March 28, 2024
Our File: 213085

Via Email: publicworks@westgrey.com

Municipality of West Grey
402813 Grey Road # 4, R. R. # 2
Durham, ON N0G 1R0

Attention: Mr. Geoff Aitken, Director of Public Works

Re: Annual Monitoring Report (2023)
Bentinck Landfill Site
Certificate of Approval No. A261301

Dear Geoff,

Please find enclosed Annual Monitoring Report (2023) for the Bentinck Landfill Site. On behalf of the Municipality and by way of this letter, we have submitted the Annual Report to Mr. Scott Gass, P. Eng., at the Ministry of the Environment, Conservation and Parks (MECP) District Office in Owen Sound.

The environmental monitoring results are generally consistent with the annual monitoring results from previous years, which indicate that the Reasonable Use Guideline continues to be met.

As requested by the MECP, a copy of the Landfill Monitoring and Screening Checklist included in the *Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document* (MOE, 2010) has also been enclosed with the annual report. It should be noted that the attached checklist is not intended to replace the Annual Monitoring Report, but rather provide a general summary of the annual findings. Consequently, for details regarding the annual monitoring program and site operations, please refer directly to the report.

I trust that this is sufficient for your records at this time. Please do not hesitate to contact me if you have any questions, or should you wish to discuss this further.

Yours truly,
GM BLUEPLAN ENGINEERING LIMITED
Per:

A.W. Bringleson, B.E.S., C.E.T.
AWB/gk/ah

Encl.

cc: MECP Owen Sound: Scott Gass, P.Eng. – scott.gass@ontario.ca
File No. 213085

Prepared By:

BluePlan ENGINEERING

Municipality of West Grey

Annual Monitoring Report (2022) - Bentinck Landfill Site Environmental Compliance Approval No. A261301

GMBP File: 213085

March 2024

West Grey

GUELPH | OWEN SOUND | LISTOWEL | KITCHENER | LONDON | HAMILTON | GTA

1260-2ND AVE. E., UNIT 1, OWEN SOUND ON N4K 2J3 P: 519-376-1805
WWW.GMBLUEPLAN.CA

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

ANNUAL MONITORING REPORT (2022) - BENTINCK LANDFILL SITE

MUNICIPALITY OF WEST GREY

MARCH 2024

GMBP FILE: 213085

1. INTRODUCTION & BACKGROUND INFORMATION

The Bentinck Landfill Site is located approximately 8 kilometres northeast of Hanover on the east side of Grey Road 3. The landfill site is located on part of Lots 16 & 17, Concession 7, in the former Township of Bentinck, Municipality of West Grey, County of Grey, as shown on Figure No. 1.

An Application for a Waste Disposal Site was submitted to the Ministry of the Environment Conservation and Parks (MECP) for approval in 1972. Landfilling operations were reportedly initiated in 1974 using the trenching method of landfilling, which continues to date. On April 12, 1990, Provisional Certificate of Approval (C of A) No. A261301 was issued to the Municipality by the MECP, licensing a 20.2 hectare (50 acre) landfilling site. In 1997, an additional 12.2 ha (30.1 acres) of buffer land was obtained by the Municipality located along the southern boundary of the landfill site. As referenced in the amended C of A, the Site now comprises an area of 32.4 ha (80.1 acres). In addition to the lands recognized within the C of A, the Municipality owns additional buffer lands located directly east and adjacent to the landfill Site, which consists of a property that comprises an area of 6.97 hectares (17.2 acres) as shown on Figure 2.

The Environmental Compliance Approval (formerly C of A) was amended and re-issued on May 20, 2005, September 29, 2005, October 16, 2008, and April 14, 2020. A Plan of Development and Operations (PDO) for the Site was completed in August of 1988. The PDO was updated and submitted for acceptance by the MECP in 2006. The updated PDO, dated December 18, 2006, is referenced in Schedule “A” of the Environmental Compliance Approval (ECA). A copy of the ECA and the associated amendments is provided in Appendix “A.” This annual monitoring report is being submitted to meet the conditions of the ECA.

2. SITE USAGE

The approved service area for the waste disposal site includes residents from the entire Municipality of West Grey. Refuse delivered to the Site primarily originates from full time and seasonal residents situated within the former Township of Bentinck. The population of the former Township of Bentinck, before amalgamation occurred in 2000, was 3,422 based on the 1999 Ontario Municipal Directory. The contributing population is expected to be generally consistent with the pre-amalgamation population within the service area.

Based on a review of previous Annual Reports and the 2006 PDO, operations at the Site have completed filling all trenches and progressed to above-grade filling using the area ramp method in the current monitoring period. Active landfilling is currently proceeding in the northeast portion of the landfill Site to the north of the receiving area. It is recommended to continue landfilling in this area until complete. The 2006 PDO indicates that Phase I of the Site consists of completing all trenches within Phase I, to be followed by the commencement of landfilling using the area ramp method.

During the current monitoring period, trenching in Phase I was completed and operations have progressed to above-grade filling using the ramp method specified in the approved PDO. Interim soil cover should be applied to the active area weekly. The excavated earth from the trenches should be satisfactory for cell cover material. The existing site conditions and the active area are presented on Figure 3.

3. SITE LIFE EXPECTANCY

The amended ECA provides for a total site area of approximately 32.4 ha with a currently approved landfill footprint of 20.2 ha and an approved operational capacity of 227,400 m^3 including daily and intermediate cover but not including final cover and capping materials. Based on the 2006 PDO, the theoretical approved volumetric capacity for the Site is 923,140 m^3. Prior to utilizing the additional theoretical airspace capacity, Condition 20.3 of the ECA requires that an updated PDO and Hydrogeological Assessment be completed for submission and acceptance by the MECP.

In the past, topographical surveys have been completed every two years to monitor site development and evaluate the remaining site capacity. The most recent capacity determination survey at the landfill was completed in January 2024. By comparing the survey in the active landfill area between the surveys, and by considering the previous excavated cell dimensions, it is assumed that approximately 90% of the 2022 surveyed area can be considered active. Based on the active surveyed area, a fill rate of 4,930 m^3/year was calculated for the current operating year. This represents a slightly higher volume than the 5-year average. However, it is noted that in 2020, the volume filled was significantly greater than the typical annual average, and in 2019 the volume filled was significantly lower than the typical annual average. The combined volume of 7,450 m^3 filled in 2019 and 2020 represents a two-year average fill rate of 3,725 m^3, which is within the typical annual range. Comparatively, the two-year average fill rate for 2021 and 2022 is 4,240 m^3, which is within the typical annual range.

We recommend that a topographic survey be completed at the site in the fall of 2024 in order to update the annual landfill rate at the Site and to confirm the remaining airspace capacity and site life. Since the landfill operations have progressed to the next phase of approved waste placement as per the PDO, and since waste placement is now completed above-grade using the area ramp method, the completion of annual topographic surveys will be key in assessing the volumetric capacity used and the remaining site life.

Based on a review of available information, the reported remaining airspace capacity for waste and daily cover at the beginning of the 2023 operating year was 158,721 m^3. Based on the annual fill rate of 4,930 m^3 in 2023, the Site has a remaining airspace capacity of 153,791 m^3 for waste and daily cover, and 31,500 m^3 for final cover. Landfill capacity calculations are presented in the attached Table 1. At the average fill rate observed over the last five years (i.e., 4,227 m^3), the remaining volumetric capacity provides for an approximate site life of 36.4 years. The 2006 PDO provides a scenario where the entire Municipality of West Grey could be contributing to the Bentinck Waste Disposal Site at an approximate hypothetical annual fill rate of 9,120 m^3/year. Under this scenario, the Site would have capacity for approximately 16.9 years as indicated in Table 1.

The Bentinck Landfill Site began the use of a scale on September 22, 2018. New fees came into effect at that time as well. The new fees were adopted under By Law No. 112-2018 and are provided within Appendix “B”. The Municipality reported that the entrance and diversion area underwent renovations to accommodate the scale and scale house including the installation of traffic lights, internet tower, cameras, diversion bins and roadways. The updated receiving area and associated changes are provided on Figure 3. Based on the weigh scale reports, approximately 1,646 tonnes of waste were brought to the site for the reporting period.

4. BURNING OPERATIONS

Based on the current Environmental Compliance Approval (ECA) requirements, only segregated clean, dry wood wastes such as brush, trees and untreated lumber may be burned at the site. Supervised burning of wood waste is to occur on clear, dry, windless days when the site is closed to the public. The Site Attendant is responsible for removing any non-wood wastes from the pile prior to burning, and to regularly remove cold ashes from the burn area for disposal in the active landfill area.

The operating authority is responsible to maintain appropriate burning operations at the site. Appropriate operations include the burning of appropriate wood wastes, which are separated from refuse and stockpiled in a designated burn area that is located a minimum distance of 30 metres from the active fill area and is within view of the Site Attendants building. Burning is to be completed under direct supervision of the operator and is to be conducted as frequently as necessary to maintain a burn pile that measures no greater than 6m by 6m in area and 3m in height. Cold ashes are to be removed from the burn area and placed directly in the active area following each burn.

The Municipality reports that approximately 216 tonnes of wood waste was burned at the Bentinck Landfill during the reported monitoring period. Inspections by staff of GM BluePlan Limited during the monitoring period noted that the wood pile was generally well maintained. Care should be taken to keep the burn pile to a minimum to reduce clutter and keep the site aesthetically acceptable. The Municipality should continue to ensure that the responsibilities of the Site Attendant to only burn the appropriate wood wastes specified in the ECA and in the burning regulation (Appendix “C”) are being carried out on a consistent basis.

5. RECYCLING/WASTE REDUCTION

Waste Management was contracted to collect curbside recyclable goods from households and to collect the accumulation of recyclables from the landfill site. All Ontario Recycling was contracted to collect and remove accumulations of scrap metal and tires from the site. Recyclable goods not accepted as part of the blue box program, such as scrap metal, tires, used propane tanks, waste electrical and electronic equipment, and vehicle batteries are stockpiled and hauled from the landfill site as required.

Waste tires were the first divertible material to be transitioned to the individual producer responsibility (IPR) framework under the recent waste diversion legislation, the Waste-Free Ontario Act. The Municipality continues to accept used tires, to a maximum of 10 tire units per person per day. As a registered collector, the Municipality accepts used tires free of charge from residents. These tires are recycled by tire producers (or Producer Responsibility Organizations), who are now directly responsible and accountable for meeting mandatory collection and recycling targets for used tires.

According to the site records, an estimated 19,645 tire units [18,088 passenger/light truck (PLT), 1163 medium truck tires (MT), and 240 Agricultural/Logger/Skidder tires (AG/LS), 149 Industrial tires (IND), 4 small off-road tires (SOTR), and 1 medium off-road tire (MOTR)] weighing approximately 368.32 tonnes were received and diverted by the Municipality in the current reporting period.

As per the requirements of Reg. 347/90-Section 6 (i.e., The General Waste Management Regulation) of the Environmental Protection Act (EPA) and consistent with the requirements of the ECA, continued attention should be given to the size of the tire stockpile to ensure that there are fewer than 5,000 tire units at any given time.

Municipal records, received from Waste Management, provide the total recycling tonnage diverted from within the entire Municipality of West Grey for the current reporting period.

The following approximate quantities of recyclables were diverted from the landfill in 2021 and 2022:

Diversion Stream	2021	2022	2023
Onsite Depot & Curbside Recycling Program for entire Municipality (tonnes)	766.02	595.30	727.91
Scrap metal (tonnes)	85.91	105.58	112
Tires (tonnes)	42.20	38.82	368.32
Waste Electrical and Electronic Equipment (WEEE) (tonnes)	10.91	15.03	17.8
Wood Waste (tonnes)	110	1,320	200
Furniture/mattresses (units)	534	259	500
Appliances (units)	116	127	-
Appliances (with Freon) (units)	102	65	127

*Note: The scrap metal tonnage is a combined measurement for the Durham and Bentick Landfills.

Aside from the increased diversion of tires, the reported recycling and waste diversion totals are generally comparable to historical totals. Based on the totals reported in the current operating year, the diversion totals indicate a slight decrease in onsite and curbside recycling but are consistent with previous totals for the site. It is important that the Municipality continue to remove stockpiles of recyclable goods on a regular basis to further reduce the volume of waste entering the landfill, to prevent clutter, and to maintain an aesthetically acceptable site.

6. GENERAL OPERATIONS

6.1 Site Controls

The site is open on Wednesdays from 8:00 A.M. to 5:00 P.M. and on Saturday from 8:00 A.M. to 4:00 P.M. each week. A sign at the access gate notes the hours of operation and specifies the acceptable wastes that are received at the Site. When the landfill is closed to the public, a locked gate across the entrance road controls access to the site. Although signs are not posted at all of the various disposal locations, designated areas for waste, recyclable materials, and wood waste are clearly visible. The site is located in a secluded setting and is set well back from Grey Road 3. The landfill is adequately screened from the public view by low hills and heavy tree cover.

The Municipality has reported that the traffic pattern has changed at the landfill. Customers looking to recycle did not have to cross the scales prior to the update but have included more metrics and load inspections moving forward. A drywall and single diversion program is planned for the future. In addition, the new scale software is waste-type specific, which adds to the site control capabilities.

6.2 Site Cleanliness

The most important aspect of site cleanliness is to ensure that all landfilled wastes are adequately covered and compacted immediately following waste placement so that refuse is not exposed at the surface. The application and compaction of an appropriate soil cover immediately following waste disposal decreases blowing litter and reduces surface water infiltration vertically through the refuse to reduce leachate production at the site.

A consistent effort should be made to ensure wastes are adequately covered and blown litter is collected on a routine basis. The Site Operator is responsible for compaction and covering of refuse and for collecting blown litter. **We recommend that waste continue to be compacted and covered and that litter is collected on the same day following waste disposal to maintain an acceptable site appearance.** General duties of Site Supervisors and Site Attendants are included as Appendix "C".

Another important aspect of site cleanliness is to ensure that accumulations of recyclable materials are regularly removed from the site and that appropriate wood wastes are burned regularly to maintain a manageable pile. Designated areas for recyclable goods appear to be organized and generally well managed.

It is noted that the Municipality provided notice of a complaint that was received regarding litter on the north side of the landfill, in addition to general complaints about sorting requirements and fees. The municipality has responded stating that they will arrange for litter collection and a litter fence was reportedly to be installed in the summer of 2023. More funds for public education and engagement on sorting will reportedly be included in the 2024 budget.

6.3 Active Landfill Area

Waste compaction and covering operations are reportedly achieved with a rubber tire loader and a tow-behind sheepsfoot roller. Previous Annual monitoring Reports indicate that the Municipality has typically achieved reasonably adequate waste compaction and covering in the active trench/area.

Currently, the active landfilling operations are being conducted in of the northeast portion of Phase 1 as per the 2006 PDO, which describes landfilling using the trenching method until such time that it becomes feasible to implement the area ramp method. It is noted that during the current monitoring period, operations using the Area-Ramp method in the northeast portion of the landfill footprint have been initiated.

Areas of the landfill that have been filled to capacity or have reached final contours should be capped and progressively closed using a minimum 600 mm of low-permeability silty clay material and 150 mm of topsoil seeded to grass.

Interim cover should be applied to the active area weekly so that no waste is exposed.

7. ENVIRONMENTAL MONITORING

The current ECA requires the submission of an annual monitoring report summarizing the environmental conditions at the landfill site and a statement with regard to Site compliance in accordance to the Reasonable Use Concept, MECP Guideline B-7 (RUC). Based on the MECP requirements specified in the ECA, the report must address the results of the groundwater and/or surface water monitoring programs and assess the environmental conditions at the site to ensure compliance with the RUC and with the requirements of the Provincial Water Quality Objectives (PWQO).

Recent historical water quality data indicates the presence of locally impacted groundwater in the shallow overburden deposit in the vicinity of the landfill, which is slowly migrating in a south to south-easterly direction. Previously completed annual monitoring reports concluded that leachate impacted groundwater is being contained to the subject property and that the landfill site was in compliance with the criteria specified in MECP Guideline B-7.

It is proposed to continue the established annual monitoring program at the site on a semi-annual basis according to the analytical parameters outlined in Table 2. Monitoring locations are shown on the Monitoring Well Location Plan presented on Figure 4.

Table 2 - Monitoring Locations & Analytical Requirements

MONITORING WELL LOCATION	GROUNDWATER SAMPLING FREQUENCY	SURFACE WATER LOCATION	SURFACE WATER SAMPLING FREQUENCY
TH-2	Spring & Fall	SW-2	Spring & Fall
TH-3	Spring & Fall	SW-2A	Spring & Fall
TH-5A	Spring & Fall	SW-4	Spring & Fall
TH-5B	Spring & Fall	SW-5	Spring & Fall
TH-6	Spring & Fall		
TH-7	Spring & Fall		
TH-8	Spring & Fall		
TH-9	Spring & Fall		
TH-10	Spring & Fall		
TH-11	Spring & Fall		
TH-12	Spring & Fall		
*TH-13	Spring & Fall		
*TH-14	Spring & Fall		
TP-3	Spring & Fall		
TP-5	Spring & Fall		

ANALYTICAL PARAMETERS (GROUNDWATER & SURFACE WATER)

- Alkalinity
- Ammonia, Total Kjeldahl Nitrogen (TKN), Phenols
- Hardness
- Conductivity, TDS (*Surface Water Only*)
- Metals – Calcium, Iron, Magnesium, Manganese, Phosphorus, Potassium, Sodium
- Anions – Chloride, Nitrate, Nitrite, Phosphate, Sulphate
- Dissolved Organic Carbon (DOC)
- pH

Notes:
* Monitoring Wells TH-13 and TH-14 were installed at the Site in the fall of 2013 as per MECP recommendation. Well logs for the new monitors are presented in Appendix "H." It should be noted that well installation details from wells installed by others were not provided in historical reports and thus there are currently no well logs for TP-3, TP-5, and TH-6 to TH-12 available for review. A tabulated summary of the monitoring well locations and construction details are provided in Table 3.

7.1 Sampling Procedures and Requirements

Groundwater quality is monitored at the site by twice-annual sampling at the above noted network of monitoring wells. It is standard procedure to measure the static groundwater level prior to purging three (3) casing volumes of stagnant water from each test well. Wells are allowed to recharge with fresh groundwater before sampling. Groundwater samples are collected using dedicated inertial-type pumps, are kept chilled, and are sent within 24 hours of the sampling event to an accredited laboratory for appropriate analyses.

MECP Guideline B-7 establishes the basis for determining what constitutes the reasonable use of groundwater on properties adjacent to landfill sites. The potential use of groundwater in this region will typically be for domestic consumption. Therefore, the allowable concentrations presented within the Ontario Drinking Water Standards (ODWS) are utilized to determine the site-specific Reasonable Use Criteria through the application of MECP Guideline B-7. MECP Procedure B-7-1 provides technical details for the application of MECP Guideline B-7. A change in the quality of groundwater on an adjacent property, where the reasonable use is determined to be for drinking water, will be acceptable only where:

i) Quality is not degraded by more than 50% of the difference between background concentrations and the Ontario Drinking Water Standards for *non-health related* parameters, and.

ii) Quality is not degraded by more than 25% of the difference between background concentrations and the Ontario Drinking Water Standards for *health-related* parameters.

Background concentrations are considered to be, the quality of the groundwater prior to influence or impact from landfill related activities.

Surface water samples are collected by submerging the appropriate sample container into the water body and removing the container when a sufficient volume of sample has been collected. During collection, contact with the bottom sediment is avoided to prevent stirring-up sediment. When collecting surface water samples, direct dipping of the sample bottle is completed unless the bottle contains preservative. For those samples requiring preservative, a clean unpreserved bottle is used to obtain the sample then transferred into the appropriate preserved bottle. The surface water temperature is measured and recorded at the time of sampling.

7.2 Summary & Comparison of Background Groundwater Quality

The background groundwater quality at the site is determined by calculating the average concentrations from the groundwater samples collected at TH-9. Monitoring Well TH-9 is located in proximity to the north property boundary and is located hydraulically upgradient of the landfill site. The well monitors the quality of groundwater in the shallow overburden unit where there is no evidence of influence by landfill leachate.

Based on a review of information provided in previous annual monitoring reports completed by others, it appears that the background groundwater quality was historically determined by calculating average concentrations from the shallow groundwater samples collected at TP-5. It must be noted that TP-5 is a test well that was initially installed in a shallow, excavated testpit with an approximate total depth of 1.4 metres. Additionally, TP-5 is centrally located on the landfill property and is approximately 100 metres south of the North (i.e., hydraulically upgradient) property boundary. Based on a review of the available historical groundwater data, it is also apparent that TP-5 is commonly dry and that samples have only periodically been collected at this location. Comparatively, TH-9 is situated in close proximity to the north property boundary where influence from landfill leachate is considered to be lowest. TH-9 is screened in the overburden soils at an approximate depth of 4.5 metres and groundwater samples are routinely collected as part of the established monitoring program.

A comparison of the background groundwater quality determined from the TH-9 analytical data indicates that the average concentrations are generally consistent with the historical average concentrations that were determined through the previous calculations and would not significantly alter the reasonable use calculations when compared to previous monitoring programs.

Based on the current reporting period and historical groundwater data from the background monitoring well, the concentrations of hardness (as $CaCO_3$), DOC, Iron, and Manganese in the natural groundwater are typically elevated and the reported concentrations consistently exceed the criteria identified in the ODWS. The historical groundwater data is tabulated and presented in Appendix "D." These parameters are considered to be naturally occurring and are elevated due to the typical mineralization of the natural groundwater in the area of the site. In general, the background groundwater quality at the site is considered to be good with relatively low levels of typical anions, metals, and nutrient parameters. The concentrations of leachate indicator parameters remain stable over time with low concentrations of parameters such as chloride (i.e., <10 mg/L), hardness and alkalinity (around 300 mg/L, respectively), and conductivity (ranging from 500 to 600 umho/cm).

7.3 Summary of Hydrogeologic Setting

The site is located in an area where surficial silty sand and gravel deposits are found to an approximate depth of 35 to 40 metres below ground surface (mbgs). Underlying the upper layer of silty sand and gravel is a thick layer of compact, relatively low-permeability silty clay till overlying the shale and dolostone bedrock of the Salina formation. At the time of the initial hydrogeological assessment, the silt and clayey soils were encountered at an approximate depth of 11 metres and extended to the surface of the bedrock (i.e., at 35 to 40 metres). The relatively low permeability till unit likely acts as an aquitard that separates the shallow overburden aquifer from the underlying bedrock aquifer. This confining layer may also account for the relatively high-water table, onsite swampy areas, and significant ponding of local surface waters observed in the area.

Onsite, the relatively low permeability silt till layer ranges in thickness from about 25 m to 30 m and is underlain by the bedrock aquifer, which is used for domestic water supplies in the area. The underlying bedrock is inferred to be dolomitic limestone of the Salina Formation.

The topography of the landfill property slopes moderately downward from the relatively flat area of the landfill footprint to the adjacent low-lying swampy areas to the southeast and southwest, as well as toward the Styx River located to the southeast of the Site. An onsite swampy area is also centrally located on the landfill property, which separates the current active area of landfilling from the historic area of waste placement in the west portion of the Site (as presented on the attached Figures). Based on current and historic water level data for the site, the groundwater is inferred to flow primarily in a southerly direction with minor seasonal fluctuations to the southeast and southwest. Ultimately, it is reasonable to expect that the shallow groundwater or a major component thereof, discharges to the Styx River located to the south/southeast of the landfill Site. The interpreted groundwater flow direction for the current monitoring year is presented on Figure 4 and the historic groundwater elevations are tabulated and presented in Appendix "G".

The observation wells located onsite were installed at varying depths to facilitate the monitoring of groundwater quality within the shallow sand and gravel / silty sand deposits, and the underlying clayey silt till layer, respectively. The hydraulic conductivity (K) of the shallow overburden soils is generally estimated to be in the range of 1×10^{-3} cm/s to 1×10^{-5} cm/s.

7.4 Leachate Production

The current and historical analytical results collected through the established monitoring program indicate that there is evidence of leachate influence to the shallow groundwater at onsite monitoring wells TH-3 and TH-6 where elevated concentrations of chloride, conductivity, hardness, alkalinity, DOC, and ammonia have consistently been reported for several years. The chloride concentrations reported at these locations have historically ranged between 1 to 134 mg/L, and 25 to 193 mg/L, respectively. However, the concentrations have generally been lower and indicate a more stable to decreasing trend in recent monitoring years with respective averages of 20 mg/L and 72 mg/L over the last five years. TH-3 is located immediately south and downgradient of the refuse trenches and does not represent the quality of groundwater leaving the subject property. TH-6 is located adjacent to the access road on the south boundary of the landfill footprint. However, the groundwater at this well does not represent groundwater quality flowing offsite as the municipally owned buffer lands are located further downgradient of the monitoring well and extend an additional distance of approximately 150 metres to the south. Additionally, the groundwater downgradient of TH-6 is monitored at the location of TH-10, which is situated within the municipal buffer lands. The analytical results indicate that the concentrations of leachate indicator parameters at TH-10 are significantly lower than the concentrations at TH-6 and have decreased consistently since 2006/2007. The analytical data indicates that the leachate indicator parameter concentrations decrease with distance from the landfill footprint.

A monitoring well (TH-14) was installed in September of 2013 as a leachate characterization well within the area of historical waste as per previous recommendations made by the MECP. The reported analytical results from the initial sampling event indicate elevated concentrations of hardness, alkalinity, conductivity, ammonia, and DOC at the location of TH-14. An ongoing evaluation and trend analysis of analytical results from the leachate well will be completed to more accurately characterize the leachate, evaluate the potential for radial flow/mounding, and to discern long-term attenuation and leachate quality trends.

An ongoing evaluation of the analytical results from the shallow and deep overburden monitors continues to indicate that leachate impacts remain primarily in the upper and higher permeability soils within the overburden. The relatively thick layer (i.e., 25 to 30 metres) of lower permeability clayey silt till overlying the bedrock surface is expected to provide a level of hydraulic separation between the shallow overburden unit and the underlying bedrock aquifer.

7.5 Annual Monitoring Program

A groundwater monitoring program was reportedly initiated at the site in about 1982 to satisfy MECP conditions at that time. Currently, there are a total of 16 monitoring wells located at the site, which intercept the groundwater in two different geologic units.

In addition to the groundwater monitoring program, surface water sampling is also conducted as part of the annual monitoring program. Surface water samples are collected from four locations including from the Styx River, and from the tributary/intermittent creek that flows across the south portion of the property within the southerly buffer lands.

Groundwater and surface water samples were collected from the site in the spring and fall of the current monitoring period. Water samples were submitted to Bureau Veritas Laboratories Inc. (BV Labs) in Mississauga for analysis of the established analytical parameter list, as outlined below. Copies of the laboratory Certificates of Analyses are presented in Appendix “F.”

The following is a detailed summary of the Environmental Monitoring Program for the current monitoring year.

Summary of Annual Monitoring Program

GROUNDWATER	ANALYTICAL PARAMETERS
TH-2, TH-3, TH-5A, TH-5B, TH-6, TH-7, TH-8, TH-9, TH-10, TH-11 TH-12, TH-13, TH-14, TP-3, TP-5	Alkalinity, Ammonia, TKN, Phenols, Hardness, Conductivity, Calcium, Iron, Magnesium, Manganese, Phosphorus, Potassium, Sodium, Chloride, Nitrate, Nitrite, Phosphate, Sulphate, DOC, pH
SURFACE WATER	**ANALYTICAL PARAMETERS**
SW-2, SW-2A, SW-4, SW-5	Alkalinity, Ammonia, TKN, Phenols, Hardness, Conductivity, Calcium, Iron, Magnesium, Manganese, Phosphorus, Potassium, Sodium, Chloride, Nitrate, Nitrite, Phosphate, Sulphate, DOC, pH

7.6 Groundwater Quality Review

North Boundary Condition (Upgradient)

The north property boundary is located approximately 50 metres upgradient of the landfill footprint. Groundwater quality in proximity to the north property line is monitored at TP-5, TH-5A, TH-5B, and TH-9. Although TP-5 is not located at the north boundary, it is situated in the north portion of the property and has historically been used to represent general background groundwater conditions. The leachate indicator parameters measured along the north property boundary indicate that there is no landfill related impact to the groundwater located hydraulically upgradient of the subject property. The average background chloride concentration at the above noted locations is less than 10 mg/L, which has been interpreted to generally reflect background groundwater quality as per the criteria of Guideline B-7. It is noted that during the current monitoring year, TP-5 could not be sampled in the fall.

The shallow overburden well TH-5A, previously displayed some minor evidence of leachate influence and a temporary increasing trend in indicator parameter concentrations between 2018 and 2019 but have since displayed a sharp decreasing trend between 2019 and the current reporting period. As expected, the concentrations of hardness, alkalinity, conductivity, ammonia, chloride, and DOC have been slightly elevated compared to the background concentrations since 2017. However, as reported above, the concentrations have displayed a decreasing trend in the last few years. In the current monitoring period, only the concentration of hardness exceeded the RUC. It should also be noted that the deep overburden well TH-5B has historically not shown the same elevated concentrations of the leachate indicator parameters. Only the reported concentration of hardness was elevated above the RUC and manganese was reported above the ODWS aesthetic objective.

The groundwater quality at TH-9 (i.e., the background monitoring location) was previously discussed in detail in Section 7.2. In summary, the groundwater quality at TH-9 is described as being mineralized with elevated levels of hardness (as $CaCO_3$), alkalinity, DOC, Iron, and Manganese. As previously reported, the background water quality is considered to be typical of shallow groundwater conditions in a carbonate-rich system.

East Boundary Condition

The groundwater quality along the east property line is monitored at TH-7 and TH-8, which are considered to be cross-gradient to downgradient of the landfill footprint. The analytical data indicates that the groundwater quality at these monitoring locations is generally consistent with the groundwater in the upgradient/background monitoring wells. An evaluation of the historical groundwater results and long-term trends indicate that the concentrations of leachate indicator parameters have generally decreased in recent years in the case of TH-8 and exhibit overall stable trends in the case of TH-7.

Based on historical trends, there appears to have been some leachate influence to groundwater at TH-7 and TH-8 prior to 2000, which may have been related to landfilling activities in the easterly landfill trenches. Since that period, a review of the long-term analytical trends for both monitoring locations indicate very stable to decreasing trends over time.

The current analytical results indicate that, in general, the concentrations of hardness, alkalinity, manganese, and nitrate were slightly elevated. This is consistent with recent monitoring trends and no apparent upward trend is visible. The historical data indicates that the concentrations of these parameters have consistently been reported above the criteria of MECP Guideline B-7 and the ODWS. The east property boundary is considered to be hydraulically cross-gradient, and the Municipality owns an additional 6.97 hectares (17.2 acres) of property to the east of the landfill Site which extends to the Styx River. Therefore, leachate influence and/or impact to the east property boundary is considered to be further limited. The groundwater quality at TH-7 and TH-8 will continue to be monitored as part of the established groundwater monitoring program to discern if a more pronounced long-term trend becomes apparent.

South Boundary Condition (Downgradient)

The downgradient property boundary is monitored by monitoring wells TP-3, TH-6, TH-10, and TH-11. TH-10 and TH-11 are located in the additional buffer lands owned by the Municipality to the south of the landfill property. TP-3 is located to the east of the diversion bins, east of TH-6. TP-3 appears to have been destroyed in the fall of 2018 when work was done to the diversion area. Based on a review of the well installation details, it is a test well that was initially installed in a shallow, excavated testpit with an approximate total depth of 1.7 metres. The groundwater in the vicinity of TP-3 is also monitored by TH-6 and TH-10. **The condition of TP-3 has been investigated and confirmed to have been destroyed. Therefore, it is recommended that the well should be removed from the Monitoring Program, pending approval from the MECP, and decommissioned as per the requirements of Regulation 903.**

TH-6 is located south of the active trenching area and is situated on the south boundary of the landfill property. However, the buffer lands to the south of the landfill property comprise an additional distance of approximately 150 metres from the location of TH-6. Considering the additional 150 metres of downgradient buffer lands owned by the Municipality beyond the south limit of the landfill, the quality of groundwater measured at these wells does not represent the actual quality of groundwater flowing offsite.

The analytical findings suggest that there is some leachate influence to the groundwater at the location of TH-6 located onsite to the south of the landfill footprint. However, the long-term analytical trends for leachate indicator parameters at TH-6 remain very stable over time with evident decreasing trends since the early 2000's. The groundwater is monitored further south at TH-10 and TH-11. Aside from hardness, the downgradient observation wells TH-10 and TH-11 continue to have concentrations of leachate indicator parameters below the criteria of MECP Guideline B-7. The elevated hardness concentrations identified at the downgradient monitoring wells are consistent with the historical range of background values and a trend analysis indicates stable long-term trends.

Thus, the current and historical analyses suggest that the groundwater that is influenced by leachate above the RUC remains onsite and does not cause impact to groundwater leaving the subject property that exceeds MECP Guideline B-7. Exceedances of MECP Guideline B-7 are summarized by location in Table 5.

Based on the observed direction of groundwater flow and the measured leachate impacts adjacent to the south edge of the landfill footprint, obtaining consistent groundwater samples from monitoring locations located to the south of historically placed wastes, and at or near the south property boundary (i.e., TH-6, TH-10, and TH-11) will be critical in assessing site compliance to MECP Guideline B-7.

West Boundary Condition

The landfill is essentially divided into east and west areas of waste placement that are separated by the onsite treed swampy feature and an area of planted mature conifers. Waste placement in the west portion of the Site reportedly occurred prior to 1990 and the landfilled trenches are located approximately 150 metres west of the current active area of the Site. The historical waste trenches in this portion of the Site appear to be approximately 10 to 15 metres from the west property boundary at its closest point. The onsite groundwater quality to the west of the landfill is monitored by wells TH-12, and TH-13. Prior to 2006 the groundwater to the west of the landfill was also monitored by TH-1. However, TH-1 was consistently dry, and as a result was replaced in the monitoring program by monitoring at TH-12. Based on the direction of groundwater flow at the site, the groundwater at TH-12 is considered to be hydraulically cross-gradient of the landfill footprint. The groundwater at TH-13 (installed in 2013) is considered to monitor groundwater directly downgradient of the historical west portion of the landfill (refer to the attached Figures).

A review of the historical groundwater quality for TH-1, prior to being removed from the monitoring program, indicates that the groundwater quality at this location is consistent with background conditions with low concentrations of leachate indicator parameters. Groundwater monitoring has been completed at TH-12 since 2006, at which time the monitoring well was added to the monitoring program. The analytical results for TH-12 indicate that the concentrations are analogous to background conditions with an average chloride concentration of <5 mg/L.

Sampling at TH-13 was initiated in the fall of 2013 and twice annual sampling has been completed at this location since that time. The monitoring well was installed at the south edge of the closed west portion of waste placement to provide a downgradient monitor of the westerly landfill trenches. Based on the analytical results to date, there is no indication of leachate impact at the location of TH-13, and only hardness is reported above the RUC. The concentrations of all parameters are consistent with background concentrations. Based on a reported closure date in 1990 (i.e., over 25 years), the long-term trends are expected to be stable in this portion of the Site.

The continuation of the sampling program at the westerly monitoring wells is recommended to evaluate the groundwater conditions downgradient of the closed west landfill trenches and to continue the ongoing trend analysis.

7.7 Surface Water Quality Review

7.7.1 Regulatory Framework

The purpose of surface water quality management at the Site is to achieve the requirements established in the Provincial Water Quality Objectives (PWQO) set out by the MECP. The criteria established by the PWQO ensure that surface waters are of a quality that is satisfactory for aquatic life and recreation. Areas that have water quality that meet the PWQO requirements are to be maintained at or below the applicable objectives. Areas that have water quality that does not presently meet the PWQO are not to be degraded any further and are to be upgraded if practicable.

Currently, the surface water quality monitoring program at the Site evaluates water quality within the Styx River and the intermittent tributary that flows through the south portion of the buffer lands to the south of the landfill property, which discharges to the Styx River.

As previously discussed, the existing surface water monitoring program consists of four (4) sampling locations including SW-2, SW-2A, SW-4 and SW-5. The results of the most recent surface water monitoring and compliance with the PWQO are provided in Table 6. A summary of the historical surface water sampling data, compared to the PWQO, is provided in both tabular and graphical form in Appendix “E.”

7.7.2 Surface Water Quality Summary

The reported surface water quality results for the current monitoring program indicate that there are no exceedances of the PWQO. Sampling location SW-2A represents the background surface water quality in the intermittent tributary that is flowing upstream of the landfill property. Sampling locations SW-4 and SW-5 represent off-site conditions within the Styx River where surface waters discharge into the river downstream of the landfill Site. There is no direct surface water flow path from the landfill trenches / active areas to the surface water bodies. The extensive historic surface water monitoring data indicates that the surface water quality at the downstream locations is consistent with the background conditions at SW-2A and does not indicate impact from landfill leachate.

The continuation of twice annual monitoring of the surface waters adjacent to the Site is recommended to continue as part of the annual monitoring program.

8. CLOSED AREAS

A significant portion of the landfill has been filled and closed. The closed portions of the Site include the landfill trenches in the west portion of the landfill property adjacent to the west property boundary. Additionally, in the east portion of the Site, Trenches 1 through 17 have primarily been filled and temporarily closed to date including the application of interim cover.

Upon completion of landfilling in a designated portion of the landfill footprint, sufficient cover material should be progressively applied from the existing stockpiles of cover. Progressive covering and grading of the finished areas should be conducted in such a manner as to promote runoff and reduce infiltration, thus reducing the generation of landfill leachate at the site.

As noted in Section 6.3, during the current monitoring period, initiation of landfilling using the area ramp method has commenced on top of the trenched areas.

9. CERTIFICATE OF APPROVAL

The waste disposal site operates under Environmental Compliance Approval (ECA, formerly C of A) Number A261301, which was issued by the MECP on April 12, 1990. The ECA for the site is based on the original application made in January 13, 1972 (see Appendix "A") and the former Plan of Development and Operation completed in 1988.

A copy of the ECA and the associated amendments, dated May 20 and September 29, 2005, October 16, 2008, and April 14, 2020, are provided in Appendix “A”.

10. CONCLUSIONS

1) The approved landfill footprint specified within the original C of A covers a total area of 32.4 ha (80.1 acres). In addition to the lands recognized within the C of A, the Municipality owns additional buffer lands located directly east and adjacent to the landfill Site, which consists of a property that comprises an area of 6.97 hectares (17.2 acres). Currently, the total approved capacity for waste and daily cover is 227,400 m^3.

2) Landfill operations continue to proceed in the northeast portion of Phase I. During the current monitoring period, landfilling has progressed to the area ramp method as per the requirements of the updated PDO. The approved landfill footprint in the east portion of the site has been surveyed and the corners laid out including the placement of boundary markers to provide direction to the operators.

3) The estimated average annual fill rate over the past five operating years is 4,227 m^3/year and the maximum observed fill rate is 6,100 m^3/year. Based on a review of previous annual reports by others, the 2006 PDO provides a theoretical annual fill rate of 9,120 m^3/year under a scenario where the entire Municipality is contributing waste to the Bentinck Site.

4) The landfill has about 153,791 m^3 of remaining capacity for waste and daily cover. At the average five-year annual fill rate of 4,227 m^3/year, the remaining site life is approximately 36.4 years. At the theoretical annual fill rate referenced within the 2006 PDO for general planning purposes, the landfill would have sufficient capacity for approximately 16.9 years.

5) The groundwater monitoring program indicates that leachate impacts are being contained to the shallow overburden at the landfill site and that there is a level of hydraulic separation between the shallow overburden soils and the underlying low-permeability silt till (i.e., that is approximately 25 metres in thickness), which is further underlain by the limestone bedrock.

6) Based on a review and evaluation of the analytical findings, there is currently no apparent impact to the groundwater leaving the subject property above the Reasonable Use Criteria as referenced in MECP Guideline B-7.

7) The surface water monitoring program indicates that the surface water quality downstream of the landfill property is consistent with the surface water quality in the upstream background sampling location. The surface water monitoring results indicate that there are no PWQO exceedances reported for the 2022 monitoring program.

11. RECOMMENDATIONS

The following actions are recommended for the upcoming monitoring year(s):

1) We recommend that a topographic survey be completed at the site in the fall of 2024 in order to update the annual landfill rate at the Site and to confirm the remaining airspace capacity and site life.

2) It is important that the Municipality continue to remove stockpiles of recyclable goods on a regular basis to further reduce the volume of waste entering the landfill, to prevent clutter, and to maintain an aesthetically acceptable site.

3) Areas of the landfill that have been filled to capacity or have reached final contours should be capped and progressively closed using a minimum of 600 mm of low-permeability silty clay material and 150 mm of topsoil seeded to grass.

4) It is recommended to continue landfilling on top of the former Trench No. 1 using the Area-Ramp method.

5) It is recommended that the Municipality compact and cover waste on the same day following waste disposal, or as soon as practical, to prevent blowing litter, reduce leachate production, and maintain site aesthetics.

6) All future capping operations should be completed using a low permeability clayey silt material, or equivalent cover (as per the PDO), to reduce surface water infiltration.

7) TP-3 is confirmed to be destroyed. It is recommended that the well be removed from the monitoring program (see recommendation #8 below for groundwater monitoring) and be decommissioned as per the requirements of Regulation 903.

8) We recommend continuing the established monitoring program on a semi-annual basis as outlined below:

GROUNDWATER	ANALYTICAL PARAMETERS
TH-2, TH-3, TH-5A, TH-5B, TH-6, TH-7, TH-8, TH-9, TH-10, TH-11 TH-12, TH-13, TH-14, TP-5	Alkalinity, Ammonia, TKN, Phenols, Hardness, Conductivity, Calcium, Iron, Magnesium, Manganese, Phosphorus, Potassium, Sodium, Chloride, Nitrate, Nitrite, Phosphate, Sulphate, DOC, pH

SURFACE WATER	ANALYTICAL PARAMETERS
SW-2, SW-2A, SW-4, SW-5	Alkalinity, Ammonia, TKN, Phenols, Hardness, Conductivity, Calcium, Iron, Magnesium, Manganese, Phosphorus, Potassium, Sodium, Chloride, Nitrate, Nitrite, Phosphate, Sulphate, DOC, pH

All of which is respectfully submitted,
GM BLUEPLAN ENGINEERING LIMITED.

Per:

Gerhard Kiessling, P.Geo.

A.W. Bringleson, B.E.S., C. E. T.

M.D. Nelson, P.Eng., P.Geo

TABLES

Table 1 - Landfill Volume Capacity (m^3) - Bentinck Landfill

		2018	2019	2020	2021	2022	2023
Total Approved Capacity							
Total Capacity for Waste and Daily Cover		227400	227400	227400	227400	227400	227400
Total Capacity for Final Cover		31500	31500	31500	31500	31500	31500
Total Air space Capacity		258900	258900	258900	258900	258900	258900
Volume Filled to Beginning of Year							
Volume of Waste and Daily Cover		48249	52749	54099	60199	62599	68679
Volume of Final Cover		0	0	0	0	0	0
Total Volume Filled		48249	52749	54099	60199	62599	68679
Available Capacity at Beginning of Year							
Capacity for Waste and Daily Cover		179151	174651	173301	167201	164801	158721
Capacity for Final Cover		31500	31500	31500	31500	31500	31500
Total Available Capacity		210651	206151	204801	198701	196301	190221
Capacity Used During Year							
Capacity Used for Waste and Daily Cover		4500	1350	6100	2400	6080	4930
Capacity Used for Final Cover		0	0	0	0	0	0
Total Capacity Used		4500	1350	6100	2400	6080	4930
Volume Filled at End of Year							
Volume of Waste and Daily Cover		52749	54099	60199	62599	68679	73609
Volume of Final Cover		0	0	0	0	0	0
Total Volume Filled		52749	54099	60199	62599	68679	73609
Remaining Capacity at End of Year							
Capacity for Waste and Daily Cover		174651	173301	167201	164801	158721	153791
Capacity for Final Cover		31500	31500	31500	31500	31500	31500
Total Remaining Capacity		206151	204801	198701	196301	190221	185291
Remaining Site Life (years)							
At 5 year Average Fill Rate	4227	41.3	41.0	39.6	39.0	37.6	36.4
At Maximum Observed Fill Rate	6100	28.6	28.4	27.4	27.0	26.0	25.2
At Fill Rate Specified in 2006 PDO	9120	19.2	19.0	18.3	18.1	17.4	16.9

TABLE 3:
SUMMARY OF MONITORING WELL LOCATIONS AND CONSTRUCTION DETAILS

BOREHOLE ID [WELL ID]	LOCATION (relative to refuse pile)	DATE INSTALLED	ELEVATION (RELATIVE)		ELEVATION (GEODETIC)		DEPTH TO BOTTOM OF MW
			Ground (m)	Top of Casing* (m)	Ground (mASL)	Top of Casing (mASL)	
TH-1	West Boundary	1984	99.21	99.78	298.51	299.08	3.40
TH-2	Downgradient of Historic Cells	1984	99.54	100.13	298.84	299.43	5.63
TH-3	In Footprint - Downgradient of Cells	1984	102.91	103.52	302.21	302.82	6.84
TH-4	Northeast Corner	1984	103.88	104.33	303.18	303.63	7.86
TH-5A	Upgradient - In Footprint	1984	102.88	102.88	302.18	302.49	8.42
TH-5B	Upgradient - In Footprint	1984	102.90	103.19	302.18	302.49	12.56
TH-6	Downgradient Edge of Footprint	1988	101.42	102.31	300.72	301.72	8.23
TH-7	Downgradient Edge of Footprint	1988	96.80	97.92	296.10	297.22	4.23
TH-8	East Edge of Footprint	1988	103.08	103.75	302.33	303.05	8.20
TH-9	Upgradient Boundary	1988	98.96	99.80	298.26	299.10	4.50
TH-10	Downgradient -Buffer Lands	1989	95.60	96.10	294.90	295.40	3.20
TH-11	Downgradient - Buffer Lands	1989	96.25	97.51	295.55	296.81	2.84
TH-12	West Boundary	2006	98.25	99.00	297.55	298.30	12.00
TH-13	Downgradient - SW Corner	2013	97.08	98.11	296.38	297.41	5.49
TH-14	In Refuse Pile (Leachate Well)	2013	104.00	105.26	303.48	304.56	9.91
TP-3	Downgradient - In Footprint	1988	97.50	97.80	296.80	297.10	1.67
TP-5	Upgradient - In Footprint	1988	97.71	98.12	297.01	297.42	1.37

NOTES:

1. All depths measured in mbgs = approximate depth in metres below ground surface
2. na = Not Available.
3. Detailed borehole logs are provided in the Appendices.
4. Screened interval includes screen and sandpack up to the bentonite seal.
5. Elevations measured in mASL = meters above sea level.
6. Depth in meters below ground surface.
7. TBS: To Be Surveyed

Table 4:
REASONABLE USE CRITERIA - OBJECTIVE LEVELS

Parameter	Background Concentration (Cb)	Maximum Concentration (Cr)	Objective Level (Cm)
Alkalinity(as CaCO3)	299.69	30 - 500 [OG]	400
Ammonia(as N)	1.09	nv	nv
Calcium	82.15	nv	nv
Chloride	2.94	250 [AO]	126
Conductivity (umho/cm)	550.66	nv	nv
Dissolved Organic Carbon(DOC)	20.45	5.0 [AO]	13
Hardness(as CaCO3)	314.69	80-100 [OG]	207
Iron	1.01	0.3 [AO]	0.7
Magnesium	27.85	nv	nv
Manganese	0.24	0.05 (AO)	0.3
Nitrate(as N)	0.20	10 (MAC)	3
Nitrite(as N)	0.04	1 (MAC)	0.28
Orthophosphate(as P)	0.06	nv	nv
pH	7.71	6.5-8.5 [OG]	6.5 to 8.5
Phenols	0.08	nv	nv
Phosphorus, Total (as P)	0.32	nv	nv
Potassium	0.50	nv	nv
Sodium	1.13	200 [AO]	101
Sulphate	15.07	500 [AO]	258
Total Kjeldahl Nitrogen(as N)	2.04	nv	nv

Notes:
***** The background concentrations for these parameters exceed the ODWS. Therefore, the RUC is set at the maximum measured naturally occurring concentration in the background well
AO = Aesthetic Objective
OG = Operational Guideline
MAC = Maximum Acceptable Concentration
Background Concentrations are Based on Concentrations Reported from TH-9 from 1993 to 2020.

MOE Procedure B-7-1

$Cm = Cb + x(Cr-Cb)$

Where:

Cm = Maximum Concentration Acceptable in Groundwater at Property Line
Cb = Background Concentration from TH-9 from 1993 to Present
Cr = Maximum Concentration Acceptable in Groundwater as per Ontario Drinking Water Standards (ODWS)
x = A Constant; Being 0.5 for Non-Health related Parameters, and 0.25 for Helath Related Parameters

Table 5:
Summary of Groundwater Quality and Comparison to RUC

SPRING - 2023

Sample Date	Ontario Drinking Water Standards (ODWS)	MOE Guideline B-7 Reasonable Use Criteria	Sample Identification And Monitoring Well Location														
			23-Apr-23														
MW Location			North - Upgradient			Background	East Boundary		South Boundary - Downgradient				Western Boundry		Onsite		
Sample ID	(mg/L)	(mg/L)	TH-5A	TH-5B	TP-5	TH-9	TH-7	TH-8	TP-3	TH-6	TH-10	TH-11	TH-12	TH-13	TH-2	TH-3	TH-14
Parameter																	
Alkalinity(as CaCO3)	30 - 500 [OG]	400	250	210	180	300	**540**	480		**750**	270	200	160	270	270	**550**	
Ammonia(as N)	nv	nv	1.7	0.074	<0.050	<0.050	0.2	<0.050		18	0.069	<0.050	0.24	<0.050	0.14	5.3	
Calcium	nv	nv	56	47	46	84	180	160		160	81	51	43	73	67	150	
Chloride	250 [AO]	126	62	<1.0	<1.0	4.5	64	6.9		93	24	3.2	<1.0	3.1	2.9	26	
Conductivity (umho/cm)	nv	nv	680	450	340	580	1300	940		1800	590	380	460	540	530	1100	
Dissolved Organic Carbon(DOC)	5.0 [AO]	13	3.5	1.1	0.98	**16**	2.4	3		**10**	2.1	1.5	0.5	1.3	1.7	3.6	
Hardness(as CaCO3)	80-100 [OG]	207	**280**	**240**	**190**	**330**	**640**	**540**		**780**	**300**	**210**	**220**	**310**	**290**	**590**	
Iron	0.3 [AO]	0.65	<0.1	<0.1	<0.1	0.12	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Magnesium	nv	nv	34	29	17	29	45	34		94	22	20	27	31	30	51	
Manganese	0.05 (AO)	0.27	0.0079	**0.14**	<0.002	0.012	0.022	0.018		**3.3**	0.05	<0.002	0.0066	<0.002	<0.002	**0.16**	
Nitrate(as N)	10 (MAC)	2.7	<0.10	<0.10	<0.10	0.16	8.47	1.27	No Sample	1.57	0.76	<0.10	0.15	1.26	0.65	0.37	No Sample
Nitrite(as N)	1 (MAC)	0.28	0.012	<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	0.023	<0.010	0.02	<0.010	<0.010	<0.010	
Orthophosphate(as P)	nv	nv	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		0.017	0.02	<0.010	<0.010	<0.010	<0.010	<0.010	
pH	6.5-8.5 [OG]	6.5 to 8.5	8.14	8.15	8.12	8.09	7.74	7.80		7.89	8.04	8.18	8.21	8.06	8.16	7.81	
Phenols	nv	nv	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Phosphorus, Total (as P)	nv	nv	0.13	<0.020	0.29	0.058	<0.020	0.022		0.041	0.068	0.056	1.1	0.39	0.058	0.1	
Potassium	nv	nv	2.9	1	<.2	0.31	6.2	2.3		62	2.7	0.23	1.1	0.41	0.91	6.7	
Sodium	200 [AO]	101	28	7.1	0.27	1.30	35	5.7		59	14	1.8	13	0.98	1.7	14	
Sulphate	500 [AO]	258	1.3	17	2.3	2.9	20	21		94	4.7	3.5	77	6.4	6.8	5.7	
Total Kjeldahl Nitrogen(as N)	nv	nv	2	0.14	0.17	0.39	1	0.34		17	0.14	<0.10	0.75	0.24	0.94	5.3	

FALL - 2023

Sample Date	Ontario Drinking Water Standards (ODWS)	MOE Guideline B-7 Reasonable Use Criteria	Sample Identification And Monitoring Well Location														
			22-Nov-23														
MW Location			North - Upgradient			Background	East Boundary		South Boundary - Downgradient				Western Boundry		Onsite		
Sample ID	(mg/L)	(mg/L)	TH-5A	TH-5B	TP-5	TH-9	TH-7	TH-8	TP-3	TH-6	TH-10	TH-11	TH-12	TH-13	TH-2	TH-3	TH-14
Parameter																	
Alkalinity(as CaCO3)	30 - 500 [OG]	400	290	240		320	500	**520**		**740**	200	270	160	290	290	**540**	
Ammonia(as N)	nv	nv	3.4	0.41		5.4	2.5	<0.050		17	<0.050	<0.050	0.38	<0.050	0.31	6.3	
Calcium	nv	nv	74	54		82	150	180		150	100	<0.1	44	76	73	150	
Chloride	250 [AO]	126	45	<1.0		<10	16	8.4		52	19	74	<1.0	2.9	3.3	34	
Conductivity (umho/cm)	nv	nv	720	480		640	1000	1000		1700	460	770	480	560	560	1100	
Dissolved Organic Carbon(DOC)	5.0 [AO]	13	4.1	1.8		**18**	2.1	3.2		7.6	2.5	0.84	1.2	1.7	2.7	3.6	
Hardness(as CaCO3)	80-100 [OG]	207	**340**	**260**		**230**	**540**	**620**		**740**	**230**	**410**	**230**	**320**	**310**	**590**	
Iron	0.3 [AO]	0.65	<0.1	<0.1		**1.7**	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Magnesium	nv	nv	37	30		31	40	42		87	17	36	28	32	31	54	
Manganese	0.05 (AO)	0.27	0.0077	**0.21**	No Sample	**0.33**	**0.26**	**0.23**	No Sample	**3**	0.013	<0.002	0.0076	<0.002	**0.23**	**0.15**	No Sample
Nitrate(as N)	10 (MAC)	2.7	0.19	<0.10		1.27	<0.10	1.74		0.21	0.78	0.22	0.13	0.83	0.33	0.38	
Nitrite(as N)	1 (MAC)	0.28	0.124	0.023		0.78	0.143	0.017		<0.010	<0.010	<0.010	0.034	<0.010	<0.010	<0.010	
Orthophosphate(as P)	nv	nv	<0.010	<0.010		<0.10	0.71	<0.010		<0.010	0.03	0.012	<0.010	<0.010	<0.010	<0.010	
pH	6.5-8.5 [OG]	6.5 to 8.5	8.07	7.91		7.67	7.5	7.65		7.48	7.74	7.99	8.02	7.8	7.93	7.6	
Phenols	nv	nv	0.001	<0.0010		<0.0010	0.013	<0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0033	<0.0010	
Phosphorus, Total (as P)	nv	nv	<0.1	<0.1		<0.1	0.8	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Potassium	nv	nv	4.2	1.3		1.2	8.8	2.7		61	2.4	0.44	1.2	0.48	1.2	7.4	
Sodium	200 [AO]	101	24	7.7		1.50	15	7.5		46	11	11	14	0.96	1.7	24	
Sulphate	500 [AO]	258	2.1	14		<10	25	26		79	3.4	3.1	71	4.4	6.8	3	
Total Kjeldahl Nitrogen(as N)	nv	nv	3.8	0.6		5.9	3.6	0.35		16	0.1	<0.10	<0.50	<0.10	1.4	6.2	

Notes:

1. Analytical results are reported in mg/L unless otherwise noted. Analysis completed by Maxxam Analytics Inc.
2. Reasonable Use Criteria are calculated using MOE Procedure B-7-1
3. Background Concentrations are based on concentrations measured at TH-9 from 1993 to present
4. AO: Aesthetic Objective; OG = Operational Guideline; MAC = Maximum Acceptable Concentration; IMAC = Interim Maximum Acceptable Concentration.
5. Values in **bold** are greater than the ODWS
6. Shaded values are greater than the Reasonable Use Criteria

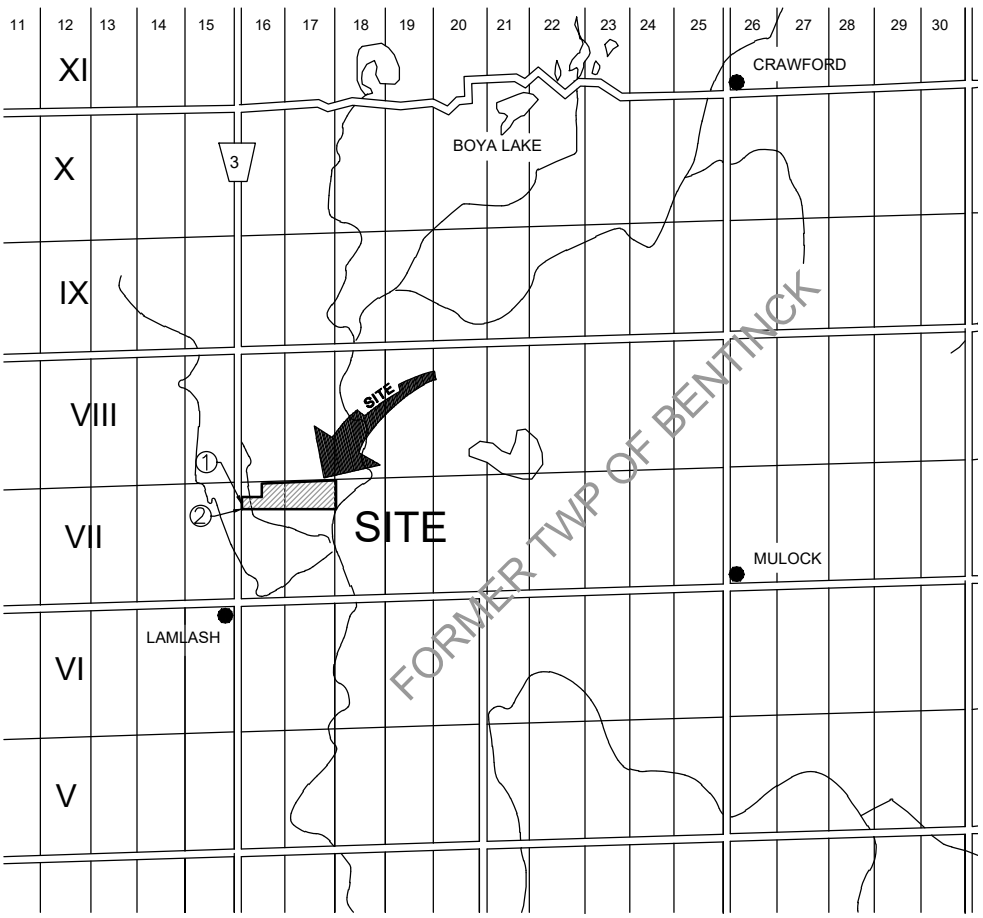
Table 6:
Summary of Surface Water Quality and Comparison to PWQO

Parameter	PWQO (mg/L)	Spring Monitoring - 2023				Fall Monitoring - 2023			
		SW-2 (Downstream)	SW-2A (Background)	SW-4 (Downstream)	SW-5 (Downstream)	SW-2 (Downstream)	SW-2A (Background)	SW-4 (Downstream)	SW-5 (Downstream)
Alkalinity(as CaCO3)	**	200	200	210	210	260	230	240	240
Ammonia(as N)	20	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.062	<0.050
Calcium	NV	56	55	57	58	70	63	63	63
Chloride	NV	17	15.0	5.1	5.0	31	25	7.6	7.7
Conductivity @25øC (µmho/cm)	NV	470	440	440	440	NV	NV	NV	NV
Dissolved Organic Carbon(DOC	NV	7.1	7.5	4.1	4.2	6.6	6.5	4.2	4
Hardness(as CaCO3)	NV	220	210	230	230	280	250	270	270
Iron	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Magnesium	NV	21	21	24	25	NV	NV	NV	NV
Manganese	NV	0.0093	0.0063	0.0054	0.0046	0.025	0.02	0.0053	0.0035
Nitrate(as N)	NV	<0.10	0.11	0.41	0.37	0.14	0.2	0.53	0.55
Nitrite(as N)	NV	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)	NV	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5	8.19	8.19	8.31	8.33	8.21	8.2	8.26	8.31
Phenols	NV	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)	0.03	<0.004	<0.004	<0.004	<0.004	<0.020	<0.020	<0.020	<0.020
Potassium	NV	1.6	1.6	0.79	0.78	1.5	1.7	0.88	0.84
Sodium	NV	10	9.9	3.4	3.5	19	17	4.1	4.4
Sulphate	NV	5.6	5.5	9.1	8.6	6.4	5.5	17	17
TDS (ion sum calc.)	NV	235	230	200	170	NV	NV	NV	NV
Total Kjeldahl Nitrogen(as N)	NV	0.33	0.37	0.32	0.24	0.24	0.22	0.13	0.18

Notes:
1. Analytical results are reported in mg/L unless otherwise noted
2. PWQO: Provincial Water Quality Objective
3. NV: No Value
4. na: Not Available
5. ** Alkalinity should not be decreased by more than 25% of the natural concentration.
6. Values in **BOLD** and shaded indicate exceedance of PWQO.

FIGURES

213085
Annual Monitoring Report
Bentinck Landfill
Part Lots 16 & 17, Conc. 7
Municipality of West Grey
(Former Twp. of Bentinck)



① -Entrance UTM
502 140 E
4896 755 N

② -SW Property Corner UTM
502 140 E
4896 755 N

Not To Scale
FEBRUARY 2024

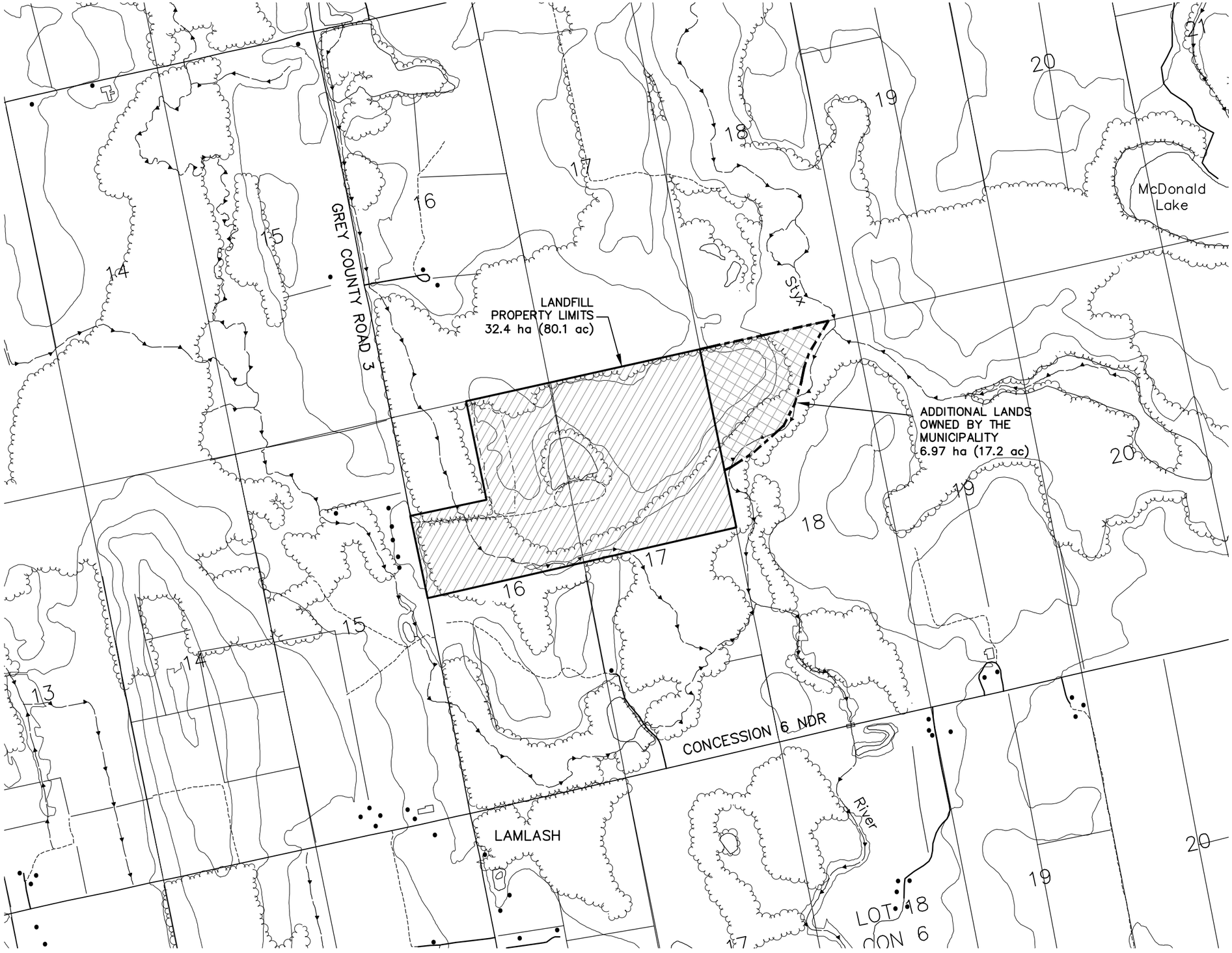
SITE LOCATION MAP

Figure No. 1

BluePlan ENGINEERING

FILE:C:\Carri Documents\2022 Landfills\213085 AMR Figures.dwg LAYOUT:FIG 1
LAST SAVED BY:Cblue, 1/31/2024 4:19:51 PM PLOTTED BY:Carri Blue - GM BluePlan 2/3/2024 2:54:32 PM

213085
Annual Monitoring Report
Bentinck Landfill
Part Lots 16 & 17, Conc. 7
Municipality of West Grey
(Former Twp. of Bentinck)



Legend

LICENCED LANDFILL PROPERTY

ADDITIONAL LANDS OWNED BY THE MUNICIPALITY

Scale = 1:10,000

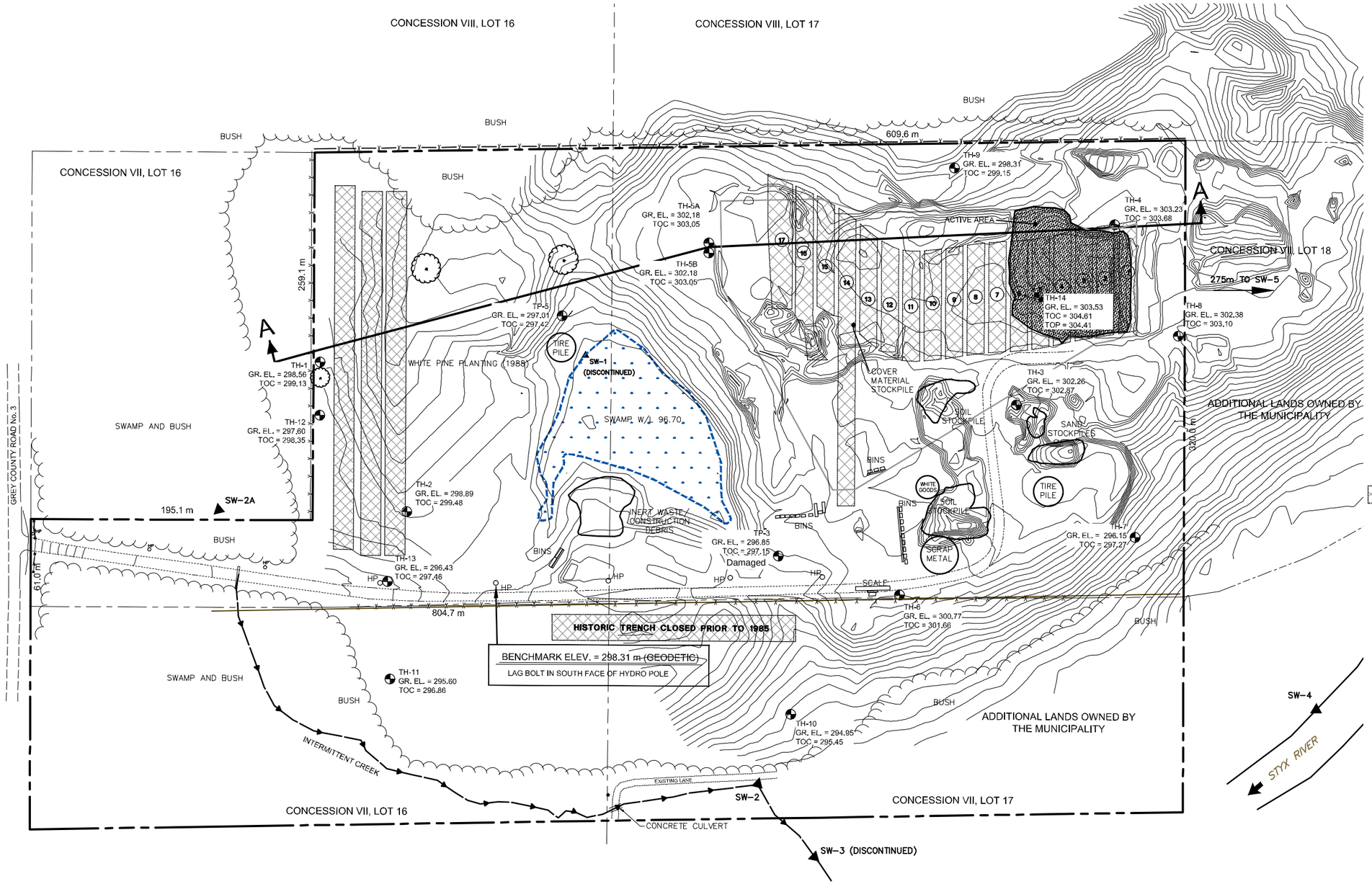
FEBRUARY 2024

SITE LAYOUT PLAN

Figure No. 2

BluePlan ENGINEERING

213085
Annual Monitoring Report
Bentinck Landfill
Part Lots 16 & 17, Conc. 7
Municipality of West Grey
(Former Twp. of Bentinck)



Legend

- TH — MONITORING WELL LOCATION
- TP — TEST PIT LOCATION
- TOC — TOP OF CASING ELEVATION
- SW-2 — SURFACE WATER SAMPLE LOCATION
- LIMITS OF LICENCED AREA
- CONCESSION LINE BOUNDARY AND LOT LINE BOUNDARY
- CLOSED LANDFILL TRENCHES

Notes

CONTOURS FROM TOPOGRAPHICAL SURVEY BY GMBP ENGINEERING ON NOVEMBER 17, 2022.

Scale = 1:3000

FEBRUARY 2024

EXISTING CONDITIONS PLAN

Figure No. 3

BluePlan ENGINEERING

213085
Annual Monitoring Report
Bentinck Landfill
Part Lots 16 & 17, Conc. 7
Municipality of West Grey
(Former Twp. of Bentinck)

CONCESSION VIII, LOT 16

CONCESSION VIII, LOT 17

CONCESSION VII, LOT 16

CONCESSION VII, LOT 18

CONCESSION VII, LOT 17

GREY COUNTY ROAD No. 3

BUSH

609.6 m

259.1 m

195.1 m

61.0 m

804.7 m

320.0 m

TH-9
GR. EL. = 298.31
TOC = 299.15
W/L = 296.83(S), 296.25(F)
CL = 4.5(S), <10.0(F)
(sample required dilution)

TH-5A
GR. EL. = 302.18
TOC = 303.05
W/L = 296.78(S), 295.02(F)
CL = 62(S), 45(F)

TH-5B
GR. EL. = 302.18
TOC = 303.05
W/L = 296.60(S), 295.60(F)
CL = <1.0(S), <1.0(F)

TP-5
GR. EL. = 297.0
TOC = 297.42
W/L = 296.48(S), DRY(F)
CL = <1.0(S), DRY(F)

TH-4
GR. EL. = 303.23
TOC = 303.68
W/L = N/A(S), N/A(F)
CL = N/A(S), N/A(F)

TH-14
GR. EL. = 303.53
TOC = 304.61
W/L = N/A(S), N/A(F)
CL = N/A(S), N/A(F)

TH-8
GR. EL. = 302.38
TOC = 303.10
W/L = 296.60(S), 295.81(F)
CL = 6.9(S), 8.4(F)

TH-3
GR. EL. = 302.26
TOC = 302.87
W/L = 296.62(S), 296.17(F)
CL = 26(S), 34(F)

TH-1
GR. EL. = 298.56
TOC = 299.13
W/L = DRY(S), DRY(F)
C/L = DRY(S), DRY(F)

TH-12
GR. EL. = 297.60
TOC = 298.35
W/L = 295.61(S), 295.30(F)
CL = <1.0(S) <1.0(F)

TH-2
GR. EL. = 298.89
TOC = 299.48
W/L = 295.75(S), 295.08(F)
CL = 2.9(S), 3.3(F)

TH-13
GR. EL. = 296.43
TOC = 297.46
TOP = 297.36
W/L = 295.31(S), 295.07(F)
CL = 3.1(S), 2.9(F)

TH-11
GR. EL. = 295.60
TOC = 296.86
W/L = 295.18(S), 295.00(F)
CL = 3.2(S), 74(F)

TH-10
GR. EL. = 294.95
TOC = 295.45
W/L = 293.93(S), 293.65(F)
CL = 24(S), 19(F)

TH-6
GR. EL. = 300.77
TOC = 301.66
W/L = 295.96(S), 295.36(F)
CL = 93(S), 52(F)

TH-7
GR. EL. = 296.15
TOC = 297.27
W/L = 295.41(S), 295.12(F)
CL = 64(S), 16(F)

TH-15
GR. EL. = 296.85
TOC = 297.15
W/L = N/A(S), N/A(F)
CL = N/A(S), N/A(F)

ACTIVE AREA

COVER MATERIAL STOCKPILE

SOIL STOCKPILE

SAND STOCKPILES

BINS

WHITE GOODS

SCRAP METAL

TIRE PILE

SW-1 (DISCONTINUED)

SW-2A

SW-2

SW-3 (DISCONTINUED)

SW-4

275m TO SW-5

WHITE PINE PLANTING (1988)

SWAMP AND BUSH

SWAMP W/L 96.70

INERT WASTE/ CONSTRUCTION DEBRIS

HISTORIC TRENCH CLOSED PRIOR TO 1985

BENCHMARK ELEV. = 298.31 m (GEODETIC)
LAG BOLT IN SOUTH FACE OF HYDRO POLE

ADDITIONAL LANDS OWNED BY THE MUNICIPALITY

ADDITIONAL LANDS OWNED BY THE MUNICIPALITY

INTERMITTENT CREEK

EXISTING LANE

CONCRETE CULVERT

STYX RIVER

ERSKINE WELL

Legend

TH	MONITORING WELL LOCATION
TP	TEST PIT LOCATION
TOC	TOP OF CASING ELEVATION
W/L	GROUNDWATER LEVEL
CL	CHLORIDE CONCENTRATION
(S)/(F)	SPRING/FALL MONITORING ROUND
SW-2	SURFACE WATER SAMPLE LOCATION
	LIMITS OF LICENCED AREA
	CONCESSION LINE BOUNDARY AND LOT LINE BOUNDARY
	CLOSED LANDFILL TRENCHES
	INFERRED DIRECTION OF GROUNDWATER FLOW

Notes

GROUNDWATER LEVELS SHOWN RECORDED ON SEPTEMBER 29, 2022. CONTOURS FROM TOPOGRAPHICAL SURVEY BY GMBP ENGINEERING ON NOVEMBER 17, 2022.

