



OXFORD COUNTY
WASTE MANAGEMENT
FACILITY, SALFORD
2021 OPERATIONS AND
MONITORING REPORT
COUNTY OF OXFORD

PROJECT NO.: 111-53036-05
DATE: MARCH 07, 2022

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March 07, 2022

Mr. Frank Gross, C.Tech
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Dear Sir:

**Subject : Oxford County Waste Management Facility, Salford
2021 Operations and Monitoring Report**

We are pleased to provide one (1) digital copy of the 2021 Operations and Monitoring Report for the Oxford County Waste Management Facility. This report was prepared to comply with the requirements of the Ministry of the Environment, Conservation and Parks (MECP) Amended Environmental Compliance Approval (ECA) No. A070808 issued November 7, 2013, and also addresses the requirements of the Certificate of Approval (CofA) No. 4504-74CKZ2 for sewage works issued July 3, 2007 under Section 53 of the Ontario Water Resources Act. The report was prepared based on monitoring and site operations data supplied by the County.

The report provides background information on the landfill site and physical setting; details of the work program completed; a discussion on the operations of the landfill and the results of the monitoring completed in 2021, including an assessment of compliance; and conclusions and recommendations. Technical data are appended.

The "Monitoring and Screening Checklist" with signed declarations, as per the MECP Technical Guidance Document – Monitoring and Reporting for Waste Disposal Sites is provided in Appendix I.

Yours truly,
WSP Canada Inc.

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1 INTRODUCTION

1.1 BACKGROUND

The Oxford County Waste Management Facility (site) is located on Part of Lots 11 and 12, Concession II near the village of Salford in the Township of South-West Oxford. It is noted that the name of the site was changed from the Salford and/or Oxford County Landfill to the Oxford County Waste Management Facility, as part of an Oxford County Waste Management Strategy recommendation, passed by County Council in August 2014 and accepted by the MECP in July 2015.

The landfill comprises a 43.7 ha fill area within a total site area of approximately 89.4 ha. The site is bounded by County Road 46 to the north, agricultural land to the west, and buffer lands to the south and east. The location of the site is shown on Figure 1. Though County Road 46 is situated north-northwest of the site, it will be designated as being north (map-north) of the site for the purpose of this report. All other directions provided throughout the report will be based on map-north, rather than true-north.

The site is active and has received domestic and commercial solid waste, brush, non-hazardous solid industrial and other waste limited to sewage sludge and non-hazardous industrial sludges for on-site disposal since mid-June 1986. The site is operated by the County of Oxford (County) in accordance with the Ministry of the Environment, Conservation and Parks (MECP) Amended Environmental Compliance Approval (ECA) No. A070808 issued November 7, 2013. A copy of the site ECA (Waste) is provided in Appendix A.

The landfill property is divided into (2) working areas; the north fill area which is comprised of three (3) completed landfill cells (Cells 1, 2 and 3), one currently active cell (Cell 4), and the south area which is currently used for the stockpiling of clean soil and will be developed when the north area reaches capacity. The north and south areas are separated by an east west corridor as shown on the Site Plan, Figure 2.

A leachate collection system (LCS) was progressively constructed around the perimeter of the landfill (Cells 1, 2, 3 and 4) according to the original site design. The LCS was periodically enhanced with the placement of underdrain laterals beneath the landfilled area. The leachate collected in the LCS is conveyed from the site via truck for treatment at the Ingersoll and Woodstock sewage treatment plants. The LCS is shown on the Site Plan, Figure 2.

In late 1999, a slurry cut-off wall was installed around the northeast extent of the north fill area. The approximate lateral extent of the cut-off wall is shown in the Cut-off Wall Details, Figure 3, while the approximate depth of the cut-off wall is shown in section view on Figure 4. The cut-off wall was constructed using the vibrating beam method with Impermix slurry, with a specified permeability of less than 1×10^{-10} m/s.

In 1999, the County acquired an additional 97 ha of property east of the landfill for use as site buffer lands; of which approximately 10 ha serve as a location for the temporary stockpiling of clean excavated soils. In 2005, a composting facility for yard wastes was established on the northern portion of the buffer lands. In 2009, the County acquired the property east of the composting facility, extending the buffer lands to the east. The buffer property is not to be used for waste disposal purposes and is not part of the ECA (Waste) for the site.

In 2006, a public Recycling and Transfer Station was established in the area to the west of the maintenance building, where household garbage is unloaded. A total of twelve (12) drop-off bins are located in this area; six (6) bins are designated for household waste, two (2) bins for scrap metal, two (2) bins for construction and demolition material,

one (1) bin for cardboard, and one (1) bin for film plastic. One (1) concrete bunker is also located in the depot area for bluebox recycling material. The Recycling and Transfer Station area also accepts refrigerators and air conditioners, as well as household hazardous waste, tires, electronics, textiles, and bulk expanded Styrofoam.

On July 3, 2007, CofA No. 4504-74CKZ2 for sewage works was issued by the MECP for storm water management at the Site. A copy of the CofA (Sewage) is included in Appendix A.

A landfill gas collection system and enclosed flare were installed at the site in 2010. The Amended ECA included in Appendix A covers the operation of the flare system. The landfill gas collection system was commissioned and began operation in late 2010. It is understood that COMCOR Environmental Limited will prepare and submit the landfill gas collection and flaring system 2021 Annual Report Letter directly to the County.

Groundwater and surface water monitoring has been undertaken at the site since 1985. WSP was retained by the County to complete the 2021 Operations and Monitoring Report at the site to satisfy the relevant components of Conditions 2.9, 2.10, 2.11, and 6.0 of the Waste ECA and Conditions 5.1 and 7.2 of the Sewage CofA.

1.2 PHYSICAL SETTING

1.2.1 TOPOGRAPHY AND DRAINAGE

The Oxford County Waste Management Facility at Salford (landfill site or site) is located within the Thames River watershed, and straddles a northwest-southeast trending surface water drainage divide (ridge) between two sub-basins. The area northeast of the divide drains to a small unnamed stream or ditch while the area southwest of the divide drains to Reynolds Creek.

The hummocky topography at the site and the clayey texture of the soil within the watershed area results in naturally poor surface drainage. Prior to the development of the landfill, it was reported that four (4) large depressions on the site were wet throughout most of the year and several smaller depressions flooded in the spring and intermittently in the fall. Further, tile drains were reported to exist on the site prior to landfilling.

The Hooper Drain (a municipal drain) crosses through the northeast corner of the site adjacent to Sedimentation Pond B and outside of the landfill footprint, and exits north of the property. Surface water collected from the County owned buffer lands (formerly farmland) east of the landfill site is conveyed northwest via the Hooper Drain. The original clay tile drain was replaced by a closed concrete pipe and relocated approximately three (3) metres northeast of the original location.

An interior ditch network around the perimeter of the landfilled area directs surface water runoff from the landfill into two (2) storm water retention ponds north of the landfill as shown on Figure 5.

The interior drainage system conveys surface water runoff from completed areas in the western portion of the site to Sedimentation Pond A (retention pond) via a ditch along the south and west sides of the fill areas, and then flows through the ditch adjacent to the site access road into Sedimentation Pond B. Runoff from the east side of the fill area is conveyed north to Sedimentation Pond B via the southeast and east ditches inside of the berm. Any surface water runoff between the berm and the eastern property boundary flows northward off the property via ditches adjacent to County Road 46.

Sedimentation Pond B has an outlet structure fitted with a valve, allowing controlled discharge to the Hooper Drain. During periods of high water level in Sedimentation Pond B, outflow can occur via an overflow on the north side of the pond which is conveyed by a ditch along the south side of the County Road 46. Overflow conditions in the pond are considered rare; however, County staff noted that overflow conditions in the pond occurred on three occasions (March 15, October 4 and November 4, 2021) during the required reporting period between March 15 and November 30, 2021. As per CofA No. 4504-74CKZ2 (Sewage), surface water samples were collected from Sedimentation Pond B on March 15, October 4, and November 4, 2021. It is noted that several other supplemental surface water sampling events were completed in 2021, in conjunction with MECP Incident Report Number 3806-BZFSF3. Related correspondence related to this incident is detailed in Appendix A.

The topography at the site is dominated by the waste mounds and soil stockpiles in the northern portion of the site and soil stockpiles in the southern portion of the site, which has resulted in minor variations to runoff from the topographical drainage divide. The surface water runoff within the active fill area in the northern portion of the site is pumped into the leachate management system for collection and off-site disposal.

1.2.2 SITE GEOLOGY

The description of the site geology provided herein is based on a review of published maps and reports, including findings from other investigations carried out in the general area, and historic intrusive investigations completed at the landfill site. Cross-sections along a north to south and west to east profile through the overburden geology at the site are provided in Figure 6. Borehole logs for current and historical monitoring wells are included in Appendix B.

The landfill site is situated on the Ingersoll Moraine; a sinuous hummocky ridge stretching from east of Woodstock to near London. It is the northern member of a sequence of sub-parallel moraine ridges. The physiographic region south of the Ingersoll Moraine is a strip of till plain which separates it from the St. Thomas Moraine. North of the moraine is an area of drumlinized till plain. Both these till plain areas contain patches of surface glacio-fluvial sands and ice-contact or kame sands (Taylor 1913, Chapman and Putnam 1966, Terasmae et al. 1972, Cowan 1975, Barnett 1982).

The principal regional overburden geologic units, in the order of occurrence below surface, include i) Glaciolacustrine Unit, ii) Port Stanley Drift Unit, iii) Inter-Till Sands Unit and iv) Catfish Creek Drift Unit. The term “drift” infers that the Port Stanley Till and the Catfish Creek Till may include non-till sediments.

The Glaciolacustrine Unit consists of clayey to sandy silts, approximately 4.6 m to 7.9 m thick; with periodic beds of sand appearing deeper within the sequence. The Glaciolacustrine Unit is present only in the northeast portion of the site, and likely extends beyond the property boundary.

The Port Stanley Drift Unit varies from a massive clayey silt till to a laminated water-lain clayey silt till and silty glaciolacustrine materials. Occasional thin sand lenses are present across the site. The Port Stanley Till is approximately 3 m to 21 m thick and was at least 9 m thick beneath most of the site prior to excavation. This unit is present across the entire site and is exposed at surface except where the Glaciolacustrine Unit is present, as noted above. The upper portion of this unit, where exposed at surface, is weathered and fractured (Fractured Till Unit), with individual fractures extending to depths of approximately 3 m to 4.6 m, and up to 6 m in higher topographic areas. The Fractured Till is differentiated from the unweathered clayey silt till (Upper Till Unit) by its reddish brown colour. Of note, a sand lens was observed at a relatively shallow depth at the south end of Cell 4; while at the north end, a thin gravelly seam was observed along a significant portion of the excavation wall. Sand lenses may be more common in portions of the site than originally reported.

Underlying portions of the Upper Till Unit are silty fine sands to coarse sands with some gravel, which may be intermixed with thin layers of silt till (referred to as the Inter-Till Sands Unit). The unit varies from 0.1 m to 2.4 m thick and is discontinuous across the site. The deposition of the Inter-Till Sands Unit appears to be related to the topography of the underlying Catfish Creek Drift Unit (Lower Till Unit). The Lower Till Unit is a pebbly to stony sandy silt till with occasional sand layers throughout. The Lower Till Unit is not exposed at the surface, and it appears to be present across the site. The Lower Till Unit rises beneath a topographic high in the centre of the property, but it is still covered by approximately 6 m to 9 m of the younger clayey silt till of the Upper Till Unit. None of the boreholes on the site penetrate the full thickness of the Lower Till Unit; though the maximum thickness proved by drilling is 24 m.

There is limited information relating to the bedrock geology at the site. None of the intrusive investigations at the site encountered bedrock. However, local water well records suggest that bedrock occurs at approximately 50 m to 64 m below ground surface. The Waste Management and Education Centre (landfill office) well, designated monitoring well 999 (MECP water well record 4706881), encountered bedrock at approximately 65.5 m depth.

2 LOCAL HYDROGEOLOGY

The local geologic units are grouped into five (5) general hydrostratigraphic units as described below.

OVERBURDEN STRATIGRAPHIC UNIT	HYDRO-STRATIGRAPHY	CALCULATED HYDRAULIC CONDUCTIVITY RESULTS (m/s)		
		Range		Mean
Glaciolacustrine Sediments	Glaciolacustrine Unit	1.2x10 ⁻⁷	- 4.5x10 ⁻⁷	2.0x10 ⁻⁷
Port Stanley Till	Fractured Till Unit	1.0x10 ⁻⁷	- 1.8x10 ⁻⁸	1.0x10 ⁻⁷
	Upper Till Unit	1.0x10 ⁻⁹	- 5.3x10 ⁻¹⁰	4.0x10 ⁻¹⁰
Inter-Till Sands	Inter-till Sands Unit	1.5x10 ⁻⁶	- 4.9x10 ⁻⁹	1.0x10 ⁻⁵ - 1.0x10 ⁻⁷ coarse sediments - fine sediments
Catfish Creek Till	Lower Till Unit	3.0x10 ⁻⁷	- 7.1x10 ⁻⁹	7.0x10 ⁻⁹

The weathered portion of the clayey silt (Fractured Till Unit) is expected to be hydraulically active as the open fractures in the weathered zone promote the movement of infiltrating precipitation. Based on field observations, the fracture frequency and interconnection between fractures decrease rapidly with depth, with a low number of fractures being observed deeper than approximately 4.6 m below ground surface. This impedes downward infiltration and promotes shallow, lateral groundwater movement through the upper zone of more intense fracturing. The groundwater table is located in the Fractured Till Unit and within the Glaciolacustrine Unit in the northeast corner of the site.

The unweathered, unfractured portion of the Port Stanley Till (Upper Till Unit) is predominantly clayey silt with a low bulk hydraulic conductivity. As such, it does not represent an active groundwater flow system. Groundwater movement through this unit is inferred to be slower and predominantly downward. The Upper Till is underdrained by the discontinuous Inter-Till Sands Unit. Groundwater flow in this unit may be tortuous due to its discontinuous nature; however, flow in the unit is typically lateral. Groundwater reaching the Lower Till Unit (Catfish Creek Drift Unit) is inferred to move downward with a slight southwesterly component.

3 ANNUAL MONITORING PROGRAM

3.1 OBJECTIVES AND SCOPE

The site operations and annual monitoring report was prepared in compliance with Conditions 2.9, 2.10, 2.11, and 6.0 of the Waste ECA, and Conditions 5.1 and 7.2 of CofA (Sewage) No. 4504 74CKZ2 and includes the following objectives:

- Assess the potential effects of the landfill site on groundwater and surface water quality;
- Evaluate the performance of the leachate collection system (LCS) at the site;
- Assess the potential for combustible gas migration from the site;
- Provide documentation of the site operations, monitoring program results and findings; and
- Provide recommendations on future monitoring and remedial actions, if required.

The site operations and monitoring report consisted of a data collection component completed by the County and WSP. This report provides the results of the 2021 site operation and annual monitoring program activities. Available historic data are also incorporated into the report. The “Monitoring and Screening Checklist” with signed declarations, as per the MECP Technical Guidance Document – Monitoring and Reporting for Waste Disposal Sites, is provided in Appendix I.

3.2 ANNUAL MONITORING PROGRAM

The annual monitoring program at the site included groundwater, surface water, LCS, and combustible gas monitoring. The groundwater monitoring program included on-site monitoring wells and private domestic wells. In 2021, the LCS liquid level measurements, leachate sampling, gas readings, and private domestic well sampling were undertaken by the County, following general monitoring protocols and procedures. Groundwater level measurements, groundwater sampling of on-site wells, and surface water sampling were completed by WSP following standardized general monitoring protocols and procedures, summarized in Table 3-1.

In early 2013, Oxford County provided WSP with all available borehole logs for the site, as recommended in previous operations and monitoring reports. The borehole logs were collated and the monitoring well construction details were summarized in tabular format as shown in Table B-1, Appendix B. Relevant information was extracted from the borehole logs and included in the monitor construction details as follows: current and former well designations; well installation date; and screened intervals. Additionally, historic survey data and well status/condition were added to the table based on information provided by Oxford County and WSP field observations.

Table 3-1 Monitoring Protocols and Procedures

GROUNDWATER LEVEL MEASUREMENT	GROUNDWATER/LEACHATE SAMPLING	SURFACE WATER SAMPLING
<ul style="list-style-type: none"> ▪ Monitor integrity is visually inspected (casing, lock, caps, etc.) ▪ Well cap is carefully removed to avoid introducing foreign material into monitor ▪ A water level is measured using a clean electronic water level meter with a stainless steel probe and graduated cable ▪ The water level measurement is referenced to a known geodetic elevation on the monitor and checked twice for confirmation ▪ The water level is recorded in the dedicated project field book and checked against previous reading ▪ If the water level is significantly greater than historic value, the level in the well is checked again ▪ The water level depth probe and cable are rinsed with de-ionized water between wells ▪ Water levels in each monitor are measured and recorded prior to purging 	<ul style="list-style-type: none"> ▪ Each monitoring well is purged prior to sampling in order to remove stagnant water in the monitor and surrounding sand pack. ▪ Purging and sampling is carried out using the dedicated inertial lift pump and high density polyethylene tubing in place within the monitors. ▪ Well volumes are determined in the field based on the water level measurement. At least 3 well volumes are removed for moderate yield wells, or 1 to 2 well volumes for low yield wells (wells that dry out and are slow to recover). The volume of water purged is measured in a graduated container. ▪ Field parameters (pH, conductivity and temperature) are measured using calibrated instruments during purging to ensure that representative formation water is sampled. Purging is considered completed once the pH, conductivity and temperature have stabilized. ▪ The groundwater sample is collected from the well as soon as there is a sufficient volume of liquid within the well, usually on the same day or on the following day, at the latest. ▪ Samples collected for metals analysis are field filtered using a high capacity in-line 0.45 micron disposable filter. The sample is collected directly from the filter discharge into the sample bottle. ▪ Water samples are collected directly into the laboratory provided bottles with the appropriate preservatives added. Sample bottles are marked, labelled, and sealed in the field. ▪ Samples are stored in coolers packed with ice, and delivered or couriered to the laboratory at the end of each day, under Chain of Custody procedures. ▪ Field notes including date, weather, the sampling data, time, staff, field parameters, visual observations, and number of bottles are marked on the Water Sampling Field Data sheets in the Project Field Book. 	<ul style="list-style-type: none"> ▪ Attempts are made to schedule surface water monitoring events to correspond to periods of anticipated flow whenever possible (i.e. 24 hrs after a significant precipitation event) ▪ Surface water samples at each location are collected prior to flow measurement. ▪ Monitoring is completed from downstream to upstream locations to avoid sediment disturbance which may influence sample integrity ▪ Surface water samples are collected directly into the laboratory provided bottles that do not have preservatives. For bottles with preservatives added, standard grab sampling methods are used and then the water decanted into laboratory provided bottles with the appropriate preservatives. The sample container is pointed upstream and care is taken to avoid particulate and organic matter in the water ▪ Sample bottles are marked, labelled and sealed in the field ▪ Samples are stored in ice packed coolers, and delivered or couriered to the laboratory at the end of each day, under Chain of Custody procedures ▪ Field parameters (pH, conductivity, temperature and dissolved oxygen) are measured from a separate beaker of water using calibrated instruments ▪ When the flows are adequate, stream flow discharge is estimated based on the cross-sectional area of the stream, and the water velocity ▪ A cross-sectional profile of the stream is determined by measuring the cross sectional width and depth of the wetted stream at various points. The velocity is estimated by measuring travel time between two profiles across the stream ▪ Field notes including date, weather, time, sampling data, staff, field parameters, visual observations, and number of bottles are marked on the Water Sampling Field Data sheets in the Project Field Book

3.2.1 GROUNDWATER – ON-SITE MONITORING WELLS

The groundwater monitoring program completed in 2021 included the following items:

- Semi-annual groundwater level measurements at seventy-four (74) monitoring well locations in May and October; and
- Semi-annual groundwater sample collection from forty-four (44) observation wells in May and thirty-two (32) observation wells in October.

A summary of the groundwater monitoring network is provided in the following table. The locations of the observation wells are shown on the Site Plan, Figure 2. The observation wells have been grouped into various stratigraphic units as inferred from previous reports. Borehole logs and monitor construction details for the monitoring well network are included in Appendix B.

Table 3-2 Groundwater Monitoring Network

GLACIOLACUSTRINE UNIT WELLS				
98-7	***	98-11	***	98-12 *** 98-13 ***
FRACTURED TILL UNIT WELLS				
053		202	552RA *	7obs
98-2		233R *	562 *	10P
98-4		263R *	581 *	03-7SR *
98-9		281	592 *	
98-14		391	2P	
111R	*	531R *	2obs	
141R	*	541 *	7P	
UPPER TILL UNIT WELLS				
013R	***	193	421	03-6 ***
023R	*	232R *	431	00-01 ***
063	†	242	593 *	00-02 ***
121		262R	03-3 **	00-04 *
131		381R *	03-4 **	03-7D *
192		401 †	03-5 **	05-01 *
INTER-TILL SANDS UNIT WELLS				
012R	***	561 *	594 *	
162		571 *	998R *	
551R	*	591 *	00-03 *	
LOWER TILL UNIT WELLS				
022R	*	061	102 †	231R *
051		071 †	161	261R
052		101R *	191 *	595 *
SHALLOW BEDROCK WELLS				
999	*			
LEACHATE WELLS				
03-8	*			

Notes: Water level elevations measured at groundwater monitors shown above except bedrock well 999.
 * Groundwater monitors included in the 2021 semi-annual sampling program.
 ** Groundwater monitors included in the 2021 annual sampling program
 *** Groundwater monitors sampled annually for chloride only.
 † Monitoring well possibly screened across upper and lower tills.

Groundwater samples were submitted to SGS Canada Inc. in Lakefield, Ontario for analysis of the following parameters, as required by the ECA (Waste).

GENERAL PARAMETERS

pH	Hardness	Colour
Conductivity	Turbidity	

MAJOR AND MINOR IONS

Alkalinity	Calcium	Magnesium
Sulphate	Chloride	Sodium
Carbonate	Fluoride	
Bicarbonate	Potassium	

NUTRIENTS / ORGANIC INDICATORS

DOC	Nitrate
Phenols	Nitrite

3.2.2 GROUNDWATER – PRIVATE DOMESTIC WELLS

The private domestic well groundwater monitoring program completed in 2021 included annual groundwater sampling during October at the following sixteen (16) domestic wells. The well locations are shown on Figure 7.

902	908	913	920
904	909	916	921
906	911	917	922
907	912	918	999

A sample was not able to be collected from domestic well 902 in October 2021.

As noted previously, the County acquired the property east of the compost facility and buffer lands in 2009. The property included an unoccupied residence and private domestic well 923. This well was inactive and as such, was removed from the private groundwater well sampling program in 2010.

The 2021 private groundwater monitor sampling was undertaken by the Oxford County Board of Health. It is noted that the annual groundwater sampling normally takes place during the month of April, but due to COVID-19 pandemic, the Oxford County Board of Health delayed the sampling until the month of October. It is understood that the groundwater sampling followed general monitoring protocols and procedures. Groundwater samples were submitted to ALS Laboratories in Waterloo, Ontario, for analysis of pH, conductivity, hardness, chloride, DOC, phenols, fluoride, colour, and turbidity, as required by the ECA (Waste). Copies of the laboratory certificates of analysis are included in Appendix H.

3.2.3 SURFACE WATER

The surface water monitoring program completed in 2021 included quarterly monitoring at the stations listed in the following table. The locations of the surface water monitoring stations are shown in Figure 5.

SURFACE WATER STATION		RELATIVE POSITION	SAMPLING FREQUENCY
SW1	(971)	Sedimentation Pond A (retention pond) in the northwest corner of the landfill.	Quarterly
SW4	(974)	A naturally wet surficial depression adjacent to Cells 2 and 3 (downstream) that collects stormwater runoff from the landfill sideslopes and conveys it westward off the landfill property.	
SW7	(977)	Sedimentation Pond B (retention pond) in the northeast corner of the landfill.	
SW8	(978)	At the point where the Hooper Drain enters the landfill property (upstream) via a culvert inlet east of the landfill berm.	
SW9	(979)	From the manhole where the Hooper Drain leaves the landfill property (downstream and westward).	

The quarterly compliance monitoring was completed on March 15, May 17, August 12, and October 4, 2021 and included sample collection and field measurements where applicable. The surface water monitoring protocols and procedures are presented in Table 3-1.

The CofA (Sewage) also requires that Pond B be sampled and tested on four occasions, within twenty-four hours of a rainfall event resulting in stormwater discharge from the Pond, during the required reporting period between March 15 and November 30, 2021. Discharge conditions from the pond occurred on March 15, October 4 and November 4, 2021, and as per CofA No. 4504-74CKZ2 (Sewage), surface water samples were collected from Sedimentation Pond B within twenty-four hours. Once the south landfill area has been developed, this requirement will extend to proposed Sedimentation Ponds C and D.

In addition to these sampling events, a number of supplemental surface water samples were collected as part of the initial investigation and subsequent remedial actions in relation to landfill impacted stormwater entering Sedimentation Pond A in March 2021. Letters of notification and other pertinent correspondence for these supplemental sampling events, containing subsequent discussions, recommendations and approvals, are provided in Appendix A.

The surface water samples were submitted to SGS Canada Inc. in Lakefield, Ontario, for analysis of the parameters listed below. Field measurements of pH, conductivity, temperature, and dissolved oxygen were obtained from each location.

GENERAL PARAMETERS

Field	* pH	Lab	* † <i>pH</i>	† <i>Hardness</i>
	* Conductivity		* † <i>Conductivity</i>	* TSS
	* Temperature		† <i>Turbidity</i>	* TDS
	* Dissolved Oxygen		† <i>Colour</i>	

MAJOR AND MINOR IONS

* Alkalinity	<i>Calcium</i>	<i>Magnesium</i>
* Sulphate	* † <i>Chloride</i>	
<i>Ortho-Phosphate</i>	† <i>Fluoride</i>	

NUTRIENTS / ORGANIC INDICATORS

* <i>Ammonia</i>	* <i>Nitrite</i>	† <i>DOC</i>
* <i>TKN</i>	* <i>Total Phosphorus</i>	* COD
* <i>Nitrate</i>	* † <i>Phenols</i>	* BOD ₅

METALS

- * *Iron*

Notes: * Requirement of CofA (Sewage) No. 4504-74CKZ2 surface water parameter list for Sedimentation Ponds A and B (SW1 and SW7).
† Requirement of ECA (Waste) No. A070808 (all locations)
Bold and italicized parameters denote chemical analyte list for surface water stations SW4, SW8 and SW9.

3.2.4 COMBUSTIBLE GAS

During 2021, combustible gas measurements were completed by County staff on a weekly to bi-weekly basis at gas probes GW3 and GW5. Gas probe GW1 was decommissioned during the excavation of part of Cell 4 in September 2008. Gas probe GW2 was decommissioned in mid-May of 2017, during the excavation of another part of Cell 4. The locations of the current combustible gas probes are shown on Figure 8.

Additionally, combustible gas monitoring was carried out in a number of on-site structures including the scalehouse, barn shop and storage, Coverall building (heavy equipment shed), household hazardous waste (HHW) building, transfer station building, and the landfill office building, to monitor potential combustible gas migration from the landfill towards the structures. Monitoring at the landfill office building began in late June 2018. Monitoring at the former office building (house) was discontinued in August 2018, as the building was demolished.

3.2.5 LEACHATE COLLECTION SYSTEM MONITORING PROGRAM

The 2021 LCS liquid level measurements were collected on a monthly basis at manholes MH1 and MH16, and from leachate well 03-8. Leachate sampling was conducted monthly at manhole MH1 or MH16 in 2021. It is understood that the leachate sampling undertaken by the Oxford County Water and Wastewater staff followed general monitoring protocols and procedures. The leachate samples were submitted to SGS Canada Inc. for analysis of the following parameters.

GENERAL PARAMETERS

* pH	* Conductivity	* Hardness
* Colour	* Turbidity	TSS

MAJOR AND MINOR IONS

Sulphate	* Chloride	* Fluoride
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NUTRIENTS / ORGANIC INDICATORS

* Phenols	COD	* DOC
TKN	BOD ₅	

METALS

Aluminum	Cobalt	Phosphorus
Antimony	Copper	Selenium
Arsenic	Iron	Silver
Barium	Lead	Tin
Beryllium	Manganese	Titanium
Bismuth	Mercury	Vanadium
Cadmium	Molybdenum	Zinc
Chromium	Nickel	

OTHER INDICATORS

Cyanide	H ₂ S	Oil & Grease
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Note: * Requirement of ECA (Waste) No. A070808 leachate parameter list.

The ECA (Waste) requires annual leachate sampling for the prescribed ECA parameters be completed at all manholes. However, manhole MH16 is situated at the confluence that receives leachate input from the lateral under-drain beneath the closed and open portions of Cell 3 and 4 respectively, and leachate input from the perimeter LCS adjacent to Cells 1 and 2. As such, it is inferred that samples collected from manhole MH16 are representative of the leachate from the landfill.

4 2021 SITE OPERATIONS

4.1 FACILITY CHARACTERISTICS

4.1.1 SITE DEVELOPMENT

The progression of site development in 2021 and anticipated limits of landfilling in 2022 are shown on Figure 8.

4.1.2 SITE FACILITIES

The on-site facilities include the weigh scales, scalehouse, coverall building (heavy equipment shed), maintenance building (barn and shop), Household Hazardous Waste Depot, and the Waste Management and Education Centre building. The on-site facilities were functioning properly and maintained accordingly in 2021.

The original farm house on the property had been utilized over the years as an office space. It was not accessible and did not offer enough space; as such, the farm house was replaced with the Waste Management and Education Centre building. This building is located just east of the former landfill office, and is approximately 4,000 square feet. The building has office space, meeting rooms, staff lockers, as well as a large educational space. The building is designated to be Zero Net Energy, meaning energy requirements for the building are met by solar panels on the site. Construction began in mid-2017, and was completed in June 2018. Demolition of the former office building (house) was completed in August 2018.

The public recycling and transfer station (public drop-off depot) has continued to function properly since it was constructed in 2005. The depot ensures that small vehicles and the general public can drop off waste safely, away from the working face of the landfill. Currently, the depot consists of twelve (12) bins: six (6) bins are designated for household waste, two (2) bins for scrap metal, two (2) bins for construction and demolition material, one (1) bin for cardboard, and one (1) bin for film plastic. One (1) concrete bunker is also located in the depot area for blue box recycling material. The public drop-off depot also collects tires, electronics, appliances containing freon, textiles, and expanded bulk Styrofoam. An on-site household hazardous waste (HHW) depot was commissioned at the site in 2008. There is also a construction and demolition material depot located behind the HHW depot.

In 2005, a composting facility was established to the east of the landfill on approximately 10 ha of County buffer lands. There are several windrows of compostable materials at the compost facility consisting mainly of leaves, grass clippings, and clean brush. A Biosolids storage facility is located on the buffer lands just south of the compost facility. The storage facility began operations in 2008 and was an initiative of the County to build business relationships with local users to create a long-term plan for the disposal of Biosolids materials. The composting facility and Biosolids storage facility are functioning properly. These facilities are not covered under the ECA for waste disposal, but under a separate CofA.

The water supply for the site is obtained from bedrock monitoring well 999, located west of the new Waste Management and Education Centre building. The well was drilled and installed in mid-1991 and is sampled semi-annually as part of the groundwater monitoring program.

4.1.3 SITE ACCESS AND INCOMING WASTE CONTROL

The 2021 operating hours at the site were 08:30 to 16:30 Monday to Friday and from 08:00 to 16:00 on Saturday. The site is closed to the public on all public holidays.

Site access is controlled by scalehouse operators/attendants. On occasion, the main gate will remain open after scheduled operating hours to permit County staff to exit the site. A second gate, which controls access to the operating areas, is controlled by the scalehouse attendants. An access point is located on the buffer lands adjacent to the eastern perimeter of site to allow the transfer and temporary stockpiling of excavated soils from the site onto the buffer lands. The access point to the buffer lands is open during normal operating hours, but is not accessible to the public.

In 2019-2020, Hydro One installed gates along the east and west fence lines and improved access roads, for easier access to the hydro corridor that is located to the south of the current landfill mound.

The scalehouse attendants are required to perform incoming waste inspections as required and collect tipping fees. They also complete records for each vehicle entering the site that include:

- Date and time of arrival;
- Licence number of the vehicle and vehicle type;
- Apparent ownership of trucks;
- Type of source of waste, by municipality and by premises if possible;
- Quantity (in kilograms) of waste being received; and
- Whether warnings have been issued for non-secure loads (i.e., not covered).

All loads are weighed and a system of user fees is in place. The weighing and billing for delivered loads is handled by two (2) full-time scalehouse operators, with backup from two (2) part-time operators.

4.1.4 SITE EQUIPMENT

The on-site equipment currently in use at the site reportedly includes:

- One Caterpillar 826K compactor;
- One Caterpillar 816F compactor;
- One Caterpillar 938 loader;
- One Caterpillar model D-7R crawler tractor with modified bulldozer blade;
- One Bron/Caterpillar 14-yard hydraulic pullscraper which attaches behind the D-7R;
- One Case 570MXT loader;
- One Doosan loader;
- One John Deere 4005 farm tractor with rotary mower, used for site mowing and other work;
- One 7,000 gallon highway tanker for leachate hauling; and
- Two all-terrain vehicles used for site inspections and grounds maintenance.

Additional on-site equipment includes pumps, generators, compressors, etc. It is reported that this equipment is maintained and in good operating condition. A replacement schedule for the on-site equipment is supported by annual contributions to a reserve fund. Select on-site equipment that receives relatively light use is shared with the Oxford County Road Department.

4.1.5 LABOUR FORCE

The full-time waste handling staff at the site typically consists of one (1) foreman, one (1) municipal hazardous or special waste (MHSW) operator, five (5) heavy equipment operators, two (2) labourers/transfer station operators, one or two (1 or 2) summer students, one (1) scalehouse operator, and two (2) part-time scale operators on an as-needed basis. Waste Management staff including one (1) supervisor, one (1) Waste Management co-ordinator, and one (1) Waste Management technician also work out of the office at the site. The employee working schedules do not necessarily coincide with landfill operating hours. Some arrive at 07:00 to prepare the site and the equipment for daily activities. Others remain until 17:00 or later to complete waste compaction and covering, and to carry out maintenance and record-keeping activities.

4.2 SITE QUANTITIES

4.2.1 ACCEPTED / RESTRICTED WASTES

The ECA (Waste) for the site permits the receipt, for disposal, of domestic, commercial, non-hazardous solid industrial and other wastes limited to sewage sludge (processed organic waste) and non-hazardous industrial sludges. At present, the following wastes are excluded:

- Liquid waste as defined by Regulation 347;
- Toxic waste as defined by Regulation 347;
- Pathological wastes;
- Dead animals;
- Chemical waste unless approved by the MECP;
- Sludges unless approved by the MECP;
- Scrap motor vehicles and farm machinery or parts thereof;
- Tree trunks;
- Tree limbs or stumps unless they are in pieces small enough for one person to handle;
- Pieces of concrete unless they are small enough to be handled by one person;
- Heavy timbers in excess of 3 feet in length; and
- Material sealed in containers which cannot be opened for examination at the gate.

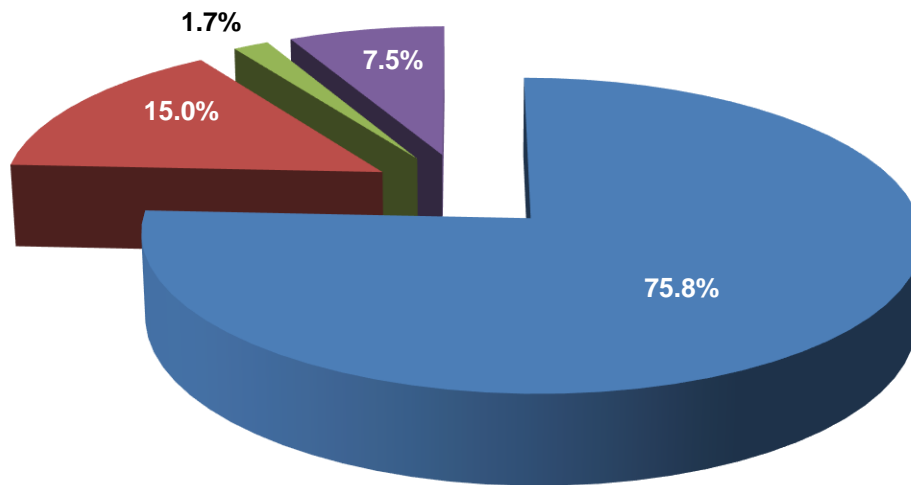
The on-site household hazardous waste (HHW) depot was commissioned in 2008.

Before accepting any suspect contaminated soils, the County requires the hauler to provide MECP Regulation 347 Leachate Toxicity Test results demonstrating that the material meets all requirements for landfill disposal. A total of 420.55 tonnes of soil (non-hazardous soil and clean fill) was received at the landfill in 2021.

4.2.2 MATERIALS QUANTITIES PROCESSED AT THE SITE

The quantities of waste and other materials processed at the landfill from January 1, 2021 to December 31, 2021 are provided in the following table. The proportion of wastes (by tonnage) received from the various sectors are depicted in the following graph.

Waste Types Received (2021 Tonnages)



- Mixed Solids and Domestic (other)
- Construction, Demolition, Clean Fill and Contaminated Soils
- Industrial Solids
- Sewage and Non-Hazardous Sludges

WASTE MATERIALS	2021 SITE WASTE QUANTITIES (TONNES)
Waste Quantities Received † (excluding the following)	49,309.08
Yard Waste †† and Clean Brush †† sent to Compost Site	1,426.82
Freon Containing Items, Tires and Hazardous Household Waste (HHW) ††	184.27
Mixed Construction and Demolition ††	5,773.00
Compost Site Material ††	17,370.00
Biosolids sent to Storage Facility ††	6,339.55
Segregated Scrap Metal ††	234.00
Blue Box Recyclables ††	5,387.06
Film Plastic ††	5.00

2021 SITE WASTE QUANTITIES (TONNES)

WASTE MATERIALS

Electronics ††	38.00
Cardboard ††	76.00
Bulky Styrofoam ††	11.00
Total	86,153.78

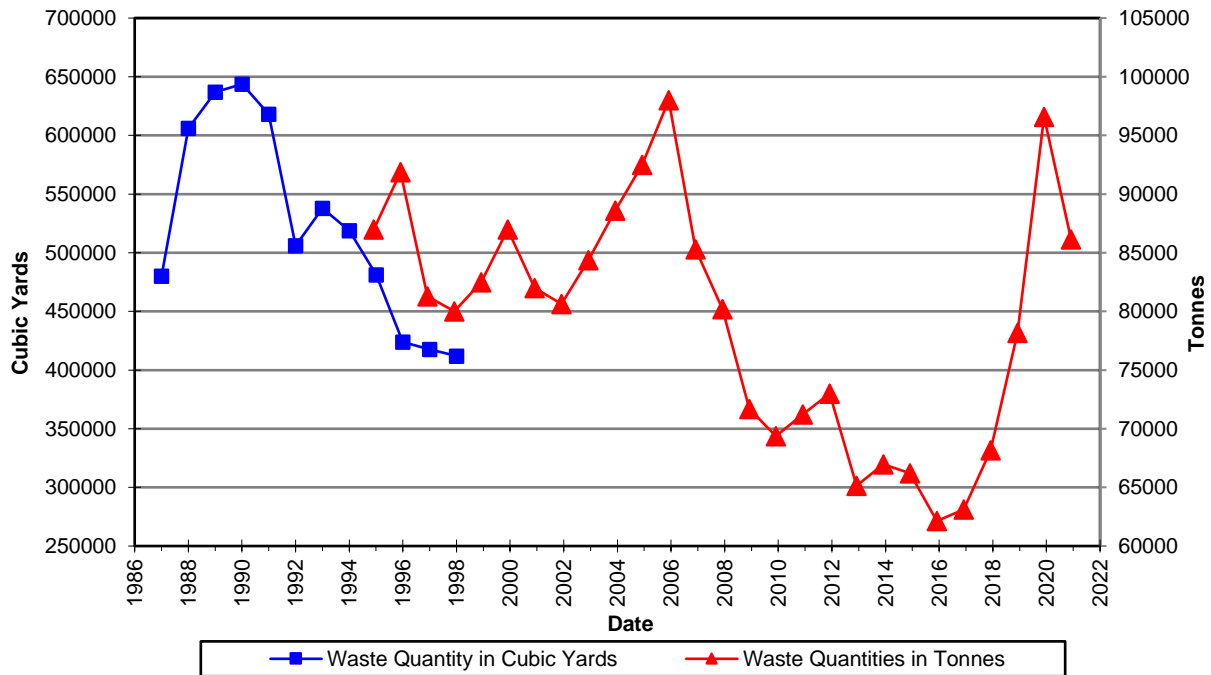
Notes: † Denotes landfilled waste. Waste classification includes: mixed solid, demolition, non-hazardous solid, clean fill, large article collection, asbestos, biosolids to landfill, non-hazardous sludges, non-hazardous soil, brake linings, and residual C&D
 †† Denotes recycled waste.

The 2021 vehicle enumeration records indicate that approximately 1,934 small vehicles (cars and pickups, with or without trailers) arrived at the site each month in 2021, an approximate decrease of 8% from 2020. Total trips by all vehicles averaged about 3,457 per month, a decrease of 6% compared to 2020.

The historical waste quantities received at the landfill site are shown on the following graph. The waste quantities are reported by volume for the earlier years of site operation and by weight since 1995 when tonnage information became available.

As observed in the graph below, waste quantities received generally decreased from 2006 through 2016, but have increased since 2016. The total waste quantity received at the site in 2021 was approximately 86,154 tonnes, which is lower than quantities observed in 2020 (96,583 tonnes).

**Waste Quantities Received at Landfill
 Oxford County Waste Management Facility
 1986 - 2021**



Note: Post-1997 values represent the calendar year, while pre-1997 values are for the July to June period of the stated year.

4.2.3 WASTE DIVERSION INITIATIVES

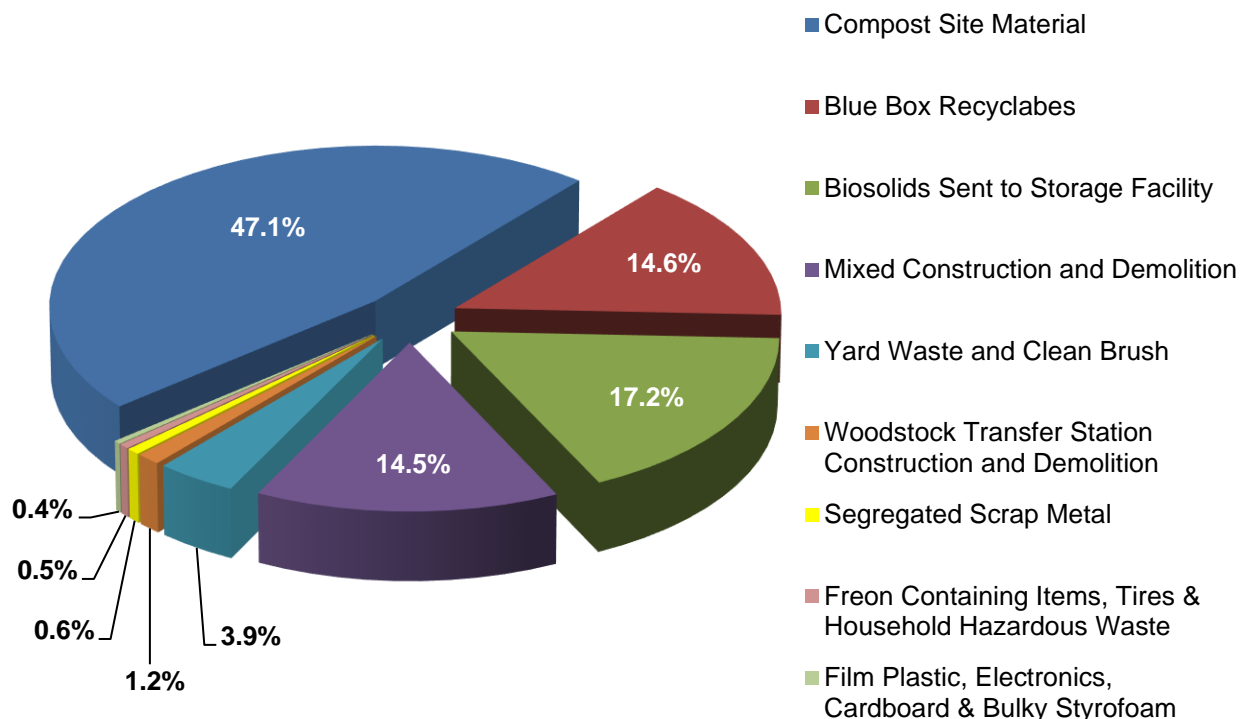
Scrap metal is separated at the landfill and once sufficient quantities have accumulated to warrant pick-up, they are taken away for recycling by a licensed hauler. During 2021, approximately 234 tonnes of scrap metal was diverted from the landfill. Additionally, 4,385 tires were removed from the site, while 139 tonnes of hazardous household waste, 38 tonnes of electronics, and 659 freon units were collected and diverted from landfill disposal.

In 2003, a separate brush area was established. Approximately 1,427 tonnes of clean brush was received at the landfill in 2021. This brush is currently chipped, ground, and relocated to the compost pad for processing. As noted previously, a composting facility is located on adjacent buffer lands to the east of the site and receives the yard waste and compost material diverted from the landfill. Also, a Biosolids storage facility is located on the buffer lands just south of the compost facility and receives all Biosolids diverted from the landfill for processing.

During 2010, recycling of construction and demolition materials was introduced at the site. Approximately 5,773 tonnes of construction and demolition materials were diverted from the landfill and recycled in 2021.

During 2021, approximately 36,844.70 tonnes of waste material received at the site was diverted from the landfill and sent out for recycling. The proportions of recycled material diverted from the landfill are shown in the following graph.

Waste Diversion (2021 Tonnages)



4.2.4 SITE CAPACITY

The original landfill design incorporated a capacity equivalent to 2,356,200 tonnes. This was based in part, on an in-place density of 1,000 lb./yd³ or 593 kg/m³, which is an achievable level of compaction with the County's on-site equipment (summarized in Section 4.1.4). The original design capacity was projected to serve the needs of the County for a minimum period of 25 years. As actual waste quantities received have been less than projected, the anticipated site life continues to be longer than originally projected, barring any unexpected, substantial increase in waste received at the site in the years ahead.

The current approach for estimating the remaining site life is through updated digital mapping of the site. Fly-over surveys are scheduled for the spring, on a three (3) year term, with the last survey being completed in May 2019. The volume available for refuse and cover material in the north and south fill areas was originally estimated to be 3,910,500 m³ and 1,994,700 m³ respectively, for a total volume of 5,905,200 m³ (M.M. Dillon, 1984).

In the Amendment to the 1986 Design and Operation Report (R.J. Burnside, 2013), final landfill slope contours were provided. Previously, final contouring was not available to assess the remaining site capacity. The most recent fly-over mapping of the site was completed in May 2019. Based on the fly-over digital mapping for the site, approximately 255,674 m³ of air space was consumed between May 2016 and May 2019. Based on the May 2019 fly-over mapping, an estimated volume of 3,031,410 m³ was available for refuse and cover material. The total amount of final cover to be placed on the remaining landfill area was estimated to be 323,063 m³ in May 2019; therefore, there was approximately 2,708,347 m³ of remaining airspace available for landfilling in May 2019.

Based on the Amendment to the 1986 Design and Operation Report (R.J. Burnside, 2013) in-place waste density estimate (750 kg/m³) and the original design waste to cover design assumptions (4:1), the air space consumed from May 2019 to the end of 2019 was approximately 56,041 m³. Hence, the volume available for landfilling at the end of 2019 was approximately 2,652,306 m³ (based on the May 2019 fly-over).

The average yearly "air space consumption" between 2016 and 2019 was approximately 85,225 m³, using the May 2016 and May 2019 fly-over digital mapping. Applying this usage to the estimated remaining air space available for landfilling at the end of 2021 of 2,468,661 m³, approximately 29 to 34 years of additional waste capacity remain, assuming similar consumption rates in the future. A confirmation of these interim calculations will be provided as additional surveys of the fill areas are completed. A fly-over survey is scheduled for the spring of 2022 and will continue on a three (3) year term.

4.3 SITE DEVELOPMENT AND OPERATIONS CONTROL

4.3.1 SEQUENCE OF LANDFILLING

The licensed area for waste disposal consists of north and south fill areas, of which only the north area has been used to date as shown on Figure 8. Landfilling commenced in Cell 1 and then moved towards Cells 2 and 3 to the south and east respectively. In 2021, landfilling activities continued in Cell 4. The 2021 approximate limits of landfilling in Cell 4 are shown on Figure 8.

In co-ordination with WSP, the County also developed Fill Plans for the Oxford County Waste Management Facility in 2021, detailing waste placement over the next five (5) years. Completion of these Development Fill Plans will

assist with long-term planning of landfill operations by providing an overview of cell capacities, cover requirements, access roads, drainage, sediment control and other relevant information.

4.3.2 COVER MATERIAL PROGRAMS

The County continues to apply daily cover consisting of felt fabric and some soil to the received wastes. The total volume of the excavated soils available from the north and south fill areas was estimated to be 2,000,700 m³ after applying a soil bulk factor of 15% (M.M. Dillon, 1984).

According to the 2006 topographic survey, the cover material remaining on the site was approximately 934,600 m³. The projected cover material needs and availability utilizing this volume suggested a net deficit of cover materials at the site. The estimate was based on final cover and daily and intermediate cover requirements to complete the site with a final cover thickness of approximately 1 m. Of note, the 1984 Design and Operations Report recommended a minimum cover thickness of approximately 0.9 m. The estimated deficit of cover material was 27,085 m³. However, this deficit is unlikely as the County continues to manage the consumption of on-site soil resources through the use of waste felt fabric as daily cover. The felt serves to reduce the amount of soil required and maximizes the remaining site capacity. When available, the County also uses compost-overs, excess woodchips, and other clayey output from the Biosolids facility as daily cover.

4.3.3 GROUNDWATER CONTROL MEASURES

No new groundwater control measures were implemented in 2021 and no problems with groundwater inflow to the excavation were reported.

4.3.4 SURFACE WATER CONTROL

Details of the surface water control measures are outlined in the application for storm water management facilities submitted to the MECP in January 2007. CofA (Sewage) Number 4504-74CKZ2 was issued in July 2007.

An interior ditch network around the perimeter of the landfilled area directs surface water runoff from the landfill into two (2) storm water retention ponds north of the landfill as shown on Figure 5. Surface water runoff from completed areas in the western portion of the site is conveyed to Sedimentation Pond A (retention pond) via a ditch along the south and west sides of the fill areas. Surface water from Pond A then flows by the ditch adjacent to the site access road into Sedimentation Pond B. Runoff from the east side of the fill area is conveyed north to Sedimentation Pond B via the southeast and east ditches inside of the berm. Any surface water runoff between the berm and the eastern property boundary flows northward off the property via ditches adjacent to County Road 46.

Sedimentation Pond B has an outlet structure fitted with a valve to control the discharge to the Hooper Drain. During periods of high water level in Sedimentation Pond B, outflow can occur via an overflow on the north side of the pond which is conveyed by ditch along the south side of the County Road 46. Overflow conditions in the pond are considered rare; however, County staff noted that overflow conditions in the pond occurred on three occasions (March 15, October 4 and November 4, 2021) during the required reporting period between March 15 and November 30, 2021. As per CofA No. 4504-74CKZ2 (Sewage), surface water samples were collected from Sedimentation Pond B within 24 hours.

In addition to these sampling events, an initial investigation and subsequent remedial actions were undertaken in relation to landfill impacted stormwater entering Sedimentation Pond A in March 2021. Letters of notification and other pertinent correspondence for these events, which contain subsequent discussions, recommendations and approvals, are provided in Appendix A.

A fill plan was developed in 2021, which corrected some contours in various portions of the landfill to ensure that surface water runs in the correct direction. No other new surface water control measures were implemented in 2021. The surface water runoff within the active fill areas is isolated and then pumped into the leachate management system for collection and off-site disposal.

4.3.5 LEACHATE CONTROL AND HANDLING

As the landfill has been developed, leachate drains have been progressively constructed around the perimeter of the fill areas, with periodic placement of underdrain laterals beneath the wastes. The LCS is shown on the Site Plan, Figure 2.

The leachate pumped from the LCS is conveyed from the site via truck for treatment at the Ingersoll and Woodstock sewage treatment plants. The quantity of leachate removed from the site in 2021 was approximately 45,351 m³ (9,975,825 Imp. Gal.) with approximately 57% of the leachate hauled to Woodstock and 43% hauled to Ingersoll. The annual quantities of leachate removed from the site since 1996 are shown on the following table.

ANNUAL QUANTITY OF LEACHATE HAULED OFF-SITE (IMPERIAL GALLONS)		ANNUAL QUANTITY OF LEACHATE HAULED OFF-SITE (IMPERIAL GALLONS)	
YEAR		YEAR	
1996	600,000	2009	9,027,749
1997	2,100,000	2010	7,860,818
1998	1,470,000	2011	9,331,096
1999	3,465,000	2012	4,664,228
2000	4,425,000	2013	6,256,585
2001	3,935,000	2014	4,901,573
2002	4,435,000	2015	2,797,349
2003	4,215,000	2016	4,261,464
2004	7,057,200	2017	6,142,091
2005	8,401,200	2018	7,152,740
2006	14,011,400	2019	8,396,996
2007	6,746,466	2020	8,123,794
2008	10,150,000	2021	9,975,825

4.3.6 LANDFILL GAS CONTROL

An active landfill gas collection system consisting of a series of collection wells and a flaring system was installed at the site in 2010 and is governed by the waste ECA (included in Appendix A). The landfill gas collection and flare system were commissioned and began operation in late 2010.

Permanent gas monitors/alarms have been installed in the basement of the Waste Management and Education Centre and the Coverall building (heavy equipment shed). Permanent gas monitors/alarms have also been installed in the household hazardous waste building and maintenance barn/shop, as required. All monitors are calibrated by Hetek Solutions every six (6) months. Landfill gas related safety procedures are posted in the staff lunchroom and included in employee handbooks. Additionally, a smoking ban was initiated for all on-site buildings with signage posted. In 2017, the County also installed vents into the transfer station hut, as recommended by a previous MECP inspection report.

Two combustible gas monitoring wells were maintained throughout the year, along with the on-site structures. It is understood that the portable gas monitoring instrument used in the combustible gas monitoring program is calibrated every six (6) months. It is recommended that County staff continue with training on the use of the gas monitoring instrument and for the measurement and recording of the combustible gas readings.

4.3.7 LITTER AND DUST CONTROL

Litter control measures at the site include a combination of fencing and tree planting in order to contain blowing litter. It is understood that landfill staff and road maintenance authorities patrol and pick up stray litter both on-site and from adjacent properties and roadways at least once per week. The collected litter is disposed of at the landfill. Also, all incoming open type vehicles or trailers are required to keep waste loads covered to avoid littering roadways. Further, the Ministry of Transportation are asked to fine those who do not have secure loads.

With the exception of the access road to the tipping face, on-site roads are paved. This serves to minimize the generation of dust from vehicles.

4.3.8 ODOUR COMPLAINTS

It is noted that two (2) odour complaints were received by the County in 2021.

The first complaint was received by County staff on February 18, 2021. A resident reported that they experienced significant odours, thought to be originating from the landfill. This complaint was investigated by County staff and resolved by March 8, 2021. A full summary of the complaint and subsequent investigation/resolution is maintained on file by the County.

The second complaint was received by County staff on December 21, 2021. A resident reported that they experienced odours thought to be originating from the landfill, and also expressed concern over their water quality. This complaint was investigated by County staff and resolved by January 4, 2022. A full summary of the complaint and subsequent investigation/resolution is maintained on file by the County.

4.3.9 VEGETATION AND TREE PLANTING PROGRAMS

The County has undertaken efforts to vegetate bare soil areas with ground cover at the site. Various grass species and trefoil have been established over time. Grass on the property is also regularly mowed. The condition of vegetation in the on-site buffer zones and on rehabilitated parts of the landfill is regularly monitored by site staff by means of visual inspection to assess past planting programs. During 2021, there were no dead trees around the transfer station.

4.3.10 VECTOR CONTROL

There were no new nuisance vectors reported by County staff in 2021. The numbers of birds attracted to the landfill are minimized through the compaction of wastes and the daily application of cover material. Also, trap and release of wildlife is undertaken at the site.

4.3.11 LANDFILL SITE LIAISON COMMITTEE

At the commencement of landfilling, a Landfill Site Liaison Committee was formed to facilitate dialogue between the County and area residents regarding site operations. This committee normally meets annually at the nearby Salford Community Hall, with County staff and members of the local community in attendance. Due to the COVID-19 pandemic, this meeting was unable to be held in 2021.

5 GROUNDWATER LEVELS AND FLOW CONDITIONS

Groundwater levels are measured semi-annually in the observation wells at the site. Construction details for the wells currently included in the 2021 monitoring network are summarized in Table 1. The 2021 groundwater and leachate level data are provided in Table 2 and 3, respectively.

Historic groundwater elevation data for the site are summarized in Table C-1, while groundwater hydrographs for select wells are provided in Figures C-1 to C-27, Appendix C. Water level measurements in a number of manholes along the LCS were collected monthly by County staff. The historic liquid level elevations in the manholes are provided in Table F-2, Appendix F.

In 2021, groundwater elevations measured in the observation wells were typically within or similar to their respective historic ranges, with the exception of the October groundwater elevation at well 233R, which was slightly higher than historic results.

As observed in the hydrographs, Figures C-1 to C-27 in Appendix C, groundwater elevations in the Glaciolacustrine Unit, Fractured Till Unit, Upper Till Unit, Inter-Till Sands Unit, and Lower Till Unit typically fluctuated in response to seasonal and climatic conditions with higher groundwater elevations in the late-spring (May) and decreasing during the summer through to mid-fall (October). Exceptions to this pattern were observed at upper till wells 023R, 193, 381R, 00-02, 00-04 and 05-01; at fractured till wells 03-7SR, 233R, 281, 531R, 541, 552RA, 581, 592, 2P, 7P,

7obs and 10P; and at lower till well 052, where the groundwater elevation in October was greater than the elevation in May.

Overall, groundwater elevations in the observation wells at the site have fluctuated over the long term with no consistent increasing or decreasing trend. The notable exceptions were at 7P, 7obs, and 10P, screened in the Fractured Till Unit, where groundwater elevations increased from 2002 until 2013, generally fluctuated within a similar range between 2013 and 2018 and increased further between October 2018 and May 2019. The 2019 to 2021 groundwater elevations at wells 7P, 7obs and 10P have remained generally consistent at a slightly higher groundwater elevation than the pre-May 2019 levels. It is also noted that groundwater levels at observation wells 00-01, 00-02 and 00-04, screened in the Upper Till Unit, have increased since 2002, but have been generally stable since October 2006, with the exception of a discrete spike in groundwater levels in May 2018. The 2019 to 2021 groundwater elevations have remained generally consistent at a slightly higher groundwater elevation than the pre-May 2018 levels. These wells are all located in close proximity to the cut-off wall and/or the LCS. The observed groundwater level patterns suggest that the groundwater in the wells was lowered after installation, likely due to the presence of the cut-off wall and LCS, and has slowly returned to equilibrium levels.

Of note, the groundwater elevation at lower till unit well 052 gradually increased between the fall of 2011 until the fall of 2016, and decreased between 2017 and 2020. In 2021, the groundwater elevation at well 052 fluctuated at an elevation similar to the levels recorded in 2020, and similar to the pre-2011 levels. The surface seal at well 052 was repaired in the summer of 2016, and it is interpreted that the groundwater elevation was slowly returning to equilibrium. The 2020/2021 levels indicate that equilibrium may have been reached. Continued monitoring of this trend is recommended to confirm.

As shown in Figure C-26, the leachate level measured at well 03-8 fluctuated with an overall increasing trend from installation in 2003 until 2019, and has remained relatively stable since.

5.1 GROUNDWATER FLOW

To assess the shallow groundwater flow regime, a number of overburden monitoring wells from the Glaciolacustrine Unit, Fractured Till Unit, and select Upper Till Unit wells were grouped according to those previously reported by others, under the assumption the wells are screened in shallow, weathered, and fractured overburden.

The overburden groundwater elevations measured in May 2021 and the interpreted water table contours are presented in Figure 9. The water level elevations measured in the LCS manholes are also included in Figure 9. The water table is inferred to be a subtle reflection of ground surface topography.

The overburden groundwater elevations indicate that a mound exists in the northwest fill area (Cells 1 and 2). The leachate mound in the northwest fill area is inferred to be approximately 8.7 m higher than overburden groundwater elevations to the north at fractured till well 531R and approximately 4.9 m higher than the groundwater elevations to the northwest at upper till well 193.

Notwithstanding the leachate mounding, natural groundwater flow in the shallow overburden (Glaciolacustrine Unit and Fractured Till Unit) is inferred to be influenced by a groundwater divide created by the area of higher elevation that trends northwest to southeast across the site. Groundwater in the northern portion of the site is inferred to flow in a northwesterly to northeasterly direction. Groundwater in the surficial glaciolacustrine sediments, situated in the northeast portion of the site, moves off-site to the north/northeast. Groundwater in the northwest portion of the site flows to the northwest and west in the Fractured Till Unit. Groundwater flow in the southern portion of the site is generally in a south to southwesterly direction. It is noted that shallow groundwater flow across the site is also

influenced, to varying degrees, by tile drains, the perimeter LCS, the landfill excavation, and the cut-off wall (hydraulic barrier).

The leachate mound induces localized radial flow away from the fill areas. However, the LCS intercepts the radial flow from the leachate mound(s) and influences the overburden flow pattern. The influence of the LCS on the overburden groundwater flow is particularly evident along the north, east, and west edges of the fill areas where water levels in shallow overburden wells located adjacent to the LCS show minor groundwater elevation fluctuations ranging between approximately 294 mASL and 298 mASL. In these areas, overburden groundwater flow in the native soil is inferred to be locally back toward the LCS. Water level measurements in the LCS manholes should be continued for confirmation.

There is also a notable difference between the groundwater elevations in wells 98-2 and 98-7, inferred to be downgradient (outside) of the cut-off wall, and the related observation wells (2P, 2obs, 7P, and 7obs) inside the cut-off wall. This pattern seems to suggest that the cut-off wall is acting as a hydraulic barrier, as was intended.

Groundwater flow within the Inter-Till Sands Unit is expected to be subdued relative to the shallow overburden groundwater flow since it should not experience the same degree of groundwater recharge. Groundwater elevations measured in the inter-till sands wells during May 2021 are shown on Figure 10. The estimated boundary of the discontinuous Inter-Till Sands Unit is shown on Figure 10, as are groundwater elevations from select observation wells screened in the lower till, with similar groundwater elevations to the inter-till sands. There are insufficient observation wells screened within the Inter-Till Sands Unit to contour the groundwater flow directions. However, the data appear to suggest that flow in the Inter-Till Sands Unit is predominantly west to southwest. This is similar to the original interpretation that flow in the Inter-Till Sands Unit within the northeast portion of the site is predominantly to the northwest, while groundwater flow in the Unit within the southern portion of the site is predominantly west to southwest (Gartner Lee, 1984).

5.1.1 VERTICAL HYDRAULIC GRADIENTS

Based on the groundwater level monitoring in the nested well locations, downward vertical hydraulic gradients were observed between the Fractured Till/Upper Till, Upper Till/Inter-Till Sands and Inter-Till Sands/Lower Till units at well nests 01, 02, 05, 16, 19, 23, 26, 55 and 59 during 2021. Upward gradients were observed at nest 54 in May 2021 and at nest 56 in October 2021. These gradients are consistent with those observed in previous reports, and are consistent with the physical and geological settings at the site.

The vertical groundwater velocity through the unfractured Upper Till Unit was previously estimated between 0.001 m/year and 0.025 m/year (Gartner Lee, 1984). Based on Darcy's equation for advective flow, the higher estimated vertical groundwater velocity of 0.025 m/year, and an Upper Till Unit thickness of 4.5 m below the landfill, it is estimated that it would take in the order of 180 years for leachate from the landfill to migrate vertically down through the unweathered clayey silt till to the underlying Inter-Till Sands Unit or Lower Till Unit. It is recognized however, that chemical diffusion of non-reactive stable chemicals will be faster through the low hydraulic conductivity soil observed at the site. Also, piezometer head fluctuations in some of the Inter-Till Sands Unit wells suggest more rapid recharge into the Unit. As such, this calculation may underestimate the vertical flow through the Upper Till Unit. The chemical results from the Inter-Till Sands Unit wells will demonstrate if leachate influences are reaching the Unit.

6 GROUNDWATER QUALITY

The 2021 on-site groundwater and leachate well chemistry data is provided in Table 4. The available historic on-site groundwater and leachate chemical data for the site from 1985 to 2021 are provided in Appendix D. The general inorganic chemical results are provided in Table D-1 and chloride results for select on-site wells are included in Table D-2. Concentrations versus time graphs for alkalinity, chloride, potassium, and DOC are provided in Figures D-1 to D-46, Appendix D. The 2021 laboratory certificates of analysis are included in Appendix H.

The quality assurance/quality control (QA/QC) program for the monitoring program at the site included a field and a laboratory component. Standard field protocols were used to ensure consistency in the field.

The 2021 groundwater duplicate results are provided in Table 5. Duplicate samples were collected from wells 561, 191, 023R and 013R in May and wells 233R, 593, and 023R in October. Duplicate samples were generally similar to the original samples results with the calculated Relative Percent Difference (RPD) within or close to the 20% guideline for acceptability or less than two times the laboratory reported method detection limit (MDL), with the following exceptions:

- The May concentration of nitrate (RPD 145%) at 561, which was higher in the duplicate sample;
- The October concentration of potassium (RPD 21%), which was lower in the duplicate sample; and
- The October concentrations of hardness (RPD 48%), calcium (RPD 63%), potassium (100% RPD) and magnesium (26%) at 593, which were higher in the duplicate sample.

In each case listed above, the original result was similar to, or lower than, historic values. As such, the results from the original samples were used in the assessment.

Ion charge balance errors in the majority of the groundwater samples collected in 2021 were within the acceptable limit of ten percent. The exceptions included:

- May: 03-8 (27.7%); and
- October: 03-7SR (22.0%), 552RA (12.7%), 561 (14.5%), 231R (21.5%) and 03-8 (19.2%).

In the October samples from wells 03-7SR and 552RA, the calcium concentrations were lower than historic values. In the October sample from wells 561 and 231R, the alkalinity and calcium concentrations were elevated compared to historic values. The calcium/alkalinity concentrations greatly affected the ion balance errors. Based upon discussions with the laboratory, suspended sediment within some samples is likely causing a high bias for alkalinity concentrations. This appears to be a regular occurrence, normally during the fall sampling event. It is noted that while elevated alkalinity concentrations have been observed during recent fall sampling events at several wells, including fall 2021, the ion balance errors at most of these wells in October 2021 were still less than 10%.

As for leachate monitor 03-8, it is noted that ion charge balance errors are consistently elevated in the landfill leachate. The error of the laboratory instruments increases with elevated concentrations produced by leachate. This pattern of elevated ion charge balance in leachate samples is consistent across most municipal landfills in Ontario.

6.1 LEACHATE CHEMISTRY

Leachate is produced from the infiltration of precipitation through the waste. Processes within the waste degrade the quality of the percolating water to create leachate. The chemical composition of leachate can vary within the waste cells depending on various factors such as refuse composition, age, hydraulic conductivity, residence time, and the leachate flow regime.

Leachate samples were collected in May and October 2021 from monitoring well 03-8 screened in the refuse. Chemical results are presented in Table D-1, Appendix D. Laboratory certificates of analysis are provided in Appendix H.

The 2021 inorganic leachate chemistry from refuse monitor 03-8 is summarized in Table 6. Historical leachate quality data for refuse well 03-8 are provided for comparison.

In general, the 2021 leachate quality at the site was within the range of representative concentrations for municipal landfills in Ontario (Freeze & Cherry, 1979 and the Ministry of the Environment, 1993) with the exception of pH and the May concentration of alkalinity, which were above their representative concentrations. Also, concentrations of DOC, calcium, potassium and magnesium were closer to the low end of the ranges of representative concentrations for municipal landfills and concentrations of chloride and sodium were mid-range of their respective representative concentrations.

A comparison of the 2021 leachate quality with the 2021 groundwater quality in the overburden (Fractured Till Unit, Upper Till Unit, Inter-Till Sands Unit, and Lower Till Unit) from the site reveals that the leachate at the site is characterized by consistently elevated concentrations of most parameters except pH, nitrate, nitrite, and to some degree calcium. Further, the leachate has depleted concentrations of sulphate relative to the overburden quality at the site.

A combination of parameters with elevated or reduced concentrations in the leachate relative to the on-site overburden water quality and the range of representative concentrations for municipal landfills in Ontario can be used as diagnostic indicator parameters to identify leachate contribution to the groundwater. Historically, chloride was used as the primary indicator parameter, which is valid given its conservative characteristics. However, alkalinity, potassium, and DOC can provide additional indications of possible leachate influences in the overburden.

6.2 OVERBURDEN GROUNDWATER CHEMISTRY

Thirty three (33) overburden groundwater observation wells are sampled for general inorganic parameters as part of the monitoring program. Based on the inferred groundwater flow pattern in the overburden units, there are no overburden wells that could be considered upgradient or cross-gradient from the fill areas.

6.2.1 GROUNDWATER QUALITY COMPARISON

A summary of the 2021 chemical results for the diagnostic indicator parameters in the overburden monitors at the site is provided in Table 7. The 2021 concentration ranges for refuse well 03-8 are included for comparison. For assessment purposes, the downgradient monitoring wells were divided into the following groups based on their location in the inferred flow regime.

**RELATIVE DOWNGRADIENT
MONITORING WELL POSITION**

MONITORING WELLS SITUATED IN INFERRED OVERBURDEN UNITS

		Fractured Till Unit	Upper Till Unit	Inter-Till Sands Unit	Lower Till Unit
Southeast	Downgradient to the Landfill	581		571	
South	Adjacent to the Landfill	233R	232R		231R
	Downgradient to the Landfill	263R, 562		561	101R
East	Adjacent to the Landfill	141R			
West	Adjacent to the Landfill		381R	591	
	Downgradient to the Landfill	592	593	594	
Northwest	Adjacent to the Landfill	531R			191
	Downgradient to the Landfill	541			595
North	Adjacent to the Landfill		03-3, 03-4, 03-5		
	Downgradient to the Landfill	03-7SR, 111R, 552RA	023R, 03-7D, 00-04, 05-01	551R, 998R, 00-03	022R

I) SOUTHEAST OF THE LANDFILL

Downgradient to the southeast of the fill area, diagnostic indicator parameter concentrations at Fractured Till well 581 and Inter-Till Sand well 571 were appreciably lower than the 2021 leachate results. As noted in the concentration versus time graphs (Figures D-15 and D-32), diagnostic parameter concentrations at Fractured Till well 581 and Inter-Till Sand well 571 have fluctuated over the long term with no overall increasing or decreasing trends. Parameter concentrations at Inter-Till Sand well 571 were generally lower than those observed at Fractured Till well 581. There was no evidence of leachate influence in the monitoring wells to the southeast of the fill area in 2021.

II) SOUTH OF THE LANDFILL

Adjacent to the south of the fill area, diagnostic indicator parameter concentrations at Fractured Till well 233R, Upper Till well 232R, and Lower Till well 231R were notably lower than the 2021 leachate range. As noted on the concentration versus time graphs for these wells (Figures D-6, D-25 and D-43), chloride, alkalinity, potassium, and DOC concentrations have typically fluctuated with no overall increasing trends. The exception is chloride concentrations at Upper Till well 232R, which have increased since 2010; however, the concentrations of chloride in the well have only increased from approximately 2 mg/L to 11 mg/L, and are still very low overall (10 to 11 mg/L in 2021). As shown in Figure D-25, concentrations of other leachate indicator parameters have not shown increasing trends. It is noted that concentrations of alkalinity and chloride at Lower Till well 231R were appreciably elevated in October 2021 compared to recent results. Further monitoring will confirm the October 2021 alkalinity and chloride concentrations at well 231R.

Parameter concentrations at Upper Till well 232R and Lower Till well 231R were typically lower than those observed at well 233R. Furthermore, concentrations of most parameters were lower in the Lower Till well (231R) compared to the Upper Till well (232R).

Downgradient to the south of the fill area, diagnostic parameter concentrations at Fractured Till wells 263R and 562, Inter-Till Sands well 561, and Lower Till well 101R were notably lower than the 2021 leachate results. As noted on the concentration versus time graphs for these wells (Figures D-8, D-14, D-31 and D-40), chloride, alkalinity, potassium, and DOC concentrations have fluctuated with no overall increasing trends. The exception is at Fractured Till well 562 in which the chloride concentrations have fluctuated with a marginally increasing trend to 2017, after which the concentrations have remained generally stable. The actual parameter concentrations (5 to 10 mg/L for chloride) are still low, and a corresponding increase in other diagnostic concentrations was not observed. It is noted that the concentration of alkalinity at Inter-Till Sands well 561 was elevated in October 2021, similar to elevated concentrations reported in the fall of 2019 and 2020. The fall 2019 and 2020 alkalinity concentrations at well 561 were considered questionable and were not plotted on Figure D-31. As previously discussed, based on discussions with the laboratory, suspended sediment within some samples, including from well 561, is likely causing a high bias for alkalinity concentrations. As such, the elevated alkalinity observed at well 561 in October 2021 should be interpreted with caution.

The parameter concentrations at Inter-Till Sands well 561 and Lower Till well 101R were typically lower than those observed at Fractured Till wells 263R and 562.

In summary, there was no definitive indication of leachate influence in the monitoring wells south of the fill area during 2021. However, monitoring of Fractured Till well 562 and Upper Till well 232R should be continued to evaluate concentration trends and their significance, if any. In addition, monitoring at Lower Till well 231R should be continued to confirm the elevated alkalinity and chloride concentrations observed in October 2021.

III) EAST OF THE LANDFILL

Adjacent to the east of the landfill, diagnostic parameter concentrations at Fractured Till well 141R were notably lower than the 2021 leachate results. The diagnostic parameter concentrations in the well have fluctuated with no overall increasing or decreasing trends (Figure D-4). The exception is alkalinity which has generally fluctuated with increasing concentrations in the spring. Other parameters, such as conductivity, hardness, sulphate, calcium, and magnesium, and to a lesser degree chloride, also show a similar trend of increasing concentrations in the spring. Chloride concentrations have remained low (less than 9 mg/L), indicating that the seasonal fluctuation is not leachate related. The surface seal at the well was inspected in 2018 and its integrity was confirmed. Nonetheless, the well does appear to be historically influenced by some form of seasonal changes in water quality. It is also noted that the May 2021 DOC concentration at well 141R (1.9 mg/L) was the lowest observed since 2008 and the October 2021 alkalinity concentration at well 141R (233 mg/L) was the lowest observed to date. Continued monitoring is required to evaluate these trends.

IV) WEST OF THE LANDFILL

Adjacent to the west of the landfill, diagnostic indicator parameter concentrations at Upper Till well 381R and Inter-Till Sand well 591 were notably lower than the 2021 leachate results. As observed in the concentration versus time graphs (Figures D-27 and D-34), diagnostic parameter concentrations at these wells have fluctuated with no overall increasing or decreasing trends, with the exception of alkalinity concentrations. At well 381R, alkalinity concentrations have fluctuated with a marginal increasing trend since 2012; and at well 591, alkalinity concentrations have fluctuated with an overall decreasing trend since 2010. In 2021, chloride concentrations at well 381R increased above the historic range for the well, but remained low overall (7 to 8 mg/L). Chloride concentrations at well 591 also increased in 2021, compared to recent results, but remained low overall.

Overall, parameter concentrations at Upper Till well 381R were somewhat elevated relative to the Upper Till well 232R located adjacent to the south of the landfill. However, the differences were not substantial. Concentrations of

alkalinity, hardness, calcium, potassium and magnesium were lower at Inter-Till Sands well 591 compared to Upper Till well 381R. Concentrations of sulphate, fluoride and sodium were higher at well 591 compared to well 381R, while the remaining parameter concentrations were similar between the two wells.

Downgradient to the west of the fill area, diagnostic indicator parameter concentrations at Fractured Till well 592, Upper Till well 593, and Inter-Till Sands well 594 were notably lower than the 2021 leachate results. The diagnostic parameter concentrations are generally consistent with those observed across the site. Diagnostic parameter concentrations at these wells have generally fluctuated with no overall increasing or decreasing trends (Figures D-16, D-28 and D-35). Exceptions include the chloride and potassium concentrations at Fractured Till well 592, which have decreased between October 2015 and 2019, and have been stable since. It is noted that the 2021 chloride concentrations at well 593 were elevated compared to historical results from the well, however, the concentrations remained low overall (6 – 7 mg/L). Although based on a more limited data set, these concentration trends will continue to be monitored.

There was no evidence of leachate influence in the wells adjacent west of the landfill in 2021.

V) NORTHWEST OF THE LANDFILL

Adjacent to the northwest of the landfill, diagnostic parameter concentrations at Fractured Till well 531R and Lower Till well 191 were appreciably lower than the 2021 leachate results. The diagnostic parameter concentrations at these wells have fluctuated with no overall increasing or decreasing trends (Figure D-10 and D-41). The exception is the chloride concentrations at well 531R, which have decreased overall since 2005. Parameter concentrations at Lower Till well 191 were typically similar to Fractured Till well 531R.

Diagnostic parameter concentrations at Fractured Till well 541 and Lower Till well 595 located downgradient northwest of the landfill were notably lower than the 2021 leachate results. Parameter concentrations from monitoring well 541 were typically similar or lower than those observed at Fractured Till well 531R adjacent to the landfill. With the exception of chloride at Fractured Till well 541, the diagnostic parameter concentrations at the well have fluctuated with no overall increasing or decreasing trends (Figure D-11). The chloride concentrations at monitoring well 541 have decreased overall since 1999. The parameter concentrations at Lower Till well 595 are generally consistent with those observed across the site, with the exception of higher sulphate concentrations. Diagnostic parameter concentrations of chloride, potassium, and DOC at well 595 appear to fluctuate with generally decreasing trends (Figure D-44).

There was no evidence of leachate influence in the monitoring wells to the northwest of the landfill in 2021.

VI) NORTH OF THE LANDFILL

Adjacent to the north of the landfill, diagnostic parameter concentrations at Upper Till wells 03-3, 03-4, and 03-5 were notably lower than the 2021 leachate results. The chloride concentrations in these Upper Till wells are appreciably higher than those observed in other Upper Till wells at the site. However, the remaining diagnostic parameter concentrations are generally more consistent with those observed across the site. Chloride concentration trends are discussed further in Section 6.2.2 that follows. Diagnostic parameter concentrations appear to fluctuate with no overall increasing or decreasing trends (Figure D-19, D-20 and D-21). Continued monitoring is required to evaluate these trends.

Downgradient to the north of the fill area, diagnostic parameter concentrations at Fractured Till wells 03-7SR, 111R, and 552RA were appreciably lower than the 2021 leachate range. As a result of a sudden and significant increase in chloride concentration at well 03-7S in 2019, well 03-7S was decommissioned and replaced by well 03-7SR in

July 2020. As shown in Figure D-1, diagnostic parameter concentrations at replacement well 03-7SR have been similar to the pre-2019 results from original well 03-7S. Replacement well 111R was installed in July 2017 to replace well 111. As shown in Figure D-2, parameter concentrations at replacement well 111R have typically been lower than at original well 111; particularly chloride. Chloride concentrations at 111R have been similar to the pre-1999 results from well 111. As a result of a sudden and significant increase in chloride concentration at well 552R in 2017, well 552R was decommissioned and replaced by well 552RA in July 2018. As shown in Figure D-13, diagnostic parameter concentrations at replacement well 552RA have been similar to the pre-2017 results from original well 552R. The chloride concentrations in wells 03-7SR and 552RA are similar to those observed in Upper Till wells adjacent to the north of the fill area, and generally higher than observed in the other Fractured Till wells at the site. The remaining diagnostic parameter concentrations in Fractured Till wells 03-7SR and 552R are similar to those observed across the site, with the exception of elevated potassium concentrations at well 03-7SR. Chloride concentration trends are discussed further in Section 6.2.2.

Within Upper Till wells 00-04, 023R, 03-7D, and 05-01, located downgradient to the north of the fill area, diagnostic parameter concentrations were notably lower than the 2021 leachate range. The diagnostic parameter concentrations at these wells have fluctuated with no overall increasing or decreasing trends (Figures D-17, D-18, D-22, and D-23). The exception is the alkalinity concentrations at well 05-01, which increased overall from 2015 to 2020. In 2021, alkalinity concentrations at well 05-01 decreased abruptly to concentrations observed in 2015. In 2021, chloride concentrations at 03-7D and 05-01 also exhibited a sudden increase of up to 4 mg/L higher than previously observed. Diagnostic parameter concentrations in these wells are generally lower than those observed in the Upper Till wells adjacent to the north of the fill area, particularly the chloride concentrations. With the exceptions of the chloride concentrations at wells 00-04 and 023R, the diagnostic parameter concentrations at wells 00-04, 023R, 03-7D, and 05-01 are generally similar to those observed in the other Upper Till wells at the site.

Downgradient to the north of the fill area, diagnostic parameter concentrations at Inter-Till Sands wells 551R, 998R, and 00-03 were notably lower than the 2021 leachate range. Parameter concentrations from wells 551R and 00-03 were typically similar to those at the other Inter-Till Sands wells on-site, and the diagnostic parameter concentrations at the wells have fluctuated with no overall increasing or decreasing trends (Figure D-30 and D-37), with the exception of chloride. Chloride concentrations at 551R and 00-03 have increased overall since 2003, with a notable increase observed at both wells in 2021. Replacement well 998R was installed in July 2020, to replace former well 998, as the original well had become compromised. Parameter concentrations at the replacement well are similar to the concentrations at original well 998, prior to the damage incurred in early 2018 (Figure D-36). Parameter concentrations from replacement well 998R have also been similar to those at other Inter-Tills Sands wells.

Downgradient to the north of the fill area, diagnostic parameter concentrations at Lower Till well 022R were notably lower than the 2021 leachate range. Parameter concentrations at well 022R were similar to those observed in the other Lower Till wells on-site. The diagnostic parameter concentrations at this well have fluctuated with no overall increasing or decreasing trends (Figure D-38). The 2021 chloride concentrations at 022R were elevated compared to historic results from the well; however the 2021 concentrations remained low (6 – 8 mg/L).

6.2.2 CHLORIDE CONCENTRATIONS

The chloride concentrations observed in the wells included in the 2021 semi-annual monitoring program are summarized below. The May 2021 chloride concentrations are shown in Figure 11.

- North of the landfill: 3 mg/L to 320 mg/L (well 03-4);
- Northwest of the landfill: 2 mg/L to 7 mg/L;

- East of the landfill: 7 mg/L to 8 mg/L;
- West of the landfill: 1 mg/L to 8 mg/L;
- South of the landfill: <1 mg/L to 11 mg/L; and
- Southeast of the landfill: 2 mg/L to 9 mg/L.

The highest chloride concentrations in 2021, adjacent to the north of the landfill, were observed in Upper Till monitoring wells 03-4 (320 mg/L), 03-3 (270 mg/L), and 03-5 (180 mg/L), which are situated in close proximity to each other as shown on Figure 11. The 2021 chloride concentration in well 03-3 was lower than the 2020 level, while the chloride concentrations at wells 03-4 and 03-5 were higher than their respective 2020 levels. A review of the historical chloride concentrations at these wells indicates that between 2004 and 2008, chloride concentrations decreased overall, and have since fluctuated with no overall trend.

Downgradient to the north of the landfill, the highest chloride concentrations were observed at Fractured Till well 03-7SR (77 mg/L) in October 2021. The chloride concentrations at monitoring well 03-7S generally increased since the well was installed in 2003; however, the concentrations reported in 2019 and 2020 showed a significant increase from the previous results. Given the proximity of Fractured Till well 03-7S to the access road to the recently constructed Waste Management and Education Centre building, the elevated chloride concentrations were inferred to be related, by some degree, to road salting activities and/or construction activities. As a result, Fractured Till well 03-7SR was decommissioned and replaced in July 2020, at a location slightly further downgradient. The sample results collected from replacement well 03-7SR since October 2020 (57 - 77.3 mg/L) have displayed a sharp decrease in the chloride concentration compared to the original well.

Elevated chloride concentrations have also been observed at Fractured Till well 552R, which was decommissioned in 2018 and replaced as 552RA at a slightly higher grade on the nearby berm to help diminish any future road salting issues. The replacement well has been sampled on seven occasions to date and the chloride concentrations have been significantly less than 2009 to 2018 results from former well 552R. The chloride concentrations at the replacement well 552RA have been similar to the pre-2009 results from well 552R.

A number of wells were installed along the northern edge of the fill in 2000 to determine if sandy horizons in the Upper Till were extensive and presented potential contaminant pathways. Additional wells were added in 2003. The chloride concentrations for these wells are provided in Table D-2. Concentrations versus time graphs for chloride are provided in Figures D-47 to D-55, Appendix D. The May 2021 chloride concentrations from the overburden groundwater monitoring wells at the site are illustrated on Figure 11.

Elevated chloride concentrations were observed in select shallow monitoring wells situated in the northern portion of the site, between the current operating cell and northern boundary. These results are consistent with previous Operations and Monitoring Reports. The elevated chloride concentrations are generally limited to Glaciolacustrine Unit/Fractured Till Unit monitoring wells 98-7 (38 mg/L), 98-11 (220 mg/L), 98-12 (120 mg/L), 98-13 (76 mg/L) 03-7SR (57 mg/L), and 552RA (65 mg/L) and Upper Till Unit wells 00-01 (73 mg/L), 00-02 (60 mg/L), 00-04 (52 mg/L), 03-3 (270 mg/L), 03-4 (320 mg/L), 03-5 (180 mg/L), 03-6 (71 mg/L), and 023R (25 mg/L). It is noted that the chloride concentration in May 2021 at well 98-13 was appreciably elevated (76 mg/L) compared to historic results from the well (1 – 15.2 mg/L). Further monitoring will confirm if chloride concentrations are increasing at well 98-13, or if the May 2021 should be considered anomalous.

Inter-Till Sand monitoring well 998 also had elevated chloride concentrations between 2018 and 2020, which were attributed to construction activities adjacent to the well in mid-2017 to June 2018. As a result, Inter-Till Sand monitoring well 998 was decommissioned and replaced in July 2020, at a location slightly further downgradient.

The sample results collected from replacement well 998R since October 2020 (6 – 11 mg/L) have displayed a sharp decrease in the chloride concentration compared to the original well.

Chloride concentrations at the remaining northeast to northwest Glaciolacustrine Unit/Fractured Till Unit monitoring wells 111R, 141R, 531R, 541, and 592, and Upper Till Unit monitoring wells 03-7D, 013R, 05-01, and 593 were notably lower than concentrations from the above noted monitoring wells. Furthermore, the 2021 chloride concentrations were consistently lower at Inter-Till Sand monitoring wells 012R, 00-03, 551R, 591, and 594, Lower Till wells 022R, 191, and 595, and bedrock well 999 situated in the northeast portion of the site. In general, chloride concentrations at these wells in 2021 were similar to those observed in 2020.

In summary, appreciably elevated chloride concentrations are confined to the northern edge of the fill area, particularly in Upper Till Unit wells 03-3, 03-4, and 03-5. These wells are located adjacent to the western end of the cut-off wall and are inferred to be deeper than the cut-off wall as they are reportedly screened in the unfractured Upper Till Unit. They are also located near a roadside drainage ditch adjacent to the site access road. Chloride concentrations are appreciably lower downgradient and north of wells 03-3, 03-4, and 03-5, at Fractured Till wells 111R, Upper Till wells 03-7D and 05-01, and Inter-Till Sand well 00-03. Chloride levels at the northern property boundary comply with the Ontario Drinking Water Objectives (Section 6.2.4).

However, chloride concentrations at these wells are still elevated relative to wells elsewhere across the remainder of the site. There are two plausible sources of the elevated chlorides; either landfill leachate or salt used on the access road in the winter season. It is inferred that the appreciably elevated chloride concentrations in wells 03-3, 03-4, and 03-5 are influenced to some extent by landfill leachate given their close proximity to the end the cut-off wall. Based on groundwater movement and downgradient chloride concentrations, the landfill leachate influence appears to be limited to only this small area, moving in and out of the vicinity during seasonal changes in groundwater elevation and regular leachate removal from the LCS at MH16.

It is inferred that the chloride levels in the remainder of groundwater wells along County Road 46 and the Site access road are largely influenced by road-salting activities.

6.2.3 TRILINEAR DIAGRAM

The natural variability in the overburden groundwater quality at the site is illustrated on the trilinear diagram using the May 2021 analytical results, Figure 12. The anion chemical results are presented on the triangular graph in the lower right, while the cation chemical results are presented on the triangular graph in the lower left. The anion and cation results are combined on the diamond shaped graph in the centre. Water with similar chemical signatures will plot together on the trilinear diagram.

Leachate chemistry from the site is also plotted on the trilinear diagram for reference. Leachate chemistry from refuse monitor 03-8 is generally sodium and bicarbonate enriched, and sulphate deficient. The leachate chemistry plots near the lower central portion of the combined graph.

The Fractured Till shallow groundwater samples from the site are typically calcium-bicarbonate type water, and plot consistently together near the left corner of the combined graph. Their consistency is more pronounced in the cation results, plotted in the lower left triangular graph. The exception is Fractured Till well 111R, which plots separate from the other Fractured Till wells in the centre portion of the combined graph. Groundwater quality in the well is influenced by elevated sodium concentrations. Likewise, water quality at monitors 233R and 141R is influenced by elevated sulphate concentrations, as shown in the anion results plotted in the lower right triangular graph. However,

the water quality at these wells do not exhibit typical leachate quality influences (e.g. higher relative ion ratio of bicarbonate).

Water quality in the Upper Till groundwater is typically bicarbonate enriched with no dominant cation. Groundwater quality in these wells typically plots in the left portion of the combined graph. Exceptions are observed at wells 03-3, 03-4, and 03-5 which are influenced by elevated chloride concentrations and plot toward the centre-left portion of the combined graph. Also, well 03-7D plots in the centre portion of the combined graph, but is influenced by higher relative ion ratios of sodium and sulphate. In addition, well 023R plots in the upper left portion of the combined graph, as it is influenced by higher sulphate concentrations. The relative ion ratios shown in the combined plot do not exhibit typical landfill leachate influences.

Groundwater quality in the Inter-Till Sands typically plots in the left corner of the combined graph, which suggests lower mineralization of the water. The exceptions are groundwater quality at wells 591 and 594. Water quality at well 591 plots toward the right corner of the combined graph. The water quality in this well is influenced by elevated sulphate concentrations, which is typically related to slow moving groundwater. The results suggest that well 591 may be screened in a predominantly clay soil, rather than in the Inter-Till Sands. The borehole log for well 591 is not available. Groundwater quality at well 594 is strongly influenced by higher sodium concentrations (relative to the other cation concentrations) and the relative ion ratio shown in the combined plot is similar to leachate quality. However, the groundwater quality at well 594 exhibits appreciably lower chloride, calcium, and magnesium concentrations.

Water quality in the Lower Till groundwater is typically bicarbonate enriched with no dominant cation; though water quality at well 022R is enriched with calcium cations and water quality at well 595 is enriched with sodium cations and sulphate anions. Water quality in the Lower Till wells generally plots in the left portion of the combined graph. Exceptions include monitoring well 231R, which plots in the lower central portion of the combined graph, toward the leachate well; as well as monitoring well 595, which plots toward the right side of the combined graph. Water quality at monitoring well 595 is influenced by higher relative ion ratios of sodium and sulphate. Water quality at monitoring well 231R is influenced by elevated sodium concentrations relative to the calcium and magnesium levels. The relative ion ratios at these wells may be related to bedrock groundwater influences.

Bedrock groundwater chemistry is bicarbonate-enriched with no dominant cation. The relative ion ratios shown in the combined plot are similar to leachate chemistry; however, the groundwater quality at bedrock well 999 exhibits appreciably lower concentrations of all parameters. Water quality is influenced by elevated sodium concentrations relative to the calcium, magnesium, and sulphate levels. The relative ion ratios in the bedrock well are similar to Lower Till groundwater quality.

6.2.4 ONTARIO DRINKING WATER QUALITY STANDARDS

The following parameters were detected at concentrations exceeding the Ontario Drinking Water Quality Standards (ODWQS) (MECP, June 2003) in samples collected from the overburden flow system and bedrock well 999 during 2021.

- Hardness at all wells sampled in 2021, excluding Inter-Till Sands well 594 (May);
- Turbidity at all wells sampled in 2021, excluding Upper Till well 03-4 and bedrock well 999;
- Colour at Fractured Till well 111R, 141R (May) and 531R (October), Upper Till well 03-3, 03-5 and 05-01 (October), Inter-Till Sands well 594 (October) Lower Till well 022R and 231R, and bedrock well 999 (May);
- Alkalinity at Fractured Till well 141R (May) and 233R (October);

- Sulphate at Fractured Till well 141R (May);
- Chloride at Upper Till wells 03-3 and 03-4;
- Fluoride at Inter-Till Sands well 594 (October), Lower Till well 231R, and bedrock well 999; and
- DOC at Fractured Till wells 552RA (May) and 562 (October), Upper Till wells 03-5 and 381R (October), and Lower Till well 022R (October).

The parameters that exceeded the ODWQS within the overburden groundwater flow system have objectives or guidelines related to the aesthetic quality or operational treatment of the water and are not health related. The exception was fluoride which has a maximum acceptable concentration limit. The fluoride exceedances were observed at wells 594, 231R, and bedrock well 999. The 2021 fluoride concentrations at these wells are consistent with historic results and are inferred to be the result of natural bedrock groundwater chemistry. As evidenced by the private well sampling program results presented in Section 6.3, fluoride appears to be naturally elevated in deep groundwater units in the vicinity of the Site.

6.2.5 GUIDELINE B-7 COMPLIANCE ASSESSMENT

Guideline B-7 was established by the MECP as a mechanism to assess the acceptable level of leachate impacts on the groundwater system. Guideline B-7 is applied to groundwater quality at the property boundary, and is intended to protect both existing and potential reasonable uses of the groundwater on adjacent properties. The Guideline states that, for non-health related parameters, the impact from the landfill should not raise the concentration by more than half the difference between the background concentration and the Ontario Drinking Water Quality Standard or Objective (ODWQS).

Given the hydrogeologic setting at the site, a hydraulically upgradient or background well is not available at the site. For the purpose of this assessment however, the average 2021 groundwater quality from monitoring well 263R (Fractured Till Unit) was used to represent background conditions. This well is situated furthest away from the fill area (> 500 m) and typically has the lowest parameter concentrations on site.

Guideline B-7 criteria were established for chloride, alkalinity, and DOC, which are diagnostic leachate indicator parameters. Criteria were also established for nitrate, nitrite, sulphate, and sodium, which also have ODWQSs. The 2021 Guideline B-7 criteria are noted below, and shown on Table 4:

- Chloride – 127 mg/L
- Alkalinity – 392 mg/L
- DOC – 3.68 mg/L
- Nitrate – 2.68 mg/L (health-related parameter)
- Nitrite – 0.26 mg/L (health-related parameter)
- Sulphate – 291 mg/L
- Sodium – 112 mg/L

The Guideline B-7 criteria are applicable to the property boundary. As such, compliance was assessed at the following wells, as specified in the Amendment to 1986 Design and Operation Report (R.J. Burnside, 2013).

MONITORING WELLS

WELL LOCATION	Fractured Till Unit	Upper Till Unit	Inter-Till Sands Unit	Lower Till Unit
South Property Boundary	233R	232R, 381R		231R
West Property Boundary	592	593	591, 594	191
East Property Boundary	141R			
Northwest Property Boundary	541			595
North Property Boundary	111R, 552RA	023R	551R, 998R, 00-03	022R

In summary, concentrations at the property boundary complied with the Guideline B-7 criteria, with the following exceptions:

- Alkalinity at Fractured Till wells 141R (May) and 233R, and Upper Till well 381R;
- Nitrite at Fractured Till well 141R (May);
- Sulphate at Fractured Till wells 141R and 233R, and Upper Till well 023R; and
- DOC in Fractured Till well 552RA (May), Upper Till well 381R (October), and Lower Till well 022R (October).

The alkalinity and sulphate exceedances at Fractured Till well 233R downgradient to the south of the landfill are consistent with historic results. The exceedances do not appear to be related to the landfill as other diagnostic indicator parameter concentrations, such as chloride and potassium, do not suggest any leachate impact.

The alkalinity exceedances at Upper Till well 381R, downgradient to the south of the landfill, are consistent with historic results. The exceedances do not appear to be related to the landfill as other diagnostic indicator parameter concentrations, such as chloride and potassium, do not suggest a leachate impact.

The elevated alkalinity and sulphate results at Fractured Till well 141R along the east property boundary recur regularly, particularly in the spring. The groundwater quality at well 141R appears to be influenced by seasonal recharge of alkalinity and sulphate rich water. Elevated nitrite has occasionally been reported at well 141R and also suggests that the well might be seasonally influenced by surface water seepage (in spring).

The sulphate exceedances at Upper Till well 023R downgradient to the north of the landfill were within the historic range of the concentrations at the well. The exceedances do not appear to be related to the landfill as other diagnostic indicator parameter concentrations, such as chloride and potassium, do not suggest any leachate impact. Regardless, sulphate concentrations are reduced in the landfill leachate and these elevated levels in well 023R are not an indicator of leachate influences.

The noted DOC exceedances are similar to the historic results of each respective well, and are not consistently observed. The DOC exceedances do not suggest leachate impact.

In summary, the site was in compliance with the Guideline B-7 criteria at the property boundaries in 2021 for the wells tested. The isolated exceedances outlined above were not related to landfill influences.

6.2.6 TRIGGER MECHANISM COMPLIANCE ASSESSMENT

The trigger mechanism set out in Section 3.3.1 of the Amendment to 1986 Design and Operation Report (R.J. Burnside, 2013) (D & O Report), lists chloride, DOC, alkalinity, and potassium as leachate indicators, and identifies chloride as the most effective indicator for assessing compliance using Guideline B-7. The D & O Report states:

“chloride will provide the main trigger unless there is a clear increasing trend in the other three [diagnostic indicator] parameters in the absence of chloride.”

The D & O Report also identifies that the trigger level is set at 75% of the Guideline B-7 criteria, to be evaluated at the property boundary wells (identified in Section 6.2.5 of this report).

As outlined in Section 6.2.1, there are no clear increasing trends for concentrations of DOC, alkalinity, and potassium at any of the property boundary wells. As such, chloride is the only trigger criteria included in the 2021 assessment. For 2021, the trigger criteria for chloride is calculated as 95.4 mg/L.

None of the property boundary wells at the site exceeded the trigger criteria during 2021 and, as such, the trigger mechanism was satisfied in 2021.

6.3 DOMESTIC WELL GROUNDWATER CHEMISTRY

The 2021 domestic well chemistry data is provided in Table 8. It is noted that the annual groundwater sampling normally takes place during the month of April, but due to COVID-19 pandemic, the Oxford County Board of Health delayed the sampling until the month of October. The location of the domestic private wells are shown in Figure 7. In 2021, groundwater samples were collected from fifteen (15) domestic private wells; a sample was not able to be collected from domestic well 902 in October 2021. Historic inorganic chemical results are presented in Table D-3, in Appendix D. The 2021 private groundwater monitor sampling was undertaken by the Oxford County Board of Health. It is understood that the groundwater sampling followed general monitoring protocols and procedures.

In summary, the 2021 water quality results in the domestic wells were generally consistent with historic results. There has not been much overall change in the groundwater quality in the wells over the years. It is noted that sample results from several wells in 2021 and historically may be representative of water that has been treated or softened. This interpretation has been made based on appreciably low concentrations of calcium, magnesium and hardness. The calcium, magnesium and hardness results from the affected samples have been marked with an asterisk (*) in Table D-3 and Table 8. In 2021, the samples which are interpreted to represent treated or softened water were collected from wells 907, 908, 912, 916 and 922.

The 2021 groundwater quality in the domestic wells generally complied with the health-related standards and aesthetic objectives set out in the Ontario Drinking Water Quality Standards (ODWQS) (MECP, June 2003) for the parameters tested. However, hardness was exceeded in wells 904, 906, 909, 918, 920, and 999; colour exceeded in wells 909, 911 and 921; and fluoride exceeded at wells 906, 907, 908, 911, 913, 917, 920, 921, 922 and 999. These exceedances are generally consistent with historic results. Hardness in wells 917 and 921, as well as the locations that were noted as likely representing softened water (907, 908, 912, 916, and 922) were below the ODWQS range (80 to 100 mg/L). It is noted that colour has an aesthetic objective, hardness has an operational guideline, and fluoride has a maximum acceptable concentration.

Fluoride appears to be naturally elevated in some of the deep groundwater units in the vicinity of the Site. This was also observed at two deep monitoring wells on site. It is recommended that the Oxford County Board of Health notify each respective resident of ODWQS exceedances, if this has not been completed already.

There is no indication of leachate influences in the groundwater quality at the private domestic wells monitored.

7 SURFACE WATER QUALITY

The 2021 surface water chemistry data is provided in Table 9. The historic general surface water chemical results from the surface water stations are provided in Table E-1, Appendix E. The laboratory certificates of analysis are provided in Appendix H. Concentration versus time graphs were produced for calcium, chloride, hardness, magnesium, ammonia, phosphorus, DOC, and TKN, and are presented on Figures E-1 through E-15. Surface water samples were collected quarterly from stations 971 (SW1), 974 (SW4), 977 (SW7), 978 (SW8), and 979 (SW9), as shown on Figure 5.

In addition to these sampling events, a number of supplemental surface water samples were collected as part of the initial investigation and subsequent remedial actions in relation to landfill impacted stormwater entering Sedimentation Pond A in March 2021. Letters of notification and other pertinent correspondence for these supplemental sampling events, containing subsequent discussions, recommendations and approvals, are provided in Appendix A. Further discussion on the supplemental sample results is presented in Section 7 VII.

As part of the QA/QC program, duplicate surface water samples were collected from station 978 (SW8) in March and May and station 974 (SW4) in August and October 2021. The 2021 surface water duplicate results are provided in Table 10. In general, duplicate sample results were similar to the original sample results, with the calculated Relative Percent Difference (RPD) within the 20% guideline for acceptability or within two times the reported method detection limit (MDL), with the following exceptions:

- The May concentrations of turbidity (RPD 21%) and phosphorus (RPD 37%) at station 978, which were higher in the duplicate sample; and
- The August concentration of turbidity (RPD 27%) at station 974, which was higher in the original sample.

In each case listed above, both the original and duplicate results were similar to historic values. As such, the results from the original sample were used in the assessment.

I) UPGRADIENT/BACKGROUND WATER QUALITY (978)

Background surface water station 978 (SW8) is located on the Hooper Drain, in the catchbasin close to the point where it enters the eastern side of the landfill property. This station represents the upstream conditions of the surface water quality within the Hooper Drain.

The 2021 chemistry results were generally within the historic background range for surface water at 978. The exceptions were the colour and turbidity concentrations in March and May, which were lower than their respective historic ranges, and the colour and iron concentrations in October, which exceeded their respective historic ranges. In general, parameter concentrations at background station SW8 were similar to 2020.

As illustrated in Figures E-10 to E-12, concentrations of calcium, chloride, hardness, magnesium, ammonia, phosphorus, DOC, and TKN have fluctuated over the long-term with no overall increasing or decreasing trends. The exceptions are the DOC concentrations which appears to have increased marginally overall since 2006, and the TKN concentrations, which appears to have increased marginally overall since 2007. During 2021, parameter concentrations for fluoride, ammonia, nitrite, phenols and TKN remained similar from March through October. Turbidity, colour, phosphorus, iron, ortho-phosphate and DOC generally increased from March through October 2021. Conductivity, hardness, calcium, chloride, nitrate and magnesium concentrations fluctuated through the year, with no overall trend.

II) HOOPER DRAIN ON NORTHERN BOUNDARY (979)

Surface water station 979 (SW9) is located in a manhole on the Hooper Drain, near the northern property boundary. The Hooper Drain cuts across the northeast corner of the landfill property, and is enclosed in a concrete pipe for most of its length on the property. Station 979 is considered to be representative of the off-site drainage from the landfill.

The 2021 parameter concentrations at 979 were generally within the historic background range. Exceptions included the magnesium concentration in May and unionized ammonia concentration in March, which exceeded their respective historic range; and the turbidity concentration in March, which was lower than the historic range. With the exception of these noted concentrations, parameter concentrations at 979 in 2021 were generally similar to 2020.

As illustrated in Figures E-13 to E-15, parameter concentrations at 979 have fluctuated with no overall trends since monitoring began at the station. During 2021, concentrations of conductivity and chloride decreased from March through October, while concentrations of turbidity increased from March through August and then decreased to October. Concentrations of ammonia, unionized ammonia and TKN were elevated in March and were lower and steady for the remainder of the year. Concentrations of hardness, calcium, magnesium, phosphorus and iron increased from March to May, and then decreased through October. Concentrations of the remaining parameters generally fluctuated with no overall trend or remained stable during 2021.

In March, May and August 2021, concentrations of several parameters increased between upstream station 978 and downstream station 979. These parameters include conductivity, colour, turbidity, chloride, magnesium, ammonia, un-ionized ammonia, TKN, phosphorus, DOC and iron in March; colour, turbidity, hardness, calcium, magnesium, un-ionized ammonia, phosphorus, DOC and iron in May; and turbidity, hardness, calcium, magnesium, unionized ammonia, phenols, phosphorus, ortho-phosphate and iron in August. It is noted that turbidity levels at station 979 were appreciably greater than at station 978 during the March, May and August sampling events in 2021. This could have an influence on the water quality results. In October 2021, parameter concentrations were typically similar or marginally lower at downstream station 979 compared to upstream station 978.

As discussed further in Section 7 VIII, leachate is interpreted to have impacted water quality in Sedimentation Ponds A and B, as well as downstream station 979 in March 2021.

III) WET AREA AT MALCOLM BOUNDARY (974)

Surface water station 974 (SW4) is situated in a wet area which, following rainfall events, sometimes drains westward from the site. Any surface water run-off from the southwest portion of the fill area which may bypass the perimeter drain could reach this wet area.

The 2021 parameter concentrations were similar to the historic range at surface water station 974, with the exceptions of colour in March; turbidity in May; and turbidity and chloride in August, which were lower than their respective historic ranges. For the most part, parameter concentrations at station 974 in 2021 were generally similar to 2020.

As illustrated in Figures E-4 to E-6, parameter concentrations at station 974 have fluctuated over the long-term with no overall trends. During 2021, parameter concentrations of conductivity, hardness, calcium and TKN increased from March to May and then decreased through October, while concentrations of phosphorus and iron decreased from March to August and increased in October. Concentrations of ammonia, nitrate, nitrite, unionized ammonia, phenols and ortho-phosphate remained stable during 2021 and concentrations of the remaining parameters fluctuated throughout the year with no overall trend.

Relative to background station 978 on the Hooper Drain, parameter concentrations were generally similar to or lower at station 974 during 2021. However, concentrations of colour, phosphorous, DOC and iron in March and May; and unionized ammonia in August, were elevated in the downstream station relative to upstream station 978. The elevated concentrations observed at station 974 are sporadic and do not appear to be related to the landfill.

IV) SEDIMENTATION POND A (971)

Surface water station 971 (SW1) is located within Sedimentation Pond A. This station monitors the surface water quality of run-off from the western portion of the landfill.

With the exception of the March 2021 sample results, parameter concentrations in 2021 were similar to historic values for surface water station 971. As discussed further in Section 7 VIII, leachate impacts were identified at Sedimentation Pond A in March 2021. Due to the leachate impacts, concentrations of several parameters were elevated above their respective historic range in March 2021. During the remaining quarterly sampling events, concentrations of conductivity, colour, TDS, chloride and unionized ammonia were elevated above historic results for station 971 in May; concentrations of conductivity and TDS were elevated above historic results in August; and colour was elevated above historic results in October.

As illustrated in Figures E-1 to E-3, parameter concentrations at 971 have fluctuated over the long-term with no overall increasing or decreasing trends. The identified leachate impacts at station 971 in March 2021 are evident in the graphs, based on elevated concentrations of hardness, chloride, ammonia, DOC and TKN. Excluding the supplemental samples, in 2021, parameter concentrations of conductivity, turbidity, TDS, alkalinity, ammonia, TKN, BOD₅, COD and DOC decreased between March and October, while concentrations of iron, phosphorus and phenols were elevated in March, but fluctuated at a lower concentration during the remainder of 2021. Fluoride and nitrate concentrations remained consistent throughout 2021, while concentrations of colour, hardness, sulphate, nitrite, TSS and chloride generally fluctuated with no overall trend.

In March 2021, parameter concentrations in Sedimentation Pond A (971) were generally elevated compared to background station 978. The elevated concentrations are attributed to the documented leachate impacts to the pond. During the remainder of 2021, parameter concentrations in Sedimentation Pond A (971) were typically similar to, or lower than, the background station 978. The exceptions were concentrations of conductivity, colour, turbidity, chloride, ammonia, un-ionized ammonia, phosphorus and DOC in May; conductivity, chloride, ammonia, unionized ammonia, TKN and DOC in August; and conductivity, hardness, chloride, phenols and TKN in October, which were elevated at station 971 in comparison to the background station. It is noted that the May turbidity levels at station 971 were appreciably greater than at station 978. This could have an influence on the water quality results.

V) SEDIMENTATION POND B (977)

Surface water station 977 (SW7) is located in Sedimentation Pond B. Sedimentation Pond B collects most of the run-off from the north landfill area, which is currently being developed for waste disposal, either directly, or as flow from Sedimentation Pond A. In dry periods there is little to no flow into or out of the pond and thus, at those times, the water samples represent stagnant conditions. The pond is equipped with an outflow structure with a shut-off valve, allowing Oxford County staff to allow sediment to settle before discharging the water to the Hooper Drain.

As discussed further in Section 7 VIII, leachate impacts were identified at Sedimentation Pond A in March 2021, which subsequently impacted water quality at Sedimentation Pond B and downstream of the Site. As a result of the incident, several supplemental samples were collected from station 977 in 2021.

Despite the above-noted impacts to Sedimentation Pond A in March 2021, the 2021 parameter concentrations at Sedimentation Pond B typically remained within the historic range for the station. The exceptions were the TDS concentration in March and the nitrite concentration in October, which were marginally higher than their respective historic range; and the phosphorus concentration in October, which was lower than the historic range. Parameter concentrations at 977 in 2021 were generally similar to 2020.

As illustrated in Figures E-7 to E-9, parameter concentrations at 977 have fluctuated over the long-term with no overall increasing or decreasing trends. During 2021, parameter concentrations conductivity and colour decreased from March to October, while fluoride, nitrite and BOD₅ concentrations remained relatively stable from March to October. Concentrations of turbidity, phosphorus and TSS increased from March to August and decreased in October. Concentrations of TDS, ammonia, unionized ammonia, TKN and DOC decreased from March to August and increased in October. The remainder of the parameter concentrations fluctuated with no overall trend over the year.

In March 2021, parameter concentrations in Sedimentation Pond B (977) were generally elevated compared to background station 978. The elevated concentrations are attributed to the documented leachate impacts to Sedimentation Pond A, which subsequently impacted Sediment Pond B. During the remainder of 2021, parameter concentrations in Sedimentation Pond B (977) were generally similar to or lower than background station 978. The exceptions were concentrations of colour, turbidity, chloride, ammonia, un-ionized ammonia, TKN and DOC in May; unionized ammonia in August; and conductivity, chloride, fluoride and TKN in October, which were elevated at station 977 in comparison to the background station. It is noted that the May turbidity levels at station 977 were appreciably greater than at station 978. This could have an influence on the water quality results.

VI) COMPLIANCE

The majority of the surface water runoff from the landfill makes its way to Sedimentation Pond B, either directly or via Sedimentation Pond A. When pond levels are sufficiently high, water from Pond B discharges to the Hooper Drain, through a controlled valve, and leaves the landfill property flowing north beneath County Road 46.

Another possible pathway for off-site flow of surface water is at the small wet area on the west side of the property boundary. If surface water runoff from the southwest portion of the fill area were to bypass the perimeter ditches for some reason, it would reach this area, and potentially drain west off-site after periods of heavy rainfall.

Of the parameters analyzed at the site, only pH, phenols, phosphorus, un-ionized ammonia (calculated), and iron have Provisional Water Quality Objectives (PWQO). The 2021 results for these parameters are provided in Table 11.

Phosphorous concentrations were above the PWQO at each station during each 2021 compliance sampling event. The PWQO for phosphorus is an “interim” value and is in place to avoid excessive growth of algae or plants in downstream water courses. Phosphorous concentrations also exceeded the PWQO at background station 978.

Iron concentrations exceeded the PWQO at each station during each 2021 compliance sampling event, with the exception of the concentrations at station 971 (Sedimentation Pond A) in May, August and October 2021. The PWQO exceedances may be related to sediment load in the samples. Total suspended solids (TSS) concentrations ranging from 32 mg/L to 83 mg/L were measured in the surface water samples collected from Sedimentation Pond B, while sediment loading and particulate were observed in the majority of samples collected from the remaining stations.

In 2021, phenols concentrations exceeded the PWQO at station 979 in August and October, station 974 in August, station 971 (Sedimentation Pond A) during each event, and at station 977 (Sedimentation Pond B) in March and October. The concentration of phenols reported at background station 978 was similar to the concentration at the downgradient station 979 during each event in 2021.

The pH was slightly elevated (8.54) above the PWQO range (6.5 – 8.5) at Sedimentation Pond A (SW1) in May 2021. Sporadic PWQO exceedances of pH have been observed in the past.

Exceedances of un-ionized ammonia were observed at Sedimentation Pond A (SW1) in March, May and August; Sedimentation Pond B (SW7) in March and May; and at downstream station 979 in March. Elevated unionized ammonia in March 2021 is attributed to the documented leachate impacts at Sedimentation Pond A, as further discussed in Section 7 VIII. Sporadic PWQO exceedances of this parameter have been observed in the past. Continued monitoring is required to assess potential concentration trends.

VII) SUPPLEMENTAL STORMWATER SAMPLING

The CofA (Sewage) requires that Pond B be sampled and tested on four occasions, within twenty-four hours of a rainfall event resulting in stormwater discharge from the Pond. In 2021, there was surface water discharge from Pond B on three occasions (March 15, October 4 and November 4) whereby the supplemental stormwater samples were required to be collected, during the period of March 15 and November 30, 2021. As per the CofA, surface water samples were collected from Sedimentation Pond B within twenty-four hours of each discharge event. It is noted that the March 15 and October 4 quarterly sampling events coincided with the March 15 and October 4 discharge events, and, therefore, these samples covered both the quarterly and supplemental requirements.

The PWQOs for unionized ammonia, phenols, phosphorus and iron were exceeded in the quarterly/supplemental sample collected on March 15, 2021, which was attributed to the documented leachate impacts at the ponds in March 2021, as discussed further in the following section. The PWQOs for phenols, phosphorus and iron were exceeded in the quarterly/supplemental sample collected on October 4, 2021 from Station 977. The PWQOs for unionized ammonia, phosphorus and iron were exceeded in the supplemental sample collected on November 4, 2021 from station 977. The supplemental results were typically similar to those observed throughout the remainder of 2021 in Sedimentation Pond B, and were typically lower than, or similar to, the range of results observed at downstream station 979, as well as background station 978.

In summary, with the exception of the March 2021 incident discussed in the following section, surface water quality in the Hooper Drain and in the wet area on the west property boundary was not impacted by surface water runoff from the landfill during 2021.

VIII) SUPPLEMENTAL SAMPLING WITH REGARDS TO IMPACTS TO SED POND A & B

As mentioned above, evidence of landfill leachate impacts to Sedimentation Ponds A and B was identified following review of the March 2021 quarterly surface water results. Based on the surface water results and the County's identification of a leachate seep near Sedimentation Pond A in March 2021, it was inferred that leachate had entered the pond. The leachate impacted water from Sedimentation Pond A had also impacted water quality in Sedimentation Pond B and the surface water discharge from the Site (surface water station 979).

It was recommended that discharge from Sedimentation Pond A (SW1) to Sedimentation Pond B (SW7) be temporarily stopped, to prevent any further landfill impacts downstream, which the County completed immediately. The County also enacted measures to shut off any flow from Sedimentation Pond B to the Hooper Drain.

As part of subsequent supplemental surface water sampling events, samples were collected from surface water monitoring stations SW7 (Sedimentation Pond B) and SW8 (background) in April 2021. These supplemental sampling events revealed that ammonia concentrations were decreasing, to a point wherein calculated un-ionized ammonia concentrations were below the PWQO on April 30, 2021.

On May 3, 2021, the County submitted a proposed Discharge Plan for Sedimentation Pond B, to the Ministry of the Environment, Conservation and Parks (MECP), for their review. The MECP reviewed the Discharge Plan on May 4, 2021 and agreed that the proposed plan would suffice in returning the pond to operating levels.

The discharge of Sedimentation Pond B was completed between May 4 and 14, 2021. Sampling was completed during the discharge event from surface water station SW7, as agreed upon with the MECP. In addition to the sampling plan, occasional visual checks of the downstream Hooper Drain discharge area were also undertaken by the County, during the discharge event. No acute lethality was noted during these visual checks, and the mixing zone downstream of the discharge also appeared to remain small and was not visually affected by the discharge of surface water from Sedimentation Pond B.

Following the October 2021 sampling event, it was noted that surface water quality concentrations at station SW1 (Sedimentation Pond A) were within the historically appropriate concentration range for this station, as well as within the historical background range at surface water station (SW8). The MECP reviewed the submitted October 2021 results and supported the reinstatement of discharge from Sedimentation Pond A to Pond B.

WSP prepared several letters to document the identified leachate impacts at Sedimentation Pond A and subsequent supplemental sampling in 2021. Copies of the letters, as well as email communication between the County and MECP, is attached in Appendix A-2.

8 LEACHATE COLLECTION SYSTEM MONITORING RESULTS

Leachate samples from the LCS manholes were collected on a monthly basis from MH16 or MH1 and analyzed for parameters required by the ECA (Waste). The 2021 leachate chemical results are provided in Table 12. Available historic leachate sampling results since 2007 are presented in Table F-1, Appendix F.

The 2021 chemical results from the leachate collection system typically complied with the County of Oxford Sewer Use By-Law No. 2719-87 guidelines. The exceptions included concentrations of BOD in March, July and October; and chloride in April, July and September.

9 COMBUSTIBLE GAS MONITORING RESULTS

Combustible gas concentrations were measured at gas probes GW3 and GW5 on a weekly to monthly basis in 2021. GW3 and GW5 are located on the north and south sides of Sedimentation Pond A, respectively. On-site structures including the scalehouse, barn shop and storage, Coverall building (heavy equipment shed), household hazardous waste (HHW) building, transfer station building, and the Waste Management and Education Centre were also measured for combustible gas concentrations. Monitoring at the Waste Management and Education Centre began in late June 2018. Monitoring at the former office building (house) was discontinued in August 2018, as the building was demolished.

The following table summarizes the number of measurements, the highest recorded gas measurement, and the number of gas measurements detected in 2021. The combustible gas concentrations were measured as a percent of the lower explosive limit (LEL) for methane, and are presented in the following table. The LEL for methane represents 5% gas by volume in air.

SAMPLING LOCATION	Number of Measurements	Highest Recorded Value (% LEL)	Number of Detections
Coverall Building	40	0	0
Green Barn – Shop	40	0	0
Green Barn – Storage	40	0	0
Scalehouse	40	0	0
HHW Building	40	0	0
Transfer Station Building	40	0	0
GW3 - Parking Lot	39	0	0
GW5 - South of Sedimentation Pond A	40	0	0
Waste Management and Education Centre	40	0	0

Combustible gas was not detected in the scalehouse, barn shop and storage, Coverall building, HHW building, transfer station building, the Waste Management and Education Centre, or gas probes GW3 and GW5 during 2021. Historically, the highest gas concentrations had been observed at GW5.

Historical monitoring results suggest that combustible gas is present in the fill. Typically, combustible gas produced at the landfill migrates vertically upward through cracks in the landfill cover, or laterally to the side slopes. As fill is placed over the refuse area as part of the site re-grading, venting of the gas is restricted and increased lateral migration may occur. Permanent gas monitors/alarms have been installed in all on-site buildings, including the transfer station hut.

Landfill gas related safety procedures are posted in the staff lunchroom and included in employee handbooks. Additionally, a smoking ban was initiated for all on-site buildings with signage posted.

Conditions 5.5 and 5.6 of the Waste ECA specifies that the concentration of methane gas at the property boundary must be less than 2.5% by volume in air (50% LEL), and be less than 1.0% by volume (20% LEL) within habitable enclosed structures on-site, or where there is a potential source of ignition. Should the methane gas concentration exceed either of these trigger levels, the measurement is to be re-taken immediately, and subsequent confirmatory measurements are to be taken daily for a period of up to three (3) days. If gas concentration trigger exceedances are confirmed by the additional measurements, the District Manager is to be immediately notified, and appropriate control measures are to be implemented as soon as possible.

During 2021, neither of the methane gas trigger concentrations previously noted were exceeded. As such, confirmatory gas measurements were not required.

It is understood that the portable gas monitoring instrument used in the combustible gas monitoring program is calibrated every six (6) months. It is recommended that County staff continue with training on the use of the gas monitoring instrument and for the measurement and recording of the combustible gas readings.

10 2022 MONITORING PROGRAM

The annual monitoring program should be continued at the Salford Landfill site, as summarized in Table 13.

11 CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the 2021 monitoring program presented in this report, the following conclusions are provided.

- Site operations during 2021 were similar to previous years. There was little to no change to the site facilities, access, incoming waste controls, and equipment. The labour force was similar to 2020. The total waste quantity received at the Site in 2021 was approximately 86,154 tonnes, of which approximately 36,845 tonnes was diverted from the landfill and sent out for recycling. The remaining site capacity available for landfilling is estimated to be in the order of 2.47 million cubic metres, which represents approximately 29 to 34 years of additional waste capacity. In 2021, landfilling activities continued in Cell 4.
- The overburden groundwater elevations indicate that a mound exists in the northwest fill area. The leachate collection system (LCS) intercepts the radial flow induced by the leachate mound(s) and influences the shallow overburden groundwater flow pattern in the vicinity of the fill areas. Notwithstanding the leachate mounding, groundwater flow in the shallow overburden is influenced by a groundwater divide, and is inferred to flow in a northwesterly to northeasterly direction in the northern portion of the site, and in a south to southwesterly direction in the southern portion of the site.

- The LCS has had an influence on the overburden groundwater elevations at the site, and is inferred to be operating as designed to restrict the outward flow of leachate impacted groundwater in the shallow overburden.
- Leachate influences were not observed in the groundwater quality at the site boundaries. Elevated chloride concentrations were observed in several wells in the Upper Till near the western end of the cut-off wall and near the site access road. The elevated chloride concentrations in these wells may be related to leachate influences or influences from seasonal road salt applications. However, the influences are localized and do not extend to the property boundary.
- Groundwater quality at the property boundary complied with the Guideline B-7 criteria in 2021. Isolated exceedances that were observed were not related to landfill influences. Chloride concentrations at the property boundary wells complied with the specified trigger level (75% of the Guideline B-7 criteria).
- The 2021 groundwater quality in the private domestic wells monitored was generally consistent with historic results. No impairment of water quality attributable to the landfill was observed.
- In March 2021, leachate impacts were identified within the surface water in Sedimentation Pond A, which had subsequently impacted water quality in Sedimentation Pond B and downstream of the Site. The MECP was notified of this incident. All surface water quality returned to historically appropriate concentrations by October 2021. Other than this incident, surface water quality at the site was not measurably affected by the landfill in 2021.
- Combustible gas monitoring was completed at the site on a weekly to monthly basis. Combustible gas was not detected in the scalehouse, barn shop and storage, Coverall building, HHW building, transfer station building, the former office, the Waste Management and Education Centre, or gas probes GW3 and GW5 during 2021. There were no methane gas concentrations that exceeded the trigger levels in property boundary gas probes or habitable enclosed structures on-site, as specified in Condition 5.4 of the Waste ECA.
- Leachate collected in the LCS typically complied with the County of Oxford Sewer Use By-Law guidelines in 2021, with the exception of concentrations of BOD in March, July and October; and chloride in April, July and September.
- During 2021, the site operated in compliance with the requirements of Amended Environmental Compliance Approval (ECA) No. A070808 issued November 7, 2013, and Certificate of Approval (CofA) No. 4504-74CKZ2 for sewage works issued July 3, 2007.

Based on the findings of the 2021 monitoring program, the following recommendations are provided for consideration.

- Monitoring should be continued at the site, as summarized in Section 10.0;
- In the winter months, it is recommended that snow removed from the access road and entrance to the Site be piled in a location away from the adjacent groundwater monitoring wells at the north end of the Site; and
- Staff training on the portable landfill gas instrument should be continued.

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TABLES



Table 1: Monitoring Well Construction Details - Current Monitoring Program

Current Well Designation	Installation Date	Stratigraphic Unit	Ground Surface Elevation ⁽¹⁾ (m ASL)	Measuring Point Elevation (m ASL)	Stickup ⁽¹⁾ (m)	Riser Inside Diameter ⁽¹⁾ (mm)	Screen Length ⁽¹⁾ (m)	Screened Interval ⁽¹⁾		Well Status/ Condition
								(m bgs)	(m ASL)	
051	15-Dec-77	LT	287.14	288.13	0.99	32	0.6	26.7 - 27.3	260.47 - 259.86	✓
052	15-Dec-77	LT	287.14	288.15	1.01	32	0.8	14.6 - 15.4	272.51 - 271.75	✓
053	15-Dec-77	FT	287.14	287.96	0.82	32	4.6	2.4 - 7.0	284.70 - 280.13	✓
061	20-Dec-77	LT	291.45	292.40	0.95	32	0.6	18.3 - 18.9	273.16 - 272.55	✓
063	20-Dec-77	UT	291.50	292.34	0.84	32	4.9	2.1 - 7.0	289.37 - 284.49	✓
071	21-Dec-77	LT	299.90	300.86	0.96	32	0.6	17.2 - 17.8	282.68 - 282.07	✓
102	3-Jan-78	LT	292.32	293.20	0.88	32	6.1	4.0 - 10.1	288.36 - 282.26	✓
121	5-Jan-78	UT	294.17	295.09	0.92	32	6.4	4.0 - 10.4	290.21 - 283.81	✓
131	5-Jan-78	UT	304.33	305.34	1.01	32	6.4	4.0 - 10.4	300.37 - 293.97	✓
161	26-Jul-78	LT	296.55	297.39	0.84	32	0.6	11.3 - 11.9	285.27 - 284.66	✓
162	26-Jul-78	ITS	296.56	297.36	0.80	32	3.0	4.6 - 7.6	291.99 - 288.94	✓
191	28-Sep-83	LT	301.33	303.54	2.21	51	0.6	21.6 - 22.3	279.68 - 279.07	✓
192	28-Sep-83	UT	301.33	303.34	2.01	51	0.6	12.2 - 12.8	289.13 - 288.52	✓
193	28-Sep-83	UT	301.33	303.52	2.19	32	3.0	3.4 - 6.4	297.97 - 294.92	✓
202	20-Oct-83	FT	295.05	295.63	0.58	32	3.0	1.7 - 4.7	293.37 - 290.32	✓
242	26-Oct-83	UT	291.48	291.71	0.23	32	3.2	2.1 - 5.3	289.35 - 286.15	✓
281	7-Oct-83	FT	295.29	297.96	2.67	32	2.3	0.8 - 3.0	294.53 - 292.24	✓
391	6-Oct-83	FT	290.47	291.54	1.07	32	4.0	0.6 - 4.6	289.86 - 285.90	Damaged riser
401	6-Oct-83	UT	289.10	289.96	0.86	32	5.3	1.1 - 6.4	288.04 - 282.70	✓
421	6-Oct-83	UT	294.13	294.72	0.59	32	5.2	1.8 - 7.0	292.30 - 287.12	✓
431	21-Oct-83	UT	295.56	296.02	0.46	32	4.1	2.4 - 6.6	293.13 - 289.01	✓
541	15-Jul-87	FT	295.10	295.57	0.59	51	2.7	3.1 - 5.8	292.05 - 289.31	✓
561	15-Jul-87	ITS	289.60	290.02	0.51	51	2.4	9.2 - 11.6	280.42 - 278.02	✓
562	15-Jul-87	FT	289.50	290.04	0.58	51	2.7	1.8 - 4.6	287.67 - 284.93	✓
571	15-Jul-87	ITS	296.30	296.73	0.52	51	1.4	19.1 - 20.4	277.25 - 275.88	✓
581	13-Jul-87	FT	299.20	299.74	0.61	51	2.7	1.8 - 4.6	297.36 - 294.63	✓
591		ITS	300.02	300.75	0.73	51				✓
98-2	25-May-98	FT	296.83	297.34	0.51	51	3.0	3.7 - 6.7	293.18 - 290.13	✓
98-4	26-May-98	FT	298.91	299.43	0.52	51	1.5	3.1 - 4.6	295.83 - 294.31	✓
98-7	27-May-98	FT	295.98	296.82	0.84	51	1.5	5.2 - 6.7	290.80 - 289.28	✓
98-9	27-May-98	FT	295.59	296.25	0.66	51	1.5	5.2 - 6.7	290.41 - 288.89	✓
98-11	28-May-98	FT	296.72	297.57	0.85	51	3.0	2.2 - 5.2	294.57 - 291.52	✓
98-12	28-May-98	FT	296.59	297.32	0.73	51	1.5	4.6 - 6.1	292.01 - 290.49	✓
98-13	28-May-98	FT	295.76	296.04	0.28	51	3.0	6.2 - 9.2	289.61 - 286.56	✓
98-14	29-May-98	FT	302.38	303.13	0.75	51	3.0	6.1 - 9.1	296.33 - 293.28	✓
00-01	25-May-00	UT	298.92	299.74	0.82	51	3.0	6.9 - 9.9	292.06 - 289.01	✓
00-02	26-May-00	UT	299.00	299.67	0.67	51	1.5	5.5 - 6.7	293.51 - 292.29	✓
00-03	26-May-00	ITS	295.34	296.18	0.84	51	3.0	12.2 - 15.2	283.15 - 280.10	✓

Notes: (1) Data estimated based on borehole log or MOE well record.
 (2) Data based on field measurements during 2010.

Measuring point elevations as of October 1989
 FT - Fractured Till or Glacio-lacustrine Deposits

UT - Upper Till
 ITS - Inter-till Sands
 LT - Lower Till
 B - Bedrock

Table 1: Monitoring Well Construction Details - Current Monitoring Program

Current Well Designation	Installation Date	Stratigraphic Unit	Ground Surface Elevation ⁽¹⁾ (m ASL)	Measuring Point Elevation (m ASL)	Stickup ⁽¹⁾ (m)	Riser Inside Diameter ⁽¹⁾ (mm)	Screen Length ⁽¹⁾ (m)	Screened Interval ⁽¹⁾		Well Status/ Condition
								(m bgs)	(m ASL)	
00-04	25-May-00	UT	299.89	300.67	0.78	51	3.0	6.9 - 9.9	293.03 - 289.98	✓
2P	26-May-00	FT	296.94	297.84	0.90	100	3.0	4.6 - 7.6	292.37 - 289.32	✓
7P	24-May-00	FT	296.03	296.89	0.86	100	1.5	4.6 - 6.1	291.46 - 289.93	✓
10P	23-May-00	FT	295.54	296.49	0.97	100	1.5	4.9 - 6.4	290.66 - 289.14	✓
2obs	29-May-00	FT	296.94	297.78	0.87	51	3.0	4.6 - 7.6	292.37 - 289.32	✓
7obs	23-May-00	FT	295.60	296.76	1.24	51	1.5	5.2 - 6.7	290.42 - 288.89	✓
999	22-May-91	B	300.64	300.93	0.30	127	25.0	65.5 - 90.5	235.14 - 210.11	✓
012R	18-Mar-03	ITS	298.50	299.29	0.76	51	1.5	15.2 - 16.8	283.26 - 281.74	✓
013R	18-Mar-03	UT	298.70	299.41	0.72	51	1.5	7.0 - 8.5	291.69 - 290.17	✓
551R	19-Mar-03	ITS	296.70	297.53	0.86	51	1.5	13.7 - 15.2	282.98 - 281.46	✓
03-3	11-Sep-03	UT	297.00	297.88	0.84	51	1.5	3.7 - 5.2	293.34 - 291.82	✓
03-4	11-Sep-03	UT	297.30	298.21	0.89	51	3.0	3.4 - 6.4	293.95 - 290.90	✓
03-5	11-Sep-03	UT	297.30	298.14	0.86	51	3.0	3.0 - 6.1	294.25 - 291.20	✓
03-6	12-Sep-03	UT	297.50	298.37	0.87	51	3.0	4.6 - 7.6	292.93 - 289.88	✓
03-7d	12-Sep-03	UT	297.37	298.32	0.68	51	1.5	6.7 - 8.2	290.70 - 289.18	✓
03-8	15-Sep-03	R	311.37	312.16	0.77	51	4.6	7.8 - 12.4	303.59 - 299.02	✓
141R	23-Aug-04	FT	297.42	297.43	0.66	51	3.0	4.4 - 7.5	293.00 - 289.95	✓
022R	26-Aug-04	LT	305.34	305.34	0.69	51	1.5	20.1 - 21.6	285.22 - 283.70	✓
023R	25-Aug-04	UT	305.87	305.37	0.81	51	3.0	2.9 - 5.9	302.97 - 299.93	✓
531R	25-Aug-04	FT	298.81	298.81	0.69	51	3.0	2.4 - 5.5	296.37 - 293.32	✓
381R	25-Aug-04	UT	297.29	297.29	0.74	51	3.0	2.1 - 5.2	295.16 - 292.11	✓
101R	25-Aug-04	LT	292.83	292.83	0.76	51	1.5	15.2 - 16.8	277.59 - 276.07	✓
231R	26-Aug-05	LT	295.89	296.83	0.94	51	1.7	18.1 - 19.7	277.82 - 276.15	✓
232R	23-Aug-05	UT	295.90	296.73	0.83	51	1.5	7.4 - 9.0	288.45 - 286.91	✓
233R	23-Aug-05	FT	296.00	296.77	0.77	51	3.0	1.8 - 4.9	294.17 - 291.12	✓
261R	23-Aug-05	LT	292.80	293.64	0.84	51	1.5	13.4 - 14.9	279.39 - 277.86	✓
262R	23-Aug-05	UT	292.65	293.54	0.89	51	1.5	7.6 - 9.1	285.03 - 283.51	✓
263R	23-Aug-05	FT	292.58	293.32	0.74	51	3.0	3.0 - 6.1	289.53 - 286.48	✓
05-01	26-Aug-05	UT	299.26	300.16	0.90	51	3.0	2.9 - 5.9	296.36 - 293.32	✓
592	12-Sep-14	FT	297.56	298.76	1.20	51	3.2	1.4 - 4.6	296.14 - 292.94	✓
593	12-Sep-14	UT	297.50	298.69	1.19	51	3.2	7.3 - 10.5	290.18 - 286.98	✓
594	11-Sep-14	ITS	297.34	298.53	1.19	51	1.7	13.4 - 15.1	283.90 - 282.25	✓
595	15-Sep-14	LT	295.38	296.51	1.14	51	3.2	10.4 - 13.6	285.02 - 281.82	✓
111R	5-Jul-17	FT	298.62	299.35	0.73	51	4.6	4.5 - 9.1	294.12 - 289.48	✓
552RA	24-Jul-18	FT	297.53	298.34	0.76	51	1.7	4.4 - 6.1	293.11 - 291.43	✓
998R	15-Jun-20	ITS	298.70	299.46	0.75	51	1.7	18.7 - 20.4	279.96 - 278.28	✓
03-7SR	16-Jun-20	FT	296.38	297.20	0.82	51	1.7	1.8 - 3.5	294.55 - 292.88	✓

Notes: - (1) Data estimated based on borehole log or MOE well record. - Measuring point elevations as of October 1989 - UT - Upper Till - LT - Lower Till
 - (2) Data based on field measurements during 2010. - FT - Fractured Till or Glacio-lacustrine Deposits - ITS - Inter-till Sands - B - Bedrock

Table 2: 2021 Groundwater Level Elevations

Well No.	Unit	Current Elevation		13-May-21		04-Oct-21	
		Top of Pipe	Ground	mBTOP	mASL	mbTOP	mASL
051	LT	288.13	287.14	6.91	281.22	7.25	280.88
052	LT	288.15	287.14	5.33	282.82	5.08	283.07
053	FT	287.96	287.14	1.88	286.08	2.75	285.21
061	LT	292.40	291.45	3.96	288.44	5.31	287.09
063	UT	292.34	291.50	2.53	289.81	5.12	287.22
071	LT	300.86	299.90	10.01	290.85	10.93	289.93
102	LT	293.20	292.32	1.98	291.22	3.68	289.52
121	UT	295.09	294.17	3.34	291.75	7.69	287.40
131	UT	305.34	304.33	2.63	302.71	2.74	302.60
161	LT	297.39	296.55	6.29	291.10	7.37	290.02
162	ITS	297.36	296.56	2.93	294.43	5.25	292.11
191	LT	303.54	301.33	12.70	290.84	12.93	290.61
192	UT	303.34	301.33	9.31	294.03	9.81	293.53
193	UT	303.52	301.33	2.26	301.26	1.63	301.89
202	FT	295.63	295.05	1.67	293.96	2.11	293.52
242	UT	291.71	291.48	1.05	290.66	2.32	289.39
281	FT	297.96	295.29	3.10	294.86	3.06	294.90
391	FT	291.54	290.47				
401	UT	289.96	289.10	2.54	287.42	5.41	284.55
421	UT	294.72	294.13	1.85	292.87	4.95	289.77
431	UT	296.02	295.56	1.74	294.28	4.11	291.91
541	FT	295.57	295.10	2.00	293.57	0.94	294.63
561	ITS	290.02	289.60	2.55	287.47	2.61	287.41
562	FT	290.04	289.50	2.34	287.70	2.89	287.15
571	ITS	296.73	296.30	6.00	290.73	6.24	290.49
581	FT	299.74	299.20	1.53	298.21	1.44	298.30
591	ITS	300.75	300.02	7.93	292.82	8.24	292.51
98-2	FT	297.34	296.83	0.99	296.35	1.70	295.64
98-4	FT	299.43	298.91	2.08	297.35	2.71	296.72
98-7	FT	296.82	295.98	1.79	295.03	2.20	294.62
98-9	FT	296.25	295.59	1.78	294.47	1.97	294.28
98-11	FT	297.57	296.72	2.11	295.46	2.61	294.96
98-12	FT	297.32	296.59	2.21	295.11	2.68	294.64
98-13	FT	296.04	295.76	1.68	294.36	1.72	294.32
98-14	FT	303.13	302.38	5.35	297.78	6.35	296.78
00-01	UT	299.74	298.92	3.88	295.86	3.96	295.78
00-02	UT	299.67	299.00	3.79	295.88	3.41	296.26
00-03	ITS	296.18	295.34	1.56	294.62	1.66	294.52
00-04	UT	300.67	299.89	4.75	295.92	4.40	296.27
2P	FT	297.84	296.94	2.76	295.08	2.30	295.54
7P	FT	296.89	296.03	2.36	294.53	2.12	294.77
10P	FT	296.49	295.54	2.07	294.42	1.82	294.67
2obs	FT	297.78	296.94	2.58	295.20	2.63	295.15
7obs	FT	296.76	295.60	2.12	294.64	1.30	295.46
999	B	300.93	-	-	-	-	-
012R	ITS	299.29	298.50	4.46	294.83	5.51	293.78
013R	UT	299.41	298.70	4.12	295.29	4.50	294.91
551R	ITS	297.53	296.70	2.77	294.76	2.87	294.66

Notes:

- mBTOP - metres below top of pipe
- mASL - metres above sea level
- FT - Fractured Till or Glacio-lacustrine Deposits
- UT - Upper Till
- ITS - Inter-till Sands
- LT - Lower Till
- B - Bedrock
- R - Refuse

Table 2: 2021 Groundwater Level Elevations

Well No.	Unit	Current Elevation		13-May-21		04-Oct-21	
		Top of Pipe	Ground	mBTOP	mASL	mbTOP	mASL
03-3	UT	297.88	297.00	2.28	295.60	2.84	295.04
03-4	UT	298.21	297.30	2.53	295.68	3.20	295.01
03-5	UT	298.14	297.30	1.79	296.35	3.31	294.83
03-6	UT	298.37	297.50	2.58	295.79	3.22	295.15
03-7D	UT	298.32	297.37	2.27	296.37	2.06	296.26
03-8	R	312.16	311.37	6.05	306.11	6.20	305.96
141R	FT	297.43	297.42	0.99	296.44	1.16	296.27
022R	LT	305.34	305.34	11.87	293.47	12.00	293.34
023R	UT	305.37	305.87	4.89	300.48	4.12	301.25
531R	FT	298.81	298.81	1.36	297.45	0.94	297.87
381R	UT	297.29	297.29	1.14	296.15	0.80	296.49
101R	LT	292.83	292.83	2.89	289.94	3.10	289.73
231R	LT	296.83	295.89	6.96	289.87	7.15	289.68
232R	UT	296.73	295.90	3.87	292.86	4.04	292.69
233R	FT	296.77	296.00	1.14	295.63	0.50	296.27
261R	LT	293.64	292.80	6.91	286.73	6.92	286.72
262R	UT	293.54	292.65	5.17	288.37	5.65	287.89
263R	FT	293.32	292.58	3.07	290.25	4.27	289.05
05-01	UT	300.16	299.26	3.31	296.85	3.08	297.08
592	FT	298.76	297.56	1.94	296.82	1.24	297.52
593	UT	298.69	297.50	6.45	292.24	6.54	292.15
594	ITS	298.53	297.34	9.50	289.03	9.74	288.79
595	LT	296.51	295.38	2.17	294.34	2.41	294.10
111R	FT	299.35	298.62	1.43	297.92	1.43	297.92
552RA	FT	298.34	297.53	3.29	295.05	3.07	295.27
998R	ITS	299.46	298.70	5.58	293.88	5.71	293.75
03-7SR	FT	297.20	296.38	1.28	295.92	0.78	296.42

Notes:

- mBTOP - metres below top of pipe
- mASL - metres above sea level
- FT - Fractured Till or Glacio-lacustrine Deposits
- UT - Upper Till
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- LT - Lower Till
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Table 3: 2021 Leachate Level Elevations

Manhole / Well No.	1	7	8	12	16	17	03-8
Measuring Point Elevation	301.42	299.53	308.39	312.03	297.86	302.20	312.16
Jan-21	298.43	sealed	sealed	sealed	294.77	sealed	306.41
Feb-21	296.47	sealed	sealed	sealed	292.78	sealed	306.25
Mar-21	297.30	sealed	sealed	sealed	293.89	sealed	306.41
Apr-21	297.50	sealed	sealed	sealed	292.38	sealed	306.39
May-21	295.58	sealed	sealed	sealed	292.57	sealed	306.32
Jun-21	292.42	sealed	sealed	sealed	290.51	sealed	305.28
Jul-21	296.99	sealed	sealed	sealed	293.84	sealed	306.60
Aug-21	296.99	sealed	sealed	sealed	293.84	sealed	306.60
Sep-21	296.99	sealed	sealed	sealed	293.84	sealed	306.60
Oct-21	297.81	sealed	sealed	sealed	293.10	sealed	306.36
Nov-21	298.07	sealed	sealed	sealed	292.62	sealed	306.45
Dec-21	297.26	sealed	sealed	sealed	294.52	sealed	306.46

Notes: · All elevations in metres above sea level
 · Blank indicates data not available

Table 4: 2021 Groundwater Chemical Results

Monitor	Date	Unit	pH	Field		pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L
				6.5 - 8.5 OG	NC								
ODWQS													
Guideline B-7													
98-7	May-21	FT	7.71	680	11.0								
98-11	May-21	FT	6.76	1820	10.3								
98-12	May-21	FT	7.75	780	12.5								
98-13	May-21	FT	6.68	1166	13.6								
03-7SR	May-21	FT	7.18	905	8.6	8.07	903	2122	<3	361	331	331	<2
	Oct-21	FT	7.51	960	15.2	8.13	1030	3700	3	233	367	367	<2
111R	May-21	FT	8.10	394	10.2	8.21	363	272	9	114	135	135	<2
	Oct-21	FT	8.46	380	12.7	8.21	383	3310	6	132	107	107	<2
141R	May-21	FT	6.75	1873	10.2	7.48	2050	68.8	8	1170	614	614	<2
	Oct-21	FT	7.11	1640	11.9	8.26	1120	381	5	464	233	142	<2
233R	May-21	FT	6.95	1418	8.9	7.88	1440	725	<3	765	479	479	<2
	Oct-21	FT	7.20	1450	13.2	7.57	1500	615	3	1050	585	585	<2
263R	May-21	FT	7.50	660	9.0	8.26	688	74.9	<3	299	281	281	<2
	Oct-21	FT	7.83	601	12.4	8.10	625	49.8	3	333	287	287	<2
531R	May-21	FT	7.31	710	8.9	8.32	692	42.6	<3	263	308	304	4
	Oct-21	FT	7.66	670	12.9	8.01	802	14.7	6	322	297	193	<2
541	May-21	FT	7.58	637	11.7	8.11	626	55.1	<3	293	273	273	<2
	Oct-21	FT	7.94	630	13.6	8.09	647	48.8	<3	398	289	289	<2
552RA	May-21	FT	7.56	748	10.0	8.11	701	22.1	<3	373	245	245	<2
	Oct-21	FT	7.74	730	12.8	8.19	778	1250	<3	274	264	264	<2
562	May-21	FT	7.27	621	8.8	8.19	640	189	<3	262	258	258	<2
	Oct-21	FT	7.77	630	13.8	8.06	658	97.2	4	379	315	315	<2
581	May-21	FT	7.70	569	10.0	8.16	582	141	<3	250	243	243	<2
	Oct-21	FT	7.91	600	14.1	8.16	611	77.5	<3	359	296	296	<2
592	May-21	FT	7.18	618	10.1	8.12	615	694	<3	271	301	301	<2
	Oct-21	FT	7.85	650	15.0	7.97	654	75.9	3	398	377	377	<2
00-01	May-21	UT	7.72	750	12.1								
00-02	May-21	UT	7.24	849	11.2								
00-04	May-21	UT	7.65	755	11.4	8.23	691	80.7	5	312	262	262	<2
	Oct-21	UT	7.86	680	13.0	8.04	684	118	<3	385	302	302	<2
013R	May-21	UT	7.74	525	10.7								
023R	May-21	UT	7.46	1279	11.9	8.15	1360	52.3	<3	698	344	344	<2
	Oct-21	UT	7.59	1280	11.3	7.95	1390	10.4	3	797	373	373	<2
03-3	May-21	UT	7.10	1560	9.8	7.89	1420	15.4	10	527	412	412	<2
03-4	May-21	UT	7.30	1487	9.8	7.93	1400	4.32	<3	592	325	325	<2
03-5	May-21	UT	7.15	1496	10.5	7.87	1350	70.7	7	629	462	462	<2
03-6	May-21	UT	7.54	812	10.8								
03-7d	May-21	UT	8.00	425	11.0	8.13	440	7.39	4	122	118	118	<2
	Oct-21	UT	8.15	410	14.1	7.91	427	5.19	5	147	113	113	<2
05-01	May-21	UT	7.61	520	11.9	8.38	552	177	<3	243	241	235	7
	Oct-21	UT	7.91	530	12.5	8.29	566	133	6	221	255	255	<2

Notes: · ODWQS - Ontario Drinking Water Quality Standard (June 2003) · AO - Aesthetic Objective
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 · IMAC - Interim Maximum Acceptable Concentration · Bold/shading indicates concentration exceeds Ontario Drinking Water Quality Standard.



