March 27, 2024
Our File: 213086

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)
Durham Landfill Site
MOE Certificate of Approval No. A260202

Dear Geoff,

Please find enclosed, the Annual Monitoring Report (2023) for the Durham Landfill Site. On behalf of the Municipality, we have submitted a digital copy of the report to Mr. Scott Gass, P.Eng. at the Ministry of the Environment, Conservation and Parks (MECP), Owen Sound District Office.

The environmental monitoring results are generally consistent with the annual monitoring results from previous years, which indicate that the Reasonable Use Guideline primarily continues to be met with the exception of an increase in the concentration of leachate indicator parameters at the northwest property boundary (i.e., at TW-7). In their most recent review and comments, the MECP specified that a plan to address this increasing trend is required. As a result, we have recommended the establishment and registration of a contaminant attenuation zone (CAZ) to the west of the landfill property under a scenario where a reduction in concentrations is not observed after the capping and closure of the landfill in this area of the footprint.

Further to the above, the landfill reached capacity for waste and daily cover at the end of 2020, and therefore all waste was transferred offsite in 2022. A Closure Plan is required to be submitted for Ministry review and approval.

As requested by the MECP, a copy of the 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:

Alen Bringleson, B.E.S., C.E.T.
AWB/ah
Encl.

cc: MECP: Scott Gass, P.Eng., via Email (One Digital Copy) – Scott.Gass@Ontario.ca
File No. 213086

Prepared By:

ANNUAL MONITORING REPORT (2023)

Durham Waste Disposal Site
Municipality of West Grey
Environmental Compliance Approval No. A260202

GMBP File: 213086

March 2024

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DURHAM WASTE DISPOSAL SITE
MUNICIPALITY OF WEST GREY

ANNUAL MONITORING REPORT (2023)

MARCH 2024

GMBP FILE: 213086

1. INTRODUCTION & BACKGROUND INFORMATION

The Durham Landfill Site is located at 590 Park Street and is situated in a rural area at the west terminus of Park Street, as shown on Figure No. 1. The landfill property is located north of Douglas Street and south of the Saugeen River. The area approved for waste placement comprises an area of 4.8 hectares (12 acres). The landfill property is legally described as Plan 505, Part of Lots 4 & 7PT; Municipality of West Grey, Park Lot D, Registered Plan 17R3582, Parts 8 & 9, former Town of Durham.

Landfilling at the site reportedly commenced in approximately 1965 and generally occurred in the southern half of the site (within the portion that is now closed). An Application for a Waste Disposal Site was submitted to the Ministry of the Environment (MOE) for approval in 1971 and Provisional Certificate of Approval (C of A) #A260202 was issued by the MOE on July 13, 1989. The Environmental Compliance Approval (ECA) was amended by the MOE in 1989 and amended in August 1992, May 1994, June 2004, and June 2020.

In addition to the 4.8-hectare licensed fill area, the Municipality also owns an additional area of approximately 16.6 hectares (41 acres) of buffer lands to the north of the landfill Site which extend beyond the Saugeen River, and an additional 2.5 hectares (6.1 acres) of buffer lands to the south of the landfill, which extend to the right-of-way for Douglas Street. Additionally, a Union Gas easement, measuring approximately 50 meters in width, is located along the west side of the Site and separates the landfill site from the adjacent wooded property. The Site layout and general existing conditions are presented on Figure 2.

A Plan of Development and Operations (PDO) for the Site was completed in December of 1996. The 1996 PDO is referenced in Schedule “A” of the current Environmental Compliance Approval (ECA). A copy of the ECA and the associated amendments is provided in Appendix “A.”

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 Town of Durham and the former Township of Glenelg. Additionally, the commercial waste generated within the Municipality is directed to the waste disposal site. The contributing population within the Town of Durham (2,641) and the former Township of Glenelg (2,092) before amalgamation occurred in 2000 was 4,733 based on the Statistics Canada Census Report. Based on the statistical information available, the population of the Durham area has historically fluctuated with a reported growth in population of 6 people between 1996 and 2001.

Therefore, the growth rate for the area is considered to be generally stagnant and the contributing population within the current service area is expected to be generally consistent with the pre-amalgamation totals.

Based on a review of previous Annual Reports and the 1996 PDO, operations at the Site were previously completed using the area ramp method of landfilling. Using this methodology, designated cells are developed and progressively closed within three phases of development that were outlined in the PDO. In recent years, landfilling was completed in the Phase III portion of the landfill, which included filling of the remaining approved area to the west of the landfill pile and proceeding to the designated portion of the approved footprint located north of Phase II. The 1996 PDO indicates that Phase III of the Site consists of waste placement throughout the remaining north portion of the approved landfill footprint and extending in an easterly direction toward the main entrance utilizing the sequence of cell development described within the PDO. Based on the completion of annual topographic surveys and capacity determination, the approved phases of landfill development have been completed with no volumetric capacity remaining. Therefore, closure and capping of the landfill site is to be completed. Further discussion of site life and capacity is provided below. Finished side slopes should be constructed at 4:1 grade and then taper to a 10:1 slope, as specified within the approved plan of operations.

3. SITE LIFE EXPECTANCY

The amended ECA provides for the use and operation of a waste disposal site consisting of a 4.8 ha landfilling area and a total approved waste disposal capacity of 207,000 m^3 including waste, daily, and final cover.

In the past, topographical surveys have been completed every one to three years to monitor site development and evaluate the remaining site capacity. The most recent capacity determination survey at the landfill was completed by GM BluePlan Engineering Limited (GMBP) in December of 2020. By comparing the contours in the active landfill area between the previous survey (2018), an annual fill rate of 3,559 m/year was calculated for 2020.

Based on a review of available information, the landfill reached capacity for waste and daily cover with no volumetric capacity remaining at the end of the 2020 operating year. As presented in Table 1, the five-year average annual fill rate is 3,178 m^3/year, and the Site has no remaining airspace capacity for waste and daily cover. The site has capacity for approximately 18,950 m^3, for the placement of final cover.

The Municipality has prepared for closure of the Site and ongoing waste management operations at the approved Bentinck waste disposal site. It is noted that, the Municipality has retained GMBP to complete the Closure Plan as required by the conditions of the existing ECA. The Closure Plan is currently being considered while potential options for closure, grading, and sloping of the north-northeast portion of the landfill footprint are being considered. The Closure Plan will be submitted for MECP review and approval upon completion.

4. BURNING OPERATIONS

Based on the current 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 approved 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 Attendant's 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. During the current monitoring period, 61.23 tonnes of wood waste was reportedly burned onsite.

The Municipality reports that a wood waste grinding and shredding program is completed at the Site and that during the current monitoring period, no wood waste was diverted onsite. Further discussion regarding the extent of the wood waste pile is provided in sections 6.2 and 7.8.2 of this report. 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 (AOR) 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.

Based on information provided by the municipality, a total of 1,466 tire units were segregated and diverted from the landfill footprint. Continued attention should be given to the management of the tire pile located at the landfill. The size of the tire pile at the site should be monitored regularly to ensure that there are fewer than 5,000 tire units onsite at any given time as per the requirements of the Environmental Protection Act (EPA). Regular removal of used tires and other accumulations of salvageable materials will also help to maintain an aesthetically acceptable site.

Municipal records, received from Waste Management, provide the total recycling tonnage (i.e., 727.91 tonnes) diverted from within the entire Municipality of West Grey in the current reporting period. Correspondence received for the current year is provided in Appendix “B.” As previously reported, the contributing population for the waste disposal site is approximately 4,733 including full time and seasonal residents. Based on the Census data provided by Statistics Canada, the population of the Municipality is approximately 12,300. Therefore, based on the contributing population for the Durham Site, it is estimated that the quantity of recyclables diverted from the facility represents approximately 40% of the total recycling tonnage that has been reported for the Municipality.

The following approximate quantities of recyclables were diverted from the landfill in the current reporting year (with a comparison to recent annual totals provided for reference):

	2020	2021	2022	2023
Onsite Depot & Curbside Recycling Program	286.37 tonnes	281.84 tonnes	238.12 tonnes	58.58 tonnes
Scrap Metal*	36.11 tonnes	64.81 tonnes	41.56 tonnes	114.38 tonnes
Tires (15 kg/unit)	1,818 units – 25.6 tonnes	1,937 units – 35.6 tonnes	2,803 units – 44.3 tonnes	1,466 units – 22.0 tonnes
Waste Electrical and Electronic Equipment (WEEE)	7.76 tonnes	5.72 tonnes	6.97 tonnes	4.84 tonnes
Wood Waste	1.74 tonnes	3.2 tonnes	168.6 tonnes	0 tonnes

* Note: Scrap Metal weight is a measurement combined with the Bentick Landfill site.

The reported recycling and waste diversion totals are generally consistent with historical totals. Based on the totals reported in the current year, the diversion totals indicate a generally stable trend in the amount of blue box recyclables over the last four years. The diversion of scrap metals and wood waste are generally consistent with previous totals with a decreasing trend in the amount of wood burned per year, as the volume of wood being shredded/ground increases in favour of burning. The WEEE program has indicated a generally stable trend. 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 from 8:00 AM to 5:00 PM on Thursday and Friday, and from 8:00 AM to 4:00 PM on Saturday each week. A sign at the access gate notes the hours of operation and specifies the acceptable wastes that are received at the Site. The ECA notes that the hours of operation may be changed by the Owner at any time provided the hours are correctly posted at the Site entrance gate and that suitable notice is provided to the public. 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 landfill is adequately screened from the public view by low hills and tree cover along the property boundary.

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 the completion of routine inspections of the Site and for collecting blown litter. 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.

6.3 Active Landfill Area

Waste covering operations were previously achieved using a rubber tire loader and compaction of the waste was provided by several passes of a Cat 816 landfill compactor. Previous Annual Monitoring Reports indicate that the Municipality typically achieved reasonably adequate waste compaction and covering in the active area.

Based on the most recent topographic survey, there is no remaining air space for waste and daily cover and the Municipality has prepared for closure of the site. Waste cells that have been filled to capacity or have reached final contours should be capped and closed using a minimum of 600 mm of low-permeability silty clay material and 150 mm of topsoil seeded to grass.

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 with regard to the Reasonable Use Concept, MOE Guideline B-7 (RUC). Based on the MOE 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. The shallow groundwater has been determined to flow primarily in a northerly direction toward the Saugeen River, with a minor component of north-westerly flow. 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 MOE Guideline B-7.

It is proposed to continue the established annual monitoring program at the site on an annual basis according to the analytical parameters outlined in Table 2. Monitoring locations are shown on the Monitoring Well Locations and Groundwater Contour Plan presented on Figure 4.

Table 2 - Monitoring Locations & Analytical Requirements

DURHAM LANDFILL SITE
Water Quality Monitoring Locations (Fall Only)
WATER MONITORING
Groundwater/Leachate Monitors
TW-1, TW-2, TW-3, TW-5, TW-6, TW-7, TW-8, TW-9, TW-10, TW-11, TW-12, TW-13, TW-14, TW-16, TW-17, TW-18, TW-19, TW-20, TW-21, TW-22S, TW-22D, LW-1, LW-2
Surface Water Monitors
SW-7 Drainage Channel (north of the landfill footprint)
METHANE GAS MONITORING
Gas Monitors **-** GW-1, GW-2, GW-3
PARAMETERS
Groundwater
Conductivity, hardness, nitrite, TKN, pH, sodium, chloride, nitrate, total ammonia, sulphate, alkalinity, iron, TDS, barium, boron
Surface Water
Conductivity, pH, chloride, total ammonia, alkalinity, iron, total phosphorus, phenols, dissolved oxygen, temperature (field)

It is noted that the monitoring program identified in Table 2 above has been developed over time with correspondence, review, and approval by the MECP reviewers. For example, TW-15 was previously removed from the monitoring program in correspondence provided by the MECP dated December 13, 2013, and May 30, 2014. Copies of the applicable correspondence are provided in Appendix “B.” During this monitoring period, a new nested monitoring well was installed, MW-22S and MW-22D, located in the southwest corner near Douglas Street (shown in Figure 2).

7.1 Sampling Procedures and Requirements

Groundwater quality is monitored at the site by annual sampling at the above noted network of monitoring wells in the fall. It is standard procedure to measure the static groundwater level prior to purging three (3) casing volumes of stagnant water from each test well. Monitoring 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.

MOE 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 MOE Guideline B-7. MOE Procedure B-7-1 provides technical details for the application of MOE 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 has historically been determined by calculating the average concentrations from the groundwater samples collected at the Caswell overburden well between 1982 and 1996. The Caswell well is located on the property directly adjacent to the landfill and is situated to the southeast of the east property boundary. The exact location of the water supply well is unknown but is reportedly located southeast of the Site, which is considered to be hydraulically upgradient of the landfill property.

Based on the historical groundwater data from the background monitoring well, the concentrations of hardness (as $CaCO_3$), alkalinity, and organic nitrogen in the natural groundwater are elevated and the reported historical concentrations of hardness consistently exceed the criteria identified in the ODWS. 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 have moderately elevated levels of typical anions (including chloride), and nutrient parameters.

The monitoring of the background wells has been discontinued since 1996. The exact well construction, screened interval(s), and the unit being measured at the Caswell well are somewhat unclear at this time. As noted in previous MOE correspondence, (dated December 13, 2013), if ongoing monitoring of a well that is representative of background conditions is not available, the installation of a new background monitoring well that monitors the water quality in the overburden and the bedrock would be required. Based on MECP recommendations, , the installation of a nested background well was completed in 2023 on the municipally owned property in proximity to Douglas Street. OW-22S & 22D were installed in the shallow and deeper overburden to represent new background wells. The monitoring wells were sampled at the time of the fall sampling program and the ongoing data from these locations will be evaluated as the background monitors for the Site.

7.3 Physiographic and Geological Setting

The site is located in the highland area of central Grey County, within the physiographic region known as the "Horseshoe Moraines". The region is generally characterized by till ridges, kame moraines, outwash plains and spillways. This area of Grey County is located on the Singhampton Recessional Moraine, in the northern "toe" of the horseshoe. The Singhampton Recessional Moraine is a till moraine feature which is aligned in a southwest/northeast direction across the drumlinized till plain that dominates the area. Relief among the moraines and drumlins is often more than 30 metres. Many small lakes, streams and wetland areas exist within the low areas between drumlins.

In the immediate area of the site, the overburden soils consist mainly of loamy tills, which primarily consist of clayey silt, silty sands, and sand and gravel with stones. These loamy tills are classified in the Donnybrook, Sargent, and Gilford Series, which are described as loams comprised of well sorted gravelly outwash with good drainage characteristics. Based on a review of available borehole logs and MECP water well records, the lower overburden consists of a layer of red to grey clayey hardpan that overlies the grey/brown dolostone bedrock of the Guelph and Amabel Formations.

Regionally, the drainage from the high plateau is generally from east to west toward Lake Huron. In the area of the subject site, the landscape is described as gently rolling. Surface drainage is generally from south to north toward the Saugeen River, which flows from east to west across the northeast portion of the study area. The subject lands are located about 4.5 kilometres upstream from the confluence of the Rocky Saugeen and the Saugeen Rivers.

The geologic cross-sections presented within the Grey and Bruce Counties Groundwater Study (July 2003), indicate that the bedrock surface elevation in the area is at an approximate elevation of 320 to 325 metres above sea level (masl). Based on a surface elevation of approximately 340 masl, the overburden thickness is estimated to be 15 to 20 metres in the vicinity of the site.

Based on a review of the borehole logs and geologic cross-sections presented within the historic Annual Monitoring Reports for the landfill site, the bedrock surface was encountered at several of the monitoring well locations. Based on a review of this information, the bedrock surface is identified at an approximate depth of 18 to 25 metres below ground surface. Borehole/Well logs are provided in Appendix “H.” Based on a review of the MECP water well records for supply wells in proximity to the landfill, the water supply wells obtain their water from the underlying dolostone/limestone bedrock unit.

7.4 Summary of Hydrogeologic Setting

The hydrogeological conditions in the study area were determined based on the information presented within the previous Hydrogeological Assessments, the Annual Monitoring Reports, and on a review of the available borehole/monitoring well logs. According to the above noted document review, the direction of shallow groundwater flow has been established and documented as part of four previous Hydrogeological Assessments at the landfill site and as part of the annual monitoring program that have been conducted for a period of over twenty-five years. Based on the previous and ongoing studies, the overall direction of shallow groundwater flow is reportedly in a north-easterly direction toward the Saugeen River. Additionally, a minor component of west to northwesterly flow has been observed in the central and south portion of the landfill Site at various periods throughout the monitoring programs. The shallow groundwater flow was determined through the measurement of groundwater elevations in the 21 monitoring wells located on the closed and active landfill properties.

Based on previous investigations, the groundwater flow pattern has been divided into three different systems comprised of: shallow silty sand and gravel overburden, shallow clayey silt overburden, and the underlying limestone bedrock system. This division was based on an assessment of the borehole depths, screened intervals, soil descriptions, and historic groundwater quality data. A summary of the monitoring well details, including a division of the wells into each separate flow system, is provided in Table 3. An on-going assessment of the flow pattern and groundwater quality will continue in future annual monitoring reports based on their established designations within these units.

The Grey and Bruce Counties Groundwater Study (July 2003) indicates that the regional groundwater flow in the bedrock aquifer is in a north to northwesterly direction. Upward gradients are commonly measured at the nested monitoring wells located on the landfill property. Based on the measured vertical gradients and on the occurrence of the clayey hardpan layer overlying the bedrock, the bedrock groundwater system is inferred to be under confined to semi-confined conditions. Additionally, a groundwater system that contains deeper groundwater systems with an upward gradient typically acts to prevent the downward migration of the shallow groundwater. Therefore, the shallow groundwater in proximity to the landfill site is expected to primarily have a horizontal flow direction within the shallow sand and gravel overburden materials.

Based on the area topography and on the occurrence of the Saugeen River in close proximity to the Site, a shallow groundwater and surface water flow divide is inferred to exist at the Saugeen River. Additionally, the hydrogeological conditions indicate that the Saugeen River would likely be the ultimate receptor for both potential groundwater and surface water impacts from the waste disposal site. As such, it is reasonable to expect that surface water or groundwater impacts would not occur north of the Saugeen River.

Based on the soil type, the hydraulic conductivity (K) of the overburden has previously been estimated to be in the order of 10^{-4} to 10^{-3} m/s. Using the hydraulic gradient (i) in the overburden of approximately 0.3%, the groundwater flow velocity is estimated to be in the range of approximately 5 to 30 m/year.

Groundwater level measurements are collected annually in conjunction with the established monitoring program. A review of previous groundwater contour plans and previously measured groundwater elevation data indicates that the flow pattern depicted using the most recent data are representative of the typical groundwater flow directions at the site. A summary of the historical groundwater elevation measurements is provided in Appendix "G." In general, the groundwater flow patterns, and vertical and horizontal gradients calculated are consistent with those historically presented.

7.5 Leachate Production

The quality of leachate is measured and characterized by the collection of groundwater samples at the leachate characterization wells LW-1, LW-2, and at TW-8, which are located within different portions of the refuse pile. Analytical data for each of the leachate wells is available since 1990 and a review of the data indicates that there is evidence of leachate influence to the shallow groundwater at these locations where elevated concentrations of chloride, conductivity, hardness, alkalinity, ammonia, TKN, and nitrogen have consistently been reported for several years. The most pronounced evidence of leachate influence/impact is identified at the location of shallow overburden monitor TW-12 where the concentrations of leachate indicator parameters have varied over the years with two periods of increasing concentrations from 2011 to 2015, and 2019-2021. However, since 2021 the leachate indicators have shown a notable downward trend in concentrations. The current and historical groundwater quality results and the long-term trend graphs are presented in Appendix "D." It must be noted that TW-12 is situated at the toe of the slope adjacent to the active landfilling area and is screened in the shallow sand and gravel overburden which terminates at the surface of the lower permeability clayey silt at an approximate depth of 3.15 metres. Based on these conditions, TW-12 is expected to represent shallow groundwater that is most likely to be impacted from landfill leachate.

Of the monitoring wells located directly within the refuse pile, evidence of leachate influence is more pronounced at the locations of LW-1 compared to TW-2 and TW-8, the latter of which is located toward the upgradient edge of the closed historical portion of the landfill footprint. The chloride concentrations reported at LW-1 and TW-8 have historically ranged between 30 to 60 mg/L with an average of 57 mg/L and 49 mg/L, respectively. The concentrations have been comparable to the historical data and indicate a stable trend in recent monitoring years. The leachate wells (LW-1 and LW-2) are located within the refuse pile and do not represent the quality of groundwater leaving the subject property. Additionally, the groundwater downgradient of the leachate wells is monitored at numerous monitoring well locations located in the north portion of the Site and within the additional buffer lands located north of the landfill property.

The analytical results for the downgradient wells indicate that there is leachate influence to the shallow groundwater downgradient of the landfill and that the concentrations of leachate indicator parameters are elevated but have been generally stable in recent years.

An ongoing evaluation and trend analysis of analytical results from the leachate wells 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., 20 to 25 meters) 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.

7.6 Annual Monitoring Program

A groundwater monitoring program was reportedly initiated at the site in about 1986 to satisfy MOE conditions at that time. Historically, the monitoring program included up to twenty onsite monitoring wells, leachate wells, five neighbouring domestic wells, five surface water sampling locations, and three landfill gas probes. Currently, the sampling program consists of a total of twenty-one monitoring wells that intercept the groundwater within three different geologic units including the shallow sand and gravel overburden, the underlying clayey silt overburden, and the bedrock.

Additionally, surface water and landfill gas sampling are also conducted as part of the annual monitoring program. Surface water samples were historically collected at the location of SW-5 which is located in the low-lying wetland area within the area of buffer lands located to the north of the landfill property. However, in 2015, samples were collected at locations SW-6 and SW-7 to further delineate potential leachate impact farther north of the landfill footprint as per MECP correspondence. Based on the stagnant, ponded nature of the surface water feature at SW-5 (i.e., at the toe of the north landfill slope), continued monitoring at SW-7 (i.e., in the drainage channel) is recommended as part of future monitoring events. Landfill gas is measured at three landfill gas probes (GW-1 to GW-3), which are located to the south of the landfill site.

The sampling program was completed at the Site in November of the current reporting period. Samples were submitted to Bureau Veritas Laboratories (BVL) in Mississauga for analysis of the established analytical parameter list. 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 Durham Landfill site.

7.7 Groundwater Quality Review

North Boundary Condition (Downgradient)

It is noted that a 60-metre buffer area is maintained along the north property boundary between the approved limit of the landfill footprint and the property boundary. Due to the additional municipal buffer lands situated to the north of the landfill property, the north property boundary is located approximately 550 meters downgradient of the landfill footprint. Groundwater quality to the north of the landfill site is monitored at TW-9, TW-10, TW-11, and at TW-16 to TW-20. Monitoring wells TW-19 and TW-20 are located in the additional buffer lands owned by the Municipality to the north of the landfill property.

Considering the additional 550 meters of downgradient buffer lands owned by the Municipality beyond the north limit of the landfill, the quality of groundwater measured at these wells is not considered to represent the actual quality of groundwater flowing offsite.

With the exception of hardness, organic nitrogen, and alkalinity levels, most of the downgradient observation wells continue to have concentrations of leachate indicator parameters below the criteria of MOE Guideline B-7. The chloride concentrations at the downgradient wells TW-9, TW-10, TW-11, TW-16, and TW-20 are generally consistent with the background concentrations and are well within their historical ranges. Wells TW-17, TW-18, and TW-19 show a slight increasing trend in recent years. However, the concentrations of leachate indicator parameters generally demonstrate stable long-term trends overall. The analytical findings suggest that there is some leachate influence to the groundwater at the monitoring wells located onsite and directly to the north of the landfill footprint (i.e., in close proximity to the landfill pile). Exceedances of MECP Guideline B-7 are summarized by location in Table 5.

As noted above, the elevated concentrations identified at the downgradient monitoring wells produce a trend analysis indicating overall stable long-term trends. It is also noted that the ODWS criterion for hardness in drinking water is 80 to 100 mg/L with levels as high as 200 mg/L being considered poor, but tolerable. The ODWS criterion for alkalinity in drinking water is 500 mg/L. The ODWS criteria for hardness and alkalinity are Operational Guidelines (OG) that have been set for *treated* drinking water and not for groundwater.

The current and historical analyses suggest that the groundwater that is influenced by leachate above the RUC remains onsite and does not cause impact (i.e., that exceeds MOE Guideline B-7) to groundwater leaving the subject property. Based on the extent of Municipal buffer lands directly to the north of the landfill footprint, it is noted that the concentrations measured to the north of the footprint do not represent the quality of groundwater flowing offsite. Additional attenuation of landfill impacts is expected prior to discharge to the Saugeen River.

East Boundary Condition

The groundwater quality along the east property line is monitored at TW-3, which is considered to be hydraulically cross-gradient of the landfill footprint. As noted above, the groundwater quality in the northeast portion of the property is monitored at TW-10 and TW-11, which have been discussed in the North Boundary Condition section. It is also noted that a 30-metre buffer area is maintained along the east property boundary, which is used as a receiving area and for various waste diversion activities such as the placement of compost and salvageable materials.

The analytical data at TW-3 indicates that the groundwater quality at this location is generally consistent with the groundwater in the upgradient/background monitoring well. 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 and exhibit stable to decreasing trends.

The analytical results from the current monitoring year indicate that the concentrations of hardness and alkalinity are somewhat elevated above the MECP Guideline B-7 criteria, which is consistent with background conditions and with historical monitoring trends. The historical data indicates that the concentrations of these parameters

have consistently been reported above the MECP Reasonable Use Criteria and the ODWS. The groundwater quality at TW-3 will continue to be monitored as part of the established groundwater monitoring program to discern if there is a component of radial flow away from the landfill footprint and to evaluate the long-term trends at this location.

South Boundary Condition (Upgradient)

The south property boundary is considered to be located hydraulically upgradient of the landfill footprint. As previously reported, the Municipality owns an additional 2.5 hectares (6.1 acres) of buffer land directly to the south of the former closed portion of the Site. Due to the documented northerly groundwater flow direction and the closure of the south portion of the landfill footprint, the south property boundary is considered to have a low risk for potential leachate impact. No evidence of groundwater mounding or radial flow from the landfill is apparent at this time.

The southwest portion of the landfill property is monitored at the location TW-5, which continues to display stable to slightly decreasing long-term trends and concentrations that are generally consistent with background conditions. The analytical results from the current reporting period are consistent with historical data and the reported concentrations are below the RUC with the exception of hardness, alkalinity, and organic nitrogen.

It is noted that nested monitoring wells TW-22S & 22D were installed in the summer of 2023 in response to the Ministry's recommendations to install and establish a new background monitoring well since sampling of the former background well was discontinued in 1996. Previously the 'Caswell' and 'Martin Plastics' Wells were used as background wells. However, based on their depth, construction, and screened intervals, it was determined that they were not representative of background conditions applicable to the landfill site. Therefore, the new nested background wells (i.e., shallow, and deep installations) were installed on municipally owned lands in close proximity to the hydraulically upgradient boundary near Douglas Street.

The initial data from the sampling completed at TW-22S/D indicates that the reported concentrations of certain leachate indicator parameters (conductivity, chloride, sodium, and TDS) are elevated. However, it also noted that the concentrations of hardness and alkalinity remain low, which suggests that the elevated parameters are not attributable to landfill leachate. The exact source of the somewhat elevated parameters is currently unknown but may be related to snow removal / de-icing operations along the adjacent Douglas Street or may be related to the initial sampling event from a monitoring well that was recently installed (i.e., disturbance and sedimentation of the groundwater). As reported, only one data point is available at this time. Ongoing monitoring will be completed to establish long-term trends and background conditions.

West Boundary Condition

The onsite groundwater quality to the west of the landfill is monitored by wells TW-5, TW-6, TW-7, and TW-21. TW-5 and TW-6 extend to respective depths of 11.5 meters and 17.9 meters below ground surface and monitor the groundwater in the deeper silty sand and gravel overburden. Comparatively, TW-7 and TW-21 terminate at depths of 8.6 meters and 7.62 meters below ground surface, respectively, and monitor the quality of the groundwater in the shallow, higher-permeability native sand. As previously reported, the northwest portion of the landfill property is also monitored by bedrock well TW-9. Based on the direction of groundwater flow at the site, the groundwater at TW-5 to TW-7 is primarily considered to be hydraulically cross-gradient of the landfill footprint, and downgradient during periods of radial flow to the northwest. It is noted that a 30-meter buffer area is maintained along the west property boundary. Additionally, a Union Gas easement is situated directly adjacent to the west boundary of the landfill property, which provides approximately 50 meters of additional property between the landfill boundary and the closest westerly private property.

As noted above, monitoring wells TW-5, TW-6, TW-7, and TW-21 are screened at different intervals and monitor the groundwater in different overburden units. For this monitoring period, no sample was able to be taken at TW-7. A review of the historical groundwater quality for TW-5 and TW-6 indicates that the groundwater quality at these

locations is generally consistent with background conditions. Low concentrations of leachate indicator parameters are present with slightly elevated hardness concentrations in related to the background conditions with the exception of alkalinity and organic nitrogen in TW-5, which falls slightly above the RUC. Overall, the analytical results for TW-5 and TW-6 indicate stable long-term trends and TW-6 contains no exceedances of the MECP Reasonable Use Concept related to leachate impacts. Conversely, the shallower groundwater monitored at TW-7 has previously displayed an increasing trend with elevated concentrations of hardness, alkalinity, chloride, conductivity, sulphate, and organic nitrogen between 2006 and 2017.

As reported above, the long-term trend displays an increasing concentration trend at the location of TW-7 between 2006 and 2017, which may correspond to landfilling in the west-northwest portion of the landfill footprint during that period. Recent landfill operations have extended to the northwest portion of the landfill footprint in close proximity to TW-6 and TW-7. However, closure and capping of this area of the landfill is being coordinated with the placement of clayey cap and vegetative cover being planned as part of the final landfill closure. It is noted that the reported leachate indicator concentrations appear to have peaked in 2017/18 and have displayed a decreasing trend since that time. Upon capping and closure of the west-northwest portion of the footprint, a reduction in infiltration and a continued corresponding improvement of groundwater quality at these monitoring locations is anticipated. During the current monitoring period, the concentrations of leachate indicator parameters remain somewhat elevated but continue to display a decreasing trend since 2017/18 (i.e., continued reduction of hardness, alkalinity, conductivity, and TDS).

The ongoing analytical trends at TW-7 will continue to be evaluated to determine if an increasing trend continues, or if peak concentrations have been measured and the reduction observed in recent years will continue.

Under a scenario where elevated concentrations and RUC exceedances continue to be measured at the location of TW-7, in close proximity to the west-northwest property boundary, an evaluation of options for obtaining additional buffer lands to the west of the landfill property is recommended. It is noted that the most feasible option would likely be to obtain an agreement with land owner(s) situated to the west of the landfill property to register a portion of their property as a contaminant attenuation zone (CAZ), which would increase the extent of municipally owned buffer lands and ensure access to these properties for the purpose of monitoring. **Based on the typical planning period required to obtain and register the CAZ lands, and to amend the ECA accordingly, communication with the owners and coordination is recommended.**

The initial sampling event at TW-21 was completed in November of 2014. The analytical results for samples collected from TW-21 between 2014 and the current monitoring period indicate stable-to-decreasing trend in leachate indicator parameters when compared to TW-7 but contain elevated concentrations of hardness and alkalinity above the RUC. The ongoing analytical trends at TW-21 will continue to be evaluated as more data becomes available.

TW-21 is located in an area of the landfill footprint that was part of final waste placement operations, grading, and capping efforts. As a result of those efforts, TW-21 has been covered with limited access. It is recommended assess the integrity of the well casing and seal of the monitoring well, and to raise the monitoring well to provide continued access and to prevent further damage and/or being buried.

7.8 Surface Water Quality Review

7.8.1 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 MOE. 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 practical.

7.8.2 Surface Water Quality Summary

Historically, the surface water monitoring program consisted of five sampling locations. However, based on previous discussions and MECP recommendations provided in correspondence dated June 18, 2015 (see Appendix "B") surface water samples are now collected north of the low-lying area adjacent to the landfill (SW-7). SW-7 is collected from a low point in the drainage channel where surface water flows can accumulate prior to out letting northward to the river. During previous monitoring periods, the iron concentration ranged as high as 40 mg/L. During subsequent sampling events, the average iron concentration has remained below 0.5 mg/L and was reported as 0.36 mg/L during the current monitoring period.

As noted above, sampling at the location of SW-5 has not been completed since 2014. As per MECP correspondence (June 2015), SW-6 and SW-7 are collected during the yearly sampling program further north and downstream of the stagnant ponded location of SW-5. However, SW-6 was dry during the current monitoring period. Based on a comparison of previous analytical results for SW-5 and the 2015 results for SW-6 and SW-7, some evident differences in the surface water quality were apparent from the initial monitoring results. The concentrations of conductivity and chloride were somewhat elevated but indicate a relatively significant decrease from SW-5 (1200 µS/cm, and 140 mg/L in 2014, respectively) and SW-6 (1100 µS/cm, and 140 mg/L in 2015), respectively to SW-7 (530 µS/cm, and 15 mg/L in 2023, respectively). This indicates a decreasing trend. Based on this initial monitoring data, ongoing sampling at SW-7 will continue to be completed to further evaluate the surface water quality in the flowing drainage channel to determine if the long-term trend continues.

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."

In previous Annual Reports, the extent of the various stockpiled wood waste materials that were previously located directly adjacent to the north property boundary was noted, and the stockpiles in that portion of the Site were considered to be having a potential contribution to the elevated surface water concentrations previously measured at SW-5, SW-6, and SW7. It is noted that the Municipality has completed a shredding program and relocated the resultant materials to an area within the approved landfill footprint and away from the low-lying onsite feature. Ongoing monitoring of the surface water in the location of SW-7 is recommended to continue as part of the annual monitoring program.

7.9 Landfill Gas Monitoring

Three (3) methane gas monitors are located on the property south of the licenced landfill area (GW-1, GW-2, and GW-3). During the current reporting period, GW-1 and GW-3 reported 0% methane in air, and GW-2 reported 36% methane in air. Methane gas should continue to be monitored during future monitoring programs.

8. CLOSED AREAS

The south portion of the landfill was historically filled and has been closed and capped since 1996. The closed portion of the Site also includes a narrow strip of the landfill footprint located on the boundary between the active landfill property and the historic southerly portion of the Site.

Upon completion of landfilling in a designated cell/portion of the landfill footprint, sufficient cover material should be progressively applied from the existing stockpiles of cover generated from the excavation and preparation of new subsurface landfill areas. Covering and grading of 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.

It is noted that Condition 46 of the ECA specifies that two years prior to actual site closure, the Owner shall submit a Closure Plan for approval by the Director. The Closure Plan is to include, but not be limited to, the following details:

- Proposed end use,
- Final closure schedule,
- Configuration of final contours,
- Landscaping,
- Use of any onsite facilities (as applicable),
- Rodent control,
- Groundwater, surface water, and landfill gas control, and
- Post-closure inspections, maintenance, monitoring, and reporting requirements.

The site has no remaining airspace capacity for waste and daily cover, and therefore, the Municipality has prepared for closure of the Site and ongoing waste management operations at the approved Bentinck waste disposal site. Furthermore, the Municipality has retained GMBP to complete the Closure Plan required by Condition 46 of the ECA. The Closure Plan is being considered while potential options for closure, grading, and sloping of the north-northeast portion of the landfill footprint are being considered. The Closure Plan will be submitted for MECP review and approval upon completion.

9. ENVIRONMENTAL COMPLIANCE APPROVAL

The waste disposal site operates under the amended Environmental Compliance Approval (ECA) Number A260202, which was issued by the MOE on June 5, 2020. The amended ECA for the site revoked and replaced the original C of A that was issued on December 11, 1996 (see Appendix "A").

A copy of the ECA and the associated amendments are provided in Appendix “A.”

10. CONCLUSIONS

1) The approved area of the Site specified within the ECA covers a total area of 4.8 ha (12 acres). In addition to the lands recognized within the ECA, the Municipality owns additional buffer lands located directly north and south (adjacent to) of the landfill Site. The additional municipally owned lands to the north of the landfill comprise an approximate area of 16.6 hectares (41 acres), which extends to the north beyond the Saugeen River. The lands to the south of the landfill comprise an additional 2.5 hectares (6.1 acres), which extends to the right-of-way for Douglas Street.

2) Currently, the total approved capacity for waste and daily cover, and final cover is 207,000 m^3. Based on a review of previous Annual Monitoring Reports and topographical survey data that has been provided, the Site has no remaining airspace capacity for waste and daily cover, and approximately 18,950 m^3 for final cover. The Municipality has made arrangements to obtain clayey final cover/capping and placement of the final cover is being coordinated.

3) The estimated average annual fill rate over the past five operating years is 3,178 m^3/year and the maximum observed fill rate is 3,559 m^3/year. The capacity for waste and daily cover at the Site has been completely utilized and no filling was completed during the current reporting period. Alternate disposal options are already available at other approved Municipal waste disposal sites within the municipal service area and all waste is currently being transferred to the Bentinck Waste Disposal Facility (i.e., which is operating as the West Grey Regional Landfill Site).

4) The findings of the groundwater monitoring program indicate that leachate impacts are primarily being measured in the shallow overburden at the landfill site. The groundwater flow is primarily in a northerly direction toward the additional municipally owned buffer lands and toward the Saugeen River, with evidence of some radial flow in a northwesterly direction. The Municipality owns the additional 16.6 ha (41 acres) of downgradient buffer lands to the north of the landfill property that extend beyond the Saugeen River.

5) The findings indicate that there is a level of hydraulic separation between the shallow sandy overburden soils and the underlying silty sand and gravel till / clayey silt till (i.e., that is approximately 20 meters in thickness), which is further underlain by the limestone bedrock. Based on the relatively thick layer of native till and on the measured upward hydraulic gradients, impacts to the bedrock aquifer are not anticipated.

6) Based on a review and evaluation of the analytical findings, there is evidence of localized impact to the groundwater at the location of TW-7 in close proximity to the west property boundary where an increasing trend has become apparent in recent monitoring years. Closure and capping of the landfill footprint in the area of TW-6 and TW-7 is being coordinated. A reduction in measured leachate indicator parameters is anticipated following closure and capping of this area of the landfill site.

7) With regard to the measured groundwater quality in proximity to the west property boundary, consideration should be given to obtaining an agreement with landowner(s) situated to the west of the landfill property to register a portion of their property as a contaminant attenuation zone (CAZ), which would increase the extent of downgradient buffer lands and would ensure access to these properties for the purpose of monitoring.

8) The surface water monitoring program indicates that the surface water quality in the low-lying ponded area directly north of the landfill footprint has historically shown influence from landfill leachate with concentrations that exceeded the PWQO. Sampling of surface water further downstream was completed at SW-7 and the reported concentrations from the current sampling period indicate a significant reduction in several indicator parameters. Ongoing sampling at this location will continue as part of the annual monitoring program.

11. RECOMMENDATIONS

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

1) Condition 46 of the existing ECA requires the preparation and submission of a Closure Plan for Ministry approval. The Closure Plan is currently being considered while potential options for closure, grading, and sloping of the north-northeast portion of the landfill footprint are being considered. The Closure Plan will be submitted for MECP review and approval upon completion.

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

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

4) 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.

5) Consideration should be given to obtaining an agreement with landowner(s) situated to the west of the landfill property to register a portion of their property as a contaminant attenuation zone (CAZ), which would increase the extent of municipally owned downgradient buffer lands and would ensure access to these properties for the purpose of monitoring. Based on the typical planning period required to obtain and register the CAZ lands, and to amend the ECA accordingly, communication with the owners and coordination is recommended.

6) It is recommended that LW-1 should be assess and fixed, as it was noted to be damaged during the 2023 sampling program.

7) We recommend continuing the established monitoring program on a once annual basis in the fall as outlined below:

GROUNDWATER	ANALYTICAL PARAMETERS
TW-1, TW-2, TW-3, TW-5, TW-6, TW-7, TW-8, TW-9 TW-10, TW-11, TW-12, TW-13, TW-14, TW-16, TW-17, TW-18, TW-19, TW-20, TW-21, LW-1, LW-2 (Proposed upgradient monitoring wells)	Conductivity, hardness, nitrite, TKN, pH, sodium, chloride, nitrate, total ammonia, sulphate, alkalinity, iron, TDS, barium, boron
SURFACE WATER	**ANALYTICAL PARAMETERS**
SW-7	Conductivity, pH, chloride, total ammonia, alkalinity, iron, total phosphorus, phenols, dissolved oxygen, temperature (field)

All of which is respectfully submitted
GM BLUEPLAN ENGINEERING LIMITED

Per:

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TABLES:

Table 1:
Landfill Volume Capacity and Site Life

	2018	2019	2020	2021	2022	2023
Total Approved Capacity (m^3)						
Total Capacity for Waste and Daily Cover	170550	170550	170550	170550	170550	170550
Total Capacity for Final Cover	36450	36450	36450	36450	36450	36450
Total Air space Capacity	207000	207000	207000	207000	207000	207000
Volume Filled at Beginning of Year (m^3)						
Volume of Waste and Daily Cover	160311	163651	166991	170550	170550	170550
Volume of Final Cover	18950	18950	18950	18950	18950	18950
Total Volume Filled	179261	182601	185941	189500	189500	189500
Available Capacity at Beginning of Year (m^3)						
Capacity for Waste and Daily Cover	10239	6899	3559	0	0	0
Capacity for Final Cover	18950	18950	18950	18950	18950	18950
Total Available Capacity	29189	25849	22509	18950	18950	18950
Capacity Used During Year (m^3)						
Capacity Used for Waste and Daily Cover	*3340*	*3340*	3559	0	0	0
Capacity Used for Final Cover	0	0	0	0	0	0
Total Capacity Used	3340	3340	3559	0	0	0
Volume Filled at End of Year (m^3)						
Volume of Waste and Daily Cover	163651	166991	170550	170550	170550	170550
Volume of Final Cover	18950	18950	18950	18950	18950	18950
Total Volume Filled	182601	185941	189500	189500	189500	189500
Remaining Capacity at End of Year (m^3)						
Capacity for Waste and Daily Cover	6899	3559	0	0	0	0
Capacity for Final Cover	18950	18950	18950	18950	18950	18950
Total Remaining Capacity	25849	22509	18950	18950	18950	18950
Remaining Site Life (Years)						
At 5-year Average Fill Rate (3,178 m^3)	2.2	1.1	--	--	--	--
At 5-year Maximum Fill Rate (3,559 m^3)	1.9	1.0	--	--	--	--

1. Capacity used, *shown in italics*, represents an estimate based on the capacity used between 2017 and 2018.

Table 3:
SUMMARY OF MONITORING WELL LOCATIONS
AND CONSTRUCTION DETAILS

BOREHOLE ID [WELL ID]	LOCATION (relative to refuse pile)	MonitoringStatus	Date of Installation	ELEVATION		Monitoring Well Depth	Screened Interval (metres)	Unit Measured
				Ground	Top of Casing*			
TW-1	Onsite - In Footprint	Active	1986	337.12	337.50	23.41	16.01 to 22.11	Limestone Bedrock (Lower)
TW-2	Onsite - In Footprint	Active	1986	337.14	337.66	12.45	9.23 to 11.03	Coarse Gravel (Shallow)
TW-3	East Property Boundary	Active	1986	340.83	341.38	11.07	8.64 to 10.44	Gravel (Shallow)
TW-4	Southwest Corner	Active	1986	339.52	340.07	11.04	8.73 to 10.53	Gravel (Shallow)
TW-5	Southwest Corner	Active	1990	339.17	339.97	11.54	9.45 to 10.95	Medium to Fine Sand (Shallow)
TW-6	Onsite - Northwest Corner	Active	1990	342.74	343.70	17.90	15.84 to 17.04	Sand & Gravel (Intermediate)
TW-7	Onsite - Northwest Corner	Active	1990	342.75	343.71	8.68	7.43 to 8.93	Fine Sand (Shallow)
TW-8	In Refuse Pile (Closed Portion)	Active	1990	338.15	339.08	23.45	18.88 to 21.92	Limestone Bedrock (Lower)
TW-9	Onsite - Northwest Corner	Active	1991	342.51	343.36	24.90	22.40 to 23.89	Limestone Bedrock (Lower)
TW-10	Northeast Corner	Active	1991	335.82	336.78	19.65	17.50 to 18.99	Limestone Bedrock (Lower)
TW-11	Northeast Corner	Active	1991	335.88	336.83	8.64	6.37 to 7.89	Clayey Silt & Stones (Shallow)
TW-12	Onsite - In Footprint	Active	1993	335.29	336.41	3.15	1.0 to 2.5	Sand & Gravel / Clayey Silt Interface (Shallow)
TW-13	Onsite - In Footprint	Active	1993	334.54	335.62	4.10	1.0 to 2.45	Clayey Silt (Shallow)
TW-14	Onsite - In Footprint	Active	1993	335.31	335.99	10.10	7.5 to 9.0	Sand & Gravel (Shallow)
TW-15	Onsite - In Footprint	Discontinued	1993	334.51	335.38	5.18	2.4 to 3.9	Clayey Silt (Shallow)
TW-16	Onsite - North Boundary	Active	1993	335.38	336.47	4.03	1.65 to 3.5	Clayey Silt / Sandy Silt (Shallow)
TW-17	Onsite - Northeast Corner	Active	1993	335.07	336.06	4.10	1.7 to 3.2	Fine to Medium Sand (Shallow)
TW-18	Onsite - North Boundary	Active	1993	334.16	335.27	2.50	1.1 to 1.85	Clayey Silt (Shallow)
TW-19	North Buffer Lands	Active	1996	336.17	337.28	8.25	4.4 to 7.4	Fine Sand (Shallow)
TW-20	North Buffer Lands	Active	1996	334.96	335.96	9.40	5.6 to 8.7	Fine to Medium Silty Sand (Shallow)
TW-21	West Property Boundry	Active	2014	340.00	340.81	7.62	4.42 to 7.62	Fine to Medium Silty Sand (Shallow)
LW-1	In Refuse Pile (Active Portion)	Active	1990	346.51	347.29	16.90	8.68 to 10.18	Fine Sand (Shallow)
LW-2	In Refuse Pile (Closed Portion)	Active	1990	338.59	339.61	8.82	6.32 to 7.82	Silty Gravel (Shallow)

NOTES:

1. All depths measured in mbgs = approximate depth in metres below ground surface
2. na = Not Available.
3. Borehole logs are provided in the Appendices.
4. Elevations measured in mASL = meters above sea level.
5. Depth in meters below ground surface.

Table 4:
REASONABLE USE CRITERIA - OBJECTIVE LEVELS

Parameter	Background Concentration (Cb)	Maximum Concentration (Cr)	Objective Level (Cm)
Alkalinity(as CaCO3)	280	30 - 500 [OG]	390
Ammonia(as N)	0.06	nv	nv
Chloride	28	250 [AO]	139
Conductivity (umho/cm)	622	nv	nv
Hardness(as CaCO3)	313	80-100 [OG]	207
pH	7.43	6.5-8.5 [OG]	6.5 to 8.5
Sulphate	18	500 [AO]	259
Organic Nitrogen	0.12	0.15 (OG)	0.14
Total Kjeldahl Nitrogen(as N)	0.2	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 Caswell Well from 1982 and 1996.

MOE Procedure B-7-1

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

Where:

Cm = Maximum Concentration Acceptable in Groundwater at Property Line

Cb = Background Concentration from Caswell Well from 1982 and 1996.