Scale = 1:3000

FEBRUARY 2024

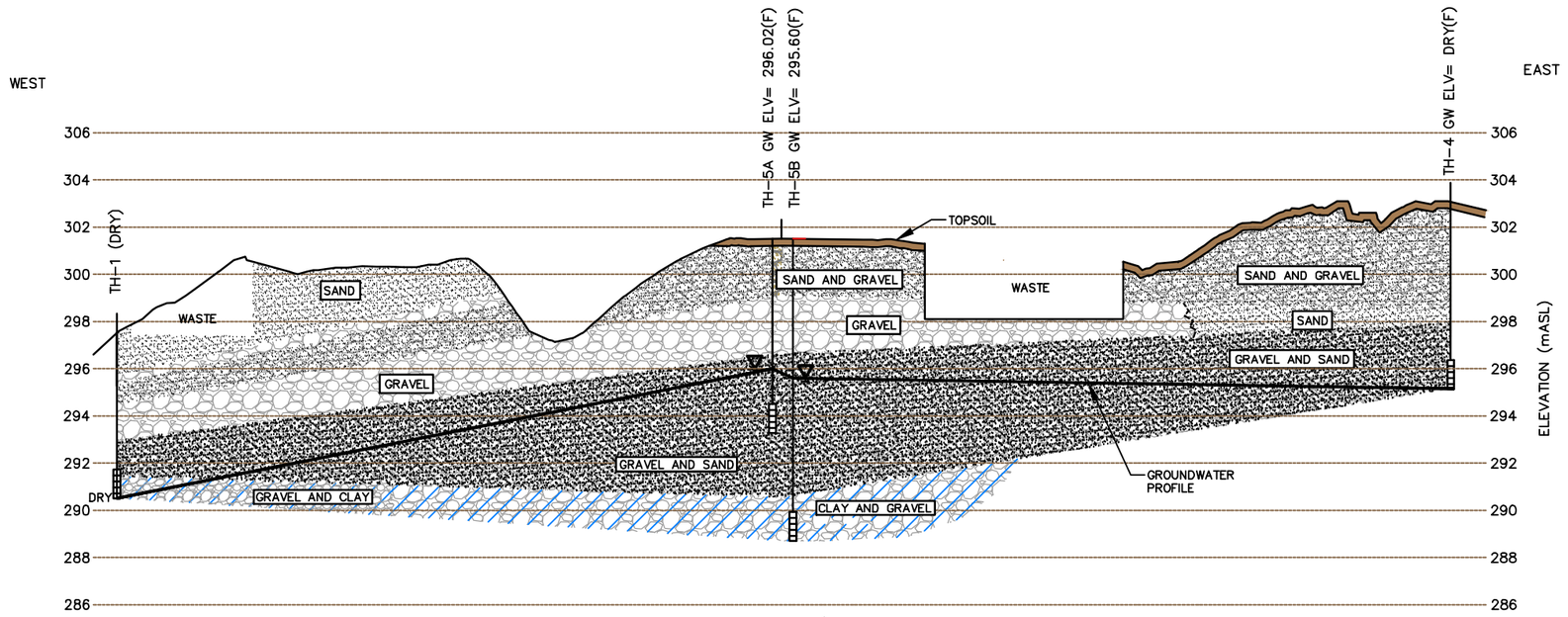
MONITORING LOCATIONS AND GROUNDWATER CONTOUR PLAN

Figure No. 4

BluePlan ENGINEERING

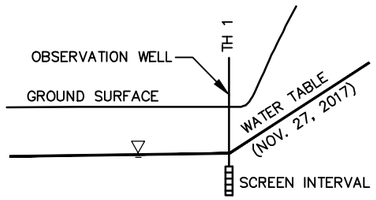
FILE:C:\Carri Documents\2022 Landfills\213085 AMR Figures.dwg LAYOUT:FIG 4
LAST SAVED BY:Cblue, 2/27/2024 5:33:46 PM PLOTTED BY:Carri Blue - GM BluePlan 2/27/2024 5:34:08 PM

213085
Annual Monitoring Report
Bentinck Landfill
Part Lots 16 & 17, Conc. 7
Municipality of West Grey
(Former Twp. of Bentinck)



SECTION A – A'

SCALES :
1 : 2,500 HORIZONTAL
1 : 250 VERTICAL



TYPICAL WELL DETAIL
NTS

NOTES :

1. FOR LOCATION OF SECTION A–A' SEE FIGURE 3
2. GROUNDWATER PROFILE SHOWN IS BASED ON MONITORING DATA OBTAINED OCTOBER 7, 2021.
3. CROSS–SECTION BASED ON WELL LOGS PREPARED BY HIGHLAND WELL DRILLING FEBRUARY, 1984.
4. GROUND PROFILE BASED ON FIELD SURVEY DATA OBTAINED BY GENIVAR INC. ON NOVEMBER 22, 2013.
5. WASTE LIMITS ARE APPROXIMATE ONLY.

Legend

- TOPSOIL
- SAND
- SAND AND GRAVEL
- GRAVEL
- GRAVEL AND SAND
- CLAY AND GRAVEL
- GRAVEL AND CLAY
- WATER ELEVATION (OCTOBER 7, 2021)

Scale As Noted
FEBRUARY 2024

CROSS-SECTION A-A'

Figure No. 5

BluePlan ENGINEERING

APPENDIX A:
ENVIRONMENTAL COMPLIANCE APPROVAL NO. A261301

Ontario

Ministry of the Environment **Ministère de l'Environnement**

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A261301
Notice No. 1

The Corporation of the Municipality of West Grey
Rural Route, No. 2
Durham, Ontario
N0G 1R0

Site Location: Bentinck Landfill Site
Part of Lots 16 & 17, Concession 1
West Grey Municipality, County of Grey

You are hereby notified that I have amended Provisional Certificate of Approval No. A261301 issued on April 12, 1990 for 32.4 ha landfilling site , as follows:

1. The following definitions have been added:

a. "Certificate" means this Provisional Certificate of Approval No. A261301, dated April 12, 1990, as amended from time to time, including all schedules attached to and forming part of this Certificate;

b. "Director" means the one or more persons who from time to time are so designated for the purpose of Section 37 of the *Environmental Protection Act*;

c. "District Manager" means the District Manager, Owen Sound District Office, South Western Region, Ministry of Environment;

d. "*EPA*" mean the *Environmental Protection Act*, R.S.O. 1990, C. E-19 as amended;

e. "Notice" means this Notice of Amendment to the Provisional Certificate of Approval No. A261301, as amended from time to time, including all schedules attached to and forming part of this Certificate;

f. "Ministry" means the Ministry of the Environment;

g. "O.Reg. 347" means Ontario Regulation 347 (General-Waste Management Regulation), R.R.O. 1990, as amended;

h. "O.Reg. 558" means Ontario Regulation 558/00 issued to amend O.Reg. 347;

i. "Owner" means The Corporation of the Municipality of West Grey;

j. "Site" means the Bentinck Landfill Site, located on Part Lots 16 & 17, Concession 1, in the former Township of Bentinck, with its associated buildings and storage facilities;

k. "Guideline B-7" means the Ministry's Guideline B-7 entitled "Incorporation of the Reasonable Use Concept into MOE Groundwater Management Activities", dated April 1994, as amended; and

l. "Regional Director" means the Regional Director of the Southwestern Region of the Ministry.

2. The following conditions have been added:

GENERAL

7. The Site shall be developed, operated and maintained in accordance with all of the plans and specifications in the documents listed in Schedule "A". Should there be discrepancies between the documents listed in Schedule "A" and the conditions in the Certificate , the conditions shall take precedence. Should there be discrepancies between the documents listed in Schedule "A", the document bearing the most recent date shall take precedence.

8. Requirements specified in this Certificate are minimum requirements and do not abrogate the need to take all reasonable steps to avoid violating the provisions of other applicable legislation. The Owner shall ensure compliance with all the terms and conditions of this Certificate. Any noncompliance constitutes a violation of the *EPA* and is grounds for enforcement.

9. The requirements of this Certificate are severable. If any requirements of this Certificate to any circumstances is held invalid, the application of such requirement to other circumstances and the remainder of this Certificate shall not be affected thereby.

10. The Owner shall ensure that all communications/correspondence made pursuant to this Certificate includes reference to this Provisional Certificate of Approval No. 261301.

NOTIFICATION OF CHANGES

11. The Owner shall notify the Director in writing of any of the following changes within thirty (30) days of the change occurring:

(a) change of Owner or Operator of the Site or both;

(b) change of address or address of the new Owner;

(c) change of partners where the Owner or Operator is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act*, 1991 shall be included in the notification to the Director;

(d) any change of name of the corporation where the Owner or Operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or Notice of Change" (Form 1 or 2 of O. Reg. 182, Chapter C-39, R.R.O. 1990 as amended from time to time), filed under the *Corporations Information Act* shall be included in the notification to the Director; and

(e) change in directors or officers of the corporation where the Owner or Operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or Notice of Change" as referred to in 11(d), supra.

12. In the event of any changes in ownership of the Site, the Owner shall notify, in writing, the succeeding owner of the existence of this Certificate, and a copy of such written notice shall be forwarded to the Director and the District Manager.

INSPECTIONS

13. The Owner shall allow Ministry personnel, or a Ministry authorized representative(s), upon presentation of credentials, to:

(a) carry out any and all inspections authorized by Sections 156, 157 or 158 of the *EPA*, Sections 15, 16 or 17 of the *Ontario Water Resources Act*, R.S.O. 1990, or Sections 19 or 20 of the *Pesticides Act*, R.S.O. 1990, as amended from time to time, of any place to which this Certificate relates, and

without restricting the generality of the foregoing to:

(b) (i) enter upon the premises or the location where the records required by the conditions of this Certificate are kept;

(ii) have access to and copy, at any reasonable time, any records required by the conditions of this Certificate;

(iii) inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations required by the conditions of this Certificate, and

(iv) sample and monitor, at reasonable times, for the purposes of assuring compliance with the conditions of this Certificate.

RELEASE OF INFORMATION

14. (a) The Owner shall, forthwith upon request of the Director, District Manager, or Provincial Officer (as defined in the *EPA*), furnish any information requested by such persons with respect to compliance with the Certificate, including but not limited to, any records required to be kept under this Certificate; and

(b) in the event, the Owner provides the Ministry with information, records, documentation or notification in accordance with this Certificate (for the purposes of this Condition referred to as "Information"),

(i) the receipt of Information by the Ministry;

(ii) the acceptance by the Ministry of the Information's completeness or accuracy; or

(iii) the failure of the Ministry to prosecute the Owner, or to require the Owner to take any action, under this Certificate or any statute or regulation in relation to the Information.

shall not be construed as an approval, excuse or justification be the Ministry of any act omission of the Owner relating to the Information, amounting to noncompliance with this Certificate or any statute or regulation.

15. Any information relating to this Certificate and contained in Ministry files may be made available to the public in accordance with the provisions of the *Freedom of Information and Protection of Privacy Act*, R.S.O. 1990, C.F-31.

CERTIFICATE OF PROHIBITION

16. Pursuant to Section 197 of the *EPA*, neither the Owner nor any person having an interest in the property that the Site is on, shall deal with the property in any way without first giving a copy of this Certificate to each person acquiring an interest in the property as a result of the dealing.

17. The Owner shall:

(a) within sixty (60) days of the date of this Notice, submit to the Director for the Director's signature two copies of a completed Certificate of Prohibition containing a registerable description of the property that the Site is on, in accordance with Form 1 of Ontario Regulation 14/92 and

(b) within ten (10) calendar days of receiving the Certificates of Prohibition signed by the Director, register the Certificate of Prohibition in the appropriate Land Registry Office on title to the property that the Site is on and shall submit to the Director immediately following registration the duplicate registered copy.

SERVICE AREA

18. The approved service area for the Site is the Municipality of West Grey.

WASTE TYPES

19. Only solid non-hazardous waste shall be accepted at the Site for landfilling. No liquid industrial wastes or hazardous wastes as defined under O.Reg. 347 and O.Reg. 558 shall be landfilled at the Site.

SITE LIFE and CAPACITY

20. By December 31, 2006, the Owner shall determine the actual capacity of the Site and shall provide the justifying documentation. The capacity estimate should include the waste, daily cover and intermediate cover, but should exclude the final cover. Based on the anticipated disposal rates of disposal Site life must also be estimated.

WASTE PLACEMENT

21. By December 31, 2006, the Owner shall provide a Site plan delineating the proposed footprint of the waste and its final contours. The Site plan must also show the property lines in all directions and the necessary buffer areas around the waste fill area.

DESIGN AND OPERATIONS REPORT

22. By December 31, 2006, the Owner shall submit for the Director's approval, a revised Design and Operations Report that includes as a minimum the following information:

(a) waste types to be landfilled at the site, the service area and handling of the waste received at the site but unacceptable for landfilling or the recycling activities;
(b) location and description of the access road, the on-site roads at the Site and the impact of the increased traffic to the Site;
(c) description and location of the fencing and the gate(s);
(d) details of the signs required at the Site, including the sign at the front gate and the signs at the various locations throughout the Site;
(e) screening of the Site from the public, both visual and the protection from the noise impact;
(f) details of the clean surface water drainage from the Site and any works required to prevent extraneous surface water from contacting the active working face;
(g) description of the fill method, the equipment used at the Site, the areas used for various fill methods of landfilling, and timelines for various phases of the Site development;
(h) the operating hours of the Site and the hours for the various activities to be undertaken at the Site, including waste compaction, waste coverage, clean wood burning and removal of wastes collected for transfer;
(i) details on winter operations;
(j) thickness of the daily cover, frequency of the application, characteristics of the material and its source and the method of application;
(k) thickness of the intermediate cover, frequency of the application, characteristics of the material and its source and the method of application;
(l) the equipment used, the frequency and the procedures used for waste compaction;

(m) details on Site supervision and monitoring of the activities at the Site, including inspections of the incoming wastes;
(n) details on handling of other wastes, including the types and amounts of wastes handled, storage locations, storage facility design/description and the frequency of removal from the Site;
(o) details on housekeeping practices undertaken to control noise, dust, litter, odour, rodents, insects and other disease vectors, scavenging birds or animals;
(p) location of the clean wood burning area and the procedures for the burning, including frequency, supervision and measures to keep the unacceptable waste from the burn area;
(q) details on the closure of the Site, including the description of the final cover and its estimated permeability, its thickness, the source of the final cover material, the thickness of the top soil and the vegetation proposed for the closed waste mound, as well as the timeframe for the progressive waste coverage;
(r) monitoring program for the surface and groundwater;
(s) site-specific trigger mechanism program for the implementation of the groundwater and surface water contingency measures and a description of such measures;
(t) landfill gas control or management required at the Site;
(v) maintenance activities proposed for the Site and for the monitoring well network, including the type of the activities, the frequency of the activities and the personnel responsible for them;
(w) inspection activities proposed for the Site, including the frequency of the activities and the personnel responsible for them;
(x) details of training provided for the personnel responsible for the activities at the Site;
(y) contingency plans for the emergency situations that may occur at the Site;
(z) storm water management, including the location and the design of any works required;
(aa) any other information relevant to the design and operation of the Site or the information required by the District Manager.

COMPLIANCE LIMITS

23. The Site shall be operated in such a way as to ensure compliance with the following:

(a) Reasonable Use Guideline B-7 for the protection of the groundwater at the Site;

(b) Provincial Water Quality Objectives included in the July 1994 publication entitled *Water Management Policies, Guidelines, Provincial Water Quality Objectives*, as amended from time to time or limits set by the Regional Director, for the protection of the surface water at the Site.

SITE CLOSURE

24. At least two (2) years prior to the anticipated date of closure of the landfill at this Site or the date when 90 per cent of the total waste disposal volume is reached, whichever occurs first, the Owner shall submit to the Director for approval, with a copy to the District Manager, a detailed Site Closure Plan pertaining to the termination of the landfilling operations at the Site, post-closure inspection, maintenance and monitoring and the end use. The plan shall include, but not be limited to the following:

(a) a plan showing Site appearance after closure;

(b) a description of the proposed end use for the Site;

(c) descriptions of the procedures for closure of the Site, including but not be limited to, the following:

(i) advance notification of the public of the Site closure;
(ii) posting a sign at the Site entrance indicating the landfill is closed and identifying any alternative waste disposal arrangements;
(iii) completion, inspection and maintenance of the final cover and landscaping;
(iv) Site security after closure;
(v) removal of unnecessary landfill-related structures, buildings and facilities; and

(vi) final construction of any necessary control, treatment, disposal and monitoring facilities for ground and surface water and for landfill gas.

(d) description of the procedures for post-closure care of the Site, including:

(i) operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas, if applicable;
(ii) record keeping and reporting; and
(iii) complaint contact and response procedures.

(e) an assessment of the adequacy of and need to implement the contingency plans; and

(f) an estimate of the contaminating life span of the Site, based on the results of the monitoring programs to-date.

The following document has been added to Schedule "A":

4. Letter to Ian Parrott, Ontario Ministry of the Environment, dated February 12, 2004 from Ken Gould, Public Works Manager, The Corporation of the Municipality of West Grey, requesting the service area to be increased to include the entire Municipality of West Grey and to increase the size of the site from 20.2 ha to 32.4 ha.

5. Letter to Margaret Wojcik, Ontario Ministry of the Environment, dated April 13, 2005 from Brian R. Scott, Henderson Paddon & Associates Limited, requesting December 31, 2006 as the deadline for the submission of the necessary documentation.

The reasons for this amendment to the Certificate of Approval are as follows:

1. Condition 7 is included to ensure that the Site is operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.

2. Conditions 8, 9 and 10 are included to clarify the legal rights and responsibilities of the Owner.

3. Conditions 11 and 12 are included to require the Owner to notify the Ministry of any changes to the legal ownership of the Site.

4. Conditions 13 and 14 are included to ensure that the appropriate Ministry staff have ready access to information and the operations of the Site, which are approved under this Certificate. Condition 13 is supplementary to the powers of entry afforded a Provincial Officer pursuant to the *EPA*, the *Ontario Water Resources Act*, and the *Pesticides Act*, as amended.

5. Condition 15 is included to ensure that the Owner is aware of the rights of the public with respect to any information submitted with the application.

6. Conditions 16 and 17 are included, pursuant to subsection 197(1) of the *EPA*, to ensure that any persons having an interest in the site are aware that the land has been approved and used for the purposes of waste disposal.

7. Condition 18 is included to specify the approved service area for the Site.

8. Condition 19 is included to specify the approved types of waste that may be accepted for disposal at the Site.

9. Conditions 20 and 21 are included to require the Owner to determine the disposal capacity of the Site and to delineate the fill area and the final contours, so that the landfilling can proceed in a controllable manner to minimize the environmental impacts.

10. Condition 22 is included to require the Owner to submit an up-dated Design and Operations Report to incorporate the changes to the design and operations of the Site into a complete document that can used to assess compliance with the Ministry's requirements.

11. Condition 23 is included to provide the groundwater and surface water limits to prevent water pollution at the Site.

12. Condition 24 is included to ensure that final closure of the Site is completed in an aesthetically pleasing manner and to ensure long-term protection of the natural environment.

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A261301 dated April 12, 1990

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Section 39, *Environmental Protection Act*
Ministry of Environment and Energy
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.

DATED AT TORONTO this 20th day of May, 2005

Ian Parrott, P.Eng.
Director
Section 39, *Environmental Protection Act*

MW/

c: District Manager, MOE Owen Sound
Brian Scott. P.Eng., Henderson, Paddon & Associates Limited

Ontario

Ministry of the Environment | **Ministère de l'Environnement**

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A261301
Notice No. 2
Issue Date: September 29, 2005

The Corporation of the Municipality of West Grey
Rural Route, No. 2
Durham, Ontario
N0G 1R0

Site Location: Bentinck Waste Disposal Site
Part of Lots 16 & 17, Concession 7, Former Township of Bentinck
West Grey Municipality, County of Grey

You are hereby notified that I have amended Provisional Certificate of Approval No. A261301 issued on April 12, 1990 for a *32.4 ha landfilling site, as follows:*

The site location mentioned in Notice No. 1, dated May 20, 2005, has been changed as follows:

FROM Bentinck Landfill Site
Part of Lots 16 & 17, Concession 1
West Grey Municipality, County of Grey

TO: Bentinck Waste Disposal Site
Part of Lots 16 & 17, Concession 7, Former Township of Bentinck
West Grey Municipality, County of Grey

The reason for this amendment to the Certificate of Approval is as follows:

all in accordance with the letter dated July 19, 2005, from Ian C. Johnson, of Dunlop, Johnson & Pust, Barristers & Solicitors, 21 Main Street East, Box 433, Markdale, Ontario NOC 1H0.

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A261301 dated April 12, 1990

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Section 39, *Environmental Protection Act*
Ministry of Environment and Energy
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.

DATED AT TORONTO this 29th day of September, 2005

Ian Parrott, P.Eng.
Director
Section 39, *Environmental Protection Act*

BR/
c: District Manager, MOE Barrie District Office
Area Supervisor, MOE, Owen Sound Area Office
Ian C. Johnson, Dunlop, Johnson & Pust
Brian Scott, P.Eng., Henderson, Paddon & Associates Limited

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A261301
Notice No. 3
Issue Date: October 16, 2008

The Corporation of the Municipality of West Grey
Rural Route, No. 2
Durham, Ontario
N0G 1R0

Site Location: Bentinck Waste Disposal Site
Lot 16 & 17, Concession 7
West Grey Municipality, County of Grey

You are hereby notified that I have amended Provisional Certificate of Approval No. A261301 issued on April 12, 1990 and amended on May 20, 2005 and September 29, 2005 for the use and operation of 20.2 hectare landfilling/recycling site within a total site area of 32.4 hectares, as follows:

The following conditions are added to the Certificate:

20.1 The calculated theoretical maximum volumetric capacity of the Site, consisting of the waste, daily cover and intermediate cover, but excluding the final cover is 923,140 cubic metres.

20.2 This approval is for the design, operation and use of 227,400 cubic meters (this volume includes the daily and intermediate cover) of the calculated theoretical maximum volumetric capacity of 923,140 cubic metres, as described in Items 6 and 7 of Schedule "A".

20.3 The Owner may utilize the remaining calculated theoretical maximum volumetric capacity of the Site with the approval of the Director. The Owner shall submit to the Director for Director's approval at least two (2) years prior to utilizing the capacity under approved as per Condition 20.2, a design and operation plan with up to date engineering and environmental standards and a detailed hydrogeological assessment for proper and safe development of the remainder of the Site. Or a closure plan as per condition 24 shall be submitted.

25. WASTE DIVERSION

25.1 The Owner shall ensure that:

(a) all bins and waste storage areas are clearly labelled;
(b) all lids or doors on bins shall be kept closed during non-operating hours and during the high wind events; and
(c) if necessary to prevent litter, waste storage areas shall be covered during the high winds events.

25.2 The Owner shall provide a segregated area for the storage of *Refrigerant Appliances* so that the following are ensured:

(a) all *Refrigerant Appliances* have been tagged to indicate that the refrigerant has been removed by a licensed technician. The tag number shall be recorded in the log book and shall remain affixed to the appliance until transferred from the *Site;* **or**
(b) all *Refrigerant Appliances* accepted at the *Site,* which have not been tagged by a licensed technician to

verify that the equipment no longer contains refrigerants, are stored segregated, in a clearly marked area, in an upright position and in a manner which allows for the safe handling and transfer from the *Site* for removal of refrigerants as required by O.Reg. 189; and
(c) all *Refrigerant Appliances* received on-site shall either have the refrigerant removed prior to being transferred from the *Site* or shall be shipped off-site only to facilities where the refrigerants can be removed by a licensed technician in accordance with O.Reg. 189.

25.3 Propane cylinders shall be stored in a segregated area in a manner which prevents cylinders from being knocked over or cylinder valves from breaking.

25.4 The Owner shall transfer waste and recyclable materials from the *Site* as follows:

(a) recyclable materials shall be transferred off-site once their storage bins are full;
(b) scrap metal shall be transferred off-site at least twice a year;
(c) tires shall be transferred off-site as soon as a load for the contractor hired by the Owner has accumulated or as soon as the accumulated volume exceeds the storage capacity of its bunker; and
(d) immediately, in the event that waste is creating an odour or vector problem.

25.7 The Owner shall notify the appropriate contractors that waste and recyclable wastes that are to be transferred off the *Site* are ready for removal. Appropriate notice time, as determined by the contract shall be accommodated in the notification procedure.

26. CHANGES TO THE MONITORING PLAN

26.1 The *Owner* may request to make changes to the monitoring program(s) to the *District Manager* in accordance with the recommendations of the annual report. The Owner shall make clear reference to the proposed changes in separate letter that shall accompany the annual report.

26.2 Within fourteen (14) days of receiving the written correspondence from the *District* Manager confirming that the *District Manager* is in agreement with the proposed changes to the environmental monitoring program, the *Owner* shall forward a letter identifying the proposed changes and a copy of the correspondences from the *District Manager* and all other correspondences and responses related to the changes to the monitoring program, to the *Director* requesting the *Certificate* be amended to approve the proposed changes to the environmental monitoring plan prior to implementation.

26.3 In the event any other changes to the environmental monitoring program are proposed outside of the recommendation of the annual report, the *Owner* shall follow current ministry procedures for seeking approval for amending the Certificate of Approval.

27. SITE ACCESS

27.1 Waste shall only be accepted at the *Site* during the following time periods:

Monday to Friday: 8:00 a.m. to 7:00 p.m.
Saturday: 8:00 a.m. to 4.00 p.m.

27.2 On-site equipment used for daily site preparation and closing activities shall be operated one (1) hour after the hours of operation approved by this *Certificate.*

27.3 With the prior written approval from the *District Manager,* the time periods may be extended to accommodate seasonal or unusual quantities of waste.

28. GROUNDWATER and SURFACE WATER MONITORING PLAN and, TRIGGER MECHANISMS AND CONTINGENCY PLANS

28.1 The Owner shall revise groundwater and surface water monitoring plan, trigger mechanism and contingency plans in

consultation with the Technical Support Unit, West Central Region, Ministry of the Environment.

28.2 The Owner shall submit the plans required as per Condition 28.1 to the District Manager with the 2008 annual monitoring report.

28.3 The Owner shall follow procedure in Conditions 26.1 and 26.2 to amend the Certificate of Approval to incorporate plans required by Condition 28.1 into the Certificate of Approval.

29.0 GROUNDWATER WELLS AND MONITORS

29.1 The *Owner* shall ensure that all groundwater monitoring wells which form part of the monitoring program are properly capped, locked and protected from damage.

29.2 Where landfilling is to proceed around monitoring wells, suitable extensions shall be added to the wells and the wells shall be properly re-secured.

29.3 Any groundwater monitoring wells included in the on-going monitoring program that are damaged shall be assessed, repaired, replaced or decommissioned by the *Owner,* as required.

(a) The *Owner* shall repair or replace any monitoring well which is destroyed or in any way made to be inoperable for sampling within a two (2) year period.

(b) All monitoring wells which are no longer required as part of the groundwater monitoring program, and have been approved by the *District Manager* for abandonment, shall be decommissioned by the *Owner,* as required, in accordance with *O.Reg. 903,* that will prevent contamination through the abandoned well. A report on the decommissioning of the well shall be included in the Annual Report for the period during which the well was decommissioned.

SCHEDULE "A"

6. The report titled "Development and Operations Report, Bentinck Landfill, Municipality of West Grey" dated December 18, 2006 and prepared by Henderson Paddon & Associates Limited.

7. Revised Drawing numbers 101805-101, 101805-102, 101805-103, 101805-104 and 101805-105 dated and signed by Peter Brodzikowski, P.Eng., Henderson Paddon & Associates Limited.

The reasons for this amendment to the Certificate of Approval are as follows:

1. This amendment is to approve the design and operation proposed by the Owner.

2. Conditions 20.1, 20.2 and 20.3 are included to specify the approved amounts of waste that may be accepted for disposal at the *Site,* based on the *Owner*'s application and supporting documentation.

3. Conditions 26.1, 26.2 and 26.3 are included to streamline approval of the changes to the monitoring plan.

4. Condition 27 is included to specify the hours of operation for the landfill site and a mechanism for amendment of the hours of operation, as required.

5. Condition 28 is included to require the Owner to revise the monitoring plans, trigger mechanisms and contingency plans for groundwater and surface water.

6. Condition 29 is included to ensure the integrity of the groundwater monitoring network so that accurate monitoring results are achieved and the natural environment is protected.

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A261301 dated April 12, 1990 as amended

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Director
Section 39, *Environmental Protection Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.

DATED AT TORONTO this 16th day of October, 2008

Tesfaye Gebrezghi, P.Eng.
Director
Section 39, *Environmental Protection Act*

RM/
c: District Manager, MOE Owen Sound
Frank Ford, Henderson Paddon & Associates Limited

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A261301
Issue Date: April 14, 2020

The Corporation of the Municipality of West Grey
402812 Grey Road 4 (RR#2)
West Grey, Ontario
N0G 1R0

Site Location: Bentinck Landfill Site
114079 Grey Road 3
West Grey Municipality, County of Grey
N4N 3B8

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

the use and operation of 20.2 hectare landfilling/recycling site within a total site area of 32.4 hectares.

For the purpose of this environmental compliance approval, the following definitions apply:

- "Approval" means this Environmental Compliance Approval and any Schedules to it, including the application and supporting documentation listed in Schedule "A";

- "Contaminating Life Span" means contaminating life span as defined in Ontario Regulation 232/98;

- "Director" means any Ministry employee appointed in writing by the Minister pursuant to section 5 of the EPA as a Director for the purposes of Part II.1 of the EPA;

- "District Manager" means the District Manager of the local district office of the Ministry in which the Site is geographically located;

- "EPA" or "Act" means Environmental Protection Act, R.S.O. 1990, c. E. 19, as amended;

- "HHW Depot" means household hazardous waste depot;

- "Ministry" means the Ontario Ministry of the Environment, Conservation and Parks;

- "NMA" means Nutrient Management Act, 2002, S.O. 2002, c. 4, as amended;

- "Ontario Drinking Water Quality Standards" means Ontario Regulation 169/03 (Ontario Drinking Water Quality Standards), as amended;

- "Operator" means any person, other than the Owner's employees, authorized by the Owner as having the charge, management or control of any aspect of the Site and includes its successors or assigns;

- "Owner" means any person that is responsible for the establishment or operation of the Site being approved by this Approval, and includes The Corporation of the Municipality of West Grey and its successors and assigns;

- "OWRA" means the Ontario Water Resources Act, R.S.O. 1990, c. O.40, as amended;

- "PA" means the Pesticides Act, R.S.O. 1990, c. P-11, as amended;

- "Provincial Officer" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the OWRA, Section 5 of the EPA, Section 17 of the PA, Section 4 of the NMA, or Section 8 of the SDWA;

- "Refrigerant Appliances" means household appliances which use, or may use refrigerants, and which include, but is not restricted to, refrigerators, freezers and air-conditioning systems;

- "Regional Director" means the Regional Director of the local Regional Office of the Ministry in which the Site is located;

- "Regulation 232" means Ontario Regulation 232/98 (New Landfill Standards) made under the EPA, as amended from time to time;

- "Regulation 347" or "Reg. 347" means Regulation 347, R.R.O. 1990, made under the EPA, as amended;

- "O. Reg. 463/10" means Ontario Regulation 463/10, Ozone Depleting Substances and Other Halocarbons, made under the EPA, as amended;

- "Regulation 903" means Regulation 903, R.R.O. 1990, made under the OWRA, as amended;

- "SDWA" means Safe Drinking Water Act, 2002, S.O. 2002, c. 32, as amended;

- "Site" means the entire waste disposal site, including the buffer lands, and contaminant attenuation zone at Bentinck Landfill Site, 114079 Grey Road 3, West Grey Municipality, County of Grey, N4N 3B8; and

- "Trained Personnel" means personnel knowledgeable in the following through instruction and/or practice:
  - relevant waste management legislation, regulations and guidelines;
  - major environmental concerns pertaining to the waste to be handled;
  - occupational health and safety concerns pertaining to the processes and wastes to be handled;
  - management procedures including the use and operation of equipment for the processes and wastes to be handled;
  - emergency response procedures;
  - specific written procedures for the control of nuisance conditions;
  - specific written procedures for refusal of unacceptable waste loads; and
  - the requirements of this Approval.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL

Compliance

(1) The Owner and Operator shall ensure compliance with all the conditions of this Approval and shall ensure that any person authorized to carry out work on or operate any aspect of the Site is notified of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this Approval.

In Accordance

(3) Except as otherwise provided by this Approval, the Site shall be designed, developed, built, operated and maintained in accordance with the documentation listed in the attached Schedule "A".

(4) Construction and installation of the aspects of the HHW Depot defined and approved in this Approval must be completed within 5 years of the later of:

(a) the date this Approval; or

(b) if there is a hearing or other litigation in respect of the issuance of this Approval, the date that this hearing or litigation is disposed of, including all appeals.

(5) This Approval ceases to apply in respect of the aspects of the HHW Depot defined and approved in this Approval that have not been constructed or installed before the later of the dates identified in Condition 1(4) above.

Interpretation

(6) Where there is a conflict between a provision of any document listed in Schedule "A" in this Approval, and the conditions of this Approval, the conditions in this Approval shall take precedence.

(7) Where there is a conflict between the application and a provision in any document listed in Schedule "A", the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the Ministry approved the amendment.

(8) Where there is a conflict between any two documents listed in Schedule "A", the document bearing the most recent date shall take precedence.

(9) The conditions of this Approval are severable. If any condition of this Approval, or the application of any condition of this Approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.

Other Legal Obligations

(10) The issuance of, and compliance with, this Approval does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or

(b) limit in any way the authority of the Ministry to require certain steps be taken or to require the Owner and Operator to furnish any further information related to compliance with this Approval.

Adverse Effect

(11) The Owner and Operator shall take steps to minimize and ameliorate any adverse effect on the natural environment or impairment of water quality resulting from the Site, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

(12) Despite an Owner, Operator or any other person fulfilling any obligations imposed by this Approval the person remains responsible for any contravention of any other condition of this Approval or any applicable statute, regulation, or other legal requirement resulting from any act or omission that caused the adverse effect to the natural environment or impairment of water quality.

Change of Ownership

(13) The Owner shall notify the Director, in writing, and forward a copy of the notification to the District Manager, within 30 days of the occurrence of any changes in the following information:
   (a) the ownership of the Site;
   (b) the Operator of the Site;
   (c) the address of the Owner or Operator; and
   (d) the partners, where the Owner or Operator is or at any time becomes a partnership and a copy of the most recent declaration filed under the Business Names Act, R. S. O. 1990, c. B.17, shall be included in the notification.

(14) No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance and sufficient financial assurance is deposited with the Ministry to ensure that these conditions will be carried out.

(15) In the event of any change in ownership of the Site, other than change to a successor municipality, the Owner shall notify the successor of and provide the successor with a copy of this Approval, and the Owner shall provide a copy of the notification to the District Manager and the Director.

Registration on Title Requirement

(16) Prior to dealing with the property in any way, the Owner shall provide a copy of this Approval and any amendments, to any person who will acquire an interest in the property as a result of the dealing.

(17) (a) Within thirty (30) calendar days from the date of issuance of this Approval, the Owner shall submit to the Director a completed Certificate of Requirement which shall include:
   (i) a plan of survey prepared, signed and sealed by an Ontario Land Surveyor, which shows the area of the Site where waste has been or is to be deposited at the Site;
   (ii) proof of ownership of the Site;
   (iii) a letter signed by a member of the Law Society of Upper Canada or other qualified legal practitioner acceptable to the Director, verifying the legal description provided in the Certificate of Requirement;
   (iv) the legal abstract of the property; and
   (v) any supporting documents including a registerable description of the Site.

   (b) Within fifteen (15) calendar days of receiving a Certificate of Requirement authorized by the Director, the Owner shall:
   (i) register the Certificate of Requirement in the appropriate Land Registry Office on the title to the property; and
   (ii) submit to the Director and the District Manager, written verification that

the Certificate of Requirement has been registered on title.

Inspections by the Ministry

(18) No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the OWRA, the EPA, the PA, the SDWA or the NMA, of any place to which this Approval relates, and without limiting the foregoing:

(a) to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this Approval are kept;

(b) to have access to, inspect, and copy any records required to be kept by the conditions of this Approval;

(c) to inspect the Site, related equipment and appurtenances;

(d) to inspect the practices, procedures, or operations required by the conditions of this Approval; and

(e) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this Approval or the EPA, the OWRA, the PA, the SDWA or the NMA.

Information and Record Retention

(19) (a) Except as authorized in writing by the Director, all records required by this Approval shall be retained at the Site for a minimum of two (2) years from their date of creation.

(b) The Owner shall retain all documentation listed in Schedule "A" for as long as this Approval is valid.

(c) All monthly summary reports of waste records collected are to be kept at the Site until they are included in the Annual Report.

(d) The Owner shall retain employee training records as long as the employee is working at the Site.

(e) The Owner shall make all of the above documents available for inspection upon request of Ministry staff.

(20) The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action under this Approval or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:

(a) an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any term or condition of this Approval or any statute, regulation or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

(21) The Owner shall ensure that a copy of this Approval, in its entirety and including all its Notices of Amendment, and documentation listed in Schedule "A", are retained at the Site at all times.

(22) Any information related to this Approval and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, RSO 1990, CF-31.

2. SITE OPERATION

Operation

(1) The Site shall be operated and maintained at all times including management and disposal of all waste, in accordance with the EPA, Regulation 347, and the conditions of this Approval. At no time shall the discharge of a contaminant that causes or is likely to cause an adverse effect be permitted.

Signs

(2) The Owner shall install and maintain a sign at the entrance to the Site. The sign shall be visible and readable from the main road leading to the Site. The following information shall be included on the sign:

(a) the name of the Site and Owner;
(b) the number of the Approval;
(c) the name of the Operator;
(d) the normal hours of operation;
(e) the allowable and prohibited waste types;
(f) the telephone number to which complaints may be directed;
(g) a warning against unauthorized access;
(h) a twenty-four (24) hour emergency telephone number (if different from above); and
(i) a warning against dumping outside the Site.

(3) The Owner shall install and maintain signs to direct vehicles to working face and waste diversion areas.

(4) The Owner shall provide signs at waste diversion area informing users what materials are acceptable and directing users to appropriate storage areas.

Vermin, Vectors, Dust, Litter, Odour, Noise and Traffic

(5) The Site shall be operated and maintained such that the vermin, vectors, dust, litter, odour, noise and traffic do not create a nuisance.

Burning Waste Prohibited

(6) (a) Burning of waste at the Site is prohibited.

(b) Notwithstanding Condition 2. (6) (a) above, burning of segregated, clean wood and brush at the landfill may be carried out in strict compliance with the Ministry of the Environment Document titled "Guideline C-7, Burning at Landfill Sites" dated April 1994.

Site Access

(7) Waste shall only be accepted during the following time periods:

Monday to Friday: 8:00 a.m. to 7:00 p.m.
Saturday: 8:00 a.m. to 4.00 p.m.

(8) On-site equipment used for daily site preparation and closing activities may be operated one (1) hour before and one (1) hour after the hours of operation approved by this Approval.

(9) With the prior written approval from the District Manager, the time periods may be extended to accommodate seasonal or unusual quantities of waste.

Site Security

(10) No waste shall be received, landfilled or removed from the Site unless a site supervisor or an attendant is present and supervises the operations during operating hours. The Site shall be closed when a site attendant is not present to supervise landfilling operations.

(11) The Site shall be operated and maintained in a safe and secure manner. During non-operating hours, the Site entrance and exit gates shall be locked and the Site shall be secured against access by unauthorized persons.

3. EMPLOYEE TRAINING

(1) A training plan for all employees that operate any aspect of the Site shall be developed and implemented by the Owner or the Operator. Only Trained Personnel shall operate any aspect of the Site or carry out any activity required under this Approval.

4. COMPLAINTS RESPONSE PROCEDURE

(1) If at any time the Owner receives complaints regarding the operation of the Site, the Owner shall respond to these complaints according to the following procedure:

(a) The Owner shall record and number each complaint, either electronically or in a

log book, and shall include the following information: the nature of the complaint, the name, address and the telephone number of the complainant if the complainant will provide this information and the time and date of the complaint;

(b) The Owner, upon notification of the complaint, shall initiate appropriate steps to determine possible causes of the complaint, proceed to take the necessary actions to eliminate the cause of the complaint and forward a formal reply to the complainant; and

(c) The Owner shall complete and retain on-site a report written within one (1) week of the complaint date, listing the actions taken to resolve the complaint and any recommendations for remedial measures, and managerial or operational changes to reasonably avoid the recurrence of similar incidents.

5. EMERGENCY RESPONSE

(1) All Spills as defined in the EPA shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the emergency situation, and the action taken for clean-up, correction and prevention of future occurrences.

(2) In addition, the Owner shall submit, to the District Manager a written report within three (3) business days of the emergency situation, outlining the nature of the incident, remedial measures taken, handling of waste generated as a result of the emergency situation and the measures taken to prevent future occurrences at the Site.

(3) All wastes resulting from an emergency situation shall be managed and disposed of in accordance with Reg. 347.

(4) All equipment and materials required to handle the emergency situations shall be:
(a) kept on hand at all times that waste landfilling and/or handling is undertaken at the Site; and
(b) adequately maintained and kept in good repair.

(5) The Owner shall ensure that the emergency response personnel are familiar with the use of such equipment and its location(s).

6. INSPECTIONS, RECORD KEEPING AND REPORTING

Daily Log Book

(1) A daily log shall be maintained in written or electronic format and shall include the following information:
(a) the type, date and time of arrival, hauler, and quantity (tonnes) of all waste and cover material received at the Site;
(b) the area of the Site in which waste disposal operations are taking place;
(c) a record of litter collection activities and the application of any dust suppressants;

(d) a record of the daily inspections; and
(e) a description of any out-of-service period of any control, treatment, disposal or monitoring facilities, the reasons for the loss of service, and action taken to restore and maintain service.

(2) Any information requested, by the Director or a Provincial Officer, concerning the Site and its operation under this Approval, including but not limited to any records required to be kept by this Approval shall be provided to the Ministry, upon request.

Daily Inspections and Log Book

(3) An inspection of the entire Site and all equipment on the Site shall be conducted each day the Site is in operation to ensure that: the Site is secure; that the operation of the Site is not causing any nuisances; that the operation of the Site is not causing any adverse effects on the environment and that the Site is being operated in compliance with this Approval. Any deficiencies discovered as a result of the inspection shall be remedied immediately, including temporarily ceasing operations at the Site if needed**.**

(4) A record of the inspections shall be kept in a daily log book that includes:
(a) the name and signature of person that conducted the inspection;
(b) the date and time of the inspection;
(c) the list of any deficiencies discovered;
(d) the recommendations for remedial action; and
(e) the date, time and description of actions taken.

(5) A record shall be kept in the daily log book of all refusals of waste shipments, the reason(s) for refusal, and the origin of the waste, if known.

Annual Report

(6) A written report on the development, operation and monitoring of the Site, shall be completed annually (the "Annual Report"). The Annual Report shall be submitted to the District Manager, by March 31st of the year following the period being reported upon.

(7) The Annual Report shall include but not be limited to the following information:

(a) the results and an interpretive analysis of the results of all leachate, groundwater, surface water and landfill gas monitoring, including an assessment of the need to amend the monitoring programs;
(b) an assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the Site, and the adequacy of and need to implement the contingency plans;
(c) site plans showing the existing contours of the Site; areas of landfilling operation during the reporting period; areas of intended operation during the next reporting period; areas of excavation during the reporting period; the progress of final

cover, vegetative cover, and any intermediate cover application; facilities existing, added or removed during the reporting period; and site preparations and facilities planned for installation during the next reporting period;

(d) calculations of the volume of waste, daily and intermediate cover, and final cover deposited or placed at the Site during the reporting period and a calculation of the total volume of Site capacity used during the reporting period;

(e) a calculation of the remaining capacity of the Site and an estimate of the remaining Site life;

(f) a summary of the weekly, maximum daily and total annual quantity (tonnes) of waste received at the Site;

(g) a summary of any complaints received and the responses made;

(h) a discussion of any operational problems encountered at the Site and corrective action taken;

(i) any changes to the Design and Operations Report and the Closure Plan that have been approved by the Director since the last Annual Report;

(j) a report on the status of all monitoring wells and a statement as to compliance with Ontario Regulation 903; and

(k) any other information with respect to the Site which the District Manager may require from time to time.

7. LANDFILL DESIGN AND DEVELOPMENT

Approved Waste Types

(1) Only municipal waste as defined under Reg. 347 being solid non-hazardous shall be accepted at the Site for landfilling.

(2) The Owner shall develop and implement a program to inspect waste to ensure that the waste received at the Site is of a type approved for acceptance under this Approval.

(3) The Owner shall ensure that all loads of waste are properly inspected by Trained personnel prior to acceptance at the Site and that the waste vehicles are directed to the appropriate areas for disposal or transfer of the waste. The Owner shall notify the District Manager, in writing, of load rejections at the Site within one (1) business day from their occurrence.

Capacity

(4) The calculated theoretical maximum volumetric capacity of the Site, consisting of the waste, daily cover and intermediate cover, but excluding the final cover is 923,140 cubic metres.

(5) This approval is for the design, operation and use of 227,400 cubic meters (this volume includes the daily and intermediate cover) of the calculated theoretical maximum volumetric capacity of 923,140 cubic metres, as described in Items 6 and 7 of Schedule

"A".

(6) The Owner may utilize the remaining calculated theoretical maximum volumetric capacity of the Site with the approval of the Director. The Owner shall submit to the Director for Director's approval at least two (2) years prior to utilizing the capacity approved in accordance with the Condition 7(4), a design and operation plan with up to date engineering and environmental standards and a detailed hydrogeological assessment for proper and safe development of the remainder of the Site.

Service Area

(7) Only waste that is generated within the boundaries of the Municipality of West Grey.may be accepted at the Site.

Cover

(8) Alternative materials to soil may be used as weekly and interim cover material, based on an application with supporting information and applicable fee for a trial use or permanent use, submitted by the Owner to the Director, copied to the District Manager and as approved by the Director via an amendment to this Approval. The alternative material shall be non-hazardous according to Reg. 347 and will be expected to perform at least as well as soil in relation to the following functions:

(a) Control of blowing litter, odours, dust, landfill gas, gulls, vectors, vermin and fires;
(b) Provision for an aesthetic condition of the landfill during the active life of the Site;
(c) Provision for vehicle access to the active tipping face; and
(d) Compatibility with the design of the Site for groundwater protection, leachate management and landfill gas management.

(9) Cover material shall be applied as follows:

(a) **Weekly** Cover - Weather permitting, deposited waste shall be covered **weekly** in a manner acceptable to the District Manager so that no waste is exposed to the atmosphere;
(b) Intermediate Cover - In areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 300 millimetre of soil cover or an approved thickness of alternative cover material shall be placed; and
(c) Final Cover - In areas where landfilling has been completed to final contours, a minimum 600 millimetre thick layer of soil of medium permeability and 150 millimetres of top soil (vegetative cover) shall be placed. Fill areas shall be progressively completed and rehabilitated as landfill development reaches final contours.

Design and Operations Report

(10) The Design and Operations Report to be submitted under the condition 7(6) shall include as a minimum the following information:

(a) proposed landfill design including the footprint, final contours, capacity and an estimate of the amount of existing waste;
(b) an estimate of waste types and quantities to be landfilled at the site and recycling and resource recovering activities at the Site;
(c) location and description of the access road and the on-site roads at the Site;
(d) description and location of the fencing and the gate(s);
(e) screening of the Site from the public, both visual and the protection from the noise impact;
(f) details of the clean surface water drainage from the Site and any works required to prevent extraneous surface water from contacting the active working face;
(g) description of the fill method, the equipment used at the Site, the areas used for various fill methods of landfilling, and timelines for various phases of the Site development;
(h) the operating hours of the Site and the hours for the various activities to be undertaken at the Site, including waste compaction, waste coverage and other activities within the Site;
(i) details on winter operations;
(j) the equipment used and the procedures used for waste deposition, spreading and covering;
(k) details on supervision and monitoring of the activities at the Site;
(l) details on handling of other wastes, including the types and amounts of wastes handled, storage locations, storage facility design/description and the frequency of removal from the Site;
(m) details on housekeeping practices undertaken to control noise, dust, litter, odour, rodents, insects and other disease vectors, scavenging birds or animals;
(n) details on the closure of the Site, including the description of the final cover and its estimated permeability, its thickness, the source of the final cover material, the thickness of the top soil and the vegetation proposed for the closed waste mound, as well as the timeframe for the progressive waste coverage;
(o) monitoring program for the surface and ground water;
(p) site-specific trigger mechanism program for the implementation of the groundwater and surface water, contingency measures and a description of such measures;
(q) landfill gas control or management required at the Site;
(r) maintenance activities proposed for the Site and for the monitoring well network, including the type of the activities, the frequency of the activities and the personnel responsible for them;
(s) inspection activities proposed for the Site, including the frequency of the activities and the personnel responsible for them;
(t) details of training provided for the personnel responsible for the activities at the Site;
(u) contingency plans for the emergency situations that may occur at the Site;
(v) storm water management, including the location and the design of any works

required; and

(w) any other information relevant to the design and operation of the Site or the information required by the District Manager.

8. LANDFILL MONITORING

Landfill Gas

(1) The Owner shall ensure that any buildings or structures at the Site contain adequate ventilation systems to relieve any possible landfill gas accumulation to prevent methane concentration reaching the levels within its explosive range. Routine monitoring for explosive methane gas levels shall be conducted in all buildings or structures at the Site, especially enclosed structures which at times are occupied by people.

Compliance

(2) The Site shall be operated in such a way as to ensure compliance with the following:

(a) Reasonable Use Guideline B-7 for the protection of the groundwater at the Site; and

(b) Provincial Water Quality Objectives included in the July 1994 publication entitled Water Management Policies, Guidelines, Provincial Water Quality Objectives, as amended from time to time or limits set by the Regional Director, for the protection of the surface water at and off the Site.

Surface Water and Groundwater

(3) The Owner shall monitor surface water and ground water in accordance with the monitoring programs outlined in documents listed in the attached Schedule "A".

(4) A certified Professional Geoscientist or Engineer possessing appropriate hydrogeologic training and experience shall execute or directly supervise the execution of the groundwater monitoring and reporting program.

Groundwater Wells and Monitors

(5) The Owner shall ensure that all groundwater monitoring wells which form part of the monitoring program are properly capped, locked and protected from damage.

(6) Where landfilling is to proceed around monitoring wells, suitable extensions shall be added to the wells and the wells shall be properly re-secured.

(7) Any groundwater monitoring well included in the on-going monitoring program that is damaged shall be assessed, repaired, replaced or decommissioned by the Owner, as

required.

(a) The Owner shall repair or replace any monitoring well which is destroyed or in any way made to be inoperable for sampling such that no more than one regular sampling event is missed.

(b) All monitoring wells which are no longer required as part of the groundwater monitoring program, and have been approved by the Director for abandonment, shall be decommissioned by the Owner, as required, in accordance with O.Reg. 903, to prevent contamination through the abandoned well. A report on the decommissioning of the well shall be included in the Annual Report for the period during which the well was decommissioned.

Trigger Mechanisms and Contingency Plans

(8) The Owner shall revise groundwater and surface water monitoring plan, trigger mechanism and contingency plans in consultation with the Technical Support Unit, South West Region of the Ministry.

(9) The Owner shall submit the plans required as per Condition 8 (8) to the District Manager with the 2020 annual monitoring report.

(10) The Owner shall follow procedure in Conditions 8(13) and 8(14) to amend the Approval.

(11) If monitoring results, investigative activities and/or trigger mechanisms indicate the need to implement contingency measures, the Owner shall ensure that the following steps are taken:

(a) The Owner shall notify the District Manager, in writing of the need to implement contingency measures, no later than 30 days after confirmation of the exceedances;
(b) Detailed plans, specifications and descriptions for the design, operation and maintenance of the contingency measures shall be prepared and submitted by the Owner to the Director for approval; and
(c) The contingency measures shall be implemented by the Owner upon approval by the Director.

(12) The Owner shall ensure that any proposed changes to the site-specific trigger levels for leachate impacts to the surface water or groundwater, are approved in advance by the Director via an amendment to this Approval.

Changes to the Monitoring Programs, Trigger Mechanisms and Contingency Plans

(13) The Owner may request to make changes to the monitoring program(s), trigger mechanisms and/or contingency plan to the District Manager in accordance with the

recommendations of the annual report. The Owner shall make clear reference to the proposed changes in a separate letter that shall accompany the annual report.

(14) Within fourteen (14) days of receiving the written correspondence from the District Manager confirming that the District Manager is in agreement with the proposed changes to the environmental monitoring program, trigger mechanisms and/or contingency plans, the Owner shall forward a letter identifying the proposed changes and a copy of the correspondences from the District Manager and all other correspondences and responses related to the changes, to the Director requesting the Approval be amended to approve the proposed changes to the environmental monitoring plan prior to implementation.

9. CLOSURE PLAN

(1) At least two (2) years prior to closure, the Owner shall submit to the Director for approval, with copies to the District Manager, a detailed Site closure plan pertaining to the termination of landfilling operations at this Site, post-closure inspection, maintenance and monitoring, and end use. The plan shall include the following as a minimum but not limited to:

- (a) a plan showing Site appearance after closure;
- (b) a description of the proposed end use of the Site, that shall include a discussion on the Environmental Assessment commitments (if applicable) to dedicate portion of the lands within the Site that are not required for site post-closure operations and monitoring, to be used for community recreational purpose;
- (c) A description of how pollinator friendly plants were considered in the final vegetative cover for the landfill and/or in the landscaping within the Site;
- (d) a description of the procedures for closure of the Site:
  - (i) advance notification of the public of the landfill closure;
  - (ii) posting a sign at the Site entrance indicating the landfill is closed and identifying any alternative was disposal arrangements;
  - (iii) completion, inspection and maintenance of the final cover and landscaping;
  - (iv) site security;
  - (v) removal of unnecessary landfill-related structures, buildings and facilities; and
  - (vi) final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
- (e) a schedule indicating the time-period for implementing sub-conditions (i) to (vi) above.
- (f) descriptions of the procedures for post-closure care of the Site, including:
  - (i) Operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
  - (ii) Record keeping and reporting; and
  - (iii) Complaint contact and response procedures;

(g) an assessment of the adequacy of and need to implement the contingency plans for leachate and methane gas; and
(h) an updated estimate of the Contaminating Life Span of the Site, based on the results of the monitoring programs to date.

(2) The Site shall be closed in accordance with the closure plan as approved by the Director.

10. WASTE DIVERSION

(1) The Owner shall ensure that:
(a) all bins and waste storage areas are clearly labelled;
(b) all lids or doors on bins shall be kept closed during non-operating hours and during the high wind events; and
(c) if necessary to prevent litter, waste storage areas shall be covered during the high winds events.

(2) The Owner/Operator shall remove the refrigerant as defined in O. Reg. 463/10 in accordance with the following:
(a) all White Goods containing refrigerants which have not been tagged by a licensed technician to verify that the equipment no longer contains refrigerants, shall be stored in a separate area in an upright position; and

(b) White Goods containing refrigerants received at the Site shall be shipped off-Site in order to have the refrigerants removed by a licensed technician in accordance with O. Reg. 463/10; or

(c) the refrigerant shall be removed at the Site by a licensed technician, in accordance with O. Reg. 463/10, prior to shipping White Goods off-Site; and

(d) a detailed log of all White Goods containing refrigerants received shall be maintained. The log shall include the following:
(i) date of the record;
(ii) types, quantities and source of White Goods containing refrigerants received;
(iii) details on removal of refrigerants as required by O. Reg. 463/10; and
(iv) the quantities and destination of the White Goods and/or refrigerants transferred from the Site.

(3) Propane cylinders shall be stored in a segregated area in a manner which prevents cylinders from being knocked over or cylinder valves from breaking.

(4) The Owner shall transfer waste and recyclable materials from the Site as follows:
(a) recyclable materials shall be transferred off-site once their storage bins are full;
(b) scrap metal shall be transferred off-site at least twice a year;
(c) tires shall be transferred off-site as soon as a load for the contractor hired by the

Owner has accumulated or as soon as the accumulated volume exceeds the storage capacity of its bunker; and

(d) immediately, in the event that waste is creating an odour or vector problem.

(5) The Owner shall notify the appropriate contractors that waste and recyclable wastes that are to be transferred off-site are ready for removal. Appropriate notice time, as determined by the contract shall be accommodated in the notification procedure.

11. HHW TRANSFER STATION

(1) Mobile Municipal Hazardous or Special Waste (MHSW) Collection Unit as proposed by the Owner is hereby approved subject to the following conditions:

(a) Maximum volume of waste to be stored at the HHW Depot shall be 31 cubic meters.

(b) The Owner shall provide a minimum of 7700 litres of secondary containment within the storage unit.

(b) All waste shall be removed from the Mobile MHSW collection unit prior to moving to the Durham Waste Disposal Site.

(2) No radioactive, pathological or biomedical wastes or contaminated radioactive, pathological or biomedical wastes shall be accepted at this Site.

SCHEDULE "A"

1. Application for a Certificate of Approval for a waste disposal site dated January 13, 1972 submitted by the Township of Bentinck.

2. "Township of Bentinck Development and Operations Plan Sanitary Landfill Site" dated August, 1988 submitted by Fieldholme Engineering Inc.

3. Resolution of Council included in letter from the Township of Bentinck dated April 10, 1989 adopting the consulting engineering report.

4. Letter to Ian Parrott, Ontario Ministry of the Environment, dated February 12, 2004 from Ken Gould, Public Works Manager, The Corporation of the Municipality of West Grey, requesting the service area to be increased to include the entire Municipality of West Grey and to increase the size of the site from 20.2 ha to 32.4 ha.

5. Letter to Margaret Wojcik, Ontario Ministry of the Environment, dated April 13, 2005 from Brian R. Scott, Henderson Paddon & Associates Limited, requesting December 31, 2006 as the deadline for the submission of the necessary documentation.

6. The report titled "Development and Operations Report, Bentinck Landfill, Municipality of West Grey" dated December 18, 2006 and prepared by Henderson Paddon & Associates Limited.

7. Revised Drawing numbers 101805-101, 101805-102, 101805-103, 101805-104 and 101805-105 dated and signed by Peter Brodzikowski, P.Eng., Henderson Paddon & Associates Limited.

8. Environmental Compliance Approval Application dated June 6, 2019 and signed Brent Glasier, Director of Infrastructure & Public Works
The Corporation of the Municipality of West Grey, including the attached supporting documentation.

9. Electronic mail dated March 12, 2020 (8:54 a.m.) from Al Bringleson - GM Blue Plan to Ranjani Munasinghe, Ministry of the Environment, Conservation and Parks responding to the information request letter dated February 21, 2020.

The reasons for the imposition of these terms and conditions are as follows:

- The reason for Conditions 1(1), (2), (6), (7), (8), (9), (10), (11), (12), (19), (20) and (21) is to clarify the legal rights and responsibilities of the Owner and Operator under this Approval.

- The reasons for Condition 1(3), 1(4), 1(5) and 7 (10) Condition for D&O submission) are to ensure that the Site is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.

- The reasons for Condition 1(13) are to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.

- The reasons for Condition 1(14) are to restrict potential transfer or encumbrance of the Site without the approval of the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Approval.

- The reason for Condition 1(15) is to ensure that the successor is aware of its legal responsibilities.

- The reasons for Conditions 1(16) and (17) are that the Part II.1 Director is an individual with authority pursuant to Section 197 of the Environmental Protection Act to require registration on title and provide any person with an interest in property before dealing with the property in any way to give a copy of the Approval to any person who will acquire an interest in the property as a result of the dealing.

- The reason for Condition 1(18) is to ensure that appropriate Ministry staff has ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in this Approval. This Condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the Act, the OWRA, the PA, the NMA and the SDWA.

- Condition 1 (22) has been included in order to clarify what information may be subject to the Freedom of Information Act.

SITE OPERATION

- The reasons for Conditions 2(1), 2(5) and 6(3) are to ensure that the Site is operated, inspected and maintained in an environmentally acceptable manner and does not result in a hazard or nuisance to the natural environment or any person.

- The reason for Conditions 2 (2), 2(3) and 2(4) is to ensure that users of the Site are fully aware of important information and restrictions related to Site operations and access under this Approval.

- The reasons for Condition 2(6) are open burning of municipal waste is unacceptable because of concerns with air emissions, smoke and other nuisance effects, and the potential fire hazard and to make sure burning of brush and wood are carried out in accordance with Ministry guidelines.

- The reasons for Condition 2(7), 2(8) and 2(9) are to specify the hours of operation for the landfill site and a mechanism for amendment of the hours of operation, as required.

- The reasons for Condition 2(10) and 2(11) are to ensure that the Site is supervised by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person and to ensure the controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site attendant is on duty.

EMPLOYEE TRAINING

- The reason for Condition 3(1) is to ensure that the Site is supervised and operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.

COMPLAINTS RESPONSE PROCEDURE

- The reason for Condition 4(1) is to ensure that any complaints regarding landfill operations at this Site are responded to in a timely and efficient manner.

EMERGENCY RESPONSE

- Conditions 5(1) and 5(2) are included to ensure that emergency situations are reported to the Ministry to ensure public health and safety and environmental protection.

- Conditions 5(3), 5(4) and 5(5) are included to ensure that emergency situations are handled in a manner to minimize the likelihood of an adverse effect and to ensure public health and safety and environmental protection.

RECORD KEEPING AND REPORTING

- The reason for Conditions 6(1) and 6(2) is to ensure that accurate waste records are maintained to ensure compliance with the conditions in this Approval (such as fill rate, site capacity, record keeping, annual reporting, and financial assurance requirements), the EPA and its regulations.

- The reason for Conditions 6(4) and 6(5) is to ensure that detailed records of Site inspections are recorded and maintained for inspection and information purposes.

- The reasons for Conditions 6(6) and 6(7) are to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified. An annual report is an important tool used in

reviewing site activities and for determining the effectiveness of site design.

LANDFILL DESIGN AND DEVELOPMENT

- The reason for Conditions 7(1) to 7(7) inclusive is to specify the approved areas from which waste may be accepted at the Site and the types and amounts of waste that may be accepted for disposal at the Site, based on the Owner's application and supporting documentation.

- Condition 7(8) is to provide the Owner the process for getting the approval for alternative daily and intermediate cover material.

- The reasons for Condition 7(9) are to ensure that daily/weekly and intermediate cover are used to control potential nuisance effects, to facilitate vehicle access on the Site, and to ensure an acceptable site appearance is maintained. The proper closure of a landfill site requires the application of a final cover which is aesthetically pleasing, controls infiltration, and is suitable for the end use planned for the Site.

LANDFILL MONITORING

- Reasons for Condition 8(1) are to ensure that landfill gas is monitored and all buildings at the Site are free of any landfill gas accumulation, which due to a methane gas component may be explosive and thus create a danger to any persons at the Site.

- Condition 8(2) is included to provide the groundwater and surface water limits to prevent water pollution at the Site.

- Conditions 8(3) and 8(4) are included to require the Owner to demonstrate that the Site is performing as designed and the impacts on the natural environment are acceptable. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.

- Conditions 8(5), 8(6) and 8(7) are included to ensure the integrity of the groundwater monitoring network so that accurate monitoring results are achieved and the natural environment is protected.

- Conditions 8(8) to 8(12) inclusive are added to ensure the Owner has a plan with an organized set of procedures for identifying and responding to potential issues relating to groundwater and surface water contamination at the Site's compliance point.

- Conditions 8(13) and 8(14) are included to streamline the approval of the changes to the monitoring plans and trigger mechanisms and contingency plans.

CLOSURE PLAN

- The reasons for Condition 9 are to ensure that final closure of the Site is completed in an

aesthetically pleasing manner, in accordance with Ministry standards, and to ensure the long-term protection of the health and safety of the public and the environment.

WASTE DIVERSION

- Condition 10 is included to ensure that the recyclable materials are stored in their temporary storage location and transferred off-site in a manner as to minimize a likelihood of an adverse effect or a hazard to the natural environment or any person.

HHW TRANSFER STATION

- The reasons for the Condition 11 are to approve collection of household hazardous waste and to ensure that the wastes are managed in a manner that protects the environment and the health and safety of the public.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). A261301 issued on April 12, 1990 as amended.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the**

Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 14th day of April, 2020

Mohsen Keyvani, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

RM/

c: District Manager, MECP Owen Sound
Alen Bringleson, GM BluePlan Engineering
Vance Czerwinski, Operations Manager

APPENDIX B:
CORRESPONDENCE

From: Jessica Weller - GM BluePlan <Jessica.Weller@gmblueplan.ca>
Sent: January 9, 2024 12:36 PM
To: Nicole Heber <environment@westgrey.com>
Cc: Kate Charpontier - GM BluePlan <Kate.Charpontier@gmblueplan.ca>
Subject: 2023 AMR Information Requests

Good afternoon Nicole,

We have begun completing our annual monitoring reports for the Neustadt, Normanby, Bentinck, Glenelg and Durham landfill sites and require the standard info that we ask for every year. I've copied and pasted the info from previous years for ease of reply.

1. The quantities of recyclables and other materials diverted from the landfills including the following details and totals:
    a. Recycling totals (Tonne):
    b. Scrap Metals (Tonne):
    c. Tires (Total number of each type i.e. passenger light, medium, agricultural or large):
    d. Bale Wrap (Tonne):
    e. WEEE (electronic program) (Tonnes):
    f. Woodwaste burned (if any?):
    g. Woodwaste ground/shredded (if any):
    h. Mattresses / Bulky Furniture (if applicable):
    i. Other Diversion streams not included above? :

2. Any relevant correspondence received during the calendar year such as MECP letters/comments acknowledging the receipt of the previous Annual Report(s) and a summary of review comments. Any other relevant correspondence.

3. A list of any formal public complaints received (if any) and subsequent actions taken by the Municipality.

4. Provide the Contractors that hauled waste to the Sites and/or recyclables away from the Sites.

5. The weigh scale totals for 2023where applicable.

6. Any other relevant information.

Thank you,

Jess

Jessica Weller, C.E.T.
Technical Specialist
(She/Her)

Provided to GM Blue Plan for 2023 AMR

Material type	Tonnes			Units			Notes	Hauler
	Bentinck	Durham	B&D	Bentinck	Durham	Total		
Scrap Metal Tonnes			114.38				sites were not separated but will be going forward	All Ontario Recycling
CFC appliances				127	25		AOR shows less than the scale processed	All Ontario Recycling
Comp Gas 20lb units						112		GFL
Comp Gas 5lb units						383		GFL
Bale Wrap	162		162				stockpile from Bentinck removed, not sorting currently	Cedarwell to Switch Energy
Textiles							did not respond, waiting for info	Diabetes Canada
HHW							see HHW tab for summary	GFL. Pharmaceuticals & sharps not accepted, directed to pharmacies
WEE	17.802	4.837	22.639					Goat Transport to EPRA
Batteries auto			1.504					E360 Solutions
Batteries other			0.095	0.351				E360 Solutions
Flourescent Light tube (units)						422		GFL
Styrofoam	0.976895	0.53765	1.514544					Second Wind Recycling
Mattress				500		500		Smartway to TRY Recycling
Film Plastics	1.8265	0.455	2.2815					Trash Taxi
Brush Burned	215.92	61.23	277.15				estimated 10 burns at Durham & 3 at Bentinck	
Wood Waste shred	200	0	200				no wood receved at Durham, Bentinck wood part of sorted household, 21 hrs onsite hauling, estimate 200t	
Recycling - Comingle	52.65963	42.78734	95.44696					Waste Management Inc
Recycling - Cardboard	36.86174	15.79789	52.65963					Waste Management Inc
Transfer Waste								
Durham to Bentinck	281.1507							Waste Management Inc
Curbside Collection								
curbside blue box	579.81							Waste Management Inc
cubside waste to Bentinck	750.97							Waste Management Inc
curbside waste to WM site	58.73							Waste Management Inc
Tires								All Ontario Recycling
PLT (units)				18088	1259	19347	loads were not weighed at each site each pickup until last pickup	
MT (units)				1163	171	1334		
AGLS (units)				240	18	258		
IND (units)				149	18	167		
SOTR (units)				4	0	4		
MOTR (units)				1	0	1		

HHW SUMMARY

SUMMARY	vol (l)	weight (t)	units
Admin fees			
Supplies			
Used Oil	4162		
Oil filters (Auto)			70
Aerosol			381
Antifreeze	116		
Propane 20lb		1.118	112
Propane 5lb			383
Paint Related (PC)	4546		
Lighting			422
Pharma			
Sharps			
Other materials	5685		
TOTAL	14509	1.118	1368

GM BluePlan Question	West Grey Response
2. Any MECP correspondence?	not aware of any
3. Complaints	Issues: litter on N side of Bentinck, general complaints about having to sort and fees Responses: Staff will reach out to resident & arrange for litter collection, litter fencing installed summer 2023, more in budget for 2024, public education and engagement on sorting
4. Contractors	listed above
5. Weigh scale totals:	scale reports attached to email
6. Other information:	Traffic pattern changed at Bentinck. Previously recycling customers did not have to cross scale, more metrics & load inspections now. Staffing challenges. Drywall & Shingles diversion programs planned for Bentinck New scale software is waste specific and will provide more metrics Increased promotion & education program, heavy emphasis on diversion Enhanced signage

Municipality Of West Grey

Bentinck WMF

Material Summary Report

(2023)

Material Name			Cash Cust.	Municipal		Total	
Appliance - Air Conditioner	**# of Loads**		0	20	0	0	20
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	20	0	0	20	
	Fees ($)	0.00	500.00	0.00	0.00	500.00	
Appliance - Dehumidifier	**# of Loads**		0	25	0	0	25
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	28	0	0	28	
	Fees ($)	0.00	700.00	0.00	0.00	700.00	
Appliance - Dish Washer	**# of Loads**		0	30	1	0	31
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	30	1	0	31	
	Fees ($)	0.00	300.00	10.00	0.00	310.00	
Appliance - Dryer	**# of Loads**		0	12	0	0	12
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	12	0	0	12	
	Fees ($)	0.00	120.00	0.00	0.00	120.00	
Appliance - Freezer	**# of Loads**		0	22	0	0	22
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	26	0	0	26	
	Fees ($)	0.00	650.00	0.00	0.00	650.00	
Appliance - Fridge	**# of Loads**		0	51	0	0	51
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	53	0	0	53	
	Fees ($)	0.00	1,325.00	0.00	0.00	1,325.00	
Appliance - Stove	**# of Loads**		0	24	0	0	24
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	24	0	0	24	
	Fees ($)	0.00	240.00	0.00	0.00	240.00	
Appliance - Washing Machine	**# of Loads**		0	15	0	0	15
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	16	0	0	16	
	Fees ($)	0.00	160.00	0.00	0.00	160.00	
Appliance - Water Cooler	**# of Loads**		0	9	0	0	9
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	9	0	0	9	
	Fees ($)	0.00	225.00	0.00	0.00	225.00	
Appliance - Water Tank	**# of Loads**		0	14	0	0	14
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	14	0	0	14	
	Fees ($)	0.00	140.00	0.00	0.00	140.00	
Appliances - Refridgerant Removed	**# of Loads**		0	4	0	0	4
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	4	0	0	4	
	Fees ($)	0.00	40.00	0.00	0.00	40.00	

Asbestos	**# of Loads**		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Bag Tags (1 Sheet min.)	**# of Loads**		0	84	0	0	84
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	153	0	0	153	
	Fees ($)	0.00	3,275.00	0.00	0.00	3,275.00	
Battery	**# of Loads**		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Blue Boxes	**# of Loads**		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Box Spring (any size)	**# of Loads**		0	104	1	0	105
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	112	1	0	113	
	Fees ($)	0.00	2,800.00	25.00	0.00	2,825.00	
Brick/Concrete	**# of Loads**		0	54	1	0	55
	Weight(Ton)	0.00	35.61	2.14	0.00	37.75	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	1,832.25	107.00	0.00	1,939.25	
Brush (Under 4" dia.)	**# of Loads**		0	1,309	1	0	1,310
	Weight(Ton)	0.00	182.19	0.04	0.00	182.23	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Cardboard	**# of Loads**		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Closed Hours Fee	**# of Loads**		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Concrete / Brick no rebar	**# of Loads**		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Contaminated Fill	**# of Loads**		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Curbside - Inbound	**# of Loads**		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
E-Waste	**# of Loads**		0	5	0	0	5
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	17	0	0	17	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Household Hazardous Waste	**# of Loads**		0	156	1	0	157
	Weight(Ton)	0.00	9.12	0.05	0.00	9.17	
	Quantity	0	0	0	0	0	

	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Incoming Household	**# of Loads**		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Lg. Brush (4" dia. or greater)	**# of Loads**		0	41	6	0	47
	Weight(Ton)	0.00	30.47	3.22	0.00	33.69	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	476.80	60.00	0.00	536.80	
Mattress (any size)	**# of Loads**		0	255	3	0	258
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	309	4	0	313	
	Fees ($)	0.00	7,725.00	100.00	0.00	7,825.00	
Recycling	**# of Loads**		0	247	2	0	249
	Weight(Ton)	0.00	6.06	0.01	0.00	6.07	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Recycling Contamination Fee	**# of Loads**		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Scrap Metal	**# of Loads**		0	743	1	0	744
	Weight(Ton)	0.00	53.45	0.02	0.00	53.47	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Scrap Metal - Outbound	**# of Loads**		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Sorted Household/Commercial	**# of Loads**		0	10,024	250	0	10,274
	Weight(Ton)	0.00	928.93	132.51	0.00	1,061.44	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	162,719.95	18,880.92	0.00	181,600.87	
Stumps	**# of Loads**		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Lg. 20" or More With Rims	**# of Loads**		0	5	0	0	5
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	20	0	0	20	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Lg. 20" or More No Rims	**# of Loads**		0	31	0	0	31
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	181	0	0	181	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Med. 16-20" No rims	**# of Loads**		0	294	2	0	296
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	2,416	67	0	2,483	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Med. 16-20" With Rims	**# of Loads**		0	53	1	0	54
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	270	9	0	279	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Sm. 15" or Less No Rims	**# of Loads**		0	40	0	0	40
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	

		Quantity	0	162	0	0	162	
		Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Sm. 15" or Less With Rims		**# of Loads**		0	26	0	0	26
		Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
		Quantity	0	40	0	0	40	
		Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Tractor No Rims		**# of Loads**		0	24	1	0	25
		Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
		Quantity	0	48	2	0	50	
		Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Tractor With Rims		**# of Loads**		0	0	0	0	0
		Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
		Quantity	0	0	0	0	0	
		Fees ($)	0.00	0.00	0.00	0.00	0.00	
Unsorted Household/Commercial		**# of Loads**		0	142	66	0	208
		Weight(Ton)	0.00	67.90	194.07	0.00	261.97	
		Quantity	0	0	0	0	0	
		Fees ($)	0.00	17,674.04	50,458.20	0.00	68,132.24	
Weight Only		**# of Loads**		0	12	0	0	12
		Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
		Quantity	0	12	0	0	12	
		Fees ($)	0.00	120.00	0.00	0.00	120.00	
West Grey Construction Soil		**# of Loads**		0	0	0	0	0
		Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
		Quantity	0	0	0	0	0	
		Fees ($)	0.00	0.00	0.00	0.00	0.00	
WG Construction Soil		**# of Loads**		0	0	0	0	0
		Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
		Quantity	0	0	0	0	0	
		Fees ($)	0.00	0.00	0.00	0.00	0.00	
	Total	**# of Loads**	0	13,875	337	0	14,212	
		Weight(Ton)	0.00	1,313.73	332.06	0.00	1,645.79	
		Quantity	0	3,976	84.00	0	4,060	
		Fees($)	0.00	201,023.04	69,641.12	0.00	270,664.16	

APPENDIX C:
DUTIES OF SITE SUPERVISOR & SITE ATTENDANT

Attachment 1

Duties of Site Supervisor

(1) Knowledge of the Plan of Operation for the site.