Table 4: 2021 Groundwater Chemical Results

Monitor	Date	Unit	Sulphate mg/L	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Phenols mg/L	DOC mg/L
			500		250	1.5			200	10	1		5
			AO	NC	AO	MAC	NC	NC	AO	MAC	MAC	NC	AO
		Guideline B-7	291		127				112	2.68	0.26		3.68
98-7	May-21	FT			38								
98-11	May-21	FT			220								
98-12	May-21	FT			120								
98-13	May-21	FT			76								
03-7SR	May-21	FT	51	98.2	57	<0.06	14.7	28.1	24.1	4.02	<0.03	<0.002	3.2
	Oct-21	FT	43	45.2	77	0.06	18.9	29.2	34.7	6.30	<0.03	<0.002	2.0
111R	May-21	FT	76	28.7	5	1.29	0.993	10.2	41.7	0.08	<0.03	<0.002	3.4
	Oct-21	FT	73	36.1	6	1.29	1.15	10.3	42.4	<0.06	<0.03	<0.002	1.0
141R	May-21	FT	610	331	8	0.29	1.71	83.0	25.3	0.24	0.53	<0.002	1.9
	Oct-21	FT	350	69.5	7	0.27	1.70	70.5	26.5	<0.06	<0.03	<0.002	4.0
233R	May-21	FT	430	201	5	<0.06	1.61	64.2	9.25	<0.06	<0.03	<0.002	3.3
	Oct-21	FT	450	305	6	<0.06	2.37	70.1	12.1	<0.06	<0.03	<0.002	2.5
263R	May-21	FT	92	66.0	4	0.33	1.85	32.7	23.8	0.16	<0.03	<0.002	1.6
	Oct-21	FT	70	79.4	5	0.34	2.61	32.7	23.8	0.32	<0.03	<0.002	3.1
531R	May-21	FT	69	56.6	5	0.31	1.65	29.5	31.5	0.08	<0.03	<0.002	1.9
	Oct-21	FT	71	70.0	7	0.35	2.11	35.9	31.8	0.07	<0.03	<0.002	1.1
541	May-21	FT	67	67.2	3	0.38	1.41	30.5	16.1	<0.06	<0.03	<0.002	1.8
	Oct-21	FT	61	102	4	0.42	1.80	34.7	17.9	<0.06	<0.03	<0.002	1.0
552RA	May-21	FT	54	97.8	65	0.50	1.26	31.3	19.1	0.06	<0.03	<0.002	5.6
	Oct-21	FT	49	59.8	69	0.50	1.60	30.3	19.9	<0.06	<0.03	<0.002	<1.0
562	May-21	FT	76	60.9	9	0.58	0.898	26.7	17.5	0.09	<0.03	<0.002	1.9
	Oct-21	FT	67	97.6	9	0.60	1.52	32.9	18.5	<0.06	<0.03	<0.002	5.1
581	May-21	FT	49	52.1	6	0.44	1.08	29.1	9.19	5.89	<0.03	<0.002	1.8
	Oct-21	FT	39	90.8	9	0.41	1.67	32.2	10.5	4.88	<0.03	<0.002	2.5
592	May-21	FT	44	66.0	3	0.11	1.24	25.7	6.30	0.06	<0.03	<0.002	2.9
	Oct-21	FT	44	112	3	0.06	1.94	28.9	11.4	<0.06	<0.03	<0.002	4.3
00-01	May-21	UT			73								
00-02	May-21	UT			60								
00-04	May-21	UT	57	65.4	52	0.66	2.08	36.2	41.6	<0.06	<0.03	<0.002	1.8
	Oct-21	UT	49	87.1	51	0.69	2.27	40.6	40.0	<0.06	<0.03	<0.002	1.0
013R	May-21	UT			11								
023R	May-21	UT	450	129	25	0.31	2.68	91.2	28.2	<0.06	<0.03	0.0020	2.7
	Oct-21	UT	420	163	26	0.32	2.91	94.6	30.0	<0.06	<0.03	<0.002	1.7
03-3	May-21	UT	63	157	270	0.08	6.74	32.7	121	0.91	<0.03	<0.002	4.5
03-4	May-21	UT	50	156	320	0.31	2.96	49.1	100	0.30	<0.03	<0.002	2.9
03-5	May-21	UT	190	143	180	0.23	2.62	66.0	84.8	<0.06	<0.03	<0.002	6.9
03-6	May-21	UT			71								
03-7d	May-21	UT	81	31.3	15	1.07	0.968	10.8	39.4	0.11	<0.03	<0.002	2.0
	Oct-21	UT	75	39.6	17	1.13	1.11	11.6	41.6	0.15	<0.03	<0.002	2.6
05-01	May-21	UT	47	44.9	12	0.72	1.61	31.7	26.7	<0.06	<0.03	<0.002	1.4
	Oct-21	UT	44	32.5	13	0.73	2.02	33.9	28.2	<0.06	<0.03	<0.002	<1.0

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Table 4: 2021 Groundwater Chemical Results

Monitor	Date	Unit	pH	Cond.	Temp.	pH	Conductivity	Turbidity	Colour	Hardness	Alkalinity	Bicarbonate	Carbonate
			6.5 - 8.5	Field	NC	NC	6.5 - 8.5	µS/cm	5	TCU	mg/L	mg/L	mg/L
ODWQS			6.5 - 8.5			6.5 - 8.5		5	5	80 - 100	30 - 500		
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC
											392		
232R	May-21	UT	7.71	499	10.3	8.30	522	17.1	3	196	221	221	<2
	Oct-21	UT	7.91	490	12.1	8.26	504	11.1	<3	235	224	224	<2
381R	May-21	UT	6.70	837	9.8	8.25	866	599	<3	367	395	395	<2
	Oct-21	UT	6.64	840	14.0	7.87	848	316	4	499	426	426	<2
593	May-21	UT	7.69	538	11.4	8.33	562	245	<3	230	227	224	3
	Oct-21	UT	8.12	520	10.8	8.25	537	455	5	283	264	264	<2
551R	May-21	ITS	7.68	520	11.1	8.20	485	14.0	<3	279	228	228	<2
	Oct-21	ITS	7.78	480	11.5	8.22	521	48.8	4	218	234	234	<2
561	May-21	ITS	7.76	396	9.6	8.26	400	1006	<3	179	204	204	<2
	Oct-21	ITS	8.00	370	10.4	8.24	380	2530	5	218	326	326	<2
571	May-21	ITS	7.74	431	11.6	8.22	440	38.7	<3	194	219	219	<2
	Oct-21	ITS	7.92	420	10.2	8.21	425	32.3	<3	242	234	234	<2
591	May-21	ITS	8.02	664	12.7	7.81	679	93.1	<3	113	58	58	<2
	Oct-21	ITS	8.50	640	12.4	8.00	676	145	<3	154	69	69	<2
594	May-21	ITS	7.76	376	12.7	8.25	366	222	3	85.4	168	168	<2
	Oct-21	ITS	8.30	350	11.5	8.33	354	207	10	103	195	192	3
998R	May-21	ITS	7.72	458	12.2	8.33	482	>4000	<3	185	198	196	2
	Oct-21	ITS	8.10	420	11.0	8.41	446	>4000	5	202	209	203	6
00-03	May-21	ITS	7.70	505	10.7	8.21	484	52.9	<3	268	226	226	<2
	Oct-21	ITS	7.97	490	10.9	8.29	499	119	3	221	227	227	<2
012R	May-21	ITS	7.50	528	11.2								
022R	May-21	LT	7.68	380	11.2	8.20	372	1053	9	154	160	160	<2
	Oct-21	LT	7.75	580	11.1	8.08	611	2240	22	323	276	276	<2
101R	May-21	LT	7.82	421	10.9	8.28	433	305	<3	195	216	216	<2
	Oct-21	LT	7.99	410	10.9	8.18	417	126	4	238	233	233	<2
191	May-21	LT	7.89	580	12.3	8.31	581	144	<3	265	216	216	<2
	Oct-21	LT	8.11	490	11.4	8.48	500	79.1	<3	245	211	197	14
231R	May-21	LT	8.03	332	10.5	8.22	340	>4000	6	104	159	159	<2
	Oct-21	LT	7.95	320	11.0	8.35	326	>4000	14	142	315	313	2
595	May-21	LT	8.04	587	11.2	7.89	611	36.3	<3	151	95	95	<2
	Oct-21	LT	8.24	580	12.3	7.94	609	43.8	4	189	97	97	<2
999	May-21	B	7.87	406	20.5	8.18	363	0.16	7	129	168	168	<2
	Oct-21	B	7.85	420	20.8	8.17	427	0.22	5	163	195	195	<2
03-08	May-21	R	6.85	8760	16.5	8.12	8740	126	430	950	3450	3450	<2
	Oct-21	R	7.39	5250	17.4	7.86	4790	52.6	220	687	1840	1840	<2

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Table 4: 2021 Groundwater Chemical Results

Monitor	Date	Unit	Sulphate mg/L	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Phenols mg/L	DOC mg/L
		ODWQS	500		250	1.5			200	10	1		5
		Guideline B-7	AO	NC	AO	MAC	NC	NC	AO	MAC	MAC	NC	AO
			291		127				112	2.68	0.26		3.68
232R	May-21	UT	48	35.0	10	0.91	1.28	26.4	34.1	0.13	<0.03	<0.002	1.7
	Oct-21	UT	50	47.9	11	1.01	1.71	28.2	39.7	0.15	<0.03	0.003	3.3
381R	May-21	UT	88	70.7	7	0.31	2.00	46.4	22.1	<0.06	<0.03	<0.002	2.2
	Oct-21	UT	82	116	8	0.31	2.78	51.0	25.7	<0.06	<0.03	<0.002	6.7
593	May-21	UT	68	43.9	6	0.57	1.51	29.1	28.7	0.13	<0.03	<0.002	2.0
	Oct-21	UT	68	59.8	7	0.57	1.86	32.5	31.9	0.10	<0.03	<0.002	1.7
551R	May-21	ITS	44	63.6	9	0.84	1.18	29.2	12.8	<0.06	<0.03	<0.002	1.7
	Oct-21	ITS	42	38.7	10	0.85	1.44	29.6	13.7	<0.06	<0.03	<0.002	1.5
561	May-21	ITS	11	35.1	<1	1.10	1.13	22.3	13.2	0.07	0.05	<0.002	2.1
	Oct-21	ITS	10	46.9	1	1.07	1.58	24.5	14.9	<0.06	<0.03	<0.002	1.8
571	May-21	ITS	17	41.9	2	0.95	1.06	21.7	10.8	0.06	<0.03	<0.002	1.4
	Oct-21	ITS	17	56.5	2	0.94	1.40	24.5	12.5	<0.06	<0.03	<0.002	1.5
591	May-21	ITS	280	23.7	7	0.98	0.945	13.0	89.7	0.30	<0.03	<0.002	1.6
	Oct-21	ITS	260	37.7	8	1.11	1.25	14.4	98.6	<0.06	<0.03	<0.002	1.3
594	May-21	ITS	22	17.2	1	1.50	1.24	10.3	44.2	0.36	<0.03	<0.002	2.0
	Oct-21	ITS	19	23.5	4	1.57	1.49	10.8	48.4	0.17	<0.03	<0.002	3.3
998R	May-21	ITS	57	38.6	11	1.05	2.69	21.7	28.4	<0.06	<0.03	<0.002	2.6
	Oct-21	ITS	48	41.8	6	1.05	3.04	23.7	25.4	<0.06	<0.03	<0.002	1.3
00-03	May-21	ITS	44	60.1	9	0.82	1.19	28.6	13.6	<0.06	<0.03	<0.002	1.8
	Oct-21	ITS	43	38.9	10	0.82	1.48	30.1	14.9	<0.06	<0.03	<0.002	<1.0
012R	May-21	ITS			13								
022R	May-21	LT	19	41.5	8	0.61	0.983	12.2	15.1	2.44	<0.03	<0.002	3.9
	Oct-21	LT	52	85.1	6	0.32	1.97	26.9	7.94	1.47	0.08	<0.002	9.0
101R	May-21	LT	17	41.0	2	0.91	1.14	22.6	12.6	0.13	<0.03	<0.002	1.6
	Oct-21	LT	16	54.6	2	0.96	1.50	24.7	15.0	<0.06	<0.03	<0.002	2.9
191	May-21	LT	85	50.2	7	0.82	1.78	33.9	19.0	2.08	<0.03	<0.002	1.9
	Oct-21	LT	59	45.3	4	0.94	1.98	32.0	23.8	0.83	<0.03	<0.002	1.0
231R	May-21	LT	23	21.9	2	1.72	1.06	12.1	33.8	<0.06	<0.03	<0.002	1.6
	Oct-21	LT	24	36.4	4	1.71	1.59	12.4	36.4	<0.06	<0.03	<0.002	2.4
595	May-21	LT	210	40.2	3	1.19	1.17	12.3	69.1	0.52	<0.03	<0.002	1.6
	Oct-21	LT	200	53.0	2	1.18	1.37	13.7	73.6	0.25	<0.03	<0.002	1.1
999	May-21	B	21	28.5	3	2.05	1.76	14.2	34.4	0.12	<0.03	<0.002	2.3
	Oct-21	B	26	35.7	5	1.82	1.23	17.9	31.8	<0.06	<0.03	<0.002	1.6
03-08	May-21	R	<2	104	940	0.77	396	168	574	<0.06	<0.3	0.031	243
	Oct-21	R	28	115	480	0.56	242	97.3	335	<0.06	<0.3	0.009	117

Notes: · ODWQS - Ontario Drinking Water Quality Standard (June 2003) · AO - Aesthetic Objective
 · NC - No criteria · OG - Operational Guideline
 · MAC - Maximum Acceptable Concentration · * - result interpreted with caution or considered questionable
 · IMAC - Interim Maximum Acceptable Concentration · Bold/shading indicates concentration exceeds Ontario Drinking Water Quality Standard

Table 5: 2021 Groundwater Duplicate Results

Parameter	Unit	MDL	13-May-21			MDL	14-May-21			MDL	14-May-21			MDL	17-May-21		
			561	14	RPD (%)		191	15	RPD (%)		023R	16	RPD (%)		013R	CL-DUP	RPD (%)
pH	NA	0.05	8.26	8.29	0	0.05	8.31	8.33	0	0.05	8.15	8.13	0	-	-	-	-
Conductivity	µS/cm	2	400	390	3	2	581	582	0	2	1360	1320	3	-	-	-	-
Turbidity	NTU	0.10	1006	1053	5	0.10	144	131	9	0.10	52.3	55.3	6	-	-	-	-
Colour	TCU	3	<3	<3	<2xMDL	3	<3	<3	<2xMDL	3	<3	<3	<2xMDL	-	-	-	-
Hardness	mg/L	0.05	179	167	7	0.05	265	250	6	0.05	698	692	1	-	-	-	-
Alkalinity	mg/L	2	204	202	1	2	216	217	0	2	344	326	5	-	-	-	-
Bicarbonate	mg/L	2	204	202	1	2	216	214	1	2	344	326	5	-	-	-	-
Carbonate	mg/L	2	<2	<2	<2xMDL	2	<2	3	<2xMDL	2	<2	<2	<2xMDL	-	-	-	-
Sulphate	mg/L	2	11	11	0	2	85	85	0	2	450	460	2	-	-	-	-
Calcium	mg/L	0.01	35.1	32.9	6	0.01	50.2	48.7	3	0.01	129	128	1	-	-	-	-
Chloride	mg/L	1	<1	<1	<2xMDL	1	7	6	15	1	25	25	0	1	11	11	0
Fluoride	mg/L	0.06	1.10	1.08	2	0.06	0.82	0.77	6	0.06	0.31	0.29	7	-	-	-	-
Potassium	mg/L	0.009	1.13	1.05	7	0.009	1.78	1.66	7	0.009	2.68	2.79	4	-	-	-	-
Magnesium	mg/L	0.001	22.3	20.7	7	0.001	33.9	31.1	9	0.001	91.2	90.6	1	-	-	-	-
Sodium	mg/L	0.01	13.2	12.2	8	0.01	19.0	18.0	5	0.01	28.2	28.4	1	-	-	-	-
Nitrate	mg/L	0.06	0.07	0.44	145	0.06	2.08	2.07	0	0.06	<0.06	<0.06	<2xMDL	-	-	-	-
Nitrite	mg/L	0.03	0.05	0.06	18	0.03	<0.03	<0.03	<2xMDL	0.03	<0.03	<0.03	<2xMDL	-	-	-	-
Phenols	mg/L	0.002	<0.002	<0.002	<2xMDL	0.002	<0.002	<0.002	<2xMDL	0.002	0.002	<0.002	<2xMDL	-	-	-	-
DOC	mg/L	1.0	2.1	1.8	15	1.0	1.9	2.4	<2xMDL	1.0	2.7	3.0	11	-	-	-	-

Notes:

- mg/L - milligrams per litre
- µS/cm - microSiemens per centimetre
- NTU - nephelometric turbidity units
- TCU - true colour units
- MDL - Method Detection Limit
- RPD - Relative Percent Difference
- for values >5xMDL, RPDs of >20% are bold and shaded
- for values <5xMDL, RPDs of >2xMDL are bold and shaded

Table 5: 2021 Groundwater Duplicate Results

Parameter	Unit	MDL	04-Oct-21			MDL	04-Oct-21			MDL	05-Oct-21		
			233R	755	RPD (%)		593	776	RPD (%)		023R	777	RPD (%)
pH	NA	0.05	7.57	7.52	1	0.05	8.25	8.22	0	0.05	7.95	8.04	1
Conductivity	µS/cm	2	1500	1520	1	2	537	538	0	2	1390	1360	2
Turbidity	NTU	0.1	615	698	13	0.1	455	406	11	0.1	10.4	10.3	1
Colour	TCU	3	3	6	<2xMDL	3	5	5	0	3	3	<3	<2xMDL
Hardness	mg/L	0.05	1050	918	13	0.05	283	461	48	0.05	797	752	6
Alkalinity	mg/L	2	585	630	7	2	264	268	2	2	373	366	2
Bicarbonate	mg/L	2	585	630	7	2	264	268	2	2	373	366	2
Carbonate	mg/L	2	<2	<2	<2xMDL	2	<2	<2	<2xMDL	2	<2	<2	<2xMDL
Sulphate	mg/L	2	450	430	5	2	68	69	1	2	420	430	2
Calcium	mg/L	0.01	305	259	16	0.01	59.8	115	63	0.01	163	153	6
Chloride	mg/L	1	6	5	18	1	7	6	15	1	26	26	0
Fluoride	mg/L	0.06	<0.06	<0.06	<2xMDL	0.06	0.57	0.57	0	0.06	0.32	0.31	3
Potassium	mg/L	0.009	2.37	1.91	21	0.009	1.86	5.61	100	0.009	2.91	2.84	2
Magnesium	mg/L	0.001	70.1	65.8	6	0.001	32.5	42.3	26	0.001	94.6	89.7	5
Sodium	mg/L	0.01	12.1	10.1	18	0.01	31.9	32.2	1	0.01	30.0	29.1	3
Nitrate	mg/L	0.06	<0.06	<0.06	<2xMDL	0.06	0.10	0.10	0	0.06	<0.06	<0.06	<2xMDL
Nitrite	mg/L	0.03	<0.03	<0.03	<2xMDL	0.03	<0.03	<0.03	<2xMDL	0.03	<0.03	<0.03	<2xMDL
Phenols	mg/L	0.002	<0.002	<0.002	<2xMDL	0.002	<0.002	<0.002	<2xMDL	0.002	<0.002	<0.002	<2xMDL
DOC	mg/L	1.0	2.5	3.0	18	1.0	1.7	1.0	<2MDL	1.0	1.7	1.7	0

Notes:

- mg/L - milligrams per litre
- µS/cm - microSiemens per centimetre
- NTU - nephelometric turbidity units
- TCU - true colour units
- MDL - Method Detection Limit
- RPD - Relative Percent Difference
- for values >5xMDL, RPDs of >20% are bold and shaded
- for values <5xMDL, RPDs of >2xMDL are bold and shaded

Table 6: 2021 Leachate Quality Summary

Parameter	Ontario Drinking Water Quality Standards	Leachate Concentrations (Well 03-8)		
		Historical Range	2021 Range	Typical Landfill Leachate
		(2005 - 2020)		(source)
pH	6.5 - 8.5	7.11 - 8.37	7.86 - 8.12	6 - 7 ²
Conductivity		6,390 - 12,200	4,790 - 8,740	
Hardness	80 - 100	863 - 1,670	687 - 950	
Alkalinity	30 - 500	2,520 - 5,950	1,840 - 3,450	300 - 2,000 ²
Sulphate	500	<2 - <50	<2 - 28	<1 - 300 ²
Calcium		84.9 - 195	104 - 115	100 - 1,000 ²
Chloride	250	253 - 1250	480 - 940	20 - 2,500 ²
Fluoride	1.5	<0.05 - <10	0.56 - 0.77	
Potassium		310 - 830	242 - 396	200 - 1,000 ¹
Magnesium		158 - 321	97.3 - 168	100 - 1,500 ¹
Sodium	200	547 - 1400	335 - 574	200 - 1,200 ¹
Nitrate	10	<0.05 - <2.5	<0.06	<0.1 - 0.5 ²
Nitrite	1	<0.05 - <2.5	<0.3	<1 ²
Phenols		<0.001 - 0.180	0.009 - 0.031	
DOC	5	108 - 490	117 - 243	200 - 30,000 ¹

Notes: All concentrations in milligrams per litre (mg/L) unless otherwise indicated.

Shading indicates concentration exceeds Ontario Drinking Water Quality Standard.

¹ Typical leachate characteristics data from Freeze & Cherry (1979).

² Typical leachate characteristics data from the Ministry of the Environment (1993).

Table 7: Diagnostic Indicator Parameters

Parameter	Leachate Concentrations (Well 03-8)	Downgradient Southeast				Adjacent South					
		Fractured Till Well		Inter-till Sands Well		Fractured Till Well		Upper Till Well		Lower Till Well	
		Well 581		Well 571		Well 233R		Well 232R		Well 231R	
		2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range
Alkalinity	1,840 - 3,450	211 - 298	243 - 296	200 - 242	219 - 234	310 - 612	479 - 585	191 - 260	221 - 224	130 - 198	159 - 315
Chloride	480 - 940	3.0 - 12	6 - 9	1.0 - 12	2	<2.0 - 7.0	5 - 6	<2.0 - 8.8	10 - 11	0.84 - 7.0	2 - 4
Potassium	242 - 396	1.0 - 4.9	1.08 - 1.67	1.0 - 5.1	1.06 - 1.40	1.78 - 7.6	1.61 - 2.37	1.33 - 3.6	1.28 - 1.71	1.0 - 2.0	1.06 - 1.59
DOC	117 - 243	0.6 - 19.6	1.8 - 2.5	<0.5 - 9.7	1.4 - 1.5	1.0 - 8.4	2.5 - 3.3	1.1 - 7.0	1.7 - 3.3	0.7 - 6.8	1.6 - 2.4

Parameter	Leachate Concentrations (Well 03-8)	Downgradient South						Adjacent East			
		Fractured Till Wells				Inter-till Sands Well		Lower Till Well		Fractured Till Well	
		Well 263R		Well 562		Well 561		Well 101R		Well 141R	
		2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range
Alkalinity	1,840 - 3,450	253 - 344	281 - 287	209 - 315	258 - 315	179 - 226	204 - 326	200 - 270	216 - 233	242 - 708	233 - 614
Chloride	480 - 940	3.37 - 10	4 - 5	2.0 - 10.3	9	0.37 - 6.0	<1 - 1	1.08 - 13	2	3.0 - 8.70	7 - 8
Potassium	242 - 396	1.98 - 5.0	1.85 - 2.61	0.72 - 2.8	0.898 - 1.52	1.0 - 2.0	1.13 - 1.58	1.0 - 3.3	1.14 - 1.50	1.45 - 2.6	1.70 - 1.71
DOC	117 - 243	<1 - 10.8	1.6 - 3.1	<0.7 - 7.1	1.9 - 5.1	<0.5 - 6.8	1.8 - 2.1	0.8 - 4.7	1.6 - 2.9	1.0 - 14.4	1.9 - 4.0

Parameter	Leachate Concentrations (Well 03-8)	Adjacent West				Downgradient West					
		Upper Till Well		Inter-till Sands Well		Fractured Till Well		Upper Till Well		Inter-till Sands Well	
		Well 381R		Well 591		Well 592		Well 593		Well 594	
		2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range
Alkalinity	1,840 - 3,450	267 - 439	395 - 426	34 - 151	58 - 69	217 - 390	301 - 377	202 - 270	227 - 264	131 - 215	168 - 195
Chloride	480 - 940	1.60 - 6.03	7 - 8	4.24 - 24	7 - 8	2.82 - 7.88	3	3.67 - 4.96	6 - 7	1.69 - 4.50	1 - 4
Potassium	242 - 396	2.0 - 6.1	2.00 - 2.78	0.947 - 5.4	0.945 - 1.25	1.18 - 4.53	1.24 - 1.94	1.53 - 3.15	1.51 - 1.86	1.38 - 2.74	1.24 - 1.49
DOC	117 - 243	1.0 - 14.2	2.2 - 6.7	1.0 - 16.8	1.3 - 1.6	1.3 - 5.5	2.9 - 4.3	1.0 - 2.6	1.7 - 2.0	1.3 - 5.5	2.0 - 3.3

Parameter	Leachate Concentrations (Well 03-8)	Adjacent Northwest				Downgradient Northwest			
		Fractured Till Well		Lower Till Well		Fractured Till Well		Lower Till Well	
		Well 531R		Well 191		Well 541		Well 595	
		2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range
Alkalinity	1,840 - 3,450	251 - 338	297 - 308	190 - 300	211 - 216	255 - 333	273 - 289	88 - 123	95 - 97
Chloride	480 - 940	4.18 - 13	5 - 7	1.0 - 23	4 - 7	3.52 - 20	3 - 4	2.10 - 7.35	2 - 3
Potassium	242 - 396	1.65 - 4.0	1.65 - 2.11	1.55 - 8.8	1.78 - 1.98	1.37 - 2.0	1.41 - 1.80	1.18 - 3.08	1.17 - 1.37
DOC	117 - 243	1.0 - 6.8	1.1 - 1.9	0.6 - 7.0	1.0 - 1.9	0.6 - 15	1.0 - 1.8	1.6 - 3.8	1.1 - 1.6

Notes: All concentrations are in mg/L.

Table 7: Diagnostic Indicator Parameters

Parameter	Leachate Concentrations (Well 03-8)	Adjacent North						Downgradient North			
		Upper Till Wells						Fractured Till Wells			
		Well 03-3		Well 03-4		Well 03-5		Well 03-7S / 03-7SR ***		Well 111 / 111R	
		2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range*
Alkalinity	1,840 - 3,450	335 - 477	412	301 - 399	325	347 - 457	462	2.68 - 663	331 - 367	86 - 147	107 - 135
Chloride	480 - 940	93.2 - 765	270	259 - 503	320	161 - 796	180	31.0 - 404	57 - 77	2.99 - 72	5 - 6
Potassium	242 - 396	3.97 - 6.99	6.74	2.85 - 5.73	2.96	2.48 - 2.95	2.62	9.14 - 19.6	14.7 - 18.9	0.7 - 2.07	0.993 - 1.15
DOC	117 - 243	3.3 - 5.85	4.5	2.6 - 6.7	2.9	3.4 - 7.2	6.9	2.6 - 6.9	2.0 - 3.2	1.2 - 13.0	1.0 - 3.4

Parameter	Leachate Concentrations (Well 03-8)	Downgradient North									
		Fractured Till Wells				Upper Till Wells					
		Well 552R / 552RA		Well 023R		Well 03-7d		Well 00-04		Well 05-01	
		2021 Range	Historic Range **	2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range
Alkalinity	1,840 - 3,450	227 - 499	245 - 264	290 - 412	344 - 373	105 - 128	113 - 118	245 - 294	262 - 302	235 - 308	241 - 255
Chloride	480 - 940	48.3 - 236	65 - 69	20.8 - 27.7	25 - 26	9.0 - 13.3	15 - 17	13 - 61	51 - 52	5.9 - 10.8	12 - 13
Potassium	242 - 396	0.9 - 2.0	1.26 - 1.60	2.68 - 3.38	2.68 - 2.91	0.984 - 1.63	0.968 - 1.11	2.00 - 3.02	2.08 - 2.27	1.62 - 2.04	1.61 - 2.02
DOC	117 - 243	<1 - 5.4	<1.0 - 5.6	2.2 - 6.5	1.7 - 2.7	1.6 - 6.5	2.0 - 2.6	1.5 - 6.8	1.0 - 1.8	1.23 - 5.3	<1.0 - 1.4

Parameter	Leachate Concentrations (Well 03-8)	Downgradient North								Bedrock Well	
		Inter-till Sands Wells						Lower Till Well		Well 999	
		Well 551R		Well 998 / 998R ****		Well 00-03		Well 022R		Well 999	
		2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range	2021 Range	Historic Range
Alkalinity	1,840 - 3,450	197 - 256	228 - 234	97 - 451	198 - 209	202 - 274	226 - 227	140 - 323	160 - 276	151 - 228	168 - 195
Chloride	480 - 940	5.0 - 12.1	9 - 10	<2 - 300	6 - 11	4.0 - 122	9 - 10	0.3 - 3.35	6 - 8	1.0 - 8.0	3 - 5
Potassium	242 - 396	0.8 - 2.0	1.18 - 1.44	1.0 - 3.9	2.69 - 3.04	<0.2 - 1.59	1.19 - 1.48	1.15 - 1.91	0.983 - 1.97	0.871 - 4.1	1.23 - 1.76
DOC	117 - 243	0.6 - 7.4	1.5 - 1.7	<0.5 - 6.9	1.3 - 2.6	<0.5 - 6.7	<1.0 - 1.8	2.04 - 10.4	3.9 - 9.0	0.8 - 7.0	1.6 - 2.3

Notes: All concentrations are in mg/L.

* Well 111 was decommissioned and re-installed as Well 111R in 2017; the historic range includes the historic chemistry from both wells.

** Well 552R was decommissioned and re-installed as Well 552RA in 2018; the historic range includes the historic chemistry from both wells.

*** Well 03-7S was decommissioned and re-installed as Well 03-7SR in June 2020; the historic range includes the historic chemistry from 03-7S.

**** Well 998 was decommissioned and re-installed as Well 998R in June 2020; the historic range includes the historic chemistry from 998.

Table 8: 2021 Groundwater Chemical Results - Private Wells

Monitor	Date	pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Magnesium mg/L	Nitrate mg/L	Nitrite mg/L	Phenols mg/L	DOC mg/L
ODWQS		6.5 - 8.5 OG	NC	5.0 AO	5 AO	80 - 100 OG	NC	250 AO	1.5 MAC	NC	10 MAC	1 MAC	NC	5.0 AO
904	Oct-21	7.84	693	0.70	<2.0	311	72.4	26.3	0.449	31.6	0.113	<0.010	<0.0010	2.37
906	Oct-21	8.33	360	1.69	<2.0	118	21.2	1.94	1.67	15.7	0.040	<0.010	<0.0010	2.44
907	Oct-21	8.31	339	0.30	4.1	<1.3*	<0.50*	1.66	2.31	<0.050*	<0.020	<0.010	<0.0010	2.59
908	Oct-21	8.28	339	<0.10	2.1	<1.3*	<0.50*	1.12	1.97	<0.050*	<0.020	<0.010	<0.0010	2.57
909	Oct-21	7.90	707	0.16	7.1	334	79.3	6.29	0.439	32.9	2.44	<0.010	<0.0010	4.42
911	Oct-21	8.21	368	0.27	5.2	84.4	16.5	4.63	2.23	10.5	0.259	<0.010	<0.0010	2.93
912	Oct-21	8.49	469	0.99	<2.0	<1.3*	<0.50*	2.33	1.00	<0.050*	<0.020	<0.010	<0.0010	1.85
913	Oct-21	8.22	344	1.09	3.5	85.7	16.4	1.25	2.18	10.9	<0.020	<0.010	<0.0010	2.36
916	Oct-21	8.24	659	<0.10	2.5	<1.3*	<0.50*	21.7	0.873	<0.050*	<0.020	<0.010	<0.0010	1.73
917	Oct-21	8.26	332	0.17	4.2	76.0	13.4	1.88	2.23	10.4	<0.020	<0.010	<0.0010	2.41
918	Oct-21	8.08	407	0.22	4.2	155	30.3	2.14	1.39	19.4	0.698	0.112	<0.0010	1.95
920	Oct-21	8.43	340	2.52	2.6	104	17.7	0.78	1.77	14.6	<0.020	<0.010	<0.0010	2.10
921	Oct-21	8.14	341	0.27	12.9	70.0	14.3	1.46	2.08	8.31	0.534	<0.010	<0.0010	2.51
922	Oct-21	8.34	399	0.22	4.8	<1.3*	<0.50*	2.52	2.34	<0.050*	<0.020	<0.010	<0.0010	3.33
999	Oct-21	8.07	439	<0.10	3.4	157	31.7	4.24	1.76	18.9	<0.020	<0.010	<0.0010	2.44

- Notes:
- Blank indicates sample was not collected
 - ODWQS - Ontario Drinking Water Quality Standard (June 2003)
 - NC - No criteria
 - MAC - Maximum Acceptable Concentration
 - IMAC - Interim Maximum Acceptable Concentration
 - AO - Aesthetic Objective
 - OG - Operational Guideline
 - Bold/shading indicates concentration exceeds Ontario Drinking Water Quality Standard.
 - * - indicates anomalous data, water likely softened

Table 9: 2021 Surface Water Chemistry

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L	unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		6.5 - 8.5	NC	field NC	NC	6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW1	15-Mar-21	7.67	2020	6.8	4.11	7.83	1640	63	81.6	515	1000	537	180		77
(971)	17-May-21	8.44	1152	16.5	5.20	8.54	1180	52	21.7	224	683	287	200		69
	10-Jun-21	7.79	962	24.2	9.80	8.22	1260	56	8.79	327	680	311	210		68
	29-Jun-21	7.71	1040	22.3	9.57	8.46	1080	45	17.4	285	577	241	170		54
	29-Jul-21	7.85	1080	23.4	10.42	8.13	1080	39	8.46	289	657	251	170		82
	12-Aug-21	7.79	939	23.7	6.36	8.17	1030	37	10.6	283	626	246	180		79
	04-Oct-21	7.46	664	17.5	9.87	7.76	719	50	5.07	241	440	180	87		65
SW4	15-Mar-21	7.09	670	3.5	6.45	7.41	336	25	5.34	199			4	63.7	
(974)	17-May-21	7.16	485	12.0	4.65	7.91	453	62	1.67	223			7	67.1	
	12-Aug-21	8.05	280	20.8	6.12	8.09	290	50	3.56	166			<1	54.3	
	04-Oct-21	8.10	257	16.7	10.28	7.81	254	111	24.4	150			4	47.3	
SW7	15-Mar-21	8.34	1060	4.6	12.32	8.19	823	19	20.2	307	486	262	83		62
(977)	12-Apr-21	7.39	762	17.15	9.70	8.26	825	22	67.3	300	474	239	86		60
	26-Apr-21	7.81	662	9.73	8.54	8.26	767	18	61.4	256	486	215	88		64
	30-Apr-21	6.84	759	11.9											
	04-May-21	7.81	840	15.4	10.83	8.27	753		23.5						
	05-May-21	7.70	780	13.5	9.79	8.23	739		37.7						
	07-May-21	7.68	810	11.1	13.23	8.33	726		34.4						
	11-May-21	7.52	810	12.2	14.03	8.46	720		19.2						
	17-May-21	8.40	680	17.0	8.32	8.50	658	17	25.5	164	469	124	88		72
	12-Aug-21	8.12	517	24.2	5.40	8.07	562	17	75.0	164	329	127	80		47
	04-Oct-21	7.87	519	17.5	10.82	8.18	559	15	38.4	206	349	138	66		61
	04-Nov-21	8.15	826	6.13	10.30	8.18	721				409	199	70		67

Table 9: 2021 Surface Water Chemistry

Surface Water Station	Date	Fluoride mg/L	Magnesium mg/L	Ammonia mg/L	Un-ionized Ammonia ** mg/L	Nitrate mg/L	Nitrite mg/L	TKN mg/L	Phenols mg/L	BOD ₅ mg/L	COD mg/L	Phosphorous mg/L	DOC mg/L	Ortho-phosphate mg/L	Iron mg/L	TSS mg/L
PWQO		NC	NC	NC	0.02	NC	NC	NC	0.001	NC	NC	0.03	NC	NC	0.30	NC
SW1	15-Mar-21	0.15		37.2	0.249	<0.06	0.14	41	0.111	195	325	0.786	139		2.86	55
(971)	17-May-21	0.13		16.5	1.28	<0.06	<0.03	20.8	0.004	19	123	0.340	29.0		0.11	57
	10-Jun-21	0.13		14.7	0.469	<0.06	<0.03	18.4	0.003	11	98	0.298	35.1		0.38	19
	29-Jun-21	0.14		6.2	0.145	0.88	0.52	10.0	0.001	16	81	0.217	15		0.32	42
	29-Jul-21	0.14		2.5	0.086	0.13	0.12	5.8	0.001	4	71	0.133	24.7		0.17	19
	12-Aug-21	0.16		1.2	0.037	<0.06	0.06	4.0	0.003	12	80	0.120	22.7		0.12	21
	04-Oct-21	0.16		0.5	0.005	0.07	0.03	1.6	0.005	14	44	0.193	14.8		0.26	6
SW4	15-Mar-21	<0.06	9.75	0.1	<0.001	<0.06	<0.03	<0.5	<0.002			0.581	6.6	0.13	3.48	
(974)	17-May-21	0.12	13.4	<0.1	<0.001	<0.06	<0.03	1.6	<0.001			0.262	16	0.06	1.01	
	12-Aug-21	0.06	7.49	0.2	0.009	<0.06	<0.03	1.2	0.002			0.185	11.8	0.06	0.62	
	04-Oct-21	0.08	7.74	<0.1	<0.004	0.07	<0.03	0.6	<0.001			0.227	14.6	0.13	2.15	
SW7	15-Mar-21	0.13		5.7	0.147	0.09	<0.03	7.0	0.002	10	49	0.084	16.0		0.82	32
(977)	12-Apr-21	0.16		4.3	0.034	0.28	<0.03	6.3	<0.001	7	32	0.113	14.2		1.46	57
	26-Apr-21	0.16		3.7	0.043	0.31	<0.03	4.8	<0.001	9	39	0.115	12		0.61	47
	30-Apr-21			3.2	0.005											
	04-May-21			2.5	0.045	0.42	<0.03	4.3								
	05-May-21			2.6	0.031	0.35	<0.03	3.8								
	07-May-21			2.2	0.021	0.34	<0.03	3.7								
	11-May-21			1.9	0.014	0.40	<0.03	3.1								
	17-May-21	0.13		1.1	0.081	0.38	<0.03	2.6	<0.001	8	40	0.100	12		0.66	37
	12-Aug-21	0.18		0.2	0.013	<0.06	<0.03	1.5	<0.001	7	43	0.182	9.8		2.10	83
	04-Oct-21	0.19		0.7	0.017	0.69	0.16	1.6	0.004	10	28	0.072	10.6		0.99	40
	04-Nov-21			1.8	0.034	1.18	0.10	5.0	<0.001	10	27	0.093			1.22	35

Table 9: 2021 Surface Water Chemistry

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L	unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		6.5 - 8.5	NC	field NC	NC	6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW8	15-Mar-21	7.97	760	5.2	14.05	8.00	543	9	6.53	280			34	86.3	
(978)	12-Apr-21	7.19	643	14.32	10.90	8.19	645	29	18.2	362	389	181	80		27
	26-Apr-21	8.00	557	9.71	9.77	8.11	696	11	22.3	261	417	186	79		29
	17-May-21	7.45	797	12.0	8.56	7.98	793	9	4.71	341			62	96.8	
	12-Aug-21	7.57	563	20.0	7.14	8.02	640	39	78.1	278			73	83.4	
	04-Oct-21	7.57	323	16.5	10.95	7.68	359	93	243	185			24	53.6	
SW9	15-Mar-21	7.96	1100	4.4	8.92	8.01	876	20	11.2	346			89	99.3	
(979)	17-May-21	7.99	749	13.7	7.42	7.96	749	13	38.4	591			76	166	
	12-Aug-21	7.85	576	20.1	5.69	8.03	632	26	790	511			75	162	
	04-Oct-21	7.53	334	16.4	6.33	7.74	356	101	252	190			24	57.5	

Notes: · PWQO - Provincial Water Quality Objectives (July 1994) · Units provided

· NC - No criteria

· ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where $pKa = 0.09018 + 2729.92/T$ and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.

· Blank - Indicates data not available

· Units provided

· Shading indicates concentration exceeds PWQO

Table 9: 2021 Surface Water Chemistry

Surface Water Station	Date	Fluoride mg/L	Magnesium mg/L	Ammonia mg/L	Un-ionized Ammonia ** mg/L	Nitrate mg/L	Nitrite mg/L	TKN mg/L	Phenols mg/L	BOD ₅ mg/L	COD mg/L	Phosphorous mg/L	DOC mg/L	Ortho-phosphate mg/L	Iron mg/L	TSS mg/L
		NC	NC	NC	0.02	NC	NC	NC	0.001	NC	NC	0.03	NC	NC	0.30	NC
SW8	15-Mar-21	0.12	15.7	<0.1	<0.001	3.08	<0.03	<0.5	<0.002			0.052	4.0	<0.03	0.35	
(978)	12-Apr-21	0.13		<0.1	<0.001	1.96	<0.03	1.4	<0.001	4	29	0.233	11.3		1.86	30
	26-Apr-21	0.10		<0.1	<0.002	5.14	<0.03	<0.5	<0.001	10	11	0.125	6		0.56	24
	17-May-21	0.16	24.0	<0.1	<0.001	5.63	<0.03	<0.5	<0.001			0.080	6	<0.03	0.67	
	12-Aug-21	0.14	16.9	0.4	0.006	2.07	<0.03	1.5	0.001			0.360	9.5	0.19	2.98	
	04-Oct-21	0.14	12.4	<0.1	<0.001	4.34	<0.03	1.0	<0.001			0.770	15.2	0.50	11.1	
SW9	15-Mar-21	0.13	23.9	6.7	0.072	0.12	<0.03	8.3	<0.002			0.129	14.9	0.05	1.02	
(979)	17-May-21	0.16	42.8	0.3	0.007	2.88	<0.03	1.3	<0.001			0.925	9	0.04	11.3	
	12-Aug-21	0.18	25.9	0.3	0.008	0.79	<0.03	1.6	0.002			0.817	10.6	0.31	6.73	
	04-Oct-21	0.18	11.2	<0.1	<0.001	4.98	<0.03	1.1	0.002			0.542	18.0	0.52	3.06	

Notes: · PWQO - Provincial Water Quality Objectives (July 1994)

· Units provided

· NC - No criteria

· Blank - Indicates data not available

· Shading indicates concentration exceeds PWQO

· ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where $pKa = 0.09018 + 2729.92/T$ and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.

Table 10: 2021 Surface Water Duplicate Results

Parameter	Unit	MDL	March 15, 2021			MDL	May 17, 2021			MDL	August 12, 2021		
			SW8	SWDUP	RPD		SW8	SWDUP	RPD		SW4	SWDUP	RPD
pH	NA	0.05	8.00	8.10	1	0.05	7.98	8.00	0	0.05	8.09	7.97	1
Conductivity	µS/cm	2	543	542	0	2	793	783	1	2	290	297	2
Colour	TCU	3	9	8	12	3	9	10	11	3	50	48	4
Turbidity	NTU	0.10	6.53	6.99	7	0.10	4.71	5.82	21	0.10	3.56	2.71	27
Hardness	mg/L	0.05	280	293	5	0.05	341	351	3	0.05	166	164	1
Chloride	mg/L	1	34	34	0	1	62	61	2	1	<1	<1	<2xMDL
Calcium	mg/L	0.003	86.3	89.8	4	0.003	96.8	101	4	0.01	54.3	53.4	2
Fluoride	mg/L	0.06	0.12	0.12	0	0.06	0.16	0.15	6	0.06	0.06	0.08	<2xMDL
Magnesium	mg/L	0.001	15.7	16.7	6	0.001	24.0	24.3	1	0.001	7.49	7.43	1
Ammonia	mg/L	0.1	<0.1	<0.1	<2xMDL	0.1	<0.1	<0.1	<2xMDL	0.1	0.2	0.1	<2xMDL
Un-ionized Ammonia	mg/L	0.001	<0.001	<0.001	<2xMDL	0.001	<0.001	<0.001	<2xMDL	0.01	0.01	0.01	<2xMDL
Nitrate	mg/L	0.06	3.08	3.19	4	0.06	5.63	5.64	0	0.06	<0.06	<0.06	<2xMDL
Nitrite	mg/L	0.03	<0.03	<0.03	<2xMDL	0.03	<0.03	<0.03	<2xMDL	0.03	<0.03	<0.03	<2xMDL
TKN	mg/L	0.5	<0.5	<0.5	<2xMDL	0.5	<0.5	<0.5	<2xMDL	0.5	1.2	1.2	0
Phenols	mg/L	0.0010	<0.002	<0.002	<2xMDL	0.0010	<0.001	<0.001	<2xMDL	0.001	0.002	0.002	<2xMDL
Phosphorous	mg/L	0.003	0.052	0.057	9	0.003	0.080	0.116	37	0.003	0.185	0.195	5
DOC	mg/L	1.0	4.0	3.8	5	1	6	5	18	1.00	11.8	11.9	1
Ortho-phosphate	mg/L	0.03	<0.03	0.03	<2xMDL	0.03	<0.03	<0.03	<2xMDL	0.03	0.06	0.07	15
Iron	mg/L	0.01	0.350	0.365	4	0.01	0.67	0.69	3	0.01	0.62	0.61	2

- Notes:**
- mg/L - milligrams per litre
 - µS/cm - microSiemens per centimetre
 - NTU - nephelometric turbidity units
 - TCU - true colour units
 - MDL - Method Detection Limit
 - RPD - Relative Percent Difference
 - for values >5xMDL, RPDs of >20% are bold and shaded
 - for values <5xMDL, RPDs of >2xMDL are bold and shaded

Table 10: 2021 Surface Water Duplicate Results

Parameter	Unit	MDL	October 4, 2021		
			SW4	SWDUP	RPD
pH	NA	0.05	7.81	7.85	1
Conductivity	µS/cm	2	254	256	1
Colour	TCU	3	111	109	2
Turbidity	NTU	0.10	24.4	21.1	15
Hardness	mg/L	0.05	150	138	8
Chloride	mg/L	1	4	3	<2xMDL
Calcium	mg/L	0.01	47.3	43.8	8
Fluoride	mg/L	0.06	0.08	0.08	0
Magnesium	mg/L	0.001	7.74	6.94	11
Ammonia	mg/L	0.1	<0.1	<0.1	<2xMDL
Un-ionized Ammonia	mg/L	0.004	<0.004	<0.004	<2xMDL
Nitrate	mg/L	0.06	0.07	<0.06	<2xMDL
Nitrite	mg/L	0.03	<0.03	<0.03	<2xMDL
TKN	mg/L	0.5	0.6	<0.5	<2xMDL
Phenols	mg/L	0.001	<0.001	0.003	<2xMDL
Phosphorous	mg/L	0.003	0.227	0.247	8
DOC	mg/L	1	14.6	14.7	1
Ortho-phosphate	mg/L	0.03	0.13	0.14	7
Iron	mg/L	0.01	2.15	1.98	8

- Notes:**
- mg/L - milligrams per litre
 - µS/cm - microSiemens per centimetre
 - NTU - nephelometric turbidity units
 - TCU - true colour units
 - MDL - Method Detection Limit
 - RPD - Relative Percent Difference
 - for values >5xMDL, RPDs of >20% are bold and shaded
 - for values <5xMDL, RPDs of >2xMDL are bold and shaded

Table 11: 2021 Surface Water Quality Compliance with PWQO

Surface Water Station	Parameter	PWQO	15-Mar-21	17-May-21	12-Aug-21	04-Oct-21
978	pH	6.5 - 8.5	8.00	7.98	8.02	7.68
(SW8)	Un-ionized Ammonia	0.02	<0.001	<0.001	0.006	<0.001
Background - Entering Site via Hooper Drain	Phenols	0.001	<0.002	<0.001	0.001	<0.001
	Phosphorous	0.03	0.052	0.080	0.360	0.770
	Iron	0.3	0.35	0.67	2.98	11.1
979	pH	6.5 - 8.5	8.01	7.96	8.03	7.74
(SW9)	Un-ionized Ammonia	0.02	0.072	0.007	0.008	<0.001
Downgradient - Leaving site via Hooper Drain	Phenols	0.001	<0.002	<0.001	0.002	0.002
	Phosphorous	0.03	0.129	0.925	0.817	0.542
	Iron	0.3	1.02	11.3	6.73	3.06
974	pH	6.5 - 8.5	7.41	7.91	8.09	7.81
(SW4)	Un-ionized Ammonia	0.02	<0.001	<0.001	0.009	<0.004
Wet Area on West Boundary	Phenols	0.001	<0.002	<0.001	0.002	<0.001
	Phosphorous	0.03	0.581	0.262	0.185	0.227
	Iron	0.3	3.48	1.01	0.62	2.15
971	pH	6.5 - 8.5	7.83	8.54	8.17	7.76
(SW1)	Un-ionized Ammonia	0.02	0.249	1.28	0.037	0.005
Sedimentation Pond A	Phenols	0.001	0.111	0.004	0.003	0.005
	Phosphorous	0.03	0.786	0.340	0.120	0.193
	Iron	0.3	2.86	0.11	0.12	0.26
977	pH	6.5 - 8.5	8.19	8.50	8.07	8.18
(SW7)	Un-ionized Ammonia	0.02	0.147	0.081	0.013	0.017
Sedimentation Pond B	Phenols	0.001	0.002	<0.001	<0.001	0.004
	Phosphorous	0.03	0.084	0.100	0.182	0.072
	Iron	0.3	0.82	0.66	2.10	0.99

Notes: • Concentrations are in mg/L except pH
 • Bold and shading indicates concentration (or laboratory reported detection limit) exceeds Provincial Water Quality Objective.
 • Blank indicates sampling station was dry at the time of sampling.

Table 12: 2021 Leachate Chemical Results

Monitor	Date	pH	Conductivity	Colour	Turbidity	TKN	TSS	H ₂ S	Sulphate	Hardness	Total O&G	BOD	Chloride	Fluoride	DOC	Phenol	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth
		unitless	µS/cm	TCU	NTU	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
By-law limits		5.5 to 10.5					350		1500		100	300	1500	10		1	50	5	1			5
MH16	20-Jan-21	7.61	8600	360	103	486	109	0.06	7	1500	7	211	930	0.29	198	0.076	1.30	0.0040	0.0150	0.820	0.000053	0.000078
MH16	18-Feb-21	8.05	11000	1140	25.5	699	5	<0.02	<2	1260	<8	104	1500	0.49	279	0.025	0.288	0.0040	0.0154	0.995	0.000020	0.000070
MH16	09-Mar-21	7.58	6630	405	667	369	31	3.5	260	1510	28	777	770	0.30	381	0.983	0.355	0.0087	0.0172	0.419	0.000018	0.000074
MH16	12-Apr-21	7.69	13700	1090	17.4	446	70	<0.2	<20	1260	38	113	1800	0.56	278	0.039	0.218	0.0052	0.0208	0.874	<0.000007	0.00004
MH16	04-May-21	7.75	8930	925	13.6	734	7	0.04	<2	1240	11	88	1500	0.51	269	0.048	0.150	<0.009	0.0140	1.09	<0.00007	<0.0001
MH1	09-Jun-21	7.69	9140	450	118	470	50	<0.12	<2	1800	4	126	960	0.49	215	0.028	0.113	0.0036	0.0128	0.603	0.000017	0.00017
MH16	08-Jul-21	7.93	13100	1140	172	716	224	0.02	88	1290	10	392	2000	0.54	321	0.042	2.45	0.0048	0.0221	1.00	0.00012	0.00016
MH1	31-Aug-21	7.67	8650	670	117	499	294	0.05	350	1540	9	117	960	0.44	201	0.020	3.35	0.0043	0.0204	1.14	0.000101	0.00024
MH16	08-Sep-21	8.13	14000	1380	16.6	1020	33	<0.02	54	1140	10	83	2100	0.64	<1	0.056	0.200	<0.009	0.0160	1.01	<0.00007	<0.0001
MH16	13-Oct-21	7.49	4820	1040	101	205	228	0.33	14	1080	6	1430	590	0.32	641	0.003	1.70	0.0232	0.0569	0.441	0.000094	0.00093
MH16	18-Nov-21	7.88	7490	650	28.5	504	24	<0.02	110	853	7	75	930	0.44	206	<0.02	0.260	<0.009	0.0170	0.715	<0.00007	<0.0001
MH16	02-Dec-21	7.84	6540	308	83.6	373	40	<0.02	5	1320	<4	102	740	0.48	199	<0.02	0.110	<0.009	0.0080	0.607	<0.00007	<0.0001

Notes: - Concentrations in mg/L unless otherwise noted

- By-law limits = Oxford County Sewer Discharge By-Law No. 2719-87

Table 12: 2021 Leachate Chemical Results

Monitor	Date	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silver	Tin	Titanium	Vanadium	Zinc	COD	Total Cyanide
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
By-law limits		1	5	5	2	50	5	5	0.1	5	2	10	5	5	5	5	5	2		2
MH16	20-Jan-21	0.000191	0.0694	0.0156	0.0104	13.2	0.00538	0.905	0.00002	0.00574	0.0721	4.57	0.00455	0.00005	0.00478	0.0707	0.0147	0.100	665	0.01
MH16	18-Feb-21	0.00006	0.116	0.0209	0.0190	1.60	0.0014	0.756	<0.00001	0.0033	0.092	7.17	0.00140	<0.00005	0.00580	0.0614	0.0171	0.080	910	0.02
MH16	09-Mar-21	0.00055	0.0755	0.0113	0.0072	4.26	0.0060	1.93	0.00002	0.017	0.0584	5.82	0.00068	<0.00005	0.00310	0.0421	0.0104	0.284	1440	<0.01
MH16	12-Apr-21	0.00017	0.151	0.0253	0.0055	1.51	0.00148	0.722	<0.00001	0.0047	0.106	9.11	0.00090	<0.00005	0.00657	0.0711	0.0166	0.082	1120	0.02
MH16	04-May-21	<0.00003	0.116	0.0211	0.0060	1.44	<0.0009	0.688	<0.00001	0.0242	0.0990	6.74	0.00100	<0.0005	0.0045	0.0689	0.0164	0.050	880	0.01
MH1	09-Jun-21	0.000094	0.0607	0.0227	0.0214	19.6	0.00489	0.550	0.00002	0.00255	0.0859	3.54	0.00111	<0.00005	0.0154	0.0447	0.0115	0.063	790	<0.01
MH16	08-Jul-21	0.00014	0.146	0.0274	0.0201	4.89	0.00366	0.768	<0.00001	0.0105	0.1080	9.26	0.00196	0.00005	0.00573	0.149	0.0234	0.093	1170	0.02
MH1	31-Aug-21	0.00022	0.116	0.0248	0.0551	8.46	0.00638	1.14	0.00002	0.0318	0.113	6.73	0.00083	0.00009	0.00442	0.166	0.0228	0.087	640	0.01
MH16	08-Sep-21	0.00003	0.158	0.0279	0.0130	1.50	<0.0009	0.544	0.00001	0.0043	0.115	8.10	0.00110	<0.0005	0.0060	0.0783	0.0186	0.030	134	0.01
MH16	13-Oct-21	0.00030	0.131	0.00738	0.0329	6.51	0.00747	1.07	0.00002	0.0187	0.0631	4.32	0.00158	0.00008	0.00309	0.0805	0.0296	0.147	1720	0.02
MH16	18-Nov-21	<0.00003	0.0794	0.01706	0.0070	1.20	0.00090	0.602	<0.00001	0.0033	0.074	4.90	0.00040	<0.0005	0.0037	0.0437	0.0121	0.070	700	0.01
MH16	02-Dec-21	0.00008	0.0367	0.0117	0.0060	11.6	0.00228	0.528	<0.0001	0.0021	0.048	2.70	<0.0004	<0.0005	0.0043	0.0222	0.0058	0.030	520	0.01

Notes: - Concentrations in mg/L unless otherwise noted

- By-law limits = Oxford County Sewer Discharge By-Law No. 2719-87

Table 13 2022 Environmental Monitoring Program

Activity	Location	Sampling Frequency	Analysis / Measurement
Groundwater and Leachate Level Monitoring	<p>Glaciolacustrine Unit: 98-7, 98-11, 98-12, 98-13</p> <p>Fractured Till Unit: 053, 98-2, 98-4, 98-9, 98-14, 111R, 141R, 202, 233R, 263R, 281, 391, 531R, 541, 552RA, 562, 581, 592, 2P, 2obs, 7P, 7obs, 10P, 03-7SR</p> <p>Upper Till Unit: 013R, 023R, 063, 121, 131, 192, 193, 232R, 242, 262R, 381R, 401, 421, 431, 593, 03-3, 03-4, 03-5, 03-6, 00-01, 00-02, 00-04, 03-7D, 05-01</p> <p>Inter-Till Sands Unit: 012R, 162, 551R, 561, 571, 591, 594, 998R, 00-03</p> <p>Lower Till Unit: 022R, 051, 052, 061, 071, 101R, 102, 161, 191, 231R, 261R, 595</p> <p>Leachate Well: 03-8</p>	Semi-Annual (spring and fall)	Water level measurement
Groundwater and Leachate Sampling	<p>Fractured Till Unit: 111R, 141R, 233R, 263R, 531R, 541, 552RA, 562, 581, 592, 03-7SR</p> <p>Upper Till Unit: 023R, 232R, 381R, 593, 00-04, 03-7D, 05-01</p> <p>Inter-Till Sands Unit: 551R, 561, 571, 591, 594, 998R, 00-03</p> <p>Lower Till Unit: 022R, 101R, 191, 231R, 595</p> <p>Shallow Bedrock Unit: 999</p> <p>Leachate Well: 03-8</p>	Semi-Annual (spring and fall)	<p>General Parameters: pH, conductivity, hardness, turbidity, colour</p> <p>Major & Minor Ions: alkalinity, sulphate, carbonate, bicarbonate, calcium, chloride, fluoride, potassium, magnesium, sodium</p> <p>Nutrients/Organic Indicators: DOC, phenols, nitrate, nitrite</p>
	Upper Till Unit: 03-3, 03-4, 03-5	Annual (spring)	
	<p>Glaciolacustrine Unit: 98-7, 98-11, 98-12, 98-13</p> <p>Upper Till Unit: 013R, 03-6, 00-01, 00-02</p> <p>Inter-Till Sands Unit: 012R</p>	Annual (spring)	Chloride
Private Well Sampling (completed by Oxford County Board of Health)	Private Well: 902, 904, 906, 907, 908, 909, 911, 912, 913, 916, 917, 918, 920, 921, 922	Annual (spring)	<p>General Parameters: pH, conductivity, hardness, turbidity, colour</p> <p>Major & Minor Ions: calcium, chloride, fluoride, magnesium</p> <p>Nutrients/Organic Indicators: DOC, phenols, nitrate, nitrite</p>
Leachate Collection System Sampling (completed by Oxford County Water and Wastewater staff)	MH16	Monthly	<p>General Parameters: pH, conductivity, hardness, turbidity, colour, TSS</p> <p>Major & Minor Ions: sulphate, chloride, fluoride,</p> <p>Nutrients/Organic Indicators: DOC, phenols, TKN, COD, BOD₅</p> <p>Metals: aluminum, antimony, arsenic, barium, beryllium, bismuth, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, phosphorus, selenium, silver, tin, titanium, vanadium, zinc</p> <p>Other: total cyanide, H₂S, oil & grease</p>



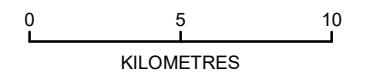
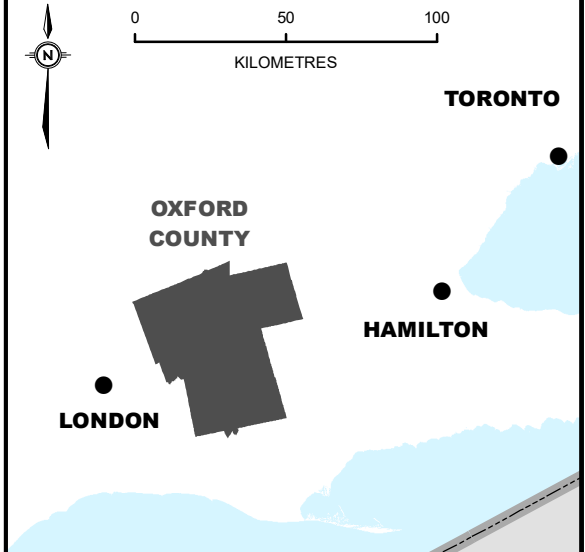
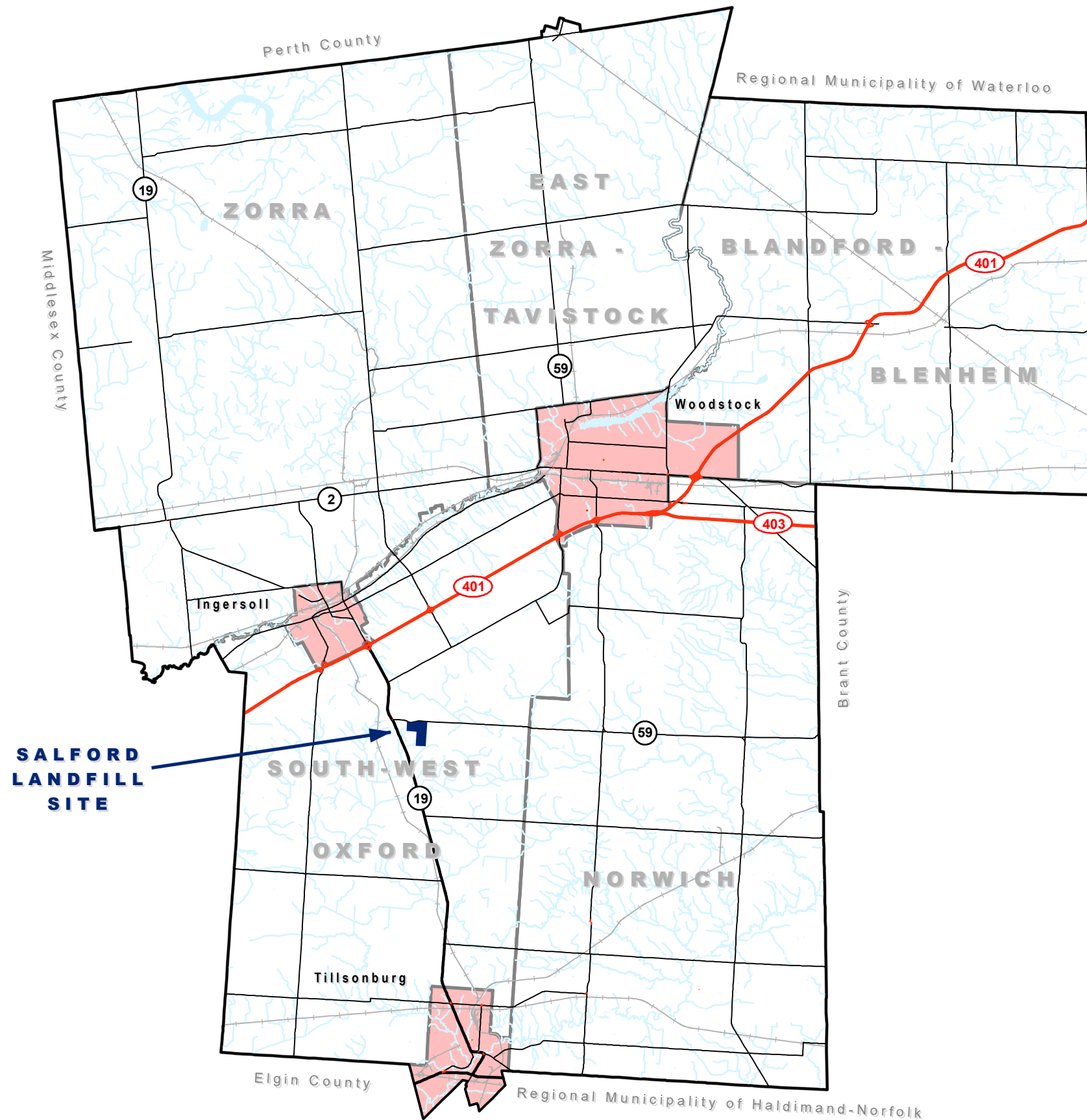
Activity	Location and Geologic Unit	Frequency	Analysis / Measurement
Surface Water Sampling	Surface Water Station: SW4, SW8, SW9	Quarterly	<p>Field Measurements: pH, conductivity, temperature, dissolved oxygen</p> <p>General Parameters: pH, conductivity, turbidity, colour, hardness</p> <p>Major & Minor Ions: chloride, magnesium, calcium, fluoride, ortho-phosphate</p> <p>Nutrients/Organic Indicators: ammonia, TKN, nitrate, nitrite, total phosphorus, phenols, DOC</p> <p>Total Metals: iron</p>
	Stormwater Management Pond: SW1, SW7	Quarterly	<p>Field Measurements: pH, conductivity, temperature, dissolved oxygen</p> <p>General Parameters: pH, conductivity, TSS, TDS, turbidity, colour, hardness</p> <p>Major & Minor Ions: alkalinity, chloride, sulphate, fluoride</p> <p>Nutrients/Organic Indicators: ammonia, TKN, nitrate, nitrite, total phosphorus, phenols, DOC, COD, BOD₅</p> <p>Total Metals: iron</p>
	Stormwater Management Pond: SW7	Four times annually, as required †	<p>Field Measurements: pH, conductivity, temperature, dissolved oxygen</p> <p>General Parameters: pH, conductivity, TSS, TDS</p> <p>Major & Minor Ions: alkalinity, chloride, sulphate</p> <p>Nutrients/Organic Indicators: ammonia, TKN, nitrate, nitrite, total phosphorus, phenols, COD, BOD₅</p> <p>Total Metals: iron</p>

Note: † - Samples shall be collected within 24 hours after a rainfall event resulting in a stormwater discharge from SWM Pond B during the period between March 15 and November 30 ensuring that a minimum of 1 month period is set between consecutive sampling events, as per the CofA (Sewage).



FIGURES





NAD 1983 UTM Zone 17N

SITE LOCATION MAP

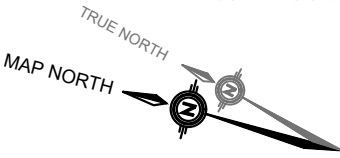
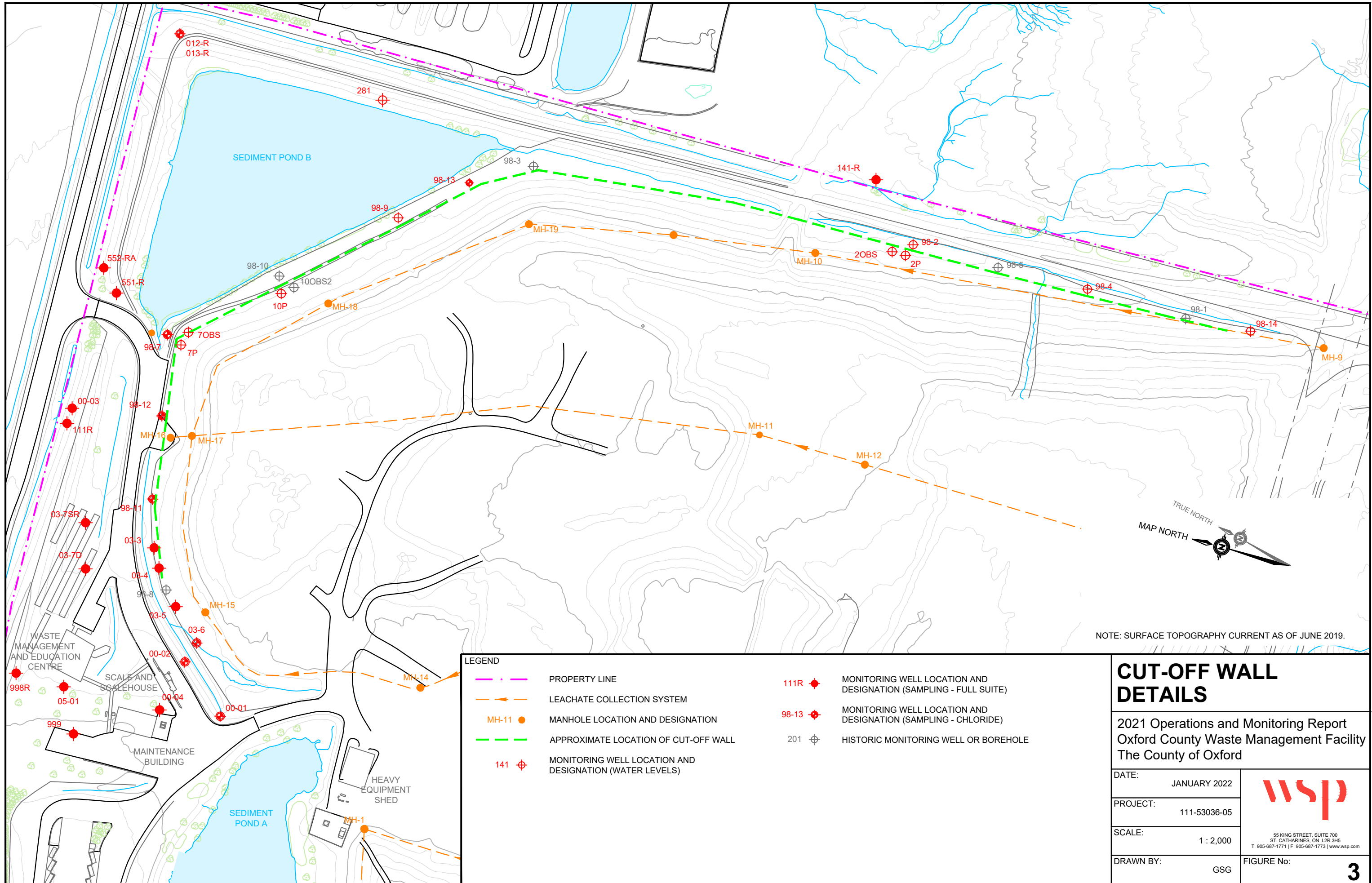
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Oxford County Waste Management Facility
The County of Oxford

DATE:	JANUARY 2022
PROJECT:	111-53036-05
SCALE:	1 : 250,000
DRAWN BY:	GSG



FIGURE No: **1**





NOTE: SURFACE TOPOGRAPHY CURRENT AS OF JUNE 2019.

LEGEND	
	PROPERTY LINE
	LEACHATE COLLECTION SYSTEM
	MANHOLE LOCATION AND DESIGNATION
	APPROXIMATE LOCATION OF CUT-OFF WALL
	MONITORING WELL LOCATION AND DESIGNATION (WATER LEVELS)
	MONITORING WELL LOCATION AND DESIGNATION (SAMPLING - FULL SUITE)
	MONITORING WELL LOCATION AND DESIGNATION (SAMPLING - CHLORIDE)
	HISTORIC MONITORING WELL OR BOREHOLE

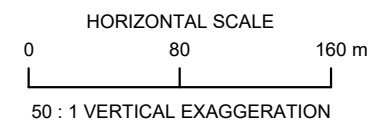
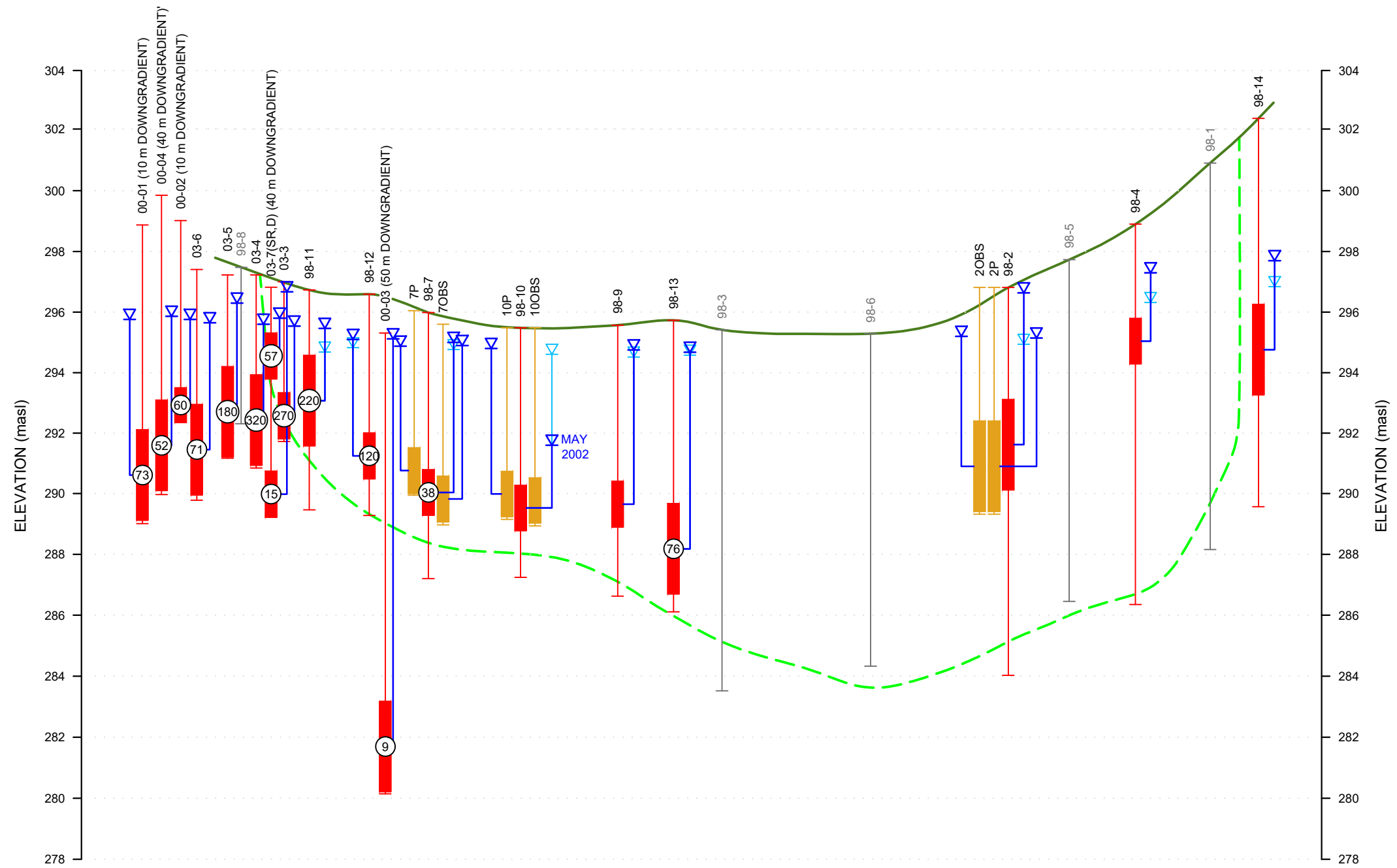
CUT-OFF WALL DETAILS

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The County of Oxford

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FIGURE No: **3**



LEGEND

HISTORIC WELL / BOREHOLE		EXISTING WELL (UPGRADIENT)		EXISTING WELL (DOWNGRADIANT)	
98-3	WELL DESIGNATION	15	WELL DESIGNATION	15	WELL DESIGNATION
—	GROUND SURFACE	—	GROUND SURFACE	—	GROUND SURFACE
	END OF HOLE	■	SCREENED INTERVAL	■	SCREENED INTERVAL
- - -	APPROXIMATE DEPTH OF CUT-OFF WALL (SNC LAVALIN, 1999)	▽	GROUNDWATER ELEVATION, MAY 2021	○	CHLORIDE CONCENTRATION, MAY 2021 (mg/L)
▽	GROUNDWATER ELEVATION, JUNE 1998				

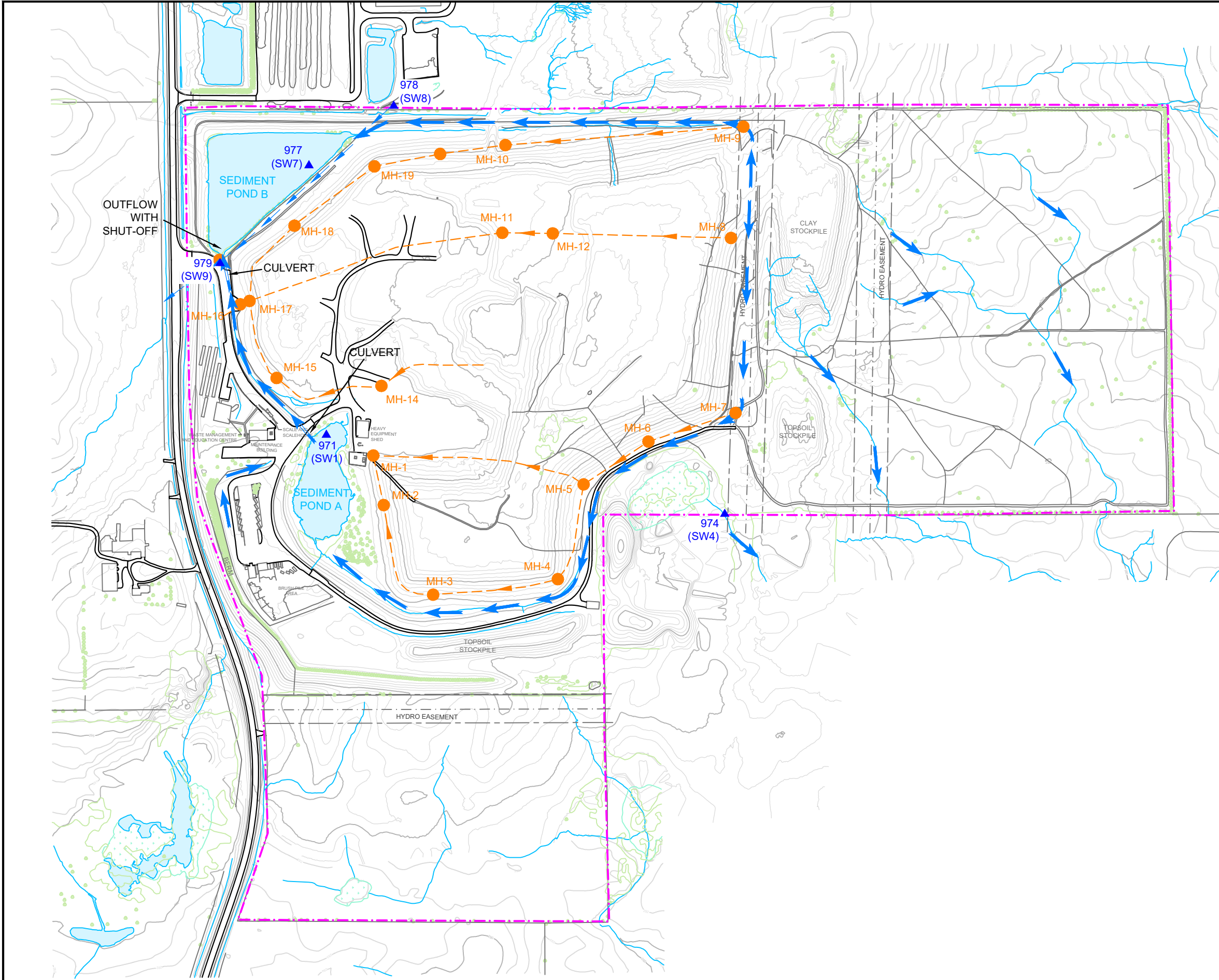
CUT-OFF WALL SECTION

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The County of Oxford

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FIGURE No: **4**



- LEGEND**
- - - PROPERTY LINE
 - - - LEACHATE COLLECTION SYSTEM
 - MH-11 MANHOLE
 - ▲ 974 (SW4) SURFACE WATER SAMPLING STATION LOCATION
 - SURFACE WATER FLOW DIRECTION
 - - - HOOPER DRAIN AND FLOW DIRECTION



0 100 200 m

NOTE: SURFACE TOPOGRAPHY CURRENT AS OF JUNE 2019.

SURFACE WATER MONITORING LOCATIONS AND FLOW MANAGEMENT

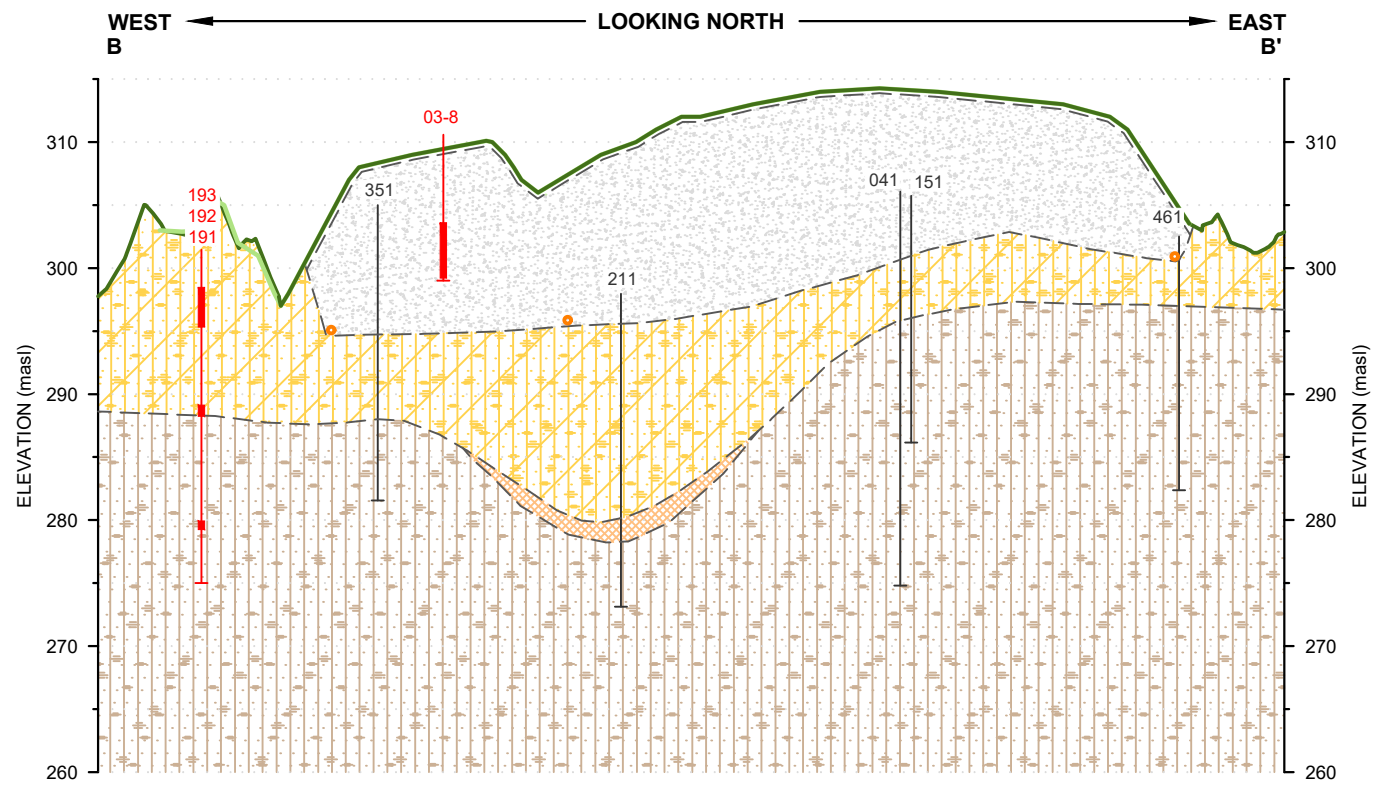
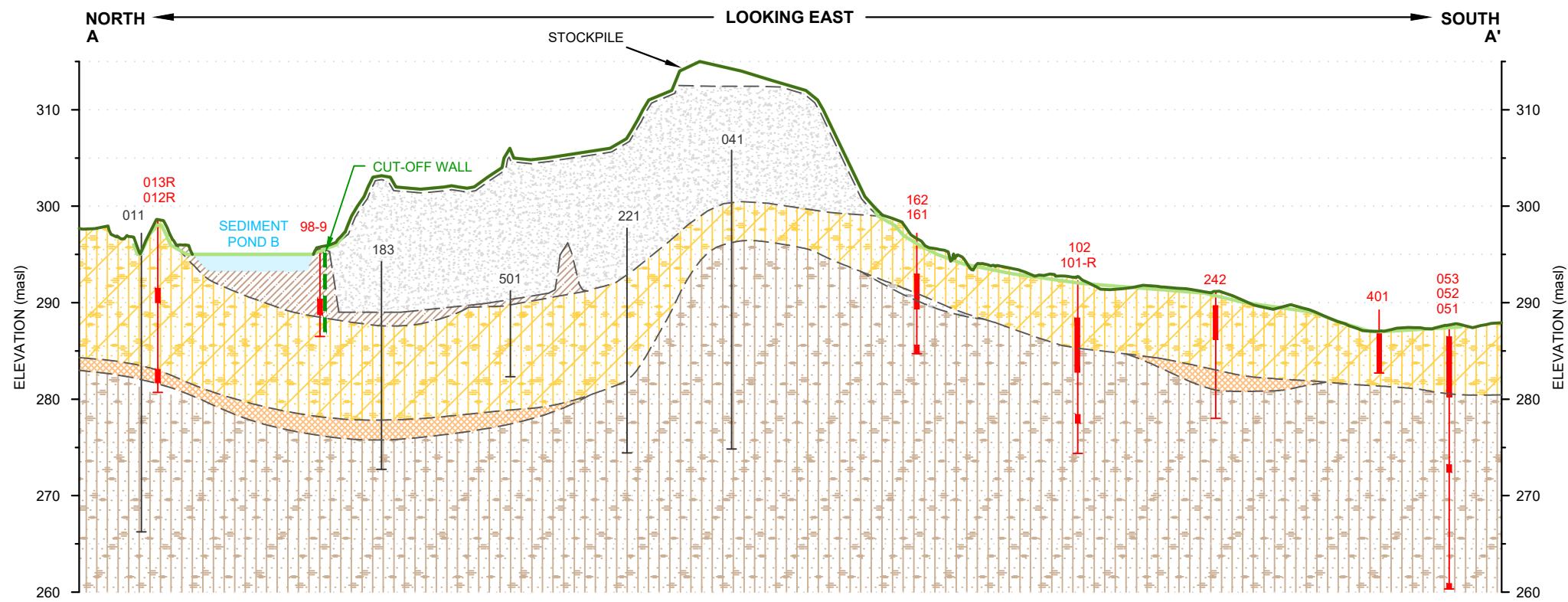
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The County of Oxford

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PROJECT:	111-53036-05
SCALE:	1 : 5,000
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55 KING STREET, SUITE 700
ST. CATHARINES, ON L2R 3H5
T 905-687-1771 | F 905-687-1773 | www.wsp.com

FIGURE No: 5

C:\USERS\INGS04048\ONEDRIVE - WSP 0365111-53036-05 SALFORD 2021 AMR4 MODELS AND DRAWINGS\41 XXIDWG\2021 FILES\11-53036-05-F5-SW.DWG



- LEGEND**
- FORMER BOREHOLE
 - EXISTING PIEZOMETER
 - REFUSE
 - GLACIO-LACUSTRINE DEPOSITS
 - CLAYEY SILT TILL
 - INTER-TILL SANDS
 - SANDY SILT TILL
 - LEACHATE COLLECTOR PIPE

HORIZONTAL SCALE
 0 120 240 m
 10 : 1 VERTICAL EXAGGERATION

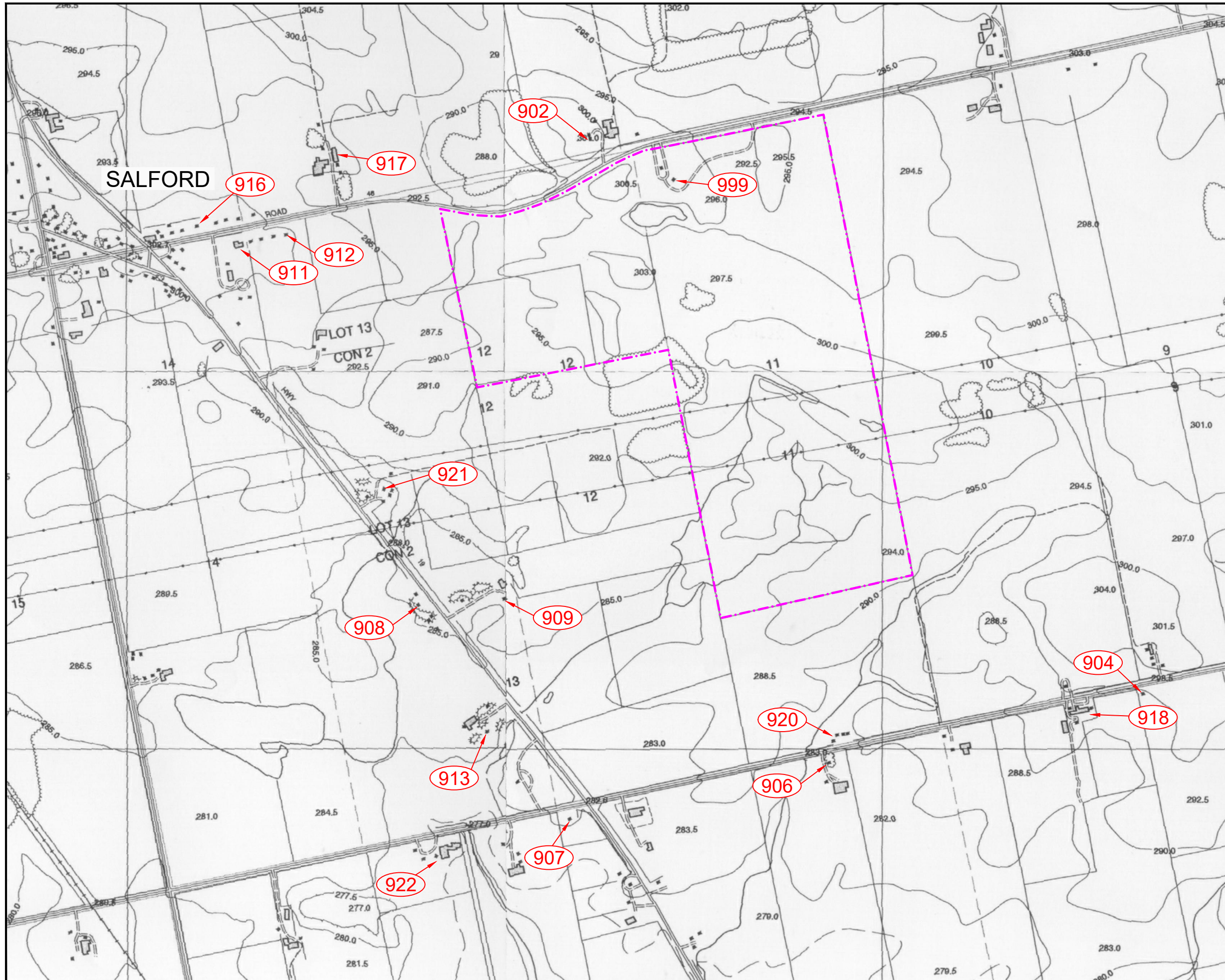
HYDROGEOLOGICAL CROSS SECTIONS

2021 Operations and Monitoring Report
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 The County of Oxford

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PROJECT:	111-53036-05
HORIZONTAL SCALE:	1 : 6,000
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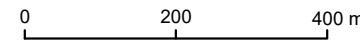


FIGURE No: **6**



LEGEND


- PROPERTY LINE
- WELL DESIGNATION

PRIVATE WELL LOCATION PLAN

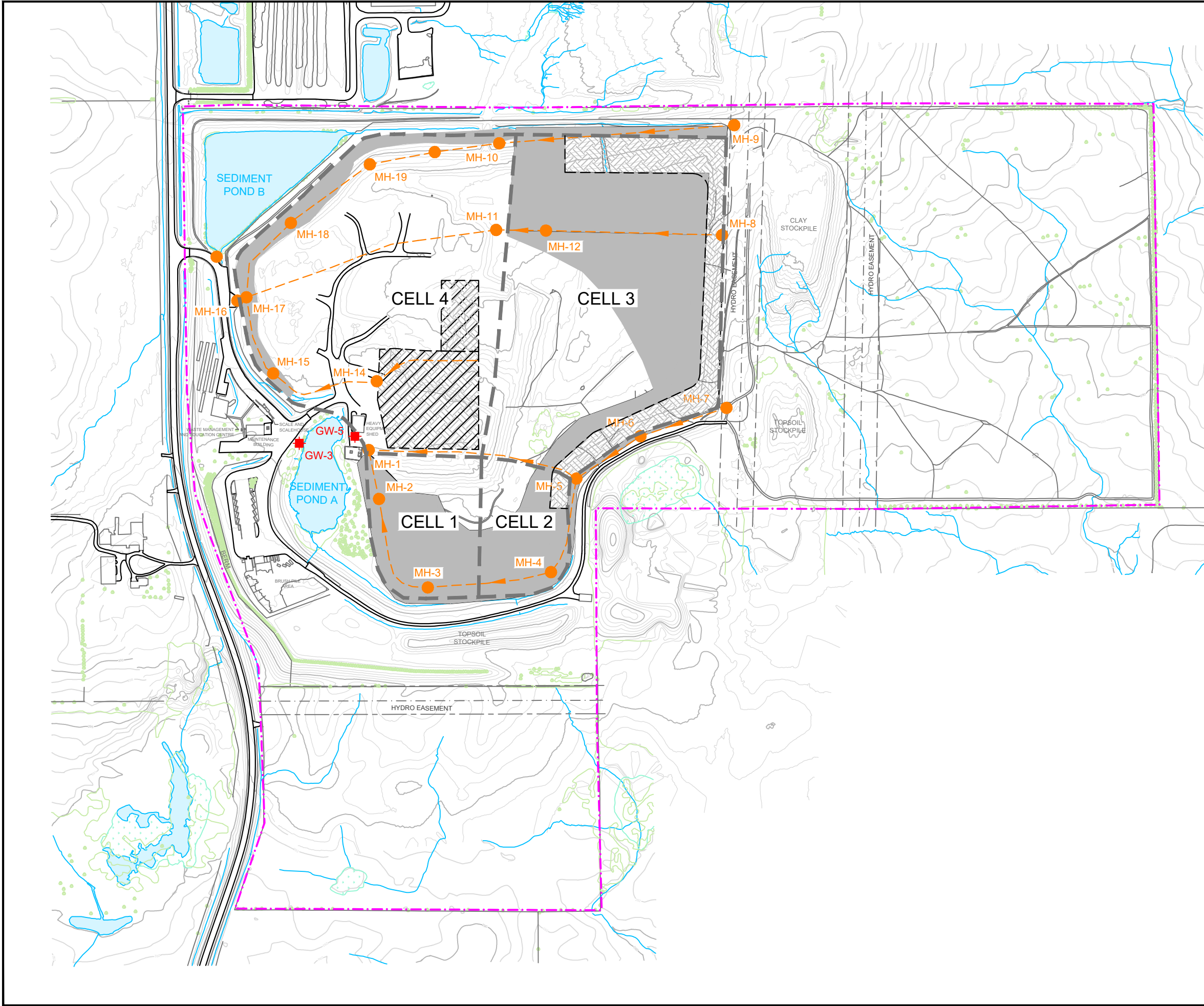
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SCALE:	1 : 10,000
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55 KING STREET, SUITE 700
 ST. CATHARINES, ON L2R 3H5
 T 905-687-1771 | F 905-687-1773 | www.wsp.com

FIGURE No: **7**



- LEGEND**
- · - · PROPERTY LINE
 - - - - LEACHATE COLLECTION SYSTEM
 - MH-11 MANHOLE
 - GW-3 METHANE GAS MONITORING WELL
 - LIMIT OF CERTIFIED LANDFILL AND CONSTRUCTED CELLS (NORTH FILL AREA)
 - AREA COMPLETED TO FINAL COVER
 - AREA TO BE LANDFILLED IN 2022
 - AREA OF LANDFILLING IN 2021



0 100 200 m

NOTE: SURFACE TOPOGRAPHY CURRENT AS OF JUNE 2019.

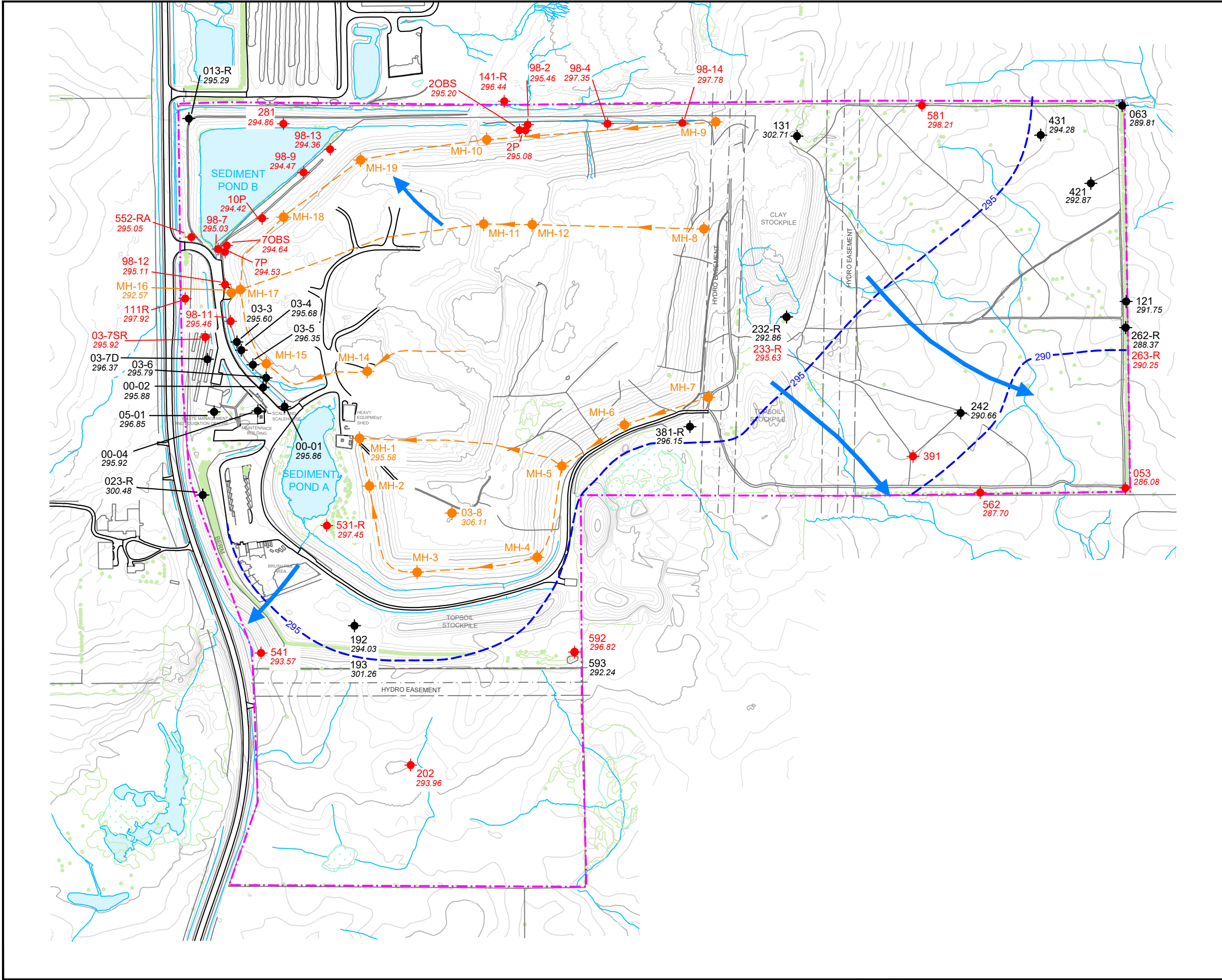
PROGRESSION OF SITE DEVELOPMENT

2021 Operations and Monitoring Report
Oxford County Waste Management Facility
The County of Oxford

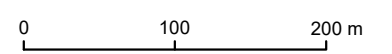
DATE:	JANUARY 2022
PROJECT:	111-53036-05
SCALE:	1 : 5,000
DRAWN BY:	GSG

55 KING STREET, SUITE 700
ST. CATHARINES, ON L2R 3H5
T 905-687-1771 | F 905-687-1773 | www.wsp.com

FIGURE No: **8**



- LEGEND**
- PROPERTY LINE
 - LEACHATE COLLECTION SYSTEM
- MONITORING WELLS**
- 111 FRACTURED TILL OR GLACIOLACUSTRINE UNIT
 - 03-5 UPPER TILL UNIT
 - MH-1 LEACHATE WELL OR MANHOLE
 - 295.00 ELEVATION OF WATER TABLE (m ASL)
 - 295 APPROXIMATE WATER TABLE CONTOUR (m ASL)
 - INFERRED GROUNDWATER FLOW DIRECTION




NOTE: SURFACE TOPOGRAPHY CURRENT AS OF JUNE 2019.

SHALLOW WELL WATER TABLE ELEVATIONS - MAY 2021

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Oxford County Waste Management Facility
The County of Oxford

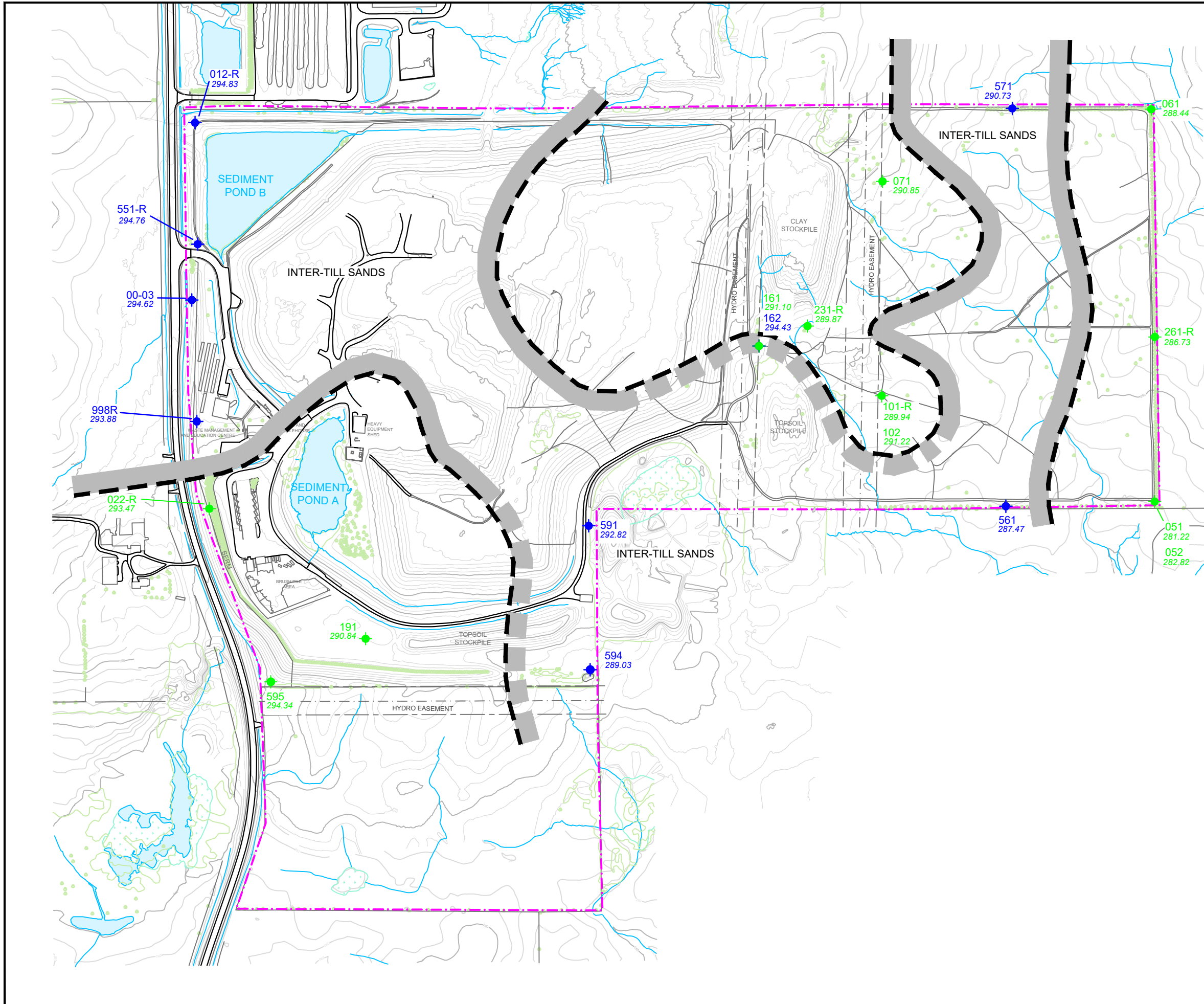
DATE:	JANUARY 2022
PROJECT:	111-53036-05
SCALE:	1 : 5,000
DRAWN BY:	GSG



55 KING STREET, SUITE 700
ST. CATHARINES, ON L2R 3H5
T 905-687-1771 | F 905-687-1773 | www.wsp.com

FIGURE No: **9**

C:\USERS\INGS04048\ONEDRIVE - WSP\0365111-53036-05 Salford 2021 AMR4 MODELS AND DRAWINGS\41 XXDWG\2021 FILES\111-53036-05-F9-GW.DWG



- LEGEND**
- · - · PROPERTY LINE
 - MONITORING WELLS**
 - ◆ 162 INTER-TILL SAND UNIT
 - ◆ 03-5 LOWER TILL UNIT
 - 295.00 POTENTIOMETRIC LEVELS (m ASL)
 - APPROXIMATE AREA OF INTER-TILL SANDS (GARTNER-LEE 1984)



NOTE: SURFACE TOPOGRAPHY CURRENT AS OF JUNE 2019.

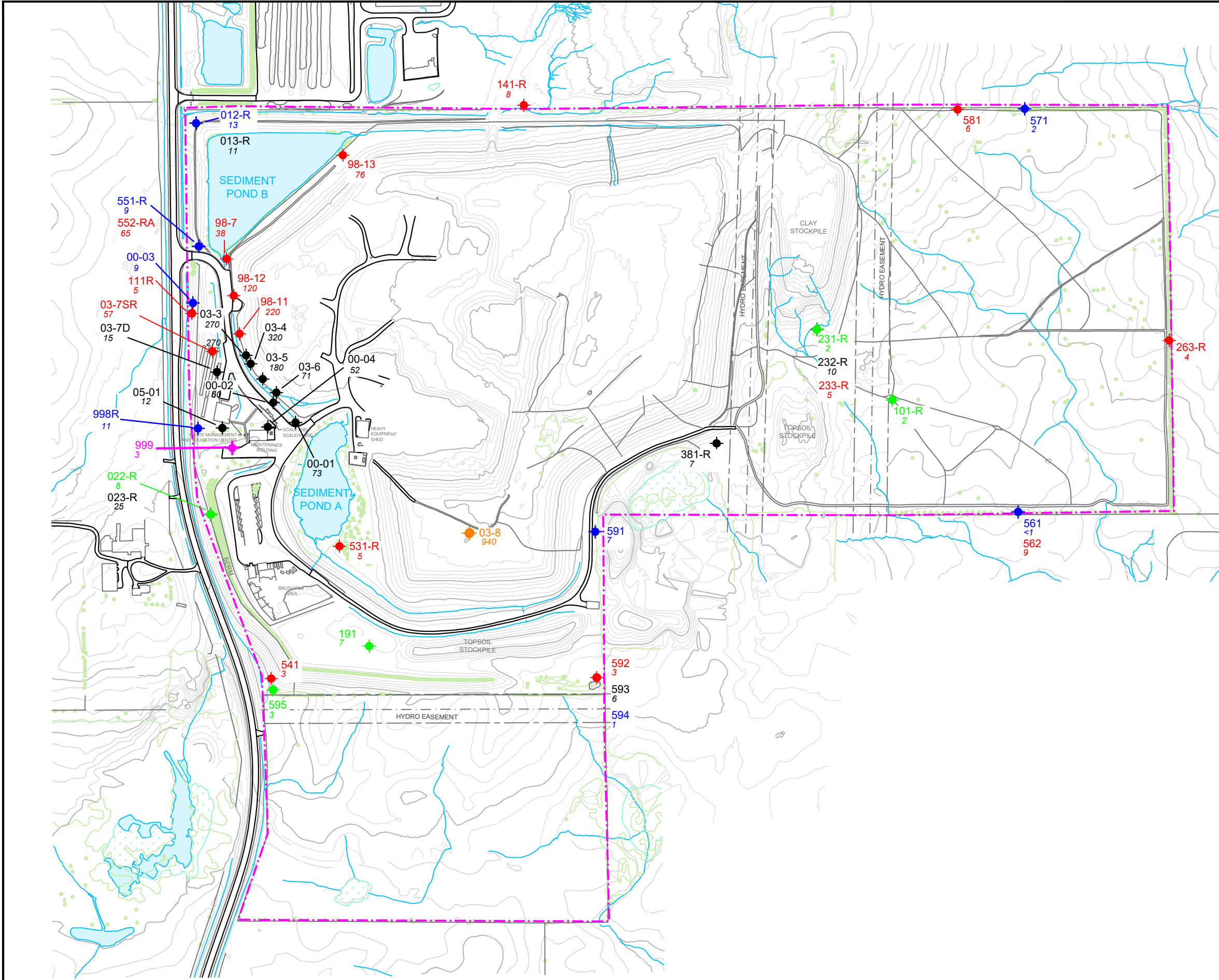
INTER-TILL SANDS PIEZOMETRIC LEVELS - MAY 2021

2021 Operations and Monitoring Report
Oxford County Waste Management Facility
The County of Oxford

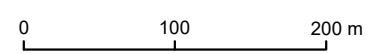
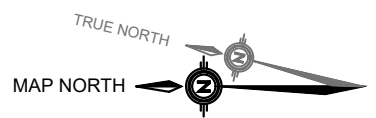
DATE:	JANUARY 2022
PROJECT:	111-53036-05
SCALE:	1 : 5,000
DRAWN BY:	GSG



FIGURE No: **10**



- LEGEND**
- - - PROPERTY LINE
- MONITORING WELLS**
- ◆ 111R **FRACTURED TILL OR GLACIOLACUSTRINE UNIT**
 - ◆ 03-5 **UPPER TILL UNIT**
 - ◆ 561 **INTER-TILL SAND UNIT**
 - ◆ 191 **LOWER TILL UNIT**
 - ◆ 999 **SHALLOW BEDROCK UNIT**
 - ◆ 03-8 **LEACHATE WELL**
 - 5.0 **CHLORIDE CONCENTRATION (mg/L)**



NOTE: SURFACE TOPOGRAPHY CURRENT AS OF JUNE 2019.

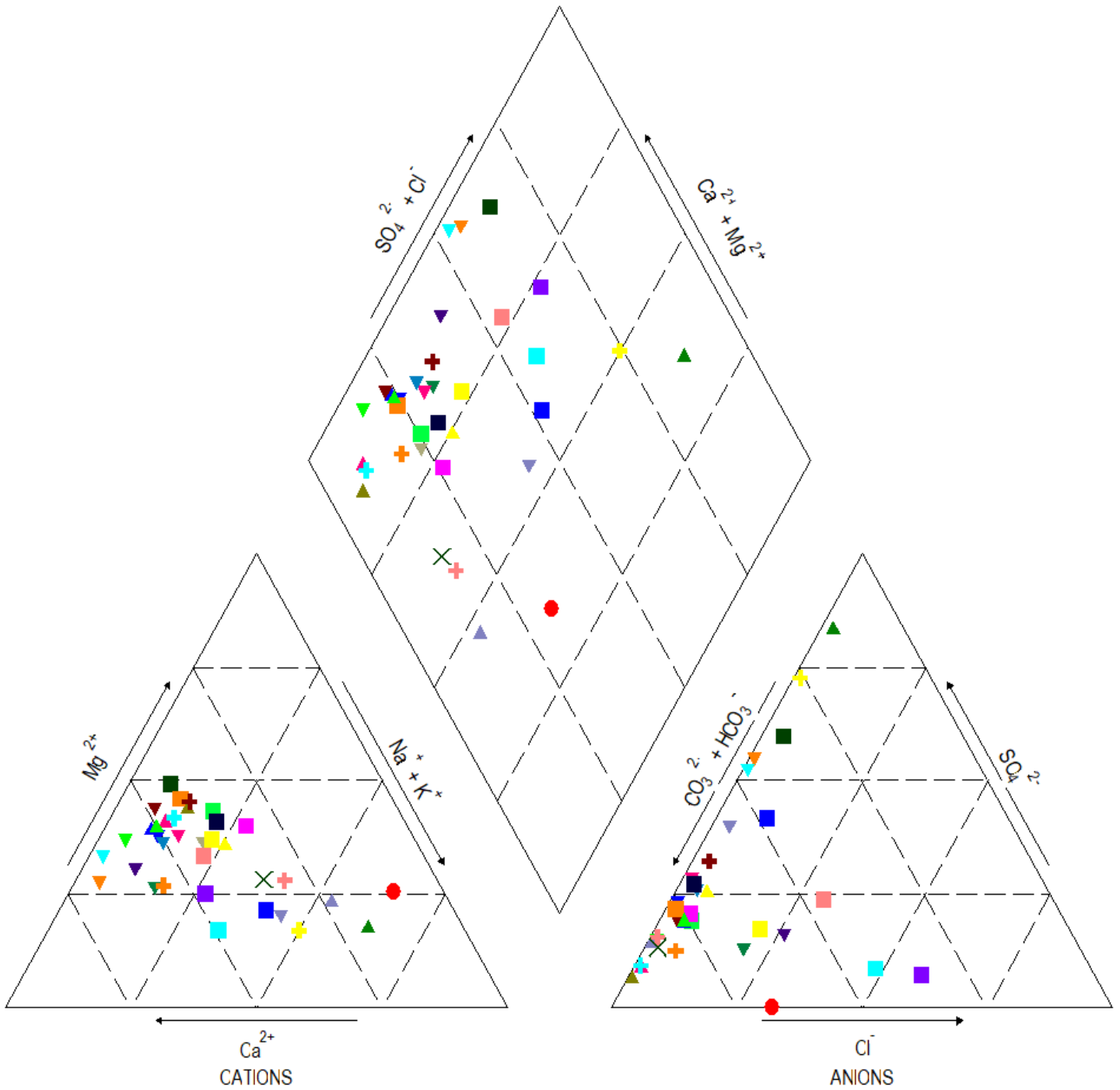
CHLORIDE CONCENTRATIONS - MAY 2021

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Oxford County Waste Management Facility
The County of Oxford

DATE:	JANUARY 2022
PROJECT:	111-53036-05
SCALE:	1 : 5,000
DRAWN BY:	GSG



FIGURE No: **11**



LEGEND

- | | |
|----------------|------------------|
| REFUSE | UPPER TILL |
| ● 03-08 | ■ 00-04 |
| FRACTURED TILL | ■ 023R |
| ▼ 03-7SR | ■ 03-3 |
| ▼ 111R | ■ 03-4 |
| ▼ 141R | ■ 03-5 |
| ▼ 233R | ■ 03-7D |
| ▼ 263R | ■ 05-01 |
| ▼ 531R | ■ 232R |
| ▼ 541 | ■ 381R |
| ▼ 552RA | ■ 593 |
| ▼ 562 | INTER-TILL SANDS |
| ▼ 581 | ▲ 551R |
| ▼ 592 | ▲ 561 |
| LOWER TILL | ▲ 571 |
| ○ 022R | ▲ 591 |
| ○ 101R | ▲ 594 |
| ○ 191 | ▲ 998R |
| ○ 231R | ▲ 00-03 |
| ○ 595 | BEDROCK |
| | × 999 |

TRILINEAR DIAGRAM - MAY 2021

2021 Operations and Monitoring Report
Oxford County Waste Management Facility
The County of Oxford



DATE: JANUARY 2022

PROJECT: 111-53036-05

SCALE: AS SHOWN

DRAWN BY: AM

FIGURE No.: 12

APPENDIX

A

APPROVALS AND
CORRESPONDENCE

APPENDIX

A-1 *ENVIRONMENTAL COMPLIANCE APPROVALS*



Ontario

Ministry
of the
Environment

Provisional Certificate No.

A 070808

12

PROVISIONAL CERTIFICATE OF APPROVAL WASTE DISPOSAL SITE

Under the Environmental Protection Act and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

County of Oxford,
415 Hunter Street,
Box 397, Court House,
Woodstock, Ontario.
N4S 7Y3

for the use and operation of a 43.7 hectare (108 acre) landfilling site within a total site area of 89.44 hectares (221 acres).

all in accordance with the following plans and specifications:

As listed in Schedule "A" attached to this Certificate

Located:

North part of Lot 12, Conc. 2 Dereham (Reg. Plan 41R1300)
and North 3/4 of Lot 11, Conc. 2 Dereham, Twp. of
South-West Oxford.

which includes the use of the site only for the disposal of the following categories of waste (NOTE: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval)

Domestic, commercial, non-hazardous solid industrial and other waste limited to sewage sludge (processed organic waste) and non-hazardous industrial sludges.

and subject to the following conditions:

1. The County of Oxford shall apply on a source by source basis to the Director of the Southwestern Region of the Ministry of the Environment for approval to dispose of dewatered sewage sludge (processed organic waste) and non-hazardous industrial sludges at the proposed site and shall provide the volumes and analyses of the sludge material.
2. No waste shall be deposited at this site until a procedure is developed to properly seal all boreholes, any gas or water wells, sand lenses and any other conduits for possible leachate movement within the actual landfill area and the proposed method of properly sealing these submitted to and approved by the Director of the Southwestern Regional Office of the Ministry of the Environment. The said Regional Director is to be advised as to the location of these boreholes, gas or water wells, sand lenses and other conduits.

Dated this 16th day of August, 1983.

Director, Section 38
Environmental Protection Act



Ontario

Ministry
of the
Environment

PROVISIONAL CERTIFICATE OF APPROVAL WASTE DISPOSAL SITE

The following conditions are additional to the conditions shown on Provisional Certificate of Approval Number A 070808 dated August 16, 1983

3. No waste shall be deposited in the site until a design report, based on the conceptual plans, presented before the Board and on any modifications directed by the Board (with plans and specifications) detailing the site development (including site preparation and operation program), is submitted to and approved by the Director of the Environmental Approvals and Project Engineering Branch. The design report should provide for a progressive rehabilitation of the landfill site to a natural passive state.
4. No wastes shall be deposited in the site until a suitable contingency program of leachate control is submitted to and approved by the Director of the Environmental Approvals and Project Engineering Branch of the Ministry of the Environment.
5. No wastes are to be deposited at this site until a detailed program for monitoring surface and ground water including leachate movement is submitted to and approved by the Director of the Environmental Approvals and Project Engineering Branch of the Ministry of the Environment. The monitoring program may be modified from time to time as required in writing by the Director of the Southwestern Regional Office of the Ministry of the Environment.
6. No wastes are to be deposited at the site until a detailed program for monitoring gas migration is submitted to and approved by the Director of the Environmental Approvals and Project Engineering Branch. If, in the opinion of the Director of the Southwestern Region of the Ministry of the Environment, migration of gas off-site or on-site may create a hazard, a suitable gas venting system must be designed and the design plan submitted for approval to the Director of the Environmental Approvals and Project Engineering Branch of the Ministry of the Environment. The gas venting system is to be installed after it is approved by the said Director.
7. The County of Oxford will provide the Director of the Southwestern Region of the Ministry of the Environment with an annual site development progress report which will include the results of an interpretative analysis of all monitoring programs.
8. No waste shall be deposited in the site until a site preparation report completed by a Professional Consulting Engineering firm has been submitted to and approved by the Director of the Southwestern Region of the Ministry of the Environment. Such a report shall contain confirmation that those undertakings required to prepare the site for the acceptance of refuse as indicated in the site design report (Condition 3) have been completed as specified.



Ministry
of the
Environment
Ontario

PROVISIONAL CERTIFICATE OF APPROVAL WASTE DISPOSAL SITE

The following conditions are additional to the conditions shown on Provisional Certificate
of Approval Number A 070808 dated August 16, 1983

9. In the normal course of events, access to the site for the disposal of waste from the City of Woodstock shall be via Highway 401, Highway 19 and County Road 46. In the normal course of events, access to the site for the disposal of waste from the Town of Tillsonburg shall be via Highway 19 and County Road 46.
10. The operation of the site shall require that berms be constructed progressively along the northern portion of the fill area to effectively screen the landfilling of wastes from the residence located on the north side of County Road 46 opposite the landfill site.
11. Within sixty days from these conditions becoming enforceable, any certificate issued as a result of and subsequent to the hearing, including any reasons for these conditions is to be registered by the applicant as an instrument in the appropriate Land Registry Office against title to the site and a duplicate registered copy thereof returned by the applicant to the Director of the Environmental Approvals and Project Engineering Branch.
12. No land which is the subject of this application shall be sold or otherwise disposed of without the prior written approval of the Director of the Environmental Approvals and Project Engineering Branch.

SCHEDULE "A"

This Schedule "A" forms part of Provisional Certificate of Approval No. A 070808 dated August 11, 1983.

1. Report entitled "Oxford County Salford Landfill Site Design and Operations Report" prepared by M.M. Dillon Limited, dated April 3, 1981
2. Report entitled "Oxford County Salford Landfill Site Hydrogeological Study" prepared by Gartner Lee Associates Limited, for M.M.Dillon Limited, dated February 12, 1982.



Ontario

MINISTRY OF THE ENVIRONMENT

NOTICE

TO: County of Oxford,
415 Hunter Street,
Box 397, Court House,
Woodstock, Ontario.
N4S 7Y3

You are hereby notified that Provisional Certificate of Approval No. A 070808 has been issued to you subject to the conditions outlined therein.

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

1. The reason for condition 1 is that the volume and the composition of the sludge is required to be known prior to disposal at the site in order that the Director of the Region can be assured that the sludge can be handled at this site considering both engineering of the site and hydrogeological conditions.
2. The reason for condition 2 is that a more permeable silty sand till underlies the surficial clay silt till at the proposed site. The plugging of any conduits is required to prevent the ingress of leachate into the more permeable materials under the site and thereby prevent the introduction of contaminants into the groundwater system.
3. The reason for condition 3 is that the consultants for the County have presented the general concept of the development and operation of the proposed site in support of the County's application. The detailed plans required by the condition are necessary in order that Ministry staff can ensure that the concepts proposed by the consultants for the County will in fact be designed to acceptable engineering standards and are adequately implemented in the development and operation of the site.
4. The reason for condition 4 is that it is the practice of this Ministry to require that a contingency program in any landfill proposal is submitted prior to operations of a new site.
5. The reason for condition 5 is that the consultants for the County have investigated the physical conditions in and around the proposed landfill site. The findings indicate that leachate migration from this site will be minimal and proceed at a very slow rate, provided that the numerical predictions are correct. The monitoring program as required by the above condition will determine measures required to protect surface and groundwater quality.
6. The reason for condition 6 is that as buildings will be located within the property and close to the actual disposal area, monitoring the gas migration towards these buildings is necessary to safeguard personnel and structures on the site. The monitoring of off-site migration of gas is necessary to ensure that no hazards are created to adjacent properties.
7. The reason for condition 7 is that this condition is required in order that both the Ministry of the Environment and the operator of the landfill site will be aware of any impact of the landfill site on the landfill property and adjacent lands. The annual report, which includes both the hard data and also the interpretation of the meaning of the data with respect to leachate and gas migration, will provide sufficient warning to the Ministry and the operator to allow for implementation of any preventative measures to control leachate or gas.

8. The reason for condition 8 is that this condition is required in order that the staff of the Ministry of the Environment are totally assured that the site is being developed as designed by the consultants. This also puts the onus on the landfill operator to develop the site according to the specifications prepared by the consultants.
9. The reason for condition 9 is that the proposed access routes are capable of accepting the additional traffic load which will be created by the operation of this site. These routes were those identified before the Board.
10. The reason for condition 10 is that noise levels emitted from the operation of the landfill site may be excessive should the berms not be constructed.
11. The reason for condition 11 is that Section 45 of the Environmental Protection Act, prohibits any use being made of the lands after they cease to be used for waste disposal purposes within a period of twenty-five years from the year in which such land ceased to be used unless the approval of the Minister for the proposed use has been given. The purpose of this prohibition is to protect future occupants of the site and the environment from any hazards which might occur as a result of waste being disposed of on the site. This prohibition and potential hazard should be drawn to the attention of future owners and occupants by the Certificate being registered on title.
12. The reason for condition 12 is that because leachate and gas will be produced at the site into the future, it is in the public interest to ensure that site ownership and responsibility remain with a responsible, viable party. Should the County, at some future date, desire to sell all or a portion of the lands which are the subject of this application, it is reasonable to have the potential sale reviewed to ensure site integrity is maintained.

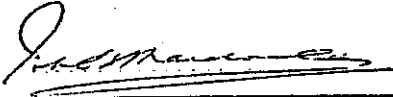
You may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board.

This Notice should be served upon:

The Secretary
Environmental Appeal Board
1 St. Clair Avenue West AND
5th Floor
Toronto, Ontario M4V 1K7

The Director
Section 38, E.P.A.
Ministry of the Environment
135 St. Clair Ave. W.,
Toronto, Ontario M4V 1P5

Dated at Toronto this 16th day of August 1983.



Director
Section 38, E.P.A.

DLC

10 - 1



Ministry of Environment and Energy
 Ministère de l'Environnement et de l'Énergie

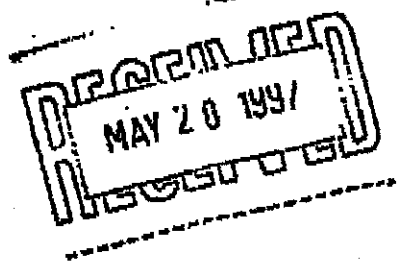
Southwestern Region
 985 Adelaide Street South
 London Ontario
 N6E 1V3

Region du Sud-Ouest
 985, rue Adelaide
 London, Ontario
 N6E 1V3

File No. OX SO 610
 Lot 11,12, Conc.2

May 5, 1997

Don Pratt, P. Eng.,
 County Engineer
 County of Oxford
 P.O. Box 397, Court House,
 415 Hunter Street
 Woodstock, ON
 N4S 7Y3



Dear Mr. Pratt,

RE: Oxford County Landfill Site - Salford
 Certificate of Approval No. A070808
 Pt. Lot 11,12, Conc. 2
 Southwest Oxford Township

This letter confirms the meeting at your office on March 20, 1997 where the Monitoring Programs associated with the operation of Oxford County Landfill Site were discussed. I am writing this in regards to condition No. 5 of your Certificate of Approval No. A070808 issued August 16, 1983.

Condition No. 5 states:

"No wastes are to be deposited at this site until a detailed program for monitoring surface and groundwater including leachate movement is submitted to and approved by the Director of Environmental Approvals and Project Engineering Branch of the Ministry of Environment. The Monitoring Program may be modified from time to time as required in writing by the Director of the Southwestern Regional Office of the Ministry of Environment and Energy."

A monitoring program was developed and approved by letter to you dated January 28, 1985 (copy appended). The approved Monitoring Program was included in the Revised Design & Operations Report June 17, 1986 and forms part of Certificate of Approval No. A070808.

With this letter today I am modifying the Oxford County Landfill Site - Monitoring Program which takes effect on May 1, 1997.

All sample collection, analyses and reporting is now the responsibility of the County of Oxford. All samples must be collected according to this Ministry's "A Guide to the Collection and Submission of Samples for Laboratory Analyses." All samples must be analyzed by a credited laboratory.

All sample results must be reported to the Ministry of Environment and Energy, London District Office and to the well owner (private well results should indicate comparison to ODWO as a minimum) as soon as received by County of Oxford.

Leachate levels in all collection system manholes and flush vents must be measured and recorded monthly, to assess the leachate collection systems performance. Records of these monthly measurements will be included in the Annual Report.

All monitoring program results must be summarized in an Annual Report to be submitted to me within 90 days of the end of the calendar year being reported. The report must contain an interpretive analyses of all monitoring programs by a qualified Hydrogeologist.

This monitoring and reporting program forms part of your Certificate of Approval and may be further modified based on the results of analyses. Modifications may include changes in parameters tested, sampling frequencies or monitoring station locations. All changes to the monitoring program will be subject to approval of the Regional Director, Southwestern Region of Ministry of the Environment and Energy.

Yours truly,



J.F. Janse,
Director,
Southwestern Region

m:\rossg\lanthors\041701

ON-SITE MONITORING WELLS

LOCATIONS: 101,111,141,191,231,232,233,263,381,541,551,552,561,562,571,581,591,601

PARAMETERS: chloride, conductivity, DOC, hardness, PH, phenol, fluoride, colour turbidity

FREQUENCY: twice per year

SURFACE WATER SAMPLES

LOCATIONS: SW1 (971) = sediment basin A

SW3 (973) = kettle pond on Way property

SW4 (974) = wet area at Manicom boundary, 11/12 lot line

SW6 (976) = Hooper drain catchbasin at Road 46

SW7 (977) = sediment basin B

to be added to list later:

SW2 (972) = pond at Bartram boundary, 10/11 lot line

SW5 (975) = culvert at Hwy 19 on Anscombe drain

PARAMETERS: chloride, conductivity, DOC, hardness, pH, phenol, turbidity, colour, fluoride

SAMPLING FREQUENCY: 4 times per year

PARAMETERS: conductivity, chloride, DOC, hardness, pH, phenol, fluoride, colour turbidity

FREQUENCY: four time per year

LEACHATE

LOCATIONS: All leachate collection system manholes must be identified on a legible siteplan showing all monitoring wells. Each leachate collection system manhole shall be sampled.

PARAMETERS: conductivity, chloride, DOC, hardness, pH, phenol, fluoride, colour, turbidity

FREQUENCY: Once per year

OXFORD COUNTY LANDFILL SITE (SALFORD)MONITORING PROGRAMMEPRIVATE WELL MONITORING

WELL NO.	OWNER	PHONE NO.	LOCATION	COMMENTS/STATUS
A07080800	Landfill Site Well	485-1516	Lot 11 Conc. 2	new well drilled in 1991
A07080801	Mr. H. Olthaar	485-6665	Lot 13 Conc. 1	
A07080802	Mrs. A. Monkel	485-3199	Lot 12 Conc. 1	
*A07080803	Ms. Stuart		Lot 9 Conc. 2	no samples on record, owner refused samplin
A07080804	Mr. D. Gayford	485-2889	Lot 9 Conc. 3	
A07080805	Mr. J. Smits	485-2408	Lot 11 Conc.2	new well drilled in 1989
A07080806	Mr. L. Bartram	485-2700	Lot 11 Conc.3	
A07080808	Mr. A. Verveer	425-1436	Lot 13 Conc.22	
A07080809	Mr. Van Gingle	425-1621	Lot 13 Conc. 2	
A07080810	Mr. A. Manicom	485-1137	Lot 13 Conc. 2	new well drilled in 1992
A07080811	Mr. W. Wilson	485-2607	Lot 13, Con.2	new well drilled in 1984
A07080812	Mrs. McKillop	485-4697	Lot 13 Conc.2	
A07080813	Mr. G. Belore	485-5013	Lot 13 Conc.2	
*A07080814	Mr. V. Blakely	485-0454	Lot 11 Con. 1	same well as Monkel
A07080815	Ms. D. Barrett	613-822-6977	Lot 11 Conc. 3	Tenant Mrs. Taylor 425-0439
A07080816	Mr. T. Way	485-3348	14 Church St.	added to program Dec 28, 1988
A07080817	Mr. A. Bruggeman	485-0441	Lot 12 Conc.3	added to program in 1991
A07080818	Mr. G. Bartram	485-0557	Lot 11 Conc. 2	
*A07080819	MacDonald			Sampled April 24/86
*A07080820	E. Wilson			Sampled June 25/87
A07080821	Nothof	485-0031	Lot 10 Conc. 2	added to program April 11/95

*Monitoring locations removed from the monitoring program

PARAMETERS: chloride, conductivity, DOC, hardness, PH, phenol, fluoride, colour turbidity

REQUENCY: once per year

20

Miles C / Daniel

RECEIVED
JUL 18 2007



Ministry of the Environment
Ministère de l'Environnement

CERTIFICATE OF APPROVAL
MUNICIPAL AND PRIVATE SEWAGE WORKS
NUMBER 4504-74CKZ2
Issue Date: July 3, 2007

COUNTY OF OXFORD
C.A.O./OLEAK'S OFF

RECEIVED
JUL 17 2007
REVOLVE

The Corporation of the County of Oxford
415 Hunter St Court House, No. 397
Woodstock, Ontario
N4S 7Y3

Site Location: Salford Landfill
Lot 11 & 12, Concession 2
South-West Oxford Township, Restructured County of Oxford

REFER TO
FILE
COUNCIL
DEPARTMENT/OFFICE
PUBLIC WORKS
COMMENTS

You have applied in accordance with Section 53 of the Ontario Water Resources Act for approval of a stormwater management facility to service a 43.7 ha landfill foot print within a total of 89.46 ha drainage area at Salford Landfill Site, designed to attenuate stormwater runoff from 1:100 year return frequency storm event to or below pre-development levels, consisting of the following:

PROPOSED SEWAGE WORKS AS PER APPLICATION DATED JANUARY 30, 2007:

Sedimentation Pond C

- two (2) perimeter ditches with a total length of 780 m collecting stormwater runoff from the southern perimeter of the north fill area and from the northern perimeter of the south fill area, having an approximate depth of 1.0 m and side slopes of 2H:1V, both discharging collected stormwater runoff to a sedimentation pond described below;
- one (1) sedimentation pond (**Pond C**) located at the northwest corner of the south fill area, having a top surface area of approximately 5,900 m², providing a permanent storage capacity of 2,950 m³ with a permanent pool depth of 0.5 m and an active storage capacity of 8,850 m³ with a depth of 1.5 m (total depth of 2.0 m and total storage capacity of 11,800 m³), equipped with an emergency overflow structure and an outlet control structure, discharging to an existing local drainage ditch; and
- including all associated controls and appurtenances.

Sedimentation Pond D

- two (2) perimeter ditches with a total length of approximately 855 m collecting stormwater runoff from the northern and southern parts of the south fill area, having an approximate depth of 1.0 m

and side slopes of 2H:1V, discharging collected stormwater run-off to a sedimentation pond described below;

- one (1) sedimentation pond (**Pond D**) located at the southwest corner of the south fill area, having a top surface area of approximately 6,200 m², providing a permanent storage capacity of 3,100 m³ with a permanent pool depth of 0.5 m and an active storage capacity of 8,600 m³ with a depth of 1.4 m (total depth of 1.9 m and total storage capacity of 11,780 m³), equipped with an emergency overflow structure and an outlet control structure, discharging to an existing local drainage ditch; and
- including all associated controls and appurtenances.

EXISTING SEWAGE WORKS:

Sedimentation Pond A

- one (1) approximately 540 m long perimeter ditch collecting stormwater runoff from the western perimeter of the north fill area, having an approximate depth of 1.0 m and side slopes of 2H:1V, discharging collected stormwater run-off to a sedimentation pond described below;
- one (1) sedimentation pond (**Pond A**) located at the northwest part of the north fill area, having a top surface area of approximately 7,550 m², providing a permanent storage capacity of 35,000 m³ with a permanent pool depth of 4.6 m and an active storage capacity of 9,000 m³ with a depth of 1.2 m (total depth of 5.8 m and total storage capacity of 44,000 m³), discharging to sedimentation pond B described below; and
- including all associated controls and appurtenances.

Sedimentation Pond B

- one (1) approximately 240 m long perimeter ditch receiving discharges from sedimentation **Pond A** and collecting stormwater runoff from the northern perimeter of the north fill area, having an approximate depth of 1.0 m and side slopes of 2H:1V, discharging collected stormwater runoff to a sedimentation pond described below;
- one (1) sedimentation pond (**Pond B**) located at the northeast corner of the north fill area, having a top surface area of approximately 15,000 m², providing a permanent storage capacity of 53,000 m³ with a permanent pool depth of 3.5 m and an active storage capacity of 15,000 m³ with a depth of 1.0 m (total depth of 4.5 m and total storage capacity of 68,000 m³), equipped with an emergency overflow culvert through the north berm discharging to a road side ditch along County Road 46 and an outlet control gate valve (**normally closed**), discharging to Hooper Drain; and
- including all associated controls and appurtenances.

all in accordance with the Application for Approval of Municipal and Private Sewage Works submitted by County of Oxford dated January 30, 2007, and drawings and design specifications prepared by SNC -Lavalin Engineers & Constructors Inc., Toronto, Ontario.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

"*Act* " means the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended;

"*Certificate* " means this entire certificate of approval document, issued in accordance with Section 53 of the *Act* , and includes any schedules;

"*CBOD5* " means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample;

"*Director* " means any *Ministry* employee appointed by the Minister pursuant to section 5 of the *Act* ;

"*District Manager* " means the District Manager of the London District Office of the Ministry;

"*Ministry* " means the Ontario Ministry of the Environment;

"*Owner* " means County of Oxford and includes its successors and assignees;

"*Previous Works* " means those portions of the sewage works previously constructed and approved under a certificate of approval;

"*Proposed Works* " means the sewage works described in the *Owner* 's application, this *Certificate* and in the supporting documentation referred to herein, to the extent approved by this *Certificate* ;

"*Substantial Completion* " has the same meaning as "*substantial performance* " in the Construction Lien Act;

"*Works* " means the sewage works described in the *Owner* 's application, this *Certificate* and in the supporting documentation referred to herein, to the extent approved by this *Certificate* and includes both *Previous Works* and *Proposed Works* .

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

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

- (1) The *Owner* shall ensure that any person authorized to carry out work on or operate any aspect of the *Works* is notified of this *Certificate* and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.
- (2) Except as otherwise provided by these Conditions, the *Owner* shall design, build, install, operate and maintain the *Works* in accordance with the description given in this *Certificate* , the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this *Certificate* .
- (3) Where there is a conflict between a provision of any submitted document referred to in this *Certificate* and the Conditions of this *Certificate* , the Conditions in this *Certificate* shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.
- (4) Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.
- (5) The requirements of this *Certificate* are severable. If any requirement of this *Certificate* , or the application of any requirement of this *Certificate* to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this certificate shall not be affected thereby.

2. EXPIRY OF APPROVAL

The approval issued by this *Certificate* will cease to apply to those parts of the *Proposed Works* which have not been constructed within ten (10) years of the date of this *Certificate* .

3. CHANGE OF OWNER

- (1) The *Owner* shall notify the *District Manager* and the *Director* , in writing, of any of the following changes within 30 days of the change occurring:
 - (a) change of *Owner* ;
 - (b) change of address of the *Owner* ;
 - (c) change of partners where the *Owner* 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.B17 shall be included in the notification to the *District Manager* ;
 - (d) change of name of the corporation where the *Owner* is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations

Information Act, R.S.O. 1990, c. C 39 shall be included in the notification to the *District Manager* ;

- (2) In the event of any change in ownership of the *Works* , other than a change to a successor municipality, the *Owner* shall notify in writing the succeeding owner of the existence of this *Certificate* , and a copy of such notice shall be forwarded to the *District Manager* and the *Director* .

4. UPON THE SUBSTANTIAL COMPLETION OF THE WORKS

- (1) Within one year of the *Substantial Completion* of the *Proposed Works* , a set of as-built drawings showing the *Works* “as constructed” shall be prepared. These drawings shall be kept up to date through revisions undertaken from time to time and a copy shall be retained at the *Works* or at operational office of the *Owner* for the operational life of the *Works* .

5. MONITORING AND RECORDING

- (1) The *Owner* shall carry out the following stormwater monitoring program. Stormwater grab samples shall be collected from **Pond B, Pond C, and Pond D four times annually** and analysed for the following parameters listed in Table 1:

Table 1 - Stormwater Monitoring Sampling Point: Pond B, Pond C and Pond D		
General Parameters	General Parameters	Field Parameters
Alkalinity	Total Suspended Solids	Conductivity
Conductivity	Total Dissolved Solids	Dissolved Oxygen
pH	Chemical Oxygen Demand	pH
Chloride	Total Phosphorus	Temperature
Sulphate	Total Kjeldahl Nitrogen	
Nitrate as Nitrogen	Biological Oxygen Demand (BOD5)	
Nitrite as Nitrogen	Phenols	
Total Ammonia	Iron	

* **Note:** Samples shall be collected within twenty four hours after a rainfall event resulting in a stormwater discharge from each SWM Pond during the period between March 15 and November 30 ensuring that a minimum of one (1) month period is set between consecutive sampling events.

- (2) The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:
- (a) the Ministry's Procedure F-10-1, “Procedures for Sampling and Analysis

Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended from time to time by more recently published editions;

(b) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions; and,

(c) the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition), as amended from time to time by more recently published editions.

(3) The *Owner* shall retain for a minimum of three (3) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this *Certificate* .

6. OPERATION AND MAINTENANCE

(1) The *Owner* shall ensure that the design minimum liquid retention volume(s) is maintained at all times.

(2) The *Owner* shall inspect the *Works* at least once a year and, if necessary, clean and maintain the *Works* to prevent the excessive build-up of sediments and/or vegetation.

(3) The *Owner* shall maintain a logbook to record the results of these inspections and any cleaning and maintenance operations undertaken, and shall keep the logbook at the site or at the *Owner's* operational headquarters for inspection by the *Ministry* . The logbook shall include the following:

(a) the name of the *Works* ; and

(b) the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed.

7. REPORTING

(1) The *Owner* shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to *Ministry* staff.

(2) The *Owner* shall prepare and submit to the *District* Manager performance report, on annual basis, within ninety (90)days following the end of the period being reported upon. The first such report shall cover the first annual period following the commencement of operation of the *Works* and subsequent reports shall be submitted to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

- (a) a summary and interpretation of all monitoring data collected for stormwater under Condition 5, including an overview of the success and adequacy of the *Works* ;
- (b) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the *Works* ;
- (c) a description of any operating problems encountered and corrective actions taken;
- (d) any other information the *District Manager* requires from time to time.

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

1. Condition 1 is imposed to ensure that the *Works* are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the *Certificate* and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. The condition also advises the Owners their responsibility to notify any person they authorized to carry out work pursuant to this *Certificate* the existence of this *Certificate* .
2. Condition 2 is included to ensure that, when the *Works* are constructed, the *Works* will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.
3. Condition 3 is included to ensure that the *Ministry* records are kept accurate and current with respect to the approved works and to ensure that subsequent owners of the *Works* are made aware of the *Certificate* and continue to operate the *Works* in compliance with it.
4. Condition 4 is included to require that the *Works* be properly operated and maintained such that the environment is protected .
5. Condition 5 is included to enable the *Owner* to evaluate and demonstrate the performance of the *Works* on a continual basis, so that the *Works* are properly operated and maintained at a level which is consistent with the design objectives specified in the *Certificate* and that the *Works* does not cause any impairment to the receiving watercourse.
6. Condition 6 is included to require that the *Works* be properly operated and maintained such that the environment is protected .
7. Condition 7 is included to ensure that the *Ministry* is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this *Certificate*, so that the *Ministry* can work with the *Owner* in resolving any problems in a timely manner.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

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

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

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

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., Suite 1700
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

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

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 3rd day of July, 2007



Mohamed Dhalla, P.Eng.
Director
Section 53, *Ontario Water Resources Act*

SH/

c: District Manager, MOE London - District
Paul Donahue, SNC-Lavalin Engineers & Constructors Inc.

AMENDMENT TO PROVISIONAL CERTIFICATE OF
APPROVAL
WASTE DISPOSAL SITE

NUMBER A070808

Notice No. 3

Issue Date: September 29, 2010

RECEIVED

OCT 07 2010

The Corporation of the County of Oxford
21 Reeve St
Post Office Box, No. 1614
Woodstock, Ontario
N4S 7Y3

Site Location: Salford Landfill
Lots 11 & 12, Concession 2
South-West Oxford Township, Restructured County of Oxford

You are hereby notified that I have amended Provisional Certificate of Approval No. A070808 issued on August 24, 1983, as amended for the use and operation of a 43.7 hectare (108 acre) Waste Fill Area within a total Site area of 89.44 hectares (221 acres) , as follows:

INSTALLATION AND OPERATION OF LANDFILL GAS COLLECTION AND FLARING SYSTEM

Pursuant to Section 11.1 of Ontario Regulation 347, approval is hereby granted for the construction and operation of landfill gas collection system, comprising of vertical gas extraction wells, a network of sub-laterals, laterals and perimeter header piping, and a flaring facility;

all in accordance with the Application for a Provisional Certificate of Approval for a Waste Disposal Site, dated March 29, 2010, and supporting documentation as listed in Schedule "A", which is attached to this Certificate and forms part of the Provisional Certificate of Approval, No. A070808.

For the purposes of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

"*Certificate*" means this Provisional Certificate of Approval No. A070808, including all items, conditions and Schedules attached to and forming part of this Certificate, as amended by the Director.

"*Director*" means the Supervisor, Waste Approvals, Environmental Assessment and Approvals Branch of the Ontario Ministry of the Environment, who is designated as a Director under Section 39 of the *Environmental Protection Act*.

"*District Manager*" means the District Manager of the London District Office, Southwestern Region, Ontario Ministry of the Environment, or his/her representative.

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

"*MOE*" or "*Ministry*" means the Ontario Ministry of the Environment.

"*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 *Certificate*, and includes the County of Oxford, 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* or section 5 of the *EPA* or section 17 of *PA*.

"*Regional Director*" means the Regional Director of the Southwestern Regional Office of the Ontario Ministry of the Environment.

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

"*Site*" or "*Facility*" means the entire waste disposal site, including the waste fill Area, the buffer lands/contaminant attenuation zone, and all the operations approved by the *Certificate*, as amended.

"*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 the Certificate.

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

TERMS AND CONDITIONS

1.0 GENERAL

Compliance

- 1.1 This Notice revokes and replaces Notice No. 1 dated May 21, 2010 and its amendment(s), issued under Section 11.1 of Ontario Regulation 347 for the installation of Landfill gas collection and flaring System.
- 1.2. The Owner/Operator shall ensure compliance with all the conditions of this Certificate and shall ensure that any person authorized to carry out work on or operate any aspect of the Site/System is notified of this Certificate and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same. Any noncompliance constitutes a violation of the *EPA* , R.S.O. 1990 and is grounds for enforcement.

In Accordance

- 1.3 Except as otherwise provided for in this *Certificate* , the *Site* shall be designed, developed, used, operated and maintained, and all facilities, equipment and fixtures shall be built and installed, in accordance with the documentation listed in the attached Schedule "A" and the terms and conditions of this *Certificate* .
- 1.4 The requirements specified in this Certificate are the requirements under the *EPA* , R.S.O. 1990. The issuance of this Certificate in no way abrogates the Owner's legal obligations to take all reasonable steps to avoid violating other applicable provisions of this legislation and other legislation and regulations.

Interpretation

- 1.5 (a) Where there is a conflict between a provision of any document, including the application, referred to in Schedule "A" of this *Certificate* , and the conditions of

this *Certificate*, the conditions in this *Certificate* shall take precedence.

- (b) Where there is a conflict between the application and a provision in any documents listed in Schedule "A", the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the *Ministry* approved the amendment.
- (c) Where there is a conflict between any two documents listed in Schedule "A", other than the application, the document bearing the most recent date shall take precedence.

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

Adverse Effect

1.7 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.

1.8 Despite the Owner/Operator or any other person fulfilling any obligations imposed by this *Certificate* the person remains responsible for any contravention of any other condition of this *Certificate* 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.

Notifications

1.9 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) change of the Ownership and/or Operator of the *Site* ;
- (b) change of the address of the *Owner* or *Operator* ;
- (c) 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;
- (d) any change of name of the corporation where the Owner or Operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or

Notice of Change" (Form 1 or 2 of Ontario Regulation 182, Chapter C-39, R.R.O. 1990 as amended from time to time), filed under the *Corporations Information Act* shall be included in the notification to the Director.

- 1.10 (a) The Owner/Operator shall, forthwith upon request of the Director, District Manager, or *Provincial Officer*, furnish any information requested by such persons with respect to compliance with this Certificate, including but not limited to, any records required to be kept under this Certificate; and
- (b) In the event the Owner/Operator provides the Ministry with information, records, documentation or notification in accordance with this Certificate (for the purposes of this condition referred to as "Information"),
- i. the receipt of Information by the Ministry;
 - ii. the acceptance by the Ministry of the Information's completeness or accuracy; or
 - iii. the failure of the Ministry to prosecute the Owner, or to require the Owner to take any action, under this Certificate or any statute or regulation in relation to the Information;

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

- 1.11 The Owner/Operator shall allow Ministry personnel, or Ministry authorized representative(s), upon presentation of credentials, to carry out any and all inspections authorized by the *Environmental Protection Act, R.S.O. 1990*, and the *Ontario Water Resources Act, R. S. O. 1990* or the *Pesticides Act, R. S. O. 1990*, as amended, of any place to which this Certificate relates and without restricting the generality of the foregoing to:
- (a) enter upon the premises or the location where the records required by the conditions of this Certificate are kept;
 - (b) have access to and copy, at any reasonable time, any records required by the conditions of this *Certificate* ;
 - (c) inspect at reasonable times any facilities (including monitoring and control equipment), equipment, practices or operations required by the conditions of this *Certificate* ; and
 - (d) sample and monitor at reasonable times for the purposes of assessing compliance with the conditions of this Certificate.