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 5a:
Summary of Groundwater Quality and Comparison to RUC

Sample ID MW Location Sampling Date	Ontario Drinking Water Standards (ODWS) (mg/L)	MOE Guideline B-7 Reasonable Use Criteria (mg/L)	Sample Identification And Monitoring Well Location										
			30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23
			North Boundary - Downgradient								East Boundary	Background	
			TW-9	TW-10	TW-11	TW-16	TW-17	TW-18	TW-19	TW-20	TW-3	TW-22S	TW-22D
Parameter													
Alkalinity(as CaCO3)	30 - 500 [OG]	390	320	290	**400**	**560**	**460**	**510**	**590**	**460**	**430**	270	270
Ammonia(as N)	nv	nv	0.91	<0.050	4.1	3.7	1.8	1.4	19	6.4	1.9	0.54	53
Chloride	250 [AO]	139	22	20	43	75	**140**	**140**	87	47	58	**350**	**180**
Conductivity (umho/cm)	nv	nv	760	730	940	1300	1400	1500	1400	1100	1000	1700	1200
Hardness(as CaCO3)	80-100 [OG]	207	**390**	**380**	**440**	**570**	**560**	**590**	**520**	**460**	**490**	**590**	**420**
pH	6.5-8.5 [OG]	6.5 to 8.5	7.71	7.86	7.59	7.72	7.54	7.74	7.49	7.65	7.6	8.08	8.05
Sulphate	500 [AO]	259	42	56	23	2.1	42	33	1.3	10	16	13	30
Organic Nitrogen	0.15	0.14	<0.10	<0.10	<0.10	**0.50**	**0.60**	**0.80**	<0.10	<0.10	<0.10	**0.46**	**0.67**
Total Kjeldahl Nitrogen(as N)	nv	nv	1	<0.10	4.1	4.2	2.4	2.2	18	6.5	1.8	1	1.2

Notes:

1. Analytical results are reported in mg/L unless otherwise noted
2. Reasonable Use Criteria are calculated using MOE Procedure B-7-1
3. Background Concentrations are based on concentrations measured at the Caswell Well from 1982 to 1996
4. Values in **Bold** are greater than the Reasonable Use Criteria
5. Shaded values are greater than the ODWS

AO: Aesthetic Objective;
OG: Operational Guideline;
MAC: Maximum Acceptable Concentration;
IMAC: Interim Maximum Acceptable Concentration.

Table 5b:
Summary of Groundwater Quality and Comparison to RUC

Sample ID / MW Location / Sampling Date	Ontario Drinking Water Standards (ODWS)	MOE Guideline B-7 Reasonable Use Criteria	Sample Identification And Monitoring Well Location											
			30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23	30-Nov-23
			West Boundary				Onsite							
	(mg/L)	(mg/L)	TW-5	TW-6	TW-7	TW-21	TW-1	TW-2	TW-8	TW-12	TW-13	TW-14	LW-1	LW-2
Parameter														
Alkalinity(as CaCO3)	30 - 500 [OG]	390	**400**	330		**710**	**870**	**400**	310	**1500**	**560**	**600**		**420**
Ammonia(as N)	nv	nv	0.72	1.7		16	34	16	1.2	100	7.3	28		1.2
Chloride	250 [AO]	139	15	24		31	65	62	47	**260**	**210**	110		30
Conductivity (umho/cm)	nv	nv	840	790	No Sample	1400	1800	1000	910	3700	1700	1500	No Sample	900
Hardness(as CaCO3)	80-100 [OG]	207	**450**	**400**		**650**	**650**	**350**	**430**	**990**	**610**	**490**		**460**
pH	6.5-8.5 [OG]	6.5 to 8.5	7.56	7.7		7	7.57	7.66	7.78	7.45	7.57	7.48		7.35
Sulphate	500 [AO]	259	23	46		26	12	13	88	50	3.4	2.6		6
Organic Nitrogen	0.15	0.14	**0.15**	0.10		<0.10	<0.10	<0.10	0.10	<0.10	**0.6**	**1.0**		0.10
Total Kjeldahl Nitrogen(as N)	nv	nv	0.87	1.8		16	33	15	1.3	99	7.9	29		1.3

Notes:

1. Analytical results are reported in mg/L unless otherwise noted
2. Reasonable Use Criteria are calculated using MOE Procedure B-7-1
3. Background Concentrations are based on concentrations measured at the Caswell Well from 1982 to 1996
4. Values in **Bold** are greater than the Reasonable Use Criteria
5. Shaded values are greater than the ODWS

AO: Aesthetic Objective;
OG: Operational Guideline;
MAC: Maximum Acceptable Concentration;
IMAC: Interim Maximum Acceptable Concentration.

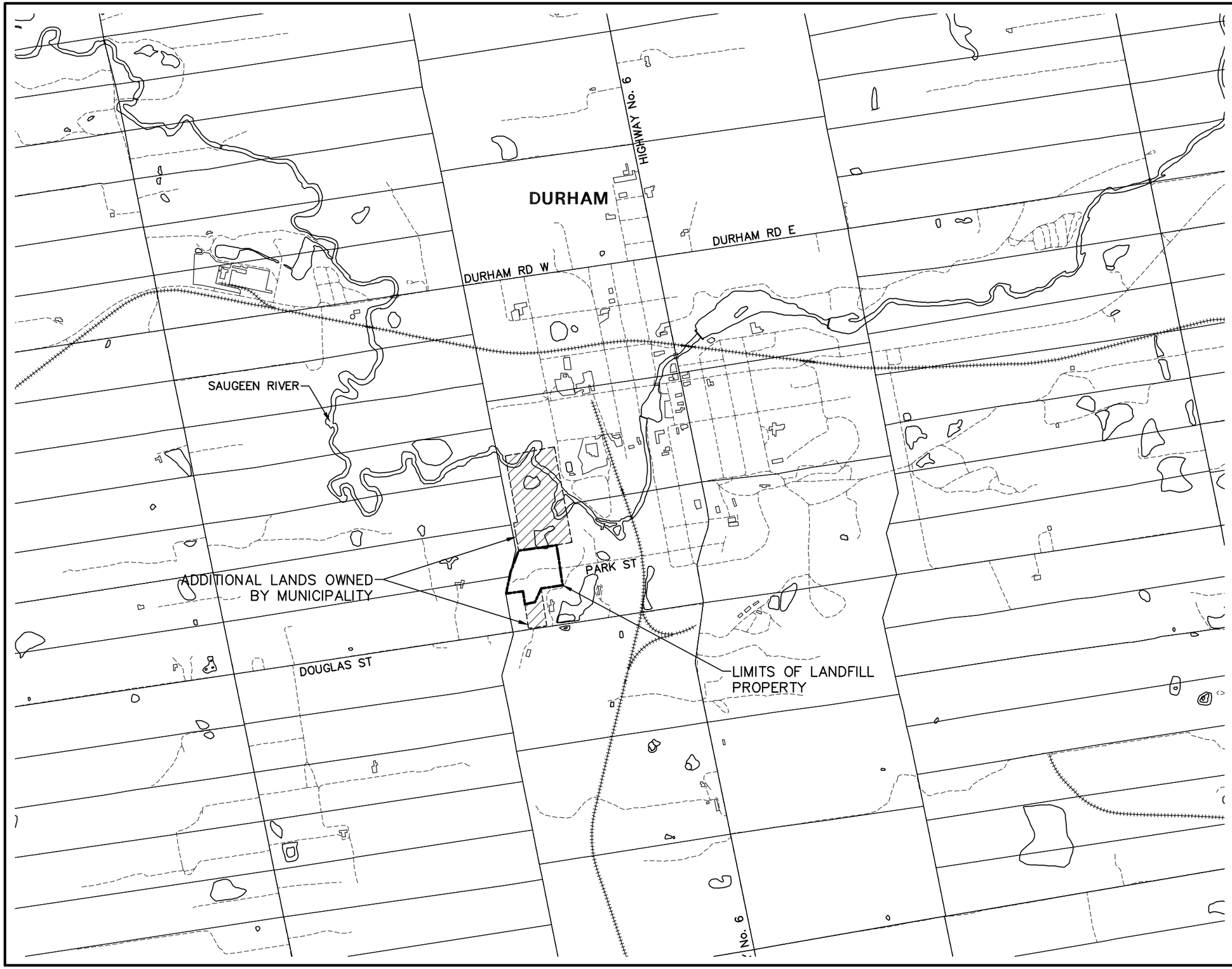
Table 6:
Summary of Surface Water Quality and Comparison to PWQO

Fall Monitoring - 2023		
Parameter	**PWQO (mg/L)**	**SW-7**
		30-Nov-23
Alkalinity(as CaCO3)	**	250
Ammonia(as N)	20	0.055
Chloride	NV	15
Conductivity (µmho/cm)	NV	530
Iron	0.3	0.06
pH	6.5-8.5	8.25
Phenols	NV	0.0013
Phosphorus, Total (as P)	0.03	<0.020

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

FIGURES:

213086
Durham Landfill Site
Municipality of West Grey
County of Grey



SCALE = 1:20,000
JANUARY 2024

SITE LOCATION MAP

Figure No. 1

BluePlan ENGINEERING

FILE:C:\Carri Documents\2022 Landfills\213086 AMR Figures.dwg LAYOUT:Figure 1 - Site Location
LAST SAVED BY:Kcharpontier, 4/6/2023 8:56:07 AM PLOTTED BY:Carri Blue - GM BluePlan 1/22/2024 5:11:26 PM

213086
Durham Landfill Site
Municipality of West Grey
County of Grey

LEGEND

———	LANDFILL BOUNDARY
– – – –	ADDITIONAL LANDS OWNED BY MUNICIPALITY
△ SW–5	FORMER SURFACE WATER MONITORING LOCATION
▲ SW–7	SURFACE WATER MONITORING LOCATION
LW–1	LEACHATE MONITORING LOCATION AND NUMBER
GW–2	LANDFILL GAS MONITORING LOCATION AND NUMBER
TW–17	TEST WELL LOCATION AND NUMBER

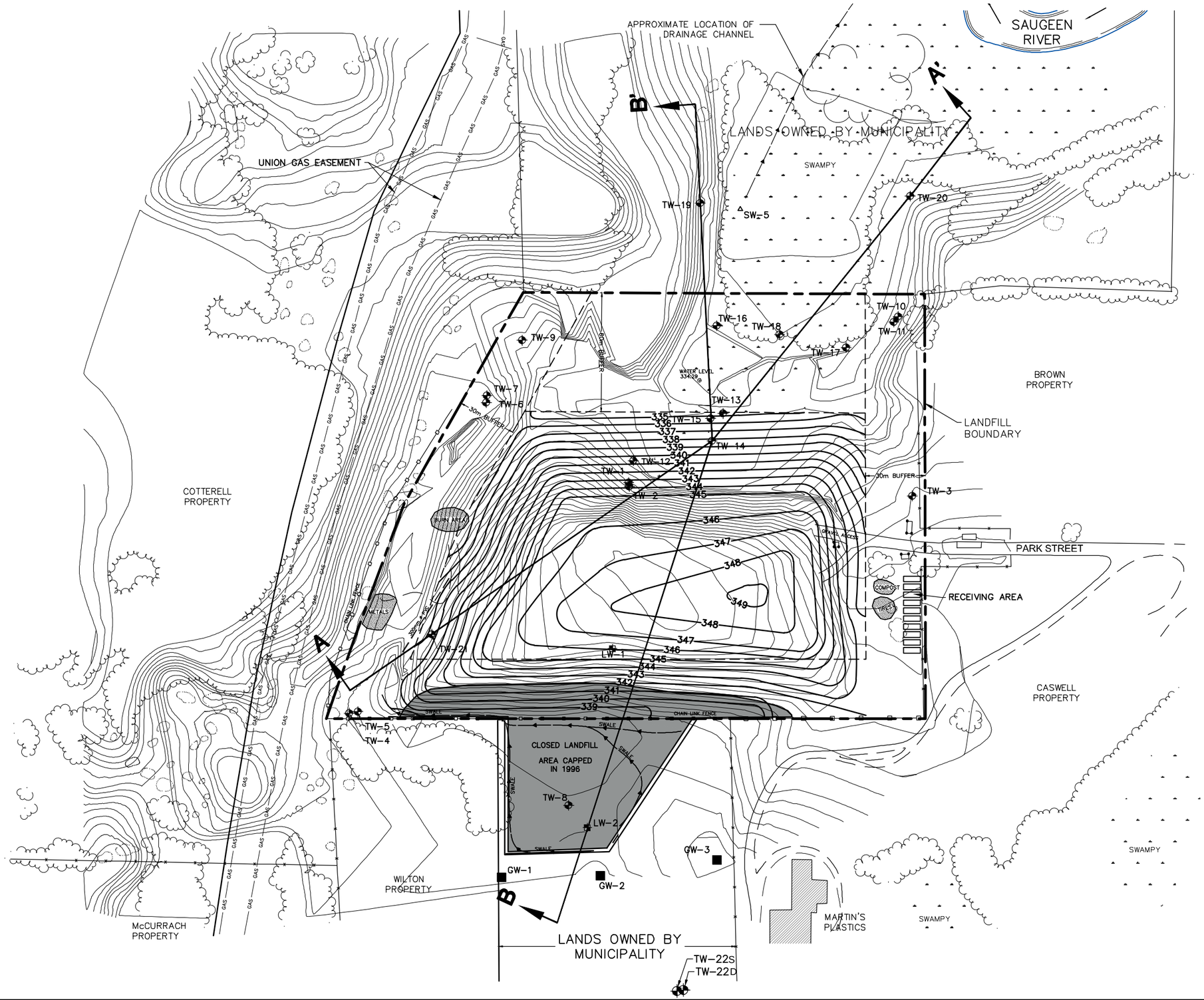
SCALE = 1:3,500±
JANUARY 2024

SITE LAYOUT

Figure No. 2

BluePlan ENGINEERING

213086
Durham Landfill Site
Municipality of West Grey
County of Grey



LEGEND

338 ——	EXISTING CONTOUR
△ SW–5	FORMER SURFACE WATER MONITORING LOCATION
▲ SW–2	SURFACE WATER MONITORING LOCATION
✠ LW–1	LEACHATE MONITORING LOCATION AND NUMBER
■ GW–2	LANDFILL GAS MONITORING LOCATION AND NUMBER
✠ TW–17	TEST WELL LOCATION AND NUMBER

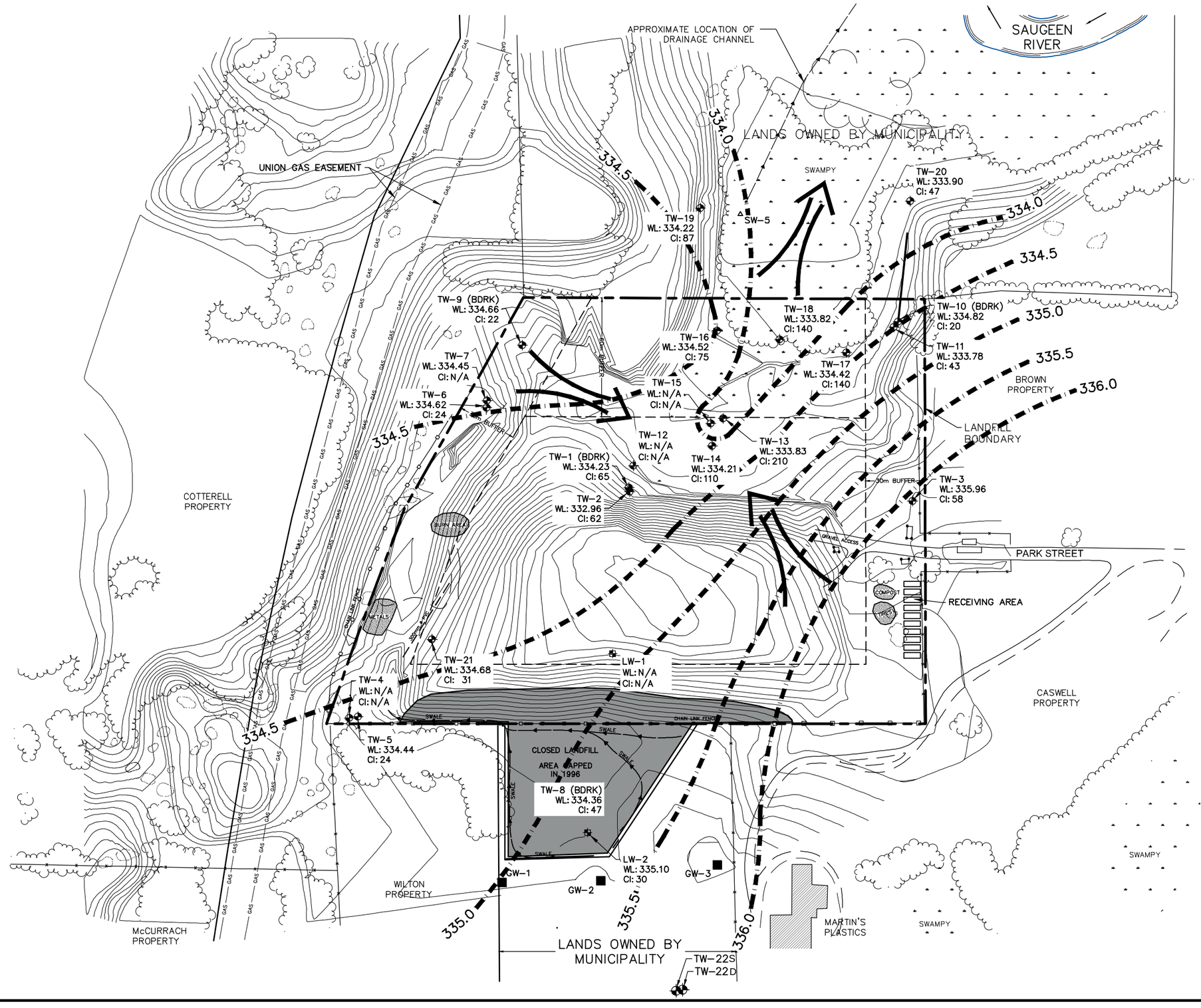
SCALE = 1:2,000
JANUARY 2024

EXISTING CONDITIONS

Figure No. 3

BluePlan ENGINEERING

213086
Durham Landfill Site
Municipality of West Grey
County of Grey



LEGEND

338	EXISTING CONTOUR
SW-5	FORMER SURFACE WATER MONITORING LOCATION
SW-7	SURFACE WATER MONITORING LOCATION
LW-1	LEACHATE MONITORING LOCATION AND NUMBER
GW-2	LANDFILL GAS MONITORING LOCATION AND NUMBER
TW-17	TEST WELL LOCATION AND NUMBER
	GENERAL DIRECTION OF GROUNDWATER FLOW
335	INTERPRETED POTENTIOMETER SURFACE
CI	CHLORIDE CENCENTRATION (mg/L)
(BDRK)	BEDROCK MONITORING WELL

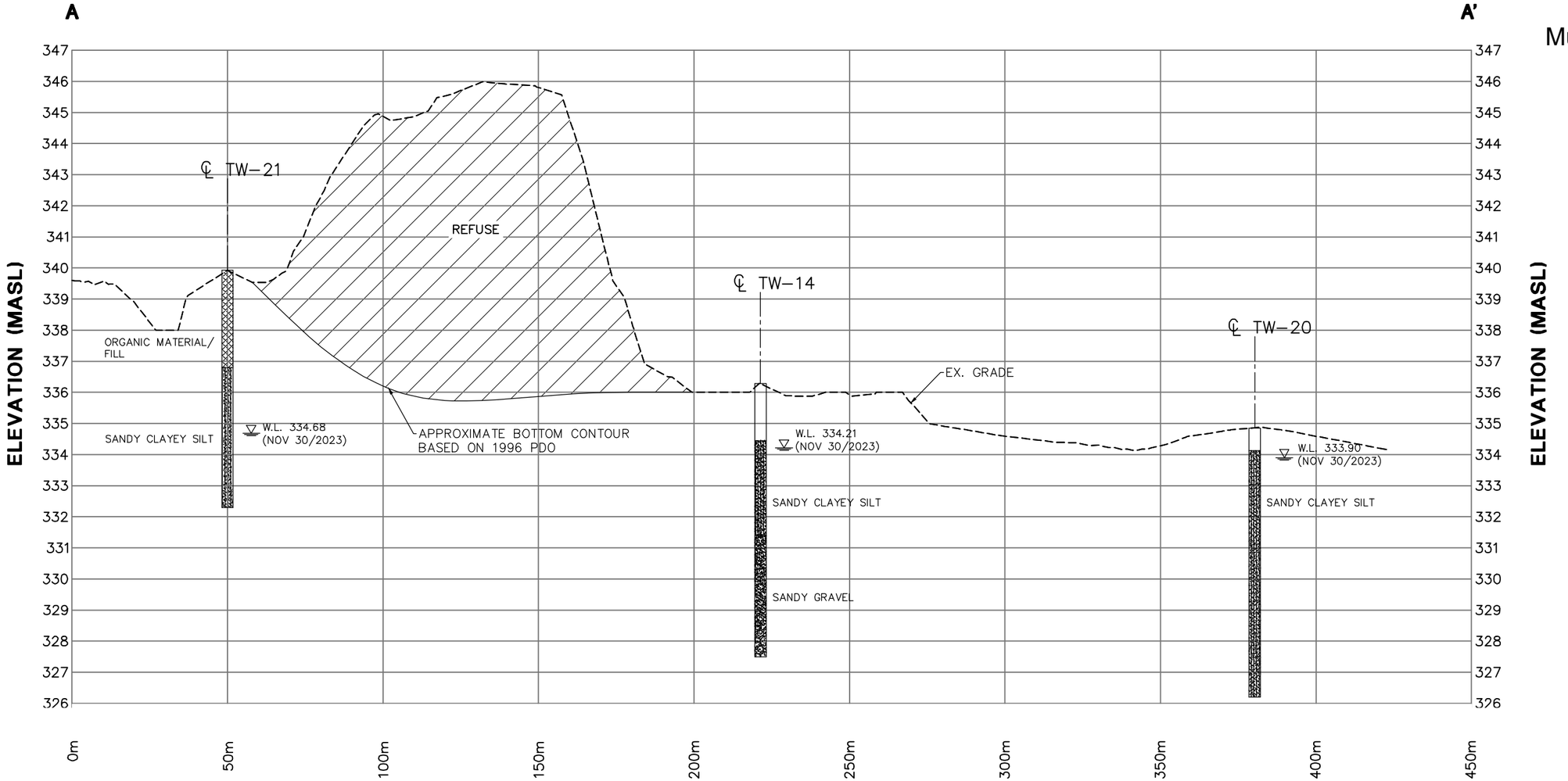
SCALE = 1:2,000
JANUARY 2024

MONITORING WELL LOCATIONS AND GROUNDWATER CONTOUR PLAN

Figure No. 4

BluePlan ENGINEERING

213086
Durham Landfill Site
Municipality of West Grey
County of Grey



SCALE = 1:1,500 Horiz.
1:150 Vert.
JANUARY 2024

NOTES:

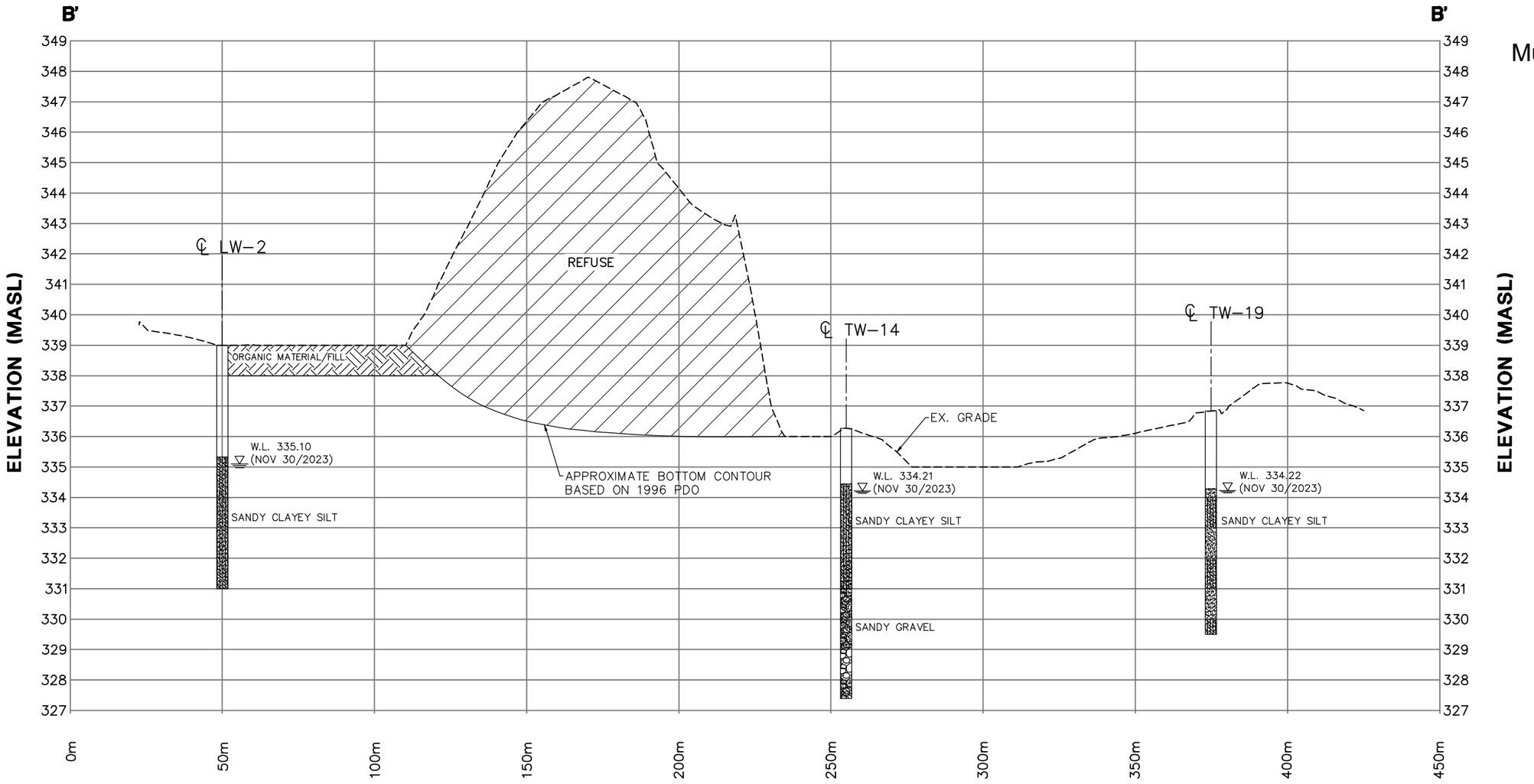
1. GEOLOGIC INFORMATION AND WELL DEPTHS OBTAINED FROM PREVIOUS REPORTS AND PDO COMPLETED BY OTHERS.
2. 10x VERTICAL EXAGGERATION.

CROSS-SECTION A-A'

Figure No. 5a

BluePlan ENGINEERING

213086
Durham Landfill Site
Municipality of West Grey
County of Grey



SCALE = 1:1,500 Horiz.
1:150 Vert.
JANUARY 2024

NOTES:

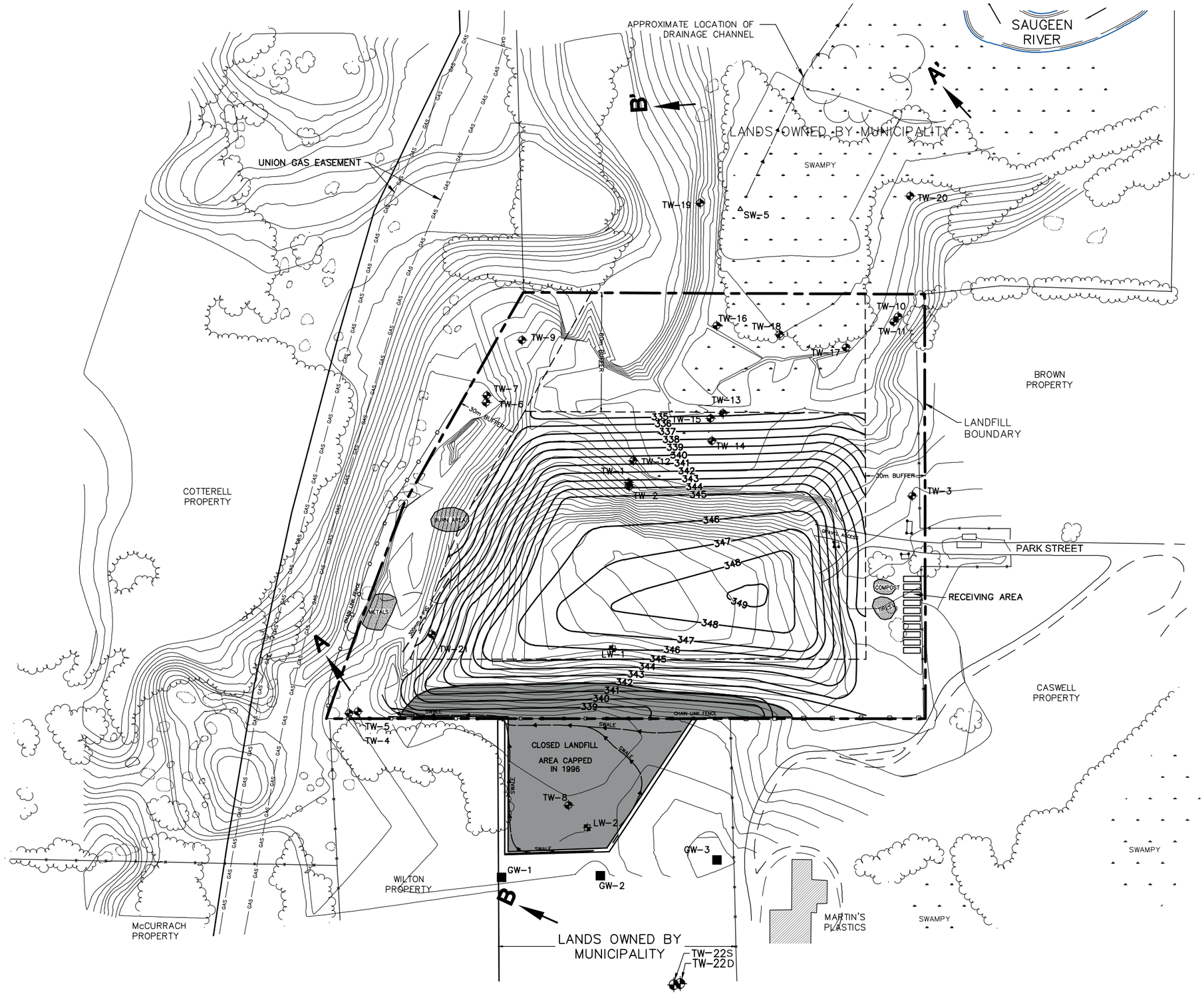
1. GEOLOGIC INFORMATION AND WELL DEPTHS OBTAINED FROM PREVIOUS REPORTS AND PDO COMPLETED BY OTHERS.
2. 10x VERTICAL EXAGGERATION.

CROSS-SECTION B-B'

Figure No. 5b

BluePlan ENGINEERING

213086
Durham Landfill Site
Municipality of West Grey
County of Grey



LEGEND

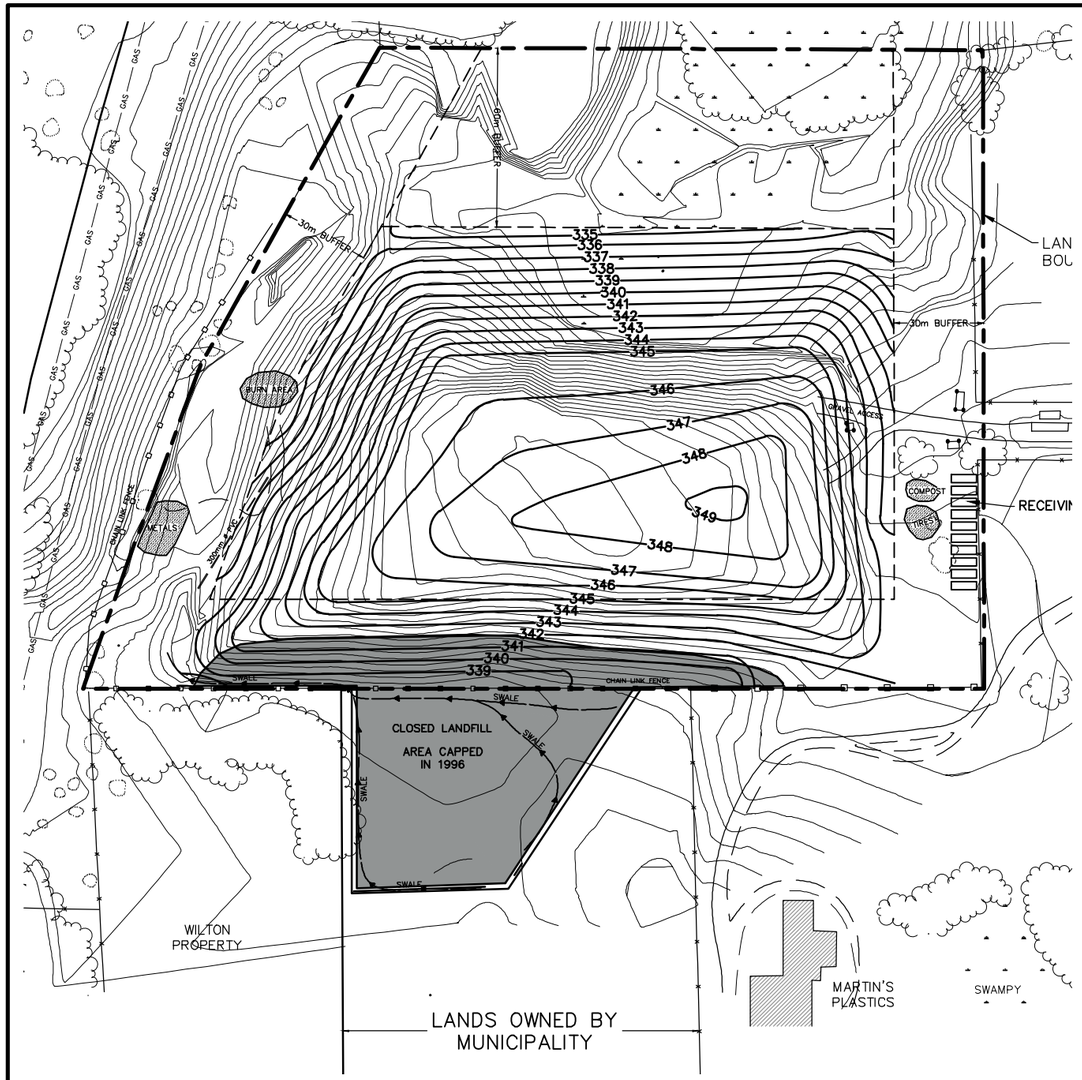
338	EXISTING CONTOUR
338	FINAL CONTOUR
△ SW–5	FORMER SURFACE WATER MONITORING LOCATION
▲ SW–2	SURFACE WATER MONITORING LOCATION
✠ LW–1	LEACHATE MONITORING LOCATION AND NUMBER
■ GW–2	LANDFILL GAS MONITORING LOCATION AND NUMBER
✥ TW–17	TEST WELL LOCATION AND NUMBER

SCALE = 1:2,000
JANUARY 2024

FINAL CONTOURS

Figure No. 6

BluePlan ENGINEERING



213086
Durham Landfill Site
Municipality of West Grey
County of Grey

Elevations Table				
Number	Minimum Elevation	Maximum Elevation	Area	Color
1	−8.40	−6.00	1708.52	
2	−6.00	−4.00	2306.62	
3	−4.00	−2.00	4286.66	
4	−2.00	0.00	8938.21	
5	0.00	1.00	9358.74	
6	1.00	2.00	5092.25	
7	2.00	3.00	426.49	
8	3.00	3.40	7.79	

LEGEND

Cut/Fill Summary

2d Area	Cut	Fill	Net
32125.28sq.m	43047.02 Cu. M.	12779.36 Cu. M.	**30267.66 Cu. M.<Cut>**

SCALE = 1:2,000
JANUARY 2024

CAPACITY ILLUSTRATION

Figure No. 7

BluePlan ENGINEERING

APPENDIX A:
ENVIRONMENTAL COMPLIANCE APPROVAL NO. A260202

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A260202
Issue Date: June 5, 2020

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

Site Location: 590 Park Street
West Grey Municipality, County of Grey
N0G 1R0

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 a Waste Disposal Site consisting of a 4.8 hectare (12 acre) landfilling area/transfer site within a total site area of 16.6 hectares.

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

"Approval" means this entire Environmental Compliance Approval and any Schedules attached to it;

"Clean Wood" means waste, that is wood or a wood product, including tree trunks, tree branches, leaves and brush that is not painted, contaminated with chemicals such as chromated copper arsenate, upholstered, or to which a rigid surface treatment is affixed or adhered and from which removable hardware, fittings and attachments have been removed;

"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" 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;

“O. Reg. 232/98” means Ontario Regulation 232/98 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;

“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;

“Regional Director” means the Regional Director of the local Regional Office of the Ministry in which the Site is located;

“Reg. 347” means Regulation 347, R.R.O. 1990, made under the EPA, as amended;

“Reg. 903” means Regulation 903, R.R.O. 1990, made under the OWRA, as amended;

"Schedules" means the following schedules attached to this Approval and forming part of this Approval namely:

- Schedule 1 - Supporting Documentation
- Schedule 2 - Enironmental Monitoring Program;

“SDWA” means Safe Drinking Water Act, 2002, S.O. 2002, c. 32;

“Site” means the entire waste disposal site, including the buffer lands, and contaminant attenuation zone at 590 Park Street, West Grey Municipality, County of Grey;

"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; and

"White Goods" means household appliances which use, or may use refrigerants, and which include, but is not restricted to, refrigerators, freezers and air-conditioning systems.

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 1.

(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 1 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 1, 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 1, 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 1 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 1, 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, Reg. 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 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:

Thursday	8:00 am	- 5:00 pm
Friday	8:00 am	- 5:00 pm
Saturday	8:00 am	- 4:00 pm

(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 (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 Reg. 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) The following wastes are approved for receipt at the Landfill:
(a) solid, non-hazardous municipal wastes generated by residential, commercial and institutional sectors; and
(b) biosolids which are not leachate toxic waste, as defined by Reg. 347, and meet the slump test.

(2) The following wastes are prohibited from receiving at the Landfill for disposal:
(a) hazardous waste;
(b) septic tank waste;
(c) sewage; and
(d) liquid industrial waste.

(3) 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.

(4) 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

(5) The total approved waste disposal capacity of the Landfill consisting of the waste, daily cover and intermediate cover, but excluding the final cover shall be limited to 207,000 cubic metres.

(6) The operational life of the Landfill shall be limited to the time until final contours have been reached, shown on Drawing 1064-4, prepared by D.J. Peach & Associated Ltd., dated September 1996.

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) Fifteen (15) cm of cover material applied to all exposed waste material within 24 hours of receipt of domestic waste from the Town of Durham's curbside collection service, and no less than once per week;
   (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.

Geosynthetic Final Cover

(10) If the Owner proposes Geosynthetic Clay Liner for the final cover, the following are the minimum requirements for the Geosynthetic Clay final cover for the Site:

(a) three hundred (300) millimeter subgrade soil compacted to 85% Standard Proctor Density;

(b) three hundred (300) millimeter drainage layer protecting the GCL; and

(c) one hundred and fifty (150) millimeter top soil.

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 program outlined in Schedule 2.

(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 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) (a) Within one (1) year from the date of this Approval, the Owner shall submit to the District Manager, details of a trigger mechanisms plan for surface water and groundwater quality monitoring for the purpose of initiating investigative activities into the cause of increased contaminant concentrations.

(b) Within one (1) year from the date of this Approval, the Owner shall submit to the District Manager, details of a contingency plan to be implemented in the event that the surface water or groundwater quality exceeds any trigger mechanism.

(c) Groundwater monitoring well TW7 exceeds Reasonable Use Criteria. Within (1) year from the date of this Approval the Owner shall propose an action plan to bring the Site into compliance.

(9) In the event of a confirmed exceedance of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate, the Owner shall immediately notify the District Manager, and an investigation into the cause and the need

for implementation of remedial or contingency actions shall be carried out by the Owner in accordance with the approved trigger mechanisms and associated contingency plans.

(10) 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.

(11) 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

(12) 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.

(13) 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) Within one (1) years from the date of this Approval, 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 waste 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 high wind events; and
  (c) if necessary to prevent litter, waste storage areas shall be covered during 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 1
Supporting Documents

1. Application for a Provisional Certificate of Approval for a Waste Disposal Site signed by Mr. Ken Gould, Public Works Manager, dated November 26, 2003.

2. Town of Durham Landfill Site, Service Area Modifications, prepared for the Municipality of West Grey, prepared by Henderson, Paddon & Associates Limited, November 2003.

3. Plan of Development and Operation, Town of Durham Sanitary Landfill Site, prepared by D.J. Peach & Associates Ltd., dated December 1996.

4. Drawings prepared by D.J. Peach &Associates Ltd. dated September 1996 consisting of:
   Dwg. No. 1064-2: Existing Conditions
   Dwg. No. 1064-3: Flood Plain Mapping
   Dwg. No. 1064-4: Proposed Final Contours
   Dwg. No. 1064-5: Cross Sections
   Dwg. No. 1064-6: Phasing Details
   Dwg. No. 1064-7: Cell Development Sequence

5. Application for Approval of Waste Disposal Site (Part V), Town of Durham, Ontario (Thermal) Waste Oxidizer Project, May 17, 1996, submitted to MOE, Approvals Branch, Submitted by the Corporation of the Town of Durham, Durham, Ontario, prepared by Eco Waste Solutions, Burlington, Ontario.

6. Application for Approval of Municipal Waste Incinerator at Landfill, Letter to A. Dominski, MOE, Approvals Branch, signed by L. Casacia of Eco Waste Solutions, August 8, 1996.

7. Waste Flow, Town of Durham Landfill Site/Waste Oxidizer Project, Eco Waste Solutions, Appended to Letter dated October 1, 1996.

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 April 7, 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.

Schedule 2
Environmental Monitoring Program

This Schedule 2 forms part of Certificate of Approval No. A260202.

	Sampling Location	**Parameters**	**Frequency**
Groundwater	TW1, TW2, TW3, TW5, TW6, TW7, TW8, TW9, TW10, TW11, TW12, TW13, TW14, TW15, TW16, TW17, TW18, TW19, TW20, LW1, LW2	Water level, hardness, conductivity, chloride, iron, alkalinity, pH, TKN, total ammonia, sulphate, nitrite, nitrate, sodium, TDS, barium, boron	annually
Surface water	SW5	conductivity, phenols, chloride, iron, alkalinity, pH, total ammonia, total phosphorous, dissolved oxygen, temperature (field)	annually
Methane gas	GW1, GW2, GW3	methane	annually

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

GENERAL

- 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) and 1(5) 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) (a) and 2(6)(b) 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.

- Condition 7(10) is included to provide minimum requirements for the geosynthetic clay final cover if the Owner proposes to use geosynthetic clay for the final cover.

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(11) 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(12) and 8(13) 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

- 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). A260202 issued on June 22, 2004

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*

The Director appointed for the purposes of Part II.1 of

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

AND

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 5th day of June, 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 Blue Plan Engineering

APPENDIX B:
CORRESPONDENCE

Gerhard Kiessling - GM BluePlan

From: Jessica Weller - GM BluePlan
Sent: Tuesday, March 26, 2024 4:51 PM
To: Gerhard Kiessling - GM BluePlan
Subject: FW: 2023 AMR Information Requests
Attachments: GM BluePlan Summary 2023.xlsx; 2023 Durham Scale Report.xls; 2023 Bentinck Scale Report.xls

See attached and below.

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

GM BluePlan Engineering Limited
1260-2nd Avenue East | Owen Sound ON N4K 2J3
t: 519.376.1805 ext. 2206 I c: 519.374.9466
jessica.weller@gmblueplan.ca | www.gmblueplan.ca

A GEI Company

From: Nicole Heber <environment@westgrey.com>
Sent: Tuesday, March 26, 2024 4:44 PM
To: Jessica Weller - GM BluePlan <Jessica.Weller@gmblueplan.ca>
Subject: [EXT] RE: 2023 AMR Information Requests

EXTERNAL EMAIL

Hi Jessica,

Please find attached spreadsheet with information on diversion and disposal.

Also separately attached scale reports for each site

Please let me know if you have any questions.

Sincerely,
Nicole

Nicole Heber, MSc
Environmental Officer

Municipality of West Grey

402813 Grey Road 4,
RR2 Durham, ON N0G 1R0
O: 519-369-2200 x252
www.westgrey.com @ourWestGrey

From: Jessica Weller - GM BluePlan <Jessica.Weller@gmblueplan.ca>
Sent: Monday, March 25, 2024 9:03 AM
To: Nicole Heber <environment@westgrey.com>
Subject: RE: 2023 AMR Information Requests

Hi Nicole,

Following up on this. Hoping we can get your info today, we actually have a large number of AMRs that have a March 31st deadline and it really puts strain on our admin staff when we wait until the last week to try and get them all submitted. This year we need to have everything submitted Thursday of this week with the holiday Friday.

Please send along as soon as possible.

Thanks,

Jess

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

GM BluePlan Engineering Limited
1260-2nd Avenue East | Owen Sound ON N4K 2J3
t: 519.376.1805 ext. 2206 I c: 519.374.9466
jessica.weller@gmblueplan.ca | www.gmblueplan.ca

From: Nicole Heber <environment@westgrey.com>
Sent: Tuesday, March 19, 2024 8:59 AM
To: Jessica Weller - GM BluePlan <Jessica.Weller@gmblueplan.ca>
Subject: [EXT] RE: 2023 AMR Information Requests

EXTERNAL EMAIL

Good morning Jessica,

Yes I'll check into that for you.

Also will have the other AMR info for you by end of the week. Been swamped with a few other things lately & there is Council today.

Nicole 😊

Nicole Heber, MSc
Environmental Officer

Municipality of West Grey
402813 Grey Road 4,
RR2 Durham, ON N0G 1R0
O: 519-369-2200 x252
www.westgrey.com @ourWestGrey

From: Jessica Weller - GM BluePlan <Jessica.Weller@gmblueplan.ca>
Sent: Tuesday, March 19, 2024 8:11 AM
To: Nicole Heber <environment@westgrey.com>
Subject: RE: 2023 AMR Information Requests

Good morning Nicole,

Just touching base this morning regarding the Normanby Landfill Site. We have mention in our 2022 AMR about final cover being placed within the landfill and that scheduled placement of topsoil and vegetative cover was planned for the spring of 2023.

Can you confirm if this happened?

Thanks,

Jess

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

GM BluePlan Engineering Limited
1260-2nd Avenue East | Owen Sound ON N4K 2J3
t: 519.376.1805 ext. 2206 I c: 519.374.9466
jessica.weller@gmblueplan.ca | www.gmblueplan.ca

From: Jessica Weller - GM BluePlan
Sent: Thursday, March 07, 2024 8:35 AM
To: 'Nicole Heber' <environment@westgrey.com>
Subject: RE: 2023 AMR Information Requests

Hey Nicole,

Just touching base on this as we have a ton of March deadlines and are hoping to get out AMRs finalized this week/next.

I don't believe I've seen any info from you yet, can you please send along at your earliest convenience ?

Thanks,

Jess

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

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From: Nicole Heber <environment@westgrey.com>
Sent: Wednesday, January 10, 2024 10:21 AM
To: Jessica Weller - GM BluePlan <Jessica.Weller@gmblueplan.ca>
Subject: [EXT] RE: 2023 AMR Information Requests

EXTERNAL EMAIL

Perfect thank you – I'm sure March will go by like Mach 1 😊

Are there any specific items you need from me for the closed sites?