(2) Responsible for site access control.

(3) Ensures deposition of waste in designated areas.

(4) Ensures all burning on-site consists of clean dry wood waste of manageable size which does not adversely impact on neighbouring property owners at any time.

(5) Ensures litter pickup on and off site on a weekly basis.

Where required by Council, the site supervisor shall also:

(6) Ensure proper compaction and cover of material at the specified frequency;

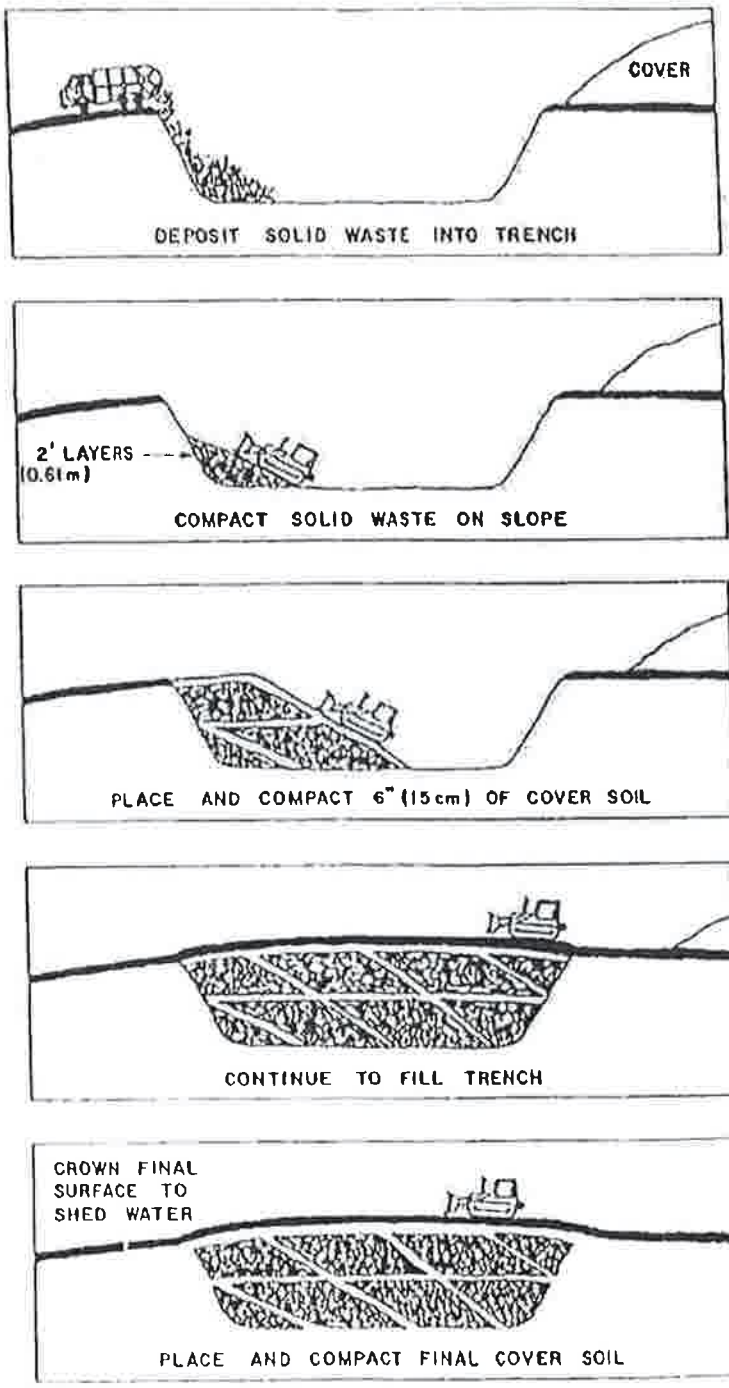
(7) Record volumes and types of waste material;

(8) Maintain monitoring well security;

(9) Identify on-site road maintenance problems to Council;

(10) Discuss with Council waste site problems with respect to site users, types of waste etc.

112701



TRENCH METHOD

COMPACTION EFFORT

COMPACTION	EQUIPMENT	METHOD	DENSITY
Poor	None	Wastes dumped into trench	100 - 200 $\frac{lb}{yd^3}$ 60 - 120 $\frac{kgm}{m^3}$
Minimal	Tracked Machine	Waste dumped into trench. Equipment compacts surface of wastes	200 - 500 $\frac{lb}{yd^3}$ 120 - 300 $\frac{kgm}{m^3}$
Moderate	Tracked Machine	Wastes spread in layers. Each layer is compacted with one pass of the machine	500 - 800 $\frac{lb}{yd^3}$ 300 - 475 $\frac{kgm}{m^3}$
Good	Tracked Machine	Waste spread in thin layers. Each layer compacted with three to five passes of the machine	800 - 1000 $\frac{lb}{yd^3}$ 475 - 600 $\frac{kgm}{m^3}$
Excellent	Steel Wheeled Compactor	Wastes spread in thin layers. Each layer compacted with the machine with up to five passes	over 1000 $\frac{lb}{yd^3}$

GUIDELINE C-7
(formerly 14-08)

Burning at Landfill Sites

Legislative Authority:

Environmental Protection Act, RSO 1990, Sections 6, 14 and 27
Ontario Regulation 347, Sections 1 and 12.1

Responsible Director:

Director, Program Development Branch

Last Revision Date:

April, 1994

Table of Contents

SYNOPSIS

The primary purpose of this guideline is to provide a set of operational requirements for the orderly burning of segregated clean wood and brush in a safe and environmentally- acceptable manner at appropriate landfill sites. This guideline is intended for use by landfill operators in their operation of a landfill site, and by Ministry staff during their review and inspection of landfill operations. The operational requirements are provided in Section 4-21, "Open Burning of Waste", of Procedure C-8-1: "Guidance Manual for Landfill Sites Receiving Municipal Waste" (C-8-1).

The guideline shall be enforced by including appropriate conditions on a Certificate of Approval for a landfill site, and by the Regions during the normal course of their activities.

1.0 Introduction

The burning of municipal waste, except for a limited number of specific materials, is prohibited by O. Regulation 347, Section 12.1. Segregated clean wood and brush, however, may be burned at certain sites, subject to certain requirements. These requirements are detailed in Section 4.21 of Procedure C-8-1: "Guidance Manual for Landfill Sites Receiving Municipal Waste".

2.0 General Requirements

As part of an overall program to maximize waste capacity at existing landfill sites, thereby extending their life, burning of clean wood and brush may be allowed under strictly controlled conditions.

2.1 Other Agencies

The Ministry of Natural Resources and local municipal authorities shall be consulted to obtain any necessary permits. Specific regulations enforced by the Ministry of Natural Resources shall be complied with for burning wood and brush at landfills located north of Ontario's fire line.

2.2 Certificate of Approval

Burning of any kind is not permitted at new landfill sites unless specifically allowed in the Certificate of Approval.

3.0 Operational Requirements

The operational requirements are detailed under Section 4.21.3 of the guidance manual under the headings of:

(a) Weather and Atmospheric Conditions,
(b) Supervision,
(c) Environmental Controls,
(d) Extinguishing Requirements,
(e) Access Control, and
(f) Resolution of Complaints.

4.21.3 Operational Requirements

a) Weather and Atmospheric Conditions

Burning should be carried out only when prevailing weather and atmospheric conditions are suitable. Burning should not be carried out when:

i) the area has a high Air Quality Index (AQI);
ii) rain or fog are present, since smoke cannot disperse properly and may be concentrated in one particular area; and
iii) wind speeds are high or wind directions are changing frequently, because these conditions allow fires to spread rapidly.

b) Supervision

i) Dry brush and clean wood wastes should be segregated and subsequently burned on a designated, cleaned area of the site, under supervision of the site operator.

ii) The fire should be supervised continuously until completely extinguished.

iii) The site operator should clear residual ashes from a fire and dispose of the ash with normal incoming waste as soon as practically possible. The ashes must be cold prior to mixing with waste. Residual ashes should not be allowed to accumulate at the designated burning area.

c) Environmental Controls

i) Petroleum products, plastics, rubber or any other material that will cause excessive smoke or noxious fumes must not be mixed with or contaminate the wood or brush that may be burned.

ii) Burning should not be carried out if there is sensitive land-use adjacent to the landfill site or if the nearest dwelling is less than 150 metres from the site.

iii) A 30 metre fire break should be provided around the burning area.

iv) Ontario Regulation 308, made under the EPA, contains provisions dealing with air pollution. Owners and site operators are advised to apprise themselves of the provisions contained therein.

d) Extinguishing Requirements

The area of burning on the landfill site must be restricted in order to enable the operator to extinguish the fire immediately if necessary due to a change in weather or other conditions or if so ordered by MOEE or Ministry of Natural Resources staff. The operator must also provide proof of this ability (i.e., on-site equipment or written agreement with local fire control agency) to extinguish the fire.

e) Access Control

i) Access to the landfill site by the public and other unauthorized personnel must be restricted when burning is carried out.

ii) Appropriate signs should be posted at all entrances to the site used by the public and waste haulers advising them of restricted access due to burning of waste.

f) Resolution of Complaints

i) Complaints from local residents regarding smoke or odour emissions will have to be resolved by the operator. If this is not corrected satisfactorily, the operator would be required to stop burning.

ii) When persistent problems are encountered with burning at existing sites, the operator may be requested either to stop burning or make a satisfactory proposal to control burning for incorporation in the Certificate of Approval for the site. This may involve a request for amendment of a current Certificate of Approval. If the operator does not comply voluntarily with such a request, formal action to halt burning may be taken under provisions of the EPA.

4.21 OPEN BURNING OF WASTE

4.21.1 Rationale

The burning of municipal waste, except a limited number of specific material, is prohibited by regulation in Ontario. Open burning of waste at a landfill site creates

a) air emission concerns;
b) public and environmental hazards;
c) lack of site operational control;
d) fire hazard; and
e) nuisance.

Segregated, clean wood and brush, however, may be burned at certain isolated sites, subject to weather and atmospheric conditions and supervision requirements.

4.21.2 General Requirements

a) As part of an overall program to maximize waste capacity at existing landfill sites, thereby extending their life, open burning of clean wood and brush may be allowed under strictly controlled conditions as discussed in this subsection.

The Ministry of Natural Resources and local municipal authorities should be consulted in order to obtain any necessary permits for burning. These agencies may require specific details on safety precautions and fire prevention measures that will be taken. Landfill site owner/operators are also advised to check for any municipal by-laws enforced by the local police and fire departments. Specific regulations enforced by the Ministry of Natural Resources must be complied with for burning north of Ontario's fire line. The fire line runs east from Lake Huron across the bottom of Georgian Bay and the top of Lake Simcoe down to Gananoque, then north and west to meet the Ottawa River north of Renfrew.

b) Burning is not permitted at new landfill sites unless specifically allowed in the Certificate of Approval, usually conditional on the compliance with various environmental and safety considerations. Any permit to burn waste at new landfill sites would also be conditional on compliance with local municipal by-laws, and specific requirements of The Ministry of Natural Resources.

4.21.3 Operational Requirements

a) Weather and Atmospheric Conditions

Burning should be carried out only when prevailing weather and atmospheric conditions are suitable. Burning should not be carried out when:

i) the area has a high Air Quality Index (AQI);
ii) rain or fog are present, since smoke cannot disperse properly and may be concentrated in one particular area; and
iii) wind speeds are high or wind directions are changing frequently, because these conditions allow fires to spread rapidly.

b) Supervision

i) Dry brush and clean wood wastes should be segregated and subsequently burned on a designated, cleaned area of the site, under supervision of the site operator.

ii) The fire should be supervised continuously until completely extinguished.

iii) The site operator should clear residual ashes from a fire and dispose of the ash with normal incoming waste as soon as practically possible. The ashes must be cold prior to mixing with waste. Residual ashes should not be allowed to accumulate at the designated burning area.

c) Environmental Controls

i) Petroleum products, plastics, rubber or any other material that will cause excessive smoke or noxious fumes must not be mixed with or contaminate the wood or brush that may be burned.

ii) Burning should not be carried out if there is sensitive land-use adjacent to the landfill site or if the nearest dwelling is less than 150 metres from the site.

iii) A 30 metre fire break should be provided around the burning area.

iv) Ontario Regulation 308, made under the EPA, contains provisions dealing with air pollution. Owners and site operators are advised to apprise themselves of the provisions contained therein.

d) **Extinguishing Requirements**

The area of burning on the landfill site must be restricted in order to enable the operator to extinguish the fire immediately if necessary due to a change in weather or other conditions or if so ordered by MOEE or Ministry of Natural Resources staff. The operator must also provide proof of this ability (i.e., on-site equipment or written agreement with local fire control agency) to extinguish the fire.

e) **Access Control**

i) Access to the landfill site by the public and other unauthorized personnel must be restricted when burning is carried out.

ii) Appropriate signs should be posted at all entrances to the site used by the public and waste haulers advising them of restricted access due to burning of waste.

f) **Resolution of Complaints**

i) Complaints from local residents regarding smoke or odour emissions will have to be resolved by the operator. If this is not corrected satisfactorily, the operator would be required to stop burning.

ii) When persistent problems are encountered with burning at existing sites, the operator may be requested either to stop burning or make a satisfactory proposal to control burning for incorporation in the Certificate of Approval for the site. This may involve a request for amendment of a current Certificate of Approval. If the operator does not comply voluntarily with such a request, formal action to halt burning may be taken under provisions of the EPA.

APPENDIX D:
HISTORICAL GROUNDWATER QUALITY

Historic Groundwater Quality at Test Well TH 1

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 1 7-Nov-94	TH 1 9-Nov-99	TH 1 11-Jul-01	TH 1 18-Oct-01	TH 1 18-Jun-02	TH 1 22-Oct-02 001	TH 1 20-May-03	TH 1 1-Oct-03 005	TH 1 (dup) 1-Oct-03 006	TH 1 29-Sep-04	TH 1 21-Sep-05	TH 1 25-Sep-06	TH 1 9-Oct-07	TH 1 15-Apr-08	TH 1 17-Sep-08
Alkalinity(as CaCO3)	30 - 500 [OG]	366	171	DRY	DRY	NO	159	NO	164	166	DRY	DRY	DRY	DRY	DRY	DRY
Ammonia(as N)		0.005	0.16				0.22		0.18	0.18						
Calcium		166					50.2		44.5	44.7						
Chloride	250 [AO]	2	11.7				1.4		1.2	1.2						
Conductivity @25øC (mho/cm)		846	431				481		491	483						
Dissolved Organic Carbon(DOC)	5.0 [AO]	8.4					0.5		4	21						
Hardness(as CaCO3)	80-100 [OG]	493	295				245		227	228						
Iron	0.3 [AO]	0.01	0.01				0.06		0.009	0.007						
Magnesium		18.4					29.1		28.1	28.3						
Manganese	0.05 [AO]	0.005					<0.01		0.009	0.009						
Nitrate(as N)	10	3.5	0.91				0.1		0.1	0.1						
Nitrite(as N)	1	0.02	0.05				<0.1		<0.1	<0.1						
Orthophosphate(as P)							<0.01		<0.01	<0.01						
pH	6.5-8.5 [OG]	6.78	7.94				8.41		8.45	8.43						
Phenols		<0.0010					<0.001		<0.001	<0.001						
Phosphorus, Total (as P)		0.029					0.35		29.3	4.75						
Potassium		0.066					0.8		1.3	1.3						
Sodium	200 [AO]	0.4	16				14.1		14.2	14.3						
Sulphate	500 [AO]	10.2	76.6				97		109	98						
Total Kjeldahl Nitrogen(as N)		0.33	2.5				0.21		7.37	1.73						

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 1

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 1 30-Apr-09	TH 1 1-Oct-09	TH 1 12-May-10	TH 1 9-Nov-10	TH 1 2-May-11	TH 1 21-Sep-11	TH 1 12-Apr-12	TH 1 23-Nov-12	TH 1 7-May-13	TH 1 26-Nov-13	TH 1 1-May-14	TH 1 4-Nov-14
Alkalinity(as CaCO3)	30 - 500 [OG]	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
Ammonia(as N)													
Calcium													
Chloride	250 [AO]												
Conductivity @25øC (mho/cm)													
Dissolved Organic Carbon(DOC)	5.0 [AO]												
Hardness(as CaCO3)	80-100 [OG]												
Iron	0.3 [AO]												
Magnesium													
Manganese	0.05 [AO]												
Nitrate(as N)	10												
Nitrite(as N)	1												
Orthophosphate(as P)													
pH	6.5-8.5 [OG]												
Phenols													
Phosphorus, Total (as P)													
Potassium													
Sodium	200 [AO]												
Sulphate	500 [AO]												
Total Kjeldahl Nitrogen(as N)													

Historic Groundwater Quality at Test Well TH 2

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 2 27-May-93	TH 2 4-Oct-93	TH 2 13-Jun-94	TH 2 7-Nov-94	TH 2 19-Jun-95	TH 2 30-Oct-95	TH 2 15-Nov-96	TH 2 15-Nov-96 Replicate	TH 2 19-Dec-97	TH 2 18-Dec-98	TH 2 18-Dec-98 Replicate	TH 2 21-Dec-00	TH 2 21-Dec-00 Replicate	TH 2 18-Oct-01 009	TH 2 22-Oct-02 DRY	TH 2 1-Oct-03 DRY
Alkalinity(as CaCO3)	30 - 500 [OG]	280	280	293	254	263	268	262	262	253	258	253	292	298	275		
Ammonia(as N)		0.243	0.062	0.025	0.286	<0.05	0.1	0.16		0.04	nd	nd	0.05	0.05	0.37		
Calcium		68	74.2	57.8	75.2	58.9	59.6	70.2	70.5	66	67.1	66.3	67.1	66.8	69.1		
Chloride	250 [AO]	2.4	6.3	2.1	1.8	2.3	2.9	2.78	2.78	2.98	2.67	2.66	2.7	2.7	3.8		
Conductivity @25øC (µmho/cm)		537	524	560	558	561	548	500	502		499	490	493	493	533		
Dissolved Organic Carbon(DOC)	5.0 [AO]	1.8	1.1	7.9	5.8	14.9	2.9	1.2		1.1	1.8	1.4	2	2			
Hardness(as CaCO3)	80-100 [OG]	292	312	259	327	275	275	301	295	292	287	283	286	286	297		
Iron	0.3 [AO]	0.04	0.1	<0.01	0.01	0.29	0.09	0.022	0.016	0.01	0.08	0.08	0.08	0.08	<0.01		
Magnesium		29.5	30.7	27.8	33.7	31.1	30.7	29.9	30	30.7	29	28.7	28.8	28.8	30.3		
Manganese	0.05 [AO]			0.071	0.079	0.022	0.038	0.033	0.034	0.026	nd	nd	0.007	0.007			
Nitrate(as N)	10	0.1	1.7	3.3	0.4	4.5	3.4	3.98	4.04	3.63	1.67	1.66	2.9	2.8	1.4		
Nitrite(as N)	1	<0.01	0.01	<0.01	0.05	0.01	0.04	<0.03	<0.03		nd	nd	nd	nd	<0.1		
Orthophosphate(as P)								<0.05	<0.05		nd	nd	nd	nd			
pH	6.5-8.5 [OG]	7.92	7.64	7.74	7.55	7.89	7.9	7.6	7.61	7.77	8.21	8.13	7.84	7.88	7.69		
Phenols		0.003	0.008	0.006	<0.0010	<0.0010	<0.0010	<0.001			0.001	0.001	nd	nd			
Phosphorus, Total (as P)		0.014	0.01	0.008	0.009	0.01	0.03	0.03		0.09	nd	nd					
Potassium				0.9	0.75	1.26	1.06	1.6	1.7		1.2	nd	nd	nd			
Sodium	200 [AO]			1.1	1.1	1.5	1.4	1.66	1.69	1.36	1.3	1.2	11.4	11.3	1.3		
Sulphate	500 [AO]			17.9	15.5	14.3	16.6	15	15.2	14.6	14.5	14.4	12.1	12	13.2		
Total Kjeldahl Nitrogen(as N)		1.23	0.43	0.6	0.33	0.62	0.81	0.56		0.39	0.22	0.2	0.16	0.18	1.18		

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 2

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 2 29-Sep-04	TH 2 21-Sep-05	TH 2 25-Sep-06	TH 2 9-Oct-07	TH 2 17-Sep-08	TH 2 1-Oct-09	TH 2 9-Nov-10	TH 2 21-Sep-11	TH 2 23-Nov-13	TH 2 26-Nov-13	TH 2 1-May-14	TH 2 4-Nov-14	TH-2 20-Apr-15	TH-2 3-Nov-15	TH-2 26-Oct-16
Alkalinity(as CaCO3)	30 - 500 [OG]	290	280	282	286	294	280	267	271	278	260	260	260	260	260	270
Ammonia(as N)		0.05	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	ND	0.078	0.055	<0.050	<0.050
Calcium		69.1	67.4	72.7	70.2	74	62.1	66.8	73.0	72.5		67	73	72	65	62
Chloride	250 [AO]	2.4	2.6	3.2	3.4	3.1	3.4	3.7	3.7	2.8	3	3	3	3	3.1	2.3
Conductivity @25øC (µmho/cm)		487	528	513	543	555	551	555	587	530	530	520	530	530	520	520
Dissolved Organic Carbon(DOC)	5.0 [AO]	0.7	4.4	2.6	1.6	1.2	1.3	1.2	1.4	3.1	0.8	0.66	0.77	1.2	0.87	1.5
Hardness(as CaCO3)	80-100 [OG]	299	285	307	297	307	266	293	309	308	280	280	310	300	280	270
Iron	0.3 [AO]	<0.005	<0.005	<0.005	0.009	<0.005	<0.005	<0.005	0.006	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Magnesium		30.6	28.3	30.6	29.7	29.6	26.9	30.6	30.8	30.8	28	26	31	30	28	27
Manganese	0.05 [AO]	0.002	<0.001	<0.001	0.001	<0.001	0.005	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Nitrate(as N)	10	1.5	1	2.8	3.6	4.2	4.2	5.3	4.4	2.7	3.9	4.79	3.27	2.78	2.4	2.01
Nitrite(as N)	1	<0.1	<0.1	<0.1	<0.1			<0.1	<0.1	<0.1	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.10	<0.010	<0.10	<0.010
pH	6.5-8.5 [OG]	7.59	7.73	7.69	7.29	7.52	7.51	7.22	7.81	7.93	8.08	8.11	8.1	7.99	8.07	8.09
Phenols		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)		1.56	1.75	1.23	2.42	2.17	2.64	0.96	0.95	1.79	0.73	0.29	1.7	0.54	0.19	<0.1
Potassium		0.6	0.5	0.5	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.54	0.63	0.59	0.62	0.53
Sodium	200 [AO]	1.2	1.1	1.1	1.6	1.8	1.2	1.1	1.4	1.4	1.5	1.5	1.6	1.6	1.6	1.4
Sulphate	500 [AO]	8	8	8	9	11	11	11	11	9	8	9	16	9	11	6.9
Total Kjeldahl Nitrogen(as N)		1.54	1.6	1.45	1.77	2.01	3.2	0.82	0.94	1.24	1.1	2.2	3.8	0.9	<0.50	0.21

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 2

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH-2 16-May-17	TH-2 7-Dec-17	TH-2 10-Apr-18	TH-2 15-Nov-18	TH-2 24-Apr-19	TH-2 20-Nov-19	TH-2 13-May-20	TH-2 12-Nov-20	TH-2 8-Apr-21	TH-2 7-Oct-21	TH-2 3-May-22	TH-2 29-Sep-22 No Sample	TH-2 23-Apr-23	TH-2 22-Nov-23
Alkalinity(as CaCO3)	30 - 500 [OG]	280	290	290	270	230	290	280	280	270	280	280		270	290
Ammonia(as N)		<0.050	<0.050	0.12	0.068	<0.050	0.1	0.14	<0.050	<0.050	<0.050	<0.050		0.14	0.31
Calcium		64	64	68	64	73	67	75	65	65	69	66		67	73
Chloride	250 [AO]	2.7	2.4	2.3	2.3	3.4	3	2.4	2.1	2.5	2.5	2.8		2.9	3.3
Conductivity @25øC (µmho/cm)		550	550	540	510	530	540	540	510	500	500	530		530	560
Dissolved Organic Carbon(DOC)	5.0 [AO]	0.58	0.96	0.78	1	0.78	0.76	0.97	0.92	0.99	0.85	0.64		1.7	2.7
Hardness(as CaCO3)	80-100 [OG]	280	280	290	280	310	290	310	270	280	290	290		290	310
Iron	0.3 [AO]	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
Magnesium		29	28	29	29	31	29	31	27	28	29	30		30	31
Manganese	0.05 [AO]	<0.0002	<0.002	<0.002	<0.002	<0.002	0.03	<0.002	<0.002	<0.002	<0.002	<0.002		<0.002	0.23
Nitrate(as N)	10	2.26	2.15	1.63	1.61	2.35	2.18	2.09	1.14	0.9	0.86	1.44		0.65	0.33
Nitrite(as N)	1	<0.010	<0.010	<0.010	<0.010	<0.010	0.026	<0.01	<0.01	<0.01	<0.01	<0.01		<0.010	<0.010
Orthophosphate(as P)		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.013	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010
pH	6.5-8.5 [OG]	7.99	7.89	8.04	7.8	8.13	8	8.12	8.14	8.21	8.07	8.14		8.16	7.93
Phenols		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0019	0.001	<0.0010	<0.0010	<0.0010	NV		<0.0010	0.0033
Phosphorus, Total (as P)		0.069	<0.1	0.63	0.095	<0.10	0.098	0.064	2.3	0.062	NV	<0.10		0.058	<0.1
Potassium		0.52	0.57	0.55	0.57	0.63	0.84	0.63	0.54	0.55	0.83	0.56		0.91	1.2
Sodium	200 [AO]	1.4	1.5	1.4	1.4	1.7	1.4	1.3	1.2	1.3	1.3	1.3		1.7	1.7
Sulphate	500 [AO]	5.6	6.5	6.6	6.6	6.6	6.8	7	6.8	4.8	4.7	5.1		6.8	6.8
Total Kjeldahl Nitrogen(as N)		0.4	0.46	0.86	0.22	<0.10	0.37	0.2	<0.10	0.12	0.23	<0.10		0.94	1.4

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TH 3

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 3 27-Apr-93	TH 3 4-Oct-93	TH 3 13-Jun-94	TH 3 7-Nov-94	TH 3 19-Jun-95	TH 3 30-Oct-95	TH 3 15-Nov-96	TH 3 9-May-97	TH 3 19-Dec-97	TH 3 13-May-98	TH 3 13-May-98 (dup)	TH 3 18-Dec-98	TH 3 11-Jul-00	TH 3 11-Jul-00 (dup)	TH 3 21-Dec-00	TH 3 11-Jul-01 005	TH 3 18-Oct-01 003
Alkalinity(as CaCO3)	30 - 500 [OG]	290	246	386	309	350	456	791	818	1040	1060	1070	987	966	933	988	996	955
Ammonia(as N)		0.072	0.099	0.075	0.51	<0.5	0.2	0.06	0.41	8.5	27	28	19.9	36.1	37	27	11.9	26.7
Calcium		70.9	66.4	59.6	73.4	73.9	103	76.9	151	193	174	173	145	171	170	154	207	161
Chloride	250 [AO]	1.1	2.2	4.2	3.1	6.5	32.6	79.6	86.5	110	128	131	134	82.5	82.3	81.2	74.7	66.2
Conductivity @25øC (µmho/cm)		550	591	721	618	712	1022	1530	1660	1740	2040	2060	1840	1640	1640	1470	1850	1785
Dissolved Organic Carbon(DOC)	5.0 [AO]	1.1	1.3	9.4	9	15.6	5.6	79	126	1.4	25.3	26.3	22.7	20.1	20.4	12.9		
Hardness(as CaCO3)	80-100 [OG]	301	299	329	360	343	492	830	869	925	818	813	742	761	758	708	933	740
Iron	0.3 [AO]	0.02	0.02	0.24	0.63	0.02	0.15	3.29	9.56	15.4	18.1	18.2	0.73	13.6	13.6	7.15	1.32	0.88
Magnesium		30	32.3	43.8	42.9	38.4	56.8	161	120	108	93.3	93.5	92	81	80.7	78.4	101	82.2
Manganese	0.05 [AO]			0.423	0.352	0.282	0.399	0.055	0.052	0.053	0.058	0.058	0.07	1.39	1.38	0.589		
Nitrate(as N)	10	1.8	4.1	0.5	0.2	3.1	0.1	<0.03		0.05	0.11	0.1	nd	0.2	0.2	0.4	<0.1	<0.1
Nitrite(as N)	1	<0.01	0.01	0.01	0.01	0.09	0.02	<0.03			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Orthophosphate(as P)								<0.05			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
pH	6.5-8.5 [OG]	7.09	7.69	7.72	7.46	7.77	7.67	7.4	7.38	7.54	7.01	7.04	7.6	7.29	7.3	7.58	7.35	7.5
Phenols		0.0125	<0.001	0.0047	<0.001	<0.0022	<0.001	0.067	64	0.005	0.03	0.03	0.019	0.003	0.003	0.002		
Phosphorus, Total (as P)		0.008	0.005	0.023	0.011	0.01	0.03	0.03	1.1	42.8	0.09	0.09	0.07	0.3	0.2			
Potassium				0.5	0.41	0.85	1.0	<1			48.1	49.9	48.1	44	43	43		
Sodium	200 [AO]			5.2	1.6	1.5	13.5	62.5	60.6	102	102	104	100	67.6	67.6	52.5	84.2	61.2
Sulphate	500 [AO]			12.5	17.8	13.7	13.9	0.15	0.38	0.14	0.86	0.78	1.4	2	1.9	1.6	<1.0	<1.0
Total Kjeldahl Nitrogen(as N)		0.53	0.59	0.71	0.56	0.47	0.62	1.05	2.64	11.1	26	25	20.5	45	45	27.3	19.7	27.4

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TH 3

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 3 18-Jun-02 DRY	TH 3 22-Oct-02 DRY	TH 3 20-May-03 005	TH 3 1-Oct-03 DRY	TH 3 5-May-04	TH 3 29-Sep-04 015	TH 3 6-Apr-05 004	TH 3 21-Sep-05 013	TH 3 4-Apr-06 005	TH 3 25-Sep-06 DRY	TH 3 13-Apr-07 007	TH 3 9-Oct-07 DRY	TH 3 15-Apr-08 011	TH 3 17-Sep-08 DRY	TH 3 30-Apr-09	TH 3 1-Oct-09 DRY	TH 3 12-May-10 DRY	TH 3 9-Nov-10
Alkalinity(as CaCO3)	30 - 500 [OG]			855		800	880	835	853	865		835		815		830			769
Ammonia(as N)				22.4		18.5	17.8	19.3	28.7	23.5		35.2		20.8		33.7			19.1
Calcium				158		157	149	158	158	158		148		165		177			166
Chloride	250 [AO]			53.8		46.1	60.4	41.1	60.2	49.7		42		35.6		34			29.4
Conductivity @25øC (µmho/cm)				1560		1090	1460	1560	1690	1500		1470		1550		1440			1460
Dissolved Organic Carbon(DOC)	5.0 [AO]			11.3		10.4	12	13.1	31.4	22.9		11		11		11.2			12.6
Hardness(as CaCO3)	80-100 [OG]			665		658	672	694	684	692		627		685		731			648
Iron	0.3 [AO]			3.07		7.91	12.1	13.1	1.11	10.8		0.631		8.03		6.65			10
Magnesium				65.7		64.7	73.1	73	70.6	72.6		62.6		66.5		69.8			56.6
Manganese	0.05 [AO]			0.06		0.055	0.051	0.061	0.04	0.061		0.064		0.054		0.064			0.051
Nitrate(as N)	10			0.2		<0.1	0.1	0.3	0.1	0.2		0.4		0.1		0.2			0.2
Nitrite(as N)	1			<0.1		<0.1	<0.1	<0.1	<0.1	<0.1		<0.1							<0.1
Orthophosphate(as P)				<0.01		<0.01	<0.01	<0.01	<0.01	<0.01		<0.01		<0.01		<0.01			<0.01
pH	6.5-8.5 [OG]			7.23		7.51	7.12	7.1	7.29	7.54		7.09		6.78		6.56			6.53
Phenols				<0.001		<0.001	<0.001	<0.001	<0.001	<0.001		<0.001		<0.001		<0.001			<0.001
Phosphorus, Total (as P)				6.79		2.09	1.15	2.61	3.45	3.81		4.35		2.19		3.21			4.05
Potassium				31.9		37.3	25.8	24.5	47.9	36.5		39		32.6		32.2			21.5
Sodium	200 [AO]			63.3		50.6	52.6	61.2	65.6	51.2		54		47.3		46.3			40.7
Sulphate	500 [AO]			<1.0		<1.0	<1	<1	<1	<1		4		4		<1			2
Total Kjeldahl Nitrogen(as N)				27.2		20	20.2	23.8	47.9	23.5		40.8		24.7		37.4			22.1

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TH 3

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 3 2-May-11	TH 3 21-Sep-11 DRY	TH 3 12-Apr-12	TH 3 23-Nov-12	TH 3 7-May-13	TH 3 26-Nov-13	TH 3 1-May-14	TH 3 4-Nov-14	TH 3 20-Apr-15	TH 3 3-Nov-15	TH-3 20-Apr-16	TH 3 26-Oct-16	TH-3 16-May-17	TH 3 7-Dec-17
Alkalinity(as CaCO3)	30 - 500 [OG]	694		729	730	720	680	670	710	690	660	510	570	280	720
Ammonia(as N)		13.3		10.3	12.4	27	16	12	8.2	13	31	31	28	15	7.5
Calcium		163		190	175	160	160	160	190	160	130	140	120	53	17
Chloride	250 [AO]	19.8		20.9	15.9	19	19	20	16	19	22	16	12	15	16
Conductivity @25øC (µmho/cm)		1290		1340	1260	1400	1300	1200	1300	1300	1300	1000	1100	1200	1300
Dissolved Organic Carbon(DOC)	5.0 [AO]	7.9		7.0	8.5	6.9	6.8	5.9	5.9	7.2	7.7	6.8	6.9	5.6	5.2
Hardness(as CaCO3)	80-100 [OG]	623		700	637	550	610	620	730	610	510	500	450	600	650
Iron	0.3 [AO]	5.05		12.9	2.83	<0.1	<0.1	ND	<0.1	0.34	<0.1	<0.1	<0.1	<0.10	<0.1
Magnesium		52.6		54.5	48.8	40	51	50	58	49	42	39	36	47	53
Manganese	0.05 [AO]	0.058		0.052	0.058	0.048	0.055	0.047	0.62	0.058	0.05	0.017	0.057	0.078	0.074
Nitrate(as N)	10	0.1		<0.1	0.6	<0.1	<0.1	ND	<0.10	<0.10	<0.10	0.42	<0.10	<0.10	<0.10
Nitrite(as N)	1	<0.1		<0.1	<0.1	<0.01	0.01	ND	<0.010	<0.010	<0.010	<0.010	0.013	<0.010	<0.010
Orthophosphate(as P)		<0.01		<0.01	<0.01	<0.01	<0.01	ND	0.011	<0.010	0.011	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]	7.47		7.36	7.53	7.53	7.63	7.65	7.52	7.44	7.77	7.89	7.82	7.5	7.63
Phenols		<0.001		<0.001	<0.001	0.0012	0.0018	ND	<0.001	0.0017	<0.001	<0.001	<0.001	<0.0010	<0.0050
Phosphorus, Total (as P)		3.71		1.20	2.70	0.21	1.10	1.70	0.53	0.35	1	0.026	<0.1	0.06	<0.1
Potassium		15.8		12.1	15.1	15	11	12	8.5	15	16	22	20	16	1.1
Sodium	200 [AO]	31.1		27.7	25.0	22	29.0	21	23.0	24	23	19	13	13	14
Sulphate	500 [AO]	9		6	6	8	1	7	8	9	2.5	39	3	4.2	3.3
Total Kjeldahl Nitrogen(as N)		14.3		9.31	15.9	26	16	14	7.1	14	31	32	29	18	8

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TH 3

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH-3 10-Apr-18	TH 3 15-Nov-18	TH-3 24-Apr-19	TH 3 20-Nov-19	TH-3 13-May-20	TH 3 12-Nov-20 DRY	TH-3 8-Apr-21	TH 3 7-Oct-21	TH-3 3-May-22	TH 3 29-Sep-22	TH-3 23-Apr-23	TH-3 22-Nov-23
Alkalinity(as CaCO3)	30 - 500 [OG]	700	710	650	650	640		570	570	540	520	550	540
Ammonia(as N)		5.4	5.8	8.1	18	20		12	13	8.8	9.7	5.3	6.3
Calcium		160	160	170	140	160		140	140	140	140	150	150
Chloride	250 [AO]	9.3	14	13	12	10		11	11	15	16	26	34
Conductivity @25øC (µmho/cm)		1200	1200	1300	1200	1200		1100	1000	1000	990	1100	1100
Dissolved Organic Carbon(DOC)	5.0 [AO]	3.9	4.2	4.9	4.9	4.3		4.5	3.9	3.9	3.0	3.6	3.6
Hardness(as CaCO3)	80-100 [OG]	650	640	650	550	590		520	530	510	510	590	590
Iron	0.3 [AO]	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Magnesium		59	59	57	49	44		39	41	38	36	51	54
Manganese	0.05 [AO]	0.039	0.05	0.071	0.07	0.079		0.089	0.082	0.11	0.11	0.16	0.15
Nitrate(as N)	10	<0.10	<0.10	<0.10	<0.10	<0.10		0.15	0.1	<0.1	<0.1	0.37	0.38
Nitrite(as N)	1	<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]	7.72	7.46	7.75	7.46	7.86		7.59	7.72	7.65	7.77	7.81	7.6
Phenols		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010		<0.0010	<0.0010	NV	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)		1.6	1.5	0.32	1.8	0.61		0.38	NV	0.37	0.50	0.1	<0.1
Potassium		7.7	7.6	10	12	19		12	14	12	10	6.7	7.4
Sodium	200 [AO]	12	15	17	16	10		13	11	9.1	7.5	14	24
Sulphate	500 [AO]	2.9	2	<1.0	<1.0	10		2.9	4.2	6.4	7.2	5.7	3
Total Kjeldahl Nitrogen(as N)		6.3	5.9	8	19	21		12	16	9.4	10	5.3	6.2

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TH 4

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 4 27-Apr-93	TH 4 4-Oct-93	TH 4 13-Jun-94	TH 4 7-Nov-94	TH 4 19-Jun-95	TH 4 18-Dec-98	TH 4 18-Oct-01	TH 4 22-Oct-02	TH 4 1-Oct-03	TH 4 29-Sep-04	TH 4 21-Sep-05	TH 4 25-Sep-06	TH 4 13-Apr-07	TH 4 9-Oct-07	TH 4 15-Apr-08
Alkalinity(as CaCO3)	30 - 500 [OG]	776		590	881	737		DRY	DRY	DRY	DRY	DRY	DRY	DRY	No Sample	DRY
Ammonia(as N)		35		31.9	29.9	25.2										
Calcium		80.5		102	121	119	169									
Chloride	250 [AO]	87.5		32.6	26.9	19.8	17.5									
Conductivity @25øC (µmho/cm)		1830	1390	1730	1690	1480										
Dissolved Organic Carbon(DOC)	5.0 [AO]	58	15.5	23	>20	16.8										
Hardness(as CaCO3)	80-100 [OG]	594		569	687	586	710									
Iron	0.3 [AO]	0.1	0.25	0.19	10.3	7.83	0.92									
Magnesium		95.4		76	92.8	69.9	69.6									
Manganese	0.05 [AO]			0.122	0.142	0.159	0.11									
Nitrate(as N)	10	2.5		0.1	1.2	<0.1	nd									
Nitrite(as N)	1	<0.01		<0.01	0.04	<0.01	nd									
Orthophosphate(as P)							nd									
pH	6.5-8.5 [OG]	7.72	8.12	7.2	6.61	6.9										
Phenols		0.02	0.042	0.0346		0.0198										
Phosphorus, Total (as P)		<0.10		0.055	0.05	0.02										
Potassium				54.3	69.2	54.2	49.4									
Sodium	200 [AO]			29.2	28.9	21.5	17.1									
Sulphate	500 [AO]			9.4	11.7	17.7	17.2									
Total Kjeldahl Nitrogen(as N)		45.5		36	39.7	32.4										

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TH 4

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 4 17-Sep-08	TH 4 30-Apr-09	TH 4 1-Oct-09	TH 4 12-May-10	TH 4 9-Nov-10	TH 4 2-May-11	TH 4 21-Sep-11	TH 4 12-Apr-12	TH 4 22-Nov-12	TH 4 7-May-13	TH 4 26-Nov-13	TH 4 1-May-14	TH 4 4-Nov-14	TH 4 20-Apr-15	TH 4 3-Nov-15
Alkalinity(as CaCO3)	30 - 500 [OG]	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	660	DRY	DRY	DRY
Ammonia(as N)													12			
Calcium													200			
Chloride	250 [AO]												20			
Conductivity @25øC (µmho/cm)													1200			
Dissolved Organic Carbon(DOC)	5.0 [AO]												8.9			
Hardness(as CaCO3)	80-100 [OG]												600			
Iron	0.3 [AO]												ND			
Magnesium													25			
Manganese	0.05 [AO]												0.027			
Nitrate(as N)	10												ND			
Nitrite(as N)	1												0.05			
Orthophosphate(as P)													ND			
pH	6.5-8.5 [OG]												7.65			
Phenols													ND			
Phosphorus, Total (as P)													1.7			
Potassium													1.1			
Sodium	200 [AO]												0.46			
Sulphate	500 [AO]												6			
Total Kjeldahl Nitrogen(as N)													16			

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TH 5A

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 5A 7-Apr-93	TH 5A 4-Oct-93	TH 5A 13-Jun-94	TH 5A 19-Jun-95	TH 5A 30-Oct-95	TH5A 15-Nov-96	TH5A 19-Dec-97	TH5A 18-Dec-98	TH5A 18-Oct-01 007	TH5A 22-Oct-02 DRY	TH5A 11-Oct-03 DRY	TH5A 29-Sep-04	TH5A 21-Sep-05 DRY	TH5A 25-Sep-06 013	TH5A 9-Oct-07 DRY	TH5A 15-Apr-08 DRY	TH5A 17-Sep-08 DRY
Alkalinity(as CaCO3)	30 - 500 [OG]	254	241	248	239		263	259	181	154			300		230			
Ammonia(as N)		0.194	0.66	0.266	0.81		3.52	0.03	1.83	0.65			19.7		0.82			
Calcium		51.8	43.3	41.8	51.0	40.3	32.9	36.7	32.3	26.2			35.8		44			
Chloride	250 [AO]	2.5	3.6	4.4	4.6	9.4	2.77	2.88	9	9.1			6.8		9.6			
Conductivity @25øC (µmho/cm)		513	445	509	509	424	477	479	385	316			533		466			
Dissolved Organic Carbon(DOC)	5.0 [AO]	7.1	6.7	7.8	10.6	4.5	3	2.2	18.6				14.7		3.1			
Hardness(as CaCO3)	80-100 [OG]	257	223	215	254	194	196	208	170	139			195		192			
Iron	0.3 [AO]	0.06	0.12	<0.01	0.07	0.31	0.97	1.41	0.13	0.02			0.046		0.016			
Magnesium		31	27.8	26.8	30.8	22.6	27	28.2	21.7	18			25.6		20			
Manganese	0.05 [AO]			0.064	0.059	0.067	0.118	0.131	0.12				0.113		0.064			
Nitrate(as N)	10 d	0.2	0.2	4.1	6.5		0.3		0.41	0.6			0.3		5.8			
Nitrite(as N)	1 d	<0.01	0.12	0.26	0.33		0.12	0.03	0.04	<0.1			0.1		0.2			
Orthophosphate(as P)							<0.05		nd				0.24		<0.01			
pH	6.5-8.5 [OG]	8.18	8.11	8.13	8.1	8.36	7.59	7.65	7.95	7.95			7.38		7.6			
Phenols		0.001	0.0045	0.0078	0.0015	0.0015	0.018		0.002				0.008		<0.001			
Phosphorus, Total (as P)		0.006	0.01	0.42	0.02		0.22	2.3	0.02				1.97		5.31			
Potassium				1.2	2.19	2.49	2		3.8				7		2.3			
Sodium	200 [AO]			11.4	8.9	13.1	31.1	23.5	11.7	10.9			10.2		32.9			
Sulphate	500 [AO]			14.5	12.1		4.24	4.53	5.6	<1.0			2		4			
Total Kjeldahl Nitrogen(as N)		0.66	1.35	0.97	1.89			0.3	3.28	0.71			25.8		15.1			

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TH 5A

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH5A 30-Apr-09 DRY	TH5A 1-Oct-09	TH5A (11) 12-May-10	TH5A 9-Nov-10 DRY	TH5A 2-May-11	TH5A 21-Sep-11 DRY	TH5A 12-Apr-12	TH5A 23-Nov-12	TH5A 7-May-13 DRY	TH5A 26-Nov-13 DRY	TH5A 1-May-14	TH5A 4-Nov-14 DRY	TH5A 20-Apr-15	TH5A 3-Nov-15	TH5A 20-Apr-16	TH5A 26-Oct-16	TH5A 16-May-17	TH5A 7-Dec-17
Alkalinity(as CaCO3)	30 - 500 [OG]		256	181		221		223	242			240		200	200	210	180	210	270
Ammonia(as N)			1.14	0.05		0.07		0.05	0.06			1.5		0.084	0.3	0.071	1.4	0.11	0.079
Calcium			56.7	39.4		42.4		57.1	68.3			69		62	52	59	47	53	87
Chloride	250 [AO]		5.2	7.8		7.1		7.3	5.6			4		5	6.5	6.4	7.1	7	9.8
Conductivity @25øC (µmho/cm)			518	374		494		486	508			490		430	410	400	350	420	650
Dissolved Organic Carbon(DOC)	5.0 [AO]		2.3	1.1		1.2		1.6	2.5			1.6		1.4	1	0.83	1.5	0.94	1.3
Hardness(as CaCO3)	80-100 [OG]		234	182		200		231	256			260		240	200	220	180	210	350
Iron	0.3 [AO]		0.259	0.069		0.054		0.036	0.112			ND		<0.1	<0.1	<0.001	<0.001	<0.10	<0.10
Magnesium			22.4	20.3		22.9		21.4	20.7			21		20	18	19	14	19	23
Manganese	0.05 [AO]		0.125	0.058		0.031		0.104	0.097			0.28		0.058	0.13	<2.0	0.34	0.042	0.15
Nitrate(as N)	10 d		5.3	1.7		5.0		4.8	6.3			3.95		2.98	2.43	1.69	0.99	1.09	2.64
Nitrite(as N)	1 d					<0.1		<0.1	0.1			0.057		0.028	0.031	<0.010	0.226	0.027	<0.010
Orthophosphate(as P)			<0.01	<0.01		<0.01		<0.01	0.02			ND		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]		7.65	8.12		7.96		8.05	7.94			8.06		7.93	8.01	8.12	8.19	8.01	7.84
Phenols			0.005	<0.001		<0.001		<0.001	<0.001			ND		<0.0010	<0.001	<0.0010	0.0041	<0.0010	<0.0010
Phosphorus, Total (as P)			1.54	0.51		3.12		0.42	2.21			7		0.27	0.9	0.42	<0.001	2.8	<0.1
Potassium			0.7	0.7		1.1		0.7	0.8			0.74		0.77	0.66	0.68	0.83	0.68	0.7
Sodium	200 [AO]		2.2	5.4		4.6		2.9	3.2			0.84		2.3	2.2	2.4	2.5	2.5	1.9
Sulphate	500 [AO]		9	4		7		7	9			9		5	3.7	4	2.1	3.2	6.7
Total Kjeldahl Nitrogen(as N)			4.33	1.65		5.13		0.29	3.07			15		0.66	0.71	0.22	1.9	0.63	0.31

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TH 5A

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH5A 10-Apr-18	TH5A 15-Nov-18	TH5A 24-Apr-19	TH5A 20-Nov-19	TH5A 13-May-20	TH5A 12-Nov-20	TH5A 8-Apr-21	TH5A 7-Oct-21	TH5A 3-May-22 Dry	TH5A 29-Sep-22 No Sample	TH5A 23-Apr-23	TH5A 22-Nov-23
Alkalinity(as CaCO3)	30 - 500 [OG]	240	270	420	380	490	550	470	410			250	290
Ammonia(as N)		0.15	0.21	0.062	0.34	0.42	2.9	2.8	3.0			1.7	3.4
Calcium		58	66	120	93	120	120	99	88			56	74
Chloride	250 [AO]	11	21	92	110	130	110	100	88			62	45
Conductivity @25øC (µmho/cm)		460	560	1100	1100	1200	1300	1200	960			680	720
Dissolved Organic Carbon(DOC)	5.0 [AO]	1.1	4.7	7.9	36	12	8.5	7.2	5.2			3.5	4.1
Hardness(as CaCO3)	80-100 [OG]	240	280	520	420	540	520	460	430			280	340
Iron	0.3 [AO]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	<0.1
Magnesium		24	27	50	46	60	52	52	51			34	37
Manganese	0.05 [AO]	0.016	0.33	0.45	0.11	0.086	0.0021	0.044	0.016			0.0079	0.0077
Nitrate(as N)	10 d	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12			<0.10	0.19
Nitrite(as N)	1 d	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.034			0.012	0.124
Orthophosphate(as P)		<0.010	<0.010	<0.010	<0.010	0.23	<0.010	<0.010	<0.010			<0.010	<0.010
pH	6.5-8.5 [OG]	8.09	7.67	7.8	7.79	7.95	7.73	7.93	7.93			8.14	8.07
Phenols		<0.0010	<0.0010	0.0058	0.018	0.0078	0.0063	0.0017	0.0010			<0.0010	0.001
Phosphorus, Total (as P)		0.28	0.15	0.16	5.5	0.23	2.8	0.29	NV			0.13	<0.1
Potassium		0.64	0.63	0.9	2.1	3.2	3.6	3.2	3.9			2.9	4.2
Sodium	200 [AO]	2.6	7.5	52	61	73	66	63	53			28	24
Sulphate	500 [AO]	1.4	<1.0	<1.0	6.3	<1.0	<1.0	<1.0	<1.0			1.3	2.1
Total Kjeldahl Nitrogen(as N)		0.2	0.27	0.51	1.8	0.88	3.4	3.5	3.7			2	3.8

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 5B

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 5B 27-Apr-93	TH 5B 4-Oct-93	TH 5B 13-Jun-94	TH 5B 19-Jun-95	TH 5B 30-Oct-95	TH5B 15-Nov-96	TH5B 18-Dec-98	TH5B 21-Dec-00	TH5B 18-Oct-01	TH5B 22-Oct-02 DRY	TH5B 1-Oct-03 DRY	TH5B 29-Sep-04	TH5B 21-Sep-05 DRY	TH5B 25-Sep-06 DRY	TH5B 9-Oct-07 DRY	TH5B 15-Apr-08 DRY	TH5B 17-Sep-08 DRY	TH5B 30-Apr-09	TH5B 1-Oct-09 DRY	TH5B [(11)] 12-May-10	TH5B [(11)] 9-Nov-10
Alkalinity(as CaCO3)	30 - 500 [OG]	205	206	206	198	239	215	269	243	207			240								231	233
Ammonia(as N)		0.454	0.404	0.403	0.61	7.99	4	8.6	3.1	1.45			5.55						0.05		1.34	2.74
Calcium		32.8	33.5	28.6	33.6	34	42	36.4	34.6	29.6			35.1						42.8		39.8	39.2
Chloride	250 [AO]	2.1	2.2	2.4	1.9	2.6	6.91	3.7	2.5	3.3			2.5								1.5	1.7
Conductivity @25øC (µmho/cm)		480	400	416	409	488	405	504	433	398			450								440	442
Dissolved Organic Carbon(DOC)	5.0 [AO]	2.1	1.9	8	2.6	43	2.7	11	3.1				3.3								1.4	2.6
Hardness(as CaCO3)	80-100 [OG]	196	203	172	203	208	203	208	198	174			205						229		207	218
Iron	0.3 [AO]	0.06	0.07	0.02	0.45	3.95	0.736	2.25	0.79	0.83			0.05						0.008		0.319	0.065
Magnesium		27.7	28.9	24.5	29	29.9	23.6	28.3	27	24.3			28.5						29.6		26.1	29.1
Manganese	0.05 [AO]			0.086	0.073	0.068	0.102	0.16	0.089				0.066						0.02		0.121	0.084
Nitrate(as N)	10 d	2.2	<0.1	0.2	<0.1	<0.1	0.24	nd	1.5	<0.1			0.1								<0.1	<0.1
Nitrite(as N)	1 d	<0.01	<0.01	<0.01	0.01	0.01	0.22	nd	nd	<0.1			<0.1									<0.1
Orthophosphate(as P)							<0.05	nd	nd				0.01								<0.01	0.02
pH	6.5-8.5 [OG]	8.19	7.9	7.86	7.94	7.76	7.53	7.98	7.83	7.98			7.29								7.99	7.45
Phenols		0.003	0.0035	0.006	0.0069	0.269	0.077	0.021	nd				0.194						<0.001		<0.001	0.031
Phosphorus, Total (as P)		0.007	0.005	0.008	0.04	0.06	1.57	0.08					3.35						0.25		0.29	1.26
Potassium				1.2	1.35	3.17	3.3	3.3	2				1.8						1.2		1.5	1.2
Sodium	200 [AO]			11.1	8.1	8.5	9.73	19.1	13.2	9.5			7.4						7.8		9.3	6.4
Sulphate	500 [AO]			18.6	17.1	14.2	3.79	0.84	17.9	12.1			16								17	8
Total Kjeldahl Nitrogen(as N)		0.99	0.79	1.02	1.04	13.6	4.23	9.6	3.2	1.54			19.3						0.69		2.55	7.23

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 5B

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH5B 2-May-11	TH5B 21-Sep-11	TH5B 12-Apr-12	TH5B 23-Nov-12	TH5B 7-May-13 DRY	TH5B 26-Nov-13 DRY	TH5B 1-May-14	TH5B 4-Nov-14 DRY	TH5B 20-Apr-15	TH5B 3-Nov-15	TH5B 20-Apr-16	TH5B 26-Oct-16	TH5B 16-May-17	TH5B 7-Dec-17	TH5B 10-Apr-18	TH5B 15-Nov-18	TH5B 24-Apr-19	TH5B 20-Nov-19	TH5B 13-May-20	TH5B 12-Nov-20	TH5B 8-Apr-21	TH5B 7-Oct-21	TH5B 3-May-22 No Sample	TH5B 29-Sep-22 No Sample
Alkalinity(as CaCO3)	30 - 500 [OG]	215	208	212	215			220		200	200	210	200	200	210	210	210	200	210	220	210	230	220		
Ammonia(as N)		1.21	0.14	0.68	0.15			2.6		<0.050	0.15	0.1	0.05	<0.050	0.3	0.2	0.081	<0.050	0.05	0.07	0.051	0.12	0.17		
Calcium		38.8	37.9	38.3	38.7			43		41	35	42	35	110	38	37	37	40	40	45	41	45	45		
Chloride	250 [AO]	1.2	1.4	1.4	1.3			ND		2	1.8	1.4	<1.0	1.5	1.2	1.4	1.7	1.5	1.6	1.1	1.4	1.6	1.8		
Conductivity @25øC (µmho/cm)		442	434	427	405			440		430	410	430	410	410	420	420	430	420	420	440	440	460	430		
Dissolved Organic Carbon(DOC)	5.0 [AO]	1.1	1.2	0.9	2.9			1.8		1.1	0.81	0.92	1.3	1.3	1.6	1.2	0.91	0.87	0.65	0.64	0.98	0.89	0.74		
Hardness(as CaCO3)	80-100 [OG]	211	211	215	218			220		220	200	230	200	210	210	210	200	220	220	240	210	230	230		
Iron	0.3 [AO]	0.084	0.006	0.009	0.632			ND		<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
Magnesium		27.7	28.3	29.1	29.5			21		29	27	29	28	29	29	28	27	29	28	30	27	27	29		
Manganese	0.05 [AO]	0.074	0.051	0.027	0.052			0.1		0.012	0.047	0.081	<2.0	0.019	0.063	0.047	0.014	0.0039	0.09	0.13	0.2	0.12	0.12		
Nitrate(as N)	10 d	<0.1	<0.1	0.1	0.2			ND		0.25	<0.10	<0.1	<0.1	0.12	0.16	0.14	0.25	0.33	0.29	0.023	<0.10	<0.10	<0.10		
Nitrite(as N)	1 d	<0.1	<0.1	<0.1	<0.1			0.02		0.012	0.01	<0.01	<0.01	<0.0.010	0.025	<0.010	<0.010	<0.010	<0.010	<0.10	<0.010	<0.010	<0.010		
Orthophosphate(as P)		<0.01	<0.01	<0.01	0.02			ND		<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
pH	6.5-8.5 [OG]	7.84	7.91	8.05	7.98			8.07		7.99	8.03	8.09	8.25	8.15	8.15	8.1	7.99	8.16	8.03	8.07	8.02	7.98	7.99		
Phenols		<0.001	<0.001	<0.001	<0.001			ND		<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.001	<0.0010	<0.0010	0.0012		
Phosphorus, Total (as P)		0.53	0.25	0.12	4.35			4.6		0.15	0.35	2.8	<0.1	0.055	<0.1	0.22	0.024	0.057	0.043	0.82	0.07	0.33	NV		
Potassium		1.2	1.0	1	0.9			1.3		1.5	0.94	1	1	1.1	1.2	1.1	1.1	1	0.99	1.1	1.1	0.95	1.1		
Sodium	200 [AO]	7.3	7.3	7.3	7.1			7.4		7.8	7.1	7.7	7.1	7.6	7.6	7.4	7	7.5	7.6	7.8	7.1	7.4	7.6		
Sulphate	500 [AO]	18	21	23	21			22		26	23	27	21	21	22	25	24	21	24	23	23	22	20		
Total Kjeldahl Nitrogen(as N)		1.91	0.77	0.33	3.32			12		0.48	<0.50	0.57	0.23	0.25	0.41	0.29	0.12	0.1	0.13	0.18	0.24	0.28	0.28		

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 5B

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH5B 23-Apr-23	TH5B 22-Nov-23
Alkalinity(as CaCO3)	30 - 500 [OG]	210	240
Ammonia(as N)		0.074	0.41
Calcium		47	54
Chloride	250 [AO]	<1.0	<1.0
Conductivity @25øC (µmho/cm)		450	480
Dissolved Organic Carbon(DOC)	5.0 [AO]	1.1	1.8
Hardness(as CaCO3)	80-100 [OG]	240	260
Iron	0.3 [AO]	<0.1	<0.1
Magnesium		29	30
Manganese	0.05 [AO]	0.14	0.21
Nitrate(as N)	10 d	<0.10	<0.10
Nitrite(as N)	1 d	<0.010	0.023
Orthophosphate(as P)		<0.010	<0.010
pH	6.5-8.5 [OG]	8.15	7.91
Phenols		<0.0010	<0.0010
Phosphorus, Total (as P)		<0.020	<0.1
Potassium		1	1.3
Sodium	200 [AO]	7.1	7.7
Sulphate	500 [AO]	17	14
Total Kjeldahl Nitrogen(as N)		0.14	0.6

Historic Groundwater Quality at Test Well TH 6

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 6 27-Apr-93	TH 6 4-Oct-93	TH 6 13-Jun-94	TH 6 7-Nov-94	TH 6 19-Jun-95	TH 6 30-Oct-95	TH 6 27-May-96	TH 6 27-May-96 Replicate	TH 6 15-Nov-96	TH 6 9-May-97	TH 6 19-Dec-97	TH 6 13-May-98	TH 6 18-Dec-98	TH 6 11-Jul-00	TH 6 21-Dec-00	TH 6 11-Jul-01 001	TH 6 18-Oct-01 001
Alkalinity(as CaCO3)	30 - 500 [OG]	590	375	639	418	637	693	796	779	820	811	948	951	837	699	694	708	691
Ammonia(as N)		0.071	0.245	0.011	0.33	0.1	0.48	<0.05		0.17	0.16	0.05	nd	nd	0.09	0.06	0.03	0.02
Calcium		229	220	258	266	254	264	239	237	232	154	155	126	101	119	137	140	175
Chloride	250 [AO]	143	107	193	169	98.2	90	82.5	82.5	137	156	150	70.9	29.5	35.3	112	184	177
Conductivity @25øC (µmho/cm)		2790	2660	3370	3010	2960	2810	2880	2880	3120	3490	3680	3020	1980	1320	1340	2400	2240
Dissolved Organic Carbon(DOC)	5.0 [AO]	3.7	3.2	10.7	10.3	5.3	5.4	5.6		6.3	7.3	7.6	5.5	5.1	4	2.5		
Hardness(as CaCO3)	80-100 [OG]	1664	1546	1778	1880	1801	1748	2080	2080	2110	2430	2380	1910	1280	840	781	1073	1120
Iron	0.3 [AO]	0.07	0.09	0.01	0.04	0.03	0.05	0.021	0.021	0.037	0.034	0.05	0.067	0.03	0.11	0.09	0.02	<0.01
Magnesium		264	241	274	294	283	264	359		369	480	483	386	249	132	107	176	166
Manganese	0.05 [AO]			0.027	0.016	0.028	0.019	0.015	0.016	0.023	0.009	0.021	0.024	0.07	0.068	0.048		
Nitrate(as N)	10	0.3	0.8	1.1	1.3	1.6	1.6	1.63	1.63	2.71	2.31	0.77	0.39	0.12	nd	nd	0.8	1
Nitrite(as N)	1	<0.01	0.02	0.04	0.01	0.02	0.01	<0.03	<0.03	<0.03		0.3	nd	nd	nd	nd	<0.1	<0.1
Orthophosphate(as P)								<0.05		<0.05		0.5	nd	nd	nd	nd		
pH	6.5-8.5 [OG]	7.34	7.37	7.08	7.07	7.21	7.24	7.24	7.25	6.97	7.3	7.15	7.13	7.89	7.2	7.46	7.06	7.13
Phenols		<0.001	0.003	0.002	<0.001	0.0042	0.0042	0.001		<0.001			0.02	0.001	0.002	nd		
Phosphorus, Total (as P)		0.007	0.007	0.009	0.007	0.04	0.05	0.274		0.33	56.8	61.2	0.02	nd	nd			
Potassium				19.3	23	24.9	24.4	17.9		27.6			59.1	46.7	21	21		
Sodium	200 [AO]			71.5	79	55	49.4	43.1		70.9	77.6	92.3	56.5	21.1	21.1	23.1	129	130
Sulphate	500 [AO]			1402	1083	1190	1085	1130		1160	1570	1510	1100	493	150	138	321	314
Total Kjeldahl Nitrogen(as N)		0.52	0.8	0.6	0.43	0.51	0.57	0.69		0.74	1.58	0.61	0.45	0.47	0.65	0.2	0.31	0.27

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 6

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 6 (Dup) 18-Oct-01 002	TH 6 18-Jun-02 005	TH 6 (Dup) 18-Jun-02 006	TH 6 22-Oct-02 004	TH 6 (Dup) 22-Oct-02 005	TH 6 20-May-03 007	TH 6 1-Oct-03 002	TH 6 5-May-04 005	TH 6 29-Sep-04 013	TH 6 (dup) 29-Sep-04 014	TH 6 6-Apr-05 002	TH 6 21-Sep-05 003	TH 6 4-Apr-06 008	TH 6 (dup) 4-Apr-06 009	TH 6 25-Sep-06 012
Alkalinity(as CaCO3)	30 - 500 [OG]	713	745	740	640	639	672	651	588	582	573	580	532	520	525	543
Ammonia(as N)		0.02	0.1	0.11	0.09	0.08	<0.01	0.02	0.04	0.05	0.05	0.02	0.02	<0.01	<0.01	<0.01
Calcium		140	97.9	122	172	170	181	210	194	216	216	314	250	327	329	292
Chloride	250 [AO]	176	61	61.1	56.3	56.3	78.7	70.5	83	106	106	141	104	118	118	97.3
Conductivity @25øC (µmho/cm)		2260	1847	1841	1660	1660	1730	1650	1380	1600	1590	2130	1870	2160	2130	1980
Dissolved Organic Carbon(DOC)	5.0 [AO]		2.2	2.1	2.2	2.5	2.0	4	1.6	1.7	1.7	2.2	12.6	6.3	9.2	7
Hardness(as CaCO3)	80-100 [OG]	1069	869	1090	1129	1124	1011	973	925	930	929	1240	962	1300	1310	1190
Iron	0.3 [AO]	0.02	<0.01	<0.01	<0.02	<0.02	0.68	0.007	<0.005	<0.005	<0.005	0.014	<0.005	<0.005	<0.005	<0.005
Magnesium		175	152	191	170	170	136	109	107	94.7	94.6	110	82	118	118	113
Manganese	0.05 [AO]		0.049	0.047	0.08	0.08	0.06	0.069	0.054	0.085	0.085	0.127	0.101	0.153	0.154	0.14
Nitrate(as N)	10	0.9	0.7	0.7	0.4	0.4	0.2	0.3	0.9	0.7	0.7	0.7	3.6	4.8	4.8	5.5
Nitrite(as N)	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2
Orthophosphate(as P)			<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
pH	6.5-8.5 [OG]	7.02	7.06	7.11	8.09	8.08	7.46	8.04	7.5	7.11	7.1	7.08	7.15	7.64	7.57	6.88
Phenols			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)			0.13	<0.1	0.51	0.51	1.09	0.21	0.49	0.33	0.28	0.06	1.89	0.06	0.08	0.32
Potassium			17.9	17.4	16.8	17.2	21.0	18.5	13.8	11.5	11.4	10.6	7.4	7.3	7.4	6.3
Sodium	200 [AO]	120	47.6	49.1	27.1	27.6	42.9	37.3	29.1	30.4	30.4	53.5	42.2	48.7	48.7	42.5
Sulphate	500 [AO]	318	301	302	280	279	364	362	280	320	330	590	390	690	680	620
Total Kjeldahl Nitrogen(as N)		0.23	0.28	0.3	0.3	0.26	<0.05	0.18	0.35	0.16	0.2	0.25	0.48	0.37	0.37	0.48

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 6

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 6 13-Apr-07 004	TH 6 9-Oct-07 003	TH 6 15-Apr-08 004	TH 6 (dup) 15-Apr-08 005	TH 6 17-Sep-08 004	TH 6 30-Apr-09	TH 6 (dup) 30-Apr-09 Duplicate #1	TH 6 1-Oct-09	TH 6 12-May-10	TH 6 (dup) 12-May-10 Duplicate #2	TH 6 9-Nov-10	TH 6 2-May-11	TH 6 (dup) 2-May-11 Duplicate #1	TH 6 21-Sep-11	TH 6 (dup) 21-Sep-11 Duplicate #1
Alkalinity(as CaCO3)	30 - 500 [OG]	520	528	525	550	575	588	571	573	602	601	592	576	573	546	527
Ammonia(as N)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.02	0.01	0.21	0.28	0.27	0.29	0.27
Calcium		321	248	275	280	224	289	289	180	166	189	148	147	147	140	137
Chloride	250 [AO]	121	91.3	116	117	94.5	124	124	93.6	79.9	80.9	59.8	49.8	49.7	62.4	62.0
Conductivity @25øC (µmho/cm)		2250	1660	2230	2240	1970	2210	2210	1910	1950	1890	1650	1600	1600	1560	1540
Dissolved Organic Carbon(DOC)	5.0 [AO]	2.6	1.9	2	2	1.6	1.7	1.5	2.2	2.3	2.3	2.8	2.4	2.3	2.7	2.7
Hardness(as CaCO3)	80-100 [OG]	1330	998	1180	1200	934	1240	1240	807	889	877	700	675	671	641	631
Iron	0.3 [AO]	<0.005	0.016	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Magnesium		128	92	120	122	90.7	125	125	87.1	94.2	93.2	80.3	74.6	74.2	71.1	69.9
Manganese	0.05 [AO]	0.167	0.159	0.204	0.207	0.181	0.173	0.172	0.156	0.141	0.139	0.143	0.138	0.137	0.146	0.143
Nitrate(as N)	10	5.4	2.9	3	3	2.8	1.4	1.4	0.8	0.5	0.5	0.2	0.2	0.2	0.1	0.2
Nitrite(as N)	1	<0.1	<0.1									<0.1	<0.1	<0.1	<0.1	<0.1
Orthophosphate(as P)		<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	<0.01
pH	6.5-8.5 [OG]	7.01	6.85	6.65	6.7	6.9	6.49	6.64	6.99	7.46	7.42	6.82	7.46	7.44	7.37	7.42
Phenols		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)		0.41	0.04	0.25	0.23	0.18	0.67	0.67	1.43	0.38	0.39	0.41	0.07	0.08	0.56	0.41
Potassium		6.5	6.6	9.5	9.7	21.6	49.1	49	55.4	83.2	82.3	89.4	80.3	79.6	74.3	73.0
Sodium	200 [AO]	47.3	38	49.3	49.1	38.8	53.9	54	35.2	43.2	42.7	48.2	45.7	45.4	49.0	48.1
Sulphate	500 [AO]	720	540	690	680	490	610	600	430	440	440	303	228	225	190	192
Total Kjeldahl Nitrogen(as N)		0.41	0.3	0.3	0.29	0.29	0.53	0.41	0.18	0.25	0.26	0.42	0.29	0.34	0.48	0.50

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 6

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 6 12-Apr-12	TH 6 (dup) 12-Apr-12 Duplicate #1	TH 6 22-Nov-12	TH 6 7-May-13	TH 6 26-Nov-13	TH 6 1-May-14	TH 6 4-Nov-14	TH 6 20-Apr-15	TH 6 3-Nov-15	TH6 20-Apr-16	TH 6 26-Oct-16	TH6 16-May-17	TH 6 7-Dec-17	TH6 10-Apr-18	TH 6 15-Nov-18
Alkalinity(as CaCO3)	30 - 500 [OG]	545	535	527	510	590	630	700	**770**	780	**770**	740	740	800	840	820
Ammonia(as N)		0.20	0.20	0.11	0.5	0.53	1.6	3.1	2	2.1	2.9	4.3	4.7	9.1	8.6	12
Calcium		133	136	114	110	100	110	130	120	110	120	100	110	120	140	130
Chloride	250 [AO]	93.8	94.6	86.8	78	69	76	94	86	73	59	70	73	85	72	73
Conductivity @25øC (µmho/cm)		1520	1520	1350	1300	1300	1400	1600	1700	1600	1600	1600	1700	1700	1800	1700
Dissolved Organic Carbon(DOC)	5.0 [AO]	4.1	4.3	4.8	4.8	6	6.7	6.5	7.2	7.3	6.2	6	6.5	6.3	7.1	6.9
Hardness(as CaCO3)	80-100 [OG]	608	616	523	490	470	540	720	**730**	**670**	**710**	**670**	700	740	790	760
Iron	0.3 [AO]	<0.005	<0.005	0.009	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<100	<0.1	<0.10	<0.10	<0.1	<0.1
Magnesium		66.7	67.4	57.7	55	52	68	97	110	98	100	100	100	110	110	110
Manganese	0.05 [AO]	0.151	0.151	0.311	0.16	0.41	0.23	0.34	**0.32**	**0.34**	**0.46**	**0.48**	0.57	1.1	1.1	0.91
Nitrate(as N)	10	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	0.19	1.25	2.43
Nitrite(as N)	1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.042	<0.10	0.017	<0.010	0.031
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	0.027	<0.010	0.013
pH	6.5-8.5 [OG]	7.68	7.79	7.72	7.82	7.85	7.84	7.78	7.69	7.86	7.82	7.83	7.67	7.63	7.66	7.4
Phenols		<0.001	<0.001	<0.001	0.0011	<0.001	<0.001	<0.001	0.0031	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)		0.31	0.32	0.79	0.027	<0.02	<0.02	0.062	0.029	0.044	<0.02	<0.1	<0.020	<0.1	0.091	0.033
Potassium		75.6	76.2	74.3	64	58	58	69	61	52	66	57	57	57	62	59
Sodium	200 [AO]	58.1	59.0	66.3	68	51	64	84	82	70	69	62	60	62	69	61
Sulphate	500 [AO]	156	157	99	59	35	27	34	34	37	46	54	78	78	100	95
Total Kjeldahl Nitrogen(as N)		0.51	0.51	0.79	0.98	1.1	2.1	3.5	2.5	2.9	3.5	5.3	7.1	10	9.3	12