- 1.12 All records and monitoring data required by the conditions of this *Certificate* shall be kept on the Owner's premises for a minimum period of two (2) years from the date of their creation.
- 1.13 The Owner/Operator shall ensure that all communication made pursuant to this *Certificate* refers to the *Certificate* No. A070808.
- 1.14. Any information relating to this *Certificate* and contained in Ministry files shall be made available to the public in accordance with the provisions of the *Freedom of Information and Protection of Privacy Act* , R.S.O. 1990, C. F-31.

2.0 SITE DEVELOPMENT AND OPERATION

- 2.1 Within one (1) year from the date of this Notice, the Owner/Operator shall prepare and submit to the Director, for approval, copied to the District Manager, an updated Development and Operations Report for the continued use of the Site. The Development and Operations Report shall include, as a minimum, the following:
- (a) a full-scale site plan and specifications showing the footprint of the fill area, buffer and/or contaminant attenuation zones, all waste management activities at the Site, and the entire Site boundary;
 - (b) full-scale drawings showing base contours in future landfilling areas as applicable, as well as final contours;
 - (c) detailed quality assurance/quality control (QA/QC) program for the preparation/development of new areas of the remaining landfill base, final cover and any other facility as appropriate;
 - (d) an estimate of the remaining capacity and site life, based on the current fill rate;
 - (e) detailed information on updated Site development, utilization and maintenance;
 - (f) groundwater and surface water assessment; including leachate monitoring and Surface water management programs;
 - (g) details of nuisance control programs and necessary precautions to avoid disturbance to the natural environment caused by the operation of the Site and associated facilities;
 - (h) details on the monitoring, inspections, maintenance, repair at the Site and replacement of associated facilities;
 - (i). contingency plans for environmental controls; and

- (j) Application for approval under Section 53 of the OWRA, if applicable, for any proposed surface water management works for the Site.
- 2.2 A landfill gas collection system, comprising of vertical gas extraction wells, a network of sub-laterals, laterals and perimeter header piping, and a flaring facility, shall be constructed and operated, in accordance with the conceptual design and operation described in Section 2.1 in the Design Report, Item 1 in Schedule "A", as amended by Item 3 in Schedule "A", attached to this Certificate.

Detailed Design and Operations

- 2.3 The landfill gas collection and flaring system, phase 1, shall be constructed and operated in accordance with the detailed design and development, as described in Section 2.2 in Item 1 in Schedule "A", as amended by Item 3 in Schedule "A", attached to this Certificate.
- 2.4 Detailed design in phase 2 and all subsequent phases of the landfill gas collection and flaring system, shall be submitted by the Owner/Operator, for the approval of the Director, with copies to the District Manager, prior to construction. The detailed design, development drawings and specifications, shall reflect the conceptual design of the landfill gas collection and flaring system, as presented in Item 1 in Schedule "A", as amended by Item 3 in Schedule "A", attached to this Certificate. Any design optimization or modification shall be clearly identified, along with an explanation of the reasons for the change.
- 2.5 The detailed design shall, at a minimum include the following:
- (a) full-scale design drawings and specifications, including profiles, site plan showing all engineered facilities associated with the headers, laterals and sub-laterals, and material descriptions and requirements for delivery, storage, installation and sampling;
 - (b) detailed quality assurance/quality control (QA/QC) program for construction of the landfill gas collection and flaring system ;
 - (c) details of nuisance control programs and necessary precautions to avoid disturbance to the natural environment caused by the operation of the landfill gas collection and flaring system;
 - (d) details on the monitoring, maintenance, repair and replacement of components of the landfill gas collection and flaring system, as necessary;
 - (e) contingency plans for environmental controls;

- 2.6 The Owner/Operator shall develop and operate the landfill gas collection and flaring system, including all approved facilities, in accordance with the approved detailed design and operations report, as required in Conditions 2.3 and 2.4 above, and shall implement the QA/QC activities and procedures, as approved by the Director.
- 2.7 No later than ninety (90) days after the commissioning of the landfill gas collection and flaring system, the Owner/Operator shall submit to the Director for approval, with copies to the District Manager, Operation and Maintenance Manual (Manual) for the gas collection and flaring system. The Manual shall provide, but not be limited to, details on inspection and maintenance schedules, documentation procedures, shut-down procedures, Ministry contact procedures, flare operations, and maintenance.

3.0 SITE OPERATIONS

- 3.1 The *Site* shall be operated and maintained at all times, including management and disposal of all waste, in accordance with the *EPA , Regulation 347* , and the conditions of this *Certificate*. At no time shall the discharge of a contaminant that causes or is likely to cause an adverse effect be permitted.
- 3.2 Prior to implementation of any changes in the landfill gas collection and flaring system operation, that may result in activities not specified in the Design Report, Item 1, in Schedule "A", as amended in Item 3 in Schedule "A", attached to this Certificate, or in this Certificate, and that may likely cause the discharge of contaminant to the natural environment, the Owner/Operator shall obtain approval from the Director.
- 3.3 The Owner/Operator shall maintain records of landfill gas flow. Such records shall be made available for inspection upon request by a Provincial Officer.
- 3.4 In the event of a discharge of a contaminant, including landfill gas, landfill gas condensate, etc., the Owner/Operator shall immediately notify the District Manager and the Ministry's "Spills Action Centre", and advise of actions being taken to contain, control and ameliorate the situation.
- 3.5 For any situation when landfill gas is not being collected and incinerated and which cannot be rectified within 48 hours, the Owner/Operator shall notify the District Manager and advise of actions being taken to contain, control and ameliorate the situation.

Landfill gas and Odour Management

- 3.6 Within ninety (90) days of commissioning the landfill gas collection and flaring system, the Owner/Operator shall submit to the Director for approval, a written report describing a plan and implementation schedule for landfill gas and odour management in conjunction with site development and progressive rehabilitation. The plan shall include, as a minimum:

- (a) A description of any anticipated progress of final cover placement until site closure, based on progressive rehabilitation of the Site;
- (b) A landfill gas emissions survey of the Site to be conducted using Flame Ionization Detector or equivalent, at the completion of each of the three phases, to provide an indication of the capture efficiency of the landfill gas collection and control system at the time of the survey, and to identify areas of the Site which require upgrading, alteration, or additional collection and control facilities; and
- (c) A program to evaluate the effectiveness of the landfill gas collection system. The program shall include an assessment to be conducted at least once a year, of the Site's conformance with an operating code of practice which includes the development of system design parameters, such as spacing and zones of influence for the extraction wells, minimum applied vacuum and landfill gas flow rates for extraction wells and headers; details on the management of the system to satisfy the design parameters and a description of rationale for landfill gas flow adjustments to optimize system operation.

3.7 During construction of the landfill gas collection system, the Owner/Operator shall implement as a minimum, odour control plan described in Item 3 in Schedule "A", attached to this Certificate. The effectiveness of the odour control plan shall be monitored and evaluated regularly, and updated or amended as necessary, based on operational experience and odour complaints received.

3.8 After commissioning the landfill gas collection and flaring system, the Owner/Operator shall prepare and submit to the District Manager, with copies maintained at the Site, a written report covering each year's construction season. The report shall detail the construction activities, QA/QC program carried out for the construction, as-built drawings of the landfill gas collection and flaring system to date, including a description and reasons for any changes to the design of the landfill gas collection and flaring system.

3.9 Any gas extraction well that needs to be replaced due to damage or the well is deemed to be not functioning properly, the Owner/Operator shall replace the gas extraction well within a reasonable time frame of identifying the need for replacement. Any such changes to the gas extraction system shall be documented in the Annual Report.

4.0 ENVIRONMENTAL CONTROL, MONITORING/INSPECTION AND MAINTENANCE

4.1 The Owner/Operator shall carry out monitoring program for landfill gas to monitor the performance of the landfill gas collection and flaring system, as described in Item 1 in Schedule "A", as amended in Item 3 in Schedule "A", attached to this Certificate, and as per written recommendations of the District Manager, through the review of Annual

Monitoring Reports, and any related EPA requirements.

- 4.2 Components of the active gas collection system shall be monitored on an as-needed basis, with a routine frequency of once per month for the full collection field. Any observed deficiencies/problems shall be repaired as soon as practicable and a summary of remedial actions carried out, shall be reported in the Annual Monitoring Report, listed in Condition 5.1 below.
- 4.3 The Owner/Operator shall ensure that any proposed changes to the monitoring program under this Certificate shall be implemented subject to prior written concurrence of the District Manager.

Subsurface Migration of Combustible Gas

- 4.4 Buildings and structures existing or to be built on Site shall be situated, constructed and monitored in a manner which minimizes the potential for explosive hazards due to combustible gas. Appropriate methane detection and alarm equipment, shall be installed and maintained for all enclosed unvented buildings and/or structures on Site, which at times are occupied by people.

Note: For the purposes of Condition 4.4, vented building or structure is a building or structure built with its floor sealed and elevated above ground and having adequate air space underneath the floor of the building or structure.

- 4.5 Subsurface migration of combustible methane gas shall meet the following limits, as required by Ontario Reg. 232/98
- (a) The concentration of methane gas must be less than 2.5 percent by volume at the limits of the property boundary.
 - (b) The concentration of methane gas must be less than 1.0 percent by volume in any on-site building or enclosed structure, and in the area immediately outside the foundation or basement floor of the building or structure that is located on Site, if the building or structure is accessible by people or contains electrical equipment or a potential source of ignition.
 - (c) Sub-condition (b) does not apply to a leachate collection, storage or pumping station or a landfill gas collection and/or treatment facility for which specific Occupational Health and Safety measures and procedures relating to the risk of asphyxiation and the risk of explosion, must be followed.
 - d) The concentration of methane gas from the Site in any off-Site building or enclosed structure, and in the area immediately outside the foundation or basement floor of the building or structure, if the building or structure is accessible by people or contains electrical equipment or a potential source of ignition, must be

less than 0.05% by volume.

- 4.6 If a measured gas concentration at any specific compliance location, reaches the applicable limit identified in Sub-conditions 4.5 (a) and (b) above, or if a notification is given that gas concentration has reached the limit specified in Sub-condition 4.5(d), above, the reading shall be re-measured immediately and daily for a period of up to three (3) consecutive days. If these readings confirm an exceedance of the applicable limit, the District Manager shall be notified immediately, and appropriate control measures shall be implemented as soon as possible thereafter.

5.0 ANNUAL REPORT

- 5.1 By April 30th following the end of each operating year, the Owner/Operator shall prepare and submit to the District Manager, a report summarizing the records of all waste management activities at the Site, including landfill gas collection and flaring, covering the previous calendar year. The report shall include, as a minimum, the following information:
- (a) the results and an interpretive analysis of the results of all landfill gas monitoring, including an assessment of the need to amend the monitoring program or to develop and implement contingency measures;
 - (b) review and assessment of any environmental and operational problems, that could negatively impact the environment, encountered during the operation of the Site and during Site inspections and any mitigative actions taken;
 - (c) a summary of any public complaints received by the Owner/Operator and the responses made;
 - (d) a statement as to compliance with all Conditions of this Certificate and with the inspection and reporting requirements of the Conditions herein;
 - (e) any recommendations to minimize environmental impacts from the operation of the Site and to improve Site operations and monitoring programs in this regard; and
 - (f) any other information with respect to the *Site* which the District Manager may require from time to time.

6.0 CLOSURE PLAN

- 6.1 At least 2 years prior to the anticipated date of closure of this *Site* or any aspect of the operations at the site, 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 and/or any aspect of the operations at this *Site*, post-closure

inspection, maintenance and monitoring, and end use. The plan shall include but not limited to the following:

- (a) a plan showing *Site* appearance after closure;
- (b) a description of the proposed end use of the *Site* ;
- (c) a description of the procedures for closure of the *Site*;
- (d) advance notification of the public of the landfill closure;
- (e) posting of a sign at the *Site* entrance indicating the landfill is closed and identifying any alternative waste disposal arrangements;
- (f) completion, inspection and maintenance of the final cover and landscaping;
- (g) site security;
- (h) removal of unnecessary landfill-related structures, buildings and facilities; and
- (i) final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
- (j) a schedule indicating the time-period for implementing sub-conditions (a) to (e) above.
- (k) description of the procedures for post-closure care of the *Site*, including operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
- (l) record keeping and reporting; and
- (m) complaint contact and response procedures;
- (n) an assessment of the adequacy of and need to implement contingency plans for leachate and methane gas; and
- (o) an updated estimate of the contaminating life span of the *Site* , based on the results of the monitoring programs to date.

6.2 Within ten (10) days after closure of the *Site*, the Owner shall notify the Director, in writing, that the *Site* is closed and that the *Site* Closure Plan has been implemented.

SCHEDULE "A"

The following documentation is hereby added to Schedule "A", and forms part of the Provisional Certificate of Approval No. A070808. If there is a conflict between documents listed in Schedule "A", the document bearing the most recent date shall apply:

Documentation

1. Report entitled "Ontario Regulation 347 Design Report, Oxford County Landfill Site, Salford, Ontario", dated June 26, 2009
2. Application for Provisional Certificate of Approval for a Waste Disposal Site, Installation and Operation of Landfill gas Collection and Flaring System, dated March 29, 2010, signed by Robert Walton, Director of Public Works, County of Oxford.
3. Letter dated April 15, 2010, from Denise Burgess, Comcor Environmental Limited to Dickson Odame-Osafo, Ministry of the Environment, Re: response to MOE comments on the design report.

REASONS

The reason(s) for this amendment to the Certificate of Approval is (are) as follows:

1. The reason for **Condition 1.1** is to clarify the status of this Certificate of Approval as it relates to previous approvals.
2. The reason for **Conditions 1.2, 1.4, 1.5, 1.6, 1.7, 1.8, 1.10, 1.12, 1.13 and 1.14** is to clarify the legal rights and responsibilities of the Owner and Operator under this Certificate of Approval.
3. The reason for **Conditions 1.3, 2.2, 2.3 and 3.2** is 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.
4. The reasons for **Condition 1.9** 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.
5. The reason for **Condition 1.11** 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 Certificate of Approval. This condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the EPA and OWRA.

6. The reason for **Condition 2.1** is to ensure that the Site is developed and operated in a manner which conforms to current standards of landfill development and operation.
7. The reason for **Conditions 2.4, 2.5, 2.6, 2.7 and 4.3** is to ensure that the Site is designed, constructed and operated in an environmentally acceptable manner, based on the conceptual design and operations for the Site. **Condition 4.3** has been specifically included to allow for optimization of design, based on operating experience and monitoring results.
8. The reasons for **Conditions 3.1, 3.3, 3.4, 3.5, 3.7 and 3.9** 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 to any person.
9. The reasons for **Condition 3.6** are to ensure optimized performance and capture efficiency of the landfill gas collection and control system design, based on operating experience and monitoring results, and to mitigate possible odour impacts from the site. Application of a final cover provides aesthetically pleasing appearance and controls infiltration.
10. The reason for **Condition 3.8** is to confirm that the Site conditions are as expected and that the Site has been prepared and constructed in accordance with the approved design.
11. The reasons for **Conditions 4.1 and 4.2** are to demonstrate that the landfill 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 early warning of potential problems so that any necessary remedial/contingency action can be taken.
12. The reason for **Condition 4.4** is to ensure protection of public health and safety of people against potential for explosion due to accumulation of landfill gas generated at this Site.
13. The reason for **Conditions 4.5 and 4.6** is to ensure that landfill gas generated at this Site is managed in an environmentally acceptable manner.
14. The reason for **Condition 5.1** is to ensure that regular review of site operations and monitoring data is documented and any possible improvements to site 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 operations and monitoring.
15. The reason for **Conditions 6.1 and 6.2** is to ensure that final closure of the Site is completed in an environmentally acceptable manner in order to ensure the long-term protection of the natural environment.

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A070808 dated August 24, 1983

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

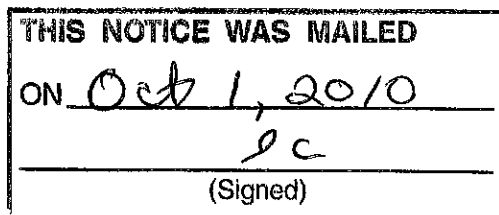
AND

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

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

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

DATED AT TORONTO this 29th day of September, 2010



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

DO/

c: District Manager, MOE London - District
Denise Burgess, Comcor Environmental Limited ✓



COUNTY OF OXFORD
RECEIVED

NOV 19 2013

Ministry of the Environment
Ministère de l'Environnement

REFER TO Public Works AMENDED-ENVIRONMENTAL COMPLIANCE APPROVAL

File/ EDMS: _____

NUMBER A070808

Issue Date: November 7, 2013

County of Oxford
21 Reeve St
Post Office Box, No. 1614
Woodstock, Ontario
N4S 7Y3

Site Location: Salford Landfill
Lot 11 & 12, Concession 2
South-West Oxford Township, Restructured County of Oxford

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 43.7 hectare (108 acre) Waste Fill Area within a total Site area of 89.44 hectares (221 acres)

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

DEFINITIONS

"Approval" means this Environmental Compliance Approval No. A070808, including all items, conditions and Schedules attached to and forming part of this Approval, as amended by the Director;

"Director" means any Ministry employee appointed in writing by the Minister pursuant to Section 5 of the EPA as a Director for the purpose 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;

"MOE" or "Ministry" means the Ontario Ministry of the Environment;

"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 County of Oxford, 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 or Section 5 of the EPA or section 17 of PA;

"Regional Director" means the Regional Director of the Southwestern Regional Office of the Ontario Ministry of the Environment;

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

"Site" or "Facility" means the entire waste disposal site, including the waste fill Area, the buffer lands/contaminant attenuation zone, and all the operations approved by the Approval, as amended and located at part of Lot 11 & 12, Concession 2, South-West Oxford Township, Restructured County of Oxford, known as Salford and or Oxford Landfill; and

"Trained personnel" means personnel knowledgeable in the following through instruction and/or practice:

- relevant waste management legislation, regulations and guidelines;
- major environmental concerns pertaining to the waste to be handled;
- occupational health and safety concerns pertaining to the processes and wastes to be handled;
- management procedures including the use and operation of equipment for the processes and wastes to be handled;
- emergency response procedures;
- specific written procedures for the control of nuisance conditions;
- specific written procedures for refusal of unacceptable waste loads; and
- the requirements of the Approval.

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

1.0 GENERAL

Compliance

1.1 The Owner/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/System is notified of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person

complies with the same. Any noncompliance constitutes a violation of the EPA, R.S.O. 1990 and is grounds for enforcement.

In Accordance

1.2 Except as otherwise provided for in this Approval, the Site shall be designed, developed, used, operated and maintained, and all facilities, equipment and fixtures shall be built and installed, in accordance with the documentation listed in the attached Schedule "A" and the terms and conditions of this Approval.

1.3 The requirements specified in this Approval are the requirements under the EPA, R.S.O. 1990. The issuance of this Approval in no way abrogates the Owner's legal obligations to take all reasonable steps to avoid violating other applicable provisions of this legislation and other legislation and regulations.

Interpretation

1.4 (a) Where there is a conflict between a provision of any document, including the application, referred to in Schedule "A" of this Approval, and the conditions of this Approval, the conditions in this Approval shall take precedence.

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

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

1.5 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.

Adverse Effect

1.6 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.

1.7 Despite the 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.

Notifications

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

1.9 (a) The Owner/Operator shall, forthwith upon request of the Director, District Manager, or Provincial Officer, furnish any information requested by such persons with respect to compliance with this Approval, including but not limited to, any records required to be kept under this Approval; and

(b) In the event the Owner/Operator provides the Ministry with information, records, documentation or notification in accordance with this Approval (for the purposes of this condition referred to as "Information"),

- i. the receipt of Information by the Ministry;
- ii. the acceptance by the Ministry of the Information's completeness or accuracy; or
- iii. the failure of the Ministry to prosecute the Owner, or to require the Owner to take any action, under this Approval or any statute or regulation in relation to the Information;

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

1.10 The Owner/Operator shall allow Ministry personnel, or Ministry authorized representative(s), upon presentation of credentials, to carry out any and all inspections authorized by the Environmental Protection Act, R.S.O. 1990, and the Ontario Water Resources Act, R. S. O. 1990 or the Pesticides Act, R. S. O. 1990, as amended, of any place to which this Approval relates and without restricting the generality of the foregoing to:

- (a) enter upon the premises or the location where the records required by the conditions of this Approval are kept;
- (b) have access to and copy, at any reasonable time, any records required by the conditions of

this Approval;

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

(d) sample and monitor at reasonable times for the purposes of assessing compliance with the conditions of this Approval.

1.11 All records and monitoring data required by the conditions of this Approval shall be kept on the Owner's premises for a minimum period of two (2) years from the date of their creation.

1.12 The Owner/Operator shall ensure that all communication made pursuant to this Approval refers to the Approval No. A070808.

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

2.0 SITE DESIGN, DEVELOPMENT AND OPERATION

2.1 (a) The Site shall be designed, operated and maintained at all times, in accordance with the EPA, Regulation 347, the conditions of this Approval, report entitled Oxford County Salford Landfill Site Design and Operations Report, prepared by M.M. Dillon Limited, dated September 12, 1984, and revised on June 17, 1986 and report entitled County of Oxford, Oxford Landfill Site, Amendment to 1986 Design and Operation Report, prepared by R.J. Burnside & Associates Limited, dated April 2013, included in Schedule "A" as Items 6 and 7.

(b) The combined capacity of North Fill Area and South Fill Area, including waste, daily, and final cover, shall not exceed 5,900,000 cubic metres, as represented by final contours in Figure 5, Item 7 of Schedule "A".

(c) Two years prior to North Fill Area reaching final capacity and before South Fill Area is to be utilized, the Owner shall submit to the Director, a complete design and operation plan for utilization of the approved capacity in the South Fill Area.

DAILY, INTERMEDIATE AND FINAL COVER

2.2 Waste shall be deposited in the fill area in an orderly manner. All waste shall be compacted and then covered in accordance with the following schedule:

(a) (i) Soil cover material with a minimum thickness of 150 mm or an equivalent thickness of alternative cover material as approved by the Director shall be placed over the entire working face at the end of each operating day;

(ii) The Owner shall ensure that a minimum cover material supply equal to two days

requirements is maintained at the Site to ensure that adequate cover is always available.

- (b) Interim cover consisting of a minimum thickness of 300 mm of soil cover or an equivalent thickness of alternative cover material as approved by the Director shall be placed on areas where landfilling has been temporarily discontinued for six months or more.
- (c) In areas where landfilling has reached final contours, final cover shall be applied within two years in accordance to details outlined in Item 6 of Schedule "A".
- (d) The landfilling area shall be inspected monthly for erosion of the interim and final cover material. Appropriate corrective measures shall be undertaken by the Owner within 5 working days, weather permitting, after an erosion problem is identified.

2.3 The Owner shall ensure that there is no burning of waste at the Site.

2.4 The Owner shall ensure that there is no uncontrolled scavenging of waste at the Site.

WASTE DIVERSION FACILITIES

2.5 (a) Diversion Facilities shall be operated and maintained as outlined in Section 2.1, Item 7 of Schedule "A".

(b) The Owner shall ensure that the Site and the Diversion facilities are operated and maintained such that the vermin, vectors, dust, litter, odour, noise and traffic do not create a nuisance.

(c) The Owner shall ensure that all white goods containing refrigerants are stored in a segregated area in an upright position and in a manner that allows for safe handling and removal of refrigerants as required by O. Reg. 189, until refrigerant has been drained and item has been tagged by a licensed contractor.

SITE INSPECTIONS AND RECORD KEEPING

2.6 (a) An inspection of the working area of the Site and all active equipment shall be conducted each day the Site is in operation to ensure 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.

(b) A record of the inspections shall be kept in a daily log book or a dedicated electronic file 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.

SITE SECURITY AND ACCESS

- 2.7 (a) The Owner shall construct adequate fence and gate to secure Site from unauthorized access. During non-operating hours, the Site entrance and exit gates shall be locked and the Site shall be secured against access by unauthorized persons
- (b) Access roads and on-Site roads shall be provided and maintained in a manner that vehicles hauling waste to and on the Site may travel readily and safely on any operating day. During winter months, when the Site is in operation, roads must be maintained to ensure safe access to the landfill working face. Access roads must be clear of mud, ice and debris which may create hazardous conditions.

COMPLAINT PROCEDURE

- 2.8 If at any time, the Owner receives complaints regarding 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 shall initiate appropriate steps to determine all possible causes of the complaint, proceed to take the necessary actions to eliminate the cause of the complaint if applicable and forward a formal reply to the complainant; and
- (c) The Owner shall complete and retain on-site a report written within two (2) weeks of the complaint date, listing the actions taken to resolve the complaint if applicable and any recommendations for remedial measures, and managerial or operational changes to reasonably avoid the recurrence of similar incidents.

GROUNDWATER AND SURFACE WATER MONITORING

- 2.9 (a) The Owner shall ensure that all groundwater monitoring wells which form part of the monitoring program are properly capped, locked and protected from damage.
- (b) Monitoring wells shall be inspected during groundwater monitoring events and any changes in the physical condition of each well shall be documented. Necessary repairs shall be undertaken, as needed. If a monitoring well is greatly damaged and cannot reasonably be repaired, the District Manager shall be notified and the well shall be properly abandoned. The well shall be replaced by a new monitoring well if directed by the District Manager to do so in accordance with O. Reg. 903.
- (c) All monitoring wells which are no longer required as part of the groundwater monitoring

program, and have been approved by the District Manager for abandonment, shall be decommissioned by the Owner, as required, in accordance with O.Reg. 903. A report on the decommissioning of the well shall be included in the Annual Report for the period during which the well was decommissioned.

2.10 The Owner shall conduct groundwater and surface water monitoring at the Site in accordance with the details outlined in Section 3.2, Item 7 of Schedule "A" and as listed in the following table:

Groundwater Monitoring Locations	Frequency	Parameters
<p>00-03, 022R, 023R, 101R, 111, 141R, 191, 231R, 232R, 233R, 263R, 381R, 531R, 541(new well to be drilled in Lower Till), 551R, 552R, 561, 562, 571, 581, 591(new well to be drilled west of 591 with screens in Fractured Till, Upper Till, and Inter-Till Sand), 998, 999 (bedrock well), 03-08 (existing leachate well), and proposed South Fill Area leachate well when it is developed</p>	<p>Twice per year</p>	<p>pH, Conductivity, Hardness, Chloride, DOC, Alkalinity, Carbonate, Bicarbonate, Nitrate, Nitrite, Sulphate, Calcium, Potassium, Magnesium, Sodium, Phenols, Fluoride, colour and turbidity</p>
<p>Private Wells: 902, 904, 906, 907, 908, 909, 911, 912, 913, 916, 917, 918, 920, 921, 922</p>	<p>Once per year</p>	<p>pH, Conductivity, Hardness, Chloride, DOC, Phenols, Fluoride, colour and turbidity</p>
<p>Leachate Sampling: all accessible collection system manholes</p>	<p>Once per year</p>	<p>pH, Conductivity, Hardness, Chloride, DOC, Phenols, Fluoride, colour and turbidity</p>

Surface Water Monitoring Locations	Frequency	Parameters
SW1 (971), Sediment Basin A SW4(974), Wet area at Manicom boundary, 11/12 lot line SW7(977), Sediment Basin B SW8(978), Hooper Drain catchbasin upstream of site SW9(979), Hooper Drain manhole downstream from site	Four times per year	pH, Conductivity, Hardness, Chloride, DOC, Phenols, Fluoride, colour and turbidity
To be added when South Fill Area is developed: SW2(972), Pond at Bartram boundary, 10/11 lot line SW5(975), Culvert at Hwy 19 on Anscombe Drain	Four times per year	pH, Conductivity, Hardness, Chloride, DOC, Phenols, Fluoride, colour and turbidity

2.11 The Owner shall follow trigger mechanisms outlined in Section 3.3.1 Item 7 of Schedule "A".

CHANGES TO THE MONITORING PLAN

2.12 (a) The Owner may request changes to the monitoring program(s) to the District Manager in writing.

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

3.0 LANDFILL GAS COLLECTION AND FLARING SYSTEM

3.1 A landfill gas collection system, comprising vertical gas extraction wells, a network of sub-laterals, laterals and perimeter header piping, and a flaring facility, shall be constructed and operated, in accordance with the conceptual design and operation described in Section 2.1 in the Design Report, Item 1 in Schedule

"A", as amended by Item 3 in Schedule "A", attached to this Approval.

3.2 The landfill gas collection and flaring system, phase 1, shall be constructed and operated in accordance with the detailed design and development, as described in Section 2.2 in Item 1 in Schedule "A", as amended by Item 3 in Schedule "A", attached to this Approval.

3.3 Detailed design in phase 2 and all subsequent phases of the landfill gas collection and flaring system, shall be submitted by the Owner/Operator, for the approval of the Director, with copies to the District Manager, prior to construction. The detailed design, development drawings and specifications, shall reflect the conceptual design of the landfill gas collection and flaring system, as presented in Item 1 in Schedule "A", as amended by Item 3 in Schedule "A", attached to this Approval. Any design optimization or modification shall be clearly identified, along with an explanation of the reasons for the change.

3.4 The detailed Phase 2 design shall, at a minimum include the following:

- (a) full-scale design drawings and specifications, including profiles, site plan showing all engineered facilities associated with the headers, laterals and sub-laterals, and material descriptions and requirements for delivery, storage, installation and sampling;
- (b) detailed quality assurance/quality control (QA/QC) program for construction of the landfill gas collection and flaring system ;
- (c) details of nuisance control programs and necessary precautions to avoid disturbance to the natural environment caused by the operation of the landfill gas collection and flaring system;
- (d) details on the monitoring, maintenance, repair and replacement of components of the landfill gas collection and flaring system, as necessary; and
- (e) contingency plans for environmental controls.

3.5 The Owner shall operate and maintain the landfill gas collection and flaring system in accordance with Operation and Maintenance Manual, Landfill Gas Collection and Flaring System, Oxford County Landfill Site, prepared by Comcor Environmental Limited, dated January 17, 2011, Items No. 5 of Schedule "A".

3.6 During construction of the landfill gas collection system, the Owner/Operator shall implement as a minimum, odour control plan described in Item 3 in Schedule "A", attached to this Approval. The effectiveness of the odour control plan shall be monitored and evaluated regularly, and updated or amended as necessary, based on operational experience and odour complaints received.

3.7 After commissioning the landfill gas collection and flaring system, the Owner/Operator shall prepare and submit to the District Manager, with copies maintained at the Site, a written report covering any significant landfill gas collection system expansion or modification. The report shall detail the construction activities, QA/QC program carried out for the construction, as-built drawings of the landfill gas collection and flaring system to date, including a description and reasons for any changes to the design

of the landfill gas collection and flaring system.

4.0 LANDFILL GAS COLLECTION AND FLARING SYSTEM OPERATION

4.1 Prior to implementation of any changes in the landfill gas collection and flaring system operation, that may result in activities not specified in the Design Report, Item 1, in Schedule "A", as amended in Item 3 in Schedule "A", attached to this Approval, or in this Approval, and that may likely cause the discharge of contaminant to the natural environment, the Owner/Operator shall obtain approval from the Director.

4.2 The Owner/Operator shall maintain records of landfill gas flow. Such records shall be made available for inspection upon request by a Provincial Officer.

4.3 In the event of a discharge of a contaminant, including landfill gas, landfill gas condensate, etc., the Owner/Operator shall immediately notify the District Manager and the Ministry's "Spills Action Centre", and advise of actions being taken to contain, control and ameliorate the situation.

4.4 For any situation when landfill gas is not being collected and incinerated and which cannot be rectified within 48 hours, the Owner/Operator shall notify the District Manager and advise of actions being taken to contain, control and ameliorate the situation.

4.5 Any gas extraction well that needs to be replaced due to damage or the well is deemed to be not functioning properly, the Owner/Operator shall replace the gas extraction well within a reasonable time frame of identifying the need for replacement. Any such changes to the gas extraction system shall be documented in the Annual Report.

4.6 The Owner/Operator shall carry out odour and landfill gas management, as well as the rehabilitation of the Site, in accordance with a report entitled "Landfill Gas and Odour Management Plan", Item 4 in Schedule "A", attached to this Environmental Compliance Approval.

4.7 The Owner/Operator shall document and include in the subsequent Annual Report, the results of the emissions survey completed. The reporting on the emissions survey shall, as a minimum, include tabulated results, drawing showing survey grid nodes, and a site map showing colour-coded concentration levels of landfill gas emissions based on the results of the surface emissions survey.

5.0 LANDFILL GAS ENVIRONMENTAL CONTROL, MONITORING/INSPECTION AND MAINTENANCE

5.1 The Owner/Operator shall carry out monitoring program for landfill gas to monitor the performance of the landfill gas collection and flaring system, as described in Item 1 in Schedule "A", as amended in Item 3 in Schedule "A", attached to this Approval, and as per written recommendations of the District Manager, through the review of Annual Monitoring Reports, and any related EPA requirements.

5.2 Components of the active gas collection system shall be monitored on an as-needed basis, with a routine frequency of once per month for the full collection field. Any observed deficiencies/problems shall be repaired as soon as practicable and a summary of remedial actions carried out, shall be reported in the

Annual Monitoring Report.

Subsurface Migration of Combustible Gas

5.4 Buildings and structures existing or to be built on Site shall be situated, constructed and monitored in a manner which minimizes the potential for explosive hazards due to combustible gas. Appropriate methane detection and alarm equipment, shall be installed and maintained for all enclosed unvented buildings and/or structures on Site, which at times are occupied by people.

Note: For the purposes of Condition 5.4, vented building or structure is a building or structure built with its floor sealed and elevated above ground and having adequate air space underneath the floor of the building or structure.

5.5 Subsurface migration of combustible methane gas shall meet the following limits, as required by Ontario Reg. 232/98:

- (a) The concentration of methane gas must be less than 2.5 percent by volume at the limits of the property boundary.
- (b) The concentration of methane gas must be less than 1.0 percent by volume in any on-site building or enclosed structure, and in the area immediately outside the foundation or basement floor of the building or structure that is located on Site, if the building or structure is accessible by people or contains electrical equipment or a potential source of ignition.
- (c) Sub-condition (b) does not apply to a leachate collection, storage or pumping station or a landfill gas collection and/or treatment facility for which specific Occupational Health and Safety measures and procedures relating to the risk of asphyxiation and the risk of explosion, must be followed.
- d) The concentration of methane gas from the Site in any off-Site building or enclosed structure, and in the area immediately outside the foundation or basement floor of the building or structure, if the building or structure is accessible by people or contains electrical equipment or a potential source of ignition, must be less than 0.05% by volume.

5.6 If a measured gas concentration at any specific compliance location, reaches the applicable limit identified in Sub-conditions 5.5 (a) and (b) above, or if a notification is given that gas concentration has reached the limit specified in Sub-condition 5.5(d), above, the reading shall be re-measured immediately and daily for a period of up to three (3) consecutive days. If these readings confirm an exceedance of the applicable limit, the District Manager shall be notified immediately, and appropriate control measures shall be implemented as soon as possible thereafter.

6.0 ANNUAL REPORT

6.1 By April 30th following the end of each operating year, the Owner/Operator shall prepare and submit to the District Manager an annual report, covering the previous calendar year. The report shall

include, as a minimum, the following information:

- (a) a survey of the Site's waste disposal area, drawings showing areas of fill, buffer areas, current landfilling area contours, percentage of available space utilized, and an estimate of the remaining disposal capacity;
- (b) a summary of the quantities of waste received;
- (c) a drawing(s) indicating all groundwater, surface water and gas monitoring locations;
- (d) tables outlining monitor locations, analytical parameters sampled and frequency of sampling;
- (e) the results and an interpretive analysis of the results of all monitoring at the Site including groundwater, surface water, leachate and landfill gas monitoring, and an assessment of the need to amend the monitoring program or to develop and implement contingency measures;
- (f) review and assessment of any environmental and operational problems, that could negatively impact the environment, encountered during the operation of the Site and during Site inspections and any mitigative actions taken;
- (g) a summary of any public complaints received by the Owner/Operator and the responses made;
- (h) a statement as to compliance with all Conditions of this Approval and all applicable Ministry Acts, Regulations, Guidelines, including Guideline B-7, Incorporation of the Reasonable Use Concept Into MOEE Groundwater Management Activities, (MOEE 1994), and Ontario Provincial Water Quality Objectives;
- (i) any recommendations to minimize environmental impacts from the operation of the Site and to improve Site operations and monitoring programs in this regard; and
- (j) any other information with respect to the Site which the District Manager may require from time to time.

7.0 CLOSURE PLAN

7.1 At least 2 years prior to the anticipated date of closure of this Site or any aspect of the operations at the site, 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 and/or any aspect of the operations at this Site, post-closure inspection, maintenance and monitoring, and end use. The plan shall include but not limited to the following:

- (a) a plan showing Site appearance after closure;
- (b) a description of the proposed end use of the Site;
- (c) a description of the procedures for closure of the Site;
- (d) advance notification of the public of the landfill closure;
- (e) posting of a sign at the Site entrance indicating the landfill is closed and identifying any alternative waste disposal arrangements;
- (f) completion, inspection and maintenance of the final cover and landscaping;
- (g) site security;
- (h) removal of unnecessary landfill-related structures, buildings and facilities; and
- (i) final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;

- (j) a schedule indicating the time-period for implementing sub-conditions (a) to (e) above.
- (k) description of the procedures for post-closure care of the Site, including operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
- (l) record keeping and reporting; and
- (m) complaint contact and response procedures;
- (n) an assessment of the adequacy of and need to implement contingency plans for leachate and methane gas; and
- (o) an updated estimate of the contaminating life span of the Site, based on the results of the monitoring programs to date.

7.2 Within ten (10) days after closure of the Site, the Owner shall notify the Director, in writing, that the Site is closed and that the Site Closure Plan has been implemented.

The following documentation hereby forms Schedule "A", and part of Approval No. A070808.

1. Report entitled "Ontario Regulation 347 Design Report, Oxford County Landfill Site, Salford, Ontario", dated June 26, 2009.
2. Application for Provisional Certificate of Approval for a Waste Disposal Site, Installation and Operation of Landfill gas Collection and Flaring System, dated March 29, 2010, signed by Robert Walton, Director of Public Works, County of Oxford.
3. Letter dated April 15, 2010, from Denise Burgess, Comcor Environmental Limited to Dickson Odame-Osafo, Ministry of the Environment, Re: response to MOE comments on the design report.
4. Report entitled "Landfill Gas and Odour Management Plan, Landfill Gas Collection and Flaring System, Oxford County Landfill Site" Salford, Ontario, dated March 15, 2011, prepared by COMCOR Environmental Limited.
5. Report entitled "Operation and Maintenance Manual, Landfill Gas Collection and Flaring System, Oxford County Landfill Site", prepared by Comcor Environmental Limited, dated January 17, 2011.
6. Report entitled "Oxford County Salford Landfill Site Design and Operations Report", prepared by M.M. Dillon Limited, dated September 12, 1984, and revised on June 17, 1986.
7. Report entitled "County of Oxford, Oxford Landfill Site, Amendment to 1986 Design and Operation Report", prepared by R.J. Burnside & Associates Limited, dated April 2013.

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

1. The reasons for **Conditions 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.9, 1.11, 1.12, and 1.13** are to clarify the legal rights and responsibilities of the Owner and Operator under this Approval.
2. The reasons for **Conditions 2.1(a), 3.2, 3.3 and 4.2** 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.
3. The reason for **Condition 1.8** is 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.
 4. The reason for **Condition 1.10** 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 Certificate of Approval. This condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the EPA and OWRA.
 5. The reason for **Condition 2.1(b)** is to specify the site approved capacity.
 6. The reason for **Condition 2.1(c)** is to ensure submission of a design and operation plan which will meet the future standards of best practices.
 7. The reasons for **Conditions 2.1, 3.1, 3.2, 3.3, 3.4, and 3.5** are to ensure that the Site is designed, constructed and operated in a manner which conforms to current standards of landfill development and operation and as approved..
 8. The reason for **Condition 2.2** is to ensure that the waste is covered regularly and that final cover is applied as the site reaches final contours.
 9. The reason for **Condition 2.8** is to ensure that complains are handled properly.
 10. The reasons for **Conditions 2.3, 2.4, 2.5, 2.6, and 2.7** 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 to any person.
 11. The reasons for **Conditions 3.5, 4.1, 4.2, 4.3, and 4.4** are to ensure site is operated in a controlled manner.
 12. The reasons for **Condition 3.7, 4.5 and 4.6** are to ensure optimized performance and capture efficiency of the landfill gas collection and control system design, based on operating experience and monitoring results, and to mitigate possible odour impacts from the site.
 13. The reason for **Condition 4.7** is to ensure that landfill gas emission data are documented and mapped clearly to identify and remediate areas deficient of landfill gas collection.
 14. The reasons for **Conditions 2.9, 2.10, 2.11, 2.12, 5.1 and 5.2** are to demonstrate that the landfill 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 early warning of potential problems so that any necessary remedial/contingency action can be taken.
 15. The reason for **Condition 5.4** is to ensure protection of public health and safety of people against potential for explosion due to accumulation of landfill gas generated at this Site.
 16. The reasons for **Conditions 5.5 and 5.6** are to ensure that landfill gas generated at this Site is managed in an environmentally acceptable manner.
 17. The reason for **Condition 6.1** is to ensure that regular review of site operations and monitoring data is documented and any possible improvements to site 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 operations and monitoring.
 18. The reasons for **Conditions 7.1 and 7.2** are to ensure that final closure of the Site is completed in an environmentally acceptable manner in order to ensure the long-term protection of the natural environment.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). A070808

issued on August 16, 1983 and all subsequent amendments.

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:

1. 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;
2. 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:

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

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

This Notice must be served upon:

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

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 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 7th day of November, 2013



Dale Gable, P.Eng.

Director

appointed for the purposes of Part II.1 of the

Environmental Protection Act

NP/

c: District Manager, MOE London - District
Kent Hunter, P.Eng., R.J. Burnside & Associates Limited

APPENDIX

A-2 *MECP CORRESPONDENCE*



March 26, 2021

Pamela Antonio
Supervisor of Waste Management
County of Oxford
21 Reeve Street,
Woodstock, Ontario N4S 7Y3

**Subject: Letter of Notification
Quarterly Surface Water Sampling Event – March 2021
Oxford County Waste Management Facility, Salford
County of Oxford**

WSP Canada Inc. (WSP) is providing this Letter of Notification to the County of Oxford (County) in summary of the recent quarterly surface water sampling event, completed in March 2021 at the Oxford County Waste Management Facility (Site) near Salford, Ontario.

1 BACKGROUND

The surface water monitoring program completed at the Site includes quarterly monitoring at the stations listed in the following table. The locations of the surface water monitoring stations are shown in Figure 5 of the 2020 Annual Operations and Monitoring Report, attached to this letter report.

SURFACE WATER STATION	RELATIVE POSITION	SAMPLING FREQUENCY
SW1 (971)	Sedimentation Pond A (retention pond) in the northwest corner of the landfill.	Quarterly
SW4 (974)	A naturally wet surficial depression adjacent to Cells 2 and 3 (downstream) that collects stormwater runoff from the landfill sideslopes and conveys it westward off the landfill property.	
SW7 (977)	Sedimentation Pond B (retention pond) in the northeast corner of the landfill.	
SW8 (978)	At the point where the Hooper Drain enters the landfill property (upstream) via a culvert inlet east of the landfill berm.	
SW9 (979)	From the manhole where the Hooper Drain leaves the landfill property (downstream and westward).	

The majority of the surface water runoff from the landfill makes its way to Sedimentation Pond B, either directly or via Sedimentation Pond A. When pond levels are sufficiently high, water from Pond B

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discharges to the Hooper Drain, through a controlled valve, and leaves the landfill property flowing north beneath County Road 46.

2 SAMPLING EVENT AND RESULTS

As part of the quarterly surface water sampling event, surface water samples were collected from surface water monitoring stations SW1, SW4, SW7, SW8 and SW9 on March 15, 2021. Samples were submitted to SGS Laboratories in Lakefield, Ontario, for analysis of the required quarterly parameters, as per Amended Environmental Compliance Approval (ECA) No. A070808 issued November 7, 2013, and also Certificate of Approval (CofA) No. 4504-74CKZ2 for sewage works issued July 3, 2007. Field measurements of pH, conductivity, temperature, and dissolved oxygen were obtained from each location. A copy of the laboratory certificates of analysis are attached, with summarized field and laboratory results presented in the attached Table 1.

2.1 PWQO

The reported chemical concentrations were compared to the relevant Provincial Water Quality Objectives (July 1994 plus updates) (PWQO). Presented in the attached Table 1 are the parameters that exceeded their respective PWQO, which are summarized below.

- The PWQO for un-ionized ammonia was exceeded at stations SW1, SW7 and SW9;
- Phenols concentrations exceeded the PWQO at stations SW1 and SW7;
- The PWQO for phosphorus was exceeded at all stations; and
- Iron concentrations exceeded the PWQO at all stations.

The reported parameter concentration exceedances were within their respective historical ranges, with the exception of the un-ionized ammonia and phenols concentrations at station SW1 and the un-ionized ammonia concentration at station SW9.

Several other parameter concentrations (without PWQO) were also noted to exceed their historical concentration range at station SW1, including field/lab conductivity, total dissolved solids (TDS), ammonia, total kjeldahl nitrogen (TKN), biological oxygen demand (BOD₅) and chemical oxygen demand (COD). The TDS concentration at station SW7 also exceeded its historical range at station SW7, as well as field conductivity values at stations SW7 and SW9.

2.2 INTERPRETATION BY STATION POSTION

During the sampling event on March 15, 2021, parameter concentrations generally increased between background station SW8 and downstream station SW9. In particular, those parameters that were noted to be elevated above the historic range of concentrations at station SW1 (Sedimentation Pond A) were also observed to be elevated at downstream station SW9. Parameter concentrations at SW7 (Sedimentation Pond B) were generally similar or marginally lower than the concentrations at downstream station SW9.

This information infers that the elevated parameter concentrations noted at station SW1 (Sedimentation Pond A) may have adversely affected concentrations downstream within station SW7, as well as within the surface water discharge from the Site (SW9).



3 RECOMMENDATIONS

3.1 INITIAL ACTION

It is noted that there are currently no ECA/CofA mandated trigger concentration levels or contingency plans in relation to the surface water monitoring results at the Site. However, Condition 1.6 of the ECA does state that, “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.”

As such, upon analysis of the surface water monitoring results, the County was notified of the assumed landfill impact to Sedimentation Pond A. After discussions with the County, it was inferred that recent stormwater run-off and a leachate seep from the landfill mound, in the vicinity of landfilled biosolids, may have been a contributing factor to the elevated parameter concentrations within Sedimentation Pond A. Please refer to the County’s inspection memo (under separate cover) for a full description of the inferred cause of the landfill impacted stormwater, as well as initial remedial measures that were undertaken.

After analysis of the surface water monitoring results, it was also recommended that discharge from Sedimentation Pond A (SW1) to Sedimentation Pond B (SW7) be temporarily stopped, to prevent any further landfill impacts downstream. As a further precaution, the discharge valve from Sedimentation Pond B to the Hooper Drain was closed, and the overflow discharge pipe from Sedimentation Pond B to the ditch along the south side of the County Road 46 was blocked, in order to halt surface water discharge from the Site.

3.2 REMEDIAL ACTION

The County reached out to their local Provincial Officer to inform them of these initial corrective actions, but was unable to receive a reply at the time. As a further precautionary measure, a report was filed with the MECP Spills Action Centre.

It is recommended that the landfill impacted surface water within Sedimentation Pond A is dealt with in consultation with the MECP. There would appear to be two options for this remedial action:

- 1) Pump and haul the surface water within the Pond to the Ingersoll and Woodstock sewage treatment plants for treatment; or
- 2) Pump the impacted surface water from within the Pond to an area of the landfill mound, to re-circulate within the landfill and eventually drain through the leachate collection system (LCS) to manhole MH16, which is pumped and hauled to the Ingersoll and Woodstock sewage treatment plants as leachate. This option would be more economically feasible.

After this removal of the impacted surface water, Sedimentation Pond A will slowly fill again. Flow from Sedimentation Pond A to Sedimentation Pond B should remain blocked until surface water monitoring determines that historically appropriate parameter concentrations are observed again within Sedimentation Pond A and/or parameter concentrations are similar or lower than results at background surface water station SW8.

The discharge valve from Sedimentation Pond B should remain closed until surface water monitoring determines that parameter concentrations are similar or lower than results at background surface water station SW8.



Pamela Antonio
County of Oxford

We trust that this letter has sufficient information for your review. Please contact us if you have any questions or concerns.

Prepared by:
WSP Canada Inc.

A handwritten signature in black ink, appearing to read 'Albert Siertsema', with a long, sweeping flourish extending to the right.

Albert Siertsema, P.Eng.
Project Engineer, Environment

Attachments: Table 1: March 2021 Surface Water Chemistry
 Laboratory Certificates of Analysis
 Figure 5: Surface Water Monitoring Locations and Flow Management – 2020 Annual Operations
 and Monitoring Report

AMS/jpc
WSP ref.: 111-53036 -05

Table 1: March 2021 Surface Water Chemistry

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L	unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PWQO		6.5 - 8.5	NC	NC	NC	6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW1 (971)	Mar-21	7.67	2020	6.8	4.1	7.83	1640	63	81.6	515	1000	537	180		77
	Historic Maximum	9.18	1020	27.0	15.8	9.40	923	100	7200	311	550	413	190		101
SW4 (974)	Mar-21	7.09	670	3.5	6.45	7.41	336	25	5.34	199			4	63.7	
	Historic Maximum	8.42	674	21.8	17.3	8.20	945	2270	198	567			119	183	
SW7 (977)	Mar-21	8.34	1060	4.6	12.32	8.19	823	19	20.2	307	486	262	83		62
	Historic Maximum	9.27	727	26.0	14.3	9.20	1420	640	819	537	438	362	235		104
SW8 (978)	Mar-21	7.97	760	5.2	14.05	8.00	543	9	6.53	280			34	86.3	
	Historic Maximum	8.75	1140	25.5	14.0	8.45	1420	122	1010	678			242	210	
SW9 (979)	Mar-21	7.96	1100	4.4	8.92	8.01	876	20	11.2	346			89	99.3	
	Historic Maximum	8.72	998	26.5	13.9	8.30	1010	145	2120	636			151	200	

Notes: · PWQO - Provincial Water Quality Objectives (July 1994) · Units provided · Concentrations in red exceed historic maximum value at the noted location
 · NC - No criteria · Blank - Indicates data not available · Shading indicates concentration exceeds PWQO
 · ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where $pKa = 0.09018 + 2729.92/T$ and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



Table 1: March 2021 Surface Water Chemistry

Surface Water Station	Date	Fluoride	Magnesium	Ammonia	Un-ionized Ammonia **	Nitrate	Nitrite	TKN	Phenols	BOD ₅	COD	Phosphorous	DOC	Ortho-phosphate	Iron	TSS
		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
PWQO		NC	NC	NC	0.02	NC	NC	NC	0.001	NC	NC	0.03	NC	NC	0.30	NC
SW1 (971)	Mar-21	0.15		37.2	0.249	<0.06	0.14	41	0.111	195	325	0.786	139		2.86	55
	Historic Maximum	3.2		17.0	0.070	7.4	0.49	21.6	0.011	31	431	1.72	35.5		10.1	275
SW4 (974)	Mar-21	<0.06	9.75	0.1	<0.001	<0.06	<0.03	<0.5	<0.002			0.581	6.6	0.13	3.48	
	Historic Maximum	0.4	27	1.8	0.009	0.7	0.13	7.54	0.075			2.40	45.9	0.37	7.45	
SW7 (977)	Mar-21	0.13		5.7	0.147	0.09	<0.03	7.0	0.002	10	49	0.084	16		0.820	32
	Historic Maximum	0.53		9.0	0.176	3.47	0.11	26.2	0.027	37	92	4.43	86.5		3.55	139
SW8 (978)	Mar-21	0.12	15.7	<0.1	<0.001	3.08	<0.03	<0.5	<0.002			0.052	4.0	<0.03	0.350	
	Historic Maximum	0.40	39.1	11.6	0.212	21.4	0.45	32.4	0.023			3.20	79.1	1.9	7.69	
SW9 (979)	Mar-21	0.13	23.9	6.7	0.072	0.12	<0.03	8.3	<0.002			0.129	14.9	0.05	1.02	
	Historic Maximum	259	38.2	7.5	0.069	18.9	0.49	21.2	0.013			7.45	46.7	1.8	28	

Notes: · PWQO - Provincial Water Quality Objectives (July 1994) · Units provided · Concentrations in red exceed historic maximum value at the noted location
 · NC - No criteria · Blank - Indicates data not available · Shading indicates concentration exceeds PWQO
 · ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.

**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.
 Lakefield - Ontario - K0L 2H0
 Phone: 705-652-2000 FAX: 705-652-6365

Project : Salford Landfill, Sedimentation
 Ponds

24-March-2021

WSP Canada Inc.

Attn : Albert Siertsema

55 King Street, Suite 700
 St. Catharines, ON
 L2R 3H5, Canada

Phone: 905-687-1771 x 240
 Fax:

Date Rec. : 17 March 2021
LR Report: CA14326-MAR21
Reference: Oxford County Landfill,
 Albert Siertsema

Copy: 1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: SW1	6: SW7
Sample Date & Time					15-Mar-21 13:00	15-Mar-21 14:00
Temp Upon Receipt [°C]	---	---	---	---	6.0	6.0
BOD5 [mg/L]	17-Mar-21	17:39	22-Mar-21	13:54	195	10
pH [No unit]	18-Mar-21	16:08	23-Mar-21	08:10	7.83	8.19
Alkalinity [mg/L as CaCO3]	18-Mar-21	16:08	23-Mar-21	08:10	537	262
Conductivity [uS/cm]	17-Mar-21	14:26	18-Mar-21	11:32	1640	823
TSS [mg/L]	17-Mar-21	10:55	19-Mar-21	09:54	55	32
TDS [mg/L]	17-Mar-21	09:05	18-Mar-21	15:21	1000	486
Colour [TCU]	17-Mar-21	09:33	18-Mar-21	09:22	63	19
Turbidity [NTU]	17-Mar-21	10:42	17-Mar-21	14:02	81.6	20.2
COD [mg/L]	17-Mar-21	12:00	22-Mar-21	13:55	325	49
F [mg/L]	17-Mar-21	12:50	18-Mar-21	08:09	0.15	0.13
DOC [mg/L]	17-Mar-21	15:14	18-Mar-21	16:48	139	16
Cl [mg/L]	24-Mar-21	08:22	24-Mar-21	14:25	180	83
SO4 [mg/L]	24-Mar-21	08:25	24-Mar-21	14:25	77	62
NO2 [as N mg/L]	19-Mar-21	01:09	19-Mar-21	14:32	0.14	< 0.03
NO3 [as N mg/L]	19-Mar-21	01:09	19-Mar-21	14:32	< 0.06	0.09
NO2+NO3 [as N mg/L]	19-Mar-21	01:09	19-Mar-21	14:32	0.14	0.09
NH3+NH4 [as N mg/L]	17-Mar-21	18:18	20-Mar-21	14:03	37.2	5.7
TKN [as N mg/L]	17-Mar-21	19:31	22-Mar-21	13:48	41.0	7.0
4AAP-Phenolics [mg/L]	17-Mar-21	14:00	22-Mar-21	13:02	0.111	0.002
Hardness [mg/L as CaCO3]	22-Mar-21	13:51	23-Mar-21	16:29	515	307
P (tot) [mg/L]	22-Mar-21	13:51	23-Mar-21	16:29	0.786	0.084
Fe (tot) [mg/L]	22-Mar-21	13:51	23-Mar-21	16:29	2.86	0.820

Temperature of Sample upon Receipt: 6 degrees C
 Cooling Agent Present: Yes
 Custody Seal Present: Yes

Chain of Custody Number: NA

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar -solution	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Biochemical Oxygen Demand (BOD5)	Biochemical Oxygen Demand (BOD5)	ME-CA-[ENV]EWL-LAK-AN-007
Chemical Oxygen Demand	Chemical Oxygen Demand	ME-CA-[ENV]EWL-LAK-AN-009
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness	Hardness (CaCO3) by ICP	ME-CA-[ENV]SPE-LAK-AN-003
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrate + Nitrite (as N)	Total Nitrate/Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Total Dissolved Solids	Total Dissolved Solids by Gravimetric	ME-CA-[ENV]EWL-LAK-AN-005
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Total Suspended Solids	Total Suspended Solids	ME-CA-[ENV]EWL-LAK-AN-004
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003

Brad Moore Hon. B.Sc
Project Specialist,
Environment, Health & Safety



Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
						%							
<i>Alkalinity - QCBatchID: EWL0308-MAR21</i>													
Alkalinity	2	mg/L as Ca	< 2			2	20	104	80	120	NA		
<i>Ammonia by SFA - QCBatchID: SKA0164-MAR21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			1	10	99	90	110	93	75	125
<i>Ammonia by SFA - QCBatchID: SKA0177-MAR21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			3	10	97	90	110	86	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5030-MAR21</i>													
Chloride	1	mg/L	<1			0	20	105	80	120	91	75	125
Sulphate	2	mg/L	<2			2	20	101	80	120	81	75	125
<i>Anions by IC - QCBatchID: DIO0304-MAR21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	100	80	120	99	75	125
Nitrate + Nitrite (as N)	0.06	mg/L	<0.06			NA		NA			NA		
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	96	80	120	96	75	125
<i>Biochemical Oxygen Demand - QCBatchID: BOD0037-MAR21</i>													
Biochemical Oxygen Demand (BOD5)	2	mg/L	< 2			12	30	99	70	130	NV	70	130
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0286-MAR21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			0	20	99	90	110	100	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0276-MAR21</i>													
Chemical Oxygen Demand	8	mg/L	<8			4	20	98	80	120	100	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0295-MAR21</i>													
Chemical Oxygen Demand	8	mg/L	<8			6	20	98	80	120	99	75	125
<i>Colour - QCBatchID: EWL0272-MAR21</i>													
Colour	3	TCU	< 3			0	10	100	80	120	NA		
<i>Conductivity - QCBatchID: EWL0283-MAR21</i>													
Conductivity	2	uS/cm	< 2			0	20	99	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0278-MAR21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	93	90	110	93	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0108-MAR21</i>													
Iron (total)	0.007	mg/L	<0.007			ND	20	98	90	110	NV	70	130
Phosphorus (total)	0.003	mg/L	<0.003			ND	20	96	90	110	NV	70	130
<i>pH - QCBatchID: EWL0308-MAR21</i>													
pH	0.05	No unit	NA			0		101			NA		
<i>Phenols by SFA - QCBatchID: SKA0161-MAR21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	118	80	120	99	75	125
<i>Phenols by SFA - QCBatchID: SKA0194-MAR21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	110	80	120	91	75	125



SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : Salford Landfill, Sedimentation Ponds
LR Report : CA14326-MAR21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
%													
<i>Solids Analysis - QCBatchID: EWL0270-MAR21</i>													
Total Dissolved Solids	30	mg/L	<30			2	20	96	90	110	NA		
<i>Suspended Solids - QCBatchID: EWL0275-MAR21</i>													
Total Suspended Solids	2	mg/L	< 2			5	10	98	90	110	NA		
<i>Total Nitrogen - QCBatchID: SKA0175-MAR21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			0	10	98	90	110	94	75 125	
<i>Total Nitrogen - QCBatchID: SKA0189-MAR21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			1	10	97	90	110	114	75 125	
<i>Turbidity - QCBatchID: EWL0274-MAR21</i>													
Turbidity	0.10	NTU	< 0.10			2	10	99	90	110	NA		



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

WSP Canada Inc.

Attn : Albert Siertsema

55 King Street, Suite 700
St. Catharines, ON
L2R 3H5, Canada

Phone: 905-687-1771 x 240
Fax:

Project : Salford Landfill, SW Stations

24-March-2021

Date Rec. : 17 March 2021
LR Report: CA14327-MAR21
Reference: Oxford County Landfill, Albert Siertsema

Copy: 1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: SW4	6: SW8	7: SW9	8: SWDUP
Sample Date & Time					15-Mar-21 11:40	15-Mar-21 13:30	15-Mar-21 12:15	15-Mar-21
Temp Upon Receipt [°C]	---	---	---	---	6.0	6.0	6.0	6.0
pH [No unit]	18-Mar-21	11:38	18-Mar-21	15:35	7.41	8.00	8.01	8.10
Conductivity [uS/cm]	17-Mar-21	14:26	18-Mar-21	11:32	336	543	876	542
Colour [TCU]	17-Mar-21	09:33	18-Mar-21	09:22	25	9	20	8
Turbidity [NTU]	17-Mar-21	10:42	17-Mar-21	14:02	5.34	6.53	11.2	6.99
Cl [mg/L]	24-Mar-21	08:22	24-Mar-21	14:28	4	34	89	34
F [mg/L]	17-Mar-21	12:50	18-Mar-21	08:09	< 0.06	0.12	0.13	0.12
Tot.Reactive P [mg/L]	17-Mar-21	10:51	17-Mar-21	14:14	0.13	< 0.03	0.05	0.03
DOC [mg/L]	23-Mar-21	16:37	24-Mar-21	15:11	6.6	4.0	14.9	3.8
NO2 [as N mg/L]	19-Mar-21	01:09	19-Mar-21	14:32	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	19-Mar-21	01:09	19-Mar-21	14:32	< 0.06	3.08	0.12	3.19
NO2+NO3 [as N mg/L]	19-Mar-21	01:09	19-Mar-21	14:32	< 0.06	3.08	0.12	3.19
NH3+NH4 [as N mg/L]	17-Mar-21	18:18	18-Mar-21	14:45	0.1	< 0.1	6.7	< 0.1
TKN [as N mg/L]	17-Mar-21	19:31	22-Mar-21	13:49	< 0.5	< 0.5	8.3	< 0.5

OnLine LIMS

0002440176



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

Project : Salford Landfill, SW Stations

LR Report : CA14327-MAR21

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: SW4	6: SW8	7: SW9	8: SWDUP
4AAP-Phenolics [mg/L]	17-Mar-21	14:00	18-Mar-21	14:59	< 0.002	< 0.002	< 0.002	< 0.002
Hardness [mg/L as CaCO3]	19-Mar-21	12:32	24-Mar-21	10:18	199	280	346	293
Ca (tot) [mg/L]	19-Mar-21	12:32	24-Mar-21	10:18	63.7	86.3	99.3	89.8
Fe (tot) [mg/L]	19-Mar-21	12:32	24-Mar-21	10:18	3.48	0.350	1.02	0.365
P (tot) [mg/L]	19-Mar-21	12:32	24-Mar-21	10:18	0.581	0.052	0.129	0.057
Mg (tot) [mg/L]	19-Mar-21	12:32	24-Mar-21	10:18	9.75	15.7	23.9	16.7

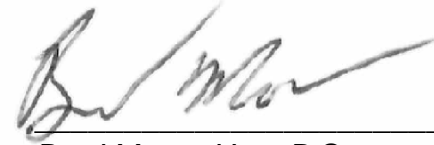
Temperature of Sample upon Receipt: 6 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: NA

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar -solution	ME-CA-[ENV]SFA-LAK-AN-006
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Calcium (total)	Ca by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness	Hardness (CaCO3) by ICP	ME-CA-[ENV]SPE-LAK-AN-003
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Magnesium (total)	Mg by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrate + Nitrite (as N)	Total Nitrate/Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Phosphorus (total reactive)	Tot. Reactive Phos. by Skalar or Spec.- no reagents or heat	ME-CA-[ENV]SFA-LAK-AN-004

Parameter	Description	SGS Method Code
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



*Brad Moore Hon. B.Sc
Project Specialist,
Environment, Health & Safety*



Quality Control Report

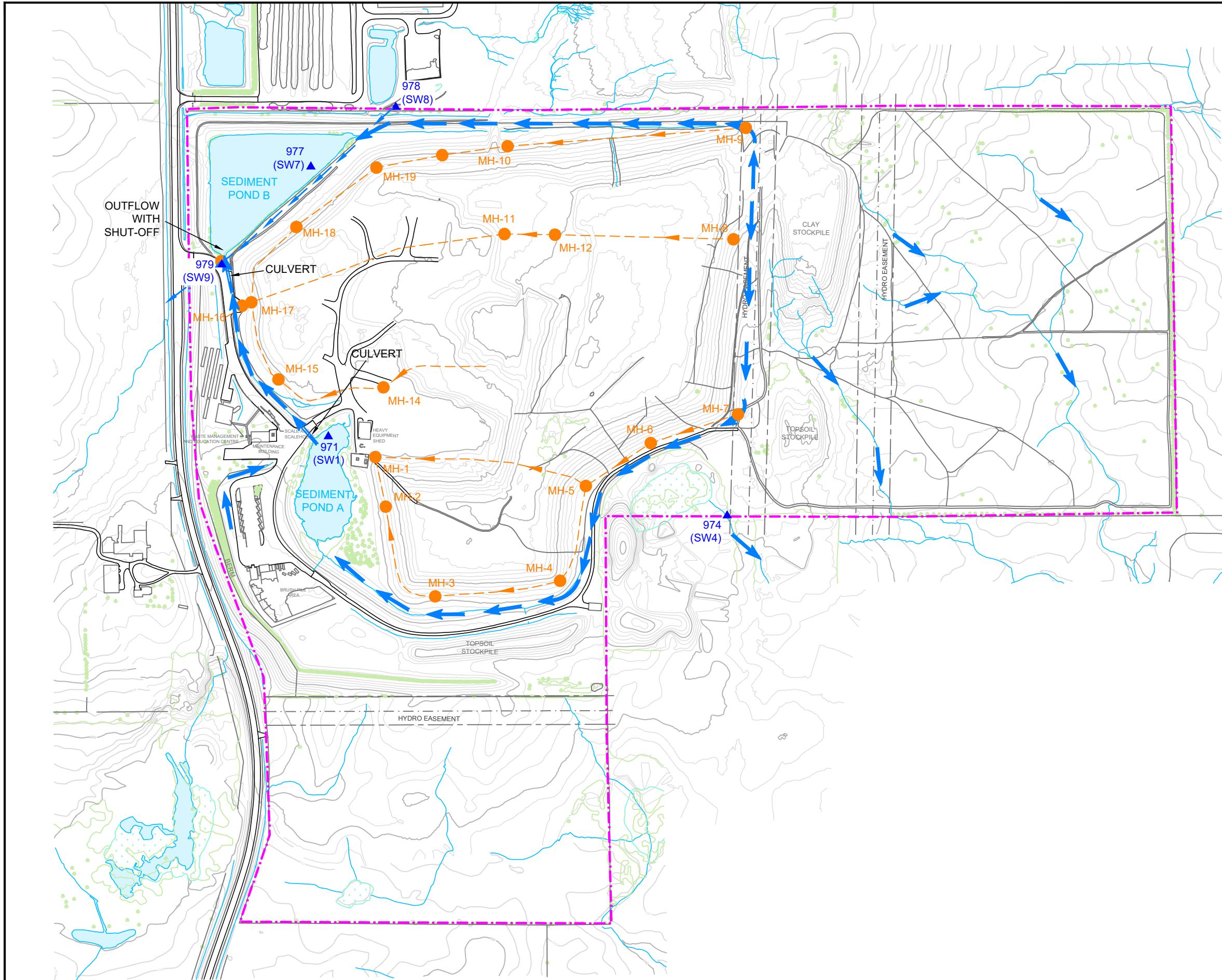
Parameter	Reporting Limit	Unit	Method Blank	Inorganic Analysis									
				Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
				%									
<i>Ammonia by SFA - QCBatchID: SKA0164-MAR21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			1	10	99	90	110	93	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5030-MAR21</i>													
Chloride	1	mg/L	<1			0	20	105	80	120	91	75	125
<i>Anions by IC - QCBatchID: DIO0304-MAR21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	100	80	120	99	75	125
Nitrate + Nitrite (as N)	0.06	mg/L	<0.06			NA		NA			NA		
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	96	80	120	96	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0381-MAR21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			6	20	99	90	110	109	75	125
<i>Colour - QCBatchID: EWL0272-MAR21</i>													
Colour	3	TCU	< 3			0	10	100	80	120	NA		
<i>Conductivity - QCBatchID: EWL0283-MAR21</i>													
Conductivity	2	uS/cm	< 2			0	20	99	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0278-MAR21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	93	90	110	93	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0104-MAR21</i>													
Calcium (total)	0.01	mg/L	<0.01			5	20	105	90	110	101	70	130
Iron (total)	0.007	mg/L	<0.007			2	20	104	90	110	NV	70	130
Magnesium (total)	0.001	mg/L	<0.001			7	20	107	90	110	102	70	130
Phosphorus (total)	0.003	mg/L	<0.003			9	20	101	90	110	NV	70	130
<i>pH - QCBatchID: EWL0296-MAR21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0161-MAR21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	118	80	120	99	75	125
<i>Phenols by SFA - QCBatchID: SKA0166-MAR21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	100	80	120	86	75	125
<i>Reactive Phosphorus by SFA - QCBatchID: SKA0155-MAR21</i>													
Phosphorus (total reactive)	0.03	mg/L	<0.03			ND	10	100	90	110	90	75	125
<i>Total Nitrogen - QCBatchID: SKA0160-MAR21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			2	10	95	90	110	98	75	125
<i>Total Nitrogen - QCBatchID: SKA0175-MAR21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			0	10	98	90	110	94	75	125
<i>Total Nitrogen - QCBatchID: SKA0189-MAR21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			1	10	97	90	110	114	75	125
<i>Turbidity - QCBatchID: EWL0274-MAR21</i>													



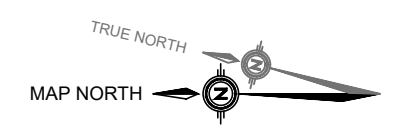
SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

Project : Salford Landfill, SW Stations
LR Report : CA14327-MAR21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
Turbidity	0.10	NTU	< 0.10			2	10	99	90	110	NA		



- LEGEND**
- - - PROPERTY LINE
 - - - LEACHATE COLLECTION SYSTEM
 - MH-11 MANHOLE
 - ▲ 974 (SW4) SURFACE WATER SAMPLING STATION LOCATION
 - ← SURFACE WATER FLOW DIRECTION
 - - - HOOPER DRAIN AND FLOW DIRECTION



0 100 200 m

NOTE: SURFACE TOPOGRAPHY CURRENT AS OF JUNE 2019.

SURFACE WATER MONITORING LOCATIONS AND FLOW MANAGEMENT

2020 Operations and Monitoring Report
Oxford County Waste Management Facility
The County of Oxford

DATE:	JANUARY 2021
PROJECT:	111-53036-04
SCALE:	1 : 5,000
DRAWN BY:	JLD



FIGURE No: **5**



April 30, 2021

Frank Gross, C.Tech
Manager of Transportation & Waste Management Services
County of Oxford
21 Reeve Street,
Woodstock, Ontario N4S 7Y3

**Subject: Letter of Notification
Supplemental Surface Water Sampling Events – April 2021
Oxford County Waste Management Facility, Salford
County of Oxford**

WSP Canada Inc. (WSP) is providing this Letter of Notification to the County of Oxford (County) in summary of the recent supplemental surface water sampling events, completed in April 2021 at the Oxford County Waste Management Facility (Site) near Salford, Ontario.

1 BACKGROUND

The surface water monitoring program completed at the Site includes quarterly monitoring at the stations listed in the following table. The locations of the surface water monitoring stations are shown in Figure 5 of the 2020 Annual Operations and Monitoring Report, attached to this letter report.

SURFACE WATER STATION	RELATIVE POSITION	SAMPLING FREQUENCY
SW1 (971)	Sedimentation Pond A (retention pond) in the northwest corner of the landfill.	Quarterly
SW4 (974)	A naturally wet surficial depression adjacent to Cells 2 and 3 (downstream) that collects stormwater runoff from the landfill sideslopes and conveys it westward off the landfill property.	
SW7 (977)	Sedimentation Pond B (retention pond) in the northeast corner of the landfill.	
SW8 (978)	At the point where the Hooper Drain enters the landfill property (upstream) via a culvert inlet east of the landfill berm.	
SW9 (979)	From the manhole where the Hooper Drain leaves the landfill property (downstream and westward).	

The majority of the surface water runoff from the landfill makes its way to Sedimentation Pond B, either directly or via Sedimentation Pond A. When pond levels are sufficiently high, water from Pond B

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discharges to the Hooper Drain, through a controlled valve, and leaves the landfill property flowing north beneath County Road 46.

As part of the quarterly surface water sampling event, surface water samples were collected from surface water monitoring stations SW1, SW4, SW7, SW8 and SW9 on March 15, 2021. Upon receipt of the results, several parameter concentrations were noted to exceed their respective historical ranges at station SW1, including field/lab conductivity, total dissolved solids (TDS), ammonia, un-ionized ammonia, total kjeldahl nitrogen (TKN), phenols, biological oxygen demand (BOD₅) and chemical oxygen demand (COD). As such, upon analysis of the surface water monitoring results, the County was notified of the assumed landfill impact to Sedimentation Pond A.

As noted in our previous letter of notification on March 26, 2021, it was also inferred that elevated parameter concentrations noted at station SW1 (Sedimentation Pond A) may have adversely affected concentrations downstream within station SW7, as well as within the surface water discharge from the Site (SW9).

It was recommended that discharge from Sedimentation Pond A (SW1) to Sedimentation Pond B (SW7) be temporarily stopped, to prevent any further landfill impacts downstream, which the County completed immediately. As recommended in our previous letters of notification dated March 26 and 29, 2021, the County also enacted measures to shut-off the flow from Sedimentation Pond B to the Hooper Drain.

2 SAMPLING EVENTS AND RESULTS

As part of supplemental surface water sampling events, samples were collected from surface water monitoring stations SW7 (Sedimentation Pond B) and SW8 (background) on April 12 and 26, 2021. Samples were submitted to SGS Laboratories in Lakefield, Ontario, for analysis of the quarterly surface water parameters. Field measurements of pH, conductivity, temperature, and dissolved oxygen were obtained from each location. A copy of the laboratory certificates of analysis are attached, with summarized field and laboratory results presented in the attached Table 1. This table also includes the results from the previous sampling event in March 2021, for comparison purposes.

The reported chemical concentrations were compared to the relevant Provincial Water Quality Objectives (July 1994 plus updates) (PWQO). The parameters that exceeded their respective PWQO during supplemental events in April 2021 are presented in the attached Table 1 and summarized below.

- The PWQO for un-ionized ammonia was exceeded at station SW7;
- Phosphorus concentrations exceeded the PWQO at stations SW7 and SW8; and
- The PWQO for iron was exceeded at stations SW7 and SW8.

The reported parameter concentration exceedances were within their respective historical ranges.

During the sampling event on April 12, 2021, the PWQO concentration exceedances for phosphorus and iron were higher at background station SW8 than within Sedimentation Pond B (SW7). The un-ionized ammonia concentration within Sedimentation Pond B (SW7) continued to exceed the PWQO and the background (SW8) concentration.

As such, a second supplemental sampling event was completed on April 26, 2021. The PWQO concentration exceedances of phosphorus and iron were again comparable (<10% relative percent difference) or higher at background station SW8 than within Sedimentation Pond B (SW7). The un-ionized ammonia concentration within Sedimentation Pond B (SW7) continued to exceed the PWQO during the April 26, 2021 sampling event.



Frank Gross, C.Tech
County of Oxford

These supplemental sampling events revealed that ammonia concentrations were decreasing, but were not yet to a point wherein calculated un-ionized ammonia concentrations were below the PWQO. Based on these results, a third supplemental sample was collected from Sedimentation Pond B (SW7) on April 30, 2021 and submitted to BV Laboratories for analysis of ammonia. The sample results will be unavailable until May 3, 2021, but it is noted that based upon collected field parameters (field pH and temperature), if the ammonia concentration remains the same or decreases, the calculated un-ionized ammonia will satisfy the PWQO. The ammonia concentrations within Sedimentation Pond B have steadily decreased during each sampling event since March 15, 2021.

3 RECOMMENDATIONS

It is noted that there are currently no ECA/CofA mandated trigger concentration levels or contingency plans in relation to the surface water monitoring results at the Site. However, Condition 1.6 of the ECA does state that, “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.”

It is suggested that the supplemental sampling completed in April 2021 satisfies this Condition. Although the final ammonia results will not be available until May 3, 2021, supplemental samples collected since March 15, 2021 have shown steadily decreasing concentrations of ammonia, and field parameters collected on April 30, 2021 suggest that the un-ionized ammonia concentration calculated from the laboratory sample result will satisfy the PWQO.

As such, it is recommended that this summary letter and April 2021 surface water sampling results are provided to the MECP, with the intent of requesting that discharge from Sedimentation Pond B to the Hooper Drain be permitted to resume as soon as possible. The preceding rationale has been provided prior to the final ammonia result as the Sedimentation Pond is nearing its capacity limits and requires discharge before the next significant precipitation event, to avoid overflowing.

It is noted that flow from Sedimentation Pond A to Sedimentation Pond B should remain blocked until surface water monitoring determines that historically appropriate parameter concentrations are observed again within Sedimentation Pond A (SW1) and/or parameter concentrations are similar to or lower than results at background surface water station SW8.

We trust that this letter has sufficient information for your review. Please contact us if you have any questions or concerns.

Prepared by:
WSP Canada Inc.

Albert Siertsema, P.Eng.
Project Engineer, Environment



Frank Gross, C.Tech
County of Oxford

Attachments: Table 1: March/April 2021 Surface Water Chemistry
 Laboratory Certificates of Analysis
 Figure 5: Surface Water Monitoring Locations and Flow Management – 2020 Annual Operations
 and Monitoring Report

AMS/jpc
WSP ref.: 111-53036 -05

Table 1: March/April 2021 Surface Water Chemistry

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L	unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PWQO		6.5 - 8.5	NC	NC	NC	6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW1 (971)	15-Mar-21	7.67	2020	6.8	4.1	7.83	1640	63	81.6	515	1000	537	180		77
	Historic Maximum	9.18	1020	27.0	15.8	9.40	923	100	7200	311	550	413	190		101
SW4 (974)	15-Mar-21	7.09	670	3.5	6.45	7.41	336	25	5.34	199			4	63.7	
	Historic Maximum	8.42	674	21.8	17.3	8.20	945	2270	198	567			119	183	
SW7 (977)	15-Mar-21	8.34	1060	4.6	12.32	8.19	823	19	20.2	307	486	262	83		62
	12-Apr-21	7.39	762	17.15	9.70	8.26	825	22	67.3	300	474	239	86		60
	26-Apr-21	7.81	662	9.73	8.54	8.26	767	18	61.4	256	486	215	88		64
	30-Apr-21	6.84	759	11.9											
	Historic Maximum	9.27	727	26.0	14.3	9.20	1420	640	819	537	438	362	235		104
SW8 (978)	15-Mar-21	7.97	760	5.2	14.05	8.00	543	9	6.53	280			34	86.3	
	12-Apr-21	7.19	643	14.32	10.90	8.19	645	29	18.2	362	389	181	80		27
	26-Apr-21	8.00	557	9.71	9.77	8.11	696	11	22.3	261	417	186	79		29
	Historic Maximum	8.75	1140	25.5	14.0	8.45	1420	122	1010	678			242	210	
SW9 (979)	15-Mar-21	7.96	1100	4.4	8.92	8.01	876	20	11.2	346			89	99.3	
	Historic Maximum	8.72	998	26.5	13.9	8.30	1010	145	2120	636			151	200	

Notes: · PWQO - Provincial Water Quality Objectives (July 1994) · Units provided

· NC - No criteria

· Blank - Indicates data not available

· Shading indicates concentration exceeds PWQO

· ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where $pKa = 0.09018 + 2729.92/T$ and $T =$ ambient water temperature in Kelvin ($K = °C + 273.16$). Field pH is used in the equation.

Table 1: March/April 2021 Surface Water Chemistry

Surface Water Station	Date	Fluoride	Magnesium	Ammonia	Un-ionized Ammonia **	Nitrate	Nitrite	TKN	Phenols	BOD ₅	COD	Phosphorous	DOC	Ortho-phosphate	Iron	TSS
		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
PWQO		NC	NC	NC	0.02	NC	NC	NC	0.001	NC	NC	0.03	NC	NC	0.30	NC
SW1 (971)	15-Mar-21	0.15		37.2	0.249	<0.06	0.14	41	0.111	195	325	0.786	139		2.86	55
	Historic Maximum	3.2		17.0	0.070	7.4	0.49	21.6	0.011	31	431	1.72	35.5		10.1	275
SW4 (974)	15-Mar-21	<0.06	9.75	0.1	<0.001	<0.06	<0.03	<0.5	<0.002			0.581	6.6	0.13	3.48	
	Historic Maximum	0.4	27	1.8	0.009	0.7	0.13	7.54	0.075			2.40	45.9	0.37	7.45	
SW7 (977)	15-Mar-21	0.13		5.7	0.147	0.09	<0.03	7.0	0.002	10	49	0.084	16.0		0.820	32
	12-Apr-21	0.16		4.3	0.034	0.28	<0.03	6.3	<0.001	7	32	0.113	14.2		1.46	57
	26-Apr-21	0.16		3.7	0.043	0.31	<0.03	4.8	<0.001		39	0.115	12		0.61	47
	30-Apr-21															
	Historic Maximum	0.53		9.0	0.176	3.47	0.11	26.2	0.027	37	92	4.43	86.5		3.55	139
SW8 (978)	15-Mar-21	0.12	15.7	<0.1	<0.001	3.08	<0.03	<0.5	<0.002			0.052	4.0	<0.03	0.350	
	12-Apr-21	0.13		<0.1	<0.001	1.96	<0.03	1.4	<0.001	4	29	0.233	11.3		1.86	30
	26-Apr-21	0.10		<0.1	<0.002	5.14	<0.03	<0.5	<0.001		11	0.125	6		0.56	24
	Historic Maximum	0.40	39.1	11.6	0.212	21.4	0.45	32.4	0.023			3.20	79.1	1.9	7.69	
SW9 (979)	15-Mar-21	0.13	23.9	6.7	0.072	0.12	<0.03	8.3	<0.002			0.129	14.9	0.05	1.02	
	Historic Maximum	259	38.2	7.5	0.069	18.9	0.49	21.2	0.013			7.45	46.7	1.8	28	

Notes: - PWQO - Provincial Water Quality Objectives (July 1994) - Units provided
 - NC - No criteria - Blank - Indicates data not available - Shading indicates concentration exceeds PWQO
 - ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where $pKa = 0.09018 + 2729.92/T$ and $T =$ ambient water temperature in Kelvin ($K = °C + 273.16$). Field pH is used in the equation.





SGS Canada Inc.

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WSP Canada Inc.

Attn : Albert Siertsema

1821 Provincial Road, Unit 10, Windsor
Canada, N8W 5V7
Phone: 905-687-1771 x 240, Fax:

Project : 111-53036-05, Salford Landfill

19-April-2021

Date Rec. : 13 April 2021

LR Report: CA14345-APR21

Reference: 111-53036-05, Salford Landfill, Albert Siertsema

Copy: 1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: SW7	7: SW8
Sample Date & Time						12-Apr-21 08:00	12-Apr-21 08:00
Temp Upon Receipt [°C]	---	---	---	---	---	9.0	9.0
BOD5 [mg/L]	13-Apr-21	16:24	19-Apr-21	13:29	2	7	4
pH [No unit]	13-Apr-21	10:26	13-Apr-21	15:46	0.05	8.26	8.19
Conductivity [uS/cm]	13-Apr-21	10:26	13-Apr-21	15:46	2	825	645
TDS [mg/L]	13-Apr-21	14:27	15-Apr-21	15:16	30	474	389
TSS [mg/L]	13-Apr-21	09:42	15-Apr-21	10:14	2	57	30
Turbidity [NTU]	13-Apr-21	22:16	14-Apr-21	08:25	0.10	67.3	18.2
\ [TCU]	14-Apr-21	09:49	15-Apr-21	15:51	3	22	29
DOC-Low [mg/L]	14-Apr-21	15:48	16-Apr-21	09:33		14.2	11.3
Hardness [mg/L as CaCO3]	16-Apr-21	13:19	16-Apr-21	17:01	0.05	300	362
Alkalinity [mg/L as CaCO3]	13-Apr-21	10:26	13-Apr-21	15:46	2	239	181
F [mg/L]	14-Apr-21	08:35	14-Apr-21	14:49		0.16	0.13
Cl [mg/L]	14-Apr-21	13:56	14-Apr-21	15:58	1	86	80
SO4 [mg/L]	14-Apr-21	13:51	14-Apr-21	15:58	2	60	27
NO2 [as N mg/L]	13-Apr-21	15:20	14-Apr-21	10:36	0.03	< 0.03	< 0.03
NO3 [as N mg/L]	13-Apr-21	15:20	14-Apr-21	10:36	0.06	0.28	1.96
NO2+NO3 [as N mg/L]	13-Apr-21	15:20	14-Apr-21	10:36	0.06	0.28	1.96
NH3+NH4 [as N mg/L]	13-Apr-21	19:10	14-Apr-21	15:32	0.1	4.3	< 0.1
TKN [as N mg/L]	13-Apr-21	19:39	14-Apr-21	08:00	0.5	6.3	1.4



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

Project : 111-53036-05, Salford Landfill

LR Report : CA14345-APR21

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: SW7	7: SW8
4AAP-Phenolics [mg/L]	13-Apr-21	12:18	13-Apr-21	15:49	0.001	< 0.001	< 0.001
P (tot) [mg/L]	16-Apr-21	13:19	16-Apr-21	17:01	0.003	0.113	0.233
COD [mg/L]	14-Apr-21	09:28	16-Apr-21	16:16	8	32	29
Fe (tot) [mg/L]	16-Apr-21	13:19	16-Apr-21	17:01	0.01	1.46	1.86

PWQO - Provincial Water Quality Objectives

Limits based on MOE PIBS 3303E publication July 1994 reprinted February 1999

a PWQO limit based on pH >6.5-9.0 (at pH 4.5-5.5 PWQO = 15ug/L, pH >5.5-6.5 PWQO 10% above background levels in geological area.

b PWQO limit based on Hardness <75 mg/L (For Hardness >75 mg/L PWQO = 1100 ug/L)

c PWQO limit based on Hardness 0-100 mg/L (For Hardness >100 mg/L PWQO = 0.5 ug/L)

d PWQO limit based on Cr VI (PWQO limit for Cr III = 8.9 ug/L)

e PWQO limit based on Hardness 0-20 (For Hardness >20 mg/L PWQO = 5 ug/L)

f PWQO limit based on Hardness <30 (For Hardness 30-80 PWQO = 3 ug/L, & >80 PWQO=5)

Temperature of Sample upon Receipt: 9 degrees C

Cooling Agent Present: Yes

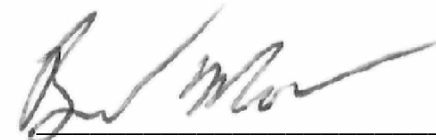
Custody Seal Present: Yes

Chain of Custody Number: NA

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar - surface waters	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Biochemical Oxygen Demand (BOD5)	Biochemical Oxygen Demand (BOD5)	ME-CA-[ENV]EWL-LAK-AN-007
Chemical Oxygen Demand	Chemical Oxygen Demand	ME-CA-[ENV]EWL-LAK-AN-009
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness	Hardness (CaCO3) by ICP	ME-CA-[ENV]SPE-LAK-AN-003
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006

Parameter	Description	SGS Method Code
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrate + Nitrite (as N)	Total Nitrate/Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Total Dissolved Solids	Total Dissolved Solids by Gravimetric	ME-CA-[ENV]EWL-LAK-AN-005
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Total Suspended Solids	Total Suspended Solids	ME-CA-[ENV]EWL-LAK-AN-004
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



Brad Moore Hon. B.Sc
Project Specialist,
Environment, Health & Safety



Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
							%		Low	High		Low	High
<i>Alkalinity - QCBatchID: EWL0203-APR21</i>													
Alkalinity	2	mg/L as Ca	< 2			2	20	102	80	120	NA		
<i>Ammonia by SFA - QCBatchID: SKA0120-APR21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			5	10	96	90	110	100	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5030-APR21</i>													
Chloride	1	mg/L	<1			0	20	105	80	120	103	75	125
Sulphate	2	mg/L	<2			1	20	106	80	120	104	75	125
<i>Anions by IC - QCBatchID: DIO0180-APR21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	103	80	120	104	75	125
Nitrate + Nitrite (as N)	0.06	mg/L	<0.06			NA		NA			NA		
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	97	80	120	102	75	125
<i>Biochemical Oxygen Demand - QCBatchID: BOD0026-APR21</i>													
Biochemical Oxygen Demand (BOD5)	2	mg/L	< 2			5	30	113	70	130	114	70	130
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0241-APR21</i>													
Dissolved Organic Carbon	0.5	mg/L	<0.5			0	20	100	90	110	102	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0226-APR21</i>													
Chemical Oxygen Demand	8	mg/L	<8			8	20	90	80	120	98	75	125
<i>Colour - QCBatchID: EWL0227-APR21</i>													
Colour	3	TCU	< 3			0	10	100	80	120	NA		
<i>Conductivity - QCBatchID: EWL0203-APR21</i>													
Conductivity	2	uS/cm	< 2			1	20	98	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0223-APR21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	97	90	110	105	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0064-APR21</i>													
Iron (total)	0.01	mg/L	<0.007			0	20	98	90	110	102	70	130
Phosphorus (total)	0.003	mg/L	<0.003			ND	20	97	90	110	NV	70	130
<i>pH - QCBatchID: EWL0203-APR21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0111-APR21</i>													
4AAP-Phenolics	0.001	mg/L	<0.001			ND	10	107	90	110	98	75	125
<i>Solids Analysis - QCBatchID: EWL0200-APR21</i>													
Total Dissolved Solids	30	mg/L	<30			1	20	94	90	110	NA		
<i>Suspended Solids - QCBatchID: EWL0202-APR21</i>													
Total Suspended Solids	2	mg/L	< 2			0	10	100	90	110	NA		
<i>Total Nitrogen - QCBatchID: SKA0113-APR21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			3	10	94	90	110	NV	75	125



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Phone: 705-652-2000 FAX: 705-652-6365

Project : 111-53036-05, Salford Landfill
LR Report : CA14345-APR21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
Turbidity - QCBatchID: EWL0220-APR21													
Turbidity	0.10	NTU	< 0.10			1	10	99	90	110	NA		

SGS Canada Inc.
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Phone: 705-652-2000 FAX: 705-652-6365

Project : 191-0671-01

29-April-2021

WSP Canada Inc.
Attn : Albert Siertsema

1821 Provincial Road, Unit 10, Windsor
Canada, N8W 5V7
Phone: 905-687-1771 x 240, Fax:

Date Rec. : 26 April 2021
LR Report: CA30387-APR21
Reference: 191-06761-01, Albert Siertsema

Copy: 1

CERTIFICATE OF ANALYSIS

Preliminary Report

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Date	4: Analysis Completed Time	5: RL	6: SW7	7: SW8
Sample Date & Time						26-Apr-21 08:30	26-Apr-21 09:00
Temp Upon Receipt [@ London Lab °C]	***	***	***	***	***	***	***
Temp Upon Receipt [@ Lakefield Lab °C]	***	***	***	***	***	***	***
BOD5 [mg/L]	***	***	***	***	***	***	***
pH [No unit]	27-Apr-21	14:03	29-Apr-21	11:21	0.05	8.26	8.11
Conductivity [uS/cm]	27-Apr-21	14:03	29-Apr-21	11:21	2	767	696
TDS [mg/L]	27-Apr-21	16:16	29-Apr-21	10:05	30	486	417
TSS [mg/L]	27-Apr-21	08:09	29-Apr-21	13:39	2	47	24
Hardness [mg/L as CaCO3]	29-Apr-21	10:48	29-Apr-21	15:01	0.05	256	261
Alkalinity [mg/L as CaCO3]	27-Apr-21	14:03	29-Apr-21	11:21	2	215	186
Cl [mg/L]	29-Apr-21	10:52	29-Apr-21	15:53	1	88	79
SO4 [mg/L]	29-Apr-21	10:47	29-Apr-21	15:53	2	64	29
NO2 [as N mg/L]	27-Apr-21	16:27	28-Apr-21	15:47	0.03	< 0.03	< 0.03
NO3 [as N mg/L]	27-Apr-21	16:27	28-Apr-21	15:47	0.06	0.31	5.14
NO2+NO3 [as N mg/L]	27-Apr-21	16:27	28-Apr-21	15:47	0.06	0.31	5.14
NH3+NH4 [as N mg/L]	27-Apr-21	17:05	29-Apr-21	09:20	0.1	3.7	< 0.1
TKN [as N mg/L]	27-Apr-21	15:49	28-Apr-21	09:53	0.5	4.8	< 0.5
4AAP-Phenolics [mg/L]	27-Apr-21	07:11	28-Apr-21	14:02	0.001	< 0.001	< 0.001
P (tot) [mg/L]	29-Apr-21	10:48	29-Apr-21	15:01	0.003	0.115	0.125
COD [mg/L]	28-Apr-21	08:07	29-Apr-21	09:44	8	39	11
Fe (tot) [mg/L]	29-Apr-21	10:48	29-Apr-21	15:01	0.01	0.61	0.56
DOC [mg/L]	27-Apr-21	12:17	28-Apr-21	13:06	1	12	6
F [mg/L]	27-Apr-21	10:15	27-Apr-21	13:27	0.06	0.16	0.10
Colour [TCU]	27-Apr-21	10:14	29-Apr-21	14:20	3	18	11
Turbidity [NTU]	27-Apr-21	20:06	28-Apr-21	09:05	0.10	61.4	22.3

PWQO - Provincial Water Quality Objectives

Limits based on MOE PIBS 3303E publication July 1994 reprinted February 1999

a PWQO limit based on pH >6.5-9.0 (at pH 4.5-5.5 PWQO = 15ug/L, pH >5.5-6.5 PWQO 10% above background levels in geological area.

b PWQO limit based on Hardness <75 mg/L (For Hardness >75 mg/L PWQO = 1100 ug/L)

c PWQO limit based on Hardness 0-100 mg/L (For Hardness >100 mg/L PWQO = 0.5 ug/L)

d PWQO limit based on Cr VI (PWQO limit for Cr III = 8.9 ug/L)

e PWQO limit based on Hardness 0-20 (For Hardness >20 mg/L PWQO = 5 ug/L)

f PWQO limit based on Hardness <30 (For Hardness 30-80 PWQO = 3 ug/L, & >80 PWQO=5)

Temperature of Sample upon Receipt: degrees C

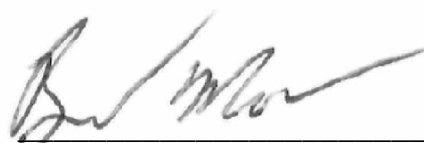
Cooling Agent Present:

Custody Seal Present:

Chain of Custody Number:

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar - surface waters	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EJWL-LAK-AN-006
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Biochemical Oxygen Demand (BOD5)	Biochemical Oxygen Demand (BOD5)	ME-CA-[ENV]EJWL-LAK-AN-007
Chemical Oxygen Demand	Chemical Oxygen Demand	ME-CA-[ENV]EJWL-LAK-AN-009
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EJWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EJWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EJWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Skalar	ME-CA-[ENV]SFA-LAK-AN-009
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EJWL-LAK-AN-014
Hardness	Hardness (CaCO3) by ICP	ME-CA-[ENV]SPE-LAK-AN-003
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrate + Nitrite (as N)	Total Nitrate/Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EJWL-LAK-AN-006
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EJWL-LAK-AN-026
Total Dissolved Solids	Total Dissolved Solids by Gravimetric	ME-CA-[ENV]EJWL-LAK-AN-005
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Total Suspended Solids	Total Suspended Solids	ME-CA-[ENV]EJWL-LAK-AN-004
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EJWL-LAK-AN-003



Brad Moore Hon. B.Sc
Project Specialist,
Environment, Health & Safety



Quality Control Report

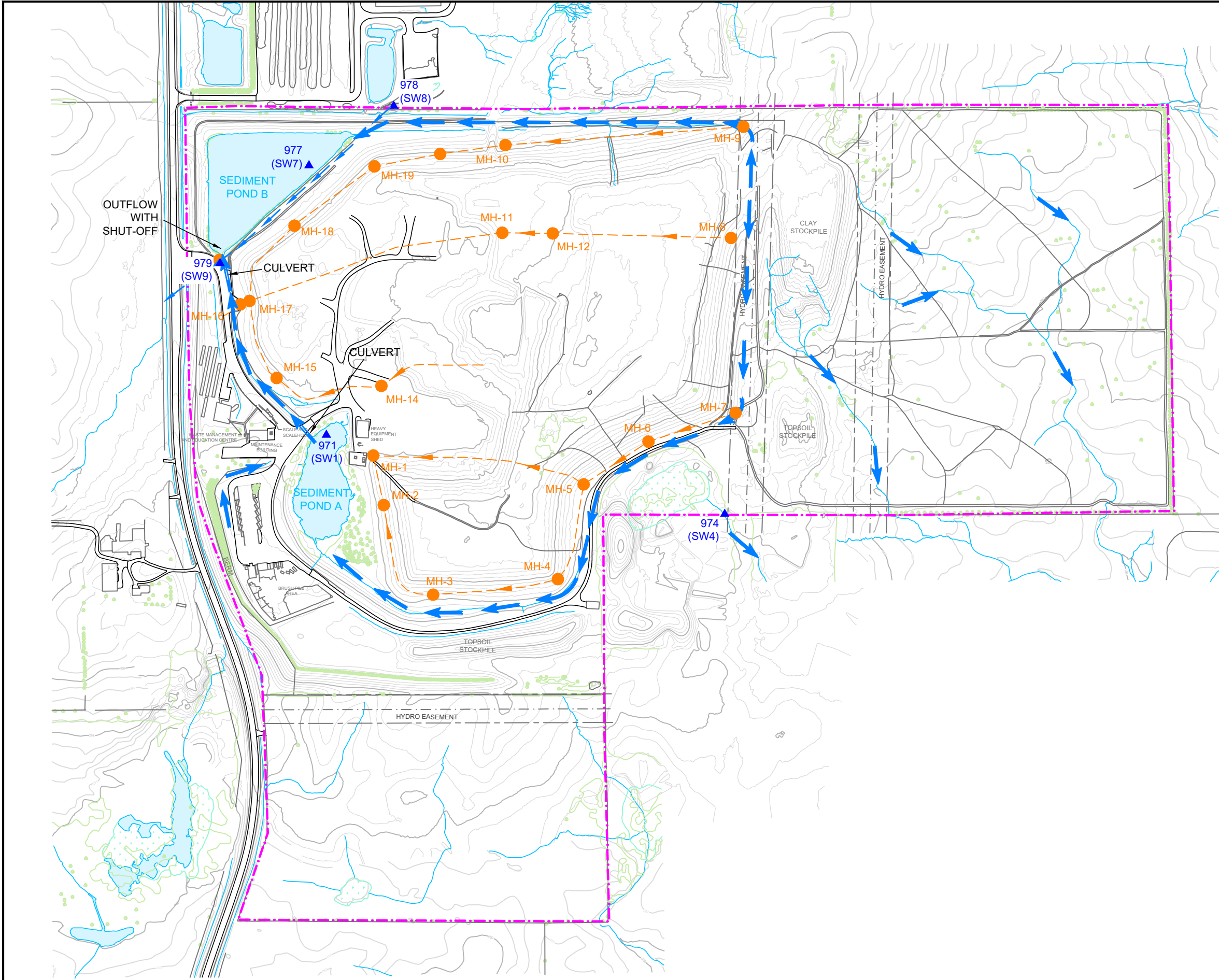
Parameter	Reporting Limit	Unit	Method Blank	Inorganic Analysis									
				Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Alkalinity - QCBatchID: EWL0466-APR21</i>													
Alkalinity	2	mg/L as Ca	< 2			ND	20	98	80	120	NA		
<i>Ammonia by SFA - QCBatchID: SKA0255-APR21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			1	10	99	90	110	101	75	125
<i>Ammonia by SFA - QCBatchID: SKA0259-APR21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			ND	10	98	90	110	91	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5066-APR21</i>													
Chloride	1	mg/L	<1			0	20	105	80	120	98	75	125
Sulphate	2	mg/L	<2			2	20	105	80	120	103	75	125
<i>Anions by IC - QCBatchID: DIO0452-APR21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	104	80	120	106	75	125
Nitrate + Nitrite (as N)	0.06	mg/L	<0.06			NA		NA			NA		
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	97	80	120	91	75	125
<i>Carbon by SFA - QCBatchID: SKA0249-APR21</i>													
Dissolved Organic Carbon	1	mg/L	<1			1	20	101	90	110	99	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0481-APR21</i>													
Chemical Oxygen Demand	8	mg/L	<8			2	20	102	80	120	103	75	125
<i>Colour - QCBatchID: EWL0457-APR21</i>													
Colour	3	TCU	< 3			2	10	105	80	120	NA		
<i>Conductivity - QCBatchID: EWL0466-APR21</i>													
Conductivity	2	uS/cm	< 2			2	20	99	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0458-APR21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	103	90	110	102	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0143-APR21</i>													
Iron (total)	0.01	mg/L	<0.007			0	20	100	90	110	125	70	130
Phosphorus (total)	0.003	mg/L	<0.003			ND	20	106	90	110	NV	70	130
<i>pH - QCBatchID: EWL0466-APR21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0251-APR21</i>													
4AAP-Phenolics	0.001	mg/L	<0.001			6	10	99	90	110	102	75	125
<i>Solids Analysis - QCBatchID: EWL0455-APR21</i>													
Total Dissolved Solids	30	mg/L	<30			2	20	99	90	110	NA		
<i>Suspended Solids - QCBatchID: EWL0451-APR21</i>													
Total Suspended Solids	2	mg/L	< 2			4	10	94	90	110	NA		
<i>Total Nitrogen - QCBatchID: SKA0244-APR21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			ND	10	98	90	110	88	75	125



SGS Canada Inc.
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 Lakefield - Ontario - KOL 2H0
 Phone: 705-652-2000 FAX: 705-652-6365

Project : 191-0671-01
LR Report : CA30387-APR21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Turbidity - QCBatchID: EWL0478-APR21</i>													
Turbidity	0.10	NTU	< 0.10			1	10	96	90	110	NA		



- LEGEND**
- - - PROPERTY LINE
 - - - LEACHATE COLLECTION SYSTEM
 - MH-11 MANHOLE
 - ▲ 974 (SW4) SURFACE WATER SAMPLING STATION LOCATION
 - SURFACE WATER FLOW DIRECTION
 - - - HOOPER DRAIN AND FLOW DIRECTION



0 100 200 m

NOTE: SURFACE TOPOGRAPHY CURRENT AS OF JUNE 2019.

SURFACE WATER MONITORING LOCATIONS AND FLOW MANAGEMENT

2020 Operations and Monitoring Report
Oxford County Waste Management Facility
The County of Oxford

DATE:	JANUARY 2021
PROJECT:	111-53036-04
SCALE:	1 : 5,000
DRAWN BY:	JLD



FIGURE No:



May 3, 2021

Frank Gross, C.Tech
Manager of Transportation & Waste Management Services
County of Oxford
21 Reeve Street,
Woodstock, Ontario N4S 7Y3

**Subject: Sedimentation Pond B Discharge Plan – May 2021
Oxford County Waste Management Facility, Salford
County of Oxford**

WSP Canada Inc. (WSP) is providing this proposed Discharge Plan to the County of Oxford (County) for Sedimentation Pond B at the Oxford County Waste Management Facility (Site) near Salford, Ontario.

1 BACKGROUND

On May 3, 2021, the Ministry of the Environment, Conservation and Parks (MECP) held a virtual meeting with the County and WSP to discuss the next steps with regard to the discharge of the surface water from Sedimentation Pond B. As a result of the meeting's discussions, the MECP recommended that a Discharge Plan be prepared for due diligence purposes.

2 DISCHARGE RATES / TIMEFRAME

It is proposed that the discharge event will commence in the morning of May 4, 2021.

The maximum flow rate for the discharge of Sedimentation Pond B, through the recently repaired discharge outlet and gate valve, was calculated to be approximately 295 m³ / hour using the Hazen-Williams equation for pipe flow. It is proposed that the 150 mm diameter outlet gate valve be opened only 25% (5.5 turns) during the event, which would be approximately 74 m³ / hour.

It is proposed that the discharge only occurs during working hours, such that County staff can monitor any effects of discharge while at the Site. Thus, Sedimentation Pond B will only be discharged via the outlet gate valve from 08:30 to 16:30 Monday to Friday and from 8:00 to 16:00 on Saturday.

Assuming that Sedimentation Pond B is completely full, it has been calculated (using the storm water pond dimensions per Certificate of Approval No. 4504-74CKZ2 for sewage works issued July 3, 2007) that the total volume of surface water to the depth of the invert of the emergency overflow culvert would

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Frank Gross, C.Tech
County of Oxford

be approximately 13,500 m³. Based upon the proposed discharge flow rate and timeframes for discharge to occur, this volume will take approximately 23 days to discharge.

3 SAMPLING PLAN

As discussed with the MECP, it is recommended that sampling be completed during the discharge event, from surface water station SW7. If discharge begins on May 4, 2021, it is proposed that surface water station SW7 be sampled on May 4, 5, and 7, 2021. During the remainder of the discharge event, weekly sampling at surface water station SW7 is recommended. The samples should be collected and analyzed for the following parameters:

FIELD PARAMETERS

pH	Conductivity	Temperature
Dissolved Oxygen		

GENERAL PARAMETERS

pH	Conductivity	Turbidity
----	--------------	-----------

NITROGEN CYCLE

Ammonia	Nitrate	Un-ionized ammonia
TKN	Nitrite	(calculated)

4 SUPPLEMENTAL OBSERVATIONS

In addition to the sampling plan, occasional visual checks of the Hooper Drain discharge area downstream should be undertaken by the County, during the discharge event. These visual checks are included to help confirm that there is no acute lethality noted downstream, and that the mixing zone remains as small as possible, downstream of the discharge.

We trust that this letter has sufficient information for your review. Please contact us if you have any questions or concerns.

Prepared by:
WSP Canada Inc.

Albert Siertsema, P.Eng.
Project Engineer, Environment

AMS/jpc
WSP ref.: 111-53036 -05

Siertsema, Albert

From: Woodhouse, Andrew (MECP) <Andrew.Woodhouse@ontario.ca>
Sent: May-04-21 10:41 AM
To: Frank Gross
Cc: Andrea Coverdale; Chris Hotchkiss; Siertsema, Albert; Smith, Ryan (MECP)
Subject: RE: Pond B Discharge Plan and Analytical Results

Hi Frank

The ministry has reviewed the proposal submitted via email on May 3, 2021 and is of the opinion that the proposed plan should suffice in order to return the pond to operating levels.

Subsequent to the completion, please also provide a brief final summary report which could include a description of the completed work, monitoring observations and sample analyses for our records.

If you have any questions or concerns please advise.

Regards

Andrew Woodhouse | Provincial Officer

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs
London District Office | 733 Exeter Road, London ON N6E 1L3
T: 226-688-5177 | andrew.woodhouse@ontario.ca

From: Frank Gross <fgross@oxfordcounty.ca>
Sent: May 3, 2021 5:48 PM
To: Woodhouse, Andrew (MECP) <Andrew.Woodhouse@ontario.ca>
Cc: Andrea Coverdale <acoverdale@oxfordcounty.ca>; Chris Hotchkiss <chotchkiss@oxfordcounty.ca>; Siertsema, Albert <Albert.Siertsema@wsp.com>
Subject: Pond B Discharge Plan and Analytical Results

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Andrew – a copy of our proposed discharge plan is attached for your review.

Analytical results from the April 30, 2021 sampling event at Sedimentation Pond B are also attached. The ammonia concentration is 3.2 mg/L, which makes the un-ionized ammonia concentration 0.005 mg/L and is below PWQO of 0.02 mg/L for un-ionized ammonia.

Thanks
Frank

Frank Gross, C.Tech

Manager of Transportation & Waste Management Services

Oxford County | 21 Reeve St., PO Box 1614, Woodstock, ON, N4S 7Y3 | T 519-539-9800 /1-800-755-0394, Ext 3120
fgross@oxfordcounty.ca



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 **Think about our Environment. Print only if necessary.**



May 21, 2021

Frank Gross, C.Tech
Manager of Transportation & Waste Management Services
County of Oxford
21 Reeve Street,
Woodstock, Ontario N4S 7Y3

**Subject: Sedimentation Pond B Discharge Summary – May 2021
Oxford County Waste Management Facility, Salford
County of Oxford**

WSP Canada Inc. (WSP) is providing this letter report to the County of Oxford (County) in summary of the recent Sedimentation Pond B discharge event, completed from May 4 to 14, 2021 at the Oxford County Waste Management Facility (Site) near Salford, Ontario.

1 BACKGROUND

On May 3, 2021, the County submitted a proposed Discharge Plan for Sedimentation Pond B, to the Ministry of the Environment, Conservation and Parks (MECP), for their review. The MECP reviewed the Discharge Plan on May 4, 2021 and agreed that the proposed plan should suffice in returning the pond to operating levels.

2 DISCHARGE RATES / TIMEFRAME

The discharge of Sedimentation Pond B commenced at 08:30 on May 4, 2021. The maximum flow rate for the discharge of Sedimentation Pond B, through the discharge outlet and gate valve, was calculated to be approximately 295 m³ / hour. The 150 mm diameter outlet gate valve was opened only 25% (5.5 turns) during the event, which was approximately 74 m³ / hour.

Discharge only occurred during working hours, so that County staff could monitor any effects of discharge while at the Site. Sedimentation Pond B was only discharged between the hours of 08:30 to 16:30 Monday to Friday.

By May 14, 2021, Sedimentation Pond B had completed discharging to the depth of the invert of the emergency overflow culvert, a volume of approximately 9,000 m³ based upon the stormwater pond dimensions per Certificate of Approval No. 4504-74CKZ2 for sewage works, issued July 3, 2007. The

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Frank Gross, C.Tech
County of Oxford

discharge of Sedimentation Pond B through the discharge outlet and gate valve was ended at 16:30 on May 14, 2021.

3 SAMPLING EVENTS AND RESULTS

The discharge of Sedimentation Pond B commenced on May 4, 2021. Samples were collected by County staff on May 4, 5, 7, and 11, 2021, for the following parameters:

FIELD PARAMETERS

pH	Conductivity	Temperature
Dissolved Oxygen		

GENERAL PARAMETERS

pH	Conductivity	Turbidity
----	--------------	-----------

NITROGEN CYCLE

Ammonia	Nitrate	Un-ionized ammonia
TKN	Nitrite	(calculated)

A copy of the laboratory certificates of analysis are attached, with summarized field and laboratory results presented in the attached Table 1.

4 SUPPLEMENTAL OBSERVATIONS

In addition to the sampling plan, occasional visual checks of the downstream Hooper Drain discharge area were also undertaken by the County, during the discharge event.

No acute lethality was noted during these visual checks, which were conducted on May 4 through 7 and May 10 through 14, 2021, by the County. The mixing zone downstream of the discharge also appeared to remain small and was not visually affected by the discharge of surface water from Sedimentation Pond B.

We trust that this letter has sufficient information for your review. Please contact us if you have any questions or concerns.

Prepared by:
WSP Canada Inc.

Albert Siertsema, P.Eng.
Project Engineer, Environment

Attachments: Table 1: Surface Water Chemistry Results
Laboratory Certificates of Analysis

AMS/jpc
WSP ref.: 111-53036 -05

Table 1: Sedimentation Pond B - Discharge Surface Water Results

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Turbidity	Ammonia	Un-ionized Ammonia **	Nitrate	Nitrite	TKN
		unitless	µS/cm	°C	mg/L	unitless	µS/cm	NTU	mg/L	mg/L	mg/L	mg/L	mg/L
PWQO		6.5 - 8.5	NC	NC	NC	6.5 - 8.5	NC	Narrative	NC	0.02	NC	NC	NC
SW7 (977)	04-May-21	7.81	840	15.4	10.83	8.27	753	23.5	2.5	0.045	0.42	<0.03	4.3
	05-May-21	7.70	780	13.5	9.79	8.23	739	37.7	2.6	0.031	0.35	<0.03	3.8
	07-May-21	7.68	810	11.1	13.23	8.33	726	34.4	2.2	0.021	0.34	<0.03	3.7
	11-May-21	7.52	810	12.2	14.03	8.46	720	19.2	1.9	0.014	0.40	<0.03	3.1

Notes: · PWQO - Provincial Water Quality Objectives (July 1994) · Units provided · Shading indicates concentration exceeds PWQO
 · NC - No criteria · Blank - Indicates data not available
 · ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH}+1)$; where $pKa = 0.09018 + 2729.92/T$ and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

13-May-2021

County of Oxford (Oxford County Waste Management Facility)

**195 Admiral St.
Woodstock, ON
N4S 7W5, Canada**

**Date Rec. : 06 May 2021
LR Report: CA13199-MAY21**

Copy: #1

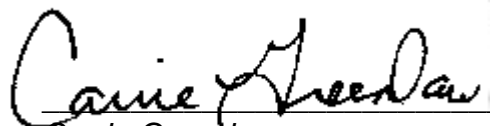
Phone: 519-537-8531

Fax:

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1:	2:	3:	4:	5:
	Analysis Start Date	Analysis Start Time	Analysis Completed Date	Analysis Completed Time	Stormwater Pond Landfill SW7
Sample Date & Time					04-May-21 14:30
Temperature Upon Receipt [°C]	---	---	---	---	8.0
pH [No unit]	07-May-21	10:39	11-May-21	13:05	8.27
Temperature @ pH [°C]	07-May-21	10:39	11-May-21	13:05	18.9
Conductivity [uS/cm]	07-May-21	10:39	10-May-21	16:13	753
Turbidity [NTU]	06-May-21	13:51	06-May-21	14:11	23.5
Total Kjeldahl Nitrogen [as N mg/L]	07-May-21	18:55	10-May-21	15:04	4.3
Unionized Ammonia [mg/L as N]	08-May-21	08:44	10-May-21	19:26	0.161
Ammonia+Ammonium (N) [as N mg/L]	08-May-21	08:44	10-May-21	19:26	2.5
Nitrite (as N) [mg/L]	10-May-21	21:28	13-May-21	09:25	< 0.03
Nitrate (as N) [mg/L]	10-May-21	21:28	13-May-21	09:25	0.42
Nitrate + Nitrite (as N) [mg/L]	10-May-21	21:28	13-May-21	09:25	0.42



Carrie Greenlaw
Project Specialist,
Environment, Health & Safety



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14-May-2021

County of Oxford (Oxford County Waste Management Facility)

**195 Admiral St.
Woodstock, ON
N4S 7W5, Canada**

Date Rec. : 06 May 2021
LR Report: CA13205-MAY21

Copy: #1

**Phone: 519-537-8531
Fax:**

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Stormwater Pond Landfill May 5
Sample Date & Time					05-May-21 09:10
Temperature Upon Receipt [°C]	---	---	---	---	8.0
pH [No unit]	06-May-21	16:54	10-May-21	16:48	8.23
Temperature @ pH [°C]	06-May-21	16:54	10-May-21	16:48	19.8
Conductivity [uS/cm]	06-May-21	16:54	10-May-21	16:48	739
Turbidity [NTU]	06-May-21	22:20	07-May-21	08:26	37.7
Total Kjeldahl Nitrogen [as N mg/L]	07-May-21	18:55	10-May-21	15:06	3.8
Ammonia+Ammonium (N) [as N mg/L]	08-May-21	08:44	10-May-21	19:27	2.6
Unionized Ammonia [mg/L as N]	08-May-21	08:44	10-May-21	19:27	0.161
Nitrite (as N) [mg/L]	10-May-21	21:55	14-May-21	10:18	< 0.03
Nitrate (as N) [mg/L]	10-May-21	21:55	14-May-21	10:18	0.35
Nitrate + Nitrite (as N) [mg/L]	10-May-21	21:55	14-May-21	10:18	0.35

Note: Provincial Unionized ammonia calculated using lab results for pH and temperature.


Carrie Greenlaw
Project Specialist,
Environment, Health & Safety



SGS Canada Inc.

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14-May-2021

County of Oxford (Oxford County Waste Management Facility)

**195 Admiral St.
Woodstock, ON
N4S 7W5, Canada**

Date Rec. : 08 May 2021
LR Report: CA13344-MAY21

Copy: #1

Phone: 519-537-8531

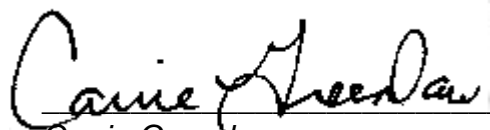
Fax:

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Stormwater Pond Landfill
Sample Date & Time					07-May-21
Temperature Upon Receipt [°C]	---	---	---	---	11.0
pH [No unit]	10-May-21	08:08	13-May-21	10:41	8.33
Temperature @ pH [°C]	10-May-21	08:08	13-May-21	10:41	20.8
Conductivity [uS/cm]	10-May-21	08:08	13-May-21	10:41	726
Turbidity [NTU]	08-May-21	13:00	10-May-21	10:20	34.4
Total Kjeldahl Nitrogen [as N mg/L]	13-May-21	16:32	14-May-21	15:16	3.7
Unionized Ammonia [mg/L as N]	10-May-21	20:49	11-May-21	11:01	0.185
Ammonia+Ammonium (N) [as N mg/L]	10-May-21	20:49	11-May-21	11:01	2.2
Nitrite (as N) [mg/L]	10-May-21	18:33	13-May-21	09:11	< 0.03
Nitrate (as N) [mg/L]	10-May-21	18:33	13-May-21	09:11	0.34
Nitrate + Nitrite (as N) [mg/L]	10-May-21	18:33	13-May-21	09:11	0.34

Note: Provincial unionized ammonia calculated using lab results for pH and temperature.



Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

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20-May-2021

County of Oxford (Oxford County Waste Management Facility)

**195 Admiral St.
 Woodstock, ON
 N4S 7W5, Canada**

Date Rec. : 12 May 2021
LR Report: CA12367-MAY21

Copy: #1

**Phone: 519-537-8531
 Fax:**

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Stormwater Pond Landfill May 11
Sample Date & Time					11-May-21 08:45
Temperature Upon Receipt [°C]	---	---	---	---	13.0
pH [No unit]	13-May-21	13:12	14-May-21	13:36	8.46
Temperature @ pH [°C]	13-May-21	13:12	14-May-21	13:36	19.5
Conductivity [uS/cm]	13-May-21	13:12	14-May-21	13:36	720
Turbidity [NTU]	12-May-21	21:52	13-May-21	08:14	19.2
Total Kjeldahl Nitrogen [as N mg/L]	14-May-21	20:00	17-May-21	09:46	3.1
Ammonia+Ammonium (N) [as N mg/L]	12-May-21	21:30	13-May-21	11:44	1.9
Unionized Ammonia [mg/L as N]	12-May-21	21:30	17-May-21	09:46	0.185
Nitrite (as N) [mg/L]	15-May-21	10:48	20-May-21	11:15	< 0.03
Nitrate (as N) [mg/L]	15-May-21	10:48	20-May-21	11:15	0.40
Nitrate + Nitrite (as N) [mg/L]	15-May-21	10:48	20-May-21	11:15	0.40

Note: Provincial unionized ammonia calculated using Lab results for pH and temperature.



Carrie Greenlaw
 Project Specialist,
 Environment, Health & Safety



October 13, 2021

Pamela Antonio
Supervisor of Waste Management
County of Oxford
21 Reeve Street,
Woodstock, Ontario N4S 7Y3

**Subject: Letter of Notification
Surface Water Sampling Event – October 2021
Oxford County Waste Management Facility, Salford
County of Oxford**

WSP Canada Inc. (WSP) is providing this Letter of Notification to the County of Oxford (County) in summary of the recent surface water sampling event, completed on October 4, 2021 at the Oxford County Waste Management Facility (Site) near Salford, Ontario.

1 BACKGROUND

The surface water monitoring program completed at the Site includes quarterly monitoring at the stations listed in the following table. The locations of the surface water monitoring stations are shown in Figure 5 of the 2020 Annual Operations and Monitoring Report, attached to this letter report.

SURFACE WATER STATION	RELATIVE POSITION	SAMPLING FREQUENCY
SW1 (971)	Sedimentation Pond A (retention pond) in the northwest corner of the landfill.	Quarterly
SW4 (974)	A naturally wet surficial depression adjacent to Cells 2 and 3 (downstream) that collects stormwater runoff from the landfill sideslopes and conveys it westward off the landfill property.	
SW7 (977)	Sedimentation Pond B (retention pond) in the northeast corner of the landfill.	
SW8 (978)	At the point where the Hooper Drain enters the landfill property (upstream) via a culvert inlet east of the landfill berm.	
SW9 (979)	From the manhole where the Hooper Drain leaves the landfill property (downstream and westward).	

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The majority of the surface water runoff from the landfill makes its way to Sedimentation Pond B, either directly or via Sedimentation Pond A. When pond levels are sufficiently high, water from Pond B discharges to the Hooper Drain.

As part of the quarterly surface water sampling event, surface water samples were collected from surface water monitoring stations SW1, SW4, SW7, SW8 and SW9 on March 15, 2021. Upon receipt of the results, several parameter concentrations (most notably ammonia/un-ionized ammonia) were noted to exceed their respective historical ranges at station SW1. As such, upon analysis of the surface water monitoring results, the County was notified of the assumed landfill impact to Sedimentation Pond A.

It was also inferred that elevated parameter concentrations noted at station SW1 (Sedimentation Pond A) may have adversely affected concentrations downstream within station SW7, as well as within the surface water discharge from the Site (SW9).

It was recommended that discharge from Sedimentation Pond A (SW1) to Sedimentation Pond B (SW7) be temporarily stopped, to prevent any further landfill impacts downstream, which the County completed immediately. The County also enacted measures to shut-off the flow from Sedimentation Pond B to the Hooper Drain.

As part of subsequent supplemental surface water sampling events, samples were collected from surface water monitoring stations SW7 (Sedimentation Pond B) and SW8 (background) in April 2021. These supplemental sampling events revealed that ammonia concentrations were decreasing, to a point wherein calculated un-ionized ammonia concentrations were below the PWQO on April 30, 2021.

On May 3, 2021, the County submitted a proposed Discharge Plan for Sedimentation Pond B, to the Ministry of the Environment, Conservation and Parks (MECP), for their review. The MECP reviewed the Discharge Plan on May 4, 2021 and agreed that the proposed plan should suffice in returning the pond to operating levels.

The discharge of Sedimentation Pond B was completed between May 4 and 14, 2021. Discharge only occurred during working hours, so that County staff could monitor any effects of discharge while at the Site. Sampling was completed during the discharge event from surface water station SW7, as agreed upon with the MECP. In addition to the sampling plan, occasional visual checks of the downstream Hooper Drain discharge area were also undertaken by the County, during the discharge event. No acute lethality was noted during these visual checks, and the mixing zone downstream of the discharge also appeared to remain small and was not visually affected by the discharge of surface water from Sedimentation Pond B.

2 SUBSEQUENT SEDIMENTATION POND A RESULTS

As part of further supplemental surface water sampling events, samples were also collected from surface water monitoring station SW1 (Sedimentation Pond A) in June and July 2021, to monitor the improvement of surface water quality as the result of remedial actions (removal of surface water from pond, as well as aeration). Quarterly surface water sampling results were also collected from all surface water stations in August 2021. These sampling events revealed that ammonia and other indicator parameter concentrations have continued to decrease since the discharge of Sedimentation Pond B in May 2021, as shown in the summary of field and laboratory results, presented in Table 1.



3 OCTOBER 2021 EVENT AND RESULTS

As part of the most recent quarterly surface water sampling event, surface water samples were collected from surface water monitoring stations SW1, SW4, SW7, SW8 and SW9 on October 4, 2021. Samples were submitted to SGS Laboratories in Lakefield, Ontario, for analysis of the required quarterly parameters, as per Amended Environmental Compliance Approval (ECA) No. A070808 issued November 7, 2013, and also Certificate of Approval (CofA) No. 4504-74CKZ2 for sewage works issued July 3, 2007. Field measurements of pH, conductivity, temperature, and dissolved oxygen were obtained from each location. Summarized field and laboratory results are presented in the attached Table 1.

3.1 PWQO

The reported chemical concentrations were compared to the relevant Provincial Water Quality Objectives (July 1994 plus updates) (PWQO). The October 2021 concentrations that exceeded their respective PWQO are summarized below.

- Phenols concentrations exceeded the PWQO at stations SW1, SW7 and SW9;
- The PWQO for phosphorus was exceeded at all stations; and
- Iron concentrations exceeded the PWQO at stations SW4, SW7, SW8 and SW9.

The reported parameter concentration exceedances were within their respective historical ranges.

3.2 SURFACE WATER QUALITY DISCUSSION

It is noted in previous letters of notification that flow from Sedimentation Pond A to Sedimentation Pond B should remain blocked until surface water monitoring determines that historically appropriate parameter concentrations are observed again within Sedimentation Pond A (SW1) and/or parameter concentrations are similar to or lower than results at background surface water station SW8.

A review of the October 2021 surface water quality data confirms that previously elevated parameter concentrations of field/lab conductivity, total dissolved solids (TDS), ammonia, un-ionized ammonia, total kjeldahl nitrogen (TKN), phenols, biological oxygen demand (BOD₅) and chemical oxygen demand (COD) at SW1 (Sedimentation Pond A) have decreased dramatically since March 2021. These concentrations are now within the historically appropriate concentration range for this station; well below the previous historic maximum concentrations at this station. The October 2021 concentrations at SW1 are also within the range of historical background concentrations at station SW8; well below the historic maximum concentrations at station SW8.

4 RECOMMENDATIONS

It is noted that there are currently no ECA/CofA mandated trigger concentration levels or contingency plans in relation to the surface water monitoring results at the Site. However, Condition 1.6 of the ECA does state that, “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.” It is suggested that the supplemental sampling completed in 2021 has satisfied this Condition.

As noted previously, October 2021 surface water quality concentrations at station SW1 (Sedimentation Pond A) are within the historically appropriate concentration range for this station, as well as within the historical background range at surface water station (SW8).



Pamela Antonio
County of Oxford

As such, it is recommended that this summary letter and surface water sampling results be provided to the MECP as support to the request that discharge from Sedimentation Pond A to Sedimentation Pond B be permitted to resume as soon as possible.

We trust that this letter has sufficient information for your review. Please contact us if you have any questions or concerns.

Prepared by:
WSP Canada Inc.

A handwritten signature in black ink, appearing to read 'Albert Siertsema', is positioned below the company name.

Albert Siertsema, P.Eng.
Project Engineer, Environment

Attachments: Table 1: 2021 Surface Water Chemistry
 Figure 5: Surface Water Monitoring Locations and Flow Management – 2020 Annual Operations
 and Monitoring Report

AMS/jpc
WSP ref.: 111-53036 -05

Table 1: 2021 Surface Water Chemistry

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L	unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		6.5 - 8.5	NC	field NC	NC	6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW1	15-Mar-21	7.67	2020	6.8	4.11	7.83	1640	63	81.6	515	1000	537	180		77
(971)	17-May-21	8.44	1152	16.5	5.20	8.54	1180	52	21.7	224	683	287	200		69
	10-Jun-21	7.79	962	24.2	9.80	8.22	1260	56	8.79	327	680	311	210		68
	29-Jun-21	7.71	1040	22.3	9.57	8.46	1080	45	17.4	285	577	241	170		54
	29-Jul-21	7.85	1080	23.4	10.42	8.13	1080	39	8.46	289	657	251	170		82
	12-Aug-21	7.79	939	23.7	6.36	8.17	1030	37	10.6	283	626	246	180		79
	04-Oct-21	7.46	664	17.5	9.87	7.76	719	50	5.07	241	440	180	87		65
Historic Maximum		9.18	1020	27.0	15.8	9.40	923	100	7200	311	550	413	190		101
SW4	15-Mar-21	7.09	670	3.5	6.45	7.41	336	25	5.34	199			4	63.7	
(974)	17-May-21	7.16	485	12.0	4.65	7.91	453	62	1.67	223			7	67.1	
	12-Aug-21	8.05	280	20.8	6.12	8.09	290	50	3.56	166			<1	54.3	
	04-Oct-21	8.10	257	16.7	10.28	7.81	254	111	24.4	150			4	47.3	
Historic Maximum		8.42	674	21.8	17.3	8.20	945	2270	198	567			119	183	
SW7	15-Mar-21	8.34	1060	4.6	12.32	8.19	823	19	20.2	307	486	262	83		62
(977)	12-Apr-21	7.39	762	17.15	9.70	8.26	825	22	67.3	300	474	239	86		60
	26-Apr-21	7.81	662	9.73	8.54	8.26	767	18	61.4	256	486	215	88		64
	30-Apr-21	6.84	759	11.9											
	04-May-21	7.81	840	15.4	10.83	8.27	753		23.5						
	05-May-21	7.70	780	13.5	9.79	8.23	739		37.7						
	07-May-21	7.68	810	11.1	13.23	8.33	726		34.4						
	11-May-21	7.52	810	12.2	14.03	8.46	720		19.2						
	17-May-21	8.40	680	17.0	8.32	8.50	658	17	25.5	164	469	124	88		72
	12-Aug-21	8.12	517	24.2	5.40	8.07	562	17	75.0	164	329	127	80		47
	04-Oct-21	7.87	519	17.5	10.82	8.18	559	15	38.4	206	349	138	66		61
Historic Maximum		9.27	727	26.0	14.3	9.20	1420	640	819	537	438	362	235		104

Table 1: 2021 Surface Water Chemistry

Surface Water Station	Date	Fluoride	Magnesium	Ammonia	Un-ionized Ammonia **	Nitrate	Nitrite	TKN	Phenols	BOD ₅	COD	Phosphorous	DOC	Ortho-phosphate	Iron	TSS
		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
PWQO		NC	NC	NC	0.02	NC	NC	NC	0.001	NC	NC	0.03	NC	NC	0.30	NC
SW1 (971)	15-Mar-21	0.15		37.2	0.249	<0.06	0.14	41	0.111	195	325	0.786	139		2.86	55
	17-May-21	0.13		16.5	1.28	<0.06	<0.03	20.8	0.004	19	123	0.340	29.0		0.11	57
	10-Jun-21	0.13		14.7	0.469	<0.06	<0.03	18.4	0.003	11	98	0.298	35.1		0.38	19
	29-Jun-21	0.14		6.2	0.145	0.88	0.52	10.0	0.001	16	81	0.217	15		0.32	42
	29-Jul-21	0.14		2.5	0.086	0.13	0.12	5.8	0.001	4	71	0.133	24.7		0.17	19
	12-Aug-21	0.16		1.2	0.037	<0.06	0.06	4.0	0.003	12	80	0.120	22.7		0.12	21
	04-Oct-21	0.16		0.5	0.005	0.07	0.03	1.6	0.005	14	44	0.193	14.8		0.26	6
Historic Maximum		3.2		17.0	0.070	7.4	0.49	21.6	0.011	31	431	1.72	35.5		10.1	275
SW4 (974)	15-Mar-21	<0.06	9.75	0.1	<0.001	<0.06	<0.03	<0.5	<0.002			0.581	6.6	0.13	3.48	
	17-May-21	0.12	13.4	<0.1	<0.001	<0.06	<0.03	1.6	<0.001			0.262	16	0.06	1.01	
	12-Aug-21	0.06	7.49	0.2	0.009	<0.06	<0.03	1.2	0.002			0.185	11.8	0.06	0.62	
	04-Oct-21	0.08	7.74	<0.1	<0.004	0.07	<0.03	0.6	<0.001			0.227	14.6	0.13	2.15	
Historic Maximum		0.4	27	1.8	0.009	0.7	0.13	7.54	0.075			2.40	45.9	0.37	7.45	
SW7 (977)	15-Mar-21	0.13		5.7	0.147	0.09	<0.03	7.0	0.002	10	49	0.084	16.0		0.82	32
	12-Apr-21	0.16		4.3	0.034	0.28	<0.03	6.3	<0.001	7	32	0.113	14.2		1.46	57
	26-Apr-21	0.16		3.7	0.043	0.31	<0.03	4.8	<0.001	9	39	0.115	12		0.61	47
	30-Apr-21			3.2	0.005											
	04-May-21			2.5	0.045	0.42	<0.03	4.3								
	05-May-21			2.6	0.031	0.35	<0.03	3.8								
	07-May-21			2.2	0.021	0.34	<0.03	3.7								
	11-May-21			1.9	0.014	0.40	<0.03	3.1								
	17-May-21	0.13		1.1	0.081	0.38	<0.03	2.6	<0.001	8	40	0.100	12		0.66	37
	12-Aug-21	0.18		0.2	0.013	<0.06	<0.03	1.5	<0.001	7	43	0.182	9.8		2.10	83
04-Oct-21	0.19		0.7	0.017	0.69	0.16	1.6	0.004	10	28	0.072	10.6		0.99	40	
Historic Maximum		0.53		9.0	0.176	3.47	0.11	26.2	0.027	37	92	4.43	86.5		3.55	139

Table 1: 2021 Surface Water Chemistry

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L	unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PWQO		6.5 - 8.5	NC	NC	NC	6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW8	15-Mar-21	7.97	760	5.2	14.05	8.00	543	9	6.53	280			34	86.3	
(978)	12-Apr-21	7.19	643	14.32	10.90	8.19	645	29	18.2	362	389	181	80		27
	26-Apr-21	8.00	557	9.71	9.77	8.11	696	11	22.3	261	417	186	79		29
	17-May-21	7.45	797	12.0	8.56	7.98	793	9	4.71	341			62	96.8	
	12-Aug-21	7.57	563	20.0	7.14	8.02	640	39	78.1	278			73	83.4	
	04-Oct-21	7.57	323	16.5	10.95	7.68	359	93	243	185			24	53.6	
Historic Maximum		8.75	1140	25.5	14.0	8.45	1420	122	1010	678			242	210	
SW9	15-Mar-21	7.96	1100	4.4	8.92	8.01	876	20	11.2	346			89	99.3	
(979)	17-May-21	7.99	749	13.7	7.42	7.96	749	13	38.4	591			76	166	
	12-Aug-21	7.85	576	20.1	5.69	8.03	632	26	790	511			75	162	
	04-Oct-21	7.53	334	16.4	6.33	7.74	356	101	252	190			24	57.5	
Historic Maximum		8.72	998	26.5	13.9	8.30	1010	145	2120	636			151	200	

Notes: · PWQO - Provincial Water Quality Objectives (July 1994) · Units provided

· NC - No criteria

· Blank - Indicates data not available

· ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where $pKa = 0.09018 + 2729.92/T$ and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.

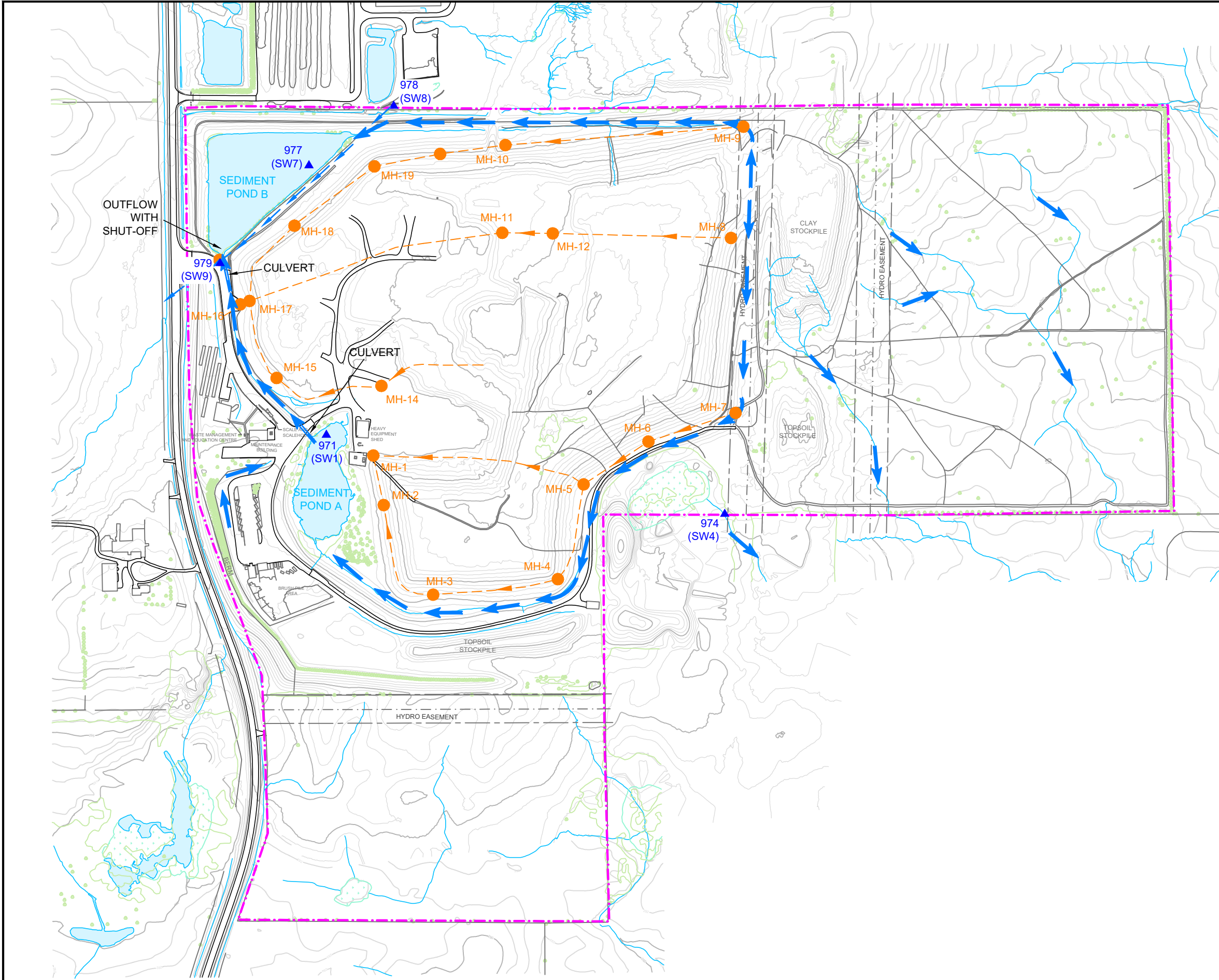
· Units provided

· Shading indicates concentration exceeds PWQO

Table 1: 2021 Surface Water Chemistry

Surface Water Station	Date	Fluoride	Magnesium	Ammonia	Un-ionized Ammonia **	Nitrate	Nitrite	TKN	Phenols	BOD ₅	COD	Phosphorous	DOC	Ortho-phosphate	Iron	TSS
		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
PWQO		NC	NC	NC	0.02	NC	NC	NC	0.001	NC	NC	0.03	NC	NC	0.30	NC
SW8 (978)	15-Mar-21	0.12	15.7	<0.1	<0.001	3.08	<0.03	<0.5	<0.002			0.052	4.0	<0.03	0.35	
	12-Apr-21	0.13		<0.1	<0.001	1.96	<0.03	1.4	<0.001	4	29	0.233	11.3		1.86	30
	26-Apr-21	0.10		<0.1	<0.002	5.14	<0.03	<0.5	<0.001	10	11	0.125	6		0.56	24
	17-May-21	0.16	24.0	<0.1	<0.001	5.63	<0.03	<0.5	<0.001			0.080	6	<0.03	0.67	
	12-Aug-21	0.14	16.9	0.4	0.006	2.07	<0.03	1.5	0.001			0.360	9.5	0.19	2.98	
	04-Oct-21	0.14	12.4	<0.1	<0.001	4.34	<0.03	1.0	<0.001			0.770	15.2	0.50	11.1	
Historic Maximum		0.40	39.1	11.6	0.212	21.4	0.45	32.4	0.023			3.20	79.1	1.9	7.69	
SW9 (979)	15-Mar-21	0.13	23.9	6.7	0.072	0.12	<0.03	8.3	<0.002			0.129	14.9	0.05	1.02	
	17-May-21	0.16	42.8	0.3	0.007	2.88	<0.03	1.3	<0.001			0.925	9	0.04	11.3	
	12-Aug-21	0.18	25.9	0.3	0.008	0.79	<0.03	1.6	0.002			0.817	10.6	0.31	6.73	
	04-Oct-21	0.18	11.2	<0.1	<0.001	4.98	<0.03	1.1	0.002			0.542	18.0	0.52	3.06	
Historic Maximum		259	38.2	7.5	0.069	18.9	0.49	21.2	0.013			7.45	46.7	1.8	28	

Notes: · PWQO - Provincial Water Quality Objectives (July 1994) · Units provided · Shading indicates concentration exceeds PWQO
 · NC - No criteria · Blank - Indicates data not available
 · ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where $pKa = 0.09018 + 2729.92/T$ and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



- LEGEND**
- - - PROPERTY LINE
 - - - LEACHATE COLLECTION SYSTEM
 - MH-11 MANHOLE
 - ▲ 974 (SW4) SURFACE WATER SAMPLING STATION LOCATION
 - SURFACE WATER FLOW DIRECTION
 - - - HOOPER DRAIN AND FLOW DIRECTION



0 100 200 m

NOTE: SURFACE TOPOGRAPHY CURRENT AS OF JUNE 2019.

SURFACE WATER MONITORING LOCATIONS AND FLOW MANAGEMENT

2020 Operations and Monitoring Report
Oxford County Waste Management Facility
The County of Oxford

DATE:	JANUARY 2021
PROJECT:	111-53036-04
SCALE:	1 : 5,000
DRAWN BY:	JLD



FIGURE No: **5**

Siertsema, Albert

From: Woodhouse, Andrew (MECP) <Andrew.Woodhouse@ontario.ca>
Sent: October-25-21 10:18 AM
To: Pamela Antonio
Subject: RE: Incident Report Number 3806-BZFSF3

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Pam

The MECP has reviewed the document: “Letter of Notification, Surface Water Sampling Event – October 2021, Oxford County Waste Management Facility, Salford, County of Oxford”, dated October 13, 2021, with respect to surface water concerns.

The document outlines a summary of all the work completed in 2021 including most recently, a surface water sampling event which was completed on October 4, 2021 at the Oxford County Waste Management Facility (Site) near Salford, Ontario.

Upon review, concentrations of all parameters from the samples collected at Sedimentation Pond A (SW1) have returned to ranges which are historically appropriate and therefore, there is a recommendation from the consultants to be approved to reinstate the discharge from Pond A to Pond B as soon as possible.

Based on the review of the document referenced above, the ministry supports the reinstatement of the discharge from Pond A to Pond B as soon as possible to ensure that the system continues to operate as designed.

Further samples of the sediment in Pond A as well as depth measurements may help to indicate if a pond maintenance (i.e clean out) is necessary at this time to help reduce the likelihood of another event or if further efforts to identify leachate migration are necessary

If you have any questions or concerns, please let me know.

Regards

Andrew Woodhouse | Provincial Officer

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs
London District Office | 733 Exeter Road, London ON N6E 1L3
T: 226-688-5177 | andrew.woodhouse@ontario.ca

From: Pamela Antonio <pantonio@oxfordcounty.ca>
Sent: October 22, 2021 10:50 AM
To: Woodhouse, Andrew (MECP) <Andrew.Woodhouse@ontario.ca>
Subject: RE: Incident Report Number 3806-BZFSF3

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Andrew,

I just wanted to check in with you to see if you have had a chance to review our request to allow Sediment Pond A to discharge into Sediment Pond B.

Thanks
Pam

PAMELA ANTONIO, Supervisor of Waste Management

T 519.539.9800 / 1-800-755-0394, ext. 3114

www.oxfordcounty.ca | www.wasteline.ca



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p Think about our environment. Print only if necessary.

From: Woodhouse, Andrew (MECP) [<mailto:Andrew.Woodhouse@ontario.ca>]

Sent: October 15, 2021 8:10 PM

To: Pamela Antonio <pantonio@oxfordcounty.ca>

Subject: RE: Incident Report Number 3806-BZFSF3

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Thank-you Pam. I'll review the letter and get back to you next week.

Have a good weekend

Andrew

Andrew Woodhouse | Provincial Officer

Ministry of the Environment, Conservation and Parks

Ministère de l'Environnement, de la Protection de la nature et des Parcs

London District Office | 733 Exeter Road, London ON N6E 1L3

T: 226-688-5177 | andrew.woodhouse@ontario.ca

From: Pamela Antonio <pantonio@oxfordcounty.ca>

Sent: October 14, 2021 2:27 PM

To: Woodhouse, Andrew (MECP) <Andrew.Woodhouse@ontario.ca>

Cc: Frank Gross <fgross@oxfordcounty.ca>

Subject: Incident Report Number 3806-BZFSF3

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hello Andrew,

I have attached a letter from our consultant, WSP which includes the latest results from the surface water sampling event conducted on October 4th.

At present Sediment Pond A (Surface Water Station SW1 (971) has not been able to discharge to Sediment Pond B since March 2021. The attached letter provides an overview of activities undertaken to resolve the issues with Sediment Pond A and a recommendation to re-open Pond A.

Let me know if you agree with the recommendations contained within this letter (to allow discharge from Sediment Pond A to Sediment Pond B) and if this Incident Report can be closed.

Thanks,
Pam

PAMELA ANTONIO, MPA, BES | Supervisor of Waste Management

OXFORD COUNTY | 21 Reeve St., PO Box 1614, Woodstock, ON, N4S 7Y3

WWW.OXFORDCOUNTY.CA | WWW.WASTELINE.CA | T 519.539.9800 / 1-800-755-0394, ext. 3114



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p Think about our environment. Print only if necessary.

APPENDIX

B

MONITOR CONSTRUCTION
DETAILS AND BOREHOLE
LOGS

Table B-1: Monitoring Well Construction Details
Oxford County Waste Management Facility

Current Well Designation	Former Designation	Installation Date	Ground Surface Elevation ⁽¹⁾ (m ASL)	Measuring Point Elevation (m ASL)	Stickup ⁽¹⁾ (m)	Riser Inside Diameter ⁽¹⁾ (mm)	Screen Length ⁽¹⁾ (m)	Screened Interval ⁽¹⁾		Well Depth (mbTOP)		Well Status/ Condition
								(m bgs)	(m ASL)	BH Log ⁽¹⁾	Measured ⁽²⁾	
011	BH1 (deep)	26-Jul-76		295.85			0.9	28.4 - 29.3				Sealed in 2003
012	BH1 (intermediate)	26-Jul-76		295.84			0.9	17.1 - 18.1				Sealed in 2003
013	BH1 (shallow)	26-Jul-76		295.86			3.0	4.0 - 7.0				Sealed in 2003
022	BH2 (deep)	27-Jul-76		301.80			0.9	28.0 - 29.0				Sealed in 2004
023	BH2 (shallow)	27-Jul-76		301.94			3.0	4.0 - 7.0				Sealed in 2004
031	BH3 (deep)	28-Jul-76		301.75			0.9	25.1 - 26.1				Sealed in 2000
032	BH3 (intermediate)	28-Jul-76		301.72			0.9	17.4 - 18.3				Sealed in 2000
033	BH3 (shallow)	28-Jul-76		301.73			3.0	4.0 - 7.0				Sealed in 2000
041	BH4 (deep)	14-Dec-77		306.93			0.9	30.5 - 31.4				Sealed in 2007
042	BH4 (intermediate)	14-Dec-77		306.55			0.6	15.5 - 16.2				Sealed in 2007
043	BH4 (shallow)	14-Dec-77		306.86			6.1	8.8 - 14.9				Sealed in 2007
051	BH5 (deep)	15-Dec-77	287.14	288.13	0.99	32	0.6	26.7 - 27.3	260.47 - 259.86			✓
052	BH5 (intermediate)	15-Dec-77	287.14	288.15	1.01	32	0.8	14.6 - 15.4	272.51 - 271.75			✓
053	BH5 (shallow)	15-Dec-77	287.14	287.96	0.82	32	4.6	2.4 - 7.0	284.70 - 280.13			✓
061	BH6 (intermediate)	20-Dec-77	291.45	292.40	0.95	32	0.6	18.3 - 18.9	273.16 - 272.55			✓
063	BH6 (shallow)	20-Dec-77	291.50	292.34	0.84	32	4.9	2.1 - 7.0	289.37 - 284.49			✓
071	BH7 (deep)	21-Dec-77	299.90	300.86	0.96	32	0.6	17.2 - 17.8	282.68 - 282.07			✓
081	BH8 (deep)	21-Dec-77		298.60			0.6	16.2 - 16.8				Sealed in 2003
082	BH8 (shallow)	21-Dec-77		298.70			4.6	2.4 - 7.0				Sealed in 2003
091	BH9 (deep)	22-Dec-77					0.6	16.8 - 17.4				Sealed in 2007
092	BH9 (shallow)	22-Dec-77		295.78			4.9	2.1 - 7.0				Sealed in 2003
101	BH10 (deep)	3-Jan-78		293.35			0.6	14.0 - 14.6				Sealed in 2004
102	BH10 (shallow)	3-Jan-78	292.32	293.20	0.88	32	6.1	4.0 - 10.1	288.36 - 282.26			✓
111	BH11	5-Jan-78	295.08	295.98	0.90	32	4.9	2.4 - 7.3	292.64 - 287.76	8.19		Sealed in 2017
121	BH12	5-Jan-78	294.17	295.09	0.92	32	6.4	4.0 - 10.4	290.21 - 283.81			✓
131	BH13	5-Jan-78	304.33	305.34	1.01	32	6.4	4.0 - 10.4	300.37 - 293.97			✓
141	BH14	5-Jan-78		296.56			4.6	2.4 - 7.0				Sealed in 2004
151	BH15 (deep)	27-Jul-78					0.6	8.2 - 8.8				Sealed in 2007
152	BH15 (shallow)	27-Jul-78					3.0	16.5 - 19.5				Sealed in 2007
161	BH16 (deep)	26-Jul-78	296.55	297.39	0.84	32	0.6	11.3 - 11.9	285.27 - 284.66			✓
162	BH16 (shallow)	26-Jul-78	296.56	297.36	0.80	32	3.0	4.6 - 7.6	291.99 - 288.94			✓
163				297.44								Riser Damaged in 2000
181	BH83-18 (1)	27-Sep-83	295.02				0.6	21.8 - 22.4	273.22 - 272.61			Sealed in 2007
182	BH83-18 (2)	27-Sep-83	295.02				0.6	17.1 - 17.7	277.95 - 277.34			Sealed in 2007
183	BH83-18 (3)	27-Sep-83	295.02	296.11			0.6	7.6 - 8.2	287.40 - 286.79			Sealed in 2003
184	BH83-18 (4)	27-Sep-83	295.02	295.47			0.3	3.4 - 3.7	291.66 - 291.36			Sealed in 2003
185	BH83-18 (5)	27-Sep-83	295.02	295.33			2.1	1.2 - 3.4	293.80 - 291.66			Riser Damaged in 2007
191	BH83-19 (deep)	28-Sep-83	301.33	303.54	2.21	51	0.6	21.6 - 22.3	279.68 - 279.07	23.66		✓
192	BH83-19 (intermediate)	28-Sep-83	301.33	303.34	2.01	51	0.6	12.2 - 12.8	289.13 - 288.52			✓
193	BH83-19 (shallow)	28-Sep-83	301.33	303.52	2.19	32	3.0	3.4 - 6.4	297.97 - 294.92			✓
201	BH83-20 (deep)	20-Oct-83	295.05	295.61			0.6	13.0 - 13.6	282.09 - 281.48			Riser Damaged in 2002
202	BH83-20 (shallow)	20-Oct-83	295.05	295.63	0.58	32	3.0	1.7 - 4.7	293.37 - 290.32			✓
211	BH83-21 (1)	29-Sep-83	298.00				0.6	23.0 - 23.6	274.99 - 274.38			Sealed in 2007

Notes: · All elevations in metres above sea level
· ✓ Surface seal in good condition and well is capped.