Sincerely,
Nicole

Nicole Heber, MSc
Environmental Officer

Municipality of West Grey
402813 Grey Road 4,
RR2 Durham, ON N0G 1R0
O: 519-369-2200 x252
C: 519-493-8145
www.westgrey.com @ourWestGrey

From: Jessica Weller - GM BluePlan <Jessica.Weller@gmblueplan.ca>
Sent: January 10, 2024 8:31 AM
To: Nicole Heber <environment@westgrey.com>
Subject: RE: 2023 AMR Information Requests

Great , thanks !

Due dates for the reports are as follows:
Bentinck – Mach 31st
Durham – April 30th
Glenelg – April 30th
Normanby – April 30th
Neustadt – May 30th

Please let me know if you have any questions ,

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

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t: 519.376.1805 ext. 2206 I c: 519.374.9466
jessica.weller@gmblueplan.ca | www.gmblueplan.ca

From: Nicole Heber <environment@westgrey.com>
Sent: Tuesday, January 09, 2024 4:00 PM
To: Jessica Weller - GM BluePlan <Jessica.Weller@gmblueplan.ca>
Cc: Kate Charpontier - GM BluePlan <Kate.Charpontier@gmblueplan.ca>
Subject: [EXT] RE: 2023 AMR Information Requests

EXTERNAL EMAIL

Thanks Jessica,

I've started gathering some of this info already. What is your due date for the report?

Thanks
Nicole

Nicole Heber, MSc
Environmental Officer

Municipality of West Grey
402813 Grey Road 4,
RR2 Durham, ON N0G 1R0
O: 519-369-2200 x252

C: 519-493-8145
www.westgrey.com @ourWestGrey

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)

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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

Durham WMF

Material Summary Report

(2023)

Material Name			Cash Cust.	Municipal		Total	
Appliance - Air Conditioner	# 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 ($)	0.00	100.00	0.00	0.00	100.00	
Appliance - Dehumidifier	# of Loads		0	8	0	0	8
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	9	0	0	9	
	Fees ($)	0.00	225.00	0.00	0.00	225.00	
Appliance - Dish Washer	# of Loads		0	14	1	0	15
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	14	1	0	15	
	Fees ($)	0.00	140.00	10.00	0.00	150.00	
Appliance - Dryer	# of Loads		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Appliance - Freezer	# of Loads		0	6	0	0	6
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	6	0	0	6	
	Fees ($)	0.00	150.00	0.00	0.00	150.00	
Appliance - Fridge	# of Loads		0	16	1	0	17
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	16	1	0	17	
	Fees ($)	0.00	400.00	25.00	0.00	425.00	
Appliance - Stove	# of Loads		0	3	0	0	3
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	3	0	0	3	
	Fees ($)	0.00	30.00	0.00	0.00	30.00	
Appliance - Washing Machine	# of Loads		0	3	0	0	3
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	3	0	0	3	
	Fees ($)	0.00	30.00	0.00	0.00	30.00	
Appliance - Water Cooler	# of Loads		0	3	0	0	3
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	3	0	0	3	
	Fees ($)	0.00	75.00	0.00	0.00	75.00	
Appliance - Water Tank	# of Loads		0	2	0	0	2
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	2	0	0	2	
	Fees ($)	0.00	20.00	0.00	0.00	20.00	
Appliances - Refridgerant Removed	# of Loads		0	1	0	0	1
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	1	0	0	1	
	Fees ($)	0.00	10.00	0.00	0.00	10.00	

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 ($)	0.00	0.00	0.00	0.00	0.00	
Bag Tags (1 Sheet min.)	**# of Loads**		0	15	0	0	15
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	16	0	0	16	
	Fees ($)	0.00	360.00	0.00	0.00	360.00	
Battery	**# of Loads**		0	7	0	0	7
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	38	0	0	38	
	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	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Brick/Concrete	**# of Loads**		0	1	0	0	1
	Weight(Ton)	0.00	0.15	0.00	0.00	0.15	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	10.00	0.00	0.00	10.00	
Brush (Under 4" dia.)	**# of Loads**		0	479	0	0	479
	Weight(Ton)	0.00	61.23	0.00	0.00	61.23	
	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	190	0	0	190
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	549	0	0	549	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Household Hazardous Waste	**# of Loads**		0	32	0	0	32
	Weight(Ton)	0.00	1.67	0.00	0.00	1.67	
	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	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Mattress (any size)	**# of Loads**		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Recycling	**# of Loads**		0	168	0	0	168
	Weight(Ton)	0.00	3.64	0.00	0.00	3.64	
	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	257	0	0	257
	Weight(Ton)	0.00	17.93	0.00	0.00	17.93	
	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	3,994	62	0	4,056
	Weight(Ton)	0.00	204.33	21.64	0.00	225.97	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	45,001.99	3,052.80	0.00	48,054.79	
Stumps	**# of Loads**		0	0	0	0	0
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	0	0	0	0	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Lg. 20" or More With Rims	**# of Loads**		0	3	0	0	3
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	5	0	0	5	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Lg. 20" or More No Rims	**# of Loads**		0	53	0	0	53
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	316	0	0	316	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Med. 16-20" No rims	**# of Loads**		0	165	0	0	165
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	1,887	0	0	1,887	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Med. 16-20" With Rims	**# of Loads**		0	31	0	0	31
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
	Quantity	0	144	0	0	144	
	Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Sm. 15" or Less No Rims	**# of Loads**		0	32	0	0	32
	Weight(Ton)	0.00	0.00	0.00	0.00	0.00	

		Quantity	0	220	0	0	220	
		Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Sm. 15" or Less With Rims		**# of Loads**		0	4	0	0	4
		Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
		Quantity	0	10	0	0	10	
		Fees ($)	0.00	0.00	0.00	0.00	0.00	
Tires - Tractor No Rims		**# of Loads**		0	26	0	0	26
		Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
		Quantity	0	59	0	0	59	
		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	16	0	0	16
		Weight(Ton)	0.00	1.69	0.00	0.00	1.69	
		Quantity	0	0	0	0	0	
		Fees ($)	0.00	446.25	0.00	0.00	446.25	
Weight Only		**# of Loads**		0	16	0	0	16
		Weight(Ton)	0.00	0.00	0.00	0.00	0.00	
		Quantity	0	16	0	0	16	
		Fees ($)	0.00	160.00	0.00	0.00	160.00	
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	5,549	64	0	5,613	
		Weight(Ton)	0.00	290.64	21.64	0.00	312.28	
		Quantity	0	3,321	2.00	0	3,323	
		Fees($)	0.00	47,158.24	3,087.80	0.00	50,246.04	

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;

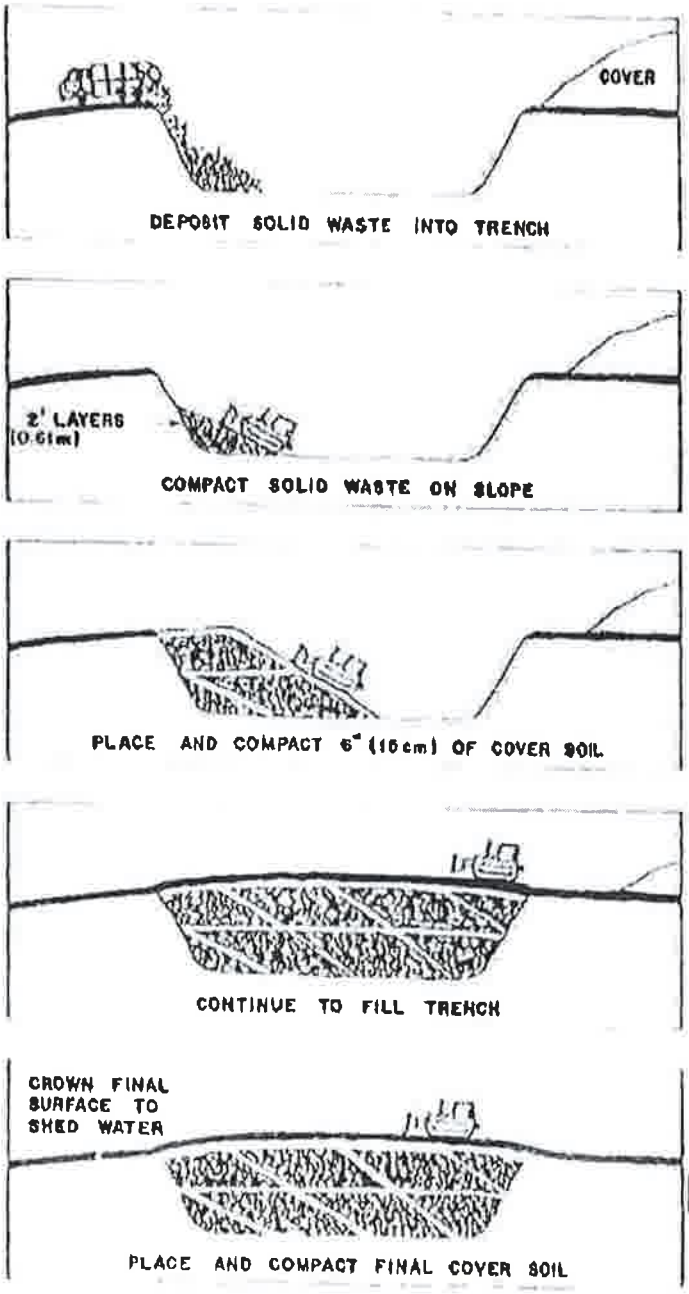
(7) Record volumes and types of waste material;

(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, cleared 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.

APPENDIX D:
HISTORICAL GROUNDWATER QUALITY

HISTORICAL GROUNDWATER QUALITY DATA – TW-1

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia	TKN	Org. N Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5 - 8.5	30-500	200		
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Jun-86	820	41.0	368					1.3	1.43	0.13	65.5	7.70	322			
Feb-89	1203	222.0	539					6.7	7.9	1.2	84.5	7.00	482			
Nov-90	908	11.5	448					2.25	2.4	0.15	195.0	7.22	316			
Nov-91	613	11.5	320					0.63	0.85	0.22	46.5	7.56	278			
Dec-92	1090	35.1	570					3.4	4.36	0.96	234.0	7.32	343			
Jan-94	638	10.0	321					0.51	0.76	0.25	53.0	7.73	264			
Nov-94	679	9.6	378					0.18	0.31	0.13	111.0	7.52	280			
Oct-95	610	9.3	324					0.28	0.27	0	45.5	7.71	273			
Dec-96	357	14.0	192					0.3	0.6	0.3	0.5	7.99	187			
Nov-97	510	29.4	336			0.27	0.5	1.05	3.1	2.05		7.60	289			
Oct-98	402	25.8	282			0.06	0.05	0.05	0.95	0.9	2.5	7.35	209	24.0		
Oct-99	384	58.5	197	0.46	200	0.37	0.05	0.73	4.8	4.07	5.2	7.44	215	15.9		
Nov-00	426	27.7	166	0.01	200	0.52	<0.05	0.05	0.8	0.75	9.2	8.18	188	22.1	<0.01	0.07
Oct-01	330	20.03	166.8	0.05	158.4	<0.1	<0.1	0.1	0.29	0.19	<1.0	7.65		11.7	<0.01	0.04
Nov-02	582	12.1	318.7	1.59	313	0.8	<0.1	0.46	0.91	0.45	24	7.78	261	7.6	0.015	0.02
Nov-03	372	20.6	175	0.761	194	<0.1	<0.1	0.41	1.06	0.65	<1	8.17	181	14.1	0.003	0.034
Sep-04	717	14.3	403	1.35	478	0.1	<0.1	0.86	1.04	0.18	152	7.53	270	8.3	0.017	0.03
Sep-05	603	11.8	333	0.207	339	0.6	<0.1	0.42	0.95	0.53	35	8.23	279	7.6	0.018	0.087
Sep-06	583	9.2	327	0.433	344	0.6	<0.1	0.14	0.35	0.21	45	7.53	278	6.3	0.011	0.013
Nov-07	499	11.3	266	1.21	272	0.7	<0.1	0.16	0.74	0.58	18	7.56	240	8	0.008	0.017
Nov-08	943	16.8	475	3	565	<0.1	<0.1	1.28	1.49	0.21	199	7.69	290	10	0.021	0.038
Nov-09	603	10.3	286	0.425	312	0.6	<0.1	0.28	0.44	0.16	33	7.38	266	6.9	0.009	0.018
Nov-10	845	10.3	506	3.62	584	<0.1	<0.1	1.29	3.01	1.72	236	7.36	247	6.6	0.019	0.044
Nov-11	9630	902	3620	211	5720	1	3.6	219	287	68	<10	6.93	3190	813	0.211	29.3
Nov-12	636	14.6	342	3.73	362	0.1	<0.1	3.17	19.1	15.93	25	7.74	307	12.2	0.014	0.181
Nov-13	980	28.0	490	0.25	624	<0.1	<0.01	4.1	5.6	1.5	180	7.6	320	21	0.029	0.19
Nov-14	2100	130	710	0.012	1010	<0.10	<0.010	4.0	44	40	<1	7.46	920	13	0.011	0.092
Nov-15	620	14	320	0.012	326	<0.10	<0.010	1.0	3.3	2.3	32	7.91	290	7.4	0.016	0.031
Nov-16	590	11.0	300	<0.01	326	<0.10	<0.010	0.28	0.38	0.1	33.0	7.96	280	6.30	0.006	0.02
Nov-17	1100	20.0	550	0.1	575	<0.10	<0.010	1.6	1.7	0.1	310.0	7.90	270	12.00	0.017	0.09
Nov-18	540	42.0	180	<0.1	200	<0.10	<0.010	3.5	3.7	0.2	3.8	8.44	210	30.00	0.003	0.24
Nov-19	660	21.0	340	0.17	330	<0.10	<0.010	1.9	1.9	<0.10	28.0	7.99	290	13.00	0.017	0.06
Nov-20	580	38.0	230	<0.1	295	<0.10	<0.010	3.1	3.4	0.3	13.0	8.07	240	25.0	0.017	0.17
Dec-21	1200	84.0	420	<0.1	515	<0.10	0.053	16	17	1.0	14.0	7.18	490	49.0	0.041	0.19
Oct-22							Insufficient Water									
Nov-23	1800	65.0	650	0.012	840	<0.10	<0.010	34	33	<0.10	12.0	7.57	870	89.0	0.056	
Average	1004.37	57.48	452.84	9.53	628.43	0.18	0.19	8.99	13.11	4.41	74.84	7.66	401.03	49.60	0.03	1.41
Std. Dev.	1548.59	152.64	567.71	42.93	1104.63	0.23	0.72	37.06	48.58	13.55	85.47	0.34	518.41	160.03	0.04	6.23

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS

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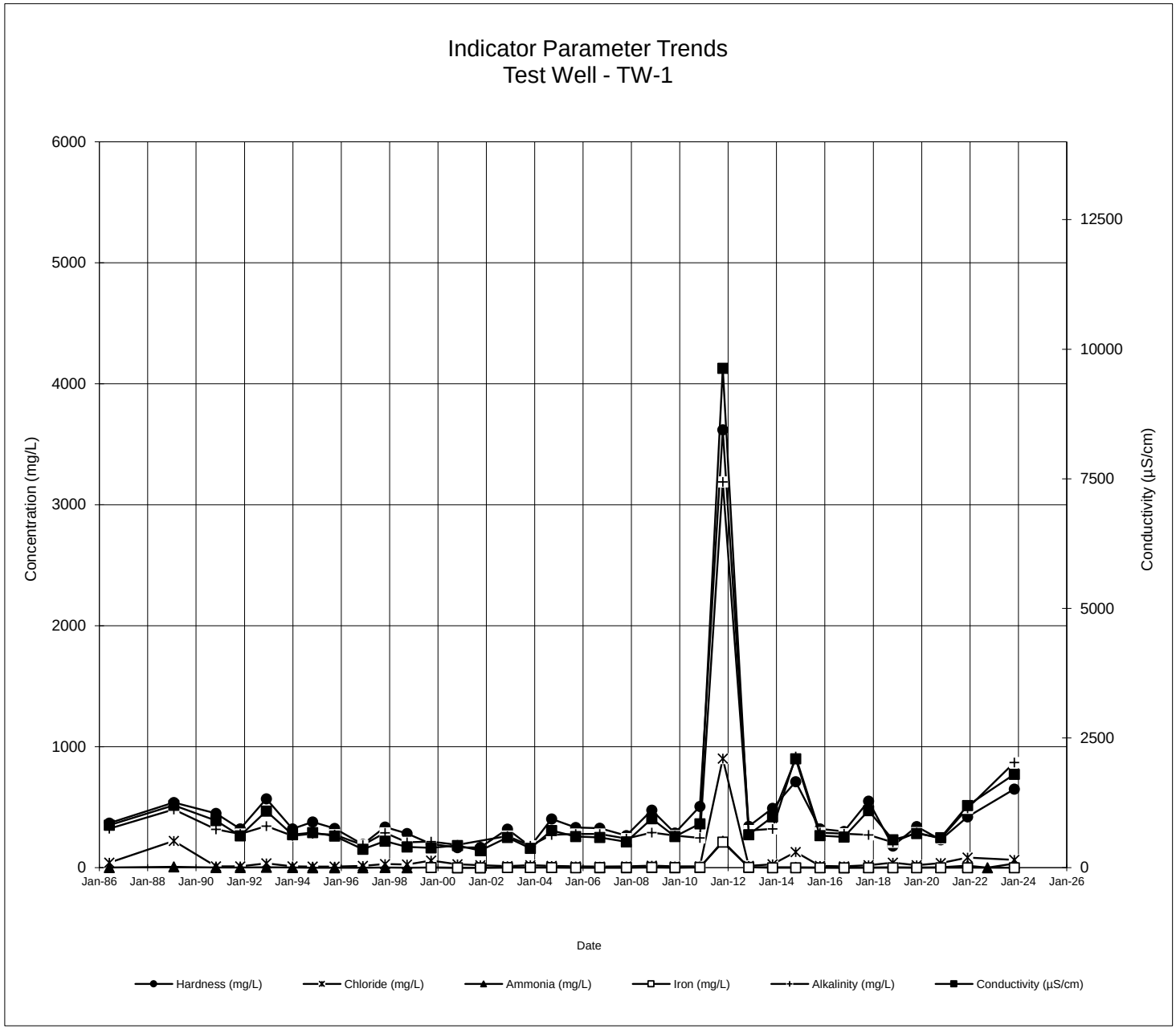
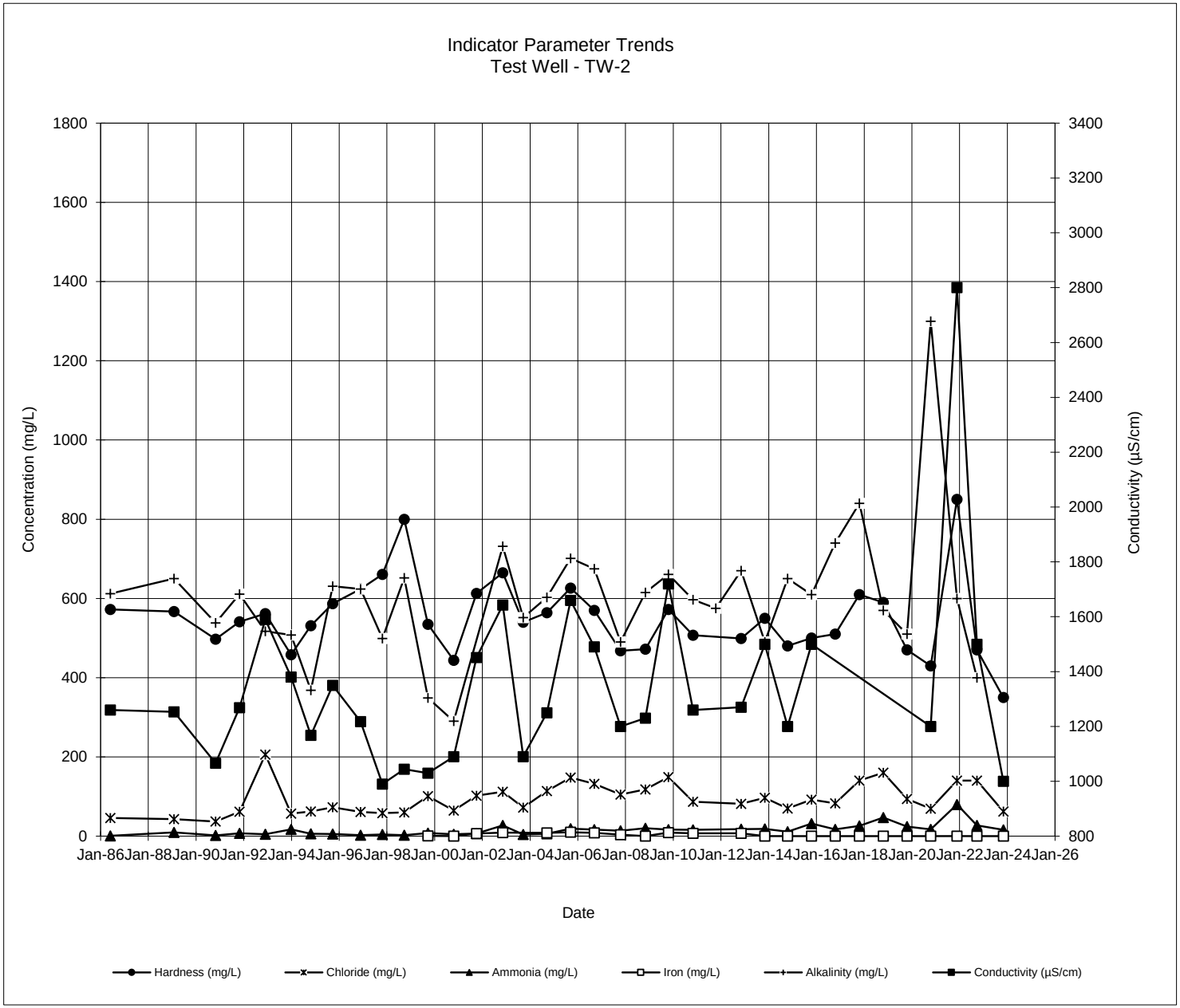

Indicator Parameter Trends
Test Well - TW-1
Concentration (mg/L)
Conductivity (µS/cm)
6000
5000
4000
3000
2000
1000
0
12500
10000
7500
5000
2500
0
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22
Jan-24
Jan-26
Date
Hardness (mg/L)
Chloride (mg/L)
Ammonia (mg/L)
Iron (mg/L)
Alkalinity (mg/L)
Conductivity (µS/cm)

HISTORICAL GROUNDWATER QUALITY DATA – TW-2

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80 - 100	0.3	500	10	1.0			0.15	500	6.5 - 8.5	30-500	200		
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Jun-86	1260	46.0	572					0.845	1.93	1.08	54.0	7.49	612			
Feb-89	1253	43.0	567					9.6	11.3	1.7	15.5	6.88	650			
Nov-90	1066	36.8	497					1.87	2.25	0.38	35.0	7.04	538			
Nov-91	1268	61.8	541					7.0	8.50	1.5	32.5	7.16	611			
Dec-92	1590	206.0	562					5.0	6.45	1.45	23.0	7.11	517			
Jan-94	1380	57.2	458					17	22.2	5.2	29.7	7.27	508			
Nov-94	1168	62.2	531					5.76	7.50	1.74	28.0	7.21	368			
Oct-95	1350	72.8	587					5.41	6.68	1.27	23.1	6.91	631			
Dec-96	1218	61.0	624					2.2	2.60	0.4	25.0	7.23	624			
Nov-97	990	58.0	661			0.99	0.5	4.12	7.90	3.78		7.10	499			
Oct-98	1044	60.0	800			0.08	0.05	2.38	4.40	2.02	27.0	6.76	652	58.0		
Oct-99	1030	100.7	535	0.47	570	0.62	0.05	7.6	9.60	2	20.0	7.22	349	36.0		
Nov-00	1090	64.4	444	0.01	530	0.69	<0.05	4.54	9.60	5.06	27.0	7.30	290	46.6	<0.01	0.250
Oct-01	1451	102	612.6	6.78	753	<0.1	<0.1	6.52	8.70	2.18	19.0	6.73		69.1	0.080	0.280
Nov-02	1643	112	664.8	9.05	935	0.20	<0.1	27.1	31.1	4	27.0	8.08	732	99.9	0.145	0.410
Oct-03	1090	72.0	540		670	0.10	<0.1	4.03	4.58	0.55	16.0	8.06	552	50.8	0.054	0.201
Sep-04	1250	114	564	8.03	763	0.10	<0.1	6.0	6.47	0.47	19.0	7.05	603	61.3	0.071	0.204
Sep-05	1660	148	626	9.82	927	<0.1	<0.1	18.6	21.9	3.3	13.0	7.81	701	96.6	0.130	0.396
Sep-06	1490	132	570	8.48	873	<0.1	<0.1	16.5	18.2	1.7	16.0	7.01	675	92.9	0.092	0.292
Nov-07	1200	105	468	3.84	678	0.5	<0.1	13.6	14.7	1.10	23.0	7.25	490	59.4	0.063	0.200
Nov-08	1230	118	472	0.23	793	<0.1	<0.1	20.1	21.40	1.3	17.0	7.35	615	81.6	0.075	0.273
Nov-09	1720	149	572	8.77	896	0.1	<0.1	16.5	16.5	<0.1	17.0	6.82	661	89.6	0.075	0.244
Nov-10	1260	86.7	507	6.96	744	<0.1	<0.1	15.7	17.3	1.6	22.0	7.25	597	60.2	0.069	0.222
Nov-11	Reported Obstruction															
Nov-12	1270	81.8	499	7.06	719	0.1	<0.1	17.4	19.1	1.7	29.0	7.38	575	61.5	0.075	0.322
Nov-13	1500	97.0	550	0.1	788	<0.1	<0.01	18.0	17.0	<0.10	15.0	7.35	670	85.0	0.064	0.390
Nov-14	1200	70.0	480	<0.1	594	<0.10	<0.01	11.0	12	1.0	25.0	7.77	490	56.0	0.068	0.480
Nov-15	1500	92.0	500	<0.1	722	0.43	<0.01	32.0	32	<0.10	24.0	7.62	650	75.0	0.085	0.560
Nov-16	1300	83.0	510	<0.1	646	0.35	<0.010	17.0	19.0	2.0	11.0	7.64	610	57.0	0.058	0.340
Nov-17	1800	140.0	610	<0.1	770	<0.10	<0.010	26.0	26.0	<0.10	20.0	7.49	740	100	0.077	0.640
Nov-18	2000	160.0	590	<0.1	925	0.16	<0.010	47.0	44.0	<0.10	<1.0	7.72	840	130	0.110	0.850
Nov-19	1400	94.0	470	<0.1	615	<0.10	<0.010	24.0	26.0	2	15.0	7.59	570	70	0.063	0.440
Nov-20	1200	69.0	430	<0.1	425	0.27	0.029	17.0	17.0	<0.10	8.8	7.81	510	43	0.047	0.230
Dec-21	2800	140	850	0.19	1310	<0.10	<0.010	80.0	90.0	10.0	32.0	6.97	1300	160	0.084	1.500
Oct-22	1500	140	470	<0.1	665	0.142	0.39	27.0	31.0	4.0	14.0	7.83	600	110	0.064	0.450
Nov-23	1000	62	350	<0.1	460	2.42	0.044	16.0	15.0	<0.10	13.0	7.66	400	53	0.003	
Average	1376.3	94.2	551.0	3.05	740.5	0.30	0.07	15.73	17.42	2.30	22.29	7.34	600.88	76.10	0.08	0.42
Std. Dev.	344.2	39.0	96.8	3.91	185.6	0.50	0.12	15.07	15.99	2.00	8.76	0.36	168.54	28.95	0.03	0.29

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS



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Durham Landfill

GM BluePlan Engineering Limited

HISTORICAL GROUNDWATER QUALITY DATA – TW-3

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80 - 100	0.3	500	10	1.0			0.15	500	6.5 - 8.5	30-500	200		
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Jun-86	1040	40.0	391					7.70	8.75	1.05	44.5	7.64	487			
Feb-89	976	28.1	499					4.86	6.2	1.34	37.0	6.86	467			
Nov-90	1009	31.2	457					6.42	7	0.58	33.5	6.99	495			
Nov-91	924	25.4	448					5.50	6.6	1.1	30.0	7.21	443			
Dec-92	1032	37.2	485					3.40	7.28	3.88	30.5	7.07	477			
Jan-94	1047	29.9	514					5.58	8.5	2.92		7.16	360			
Nov-94	1055	34.8	515					5.67	8	2.33	35.7	7.14	221			
Oct-95	994	28.2	526					4.50	5.79	1.29	32.1	7.05	419			
Dec-96	1119	41.0	602					2.60	2.8	0.2	37.0	7.34	565			
Nov-97	1010	68.1	685			0.5	0.5	7.14	13	5.86		6.70	520			
Oct-98	1003	53.0	631			0.05	0.05	5.90	7.92	2.02	38.0	6.40	500	47.8		
Oct-99	882	40.9	511	0.18	460	0.49	0.05	1.16	5.8	4.6	50.4	7.01	292	20.7		
Nov-00	1117	54.5	461	<0.01	520	0.62	<0.05	4.80	7.8	3.0	25.5	7.20	369	43.9	<0.01	0.19
Oct-01	1077	49.4	454.9	11.6	549	<0.1	<0.1	7.72	8.47	0.75	22.6	6.77		30.3	0.06	0.20
Nov-02	1032	49.1	525.7	14	574	0.2	<0.1	7.05	7.86	0.81	24.0	7.94	504	7.70	0.06	0.20
Nov-03	1000	49.7	512	12.5	601	0.2	<0.1	5.41	5.96	0.55	21.0	7.10	498	34.5	0.05	0.19
Sep-04	1090	59.7	482	14	629	0.2	<0.1	1.09	1.43	0.34	22.0	7.22	546	35.7	0.05	0.21
Sep-05	1060	61.5	538	14	641	<0.1	<0.1	7.17	8.02	0.85	21.0	7.52	518	35.8	0.06	0.24
Sep-06	1120	61.4	543	14.3	663	0.2	<0.1	6.33	7.2	0.87	16.0	7.06	552	38.6	0.06	0.21
Nov-07	944	45.2	472	13.6	570	0.2	<0.1	5.84	6.6	0.76	20.0	7.24	486	30.5	0.05	0.19
Nov-08	967	53.3	451	10.8	586	0.1	<0.1	6.02	6.04	<0.10	18.0	7.53	498	38.2	0.05	0.16
Nov-09	1100	51.7	441	11.8	606	0.2	<0.1	7.86	8.29	0.43	18.0	6.91	510	42.4	0.05	0.20
Nov-10	992	52	444	11.1	549	<0.1	<0.1	4.79	5.43	0.64	15.0	6.87	447	33.3	0.04	0.13
Nov-11	1020	37	419	14.3	528	<0.1	<0.1	1.63	5.48	3.85	17.0	7.48	469	23.5	0.04	0.12
Nov-12	963	34.6	511	10.9	564	0.1	<0.1	4.85	5.61	0.76	16.0	7.52	478	26.2	0.05	0.14
Nov-13	1000	44.0	480	0.91	570	<0.1	<0.01	4.50	4.20	<0.10	17.0	7.37	480	31.0	0.03	0.12
Nov-14	1000	39	520	11	546	<0.1	<0.01	7.50	7.80	0.3	16.0	7.60	490	32.0	0.09	0.14
Nov-15	930	36	470	<0.1	496	<0.1	<0.01	5.30	5.30	<0.10	18.0	7.55	430	23.0	0.04	0.13
Nov-16	990	42.0	480	0.15	534	<0.10	<0.010	3.70	4.20	0.5	18.0	7.64	470	25.0	0.03	0.11
Nov-17	1000	40.0	450	1.8	465	<0.10	<0.010	4.60	5.20	0.6	14.0	7.48	480	26.0	0.04	0.15
Nov-18	990	46.0	450	<0.1	480	<0.10	<0.010	5.20	4.80	<0.10	17.0	7.78	450	27.0	0.03	0.13
Nov-19	920	45.0	430	1.7	465	0.17	<0.010	4.00	4.20	0.2	13.0	7.65	400	27.0	0.03	0.10
Nov-21	940	57.0	450	<0.1	525	<0.10	0.016	2.10	2.40	0.3	20.0	7.92	410	28.0	0.03	0.07
Oct-22	950	47	460	<0.1	460	<0.10	<0.010	2.3	2.8	0.5	25	7.82	440	28.0	0.03	0.08
Nov-23	1000	58	490	<0.1	415	<0.10	<0.010	1.9	1.8	<0.10	16	7.6	430	36.0	0.03	
Average	1008.4	44.9	491.4	6.97	541.5	0.15	0.05	4.92	6.13	1.44	24.21	7.30	458.85	30.88	0.05	0.16
Std. Dev.	59.52	10.71	58.85	5.52	63.6	0.16	0.10	1.94	2.33	1.47	9.57	0.37	70.08	8.37	0.01	0.05

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS

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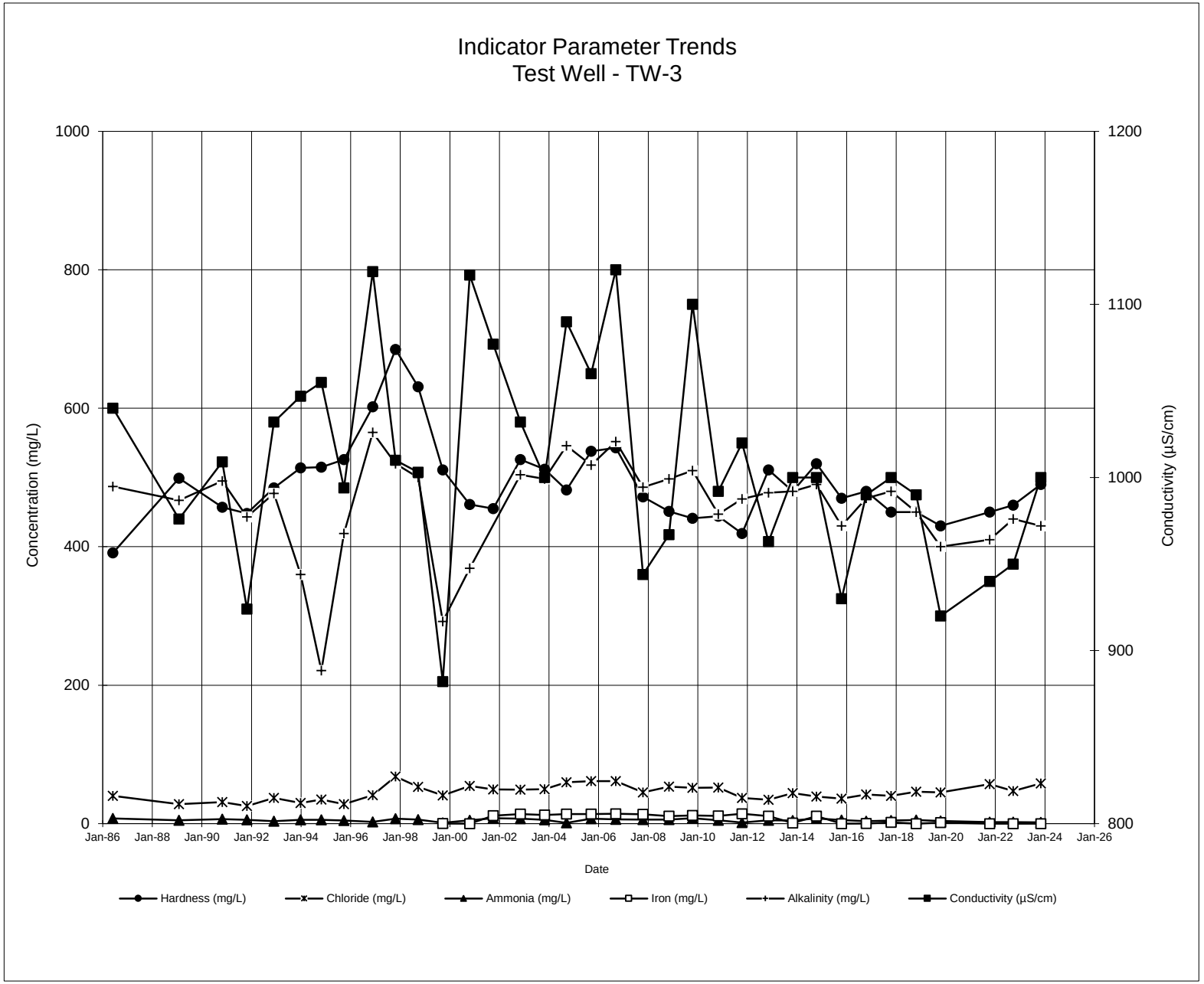
Durham Landfill

GM BluePlan Eningeering Limited



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Durham Landfill

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HISTORICAL GROUNDWATER QUALITY DATA – TW-4

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron	Phenols	Calcium	T. Phosphorus (P)	Magnesium
ODWQS		250	80 - 100	0.3	500	10	1.0			0.15	500	6.5 - 8.5	30-500	200						
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01	0.001	1.0	0.01	1.0
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Oct-98	797	25.6	598			0.09	0.05	0.65	1.78	1.13	32.1	6.49	417	16.6						
Oct-99	772	38.3	520	1.32	410	0.61	<0.05	1.71	5.2	3.5	39.2	7.10	255	15.2						
Nov-00	780	33.70	403	0.09	380	0.7	<0.05	0.38	1.3	0.9	41.20	7.90	249	21.4	<0.01	0.06				
Oct-01	702	25.40	294	0.92	337	<0.1	<0.1	0.52	0.9	0.38	37.60	6.85		6.5	0.03	0.04		71.4		28.1
Average	762.75	30.75	453.75	0.78	375.65	0.47	0.05	0.82	2.30	1.48	37.53	7.09	307.00	14.93	0.03	0.05		71.40		28.10
Std. Dev.	41.82	6.35	133.29	0.63	36.71	0.33		0.61	1.97	1.38	3.91	0.60	95.31	6.21		0.01				

ODWQS - Ontario Drinking Water Quality Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

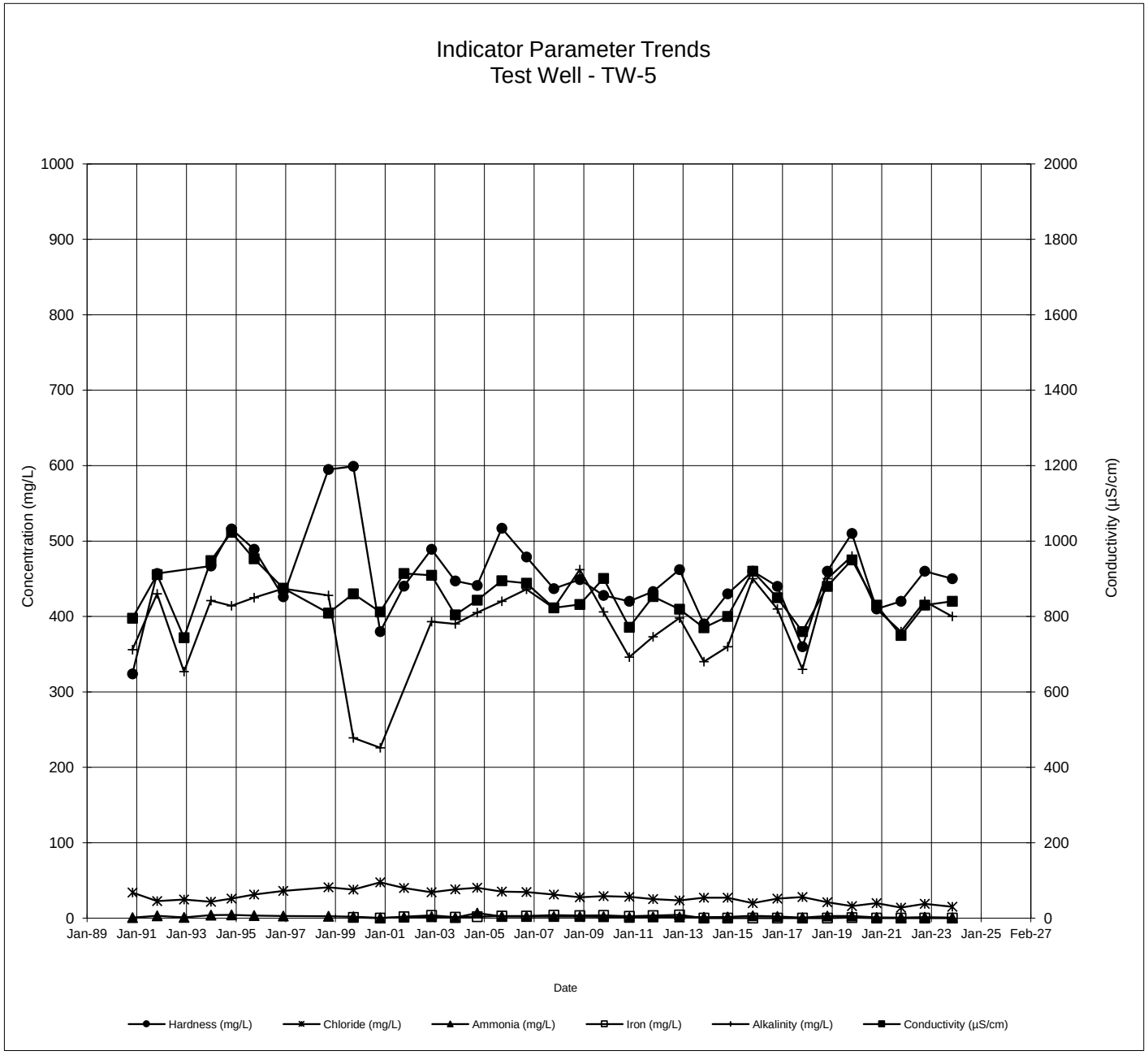
- exceeds ODWQS

HISTORICAL GROUNDWATER QUALITY DATA – TW-5

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80 - 100	0.3	500	10	1.0			0.15	500	6.5 - 8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Nov-90	795	33.9	324					0.73	0.95	0.22	48	7.55	356			
Nov-91	911	22.6	457					3.2	4.0	0.8	41	7.13	430			
Dec-92	744	24.6						1.0	1.49	0.49	44	7.34	327			
Jan-94	948	21.6	467					4.09	5.9	1.81	40.3	7.19	421			
Nov-94	1023	25.9	516					4.32	5.55	1.23	33	6.91	414			
Oct-95	953	31.2	489					3.48	4.41	0.93	32.9	7.00	425			
Dec-96	875	36.0	426					2.9	3.10	0.2	34.0	7.07	437			
Oct-98	809	41.0	595			0.07	0.05	2.41	4.40	1.99	35.8	6.07	428	24.9		
Oct-99	860	38.0	599	0.93	470	0.77	0.05	2.03	6.10	4.0	39.2	7.04	239	14.3		
Nov-00	812	47.5	380	<0.01	400	0.58	<0.05	0.39	1.0	0.6	51.5	7.26	226	18.2	<0.01	0.06
Oct-01	914	40.1	440	2.01	439	<0.1	<0.1	1.37	1.94	0.57	40.3	6.73		12.4	0.06	0.06
Nov-02	909	34.2	489	3.64	495	<0.1	<0.1	1.85	2.32	0.47	38	7.38	393	13.8	0.07	0.05
Nov-03	804	38.2	447	1.27	491	<0.1	<0.1	0.67	0.83	0.16	49	7.23	390	13.7	0.05	0.03
Sep-04	843	40.2	441	2.03	506	<0.1	<0.1	6.78	7.41	0.63	46	7.33	405	14.7	0.05	0.04
Sep-05	895	35.1	517	2.89	526	<0.1	<0.1	2.07	2.51	0.44	38	7.86	420	15.3	0.08	0.06
Sep-06	888	34.5	479	2.73	522	<0.1	<0.1	2.10	2.52	0.42	34	7.08	436	16	0.06	0.05
Nov-07	823	31.2	437	3.89	489	<0.1	<0.1	2.24	2.71	0.47	35	7.26	411	16	0.06	0.05
Nov-08	832	27.6	449	3.35	518	<0.1	<0.1	2.27	2.53	0.26	30	7.36	462	16.9	0.06	0.05
Nov-09	901	29.2	428	3.57	487	<0.1	<0.1	1.89	2.15	0.26	37	6.93	406	17.6	0.05	0.05
Nov-10	771	28.2	420	2.44	443	<0.1	<0.1	0.87	1.21	0.34	44	7.27	346	14.5	0.04	0.03
Nov-11	853	25.4	433	3.43	461	<0.1	<0.1	1.46	1.96	0.5	37	7.34	373	15.5	0.05	0.04
Nov-12	819	23.6	462	4.39	483	0.10	<0.1	1.61	2.20	0.59	35	7.55	398	15.6	0.06	0.04
Nov-13	770	27	390	<0.1	458	0.13	0.15	1.20	1.10	<0.10	39	7.67	340	15	0.04	0.02
Nov-14	800	27	430	<0.1	440	0.14	0.052	1.50	1.70	0.20	39	7.72	360	17	0.05	0.04
Nov-15	920	20	460	0.24	498	<0.1	<0.1	3.10	3.50	0.40	27	7.55	450	13	0.06	0.08
Nov-16	850	26.0	440	<0.1	464	<0.1	0.013	2.10	2.40	0.30	32	7.70	410	14	0.05	0.06
Nov-17	760	28	360	<0.1	250	<0.1	<0.01	0.66	0.70	<0.10	39	7.78	330	14	0.04	0.03
Nov-18	880	21	460	<0.1	430	<0.1	<0.01	2.70	2.60	<0.10	25	7.84	450	13	0.06	0.08
Nov-19	950	16	510	0.8	505	<0.10	<0.010	2.70	2.90	0.2	17	7.56	480	12	0.06	0.09
Nov-20	830	20	410	<0.1	450	0.37	0.011	0.90	1.20	0.30	26	7.54	410	11	0.05	0.06
Nov-21	750	14	420	<0.1	420	0.22	0.061	0.59	0.92	0.33	25	7.92	380	9	0.04	0.06
Oct-22	830	19	460	<0.1	335	0.23	<0.010	1.30	1.50	0.20	23	7.65	420	12	0.05	0.06
Nov-23	840	15	450	<0.1	415	<0.10	0.034	0.72	0.87	0.15	23	7.56	400	12	36.00	
Average	853.4	28.6	452.7	1.52	455.8	0.13	0.05	2.04	2.62	0.65	35.70	7.34	392.91	14.65	1.62	0.05
Std. Dev.	65.99	8.24	56.28	1.56	61.31	0.18	0.05	1.33	1.71	0.77	8.08	0.38	56.28	3.01	7.50	0.02