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 6

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH6 24-Apr-19	TH 6 20-Nov-19	TH6 13-May-20	TH 6 12-Nov-20	TH6 8-Apr-21	TH 6 7-Oct-21	TH6 3-May-22	TH 6 29-Sep-22	TH6 23-Apr-23	TH 6 22-Nov-23
Alkalinity(as CaCO3)	30 - 500 [OG]	820	740	810	880	800	800	820	780	750	740
Ammonia(as N)		17	12	17	35	17	17	17	19	18	17
Calcium		140	120	140	130	140	160	150	160	160	150
Chloride	250 [AO]	75	41	72	80	47	90	45	80	93	52
Conductivity @25øC (µmho/cm)		2000	1600	1700	1900	1700	1800	1800	1800	1800	1700
Dissolved Organic Carbon(DOC)	5.0 [AO]	7.9	5.8	6.4	9.2	7.9	8.0	8.4	8.4	10	7.6
Hardness(as CaCO3)	80-100 [OG]	850	670	780	740	730	820	770	780	780	740
Iron	0.3 [AO]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Magnesium		120	94	100	98	94	100	94	95	94	87
Manganese	0.05 [AO]	1.7	1.4	2.2	2.2	2.6	2.8	3.0	2.9	3.3	3
Nitrate(as N)	10	<0.10	1.68	0.49	0.18	<0.10	1.57	0.49	1.36	1.57	0.21
Nitrite(as N)	1	<0.010	0.015	<0.010	0.079	0.180	0.096	0.013	0.016	<0.010	<0.010
Orthophosphate(as P)		<0.010	<0.010	<0.010	1.2	0.022	0.018	<0.010	<0.010	0.017	<0.010
pH	6.5-8.5 [OG]	7.66	7.45	7.83	7.65	8.08	7.68	7.53	7.56	7.89	7.48
Phenols		<0.0010	<0.0010	0.0012	0.066	<0.0010	<0.0010	NV	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)		0.047	0.042	0.072	2.1	0.26	NV	NV	0.19	0.041	<0.1
Potassium		68	65	68	61	58	64	60	60	62	61
Sodium	200 [AO]	68	49	56	58	57	62	53	51	59	46
Sulphate	500 [AO]	130	100	98	82	100	100	130	110	94	79
Total Kjeldahl Nitrogen(as N)		18	14	16	34	17	18	NV	18	17	16

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 7

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 7 27-Apr-93	TH 7 4-Oct-93	TH 7 13-Jun-94	TH 7 7-Nov-94	TH 7 19-Jun-95	TH 7 30-Oct-95	TH 7 27-May-96	TH 7 15-Nov-96	TH 7 15-Nov-96 Replicate	TH 7 9-May-97	TH 7 19-Dec-97	TH 7 13-May-98	TH 7 18-Dec-98	TH 7 11-Jul-00	TH 7 21-Dec-00
Alkalinity(as CaCO3)	30 - 500 [OG]	296	283	312	292	335	327	292	347		308	501	535	563	732	722
Ammonia(as N)		0.056	0.104	0.011	1.2	0.03	0.36	<0.05	0.06		0.16	0.04	0.41	2.21	12.6	11.8
Calcium		74.7	78.4	66.6	93.3	72.9	85.9	79	92	91	69.7	79.8	90.8	107	121	139
Chloride	250 [AO]	5.4	5.5	4.3	12.7	9.3	20.8	18.6	38.8		25.5	37	30.6	53.7	34.5	24.9
Conductivity @25øC (µmho/cm)		640	747	682	717	632	693	548	677		583	937	960	1010	1260	1100
Dissolved Organic Carbon(DOC)	5.0 [AO]	2.4	0.5	7.3	8.9	8.7	3.6	1.6	3.9		2.8	5.2	3.7	5.3	8.1	4.4
Hardness(as CaCO3)	80-100 [OG]	329	354	282	383	308	341	306	369		297	498	491	534	643	601
Iron	0.3 [AO]	0.05	0.07	<0.01	<0.01	<0.01	0.08	0.069	<0.005	<0.005	0.016	0.056	0.064	0.07	0.05	0.01
Magnesium		34.6	38.3	28.1	36.4	30.6	30.6	26.4	34.9	34.6	29.4	72.7	64.3	64.6	82.6	61.7
Manganese	0.05 [AO]			<0.003	<0.003	<0.003	0.042	0.017	<0.005	<0.005			0.856	0.9	1.47	1.06
Nitrate(as N)	10	2.1	1.2	0.5	0.3	0.4	0.2	0.27	0.07		2.31	0.03	nd	0.2	0.4	0.5
Nitrite(as N)	1	0.07	<0.01	<0.01	0.02	<0.01	0.02	<0.03	<0.03				nd	nd	nd	nd
Orthophosphate(as P)								<0.05	<0.05				nd	nd	nd	nd
pH	6.5-8.5 [OG]	7.66	7.55	7.45	7.4	7.7	7.71	7.56	7.41		7.6	52.3	7.57	8	7.12	7.46
Phenols		<0.001	-	0.0114	<0.001	<0.001	0.0039	<0.001	<0.001				0.02	0.001	0.001	nd
Phosphorus, Total (as P)		0.005	0.005	0.006	0.002	0.03	0.03	0.29	1				0.04	0.01	nd	
Potassium				0.5	0.61	0.5	0.68	<1	<1	<1			3.8	11.9	23	31
Sodium	200 [AO]			2.3	8.7	7.3	11.5	9.45	21.5	21.2	19.2	31.1	18.5	36.9	38.4	21.9
Sulphate	500 [AO]			18.4	5.4	5.8	3.3	3.33	0.91		1.93	2.5	9	8.7	12.6	9.6
Total Kjeldahl Nitrogen(as N)		0.34	0.33	0.21		0.25	0.73	0.3	0.4		0.85	0.45	0.88	2.8	14.2	17

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 7

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 7 11-Jul-01	TH 7 18-Oct-01	TH 7 18-Jun-02	TH 7 22-Oct-02	TH 7 20-May-03	TH 7 20-May-03	TH 7 1-Oct-03	TH 7 5-May-04	TH 7 (dup) 5-May-04	TH 7 29-Sep-04	TH 7 (dup) 29-Sep-04	TH 7 6-Apr-05	TH 7 (dup) 6-Apr-05	TH 7 21-Sep-05	TH 7 (dup) 21-Sep-05
Alkalinity(as CaCO3)	30 - 500 [OG]	652	662	555	615	555	543	462	504	504	540	619	444	442	619	615
Ammonia(as N)		5.66	10.6	4.42	6.68	3.24	3.30	6.17	7.82	8.05	2.35	2.37	2.51	2.48	2.43	2.43
Calcium		137		119	172	124	125	91.6	115	116	133	132	120	120	192	195
Chloride	250 [AO]	17.1	17.3	9.7	21.8	15.3	15.4	10.9	12.9	13.5	8.1	7.9	4.4	4.5	10.1	10.1
Conductivity @25øC (µmho/cm)		1194	1244	1045	1160	1010	1020	918	770	775	907	905	880	882	1110	1110
Dissolved Organic Carbon(DOC)	5.0 [AO]			2.1	3.6	2.0	2.0	5	2	2.2	1.7	1.8	1.3	1.3	18.4	19.7
Hardness(as CaCO3)	80-100 [OG]	626		496	637	507	510	421	494	497	505	499	464	467	672	684
Iron	0.3 [AO]	<0.01	<0.01	<0.01	0.1	0.28	0.28	0.005	0.01	0.005	<0.005	<0.005	0.008	<0.005	<0.005	<0.005
Magnesium		69.0		48.3	50.3	48.0	48.1	46.8	50.2	50.4	41.8	41.3	40.2	40.4	46.9	47.7
Manganese	0.05 [AO]			0.667	0.89	0.77	0.78	0.667	0.7	0.699	0.692	0.638	0.524	0.535	0.783	0.795
Nitrate(as N)	10	4.2		2.8	0.6	12.1	12.1	3.5	12	12.4	3.1	3.2	10.6	10.6	1.3	1.3
Nitrite(as N)	1	0.1		0.1	0.2	0.2	0.3	0.3	<0.1	0.2	<0.1	<0.1	0.1	0.2	<0.1	<0.1
Orthophosphate(as P)				<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
pH	6.5-8.5 [OG]	7.13	7.06	6.89	7.82	7.30	7.37	8.1	7.58	7.57	7.17	7.21	7.24	7.23	7.15	7.04
Phenols			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)			0.02	0.54	1.76	0.66	0.65	0.25	0.2	0.19	0.09	0.27	0.35	0.48	0.31	0.28
Potassium				22.5	21.7	18.7	18.7	24.7	24.5	24.6	18.2	17.9	14.2	14.3	19.3	19.8
Sodium	200 [AO]	20.7		11.3	22	19.7	19.7	10.1	11.5	11.6	9.5	9.2	5.4	5.5	11.7	11.9
Sulphate	500 [AO]	9.7		9.4	5	7	7	8	9	9	5	5	7	7	4	4
Total Kjeldahl Nitrogen(as N)		5.69		5.2	7.47	4.22	3.97	7.58	7.93	8.1	2.89	2.95	2.59	2.56	3.28	3.33

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 7

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 7 4-Apr-06	TH 7 25-Sep-06	TH 7 (dup) 25-Sep-06	TH 7 13-Apr-07	TH 7 9-Oct-07	TH 7 (dup) 9-Oct-07	TH 7 15-Apr-08	TH 7 17-Sep-08	TH 7 (dup) 17-Sep-08	TH 7 30-Apr-09	TH 7 1-Oct-09	TH 7 12-May-10	TH 7 9-Nov-10	TH 7 (dup) 9-Nov-10 Dup#2	TH 7 2-May-11	TH 7 21-Sep-11	TH 7 (dup) 21-Sep-11 Duplicate #2
Alkalinity(as CaCO3)	30 - 500 [OG]	605	681	672	468	660	700	490	448	450		599	475	482	484	511	578	577
Ammonia(as N)		5.63	0.49	0.48	2.24	3.1	3.08	2.79	0.87	0.86	1.13	1.38	1.73	0.16	0.16	1.89	0.27	0.26
Calcium		160	175	170	127	155	155	131	116	115	145	143	134	137	139	149	162	163
Chloride	250 [AO]	12.9	17.3	17.3	5.5	14	14	6.6	5.3	5		9.6	5.6	4.3	4.3	4.8	6.8	6.8
Conductivity @25øC (µmho/cm)		1050	1090	1090	920	1060	1060	967	794	806		1060	918	875	869	1000	1110	1090
Dissolved Organic Carbon(DOC)	5.0 [AO]	9.4	8.2	12.9	2	4.1	4.3	2.2	1.7	1.7	1.5	2.7	1.9	1.8	2.0	2.0	3.7	3.5
Hardness(as CaCO3)	80-100 [OG]	610	627	611	477	558	557	489	423	419	526	505	470	487	492	515	569	570
Iron	0.3 [AO]	<0.005	<0.005	<0.005	<0.005	0.01	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Magnesium		51	46.1	45.3	38.7	41.4	41.2	39.2	32.4	32.3	39.8	36	32.6	35	35.3	34.8	40.0	39.5
Manganese	0.05 [AO]	0.965	0.995	0.994	0.562	0.875	0.857	0.6	0.508	0.501	0.396	0.391	0.508	0.773	0.783	0.405	0.451	0.467
Nitrate(as N)	10	4	0.9	0.9	12.4	1	1	7	3	3		1	6.8	2.0	2.0	5.2	0.6	0.6
Nitrite(as N)	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1							<0.1	<0.1	0.1	<0.1	<0.1
Orthophosphate(as P)		<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	<0.01	<0.01
pH	6.5-8.5 [OG]	7.61	6.79	6.78	7.18	7.01	6.99	6.92	7	6.99		6.94	7.49	6.76	6.75	7.41	7.20	7.20
Phenols		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)		0.27	0.24	0.21	0.36	0.08	0.08	0.18	0.2	0.22	0.27	0.15	0.05	0.13	0.11	0.10	0.34	0.35
Potassium		27.1	13.5	13.4	22.2	21	20.9	21.3	13.2	13.1	13	14.4	9.5	10.5	10.6	15.7	11.1	10.9
Sodium	200 [AO]	16.5	17.6	17.5	7	16.7	16.9	10.7	5.9	5.8	5.1	10	5.9	4.5	4.6	4.9	9.0	8.9
Sulphate	500 [AO]	4	4	4	6	6	6	6	7	7		11	10	5	5	9	7	7
Total Kjeldahl Nitrogen(as N)		6.37	0.96	0.91	2.7	3.83	3.72	3.49	1.27	1.27	1.43	1.87	2.1	0.29	0.36	2.29	0.63	0.62

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 7

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 7 12-Apr-12	TH 7 22-Nov-12	TH 7 22-Nov-12 Duplicate #1	TH 7 7-May-13	TH 7 26-Nov-13	TH 7 1-May-14	TH 7 4-Nov-14	TH 7 20-Apr-15	TH 7 3-Nov-15	TH7 20-Apr-16	TH 7 26-Oct-16	TH7 16-May-17	TH 7 7-Dec-17	TH7 10-Apr-18	TH 7 15-Nov-18
Alkalinity(as CaCO3)	30 - 500 [OG]	454	605	630	470	400	630	460	**420**	**510**	**430**	**450**	570	540	580	540
Ammonia(as N)		0.41	7.16	6.51	1.6	<0.05	1.6	<0.05	0.069	2.2	0.52	0.61	3.8	0.066	0.32	1.9
Calcium		130	166	165	140	120	120	140	150	150	130	130	150	150	170	150
Chloride	250 [AO]	4.5	7.3	7.7	6	4	7.6	5	7	7.8	8.7	8.5	7.0	3.4	7.1	7.3
Conductivity @25øC (µmho/cm)		873	1060	1070	940	800	1400	890	820	970	820	870	1100	960	1000	960
Dissolved Organic Carbon(DOC)	5.0 [AO]	1.5	3.9	3.1	1.8	1.3	6.7	1.7	1.8	1.8	1.3	1.9	1.7	1.3	1.8	2.1
Hardness(as CaCO3)	80-100 [OG]	479	571	569	480	420	540	470	**520**	**510**	**460**	**450**	550	550	580	510
Iron	0.3 [AO]	<0.005	<0.005	<0.005	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.1
Magnesium		37.6	37.9	37.9	34	30	29	34	36	34	31	32	40	40	39	34
Manganese	0.05 [AO]	0.317	0.793	0.811	0.6	0.12	0.69	0.097	0.047	0.11	0.037	0.0059	0.14	0.15	0.1	0.19
Nitrate(as N)	10	5.8	1.5	1.5	5.9	6.7	ND	3.79	5.67	3.69	4.37	4.25	5.48	4.83	3.73	2.63
Nitrite(as N)	1	<0.1	<0.1	<0.1	0.016	0.041	ND	<0.1	<0.10	0.014	<0.010	0.024	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.01	0.012	ND	<0.01	<0.10	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]	7.65	7.41	7.49	7.54	7.89	7.84	7.73	7.83	7.71	7.88	7.67	7.49	7.76	7.53	7.47
Phenols		<0.001	<0.001	<0.001	0.001	<0.001	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)		0.13	0.38	0.43	<0.02	<0.02	ND	0.029	0.045	0.072	0.023	<0.1	<0.020	<0.1	0.053	<0.020
Potassium		9.6	17.1	17.0	15	6.2	7.9	6.1	5.8	9.2	11	7.8	18	5.1	9.6	9.2
Sodium	200 [AO]	3.7	8.6	8.6	6.3	4.5	3.3	4.7	4.1	7.1	3.9	5	6.4	3.7	6.1	7.3
Sulphate	500 [AO]	8	10	10	10	9	27	8	7	9.2	5.8	6.4	8.8	7.1	9	8.1
Total Kjeldahl Nitrogen(as N)		0.53	7.29	7.76	2.3	0.22	2.1	0.19	0.23	2.6	0.79	0.9	5.4	<0.20	1	1.7

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 7

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH7 24-Apr-19	TH 7 20-Nov-19	TH7 13-May-20	TH 7 12-Nov-20	TH7 8-Apr-21	TH 7 7-Oct-21	TH7 3-May-22	TH 7 29-Sep-22	TH7 23-Apr-23	TH 7 22-Nov-23
Alkalinity(as CaCO3)	30 - 500 [OG]	470	520	560	530	520	460	550	430	540	500
Ammonia(as N)		3.2	1.6	2.1	0.31	0.069	0.075	2.3	<0.050	0.2	2.5
Calcium		180	150	180	150	180	140	160	130	180	150
Chloride	250 [AO]	6.2	7	13.0	7.4	130.0	10	18	11	64	16
Conductivity @25øC (µmho/cm)		1100	980	1000	980	1400	860	1100	870	1300	1000
Dissolved Organic Carbon(DOC)	5.0 [AO]	1.6	1.6	2	1.7	1.9	1.4	1.8	1.8	2.4	2.1
Hardness(as CaCO3)	80-100 [OG]	600	520	640	520	650	510	560	460	640	540
Iron	0.3 [AO]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Magnesium		39	36	44	36	47	36	36	36	45	40
Manganese	0.05 [AO]	0.13	0.02	0.079	0.11	0.15	0.13	0.01	0.021	0.022	0.26
Nitrate(as N)	10	6.18	6.83	12.9	3.54	10.2	5.51	5.93	6.96	8.47	<0.10
Nitrite(as N)	1	<0.010	0.024	0.011	<0.010	0.035	0.058	0.016	<0.010	<0.010	0.143
Orthophosphate(as P)		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.71
pH	6.5-8.5 [OG]	7.59	7.56	7.76	7.65	7.79	7.68	7.51	7.79	7.74	7.5
Phenols		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NV	<0.0010	<0.0010	0.013
Phosphorus, Total (as P)		<0.020	<0.020	<0.020	0.033	<0.020	NV	NV	<0.020	<0.020	0.8
Potassium		12	9.1	9.6	5.2	5.6	5.4	8	3.1	6.2	8.8
Sodium	200 [AO]	5.5	5.8	8	5.8	46	7.3	18	15	35	15
Sulphate	500 [AO]	8.3	7.9	12	9.1	14	12	12	16	20	25
Total Kjeldahl Nitrogen(as N)		2.9	2	2.1	0.39	<0.50	0.27	NV	0.25	1	3.6

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH-8

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 8 27-Apr-93	TH 8 4-Oct-93	TH 8 13-Jun-94	TH 8 7-Nov-94	TH 8 19-Jun-95	TH 8 30-Oct-95	TH 8 27-May-96	TH 8 15-Nov-96	TH 8 9-May-97	TH 8 19-Dec-97	TH 8 13-May-98	TH 8 18-Dec-98	TH 8 11-Jul-00	TH 8 21-Dec-00	TH 8 11-Jul-01	TH 8 (Dup 11-Jul-01
Alkalinity(as CaCO3)	30 - 500 [OG]	829	1387	913	812	788	810	759	741	703	723	736	757	774	795	757	769
Ammonia(as N)		4.7	13.6	18.9	19.7	17.8	23.3	12.6	17.6		13	14.1	18.2	6	11	12.6	10.1
Calcium		88.5	55.4	78	95.6	96.4	92.5	121	128	139	138	147	135	194	190	203	205
Chloride	250 [AO]	75.1	75.3	60.2	53.6	43.8	52.5	33.2	35.1	45.2	15.2	21.4	24.3	19.4	21	16.2	16.3
Conductivity @25øC (µmho/cm)		1630	1700	1700	1710	1550	1550.0	1290	1220	1250	1160	1290	1250	1200	1160	1343	1347
Dissolved Organic Carbon(DOC)	5.0 [AO]	24	22.5	32	>20	16.3	20	10.3	10.3	9.6	7.2	8.5	15.9	18.6	10.6		
Hardness(as CaCO3)	80-100 [OG]	751	677	630	724	669	631	639	628	598	624	600	601	644	656	691	702
Iron	0.3 [AO]	0.48	0.07	4.41	4.43	11	1.91	2.72	4.18	1.6	2.16	4.35	0.08	0.01	1.91	3.1	2.05
Magnesium		128	130	105	117	104	97.0	81.8	75.9	62	67.7	56.4	64.3	38.9	44.2	44.6	46.2
Manganese	0.05 [AO]			1.06	1.39	1.31	1.89	1.76	1.69	1.91	2.4	2.14	2.95	0.921	1.55		
Nitrate(as N)	10	0.3	0.1	0.2	<0.1	0.1	0.1	0.18	0.64		0.61	nd	nd	nd	nd	<0.1	<0.1
Nitrite(as N)	1	0.02	0.01	<0.01	<0.01	0.01	<0.01	<0.03	<0.03			nd	nd	nd	nd	<0.1	<0.1
Orthophosphate(as P)								<0.05	<0.05			nd	nd	nd	nd		
pH	6.5-8.5 [OG]	7.38	7.51	7.17	7.07	7.12	7.35	7.18	6.97	6.97	0.32	6.8	7.89	6.89	7.16	7.25	7.27
Phenols		0.02	0.019		<0.001	0.012	0.0128	0.004	<0.001	3	0.001	0.025	0.005	0.005	0.003		
Phosphorus, Total (as P)		0.019	0.017	0.017	0.206	0.03	0.04	0.386	0.73		35.4	0.04	0.01	nd			
Potassium				29.9	47.6	49.4	49.6	43.4	36.8			32.2	40.8	10	18		
Sodium	200 [AO]			48.6	49.3	38.1	39.7	30	30.9	29.2	19.4	19.1	19	21.7	14.7	19	19.6
Sulphate	500 [AO]			5.0	0.9	2.3	1.7	3.72	1.61	1.95	1.88	1	1.2	2.7	6.7	4.1	4.1
Total Kjeldahl Nitrogen(as N)		7.6	17.2	20.6	33.7	24.3	26.3	14	20.8	29.8	15.5	15	18.4	10.3	17	12.7	13.9

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH-8

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 8 18-Oct-01	TH 8 18-Jun-02	TH 8 22-Oct-02	TH 8 20-May-03	TH 8 1-Oct-03	TH 8 5-May-04	TH 8 29-Sep-04	TH 8 6-Apr-05	TH 8 21-Sep-05	TH 8 4-Apr-06	TH 8 25-Sep-06	TH 8 13-Apr-07	TH 8 9-Oct-07 DRY	TH 8 15-Apr-08	TH 8 17-Sep-08	TH 8 30-Apr-09	TH 8 1-Oct-09
Alkalinity(as CaCO3)	30 - 500 [OG]	768	760	723	639	495	738	744	750	713	665	708	678		639	655	705	698
Ammonia(as N)		14.4	15.1	18.2	16.7	11	8.17	7.7	14	13.2	15.2	9.77	8.45		10.3	8.6	7.01	6.38
Calcium		166	160	197	139	128	214	213	203	226	175	191	187		169	172	220	175
Chloride	250 [AO]	15.5	14.7	10.9	8.5	4.3	10	9.8	9.8	9.1	7.4	5.4	6.8		6.5	5.7	5.2	5.3
Conductivity @25øC (µmho/cm)		1365	1315	1300	1100	904	1320	1190	1320	1290	1140	1150	1150		1150	1090	1200	1230
Dissolved Organic Carbon(DOC)	5.0 [AO]		10.7	180	5.3	14	5.8	7.2	6.3	35.4	17.7	16	6.3		7.5	7.7	6.7	7.3
Hardness(as CaCO3)	80-100 [OG]	600	573	699	523	474	715	696	671	736	607	641	617		563	565	719	584
Iron	0.3 [AO]	2.09	3.31	1.37	1.74	0.017	2.02	1.98	0.901	0.67	1.16	0.251	0.133		0.321	0.044	0.151	0.57
Magnesium		44.9	42.1	50.3	42.6	37.5	43.9	39.9	39.7	41.3	41.1	39.7	36.5		34.3	33	40.9	35.9
Manganese	0.05 [AO]		2.24	1.9	1.94	0.959	1.71	1.55	1.58	1.57	2.13	1.58	0.715		1.52	1	0.832	1.09
Nitrate(as N)	10	1	<0.1	0.2	0.1	1	0.7	0.4	0.3	0.3	0.4	1.6	1.7		0.3	0.7	0.9	1
Nitrite(as N)	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					
Orthophosphate(as P)			<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	<0.01
pH	6.5-8.5 [OG]	7.22	6.61	7.77	7.23	7.75	7.36	6.91	6.86	7.02	7.54	6.92	6.91		6.62	6.8	6.42	6.73
Phenols			0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)			0.11	1.24	1.05	3.63	1.35	1.36	2.45	0.7	1.26	0.67	1.16		1.11	0.68	0.61	1.62
Potassium			17.9	26.3	25.7	16.3	18.4	16.2	20.1	21.6	22.9	16.9	9.9		16.7	11.2	8.5	10.6
Sodium	200 [AO]	17.3	21.9	14	11.7	4.7	8.8	12.3	8.6	11.3	8.8	7.2	4.5		6.1	4.8	3.4	5
Sulphate	500 [AO]	<1.0	4.8	1	2	8	5	4	12	13	11	9	4		13	15	16	25
Total Kjeldahl Nitrogen(as N)		14.9	17.9	20.8	18.7	15.3	10.5	9.75	10.1	14.8	15.6	11.4	9.37		11.8	9.4	7.79	7.93

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH-8

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 8 12-May-10	TH 8 9-Nov-10	TH 8 2-May-11	TH 8 21-Sep-11	TH 8 12-Apr-12	TH 8 22-Nov-12	TH 8 7-May-13	TH 8 26-Nov-13	TH 8 1-May-14	TH 8 4-Nov-14	TH 8 20-Apr-15	TH 8 3-Nov-15	TH8 20-Apr-16	TH 8 26-Oct-16	TH8 16-May-17	TH 8 7-Dec-17	TH8 10-Apr-18	TH 8 15-Nov-18
Alkalinity(as CaCO3)	30 - 500 [OG]	652	658	666	664	689	623	440	380	510	470	**490**	**520**	370	**460**	**540**	**550**	**500**	**560**
Ammonia(as N)		6.46	9.56	11.0	13.4	13.9	10.0	6.2	2.8	0.72	1.1	0.64	0.8	0.055	0.93	1.1	0.5	0.32	0.2
Calcium		178	183	200	198	205	175	140	120	160	160	160	160	130	140	160	160	150	170
Chloride	250 [AO]	4.3	4.0	4.3	4.6	5.3	4.4	6	2	2	1	2	2.5	1.3	1.2	2.2	1.5	1.4	1.4
Conductivity @25øC (µmho/cm)		1190	1180	1230	1290	1250	1100	840	710	920	870	900	950	630	820	980	940	860	950
Dissolved Organic Carbon(DOC)	5.0 [AO]	6.4	8.4	7.8	7.5	7.2	10.6	2.9	1.8	1.8	2.2	2.4	1.8	0.73	3.2	2.5	1.9	1.6	2.4
Hardness(as CaCO3)	80-100 [OG]	612	613	646	651	674	584	460	390	530	530	**520**	**520**	**420**	**460**	**530**	**520**	**490**	**570**
Iron	0.3 [AO]	0.076	1.16	2.60	2.41	3.58	1.53	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.1
Magnesium		36.5	38.1	35.8	38.1	39.0	35.4	28.0	24	29.0	30	29.0	31	24	27	31.0	31	30.0	37
Manganese	0.05 [AO]	0.779	1.42	1.17	1.11	1.02	0.816	0.56	0.19	0.51	0.72	**0.82**	**0.87**	0.029	**0.6**	**0.66**	**0.56**	0.25	0.11
Nitrate(as N)	10	1.5	0.5	0.2	0.5	0.2	0.9	0.91	1.3	0.58	0.57	0.22	0.59	0.38	0.81	0.26	0.37	0.4	0.86
Nitrite(as N)	1		<0.1	<0.1	<0.1	<0.1	<0.1	0.14	0.26	<0.1	0.072	0.048	0.142	0.011	0.159	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.10	<0.010	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]	7.21	6.47	7.65	7.03	7.31	7.37	7.79	7.87	7.71	7.61	7.58	7.75	7.92	7.9	7.73	7.75	7.83	7.6
Phenols		<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0053	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)		0.62	1.72	0.90	0.29	0.46	0.41	0.63	2.8	0.13	0.41	0.14	0.12	0.11	<0.1	0.28	<0.1	0.67	0.094
Potassium		8.3	13.5	12.3	13.5	13.5	12.1	6.6	3.1	3.7	4	2.7	3.2	1.2	2.5	3.2	2.3	1.7	1.6
Sodium	200 [AO]	2.7	4.5	4.8	6.2	6.0	4.4	2.2	1.2	1.5	1.3	1.2	1.3	0.74	1.4	1.3	1.5	1.0	1.2
Sulphate	500 [AO]	20	23	12	12	12	8	6	3	10	8	11	14	2.8	9	10	7.5	5.8	8.5
Total Kjeldahl Nitrogen(as N)		8.03	11.0	11.8	13.4	4.5	10.7	6.6	3.6	0.89	1.1	0.91	1.3	0.13	1.3	1.7	0.67	0.55	0.3

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH-8

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH8 24-Apr-19	TH 8 20-Nov-19	TH8 13-May-20	TH 8 12-Nov-20	TH8 8-Apr-21	TH 8 7-Oct-21	TH 8 3-May-22	TH 8 29-Sep-22	TH 8 23-Apr-23	TH 8 22-Nov-23
Alkalinity(as CaCO3)	30 - 500 [OG]	**510**	**580**	**550**	**550**	**450**	**530**	**520**	**580**	**480**	**520**
Ammonia(as N)		0.056	0.2	0.6	<0.050	<0.050	0.11	0.06	<0.050	<0.050	<0.050
Calcium		170	170	180	160	140	170	160	210	160	180
Chloride	250 [AO]	2.1	2.1	1.7	2.4	1.9	2.9	3.8	8.5	6.9	8.4
Conductivity @25øC (µmho/cm)		960	1000	960	970	810	930	970	1100	940	1000
Dissolved Organic Carbon(DOC)	5.0 [AO]	1.9	2.2	2.5	2.2	0.94	1.7	2.4	4.1	3	3.2
Hardness(as CaCO3)	80-100 [OG]	**580**	**580**	**600**	**540**	**450**	**570**	**540**	**690**	**540**	**620**
Iron	0.3 [AO]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Magnesium		35.0	37	35.0	36	27.0	34	34	43	34	42
Manganese	0.05 [AO]	0.3	**0.37**	**0.56**	**0.96**	0.067	0.17	0.062	0.095	0.018	0.23
Nitrate(as N)	10	0.54	1.25	1.21	1.91	0.32	0.91	1.10	1.73	1.27	1.74
Nitrite(as N)	1	0.021	0.052	0.014	<0.010	0.013	0.017	<0.010	<0.010	<0.010	0.017
Orthophosphate(as P)		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]	7.76	7.72	7.83	7.76	7.72	7.65	7.73	7.65	7.8	7.65
Phenols		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NV	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)		0.054	0.17	0.21	0.25	0.022	NV	0.060	0.15	0.022	<0.1
Potassium		1.7	2	2.2	1.9	1.5	2.0	1.9	2.4	2.3	2.7
Sodium	200 [AO]	1.5	1.6	1.5	1.2	1.1	1.5	1.7	4.3	5.7	7.5
Sulphate	500 [AO]	6.1	10	8.3	12	4.1	19	28	42	21	26
Total Kjeldahl Nitrogen(as N)		0.22	0.36	0.73	0.11	0.18	0.29	0.21	0.25	0.34	0.35

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TH 9

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 9 27-Apr-93	TH 9 4-Oct-93	TH 9 13-Jun-94	TH 9 7-Nov-94	TH 9 19-Jun-95	TH 9 30-Oct-95	TH 9 27-May-96	TH 9 15-Nov-96	TH 9 9-May-97	TH 9 19-Dec-97	TH 9 13-May-98	TH 9 18-Dec-98	TH 9 11-Jul-00	TH 9 21-Dec-00	TH 9 11-Jul-01 Not Found	TH 9 18-Jun-02	TH 9 22-Oct-02	TH 9 20-May-03
Alkalinity(as CaCO3)	30 - 500 [OG]	275	291	322	329	295	299	296	287	270	329	308	292	289	279		309	285	315
Ammonia(as N)		0.136	0.14	0.144	0.15	0.28	1.18	0.62	1.59	10.4	1.22	0.44	1.28	0.49	0.9		0.47	0.5	0.08
Calcium		73.6	82	72.6	90.2	81.3	80.9	82.9	79.2	77.8	77.4	81.8	82.9	88.3	82		78.6	86	83.0
Chloride	250 [AO]	2.4	1.6	1.8	2.4	2.6	5.1	3.03	2.28	2.66	2.88	2.1	2.6	1.9	2		2.7	1.9	2.1
Conductivity @25øC (µmho/cm)		516	536	581	579	587	575	527	500	496	530	536	538	540	506		565	546	537
Dissolved Organic Carbon(DOC)	5.0 [AO]	15.8	13.8	23	>20	15.5	14.3	20.6	22.5	20	20.1	22.9	15.7	23.9	23		17.8	89	12.9
Hardness(as CaCO3)	80-100 [OG]	296	320	288	356	324	318	328	309	295	305	314	325	342	318		310	330	322
Iron	0.3 [AO]	0.26	0.1	0.24	1.48	0.03	1.34	2.15	1.71	1.54	1.74	2.57	1.18	0.72	0.83		1.96	2.32	0.81
Magnesium		27.1	28	25.9	31.6	29.2	28.2	29.4	26.4	24.6	27.1	26.7	28.5	29.5	27.5		27.5	28	27.9
Manganese	0.05 [AO]			0.273	0.44	0.263	0.301	0.372	0.318	0.362	0.333	0.359	0.33	0.285	0.291		0.322	0.3	0.22
Nitrate(as N)	10	0.3	0.3	0.2	0.1	<0.1	0.1	0.1	0.17		0.63	0.11	0.05	nd	0.4		< 0.1	0.1	0.2
Nitrite(as N)	1	<0.01	0.01	0.01	0.01	<0.01	0.01	<0.03	0.1		0.07	nd	nd	nd	nd		< 0.1	< 0.1	<0.1
Orthophosphate(as P)								<0.05	<0.05			nd	nd	nd	nd		< 0.01	0.01	<0.01
pH	6.5-8.5 [OG]	7.8	7.74	7.54	7.44	7.64	7.67	7.33	7.41	6.97	7.41	7.36	7.83	7.38	7.67		7.14	8.39	7.70
Phenols		0.02	0.003	0.0046	0.005	0.0034	0.131	<0.001	0.006	1		0.019	0.001	0.004	nd		< 0.001	< 0.001	<0.001
Phosphorus, Total (as P)		0.008	0.006	0.008	0.011	<0.01	0.09	0.082	0.27			0.13	0.02	nd			1.05	0.99	2.55
Potassium				0.4	0.64	0.53	1.01	1.5	<1			nd	1.6	nd	nd		< 1.0	< 1.0	<0.4
Sodium	200 [AO]			0.5	0.7	0.8	0.9	0.85	1.02	0.75	0.72	0.77	0.8	9	1.1		< 1.0	< 1.0	1.0
Sulphate	500 [AO]			22.0	26.3	49.8	33.4	14.1	8.76	14	9.8	6.6	14	27.8	22.8		5.1	3	4
Total Kjeldahl Nitrogen(as N)		0.83	0.81	0.82	1.03	0.77	2.41	0.96	1.97	14.3	1.86	1.4	1.77	3.3	2.4		1.55	2.69	5.6

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TH 9

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 9 1-Oct-03	TH 9 5-May-04	TH 9 29-Sep-04	TH 9 6-Apr-05	TH 9 21-Sep-05	TH 9 4-Apr-06	TH 9 25-Sep-06	TH 9 13-Apr-07	TH 9 (dup) 13-Apr-07	TH 9 9-Oct-07	TH 9 15-Apr-08	TH 9 17-Sep-08	TH 9 30-Apr-09	TH 9 1-Oct-09
Alkalinity(as CaCO3)	30 - 500 [OG]	330	303	300	326	295	330	318	304	300	286	290	290	266	292
Ammonia(as N)		0.34	0.26	0.34	0.19	0.3	0.19	0.23	0.15	0.15	0.16	0.19	0.27	0.15	0.23
Calcium		83.2	90.1	81.2	87.3	83.5	90.6	87.2	85.8	85.8	78.4	85.1	80.4	90.2	72.1
Chloride	250 [AO]	2.1	2.1	2.2	2.4	2.5	2.3	2.7	2.7	2.6	3.1	2.7	3	3	3.3
Conductivity @25øC (µmho/cm)		613	654	498	579	563	579	544	531	542	526	563	540	540	572
Dissolved Organic Carbon(DOC)	5.0 [AO]	28	16.3	15.2	19.6	20.5	22.1	23.8	19	19.1	20	20.8	19.9	18.3	15.1
Hardness(as CaCO3)	80-100 [OG]	338	347	317	343	321	353	339	336	336	308	330	310	343	287
Iron	0.3 [AO]	1.89	0.826	1.82	1.72	1.15	1.21	1.65	0.437	0.487	0.532	0.574	1.02	0.189	0.392
Magnesium		31.7	29.7	27.8	30.3	27.3	30.7	29.5	29.6	29.5	27.1	28.5	26.5	28.7	26
Manganese	0.05 [AO]	0.321	0.285	0.303	0.327	0.239	0.252	0.35	0.113	0.119	0.131	0.194	0.285	0.09	0.215
Nitrate(as N)	10	0.1	<0.1	0.2	0.1	0.1	0.1	0.1	<0.1	<0.1	0.2	<0.1	<0.1	0.1	0.1
Nitrite(as N)	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1				
Orthophosphate(as P)		<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
pH	6.5-8.5 [OG]	8.43	8.03	7.65	7.53	7.66	8.14	7.14	7.43	7.48	6.99	7.14	7.39	6.93	7.27
Phenols		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)		0.48	0.99	0.33	0.27	0.22	0.17	0.1	0.22	0.22	0.2	0.12	0.06	0.4	0.36
Potassium		0.4	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.4
Sodium	200 [AO]	1	0.9	0.8	0.8	0.9	0.9	0.9	1.2	1	1.1	1.4	1	1	0.9
Sulphate	500 [AO]	11	28	19	11	9	9	12	19	18	20	16	26	25	28
Total Kjeldahl Nitrogen(as N)		1.69	2.42	1.16	1.34	0.9	1.01	1.06	1.08	1.12	1.06	0.41	0.91	1.08	1.08

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TH 9

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 9 12-May-10	TH 9 9-Nov-10	TH 9 2-May-11	TH 9 21-Sep-11	TH 9 12-Apr-12	TH 9 22-Nov-12	TH 9 7-May-13	TH 9 26-Nov-13	TH 9 1-May-14	TH 9 4-Nov-14	TH 9 20-Apr-15	TH 9 3-Nov-15	TH9 20-Apr-16	TH 9 26-Oct-16	TH9 16-May-17	TH 9 7-Dec-17	TH9 10-Apr-18	TH 9 15-Nov-18
Alkalinity(as CaCO3)	30 - 500 [OG]	341	317	333	272	292	287	320	280	270	270	270	290	310	400	270	290	270	280
Ammonia(as N)		0.18	0.3	0.21	0.24	0.22	0.25	0.3	0.058	0.11	0.82	0.11	0.25	0.12	27	0.5	0.095	0.092	0.16
Calcium		87.5	89	83.9	78.1	81.8	80.9	160	76	73	71	76	67	87	76	72	68	68	72
Chloride	250 [AO]	2.3	2.5	2.0	3.2	2.7	3.2	3	3	2	3	2	3.6	2.7	4.9	3.0	2.6	2.9	3.8
Conductivity @25øC (µmho/cm)		616	592	573	565	546	528	550	510	500	500	500	530	550	750	530	510	490	500
Dissolved Organic Carbon(DOC)	5.0 [AO]	26.9	31.3	23.1	17.8	20.3	17.9	23	23	20	18	**19**	**19**	**23**	**23**	1.2	**22**	**17**	13
Hardness(as CaCO3)	80-100 [OG]	340	351	329	307	323	319	320	300	290	280	300	260	**340**	300	290	270	270	280
Iron	0.3 [AO]	0.68	2.73	1.06	2.25	2.13	2.83	0.42	0.71	0.16	0.63	0.15	0.41	0.21	0.46	0.014	0.69	0.21	0.65
Magnesium		29.4	31.3	29.1	27.1	28.9	28.4	28	26	26	26	26	24	30	27	26	25	25	24
Manganese	0.05 [AO]	0.202	0.372	0.303	0.299	0.312	0.149	0.26	0.92	0.098	0.26	0.051	0.23	0.0031	**0.36**	0.17	0.16	0.0039	0.15
Nitrate(as N)	10	<0.1	0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	ND	<0.10	<0.10	<0.10	0.11	<0.50	0.35	0.3	<0.50	0.16
Nitrite(as N)	1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	0.024	ND	<0.010	<0.010	0.011	<0.010	0.097	0.06	0.011	<0.050	0.012
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.010	0.021	<0.010	0.41	0.068	0.041	0.038	0.026
pH	6.5-8.5 [OG]	7.68	7.02	7.69	7.64	7.83	7.86	8.1	8.06	8.01	7.99	7.96	7.96	8.17	8.01	7.9	7.92	8.00	7.93
Phenols		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	0.001	<0.001	<0.0010	0.028	<0.0010	<0.0020	<0.0010	<0.0010
Phosphorus, Total (as P)		0.17	0.11	0.10	0.14	0.12	0.39	0.41	0.087	0.66	0.21	0.76	0.73	0.43	0.14	0.7	0.1	0.26	0.22
Potassium		0.2	0.3	0.5	0.3	0.2	0.3	0.32	0.33	0.28	0.32	0.23	0.37	0.33	3.4	0.6	0.37	0.31	0.31
Sodium	200 [AO]	1	0.8	0.9	1.4	0.9	1.2	0.95	0.92	0.87	1	0.98	1.1	1	2.4	0.97	0.9	0.83	1
Sulphate	500 [AO]	5	7	8	21	7	10	<1	<1	ND	<1	<1	2.8	<1	<1	<1.0	<1.0	<1.0	4.6
Total Kjeldahl Nitrogen(as N)		1.12	1.22	1.08	0.86	0.77	1.39	1.8	2.4	2.4	0.8	1.2	1	0.57	27	1.2	0.59	0.45	0.39

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TH 9

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH9 24-Apr-19	TH 9 20-Nov-19	TH9 13-May-20	TH 9 12-Nov-20	TH9 8-Apr-21	TH 9 7-Oct-21	TH9 3-May-22	TH 9 29-Sep-22	TH9 23-Apr-23	TH 9 22-Nov-23
Alkalinity(as CaCO3)	30 - 500 [OG]	300	290	310	300	310	300	300	290	300	320
Ammonia(as N)		0.14	0.85	0.23	0.28	0.078	0.053	<0.050	<0.050	<0.050	5.4
Calcium		84	74	89	77	83	82	81	82	84	82
Chloride	250 [AO]	3.4	4.2	2.9	3.6	3.7	4.0	6.7	6.4	4.5	<10
Conductivity @25øC (µmho/cm)		560	540	560	540	560	530	560	540	580	640
Dissolved Organic Carbon(DOC)	5.0 [AO]	**16**	**17**	**18**	**21**	**19**	**19**	**19**	**16**	**16**	**18**
Hardness(as CaCO3)	80-100 [OG]	330	300	350	300	320	310	310	310	330	230
Iron	0.3 [AO]	0.38	0.77	0.5	2.4	0.17	1.8	0.14	0.27	0.12	1.7
Magnesium		29	27	31	26	27	26	27	27	29	31
Manganese	0.05 [AO]	0.19	0.23	0.3	0.25	0.023	0.15	0.0035	0.025	0.012	**0.33**
Nitrate(as N)	10	<0.10	<0.10	0.14	<0.10	0.16	0.17	0.15	0.24	0.16	1.27
Nitrite(as N)	1	0.024	0.052	<0.010	0.015	<0.010	0.029	<0.010	0.011	<0.010	0.78
Orthophosphate(as P)		<0.010	0.023	0.017	0.041	<0.010	0.010	<0.010	<0.010	<0.010	<0.10
pH	6.5-8.5 [OG]	7.99	7.92	8.02	7.91	8.05	7.90	8.04	8.09	8.09	7.67
Phenols		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NV	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)		0.24	0.37	0.091	0.16	0.3	NV	NV	0.098	0.058	<0.1
Potassium		0.3	0.5	0.42	0.31	0.25	0.37	0.25	0.30	0.31	1.20
Sodium	200 [AO]	1.1	1.1	1.1	0.86	0.82	0.87	0.80	0.93	1.30	1.5
Sulphate	500 [AO]	<5.0	7	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	2.9	<10
Total Kjeldahl Nitrogen(as N)		0.5	1.5	0.56	0.7	0.51	0.57	NV	0.45	0.39	5.9

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 10

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 10 27-Apr-93	TH 10 4-Oct-93	TH 10 13-Jun-94	TH 10 7-Nov-94	TH 10 19-Jun-95	TH 10 30-Oct-95	TH 10 27-May-96	TH 10 15-Nov-96	TH 10 9-May-97	TH 10 19-Dec-97	TH 10 13-May-98	TH 10 18-Dec-98	TH 10 11-Jul-00	TH 10 21-Dec-00	TH 10 11-Jul-01	TH 10 18-Oct-01	TH 10 18-Jun-02
Alkalinity(as CaCO3)	30 - 500 [OG]	209	206	212	218	236	230	239	238	237	251	238	283	282	309	308	304	372
Ammonia(as N)		0.083	0.084	0.019	0.21	<0.05	0.38	<0.05	0.07	0.08	0.04	nd	0.03	0.06	0.04	0.05	0.02	<0.01
Calcium		60.5	72.4	56.1	71.4	63.7	76.1	75.9	81.4	76.9	82.1	79.2	93.7	90.9	90.4	92.6	92.3	102
Chloride	250 [AO]	50.3	58.3	35.6	56	19.9	65.9	85.6	4.58	73.1	66.5	46.6	90.7	59.1	57.8	50.3	81	79
Conductivity @25øC (µmho/cm)		557	566	519	587	510	655	666	598	668	650	625	783	685	639	734	811	877
Dissolved Organic Carbon(DOC)	5.0 [AO]	0.5	0.4	13.3	6.9	9.6	9.9	1.7	0.9	1.7	1	0.5	1.6	3	1.1			<0.5
Hardness(as CaCO3)	80-100 [OG]	225	265	208	256	236	270	272	288	276	299	284	337	333	326	343	334	409
Iron	0.3 [AO]	0.05	0.07	<0.01	0.02	0.02	<0.01	0.087	0.022	0.006	0.02	0.006	0.04	0.06	nd	0.01	0.01	<0.01
Magnesium		18	20.3	16.5	18.8	18.6	19.4	20.2	20.4	20.2	22.9	21	25.1	25.7	24.3	27.2	25	37.5
Manganese	0.05 [AO]			<0.003	0.013	<0.003	0.007	0.061	0.031	0.038		0.014	nd	0.022	nd			<0.005
Nitrate(as N)	10 d	0.9	0.2	0.4	0.1	0.5	0.1	0.16	0.35		0.49	0.31	0.58	1.9	1.2	1.4	1.2	2
Nitrite(as N)	1 d	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.03	0.2			nd	nd	nd	nd	<0.1	<0.1	<0.1
Orthophosphate(as P)								<0.05	<0.05			nd	nd	nd	nd			<0.01
pH	6.5-8.5 [OG]	7.81	7.82	7.71	7.65	7.81	7.87	7.79	7.53	7.65	7.8	7.6	8.18	7.56	7.88	7.63	7.61	7.32
Phenols		0.0015	<0.001	0.0012	0.0134	<0.001	0.0053	<1	<1			0.017	0.001	0.002	nd			<0.001
Phosphorus, Total (as P)		0.006	0.008	0.008	0.004	<0.01	0.04	0.017	<0.01			0.01	nd	nd				<0.1
Potassium				0.6	0.71	0.49	0.68	<1	<1			nd	1.7	nd	nd			1.5
Sodium	200 [AO]			10.6	29.0	11.5	29.9	43.4	22.8	45	20.2	21.7	37.4	31.8	24.2	26.6	29.3	28.3
Sulphate	500 [AO]			12.6	9.9	11.5	16.5	15.3	17.5	52	17.3	32.3	15	15.8	8.8	12.9	10.6	13.1
Total Kjeldahl Nitrogen(as N)		0.31	0.33	0.15	0.17	0.18	0.23	0.21	0.2	0.64		0.11	0.25	0.74	0.43	0.37	0.53	0.13

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 10

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 10 22-Oct-02	TH 10 20-May-03	TH 10 1-Oct-03	TH 10 5-May-04	TH 10 29-Sep-04	TH 10 27-Apr-05	TH 10 21-Sep-05	TH 10 4-Apr-06	TH 10 25-Sep-06	TH 10 13-Apr-07	TH 10 9-Oct-07	TH 10 15-Apr-08	TH 10 17-Sep-08	TH 10 30-Apr-09	TH 10 1-Oct-09	TH 10 12-May-10
Alkalinity(as CaCO3)	30 - 500 [OG]	294	339	393	519	290	316	315	360	348	354	327	452	352	469	337	319
Ammonia(as N)		0.02	<0.01	0.01	0.08	0.07	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Calcium		103	97.7	115	140	93.4	100	99.2	114	105	112	105	123	101	117	82.4	81.1
Chloride	250 [AO]	83.2	85.6	68.1	38.5	95.3	71.3	68.9	82.3	83	67.2	102	51.4	38.4	26.9	35.7	21.8
Conductivity @25øC (µmho/cm)		827	802	868	731	744	790	784	879	806	793	854	947	729	931	725	661
Dissolved Organic Carbon(DOC)	5.0 [AO]	59	<0.5	4	2.1	0.5	<0.5	5.6	3.9	2.6	1.2	3.4	1.1	0.9	1.5	0.9	0.9
Hardness(as CaCO3)	80-100 [OG]	368	363	422	535	365	381	358	417	376	412	381	465	381	442	322	306
Iron	0.3 [AO]	0.07	0.18	0.158	0.016	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	<0.005	0.028	<0.005	<0.005	<0.005
Magnesium		26.9	28.8	32.7	45.1	32	31.8	26.8	32.5	27.9	32.4	29.1	38.6	31.4	36.1	28.1	25
Manganese	0.05 [AO]	<0.01	<0.01	0.015	0.004	0.006	<0.001	0.002	<0.001	0.003	<0.001	0.002	<0.001	0.009	0.003	0.003	<0.001
Nitrate(as N)	10 d	0.5	1.3	0.6	0.3	0.8	1.3	0.4	1.3	0.7	1.1	0.5	0.5	1.1	0.6	1.0	1.0
Nitrite(as N)	1 d	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					
Orthophosphate(as P)		<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	<0.01	<0.01
pH	6.5-8.5 [OG]	8.22	7.65	8.39	7.76	7.55	7.57	7.63	7.86	7.12	7.46	7.08	6.99	7.21	6.79	7.21	7.76
Phenols		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)		0.04	0.02	<0.01	0.02	0.01	<0.01	0.02	0.02	<0.01	0.02	<0.01	0.01	0.03	0.13	0.02	0.01
Potassium		<0.4	0.7	0.9	0.7	0.7	0.7	0.7	0.9	1	1	1.1	1	1.1	0.9	1.4	1.1
Sodium	200 [AO]	41.8	36.8	32.3	27.1	25.7	31.8	31.6	42.9	35.3	32.9	43.2	35.5	23.7	17.2	18.6	14.8
Sulphate	500 [AO]	7	9	9	12	9	10	8	11	10	11	10	15	11	17	8	8
Total Kjeldahl Nitrogen(as N)		0.47	0.09	<0.05	0.31	0.1	<0.05	0.06	0.08	0.07	0.2	<0.05	0.08	0.25	0.92	0.14	<0.05

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 10

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 10 9-Nov-10	TH 10 2-May-11	TH 10 21-Sep-11	TH 10 12-Apr-12	TH 10 22-Nov-12	TH 10 7-May-13	TH 10 26-Nov-13	TH 10 1-May-14	TH 10 4-Nov-14	TH 10 20-Apr-15	TH 10 3-Nov-15	TH 10 20-Apr-16	TH 10 26-Oct-16	TH 10 16-May-17	TH 10 7-Dec-17	TH 10 15-Nov-18
Alkalinity(as CaCO3)	30 - 500 [OG]	330	467	343	508	367	460	360	410	300	270	330	370	370	**430**	350	330
Ammonia(as N)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	0.063	0.13	<0.050	<0.050	<0.050	0.058	0.33	0.13	0.053
Calcium		92.2	134	95.0	139	115	160	100	120	130	85	87	110	97	120	86	88
Chloride	250 [AO]	16.3	19.6	14.7	20.4	25.6	24	24	24	18	21	21	19	20	25	16	20
Conductivity @25øC (µmho/cm)		675	934	718	991	745	960	750	830	630	580	660	740	730	870	680	650
Dissolved Organic Carbon(DOC)	5.0 [AO]	1.3	1.4	1.5	1.4	2.3	1.6	1.1	1.3	0.69	1.3	0.67	1.1	1.9	3.8	0.6	0.81
Hardness(as CaCO3)	80-100 [OG]	345	496	357	529	427	590	370	430	340	310	**330**	**390**	**370**	**430**	320	**330**
Iron	0.3 [AO]	<0.005	<0.005	0.008	0.007	0.008	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1
Magnesium		27.9	39.2	29.1	44.0	33.8	49.0	29	34.0	33	25.0	27	31	31	34.0	26	26
Manganese	0.05 [AO]	<0.001	0.001	0.006	0.006	0.002	0.0065	0.0027	0.001	0.094	<0.002	0.0036	0.026	<0.002	0.1	0.19	<0.002
Nitrate(as N)	10 d	0.8	0.6	0.8	0.3	0.7	<0.1	0.99	0.5	1.15	0.74	0.34	0.34	0.24	0.13	0.6	0.46
Nitrite(as N)	1 d	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	ND	0.023	<0.01	<0.01	<0.01	<0.01	0.015	<0.010	<0.010
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.012	ND	0.012	<0.01	<0.01	<0.01	<0.01	<0.010	0.022	<0.010
pH	6.5-8.5 [OG]	7.23	7.84	7.69	7.88	7.72	7.87	8.06	7.88	8	7.75	7.9	8.03	8.11	7.93	7.9	7.96
Phenols		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	ND	<0.001	<0.001	<0.001	<0.001	<0.001	0.0026	<0.0010	<0.0010
Phosphorus, Total (as P)		0.02	0.01	0.04	0.06	0.02	0.046	<0.02	0.084	0.025	0.056	0.021	<0.02	<0.1	0.04	<0.1	0.074
Potassium		0.9	1.1	1.1	1.4	1.4	1.9	1.7	2	5.9	1.4	1.3	1.9	2.1	3.6	2.1	2.3
Sodium	200 [AO]	10.1	15.1	10.3	14.1	10.8	16	13	12	4.6	8.4	11	12	11	15	9.5	9.3
Sulphate	500 [AO]	8	18	9	26	11	31	11	17	6	6	6.3	7.9	6.4	7.7	6	4.7
Total Kjeldahl Nitrogen(as N)		0.11	<0.05	0.18	<0.05	0.11	0.61	0.11	0.67	<0.10	0.13	<0.50	0.14	0.27	1.4	0.13	<0.10

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 10

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 10 24-Apr-19	TH 10 20-Nov-19	TH 10 13-May-20	TH 10 12-Nov-20	TH 10 8-Apr-21	TH 10 7-Oct-21	TH 10 3-May-22	TH 10 29-Sep-22	TH 10 23-Apr-23	TH 10 22-Nov-23
Alkalinity(as CaCO3)	30 - 500 [OG]	340	400	340	430	440	390	360	130	270	200
Ammonia(as N)		0.18	0.071	0.071	0.12	0.056	<0.050	0.30	0.22	0.069	<0.050
Calcium		110	100	100	110	130	130	110	40	81	100
Chloride	250 [AO]	24	26	23	30	36	38	33	13	24	19
Conductivity @25øC (µmho/cm)		760	780	680	850	920	810	770	310	590	460
Dissolved Organic Carbon(DOC)	5.0 [AO]	1.6	1.3	0.88	1.3	1.5	2.3	1.5	2.0	2.1	2.5
Hardness(as CaCO3)	80-100 [OG]	**390**	**390**	**360**	**410**	**470**	**440**	**410**	140	300	230
Iron	0.3 [AO]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Magnesium		31	32	28	32	35	31	29	11	22	17
Manganese	0.05 [AO]	0.072	0.035	0.046	0.053	<0.002	0.015	0.17	0.026	0.05	0.013
Nitrate(as N)	10 d	0.32	0.25	0.4	0.93	1.68	1.5	0.58	1.8	0.76	0.78
Nitrite(as N)	1 d	<0.010	<0.010	<0.010	<0.010	<0.010	0.035	0.010	0.020	0.023	<0.010
Orthophosphate(as P)		0.02	<0.010	<0.010	0.025	0.019	0.029	0.011	0.13	0.02	0.03
pH	6.5-8.5 [OG]	7.9	7.97	8.04	7.9	7.86	7.88	7.73	7.83	8.04	7.74
Phenols		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NV	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)		0.057	0.071	<0.020	0.05	0.094	NV	NV	0.067	0.068	<0.1
Potassium		2.2	2.8	2.2	2.7	2.7	2.4	3.1	1.6	2.7	2.4
Sodium	200 [AO]	17	16	12	20	20	18	23	7.2	14	11
Sulphate	500 [AO]	4.8	6.1	5.5	7.4	7.9	6.5	11	2.3	4.7	3.4
Total Kjeldahl Nitrogen(as N)		0.26	0.29	0.11	0.53	0.4	0.28	NV	0.49	0.14	0.1

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 11

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 11 27-Apr-93	TH 11 4-Oct-93	TH 11 13-Jun-94	TH 11 7-Nov-94	TH 11 19-Jun-95	TH 11 30-Oct-95	TH 11 15-Nov-96	TH 11 19-Dec-97	TH 11 18-Dec-98	TH 11 21-Dec-00	TH 11 18-Oct-01	TH 11 22-Oct-02	TH 11 1-Oct-03	TH 11 29-Sep-04	TH 11 21-Sep-05	TH 11 (dup) 21-Sep-05	TH 11 25-Sep-06	TH 11 9-Oct-07	TH 11 17-Sep-08
Alkalinity(as CaCO3)	30 - 500 [OG]	179	213	166	226	198	260	197	194	234	233	227	243	238	280	260	262	262	270	302
Ammonia(as N)		0.078	0.06	0.021	0.09	0.18	<0.05	0.05	0.04	0.05	0.11	0.02	0.02	<0.01	0.04	0.04	0.04	<0.01	<0.01	<0.01
Calcium		46.4	64.4	46.1	67	56	77.5	60.5	53.2	74.8	62.4	61.6	83.8	74.4	73.2	80.6	78.6	82.4	80.8	76.9
Chloride	250 [AO]	0.4	2.4	0.7	6.7	2	23.2	3.39	4.56	30.3	3.5	4.6	29.1	13.6	15	24.1	24.1	38.2	33.3	7.5
Conductivity @25øC (µmho/cm)		340	407	324	444	390	554	370	370	515	346	426	564	489	493	567	566	572	574	526
Dissolved Organic Carbon(DOC)	5.0 [AO]	1.2	1.4	5.9	6.1	5.1	2.4	1.5	1.5	3.1	3.7		65	5	0.7	3.6	3.9	3.4	0.7	1.4
Hardness(as CaCO3)	80-100 [OG]	176	234	175	248	210	287	213	204	275	241	237	303	271	290	300	293	316	305	302
Iron	0.3 [AO]	0.06	0.01	0.02	0.04	0.02	0.03	0.048	0.009	0.23	0.01	0.02	0.03	0.006	0.014	<0.005	<0.005	0.007	0.018	<0.005
Magnesium		14.6	17.7	14.5	19.5	16.9	22.7	17	17.2	21.3	20.5	20.2	22.8	20.8	26	24	23.5	26.8	25	26.7
Manganese	0.05 [AO]			<0.003	0.014	0.003	0.008	0.007		nd	nd		<0.01	0.007	0.004	0.004	0.004	0.005	0.001	0.003
Nitrate(as N)	10	0.9	0.3	0.8	0.2	0.2	0.4	0.46	0.49	0.25	0.2	<0.1	0.5	0.3	0.3	0.5	0.6	0.5	0.6	0.1
Nitrite(as N)	1	<0.01	<0.01	<0.01	<0.01	0.01	0.01	<0.03		nd	nd	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Orthophosphate(as P)								<0.05		nd	nd		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pH	6.5-8.5 [OG]	8.07	7.89	7.78	7.56	7.88	7.8	7.83	8.13	8.21	7.96	7.68	8.23	8.47	7.48	7.71	7.69	7.24	7.03	7.36
Phenols		0.003	<0.001	0.0019	0.0014	0.001	<0.001	<0.001		0.001	nd		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)		0.006	0.007	0.008	0.007	0.01	0.07	0.13		nd			2.52	0.56	0.05	0.19	0.19	0.1	0.31	0.46
Potassium				0.5	0.5	0.45	0.49	<1		nd	nd		<0.4	0.4	0.3	0.4	0.4	0.4	0.5	0.5
Sodium	200 [AO]			0.4	2.3	0.6	4.3	1.1	1.2	5.2	2.2	1.5	10.1	2	4.6	3.4	3.3	6.7	8.5	2.1
Sulphate	500 [AO]			9.4	8.3	8	8	4.51	4.44	6	4.5	6.9	7	6	5	6	6	10	13	5
Total Kjeldahl Nitrogen(as N)		0.4	0.31	0.25	0.23	0.35	0.34	0.29	0.11	0.22	0.21	0.18	2.43	0.5	0.31	0.7	0.75	0.39	0.84	1.03

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 11

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 11 1-Oct-09	TH 11 9-Nov-10	TH 11 21-Sep-11	TH 11 22-Nov-12	TH 11 26-Nov-13	TH 11 1-May-14	TH 11 4-Nov-14	TH 11 20-Apr-15	TH 11 3-Nov-15	TH 11 26-Oct-16	TH 11 16-May-17	TH 11 7-Dec-17	TH 11 10-Apr-18
Alkalinity(as CaCO3)	30 - 500 [OG]	272	318	272	263	230	190	280	230	280	260	180	300	200
Ammonia(as N)		<0.01	<0.01	<0.01	<0.01	<0.05	ND	0.13	<0.050	<0.050	<0.050	0.33	<0.050	0.073
Calcium		67.1	85.7	81.0	73.8	57	44	74	59	81	85	43	66	43
Chloride	250 [AO]	19.4	12.1	50.5	12.8	2	<1	9	5	16	68	2.0	4.4	1.2
Conductivity @25øC (µmho/cm)		560	622	692	509	420	340	540	450	560	710	870	530	340
Dissolved Organic Carbon(DOC)	5.0 [AO]	1	1.8	1.9	1.6	1.4	1.3	1.7	1.1	1	1.1	3.8	0.94	1.1
Hardness(as CaCO3)	80-100 [OG]	271	344	313	286	240	180	300	240	310	**340**	180	290	190
Iron	0.3 [AO]	<0.005	<0.005	<0.005	<0.005	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1
Magnesium		25.2	31.7	27.0	24.7	23	18	29	24	25	30	187	30	19
Manganese	0.05 [AO]	0.003	<0.001	<0.001	<0.001	<0.002	ND	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Nitrate(as N)	10	0.2	0.1	0.4	0.2	<0.1	ND	<0.10	<0.10	0.33	0.22	0.13	<0.10	<0.10
Nitrite(as N)	1		<0.1	<0.1	<0.1	0.011	ND	<0.01	<0.01	<0.01	<0.01	0.015	<0.010	<0.010
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	0.013	0.018	<0.01	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]	7.3	7.21	7.77	7.89	8.15	8.17	7.99	7.9	8.14	7.91	7.93	8.05	8.11
Phenols		<0.001	<0.001	<0.001	<0.001	<0.001	ND	0.0012	<0.001	<0.001	<0.001	0.0026	<0.0010	<0.0010
Phosphorus, Total (as P)		0.23	0.26	0.13	0.65	0.43	0.15	0.32	0.84	0.94	<0.1	0.04	<0.1	0.37
Potassium		0.6	0.4	0.5	0.3	0.35	0.3	0.67	0.49	0.55	0.45	0.2	0.44	0.27
Sodium	200 [AO]	4.5	2.4	9.7	4.2	1.2	0.44	1.6	1.1	4.8	8.8	0.54	2.1	0.38
Sulphate	500 [AO]	4	3	6	4	2	4	4	3	3.7	7.6	7.7	<1.0	<1.0
Total Kjeldahl Nitrogen(as N)		0.3	0.43	0.20	0.61	6.8	0.25	0.44	1	<0.50	0.23	1.4	<0.13	<0.10

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 11

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH 11 15-Nov-18	TH 11 24-Apr-19	TH 11 20-Nov-19	TH 11 13-May-20	TH 11 12-Nov-20	TH 11 8-Apr-21	TH 11 7-Oct-21	TH 11 3-May-22	TH 11 29-Sep-22	TH 11 23-Apr-23	TH 11 22-Nov-23
Alkalinity(as CaCO3)	30 - 500 [OG]	270	190	270	200	290	220	240	210	230	200	270
Ammonia(as N)		<0.050	<0.050	0.069	0.11	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Calcium		77	47	87	51	81	56	66	46	62	51	<0.1
Chloride	250 [AO]	33	1.4	64	2.3	30	7.4	10	2.0	24	3.2	74
Conductivity @25øC (µmho/cm)		590	350	700	370	610	430	460	400	500	380	770
Dissolved Organic Carbon(DOC)	5.0 [AO]	0.94	1.1	0.77	1.1	0.87	1.2	1.1	1.1	1.5	1.5	0.84
Hardness(as CaCO3)	80-100 [OG]	300	190	**350**	210	310	230	260	200	260	210	**410**
Iron	0.3 [AO]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Magnesium		27	18	31	20	26	21	24	21	27	20	36
Manganese	0.05 [AO]	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.0026	<0.002	<0.002	<0.002	<0.002
Nitrate(as N)	10	<0.10	<0.10	<0.10	<0.10	0.27	<0.10	0.72	0.13	0.59	<0.10	0.22
Nitrite(as N)	1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.010	<0.010	<0.010	<0.010	0.027	<0.010	0.049	<0.010	0.033	<0.010	0.012
pH	6.5-8.5 [OG]	8.02	8.15	8.06	8.18	8.07	8.07	8.06	8.07	8.13	8.18	7.99
Phenols		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NV	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)		0.045	0.033	0.055	0.068	0.53	0.071	NV	NV	0.13	0.056	<0.1
Potassium		0.38	0.23	0.36	0.24	0.38	0.27	0.58	0.26	0.46	0.23	0.44
Sodium	200 [AO]	3.1	0.55	7.8	0.98	2.9	2.8	2.3	0.68	4.2	1.8	11
Sulphate	500 [AO]	3.3	<1.0	4	1.6	<1.0	2.5	3.4	2.0	2.1	3.5	3.1
Total Kjeldahl Nitrogen(as N)		<0.10	0.12	0.16	0.1	0.21	0.17	0.25	NV	<0.1	<0.10	<0.10

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 12

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH12 25-Sep-06	TH12 9-Oct-07	TH12 17-Sep-08	TH12 1-Oct-09	TH12 1-Oct-09 Duplicate #1	TH12 9-Nov-10	TH12 9-Nov-10 Dup#3	TH12 21-Sep-11	TH12 23-Nov-12	TH12 23-Nov-12 Duplicate #3	TH12 26-Nov-13	TH12 1-May-14	TH12 4-Nov-14
Alkalinity(as CaCO3)	30 - 500 [OG]	175	167	180	172	171	166	167	166	167	167	170	170	170
Ammonia(as N)		0.17	0.12	0.21	0.19	0.17	0.2	0.23	0.19	0.16	0.17	0.24	0.26	0.33
Calcium		45.1	42.2	43.7	39.3	39.4	44	44.3	42.3	44.2	44.5	45	43	47
Chloride	250 [AO]	1	1	1	1	1	1	1	1.2	0.9	0.9	<1	<1	<1
Conductivity @25øC (µmho/cm)		462	443	486	477	480	478	476	501	469	466	480	470	480
Dissolved Organic Carbon(DOC)	5.0 [AO]	1.9	4	0.6	0.4	0.4	0.9	0.6	0.8	1.1	1.1	0.46	0.48	0.55
Hardness(as CaCO3)	80-100 [OG]	233	217	219	206	207	229	230	219	229	231	230	220	240
Iron	0.3 [AO]	<0.005	0.008	0.062	0.042	0.042	0.064	0.066	0.108	<0.005	<0.005	<0.1	<0.1	<0.1
Magnesium		29.2	27.1	26.7	26.2	26.3	28.9	29	27.5	28.7	29.0	28	26.0	31
Manganese	0.05 [AO]	0.01	0.018	0.006	0.006	0.006	0.002	0.002	0.005	0.005	0.005	0.0081	0.0075	0.008
Nitrate(as N)	10	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1
Nitrite(as N)	1	<0.1	<0.1				<0.1	<0.1	<0.1	<0.1	<0.1	0.054	0.031	0.105
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01
pH	6.5-8.5 [OG]	7.77	7.44	7.69	7.55	7.68	7.43	7.36	7.89	8.03	7.99	8.17	8.22	8.13
Phenols		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)		15.7	10.9	0.32	0.33	0.41	0.28	0.26	0.14	2.15	1.88	1.4	5.9	13
Potassium		1.3	1.2	1.2	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.5
Sodium	200 [AO]	14.4	13.4	14	11.8	11.9	11.9	12	13.3	13.6	13.7	14	14	15
Sulphate	500 [AO]	90	86	89	87	87	92	92	89	89	89	74	75	78
Total Kjeldahl Nitrogen(as N)		4.19	3.49	0.34	0.21	0.19	0.27	0.24	0.19	0.58	0.53	1.6	ND	5.1

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 12

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH12 20-Apr-15	TH12 3-Nov-15	TH12 26-Oct-16	TH12 16-May-17	TH12 7-Dec-17	TH12 10-Apr-18	TH12 15-Nov-18	TH12 24-Apr-19	TH12 20-Nov-19	TH12 13-May-20	TH12 12-Nov-20	TH12 8-Apr-21	TH12 7-Oct-21	TH12 3-May-22	TH12 29-Sep-22	TH12 23-Apr-23	TH12 22-Nov-23
Alkalinity(as CaCO3)	30 - 500 [OG]	170	170	170	180	180	170	170	160	170	170	170	170	160	170	170	160	160
Ammonia(as N)		0.23	0.22	0.22	0.071	0.25	0.31	0.41	0.25	0.3	0.26	0.21	<0.050	0.23	0.13	0.26	0.24	0.38
Calcium		46	41	42	58	42	42	43	44	42	46	42	44	46	42	43	43	44.00
Chloride	250 [AO]	1	1.7	1.1	1.5	1.0	1.1	1.2	<1.0	1.3	1.1	1.6	1.0	1.5	<1.0	1.4	<1.0	<1.0
Conductivity @25øC (µmho/cm)		480	480	480	570	480	480	460	480	470	480	480	480	470	480	470	460	480
Dissolved Organic Carbon(DOC)	5.0 [AO]	0.94	0.47	0.41	0.66	1.0	<0.50	<0.50	<0.50	<0.50	0.47	0.57	0.51	<0.40	<0.40	0.42	0.5	1.2
Hardness(as CaCO3)	80-100 [OG]	230	210	220	260	220	220	230	230	220	240	210	220	230	210	220	220	230
Iron	0.3 [AO]	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Magnesium		29.0	27	28	29	0.0066	27	29	29	27	30	26	28	28	26	27	27	28
Manganese	0.05 [AO]	0.0082	0.0062	0.0074	0.019	6.6	0.008	0.007	0.0073	0.0066	0.0078	0.0076	0.0088	0.0081	0.0076	0.0084	0.0066	0
Nitrate(as N)	10	0.13	<0.10	0.13	<0.10	<0.10	<0.10	0.13	0.12	<0.10	0.18	0.33	0.22	0.19	0.24	0.22	0.15	0.13
Nitrite(as N)	1	0.037	0.039	0.105	0.093	0.019	0.014	0.022	0.043	0.068	0.021	0.022	0.031	0.043	0.023	0.018	0.02	0.034
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]	7.99	8.12	8.08	8.04	8.07	8.11	7.99	8.2	8.12	8.14	8.12	8.11	8.19	8.09	8.21	8.21	8.02
Phenols		<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NV	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)		9.1	3.9	<0.1	17	<0.1	2	14	2.7	7.7	5.7	8.4	9.4	NV	NV	0.04	1.1	<0.1
Potassium		1.4	1.1	1.5	1.4	1.3	1.3	1.4	1.3	1.2	1.3	1.3	1.4	1.3	1.2	1.2	1.1	1.2
Sodium	200 [AO]	15	13	14	14	13	13	14	14	13	14	13	14	15	13	14	13	14
Sulphate	500 [AO]	68	78	78	100	76	77	76	73	80	83	79	80	73	81	74	77	71
Total Kjeldahl Nitrogen(as N)		<2.0	<0.50	0.78	0.69	0.75	0.4	0.4	0.34	0.51	0.47	0.25	0.48	0.78	NV	0.29	0.75	<0.50