· (1) Data estimated based on borehole log or MECP well record.
· (2) Data based on field measurements during 2010.

Table B-1: Monitoring Well Construction Details
Oxford County Waste Management Facility

Current Well Designation	Former Designation	Installation Date	Ground Surface Elevation ⁽¹⁾ (m ASL)	Measuring Point Elevation (m ASL)	Stickup ⁽¹⁾ (m)	Riser Inside Diameter ⁽¹⁾ (mm)	Screen Length ⁽¹⁾ (m)	Screened Interval ⁽¹⁾		Well Depth (mbTOP)		Well Status/ Condition
								(m bgs)	(m ASL)	BH Log ⁽¹⁾	Measured ⁽²⁾	
212	BH83-21 (2)	29-Sep-83	298.00				0.6	18.9 - 19.5	279.11 - 278.50			Sealed in 2007
213	BH83-21 (3)	29-Sep-83	298.00				0.6	9.9 - 10.5	288.10 - 287.49			Sealed in 2007
214	BH83-21 (4)	29-Sep-83	298.00				2.1	1.0 - 3.1	297.01 - 294.88			Sealed in 2007
221	BH83-22 (1)	21-Oct-83	297.64	298.10			0.6	22.4 - 23.0	275.23 - 274.62			Sealed in 2007
222	BH83-22 (2)	21-Oct-83	297.64	298.28			0.6	11.7 - 12.3	285.90 - 285.29			Sealed in 2007
223	BH83-22 (3)	21-Oct-83	297.64	298.39			0.6	6.1 - 6.7	291.54 - 290.93			Sealed in 2007
224	BH83-22 (4)	21-Oct-83	297.64	298.24			2.7	1.4 - 4.1	296.27 - 293.52			Sealed in 2007
231	BH83-23 (deep)	18-Oct-83	295.93	296.79			0.6	18.7 - 19.4	277.19 - 276.58			Replaced in 2005
232	BH83-23 (intermediate)	18-Oct-83	295.93	296.85			0.6	8.5 - 9.1	287.40 - 286.79			Replaced in 2005
233	BH83-23 (shallow)	18-Oct-83	295.93	296.31			3.4	1.2 - 4.6	294.71 - 291.36			Replaced in 2005
241	BH83-24 (deep)	26-Oct-83	291.48				0.6	9.5 - 10.1	281.96 - 281.35			Sealed in 2007
242	BH83-24 (shallow)	26-Oct-83	291.48	291.71	0.23	32	3.2	2.1 - 5.3	289.35 - 286.15			✓
251	BH83-25 (deep)	27-Oct-83	290.29				0.6	13.4 - 14.0	276.88 - 276.27			Sealed in 2007
252	BH83-25 (intermediate)	27-Oct-83	290.29				0.6	7.0 - 7.6	283.28 - 282.67			Sealed in 2007
253	BH83-25 (shallow)	27-Oct-83	290.29				3.0	1.7 - 4.7	288.62 - 285.57			Riser Damaged in 2007
261	BH83-26 (deep)	25-Oct-83	292.64	293.30			0.6	14.5 - 15.1	278.16 - 277.55			Replaced in 2005
262	BH83-26 (intermediate)	25-Oct-83	292.64	293.07			0.6	6.9 - 7.5	285.78 - 285.17			Replaced in 2005
263	BH83-26 (shallow)	25-Oct-83	292.64	293.55			3.0	2.0 - 5.0	290.66 - 287.61			Replaced in 2005
271	BH83-27 (deep)	2-Nov-83	308.09	308.50			0.6	13.1 - 13.7	294.99 - 294.38			Sealed in 2007
272	BH83-27 (shallow)	2-Nov-83	308.09	308.35			3.0	3.2 - 6.2	304.89 - 301.84			Sealed in 2007
281	BH83-28	7-Oct-83	295.29	297.96	2.67	32	2.3	0.8 - 3.0	294.53 - 292.24			✓
291	BH83-29	7-Oct-83	295.32				3.5	1.1 - 4.6	294.25 - 290.75			Sealed in 2007
301	BH83-30	7-Oct-83	295.14	295.49			2.1	0.9 - 3.0	294.22 - 292.09			Riser Damaged in 2007
311	BH83-31	7-Oct-83	295.35	295.96			3.4	1.2 - 4.6	294.13 - 290.78			Removed in 2000
321	BH83-32 (deep)	11-Oct-83	298.22	298.73			0.6	10.0 - 10.6	288.23 - 287.62			Sealed in 1998
322	BH83-32 (shallow)	11-Oct-83	298.22	298.71			4.3	1.2 - 5.5	297.00 - 292.73			Sealed in 1998
331	BH83-33 (deep)	7-Oct-83	297.36	297.87			0.6	6.0 - 6.6	291.34 - 290.73			Sealed in 2008
332	BH83-33 (shallow)	7-Oct-83	297.36	297.71			3.0	0.9 - 4.0	296.45 - 293.40			Sealed in 2008
341	BH83-34	11-Oct-83	298.34	299.86			3.8	1.1 - 4.9	297.27 - 293.46			Not located since 2007
351	BH83-35 (deep)	11-Oct-83	305.04				0.6	19.4 - 20.0	285.69 - 285.08			Sealed in 2007
352	BH83-35 (shallow)	11-Oct-83	305.04				4.7	5.6 - 10.4	299.41 - 294.68			Sealed in 2007
361	BH83-36	11-Oct-83	298.92				4.3	1.2 - 5.5	297.70 - 293.43			Sealed in 2007
371	BH83-37	19-Oct-83	298.52				3.0	2.9 - 5.9	295.63 - 292.58			Sealed in 2007
381	BH83-38	19-Oct-83	297.00	297.47			2.9	2.4 - 5.3	294.56 - 291.69			Replaced in 2004
391	BH83-39	6-Oct-83	290.47	291.54	1.07	32	4.0	0.6 - 4.6	289.86 - 285.90			Damaged riser
401	BH83-40	6-Oct-83	289.10	289.96	0.86	32	5.3	1.1 - 6.4	288.04 - 282.70			✓
411	BH83-41	6-Oct-83	290.29				5.9	1.1 - 7.2	289.15 - 283.05			Not located since 2007
421	BH83-42	6-Oct-83	294.13	294.72	0.59	32	5.2	1.8 - 7.0	292.30 - 287.12			✓
431	BH83-43	21-Oct-83	295.56	296.02	0.46	32	4.1	2.4 - 6.6	293.13 - 289.01			✓
441	BH83-44	17-Oct-83	298.70				3.0	1.6 - 4.6	297.10 - 294.06			Sealed in 2007
451	BH83-45	17-Oct-83	301.45	302.00			3.4	2.7 - 6.0	298.78 - 295.43			Sealed in 2007
461	BH83-46	17-Oct-83	302.61	303.20			3.7	3.7 - 7.3	298.95 - 295.29			Sealed in 2007
471	BH83-47 (deep)	16-Oct-83	297.39	297.79			0.6	19.2 - 19.8	278.19 - 277.58			Sealed in 2007

Notes: · All elevations in metres above sea level
 · ✓ Surface seal in good condition and well is capped.

· (1) Data estimated based on borehole log or MECP well record.
 · (2) Data based on field measurements during 2010.

Table B-1: Monitoring Well Construction Details
Oxford County Waste Management Facility

Current Well Designation	Former Designation	Installation Date	Ground Surface Elevation ⁽¹⁾ (m ASL)	Measuring Point Elevation (m ASL)	Stickup ⁽¹⁾ (m)	Riser Inside Diameter ⁽¹⁾ (mm)	Screen Length ⁽¹⁾ (m)	Screened Interval ⁽¹⁾		Well Depth (mbTOP)		Well Status/ Condition
								(m bgs)	(m ASL)	BH Log ⁽¹⁾	Measured ⁽²⁾	
472	BH83-47 (shallow)	16-Oct-83	297.39	298.10			3.4	1.4 - 4.7	296.02 - 292.67			Sealed in 2007
481	BH83-48	16-Oct-83	296.42	297.13			3.2	1.1 - 4.3	295.35 - 292.15			Sealed in 2007
491	BH83-49 (deep)	15-Oct-83	295.17				0.6	16.8 - 17.4	278.40 - 277.79			Sealed in 2007
492	BH83-49 (shallow)	15-Oct-83	295.17	295.75			3.4	1.2 - 4.6	293.95 - 290.60			Sealed in 2003
501	BH83-50 (deep)	3-Nov-83	295.72	295.98			0.6	12.4 - 13.0	283.30 - 282.69			Sealed in 2003
502	BH83-50 (shallow)	3-Nov-83	295.72	295.82			2.7	1.2 - 4.0	294.50 - 291.75			Riser Damaged in 1998
511	BH83-51 (deep)	4-Nov-83	296.72	297.41			0.6	12.1 - 12.7	284.61 - 284.00			Removed in 2000
512	BH83-51 (shallow)	4-Nov-83	296.72	297.30			2.4	1.2 - 3.7	295.50 - 293.07			Removed in 2000
521	BH83-52	7-Nov-83	292.64				3.0	3.2 - 6.2	289.44 - 286.39			Sealed in 2007
531	BH83-53	8-Nov-83	298.06	298.63			3.7	1.8 - 5.5	296.24 - 292.58			Sealed in 2004
541		15-Jul-87	295.10	295.57	0.59	51	2.7	3.1 - 5.8	292.05 - 289.31	6.38	6.25	✓
551		20-Jul-87	295.92	296.40	0.61	51	1.3	13.0 - 14.3	282.90 - 281.59	14.94		Sealed in 2003
552		15-Jul-87	295.80	296.29	0.61	51	2.7	1.8 - 4.6	293.96 - 291.23	5.18		Sealed in 2003
561		15-Jul-87	289.60	290.02	0.51	51	2.4	9.2 - 11.6	280.42 - 278.02	12.09	10.81	✓
562		15-Jul-87	289.50	290.04	0.58	51	2.7	1.8 - 4.6	287.67 - 284.93	5.15	5.40	✓
571		15-Jul-87	296.30	296.73	0.52	51	1.4	19.1 - 20.4	277.25 - 275.88	20.94	20.49	✓
581		13-Jul-87	299.20	299.74	0.61	51	2.7	1.8 - 4.6	297.36 - 294.63	5.18	4.89	✓
591			300.02	300.75	0.73						11.76	✓
98-2		25-May-98	296.83	297.34	0.51	51	3.0	3.7 - 6.7	293.18 - 290.13			✓
98-4		26-May-98	298.91	299.43	0.52	51	1.5	3.1 - 4.6	295.83 - 294.31			✓
98-7		27-May-98	295.98	296.82	0.84	51	1.5	5.2 - 6.7	290.80 - 289.28		7.52	✓
98-9		27-May-98	295.59	296.25	0.66	51	1.5	5.2 - 6.7	290.41 - 288.89			✓
98-10		28-May-98	295.46	296.17			1.5	5.2 - 6.7	290.28 - 288.76			Riser Damaged in 2002
98-11		28-May-98	296.72	297.57	0.85	51	3.0	2.2 - 5.2	294.57 - 291.52		5.48	✓
98-12		28-May-98	296.59	297.32	0.73	51	1.5	4.6 - 6.1	292.01 - 290.49		7.16	✓
98-13		28-May-98	295.76	296.04	0.28	51	3.0	6.2 - 9.2	289.61 - 286.56		8.68	✓
98-14		29-May-98	302.38	303.13	0.75	51	3.0	6.1 - 9.1	296.33 - 293.28			✓
00-01		25-May-00	298.92	299.74	0.82	51	3.0	6.9 - 9.9	292.06 - 289.01	10.73	10.78	✓
00-02		26-May-00	299.00	299.67	0.67	51	1.5	5.5 - 6.7	293.51 - 292.29	7.38	7.65	✓
00-03		26-May-00	295.34	296.18	0.84	51	3.0	12.2 - 15.2	283.15 - 280.10	16.08	15.31	✓
00-04		25-May-00	299.89	300.67	0.78	51	3.0	6.9 - 9.9	293.03 - 289.98	10.69	8.48	✓
2P		26-May-00	296.94	297.84	0.90	100	3.0	4.6 - 7.6	292.37 - 289.32	8.52		✓
7P		24-May-00	296.03	296.89	0.86	100	1.5	4.6 - 6.1	291.46 - 289.93	6.96		✓
10P		23-May-00	295.54	296.49	0.97	100	1.5	4.9 - 6.4	290.66 - 289.14	7.37		✓
2obs		29-May-00	296.94	297.78	0.87	51	3.0	4.6 - 7.6	292.37 - 289.32	8.49		✓
7obs		23-May-00	295.60	296.76	1.24	51	1.5	5.2 - 6.7	290.42 - 288.89	7.95		✓
10 OBS		23-May-00	295.60	296.76	1.24	51	1.5	5.2 - 6.7	290.42 - 288.89	7.95		Riser Damaged in 2002
999		22-May-91	300.64	300.93	0.30	127	25.0	65.5 - 90.5	235.43 - 210.40			✓
10obs2				296.08								Removed in 2007
012R	BH03-1D	18-Mar-03	298.50	299.29	0.76	51	1.5	15.2 - 16.8	283.26 - 281.74	17.52	17.50	✓
013R	BH03-1S	18-Mar-03	298.70	299.41	0.72	51	1.5	7.0 - 8.5	291.69 - 290.17	9.25	9.23	✓
551R	BH03-2D	19-Mar-03	296.70	297.53	0.86	51	1.5	13.7 - 15.2	282.98 - 281.46	16.10	15.73	✓
552R	BH03-2S	19-Mar-03	296.80	297.32	0.71	51	1.5	4.0 - 5.5	292.84 - 291.31	6.20	6.17	Sealed in 2018

Notes: · All elevations in metres above sea level
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· (1) Data estimated based on borehole log or MECP well record.
· (2) Data based on field measurements during 2010.

Table B-1: Monitoring Well Construction Details
Oxford County Waste Management Facility



Current Well Designation	Former Designation	Installation Date	Ground Surface Elevation ⁽¹⁾ (m ASL)	Measuring Point Elevation (m ASL)	Stickup ⁽¹⁾ (m)	Riser Inside Diameter ⁽¹⁾ (mm)	Screen Length ⁽¹⁾ (m)	Screened Interval ⁽¹⁾		Well Depth (mbTOP)		Well Status/ Condition
								(m bgs)	(m ASL)	BH Log ⁽¹⁾	Measured ⁽²⁾	
03-3		11-Sep-03	297.00	297.88	0.84	51	1.5	3.7 - 5.2	293.34 - 291.82	6.02	6.17	✓
03-4		11-Sep-03	297.30	298.21	0.89	51	3.0	3.4 - 6.4	293.95 - 290.90	7.29	7.21	✓
03-5		11-Sep-03	297.30	298.14	0.86	51	3.0	3.0 - 6.1	294.25 - 291.20	6.96	6.98	✓
03-6		12-Sep-03	297.50	298.37	0.87	51	3.0	4.6 - 7.6	292.93 - 289.88	8.49	8.62	✓
03-7s		12-Sep-03	297.85	298.78	0.81	51	1.5	2.6 - 4.1	295.28 - 293.75	5.03	5.10	Decommissioned in 2020
03-7d		12-Sep-03	297.37	298.32	0.68	51	1.5	6.7 - 8.2	290.70 - 289.18	9.14	9.08	✓
03-8		15-Sep-03	311.37	312.16	0.77	51	4.6	7.8 - 12.4	303.59 - 299.02	13.12	9.23	✓
141R		23-Aug-04	297.42	297.43	0.66	51	3.0	4.4 - 7.5	293.00 - 289.95	8.13	8.11	✓
022R		26-Aug-04	305.34	305.34	0.69	51	1.5	20.1 - 21.6	285.22 - 283.70	22.33	22.26	✓
023R		25-Aug-04	305.87	305.37	0.81	51	3.0	2.9 - 5.9	302.97 - 299.93	6.75	9.89	✓
531R		25-Aug-04	298.81	298.81	0.69	51	3.0	2.4 - 5.5	296.37 - 293.32	6.18	6.19	✓
381R		25-Aug-04	297.29	297.29	0.74	51	3.0	2.1 - 5.2	295.16 - 292.11	5.92	6.12	✓
101R		25-Aug-04	292.83	292.83	0.76	51	1.5	15.2 - 16.8	277.59 - 276.07	17.52	17.52	✓
231R		26-Aug-05	295.89	296.83	0.94	51	1.7	18.1 - 19.7	277.82 - 276.15	20.68	20.68	✓
232R		23-Aug-05	295.90	296.73	0.83	51	1.5	7.4 - 9.0	288.45 - 286.91	9.82	10.00	✓
233R		23-Aug-05	296.00	296.77	0.77	51	3.0	1.8 - 4.9	294.17 - 291.12	5.65	5.98	✓
261R		23-Aug-05	292.80	293.64	0.84	51	1.5	13.4 - 14.9	279.39 - 277.86	15.78		✓
262R		23-Aug-05	292.65	293.54	0.89	51	1.5	7.6 - 9.1	285.03 - 283.51	10.03		✓
263R		23-Aug-05	292.58	293.32	0.74	51	3.0	3.0 - 6.1	289.53 - 286.48	6.84	6.87	✓
05-01		26-Aug-05	299.26	300.16	0.90	51	3.0	2.9 - 5.9	296.36 - 293.32	6.84	10.16	✓
592		12-Sep-14	297.56	298.76	1.20	51	3.2	1.4 - 4.6	296.14 - 292.94	5.82		✓
593		12-Sep-14	297.50	298.69	1.19	51	3.2	7.3 - 10.5	290.18 - 286.98	11.72		✓
594		11-Sep-14	297.34	298.53	1.19	51	1.7	13.4 - 15.1	283.90 - 282.25	16.28		✓
595		15-Sep-14	295.38	296.51	1.14	51	3.2	10.4 - 13.6	285.02 - 281.82	14.70		✓
111R		5-Jul-17	298.62	299.35	0.73	51	4.6	4.5 - 9.1	294.12 - 289.48	9.87		✓
552RA		24-Jul-18	297.53	298.34	0.76	51	1.7	4.4 - 6.1	293.11 - 291.43	6.86		✓
998	BH999	16-Jul-87	298.60	299.41	0.62	130	3.1	17.4 - 20.4	281.22 - 278.17	21.05	19.10	Decommissioned in 2020
998R		15-Jun-20	298.70	299.46	0.75	51	1.7	18.7 - 20.4	279.96 - 278.28	21.17		✓
03-7SR		16-Jun-20	296.38	297.20	0.82	51	1.7	1.8 - 3.5	294.55 - 292.88	4.32		✓

Notes: - All elevations in metres above sea level
- ✓ Surface seal in good condition and well is capped.

- (1) Data estimated based on borehole log or MECP well record.
- (2) Data based on field measurements during 2010.

BOREHOLE NO. 1

PROJECT NAME PROPOSED SALFORD LANDFILL SITE PROJECT NO. 76-59
 CLIENT M.M. DILLON LIMITED DATE JULY 26, 1976
 BOREHOLE TYPE 3 1/4" I.D. HOLLOW STEM AUGER GEOLOGIST R.L.
 ELEVATION _____ TECHNOLOGIST _____

DEPTH ELEV.	STRATIGRAPHY	DESCRIPTION	SAMPLE				GROUND WATER	REMARKS
			NO.	TYPE	BLOWS/FT.	% WATER		
0.0'								
		<u>TILL</u> Grey brown dense to compact clayey sandy silt to sandy clayey silt till becoming saturated and changing to grey at 12'±.	1	SS	39	19		SAMPLE 1 Gravel 2 Sand 29 Silt 50 Clay 19
			2	SS	15	14		
			3	SS	16	34		
			4	SS	24	20		
49			5	SS	38	17		
		<u>SAND</u> Grey dense to very dense silty sand, saturated.						SAMPLE 5 Gravel 0 Sand 76 Silt 14 Clay 10
56			6	SS	65	9		
		<u>TILL</u> Grey very dense sandy silt till, saturated.	7	SS	100			
			8	SS	70/	4" 8		
		Becoming clayey sandy silt till at 85'±.	9	SS	130	10		

● Piezometer Tip ▲ Standpipe Tip

BOREHOLE NO. 2

PROJECT NAME PROPOSED SALFORD LANDFILL SITE

PROJECT NO. 76-59

CLIENT M.M. DILLON LIMITED



DATE JULY 27, 1976

BOREHOLE TYPE 3 1/4" I.D. HOLLOW STEM AUGER

GEOLOGIST R.L.

ELEVATION _____

TECHNOLOGIST _____

DEPTH ELEV.	STRATIGRAPHY	DESCRIPTION	SAMPLE				GROUND WATER	REMARKS
			NO.	TYPE	BLOWS/FT.	% WATER		
0.0'								
		<u>TILL</u> Brown dense to very dense clayey sandy silt to clayey silt till becoming saturated and changing to grey at 12'±.	1	SS	53	14		
	2		SS	34	22			
	3		SS	42	13			
	4		SS	31	17			
	5		SS	32	20			
55		<u>TILL</u> Grey sandy silt till becoming very sandy below 95'.	6	SS	20	12		
	7		SS	56	11			
	8		SS	50/	2" 8			

SAMPLE 3
 Gravel 0
 Sand 25
 Silt 20
 Clay 25

BOREHOLE NO. 3

PROJECT NAME PROPOSED SALFORD LANDFILL SITE PROJECT NO. 76-59
 CLIENT M.M. DILLON LIMITED DATE JULY 28, 1976
 BOREHOLE TYPE 3 1/4" I.D. HOLLOW STEM AUGER GEOLOGIST R.L.
 ELEVATION _____ TECHNOLOGIST _____

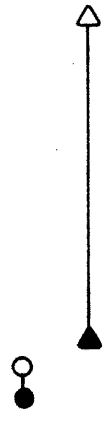
DEPTH ELEV.	STRATIGRAPHY	DESCRIPTION	SAMPLE				GROUND WATER	REMARKS
			NO.	TYPE	BLOWS/FT.	% WATER		
0.0'		<u>TILL</u> Brown dense to compact clayey silt till becoming saturated changing to grey at 15'±.						
			1	SS	45	17		
			2	SS	17	18		
			3	SS	24	19		
			4	SS	18	19		
54			5	SS	28	15		SAMPLE 5 Gravel 0 Sand 12 Silt 58 Clay 30
		<u>SAND</u> Grey compact silty sand with clayey lenses, saturated.	6	SS	25	14		
63		<u>TILL</u> Grey dense to very dense sandy silt to gravelly sand till, saturated.	7	SS	38	12		
			8	SS	53	14		SAMPLE 9 Gravel 30 Sand 38 Silt 24 Clay 8
			9	SS	79	11		
86.5		Borehole terminated in till at 86.5'.						

● Piezometer Tip ▲ Standpipe Tip

BOREHOLE NO. 4




PROJECT NAME PROPOSED SALFORD LANDFILL SITE PROJECT NO. 77-128
 CLIENT M.M. DILLON LIMITED DATE DEC. 13 & 14, 1977
 BOREHOLE TYPE 3½" HOLLOW STEM AUGER GEOLOGIST M.J.H.
 ELEVATION _____ TECHNOLOGIST _____

DEPTH ELEV.	STRATIGRAPHY	DESCRIPTION	SAMPLE				GROUND WATER	REMARKS
			NO.	TYPE	BLOWS/FT.	% WATER		
0.0'		<u>TILL</u>						<u>SAMPLE 1</u>
		Dense, brown clayey silt till becoming grey at 24.5'. Fractures were found to a depth of 10'±.	1	SS	24			Gravel 2
			2	SS	38			Sand 11
			3	SS	41			Silt 62
								Clay 25
								<u>SAMPLE 3</u>
			4	SS	27			Gravel 6
24		Sand seam (dry - 6" thick)	5	SS	30			Sand 21
								Silt 53
			6	SS	47			Clay 20
33		Sand seams (2.5" thick)	7&8	SS	32			<u>SAMPLE 5</u>
34		<u>TILL</u>						Gravel 0
		Grey sandy silt to silty sand till, dense becoming very dense at 48'±.	9	SS	34			Sand 20
			10	SS	-			Silt 51
			11	SS	70			Clay 47
			12	SS	132			<u>SAMPLE 9</u>
56		Sand Seam: medium-coarse sand						Gravel 18
59		<u>TILL</u>	13	SS	96			Sand 40
		As above.	14	SS	100			Silt 33
			15	SS	130			Clay 9
			16	SS	110			<u>SAMPLE 11</u>
			17	SS	104			Gravel 11
								Sand 20
								Silt 53
								Clay 16
								<u>SAMPLE 13</u>
								Gravel 8
								Sand 74
								Silt 16
								Clay 2
								<u>SAMPLE 15</u> <u>SAMPLE 17</u>
								Gravel 9 Gravel 14
								Sand 39 Sand 39
								Silt 42 Silt 36
								Clay 10 Clay 11



BOREHOLE NO. 5

PROJECT NAME PROPOSED SALFORD LANDFILL SITE PROJECT NO. 77-128
 CLIENT M.M. DILLON LIMITED DATE DEC. 15, 1977.
 BOREHOLE TYPE 3 1/4" HOLLOW STEM AUGER GEOLOGIST M.J.H.
 ELEVATION _____ TECHNOLOGIST _____

DEPTH ELEV.	STRATIGRAPHY	DESCRIPTION	SAMPLE				GROUND WATER	REMARKS
			NO.	TYPE	BLOWS/FT.	% WATER		
0.0'		<u>TILL</u> Compact, brown clayey silt till becoming grey at 12'±. Fractured (oxidized) to 10'.		AS				SAMPLE 2 Gravel 4 Sand 11 Silt 59 Clay 26
			1	SS	13			
			2	SS	30			
			3	SS	17			
22			4	SS	18			
		<u>TILL</u> Compact to very dense, grey sandy silt to silty sand till.	5	SS	19			
			6	SS	30			
35		Sand Seam: medium coarse sand	7	SS	16			SAMPLE 7
37			8	SS	51			Gravel 6 Sand 86 Silt } 8 Clay }
		<u>TILL</u> As above.	9	SS	49			
49			10	SS	43			
			11	SS	-			
			12	SS	28			
			13	SS	-			
			14	SS	20			
			15	SS	17			
		Borehole terminated at 89.5' in silty sand till.	16	SS	28			SAMPLE 16 Gravel 12 Sand 43 Silt 36 Clay 9
89.5'								

● Piezometer Tip ▲ Standpipe Tip

BOREHOLE NO. 6

PROJECT NAME PROPOSED SALFORD LANDFILL

PROJECT NO. 77-128

CLIENT M.M. DILLON LIMITED

DATE DEC. 20, 1977

BOREHOLE TYPE 3 1/4" HOLLOW STEM AUGER

GEOLOGIST M.J.H.

ELEVATION _____

TECHNOLOGIST _____

DEPTH ELEV.	STRATIGRAPHY	DESCRIPTION	SAMPLE				GROUND WATER	REMARKS
			NO.	TYPE	BLOWS/FT.	% WATER		
0.0'								
		<u>TILL</u>						
		Compact to very dense brown clayey silt till. Fractures to 10'±.	1	SS	15			
10'			2	SS	53			
		<u>TILL</u>						
		Compact to dense, brown silty sand till with minor amounts of sandy silt till becoming grey at 10.5'±.	3	SS	28			
			4	SS	25			
			5	SS	35			
			6	SS	18			
			7	SS	32			
			8	SS	72			
			9	SS	13			
			10	SS	32			
			11	SS	30			
			12	SS	-			
			13	SS	28			
			14	SS	21			
			15	SS	20			
			16	SS	31			
			17	SS	-			
90.4		Borehole terminated at 90.4' in silty sand till.						





SAMPLE 17

Gravel 20
Sand 43
Silt 30
Clay 7

BOREHOLE NO. 9

PROJECT NAME PROPOSED SALFORD LANDFILL SITE PROJECT NO. 77-128
 CLIENT M.M. DILLON LIMITED DATE DEC. 22, 1977
 BOREHOLE TYPE 3 1/2" HOLLOW STEM AUGER GEOLOGIST M.J.H.
 ELEVATION _____ TECHNOLOGIST _____

DEPTH ELEV.	STRATIGRAPHY	DESCRIPTION	SAMPLE				GROUND WATER	REMARKS
			NO.	TYPE	BLOWS/FT.	% WATER		
0.0		<u>TILL</u> Loose to compact, brown clayey silt till becoming grey at 5'±.		AS				
			1	SS	24			
			2	SS	8			
			3	SS	-			
4.0		Coarse grained sand-gravel seam (1/2" thick).	4	SS	-			
49.5 52		Two medium grained sand seams (4" thick)	5	SS	-			
		<u>TILL</u> Grey sandy silt till.						
59.5		Borehole terminated at 59.5' in sandy silt till.	6	SS	-			

BOREHOLE NO. 10



PROJECT NAME PROPOSED SALFORD LANDFILL SITE PROJECT NO. 77-128
 CLIENT M.M. DILLON LIMITED DATE JAN. 3, 1978.
 BOREHOLE TYPE 3 1/4" HOLLOW STEM AUGER GEOLOGIST M.J.H.
 ELEVATION _____ TECHNOLOGIST _____

DEPTH ELEV.	STRATIGRAPHY	DESCRIPTION	SAMPLE				GROUND WATER	REMARKS
			NO.	TYPE	BLOWS/FT.	% WATER		
0.0'		<u>TILL</u> Compact to dense, brown clayey silt to sandy silt till becoming grey at 17'±. Fractures found to a depth of 20'±.						
				AS				
			1	SS	41			
			2	SS	20			
23		<u>TILL</u> Compact, grey sandy silt to silty sand till.						
			3	SS	21			
			4	SS	-			
39		Thinly laminated silt and silty clay.						
			5	SS	-			
			6	SS	-			
49		Sand seam: Fine grey sand						
52								
		<u>TILL</u> Dense grey silty sand till.						
59.5		Borehole terminated at 59.5' in silt till.						

● Piezometer Tip ▲ Standpipe Tip

BOREHOLE NO. 11 & 12

PROJECT NAME PROPOSED SALFORD LANDFILL SITE PROJECT NO. 77-128
 CLIENT M.M. DILLON LIMITED DATE JAN. 4 & 5, 1978.
 BOREHOLE TYPE 8" O.D. SOLID STEM AUGER GEOLOGIST _____
 ELEVATION _____ TECHNOLOGIST _____

DEPTH ELEV.	STRATIGRAPHY	DESCRIPTION	SAMPLE				GROUND WATER	REMARKS
			NO.	TYPE	BLOWS/FT.	% WATER		
0.0'								
		<u>TILL</u> Brown clayey silt till becoming grey at 9'±.						
24		Borehole terminated at 24' in silt till.						
0.0'		BOREHOLE NO. 12						
		<u>TILL</u> Brown silt till becoming grey at 17'±.						
34		Borehole terminated at 34' in silt till.						

● Piezometer Tip ▲ Standpipe Tip

LOG OF BOREHOLE 111 Decommissioning

project | Oxford County Waste Management Facility
client | County of Oxford
location | Salford, Ontario
position |

rig type | GEOPROBE, track-mounted
method | Direct push, 50 mm dia.
coring | n/a

project no. | 111-53036-00
date started | 2017/07/05
supervisor | MEQ
reviewer | AMS

Depth Scale (m)	SUBSURFACE PROFILE			SAMPLE		Elevation Scale (mASL)	Penetration Test Values (Blows / 0.3m)				Water Content (%) & Plasticity			PID Readings	Well Details	Lab Data and Comments
	Elev Depth (m)	STRATIGRAPHY	Graphic Plot	Number	Type		SPT N-Value	X Dynamic Cone O Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane				PL MC LL 10 20 30				
0	295.1	GROUND SURFACE														
0		TILL; brown clayey silt till becoming grey at around 2.7 m.					295									Monitoring well was overdrilled to 7.3 m below ground surface and backfilled with granular bentonite. PVC riser and screen were removed.
1							294									
2							293									
3							292									
4							291									
5							290									
6							289									
7							288									
	287.8															

END OF BOREHOLE
 Stratigraphy inferred from original borehole log for 111, formerly BH11 (M.M. Dillon Limited, 1978).

Library: genhivier - library.gib - report: gen log v1 file: salford 111.gpj

LOG OF BOREHOLE 111R



project | Oxford County Waste Management Facility
client | County of Oxford
location | Salford, Ontario
position |

rig type | GEOPROBE, track-mounted
method | Direct push, 50 mm dia.
coring | n/a

project no. | 111-53036-00
date started | 2017/07/05
supervisor | MEQ
reviewer | AMS



Depth Scale (m)	SUBSURFACE PROFILE			SAMPLE		Elevation Scale (mASL)	Penetration Test Values (Blows / 0.3m)	Water Content (%) & Plasticity	PID Readings	Well Details	Lab Data and Comments
	Elev Depth (m)	STRATIGRAPHY	Graphic Plot	Number	Type						
0		GROUND SURFACE					Penetration Test Values (Blows / 0.3m) X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) O Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160	PL MC LL 10 20 30			Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MT) GR SA SI CL
0.2		Dark brown TOPSOIL and rootlets, some organics, trace clay, trace silt, dry, loose.		1	DP						
1.0		Brown CLAYEY SILT TILL , some fine sand, some grey fractures, trace fine gravel, DTPL, stiff.		2	DP						
1.5		Grey CLAYEY SILT TILL , trace fine to medium gravel, APL, stiff to firm.		3	DP						
4.0				4	DP						
6.1		Grey CLAYEY SILT TILL , trace fine to medium gravel, APL to WTPL, firm to soft.		5	DP						
9.1				6	DP						
<p>END OF BOREHOLE</p> <p>Borehole was dry and open upon completion.</p>											

Library: gsniver - library.gib - report: gen log v1 file: salford 111.gpj

BOREHOLE NO. 16

PROJECT NAME PROPOSED SALFORD-LANDFILL SITE
 CLIENT M.M. DILLON LIMITED
 BOREHOLE TYPE 3 1/4" HOLLOW STEM AUGER
 ELEVATION _____

PROJECT NO. 77-128
 DATE JULY 26, 1978.
 GEOLOGIST A.B.
 TECHNOLOGIST _____

DEPTH ELEV.	STRATIGRAPHY	DESCRIPTION	SAMPLE				GROUND WATER	REMARKS
			NO.	TYPE	BLOWS/FT.	% WATER		
0.0'		<u>TILL</u> Brown to grey at 14' moderately dense clayey silt till. Near-vertical fractures to 18'±. Low pebble content.	1	SS	22	14		
			2	SS	28	14		
			3	SS	21	15		
			4	SS	15	15		
23		<u>Sand Seam</u>						
25		<u>TILL</u> Grey moderately dense stoney sandy silt till.	5	SS	13	14		
			6	SS	22	12		
			7	SS	19	22		
39		<u>SAND: Fine-medium clean grey sand.</u>	8	SS	8	10		
41.5		Borehole terminated at 41.5' in till.						

● Piezometer Tip ▲ Standpipe Tip

BOREHOLE NO. 17

PROJECT NAME PROPOSED SALFORD LANDFILL SITE

PROJECT NO. 77-128

CLIENT M.M. DILLON



DATE July 26, 1978

BOREHOLE TYPE 3 1/4" HOLLOW STEM AUGER

GEOLOGIST A.B.

ELEVATION _____

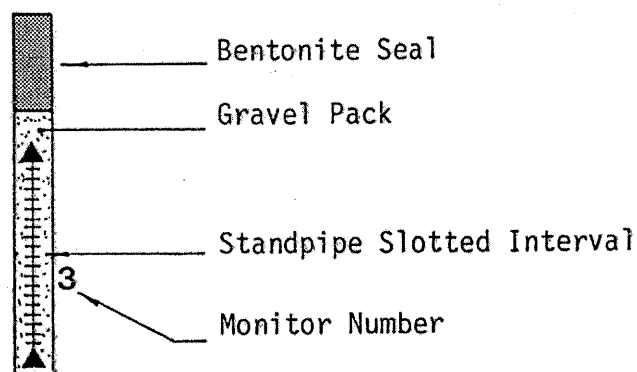
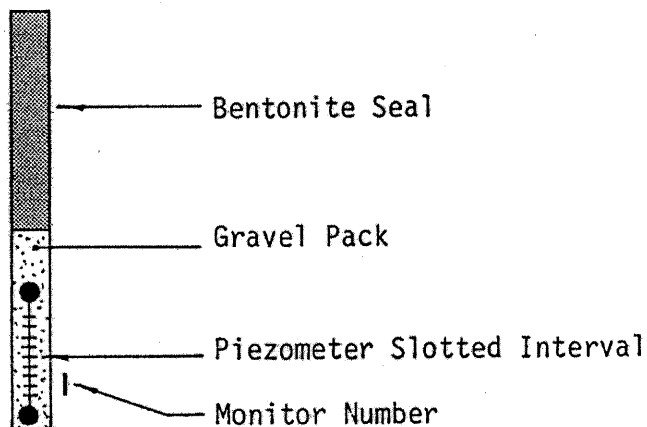
TECHNOLOGIST _____

DEPTH ELEV.	STRATIGRAPHY	DESCRIPTION	SAMPLE				GROUND WATER	REMARKS
			NO.	TYPE	BLOWS/FT.	% WATER		
0.0'								
		<u>TILL</u> Brown to grey at 16' moderately dense clayey silt till with low pebble content. Near-vertical fractures to 10'±.	1	SS	28	12		
			2	SS	24	14		
			3	SS	22	16		
			4	SS	15	9		
21		<u>TILL</u> Grey-brown to grey dense to very dense stoney sandy silt till.	5	SS	32	8		
			6	SS	38	9		
			7	SS	44	6		
38			8	SS	70	10		
41.5		<u>SILTY SAND: Grey silt & Fine sand</u> 41-41.5' Stoney sand silt till						
		Borehole terminated at 41.5' in till.						

● Piezometer Tip ▲ Standpipe Tip

Explanation Of Symbols On Borehole Logs

MONITOR DETAILS



TYPE OF SAMPLE

- AS Auger Sample
- SS Split Spoon (2' long x 1 1/4" I.D.)
- ST Shelby Tube (2' long x 2 7/8" I.D.)

ABBREVIATED DESCRIPTIONS

- VF - Very Fine
- F - Fine
- M - Medium
- C - Coarse

"N" VALUE

Standard Penetration Resistance. 'N' - The number of blows required to advance a standard split spoon sampler 12 inches into the subsoil, driven by means of a 140 pound hammer falling freely a distance of 30 inches.

The consistency of cohesive soils and the relative density or denseness of cohesionless soils are related to the standard penetration resistance as follows:

<u>COHESIVE SOILS</u>		<u>COHESIONLESS SOILS</u>	
<u>Consistency</u>	<u>'N' Blows/Foot</u>	<u>Denseness</u>	<u>'N' Blows/Foot</u>
Very Soft	0-2	Very loose	0-4
Soft	2-4	Loose	4-10
Firm	4-8	Compact	10-30
Stiff	8-15	Dense	30-50
Very Stiff	15-30	Very Dense	50
Hard	30		

B1) GROUND WATER MONITOR CONSTRUCTION AND INSTALLATION

Piezometers consisted of a 2-foot section of 2" inside diameter commercially available PVC wire wound Johnson (R) well screen. This was attached by a threaded connector to a 2" Schedule #80 PVC pipe with threaded male/female connections. All male threads were wrapped with teflon tape to prevent leakage and ensure a tight fit. For details on monitor construction see the accompanying schematic diagram (Figure B1).

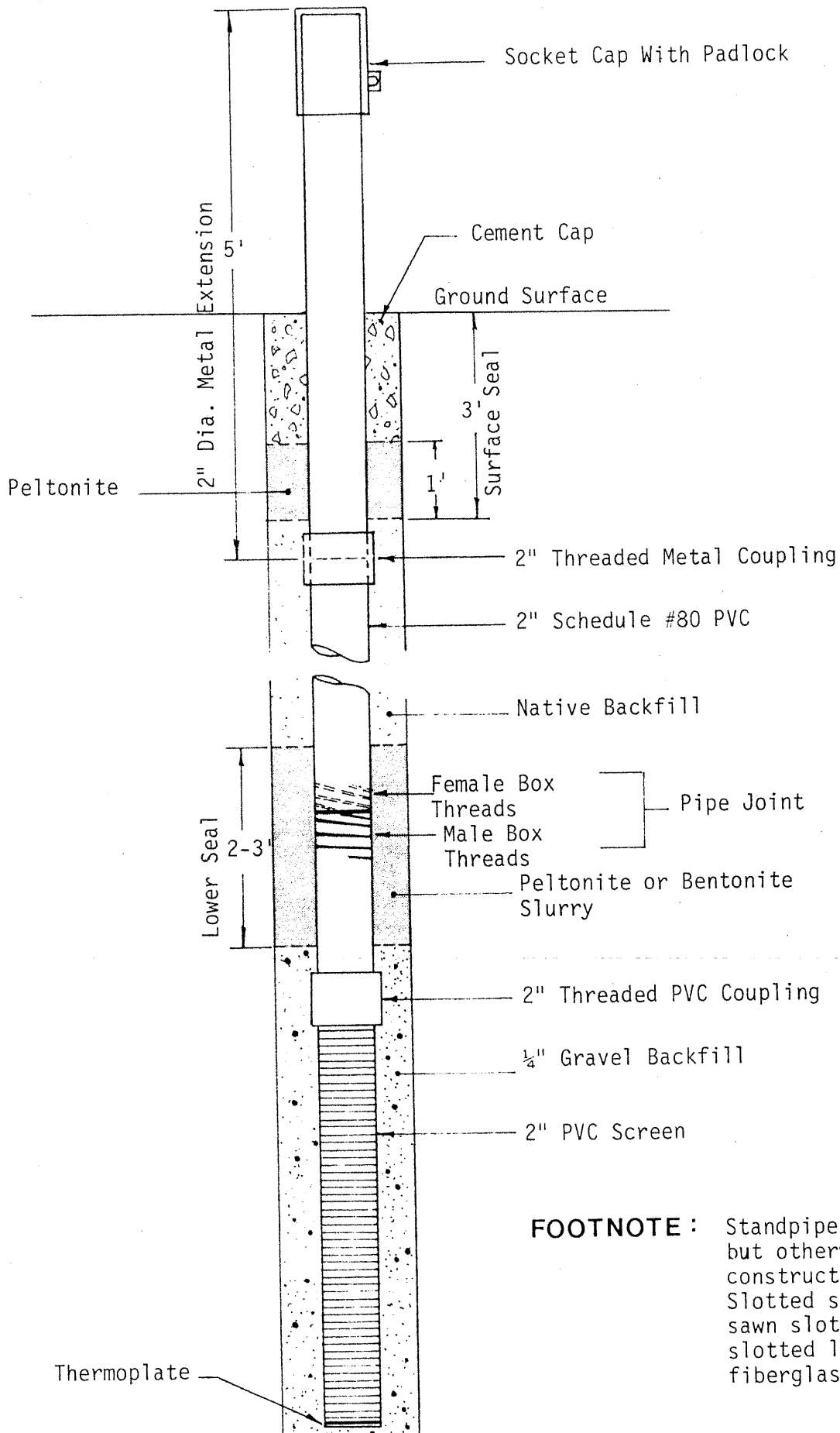
A separate hole was drilled for each installation. The annular space around the well screen was backfilled with $\frac{1}{4}$ " pea gravel and sealed with either peltonite or bentonite slurry. The latter was pumped downwards under pressure and was used where extremely wet conditions were encountered or where a large-sealed interval was required to prevent vertical hydraulic connection between stratigraphic units. Following the emplacement of the lower seal the annulus was backfilled with native material. In some cases, where the native soil changed to a thick slurry during drilling and therefore tended to float, it was necessary to use the gravel backfill exclusively.

Prior to installing the upper seal, a 5-foot metal extension with a welded flange on one end, was threaded to the uppermost length of PVC pipe. This metal piece extended approximately 3 feet below ground. The purpose of the metal pipe was to provide a more stable stick-up and a simple locking design to deter vandalism. The upper seal was then set in place in the upper 2 to 4 feet. It consisted of 6 to 12 inches of peltonite, finished with a cement cap extending to ground surface. The top of the pipe was fitted with a socket cap and padlocked.

Standpipes were made of 1½" Schedule #80 PVC pipe with threaded connections. Pipe was slotted every 4 to 6 inches and the entire slotted length was wrapped in fibreglass cloth. The annular space around the slotted section was backfilled with pea gravel, with the remaining annulus filled with native material. The monitor was sealed and finished at surface in the same manner as a piezometer.

TYPICAL PIEZOMETER INSTALLATION

FIGURE B1



FOOTNOTE : Standpipe is made from 1½" PVC but otherwise similar in construction to piezometer. Slotted section consists of hand sawn slots 4"-6" apart and entire slotted length was wrapped with fiberglass cloth.

MONITOR DETAILS

BOREHOLE NO.	MONITOR NO.	DIAMETER (inches)	TOP OF PIPE ELEV.	STICKUP ft.	GROUND ELEV.	TYPE	SCREENED INTERVAL		GRAVEL PACK	SEAL
							DEPTH FROM GRADE	ELEVATION	DEPTH FROM GRADE	DEPTH FROM GRADE
18	1	2	970.37	~2.43	~967.9	●	71.5-73.5	896.4-894.4	67.3-73.5	56-67.3 Surface-2.8
	2	2	970.21	~2.59	~967.6	●	56.0-58.0	911.6-909.6	54.8-58.0	52.8-54.8 surface-2.6
	3	2	971.70	~3.41	~968.3	●	25.5-27.5	942.8-940.8	24.9-27.5	22.6-24.9 surface-3.9
	4	2	969.46	~1.67	~967.8	●	10.9-11.9	956.9-955.9	8.5-11.9	7.5-8.5 surface-2.0
	5	1½	968.87	~0.98	~967.9	▲	4.0-11.0	963.9-956.9	2.5-11.0	surface-2.5
19	1	2	991.08	~2.46	~988.6	●	70.5-72.5	918.1-916.1	65.6-72.5	77-82 41.3-65.6 surface-1.5
	2	2	990.26	~1.58	~988.7	●	40.3-42.3	948.4-946.4	35.1-42.3	32.2-35.1 surface-2.0
	3	1½	991.04	~2.30	~988.7	▲	10.7-20.7	978.0-968.0	3.0-20.7	surface-3.0
20	1	2	970.13	~2.17	~968.0	●	42.4-44.4	925.6-923.6	41.0-44.4	39.0-41.0 surface-3.5
	2	1½	969.92	~1.74	~968.2	▲	5.3-15.3	962.9-952.9	3.0-15.3	surface-3.0
21	1	2	979.91	~2.20	~977.7	●	75.5-77.5	902.2-900.2	74.1-77.5	54.0-74.1 surface-2.5
	2	2	979.81	~2.26	~977.6	●	61.5-63.5	916.1-914.1	59.4-63.5	55.0-59.4 surface-2.6
	3	2	979.28	~1.80	~977.5	●	32.4-34.4	945.1-943.1	30.8-34.4	29.9-30.8 surface-2.5
	4	1½	979.55	~1.84	~977.7	▲	3.2-10.2	974.5-967.5	2.5-10.2	surface-2.5
22	1	2	978.21	~1.67	~976.5	●	73.3-75.3	903.2-901.2	72.1-75.5	69.8-72.1 surface-5.0
	2	2	978.75	~1.57	~977.2	●	38.0-40.0	939.2-937.2	25.8-40.0	24.2-25.8 surface-4.7
	3	2	979.12	~2.20	~976.9	●	19.6-21.6	957.3-955.3	19.0-21.6	17.2-19.0 surface-4.5
	4	1½	978.42	~1.64	~976.8	▲	4.4-13.4	972.4-963.4	3.7-13.4	surface-3.7
23	1	2	973.73	~2.82	~970.9	●	61.6-63.6	909.3-907.3	60.0-63.6	58.3-60.0 surface-2.8
	2	2	973.41	~2.17	~971.2	●	27.8-29.8	943.4-941.4	24.8-29.8	22.7-24.8 surface-3.5
	3	1½	973.35	~2.30	~971.1	▲	3.7-14.7	967.4-956.4	2.8-14.7	surface-2.8
24	1	2	958.07	~1.74	~956.3	●	31.3-33.3	925.0-923.0	30.2-33.3	26.3-30.2 6.4-6.9 surface-2.6

● - Piezometer

▲ - Standpipe

MONITOR DETAILS

BOREHOLE NO.	MONITOR NO.	DIAMETER (inches)	TOP OF PIPE ELEV.	STICKUP ft.	GROUND ELEV.	TYPE	SCREENED INTERVAL		GRAVEL PACK	SEAL
							DEPTH FROM GRADE	ELEVATION	DEPTH FROM GRADE	DEPTH FROM GRADE
24	2	1½	958.11	~2.17	~955.9	▲	6.8-17.8	949.1-938.1	5.7-17.8	surface-5.7
25	1	2	955.82	~3.46	~952.4	●	43.7-45.7	908.7-906.7	29.3-45.7	26.5-29.3 surface-4.0
	2	2	953.74	~2.00	~951.7	●	23.0-25.0	928.7-926.7	21.7-25.0	19.4-21.7 surface-5.0
	3	1½	953.92	~1.74	~958.2	▲	5.2-15.3	947.0-936.9	3.7-15.3	surface-3.7
26	1	2	962.30	~2.17	~960.1	●	47.8-49.8	912.3-910.3	47.2-49.8	44.9-47.2 surface-3.1
	2	2	961.72	~2.03	~959.7	●	22.6-24.6	937.1-935.1	21.7-24.6	20.2-21.7 surface-4.2
	3	1½	962.70	~2.49	~960.2	▲	6.4-16.4	953.8-943.8	2.8-16.4	surface-2.8
27	1	2	1012.53	~1.74	~1010.8	●	42.9-44.9	967.9-965.9	37.5-44.9	35.1-37.5 surface-4.8
	2	1½	1012.03	~1.51	~1010.5	▲	10.5-20.5	1000.0-990.0	5.3-20.5	surface-2.8
28	1	1½	970.83	~2.07	~968.8	▲	2.9-9.9	965.9-958.9	2.5-9.9	surface-2.5
29	1	1½	970.97	~2.33	~968.9	▲	3.7-14.7	965.2-954.2	2.5-14.7	surface-2.5
30	1	1½	970.38	~2.07	~968.3	▲	2.9-9.9	965.4-958.4	2.5-9.9	surface-2.5
31	1	1½	971.04	~2.07	~969.0	▲	3.9-14.9	965.1-954.1	2.5-14.9	surface-2.5
32	1	2	980.42	~2.07	~978.4	●	32.9-34.9	945.5-943.5	31.8-34.9	29.8-31.8 surface-2.8
	2	1½	980.28	~2.00	~978.3	▲	4.0-18.0	974.3-960.3	3.0-18.0	surface-3.0
33	1	2	977.54	~1.94	~975.6	●	19.6-21.6	956.0-954.0	19.3-21.6	17.6-19.3 surface-4.1
	2		976.80	~2.00	~974.8	▲	3.0-13.0	971.8-961.8	2.5-13.0	surface-2.5
34	1	1½	980.75	~1.97	~978.8	▲	3.7-15.7	975.1-963.1	2.5-15.7	surface-2.5
35	1	2	1001.95	~1.18	~1000.8	●	63.3-65.3	937.5-935.5	56.0-65.3	54.0-56.0 surface-4.9
	2	1½	1002.15	~1.25	~1000.9	▲	18.8-33.8	982.1-967.1	1.5-33.8	surface-1.5
36	1	1½	982.67	~2.00	~980.7	▲	4.0-18.0	976.7-962.7	3.0-18.0	surface-3.0
37	1	1½	988.57	~3.15	~979.4	▲	9.6-19.6	969.8-959.8	8.5-19.6	7.3-8.5 surface-2.5
38	1	1½	976.33	~2.03	~974.4	▲	7.6-17.4	966.8-957.0	7.0-17.4	6.5-7.0 surface-2.5
39	1	1½	956.12	~3.08	~953.0	▲	1.9-14.9	951.1-938.1	2.0-14.9	surface-2.0
40	1	1½	951.02	~2.49	~948.5	▲	3.5-20.5	945.0-928.0	2.5-20.5	surface-2.5

● - Piezometer

▲ - Standpipe

MONITOR DETAILS

BOREHOLE NO.	MONITOR NO.	DIAMETER (inches)	TOP OF PIPE ELEV.	STICKUP ft.	GROUND ELEV.	TYPE	SCREENED INTERVAL		GRAVEL PACK	SEAL
							DEPTH FROM GRADE	ELEVATION	DEPTH FROM GRADE	DEPTH FROM GRADE
41	1	1½	954.63	~2.26	~952.4	▲	3.7-22.7	948.7-929.7	3.0-22.7	surface-3.0
42	1	1½	967.02	~2.00	~965.0	▲	6.0-23.0	959.0-942.0	2.0-23.0	surface-2.0
43	1	1½	971.41	~1.67	~969.7	▲	8.3-21.3	961.4-948.4	2.5-21.3	surface-2.5
44	1	1½	981.82	~1.80	~980.0	▲	5.2-15.2	974.8-964.8	3.6-15.2	surface-3.6
45	1	1½	991.19	~2.17	~989.0	▲	8.8-19.8	980.2-969.2	6.8-19.8	5.3-6.8 surface-2.5
46	1	1½	994.83	~2.00	~992.8	▲	12.0-23.0	980.8-969.8	9.5-23.0	8.3-9.5 surface-2.5
47	1	2	977.21	~1.51	~975.7	●	63.0-65.0	912.7-910.7	62.2-65.0	60.1-62.2 surface-3.5
	2	1½	977.47	~1.35	~976.1	▲	4.6-15.6	971.5-960.5	2.8-15.6	surface-2.8
48	1	1½	974.82	~2.33	~972.5	▲	3.2-14.2	369.3-958.3	3.5-14.2	surface-3.5
49	1	2	970.07	~1.67	~968.4	●	55.3-57.3	913.1-911.1	53.7-57.3	51.6-53.7 surface-5.3
	2	1½	970.41	~1.94	~968.5	▲	4.0-15.0	964.5-953.5	2.8-15.0	surface-2.8
50	1	2	971.41	~1.25	~970.2	●	40.7-42.7	929.5-927.5	39.8-42.7	37.6-39.8 surface-11.7
	2	2	971.15	~1.25	~969.9	▲	4.3-12.8	965.6-957.1	3.6-12.8	surface-3.6
51	1	2	975.80	~2.33	~973.5	●	39.7-41.7	933.8-931.8	37.1-41.7	33.1-37.1 surface-2.0
	2	2	975.69	~2.26	~973.4	▲	4.1-12.1	969.3-961.3	3.3-12.1	surface-3.3
52	1	1½	961.78	~1.67	~960.1	▲	10.2-20.2	949.9-939.9	7.5-20.2	5.5-7.5 surface-3.2
53	1	1½	979.97	~2.08	~977.9	▲	6.0-18.0	971.9-959.9	5.2-18.0	surface-5.2

● - Piezometer

▲ - Standpipe

BOREHOLE NO. 83-18

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89

DATE Sept. 27/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~ 967.9 ft.a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30	
0	CLAYEY SILT Dark yellowish brown, mottled, firm.		1	SS	7	23					
5		5	2	SS	5	24					
8.8	SAND/SILT SEQUENCE Alternating layers (as shown) of silty very fine to fine sands and clayey to sandy silts. <u>sands are saturated.</u>		3	SS	4	20					
10	6" Silty Sand 2" Silty V.F. Sand 13" Clayey Silt 2" F.To.M. Sand	4	4	SS	10	14					
15	12" Silt & V.F. Sand 18" Clayey Silt 12" Silty V.F. To F. Sa.		5	SS	19	18					Sample 5 (11.5'-11.8') GRVL 0% Sand 50% Silt 43% Clay 7%
20	3.2' Laminated Silt & Clay 4" Sandy Silt 8" Clayey Silt 6" C. Sand & Gravel		6	SS	10	16					
25	4-8' Laminated Silt & Clay 18" Silty V.F. Sand To Sandy Silt	Seal For 3 (See Next Page)	7	SS	9	21					
			8A	ST	push						Sample 8A GRVL 0% Sand 1% Silt 51% Clay 48%
			9	SS	18	11					

BOREHOLE NO.83-18 cont'd.

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89

DATE SEPT. 27, 1983

BOREHOLE TYPE 4 1/2" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~967.9 ft. a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30	
25.525	3" Silt & Clay	3	10	ss	6	13					
	<u>CLAYEY SILT TILL</u> Dark yellowish brown, firm, becoming stiff to very stiff below 35'. Moderate amount of grit found in till matrix. Predominantly massive with minor grit, grain size and stiffness variation.										
30				11	ss	11	10				
				12	ss	8	12				
				13	ss	8	15				
35				14	ss	21	15				
				15	ss	24	12				
40	At 43' the clayey silt till grades in and out of more clayey sequences (as shown below) that contain less grit and are softer.			16	ss	24	14				
				17	ss	17	13				
45	17" Clayey Silt			18	ss	15	18				
	25" Clayey Silt Till			19	ss	15	19				
	5" Clayey Silt										
	19" Clayey Silt Till										
50	11" Clayey Silt										

BOREHOLE NO. 83-18 cont'd.

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89

DATE Sept. 27, 1983

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~967.9 ft. a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS	
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30		
50	14" Clayey Silt Till		20	ss	20	19						
55			21	ss	21	25						
56.5	5.8' Clayey Silt	2	22	ss	30	15						Sample 22 (56.5-57) Grvl 8% Sand 85% Silt & Clay } 7%
60	SAND/SILTY SAND TILL SEQUENCE Alternating layers (as shown) of med. to coarse sand (minor gravel) & silty sand till. 2.6' M. Sand saturated, dense to very dense.		23	ss	85	5						
64.2	2.9' Silty Sand Till 14" C. Sand & Gravel 4" Silty Sand Till 8" Clean M. Sand		24	ss	30	8						
65	SANDY SILT TILL Dark yellowish brown (but slightly greyer in colour than the clayey silt till) gritty to pebbly, very dense, saturated.		25	ss	100	8						
70	1" C. Sand / Gravel Seam		26	ss	100	6						
73.5		1	27	ss	135	9						
75	Borehole terminated in sandy silt till at 73.5 feet		28	ss	100	7						

BOREHOLE NO. 83-19

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL PROJECT NO. 83-89
 BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS DATE Sept. 28/83
 GROUND ELEVATION ~988.6 ft. a.s.l. GEOLOGIST GAM
 CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30	
0	<u>CLAYEY SILT TILL</u> Dark yellowish brown, stiff to hard. Till matrix contains moderate amount of grit and a few pebbles. Massive throughout.		1	ss	11	15.					
			2	ss	24	13.					
5			3	ss	21	14.					
			4	ss	50	15.					
10			5	ss	36	14.					
			6	ss	39	14.					
15			7	ss	34	15.					
			8	ss	32	15.					
20	Colour becomes slightly greyer at 19'.		9	ss	18	15.					
			10	ss	21	15.					
25											

BOREHOLE NO. 83-19 cont'd.

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL

PROJECT NO. 83-89

INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

DATE Sept. 28, 1983

BOREHOLE TYPE 4 1/2" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~988.6 ft. a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS			
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30				
25	CLAYEY SILT TILL cont'd.		11	ss	23	15								
					12	ss	18	16						
30														
					13	ss	17	16						
					14	ss	22	14						
35														
					15	ss	24	14						
					16	ss	18	13						
40														
					17	ss	20	11						
					18	ss	25	14						
43.9														
					19	ss	24	14						
45														
					20	ss	12	16						
50														

VERY FINE SANDY
SILT Dark yellowish brown,
compact, saturated. Contains
occasional siltier laminae.

1" Gravel Seam

Seal
For 1
(See
Next
Page)

BOREHOLE NO. 83-20

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89

DATE Oct 20/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~ 968.0 ft.a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30	
0	<p><u>CLAYEY SILT TILL</u></p> <p>Dark yellowish brown, stiff to hard. Till matrix contains moderate amount of grit and a few pebbles. Predominantly massive with minor variance in grit content and stiffness observed.</p> <p>Colour becomes slightly greayer at 9'</p>		1	AS							No moisture contents determined
			2	SS	10						
			3	SS	38						
			4	SS	22						
5			5	SS	19						
			6	SS	16						
10			7	SS	18						
			8	SS	13						
15			9	SS	17						
			10	SS	38						
20											
25											

17" Silty Clayey Gravel Seam

BOREHOLE NO. 83-20 con't

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89
DATE Oct 20/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~ 968.0 ft a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS		
			NO.	TYPE	'N VALUE	% WATER	SAMPLE INTERVAL	10	20	30			
25	Silty clayey Gravel con't		11	SS	29							No moisture contents determined	
	<u>CLAYEY SILT TILL con't</u>												
				12	SS	18							
30				13	SS	12							
				14	SS	16							
35				15	SS	17							
				16	SS	18							
40				17	SS	15							
				18	SS	26							
45				19	SS	28							
				20	SS	34							
50													



BOREHOLE NO. 83-21

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89

DATE Sept. 29/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~977.7 ft. a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS		
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30			
0 1.7	<u>ORGANICS</u> Black organic-rich muck, contains numerous plant rootlets & fibre, very soft, wet.		1	ss	2								
5 6.0	<u>SILTY CLAY</u> Dark yellowish brown, soft, contains some mixed organics and plant rootlets.		2	ss	3		3						
			3	ss	11		9						
10	<u>CLAYEY SILT TILL</u> Dark yellowish brown, stiff to very stiff. Till matrix contains a small to moderate amount of grit with a few pebbles. Predominantly massive with minor variations in grit content.	4	4	ss	16		12						
15			5	ss	28		13						
			6	ss	28		14						
			7	ss	17		15						
			8	ss	20		15						
20			8A	ST	PUSH								
			9	ss	24		12						
25	----- 2" Sandy Silt Seam -----												

BOREHOLE NO. 83-21 cont'd.

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL
 BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS
 GROUND ELEVATION ~977.7 ft. a.s.l.

PROJECT NO. 83-89
 DATE Sept. 29/83
 GEOLOGIST GAM
 CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30	
60	CLAYEY SILT TILL cont'd.		20	ss	26	11					
			21	ss	44	7					
55	2" Silty Gravel/F. Sand Seam										
			22	ss	41	12					
58.5	SAND/SILTY SAND TILL SEQUENCE Alternating layers (as shown) of silty fine to coarse sands and silty sand till, saturated, compact to dense		23	ss	16	8					
	11" Silty F. To M. Sand										
60	25" Silty Sand Till		24	ss	38	16					
64.4	2.9' M. To C. Sand		25	ss	12	9					
65	SANDY SILT TILL Dark yellowish brown (but slightly greyer in colour than the clayey silt till), gritty to pebbly, compact, saturated		26	ss	11	9					
			27	ss	23	9					
70			28	ss	19	6					
			29	ss	11	7					
75											

1
(See Next Page)

BOREHOLE NO. 83-22

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89
DATE Oct. 21/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~976.5 ft.a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS	
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30		
0	<u>SILTY CLAY</u> Dark yellowish brown, firm to stiff.		1	As		28						
			2	ss	11	-						
5			3	ss	4	18						
7.0												
	<u>CLAYEY SILT TILL</u> Dark yellowish brown, very stiff to hard. There is variation in the amount of grit and pebbles in the till matrix.		4	ss	12	14						
10			5	ss	26	14						
			6	ss	16	13						
15			7	ss	31	13						
			8	ss	32	15						
20			9	ss	37	-						
			10	ss	22	15						
25												

Some sections show occasional vague laminations as indicated below. A few thin sand seams are also present as shown.

Seal For 2 (See Next Page)

BOREHOLE NO. 83-22 cont'd.

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89

DATE Oct. 21/83

BOREHOLE TYPE 4 1/2" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~976.5 ft. a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30	
50	CLAYEY SILT TILL cont'd.		21	ss	28	18					
53.3			22	ss	18	10					
55	SANDY SILT TILL Dark yellowish brown (but slightly greyer in colour than the clayey silt till), gritty and pebbly, loose to very dense, saturated.		23	ss	15	6					
			24	ss	8	11					
60			25	ss	10	9					
65			26	ss	61	9					
70			27	ss	56	8					
75			Borehole terminated in sandy silt till at 77.0 feet.	1	28	ss	30	7			

BOREHOLE NO. 83-24

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89

DATE Oct. 26/83

BOREHOLE TYPE 4 1/2" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~956.3 ft. a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30	
0	<p><u>CLAYEY SILT TILL</u> Dark yellowish brown, stiff to hard. Till matrix contains small to moderate amount of grit and a few pebbles. Predominantly massive with minor grit and stiffness variation.</p> <p>Colour becomes slightly greyer below 13'</p>		1	as		24					
			2	ss	21	20					
5			3	ss	34	15					
			4	ss	38	17					
10			5	ss	44	17					
			6	ss	20	18					
15			7	ss	18	16					
			8	ss	13	17					
20			9	ss	11	17					
25			10	ss	18	17					

BOREHOLE NO. 83-26

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89
DATE OCT.25/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~960.1 ft.a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30	
25	CLAYEY SILT TILL cont'd		11	SS	16	13					Sample 12A (28.3-28.5' (massive till) M.I.T. GRVL 0% Sand 20% Silt 60% Clay 20%
28.8			12	SS	12	23					
29.5			9" Silty Clay to Clay Shows Vague Laminations	13	SS	26	13				
30	SANDY SILT TILL Dark yellowish brown (but slightly greyer in colour than the clayey silt till), gritty to pebbly, compact, becoming very dense below 35', saturated.										Sample 12B (28.8-29.0' (laminated, more clayey and grit free) sequence in till. M.I.T. GRVL 0% Sand 1% Silt 60% Clay 39%
31.7			14	SS	24	12					
35			15	SS	80	7					
40			16	SS	120	7					
45	Borehole terminated in sandy silt till at 51.5 feet.	1	17	SS	135	7					
			18	SS	105	5					
50			19	SS	93	7					

BOREHOLE NO. 83-27 con't

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89
DATE NOV. 2/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~1010.8 ft.a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS		
			NO.	TYPE	'N VALUE	% WATER	SAMPLE INTERVAL	10	20	30			
25	<p>SANDY SILT TILL cont'd Dark yellowish brown (but slightly greyer in colour than the clayey silt), gritty to pebbly, compact, becoming very dense below 33', saturated. One sand seam as shown.</p> <p>----- 5" Clean V.F. Sand -----</p>		11	SS	26	8							
					12	SS	17	10					
30					13	SS	16	7					
					14	SS	78	16					
35					15	SS	150	5					
					16	SS	162	7					
40					17	SS	76	7					
					18	SS	74	7					
45					19	SS	76	7					
47.0			Borehole terminated in sandy silt till at 47.0 feet.										
50													

BOREHOLE NO. 83-30

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89

DATE OCT. 7/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~968.3 ft.a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS		
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30			
0	SANDY SILT TO SILT Dark yellowish brown, laminated stiff.		1	AS		15							
5	One silty gravel seam as shown.												
				2	SS	12	17						
10	-----2" Silty Gravel Seam-----			3	SS	13	14						
12.0													
	Borehole terminated in sandy silt to silt at 12.0 feet.												
15													
20													
25													

Sample 2
(M.I.T)
GRVL 0%
Sand 8%
Silt 77%
Clay 15%

BOREHOLE NO. 83-34

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89

DATE OCT.11/83

BOREHOLE TYPE 4 1/2" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~978.8 ft.a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30	
0	<p>CLAYEY SILT TILL</p> <p>Dark yellowish brown, stiff to very stiff. Till matrix contains a small to moderate amount of grit and a few pebbles. Predominantly massive.</p>		1	AS	-	26					
5			2	SS	14	14					
10			3	SS	28	14					
15			4	SS	24	13					
20			4A	ST	PUSH	-					
25											

An 8" sand seam at 25.4' as shown on next page.

BOREHOLE NO. 83-35 con't

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89


DATE Oct 11/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION approx. 1000.8 ft a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS		
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30			
25	CLAYEY SILT TILL (cont'd.)		6	SS	17	15							
30					7	SS	19	16					
35			8	SS	30	15							
40	Below approximately 47' the clayey silt till grades in and out of more clayey sequences with occasional paper thin laminations.		9	SS	26	14							
45	These sequences are barely distinguishable from the massive till.		10	SS	28	14							
50													

SAMPLE 10
Grvl 1%
Sand 15%
Silt 58%
Clay 26%

BOREHOLE NO. 83-35 con't

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89

DATE Oct 11/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION approx. 1000.8 ft a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS	
			NO.	TYPE	'N' VALUE	X-WATER	SAMPLE INTERVAL	10	20	30		
50	CLAYEY SILT TILL con't		.11	SS	30	18						
			.11A	ST	PUSH							
55	FINE SAND SEAM (8" thick) contains occasional thin (<1/4") silt laminae, saturated		.12	SS	47	13						
56.2												
56.8												
	SANDY SILT TILL Dark yellowish brown (but slightly greyer in colour than the clayey silt till), gritty to pebbly, very dense, saturated.		.13	SS	64	6						
60	----- 1" C. Sand/Gravel Seam -----											
		1										
65			.14	SS	52	8						
68.0												
	FINE TO MEDIUM SAND Dark yellowish brown, compact, saturated.		.15	SS	24	18						
70												
75												

Sample 15
Grvl 2%
Sand 92%
Silt & Clay } 6%

BOREHOLE NO. 83-42

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89

DATE Oct. 6/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION approx. 965.0 ft. a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS	
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30		
0	<u>CLAYEY SILT TILL</u> Dark yellowish brown, hard. Till matrix contains a small to moderate amount of grit and a few pebbles. Predominantly massive with the occasional thin (<1") vague laminations.	1	1	AS		17						
5			2	ss	45	14						
10			3	ss	46	16						
15			3A	ST	PUSH							
20			4	ss	33	16						
25	Borehole terminated in clayey silt till at 25.0 feet.		5	ss	34	12						

BOREHOLE NO. 83-44 cont'd.

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89

DATE Oct. 17/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION approx. 980.0 ft. a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30	
25	CLAYEY SILT TILL cont'd.		6	ss	10	24					
30				7	ss	14	21				
35				8	ss	19	16				
		1" Silty V.F. Sand Seam									
40				9	ss	30	10				
45			10	ss	23	14					
50											

BOREHOLE NO. 83-47

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89

DATE OCT. 16/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~975.7 ft.a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS	
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30		
0	CLAYEY SILT TILL Dark yellowish brown, stiff to very stiff. Till matrix contains a moderate amount of grit and a few pebbles. Predominantly massive.	1	1	AS	-	28						
5	<div style="border: 1px solid black; padding: 5px;"> <p>SILTY SAND/SILTY CLAY TILL /LAMINATED SILT SEQUENCE</p> <p>Alternating layers (as shown below) of laminated silt, silty clay till and silty fine sands.</p> <p>----- 1" Gravelly M. To C. Sand Seam</p> </div>		2	SS	15	19						
			3	SS	22	17						
9.2			4	SS	18	18						
10	~13" Silty V. F. Sand		2	5	SS	15	15					
	6" Clayey Silt Till			6	SS	11	19					
	3" Silty V. F. To C. Sand/Gravel			7	SS	12	18					
	14" Laminated Silt											
15	8" Clayey Silt Till											
	16" Silty V.F. To F. Sand											
17.0	16" Sandy Silt To Silt											
	10" Silty F. To V.F. Sand											
	5" Silt											
20	CLAYEY SILT TILL Dark yellowish brown, stiff to very stiff. Till matrix contains a small amount of grit. The clayey silt till grades in and out of thin more clayey sequences.		8	SS	12	13						
25	An 11" thick zone is shown below. These sequences have less grit and are softer.											

BOREHOLE NO. 83-47 (cont'd)

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89

DATE OCT. 16/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~975.7 ft.a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS
			NO.	TYPE	T.N. VALUE	% WATER	SAMPLE INTERVAL	10	20	30	
25	CLAYEY SILT TILL cont'd Below 32 feet there are a few thin horizons (as indicated) where the grit content increases sufficiently to give the till a sandier texture. Also there are a few thin (<2") sand seams.		9	SS	22	21					
30			10	SS	15	8					
	11" Laminated Clayey Silt 2" Silty Sand Till 2" Silty C. Sand/Gravel Seam										
35			11	SS	12	15					
	5" Silty Sand Till 1" Silty Gravel Seam										
40			12	SS	14	13					
43.0											
45	SANDY SILT TILL Dark yellowish brown (but slightly greyer in colour than the clayey silt till), gritty to pebbly, generally compact, saturated.		13	SS	14	9					
50											

BOREHOLE NO. 83-48

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL

PROJECT NO. 83-89



DATE OCT. 16/83

BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS

GEOLOGIST GAM

GROUND ELEVATION ~972.5 ft.a.s.l.

CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS	
			NO.	TYPE	'N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30		
0	SILT Dark yellowish brown, stiff to very stiff, varies between a clayey silt and sandy silt, laminated. One sand seam as shown.		1	AS		21						
5			2	SS	25	19						
			5" Silty F. Sand									
10			3	SS	15	19						
15	CLAYEY SILT TILL Dark yellowish brown. Till matrix contains a mod.amt.of grit.		4	SS	14	15						
16.5 17.0												
	Borehole terminated in clayey silt till at 17.0 feet.											
20												
25												

BOREHOLE NO. 83-50 cont'd.

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL
 BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS
 GROUND ELEVATION approx. 970.2 ft. a.s.l.

PROJECT NO. 83-89
 DATE Nov. 3/83
 GEOLOGIST GAM
 CHECKED BY GWR/AJC




DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS	
			NO.	TYPE	N' VALUE	% WATER	SAMPLE INTERVAL	10	20	30		
25	CLAYEY SILT TILL cont'd.	1	5	ss	10	22						
30												
35					6	ss	8	23				
			7	ss	14	13						
			8	ss	32	18						
			8A	ST	PUSH							
44.0												
45	Borehole terminated in clayey silt till at 44.0 feet.											
50												

Sample 7
 GRVL 3%
 Sand 17%
 Silt 53%
 Clay 27%

BOREHOLE NO. 83-52 cont'd

PROJECT NAME ADDITIONAL HYDROGEOLOGICAL AND GEOTECHNICAL INVESTIGATIONS - PROPOSED OXFORD COUNTY LDFL PROJECT NO. 83-89
 DATE NOV. 7/83
 BOREHOLE TYPE 4 1/4" HOLLOW STEM AUGERS GEOLOGIST GAM
 GROUND ELEVATION -960.1 ft.a.s.l. CHECKED BY GWR/AJC

DEPTH (feet)	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS	SAMPLE					WATER CONTENT %			COMMENTS
			NO.	TYPE	TN VALUE	% WATER	SAMPLE INTERVAL	10	20	30	
25	CLAYEY SILT TILL cont'd		6	SS	26	17					
28.0											
30	SAND/SILT SEQUENCE Alternating Layers (as shown below) of sands and silts, compact saturated. ~3' Silt & V.F Sand 8" Silt with A Few 1" Sand Seams		7	SS	26	19					
32.0											
35	Borehole terminated in sand/silt sequence at 32.0 feet.										
36											
37											
38											
39											
40											
41											
42											
43											
44											
45											
46											
47											
48											
49											
50											

Geological Log							Borehole No. 551	
Scale (ft.) (m)	Elev. (mGSD) Depth (m)	Description	Strat Plot	Piezometer	Sample Number	Sample Type	Blows/0.3m	Sheet <u>1</u> of <u>1</u>
								Project SALFORD LANDFILL
								Project No.
								Date Drilled <u>July 20, 1987</u>
								Driller <u>All Terrain Drilling Ltd.</u>
								Type of Rig <u>CME 75</u>
								Drilling Method <u>Hollow Stem Augers 4 1/2"</u>
								Depth Water Found (Below Ground Surface)
								_____ m _____ ft
								Water Level on Completion (Below)
								_____ m _____ ft
								Details of Piezometer
								Type of Pipe <u>PVC</u>
								Diameter of Pipe <u>50.8</u> mm <u>2</u> ins
								Type of Screen <u>PVC</u>
								Length of Screen <u>1.31</u> m <u>4.31</u> ft
								Type of Pack <u>pea gravel</u>
								Type of Seal <u>peltonite</u>
								Surface Seal <u>cement bentonite grout</u>
								Length of Pipe Above Ground <u>0.61</u> m
								Legend
								 Static Water Level _____ m GSD (Date _____)
								 Seal
								 Screen or Piezometer Tip
								SS Split Spoon Sample
								WA Wash Sample
								AU Auger Sample
								Drilling Supervised by <u>D. Ruttan</u>
								Log Prepared by <u>D. Ruttan</u>
Borehole Record							Charlesworth	
	295.92	Ground Surface						
	0.0	light brown sandy silt, soft			1	SS	17	
		brown clayey silt or silty clay few fine sand seams 1" (25 mm)			2	SS	8	
		at 15 ft (4.6 m) fine sand seam trace silt and clay			3	SS	7	
	291.12 4.8	grey brown clayey silt) silty clay) till trace- minor fine-coarse gravel			4	SS	11	
		fine silty sand seam at 7.6 m			5	SS	18	
	283.12 12.8	brown fine-coarse sand changing gradually to			8	SS	30	
	281.72 14.2	brown uniform medium sand			9	SS	72	
	280.42 15.5	brown dense sandy silt till minor fine-coarse gravel trace clay			10	SS	100	
		End of Hole			11	SS	100	

Geological Log

Borehole No. 552

Sheet 1 of 1

Project
SALFORD LANDFILL

Project No.

Date Drilled July 15, 1987

Driller All Terrain Drilling Ltd.

Type of Rig CME 75

Drilling Method Hollow Stem Augers

Depth Water Found (Below Ground Surface)

_____ m _____ ft

Water Level on Completion Below _____)

_____ m _____ ft

Details of Piezometer

Type of Pipe PVC flush coupling

Diameter of Pipe 50.8 mm 2 ins

Type of Screen PVC

Length of Screen 2.73 m 8.96 ft

Type of Pack pea gravel

Type of Seal peltonite

Surface Seal peltonite-cement benlonite
grout

Length of Pipe Above Ground 0.61 m

Legend



Static Water Level _____ m GSD
(Date _____)

Seal

Screen or Piezometer Tip

SS Split Spoon Sample

WA Wash Sample

AU Auger Sample

Drilling Supervised by D. Ruttan


Log Prepared by D. Ruttan

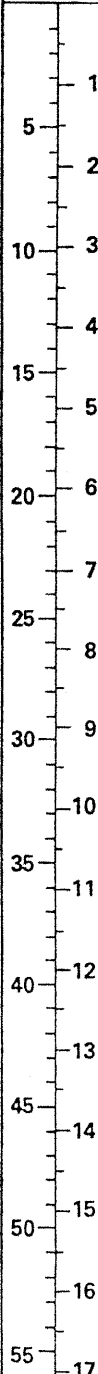
Scale (ft.) (m)	Geological Log			Strat. Plot	Piezometer	Sample Number	Sample Type	Blows/0.3m
	Elev. (mGSD) Depth (m)	Description						
	295.8	Ground Surface						
1		fill						
5	293.9	brown sandy silt till						
2	1.8 2.0	brown sandy silt underlain by silty sandy fine gravel			1	SS	15	
3					2	SS	8	
4		grey soft clayey silt till trace fine-coarse gravel trace sand						
5	290.8 5.0	End of Hole			3	SS	11	
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								

Borehole Record

Charlesworth

Geological Log						Borehole No. 561	
Scale (ft.) (m)	Elev. (mGSD) Depth (m)	Description	Strat. Plot	Piezometer	Sample Number	Sample Type	Sheet <u>1</u> of <u>1</u>
							Project SALFORD LANDFILL
							Project No.
	289.6	Ground Surface					Date Drilled <u>July 14, 15, 1987</u>
	0.0						Driller <u>All Terrain Drilling Ltd.</u>
							Type of Rig <u>CME 75</u>
							Drilling Method <u>Hollow Stem Augers</u>
1		brown clayey silt till trace fine-coarse gravel trace-minor sand fractured with grey-green weathering			1	SS 14	Depth Water Found (Below Ground Surface) _____ m _____ ft
5							Water Level on Completion (Below) _____ m _____ ft
2							
10					2	SS 22	
3							
4	~4.1						Details of Piezometer
	285.5						Type of Pipe <u>PVC flush coupling</u>
15		grey clayey silt till trace-minor fine-coarse gravel trace sand, unfractured 1" lens of clayey silty sand and gravel at 21.5 ft (6.55 m)			3	SS 14	Diameter of Pipe <u>50.8</u> mm <u>2</u> ins
5							Type of Screen <u>PVC</u>
20					4	SS 24	Length of Screen <u>1.37</u> m <u>4.48</u> ft
6							Type of Pack <u>pea gravel</u>
7							Type of Seal <u>peltonite/cement bentonite</u> <u>grout</u>
25		becoming more sandy and gravelly at 7.6 m			5	SS 16	Surface Seal <u>grout</u>
8							Length of Pipe Above Ground <u>0.51</u> m
30		gravel and boulders at 32 ft. (9.75 m)			6	SS 8	
9							
35		grey silty fine-coarse sand, fine gravel minor-trace clay			7	SS 19	
11	278.5						Legend
	11.1	grey sandy gravelly silt till, trace-					Static Water Level: _____ m GSD (Date _____)
	11.7	minor clay (fine-coarse gravel, medium sand)					Seal
40	277.9	End of Hole					Screen or Piezo meter Tip
12							
13							
45							
14							
50							
15							
55							
16							
17							
Borehole Record						Drilling Supervised by <u>D. Ruttan</u>	
						Log Prepared by <u>D. Ruttan</u>	
						Charlesworth	

Geological Log				Borehole No. 562	
Scale (ft.) (m)	Elev. (mGSD) Depth (m)	Description	Strat. Plot	Piezometer	Sample Number
	Sheet <u>1</u> of <u>1</u>				
					Project SALFORD LANDFILL
					Project No.
					Date Drilled <u>July 15, 1987</u>
					Driller <u>All Terrain Drilling Ltd.</u>
					Type of Rig <u>CME 75</u>
					Drilling Method <u>Hollow Stem Augers</u>
					Depth Water Found (Below Ground Surface) _____ m _____ ft
					Water Level on Completion (Below) _____ m _____ ft
					Details of Piezometer
					Type of Pipe <u>PVC</u>
					Diameter of Pipe <u>50.8</u> mm <u>2</u> ins
					Type of Screen <u>PVC</u>
					Length of Screen <u>2.74</u> m <u>9.0</u> ft
					Type of Pack <u>pea gravel</u>
					Type of Seal <u>peltonite</u>
					Surface Seal <u>grout cement/bentonite</u>
					Length of Pipe Above Ground <u>0.58</u> m
					Legend
					
					Static Water Level _____ mGSD (Date _____) Seal Screen or Piezometer Tip
					SS Split Spoon Sample WA Wash Sample AU Auger Sample
					Drilling Supervised by <u>D. Ruttan</u>
					Log Prepared by <u>D. Ruttan</u>
Borehole Record				Charlesworth	



289.5
0.0

4.85
284.7


Ground Surface

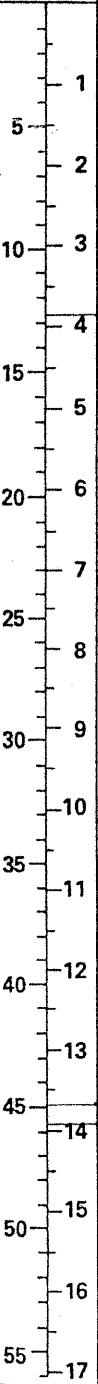
see log of 561 for stratigraphy

boulder at 3.1 m

End of Hole

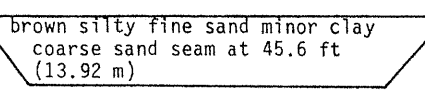


Geological Log						Borehole No. 571	
Scale (ft.) (m)	Elev. (mGSD) Depth (m)	Description	Strat. Plot	Piezometer	Sample Number	Sample Type	Blows/0.3m
							Sheet <u>1</u> of <u>2</u>
	296.3	Ground Surface					Project SALFORD LANDFILL
							Project No.
							Date Drilled <u>July 15, 1987</u>
							Driller <u>All Terrain Drilling Ltd.</u>
							Type of Rig <u>CME 75</u>
							Drilling Method <u>Hollow Stem Augers</u>
							Depth Water Found (Below Ground Surface) _____ m _____ ft
							Water Level on Completion (Below) _____ m _____ ft
							Details of Piezometer
							Type of Pipe <u>PVC</u>
							Diameter of Pipe <u>50.8</u> mm <u>2</u> ins
							Type of Screen <u>PVC</u>
							Length of Screen <u>1.37</u> m <u>4.48</u> ft
							Type of Pack <u>pea gravel</u>
							Type of Seal <u>peltonite/cement bentonite grout</u>
							Surface Seal _____
							Length of Pipe Above Ground <u>1.71</u> ft. <u>0.52</u> m
							Legend
							 Static Water Level _____ mGSD (Date _____)
							Seal
							Screen or Piezometer Tip
							SS Split Spoon Sample WA Wash Sample AU Auger Sample
							Drilling Supervised by <u>D. Ruttan</u>
							Log Prepared by <u>D. Ruttan</u>
Borehole Record						Charlesworth	



Grout

Gravel



Geological Log

Borehole No. 571

Continuation Sheet

2 of 2

Project

SALFORD LANDFILL

Project No.

Scale (ft) (m)	Elev. (mGSD) Depth (m)	Description	Strat. Plot	Piezometer	Sample Number	Sample Type	Blows/0.3m	
60 18 65 19 70 21 75 23 80 24 85 26 90 27 95 29 100 30 105 32 110 33 115 35 36		brown fine-coarse silty sand to medium sand with minor silt			12	SS	19	
			clayey silt till lens 13 mm			13	SS	11
						14	SS	26
						15	SS	16
						16	SS	29
		21.6			Cave			
		21.8	sandy silt till, trace-minor clay, trace fine-coarse gravel					
		274.5						
			End of Hole					
Borehole Record								
							Charlesworth	

Geological Log						Borehole No. 581	
Scale (ft.) (m)	Elev. (mGSD) Depth (m)	Description	Strat. Plot	Piezometer	Sample Number	Sample Type	Blows/0.3m
	Sheet <u>1</u> of <u>1</u>						
	299.2	Ground Surface					
1 5 2 10 3 4 15 5 20 6 7 25 8 30 9 10 35 11 40 12 13 45 14 15 50 16 55 17		brown clayey silt till, minor sand sand content decreases to trace at 15 ft. few weathered fractures, turning to grey clayey silt at 11 ft. fracturing decreases with depth becoming softer with depth			1 SS 26 2 SS 27 3 SS 10		
	294.6	End of Hole					
	4.6						
Project SALFORD LANDFILL Date Drilled July 13, 1987 Driller All Terrain Drilling Ltd. Type of Rig CME 75 Drilling Method Hollow Stem Augers Depth Water Found (Below Ground Surface) _____ m _____ ft Water Level on Completion (Below) _____ m _____ ft Details of Piezometer Type of Pipe PVC flush coupling Diameter of Pipe 50.8 mm 2 ins Type of Screen PVC Length of Screen 2.73 m 8.95 ft Type of Pack pea gravel Type of Seal peltonite Surface Seal cement/bentonite grout Length of Pipe 2 ft Above Ground 0.61 m Legend SS Split Spoon Sample WA Wash Sample AU Auger Sample Drilling Supervised by D. Ruttan Log Prepared by D. Ruttan							
Borehole Record						Charlesworth	

EXPLANATION OF THE BOREHOLE LOG FORM

This form summarizes both field information and selected laboratory test results obtained from each borehole. An explanation of the various columns of the form follows.

DEPTH

This column gives the depth scale of the borehole.

ELEVATION AND DEPTH

This column gives the elevation and depth of inferred geologic contacts. The elevation is referred to the datum shown in the general heading.

DESCRIPTION

This column gives a description of the soil based on visual examination of the samples and laboratory tests. Each stratum is described according to the following classification and terminology. The soil is also typically given a designation in accordance with the Unified Soil Classification System (USCS) - ASTM D2487.

Classification	Particle Size	Particle Size or Sieve No. (U.S. Standard)
Clay	less than 0.002 mm	less than 0.002 mm
Silt	from 0.002 to 0.075 mm	from 0.002 mm to #200 sieve
Sand	from 0.075 to 4.75 mm	from #200 to #4 sieve
Gravel	from 4.75 to 75 mm	from #4 to 3 in
Cobbles	from 75 to 200 mm	from 3 in to 8 in
Boulders	larger than 200 mm	larger than 8 in

Terminology	Proportion
trace, occasional	less than 10%
some	10 to 20%
adjective (<i>e.g.</i> , silty or sandy)	20 to 35%
and (<i>e.g.</i> , sand and gravel)	35 - 50%

The relative density of cohesionless soils and the consistency of cohesive soils are defined by:

Cohesionless Soils		Cohesive Soils		
Relative Density	Standard Penetration "N"	Consistency	Undrained Shear Strength, S_u	
very loose	0 to 4	very soft	0 to 12 kPa	0 to 250 psf
loose	4 to 10	soft	12 to 25 kPa	250 to 500 psf
compact	10 to 30	firm	25 to 50 kPa	500 to 1000 psf
dense	30 to 50	stiff	50 to 100 kPa	1000 to 2000 psf
very dense	over 50	very stiff	100 to 200 kPa	2000 to 4000 psf
		hard	over 200 kPa	over 4000 psf

SYMBOL

These standard symbols describe the stratigraphy of the soil and rock strata.

WATER LEVEL

This column shows the groundwater level in the borehole measured on the date indicated. In impervious soils, the accurate determination of ground water elevations by standpipe, casing or open-hole readings is not possible within the normal time frame of the completion of the site work, and the true groundwater level may be higher or lower than indicated. Where both pervious and impervious soil strata are penetrated, the groundwater levels in each layer may be at different levels and sealed piezometers or standpipes within the individual layers are required to establish true groundwater conditions. Water levels determined by a piezometer can be considered as reliable groundwater levels for the layer in which the piezometer is located and sealed.

TESTS

The central section of the log forms a graph which is used to plot selected field and laboratory test results, at the elevation at which they were carried out. The symbols and scales for the plotting are shown at the head of the column. The dynamic penetration test blows are the number of blows required to drive a 51 mm (2 in) diameter cone a depth of 300 mm (1 ft) using an energy of 480 joules (4200 lb-in). This test is carried out from ground surface or beyond the cased depth of the borehole.

OTHER TESTS

This column shows the results or abbreviations of other field or laboratory tests which have been performed. An explanation of the abbreviations is given on the top of the form. The results of other test not plotted on the form are given in an Appendix to the report.

SAMPLES

The first three columns describe the condition, type and number, as well as the percentage recovery of each sample obtained from the borehole. The location and condition of each sample is plotted to scale. The legend for sample condition is explained on the top left side of the form.

The last column shows the "N" value of the soil as determined by the Standard Penetration Test. The "N" value corresponds to the number of blows required to drive the second and third 150 mm (6 in) of a 51 mm (2 in) diameter standard split spoon sampler with an energy of 480 joules (4200 lb-in). The Standard Penetration Test is carried out according to ASTM D1586.

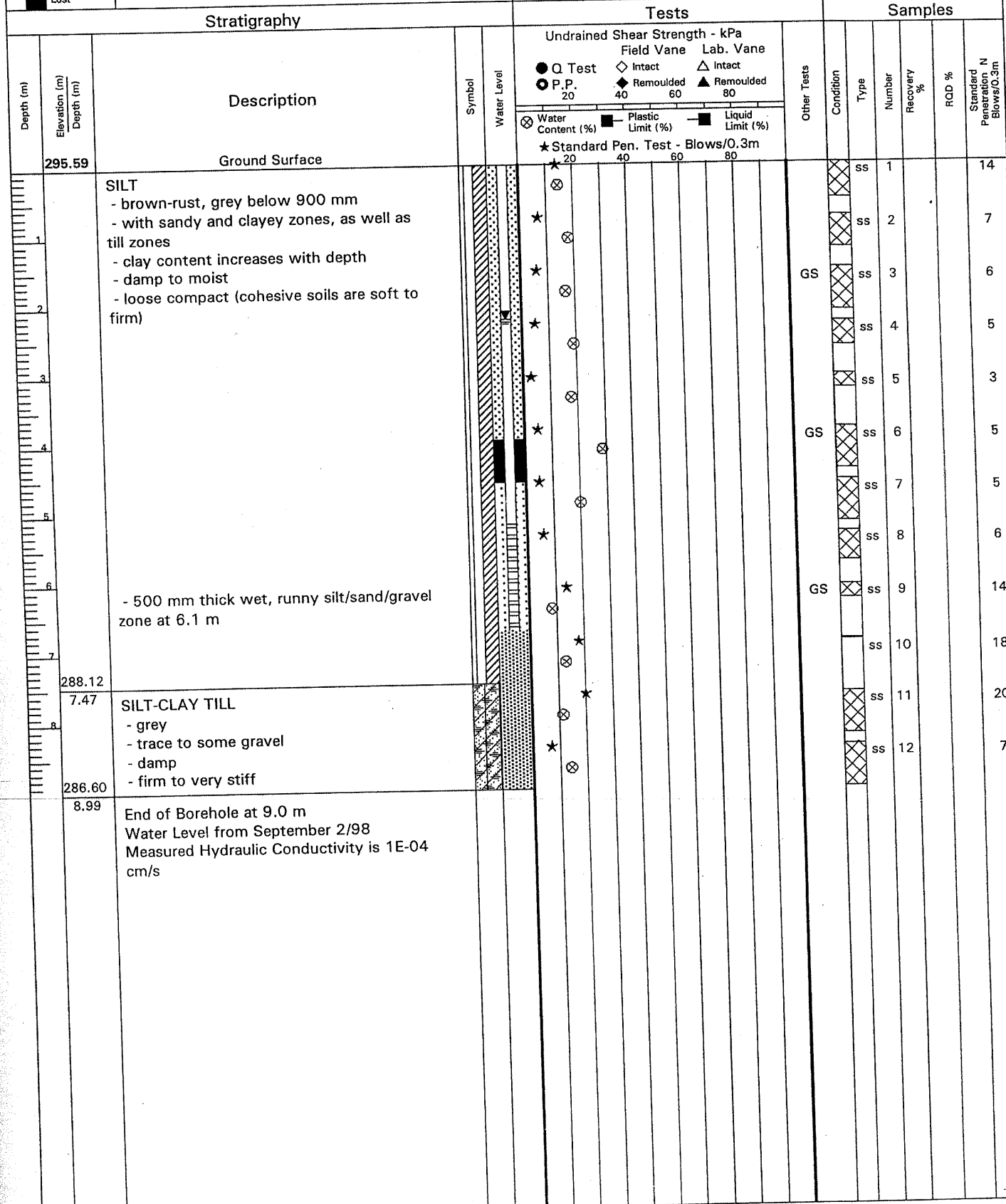
Soil and rock samples will be stored for a 3 month period after which they will be discarded unless we are otherwise instructed.

SNC-Lavalin

Borehole Log

Project Salford Landfill Borehole 98-9
Oxford County Page 1 of 1
 Contract No. 012905 Boring Date 98/5/27
 Location See Figure 1 Casing HSA

Sample Condition	Sample Types			Abbreviations			
	Disturbed Good Lost	SS Split Spoon PS Piston Sampler WS Wash Sample RC Rock Core	ST Thin Walled Open (Shelby) BU Bulk AS Auger T Split Tube	GS Grain Size Analysis W Wet Unit Weight (kN/m ³) C Consolidation P.P. Pocket Penetrometer UCS Unconfined Compressive Strength	k Permeability (cm/s) DS Direct Shear Q Triaxial Quick RQD Rock Quality Designation		



SNC-Lavalin

Borehole Log

Project Salford Landfill Borehole 98-12
Oxford County Page 1 of 1
 Contract No. 012905 Boring Date 98/5/28
 Location See Figure 1 Casing HSA

Sample Condition	Sample Types			Abbreviations			
	Disturbed Good Lost	SS Split Spoon PS Piston Sampler WS Wash Sample RC Rock Core	ST Thin Walled Open (Shelby) BU Bulk AS Auger T Split Tube	GS Grain Size Analysis W Wet Unit Weight (kN/m ³) C Consolidation P.P. Pocket Penetrometer UCS Unconfined Compressive Strength	k Permeability (cm/s) DS Direct Shear Q Triaxial Quick ROD Rock Quality Designation		

Stratigraphy			Tests				Samples							
Depth (m)	Elevation (m)	Description	Symbol	Water Level	Undrained Shear Strength - kPa			Other Tests	Condition	Type	Number	Recovery %	ROD %	Standard Penetration N Blows/0.3m
					Q Test	Field Vane	Lab. Vane							
	296.59	Ground Surface												
1	295.42	SILT TILL FILL - mottled - upper 100 mm topsoil - damp								SS	1			18
1.17		- stiff to very stiff								SS	2			12
2		layered SILT and CLAY - brown to grey - with sandy zones and till layers - with sand and gravel layers at 1.9 m (150 mm), 2.4 m (30 mm), and 5.3 m (90 mm) - clay generally increases with depth - damp to moist - loose to compact (cohesive soils are firm to stiff)								SS	3			13
3										SS	4			10
4										SS	5			12
5									GS	SS	6			5
6	290.49									SS	7			6
6.10		SILT-CLAY TILL - grey - clay increases with depth								SS	8			7
7	289.27	- trace to some sand and gravel - damp to moist - stiff to very stiff								SS	9			11
7.32		End of Borehole at 7.3 m Water Level from September 2/98 Hydraulic Conductivity Not Measured								SS	10			17

Project No: 01-212

Borehole #: 00-01

Project: Salford Landfill

Client: Oxford County

Location: SW of Scale House

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	0						
1		CLAYEY SILT TILL -firm to dense, orange brown clayey silt till, minor fine to coarse gravel -turning dark brown at 4.6 m -some minor ochre lenses between 8.2 to 9.8 m	299	1	SS	7			Protective Casing Bentonite Cement Stickup 0.82 m Elevation 299.74 m 50 mm Dia Sch 40 PVC Pipe Bentonite Grout Holeplug 50 mm Dia Sch 40 PVC 10 Slot Screen No 3 Silica Sand
2				2	SS	10			
3				3	SS	13			
4				4	SS	26			
5				5	SS	35			
6				6	SS	26			
7				7	SS	20			
8				8	SS	14			
9				9	SS	13			
10				10	SS	10			
11				11	SS	15			
12				12	SS	19			
13				13	SS	18			
14				14	SS	19			
10.5		End of Borehole	288						

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: May 25, 2000



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

Project No: 01-212

Borehole #: 00-02


Project: Salford

Client: Oxford County

Location: S of Scale House on Road

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	0						
1		CLAYEY SILT TILL -brown to dark brown, loose becoming dense at 3 m -minor fine to coarse gravel -grey, vertical seams (root channels?) at 1.5 m -becoming wet, soft, firm at 4.6 m -orange mottles at 5.3 m	299	1	SS	2			Protective Casing Concrete
2			2	SS	15		Stickup 0.67 m Elevation 299.67 m		
3			3	SS	18		50 mm Dia PVC Sch 40 Pipe		
4			4	SS	26				
5			5	SS	38				
6			6	SS	40		Bentonite Grout		
7			7	SS	18		Holeplug		
8			5.79						
9		SAND AND GRAVEL -sandy, clayey silt with fine to coarse angular gravel at 5.79 m, grading into -loose fine to coarse sand, fine to coarse gravel at 6.1 m	293	8	SS	14			50 mm Dia PVC 10 Slot Screen
10			6.78	9	SS	11			No 3 Silica Sand
11		CLAYEY SILT TILL -dark brown clayey silt till with fine to coarse gravel soft to stiff -slightly more gravel at 10.5 m	292	10	SS	12			Holeplug
12			11	SS	12				
13			12	SS	12		Bentonite Grout		
14			13	SS	12				
15				14	SS	14			
16		End of Borehole	288						

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: May 26, 2000



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

Project No: 01-212

Borehole #: 00-03

Project: Salford

Client: Oxford County

Location: Next to 111 on County Road

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE			SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft		
0		Ground Surface	0					
1		CLAYEY SILT TILL -brown, orange brown, grey at surface, becoming dark brown at 1.5 m, clayey silt till, minor fine to coarse gravel, firm to stiff near surface, becoming softer with depth, soft at 6 m -0.08 m sand and gravel layer at 1.75 m -softer and wetter at 6.4 m with less clay for 0.3 m -softer and wetter at 7.9 m for 0.3 m	295	1	SS	4		Protective Casing Concrete
2				2	SS	7		Stickup 0.84 m Elevation 296.18 m
3				3	SS	22		50 mm Dia PVC Sch 40 Pipe
4				4	SS	11		
5				5	SS	12		
6				6	SS	10		Bentonite Grout
7				7	SS	12		
8				8	SS	8		
9				9	SS	8		
10				10	SS	12		
11				11	SS	10		
12				12	SS	8		

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: May 26, 2000



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 2

Project No: 01-212

Borehole #: 00-03

Project: Salford

Client: Oxford County

Location: Next to 111 on County Road

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
31				13	SS	12			Bentonite Grout Holeplug 50 mm Dia PVC 10 Slot Screen No 3 Silica Sand
32				14	SS	6			
33	10			15	SS	5			
34				16	SS	38			
35				17	SS	18			
36	11	-brown, soft, wet, fine gravelly, clayey silt till from 10.8 to 11.2 m							
37									
38		-brown silt till, minor sand, clay and fine to coarse gravel from 11.4 to 11.9 m							
39	12								
40									
41		-trace fine to coarse gravel from 11.2 to 13.1 m except where noted							
42	13		13.1						
43		SAND	282	18	SS	4			
44		-dark brown fine to medium sand	13.7						
45		-significant clay from 13.26 to 13.34 m	282						
46	14	-artesian water pressure encountered	281	19	SS	19			
47		CLAYEY SILT TILL							
48		-brown clayey silt till, minor fine gravel							
49	15	SAND	14.9	20	SS	70			
50		-brown, black fine to medium sand, wet, loose	280						
51		CLAYEY SILT TILL							
52		-brown clayey silt till, minor fine to coarse gravel, stiff							
53	16	SILT	15.8	21	SS	84			
54		-silt with minor clay, minor sand, grading to sandy silt at 14.3 m	279						
55		-becoming loose, dark brown fine to coarse sand, trace fine gravel at 14.5 m							
56	17	CLAYEY SILT TILL							
57		-brown, dense to very dense, clayey silt till, trace to minor fine to coarse gravel							
58									
59	18								
60		End of Borehole							

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: May 26, 2000



Hole Size: 17 cm

Datum: Geodetic

Sheet: 2 of 2

Project No: 01-212

Borehole #: 00-04


Project: Salford Landfill

Client: Oxford County

Location: SE Corner of Shed

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE					SAMPLE			Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	0						
1		CLAYEY SILT to SILT -brown, orange brown with ochre blebs, clayey silt to silt, minor clay, minor fine to coarse sand and gravel, moist, soft to firm	300	1	SS	9			Protective Casing Bentonite Cement
2	2			SS	6				
3	3			SS	19				
4		SANDY SILT to SILTY FINE SAND -brown with grey patches, soft, dry, sandy silt to silty fine sand -minor fine to coarse gravel	274	4	SS	38			Stickup 0.78 m Elevation 300.67 m
5	5			SS	43				
6	6			SS	41				
7	7			SS	21				
8		SAND AND GRAVEL -dark brown coarse sand and fine to coarse gravel, minor clay at 5.8 m, moist -no sample from 6.1 to 6.7 m due to looseness of formation	294	8	SS	16			50 mm Dia Sch 40 PVC Pipe
9	9			SS	16				
10	10			SS	10				
11		CLAYEY SILT TILL -brown clayey silt till, trace fine gravel, trace sand, moist, soft to firm, becoming slightly more dense from 9.9 to 11.28 m	293	11	SS	11			50 mm Dia Sch 40 PVC 10 Slot Screen
12	12			SS	9				
13	13			SS	16				
14	14			SS	13				
15	15			SS	14				
16		End of Borehole	289					No 3 Silica Sand	

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: May 25, 2000



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

Project No: 00-206

Borehole #: 2P

Project: Salford Cut-Off Wall

Client: County of Oxford

Location: East Side of Landfill

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	296.94						Protective Casing Bentonite Cement Elevation MP 297.84 m 100 mm Diameter PVC Pipe Bentonite Grout Holeplug 100 mm Diameter PVC 10 Slot Screen
1		FILL -stiff, dry, dark brown to grey brown to ochre clayey silt with minor fine to coarse gravel		1	SS	25			
2				2	SS	20			
3				3	SS	13			
4			293.89	4	SS	21			
5		CLAYEY SILT, SANDY SILT, AND SILT -stiff, dry, brown clayey silt changing at 3.2 m to brown sandy silt, minor fine to coarse gravel -moist sand seam at 3.43 m -at 3.81 m, dry, stiff, brown, black, ochre clayey silt, trace to minor fine to medium gravel, clasts disc like, banded, alternating colours, organic remains -at 4.57 m, predominantly brown, some subrounded gravel clasts to 3 cm		5	SS	17			
6		-small fracture < 1 mm -ochre fracture fillings		6	SS	31			
7		-brown sandy clayey silt, fine to medium gravel at 6.1 m	290.69	7	SS	14			
8		SANDY SILT -brown sandy silt or silty fine sand		8	SS	12			
9		CLAYEY SILT -brown, uniform, moist, soft clayey silt -minor fine to medium gravel at 6.86 m	289.93	9	SS	16			
10		SANDY SILT -sandy silt and silt	289.62						
11		CLAYEY SILT -clayey silt, no gravel	289.32						
12		TILL -brown, black with fractures and ochre fracture fillings, clayey silt with fine to medium gravel -changing at 7.77 m to soft, brown, uniform clayey silt till, trace gravel	288.71	10	SS	13			
13		End of Borehole						Silica Sand	

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: May 26, 2000



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

Project No: 00-206

Borehole #: 7P

Project: Salford Cut-Off Wall

Client: County of Oxford

Location: SW Side of wall
Near 98-7

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	296.03						
1		FILL -dark brown clayey silt, soft moist with root channels -becoming dark brown sandy silt at 1.5 m changing to grey sandy silt at 1.83 m -orange brown sandy silt at 2,3 m changing to grey sandy silt trace clay at 2.67 m. soft		1	SS	14			
2				2	SS	8			
3					3	SS	12		
4			292.98						
5		CLAYEY SILT -grey, to grey brown, soft clayey silt, minor to trace fine to coarse gravel		4	SS	10			
6					5	SS	5		
7			291.09						
8		SAND AND GRAVEL -fine to coarse sand, fine to coarse gravel, with clayey silt interbeds	290.54						
9		CLAYEY SILT -brown, soft clayey silt -trace fine gravel		6	SS	23			
10					7	SS	10		
11			289.63						
12		End of Borehole		8	SS	0			
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: May 24, 2000



Hole Size: 17 cm

Datum:

Sheet: 1 of 1

Project No: 00-206

Borehole #: 10P

Project: Salford Cut-Off Wall

Client: County of Oxford

Location: Northeast of landfill
Southwest Side of Wall

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0 m		Ground Surface	295.54						Protective Casing Bentonite Cement Elevation MP 296.51 m Bentonite Cement Grout Flush Jointed PVC 100 mm Diameter Pipe Holeplug — 291.27 m — 290.66 m Silica Sand Screen PVC 100 mm Diameter 10-Slot — 289.14 m
1		FILL -black, changing to dark brown and then grey, light brown at 1.4 m, clayey silt to silt, minor to trace gravel, iron oxide (orange) blebs and root channels near surface dry, firm at surface becoming soft, moist at 1.5 m		1	SS	9			
2				2	SS	11			
3									
4									
5									
6			293.56	3	SS	4			
7		SAND -light brown, fine to coarse sand, trace fine to medium gravel, moist	293.25						
8		CLAYEY SILT -brown, grey, moist, mottled clayey silt becoming grey, firm clayey silt at 2.44 m	292.6	4	SS	6			
9			292.49						
10		SILT -wet, loose silt, some sandy layers with trace fine to medium gravel		5	SS	8			
11		CLAYEY SILT -firm, soft clayey silt, minor black horizontal banding <0.5 cm thick							
12				6	SS	4			
13									
14				7	SS	4			
15									
16									
17			290.05						
18		SAND -brown, firm fine to coarse sand, trace fine to coarse gravel, trace clay at lower contact	289.6	8	SS	18			
19									
20		CLAYEY SILT -grey, soft clayey silt -2.5 cm gravel, sand, silt layer at 6.4 m		9	SS	5			
21			288.68						
22									
23		CLAYEY SILT TILL -grey clayey silt till, minor fine to coarse gravel, red-brown mottles in places		10	SS	7			
24			287.92						
25									
26		End of Borehole							
27									
28									
29									
30									

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: May 23, 2000



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

Project No: 00-206

Borehole #: 20bs

Project: Salford Cut-Off Wall

Client: Counry of Oxford

Location: East of Landfill
Inside the wall

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0.0		Ground Surface	296.94						Protective Casing Bentonite Cement
1		FILL -firm, dry, brown-grey with ochre blebs, clayey silt fill, minor fine to medium gravel, becoming darker below 1.5 m, thin (2.5 cm) sandy clayey silt lenses at 1.5 m, becoming moist with only trace of sand at 2.3 m		1	SS	9			Elevation MP 297.81 m
2				2	SS	20			Bentonite Grout
3				3	SS	16			50 mm Diameter PVC Pipe
4		CLAYEY SILT AND SANDY SILT -alternating layers of clayey silt and sandy silt or sandy clayey silt -at 3.2 m dark brown to black clayey silt, trace to minor fine to coarse gravel -at 3.8 m stiff dark brown sandy silt, trace fine gravel -at 4.34 m dark brown clayey silt -at 4.57 m firm, brown, sandy clayey silt, trace to minor fine gravel -at 4.65 m firm, dark brown, clayey silt -at 5.11 m dark brown, fine to coarse sand trace fine gravel, wet -at 5.33 m brown-orange brown clayey silt trace fine gravel -predominantly dark brown clayey silt below 5.41 m -8 cm layer of sandy silt at 6.25 m -2.5 cm layer of sandy, clayey silt at 6.48 m	4	SS	17		Holeplug —292.98 m		
5			5	SS	20		—292.37 m		
6			6	SS	13		Silica Sand		
7			7	SS	10		50 mm Diameter 10 Slot Screen		
8			8	SS	12				
9		SILTY FINE SAND -dark brown, stiff, wet, silty fine sand	290.01	9	SS	15			
10			289.62	10	SS	12		—289.32 m	
11		CLAYEY SILT -firm, dark brown, clayey silt -at 7.62 m 8 cm layer of soft, dark brown, sandy clayey silt, trace fine to coarse gravel	288.71						
12			End of Borehole						

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: May 29, 2000



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

Project No: 00-206

Borehole #: 70bs

Project: Salford Cut-Off Wall

Client: County of Oxford

Location: SW Side of wall
Near 98-7

Drilling Supervised by: David Ruttan

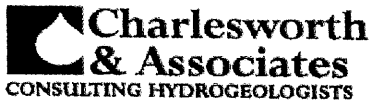
Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0 m		Ground Surface	295.6						Protective Casing Bentonite Cement Stickup 1.24 m Bentonite Cement Grout Flush Jointed PVC 50 mm Diameter Pipe Holeplug Silica Sand Screen PVC 50 mm Diameter 10-Slot
1		FILL -black, changing to dark brown and then grey, orange brown at 1.2 m, clayey silt to silt, iron oxide (orange) blebs and root channels near surface dry, firm to stiff at top		1	SS	9			
2			294.08						
3		SILT -light brown silt, minor fine sand, minor clay, horizontal bedding with beds 1 mm thick, some orange mottles	293.62	2	SS	6			
4		SAND -brown, fine sand, trace medium gravel, wet	293.31						
5		SILT AND SANDY SILT -light brown, soft, silt and sandy silt, few thin layers of sand, silty fine to coarse sand at 2.74 m, trace clay from 3 to 3.5 m, 2 0.5 cm black layers at 3.35 m		3	SS	6			
6			292.09	4	SS	10			
7		CLAYEY SILT -light brown, soft, uniform clayey silt		5	SS	6			
8				6	SS	5			
9			289.81	7	SS	14			
10		SAND AND GRAVEL -light brown, loose, fine to coarse sand, fine to coarse gravel	289.35						
11		CLAYEY SILT to SILT -grey clayey silt to silt with trace clay at 6.55 m.		8	SS	8			
12			288.74						
13		CLAYEY SILT TILL -light brown, grey clayey silt till, fine to coarse gravel		9	SS	12			
14			288.13						
15		End of Borehole							
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: May 23, 2000



Hole Size: 17 cm

Datum:

Sheet: 1 of 1

Project No: 00-206

Borehole #: 10obs

Project: Salford Cut-Off Wall

Client: County of Oxford

Location: Northeast of landfill
Southwest Side of Wall

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	295.6						Protective Casing Bentonite Cement Stickup 1.24 m Bentonite Cement Grout Flush Jointed PVC 50 mm Diameter Pipe Holeplug Silica Sand Screen PVC 50 mm Diameter 10-Slot
1		FILL -black, changing to dark brown and then grey, orange brown at 1.2 m, clayey silt to silt, iron oxide (orange) blebs and root channels near surface dry, firm to stiff at top							
2				1	SS	9			
3			294.08						
4									
5		SILT -light brown silt, minor fine sand, minor clay, horizontal bedding with beds 1 mm thick, some orange mottles	293.62	2	SS	6			
6									
7		SAND -brown, fine sand, trace medium gravel, wet	293.31						
8				3	SS	6			
9		SILT AND SANDY SILT -light brown, soft, silt and sandy silt, few thin layers of sand, silty fine to coarse sand at 2.74 m, trace clay from 3 to 3.5 m, 2 0.5 cm black layers at 3.35 m							
10									
11			292.09	4	SS	10			
12		CLAYEY SILT -light brown, soft, uniform clayey silt							
13									
14				5	SS	6			
15									
16				6	SS	5			
17									
18									
19			289.81	7	SS	14			
20		SAND AND GRAVEL -light brown, loose, fine to coarse sand, fine to coarse gravel	289.35						
21									
22		CLAYEY SILT to SILT -grey clayey silt to silt with trace clay at 6.55 m.	288.74	8	SS	8			
23									
24		CLAYEY SILT TILL -light brown, grey clayey silt till, fine to coarse gravel							
25			288.13	9	SS	12			
26		End of Borehole							
27									
28									
29									
30									

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: May 23, 2000



Hole Size: 17 cm

Datum:

Sheet: 1 of 1

Project No: 03-225

Borehole #: 03-1S

Location: NE corner

Client: Oxford County

Water Level Elev: 295.6 mGSD

Drilling Supervised by: R. Harris

Borehole Log Prepared by: R. Harris

Project: Salford Landfill

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	296.7						
1-3		Fill -moist, stiff, inhomogeneous -brown-yellow-rust-grey clayey silt till fill							Protective Casing Cement Stickup 0.72 m Bentonite grout
4		Clayey Silt Till Stiff, moist, greyish brown with FeOx specks and very faint fracture haloes	294.9	1	SS	13			50 mm Dia PVC
5			294.2	2	SS	39			Holeplug
6-12		Stiff, plastic, brownish grey							
13			286.5						
14		Clay to Silty Clay Stiff, very plastic, brownish grey, trace grit and pebbles		5	SS	22			
15			283.3						
16		Sand, Sand and Gravel Interbedded brown medium-coarse sand, brown silty fine-medium sand and grey-brown cohesive silt-sand-gravel		6	SS	24			
17		Sandy Silt Till Very dense, grey to reddish grey	281.9	7	SS	22			
18			280.9	8	SS	>100			

Drilled By: Lantech Drilling

Hole Size: 17 cm

Drill Method: Hollow Stem Augers



Datum: Geodetic

Drill Date: Mar 17-18, 2003

Sheet: 1 of 1

Project No: 03-225 **Borehole #: 03-1D** Location: NE corner
 Client: Oxford County Water Level Elev: 294.8 mGSD
 Drilling Supervised by: R. Harris Borehole Log Prepared by: R. Harris
 Project: Salford Landfill

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	298.5						
1-4		Fill -moist, stiff, inhomogeneous -brown-yellow-rust-grey clayey silt till fill							Protective casing Cement
10			294.7	1	SS	13			Stickup 0.76 m 50 mm Dia PVC
13-14		Clayey Silt Till Stiff, moist, greyish brown with FeOx specks and very faint fracture haloes	284						
15-16				2	SS	39			
20-21									Bentonite grout
22-23									
24-25									
26-27				3	SS	13			
28-29		Stiff, plastic, brownish grey							
30-31									
32-33									
34-35									
36-37				4	SS	22			
38-39									
40-41			286.3						
42-43									
44-45									
46-47		Clay to Silty Clay Stiff, very plastic, brownish grey, trace grit and pebbles		5	SS	22			Holeplug
48-49									Washed cave
50-51			283.1						
52-53		Sand, Sand and Gravel Interbedded brown medium-coarse sand, brown silty fine-medium sand and grey-brown cohesive silt-sand-gravel		6	SS	24			Silica sand
54-55			281.7	7	SS	22			
56-57									
58-59		Sandy Silt Till Very dense, grey to reddish grey	280.7	8	SS	>100			

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Mar 17-18, 2003



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

LOG OF BOREHOLE 552R (Decommissioning)



project | Oxford County Waste Management Facility

project no. | 111-53036-02

client | County of Oxford

rig type | GEOPROBE, track-mounted

date started | 2018/07/24

location | Salford, Ontario

method | Direct push, 50 mm dia.

supervisor | MEQ

position |

coring | n/a

reviewer | AMS

Depth Scale (m)	SUBSURFACE PROFILE		SAMPLE			Elevation Scale (mASL)	Penetration Test Values (Blows / 0.3m) × Dynamic Cone 10 20 30 40	Water Content (%) & Plasticity PL MC LL 0 0 0	PID Readings	Well Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	STRATIGRAPHY	Graphic Plot	Number	Type						
0	296.8	GROUND SURFACE									
0		Fill: Dry to moist, stiff to soft mixture of mottled red-grey silt till, black loamy silt, and buff-brown sandy silt									The monitoring well was overdrilled to 5.5 m below ground surface and backfilled with granular bentonite. The PVC riser and screen were removed.
2.4	294.4	Clayey Silt: Stiff to plastic, brownish to reddish grey, moist interbedded silty sand and gravel at 15.5-16.5', minor interbedded sandy silt at 10.3'.									
5.5	291.3										

END OF BOREHOLE

The stratigraphy is inferred from the original borehole log for 552R, formerly BH03-2S [Charlesworth and Associates, 2003]

LOG OF BOREHOLE 552RA



project | Oxford County Waste Management Facility
client | County of Oxford
location | Salford, Ontario
position |

rig type | GEOPROBE, track-mounted
method | Direct push, 50 mm dia.
coring | n/a

project no. | 111-53036-02
date started | 2018/07/24
supervisor | MEQ
reviewer | AMS

Depth Scale (m)	SUBSURFACE PROFILE		SAMPLE		Elevation Scale (mARD)	Penetration Test Values (Blows / 0.3m)	Water Content (%) & Plasticity	PID Readings	Well Details	Lab Data and Comments
	Elev Depth (m)	STRATIGRAPHY	Graphic Plot	Number						
0		GROUND SURFACE								
0.1		Dark brown TOPSOIL , some rootlets and organics, trace clay, trace silt, dry, loose.								
1		Red-brown to brown CLAYEY SILT , trace interbedded sandy silt, moist, loose to compact.		1	DP					
2		Turns grey		2	DP					
3		Brown SANDY SILT , some fine gravel, trace clay, wet, loose.		3	DP					
4		Grey SILTY CLAY , increasing clay content with depth, APL, stiff to firm.		4	DP					
5				4	DP					
6	5.9 6.1	Grey fine to medium GRAVEL , some sand, wet, loose.								
7		Grey SILTY CLAY , trace fine gravel, APL, stiff.		5	DP					

7.6
END OF BOREHOLE

Unstabilized water level at 3.4 m below ground surface; borehole was open upon completion.

Library: genivar - library.gib - report: gen log v1 - file: salford bh logs 2018.gpj

Project No: 03-225

Borehole #: 03-2D

Location: By main gate

Client: Oxford County

Water Level Elev: 294.8 mGSD

Drilling Supervised by: R. Harris

Borehole Log Prepared by: R. Harris

Project: Salford Landfill

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks	
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery			
0		Ground Surface	298.7							
1		Fill Dry to moist, stiff to soft mixture of mottled red-grey silt till, black loamy silt, and buff-brown sandy silt	294.3	1	SS	22			Protective casing Cement	
2										Stickup 0.86 m
3		Clayey Silt Stiff to plastic, brownish to reddish grey, moist interbedded silty sand and gravel at 15.5-16.5', minor interbedded sandy silt ca. 10.3'. Leachate odour noticed during sample retrieved at 15'.	291.2	2	SS	18			50 mm Dia PVC	
4										
5						3	SS	13		
6						4	SS	11		
7						5	SS	14		
8		Silty Clay Diamicton Dense, stiff to plastic, brownish grey; trace pebbles and grit; breaks to wafery texture in horizontal plane (glaciolacustrine diamicton)	285.1						Bentonite grout	
9						6	SS	14		
10										
11		Clay Dense, very plastic, brownish grey; 'potters' clay	283.3	7	SS	19			Hole plug	
12										Silica sand
13		Sand Clean, brown, uniform fine to medium sand	281.8	8	SS	17			Washed cave	
14										
15		Silt-Sand Till Very dense, grey-brown	281	9	SS	115				
16		End of Borehole								

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Mar 18-19, 2003



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

Project No: 03-225

Borehole #: 03-3

Location: Outside cut-off wall between 98-11 and end of cut-off wall

Client: Oxford County

Water Level Elev: 295.0 mGSD

Drilling Supervised by: R. Harris

Borehole Log Prepared by: R. Harris

Project: Salford Landfill

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	297						
1				1	AU	-			Protective casing Cement
2				2	AU	-			Stickup 0.84 m
3		Fill Dry, light brown silt-sand and dark loam							Hole plug
4									
5									
6			294.9						
7									50 mm Dia PVC
8		Sand Soft fine to coarse sand; some silt; brown with yellow, orange and olive; minor gravel; minor interbedded stiff, brown-grey clay-silt							
9									
10				3	SS	70			Silica sand
11									
12			293.2						
13				4	SS	16			
14									
15									
16									
17									Cave
18									
19									
20		Silty Clay Till Plastic to very plastic; grey; trace sand							
21				5	SS	18			
22									Hole plug
23									
24									
25									
26									
27			288.8						

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Sep 10-11, 2003



Hole Size: 17 cm

Datum: Geodetic

Sheet 1 of 1

Project No: 03-226

Borehole #: 03-4

Location: At end of cut-off wall

Client: Oxford County

Water Level Elev: 294.7 mGSD

Drilling Supervised by: R. Harris

Borehole Log Prepared by: R. Harris

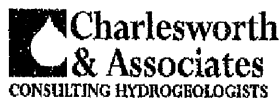
Project: Salford Landfill

SUBSURFACE PROFILE				SAMPLE				Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery	
0		Ground Surface	297.3					
1		<i>Fill</i> Depth assumed from adjacent borehole logs						Protective casing Cement Stickup 0.89 m
2								
3			295.8					Holeplug
4		<i>Interbed. Clayey Silt, Silty Snd, Gravel</i> Stiff, moist, brown clayey silt; moist brown silty sand and gravel, bedding 0.5"-10"; minor interbedded soft clay-silt diamicton with sugary texture						50 mm Dia PVC Silica sand
5								
6								
7								
8								
9			293.7	1	SS	21		
10		<i>Interbed. Clay Silt Till and Clay Silt dm.</i> (Interbedded Clayey Silt Till and Clayey Silt Diamicton) Diamicton is stiff to plastic, sticky, moist, grey, sugary texture; gravel fraction quite fine; some inhomogeneity with respect to colour; possible reworking or slumping; till is stiff to plastic, grey; bedding thickness 0.3-2.0"; minor interbedded clayey silt						
11								
12								
13								
14			291.1	2	SS	16		
15				3	SS	23		
16				4	SS	27		
17				5	SS	25		Holeplug
18		<i>Clay-Silt Diamicton</i> Stiff to plastic, olive-grey, layered, sugary texture, minor grit and pebbles; minor interbedded clay-silt to clay, (glaciolacustrine diamicton)						Backfill
19								
20								
21				6	SS	14		
22				7	SS	13		
23				8	SS	13		
24			288.3					
25								
26								
27								
28								
29								
30		End of Borehole						

Drilled By: Lantech Drilling

Hole Size: 17 cm

Drill Method: Hollow Stem Augers



Datum: Geodetic

Drill Date: Sep 11, 2003

Sheet: 1 of 1

Project No: 03-225

Borehole #: 03-5

Location: S side of access road

Client: Oxford County

Water Level Elev: 294.8 mGSD

Drilling Supervised by: R. Harris

Borehole Log Prepared by: R. Harris

Project: Salford Landfill

SUBSURFACE PROFILE				SAMPLE					Remarks	
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery	Well Data		
0		Ground Surface	297.3						Protective casing Cement Stickup 0.86 m	
1		<i>Fill</i> Depth assumed from nearby boreholes	295.8							
2										Holeplug
3		<i>Clay-Silt Diamicton</i> Plastic, olive grey, layered, stiff to sugary texture; gravel fraction sparse, fine; minor interbedded grey, laminated clay-silt to clay zones to 1.3'; trace silty partings; (glaciolacustrine diamicton)							50 mm Dia PVC	
4										Silica sand
5						1	SS	16		
6						2	SS	12		
7						3	SS	11		
8										
9										
10						4	SS	15		
11						5	SS	13		
12									Cave	
13			290							

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Sep 11, 2003



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

Project No: 03-225

Borehole #: 03-6

Location: S side of access road

Client: Oxford County

Water Level Elev: 294.0 mGSD

Drilling Supervised by: R. Harris

Borehole Log Prepared by: R. Harris

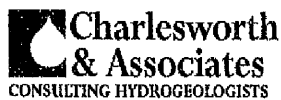
Project: Salford Landfill

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	297.5						
1		<i>Fill</i> Dry yellow-brown sand-silt fill; depth assumed from adjacent boreholes	296						Protective casing Cement Stickup 0.87 m
2									
3									
4									
6									
7		<i>Clay-Silt Till</i> Stiff to plastic, grey-brown to grey	291.4						Holeplug 50 mm Dia PVC
8									
9									
10									
11									
12									
13									
14									
15									
16									
17		<i>Clay-Silt Diamicton</i> Stiff to very plastic, sticky, grey to olive-grey, waffery texture; trace distorted reddish grey clay interbeds; trace faint, silty partings????; (glaciolacustrine diamicton)	287.7						Silica sand
18									
19									
20									
21									
22				1	SS	34			
23									
24									
25									
26									
27				2	SS	13			
28				3	SS	13			
29				4	SS	10			
30				5	SS	12			
31									Holeplug
32									

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Sep 11-12, 2003



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

Project No: 03-225

Borehole #: 03-7S

Location: North of access road, north of borehole 03-4

Client: Oxford County

Water Level Elev: 295.4 mGSD

Drilling Supervised by: R. Harris

Borehole Log Prepared by: R. Harris

Project: Salford Landfill

SUBSURFACE PROFILE				SAMPLE				Remarks	
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0 ft m		Ground Surface	296.8						
0		Top soil	296.5					Protective casing Cement Holeplug Stickup 0.80 m	
1		Silty Sand Dry, yellow-brown, loamy becoming damp, sticky, buff-brown ca. 4.5' and wet ca. 5.75'; fine bedded; minor gravel	294.4	1	SS	5			
2									
3		Clay-Silt Till Stiff to plastic, brown turning grey to olive-grey ca. 9.5'	291.3	2	SS	15			
4									
5									
6									
7		Clay-Silt Diamicton Stiff to plastic olive-grey; Gravel fraction sparse, fine; breaks to wafery texture; trace clay interbeds to 1"; (glaciolacustrine diamicton)	287	3	SS	9			
8									
9									
10									
11				4	SS	12			
12									
13				5	SS	8			
14									
15				6	SS	12			
16									
17				7	SS	12			
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
32									

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Sep 12, 2003



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

LOG OF BOREHOLE 03-7S (Decommissioning)



project | Oxford County Waste Management Facility

project no. | 111-53036-04

client | County of Oxford

rig type | D50, track-mounted

date started | 2020-06-15

location | Salford, Ontario

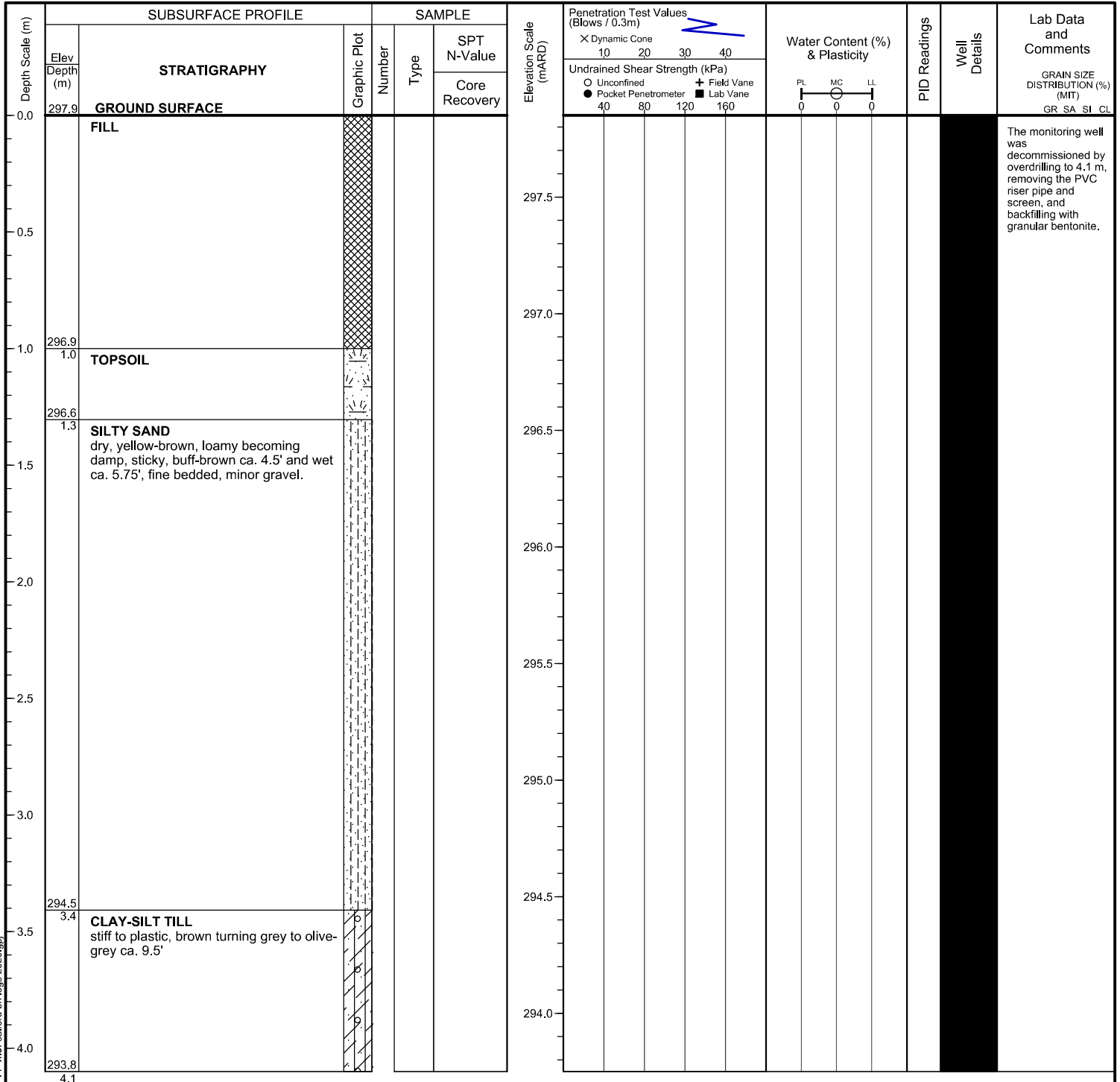
method | Hollow stem augers, 215 mm dia.

supervisor | MEQ

elevation | 297.85 mASL

coring | n/a

reviewer | AMS



The monitoring well was decommissioned by overdrilling to 4.1 m, removing the PVC riser pipe and screen, and backfilling with granular bentonite.

The stratigraphy is inferred from the original borehole log for 03-7S [Charlesworth and Associates, 2003]

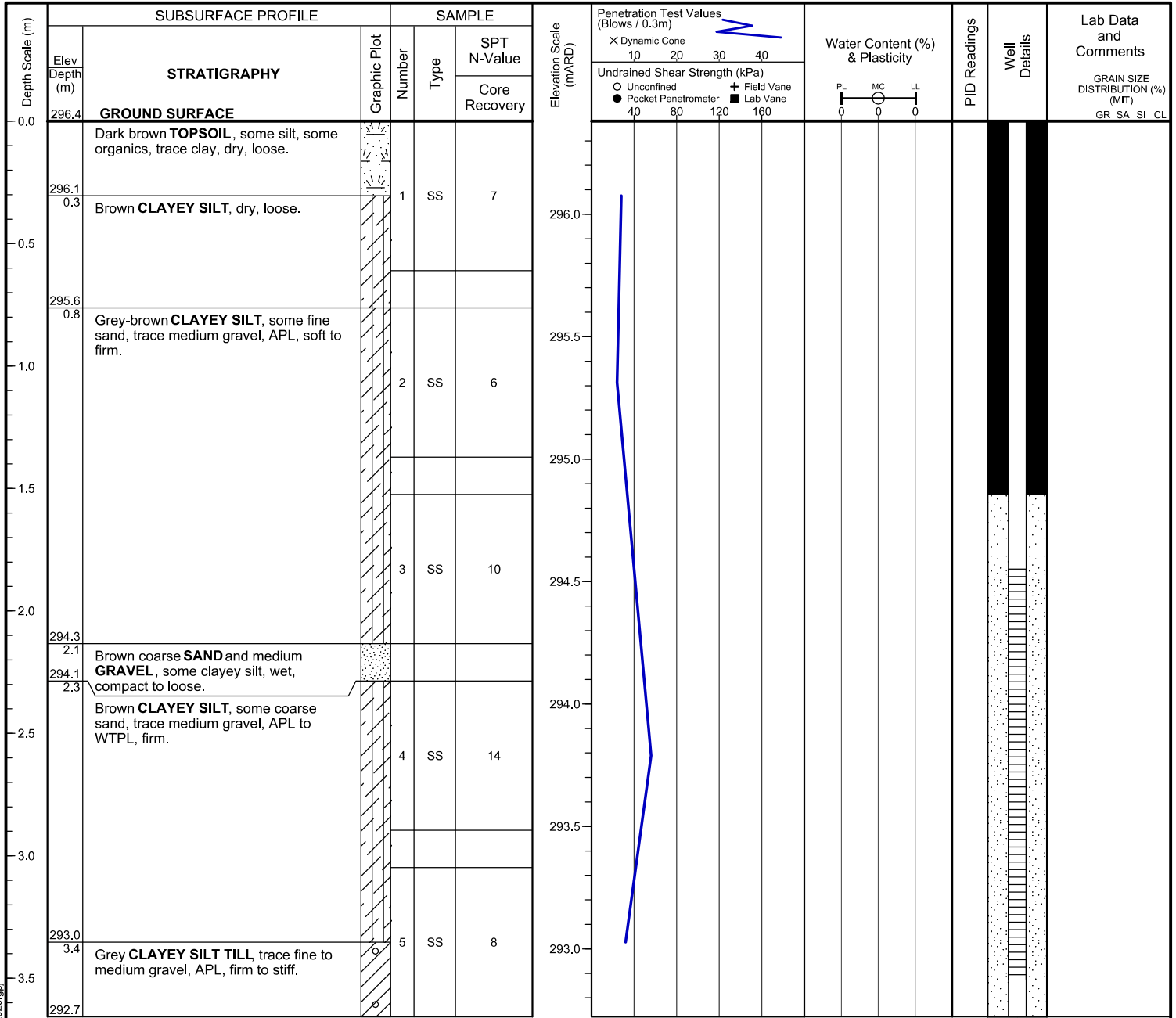
Library: genivar - library.gib - report - gen log v1 - file: salford bh logs 2020.gpj

LOG OF BOREHOLE 03-7SR

project | Oxford County Waste Management Facility
client | County of Oxford
location | Salford, Ontario
elevation | 296.38 mASL

rig type | D50, track-mounted
method | Hollow stem augers, 215 mm dia.
coring | n/a

project no. | 111-53036-04
date started | 2020-06-16
supervisor | MEQ
reviewer | AMS



Library: genivar - library.gib report: gen log v1 file: salford bh logs 2020.gpj

Project No: 03-225

Borehole #: 03-7D

Location: North of access road, north of borehole 03-4

Client: Oxford County

Water Level Elev: 294.1 mGSD

Drilling Supervised by: R. Harris

Borehole Log Prepared by: R. Harris

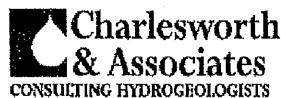
Project: Salford Landfill

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	296.6						
0		Top soil	296.5						Protective casing Cement
1									Stickup 0.89 m
2		Silty Sand Dry, yellow-brown, foamy becoming damp, sticky, buff-brown ca. 4.5' and wet ca. 5.75'; fine bedded; minor gravel		1	SS	5			Backfill
3									
4			294.4	2	SS	15			50 mm Dia PVC
5									
6				3	SS	9			Holeplug
7									
8		Clay-Silt Till Stiff to plastic, brown turning grey to olive-grey ca. 9.5'							
9				4	SS	12			
10									
11			291.3						Silica Sand
12									
13				5	SS	8			
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
32			287	7	SS	12			Holeplug

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Sep 12, 2003



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

Project No: 03-225

Borehole #: 03-8

Location: Centre of cell 1

Client: Oxford County

Water Level Elev: 301.4 mGSD

Drilling Supervised by: R. Harris

Borehole Log Prepared by: R. Harris

Project: Salford Landfill

SUBSURFACE PROFILE				SAMPLE				Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery	
0		Ground Surface	310.6					
1								Protective casing Cement Stickup 0.77 m
2								Holeplug
3								50 mm Dia PVC
4								
5								
6		Waste Very stiff drilling; marginally softer ca. 23'; refusal at 36'						
7								Silica Sand
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38			289					

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Sep 12 and 15, 2003



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

Project No: 01-212

Borehole #: 141 R

Project: Salford Landfill

Client: Oxford County

Location: East Side of Landfill

Drilling Supervised by: D. Ruttan

Borehole Log Prepared by: D. Ruttan

SUBSURFACE PROFILE

SAMPLE

Depth	Symbol	Description	Depth/Elev.	SAMPLE			Well Data	Remarks
				Number	Type	Blows/ft Recovery		
0		Ground Surface	297.42					
0		FILL -hard, dry, light brown gravelly, clayey silt fill, few light orange sand lenses, sand at 1.37 m		1	SS	42		Stickup 0.66 m Holeplug, Cement Protective Casing
1								
2								
3								
4				2	SS	29		Grout
5			295.9					
5		CLAYEY SILT TILL -dark brown to grey, relatively soft, organic clayey silt till with root channels, trace-minor sand, trace-minor fine-coarse gravel		3	SS	11		Schedule 40 50 mm Diameter PVC Pipe
6								
7								
8								
9								
10		-moist						
11		-orange, brown mottling		4	SS	9		
12			293.61					Holeplug
13		SANDY SILT -light brown to brown sandy silt, soft	293.46					#2 Sand

Drilled By: Lantech Drilling Services

Drill Method: Hollow Stem Augers

Drill Date: Aug 23, 2004



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 2

Project No: 01-212

Borehole #: 141 R

Project: Salford Landfill

Client: Oxford County

Location: East Side of Landfill

Drilling Supervised by: D. Ruttan

Borehole Log Prepared by: D. Ruttan

SUBSURFACE PROFILE

SAMPLE

Depth	Symbol	Description	Depth/Elev.	SAMPLE			Well Data	Remarks
				Number	Type	Blows/ft Recovery		
14		CLAYEY SILT TILL -grey to brown clayey silt till, minor sand, and fine to coarse gravel, some clasts large (up to 5 cm), angular greenish -wet		6	SS	11	Schedule 40 PVC 50 mm Diameter 10 Slot Screen	
15			292.85					
16	5	SANDY CLAYEY SILT TILL -grey, wet, sandy clayey silt till, relatively soft, sandy to minor sand, trace fine to coarse rounded gravel		7	SS	13		
17								
18		CLAYEY SILT TILL -firm to stiff light brown clayey silt till, sandy at 5.5 m, trace gravel	292.09					
19	6			8	SS	15		
20								
21				9	SS	14		
22	7							
23				10	SS	18		
24								
25		End of Borehole	289.93					
26	8							
27								

Drilled By: Lantech Drilling Services

Drill Method: Hollow Stem Augers

Drill Date: Aug 23, 2004



Hole Size: 17 cm

Datum: Geodetic

Sheet: 2 of 2

Borehole #: 023R

Project No: 01-212

Project: Salford Landfill

Client: Oxford County

Location:

Water Level Elev: 296.2 mGSD

Drilling Supervised by: D. Ruttan

Borehole Log Prepared by: D. Ruttan

SUBSURFACE PROFILE				SAMPLE					
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery	Well Data	Remarks
0		Ground Surface	305.87						
1		-see log of 022R for stratigraphy			SS				Stickup 0.81 m Bentonite, Cement Protective Casing
2									
3									
4									
5									50 mm Diameter Schedule 40 PVC Casing
6									
7									
8									
9									
10									
11									
12									Grout
13									
14									
15									

Drilled By: Lantech Drilling Services

Drill Method: Hollow Stem Augers

Drill Date: Aug 24-25, 2004



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 2

Project No: 01-212

Borehole #: 023R

Project: Salford Landfill

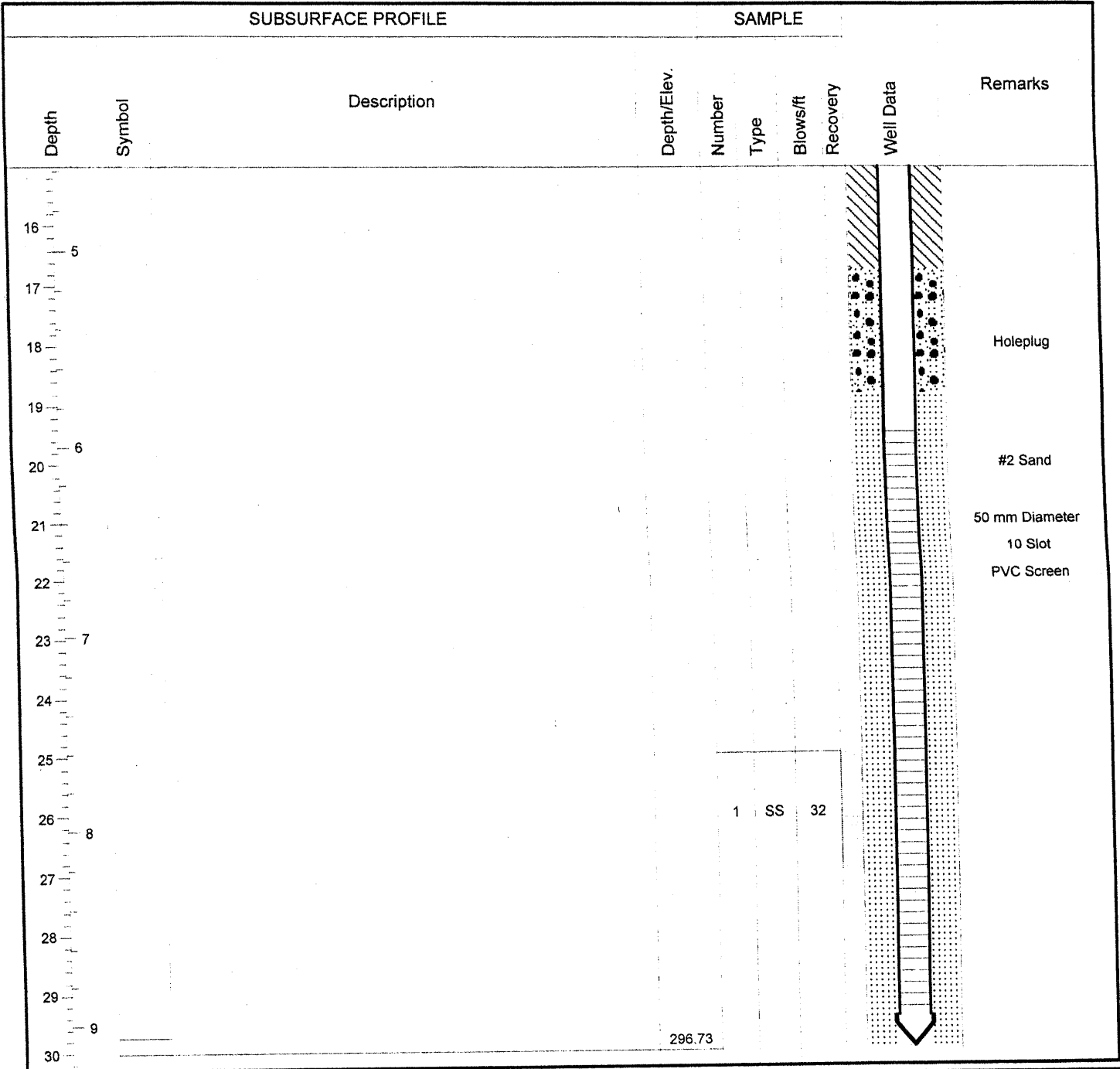
Client: Oxford County

Location:

Water Level Elev: 296.2 mGSD

Drilling Supervised by: D. Ruttan

Borehole Log Prepared by: D. Ruttan



Drilled By: Lantech Drilling Services



Hole Size: 17 cm

Drill Method: Hollow Stem Augers

Datum: Geodetic

Drill Date: Aug 24-25, 2004

Sheet: 2 of 2

Project No: 01-212

Borehole #: 022R

Project: Salford Landfill

Client: Oxford County

Location: Berm NW of Office

Water Level Elev: 292.6 mGSD

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE			SAMPLE				Remarks	
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft		Recovery
0		Ground Surface	305.34					
0		CLAYEY SILT FILL						
1		-firm to dense, orange brown clayey silt gravelly fill						Protective Casing
2								Bentonite
3								Cement
4								
5								
6				1	SS	20		
7								Stickup
8			302.9					0.69 m
9		CLAYEY SILT TILL						
10		-uniform, orange-brown to brown clayey silt till with trace to minor fine to coarse gravel, trace sand						
11		-fractured, whitish to grey alterations in and bordering fractures		2	SS	14		50 mm Dia Sch 40 PVC Pipe
12								
13				3	SS	30		
14								
15		-becoming slightly moist						Bentonite
16				4	SS	38		Grout
17								
18								
19				5	SS	32		
20		-no fractures noted below 6 m						
21		-less dense		6	SS	18		
22								
23								
24				7	SS	19		
25								
26								

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Aug 25-26, 2004



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 3

Project No: 01-212

Borehole #: 022R

Project: Salford Landfill

Client: Oxford County

Location: Berm NW of Office

Water Level Elev: 292.6 mGSD

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE			Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft Recovery		
8				8	SS	17		
27				9	SS	12		
28				10	SS	14		
29				11	SS	15		
30				12	SS	20		
31				13	SS	20		
32				14	SS	20		
33		-noticibly wet		15	SS	23		
34				16	SS	16		
35				17	SS	15		
36				18	SS	17		
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								

Drilled By: Lantech Drilling



Hole Size: 17 cm

Drill Method: Hollow Stem Augers

Datum: Geodetic

Drill Date: Aug 25-26, 2004

Sheet: 2 of 3

Project No: 01-212

Borehole #: 022R

Project: Salford Landfill

Client: Oxford County

Location: Berm NW of Office

Water Level Elev: 292.6 mGSD

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE

SAMPLE

Depth	Symbol	Description	Depth/Elev.	SAMPLE			Well Data	Remarks
				Number	Type	Blows/ft		
16								
53				19	SS	22		
54								
55								
56			17	20	SS	22		
57								
58								
59			18	21	SS	25		
60								
61				22	SS	31		
62			19					
63				23	SS	20		
64								
65			20	24	SS	14		Holeplug
66			285.22					
67		SILTY GRAVEL -soft, loose, silt, minor clay and gravel becoming more gravelly at 20.38 m, predominantly silty gravel, trace-minor clay at 20.53 m -gradational contact between upper till and silty gravel		25	SS	17		50 mm Dia Sch 40 PVC 10 Slot Screen
68			284.51					No 2 Silica Sand
69		SANDY SILT TILL -brick red silt till trace-minor clay from 20.73 m to 20.83 m, underlain by grey, gritty, relatively soft silty till, trace-minor clay, minor fine gravel to coarse sand, becoming firm to dense at 21.52 m		26	SS	11		
70								
71				27	SS	28		Holeplug
72			22					
73				28	SS	66		
74								
75				29	SS	56		Cave
76			23					
76			282.17					
77		End of Borehole						
78								

Drilled By: Lantech Drilling



Hole Size: 17 cm

Drill Method: Hollow Stem Augers

Datum: Geodetic

Drill Date: Aug 25-26, 2004

Sheet: 3 of 3

Borehole #: 381R

Project No: 01-212

Project: Salford Landfill

Client: Oxford County

Location:

Water Level Elev: 291.4 mGSD

Drilling Supervised by: D. Ruttan

Borehole Log Prepared by: D. Ruttan

SUBSURFACE PROFILE

SAMPLE

Depth	Symbol	Description	Depth/Elev.	SAMPLE			Well Data	Remarks
				Number	Type	Blows/ft		
0		Ground Surface	297.29					
0		TOPSOIL -firm, dry, brown clayey silt till, with organic material, trace to minor sand		1	SS	14		Stickup 0.74 m Bentonite, Cement Protective Casing
2		CLAYEY SILT TILL -brown-orange brown, firm, fractured with grey weathering in fractures, clayey silt till, trace to minor sand, trace gravel, becoming wet at 2.3 m	296.68					
3				2	SS	11		Holeplug
4		-weathering on fractures becoming orange-brown below 2.4 m, till colour becoming grey-brown to grey, fractures disappear at 3 m						50 mm Diameter Schedule 40 PVC Casing
5				3	SS	18		
6				4	SS	32		#2 Sand
7				5	SS	27		50 mm Diameter 10 Slot PVC Screen
8				6	SS	15		
9				7	SS	19		
10				8	SS	16		Cave
11			291.34					

Drilled By: Lantech Drilling Services



Hole Size: 17 cm

Drill Method: Hollow Stem Augers

Datum: Geodetic

Drill Date: Aug 24-25, 2004

Sheet: 1 of 1

Project No: 01-212

Borehole #: 101R

Project: Salford Landfill

Client: Oxford County

Location:

Drilling Supervised by: D. Ruttan

Borehole Log Prepared by: D. Ruttan

SUBSURFACE PROFILE

SAMPLE

Depth	Symbol	Description	Depth/Elev.	SAMPLE		Blows/ft	Recovery	Well Data	Remarks
				Number	Type				
0		Ground Surface	292.83						
0		TOPSOIL -firm, dry, red-brown clayey silt, with organic material, slight mottling, trace sand, trace fine to coarse green and yellow angular gravel		1	SS	12			Stickup 0.76 m Bentonite, Cement Protective Casing
2		CLAYEY SILT TILL -stiff to dense, dry red-brown clayey silt till, slight mottling, fractured, grey weathering along fractures, trace fine gravel, fractures disappear at 5.3 m, underlying material uniform until 8.74 m	292.22	2	SS	21			
6		-becoming moist		3	SS	31			50 mm Diameter Schedule 40 PVC Casing
8		-wet		4	SS	22			
11				5	SS	21			
13				6	SS	21			
16				7	SS	10			
18		-fractures disappear -becoming grey		8	SS	11			

Drilled By: Lantech Drilling Services Inc.