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS



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Durham Landfill

GM BluePlan Engineering Limited

HISTORICAL GROUNDWATER QUALITY DATA – TW-6

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80 - 100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Nov-90	850	31.7	347					0.295	0.49	0.2	59.0	7.48	396			
Nov-91	841	31.8	411					0.962	1.31	0.35	48.5	7.45	372			
Dec-92	828	31.4	431					1.3	1.72	0.42	48.0	7.42	375			
Jan-94	845	29.3	390					1.56	1.93	0.37	46.1	7.52	350			
Nov-94	842	29.2	421					1.7	2.36	0.66	44.4	7.46	391			
Oct-95	834	29.6	415					1.59	2.2	0.61	45.1	7.41	376			
Dec-96	780	25.0	424					2.4	2.5	0.1	45.0	7.43	387			
Nov-97	700	32.1	493			0.02	0.05	2.81	5.5	2.69		6.90	357			
Oct-98	518	44.7	624			0.08	0.05	1.6	3.22	1.62	54.7	6.57	422	35.8		
Oct-99	716	42.8	420	0.01	400	0.46	0.05	2.4	3.8	1.4	51.8	7.50	274	20.6		
Nov-00	795	35.2	359	<0.01	350	0.63	<0.05	1.6	2.8	1.2	60.8	7.46	253	24.8	<0.01	0.08
Oct-01	788	27.4	362	1.82	405	<0.1	<0.1	1.78	2.07	0.29	51.2	7.12		15.7	0.06	0.07
Nov-02	787	28.8	388.888	1.69	440	0.1	<0.1	1.69	1.92	0.23	59	8.2	330	17.4	0.06	0.05
Oct-03	736	27.1	386.0		446	<0.1	<0.1	1.6	1.82	0.22	60	8.24	339	17.3	0.06	0.06
Sep-04	768	28.4	391.0	1.89	458	<0.1	<0.1	1.52	1.74	0.22	65.0	7.49	351	17.0	0.06	0.06
Sep-05	780	28.5	402	1.77	443	<0.1	<0.1	1.38	1.6	0.22	60.0	8.14	328	16.5	0.07	0.064
Sep-06	774	32.1	410	1.87	480	0.1	<0.1	1.35	1.54	0.19	67.0	7.38	360	18	0.06	0.06
Nov-07	793	27.7	383	1.79	437	0.1	<0.1	1.36	1.56	0.2	59.0	7.35	327	17.8	0.06	0.06
Nov-08	742	28.3	381	1.82	435	<0.1	<0.1	1.44	1.62	0.18	57.0	7.72	330	18.2	0.06	0.06
Nov-09	816	30.4	383	1.67	459	<0.1	<0.1	1.43	1.51	0.08	61.0	7.06	349	19.8	0.05	0.06
Nov-10	746	27.6	388	1.74	439	<0.1	<0.1	1.29	1.48	0.19	58.0	7.1	329	17.1	0.05	0.05
Nov-11	809	27.0	399	1.8	444	<0.1	<0.1	1.25	1.72	0.47	58.0	7.53	328	18.2	0.06	0.05
Nov-12	747	25.3	417	1.85	451	0.1	<0.1	1.26	1.68	0.42	60.0	7.81	329	18.7	0.06	0.05
Nov-13	760	25.0	380	<0.1	444	<0.1	<0.01	1.40	1.3	<0.10	53.0	7.74	330	17	0.05	0.04
Nov-14	790	26.0	410	<0.1	440	<0.1	<0.01	1.40	1.7	0.3	53.0	7.86	340	19	0.06	0.06
Nov-15	770	26.0	360	<0.1	422	<0.1	<0.01	1.40	1.40	<0.10	50.0	7.83	320	16.0	0.05	0.052
Nov-16	760	26.0	380	<0.1	414	<0.10	<0.010	1.30	1.50	0.2	49.0	7.88	340	17.0	0.06	0.052
Nov-17	780	25.0	370	<0.1	330	<0.10	<0.010	1.40	1.50	0.1	47.0	7.85	340	16.0	0.05	0.057
Nov-18	760	27.0	370	<0.1	375	<0.10	<0.010	1.50	1.40	<0.10	47.0	8.03	340	16.0	0.05	0.051
Nov-19	760	25.0	400	<0.1	415	<0.10	<0.010	1.30	1.30	0	45.0	7.92	330	17.0	0.05	0.045
Nov-20	780	27.0	350	<0.1	410	<0.10	<0.010	1.60	1.50	<0.10	47.0	7.79	340	16.0	0.05	0.049
Nov-21	760	26.0	390	<0.1	430	<0.10	<0.010	1.20	1.50	0.3	50.0	7.93	330	16.0	0.05	0.047
Oct-22	760	27.0	390	<0.1	390	<0.10	<0.010	1.50	1.60	0.1	50.0	8.00	340	18.0	0.06	0.046
Nov-23	790	24.0	400	<0.1	400	<0.10	<0.010	1.70	1.80	0.1	46.0	7.70	330	17.0	55.00	
Average	773.68	28.98	400.77	0.84	422.28	0.09	0.03	1.51	1.90	0.45	53.20	7.60	343.42	18.38	2.446	0.054
Std. Dev.	57.95	4.55	48.13	0.89	34.55	0.13	0.02	0.42	0.87	0.57	6.49	0.38	31.84	4.03	11.456	0.009

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS

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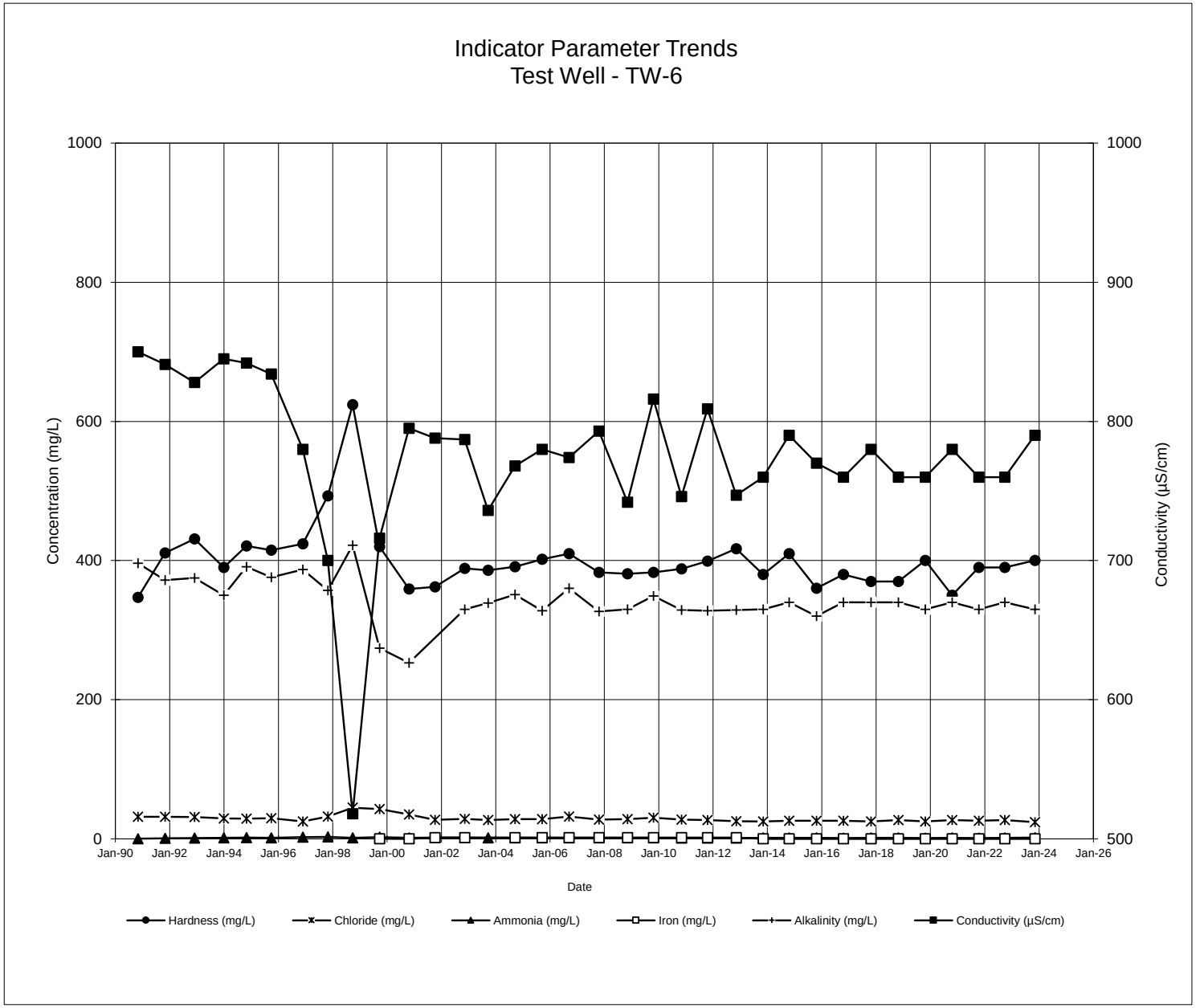


Our File: 213086
Durham Landfill

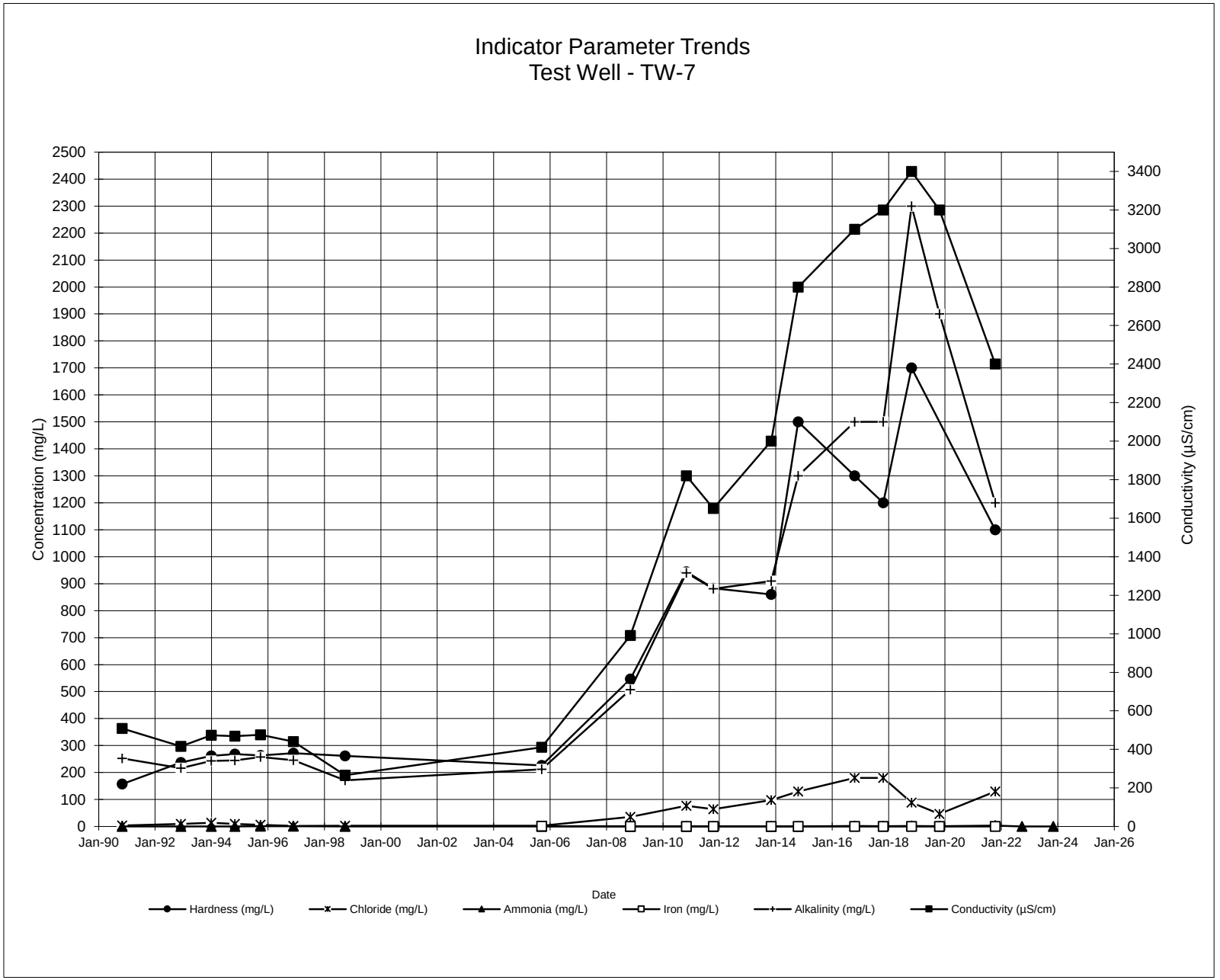
GM BluePlan Engineering Limited

HISTORICAL GROUNDWATER QUALITY DATA – TW-7

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Nov-90	509	3.3	157					0.001	0.2		35.5	7.92	252			
Nov-91																
Dec-92	416	9.5	237					0.022	0.08		9.5	7.77	216			
Jan-94	473	13.3	262					0.044	0.81		13.3	7.83	243			
Nov-94	469	9.7	268					0.01	0.34		9.7	7.57	245			
Oct-95	476	6.3	263					1.18	2.05		6.3	7.49	257			
Dec-96	441	1.9	272					0.9	1.2		9.3	7.66	246			
Oct-98	266	2.4	262			0.6	0.05	0.23	0.68	0.45	8.1	6.64	171	3.70	3.70	3.70
Oct-01																
Nov-02																
Oct-03																
Sep-04																
Sep-05	411	3	226	0.983	218	0.4	<0.1	0.07	6.32	6.25	8	8.4	212	0.8	0.011	0.007
Sep-06																
Nov-07																
Nov-08	991	35.7	547	0.011	618	3.5	<0.1	0.01	0.7	0.69	63.0	7.43	507	12.4	0.02	0.083
Nov-09																
Nov-10	1820	76.4	944	0.045	1060	1.5	<0.1	<0.01	1.93	1.92	54.0	7.23	940	41.7	0.05	0.27
Nov-11	1650	64.1	883	0.008	1170	3.4	<0.1	<0.01	1.47	1.46	96.0	7.72	881	28.5	0.15	0.28
Nov-12																
Nov-13	2000	98	860	<0.1	1130	0.83	<0.01	0.052	1.20	1.148	100.0	7.69	910	48	0.12	0.35
Nov-14	2800	130.0	1500	<0.1	1730	4.78	0.012	0.099	2.5	2.401	160.0	7.75	1300	75	0.14	0.57
Nov-15																
Nov-16	3100	180.0	1300	<0.1	1920	0.13	0.148	1.60	3.2	1.6	1.6	8.12	1500	130	0.11	0.76
Nov-17	3200	180.0	1200	<0.1	1760	0.33	<0.010	0.74	1.6	0.86	77.0	7.77	1500	120	0.11	0.62
Nov-18	3400	88.0	1700	<0.1	2150	0.49	0.235	1.80	3.6	1.8	<1.0	8.11	2300	86	0.12	0.82
Nov-19	3200	46.0		<0.1	1940	0.49	0.086	0.74	1.90	1.16	<1.0	7.86	1900	34.0	0.10	0.91
Nov-21	2400	130.0	1100	<0.1	1240	0.83	0.517	3.20	4.80	1.6	1.0	8.05	1200	75.0	0.09	0.89
Oct-22							Insufficient Water									
Nov-23							Insufficient Water									
Average	1556.78	59.87	704.76	0.12	1357.82	1.44	0.10	0.67	1.92	1.78	40.77	7.72	821.11	54.59	0.39	0.77
Std. Dev.	1192.61	61.93	514.17	0.27	601.59	1.55	0.15	0.90	1.66	1.51	46.85	0.39	667.25	43.02	1.04	0.97

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS



Our File: 213086
Durham Landfill

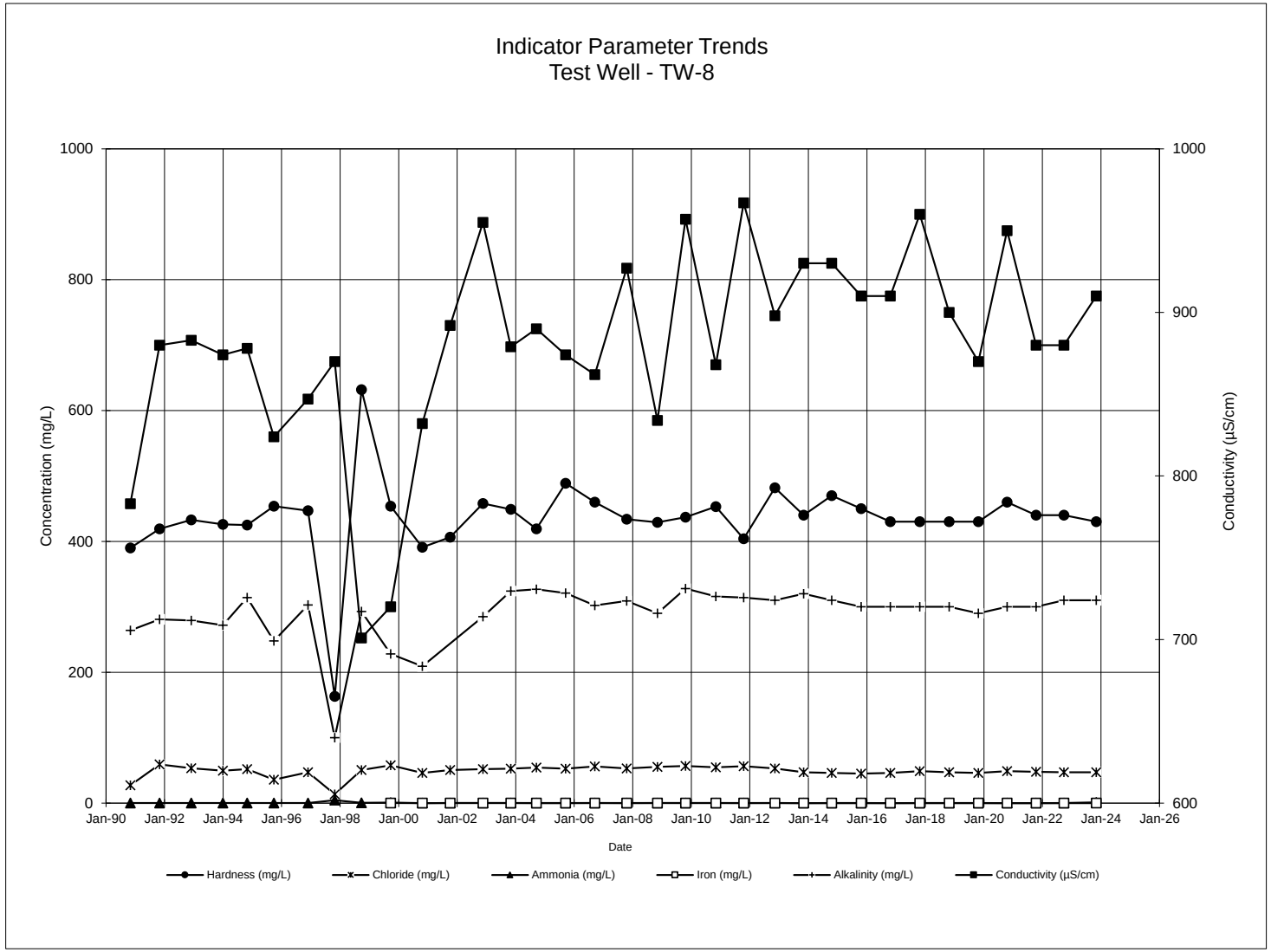
GM BluePlan Engineering Limited

HISTORICAL GROUNDWATER QUALITY DATA – TW-8

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Nov-90	783	27.2	390					0.025			154	7.46	264.0			
Nov-91	880	59.2	419					0.089	0.22	0.131	89.5	7.61	281.0			
Dec-92	883	53.4	433					0.058	0.15	0.092	130	7.54	279.0			
Jan-94	874	49.4	426				7	0.1	0.29	0.19	76.8	7.6	272.0			
Nov-94	878	52.1	425					0.083	0.2	0.117	119	7.43	314.0			
Oct-95	824	35.7	454					0.05	0.13	0.08	162	7.53	248.0			
Dec-96	847	47.0	447					0.05	0.5	0.45	113	7.49	303.0			
Nov-97	870	13.5	163			0.5	0.5	4.52	9.2	4.68		6.9	100.0			
Oct-98	701	50.6	632			0.07	0.05	0.38	0.73	0.35	42.4	6.8	293.0	20.5		
Oct-99	720	57.8	454	0.0	390	0.87	0.05	0.95	4.1	3.15	143	7.5	228.0	16.5		
Nov-00	832	46.0	391	<0.01	370	0.69	<0.05	<0.05	0.9	0.85	181	7.45	209.0	22.1	<0.01	0.04
Oct-01	892	50.5	406.591	0.1	464	<0.1	<0.1	0.15	0.22	0.07	117	7.07		23.5	0.04	0.02
Nov-02	955	52.1	458	0.09	550	0.1	<0.1	0.11	0.34	0.23	143	8.25	285	25.7	0.045	0.02
Nov-03	879	52.7	449	0.074	558	0.1	<0.1	0.04	0.06	0.02	126	7.51	324	31.1	0.045	0.03
Sep-04	890	54.5	419	0.083	541	0.2	<0.1	<0.01	0.07	0.06	120	7.69	327.0	27.3	0.042	0.02
Sep-05	874	52.8	489	0.077	554	0.2	<0.1	<0.01	0.1	0.09	109	8.07	321.0	29.9	0.053	0.024
Sep-06	862	56.2	460	0.106	543	0.1	<0.1	0.11	0.14	0.03	118	7.41	302.0	28.5	0.051	0.02
Nov-07	927	53.1	434	0.088	542	0.1	<0.1	<0.01	0.69	0.68	125	7.31	309.0	28.8	0.043	0.02
Nov-08	834	55.5	429	0.129	526	<0.1	<0.1	0.05	0.35	0.3	127	6.85	290.0	22.3	0.065	0.01
Nov-09	957	56.8	437	0.141	554	0.1	<0.1	0.12	0.16	0.04	119	7.08	328.0	29.8	0.042	0.02
Nov-10	868	54.8	453	0.066	543	<0.1	<0.1	0.02	<0.05	<0.05	117.00	7.4	316.0	27.3	0.046	0.01
Nov-11	967	56.3	404	0.1	528	0.1	<0.1	<0.01	<0.05	<0.05	122	7.71	314.0	23.2	0.038	0.01
Nov-12	898	53.0	482	0.085	560	0.2	<0.1	0.03	0.35	0.32	123	7.85	310.0	31.5	0.055	0.009
Nov-13	930	47.0	440	<0.1	588	<0.1	<0.01	<0.05	0.21	0.16	110	7.59	320.0	30.0	0.049	<0.01
Nov-14	930	46.0	470	<0.1	560	<0.1	<0.01	0.17	0.32	0.15	110	7.84	310.0	32.0	0.051	0.025
Nov-15	910	45.0	450	<0.1	522	<0.1	<0.01	0.064	0.2	0.14	110.00	7.83	300.0	30.0	0.055	0.02
Nov-16	910	46	430	<0.1	604	<0.10	<0.010	<0.05	0.17	0.12	110	7.84	300.0	30.0	0.054	0.02
Nov-17	960	49	430	<0.1	530	<0.10	<0.010	0.11	0.11	<0.05	130	7.78	300.0	27.0	0.053	0.02
Nov-18	900	47	430	<0.1	515	<0.10	<0.010	0.11	0.1	<0.05	120	8.09	300.0	26.0	0.063	0.02
Nov-19	870	46	430	<0.1	520	<0.10	<0.010	0.16	0.18	0.02	90	7.85	290.0	26.0	0.071	0.02
Nov-20	950	49	460	<0.1	630	<0.10	<0.010	<0.05	0.19	0.14	120	7.91	300.0	29.0	0.060	0.02
Nov-21	880	48	440	<0.1	530	<0.10	<0.010	<0.05	0.23	0.18	99	8.09	300.0	26.0	0.078	0.02
Oct-22	880	47	440	<0.1	490	<0.10	<0.010	0.073	0.11	0.04	100	7.98	310.0	28.0	0.076	0.01
Nov-23	910	47	430	<0.1	485	<0.10	<0.010	1.2	1.3	0.10	88	7.78	310.0	27.0	82.000	
Average	880.15	48.74	435.43	0.07	527.87	0.15	0.31	0.35	0.71	0.45	117.08	7.59	289.61	26.88	3.62	0.02
Std. Dev.	59.73	8.78	62.57	0.03	56.67	0.21	1.34	0.91	1.74	1.00	24.95	0.36	43.31	3.72	17.09	0.01

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS


Indicator Parameter Trends
Test Well - TW-8
Concentration (mg/L)
Conductivity (µS/cm)
1000
800
600
400
200
0
900
700
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22
Jan-24
Jan-26
Date
Hardness (mg/L)
Chloride (mg/L)
Ammonia (mg/L)
Iron (mg/L)
Alkalinity (mg/L)
Conductivity (µS/cm)

HISTORICAL GROUNDWATER QUALITY DATA – TW-9

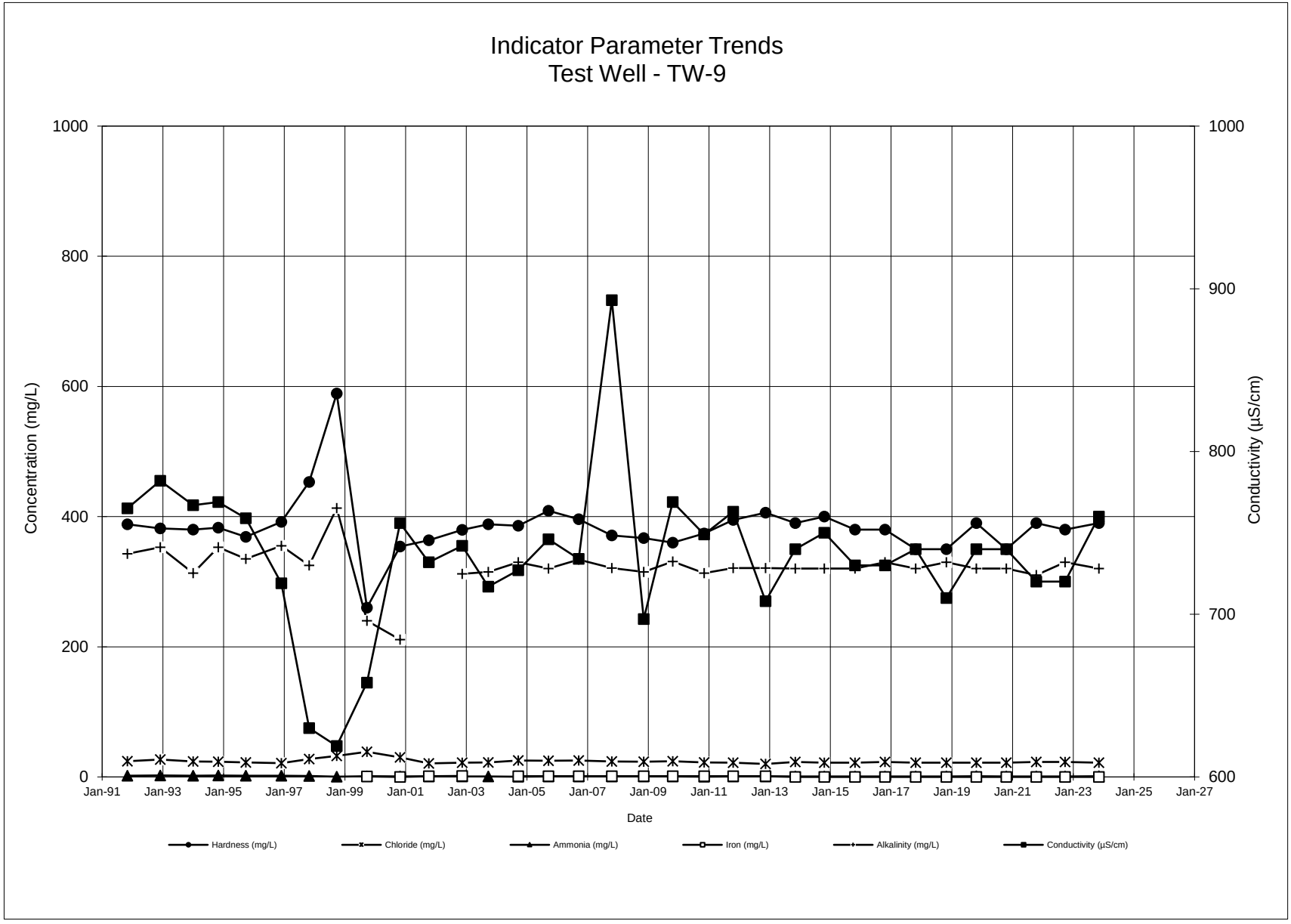
Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Nov-91	765	24.3	388					2	2.52	0.52	50.5	7.43	343.0			
Dec-92	782	26.9	382					2.3	3.08	0.78	47	7.43	353.0			
Jan-94	767	23.9	380					1.95	3.05	1.1	49.5	7.58	313.0			
Nov-94	769	23.2	383					2.05	3.05	1.0	46.9	7.48	353.0			
Oct-95	759	22.2	369					1.7	2.28	0.58	47	7.4	335.0			
Dec-96	719	21.0	392					1.7	1.8	0.1	47	7.38	355.0			
Nov-97	630	27.3	453			1.05	0.05	1.48	3.8	2.32		7.3	325.0			
Oct-98	619	32.4	589			0.09	0.05	0.4	0.8	0.4	50	6.79	413.0	25.30		
Oct-99	658	38.6	260	0.9	370	0.69	0.05	0.92	5.9	4.0	63.2	7.5	240.0	13.2		
Sep-05	746	24.9	409	1.15	434	<0.1	<0.1	0.64	0.8	0.16	59	8.26	320.0	14.6	0.032	0.05
Sep-06	734	25.2	396	1.11	438	<0.1	<0.1	0.55	0.68	0.13	58	7.36	334.0	15.3	0.027	0.046
Nov-07	893	23.6	371	0.989	415	<0.1	<0.1	0.65	0.78	0.13	53	6.85	321.0	15	0.027	0.05
Nov-08	697	23.4	367	1	416	<0.1	<0.1	0.61	3.41	2.8	60	7.82	315.0	14.9	0.035	0.04
Nov-09	769	24.1	360	0.945	421	<0.1	<0.1	0.6	0.67	0.07	56	7.14	331.0	15.7	0.023	0.04
Nov-10	749	22.2	374	0.943	415	<0.1	<0.1	0.52	0.64	0.12	60	7.32	313.0	13.8	0.025	0.03
Nov-11	763	22	395	0.92	422	<0.1	<0.1	0.63	0.91	0.28	52	7.58	321.0	15.5	0.029	0.04
Nov-12	708	19.9	406	1.1	424	<0.1	<0.1	0.66	0.76	0.1	53	7.67	321.0	15.1	0.032	0.03
Nov-13	740	23.0	390	<0.1	436	<0.1	0.017	0.78	0.79	0.01	54	7.74	320.0	15.0	0.027	0.028
Nov-14	750	22.0	400	<0.1	416	<0.1	<0.01	0.66	0.81	0.15	53	7.85	320.0	16.0	0.14	0.57
Nov-15	730	22.0	380	<0.1	410	<0.1	<0.01	0.79	0.96	0.17	44	7.9	320.0	14.0	0.029	0.034
Nov-16	730	23.0	380	<0.1	444	<0.10	0.013	0.82	1	0.18	44	7.91	330.0	15.0	0.029	0.04
Nov-17	740	22	350	<0.1	365	<0.10	<0.010	0.77	0.81	0.04	48	7.82	320.0	13.0	0.028	0.04
Nov-18	710	22	350	<0.1	360	<0.10	<0.010	0.89	0.92	0.03	41	8.08	330.0	13.0	0.028	0.04
Nov-19	740	22	390	<0.1	385	<0.10	0.015	0.97	1	0.03	41	7.86	320.0	14.0	0.029	0.04
Nov-20	740	22	350	<0.1	400	<0.10	<0.010	0.88	0.96	0.08	46	7.77	320.0	13.0	0.027	0.03
Nov-21	720	23	390	<0.1	370	<0.10	0.016	0.69	0.86	0.17	53	8.05	310.0	14.0	0.030	0.03
Oct-22	720	23	380	<0.1	365	<0.10	<0.010	0.69	0.79	0.10	47	7.98	330.0	14.0	0.030	0.28
Nov-23	760	22	390	<0.1	375	<0.10	<0.010	0.91	1	<0.1	42	7.71	320.0	15.0	0.030	
Average	735.79	23.97	384.70	0.56	403.25	0.14	0.03	0.95	1.50	0.53	52.69	7.62	322.31	15.02	0.03	0.07
Std. Dev.	46.39	3.66	46.86	0.54	30.29	0.25	0.02	0.52	1.22	0.91	7.99	0.37	32.12	2.88	0.02	0.12

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS

Our File: 213086
Durham Landfill

GM BluePlan Engineering Limited



Our File: 213086
Durham Landfill

GM BluePlan Engineering Limited

HISTORICAL GROUNDWATER QUALITY DATA – TW-10

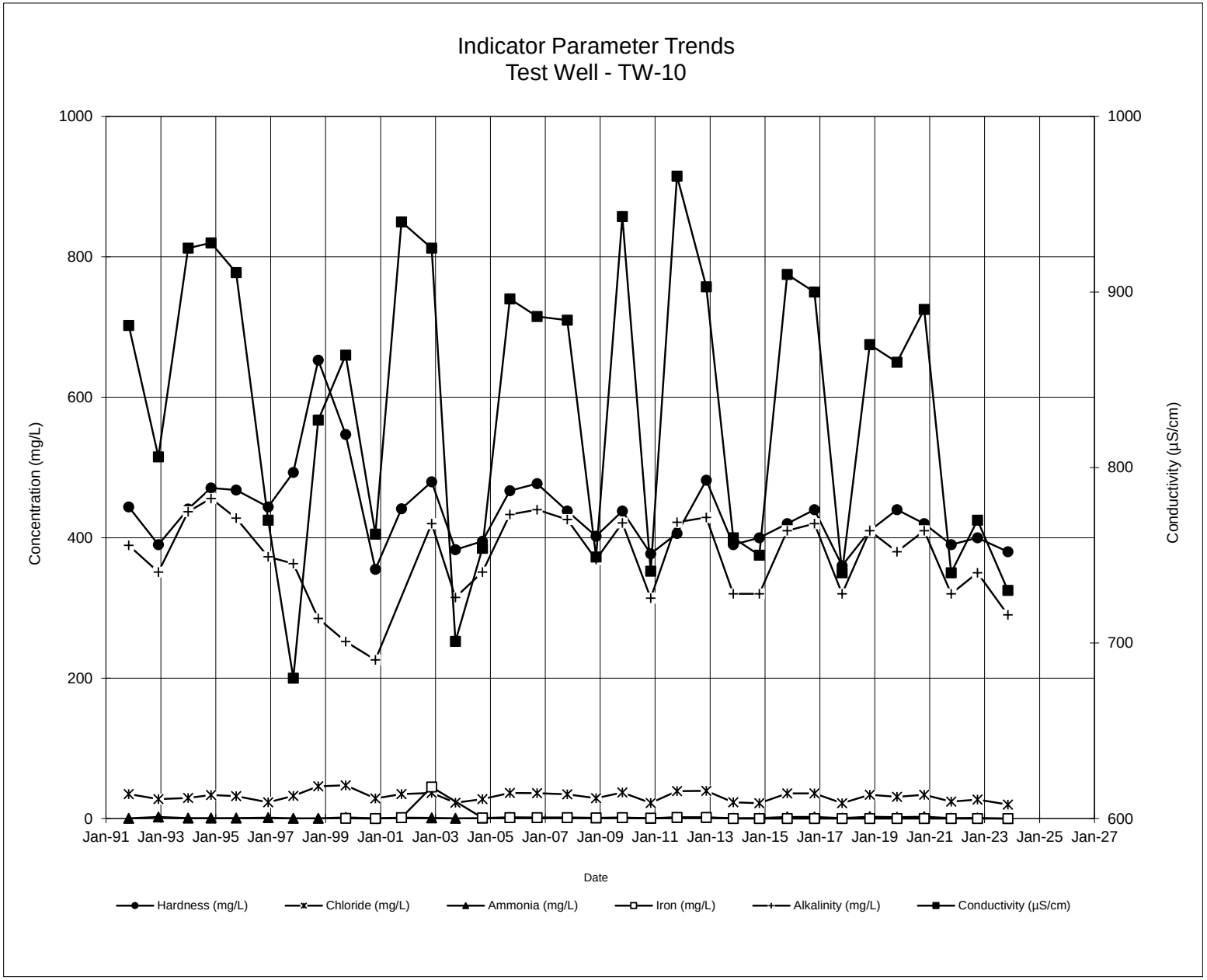
Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Nov-91	881	35.0	444					0.24	0.54	0.3	39.0	7.54	389			
Dec-92	806	27.8	390					2.4	3.18	0.78	44.5	7.38	351			
Jan-94	925	29.2	441					0.63	0.98	0.35	36.8	7.44	437			
Nov-94	928	33.5	471					0.7	1.29	0.59	33.1	7.39	456			
Oct-95	911	32.0	468					0.84	1.08	0.24	34.3	7.28	428			
Dec-96	770	23.0	444					1.3	1.4	0.1	45.0	7.88	373			
Nov-97	680	32.3	493			0.05	0.05	0.5	2.9	2.4		7.30	363			
Oct-98	827	45.9	653			0.05	0.05	0.28	0.78	0.5	32.7	6.81	285	31.3		
Oct-99	864	47.4	547	0.46	480	0.05	0.05	1.55	3.8	2.2	36.5	7.37	252	25.8		
Nov-00	762	28.8	355	<0.01	350	0.64	<0.05	0.5	1.3	0.8	75.7	7.53	226	19.8	<0.01	0.07
Oct-01	940	34.8	441	1.44	479	<0.1	<0.1	1.43	1.91	0.48	32.5	6.83		19.8	0.06	0.12
Nov-02	925	36.4	480	44.9	513	0.1	<0.1	1.11	1.49	0.38	38.0	8.03	420	22.2	0.06	0.10
Oct-03	701	22.5	383		431	<0.1	<0.1	0.44	0.54	0.1	71	8.22	315	13.6	0.03	0.05
Sep-04	754	27.6	395	0.93	452	<0.1	<0.1	0.6	0.72	0.12	62	7.61	351	15.7	0.03	0.05
Sep-05	896	36.6	467	1.39	517	<0.1	<0.1	1.54	1.85	0.31	36	8.12	433	21.9	0.07	0.11
Sep-06	886	36.2	477	1.35	531	<0.1	<0.1	1.35	1.65	0.3	38	7.26	440	23.7	0.06	0.10
Nov-07	884	34.6	438	1.43	503	0.1	<0.1	1.39	1.73	0.34	34	7.27	426	22.9	0.06	0.12
Nov-08	749	29.1	402	0.94	461	<0.1	<0.1	1.05	1.3	0.25	49	7.61	369	19.1	0.04	0.07
Nov-09	943	37	438	1.24	510	<0.1	<0.1	1.36	1.55	0.19	40	7.02	421	24.4	0.05	0.10
Nov-10	741	22.3	377	0.76	416	<0.1	<0.1	0.52	0.62	0.10	59	7.27	314	13.9	0.03	0.03
Nov-11	966	39.2	406	1.63	492	<0.1	<0.1	1.57	2.10	0.53	35	7.58	422	19.9	0.05	0.10
Nov-12	903	39.5	482	1.53	527	0.1	<0.1	1.73	2.18	0.45	31	7.59	429	27.3	0.08	0.13
Nov-13	760	23	390	<0.1	436	<0.1	<0.01	0.75	0.76	0.01	58	7.69	320	16	0.03	0.26
Nov-14	750	22	400	<0.1	416	<0.1	<0.01	0.6	0.74	0.14	54	7.86	320	15	0.03	0.04
Nov-15	910	36	420	<0.1	486	<0.1	<0.01	2.3	2.5	0.2	33	7.83	410	26	0.07	0.12
Nov-16	900	36	440	<0.1	474	<0.10	<0.010	2.3	2.6	0.3	32	7.81	420	28	0.07	0.12
Nov-17	740	22	360	<0.1	425	<0.10	<0.010	0.68	0.61	<0.10	49	7.82	320	13	0.03	0.03
Nov-18	870	34	410	<0.1	430	<0.10	<0.010	2.5	2.4	<0.10	30	8.08	410	25	0.07	0.11
Nov-19	860	31	440	<0.1	445	<0.10	<0.010	2	2.1	0.1	39	7.8	380	22	0.05	0.086
Nov-20	890	34	420	<0.1	460	<0.10	<0.010	2.6	2.7	0.1	34	7.95	410	25	0.06	0.097
Nov-21	740	24	390	<0.1	410	<0.10	<0.010	0.61	0.81	0.2	64	8.13	320	14	0.03	0.029
Oct-22	770	27	400	<0.1	335	<0.10	<0.010	1.0	1.1	0.1	47	7.98	350	17	0.04	0.049
Nov-23	730	20	380	<0.1	405	0.57	<0.010	<0.050	<0.10	<0.10	56	7.86	290	15	0.03	
Average	835.21	31.51	434.60	2.44	455.38	0.10	0.03	1.20	1.60	0.45	43.72	7.61	370.31	20.67	0.05	0.09
Std. Dev.	83.46	6.90	57.92	9.07	51.25	0.15	0.02	0.70	0.85	0.56	12.54	0.37	60.09	5.16	0.02	0.05

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS

Our File: 213086
Durham Landfill

GM BluePlan Engineering Limited



Our File: 213086
Durham Landfill

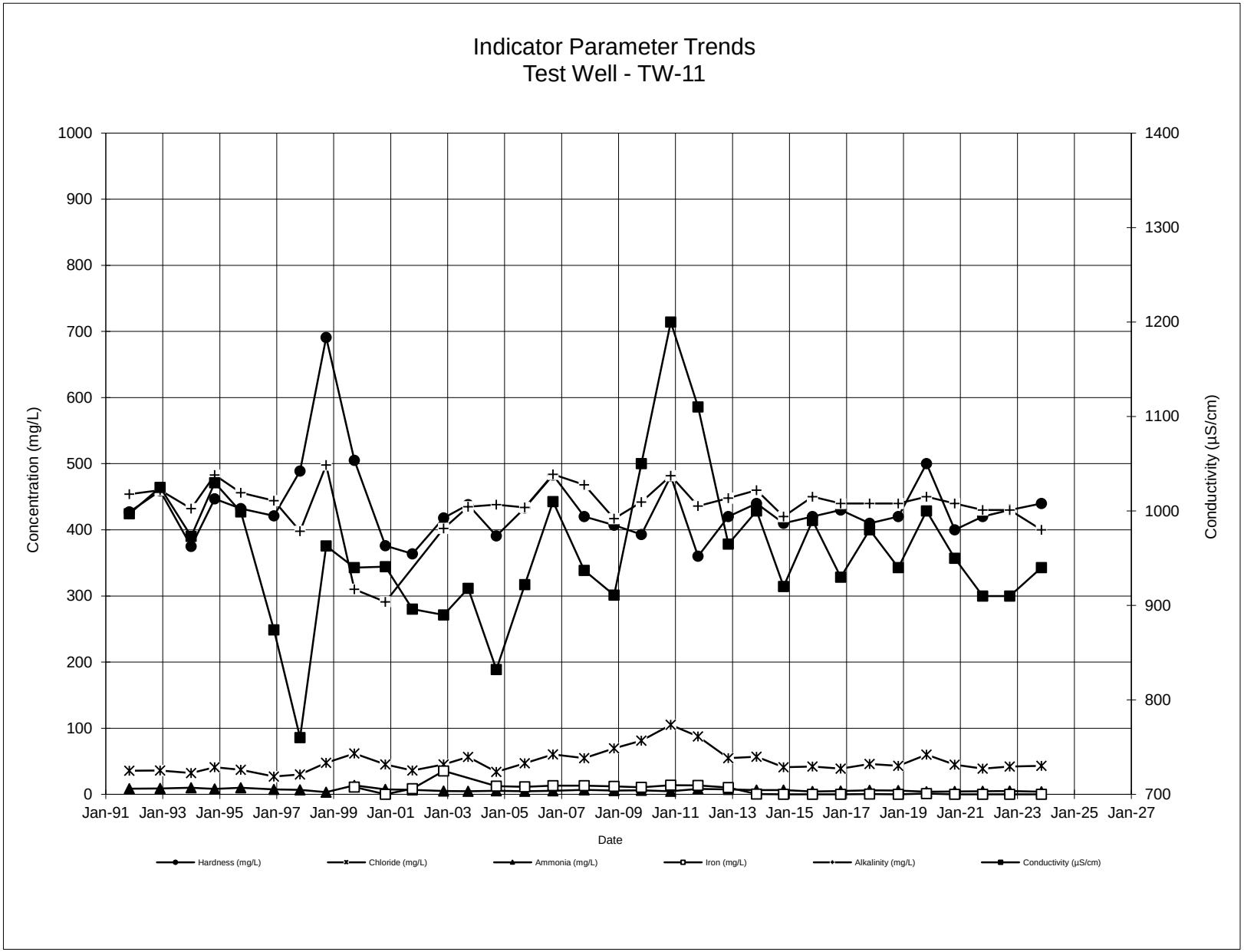
GM BluePlan Engineering Limited

HISTORICAL GROUNDWATER QUALITY DATA – TW-11

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Nov-91	997	35.6	427					8.5	10	1.5	23.0	7.16	454			
Dec-92	1025	36.0	459					8.8	10.9	2.1	25.0	7.10	460			
Jan-94	973	32.1	375					9.95	12.3	2.45	23.4	7.22	432			
Nov-94	1030	40.8	447					8.22	12.5	4.28	21.5	7.18	483			
Oct-95	999	37.1	432					10	11.8	1.8	20.6	7.11	456			
Dec-96	874	27.0	421					7.5	8.2	0.7	18.0	7.69	444			
Nov-97	760	29.9	489			0.05	0.05	6.64	13.1	6.46		7.30	398			
Oct-98	963	47.5	691			0.06	0.05	3.28	5.52	2.24	18.5	6.68	498	38.4		
Oct-99	940	61.8	505	11.1	490	1.2	0.05	13.6	15.2	1.6	23.2	7.20	310	32.4		
Nov-00	941	45.2	376	0.05	430	0.56	<0.05	7.35	8.6	1.25	24.4	7.25	291	35.9	<0.01	0.18
Oct-01	896	36.2	364	8.5	450	<0.1	<0.1	6.85	9.1	2.25	18.1	6.76		22.4	0.05	0.14
Nov-02	890	45.2	418	35.4	487	0.2	<0.1	4.93	5.4	0.47	21.0	7.97	402	27.7	0.05	0.12
Oct-03	918	56.4	438		539	<0.1	<0.1	4.48	4.72	0.24	18	8.09	435	36.4	0.047	0.15
Sep-04	832	33.8	391	12.40	493	<0.1	<0.1	5.29	5.66	0.37	16	7.29	438	26.2	0.04	0.15
Sep-05	922	47	433	11.5	524	<0.1	<0.1	4.68	5.54	0.86	19	7.88	434	28.6	0.05	0.15
Sep-06	1010	60.3	483	13.2	599	<0.1	<0.1	5.24	5.73	0.49	17	7.09	484	38.8	0.049	0.16
Nov-12	965	54.8	420	10.4	557	0.1	<0.1	7.61	8.79	1.18	15	7.49	448	50.3	0.05	0.17
Nov-13	1000	57	440	0.28	542	<0.1	<0.01	6.3	7.2	0.9	15	7.59	460	45	0.03	0.18
Nov-14	920	41	410	<0.1	464	<0.1	<0.01	6.4	7.2	0.8	15	7.73	420	37	0.32	0.14
Nov-15	990	42	420	<0.1	520	<0.1	<0.01	4.4	4.7	0.3	16	7.73	450	33	0.03	0.17
Nov-16	930	39	430	<0.1	484	<0.10	<0.010	5	5.6	0.6	14	7.7	440	29	0.03	0.17
Nov-17	980	46	410	0.48	460	<0.10	<0.010	6.1	6.1	<0.10	11	7.61	440	27	0.03	0.14
Nov-18	940	43	420	<0.1	460	<0.10	<0.010	5.8	5.8	<0.10	12	7.88	440	28	0.02	0.14
Nov-19	1000	60	500	1.1	515	<0.10	<0.010	4.1	4.3	0.2	13	7.71	450	36	0.03	0.15
Nov-20	950	45	400	<0.1	470	<0.10	<0.010	4.4	4.6	0.2	9.5	7.56	440	32	0.03	0.17
Nov-21	910	39	420	<0.1	465	<0.10	<0.010	4.5	5	0.5	16	7.98	430	27	0.03	0.14
Oct-22	910	42	430	<0.1	410	<0.10	<0.010	5.1	5.2	0.1	18	7.82	430	25	0.03	0.10
Nov-23	940	43	440	<0.1	465	<0.10	<0.010	4.1	4.1	<0.10	23	7.59	400	30	0.03	
Average	957.97	49.14	434.84	6.98	508.24	0.12	0.03	6.37	7.50	1.24	17.26	7.45	434.75	35.07	0.05	0.16
Std. Dev.	78.13	17.01	58.43	8.45	57.78	0.24	0.02	2.16	2.92	1.34	4.20	0.36	42.33	9.02	0.06	0.03