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TH 13

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH13 26-Nov-13	TH13 1-May-14	TH13 4-Nov-14	TH13 20-Apr-15	TH13 3-Nov-15	TH13 20-Apr-16	TH13 26-Oct-16	TH13 16-May-17	TH13 7-Dec-17	TH13 10-Apr-18	TH13 15-Nov-18	TH13 24-Apr-19	TH13 20-Nov-19	TH13 13-May-20	TH13 12-Nov-20	TH13 8-Apr-21	TH13 7-Oct-21	TH13 3-May-22	TH13 29-Sep-22	TH13 23-Apr-23	TH13 22-Nov-23
Alkalinity(as CaCO3)	30 - 500 [OG]	260	260	270	260	260	270	270	280	280	280	280	250	280	290	290	280	280	280	260	270	290
Ammonia(as N)		<0.05	ND	0.093	0.11	<0.050	<0.050	0.06	<0.050	0.05	0.2	0.12	0.12	0.12	0.092	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Calcium		65	67	77	68	65	67	66	69	64	65	67	71	69	75	69	69	73	70	71	73	76
Chloride	250 [AO]	2	2	2	2	3.2	2.2	2.4	2.2	1.6	2.2	2.6	2.9	3.4	3	1.5	1.8	2.8	3.4	3.3	3.1	2.9
Conductivity @25øC (µmho/cm)		520	510	520	490	510	510	520	540	510	510	510	520	540	540	540	520	510	540	480	540	560
Dissolved Organic Carbon(DOC)	5.0 [AO]	1.3	1.6	1.4	2.5	1.4	2.6	1.6	1.8	2.4	2.3	1.5	1.3	1.1	1.3	1.6	1.4	1.4	1.2	1.4	1.3	1.7
Hardness(as CaCO3)	80-100 [OG]	270	270	320	280	270	280	280	290	270	270	290	290	290	310	290	290	300	300	290	310	320
Iron	0.3 [AO]	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Magnesium		25	25	31	27	26	27	28	29	26	27	29	29	29	31	28	28	28	30	29	31	32
Manganese	0.05 [AO]	<0.002	ND	<0.002	<0.002	<0.002	<0.002	<0.002	0.19	<0.02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Nitrate(as N)	10	2.5	1.73	1.13	0.76	1.4	0.24	2.22	0.23	0.63	0.34	1.85	1.37	2.03	1.85	1.22	0.68	0.59	1.19	0.72	1.26	0.83
Nitrite(as N)	1	0.011	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.01	ND	0.011	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]	8.08	8.04	7.99	8.09	7.93	8.1	8.17	7.96	7.96	8.07	7.83	8.09	7.98	7.89	7.95	7.99	7.86	7.95	8.29	8.06	7.8
Phenols		<0.01	ND	<0.001	<0.0010	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NV	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)		8.8	3.9	1.9	1.8	1.1	0.75	<0.1	2.6	<0.1	4.3	1.4	1.2	0.65	0.42	2.4	0.81	NV	NV	0.70	0.39	<0.1
Potassium		0.47	0.42	0.53	0.43	0.49	0.39	0.52	0.49	0.39	0.41	0.47	0.4	0.47	0.5	0.45	0.37	0.55	0.38	0.44	0.41	0.48
Sodium	200 [AO]	1	1.3	1.1	1	1	1.2	1.2	1.4	0.95	0.92	1	1.1	0.92	1.3	0.9	0.7	0.91	1.1	0.96	0.98	0.96
Sulphate	500 [AO]	6	10	7	8	9.4	9.3	7.2	4.9	4.2	5.4	5.1	5.7	9.1	9.1	4.8	2.6	4.4	5.2	5.4	6.4	4.4
Total Kjeldahl Nitrogen(as N)		11	6.7	<2.0	2.1	<0.50	0.25	0.6	0.37	0.29	0.43	0.52	0.2	0.41	0.24	0.24	0.15	0.2	NV	<0.10	0.24	<0.10

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TH 14

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TH14 26-Nov-13	TH14 1-May-14	TH14 4-Nov-14	TH14 20-Apr-15	TH14 3-Nov-15	TH14 20-Apr-16	TH14 26-Oct-16	TH14 16-May-17	TH14 7-Dec-17	TH14 10-Apr-18	TH14 15-Nov-18	TH14 24-Apr-19	TH14 20-Nov-19	TH14 13-May-20	TH14 12-Nov-20	TH14 8-Apr-21	TH14 7-Oct-21	TH14 3-May-22	TH14 29-Sep-22	TH14 23-Apr-23 No Sample	TH14 22-Nov-23 No Sample
Alkalinity(as CaCO3)	30 - 500 [OG]	730	690	540	**460**	**540**	**550**	**460**	**520**	**630**	**470**	**590**	**470**	**550**	**510**	**490**	**490**	**480**	**590**	**420**		
Ammonia(as N)		23	22	21	15	8.3	6.2	12	14	22	8.6	15	8.3	13	9.3	16	7.7	16	16	1.3		
Calcium		200	190	140	130	150	160	120	130	150	130	150	130	140	140	130	140	140	160	120		
Chloride	250 [AO]	11	12	7	5	8	8.4	5.9	15	7	13	8.4	7.3	8.6	9	6.6	9.6	7.3	17	15		
Conductivity @25øC (µmho/cm)		1400	1300	1000	890	1000	1000	870	1000	1100	870	1000	970	1000	940	910	910	880	1100	810		
Dissolved Organic Carbon(DOC)	5.0 [AO]	7.7	6.5	5.1	4.5	3.8	3.9	3.3	5.3	5.6	3.9	4.7	3.1	3.6	4	3.7	3.3	3.6	6.6	2.7		
Hardness(as CaCO3)	80-100 [OG]	660	600	500	**430**	**520**	**580**	**400**	**430**	**490**	**430**	**520**	**470**	**490**	**500**	**410**	**460**	**450**	**540**	**450**		
Iron	0.3 [AO]	<0.1	ND	<0.1	<0.1	3.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.27	<0.1	1.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
Magnesium		40	34	30	28	38	43	25	26	28	27	32	33	31	36	23	29	25	30	36		
Manganese	0.05 [AO]	0.26	0.26	0.2	0.17	0.17	0.19	0.16	**<0.002**	0.2	0.16	0.3	**0.31**	0.27	0.24	0.25	0.25	0.24	0.26	0.19		
Nitrate(as N)	10	<0.1	ND	<0.1	<0.10	<0.1	<0.1	<0.1	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		
Nitrite(as N)	1	<0.01	ND	0.01	<0.01	0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
Orthophosphate(as P)		<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.0010	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
pH	6.5-8.5 [OG]	7.41	7.49	7.43	7.53	7.49	7.79	7.75	7.5	7.34	7.55	7.19	7.64	7.39	7.73	7.54	7.76	7.56	7.38	7.82		
Phenols		0.0053	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.0010	<0.0010	<0.0010	0.001	0.001	<0.0010	<0.0010	<0.0010	<0.0010	NV	<0.0010		
Phosphorus, Total (as P)		3.4	2.9	2.1	1.4	0.71	0.58	<0.1	0.45	<0.1	0.75	7.5	0.14	0.33	0.31	0.18	0.096	NV	NV	0.054		
Potassium		18	17	14	12	8.8	7.2	12	12	180	7	15	10	8.1	7.5	9.5	6.6	12	15	1.9		
Sodium	200 [AO]	10	13	8	5.8	6.2	8.2	7.3	12	6.5	4.2	5.7	7	6.5	8.5	4.3	6.5	4.6	11	6.7		
Sulphate	500 [AO]	10	16	14	12	7.4	8.8	9.3	6.9	3.9	12	3.7	9.5	7.1	16	6.3	9.2	6.9	5.3	11		
Total Kjeldahl Nitrogen(as N)		31	6.5	5.1	14	8.7	6.6	13	17	23	9.1	14	8.2	14	8.2	15	7.1	17	NV	1.4		

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TP 3

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TP 3 27-Apr-93	TP 3 13-Jun-94	TP 3 7-Nov-94	TP 3 19-Jun-95	TP 3 30-Oct-95	TP3 15-Nov-96	TP3 19-Dec-97	TP3 18-Dec-98	TP3 11-Jul-01	TP3 18-Jun-02	TP3 22-Oct-02 Dry	TP3 20-May-03	TP3 1-Oct-03 Dry	TP3 5-May-04
Alkalinity(as CaCO3)	30 - 500 [OG]	171	102	105	105	170	240	255	227		218		183		167
Ammonia(as N)		0.142	0.46	0.223	<0.05	0.05	<0.05	0.03	0.16		<0.01		<0.01		0.03
Calcium		54.6	44.4	38.2	36.5	61.7	86.5	80.5	75.2		65.9		59.7		56.1
Chloride	250 [AO]	3.1	28	4.8	4.7	3.1	1.41	4.67	2.1		3.7		17.2		4.9
Conductivity @25øC (µmho/cm)		354	343	256	262	369	442	470	414		410		385		342
Dissolved Organic Carbon(DOC)	5.0 [AO]	0.9	15.9	15	4.5	2.5	1.2	0.9	2		<0.5		0.5		<0.5
Hardness(as CaCO3)	80-100 [OG]	175	138	117	113	191	245	257	245		204		185		171
Iron	0.3 [AO]	<0.01	1.82	0.29	0.21	0.2	0.017	0.046	0.24		<0.01		0.07		<0.005
Magnesium		9.3	6.6	5.2	5.3	9	13	13.7	13.9		9.5		8.63		7.41
Manganese	0.05 [AO]		0.499	0.149	0.016	<0.003	<0.005		nd		<0.005		<0.01		<0.001
Nitrate(as N)	10	0.6	0.5	2.5	0.6	0.9	1.19	0.29	1.27		0.6		0.3		0.3
Nitrite(as N)	1	0.02	0.01	0.01	<0.01	0.01	<0.03		nd		<0.1		<0.1		<0.1
Orthophosphate(as P)							<0.05		nd		<0.01		<0.01		<0.01
pH	6.5-8.5 [OG]	8.16	7.7	7.76	8.06	8.1	7.54	7.7	8.26		7.44		7.85		8.06
Phenols		0.0045	0.0033	0.0053	<0.001	0.0017	<0.001		nd		<0.001		<0.001		<0.001
Phosphorus, Total (as P)		0.02	0.137	0.094	0.01	0.03	0.3	1.6	0.01		0.18		0.06		0.14
Potassium			2.4	2.79	2.25	2.03	1.9		2		1.3		0.9		1.1
Sodium	200 [AO]		14.3	4.7	7.3	1.4	1.08	4.54	1.1		2.5		14.7		5.7
Sulphate	500 [AO]		24.0	14.0	16.7	16.4	4.65	3.78	5.2		6.5		4		3
Total Kjeldahl Nitrogen(as N)							0.29		0.37		0.04		0.17		0.21

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TP 3

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TP3 29-Sep-04	TP3 6-Apr-05	TP3 21-Sep-05 Dry	TP3 4-Apr-06	TP3 25-Sep-06 Dry	TP3 13-Apr-07	TP3 9-Oct-07 Dry	TP3 15-Apr-08	TP3 17-Sep-08	TP3 30-Apr-09	TP3 1-Oct-09	TP3 12-May-10	TP3 9-Nov-10
Alkalinity(as CaCO3)	30 - 500 [OG]	230	180		160		166		140	180	140	145	229	249
Ammonia(as N)		0.05	0.02		<0.01		0.04		<0.01	<0.01	0.01	<0.01	<0.01	<0.01
Calcium		73.4	60.2		61.8		55.6		49	58.2	53.8	45.1	73.1	87.6
Chloride	250 [AO]	11.4	2.2		1.5		1.2		1.1	5.8	3.5	10.6	4.1	22.2
Conductivity @25øC (µmho/cm)		409	345		375		305		316	360	278	310	438	545
Dissolved Organic Carbon(DOC)	5.0 [AO]	0.6	0.9		1.2		1.4		0.9	1.4	0.6	1	0.8	0.9
Hardness(as CaCO3)	80-100 [OG]	235	185		195		175		151	177	158	137	223	267
Iron	0.3 [AO]	0.005	<0.005		<0.005		<0.005		0.007	<0.005	<0.005	<0.005	<0.005	0.005
Magnesium		12.6	8.47		9.78		8.67		7.03	7.73	5.81	5.91	9.77	11.7
Manganese	0.05 [AO]	<0.001	<0.001		<0.001		<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrate(as N)	10	0.4	0.4		6.1		1		1.1	0.1	0.2	0.2	0.4	0.2
Nitrite(as N)	1	<0.1	<0.1		<0.1		<0.1							<0.1
Orthophosphate(as P)		<0.01	<0.01		<0.01		<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pH	6.5-8.5 [OG]	7.55	7.7		8.11		7.66		7.3	7.53	7.13	7.59	7.9	7.12
Phenols		<0.001	<0.001		<0.001		<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)		0.25	0.01		0.02		<0.01		0.02	0.03	<0.01	1.07	0.55	1.74
Potassium		1	0.5		0.6		0.8		1.2	1.3	1.6	1.6	1.3	1.6
Sodium	200 [AO]	2.6	0.7		0.7		1.8		3.3	3.8	1.7	2.8	2.9	8.4
Sulphate	500 [AO]	2	3		4		3		3	2	2	1	2	2
Total Kjeldahl Nitrogen(as N)		0.16	0.07		0.16		0.09		0.08	0.09	<0.05	1.15	0.05	0.59

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality at Test Well TP 3

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TP3 2-May-11	TP3 21-Sep-11	TP3 12-Apr-12	TP3 23-Nov-12	TP3 7-May-13	TP3 26-Nov-13	TP3 1-May-14	TP3 4-Nov-14	TP3 20-Apr-15	TP3 3-Nov-15	TP3 20-Apr-16	TP3 16-May-17	TP3 7-Dec-17	TP3 10-Apr-18
Alkalinity(as CaCO3)	30 - 500 [OG]	149	240	170	268	180	170	180	230	240	280	120	220	270	170
Ammonia(as N)		<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	ND	0.084	<0.050	<0.050	<0.050	<0.050	<0.050	0.1
Calcium		56.5	115	58.2	91.5	57	59	61	84	91	89	45	70	84	54
Chloride	250 [AO]	2.0	151*	4.7	5.3	2	5	2	16	4	4.7	<1.0	1.4	6.4	2.7
Conductivity @25øC (µmho/cm)		336	957	334	503	340	340	340	480	470	530	240	400	510	320
Dissolved Organic Carbon(DOC)	5.0 [AO]	0.9	0.9	0.7	1.5	0.94	0.65	0.77	0.81	1.1	1	0.9	0.8	0.75	1
Hardness(as CaCO3)	80-100 [OG]	168	351	175	281	170	180	180	260	280	270	130	210	250	160
Iron	0.3 [AO]	<0.005	<0.005	<0.005	<0.005	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1
Magnesium		6.46	15.5	7.18	12.8	7.8	7.4	7.7	11	12	12	5.2	9.7	11	6.7
Manganese	0.05 [AO]	<0.001	<0.001	<0.001	0.001	<0.002	<0.002	ND	,0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Nitrate(as N)	10	0.4	0.3	0.3	0.6	<0.1	<0.1	0.11	<0.10	0.2	0.25	0.58	0.17	<0.10	0.21
Nitrite(as N)	1	<0.1	0.1	<0.1	<0.1	<0.01	0.011	ND	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.001	<0.01	<0.001	0.016	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]	7.87	7.86	8.06	8.00	8.11	8.18	8.15	7.99	8.13	8.01	8.07	8.03	7.91	8.13
Phenols		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)		0.03	0.51	0.09	1.62	0.14	0.072	0.12	0.1	0.037	0.11	0.025	0.1	<0.1	0.14
Potassium		1.2	2.3	1.1	2.1	1.6	1.3	1.3	1.6	1.7	1.5	0.98	0.73	1.4	3.4
Sodium	200 [AO]	1.8	39.9	3.1	5.1	3.7	1.1	0.96	7.9	4.5	2.1	0.73	1.2	2.4	1.6
Sulphate	500 [AO]	2	2	3	2	2	<1	2	<1	<1	<1	2.1	<1.0	<1.0	3.6
Total Kjeldahl Nitrogen(as N)		<0.05	0.44	<0.05	1.29	0.56	0.27	0.38	<0.1	0.22	<0.50	<0.1	0.3	<0.10	0.29

NOTES:

1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TP 5

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TP 5 27-Apr-93	TP 5 13-Jun-94	TP 5 7-Nov-94	TP 5 19-Jun-95	TP 5 27-May-96	TP 5 15-Nov-96	TP 5 9-May-97	TP 5 19-Dec-97	TP 5 13-May-98	TP 5 11-Jun-99	TP 5 11-Jul-01 DRY	TP 5 18-Oct-01 DRY	TP 5 18-Jun-02	TP 5 22-Oct-02 DRY	TP 5 20-May-03	TP 5 1-Oct-03 DRY
Alkalinity(as CaCO3)	30 - 500 [OG]	175	181	192	210	179	181	137	208	213	229.73			204		158	
Ammonia(as N)		0.101	0.014	0.167	0.16	<0.05	<0.05	0.16	0.12	0.03	0.12			0.03		<0.01	
Calcium		43.4	49.6	49.2	55.8	51.1	51.8	38.4	53.5	57.9				58		42.3	
Chloride	250 [AO]	1.4	0.6	1.2	0.8	0.76	0.72	0.63	0.79	0.41	1.24			1.9		1.2	
Conductivity @25øC (µmho/cm)		354	350	344	403	326	334	256	381	386	344			384		275	
Dissolved Organic Carbon(DOC)	5.0 [AO]	0.5	4.3	11	2.5	0.8	0.9	0.6	1.2	0.3				<0.5		<0.5	
Hardness(as CaCO3)	80-100 [OG]	171	191	193	217	189	194	139	213	216	241.07			216		159	
Iron	0.3 [AO]	0.02	0.03	0.05	0.03	0.037	0.01	0.009	0.007	nd	2.29			<0.01		0.08	
Magnesium		15.2	16.3	16.9	18.9	15	16.6	10.6	19.2	17.4				17.3		12.9	
Manganese	0.05 [AO]		<0.003	0.009	0.004	0.007	0.005			0.015				<0.005		<0.01	
Nitrate(as N)	10	1.3	0.2	0.2	0.2	0.07	0.17	0.32	0.27	nd	<0.05			<0.1		0.4	
Nitrite(as N)	1	<0.01	<0.01	<0.01	<0.01	<0.03	<0.03		0.09	nd	<0.05			<0.1		<0.1	
Orthophosphate(as P)						<0.05	<0.05		0.05	nd				<0.01		<0.01	
pH	6.5-8.5 [OG]	8.12	7.82	7.75	7.83	7.69	7.61	7.83	7.59	7.65	7.32			7.46		7.94	
Phenols		<0.001	0.0028	0.0024	<0.001	<0.001	<0.001			0.018				<0.001		<0.001	
Phosphorus, Total (as P)		0.007	0.01	0.022	<0.01	0.057	<0.01			0.02				0.13		0.45	
Potassium			0.3	0.22	<0.15	<1	<1			nd				<1.0		<0.4	
Sodium	200 [AO]		0.6	0.4	0.5	0.47	0.67	0.39	0.39	0.35	0.62			<1.0		0.3	
Sulphate	500 [AO]		5.3	4.8	6	4.08	3.96	3.65	3.7	4.5	5.63			6.5		3	
Total Kjeldahl Nitrogen(as N)						0.29	0.19	0.84	0.4	0.17	4.4			0.17		0.90	

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TP 5

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TP 5 5-May-04	TP 5 29-Sep-04 DRY	TP 5 6-Apr-05	TP 5 21-Sep-05 DRY	TP 5 4-Apr-06	TP 5 25-Sep-06 DRY	TP 5 13-Apr-07	TP 5 9-Oct-07 DRY	TP 5 15-Apr-08	TP 5 17-Sep-08	TP 5 30-Apr-09	TP 5 1-Oct-09	TP 5 12-May-10	TP 5 9-Nov-10	TP 5 2-May-11
Alkalinity(as CaCO3)	30 - 500 [OG]	151		150		121		138		100	244	130	217	221	274	149
Ammonia(as N)		0.05		0.02		0.06		<0.01		<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01
Calcium		44.5		40.7		34.5		39.3		30.9	62.6	43.9	51.7	56.3	73.3	40.3
Chloride	250 [AO]	0.5		1.1		1.1		0.5		0.5	0.5	0.5	0.5	1	0.5	0.6
Conductivity @25øC (µmho/cm)		316		285		247		272		220	426	257	388	402	493	290
Dissolved Organic Carbon(DOC)	5.0 [AO]	0.5		0.8		1.2		1.3		0.5	1.3	0.4	0.7	0.8	0.9	0.7
Hardness(as CaCO3)	80-100 [OG]	161		155		129		145		113	231	156	135	213	284	150
Iron	0.3 [AO]	<0.005		<0.005		0.007		<0.005		<0.005	<0.005	<0.005	<0.005	0.012	0.006	<0.005
Magnesium		12.1		12.9		10.4		11.4		8.7	18.1	11.3	15.3	17.5	24.5	12.0
Manganese	0.05 [AO]	<0.001		<0.001		<0.001		<0.001		<0.001	0.002	<0.001	<0.001	0.003	0.002	<0.001
Nitrate(as N)	10	0.2		0.3		0.3		0.3		0.4	0.1	0.2	0.1	<0.1	0.1	0.1
Nitrite(as N)	1	<0.1		<0.1		<0.1		<0.1							<0.1	<0.1
Orthophosphate(as P)		<0.01		<0.01		<0.01		<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pH	6.5-8.5 [OG]	8.04		7.67		8.13		7.77		7.22	7.5	7.28	7.67	7.89	7.21	7.82
Phenols		<0.001		<0.001		<0.001		<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)		0.18		0.35		0.28		0.25		0.73	0.1	0.17	1.1	0.2	0.09	0.78
Potassium		<0.1		<0.1		0.1		0.2		0.3	0.3	0.2	0.3	0.2	0.2	0.5
Sodium	200 [AO]	0.3		0.3		0.3		1.1		0.9	0.4	0.3	3.6	0.4	0.4	<0.2
Sulphate	500 [AO]	3		3		3		2		2	3	2	2	2	2	2
Total Kjeldahl Nitrogen(as N)		0.52		0.47		0.47		0.38		0.99	0.27	0.24	1.52	0.28	0.18	1.06

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

Historic Groundwater Quality for Test Well TP 5

Municipality of West Grey
Groundwater Quality - Bentinck Landfill

Chemical Parameter	ODWS	TP 5 21-Sep-11 DRY	TP 5 12-Apr-12	TP 5 23-Nov-12 DRY	TP 5 7-May-13	TP 5 26-Nov-13	TP 5 1-May-14	TP 5 4-Nov-14	TP 5 20-Apr-15	TP 5 20-Apr-16	TP 5 16-May-17	TP 5 7-Dec-17	TP 5 15-Nov-18	TP 5 24-Apr-19
Alkalinity(as CaCO3)	30 - 500 [OG]		203		160	210	160	260	210	170	170	270	220	180
Ammonia(as N)			0.03		<0.05	<0.05	ND	0.06	<0.050	<0.050	<0.050	0.066	0.096	<0.050
Calcium			52.8		49	54	39	70	56	46	44	66	54	48
Chloride	250 [AO]		0.6		<1	<1	ND	<1	<1	<1.0	1.1	<1.0	<1.0	<1.0
Conductivity @25øC (µmho/cm)			369		310	380	290	470	390	300	310	480	400	330
Dissolved Organic Carbon(DOC)	5.0 [AO]		0.9		0.64	0.85	0.49	<0.001	0.96	0.67	0.94	0.73	0.69	0.6
Hardness(as CaCO3)	80-100 [OG]		205		180	200	150	270	220	170	170	260	210	180
Iron	0.3 [AO]		<0.005		<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.10	<0.10	<0.1	<0.1
Magnesium			17.9		14	17	13	23	20	15	14	23	18	16
Manganese	0.05 [AO]		0.003		<0.002	<0.002	ND	<0.002	<0.002	<0.002	<0.002	0.0078	<0.002	<0.002
Nitrate(as N)	10		0.1		<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Nitrite(as N)	1		<0.1		<0.001	<0.01	ND	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)			<0.01		<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5 [OG]		7.99		7.79	8.11	8.16	7.96	7.95	8.18	8.1	7.9	7.96	8.13
Phenols			<0.001		<0.001	<0.001	ND	<0.01	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)			0.19		0.58	1.3	0.27	0.31	0.12	0.23	0.67	<0.1	1.5	0.06
Potassium			0.2		0.24	0.24	0.21	0.4	0.025	0.6	<0.2	0.31	<0.2	<0.2
Sodium	200 [AO]		0.3		0.26	0.37	0.27	0.39	0.33	1.5	0.27	0.44	0.32	0.28
Sulphate	500 [AO]		2		2	2	1	2	2	<1	1.7	<1.0	<1.0	<1.0
Total Kjeldahl Nitrogen(as N)			0.07		1.4	2.9	9.9	0.36	0.49	0.1	0.19	0.11	0.15	<0.10

NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

shading indicates exceedence of ODWQS

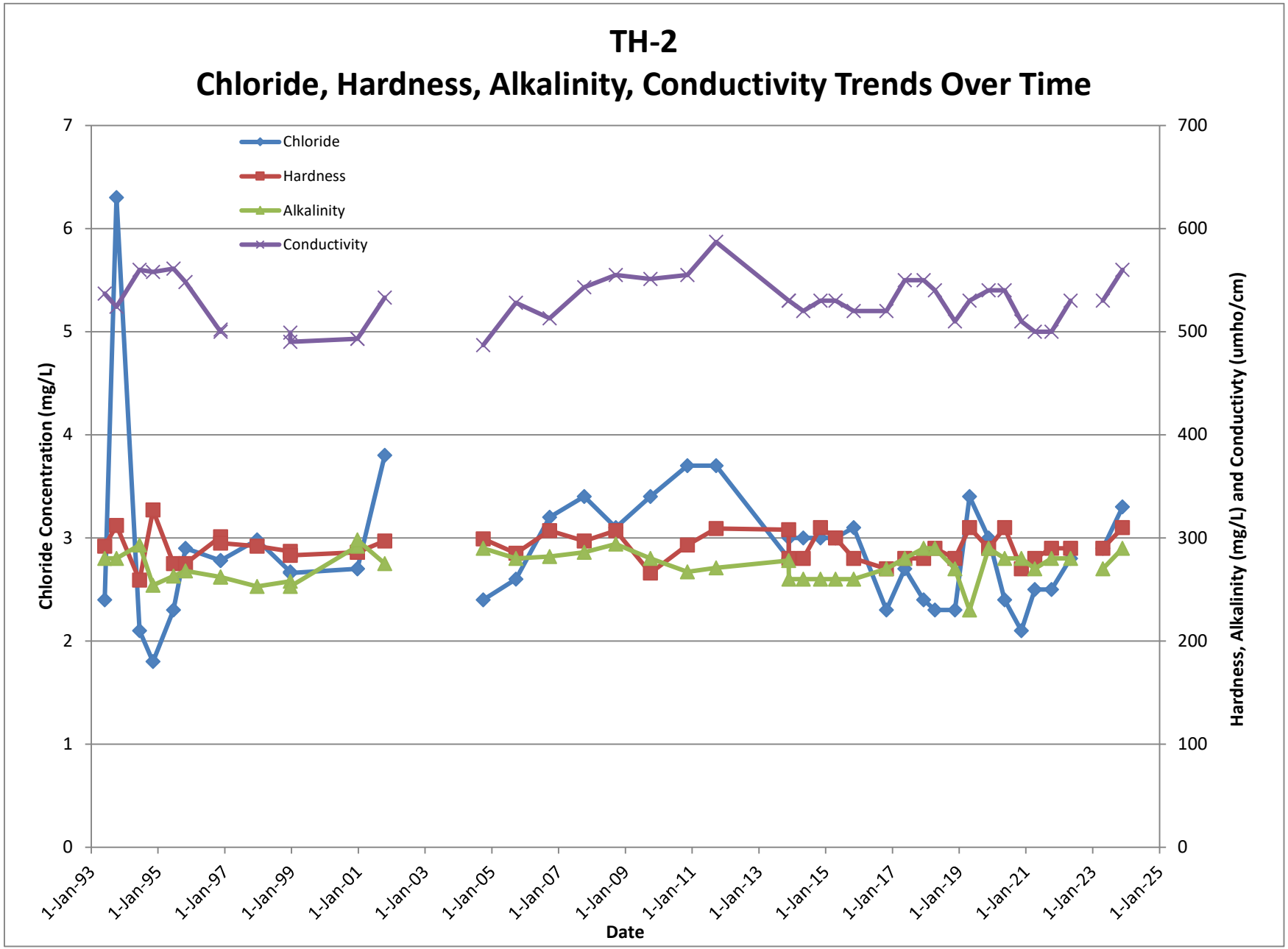
Historic Groundwater Quality for Test Well TP 5

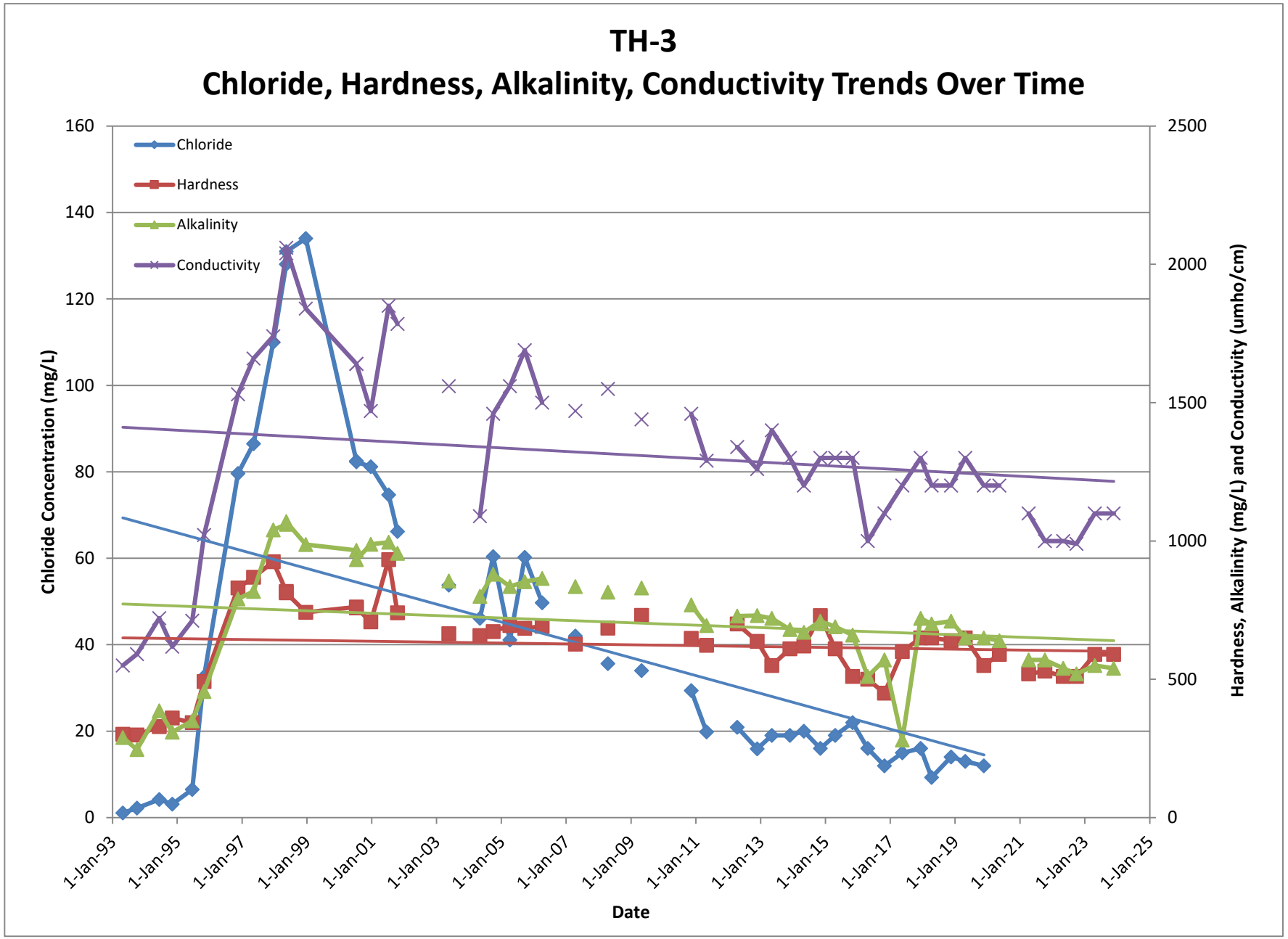
Municipality of West Grey
Groundwater Quality - Bentinck Landfill

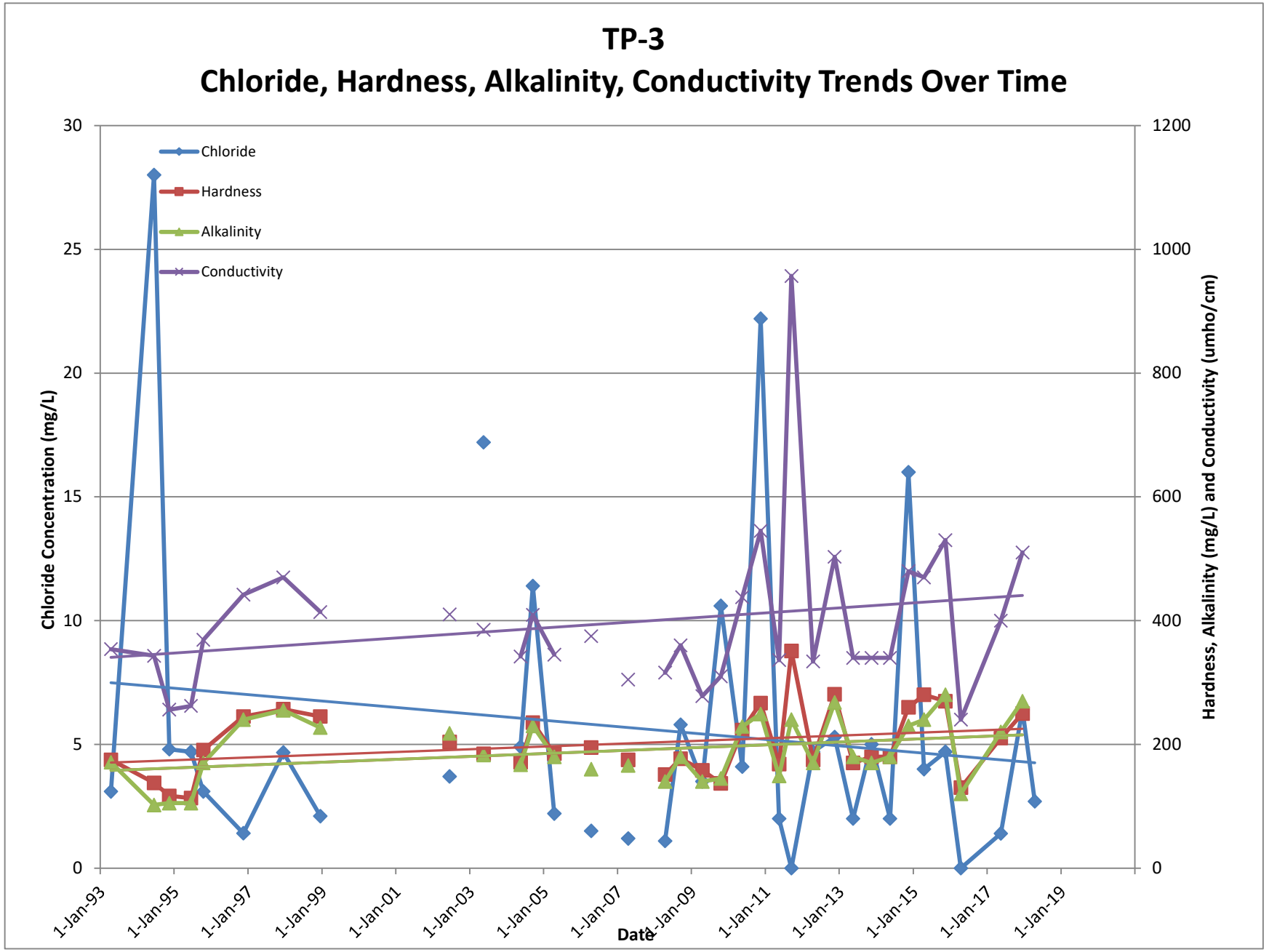
Chemical Parameter	ODWS	TP 5 20-Nov-19	TP 5 13-May-20	TP 5 12-Nov-20 Dry	TP 5 8-Apr-21	TP 5 7-Oct-21 Dry	TP 5 3-May-22	TP 5 29-Sep-22 Dry	TP 5 23-Apr-23	TP 5 22-Nov-23 No Sample
Alkalinity(as CaCO3)	30 - 500 [OG]	220	180		180		230		180	
Ammonia(as N)		0.075	<0.050		<0.050		0.12		<0.050	
Calcium		54	49		46		58		46	
Chloride	250 [AO]	<1.0	<1.0		1.4		<1.0		<1.0	
Conductivity @25øC (µmho/cm)		390	340		340		430		340	
Dissolved Organic Carbon(DOC)	5.0 [AO]	0.51	0.8		0.98		0.67		0.98	
Hardness(as CaCO3)	80-100 [OG]	210	190		180		230		190	
Iron	0.3 [AO]	<0.1	<0.1		<0.1		<0.1		<0.1	
Magnesium		19	17		16		21		17	
Manganese	0.05 [AO]	<0.002	<0.002		<0.002		<0.002		<0.002	
Nitrate(as N)	10	<0.10	<0.10		<0.10		<0.10		<0.10	
Nitrite(as N)	1	<0.010	<0.010		<0.010		<0.010		<0.010	
Orthophosphate(as P)		<0.010	<0.010		<0.010		0.036		<0.010	
pH	6.5-8.5 [OG]	8.16	8.13		8.01		8.06		8.12	
Phenols		<0.0010	<0.0010		<0.010		NV		<0.0010	
Phosphorus, Total (as P)		0.26	0.57		0.72		NV		0.29	
Potassium		<0.2	0.23		<0.2		<0.2		<.2	
Sodium	200 [AO]	0.33	0.29		0.33		0.36		0.27	
Sulphate	500 [AO]	<1.0	1.4		<1.0		<1.0		2.3	
Total Kjeldahl Nitrogen(as N)		0.17	0.14		0.11		NV		0.17	

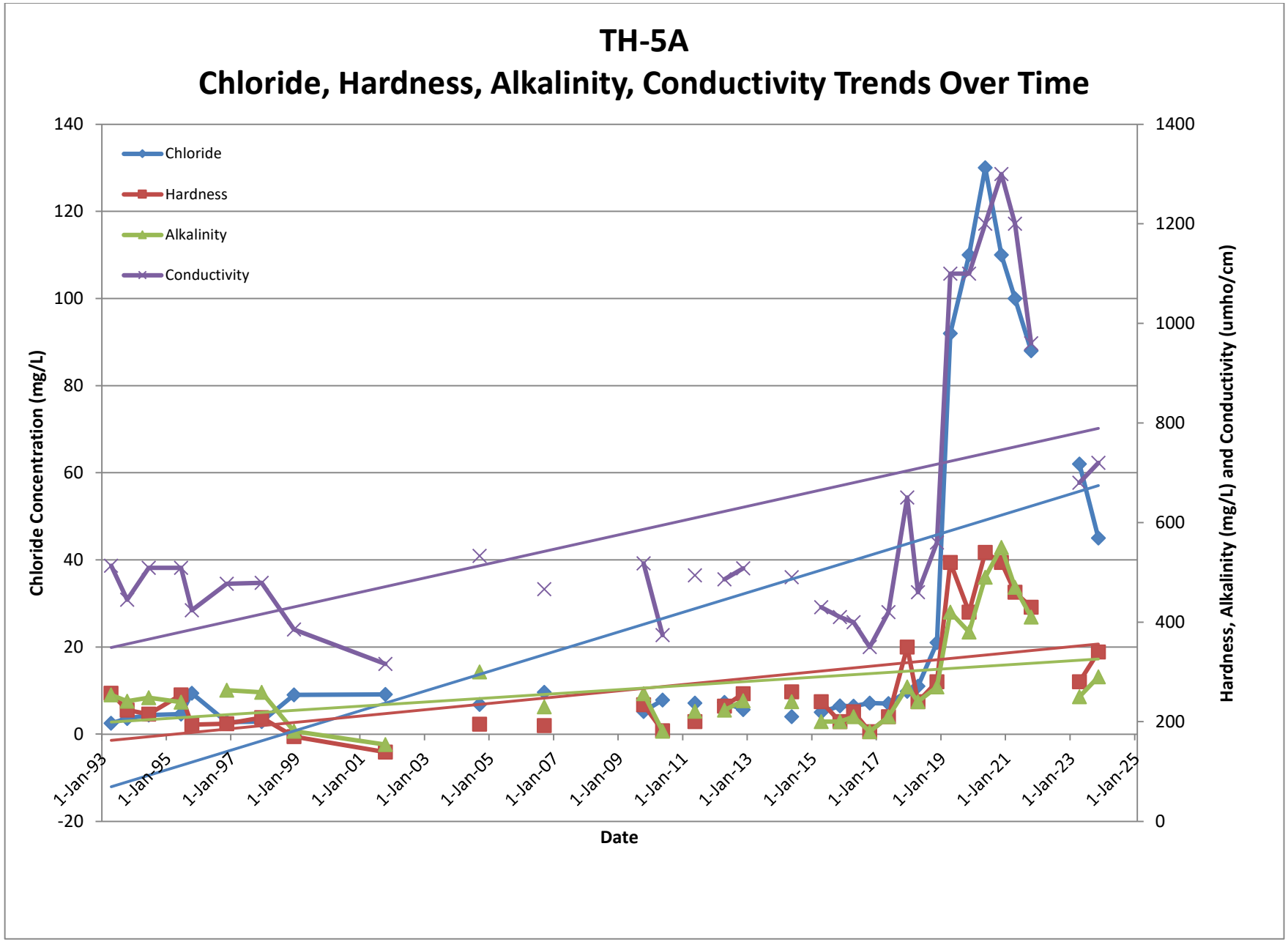
NOTES:
1. All results expressed in mg/L unless otherwise noted.
2. ODWS - Ontario Drinking Water Standards
3. IMAC indicates an interim maximum acceptable concentration.
4. AO indicates an aesthetic objective, not health related.
5. OG indicates an operational guideline, not health related.
6. Concentrations reported up to 2012 are from the 2012 Annual Monitoring Report prepared by Genivar Inc.

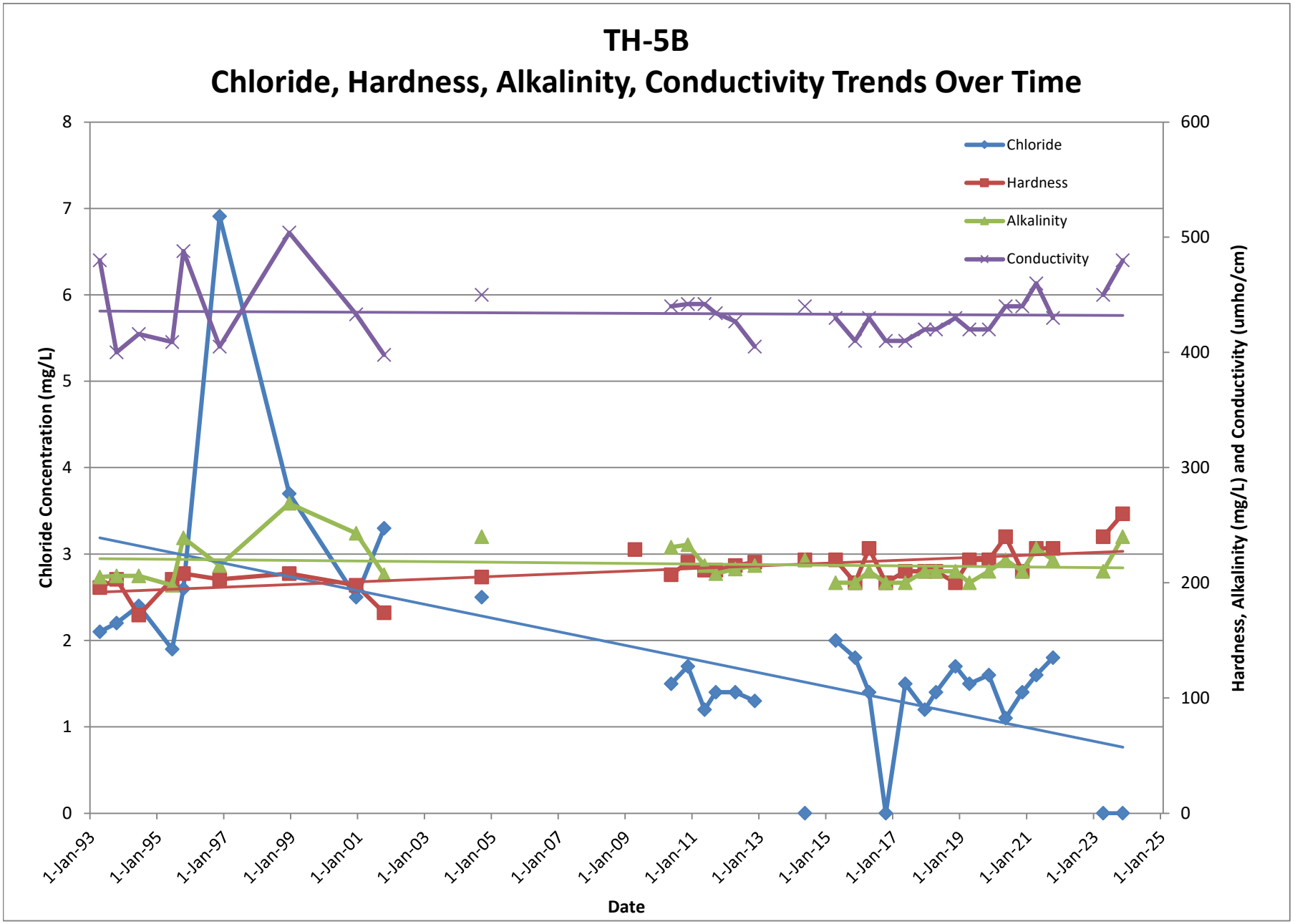
shading indicates exceedence of ODWQS

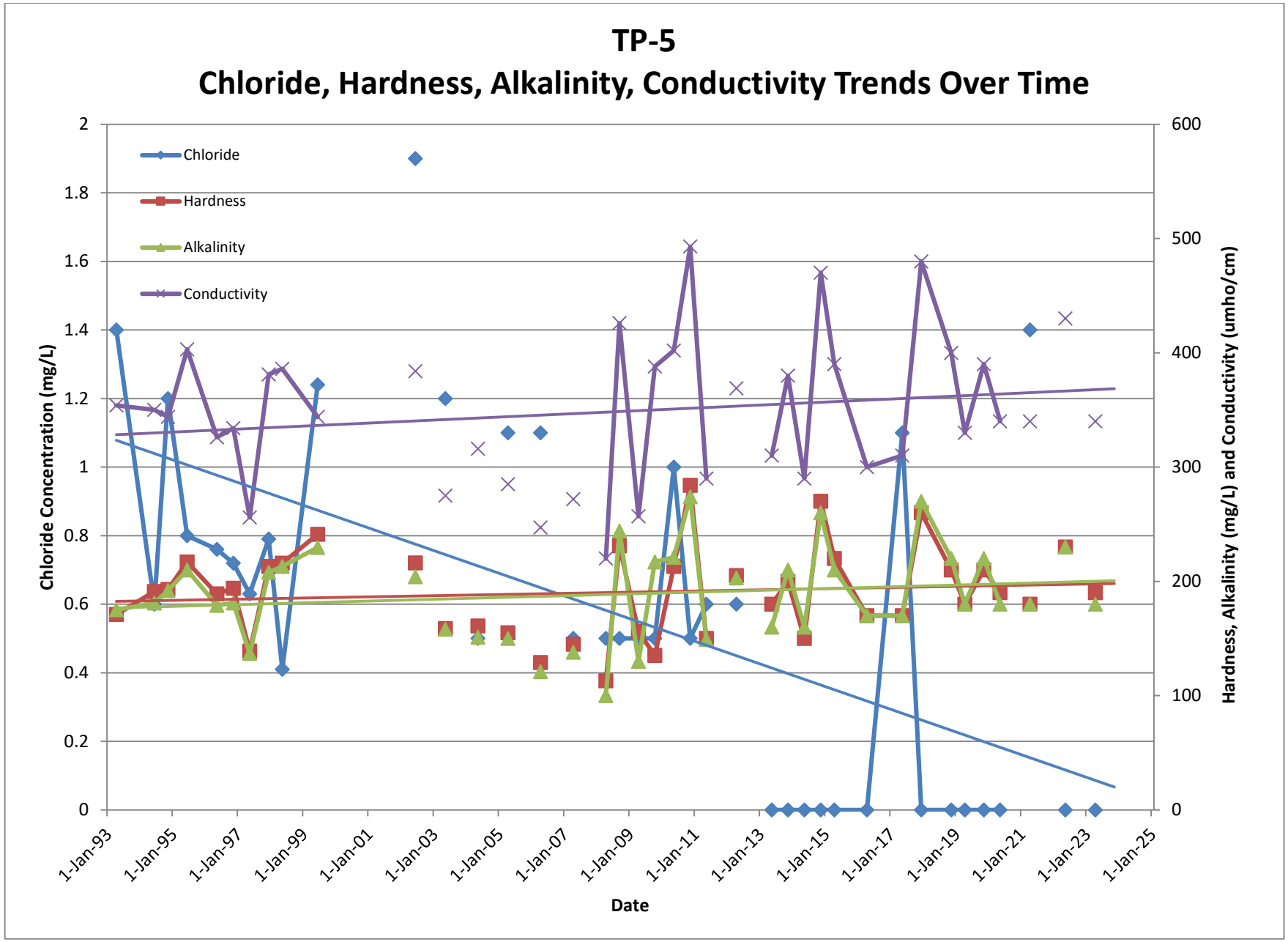

TH-2
Chloride, Hardness, Alkalinity, Conductivity Trends Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivty (umho/cm)
Date
0
1
2
3
4
5
6
7
100
200
300
400
500
600
700
1-Jan-93
1-Jan-95
1-Jan-97
1-Jan-99
1-Jan-01
1-Jan-03
1-Jan-05
1-Jan-07
1-Jan-09
1-Jan-11
1-Jan-13
1-Jan-15
1-Jan-17
1-Jan-19
1-Jan-21
1-Jan-23
1-Jan-25

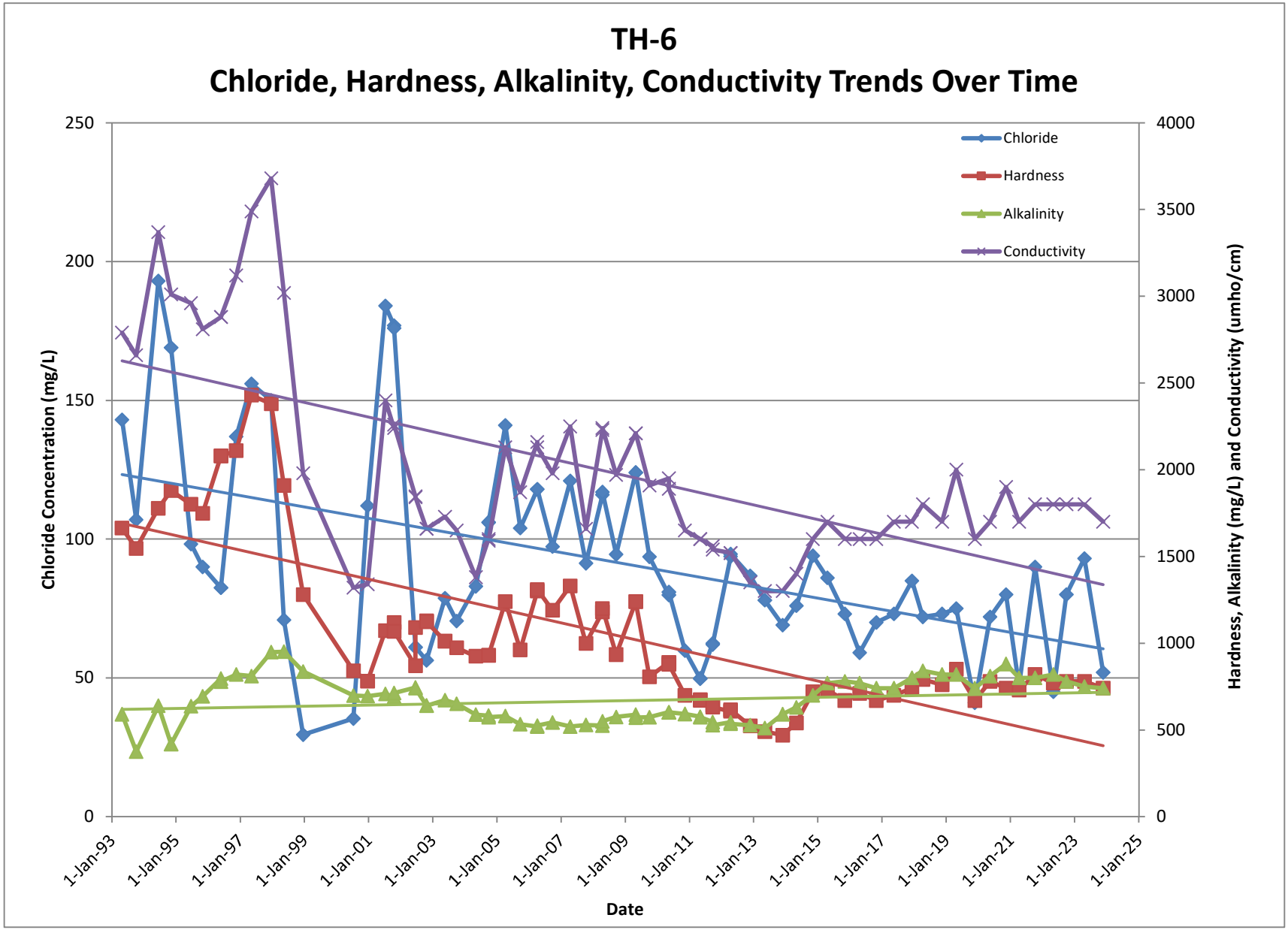

TH-3
Chloride, Hardness, Alkalinity, Conductivity Trends Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivity (umho/cm)
Date
0
20
40
60
80
100
120
140
160
0
500
1000
1500
2000
2500
1-Jan-93
1-Jan-95
1-Jan-97
1-Jan-99
1-Jan-01
1-Jan-03
1-Jan-05
1-Jan-07
1-Jan-09
1-Jan-11
1-Jan-13
1-Jan-15
1-Jan-17
1-Jan-19
1-Jan-21
1-Jan-23
1-Jan-25

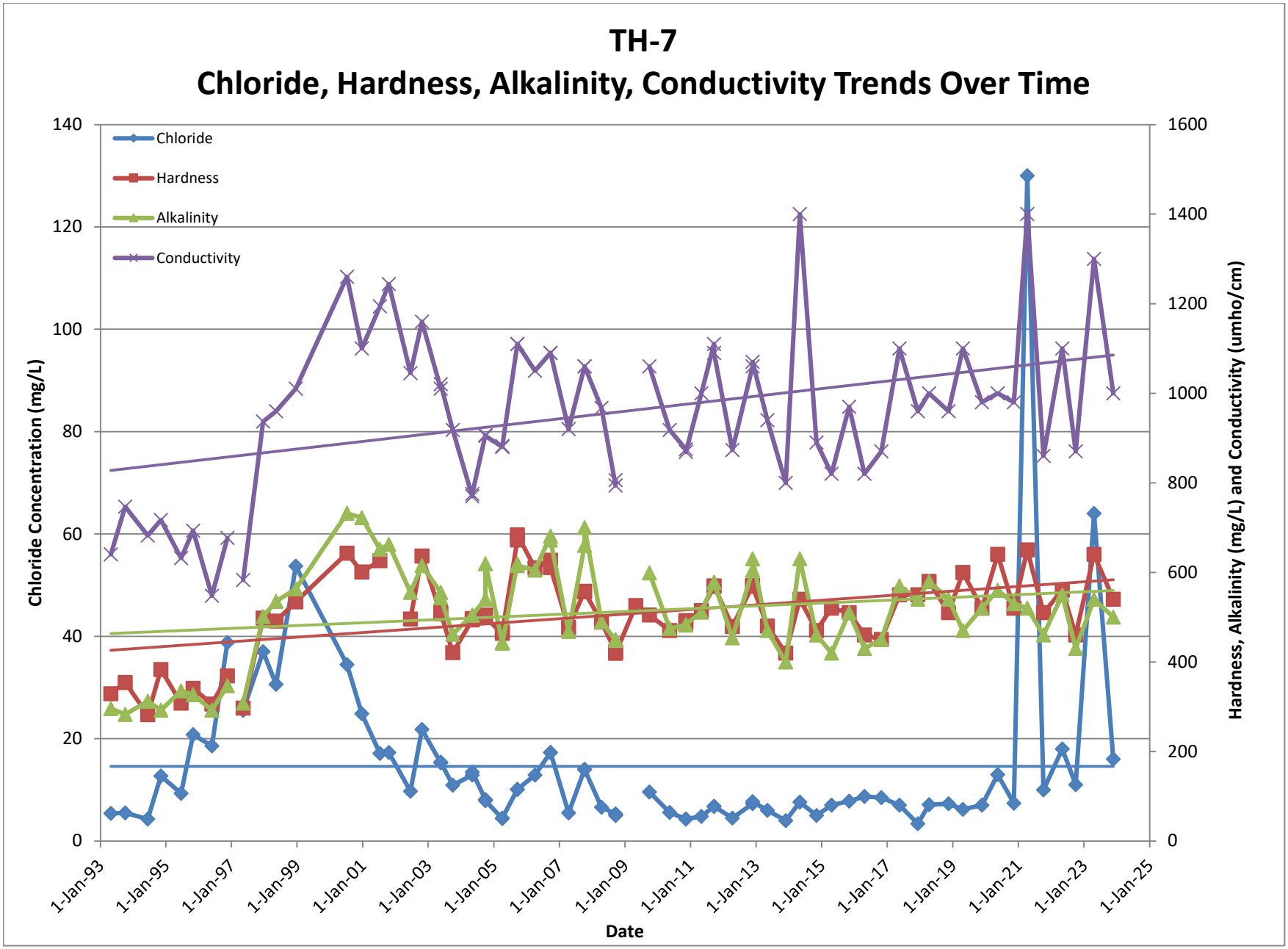

TP-3
Chloride, Hardness, Alkalinity, Conductivity Trends Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivity (umho/cm)
Date
0
5
10
15
20
25
30
0
200
400
600
800
1000
1200
1-Jan-93
1-Jan-95
1-Jan-97
1-Jan-99
1-Jan-01
1-Jan-03
1-Jan-05
1-Jan-07
1-Jan-09
1-Jan-11
1-Jan-13
1-Jan-15
1-Jan-17
1-Jan-19

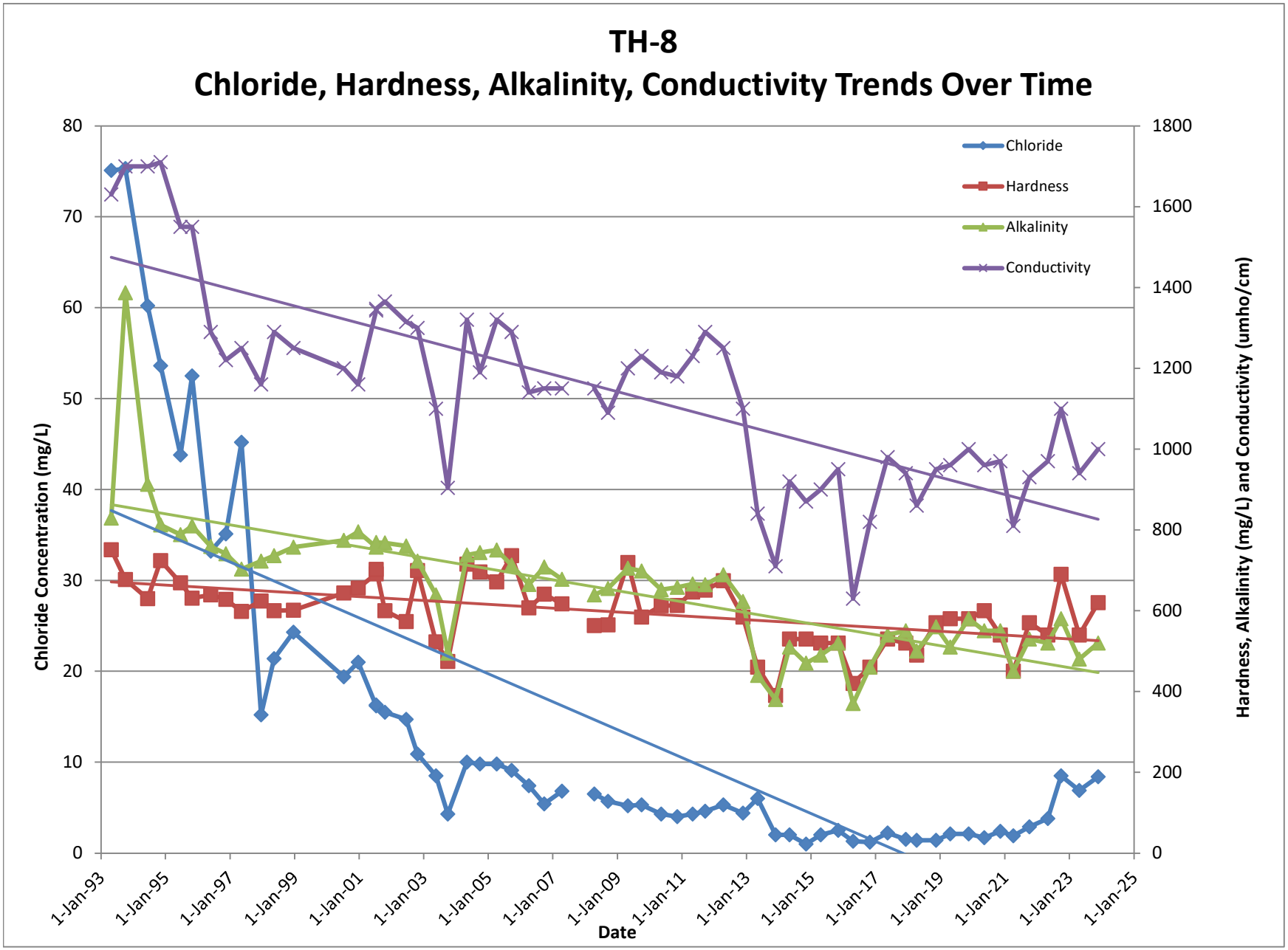

TH-5A
Chloride, Hardness, Alkalinity, Conductivity Trends Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivity (umho/cm)
Date
140
120
100
80
60
40
20
0
-20
1400
1200
1000
800
600
400
200
0
1-Jan-93
1-Jan-95
1-Jan-97
1-Jan-99
1-Jan-01
1-Jan-03
1-Jan-05
1-Jan-07
1-Jan-09
1-Jan-11
1-Jan-13
1-Jan-15
1-Jan-17
1-Jan-19
1-Jan-21
1-Jan-23
1-Jan-25

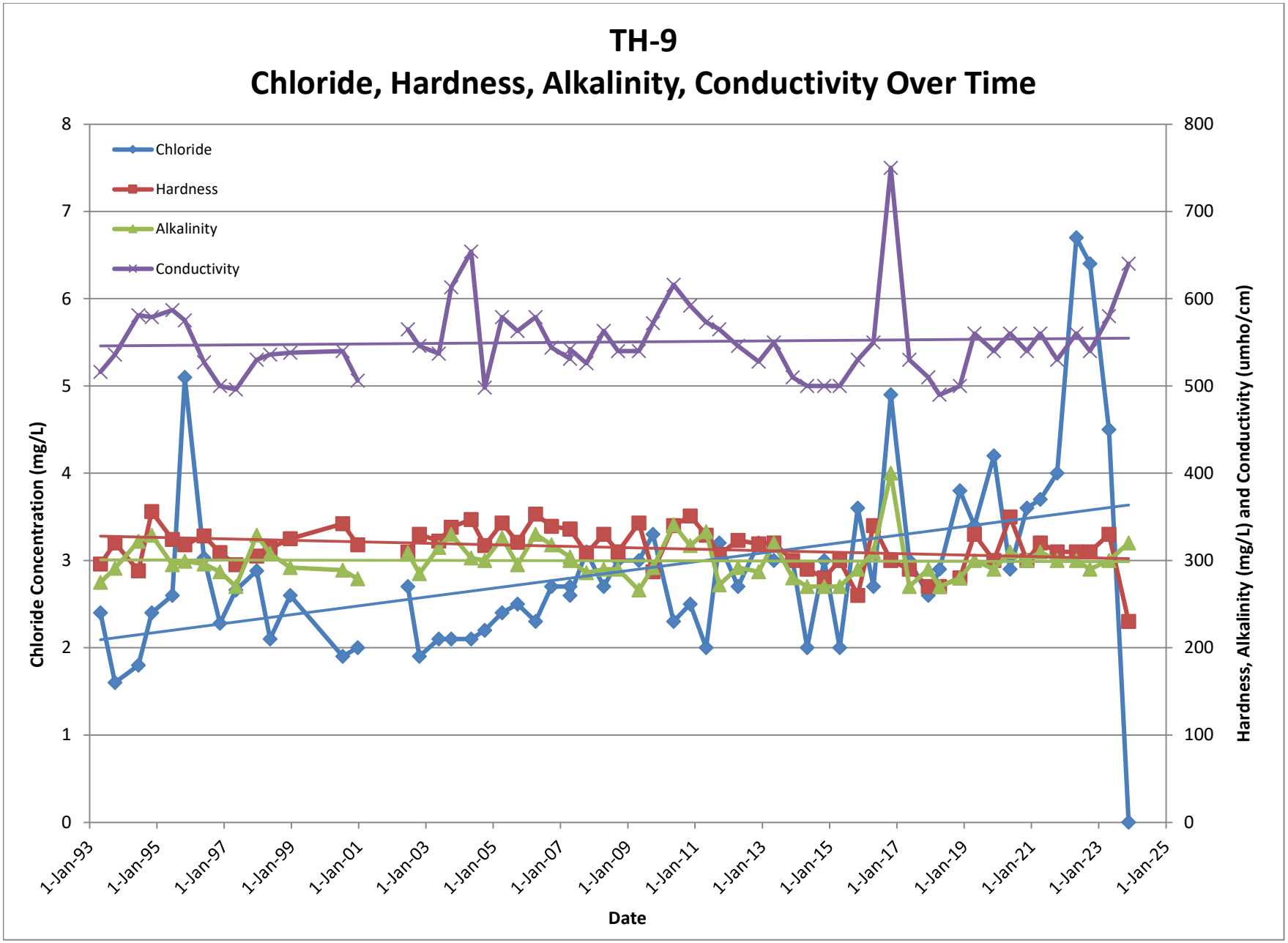

TH-5B
Chloride, Hardness, Alkalinity, Conductivity Trends Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivity (umho/cm)
Date
0
1
2
3
4
5
6
7
8
0
100
200
300
400
500
600
1-Jan-93
1-Jan-95
1-Jan-97
1-Jan-99
1-Jan-01
1-Jan-03
1-Jan-05
1-Jan-07
1-Jan-09
1-Jan-11
1-Jan-13
1-Jan-15
1-Jan-17
1-Jan-19
1-Jan-21
1-Jan-23
1-Jan-25

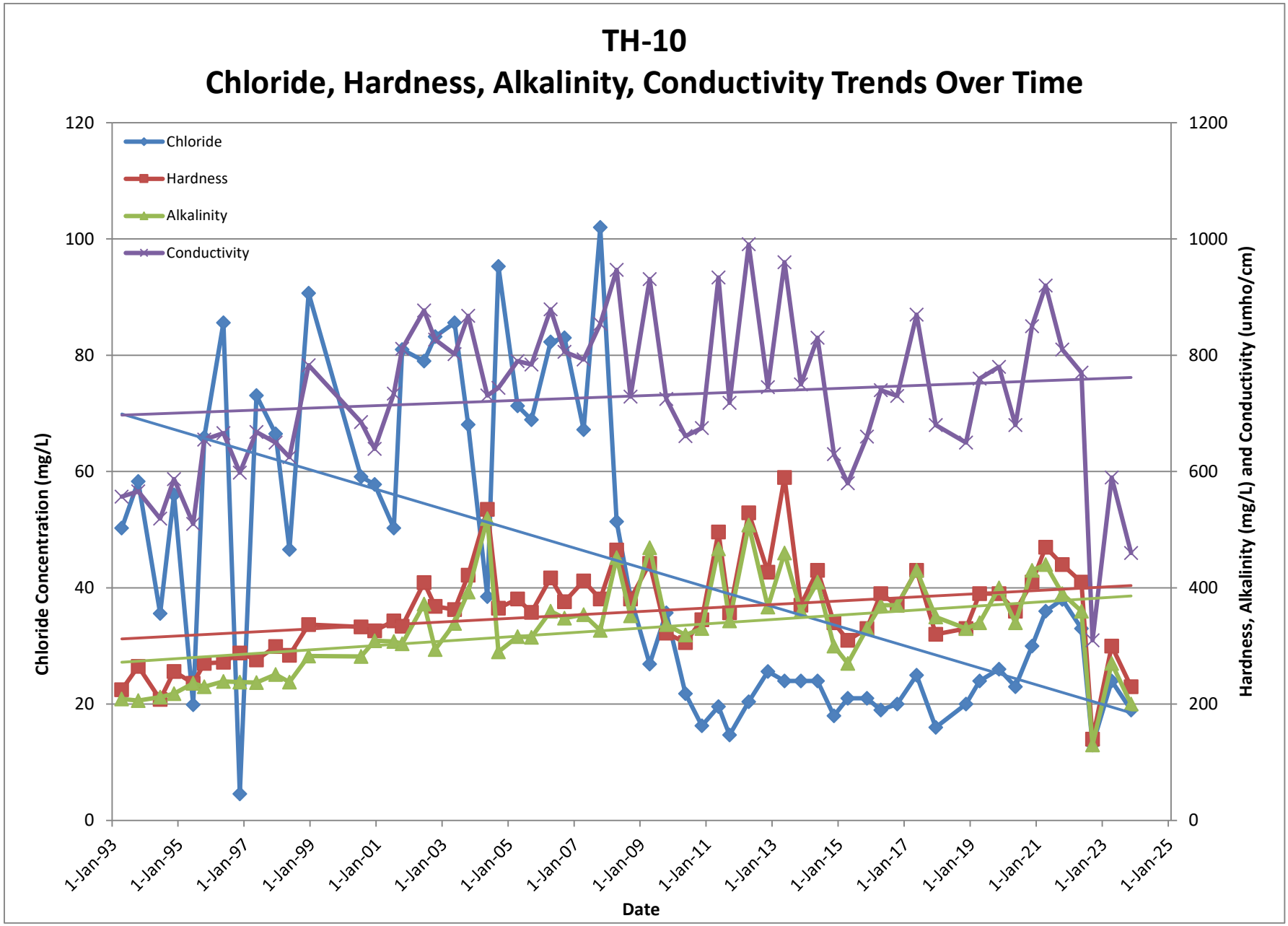

TP-5
Chloride, Hardness, Alkalinity, Conductivity Trends Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivity (umho/cm)
Date
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
0
100
200
300
400
500
600
1-Jan-93
1-Jan-95
1-Jan-97
1-Jan-99
1-Jan-01
1-Jan-03
1-Jan-05
1-Jan-07
1-Jan-09
1-Jan-11
1-Jan-13
1-Jan-15
1-Jan-17
1-Jan-19
1-Jan-21
1-Jan-23
1-Jan-25

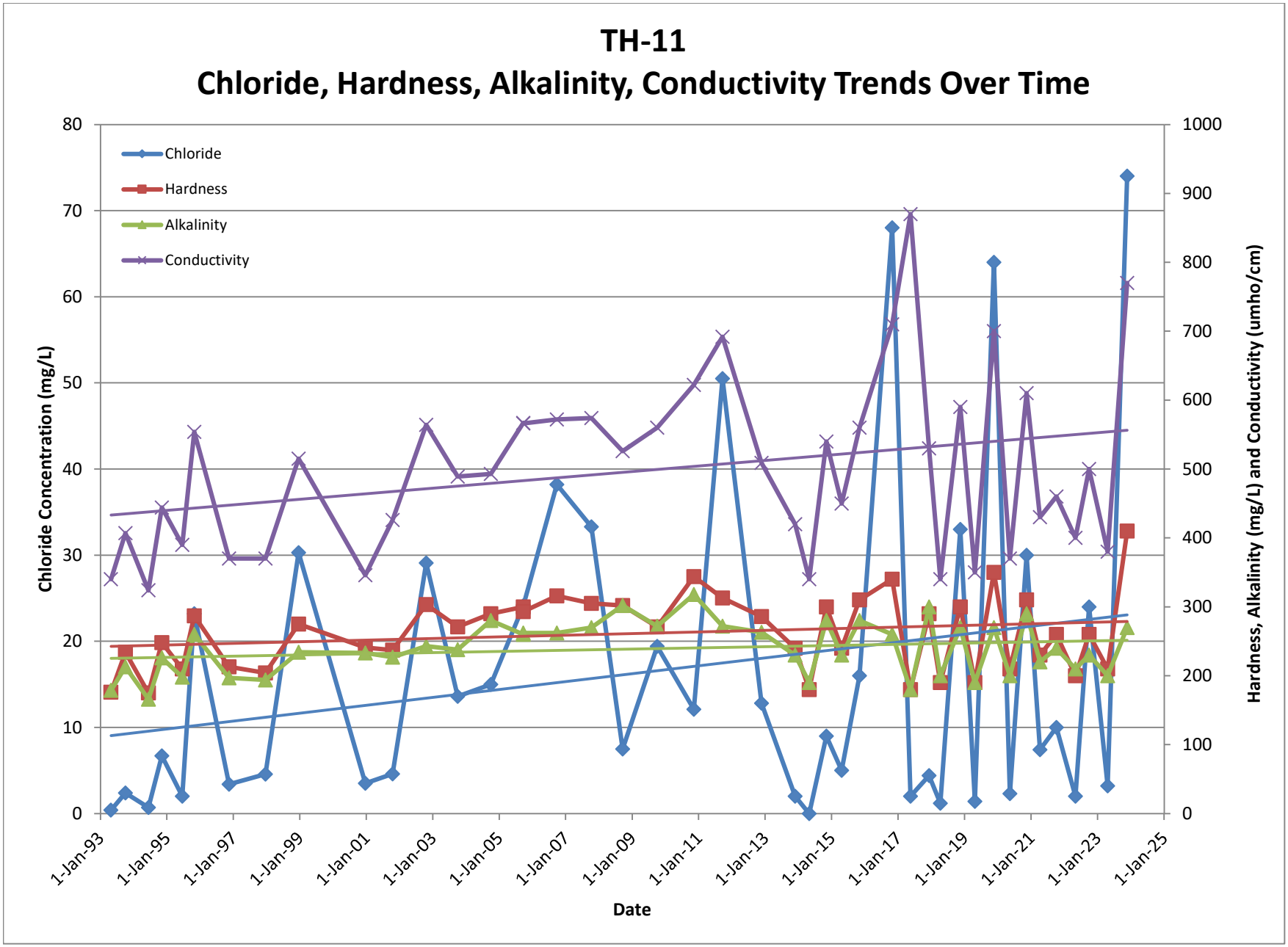

TH-6
Chloride, Hardness, Alkalinity, Conductivity Trends Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivity (umho/cm)
Date
0
50
100
150
200
250
0
500
1000
1500
2000
2500
3000
3500
4000
1-Jan-93
1-Jan-95
1-Jan-97
1-Jan-99
1-Jan-01
1-Jan-03
1-Jan-05
1-Jan-07
1-Jan-09
1-Jan-11
1-Jan-13
1-Jan-15
1-Jan-17
1-Jan-19
1-Jan-21
1-Jan-23
1-Jan-25