Hole Size: 17 cm

Drill Method: Hollow Stem Augers

Datum: Geodetic

Drill Date: Aug 24-25, 2004

Sheet: 1 of 3

Project No: 01-212

Borehole #: 101R

Project: Salford Landfill

Client: Oxford County

Location:

Drilling Supervised by: D. Ruttan

Borehole Log Prepared by: D. Ruttan

SUBSURFACE PROFILE			SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft		
21				9	SS	12		
22								
23	7			10	SS	14		
24								
25								
26	8			11	SS	15		
27								
28			284.08	12	SS	11		
29		GRAVELLY SAND -gravelly sand with minor clay and silt, wet, loose	283.76					
30	9	CLAYEY SILT TILL -clayey silt till similar to overlying material but with greater sand and fine gravel content - estimated at 10-15%, sandy lens 9.56-9.62 m		13	SS	13		
31								
32			282.93					
33	10	CLAYEY SILT TILL -relatively uniform clayey silt till, trace sand, trace-minor fine to coarse gravel and some large 2cm rounded gravel clasts		14	SS	14		
34								
35								
36	11			15	SS	22		
37								
38								
39				16	SS	17		
40	12							

Drilled By: Lantech Drilling Services Inc.



Hole Size: 17 cm

Drill Method: Hollow Stem Augers

Datum: Geodetic

Drill Date: Aug 24-25, 2004

Sheet: 2 of 3

Borehole #: 101R

Project: Salford Landfill

Project No: 01-212

Client: Oxford County

Location:

Drilling Supervised by: D. Ruttan

Borehole Log Prepared by: D. Ruttan

SUBSURFACE PROFILE

SAMPLE

Depth	Symbol	Description	Depth/Elev.	SAMPLE			Well Data	Remarks
				Number	Type	Blows/ft Recovery		
41		SILTY FINE SAND -wet, loose, silty fine sand	280.39	17	SS	14		
42		CLAYEY SILT TILL -similar to overlying clayey silt till	280.23					
43	13		279.76					
44		FINE SANDY SILT -light brown very soft fine sandy silt or silty fine sand, trace clay, variable density, soft at 13.1 m, dense at 13.7 m, soft to firm at 14.5 m, very soft at 15.2 m.		18	SS	1		
45								
46	14			19	SS	27		
47								
48				20	SS	8		
49	15							Holeplug
50								
51				21	SS	1		#2 Sand
52	16		276.83					
53		SAND AND GRAVEL -fine to coarse sand, fine to coarse gravel, gravel seam with medium to coarse gravel up to 3 cm diameter, rounded, multicoloured from 16.35-16.46 m.		22	SS	29		50 mm Diameter 10 Slot PVC Screen
54								
55			276.07					
56	17	SAND TILL -very dense, light brown to grey medium to coarse sand till, minor fine to coarse gravel, trace clay and silt		23	SS	45		
57								Holeplug
58			275.15					
59	18	End of Borehole		24	SS	97		
60								

Drilled By: Lantech Drilling Services Inc.

Drill Method: Hollow Stem Augers

Drill Date: Aug 24-25, 2004



Hole Size: 17 cm

Datum: Geodetic

Sheet: 3 of 3

Borehole #: 231R

Project No: 01-232

Project: Salford Landfill

Client: Oxford County

Location: Between Hydro Easements

Drilling Supervised by: David Ruttan

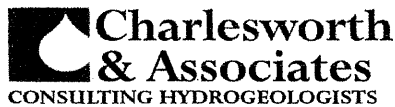
Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	295.89						
0 to 1		SAND AND SILT -silty fine sand and sandy silt, fractured, brown alteration on fractures		1	SS	14			Protective Casing Bentonite Cement
1 to 3		CLAYEY SILT TILL -dark brown-light brown-grey clayey silt till, trace-minor fine to coarse gravel, fractured, grey fracture fillings -till uniform and plastic below 4.5 m	294.98						Stickup 0.94 m Elevation 296.83 m
3 to 4				2	SS	12			50 mm Dia Sch 40 PVC Pipe
4 to 13		fractured above 4 m		3	SS	34			
13 to 16				4	SS	15			Grout
16 to 21				5	SS	12			
21 to 24									

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Aug 25, 26, 2005



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 3

Borehole #: 231R

Project No: 01-232

Project: Salford Landfill

Client: Oxford County

Location: Between Hydro Easements

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks			
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery					
25	[Symbol: Horizontal dashes with 'x' marks]	boulders at 9.15-9.45 m	283.7	6	SS	34		[Well Data: Vertical hatching]	[Remarks: Grout]			
26				8								
27												
28												
29												
30				9								
31							7			SS	>100	
32												
33				10								
34												
35												
36	11			8	SS	27						
37												
38												
39												
40	12	SANDY SILT TILL										
41		-sandy silt till, minor gravel to gravelly, minor clay		9	SS	13						
42												
43	13											
44												
45												
46	14			10	SS	31						
47												
48												

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Aug 25, 26, 2005



Hole Size: 17 cm

Datum: Geodetic

Sheet: 2 of 3

Project No: 01-232

Borehole #: 231R

Project: Salford Landfill

Client: Oxford County

Location: Between Hydro Easements

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks			
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery					
49		0.13 m sand seam	276.18						Grout Holeplug 50 mm Dia Sch 40 PVC 10 Slot Screen No 3 Silica Sand			
50				15		11	SS			30		
51				16								
52												
53												
54												
55												
56				17		12	SS			61		
57												
58												
59				18								
60												
61							13			SS	85	
62				19								
63												
64												
65		End of Borehole										
66	20			14	SS	15						
67												
68												
69	21											
70												
71												
72												

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Aug 25, 26, 2005



Hole Size: 17 cm

Datum: Geodetic

Sheet: 3 of 3

Project No: 01-232

Borehole #: 232R

Project: Salford Landfill

Client: Oxford County

Location: Between Hydro Easements

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	295.9						
0 to 22		CLAYEY SILT TILL -see log of 231R for detailed stratigraphy							Protective Casing Bentonite Cement Stickup 0.83 m Elevation 296.73 m 50 mm Dia Sch 40 PVC Pipe Bentonite Grout Holeplug
22 to 27		-grey, firm, clayey silt till minor fine to coarse gravel to gravelly gravel angular to rounded		1	SS	17			50 mm Dia Sch 40 PVC 10 Slot Screen
27 to 30			286.76						No 3 Silica Sand
30 to 32		End of Borehole							

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Aug 23, 2005



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

Project No: 01-232

Borehole #: 233R

Project: Salford Landfill

Client: Oxford County

Location: Between Hydro Easements

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	296						
0		CLAYEY SILT TILL -see log of 231R for detailed stratigraphy							Protective Casing Bentonite Cement Stickup 0.77 m Elevation 296.77 m
1									
2									
3									
4									
5									
6									50 mm Dia Sch 40 PVC Pipe
7									
8									
9									
10		brown clayey silt till, trace fine-coarse gravel, wet		1	SS	32			No 3 Silica Sand
11									
12									
13									50 mm Dia Sch 40 PVC 10 Slot Screen
14									
15									
16			291.02						
17		End of Borehole							
18									

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Aug 23, 2005



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

Project No: 01-232

Borehole #: 261R

Project: Salford Landfill

Client: Oxford County

Location: South Boundary

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	292.8						
1		CLAYEY SILT TILL -light brown clayey silt till, trace to minor gravel, fractured, brown fracture fillings		1	SS	13			Protective Casing Bentonite Cement
2									Stickup 0.84 m Elevation 293.64 m
3									
4									
5									
6				2	SS	35			50 mm Dia Sch 40 PVC Pipe
7									
8									
9									
10		-brown changing to grey							
11				3	SS	39			
12									
13									
14									
15									
16				4	SS	14			
17									
18									Grout
19									
20									
21									
22			286.09	5	SS	19			
23		SANDY SILT TILL -minor gravel, trace to minor clay							
24									
25			285.18						
26		CLAYEY SILT TILL -grey clayey silt till, minor fine to coarse gravel, gravel content decreasing	284.7	6	SS	28			
27		SILTY FINE SAND AND GRAVEL -grey silty fine to coarse sand, fine to coarse gravel, minor clay at top of seam							
28									
29									
30			283.66						Grout

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Aug 23, 2005



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 2

Borehole #: 261R

Project No: 01-232

Project: Salford Landfill

Client: Oxford County

Location: South Boundary

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks	
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery			
31		SAND AND GRAVEL -sand and gravel lens, silty with some clay	283.35	7	SS	22			Holeplug	
32		CLAYEY SILT TILL								
33		SANDY SILT TILL -grey, dense, sandy silt till, minor clay, minor fine to coarse gravel								
34										
35		-coarse sand 10.7-11.0 m								
36		11	-fine sand at 11.4 m		8	SS	>100			
37			-rough drilling, boulders							
38										
39		12	-becoming gravelly, sandy silt till		9	SS	>100			
40										
41										
42	13	-rough drilling, boulders								
43										
44										
45	14	-minor fine to coarse gravel		10	SS	68				
46										
47										
48	15	-sandy, gravelly, fine to coarse sand								
49										
50		fine to coarse gravel		11	SS	63				
51										
52	16	End of Borehole	276.95							
53										
54										
55										
56	17									
57										
58										
59	18									
60										

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Aug 23, 2005



Hole Size: 17 cm

Datum: Geodetic

Sheet: 2 of 2

Project No: 01-232

Borehole #: 262R

Project: Salford Landfill

Client: Oxford County

Location: South Boundary

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE					SAMPLE				Well Data	Remarks	
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery				
0		Ground Surface	0								
1		CLAYEY SILT TILL -see log of 261R for detailed stratigraphy -uniform, stiff to dense, moist grey clayey silt till, trace to minor fine to coarse angular to rounded gravel to 2-3 cm diameter. no visible laminations			SS					Protective Casing Bentonite Cement	
2											Stickup 0.89 m Elevation 293.54 m
3											50 mm Dia Sch 40 PVC Pipe
4											Bentonite Grout
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											Holeplug
24											
25											
26					1	SS	23			50 mm Dia Sch 40 PVC 10 Slot Screen	
27										No 3 Silica Sand	
28											
29											
30											
31											
32		End of Borehole									
33											
34											
35											

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Aug 23, 2005



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

Project No: 01-232

Borehole #: 263R

Project: Salford Landfill

Client: Oxford County

Location: South Boundary

Drilling Supervised by: David Ruttan

Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	292.58						
0 to 1	[Symbol]	CLAYEY SILT TILL -see log of 261R for detailed stratigraphy							Protective Casing Bentonite Cement
1 to 2	[Symbol]								Stickup 0.74 m Elevation 293.32 m
2 to 3	[Symbol]								Holeplug
3 to 4	[Symbol]								50 mm Dia Sch 40 PVC Pipe
4 to 5	[Symbol]								
5 to 6	[Symbol]								
6 to 7	[Symbol]								
7 to 8	[Symbol]								
8 to 9	[Symbol]								
9 to 10	[Symbol]								
10 to 11	[Symbol]								No 3 Silica Sand
11 to 12	[Symbol]								
12 to 13	[Symbol]								
13 to 14	[Symbol]								
14 to 15	[Symbol]	-stiff to dense, slightly moist							50 mm Dia Sch 40 PVC 10 Slot Screen
15 to 16	[Symbol]	grey clayey silt till, trace		1	SS	21			
16 to 17	[Symbol]	fine gravel							
17 to 18	[Symbol]								
18 to 19	[Symbol]								
19 to 20	[Symbol]								
20 to 21	[Symbol]	End of Borehole	286.48						

Drilled By: Lantech Drilling
 Drill Method: Hollow Stem Augers
 Drill Date: Aug 23, 2005



Hole Size: 17 cm
 Datum: Geodetic
 Sheet: 1 of 1

Project No: 01-212

Borehole #: 05-01

Project: Salford Landfill

Client: Oxford County

Location: N of Scale House

Drilling Supervised by: David Ruttan

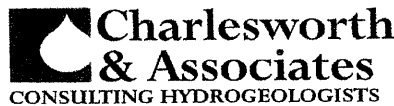
Borehole Log Prepared by: David Ruttan

SUBSURFACE PROFILE				SAMPLE				Well Data	Remarks
Depth	Symbol	Description	Depth/Elev.	Number	Type	Blows/ft	Recovery		
0		Ground Surface	299.26						
0		CLAYEY SILT TILL -light brown to brown, clayey silt till, trace to minor fine to coarse gravel, fractured to about 4.6 m, orange and grey fracture fillings, moist at 2.3 m, becoming wet at 4.6 m			SS				Protective Casing Bentonite Cement
1				1	SS	27			
2				2	SS	31			Stickup 0.90 m Elevation 300.16 m
3		0.03 m sandy layer, soft drilling at 2.75 m		3	SS	38			
4		soft drilling thin sand layer		4	SS	28			50 mm Dia Sch 40 PVC Pipe Bentonite Grout
5		some fine sand		5	SS	33			
6		uniform clayey silt till with minor fine to coarse gravel		6	SS	35			Holeplug
7		slightly softer than above		7	SS	16			
8				8	SS	16			
9				9	SS	15			
10				10	SS	14			50 mm Dia Sch 40 PVC 10 Slot Screen
11				11	SS	14			No 3 Silica Sand
12			289.51	12	SS	12			
13		End of Borehole							

Drilled By: Lantech Drilling

Drill Method: Hollow Stem Augers

Drill Date: Aug 26, 2005



Hole Size: 17 cm

Datum: Geodetic

Sheet: 1 of 1

LOG OF BOREHOLE 592



project | Salford Landfill Site
client | Oxford County
location | Salford, ON
position |

rig type | CME 75, track-mounted
method | Hollow stem augers, 215 mm dia.
coring | n/a

project no. | 111-53036-00 132-00
date started | 2014/09/12
supervisor | MEQ
reviewer | AMS

Depth Scale (m)	SUBSURFACE PROFILE		SAMPLE			Elevation Scale (mARD)	Penetration Test Values (Blows / 0.3m) × Dynamic Cone 10 20 30 40 Un drained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160	Water Content (%) & Plasticity PL MC LL 10 20 30	PID Readings	Well Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	STRATIGRAPHY	Graphic Plot	Number	Type						
0		GROUND SURFACE									
0		Orangey to dark brown CLAYEY SILT TILL , trace to some organics, trace gravel, DTPL, stiff.		1	SS	4					
1				2	SS	7					
1.5		Brown CLAYEY SILT TILL , trace medium gravel, trace fine sand, DTPL, stiff to very stiff, occasional grey fractures.		3	SS	11					
2				4	SS	27					
3				5	SS						
3.8		Brown CLAYEY SILT TILL , trace gravel, DTPL, very stiff. 30 mm thick layer of brown medium to coarse silty sand, moist, compact.		6	SS	31					
4.6		END OF BOREHOLE Stratigraphy inferred from adjacent borehole 594.									

SS5 - No sample recovered

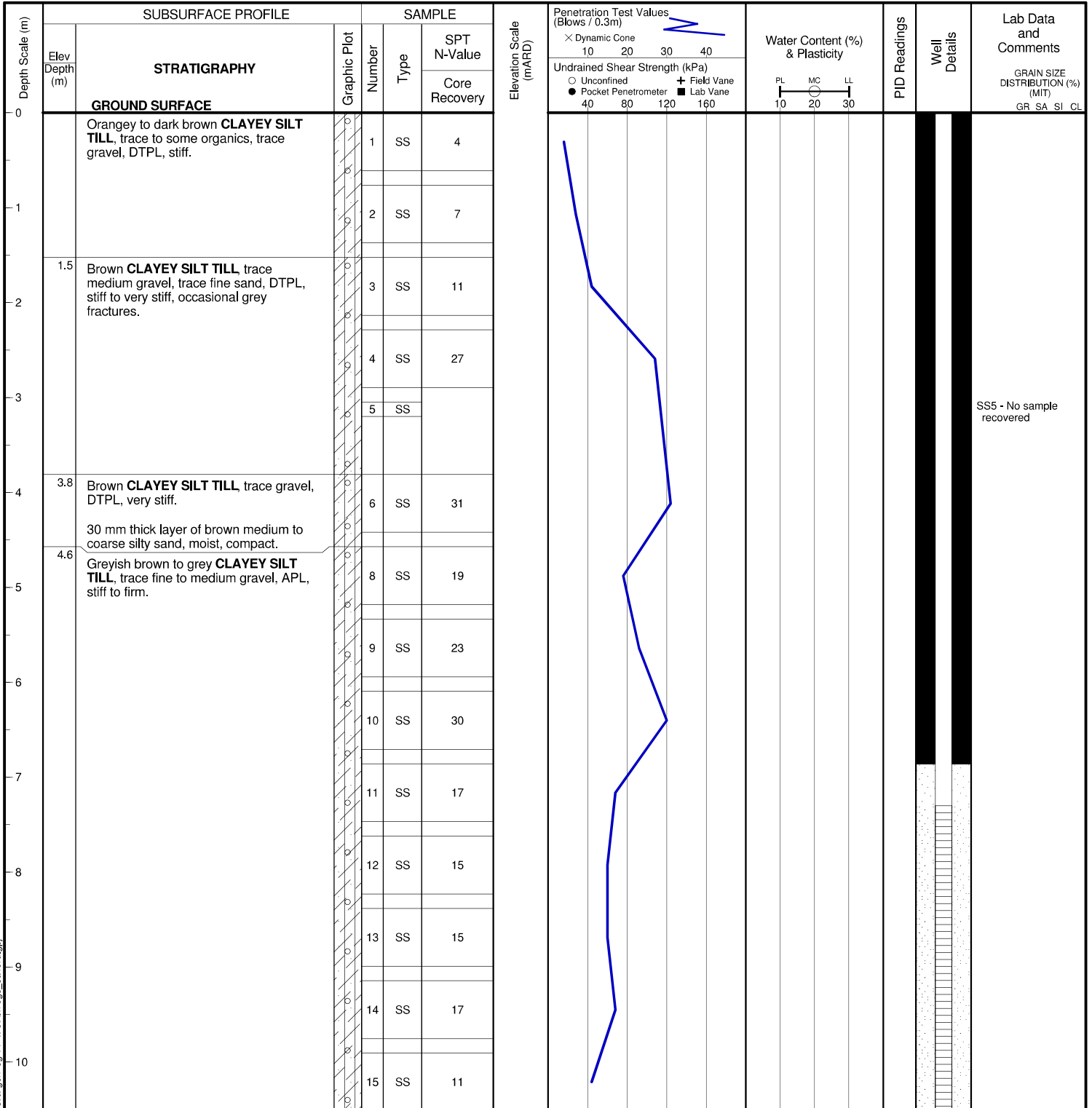
LOG OF BOREHOLE 593



project | Salford Landfill Site
client | Oxford County
location | Salford, ON
position |

rig type | CME 75, track-mounted
method | Hollow stem augers, 215 mm dia.
coring | n/a

project no. | 111-53036-00 132-00
date started | 2014/09/12
supervisor | MEQ
reviewer | AMS



SS5 - No sample recovered

END OF BOREHOLE
 Stratigraphy inferred from adjacent borehole 594.

Library: genivar - library.glb report: gen_log_v1 file: bhlogs_salford.gpj

LOG OF BOREHOLE 594



project | Salford Landfill Site
client | Oxford County
location | Salford, ON
position |

rig type | CME 75, track-mounted
method | Hollow stem augers, 215 mm dia.
coring | n/a

project no. | 111-53036-00 132-00
date started | 2014/09/11
supervisor | MEQ
reviewer | AMS

Depth Scale (m)	SUBSURFACE PROFILE			SAMPLE			Elevation Scale (mARD)	Penetration Test Values (Blows / 0.3m) × Dynamic Cone 10 20 30 40 Un drained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160	Water Content (%) & Plasticity PL MC LL 10 20 30	PID Readings	Well Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	STRATIGRAPHY	Graphic Plot	Number	Type	SPT N-Value Core Recovery						
0		GROUND SURFACE										
0		Orangey to dark brown CLAYEY SILT TILL , trace to some organics, trace gravel, DTPL, stiff.		1	SS	4						
1				2	SS	7						
1.5		Brown CLAYEY SILT TILL , trace medium gravel, trace fine sand, DTPL, stiff to very stiff, occasional grey fractures.		3	SS	11						
2				4	SS	27						
3				5	SS							
3.8		Brown CLAYEY SILT TILL , trace gravel, DTPL, very stiff.		6	SS	31						
4.6		30 mm thick layer of brown medium to coarse silty sand, moist, compact.		8	SS	19						
5		Greyish brown to grey CLAYEY SILT TILL , trace fine to medium gravel, APL, stiff to firm.		9	SS	23						
6				10	SS	30						
7				11	SS	17						
8				12	SS	15						
9				13	SS	15						
10				14	SS	17						
11				15	SS	11						
12				16	SS	19						
12.2		30 mm thick sand and gravel seam at 12m depth.		17	SS	16						
13		Grey CLAYEY SILT TILL , trace medium to coarse gravel, trace cobble, APL, firm to stiff.		18	SS	10						
13.7		Grey SILTY SAND TO SANDY SILT , trace gravel, trace cobble, dilatent, saturated, loose.		19	SS	22						
14.5		Grey SILTY SAND , some medium to coarse gravel, wet, dense.		20	SS	11						
15				21	SS	48						
15.2		END OF BOREHOLE										

SS5 - No sample recovered

Library: genivar - library.glb report: gen_log v1 file: bhlogs_salford.gpj

LOG OF BOREHOLE 595



project | Salford Landfill Site
client | Oxford County
location | Salford, ON
position |

rig type | CME 75, track-mounted
method | Hollow stem augers, 215 mm dia.
coring | n/a

project no. | 111-53036-00 132-00
date started | 2014/09/15
supervisor | MEQ
reviewer | AMS

Depth Scale (m)	SUBSURFACE PROFILE			SAMPLE			Elevation Scale (mARD)	Penetration Test Values (Blows / 0.3m) × Dynamic Cone 10 20 30 40 Un drained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160	Water Content (%) & Plasticity PL MC LL 10 20 30	PID Readings	Well Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	STRATIGRAPHY	Graphic Plot	Number	Type	SPT N-Value Core Recovery						
0		GROUND SURFACE										
0 - 1.5		Brown to reddish brown CLAYEY SILT TILL , trace organics, trace sand, trace gravel, DTPL, firm.		1	SS	5						
1.5 - 4.6		Brown to reddish brown CLAYEY SILT TILL , trace gravel, occasional grey fractures, DTPL, very stiff.		2	SS	16						
4.6 - 7.6		Brownish grey CLAYEY SILT TILL , trace fine gravel, APL, firm to soft. 300 mm thick medium to coarse sand seam at 5.0 m depth.		3	SS	16						
7.6 - 13.7		Grey CLAYEY SILT TILL , some subangular fine to medium gravel, APL to WTPL, stiff. 150 mm thick medium to coarse sand seam at 9.9 m depth.		4	SS	27						
				5	SS	24						
				6	SS	10						
				7	SS	12						
				8	SS	7						
				9	SS	7						
				10	SS	14						
				11	SS	8						
				12	SS	8						
				13	SS	9						
				14	SS	13						
				15	SS	9						
				16	SS	14						
				17	SS	14						
				18	SS	24						

END OF BOREHOLE

Geological Log					Borehole No. 999		
					Continuation Sheet		
					2 of 2		
					Project		
					SALFORD LANDFILL		
					Project No.		
Scale (ft) (m)	Elev. (mGSD) Depth (m)	Description	Strat. Plot	Piezometer	Sample Number	Sample Type	Blows/0.3m
18	280.49				12	SS	43
19	18.4	brown firm fine-coarse sand fine gravel becoming fine-medium silty sand at 20 m					
20	278.89				13	SS	>100
21	20.0 278.19 20.7	brown sandy silt till, minor - 15% fine-coarse gravel, trace clay very dense					
22		End of Hole					
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
Borehole Record					Charlesworth		

LOG OF BOREHOLE 998 (Decommissioning)



project | Oxford County Waste Management Facility

project no. | 111-53036-04

client | County of Oxford

rig type | D50, track-mounted

date started | 2020-06-15

location | Salford, Ontario

method | Hollow stem augers, 215 mm dia.

supervisor | MEQ

elevation | 298.60 mASL

coring | n/a

reviewer | AMS

Depth Scale (m)	SUBSURFACE PROFILE			SAMPLE		Elevation Scale (mARD)	Penetration Test Values (Blows / 0.3m)				Water Content (%) & Plasticity			PID Readings	Well Details	Lab Data and Comments
	Elev Depth (m)	STRATIGRAPHY	Graphic Plot	Number	Type		SPT N-Value	Undrained Shear Strength (kPa)				PL	MC			
12	(continued)	Soft brown CLAYEY SILT or SILTY CLAY TILL , trace fine-coarse gravel, trace-minor sand. (continued)														
13																
14																
15																
16																
17																
18	280.5 18.1	Brown firm fine-coarse SAND , fine gravel becoming fine-medium silty sand at 19.7 m.														
19																
20	278.9 19.7	Brown SANDY SILT TILL , minor - 15% fine-coarse gravel, trace clay, very dense.														
	278.2 20.4															

END OF BOREHOLE

The stratigraphy is inferred from the original borehole log for 998 [Charlesworth and Associates, 1987]

LOG OF BOREHOLE 998R



project | Oxford County Waste Management Facility

project no. | 111-53036-04

client | County of Oxford

rig type | D50, track-mounted

date started | 2020-06-15

location | Salford, Ontario

method | Hollow stem augers, 215 mm dia.

supervisor | MEQ

elevation | 298.70 mASL

coring | n/a

reviewer | AMS

Depth Scale (m)	SUBSURFACE PROFILE			SAMPLE			Elevation Scale (mARD)	Penetration Test Values (Blows / 0.3m) X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) O Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160	Water Content (%) & Plasticity PL MC LL 0 0 0	PID Readings	Well Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	STRATIGRAPHY	Graphic Plot	Number	Type	SPT N-Value						
0	298.7	GROUND SURFACE										
1	297.9 0.8	Dark brown CLAYEY SILT TILL , trace organics, dry, compact.	○	1	SS	17						
			○	2	SS	10						
			○	3	SS	22						
			○	4	SS	23						
3	295.5 3.2	Brown CLAYEY SILT TILL , some fine to medium gravel, trace of interbedded fine sand, DTPL to APL, firm to stiff.	○	5	SS	9						
			○	6	SS	11						
			○	7	SS	12						
			○	8	SS	10						
			○	9	SS	10						
			○	10	SS	13						
			○	11	SS	13						
			○	12	SS	12						
			○	13	SS	11						
			○	14	SS	10						
			○	15	SS	12						
			○	16	SS	16						

Library: genivar - library.gib - report - gen log v1 - file: salford bh logs 2020.gpj

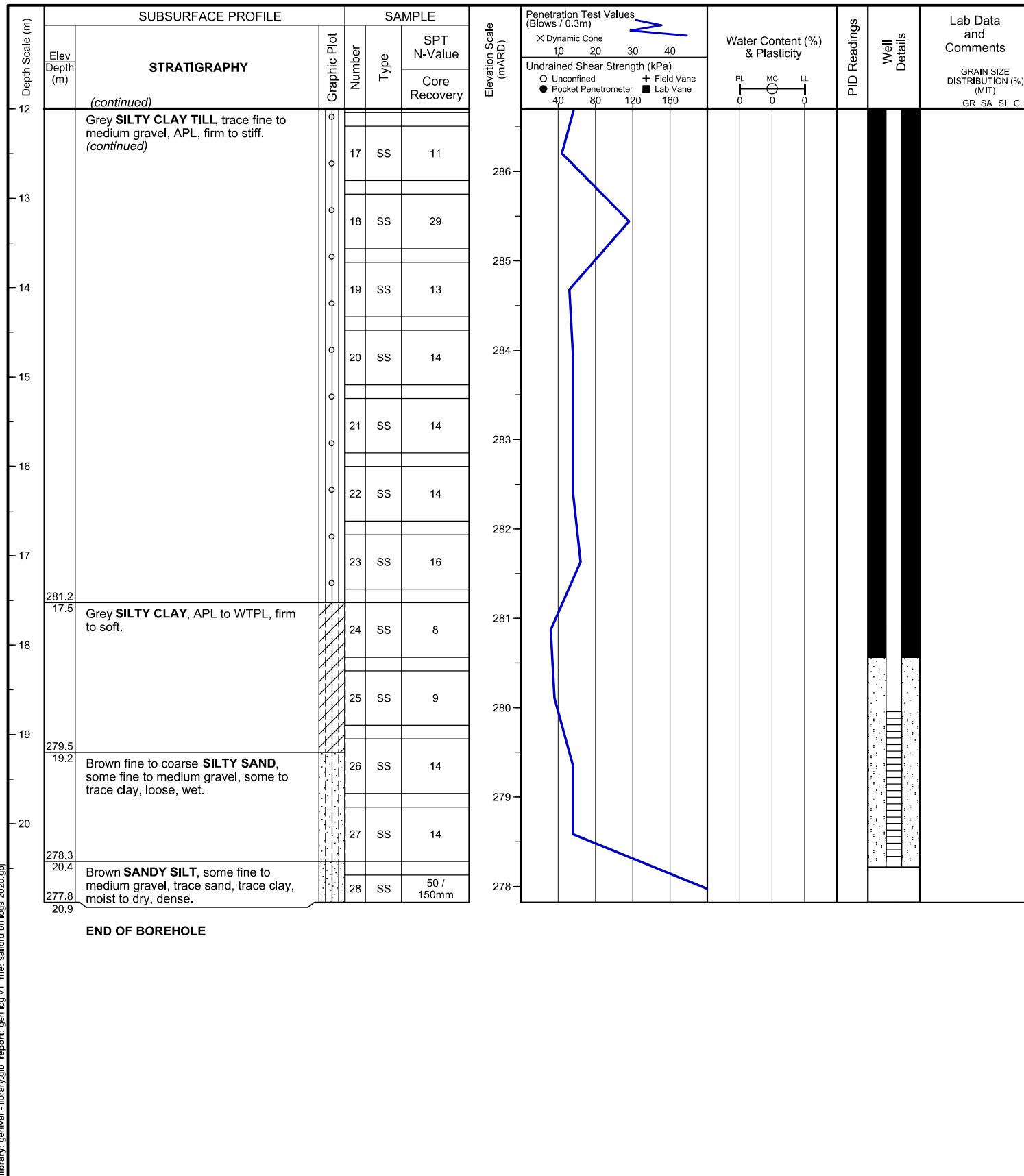
(continued next page)

LOG OF BOREHOLE 998R

project | Oxford County Waste Management Facility
client | County of Oxford
location | Salford, Ontario
elevation | 298.70 mASL

rig type | D50, track-mounted
method | Hollow stem augers, 215 mm dia.
coring | n/a

project no. | 111-53036-04
date started | 2020-06-15
supervisor | MEQ
reviewer | AMS



Library: genivar - library.gib report: gen log v1 file: salford bh logs 2020.gpj

APPENDIX

C

WATER LEVEL DATA



**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	Apr-89	Oct-89	May-90	Oct-90	Apr-91	Oct-91	Apr-92	Oct-92	Apr-93	Oct-93	May-94	Oct-94	May-95	Oct-95	Jun-96	Oct-96
051	LT	288.13		280.83	281.08	281.12	281.77	280.98	281.38		281.89	281.28	281.28	281.37	281.64	281.06	281.51	281.47
052	LT	288.15		282.78	282.61	282.63	282.76	282.57	282.53		282.72	282.69	282.59	282.67	282.75	282.65	282.75	282.82
053	FT	287.96		282.30	286.42	bent					286.66	284.82	286.87	285.30	286.39	283.57	286.19	286.57
061	LT	292.40		286.00	287.67	287.66	288.15	286.00	288.21		288.59	287.51	288.42	287.23	288.03	286.47	288.02	288.12
063	UT	292.34		285.87	287.81	287.87	288.25	286.05	288.41		289.03	287.69	288.82	287.33	288.32	286.47	288.20	288.35
071	LT	300.86		289.36	290.78	290.35	291.38	289.39	291.06		291.31	289.96	290.92	290.26	291.01	291.01	289.60	290.98
102	LT	293.20		288.52	290.16	290.11	290.63	288.48	290.41		290.64	289.49	290.82	289.57	290.67	288.93	290.54	290.76
121	UT	295.09		285.49	287.94	287.89	288.94	285.42	290.10		289.84	287.45	290.97	287.34	289.66	286.51	289.27	290.15
131	UT	305.34		301.00	302.14	302.16	302.41	301.27	302.35		302.54	302.03	302.32	302.03	302.30	301.77	302.17	302.33
161	LT	297.39		289.11	290.65	290.36	290.81	289.37	290.89		291.09	289.81	290.78	290.05	290.91	289.38	290.80	290.80
162	ITS	297.36		291.82	293.47	293.65	293.84	292.70	293.73		293.92	293.37	293.84	293.37	293.88	293.07	293.68	293.61
191	LT	303.54	290.94	289.41	290.86	290.39	291.38	289.44	291.14	290.75	291.26	289.83	290.89	290.23	291.04	289.54	290.99	291.04
192	UT	303.34		292.29	293.41	293.02	293.65	292.22	293.50	293.28	293.48	292.58	293.28	292.79	293.49	292.26	293.38	293.62
193	UT	303.52		289.97	300.22	300.33	298.34	299.89	300.66	298.94	300.10	301.16	301.22	298.28	301.06	298.16	299.95	300.20
202	FT	295.63		293.34	294.19	294.32	294.26	293.19	294.29		294.40	293.71	294.27	293.93	294.28		294.37	294.44
242	UT	291.71		287.79	290.23	290.94	290.70	288.19	290.91		290.89	290.90	291.05	289.74	290.83	289.18	290.41	290.67
281	FT	297.96		294.04	294.73	294.91	294.83	294.26	294.73		294.93	294.11	294.97	294.36	294.99	293.26	294.69	291.63
391	FT	291.54		287.82	289.54	289.89	289.58	287.68	289.74		289.69	288.58	289.76	288.62	289.47	288.16	289.25	289.31
401	UT	289.96																
421	UT	294.72		287.27	292.33	293.74	293.29	287.45	293.73		293.97	293.50	293.78	291.35	292.96	290.26	292.79	292.96
431	UT	296.02		291.33	294.64	295.16	294.93	291.65	295.20		295.39	295.07	295.32	295.74	294.87	293.35	294.54	294.73
541	FT	295.57	293.91	292.92	294.10	294.21	294.22	293.24	294.38	293.82	294.22	293.71	294.47	293.18	294.39	292.89	294.10	293.86
561	ITS	290.02		285.54	287.31	287.14	287.71	285.58	287.64		287.84	286.60	287.53	286.78	287.53	286.11	287.49	287.62
562	FT	290.04		285.19	287.78	288.10	287.76	284.85	288.04		288.01	286.79	288.00	287.06	287.74	286.37	287.75	287.90
571	ITS	296.73		290.23	290.15	290.17	290.32	290.25	290.22		290.50	290.47	290.41	290.43	290.44	290.36	291.34	291.24
581	FT	299.74		296.71	298.35	298.06	298.64	296.69	298.79		298.93	297.12	298.78	297.58	298.28	297.13	298.22	298.42
591	ITS	300.75																

Notes: · All elevations in metres above sea level · FT - Fractured Till or Glacio-lacustrine Deposits · LT - Lower Till
 · Blank indicates data not available · UT - Upper Till · B - Bedrock
 · Measuring point elevations as of October 1989 · ITS - Inter-till Sands · R - Refuse

**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	Apr-89	Oct-89	May-90	Oct-90	Apr-91	Oct-91	Apr-92	Oct-92	Apr-93	Oct-93	May-94	Oct-94	May-95	Oct-95	Jun-96	Oct-96
98-2	FT	297.34																
98-4	FT	299.43																
98-7	FT	296.82																
98-9	FT	296.25																
98-11	FT	297.57																
98-12	FT	297.32																
98-13	FT	296.04																
98-14	FT	303.13																
00-01	UT	299.74																
00-02	UT	299.67																
00-03	ITS	296.18																
00-04	UT	300.67																
2P	FT	297.84																
7P	FT	296.89																
10P	FT	296.49																
2obs	FT	297.78																
7obs	FT	296.76																
999	B	300.93	293.34	291.83	292.52	293.50	294.35	292.22	294.20	293.72	294.19	292.58	293.87	293.00	294.04	292.23	293.79	294.05
012R	ITS	299.29																
013R	UT	299.41																
551R	ITS	297.53																
552R	FT	297.32																
03-3	UT	297.88																
03-4	UT	298.21																
03-5	UT	298.14																
03-6	UT	298.37																
03-7s	FT	298.78																
03-7d	UT	298.32																
03-8	R	312.16																

Notes: · All elevations in metres above sea level · FT - Fractured Till or Glacio-lacustrine Deposits · LT - Lower Till
 · Blank indicates data not available · UT - Upper Till · B - Bedrock
 · Measuring point elevations as of October 1989 · ITS - Inter-till Sands · R - Refuse

**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	Apr-89	Oct-89	May-90	Oct-90	Apr-91	Oct-91	Apr-92	Oct-92	Apr-93	Oct-93	May-94	Oct-94	May-95	Oct-95	Jun-96	Oct-96
141R	FT	297.43																
022R	LT	305.34																
023R	UT	305.37																
531R	FT	298.81																
381R	UT	297.29																
101R	LT	292.83																
231R	LT	296.83																
232R	UT	296.73																
233R	FT	296.77																
261R	LT	293.64																
262R	UT	293.54																
263R	FT	293.32																
05-01	UT	300.16																
592	FT	298.76																
593	UT	298.69																
594	ITS	298.53																
595	LT	296.51																
111R	FT	299.35																
552RA	FT	298.34																
998	ITS	299.41																
998R	ITS	299.46																
03-7SR	FT	297.20																

Notes: · All elevations in metres above sea level
 · Blank indicates data not available
 · Measuring point elevations as of October 1989

· FT - Fractured Till or Glacio-lacustrine Deposits
 · UT - Upper Till
 · ITS - Inter-till Sands

· LT - Lower Till
 · B - Bedrock
 · R - Refuse

**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	Apr-97	Oct-97	May-98	Oct-98	Jun-99	Oct-99	Jun-00	Oct-00	May-01	Oct-01	May-02	Oct-02	May-03	Oct-03	May-04	Oct-04
051	LT	288.13	281.76	281.41	281.78	280.87	281.59	280.02	280.85	281.26	281.84	281.18	282.02	281.32	281.25	281.27	282.25	281.76
052	LT	288.15	282.81	282.96	283.10	282.88	282.71	282.74	282.75	282.89	282.97	285.85	283.02	283.02	282.91	282.90	282.99	282.99
053	FT	287.96	286.82	286.54	286.50	282.78	285.90	282.46	287.06	287.26	287.27	286.02	287.31	283.47	283.59	286.11	287.72	285.37
061	LT	292.40	288.40	287.62	288.19	286.01	287.05	285.43	288.12	288.31	288.51	286.99	288.58	286.32	288.48	287.45	289.43	286.77
063	UT	292.34	288.72	288.75	288.43	286.03	287.15	285.66	288.36	288.60	288.96	287.11	288.92	286.27	289.14	287.60	289.56	286.78
071	LT	300.86	291.00	291.25	291.24	289.21	289.56	288.37	290.47	290.68	290.97	289.66	291.28	289.50	290.95	289.95	291.52	289.97
102	LT	293.20	291.74	290.53	291.11	288.35	290.99	288.12	290.58	290.96	291.67	291.46	291.44	288.87	291.94	290.21	292.11	289.50
121	UT	295.09	292.19	289.26	290.92	285.25	287.24	285.02	289.18	290.57	290.39	287.56	290.84	286.21	288.47	287.04	293.88	286.77
131	UT	305.34	302.27	302.16	302.30	300.41	301.50	300.59	301.85	302.07	302.16	301.38	302.25	300.55	302.18	301.36	302.67	301.06
161	LT	297.39	290.97	290.13	290.32	288.41	288.86	288.71	290.07	290.47	290.85	289.39	290.83	289.57	290.57	289.63	292.07	290.12
162	ITS	297.36	294.06	293.30	293.50	291.86	292.76	293.40	293.08	293.81	293.77	291.97	293.27	291.71	293.51	292.04	294.03	292.09
191	LT	303.54	291.26	290.06	291.06	289.10	289.58	290.89	290.49	290.67	290.90	288.69	291.21	288.64	290.73	290.26	291.62	289.89
192	UT	303.34	293.65	292.65	293.63	291.83	292.30	291.79	293.55	293.67	293.59	293.10	294.19	292.35	293.90	293.13	294.50	292.66
193	UT	303.52	300.74	298.22	298.22	297.28	299.50	301.36	300.64	300.64	299.43	302.12	300.90	298.13	301.48	301.20	302.19	298.14
202	FT	295.63	294.44		294.35	292.68	294.43	293.92	294.30	294.35	294.40	293.29	294.31	292.88	293.50	294.23	294.23	294.07
242	UT	291.71	291.00	291.08	290.63	288.36	290.13	288.94	290.55	290.75	290.99	290.98	290.73	288.49	289.19	289.86	291.22	288.84
281	FT	297.96	294.71	294.17	294.53	292.16	293.96	292.14	294.41	294.45	294.49	292.73	294.51	dry	295.25	293.99	296.00	293.91
391	FT	291.54	289.60	288.74	289.25	287.33	288.91	288.27	289.13	289.19	289.26	287.75	289.14	287.45	289.67	287.99	289.74	287.73
401	UT	289.96																
421	UT	294.72	293.69	293.72	292.94	288.38	292.54	291.92	293.02	293.22	293.54	293.57	293.08	288.30	290.51	293.18	293.61	288.92
431	UT	296.02	294.74	294.70	294.73	291.85	294.44	291.45	294.50	294.66	294.79	294.59	294.54	291.70	292.98	293.30	295.07	292.11
541	FT	295.57	294.13	293.14	293.69	292.41	293.18	292.52	293.67	293.90	293.77	294.40	293.75	292.44	294.33	293.39	294.48	292.59
561	ITS	290.02	287.82	286.96	287.63	285.61	286.34	285.45	287.19	287.42	287.63	286.48	287.95	285.92	287.55	286.84	288.28	286.54
562	FT	290.04	287.81	287.03	287.84	285.45	287.56	284.89	287.81	287.91	287.87	285.39	287.95	285.13	288.16	286.99	288.46	286.50
571	ITS	296.73	291.05	291.07	290.84	290.28	289.16	288.23	290.31	290.51	290.76	289.59	291.20	289.38	290.53	289.86	291.40	289.79
581	FT	299.74	298.76	297.58	298.19	296.10	297.84	297.23	298.00	298.14	298.39	296.22	298.24	296.26	296.82	297.92	298.99	296.55
591	ITS	300.75					291.39	290.70	dry	dry	292.85	292.66	292.65	292.63	291.04	291.75	291.95	292.85

Notes: · All elevations in metres above sea level · FT - Fractured Till or Glacio-lacustrine Deposits · LT - Lower Till
· Blank indicates data not available · UT - Upper Till · B - Bedrock
· Measuring point elevations as of October 1989 · ITS - Inter-till Sands · R - Refuse

**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	Apr-97	Oct-97	May-98	Oct-98	Jun-99	Oct-99	Jun-00	Oct-00	May-01	Oct-01	May-02	Oct-02	May-03	Oct-03	May-04	Oct-04
98-2	FT	297.34							294.65	295.49	295.66	295.66	295.67	295.39	295.92	295.55	295.55	295.21
98-4	FT	299.43							296.65	296.79	297.29	296.93	297.35	296.06	297.44	297.44	297.56	296.05
98-7	FT	296.82							294.77	294.59	294.72	294.55	294.59	293.16	294.91	294.44	295.14	294.11
98-9	FT	296.25							294.28	293.68	293.71	292.61	293.43	291.86	293.59	292.85	294.14	293.19
98-11	FT	297.57							295.17	295.40	295.46	295.37	295.13	294.26	295.44	295.16	295.65	294.58
98-12	FT	297.32							294.81	294.62	294.73	294.60	294.60	293.36	294.93	294.47	295.24	294.17
98-13	FT	296.04							294.36	293.90	293.82	293.00	293.56	291.78	293.56	292.46	293.88	292.63
98-14	FT	303.13							296.89	296.90	297.33	295.51	297.93	295.60	296.51	295.33	298.19	295.85
00-01	UT	299.74							289.71	294.62	294.57	294.29	294.48	293.82	294.72	294.88	294.57	294.74
00-02	UT	299.67							293.25	293.26	293.26	293.23	293.26	293.18	294.10	294.45	295.27	294.60
00-03	ITS	296.18							294.24	294.43	294.65	293.21	294.87	292.87	294.56	293.45	295.54	293.44
00-04	UT	300.67							292.94	293.75	294.09	294.11	294.22	294.04	294.61	294.75	296.30	294.77
2P	FT	297.84							294.32	295.17	294.95	295.49	295.67	295.36	295.46	295.41	295.65	295.19
7P	FT	296.89							293.79	290.62	290.64	290.67	290.66	290.57	290.71	290.90	291.56	291.58
10P	FT	296.49							293.78	289.81	289.87	289.87	289.75	289.61	290.32	290.46	291.57	291.78
2obs	FT	297.78							294.43	295.24	295.24	295.63	295.68	295.36	295.52	295.51	295.72	295.19
7obs	FT	296.76							293.76	290.59	290.61	290.59	290.61	290.56	290.68	290.89	292.13	291.58
999	B	300.93	294.09	292.83	293.90	291.69												
012R	ITS	299.29													294.83	293.73	295.81	293.68
013R	UT	299.41													295.58	294.91	296.21	294.42
551R	ITS	297.53													294.75	293.63	295.72	293.60
552R	FT	297.32													294.90	294.52	295.20	294.12
03-3	UT	297.88														295.02	295.81	294.75
03-4	UT	298.21														294.71	296.76	294.94
03-5	UT	298.14														294.83	295.70	294.34
03-6	UT	298.37														293.99	295.99	295.39
03-7s	FT	298.78														295.43	295.46	294.51
03-7d	UT	298.32														294.14	296.30	294.90
03-8	R	312.16														301.41		

Notes: · All elevations in metres above sea level · FT - Fractured Till or Glacio-lacustrine Deposits · LT - Lower Till
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**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	Apr-97	Oct-97	May-98	Oct-98	Jun-99	Oct-99	Jun-00	Oct-00	May-01	Oct-01	May-02	Oct-02	May-03	Oct-03	May-04	Oct-04	
141R	FT	297.43																	295.18
022R	LT	305.34																	292.37
023R	UT	305.37																	297.91
531R	FT	298.81																	295.16
381R	UT	297.29																	294.24
101R	LT	292.83																	289.06
231R	LT	296.83																	
232R	UT	296.73																	
233R	FT	296.77																	
261R	LT	293.64																	
262R	UT	293.54																	
263R	FT	293.32																	
05-01	UT	300.16																	
592	FT	298.76																	
593	UT	298.69																	
594	ITS	298.53																	
595	LT	296.51																	
111R	FT	299.35																	
552RA	FT	298.34																	
998	ITS	299.41																	
998R	ITS	299.46																	
03-7SR	FT	297.20																	

Notes: · All elevations in metres above sea level
 · Blank indicates data not available
 · Measuring point elevations as of October 1989

· FT - Fractured Till or Glacio-lacustrine Deposits
 · UT - Upper Till
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**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	May-05	Oct-05	May-06	Oct-06	May-07	Oct-07	May-08	Oct-08	May-09	Oct-09	May-10	Oct-10	Jun-11	Oct-11	May-12	Oct-12
051	LT	288.13	282.07	281.27	282.14	281.78	282.29	280.67	281.95	281.53	282.37	281.58	281.67	281.22	282.24	281.20	281.69	280.62
052	LT	288.15	283.00	282.95	282.97	283.00	283.12	283.04	283.02	283.02	283.09	283.14	283.11	283.07	282.40	283.81	284.07	284.18
053	FT	287.96	287.29	284.27	287.18	287.71	287.15	283.97	287.08	286.70	287.09	286.86	287.13	285.84	287.14	287.36	286.77	285.88
061	LT	292.40	289.43	286.47	288.49	288.79	288.50	286.09	288.34	287.72	288.52	288.04	288.31	287.38	288.74	287.51	288.02	286.38
063	UT	292.34	288.94	286.53	288.98	289.56	289.02	286.10	288.84	287.94	289.07	288.32	288.91	287.62	289.90	287.73	288.28	286.48
071	LT	300.86	291.27	289.62	291.15	290.99	291.39	289.41	290.92	290.49	291.50	290.80	290.95	290.33	291.54	290.13	290.80	289.42
102	LT	293.20	291.36	288.98	291.43	292.11	291.42	288.79	291.37	290.64	291.65	291.63	291.79	289.83	291.55	291.65	291.04	288.69
121	UT	295.09	290.26	285.93	290.62	291.88	291.07	285.88	289.66	287.81	292.61	289.88	292.76	287.30	292.56	288.90	289.58	285.76
131	UT	305.34	302.36	300.90	302.22	302.71	302.47	300.27	302.11	301.80	302.52	302.23	302.32	301.66	302.63	302.18	302.09	299.54
161	LT	297.39	291.28	289.87	290.98	290.99	290.84	289.32	290.76	290.37	291.52	290.99	291.12	290.39	291.77	290.25	290.87	289.57
162	ITS	297.36	294.03	291.73	294.01	294.30	294.22	291.58	294.28	293.83	294.64	294.03	294.40	292.43	294.98	292.13	293.35	291.52
191	LT	303.54	290.83	289.49	291.06	291.12	291.16	289.50	291.03	290.56	292.95	291.24	294.31	290.24	291.54	290.17	290.75	289.56
192	UT	303.34	294.14	292.39	293.99	293.96	294.17	292.30	293.89	293.31	294.36	293.37	293.76	293.05	294.45	293.09	293.46	292.36
193	UT	303.52	300.84	297.94	300.57	302.14	300.58	297.98	300.23	299.89	301.65	300.90	300.08	299.12	301.56	301.98	299.68	298.02
202	FT	295.63	294.32	294.12	294.36	unread	294.48	292.48	294.32	294.25	294.30	294.29	294.29	294.07	294.35		294.22	
242	UT	291.71	290.87	290.76	290.74	291.25	290.84	288.07	289.85	290.30	290.86	290.75	290.97	289.52	290.73	290.91	290.34	288.21
281	FT	297.96	294.98	293.74	294.74	295.70	294.79	293.42	294.67	294.55	294.88	294.63	294.69	294.60	295.28	295.24	294.65	294.82
391	FT	291.54	289.17	287.40	289.10	289.76	289.03	287.14	289.03	288.74	289.05	288.58	289.28	288.53	289.72	289.72		
401	UT	289.96									287.69	286.56	287.84	286.10	287.58	284.69	287.19	283.55
421	UT	294.72	293.11	287.64	293.05	293.63	292.94	287.55	292.97	291.54	293.08	292.63	293.21	290.87	292.99	291.64	292.46	287.25
431	UT	296.02	294.59	291.48	294.51	295.06	294.58	291.38	294.46	293.74	294.55	294.02	294.65	292.89	294.41	292.96	293.98	290.90
541	FT	295.57	293.59	292.59	293.59	294.72	293.49	292.53	293.64	293.47	293.82	293.86	293.52	293.17	293.85	294.39	293.06	292.85
561	ITS	290.02	287.90	286.17	287.84	287.85	287.89	285.96	287.69	287.30	288.07	287.52	287.60	286.96	288.09	286.98	287.49	286.10
562	FT	290.04	287.86	285.62	287.83	288.64	287.76	285.21	287.73	287.59	287.88	287.57	287.74	286.98	287.81	286.82	287.61	284.86
571	ITS	296.73	291.05	289.46	291.01	290.90	291.09	289.29	290.80	290.31	291.31	290.72	290.75	290.07	291.33	291.07	290.64	289.31
581	FT	299.74	298.33	296.02	298.24	299.07	298.24	296.09	298.19	297.72	298.42	298.10	298.36	297.05	298.29	296.68	297.71	295.57
591	ITS	300.75	292.67	292.62	292.72	292.80	293.28	293.12	292.25	292.71	292.92	293.23	292.71	292.50	293.24	292.74	293.09	292.29

Notes: · All elevations in metres above sea level · FT - Fractured Till or Glacio-lacustrine Deposits · LT - Lower Till
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**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	May-05	Oct-05	May-06	Oct-06	May-07	Oct-07	May-08	Oct-08	May-09	Oct-09	May-10	Oct-10	Jun-11	Oct-11	May-12	Oct-12
98-2	FT	297.34	296.13	294.60	295.46	295.53	295.52	294.39	295.54	295.24	295.37	295.27	296.31	295.17	296.08	295.99	295.52	295.24
98-4	FT	299.43	297.38	295.40	296.87	297.25	297.04	295.26	296.94	296.25	297.33	296.54	297.38	296.12	297.46	296.94	296.70	295.82
98-7	FT	296.82	294.86	294.14	294.87	295.12	294.86	293.85	294.87	294.88	295.00	294.94	294.97	294.79	295.12	295.11	294.78	294.68
98-9	FT	296.25	293.97	292.49	293.98	294.35	293.95	293.17	294.17	294.04	293.85	294.03	294.03	294.02	294.71	294.16	293.95	293.90
98-11	FT	297.57	295.37	294.92	295.29	295.76	295.24	294.55	295.32	295.34	295.51	295.55	295.59	295.58	295.60	295.66	294.97	295.58
98-12	FT	297.32	294.93	294.24	294.92	295.20	294.89	293.99	294.93	294.94	295.07	295.02	295.02	294.88	295.20	295.18	294.79	294.76
98-13	FT	296.04	293.81	293.20	293.74	294.26	293.62	292.68	294.00	293.90	294.20	293.86	293.75	293.77	294.63	293.79	293.60	293.39
98-14	FT	303.13	297.72	295.42	297.48	296.61	297.98	295.48	297.23	296.41	298.05	296.83	297.44	296.34	298.26	296.05	297.17	300.48
00-01	UT	299.74	295.28	295.05	295.36	295.82	295.40	294.81	295.54	295.29	295.60	295.39	295.25	295.24	296.02	295.47	295.08	295.24
00-02	UT	299.67	295.19	294.92	295.27	295.69	295.27	294.55	295.50	295.22	295.52	295.21	295.16	295.07	295.91	295.31	294.98	295.22
00-03	ITS	296.18	294.90	293.07	294.81	295.12	294.87	292.91	294.60	294.15	295.15	294.53	294.68	293.96	295.37	293.95	294.43	293.10
00-04	UT	300.67	295.41	295.11	295.57	295.96	295.53	294.79	295.89	295.53	295.85	295.53	295.59	295.39	296.16	295.47	295.21	295.31
2P	FT	297.84	296.01	293.62	293.87	293.98	293.84	293.46	294.03	293.91	294.11	293.86	293.95	294.24	294.80	294.50	294.24	294.32
7P	FT	296.89	292.18	292.38	292.73	293.23	293.07	292.57	293.28	293.27	293.45	293.25	293.21	293.24	293.78	293.48	293.27	293.43
10P	FT	296.49	292.29	292.47	292.67	293.16	292.83	292.36	293.19	293.12	293.36	293.03	293.01	293.08	293.73	293.30	293.02	293.28
2obs	FT	297.78	296.10	293.84	294.16	294.33	294.11	293.69	294.26	294.28	294.36	294.14	294.19	294.62	295.10	294.92	294.59	294.62
7obs	FT	296.76	292.18	292.39	292.74	294.81	293.77	292.61	293.25	293.30	293.48	293.21	293.25	293.80	293.90	294.34	293.29	294.78
999	B	300.93																
012R	ITS	299.29	295.16	293.31	295.05	295.41	295.12	293.17	294.84	294.45	295.41	294.79	294.93	294.20	295.62	294.11	294.66	293.35
013R	UT	299.41	295.40	294.29	295.25	295.84	295.26	293.85	295.26	295.06	295.55	295.21	295.28	294.92	295.83	295.34	294.99	294.42
551R	ITS	297.53	295.06	293.22	294.95	295.31	295.03	293.08	294.77	294.31	295.31	294.70	294.84	294.12	295.54	294.02	294.59	293.27
552R	FT	297.32	294.89	294.14	294.87	295.17	294.88	293.86	294.85	294.85	294.99	294.96	294.97	294.78	295.11	295.11	294.79	295.06
03-3	UT	297.88	295.50	294.98	295.46	295.95	295.36	294.61	295.43	295.44	295.59	295.58	295.61	295.55	295.68	295.67	295.03	295.56
03-4	UT	298.21	295.27	294.81	295.32	295.79	295.31	294.57	295.30	295.25	295.44	295.36	295.39	295.29	295.57	295.47	294.97	295.29
03-5	UT	298.14	295.62	295.10	295.74	296.92	295.77	295.11	296.20	296.13	296.45	296.37	296.49	296.55	296.37	296.82	295.41	296.60
03-6	UT	298.37	295.36	295.00	295.50	296.19	295.47	294.45	295.69	295.66	295.78	295.85	295.48	295.54	296.10	295.93	295.01	295.46
03-7s	FT	298.78	296.11	295.10	295.97	296.76	295.89	294.74	295.80	295.76	295.98	295.97	295.95	295.79	296.10	296.15	295.36	295.49
03-7d	UT	298.32	296.02	294.82	295.84	296.30	295.94	294.73	295.82	295.76	296.10	295.90	295.85	295.60	296.29	295.86	295.51	295.18
03-8	R	312.16			303.01	303.99	303.52	303.41	303.56	304.28	303.88	303.97	303.10	303.21	304.33	304.07	304.81	304.03

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**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	May-05	Oct-05	May-06	Oct-06	May-07	Oct-07	May-08	Oct-08	May-09	Oct-09	May-10	Oct-10	Jun-11	Oct-11	May-12	Oct-12
141R	FT	297.43	295.91	294.73	295.70	295.76	295.64	294.50	295.69	295.39	295.93	295.42	296.07	295.24	296.09	296.17	295.60	295.42
022R	LT	305.34	293.81	292.06	293.64	293.79	293.74	291.89	293.53	293.05	294.00	293.33	293.53	292.78	294.20	292.62	293.27	292.00
023R	UT	305.37	301.19	300.23	300.83	301.90	300.75	299.46	300.62	300.38	300.94	300.27	300.56	300.14	301.45	300.63	300.00	299.42
531R	FT	298.81	297.53	294.53	297.14	297.93	296.91	294.49	297.11	296.70	297.27	297.46	297.04	296.53	297.28	297.61	296.49	294.25
381R	UT	297.29	296.23	294.75	296.26	296.48	296.16	294.39	296.16	296.12	296.39	296.35	296.42	296.44	296.17	296.43	295.81	296.45
101R	LT	292.83	290.29	288.74	290.26	290.15	290.33	288.53	290.04	289.61	290.51	289.94	289.99	289.34	290.56	289.32	289.89	288.59
231R	LT	296.83		288.70	290.18	290.09	290.28	288.48	290.00	289.55	290.47	287.88	289.93	289.28	290.51	289.26	289.84	288.54
232R	UT	296.73		290.71	292.97	292.75	293.05	291.55	293.02	292.62	293.31	291.88	293.06	292.42	293.36	292.51	292.98	292.00
233R	FT	296.77		294.17	295.44	295.82	295.43	294.08	295.71	295.02	295.68	295.47	295.84	295.03	295.59	295.65	295.30	295.03
261R	LT	293.64		285.04	287.16	287.23	287.23	285.06	287.00	286.42	287.37	286.67	286.88	285.95	287.37	285.80	286.75	284.75
262R	UT	293.54		285.88	288.42	288.61	288.51	285.55	288.25	287.54	288.63	287.83	288.18	287.00	288.73	287.12	287.96	285.44
263R	FT	293.32		286.72	290.26	290.37	290.20	287.45	290.07	289.38	290.45	289.33	290.10	289.03	290.49	287.70	289.68	286.79
05-01	UT	300.16		295.26	296.29	296.73	296.47	295.24	296.43	296.33	296.65	296.33	296.45	296.19	296.96	296.14	296.25	295.60
592	FT	298.76																
593	UT	298.69																
594	ITS	298.53																
595	LT	296.51																
111R	FT	299.35																
552RA	FT	298.34																
998	ITS	299.41											293.73	293.03			293.51	292.25
998R	ITS	299.46																
03-7SR	FT	297.20																

Notes: · All elevations in metres above sea level
 · Blank indicates data not available
 · Measuring point elevations as of October 1989

· FT - Fractured Till or Glacio-lacustrine Deposits
 · UT - Upper Till
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**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Oct-17	May-18	Oct-18	May-19	Oct-19	May-20	Oct-20
051	LT	288.13	282.02	281.55	281.95	281.69	281.54	280.90	281.96	280.29	281.78	280.52	281.64	281.01	281.87	280.95	281.89	280.69
052	LT	288.15	284.39	284.73	284.72	284.87	284.67	284.82	284.86	284.92	284.30	283.99	283.70	283.48	283.34	283.23	283.10	282.97
053	FT	287.96	287.16	287.35	287.29	287.39	286.89	285.99	286.98	283.66	286.76	283.97	286.86	285.73	286.87	285.73	286.31	284.73
061	LT	292.40	288.52	288.63	288.80	288.75	288.33	286.94	288.54	285.97	288.91	286.34	288.78	287.60	288.90	287.33	288.70	286.97
063	UT	292.34	289.46	289.98	290.25	290.12	289.25	286.99	289.40	285.98	290.40	286.34	290.95	287.71	290.93	287.44	290.18	287.04
071	LT	300.86	291.23	290.74	291.20	290.99	290.86	290.03	291.21	289.22	291.01	289.56	290.93	290.27	291.26	290.12	291.26	289.76
102	LT	293.20	291.59	291.87	291.89	291.81	291.10	289.50	291.36	288.44	291.84	288.89	292.04	290.22	292.03	289.63	291.60	289.01
121	UT	295.09	292.95	293.32	293.58	293.45	291.78	287.08	292.45	285.52	293.65	286.22	293.53	287.64	293.27	287.28	292.98	287.86
131	UT	305.34	302.61	302.52	302.70	302.56	302.50	301.71	302.59	301.53	304.06	301.98	303.04	302.03	303.10	302.35	302.95	302.65
161	LT	297.39	291.31	290.71	291.32	291.16	290.89	289.83	291.39	289.20	291.27	289.55	291.22	290.49	291.42	290.07	291.49	289.85
162	ITS	297.36	295.08	293.69	295.04	294.76	293.91	292.06	294.69	291.36	295.90	291.69	295.00	293.71	294.93	292.36	294.84	291.86
191	LT	303.54	291.29	290.76	291.28	291.24	291.19	290.02	291.14	289.41	291.36	289.65	291.24	290.33	291.56	290.23	291.23	289.90
192	UT	303.34	294.29	293.69	294.24	294.21	294.09	292.81	294.21	292.23	294.29	292.44	294.27	292.31	294.48	293.06	294.34	292.90
193	UT	303.52	302.02	302.13	302.26	302.23	302.14	299.08	301.34	298.16	302.28	298.45	302.24	299.37	302.31	299.73	301.91	300.90
202	FT	295.63	294.36	294.65	294.41	294.38	294.30	294.11	294.30	293.50	294.53	293.31	294.50	293.48	294.66	293.62	294.31	293.46
242	UT	291.71	290.90	291.16	291.13	291.10	290.31	289.32	290.67	287.61	290.73	288.77	291.26	289.77	291.23	289.54	290.91	289.26
281	FT	297.96	295.15	295.56	295.33	295.13	294.91	294.70	294.99	294.51	295.42	294.56	295.21	294.73	295.55	294.96	295.08	294.83
391	FT	291.54	289.79	290.16	290.15	290.12												
401	UT	289.96	287.75	288.08	288.05	287.98	287.32	285.46	287.44	283.15	287.44	284.26	288.15	285.89	288.34	285.77	287.54	283.99
421	UT	294.72	293.10	293.43	293.39	293.32	292.55	290.19	292.84	287.25	293.33	288.02	293.61	291.53	293.62	290.72	293.09	288.05
431	UT	296.02	294.54	294.76	294.83	294.77	294.04	292.52	294.20	291.10	294.76	291.77	294.92	293.66	294.93	293.04	294.50	291.72
541	FT	295.57	293.92	294.83	294.28	294.00	293.80	292.82	294.10	292.39	294.42	292.59	294.37	293.56	294.65	293.30	293.77	292.95
561	ITS	290.02	287.88	287.57	287.87	287.92	287.28	286.72	287.82	284.69	287.84	286.19	287.74	287.08	288.00	286.85	287.87	286.32
562	FT	290.04	288.03	289.02	288.14	287.88	287.69	286.73	287.72	284.70	288.24	285.15	288.04	287.26	288.19	286.80	287.81	285.06
571	ITS	296.73	291.04	290.60	291.03	290.87	290.70	289.62	291.01	289.12	290.95	289.45	290.89	290.20	291.19	289.98	291.08	289.65
581	FT	299.74	298.54	298.57	298.82	298.47	297.87	296.68	298.15	295.72	298.90	296.46	298.91	297.14	299.03	297.11	298.45	296.45
591	ITS	300.75	292.91	292.91	292.99	293.05	292.88	292.65	293.14	292.39	292.76	292.50	292.92	292.66	293.04	292.73	293.22	292.39

Notes: · All elevations in metres above sea level · FT - Fractured Till or Glacio-lacustrine Deposits · LT - Lower Till
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 · Measuring point elevations as of October 1989 · ITS - Inter-till Sands · R - Refuse

**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Oct-17	May-18	Oct-18	May-19	Oct-19	May-20	Oct-20
98-2	FT	297.34	296.13	296.22	296.65	296.67	295.70	295.33	296.08	295.02	296.60	295.00	297.14	295.66	296.49	295.52	296.91	295.87
98-4	FT	299.43	297.39	297.50	297.68	297.73	297.13	296.21	297.48	296.80	297.40	295.58	297.64	296.65	297.62	296.49	297.53	296.87
98-7	FT	296.82	295.07	295.23	295.16	295.27	295.02	294.62	295.05	294.35	295.24	294.43	295.26	294.21	295.36	294.99	295.15	294.39
98-9	FT	296.25	294.52	294.33	294.34	294.41	294.10	294.04	294.39	293.84	294.50	293.92	294.26	293.66	294.76	294.65	294.75	293.86
98-11	FT	297.57	295.52	295.83	295.71	295.67	295.66	295.09	295.84	294.79	295.67	295.20	295.82	294.76	295.79	295.02	296.61	294.90
98-12	FT	297.32	295.13	295.26	295.22	295.17	295.12	294.60	295.22	294.42	296.31	294.54	295.36	294.37	295.44	294.61	295.37	294.75
98-13	FT	296.04	294.40	293.95	294.05	294.15	293.63	293.63	294.13	293.39	294.24	293.49	294.90	293.41	294.75	294.49	294.68	294.28
98-14	FT	303.13	298.07	297.54	298.39	298.43	298.33	296.26	297.97	295.61	297.77	295.65	297.99	297.00	298.58	296.55	298.35	297.01
00-01	UT	299.74	295.82	295.54	295.54	295.72	295.37	295.44	295.49	295.33	295.63	295.62	296.63	295.98	295.86	295.69	296.12	295.91
00-02	UT	299.67	295.95	295.36	295.34	295.61	295.21	295.25	295.22	295.30	295.47	294.80	296.87	296.62	295.91	295.72	296.07	296.52
00-03	ITS	296.18	295.13	294.77	295.23	295.28	295.21	293.62	294.91	293.04	295.32	293.33	295.13	294.22	295.52	293.93	295.03	293.48
00-04	UT	300.67	296.08	295.75	295.68	295.74	295.33	295.32	295.32	295.32	295.72	294.87	296.97	295.81	295.96	295.95	296.11	296.34
2P	FT	297.84	294.82	294.59	294.55	294.59	294.49	294.38	294.69	294.35	294.76	294.53	296.39	295.30	295.21	295.56	295.63	295.55
7P	FT	296.89	293.87	293.73	293.74	293.80	293.47	293.75	293.93	293.97	293.98	293.64	294.02	293.81	294.57	294.61	294.67	294.83
10P	FT	296.49	293.75	293.49	293.51	293.60	293.23	293.56	293.76	293.79	293.77	293.40	293.72	293.59	294.37	294.51	294.58	294.76
2obs	FT	297.78	295.04	294.93	294.76	294.78	294.66	294.60	294.88	294.63	294.88	294.60	296.42	295.38	295.31	295.64	295.68	294.80
7obs	FT	296.76	293.98	294.34	294.22	294.18	293.56	294.70	294.00	294.04	294.53	295.65	294.61	294.08	295.49	295.41	295.04	295.50
999	B	300.93																
012R	ITS	299.29	295.37	294.99	295.46	295.49	295.39	293.83	295.13	293.25	295.55	293.55	295.33	293.94	295.75	294.13	295.23	293.68
013R	UT	299.41	295.77	295.81	295.91	295.89	295.52	294.66	295.30	293.82	296.19	294.36	295.87	295.19	296.33	295.02	295.51	294.80
551R	ITS	297.53	295.28	294.91	295.38	295.14	294.75	293.77	295.06	293.18	295.44	293.48	295.27	294.36	295.67	294.07	295.17	293.61
552R	FT	297.32	294.96	295.23	295.16	295.14	294.91	294.50	295.04	294.34	295.20	294.40	295.19					
03-3	UT	297.88	295.66	295.96	295.78	295.81	295.71	295.07	295.78	294.77	295.75	295.15	296.03	294.78	295.95	295.63	295.74	294.49
03-4	UT	298.21	295.54	295.75	295.66	295.71	295.60	295.03	295.66	294.83	295.62	295.01	296.16	295.18	296.05	295.11	295.82	294.87
03-5	UT	298.14	296.31	296.92	296.65	296.59	296.64	295.23	296.81	294.81	296.63	295.02	296.73	295.04	296.75	294.69	296.55	294.86
03-6	UT	298.37	296.04	296.19	295.89	295.77	295.75	295.04	296.14	294.85	295.79	294.43	296.45	295.54	296.10	295.19	296.01	295.15
03-7s	FT	298.78	295.90	296.52	296.34	296.07	296.12	295.02	296.40	294.63	296.20	295.61	296.69	296.45	296.69	296.45	296.69	
03-7d	UT	298.32	296.16	296.16	296.29	296.13	295.73	295.18	295.91	294.72	296.28	295.23	296.37	295.80	296.37	296.01	296.37	296.02
03-8	R	312.16	304.95	304.60	304.47	304.50	304.56	304.55	304.55	305.66	306.05	304.91	306.20	305.35	306.50	305.92	306.33	305.91

Notes: · All elevations in metres above sea level · FT - Fractured Till or Glacio-lacustrine Deposits · LT - Lower Till
 · Blank indicates data not available · UT - Upper Till · B - Bedrock
 · Measuring point elevations as of October 1989 · ITS - Inter-till Sands · R - Refuse

**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	May-13	Oct-13	May-14	Oct-14	May-15	Oct-15	May-16	Oct-16	May-17	Oct-17	May-18	Oct-18	May-19	Oct-19	May-20	Oct-20
141R	FT	297.43	296.18	296.47	296.47	296.42	295.75	295.42	296.17	294.97	296.49	294.77	296.63	295.41	296.71	295.28	296.56	295.18
022R	LT	305.34	294.02	293.53	294.06	294.04	293.96	292.52	294.07	291.93	294.17	292.26	294.06	293.07	294.43	292.84	293.91	292.43
023R	UT	305.37	301.31	301.60	301.81	301.84	301.76	300.08	302.04	299.30	302.05	299.48	301.52	300.13	302.16	300.03	300.90	299.78
531R	FT	298.81	297.32	297.97	297.67	297.64	296.71	295.18	296.96	293.68	297.50	294.01	297.71	295.95	297.94	295.70	297.86	296.10
381R	UT	297.29	296.26	296.50	296.46	296.46	295.84	295.17	296.26	294.33	296.46	294.81	296.49	296.39	296.50	296.43	296.41	296.31
101R	LT	292.83	290.28	289.85	290.27	290.08	289.93	289.10	290.26	288.40	290.31	288.71	290.12	289.44	290.40	289.23	290.32	289.63
231R	LT	296.83	290.24	289.80	290.22	290.22	289.88	289.07	290.20	288.35	290.15	288.66	290.07	289.38	290.35	289.17	290.28	288.86
232R	UT	296.73	293.27	293.10	293.24	293.28	292.99	292.12	293.28	291.66	293.17	291.76	293.13	292.61	293.29	292.39	293.30	291.98
233R	FT	296.77	295.85	296.03	296.04	296.01	295.52	294.80	295.88	294.43	295.89	294.42	296.13	295.36	296.16	295.37	296.00	294.78
261R	LT	293.64	287.43	287.21	287.46	287.42	286.96	285.78	287.26	284.53	287.39	285.07	287.34	286.22	287.59	285.92	287.38	285.31
262R	UT	293.54	289.31	288.59	288.86	288.84	288.26	286.79	288.51	285.30	288.70	285.92	288.69	287.19	288.98	286.85	288.62	286.05
263R	FT	293.32	290.64	290.11	290.64	290.66	290.08	288.74	290.27	286.64	290.50	287.49	290.62	288.71	290.80	288.78	290.49	287.67
05-01	UT	300.16	296.94	296.79	296.96	296.89	296.55	296.12	296.75	295.47	296.18	295.65	297.31	296.62	297.00	296.68	297.01	296.75
592	FT	298.76				296.83	296.53	295.88	296.61	294.49	297.39	295.39	297.53	296.41	297.56	296.30	297.03	295.76
593	UT	298.69				287.11	292.05	291.37	292.26	290.39	292.52	290.85	292.45	291.71	292.66	291.58	292.46	291.03
594	ITS	298.53				289.18	289.02	288.25	289.15	287.53	289.34	287.85	289.25	288.52	289.53	288.41	289.39	288.07
595	LT	296.51				290.25	289.59	293.66	289.86	293.29	294.61	293.31	294.65	293.85	294.65	293.88	294.58	293.55
111R	FT	299.35										297.19	298.08	297.85	298.25	297.67	298.10	297.56
552RA	FT	298.34											291.44	295.35	294.97	295.15	294.91	
998	ITS	299.41	294.20	293.76	294.24	293.90	293.69	292.74	293.74	292.17	294.36	292.56	294.44	293.63	294.44	293.27	294.44	
998R	ITS	299.46																292.80
03-7SR	FT	297.20																296.23

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 · Measuring point elevations as of October 1989 · ITS - Inter-till Sands · R - Refuse

**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	May-21	Oct-21
051	LT	288.13	281.22	280.88
052	LT	288.15	282.82	283.07
053	FT	287.96	286.08	285.21
061	LT	292.40	288.44	287.09
063	UT	292.34	289.81	287.22
071	LT	300.86	290.85	289.93
102	LT	293.20	291.22	289.52
121	UT	295.09	291.75	287.40
131	UT	305.34	302.71	302.60
161	LT	297.39	291.10	290.02
162	ITS	297.36	294.43	292.11
191	LT	303.54	290.84	290.61
192	UT	303.34	294.03	293.53
193	UT	303.52	301.26	301.89
202	FT	295.63	293.96	293.52
242	UT	291.71	290.66	289.39
281	FT	297.96	294.86	294.90
391	FT	291.54		
401	UT	289.96	287.42	284.55
421	UT	294.72	292.87	289.77
431	UT	296.02	294.28	291.91
541	FT	295.57	293.57	294.63
561	ITS	290.02	287.47	287.41
562	FT	290.04	287.70	287.15
571	ITS	296.73	290.73	290.49
581	FT	299.74	298.21	298.30
591	ITS	300.75	292.82	292.51

Notes: · All elevations in metres above sea level
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 · Measuring point elevations as of October 1989

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**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	May-21	Oct-21
98-2	FT	297.34	296.35	295.64
98-4	FT	299.43	297.35	296.72
98-7	FT	296.82	295.03	294.62
98-9	FT	296.25	294.47	294.28
98-11	FT	297.57	295.46	294.96
98-12	FT	297.32	295.11	294.64
98-13	FT	296.04	294.36	294.32
98-14	FT	303.13	297.78	296.78
00-01	UT	299.74	295.86	295.78
00-02	UT	299.67	295.88	296.26
00-03	ITS	296.18	294.62	294.52
00-04	UT	300.67	295.92	296.27
2P	FT	297.84	295.08	295.54
7P	FT	296.89	294.53	294.77
10P	FT	296.49	294.42	294.67
2obs	FT	297.78	295.20	295.15
7obs	FT	296.76	294.64	295.46
999	B	300.93		
012R	ITS	299.29	294.83	293.78
013R	UT	299.41	295.29	294.91
551R	ITS	297.53	294.76	294.66
552R	FT	297.32		
03-3	UT	297.88	295.60	295.04
03-4	UT	298.21	295.68	295.01
03-5	UT	298.14	296.35	294.83
03-6	UT	298.37	295.79	295.15
03-7s	FT	298.78		
03-7d	UT	298.32	296.37	296.26
03-8	R	312.16	306.11	305.96

Notes: · All elevations in metres above sea level
 · Blank indicates data not available
 · Measuring point elevations as of October 1989

· FT - Fractured Till or Glacio-lacustrine Deposits
 · UT - Upper Till
 · ITS - Inter-till Sands

· LT - Lower Till
 · B - Bedrock
 · R - Refuse

**Table C-1: Groundwater Level Elevations
Oxford County Waste Management Facility**

Well No.	Unit	Measuring Point Elevation	May-21	Oct-21
141R	FT	297.43	296.44	296.27
022R	LT	305.34	293.47	293.34
023R	UT	305.37	300.48	301.25
531R	FT	298.81	297.45	297.87
381R	UT	297.29	296.15	296.49
101R	LT	292.83	289.94	289.73
231R	LT	296.83	289.87	289.68
232R	UT	296.73	292.86	292.69
233R	FT	296.77	295.63	296.27
261R	LT	293.64	286.73	286.72
262R	UT	293.54	288.37	287.89
263R	FT	293.32	290.25	289.05
05-01	UT	300.16	296.85	297.08
592	FT	298.76	296.82	297.52
593	UT	298.69	292.24	292.15
594	ITS	298.53	289.03	288.79
595	LT	296.51	294.34	294.10
111R	FT	299.35	297.92	297.92
552RA	FT	298.34	295.05	295.27
998	ITS	299.41		
998R	ITS	299.46	293.88	293.75
03-7SR	FT	297.20	295.92	296.42

Notes: · All elevations in metres above sea level
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 · Measuring point elevations as of October 1989

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 · ITS - Inter-till Sands

· LT - Lower Till
 · B - Bedrock
 · R - Refuse

Figure C-1
Groundwater Hydrograph - Monitoring Nest 01
Oxford County Waste Management Facility

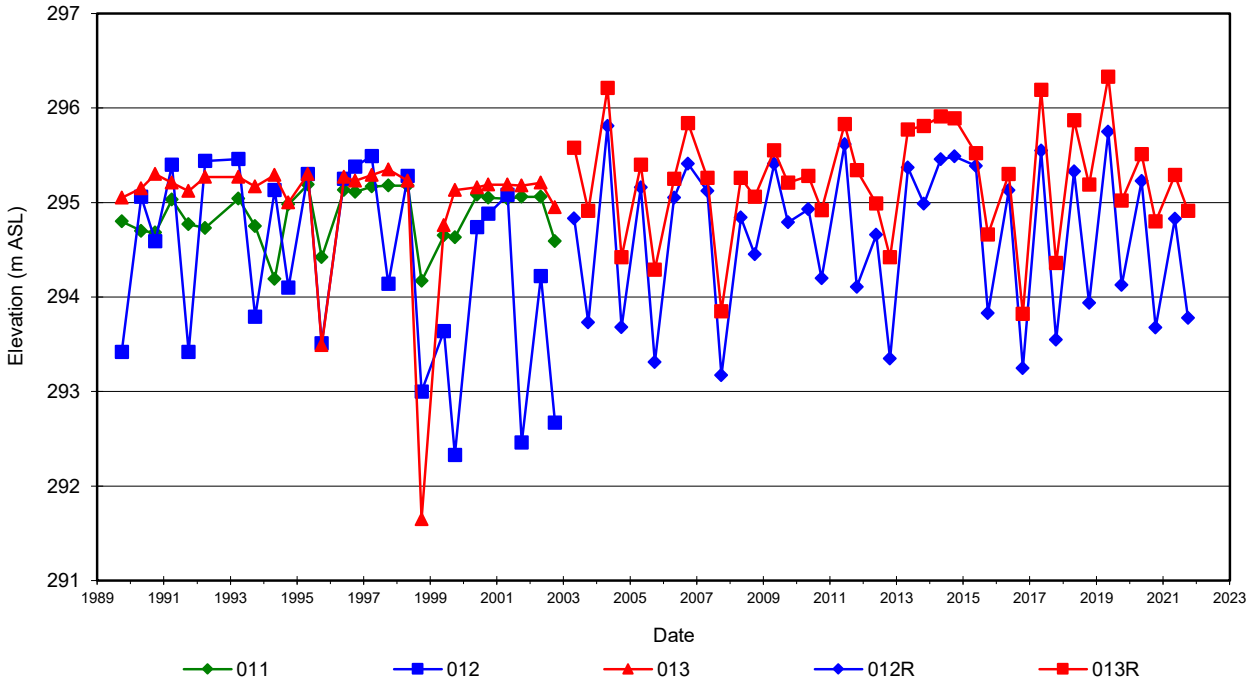
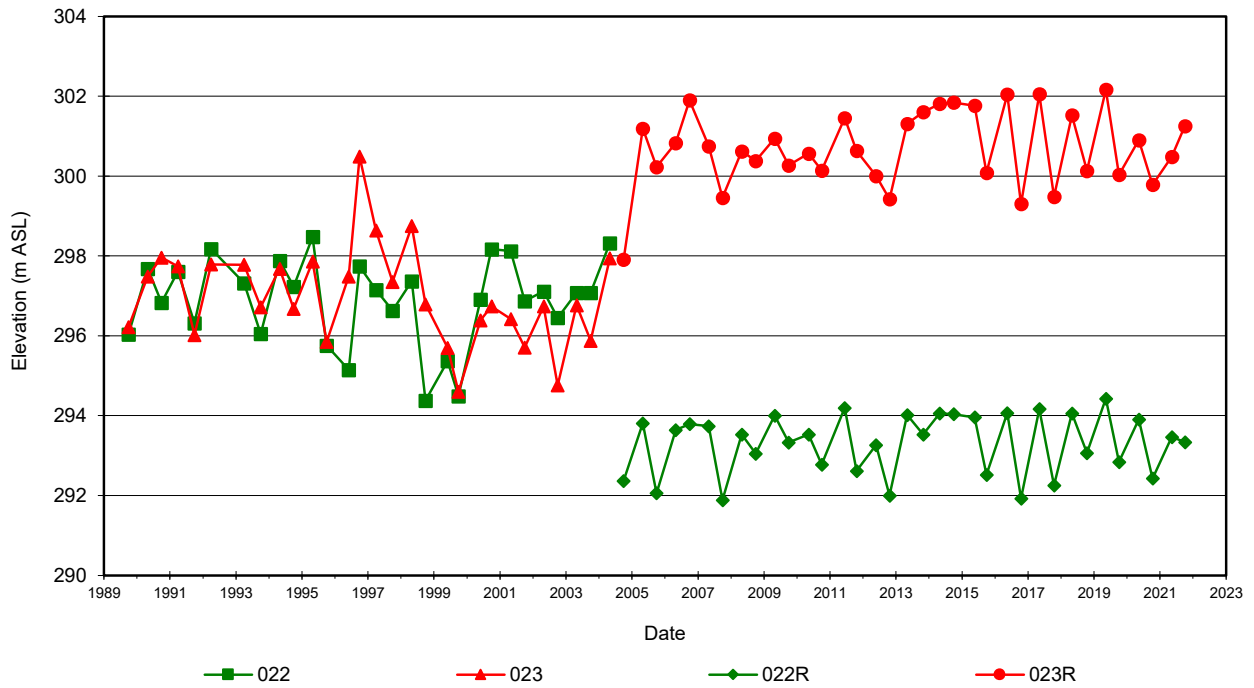
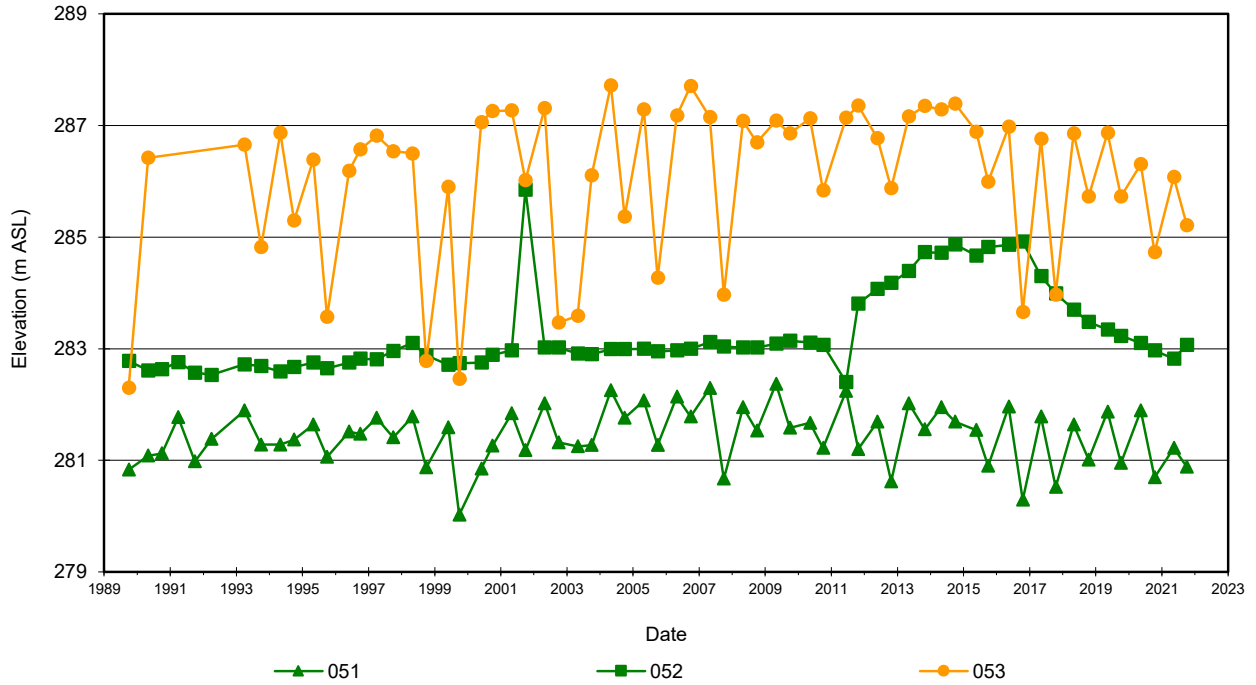


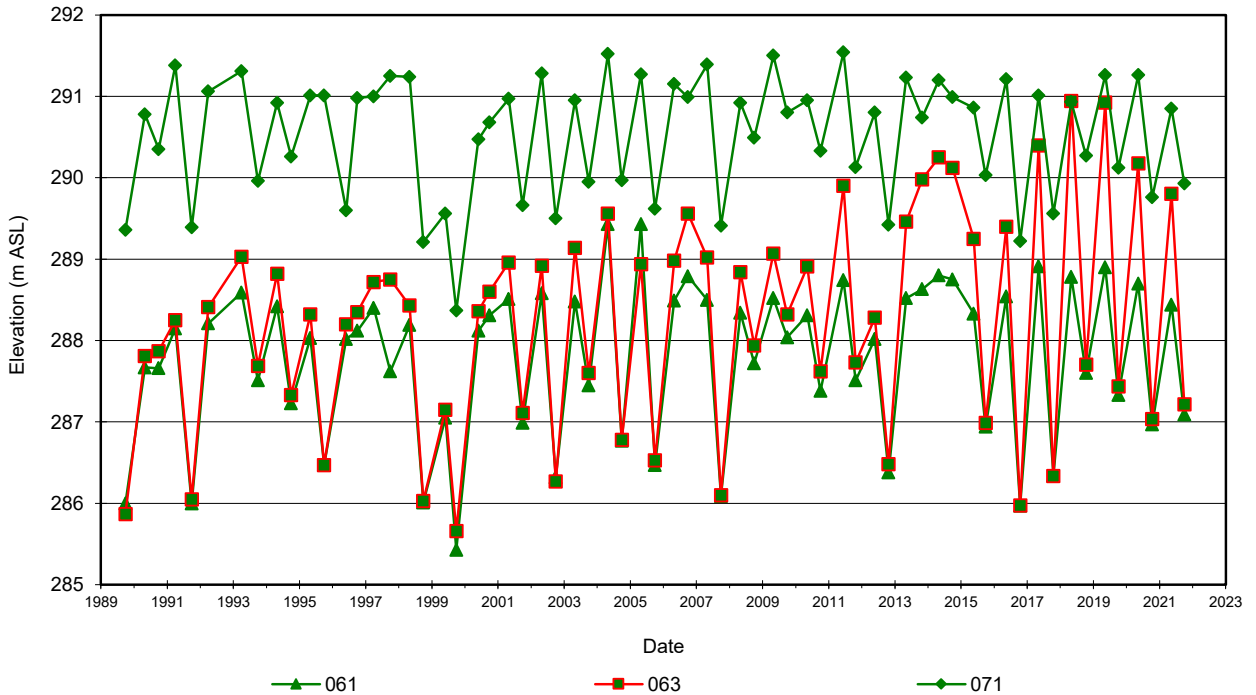
Figure C-2
Groundwater Hydrograph - Monitoring Nest 02
Oxford County Waste Management Facility



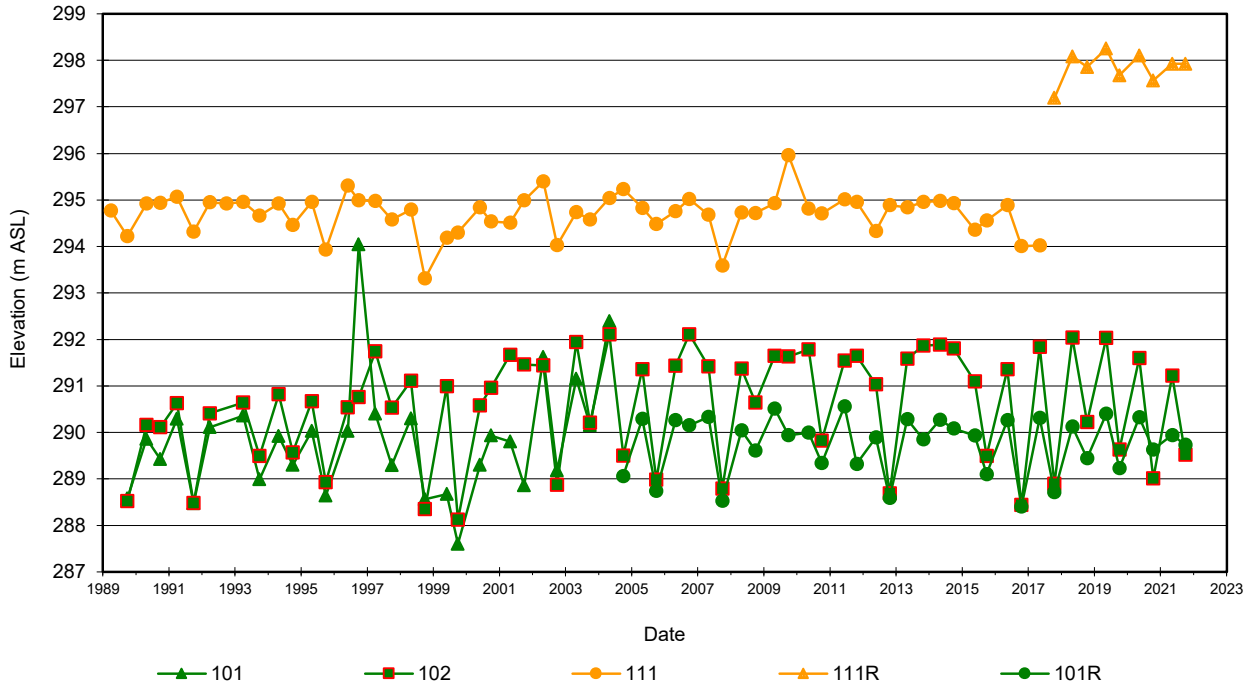
**Figure C-3
Groundwater Hydrograph - Monitoring Nest 05
Oxford County Waste Management Facility**



**Figure C-4
Groundwater Hydrograph - Monitoring Nest 06 & 07
Oxford County Waste Management Facility**



**Figure C-5
Groundwater Hydrograph - Monitoring Nest 10 & 11
Oxford County Waste Management Facility**



**Figure C-6
Groundwater Hydrograph - Monitoring Nest 16
Oxford County Waste Management Facility**

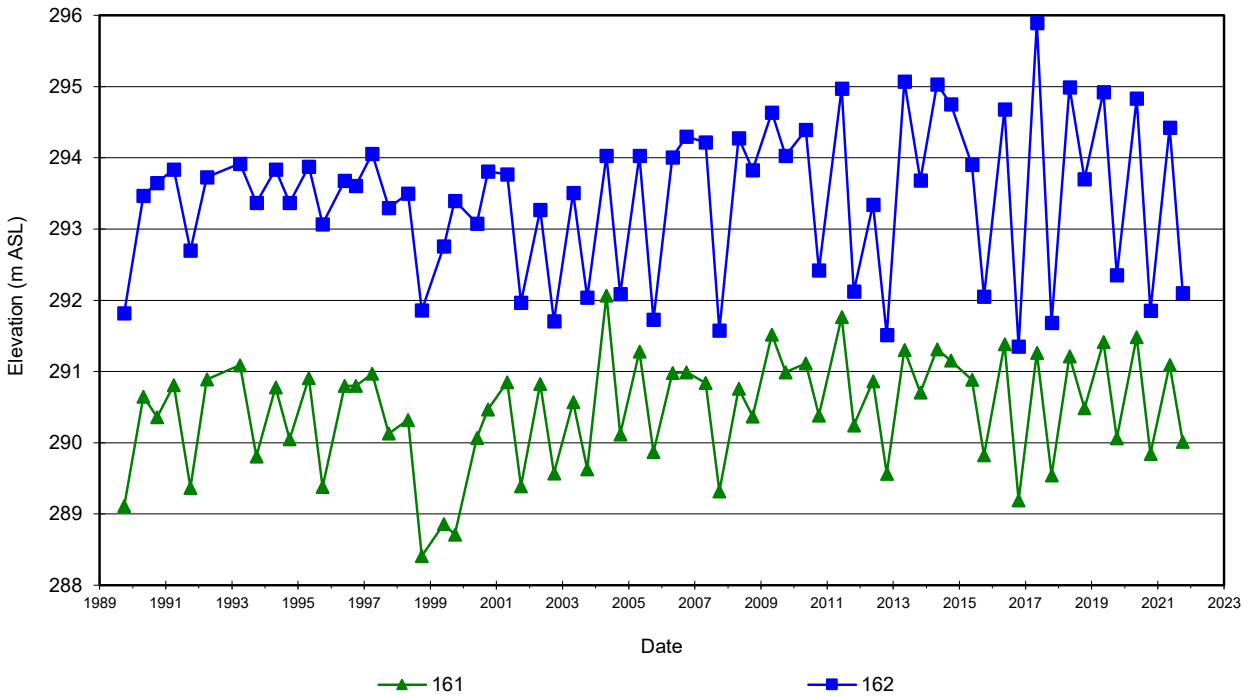


Figure C-7
Groundwater Hydrograph - Monitoring Nest 12, 13, & 14
Oxford County Waste Management Facility

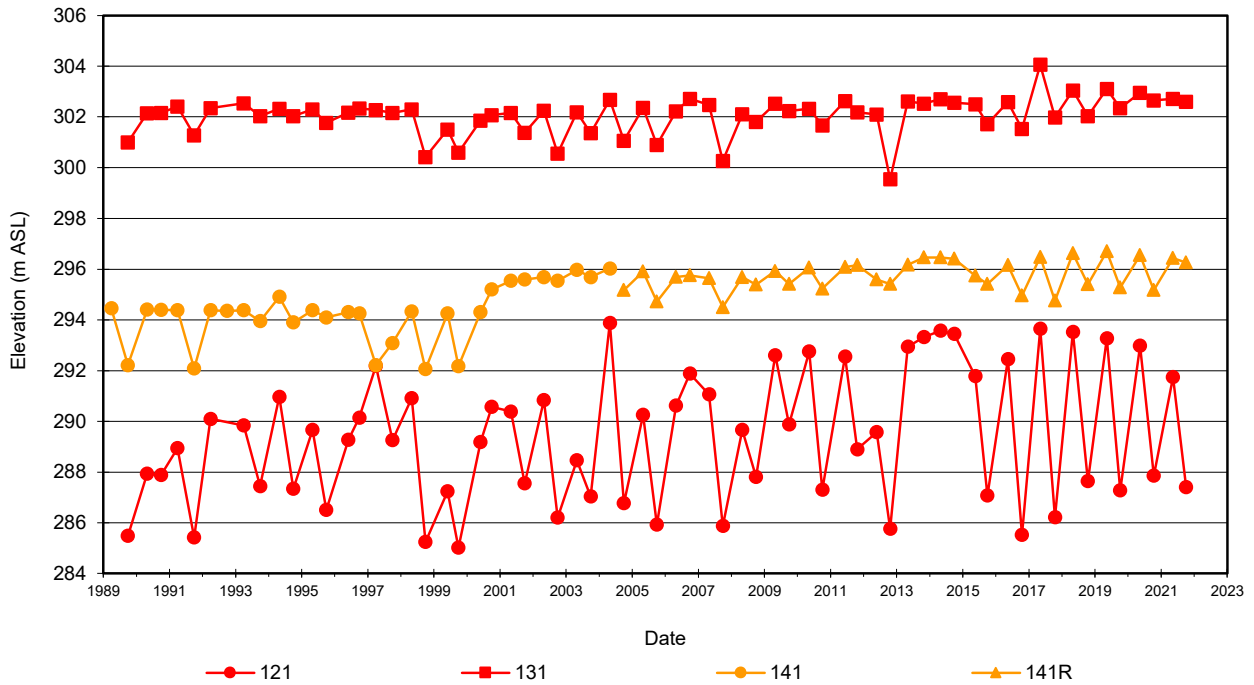
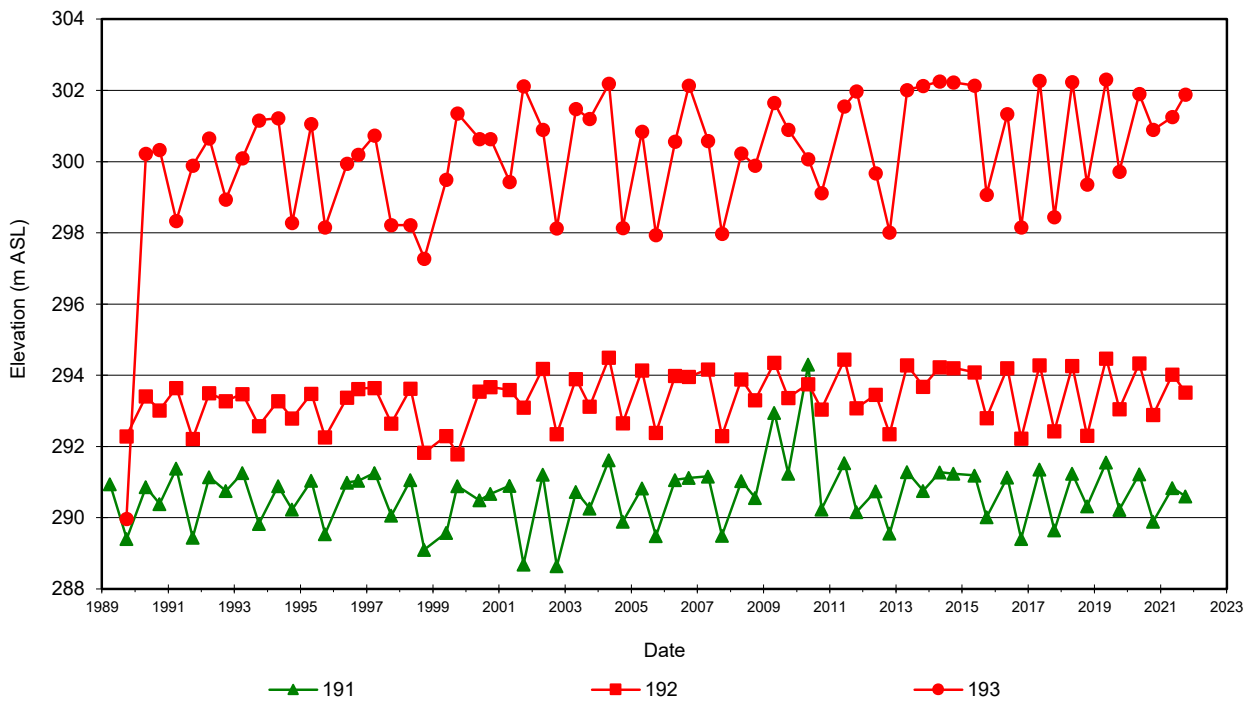
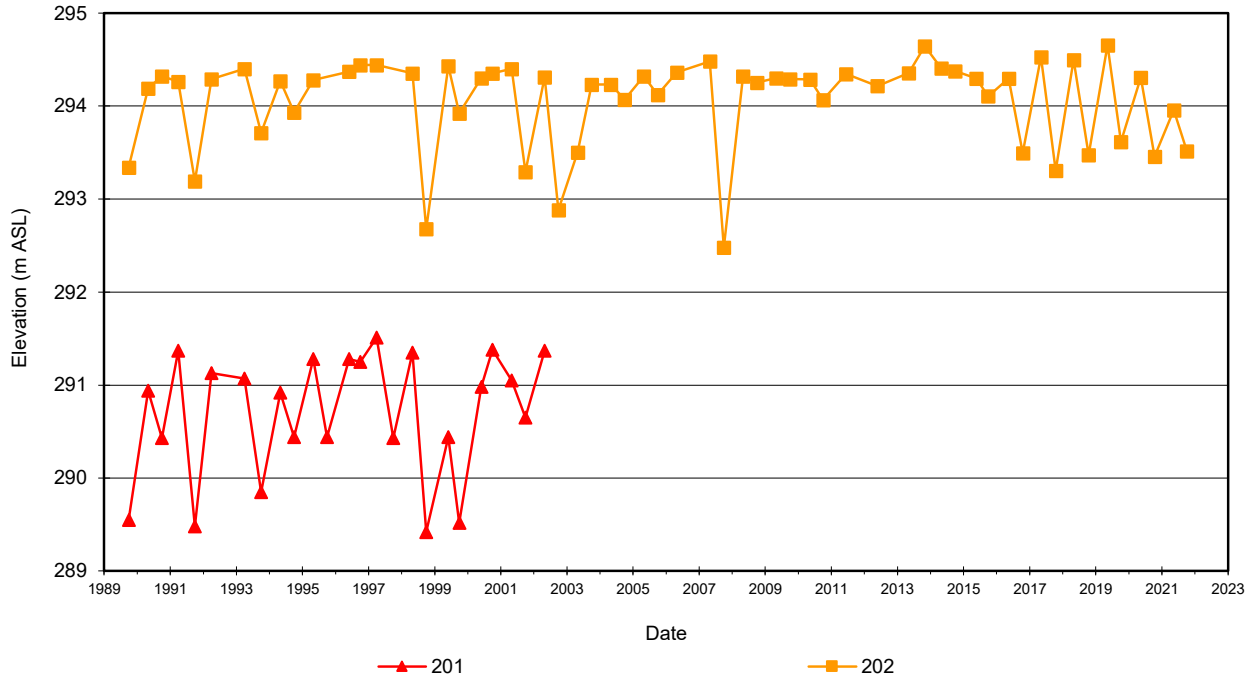


Figure C-8
Groundwater Hydrograph - Monitoring Nest 19
Oxford County Waste Management Facility



**Figure C-9
Groundwater Hydrograph - Monitoring Nest 20
Oxford County Waste Management Facility**



**Figure C-10
Groundwater Hydrograph - Monitoring Nest 23
Oxford County Waste Management Facility**

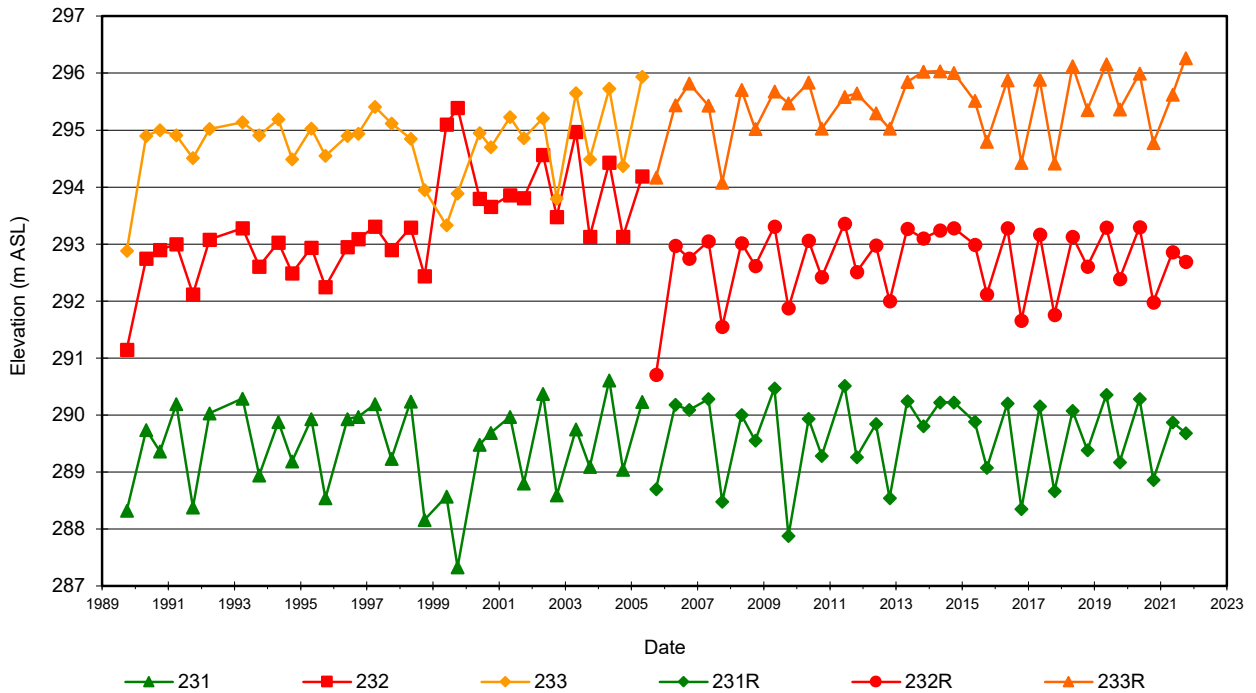


Figure C-11
Groundwater Hydrograph - Monitoring Nest 24, 26, & 28
Oxford County Waste Management Facility

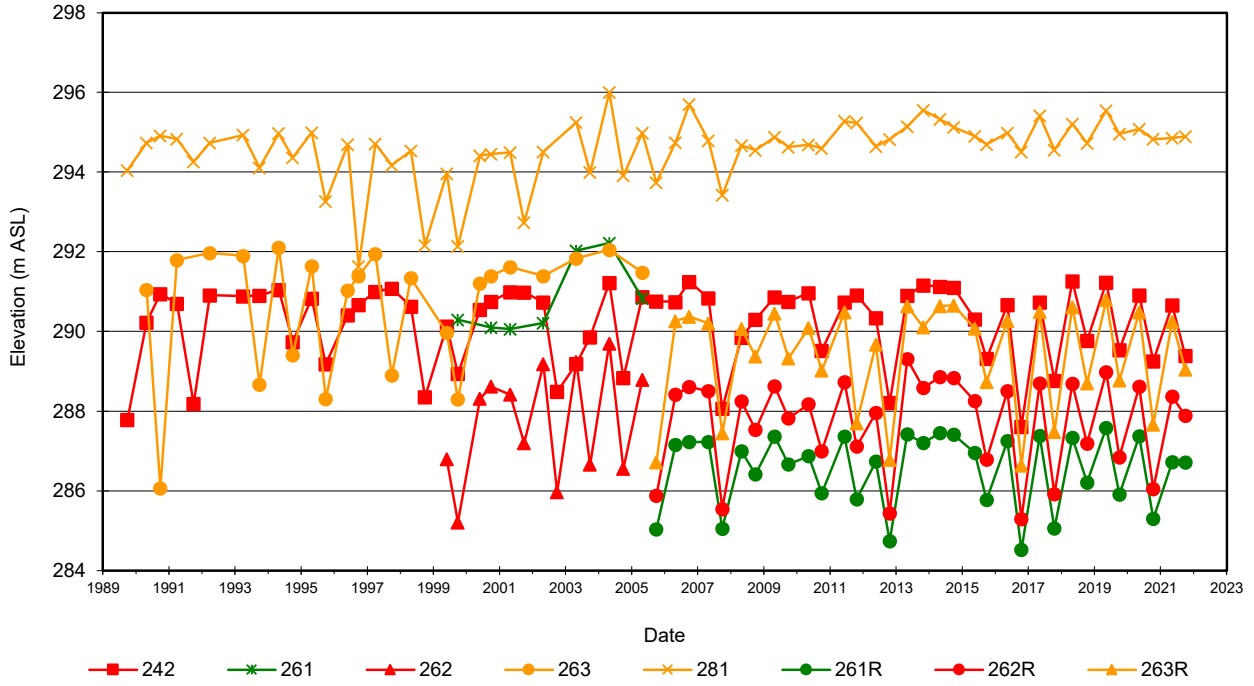


Figure C-12
Groundwater Hydrograph - Monitoring Nest 33, 38, & 39
Oxford County Waste Management Facility

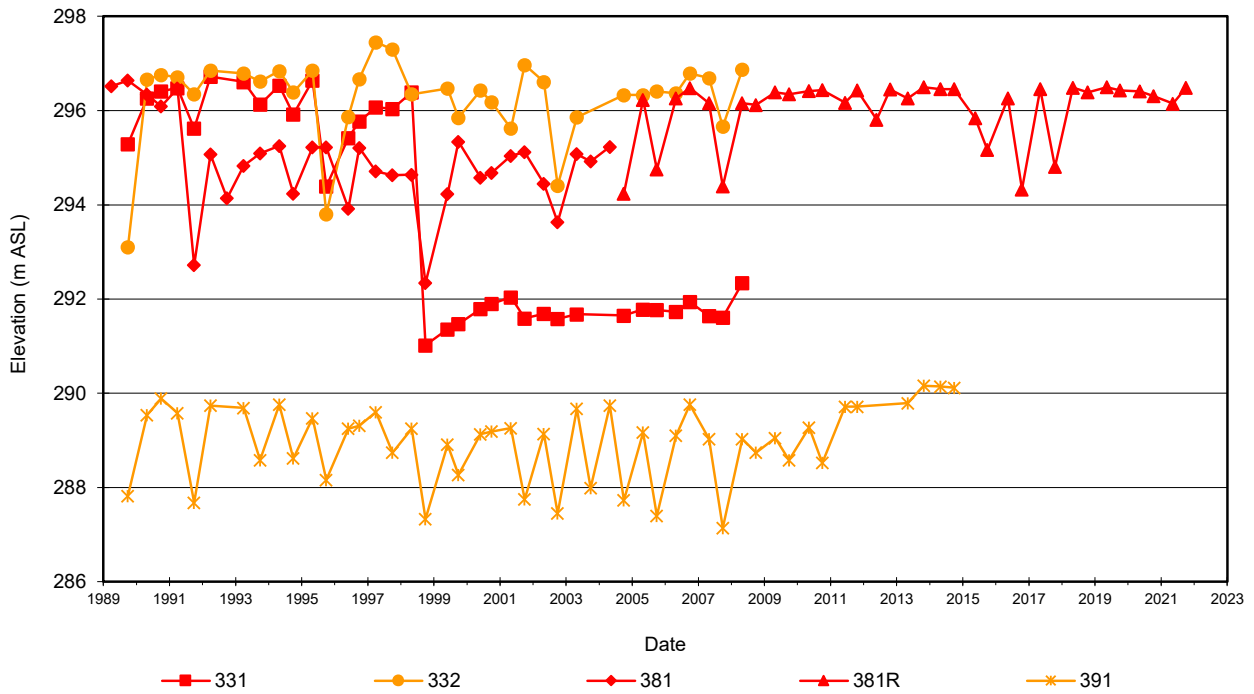


Figure C-13
Groundwater Hydrograph - Monitoring Nest 42, 43, & 49
Oxford County Waste Management Facility

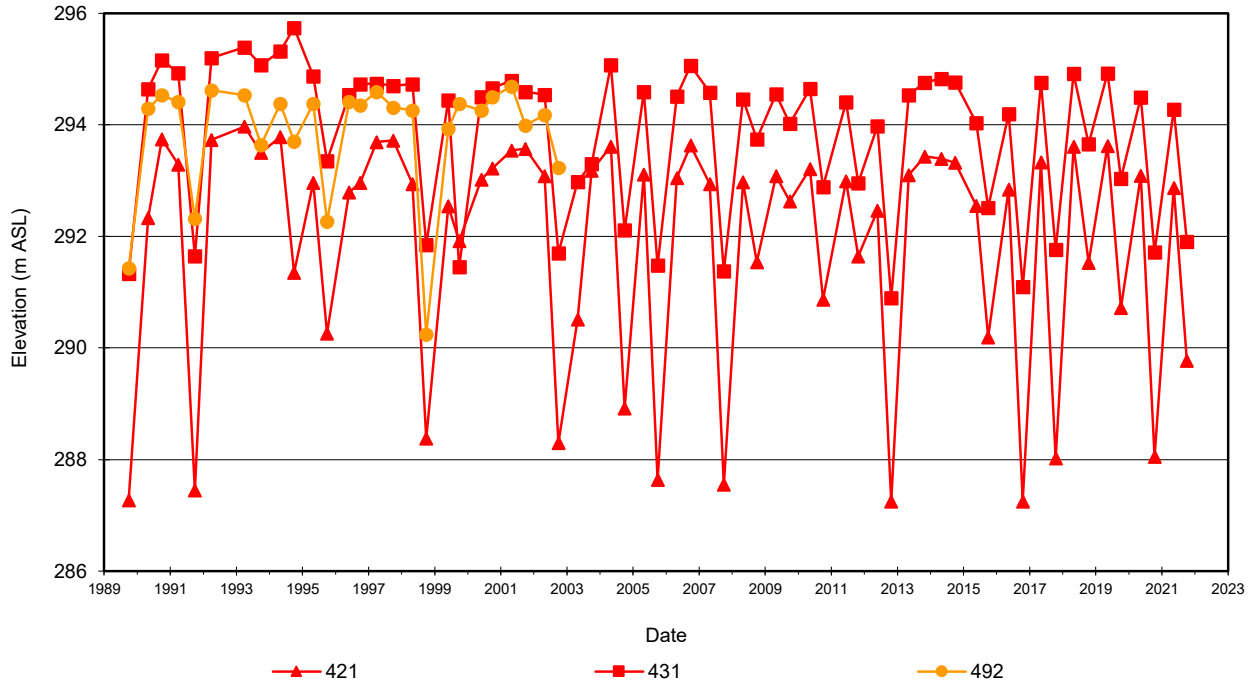


Figure C-14
Groundwater Hydrograph - Monitoring Nest 53, 54, and 595
Oxford County Waste Management Facility

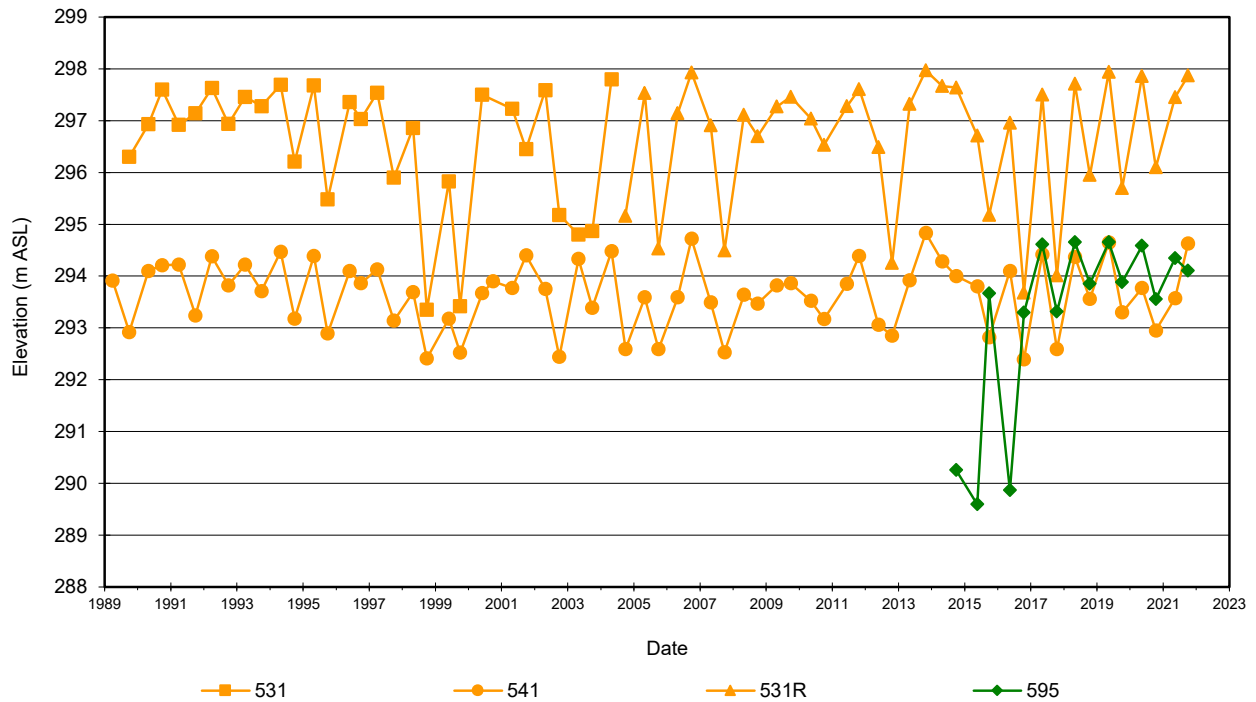


Figure C-15
Groundwater Hydrograph - Monitoring Nest 55
Oxford County Waste Management Facility

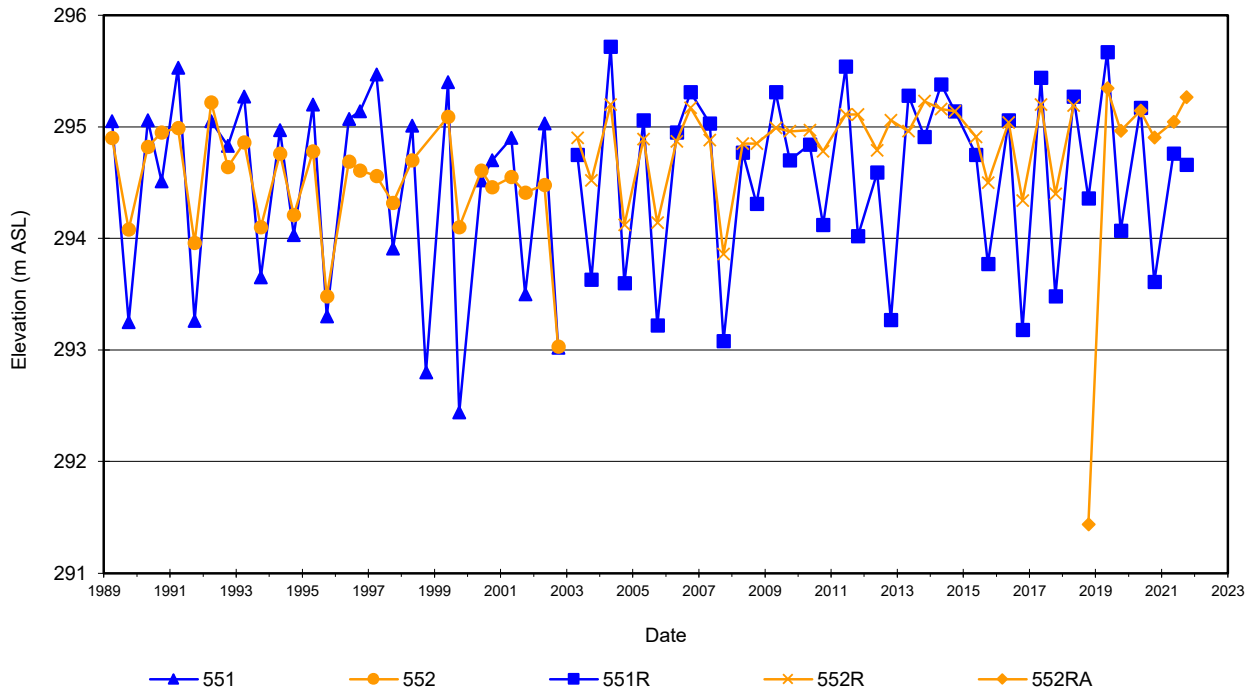


Figure C-16
Groundwater Hydrograph - Monitoring Nest 56
Oxford County Waste Management Facility

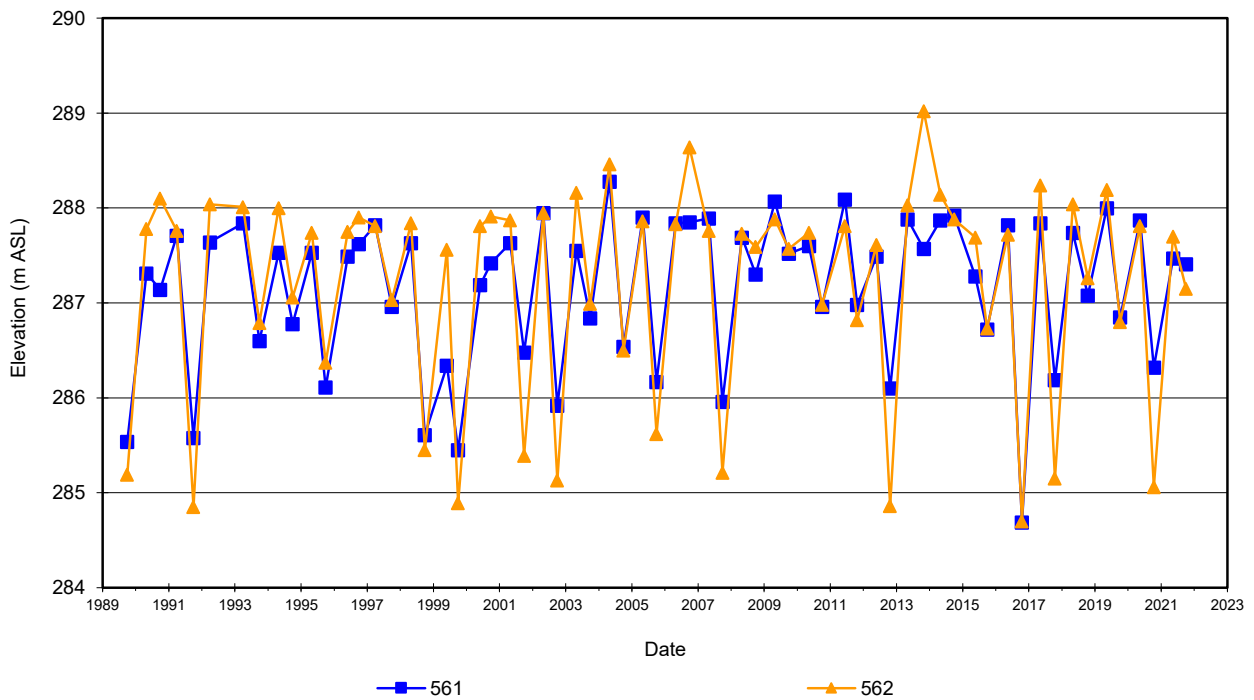


Figure C-17
Groundwater Hydrograph - Monitoring Nest 57 & 58
Oxford County Waste Management Facility

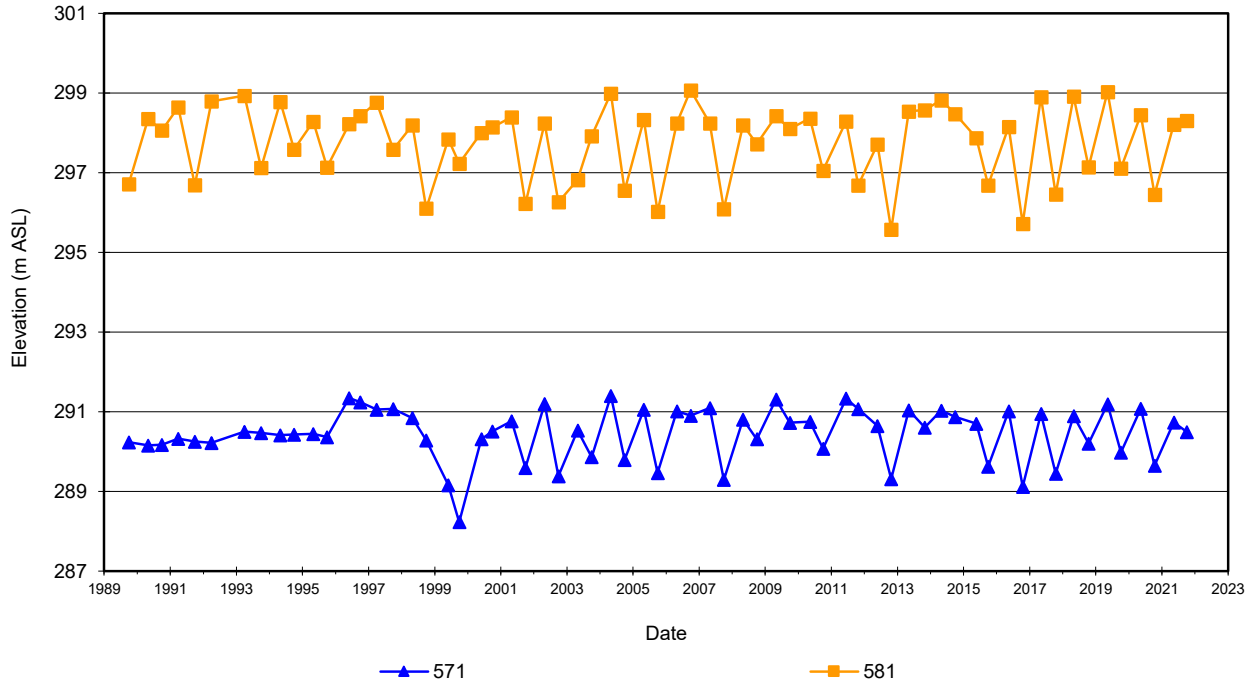


Figure C-18
Groundwater Hydrograph - Monitoring Wells 591, 592, 593, and 594
Oxford County Waste Management Facility

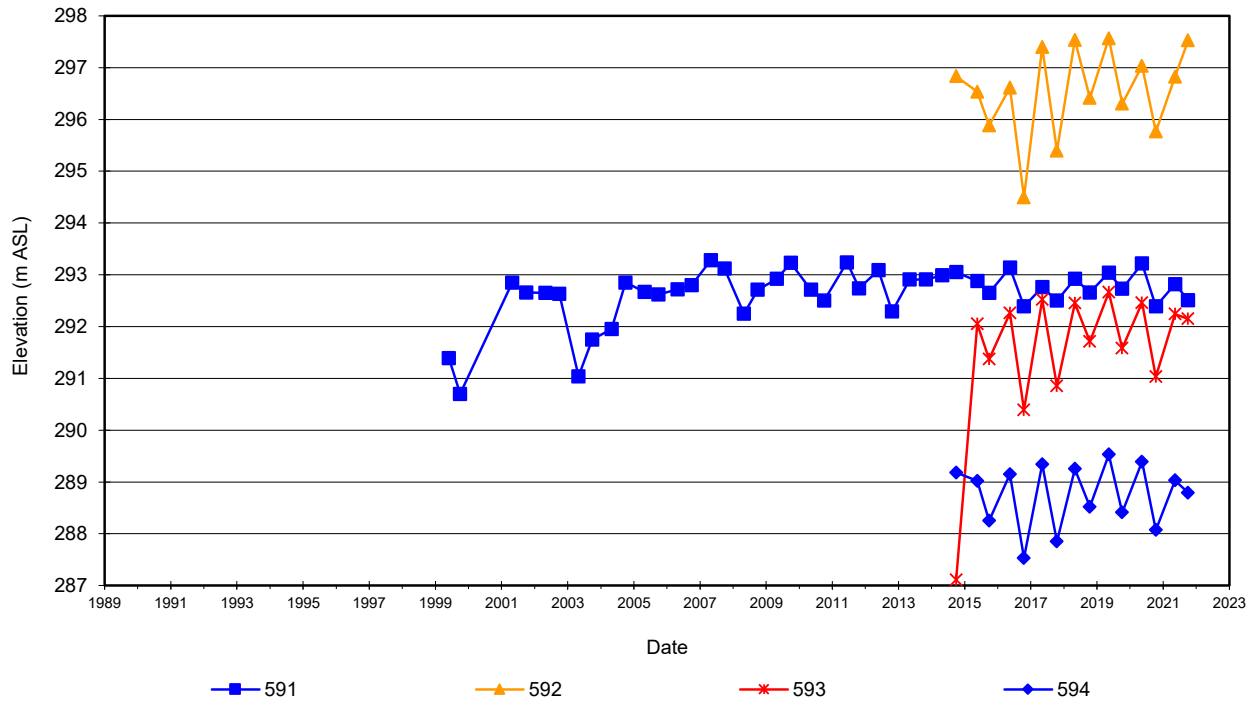


Figure C-19
Groundwater Hydrograph - Monitoring Well 98-2 and Related Wells
Oxford County Waste Management Facility

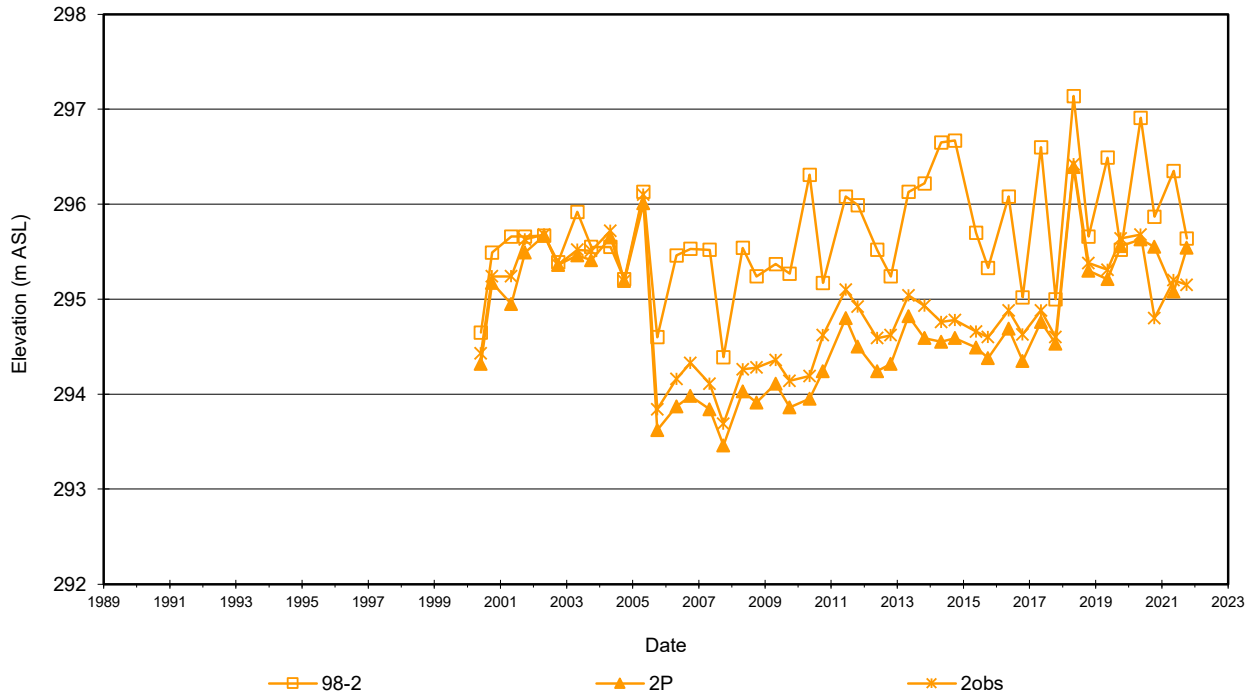


Figure C-20
Groundwater Hydrograph - Monitoring Wells 98-4 & 98-14
Oxford County Waste Management Facility

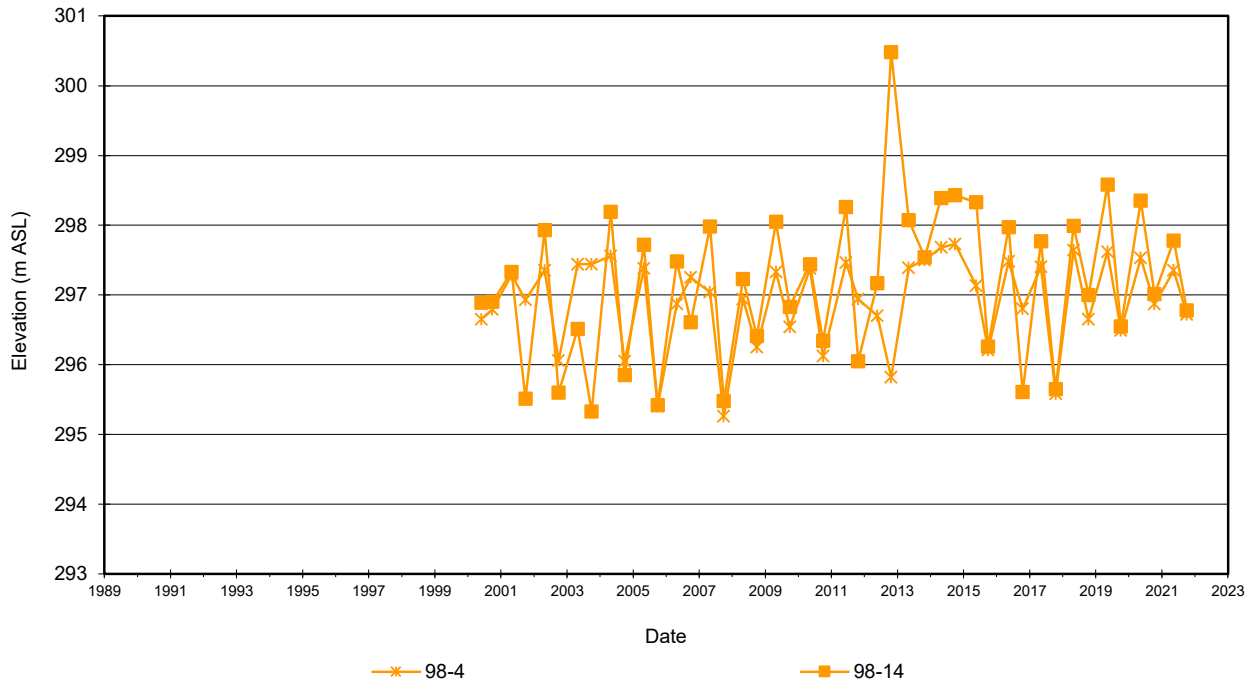


Figure C-21
Groundwater Hydrograph - Monitoring Well 98-7 and Related Wells
Oxford County Waste Management Facility

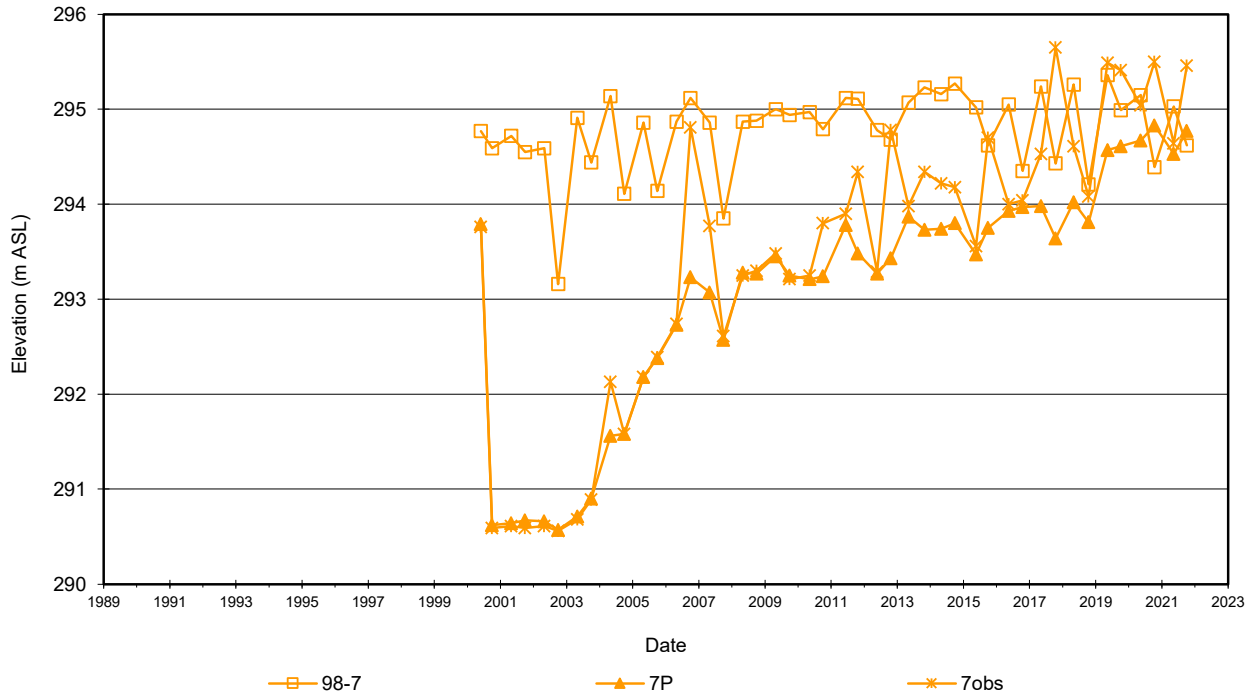


Figure C-22
Groundwater Hydrograph - Monitoring Wells 98-9 & 98-13
Oxford County Waste Management Facility

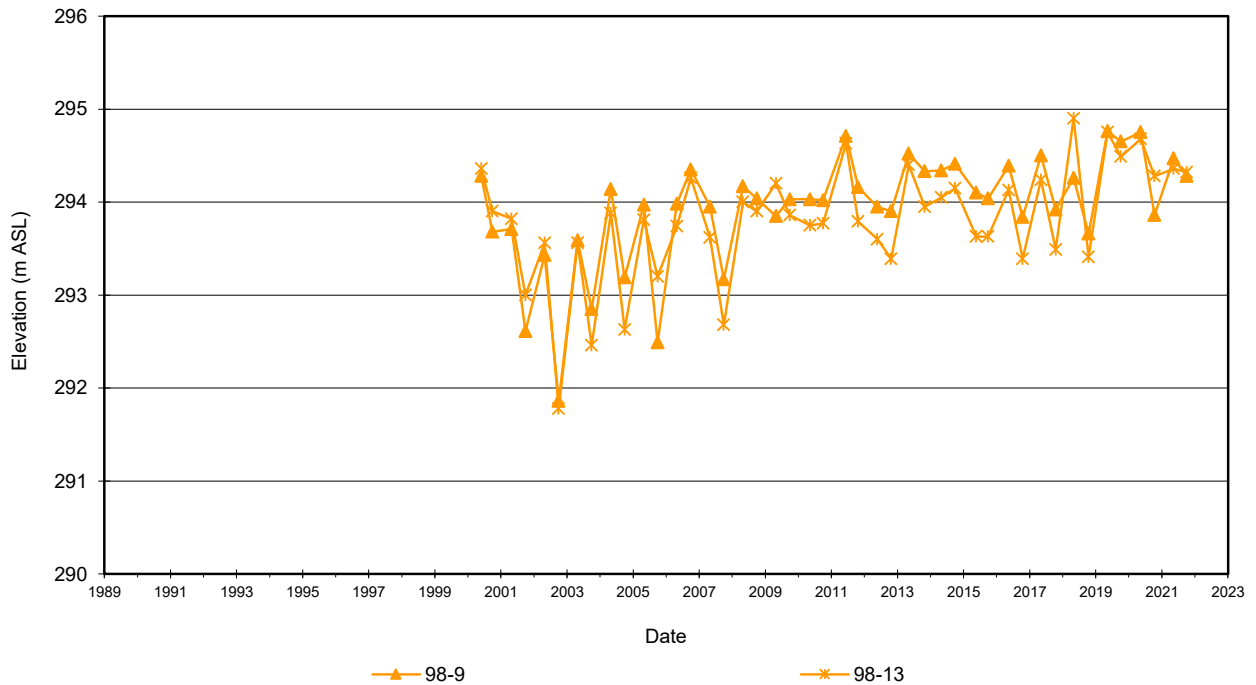


Figure C-23
Groundwater Hydrograph - Monitoring Well 98-10 and Related Wells
Oxford County Waste Management Facility

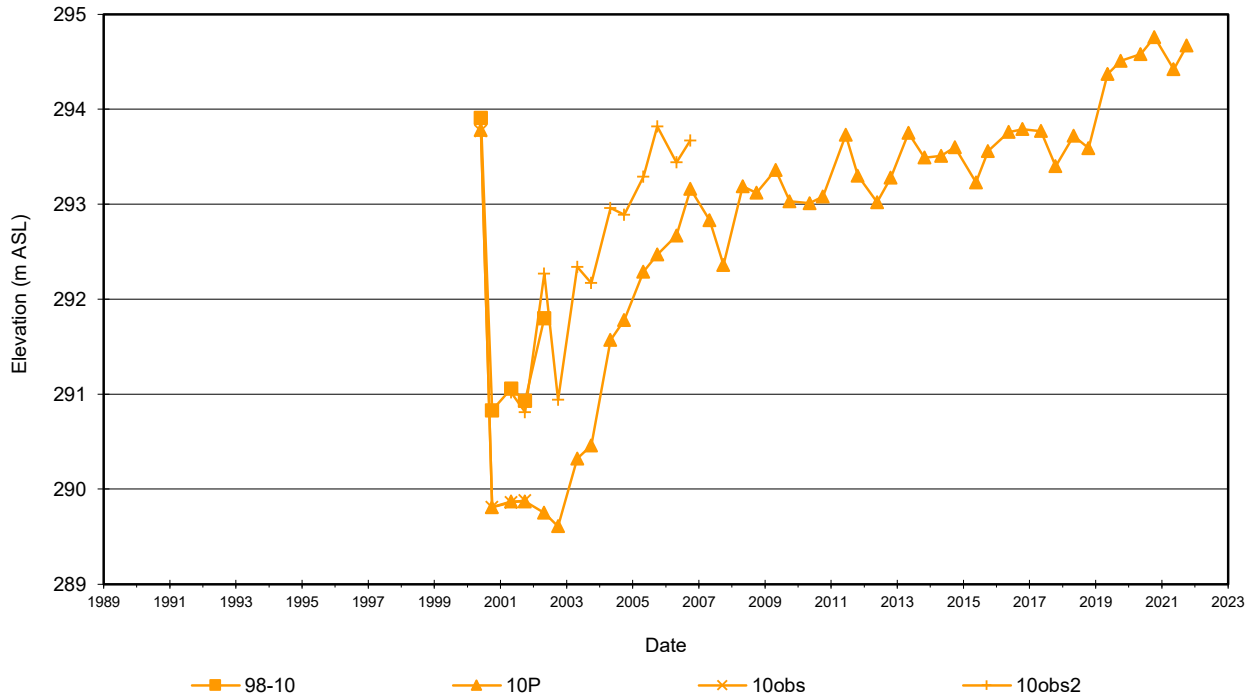


Figure C-24
Groundwater Hydrograph - Monitoring Wells 98-11 & 98-12
Oxford County Waste Management Facility