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS



Our File: 213086
Durham Landfill

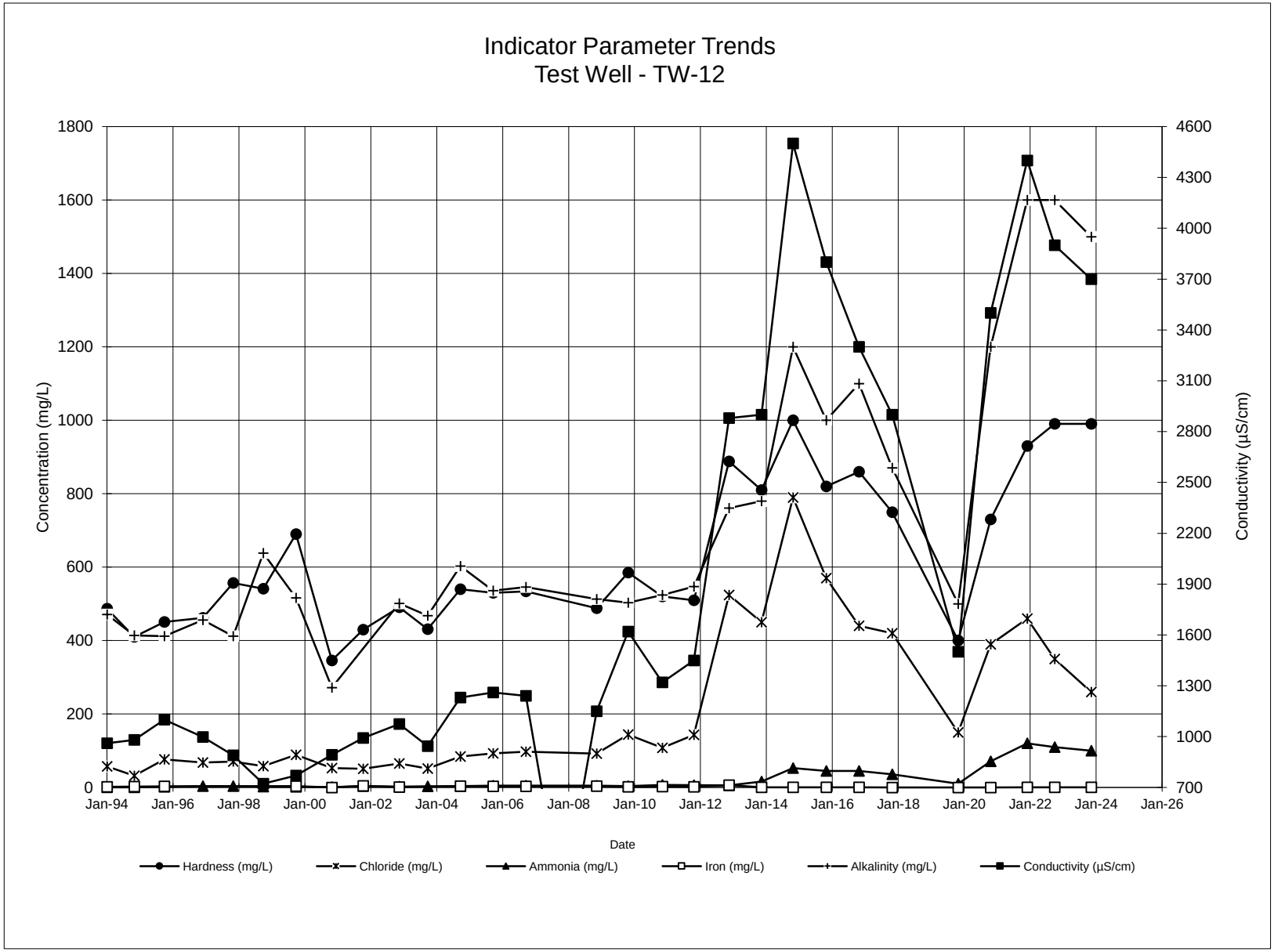
GM BluePlan Engineering Limited

HISTORICAL GROUNDWATER QUALITY DATA – TW-12

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Jan-94	960	57.3	487	1.38				0.293	0.74	0.45	23.5	7.46	471			
Nov-94	980	31.9	410	2.04				0.66	1.4	0.74	15.6	7.27	414			
Oct-95	1100	76.3	451	2.69				1.9	2.28	0.38	22.4	7.14	412			
Dec-96	998	68.0	462					3.5	3.8	0.3	21.0	7.58	456			
Nov-97	890	70.6	557			0.05	0.05	3.55	8.8	5.25		6.90	412			
Oct-98	722	58.3	541			0.07	0.05	2.16	4.02	1.86	22.1	6.62	638	50.80		
Oct-99	770	88.8	690	3.3	420	1.29	0.05	1.43	9.2	7.8	20.6	7.46	516	42.90		
Nov-00	893	52.5	346	<0.01	420	1.49	<0.05	1.25	4.5	3.25	28.3	7.62	272	50.4	<0.01	0.115
Oct-01	992	51.1	430	4.22	516	<0.1	<0.1	3.32	4.74	1.42	15.6	7.17		34.1	0.1	0.160
Nov-02	1075	65.0	491	1.06	609	0.1	<0.1	2.34	5.1	2.76	27.0	8.18	501	43.6	0.1	0.170
Oct-03	944	51.3	431		563	0.1	<0.1	2.68	3.47	0.79	28	8.24	468	38	0.083	0.141
Sep-04	1230	84.3	540	3.56	734	0.2	<0.1	3.59	6.12	2.53	38	7.31	603	54.9	0.108	0.306
Sep-05	1260	92.5	530	2.83	704	0.2	<0.1	5.24	8.56	3.32	40	8.15	536	56.2	0.141	0.318
Sep-06	1240	97.1	534	3.07	736	0.2	<0.1	4.81	13	8.19	37	7.17	546	65.1	0.128	0.27
Nov-07	Dry								Insufficient Water							
Nov-08	1150	92	488	3.58	685	<0.1	<0.1	4.89	9.1	4.21	32	7.45	513	60.4	0.085	0.224
Nov-09	1620	144	585	1.8	952	0.2	<0.1	3.86	5.02	1.16	178	7.01	503	98	0.117	0.247
Nov-10	1320	108	520	2.38	749	0.2	<0.1	6.71	8.53	1.82	49	7	524	68.6	0.107	0.277
Nov-11	1450	143	510	1.79	743	0.1	<0.1	5.98	6.13	0.15	6	7.57	547	68.6	0.088	0.242
Nov-12	2880	524	888	6.52	1570	<0.1	<0.1	5.62	18.9	13.28	2	7.52	761	270	0.211	0.338
Nov-13	2900	450	810	0.12	1550	<0.1	<0.01	16	18	2.0	69	7.53	780	310	0.2	0.91
Nov-14	4500	790	1000	0.16	2370	0.22	0.027	53	55	2.0	<1	7.73	1200	570	0.32	2.3
Nov-15	3800	570	820	0.18	1720	0.11	0.044	45	49	4.0	<1	7.62	1000	410	0.27	1.9
Nov-16	3300	440	860	0.12	1550	0.11	0.017	45	48	3.0	2.9	7.77	1100	360	0.26	1.8
Nov-17	2900	420	750	<0.01	1490	0.91	0.034	36	31	<0.10	34	7.59	870	270	0.19	1.2
Nov-18									Insufficient Water							
Nov-19	1500	150	400	<0.1	1310	4.24	0.068	10	12	2.0	19	7.83	500	160	0.12	0.53
Nov-20	3500	390	730	<0.1	2110	2.37	0.024	71	73	2.0	38	7.68	1200	350	0.27	2.7
Dec-21	4400	460	930	0.16	1980	<0.10	0.016	120	120	<0.10	4.6	7.05	1600	410	0.3	3.5
Oct-22	3900	350	990	0.23	1870	14.9	0.269	110	100	<0.10	<1.0	7.72	1600	380	0.35	3.3
Nov-23	3700	260	990	0.17	1800	9.37	0.104	100	99	<0.10	50	7.45	1500	300	0.3	
Average	1895.80	191.34	605.70	1.60	1023.85	1.41	0.05	22.33	24.28	2.88	31.72	7.23	704.97	180.87	0.18	0.95
Std. Dev.	1284.99	206.79	229.84	1.73	616.08	3.39	0.05	34.92	33.29	2.99	33.98	1.41	398.17	163.53	0.10	1.11

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS

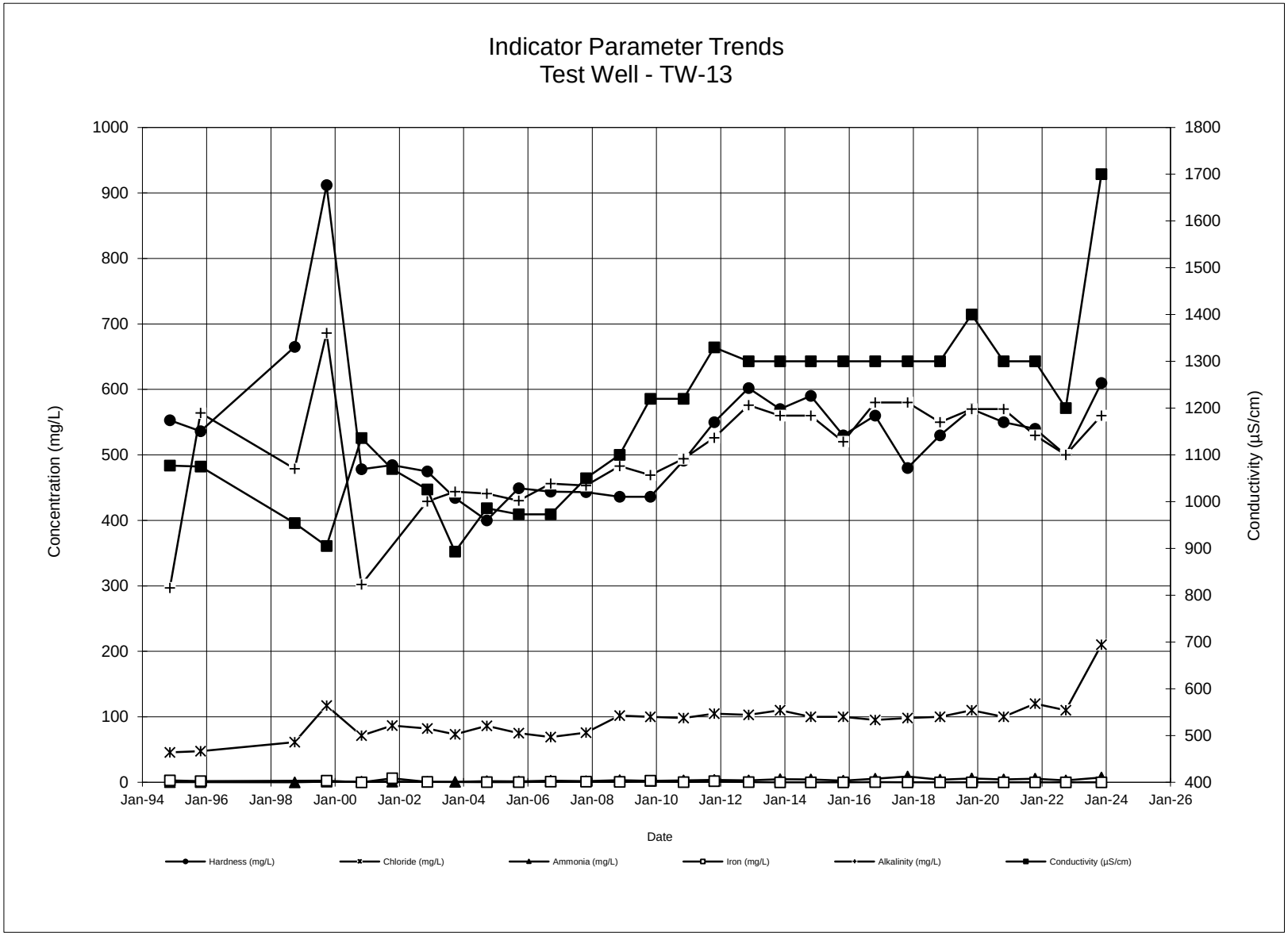

Indicator Parameter Trends
Test Well - TW-12
Concentration (mg/L)
Conductivity (µS/cm)
1800
1600
1400
1200
1000
800
600
400
200
0
4600
4300
4000
3700
3400
3100
2800
2500
2200
1900
1600
1300
1000
700
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22
Jan-24
Jan-26
Date
Hardness (mg/L)
Chloride (mg/L)
Ammonia (mg/L)
Iron (mg/L)
Alkalinity (mg/L)
Conductivity (µS/cm)

HISTORICAL GROUNDWATER QUALITY DATA – TW-13

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Nov-94	1077	45.7	553	2.96	620	0.3	<0.01	0.28	0.8	0.52	5.7	7.20	297	36.70		
Oct-95	1075	47.6	536	1.73	604	0.3	<0.01	0.39	0.67	0.28	8.1	7.22	564	37.70		
Oct-98	954	61.4	665			0.06	0.05	0.05	0.39	0.34	21.3	6.77	479	52.00		
Oct-99	905	117.1	912	2.42	480	0.44	0.005	0.95	7.3	6.3	24.0	7.21	686	37.60		
Nov-00	1136	71.3	478	<0.01	530	0.68	<0.05	1.01	3.2		40.4	7.35	302	49.10	<0.01	0.15
Oct-01	1070	86.7	484	6.1	556.4	<0.1	<0.1	1.13	2.53	1.4	12.1	7.04		39.60	0.12	0.15
Nov-02	1026	82.1	475	0.54	563	0.1	<0.1	0.76	1.15	0.39	19.0	8.14	429	41.70	0.09	0.09
Oct-03	893	73.1	434		544	0.1	<0.1	0.69	1.92	1.2	9.0	8.10	444	40.3	0.09	0.09
Sep-04	986	86.3	400	0.396	555	0.1	<0.1	1.64	3.13	1.5	11.0	7.56	441	55.6	0.12	0.12
Sep-05	973	74.9	449	0.428	555	0.2	<0.1	1.27	3.54	2.3	10.0	8.13	430	54.9	0.1	0.14
Sep-06	973	69.2	444	0.974	565	0.1	<0.1	2.38	16.1	14	10.0	7.29	456	52.0	0.09	0.12
Nov-07	1050	76.0	443	0.875	594	<0.1	<0.1	1.89	3.59	1.7	32.0	7.33	453	53.4	0.10	0.13
Nov-08	1100	102	436	0.575	644	<0.1	<0.1	3.07	7.05	4.0	29.0	7.55	483	61.1	0.126	0.15
Nov-09	1220	100	436	2.44	642	0.2	<0.1	2.26	2.29	0.03	40.0	7.13	469	58.2	0.11	0.15
Nov-10	1220	98.1	491	0.429	661	<0.1	<0.1	2.94	4.42	1.5	28.0	7.00	494	59	0.13	0.20
Nov-11	1330	105	550	1.78	714	<0.1	<0.1	3.73	7.36	3.6	25.0	7.31	526	65.1	0.182	0.22
Nov-12	1300	103	602	0.176	753	<0.1	<0.1	2.81	4.88	2.07	20.0	7.55	576	70.6	0.17	0.24
Nov-13	1300	110	570	<0.1	748	<0.1	0.02	4.6	5.4	0.8	24.0	7.59	560	68	0.16	0.24
Nov-14	1300	100	590	<0.1	746	0.11	0.02	4.3	8.8	4.5	12.0	7.70	560	73	0.14	0.27
Nov-15	1300	100	530	<0.1	708	3.19	0.70	2.5	3.4	0.90	16.0	7.76	520	68	0.16	0.28
Nov-16	1300	95	560	0.19	526	<0.10	0.03	5.6	6.70	1.1	<1.0	7.89	580	70	0.13	0.27
Nov-17	1300	98	480	<0.1	730	<0.10	<0.010	8.9	8.8	<0.10	4.4	7.64	580	72	0.15	0.24
Nov-18	1300	100	530	<0.1	630	2.08	0.543	3.9	5.3	1.4	3	7.94	550	72	0.16	0.27
Nov-19	1400	110	570	<0.1	695	0.49	0.067	5.8	7.1	1.3	4.3	7.88	570	73	0.16	0.27
Nov-20	1300	100	550	<0.1	625	0.24	0.125	4.4	5.2	0.8	<1.0	7.82	570	73	0.19	0.27
Nov-21	1300	120	540	<0.1	695	<0.10	0.025	5.4	7.5	2.1	13.0	7.88	530	65	0.15	0.22
Oct-22	1200	110	500	<0.1	590	1.18	0.02	3	4.5	1.5	<1.0	7.95	500	69	0.11	0.23
Nov-23	1700	210	610	<0.1	765	0.23	0.019	7.3	7.9	0.6	3.4	7.57	560	110	0.14	
Average	1178.14	94.73	529.21	0.87	631.05	0.38	0.08	2.96	5.03	2.24	16.99	7.55	504.04	59.91	0.13	0.20
Std. Dev.	181.51	29.79	98.69	1.38	81.66	0.70	0.16	2.22	3.33	2.93	11.05	0.37	84.30	15.86	0.03	0.06

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS


Indicator Parameter Trends
Test Well - TW-13
Concentration (mg/L)
Conductivity (µS/cm)
Date
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22
Jan-24
Jan-26
Hardness (mg/L)
Chloride (mg/L)
Ammonia (mg/L)
Iron (mg/L)
Alkalinity (mg/L)
Conductivity (µS/cm)

HISTORICAL GROUNDWATER QUALITY DATA – TW-14

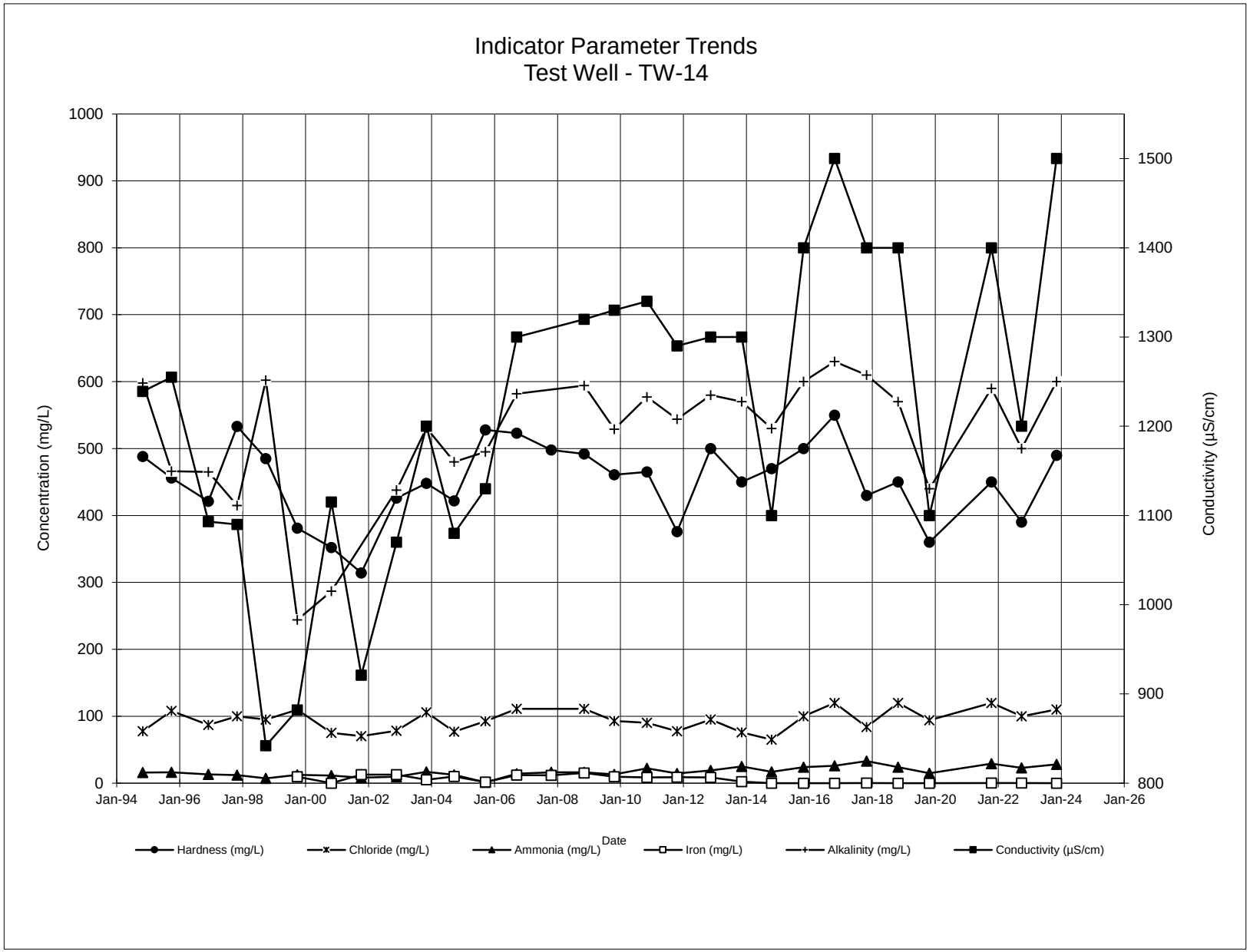
Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Nov-94	1239	77.5	488					15.8	20	4.2	16.0	7.11	598			
Oct-95	1255	108.0	456					16.1	18.5	2.4	15.7	7.05	466			
Dec-96	1093	87.0	421					13.1	13.8	0.7	31.0	7.47	465			
Nov-97	1090	99.8	533			0.05	0.05	11.9	18.4	6.5		6.80	415			
Oct-98	842	95.2	485			0.07	0.05	7.13	9.54	2.41	6.5	6.73	602	81.00		
Oct-99	882	109.6	381	9.52	460	0.57	0.05	12.3	14.3	2	32.8	7.72	244	53.50		
Nov-00	1115	75.3	352	<0.01	530	0.65	<0.05	11.41	13.6	2.19	20.7	7.32	287	70.80	<0.01	0.16
Oct-01	921	70.3	314.219	12.7	478.92	<0.1	<0.1	8.4	10.8	2.4	4.3	7.20		46.90	0.02	0.19
Nov-02	1070	78.4	425.973	12.6	560	0.2	<0.1	9.67	11.8	2.13	9.0	7.51	438	55.5	0.04	0.27
Nov-03	1200	106.0	448	5.2	690	<0.1	<0.1	17	18.9	1.9	12.0	7.25	531	70.3	0.0	0.29
Sep-04	1080	76.9	422	9.86	612	<0.1	<0.1	12.3	13.9	1.6	28.0	7.32	480	47.8	0.05	0.20
Sep-05	1130	92.8	528	1.44	660	0.1	<0.1	1.23	1.86	0.63	15.0	7.84	495	72.3	0.10	0.19
Sep-06	1300	111	523	12	763	<0.1	<0.1	14.1	15.4	1.3	21	7.19	582	67.8	0.058	0.262
Nov-07			498.0	11.7			<0.1	16.3	18	1.7				64.1	0.06	0.26
Nov-08	1320	111	492.0	15.3	769	<0.1	<0.1	16.4	18.1	1.7	17.0	7.41	594	72.1	0.06	0.27
Nov-09	1330	93.1	461	9.76	693	<0.1	<0.1	13.1	14.1	1	17.0	6.97	529	63.2	0.045	0.206
Nov-10	1340	90.2	465	8.6	726	<0.1	<0.1	22.2	26.1	3.9	7.0	6.88	577	63.8	0.063	0.32
Nov-11	1290	77.6	376	8.84	624	0.1	<0.1	14.5	24	9.5	9.0	7.41	544	40.4	0.04	0.23
Nov-12	1300	94.9	500	8.49	726	<0.1	<0.1	19.1	19.8	0.7	11.0	7.51	580	71	0.07	0.27
Nov-13	1300	76	450	2.2	610	<0.1	<0.01	25.0	21	<0.10	9.0	7.35	570	61	0.05	0.28
Nov-14	1100	65	470	<0.1	588	<0.1	<0.01	17.0	17.00	<0.10	12.0	7.57	530	52	0.04	0.25
Nov-15	1400	100.0	500	<0.1	680	<0.1	0.021	24.0	25	1.0	<1.0	7.53	600	70	0.06	0.37
Nov-16	1500	120	550	<0.1	712	<0.10	<0.010	26.0	28	2.0	<1.0	7.61	630	80	0.07	0.39
Nov-17	1400	84.0	430	0.22	605	<0.10	<0.010	33.0	32	<0.10	<1.0	7.63	610	61	0.06	0.36
Nov-18	1400	120.0	450	<0.1	615	<0.10	0.013	24.0	23	<0.10	<1.0	7.74	570	72	0.06	0.33
Nov-19	1100	94.0	360	<0.1	505	<0.10	<0.010	15.0	16	1	<1.0	7.8	440	64	0.02	0.32
Nov-21	1400	120.0	450	0.29	675	<0.10	<0.010	29.0	33	4	<1.0	7.81	590	84	0.06	0.40
Oct-22	1200	100.0	390	0.29	570	<0.10	<0.010	23.0	25	2	<1.0	7.76	500	69	0.03	0.28
Nov-23	1500	110.0	490	<0.1	675	<0.10	<0.010	28.0	29	1	<1.0	7.48	600	90	0.06	
Average	1217.75	94.41	452.04	5.39	631.61	0.11	0.03	17.10	18.96	2.40	15.47	7.39	521.00	65.74	0.05182	0.27695
Std. Dev.	174.15	15.95	58.21	5.44	86.96	0.16	0.02	7.22	7.01	2.08	8.19	0.31	95.25	11.92	0.01746	0.0668

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS

Our File: 213086
Durham Landfill

GM BluePlan Engineering Limited



Our File: 213086
Durham Landfill

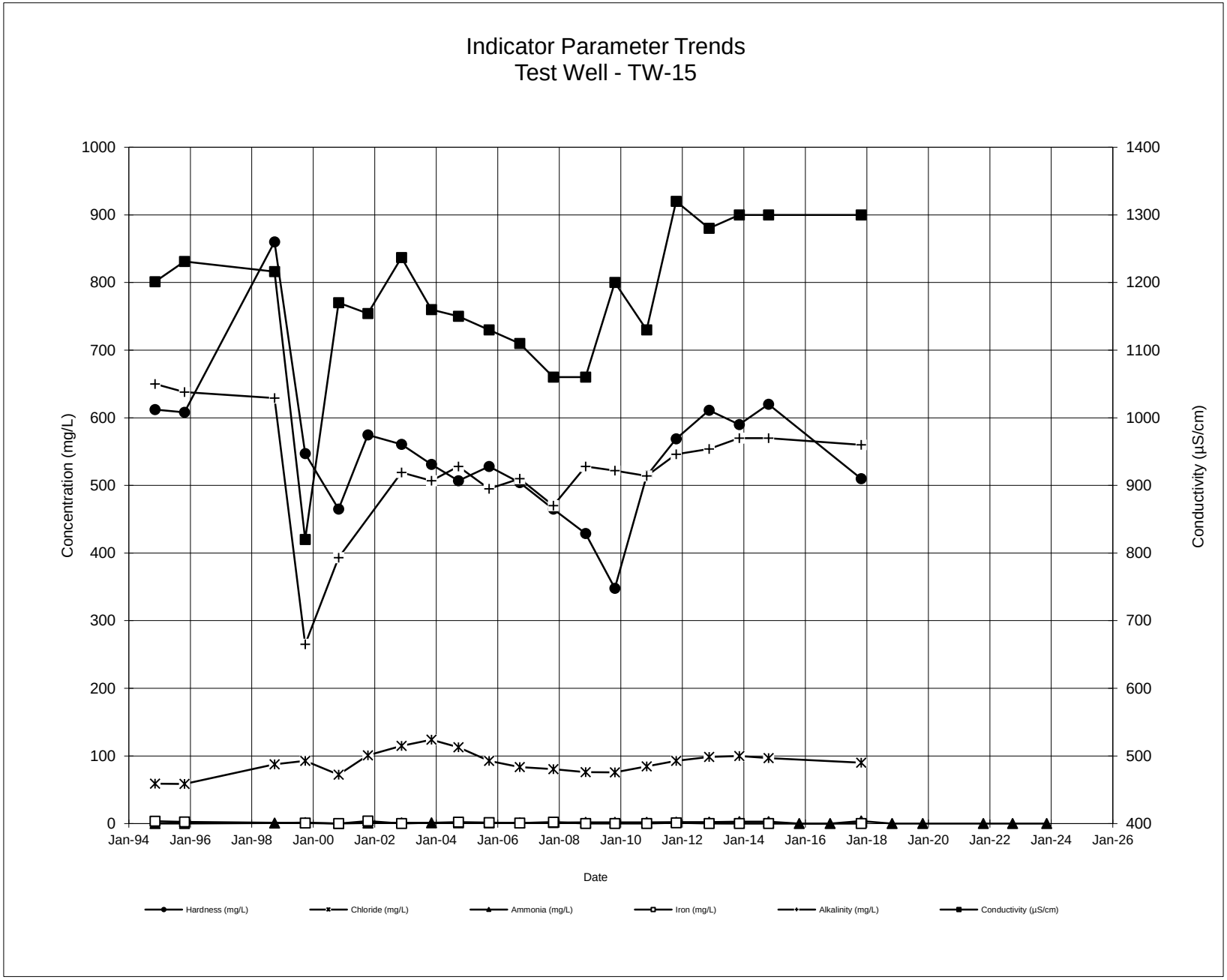
GM BluePlan Engineering Limited

HISTORICAL GROUNDWATER QUALITY DATA – TW-15

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Nov-94	1201	58.9	612	3.48	634	0.30	0.01	0.24	0.88	0.64	5.6	7.36	650	46.7		
Oct-95	1231	58.6	608	2.41	678	0.30	<0.01	0.18	0.67	0.49	7.8	7.15	638	48.2		
Oct-98	1216	87.8	860			0.09	0.05	0.84	3.22	2.38	12.4	6.60	629	67.2		
Oct-99	820	92.7	547	0.96	460	1.09	0.05	1.42	4.1	2.6	13.9	7.32	265	33.6		
Nov-00	1170	72.2	465	<0.01	500	1.41	<0.05	0.14	0.4	0.26	19.4	7.65	393	49.2	<0.01	0.16
Oct-01	1154	101.0	575	3.78	600	0.60	<0.1	0.88	1.58	0.7	15.2	7.36		48.1	0.1	0.17
Nov-02	1237	115.0	561	0.29	688	0.10	<0.1	1.22	1.95	0.73	14.0	8.47	519	56.3	0.09	0.15
Nov-03	1160	124	531		687	0.10	<0.1	1.04	1.63	0.59	13	8.09	507	60.9	0.09	0.15
Sep-04	1150	113	507	2.04	682	0.10	<0.1	1.12	3.36	2.24	14	7.71	528	63.2	0.08	0.16
Sep-05	1130	92.8	528	1.44	660	0.10	<0.1	1.23	1.86	0.63	15	7.84	495	72.3	0.10	0.19
Sep-06	1110	83.5	504	0.841	649	0.10	<0.1	1.24	10.2	8.96	15	7.39	510	67.6	0.09	0.17
Nov-07	1060	80.5	465	2.02	604	0.10	<0.1	1.51	2.57	1.06	16	7.35	470	61.7	0.09	0.18
Nov-08	1060	76.2	429	0.01	621	0.10	<0.1	1.84	3.66	1.82	17	7.52	528	55.9	0.10	0.17
Nov-09	1200	75.8	348	0.23	635	0.20	<0.1	1.89	5.63	3.74	19	7.02	522	104	0.07	0.14
Nov-10	1130	84.5	514	0.26	650	0.10	<0.1	1.96	3.87	1.91	19	7.11	514	57.4	0.11	0.22
Nov-11	1320	92.6	569	1.22	702	<0.1	<0.1	2.08	5.74	3.66	18	7.24	546	63.4	0.13	0.25
Nov-12	1280	98.5	611	0.03	724	0.10	<0.1	2.30	5.96	3.66	16	7.52	554	65.9	0.13	0.25
Nov-13	1300	100	590	<0.1	728	0.19	0.29	2.90	5.60	2.70	16	7.64	570	66	0.14	0.23
Nov-14	1300	97	620	<0.1	732	0.59	0.165	2.80	7.20	4.40	12	7.77	570	75	0.14	0.27
Nov-15							Insufficient Water									
Nov-16							Insufficient Water									
Nov-17	1300	90	510	<0.1	620	<0.10	<0.010	3.8	4.3	0.5	7.8	7.7	560	64	0.13	0.26
Nov-18							Insufficient Water									
Nov-19							Insufficient Water									
Nov-21							Insufficient Water									
Oct-22							Insufficient Water									
Nov-23							Insufficient Water									
Average	1176.45	89.73	547.67	1.06	644.95	0.29	0.06	1.53	3.72	2.18	14.31	7.49	524.63	61.33	0.11	0.20
Std. Dev.	114.92	17.02	100.56	1.22	70.97	0.37	0.06	0.94	2.48	2.06	3.79	0.40	86.75	14.16	0.02	0.04

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS


Indicator Parameter Trends
Test Well - TW-15
Concentration (mg/L)
Conductivity (µS/cm)
1000
900
800
700
600
500
400
300
200
100
0
1400
1300
1200
1100
1000
900
800
700
600
500
400
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22
Jan-24
Jan-26
Date
Hardness (mg/L)
Chloride (mg/L)
Ammonia (mg/L)
Iron (mg/L)
Alkalinity (mg/L)
Conductivity (µS/cm)

HISTORICAL GROUNDWATER QUALITY DATA – TW-16

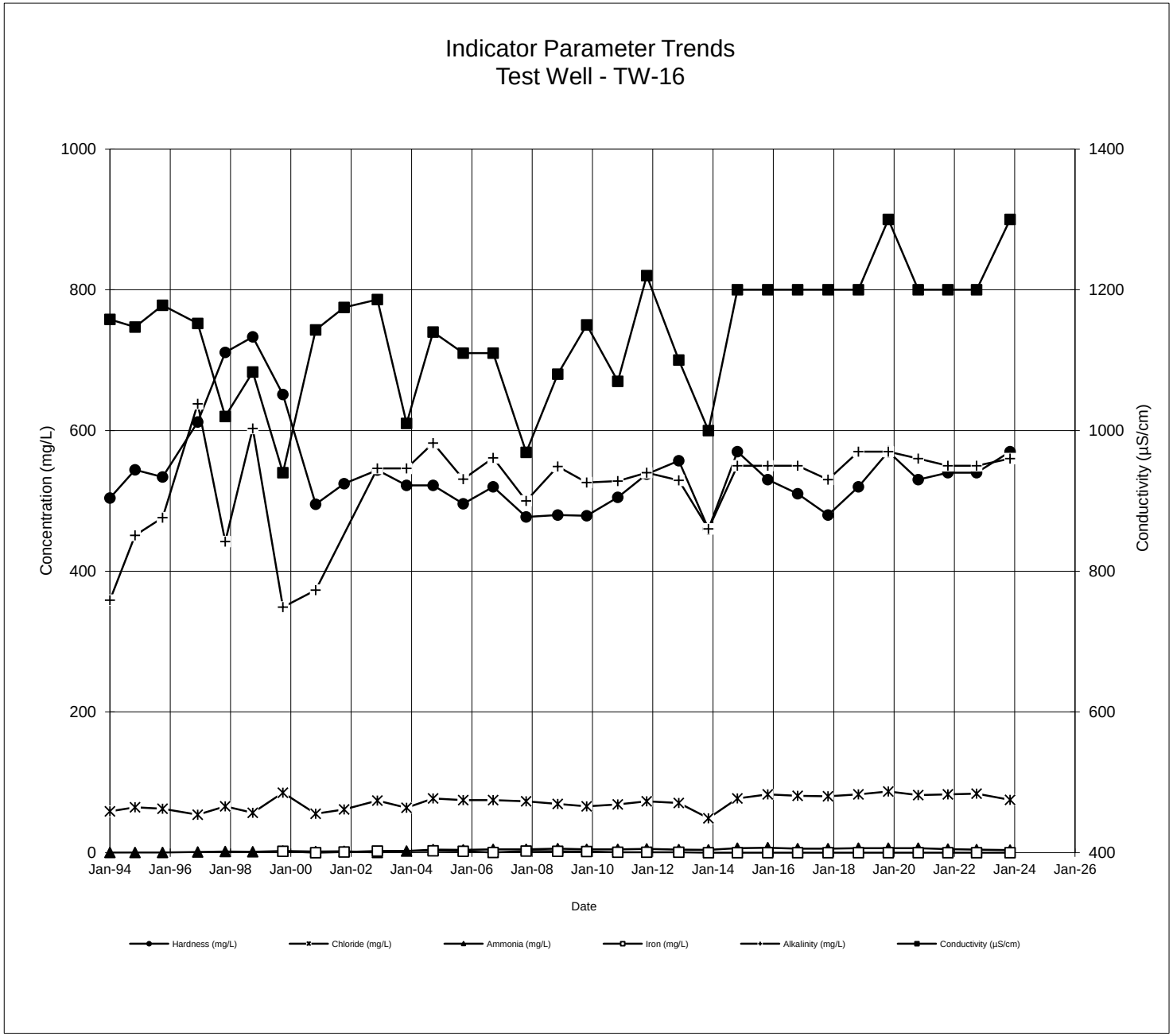
Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Jan-94	1158	58.8	504					0.22	1.08	0.86	11.5	7.45	359			
Nov-94	1147	64.7	544					0.28	1.04	0.76	9.1	7.15	451			
Oct-95	1178	62.6	534					0.45	0.98	0.53	7.5	7.68	476			
Dec-96	1152	54.0	612					1.0	1.4	0.4	3.4	7.49	638			
Nov-97	1020	66.0	711			0.84	0.05	1.49	3.88	2.39		6.90	442			
Oct-98	1083	56.7	733			0.08	0.05	1.16	4.15	2.99	1.4	7.16	603	58.5		
Oct-99	940	85.3	651	1.92	510	0.7	0.05	2.26	6.0	3.7	6.2	7.23	349	35.9		
Nov-00	1143	55.3	495	<0.01	530	0.92	<0.05	1.59	2.6	1.01	15.2	7.27	373	50.5	<0.01	0.14
Oct-01	1175	61.5	524	1.13	587.5	<0.1	<0.1	2.02	2.94	0.92	4.4	7.11		36.2	0.06	0.16
Nov-02	1186	73.9	544	2.36	638	0.20	<0.1	0.25	2.54	2.29	7.0	8.12	546	45.1	0.08	0.15
Nov-03	1010	63.7	522		632	0.10	<0.1	2.27	3.28	1.01	14.0	8.07	546	42.0	0.08	0.14
Sep-04	1140	77.2	522	2.66	661	0.10	<0.1	4.39	4.98	0.59	5.0	7.46	582	46.7	0.09	0.15
Sep-05	1110	74.8	496	2.16	617	0.20	<0.1	3.99	5.17	1.18	2.0	7.98	531	46.0	0.11	0.16
Sep-06	1110	74.8	520	0.25	649	0.20	<0.1	4.71	5.65	0.94	2.0	7.27	561	51.2	0.09	0.15
Nov-07	969	73.1	477	2.23	599	0.30	<0.1	4.84	5.72	0.88	6.0	7.36	500	47.2	0.09	0.15
Nov-08	1080	69.4	480	1.92	627	<0.1	<0.1	5.58	5.74	0.16	<1.0	7.41	549	49.0	0.09	0.15
Nov-09	1150	65.9	479	1.72	617	0.20	<0.1	4.55	5.05	0.5	3.0	7.09	526	53.1	0.09	0.16
Nov-10	1070	68.5	505	0.51	619	0.20	<0.1	4.55	5.51	0.96	2.0	7.06	528	46.6	0.09	0.16
Nov-11	1220	73.0	538	0.67	651	0.10	<0.1	5.49	6.90	1.41	1.0	7.28	540	54.4	0.11	0.19
Nov-12	1100	70.8	557	0.49	644	0.20	<0.1	4.36	5.79	1.43	4.0	7.53	529	54.4	0.10	0.18
Nov-13	1000	49.0	460	<0.1	604	0.44	0.27	4.10	4.10	<0.10	8.0	7.55	460	38.0	0.07	0.11
Nov-14	1200	77.0	570	<0.1	565	0.94	0.28	6.30	7.40	1.1	<1.0	7.72	550	59.0	0.11	0.21
Nov-15	1200	83.0	530	<0.1	640	1.60	1.05	7.00	7.30	0.3	<1.0	7.94	550	58.0	0.11	0.22
Nov-16	1200	81.0	510	<0.1	624	<0.10	<0.010	5.80	6.40	0.6	<1.0	7.89	550	56.0	0.10	0.20
Nov-17	1200	80.0	480	<0.1	485	0.40	<0.010	5.90	6.20	0.3	<1.0	8.05	530	52.0	0.06	0.17
Nov-18	1200	83.0	520	<0.1	610	0.12	0.145	6.40	6.60	0.2	<1.0	8.07	570	59.0	0.10	0.23
Nov-19	1300	87.0	570	<0.1	635	<0.10	0.022	6.50	7.00	0.5	<1.0	7.71	570	61.0	0.11	0.23
Nov-20	1200	82.0	530	<0.1	675	0.23	0.370	6.30	6.50	0.2	<1.0	7.96	560	59.0	0.12	0.25
Nov-21	1200	83.0	540	<0.1	655	1.28	1.36	5.10	5.80	0.7	1.6	8.06	550	55.0	0.09	0.20
Oct-22	1200	84.0	540	<0.1	560	0.72	0.068	4.30	4.20	<0.10	<1.0	7.90	550	61.0	0.10	0.20
Nov-23	1300	75.0	570	<0.1	640	<0.10	<0.010	3.70	4.20	0.5	2.1	7.72	560	62.0	0.09	
Average	1140.03	71.42	540.91	0.77	610.98	0.38	0.16	3.77	4.71	1.04	5.93	7.57	520.97	51.42	0.09213	0.17696
Std. Dev.	87.01	10.30	62.61	0.95	47.76	0.42	0.32	2.15	1.93	0.87	4.17	0.37	68.37	7.74	0.01542	0.03509

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS

Our File: 213086
Durham Landfill

GM BluePlan Engineering Limited



Our File: 213086
Durham Landfill

GM BluePlan Engineering Limited

HISTORICAL GROUNDWATER QUALITY DATA – TW-17

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Jan-94	674	15.4	326	2.24	438	<0.1	<0.01	2.71	3.75	1.04	15.2	7.53	336	14.30		
Nov-94	807	26.8	407	2.03	524	0.1	0.01	2.3	3.18	0.88	13.6	7.22	407	20.00		
Oct-95	729	20.7	362	2.21	474	0.3	<0.01	1.67	2.06	0.39	13.8	7.40	366	17.50		
Oct-98	587	33.3	496			0.62	0.05	1.72	4.68	2.96	30.1	6.88	333	21.60		
Oct-99	664	49.7	534	2.1	370	1.06	0.05	1.55	5.8	4.2	18.0	7.36	288	19.50		
Nov-00	827	37.4	350	<0.01	400	0.7	<0.05	3.11	4.8	1.69	16.5	7.42	277	32.00	<0.01	0.13
Oct-01	713	22.1	328.177	2.55	356.5	<0.1	<0.1	2.13	2.79	0.66	12.5	6.91		13.20	0.03	0.08
Nov-02	710	25.5	353.592	0.87	384	0.1	<0.1	1.6	1.88	0.28	12.0	8.40	345	15.50	0.03	0.06
Oct-03	639	17.6	331		352	0.1	<0.1	0.25	0.44	0.19	10.0	8.36	327	11.6	0.02	0.05
Sep-04	697	26.8	346	2.94	399	<0.1	<0.1	0.84	1.53	0.69	11.0	7.48	366	20.1	0.0	0.08
Sep-05	630	16.5	314	0.663	337	<0.1	<0.1	0.25	0.56	0.31	9.0	8.26	320	10.5	0.02	0.05
Sep-06	636	20.8	345	0.878	372	<0.1	<0.1	0.28	0.93	0.65	10.0	7.36	342	13.0	0.02	0.05
Nov-07	629	24.1	340	0.71	368	<0.1	<0.1	0.24	0.9	0.66	11	7.56	330	14.8	0.023	0.052
Nov-08																
Nov-09	881	37.5	363.0	1.01	461	0.1	<0.1	1.46	3	1.54	28.0	7.08	406	20.7	0.03	0.07
Nov-10	821	69.7	405	2.39	489	<0.1	<0.1	0.79	1.96	1.17	21.0	6.77	383	22.9	0.03	0.093
Nov-11	958	39.4	410	3.25	495	<0.1	<0.1	0.77	2.21	1.44	40.0	7.58	413	21.7	0.031	0.11
Nov-12	860	31	414	1.23	484	0.1	<0.1	0.83	2.04	1.21	36.0	7.49	412	21.2	0.03	0.07
Nov-13	850	34	420	<0.1	480	0.1	0.055	0.86	1.3	0.44	28.0	7.62	390	26	0.03	0.11
Nov-14	840	33	390	<0.1	454	0.21	0.228	0.8	1.2	0.45	20.0	7.75	390	25	0.03	0.09
Nov-15	790	30	370	<0.1	414	0.29	0.097	0.3	0.74	0.44	24.0	7.81	360	21	0.03	0.77
Nov-16	870	42.0	440	<0.1	494	<0.10	0.026	0.6	0.92	0.3	36.0	7.89	390	28	0.03	0.10
Nov-17	1000	48	450	<0.1	545	<0.10	<0.010	1.2	1.4	0.2	46.0	7.62	430	31	0.05	0.17
Nov-18	1100	64	510	<0.1	585	0.17	0.174	1.8	2.2	0.4	52.0	7.82	460	37	0.06	0.23
Nov-19	1300	88	570	<0.1	700	<0.10	0.043	1.3	2.1	0.8	79.0	7.6	480	49	0.06	0.26
Nov-20	1300	90	560	<0.1	760	<0.10	0.017	1.6	2.5	0.9	90.0	7.78	480	50	0.06	0.29
Nov-21	1300	130	610	<0.1	770	0.2	0.199	2.2	3.6	1.4	64.0	7.88	460	62	0.06	0.26
Oct-22	1200	120	510	<0.1	635	0.3	<0.010	0.4	1	0.6	46.0	7.86	420	68	0.05	0.16
Nov-23	1400	140	560	<0.1	705	0.13	0.017	1.8	2.4	0.6	42.0	7.54	460	85	0.06	
Average	871.86	47.62	421.96	0.99	490.57	0.19	0.06	1.26	2.21	0.96	29.81	7.58	384.11	28.29	0.04	0.15
Std. Dev.	237.49	35.04	87.72	1.09	126.79	0.24	0.05	0.79	1.36	0.91	21.40	0.40	56.25	18.41	0.01	0.16