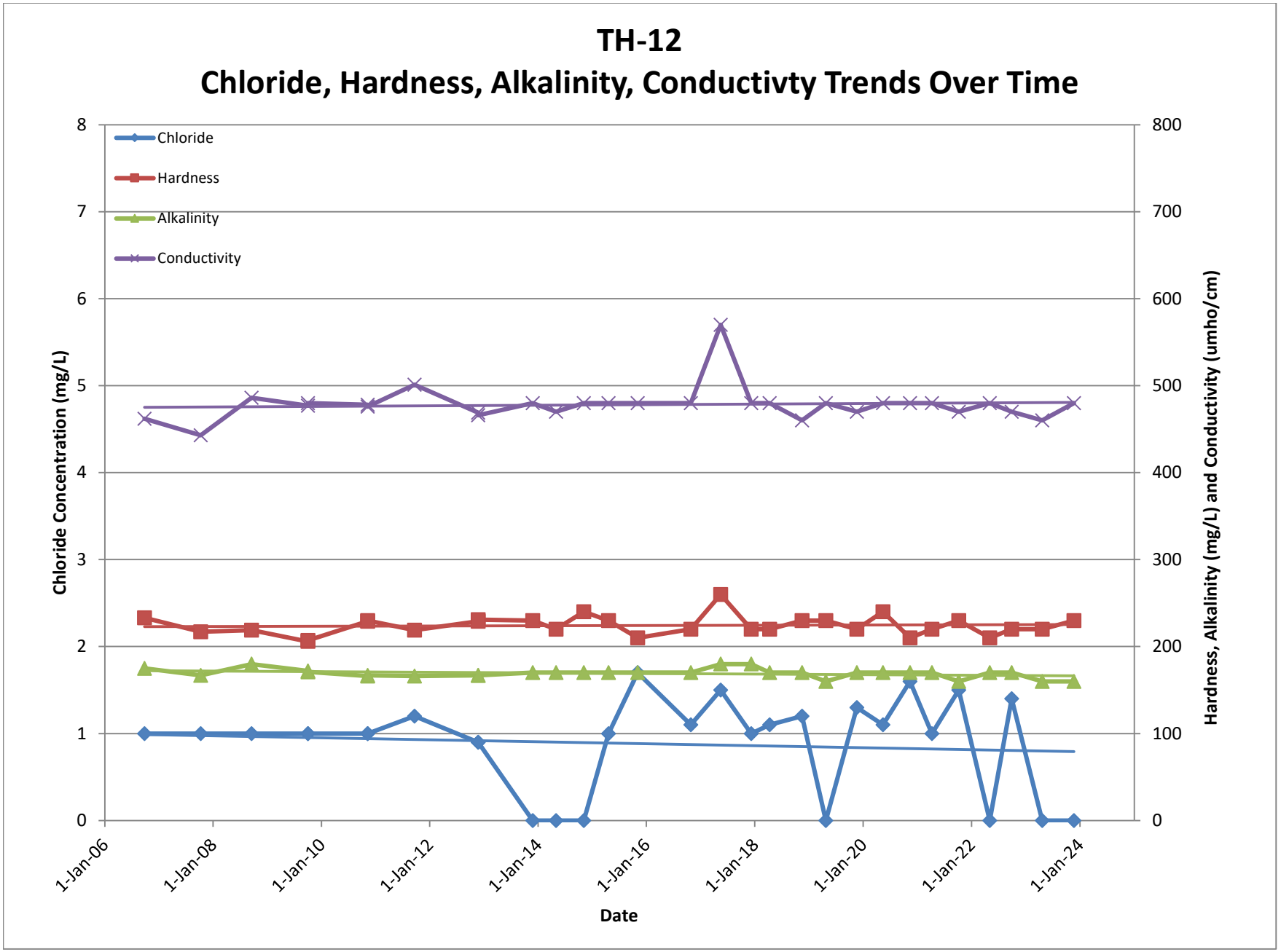

TH-7
Chloride, Hardness, Alkalinity, Conductivity Trends Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivity (umho/cm)
Date
0
20
40
60
80
100
120
140
0
200
400
600
800
1000
1200
1400
1600
1-Jan-93
1-Jan-95
1-Jan-97
1-Jan-99
1-Jan-01
1-Jan-03
1-Jan-05
1-Jan-07
1-Jan-09
1-Jan-11
1-Jan-13
1-Jan-15
1-Jan-17
1-Jan-19
1-Jan-21
1-Jan-23
1-Jan-25

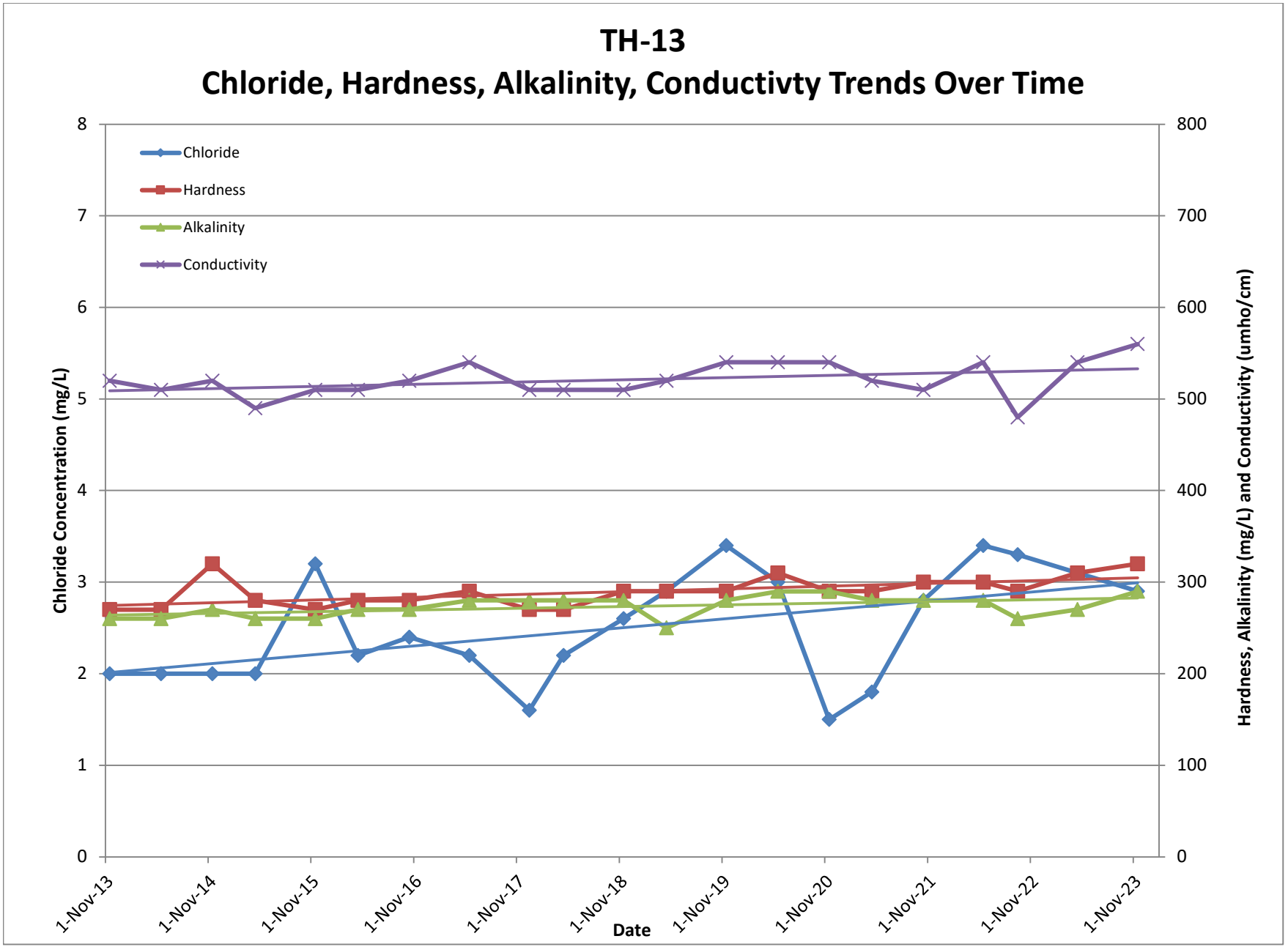

TH-8
Chloride, Hardness, Alkalinity, Conductivity Trends Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivity (umho/cm)
Date
0
10
20
30
40
50
60
70
80
0
200
400
600
800
1000
1200
1400
1600
1800
1-Jan-93
1-Jan-95
1-Jan-97
1-Jan-99
1-Jan-01
1-Jan-03
1-Jan-05
1-Jan-07
1-Jan-09
1-Jan-11
1-Jan-13
1-Jan-15
1-Jan-17
1-Jan-19
1-Jan-21
1-Jan-23
1-Jan-25

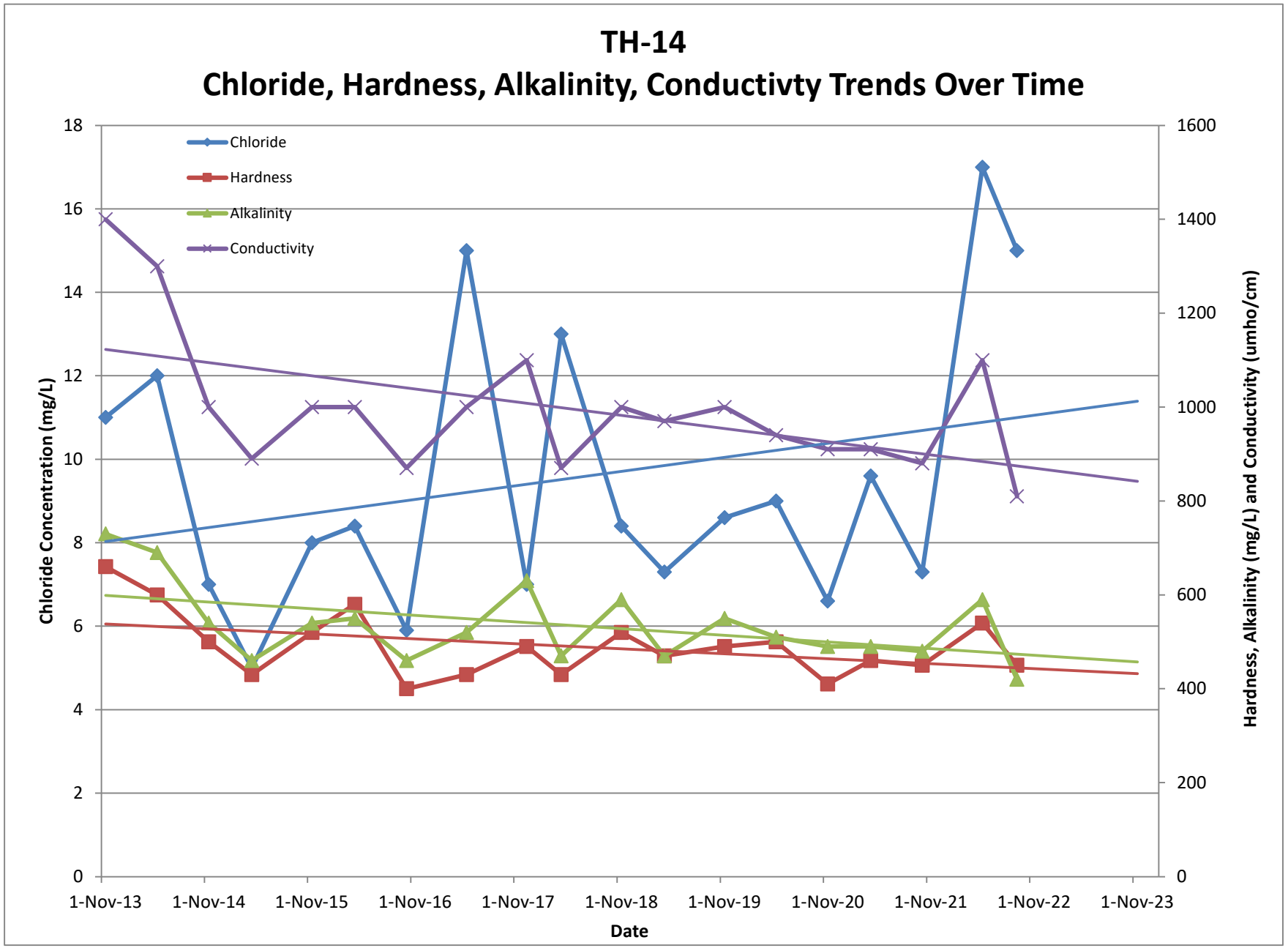

TH-9
Chloride, Hardness, Alkalinity, Conductivity Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivity (umho/cm)
Date
0
1
2
3
4
5
6
7
8
100
200
300
400
500
600
700
800
1-Jan-93
1-Jan-95
1-Jan-97
1-Jan-99
1-Jan-01
1-Jan-03
1-Jan-05
1-Jan-07
1-Jan-09
1-Jan-11
1-Jan-13
1-Jan-15
1-Jan-17
1-Jan-19
1-Jan-21
1-Jan-23
1-Jan-25


TH-10
Chloride, Hardness, Alkalinity, Conductivity Trends Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivity (umho/cm)
Date
0
20
40
60
80
100
120
0
200
400
600
800
1000
1200
1-Jan-93
1-Jan-95
1-Jan-97
1-Jan-99
1-Jan-01
1-Jan-03
1-Jan-05
1-Jan-07
1-Jan-09
1-Jan-11
1-Jan-13
1-Jan-15
1-Jan-17
1-Jan-19
1-Jan-21
1-Jan-23
1-Jan-25


TH-11
Chloride, Hardness, Alkalinity, Conductivity Trends Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivity (umho/cm)
Date
0
10
20
30
40
50
60
70
80
0
100
200
300
400
500
600
700
800
900
1000
1-Jan-93
1-Jan-95
1-Jan-97
1-Jan-99
1-Jan-01
1-Jan-03
1-Jan-05
1-Jan-07
1-Jan-09
1-Jan-11
1-Jan-13
1-Jan-15
1-Jan-17
1-Jan-19
1-Jan-21
1-Jan-23
1-Jan-25


TH-12
Chloride, Hardness, Alkalinity, Conductivty Trends Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivity (umho/cm)
Date
0
1
2
3
4
5
6
7
8
0
100
200
300
400
500
600
700
800
1-Jan-06
1-Jan-08
1-Jan-10
1-Jan-12
1-Jan-14
1-Jan-16
1-Jan-18
1-Jan-20
1-Jan-22
1-Jan-24


TH-13
Chloride, Hardness, Alkalinity, Conductivty Trends Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivity (umho/cm)
Date
0
1
2
3
4
5
6
7
8
100
200
300
400
500
600
700
800
1-Nov-13
1-Nov-14
1-Nov-15
1-Nov-16
1-Nov-17
1-Nov-18
1-Nov-19
1-Nov-20
1-Nov-21
1-Nov-22
1-Nov-23


TH-14
Chloride, Hardness, Alkalinity, Conductivty Trends Over Time
Chloride
Hardness
Alkalinity
Conductivity
Chloride Concentration (mg/L)
Hardness, Alkalinity (mg/L) and Conductivity (umho/cm)
Date
0
2
4
6
8
10
12
14
16
18
0
200
400
600
800
1000
1200
1400
1600
1-Nov-13
1-Nov-14
1-Nov-15
1-Nov-16
1-Nov-17
1-Nov-18
1-Nov-19
1-Nov-20
1-Nov-21
1-Nov-22
1-Nov-23

APPENDIX E:
HISTORICAL SURFACE WATER QUALITY

Historic Surface Water Quality at Sampling Point SW 1

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW 1 27-Apr-93	SW 1 4-Oct-93	SW 1 13-Jun-94	SW 1 7-Nov-94	SW 1 19-Jun-95	SW 1 11-Jul-01	SW 1 22-Oct-02	SW 1 20-May-03 002	SW 1 1-Oct-03	SW 1 5-May-04	SW 1 29-Sep-04	SW 1 6-Apr-05 007	SW 1 21-Sep-05	SW 1 4-Apr-06	SW 1 25-Sep-06	SW 1 13-Apr-07
Alkalinity(as CaCO3)				159	104	129	DRY	DRY	73	DRY	DRY	DRY	46	DRY	No Flow	DRY	Discontinued
Ammonia(as N)		0.059	0.083	0.021	0.11	0.18			0.15				0.09				
Calcium		24.4	43.4	41.8	29.8	36.3			17.0				7.47				
Chloride		0.8	2.7	1.8	3.7	2			2.7				1.2				
Conductivity @25øC (µmho/cm)		181	279	303	219	254			151				89				
Dissolved Organic Carbon(DOC)		14.8	36.5	36.5	>20	47			28.8				3.3				
Hardness(as CaCO3)		99	167	168	122	141			82				31				
Iron	0.300	0.01	1.01	0.58	0.71	3.81			0.42				0.238				
Magnesium		9.2	14.2	15.5	11.5	12.3			9.60				2.94				
Manganese				0.154	0.296	0.356			0.21				0.1				
Nitrate(as N)		0.3	<0.1	0.4	0.1	<0.1			0.1				<0.1				
Nitrite(as N)		0.01	0.01	<0.01	0.01	0.02			<0.1				<0.1				
Orthophosphate(as P)									<0.01				<0.01				
pH	6.5-8.5	7.53	7.24	7.30	7.17	7.24			7.15				6.8				
Phenols	0.001	0.011	0.0275	0.0161	0.045	0.0076			<0.001				<0.001				
Phosphorus, Total (as P)	(15)			0.052	0.037	0.89			0.06				0.09				
Potassium				2.60	4.7	2.26			2.6				2.8				
Sodium				0.4	0.2	0.6			1.9				8.4				
Sulphate				0.8	20.1	8.5			2				2				
TDS (ion sum calc.)																	
Total Kjeldahl Nitrogen(as N)		0.8	1.91	1.74	1.69	7.27			0.99				0.75				

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

Historic Surface Water Quality at Sampling Point SW 2

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW 2 27-Apr-93	SW 2 4-Oct-93	SW 2 30-Oct-95	SW 2 9-May-97	SW 2 11-Jul-01 003	SW 2 (Dup) 11-Jul-01 004	SW 2 18-Oct-01 011	SW 2 18-Jun-02 001	SW 2 22-Oct-02 006	SW 2 20-May-03 008	SW 2 1-Oct-03 001	SW 2 5-May-04 012	SW2 (Dup) 5-May-04 013	SW 2 29-Sep-04 011	SW 2 6-Apr-05 010	SW 2 (Dup) 6-Apr-05 009	SW 2 21-Sep-05 014
Alkalinity (as CaCO3)				210	182	308	302	204	235	282	220	270	225	216	321	180	180	325
Ammonia (as N)		0.079	0.053	<0.05	0.09	0.07	0.06	0.02	<0.01	0.06	0.02	0.01	0.07	0.06	0.05	0.02	0.02	0.05
Calcium		54.7	76.9	65.4	60.8				54.9	87.5	64.3	62.6	60	61	73.4	47.9	47.5	81.9
Chloride		24.4	43.4	34.8	12.1	11.6	11.7	19.0	12.6	12.5	19.3	27.1	18.9	18.7	10.1	14.7	14.7	6.5
Conductivity @25øC (µmho/cm)		438	572	523	418	599	598	445	473	592	482	532	536	520	562	397	398	614
Dissolved Organic Carbon(DOC)		4	4.5	6.8	4.6				7.8	5.7	7.1	8.0	6.6	6.6	4.4	4.5	4.1	8.8
Hardness(as CaCO3)		210	291	255	197				220	350	253	247	239	243	297	195	194	330
Iron	0.300	0.07	0.07	0.33	6.76	0.04	0.04	0.05	0.04	0.08	0.21	0.101	0.04	0.038	0.119	0.039	0.047	0.021
Magnesium		17.8	24	22.3	15.7				20.1	32	22.5	22.0	21.7	22.1	27.6	18.4	18.3	30.6
Manganese				0.112	2.8				0.006	0.03	0.02	0.02	0.012	0.013	0.018	0.011	0.012	0.017
Nitrate(as N)		0.3	<0.1	<0.1					0.6	0.2	0.3	0.2	0.3	0.3	0.3	0.5	0.5	0.3
Nitrite(as N)		<0.01	<0.01	0.01					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Orthophosphate(as P)									<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pH	6.5-8.5	7.81	7.86	7.71	7.46	7.90	7.92	7.59	7.56	8.51	7.93	7.87	8.06	8.06	7.97	7.71	7.69	7.97
Phenols	0.001	0.011	0.002	0.0035		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)	(15)			0.11	2.2	0.01	0.01	<0.01	0.2	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
Potassium				0.3					1.7	<0.4	1.6	1.6	1.5	1.5	1.5	1.3	1.3	2.2
Sodium				10.2	4.93				7.5	6.1	10.6	10.4	10.1	10.3	5.3	8.5	8.5	3.9
Sulphate				14.6	5.57				8.1	17	15	9	8	7	8	6	6	11
TDS (ion sum calc.)																		
Total Kjeldahl Nitrogen(as N)		0.5	0.39	1.26	1.55				0.4	0.31	0.47	0.3	0.34	0.42	0.27	0.3	0.27	0.18

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

Historic Surface Water Quality at Sampling Point SW 2

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW 2 4-Apr-06 010	SW 2 25-Sep-06 005	SW 2 13-Apr-07 009	SW 2 9-Oct-07 004	SW 2 15-Apr-08 006	SW 2 17-Sep-08 008	SW 2 30-Apr-09	SW 2 1-Oct-09	SW 2 1-Oct-09 Duplicate 2	SW 2 12-May-10	SW 2 12-May-10 Duplicate #1	SW 2 9-Nov-10	SW 2 2-May-11	SW 2 2-May-11 Duplicate #2	SW 2 21-Sep-11
Alkalinity (as CaCO3)		169	300	208	321	180	244	240	241	242	256	256	267	230	230	298
Ammonia (as N)		< 0.01	< 0.01	< 0.01	0.03	< 0.01	0.02	0.03	< 0.01	< 0.01	< 0.01	< 0.01	0.06	< 0.01	< 0.01	< 0.01
Calcium		42.2	75.1	54.9	83.7	49.2	61.2	67.1	59.4	59.3	64.8	62.5	73.7	58.0	60.4	84.2
Chloride		15.1	27.4	19.5	8.7	16.7	16.6	14.8	18.6	18.9	14.7	14.8	15.2	16.7	16.7	17.3
Conductivity @25øC (µmho/cm)		385	581	431	552	450	469	469	503	502	465	521	552	502	504	630
Dissolved Organic Carbon(DOC)		9.4	9.4	4.9	4.6	7.1	14.4	8.1	11.3	11.1	6.7	6.6	5.6	6.6	6.7	7.5
Hardness(as CaCO3)		173	296	224	329	199	243	259	240	240	259	252	294	232	242	334
Iron	0.300	0.024	0.384	0.05	0.124	0.038	0.082	0.039	0.096	0.048	0.123	0.056	0.101	0.321	0.064	0.093
Magnesium		16.5	26.4	21	29.1	18.4	22	22.3	22.2	22.4	23.6	23.2	26.7	21.2	22.1	30.1
Manganese		0.003	0.151	0.005	0.027	0.003	0.019	0.028	0.014	0.013	0.023	0.019	0.018	0.021	0.018	0.021
Nitrate(as N)		0.7	0.2	0.7	0.2	0.7	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2
Nitrite(as N)		<0.1	<0.1	<0.1	<0.1								<0.1	<0.1	<0.1	0.2
Orthophosphate(as P)		<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	<0.01
pH	6.5-8.5	8.09	7.69	7.69	7.38	7.28	7.16	7.28	7.62	7.79	8	8.01	7.11	7.88	7.94	7.92
Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)	(15)	<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	0.03
Potassium		1.2	1.7	1.3	2.2	1.4	1.9	1.7	1.8	1.8	1.3	1.4	1.8	1.2	1.3	1.8
Sodium		8	13.3	10.3	5.1	9.5	10	8.1	9.5	9.6	8.6	8.5	8.9	9.3	9.6	10.6
Sulphate		9	7	7	10	8	4	5	6	6	9	9	9	5	5	9
TDS (ion sum calc.)		195	332	243	333	215	263	264	263	264	278	275	298	251	254	333
Total Kjeldahl Nitrogen(as N)		0.33	0.49	0.34	0.21	0.32	0.46	0.29	0.19	0.34	0.30	0.24	0.23	0.16	0.16	0.30

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

UA

Historic Surface Water Quality at Sampling Point SW 2

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW 2 12-Apr-12	SW 2 22-Nov-12	SW 2 7-May-13	SW 2 26-Nov-13	SW 2 1-May-14	SW 2 4-Nov-14	SW 2 20-Apr-15	SW 2 3-Nov-15	SW 2 20-Apr-16	SW 2 26-Oct-16	SW 2 16-May-17	SW 2 7-Dec-17	SW 2 10-Apr-18	SW 2 15-Nov-18	SW 2 24-Apr-19	SW 2 20-Nov-19	SW 2 13-May-20	SW 2 12-Nov-20
Alkalinity (as CaCO3)		236	277	250	230	210	260	190	250	240	300	260	230	250	250	190	260	240	290
Ammonia (as N)		< 0.01	0.01	0.08	<0.05	ND	0.067	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.055	<0.050	0.075	0.077	0.07
Calcium		62.9	75.4	74	61	61	71	54	67	63	77	63	59	66	61	55	76	62	77
Chloride		14.9	16.7	18	17	18	20	18	24	15	18	17	14	13	19	15	24	17	23
Conductivity @25øC (µmho/cm)		496	578	530	490	450	560	430	550	490	610	530	460	490	510	400	560	490	600
Dissolved Organic Carbon(DOC)		5.0	6.4	7.3	6.7	6.4	6.2	6.3	8	5.5	5.8	7	6.2	3.8	6.4	6.2	5.9	5.1	5.8
Hardness(as CaCO3)		254	306	270	260	230	280	220	290	250	330	270	240	250	270	210	290	230	320
Iron	0.300	0.094	0.176	<0.1	<0.1	ND	<0.1	0.11	<0.1	<0.100	0.19	<0.1	<0.1	<0.1	<0.1	<0.1	0.67	<0.1	<0.1
Magnesium		23.6	28.6	24	25	23	26	18	24	23	28	23	22	26	24	20	27	22	26
Manganese		0.010	0.029	0.021	0.008	0.006.	0.002	0.027	0.014	0.008	0.044	0.02	0.015	0.02	0.02	0.004	0.13	0.021	0.03
Nitrate(as N)		0.3	0.3	<0.1	0.36	0.25	0.36	0.34	0.1	0.1	<0.10	0.1	0.33	0.56	0.28	0.11	0.26	0.21	0.12
Nitrite(as N)		<0.1	<0.1	<0.01	<0.01	ND	<0.010	<0.010	<0.010	<0.010	<0.010	0.1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.01	ND	<0.010	<0.010	<0.010	<0.010	<0.010	0.026	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5	8.15	8.02	8.09	8.11	8.11	8.2	8.02	8.06	8.18	8.19	8.18	8.1	8.18	8.11	8.2	8.07	8.07	8.09
Phenols	0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)	(15)	0.05	<0.01	0.009	<0.002	ND	0.006	0.015	<0.004	0.004	<0.1	0.004	<0.10	<0.004	<0.004	<0.004	0.079	<0.004	0.004
Potassium		1.5	1.5	1.3	1.3	1.6	1.6	1.4	1.8	1.5	1.3	1.1	1.3	1.4	1.1	1.3	1.3	1.1	1.3
Sodium		8.6	9.3	11	11	10	11	10	13	8.3	8.9	9.3	8.3	7.9	9.2	8.6	13	8.5	11
Sulphate		8	18	<1	<1	ND	1	<1	<1.0	<1.0	11	<5.0	<1.0	1.4	<1.0	<1.0	5.1	<1.0	<1.0
TDS (ion sum calc.)		263	317	292	270	246	310	212	302	254	330	269.4	242.6	230	230	160	340	315	335
Total Kjeldahl Nitrogen(as N)		0.19	0.24	0.72	0.44	0.33	0.33	0.35	0.36	0.23	0.34	0.37	0.18	0.17	0.12	0.21	0.28	0.22	0.27

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

	#REF!		#REF!
<	0.01	<	0.01

Historic Surface Water Quality at Sampling Point SW 2

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW 2 8-Apr-21	SW 2 7-Oct-21	SW 2 3-May-22	SW 2 29-Sep-22	SW 2 23-Apr-23	SW 2 22-Nov-23
Alkalinity (as CaCO3)		220	260	240	250	200	260
Ammonia (as N)		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Calcium		61	74	56	76	56	70
Chloride		21	21	20	29	17	31
Conductivity @25øC (µmho/cm)		470	510	500	550	470	
Dissolved Organic Carbon(DOC)		7.4	9.5	6.2	10	7.1	6.6
Hardness(as CaCO3)		230	260	230	290	220	280
Iron	0.300	<0.1	0.12	<0.1	<0.1	<0.1	<0.1
Magnesium		21	25	22	26	21	
Manganese		0.0094	0.022	0.017	0.024	0.0093	0.025
Nitrate(as N)		0.12	0.11	0.13	<0.10	<0.10	0.14
Nitrite(as N)		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5	8.3	8.01	8.19	8.21	8.19	8.21
Phenols	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)	(15)	0.006	0.005	0.005	0.007	<0.004	<0.020
Potassium		1.5	1.8	1.4	1.8	1.6	1.5
Sodium		11	12	9.5	16	10	19
Sulphate		<1.0	<1.0	<1.0	<1.0	5.6	6.4
TDS (ion sum calc.)		245	320	185	300	235	
Total Kjeldahl Nitrogen(as N)		0.25	0.33	0.26	0.3	0.33	0.24

Historic Surface Water Quality at Sampling Location SW2A

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW2A 4-Apr-06	SW2A (dup) 4-Apr-06	SW2A 25-Sep-06	SW2A (dup) 25-Sep-06	SW2A 13-Apr-07	SW2A (dup) 13-Apr-07	SW2A 9-Oct-07	SW2A (dup) 9-Oct-07	SW2A 15-Apr-08	SW2A (dup) 15-Apr-08	SW2A 17-Sep-08	SW2A 30-Apr-09	SW2A (dup) 30-Apr-09 Duplicate #2	SW2A 1-Oct-09	SW2A 12-May-10	SW2A 9-Nov-10	SW2A (dup) 9-Nov-10 Duplicate #1	SW2A 2-May-11
Alkalinity(as CaCO3)		148	148	292	290	200	190	314	312	170	170	216	227	220	222	226	231	232	220
Ammonia(as N)		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	0.01	0.01	0.02	0.01
Calcium		35.8	36.0	71.8	68.1	51.3	50	76.5	77.6	44.4	44.5	55.4	62.2	62.5	53.8	56.9	62.2	61.6	55.3
Chloride		8.4	8	24.1	24	15.4	15.3	8	8	12	11.7	13	14.3	14.2	15.3	14.9	16.4	15.7	16.8
Conductivity @25øC (µmho/cm)		328	331	543	540	405	400	544	529	417	400	416	442	445	450	464	491	504	482
Dissolved Organic Carbon(DOC)		8.6	11.2	13.7	12.9	5.4	5.1	11.6	6.9	8.3	8.4	16.8	8.2	7.7	12.5	8.5	7.1	6.9	7.1
Hardness(as CaCO3)		151	151	288	273	213	208	306	310	181	182	222	242	243	220	230	254	251	223
Iron	0.300	0.03	0.022	0.081	0.068	0.02	0.016	0.165	0.179	<0.005	<0.005	0.032	<0.005	<0.005	0.031	0.025	0.015	0.013	0.034
Magnesium		14.9	14.9	26.4	25	20.7	20.3	28	28.3	17	17.1	20.4	21.1	21.1	20.8	21.4	23.9	23.7	20.7
Manganese		0.003	0.004	0.075	0.06	0.004	0.004	0.173	0.188	0.003	0.003	0.021	0.035	0.035	0.019	0.048	0.011	0.01	0.014
Nitrate(as N)		0.7	0.7	0.1	0.1	0.8	0.8	<0.1	<0.1	0.7	0.7	<0.1	0.2	0.2	0.1	0.3	0.3	0.3	0.2
Nitrite(as N)		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1										<0.1	<0.1	<0.1
Orthophosphate(as P)		<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	<0.01	<0.01	<0.01	<0.01
pH	6.5-8.5	8.08	8.05	7.46	7.42	7.98	7.9	7.58	7.54	7.63	7.6	7.33	7.29	7.54	7.64	7.96	7.04	7.27	7.91
Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)	(15)	<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	<0.01	<0.01	<0.01	<0.01
Potassium		1.3	1.2	1.8	1.8	1.3	1.3	1.2	1.2	1.4	1.4	1.9	1.7	1.7	1.8	1.2	1.8	1.8	1.2
Sodium		4.1	3.9	13.3	12.7	7.9	7.6	5	5.1	6.8	6.6	8.8	7.8	7.7	8.1	9.1	9.7	9.6	9.2
Sulphate		7	7	3	3	6	6	2	2	7	7	2	3	3	3	4	5	5	3
TDS (ion sum calc.)		162	162	316	309	224	220	310	310	190	192	231	247	243	237	245	259	258	268
Total Kjeldahl Nitrogen(as N)		0.36	0.39	0.45	0.48	0.32	0.24	0.25	0.24	0.3	0.33	0.46	0.29	0.3	0.32	0.33	0.18	0.22	0.18

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

Historic Surface Water Quality at Sampling Location SW2A

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW2A 21-Sep-11	SW2A 12-Apr-12	SW2A 22-Nov-12	SW2A 7-May-13	SW2A 26-Nov-13	SW2A 1-May-14	SW2A 4-Nov-14	SW2A 20-Apr-15	SW2A 3-Nov-15	SW2A 20-Apr-16	SW2A 26-Oct-16	SW2A 16-May-17	SW2A 7-Dec-17	SW2A 10-Apr-18	SW2A 15-Nov-18
Alkalinity(as CaCO3)		282	218	251	240	220	200	230	180	240	240	290	240	220	230	230
Ammonia(as N)		0.01	0.01	0.01	0.11	<0.05	ND	0.062	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Calcium		70.4	54.4	60.1	66	58	56	59	48	60	61	70	57	54	58	55
Chloride		20.1	13.6	16.4	20	18	16	20	18	23	15	17	18	13	13	16
Conductivity @25øC (µmho/cm)		598	454	517	510	480	430	500	390	510	480	570	500	430	460	460
Dissolved Organic Carbon(DOC)		10.1	5.9	7.7	8.4	7.5	6.8	7.1	6.6	8.3	5.9	6.9	7.7	6.4	3.9	6.9
Hardness(as CaCO3)		285	224	251	260	250	220	250	200	270	240	300	260	220	240	260
Iron	0.300	0.045	0.042	1.39	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.100	<0.100	<0.1	<0.1	<0.1	<0.1
Magnesium		26.6	21.5	24.5	24	24	22	23	18	23	22	27	22	21	24	22
Manganese		0.055	0.021	0.161	0.021	0.044	0.049	0.013	0.011	0.024	0.0061	72	0.018	0.0063	0.011	0.014
Nitrate(as N)		<0.1	0.4	0.3	<0.1	0.42	0.18	0.47	0.43	0.13	0.14	<0.10	<0.10	0.35	0.68	0.44
Nitrite(as N)		<0.1	<0.1	<0.1	<0.01	<0.01	ND	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5	7.83	8.12	7.93	8.06	8.11	8.1	8.14	8.09	8.08	8.15	8.2	8.13	8.12	8.17	8.03
Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)	(15)	0.03	0.05	<0.01	0.009	<0.002	0.003	0.005	0.007	0.005	<0.004	<0.100	<0.004	<0.10	<0.004	0.004
Potassium		1.4	1.5	1.1	1.3	1.3	1.4	1.5	1.5	2.2	1.5	1.4	0.93	1.3	1.4	1.3
Sodium		11.7	8.4	9.4	12	11	8	11	10	13	8.5	9	9.4	8.3	7.3	7.8
Sulphate		3	5	9	<1	<1	ND	<1	<1	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0
TDS (ion sum calc.)		302	237	274	284	254	246	296	194	262	248	300	251.33	229.6	235	205
Total Kjeldahl Nitrogen(as N)		0.34	0.22	0.21	0.91	0.48	0.36	0.21	0.34	0.35	0.24	0.35	0.3	0.18	0.17	<0.10

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

Historic Surface Water Quality at Sampling Location SW2A

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW2A 24-Apr-19	SW2A 20-Nov-19	SW2A 13-May-20	SW2A 12-Nov-20	SW2A 8-Apr-21 Dry	SW2A 7-Oct-21	SW2A 3-May-22	SW2A 29-Sep-22	SW 2A 23-Apr-23	SW 2A 22-Nov-23
Alkalinity(as CaCO3)		180	230	220	270		240	230	240	200	230
Ammonia(as N)		0.097	0.08	0.19	0.22		0.051	<0.050	<0.050	<0.050	<0.050
Calcium		51	65	55	65		65	53	64	55	63
Chloride		13	19	15	18		18	18	23	15	25
Conductivity @25øC (µmho/cm)		380	490	450	540		470	470	510	440	
Dissolved Organic Carbon(DOC)		6.2	6.1	5.7	6.2		11	6.8	10	7.5	6.5
Hardness(as CaCO3)		210	260	210	280		240	220	270	210	250
Iron	0.300	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1
Magnesium		19	25	20	25		23	21	24	21	
Manganese		0.0028	0.027	0.021	0.058		0.025	0.017	0.017	0.0063	0.02
Nitrate(as N)		0.14	0.41	0.27	0.12		0.11	0.15	<0.10	0.11	0.2
Nitrite(as N)		<0.010	0.017	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5	8.16	8.12	8.21	8.09		7.98	8.13	8.22	8.19	8.2
Phenols	0.001	<0.0010	<0.0010	<0.0010	<0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)	(15)	<0.004	<0.004	<0.004	<0.004		0.005	<0.004	0.006	<0.004	<0.020
Potassium		1.3	1.3	1.0	1.4		2.0	1.4	2.0	1.6	1.7
Sodium		6.8	10	7.7	9.8		11	8.9	11	9.9	17
Sulphate		<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	5.5	5.5
TDS (ion sum calc.)		160	305	290	300		275	195	275	230	
Total Kjeldahl Nitrogen(as N)		0.23	0.29	0.25	0.24		0.29	0.27	0.34	0.37	0.22

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

Historic Surface Water Quality at Sampling Point SW 3

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW 3 27-Apr-93	SW 3 4-Oct-93	SW 3 7-Nov-94	SW 3 19-Oct-95	SW 3 30-Oct-95	SW 3 9-May-97	SW 3 11-Jul-01	SW 3 18-Oct-01	SW 3 18-Jun-02	SW 3 22-Oct-02 007	SW 3 20-May-03 009	SW 3 1-Oct-03 013	SW 3 5-May-04 011	SW 3 29-Sep-04 012	SW 3 6-Apr-05 008	SW 3 21-Sep-05 002	SW 3 4-Apr-06 011	SW 3 25-Sep-06	SW 3 13-Apr-07
Alkalinity(as CaCO3)				272	237	233	172	DRY	DRY	NO	264	227	235	216	312	180	333	167	DRY	Discontinued
Ammonia(as N)		0.476	0.067	0.07	0.05	0.05	0.16				0.02	< 0.01	< 0.01	0.04	0.07	0.03	0.21	0.01		
Calcium		50.9	92.8	74.4	53.7	67.3	74				103	66.3	58.2	60	82.4	49.2	82.6	42.7		
Chloride		2.9	4.7	7.5	5.9	7.6	12.3				14.4	18.8	22	18.8	10.8	14.7	7.5	15		
Conductivity @25øC (µmho/cm)		366	604	511	468	483	503				594	484	491	484	556	401	621	384		
Dissolved Organic Carbon(DOC)		4.5	8.6	6	4	6.8	5.1				70	6.9	4.9	6.6	4.3	3.8	7.1	7.9		
Hardness(as CaCO3)		199	356	290	254	262	291				396	260	231	239	334	201	332	174		
Iron	0.300	0.02	0.03	2.42	0.07	0.3	2.98				5.29	0.50	0.072	0.029	0.072	0.064	0.061	0.029		
Magnesium		17.5	30.1	25.3	29	22.8	22.9				33.6	23.0	20.8	21.7	31.1	18.9	30.6	16.5		
Manganese				0.222	0.015	0.046	1.19				0.39	0.14	0.017	0.023	0.036	0.015	0.031	0.005		
Nitrate(as N)		0.3	<0.1	<0.1	0.3	<0.1					0.2	0.3	0.4	0.3	0.3	0.5	0.3	0.7		
Nitrite(as N)		<0.01	<0.01	0.01	<0.01	0.01					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
Orthophosphate(as P)											<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01		
pH	6.5-8.5	7.68	7.41	7.36	8.38	7.63	7.69				8.09	7.96	7.91	8.16	7.96	7.71	8.1	8.12		
Phenols	0.001	0.006	0.0135	0.0086	0.001	0.0014					<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
Phosphorus, Total (as P)	(15)			0.126	0.01	0.04					0.65	0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01		
Potassium				0.31	0.76	0.37					0.4	1.6	1.9	1.5	2.1	1.4	2.5	1.2		
Sodium				2.0	3.7	1.9	3.34				7.7	10.8	10	10.1	6.1	8.7	4.5	7.9		
Sulphate				10.3	15.5	17.3	2.74				23	14	10	7	8	6	11	9		
TDS (ion sum calc.)																		194		
Total Kjeldahl Nitrogen(as N)		1.17	0.6	1.62	0.49	0.53	0.65				9.27	0.57	0.3	0.35	0.33	0.29	0.22	0.39		

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

Historic Surface Water Quality at Sampling Point SW 4

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW 4 27-Apr-93	SW 4 4-Oct-93	SW 4 13-Jun-94	SW 4 7-Nov-94	SW 4 30-Oct-95	SW4 27-May-96	SW4 15-Nov-96	SW4 9-May-97	SW4 19-Dec-97	SW 4 13-May-98	SW 4 18-Dec-98	SW 4 18-Dec-98 Replicate	SW 4 11-Jul-00	SW 4 11-Jul-00 Replicate	SW 4 21-Dec-00
Alkalinity(as CaCO3)				237	208	217	225	226	205	246	233	239	234	245	242	234
Ammonia(as N)		0.079	0.266	0.007	0.071	0.07	<0.05	<0.05	0.09	0.05	0.02	0.03	0.03	0.13	0.15	0.06
Calcium		53.6	61.5	57.7	54.6	58.4	57.8	58.8	49.2	66.1	57.3	64.9	63.8	58	59.9	58.5
Chloride		5.5	6.9	6	6.1	7.4	6.5	6.16	6.62	7.73	6.5	9.7	9.6	7.9		6.4
Conductivity @25øC (µmho/cm)		419	469	463	410	460	430	419	395	480	447	501	502	471	456	383
Dissolved Organic Carbon(DOC)		2.2	6.1	15.2	15.6	6.1	4.7	4.4	3.4	2.7	3.4	2.7	2.9	7.5	7.3	5
Hardness(as CaCO3)		230	265	257	234	251	252	170	219	279	246	291		264	264	257
Iron	0.300	0.02	0.68	0.01	0.06	0.08	0.147	0.026	0.074	0.048	0.04	0.07	0.27	0.24	0.25	0.11
Magnesium		23.2	26.9	27.3	23.7	25.5	26.1	25.2	19.5	27.6	25	27.7	27.6	28.6	29.5	26.3
Manganese				0.007	0.004	0.004	0.011	0.005		0.01	0.01	nd	nd	0.037	0.038	0.15
Nitrate(as N)		0.9	0.2	0.3	0.1	0.3	0.18	0.34	0.27	0.57	0.3	0.59	0.6	0.3	na	0.5
Nitrite(as N)		<0.01	<0.01	<0.01	<0.01	0.01	<0.03	<0.03			nd	nd	nd	nd	na	nd
Orthophosphate(as P)							<0.05	<0.05			nd	nd	nd	nd	na	nd
pH	6.5-8.5	8.27	8.19	8.35	8.14	8.31	8.13	8.04	8.16	8.25	8.26	8.47	8.48	8.25	8.25	8.07
Phenols	0.001	0.002	0.0025	0.0055	0.0074	0.0018	<0.001	<0.001			0.025			nd	nd	nd
Phosphorus, Total (as P)	(15)			0.013	0.005	0.03	0.008	0.29	1.7		0.02	0.1	nd	nd	nd	0.003
Potassium				0.9	1.05	0.97	<1	<1			1.2	nd	nd	nd	nd	nd
Sodium				3.2	3.0	3.7	3.16	3.28	2.53	4.11	3.43	4.2	4.2	4.3	4.4	3.8
Sulphate				9.4	19.2	25	10.2	10.9	9.93	17.2	11.2	30.9	31	14	na	11.7
TDS (ion sum calc.)																
Total Kjeldahl Nitrogen(as N)		0.43	0.76	0.38	0.47	0.41		0.28	0.65	0.12	0.3			0.84	0.76	0.37

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

Historic Surface Water Quality at Sampling Point SW 4

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW 4 21-Dec-00 Replicate	SW 4 11-Jul-01 009	SW 4 18-Oct-01 015	SW 4 18-Jun-02	SW 4 22-Oct-02	SW 4 20-May-03	SW 4 (dup) 20-May-03	SW 4 1-Oct-03	SW 4 5-May-04	SW 4 29-Sep-04	SW 4 6-Apr-05	SW 4 21-Sep-05	SW 4 4-Apr-06	SW 4 25-Sep-06
Alkalinity(as CaCO3)		234	234	205	236	231	206	209	222	198	250	190	238	170	240
Ammonia(as N)		0.06	0.06	0.08	0.03	0.12	< 0.01	< 0.01	0.02	0.06	0.05	0.02	0.04	< 0.01	< 0.01
Calcium		59			52.4	67.7	55.9	55.7	57.1	52.1	53	47.5	54.8	38.6	57.4
Chloride		6.3	6.3	7.4	6.1	6.7	6.9	6.7	8.5	7.1	7.3	6.4	7.3	5.7	7.5
Conductivity @25øC (µmho/cm)		388	463	410	446	496	428	426	444	433	459	381	477	351	449
Dissolved Organic Carbon(DOC)		4.9			3.7	2.8	3.7	3.8	3.3	3.8	2	2.6	7.7	5.1	4.3
Hardness(as CaCO3)		258			238.271	291	237	236	241	221	247	203	256	165	256
Iron	0.300	0.11	0.05	0.09	0.02	0.02	0.19	0.18	0.043	0.032	0.021	0.038	0.027	0.026	0.026
Magnesium		26.4			26.1	29.6	23.7	23.6	23.8	22.1	27.9	20.4	29	16.7	27.5
Manganese		0.15			<0.005	<0.01	0.01	0.01	0.004	0.004	0.005	0.006	0.007	0.002	0.005
Nitrate(as N)		0.5			0.6	0.6	0.3	0.3	0.5	0.4	0.7	0.4	0.6	0.4	0.4
Nitrite(as N)		nd			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Orthophosphate(as P)		nd			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pH	6.5-8.5	8.06	8.21	7.97	8.15	8.64	8.17	8.14	8.14	8.3	8.24	7.89	8.21	8.15	7.99
Phenols	0.001	nd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)	(15)	0.003	0.26	0.02	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Potassium		nd			<1.0	<0.4	0.7	0.7	0.8	0.7	0.8	0.6	1	0.6	0.9
Sodium		3.9			2.8	3.6	4.2	4.2	4.6	3.6	3.7	3.7	3.9	3	4.5
Sulphate		11.6			12.7	23	18	18	22	11	16	10	15	10	17
TDS (ion sum calc.)														178	261
Total Kjeldahl Nitrogen(as N)		0.36			0.48	0.34	0.32	0.31	0.32	0.33	0.24	0.2	0.27	0.24	0.32

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

Historic Surface Water Quality at Sampling Point SW 4

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW 4 13-Apr-07	SW 4 9-Oct-07	SW 4 15-Apr-08	SW 4 17-Sep-08	SW 4 30-Apr-09	SW 4 1-Oct-09	SW 4 12-May-10	SW 4 9-Nov-10	SW 4 2-May-11	SW 4 21-Sep-11	SW 4 12-Apr-12
Alkalinity(as CaCO3)		204	240	160	208	265	211	238	255	224	238	243
Ammonia(as N)		< 0.01	< 0.01	< 0.01	0.02	0.02	< 0.01	< 0.01	0.04	< 0.01	< 0.01	< 0.01
Calcium		51.7	54.6	41.9	52	61	49.6	56.9	65.8	53.0	54.1	64.9
Chloride		6.2	7.1	5.8	6.3	5.6	6.8	6.5	6.7	5.4	6.1	5.8
Conductivity @25øC (µmho/cm)		380	452	387	398	410	421	462	509	451	496	470
Dissolved Organic Carbon(DOC)		3.2	8.5	4.6	12	4.7	8.2	4.3	4	4.3	3.1	2.8
Hardness(as CaCO3)		222	249	177	223	251	216	247	282	225	251	282
Iron	0.300	0.029	0.058	0.008	0.043	<0.005	0.029	0.015	0.017	0.509	0.037	0.019
Magnesium		22.5	27.4	17.7	22.6	23.9	22.3	25.6	28.6	22.6	28.1	29.0
Manganese		0.002	0.006	0.001	0.007	0.009	0.006	0.004	0.003	0.011	<0.001	0.002
Nitrate(as N)		0.5	0.5	0.3	0.2	0.3	0.2	0.3	0.4	0.3	0.3	0.4
Nitrite(as N)		<0.1	<0.1						<0.1	<0.1	<0.1	<0.1
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pH	6.5-8.5	8.06	7.63	7.66	7.53	7.59	7.86	8.32	7.44	8.12	8.15	8.36
Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)	(15)	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.05
Potassium		0.6	1	0.6	0.8	0.8	0.8	0.6	0.9	0.5	0.8	0.8
Sodium		3.5	4.2	3.2	3.7	3.3	3.5	4	4.1	3.3	3.9	3.8
Sulphate		9	15	9	12	7	14	12	12	7	15	11
TDS (ion sum calc.)		218	256	177	223	261	224	250	273	228	252	264
Total Kjeldahl Nitrogen(as N)		0.21	0.28	0.16	0.41	0.22	0.31	0.17	0.16	0.08	0.19	0.11

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

Historic Surface Water Quality at Sampling Point SW 4

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW 4 22-Nov-12	SW 4 22-Nov-12 Duplicate #2	SW 4 7-May-13	SW 4 ########	SW 4 1-May-14	SW 4 4-Nov-14	SW 4 20-Apr-15	SW 4 3-Nov-15	SW 4 20-Apr-16	SW 4 26-Oct-16	SW 4 16-May-17	SW 4 7-Dec-17	SW 4 10-Apr-18	SW 4 15-Nov-18
Alkalinity(as CaCO3)		242	244	230	230	200	250	220	220	230	250	240	240	260	270
Ammonia(as N)		< 0.01	< 0.01	0.051	<0.05	ND	0.092	<0.050	<0.050	0.09	0.099	<0.050	<0.050	0.095	0.19
Calcium		64.8	63.0	64	59	56	62	57	59	57	61	53	61	64	64
Chloride		7.5	7.6	7	6	7	9	7	9.4	6.1	8.9	7	14	14	20
Conductivity @25øC (µmho/cm)		503	507	470	450	400	500	440	470	450	520	470	470	510	540
Dissolved Organic Carbon(DOC)		5.1	4.7	4.3	3.8	4.1	4.7	3.7	6.9	3.2	3.5	3.9	6.1	3.7	6.1
Hardness(as CaCO3)		282	274	260	260	220	280	250	270	250	300	240	250	270	290
Iron	0.300	0.425	0.053	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.100	0.11	<0.1	<0.1	<0.1	0.11
Magnesium		29.2	28.3	28	27	22	27	24	26	25	29	24	23	26	25
Manganese		0.025	0.003	0.001	0.0029	0.0049	0.0089	0.013	0.005	0.0049	9.3	0.015	0.023	0.021	0.028
Nitrate(as N)		0.5	0.6	0.27	0.57	0.33	0.43	0.32	0.3	0.39	0.51	0.35	0.29	0.55	0.28
Nitrite(as N)		<0.1	<0.1	<0.01	<0.01	ND	<0.010	<0.010	<0.010	<0.010	<0.010	7	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.01	ND	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5	8.25	8.23	8.28	8.23	8.28	8.34	8.32	8.2	8.4	8.36	8.32	8.12	8.2	8.13
Phenols	0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.0010	<0.0010	<0.0010	<0.0010	0.0017	<0.0010	<0.004	<0.0010	<0.0010
Phosphorus, Total (as P)	(15)	<0.01	<0.01	0.018	0.002	0.005	0.004	0.009	0.007	0.004	<0.100	0.007	<0.10	0.006	0.005
Potassium		0.8	0.8	0.83	0.81	0.84	0.89	0.86	1	0.81	1	0.68	1.4	1.5	1.4
Sodium		4.3	4.2	4	3.9	3.8	0.41	3.6	4.6	3.2	4.6	3.3	8.9	8.6	11
Sulphate		30	30	10	10	7	10	11	18	7.7	25	8.3	<1.0	5.3	<1.0
TDS (ion sum calc.)		284	282	256	244	210	274	240	284	234	300	231.98	252.3	245	250
Total Kjeldahl Nitrogen(as N)		0.24	0.22	0.51	0.38	0.35	<0.10	0.29	0.36	0.16	0.32	0.23	0.21	0.33	0.35

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

Historic Surface Water Quality at Sampling Point SW 4

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW 4 24-Apr-19	SW 4 20-Nov-19	SW 4 13-May-20	SW 4 12-Nov-20	SW 4 8-Apr-21	SW 4 7-Oct-21	SW 4 3-May-22	SW 4 29-Sep-22	SW 4 23-Apr-23	SW 4 22-Nov-23
Alkalinity(as CaCO3)		200	240	250	310	230	250	250	230	210	240
Ammonia(as N)		<0.050	0.15	0.29	0.49	<0.050	<0.050	<0.050	<0.050	<0.050	0.062
Calcium		48	67	64	78	61	62	59	59	57	63
Chloride		6.4	8.1	18	25	6.9	7.4	7	8.5	5.1	7.6
Conductivity @25øC (µmho/cm)		380	500	500	640	460	440	490	470	440	
Dissolved Organic Carbon(DOC)		4.4	3.4	5.0	5.4	3.8	6.2	3.1	5	4.1	4.2
Hardness(as CaCO3)		220	280	240	320	250	250	250	260	230	270
Iron	0.300	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Magnesium		20	29	23	28	25	26	26	27	24	
Manganese		0.0024	0.011	0.019	0.025	0.006	0.0047	0.012	0.0082	0.0054	0.0053
Nitrate(as N)		0.28	0.61	0.30	0.21	0.44	0.28	0.59	0.35	0.41	0.53
Nitrite(as N)		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5	8.31	8.25	8.26	8.14	8.47	8.22	8.31	8.32	8.31	8.26
Phenols	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)	(15)	0.007	0.004	<0.004	0.007	0.007	0.005	0.004	<0.004	<0.004	<0.020
Potassium		0.72	1	1.4	2.1	0.76	0.87	0.79	0.89	0.79	0.88
Sodium		3.4	4.4	9.2	13	3.6	3.5	3.3	4.1	3.4	4.1
Sulphate		<1.0	21	<1.0	<1.0	13	1.7	9.9	17	9.1	17
TDS (ion sum calc.)		165	285	280	365	240	270	190	215	200	
Total Kjeldahl Nitrogen(as N)		0.2	0.29	0.40	0.79	0.21	0.36	0.15	0.2	0.32	0.13

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

Historic Surface Water Quality at Sampling Point SW 5

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW 5 7-Nov-94	SW 5 19-Jun-95	SW 5 30-Oct-95	SW5 15-Nov-96	SW5 19-Dec-97	SW5 18-Dec-98	SW5 18-Oct-01	SW5 (Dup) 18-Oct-01	SW5 18-Jun-02	SW5 22-Oct-02	SW5 20-May-03	SW5 1-Oct-03	SW5 (Dup) 1-Oct-03	SW5 29-Sep-04	SW5 (dup) 29-Sep-04	SW5 21-Sep-05	SW5 (dup) 21-Sep-05
Alkalinity(as CaCO3)		205	260	217	221	241	242	204	203	NO	210	NO	220	221	250	250	236	236
Ammonia(as N)		0.041	<0.05	0.04	0.16	0.04	0.06	0.07	0.04		0.11		0.01	0.01	0.06	0.07	0.04	0.04
Calcium		54.6	51.9	58.4	57.9	60.8	67.7				68.9		58	58.2	52.1	53.1	52	52.6
Chloride		6.1	5.8	7.7	6.48	7.71	8.7	7.3	7.3		6.7		8.5	8.4	7.3	7.4	7.4	7.3
Conductivity @25øC (µmho/cm)		406	458	460	410	486	494	415	411		494		441	440	448	450	465	465
Dissolved Organic Carbon(DOC)		16.7	4.2	6.4	4.4	2.9	2.3				65		3.3	3.3	1.9	2.2	8.5	7.8
Hardness(as CaCO3)		229	248	250	240	269	283				297		244	245	243	247	247	249
Iron	0.300	0.05	0.09	0.01	0.047	0.016	0.05	0.05	0.03		0.03		0.036	0.035	0.02	0.019	0.02	0.019
Magnesium		22.4	28.6	25.2	24.9	27.3	27.4				30.4		24.1	24.2	27.4	27.9	28.4	28.5
Manganese		<0.003	0.015	0.004	0.007		nd				0.02		0.004	0.004	0.004	0.005	0.005	0.005
Nitrate(as N)		0.1	0.2	0.2	0.23	0.47	0.54				0.6		0.5	0.5	0.6	0.6	0.5	0.5
Nitrite(as N)		0.01	<0.01	0.01	<0.03		nd				<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Orthophosphate(as P)					<0.05		nd				<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pH	6.5-8.5	8.18	8.4	8.37	8.09	8.24	8.44	7.97	7.94		8.51		8.14	8.15	8.14	8.2	8.27	8.34
Phenols	0.001	0.007	0.001	0.001	<0.001			<0.001	<0.001		<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)	(15)	0.005	0.01	0.03	<0.01		nd	<0.01	<0.01		0.01		<0.01	<0.01	<0.01	<0.01	0.02	0.01
Potassium		1.19	0.8	0.93	<1		nd				<0.4		0.8	0.8	0.8	0.8	0.9	0.9
Sodium		3.3	3.7	3.9	3.46	3.74	3.8				3.4		4.6	4.6	3.7	3.8	3.8	3.8
Sulphate		21.8	15.9	26.0	11	17.9	28.8				24		22	22	16	16	15	15
TDS (ion sum calc.)																		
Total Kjeldahl Nitrogen(as N)		0.46	0.47	0.43	0.28	0.11					0.43		0.38	0.34	0.24	0.24	0.34	0.3

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

Historic Surface Water Quality at Sampling Point SW 5

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW5 4-Apr-06	SW5 25-Sep-06	SW5 13-Apr-07	SW5 9-Oct-07	SW5 15-Apr-08	SW5 17-Sep-08	SW5 (dup) 17-Sep-08	SW5 30-Apr-09	SW5 1-Oct-09	SW5 12-May-10	SW5 9-Nov-10	SW5 2-May-11	SW5 21-Sep-11	SW5 (dup) 21-Sep-11 Duplicate #3
Alkalinity(as CaCO3)		No Sample	242	204	236	170	210	202	219	210	238	254	224	240	242
Ammonia(as N)			< 0.01	< 0.01	< 0.01	< 0.01	0.02	0.02	< 0.01	< 0.01	< 0.01	0.04	< 0.01	< 0.01	< 0.01
Calcium			57.2	51.3	54.5	42.8	51.8	51.8	60.2	49.4	56.2	65.1	55.6	60.4	61
Chloride			7.6	6.4	7	5.8	6.2	6.3	5.7	6.9	6.6	6.8	5.4	6.0	7.4
Conductivity @25øC (µmho/cm)			450	393	468	381	396	405	418	422	464	518	451	497	497
Dissolved Organic Carbon(DOC)			5.3	2.8	25.2	4.6	11.8	11.8	4.2	8.1	4.3	3.9	4.2	3.0	2.9
Hardness(as CaCO3)			256	221	249	181	222	222	247	216	245	279	237	279	282
Iron	0.300		0.021	0.022	0.05	0.01	0.039	0.04	<0.005	0.043	0.011	0.016	0.086	0.141	0.273
Magnesium			27.5	22.4	27.4	17.9	22.5	22.5	23.6	22.5	25.4	28.2	23.9	31.2	31.5
Manganese			0.005	0.002	0.005	<0.001	0.008	0.008	0.009	0.006	0.005	0.003	0.011	0.003	0.005
Nitrate(as N)			0.4	0.5	0.5	0.4	0.2	0.2	0.3	0.2	0.3	0.4	0.3	0.3	0.4
Nitrite(as N)			<0.1	<0.1	<0.1							<0.1	<0.1	0.1	0.1
Orthophosphate(as P)			<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
pH	6.5-8.5		8.02	8.11	7.72	7.63	7.65	7.72	7.67	7.9	8.35	7.52	8.11	8.11	8.11
Phenols	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus, Total (as P)	(15)		<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.03
Potassium			0.9	0.7	1	0.6	0.8	0.8	0.8	0.8	0.6	0.8	0.6	0.9	0.9
Sodium			4.5	3.5	4.2	3.2	3.7	3.7	3.2	3.5	4	4	3.5	4.3	4.4
Sulphate			17	9	15	9	12	12	7	14	12	12	7	14	14
TDS (ion sum calc.)			262	218	253	180	224	219	233	224	249	271	232	263	267
Total Kjeldahl Nitrogen(as N)			0.26	0.15	0.23	0.21	0.46	0.45	0.2	0.34	0.21	0.19	0.12	0.26	0.25

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

Historic Surface Water Quality at Sampling Point SW 5

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

Chemical Parameter	PWQO	SW5 12-Apr-12	SW5 (dup) 12-Apr-12 Duplicate #2	SW5 22-Nov-12	SW5 7-May-13	SW5 26-Nov-13	SW5 1-May-14	SW5 4-Nov-14	SW5 20-Apr-15	SW5 3-Nov-15	SW5 20-Apr-16	SW5 26-Oct-16	SW5 16-May-17	SW5 7-Dec-17	SW5 10-Apr-18	SW5 ########
Alkalinity(as CaCO3)		243	240	240	240	220	200	250	220	230	230	250	240	250	250	230
Ammonia(as N)		< 0.01	< 0.01	< 0.01	0.089	<0.05	ND	0.063	<0.050	<0.050	<0.050	0.061	<0.050	<0.050	<0.050	0.051
Calcium		61.2	59.2	65.7	65	59	61	63	57	57	60	60	54	64	49	57
Chloride		5.9	5.9	7.5	7	7	6	8	7	9.6	6.4	9.1	7.0	6.9	6.0	8.4
Conductivity @25øC (µmho/cm)		470	470	508	470	450	390	500	390	470	450	510	470	480	480	460
Dissolved Organic Carbon(DOC)		2.8	2.8	4.7	4.2	3.9	3.8	4.8	3.7	6.8	3.1	3.8	3.9	3.8	2.4	5
Hardness(as CaCO3)		266	258	285	260	260	210	270	270	270	250	310	260	270	260	260
Iron	0.300	0.031	0.032	0.017	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.100	<0.100	<0.1	<0.1	<0.1	0.18
Magnesium		27.4	26.7	29.5	28	27	26	28	24	24	25	28	24	28	25	25
Manganese		0.001	0.002	0.003	0.012	0.0027	0.0038	0.0051	0.0091	0.004	0.0086	2.7	0.077	0.0051	0.0048	0.031
Nitrate(as N)		0.4	0.4	0.5	0.27	0.56	0.32	0.41	0.31	0.3	0.38	0.53	0.36	0.54	0.64	0.55
Nitrite(as N)		<0.1	<0.1	<0.1	<0.01	<0.01	ND	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5	8.37	8.36	8.24	8.24	8.24	8.28	8.34	8.14	8.29	8.33	8.35	8.33	8.28	8.35	8.25
Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.0010	<0.001	<0.0010	<0.0010	<0.0010	<0.004	<0.0010	<0.0010
Phosphorus, Total (as P)	(15)	0.05	0.05	<0.01	0.013	<0.002	0.002	0.008	0.008	0.004	0.009	<0.100	0.005	<0.10	0.004	0.014
Potassium		0.7	0.7	0.8	0.83	0.8	0.38	<0.01	0.77	0.93	0.83	0.85	0.64	0.79	0.7	0.75
Sodium		3.5	3.5	4.3	3.9	3.9	4.2	4.2	3.6	4.4	3.2	4.5	3.3	3.9	3.1	3.5
Sulphate		11	11	30	10	11	7	11	11	18	7.7	25	8.4	8.4	8.6	24
TDS (ion sum calc.)		258	253	284	252	240	216	260	222	216	232	310	233	254	205	195
Total Kjeldahl Nitrogen(as N)		0.14	0.12	0.40	0.43	0.37	0.31	<0.10	0.28	0.34	0.16	0.24	0.23	0.12	0.12	0.20

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

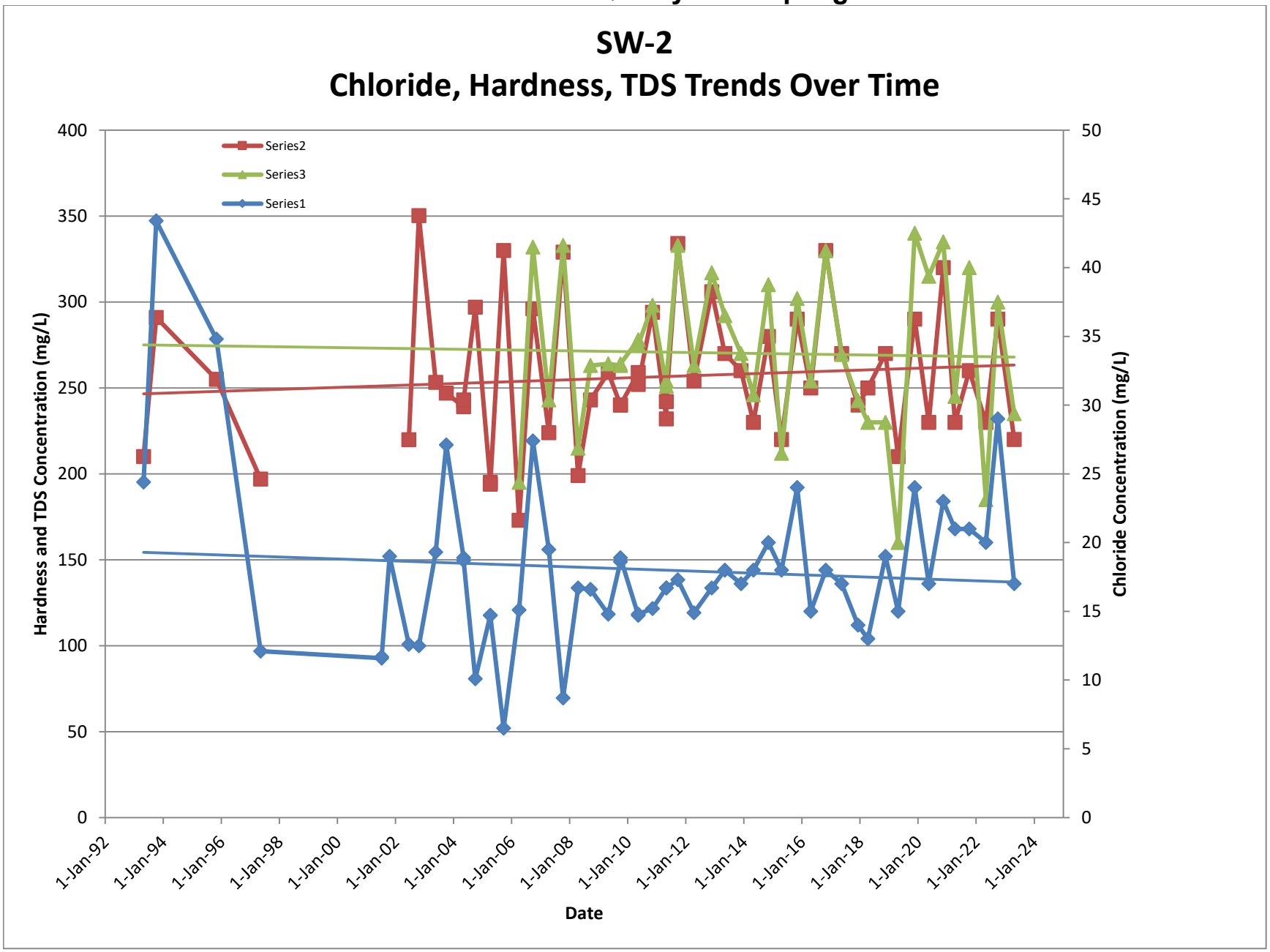
Historic Surface Water Quality at Sampling Point SW 5

Municipality of West Grey
Surface Water Quality - Bentinck Landfill

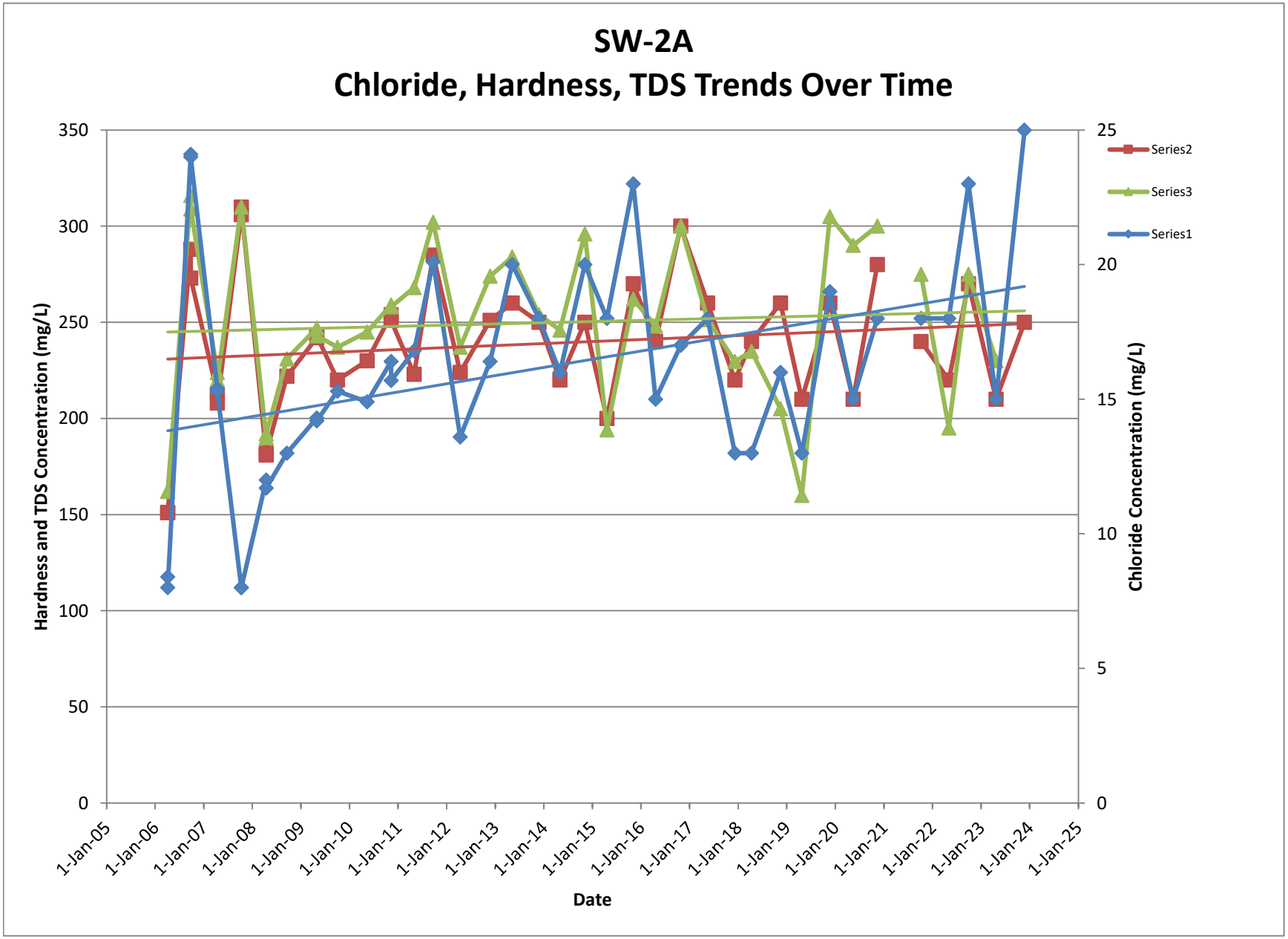
Chemical Parameter	PWQO	SW5 24-Apr-19	SW5 ########	SW5 13-May-20	SW5 12-Nov-20	SW5 8-Apr-21	SW5 7-Oct-21	SW5 3-May-22	SW5 29-Sep-22	SW 5 23-Apr-23	SW 5 22-Nov-23
Alkalinity(as CaCO3)		190	240	240	240	230	240	250	230	210	240
Ammonia(as N)		0.11	0.071	<0.050	0.085	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Calcium		51	64	57	59	58	63	64	57	58	63
Chloride		6.3	8.7	7.2	8.6	7.5	7.5	7	8.6	5	7.7
Conductivity @25øC (µmho/cm)		390	490	460	500	460	470	490	470	440	
Dissolved Organic Carbon(DOC)		4.4	3.5	2.9	4	3.7	6	3.1	4.9	4.2	4
Hardness(as CaCO3)		220	270	230	280	250	250	260	260	230	270
Iron	0.300	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Magnesium		20	27	25	27	25	27	27	27	25	
Manganese		0.0022	0.0031	0.0044	0.0037	0.0045	0.0043	0.010	0.0068	0.005	0.0035
Nitrate(as N)		0.28	0.63	0.44	0.5	0.44	0.28	0.6	0.35	0.37	0.55
Nitrite(as N)		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Orthophosphate(as P)		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	6.5-8.5	8.29	8.29	8.38	8.37	8.45	8.25	8.4	8.36	8.33	8.31
Phenols	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, Total (as P)	(15)	<0.004	0.008	<0.004	<0.004	0.005	0.005	0.004	0.005	<0.004	<0.020
Potassium		0.69	0.72	0.65	0.81	0.73	0.87	0.78	0.83	0.78	0.84
Sodium		3.4	4.1	3.3	4.2	3.6	3.5	3.3	4.0	3.5	4.4
Sulphate		<1.0	21	12	25	13	2.5	9.7	19	8.6	17
TDS (ion sum calc.)		155	295	290	285	230	280	265	200	170	
Total Kjeldahl Nitrogen(as N)		0.26	0.21	0.26	0.38	0.27	0.24	0.24	0.23	0.24	0.18

NOTES:
1. All results in mg/L unless otherwise noted.
2. PWQO indicates Provincial Water Quality Objectives, MOE, July 1994.
3. Alkalinity should not be decreased by more than 25 % of the natural concentration.
4. Shading indicates exceedance of PWQO

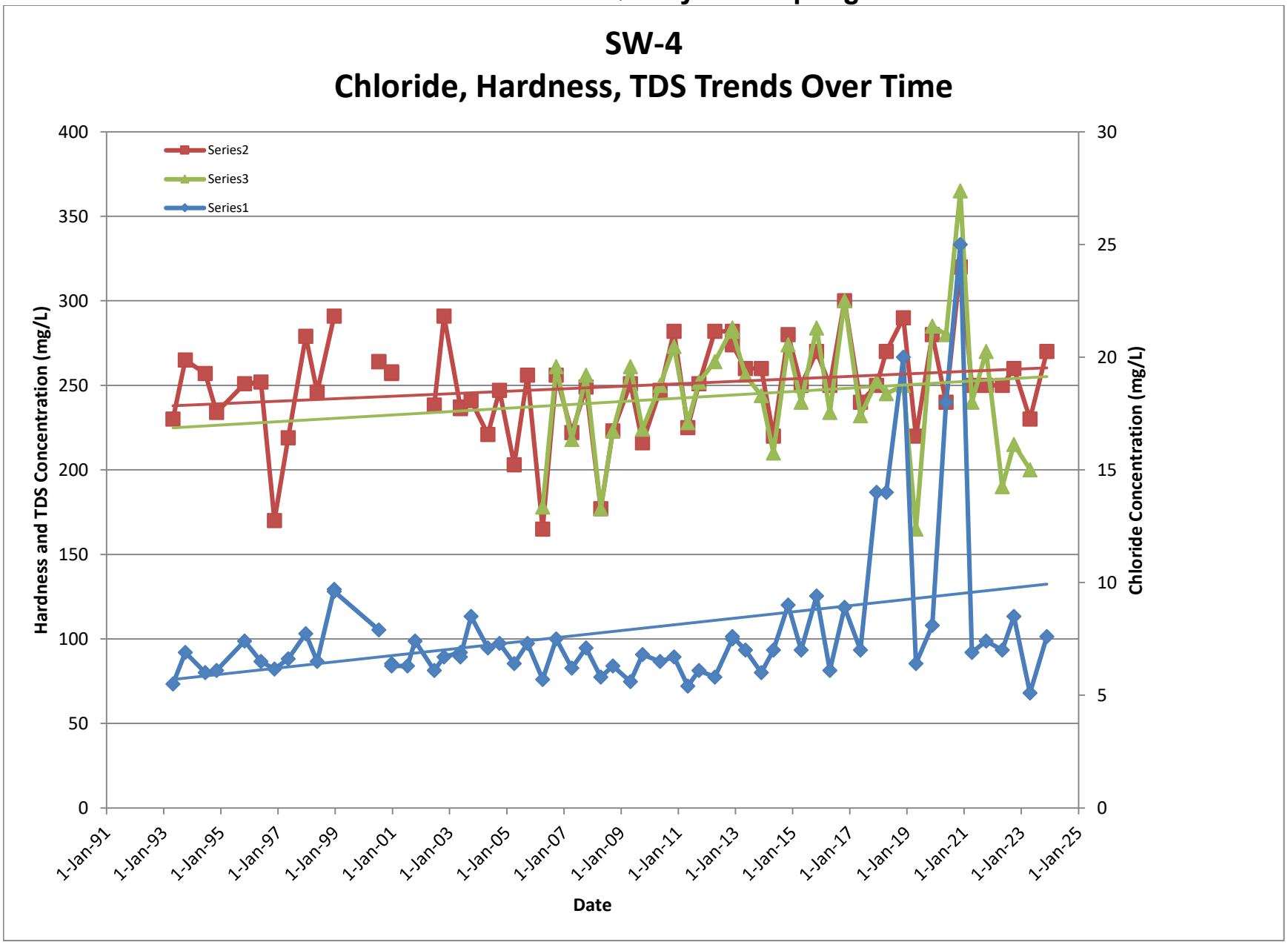
Historic Surface Water Quality at Sampling Point SW 2



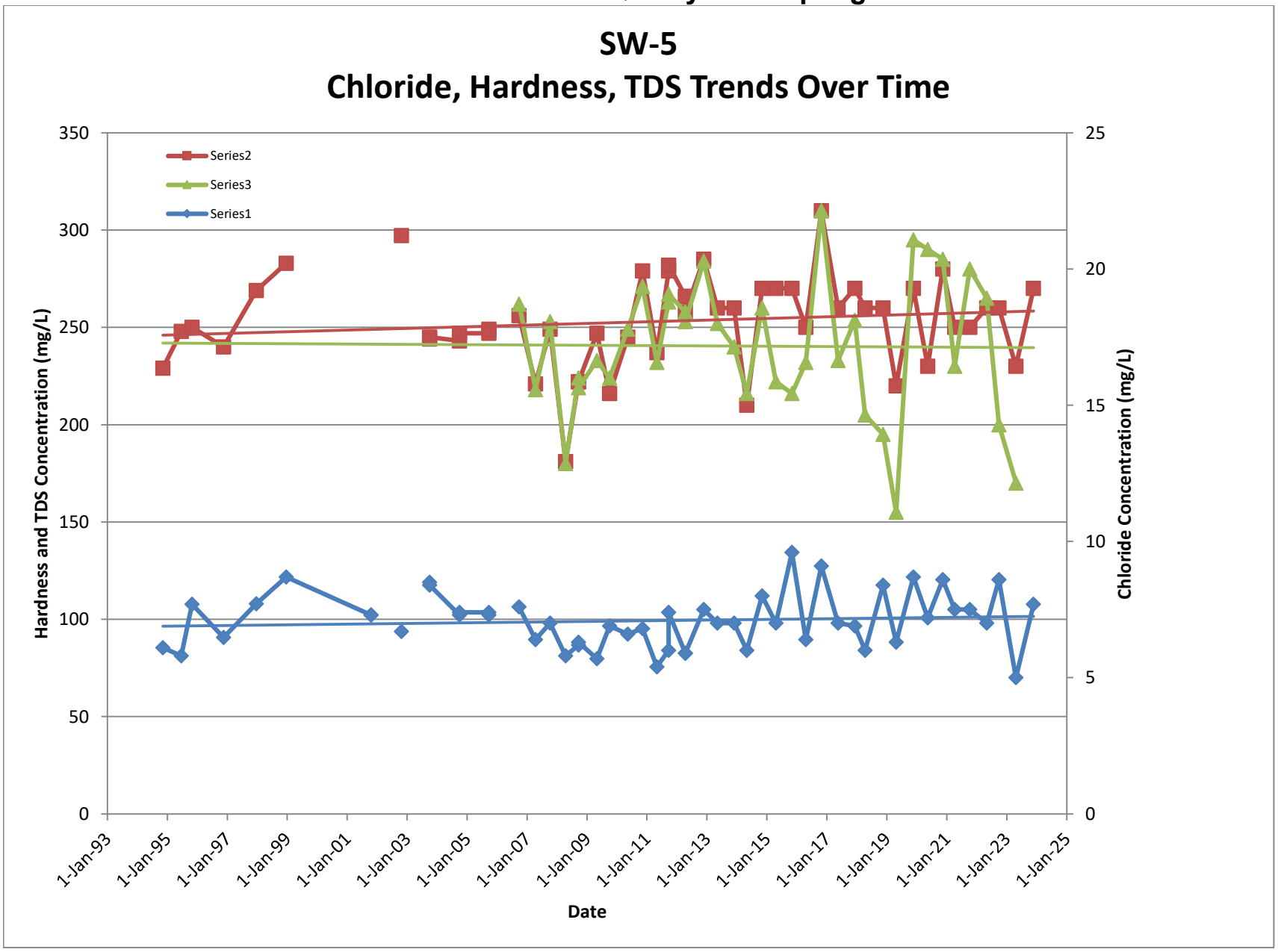
Historic Surface Water Quality at Sampling Point SW 2



Historic Surface Water Quality at Sampling Point SW 2



Historic Surface Water Quality at Sampling Point SW 2



APPENDIX F:
LABORATORY CERTIFICATES OF ANALYSIS

Your Project #: Bentinck
Your C.O.C. #: 959078-01-01, 959078-02-01

Attention: Reporting Contacts

GM BluePlan Engineering Limited
1260 - 2nd Ave E
Unit 1
Owen Sound, ON
CANADA N4K 2J3

Report Date: 2023/11/30
Report #: R7935755
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3AI435
Received: 2023/11/23, 09:25

Sample Matrix: Water
Samples Received: 16

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	12	N/A	2023/11/29	CAM SOP-00448	SM 24 2320 B m
Alkalinity	4	N/A	2023/11/30	CAM SOP-00448	SM 24 2320 B m
Chloride by Automated Colourimetry	16	N/A	2023/11/28	CAM SOP-00463	SM 24 4500-Cl E m
Conductivity	12	N/A	2023/11/29	CAM SOP-00414	SM 24 2510 m
Dissolved Organic Carbon (DOC) (1)	16	N/A	2023/11/29	CAM SOP-00446	SM 24 5310 B m
Hardness (calculated as CaCO3)	6	N/A	2023/11/29	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	10	N/A	2023/11/30	CAM SOP 00102/00408/00447	SM 2340 B
Lab Filtered Metals by ICPMS	12	2023/11/27	2023/11/29	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	4	2023/11/29	2023/11/29	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	16	N/A	2023/11/28	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	11	N/A	2023/11/28	CAM SOP-00440	SM 24 4500-NO3I/NO2B
Nitrate & Nitrite as Nitrogen in Water (2)	5	N/A	2023/11/30	CAM SOP-00440	SM 24 4500-NO3I/NO2B
pH	12	2023/11/27	2023/11/29	CAM SOP-00413	SM 24th - 4500H+ B
pH	4	2023/11/27	2023/11/30	CAM SOP-00413	SM 24th - 4500H+ B
Phenols (4AAP)	16	N/A	2023/11/29	CAM SOP-00444	OMOE E3179 m
Orthophosphate	16	N/A	2023/11/28	CAM SOP-00461	SM 24 4500-P E
Sulphate by Automated Turbidimetry	16	N/A	2023/11/28	CAM SOP-00464	SM 24 4500-SO42- E m
Total Kjeldahl Nitrogen in Water	16	2023/11/27	2023/11/28	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	4	2023/11/27	2023/11/28	CAM SOP-00407	SM 23 4500-P I

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas 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.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Your Project #: Bentinck
Your C.O.C. #: 959078-01-01, 959078-02-01

Attention: Reporting Contacts

GM BluePlan Engineering Limited
1260 - 2nd Ave E
Unit 1
Owen Sound, ON
CANADA N4K 2J3

Report Date: 2023/11/30
Report #: R7935755
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3AI435
Received: 2023/11/23, 09:25

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 Bureau Veritas, results relate to the supplied samples tested.