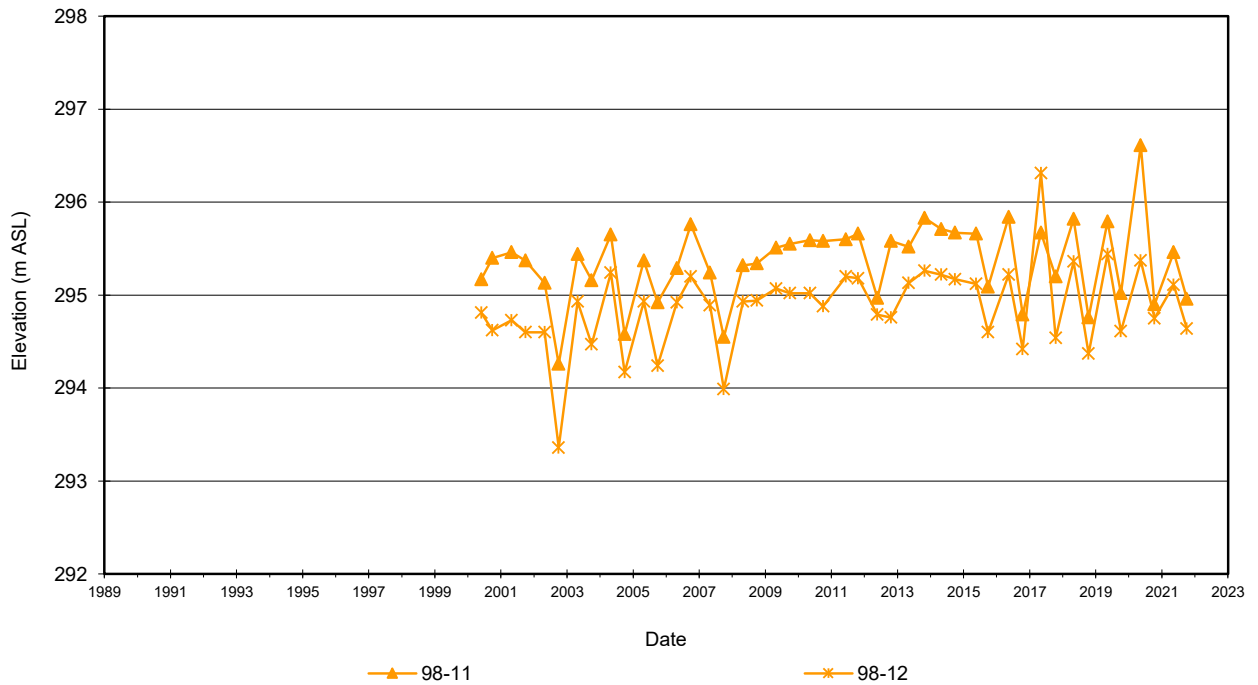


Figure C-25
Groundwater Hydrograph - 2000 Series Monitoring Wells
Oxford County Waste Management Facility

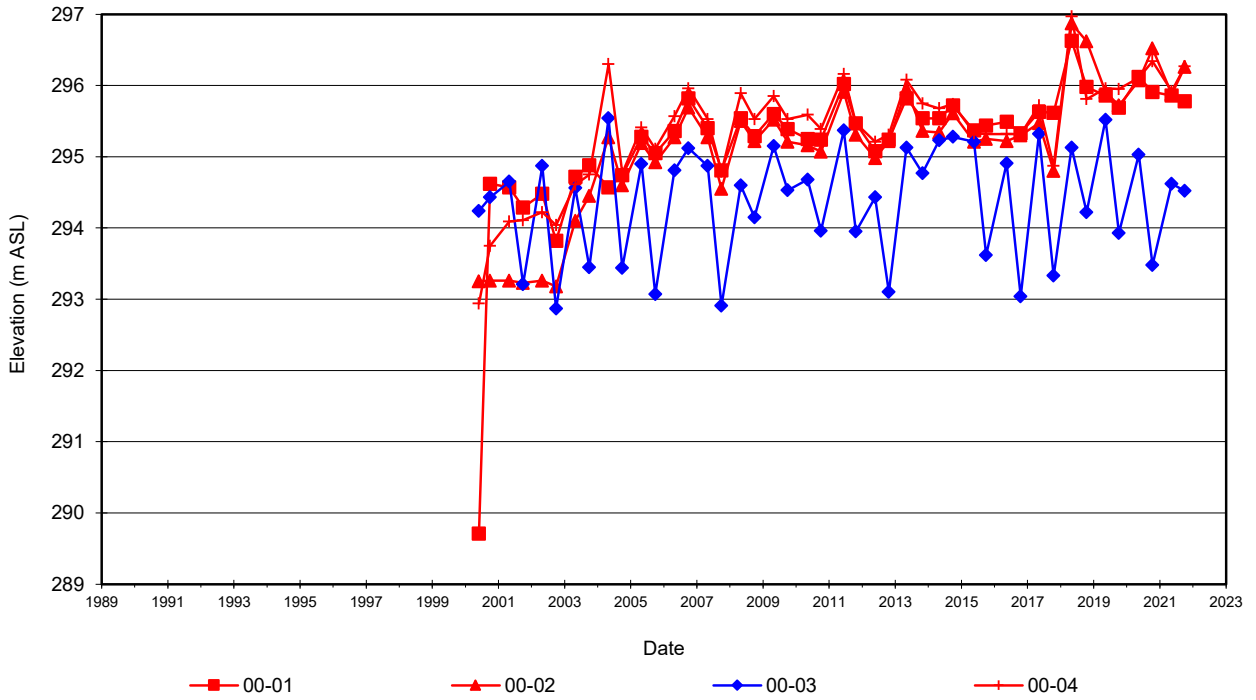


Figure C-26
Groundwater Hydrograph - Monitoring Well 03-8
Oxford County Waste Management Facility

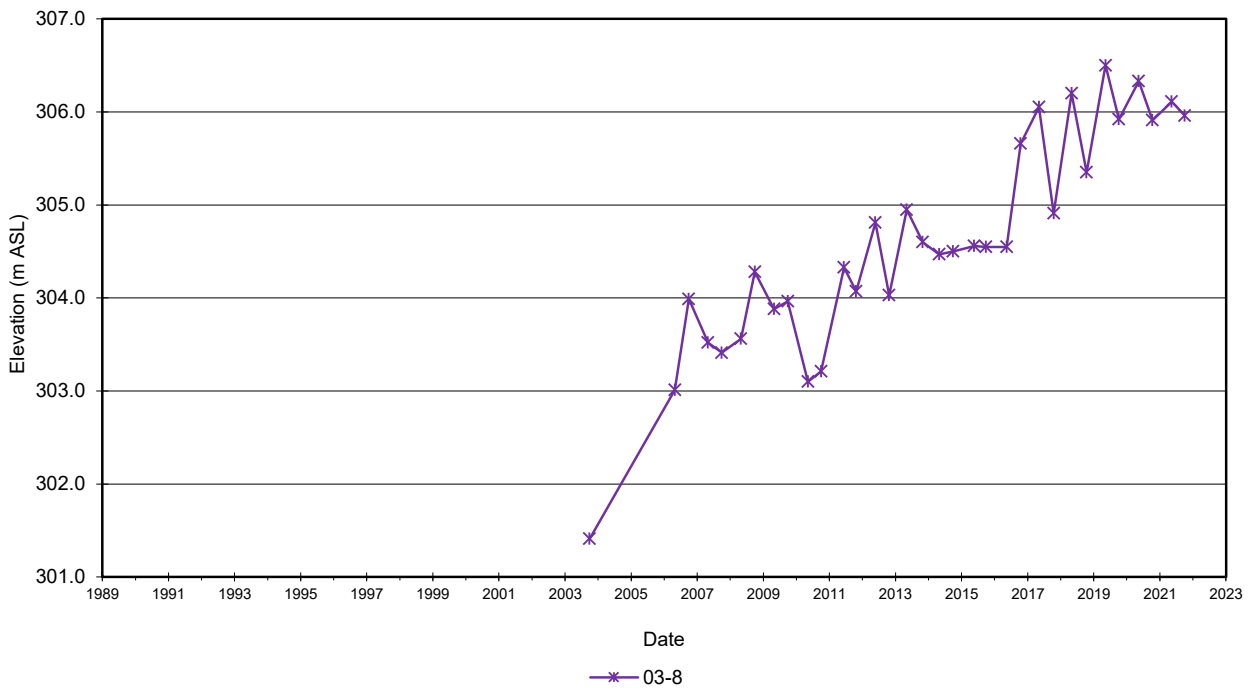
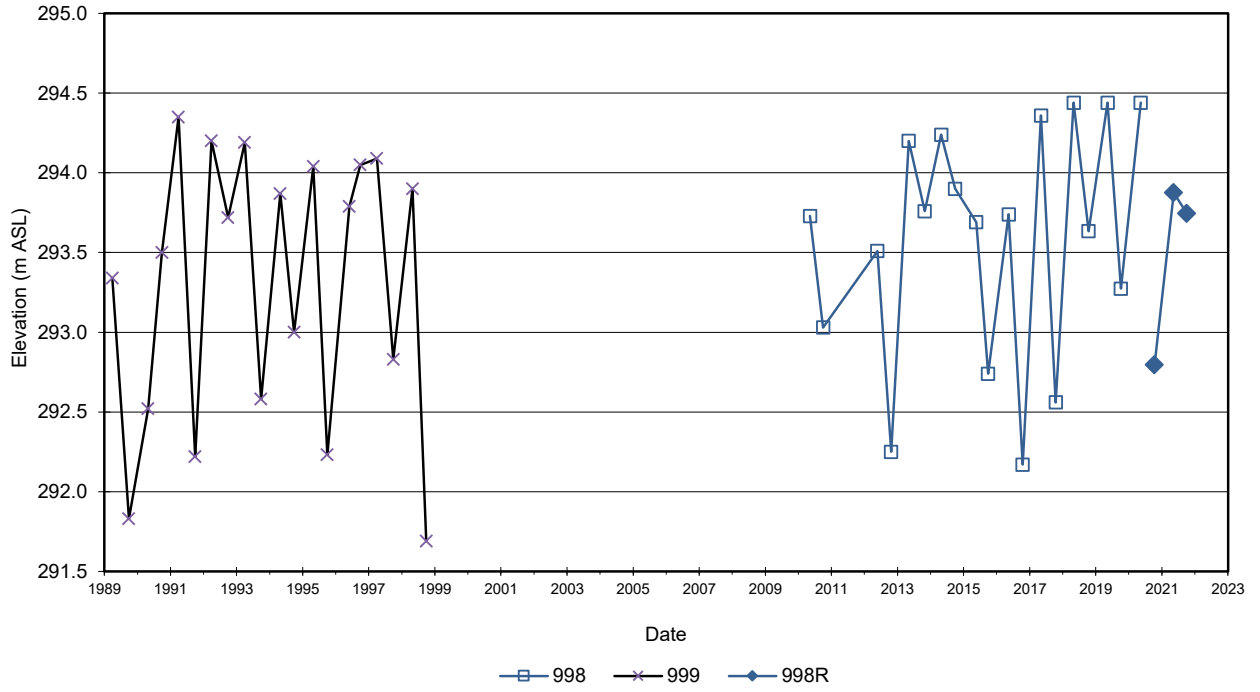


Figure C-27
Groundwater Hydrograph - Monitoring Well 998 and Domestic Well 999
Oxford County Waste Management Facility



APPENDIX

D

GROUNDWATER
CHEMISTRY

**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5	NC	NC	6.5 - 8.5	NC	5	5	80 - 100	30 - 500	NC	NC	500
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
										411				295
03-7s	May-13	FT	7.49	1004	8.2	8.11	889	101	<5	312	309	309	<5	20.2
	Oct-13		7.58	1155	12.5	8.08	1080	102	<5	433	354	354	<5	26.3
	May-14		7.40	950	8.5	7.89	978	702	<5	418	372	372	<5	19.2
	Oct-14		7.40	999	10.7	8.15	1100	484	<5	430	318	318	<5	23.8
	May-15		7.21	740	12.5	7.88	929	1100	5	445	298	298	<5	18.3
	Oct-15		7.35	857	15.2	7.98	1100	934	<5	338	292	292	<5	21.1
	May-16		7.33	656	10.9	8.09	782	1180	<5	361	268	268	<5	15.1
	Oct-16		7.04	970	17.2	8.18	934	5930	<5	417	297	297	<5	25.4
	May-17		7.23	692	8.26	8.24	827	415	5	341	328	328	<5	14.4
	Oct-17		7.23	823	16.32	8.24	1020	5370	7	454	354	354	<5	19.3
	May-18		7.47	1030	9.20	7.27	1220	2490	<5	526	407	407	<5	23.4
	Oct-18		7.82	1090	14.15	7.43	1210	1260	<5	570	532	532	<5	22.3
	May-19		6.94	1390	9.10	7.12	1760	2120	2	774	529	529	<10	24.2
Oct-19		7.46	1620	14.95	7.14	1710	1770	3.5	802	663	663	<10	22.0	
May-20		7.25	1770	9.02	7.26	2020	1640	2.6	864	537	537	<2.0	25.7	
03-7SR	Oct-20	FT	7.45	872	14.96	7.48	1090	2780	<2.0	508	520	520	<2.0	39.0
	May-21		7.18	905	8.6	8.07	903	2122	<3	361	331	331	<2	51
	Oct-21		7.51	960	15.2	8.13	1030	3700	3	233	367	367	<2	43
111	Oct-85	FT				7.9	364			89				
	Apr-86					7.9	382			104				
	Oct-86					7.8	365			99				
	Apr-87					7.8	382			101				
	Oct-87					8.0	354			114				
	May-88					7.8	388			120				
	Oct-88					7.7	381			111				
	May-89					8.1	374			100				
	Oct-89					7.9	363			91				
	May-90					7.9	377			105				
	Oct-90					8.0	370			102				
	May-91					8.1	376			102				
	Nov-91					8.0	374			105				
	May-92					8.0	377			106				
	Oct-92					8.0	364			109				
	Apr-93					8.1	356			102				
	Nov-93					8.0	364			105				
	May-94					8.1	374			108				
	Oct-94					8.1	367			108				
	May-95					8.1	379			110				
	Oct-95					8.1	374			106				
	May-97						399			117				
	Oct-97						375			110				
	May-98					8.0	399			130				
	Nov-98					7.9	352			99				
	Jun-99					8.2	451			151				
	Oct-99					8.1	455			141				
Jun-00					7.8	535	2	6	179					
Oct-00					7.9	467	31	<5	157					
May-01					8.0	427	25	6	164					
Nov-01					8.0	449	31	<5	152					
May-02					7.9	541	13	<5	188					
Nov-02					8.1	487	28	<5	156					
May-03					8.1	613	14	<5	196	144	142	2	71	
Oct-03					8.2	627	26	<5	209	147	145	2	67	
May-04					8.0	551	9	4	167	133	132	1	56	
Oct-04					8.3	524	22	<2.5	142	125	122	3	67	
May-05					8.3	504	124	<5	145	124	152	<1	62	
Oct-05					8.1	484	115	<5		130	158		53	
May-06					7.9	531	56	110	220	130	129	<10	66	
Oct-06					8.0	484	18	66	190	110	109	<10	59	

Notes: - ODWQS - Ontario Drinking Water Quality Standard (June 2003) - AO - Aesthetic Objective - † - sampled by Oxford County Board of Health
 - MAC - Maximum Acceptable Concentration - OG - Operational Guideline - * - result interpreted with caution or considered questionable
 - IMAC - Interim Maximum Acceptable Concentration - NC - No criteria



**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
03-7s	May-13	FT	85.2	95.3	<0.25	9.14	24.2	20.9	<0.25	<0.25		<0.001	6.9	
	Oct-13		121	139	<0.25	13.4	31.7	30.3	<0.25	<0.25		<0.001	5.3	
	May-14		122	87.0	<0.25	9.42	27.5	20.3	<0.25	<0.25		<0.001	2.6	
	Oct-14		116	153	<0.25	13.5	34.2	30.9	<0.25	<0.25		<0.001	4.1	
	May-15		132	113	<0.10	10.7	28.1	27.5	<0.10	<0.10		<0.001	3.7	
	Oct-15		86.3	163	<0.25	13.6	29.8	34.3	<0.25	<0.25		<0.001	4.9	
	May-16		102	91.0	<0.25	10.5	25.7	26.7	<0.25	<0.25		<0.001	4.2	
	Oct-16		118	121	<0.25	11.7	29.7	28.0	<0.25	<0.25		<0.001	3.6	
	May-17		101	57.7	<0.10	9.48	21.6	21.2	<0.10	<0.10		<0.001	2.9	
	Oct-17		133	140	<0.25	12.1	29.6	33.4	<0.25	<0.25		<0.001	3.6	
	May-18		157	137	<0.25	10.3	32.5	36.5	2.10	<0.25		<0.001	3.8	
	Oct-18		170	132	<0.25	13.0	35.3	37.0	<0.25	<0.25		<0.001	3.7	
May-19		210	301	<0.10	17.5	60.9	58.9	<0.10	<0.050	<0.11	0.0022	6.03		
Oct-19		236	287	<0.10	19.6	51.8	72.2	<0.10	<0.050	<0.11	0.0065	4.26		
May-20		252	404	<0.10	18.0	56.8	82.6	0.31	<0.050	0.31	0.0018	5.75		
03-7SR	Oct-20	FT	150	77.3	0.06	16.1	32.4	27.4	2.60	<0.010	2.60	0.0014	3.84	
	May-21		98.2	57	<0.06	14.7	28.1	24.1	4.02	<0.03		<0.002	3.2	
	Oct-21		45.2	77	0.06	18.9	29.2	34.7	6.30	<0.03		<0.002	2.0	
111	Oct-85	FT	22	6		1.2	9	38				0.0010	4.6	
	Apr-86		26	6		1.2	10	38				0.0010	3.0	
	Oct-86		24	5			10					0.0010	1.9	
	Apr-87		24	6			10					0.0010	2.9	
	Oct-87		26	5			12					0.0010	2.3	
	May-88		30	7			11					0.0010	2.5	
	Oct-88		27	7			10	36				0.0010	3.0	
	May-89		25	6			9					0.0015	2.4	
	Oct-89		21	6			9					0.0040	2.4	
	May-90		26	7			10					0.0010	1.7	
	Oct-90		25	7			10					0.0015	2.3	
	May-91		24	5			10					0.0010	1.8	
	Nov-91		25	7			10					0.0085	3.0	
	May-92		25	8			11					0.0010	2.4	
	Oct-92		26	7			11					0.0020	1.8	
	Apr-93		25	6			10					0.0010	2.1	
	Nov-93		25	6			10					0.0018	2.7	
	May-94		25	8		1.1	11	42				0.0000	2.9	
	Oct-94		26	7		1.0	11	41				0.0011	2.2	
	May-95		26	8		0.8	11	40				0.0011	2.3	
	Oct-95		25	8		1.0	10	39				0.0010	2.6	
	May-97		28	8		0.7	11	41				0.0010	2.8	
	Oct-97		26	9		1.0	11	35				0.0010	3.1	
	May-98		31	13	1.30	1.1	13	39				<0.001	2.9	
	Nov-98		23	10	1.30	1.6	10	37				<0.001	3.3	
	Jun-99		36	30	1.20	1.0	15	44				<0.001	1.6	
	Oct-99		33	33	1.20	1.3	14	44				<0.001	1.5	
Jun-00		43	57	1.90	1.2	18	50				0.0010	1.6		
Oct-00		38	35	1.10	1.2	15	48				<0.001	1.4		
May-01		40	37	1.20	1.2	16	47				<0.001	1.4		
Nov-01		36	32	1.20	1.3	15	45				<0.001	1.5		
May-02		45	56	1.10	1.0	18	50				<0.002	1.2		
Nov-02		37	42	1.10	1.1	16	49				<0.002	1.6		
May-03		47	65	1.00	1.3	19	54				<0.002	1.7		
Oct-03		49	72	1.00	1.3	21	60			0.20	<0.002	1.7		
May-04		40	50	1.20	1.1	17	52				<0.002	1.7	0.06	
Oct-04		33	38	1.20	1.0	15	52			<0.1	<0.002	3.8		
May-05		37	36	1.20	1.0	15	51			0.10	0.0020	1.5		
Oct-05		33	32	<0.5	1.0	13	51			<0.5	<0.001	1.4		
May-06		55	66	1.00	1.0	19	58			<0.2	<0.001	1.6		
Oct-06		46	49	1.10	1.0	18	50			0.20	<0.001	2.0		

Notes: - ODWQS - Ontario Drinking Water Quality Standard (June 2003) - AO - Aesthetic Objective - † - sampled by Oxford County Board of Health
- MAC - Maximum Acceptable Concentration - OG - Operational Guideline - * - result interpreted with caution or considered questionable
- IMAC - Interim Maximum Acceptable Concentration - NC - No criteria



**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5	5	5	80 - 100	30 - 500			500	
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
										411			295	
111	May-07	FT				7.9	457	22	65	150	100	99	<10	58
cont.	Oct-07					8.1	465	25	54	160	130	128	<10	54
	May-08					8.1	516	17	23	160	140	138	<10	63
	Oct-08					7.9	437	27	<1	150	120	119	<10	60
	May-09					7.92	440	40	1.8	132	125	124	<10	58.0
	Oct-09					8.20	428	33	3.2	124	121	119	<10	57.7
	May-10		8.28	410	10.1	8.17	382	14	<5	111	115	115	<5	61.0
	Oct-10		7.97	450	11.2	8.33	359	20	<5	116	116	114	<5	61.5
	Jun-11		8.10	372	10.4	8.11	390	151	<5	115	116	116	<5	67.0
	Oct-11		8.08	411	11	8.21	418	232	<5	134	123	123	<5	71.5
	May-12		8.34	517	12.5	8.00	466	26	5	135	134	134	<5	62.3
	Oct-12		8.04	413	13	8.16	492	65.9	<5	150	140	140	<5	64.1
	May-13		8.23	596	9.9	8.12	493	169	<5	146	129	129	<5	63.7
	Oct-13		8.35	530	12.1	8.10	455	68.4	<5	138	129	129	<5	64.8
	May-14		8.06	530	8.9	8.24	498	273	<5	141	127	127	<5	66.0
	Oct-14		8.27	450	9.7	8.28	497	1230	6	138	127	127	<5	67.0
	May-15		7.74	306	12.6	7.90	457	569	<5	139	123	123	<5	65.1
	Oct-15		8.00	349	13.1	7.89	453	4450	<5	133	109	109	<5	57.7
	May-16		8.32	401	12.9	8.00	501	305	<5	147	140	140	<5	77.2
	Oct-16		7.91	450	14.4	8.12	466	6600	7	123	132	132	<5	64.0
	May-17		Unable to sample due to well deficiencies											
111R	Oct-17	FT	7.65	271	11.70	7.73	345	414	6	93.1	98	98	<5	80.8
	May-18		8.42	329	11.30	8.16	369	1120	<5	95.9	86	86	<5	71.0
	Oct-18		8.28	332	10.64	7.63	338	504	<5	89.7	91	91	<5	71.0
	May-19		7.98	305	10.41	8.14	377	900	<2.0	105	128	128	<10	75.5
	Oct-19		8.58	341	11.75	8.20	375	2270	<2.0	98.4	292*	292*	<10	71.6
	May-20		7.78	320	10.03	8.18	393	262	<2.0	115	134	134	<2.0	76.0
	Oct-20		8.35	310	12.92	8.15	370	370	<2.0	99.4	114	114	<2.0	71.4
	May-21	FT	8.10	394	10.2	8.21	363	272	9	114	135	135	<2	76
	Oct-21		8.46	380	12.7	8.21	383	3310	6	132	107	107	<2	73
141	Oct-85	FT				7.7	605			265				
	Mar-86					7.6	630			294				
	Oct-86					7.6	580			260				
	Apr-87					7.6	595			258				
	Oct-87					7.8	545			279				
	May-88					7.6	605			591				
	Oct-88					7.1	1058			610				
	May-89					7.9	572			249				
	Oct-89					7.7	555			239				
	May-90					7.7	601			271				
	Oct-90					7.8	575			253				
	May-91					7.7	569			242				
	Nov-91					7.9	553			244				
	May-92					7.7	587			286				
	Oct-92					7.7	574			276				
	Apr-93					7.8	576			277				
	Nov-93					7.5	689			364				
	May-94					7.9	605			293				
	Oct-94					7.9	600			301				
	May-95					7.7	594			283				
	Oct-95					7.7	614			294				
	May-97						572			293				
	Oct-97						545			262				
	May-98					7.8	548			260				
	Nov-98					7.9	524			223				
	Jun-99					8.0	973			565				
	Oct-99					7.9	533			250				
	Jun-00					7.5	606	1	6	392				
	Oct-00					7.2	598	22	10	347				

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
111	May-07	FT	36	38	1.20	1.0	14	47			0.20	<0.001	3.0	
cont.	Oct-07		41	38	0.90	2.0	15	51			0.50	<0.001	2.0	
	May-08		41	45	1.10	1.0	15	46			0.30	<0.001	2.0	
	Oct-08		36	36	1.20	1.0	14	47			0.40	0.0010	2.0	
	May-09		31.9	31.4	1.08	<1.0	12.8	42.9	0.35	<0.10		<0.0010	2.0	
	Oct-09		31.1	33.8	1.21	1.10	11.2	38.9	0.58	<0.10		<0.0010	2.2	
	May-10		25.6	22.3	1.10	1.19	11.4	43.9	<0.05	<0.05		<0.001	1.3	
	Oct-10		27	21.4	1.23	1.06	11.8	43.7	<0.05	<0.05		<0.001	8.0	
	Jun-11		26.1	23.2	1.08	1.16	12.0	43.2	<0.05	<0.05		<0.001	2.7	
	Oct-11		30.9	27.5	1.09	1.04	13.7	45.8	<0.05	<0.05		<0.001	13.0	
	May-12		31.3	26.5	0.98	1.09	13.9	43.6	0.13	<0.05		<0.001	3.9	
	Oct-12		35.3	41.2	0.91	1.35	15.0	49.0	<0.05	<0.05		<0.001	2.5	
	May-13		33.1	35.7	0.78	1.04	15.5	48.1	<0.10	<0.10		<0.001	6.3	
	Oct-13		31.7	28.9	1.04	1.14	14.2	46.9	0.06	<0.05		<0.001	3.8	
	May-14		32.4	33.2	0.97	1.11	14.6	45.3	0.08	<0.05		<0.001	6.1	
	Oct-14		30.9	32.5	1.05	1.10	14.7	45.8	0.24	<0.10		<0.001	2.8	
	May-15		33.5	31.3	<0.05	2.07	13.5	44.6	<0.05	<0.05		<0.001	1.5	
	Oct-15		32.5	30.5	0.92	1.41	12.6	40.6	1.02	<0.05		<0.001	3.1	
	May-16		34.5	35.9	1.10	1.25	14.8	48.8	0.14	<0.05		<0.001	2.1	
	Oct-16		29.3	29.3	1.05	1.24	12.0	44.7	0.26	<0.05		<0.001	3.2	
	May-17													
111R	Oct-17	FT	22.7	2.99	1.60	1.43	8.85	39.7	<0.05	<0.05		<0.001	2.1	
	May-18		22.3	3.70	1.23	1.18	9.77	40.5	0.47	<0.05		<0.001	1.6	
	Oct-18		21.2	3.68	1.25	1.21	8.93	38.8	0.22	<0.05		<0.001	1.6	
	May-19		24.7	4.11	1.28	1.02	10.6	43.0	0.371	<0.010	0.371	0.0030	1.67	
	Oct-19		23.1	3.92	1.41	1.01	9.88	41.8	0.066	<0.010	0.066	<0.010	1.69	
	May-20		27.2	4.53	1.33	0.979	11.4	42.8	0.110	<0.010	0.110	<0.0010	2.07	
	Oct-20		23.1	4.18	1.40	0.929	10.1	41.6	0.036	<0.010	0.036	0.0012	1.84	
	May-21	FT	28.7	5	1.29	0.993	10.2	41.7	0.08	<0.03		<0.002	3.4	
	Oct-21		36.1	6	1.29	1.15	10.3	42.4	<0.06	<0.03		<0.002	1.0	
141	Oct-85	FT	62	4		1.2	27	25				0.0010	1.3	
	Mar-86		69	5		1.2	29	21				0.0010	2.1	
	Oct-86		58	5			28					0.0020	1.6	
	Apr-87		56	6			29					0.0010	2.2	
	Oct-87		59	6			32					0.0010	1.0	
	May-88		66	6			31					0.0015	1.3	
	Oct-88		187	7			34	8				0.0010	6.0	
	May-89		54	6			28					0.0015	1.5	
	Oct-89		51	7			27					0.0010	0.8	
	May-90		63	6			28					0.0010	0.9	
	Oct-90		58	6			27					0.0015	1.5	
	May-91		54	5			26					0.0040	0.8	
	Nov-91		51	6			28					0.0125	2.1	
	May-92		65	7			30					0.0010	2.3	
	Oct-92		60	6			31					0.0010	1.2	
	Apr-93		63	7			29					0.0010	1.1	
	Nov-93		89	6			34					0.0010	2.4	
	May-94		65	7		1.1	32	23				0.0022	2.4	
	Oct-94		67	7		1.2	32	22				0.0010	1.7	
	May-95		64	6		1.1	30	24				0.0010	2.0	
	Oct-95		68	7		1.3	30	22				0.0010	2.6	
	May-97		68	5		1.0	30	28				0.0010	3.3	
	Oct-97		58	5		1.2	29	23				0.0010	2.6	
	May-98		59	6	0.60	1.2	27	26				<0.001	2.8	
	Nov-98		47	7	0.60	1.3	26	27				<0.001	5.4	
	Jun-99		154	7	0.50	1.3	44	19				<0.001	2.5	
	Oct-99		53	12	0.70	1.4	29	29				<0.001	6.8	
	Jun-00		102	10	0.60	1.1	33	24				0.0080	2.8	
	Oct-00		103	5	0.40	1.5	22	10				<0.001	3.3	

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Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L	
			pH	Cond.	Temp.										
ODWQS			6.5 - 8.5			6.5 - 8.5		5	5	80 - 100	30 - 500			500	
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO	
											411			295	
141 cont.	May-01	FT				7.7	741	26	8	485					
	Nov-01					7.7	744	16	6	423					
	May-02					7.6	961	14	<5	571					
	Oct-02					7.6	1300	29	42	807	562	560	2	284	
	May-03					7.6	2560	153	47	1730	1330	1330	5	452	
	Oct-03					7.8	2220	133	42	1360	1070	1060	7	408	
	May-04					7.6	2700	27	71	1360	1550	1540	5	214	
141R	Oct-04	FT				8.2	733	21	16	355	242	238	4	156	
	May-05					8.0	1080	630	6	558	370	452	<1	204	
	Oct-05					8.2	812	2640	7		343	418		126	
	May-06					7.2	1000	35	120	640	370	369	<10	224	
	Oct-06					7.5	864	9	71	400	350	349	<10	136	
	May-07					7.1	1170	4	6	750	390	389	<10	315	
	Oct-07					7.9	784	12	33	340	340	337	<10	105	
	May-08					7.6	1210	5	12	620	440	438	<10	348	
	Oct-08					7.7	802	15	2	400	340	338	<10	114	
	May-09					7.58	1370	24	12	799	477	475	<10	366	
	Oct-09					8.01	815	6	4	379	338	335	<10	115	
	May-10			7.16	1480	8.5	8.05	1350	2	5	849	473	473	<5	433
	Oct-10			7.35	1110	12.2	8.20	1000	6	<5	604	385	385	<5	282
	Jun-11			7.22	1157	11	7.78	1320	37	<5	862	455	455	<5	443
	Oct-11			7.13	896	10.9	8.18	927	8100	<5	523	387	387	<5	224
	May-12			7.03	1027	10.2	8.07	1100	6	5	624	385	385	<5	264
	Oct-12			7.06	810	11.2	8.18	861	228	<5	552	320	320	<5	245
	May-13			7.42	1450	9.1	7.95	1500	101	<5	894	476	476	<5	438
	Oct-13			7.68	1050	11.5	7.81	1030	29.1	<5	570	441	441	<5	168
	May-14			6.85	1429	9.4	7.76	1440	207	<5	789	510	510	<5	350
	Oct-14			7.38	1015	10.7	8.25	1250	2230	7	602	409	409	<5	291
May-15			6.85	1069	15.7	7.92	1520	3645	<5	859	494	494	<5	414	
Oct-15			7.17	794	12.0	8.02	1130	85.3	<5	604	388	388	<5	199	
May-16			6.97	1002	10.4	8.07	1510	2540	<5	827	521	521	<5	415	
Oct-16			6.91	1120	13.5	8.22	1100	2880	<5	560	448	448	<5	190	
May-17			6.70	2080	10.17	7.99	2560	7740	15	1410	708	708	<5	882	
Oct-17			7.10	954	11.96	8.06	1280	5400	11	736	494	494	<5	353	
May-18			7.05	1880	10.80	6.96	2200	585	12	1520	629	629	<5	919	
Oct-18			7.38	1340	11.64	7.31	1600	465	<5	954	599	599	<5	491	
May-19			7.30	1480	11.70	7.07	1410	492	3.0	844	574	574	<50	354	
Oct-19			7.29	1270	12.00	7.31	1460	3790	5.7	873	581	581	<10	352	
May-20			6.66	1480	9.73	7.14	1740	3300	7.4	1050	634	634	<2.0	511	
Oct-20			7.31	1170	13.35	7.21	1450	817	5.7	849	543	543	<2.0	365	
May-21			6.75	1873	10.2	7.48	2050	68.8	8	1170	614	614	<2	610	
Oct-21			7.11	1640	11.9	8.26	1120	381	5	464	233	142	<2	350	
233	Mar-86	FT				7.7	655			296					
	Jun-86					7.8	705			286					
	Oct-86					7.6	605			325					
	Apr-87					7.5	685			314					
	May-88					7.5	640			320					
	May-98					7.6	796			438					
	Nov-98					7.7	790			422					
	Jun-99					7.7	958			511					
	Oct-99					7.3	783			497					
	Jun-00					7.6	772	2	<5	535					
	Oct-00					7.0	794	18	<5	508					
	May-01					7.6	904	27	<5	599					
	Nov-01					7.7	953	11	6	580					
	May-02					7.8	1000	14	<5	481					
	Oct-02					7.9	932	10	<5	559	427	424	3	172	
May-03					7.9	1050	18	<5	644	425	422	3	208		
Oct-03					8.0	937	31	<5	564	396	392	4	129		

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Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
141	May-01	FT	132	8	0.50	1.3	38	22				<0.001	4.2	
cont.	Nov-01		112	8	0.60	1.4	35	24				<0.001	3.7	
	May-02		160	8	0.50	1.2	42	23				<0.002	5.6	
	Oct-02		230	9	0.50	1.7	56	25			0.17	<0.002	10.8	
	May-03		525	14	0.30	1.3	102	23				<0.002	31.0	
	Oct-03		386	12	0.30	1.7	96	25			<0.1	0.0020	28.2	
	May-04		360	15	0.30	1.5	112	24				<0.002	37.0	1.10
141R	Oct-04	FT	83	3	0.60	2.6	36	54			<0.1	<0.002	5.2	
	May-05		140	4	0.50	1.9	49	41			0.10	0.0010	2.6	
	Oct-05		90	3	<0.5	2.4	37	44			0.50	<0.001	2.1	
	May-06		165	5	0.40	2.0	56	48			<0.2	<0.001	1.8	
	Oct-06		97	4	0.50	2.0	38	38			0.30	<0.001	2.0	
	May-07		201	5	0.40	2.0	61	44			<0.2	<0.001	3.0	
	Oct-07		79	4	0.50	2.0	34	42			0.20	<0.001	1.0	
	May-08		165	5	0.40	2.0	50	40			<0.1	0.0050	2.0	
	Oct-08		101	4	0.60	2.0	36	40			0.50	<0.001	2.0	
	May-09		210	8.5	0.37	1.70	66.7	44	<0.50	<0.10		<0.0010	3.9	
	Oct-09		94.4	4.0	0.55	1.60	34.7	38.7	0.65	<0.10		<0.0010	2.4	
	May-10		231	5.6	0.28	1.80	66.2	41.7	0.19	<0.05		<0.001	4.3	
	Oct-10		151	4.71	0.39	1.96	55.2	46.4	0.41	<0.05		<0.001	4.9	
	Jun-11		232	7.29	<0.05	2.20	68.7	39.9	0.24	<0.05		<0.001	5.9	
	Oct-11		134	5.61	<0.05	1.56	45.8	40.7	0.46	<0.05		<0.001	14.4	
	May-12		162	5.29	<0.05	1.67	53.3	38.7	0.58	<0.05		<0.001	14.1	
	Oct-12		134	5.22	0.42	2.20	52.8	47.5	0.63	0.25		<0.001	3.9	
	May-13		240	7.20	<0.5	1.74	71.6	32.4	1.02	<0.5		<0.001	7.3	
	Oct-13		142	5.76	<0.25	1.61	52.4	32.3	1.11	<0.25		<0.001	4.4	
	May-14		208	6.56	<0.25	1.51	65.5	26.8	0.30	0.27		<0.001	7.5	
	Oct-14		142	6.28	<0.25	1.61	60.0	30.2	0.72	0.36		<0.001	4.4	
	May-15		226	6.53	<0.25	1.50	71.6	31.0	<0.25	<0.25		<0.001	4.6	
	Oct-15		148	5.27	<0.25	1.89	57.0	31.4	<0.25	<0.25		<0.001	5.3	
	May-16		215	6.66	<0.25	1.74	70.4	27.5	<0.25	<0.25		<0.001	3.7	
	Oct-16		137	5.22	<0.25	1.64	53.0	28.3	0.26	<0.25		<0.001	3.9	
	May-17		414	8.70	<0.5	2.01	91.7	30.7	<0.5	<0.5		<0.001	13.7	
	Oct-17		191	4.77	<0.25	1.66	63.0	34.1	1.02	<0.25		<0.001	4.5	
	May-18		452	8.30	<0.5	1.68	96.2	28.4	<0.5	<0.5		<0.001	13.2	
	Oct-18		251	6.64	<0.25	1.86	79.5	30.0	<0.25	<0.25		<0.001	4.4	
	May-19		210	5.50	0.30	1.45	77.8	24.0	0.18	<0.050	0.18	0.0023	5.07	
	Oct-19		221	5.70	0.30	1.78	77.9	33.0	<0.10	<0.050	<0.11	0.0192*	5.74	
	May-20		277	6.10	0.29	1.59	87.9	25.7	<0.10	<0.050	<0.11	0.0020	7.43	
	Oct-20		213	5.70	0.29	1.64	77.2	29.5	<0.10	0.186	0.186	<0.0010	5.19	
	May-21		331	8	0.29	1.71	83.0	25.3	0.24	0.53		<0.002	1.9	
	Oct-21		69.5	7	0.27	1.70	70.5	26.5	<0.06	<0.03		<0.002	4.0	
233	Mar-86	FT	81	13		1.7	23	29.2				0.0010	4.2	
	Jun-86		75	13		1.9	24	20				0.0015	2.2	
	Oct-86		90	12			24					0.0015	1.9	
	Apr-87		86	3			24					<0.001	3.1	
	May-88		86	12			26					<0.001	1.8	
	May-98		118	6	0.20	1.5	35	7.8				<0.001	4.0	
	Nov-98		114	8	0.20	1.5	33	10.1				<0.001	2.8	
	Jun-99		138	3	0.20	1.8	40	8.1				<0.001	1.4	
	Oct-99		141	3	0.20	3.2	35	10.3				<0.001	2.2	
	Jun-00		154	3	0.20	2.2	37	10.6				<0.001	1.8	
	Oct-00		136	3	0.20	2.0	41	9.9				<0.001	1.5	
	May-01		167	3	0.20	2.0	44	10.3				<0.001	1.4	
	Nov-01		162	3	0.20	2.1	43	10.2				<0.001	1.3	
	May-02		124	3	0.20	2.1	42	10.1				<0.002	1.2	
	Oct-02		152	5	0.30	1.9	44	8.8			<0.1	0.0020	1.3	
	May-03		185	5	0.20	3.0	44	10.8				<0.002	1.6	
	Oct-03		160	4	0.20	4.3	40	9.7			<0.1	0.0020	2.4	

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Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5		5	5	80 - 100	30 - 500			500
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
											411			295
233 cont.	May-04	FT				7.8	1090	3	3	429	471	468	3	258
	Oct-04					7.9	1060	19	<2.5	639	375	372	3	215
	May-05					7.9	1130	1990	<5	682	417	509	<1	210
233R	Oct-05	FT				8.0	1160	894	19		469	572		224
	May-06					7.3	1090	40	840	760	430	429	<10	233
	Oct-06					7.4	1110	7	22	650	430	429	<10	7
	May-07					7.2	1205	7	11	850	480	479	<10	263
	Oct-07					7.7	1190	6	7	640	470	468	<10	215
	May-08					7.8	1250	7	9	720	480	477	<10	249
	Oct-08					7.5	1290	11	1	770	480	478	<10	285
	May-09					7.63	1440	13	2	853	533	531	<10	324
	Oct-09					7.67	1510	5	2	894	527	525	<10	353
	May-10		7.24	1570	7.8	7.99	1420	2	<5	978	599	599	<5	377
	Oct-10		6.99	1780	12.0	7.93	1370	4	<5	940	612	612	<5	381
	Jun-11		7.21	1288	8.9	7.82	1320	171	<5	943	576	576	<5	338
	Oct-11		6.57	1396	12.6	7.98	1320	492	<5	978	569	569	<5	377
	May-12		7.09	1297	9.3	7.84	1460	10	<5	897	594	594	<5	333
	Oct-12		7.18	1147	13.0	8.08	1110	229	<5	913	441	441	<5	342
	May-13		7.12	1630	8.3	8.04	1350	141	<5	715	469	469	<5	332
	Oct-13		7.50	1620	11.6	7.93	1530	108	<5	972	594	594	<5	379
	May-14		6.89	1699	7.0	7.85	1560	933	<5	967	563	563	<5	394
	Oct-14		6.81	1479	13.5	7.67	1560	295	<5	786	359	359	<5	405
	May-15		6.90	1229	8.4	7.80	1500	672	<5	844	503	503	<5	409
	Oct-15		6.83	1215	14.5	7.88	1680	206	<5	1000	549	549	<5	460
May-16		6.93	1250	7.9	8.01	1510	157	5	939	527	527	<5	417	
Oct-16		6.70	1500	15.1	7.29	1210	3840	12	702	310	310	<5	420	
May-17		6.94	1270	9.13	8.04	1550	674	<5	851	583	583	<5	375	
Oct-17		6.56	1150	12.69	8.06	1440	230	<5	910	571	571	<5	383	
May-18		6.80	1310	8.00	6.99	1450	281	5	876	521	521	<5	383	
Oct-18		7.23	1400	12.29	7.38	1460	1040	<5	915	595	595	<5	409	
May-19		7.06	1510	7.31	7.00	1410	>4000	<2.0	935	594	594	<10	434	
Oct-19		7.21	1400	13.11	7.36	1450	689	<2.0	1010	529	529	<10	431	
May-20		7.00	1330	7.78	7.22	1500	36.1	3.1	948	552	552	<2.0	385	
Oct-20		6.94	1220	13.93	7.57	1550	947	<2.0	972	576	576	<2.0	391	
May-21		6.95	1418	8.9	7.88	1440	725	<3	765	479	479	<2	430	
Oct-21		7.20	1450	13.2	7.57	1500	615	3	1050	585	585	<2	450	
263	Jun-86	FT				7.7	740			294				
	Oct-86					7.7	695			325				
	Apr-87					7.5	655			304				
	May-88					7.6	525			252				
	May-98					7.6	620			353				
	Jun-00					7.6	395	3	<5	325				
	Oct-00					7.2	632	22	<5	364				
	May-01					7.8	615	20	<5	397				
	May-02					8.0	578	17	<5	308				
	May-03					8.1	506	8	<5	283	243	240	3	37
	May-05					8.1	506	291	<5	287	227	277	<1	28
263R	May-06	FT				7.4	833	32	280	610	290	289	<10	193
	Oct-06					7.7	753	7	42	400	290	289	<10	149
	May-07					7.6	677	16	30	430	290	289	<10	96
	Oct-07					8.0	684	10	16	350	300	297	<10	88
	May-08					8.0	837	17	17	380	320	317	<10	121
	Oct-08					7.9	696	14	4	330	310	308	<10	82.0
	May-09					8.01	705	14	3	350	303	300	<10	88.6
	Oct-09					8.07	663	11	4	348	296	293	<10	61.4
	May-10		7.82	640	8.6	8.13	623	8	5	325	297	297	<5	74.0

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
233	May-04	FT	91	6	0.20	2.5	49	9				<0.002	1.5	<0.05
cont.	Oct-04		177	5	0.20	1.9	48	9			<0.1	<0.002	4.1	
	May-05		160	5	0.10	1.5	42	8			<0.1	<0.001	1.9	
233R	Oct-05	FT	170	5	<0.5	7.6	60	17			<0.5	<0.001	3.7	
	May-06		196	7	0.10	5.0	66	24.1			<0.2	<0.001	2.6	
	Oct-06		163	6	0.10	4.0	59	21.7			<0.2	<0.001	4.0	
	May-07		230	5	0.10	4.0	68	20.5			<0.2	<0.001	3.0	
	Oct-07		158	5	<0.1	4.0	60	15.2			<0.2	<0.001	2.0	
	May-08		192	5	0.10	3.0	59	24			<0.1	<0.001	1.0	
	Oct-08		208	5	0.10	3.0	61	27			<0.5	<0.001	3.0	
	May-09		208	4.6	<0.10	2.9	80.8	23.8	<0.50	<0.10		0.0010	2.3	
	Oct-09		234	<2.0	<0.10	2.90	75.1	24.7	<0.50	<0.10		0.0010	2.0	
	May-10		260	4.50	<0.05	2.86	79.9	22.0	<0.05	<0.05		<0.001	1.9	
	Oct-10		251	5.20	<0.05	3.00	76.1	17.8	<0.05	<0.05		0.0020	8.4	
	Jun-11		250	6.32	<0.05	2.97	77.3	16.2	<0.05	<0.05		<0.001	3.8	
	Oct-11		264	6.93	<0.05	2.81	77.5	17.3	<0.05	<0.05		<0.001	8.4	
	May-12		237	6.09	<0.05	2.57	74.0	15.3	<0.05	<0.05		<0.001	6.2	
	Oct-12		234	6.10	0.08	3.12	79.7	17.5	<0.05	<0.05		<0.001	2.6	
	May-13		183	5.29	<0.5	1.96	62.7	10.9	<0.5	<0.5		<0.001	6.2	
	Oct-13		248	4.80	<0.5	2.97	85.7	23.8	<0.5	<0.5		<0.001	3.4	
	May-14		260	5.29	<0.25	2.26	77.2	14.8	<0.25	<0.25		<0.001	4.4	
	Oct-14		198	5.34	<0.25	2.22	70.8	15.2	<0.25	<0.25		<0.001	4.0	
	May-15		217	5.67	<0.25	2.11	73.4	13.1	<0.25	<0.25		<0.001	5.1	
	Oct-15		269	4.50	<0.25	2.55	80.7	15.0	<0.25	<0.25		<0.001	3.4	
	May-16		254	5.83	<0.25	2.20	74.1	12.9	<0.25	<0.25		<0.001	3.4	
	Oct-16		171	4.37	<0.25	2.23	66.9	10.3	<0.25	<0.25		<0.001	2.5	
	May-17		231	4.80	<0.25	1.97	66.5	10.8	<0.25	<0.25		<0.001	2.2	
	Oct-17		250	3.74	<0.25	2.13	69.3	11.4	<0.25	<0.25		<0.001	2.7	
	May-18		238	5.67	<0.25	1.89	68.4	10.2	<0.25	<0.25		<0.001	1.2	
	Oct-18		252	5.37	<0.25	1.93	69.3	10.8	0.45	<0.25		<0.001	2.7	
	May-19		254	4.10	<0.10	1.92	73.1	11.0	<0.10	<0.050	<0.11	0.0014	3.50	
	Oct-19		278	3.70	<0.10	2.22	77.2	12.9	<0.10	<0.050	<0.11	0.0468*	2.90	
	May-20		264	3.6	<0.10	1.78	70.2	11.3	<0.10	<0.050	<0.11	<0.0010	3.53	
	Oct-20		270	3.5	<0.10	2.16	72.1	11.6	<0.10	<0.050	<0.11	0.0016	3.52	
	May-21		201	5	<0.06	1.61	64.2	9.25	<0.06	<0.03		<0.002	3.3	
	Oct-21		305	6	<0.06	2.37	70.1	12.1	<0.06	<0.03		<0.002	2.5	
263	Jun-86	FT	75	21		2.1	26	28				0.0010	2.7	
	Oct-86		87	18			26					0.0025		
	Apr-87		80	16			25					<0.001	2.4	
	May-88		67	12			20					0.0010	3.6	
	May-98		94	8	0.20	1.5	29	9				<0.001	3.6	
	Jun-00		89	5	0.30	1.1	25	8				0.0020	1.8	
	Oct-00		98	6	0.20	1.3	29	9				<0.001	1.6	
	May-01		110	4	0.20	1.1	30	8				<0.001	1.4	
	May-02		80	5	0.20	1.3	26	8				<0.002	1.6	
	May-03		77	8	0.20	1.0	22	8				<0.002	1.8	
	May-04		No data			No data								
	Oct-04		No data			No data								
	May-05		66	6	0.20	0.7	18	7			<0.1	0.0010	1.5	
263R	May-06	FT	148	7	0.20	5	59	23			<0.2	<0.001	3.9	
	Oct-06		86	6	0.30	5	44	22			<0.2	<0.001	4.0	
	May-07		98	5	0.30	3	44	21			<0.2	<0.001	2.0	
	Oct-07		71	5	0.30	3	43	20			<0.2	<0.001	2.0	
	May-08		83	5	0.30	3	42	28			1.10	<0.001	<1	
	Oct-08		79	10	0.30	3	32	31.7			1.00	<0.001	2.0	
	May-09		76	4.5	0.27	2.70	39	24.0	0.43	<0.10		<0.0010	1.8	
	Oct-09		81.9	4.90	0.28	2.70	34.9	25.5	0.70	<0.10		<0.0010	1.7	
	May-10		69.4	4.85	0.27	2.49	36.9	23.3	0.26	<0.05		<0.001	1.2	

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5	5	5	80 - 100	30 - 500			500	
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
										411			295	
263R cont.	Oct-10	FT	7.50	720	10.1	8.30	612	10	<5	344	300	396	<5	79.7
	Jun-11		7.90	589	8.8	8.22	634	69	<5	347	290	290	<5	90.5
	Oct-11		7.30	648	10.6	8.29	655	424	<5	376	300	300	<5	102
	May-12		7.46	648	9.8	8.24	711	13	<5	356	304	304	<5	104
	Oct-12		7.40	594	12.5									
	May-13		7.62	874	8.1	8.31	791	70.4	<5	368	297	293	<5	134
	Oct-13		8.18	727	11.7	8.23	732	42.6	<5	361	322	322	<5	93.3
	May-14		7.59	746	7.9	8.19	704	117	<5	353	296	296	<5	88.4
	Oct-14		7.58	598	12.2	8.33	685	91.5	<5	300	318	313	5	68.9
	May-15		7.89	488	8.4	8.27	657	255	<5	300	299	299	<5	70.4
	Oct-15		7.62	482	13.7	8.13	681	146	<5	320	294	294	<5	67.8
	May-16		7.64	550	8.9	8.16	640	126	<5	307	273	273	<5	92.3
	Oct-16		D	R	Y									
	May-17		7.52	792	9.30	8.21	974	77.6	<5	421	305	305	<5	200
	Oct-17		7.55	627	13.60	8.23	765	191	<5	397	310	310	<5	139
	May-18		7.50	711	9.60	7.75	769	77.4	<5	360	253	253	<5	151
	Oct-18		8.03	643	10.52	7.71	702	79.9	<5	341	326	326	<5	114
	May-19		7.83	683	7.97	7.76	644	81.5	<2.0	321	300	300	<10	99.0
	Oct-19		7.76	615	11.40	7.74	692	189	<2.0	336	344	344	<10	82.5
	May-20		7.75	598	9.39	7.93	676	118	<2.0	320	302	302	<2.0	84.3
	Oct-20		7.60	587	12.10	8.26	681	115	<2.0	313	299	299	<2.0	84.8
May-21		7.50	660	9.0	8.26	688	74.9	<3	299	281	281	<2	92	
Oct-21		7.83	601	12.4	8.10	625	49.8	3	333	287	287	<2	70	
531	May-88	FT				7.7	545			251				
	Oct-90					7.9	605			267				
	May-91					7.9	585			256				
	Nov-91					7.9	625			297				
	May-92					7.8	586			271				
	Oct-92					7.6	484			240				
	Apr-93					7.8	495			248				
	Apr-93					7.8	625			305				
	Nov-93					7.6	654			328				
	May-94					8.0	612			306				
	Oct-94					7.9	637			312				
	May-95					7.7	559			277				
	Oct-95					7.8	650			305				
	May-97						560			295				
	Oct-97						609			295				
	May-98					7.7	588			307				
	Jun-99					8.2	664			348				
	May-01					7.8	625	9	8	352				
	Nov-01					7.9	665	15	<5	355				
	May-02					8.0	599	9	5	318				
Oct-02					7.9	684	25	13	339					
May-03					8.0	696	6	8	318	285	282	3	28	
Oct-03					8.1	651	16	<5	355	323	319	4	35	
May-04					7.9	582	6.1	15	320	314	311	3	9	
531R	Oct-04	FT				7.9	1010	23.6	26	510	251	249	2	316
	May-05					8.2	993	44.2	11	453	301	367	<1	244
	Oct-05					8.2	896	45.4	11		324	395		170
	May-06					7.5	829	5.2	14	510	300	299	<10	204
	Oct-06					7.9	826	4.9	24	430	310	308	<10	161
	May-07					7.0	776	2.9	6	430	300	299	<10	150
	Oct-07					8.0	783	2.5	9	370	300	297	<10	131
	May-08					7.9	839	4.4	6	400	290	288	<10	192
	Oct-08					7.8	789	4.5	2	410	300	298	<10	147
	May-09					7.96	765	6.5	2	385	303	300	<10	141
Oct-09					8.01	753	6.5	4	366	298	295	<10	112	
May-10			7.69	600	8.1	8.12	679	5.3	<5	345	291	291	<5	114.0

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
263R	Oct-10	FT	73.4	4.74	0.34	2.60	39.0	19.5	<0.05	<0.05		<0.001	7.4	
cont.	Jun-11		73.3	5.37	<0.05	2.50	39.7	24.1	<0.05	<0.05		<0.001	4.0	
	Oct-11		79.3	4.85	0.31	2.55	43.3	20.7	<0.05	<0.05		<0.001	10.8	
	May-12		74.4	4.83	<0.05	2.37	41.3	20.5	<0.05	<0.05		<0.001	5.3	
	Oct-12													
	May-13		78.4	3.97	<0.25	2.24	41.8	22.9	0.29	<0.25		<0.001	5.0	
	Oct-13		78.0	4.81	<0.25	2.73	40.4	21.1	<0.25	<0.25		<0.001	3.0	
	May-14		74.4	4.30	0.30	2.44	40.6	25.2	0.19	<0.05		<0.001	3.7	
	Oct-14		62.9	4.83	0.30	2.53	34.6	24.9	0.26	<0.10		<0.001	1.2	
	May-15		63.5	4.70	0.29	2.25	34.4	24.5	0.16	<0.05		<0.001	2.7	
	Oct-15		68.7	4.80	0.31	2.57	36.1	23.2	0.14	<0.10		<0.001	3.2	
	May-16		63.7	4.59	0.31	2.08	36.0	27.1	0.26	<0.05		<0.001	1.1	
	Oct-16													
	May-17		91.1	4.12	<0.10	2.58	47.1	27.9	0.22	<0.10		<0.001	1.1	
	Oct-17		83.7	3.37	<0.25	2.65	45.6	24.9	<0.25	<0.25		<0.001	1.3	
	May-18		78.5	4.46	<0.10	2.18	39.8	31.9	0.35	<0.10		<0.001	1.0	
	Oct-18		75.4	4.46	<0.25	2.31	37.2	24.8	<0.25	<0.25		<0.001	1.5	
	May-19		68.7	4.03	0.298	1.98	36.2	26.6	0.215	<0.010	0.215	0.0014	1.76	
	Oct-19		70.3	4.09	0.362	2.31	38.9	25.1	0.152	<0.010	0.152	0.0046	2.02	
	May-20		69.1	4.13	0.296	1.99	35.9	26.2	0.13	<0.010	0.130	0.0012	2.51	
	Oct-20		64.1	4.03	0.301	2.12	37.1	27.5	0.021	<0.010	<0.022	0.0114	1.65	
	May-21		66.0	4	0.33	1.85	32.7	23.8	0.16	<0.03		<0.002	1.6	
	Oct-21		79.4	5	0.34	2.61	32.7	23.8	0.32	<0.03		<0.002	3.1	
531	May-88	FT	65	10		1.9	22	24				0.0020	5.0	
	Oct-90		61	10			28					0.0025	3.0	
	May-91		63	9			24					0.0010	2.4	
	Nov-91		67	10			31					0.0045	2.7	
	May-92		62	10			28					0.0070	2.6	
	Oct-92		66	7			18					0.0045	8.1	
	Apr-93		65	12		1.9	21	23				0.0035	4.5	
	Apr-93		70	10			31					0.0010	2.4	
	Nov-93		78	9			32					0.0010	3.7	
	May-94		73	9		1.9	30	26				0.0010	3.8	
	Oct-94		72	9		2.0	32	26				0.0010	2.5	
	May-95		71	7		2.4	24	17				0.0017	4.4	
	Oct-95		70	9		2.1	31	24				0.0010	2.8	
	May-97		74	6		2.0	27	20				0.0010	5.5	
	Oct-97		68	1		2.0	30	22				0.0010	2.8	
	May-98		74	9	0.40	2.5	30	22				<0.001	4.9	
	Jun-99		84	6	0.40	3.0	34	20				0.0140	3.1	
	May-01		88	5	0.40	2.3	32	21				<0.001	2.2	
	Nov-01		87	5	0.40	2.8	33	20				<0.001	2.1	
	May-02		78	4	0.40	2.0	30	17				<0.002	2.5	
	Oct-02		82	8	0.40	3.6	33	19				0.0190	4.7	
	May-03		83	13	0.30	2.5	27	15				<0.002	4.2	
	Oct-03		89	12	0.40	3.7	32	19			0.84	<0.002	3.7	
	May-04		100	4	0.20	1.7	17	6				0.0040	5.7	0.21
531R	Oct-04	FT	121	8	0.30	4.0	51	21			<0.1	<0.002	6.8	
	May-05		110	12	<0.4	2.8	48	56			<0.4	0.0010	2.7	
	Oct-05		140	8	<0.5	3.2	74	55			<0.5	0.0010	2.6	
	May-06		120	11	0.30	3.0	52	43			<0.2	<0.001	2.2	
	Oct-06		96	10	0.30	3.0	46	34			<0.2	<0.001	3.0	
	May-07		103	9	0.30	2.0	42	40			<0.2	<0.001	2.0	
	Oct-07		80	8	0.30	2.0	42	36			<0.2	<0.001	2.0	
	May-08		93	8	0.30	2.0	41	35			0.10	<0.001	1.0	
	Oct-08		98	13	0.40	3.0	40	32			0.40	<0.001	2.0	
	May-09		87.2	7.30	0.31	2.0	41	28	<0.10	<0.10		<0.0010	2.4	
	Oct-09		83.5	7.40	0.34	2.1	38	27	<0.10	<0.10		<0.0010	3.0	
	May-10		76.9	7.66	0.32	2.02	37.1	28.3	<0.05	<0.05		<0.001	1.1	

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5	5	5	80 - 100	30 - 500			500	
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
										411			295	
531R	Oct-10	FT	7.53	810	13.0	8.22	657	5.6	<5	366	306	306	<5	96.3
cont.	Jun-11		7.46	600	10.1	8.10	644	12	<5	343	293	293	<5	90.5
	Oct-11		7.29	653	12.7	8.37	642	116	<5	333	300	291	10	98.1
	May-12		7.83	797	10.5	8.05	662	9.5	<5	334	289	289	<5	82.8
	Oct-12		7.16	528	12.7	8.32	624	54.7	<5	306	284	279	5	85.2
	May-13		7.61	788	8.6	8.26	689	65.1	<5	352	281	281	<5	98.9
	Oct-13		8.04	750	12.5	8.01	697	58.4	6	332	317	317	<5	81.7
	May-14		7.69	718	7.9	8.20	695	107	<5	341	291	291	<5	78.6
	Oct-14		7.70	633	12.0	8.21	730	112	8	334	304	304	<5	76.9
	May-15		7.18	447	11.9	8.06	665	82	<5	269	292	292	<5	75.5
	Oct-15		7.53	500	12.6	8.03	684	206	<5	281	269	269	<5	74.4
	May-16		7.49	540	13.0	8.15	643	42.4	<5	320	269	269	<5	99.8
	Oct-16		7.43	630	15.6	8.26	721	44.1	<5	322	299	299	<5	78.9
	May-17		7.39	704	9.72	8.24	869	271	<5	371	293	293	<5	163
	Oct-17		7.56	585	12.61	8.33	720	75.3	7	368	291	283	8	143
	May-18		7.74	658	10.00	7.64	749	75.9	<5	367	267	267	<5	128
	Oct-18		7.68	644	12.73	7.94	691	15.5	<5	353	270	270	<5	108
	May-19		7.75	679	7.93	7.61	662	117	<2.0	321	326	326	<10	82.0
	Oct-19		7.82	633	12.84	7.71	718	56.4	<2.0	354	338	338	<10	85.6
	May-20		7.60	628	8.90	7.98	706	23.8	<2.0	339	332	332	<2.0	65.9
	Oct-20		7.85	581	13.02	7.92	718	17.1	<2.0	350	320	320	<2.0	79.0
	May-21		7.31	710	8.9	8.32	692	42.6	<3	263	308	304	4	69
	Oct-21		7.66	670	12.9	8.01	802	14.7	6	322	297	193	<2	71
541	May-88	FT				7.5	645			290				
	Oct-88					7.5	651			305				
	May-89					7.8	675			317				
	Oct-89					7.7	659			311				
	May-90					7.7	661			317				
	Oct-90					8.0	675			314				
	May-91					7.8	694			316				
	Nov-91					7.6	687			321				
	May-92					7.6	710			342				
	Oct-92					7.7	708			346				
	Apr-93					7.7	714			352				
	Nov-93					7.7	703			345				
	May-94					7.8	718			367				
	Oct-94					7.8	707			355				
	May-95					7.6	729			348				
	Oct-95					7.6	712			349				
	May-97						710			397				
	Oct-97						698			352				
	May-98					7.6	697			360				
	Nov-98					7.9	705			334				
	Jun-99					7.7	646			316				
	Oct-99					7.8	589			372				
	Jun-00					7.5	595	1.3	<5	355				
	Oct-00					7.4	707	14.4	<5	335				
	May-01					7.9	628	16.2	<5	379				
	Nov-01					7.9	692	14.3	8	381				
	May-02					8.0	718	9.9	<5	350				
	Oct-02					8.0	679	9.3	<5	355	311	308	3	71
	May-03					8.0	732	14.9	<5	393	321	318	3	70
	Oct-03					8.1	686	15.1	<5	370	318	314	4	68
	May-04					8.1	645	1.3	4	217	277	274	3	56
	Oct-04					8.0	727	9.7	<2.5	367	295	292	3	64
	May-05					8.0	673	203	<5	371	281	342	<1	66
	Oct-05					8.1	671	309	<5		312	381		60
	May-06					7.6	660	65.0	780	390	300	299	<10	76
	Oct-06					7.8	633	6.6	100	380	300	298	<10	66

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
531R	Oct-10	FT	83.5	6.95	0.37	2.26	38.2	27.0	<0.05	<0.05		<0.001	6.4	
cont.	Jun-11		76.5	7.76	<0.05	2.01	36.8	24.4	<0.05	<0.05		<0.001	2.9	
	Oct-11		72.0	7.08	<0.05	2.03	37.2	26.0	<0.05	<0.05		<0.001	6.5	
	May-12		75.7	6.03	0.25	1.82	35.3	24.7	<0.05	<0.05		<0.001	6.2	
	Oct-12		67.5	6.56	0.34	2.06	33.3	24.5	<0.05	<0.05		<0.001	2.1	
	May-13		76.2	5.62	<0.25	1.89	39.2	23.1	<0.25	<0.25		<0.001	6.2	
	Oct-13		72.6	5.71	<0.25	2.12	36.6	23.3	<0.25	<0.25		<0.001	2.1	
	May-14		75.0	5.32	0.26	2.33	37.3	22.6	<0.05	<0.05		<0.001	5.2	
	Oct-14		72.9	5.72	<0.25	2.19	36.9	23.4	<0.25	<0.25		<0.001	2.6	
	May-15		53.0	5.59	0.21	1.76	33.3	23.0	<0.10	<0.10		<0.001	2.7	
	Oct-15		53.4	5.49	<0.25	2.11	35.9	23.5	<0.25	<0.25		<0.001	2.8	
	May-16		68.6	5.87	0.30	1.78	36.1	22.3	<0.05	<0.05		<0.001	1.5	
	Oct-16		70.6	5.37	0.26	2.01	35.5	21.5	<0.10	<0.10		<0.001	2.2	
	May-17		82.8	4.76	0.18	2.07	39.8	22.2	<0.10	<0.10		<0.001	1.6	
	Oct-17		79.8	4.18	0.37	2.13	40.9	23.6	<0.10	<0.10		<0.001	2.2	
	May-18		82.6	5.40	<0.10	1.91	39.0	19.6	0.15	<0.10		<0.001	1.5	
	Oct-18		81.3	5.41	<0.25	2.00	36.4	21.1	<0.25	<0.25		<0.001	1.9	
	May-19		73.0	4.32	0.271	1.65	33.8	27.3	0.097	<0.010	0.097	0.0017	2.22	
	Oct-19		77.9	4.74	0.344	2.17	38.6	25.3	<0.020	<0.010	<0.022	0.0021	2.90	
	May-20		78.1	4.27	0.249	1.69	34.9	30.3	0.038	<0.010	0.038	0.0104	2.69	
	Oct-20		78.6	5.30	0.370	1.96	37.5	24.5	<0.10	<0.050	<0.11	0.0015	1.55	
	May-21		56.6	5	0.31	1.65	29.5	31.5	0.08	<0.03		<0.002	1.9	
	Oct-21		70.0	7	0.35	2.11	35.9	31.8	0.07	<0.03		<0.002	1.1	
541	May-88	FT	75	13		2.0	28	24				0.0010	2.0	
	Oct-88		76	12			28	24				0.0020	15.0	
	May-89		76	14			31					0.0010	1.4	
	Oct-89		75	14			30					0.0020	1.2	
	May-90		78	13			30					0.0010	0.9	
	Oct-90		77	15			30					0.0015	1.9	
	May-91		76	16			31					0.0035	0.8	
	Nov-91		75	16			33					0.0055	1.4	
	May-92		79	19			35						1.2	
	Oct-92		80	17			35						1.2	
	Apr-93		84	19			34					0.0010	1.1	
	Nov-93		84	17			33					0.0010	1.5	
	May-94		88	17		1.6	36	20				0.0010	2.2	
	Oct-94		85	19		1.8	35	20				0.0010	1.5	
	May-95		82	19		1.5	35	20				0.0010	2.1	
	Oct-95		84	19		1.8	34	21				0.0010	2.0	
	May-97		95	18		1.6	39	19				0.0010	3.4	
	Oct-97		86	19		1.8	33	19				0.0010	3.0	
	May-98		87	20	0.40	1.5	35	19				<0.001	2.6	
	Nov-98		80	19	0.50	1.8	33	20				<0.001	1.7	
	Jun-99		67	17	0.40	1.5	36	19				<0.001	1.1	
	Oct-99		90	16	0.50	2.0	36	21				<0.001	0.6	
	Jun-00		82	18	0.50	1.4	36	18				0.0020	1.3	
	Oct-00		75	15	0.50	1.6	36	19				<0.001	0.9	
	May-01		89	15	0.40	1.6	38	19				<0.001	1.1	
	Nov-01		93	15	0.47	1.8	36	19				<0.001	1.0	
	May-02		79	14	0.43	1.5	37	17				<0.002	0.9	
	Oct-02		86	13	0.47	1.7	34	18			2.70	<0.002	0.9	
	May-03		95	13	0.38	1.7	38	19				<0.002	1.2	
	Oct-03		87	12	0.45	1.8	37	20			1.78	<0.002	1.0	
	May-04		38	9	0.31	1.4	30	15				<0.002	0.8	<0.05
	Oct-04		90	11	0.46	1.7	35	19			0.86	<0.002	5.2	
	May-05		92	10	0.40	1.5	35	18			0.90	<0.001	1.4	
	Oct-05		89	10	<0.5	1.8	36	21			0.50	<0.001	1.1	
	May-06		97	11	0.30	2	37	18			0.90	<0.001	2.7	
	Oct-06		91	10	0.40	2	38	21			0.70	<0.001	2.0	

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Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5	5	5	80 - 100	30 - 500			500	
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
										411			295	
541	May-07	FT				7.6	657	6.0	8	420	300	299	<10	71
cont.	Oct-07					7.9	679	8.10	34	330	320	318	<10	65
	May-08					8.0	691	7.70	6	350	330	327	<10	70
	Oct-08					7.5	670	5.0	<1	370	320	319	<10	66
	May-09					7.96	692	6.50	<1.0	370	314	311	<10	70.9
	Oct-09					8.05	683	5.30	<1.0	386	307	304	<10	67.5
	May-10		7.68	510	8.5	8.10	634	4.9	<5	339	309	309	<5	78.4
	Oct-10		7.58	710	12.4	8.28	609	11.0	<5	355	303	302	<5	68.8
	Jun-11		7.58	568	9.7	8.06	615	196	<5	349	300	300	<5	73.8
	Oct-11		7.40	613	11.5	8.18	611	1550	<5	359	294	294	<5	73.8
	May-12		7.83	770	10.2	8.01	633	10.6	<5	325	289	289	<5	68.3
	Oct-12		7.43	527	13.3	8.21	522	546	<5	289	260	260	<5	67.5
	May-13		7.97	759	8.2	8.08	625	96.5	<5	368	268	268	<5	67.8
	Oct-13		7.97	718	12.5	7.84	672	65.9	<5	358	321	321	<5	66.2
	May-14		7.81	743	8.5	8.10	674	83.6	<5	347	294	294	<5	67.2
	Oct-14		7.82	613	10.4	8.27	671	111	<5	310	275	275	<5	70.8
	May-15		7.39	464	12.1	8.05	624	1410	<5	304	274	274	<5	70.4
	Oct-15		7.51	491	12.7	7.98	679	348	<5	269	272	272	<5	69.0
	May-16		7.55	548	9.3	8.12	627	182	<5	322	274	274	<5	79.6
	Oct-16		7.48	650	14.8	8.23	683	624	<5	323	296	296	<5	66.3
	May-17		7.62	602	8.65	8.28	651	3040	<5	280	255	255	<5	67.1
	Oct-17		7.65	495	13.10	8.25	633	170	<5	328	315	315	<5	64.6
	May-18		7.70	579	10.20	7.72	664	136	<5	332	290	290	<5	66.8
	Oct-18		7.75	602	12.44	7.89	622	93.2	<5	324	270	270	<5	64.0
	May-19		7.68	505	9.62	7.69	664	206	<2.0	354	318	318	<10	68.3
	Oct-19		7.58	597	13.24	7.79	677	78.6	<2.0	359	330	330	<10	64.3
	May-20		7.80	573	9.72	7.86	626	57.3	<2.0	337	305	305	<2.0	63.8
	Oct-20		7.98	545	14.27	7.79	664	132	<2.0	340	333	333	<2.0	64.0
	May-21		7.58	637	11.7	8.11	626	55.1	<3	293	273	273	<2	67
	Oct-21		7.94	630	13.6	8.09	647	48.8	<3	398	289	289	<2	61
552	Oct-87	FT				7.8	640			314				
	May-88					7.4	665			338				
	Oct-88					7.5	632			303				
	May-89					7.7	694			339				
	Oct-89					7.3	1029			509				
	May-90					7.4	903			457				
	Oct-90					7.5	870			421				
	May-91					7.6	802			377				
	Nov-91					7.3	1260			559				
	May-92					7.2	1135			562				
	Oct-92					7.2	1171			528				
	Apr-93					7.4	1037			502				
	Nov-93					7.1	1184			486				
	May-94					7.5	1118			525				
	Oct-94					7.6	919			411				
	May-95					7.4	829			385				
	Oct-95					7.5	978			424				
	May-97						661			348				
	Oct-97						634			303				
	May-98					7.8	625			322				
	Jun-99					8.2	622			260				
	Oct-99					8.0	634			331				
	Jun-00					7.6	542	3	8	318				
	Oct-00					7.3	712	30	19	304				
	May-01					7.9	610	260	44	209				
	Nov-01					7.7	1040	37	8	423				
	May-02					7.9	802	41	14	355				
	Oct-02					8.0	747	29	<5	359				

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Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
541	May-07	FT	106	9	0.40	2	37	19			0.50	<0.001	2.0	
cont.	Oct-07		77	9	0.30	2	33	19			0.40	<0.001	1.0	
	May-08		90	8	0.40	2	31.3	17			0.50	<0.001	2.0	
	Oct-08		92	13	0.50	2	35.1	19			0.40	<0.001	1.0	
	May-09		91.3	12.6	0.39	1.70	34.5	17.7	0.49	<0.10		<0.0010	2.1	
	Oct-09		100	7.10	0.42	1.80	33	17.6	<0.10	<0.10		<0.0010	1.5	
	May-10		82.9	7.28	0.36	1.64	32.1	18.6	0.16	<0.05		<0.001	1.1	
	Oct-10		87.6	6.57	0.45	1.71	33.2	19	0.07	<0.05		0.0020	4.9	
	Jun-11		85.2	7.18	0.25	1.79	33.2	17.2	0.11	<0.05		<0.001	3.7	
	Oct-11		88.2	6.98	0.36	1.68	33.8	18.3	<0.05	<0.05		<0.001	7.9	
	May-12		76.2	6.13	0.29	1.51	32.8	17.2	<0.05	<0.05		<0.001	5.1	
	Oct-12		66.7	6.57	0.36	1.78	29.7	17.8	<0.05	<0.05		<0.001	1.6	
	May-13		88.2	5.84	0.30	1.51	35.8	17.6	<0.25	<0.25		<0.001	3.6	
	Oct-13		88.0	5.60	0.47	1.76	33.5	17.5	<0.10	<0.10		<0.001	3.5	
	May-14		83.1	5.11	0.32	1.56	33.9	16.5	<0.25	<0.25		<0.001	6.7	
	Oct-14		69.6	5.70	<0.25	1.72	33.1	18.6	<0.25	<0.25		<0.001	2.7	
	May-15		71.6	4.69	0.25	1.94	30.4	18.4	<0.05	<0.05		<0.001	1.7	
	Oct-15		54.5	5.08	0.37	1.86	32.3	18.8	<0.10	<0.10		<0.001	2.8	
	May-16		76.6	5.02	0.29	1.53	31.8	17.7	<0.05	<0.05		<0.001	2.1	
	Oct-16		79.5	5.01	0.30	1.76	30.2	16.4	<0.10	<0.10		<0.001	1.4	
	May-17		64.2	4.49	0.33	1.37	29.0	16.6	0.06	<0.05		<0.001	1.6	
	Oct-17		80.6	3.58	0.30	1.61	30.7	18.0	<0.10	<0.10		<0.001	1.7	
	May-18		80.9	4.26	0.38	1.40	31.5	16.6	<0.25	<0.25		<0.001	1.8	
	Oct-18		81.7	4.56	0.35	1.58	29.1	16.9	<0.25	<0.25		<0.001	1.7	
	May-19		85.7	3.83	0.346	1.44	33.9	17.5	0.043	<0.010	0.04	<0.0010	2.45	
	Oct-19		87.6	3.85	0.411	1.67	34.1	19.7	<0.020	<0.010	<0.022	0.0350*	1.73	
	May-20		81.5	3.52	0.373	1.43	32.5	17.7	<0.020	<0.010	<0.022	0.0015	2.10	
	Oct-20		86.1	3.68	0.408	1.48	30.3	17.2	<0.020	<0.010	<0.022	<0.0010	1.81	
	May-21		67.2	3	0.38	1.41	30.5	16.1	<0.06	<0.03		<0.002	1.8	
	Oct-21		102	4	0.42	1.80	34.7	17.9	<0.06	<0.03		<0.002	1.0	
552	Oct-87	FT	80	13			28					0.0015	2.5	
	May-88		88	18		1.6	29	18				0.0010	1.5	
	Oct-88		78	19			26	28				0.0010	2.2	
	May-89		87	20			30					0.0010	1.6	
	Oct-89		143	65			37					0.0010	2.1	
	May-90		127	49			34					0.0010	1.8	
	Oct-90		117	48			31					0.0050	2.7	
	May-91		100	34			31					0.0060	1.9	
	Nov-91		159	172			39					0.0095	3.4	
	May-92		156	112			42					0.0010	2.6	
	Oct-92		146	133			40					0.0010	3.0	
	Apr-93		138	75			38					0.0010	2.6	
	Nov-93		136	107			36					0.0010	3.4	
	May-94		149	96		1.2	37	45				0.0010	4.1	
	Oct-94		114	70		1.3	31	35				0.0011	3.3	
	May-95		107	64		1.0	29	27				0.0010	3.0	
	Oct-95		123	84		2.7	28	45				0.0010	5.2	
	May-97		88	33		1.1	31	22				0.0010	3.5	
	Oct-97		73	29		1.3	30	18				0.0010	2.4	
	May-98		78	37	0.60	1.4	31	18				<0.001	3.0	
	Jun-99		73	45	0.40	2.6	19	39				0.0010	5.5	
	Oct-99		95	46	0.40	3.6	23	57				<0.001	4.6	
	Jun-00		86	38	0.50	2.2	25	23				0.0010	2.2	
	Oct-00		92	35	0.40	5.0	18	40				<0.001	4.8	
	May-01		67	73	0.30	5.6	10	73				<0.001	6.9	
	Nov-01		132	114	0.2	4	23	65				<0.001	4.7	
	May-02		109	62	0.2	2.2	20	40				<0.002	4.9	
	Oct-02		98	45	0.5	2.3	28	30				<0.002	2.3	

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L	
			pH	Cond.	Temp.										
ODWQS			6.5 - 8.5	NC	NC	6.5 - 8.5	5	5	80 - 100	30 - 500	NC	NC	500		
Guideline B-7			OG	NC	NC	OG	AO	AO	OG	OG	NC	NC	AO		
										411			295		
552R	May-03	FT				8.1	853	10.1	<5	409	334	330	3	69	
	Oct-03					8.0	767	8.37	<5	398	295	292	3	65	
	May-04				8.1	873	1.77	4	316	315	312	3	60		
	Oct-04				8.1	868	18.1	3	379	273	270	3	62		
	May-05				8.1	793	149	<5	379	259	317	<1	61		
	Oct-05				8.1	847	176	<5		306	374		56		
	May-06				7.6	747	11	110	500	250	249	<10	67		
	Oct-06				7.7	737	5.7	47	400	260	259	<10	61		
	May-07				7.5	763	6.2	8	460	270	269	<10	61		
	Oct-07				8.0	775	7.1	22	390	280	277	<10	56		
	May-08				8.0	765	6.9	19	370	260	258	<10	60		
	Oct-08				7.9	747	5	<1	390	270	268	<10	59		
	May-09				7.82	904	30	<1.0	356	337	335	<10	53.5		
	Oct-09				8.00	839	3.5	2	400	272	269	<10	56.9		
	May-10			7.58	850	9.4	8.07	780	4	<5	392	271	271	<5	60.3
	Oct-10			7.56	870	12.9	8.22	738	3.4	<5	410	248	248	<5	64.2
	Jun-11			7.59	656	9.8	8.03	738	161	<5	371	334	334	<5	45.9
	Oct-11			7.39	763	12.1	8.20	754	3030	<5	417	261	261	<5	63.4
May-12			7.37	761	11.0	7.92	807	10.5	<5	363	263	263	<5	53.7	
Oct-12			7.18	776	13.7	8.16	789	264	<5	460	310	310	<5	49.4	
May-13			7.81	969	9.4	8.01	823	201	<5	427	253	253	<5	47.7	
Oct-13			7.87	905	13.0	7.97	856	53.3	<5	410	269	269	<5	55.0	
May-14			7.44	931	8.6	7.90	892	343	<5	405	294	294	<5	56.0	
Oct-14			8.05	835	10.7	8.23	884	522	7	383	227	227	<5	60.0	
May-15			7.45	610	11.7	8.05	857	219	<5	387	244	244	<5	53.1	
Oct-15			7.68	622	15.2	8.05	905	202	<5	414	248	248	<5	55.7	
May-16			7.50	650	11.5	8.06	839	341	<5	392	239	239	<5	53.9	
Oct-16			7.33	890	14.1	8.26	1100	219	<5	507	389	389	<5	41.8	
May-17			6.80	1420	9.22	8.08	1560	51.3	<5	685	415	415	<5	27.2	
Oct-17			6.96	1320	9.98	8.10	1210	480	7	550	451	451	<5	36.2	
May-18			7.01	1480	10.02	7.03	1670	645	<5	730	499	499	<5	26.3	
552RA	Oct-18	FT	7.46	777	11.97	7.90	805	16000	<5	373	275	275	<5	50.2	
	May-19		7.37	782	9.95	7.38	956	973	<2.0	470	392	392	<10	54.9	
	Oct-19		7.81	676	13.00	7.88	805	>4000	<2.0	381	274	274	<10	48.4	
	May-20		7.42	697	10.08	7.77	792	1710	<2.0	364	304	304	<2.0	50.4	
	Oct-20		7.76	602	14.03	7.78	736	3.07	<2.0	358	315	315	<2.0	47.3	
	May-21		7.56	748	10.0	8.11	701	22.1	<3	373	245	245	<2	54	
	Oct-21		7.74	730	12.8	8.19	778	1250	<3	274	264	264	<2	49	
562	May-88	FT				7.8	530			239					
	May-98					7.8	574			317					
	Jun-99					7.9	627			316					
	Oct-99					7.6	610			366					
	Jun-00					7.8	435	3.7	<5	285					
	Oct-00					7.6	575	16.3	<5	278					
	May-01					7.9	534	21.0	<5	309					
	Nov-01					8.1	430	12.9	<5	322					
	May-02					8.0	581	17.4	<5	273					
	Oct-02					7.9	599	8.0	<5	308					
	May-03					8.1	672	7.1	<5	303	235	232	3	79	
	Oct-03					8.1	553	13.3	<5	288	255	252	3	55	
	May-04					8.1	615	11.3	15	287	268	265	3	57	
	Oct-04					8.1	624	8	3	295	260	257	3	44	
	May-05					8.1	550	316	<5	270	234	285	<1	58	
	Oct-05					8.2	613	390	<5		285	348		52	
May-06					7.8	527	22	260	290	260	259	<10	68		
Oct-06					7.8	592	8.1	87	310	280	278	<10	58		
May-07					7.6	596	8.6	16	320	290	289	<10	54		
May-08					8.0	539	4.9	5	240	230	228	<10	60		
Oct-08					7.9	584	24	<1	320	270	268	<10	62		

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
552R	May-03	FT	105	53	0.47	1.7	36	37				<0.002	1.5	
	Oct-03		101	55	0.11	1.6	36	25			<0.1	<0.002	1.5	
	May-04		67	59	0.56	1.4	36	29				<0.002	1.0	0.13
	Oct-04		94	64	0.56	1.3	35	24			<0.1	<0.002	5.1	
	May-05		98	61	0.40	1.2	35	21			<0.1	0.0010	1.0	
	Oct-05		99	61	<0.5	0.9	37	27			<0.5	<0.001	1.1	
	May-06		133	70	0.40	1.0	41	18			<0.2	<0.001	1.0	
	Oct-06		97	65	0.50	1.0	38	18			<0.2	<0.001	2.0	
	May-07		119	68	0.40	1.0	40	22			<0.2	<0.001	2.0	
	Oct-07		97	66	0.40	1.0	36	20			0.20	<0.001	1.0	
	May-08		96	63	0.50	1.0	33	19			0.10	<0.001	<1	
	Oct-08		101	66	0.50	2.0	33	17			<0.1	<0.001	1.0	
	May-09		92.1	80.0	0.38	1.40	30.5	30.0	0.27	<0.10		<0.0010	1.7	
	Oct-09		104	75.6	0.46	1.40	34.1	15.7	<0.10	<0.10		<0.0010	1.3	
	May-10		99.4	83.8	0.43	1.36	35.0	20.6	0.06	<0.05		<0.001	1.0	
	Oct-10		104	84.1	0.32	1.36	36.5	17.3	<0.05	<0.05		0.0050	4.0	
	Jun-11		92.2	48.3	<0.05	1.48	34.3	15.6	<0.05	<0.05		<0.001	2.6	
	Oct-11		106	94.9	<0.05	1.42	37.1	17.7	<0.05	<0.05		<0.001	5.4	
	May-12		88.0	90.7	<0.05	1.27	34.7	16.9	0.06	<0.05		0.0010	4.0	
Oct-12		109	92.3	0.33	1.69	45.7	21.5	<0.05	<0.05		<0.001	1.9		
May-13		107	82.8	<0.25	1.27	38.7	18.6	<0.25	<0.25		<0.001	3.4		
Oct-13		104	95.4	<0.25	1.44	36.4	18.2	<0.25	<0.25		<0.001	2.4		
May-14		103	98.7	0.47	1.34	35.8	19.0	<0.10	<0.10		<0.001	4.8		
Oct-14		91.7	110	<0.25	1.44	37.4	20.5	<0.25	<0.25		<0.001	2.7		
May-15		97.5	108	0.29	1.42	34.8	20.3	<0.10	<0.10		<0.001	1.9		
Oct-15		107	119	<0.25	1.48	35.6	21.8	<0.25	<0.25		<0.001	1.5		
May-16		97.6	107	<0.25	1.34	36.1	21.3	<0.25	<0.25		<0.001	1.6		
Oct-16		134	115	<0.25	1.68	41.8	31.2	<0.25	<0.25		<0.001	3.3		
May-17		194	214	<0.25	1.53	48.7	55.0	<0.25	<0.25		<0.001	3.0		
Oct-17		150	160	<0.25	1.66	42.7	49.1	<0.25	<0.25		<0.001	2.3		
May-18		207	236	<0.5	1.52	51.8	69.0	<0.5	<0.5		<0.001	3.5		
552RA	Oct-18	FT	97.3	68.3	0.38	1.88	31.6	29.3	<0.25	<0.25		<0.001	2.4	
	May-19		121	70.6	0.368	1.65	40.6	38.2	0.087	<0.010	0.087	<0.0010	1.98	
	Oct-19		95.7	69.0	0.468	1.45	34.5	22.5	0.059	<0.010	0.059	0.0390*	1.70	
	May-20		92.8	69.1	0.434	1.31	32.2	19.2	0.052	<0.010	0.052	<0.0010	2.60	
	Oct-20		89.2	62.8	0.516	1.32	32.9	20.4	<0.020	<0.010	<0.022	0.0020	2.59	
	May-21		97.8	65	0.50	1.26	31.3	19.1	0.06	<0.03		<0.002	5.6	
	Oct-21		59.8	69	0.50	1.60	30.3	19.9	<0.06	<0.03		<0.002	<1.0	
562	May-88	FT	55	7		2.4	25	19				0.0010	1.7	
	May-98		75	4		1.4	32	13				<0.001	2.2	
	Jun-99		69	3	0.70	1.7	35	16				0.0010	1.0	
	Oct-99		81	3	0.70	2.2	40	17				<0.001	0.9	
	Jun-00		70	3	0.60	1.4	27	23				0.0010	0.8	
	Oct-00		64	2	0.50	1.3	28	19				<0.001	0.8	
	May-01		73	2	0.60	1.3	31	17				<0.001	0.8	
	Nov-01		74	3	0.70	1.8	33	17				0.0021	0.9	
	May-02		61	2	0.60	1.3	30	19				<0.002	0.7	
	Oct-02		71	4	0.60	2.8	32	16				0.0790	5.7	
	May-03		71	3	0.60	1.6	30	19				<0.002	1.0	
	Oct-03		69	4	0.70	2.1	28	15			1.06	<0.002	1.3	
	May-04		69	4	0.60	2.7	28	25				<0.002	2.6	0.15
	Oct-04		69	3	0.80	1.8	30	19			<0.1	<0.002	6.0	
	May-05		64	3	0.50	1.1	23	33			0.40	0.0010	1.0	
	Oct-05		72	3	0.60	2.0	33	19			<0.5	<0.001	1.3	
	May-06		75	4	0.30	1.0	24	34			0.30	<0.001	<0.7	
Oct-06		74	4	0.50	2.0	31	33			0.20	<0.001	2.0		
May-07		82	4	0.50	1.0	28	31			<0.2	<0.001	2.0		
May-08		59	5	0.60	1.0	22	23			0.30	0.0050	2.0		
Oct-08		83	9	0.60	2.0	28	24			0.30	<0.001	2.0		

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Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5	5	5	80 - 100	30 - 500			500	
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
										411			295	
562	May-09	FT				8.01	611	45	<1.0	314	289	286	<10	54.7
cont.	Oct-09					8.03	645	23	2	327	300	297	<10	52.7
	May-10		7.50	590	6.5	8.14	583	4.9	<5	295	294	294	<5	50.1
	Oct-10		7.35	690	11.3	8.27	577	4.8	<5	320	315	315	<5	39.9
	Jun-11		7.55	518	8.9	8.12	567	145	<5	292	303	303	<5	41.3
	Oct-11		7.29	559	11.5	8.29	525	802	<5	305	290	288	<5	45.9
	May-12		7.51	535	8.9	8.12	637	10.6	<5	306	235	235	<5	111
	Oct-12		7.81	526	10.0									
	May-13		7.86	649	7.1	8.26	604	131	<5	264	249	249	<5	67.4
	Oct-13		7.92	673	12.1	8.20	644	38.7	<5	288	312	312	<5	49.1
	May-14		7.59	663	5.7	8.18	617	249	<5	300	302	302	<5	32.0
	Oct-14		7.60	580	12.5	8.14	609	153	<5	269	308	308	<5	34.6
	May-15		7.41	440	7.2	8.08	562	518	<5	272	277	277	<5	28.3
	Oct-15		7.63	451	14.1	8.13	645	522	<5	302	305	305	<5	29.7
	May-16		7.70	467	7.6	8.14	544	198	<5	271	264	264	<5	38.7
	Oct-16	D	R	Y										
	May-17		7.73	483	7.39	8.18	619	364	<5	242	233	233	<5	64.1
	Oct-17		7.44	542	12.00	8.13	715	1580	<5	373	255	255	<5	158
	May-18		7.68	475	7.70	7.82	506	221	<5	227	209	209	<5	57.3
	Oct-18		8.03	549	11.77	7.88	611	331	<5	302	295	295	<5	71.7
	May-19		7.77	586	6.98	7.75	570	120	<2.0	256	293	293	<10	49.3
	Oct-19		7.93	566	12.12	7.77	633	211	<2.0	310	350*	350*	<10	48.1
	May-20		7.47	533	7.68	8.02	601	162	<2.0	291	301	301	<2.0	39.3
	Oct-20		7.50	537	10.13	8.09	654	>4000	<2.0	295	381*	381*	<2.0	44.6
	May-21		7.27	621	8.8	8.19	640	189	<3	262	258	258	<2	76
	Oct-21		7.77	630	13.8	8.06	658	97.2	4	379	315	315	<2	67
581	Oct-87	FT				8.2	463			215				
	May-88					7.7	605			269				
	May-98					8.0	362			171				
	Jun-99					8.3	552			278				
	Oct-99					7.8	521			320				
	Jun-00					7.7	523	5.91	6	300				
	Oct-00					7.6	599	16.6	<5	282				
	May-01					8.0	551	17.3	6	317				
	Nov-01					8.1	614	16.3	<5	330				
	May-02					8.1	604	17.7	<5	300				
	Oct-02					8.1	589	18.8	<5	311				
	May-03					8.1	600	15.7	<5	317	255	252	3	57
	Oct-03					8.2	597	9.22	<5	326	269	265	4	54
	May-04					8.1	628	9.15	<2.5	254	272	269	3	50
	Oct-04					8.1	663	11.4	<2.5	319	251	248	3	42
	May-05					8.1	600	218	<5	321	238	290	<1	54
	Oct-05					8.2	637	424	<5		289	353		49
	May-06					7.8	569	28	93	340	270	268	<10	59
	Oct-06					7.9	572	7.9	65	340	270	268	<10	46
	May-07					7.7	605	4.9	8	370	260	259	<10	56
	Oct-07					8.1	622	10.4	44	320	280	277	<10	52
	May-08					8.1	554	7.5	7	270	230	227	<10	59
	Oct-08					7.7	576	15.3		310	240	239	<10	52
	May-09					8.06	606	35.0	<1.0	308	260	257	<10	55.9
	Oct-09					8.09	620	7.4	<1.0	309	267	264	<10	49.7
	May-10		7.59	570	6.9	8.19	581	4.5	<5	318	264	264	<5	56.4
	Oct-10		7.72	670	12.1	8.30	562	6.1	<5	326	279	275	<5	44.3
	Jun-11		7.83	542	11.8	8.17	568	116	<5	330	274	274	<5	48.1
	Oct-11		7.29	581	11.7	8.25	542	2390	<5	340	280	280	<5	45.7
	May-12					8.11	608	16.7	<5	309	267	267	<5	51.4
	Oct-12		7.68	494	13.3	8.23	521	297	<5	330	258	258	<5	45.9
	May-13		8.04	675	7.0	8.21	607	82.4	<5	292	242	242	<5	50.5
	Oct-13		8.39	674	12.5	8.19	638	23.7	<5	299	298	298	<5	39.5

Notes: · ODWQS - Ontario Drinking Water Quality Standard (June 2003) · AO - Aesthetic Objective · † - sampled by Oxford County Board of Health
· MAC - Maximum Acceptable Concentration · OG - Operational Guideline · * - result interpreted with caution or considered questionable
· IMAC - Interim Maximum Acceptable Concentration · NC - No criteria



**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
562	May-09	FT	76.4	9.40	0.50	1.20	29.9	30.9	0.39	<0.10		<0.0010	2.3	
cont.	Oct-09		82.3	4.00	0.53	1.60	29.5	23.9	<0.10	<0.10		0.0010	1.6	
	May-10		71.0	4.63	0.45	1.41	28.7	24.9	0.11	<0.05		<0.001	1.0	
	Oct-10		78.5	4.06	0.49	1.53	30.2	20.7	0.08	<0.05		<0.001	7.1	
	Jun-11		70.8	5.29	0.34	1.42	28.0	25.3	<0.05	<0.05		<0.001	2.5	
	Oct-11		72.6	4.74	0.57	1.46	30.1	21.8	<0.05	<0.05		<0.001	2.9	
	May-12		76.9	6.04	0.45	1.45	27.6	23.7	<0.05	<0.05		<0.001	3.9	
	Oct-12													
	May-13		61.9	6.09	0.54	1.11	26.6	20.6	<0.10	<0.10		<0.001	5.7	
	Oct-13		68.7	5.72	0.40	1.32	28.3	20.3	<0.10	<0.10		<0.001	3.8	
	May-14		73.1	6.26	0.36	1.10	28.6	25.4	<0.05	<0.05		<0.001	5.0	
	Oct-14		61.4	6.35	0.51	1.13	28.1	19.8	<0.10	<0.10		<0.001	2.6	
	May-15		65.2	5.91	0.37	1.17	26.5	20.3	<0.05	<0.05		<0.001	2.4	
	Oct-15		74.9	6.42	0.53	1.26	27.9	19.2	<0.10	<0.10		<0.001	2.6	
	May-16		63.5	7.17	0.49	1.15	27.2	19.4	<0.05	<0.05		<0.001	2.2	
	Oct-16													
	May-17		58.3	8.36	0.54	0.89	23.4	18.1	<0.05	<0.05		<0.001	1.9	
	Oct-17		85.4	4.82	0.41	1.80	38.7	19.0	<0.25	<0.25		<0.001	3.0	
	May-18		55.6	10.3	0.43	0.72	21.3	20.9	<0.05	<0.05		<0.001	1.1	
	Oct-18		72.8	7.37	0.57	1.13	29.3	17.6	<0.05	<0.05		<0.001	2.4	
	May-19		63.2	9.25	0.485	0.757	23.9	28.0	<0.020	<0.010	<0.022	0.0026	2.19	
	Oct-19		72.9	7.54	0.614	1.28	31.0	20.8	<0.020	<0.010	<0.022	0.0011	2.55	
	May-20		69.0	8.58	0.495	0.936	28.8	26.2	<0.020	<0.010	<0.022	<0.0010	1.78	
	Oct-20		70.5	7.39	0.594	1.04	29.0	24.9	0.061	<0.010	0.061	0.0034	2.23	
	May-21		60.9	9	0.58	0.898	26.7	17.5	0.09	<0.03		<0.002	1.9	
	Oct-21		97.6	9	0.60	1.52	32.9	18.5	<0.06	<0.03		<0.002	5.1	
581	Oct-87	FT	48	12	83	2.1	23	33				0.0010	4.3	
	May-88		63	6			27					0.0020	2.4	
	May-98		39	11	0.10	4.9	18	17				<0.001	3.7	
	Jun-99		62	3		1.5	30	19				<0.001	1.7	
	Oct-99		69	4	0.60	2.0	36	18				<0.001	1.1	
	Jun-00		69	4	0.50	1.5	31	29				0.0040	1.3	
	Oct-00		62	3	0.50	1.5	31	23				<0.001	0.8	
	May-01		72	4	0.50	1.5	34	21				<0.001	0.9	
	Nov-01		74	4	0.60	1.8	35	19					0.8	
	May-02		67	4	0.50	1.5	32	24				<0.002	0.6	
	Oct-02		69	4	0.50	1.7	34	18				<0.002	0.8	
	May-03		73	6	0.40	1.6	33	21				0.0020	0.8	
	Oct-03		74	5	0.50	1.6	35	18			5.44	<0.002	0.7	
	May-04		48	4	0.50	1.4	33	20				<0.002	0.8	<0.05
	Oct-04		71	5	0.60	1.7	35	18			4.10	<0.002	1.5	
	May-05		73	5	0.40	1.3	31	19			5.20	<0.001	0.8	
	Oct-05		75	4	<0.5	1.8	38	18			3.80	<0.001	1.0	
	May-06		82	6	0.20	1.0	32	28			4.60	<0.001	1.9	
	Oct-06		77	5	0.40	1.0	36	21			4.40	<0.001	2.0	
	May-07		89	6	0.40	1.0	36	17			4.70	<0.001	2.0	
	Oct-07		68	5	0.40	2.0	36	16			4.00	<0.001	<1	
	May-08		66	4	0.50	2.0	26	17			4.60	<0.001	2.0	
	Oct-08		75	10	0.50	2.0	30	18			5.50		2.0	
	May-09		70.6	10.20	0.42	1.3	32	14.1	4.52	<0.10		<0.0010	1.5	
	Oct-09		76.8	7.20	0.46	1.30	28.5	13.8	4.90	<0.10		<0.0010	1.3	
	May-10		72.9	5.01	0.36	1.42	32.9	14.0	5.56	<0.05		<0.001	0.7	
	Oct-10		74.9	4.15	0.44	1.63	33.7	14.2	5.17	<0.05		<0.001	7.6	
	Jun-11		76.3	5.35	0.45	1.59	33.8	12.9	5.46	<0.05		<0.001	3.8	
	Oct-11		76.6	5.55	0.38	1.66	36.1	13.6	7.04	<0.05		<0.001	5.8	
	May-12		68.9	5.05	0.33	1.41	33.2	13.0	5.56	<0.05		<0.001	19.6	
	Oct-12		73.5	5.52	0.36	1.79	35.5	14.4	5.84	<0.05		<0.001	1.9	
	May-13		65.3	5.03	<0.25	1.22	31.3	10.9	8.02	<0.25		<0.001	5.1	
	Oct-13		70.3	4.38	0.25	1.28	30.1	12.2	5.20	<0.10		<0.001	2.8	

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5	NC	NC	6.5 - 8.5	5	5	80 - 100	30 - 500	mg/L	mg/L	500	
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
														295
581 cont.	May-14	FT	7.75	667	6.8	8.21	622	115	<5	323	269	269	<5	45.0
	Oct-14		7.77	587	13.0	8.25	643	126	<5	303	295	295	<5	38.4
	May-15		7.50	462	8.3	8.08	585	139	<5	291	269	269	<5	38.4
	Oct-15		7.56	492	16.0	8.07	652	553	<5	326	286	286	<5	38.0
	May-16		7.32	480	8.2	8.09	560	199	<5	289	243	243	<5	45.6
	Oct-16		7.46	590	15.1	8.29	666	5560	<5	313	283	277	6	42.2
	May-17		7.73	456	8.55	8.19	552	354	<5	243	218	218	<5	46.5
	Oct-17		7.05	426	13.41	8.15	550	542	<5	288	250	250	<5	42.0
	May-18		7.73	517	10.10	7.79	550	118	<5	274	211	211	<5	44.7
	Oct-18		7.89	493	8.30	7.80	576	222	<5	293	286	286	<5	34.1
	May-19		7.80	571	7.75	7.78	549	58.8	<2.0	287	266	266	<10	42.7
	Oct-19		7.90	547	13.58	7.80	605	624	<2.0	314	350*	350*	<10	34.0
	May-20		7.70	500	9.25	7.96	587	56.1	<2.0	307	263	263	<2.0	39.7
Oct-20		7.76	507	14.12	8.10	636	213	<2.0	327	283	283	<2.0	42.3	
May-21		7.70	569	10.0	8.16	582	141	<3	250	243	243	<2	49	
Oct-21		7.91	600	14.1	8.16	611	77.5	<3	359	296	296	<2	39	
592	Oct-14	FT	7.33	690	12.3	8.25	738	1470	6	359	327	327	<5	63.9
	May-15		7.27	539	9.4	8.02	690	502	<5	350	335	335	<5	56.0
	Oct-15		7.43	560	13.7	8.05	765	605	<5	372	332	332	<5	56.3
	May-16		7.37	597	9.0	8.14	767	1910	<5	391	378	378	<5	61.9
	Oct-16		7.21	710	15.4	7.77	599	5450	5	305	280	280	<5	51.1
	May-17		7.20	614	10.21	8.23	758	3540	<5	347	333	333	<5	68.5
	Oct-17		6.75	557	13.44	8.25	703	1090	<5	393	358	358	<5	52.4
	May-18		7.54	579	8.40	7.53	638	143	<5	343	247	247	<5	46.5
	Oct-18		7.55	625	13.49	7.86	667	92.0	<5	350	306	306	<5	51.1
	May-19		7.24	656	7.55	7.38	631	3180	<2.0	341	359	359	<10	40.5
	Oct-19		7.30	636	13.31	7.66	711	415	2.7	402	390	390	<10	37.2
	May-20		7.34	596	8.32	7.70	662	193	<2.0	372	355	355	<2.0	34.9
	Oct-20		6.86	580	14.52	7.82	713	238	<2.0	400	380	380	<2.0	35.4
May-21		7.18	618	10.1	8.12	615	694	<3	271	301	301	<2	44	
Oct-21		7.85	650	15.0	7.97	654	75.9	3	398	377	377	<2	44	
00-04	May-13	UT	8.09	793	10.6	8.18	719	518	<5	310	282	282	<5	44.9
	Oct-13		7.96	748	12.5	8.23	689	221	<5	293	293	293	<5	42.0
	May-14		7.81	774	10.0	8.09	762	292	<5	305	276	276	<5	52.4
	Oct-14		7.99	699	10.2	8.43	715	131	<5	312	257	246	12	46.3
	May-15		7.01	483	13.5	8.07	703	415	<5	275	275	275	<5	45.4
	Oct-15		7.11	519	13.9	8.07	699	138	<5	239	250	250	<5	43.9
	May-16		7.52	549	12.5	8.22	728	279	<5	273	279	279	<5	52.1
	Oct-16		7.60	690	17.1	8.34	735	271	<5	282	285	275	10	45.6
	May-17		7.88	649	10.50	8.28	788	412	<5	281	284	282	<5	48.6
	Oct-17		7.57	529	14.33	8.21	690	61.9	5	274	289	289	<5	46.3
	May-18		8.11	628	12.60	7.93	712	101	<5	290	245	245	<5	55.0
	Oct-18		8.02	614	11.98	7.81	655	135	<5	275	288	288	<5	43.4
	May-19		7.98	564	11.42	7.88	712	169	<2.0	282	280	280	<10	48.9
Oct-19		7.97	618	12.04	7.83	683	130	<2.0	279	294	294	<10	40.1	
May-20		7.60	604	11.17	8.11	701	194	<2.0	288	276	276	<2.0	49.5	
Oct-20		7.88	569	13.71	7.82	703	105	<2.0	306	285	285	<2.0	45.0	
May-21		7.65	755	11.4	8.23	691	80.7	5	312	262	262	<2	57	
Oct-21		7.86	680	13.0	8.04	684	118	<3	385	302	302	<2	49	
023R	May-13	UT	7.51	1499	10.2	8.19	1350	15.3	<5	770	364	364	<5	404
	Oct-13		7.72	1415	11.6	8.13	1360	19.7	<5	850	393	393	<5	415
	May-14		7.21	1461	9.4	8.14	1410	21.1	<5	764	368	368	<5	418
	Oct-14		7.50	1222	10.9	8.32	1430	13.3	8	726	351	345	6	450
	May-15		7.35	931	13.6	8.20	1380	89.4	<5	730	372	372	<5	421
	Oct-15		7.19	974	11.2	8.08	1270	23.0	9	682	290	290	<5	426
	May-16		7.30	1027	15.0	8.10	1370	59.9	<5	766	344	344	<5	476
	Oct-16		7.14	1300	12.5	8.23	1380	66.4	<5	743	381	381	<5	426
May-17		7.24	1220	9.42	8.20	1510	11.0	<5	725	384	384	<5	455	

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
581	May-14	FT	73.6	4.13	0.36	1.36	33.9	12.3	4.52	<0.05		<0.001	5.1	
cont.	Oct-14		70.8	4.39	0.43	1.31	30.7	12.1	<0.10	<0.10		<0.001	2.3	
	May-15		65.4	3.72	0.29	1.26	30.9	12.1	3.95	<0.05		<0.001	3.7	
	Oct-15		76.6	6.85	0.40	1.57	32.7	13.8	6.00	<0.10		<0.001	3.7	
	May-16		63.0	4.73	0.36	1.27	31.9	11.6	5.66	<0.05		<0.001	2.6	
	Oct-16		71.0	4.44	0.30	1.55	32.9	11.3	5.09	<0.10		<0.001	1.6	
	May-17		56.1	3.92	0.38	1.14	24.9	8.94	5.37	<0.05		<0.001	2.1	
	Oct-17		65.1	3.27	0.32	1.61	30.5	10.9	4.40	<0.25		<0.001	2.1	
	May-18		64.6	4.66	<0.10	1.07	27.3	8.86	5.59	<0.10		<0.001	1.8	
	Oct-18		71.1	4.22	0.42	1.29	28.1	9.30	7.18	<0.05		<0.001	1.6	
	May-19		67.3	4.12	0.357	1.04	28.8	9.15	5.42	<0.010	5.42	0.0015	2.17	
	Oct-19		71.5	4.59	0.427	1.50	33.0	11.1	5.24	<0.010	5.24	0.0024	2.24	
	May-20		73.7	5.10	0.386	1.10	30.0	9.47	4.88	<0.010	4.88	<0.0010	2.63	
	Oct-20		75.6	4.83	0.439	1.52	33.7	11.4	5.27	<0.010	5.27	0.0052	1.83	
	May-21		52.1	6	0.44	1.08	29.1	9.19	5.89	<0.03		<0.002	1.8	
	Oct-21		90.8	9	0.41	1.67	32.2	10.5	4.88	<0.03		<0.002	2.5	
592	Oct-14	FT	84.3	7.88	<0.25	4.53	36.1	13.9	0.75	<0.25		<0.001	2.1	
	May-15		87.6	5.78	<0.10	2.37	31.8	8.31	<0.10	<0.10		<0.001	3.3	
	Oct-15		92.3	5.02	<0.25	2.69	34.4	9.90	<0.25	<0.25		<0.001	5.5	
	May-16		103	5.69	<0.25	2.07	32.5	18.4	<0.25	<0.25		<0.001	3.1	
	Oct-16		71.5	5.39	<0.05	2.15	30.8	9.35	0.07	<0.05		<0.001	3.0	
	May-17		89.8	4.60	<0.10	1.88	29.9	14.4	0.29	<0.10		<0.001	2.3	
	Oct-17		100	3.55	<0.25	2.34	34.9	9.98	<0.25	<0.25		<0.001	2.5	
	May-18		90.0	4.68	<0.10	1.42	28.8	6.90	<0.10	<0.10		<0.001	1.3	
	Oct-18		96.3	4.11	<0.25	1.96	26.5	16.2	<0.25	<0.25		<0.001	2.4	
	May-19		92.0	3.35	0.066	1.18	27.0	6.08	0.028	<0.010	0.028	0.0018	3.24	
	Oct-19		103	3.26	0.092	1.86	35.4	8.09	0.031	<0.010	0.031	0.0316*	3.08	
	May-20		96.9	2.82	0.081	1.33	31.6	7.04	<0.020	<0.010	<0.022	0.0015	2.77	
	Oct-20		109	2.99	0.079	1.65	31.0	7.29	0.029	<0.010	0.029	0.0129	3.34	
	May-21		66.0	3	0.11	1.24	25.7	6.30	0.06	<0.03		<0.002	2.9	
	Oct-21		112	3	0.06	1.94	28.9	11.4	<0.06	<0.03		<0.002	4.3	
00-04	May-13	UT	66.2	41.5	0.40	2.58	35.2	39.2	<0.25	<0.25		<0.001	6.8	
	Oct-13		61.0	40.2	<0.25	2.70	34.2	35.4	<0.25	<0.25		<0.001	3.6	
	May-14		64.9	51.2	0.38	2.50	34.6	38.1	<0.10	<0.10		<0.001	5.1	
	Oct-14		63.4	46.4	0.41	3.00	37.4	35.5	<0.25	<0.25		<0.001	1.8	
	May-15		52.7	47.9	0.44	3.02	34.9	40.0	<0.10	<0.10		<0.001	2.1	
	Oct-15		38.2	43.3	0.29	2.50	34.8	37.7	<0.25	<0.25		<0.001	3.4	
	May-16		53.4	49.2	<0.25	2.00	34.0	37.2	<0.25	<0.25		<0.001	1.9	
	Oct-16		55.2	48.1	<0.25	2.17	34.9	36.5	<0.25	<0.25		<0.001	2.1	
	May-17		54.1	46.3	0.46	2.22	35.5	41.1	<0.10	<0.10		<0.001	1.8	
	Oct-17		52.5	45.1	0.79	2.26	34.7	48.7	<0.10	<0.10		<0.001	1.9	
	May-18		55.9	49.8	0.74	2.13	36.5	41.3	<0.25	<0.25		<0.001	1.8	
	Oct-18		50.9	41.9	0.48	2.03	35.9	35.8	<0.25	<0.25		<0.001	1.5	
	May-19		56.3	44.1	0.613	2.10	34.4	42.7	0.065	<0.010	0.065	0.0023	1.70	
	Oct-19		51.3	42.9	0.745	2.08	36.5	40.0	<0.020	<0.010	<0.022	0.0022	1.95	
	May-20		54.9	43.6	0.704	2.05	36.7	42.0	0.024	<0.010	0.024	<0.0010	2.04	
	Oct-20		55.8	46.5	0.681	2.13	40.4	41.0	<0.020	<0.010	<0.022	0.0090	1.84	
	May-21		65.4	52	0.66	2.08	36.2	41.6	<0.06	<0.03		<0.002	1.8	
	Oct-21		87.1	51	0.69	2.27	40.6	40.0	<0.06	<0.03		<0.002	1.0	
023R	May-13	UT	142	25.9	0.27	2.82	101	27.5	<0.25	<0.25		<0.001	5.5	
	Oct-13		154	24.2	<0.25	3.38	113	30.1	<0.25	<0.25		<0.001	4.3	
	May-14		141	23.6	<0.25	3.05	100	28.1	<0.25	<0.25		<0.001	6.5	
	Oct-14		128	25.4	<0.25	3.06	98.8	29.1	<0.25	<0.25		<0.001	3.3	
	May-15		139	25.5	0.20	2.84	92.9	30.2	<0.10	<0.10		<0.001	2.6	
	Oct-15		110	20.9	<0.25	3.31	98.8	31.1	<0.25	<0.25		<0.001	4.7	
	May-16		145	26.2	<0.25	2.92	98.0	31.5	<0.25	<0.25		<0.001	3.0	
	Oct-16		144	23.1	<0.25	2.85	93.2	27.3	<0.25	<0.25		<0.001	2.8	
	May-17		137	24.7	<0.25	3.06	92.9	27.9	<0.25	<0.25		<0.001	2.2	

Notes: · ODWQS - Ontario Drinking Water Quality Standard (June 2003) · AO - Aesthetic Objective · † - sampled by Oxford County Board of Health
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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5	NC	NC	6.5 - 8.5	5	5	80 - 100	30 - 500	NC	NC	500	
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
														295
023R cont'd	Oct-17	UT	7.43	1050	11.85	8.13	1290	45.2	<5	761	390	390	<5	447
	May-18		7.55	1210	10.12	7.85	1370	51.1	<5	757	359	359	<5	446
	Oct-18		7.82	1240	10.21	7.53	1310	36.6	<5	747	412	412	<5	434
	May-19		7.19	1220	9.30	7.54	1390	21.4	<2.0	787	380	380	<10	424
	Oct-19		7.44	1220	9.44	7.43	1380	17.0	<2.0	760	411	411	<10	428
	May-20		7.34	1220	9.77	7.81	1400	10.2	<2.0	768	372	372	<2.0	420
	Oct-20		7.39	1120	11.99	7.75	1410	1.14	<2.0	787	393	393	<2.0	450
	May-21		7.46	1279	11.9	8.15	1360	52.3	<3	698	344	344	<2	450
Oct-21		7.59	1280	11.3	7.95	1390	10.4	3	797	373	373	<2	420	
03-3	May-13	UT	7.12	1492	8.1	8.02	1240	196	<5	491	335	335	<5	75.8
	May-14		7.09	1507	7.9	8.00	1480	340	<5	485	383	383	<5	66.5
	May-15		7.00	997	9.4	7.95	1480	1550	5	452	395	395	<5	66.0
	May-16		7.31	857	9.7	8.10	1240	916	6	439	371	371	<5	100
	May-17		7.04	967	8.40	8.21	1200	843	6	423	378	378	<5	105
	May-18		7.15	1260	8.94	7.96	1390	331	<5	499	399	399	<5	82.4
	May-19		7.07	1340	8.98	7.19	1660	151	3.2	593	477	477	<10	73.8
	May-20		6.92	1470	8.81	7.46	1690	159	5.5	562	446	446	<2.0	61.6
	May-21		7.10	1560	9.8	7.89	1420	15.4	10	527	412	412	<2	63
	03-4	May-13	UT	7.52	1709	8.3	8.11	1500	90.5	<5	605	310	310	<5
May-14			7.32	1665	8.3	8.09	1640	80.5	<5	592	324	324	<5	56.5
May-15			7.21	1061	10.3	7.94	1530	329	<5	584	301	301	<5	51.7
May-16			7.33	1168	9.7	7.99	1560	64.4	<5	569	306	306	<5	54.4
May-17			7.16	1530	9.08	8.07	1810	197	<5	1130	312	312	<5	48.7
May-18			7.20	1560	8.93	7.87	1660	123	<5	629	399	399	<5	50.3
May-19			7.68	1240	9.13	7.66	1560	122	2.3	606	359	359	<10	48.8
May-20			7.12	1430	9.04	7.65	1630	41.2	2.7	581	337	337	<2.0	45.3
May-21		7.30	1487	9.8	7.93	1400	4.32	<3	592	325	325	<2	50	
03-5	May-13	UT	7.37	1663	8.8	8.10	1470	410	<5	666	401	401	<5	173
	May-14		7.41	1512	9.1	8.05	1500	1900	<5	601	430	430	<5	165
	May-15		7.41	974	14.0	8.00	1350	9900	<5	562	347	347	<5	151
	May-16		7.29	1098	9.8	8.06	1460	2990	<5	625	383	383	<5	179
	May-17		7.27	1520	9.89	8.10	1750	17800	<5	686	352	352	<5	237
	May-18		7.11	1400	8.83	7.93	1530	999	<5	726	457	457	<5	233
	May-19		7.28	1290	9.75	7.25	1570	3200	<2.0	704	454	454	<10	212
	May-20		7.00	1360	9.34	7.43	1540	>4000	4.3	675	447	719	<2.0	184
May-21		7.15	1496	10.5	7.87	1350	70.7	7	629	462	462	<2	190	
03-7d	May-13	UT	8.05	545	9.3	8.11	506	29.3	<5	139	121	121	<5	111
	Oct-13		7.98	519	12.2	8.07	485	30.9	8	136	124	124	<5	108
	May-14		8.02	545	9.0	8.05	522	46.5	7	137	119	119	<5	123
	Oct-14		8.30	470	10.8	7.99	496	24.6	17	124	112	112	<5	110
	May-15		7.96	340	11.0	8.09	481	22.7	6	126	120	120	<5	103
	Oct-15		8.06	337	13.9	7.91	461	119	7	103	107	107	<5	100
	May-16		7.85	390	12.6	8.00	488	42.9	5	127	124	124	<5	111
	Oct-16		7.85	490	16.5	8.00	463	28.8	8	129	125	125	<5	93.3
	May-17		7.80	426	8.80	7.85	518	45.8	7	112	126	126	<5	98.5
	Oct-17		7.84	384	14.67	7.79	469	27.4	13	130	128	128	<5	102
	May-18		8.10	363	10.09	8.07	458	12.7	5	126	105	105	<5	88.7
	Oct-18		8.20	410	11.77	7.70	381	49.3	<5	110	121	121	<5	75.9
	May-19		7.70	398	9.72	8.14	456	14.8	3.2	138	127	127	<10	89.5
	Oct-19		8.42	400	12.57	8.04	442	40.0	3.3	123	128	128	<10	80.9
	May-20		8.01	396	9.49	8.18	456	11.4	2.6	133	127	127	<2.0	82.9
	Oct-20		8.14	356	14.01	7.86	439	8.27	<2.0	122	124	124	<2.0	78.5
May-21		8.00	425	11.0	8.13	440	7.39	4	122	118	118	<2	81	
Oct-21		8.15	410	14.1	7.91	427	5.19	5	147	113	113	<2	75	

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS				250	1.5			200	10	1	10		5	
Guideline B-7			NC	AO	MAC	NC	NC	AO	MAC	MAC	MAC	NC	AO	NC
				127				113	2.64	0.25			3.4	
023R	Oct-17	UT	141	20.8	<0.25	2.94	99.2	29.6	<0.25	<0.25		<0.001	2.7	
cont'd	May-18		143	22.5	0.25	2.80	97.2	29.4	<0.25	<0.25		<0.001	2.2	
	Oct-18		142	22.3	<0.25	2.68	95.3	28.5	<0.25	<0.25		<0.001	2.3	
	May-19		144	23.3	0.299	2.77	104	32.0	<0.020	<0.010	<0.022	<0.0010	2.95	
	Oct-19		145	22.3	0.250	2.83	96.8	30.8	<0.10	<0.050	<0.11	0.0016	2.45	
	May-20		144	22.0	0.230	2.80	99.2	30.7	<0.10	<0.050	<0.11	0.0025	3.33	
	Oct-20		157	23.2	0.270	2.71	96.0	29.1	<0.10	<0.050	<0.11	0.0177	2.60	
	May-21		129	25	0.31	2.68	91.2	28.2	<0.06	<0.03		0.0020	2.7	
	Oct-21		163	26	0.32	2.91	94.6	30.0	<0.06	<0.03		<0.002	1.7	
03-3	May-13	UT	145	162	<0.25	5.03	31.2	96.7	1.62	<0.25		<0.001	5.2	
	May-14		145	228	<0.25	4.61	29.9	86.5	1.02	<0.25		<0.001	3.4	
	May-15		134	225	<0.25	5.94	28.6	136	0.55	<0.25		<0.001	5.2	
	May-16		130	152	<0.25	4.87	27.7	94.6	0.43	<0.25		<0.001	3.3	
	May-17		128	93.2	<0.25	3.97	25.0	56.1	0.33	<0.25		<0.001	3.8	
	May-18		148	219	<0.25	5.58	31.4	96.0	1.07	<0.25		<0.001	3.7	
	May-19		175	259	<0.10	6.14	37.7	132	3.16	<0.050	3.16	<0.0010	5.46	
	May-20		163	281	<0.10	6.99	37.6	147	1.72	<0.050	1.72	<0.0010	5.85	
	May-21		157	270	0.08	6.74	32.7	121	0.91	<0.03		<0.002	4.5	
03-4	May-13	UT	151	293	<0.5	2.85	55.4	79.7	<0.5	<0.5		<0.001	6.7	
	May-14		153	331	<0.25	2.92	51.1	75.3	<0.25	<0.25		<0.001	2.6	
	May-15		148	302	<0.25	3.22	52.0	87.6	<0.25	<0.25		<0.001	3.7	
	May-16		144	322	<0.25	2.86	50.9	82.1	<0.25	<0.25		<0.001	3.0	
	May-17		292	323	<0.25	5.73	96.4	176	<0.25	<0.25		<0.001	2.7	
	May-18		164	342	<0.25	3.51	53.2	110	0.48	<0.25		<0.001	2.6	
	May-19		157	318	0.28	3.36	52.1	103	<0.10	<0.050	<0.11	<0.0010	3.45	
	May-20		145	303	0.264	3.05	53.2	107	<0.020	<0.010	<0.022	0.0025	3.49	
	May-21		156	320	0.31	2.96	49.1	100	0.30	<0.03		<0.002	2.9	
03-5	May-13	UT	141	172	<0.5	2.68	76.2	90.3	<0.5	<0.5		<0.001	4.7	
	May-14		132	176	<0.25	2.48	65.9	64.1	<0.25	<0.25		<0.001	7.2	
	May-15		117	168	<0.25	2.91	65.5	68.4	<0.25	<0.25		<0.001	4.3	
	May-16		137	188	<0.25	2.55	68.7	68.0	<0.25	<0.25		<0.001	3.4	
	May-17		153	205	<0.25	2.75	73.9	76.1	<0.25	<0.25		<0.001	4.1	
	May-18		157	183	<0.25	2.95	81.1	84.9	<0.25	<0.25		<0.001	3.7	
	May-19		161	174	0.23	2.53	73.4	71.3	<0.10	<0.050	<0.11	0.0013	4.33	
	May-20		158	161	0.26	2.53	68.4	76.0	<0.10	<0.050	<0.11	0.0021	6.17	
	May-21		143	180	0.23	2.62	66.0	84.8	<0.06	<0.03		<0.002	6.9	
03-7d	May-13	UT	33.6	10.3	0.82	1.19	13.3	55.5	<0.10	<0.10		<0.001	3.9	
	Oct-13		33.0	10.4	1.02	1.31	12.9	51.2	<0.05	<0.05		<0.001	2.2	
	May-14		33.1	12.2	1.16	1.30	13.2	52.7	<0.05	<0.05		<0.001	6.5	
	Oct-14		29.4	11.8	1.04	1.19	12.3	48.4	<0.10	<0.10		<0.001	2.5	
	May-15		30.6	11.6	1.12	1.15	12.1	48.7	<0.05	<0.05		<0.001	2.1	
	Oct-15		23.6	11.1	0.95	1.28	10.6	51.3	<0.10	<0.10		<0.001	2.8	
	May-16		30.6	13.1	1.10	1.31	12.3	53.1	<0.05	<0.05		<0.001	3.2	
	Oct-16		31.4	11.8	1.02	1.21	12.4	44.7	0.05	<0.05		<0.001	2.4	
	May-17		27.2	10.9	1.17	1.26	10.8	54.2	<0.05	<0.05		<0.001	1.9	
	Oct-17		32.4	11.7	0.97	1.63	11.9	49.5	0.37	0.06		<0.001	2.5	
	May-18		30.7	11.3	1.08	1.05	11.9	46.7	0.06	<0.05		<0.001	1.8	
	Oct-18		27.2	11.2	0.89	1.00	10.2	37.9	0.16	<0.05		<0.001	1.6	
	May-19		33.9	12.8	1.13	1.09	13.0	47.6	0.063	<0.010	0.063	0.0015	2.99	
	Oct-19		30.0	13.0	1.20	1.05	11.7	44.7	<0.020	<0.010	<0.022	0.0025	2.53	
	May-20		32.5	12.6	1.14	1.06	12.7	47.7	0.071	<0.010	0.07	0.0028	2.17	
	Oct-20		30.4	13.3	1.18	0.984	11.2	40.9	0.045	0.011	0.056	0.0018	2.02	
	May-21		31.3	15	1.07	0.968	10.8	39.4	0.11	<0.03		<0.002	2.0	
	Oct-21		39.6	17	1.13	1.11	11.6	41.6	0.15	<0.03		<0.002	2.6	

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Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5			80 - 100	30 - 500				
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
										411			295	
05-01	May-13	UT	7.86	568	10.0	8.34	506	53.6	<5	232	248	245	<5	30.3
	Oct-13		7.69	561	11.1	8.14	518	81.4	<5	232	253	253	<5	35.8
	May-14		7.84	564	9.5	8.10	567	135	<5	224	235	235	<5	41.8
	Oct-14		7.97	493	10.4	8.39	569	586	13	238	241	233	8	45.1
	May-15		7.77	376	11.8	8.53	528	181	<5	219	245	226	19	40.0
	Oct-15		7.89	400	12.0	8.15	537	496	<5	219	235	235	<5	44.1
	May-16		7.67	425	10.2	8.23	563	266	<5	218	255	255	<5	47.1
	Oct-16		7.65	530	12.7	8.39	549	1230	<5	237	251	240	11	42.3
	May-17		7.64	493	9.41	8.26	606	233	5	228	259	259	<5	41.4
	Oct-17		7.98	424	11.56	8.06	526	470	<5	238	253	253	<5	42.7
	May-18		7.87	499	9.73	8.06	552	539	<5	241	252	252	<5	42.7
	Oct-18		8.02	491	10.86	7.94	516	533	<5	230	267	267	<5	40.9
	May-19		7.86	448	10.51	8.02	552	461	<2.0	269	264	264	<10	46.6
	Oct-19		7.97	491	10.83	7.91	555	2790	<2.0	275	283	283	<10	41.9
	May-20		7.70	486	9.75	8.26	555	279	<2.0	251	274	274	<2.0	43.4
	Oct-20		8.09	453	12.69	8.12	561	336	<2.0	248	308	308	<2.0	41.5
	May-21		7.61	520	11.9	8.38	552	177	<3	243	241	235	7	47
Oct-21		7.91	530	12.5	8.29	566	133	6	221	255	255	<2	44	
232	Mar-86	UT				8.1	447			179				
	Jun-86					8.0	479			166				
	Oct-86					7.9	452			176				
	Apr-87					7.9	438			173				
	Oct-87					8.0	456			183				
	May-98					7.9	615			284				
	May-98					8.1	520			182				
	Nov-98					8.2	526			168				
	Jun-99					8.2	534			222				
	Oct-99					8.0	511			218				
	Jun-00					7.9	521	5.3	<5	253				
	Oct-00					7.2	577	36.2	<5	257				
	May-01					8.0	540	29.9	<5	266				
	Nov-01					8.1	570	30.0	<5	271				
	May-02					8.1	622	19.9	18	297				
	Oct-02					8.0	596	19.3	<5	294				
	May-03					8.1	678	20.3	<5	338	293	289	4	79
Oct-03					8.2	631	132	<5	341	291	287	4	76	
May-04					8.1	680	5.9	3	258	292	289	3	81	
Oct-04					8.3	567	29.5	<2.5	301	208	204	3	73	
May-05					8.2	685	604	<5	347	274	334	<1	87.7	
232R	Oct-05	UT				8.3	562	38.3	52		228	278		71
	May-06					7.8	503	6.1	66	300	230	229	<10	66
	Oct-06					8.0	491	2.0	28	270	230	228	<10	53
	May-07					7.9	486	1.8	21	260	220	219	<10	48
	Oct-07					8.2	481	1.8	17	230	230	227	<10	40
	May-08					8.0	479	1.5	15	220	230	228	<10	40
	Oct-08					8.1	466	2.1	6	210	230	227	<10	37
	May-09					8.19	474	2.2	7	216	226	223	<10	34.7
	Oct-09					8.14	472	4.4	7	203	227	224	<10	31.7
	May-10		8.00	470	9.6	8.21	437	4.1	8	200	224	224	<5	34.7
	Oct-10		7.80	530	10.1	8.29	434	6.1	8	207	226	224	<5	48.7
	Jun-11		8.04	453	10	8.24	492	15.0	6	225	233	233	<5	60.9
	Oct-11		7.54	514	11.2	8.35	490	30.8	<5	231	233	227	6	70.9
	May-12		8.38	592	12.5	8.18	524	12.0	8	212	234	234	<5	55.2
	Oct-12		7.92	420	12.8	8.46	471	35.3	<5	220	230	218	13	57.4
	May-13		8.09	590	10.2	8.31	556	50.3	<5	206	239	237	<5	119
	Oct-13		8.35	581	10.8	8.35	527	12.5	<5	206	229	225	<5	55.4
May-14		7.90	574	9.2	8.27	537	40.2	<5	221	227	227	<5	55.4	
Oct-14		8.06	502	12.4	8.24	554	21.2	<5	206	238	238	<5	60.3	

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
05-01	May-13	UT	37.7	7.78	0.63	1.73	33.4	30.0	<0.10	<0.10		<0.001	2.1	
	Oct-13		38.7	8.41	0.73	2.04	32.9	27.9	<0.05	<0.05		<0.001	3.2	
	May-14		38.1	9.65	0.64	1.75	31.3	28.4	<0.05	<0.05		<0.001	5.3	
	Oct-14		39.1	10.1	0.72	1.95	34.1	29.3	<0.10	<0.10		<0.001	1.8	
	May-15		37.8	8.93	0.78	1.69	30.3	26.9	<0.10	<0.10		<0.001	2.6	
	Oct-15		34.5	9.18	0.67	1.91	32.2	29.8	<0.10	<0.10		<0.001	2.5	
	May-16		36.4	10.8	0.65	1.62	30.9	27.0	<0.10	<0.10		<0.001	2.3	
	Oct-16		40.6	9.37	0.67	1.83	33.0	25.9	<0.05	<0.05		<0.001	2.0	
	May-17		38.9	9.64	0.73	1.72	31.8	28.1	<0.05	<0.05		<0.001	1.5	
	Oct-17		39.9	8.55	0.91	1.78	33.5	27.7	<0.10	<0.10		<0.001	1.7	
	May-18		41.5	8.94	0.68	1.69	33.4	28.0	<0.25	<0.25		<0.001	1.3	
	Oct-18		38.9	9.22	0.66	1.72	32.2	26.2	<0.05	<0.05		<0.001	1.3	
	May-19		48.4	9.59	0.670	1.80	35.9	29.3	0.023	<0.010	0.023	0.0020	1.57	
	Oct-19		50.9	9.61	0.766	2.02	35.9	29.0	<0.020	<0.010	<0.022	0.0043	2.54	
	May-20		44.1	9.78	0.723	1.67	34.3	28.1	<0.020	<0.010	<0.022	0.0013	2.40	
Oct-20		43.6	9.72	0.760	1.66	33.8	27.2	<0.020	<0.010	<0.022	0.0041	1.23		
May-21		44.9	12	0.72	1.61	31.7	26.7	<0.06	<0.03		<0.002	1.4		
Oct-21		32.5	13	0.73	2.02	33.9	28.2	<0.06	<0.03		<0.002	<1.0		
232	Mar-86	UT	37	10		2.5	21	23				0.0015	2.0	
	Jun-86		33	7		2.5	20	27				<0.001	1.8	
	Oct-86		36	6			21					<0.001	1.6	
	Apr-87		35	5			21					<0.001	2.2	
	Oct-87		35	3			23					<0.001	1.8	
	May-98		66	5			29					<0.001	1.7	
	May-98		34	6	0.7	1.4	24	52				<0.001	2.2	
	Nov-98		31	6	0.7	1.5	22	54				<0.001	2.1	
	Jun-99		42	6	0.6	2.2	28	50				<0.001	1.7	
	Oct-99		41	6	0.5	2.1	28	48				<0.001	0.6	
	Jun-00		50	7	0.5	2.0	31	43				0.0010	1.1	
	Oct-00		51	6	0.5	2.2	32	42				<0.001	1.0	
	May-01		54	7	0.5	2.3	32	41				<0.001	1.0	
	Nov-01		53	6	0.5	2.4	34	37				<0.001	1.0	
	May-02		58	7	0.4	2.1	37	31				<0.002	0.7	
Oct-02		57	7	0.4	2.2	37	27				<0.002	0.7		
May-03		68	7	0.4	2.2	41	24				<0.002	0.9		
Oct-03		67	7	0.4	2.3	42	25			<0.1	<0.002	1.2		
May-04		36	8	0.5	2.4	41	25				<0.002	1.1	0.13	
Oct-04		62	6	0.0	3.3	35	22			1.46	<0.002	3.9		
May-05		75	6	0.5	2.2	43	23			0.30	0.0010	1.1		
232R	Oct-05	UT	42	3	0.70	3.6	33	30			<0.5	<0.001	4.9	
	May-06		52	3	0.60	3.0	41	32			<0.2	<0.001	3.9	
	Oct-06		48	3	0.90	2.0	36	31			<0.2	<0.001	3.0	
	May-07		45	3	0.80	2.0	35	32			<0.2	<0.001	4.0	
	Oct-07		41	2	0.80	2.0	31	32			0.20	<0.001	2.0	
	May-08		38	<2	0.90	2.0	30	29			0.20	<0.001	2.0	
	Oct-08		36	<2	0.90	2.0	30	31			0.20	<0.001	2.0	
	May-09		34	<2.0	0.88	1.80	32.2	27.7	<0.10	<0.10		<0.0010	2.3	
	Oct-09		34	2.10	0.95	1.80	28.5	30.6	<0.10	<0.10		0.0030	1.9	
	May-10		32.1	2.10	0.74	1.62	29.0	30.3	<0.05	<0.05		<0.001	1.3	
	Oct-10		33.7	2.48	0.92	1.66	29.9	31.6	<0.05	<0.05		<0.001	5.3	
	Jun-11		36.2	3.29	0.86	1.95	32.8	32.9	<0.05	<0.05		<0.001	3.6	
	Oct-11		38.2	3.60	0.85	1.70	33.0	35.3	<0.05	<0.05		<0.001	4.3	
	May-12		34.4	3.90	0.79	1.62	30.7	32.9	<0.05	<0.05		<0.001	6.8	
	Oct-12		36.7	4.49	0.79	1.73	31.2	35.0	<0.05	<0.05		<0.001	1.8	
May-13		33.3	8.78	1.79	1.53	29.8	34.5	0.23	<0.10		<0.001	6.2		
Oct-13		34.1	4.52	0.90	1.58	29.3	34.7	0.11	<0.05		<0.001	3.1		
May-14		35.6	4.65	0.92	1.59	32.2	35.8	0.10	<0.05		<0.001	5.5		
Oct-14		34.2	5.61	0.81	1.64	29.3	35.4	<0.05	<0.05		<0.001	3.4		

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5 OG	NC	NC	6.5 - 8.5 OG	NC	5 AO	5 AO	80 - 100 OG	30 - 500 OG	NC	NC	500 AO
Guideline B-7											411			295
232R cont'd	May-15	UT	7.89	387	15.6	8.29	525	23.6	<600	199	229	227	<5	52.1
	Oct-15		8.03	387	13.2	7.88	541	8.6	<5	203	222	222	<5	51.0
	May-16		7.95	438	8.8	8.10	524	12.3	<5	201	235	235	<5	47.5
	Oct-16		7.62	480	13.2	8.55	407	6.6	18	183	260	260	<5	41.0
	May-17		7.76	467	9.96	8.25	550	13.4	5	185	233	233	<5	41.5
	Oct-17		7.07	389	10.90	8.29	498	266	<5	201	228	228	<5	45.6
	May-18		7.75	447	9.50	8.03	506	22.0	5	203	191	191	<5	47.3
	Oct-18		8.26	483	10.28	7.95	483	10.1	<5	189	245	245	<5	42.8
	May-19		7.52	531	8.72	7.99	464	2.39	<2.0	197	231	231	<10	44.4
	Oct-19		8.10	456	11.03	8.13	541	3.04	3.0	213	231	231	<10	43.5
	May-20		7.87	448	9.29	8.16	507	10.8	2.4	200	221	221	<2.0	41.8
	Oct-20		7.30	423	11.84	8.25	523	2.55	<2.0	215	220	220	<2.0	43.9
May-21		7.71	499	10.3	8.30	522	17.1	3	196	221	221	<2	48	
Oct-21		7.91	490	12.1	8.26	504	11.1	<3	235	224	224	<2	50	
381	Mar-86	UT				7.9	575			221				
	Jun-86					8.0	585			206				
	Oct-86					8.2	500			188				
	Apr-87					7.7	565			239				
	May-88					7.7	550			254				
	Oct-88					7.7	571			286				
	May-89					8.0	566			259				
	Oct-89					7.8	572			258				
	May-90					7.8	570			264				
	Oct-90					8.1	578			271				
	May-91					7.8	578			261				
	Nov-91					7.8	589			277				
	May-92					7.9	540			248				
	Oct-92					7.8	573			280				
	Apr-93					7.9	594			285				
	Apr-93					7.9	596			283				
	Nov-93					7.8	580			284				
	May-94					8.0	618			310				
	Oct-94					8.0	594			303				
	May-95					7.8	633			306				
	Oct-95					7.8	611			290				
	May-97						597			314				
	Oct-97						610			296				
	May-98					7.9	595			298				
Nov-98					7.9	625			281					
Oct-00					7.7	432	29.0	8	273					
May-01					7.9	502	17.3	<5	292					
Nov-01					8.1	858	6.9	<5	325					
May-02					8.2	640	6.8	<5	310					
Oct-02					8.1	616	3.4	<5	323					
May-03					8.2	661	11.2	<5	342	350	345	5	31	
Oct-03					8.1	647	7.4	<5	331	348	344	4	26	
May-04					8.1	588	4.0	4	264	335	331	4	32	
381R	Oct-04	UT				7.9	1010	20.1	30	497	267	265	2	113
	May-05					8.2	910	46.2	12	426	342	417	<1	153
	Oct-05					8.1	869	54.2	14		378	461		115
	May-06					7.7	768	3.6	39	490	370	368	<10	103
	Oct-06					7.7	757	4.1	19	420	350	348	<10	89
	May-07					7.5	753	1.6	7	450	360	359	<10	85
	Oct-07					7.6	759	2.4	7	380	370	369	<10	81
	May-08					7.9	784	1.7	4	400	280	278	<10	92
	Oct-08					7.8	766	1.8	2	410	370	368	<10	82
	May-09					7.99	768	3.5	2	379	363	360	<10	84.6
Oct-09					7.96	793	2.1	2	412	378	375	<10	75.0	

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Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
232R	May-15	UT	33.0	5.39	0.93	1.52	28.2	36.8	0.16	<0.05		<0.001	7.0	
cont'd	Oct-15		33.5	6.38	0.70	1.54	29.0	38.0	0.19	<0.05		<0.001	2.2	
	May-16		32.2	5.94	0.84	1.47	29.3	37.4	0.17	<0.05		<0.001	1.6	
	Oct-16		29.6	5.88	0.92	1.45	26.6	30.1	0.10	<0.05		<0.001	1.6	
	May-17		29.6	6.01	1.04	1.45	27.0	35.4	0.12	<0.05		<0.001	1.1	
	Oct-17		32.4	6.63	0.86	1.46	29.2	37.9	0.16	<0.05		<0.001	2.1	
	May-18		33.1	7.21	0.82	1.46	29.3	34.5	0.18	<0.05		<0.001	2.4	
	Oct-18		30.2	7.06	0.74	1.33	27.7	34.9	<0.25	<0.25		<0.001	1.6	
	May-19		33.6	7.39	0.988	1.35	27.5	35.0	0.188	<0.010	0.188	<0.0010	2.47	
	Oct-19		34.5	7.79	0.930	1.44	30.9	41.4	0.093	<0.010	0.093	0.0041	1.61	
	May-20		33.5	7.77	0.984	1.35	28.2	37.7	0.059	<0.010	0.059	<0.0010	2.37	
	Oct-20		32.8	8.26	0.955	1.55	32.4	43.8	0.157	<0.010	0.157	0.0099	2.30	
	May-21		35.0	10	0.91	1.28	26.4	34.1	0.13	<0.03		<0.002	1.7	
	Oct-21		47.9	11	1.01	1.71	28.2	39.7	0.15	<0.03		0.003	3.3	
381	Mar-86	UT	45	5		2.2	27	39				0.0010	2.3	
	Jun-86		41	6		2.8	25	40				0.0015	2.0	
	Oct-86		32	6			27					0.0020	1.7	
	Apr-87		47	5			29					0.0010	2.7	
	May-88		52	5			30					0.0015	1.5	
	Oct-88		63	5			31	24				0.0015	2.0	
	May-89		50	5			32					0.0010	1.8	
	Oct-89		53	5			31					0.0015	0.8	
	May-90		55	6			31					0.0010	0.9	
	Oct-90		56	6			32					0.0015	1.8	
	May-91		52	5			32					0.0045	0.9	
	Nov-91		56	6			33					0.0065	2.1	
	May-92		42	6			35					0.0010	2.0	
	Oct-92		56	6			34					0.0015	1.6	
	Apr-93		53	6		2.1	37	25				0.0010	1.2	
	Apr-93		54	6			36					0.0010	1.1	
	Nov-93		58	6			34					0.0010	1.6	
	May-94		63	5		1.9	37	25				0.0010	2.0	
	Oct-94		61	5		2.1	36	25				0.0011	1.7	
	May-95		61	6		2.0	37	25				0.0010	2.1	
	Oct-95		59	6		2.1	34	26				0.0010	3.0	
	May-97		62	6		1.8	39	26				0.0010	2.9	
	Oct-97		63	1		2.0	34	25				0.0010	2.5	
	May-98		59	7	0.60	2.0	37	25				<0.001	4.1	
	Nov-98		57	9	0.70	2.1	33	26				<0.001	2.2	
	Oct-00		48	6	0.60	1.9	37	26				<0.001	1.0	
	May-01		60	5	0.50	1.8	35	22				<0.001	1.0	
	Nov-01		67	8	0.66	1.9	38	26				<0.001	0.9	
	May-02		59	7	0.62	1.8	40	25				<0.002	0.9	
	Oct-02		66	7	0.55	2.2	39	26				<0.002	0.6	
	May-03		69	8	0.62	1.9	41	27				<0.002	1.3	
	Oct-03		68	8	0.61	2.0	39	26			<0.1	<0.002	1.0	
	May-04		41	7	0.65	1.8	39	25				<0.002	1.0	0.12
381R	Oct-04	UT	105	6	0.30	6.1	57	28			<0.1	<0.002	8.2	
	May-05		110	6	0.40	4.1	58	54			<0.1	0.0010	3.3	
	Oct-05		89	5	<0.5	3.7	51	32			<0.5	<0.001	3.3	
	May-06		101	6	0.30	3.0	58	28			<0.2	<0.001	2.2	
	Oct-06		82	5	0.40	3.0	52	26			<0.2	<0.001	3.0	
	May-07		95	5	0.30	3.0	52	26			<0.2	0.0010	2.0	
	Oct-07		72	4	0.30	3.0	48	26			<0.2	<0.001	2.0	
	May-08		85	4	0.40	2.0	46	22			<0.1	<0.001	1.0	
	Oct-08		89	4	0.40	3.0	46	21			<0.1	<0.001	2.0	
	May-09		68.5	3.40	0.31	2.40	50.5	23.6	<0.10	<0.10		<0.0010	2.3	
	Oct-09		86.3	3.20	0.34	2.50	47.7	22.0	<0.10	<0.10		<0.0010	1.9	

Notes: · ODWQS - Ontario Drinking Water Quality Standard (June 2003) · AO - Aesthetic Objective · † - sampled by Oxford County Board of Health
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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5	5	5	80 - 100	30 - 500			500	
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
										411			295	
381R <i>cont.</i>	May-10	UT	7.69	750	7.9	8.17	708	2.3	7	392	349	349	<5	84.9
	Oct-10		7.50	840	12.3	8.25	707	5.2	<5	420	369	369	<5	83.4
	Jun-11		7.74	690	11.3	8.08	720	126	<5	419	353	353	<5	91.0
	Oct-11		6.89	741	11.7	8.33	733	379	<5	439	384	374	9	95.2
	May-12		7.75	910	10.1	8.11	795	10.3	<5	412	361	361	<5	106.0
	Oct-12		7.38	635	12.1	8.27	631	329	<5	415	327	327	<5	88.4
	May-13		7.50	920	8	8.17	778	99.3	<5	446	353	353	<5	93.3
	Oct-13		7.88	883	11.8	8.17	858	39.5	<5	428	408	408	<5	88.1
	May-14		7.35	887	7.3	8.20	835	194	<5	451	380	380	<5	90.2
	Oct-14		7.40	783	12.4	8.29	848	154	<5	397	395	392	<5	36.7
	May-15		7.33	610	9.1	8.10	797	621	<5	397	371	371	<5	89.9
	Oct-15		6.83	621	13.8	8.16	878	283	<5	436	385	385	<5	88.1
	May-16		6.89	676	8.1	8.17	813	204	<5	427	376	376	<5	94.6
	Oct-16		6.81	810	14.9	8.24	906	450	12	442	429	429	<5	90.1
	May-17		7.36	761	8.33	8.29	918	357	<5	403	399	375	24	98.4
	Oct-17		7.43	662	13.60	8.17	837	163	<5	458	419	419	<5	87.9
	May-18		7.59	751	8.53	7.66	839	182	<5	426	344	344	<5	97.4
	Oct-18		7.59	764	13.51	7.92	806	171	<5	422	359	359	<5	89.3
	May-19		7.64	839	8.22	7.41	794	310	<2.0	422	407	407	<10	94.1
	Oct-19		7.45	777	13.93	7.73	914	266	6.1	478	434	434	<10	88.3
	May-20		7.21	781	8.96	7.79	836	121	<2.0	450	416	416	<2.0	87.8
Oct-20		7.18	721	14.92	7.90	883	173	<2.0	464	439	439	<2.0	84.4	
May-21		6.70	837	9.8	8.25	866	599	<3	367	395	395	<2	88	
Oct-21		6.64	840	14.0	7.87	848	316	4	499	426	426	<2	82	
593	Oct-14	UT	7.73	430	10.3	8.41	493	14300	6	199	210	202	8	38.7
	May-15		7.89	376	11.4	8.22	503	7940	<5	208	217	217	<5	55.6
	Oct-15		7.85	385	10.7	8.02	561	602	<5	239	211	211	<5	64.7
	May-16		7.51	425	11.5	8.14	557	2500	<5	228	233	233	<5	75.9
	Oct-16		7.87	510	12.5	8.21	489	2900	6	208	250	250	<5	68.0
	May-17		7.57	530	10.50	8.23	658	2550	<5	242	241	241	<5	93.4
	Oct-17		7.14	429	12.50	8.10	576	1630	<5	256	236	236	<5	86.6
	May-18		7.86	525	11.00	7.86	572	3790	<5	241	207	207	<5	87.5
	Oct-18		7.89	510	10.05	7.81	536	828	<5	232	202	202	<5	79.3
	May-19		7.60	555	9.82	7.90	530	1800	<2.0	232	489*	489*	<50	78.5
	Oct-19		7.80	506	10.08	7.94	553	881	<2.0	251	460*	460*	<10	76.5
	May-20		7.90	494	9.80	8.29	567	1330	<2.0	250	258	256	<2.0	70.8
	Oct-20		7.35	580	11.48	8.07	566	367	<2.0	253	270	270	<2.0	72.3
	May-21		7.69	538	11.4	8.33	562	245	<3	230	227	224	3	68
Oct-21		8.12	520	10.8	8.25	537	455	5	283	264	264	<2	68	
551	Oct-87	ITS				8.1	422			206				
	May-88					8.0	445			198				
	Oct-88					7.8	460			196				
	May-89					8.0	468			202				
	Oct-89					7.9	454			197				
	May-90					8.0	456			201				
	Oct-90					8.1	461			207				
	May-91					8.1	460			205				
	Nov-91					8.0	463			214				
	May-92					8.1	459			213				
	Oct-92					8.0	461			234				
	Apr-93					8.1	459			230				
	Nov-93					7.9	463			224				
	May-94					8.2	464			230				
	Oct-94					7.7	1167			296				
	May-95					7.8	1910			452				
	Oct-95					7.9	883			186				
May-97						1060			319					
Oct-97						675			208					