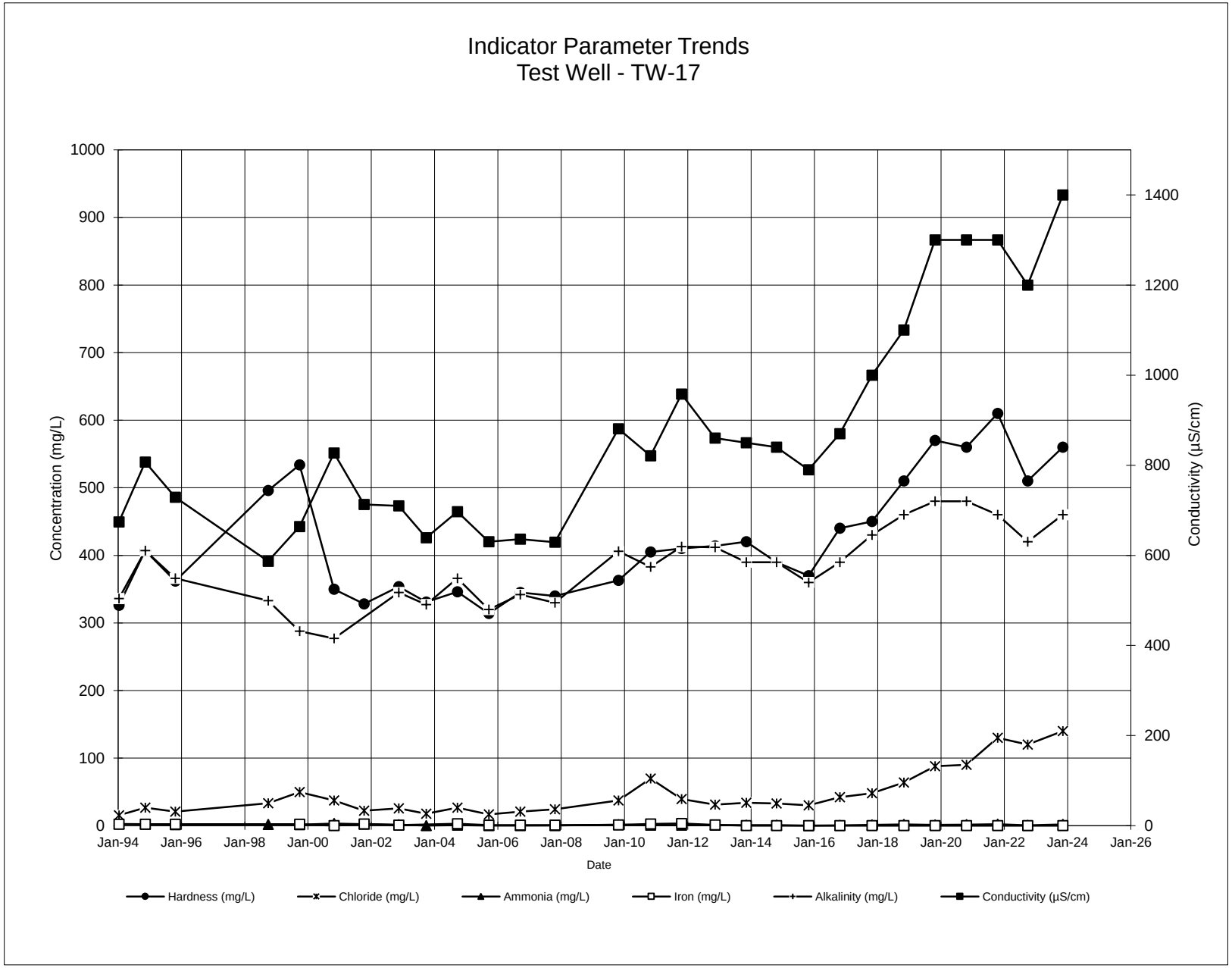
ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS

NS - No sample (frozen)

Our File: 213086
Durham Landfill

GM BluePlan Engineering Limited



Our File: 213086
Durham Landfill

GM BluePlan Engineering Limited

HISTORICAL GROUNDWATER QUALITY DATA – TW-18

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Jan-94	811	30.1	348					0.179	0.79	0.61	17.9	7.64	336			
Nov-94	761	24.8	375					0.257	1.05	0.79	3.9	7.26	404			
Oct-95	813	24.1	404					0.27	0.45	0.18	22.2	7.30	398			
Dec-96	710	17.0	437					0.2	0.5	0.3	5.8	7.42	398			
Nov-97	700	33.0	496			0.53	0.05	0.18	3.9	3.72		7.40	387			
Oct-98	838	39.2	626			0.07	0.05	0.06	0.87	0.81	19.6	6.92	439	35.50		
Oct-99	802	45.1	1322	0.01	440	1.39	0.05	0.89	10.2	9.3	28.6	7.40	894	25.70		
Nov-00	868	33.8	400	<0.01	420	0.78	<0.05	<0.05	1.8	1.8	10.4	7.62	282	32.30	<0.01	0.04
Oct-01	719	11.8	368.161	2.34	359.5	<0.1	<0.1	0.19	0.73	0.54	18.3	9.86		10.9	0.04	<0.01
Nov-02	765	13.5	400.763	<0.02	434	0.1	<0.1	0.02	0.23	0.21	60.0	8.18	339	11.2	0.0	<0.01
Nov-03	665	11.9	409		419	0.1	<0.1	0.11	0.64	0.53	25.0	8.23	372	9.3	0.04	0.01
Sep-04	710	15.3	425	2.91	452	<0.1	<0.1	0.23	1.77	1.54	11.0	7.33	429	15.6	0.04	0.02
Sep-05	613	14.8	320	0.068	342	<0.1	<0.1	0.01	1.76	1.75	22	8.34	300	8.8	0.03	0.011
Sep-06	732	17.6	435.0	0.609	443	<0.1	<0.1	0.08	1.95	1.87	10	7.27	406	16.4	0.03	0.01
Nov-07	733	25	408.0	0.034	461	0.1	<0.1	<0.01	0.66	0.65	51.0	7.35	370	15.8	0.03	0.01
Nov-08																
Nov-09	970	41.6	445	1.58	566	0.1	<0.1	0.15	3.85	3.7	96.0	7.06	398	27.8	0.036	0.03
Nov-10	1340	66.9	705	6.54	941	0.1	<0.1	0.22	3.4	3.18	337.0	6.7	383	47.9	0.07	0.30
Nov-11	1520	76.5	720	4.84	981	<0.1	<0.1	0.02	2.17	2.15	368.0	7.54	366	51.1	0.06	0.97
Nov-12	1430	106	584	2.06	906	0.2	<0.1	0.1	1.98	1.85	305.0	7.7	366	66.7	0.07	1.00
Nov-13	1500	83	710	<0.1	1040	0.18	0.023	0.5	2.70	2.18	300.0	7.65	400	64	0.07	1.30
Nov-14	1600	120.0	790	<0.1	1110	<0.10	0.21	0.3	2.9	2.6	310.0	7.76	400	90	0.09	1.40
Nov-15	1500	120	680	<0.1	1050	0.48	<0.1	0.2	1.3	1.1	250.0	7.79	400	68	0.08	1.30
Nov-16	1500	130.0	640	<0.1	1010	0.27	0.022	0.4	1.5	1.15	200.0	7.72	400	81	0.08	1.10
Nov-17	1600	180.0	560	<0.1	920	<0.10	0.027	1.7	2.5	0.8	88.0	7.76	480	100	0.07	1.00
Nov-18	1500	150.0	590	<0.1	815	0.74	0.058	0.48	1.4	0.92	120.0	8.01	450	92	0.07	1.10
Nov-19	1400	140.0	580	<0.1	845	0.46	0.019	0.97	2.2	1.23	120.0	7.84	440	91	0.07	1.10
Nov-21	1300	83.0	580	<0.1	745	0.98	0.457	2.1	3.7	1.6	29.0	8.06	570	56	0.08	0.90
Oct-22	1300	120.0	560	<0.1	705	0.83	0.372	1.7	2.5	0.8	30.0	7.95	510	66	0.08	0.89
Nov-23	1500	140.0	590	<0.1	755	0.1	0.039	1.4	2.2	0.8	33.0	7.74	510	97	0.08	
Average	1075.86	66.00	548.55	1.02	702.59	0.31	0.08	0.48	2.12	1.68	103.28	7.68	422.39	49.17	0.06	0.66
Std. Dev.	364.65	51.75	197.15	1.81	262.14	0.37	0.11	0.59	1.88	1.76	120.28	0.57	110.92	31.81	0.02	0.55

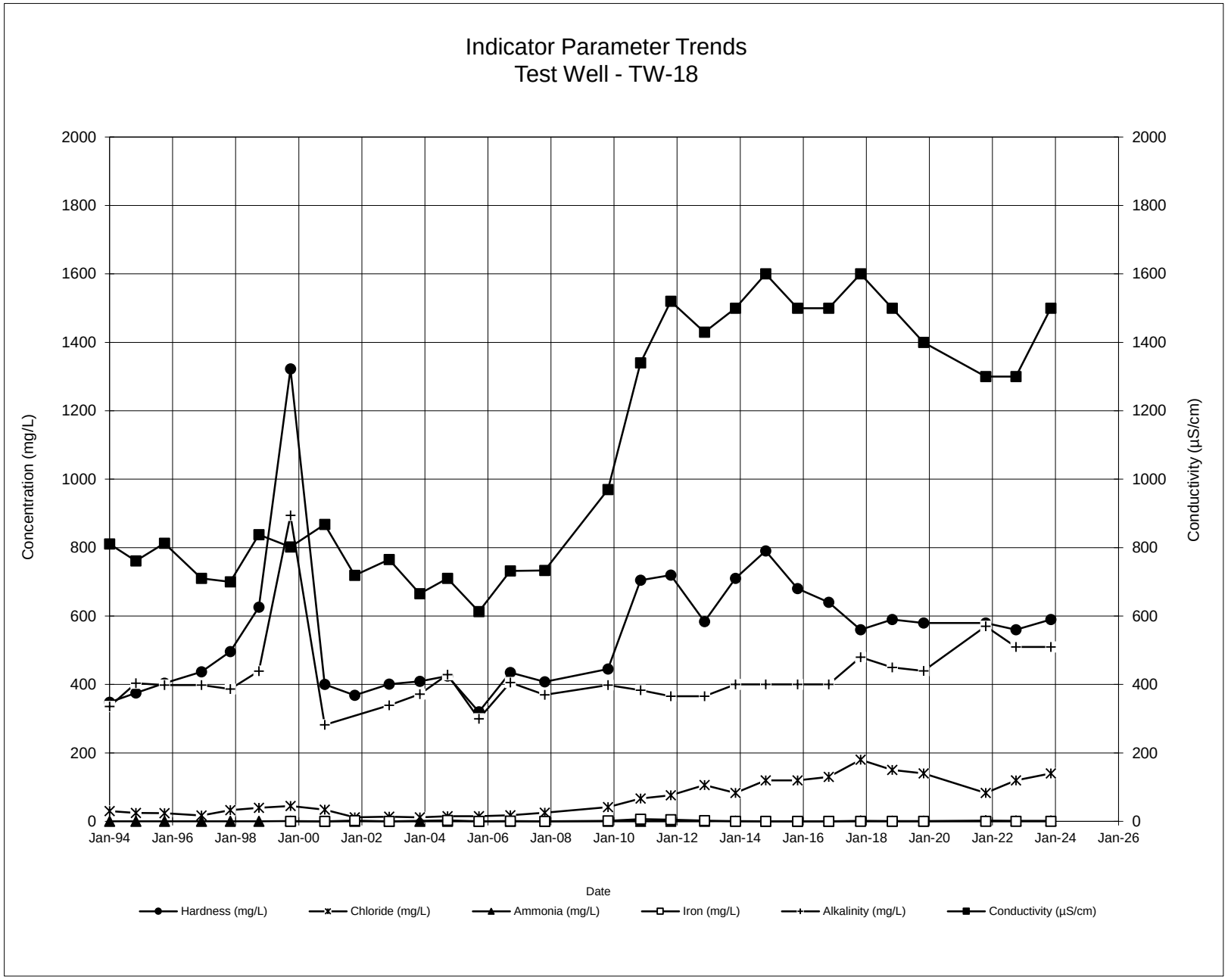
ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS

NS - No sample (frozen)

Our File: 213086
Durham Landfill

GM BluePlan Engineering Limited



Our File: 213086
Durham Landfill

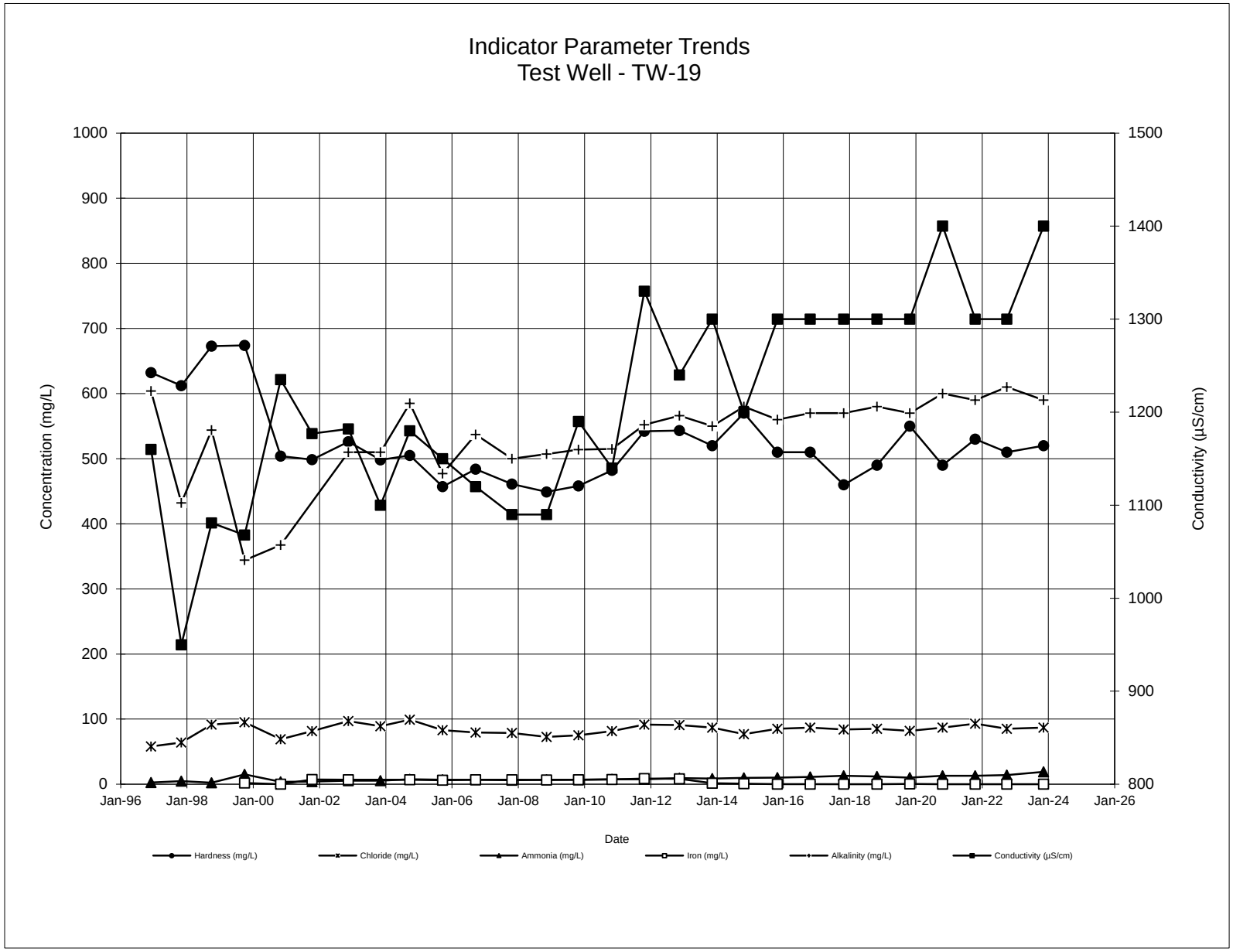
GM BluePlan Engineering Limited

HISTORICAL GROUNDWATER QUALITY DATA – TW-19

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Dec-96	1160	58	632					2.7	3	0.3	15	7.64	604			
Nov-97	950	64	612			0.05	0.05	4.88	7.74	2.86		7.00	432			
Oct-98	1081	91.7	673			0.06	0.05	2.33	4.46	2.13	15.4	6.58	544	69		
Oct-99	1068	95.3	674	2	600	0.47	0.05	15.2	18.4	3.2	10.6	7.18	344	41.7		
Nov-00	1235	69.0	504	<0.01	590	0.57	<0.05	3.57	4.6	1	39.8	7.03	368	55.6	<0.01	0.17
Oct-01	1177	81.5	498	7.3	608	0.5	<0.1	4.17	6.09	1.92	15.7	6.78		40.3	0.12	0.19
Nov-02	1182	96.9	526	6.9	662	0.2	<0.1	5.61	6.21	0.6	15.0	8.04	510	54.2	0.155	0.15
Nov-03	1100	89.2	498		645	0.1	<0.1	5.4	6.4	1	8	8.11	510	56.2	0.12	0.155
Sep-04	1180	99.2	505	6.75	727	<0.1	<0.1	7.6	8.3	0.7	27	7.19	585	65.2	0.158	0.191
Sep-05	1150	82.9	457	6.21	615	<0.1	<0.1	6.9	7.9	1	20	8.01	477	58.3	0.157	0.18
Sep-06	1120	79.4	484	6.93	659	<0.1	<0.1	6.79	7.38	0.59	18	7.17	537	54.9	0.141	0.166
Nov-07	1090	78.8	461	6.79	620	<0.1	<0.1	6.16	7.38	1.22	11	7.23	500	54	0.137	0.176
Nov-08	1090	72.8	449	6.49	625	0.1	<0.1	6.97	8.3	1.33	17	7.73	507	53.3	0.138	0.188
Nov-09	1190	75.3	458	6.78	640	0.1	<0.1	7	7.34	0.34	18	7	514	51.7	0.131	0.168
Nov-10	1140	81.5	482	7.15	652	0.1	<0.1	7.43	8.90	1.47	15	6.84	515	52.5	0.140	0.200
Nov-11	1330	91.4	542	8.67	711	<0.1	<0.1	7.43	10.1	2.67	11	7.34	552	61.4	0.165	0.219
Nov-12	1240	90.7	543	8.44	717	<0.1	<0.1	9.28	9.78	0.50	10	7.44	566	66.1	0.184	0.254
Nov-13	1300	87	520	1.7	638	<0.1	<0.01	8.8	9.0	0.20	9	7.41	550	63	0.15	0.23
Nov-14	1200	77	570	0.64	700	<0.1	<0.01	9.9	11.0	1.10	11	7.52	580	69	0.15	0.26
Nov-15	1300	85	510	0.25	648	<0.1	<0.01	10	11.0	1.00	2.8	7.61	560	63	0.15	0.27
Nov-16	1300	87	510	0.11	624	<0.10	<0.010	11	12	1.00	<1.0	7.48	570	67	0.16	0.27
Nov-17	1300	84	460	<0.01	645	<0.10	<0.010	13	12	<0.10	3.9	7.58	570	58	0.14	0.24
Nov-18	1300	85	490	<0.01	600	<0.10	<0.010	12	11	<0.10	1.2	7.72	580	62	0.14	0.28
Nov-19	1300	82	550	0.42	645	<0.10	<0.010	10	10	0	3.5	7.75	570	64	0.13	0.26
Nov-20	1400	87	490	<0.10	650	<0.10	<0.010	13	12	<0.10	<1.0	7.62	600	59	0.16	0.28
Nov-21	1300	93	530	<0.1	675	<0.10	<0.010	13	14	1	1.2	7.95	590	62	0.18	0.28
Oct-22	1300	85	510	<0.1	555	<0.10	<0.010	14	15	1	<1.0	7.74	610	66	0.14	0.3
Nov-23	1400	87	520	<0.1	585	<0.10	<0.010	19	18	<0.10	1.3	7.49	590	69	0.16	
Average	1210.11	83.45	523.51	3.48	641.44	0.11	0.03	8.68	9.55	1.19	12.52	7.44	534.61	59.09	0.14809	0.22
Std. Dev.	108.97	9.51	60.41	3.50	42.34	0.15	0.02	4.02	3.72	0.87	8.87	0.40	66.70	7.60	0.0165	0.04814

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS



Our File: 213086
Durham Landfill

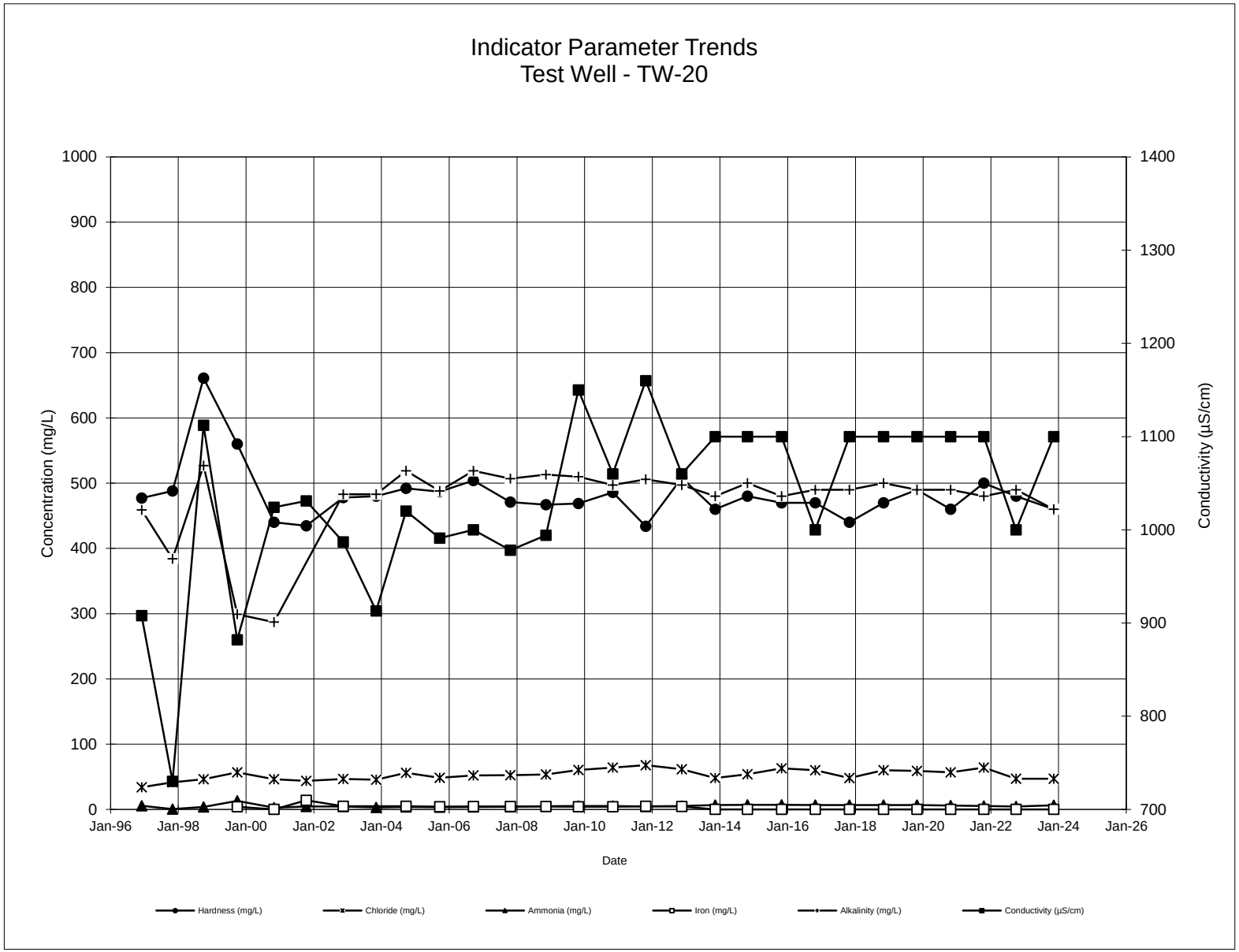
GM BluePlan Engineering Limited

HISTORICAL GROUNDWATER QUALITY DATA – TW-20

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Dec-96	908	34	477					5.7	6	0.3	25	7.75	459			
Nov-97	730	41.5	488			0.05	0.05	0.52	4	3.48		7.40	384			
Oct-98	1112	46.3	661			0.08	0.05	3.73	7.95	4.22	10	6.21	527	45.9		
Oct-99	882	57	560	4.1	500	0.92	0.05	13.1	16.5	3.4	13.2	7.26	299	30.6		
Nov-00	1024	46.4	440	<0.01	490	0.75	<0.05	2.59	3.9	1.3	19.4	7.47	287	41.9	<0.01	0.11
Oct-01	1031	43.9	435	14	515.5	<0.1	<0.1	4.64	5.89	1.25	10.9	6.95		30.4	0.1	0.15
Nov-02	987	46.8	478	4.75	550	0.1	<0.1	4.38	6.16	1.78	10.0	8.01	483	31.0	0.11	0.12
Nov-03	913	45.7	480		556	0.1	<0.1	3.01	3.52	0.51	12	8.03	483	33.8	0.1	0.124
Sep-04	1020	56.1	492	4.76	588	<0.1	<0.1	3.74	4.44	0.7	9	7.34	519	35.4	0.101	0.128
Sep-05	991	48.4	487	4.3	559	<0.1	<0.1	3.34	4.02	0.68	10	7.95	488	32.7	0.11	0.148
Sep-06	1000	52	504	4.42	594	<0.1	<0.1	3.65	4.17	0.52	11	7.19	519	35.1	0.103	0.132
Nov-07	978	52.4	471	4.36	578	<0.1	<0.1	4.18	4.71	0.53	11	7.48	507	35.7	0.104	0.132
Nov-08	994	53.6	467	4.42	590	<0.1	<0.1	4.75	5.31	0.56	14	7.68	513	38.1	0.109	0.145
Nov-09	1150	60.6	469	4.04	605	<0.1	<0.1	5.32	5.4	0.08	16	7.05	510	41.4	0.105	0.145
Nov-10	1060	64.1	486	4.29	603	<0.1	<0.1	5.12	6.11	0.99	13	6.81	497	41.6	0.119	0.159
Nov-11	1160	67.9	434	5.01	585	<0.1	<0.1	4.51	6.37	1.86	10	7.52	506	37.2	0.099	0.168
Nov-12	1060	61.7	508	4.44	609	0.1	<0.1	5.34	6.44	1.10	13	7.54	497	46.7	0.135	0.196
Nov-13	1100	48	460	<0.1	568	<0.1	<0.01	6.8	6.8	<0.15	12	7.57	480	44	0.11	0.17
Nov-14	1100	54	480	<0.1	556	<0.1	<0.01	7.2	7.8	0.60	12	7.73	500	47	0.12	0.21
Nov-15	1100	63	470	<0.1	546	<0.1	<0.01	7.2	7.1	<0.15	12	7.78	480	42	0.12	0.25
Nov-16	1000	60	470	<0.1	530	<0.10	<0.010	6.8	7.6	0.80	13	7.65	490	45	0.12	0.20
Nov-17	1100	48	440	<0.1	490	<0.10	<0.010	6.6	6.5	<0.10	13	7.68	490	38	0.12	0.18
Nov-18	1100	60	470	<0.1	535	<0.10	<0.010	6.8	6.9	0.1	20	7.84	500	40	0.12	0.20
Nov-19	1100	59	490	<0.1	540	<0.10	<0.010	6.7	7	0.3	13	7.69	490	41	0.12	0.19
Nov-20	1100	57	460	<0.1	525	<0.10	<0.010	5.8	5.7	<0.10	15	7.97	490	41	0.13	0.20
Nov-21	1100	64	500	<0.1	590	0.1	0.131	5.4	6.2	0.8	25	7.85	480	43	0.14	0.20
Oct-22	1000	47	480	<0.1	450	<0.10	<0.010	4.4	5.6	1.2	17	7.88	490	41	0.12	0.16
Nov-23	1100	47	460	<0.1	510	<0.10	<0.010	6.4	6.5	0.1	10	7.65	460	40	0.13	
Average	1032.14	53.05	482.73	2.64	550.50	0.12	0.04	5.28	6.24	1.19	13.69	7.53	475.11	39.21	0.12	0.17
Std. Dev.	93.19	8.11	43.19	3.27	41.95	0.21	0.03	2.21	2.36	1.16	4.26	0.41	58.84	4.94	0.01	0.04

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS



Our FIle: 213086
Durham Landfill

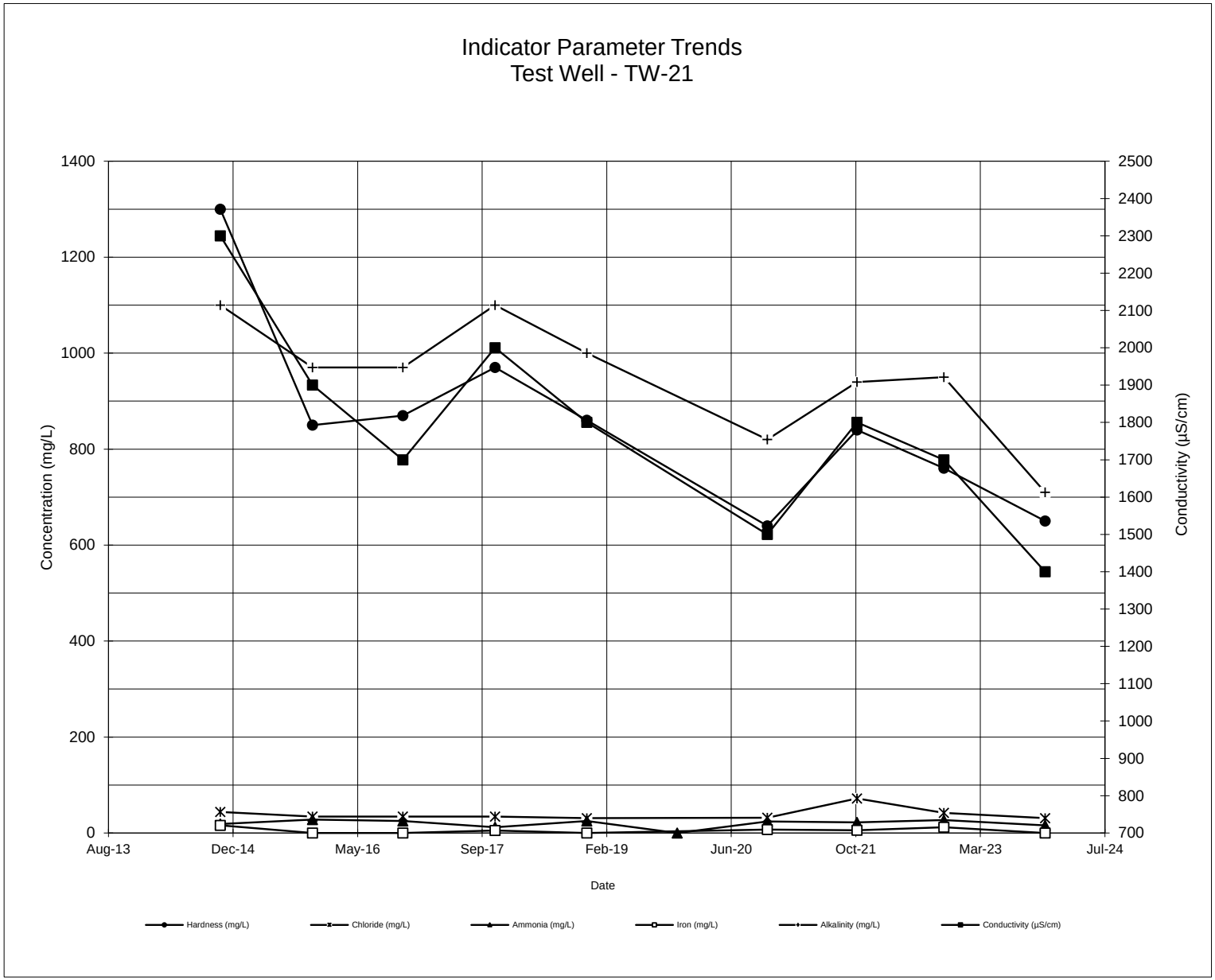
GM BluePlan Engineering Limited

HISTORICAL GROUNDWATER QUALITY DATA – TW-21

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Nov-14	2300	44	1300	16	1410	<0.1	<0.01	19	29	10	270	7.25	1100	65	0.052	1.1
Nov-15	1900	34	850	<0.1	950	<0.1	<0.01	28	32	4	6	7.31	970	41	0.077	0.61
Nov-16	1700	34	870	<0.1	922	<0.1	<0.01	25	27	2	14	7.49	970	40	0.068	0.56
Nov-17	2000	34	970	5.1	1020	<0.10	<0.010	12	11	<0.15	60	7.40	1100	39	0.029	0.75
Nov-18	1800	31	860	<0.1	775	<0.10	<0.010	25	25	<0.15	<1.0	7.77	1000	33	0.045	0.58
Nov-19							Insufficient Water									
Nov-20	1500	32	640	7.1	795	<0.10	<0.010	24	25	1	6.7	7.3	820	31	0.024	0.51
Nov-21	1800	72	840	5.7	915	<0.10	<0.010	22	25	3	35	7.49	940	56	0.066	0.61
Oct-22	1700	42	760	12	785	<0.10	<0.010	27	28	1	<1.0	7.64	950	58	0.033	0.5
Nov-23	1400	31	650	<0.1	640	<0.10	0.038	16	16	<0.10	11	7.26	710	32	0.019	
Average	1788.9	39.33	860.00	5.12	912	0.05	0.01	22.00	24.22	4.25	57.53	7.43	951	43.89	0.05	0.65
Std. Dev.	266.7	13.11	196.47	5.84	219.03	0.00	0.01	5.34	6.61	4.03	95.70	0.18	123.94	12.57	0.02	0.20

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS



Our File: 213086
Durham Landfill

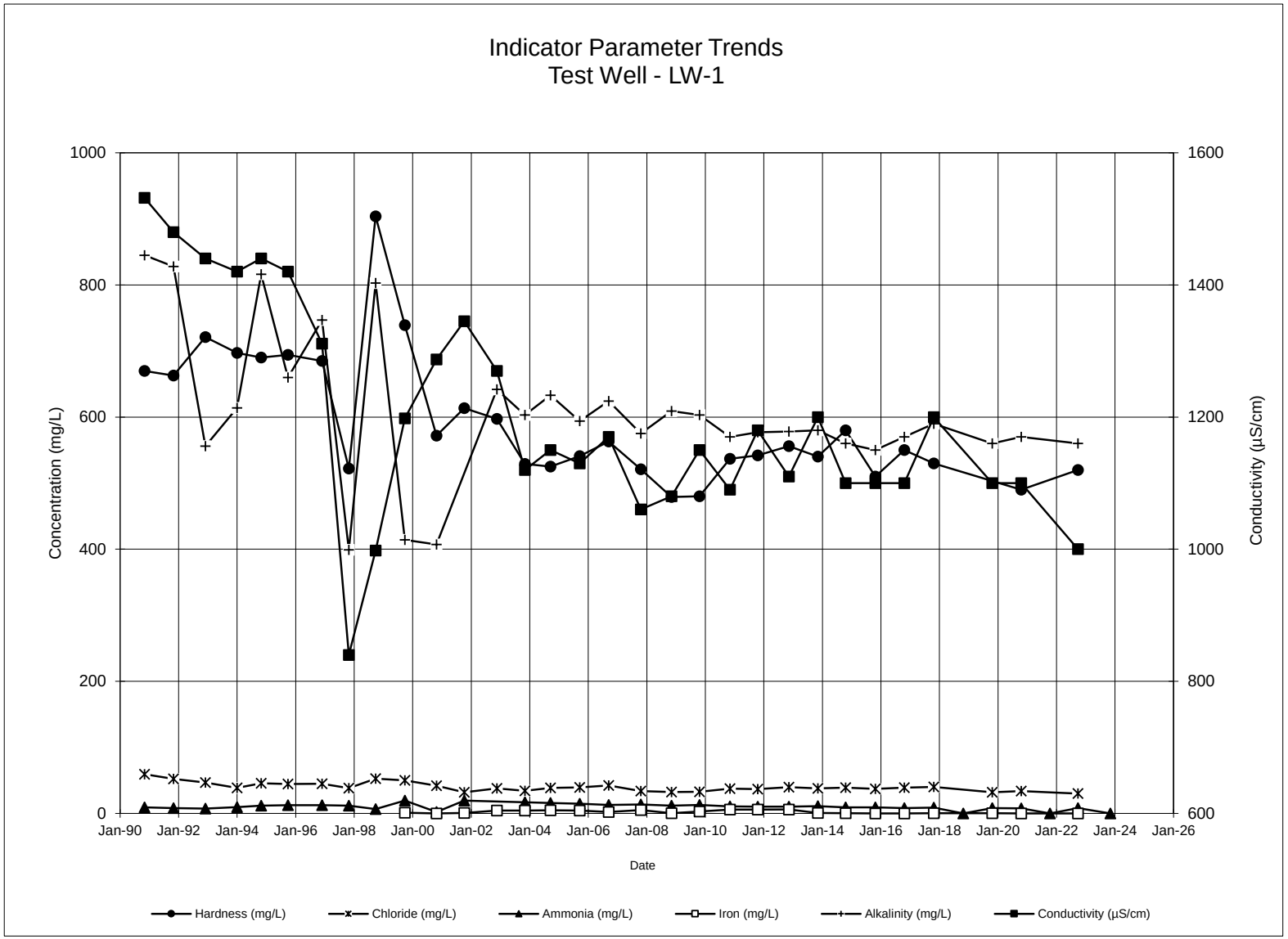
GM BluePlan Engineering Limited

HISTORICAL GROUNDWATER QUALITY DATA – LW-1

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Nov-90	1532	59.4	670					9.24	10.8	1.56	5.5	7.11	845			
Nov-91	1480	52.1	663				0.05	8	10	2	4	7.17	828			
Dec-92	1440	46.7	721					7.3	23	15.7	3.5	7.33	556			
Jan-94	1420	38.6	697					9.64	12.6	2.96	NM	7.27	614			
Nov-94	1440	45.7	690					11.8	14.3	2.5	2.3	7.22	816			
Oct-95	1420	44.7	694					12.6	14.3	1.7	1.7	7.11	660			
Dec-96	1311	45	685					12.5	13.4	0.9	0.5	7.39	747			
Nov-97	840	38.1	522			2.26	0.05	11.73	18.4	6.63		6.80	399			
Oct-98	998	52.5	904			0.05	0.05	6.41	8.84	2.43	2.93	6.59	803	43.3		
Oct-99	1198	50.1	739	1.21	650	0.53	0.05	19.3	20.3	1	6.8	7.10	414	28.8		
Nov-00	1287	42.1	572	<0.01	630	9.31	<0.05	2.13	4.1	2	20.1	7.09	407	34.2	<0.01	0.18
Oct-01	1345	32.1	613	0.66	650	<0.1	<0.1	19.4	24.1	4.7	<1.0	6.67		21.2	0.15	0.09
Nov-02	1270	37.9	597	4.43	665	0.2	<0.1		14.5	17.3	1.0	7.34	642	22.7	0.155	0.14
Nov-08	1080	32.3	479	0.202	628	0.1	<0.1	11.8	15.5	3.7	<1.0	7.45	609	28.3	0.101	0.111
Nov-09	1150	32.6	480	2.8	622	0.2	<0.1	12.7	13.6	0.9	<1.0	6.89	603	23.3	0.065	0.081
Nov-10	1090	37.4	537	5.82	622	0.2	<0.1	10.8	12.3	1.5	<1.0	7.11	570	19.6	0.116	0.098
Nov-11	1180	36.7	542	5.82	628	0.1	<0.1	10.1	14.1	4.0	<1.0	7.18	577	20.7	0.121	0.101
Nov-12	1110	39.8	556	6.01	629	0.5	<0.1	10.1	10.5	0.4	<1.0	7.43	578	22.2	0.127	0.092
Nov-13	1200	38.0	540	0.7	608	<0.1	0.031	11	10	<0.10	<1.0	7.43	580	24	0.1	0.081
Nov-14	1100	39.0	580	0.23	580	0.34	<0.01	9.3	9.8	0.5	<1.0	7.52	560	26	0.11	0.1
Nov-15	1100	37.0	510	<0.1	564	<0.1	0.121	9.2	9	<0.10	<1.0	7.5	550	22	0.1	0.099
Nov-16	1100	39.0	550	<0.1	608	1.1	0.017	8.2	9.5	1.3	7.1	7.43	570	26	0.1	0.1
Nov-17	1200	40	530	0.17	545	<0.10	<0.010	8.8	8.4	<0.10	<1.0	7.42	590	25	0.11	0.097
Nov-18							Insufficient Water									
Nov-19	1100	32		0.27	545	<0.10	<0.010	8.2	8.3	0.1	<1.0	7.62	560	23	0.093	0.096
Nov-20	1100	34	490	<0.1	605	<0.10	<0.010	7.8	7.6	<0.10	<1.0	7.48	570	22	0.086	0.093
Nov-21							Insufficient Water									
Oct-22	1000	30	520	<0.1	470	<0.10	<0.010	7.9	8	0.1	<1.0	7.78	560	23	0.078	0.088
Nov-23							Insufficient Water									
Average	1197.45	40.04	592.02	2.23	610.00	0.71	0.05	10.99	13.22	3.14	4.49	7.26	607.90	24.54	0.11	0.11
Std. Dev.	161.08	6.85	96.85	2.33	45.51	1.91	0.04	3.74	4.70	4.16	5.16	0.31	110.37	5.24	0.02	0.03

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS


Indicator Parameter Trends
Test Well - LW-1
Concentration (mg/L)
Conductivity (µS/cm)
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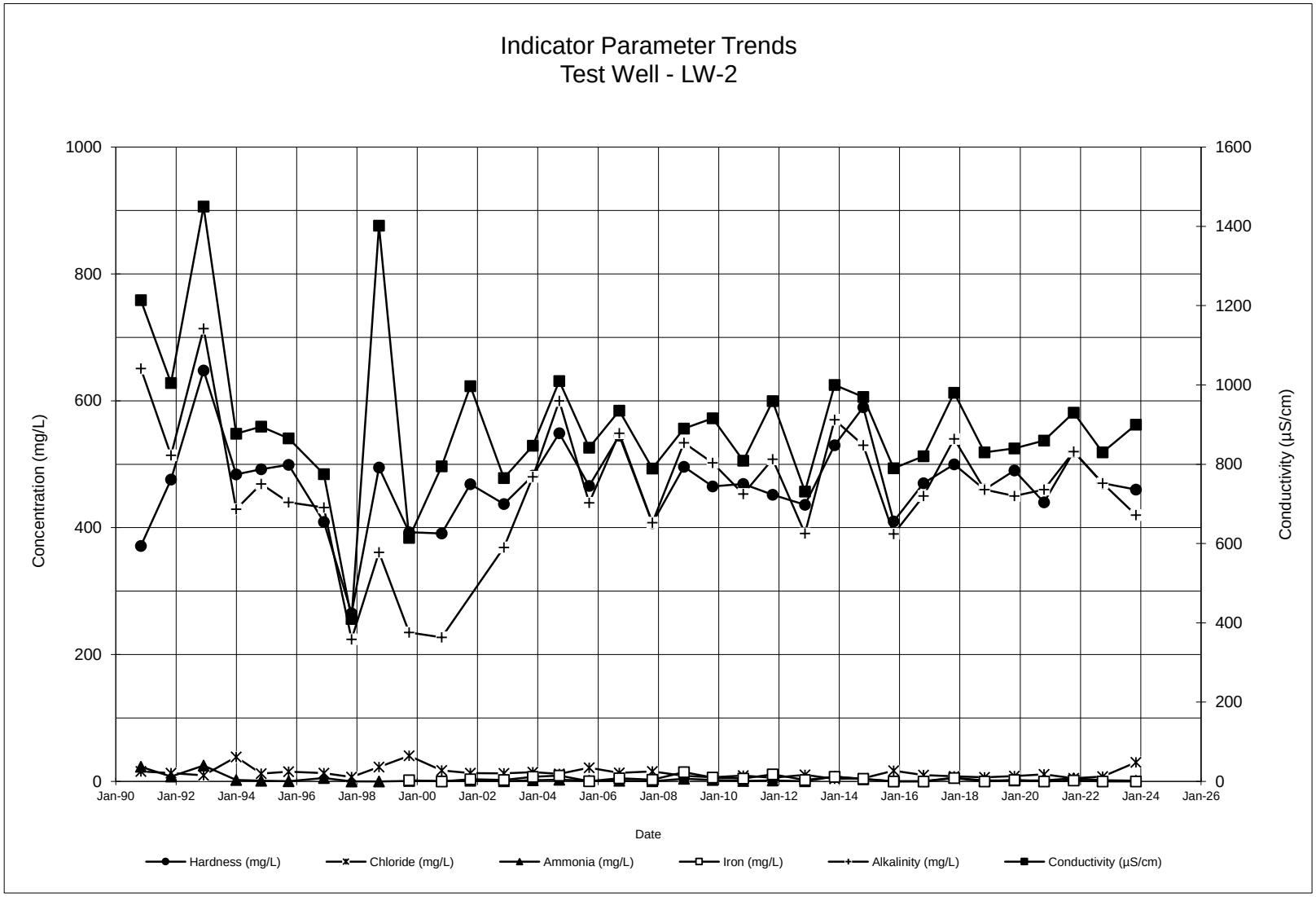
800
600
400
200
0
1600
1400
1200
1000
800
600
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22
Jan-24
Jan-26
Date
Hardness (mg/L)
Chloride (mg/L)
Ammonia (mg/L)
Iron (mg/L)
Alkalinity (mg/L)
Conductivity (µS/cm)

HISTORICAL GROUNDWATER QUALITY DATA – LW-2

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	30-500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Nov-90	1214	15.7	371					23	26	3	49	6.96	651			
Nov-91	1005	12.9	476					7.6	8.8	1.2	17.5	6.89	514			
Dec-92	1450	9.7	648					25	31.6	6.6	4	6.85	714			
Jan-94	877	38.6	484					2.3	3.7	1.4	20.7	7.13	429			
Nov-94	895	12.4	492					1.19	1.7	0.51	23.1	7.06	469			
Oct-95	865	15.5	499					0.47	0.87	0.4	21.4	6.95	440			
Dec-96	775	13.0	409					5.4	5.8	0.4	17.0	7.00	432			
Nov-97	410	6.75	265			0.91	0.05	0.05	2.2	2.2		6.8	224			
Oct-98	1402	22.8	495			0.05	0.05	0.06	1.22	1.16	10.7	6.28	361	16.1		
Oct-99	614	40.3	393	1.72	330	1.7	0.05	0.69	8.9	8.2	23.3	7.36	235	19.4		
Nov-00	795	17.3	391	<0.01	380	1.82	<0.05	0.76	2.6	1.8	38.5	7.88	227	18.5	<0.01	0.06
Oct-01	997	13.1	468.643	3.37	518.44	0.7	<0.1	1.17	2.2	1.03	11.7	6.51		6.5	0.03	0.04
Nov-02	765	12.8	437.135	2.17	415	0.6	<0.1	0.48	0.62	0.14	12	7.34	369	9	0.02	0.01
Nov-09	916	6.3	465	6.03	498	0.2	<0.1	2.28	3.5	1.17	5	6.72	502	5.7	0.027	0.029
Nov-10	809	9.1	469	4.39	470	0.2	<0.1	0.86	2.41	1.55	6	7.04	453	7.4	0.027	0.012
Nov-11	959	5.6	452	11.3	498	0.3	<0.1	1.59	2.62	1.03	5	7.18	508	4.7	0.029	0.029
Nov-12	731	10.5	436	2.08	421	0.3	<0.1	0.33	0.66	0.33	9	7.39	391	7.5	0.023	<0.005
Nov-13	1000	4	530	7.4	8.3	0.51	0.01	7.7	8.3	0.6	<1	7.10	570	3.6	0.04	0.11
Nov-14	970	5	590	4	516	0.51	0.043	3.4	4.1	0.7	<1	7.32	530	3.9	0.04	0.06
Nov-15	790	17	410	<0.01	412	0.63	0.037	0.41	1	0.59	8.5	7.60	390	8.5	0.023	0.02
Nov-16	820	9.8	470	<0.1	468	0.69	0.064	0.47	0.81	0.34	5.3	7.48	450	6.3	0.023	0.02
Nov-17	980	8.0	500	5.3	480	<0.10	<0.010	5.6	5.7	0.1	1.2	7.25	540	5.0	0.04	0.093
Nov-18	830	6.4	460	<0.1	405	0.28	<0.010	1.4	1.4	<0.10	3.0	7.69	460	4.3	0.026	0.029
Nov-19	840	8.6	490	2.2	425	0.23	0.038	1.3	1.3	<0.10	4.9	7.59	450	5.6	0.027	0.028
Nov-20	860	11.0	440	<0.1	445	0.31	0.275	1.4	1.6	0.2	6.8	7.66	460	5.8	0.029	0.036
Nov-21	930	4.9	520	1.5	525	0.22	0.024	4.8	5.7	0.9	<1.0	7.56	520	3.7	0.04	0.098
Oct-22	830	7.8	470	<0.1	425	0.95	<0.010	2	2.2	0.2	5.3	7.76	470	5.5	0.027	0.050
Nov-23	900	30.0	460	<0.1	455	0.1	0.016	1.2	1.3	0.1	6.0	7.35	420	12.0	0.026	
Average	898.29	13.55	468.70	3.62	448.03	0.48	0.05	3.35	4.59	1.41	12.56	7.20	460.27	8.39	0.0317	0.04205
Std. Dev.	188.31	8.60	66.81	3.89	109.40	0.44	0.05	5.62	6.60	1.84	10.88	0.38	106.66	4.35	0.00862	0.02799

ODWS - Ontario Drinking Water Standards (per O. Reg. 169/03 as amended to O. Reg. 255/05).