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) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Ashton Gibson, Project Manager
Email: Ashton.Gibson@bureauveritas.com
Phone# (905)817-5765

==========

This report has been generated and distributed using a secure automated process.
Bureau Veritas 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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C3AI435
Report Date: 2023/11/30

GM BluePlan Engineering Limited
Client Project #: Bentinck
Sampler Initials: KC

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XRO634			XRO634			XRO635		
Sampling Date		2023/11/22			2023/11/22			2023/11/22		
COC Number		959078-01-01			959078-01-01			959078-01-01		
	UNITS	TH-2	RDL	QC Batch	TH-2 Lab-Dup	RDL	QC Batch	TH-3	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	310	1.0	9069719				590	1.0	9069719
Inorganics										
Total Ammonia-N	mg/L	0.31	0.050	9075220				6.3	0.050	9075220
Conductivity	umho/cm	560	1.0	9075285				1100	1.0	9075285
Total Kjeldahl Nitrogen (TKN)	mg/L	1.4	0.20	9074953	1.3	0.20	9074953	6.2	0.50	9074953
Dissolved Organic Carbon	mg/L	2.7	0.40	9076684				3.6	0.40	9076684
Orthophosphate (P)	mg/L	<0.010	0.010	9075225				<0.010	0.010	9075225
pH	pH	7.93		9075286				7.60		9075286
Phenols-4AAP	mg/L	0.0033	0.0010	9079287	0.0033	0.0010	9079287	<0.0010	0.0010	9079287
Dissolved Sulphate (SO4)	mg/L	6.8	1.0	9075236				3.0	1.0	9075236
Alkalinity (Total as CaCO3)	mg/L	290	1.0	9075278				540	1.0	9075278
Dissolved Chloride (Cl-)	mg/L	3.3	1.0	9075228				34	1.0	9075228
Nitrite (N)	mg/L	<0.010	0.010	9075195				<0.010	0.010	9075203
Nitrate (N)	mg/L	0.33	0.10	9075195				0.38	0.10	9075203
Nitrate + Nitrite (N)	mg/L	0.33	0.10	9075195				0.38	0.10	9075203

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

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XRO635			XRO636		XRO637		
Sampling Date		2023/11/22			2023/11/22		2023/11/22		
COC Number		959078-01-01			959078-01-01		959078-01-01		
	UNITS	TH-3 Lab-Dup	RDL	QC Batch	TH-5A	RDL	TH-5B	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L				340	1.0	260	1.0	9069719
Inorganics									
Total Ammonia-N	mg/L				3.4	0.050	0.41	0.050	9075220
Conductivity	umho/cm				720	1.0	480	1.0	9075285
Total Kjeldahl Nitrogen (TKN)	mg/L				3.8	0.10	0.60	0.50	9074953
Dissolved Organic Carbon	mg/L				4.1	0.40	1.8	0.40	9076684
Orthophosphate (P)	mg/L	<0.010	0.010	9075225	<0.010	0.010	<0.010	0.010	9075225
pH	pH				8.07		7.91		9075286
Phenols-4AAP	mg/L				0.0010	0.0010	<0.0010	0.0010	9079287
Dissolved Sulphate (SO4)	mg/L	3.0	1.0	9075236	2.1	1.0	14	1.0	9075236
Alkalinity (Total as CaCO3)	mg/L				290	1.0	240	1.0	9075278
Dissolved Chloride (Cl-)	mg/L	34	1.0	9075228	45	1.0	<1.0	1.0	9075228
Nitrite (N)	mg/L				0.124	0.010	0.023	0.010	9075195
Nitrate (N)	mg/L				0.19	0.10	<0.10	0.10	9075195
Nitrate + Nitrite (N)	mg/L				0.31	0.10	<0.10	0.10	9075195

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

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C3AI435
Report Date: 2023/11/30

GM BluePlan Engineering Limited
Client Project #: Bentinck
Sampler Initials: KC

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XRO638			XRO638			XRO639		
Sampling Date		2023/11/22			2023/11/22			2023/11/22		
COC Number		959078-01-01			959078-01-01			959078-01-01		
	UNITS	TH-6	RDL	QC Batch	TH-6 Lab-Dup	RDL	QC Batch	TH-7	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	740	1.0	9069719				540	1.0	9069719
Inorganics										
Total Ammonia-N	mg/L	17	0.050	9075220				2.5	0.050	9075220
Conductivity	umho/cm	1700	1.0	9075285				1000	1.0	9075285
Total Kjeldahl Nitrogen (TKN)	mg/L	16	0.50	9074953				3.6	0.10	9074953
Dissolved Organic Carbon	mg/L	7.6	0.40	9076684				2.1	0.40	9076684
Orthophosphate (P)	mg/L	<0.010	0.010	9075225				0.71	0.010	9075225
pH	pH	7.48		9075286				7.50		9075286
Phenols-4AAP	mg/L	<0.0010	0.0010	9079287				0.013	0.0010	9079287
Dissolved Sulphate (SO4)	mg/L	79	1.0	9075236				25	1.0	9075236
Alkalinity (Total as CaCO3)	mg/L	740	1.0	9075278				500	1.0	9075278
Dissolved Chloride (Cl-)	mg/L	52	1.0	9075228				16	1.0	9075228
Nitrite (N)	mg/L	<0.010	0.010	9076409	<0.010	0.010	9076409	0.143	0.010	9075203
Nitrate (N)	mg/L	0.21	0.10	9076409	0.21	0.10	9076409	<0.10	0.10	9075203
Nitrate + Nitrite (N)	mg/L	0.21	0.10	9076409	0.21	0.10	9076409	0.20	0.10	9075203

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

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C3AI435
Report Date: 2023/11/30

GM BluePlan Engineering Limited
Client Project #: Bentinck
Sampler Initials: KC

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XRO640		XRO641		XRO642		XRO643		
Sampling Date		2023/11/22		2023/11/22		2023/11/22		2023/11/22		
COC Number		959078-01-01		959078-01-01		959078-01-01		959078-01-01		
	UNITS	TH-8	RDL	TH-9	RDL	TH-10	QC Batch	TH-11	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	620	1.0	350	1.0	230	9069719	410	1.0	9074401
Inorganics										
Total Ammonia-N	mg/L	<0.050	0.050	5.4	0.050	<0.050	9075220	<0.050	0.050	9075220
Conductivity	umho/cm	1000	1.0	640	1.0	460	9075285	770	1.0	9075285
Total Kjeldahl Nitrogen (TKN)	mg/L	0.35	0.10	5.9	0.20	0.10	9074953	<0.10	0.10	9074953
Dissolved Organic Carbon	mg/L	3.2	0.40	18	0.40	2.5	9076684	0.84	0.40	9076684
Orthophosphate (P)	mg/L	<0.010	0.010	<0.10 (1)	0.10	0.030	9075225	0.012	0.010	9075225
pH	pH	7.65		7.67		7.74	9075286	7.99		9075286
Phenols-4AAP	mg/L	<0.0010	0.0010	<0.0010	0.0010	<0.0010	9079287	<0.0010	0.0010	9079287
Dissolved Sulphate (SO4)	mg/L	26	1.0	<10 (1)	10	3.4	9075236	3.1	1.0	9075236
Alkalinity (Total as CaCO3)	mg/L	520	1.0	320	1.0	200	9075278	270	1.0	9075278
Dissolved Chloride (Cl-)	mg/L	8.4	1.0	<10 (1)	10	19	9075228	74	1.0	9075228
Nitrite (N)	mg/L	0.017	0.010	0.378	0.010	<0.010	9075203	<0.010	0.010	9075203
Nitrate (N)	mg/L	1.74	0.10	1.27	0.10	0.78	9075203	0.22	0.10	9075203
Nitrate + Nitrite (N)	mg/L	1.76	0.10	1.64	0.10	0.78	9075203	0.22	0.10	9075203

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C3AI435
Report Date: 2023/11/30

GM BluePlan Engineering Limited
Client Project #: Bentinck
Sampler Initials: KC

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XRO643			XRO666		XRO667		
Sampling Date		2023/11/22			2023/11/22		2023/11/22		
COC Number		959078-01-01			959078-02-01		959078-02-01		
	UNITS	TH-11 Lab-Dup	RDL	QC Batch	TH-12	RDL	TH-13	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L				230	1.0	320	1.0	9074402
Inorganics									
Total Ammonia-N	mg/L				0.38	0.050	<0.050	0.050	9075220
Conductivity	umho/cm				480	1.0	560	1.0	9075285
Total Kjeldahl Nitrogen (TKN)	mg/L				<0.50 (1)	0.50	<0.10	0.10	9074953
Dissolved Organic Carbon	mg/L	0.78	0.40	9076684	1.2	0.40	1.7	0.40	9076684
Orthophosphate (P)	mg/L				<0.010	0.010	<0.010	0.010	9075225
pH	pH				8.02		7.80		9075286
Phenols-4AAP	mg/L				<0.0010	0.0010	<0.0010	0.0010	9079287
Dissolved Sulphate (SO4)	mg/L				71	1.0	4.4	1.0	9075236
Alkalinity (Total as CaCO3)	mg/L				160	1.0	290	1.0	9075278
Dissolved Chloride (Cl-)	mg/L				<1.0	1.0	2.9	1.0	9075228
Nitrite (N)	mg/L				0.034	0.010	<0.010	0.010	9075203
Nitrate (N)	mg/L				0.13	0.10	0.83	0.10	9075203
Nitrate + Nitrite (N)	mg/L				0.16	0.10	0.83	0.10	9075203

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
(1) TKN : Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XRO668			XRO668			XRO669		
Sampling Date		2023/11/22			2023/11/22			2023/11/22		
COC Number		959078-02-01			959078-02-01			959078-02-01		
	UNITS	SW-2	RDL	QC Batch	SW-2 Lab-Dup	RDL	QC Batch	SW-2A	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	280	1.0	9069719				250	1.0	9069719
Inorganics										
Total Ammonia-N	mg/L	<0.050	0.050	9075220	<0.050	0.050	9075220	<0.050	0.050	9075220
Total Kjeldahl Nitrogen (TKN)	mg/L	0.24	0.10	9074953				0.22	0.10	9074953
Dissolved Organic Carbon	mg/L	6.6	0.40	9076684				6.5	0.40	9076684
Orthophosphate (P)	mg/L	<0.010	0.010	9075225				<0.010	0.010	9075225
pH	pH	8.21		9075193				8.20		9075193
Phenols-4AAP	mg/L	<0.0010	0.0010	9079287				<0.0010	0.0010	9079287
Total Phosphorus	mg/L	<0.020	0.020	9074874				<0.020	0.020	9074874
Dissolved Sulphate (SO4)	mg/L	6.4	1.0	9075236				5.5	1.0	9075236
Alkalinity (Total as CaCO3)	mg/L	260	1.0	9075190				230	1.0	9075190
Dissolved Chloride (Cl-)	mg/L	31	1.0	9075228				25	1.0	9075228
Nitrite (N)	mg/L	<0.010	0.010	9075195				<0.010	0.010	9075203
Nitrate (N)	mg/L	0.14	0.10	9075195				0.20	0.10	9075203
Nitrate + Nitrite (N)	mg/L	0.14	0.10	9075195				0.20	0.10	9075203

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

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C3AI435
Report Date: 2023/11/30

GM BluePlan Engineering Limited
Client Project #: Bentinck
Sampler Initials: KC

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XRO670			XRO670			XRO671		
Sampling Date		2023/11/22			2023/11/22			2023/11/22		
COC Number		959078-02-01			959078-02-01			959078-02-01		
	UNITS	SW-4	RDL	QC Batch	SW-4 Lab-Dup	RDL	QC Batch	SW-5	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	270	1.0	9069719				270	1.0	9069719
Inorganics										
Total Ammonia-N	mg/L	0.062	0.050	9075220				<0.050	0.050	9075220
Total Kjeldahl Nitrogen (TKN)	mg/L	0.13	0.10	9074953				0.18	0.10	9074953
Dissolved Organic Carbon	mg/L	4.2	0.40	9076684				4.0	0.40	9076684
Orthophosphate (P)	mg/L	<0.010	0.010	9075225				<0.010	0.010	9075225
pH	pH	8.26		9075193	8.40		9075193	8.31		9075193
Phenols-4AAP	mg/L	<0.0010	0.0010	9079287				<0.0010	0.0010	9079287
Total Phosphorus	mg/L	<0.020	0.020	9074874				<0.020	0.020	9074874
Dissolved Sulphate (SO4)	mg/L	17	1.0	9075236				17	1.0	9075236
Alkalinity (Total as CaCO3)	mg/L	240	1.0	9075190	240	1.0	9075190	240	1.0	9075190
Dissolved Chloride (Cl-)	mg/L	7.6	1.0	9075228				7.7	1.0	9075228
Nitrite (N)	mg/L	<0.010	0.010	9075203				<0.010	0.010	9075195
Nitrate (N)	mg/L	0.53	0.10	9075203				0.55	0.10	9075195
Nitrate + Nitrite (N)	mg/L	0.53	0.10	9075203				0.55	0.10	9075195

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

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XRO634		XRO635		XRO636	XRO636		
Sampling Date		2023/11/22		2023/11/22		2023/11/22	2023/11/22		
COC Number		959078-01-01		959078-01-01		959078-01-01	959078-01-01		
	UNITS	TH-2	QC Batch	TH-3	QC Batch	TH-5A	TH-5A Lab-Dup	RDL	QC Batch
Metals									
Dissolved Aluminum (Al)	ug/L	<4.9	9075368	<4.9	9075316	<4.9	<4.9	4.9	9075368
Dissolved Antimony (Sb)	ug/L	<0.50	9075368	<0.50	9075316	<0.50	<0.50	0.50	9075368
Dissolved Arsenic (As)	ug/L	<1.0	9075368	1.1	9075316	<1.0	<1.0	1.0	9075368
Dissolved Barium (Ba)	ug/L	11	9075368	33	9075316	51	50	2.0	9075368
Dissolved Beryllium (Be)	ug/L	<0.40	9075368	<0.40	9075316	<0.40	<0.40	0.40	9075368
Dissolved Bismuth (Bi)	ug/L	<1.0	9075368	<1.0	9075316	<1.0	<1.0	1.0	9075368
Dissolved Boron (B)	ug/L	<10	9075368	240	9075316	70	70	10	9075368
Dissolved Cadmium (Cd)	ug/L	<0.090	9075368	<0.090	9075316	<0.090	<0.090	0.090	9075368
Dissolved Calcium (Ca)	ug/L	73000	9075368	150000	9075316	74000	73000	200	9075368
Dissolved Chromium (Cr)	ug/L	<5.0	9075368	<5.0	9075316	<5.0	<5.0	5.0	9075368
Dissolved Cobalt (Co)	ug/L	0.75	9075368	1.0	9075316	<0.50	<0.50	0.50	9075368
Dissolved Copper (Cu)	ug/L	2.2	9075368	2.9	9075316	<0.90	1.6	0.90	9075368
Dissolved Iron (Fe)	ug/L	<100	9075368	<100	9075316	<100	<100	100	9075368
Dissolved Lead (Pb)	ug/L	<0.50	9075368	<0.50	9075316	<0.50	<0.50	0.50	9075368
Dissolved Lithium (Li)	ug/L	<5.0	9075368	7.9	9075316	<5.0	<5.0	5.0	9075368
Dissolved Magnesium (Mg)	ug/L	31000	9075368	54000	9075316	37000	37000	50	9075368
Dissolved Manganese (Mn)	ug/L	230	9075368	150	9075316	7.7	7.2	2.0	9075368
Dissolved Molybdenum (Mo)	ug/L	<0.50	9075368	<0.50	9075316	0.85	0.92	0.50	9075368
Dissolved Nickel (Ni)	ug/L	2.0	9075368	2.7	9075316	5.2	4.9	1.0	9075368
Dissolved Phosphorus (P)	ug/L	<100	9075368	<100	9075316	<100	<100	100	9075368
Dissolved Potassium (K)	ug/L	1200	9075368	7400	9075316	4200	4200	200	9075368
Dissolved Selenium (Se)	ug/L	<2.0	9075368	<2.0	9075316	<2.0	<2.0	2.0	9075368
Dissolved Silicon (Si)	ug/L	3300	9075368	6000	9075316	3100	3200	50	9075368
Dissolved Silver (Ag)	ug/L	<0.090	9075368	<0.090	9075316	<0.090	<0.090	0.090	9075368
Dissolved Sodium (Na)	ug/L	1700	9075368	24000	9075316	24000	24000	100	9075368
Dissolved Strontium (Sr)	ug/L	67	9075368	180	9075316	140	140	1.0	9075368
Dissolved Tellurium (Te)	ug/L	<1.0	9075368	<1.0	9075316	<1.0	<1.0	1.0	9075368
Dissolved Thallium (Tl)	ug/L	<0.050	9075368	<0.050	9075316	<0.050	<0.050	0.050	9075368
Dissolved Tin (Sn)	ug/L	<1.0	9075368	<1.0	9075316	<1.0	<1.0	1.0	9075368
Dissolved Titanium (Ti)	ug/L	<5.0	9075368	<5.0	9075316	<5.0	<5.0	5.0	9075368
Dissolved Tungsten (W)	ug/L	<1.0	9075368	<1.0	9075316	<1.0	<1.0	1.0	9075368
Dissolved Uranium (U)	ug/L	0.32	9075368	<0.10	9075316	0.19	0.17	0.10	9075368
Dissolved Vanadium (V)	ug/L	<0.50	9075368	<0.50	9075316	<0.50	<0.50	0.50	9075368
Dissolved Zinc (Zn)	ug/L	<5.0	9075368	<5.0	9075316	<5.0	<5.0	5.0	9075368
Dissolved Zirconium (Zr)	ug/L	<1.0	9075368	<1.0	9075316	<1.0	<1.0	1.0	9075368

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

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XRO637	XRO638	XRO639	XRO640	XRO641	XRO642		
Sampling Date		2023/11/22	2023/11/22	2023/11/22	2023/11/22	2023/11/22	2023/11/22		
COC Number		959078-01-01	959078-01-01	959078-01-01	959078-01-01	959078-01-01	959078-01-01		
	UNITS	TH-5B	TH-6	TH-7	TH-8	TH-9	TH-10	RDL	QC Batch
Metals									
Dissolved Aluminum (Al)	ug/L	<4.9	<4.9	<4.9	<4.9	46	<4.9	4.9	9075316
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	9075316
Dissolved Arsenic (As)	ug/L	1.2	<1.0	<1.0	<1.0	1.2	<1.0	1.0	9075316
Dissolved Barium (Ba)	ug/L	25	160	32	29	9.6	8.8	2.0	9075316
Dissolved Beryllium (Be)	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	9075316
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	9075316
Dissolved Boron (B)	ug/L	47	1000	140	130	14	80	10	9075316
Dissolved Cadmium (Cd)	ug/L	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090	0.090	9075316
Dissolved Calcium (Ca)	ug/L	54000	150000	150000	180000	90000	64000	200	9075316
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	9075316
Dissolved Cobalt (Co)	ug/L	<0.50	9.4	0.61	1.5	<0.50	<0.50	0.50	9075316
Dissolved Copper (Cu)	ug/L	1.1	7.4	1.4	1.6	1.8	<0.90	0.90	9075316
Dissolved Iron (Fe)	ug/L	<100	<100	<100	<100	1700	<100	100	9075316
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	9075316
Dissolved Lithium (Li)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	9075316
Dissolved Magnesium (Mg)	ug/L	30000	87000	40000	42000	31000	17000	50	9075316
Dissolved Manganese (Mn)	ug/L	210	3000	260	230	330	13	2.0	9075316
Dissolved Molybdenum (Mo)	ug/L	0.81	2.6	<0.50	<0.50	<0.50	<0.50	0.50	9075316
Dissolved Nickel (Ni)	ug/L	<1.0	34	1.5	1.9	<1.0	<1.0	1.0	9075316
Dissolved Phosphorus (P)	ug/L	<100	<100	800	<100	<100	<100	100	9075316
Dissolved Potassium (K)	ug/L	1300	61000	8800	2700	1200	2400	200	9075316
Dissolved Selenium (Se)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	9075316
Dissolved Silicon (Si)	ug/L	5000	6300	4100	5000	4000	1500	50	9075316
Dissolved Silver (Ag)	ug/L	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090	0.090	9075316
Dissolved Sodium (Na)	ug/L	7700	46000	15000	7500	1500	11000	100	9075316
Dissolved Strontium (Sr)	ug/L	330	380	230	210	70	75	1.0	9075316
Dissolved Tellurium (Te)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	9075316
Dissolved Thallium (Tl)	ug/L	<0.050	0.98	<0.050	<0.050	<0.050	<0.050	0.050	9075316
Dissolved Tin (Sn)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	9075316
Dissolved Titanium (Ti)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	9075316
Dissolved Tungsten (W)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	9075316
Dissolved Uranium (U)	ug/L	0.50	0.49	0.21	0.41	<0.10	<0.10	0.10	9075316
Dissolved Vanadium (V)	ug/L	<0.50	<0.50	<0.50	<0.50	1.0	<0.50	0.50	9075316
Dissolved Zinc (Zn)	ug/L	<5.0	21	<5.0	6.6	<5.0	11	5.0	9075316
Dissolved Zirconium (Zr)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	9075316

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XRO643	XRO666	XRO667			XRO668	XRO669		
Sampling Date		2023/11/22	2023/11/22	2023/11/22			2023/11/22	2023/11/22		
COC Number		959078-01-01	959078-02-01	959078-02-01			959078-02-01	959078-02-01		
	UNITS	TH-11	TH-12	TH-13	RDL	QC Batch	SW-2	SW-2A	RDL	QC Batch
Metals										
Dissolved Aluminum (Al)	ug/L	<4.9	<4.9	<4.9	4.9	9075316				
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	0.50	9075316				
Dissolved Arsenic (As)	ug/L	<1.0	11	<1.0	1.0	9075316				
Dissolved Barium (Ba)	ug/L	13	26	5.1	2.0	9075316				
Dissolved Beryllium (Be)	ug/L	<0.40	<0.40	<0.40	0.40	9075316				
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	1.0	9075316				
Dissolved Boron (B)	ug/L	<10	91	<10	10	9075316				
Dissolved Cadmium (Cd)	ug/L	<0.090	<0.090	<0.090	0.090	9075316				
Dissolved Calcium (Ca)	ug/L	100000	44000	76000	200	9075316				
Total Calcium (Ca)	ug/L						70000	63000	200	9078734
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	<5.0	5.0	9075316				
Dissolved Cobalt (Co)	ug/L	<0.50	<0.50	<0.50	0.50	9075316				
Dissolved Copper (Cu)	ug/L	<0.90	<0.90	1.8	0.90	9075316				
Dissolved Iron (Fe)	ug/L	<100	<100	<100	100	9075316				
Total Iron (Fe)	ug/L						<100	<100	100	9078734
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	0.50	9075316				
Dissolved Lithium (Li)	ug/L	<5.0	5.9	<5.0	5.0	9075316				
Dissolved Magnesium (Mg)	ug/L	36000	28000	32000	50	9075316				
Dissolved Manganese (Mn)	ug/L	<2.0	7.6	<2.0	2.0	9075316				
Total Manganese (Mn)	ug/L						25	20	2.0	9078734
Dissolved Molybdenum (Mo)	ug/L	<0.50	1.4	<0.50	0.50	9075316				
Dissolved Nickel (Ni)	ug/L	<1.0	<1.0	<1.0	1.0	9075316				
Dissolved Phosphorus (P)	ug/L	<100	<100	<100	100	9075316				
Dissolved Potassium (K)	ug/L	440	1200	480	200	9075316				
Total Potassium (K)	ug/L						1500	1700	200	9078734
Dissolved Selenium (Se)	ug/L	<2.0	<2.0	<2.0	2.0	9075316				
Dissolved Silicon (Si)	ug/L	1800	6200	2700	50	9075316				
Dissolved Silver (Ag)	ug/L	<0.090	<0.090	<0.090	0.090	9075316				
Dissolved Sodium (Na)	ug/L	11000	14000	960	100	9075316				
Total Sodium (Na)	ug/L						19000	17000	100	9078734
Dissolved Strontium (Sr)	ug/L	120	1300	55	1.0	9075316				
Dissolved Tellurium (Te)	ug/L	<1.0	<1.0	<1.0	1.0	9075316				
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	<0.050	0.050	9075316				
Dissolved Tin (Sn)	ug/L	<1.0	<1.0	<1.0	1.0	9075316				
Dissolved Titanium (Ti)	ug/L	<5.0	<5.0	<5.0	5.0	9075316				
Dissolved Tungsten (W)	ug/L	<1.0	<1.0	<1.0	1.0	9075316				

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XRO643	XRO666	XRO667			XRO668	XRO669		
Sampling Date		2023/11/22	2023/11/22	2023/11/22			2023/11/22	2023/11/22		
COC Number		959078-01-01	959078-02-01	959078-02-01			959078-02-01	959078-02-01		
	UNITS	**TH-11**	**TH-12**	**TH-13**	**RDL**	**QC Batch**	**SW-2**	**SW-2A**	**RDL**	**QC Batch**
Dissolved Uranium (U)	ug/L	<0.10	0.41	0.22	0.10	9075316				
Dissolved Vanadium (V)	ug/L	<0.50	<0.50	<0.50	0.50	9075316				
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	5.0	9075316				
Dissolved Zirconium (Zr)	ug/L	<1.0	<1.0	<1.0	1.0	9075316				

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		XRO670		XRO671		
Sampling Date		2023/11/22		2023/11/22		
COC Number		959078-02-01		959078-02-01		
	UNITS	**SW-4**	**QC Batch**	**SW-5**	**RDL**	**QC Batch**
Metals						
Total Calcium (Ca)	ug/L	63000	9078734	63000	200	9079139
Total Iron (Fe)	ug/L	<100	9078734	<100	100	9079139
Total Manganese (Mn)	ug/L	5.3	9078734	3.5	2.0	9079139
Total Potassium (K)	ug/L	880	9078734	840	200	9079139
Total Sodium (Na)	ug/L	4100	9078734	4400	100	9079139

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: XRO634
Sample ID: TH-2
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075278	N/A	2023/11/29	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Conductivity	AT	9075285	N/A	2023/11/29	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9069719	N/A	2023/11/29	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9075368	2023/11/27	2023/11/29	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075195	N/A	2023/11/30	Viorica Rotaru
pH	AT	9075286	2023/11/27	2023/11/29	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi

Bureau Veritas ID: XRO634 Dup
Sample ID: TH-2
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi

Bureau Veritas ID: XRO635
Sample ID: TH-3
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075278	N/A	2023/11/29	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Conductivity	AT	9075285	N/A	2023/11/29	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9069719	N/A	2023/11/30	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9075316	2023/11/27	2023/11/29	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075203	N/A	2023/11/28	Nimarta Singh
pH	AT	9075286	2023/11/27	2023/11/29	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: XRO635 Dup
Sample ID: TH-3
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan

Bureau Veritas ID: XRO636
Sample ID: TH-5A
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075278	N/A	2023/11/29	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Conductivity	AT	9075285	N/A	2023/11/29	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9069719	N/A	2023/11/29	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9075368	2023/11/27	2023/11/29	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075195	N/A	2023/11/30	Viorica Rotaru
pH	AT	9075286	2023/11/27	2023/11/29	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi

Bureau Veritas ID: XRO636 Dup
Sample ID: TH-5A
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Lab Filtered Metals by ICPMS	ICP/MS	9075368	2023/11/27	2023/11/29	Azita Fazaeli

Bureau Veritas ID: XRO637
Sample ID: TH-5B
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075278	N/A	2023/11/29	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Conductivity	AT	9075285	N/A	2023/11/29	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9069719	N/A	2023/11/30	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9075316	2023/11/27	2023/11/29	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075195	N/A	2023/11/30	Viorica Rotaru
pH	AT	9075286	2023/11/27	2023/11/29	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: XRO637 **Collected:** 2023/11/22
Sample ID: TH-5B **Shipped:**
Matrix: Water **Received:** 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi

Bureau Veritas ID: XRO638 **Collected:** 2023/11/22
Sample ID: TH-6 **Shipped:**
Matrix: Water **Received:** 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075278	N/A	2023/11/29	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Conductivity	AT	9075285	N/A	2023/11/29	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9069719	N/A	2023/11/30	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9075316	2023/11/27	2023/11/29	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9076409	N/A	2023/11/28	Viorica Rotaru
pH	AT	9075286	2023/11/27	2023/11/29	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi

Bureau Veritas ID: XRO638 Dup **Collected:** 2023/11/22
Sample ID: TH-6 **Shipped:**
Matrix: Water **Received:** 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate & Nitrite as Nitrogen in Water	LACH	9076409	N/A	2023/11/28	Viorica Rotaru

Bureau Veritas ID: XRO639 **Collected:** 2023/11/22
Sample ID: TH-7 **Shipped:**
Matrix: Water **Received:** 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075278	N/A	2023/11/29	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Conductivity	AT	9075285	N/A	2023/11/29	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9069719	N/A	2023/11/30	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9075316	2023/11/27	2023/11/29	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075203	N/A	2023/11/28	Nimarta Singh
pH	AT	9075286	2023/11/27	2023/11/29	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: XRO639
Sample ID: TH-7
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi

Bureau Veritas ID: XRO640
Sample ID: TH-8
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075278	N/A	2023/11/29	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Conductivity	AT	9075285	N/A	2023/11/29	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9069719	N/A	2023/11/30	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9075316	2023/11/27	2023/11/29	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075203	N/A	2023/11/28	Nimarta Singh
pH	AT	9075286	2023/11/27	2023/11/29	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi

Bureau Veritas ID: XRO641
Sample ID: TH-9
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075278	N/A	2023/11/29	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Conductivity	AT	9075285	N/A	2023/11/29	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9069719	N/A	2023/11/30	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9075316	2023/11/27	2023/11/29	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075203	N/A	2023/11/28	Nimarta Singh
pH	AT	9075286	2023/11/27	2023/11/29	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: XRO642
Sample ID: TH-10
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075278	N/A	2023/11/29	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Conductivity	AT	9075285	N/A	2023/11/29	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9069719	N/A	2023/11/30	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9075316	2023/11/27	2023/11/29	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075203	N/A	2023/11/28	Nimarta Singh
pH	AT	9075286	2023/11/27	2023/11/29	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi

Bureau Veritas ID: XRO643
Sample ID: TH-11
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075278	N/A	2023/11/29	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Conductivity	AT	9075285	N/A	2023/11/29	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9074401	N/A	2023/11/30	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9075316	2023/11/27	2023/11/29	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075203	N/A	2023/11/28	Nimarta Singh
pH	AT	9075286	2023/11/27	2023/11/29	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi

Bureau Veritas ID: XRO643 Dup
Sample ID: TH-11
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: XRO666
Sample ID: TH-12
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075278	N/A	2023/11/29	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Conductivity	AT	9075285	N/A	2023/11/29	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9074402	N/A	2023/11/30	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9075316	2023/11/27	2023/11/29	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075203	N/A	2023/11/28	Nimarta Singh
pH	AT	9075286	2023/11/27	2023/11/29	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi

Bureau Veritas ID: XRO667
Sample ID: TH-13
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075278	N/A	2023/11/29	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Conductivity	AT	9075285	N/A	2023/11/29	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9074402	N/A	2023/11/30	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9075316	2023/11/27	2023/11/29	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075203	N/A	2023/11/28	Nimarta Singh
pH	AT	9075286	2023/11/27	2023/11/29	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi

Bureau Veritas ID: XRO668
Sample ID: SW-2
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075190	N/A	2023/11/30	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9069719	N/A	2023/11/29	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	9078734	2023/11/29	2023/11/29	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075195	N/A	2023/11/30	Viorica Rotaru

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: XRO668
Sample ID: SW-2
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH	AT	9075193	2023/11/27	2023/11/30	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	9074874	2023/11/27	2023/11/28	Muskan

Bureau Veritas ID: XRO668 Dup
Sample ID: SW-2
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani

Bureau Veritas ID: XRO669
Sample ID: SW-2A
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075190	N/A	2023/11/30	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9069719	N/A	2023/11/29	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	9078734	2023/11/29	2023/11/29	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075203	N/A	2023/11/28	Nimarta Singh
pH	AT	9075193	2023/11/27	2023/11/30	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	9074874	2023/11/27	2023/11/28	Muskan

Bureau Veritas ID: XRO670
Sample ID: SW-4
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075190	N/A	2023/11/30	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9069719	N/A	2023/11/29	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	9078734	2023/11/29	2023/11/29	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075203	N/A	2023/11/28	Nimarta Singh

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: XRO670
Sample ID: SW-4
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH	AT	9075193	2023/11/27	2023/11/30	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	9074874	2023/11/27	2023/11/28	Muskan

Bureau Veritas ID: XRO670 Dup
Sample ID: SW-4
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075190	N/A	2023/11/30	Nachiketa Gohil
pH	AT	9075193	2023/11/27	2023/11/30	Nachiketa Gohil

Bureau Veritas ID: XRO671
Sample ID: SW-5
Matrix: Water

Collected: 2023/11/22
Shipped:
Received: 2023/11/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9075190	N/A	2023/11/30	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9075228	N/A	2023/11/28	Massarat Jan
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9076684	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9069719	N/A	2023/11/29	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	9079139	2023/11/29	2023/11/29	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9075220	N/A	2023/11/28	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9075195	N/A	2023/11/30	Viorica Rotaru
pH	AT	9075193	2023/11/27	2023/11/30	Nachiketa Gohil
Phenols (4AAP)	TECH/PHEN	9079287	N/A	2023/11/29	Chloe Pollock
Orthophosphate	KONE	9075225	N/A	2023/11/28	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9075236	N/A	2023/11/28	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	9074953	2023/11/27	2023/11/28	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	9074874	2023/11/27	2023/11/28	Muskan

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

GENERAL COMMENTS

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

Package 1	6.3°C
Package 2	7.7°C

Sample XRO635 [TH-3] : TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample XRO638 [TH-6] : TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample XRO642 [TH-10] : Total Phosphorus < ortho-Phosphate: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample XRO643 [TH-11] : Total Phosphorus < ortho-Phosphate: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Results relate only to the items tested.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9074874	Total Phosphorus	2023/11/28	98	80 - 120	104	80 - 120	<0.020	mg/L	2.3	20	105	80 - 120
9074953	Total Kjeldahl Nitrogen (TKN)	2023/11/28	111	80 - 120	101	80 - 120	<0.10	mg/L	5.1	20	98	80 - 120
9075190	Alkalinity (Total as CaCO3)	2023/11/30			100	85 - 115	<1.0	mg/L	1.2	20		
9075193	pH	2023/11/30			101	98 - 103			1.7	N/A		
9075195	Nitrate (N)	2023/11/30	94	80 - 120	98	80 - 120	<0.10	mg/L	NC	20		
9075195	Nitrite (N)	2023/11/30	101	80 - 120	102	80 - 120	<0.010	mg/L	NC	20		
9075203	Nitrate (N)	2023/11/28	90	80 - 120	89	80 - 120	<0.10	mg/L	0.13	20		
9075203	Nitrite (N)	2023/11/28	104	80 - 120	105	80 - 120	<0.010	mg/L	NC	20		
9075220	Total Ammonia-N	2023/11/28	98	75 - 125	100	80 - 120	<0.050	mg/L	NC	20		
9075225	Orthophosphate (P)	2023/11/28	94	75 - 125	95	80 - 120	<0.010	mg/L	NC	20		
9075228	Dissolved Chloride (Cl-)	2023/11/28	NC	80 - 120	95	80 - 120	<1.0	mg/L	0.61	20		
9075236	Dissolved Sulphate (SO4)	2023/11/28	89	75 - 125	96	80 - 120	<1.0	mg/L	1.5	20		
9075278	Alkalinity (Total as CaCO3)	2023/11/29			98	85 - 115	<1.0	mg/L	0.19	20		
9075285	Conductivity	2023/11/29			102	85 - 115	<1.0	umho/cm	0.65	10		
9075286	pH	2023/11/29			102	98 - 103			0.31	N/A		
9075316	Dissolved Aluminum (Al)	2023/11/29	104	80 - 120	103	80 - 120	<4.9	ug/L	NC	20		
9075316	Dissolved Antimony (Sb)	2023/11/29	110	80 - 120	105	80 - 120	<0.50	ug/L	3.2	20		
9075316	Dissolved Arsenic (As)	2023/11/29	104	80 - 120	100	80 - 120	<1.0	ug/L	1.6	20		
9075316	Dissolved Barium (Ba)	2023/11/29	104	80 - 120	103	80 - 120	<2.0	ug/L	0.37	20		
9075316	Dissolved Beryllium (Be)	2023/11/29	106	80 - 120	104	80 - 120	<0.40	ug/L	NC	20		
9075316	Dissolved Bismuth (Bi)	2023/11/29	99	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
9075316	Dissolved Boron (B)	2023/11/29	102	80 - 120	101	80 - 120	<10	ug/L	2.7	20		
9075316	Dissolved Cadmium (Cd)	2023/11/29	104	80 - 120	101	80 - 120	<0.090	ug/L	NC	20		
9075316	Dissolved Calcium (Ca)	2023/11/29	NC	80 - 120	103	80 - 120	<200	ug/L	0.88	20		
9075316	Dissolved Chromium (Cr)	2023/11/29	102	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
9075316	Dissolved Cobalt (Co)	2023/11/29	100	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		
9075316	Dissolved Copper (Cu)	2023/11/29	104	80 - 120	102	80 - 120	<0.90	ug/L	2.9	20		
9075316	Dissolved Iron (Fe)	2023/11/29	104	80 - 120	102	80 - 120	<100	ug/L	NC	20		
9075316	Dissolved Lead (Pb)	2023/11/29	100	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		
9075316	Dissolved Lithium (Li)	2023/11/29	107	80 - 120	105	80 - 120	<5.0	ug/L	1.2	20		

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9075316	Dissolved Magnesium (Mg)	2023/11/29	NC	80 - 120	101	80 - 120	<50	ug/L	1.2	20		
9075316	Dissolved Manganese (Mn)	2023/11/29	102	80 - 120	100	80 - 120	<2.0	ug/L	NC	20		
9075316	Dissolved Molybdenum (Mo)	2023/11/29	110	80 - 120	103	80 - 120	<0.50	ug/L	0.84	20		
9075316	Dissolved Nickel (Ni)	2023/11/29	99	80 - 120	100	80 - 120	<1.0	ug/L	2.5	20		
9075316	Dissolved Phosphorus (P)	2023/11/29	107	80 - 120	103	80 - 120	<100	ug/L	NC	20		
9075316	Dissolved Potassium (K)	2023/11/29	105	80 - 120	102	80 - 120	<200	ug/L	1.9	20		
9075316	Dissolved Selenium (Se)	2023/11/29	103	80 - 120	101	80 - 120	<2.0	ug/L	NC	20		
9075316	Dissolved Silicon (Si)	2023/11/29	107	80 - 120	105	80 - 120	<50	ug/L	1.2	20		
9075316	Dissolved Silver (Ag)	2023/11/29	99	80 - 120	101	80 - 120	<0.090	ug/L	NC	20		
9075316	Dissolved Sodium (Na)	2023/11/29	NC	80 - 120	101	80 - 120	<100	ug/L	0.21	20		
9075316	Dissolved Strontium (Sr)	2023/11/29	NC	80 - 120	101	80 - 120	<1.0	ug/L	3.2	20		
9075316	Dissolved Tellurium (Te)	2023/11/29	104	80 - 120	103	80 - 120	<1.0	ug/L	NC	20		
9075316	Dissolved Thallium (Tl)	2023/11/29	104	80 - 120	101	80 - 120	<0.050	ug/L	NC	20		
9075316	Dissolved Tin (Sn)	2023/11/29	110	80 - 120	104	80 - 120	<1.0	ug/L	NC	20		
9075316	Dissolved Titanium (Ti)	2023/11/29	106	80 - 120	102	80 - 120	<5.0	ug/L	NC	20		
9075316	Dissolved Tungsten (W)	2023/11/29	107	80 - 120	102	80 - 120	<1.0	ug/L	NC	20		
9075316	Dissolved Uranium (U)	2023/11/29	105	80 - 120	101	80 - 120	<0.10	ug/L	2.2	20		
9075316	Dissolved Vanadium (V)	2023/11/29	105	80 - 120	100	80 - 120	<0.50	ug/L	0.64	20		
9075316	Dissolved Zinc (Zn)	2023/11/29	99	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
9075316	Dissolved Zirconium (Zr)	2023/11/29	113	80 - 120	106	80 - 120	<1.0	ug/L	NC	20		
9075368	Dissolved Aluminum (Al)	2023/11/29	107	80 - 120	100	80 - 120	<4.9	ug/L	NC	20		
9075368	Dissolved Antimony (Sb)	2023/11/29	108	80 - 120	100	80 - 120	<0.50	ug/L	NC	20		
9075368	Dissolved Arsenic (As)	2023/11/29	103	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
9075368	Dissolved Barium (Ba)	2023/11/29	104	80 - 120	99	80 - 120	<2.0	ug/L	2.7	20		
9075368	Dissolved Beryllium (Be)	2023/11/29	105	80 - 120	101	80 - 120	<0.40	ug/L	NC	20		
9075368	Dissolved Bismuth (Bi)	2023/11/29	107	80 - 120	103	80 - 120	<1.0	ug/L	NC	20		
9075368	Dissolved Boron (B)	2023/11/29	104	80 - 120	100	80 - 120	<10	ug/L	1.0	20		
9075368	Dissolved Cadmium (Cd)	2023/11/29	104	80 - 120	98	80 - 120	<0.090	ug/L	NC	20		
9075368	Dissolved Calcium (Ca)	2023/11/29	NC	80 - 120	102	80 - 120	<200	ug/L	1.2	20		
9075368	Dissolved Chromium (Cr)	2023/11/29	105	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
9075368	Dissolved Cobalt (Co)	2023/11/29	103	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9075368	Dissolved Copper (Cu)	2023/11/29	103	80 - 120	99	80 - 120	<0.90	ug/L	NC	20		
9075368	Dissolved Iron (Fe)	2023/11/29	104	80 - 120	100	80 - 120	<100	ug/L	NC	20		
9075368	Dissolved Lead (Pb)	2023/11/29	102	80 - 120	98	80 - 120	<0.50	ug/L	NC	20		
9075368	Dissolved Lithium (Li)	2023/11/29	110	80 - 120	105	80 - 120	<5.0	ug/L	NC	20		
9075368	Dissolved Magnesium (Mg)	2023/11/29	NC	80 - 120	99	80 - 120	<50	ug/L	1.4	20		
9075368	Dissolved Manganese (Mn)	2023/11/29	104	80 - 120	100	80 - 120	<2.0	ug/L	5.8	20		
9075368	Dissolved Molybdenum (Mo)	2023/11/29	109	80 - 120	101	80 - 120	<0.50	ug/L	8.8	20		
9075368	Dissolved Nickel (Ni)	2023/11/29	102	80 - 120	99	80 - 120	<1.0	ug/L	6.2	20		
9075368	Dissolved Phosphorus (P)	2023/11/29	112	80 - 120	106	80 - 120	<100	ug/L	NC	20		
9075368	Dissolved Potassium (K)	2023/11/29	106	80 - 120	100	80 - 120	<200	ug/L	0.29	20		
9075368	Dissolved Selenium (Se)	2023/11/29	107	80 - 120	100	80 - 120	<2.0	ug/L	NC	20		
9075368	Dissolved Silicon (Si)	2023/11/29	108	80 - 120	101	80 - 120	<50	ug/L	0.75	20		
9075368	Dissolved Silver (Ag)	2023/11/29	89	80 - 120	100	80 - 120	<0.090	ug/L	NC	20		
9075368	Dissolved Sodium (Na)	2023/11/29	98	80 - 120	99	80 - 120	<100	ug/L	0.31	20		
9075368	Dissolved Strontium (Sr)	2023/11/29	103	80 - 120	101	80 - 120	<1.0	ug/L	2.5	20		
9075368	Dissolved Tellurium (Te)	2023/11/29	103	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
9075368	Dissolved Thallium (Tl)	2023/11/29	105	80 - 120	100	80 - 120	<0.050	ug/L	NC	20		
9075368	Dissolved Tin (Sn)	2023/11/29	109	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
9075368	Dissolved Titanium (Ti)	2023/11/29	110	80 - 120	98	80 - 120	<5.0	ug/L	NC	20		
9075368	Dissolved Tungsten (W)	2023/11/29	107	80 - 120	102	80 - 120	<1.0	ug/L	NC	20		
9075368	Dissolved Uranium (U)	2023/11/29	112	80 - 120	107	80 - 120	<0.10	ug/L	7.7	20		
9075368	Dissolved Vanadium (V)	2023/11/29	108	80 - 120	101	80 - 120	<0.50	ug/L	NC	20		
9075368	Dissolved Zinc (Zn)	2023/11/29	102	80 - 120	100	80 - 120	<5.0	ug/L	NC	20		
9075368	Dissolved Zirconium (Zr)	2023/11/29	110	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
9076409	Nitrate (N)	2023/11/28	91	80 - 120	92	80 - 120	<0.10	mg/L	0.048	20		
9076409	Nitrite (N)	2023/11/28	104	80 - 120	105	80 - 120	<0.010	mg/L	NC	20		
9076684	Dissolved Organic Carbon	2023/11/29	91	80 - 120	94	80 - 120	<0.40	mg/L	7.5	20		
9078734	Total Calcium (Ca)	2023/11/29	NC	80 - 120	102	80 - 120	<200	ug/L	0.62	20		
9078734	Total Iron (Fe)	2023/11/29	96	80 - 120	101	80 - 120	<100	ug/L	2.1	20		
9078734	Total Manganese (Mn)	2023/11/29	95	80 - 120	99	80 - 120	<2.0	ug/L	1.5	20		
9078734	Total Potassium (K)	2023/11/29	NC	80 - 120	102	80 - 120	<200	ug/L	3.4	20		

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9078734	Total Sodium (Na)	2023/11/29	NC	80 - 120	104	80 - 120	<100	ug/L	2.1	20		
9079139	Total Calcium (Ca)	2023/11/29	NC	80 - 120	98	80 - 120	<200	ug/L				
9079139	Total Iron (Fe)	2023/11/29	99	80 - 120	97	80 - 120	<100	ug/L				
9079139	Total Manganese (Mn)	2023/11/29	97	80 - 120	95	80 - 120	<2.0	ug/L	8.5	20		
9079139	Total Potassium (K)	2023/11/29	99	80 - 120	98	80 - 120	<200	ug/L				
9079139	Total Sodium (Na)	2023/11/29	96	80 - 120	97	80 - 120	<100	ug/L				
9079287	Phenols-4AAP	2023/11/29	102	80 - 120	101	80 - 120	<0.0010	mg/L	0	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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.

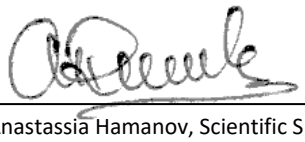
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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).

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

Bureau Veritas 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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Your Project #: Bentinck Surfacewater (213085)
Your C.O.C. #: 926689-01-01

Attention: Reporting Contacts

GM BluePlan Engineering Limited
1260 - 2nd Ave E
Unit 1
Owen Sound, ON
CANADA N4K 2J3

Report Date: 2023/04/28
Report #: R7606760
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3B2440
Received: 2023/04/21, 09:06

Sample Matrix: Surface Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	4	N/A	2023/04/26	CAM SOP-00448	SM 23 2320 B m
Chloride by Automated Colourimetry	4	N/A	2023/04/26	CAM SOP-00463	SM 23 4500-Cl E m
Conductivity	4	N/A	2023/04/26	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	4	N/A	2023/04/24	CAM SOP-00446	SM 23 5310 B m
Hardness (calculated as CaCO3)	4	N/A	2023/04/27	CAM SOP 00102/00408/00447	EPA 6010D m
Total Metals Analysis by ICPMS	4	2023/04/25	2023/04/25	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	4	N/A	2023/04/26	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	4	N/A	2023/04/25	CAM SOP-00440	SM 23 4500-NO3I/NO2B
pH	4	2023/04/24	2023/04/26	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	4	N/A	2023/04/26	CAM SOP-00444	OMOE E3179 m
Orthophosphate	4	N/A	2023/04/26	CAM SOP-00461	SM 23 4500-P E m
Sulphate by Automated Turbidimetry	4	N/A	2023/04/26	CAM SOP-00464	SM 23 4500-SO42- E m
Total Dissolved Solids	4	2023/04/25	2023/04/26	CAM SOP-00428	SM 23 2540C m
Total Kjeldahl Nitrogen in Water	4	2023/04/25	2023/04/26	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	4	2023/04/25	2023/04/27	CAM SOP-00407	SM 23 4500-P I

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas 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.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been 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 Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Your Project #: Bentinck Surfacewater (213085)
Your C.O.C. #: 926689-01-01

Attention: Reporting Contacts

GM BluePlan Engineering Limited
1260 - 2nd Ave E
Unit 1
Owen Sound, ON
CANADA N4K 2J3

Report Date: 2023/04/28
Report #: R7606760
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3B2440
Received: 2023/04/21, 09:06

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 Bureau Veritas, results relate to the supplied samples tested.

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) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Ashton Gibson, Project Manager
Email: Ashton.Gibson@bureauveritas.com
Phone# (905)817-5765
==========
This report has been generated and distributed using a secure automated process.
Bureau Veritas 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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

RESULTS OF ANALYSES OF SURFACE WATER

Bureau Veritas ID		VPO531		VPO532			VPO532		
Sampling Date		2023/04/20		2023/04/20			2023/04/20		
COC Number		926689-01-01		926689-01-01			926689-01-01		
	UNITS	SW-2	QC Batch	SW-2A	RDL	QC Batch	SW-2A Lab-Dup	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L	220	8621993	210	1.0	8621993			
Inorganics									
Total Ammonia-N	mg/L	<0.050	8627167	<0.050	0.050	8627167			
Conductivity	umho/cm	470	8626212	440	1.0	8626212			
Total Dissolved Solids	mg/L	235	8626714	230	10	8626706	215	10	8626706
Total Kjeldahl Nitrogen (TKN)	mg/L	0.33	8627673	0.37	0.10	8627673			
Dissolved Organic Carbon	mg/L	7.1	8623859	7.5	0.40	8623859			
Orthophosphate (P)	mg/L	<0.010	8627116	<0.010	0.010	8627116			
pH	pH	8.19	8626214	8.19		8626214			
Phenols-4AAP	mg/L	<0.0010	8628696	<0.0010	0.0010	8628696			
Total Phosphorus	mg/L	<0.004	8627670	<0.004	0.004	8627670			
Dissolved Sulphate (SO4)	mg/L	5.6	8627133	5.5	1.0	8627133			
Alkalinity (Total as CaCO3)	mg/L	200	8626209	200	1.0	8626209			
Dissolved Chloride (Cl-)	mg/L	17	8627136	15	1.0	8627136			
Nitrite (N)	mg/L	<0.010	8625745	<0.010	0.010	8625745			
Nitrate (N)	mg/L	<0.10	8625745	0.11	0.10	8625745			
Nitrate + Nitrite (N)	mg/L	<0.10	8625745	0.11	0.10	8625745			

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

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

RESULTS OF ANALYSES OF SURFACE WATER

Bureau Veritas ID		VPO533		VPO534			VPO534		
Sampling Date		2023/04/20		2023/04/20			2023/04/20		
COC Number		926689-01-01		926689-01-01			926689-01-01		
	UNITS	SW-4	QC Batch	SW-5	RDL	QC Batch	SW-5 Lab-Dup	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L	230	8621993	230	1.0	8621993			
Inorganics									
Total Ammonia-N	mg/L	<0.050	8627167	<0.050	0.050	8627167			
Conductivity	umho/cm	440	8626212	440	1.0	8626212			
Total Dissolved Solids	mg/L	200	8626706	170	10	8626706			
Total Kjeldahl Nitrogen (TKN)	mg/L	0.32	8627673	0.24	0.10	8627673			
Dissolved Organic Carbon	mg/L	4.1	8623859	4.2	0.40	8623909	4.2	0.40	8623909
Orthophosphate (P)	mg/L	<0.010	8627116	<0.010	0.010	8627116			
pH	pH	8.31	8626214	8.33		8626214			
Phenols-4AAP	mg/L	<0.0010	8628696	<0.0010	0.0010	8628696			
Total Phosphorus	mg/L	<0.004	8627670	<0.004	0.004	8627670			
Dissolved Sulphate (SO4)	mg/L	9.1	8627133	8.6	1.0	8627133			
Alkalinity (Total as CaCO3)	mg/L	210	8626209	210	1.0	8626209			
Dissolved Chloride (Cl-)	mg/L	5.1	8627136	5.0	1.0	8627136			
Nitrite (N)	mg/L	<0.010	8625743	<0.010	0.010	8625745			
Nitrate (N)	mg/L	0.41	8625743	0.37	0.10	8625745			
Nitrate + Nitrite (N)	mg/L	0.41	8625743	0.37	0.10	8625745			

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

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

ELEMENTS BY ATOMIC SPECTROSCOPY (SURFACE WATER)

Bureau Veritas ID		VPO531	VPO531	VPO532	VPO533	VPO534		
Sampling Date		2023/04/20	2023/04/20	2023/04/20	2023/04/20	2023/04/20		
COC Number		926689-01-01	926689-01-01	926689-01-01	926689-01-01	926689-01-01		
	UNITS	SW-2	SW-2 Lab-Dup	SW-2A	SW-4	SW-5	RDL	QC Batch
Metals								
Total Calcium (Ca)	ug/L	56000	54000	55000	57000	58000	200	8626481
Total Iron (Fe)	ug/L	<100	<100	<100	<100	<100	100	8626481
Total Magnesium (Mg)	ug/L	21000	20000	21000	24000	25000	50	8626481
Total Manganese (Mn)	ug/L	9.3	9.0	6.3	5.4	4.6	2.0	8626481
Total Potassium (K)	ug/L	1600	1500	1600	790	780	200	8626481
Total Sodium (Na)	ug/L	10000	10000	9900	3400	3500	100	8626481

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

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: VPO531
Sample ID: SW-2
Matrix: Surface Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8626209	N/A	2023/04/26	Kien Tran
Chloride by Automated Colourimetry	KONE	8627136	N/A	2023/04/26	Alina Dobreanu
Conductivity	AT	8626212	N/A	2023/04/26	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623859	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8621993	N/A	2023/04/27	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	8626481	2023/04/25	2023/04/25	Prempal Bhatti
Total Ammonia-N	LACH/NH4	8627167	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8625745	N/A	2023/04/25	Samuel Law
pH	AT	8626214	2023/04/24	2023/04/26	Kien Tran
Phenols (4AAP)	TECH/PHEN	8628696	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8627116	N/A	2023/04/26	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8627133	N/A	2023/04/26	Alina Dobreanu
Total Dissolved Solids	BAL	8626714	2023/04/25	2023/04/26	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	8627673	2023/04/25	2023/04/26	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	8627670	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPO531 Dup
Sample ID: SW-2
Matrix: Surface Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals Analysis by ICPMS	ICP/MS	8626481	2023/04/25	2023/04/25	Prempal Bhatti

Bureau Veritas ID: VPO532
Sample ID: SW-2A
Matrix: Surface Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8626209	N/A	2023/04/26	Kien Tran
Chloride by Automated Colourimetry	KONE	8627136	N/A	2023/04/26	Alina Dobreanu
Conductivity	AT	8626212	N/A	2023/04/26	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623859	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8621993	N/A	2023/04/27	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	8626481	2023/04/25	2023/04/25	Prempal Bhatti
Total Ammonia-N	LACH/NH4	8627167	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8625745	N/A	2023/04/25	Samuel Law
pH	AT	8626214	2023/04/24	2023/04/26	Kien Tran
Phenols (4AAP)	TECH/PHEN	8628696	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8627116	N/A	2023/04/26	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8627133	N/A	2023/04/26	Alina Dobreanu
Total Dissolved Solids	BAL	8626706	2023/04/25	2023/04/26	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	8627673	2023/04/25	2023/04/26	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	8627670	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: VPO532 Dup
Sample ID: SW-2A
Matrix: Surface Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids	BAL	8626706	2023/04/25	2023/04/26	Shaneil Hall

Bureau Veritas ID: VPO533
Sample ID: SW-4
Matrix: Surface Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8626209	N/A	2023/04/26	Kien Tran
Chloride by Automated Colourimetry	KONE	8627136	N/A	2023/04/26	Alina Dobreanu
Conductivity	AT	8626212	N/A	2023/04/26	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623859	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8621993	N/A	2023/04/27	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	8626481	2023/04/25	2023/04/25	Prempal Bhatti
Total Ammonia-N	LACH/NH4	8627167	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8625743	N/A	2023/04/25	Samuel Law
pH	AT	8626214	2023/04/24	2023/04/26	Kien Tran
Phenols (4AAP)	TECH/PHEN	8628696	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8627116	N/A	2023/04/26	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8627133	N/A	2023/04/26	Alina Dobreanu
Total Dissolved Solids	BAL	8626706	2023/04/25	2023/04/26	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	8627673	2023/04/25	2023/04/26	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	8627670	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPO534
Sample ID: SW-5
Matrix: Surface Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8626209	N/A	2023/04/26	Kien Tran
Chloride by Automated Colourimetry	KONE	8627136	N/A	2023/04/26	Alina Dobreanu
Conductivity	AT	8626212	N/A	2023/04/26	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623909	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8621993	N/A	2023/04/27	Automated Statchk
Total Metals Analysis by ICPMS	ICP/MS	8626481	2023/04/25	2023/04/25	Prempal Bhatti
Total Ammonia-N	LACH/NH4	8627167	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8625745	N/A	2023/04/25	Samuel Law
pH	AT	8626214	2023/04/24	2023/04/26	Kien Tran
Phenols (4AAP)	TECH/PHEN	8628696	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8627116	N/A	2023/04/26	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8627133	N/A	2023/04/26	Alina Dobreanu
Total Dissolved Solids	BAL	8626706	2023/04/25	2023/04/26	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	8627673	2023/04/25	2023/04/26	Rajni Tyagi
Total Phosphorus (Colourimetric)	SKAL/P	8627670	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: VPO534 Dup
Sample ID: SW-5
Matrix: Surface Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623909	N/A	2023/04/24	Gyulshen Idriz

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

GENERAL COMMENTS

Results relate only to the items tested.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8623859	Dissolved Organic Carbon	2023/04/24	93	80 - 120	97	80 - 120	<0.40	mg/L	4.6	20		
8623909	Dissolved Organic Carbon	2023/04/24	95	80 - 120	99	80 - 120	<0.40	mg/L	0.95	20		
8625743	Nitrate (N)	2023/04/25	NC	80 - 120	98	80 - 120	<0.10	mg/L	1.5	20		
8625743	Nitrite (N)	2023/04/25	100	80 - 120	104	80 - 120	<0.010	mg/L	3.0	20		
8625745	Nitrate (N)	2023/04/25	95	80 - 120	92	80 - 120	<0.10	mg/L	2.3	20		
8625745	Nitrite (N)	2023/04/25	100	80 - 120	104	80 - 120	<0.010	mg/L	0.91	20		
8626209	Alkalinity (Total as CaCO3)	2023/04/26			92	85 - 115	<1.0	mg/L	5.8	20		
8626212	Conductivity	2023/04/26			99	85 - 115	1.1, RDL=1.0	umho/cm	5.1	25		
8626214	pH	2023/04/26			101	98 - 103			0.52	N/A		
8626481	Total Calcium (Ca)	2023/04/25	NC	80 - 120	103	80 - 120	<200	ug/L	3.2	20		
8626481	Total Iron (Fe)	2023/04/25	107	80 - 120	103	80 - 120	<100	ug/L	NC	20		
8626481	Total Magnesium (Mg)	2023/04/25	107	80 - 120	103	80 - 120	<50	ug/L	5.7	20		
8626481	Total Manganese (Mn)	2023/04/25	103	80 - 120	100	80 - 120	<2.0	ug/L	3.3	20		
8626481	Total Potassium (K)	2023/04/25	106	80 - 120	102	80 - 120	<200	ug/L	4.1	20		
8626481	Total Sodium (Na)	2023/04/25	107	80 - 120	104	80 - 120	<100	ug/L	4.9	20		
8626706	Total Dissolved Solids	2023/04/26					<10	mg/L	6.7	20	100	90 - 110
8626714	Total Dissolved Solids	2023/04/26					<10	mg/L	8.7	20	100	90 - 110
8627116	Orthophosphate (P)	2023/04/26	93	75 - 125	94	80 - 120	<0.010	mg/L	NC	20		
8627133	Dissolved Sulphate (SO4)	2023/04/26	94	75 - 125	97	80 - 120	<1.0	mg/L	NC	20		
8627136	Dissolved Chloride (Cl-)	2023/04/26	93	80 - 120	95	80 - 120	<1.0	mg/L	2.5	20		
8627167	Total Ammonia-N	2023/04/26	101	75 - 125	99	80 - 120	<0.050	mg/L	4.4	20		
8627670	Total Phosphorus	2023/04/27	105	80 - 120	106	80 - 120	<0.004	mg/L	NC	20	105	80 - 120
8627673	Total Kjeldahl Nitrogen (TKN)	2023/04/27	119	80 - 120	96	80 - 120	<0.10	mg/L	11	20	97	80 - 120

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8628696	Phenols-4AAP	2023/04/25	101	80 - 120	96	80 - 120	<0.0010	mg/L	NC	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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.

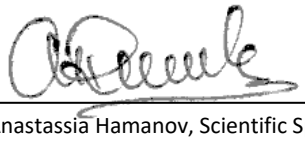
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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).

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

Bureau Veritas 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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Your Project #: Bentinck Groundwater (213085)
Your C.O.C. #: 926688-01-01

Attention: Reporting Contacts

GM BluePlan Engineering Limited
1260 - 2nd Ave E
Unit 1
Owen Sound, ON
CANADA N4K 2J3

Report Date: 2023/05/03
Report #: R7612717
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3B2723
Received: 2023/04/21, 09:06

Sample Matrix: Ground Water
Samples Received: 13

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	13	N/A	2023/04/28	CAM SOP-00448	SM 23 2320 B m
Chloride by Automated Colourimetry	1	N/A	2023/04/25	CAM SOP-00463	SM 23 4500-Cl E m
Chloride by Automated Colourimetry	12	N/A	2023/04/26	CAM SOP-00463	SM 23 4500-Cl E m
Conductivity	13	N/A	2023/04/28	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	12	N/A	2023/04/24	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1)	1	N/A	2023/04/26	CAM SOP-00446	SM 23 5310 B m
Hardness (calculated as CaCO3)	11	N/A	2023/04/25	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	2	N/A	2023/04/26	CAM SOP 00102/00408/00447	SM 2340 B
Lab Filtered Metals by ICPMS	13	2023/04/24	2023/04/25	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	13	N/A	2023/04/26	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	13	N/A	2023/04/25	CAM SOP-00440	SM 23 4500-NO3I/NO2B
pH	13	2023/04/22	2023/04/28	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	13	N/A	2023/04/26	CAM SOP-00444	OMOE E3179 m
Orthophosphate	1	N/A	2023/04/25	CAM SOP-00461	SM 23 4500-P E m
Orthophosphate	12	N/A	2023/04/26	CAM SOP-00461	SM 23 4500-P E m
Sulphate by Automated Turbidimetry	1	N/A	2023/04/25	CAM SOP-00464	SM 23 4500-SO42- E m
Sulphate by Automated Turbidimetry	12	N/A	2023/04/26	CAM SOP-00464	SM 23 4500-SO42- E m
Total Kjeldahl Nitrogen in Water	9	2023/04/25	2023/04/26	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	4	2023/04/25	2023/04/27	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	13	2023/04/25	2023/04/27	CAM SOP-00407	SM 23 4500-P I

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas 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

Your Project #: Bentinck Groundwater (213085)
Your C.O.C. #: 926688-01-01

Attention: Reporting Contacts

GM BluePlan Engineering Limited
1260 - 2nd Ave E
Unit 1
Owen Sound, ON
CANADA N4K 2J3

Report Date: 2023/05/03
Report #: R7612717
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3B2723

Received: 2023/04/21, 09:06

Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been 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 Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas 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 Bureau Veritas, results relate to the supplied samples tested.

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) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.