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Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
381R	May-10	UT	78.3	3.03	0.22	2.10	47.7	22.1	<0.05	<0.05		<0.001	1.6	
cont.	Oct-10		86.1	3.18	0.31	2.55	49.7	22.2	<0.05	<0.05		0.0010	5.2	
	Jun-11		85.7	3.62	<0.05	2.44	49.8	20.0	<0.05	<0.05		<0.001	4.2	
	Oct-11		90.3	3.60	<0.05	2.48	51.9	22.3	<0.05	<0.05		<0.001	14.2	
	May-12		82.5	3.41	<0.05	2.14	50.1	22.0	<0.05	<0.05		<0.001	5.3	
	Oct-12		80.3	3.47	0.31	2.77	52.0	23.6	<0.05	<0.05		<0.001	1.9	
	May-13		89.0	3.27	0.28	2.22	54.3	22.9	<0.25	<0.25		<0.001	4.4	
	Oct-13		89.5	3.10	<0.25	2.41	49.7	22.5	<0.25	<0.25		<0.001	4.0	
	May-14		90.9	3.21	0.28	2.62	54.4	22.7	<0.05	<0.05		<0.001	5.4	
	Oct-14		79.1	1.60	<0.10	2.33	48.4	21.8	<0.10	<0.10		<0.001	3.5	
	May-15		79.6	4.33	0.27	2.13	48.2	23.1	<0.10	<0.10		<0.001	4.4	
	Oct-15		93.0	5.84	<0.25	2.61	49.5	23.3	<0.25	<0.25		<0.001	4.6	
	May-16		88.0	6.03	<0.25	2.33	50.3	22.3	<0.25	<0.25		<0.001	2.2	
	Oct-16		92.6	5.18	<0.25	2.39	51.2	20.4	<0.25	<0.25		<0.001	2.3	
	May-17		82.8	5.02	0.21	2.12	47.7	25.7	<0.10	<0.10		<0.001	2.1	
	Oct-17		98.7	4.43	<0.25	2.37	51.3	22.8	<0.25	<0.25		<0.001	2.5	
	May-18		88.3	5.50	<0.25	2.10	49.9	24.0	<0.25	<0.25		<0.001	1.0	
	Oct-18		91.0	5.44	<0.25	2.32	47.3	23.2	<0.25	<0.25		<0.001	2.2	
	May-19		86.5	5.25	0.268	2.00	50.0	24.0	0.037	<0.010	0.037	0.0015	2.28	
	Oct-19		100	5.34	0.271	2.49	55.3	26.8	<0.020	<0.010	<0.022	0.0094	2.64	
	May-20		93.5	5.53	0.270	2.08	52.6	24.0	<0.020	<0.010	<0.022	0.0019	2.86	
	Oct-20		96.9	5.71	0.311	2.51	53.9	25.6	<0.020	<0.010	<0.022	0.0168*	2.37	
	May-21		70.7	7	0.31	2.00	46.4	22.1	<0.06	<0.03		<0.002	2.2	
	Oct-21		116	8	0.31	2.78	51.0	25.7	<0.06	<0.03		<0.002	6.7	
593	Oct-14	UT	33.0	3.67	0.57	3.15	28.3	17.6	0.20	<0.10		<0.001	1.9	
	May-15		36.1	4.29	0.33	2.11	28.6	24.8	0.13	<0.05		<0.001	2.4	
	Oct-15		41.6	3.79	0.36	2.42	32.9	29.1	0.11	<0.10		<0.001	2.6	
	May-16		38.5	4.58	0.47	2.25	32.0	31.3	0.09	<0.05		<0.001	2.2	
	Oct-16		34.0	3.82	0.40	1.62	29.8	24.4	<0.05	<0.05		<0.001	1.0	
	May-17		42.0	4.45	0.56	1.99	33.3	32.5	0.06	<0.05		<0.001	1.3	
	Oct-17		44.0	4.07	0.40	1.87	35.6	31.8	<0.25	<0.25		<0.001	1.5	
	May-18		40.5	4.96	<0.10	1.73	33.9	30.3	0.13	<0.10		<0.001	1.8	
	Oct-18		41.5	4.48	0.49	1.66	31.1	29.2	0.10	<0.05		<0.001	1.1	
	May-19		41.6	4.59	0.515	1.53	31.0	29.8	0.083	<0.010	0.083	0.0030	1.95	
	Oct-19		44.3	4.57	0.547	1.61	34.1	32.9	0.106	<0.010	0.106	0.0145	2.00	
	May-20		44.6	4.71	0.543	1.67	33.6	31.9	0.069	<0.010	0.069	0.0014	1.94	
	Oct-20		44.9	4.53	0.558	1.70	34.2	30.9	0.071	<0.010	0.071	0.0036	1.60	
	May-21		43.9	6	0.57	1.51	29.1	28.7	0.13	<0.03		<0.002	2.0	
	Oct-21		59.8	7	0.57	1.86	32.5	31.9	0.10	<0.03		<0.002	1.7	
551	Oct-87	ITS	39	8			26					0.0015	2.4	
	May-88		38	5		4.1	25	21				0.0010	1.9	
	Oct-88		37	5			25	19				0.0015	4.4	
	May-89		38	6			26					0.0020	2.5	
	Oct-89		36	4			26					0.0015	0.8	
	May-90		38	4			26					0.0010	0.8	
	Oct-90		40	4			26					0.0015	1.2	
	May-91		38	2			27					0.0035	0.8	
	Nov-91		40	3			28					0.0065	1.1	
	May-92		38	4			29						1.3	
	Oct-92		44	3			30					0.0010	1.3	
	Apr-93		44	3			29					0.0010	2.6	
	Nov-93		43	3			28					0.0010	2.4	
	May-94		43	2		1.3	30	16				0.0266	1.7	
	Oct-94		97	255		7.6	13	116				0.0056	13.5	
	May-95		147	439		3.2	21	208				0.0026	7.6	
	Oct-95		64	168		5.1	7	102				0.0030	11.9	
	May-97		107	138		1.8	13	126				0.0010	9.1	
	Oct-97		69	65		2.3	9	62				0.0010	12.5	

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Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5		5	5	80 - 100	30 - 500			500
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
											411			295
551 cont'd	May-98	ITS				7.8	803			224				
	Nov-98					8.0	474			109				
	Jun-99					8.0	463			118				
	Oct-99					8.0	561			216				
	Jun-00					7.8	671	16	25	234				
	Oct-00					7.6	718	97	27	248				
	May-01					8.1	784	558	62	143				
	Nov-01					8.0	1180	18	<5	322				
	May-02					8.1	762	125	34	229				
Oct-02				8.0	710	108	50	218						
551R	May-03	ITS				8.2	497	13.2	<5	254	245	241	4	31
	Oct-03					8.2	470	7.0	<5	251	243	240	3	28
	May-04					8.2	504	4.8	3	202	240	237	3	33
	Oct-04					8.3	512	11.9	<2.5	239	226	222	4	30
	May-05					8.2	500	75.5	<5	250	227	277	<1	28
	Oct-05					8.3	514	234	<5		249	304		27
	May-06					7.8	464	40.0	180	300	240	238	<10	32
	Oct-06					8.0	464	7.1	56	290	240	238	<10	30
	May-07					7.8	480	5.8	<1	290	230	229	<10	31
	Oct-07					8.1	492	7.2	11	270	240	237	<10	28
	May-08					8.1	499	5.5	10	220	250	247	<10	32
	Oct-08					8.0	478	40.0	<1	260	240	238	<10	31
	May-09					8.01	502	31.0	<1.0	262	243	241	<10	31.3
	Oct-09					8.18	502	4.3	2	260	228	225	<10	31.4
	May-10		7.98	390	10.0	8.20	470	2.7	<5	248	235	235	<5	34.8
	Oct-10		7.75	530	10.3	8.34	425	7.9	<5	250	244	239	5	33.7
	Jun-11		7.82	439	10.3	8.12	460	146	<5	247	232	232	<5	36.1
	Oct-11		7.61	455	10.1	8.36	443	1290	<5	258	234	227	7	37.3
	May-12		7.95	570	12.1	8.10	482	5.6	<5	223	239	239	<5	31.4
	Oct-12		7.81	401	11.0	8.30	419	1140	<5	230	225	223	<5	33.7
	May-13		8.13	562	10.4	8.23	497	91.2	<5	265	227	227	<5	35.1
Oct-13	8.20	543	10.9	7.80	502	89.5	<5	253	240	240	<5	35.3		
May-14	7.67	540	10.5	7.65	524	134	<5	245	223	223	<5	39.2		
Oct-14	8.12	475	9.7	8.32	530	86.0	8	241	229	227	<5	38.8		
May-15	7.62	369	14.7	8.34	507	98.5	<5	241	232	226	6	36.6		
Oct-15	7.63	370	12.0	8.17	524	376	<5	253	226	226	<5	37.3		
May-16	7.79	421	12.0	8.26	510	19.1	<5	243	240	240	<5	41.4		
Oct-16	7.57	480	14.1	8.16	485	84.7	<5	239	256	256	<5	35.7		
May-17	7.77	457	10.18	8.34	540	60.6	<5	233	223	216	7	39.0		
Oct-17	7.73	392	11.17	7.51	483	48.8	9	239	238	238	<5	37.7		
May-18	7.94	443	12.70	8.02	510	49.4	<5	242	197	197	<5	37.5		
Oct-18	7.97	463	10.16	7.98	477	47.8	<5	234	201	201	<5	38.3		
May-19	7.80	421	11.80	8.04	515	37.6	<2.0	261	238	238	<10	41.2		
Oct-19	8.04	454	11.88	7.96	541	51.1	<2.0	272	237	237	<10	39.6		
May-20	7.87	448	11.39	8.13	521	44.7	4.3	257	238	238	<2.0	39.6		
Oct-20	8.17	422	11.91	7.98	523	54.8	<2.0	268	245	245	<2.0	39.1		
May-21	7.68	520	11.1	8.20	485	14.0	<3	279	228	228	<2	44		
Oct-21	7.78	480	11.5	8.22	521	48.8	4	218	234	234	<2	42		
561	May-88	ITS				8.0	388			173				
	Feb-90													
	May-98					8.1	388			186				
	Nov-98					8.2	39			174				
	Jun-99					8.2	377			193				
	Oct-99					8.1	362			190				
	Jun-00					8.0	369	2.6	<5	193				
	Oct-00					7.9	430	25.0	<5	189				
	May-01					8.2	346	35.4	<5	201				
	Nov-01					8.2	374	24.0	<5	197				

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Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
551	May-98	ITS	75	106	0.20	1.8	9	93				<0.001	8.1	
cont'd	Nov-98		37	67	0.40	2.6	4	51				<0.001	12.6	
	Jun-99		39	57	0.50	3.1	5	60				<0.001	10.7	
	Oct-99		69	61	0.30	3.7	11	52				<0.001	3.9	
	Jun-00		75	76	0.40	2.1	11	77			0.0030		6.2	
	Oct-00		80	64	0.30	3.0	12	64				<0.001	6.3	
	May-01		47	122	0.30	2.7	6	143				<0.001	7.0	
	Nov-01		108	214	0.20	1.9	13	140				<0.001	4.5	
	May-02		72	82	0.30	1.6	12	87				<0.002	4.6	
	Oct-02		72	72	0.30	3.6	10	72				<0.002	9.7	
551R	May-03	ITS	51	6	0.81	1.3	31	15				0.0020	0.7	
	Oct-03		51	6	0.84	1.2	30	14			<0.1	<0.002	1.0	
	May-04		32	6	0.98	1.2	30	14				<0.002	0.8	0.12
	Oct-04		47	5	0.96	1.3	30	14			<0.1	<0.002	1.2	
	May-05		53	5	0.80	1.3	33	15			0.10	0.0010	0.9	
	Oct-05		52	5	0.70	0.8	31	17			<0.5	<0.001	0.7	
	May-06		60	7	0.80	1.0	35	14			<0.2	<0.001	<0.7	
	Oct-06		60	7	0.80	1.0	34	15			<0.2	<0.001	1.0	
	May-07		61	7	0.70	1.0	34	14			<0.2	<0.001	1.0	
	Oct-07		58	7	0.70	1.0	31	14			<0.2	<0.001	<1	
	May-08		48	6	0.80	2.0	24	14			<0.1	<0.001	<1	
	Oct-08		56	6	0.80	1.0	29	13			<0.1	<0.001	1.0	
	May-09		49.4	12.1	0.78	1.40	33.7	14.3	0.24	<0.10		<0.0010	1.2	
	Oct-09		56.0	6.2	0.81	1.30	29.3	13.2	<0.10	<0.10		<0.0010	1.9	
	May-10		50.0	6.71	0.75	1.37	29.8	13.6	<0.05	<0.05		<0.001	0.6	
	Oct-10		51.0	6.16	0.80	1.31	29.8	13.1	0.06	<0.05		0.0020	1.4	
	Jun-11		49.3	7.11	0.72	1.50	30.0	13.3	<0.05	<0.05		<0.001	1.8	
	Oct-11		52.2	6.96	0.73	1.26	31.1	13.4	<0.05	<0.05		<0.001	7.4	
	May-12		43.6	6.84	0.64	1.22	27.8	12.3	<0.05	<0.05		<0.001	5.7	
	Oct-12		46.7	6.85	0.67	1.44	27.5	12.4	<0.05	<0.05		<0.001	1.0	
	May-13		52.5	7.34	0.76	1.25	32.6	13.3	<0.10	<0.10		<0.001	4.1	
	Oct-13		50.6	7.01	0.74	1.28	30.8	12.9	<0.05	<0.05		<0.001	1.7	
	May-14		50.2	7.77	0.70	1.25	29.1	12.7	<0.05	<0.05		<0.001	2.2	
	Oct-14		46.4	7.63	0.72	1.31	30.4	13.5	<0.10	<0.10		<0.001	0.7	
	May-15		49.5	7.46	0.77	1.30	28.4	13.4	<0.05	<0.05		<0.001	2.1	
	Oct-15		52.4	8.99	0.76	1.51	29.7	14.3	<0.10	<0.10		<0.001	1.5	
	May-16		49.0	8.03	0.81	1.24	29.3	13.3	<0.05	<0.05		<0.001	1.7	
	Oct-16		47.1	7.21	0.72	1.25	29.5	12.5	<0.05	<0.05		<0.001	1.3	
	May-17		47.1	7.69	0.68	1.14	28.0	12.0	<0.05	<0.05		<0.001	0.9	
	Oct-17		47.5	6.73	0.84	1.19	29.3	12.8	<0.05	0.06		<0.001	1.2	
	May-18		48.7	7.20	0.77	1.19	29.2	12.6	<0.05	<0.05		<0.001	1.1	
	Oct-18		48.5	7.38	0.72	1.20	27.4	12.3	<0.05	<0.05		<0.001	0.7	
	May-19		53.6	8.05	0.764	1.23	31.0	13.5	<0.020	<0.010	<0.022	0.0023	0.92	
	Oct-19		54.3	8.04	0.827	1.27	33.2	14.5	<0.020	<0.010	<0.022	0.0345*	0.97	
	May-20		53.2	8.11	0.805	1.21	30.1	12.7	<0.020	<0.010	<0.022	<0.0010	2.13	
	Oct-20		53.3	8.01	0.822	1.22	32.8	13.8	<0.020	<0.010	<0.022	0.0033	1.76	
	May-21		63.6	9	0.84	1.18	29.2	12.8	<0.06	<0.03		<0.002	1.7	
	Oct-21		38.7	10	0.85	1.44	29.6	13.7	<0.06	<0.03		<0.002	1.5	
561	May-88	ITS	33	2			22					0.0010	1.5	
	Feb-90													
	May-98		33	2	1.00	1.8	25	15				<0.001	2.3	
	Nov-98		30	2	1.00	1.6	24	16				<0.001	1.8	
	Jun-99		35	1	1.10	1.7	26	16				<0.001	2.4	
	Oct-99		32	<1	1.10	1.6	27	16				<0.001	0.5	
	Jun-00		34	1	1.10	1.4	26	16				0.0040	0.5	
	Oct-00		33	<1	1.00	1.3	26	16				<0.001	<0.5	
	May-01		36	1	1.10	1.5	27	16				<0.001	0.8	
	Nov-01		35	1	1.10	1.3	27	16				<0.001	0.6	

Notes: - ODWQS - Ontario Drinking Water Quality Standard (June 2003) - AO - Aesthetic Objective - † - sampled by Oxford County Board of Health
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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5		5	5	80 - 100	30 - 500			500
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
											411			295
561	May-02	ITS				8.2	397	22.8	<5	200				
cont.	Oct-02					8.1	368	20.4	<5	186				
	May-03					8.2	392	25.0	<5	200	220	216	4	10
	Oct-03					8.3	389	15.4	<5	200	216	212	4	10
	May-04					8.1	413	9.9	3	183	211	208	3	14
	Oct-04					8.3	419	56.4	<2.5	188	202	199	3	10
	May-05					8.3	402	2210	50	187	203	247	<1	10
	Oct-05					8.2	393	3360	6		224	273		8
	May-06					8.0	362	54	1400	210	220	218	<10	11
	Oct-06					8.1	366	12	170	240	210	207	<10	9
	May-07					8.0	380	11	18	200	200	198	<10	9
	Oct-07					8.2	384	9	19	200	210	207	<10	6
	May-08					8.2	394	58	7	200	220	216	<10	11
	Oct-08					8.1	382	40	<1	200	210	207	<10	9
	May-09					8.23	396	42	<1.0	189	213	210	<10	9.90
	Oct-09					8.29	393	17.6	<1.0	185	207	203	<10	8.70
	May-10		7.92	380	8.4	8.16	370	5.5	<5	184	209	209	<5	9.47
	Oct-10		7.69	420	8.6	8.39	339	8.1	<5	186	220	212	8	8.82
	Jun-11		8.15	340	10.6	8.24	358	244	<5	192	203	203	<5	10.1
	Oct-11		7.69	562	9.5	8.38	353	1600	<5	191	207	200	7	9.86
	May-12		8.38	444	10.5	8.17	391	16.8	<5	183	212	212	<5	9.06
	Oct-12		7.97	309	9.8	8.47	337	137	<5	187	207	195	11	8.77
	May-13		8.17	441	9.5	8.28	402	281	<5	180	206	206	<5	9.47
	Oct-13		8.35	440	10	8.29	400	81.6	<5	183	218	218	<5	8.93
	May-14		8.01	419	9.1	8.25	399	1010	<5	197	205	205	<5	9.53
	Oct-14		8.13	366	10.4	8.29	407	3260	<5	176	207	207	<5	9.72
	May-15		8.01	290	11.1	8.41	393	4740	<5	174	208	197	10	9.49
	Oct-15		7.87	293	10.9	8.14	406	1640	<5	173	203	203	<5	9.47
	May-16		7.50	318	9.9	8.21	399	2330	<5	186	208	208	<5	11.1
	Oct-16		7.76	380	12.7	8.24	420	1120	<5	175	214	214	<5	9.02
	May-17		7.92	354	9.42	8.26	427	678	<5	168	217	214	<5	9.53
	Oct-17		7.60	299	10.50	8.17	375	1260	<5	185	212	212	<5	9.09
	May-18		7.73	382	9.40	7.85	384	3180	<5	186	179	179	<5	11.1
	Oct-18		8.20	356	9.40	7.97	368	1570	<5	174	222	222	<5	9.28
	May-19		7.99	389	9.37	8.05	366	1030	<2.0	179	226	226	<10	9.72
	Oct-19		8.15	349	10.16	8.10	397	736	<2.0	184	323*	323*	<10	8.29
	May-20		7.72	330	8.67	8.34	397	913	<2.0	191	238	232	6.0	8.64
	Oct-20		7.98	319	11.31	8.18	400	462	<2.0	185	267*	267*	<2.0	10.4
	May-21		7.76	396	9.6	8.26	400	1006	<3	179	204	204	<2	11
	Oct-21		8.00	370	10.4	8.24	380	2530	5	218	326	326	<2	10
571	May-88	ITS				7.8	530			239				
	Feb-90													
	May-98					8.0	362			171				
	Nov-98					8.1	398			160				
	Jun-99					8.1	411			220				
	Oct-99					7.7	397			219				
	Jun-00					7.9	408	3.6	6	224				
	Oct-00					7.8	443	15.4	<5	215				
	May-01					8.1	384	31.8	<5	236				
	Nov-01					8.0	430	16.0	<5	229				
	May-02					8.1	436	17.6	<5	226				
	Oct-02					8.1	414	16.8	<5	218				
	May-03					8.1	439	16.1	<5	232	239	236	3	14
	Oct-03					8.2	438	8.4	<5	233	234	231	3	13
	May-04					8.1	457	6.6	<2.5	172	232	229	2	17
	Oct-04					8.2	459	10.1	<2.5	219	211	208	3	14
	May-05					8.2	429	288	<5	227	218	266	<1	13
	Oct-05					8.3	454	193	<5		242	295		15
	May-06					7.8	418	34.0	310	250	240	238	<10	14

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
561	May-02	ITS	35	1	1.10	1.5	27	15				<0.002	0.5	
cont.	Oct-02		32	2	1.00	1.4	26	15				<0.002	0.5	
	May-03		35	1	1.00	1.4	27	17				<0.002	0.6	
	Oct-03		34	1	1.10	1.7	28	17			0.16	<0.002	0.7	
	May-04		30	2	1.10	1.4	26	16				<0.002	0.8	0.10
	Oct-04		32	1	1.20	1.3	26	17			0.15	<0.002	2.1	
	May-05		35	1	1.10	1.4	25	16			0.10	<0.001	2.9	
	Oct-05		35	<1	<0.5	1.5	27	17			<0.2	<0.001	1.0	
	May-06		38	<2	0.70	1.0	28	15			0.20	<0.001	<0.7	
	Oct-06		46	<2	1.00	1.0	30	17			0.20	<0.001	1.0	
	May-07		37	<2	1.10	1.0	27	15			<0.1	<0.001	2.0	
	Oct-07		36	<2	0.90	1.0	26	16			0.20	<0.001	<1	
	May-08		35	<2	1.00	1.0	26	15			0.20	<0.001	1.0	
	Oct-08		38	6	1.10	2.0	27	17			0.30	<0.001	<1	
	May-09		31.6	<2.0	0.95	1.20	26.7	13.9	0.20	<0.10		<0.0010	1.2	
	Oct-09		34.5	<2.0	1.05	1.30	23.9	14.4	0.12	<0.10		<0.0010	1.1	
	May-10		33.1	0.61	0.95	1.52	24.7	15.0	<0.05	<0.05		<0.001	0.6	
	Oct-10		33.6	0.71	0.98	1.28	24.9	14.5	<0.05	<0.05		<0.001	6.8	
	Jun-11		34.1	1.00	0.95	1.55	25.9	14.6	<0.05	<0.05		<0.001	2.2	
	Oct-11		34.1	0.88	0.95	1.24	25.8	14.8	<0.05	<0.05		<0.001	3.6	
	May-12		32.6	1.14	1.00	1.32	24.6	14.5	0.10	<0.05		<0.001	2.5	
	Oct-12		33.5	1.21	0.85	1.31	25.1	15.2	<0.05	<0.05		<0.001	1.0	
	May-13		31.9	0.74	1.02	1.29	24.4	14.0	<0.10	<0.10		<0.001	2.7	
	Oct-13		33.0	1.04	1.08	1.39	24.5	14.8	<0.05	<0.05		<0.001	2.3	
	May-14		35.2	0.90	0.93	1.59	26.4	15.3	<0.05	<0.05		<0.001	5.0	
	Oct-14		31.5	0.37	1.02	1.21	23.6	14.9	<0.05	<0.05		<0.001	<0.5	
	May-15		31.5	0.93	1.01	1.32	23.1	15.4	<0.05	<0.05		<0.001	5.8	
	Oct-15		30.7	1.16	0.92	1.29	23.3	15.9	<0.05	<0.05		<0.001	1.4	
	May-16		33.3	1.16	1.03	1.58	25.0	15.4	0.17	<0.05		<0.001	1.8	
	Oct-16		31.2	0.89	1.04	1.23	23.6	13.2	<0.05	<0.05		<0.001	0.9	
	May-17		29.6	0.84	1.06	1.22	22.9	14.6	0.06	<0.05		<0.001	0.9	
	Oct-17		32.9	0.74	0.99	1.26	25.0	15.0	0.11	<0.05		<0.001	1.6	
	May-18		33.6	1.18	0.93	1.41	24.8	14.2	0.11	<0.05		<0.001	1.9	
	Oct-18		30.8	0.88	0.96	1.23	23.5	13.7	0.19	<0.05		<0.001	1.1	
	May-19		33.5	0.68	1.04	1.12	23.2	14.0	0.077	<0.010	0.077	0.0015	2.12	
	Oct-19		33.0	0.64	1.12	1.22	24.6	14.9	<0.020	<0.010	<0.022	0.0194	1.28	
	May-20		33.8	0.69	1.06	1.22	25.9	15.0	0.129	<0.010	0.129	0.0036	1.35	
	Oct-20		33.2	0.66	1.06	1.27	24.7	15.0	<0.020	<0.010	<0.022	0.0012	1.96	
	May-21		35.1	<1	1.10	1.13	22.3	13.2	0.07	0.05		<0.002	2.1	
	Oct-21		46.9	1	1.07	1.58	24.5	14.9	<0.06	<0.03		<0.002	1.8	
571	May-88	ITS	55	7		2.1	25	23				0.0010	1.7	
	Feb-90													
	May-98		40	11	0.70	4.9	18	17				<0.001	3.7	
	Nov-98		36	12	0.70	5.1	17	17				<0.001	2.9	
	Jun-99		45	1	0.90	1.7	26	13				<0.001	0.6	
	Oct-99		44	1	0.90	1.6	27	13				<0.001	<0.5	
	Jun-00		46	1	0.10	1.2	26	13				0.0060	0.5	
	Oct-00		44	1	0.90	1.3	26	13				<0.001	<0.5	
	May-01		50	1	1.00	1.4	27	13				<0.001	0.7	
	Nov-01		48	1	1.00	1.4	26	13				<0.001	0.5	
	May-02		46	1	0.90	1.3	27	13				<0.002	<0.5	
	Oct-02		45	2	0.90	1.4	26	13				<0.002	<0.5	
	May-03		48	2	0.80	1.3	27	14				<0.002	0.5	
	Oct-03		48	2	0.90	1.2	28	14			<0.1	<0.002	<0.5	
	May-04		25	2	1.00	1.2	26	13				<0.002	0.7	0.14
	Oct-04		45	2	1.00	1.1	26	14			<0.1	<0.002	1.4	
	May-05		48	1	0.90	1.3	26	13			<0.1	0.0010	0.8	
	Oct-05		47	2	<0.5	1.3	26	14			<0.2	<0.001	0.6	
	May-06		54	<2	0.80	1.0	28	13			1.70	<0.001	0.9	

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5		5	5	80 - 100	30 - 500			500
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
											411			295
571	Oct-06	ITS				8.0	409	8.5	41	320	230	228	<10	13
cont.	May-07					7.8	426	7.6	11	250	230	229	<10	13
	Oct-07					8.1	427	12.2	18	240	230	227	<10	11
	May-08					8.1	435	5.2	4	220	240	237	<10	14
	Oct-08					8.1	431	23.0	<1	230	230	227	<10	14
	May-09					8.12	442	36.0	<1.0	238	230	227	<10	13.5
	Oct-09					8.18	441	6.7	<1.0	219	226	223	<10	13.3
	May-10		7.94	440	9.4	8.20	410	4.4	<5	219	238	238	<5	14.7
	Oct-10		7.82	450	9.4	8.36	375	4.0	<5	217	226	219	7	13.8
	Jun-11		7.87	359	10.9	8.22	398	60.0	<5	225	223	223	<5	15.8
	Oct-11		7.54	410	9.7	8.37	391	980	<5	227	229	222	6	15.6
	May-12		7.74	421	10	8.21	430	9.0	<5	223	231	231	<5	14.5
	Oct-12		7.73	346	10	8.33	358	148	<5	219	213	208	5	13.9
	May-13		7.97	491	10	8.31	450	55.6	<5	208	223	221	<5	14.5
	Oct-13		8.44	481	9.5	8.32	443	36.3	<5	208	236	233	<5	14.3
	May-14		7.78	467	9.9	8.17	445	45.6	<5	227	224	224	<5	14.4
	Oct-14		7.99	4.1	11.2	8.31	444	160	7	209	227	225	<5	15.7
	May-15		7.79	326	10.8	8.32	439	197	<5	209	225	220	<5	14.9
	Oct-15		7.71	327	11.0	8.09	455	161	<5	222	220	220	<5	15.3
	May-16		7.78	367	10.7	8.17	452	96.3	<5	219	233	233	<5	16.1
	Oct-16		7.56	430	12.3	8.21	472	166	<5	218	229	229	<5	15.3
	May-17		7.65	392	9.79	8.20	484	51.7	<5	200	232	232	<5	15.7
	Oct-17		7.26	333	11.12	7.95	428	64.3	<5	219	229	229	<5	14.8
	May-18		7.75	414	11.40	7.87	436	51.7	<5	210	200	200	<5	16.3
	Oct-18		8.18	397	8.96	7.94	414	35.1	<5	204	241	241	<5	15.1
	May-19		8.00	430	10.20	7.96	410	40.7	<2.0	213	229	229	<10	15.4
	Oct-19		8.12	382	11.42	8.05	441	39.0	2.5	213	246	246	<10	14.5
	May-20		7.95	383	11.00	8.08	439	21.3	<2.0	214	226	226	<2.0	14.9
	Oct-20		8.61	356	11.91	8.11	446	34.8	<2.0	219	224	224	<2.0	15.3
	May-21		7.74	431	11.6	8.22	440	38.7	<3	194	219	219	<2	17
	Oct-21		7.92	420	10.2	8.21	425	32.3	<3	242	234	234	<2	17
032	Oct-85	ITS				7.5	760			375				69
	Mar-86					7.6	760			388				74
	Oct-86					7.5	750			383				
	Apr-87					7.4	785			390				
	Oct-87					7.7	770			407				
	May-88					7.2	720			388				
	Oct-88					7.3	741			380				155
	May-89					7.7	878			467				
	Oct-89					7.6	837			423				
	May-90					7.5	655			329				
	Oct-90					7.6	742			393				
	May-91					7.4	1055			568				
	Nov-91					7.2	1181			622				
	May-92					7.0	1293			740				
	Oct-92					6.9	1209			679				
	Apr-93					7.0	1111			643				
	Nov-93					6.9	1219			686				
	May-94					7.3	1226			770				
	Oct-94					7.1	1242			734				
	May-95					7.3	989			578				
591	Oct-95	ITS				8.0	702			129				
(repl'd 032)	May-97						661			117				
	Oct-97						641			115				
	May-98					8.0	603			102				
	Nov-98					8.4	618			95				
	Jun-99					8.3	633			106				
	Oct-99					8.0	603			111				

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
571	Oct-06	ITS	78	2	0.90	2.0	30	17			<0.2	<0.001	<1	
cont.	May-07		53	2	0.80	1.0	27	14			<0.2	<0.001	1.0	
	Oct-07		52	<2	0.80	1.0	26	13			<0.1	<0.001	<1	
	May-08		48	<2	<0.1	1.0	23	12			<0.1	<0.001	1.0	
	Oct-08		50	6	0.90	1.0	26	13			0.20	0.0010	1.0	
	May-09		52.6	<2.0	0.82	1.40	25.8	12.7	<0.10	<0.10		<0.0010	1.4	
	Oct-09		48.3	<2.0	0.89	1.20	23.9	11.9	<0.10	<0.10		<0.0010	1.1	
	May-10		45.8	1.61	0.79	1.36	25.3	12.8	<0.05	<0.05		<0.001	0.5	
	Oct-10		45.7	1.47	0.84	1.27	25.1	12.3	<0.05	<0.05		0.0020	3.9	
	Jun-11		47.1	1.75	0.90	1.48	26.1	12.0	<0.05	<0.05		<0.001	1.5	
	Oct-11		47.4	1.71	0.81	1.30	26.4	12.6	<0.05	<0.05		<0.001	2.6	
	May-12		46.9	2.02	0.82	1.47	25.7	12.4	<0.05	<0.05		<0.001	9.7	
	Oct-12		45.3	2.14	0.74	1.43	25.6	12.8	<0.05	<0.05		<0.001	0.7	
	May-13		43.2	1.86	0.94	1.26	24.2	11.4	<0.10	<0.10		<0.001	5.1	
	Oct-13		43.2	1.81	0.88	1.25	24.2	12.3	<0.05	<0.05		<0.001	1.6	
	May-14		47.3	1.78	0.79	1.32	26.4	12.7	<0.05	<0.05		<0.001	5.7	
	Oct-14		44.1	1.98	0.91	1.33	24.1	12.5	<0.05	<0.05		<0.001	1.5	
	May-15		44.0	2.08	0.88	1.25	24.0	12.3	<0.05	<0.05		<0.001	1.8	
	Oct-15		47.8	2.46	0.92	1.72	25.0	13.2	<0.10	<0.10		<0.001	1.9	
	May-16		45.6	2.15	0.88	1.37	25.5	13.0	<0.05	<0.05		<0.001	0.7	
	Oct-16		45.6	1.78	0.87	1.29	25.2	11.7	<0.05	<0.05		<0.001	0.9	
	May-17		41.6	1.81	0.90	1.24	23.3	12.2	<0.05	<0.05		<0.001	0.6	
	Oct-17		46.0	1.24	0.79	1.33	25.4	12.6	<0.05	<0.05		<0.001	1.0	
	May-18		43.8	2.14	0.98	1.19	24.4	11.6	<0.05	<0.05		<0.001	2.0	
	Oct-18		42.8	1.93	0.82	1.18	23.7	11.6	<0.05	<0.05		<0.001	1.1	
	May-19		46.1	1.80	0.892	1.12	23.7	11.5	<0.020	<0.010	<0.022	0.0014	1.55	
	Oct-19		44.3	1.74	0.931	1.22	24.9	12.5	<0.020	<0.010	<0.022	0.0037	1.71	
	May-20		43.9	1.84	0.875	1.19	25.3	12.6	<0.020	<0.010	<0.022	<0.0010	1.71	
	Oct-20		45.6	1.85	0.898	1.23	25.4	13.0	<0.020	<0.010	<0.022	0.0024	1.61	
	May-21		41.9	2	0.95	1.06	21.7	10.8	0.06	<0.03		<0.002	1.4	
	Oct-21		56.5	2	0.94	1.40	24.5	12.5	<0.06	<0.03		<0.002	1.5	
032	Oct-85	ITS	99	2		1.9	31	16				0.0010	2.4	
	Mar-86		100	2		1.6	34	18				0.0010	2.1	
	Oct-86		100	2			32						1.5	
	Apr-87		105	2			31						2.0	
	Oct-87		106	2			35						2.1	
	May-88		104	2			31						3.1	
	Oct-88		104	1			29	14					2.0	
	May-89		123	2			39					0.0020	1.7	
	Oct-89		104	2			40						1.2	
	May-90		91	5			25						1.3	
	Oct-90		105	3			32					0.0030	2.6	
	May-91		158	6			42					0.0075	2.0	
	Nov-91		174	13			45					0.0325	15.6	
	May-92		224	7			44					0.0010	10.1	
	Oct-92		206	4			40					0.0035	8.5	
	Apr-93		210	27			28					0.0015	4.0	
	Nov-93		209	17			40					0.0049	5.1	
	May-94		247	10		1.2	37	7				0.0152	6.6	
	Oct-94		225	10		1.43	41	7				0.0045	5.2	
	May-95		189	17		0.81	25.3	6				0.0015	4.9	
591	Oct-95	ITS	31	10		5.4	13	97				0.0016	3.5	
(repl'd 032)	May-97		24	9		4.8	14	99				0.0010	3.3	
	Oct-97		24	9		4.2	13	90				0.0010	3.7	
	May-98		19	10	1.10	4.3	14	95				<0.001	2.7	
	Nov-98		17	10	1.10	4.1	13	92				<0.001	2.3	
	Jun-99		21	8	1.10	4.0	13	94				<0.001	2.1	
	Oct-99		22	8	1.10	4.3	14	102				<0.001	1.7	

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5	NC	NC	6.5 - 8.5		5	5	80 - 100	30 - 500			500
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
											411			295
591	Jun-00	ITS				8.0	654	0.37	10	113				
cont.	Oct-00					8.0	696	3.32	<5	118				
	May-01					8.3	632	5.4	<5	147				
	Nov-01					8.4	706	7.56	<5	150				
	May-02					8.1	701	3.04	<5	132				
	Oct-02					8.1	695	6.96	<5	145				
	May-03					8.1	744	14.4	<5	147	88	87	1	267
	Oct-03					8.1	764	12.6	<5	168	34	93	1	251
	May-04					7.9	774	9.63	5	160	89	88	1	339
	Oct-04					8.2	774	8.76	<2.5	146	75	74	1	293
	May-05					8.0	759	117	5	148	79	96	<1	251
	Oct-05					8.2	760	167	<5		86	105		253
	May-06					7.8	686	28.0	400	180	57	57	<10	277
	Oct-06					8.3	698	8.60	24	170	82	80	<10	246
	May-07					8.0	700	6.3	8	150	87	86	<10	266
	Oct-07					8.1	729	9.4	15	150	91	90	<10	251
	May-08					7.9	722	4.6	4	120	90	89	<10	277
	Oct-08					8.3	687	5.4	<1	130	130	128	<10	220
	May-09					8.10	658	5.5	2	115	111	110	<10	205
	Oct-09					8.11	695	16.5	23	124	151	149	<10	198
	May-10		8.79	700	9.4	7.96	709	4.5	7	168	109	109	<5	259
	Oct-10		7.68	780	10.1	8.10	687	8	<5	174	89	89	<5	278
	Jun-11		8.27	619	10.3	7.96	700	22	<5	164	90	90	<5	282
	Oct-11		8.28	643	10.1	8.08	664	286	<5	145	79	79	<5	294
	May-12		8.03	624	11.1	7.71	699	4.6	5	130	75	75	<5	256
	Oct-12		8.08	528	10.6	8.00	611	227	<5	118	66	66	<5	257
	May-13		8.25	764	10.3	7.75	743	250	<5	153	76	76	<5	267
	Oct-13		8.71	763	10.0	8.05	728	112	<5	131	73	73	<5	264
	May-14		8.30	7.49	10.5	8.03	714	130	<5	128	65	65	<5	275
	Oct-14		7.87	700	11.0	8.02	721	177	<5	124	66	66	<5	278
	May-15		8.03	505	11.0	7.85	717	300	<5	130	69	69	<5	267
	Oct-15		8.31	519	12.1	7.53	752	83.6	<5	107	68	68	<5	236
	May-16		7.74	535	12.5	7.53	705	107	<5	115	66	66	<5	281
	Oct-16		8.17	660	14.9	7.82	755	314	<5	119	73	73	<5	246
	May-17		8.19	602	11.68	7.61	728	61.9	<5	94.5	61	61	<5	252
	Oct-17		7.76	515	12.13	7.59	654	335	9	110	63	63	<5	250
	May-18		7.98	625	13.50	7.78	639	72.7	<5	91.9	73	73	<5	260
	Oct-18		7.72	532	10.68	7.27	618	211	<5	101	57	57	<5	247
	May-19		7.72	657	9.46	7.96	620	69.2	<2.0	108	65	65	<50	249
	Oct-19		8.33	606	11.55	8.13	711	136	<2.0	120	68	68	<10	251
	May-20		7.80	589	10.58	7.89	685	77.7	<2.0	112	62.2	62.2	<2.0	250
	Oct-20		7.11	559	11.71	7.39	704	168	<2.0	129	69.6	69.6	<2.0	257
	May-21		8.02	664	12.7	7.81	679	93.1	<3	113	58	58	<2	280
	Oct-21		8.50	640	12.4	8.00	676	145	<3	154	69	69	<2	260
594	Oct-14	ITS	8.33	356	11.6	8.32	337	8760	6	90.8	137	136	<5	21.4
	May-15		8.17	307	11.4	8.43	402	25900	<5	106	175	165	10	31.6
	Oct-15		8.38	324	12.6	8.04	433	223	<5	113	172	172	<5	37.4
	May-16		8.30	319	11.3	8.12	401	6460	<5	105	178	178	<5	34.7
	Oct-16		8.14	350	13.4	8.41	349	6080	7	83	200	200	<5	27.6
	May-17		8.29	345	10.97	8.28	434	10500	5	86.9	195	195	<5	25.8
	Oct-17		7.46	283	10.90	8.11	351	697	9	90.5	174	174	<5	22.2
	May-18		7.94	336	13.00	8.14	361	709	<5	89.6	131	131	<5	23.3
	Oct-18		8.50	331	10.27	7.84	352	16100	<5	80.2	157	157	<5	20.3
	May-19		8.27	362	10.36	8.29	347	>4000	<2.0	84.7	1010*	1010*	<50	20.9
	Oct-19		8.52	322	11.32	8.23	385	>4000	2.7	91.3	248*	248*	<10	19.6
	May-20		8.35	318	11.11	8.43	373	1690	<2.0	88.3	213	206	6.8	19.0
	Oct-20		8.40	299	11.80	8.17	367	751	<2.0	87.8	215	215	<2.0	19.0
	May-21		7.76	376	12.7	8.25	366	222	3	85.4	168	168	<2	22
	Oct-21		8.30	350	11.5	8.33	354	207	10	103	195	192	3	19

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
591	Jun-00	ITS	21	8	1.10	3.7	15	102				0.0010	1.7	
cont.	Oct-00		23	7	1.00	3.5	15	101				<0.001	1.6	
	May-01		33	6	1.20	2.6	16	102				<0.001	1.5	
	Nov-01		33	6	1.10	2.4	16	101				<0.001	1.5	
	May-02		25	5	1.00	2.3	17	105				<0.002	1.3	
	Oct-02		31	6	1.00	2.1	17	105				<0.002	1.3	
	May-03		31	6	1.00	2.0	17	108				<0.002	1.5	
	Oct-03		38	6	1.10	2.0	18	110			<0.1	<0.002	1.2	
	May-04		36	5	1.30	1.7	17	106				<0.002	1.6	0.34
	Oct-04		31	6	1.20	1.8	17	114			0.10	<0.002	2.2	
	May-05		24	5	0.90	1.8	16	110			<0.1	<0.001	1.4	
	Oct-05		33	5	<0.5	1.7	17	110			<0.5	<0.001	1.2	
	May-06		44	7	0.70	2	17	111			<0.2	<0.001	1.9	
	Oct-06		39	24	1.10	2	18	102			<0.2	<0.001	2.0	
	May-07		35	6	1.10	2	16	110			<0.2	<0.001	2.0	
	Oct-07		37	6	0.90	2	15	97			<0.2	<0.001	1.0	
	May-08		26	6	1.10	2	14	101			<0.1	0.0050	1.0	
	Oct-08		29	5		2	14	110			<0.1	<0.001		
	May-09		21.4	5.1	0.94	1.70	14.9	98.7	0.12	<0.10		<0.0010	2.4	
	Oct-09		26.7	5.6	1.06	3.50	13.9	96.2	<0.10	<0.10		0.0360	3.9	
	May-10		41.0	5.18	0.89	1.62	15.9	101	<0.05	<0.05		0.0030	2.0	
	Oct-10		43.6	5.00	0.92	1.21	15.7	94.8	<0.05	<0.05		0.0040	8.7	
	Jun-11		40.8	4.83	1.36	1.12	15.2	88.2	<0.05	<0.05		0.0020	5.1	
	Oct-11		32.0	4.78	0.99	1.09	15.7	98.4	<0.05	<0.05		<0.001	16.8	
	May-12		28.4	4.56	0.70	1.06	14.3	92.0	0.06	<0.05		<0.001	4.9	
	Oct-12		23.8	4.81	0.91	1.30	14.3	98.1	<0.05	<0.05		<0.001	3.7	
	May-13		35.3	4.78	0.59	1.11	15.7	98.5	<0.25	<0.25		0.0010	5.8	
	Oct-13		28.3	4.83	0.44	1.06	14.6	97.1	<0.25	<0.25		<0.001	3.2	
	May-14		26.3	4.77	0.98	1.06	15.1	96.5	<0.05	<0.05		<0.001	6.0	
	Oct-14		25.1	5.15	1.03	1.01	14.8	97.4	<0.10	<0.10		<0.001	2.6	
	May-15		28.0	5.07	1.13	1.24	14.5	104	<0.05	<0.05		<0.001	3.2	
	Oct-15		23.6	5.63	1.22	1.23	11.7	81.1	<0.10	<0.10		<0.001	2.2	
	May-16		21.6	5.52	0.97	1.23	14.8	105	0.06	<0.05		<0.001	2.9	
	Oct-16		24.1	4.77	0.86	1.06	14.2	88.5	<0.10	<0.10		<0.001	2.0	
	May-17		15.6	4.89	0.96	1.16	13.5	99.1	<0.10	<0.10		<0.001	1.5	
	Oct-17		19.9	4.24	1.20	1.12	14.6	103	<0.25	<0.25		<0.001	2.0	
	May-18		14.2	5.09	0.74	1.07	13.7	93.7	<0.10	<0.10		<0.001	2.6	
	Oct-18		18.4	5.03	0.85	1.06	13.3	95.8	<0.25	<0.25		<0.001	1.6	
	May-19		21.0	5.28	1.03	0.935	13.6	93.7	0.027	<0.010	0.027	0.0017	2.63	
	Oct-19		23.4	5.52	1.10	1.00	15.0	102	0.041	<0.010	0.041	0.0019	4.96	
	May-20		21.4	5.44	1.07	0.947	14.2	97.3	<0.020	<0.010	<0.022	0.0011	2.09	
	Oct-20		26.6	5.40	1.10	1.04	15.3	103	0.122	<0.010	0.122	0.0067	3.05	
	May-21		23.7	7	0.98	0.945	13.0	89.7	0.30	<0.03		<0.002	1.6	
	Oct-21		37.7	8	1.11	1.25	14.4	98.6	<0.06	<0.03		<0.002	1.3	
594	Oct-14	ITS	15.6	2.61	1.53	1.97	12.6	40.9	<0.05	<0.05		<0.001	2.9	
	May-15		19.0	4.50	1.33	2.54	14.3	48.3	<0.05	<0.05		<0.001	5.5	
	Oct-15		20.2	4.40	1.30	2.89	15.3	53.1	<0.10	<0.10		<0.001	2.8	
	May-16		19.1	3.79	1.42	2.74	13.9	51.8	0.18	<0.05		<0.001	2.8	
	Oct-16		14.3	2.42	1.49	1.64	11.4	42.6	0.21	<0.05		<0.001	1.3	
	May-17		14.7	2.27	1.56	2.00	12.2	55.2	0.08	<0.05		<0.001	3.8	
	Oct-17		16.3	1.71	1.48	2.01	12.1	50.5	0.16	<0.05		<0.001	1.4	
	May-18		16.1	2.22	1.69	2.12	12.0	48.2	0.26	<0.05		<0.001	1.8	
	Oct-18		14.3	1.85	1.45	1.54	10.8	52.0	0.12	<0.05		<0.001	1.4	
	May-19		15.7	1.89	1.54	1.58	11.1	49.5	0.135	<0.010	0.135	0.0026	2.22	
	Oct-19		16.4	1.87	1.61	1.46	12.2	56.1	0.132	0.01	0.142	0.0299*	2.81	
	May-20		16.4	1.74	1.62	1.42	11.5	52.0	0.095	<0.010	0.095	0.0015	1.48	
	Oct-20		16.4	1.69	1.63	1.38	11.4	51.1	0.154	<0.010	0.154	0.0127	1.34	
	May-21		17.2	1	1.50	1.24	10.3	44.2	0.36	<0.03		<0.002	2.0	
	Oct-21		23.5	4	1.57	1.49	10.8	48.4	0.17	<0.03		<0.002	3.3	

Notes: · ODWQS - Ontario Drinking Water Quality Standard (June 2003) · AO - Aesthetic Objective · † - sampled by Oxford County Board of Health
· MAC - Maximum Acceptable Concentration · OG - Operational Guideline · * - result interpreted with caution or considered questionable
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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5		5	5	80 - 100	30 - 500			500
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
										411				295
998	Jun-00	ITS												
	Oct-00													
	Jun-01				8.8	228			39					
	Nov-01				9.0	209	38.8	<5	29					
	May-02				8.6	236	18.9	<5	42					
	Oct-02				8.7	202	19.6	<5	27					
	May-03				8.7	235	11.2	<5	37	112	107	5	3	
	Oct-03				8.4	212	8.44	<5	27	105	102	2	3	
	May-04				8.2	232	4.35	<2.5	36	110	108	2	3	
	Oct-04				8.4	233	5.16	<2.5	33	97	95	2	3	
	May-05				8.4	230	86.5	<5	39	105	123	3	2	
	Oct-05				8.5	228	107	<5		112	131		3	
	May-06				8.9	204	8.6	45	50	100	93	<10	<2	
	Oct-06				9.1	211	4.5	7	60	100	90	<10	2	
	May-07				8.8	218	5.9	6	40	100	95	<10	3	
	Oct-07				8.9	212	3.9	2	60	110	102	<10	<2	
	May-08				8.9	224	4.8	3	50	110	102	<10	<2	
	Oct-08				8.2	327	1.3	3	100	170	167	<10	9	
	May-09				8.66	236	14.2	2	53	118	113	<10	3.3	
	Oct-09				8.80	228	3.2	1	80	100	94.0	<10	<2.0	
May-10			9.18	230	9.8	8.16	251	68.0	5	66	125	<5	12.6	
Oct-10			8.65	250	10.4	8.37	253	6.7	<5	81	130	127	<5	14.6
Jun-11			8.87	214	10.9	8.36	264	75.0	<5	77	132	129	<5	10.9
Oct-11			8.78	267	9.6	8.35	282	328	<5	90	137	135	<5	20.6
May-12			9.40	300	11.1	8.13	263	7.0	<5	65	133	133	<5	7.8
Oct-12			9.23	207	11.6	8.26	230	79.6	<5	56	124	124	<5	4.2
May-13			8.89	313	10.7	8.30	268	58.1	<5	68	113	113	<5	17.6
Oct-13			8.71	300	10.8	8.12	293	123	<5	89	138	138	<5	23.6
May-14			8.90	296	10.2	8.33	284	73.9	<5	63	116	116	<5	16.2
Oct-14			9.06	283	9.7	8.19	313	445	<5	95.9	125	125	<5	23.2
May-15			8.40	210	14.8	8.29	295	182	<5	82.6	136	135	<5	15.5
Oct-15			8.58	205	11.4	7.33	318	126	7	70.7	125	125	<5	17.4
May-16			8.31	239	11.5	8.01	319	616	<5	81.2	141	141	<5	24.0
Oct-16			8.44	280	12.6	8.27	427	620	<5	137	163	163	<5	35.3
May-17			8.53	287	9.80	8.13	365	348	<5	96.5	165	165	<5	16.7
Oct-17			8.10	213	12.09	7.84	294	4680	8	138	119	119	<5	30.8
May-18			7.57	747	11.05	7.70	856	4020	<5	394	280	280	<5	25.2
Oct-18			7.75	905	10.33	7.63	964	14900	<5	477	451	451	<5	35.6
May-19			7.03	978	10.11	7.28	1430	>4000	2.2	590	388	388	<10	24.7
Oct-19			7.36	1410	10.80	7.29	1450	2790	4.2	630	934*	934*	<50	17.3
May-20			7.61	1340	10.86	7.46	1480	2880	<2.0	597	363	363	<2.0	13.0
998R	Oct-20	ITS	8.12	407	11.72	8.08	456	>4000	4.5	154	398*	398*	<10	43.5
	May-21		7.72	458	12.2	8.33	482	>4000	<3	185	198	196	2	57
	Oct-21		8.10	420	11.0	8.41	446	>4000	5	202	209	203	6	48
00-03	Jun-00	ITS				7.8	403	3.9	<5	255				
	Oct-00													
	May-01				8.1	454	24.2	<5	267					
	Nov-01				8.1	492	12.4	<5	258					
	May-02				8.1	491	18.2	<5	239					
	Oct-02				8.2	477	5.1	<5	250					
	May-03				8.1	513	45.1	<5	260	251	248	3	32	
	Oct-03				8.2	492	12.4	<5	252	244	240	4	30	
	May-04				8.0	493	10.6	3	216	242	240	2	28	
	Oct-04				8.2	513	13.8	<2.5	242	225	221	4	31	
	May-05				8.2	494	229	1	245	221	270	<1	29	
	Oct-05				8.3	516	207	<5		249	304		27	
	May-06				7.8	481	54.0	500	280	240	238	<10	33	
Oct-06				7.9	462	6.9	23	260	240	238	<10	31		
May-07				7.8	478	8.1	13	280	230	229	<10	31		

Notes: - ODWQS - Ontario Drinking Water Quality Standard (June 2003) - AO - Aesthetic Objective - † - sampled by Oxford County Board of Health
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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
998	Jun-00	ITS												
	Oct-00													
	Jun-01		7	7	0.30	3.0	5	42				<0.001	0.7	
	Nov-01		4	7	0.40	3.8	5	37				<0.001	1.0	
	May-02		6	9	0.60	3.3	7	39				<0.002	0.8	
	Oct-02		4	7	0.40	3.9	4	39				<0.002	<0.5	
	May-03		5	8	0.60	3.1	6	39				<0.002	0.9	
	Oct-03		4	7	0.50	3.6	4	39			<0.1	<0.002	0.9	
	May-04		5	5	0.60	2.9	6	38				<0.002	0.8	<0.05
	Oct-04		5	6	0.60	3.4	5	42			<0.1	<0.002	2.2	
	May-05		6	5	0.50	3.1	6	40			<0.1	0.0090	0.8	
	Oct-05		5	5	<0.5	3.1	5	39			<0.2	<0.001	0.9	
	May-06		7	7	0.40	3	7	40			<0.2	<0.001	1.0	
	Oct-06		14	5	0.70	2	7	36			<0.2	<0.001	<1	
	May-07		7	6	0.40	3	6	38			<0.2	<0.001	1.0	
	Oct-07		15	5	0.30	3	6	40			<0.1	<0.001	<1	
	May-08		9	5	0.50	3	7	37			<0.1	<0.001	1.0	
	Oct-08		19	<2	2.20	1	11	45			<0.1	<0.001	2.0	
	May-09		9.11	10.0	0.39	2.70	7.35	31.7	0.14	<0.10		<0.0010	2.1	
	Oct-09		19.3	4.60	0.41	2.70	7.66	32.3	<0.10	<0.10		<0.0010	2.2	
	May-10		9.12	3.07	0.57	1.70	10.4	33.9	<0.05	<0.05		0.0060	1.2	
Oct-10		12.9	3.50	0.76	1.95	11.9	33.6	<0.05	<0.05		0.0080	5.6		
Jun-11		10.2	3.39	1.01	1.70	12.6	34.4	<0.05	<0.05		0.0050	2.9		
Oct-11		12.8	3.23	0.91	1.46	14.1	33.6	<0.05	<0.05		0.0040	5.8		
May-12		8.07	3.12	0.96	1.15	10.9	34.1	<0.05	<0.05		0.0060	5.3		
Oct-12		7.70	3.48	0.69	1.63	8.90	32.5	<0.05	<0.05		0.0020	1.1		
May-13		8.76	2.75	1.15	1.07	11.2	37.6	<0.05	<0.05		0.0010	6.9		
Oct-13		14.3	2.98	1.10	1.24	13.0	33.8	<0.05	<0.05		0.0120	2.2		
May-14		8.12	2.91	1.21	1.06	10.4	35.6	<0.05	<0.05		0.002	4.8		
Oct-14		14.0	3.34	1.09	1.41	14.8	34.7	<0.05	<0.05		0.008	2.4		
May-15		10.5	3.01	1.17	1.22	13.7	32.9	<0.05	<0.05		0.002	2.8		
Oct-15		8.51	3.36	0.95	1.54	12.0	34.3	<0.05	<0.05		0.002	2.2		
May-16		10.4	3.57	1.21	1.17	13.4	32.4	<0.05	<0.05		0.024	1.4		
Oct-16		24.3	3.12	0.85	1.33	18.5	29.0	<0.05	<0.05		0.010	2.2		
May-17		14.9	4.22	0.79	1.50	14.4	28.7	<0.05	<0.05		0.003	1.5		
Oct-17		32.6	5.46	0.48	1.33	13.7	6.89	0.98	0.38		<0.001	2.1		
May-18		119	93.4	<0.25	1.68	23.4	23.9	2.53	<0.25		<0.001	2.4		
Oct-18		147	73.2	<0.25	2.15	26.7	25.4	0.93	<0.25		<0.001	3.4		
May-19		178	240	0.130	1.90	35.1	79.2	1.38	<0.010	1.38	0.0014	3.30		
Oct-19		196	236	<0.10	2.76	34.5	97.8	1.17	<0.050	1.17	0.029	3.62		
May-20		180	300	<0.10	1.55	35.8	70.7	0.11	<0.050	0.11	0.0017	3.15		
998R	Oct-20	ITS	30.6	10.4	1.26	3.08	18.9	29.2	<0.020	<0.010	<0.022	0.0014	5.94	
	May-21		38.6	11	1.05	2.69	21.7	28.4	<0.06	<0.03		<0.002	2.6	
	Oct-21		41.8	6	1.05	3.04	23.7	25.4	<0.06	<0.03		<0.002	1.3	
00-03	Jun-00	ITS	52	4	0.90	1.4	31	14				0.0010	2.5	
	Oct-00													
	May-01		55	4	0.90	1.4	32	14				<0.001	<0.5	
	Nov-01		52	4	0.89	1.3	31	14				<0.001	0.8	
	May-02		45	4	0.85	1.4	31	14				<0.002	0.6	
	Oct-02		49	5	0.80	1.4	31	15				<0.002	0.5	
	May-03		53	4	0.80	1.3	31	16				<0.002	0.6	
	Oct-03		51	5	0.84	1.2	30	15			<0.1	<0.002	<0.5	
	May-04		37	6	0.95	1.3	30	15				<0.002	0.6	0.14
	Oct-04		48	5	0.95	1.4	30	20			<0.1	<0.002	2.2	
	May-05		53	5	0.70	1.3	31	15			<0.1	<0.001	0.7	
	Oct-05		<0.2	7	0.60	<0.2	<0.05	<0.2			<0.2	<0.001	0.7	
	May-06		57	7	0.80	1.0	34	16			<0.2	<0.001	0.7	
Oct-06		51	7	0.80	1.0	33	15			<0.2	<0.001	<1		
May-07		60	6	0.70	1.0	33	14			<0.2	<0.001	1.0		

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Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5			80 - 100	30 - 500				
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
										411			500	
													295	
00-03 cont.	Oct-07	ITS				8.1	488	5.7	15	260	240	237	<10	30
	May-08					8.1	500	9.6	9	240	240	237	<10	42
	Oct-08					8.1	480	17.6	<1	260	240	237	<10	32
	May-09					8.08	504	58.0	<1.0	242	241	238	<10	30.3
	Oct-09					8.19	504	6.6	<1.0	250	229	226	<10	32.4
	May-10		7.85	400	10.1	8.19	473	3.2	8	245	236	236	<5	34.6
	Oct-10		7.80	520	10.7	8.43	420	6.5	<5	254	234	223	11	32.9
	Jun-11		7.57	413	10.7	8.12	456	95.0	<5	247	231	231	<5	35.5
	Oct-11		7.75	454	9.7	8.37	445	4030	<5	257	235	228	8	37.9
	May-12		7.55	484	11.0	8.13	476	15.6	<5	243	228	228	<5	33.3
	Oct-12		7.84	399	11.3	8.29	409	976	<5	218	220	220	<5	35.0
	May-13		8.17	565	10.7	8.18	495	139	<5	264	225	225	<5	35.2
	Oct-13		8.19	551	10.2	8.04	499	95.3	<5	263	243	243	<5	35.5
	May-14		7.80	538	10.5	8.29	519	370	<5	250	230	230	<5	35.3
	Oct-14		7.96	469	10.0	8.33	524	280	6	241	222	219	<5	38.5
	May-15		7.51	334	11.7	8.04	501	83.4	<5	241	224	224	<5	36.6
	Oct-15		7.52	375	10.3	8.19	526	1610	<5	259	226	226	<5	37.3
	May-16		7.63	404	10.7	8.19	507	169	<5	247	234	234	<5	42.2
	Oct-16		7.66	490	12.5	8.26	493	46.2	<5	246	226	226	<5	37.0
	May-17		7.58	460	9.69	8.16	551	327	<5	235	229	229	<5	39.0
	Oct-17		7.65	396	11.00	8.22	486	317	<5	246	237	237	<5	38.5
May-18		7.89	446	11.20	8.08	508	573	<5	243	211	211	<5	37.9	
Oct-18		7.89	453	10.14	7.94	473	290	<5	233	202	202	<5	37.9	
May-19		7.75	418	11.76	8.05	512	60.3	<2.0	255	239	239	<10	39.0	
Oct-19		8.26	450	11.79	8.02	510	174	<2.0	245	274	274	<10	37.3	
May-20		7.57	431	11.15	8.07	513	327	<2.0	254	255	255	<2.0	38.5	
Oct-20		8.14	419	11.77	8.05	522	51.4	<2.0	259	248	248	<2.0	39.6	
May-21		7.70	505	10.7	8.21	484	52.9	<3	268	226	226	<2	44	
Oct-21		7.97	490	10.9	8.29	499	119	3	221	227	227	<2	43	
022R	May-13	LT	8.02	658	10.8	8.09	587	217	8	315	253	253	<5	65.4
	Oct-13		8.17	401	10.2	8.10	347	246	6	117	171	171	<5	23.0
	May-14		8.17	392	11	8.28	374	8370	<5	121	165	165	<5	25.6
	Oct-14		8.14	326	10.8	8.17	332	18300	7	113	140	140	<5	22.1
	May-15		8.13	257	13.5	8.33	328	5990	<5	91	162	158	<5	16.1
	Oct-15		7.71	265	12.8	7.94	363	57200	<5	85	167	167	<5	18.9
	May-16		7.97	371	15.5	8.14	484	5130	12	213	218	218	<5	53.0
	Oct-16		7.92	350	11.8	8.08	341	4170	9	105	164	164	<5	19.2
	May-17		7.58	579	8.64	8.22	695	35700	17	296	257	257	<5	97.9
	Oct-17		8.15	289	11.30	8.06	356	6440	6	130	175	175	<5	29.3
	May-18		8.11	396	11.50	8.04	443	2480	12	175	176	176	<5	47.3
	Oct-18		8.18	329	9.93	7.87	311	1310	<5	96.9	173	173	<5	16.8
	May-19		6.75	595	11.60	7.67	649	>4000	9.1	326	323	323	<10	54.1
	Oct-19		7.92	366	10.35	7.64	428	1410	4.2	147	413*	413*	<10	27.6
	May-20		7.73	394	10.56	8.05	453	>4000	5.2	200	225	225	<2.0	34.9
Oct-20		8.02	131	11.73	7.90	367	16.4	2.7	130	233*	233*	<2.0	21.1	
May-21		7.68	380	11.2	8.20	372	1053	9	154	160	160	<2	19	
Oct-21		7.75	580	11.1	8.08	611	2240	22	323	276	276	<2	52	
101	Apr-86	LT				7.9	394			165				
	Jun-86					7.9	418			153				
	Oct-86					7.8	424			176				
	Apr-87					7.7	438			182				
	Oct-87					7.9	406			202				
	May-88					7.8	415			188				
	May-90													
	May-98					7.9	373			179				
	Nov-98					8.0	395			169				
	Jun-99					8.3	377			192				
	Oct-99					8.1	390			183				
Jun-00					7.9	374	0.3	<5	193					
Oct-00					7.7	372	18.3	10	175					

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
00-03	Oct-07	ITS	56	6	0.70	1.0	30	17			<0.1	<0.001	<1	
cont.	May-08		53	122	0.70	1.0	27	14			0.20	<0.001	1.0	
	Oct-08		56	12	0.80	1.0	30	14			0.20	<0.001	1.0	
	May-09		49.7	5.9	0.73	1.40	28.7	13.4	<0.10	<0.10		<0.0010	2.1	
	Oct-09		54.0	6.3	0.80	1.30	28.0	13.1	<0.10	<0.10		<0.0010	1.6	
	May-10		49.9	6.55	0.65	1.36	29.2	13.5	<0.05	<0.05		<0.001	0.6	
	Oct-10		51.9	6.03	0.78	1.28	30.2	13.4	<0.05	<0.05		<0.001	6.7	
	Jun-11		50.0	6.74	0.78	1.55	29.7	13.8	<0.05	<0.05		<0.001	2.3	
	Oct-11		52.4	6.90	0.75	1.37	30.6	13.4	<0.05	<0.05		<0.001	1.2	
	May-12		48.1	6.87	0.75	1.35	29.8	13.3	<0.05	<0.05		<0.001	4.0	
	Oct-12		42.2	7.23	0.68	1.29	27.4	12.8	<0.05	<0.05		<0.001	1.2	
	May-13		53.0	7.20	0.54	1.27	32.0	13.6	<0.10	<0.10		<0.001	3.5	
	Oct-13		53.2	6.84	0.69	1.36	31.5	13.8	<0.05	<0.05		<0.001	2.9	
	May-14		50.4	6.84	0.69	1.33	30.1	13.1	<0.05	<0.05		<0.001	5.1	
	Oct-14		46.4	7.34	<0.10	1.35	30.5	14.3	<0.10	<0.10		<0.001	2.1	
	May-15		50.4	7.64	0.68	1.59	27.9	13.5	<0.05	<0.05		<0.001	1.6	
	Oct-15		54.2	7.77	0.80	1.42	30.1	14.3	<0.10	<0.10		<0.001	1.3	
	May-16		50.7	8.06	0.80	1.30	29.2	13.9	<0.05	<0.05		<0.001	1.4	
	Oct-16		50.4	7.26	0.75	1.28	29.1	12.9	<0.05	<0.05		<0.001	2.4	
	May-17		48.6	7.57	0.64	1.25	27.7	11.9	<0.05	<0.05		<0.001	0.9	
	Oct-17		50.6	7.33	0.80	1.23	29.1	13.2	<0.05	<0.05		<0.001	1.2	
	May-18		49.8	7.08	0.82	1.21	28.8	13.5	<0.05	<0.05		<0.001	1.0	
	Oct-18		48.9	7.10	0.71	1.24	27.0	13.1	<0.05	<0.05		<0.001	1.4	
	May-19		52.0	7.63	0.823	1.26	30.4	15.0	<0.020	<0.010	<0.022	<0.0010	1.46	
	Oct-19		50.4	7.37	0.864	1.29	28.8	15.1	<0.020	<0.010	<0.022	0.0058	1.68	
	May-20		53.1	7.65	0.796	1.23	29.5	13.4	<0.020	<0.010	<0.022	0.0014	1.36	
	Oct-20		52.6	7.84	0.811	1.22	31.0	13.6	<0.020	<0.010	<0.022	0.0035	1.46	
	May-21		60.1	9	0.82	1.19	28.6	13.6	<0.06	<0.03		<0.002	1.8	
	Oct-21		38.9	10	0.82	1.48	30.1	14.9	<0.06	<0.03		<0.002	<1.0	
022R	May-13	LT	82.0	3.18	0.24	1.26	26.7	12.6	0.23	<0.10		<0.001	10.4	
	Oct-13		25.2	1.45	0.95	1.29	13.1	34.9	0.22	<0.05		<0.001	3.5	
	May-14		26.5	1.47	1.00	1.47	13.4	34.2	0.18	<0.05		<0.001	5.9	
	Oct-14		23.7	1.55	1.13	1.39	13.1	38.1	0.08	<0.05		<0.001	2.4	
	May-15		19.4	1.53	1.02	1.17	10.3	37.9	0.22	<0.05		<0.001	3.0	
	Oct-15		17.0	1.60	1.05	1.78	10.4	37.1	0.32	<0.05		<0.001	4.4	
	May-16		50.7	1.40	0.42	1.91	21.1	23.0	0.79	<0.05		<0.001	6.2	
	Oct-16		23.1	1.31	1.04	1.15	11.4	32.7	0.28	<0.05		<0.001	2.4	
	May-17		73.5	1.26	0.28	1.54	27.4	11.2	1.96	<0.05		<0.001	5.7	
	Oct-17		29.6	1.04	0.84	1.49	13.7	31.1	0.11	<0.05		<0.001	1.9	
	May-18		42.4	2.99	0.74	1.47	16.9	25.6	1.76	<0.05		<0.001	3.5	
	Oct-18		21.5	1.34	1.03	1.33	10.5	33.3	0.16	<0.05		<0.001	2.1	
	May-19		79.1	1.84	0.245	1.47	31.1	9.64	5.10	<0.010	5.10	0.0020	6.12	
	Oct-19		34.3	1.99	0.913	1.72	15.0	31.6	<0.020	<0.010	<0.022	0.0163	3.52	
	May-20		49.6	3.35	0.593	1.45	18.6	20.0	1.84	<0.010	1.84	0.0023	3.03	
	Oct-20		32.0	1.83	1.06	1.32	12.3	30.6	0.186	<0.010	0.186	<0.0010	2.04	
	May-21		41.5	8	0.61	0.983	12.2	15.1	2.44	<0.03		<0.002	3.9	
	Oct-21		85.1	6	0.32	1.97	26.9	7.94	1.47	0.08		<0.002	9.0	
101	Apr-86	LT	34	6		3.1	19	18				<0.001	2.1	
	Jun-86		31	6		3.6	18	18				0.0030	3.3	
	Oct-86		31	3			24					0.0020	1.6	
	Apr-87		32	2			25					<0.001	1.9	
	Oct-87		36	2			27					<0.001	1.3	
	May-88		34	1			25					<0.001	1.3	
	May-90													
	May-98		32	2	1.00	1.9	24	18				<0.001	3.1	
	Nov-98		30	4	1.00	2.2	23	19				<0.001	2.9	
	Jun-99		34	1	0.30	2.2	26	19				<0.001	1.6	
	Oct-99		32	1	1.00	2.9	25	20				<0.001	1.1	
	Jun-00		35	1	1.00	2.0	26	20				0.0030	0.9	
	Oct-00		35	1	0.80	3.4	21	17				<0.001	1.6	

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Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5		5	5	80 - 100	30 - 500			500
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
											411			295
101	May-01	LT				8.1	332	100	<5	185				
cont'd	Nov-01					8.0	309	9.4	<5	164				
	May-02					8.0	318	13.0	<5	164				
	Oct-02					8.1	343	30.7	<5	163	194	192	2	11
	May-03					8.0	645	8.2	12	307	280	277	3	20
	Oct-03					8.2	433	18.8	<5	219	247	243	4	7
	May-04					8.1	502	4.5	7	217	266	263	3	13
101R	Oct-04	LT				8.3	554	20	4	218	200	196	4	65
	May-05					8.4	591	166	8	205	228	270	4	62
	Oct-05					8.4	539	161	5		251	299		36
	May-06					7.9	438	93	700	210	230	228	<10	28
	Oct-06					8.1	441	15	220	190	230	227	<10	26
	May-07					8.1	440	15	27	200	220	218	<10	22
	Oct-07					8.1	438	20	79	210	230	227	<10	16
	May-08					8.2	437	14.8	14	220	230	227	<10	18
	Oct-08					8.1	423	49	<1	220	220	217	<10	16
	May-09					8.17	437	26	<1.0	216	231	228	<10	14.6
	Oct-09					8.20	431	13.5	<1.0	216	219	216	<10	13.9
	May-10		8.04	420	9.7	8.02	414	5.8	<5	209	222	222	<5	14.7
	Oct-10		7.75	440	9.9	8.34	370	9.1	<5	208	222	217	5	13.9
	Jun-11		8.06	374	9.8	8.24	393	143	<5	212	216	216	<5	14.1
	Oct-11		7.57	397	10.0	8.31	396	3830	<5	218	221	219	<5	16.2
	May-12		8.18	487	10.5	8.28	420	17.8	<5	200	226	226	<5	13.7
	Oct-12		7.96	339	10.6	8.33	358	640	<5	210	214	210	<5	13.9
	May-13		7.96	470	9.8	8.31	436	172	<5	195	216	215	<5	14.4
	Oct-13		7.61	475	10.0	8.25	438	140	<5	206	233	233	<5	14.3
	May-14		7.90	456	9.9	8.26	439	256	<5	214	216	216	<5	14.2
	Oct-14		7.91	407	11.0	8.29	442	282	<5	199	220	220	<5	15.7
	May-15		7.87	313	10.7	8.38	430	339	<5	193	226	217	9	14.8
	Oct-15		7.66	317	11.4	8.21	446	387	<5	194	215	215	<5	15.1
	May-16		7.94	357	10.1	8.23	439	181	<5	207	229	229	<5	14.6
	Oct-16		7.89	430	15.4	8.30	371	227	5	184	260	260	<5	14.7
	May-17		7.70	379	10.68	8.02	474	685	<5	195	232	232	<5	15.5
	Oct-17		7.62	365	10.70	8.05	414	357	<5	207	224	224	<5	14.8
	May-18		7.80	405	11.40	7.83	423	218	17	203	216	216	<5	16.1
	Oct-18		8.15	389	9.80	7.94	413	271	<5	195	240	240	<5	15.0
	May-19		8.02	425	10.06	7.86	391	194	<2.0	202	256	256	<10	16.4
	Oct-19		8.19	378	11.06	8.01	435	199	<2.0	206	270	270	<10	14.4
	May-20		8.05	374	11.12	8.25	435	305	<2.0	212	235	235	<2.0	15.3
	Oct-20		8.05	352	11.87	8.21	442	264	<2.0	209	239	239	<2.0	15.1
	May-21		7.82	421	10.9	8.28	433	305	<3	195	216	216	<2	17
	Oct-21		7.99	410	10.9	8.18	417	126	4	238	233	233	<2	16
191	Oct-85	LT				7.9	640			279				
	Apr-86					7.8	625			289				
	Oct-86					7.8	620			298				
	Apr-87					7.7	615			293				
	Oct-87					7.9	615			311				
	May-88					7.7	655			325				
	Oct-88					7.7	632			303				
	May-89					7.9	661			306				
	Oct-89					7.8	637			296				
	May-90					7.8	639			301				
	Oct-90					7.9	636			300				
	May-91					7.9	632			293				
	Nov-91					7.9	636			310				
	May-92					7.9	621			316				
	Oct-92					7.8	622			320				
	Apr-93					8.0	620			312				
	Nov-93					7.9	604			311				

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Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
101	May-01	LT	35	1	1.00	2.0	24	18				<0.001	1.0	
cont'd	Nov-01		32	1	0.80	1.8	20	15				<0.001	1.2	
	May-02		33	1	0.80	1.4	20	15				<0.002	0.9	
	Oct-02		31	2	0.90	1.3	21	16			0.46	<0.002	0.6	
	May-03		99	6	0.20	3.0	15	6				<0.002	5.0	
	Oct-03		51	3	0.80	2.3	22	16			<0.1	<0.002	1.7	
	May-04		54	3	0.70	2.0	20	12				<0.002	2.1	<0.05
101R	Oct-04	LT	41	13	1.20	3.2	28	49			<0.1	<0.002	4.5	
	May-05		41	12	1.20	3.3	25	50			0.20	0.0020	2.9	
	Oct-05		32	4	0.90	1.6	19	62			<0.5	<0.001	1.3	
	May-06		46	4	0.60	2.0	24	47			<0.2	<0.001	1.6	
	Oct-06		39	3	0.90	1.0	23	42			0.20	<0.001	2.0	
	May-07		41	3	0.80	1.0	24	37			0.20	<0.001	1.0	
	Oct-07		42	<2	0.80	1.0	26	24			<0.2	<0.001	<1	
	May-08		45	<2	0.90	1.0	27	18			0.20	<0.001	<1	
	Oct-08		47	6	0.90	2.0	25	19			0.20	<0.001	1.0	
	May-09		41.5	<2.0	0.85	1.40	27.4	17.6	0.15	<0.10		<0.0010	1.3	
	Oct-09		44.6	<2.0	0.93	1.30	25.5	15.5	<0.10	<0.10		<0.0010	1.1	
	May-10		41.3	1.17	0.86	1.34	25.7	14.9	<0.05	<0.05		<0.001	0.8	
	Oct-10		41.3	1.31	0.89	1.27	25.4	14.4	<0.05	<0.05		<0.001	2.7	
	Jun-11		41.7	1.56	0.90	1.47	26.3	14.3	<0.05	<0.05		<0.001	2.4	
	Oct-11		43.0	1.62	0.82	1.37	26.9	15.3	<0.05	<0.05		<0.001	1.2	
	May-12		38.8	1.90	0.85	1.41	25.0	14.2	<0.05	<0.05		<0.001	4.7	
	Oct-12		40.7	2.14	0.80	1.36	26.2	15.2	<0.05	<0.05		<0.001	1.1	
	May-13		38.8	1.64	0.71	1.42	23.9	13.0	<0.10	<0.10		<0.001	3.4	
	Oct-13		41.2	1.58	0.85	1.37	25.1	14.7	<0.05	<0.05		<0.001	1.4	
	May-14		42.0	1.63	0.82	1.28	26.4	14.7	<0.05	<0.05		<0.001	3.4	
	Oct-14		39.6	1.79	0.91	1.24	24.4	14.7	<0.05	<0.05		<0.001	1.8	
	May-15		39.0	1.74	0.85	1.23	23.1	15.3	<0.05	<0.05		<0.001	1.9	
	Oct-15		38.6	2.12	0.85	1.30	23.7	15.5	<0.10	<0.10		<0.001	2.9	
	May-16		40.8	1.80	0.93	1.49	25.5	15.0	<0.05	<0.05		<0.001	1.3	
	Oct-16		34.8	1.69	0.92	1.26	23.5	12.7	<0.05	<0.05		<0.001	1.0	
	May-17		38.9	1.61	0.92	1.37	23.8	14.3	<0.05	<0.05		<0.001	1.0	
	Oct-17		40.7	1.08	0.82	1.36	25.6	14.9	<0.05	<0.05		<0.001	1.0	
	May-18		40.0	1.93	0.98	1.25	25.0	13.6	<0.05	<0.05		<0.001	1.3	
	Oct-18		38.7	1.74	0.82	1.22	24.0	13.5	<0.05	<0.05		<0.001	1.2	
	May-19		40.5	1.62	0.905	1.20	24.4	13.8	<0.020	<0.010	<0.022	0.0019	2.62	
	Oct-19		40.6	1.57	0.981	1.25	25.4	14.7	<0.020	<0.010	<0.022	0.0021	1.27	
	May-20		41.8	1.73	0.945	1.26	26.1	15.4	<0.020	<0.010	<0.022	<0.0010	1.56	
	Oct-20		40.3	1.65	0.950	1.27	26.4	15.0	<0.020	<0.010	<0.022	0.0034	1.35	
	May-21		41.0	2	0.91	1.14	22.6	12.6	0.13	<0.03		<0.002	1.6	
	Oct-21		54.6	2	0.96	1.50	24.7	15.0	<0.06	<0.03		<0.002	2.9	
191	Oct-85	LT	43	3		2.6	42	26				0.0010	1.8	
	Apr-86		43	3		2.8	44	26				0.0010	2.1	
	Oct-86		46	3			43					0.0015	1.8	
	Apr-87		45	3			44					0.0010	2.3	
	Oct-87		45	2			48					0.0010	2.1	
	May-88		48	2			50					0.0010	1.5	
	Oct-88		46	2			46	23				0.0010	2.2	
	May-89		47	3			46					0.0010	2.0	
	Oct-89		45	3			44					0.0015	1.7	
	May-90		47	3			45					0.0010	1.4	
	Oct-90		46	2			45					0.0015	2.1	
	May-91		43	1			45					0.0020	1.3	
	Nov-91		43	2			49					0.0095	1.8	
	May-92		43	3			49					0.0010	1.9	
	Oct-92		46	2			50					0.0010	1.4	
	Apr-93		46	2			48					0.0010	1.6	
	Nov-93		43	2			49						1.9	

Notes: · ODWQS - Ontario Drinking Water Quality Standard (June 2003) · AO - Aesthetic Objective · † - sampled by Oxford County Board of Health
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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5		5	5	80 - 100	30 - 500			500
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
											411			295
191	May-94	LT				8.1	620			317				
cont.	Oct-94					8.1	594			318				
	May-95					7.9				318				
	Oct-95					7.9	619			304				
	May-97						649			320				
	Oct-97						613			296				
	May-98					8.0	604			321				
	Nov-98					8.1	624			303				
	Jun-99					8.2	661			378				
	Oct-99					7.5	510			272				
	Jun-00					7.9	566	1.7	<5	337				
	Oct-00					7.7	604	18.2	<5	327				
	May-01					8.0	535	15.6	<5	329				
	Nov-01					8.1	545	13.1	<5	297				
	May-02					8.0	609	10.4	<5	331				
	Oct-02					8.1	522	13.9	8	259	257	254	3	52
	May-03					8.2	496	23.0	<5	229	229	225	4	49
	Oct-03					8.3	482	54.5	<5	233	233	229	4	39
	May-04					8.2	574	5.7	<2.5	263	256	252	4	54
	Oct-04					8.2	486	22.50	<2.5	247	230	226	4	50
	May-05					8.2	596	42.20	<5	287	252	307	<1	60
	Oct-05					8.3	552	63.80	<5		261	314		41
	May-06					7.9	542	29.0	43	330	270	268	<10	67
	Oct-06					8.1	510	11	47	270	240	237	<10	53
	May-07					7.9	560	10	17	310	250	248	<10	62
	Oct-07					8.2	472	17	66	240	230	227	<10	36
	May-08					8.1	545	10.4	9	260	240	237	<10	68
	Oct-08					8.1	468	26.0	<1	230	220	218	<10	45
	May-09					8.01	671	16.30	<1.0	320	274	271	<10	94.8
	Oct-09					8.17	588	10.10	1.5	277	247	244	<10	68.8
	May-10		7.94	580	10.2	8.21	481	5.10	<5	229	224	224	<5	55.1
	Oct-10		7.97	540	10.2	8.41	433	9.10	<5	237	240	231	9	48.5
	Jun-11		7.91	284	10.6	8.25	605	247	<5	344	295	295	<5	73.1
	Oct-11		7.92	505	9.2	8.39	527	1250	<5	299	267	258	9	67.5
	May-12		7.62	588	13.1	8.26	634	18.6	<5	317	300	300	<5	62.7
	Oct-12		8.25	454	12.9	8.45	482	392	<5	243	243	231	12	57.5
	May-13		7.99	748	10.5	8.21	624	25100	<5	287	258	258	<5	79.1
	Oct-13		7.93	661	10.4	8.34	631	76	<5	302	291	287	<5	64.5
	May-14		7.92	719	11.1	8.26	691	202	<5	348	282	282	<5	84.3
	Oct-14		7.93	719	11.1	8.37	684	103	<5	318	287	277	10	85.8
	May-15		7.70	474	12.8	8.40	661	30100	<5	313	279	267	12	83.3
	Oct-15		7.80	433	12.1	8.06	606	1600	<5	279	244	244	<5	64.2
	May-16		7.53	492	15.4	8.30	630	3860	<5	297	271	264	6	92.2
	Oct-16		7.74	500	13.7	8.25	582	286	<5	247	249	249	<5	53.0
	May-17		7.81	502	12.29	8.27	652	1530	<5	259	260	254	5	76.7
	Oct-17		8.00	395	13.81	8.13	501	252	<5	228	235	235	<5	53.5
	May-18		7.85	533	11.20	7.85	584	39.0	7	270	190	190	<5	85.2
	Oct-18		8.13	486	9.13	7.92	520	106	<5	236	246	246	<5	61.1
	May-19		7.73	564	12.10	8.10	601	104	42.7	282	238	238	<10	84.7
	Oct-19		8.19	461	11.14	8.05	522	2630	<2.0	237	427*	427*	<10	57.1
	May-20		7.54	503	10.90	8.19	607	152	<2.0	284	250	250	<2.0	84.2
	Oct-20		7.83	147	11.25	8.10	585	1.43	<2.0	275	240	240	<2.0	77.4
	May-21		7.89	580	12.3	8.31	581	144	<3	265	216	216	<2	85
	Oct-21		8.11	490	11.4	8.48	500	79.1	<3	245	211	197	14	59
231	Mar-86	LT				8.1	370			120				
	Jun-86					8.1	375			104				
	Oct-86					8.0	350			109				
	Apr-87					7.9	350			105				
	Oct-87					8.1	335			134				

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Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
191	May-94	LT	44	23		2.1	50	23				0.0010	2.2	
cont.	Oct-94		44	2		2.2	51	23				0.0010	1.7	
	May-95		45	2		2.0	50	22				0.0010	2.0	
	Oct-95		43	2		2.0	48	22				0.0010	2.1	
	May-97		50	2		2.2	47	23				0.0010	3.6	
	Oct-97		43	1		2.0	46	22				0.0010	2.8	
	May-98		46	3	0.70	2.1	50	21				<0.001	2.8	
	Nov-98		41	2	0.70	2.0	49	21				<0.001	2.0	
	Jun-99		61	2	0.70	2.1	55	21				<0.001	1.1	
	Oct-99		39	1	0.90	2.0	43	25				<0.001	1.0	
	Jun-00		54	2	0.80	2.0	49	22				0.0020	1.3	
	Oct-00		52	2	0.70	2.1	48	23				<0.001	1.1	
	May-01		52	2	0.80	2.0	48	22				<0.001	1.0	
	Nov-01		45	2	0.80	1.9	45	23				<0.001	1.0	
	May-02		54	3	0.70	2.0	47	21				<0.002	0.6	
	Oct-02		40	3	0.90	1.8	39	23			0.20	<0.002	1.0	
	May-03		36	3	0.90	1.7	34	26				0.0020	1.1	
	Oct-03		35	2	1.00	1.8	35	27			0.14	<0.002	0.8	
	May-04		38	4	1.00	1.8	41	24				<0.002	1.2	<0.05
	Oct-04		37	3	1.10	1.6	38	27			<0.1	<0.002	1.9	
	May-05		47	4	0.80	1.8	45	24			0.10	0.0010	1.4	
	Oct-05		39	2	0.80	1.8	39	26			<0.5	<0.001	0.9	
	May-06		54	5	0.50	2.0	47	23			0.20	<0.001	2.8	
	Oct-06		36	4	0.80	2.0	43	27			0.20	<0.001	1.0	
	May-07		52	5	0.80	2.0	45	23			<0.2	<0.001	2.0	
	Oct-07		39	3	0.80	2.0	34	25			<0.2	<0.001	1.0	
	May-08		47	10	0.90	2.0	33	22			0.30	<0.001	2.0	
	Oct-08		40	7	1.00	2.0	32	25			0.40	<0.001	1.0	
	May-09		62.4	6.30	0.57	8.80	39.8	22.1	1.21	<0.10		<0.0010	2.3	
	Oct-09		50.1	4.30	0.76	3.80	36.8	21.1	0.49	<0.10		<0.0010	2.0	
	May-10		37.6	2.63	0.83	2.57	32.7	24.9	0.13	<0.05		<0.001	1.3	
	Oct-10		38.2	2.32	0.89	2.16	34.5	24.0	0.08	<0.05		<0.001	4.7	
	Jun-11		51.3	5.59	0.54	2.35	52.5	19.8	0.13	<0.05		<0.001	2.9	
	Oct-11		45.5	3.92	0.71	2.25	44.9	23.0	0.06	<0.05		<0.001	5.5	
	May-12		44.8	4.90	0.35	2.45	49.7	20.2	0.21	<0.05		<0.001	7.0	
	Oct-12		37.8	3.81	0.71	2.37	36.2	22.3	0.12	<0.05		<0.001	2.4	
	May-13		44.8	4.01	0.72	2.26	42.6	21.0	<0.25	<0.25		<0.001	3.6	
	Oct-13		45.2	3.92	0.58	2.13	46.0	22.4	0.31	<0.10		<0.001	4.5	
	May-14		55.6	5.53	0.77	3.98	50.9	22.7	1.58	<0.05		<0.001	6.8	
	Oct-14		48.0	5.40	0.72	2.40	48.1	20.8	1.11	<0.10		<0.001	2.4	
	May-15		49.3	5.13	0.60	2.22	46.2	21.1	0.67	<0.05		<0.001	2.7	
	Oct-15		43.6	3.78	0.68	2.08	41.2	23.7	0.23	<0.10		<0.001	4.4	
	May-16		45.6	5.06	0.77	2.08	44.4	22.2	0.62	<0.05		<0.001	4.0	
	Oct-16		37.7	3.01	0.90	1.77	37.2	21.0	0.38	<0.05		<0.001	1.7	
	May-17		42.7	4.20	0.85	1.84	37.0	21.6	0.74	<0.05		<0.001	2.8	
	Oct-17		35.9	2.53	0.93	1.59	33.6	22.5	0.42	<0.10		<0.001	2.8	
	May-18		46.3	5.24	0.50	1.67	37.6	20.4	1.13	<0.10		<0.001	2.0	
	Oct-18		39.5	3.68	0.83	1.63	33.3	21.3	0.63	<0.05		<0.001	1.5	
	May-19		50.5	5.33	0.743	1.69	37.9	21.8	1.61	<0.010	1.61	<0.0010	2.37	
	Oct-19		41.0	3.41	0.972	1.61	32.6	23.2	0.74	<0.010	0.74	0.0120	2.04	
	May-20		52.0	5.56	0.805	1.58	37.5	20.5	1.79	<0.010	1.79	<0.0010	3.08	
	Oct-20		49.5	4.90	0.850	1.55	36.9	20.9	1.25	<0.010	1.25	0.0061	2.49	
	May-21		50.2	7	0.82	1.78	33.9	19.0	2.08	<0.03		<0.002	1.9	
	Oct-21		45.3	4	0.94	1.98	32.0	23.8	0.83	<0.03		<0.002	1.0	
231	Mar-86	LT	25	11		2.8	14	28				0.0010	4.0	
	Jun-86		21	10		2.8	13	29				<0.001	2.9	
	Oct-86		22	8			13					0.0020	2.5	
	Apr-87		20	8			13					<0.001	2.5	
	Oct-87		25	7			17					0.0010	2.8	

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Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5			6.5 - 8.5		5	5	80 - 100	30 - 500			500
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
														295
231 cont'd	May-88	LT				8.0	332			109				
	Feb-90													
	May-98					8.1	290			92				
	Nov-98					8.1	305			86				
	Jun-99					8.3	280			93				
	Oct-99					7.9	274			86				
	Jun-00					8.0	288	3	6	92				
	Oct-00					7.3	294	8	<5	97				
	May-01					8.1	265	7	<5	98				
	Nov-01					8.2	281	27	<5	101				
	May-02					8.2	297	25	<5	103				
	Oct-02					8.1	289	6	<5	96	156	154	2	10
	May-03					8.3	309	41	<5	100	163	160	3	12
	Oct-03					8.3	306	8	<5	102	157	154	3	9
	May-04					8.2	320	12	3	102	160	158	2	9
Oct-04					8.1	326	4	<2.5	99	143	141	2	12	
May-05					8.2	313	11	<5	99	148	181	<1	9	
231R	Oct-05	LT				8.4	402	52	11		178	210		33
	May-06					8.0	348	150	360	130	140	139	<10	34
	Oct-06					8.2	332	56	480	130	150	148	<10	28
	May-07					8.2	335	47	92	110	130	128	<10	26
	Oct-07					8.3	335	53	170	110		157	<10	23
	May-08					8.3	337	53	72	90	150	147	<10	26
	Oct-08					8.3	332	107	1	110	160	157	<10	25
	May-09					8.32	337	61	2	115	152	149	<10	23.8
	Oct-09					8.34	334	50	2	102	159	156	<10	24.1
	May-10		8.43	330	9.7	8.26	309	23	5	87	151	151	<5	24.4
	Oct-10		8.13	330	10.3	8.40	291	22	<5	93	150	144	<5	23.1
	Jun-11		8.20	279	10.4	8.24	305	256	<5	93	148	148	<5	23.5
	Oct-11		7.86	308	9.8	8.27	310	664	<5	96	151	151	<5	25.9
	May-12		8.68	373	10.6	8.10	329	32.6	<5	88	156	156	<5	22.5
	Oct-12		8.48	259	10.8	8.39	301	352	<5	98	159	153	6	20.6
	May-13		8.14	367	10.5	8.23	343	62.2	<5	90	151	151	<5	23.7
	Oct-13		8.49	371	9.9	8.24	342	39.1	<5	91	160	160	<5	23.6
	May-14		8.30	351	10.1	8.28	337	393	<5	94	146	146	<5	23.1
	Oct-14		8.29	335	11.6	8.00	339	3800	10	89.9	156	156	<5	24.8
	May-15		8.21	240	11.9	8.34	338	6370	<5.0	87.0	157	151	5	23.8
	Oct-15		7.99	251	11.0	8.01	347	5720	<5	87.3	150	150	<5	24.1
May-16		7.23	267	10.5	7.87	346	4380	<5	101	162	162	<5	26.1	
Oct-16		7.90	320	13.6	8.21	355	4890	<5	87.8	159	159	<5	22.9	
May-17		8.43	294	10.40	7.71	365	8380	7	87.4	164	164	<5	25.7	
Oct-17		7.38	255	11.03	8.10	320	287	<5	93.8	155	155	<5	23.0	
May-18		8.31	291	10.21	8.12	327	7350	<5	91.8	156	156	<5	24.4	
Oct-18		8.41	301	9.53	8.00	314	2870	<5	87.4	166	166	<5	22.2	
May-19		8.14	329	9.95	8.31	301	42.4	<2.0	97.0	162	160	<10	23.4	
Oct-19		8.36	299	10.94	8.32	354	>4000	2.5	102	169	167	<10	22.7	
May-20		8.17	295	10.09	8.22	342	>4000	<2.0	115	173	355	<2.0	21.8	
Oct-20		7.92	282	11.84	8.25	342	>4000	<2.0	105	198	198	<2.0	21.9	
May-21		8.03	332	10.5	8.22	340	>4000	6	104	159	159	<2	23	
Oct-21		7.95	320	11.0	8.35	326	>4000	14	142	315	313	2	24	
595	Oct-14	LT	8.10	532	9.4	8.28	620	9340	<5	147	123	123	<5	156
	May-15		8.00	415	12.0	8.17	596	3110	<5	145	107	107	<5	180
	Oct-15		8.20	442	13.2	7.87	640	12200	<5	156	98	98	<5	177
	May-16		8.09	486	13.7	7.80	624	487	<5	148	104	104	<5	223
	Oct-16		8.16	580	12.2	8.08	620	12700	5	148	101	101	<5	229
	May-17		8.16	568	9.39	8.01	726	3760	9	139	108	108	<5	207
	Oct-17		7.65	466	12.00	8.05	601	5640	6	148	103	103	<5	219
	May-18		8.25	555	12.15	8.12	632	211	<5	147	107	107	<5	210

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Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
231	May-88	LT	22	7			13					0.0010	2.4	
cont'd	Feb-90													
	May-98		17	3	1.70	1.6	12	31				<0.001	2.2	
	Nov-98		16	4	1.70	1.6	12	31				<0.001	2.3	
	Jun-99		17	2	1.80	1.6	12	31				<0.001	1.3	
	Oct-99		15	1	1.80	1.6	12	32				<0.001	0.6	
	Jun-00		16	1	1.80	1.6	13	33				0.0050	0.9	
	Oct-00		17	1	1.60	1.5	13	33				<0.001	0.8	
	May-01		17	1	1.80	1.5	14	33				<0.001	0.9	
	Nov-01		17	1	1.80	1.5	14	32				<0.001	0.7	
	May-02		18	1	1.80	1.4	14	32				<0.002	0.7	
	Oct-02		16	2	1.80	1.5	14	32			<0.1	<0.002	0.6	
	May-03		17	2	1.70	1.4	14	34				<0.002	0.7	
	Oct-03		17	2	1.70	1.5	15	34			<0.1	<0.002	1.0	
	May-04		17	2	2.00	1.4	15	34				<0.002	1.1	0.09
	Oct-04		16	1	1.80	1.3	14	34			<0.1	<0.002	3.2	
	May-05		18	1	1.60	1.4	14	34			<0.1	0.0010	1.0	
231R	Oct-05	LT	24	6	1.30	2.0	17	42			<0.5	<0.001	1.4	
	May-06		25	4	1.20	2.0	17	43			<0.2	<0.001	1.6	
	Oct-06		25	3	1.60	2.0	16	35			<0.2	<0.001	2.0	
	May-07		20	2	1.50	2.0	15	42			<0.2	<0.001	2.0	
	Oct-07		22	<2	1.50	2.0	14	39			<0.2	<0.001	1.0	
	May-08		16	7	1.70	1.0	12	37			0.20	<0.001	<1	
	Oct-08		21	6	1.70	1.0	14	38			0.20	<0.001	1.0	
	May-09		19	<2.0	1.58	1.50	16.1	40	0.14	<0.10		<0.0010	1.9	
	Oct-09		19.0	3.20	1.71	1.30	13.4	38.9	0.20	<0.10		<0.0010	1.2	
	May-10		14.2	0.97	1.35	1.29	12.5	32.5	<0.05	<0.05		<0.001	0.7	
	Oct-10		15.5	1.03	1.65	1.27	13.2	37.7	<0.05	<0.05		<0.001	6.8	
	Jun-11		15.0	1.19	1.59	1.39	13.4	36.0	<0.05	<0.05		<0.001	2.3	
	Oct-11		16.1	1.17	1.55	1.36	13.6	37.9	<0.05	<0.05		<0.001	1.2	
	May-12		14.5	1.17	1.39	1.18	12.6	36.8	<0.05	<0.05		<0.001	3.9	
	Oct-12		16.5	1.65	1.37	1.37	13.9	40.2	<0.05	<0.05		<0.001	1.4	
	May-13		15.1	1.12	1.65	1.33	12.6	33.8	0.10	<0.05		<0.001	3.4	
	Oct-13		15.6	1.19	1.70	1.27	12.7	36.9	<0.05	<0.05		<0.001	3.2	
	May-14		15.6	1.15	1.58	1.20	13.4	38.1	<0.05	<0.05		<0.001	1.7	
	Oct-14		14.4	1.29	1.64	1.21	13.1	37.0	<0.05	<0.05		<0.001	1.1	
	May-15		14.4	1.23	1.61	1.34	12.4	39.3	<0.05	<0.05		<0.001	5.9	
	Oct-15		14.2	1.52	1.63	1.40	12.6	40.4	<0.05	<0.05		<0.001	2.6	
	May-16		17.7	1.45	1.66	1.97	13.8	39.4	<0.05	<0.05		<0.001	1.2	
	Oct-16		14.4	1.12	1.70	1.21	12.6	33.3	<0.05	<0.05		<0.001	1.3	
	May-17		14.4	1.15	1.76	1.26	12.5	37.7	<0.05	<0.05		<0.001	1.1	
	Oct-17		15.3	0.84	1.51	1.48	13.5	39.0	<0.05	<0.05		<0.001	1.8	
	May-18		15.0	1.36	1.53	1.31	13.2	35.9	0.10	<0.05		<0.001	2.2	
	Oct-18		14.7	1.28	1.54	1.28	12.3	35.5	<0.05	<0.05		<0.001	1.1	
	May-19		18.4	1.23	1.67	1.04	12.4	35.6	0.072	<0.010	0.072	0.0021	2.54	
	Oct-19		18.9	1.35	1.72	1.35	13.3	39.0	0.050	<0.010	0.050	0.0282*	44.5*	
	May-20		22.5	1.35	1.70	1.23	14.4	38.7	0.068	<0.010	0.068	<0.0010	2.14	
	Oct-20		19.1	1.21	1.71	1.20	14.0	39.1	0.024	<0.010	0.024	0.0044	2.30	
	May-21		21.9	2	1.72	1.06	12.1	33.8	<0.06	<0.03		<0.002	1.6	
	Oct-21		36.4	4	1.71	1.59	12.4	36.4	<0.06	<0.03		<0.002	2.4	
595	Oct-14	LT	39.6	7.35	0.60	3.08	11.8	62.4	3.44	<0.10		<0.001	3.7	
	May-15		38.4	3.55	0.76	2.34	11.9	72.4	0.98	<0.05		<0.001	2.7	
	Oct-15		41.1	3.44	0.87	2.30	12.9	74.4	0.64	<0.10		<0.001	3.8	
	May-16		37.4	3.08	1.15	2.16	13.2	76.8	0.20	<0.05		<0.001	2.8	
	Oct-16		38.5	2.59	1.03	1.82	12.7	69.4	0.09	<0.05		<0.001	3.3	
	May-17		35.2	4.04	0.98	1.35	12.4	67.7	0.29	<0.05		<0.001	1.8	
	Oct-17		37.4	2.10	1.23	1.66	13.2	75.9	<0.10	<0.10		<0.001	2.3	
	May-18		37.0	2.53	1.10	1.50	13.3	75.1	<0.25	<0.25		<0.001	1.6	

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5	NC	NC	6.5 - 8.5	5	5	80 - 100	30 - 500	NC	NC	500	
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
										411			295	
595 cont'd	Oct-18	LT	8.30	560	10.67	7.51	585	292	<5	141	88	88	<5	211
	May-19		8.20	510	12.10	8.15	624	2640	<2.0	163	122	122	<10	210
	Oct-19		8.31	557	11.89	8.08	639	124	3.3	177	118	118	<10	202
	May-20		8.18	546	10.12	8.24	637	34.2	<2.0	149	104	104	<2.0	202
	Oct-20		8.34	500	12.96	7.84	631	0.53	<2.0	148	120	120	<2.0	198
	May-21		8.04	587	11.2	7.89	611	36.3	<3	151	95	95	<2	210
	Oct-21		8.24	580	12.3	7.94	609	43.8	4	189	97	97	<2	200
999	1998 †	B				8.3	282	1	5	73				
	Nov-98					8.9	214	0	<5	29				
	1999 †					8.2	320	1	<5	71				
	Jun-99					8.2	336	1	<5	83				
	Oct-99					7.9	349	3	6	116				
	2000 †					8.2	322	1	6	78				
	Jun-00					8.1	355	1	10	122				
	Oct-00					8.0	353	1	8	75				
	2001 †					8.1	265	1	<5	80				
	May-01					8.1	327	27	8	134				
	Nov-01					7.8	667	2	<5	191				
	Apr-02 †					8.1	376	2	9	116				
	May-02					8.1	427	3	<5	179				
	Oct-02					8.2	313	1	10	78				
	Apr-03 †					8.2	315	1	8	85				
	May-03					8.3	334	1	12	83	173	170	3	8
	Oct-03					8.2	322	1	12	79	171	168	3	8
	Apr-04 †					8.1	321	0	3	90				
	May-04					8.1	464	2	5	201	185	183	2	29
	Oct-04					8.3	400	6	6	131	173	170	3	17
	Apr-05 †					8.3	322	1	nd	87				
	May-05													
	Apr-06					8.0	353	6	10	170				
	Apr-07					8.1	310	1	20	90				
	Apr-08					8.2	414	2	8	170				
	Apr-09 †					7.91	350	0.74	11.3	80				
	Apr-10 †					8.16	339	1.22	5.8	96				
	Jun-11 †			8.13	290	13.9	8.12	322	0.96	6.7	82			
	Apr-12 †			8.01	531	15.9	8.14	325	0.76	5.8	73			
	May-13 †			7.97	424	11.5	8.24	272	0.61	7.3	78			
	Apr-14 †					8.27	331	0.5	6.2	107				
May-14			8.18	353	11.5	8.10	350	1.1	9	80	163	163	<5	9.52
Oct-14					8.32	350	0.7	10	77.5	162	161	<5	8.02	
Apr-15 †					8.40	343	0.34	6.1	115					
May-15			7.51	265	17.0	8.20	378	1.1	11	127	181	181	<5	18.7
Oct-15			7.60	270	16.8	7.95	326	1.1	9	52.0	151	151	<5	8.23
May-16			7.81	328	16.6	7.98	423	2.5	7	143	206	206	<5	23.1
Oct-16			8.08	310	16.1	8.30	328	0.6	8	73.7	168	167	<5	7.18
May-17			8.42	311	17.60	8.15	356	<0.5	7	69.3	168	168	<5	8.46
Oct-17			7.62	402	17.50	8.15	444	2.4	<5	191	210	210	<5	31.9
May-18			7.87	318	14.20	8.27	324	2.1	7	73.8	152	152	<5	7.72
Oct-18			7.98	354	11.50	7.82	439	2.7	<5	194	188	188	<5	33.2
May-19			7.73	450	15.80	8.17	431	1.47	2.5	177	204	204	<10	25.7
Oct-19			8.28	429	17.95	8.04	472	53.4*	2.3	202	228	228	<10	31.5
May-20			8.00	374	13.50	8.40	432	0.36	2.2	167	201	193	8.6	25.6
Oct-20			8.10	388	18.14	7.92	456	1.50	2.5	197	209	209	<2.0	30.9
May-21			7.87	406	20.5	8.18	363	0.16	7	129	168	168	<2	21
Oct-21			7.85	420	20.8	8.17	427	0.22	5	163	195	195	<2	26
03-08	May-05	R				7.36	12200	75.8	1050	1500	5500	6710	<1	<50
	Oct-05					8.04	11600	32.4	1160	5950	7250		<10	
	May-06					7.41	11100	>200	4500	1440	5900	5890	14	<2
	Oct-06					7.61	11600	29	1100	1670	5300	5280	20	<40

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**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
595	Oct-18	LT	35.9	2.58	1.01	1.49	12.4	73.6	<0.25	<0.25		<0.001	1.8	
cont'd	May-19		42.0	2.29	1.12	1.34	14.2	78.9	0.123	<0.010	0.123	0.0014	2.44	
	Oct-19		45.5	2.30	1.19	1.52	15.3	81.9	0.252	<0.010	0.252	0.0024	2.02	
	May-20		38.5	2.25	1.15	1.21	13.0	74.1	0.218	<0.010	0.218	0.0018	2.35	
	Oct-20		37.4	2.25	1.24	1.18	13.3	71.9	0.159	<0.010	0.159	0.0011	2.06	
	May-21		40.2	3	1.19	1.17	12.3	69.1	0.52	<0.03		<0.002	1.6	
	Oct-21		53.0	2	1.18	1.37	13.7	73.6	0.25	<0.03		<0.002	1.1	
999	1998 †	B	14	1	2.20		9					<0.001	1.2	
	Nov-98		4	8	0.40	4.1	5	34				<0.001	1.7	
	1999 †		14	1	2.30		9					<0.001	1.7	
	Jun-99		16	1	2.20	0.9	10	50				<0.001	1.9	
	Oct-99		23	1	2.00	1.2	15	44				<0.001	1.3	
	2000 †		16	1	2.50		10					<0.001	1.5	
	Jun-00		22	2	2.00	1.1	16	41				0.0040	1.4	
	Oct-00		14	1	2.20	0.9	9	49				<0.001	1.4	
	2001 †		16	1	0.20		10					<0.001	1.6	
	May-01		28	1	2.00	1.0	16	39				<0.001	1.3	
	Nov-01		39	2	1.70	1.0	23	29				<0.001	1.2	
	Apr-02 †		23	1	2.30		15					<0.002	1.6	
	May-02		36	2	1.60	1.2	22	30				<0.002	1.0	
	Oct-02		15	2	2.10	1.0	10	47				<0.002	1.5	
	Apr-03 †		16	2	2.10		11					<0.002	1.4	
	May-03		16	1	2.10	1.1	11	49				<0.002	1.2	
	Oct-03		15	2	2.30	1.0	10	49			<0.1	<0.002	1.4	
	Apr-04 †		17	2	2.10		11					0.0020	0.8	
	May-04		41	4	1.70	1.0	24	28				<0.002	1.3	0.25
	Oct-04		26	2	2.10	1.4	16	41			<0.1	<0.002	2.4	
	Apr-05 †		17	1	1.90		11					nd	1.8	
	May-05			2										
	Apr-06		33	<2	1.20		20				<0.1	<0.001	3.0	
	Apr-07		19	<2	2.10		11				<0.1	<0.001	2.0	
	Apr-08		33	3	1.70		21				0.20	<0.001	1.0	
	Apr-09 †		14.2	<2.0	1.81		11.20		<0.10	<0.10	<0.20	<0.001	2.1	
	Apr-10 †		20.5	<2.0	2.22		11.00		<0.10	<0.10	<0.2	<0.001	1.8	
	Jun-11 †		16.3	<2.0	2.34		9.92		<0.10	<0.10	<0.2	0.0046	2.7	
	Apr-12 †		15.7	<2.0	2.19		8.14		<0.10	<0.10	<0.2	<0.0010	2.7	
	May-13 †		15.9	<2.0	2.32		9.29		<0.10	<0.10	<0.2	<0.0010	2.0	
	Apr-14 †		27.4	<2.0	2.31		9.48					<0.0010	2.3	
	May-14		15.9	1.41	2.26	0.95	9.74	43.2	<0.05	<0.05		<0.001	7.0	
	Oct-14		14.8	1.27	2.39	1.06	9.85	48.9	<0.05	<0.05		<0.001	3.6	
	Apr-15 †		26.5	1.31	2.25		11.7		<0.020	<0.010		0.0018	<1.0	
	May-15		26.3	3.23	1.91	0.99	15.0	37.3	<0.05	<0.05		<0.001	5.0	
	Oct-15		9.10	1.30	2.14	1.07	7.12	48.6	<0.05	<0.05		0.002	3.9	
	May-16		29.6	4.23	2.06	1.02	16.7	32.5	<0.05	<0.05		<0.001	2.6	
	Oct-16		14.8	1.14	2.06	0.94	8.93	44.3	<0.05	<0.05		<0.001	3.9	
	May-17		13.5	1.08	2.41	0.99	8.65	46.9	<0.05	<0.05		<0.001	1.8	
	Oct-17		39.5	4.73	1.54	1.47	22.4	26.0	<0.05	<0.05		<0.001	2.5	
	May-18		14.6	1.16	2.22	1.00	9.07	46.1	<0.05	<0.05		<0.001	2.3	
	Oct-18		41.5	5.65	1.32	1.10	21.9	21.5	<0.05	<0.05		<0.001	2.4	
	May-19		36.5	4.49	1.64	1.04	20.9	30.6	<0.020	<0.010	<0.022	0.0010	2.78	
	Oct-19		41.9	5.65	1.54	1.15	23.7	23.2	<0.020	<0.010	<0.022	0.0013	2.12	
	May-20		33.5	4.34	1.67	0.871	20.2	30.0	0.026	<0.010	0.026	0.0068	2.50	
	Oct-20		41.1	5.34	1.61	1.05	23.0	26.4	<0.020	<0.010	<0.022	0.0029	2.34	
	May-21		28.5	3	2.05	1.76	14.2	34.4	0.12	<0.03		<0.002	2.3	
	Oct-21		35.7	5	1.82	1.23	17.9	31.8	<0.06	<0.03		<0.002	1.6	
03-08	May-05	R	130	1240	<10	710	260	1300			<10	0.0190	490	
	Oct-05		130	1250	<5	820	300	1400			<5	0.0120	386	
	May-06		126	1180	<2	830	272	1280			<4	<0.025		
	Oct-06		140	1240	3.20	700	321	1070			<4	0.0090	400	

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Monitor	Date	Unit	Field			pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulphate mg/L
			pH	Cond.	Temp.									
ODWQS			6.5 - 8.5	NC	NC	6.5 - 8.5	NC	5	5	80 - 100	30 - 500	NC	NC	500
Guideline B-7			OG	NC	NC	OG	NC	AO	AO	OG	OG	NC	NC	AO
											411			295
03-08	May-07	R				7.42	9460	>200	639	1550	4600	4590	11	<40
cont'd	Oct-07					7.47	10300	155	640	1380	5000	4990	14	<40
	May-08					7.39	8820	149	360	1400	4200	4190	<10	<40
	Oct-08					7.28	8790	156	320	1180	3800	3790	<10	<40
	May-09					7.43	8950	>200	316	1390	3940	3930	<10	<40
	Oct-09					7.12	10900	168	330	1320	4140	4140	<10	<40
	May-10		7.23	8990	16.2	7.65	8080	1.3	499	1240	4010	4010	<5	5.22
	Oct-10		7.25	10220	18.1	7.76	7620	62	587	1320	4290	4290	<5	5.67
	Jun-11		7.11	> 4000	20.0	7.99	6390	148	389	1280	3260	3260	<5	10.9
	Oct-11		7.14	73225	19.1	8.33	7710	274	673	1280	4280	4280	<5	19.9
	May-12		7.28	9070	21.8	7.75	8790	40.3	574	1290	3790	3790	<5	27.9
	Oct-12		6.96	>3999	19.8	8.29	6860	823	531	1320	3440	3440	<5	17.0
	May-13		6.70	7110	23.8	8.06	6580	262	357	1270	2520	2520	<5	15.2
	Oct-13		6.88	7690	21.7	8.37	7990	220	437	1160	3800	3800	114	14.5
	May-14		6.81	8070	21.2	8.00	8040	167	490	1090	3230	3230	<5	18.3
	Oct-14		7.31	8130	17.8	8.32	8120	470	463	1090	3710	3660	51	20.1
	May-15		6.92	7950	19.8	8.13	7560	327	369	1070	3190	3190	<5	11.8
	Oct-15		7.00	>3999	18.8	7.96	7580	540	<5	863	2960	2960	<5	<10
	May-16		6.85	7700	23.5	8.05	7990	622	377	1160	3240	3240	<5	<10
	Oct-16		-	-	-	7.97	8120	249	410	1220	3460	3460	<5	<5.0
	May-17		7.00	7480	16.25	7.99	9410	161	480	1080	3620	3620	<5	<10
	Oct-17		6.91	8560	20.30	7.94	7420	350	414	1230	3720	3720	<5	17.1
	May-18		7.11	5950	19.90	7.37	7720	184	449	1250	2850	2850	<5	8.40
	Oct-18		6.97	5750	14.85	7.63	7220	287	303	1150	3500	3500	<5	14.9
	May-19		6.82	6030	19.50	7.11	7970	166	273	1200	3470	3470	<250	<6.0
	Oct-19		7.23	7210	17.99	7.11	8430	149	293	1200	3460	3460	<50	<6.0
	May-20		7.11	6260	17.00	7.35	7360	177	217	1170	3020	3020	<10	12.3
	Oct-20		7.18	6730	17.30	7.29	8590	76.1	304	1230	3309	3540	<10	<6.0
	May-21		6.85	8760	16.5	8.12	8740	126	430	950	3450	3450	<2	<2
	Oct-21		7.39	5250	17.4	7.86	4790	52.6	220	687	1840	1840	<2	28

Notes: - ODWQS - Ontario Drinking Water Quality Standard (June 2003) - AO - Aesthetic Objective - † - sampled by Oxford County Board of Health
 - MAC - Maximum Acceptable Concentration - OG - Operational Guideline - * - result interpreted with caution or considered questionable
 - IMAC - Interim Maximum Acceptable Concentration - NC - No criteria

**Table D-1: Groundwater Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Unit	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Ammonia mg/L
ODWQS			NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	1 MAC	10 MAC	NC	5 AO	NC
Guideline B-7				127				113	2.64	0.25			3.4	
03-08	May-07	R	174	934	2.90	310	271	966			<4	<0.016	350	
cont'd	Oct-07		141	1060	2.00	539	249				<4	<0.001	350	
	May-08		162	823	3.00	500	242	730			<2	0.0500	250	
	Oct-08		118	827	<5	400	214	700			<2	0.0260	284	
	May-09		158	919	<5.0	520	241	847	<2.0	<2.0		0.0280	328	
	Oct-09		170	967	2.03	474	217	742	<2.0	<2.0		<0.0010	220	
	May-10		139	699	0.96	490	216	627	<0.05	<0.05		0.0730	333	
	Oct-10		147	806	<0.05	515	231	746	<0.05	<0.05		0.0590	253	
	Jun-11		182	643	<0.05	368	200	547	<0.05	<0.05		0.1370	117	
	Oct-11		134	873	<0.50	518	230	800	<0.50	<0.50		0.0220	134	
	May-12		156	810	<0.50	449	218	730	<0.50	<0.50		0.0340	108	
	Oct-12		153	878	0.46	489	227	786	0.13	<0.05		0.1070	259	
	May-13		195	253	<5	342	191	582	<5	<5		0.0440	239	
	Oct-13		151	845	<5	419	189	712	<5	<5		0.1160	247	
	May-14		130	706	0.92	417	187	705	<0.05	<0.05		0.036	223	
	Oct-14		120	835	<2.5	426	193	657	<2.5	<2.5		0.132	230	
	May-15		140	758	<1.0	387	174	613	<1.0	<1.0		0.023	228	
	Oct-15		84.9	707	<5	391	158	676	<5	<5		0.180	192	
	May-16		156	850	<5	354	186	602	<5	<5		0.049	322	
	Oct-16		159	816	<2.5	351	201	598	<2.5	<2.5		0.069	257	
	May-17		133	827	<5	382	181	611	<5	<5		0.057	249	
	Oct-17		154	725	<2.5	392	205	646	<2.5	<2.5		0.025	233	
	May-18		165	735	<2.5	406	204	645	<2.5	<2.5		0.018	245	
	Oct-18		164	797	<2.5	338	181	553	<2.5	<2.5		0.040	208	
	May-19		162	826	0.77	372	194	634	<0.40	<0.20	<0.45	0.0085	316	
	Oct-19		144	996	0.71	445	203	678	<0.40	<0.20	<0.45	0.023	259	
	May-20		150	691	0.76	354	193	602	<0.20	<0.10	<0.22	0.0532*	217	
	Oct-20		143	1070	1.26	486	212	747	<0.40	<0.20	<0.45	0.0181	260	
	May-21		104	940	0.77	396	168	574	<0.06	<0.3		0.031	243	
	Oct-21		115	480	0.56	242	97.3	335	<0.06	<0.3		0.009	117	

Notes: - ODWQS - Ontario Drinking Water Quality Standard (June 2003) - AO - Aesthetic Objective - † - sampled by Oxford County Board of Health
 - MAC - Maximum Acceptable Concentration - OG - Operational Guideline - * - result interpreted with caution or considered questionable
 - IMAC - Interim Maximum Acceptable Concentration - NC - No criteria

**Table D-2: Groundwater Chemical Results - Chloride in Selected Wells
Oxford County Waste Management Facility**

Unit / Monitor	Bedrock	Lower Till	Inter-Till Sands	Upper Till										Fractured Till	Glaciolacustrine					
	999	022R	012R	00-01	00-02	00-04	03-3	03-4	03-5	03-6	03-7d	013R	023R	03-7S	98-7	98-11	98-12	98-13	05-01	
1998 †	1																			
Nov-98	8																			
1999 †	1																			
Jun-99	1																			
Oct-99	1																			
2000 †	1																			
Jun-00	2														22	207	33	1		
Oct-00	1														19	206	28	1		
2001 †	1																			
May-01	1														20	114	39	1		
Jun-01				40	59	61														
Nov-01	2														21	132	34	1		
Apr-02 †	1																			
May-02	2														20	106	41	1		
Oct-02	2			41	56	31									23	500	74	2		
Apr-03 †	2																			
May-03	1		9	42	64	24						13			39	165	57	2		
Oct-03	2		7	42	58	40	232	503	434	19	10	11		59	32	205	51	2		
Apr-04 †	2																			
May-04	4		6	41	57	34	276	443	796	33	10	11		31	34	44	48	2		
Jul-04					57		456	421	792	34						69				
Sep-04					56		493	356	713	34						113				
Oct-04	2		6	44	58	40	765	355	669	32	10	10		53	33	239	49	2		
May-05	2		6	47	59	17	183	303	710	34	9	8		41	31	40	48	2		
May-06	2		8	53	65	13	141	304	438	41	11	9		50	35	21	60	3		
May-07	<2		7	47	57	14	208	259	302	42	10	8		35	39	42	56	<2		
May-08	3		7	48	58	16	130	271	192	44	10	9		59	42	52	70	<2		
May-09	2.1	2.1	6.8	48.0	56.2	13.2	134	280	200	45.7	9.7	8.2	25.9	46.2	37.6	43.1	67.4	<2.0	5.9	
May-10	0.90	1.14	7.23	50.0	57.7	21.7	308	288	219	50.9	9.14	8.49	26.0	101	43.0	91.4	74.1	1.23	5.70	
Jun-11	1.23	0.34	7.31	52.1	56.9	13.8	233	289	182	53.6	9.93	9.42	27.7	54.5	42.2	70.6	72.4	3.51	6.76	
May-12	4.79	1.46	7.13	50.7	56.4	37.1	227	294	187	52.8	10.2	8.90	25.5	82.6	39.6	81.4	68.8	1.77	7.77	
May-13	3.18	3.00	7.76	54.8	55.6	42.0	162	293	172	56.9	10.0	9.24	26.0	95.0	36.5	53.9	77.3	1.50	8.00	
May-14	1.41	1.47	8.70	62.7	57.9	51.2	228	331	176	62.8	12.2	10.1	23.6	87.0	42.2	43.5	86.3	1.60	9.65	
May-15	3.23	1.53	8.05	58.8	52.2	47.9	225	302	168	59.9	11.6	9.51	25.5	113	39.6	66.1	78.1	1.45	8.93	
May-16	4.23	1.40	9.78	70.3	61.2	49.2	152	322	188	70.3	13.1	10.8	26.2	91.0	44.6	44.4	92.5	1.90	10.8	
May-17	1.08	1.26	7.89	64.0	53.7	46.3	93.2	323	205	62.8	10.9	9.23	24.7	57.7	36.6	36.4	84.9	1.97	9.64	
May-18	1.16	2.99	8.34	65.0	52.4	49.8	219	342	183	63.2	11.3	9.02	22.5	137	35.7	43.4	91.4	15.2	8.94	
May-19	4.49	1.84	8.24	70.6	54.5	44.1	259	318	174	67.8	12.8	9.22	23.3	301	35.2	42.1	92.3	3.97	9.59	
May-20	4.34	3.35	8.90	68.9	59.4	43.6	281	303	161	68.7	12.6	9.06	22.0	404	34.7	132	95.8	2.32	9.78	
May-21	3	8	13	73	60	52	270	320	180	71	15	11	25	57	38	220	120	76	12	

Notes: † Units = mg/L

† - Sampled by Oxford County Board of Health. Other samples collected as part of on-site monitoring program.

**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

Monitor	Date	pH	Conductivity	Turbidity	Colour	Hardness	Alkalinity	Sulphate	Calcium	Chloride	Fluoride	Potassium	Magnesium	Sodium	Nitrate
			µS/cm	NTU	TCU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWQS	6.5 - 8.5 OG	NC	5.0 AO	5 AO	80 - 100 OG	30 - 500 OG	500 AO	NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	
902	Dec-86	8.20	357			53	175	4	9	3		0.7	8	55	
	Jan-87	8.20	357			53	175	4	9	2		0.7	8	55	
	Jul-87	8.20	333			53			10	3			7		
	Jun-88	8.10	342			48			9	2			6		
	Dec-88	8.00	346			53	172	3	10	2		0.8	7	57	
	Jul-89	8.20	344			64	183	2	14	2		0.8	7	64	
	Feb-90	8.10	343			54	179	2	10	2		0.7	7	56	
	Feb-91	8.20	340			55	174		11	2			7		
	Jul-91	8.20	344			58	171	1	12	2		0.9	7	56	
	Sep-92	8.20	342			55	173	1	11	2		0.8	7	63	
	Apr-93	8.30	347			57	184	2	12	2		0.8	7	66	
	May-93														
	Nov-94	8.10	362			109	182	13	20	2		1.0	14	46	
	Apr-95	8.10	362			104		10	19	2		1.1	14	46	
	Sep-95	8.00	358			104	197	11	20	2		1.2	13	45	
	Apr-96	8.10	360			101	192	10	19	1		1.1	13	43	
	Jun-97	8.40	355		9	100			19	2	2.50		13		
	Apr-98	8.30	305		<5	96			18	2	2.50		12		
	Apr-99	8.00	329	0.7	<5	93			17	1	2.50		12		
	Apr-00	8.10	352	0.8	<5	99			19	1	2.90		13		
	Apr-01	8.00	277	0.7	<5	94			18	1	2.90		12		
	Apr-02	8.10	342	0.7	<5	93			17	1	2.70		12		
	Apr-03	8.20	339	0.6	6	101			19	2	2.20		13		
	Apr-04	8.00	318	0.9	2.8	96			18	2	2.40		12		
	Apr-05	8.20	344	0.8	nd	106			20	1	2.30		13		
	Apr-06	8.10	292	0.95	8	100			19	<2	1.80		13		
	Apr-07	8.10	312	2.3	18	90			18	<2	2.20		11.2		
	Apr-08	8.30	323	1.7	10	90			16	<2	2.20		10.8		
	Apr-09	8.21	320	2.7	9.2	80			14.3	<2.0	1.80		11.2		
	Apr-10	8.23	327	4.4	5.6	155			44.8	<2.0	2.35		10.4		<0.10
	Apr-11	8.21	327	2.3	4.3	88			17.6	<2.0	2.37		11		0.11
	Apr-12	8.11	328	2.5	4.0	71			14.9	<2.0	2.23		8.17		<0.10
	Apr-13	8.20	275	2.7	5.2	77			15.7	<2.0	2.37		9.26		<0.10
	Apr-14	8.20	336	3.35	5.4	92			21.2	<2.0	2.38		9.49		<0.10
	Apr-15	8.39	333	4.15	5.8	90			20.5	1.12	2.39		9.32		0.023
	Apr-16	8.32	336	5.23	12.1	52			10.3	1.58	2.87		6.38		0.043
	Apr-17	8.36	343	5.94	11.6	54			11.1	1.56	2.72		6.37		0.020
	Apr-18	8.26	337	4.97	7.1	51			9.83	1.59	2.83		6.35		0.033
	Apr-19	8.22	333	1.29	10.9	52.2			10.1	1.61	2.88		6.56		<0.020
	Sep-20	8.31	355	3.06	27.1	55.8			11.0	1.66	2.88		6.89		<0.020
904	Sep-85	7.60	545			273	273		55	6			33		
	Dec-88	7.70	529			244	258	22	46	6		1.8	31	17	
	Jul-89	7.40	575			282	278	25	58	9		1.8	33	15	
	Feb-90	7.70	581			282	261	35	65	13		1.8	29	11	
	Feb-91	7.60	607			3	283		1	13			0		
	Jul-91	7.90	531			249	255	25	46	8		1.9	32	14	
	Apr-93	7.80	591			309	291	31	73	13		1.9	31	12	
	Apr-93														
	Nov-94	8.20	508			265	253	20	47	8		2.1	36	18	
	Apr-96	8.50	374		9	325	269	44	84	13		2.1	28	8	
	Jun-97	8.20	567	1.7	<5.0	294			61	17	0.70		35		
	Apr-98	8.30	482	1.2		0.9				10	0.80				
	Apr-00	8.00	660	0.4	<50	363			93	17	0.40		32		
	Apr-01	7.50	552	1.2	<5.0	379			109	13	0.40		26		
	Apr-02	7.90	640	3.1	6	347			102	9	0.20		22		
	Apr-03	8.00	596	0.5	<5.0	345			99	12	0.20		24		
	Apr-04	7.80	597	0.8	<2.5	353			97	10	0.30		27		
	Apr-05	8.00	585	0.4	nd	293			84	11	0.20		20		
	Apr-06	7.70	504	0.9	<1	310			71	13	0.40		33		
	Apr-07	7.60	592	0.3	<1	370			95	14	0.40		33		

Notes: · ODWQS - Ontario Drinking Water Quality Standard (June 2003) · MAC - Maximum Acceptable Concentration · AO - Aesthetic Objective · NC - No criteria
· * - indicates anomalous data, water likely softened · IMAC - Interim Maximum Acceptable Concentration · OG - Operational Guideline

**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

Monitor	Date	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Arsenic ug/L	Barium ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Iron mg/L	Lead ug/L	Nickel ug/L	Selenium ug/L	Sliver ug/L	Zinc ug/L
		1 MAC	10 MAC	NC	5.0 AO	0.025 IMAC	1.0 MAC	0.005 MAC	0.05 MAC	1 AO	0.30 AO	0.01 MAC	NC	0.01 MAC	NC	5 AO
902	Dec-86			0.001	2.7	6.0		0.3	1.0	4.0	0.44	3.0	2.0	1.0		110.0
	Jan-87			0.001	2.7						0.44					
	Jul-87			0.001												
	Jun-88			0.001	2.3											
	Dec-88			0.001	3.2						0.21					
	Jul-89			0.001	2.6						0.42					
	Feb-90			0.001	2.1						0.48					
	Feb-91			0.001	2.6						0.42					
	Jul-91			0.001	2.2	4.6		0.1	0.5	1.0	0.42	1.0	0.2	1.0	1.0	32.0
	Sep-92			0.001	2.5						0.67					
	Apr-93			0.001	2.6						0.53					
	May-93					5.2	39.5	0.4	0.2	1.2		3.0	7.8	1.0	0.9	93.1
	Nov-94			0.006	1.6						0.48					
	Apr-95			0.001	1.7						0.16					
	Sep-95			0.001	1.9	0.5	172.0	0.6	2.0	2.0	0.18	1.0	2.0	0.4	3.0	52.0
	Apr-96			0.001	1.6						0.17					
	Jun-97			<0.001	1.0						0.16					
	Apr-98			<0.001	1.1											
	Apr-99		<0.2	<0.001	1.6											
	Apr-00			<0.001	1.4											
	Apr-01			<0.001	1.4											
	Apr-02			<0.002	1.4											
	Apr-03			<0.002	1.6											
	Apr-04			0.002	1.2											
	Apr-05			0.002	1.7											
	Apr-06		<0.2	<0.001	2.0											
	Apr-07		<0.2	<0.001	2.0											
	Apr-08		<0.2	<0.001	1.0											
	Apr-09	<0.10	<0.20	<0.0010	2.3											
	Apr-10	<0.10	<0.20	<0.0010	2.3											
	Apr-11	<0.10	<0.20	0.004	2.5											
	Apr-12	<0.10	<0.2	<0.0010	2.2											
	Apr-13	<0.10	<0.2	<0.0010	2.1											
	Apr-14	<0.10		<0.0010	1.9											
	Apr-15	<0.010		0.0017	1.1											
	Apr-16	<0.010		0.0133	4.6											
	Apr-17	<0.010		0.0067	2.8											
	Apr-18	<0.010		0.0045	3.2											
	Apr-19	<0.010		0.0020	3.26											
	Sep-20	<0.010		0.0080	3.27											
904	Sep-85				2.1	2.0		0.3	1.0	8.0	0.14	3.0	2.0	1.0		160.0
	Dec-88			0.001	1.6						0.18					
	Jul-89			0.013	1.9						0.04					
	Feb-90			0.001	0.9						0.07					
	Feb-91			0.001	1.1						0.16					
	Jul-91			0.001	0.6	3.8	170.0	0.1	0.5	7.2	0.42	1.3	0.4	1.0		88.0
	Apr-93			0.001	1.0						0.07					
	Apr-93					2.2	122.3	1.1	0.2	21.5		5.0	0.2	1.0	0.2	91.5
	Nov-94			0.001	0.3						0.04					
	Apr-96			0.001	2.8						0.29					
	Jun-97			<0.001	0.6						0.08					
	Apr-98			<0.001	<0.5											
	Apr-00			<0.001	1.3											
	Apr-01			<0.001	1.8											
	Apr-02			<0.002	1.6											
	Apr-03			<0.002	2.1											
	Apr-04			0.002	1.4											
	Apr-05			<0.001	58.7											
	Apr-06		0.50	<0.001	2.0											
	Apr-07		0.60	<0.001	2.0											

Notes: · ODWQS - Ontario Drinking Water Quality Standard (June 2003) · MAC - Maximum Acceptable Concentration · AO - Aesthetic Objective · NC - No criteria
· * - indicates anomalous data, water likely softened · IMAC - Interim Maximum Acceptable Concentration · OG - Operational Guideline

**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

Monitor	Date	pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Sulphate mg/L	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L
ODWQS	6.5 - 8.5 OG	NC	5.0 AO	5 AO	80 - 100 OG	30 - 500 OG	500 AO	NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	
904	Apr-08	8.00	546	0.3	3	320			92	9	0.20		21		
Cont.	Apr-09	7.97	533	0.74	2.7	270			72.4	10.5	0.19		21.5		0.58
	Apr-10	7.91	614	0.30	1.7	354			91.0	15.2	0.40		30.8		<0.10
	Apr-11	8.03	563	0.44	4.2	276			82.9	12.9	0.21		16.9		0.35
	Apr-12	7.86	611	0.37	1.2	211			47.9	18.2	0.51		22.1		0.16
	Apr-13	7.92	411	1.82	5.5	283			83.1	13.8	0.24		18.3		0.48
	Apr-14	7.76	678	0.70	1.4	333			98.6	16.6	0.18		21.0		0.35
	Apr-15	8.07	668	0.97	2.1	351			106	24.4	0.185		20.8		0.522
	Apr-16	7.88	579	1.10	1.4	295			91.7	22.7	0.121		16.0		0.141
	Apr-17	8.01	553	0.43	3.6	290			90.1	14.2	0.144		15.9		0.095
	Apr-18	7.93	522	1.29	7.4	257			80.1	12.5	0.178		13.9		0.451
	Apr-19	7.68	638	0.77	<2.0	307			84.2	16.6	0.308		23.6		0.505
	Sep-20	7.93	669	0.28	<2.0	330			74.8	20.7	0.530		34.9		0.050
	Oct-21	7.84	693	0.70	<2.0	311			72.4	26.3	0.449		31.6		0.113
906	Sep-85	8.00	356			106	191	5	20	1		1.1	14	39	
	Mar-87	8.20	345			111			20	2			15		
	Jun-87	7.90	351			98			17	1			13		
	Dec-88	7.90	362			104	169	8	18	2		1.4	14	36	
	Jul-89	8.00	356			196	187	5	53	1		1.1	16	35	
	Jul-91	8.00	357			108	176	6	19	1		1.2	15	33	
	Apr-93	7.80	406			158	222	3	31	2		1.0	19	30	
	May-93														
	Apr-95	8.10	353			109		6	14	1		1.4	18	42	
	Sep-95	8.20	359			1	190	3	0	1		0.2	0	93	
	Apr-96	7.90	475			3	215	5	10	2		0.2	1	92	
	Jun-97	8.40	535	1.6	9	126			23	3	1.70		17		
	Apr-98	8.30	303	1.7	<5	116			21	1	1.70		16		
	Apr-99	8.00	330	0.88	<5	113			19	1	1.80		16		
	Apr-00	8.40	375	0.25	<5	113			<0.05	3	1.80		0		
	Apr-01	8.10	290	2.45	<5	105			17	1	2.10		16		
	Apr-02	8.10	352	3.86	<5	116			20	2	1.70		16		
	Apr-03	8.20	368	0.15	<5	128			23	11	1.50		17		
	Apr-04	8.10	327	<0.1	<2.5	123			22	2	1.70		17		
	Apr-05	8.20	349	0.20	nd	129			23	1	1.50		18		
	Apr-06	8.20	297	0.10	<1	120			20	<2	1.20		17		
	Apr-07	8.30	297	0.10	<1	130			20	<2	1.60		17		
	Apr-08	8.20	321	1.3	6	120			20	<2	1.70		16		
	Apr-09	8.24	341	<0.10	3.3	110			19	<2.0	1.29		14.3		<0.10
	Apr-10	8.23	349	<0.10	2.6	135			27.9	<2.0	1.71		15.9		<0.10
	Apr-11	8.11	350	<0.10	3.5	120			23.3	<2.0	1.70		15.0		0.36
	Apr-12	8.08	347	0.30	2.4	108			21.5	<2.0	1.62		13.1		<0.10
	Apr-13	8.15	302	0.50	3.7	115			21.2	<2.0	1.71		15.1		<0.10
	Apr-14	8.00	355	<0.10	3.5	144			31.7	<2.0	1.71		15.7		<0.10
	Apr-15	8.35	352	0.67	5.6	142			31.0	1.48	1.72		15.6		<0.020
	Apr-16	8.20	352	0.66	3.3	117			21.3	1.46	1.67		15.4		<0.020
	Apr-19	7.97	340	0.61	3.1	118			22.3	1.60	1.73		15.2		0.118
	Sep-20	8.22	372	0.24	7.8	129			23.6	1.88	1.70		17.1		0.042
	Oct-21	8.33	360	1.69	<2.0	118			21.2	1.94	1.67		15.7		0.040
907	2001	8.10	313		<5	77			15.6	1	3.10		9		
	Apr-02	8.20	328		<5	72			14.1	1	2.30		9		
	Apr-03	8.30	312		6	73			13.5	2	1.90		9		
	Apr-04	8.20	294	0.44	7.5	71			13.7	2	2.20		9		
	Apr-05	8.30	315	0.70	nd	75			14.9	1	2.10		9		
	Apr-06	8.50	294	0.15	4	<10 *			<0.5 *	<2	1.80		<0.5 *		
	Apr-07	8.40	323	0.75	9	<10			1.1	<2	2.30		<0.5		
	Apr-08	8.10	326	0.55	7	70			13.5	<2	2.30		9		
	Apr-09	8.31	327	0.50	6.5	60			12.1	<2.0	1.93		7.63		<0.10
	Apr-10	8.27	333	0.15	2.8	<10			0.73	<2.0	2.44		<0.5		<0.10
	Apr-11	8.37	325	0.56	3.0	<10 *			<0.5 *	<2.0	2.34		<0.5 *		<0.10
	Apr-12	8.13	318	0.28	3.0	64			13.6	<2.0	2.27		7.24		<0.10
	Apr-14	8.37	343	0.31	5.0	<10 *			<0.50 *	<2.0	2.44		<0.50 *		<0.10

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**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

Monitor	Date	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Arsenic ug/L	Barium ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Iron mg/L	Lead ug/L	Nickel ug/L	Selenium ug/L	Sliver ug/L	Zinc ug/L	
		1 MAC	10 MAC	NC	5.0 AO	0.025 IMAC	1.0 MAC	0.005 MAC	0.05 MAC	1 AO	0.30 AO	0.01 MAC	NC	0.01 MAC	NC	5 AO	
904	Apr-08		0.90	<0.001	2.0												
Cont.	Apr-09	<0.10	0.58	<0.0010	3.4												
	Apr-10	<0.10	<0.20	0.001	2.7												
	Apr-11	<0.10	0.35	<0.0010	2.7												
	Apr-12	<0.10	<0.2	<0.0010	1.7												
	Apr-13	<0.10	0.48	<0.0010	4.2												
	Apr-14	<0.10		<0.0010	3.4												
	Apr-15	<0.010		<0.0010	2.2												
	Apr-16	<0.010		<0.0010	5.2												
	Apr-17	<0.010		0.0011	2.5												
	Apr-18	<0.010		0.0035	3.7												
	Apr-19	<0.010		0.0021	2.40												
	Sep-20	<0.010		0.0060	1.14												
	Oct-21	<0.010		<0.0010	2.37												
906	Sep-85			0.001	1.9	10.0		0.3	1.0	1.0	0.55	3.0	2.0	1.0			57.0
	Mar-87			0.001	1.1												
	Jun-87			0.001	1.4												
	Dec-88			0.001	2.6						0.66						
	Jul-89			0.001	1.4						0.53						
	Jul-91			0.001	1.0	4.0	60.0	0.1	0.5	0.7	0.31	0.1	0.2	1.0	0.1	0.2	
	Apr-93			0.001	1.1												
	May-93					2.0	70.6	1.0	0.2	1.7		2.0	1.1	1.0	2.3	8.3	
	Apr-95			0.001	1.2						2.04						
	Sep-95			0.001	1.5	4.8	2.0	0.6	2.0	2.0	0.22	10.0	2.0	0.4	3.0	25.0	
	Apr-96			0.001	1.1						0.01						
	Jun-97			<0.001	0.6						0.06						
	Apr-98			<0.001	0.8												
	Apr-99		<0.2	<0.001	1.3												
	Apr-00			<0.001	1.2												
	Apr-01			<0.001	1.1												
	Apr-02			<0.002	0.7												
	Apr-03			<0.002	0.9												
	Apr-04			<0.002	0.7												
	Apr-05			0.001	1.2												
	Apr-06		<0.2	<0.001	2.0												
	Apr-07		0.20	<0.001	1.0												
	Apr-08		<0.2	<0.001	<1												
	Apr-09	<0.10	<0.20	<0.0010	1.8												
	Apr-10	<0.10	<0.20	<0.0010	1.8												
	Apr-11	<0.10	0.36	0.0056	2.7												
	Apr-12	<0.10	<0.2	<0.0010	1.5												
	Apr-13	<0.10	<0.2	<0.0010	1.5												
	Apr-14	<0.10		<0.0010	1.7												
	Apr-15	<0.010		<0.0010	<1.0												
	Apr-16	<0.010		0.0088	3.2												
	Apr-19	0.035		<0.0010	1.67												
	Sep-20	<0.010		0.0029	1.68												
	Oct-21	<0.010		<0.0010	2.44												
907	2001			<0.001	1.6												
	Apr-02			<0.002	1.4												
	Apr-03			<0.002	1.3												
	Apr-04			0.002	1.4												
	Apr-05			0.001	1.5												
	Apr-06		<0.2	<0.001	3.0												
	Apr-07		<0.2	<0.001	2.0												
	Apr-08		<0.2	<0.001	1.0												
	Apr-09	<0.10	<0.20	<0.0010	2.5												
	Apr-10	<0.10	<0.20	<0.0010	2.6												
	Apr-11	<0.10	<0.20	<0.0010	2.1												
	Apr-12	<0.10	<0.2	<0.0010	2.0												
	Apr-14	<0.10		<0.0010	2.6												

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**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

Monitor	Date	pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Sulphate mg/L	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L
ODWQS	6.5 - 8.5 OG	NC	5.0 AO	5 AO	80 - 100 OG	30 - 500 OG	500 AO	NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	
907 Cont.	Apr-15	8.50	348	0.22	5.4	<10 *			<0.50 *	1.98	2.37		<0.50 *		<0.020
	Apr-17	8.40	350	0.36	3.3	<10*			<0.50*	1.78	2.26		<0.050*		<0.020
	Apr-18	8.30	344	0.44	3.5	<10*			<0.50*	1.75	2.38		<0.050*		<0.020
	Apr-19	8.29	316	0.94	7.3	<1.3*			<0.50*	1.65	2.38		<0.050*		<0.020
	Sep-20	8.34	354	0.88	4.0	<2.4*			<0.50*	1.75	2.39		<0.50*		<0.020
	Oct-21	8.31	339	0.30	4.1	<1.3*			<0.50*	1.66	2.31		<0.050*		<0.020
908	Sep-85	8.40	451			5	212	30	1	6		0.2	1	107	
	Apr-86	8.00	356			90	169	20	18	4		0.9	11	45	
	Jun-88	7.80	414			128			26	6			15		
	Dec-88	7.90	376			92	160	22	19	4		0.8	11	45	
	Jul-89	8.10	390			102	168	23	22	7		1.0	11	53	
	Jan-91	8.20	341			77	157		16	2			9		
	Jul-91	8.20	331			60	148	16	13	2		0.9	7	48	
	Sep-92	8.20	334			74	163	15	16	2		0.8	9	55	
	Apr-93	8.20	334			74	164	18	16	3		0.7	8	53	
	Apr-93	8.30				74	164		15	2			9		
	May-93														
	Nov-94	8.20	332			74	155	16	15	2		0.8	9	54	
	Apr-95	8.20	335			76		17	16	2		0.8	9	51	
	Sep-95	8.20	332			70	166	16	15			0.9	8	52	
	Apr-96	8.20	335			69	163	16	14	2		0.9	8	54	
	Jun-97	8.30	333	3.7	7	79			16	2	2.40		9		
	Apr-98	8.30	288	0.9	<5	68			14	2	2.50		8		
	Apr-99	8.60	318	2.4	<5	72			14	1	2.50		9		
	Apr-00	7.40	335	1.28	<5	74			15	1	2.70		9		
	Apr-01	8.00	272	0.53	<5	85			18	1	2.70		10		
	Apr-02	8.00	371	0.12	<5	96			19	3	2.20		12		
	Apr-03	8.10	321	<0.1	<5	83			16	2	2.10		10		
	Apr-04	8.20	316	0.12	<2.5	0			<0.05	2	2.10		0		
	Apr-05	8.10	324	0.40	nd	86			17	1	1.90		11		
	Apr-06	8.10	266	0.10	<1	100			20	<2	1.40		13		
	Apr-07	8.10	305	0.15	6	90			18	<2	2.10		11		
	Apr-08	8.20	323	0.15	3	90			17	<2	2.10		11		
Apr-09	8.08	341	0.10	3	90			15.2	2.5	1.68		12		<0.10	
Apr-10	8.25	326	<0.10	2.9	108			26.7	<2.0	2.28		9.95		<0.10	
Apr-11	8.22	324	0.19	3.3	89			17.5	<2.0	2.27		11.10		<0.10	
Apr-12	7.85	324	0.15	3.8	68			14.5	<2.0	2.16		7.82		<0.10	
Apr-13	8.26	278	0.18	5.0	77			15.3	<2.0	2.29		9.29		<0.10	
Apr-14	8.25	326	0.25	2.8	88			19.7	<2.0	2.19		9.48		<0.10	
Apr-15	8.07	321	0.59	3.6	84			19.3	1.39	2.15		8.82		0.177	
Apr-16	8.32	324	0.41	3.4	<10 *			<0.50 *	1.42	2.29		<0.50 *		<0.020	
Apr-17	8.32	336	0.29	4.2	<10*			<0.50*	1.22	2.14		<0.050*		<0.020	
Apr-18	8.29	327	0.91	3.1	<10*			<0.50*	1.13	2.18		<0.050*		<0.020	
Apr-19	8.09	319	0.32	3.4	<1.3*			<0.50*	1.13	2.14		<0.050*		<0.020	
Sep-20	8.30	348	<0.10	<2.0	<2.4*			<0.50*	1.21	2.09		<0.50*		<0.020	
Oct-21	8.28	339	<0.10	2.1	<1.3*			<0.50*	1.12	1.97		<0.050*		<0.020	
909	Sep-85	7.80	426			190	215	9	36	1		1.1	24	16	
	Apr-93	7.90	426			196	224	14	37	1		1.1	25	17	
	May-93														
	Nov-94	7.80	418			207	226	11	39	1		1.4	27	17	
	Apr-95	8.10	423			198		10	37	1		1.2	26	17	
	Sep-95	7.90	415			197	228	12	37	1		1.3	26	17	
	Apr-96	7.90	422			197	232	11	36	0		1.3	26	16	
	Jun-97	7.90	418	1.7	9	214			39	1	1.00		28		
	Apr-98	8.40	338	0.30	<5	195			36	1	1.10		25		
	Apr-99	8.60	400	1.64	<5	194			36	1	1.10		25		
	Apr-00	7.90	416	0.87	<5	191			36	1	1.10		25		
	Apr-01	8.00	402	0.32	<5	206			39	1	1.10		26		
	Apr-02	8.10	418	0.32	<5	199			37	1	1.00		26		
	Apr-03	8.10	411	1.64	<5	212			39	1	0.90		28		
Apr-04	8.10	402	0.31	<2.5	200			37	2	1.10		26			
Apr-05	8.20	408	2.6	nd	209			39	1	0.90		27			

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Oxford County Waste Management Facility**