- exceeds ODWS


Indicator Parameter Trends
Test Well - LW-2
Concentration (mg/L)
Conductivity (µS/cm)
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400
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0
1600
1400
1200
1000
800
600
400
200
0
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06
Jan-08
Jan-10
Jan-12
Jan-14
Jan-16
Jan-18
Jan-20
Jan-22
Jan-24
Jan-26
Date
Hardness (mg/L)
Chloride (mg/L)
Ammonia (mg/L)
Iron (mg/L)
Alkalinity (mg/L)
Conductivity (µS/cm)

HISTORICAL GROUNDWATER QUALITY DATA – Cottrell Domestic Well

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate	Nitrite	Ammonia	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Nov-90	716	27.9	327					0.222	0.42		40	7.42	320			
Nov-91	777	33.4	380					0.954	1.46		40.5	7.37	331			
Dec-92	708	23.7	379					0.066	0.14		44	7.53	290			
Jan-94	760	29.9	377					0.83	1.26		41	7.42	336			
Nov-94	692	23.9	369					0.337	0.6		24.8	7.35	324			
Oct-95	747	28.6	376					0.44	0.78		32.4	7.27	319			
Dec-96	677	23	374					0.5	0.5		31	7.63	301			
Average	725.29	27.20	368.86					0.48	0.74		36.24	7.43	317.29			
Std. Dev.	36.91	3.85	18.81					0.32	0.47		6.93	0.12	16.35			

- exceeds ODWS

HISTORICAL GROUNDWATER QUALITY DATA – Caswell Domestic Well

Parameter	Conductivity	Chloride	Hardness	Iron	TDS	Nitrate	Nitrite	Ammonia	TKN	Org. Nitrogen	Sulphate	pH	Alkalinity	Sodium	Barium	Boron
ODWS		250	80-100	0.3	500	10	1.0			0.15	500	6.5-8.5	500	200		
MDL	0.01	0.1	0.1	0.01	0.1	0.05	0.05	0.05	0.1	0.1	1.0	0.01	1.0	0.05	0.01	0.01
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
Sep-82	625	52	298					0.02	0.17	0.15	12	7.46	304			
Feb-89	772	84.9	263					0.01	0.15	0.14	18.5	7.46	84.9			
Nov-90	560	22.7	259					0.001	0.09	0.09	18.5	7.42	264			
Nov-91	640	19.5	331					0.044	0.17	0.13	24.5	7.53	305			
Dec-92	613	18.1	314					0.024	0.17	0.15	15	7.42	278			
Jan-94	694	15.5	384					0.047	0.28	0.23	24.2	7.44	347			
Nov-94	574	12.5	307					0.059	0.1	0.04	18	7.31	289			
Oct-95	631	14.7	338					0.2	0.21	0.01	17.2	7.42	316			
Dec-96	491	15	327					0.1	0.5		9.2	7.44	336			
Average	622.22	28.32	313.44					0.06	0.20	0.12	17.46	7.43	280.43			
Std. Dev.	80.22	24.38	38.51					0.06	0.12	0.07	5.02	0.06	77.88			

- exceeds ODWS

APPENDIX E:
HISTORICAL SURFACE WATER QUALITY

HISTORICAL SURFACE WATER QUALITY DATA - SW-5

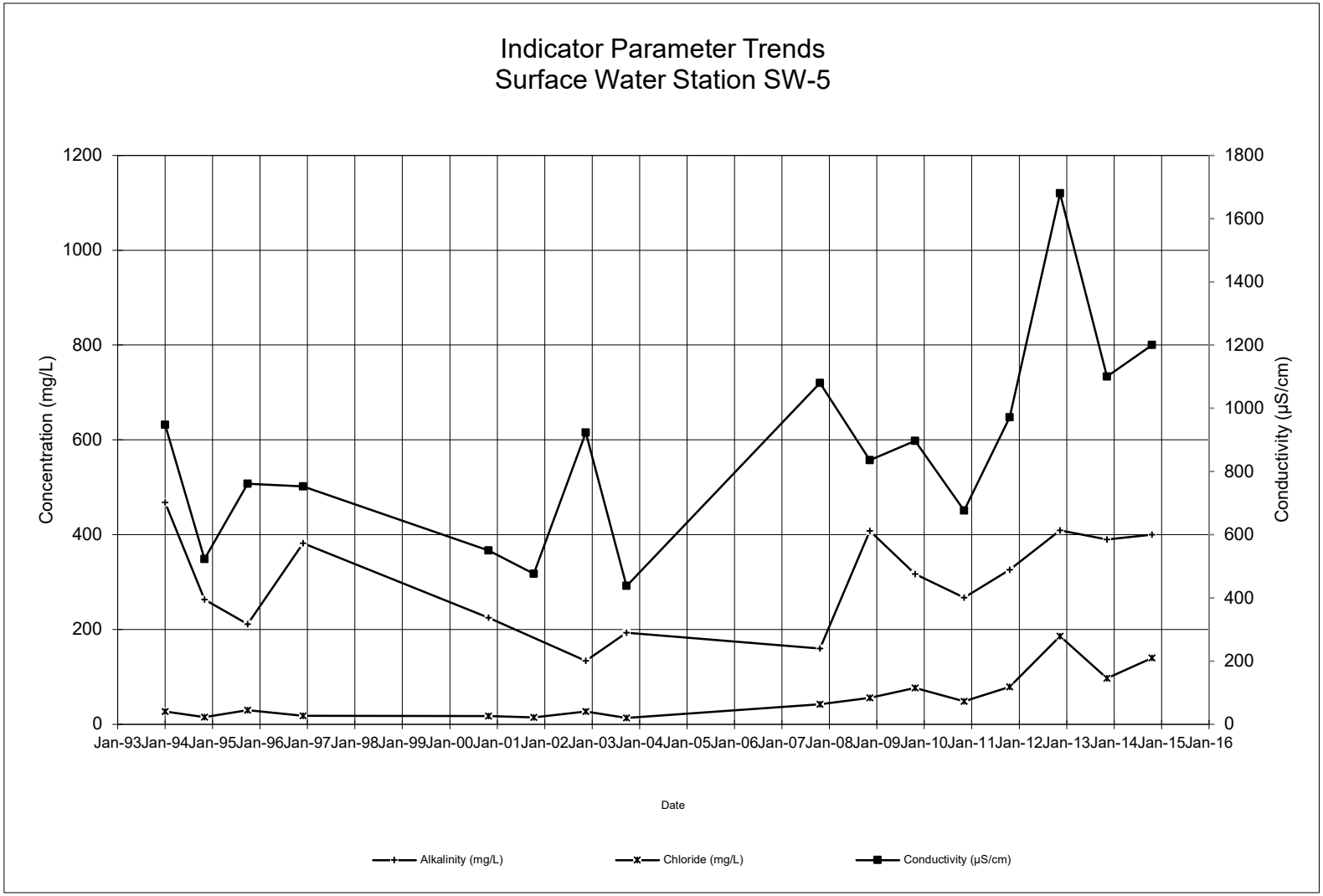
Parameter	Conductivity	Chloride	Hardness	Iron	Ammonia (as N)	Ammonia (as NH_3)	pH	pH (field)	Alkalinity	Phenols	T. Phosphorus (P)	Temp (field)	Dissolved Oxygen (field)	Unionized Ammonia (as NH_3)
PWQO				0.3			6.5-8.5	6.5-8.5		0.001	0.03			**0.002
MDL	0.01	0.1	0.1	0.01	0.05	0.05	0.01	0.01	1.0	0.001	0.01			
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l			mg/l	mg/l	mg/l	°C	mg/l	mg/l
Jan-94	948	27	508		0.009		7.43		468					
Nov-94	523	15.1	268		0.31		7.62		263					
Oct-95	761	29.9	417		0.27		7.64		211					
Dec-96	753	18	399		0.2		7.33		382					
Nov-00	550	17.1			< 0.05		7.98		225					
Oct-01	476	14.6	232	0.75	0.35		6.64			0.001	0.08		*	
Nov-02	923	27.2		0.18	4.16	5.0752	8.18		134	<0.001	0.58	2.5	2.5	
Oct-03	438	13.5		0.082	< 0.01	< 0.0122	8.44	7.80	193	<0.001	<0.01	8.3	8.0	< 0.00012
Sep-04	DRY													
Sep-05	DRY													
Sep-06	DRY													
Nov-07 †	1080	42.3		0.089	< 0.01	< 0.0122	8.12	7.8	160	<0.001	0.13	4.7	3	< 0.00009
Nov-08 †	836	55.9		1.49	0.15	0.183	7.63	6.6	408	0.014	0.05	0.1	3	0.00006
Nov-09 †	897	76.7		0.232	< 0.01	< 0.0122	7.16	8.0	317	<0.001	0.03	3.7	2	< 0.00013
Nov-10 †	676	48.2		0.178	< 0.01	< 0.0122	7.01	6.8	267	<0.001	0.10	5.1	5	< 0.00001
Nov-11 †	971	79.0		0.254	1.25	1.5250	7.65	7.5	326	<0.001	0.08	7.3	1.0	0.007
Nov-12	1680	186		3.63	0.93	1.1346	7.79	7.79	409	<0.001	0.02	2.0	9.0	0.007
Nov-13	1100	97		0.63	7.00	8.54	7.69	7.6	390	0.0061	0.078	6.0		0.045
Nov-14	1200	140		0.18	1.90	2.318	7.99	8	400	0.0014	0.043	6.4	1.5	0.03150
Average	863.25	55.47	364.80	0.70	1.04	1.88	7.64		303.53	0.01	0.12	4.6	3.9	< 0.010
Std. Dev.	317.29	49.89	113.37		1.92	2.83	0.46		104.19		0.17	2.33	2.58	< 0.017

- exceeds PWQO
* no data (equipment failed)
† sampled under non-flowing conditions

HISTORICAL SURFACE WATER QUALITY DATA - SW-5

Parameter		Conductivity	Chloride	Hardness	Iron	Ammonia (as N)	Ammonia (as NH_3)	pH	pH (field)	Alkalinity	Phenols	T. Phosphorus (P)	Temp (field)	Dissolved Oxygen (field)	Unionized Ammonia (as NH_3)
PWQO					0.3			6.5-8.5	6.5-8.5		0.001	0.03			**0.002
MDL		0.01	0.1	0.1	0.01	0.05	0.05	0.01	0.01	1.0	0.001	0.01			
UNITS		µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l			mg/l	mg/l	mg/l	°C	mg/l	mg/l
Jan-94		948	27	508		0.009		7.43		468					
Nov-94		523	15.1	268		0.31		7.62		263					
Oct-95		761	29.9	417		0.27		7.64		211					
Dec-96		753	18	399		0.2		7.33		382					
Nov-00		550	17.1			< 0.05		7.98		225					
Oct-01		476	14.6	232	0.75	0.35		6.64			0.001	0.08		*	
Nov-02		923	27.2		0.18	4.16	5.0752	8.18		134	<0.001	0.58	2.5	2.5	
Oct-03		438	13.5		0.082	< 0.01	< 0.0122	8.44	7.80	193	<0.001	<0.01	8.3	8.0	< 0.00012
Oct-03	(dup)	443	13.6		0.027	< 0.01		8.46		195	<0.001	<0.01			
Sep-04		DRY													
Sep-05		DRY													
Sep-06		DRY													
Nov-07	†	1080	42.3		0.089	< 0.01	< 0.0122	8.12	7.8	160	<0.001	0.13	4.7	3	< 0.00009
Nov-07	(dup) †	1030	42.7		0.094	< 0.01		7.89		160	<0.001	0.13			
Nov-08	†	836	55.9		1.49	0.15	0.183	7.63	6.6	408	0.014	0.05	0.1	3	0.00006
Nov-08	(dup) †	828	54.3		1.49	0.15		7.55		402	0.014	0.05			
Nov-09	†	897	76.7		0.232	< 0.01	< 0.0122	7.16	8.0	317	<0.001	0.03	3.7	2	< 0.00013
Nov-09	(dup) †	904	77.6		0.231	< 0.01		7.22	8.0	303	<0.001	0.03			
Nov-10	†	676	48.2		0.178	< 0.01	< 0.0122	7.01	6.8	267	<0.001	0.10	5.1	5	< 0.00001
Nov-10	(dup) †	659	47.0		0.182	< 0.01	< 0.0122	7.05		264	<0.001	0.08			
Nov-11	†	971	79.0		0.254	1.25	1.5250	7.65	7.5	326	<0.001	0.08	7.3	1.0	0.007
Nov-11	(dup) †	985	78.8		0.243	1.29	1.5738	7.66		322	<0.001	0.09			
Nov-12		1680	186		3.63	0.93	1.1346	7.79	7.79	409	<0.001	0.02	2.0	9.0	0.007
Nov-12	(dup)	1670	187		3.61	0.90	1.098	7.73		409	<0.001	0.02			
Nov-13		1100	97		0.63	7.00	8.54	7.69	7.6	390	0.0061	0.078	6.0		0.045
Nov-14		1200	140		0.18	1.90	2.318	7.99	8.0	400	0.0014	0.043	6.4	1.5	0.0315
Nov-14	(dup)	1200			0.18			8.01		390					
Nov-16	NM														
Average		897.13	60.37	364.80	0.72	0.83	1.65	7.66		304.26	0.01	0.10	4.6	3.9	< 0.010
Std. Dev.		330.39	50.95	113.37		1.64	2.51	0.45		98.75		0.13	2.33	2.58	< 0.017

- exceeds PWQO
* no data (equipment failed)
† sampled under non-flowing conditions
NM = Not Monitored


Indicator Parameter Trends
Surface Water Station SW-5
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Conductivity (µS/cm)
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800
1000
1200
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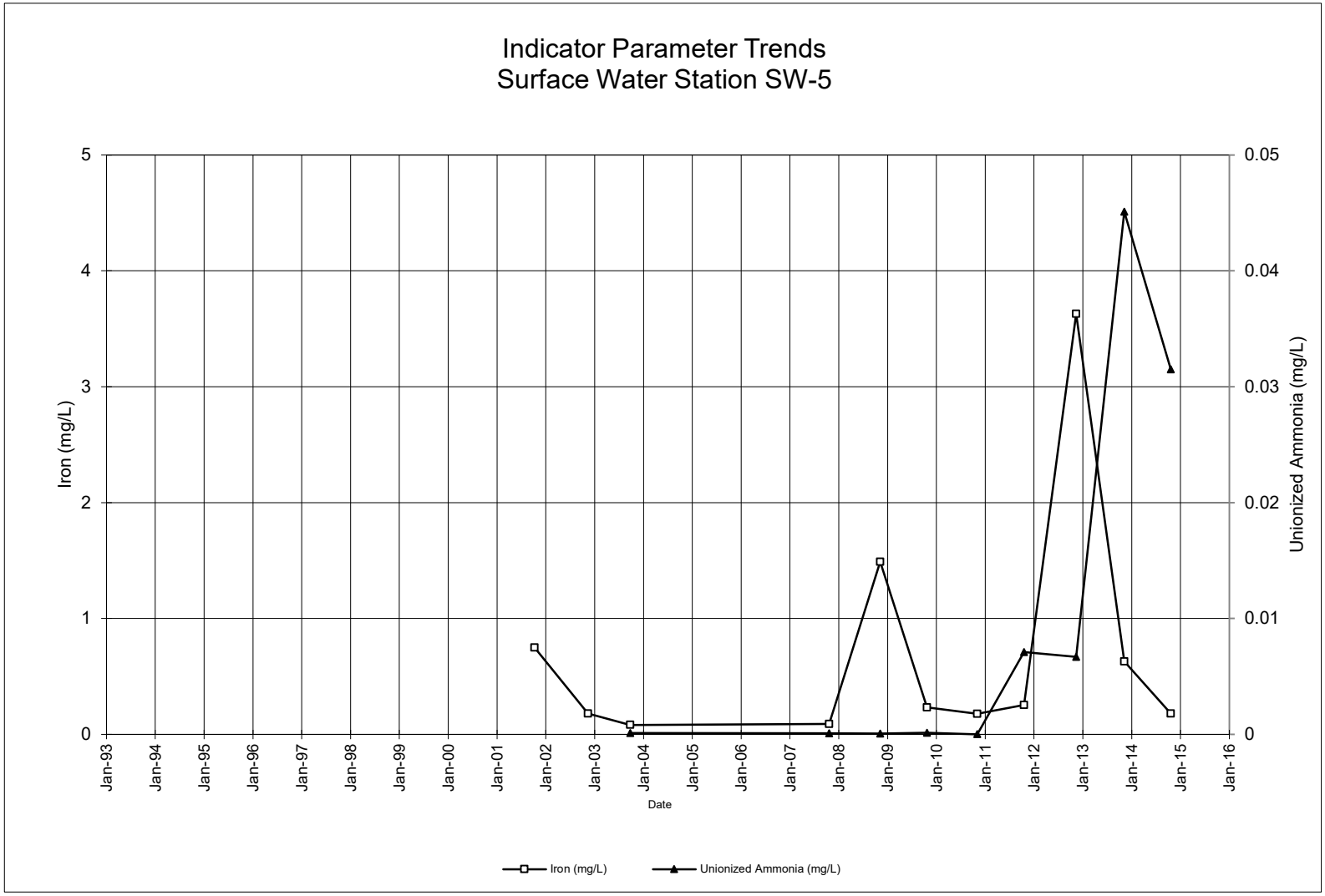
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Date
Alkalinity (mg/L)
Chloride (mg/L)
Conductivity (µS/cm)


Indicator Parameter Trends
Surface Water Station SW-5
Iron (mg/L)
Unionized Ammonia (mg/L)
Date
0
1
2
3
4
5
0
0.01
0.02
0.03
0.04
0.05
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Iron (mg/L)
Unionized Ammonia (mg/L)

HISTORICAL SURFACE WATER QUALITY DATA - SW-6

Parameter	Conductivity	Chloride	Iron	Ammonia (as N)	Ammonia (as NH_3)	pH	Alkalinity	Phenols	T. Phosphorus (P)	Unionized Ammonia (as NH_3)
PWQO			0.3			6.5-8.5		0.001	0.03	**0.002
MDL	0.01	0.1	0.01	0.05	0.05	0.01	1.0	0.001	0.01	
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l
9-Nov-15	1100	140	0.2	<0.05	0.0305	7.95	230	<0.0010	0.2	<0.002
Average	-	-	-	-	-	-	-	-	-	-
Std. Dev.										

- exceeds PWQO

* no data (equipment failed)

† sampled under non-flowing conditions

HISTORICAL SURFACE WATER QUALITY DATA - SW-7

Parameter	Conductivity	Chloride	Iron	Ammonia (as N)	Ammonia (as NH_3)	pH	pH (field)	Alkalinity	Phenols	T. Phosphorus (P)	Temp (field)	Dissolved Oxygen (field)	Unionized Ammonia (as NH_3)
PWQO			0.3			6.5-8.5	6.5-8.5		0.001	0.03			**0.002
MDL	0.01	0.1	0.01	0.05	0.05	0.01	0.01	1.0	0.001	0.01			
UNITS	µS/cm	mg/l	mg/l	mg/l	mg/l			mg/l	mg/l	mg/l	°C	mg/l	mg/l
11-Nov-15	1200	94	40	0.99	1.21	8.00		230	<0.0010	1.60	9.0	10.52	0.00
8-Nov-16	DRY												
13-Nov-17	1200	140	0.73	0.088	-	7.98	7.28	420	<0.0020	0.055	0.0	8.46	-
16-Nov-18	510	22	0.06	<0.050	-	8.23	7.79	220	<0.0010	0.005	1.7	11.20	-
14-Nov-19	660	32	0.08	0.084	-	8.19	8.01	260	<0.0010	0.008	0.6	10.10	-
10-Nov-20	850	65	0.06	0.061	-	8.27	8.03	360	<0.0010	0.027	15.7	7.21	-
5-Nov-21	620	29	0.36	<0.050	-	8.04	-	290	0.0013	0.086	-	-	-
20-Oct-22	DRY												
30-Nov-23	530	15	0.06	0.055	-	8.25	-	250	-	<0.020	-	-	-
Average	795.71	56.71	5.91	0.18	1.21	8.14	7.78	290.00	0.001	0.26	5.40	9.50	0.00
Std. Dev.	276	43	14	0	-	0	0	68	-	1	6	1	-

- exceeds PWQO

Results less than detection limit are calculated using half the detection limit in average and standard deviation calculations.

APPENDIX F:
LABORATORY CERTIFICATES OF ANALYSIS

Your Project #: Durham
Your C.O.C. #: n/a

Attention: Reporting Contacts

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

Report Date: 2023/12/04
Report #: R7940750
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3AS454
Received: 2023/12/01, 09:22

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Dissolved Oxygen	1	2023/12/04	2023/12/04	CAM SOP-00427	SM 24 4500 O G m

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 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.

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 #: Durham
Your C.O.C. #: n/a

Attention: Reporting Contacts

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

Report Date: 2023/12/04
Report #: R7940750
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3AS454
Received: 2023/12/01, 09:22

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

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Bureau Veritas Job #: C3AS454
Report Date: 2023/12/04

GM BluePlan Engineering Limited
Client Project #: Durham
Sampler Initials: CS

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XTS605	XTS605		
Sampling Date					
COC Number		n/a	n/a		
	UNITS	SW-7	SW-7 Lab-Dup	RDL	QC Batch
Inorganics					
Dissolved Oxygen	mg/L	10.5	10.5	0.050	9089069

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

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Bureau Veritas Job #: C3AS454
Report Date: 2023/12/04

GM BluePlan Engineering Limited
Client Project #: Durham
Sampler Initials: CS

TEST SUMMARY

Bureau Veritas ID: XTS605
Sample ID: SW-7
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Oxygen	DO	9089069	2023/12/04	2023/12/04	Frank Zhang

Bureau Veritas ID: XTS605 Dup
Sample ID: SW-7
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Oxygen	DO	9089069	2023/12/04	2023/12/04	Frank Zhang

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GENERAL COMMENTS

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

Package 1	10.7°C
Package 2	11.3°C

Results relate only to the items tested.

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			RPD	
QC Batch	**Parameter**	**Date**	**Value (%)**	**QC Limits**
9089069	Dissolved Oxygen	2023/12/04	0.19	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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Bureau Veritas Job #: C3AS454
Report Date: 2023/12/04

GM BluePlan Engineering Limited
Client Project #: Durham
Sampler Initials: CS

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Cristina Carriere, Senior Scientific Specialist

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Your Project #: Durham
Your C.O.C. #: n/a

Attention: Reporting Contacts

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

Report Date: 2023/12/19
Report #: R7961225
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C3AS454
Received: 2023/12/01, 09:22

Sample Matrix: Water
Samples Received: 22

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	22	N/A	2023/12/06	CAM SOP-00448	SM 24 2320 B m
Chloride by Automated Colourimetry	21	N/A	2023/12/07	CAM SOP-00463	SM 24 4500-Cl E m
Chloride by Automated Colourimetry	1	N/A	2023/12/08	CAM SOP-00463	SM 24 4500-Cl E m
Conductivity	22	N/A	2023/12/06	CAM SOP-00414	SM 24 2510 m
Dissolved Oxygen	1	2023/12/04	2023/12/04	CAM SOP-00427	SM 24 4500 O G m
Hardness (calculated as CaCO3)	21	N/A	2023/12/07	CAM SOP 00102/00408/00447	SM 2340 B
Lab Filtered Metals by ICPMS	21	2023/12/06	2023/12/07	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICP	1	2023/12/06	2023/12/07	CAM SOP-00408	EPA 6010D m
Total Ammonia-N	22	N/A	2023/12/06	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (1)	20	N/A	2023/12/06	CAM SOP-00440	SM 24 4500-NO3I/NO2B
Nitrate & Nitrite as Nitrogen in Water (1)	1	N/A	2023/12/07	CAM SOP-00440	SM 24 4500-NO3I/NO2B
pH	22	2023/12/06	2023/12/06	CAM SOP-00413	SM 24th - 4500H+ B
Sulphate by Automated Turbidimetry	21	N/A	2023/12/07	CAM SOP-00464	SM 24 4500-SO42- E m
Total Dissolved Solids	21	2023/12/06	2023/12/07	CAM SOP-00428	SM 24 2540C m
Total Kjeldahl Nitrogen in Water	21	2023/12/06	2023/12/07	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	1	2023/12/06	2023/12/06	CAM SOP-00407	SM 24 4500-P I

Remarks:

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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

Your Project #: Durham
Your C.O.C. #: n/a

Attention: Reporting Contacts

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

Report Date: 2023/12/19
Report #: R7961225
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C3AS454
Received: 2023/12/01, 09:22
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.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) 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
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RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XTS584			XTS585			XTS586		
Sampling Date										
COC Number		n/a			n/a			n/a		
	UNITS	TW-1	RDL	QC Batch	TW-2	RDL	QC Batch	TW-3	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	650	1.0	9091675	350	1.0	9091675	490	1.0	9091675
Inorganics										
Total Ammonia-N	mg/L	34	0.25	9093677	16	0.050	9093677	1.9	0.050	9093677
Conductivity	umho/cm	1800	1.0	9093584	1000	1.0	9093584	1000	1.0	9093584
Total Dissolved Solids	mg/L	840	10	9094214	460	10	9094240	415	10	9094214
Total Kjeldahl Nitrogen (TKN)	mg/L	33	1.0	9094776	15	1.0	9094776	1.8	0.10	9094766
pH	pH	7.57		9093581	7.66		9093581	7.60		9093581
Dissolved Sulphate (SO4)	mg/L	12	1.0	9092951	13	1.0	9092951	16	1.0	9092951
Alkalinity (Total as CaCO3)	mg/L	870	1.0	9093565	400	1.0	9093565	430	1.0	9093565
Dissolved Chloride (Cl-)	mg/L	65	1.0	9092939	62	1.0	9092939	58	1.0	9092939
Nitrite (N)	mg/L	<0.010	0.010	9093600	0.044	0.010	9093600	<0.010	0.010	9093600
Nitrate (N)	mg/L	<0.10	0.10	9093600	2.42	0.10	9093600	<0.10	0.10	9093600
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	9093600	2.46	0.10	9093600	<0.10	0.10	9093600

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		XTS587		XTS588			XTS588		
Sampling Date									
COC Number		n/a		n/a			n/a		
	UNITS	TW-5	QC Batch	TW-6	RDL	QC Batch	TW-6 Lab-Dup	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L	450	9091675	400	1.0	9091675			
Inorganics									
Total Ammonia-N	mg/L	0.72	9093677	1.7	0.050	9093677			
Conductivity	umho/cm	840	9093629	790	1.0	9093584	800	1.0	9093584
Total Dissolved Solids	mg/L	415	9094240	400	10	9094240			
Total Kjeldahl Nitrogen (TKN)	mg/L	0.87	9094776	1.8	0.10	9094766			
pH	pH	7.56	9093626	7.70		9093581	7.71		9093581
Dissolved Sulphate (SO4)	mg/L	23	9092951	46	1.0	9092910			
Alkalinity (Total as CaCO3)	mg/L	400	9093628	330	1.0	9093565	330	1.0	9093565
Dissolved Chloride (Cl-)	mg/L	15	9092939	24	1.0	9092904			
Nitrite (N)	mg/L	0.034	9093600	<0.010	0.010	9093600	<0.010	0.010	9093600
Nitrate (N)	mg/L	<0.10	9093600	<0.10	0.10	9093600	<0.10	0.10	9093600
Nitrate + Nitrite (N)	mg/L	<0.10	9093600	<0.10	0.10	9093600	<0.10	0.10	9093600

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

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RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XTS589			XTS589			XTS590		
Sampling Date										
COC Number		n/a			n/a			n/a		
	UNITS	TW-8	RDL	QC Batch	TW-8 Lab-Dup	RDL	QC Batch	TW-9	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	430	1.0	9091675				390	1.0	9091675
Inorganics										
Total Ammonia-N	mg/L	1.2	0.050	9093677				0.91	0.050	9093677
Conductivity	umho/cm	910	1.0	9093584				760	1.0	9093629
Total Dissolved Solids	mg/L	485	10	9094240				375	10	9094214
Total Kjeldahl Nitrogen (TKN)	mg/L	1.3	0.10	9094776				1.0	0.10	9094776
pH	pH	7.78		9093581				7.71		9093626
Dissolved Sulphate (SO4)	mg/L	88	1.0	9092951				42	1.0	9092951
Alkalinity (Total as CaCO3)	mg/L	310	1.0	9093565				320	1.0	9093628
Dissolved Chloride (Cl-)	mg/L	47	1.0	9092939				22	1.0	9092939
Nitrite (N)	mg/L	<0.010	0.010	9093818	<0.010	0.010	9093818	<0.010	0.010	9093600
Nitrate (N)	mg/L	<0.10	0.10	9093818	<0.10	0.10	9093818	<0.10	0.10	9093600
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	9093818	<0.10	0.10	9093818	<0.10	0.10	9093600

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

Bureau Veritas ID		XTS590			XTS591		XTS592		
Sampling Date									
COC Number		n/a			n/a		n/a		
	UNITS	TW-9 Lab-Dup	RDL	QC Batch	TW-10	QC Batch	TW-11	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L				380	9091675	440	1.0	9091675
Inorganics									
Total Ammonia-N	mg/L				<0.050	9093677	4.1	0.050	9093677
Conductivity	umho/cm	760	1.0	9093629	730	9093584	940	1.0	9093584
Total Dissolved Solids	mg/L				405	9094240	465	10	9094214
Total Kjeldahl Nitrogen (TKN)	mg/L				<0.10	9094776	4.1	0.10	9094776
pH	pH	7.72		9093626	7.86	9093581	7.59		9093581
Dissolved Sulphate (SO4)	mg/L				56	9092951	23	1.0	9092910
Alkalinity (Total as CaCO3)	mg/L	320	1.0	9093628	290	9093565	400	1.0	9093565
Dissolved Chloride (Cl-)	mg/L				20	9092939	43	1.0	9092904
Nitrite (N)	mg/L				<0.010	9093600	<0.010	0.010	9093600
Nitrate (N)	mg/L				0.57	9093600	<0.10	0.10	9093600
Nitrate + Nitrite (N)	mg/L				0.57	9093600	<0.10	0.10	9093600

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

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RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XTS593			XTS594			XTS595		
Sampling Date										
COC Number		n/a			n/a			n/a		
	UNITS	TW-12	RDL	QC Batch	TW-13	RDL	QC Batch	TW-14	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	990	1.0	9091675	610	1.0	9091675	490	1.0	9091675
Inorganics										
Total Ammonia-N	mg/L	100	1.0	9093677	7.3	0.050	9093677	28	0.050	9093677
Conductivity	umho/cm	3700	1.0	9093584	1700	1.0	9093584	1500	1.0	9093584
Total Dissolved Solids	mg/L	1800	10	9094214	765	10	9094240	675	10	9094240
Total Kjeldahl Nitrogen (TKN)	mg/L	99	5.0	9094766	7.9	0.50	9094766	29	1.0	9094766
pH	pH	7.45		9093581	7.57		9093581	7.48		9093581
Dissolved Sulphate (SO4)	mg/L	50	1.0	9092951	3.4	1.0	9092951	2.6	1.0	9092910
Alkalinity (Total as CaCO3)	mg/L	1500	1.0	9093565	560	1.0	9093565	600	1.0	9093565
Dissolved Chloride (Cl-)	mg/L	260	2.0	9092939	210	2.0	9092939	110	1.0	9092904
Nitrite (N)	mg/L	0.104	0.010	9093600	0.019	0.010	9093600	<0.010	0.010	9093600
Nitrate (N)	mg/L	9.37	0.10	9093600	0.23	0.10	9093600	<0.10	0.10	9093600
Nitrate + Nitrite (N)	mg/L	9.48	0.10	9093600	0.25	0.10	9093600	<0.10	0.10	9093600

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		XTS596		XTS597		XTS598			XTS599		
Sampling Date											
COC Number		n/a		n/a		n/a			n/a		
	UNITS	TW-16	RDL	TW-17	RDL	TW-18	RDL	QC Batch	TW-19	RDL	QC Batch
Calculated Parameters											
Hardness (CaCO3)	mg/L	570	1.0	560	1.0	590	1.0	9091675	520	1.0	9091675
Inorganics											
Total Ammonia-N	mg/L	3.7	0.050	1.8	0.050	1.4	0.050	9093677	19	0.050	9093677
Conductivity	umho/cm	1300	1.0	1400	1.0	1500	1.0	9093584	1400	1.0	9093584
Total Dissolved Solids	mg/L	640	10	705	10	755	10	9094240	585	10	9094240
Total Kjeldahl Nitrogen (TKN)	mg/L	4.2	0.20	2.4	0.10	2.2	0.20	9094776	18	1.0	9094766
pH	pH	7.72		7.54		7.74		9093581	7.49		9093581
Dissolved Sulphate (SO4)	mg/L	2.1	1.0	42	1.0	33	1.0	9092910	1.3	1.0	9092910
Alkalinity (Total as CaCO3)	mg/L	560	1.0	460	1.0	510	1.0	9093565	590	1.0	9093565
Dissolved Chloride (Cl-)	mg/L	75	1.0	140	1.0	140	1.0	9092904	87	1.0	9092904
Nitrite (N)	mg/L	<0.010	0.010	0.017	0.010	0.039	0.010	9093600	<0.010	0.010	9093600
Nitrate (N)	mg/L	<0.10	0.10	0.13	0.10	0.10	0.10	9093600	<0.10	0.10	9093600
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	0.14	0.10	0.14	0.10	9093600	<0.10	0.10	9093600

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XTS599			XTS600			XTS600		
Sampling Date										
COC Number		n/a			n/a			n/a		
	UNITS	TW-19 Lab-Dup	RDL	QC Batch	TW-20	RDL	QC Batch	TW-20 Lab-Dup	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L				460	1.0	9091675			
Inorganics										
Total Ammonia-N	mg/L				6.4	0.050	9093677	6.4	0.050	9093677
Conductivity	umho/cm				1100	1.0	9093584			
Total Dissolved Solids	mg/L				510	10	9094214			
Total Kjeldahl Nitrogen (TKN)	mg/L	18	1.0	9094766	6.5	0.20	9094776			
pH	pH				7.65		9093581			
Dissolved Sulphate (SO4)	mg/L				10	1.0	9092910			
Alkalinity (Total as CaCO3)	mg/L				460	1.0	9093565			
Dissolved Chloride (Cl-)	mg/L				47	1.0	9092904			
Nitrite (N)	mg/L				<0.010	0.010	9093600			
Nitrate (N)	mg/L				<0.10	0.10	9093600			
Nitrate + Nitrite (N)	mg/L				<0.10	0.10	9093600			

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

Bureau Veritas ID		XTS601			XTS602			XTS602		
Sampling Date										
COC Number		n/a			n/a			n/a		
	UNITS	TW-21	RDL	QC Batch	LW-2	RDL	QC Batch	LW-2 Lab-Dup	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	650	1.0	9091675	460	1.0	9091675			
Inorganics										
Total Ammonia-N	mg/L	16	0.050	9093677	1.2	0.050	9093677			
Conductivity	umho/cm	1400	1.0	9093584	900	1.0	9093584			
Total Dissolved Solids	mg/L	640	10	9094214	455	10	9094240	485	10	9094240
Total Kjeldahl Nitrogen (TKN)	mg/L	16	1.0	9094776	1.3	0.10	9094776			
pH	pH	7.26		9093581	7.35		9093581			
Dissolved Sulphate (SO4)	mg/L	11	1.0	9092910	6.0	1.0	9092910			
Alkalinity (Total as CaCO3)	mg/L	710	1.0	9093565	420	1.0	9093565			
Dissolved Chloride (Cl-)	mg/L	31	1.0	9092904	30	1.0	9092904			
Nitrite (N)	mg/L	0.038	0.010	9093600	0.016	0.010	9093600			
Nitrate (N)	mg/L	<0.10	0.10	9093600	0.10	0.10	9093600			
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	9093600	0.12	0.10	9093600			

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

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Bureau Veritas Job #: C3AS454
Report Date: 2023/12/19

GM BluePlan Engineering Limited
Client Project #: Durham
Sampler Initials: CS

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XTS603			XTS604			XTS605		
Sampling Date										
COC Number		n/a			n/a			n/a		
	UNITS	TW-22 S	RDL	QC Batch	TW-22D	RDL	QC Batch	SW-7	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	590	1.0	9091675	420	1.0	9091675			
Inorganics										
Total Ammonia-N	mg/L	0.54	0.050	9093731	0.53	0.050	9093731	0.055	0.050	9093731
Conductivity	umho/cm	1700	1.0	9093584	1200	1.0	9093584	530	1.0	9093584
Total Dissolved Solids	mg/L	940	10	9094214	630	10	9094240			
Total Kjeldahl Nitrogen (TKN)	mg/L	1.0	0.50	9094766	1.2	0.50	9094766			
Dissolved Oxygen	mg/L							10.5	0.050	9089069
pH	pH	8.08		9093581	8.05		9093581	8.25		9093581
Total Phosphorus	mg/L							<0.020	0.020	9093984
Dissolved Sulphate (SO4)	mg/L	13	1.0	9092951	30	1.0	9092910			
Alkalinity (Total as CaCO3)	mg/L	270	1.0	9093565	270	1.0	9093565	250	1.0	9093565
Dissolved Chloride (Cl-)	mg/L	350	5.0	9092939	180	1.0	9092904	15	1.0	9092429
Nitrite (N)	mg/L	<0.010	0.010	9093600	0.049	0.010	9093600			
Nitrate (N)	mg/L	<0.10	0.10	9093600	0.18	0.10	9093600			
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	9093600	0.23	0.10	9093600			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		XTS605		
Sampling Date				
COC Number		n/a		
	UNITS	SW-7 Lab-Dup	RDL	QC Batch
Inorganics				
Total Ammonia-N	mg/L	<0.050	0.050	9093731
Dissolved Oxygen	mg/L	10.5	0.050	9089069

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

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XTS584	XTS585	XTS586	XTS587	XTS588		XTS589		
Sampling Date										
COC Number		n/a	n/a	n/a	n/a	n/a		n/a		
	UNITS	TW-1	TW-2	TW-3	TW-5	TW-6	QC Batch	TW-8	RDL	QC Batch
Metals										
Dissolved Barium (Ba)	ug/L	56	28	30	36	55	9094559	82	2.0	9094604
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	9094559	<1.0	1.0	9094604
Dissolved Calcium (Ca)	ug/L	160000	92000	140000	110000	100000	9094559	100000	200	9094604
Dissolved Iron (Fe)	ug/L	120	<100	<100	<100	<100	9094559	<100	100	9094604
Dissolved Magnesium (Mg)	ug/L	61000	30000	36000	44000	35000	9094559	41000	50	9094604
Dissolved Manganese (Mn)	ug/L	180	58	240	8.0	45	9094559	11	2.0	9094604
Dissolved Phosphorus (P)	ug/L	<100	<100	<100	<100	<100	9094559	<100	100	9094604
Dissolved Potassium (K)	ug/L	44000	21000	4700	2200	3300	9094559	930	200	9094604
Dissolved Sodium (Na)	ug/L	89000	53000	36000	12000	17000	9094559	27000	100	9094604

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		XTS589		XTS590	XTS591	XTS592	XTS593	XTS594		
Sampling Date										
COC Number		n/a		n/a	n/a	n/a	n/a	n/a		
	UNITS	TW-8 Lab-Dup	QC Batch	TW-9	TW-10	TW-11	TW-12	TW-13	RDL	QC Batch
Metals										
Dissolved Barium (Ba)	ug/L	76	9094604	30	30	30	300	140	2.0	9094559
Dissolved Bismuth (Bi)	ug/L	<1.0	9094604	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	9094559
Dissolved Calcium (Ca)	ug/L	100000	9094604	100000	94000	120000	220000	140000	200	9094559
Dissolved Iron (Fe)	ug/L	<100	9094604	<100	<100	<100	170	<100	100	9094559
Dissolved Magnesium (Mg)	ug/L	39000	9094604	34000	35000	34000	110000	60000	50	9094559
Dissolved Manganese (Mn)	ug/L	10	9094604	61	<2.0	260	160	150	2.0	9094559
Dissolved Phosphorus (P)	ug/L	<100	9094604	<100	<100	<100	<100	<100	100	9094559
Dissolved Potassium (K)	ug/L	910	9094604	2400	2400	8100	110000	17000	200	9094559
Dissolved Sodium (Na)	ug/L	26000	9094604	15000	15000	30000	300000	110000	100	9094559

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

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XTS595	XTS596	XTS597	XTS597	XTS598	XTS599	XTS600		
Sampling Date										
COC Number		n/a	n/a	n/a	n/a	n/a	n/a	n/a		
	UNITS	TW-14	TW-16	TW-17	TW-17 Lab-Dup	TW-18	TW-19	TW-20	RDL	QC Batch
Metals										
Dissolved Barium (Ba)	ug/L	56	87	61	62	79	160	130	2.0	9094559
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	9094559
Dissolved Calcium (Ca)	ug/L	120000	140000	140000	150000	140000	130000	120000	200	9094559
Dissolved Iron (Fe)	ug/L	<100	<100	<100	<100	<100	<100	<100	100	9094559
Dissolved Magnesium (Mg)	ug/L	46000	57000	49000	51000	56000	49000	42000	50	9094559
Dissolved Manganese (Mn)	ug/L	270	270	230	240	440	500	100	2.0	9094559
Dissolved Phosphorus (P)	ug/L	<100	<100	<100	<100	<100	<100	<100	100	9094559
Dissolved Potassium (K)	ug/L	25000	6600	5900	6200	21000	21000	10000	200	9094559
Dissolved Sodium (Na)	ug/L	90000	62000	85000	87000	97000	69000	40000	100	9094559

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

Bureau Veritas ID		XTS601	XTS602	XTS603	XTS604			XTS605		
Sampling Date										
COC Number		n/a	n/a	n/a	n/a			n/a		
	UNITS	TW-21	LW-2	TW-22 S	TW-22D	RDL	QC Batch	SW-7	RDL	QC Batch
Metals										
Total Iron (Fe)	mg/L							0.06	0.02	9094063
Dissolved Barium (Ba)	ug/L	19	26	130	110	2.0	9094559			
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	9094559			
Dissolved Calcium (Ca)	ug/L	150000	140000	55000	47000	200	9094559			
Dissolved Iron (Fe)	ug/L	<100	<100	<100	<100	100	9094559			
Dissolved Magnesium (Mg)	ug/L	67000	30000	110000	74000	50	9094559			
Dissolved Manganese (Mn)	ug/L	420	430	49	30	2.0	9094559			
Dissolved Phosphorus (P)	ug/L	<100	<100	<100	<100	100	9094559			
Dissolved Potassium (K)	ug/L	24000	1600	10000	9600	200	9094559			
Dissolved Sodium (Na)	ug/L	32000	12000	89000	55000	100	9094559			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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TEST SUMMARY

Bureau Veritas ID: XTS584
Sample ID: TW-1
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092939	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092951	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094214	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094776	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS585
Sample ID: TW-2
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092939	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092951	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094240	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094776	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS586
Sample ID: TW-3
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092939	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092951	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094214	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094766	2023/12/06	2023/12/07	Kruti Jitesh Patel

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TEST SUMMARY

Bureau Veritas ID: XTS587
Sample ID: TW-5
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093628	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092939	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093629	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093626	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092951	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094240	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094776	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS588
Sample ID: TW-6
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092904	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092910	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094240	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094766	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS588 Dup
Sample ID: TW-6
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil

Bureau Veritas ID: XTS589
Sample ID: TW-8
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil

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TEST SUMMARY

Bureau Veritas ID: XTS589
Sample ID: TW-8
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	SKAL	9092939	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094604	2023/12/06	2023/12/07	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093818	N/A	2023/12/07	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092951	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094240	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094776	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS589 Dup
Sample ID: TW-8
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Lab Filtered Metals by ICPMS	ICP/MS	9094604	2023/12/06	2023/12/07	Azita Fazaeli
Nitrate & Nitrite as Nitrogen in Water	LACH	9093818	N/A	2023/12/07	Chandra Nandlal

Bureau Veritas ID: XTS590
Sample ID: TW-9
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093628	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092939	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093629	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093626	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092951	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094214	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094776	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS590 Dup
Sample ID: TW-9
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093628	N/A	2023/12/06	Nachiketa Gohil
Conductivity	AT	9093629	N/A	2023/12/06	Nachiketa Gohil
pH	AT	9093626	2023/12/06	2023/12/06	Nachiketa Gohil

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TEST SUMMARY

Bureau Veritas ID: XTS591
Sample ID: TW-10
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092939	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092951	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094240	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094776	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS592
Sample ID: TW-11
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092904	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092910	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094214	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094776	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS593
Sample ID: TW-12
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092939	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092951	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094214	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094766	2023/12/06	2023/12/07	Kruti Jitesh Patel

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TEST SUMMARY

Bureau Veritas ID: XTS594
Sample ID: TW-13
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092939	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092951	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094240	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094766	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS595
Sample ID: TW-14
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092904	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092910	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094240	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094766	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS596
Sample ID: TW-16
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092904	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092910	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094240	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094776	2023/12/06	2023/12/07	Kruti Jitesh Patel

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TEST SUMMARY

Bureau Veritas ID: XTS597
Sample ID: TW-17
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092904	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092910	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094240	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094776	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS597 Dup
Sample ID: TW-17
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti

Bureau Veritas ID: XTS598
Sample ID: TW-18
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092904	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092910	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094240	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094776	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS599
Sample ID: TW-19
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092904	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk

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TEST SUMMARY

Bureau Veritas ID: XTS599
Sample ID: TW-19
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092910	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094240	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094766	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS599 Dup
Sample ID: TW-19
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Kjeldahl Nitrogen in Water	SKAL	9094766	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS600
Sample ID: TW-20
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092904	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092910	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094214	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094776	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS600 Dup
Sample ID: TW-20
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani

Bureau Veritas ID: XTS601
Sample ID: TW-21
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092904	N/A	2023/12/07	Massarat Jan

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TEST SUMMARY

Bureau Veritas ID: XTS601
Sample ID: TW-21
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092910	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094214	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094776	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS602
Sample ID: LW-2
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092904	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093677	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092910	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094240	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094776	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS602 Dup
Sample ID: LW-2
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids	BAL	9094240	2023/12/06	2023/12/07	Darshan Patel

Bureau Veritas ID: XTS603
Sample ID: TW-22 S
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092939	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093731	N/A	2023/12/06	Shivani Shivani

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TEST SUMMARY

Bureau Veritas ID: XTS603
Sample ID: TW-22 S
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092951	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094214	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094766	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS604
Sample ID: TW-22D
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092904	N/A	2023/12/07	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Hardness (calculated as CaCO3)		9091675	N/A	2023/12/07	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	9094559	2023/12/06	2023/12/07	Prempal Bhatti
Total Ammonia-N	LACH/NH4	9093731	N/A	2023/12/06	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9093600	N/A	2023/12/06	Chandra Nandlal
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Sulphate by Automated Turbidimetry	SKAL	9092910	N/A	2023/12/07	Massarat Jan
Total Dissolved Solids	BAL	9094240	2023/12/06	2023/12/07	Darshan Patel
Total Kjeldahl Nitrogen in Water	SKAL	9094766	2023/12/06	2023/12/07	Kruti Jitesh Patel

Bureau Veritas ID: XTS605
Sample ID: SW-7
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9093565	N/A	2023/12/06	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9092429	N/A	2023/12/08	Massarat Jan
Conductivity	AT	9093584	N/A	2023/12/06	Nachiketa Gohil
Dissolved Oxygen	DO	9089069	2023/12/04	2023/12/04	Frank Zhang
Total Metals Analysis by ICP	ICP	9094063	2023/12/06	2023/12/07	Suban Kanapathippllai
Total Ammonia-N	LACH/NH4	9093731	N/A	2023/12/06	Shivani Shivani
pH	AT	9093581	2023/12/06	2023/12/06	Nachiketa Gohil
Total Phosphorus (Colourimetric)	SKAL/P	9093984	2023/12/06	2023/12/06	Muskan

Bureau Veritas ID: XTS605 Dup
Sample ID: SW-7
Matrix: Water

Collected:
Shipped:
Received: 2023/12/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Oxygen	DO	9089069	2023/12/04	2023/12/04	Frank Zhang
Total Ammonia-N	LACH/NH4	9093731	N/A	2023/12/06	Shivani Shivani

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GENERAL COMMENTS

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

Package 1	10.7°C
Package 2	11.3°C

Results relate only to the items tested.