(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Ashton Gibson, Project Manager
Email: Ashton.Gibson@bureauveritas.com
Phone# (905)817-5765

==========

This report has been generated and distributed using a secure automated process.
Bureau Veritas 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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C3B2723
Report Date: 2023/05/03

GM BluePlan Engineering Limited
Client Project #: Bentinck Groundwater (213085)
Sampler Initials: KC

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		VPQ232			VPQ233			VPQ234		
Sampling Date		2023/04/20			2023/04/20			2023/04/20		
COC Number		926688-01-01			926688-01-01			926688-01-01		
	UNITS	TH-2	RDL	QC Batch	TH-3	RDL	QC Batch	TH-5A	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	290	1.0	8621993	590	1.0	8621993	280	1.0	8621993
Inorganics										
Total Ammonia-N	mg/L	0.14	0.050	8627189	5.3	0.050	8627189	1.7	0.050	8627189
Conductivity	umho/cm	530	1.0	8623566	1100	1.0	8623571	680	1.0	8623571
Total Kjeldahl Nitrogen (TKN)	mg/L	0.94	0.10	8627872	5.3	0.20	8627872	2.0	0.10	8627872
Dissolved Organic Carbon	mg/L	1.7	0.40	8627627	3.6	0.40	8623859	3.5	0.40	8623909
Orthophosphate (P)	mg/L	<0.010	0.010	8623602	<0.010	0.010	8623602	<0.010	0.010	8623602
pH	pH	8.16		8623567	7.81		8623568	8.14		8623568
Phenols-4AAP	mg/L	<0.0010	0.0010	8629921	<0.0010	0.0010	8629921	<0.0010	0.0010	8629921
Total Phosphorus	mg/L	0.058	0.020	8627865	0.10	0.020	8627865	0.13	0.020	8627865
Dissolved Sulphate (SO4)	mg/L	6.8	1.0	8623601	5.7	1.0	8623601	1.3	1.0	8623601
Alkalinity (Total as CaCO3)	mg/L	270	1.0	8623555	550	1.0	8623557	250	1.0	8623557
Dissolved Chloride (Cl-)	mg/L	2.9	1.0	8623592	26	1.0	8623592	62	1.0	8623592
Nitrite (N)	mg/L	<0.010	0.010	8623539	<0.010	0.010	8623547	0.012	0.010	8623548
Nitrate (N)	mg/L	0.65	0.10	8623539	0.37	0.10	8623547	<0.10	0.10	8623548
Nitrate + Nitrite (N)	mg/L	0.65	0.10	8623539	0.37	0.10	8623547	0.11	0.10	8623548

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C3B2723
Report Date: 2023/05/03

GM BluePlan Engineering Limited
Client Project #: Bentinck Groundwater (213085)
Sampler Initials: KC

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		VPQ235			VPQ236			VPQ237		
Sampling Date		2023/04/20			2023/04/20			2023/04/20		
COC Number		926688-01-01			926688-01-01			926688-01-01		
	UNITS	TH-5B	RDL	QC Batch	TH-6	RDL	QC Batch	TH-7	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	240	1.0	8621993	780	1.0	8621993	640	1.0	8621993
Inorganics										
Total Ammonia-N	mg/L	0.074	0.050	8627189	18	0.050	8627189	0.20	0.050	8627189
Conductivity	umho/cm	450	1.0	8623571	1800	1.0	8623571	1300	1.0	8623571
Total Kjeldahl Nitrogen (TKN)	mg/L	0.14	0.10	8627872	17	1.0	8627872	1.0	0.20	8627872
Dissolved Organic Carbon	mg/L	1.1	0.40	8623859	10	0.40	8623859	2.4	0.40	8623859
Orthophosphate (P)	mg/L	<0.010	0.010	8623602	0.017	0.010	8623602	<0.010	0.010	8625112
pH	pH	8.15		8623568	7.89		8623568	7.74		8623568
Phenols-4AAP	mg/L	<0.0010	0.0010	8629921	<0.0010	0.0010	8629921	<0.0010	0.0010	8629921
Total Phosphorus	mg/L	<0.020	0.020	8627865	0.041	0.020	8627865	<0.020	0.020	8627865
Dissolved Sulphate (SO4)	mg/L	17	1.0	8623601	94	1.0	8623601	20	1.0	8625109
Alkalinity (Total as CaCO3)	mg/L	210	1.0	8623557	750	1.0	8623557	540	1.0	8623557
Dissolved Chloride (Cl-)	mg/L	<1.0	1.0	8623592	93	1.0	8623592	64	1.0	8625098
Nitrite (N)	mg/L	<0.010	0.010	8623548	<0.010	0.010	8623547	<0.010	0.010	8623547
Nitrate (N)	mg/L	<0.10	0.10	8623548	1.57	0.10	8623547	8.47	0.10	8623547
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	8623548	1.57	0.10	8623547	8.47	0.10	8623547

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C3B2723
Report Date: 2023/05/03

GM BluePlan Engineering Limited
Client Project #: Bentinck Groundwater (213085)
Sampler Initials: KC

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		VPQ238		VPQ239		VPQ240		
Sampling Date		2023/04/20		2023/04/20		2023/04/20		
COC Number		926688-01-01		926688-01-01		926688-01-01		
	UNITS	TH-8	QC Batch	TH-9	QC Batch	TH-10	RDL	QC Batch
Calculated Parameters								
Hardness (CaCO3)	mg/L	540	8621993	330	8621993	300	1.0	8622374
Inorganics								
Total Ammonia-N	mg/L	<0.050	8627189	<0.050	8627189	0.069	0.050	8627189
Conductivity	umho/cm	940	8623571	580	8623571	590	1.0	8623553
Total Kjeldahl Nitrogen (TKN)	mg/L	0.34	8627872	0.39	8627872	0.14	0.10	8627872
Dissolved Organic Carbon	mg/L	3.0	8623909	16	8623909	2.1	0.40	8623909
Orthophosphate (P)	mg/L	<0.010	8623602	<0.010	8623602	0.020	0.010	8623602
pH	pH	7.80	8623568	8.09	8623568	8.04		8623552
Phenols-4AAP	mg/L	<0.0010	8629921	<0.0010	8629921	<0.0010	0.0010	8629921
Total Phosphorus	mg/L	0.022	8627865	0.058	8627865	0.068	0.020	8627865
Dissolved Sulphate (SO4)	mg/L	21	8623601	2.9	8623601	4.7	1.0	8623601
Alkalinity (Total as CaCO3)	mg/L	480	8623557	300	8623557	270	1.0	8623551
Dissolved Chloride (Cl-)	mg/L	6.9	8623592	4.5	8623592	24	1.0	8623592
Nitrite (N)	mg/L	<0.010	8623547	<0.010	8623548	0.023	0.010	8623547
Nitrate (N)	mg/L	1.27	8623547	0.16	8623548	0.76	0.10	8623547
Nitrate + Nitrite (N)	mg/L	1.27	8623547	0.16	8623548	0.78	0.10	8623547

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C3B2723
Report Date: 2023/05/03

GM BluePlan Engineering Limited
Client Project #: Bentinck Groundwater (213085)
Sampler Initials: KC

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		VPQ240			VPQ241			VPQ241		
Sampling Date		2023/04/20			2023/04/20			2023/04/20		
COC Number		926688-01-01			926688-01-01			926688-01-01		
	UNITS	TH-10 Lab-Dup	RDL	QC Batch	TH-11	RDL	QC Batch	TH-11 Lab-Dup	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L				210	1.0	8622374			
Inorganics										
Total Ammonia-N	mg/L				<0.050	0.050	8627189			
Conductivity	umho/cm				380	1.0	8623553			
Total Kjeldahl Nitrogen (TKN)	mg/L				<0.10	0.10	8627872			
Dissolved Organic Carbon	mg/L				1.5	0.40	8623909			
Orthophosphate (P)	mg/L				<0.010	0.010	8623602			
pH	pH				8.18		8623552			
Phenols-4AAP	mg/L				<0.0010	0.0010	8629921			
Total Phosphorus	mg/L				0.056	0.020	8627865	0.055	0.020	8627865
Dissolved Sulphate (SO4)	mg/L				3.5	1.0	8623601			
Alkalinity (Total as CaCO3)	mg/L				200	1.0	8623551			
Dissolved Chloride (Cl-)	mg/L				3.2	1.0	8623592			
Nitrite (N)	mg/L	0.025	0.010	8623547	<0.010	0.010	8623549			
Nitrate (N)	mg/L	0.78	0.10	8623547	<0.10	0.10	8623549			
Nitrate + Nitrite (N)	mg/L	0.80	0.10	8623547	<0.10	0.10	8623549			

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

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		VPQ242			VPQ243	VPQ244		
Sampling Date		2023/04/20			2023/04/20	2023/04/20		
COC Number		926688-01-01			926688-01-01	926688-01-01		
	UNITS	TH-12	RDL	QC Batch	TH-13	TP-5	RDL	QC Batch
Calculated Parameters								
Hardness (CaCO3)	mg/L	220	1.0	8622374	310	190	1.0	8622374
Inorganics								
Total Ammonia-N	mg/L	0.24	0.050	8627189	<0.050	<0.050	0.050	8627189
Conductivity	umho/cm	460	1.0	8623553	540	340	1.0	8623571
Total Kjeldahl Nitrogen (TKN)	mg/L	0.75	0.20	8627872	0.24	0.17	0.10	8627882
Dissolved Organic Carbon	mg/L	0.50	0.40	8623909	1.3	0.98	0.40	8623859
Orthophosphate (P)	mg/L	<0.010	0.010	8623602	<0.010	<0.010	0.010	8623602
pH	pH	8.21		8623552	8.06	8.12		8623568
Phenols-4AAP	mg/L	<0.0010	0.0010	8629921	<0.0010	<0.0010	0.0010	8629921
Total Phosphorus	mg/L	1.1	0.020	8627865	0.39	0.29	0.020	8627865
Dissolved Sulphate (SO4)	mg/L	77	1.0	8623601	6.4	2.3	1.0	8623601
Alkalinity (Total as CaCO3)	mg/L	160	1.0	8623551	270	180	1.0	8623557
Dissolved Chloride (Cl-)	mg/L	<1.0	1.0	8623592	3.1	<1.0	1.0	8623592
Nitrite (N)	mg/L	0.020	0.010	8623547	<0.010	<0.010	0.010	8623547
Nitrate (N)	mg/L	0.15	0.10	8623547	1.26	<0.10	0.10	8623547
Nitrate + Nitrite (N)	mg/L	0.17	0.10	8623547	1.26	<0.10	0.10	8623547

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

ELEMENTS BY ATOMIC SPECTROSCOPY (GROUND WATER)

Bureau Veritas ID		VPQ232		VPQ233	VPQ234	VPQ234	VPQ235		
Sampling Date		2023/04/20		2023/04/20	2023/04/20	2023/04/20	2023/04/20		
COC Number		926688-01-01		926688-01-01	926688-01-01	926688-01-01	926688-01-01		
	UNITS	TH-2	QC Batch	TH-3	TH-5A	TH-5A Lab-Dup	TH-5B	RDL	QC Batch
Metals									
Dissolved Calcium (Ca)	ug/L	67000	8624999	150000	56000	57000	47000	200	8624928
Dissolved Iron (Fe)	ug/L	<100	8624999	<100	<100	<100	<100	100	8624928
Dissolved Magnesium (Mg)	ug/L	30000	8624999	51000	34000	34000	29000	50	8624928
Dissolved Manganese (Mn)	ug/L	<2.0	8624999	160	7.9	8.2	140	2.0	8624928
Dissolved Potassium (K)	ug/L	910	8624999	6700	2900	3000	1000	200	8624928
Dissolved Sodium (Na)	ug/L	1700	8624999	14000	28000	29000	7100	100	8624928

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

Bureau Veritas ID		VPQ236	VPQ237	VPQ238		VPQ239		VPQ240		
Sampling Date		2023/04/20	2023/04/20	2023/04/20		2023/04/20		2023/04/20		
COC Number		926688-01-01	926688-01-01	926688-01-01		926688-01-01		926688-01-01		
	UNITS	TH-6	TH-7	TH-8	QC Batch	TH-9	QC Batch	TH-10	RDL	QC Batch
Metals										
Dissolved Calcium (Ca)	ug/L	160000	180000	160000	8624928	84000	8624999	81000	200	8624928
Dissolved Iron (Fe)	ug/L	<100	<100	<100	8624928	120	8624999	<100	100	8624928
Dissolved Magnesium (Mg)	ug/L	94000	45000	34000	8624928	29000	8624999	22000	50	8624928
Dissolved Manganese (Mn)	ug/L	3300	22	18	8624928	12	8624999	50	2.0	8624928
Dissolved Potassium (K)	ug/L	62000	6200	2300	8624928	310	8624999	2700	200	8624928
Dissolved Sodium (Na)	ug/L	59000	35000	5700	8624928	1300	8624999	14000	100	8624928

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		VPQ241	VPQ242	VPQ243	VPQ244		
Sampling Date		2023/04/20	2023/04/20	2023/04/20	2023/04/20		
COC Number		926688-01-01	926688-01-01	926688-01-01	926688-01-01		
	UNITS	TH-11	TH-12	TH-13	TP-5	RDL	QC Batch
Metals							
Dissolved Calcium (Ca)	ug/L	51000	43000	73000	46000	200	8624928
Dissolved Iron (Fe)	ug/L	<100	<100	<100	<100	100	8624928
Dissolved Magnesium (Mg)	ug/L	20000	27000	31000	17000	50	8624928
Dissolved Manganese (Mn)	ug/L	<2.0	6.6	<2.0	<2.0	2.0	8624928
Dissolved Potassium (K)	ug/L	230	1100	410	<200	200	8624928
Dissolved Sodium (Na)	ug/L	1800	13000	980	270	100	8624928

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: VPQ232
Sample ID: TH-2
Matrix: Ground Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8623555	N/A	2023/04/28	Surinder Rai
Chloride by Automated Colourimetry	KONE	8623592	N/A	2023/04/26	Massarat Jan
Conductivity	AT	8623566	N/A	2023/04/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8627627	N/A	2023/04/26	Gyulshen Idriz
Hardness (calculated as CaCO3)		8621993	N/A	2023/04/26	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8624999	2023/04/24	2023/04/25	Nan Raykha
Total Ammonia-N	LACH/NH4	8627189	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8623539	N/A	2023/04/25	Samuel Law
pH	AT	8623567	2023/04/22	2023/04/28	Surinder Rai
Phenols (4AAP)	TECH/PHEN	8629921	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8623602	N/A	2023/04/26	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8623601	N/A	2023/04/26	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	8627872	2023/04/25	2023/04/26	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8627865	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPQ233
Sample ID: TH-3
Matrix: Ground Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8623557	N/A	2023/04/28	Surinder Rai
Chloride by Automated Colourimetry	KONE	8623592	N/A	2023/04/26	Massarat Jan
Conductivity	AT	8623571	N/A	2023/04/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623859	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8621993	N/A	2023/04/25	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8624928	2023/04/24	2023/04/25	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8627189	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8623547	N/A	2023/04/25	Samuel Law
pH	AT	8623568	2023/04/22	2023/04/28	Surinder Rai
Phenols (4AAP)	TECH/PHEN	8629921	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8623602	N/A	2023/04/26	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8623601	N/A	2023/04/26	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	8627872	2023/04/25	2023/04/27	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8627865	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPQ234
Sample ID: TH-5A
Matrix: Ground Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8623557	N/A	2023/04/28	Surinder Rai
Chloride by Automated Colourimetry	KONE	8623592	N/A	2023/04/26	Massarat Jan
Conductivity	AT	8623571	N/A	2023/04/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623909	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8621993	N/A	2023/04/25	Automated Statchk

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: VPQ234
Sample ID: TH-5A
Matrix: Ground Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Lab Filtered Metals by ICPMS	ICP/MS	8624928	2023/04/24	2023/04/25	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8627189	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8623548	N/A	2023/04/25	Samuel Law
pH	AT	8623568	2023/04/22	2023/04/28	Surinder Rai
Phenols (4AAP)	TECH/PHEN	8629921	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8623602	N/A	2023/04/26	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8623601	N/A	2023/04/26	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	8627872	2023/04/25	2023/04/26	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8627865	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPQ234 Dup
Sample ID: TH-5A
Matrix: Ground Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Lab Filtered Metals by ICPMS	ICP/MS	8624928	2023/04/24	2023/04/25	Arefa Dabhad

Bureau Veritas ID: VPQ235
Sample ID: TH-5B
Matrix: Ground Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8623557	N/A	2023/04/28	Surinder Rai
Chloride by Automated Colourimetry	KONE	8623592	N/A	2023/04/26	Massarat Jan
Conductivity	AT	8623571	N/A	2023/04/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623859	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8621993	N/A	2023/04/25	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8624928	2023/04/24	2023/04/25	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8627189	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8623548	N/A	2023/04/25	Samuel Law
pH	AT	8623568	2023/04/22	2023/04/28	Surinder Rai
Phenols (4AAP)	TECH/PHEN	8629921	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8623602	N/A	2023/04/26	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8623601	N/A	2023/04/26	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	8627872	2023/04/25	2023/04/26	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8627865	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPQ236
Sample ID: TH-6
Matrix: Ground Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8623557	N/A	2023/04/28	Surinder Rai
Chloride by Automated Colourimetry	KONE	8623592	N/A	2023/04/26	Massarat Jan
Conductivity	AT	8623571	N/A	2023/04/28	Surinder Rai

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: VPQ236
Sample ID: TH-6
Matrix: Ground Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623859	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8621993	N/A	2023/04/25	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8624928	2023/04/24	2023/04/25	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8627189	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8623547	N/A	2023/04/25	Samuel Law
pH	AT	8623568	2023/04/22	2023/04/28	Surinder Rai
Phenols (4AAP)	TECH/PHEN	8629921	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8623602	N/A	2023/04/26	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8623601	N/A	2023/04/26	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	8627872	2023/04/25	2023/04/27	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8627865	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPQ237
Sample ID: TH-7
Matrix: Ground Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8623557	N/A	2023/04/28	Surinder Rai
Chloride by Automated Colourimetry	KONE	8625098	N/A	2023/04/25	Alina Dobreanu
Conductivity	AT	8623571	N/A	2023/04/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623859	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8621993	N/A	2023/04/25	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8624928	2023/04/24	2023/04/25	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8627189	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8623547	N/A	2023/04/25	Samuel Law
pH	AT	8623568	2023/04/22	2023/04/28	Surinder Rai
Phenols (4AAP)	TECH/PHEN	8629921	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8625112	N/A	2023/04/25	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8625109	N/A	2023/04/25	Alina Dobreanu
Total Kjeldahl Nitrogen in Water	SKAL	8627872	2023/04/25	2023/04/27	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8627865	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPQ238
Sample ID: TH-8
Matrix: Ground Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8623557	N/A	2023/04/28	Surinder Rai
Chloride by Automated Colourimetry	KONE	8623592	N/A	2023/04/26	Massarat Jan
Conductivity	AT	8623571	N/A	2023/04/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623909	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8621993	N/A	2023/04/25	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8624928	2023/04/24	2023/04/25	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8627189	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8623547	N/A	2023/04/25	Samuel Law

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: VPQ238
Sample ID: TH-8
Matrix: Ground Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH	AT	8623568	2023/04/22	2023/04/28	Surinder Rai
Phenols (4AAP)	TECH/PHEN	8629921	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8623602	N/A	2023/04/26	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8623601	N/A	2023/04/26	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	8627872	2023/04/25	2023/04/26	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8627865	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPQ239
Sample ID: TH-9
Matrix: Ground Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8623557	N/A	2023/04/28	Surinder Rai
Chloride by Automated Colourimetry	KONE	8623592	N/A	2023/04/26	Massarat Jan
Conductivity	AT	8623571	N/A	2023/04/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623909	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8621993	N/A	2023/04/26	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8624999	2023/04/24	2023/04/25	Nan Raykha
Total Ammonia-N	LACH/NH4	8627189	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8623548	N/A	2023/04/25	Samuel Law
pH	AT	8623568	2023/04/22	2023/04/28	Surinder Rai
Phenols (4AAP)	TECH/PHEN	8629921	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8623602	N/A	2023/04/26	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8623601	N/A	2023/04/26	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	8627872	2023/04/25	2023/04/26	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8627865	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPQ240
Sample ID: TH-10
Matrix: Ground Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8623551	N/A	2023/04/28	Surinder Rai
Chloride by Automated Colourimetry	KONE	8623592	N/A	2023/04/26	Massarat Jan
Conductivity	AT	8623553	N/A	2023/04/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623909	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8622374	N/A	2023/04/25	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8624928	2023/04/24	2023/04/25	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8627189	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8623547	N/A	2023/04/25	Samuel Law
pH	AT	8623552	2023/04/22	2023/04/28	Surinder Rai
Phenols (4AAP)	TECH/PHEN	8629921	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8623602	N/A	2023/04/26	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8623601	N/A	2023/04/26	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	8627872	2023/04/25	2023/04/26	Jency Sara Johnson

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: VPQ240 **Collected:** 2023/04/20
Sample ID: TH-10 **Shipped:**
Matrix: Ground Water **Received:** 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	SKAL/P	8627865	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPQ240 Dup **Collected:** 2023/04/20
Sample ID: TH-10 **Shipped:**
Matrix: Ground Water **Received:** 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate & Nitrite as Nitrogen in Water	LACH	8623547	N/A	2023/04/25	Samuel Law

Bureau Veritas ID: VPQ241 **Collected:** 2023/04/20
Sample ID: TH-11 **Shipped:**
Matrix: Ground Water **Received:** 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8623551	N/A	2023/04/28	Surinder Rai
Chloride by Automated Colourimetry	KONE	8623592	N/A	2023/04/26	Massarat Jan
Conductivity	AT	8623553	N/A	2023/04/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623909	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8622374	N/A	2023/04/25	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8624928	2023/04/24	2023/04/25	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8627189	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8623549	N/A	2023/04/25	Samuel Law
pH	AT	8623552	2023/04/22	2023/04/28	Surinder Rai
Phenols (4AAP)	TECH/PHEN	8629921	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8623602	N/A	2023/04/26	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8623601	N/A	2023/04/26	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	8627872	2023/04/25	2023/04/26	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8627865	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPQ241 Dup **Collected:** 2023/04/20
Sample ID: TH-11 **Shipped:**
Matrix: Ground Water **Received:** 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	SKAL/P	8627865	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPQ242 **Collected:** 2023/04/20
Sample ID: TH-12 **Shipped:**
Matrix: Ground Water **Received:** 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8623551	N/A	2023/04/28	Surinder Rai
Chloride by Automated Colourimetry	KONE	8623592	N/A	2023/04/26	Massarat Jan
Conductivity	AT	8623553	N/A	2023/04/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623909	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8622374	N/A	2023/04/25	Automated Statchk

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

TEST SUMMARY

Bureau Veritas ID: VPQ242 **Collected:** 2023/04/20
Sample ID: TH-12 **Shipped:**
Matrix: Ground Water **Received:** 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Lab Filtered Metals by ICPMS	ICP/MS	8624928	2023/04/24	2023/04/25	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8627189	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8623547	N/A	2023/04/25	Samuel Law
pH	AT	8623552	2023/04/22	2023/04/28	Surinder Rai
Phenols (4AAP)	TECH/PHEN	8629921	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8623602	N/A	2023/04/26	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8623601	N/A	2023/04/26	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	8627872	2023/04/25	2023/04/27	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8627865	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPQ243 **Collected:** 2023/04/20
Sample ID: TH-13 **Shipped:**
Matrix: Ground Water **Received:** 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8623557	N/A	2023/04/28	Surinder Rai
Chloride by Automated Colourimetry	KONE	8623592	N/A	2023/04/26	Massarat Jan
Conductivity	AT	8623571	N/A	2023/04/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623859	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8622374	N/A	2023/04/25	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8624928	2023/04/24	2023/04/25	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8627189	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8623547	N/A	2023/04/25	Samuel Law
pH	AT	8623568	2023/04/22	2023/04/28	Surinder Rai
Phenols (4AAP)	TECH/PHEN	8629921	N/A	2023/04/26	Mandeep Kaur
Orthophosphate	KONE	8623602	N/A	2023/04/26	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8623601	N/A	2023/04/26	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	8627882	2023/04/25	2023/04/26	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8627865	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas ID: VPQ244 **Collected:** 2023/04/20
Sample ID: TP-5 **Shipped:**
Matrix: Ground Water **Received:** 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8623557	N/A	2023/04/28	Surinder Rai
Chloride by Automated Colourimetry	KONE	8623592	N/A	2023/04/26	Massarat Jan
Conductivity	AT	8623571	N/A	2023/04/28	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8623859	N/A	2023/04/24	Gyulshen Idriz
Hardness (calculated as CaCO3)		8622374	N/A	2023/04/25	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	8624928	2023/04/24	2023/04/25	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8627189	N/A	2023/04/26	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8623547	N/A	2023/04/25	Samuel Law
pH	AT	8623568	2023/04/22	2023/04/28	Surinder Rai
Phenols (4AAP)	TECH/PHEN	8629921	N/A	2023/04/26	Mandeep Kaur

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

Bureau Veritas Job #: C3B2723
Report Date: 2023/05/03

GM BluePlan Engineering Limited
Client Project #: Bentinck Groundwater (213085)
Sampler Initials: KC

TEST SUMMARY

Bureau Veritas ID: VPQ244
Sample ID: TP-5
Matrix: Ground Water

Collected: 2023/04/20
Shipped:
Received: 2023/04/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Orthophosphate	KONE	8623602	N/A	2023/04/26	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8623601	N/A	2023/04/26	Massarat Jan
Total Kjeldahl Nitrogen in Water	SKAL	8627882	2023/04/25	2023/04/26	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8627865	2023/04/25	2023/04/27	Sachi Patel

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

GENERAL COMMENTS

Sample VPQ236 [TH-6] : TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Results relate only to the items tested.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8623539	Nitrate (N)	2023/04/25	100	80 - 120	98	80 - 120	<0.10	mg/L	NC	20		
8623539	Nitrite (N)	2023/04/25	101	80 - 120	103	80 - 120	<0.010	mg/L	10	20		
8623547	Nitrate (N)	2023/04/25	100	80 - 120	96	80 - 120	<0.10	mg/L	2.2	20		
8623547	Nitrite (N)	2023/04/25	101	80 - 120	102	80 - 120	<0.010	mg/L	9.6	20		
8623548	Nitrate (N)	2023/04/25	102	80 - 120	97	80 - 120	<0.10	mg/L	0.068	20		
8623548	Nitrite (N)	2023/04/25	103	80 - 120	103	80 - 120	<0.010	mg/L	NC	20		
8623549	Nitrate (N)	2023/04/25	99	80 - 120	97	80 - 120	<0.10	mg/L	0.89	20		
8623549	Nitrite (N)	2023/04/25	100	80 - 120	103	80 - 120	<0.010	mg/L	NC	20		
8623551	Alkalinity (Total as CaCO3)	2023/04/28			92	85 - 115	2.0, RDL=1.0	mg/L	0.56	20		
8623552	pH	2023/04/28			101	98 - 103			0.048	N/A		
8623553	Conductivity	2023/04/28			99	85 - 115	1.1, RDL=1.0	umho/cm	0.34	25		
8623555	Alkalinity (Total as CaCO3)	2023/04/27			90	85 - 115	<1.0	mg/L	1.1	20		
8623557	Alkalinity (Total as CaCO3)	2023/04/28			91	85 - 115	1.9, RDL=1.0	mg/L	1.2	20		
8623566	Conductivity	2023/04/27			100	85 - 115	<1.0	umho/cm	0.29	25		
8623567	pH	2023/04/27			101	98 - 103			0.42	N/A		
8623568	pH	2023/04/28			101	98 - 103			0.27	N/A		
8623571	Conductivity	2023/04/28			100	85 - 115	<1.0	umho/cm	0.23	25		
8623592	Dissolved Chloride (Cl-)	2023/04/26	NC	80 - 120	97	80 - 120	<1.0	mg/L	0.36	20		
8623601	Dissolved Sulphate (SO4)	2023/04/26	NC	75 - 125	98	80 - 120	<1.0	mg/L	0.93	20		
8623602	Orthophosphate (P)	2023/04/26	88	75 - 125	94	80 - 120	<0.010	mg/L	0.23	20		
8623859	Dissolved Organic Carbon	2023/04/24	93	80 - 120	97	80 - 120	<0.40	mg/L	4.6	20		
8623909	Dissolved Organic Carbon	2023/04/24	95	80 - 120	99	80 - 120	<0.40	mg/L	0.95	20		
8624928	Dissolved Calcium (Ca)	2023/04/25	NC	80 - 120	99	80 - 120	<200	ug/L	0.85	20		
8624928	Dissolved Iron (Fe)	2023/04/25	98	80 - 120	97	80 - 120	<100	ug/L	NC	20		
8624928	Dissolved Magnesium (Mg)	2023/04/25	NC	80 - 120	103	80 - 120	<50	ug/L	0.85	20		
8624928	Dissolved Manganese (Mn)	2023/04/25	96	80 - 120	98	80 - 120	<2.0	ug/L	3.3	20		
8624928	Dissolved Potassium (K)	2023/04/25	103	80 - 120	104	80 - 120	<200	ug/L	1.0	20		
8624928	Dissolved Sodium (Na)	2023/04/25	NC	80 - 120	98	80 - 120	<100	ug/L	2.6	20		

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8624999	Dissolved Calcium (Ca)	2023/04/25	NC	80 - 120	98	80 - 120	<200	ug/L	1.2	20		
8624999	Dissolved Iron (Fe)	2023/04/25	99	80 - 120	98	80 - 120	<100	ug/L	NC	20		
8624999	Dissolved Magnesium (Mg)	2023/04/25	98	80 - 120	100	80 - 120	<50	ug/L	2.4	20		
8624999	Dissolved Manganese (Mn)	2023/04/25	98	80 - 120	97	80 - 120	<2.0	ug/L	NC	20		
8624999	Dissolved Potassium (K)	2023/04/25	105	80 - 120	102	80 - 120	<200	ug/L	1.4	20		
8624999	Dissolved Sodium (Na)	2023/04/25	99	80 - 120	98	80 - 120	<100	ug/L	0.98	20		
8625098	Dissolved Chloride (Cl-)	2023/04/25	NC	80 - 120	97	80 - 120	<1.0	mg/L	4.4	20		
8625109	Dissolved Sulphate (SO4)	2023/04/25	NC	75 - 125	97	80 - 120	<1.0	mg/L	0.53	20		
8625112	Orthophosphate (P)	2023/04/25	91	75 - 125	94	80 - 120	<0.010	mg/L	NC	20		
8627189	Total Ammonia-N	2023/04/26	101	75 - 125	100	80 - 120	<0.050	mg/L	NC	20		
8627627	Dissolved Organic Carbon	2023/04/26	95	80 - 120	98	80 - 120	<0.40	mg/L	8.8	20		
8627865	Total Phosphorus	2023/04/27	97	80 - 120	106	80 - 120	<0.020	mg/L	2.5	20	106	80 - 120
8627872	Total Kjeldahl Nitrogen (TKN)	2023/04/27	101	80 - 120	95	80 - 120	<0.10	mg/L	16	20	98	80 - 120
8627882	Total Kjeldahl Nitrogen (TKN)	2023/04/26	98	80 - 120	104	80 - 120	<0.10	mg/L	NC	20	109	80 - 120
8629921	Phenols-4AAP	2023/04/26	98	80 - 120	95	80 - 120	<0.0010	mg/L	NC	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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.

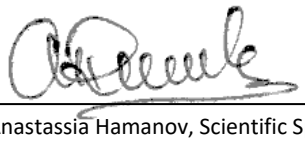
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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).

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

Bureau Veritas 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 Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

APPENDIX G:
HISTORIC GROUNDWATER ELEVATIONS

Appendix G
Bentinck Waste Disposal Site
Water Level Monitoring Data

Test Well ID	Ground Elevation (m)	Measuring Point Elevation (m)	Geodetic Ground Elevation (mASL)	Measuring Point / TOC (mASL)	13-Jun-94		7-Nov-94		19-Jun-95		30-Oct-95		24-May-96		15-Nov-96		9-May-97		19-Dec-97		13-May-98		17-Dec-98	
					WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)
TH-1	99.21	99.78	298.51	299.08	dry @ 3.30	96.48	3.00	96.78	dry @ 3.32	96.46	dry @ 3.3	96.48	dry @ 3.3	96.48	dry @ 3.3	96.48	3.00	96.78	dry @ 3.3	<96.48	dry @ 3.3	<96.48	dry @ 3.3	<96.48
TH-2	99.54	100.13	298.84	299.43	3.90	96.23	4.07	96.06	4.12	96.01	4.30	95.83	3.92	96.21	4.20	95.93	3.88	96.25	4.105	96.03	4.03	96.10	4.34	95.79
TH-3	102.91	103.52	302.21	302.82	6.37	97.15	6.85	96.67	6.62	96.90	7.50	96.02	6.40	97.12	6.70	96.82	6.4	97.12	6.85	96.67	6.41	97.11	7.2	96.32
TH-4	103.88	104.33	303.18	303.63	7.10	97.23	7.50	96.83	7.30	97.03	7.65	96.68	7.07	97.26	7.35	96.98	7	97.33	7.6	96.73	7.11	97.22	7.9	96.43
TH-5A	102.88	102.88	302.18	302.49	6.56	96.32	7.00	95.88	6.82	96.06	7.25	95.63	6.60	96.28	6.80	96.08	6.56	96.32	7	95.88	6.7	96.18	7.37	95.51
TH-5B	102.88	103.19	302.18	302.49	8.00	95.19	7.05	96.14	7.12	96.07	7.56	95.63	6.90	96.29	7.10	96.09	6.56	96.63	7.3	95.89	7	96.19	7.67	95.52
TH-6	101.42	102.31	300.72	301.72	5.87	96.44	6.20	96.11	6.08	96.23	6.44	95.87	5.88	96.43	6.00	96.31	5.69	96.62	6.25	96.06	5.91	96.40	6.56	95.75
TH-7	96.80	97.92	296.10	297.22	1.87	96.05	2.04	95.88	2.05	95.87	2.26	95.66	1.90	96.02	2.00	95.92	1.8	96.12	2.5	95.42	1.9	96.02	2.3	95.62
TH-8	103.03	103.75	302.33	303.05	6.68	97.07	7.25	96.50	6.90	96.85	7.43	96.32	6.68	97.07	7.00	96.75	6.6	97.15	7.105	96.65	6.71	97.04	7.64	96.11
TH-9	98.96	99.80	298.26	299.10	2.38	97.42	2.75	97.05	2.62	97.18	3.05	96.75	2.42	97.38	2.63	97.17	2.38	97.42	2.84	96.96	2.5	97.30	3.2	96.60
TH-10	95.60	96.10	294.90	295.40	1.45	94.65	1.28	94.82	1.63	94.47	1.64	94.46	1.40	94.70	1.40	94.70	1.32	94.78	1.55	94.55	1.5	94.60	1.7	94.40
TH-11	96.25	97.51	295.55	296.81	1.74	95.77	1.74	95.77	1.83	95.68	1.92	95.59	1.73	95.78	1.75	95.76	1.7	95.81	1.8	95.71	1.8	95.71	1.94	95.57
TH-12	98.25	99.00	297.55	298.30																				
TH-13	97.08	98.11	296.38	297.41																				
TH-14	104.18	105.26	303.48	304.56																				
TP-3	97.50	97.80	296.80	297.10	0.91	96.89	1.24	96.56	1.14	96.66	1.51	96.29	0.79	97.01	1.00	96.80	0.7	97.10	1.26	96.54	1	96.80	1.59	96.21
TP-5	97.71	98.12	297.01	297.42	1.10	97.02	1.42	96.70	1.26	98.86	dry @1.58	96.54	0.95	97.17	1.23	96.89	0.9	97.22	1.4	96.72	1.1	97.02	1.6	96.52

NOTES:

1. WL means water level
2. MP means measuring point.
3. Elevations are based on onsite datum and assumed elevations provided in previous Annual Monitoring Reports
4 Units in meters below top of casing.
5. Units in meters above sea level (masl) using assumed elevations.
6. Water levels reported up to 2012 were summarized in the 2012 Annual Monitoring Report prepared by Genivar Inc.
7. na = Not Available
8. TH-12 reportedly installed by others in 2006. However, no measuring point or groundwater elevation data is available
9. TH-13 & TH-14 were installed by G&M in 2013
10. Elevation and measurement data for 2022 and later years are based on geodetic elevations (mASL)

Appendix G
Bentinck Waste Disposal Site
Water Level Monitoring Data

Test Well ID	Ground Elevation (m)	Measuring Point Elevation (m)	Geodetic Ground Elevation (mASL)	Measuring Point / TOC (mASL)	7-Jul-00		21-Dec-00		11-Jul-01		18-Oct-01		18-Jun-02		22-Oct-02		20-May-03		1-Oct-03		5-May-04		29-Sep-04	
					WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)
TH-1	99.21	99.78	298.51	299.08	dry @ 3.3	<96.48	dry @ 3.3	<96.48	dry		3.20	96.58	2.92	96.86	3.24	96.54	2.90	96.88	3.10	96.68	2.80	96.98	Dry	
TH-2	99.54	100.13	298.84	299.43	4.38	95.75	4.19	95.94	4.10	96.03	4.20	95.93	3.96	96.17	4.29	95.84	3.90	96.23	4.17	95.96	3.90	96.23	4.12	96.01
TH-3	102.91	103.52	302.21	302.82	6.6	96.92	6.59	96.93	6.60	96.92	6.67	96.85	6.75	96.77	7.02	96.50	6.54	96.98	6.84	96.68	6.26	97.26	6.71	96.81
TH-4	103.88	104.33	303.18	303.63	7.19	97.14	7.28	97.05	7.50	96.83	7.55	96.78	7.21	97.12	7.78	96.55	7.20	97.13	7.58	96.75	7.30	97.03	7.43	96.90
TH-5A	102.88	102.88	302.18	302.49	6.88	96.00	6.91	95.97	6.60	96.28	6.75	96.13	6.65	96.23	7.27	95.61	6.67	96.21	7.05	95.83	6.48	96.40	6.90	95.98
TH-5B	102.88	103.19	302.18	302.49	6.88	96.31	6.55	96.64	9.20	93.99	6.85	96.34	6.71	96.48	7.30	95.89	6.69	96.50	7.08	96.11	6.54	96.65	6.94	96.25
TH-6	101.42	102.31	300.72	301.72	5.99	96.32	6.22	96.09	6.04	96.27	6.15	96.16	6.00	96.31	6.47	95.84	6.00	96.31	6.30	96.01	5.78	96.53	6.23	96.08
TH-7	96.80	97.92	296.10	297.22	1.93	95.99	1.94	95.98	1.80	96.12	1.94	95.98	1.96	95.96	2.22	95.70	1.97	95.95	2.19	95.73	1.80	96.12	2.11	95.81
TH-8	103.03	103.75	302.33	303.05	6.78	96.97	6.9	96.85	6.10	97.65	7.02	96.73	6.80	96.95	7.42	96.33	6.81	96.94	7.21	96.54	6.56	97.19	7.05	96.70
TH-9	98.96	99.80	298.26	299.10	2.66	97.14	2.58	97.22	--		--		2.50	97.30	3.10	96.70	2.48	97.32	2.88	96.92	2.31	97.49	2.73	97.07
TH-10	95.60	96.10	294.90	295.40	1.6	94.50	1.43	94.67	1.56	94.54	1.45	94.65	1.395	94.705	1.64	94.46	1.43	94.67	1.56	94.54	1.33	94.77	1.73	94.37
TH-11	96.25	97.51	295.55	296.81	1.9	95.61	1.72	95.79	1.95	95.56	1.91	95.60	1.80	95.71	1.94	95.57	1.82	95.69	1.83	95.68	1.75	95.76	1.90	95.61
TH-12	98.25	99.00	297.55	298.30																				
TH-13	97.08	98.11	296.38	297.41																				
TH-14	104.18	105.26	303.48	304.56																				
TP-3	97.50	97.80	296.80	297.10	1.05	96.75	-4	-	--		--		0.95	96.85	1.57	96.23	1.05	96.75	1.36	96.44	0.69	97.11	1.27	96.53
TP-5	97.71	98.12	297.01	297.42	1.39	96.73	1.18	96.94	1.20	96.92	dry		1.14	96.98	dry		1.15	96.97	1.59	96.53	0.96	97.16	1.44	96.68

NOTES:

1. WL means water level
2. MP means measuring point.
3. Elevations are based on onsite datum and assumed elevations provided in previous Annual Monitoring Reports
4 Units in meters below top of casing.
5. Units in meters above sea level (masl) using assumed elevations.
6. Water levels reported up to 2012 were summarized in the 2012 Annual Monitoring Report prepared by Genivar Inc.
7. na = Not Available
8. TH-12 reportedly installed by others in 2006. However, no measuring point or groundwater elevation data is available
9. TH-13 & TH-14 were installed by G&M in 2013
10. Elevation and measurement data for 2022 and later years are based on geodetic elevations (mASL)

Appendix G
Bentinck Waste Disposal Site
Water Level Monitoring Data

Test Well ID	Ground Elevation (m)	Measuring Point Elevation (m)	Geodetic Ground Elevation (mASL)	Measuring Point / TOC (mASL)	6-Apr-05		21-Sep-05		4-Apr-06		25-Sep-06		13-Apr-07		9-Oct-07		15-Apr-08		17-Sep-08		30-Apr-09		1-Oct-09	
					WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)
TH-1	99.21	99.78	298.51	299.08	Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry	
TH-2	99.54	100.13	298.84	299.43	3.77	96.36	4.25	95.88	3.61	96.52	4.18	95.95	3.66	96.47	4.27	95.86	3.50	96.63	4.00	96.13	3.70	96.43	4.08	96.05
TH-3	102.91	103.52	302.21	302.82	6.40	97.12	6.91	96.61	6.12	97.40	6.87	96.65	6.12	97.40	6.96	96.56	5.85	97.67	6.61	96.91	6.20	97.32	6.76	96.76
TH-4	103.88	104.33	303.18	303.63	7.12	97.21	7.60	96.73	6.84	97.49	7.62	96.71	6.80	97.53	Not Sampled		6.64	97.69	7.35		6.92	97.41	7.51	96.82
TH-5A	102.88	102.88	302.18	302.49	6.48	96.40	7.16	95.72	6.37	96.51	7.04	95.84	6.35	96.53	7.19	95.69	6.26	96.62	6.77	96.11	6.37	96.51	6.92	95.96
TH-5B	102.88	103.19	302.18	302.49	6.56	96.63	7.17	96.02	6.40	96.79	7.12	96.07	6.41	96.78	7.24	95.95	Dry		6.85	96.34	6.42	96.77	6.98	96.21
TH-6	101.42	102.31	300.72	301.72	5.86	96.45	6.40	95.91	5.56	96.75	6.32	95.99	5.59	96.72	6.42	95.89	5.39	96.92	6.11	96.20	5.66	96.65	6.21	96.10
TH-7	96.80	97.92	296.10	297.22	1.79	96.13	2.23	95.69	1.61	96.31	2.16	95.76	1.68	96.24	2.24	95.68	1.60	96.32	2.00	95.92	1.73	96.19	2.05	95.87
TH-8	103.03	103.75	302.33	303.05	6.74	97.01	7.30	96.45	6.36	97.39	7.23	96.52	6.34	97.41	7.36	96.39	6.24	97.51	6.96	96.79	6.48	97.27	7.14	96.61
TH-9	98.96	99.80	298.26	299.10	2.38	97.42	3.00	96.80	2.26	97.54	2.92	96.88	2.25	97.55	3.05	96.75	2.17	97.63	2.59	97.21	2.27	97.53	2.72	97.08
TH-10	95.60	96.10	294.90	295.40	1.21	94.89	1.85	94.25	1.24	94.86	1.60	94.50	1.30	94.80	1.79	94.31	1.26	94.84	1.45	94.65	1.41	94.69	1.58	94.52
TH-11	96.25	97.51	295.55	296.81	1.65	95.86	1.95	95.56	1.57	95.94	1.86	95.65	1.62	95.89	1.95	95.56	1.56	95.95	1.77	95.74	1.66	95.85	1.80	95.71
TH-12	98.25	99.00	297.55	298.30																				
TH-13	97.08	98.11	296.38	297.41																				
TH-14	104.18	105.26	303.48	304.56																				
TP-3	97.50	97.80	296.80	297.10	0.83	96.97	Dry		1.29	96.51	1.48	96.32	1.32	96.48	1.52	96.28	1.23	96.57	1.1	96.70	0.67	97.13	1.19	96.61
TP-5	97.71	98.12	297.01	297.42	0.98	97.14	Dry		0.82	97.30	Dry		0.83	97.29	Dry		0.73	97.39	1.31	96.81	0.82	97.30	1.41	96.71

NOTES:
1. WL means water level
2. MP means measuring point.
3. Elevations are based on onsite datum and assumed elevations provided in previous Annual Monitoring Reports
4 Units in meters below top of casing.
5. Units in meters above sea level (masl) using assumed elevations.
6. Water levels reported up to 2012 were summarized in the 2012 Annual Monitoring Report prepared by Genivar Inc.
7. na = Not Available
8. TH-12 reportedly installed by others in 2006. However, no measuring point or groundwater elevation data is available
9. TH-13 & TH-14 were installed by G&M in 2013
10. Elevation and measurement data for 2022 and later years are based on geodetic elevations (mASL)

Appendix G
Bentinck Waste Disposal Site
Water Level Monitoring Data

Test Well ID	Ground Elevation (m)	Measuring Point Elevation (m)	Geodetic Ground Elevation (mASL)	Measuring Point / TOC (mASL)	12-May-10		9-Nov-10		2-May-11		21-Sep-11		12-Apr-12		22-Nov-12		7-May-13		26-Nov-13		1-May-14		4-Nov-14	
					WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)
TH-1	99.21	99.78	298.51	299.08	Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry	
TH-2	99.54	100.13	298.84	299.43	4.01	96.12	4.03	96.10	3.70	96.43	4.18	95.95	3.91	96.22	4.13	96.00	na		3.79	96.34	3.56	96.57	4.00	96.13
TH-3	102.91	103.52	302.21	302.82	6.25	97.27	6.63	96.89	6.25	97.27	6.83	96.69	6.43	97.09	6.86	96.66	6.10	97.42	6.25	97.27	6.01	97.51	6.57	96.95
TH-4	103.88	104.33	303.18	303.63	7.31	97.02	7.33	97.00	6.96	97.37	7.55	96.78	7.13	97.20	7.61	96.72	6.86	97.47	6.95	97.38	6.71	97.62	7.29	97.04
TH-5A	102.88	102.88	302.18	302.49	6.78	96.10	6.80	96.08	6.41	96.47	7.02	95.86	6.60	96.28	7.02	95.86	6.38	96.50	6.43	96.45	6.30	96.58	6.70	96.18
TH-5B	102.88	103.19	302.18	302.49	6.84	96.35	6.57	96.62	6.45	96.74	7.07	96.12	6.64	96.55	7.10	96.09	6.43	96.76	6.48	96.71	6.24	96.95	6.77	96.42
TH-6	101.42	102.31	300.72	301.72	6.11	96.20	6.18	96.13	5.73	96.58	6.32	95.99	5.96	96.35	6.29	96.02	5.66	96.65	5.75	96.56	5.47	96.84	6.09	96.22
TH-7	96.80	97.92	296.10	297.22	2.00	95.92	1.99	95.93	1.75	96.17	2.15	95.77	1.89	96.03	2.13	95.79	1.78	96.14	1.78	96.14	1.64	96.28	1.98	95.94
TH-8	103.03	103.75	302.33	303.05	6.93	96.82	6.97	96.78	6.56	97.19	7.18	96.57	6.72	97.03	7.24	96.51	6.39	97.36	6.51	97.24	6.24	97.51	6.87	96.88
TH-9	98.96	99.80	298.26	299.10	2.60	97.20	2.61	97.19	2.30	97.50	2.85	96.95	2.45	97.35	2.92	96.88	2.29	97.51	2.33	97.47	2.19	97.61	2.58	97.22
TH-10	95.60	96.10	294.90	295.40	1.62	94.48	1.64	94.46	1.45	94.65	1.77	94.33	1.57	94.53	1.71	94.39	1.58	94.52	1.51	94.59	1.40	94.70	1.68	94.42
TH-11	96.25	97.51	295.55	296.81	1.84	95.67	1.80	95.71	1.67	95.84	1.88	95.63	1.78	95.73	1.87	95.64	na		1.68	95.83	1.60	95.91	1.79	95.72
TH-12	98.25	99.00	297.55	298.30															2.78	96.22	2.64	96.36	2.96	96.04
TH-13	97.08	98.11	296.38	297.41															2.20	95.91	2.03	96.08	2.32	95.79
TH-14	104.18	105.26	303.48	304.56															7.90	97.36	7.67	97.59	8.19	97.07
TP-3	97.50	97.80	296.80	297.10	1.18	96.62	1.20	96.60	0.71	97.09	1.32	96.48	0.98	96.82	1.34	96.46	0.75	97.05	0.83	96.97	0.48	97.32	1.09	96.71
TP-5	97.71	98.12	297.01	297.42	1.29	96.83	1.32	96.80	0.86	97.26	Dry		1.12	97.00	Dry		0.90	97.22	0.97	97.15	0.71	97.41	1.27	96.85

NOTES:

1. WL means water level
2. MP means measuring point.
3. Elevations are based on onsite datum and assumed elevations provided in previous Annual Monitoring Reports
4 Units in meters below top of casing.
5. Units in meters above sea level (masl) using assumed elevations.
6. Water levels reported up to 2012 were summarized in the 2012 Annual Monitoring Report prepared by Genivar Inc.
7. na = Not Available
8. TH-12 reportedly installed by others in 2006. However, no measuring point or groundwater elevation data is available
9. TH-13 & TH-14 were installed by G&M in 2013
10. Elevation and measurement data for 2022 and later years are based on geodetic elevations (mASL)

Appendix G
Bentinck Waste Disposal Site
Water Level Monitoring Data

Test Well ID	Ground Elevation (m)	Measuring Point Elevation (m)	Geodetic Ground Elevation (mASL)	Measuring Point / TOC (mASL)	20-Apr-15		3-Nov-15		20-Apr-16		26-Oct-16		16-May-17		27-Nov-17		10-Apr-18		15-Nov-18		24-Apr-19		20-Nov-19	
					WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)
TH-1	99.21	99.78	298.51	299.08	Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry	
TH-2	99.54	100.13	298.84	299.43	3.83	96.30	4.16	95.97	3.61	96.52	4.23	95.90	3.74	96.39	3.84	96.29	3.85	96.29	4.02	96.11	3.83	96.30	4.09	96.04
TH-3	102.91	103.52	302.21	302.82	6.47	97.05	6.89	96.63	5.98	97.54	7.00	96.52	6.13	97.39	0.82	102.70	6.37	97.15	6.71	96.81	6.25	97.27	6.84	96.68
TH-4	103.88	104.33	303.18	303.63	7.16	97.17	7.61	96.72	5.52	98.81	7.51	96.82	6.93	97.40	7.07	97.26	7.07	97.26	7.47	96.86	6.93	97.40	7.57	96.76
TH-5A	102.88	102.88	302.18	302.49	6.58	96.30	7.51	95.37	6.62	96.26	7.19	95.69	6.58	96.30	6.55	96.34	6.56	96.32	6.81	96.07	6.35	96.53	6.96	95.92
TH-5B	102.88	103.19	302.18	302.49	6.65	96.54	7.10	96.09	6.33	96.86	7.23	95.96	6.41	96.78	6.49	96.70	6.64	96.55	6.87	96.32	6.41	96.78	7.01	96.18
TH-6	101.42	102.31	300.72	301.72	5.95	96.36	6.32	95.99	5.52	96.79	6.39	95.92	5.63	96.68	5.86	96.45	5.88	96.43	6.18	96.13	5.63	96.68	6.23	96.08
TH-7	96.80	97.92	296.10	297.22	1.90	96.02	2.17	95.75	1.65	96.27	1.18	96.74	1.77	96.15	1.84	96.08	1.85	96.07	2.02	95.90	1.78	96.14	2.12	95.80
TH-8	103.03	103.75	302.33	303.05	6.75	97.00	7.32	96.43	6.25	97.50	7.36	96.39	3.41	100.34	6.65	97.10	6.66	97.09	7.09	96.66	6.52	97.23	7.22	96.53
TH-9	98.96	99.80	298.26	299.10	2.45	97.35	2.98	96.82	2.20	97.60	3.05	96.75	2.29	97.51	2.40	97.40	2.41	97.39	2.71	97.09	2.25	97.55	2.86	96.94
TH-10	95.60	96.10	294.90	295.40	1.48	94.62	1.87	94.23	1.55	94.55	1.19	94.91	1.70	94.40	2.60	93.50	1.48	94.62	1.72	94.38	1.68	94.42	1.73	94.37
TH-11	96.25	97.51	295.55	296.81	1.96	95.55	1.87	95.64	1.64	95.87	1.94	95.57	1.69	95.82	1.72	95.79	1.73	95.78	1.81	95.70	1.64	95.87	1.84	95.67
TH-12	98.25	99.00	297.55	298.30	2.83	96.17	3.08	95.92	2.65	96.35	3.15	95.85	2.75	96.25	2.83	96.17	2.84	96.16	2.97	96.03	2.67	96.33	3.03	95.97
TH-13	97.08	98.11	296.38	297.41	2.22	95.89	2.42	95.69	2.09	96.02	2.47	95.64	2.18	95.93	2.21	95.90	2.21	95.90	2.18	95.93	2.07	96.04	2.37	95.74
TH-14	104.18	105.26	303.48	304.56	8.10	97.16	8.58	96.68	7.67	97.59	8.65	96.61	7.77	97.49	7.99	97.27	7.99	97.27	8.36	96.90	7.86	97.40	8.49	96.77
TP-3	97.50	97.80	296.80	297.10	0.98	96.82	1.37	96.43	2.68	95.12	1.26	96.54	0.80	97.00	0.82	96.98	0.92	96.88	-		-		-	
TP-5	97.71	98.12	297.01	297.42	1.09	97.03	1.53	96.59	0.75	97.37	Dry		0.93	97.19	1.06	97.06	1.06	97.06	1.45	96.67	0.83	97.29	1.49	96.63

NOTES:
1. WL means water level
2. MP means measuring point.
3. Elevations are based on onsite datum and assumed elevations provided in previous Annual Monitoring Reports
4 Units in meters below top of casing.
5. Units in meters above sea level (masl) using assumed elevations.
6. Water levels reported up to 2012 were summarized in the 2012 Annual Monitoring Report prepared by Genivar Inc.
7. na = Not Available
8. TH-12 reportedly installed by others in 2006. However, no measuring point or groundwater elevation data is available
9. TH-13 & TH-14 were installed by G&M in 2013
10. Elevation and measurement data for 2022 and later years are based on geodetic elevations (mASL)

Appendix G
Bentinck Waste Disposal Site
Water Level Monitoring Data

Test Well ID	Ground Elevation (m)	Measuring Point Elevation (m)	Geodetic Ground Elevation (mASL)	Measuring Point / TOC (mASL)	13-May-20		12-Nov-20		13-May-20		12-Nov-20		8-Apr-21		7-Oct-21		3-May-22		29-Sep-22		23-Apr-23		22-Nov-23	
					WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below MP (m)	WL Elevation (m)	WL below TOC (m)	WL Elevation (mASL)	WL below TOC (m)	WL Elevation (mASL)	WL below TOC (m)	WL Elevation (mASL)	WL below TOC (m)	WL Elevation (mASL)
TH-1	99.21	99.78	298.51	299.08	Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry		Dry	
TH-2	99.54	100.13	298.84	299.43	3.95	96.18	4.17	95.96	3.95	96.18	4.17	95.96	3.51	96.62	3.98	96.15	3.83	295.60	4.12	295.31	3.73	295.70	4.40	295.03
TH-3	102.91	103.52	302.21	302.82	6.41	97.11	6.94	96.58	6.41	97.11	6.94	96.58	6.52	97.00	6.60	96.92	6.35	296.47	6.74	296.08	6.25	296.57	6.70	296.12
TH-4	103.88	104.33	303.18	303.63	7.17	97.16	Dry		7.17	97.16	Dry		7.15	97.18	Dry		7.00	296.63	7.45	296.18	-		-	
TH-5A	102.88	102.88	302.18	302.49	6.60	96.28	7.07	95.81	6.60	96.28	7.07	95.81	6.57	96.31	6.76	96.12	Dry		-		6.27	296.22	7.03	295.46
TH-5B	102.88	103.19	302.18	302.49	4.47	98.72	7.10	96.09	4.47	98.72	7.10	96.09	6.68	96.51	6.73	96.46	6.50	295.99	-		6.45	296.04	7.45	295.04
TH-6	101.42	102.31	300.72	301.72	5.90	96.41	6.29	96.02	5.90	96.41	6.29	96.02	5.84	96.47	6.04	96.27	5.68	296.04	6.18	295.54	5.70	296.02	6.30	295.42
TH-7	96.80	97.92	296.10	297.22	1.93	95.99	2.16	95.76	1.93	95.99	2.16	95.76	1.95	95.97	1.98	95.94	1.85	295.37	2.07	295.15	1.86	295.36	2.15	295.07
TH-8	103.03	103.75	302.33	303.05	6.71	97.04	7.38	96.37	6.71	97.04	7.38	96.37	6.75	97.00	6.96	96.79	6.63	296.42	7.09	295.96	6.50	296.55	7.29	295.76
TH-9	98.96	99.80	298.26	299.10	2.46	97.34	2.97	96.83	2.46	97.34	2.97	96.83	2.48	97.32	2.67	97.13	2.39	296.71	2.78	296.32	2.32	296.78	2.90	296.20
TH-10	95.60	96.10	294.90	295.40	1.67	94.43	1.86	94.24	1.67	94.43	1.86	94.24	1.68	94.42	1.75	94.35	1.85	293.55	-		1.52	293.88	1.80	293.60
TH-11	96.25	97.51	295.55	296.81	1.72	95.79	1.87	95.64	1.72	95.79	1.87	95.64	1.75	95.76	1.80	95.71	-		1.85	294.96	1.68	295.13	1.86	294.95
TH-12	98.25	99.00	297.55	298.30	2.88	96.12	3.09	95.91	2.88	96.12	3.09	95.91	2.83	96.17	2.96	96.04	2.81	295.49	3.05	295.25	2.74	295.56	3.05	295.25
TH-13	97.08	98.11	296.38	297.41	2.11	96.00	2.42	95.69	2.11	96.00	2.42	95.69	2.22	95.89	2.32	95.79	1.21	296.20	2.38	295.03	2.15	295.26	2.39	295.02
TH-14	104.18	105.26	303.48	304.56	8.04	97.22	8.67	96.59	8.04	97.22	8.67	96.59	8.11	97.15	8.30	96.96	7.96	296.60	8.40	296.16	-		-	
TP-3	97.50	97.80	296.80	297.10	-		-		-		-		-		-		-		-		-		-	
TP-5	97.71	98.12	297.01	297.42	1.13	96.99	Dry		1.13	96.99	Dry		0.99	97.13	Dry		1.05	296.37	Dry		0.94	296.48	Dry	

NOTES:

1. WL means water level
2. MP means measuring point.
3. Elevations are based on onsite datum and assumed elevations provided in previous Annual Monitoring Reports
4 Units in meters below top of casing.
5. Units in meters above sea level (masl) using assumed elevations.
6. Water levels reported up to 2012 were summarized in the 2012 Annual Monitoring Report prepared by Genivar Inc.
7. na = Not Available
8. TH-12 reportedly installed by others in 2006. However, no measuring point or groundwater elevation data is available
9. TH-13 & TH-14 were installed by G&M in 2013
10. WL and elevation data for 2022 and later years are based on geodetic elevations (mASL)

APPENDIX H:
BOREHOLE LOGS/MONITORING WELL CONSTRUCTION DETAILS

Ontario Environment

WATER WELL RECORD

Grey	Twp. of Bentinck	Con. 7	16
Twp. of Bentinck	R.R. # 1, ELMWOOD, Ont., N0G 1S0	13 - 02 - 84	

LOG OF OVERBURDEN AND BEDROCK MATERIALS

General Colour	Most common material	Other materials	General description	Depth From	Depth To
	sand			0	6
	gravel			6	7
	sand	& gravel		7	10
	gravel			10	15
	gravel	& sand		15	20
	gravel	& clay		20	23

Obs. Well 1

WATER RECORD

CASING & OPEN HOLE RECORD

5				0	23

plastic pipe

SCREEN

hacksaw	1.6	4	
plastic pipe		19	

PLUGGING & SEALING RECORD

PUMPING TEST

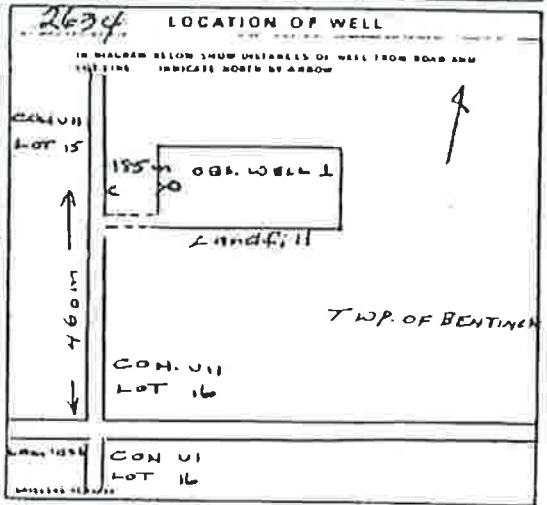
No test

5.69

LOCATION OF WELL

2634

INDICATE NORTH BY ARROW



FINAL STATUS OF WELL	Abandoned (Insufficient Supply)
WATER USE	Domestic
METHOD OF DRILLING	Cable Tool

CONTRACTOR

HIGHLAND WELL DRILLING — 2576

293 Garafraxa St.S., DURHAM, Ontario

Erich Wilson — 5478

1 - 06 - 84

CONTRACTOR'S COPY

OFFICE USE ONLY

Ministry of the Environment
Ontario

WATER WELL RECORD

County or District	Township, Borough, City, Town, Village	Con., Block, Tract, Survey, etc.	Lot
Grey	Twp. of Bentinck	Con. 7	16
Twp. of Bentinck	R.R.#1, ELMWOOD, Ontario, NOG 1S0	Date completed: 21 – 02 – 84	

LOG OF OVERBURDEN AND BEDROCK MATERIALS

General colour	Most common material	Other materials	General description	Depth – feet From	To
	topsoil			0	1
	sand	& gravel		1	8
	gravel			8	16
	gravel	& sand		16	36
	clay	& gravel		36	42

Obs. Well 5 - Piezo. 5A & 5B

WATER RECORD

Water found at – feet	Kind of water
16	Fresh
42	Fresh

CASING & OPEN HOLE RECORD

Inside diam. inches	Material	Wall thickness inches	Depth – feet From	To
5	Steel	0.188	+3	22

SCREEN

Type / Material	Diameter	Length
hacksaw / plastic pipe	1.5	4
	21 Ft.	

PLUGGING & SEALING RECORD

PUMPING TEST

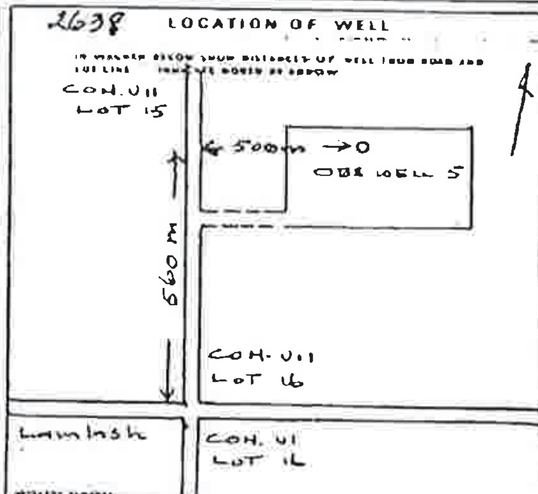
No test

Static level: 20.52 A; 21.92 B

2638

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



FINAL STATUS OF WELL

☒ Observation well

WATER USE

METHOD OF DRILLING

☒ Cable tool

CONTRACTOR

Name of well contractor	Licence number
HIGHLAND WELL DRILLING	2576
Address: 293 Garafraxa St.S., Durham, Ont.	
Name of driller or borer: Erich Wilson	Licence number: 5478
Signature of contractor: [signature]	Submission date: 1 – 06 – 84

CONTRACTOR'S COPY

OFFICE USE ONLY

Ontario — Ministry of the Environment

WATER WELL RECORD

County or District	Township, Borough, City, Town, Village	Con., Block, Tract, Survey, etc.	Lot
Grey	Twp. of Bentinck	Con. 7	16
Owner: Twp.of Bentinck	Address: R.R.#1, ELMWOOD, Ont., NOG 1S0	Date completed: 09 02 84	

LOG OF OVERBURDEN AND BEDROCK MATERIALS

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To
	sand			0	8
	sand	& gravel & clay		8	12
	sand	& gravel		12	21

Obs. Well 2

WATER RECORD

☒ Fresh

CASING & OPEN HOLE RECORD

Inside Diam	Material	Wall Thickness	Depth From	Depth To
5	☒ Open hole		0	26
		plastic pipe		

SCREEN

Material and type: hacksaw, plastic pipe
Diameter: 1.5
Length: 4
Depth to top of screen: 17

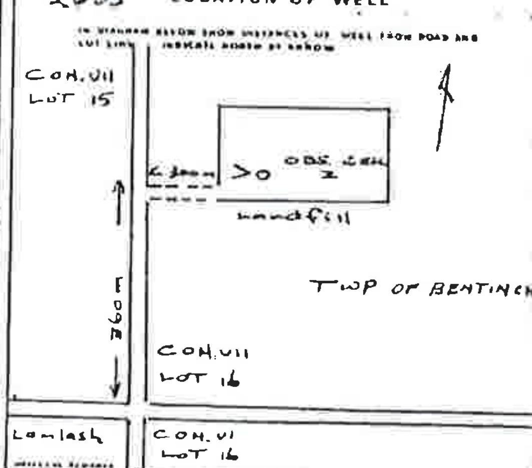
PLUGGING & SEALING RECORD

PUMPING TEST

No test
Static level: 10.53

LOCATION OF WELL

2635



FINAL STATUS OF WELL

☒ Observation well

WATER USE

METHOD OF DRILLING

☒ Cable tool

CONTRACTOR

Name of well contractor: HIGHLAND WELL DRILLING — Licence number: 2576
Address: 293 Garafraxa St. S., DURHAM, Ont.
Name of driller or borer: Erich Wilson — 5478
Submission date: 1 06 84

CONTRACTOR'S COPY

OFFICE USE ONLY

Ontario
of the Environment

WATER WELL RECORD

County or District	Township, Borough, City, Town, Village	Con.	Lot
Grey	Twp. of Bentinck	Con. 7	16
Twp. of Bentinck	R.R.#1, ELMWOOD, Ont., NOG 150	Date completed: 14 02 84	

LOG OF OVERBURDEN AND BEDROCK MATERIALS

General colour	Most common material	Other materials	General description	Depth from	Depth to
	topsoil	& gravel		0	2
	sand			2	5
	gravel			5	10
	sand	& gravel		10	18
	sand			18	19
	sand	& gravel		19	26

Obs. Well 3

WATER RECORD

Water found at – feet	Kind of water
18	Fresh

CASING & OPEN HOLE RECORD

Inside diam. inches	Material	Wall thickness inches	Depth from	Depth to
5	plastic pipe		0	26

SCREEN

Slot no.	Material and type	Length	Depth to top of screen
hacksaw	plastic pipe	4	22

PLUGGING & SEALING RECORD

PUMPING TEST

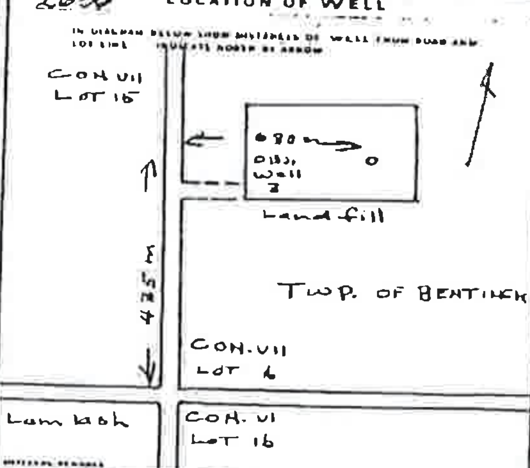
No test

Static level: 18.89

LOCATION OF WELL

2636

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



FINAL STATUS OF WELL

X Observation well

WATER USE

METHOD OF DRILLING

X Cable tool

CONTRACTOR

Name of well contractor	Licence number
HIGHLAND WELL DRILLING	2576
Address: 293 Garafraxa St.S., DURHAM, Ontario	
Name of driller or borer: Erich Wilson	5478
Signature of contractor	Submission date: 1 06 84

CONTRACTOR'S COPY

OFFICE USE ONLY

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

Grey	Twp. of Bentinck	Con. 7	16
Twp. of Bentinck	R.R.#1, ELMWOOD, Ontario, N0G 1S0		16 02 84

LOG OF OVERBURDEN AND BEDROCK MATERIALS

General colour	Most common material	Other materials	General description	Depth from	Depth to
	topsoil			0	1
	sand	& gravel		1	15
	sand			15	17
	gravel	& sand		17	26

Obs. Well 4

WATER RECORD

Water found at (feet)	Kind of water
15	☒ Fresh

CASING & OPEN HOLE RECORD

Inside diam (inches)	Material	Depth from	Depth to
5	plastic pipe	0	26

SCREEN

Type	Slot no.	Length
hacksaw	1.5	4
plastic pipe	Depth to top of screen	22

PLUGGING & SEALING RECORD

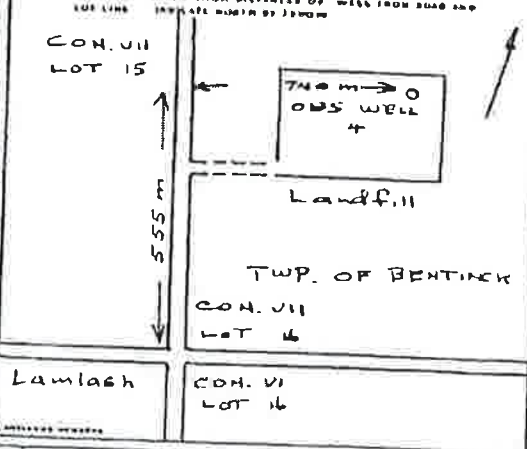
PUMPING TEST

No test

22.42

LOCATION OF WELL

2637



FINAL STATUS OF WELL

☒ Observation well

WATER USE

METHOD OF DRILLING

☒ Cable tool

CONTRACTOR

HIGHLAND WELL DRILLING | 2576

293 Garafraxa St.S., DURHAM, Ontario

Erich Wilson | 5478

Signature: [signature] | 1 06 84

CONTRACTOR'S COPY

OFFICE USE ONLY

GAMSBY AND MANNEROW LIMITED
people engineering environments
Guelph, Owen Sound, Listowel, Kitchener, Exeter
1260 Second Avenue East, Owen Sound, ON N4K 2J3
519-376-1805 Fax 519-376-8977 www.gamsby.com

MONITORING WELL ID: TH-13

CLIENT Municipality of West Grey
PROJECT NAME Bentinck Landfill Site
PROJECT NUMBER 213085
PROJECT LOCATION West Grey
DATE COMPLETED 09/30/13
CONTRACTOR London Soil Test
LOGGED BY ALE
METHOD Hollow Stem Auger
WELL CONSTRUCTION 2" PVC
NOTES

DEPTH (m)	DEPTH (ft)	ELEVATION (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	SPT N VALUE 20 40 60 80	GRAPHIC LOG	MATERIAL DESCRIPTION
	-2							
	-1							
0	0							0.00 Ground Surface
	1							Light brown sandy topsoil with plant roots and rootlets.
	2							0.30 Light brown sand and gravel with fines. dry.
1	3							
	4							
	5							
	6		SS 1	50	6-7-9-9 (16)			
2	7							
	8							
	9							
3	10							3.05
	11		SS 2	55	3-6-7-3 (13)			Light brown coarse sand with some fines. Wet.
	12							
4	13							
	14							
	15							
	16		SS 3	100	10-13-14-10 (27)			
5	17							
	18							

WELL DIAGRAM

- Concrete Seal
- Native sand and gravel
- Bentonite Seal
- Water Level 2.38 m below TOC (recorded on 09/30/13)
- Silica Sand Filter Pack
- 10 ft slotted screen riser
- Native sand blow back into base of well.

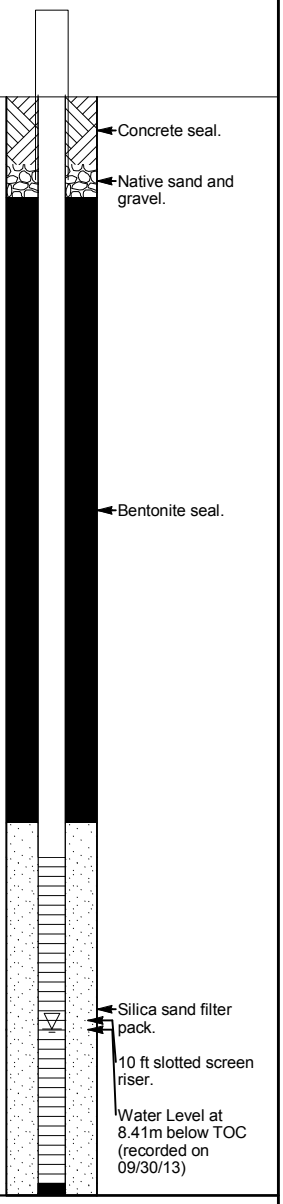
Borehole Terminated at 5.49 m.

GAMSBY AND MANNEROW LIMITED
people engineering environments
Guelph, Owen Sound, Listowel, Kitchener, Exeter
1260 Second Avenue East, Owen Sound, ON N4K 2J3
519-376-1805 Fax 519-376-8977 www.gamsby.com

MONITORING WELL ID: TH-14

CLIENT Municipality of West Grey
PROJECT NAME Bentinck Landfill Site
PROJECT NUMBER 213085
PROJECT LOCATION West Grey
DATE COMPLETED 09/30/13
CONTRACTOR London Soil Test
LOGGED BY ALE
METHOD Hollow Stem Auger
WELL CONSTRUCTION 2" PVC
NOTES

DEPTH (m)	DEPTH (ft)	ELEVATION (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	SPT N VALUE 20 40 60 80	GRAPHIC LOG	MATERIAL DESCRIPTION
	-2							
0	0							0.00 Ground Surface
								0.15 Light brown silty clay with stones. Dry.
	2							Refuse and black organics. Moist.
	4							
2	6							
	8							
	10							
	12							
4	14							
	16							
	18							
6	20							6.10
			SS 1	55	14-15 (29)			Light grey coarse sand with fines. Leachate odour observed. Moist.
	22							
	24							
8	26		SS 2	85	10-8-10-11 (18)			
	28							Becoming wet at 8.23 m bgs.
	30							
	32		SS 3	100	8-10 (18)			



Borehole Terminated at 9.91 m.