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Bureau Veritas Job #: C3AS454
Report Date: 2023/12/19

QUALITY ASSURANCE REPORT

GM BluePlan Engineering Limited
Client Project #: Durham
Sampler Initials: CS

			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
9089069	Dissolved Oxygen	2023/12/04							0.19	30		
9092429	Dissolved Chloride (Cl-)	2023/12/08	NC	80 - 120	103	80 - 120	<1.0	mg/L	0.69	20		
9092904	Dissolved Chloride (Cl-)	2023/12/07	93	80 - 120	98	80 - 120	<1.0	mg/L	NC	20		
9092910	Dissolved Sulphate (SO4)	2023/12/07	89	75 - 125	97	80 - 120	<1.0	mg/L	0.19	20		
9092939	Dissolved Chloride (Cl-)	2023/12/07	NC	80 - 120	99	80 - 120	<1.0	mg/L	5.3	20		
9092951	Dissolved Sulphate (SO4)	2023/12/07	NC	75 - 125	96	80 - 120	<1.0	mg/L	2.9	20		
9093565	Alkalinity (Total as CaCO3)	2023/12/06			98	85 - 115	<1.0	mg/L	0.76	20		
9093581	pH	2023/12/06			101	98 - 103			0.21	N/A		
9093584	Conductivity	2023/12/06			103	85 - 115	<1.0	umho/cm	0.77	10		
9093600	Nitrate (N)	2023/12/06	93	80 - 120	91	80 - 120	<0.10	mg/L	NC	20		
9093600	Nitrite (N)	2023/12/06	100	80 - 120	100	80 - 120	<0.010	mg/L	NC	20		
9093626	pH	2023/12/06			101	98 - 103			0.21	N/A		
9093628	Alkalinity (Total as CaCO3)	2023/12/06			98	85 - 115	<1.0	mg/L	1.5	20		
9093629	Conductivity	2023/12/06			103	85 - 115	<1.0	umho/cm	0.54	10		
9093677	Total Ammonia-N	2023/12/06	91	75 - 125	102	80 - 120	<0.050	mg/L	1.2	20		
9093731	Total Ammonia-N	2023/12/06	118	75 - 125	99	80 - 120	<0.050	mg/L	10	20		
9093818	Nitrate (N)	2023/12/07	100	80 - 120	101	80 - 120	<0.10	mg/L	NC	20		
9093818	Nitrite (N)	2023/12/07	106	80 - 120	106	80 - 120	<0.010	mg/L	NC	20		
9093984	Total Phosphorus	2023/12/06	106	80 - 120	103	80 - 120	<0.020	mg/L	10	20	104	80 - 120
9094063	Total Iron (Fe)	2023/12/07	99	80 - 120	103	80 - 120	<0.02	mg/L				
9094214	Total Dissolved Solids	2023/12/07			97	80 - 120	<10	mg/L	0	20		
9094240	Total Dissolved Solids	2023/12/07			102	80 - 120	<10	mg/L	6.4	20		
9094559	Dissolved Barium (Ba)	2023/12/07	102	80 - 120	99	80 - 120	<2.0	ug/L	2.0	20		
9094559	Dissolved Bismuth (Bi)	2023/12/07	99	80 - 120	95	80 - 120	<1.0	ug/L	NC	20		
9094559	Dissolved Calcium (Ca)	2023/12/07	NC	80 - 120	100	80 - 120	<200	ug/L	4.8	20		
9094559	Dissolved Iron (Fe)	2023/12/07	105	80 - 120	101	80 - 120	<100	ug/L	NC	20		
9094559	Dissolved Magnesium (Mg)	2023/12/07	NC	80 - 120	101	80 - 120	<50	ug/L	3.0	20		
9094559	Dissolved Manganese (Mn)	2023/12/07	103	80 - 120	99	80 - 120	<2.0	ug/L	3.2	20		
9094559	Dissolved Phosphorus (P)	2023/12/07	113	80 - 120	103	80 - 120	<100	ug/L	NC	20		

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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
9094559	Dissolved Potassium (K)	2023/12/07	107	80 - 120	102	80 - 120	<200	ug/L	3.7	20		
9094559	Dissolved Sodium (Na)	2023/12/07	NC	80 - 120	101	80 - 120	<100	ug/L	2.7	20		
9094604	Dissolved Barium (Ba)	2023/12/07	98	80 - 120	101	80 - 120	<2.0	ug/L	7.0	20		
9094604	Dissolved Bismuth (Bi)	2023/12/07	102	80 - 120	102	80 - 120	<1.0	ug/L	NC	20		
9094604	Dissolved Calcium (Ca)	2023/12/07	NC	80 - 120	108	80 - 120	<200	ug/L	3.3	20		
9094604	Dissolved Iron (Fe)	2023/12/07	99	80 - 120	103	80 - 120	<100	ug/L	NC	20		
9094604	Dissolved Magnesium (Mg)	2023/12/07	NC	80 - 120	98	80 - 120	<50	ug/L	3.8	20		
9094604	Dissolved Manganese (Mn)	2023/12/07	99	80 - 120	102	80 - 120	<2.0	ug/L	7.2	20		
9094604	Dissolved Phosphorus (P)	2023/12/07	104	80 - 120	102	80 - 120	<100	ug/L	NC	20		
9094604	Dissolved Potassium (K)	2023/12/07	100	80 - 120	102	80 - 120	<200	ug/L	2.6	20		
9094604	Dissolved Sodium (Na)	2023/12/07	NC	80 - 120	101	80 - 120	<100	ug/L	4.7	20		
9094766	Total Kjeldahl Nitrogen (TKN)	2023/12/07	NC	80 - 120	100	80 - 120	<0.10	mg/L	2.0	20	104	80 - 120
9094776	Total Kjeldahl Nitrogen (TKN)	2023/12/07	115	80 - 120	100	80 - 120	<0.10	mg/L	NC	20	103	80 - 120

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).

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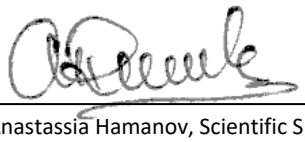
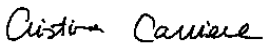
VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist



Cristina Carriere, Senior 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.

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APPENDIX G:
HISTORICAL GROUNDWATER ELEVATIONS

Historical Groundwater Elevations

Durham Landfill Site
Groundwater Elevation Data

Well No.	Bottom of Well (m)	TOC Elev. mASL	TOC Elev. Sept 27/05 mASL	TOC Elev. Dec 8/09 mASL	TOC Elev. Feb 1/13 mASL	Feb-89	Mar-89	Nov-90	May-91	Nov-91	Dec-92	Sep-93	Jan-94	Nov-94	Oct-95	Nov-96	Nov-97
TW1	313.58	336.07			337.50	334.45	334.43	334.97	335.03	334.55	335.08	334.57	334.52	334.71	334.49	334.71	334.66
TW2	324.77	336.32			337.66	334.97	334.94	335.22	335.22	334.52	335.30	334.84	334.79	334.96	334.76	335.09	334.56
TW3	330.31	341.38				335.13	335.10	335.28	335.20	334.84	335.27	334.90	334.86	335.02	334.86	335.15	334.88
TW4	328.92	340.07				334.63	334.61	335.03	335.17	334.42	335.22	334.57	334.48	334.63	334.34	NM	334.59
TW5	328.21	339.97						335.00	335.15	334.45	335.24	334.60	334.51	334.63	334.38	334.98	334.62
TW6	325.61	343.70						334.99	335.10	334.51	335.13	334.58	334.52	334.69	334.46	334.93	334.70
TW7	333.75	343.71						334.87	335.09	334.29	335.14	334.44	334.35	334.49	334.22	334.80	334.51
TW8	316.21	339.08						335.28	335.28	334.81	335.36	334.83	334.77	334.90	334.69	335.14	334.88
TW9	318.62	343.36								334.55	335.14	334.64	334.58	334.74	334.51	334.97	334.75
TW10	316.74	336.78								334.69	335.13	334.72	334.69	334.85	334.67	334.95	334.78
TW11	327.88	336.83								334.64	335.00	334.63	334.61	334.80	334.63	334.86	334.68
TW12	333.09	336.41										334.53	334.61	334.85	334.67	334.85	334.71
TW13	332.09	335.62	335.33									334.46	Frozen	334.47	334.38	334.31	334.17
TW14	324.01	335.99										334.46	Frozen	335.06	334.90	335.16	334.97
TW15	330.53	335.38	335.34									334.61	Frozen	334.67	334.51	334.48	334.19
TW16	332.23	336.47										334.11	334.21	334.40	334.34	334.16	334.12
TW17	330.47	336.06	335.97	335.90 *								334.63	334.54	334.81	334.63	NM	334.54
TW18	332.81	335.27	334.98									333.59	333.93	334.03	333.79	333.91	333.78
TW19		337.28														334.53	334.26
TW20		335.96														334.10	333.91
TW-21	332.76	340.81															
LW1		347.29						335.34	335.32	NM	335.36	334.91	334.86	335.01	334.82	335.25	335.39
LW2		339.61						335.44	335.37	NM	335.42	335.05	335.00	335.16	335.00	335.32	335.13

NOTES:

1. mASL : Metres Above Sea Level
2. Elevations are based on onsite datum and assumed elevations provided in previous Annual Monitoring Reports
3. Units in meters below top of casing.
4. Water levels reported prior to 2012 were summarized in the 2012 Annual Monitoring Report prepared by Others
5. na = Not Available

* 7.3 cm reportedly cut off top of casing on December 8, 2009

Historical Groundwater Elevations

Durham Landfill Site
Groundwater Elevation Data

Well No.	Bottom of Well (m)	TOC Elev. mASL	TOC Elev. Sept 27/05 mASL	TOC Elev. Dec 8/09 mASL	TOC Elev. Feb 1/13 mASL	Sep-98	Sep-99	Oct-00	Oct-01	Nov-02	Oct-03	Sep-04	Sep-05	Sep-06	Nov-07	Nov-08	Nov-09
TW1	313.58	336.07			337.50	334.36	334.24	334.76	334.72	334.32	334.68	334.58	334.51	334.55	334.39	335.14	334.59
TW2	324.77	336.32			337.66	334.32	334.19	334.64	334.81	334.62	334.60	334.53	334.49	334.50	334.37	335.04	334.60
TW3	330.31	341.38				334.61	333.59	334.93	334.96	334.61	334.85	334.87	334.85	334.89	334.79	335.42	335.04
TW4	328.92	340.07				334.20	334.05	334.50	334.63	--	334.71	334.60	334.44	334.47	334.14	335.11	334.57
TW5	328.21	339.97				334.31	334.17	334.86	334.71	334.36	334.72	334.66	334.50	334.53	334.30	335.13	334.58
TW6	325.61	343.70				334.35	334.21	334.81	334.99	334.31	334.72	334.63	334.51	334.54	334.36	335.14	334.69
TW7	333.75	343.71				334.17	334.09	333.75	DRY	DRY	334.39	334.49	334.34	334.35	334.12	334.87	334.43
TW8	316.21	339.08				334.56	332.86	334.43	334.42	333.96	334.36	334.84	334.17	334.23	334.07	334.79	334.33
TW9	318.62	343.36				334.41	334.26	334.86	334.78	334.36	334.77	334.66	334.56	334.60	334.41	335.18	334.64
TW10	316.74	336.78				334.45	333.49	334.81	334.84	334.49	334.76	334.71	334.66	334.71	334.57	335.28	334.88
TW11	327.88	336.83				334.44	333.43	334.72	334.80	334.52	334.63	334.62	334.59	334.62	334.52	335.23	334.85
TW12	333.09	336.41				334.40	334.21	334.80	334.92	334.54	334.83	334.60	334.66	334.75	334.64	335.17	334.88
TW13	332.09	335.62	335.33			333.95	333.78	334.21	334.38	334.29	334.39	333.84	334.20	334.27	334.27	334.69	333.45
TW14	324.01	335.99				334.76	334.64	334.36	334.46	334.16	334.38	334.31	334.28	334.31	334.20	335.54	334.30
TW15	330.53	335.38	335.34			334.06	333.93	--	334.61	334.48	334.63	334.16	334.52	334.56	334.54	334.99	333.48
TW16	332.23	336.47				334.00	333.94	334.14	334.43	334.07	334.29	333.99	334.38	334.14	334.12	334.55	334.41
TW17	330.47	336.06	335.97	335.90 *		334.24	333.32	334.55	334.81	334.31	334.77	334.37	334.63	334.57	334.44	334.89	334.50
TW18	332.81	335.27	334.98			333.07	333.06	333.82	333.92	333.51	333.88	333.53	333.62	333.55	333.49	334.15	333.75
TW19		337.28				333.91	333.77	334.37	334.27	333.87	334.27	334.22	334.03	334.07	333.88	334.72	334.26
TW20		335.96				333.70	333.62	333.91	334.01	333.71	333.89	333.81	333.85	333.85	333.78	334.50	334.00
TW-21	332.76	340.81															
LW1		347.29				335.13	335.00	335.55	333.75	333.45	333.65	333.75		331.65	331.53	335.34	334.96
LW2		339.61				334.85	333.84	335.19	334.89	334.87	335.14	335.05	335.02	335.05	334.94	335.58	335.16

NOTES:

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5. na = Not Available

* 7.3 cm reportedly cut off top of casing on December 8, 2009

Historical Groundwater Elevations

Durham Landfill Site
Groundwater Elevation Data

Well No.	Bottom of Well (m)	TOC Elev. mASL	TOC Elev. Sept 27/05 mASL	TOC Elev. Dec 8/09 mASL	TOC Elev. Feb 1/13 mASL	Nov-10	Nov-11	Nov-12	Nov-13	Nov-14	Nov-15	Nov-16	Nov-16	Nov-17	Nov-17	Nov-18	Nov-18
TW1	313.58	336.07			337.50	334.71	335.11	334.72	335.25	334.89	334.40	3.04	334.46	2.52	334.98	2.80	334.70
TW2	324.77	336.32			337.66	334.64	Plugged	334.76	335.41	335.06	334.71	3.00	334.66	2.50	335.16	2.77	334.89
TW3	330.31	341.38				335.05	335.30	334.94	335.51	335.19	334.93	6.51	334.87	6.12	335.26	6.32	335.06
TW4	328.92	340.07				334.79	334.96	334.41	335.38	334.97	334.28	5.75	334.32	4.94	335.13	5.48	334.59
TW5	328.21	339.97				335.79	334.97	334.50	335.37	334.99	333.41	5.63	334.34	4.84	335.13	5.37	334.60
TW6	325.61	343.70				334.83	335.02	334.61	335.38	335.00	334.53	9.23	334.47	8.59	335.11	8.97	334.73
TW7	333.75	343.71				334.65	334.78	334.37	335.23	334.80	334.27	9.49	334.22	8.74	334.97	9.23	334.48
TW8	316.21	339.08				334.44	334.69	334.25	335.00	334.63	334.19	4.95	334.13	4.20	334.88	4.42	334.66
TW9	318.62	343.36				334.78	334.98	334.57	335.33	334.97	334.48	8.91	334.45	8.28	335.08	8.65	334.71
TW10	316.74	336.78				334.92	335.16	334.77	335.39	335.06	334.74	2.11	334.67	1.68	335.10	1.88	334.90
TW11	327.88	336.83				334.85	335.11	334.73	335.31	334.99	334.71	2.18	334.65	1.78	335.05	1.96	334.87
TW12	333.09	336.41				334.96	335.09	334.91	335.39	335.10	334.84	1.74	334.67	1.26	335.15	--	--
TW13	332.09	335.62	335.33			333.54	333.60	333.51	333.63	333.60	333.48	1.86	333.47	1.60	333.73	1.74	333.59
TW14	324.01	335.99				334.34	334.58	334.20	334.81	334.46	334.16	1.86	334.13	1.44	334.55	1.65	334.34
TW15	330.53	335.38	335.34			333.57	333.71	333.53	333.85	333.68	na	na	na	1.23	334.15	1.75	333.63
TW16	332.23	336.47				334.41	334.47	334.37	334.64	334.53	334.40	2.23	334.24	1.93	334.54	2.02	334.45
TW17	330.47	336.06	335.97	335.90 *		334.58	334.63	334.38	334.80	334.55	334.34	1.69	334.21	1.22	334.68	1.40	334.50
TW18	332.81	335.27	334.98			333.76	333.79	333.75	333.83	333.79	333.72	1.40	333.58	1.13	333.85	1.15	333.83
TW19		337.28				334.43	334.60	334.17	335.05	334.60	334.09	3.27	334.01	2.57	334.71	3.00	334.28
TW20		335.96				333.95	334.18	333.88	334.41	334.12	333.87	2.18	333.78	1.82	334.14	1.97	333.99
TW-21	332.76	340.81								335.31	334.75	6.09	334.72	5.35	335.46	5.83	334.98
LW1		347.29				335.03	335.27	335.10	335.76	335.41	335.03	12.29	335.00	11.77	335.52	12.05	335.24
LW2		339.61				335.19	335.46	335.06	335.68	335.33	335.02	4.63	334.98	4.34	335.27	4.40	335.21

NOTES:

1. mASL : Metres Above Sea Level
2. Elevations are based on onsite datum and assumed elevations provided in previous Annual Monitoring Reports
3. Units in meters below top of casing.
4. Water levels reported prior to 2012 were summarized in the 2012 Annual Monitoring Report prepared by Others
5. na = Not Available

* 7.3 cm reportedly cut off top of casing on December 8, 2009

Historical Groundwater Elevations

Durham Landfill Site
Groundwater Elevation Data

Well No.	Bottom of Well (m)	TOC Elev. mASL	TOC Elev. Sept 27/05 mASL	TOC Elev. Dec 8/09 mASL	TOC Elev. Feb 1/13 mASL	Nov-19	Nov-19	Nov-20	Nov-20	Nov-21	Nov-21	Oct-22	Oct-22	Nov-23	Nov-23
TW1	313.58	336.07			337.50	2.84	334.66	2.76	334.74	4.10	333.40	4.64	332.86	3.27	334.23
TW2	324.77	336.32			337.66	2.80	334.86	2.73	334.93	3.70	333.96	4.72	332.94	4.70	332.96
TW3	330.31	341.38				6.65	334.73	6.30	335.08	5.02	336.36	6.40	334.98	5.42	335.96
TW4	328.92	340.07				5.50	334.57	--	--	--	--	--	--	--	--
TW5	328.21	339.97				5.16	334.81	5.26	334.71	4.75	335.22	5.45	334.52	5.53	334.44
TW6	325.61	343.70				8.97	334.73	8.89	334.81	8.42	335.28	9.05	334.65	9.08	334.62
TW7	333.75	343.71				9.22	334.49	9.06	334.65	8.55	335.16	--	--	9.26	334.45
TW8	316.21	339.08				4.69	334.39	4.22	334.86	4.16	334.92	4.73	334.35	4.72	334.36
TW9	318.62	343.36				8.66	334.70	8.58	334.78	8.14	335.22	8.73	334.63	8.70	334.66
TW10	316.74	336.78				1.89	334.89	1.85	334.93	1.52	335.26	1.96	334.82	1.96	334.82
TW11	327.88	336.83				0.98	335.85	1.94	334.89	1.65	335.18	2.07	334.76	3.05	333.78
TW12	333.09	336.41				1.54	334.87	1.45	334.96	2.18	334.23	1.77	334.64	--	--
TW13	332.09	335.62	335.33			7.78	327.55	1.65	333.68	1.44	333.89	1.35	333.98	1.50	333.83
TW14	324.01	335.99				1.67	334.32	1.63	334.36	1.32	334.67	1.76	334.23	1.78	334.21
TW15	330.53	335.38	335.34			--	--	--	--	--	--	--	--	--	--
TW16	332.23	336.47				2.02	334.45	1.99	334.48	1.75	334.72	1.89	334.58	1.95	334.52
TW17	330.47	336.06	335.97	335.90 *		1.40	334.50	1.40	334.50	1.13	334.77	1.30	334.60	1.48	334.42
TW18	332.81	335.27	334.98			1.19	333.79	1.18	333.80	1.12	333.86	1.16	333.82	1.16	333.82
TW19		337.28				3.02	334.26	2.93	334.35	2.37	334.91	3.10	334.18	3.06	334.22
TW20		335.96				2.02	333.94	1.97	333.99	1.71	334.25	1.08	334.88	2.06	333.90
TW-21	332.76	340.81				--	--	6.72	334.09	5.16	335.65	5.70	335.11	6.13	334.68
LW1		347.29				12.05	335.24	12.01	335.28	--	--	11.97	335.32	Damaged	Damaged
LW2		339.61				4.50	335.11	4.38	335.23	4.12	335.49	4.51	335.10	4.51	335.10

NOTES:

1. mASL : Metres Above Sea Level
2. Elevations are based on onsite datum and assumed elevations provided in previous Annual Monitoring Reports
3. Units in meters below top of casing.
4. Water levels reported prior to 2012 were summarized in the 2012 Annual Monitoring Report prepared by Others
5. na = Not Available

* 7.3 cm reportedly cut off top of casing on December 8, 2009

APPENDIX H:
BOREHOLE LOGS/MONITORING WELL CONSTRUCTION DETAILS

PIEZOMETER COMPLETION RECORD
1991 MONITORING PROGRAM
DURHAM LANDFILL

Well Designation	Date Completed	Reference Elevation (mAMSL)	Total Depth (m bgs)	Installed Depth (m btoc)	Stick Up (m)	Screened Interval	
						Depth (m bgs)	Elevation (mAMSL)
TW1 (1)	26-May-88	336.07	22.86	22.49	0.38	16.01-22.11	319.68-313.58
TW2 (1)	26-May-88	336.32	10.67	11.55	0.52	9.23-11.09	326.57-324.77
TW3 (1)	27-May-88	341.3	10.67	10.98	0.55	8.64-10.44	332.11-330.31
TW4 (1)	26-May-88	340.00	10.67	11.08	0.55	8.73-10.53	330.72-328.92
TW5	26-Sep-90	339.96	13.41	11.78	0.8	9.45-10.95	329.71-328.21
TW6 (3)	27-Sep-90	343.61	18.29	18.00	0.96	16.64-17.04	326.81-326.61
TW7 (3)	28-Sep-90	343.64	12.69	9.89	0.96	7.43-8.93	336.25-333.75
TW8	09-Nov-90	339.06	22.56	22.85	0.93	16.68-21.92	319.25-316.21
TW9	09-Nov-91	343.36	25.30	25.09	0.85	22.40-23.89	320.11-318.62
TW10	07-Nov-91	336.69	19.20	19.42	0.96	17.50-18.99	318.23-316.74
TW11	06-Nov-91	336.72	8.10	8.74	0.95	6.37-7.69	329.40-327.58
LW1	26-Sep-90	341.60	11.28	10.98	0.78	8.58-10.18	332.14-330.64
LW2	13-Nov-90	339.67	7.92	8.84	1.02	6.32-7.82	332.23-330.73
GW1	04-Nov-91	339.37	4.57	4.62	0.64		
GW2	04-Nov-91	340.29	4.57	5.30	0.99		
GW3	04-Nov-91	338.31	4.57	4.24	0.76		

NOTES:
(1) Piezometers installed by IWA. Borehole logs provided in Appendix B.
(2) Piezometer completed as open hole in bedrock.
(3) Piezometer nest completed in single borehole.
(4) HPA, October 1989

TABLE E-3

Well Designation	Construction Material	Unit Monitored	Hydraulic Conductivity (cm/sec)
TW1 (1)	Open Hole, (2) 127mm steel casing	Limestone bedrock	4.3 E-3 (4)
TW2 (1)	1.5m, 60slot, 50mm Plastic Screen, S.I.P.	Coarse Gravel	4.3 E-3 to 1.4 E-2 (4)
TW3 (1)	1.5m, 60slot, 50mm Plastic Screen, S.I.P.	Gravel	3.5 E-2 to 1.9 E-3 (4)
TW4 (1)	1.5m, 60slot, 50mm Plastic Screen, S.I.P.	Gravel	3 E-3 to 8 E-3 (4)
TW5	1.5m, 10slot,50mm PVC screen, PVC pipe	Medium to Fine Sand	5.6 E-3
TW6 (3)	1.2m, 10slot, 50mm PVC screen, PVC pipe	Sand and Gravel	1.8 E-2
TW7 (3)	1.5m, 10slot, 50mm PVC screen, PVC pipe	Fine Sand	2.7 E-4
TW8	3.04m, 10slot, 50mm PVC screen, PVC pipe	Limestone	5.7 E-3
TW9	1.5m, 10slot, 50mm PVC screen, PVC pipe	Limestone	1.5 E-1
TW10	1.5m, 10slot, 50mm PVC screen, PVC pipe	Limestone	1.8 E-1
TW11	1.5m, 10slot, 50mm PVC screen, PVC pipe	Clay and Stones	2.5 E-1
LW1	1.5m, 10slot, 50mm PVC screen, PVC pipe	Fine Sand	4.4 E-2
LW2	1.5m, 10slot, 50mm PVC screen, PVC pipe	Silty Gravel	5.0 E-2
GW1	3.0m, 10slot, 50mm PVC screen, PVC pipe	Sand and Gravel	
GW2	3.0m, 10slot, 50mm PVC screen, PVC pipe	Sand and Gravel	
GW3	3.0m, 10slot, 50mm PVC screen, PVC pipe	Sand and Gravel	

TABLE E-3 (CONT.)

BOREHOLE LOG

Project: DURHAM LANDFILL
Client:
Method: 5" AIR ROTARY
Elev: 338.27 m TOC: 338.337 m

Borehole: TU 12
Depth: 2.20 m
Geologist: DJM

Project: 98808
Date: SEP 14 93
Driller: DURHAM

Depth METERS	Stratigraphic Description	Strata Plot	Samples: Sampler	Samples: Sample No.	Samples: Type	Samples: N or RQD	Samples:	Instrumentation Log: stickup 1.08 m	Comments
0	fine SAND with some fine GRAVEL								Cement
1									Bentonite Seal
									38mm Sch 40 PVC Riser Pipe
									Sand
2	brown clayey SILT								38mm Sch 40 No.10 Slot PVC Screen (5')
3									
4									
5									
6									
7									
8									
9									
10									

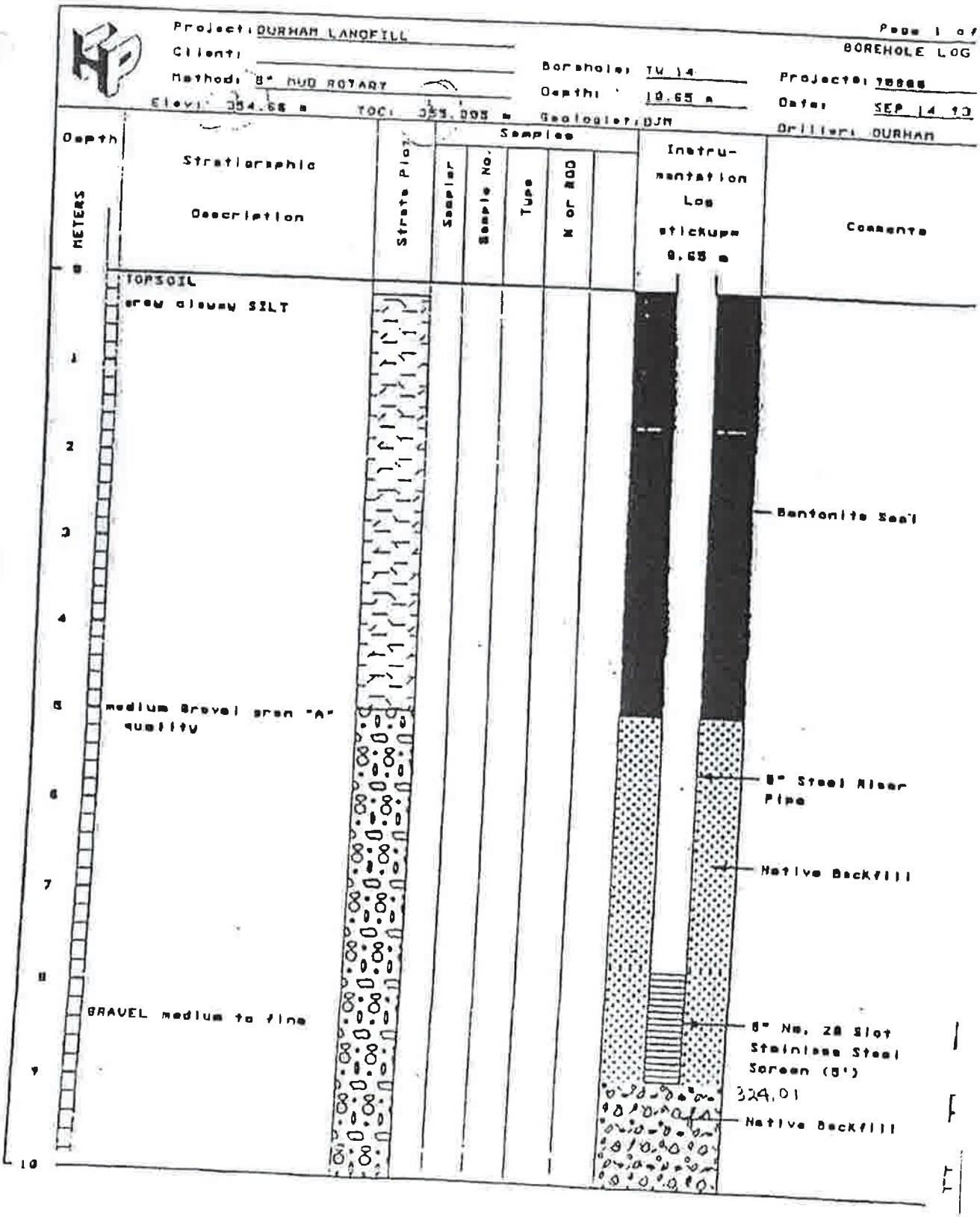
BOREHOLE LOG

Project: DURHAM LANDFILL
Client:
Method: 5" AIR ROTARY
Elev: 334.54 m TOC: 335.819 m

Borehole: TW 13
Depth: 2.45 m
Geologist: DJM

Project#: 78888
Date: SEP 14 93
Driller: DURHAM

Depth METERS	Stratigraphic Description	Strata Plot	Samples: Sampler	Samples: Sample No.	Samples: Type	Samples: N or RQD	Instrumentation Log stickup .78 m	Comments
0	TOPSOIL light brown clayey SILT							Cement
1								Bentonite Seal
								50mm Sch 40 PVC Riser Pipe
								Sand
2								50mm Sch 40 No.10 Slot PVC Screen (5')
3								
4								
5								
6								
7								
8								
9								
10								


Project: DURHAM LANDFILL
Client:
Method: 8" MUD ROTARY
Elev: 334.66 m
TOC: 335.005 m
Borehole: TW 14
Depth: 10.65 m
Geologist: DJM
Page 1 of
BOREHOLE LOG
Project: 78868
Date: SEP 14 93
Driller: DURHAM
Depth
METERS
Stratigraphic
Description
Strata Plot
Samples
Sampler
Sample No.
Type
N or RQD
Instru-
mentation
Log
stickup
0.65 m
Comments
TOPSOIL
grey clayey SILT
medium Gravel green "A" quality
GRAVEL medium to fine
Bentonite Seal
8" Steel Riser Pipe
Native Backfill
8" Nom. 20 Slot Stainless Steel Screen (5')
329.01
Native Backfill

BOREHOLE LOG

Project: DURHAM LANDFILL
Client:
Method: 8" MUD ROTARY
Elev: 354.58 m TOC: 355.305 m

Borehole: TU 14
Depth: 10.69 m
Geologist: DJM

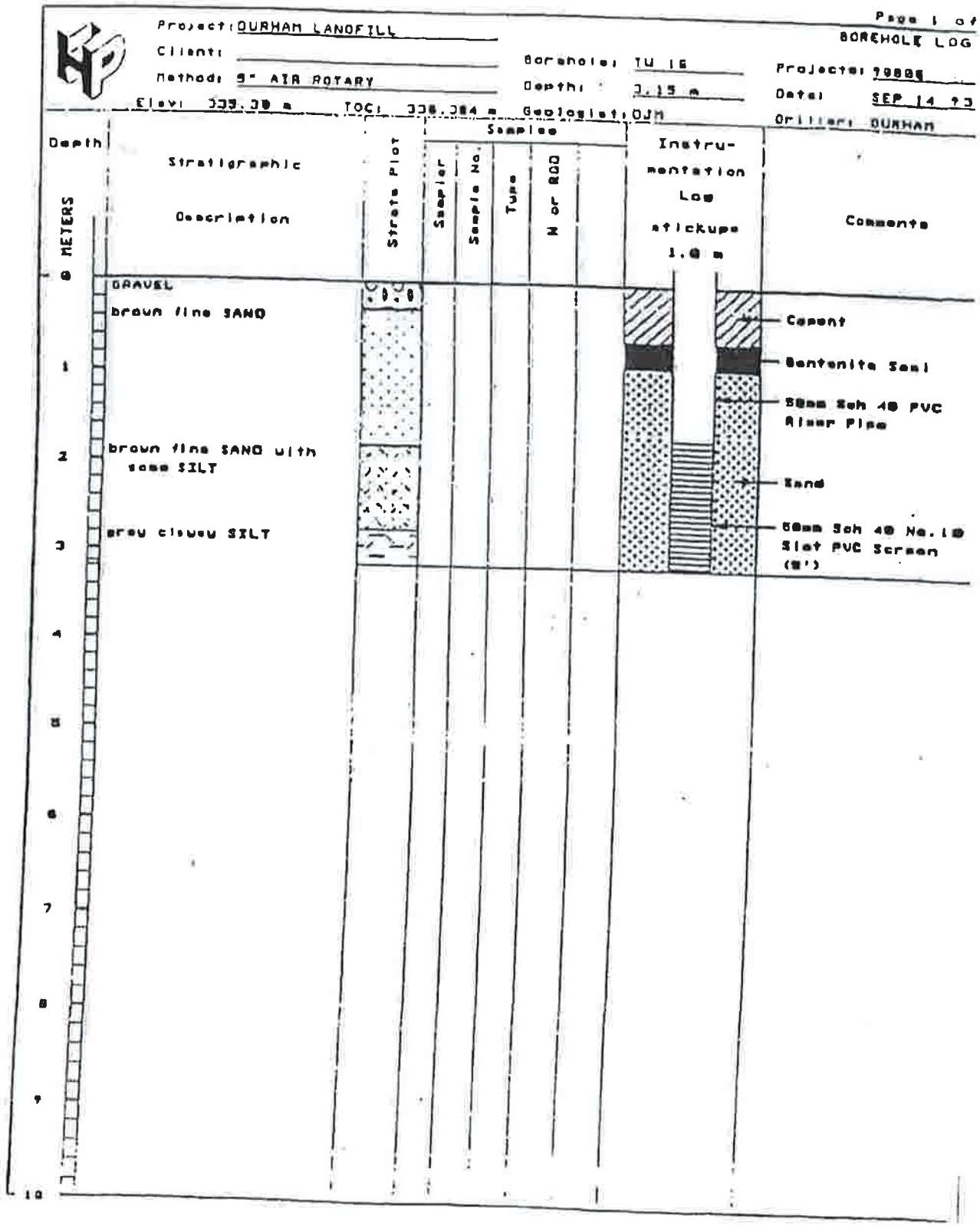
Project: 70808
Date: SEP 14 93
Driller: DURHAM

Depth METERS	Stratigraphic Description	Strata Plot	Samples: Sampler	Samples: Sample No.	Samples: Type	Samples: N or RQD	Instrumentation Log	Comments
10	GRAVEL medium to fine							
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

BOREHOLE LOG

Project: DURHAM LANDFILL
Client:
Method: 5" AIR ROTARY
Elev: 334.51 m TOC: 335.497 m
Borehole: TW 15
Depth: 3.96 m
Geologist: DJM
Project#: 90808
Date: SEP 14 93
Driller: DURHAM

Depth METERS	Stratigraphic Description	Strata Plot	Samples: Sampler	Samples: Sample No.	Samples: Type	Samples: N or RQD	Instrumentation Log stickup .19m	Comments
0	TOPSOIL							Cement
	light brown clayey SILT							
1								Bentonite Seal
2								50mm Sch 40 PVC Riser Pipe
								Sand
3	grey clayey SILT							50mm Sch 40 No.10 Slot PVC Screen (3')
4								Native Backfill
5								
6								
7								
8								
9								
10								


Project: DURHAM LANDFILL
Client:
Method: 9" AIR ROTARY
Elev: 339.39 m
TOC: 338.384 m
Borehole: TW 16
Depth: 3.15 m
Geologist: DJM
Page 1 of
BOREHOLE LOG
Project: 70806
Date: SEP 14 93
Driller: DURHAM
Depth
METERS
Stratigraphic
Description
Strata Plot
Samples
Sampler
Sample No.
Type
N or RQD
Instru-
mentation
Log
stickup
1.0 m
Comments
GRAVEL
brown fine SAND
brown fine SAND with
some SILT
grey clayey SILT
Cement
Bentonite Seal
50mm Sch 40 PVC
Riser Pipe
Sand
50mm Sch 40 No. 10
Slot PVC Screen
(3')
0
1
2
3
4
5
6
7
8
9
10

BOREHOLE LOG

Project: DURHAM LANDFILL
Client:
Method: 5" AIR ROTARY
Elev: 335.07 m TOC: 336.057 m

Borehole: TW 17
Depth: 4.60 m
Geologist: DJM

Project: 70898
Date: SEP 14 93
Driller: DURHAM

Depth METERS	Stratigraphic Description	Strata Plot	Samples: Sampler	Samples: Sample No.	Samples: Type	Samples: N or RQD	Instrumentation Log stickup 1.0 m	Comments
0	TOPSOIL							Cement
1	brown SAND fine to medium							Native Backfill
								Bentonite Seal
2	brown SAND medium							38mm Sch 40 PVC Riser Pipe
	SAND with some SILT							Sand
	SAND grey fine to medium							38mm Sch 40 No.10 Slot PVC Screen (5')
3								
4	SAND with some fine GRAVEL							Native Backfill
5								
6								
7								
8								
9								
10								

BOREHOLE LOG

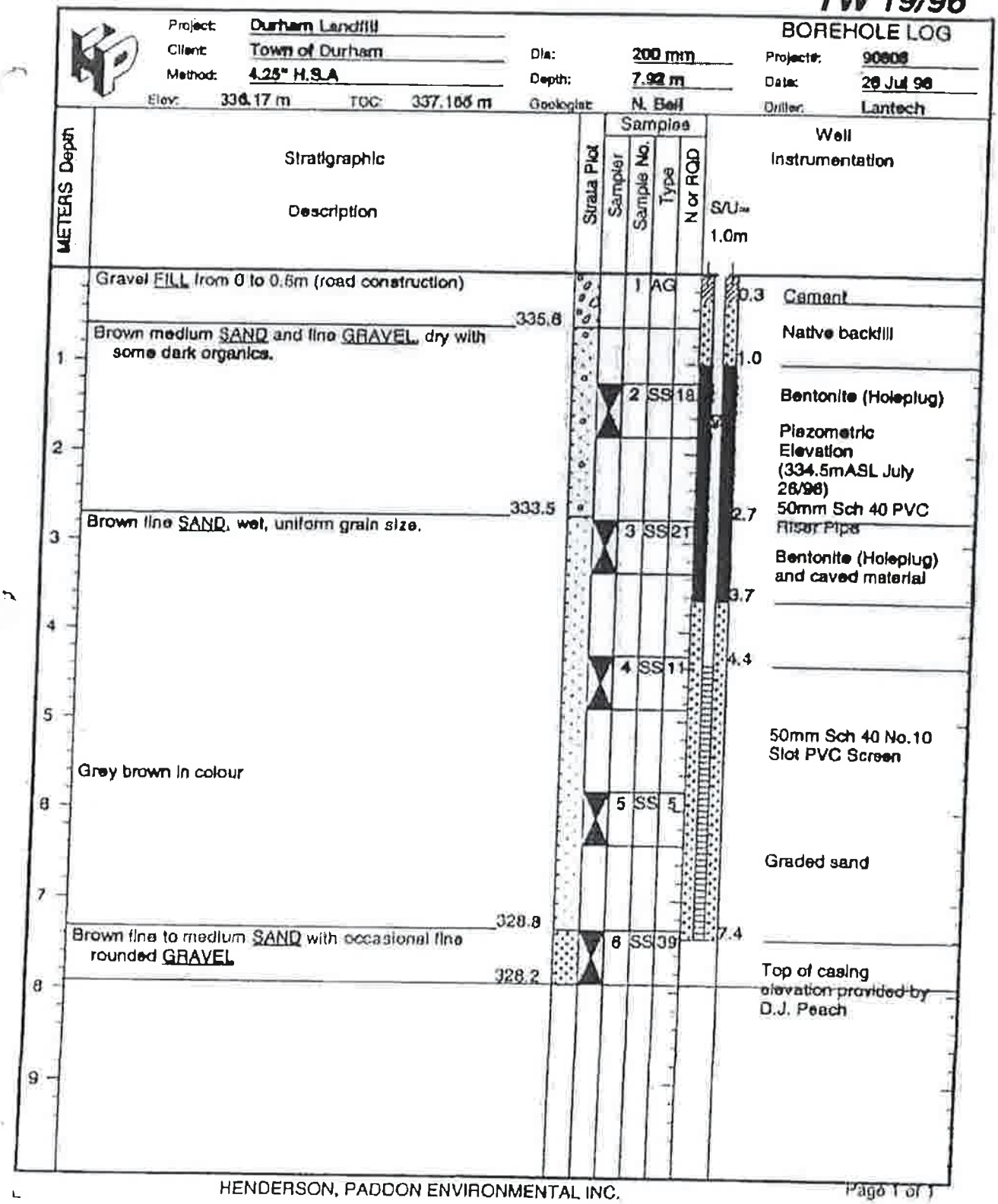
Project: DURHAM LANDFILL
Client:
Method: 4" HAND AUGER
Elev: 334.18 m TOC: 335.133 m

Borehole: TW 18
Depth: 1.85 m
Geologist: DJM

Project#: 90808
Date: SEP 22 93
Driller: HPE

Depth METERS	Stratigraphic Description	Strata Plot	Samples: Sampler	Samples: Sample No.	Samples: Type	Samples: N or RQD	Instrumentation Log stickup .95 m	Comments
0	TOPSOIL light brown clayey SILT							Cement
								Bentonite Seal
1	grey clayey SILT							50mm Sch 40 PVC Riser Pipe
								Sand
								50mm Sch 40 No. 10 Slot PVC Screen (2.5')
2								
3								
4								
5								
6								
7								
8								
9								
10								

TW 19/96



HENDERSON, PADDON ENVIRONMENTAL INC.

TW 20/96

BOREHOLE LOG

Project: Durham Landfill
Client: Town of Durham
Method: 4.25" H.S.A
Elev: 334.98 m TOC: 335.968 m
Dia: 200 mm
Depth: 9.45 m
Geologist: N. Bell
Project#: 90806
Date: 26 Jul 96
Driller: Lantech

METERS Depth	Stratigraphic Description	Strata Plot	Sampler	Sample No.	Type	N or ROD	S/U= 1.0m	Well Instrumentation
1	Grey-brown CLAY			1	AG		0.3	Cement
							0.6	Bentonite (Holeplug)
	333.7							
2	Grey fine to medium SAND in layers with SILT up to 3cm thick.			2	SS	24		Piezometric Elevation (333.96mASL July 26/96)
								Grout (Quikgrout)
3				3	SS	10		
								50mm Sch 40 PVC Riser Pipe
4				4	SS	17	4.4	
5							5.1	Bentonite (Holeplug)
	329.2						5.8	
6	Grey SILT, some fine SAND			5	SS	15		Graded sand
7	327.6							
	Grey fine to medium SAND in layers with SILT up to 3cm thick.			6	SS	10		50mm Sch 40 No.10 Slot PVC Screen
8							8.7	
	326.1							
9	Grey medium to coarse SAND and fine GRAVEL			7	SS	39		Top of casing elevation provided by D.J.Peach
	325.5							

MONITORING WELL ID: TW-21

CLIENT Municipality of West Grey
PROJECT NAME Durham Landfill - Annual Monitoring
PROJECT NUMBER 213086
PROJECT LOCATION 402813 Grey Road 4 Durham, Ontario
DATE COMPLETED June 27, 2014
CONTRACTOR London Soil Test
LOGGED BY JW
METHOD Hollow Stem Auger
WELL CONSTRUCTION 0.05m Ø 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	340						0.00 Ground Surface	340.00
	1							0.30 Dark brown to black TOPSOIL, moist	339.70
	2		SS 1	21	1-3-7-4 (10)			Brown to black sandy ORGANICS with gravel	
1	3	339							
	4								
	5								
	6								
2	7	338						2.29	337.72
	8		SS 2	30	0-0-0-1 (0)			Black SAND with some FILL (glass, wood and metal), moist	
	9							2.90	337.11
3	10	337						Black silty CLAY with gravel and fill, moist	
	11		SS 3	25	0-0-0-11 (0)				
	12							3.66	336.35
	13	336						Light brown silty SAND with gravel, wet	
4	14		SS 4	16	11-10-10-8 (20)				
	15							4.42	335.59
	16							Light brown silty SAND, wet	
5	17	335							
	18								
	19								
6	20	334							
	21								
	22								
7	23	333	SS 5	34	3-5-7-12 (12)				
	24								
	25								

Borehole Terminated at 7.62 m.