Monitor	Date	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Arsenic ug/L	Barium ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Iron mg/L	Lead ug/L	Nickel ug/L	Selenium ug/L	Sliver ug/L	Zinc ug/L	
		1 MAC	10 MAC	NC	5.0 AO	0.025 IMAC	1.0 MAC	0.005 MAC	0.05 MAC	1 AO	0.30 AO	0.01 MAC	NC	0.01 MAC	NC	5 AO	
907	Apr-15	<0.010		0.0022	1.4												
Cont.	Apr-17	<0.010		0.0013	1.7												
	Apr-18	<0.010		<0.0010	2.1												
	Apr-19	<0.010		0.0014	2.13												
	Sep-20	<0.010		0.0082	2.45												
	Oct-21	<0.010		<0.0010	2.59												
908	Sep-85			0.001	2.5	2.0		0.3	1.0	1.0	0.56	3.0	2.0	1.0			77.0
	Apr-86			0.001	2.2	3.0		0.3	1.0	1.0	11.00	3.0	2.0	1.0			42.0
	Jun-88			0.001	1.4												
	Dec-88			0.001	2.3						0.25						
	Jul-89			0.001	1.4						0.23						
	Jan-91			0.001	1.4						0.22						
	Jul-91			0.001	2.4	3.4	51.0	0.1	0.5	1.8	0.22	0.2	0.2	1.0	0.1		33.0
	Sep-92			0.001	1.5						0.26						
	Apr-93			0.001	2.2						0.15						
	Apr-93										0.02						
	May-93					2.0	89.3	1.6	0.2	4.3		5.0	4.2	1.0	4.1		0.2
	Nov-94			0.004	1.2						0.03						
	Apr-95			0.001	1.7						0.18						
	Sep-95			0.001	2.0	1.9	61.0	0.6	2.0	2.0	0.16	1.0	2.0	0.4	3.0		32.0
	Apr-96			0.001	1.6						0.21						
	Jun-97			<0.001	1.1						0.26						
	Apr-98			<0.001	1.3												
	Apr-99		<0.2	<0.001	1.5												
	Apr-00			0.002	9.2												
	Apr-01			<0.001	1.1												
	Apr-02			<0.002	0.9												
	Apr-03			<0.002	1.1												
	Apr-04			<0.002	1.2												
	Apr-05			nd	1.7												
	Apr-06		0.20	<0.001	2.0												
	Apr-07		0.20	<0.001	1.0												
	Apr-08		<0.2	<0.001	1.0												
	Apr-09	<0.10	<0.2	<0.0010	2.4												
	Apr-10	<0.10	<0.2	<0.0010	2.1												
	Apr-11	<0.10	<0.2	0.0075	1.8												
	Apr-12	<0.10	<0.2	<0.0010	2.0												
	Apr-13	<0.10	<0.2	<0.0010	1.9												
	Apr-14	<0.10		<0.0010	1.9												
	Apr-15	<0.010		0.0031	<1.0												
	Apr-16	<0.010		0.0014	3.5												
	Apr-17	<0.010		<0.0010	1.4												
	Apr-18	<0.010		<0.0010	1.5												
	Apr-19	<0.010		<0.0010	1.37												
	Sep-20	<0.010		0.0024	1.57												
	Oct-21	<0.010		<0.0010	2.57												
909	Sep-85			0.001	1.4	12.0		1.0	1.0	1.0	0.64	3.0	2.0	1.0			230.0
	Apr-93			0.001	0.2												
	May-93					13.3	164.0	1.3	0.2	2.1		2.0	1.5	1.0	2.3		118.9
	Nov-94			0.001	0.8						0.30						
	Apr-95			0.001	0.5						0.14						
	Sep-95			0.001	1.1	10.4	208.0	0.6	2.0	5.0	0.21	10.0	2.0	0.4	3.0		81.0
	Apr-96			0.001	0.7						0.21						
	Jun-97			<0.001	2.4						0.11						
	Apr-98			<0.001	<0.5												
	Apr-99		<0.2	<0.001	0.5												
	Apr-00			<0.001	<0.5												
	Apr-01			<0.001	<0.5												
	Apr-02			<0.002	0.5												
	Apr-03			<0.002	<0.5												
	Apr-04			0.002	0.5												
	Apr-05			nd	0.7												

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**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

Monitor	Date	pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Sulphate mg/L	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L
ODWQS	6.5 - 8.5 OG	NC	5.0 AO	5 AO	80 - 100 OG	30 - 500 OG	500 AO	NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	
909	Apr-06	7.90	346	0.60	<1	190			31	<2	0.70		28		
Cont.	Apr-07	7.90	390	0.70	<1	200			36	<2	1.00		26		
	Apr-08	8.20	446	0.85	2	220			39	<2	1.00		29		
	Apr-09	8.19	405	0.29	1.3	200			33	<2.0	0.79		29		<0.10
	Apr-10	8.16	415	0.80	<1.0	209			42.9	<2.0	1.02		24.8		<0.10
	Apr-11	8.10	408	0.69	<1.0	208			39.8	<2.0	1.00		26.5		<0.10
	Apr-12	8.06	406	0.35	2.3	182			37.1	<2.0	0.96		21.7		<0.10
	Apr-13	8.18	390	0.41	3.9	<10 *			<0.50 *	<2.0	1.02		<0.50 *		0.17
	Apr-14	8.15	430	0.10	1.4	<10 *			<0.50 *	<2.0	1.05		<0.50 *		<0.10
	Apr-15	8.33	519	1.73	8.5	<10 *			<0.50 *	5.68	0.562		<0.50 *		12.6
	Apr-16	8.13	415	0.50	1.8	195			38.1	0.93	1.03		24.3		<0.020
	Apr-17	8.28	423	0.61	<2.0	198			39.4	0.90	0.966		24.2		<0.020
	Apr-18	8.25	421	0.66	<2.0	189			38.4	0.94	1.01		22.7		<0.020
	Apr-19	8.00	400	0.69	<2.0	193			37.1	0.99	1.06		24.4		<0.020
	Sep-20	8.13	432	<0.10	<2.0	205			38.6	1.02	1.06		26.3		<0.020
	Oct-21	7.90	707	0.16	7.1	334			79.3	6.29	0.439		32.9		2.44
911	Sep-85	7.80	479			185	211	34	42	7		0.9	20	30	
	Apr-86	7.40	448			175	368	36	38	55		1.0	19	29	
	Dec-86	7.70				199	208	34	43	8		1.1	23	30	
	Jun-88	7.80	350			93			20	6			10		
	Dec-88	7.80	398			118	180	20	26	4		0.9	13	40	
	Jul-89	7.90	425			143	194	24	33	6		1.0	15	44	
	Feb-91	7.90	445				196		34	7			17		
	Jul-91	7.80	482			182	197	43	41	8		1.1	19	28	
	Sep-92	7.90	470			182	202	35	41	8		1.0	20	36	
	Apr-93	7.90	445			161	207	30	36	6		1.0	17	41	
	May-93														
	Nov-94	8.10	372			94	170	22	19	6		1.0	11	54	
	Apr-95	8.20	381			92		21	19	5		0.9	11	52	
	Sep-95	8.10	367			93	170	16	20	4		0.9	11	50	
	Jun-97	8.20	418	1.1	12	143			31	6	2.00		16		
	Apr-98	8.30	365	0.4	<5	155			34	6	1.90		17		
	Apr-99	8.60	370	2.5	6	113			24	4	2.20		13		
	Apr-00	8.00	417	4.4	<5	129			29	4	2.00		14		
	Apr-01	7.90	341	5.1	<5	148			33	6	2.40		16		
	Apr-02	8.10	434	6.6	<5	148			32	5	1.90		17		
	Apr-03	8.10	430	12.9	<5	160			34	7	1.50		18		
	Apr-04	8.00	422	5.5	4	163			35	7	1.90		18		
	Apr-05	8.20	446	4.7	nd	172			37	8	1.70		19		
	Apr-06	8.10	324	0.4	6	110			23	4	1.60		13		
	Apr-07	8.00	350	1.4	21	120			27	4	2.20		12		
	Apr-08	8.30	350	0.18	6	100			20	5	2.30		12		
	Apr-09	8.32	355	3.0	15.5	90			17.5	4.4	1.20		11.1		0.22
	Apr-10	8.28	350	1.5	6.0	95			21.6	3.9	2.36		10.0		<0.10
	Apr-11	8.21	363	0.11	5.5	86			18.9	5.2	2.26		9.42		0.19
	Apr-12	8.20	366	0.74	4.9	82			17.7	5.6	2.20		9.25		<0.10
	Apr-13	8.24	321	1.52	5.7	124			30.8	6.2	2.26		11.40		<0.10
	Apr-14	8.20	381	0.22	6.1	<10 *			<0.50 *	5.9	2.23		<0.50 *		0.24
	Apr-15	8.42	383	0.57	6.6	<10 *			<0.50 *	6.02	2.24		<0.50 *		0.266
	Apr-16	8.20	378	0.50	5.4	93			19.1	6.40	2.18		11.0		0.249
	Apr-17	8.31	387	0.31	5.6	22			3.75	6.10	2.10		3.12		0.238
	Apr-18	8.23	391	0.47	5.0	<10*			<0.50*	6.69	2.20		<0.050*		0.271
	Apr-19	8.11	370	0.87	7.0	92.6			18.2	6.49	2.23		11.5		0.268
	Sep-20	8.23	397	0.19	4.8	100			19.9	6.29	2.24		12.3		0.262
	Oct-21	8.21	368	0.27	5.2	84.4			16.5	4.63	2.23		10.5		0.259
912	Apr-86	7.90	431			18	402	16	3	3		0.4	3	96	
	Dec-88	7.80	441			186	209	20	37	3		1.1	23	19	
	Feb-90	7.90	426			183	214	19	33	1		1.1	24	22	
	Jan-91	7.90	425			179	212		33	1			23		
	Jul-91	7.90	429			183	205	21	34	1		1.3	24	17	
	Sep-92	7.80	451			203	218	19	40	5		1.2	25	24	
	May-93	7.80	455			193	244	20	27	5		1.2	30	30	

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**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

Monitor	Date	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Arsenic ug/L	Barium ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Iron mg/L	Lead ug/L	Nickel ug/L	Selenium ug/L	Sliver ug/L	Zinc ug/L
		1 MAC	10 MAC	NC	5.0 AO	0.025 IMAC	1.0 MAC	0.005 MAC	0.05 MAC	1 AO	0.30 AO	0.01 MAC	NC	0.01 MAC	NC	5 AO
909	Apr-06		<0.2	<0.001	2.0											
Cont.	Apr-07		<0.2	<0.001	<1											
	Apr-08		<0.2	<0.001	<1											
	Apr-09	<0.10	<0.2	<0.0010	<1.0											
	Apr-10	<0.10	<0.2	<0.0010	1.1											
	Apr-11	<0.10	<0.2	0.0079	1.3											
	Apr-12	<0.10	<0.2	<0.0010	1.2											
	Apr-13	<0.10	<0.2	<0.0010	1.2											
	Apr-14	<0.10		<0.0010	1.0											
	Apr-15	0.169		0.0010	2.4											
	Apr-16	<0.010		0.0026	2.4											
	Apr-17	<0.010		0.0011	<1.0											
	Apr-18	<0.010		0.0015	1.1											
	Apr-19	<0.010		<0.0010	0.90											
	Sep-20	<0.010		0.0054	1.08											
	Oct-21	<0.010		<0.0010	4.42											
911	Sep-85			0.001	2.9						1.76					
	Apr-86			0.001	1.3	2.0		0.3	1.0	1.0	0.76	3.0	2.0	1.0		10.0
	Dec-86			0.000	1.4	3.0		1.0	1.0	19.0	3.20	3.0	2.0	1.0		24.0
	Jun-88			0.001	1.6											
	Dec-88			0.001	2.2						0.75					
	Jul-89			0.001	2.1						0.58					
	Feb-91			0.001	1.5											
	Jul-91			0.001	1.3	2.6	65.0	0.1	0.5	3.5	1.11	0.3	0.2	1.0		16.0
	Sep-92			0.001	1.3						0.56					
	Apr-93			0.001	1.5	3.5	53.7	0.7	0.2	44.8	0.62	5.0	1.2	1.0	1.2	20.1
	May-93										0.57					
	Nov-94			0.005	1.6						0.16					
	Apr-95			0.001	1.9	2.4	35.0	0.6	2.0	7.0	0.44	10.0	2.0	0.4	3.0	30.0
	Sep-95			0.002	2.0						0.51					
	Jun-97			<0.001	1.5											
	Apr-98			<0.001	1.2											
	Apr-99		<0.2	<0.001	1.8											
	Apr-00			<0.001	1.7											
	Apr-01			<0.001	1.6											
	Apr-02			<0.002	1.5											
	Apr-03			<0.002	1.3											
	Apr-04			0.002	1.5											
	Apr-05			nd	1.8											
	Apr-06		0.40	<0.001	2.0											
	Apr-07		<0.2	<0.001	2.0											
	Apr-08		<0.2	<0.001	1.0											
	Apr-09	<0.10	0.22	<0.0010	3.3											
	Apr-10	<0.10	<0.2	<0.0010	1.9											
	Apr-11	<0.10	<0.2	0.003	3.4											
	Apr-12	<0.10	<0.2	<0.0010	2.5											
	Apr-13	<0.10	<0.2	<0.0010	3.5											
	Apr-14	<0.10		<0.0010	2.1											
	Apr-15	<0.010		0.0021	1.3											
	Apr-16	<0.010		0.0259	3.9											
	Apr-17	<0.010		0.0014	1.5											
	Apr-18	<0.010		<0.0010	2.1											
	Apr-19	<0.010		0.0017	2.12											
	Sep-20	<0.010		0.0040	2.22											
	Oct-21	<0.010		<0.0010	2.93											
912	Apr-86			0.001	0.7						0.11					
	Dec-88			0.001	1.4						0.34					
	Feb-90			0.001	0.2						1.90					
	Jan-91			0.001	0.6						0.35					
	Jul-91			0.001	0.6	8.6	72.0	0.1	0.5	1.3	0.19	0.1	0.6	1.0	0.1	3.2
	Sep-92			0.001	0.7						0.25					
	May-93			0.001	0.8						0.04					

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Monitor	Date	pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Sulphate mg/L	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L
ODWQS	6.5 - 8.5 OG	NC	5.0 AO	5 AO	80 - 100 OG	30 - 500 OG	500 AO	NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	
912	May-94														
Cont.	Nov-94	7.90	429			201	216	21	36	1		1.2	27	23	
	Apr-95	8.00	477			10		21	1	3		1.2	2	117	
	Sep-95	7.80	425			192	223	21	35	1		1.2	26	23	
	Apr-96	7.50	697			309	251	21	76	32		1.0	29	23	
	Jun-97	8.00	439	0.2	5	198			37	3	0.90		25		
	Apr-98	8.30	359	0.2	<5	196			38	2	1.00		25		
	Apr-99	8.60	424	0.28	<5	197			38	2	1.00		25		
	Apr-00	7.80	458	0.50	<5	195			39	3	1.00		24		
	Apr-01	7.90	408	2.84	<5	207			40	1	1.40		26		
	Apr-02	8.00	436	6.35	<5	200			37	1	1.00		26		
	Apr-03	8.10	419	5.31	<5	209			37	2	0.80		28		
	Apr-04	7.90	413	4.11	2.5	201			37	3	1.10		27		
	Apr-05	8.20	425	1.1	nd	209			40	2	0.90		27		
	Apr-06	8.10	354	3.0	6	190			33	<2	0.70		27		
	Apr-07	8.00	415	1.8	11	200			38	<2	0.90		26		
	Apr-08	8.20	425	0.71	4	210			38	<2	0.90		29		
	Apr-09	8.23	417	3.70	5.6	180			30.8	<2.0	0.73		23.9		<0.10
	Apr-10	8.22	423	0.74	3.5	186			35.5	<2.0	0.97		23.8		<0.10
	Apr-11	8.12	422	3.50	<1.0	201			38.6	<2.0	0.97		25.4		<0.10
	Apr-13	8.17	343	6.28	2.3	190			36.3	<2.0	0.95		24.1		<0.10
	Apr-14	8.11	433	1.52	1.9	230			52.2	<2.0	0.98		24.1		<0.10
	Apr-16	8.23	450	0.24	1.8	<10*			<0.50*	2.07	0.994		<0.50*		<0.020
	Apr-17	8.44	474	0.45	<2.0	<10*			<0.50*	2.21	0.948		<0.050*		<0.020
	Apr-18	8.27	457	0.80	<2.0	<10*			<0.50*	2.15	0.994		<0.050*		<0.020
	Sep-20	8.23	470	0.46	2.0	<2.4*			<0.50*	2.32	1.03		<0.50*		<0.020
	Oct-21	8.49	469	0.99	<2.0	<1.3*			<0.50*	2.33	1.00		<0.050*		<0.020
913	Mar-87	7.30	590			298	274	30	80	46		1.7	24	34	
	Feb-89	7.60	602			261	272	45	51	12		1.2	33	21	
	Feb-90	7.60	641			291	298		61	10			34		
	Jul-91	7.80	597			274	276	49	51	6		1.5	35	18	
	Sep-92	7.30	910			371	420	51	94	30		3.9	33	29	
	Apr-93	7.40	783			387	376	36	120	23		2.7	21	24	
	May-93														
	Nov-94	8.10	610			323	297	44	59	5		1.8	43	23	
	Apr-95	7.70	990			1		38		39				7	
	Sep-95	7.70	569			261	280	36	51	9		1.6	33	23	
	Jun-97	8.40	844	0.1	9	3			1	8	0.80				
	Apr-98	8.40	599	0.1	<5	2				15	0.60				
	Apr-99	8.10	741	0.22	<5	1				39	0.80				
	Apr-00	7.80	634	1.01	<5	1				16	0.80				
	Apr-01	7.90	334	0.49	<5	2				1	3.00				
	Apr-02	8.30	360	0.36	<5	0			<0.05	1	2.40		<0.02		
	Apr-03	8.30	338	1.29	13	86			16	2	1.70		11		
	Apr-04	8.10	325	0.76	6	67			17	2	2.30		11		
	Apr-05	8.20	335	1.6	nd	100			20	1	2.00		12		
	Apr-06	8.20	288	0.2	6	80			15	<2	1.70		10		
	Apr-07	8.10	324	0.90	16	100			21	<2	2.30		11		
	Apr-08	8.30	333	0.71	9	90				<2	2.20		12		
	Apr-09	8.20	353	0.55	8.2	80			15.5	<2.0	1.68		10.3		<0.10
	Apr-10	8.11	344	0.45	3.5	99			22.2	<2.0	2.32		10.7		<0.10
	Apr-11	8.26	334	0.55	3.9	87			17.3	<2.0	2.29		10.7		<0.10
	Apr-12	8.10	335	0.58	4.5	74			15.5	<2.0	2.22		8.67		<0.10
	Apr-13	8.22	295	0.43	7.2	83			16.5	<2.0	2.43		10.1		<0.10
	Apr-14	8.26	337	0.26	5.6	93			20.5	<2.0	2.37		10.2		<0.10
	Apr-16	8.27	343	0.80	7.5	77			15.2	1.69	2.41		9.46		<0.020
	Apr-17	8.33	352	0.80	6.3	82			16.9	1.48	2.29		9.77		<0.020
	Apr-18	8.31	339	1.65	5.7	74			14.7	1.25	2.42		9.08		<0.020
	Apr-19	8.21	341	0.79	4.2	80.3			16.4	1.47	2.35		9.54		<0.020
	Sep-20	8.24	360	0.96	12.3	93.1			18.0	1.34	2.25		11.7		<0.020
	Oct-21	8.22	344	1.09	3.5	85.7			16.4	1.25	2.18		10.9		<0.020

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Oxford County Waste Management Facility**

Monitor	Date	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Arsenic ug/L	Barium ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Iron mg/L	Lead ug/L	Nickel ug/L	Selenium ug/L	Sliver ug/L	Zinc ug/L
		1 MAC	10 MAC	NC	5.0 AO	0.025 IMAC	1.0 MAC	0.005 MAC	0.05 MAC	1 AO	0.30 AO	0.01 MAC	NC	0.01 MAC	NC	5 AO
912	May-94					2.6	23.8	1.4	0.2	25.1	0.02	2.0	0.2	1.0	1.4	9.4
Cont.	Nov-94			0.005	0.3						0.04					
	Apr-95			0.001	0.7						0.01					
	Sep-95			0.001	1.2	6.1	65.0	0.6	2.0	41.0	0.01	10.0	2.0	0.4	3.0	14.0
	Apr-96			0.001	1.8											
	Jun-97			<0.001	0.5											
	Apr-98			<0.001	<0.5											
	Apr-99		<0.2	<0.001	0.6											
	Apr-00			<0.001	0.5											
	Apr-01			<0.001	0.5											
	Apr-02			<0.002	0.6											
	Apr-03			<0.002	0.5											
	Apr-04			0.002	1.5											
	Apr-05			nd	1.9											
	Apr-06		<0.2	<0.001	2.0											
	Apr-07		<0.2	<0.001	10.0											
	Apr-08		<0.2	<0.001	2.0											
	Apr-09	<0.10	<0.2	<0.0010	1.3											
	Apr-10	<0.10	<0.2	<0.0010	1.4											
	Apr-11	<0.10	<0.2	<0.0010	1.0											
	Apr-13	<0.10	<0.2	<0.0010	1.1											
	Apr-14	<0.10		<0.0010	1.1											
	Apr-16	<0.010		0.0053	2.5											
	Apr-17	<0.010		0.0026	<1.0											
	Apr-18	<0.010		0.0018	1.2											
	Sep-20	<0.010		0.0092	1.23											
	Oct-21	<0.010		<0.0010	1.85											
913	Mar-87			0.001	1.5						0.02					
	Feb-89			0.001	0.8						0.02					
	Feb-90			0.001	1.0						0.01					
	Jul-91			0.001	0.9	8.8	120.0	0.1	0.5	2.4	0.04	1.6	0.3	1.0	0.1	170.0
	Sep-92			0.001	2.7						0.04					
	Apr-93			0.001	2.1											
	May-93					2.0	66.4	1.2	0.2	13.8		13.0	0.2	1.0	3.1	700.2
	Nov-94			0.002	0.5						0.08					
	Apr-95			0.001	2.9						0.04					
	Sep-95			0.001	1.3	4.8	105.0	0.6	2.0	2.0	0.05	10.0	2.0	0.4	3.0	206.0
	Jun-97			<0.001	0.5						0.02					
	Apr-98			<0.001	1.0											
	Apr-99		<0.2	<0.001	1.0											
	Apr-00			<0.001	0.9											
	Apr-01			<0.001	1.5											
	Apr-02			<0.002	1.4											
	Apr-03			<0.002	1.3											
	Apr-04			0.002	1.5											
	Apr-05			0.0001	1.6											
	Apr-06		<0.2	<0.001	2.0											
	Apr-07		<0.2	<0.001	2.0											
	Apr-08		<0.2	<0.001	<1											
	Apr-09	<0.10	<0.2	0.088	3.6											
	Apr-10	<0.10	<0.2	<0.001	2.4											
	Apr-11	<0.10	<0.2	0.0048	2.3											
	Apr-12	<0.10	<0.2	<0.0010	2.4											
	Apr-13	<0.10	<0.2	<0.0010	1.8											
	Apr-14	<0.10		<0.0010	2.5											
	Apr-16	<0.010		0.0083	3.7											
	Apr-17	<0.010		0.0013	1.4											
	Apr-18	<0.010		<0.0010	1.9											
	Apr-19	<0.010		0.0017	1.94											
	Sep-20	<0.010		0.0032	1.90											
	Oct-21	<0.010		<0.0010	2.36											

Notes: - ODWQS - Ontario Drinking Water Quality Standard (June 2003) - MAC - Maximum Acceptable Concentration - AO - Aesthetic Objective - NC - No criteria
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**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

Monitor	Date	pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Sulphate mg/L	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L	
		6.5 - 8.5 OG	NC	5.0 AO	5 AO	80 - 100 OG	30 - 500 OG	500 AO	NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	
916	Dec-88	7.80	496			186	234	18	29	8		1.2	28	30		
	Jul-89	7.90	454			172	228	16	27	6		1.1	26	29		
	Feb-91		450			169	231		24	6			26			
	Jul-91	8.00	463			182	218	22	27	6		1.2	28	34		
	Sep-92	7.90	500			227	249	24	31	8		1.3	36	33		
	Apr-93	8.10	490			204	248	24	30	7		1.1	31	32		
	May-94															
	Nov-94	8.00	492			219	268	28	30	7		1.1	35	33		
	Apr-95	8.00	505			220		26	31	6		1.2	34	32		
	Sep-95	8.00	507			210	252	27	31	8		1.3	32	32		
	Jun-97	8.40	508	0.6	7	152			22	8	1.00		24			
	Apr-98	8.40	396	1.3	<5	200			30	6	1.10		30			
	Apr-99	8.60	506	2.0	<5	221			33	9	1.00		34			
	Apr-00	8.00	560	3.3	<5	248			38	10	1.00		38			
	Apr-01	7.80	481	2.3	<5	229			35	9	1.40		34			
	Apr-02	8.10	537	3.9	<5	230			34	9	1.00		35			
	Apr-03	8.20	554	4.5	<5	268			39	12	0.80		42			
	Apr-04	8.10	519	4.3	<2.5	233			35	11	1.10		36			
	Apr-05	8.20	541	3.6	nd	230			35	12	0.90		35			
	Apr-06	7.60	422	3.8	<1	200			27	9	0.70		31			
	Apr-07	7.90	475	2.9	<1	210			33	11	1.00		32			
	Apr-08	8.10	512	9.1	17	240			37	12	0.90		36			
	Apr-09	8.25	615	8.9	19.1	<10 *			0.7 *	17.3	0.75		<0.50 *		<0.10	
	Apr-10	8.25	635	0.10	4.0	33 *			12.3 *	19.2	0.85		<0.62 *		<0.10	
	Apr-11	8.16	616	<0.1	<1	<10 *			1.17 *	18	0.90		<0.50 *		<0.10	
	Apr-12	8.11	595	0.13	1.4	<10 *			<0.50 *	15.9	0.87		<0.50 *		<0.10	
	Apr-13	8.23	572	0.40	2.1	<10 *			<0.50 *	15.6	0.97		<0.50 *		<0.10	
Apr-14	8.09	611	<0.10	1.8	<10 *			<0.50 *	17.4	0.95		<0.50 *		<0.10		
Apr-15	8.37	682	0.16	1.8	<10 *			<0.50 *	23.5	0.863		<0.50 *		<0.020		
Apr-16	8.23	647	0.51	2.6	<10 *			<0.50 *	22.0	0.871		<0.50 *		<0.020		
Apr-17	8.39	546	0.20	<2.0	<10*			<0.50*	12.4	1.03		<0.050*		<0.020		
Apr-18	8.32	516	1.08	2.4	<10*			<0.50*	10.3	1.12		<0.050*		<0.020		
Apr-19	8.19	490	1.70	<2.0	<1.3*			<0.50*	9.42	1.16		<0.050*		<0.020		
Sep-20	8.28	575	0.11	<2.0	<2.4*			<0.50*	13.6	1.08		<0.50*		<0.020		
Oct-21	8.24	659	<0.10	2.5	<1.3*			<0.50*	21.7	0.873		<0.050*		<0.020		
917	Dec-86	8.10	404			111		23	21	8		1.0	14	50		
	Feb-87	7.90	407			98	177		18	8			13			
	Jun-88	8.00	385			93		22	18	5		0.8	12	47		
	Dec-88	8.00	406			116	165	26	22	8		1.1	15	47		
	Jul-89	7.90	414			118	180	26	22	8		0.9	15	43		
	Feb-90	8.10	402			110	178		21	7			14			
	Jan-91	8.00	415			117	178	29	22	8		1.0	15	39		
	Jul-91	8.10	391			110	175	20	21	6		1.0	14	49		
	Sep-92	8.10	407			120	174	24	24	7		0.9	15	50		
	Apr-93						189									
	May-93	8.10	390			113		23	22	6		0.9	15	50		
	Nov-94	8.20	400			112	178	23	21	5		0.8	15	47		
	Apr-95	8.10	381			110		21	21	5		1.0	14	47		
	Sep-95	8.10	404			115	186	22	21	6		0.9	15	46		
	Apr-96	8.10	391	0.58	6.5	110	193		21	6	2.30		14			
	Jun-97	8.40	376	0.4	<5	110			21	5	2.20		14			
	Apr-98	8.30	335	0.4	<5	116			22	6	2.10		15			
	Apr-99	8.00	370	0.98	<5	108			20	5	2.20		14			
	Apr-00	8.10	370	0.34	<5	106			21	4	2.40		13			
	Apr-01	8.00	304	0.35	<5	111			21	4	2.80		14			
	Apr-02	8.10	379	0.22	<5	106			20	4	2.30		14			
Apr-03	8.20	351	0.27	<5	106			20	4	1.90		14				
Apr-04	8.10	393	0.48	3.5	114			21	8	2.10		15				
Apr-05	8.20	386	0.50	nd	116			22	6	2.10		15				
Apr-06	8.10	315	0.45	8	110			20	4	1.60		14				
Apr-07	8.10	360	0.25	11	130			26	5	2.10		15				

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**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

Monitor	Date	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Arsenic ug/L	Barium ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Iron mg/L	Lead ug/L	Nickel ug/L	Selenium ug/L	Sliver ug/L	Zinc ug/L
		1 MAC	10 MAC	NC	5.0 AO	0.025 IMAC	1.0 MAC	0.005 MAC	0.05 MAC	1 AO	0.30 AO	0.01 MAC	NC	0.01 MAC	NC	5 AO
916	Dec-88			0.001	1.5						0.22					
	Jul-89			0.001	0.7						0.12					
	Feb-91			0.001	0.8						0.46					
	Jul-91			0.001	0.7	9.9	180.0	0.1	0.5	0.6	0.53	0.2	0.5	1.0	0.1	0.2
	Sep-92			0.001	0.6						0.37					
	Apr-93			0.001	0.5						0.30					
	May-94					12.8	177.0	1.4	0.2	1.5	0.26	2.0	0.7	1.0	1.5	4.2
	Nov-94			0.001	0.8						0.01					
	Apr-95			0.001	0.9						0.23					
	Sep-95			0.001	0.7						0.27					
	Jun-97			<0.001	0.5											
	Apr-98			<0.001	0.5											
	Apr-99		<0.2	<0.001	0.5											
	Apr-00		<0.2	<0.001	0.7											
	Apr-01			<0.001	0.7											
	Apr-02			<0.002	0.7											
	Apr-03			<0.002	0.6											
	Apr-04			0.002	0.8											
	Apr-05			nd	0.9											
	Apr-06		<0.2	<0.001	1.0											
	Apr-07		<0.2	<0.001	1.0											
	Apr-08		<0.2	<0.001	<1											
	Apr-09	<0.10	<0.2	<0.0010	1.7											
	Apr-10	<0.10	<0.2	<0.0010	1.1											
	Apr-11	<0.10	<0.2	0.005	1.6											
	Apr-12	<0.10	<0.2	<0.0010	1.4											
	Apr-13	<0.10	<0.2	<0.0010	1.0											
	Apr-14	<0.10		<0.0010	1.7											
	Apr-15	<0.010		0.0036	<1.0											
	Apr-16	<0.010		0.0067	3.0											
	Apr-17	<0.010		0.0023	<1.0											
	Apr-18	<0.010		0.0014	1.1											
	Apr-19	<0.010		0.0012	1.18											
	Sep-20	<0.010		0.0037	1.08											
	Oct-21	<0.010		<0.0010	1.73											
917	Dec-86			0.001	1.5	3.0		3.0	1.0	1.0		3.0	2.0	1.0		10.0
	Feb-87			0.001	1.5						0.22					
	Jun-88			0.001												
	Dec-88			0.001	1.6						0.42					
	Jul-89			0.001	1.1						0.32					
	Feb-90			0.001	1.6						0.22					
	Jan-91			0.001	1.4						0.22					
	Jul-91			0.001	1.6	2.6		0.1	0.5	0.6	0.21	0.1	0.3	1.0	0.1	6.9
	Sep-92			0.001	1.4						0.33					
	Apr-93										0.19					
	May-93			0.005	1.4	2.9	50.5	0.6	0.2	1.6	0.18	6.0	0.9	1.0	1.2	37.6
	Nov-94			0.001	1.6						0.16					
	Apr-95			0.001	1.7						0.17					
	Sep-95			0.001	1.6	2.5	49.0	0.6	2.0	2.0	0.14	1.0	2.0	0.4	3.0	19.0
	Apr-96			<0.001							0.18					
	Jun-97			<0.001	1.2											
	Apr-98			<0.001	1.0											
	Apr-99		<0.2	<0.001	1.4											
	Apr-00		<0.2	<0.001	1.2											
	Apr-01			<0.001	1.7											
	Apr-02			<0.002	1.8											
	Apr-03			<0.002	1.6											
	Apr-04			0.002	1.1											
	Apr-05			nd	1.8											
	Apr-06		<0.2	<0.001	2.0											
	Apr-07		<0.2	<0.001	3.0											

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**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

Monitor	Date	pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Sulphate mg/L	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L
ODWQS	6.5 - 8.5 OG	NC	5.0 AO	5 AO	80 - 100 OG	30 - 500 OG	500 AO	NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	
917	Apr-08	8.20	379	0.31	9	120			22	5	2.10		16		
Cont.	Apr-09	8.15	393	0.25	6.7	100			17.7	5.7	1.62		12.5		<0.10
	Apr-10	8.59	401	0.13	4.4	69			25.6	5.4	2.26		1.37		<0.10
	Apr-11	8.28	393	<0.10	5.7	<10 *			0.9 *	5.5	2.20		<0.5 *		<0.10
	Apr-12	8.10	383	0.30	3.7	98			20.4	5.4	2.05		11.4		<0.10
	Apr-13	8.26	285	0.40	8.4	78			15.7	2.4	2.53		9.44		<0.10
	Apr-14	8.19	393	0.29	5.6	121			25.5	5.6	2.17		14.0		<0.10
	Apr-15	8.32	413	0.52	5.3	134			27.9	6.95	2.05		15.5		0.020
	Apr-16	8.28	361	0.51	7.3	82			16.0	3.68	2.43		10.1		<0.020
	Apr-17	8.39	366	0.28	4.5	<10*			<0.50*	3.03	2.31		<0.050*		<0.020
	Apr-18	8.29	383	0.91	4.4	<10*			<0.50*	4.50	2.38		0.133*		<0.020
	Apr-19	8.19	341	0.88	7.5	<1.3*			<0.50*	2.56	2.36		<0.050*		<0.020
	Sep-20	8.24	358	<0.10	2.2	<2.4*			<0.50*	2.22	2.29		<0.50*		<0.020
	Oct-21	8.26	332	0.17	4.2	76.0			13.4	1.88	2.23		10.4		<0.020
918	Jun-87	8.10	396	7.8	<5	151			30	2	1.50		19		
	Apr-98	8.10	333	15.6	<5	152			30	3	1.50		19		
	Apr-99	8.60	379	13.3	<5	154			30	1	1.60		19		
	Apr-00	8.10	411	3.5	<5	146			29	1	1.80		18		
	Apr-01	7.90	368	4.8		159			32	1	2.00		19		
	Apr-02	8.10	401	11.2	<5	161			32	1	1.60		20		
	Apr-03	8.10	382	15.8	91	169			32	2	1.30		22		
	Apr-04	8.10	397	25.0	59	160			31	2	1.50		20		
	Apr-05	8.20	390	8.9	nd	170			34	1	1.30		21		
	Apr-06	8.10	337	14.0	10	150			27	5	1.10		20		
	Apr-07	7.80	377	3.9	28	160			30	<2	1.40		21		
	Apr-08	8.20	394	1.0	56	170			33	<2	1.40		21		
	Apr-09	8.15	393	<0.10	3.2	140			27.8	<2.0	1.18		17.6		<0.10
	Apr-10	8.13	397	1.62	3.9	179			39.9	<2.0	1.45		19.3		<0.10
	Apr-11	8.02	392	<0.10	4.2	169			34.6	<2.0	1.49		20.2		<0.10
	Apr-12	7.88	392	0.14	5.3	147			31.4	<2.0	1.38		16.6		0.87
	Apr-13	7.95	315	0.49	4.2	162			33.2	<2.0	1.44		19.3		0.27
	Apr-14	7.73	399	0.35	4.7	196			46.7	<2.0	1.30		19.2		1.89
	Apr-15	8.22	401	0.70	4.7	202			48.0	1.72	1.42		19.8		0.025
	Apr-17	8.25	410	1.54	4.9	164			34.1	1.82	1.33		19.2		<0.020
	Apr-18	8.14	399	2.31	4.6	155			32.0	1.88	1.39		18.1		<0.020
	Apr-19	7.80	396	1.06	2.6	166			34.0	2.02	1.46		19.7		0.228
	Sep-20	7.96	420	2.22	3.9	174			35.3	2.13	1.44		20.8		0.277
	Oct-21	8.08	407	0.22	4.2	155			30.3	2.14	1.39		19.4		0.698
920	Feb-90	7.90	347			109	173	10	19	1		1.0	15	32	
	Feb-91	8.10	342			106	170		18	1			15		
	Feb-91	8.10	342			108	175		19	1			15		
	Jul-91														
	Sep-92	8.20				124	187	8	19	1		1.0	19	39	
	Sep-92	8.20	342			123	187		21	1			17		
	Apr-96	8.10	347			113	188	7	19	1		1.0	16	35	
	Jun-97	8.30	333	0.4	11	113			20	1	1.80		15		
	Apr-98	8.30	296	5.0	<5	109			19	1	1.80		15		
	Apr-99	8.00	319	5.57	<5	108			19	1	1.90		15		
	Apr-00	7.90	332	2.16	<5	113			21	1	1.90		15		
	Apr-01	7.90	274	4.03	<5	115			21	1	2.20		15		
	Apr-02	8.10	335	6.12	<5	111			19	1	1.80		15		
	Apr-03	8.20	327	0.69	<5	118			21	1	1.70		16		
	Apr-04	8.10	305	4.24	2.8	113			20	2	1.50		15		
	Apr-05	8.30	328	5.8	nd	116			21	1	1.70		16		
	Apr-06	8.10	284	1.1	7	110			20	<2	1.30		16		
	Apr-07	8.00	317	2.1	27	130			27	<2	1.70		16		
	Apr-08	8.10	345	<0.1	2	130			23	<2	1.70		17		
	Apr-09	8.24	320	3.7	10.4	100			17.5	<2.0	1.34		13.1		<0.10
	Apr-10	8.15	328	0.68	2.4	113			21.7	<2.0	1.81		14.3		<0.10
	Apr-11	8.23	330	1.33	5.5	112			20.5	<2.0	1.81		14.8		<0.10
	Apr-12	8.05	329	1.44	3.0	101			19.5	<2.0	1.70		12.8		0.12
	Apr-13	8.12	311	1.52	5.5	110			20.1	<2.0	1.79		14.5		<0.10

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· * - indicates anomalous data, water likely softened · IMAC - Interim Maximum Acceptable Concentration · OG - Operational Guideline



**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

Monitor	Date	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Arsenic ug/L	Barium ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Iron mg/L	Lead ug/L	Nickel ug/L	Selenium ug/L	Sliver ug/L	Zinc ug/L	
		1 MAC	10 MAC	NC	5.0 AO	0.025 IMAC	1.0 MAC	0.005 MAC	0.05 MAC	1 AO	0.30 AO	0.01 MAC	NC	0.01 MAC	NC	5 AO	
917	Apr-08		<0.2	<0.001	1.0												
Cont.	Apr-09	<0.10	<0.2	<0.0010	1.9												
	Apr-10	<0.10	<0.2	<0.0010	2.2												
	Apr-11	<0.10	<0.2	<0.001	2.5												
	Apr-12	<0.10	<0.2	<0.001	3.0												
	Apr-13	<0.10	<0.2	<0.001	2.1												
	Apr-14	<0.10		<0.0010	2.2												
	Apr-15	<0.010		0.0015	<1.0												
	Apr-16	<0.010		<0.0010	4.1												
	Apr-17	<0.010		0.0012	1.8												
	Apr-18	<0.010		0.0026	2.5												
	Apr-19	<0.010		0.0012	2.14												
	Sep-20	<0.010		0.0055	2.11												
	Oct-21	<0.010		<0.0010	2.41												
918	Jun-87			<0.001	0.8												
	Apr-98			<0.001	0.9												
	Apr-99		<0.2	<0.001	1.1												
	Apr-00		<0.2	<0.001	1.5												
	Apr-01			<0.001	1.6												
	Apr-02			<0.002	1.0												
	Apr-03			<0.002	1.0												
	Apr-04			0.002	1.4												
	Apr-05			0.001	1.4												
	Apr-06		<0.2	<0.001	2.0												
	Apr-07		<0.2	<0.001	1.0												
	Apr-08		<0.2	<0.001	1.0												
	Apr-09	<0.10	<0.2	<0.0010	1.9												
	Apr-10	<0.10	<0.2	<0.0010	2.8												
	Apr-11	<0.10	<0.2	<0.0010	2.0												
	Apr-12	<0.10	0.87	<0.0010	1.9												
	Apr-13	<0.10	0.27	<0.0010	1.7												
	Apr-14	<0.10		<0.0010	1.5												
	Apr-15	0.016		0.0020	<1.0												
	Apr-17	<0.010		<0.0010	1.4												
	Apr-18	<0.010		0.0016	1.8												
	Apr-19	0.284		0.0012	1.92												
	Sep-20	0.368		0.0029	1.84												
	Oct-21	0.112		<0.0010	1.95												
920	Feb-90			0.001	0.7						0.57						
	Feb-91			0.001	1.2						0.33						
	Feb-91										0.43						
	Jul-91					2.9	130.0	0.5	0.5	5.0		0.5	0.6	0.1	0.1	42.0	
	Sep-92			0.001	0.9						0.88						
	Sep-92										0.37						
	Apr-96				1.1						0.24						
	Jun-97			<0.001	0.8												
	Apr-98			<0.001	0.7												
	Apr-99		<0.2	<0.001	0.9												
	Apr-00		<0.4	<0.001	0.9												
	Apr-01			<0.001	0.9												
	Apr-02			<0.002	0.9												
	Apr-03			<0.002	1.0												
	Apr-04			<0.002	0.8												
	Apr-05			0.001	1.5												
	Apr-06		<0.2	<0.001	2.0												
	Apr-07		<0.2	<0.001	1.0												
	Apr-08		0.30	<0.001	<1												
	Apr-09	<0.10	<0.2	<0.0010	1.8												
	Apr-10	<0.10	<0.2	0.001	1.7												
	Apr-11	<0.10	<0.2	0.0107	1.5												
	Apr-12	<0.10	<0.2	0.0010	1.8												
	Apr-13	<0.10	<0.2	<0.0010	1.5												

Notes: · ODWQS - Ontario Drinking Water Quality Standard (June 2003) · MAC - Maximum Acceptable Concentration · AO - Aesthetic Objective · NC - No criteria
· * - indicates anomalous data, water likely softened · IMAC - Interim Maximum Acceptable Concentration · OG - Operational Guideline



**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

Monitor	Date	pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Sulphate mg/L	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L
ODWQS	6.5 - 8.5 OG	NC	5.0 AO	5 AO	80 - 100 OG	30 - 500 OG	500 AO	NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC	
920	Apr-14	8.17	338	1.64	4.5	136			30.7	<2.0	1.79		14.3		<0.10
Cont.	Apr-15	8.31	338	3.40	4.5	135			29.9	0.80	1.80		14.6		<0.020
	Apr-17	8.26	342	2.42	5.2	115			21.9	0.79	1.73		14.6		<0.020
	Apr-18	8.19	334	2.52	5.4	108			20.3	0.82	1.80		13.8		<0.020
	Apr-19	8.04	331	2.88	6.1	107			20.3	0.83	1.84		13.8		<0.020
	Sep-20	8.26	351	1.56	19.9	117			21.1	0.82	1.81		15.7		<0.020
	Oct-21	8.43	340	2.52	2.6	104			17.7	0.78	1.77		14.6		<0.020
921	Sep-92	8.10	370			79	142	51	17	1		0.8	9	59	
	Sep-92	8.10	371			78	141		17				9		
	Apr-93	7.60	358			75	144	48	16	1		0.7	8	56	
	Apr-93														
	Nov-94	7.30	352			77	132	40	16	2		0.9	9	54	
	Apr-95	8.20	362			78		43	17	2		0.7	9	53	
	Sep-95	8.20	355			75	141	43	16	1		0.9	9	53	
	Apr-96	8.00	354			71	146	39	15	1		0.8	8	50	
	Jun-97	8.30	350	0.8	11	73			15	2	2.20		8		
	Apr-98	8.20	290	0.3	<5	72			15	2	2.10		8		
	Apr-99	8.60	327	1.0	<5	68			14	1	2.20		8		
	Apr-00	8.20	354	1.0	<5	70			15	1	2.40		8		
	Apr-01	7.90	275	3.2	<5	75			16	1	2.60		9		
	Apr-02	8.20	344	1.6	<5	73			15	1	2.10		9		
	Apr-03	8.20	334	2.3	<5	73			15	2	1.90		9		
	Apr-04	8.00	321	0.6	2.8	75			15	2	2.20		9		
	Apr-06	8.30	338	1.1	nd	85			18	1	1.90		10		
	Apr-06	8.10	292	1.4	9	80			15	<2	1.50		8		
	Apr-07	7.90	323	0.6	13	80			20	<2	1.80		8		
	Apr-08	8.20	334	2.3	10	90			19	<2	2.00		10		
	Apr-09	8.25	335	0.31	5.4	70			13.6	<2.0	1.59		7.94		0.11
	Apr-10	8.26	341	0.26	7.6	105			27.3	<2.0	2.12		8.91		<0.10
	Apr-11	8.23	341	0.32	4.3	83			18.2	<2.0	2.17		9.06		0.13
	Apr-12	8.13	337	0.31	4.1	67			14.8	<2.0	2.01		7.28		<0.10
	Apr-13	8.24	293	0.68	10	73			15.6	<2.0	2.13		8.33		0.10
	Apr-14	8.21	346	0.86	5.0	85			20.0	<2.0	2.09		8.61		<0.10
	Apr-15	8.36	347	0.80	6.7	83			19.8	1.41	2.18		8.21		0.106
	Apr-16	8.24	339	0.85	5.6	71			15.2	1.37	2.12		8.11		<0.020
	Apr-17	8.20	346	0.34	3.6	73			16.2	1.39	2.02		7.89		0.034
	Apr-18	8.15	337	0.80	3.7	67			14.3	1.40	2.11		7.62		1.06
	Apr-19	8.14	331	1.45	3.4	67.7			14.7	1.65	2.26		7.54		0.140
	Sep-20	8.07	358	0.18	4.1	77.1			16.1	1.42	2.13		8.96		0.401
	Oct-21	8.14	341	0.27	12.9	70.0			14.3	1.46	2.08		8.31		0.534
922	Jul-91	8.20	387			75	141	50	15	3		1.0	9	51	
	Sep-92	8.20	388			84	158	46	16	2		1.0	11	64	
	Apr-93	8.20	385			76	153	43	15	2		0.9	9	61	
	May-93														
	Nov-94	8.20	383			83	148	40	16	2		1.0	10	61	
	Apr-95	8.20	386			77		46	15	2		0.8	10	59	
	Sep-96	8.20	367			73	161	38	15	2		0.7	9	56	
	Apr-96	8.20	368			74	166	33	14	2		1.0	9	53	
	Jun-97	8.40	368	0.4	9	77			15	2	2.30		8		
	Apr-98	8.80	296	0.2	<5	73			15	2	2.40		9		
	Apr-99	8.60	342	0.51	10	70			14	2	2.40		9		
	Apr-00	8.20	369	0.46	<5	78			16	1	2.70		9		
	Apr-01	8.10	329	0.36	<5	80			16	1	2.80		10		
	Apr-02	8.20	361	0.45	<5	72			14	1	2.30		9		
	Apr-03	8.30	343	0.36	<5	75			14	2	2.20		10		
	Apr-04	8.00	336	0.13	<2.5	77			15	3	2.30		10		
	Apr-05	8.30	344	0.4	nd	60			16	2	2.10		10		
	Apr-06	8.20	300	0.3	7				16	<2	1.70		10		
	Apr-07	8.10	334	0.2	12	80			15	<2	2.30		10		
	Apr-08	8.30	346	0.16	6	80			17	<2	2.30		10		
	Apr-09	8.29	343	0.18	5.5	60			13.5	<2.0	1.85		7.53		<0.10
	Apr-10	8.27	349	0.14	5.5	105			26.5	<2.0	2.37		9.34		<0.10

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**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

Monitor	Date	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Arsenic ug/L	Barium ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Iron mg/L	Lead ug/L	Nickel ug/L	Selenium ug/L	Sliver ug/L	Zinc ug/L
ODWQS		1 MAC	10 MAC	NC	5.0 AO	0.025 IMAC	1.0 MAC	0.005 MAC	0.05 MAC	1 AO	0.30 AO	0.01 MAC	NC	0.01 MAC	NC	5 AO
920 Cont.	Apr-14	<0.10		<0.0010	1.4											
	Apr-15	<0.010		0.0017	<1.0											
	Apr-17	<0.010		<0.0010	1.1											
	Apr-18	<0.010		0.0015	1.5											
	Apr-19	<0.010		0.0019	2.18											
	Sep-20	<0.010		0.0047	1.63											
	Oct-21	<0.010		<0.0010	2.10											
921	Sep-92			0.002	1.2						0.54					
	Sep-92			0.004	1.8						2.89					
	Apr-93			0.001	1.2						0.51					
	Apr-93					2.0	42.9	0.5	0.2	33.1	0.16	2.0	7.0	1.0	0.2	446.1
	Nov-94			0.004	1.0						0.09					
	Apr-95			0.001	1.6						0.07					
	Sep-95			0.001	1.8	2.1	48.0	0.6	2.0	8.0	0.08	10.0	2.0	0.4	3.0	37.0
	Apr-96			0.001	1.6						0.19					
	Jun-97			<0.001	0.9											
	Apr-98			<0.001	1.2											
	Apr-99			<0.001	1.3											
	Apr-00			<0.001	1.2											
	Apr-01			<0.001	1.8											
	Apr-02			<0.002	1.4											
	Apr-03			<0.002	1.2											
	Apr-04			0.002	1.3											
	Apr-06			nd	1.4											
	Apr-06		0.20	<0.001	2.0											
	Apr-07		0.20	<0.001	2.0											
	Apr-08		0.20	<0.001	1.0											
	Apr-09	<0.10	<0.2	<0.0010	2.4											
	Apr-10	<0.10	<0.2	<0.0010	1.6											
	Apr-11	<0.10	<0.2	0.0079	2.3											
Apr-12	<0.10	<0.2	<0.0010	1.8												
Apr-13	<0.10	<0.2	<0.0010	1.9												
Apr-14	<0.10		<0.0010	1.7												
Apr-15	<0.010		<0.0010	1.8												
Apr-16	<0.010		0.0142	3.3												
Apr-17	0.442		0.0062	4.3												
Apr-18	0.442		0.0028	2.0												
Apr-19	<0.010		0.0011	2.24												
Sep-20	<0.010		0.0069	2.03												
Oct-21	<0.010		<0.0010	2.51												
922	Jul-91			0.001	2.0	0.4	51.0	0.5	0.5	0.5		0.1	0.2	1.0	0.1	0.2
	Sep-92			0.001	2.0											
	Apr-93			0.001	1.9											
	May-93					2.0	37.3	0.5	0.2	1.3		5.0	1.4	1.0	1.8	1.7
	Nov-94			0.001	1.7											
	Apr-95			0.001	2.3											
	Sep-96			0.001	2.2	6.0	49.0	0.6	2.0	2.0		10.0	2.0	0.4	3.0	21.0
	Apr-96			0.001	2.0											
	Jun-97			<0.001	1.4											
	Apr-98			<0.001	1.5											
	Apr-99		<0.2	<0.001	1.8											
	Apr-00		<0.2	0.002	1.6											
	Apr-01			<0.001	2.0											
	Apr-02			<0.002	1.5											
	Apr-03			<0.002	1.5											
Apr-04			0.002	1.7												
Apr-05			0.001	1.9												
Apr-06		<0.2	<0.001	2.0												
Apr-07		<0.2	<0.001	2.0												
Apr-08		<0.2	<0.001	1.0												
Apr-09	<0.10	<0.2	<0.0010	2.6												
Apr-10	<0.10	<0.2	<0.0010	1.8												

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· * - indicates anomalous data, water likely softened · IMAC - Interim Maximum Acceptable Concentration · OG - Operational Guideline



**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

Monitor	Date	pH	Conductivity µS/cm	Turbidity NTU	Colour TCU	Hardness mg/L	Alkalinity mg/L	Sulphate mg/L	Calcium mg/L	Chloride mg/L	Fluoride mg/L	Potassium mg/L	Magnesium mg/L	Sodium mg/L	Nitrate mg/L
		6.5 - 8.5 OG	NC	5.0 AO	5 AO	80 - 100 OG	30 - 500 OG	500 AO	NC	250 AO	1.5 MAC	NC	NC	200 AO	10 MAC
922	Apr-11	8.27	350	0.27	4.1	80			15.9	<2.0	2.38		9.70		<0.10
Cont.	Apr-12	8.14	350	0.37	8.0	70			14.7	<2.0	2.26		8.03		<0.10
	Apr-13	8.23	331	0.56	10.3	77			15.5	2.4	2.39		9.36		<0.10
	Apr-14	8.29	381	1.04	4.9	82			17.7	2.4	2.36		9.26		<0.10
	Apr-15	8.40	382	0.60	6.2	84			18.1	2.47	2.35		9.39		<0.020
	Apr-16	8.27	381	0.47	8.5	74			14.9	2.53	2.37		9.01		<0.020
	Apr-17	8.30	388	0.54	6.3	80			16.9	2.08	1.90		9.20		<0.020
	Apr-18	8.31	394	1.73	5.5	<10*			<0.50*	2.54	2.40		<0.050*		<0.020
	Apr-19	8.30	384	0.63	5.0	<1.3*			<0.50*	2.55	2.45		<0.050*		<0.020
	Sep-20	8.33	412	0.45	4.3	<2.4*			<0.50*	2.62	2.42		<0.50*		<0.020
	Oct-21	8.34	399	0.22	4.8	<1.3*			<0.50*	2.52	2.34		<0.050*		<0.020
923	May-97	8.50	392	2.4	9	178			33		1.00		23		
	Apr-98	8.20	318	4.1	<5	168			31		1.10		22		
	Apr-99	8.60	380	3.3	<5	168			31		1.10		22		
	Apr-00	8.10	393	3.64	<5	170			32		1.10		22		
	Apr-01	7.87	365	4.3	<5	182			35		1.30		23		
	Apr-02		401	1.35	<5	175			33		1.10		23		
	Apr-03	8.19	397	6.2	<5	189			37	3	0.90		24		
	Apr-04	8.07	396	5.59	<25	175			32	2	1.10		23		
	Apr-05	7.95	388	4.2	nd	184			34	2	0.90		24		
	Apr-06	8.00	334	2.4	<1	160			24	<2	0.70		24		
	Apr-07	7.92	375	2.1	15	190			36	<2	1.00		24		
	Apr-08	8.06	396	2.0	9	180			34	<2	1.00		24		
	Apr-09	8.21	389	12.0	5.9	230			47.9	<2.0	0.81		26.8		<0.10
Well purchased by County and removed from program															
999	Apr-17	8.34	333	0.72	6.7	76			15.5	1.03	2.23		9.05		<0.020
	Apr-18	8.23	459	7.42	4.1	179			38.4	4.77	1.58		20.2		<0.020
	Apr-19	8.06	355	4.68	2.8	102			21.4	2.03	2.22		11.8		<0.020
	Sep-20	7.97	482	<0.10	6.7	200			40.9	5.49	1.58		23.8		<0.020
	Oct-21	8.07	439	<0.10	3.4	157			31.7	4.24	1.76		18.9		<0.020

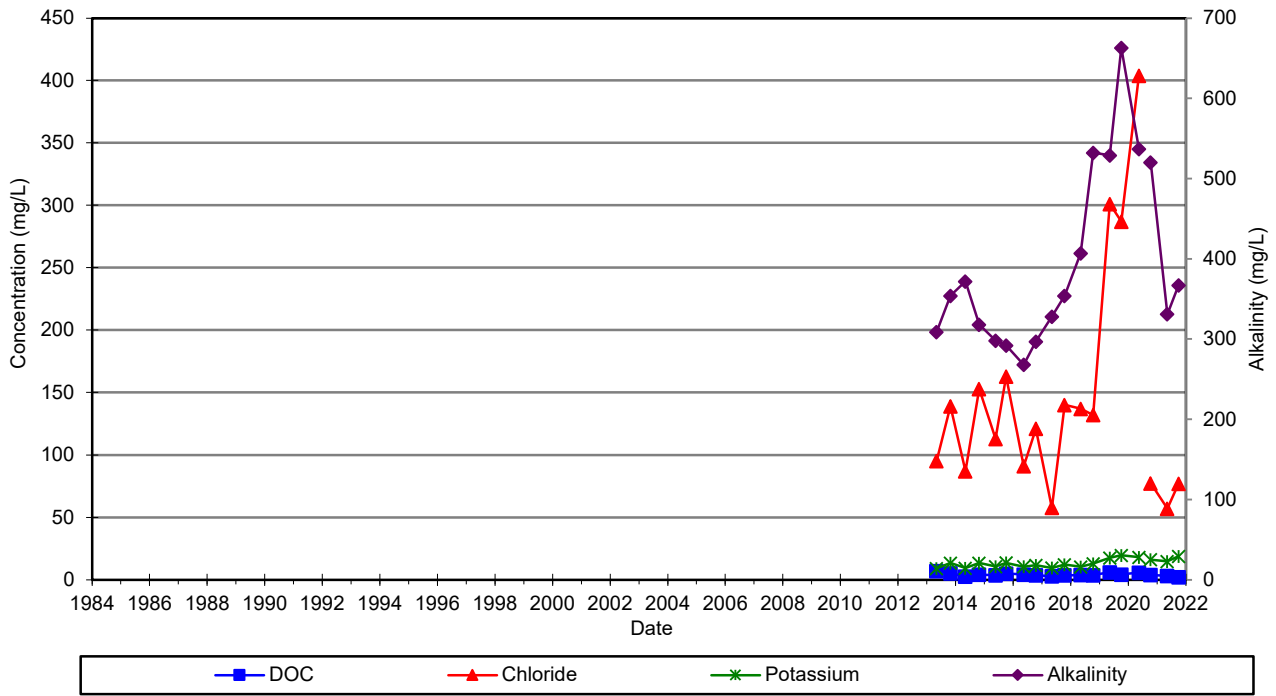
Notes: · ODWQS - Ontario Drinking Water Quality Standard (June 2003) · MAC - Maximum Acceptable Concentration · AO - Aesthetic Objective · NC - No criteria
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**Table D-3: Groundwater Chemical Results - Private Wells
Oxford County Waste Management Facility**

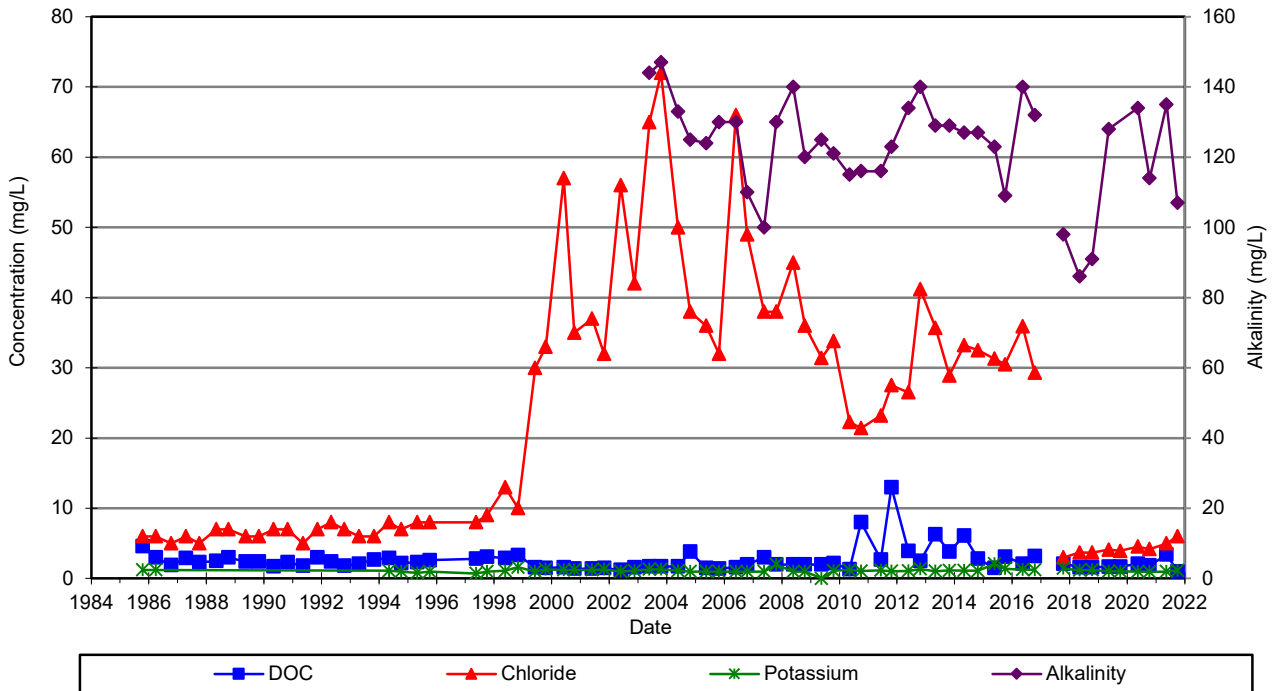
Monitor	Date	Nitrite mg/L	Nitrate & Nitrite mg/L	Phenols mg/L	DOC mg/L	Arsenic ug/L	Barium ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Iron mg/L	Lead ug/L	Nickel ug/L	Selenium ug/L	Sliver ug/L	Zinc ug/L
ODWQS		1 MAC	10 MAC	NC	5.0 AO	0.025 IMAC	1.0 MAC	0.005 MAC	0.05 MAC	1 AO	0.30 AO	0.01 MAC	NC	0.01 MAC	NC	5 AO
922	Apr-11	<0.10	<0.2	0.0113	2.8											
Cont.	Apr-12	<0.10	<0.2	<0.0010	2.6											
	Apr-13	<0.10	<0.2	<0.0010	2.8											
	Apr-14	<0.10		<0.0010	2.6											
	Apr-15	<0.010		0.0031	1.6											
	Apr-16	<0.010		0.0163	4.4											
	Apr-17	<0.010		0.0017	2.4											
	Apr-18	<0.010		0.0016	2.9											
	Apr-19	<0.010		<0.0010	2.87											
	Sep-20	<0.010		0.0065	3.02											
	Oct-21	<0.010		<0.0010	3.33											
923	May-97			<0.001	<0.5											
	Apr-98			<0.001	<0.5											
	Apr-99		<0.2	<0.001	<0.5											
	Apr-00		<0.2	<0.001	<0.5											
	Apr-01			<0.001												
	Apr-02			<0.002												
	Apr-03			<0.002	0.6											
	Apr-04			0.002	0.7											
	Apr-05			0.001	0.7											
	Apr-06		<0.2	<0.001	2.0											
	Apr-07		<0.2	<0.001	<1											
	Apr-08		<0.2	0.002	<1											
	Apr-09	<0.10	<0.2	<0.0010	1.1											
Well purchased by County and removed from program																
999	Apr-17	<0.010		0.0025	1.7											
	Apr-18	<0.010		0.0020	1.8											
	Apr-19	<0.010		0.0010	2.04											
	Sep-20	<0.010		0.0084	2.02											
	Oct-21	<0.010		<0.0010	2.44											

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 · * - indicates anomalous data, water likely softened · IMAC - Interim Maximum Acceptable Concentration · OG - Operational Guideline

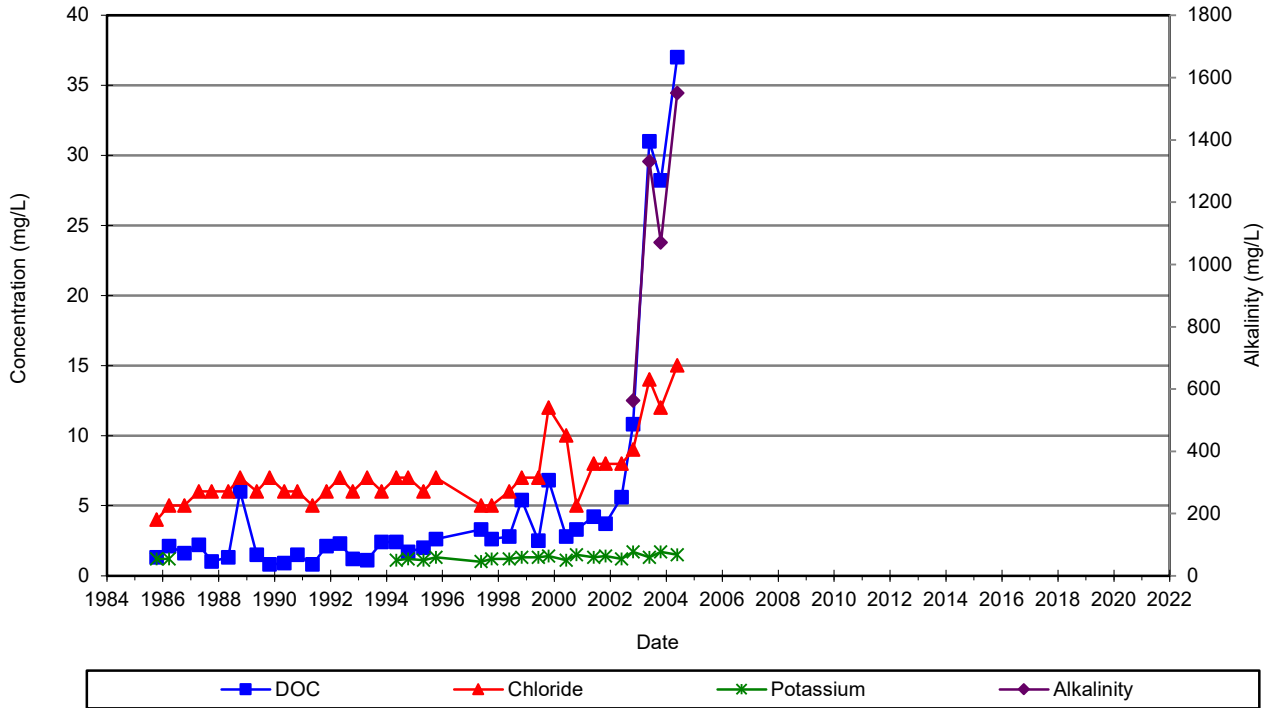
**Figure D-1: Concentration Versus Time
Fractured Till - Monitoring Well 03-7S / 03-7SR
Oxford County Waste Management Facility**



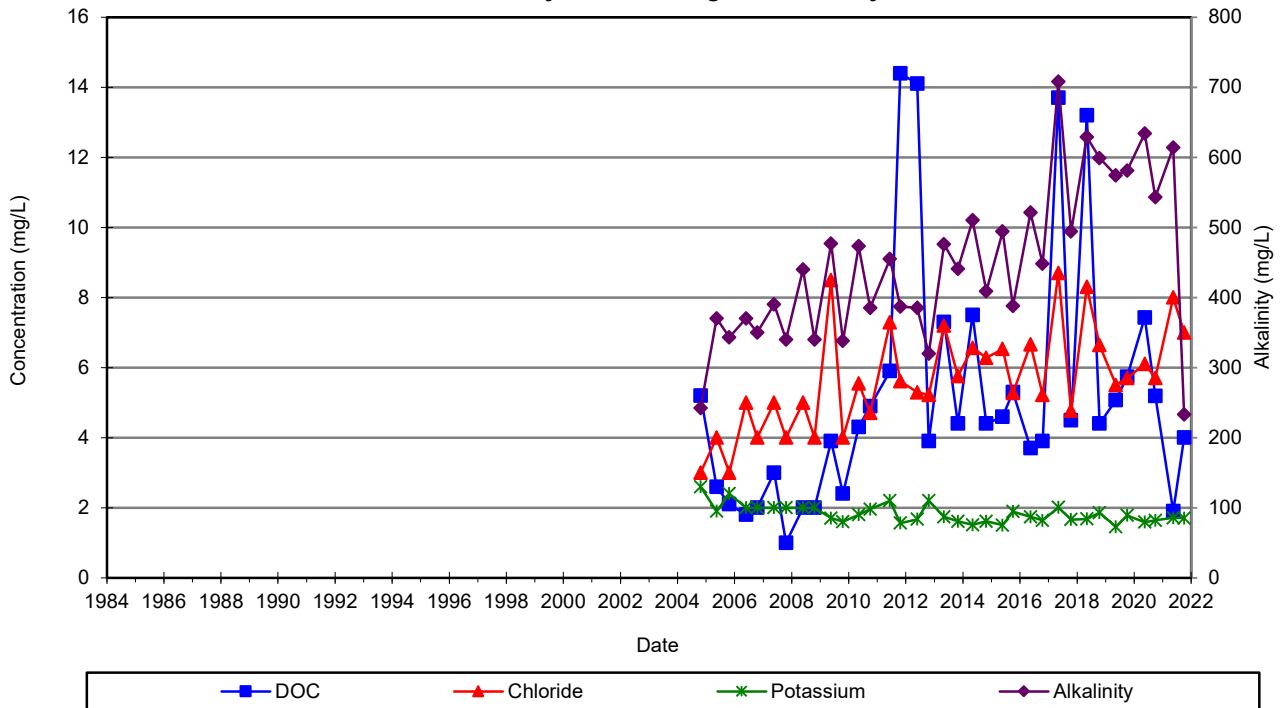
**Figure D-2: Concentration Versus Time
Fractured Till - Monitoring Well 111 / 111R
Oxford County Waste Management Facility**



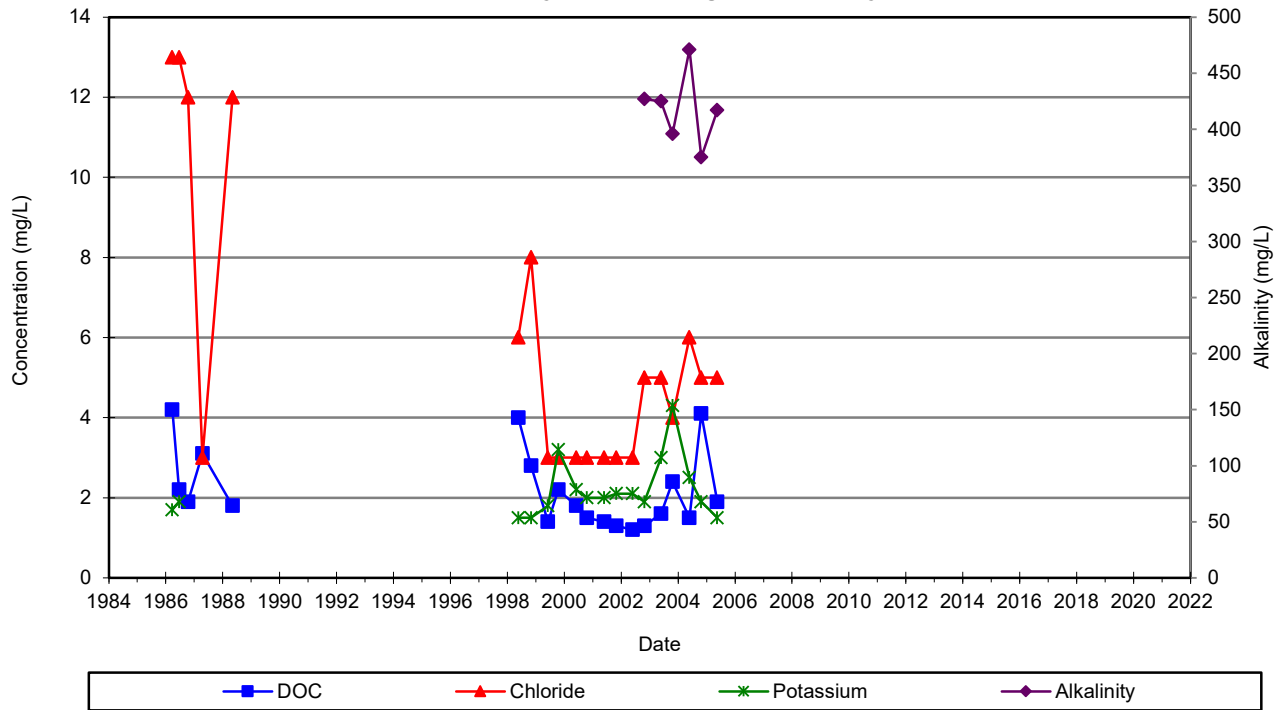
**Figure D-3: Concentration Versus Time
Fractured Till - Monitoring Well 141
Oxford County Waste Management Facility**



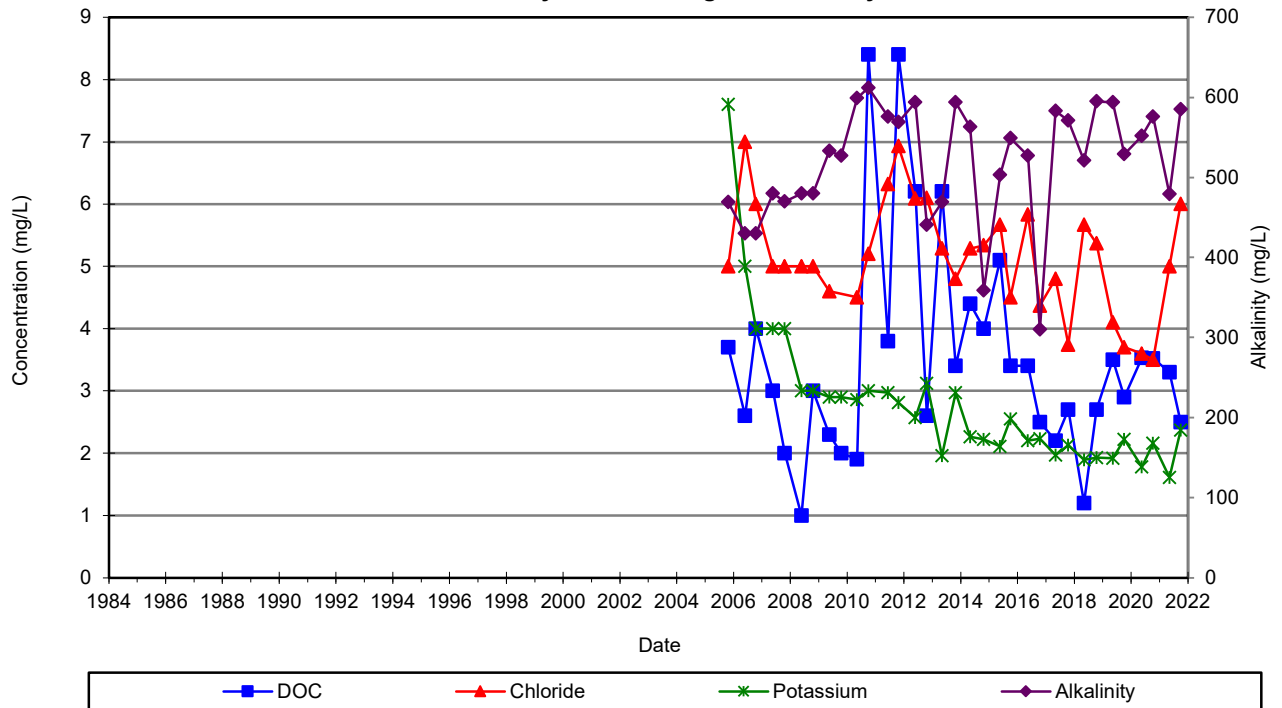
**Figure D-4: Concentration Versus Time
Fractured Till - Monitoring Well 141R
Oxford County Waste Management Facility**



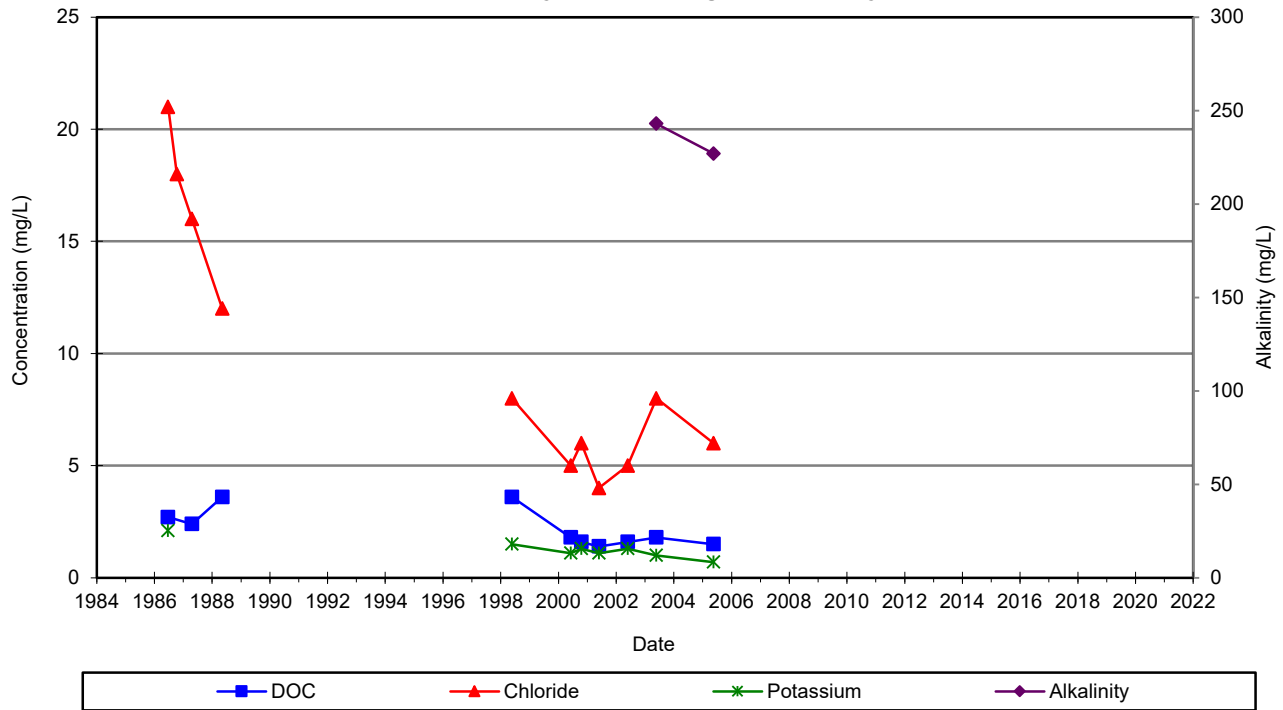
**Figure D-5: Concentration Versus Time
Fractured Till - Monitoring Well 233
Oxford County Waste Management Facility**



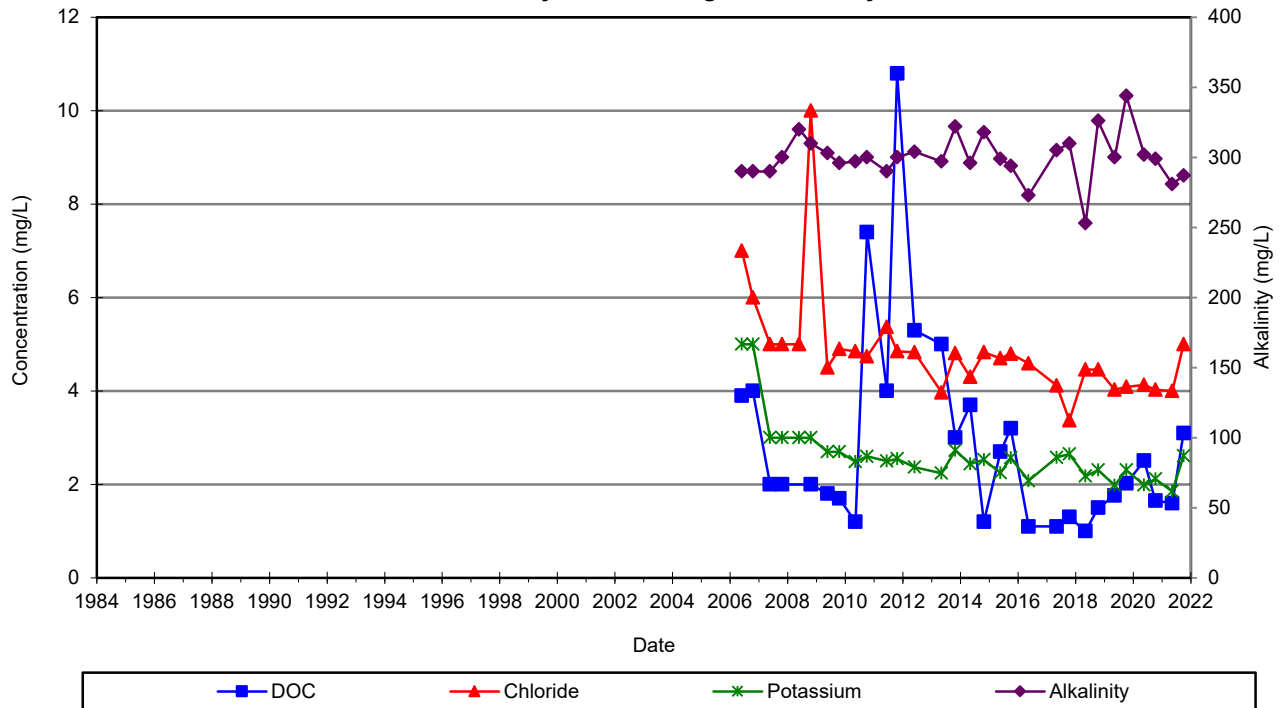
**Figure D-6: Concentration Versus Time
Fractured Till - Monitoring Well 233R
Oxford County Waste Management Facility**



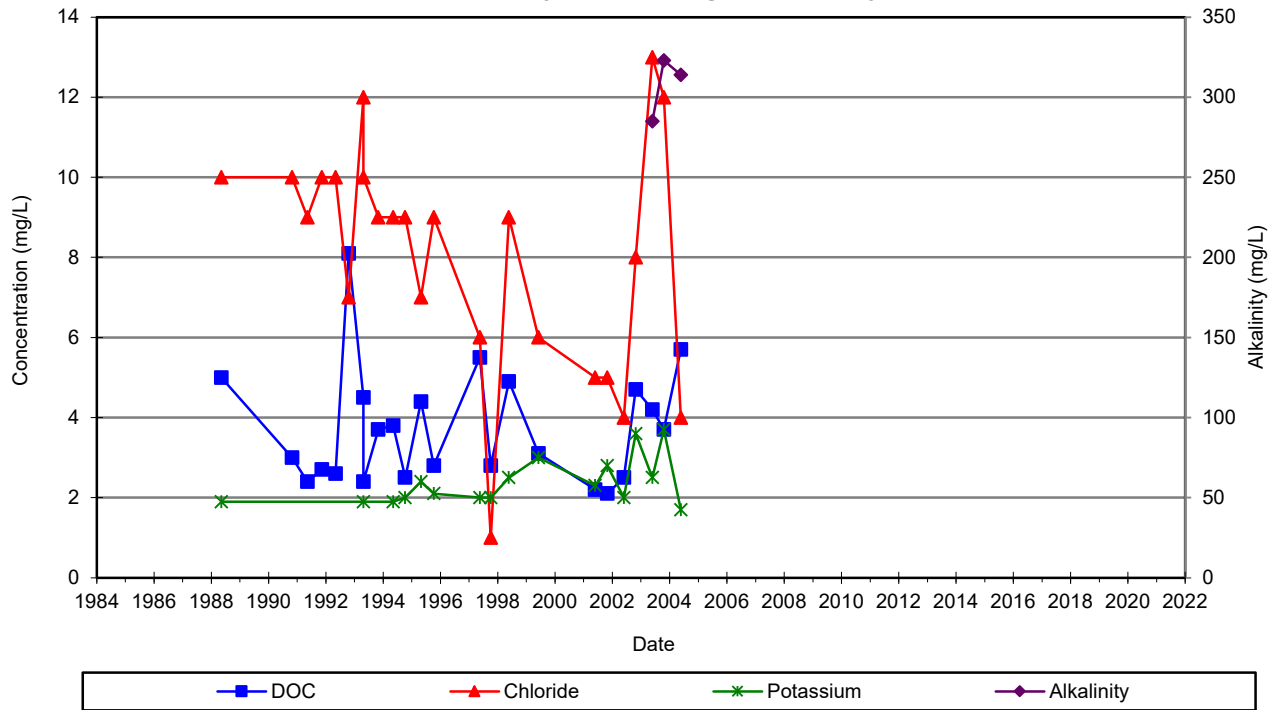
**Figure D-7: Concentration Versus Time
Fractured Till - Monitoring Well 263
Oxford County Waste Management Facility**



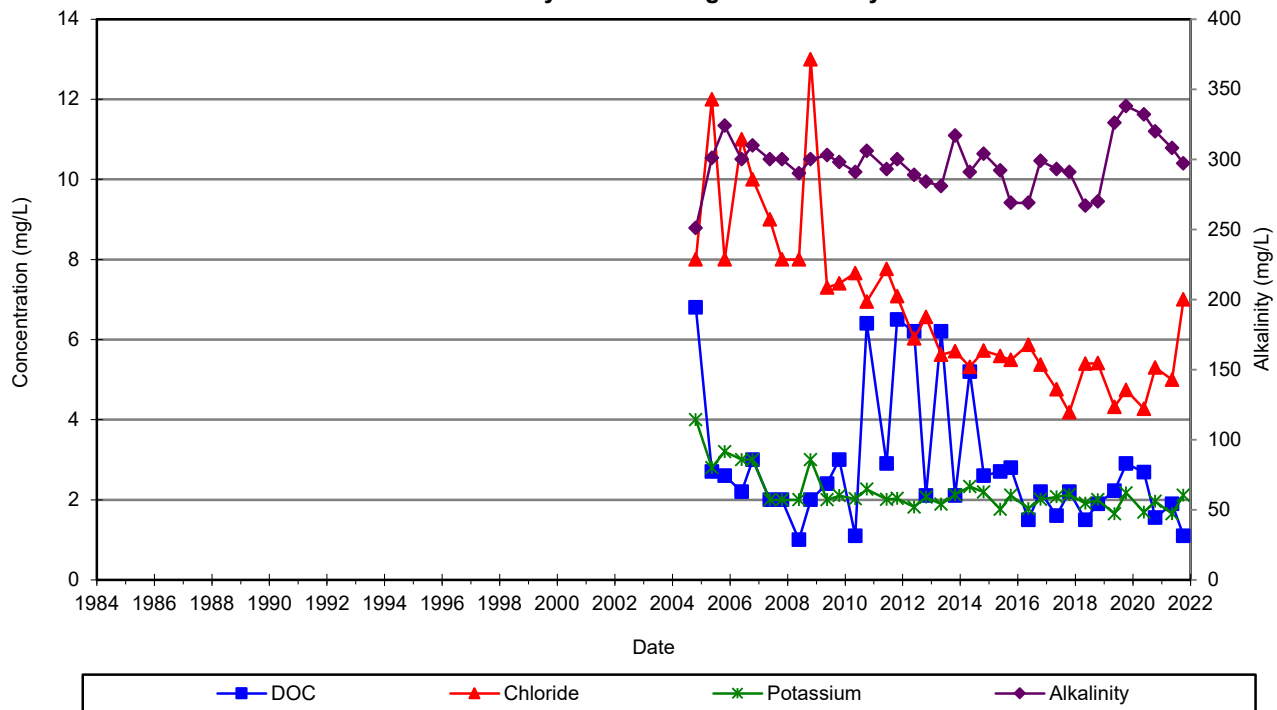
**Figure D-8: Concentration Versus Time
Fractured Till - Monitoring Well 263R
Oxford County Waste Management Facility**



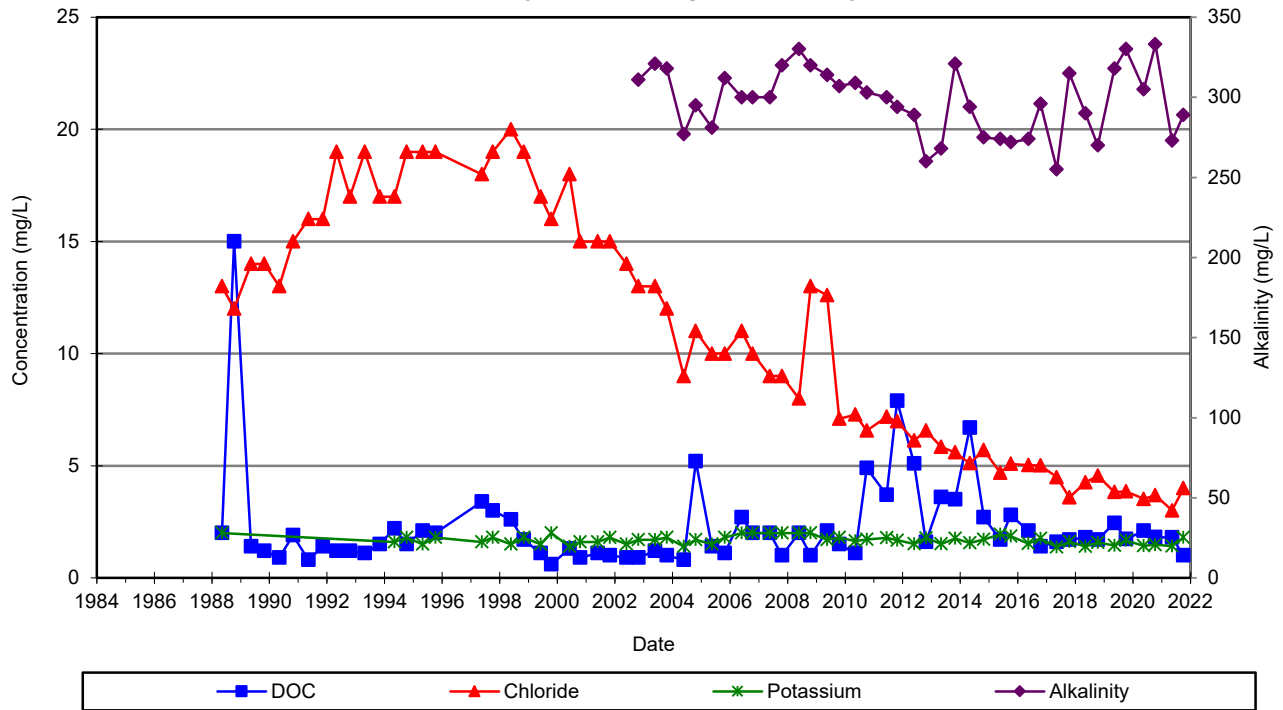
**Figure D-9: Concentration Versus Time
Fractured Till - Monitoring Well 531
Oxford County Waste Management Facility**



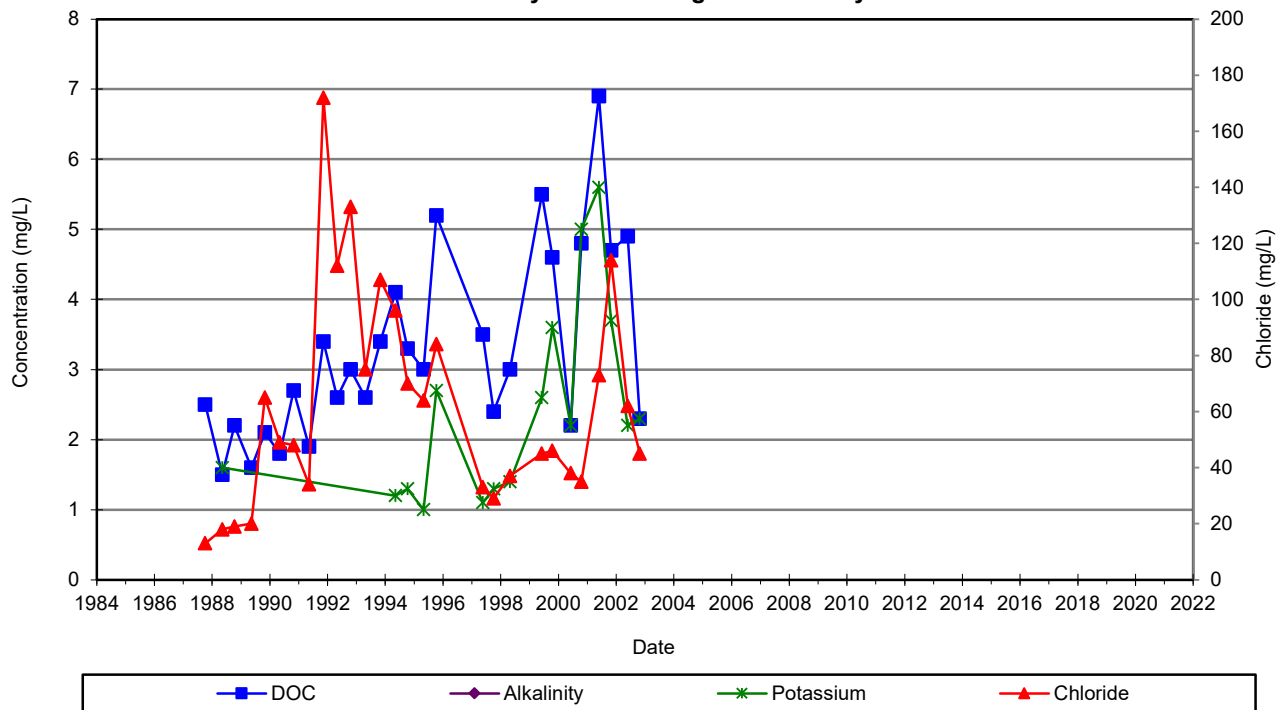
**Figure D-10: Concentration Versus Time
Fractured Till - Monitoring Well 531R
Oxford County Waste Management Facility**



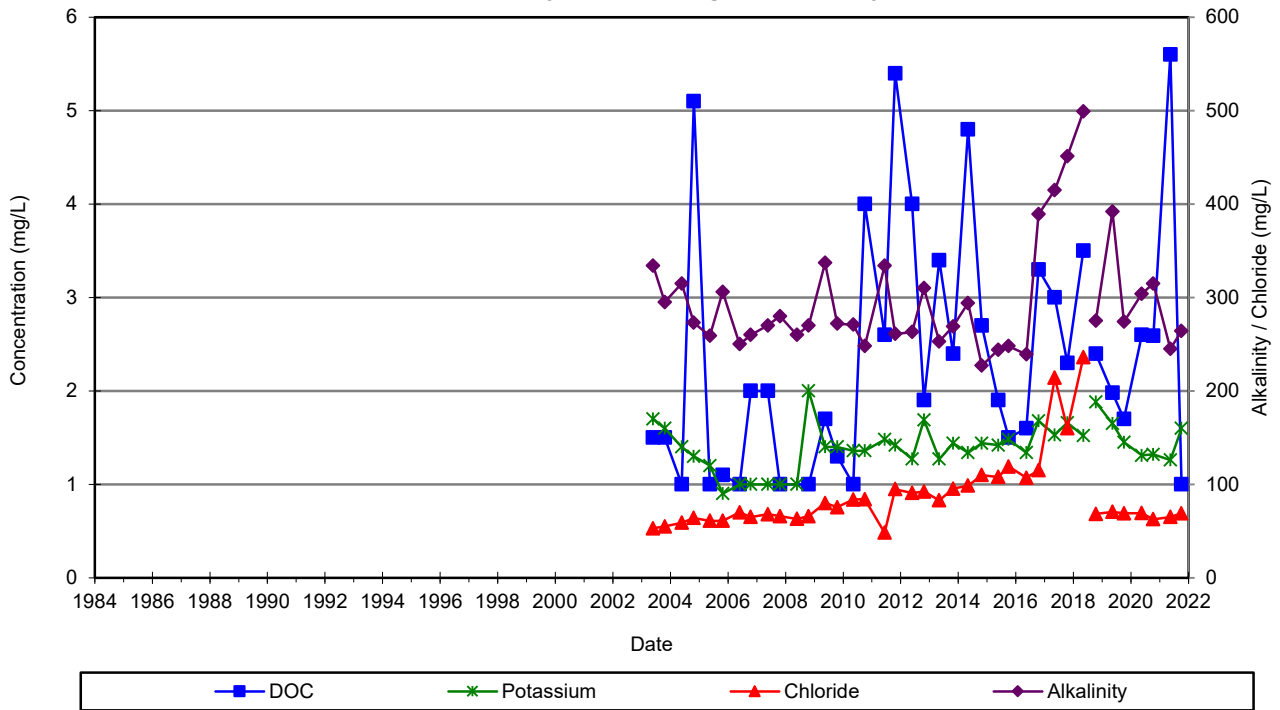
**Figure D-11: Concentration Versus Time
Fractured Till - Monitoring Well 541
Oxford County Waste Management Facility**



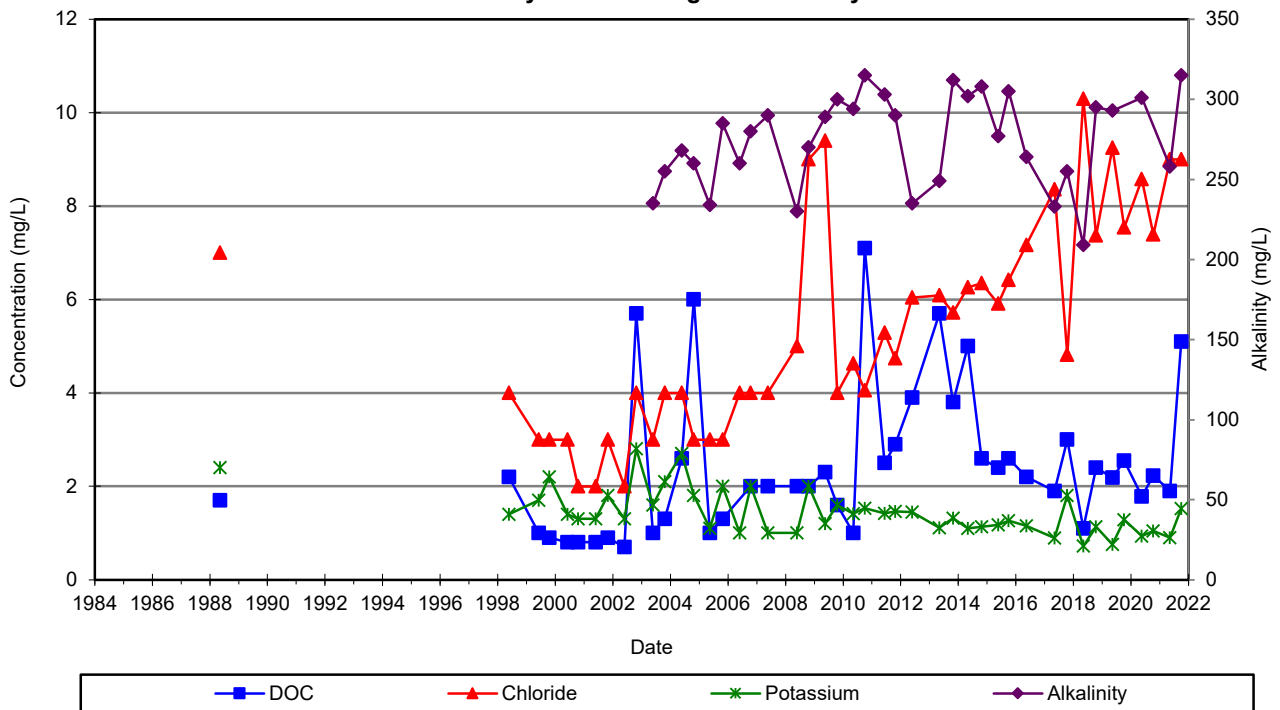
**Figure D-12: Concentration Versus Time
Fractured Till - Monitoring Well 552
Oxford County Waste Management Facility**



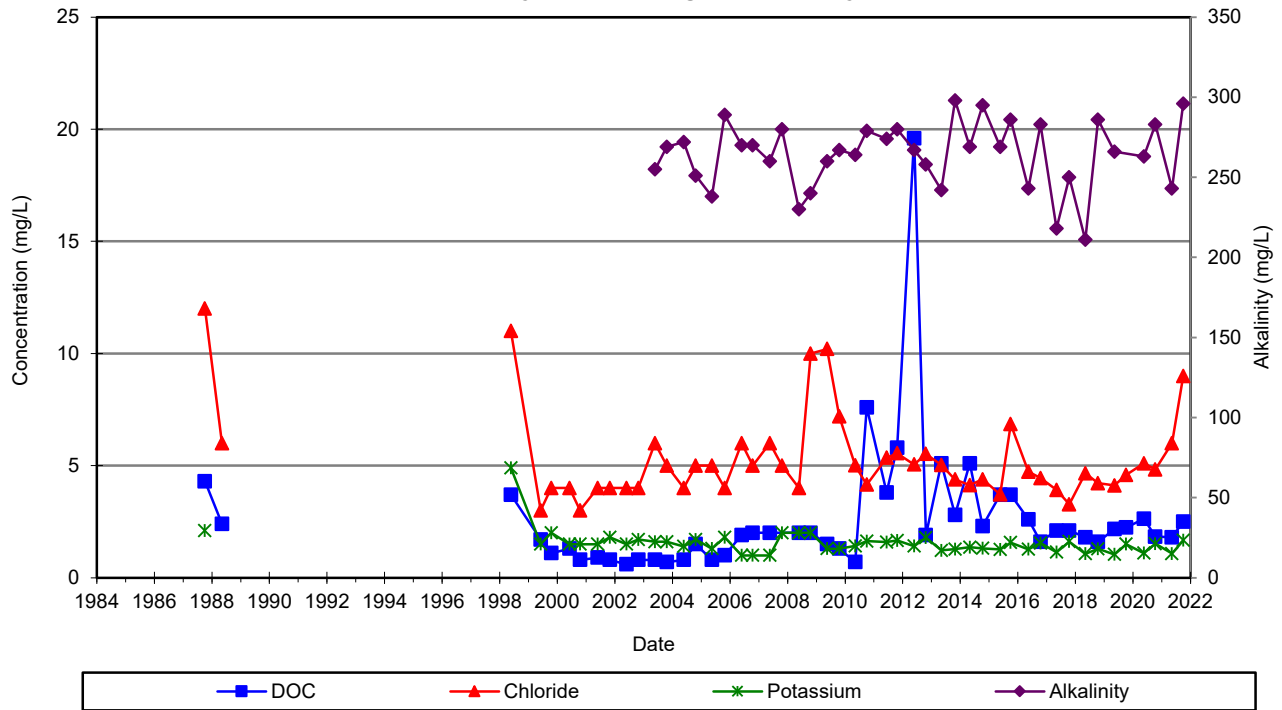
**Figure D-13: Concentration Versus Time
Fractured Till - Monitoring Well 552R / 552RA
Oxford County Waste Management Facility**



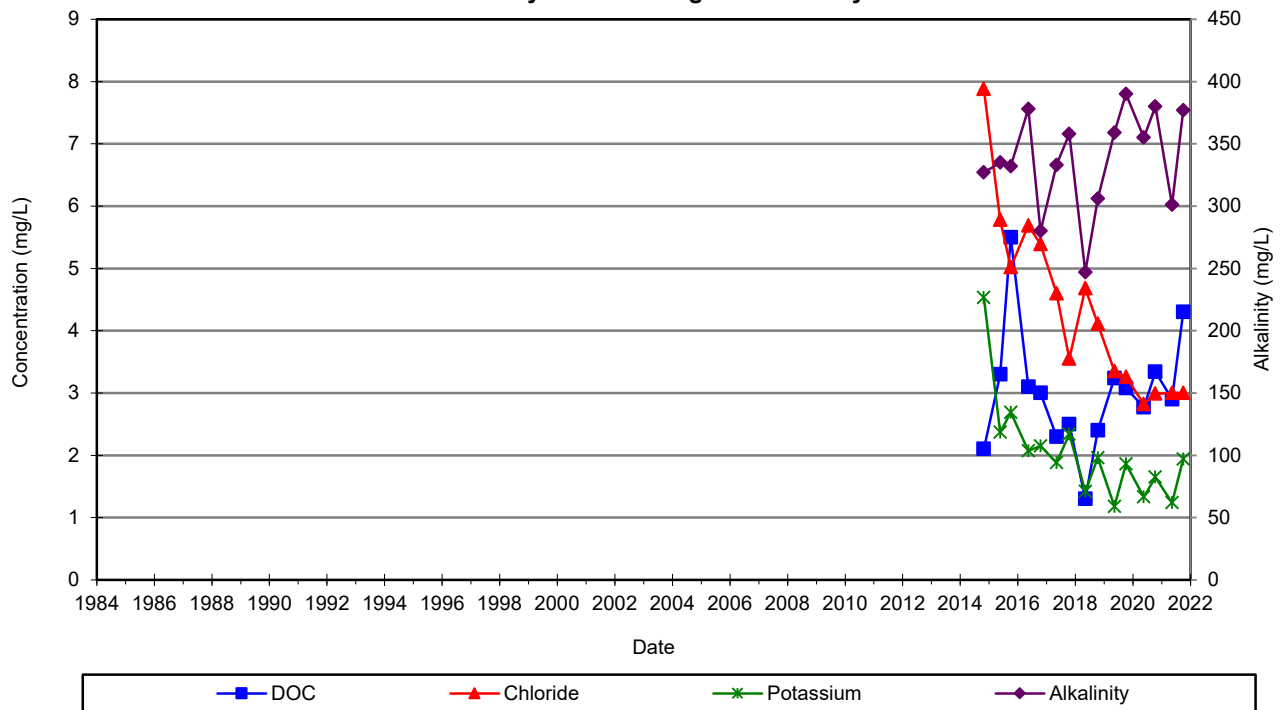
**Figure D-14: Concentration Versus Time
Fractured Till - Monitoring Well 562
Oxford County Waste Management Facility**



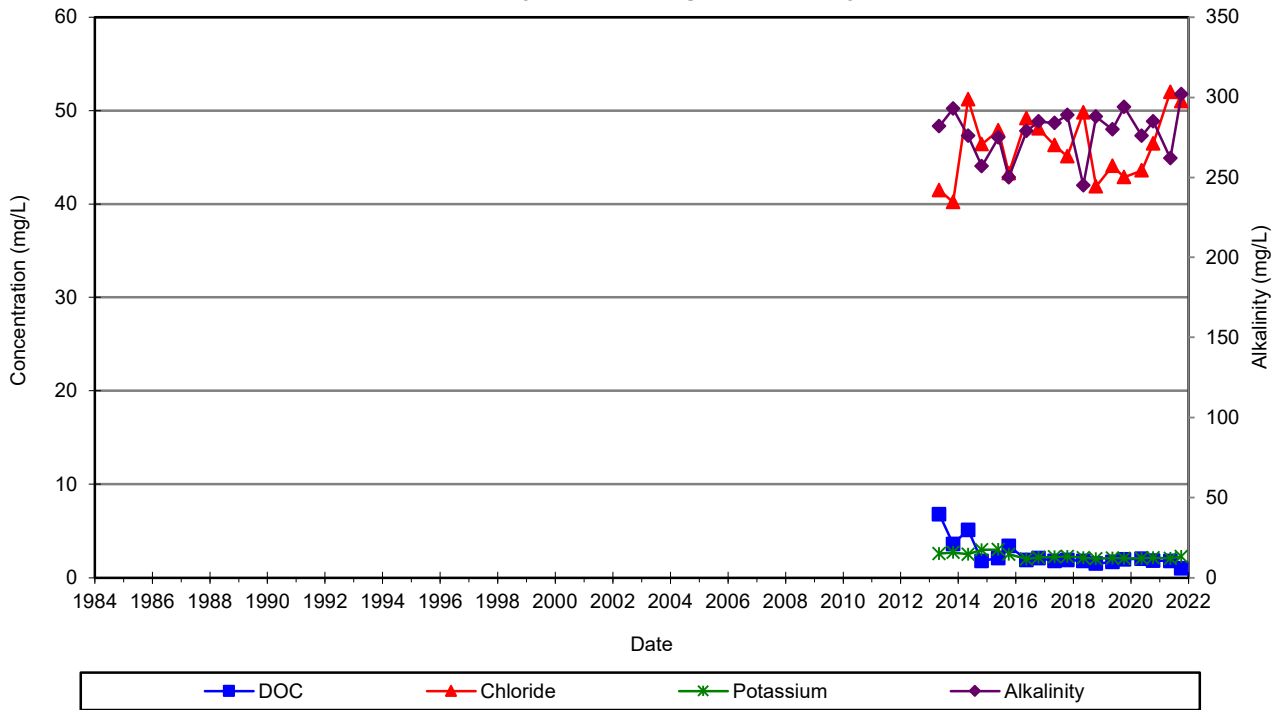
**Figure D-15: Concentration Versus Time
Fractured Till - Monitoring Well 581
Oxford County Waste Management Facility**



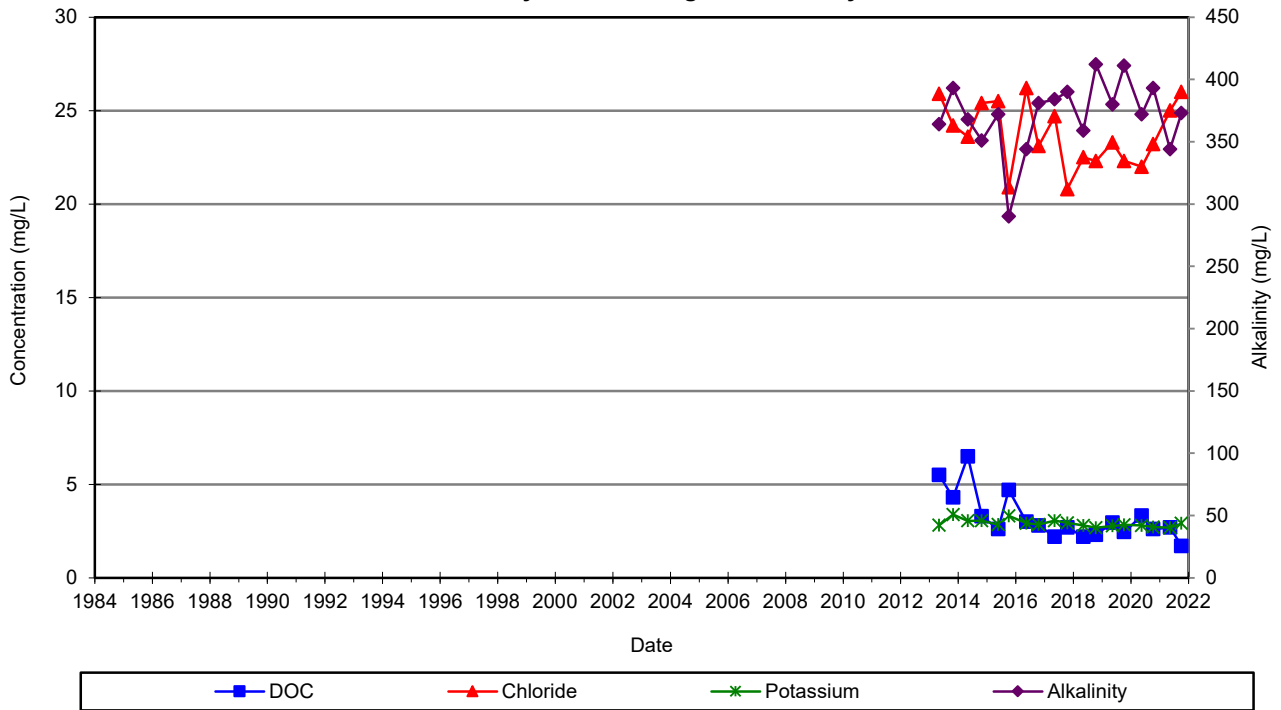
**Figure D-16: Concentration Versus Time
Fractured Till - Monitoring Well 592
Oxford County Waste Management Facility**



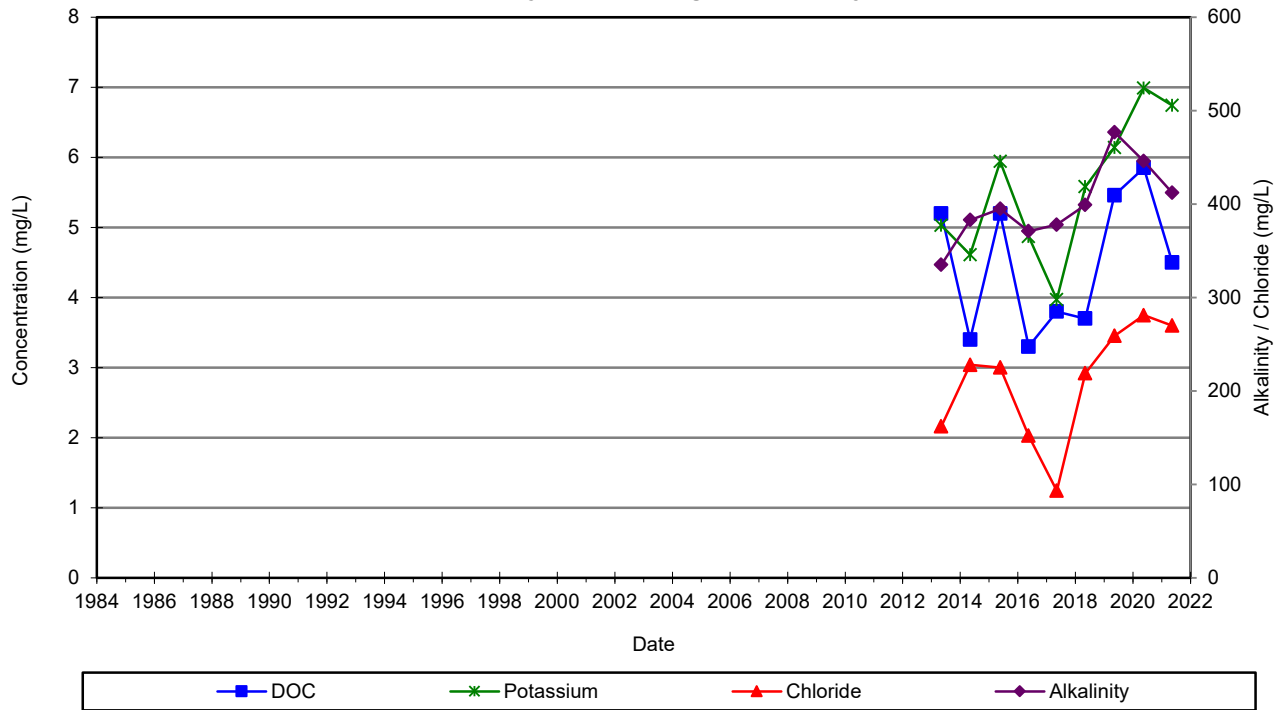
**Figure D-17: Concentration Versus Time
Upper Till - Monitoring Well 00-04
Oxford County Waste Management Facility**



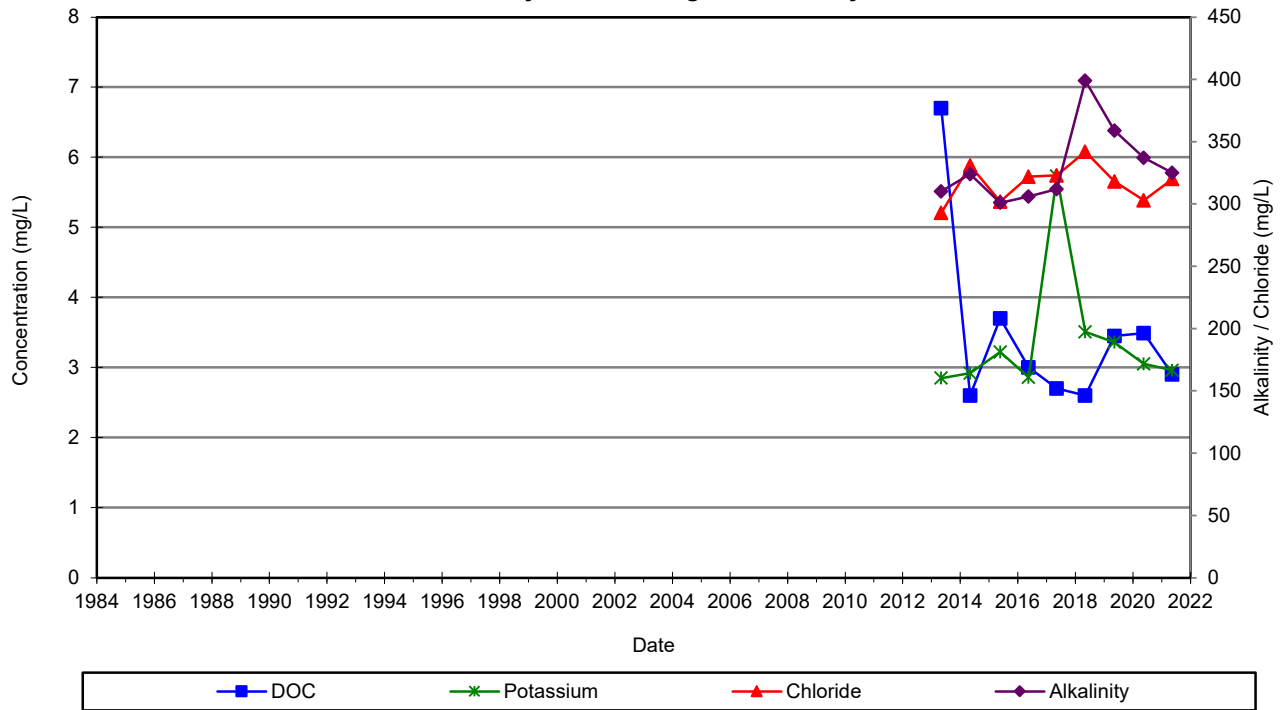
**Figure D-18: Concentration Versus Time
Upper Till - Monitoring Well 023R
Oxford County Waste Management Facility**



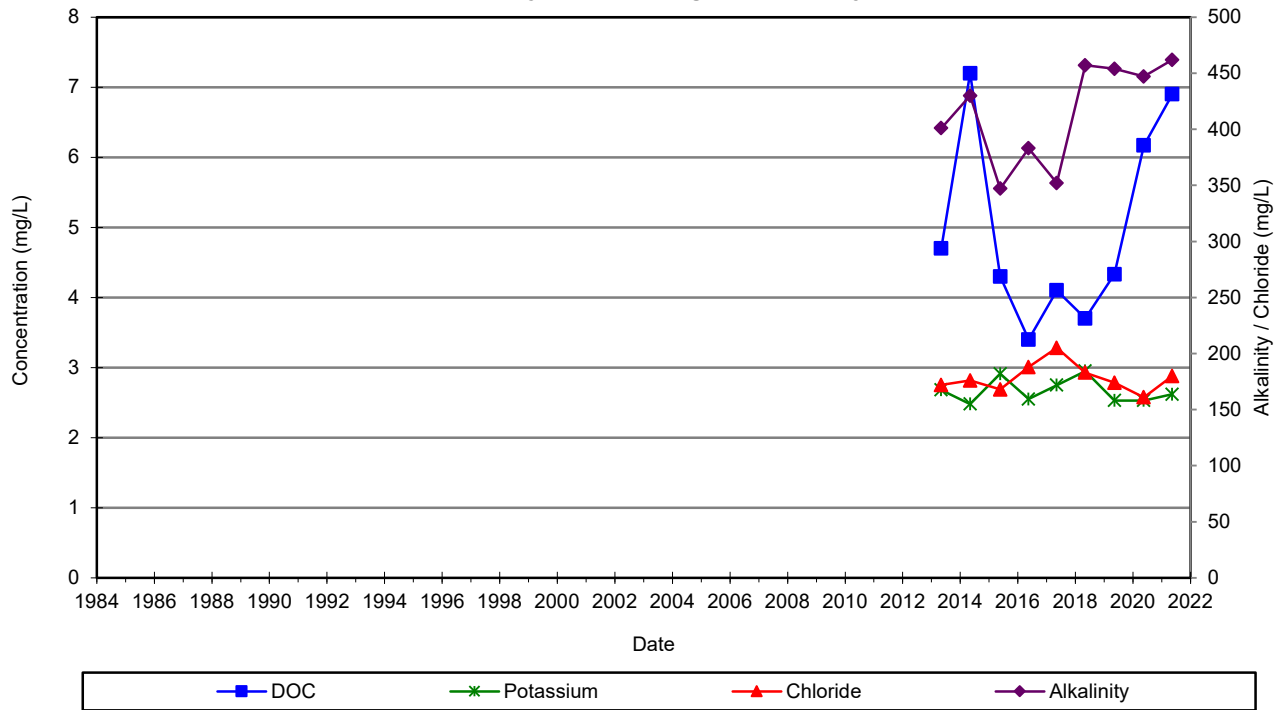
**Figure D-19: Concentration Versus Time
Upper Till - Monitoring Well 03-3
Oxford County Waste Management Facility**



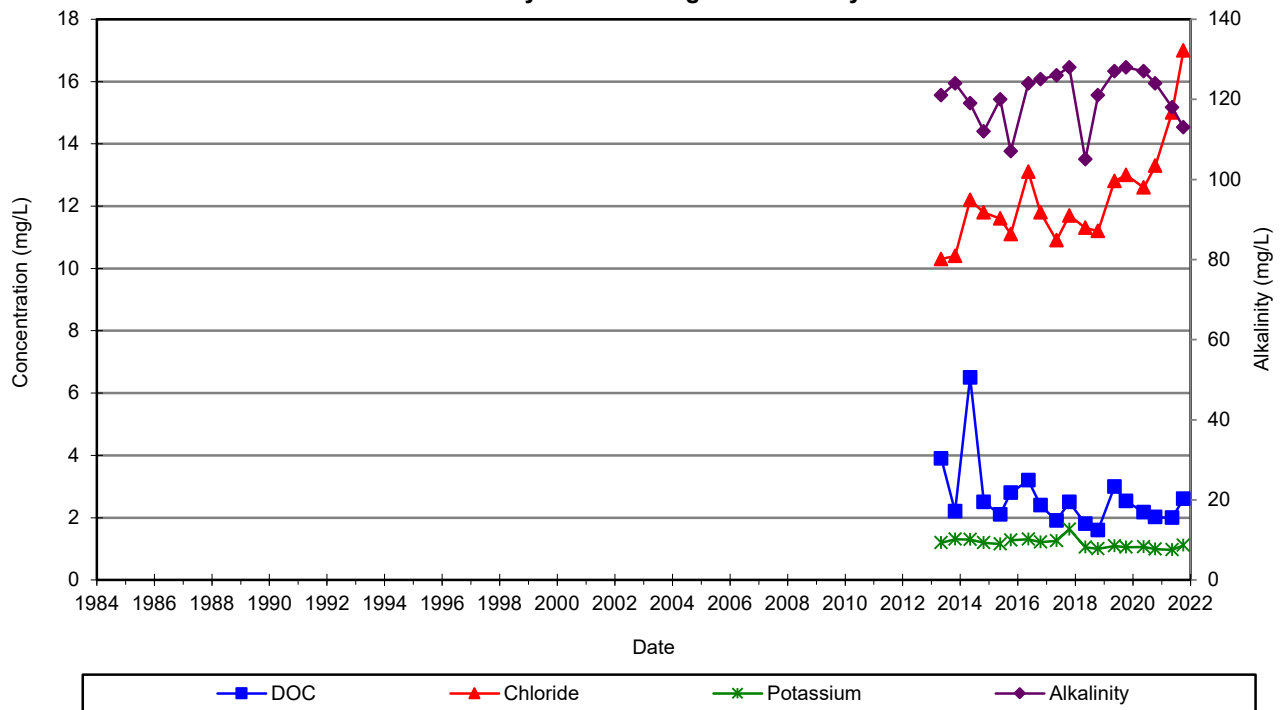
**Figure D-20: Concentration Versus Time
Upper Till - Monitoring Well 03-4
Oxford County Waste Management Facility**



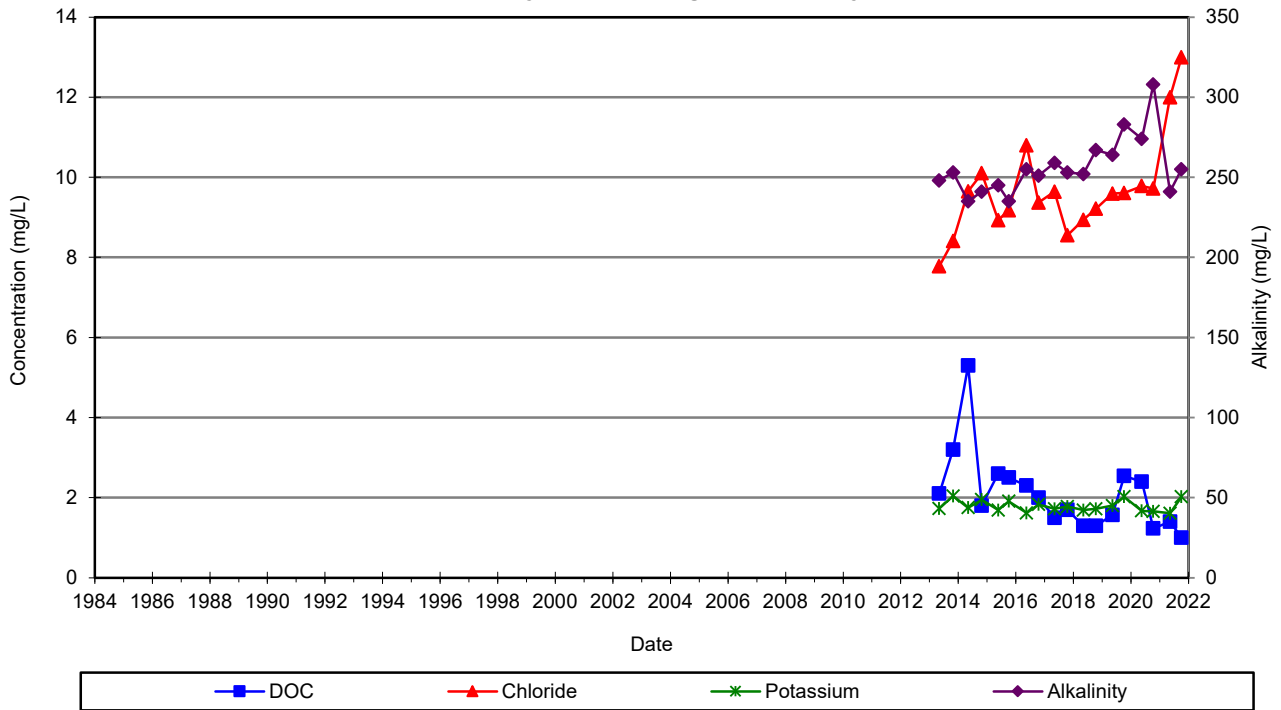
**Figure D-21: Concentration Versus Time
Upper Till - Monitoring Well 03-5
Oxford County Waste Management Facility**



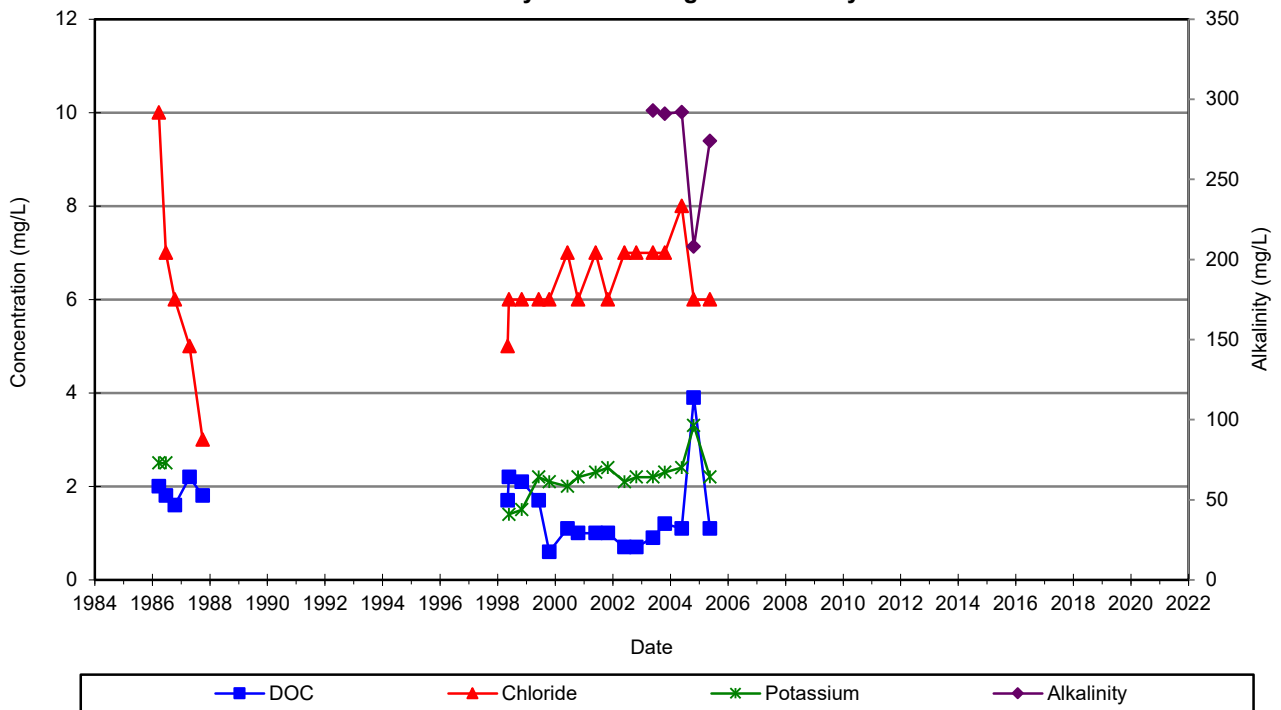
**Figure D-22: Concentration Versus Time
Upper Till - Monitoring Well 03-7d
Oxford County Waste Management Facility**



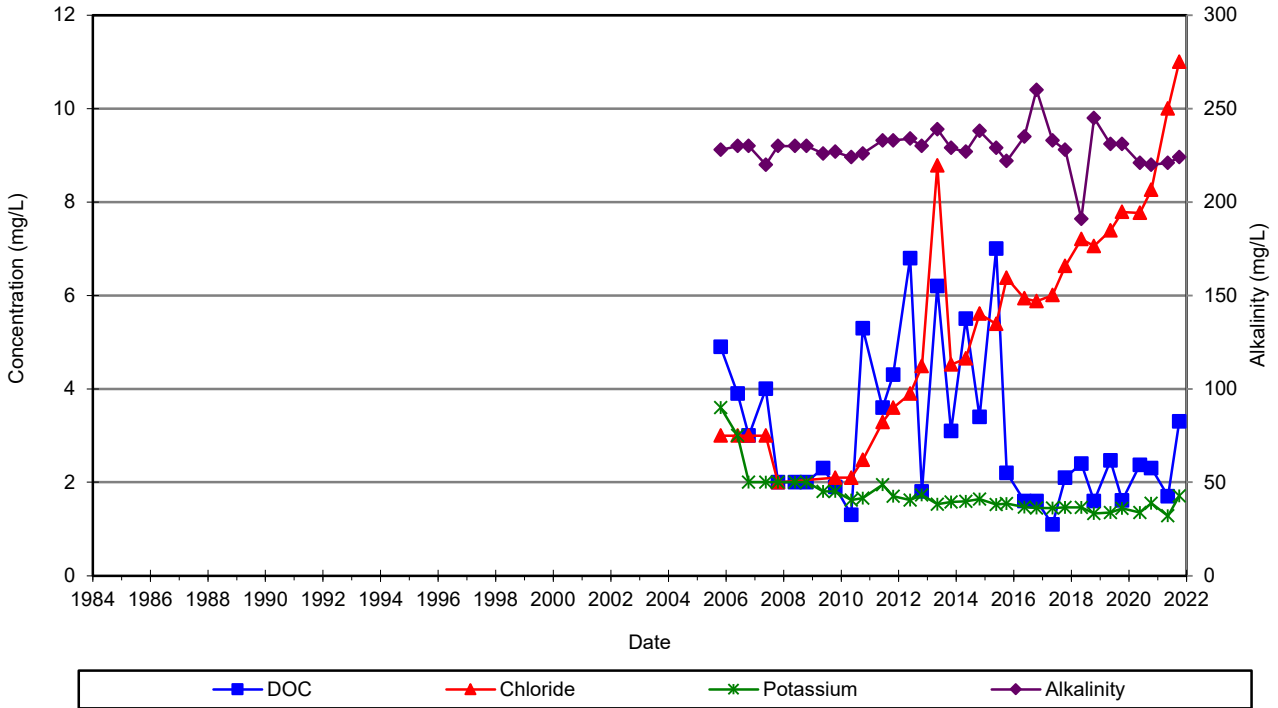
**Figure D-23: Concentration Versus Time
Upper Till - Monitoring Well 05-01
Oxford County Waste Management Facility**



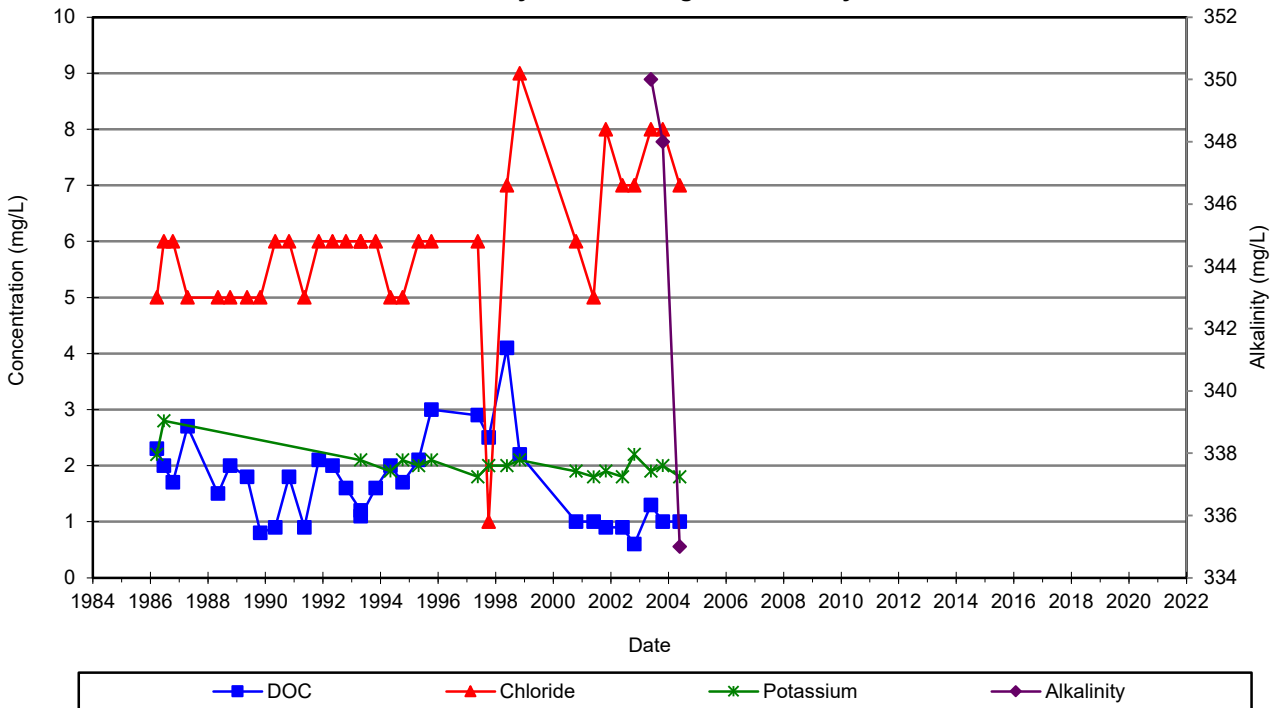
**Figure D-24: Concentration Versus Time
Upper Till - Monitoring Well 232
Oxford County Waste Management Facility**



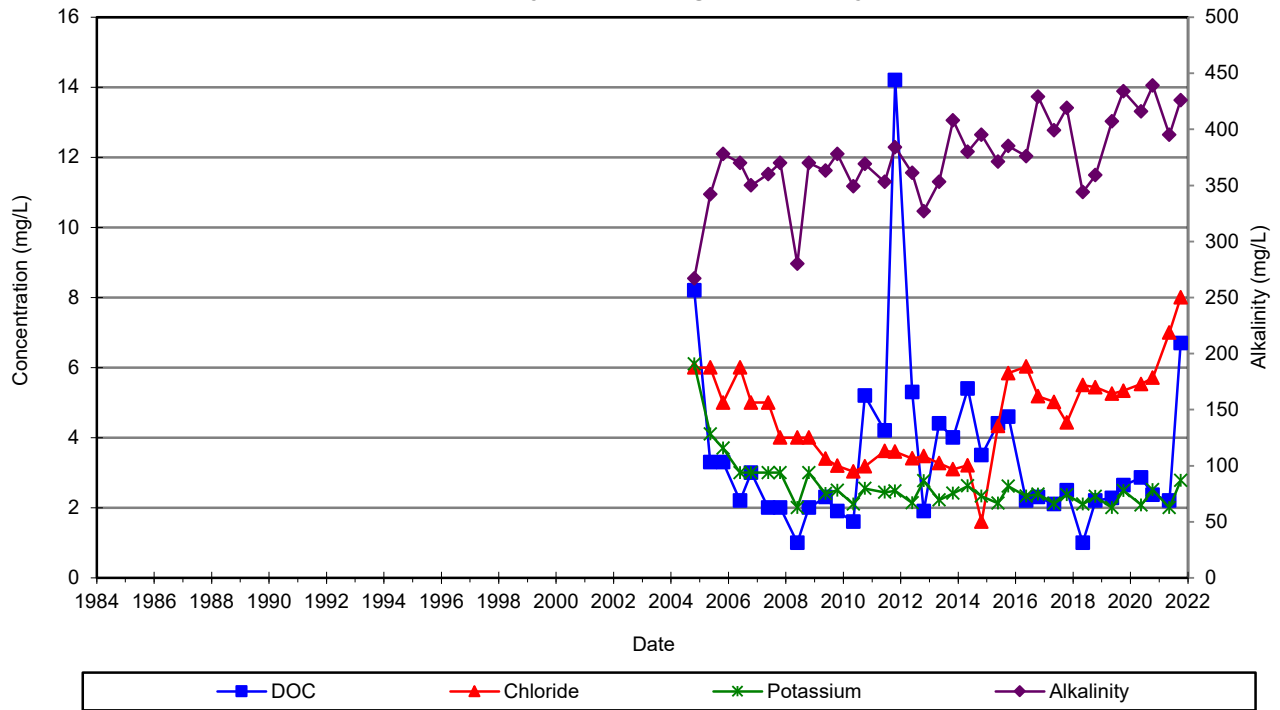
**Figure D-25: Concentration Versus Time
Upper Till - Monitoring Well 232R
Oxford County Waste Management Facility**



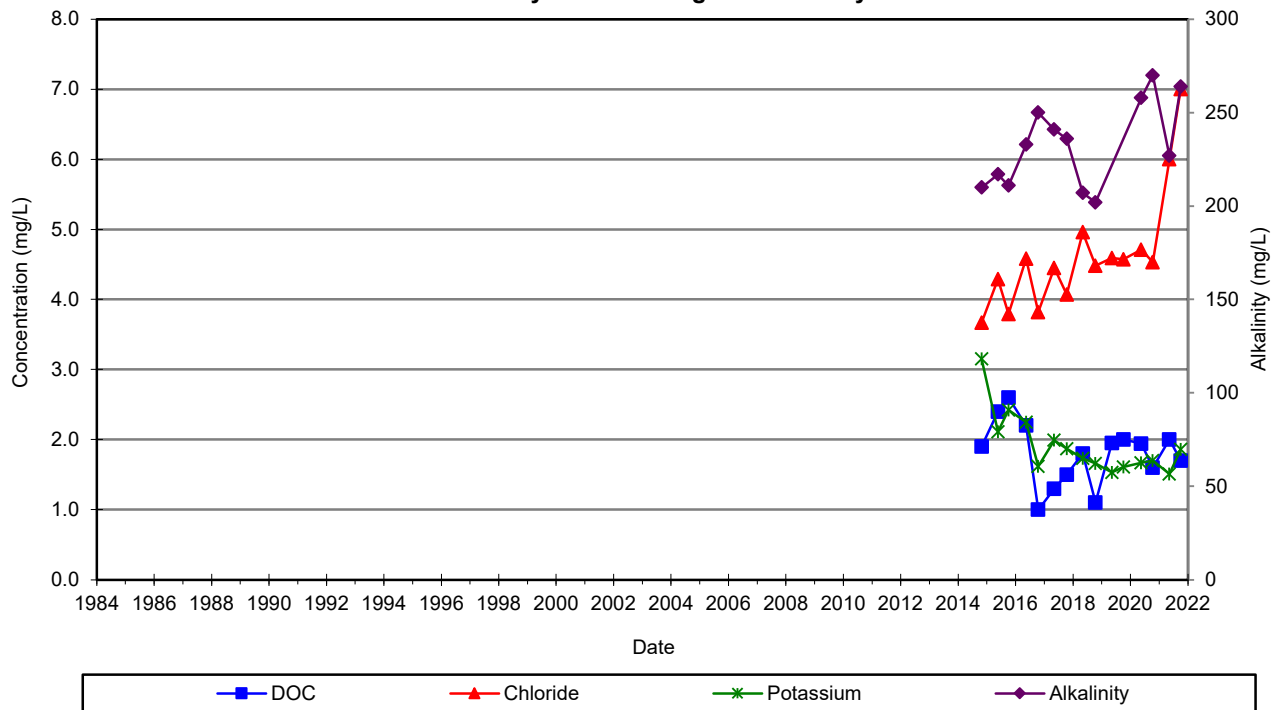
**Figure D-26: Concentration Versus Time
Upper Till - Monitoring Well 381
Oxford County Waste Management Facility**



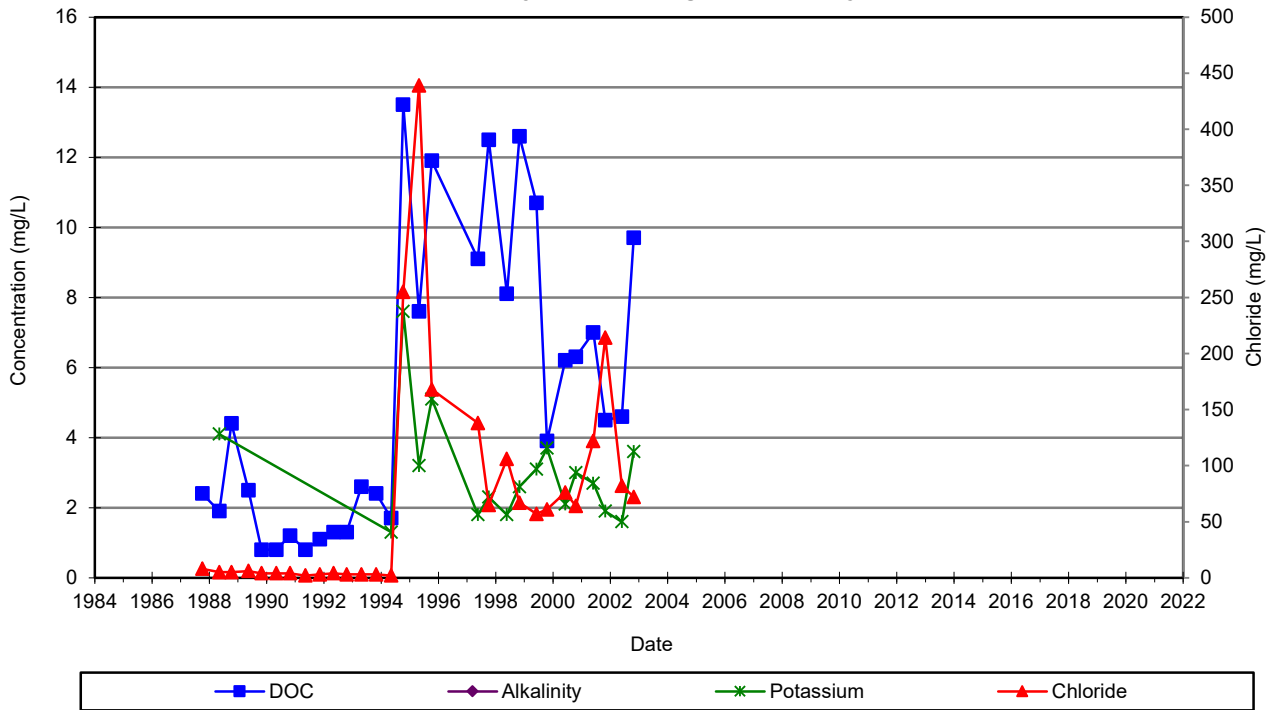
**Figure D-27: Concentration Versus Time
Upper Till - Monitoring Well 381R
Oxford County Waste Management Facility**



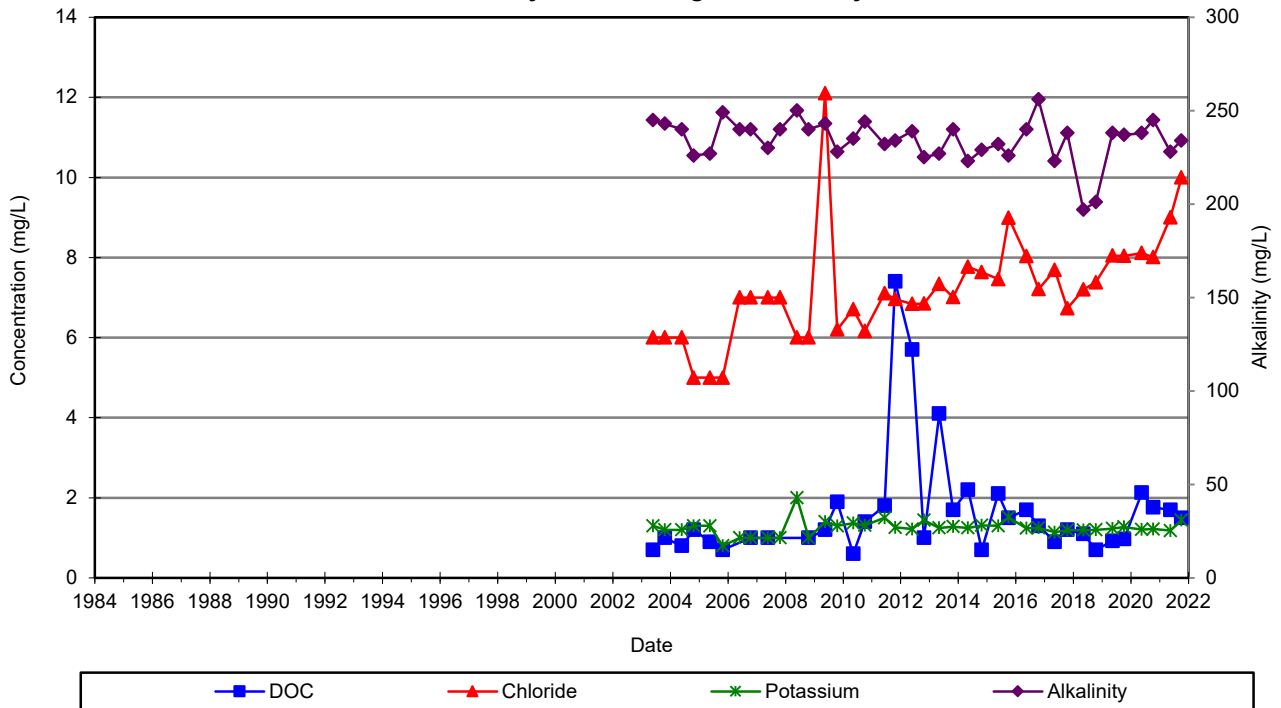
**Figure D-28: Concentration Versus Time
Upper Till - Monitoring Well 593
Oxford County Waste Management Facility**



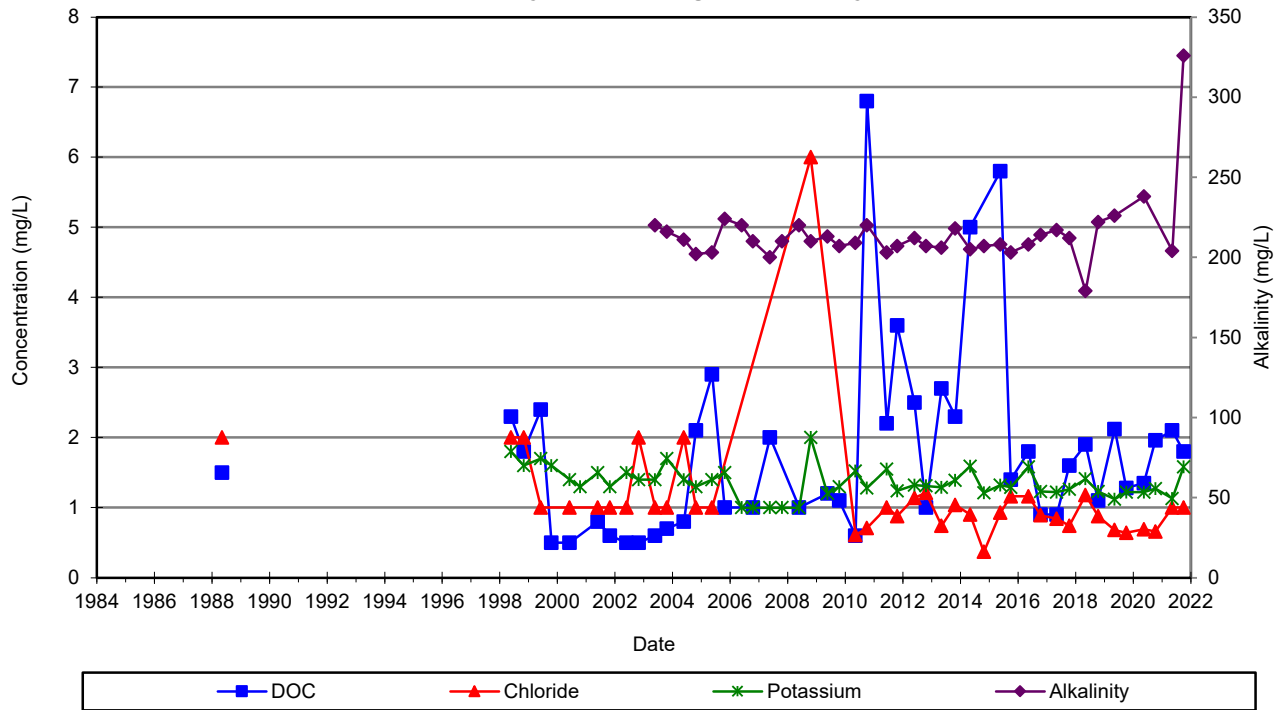
**Figure D-29: Concentration Versus Time
Inter-Till Sands - Monitoring Well 551
Oxford County Waste Management Facility**



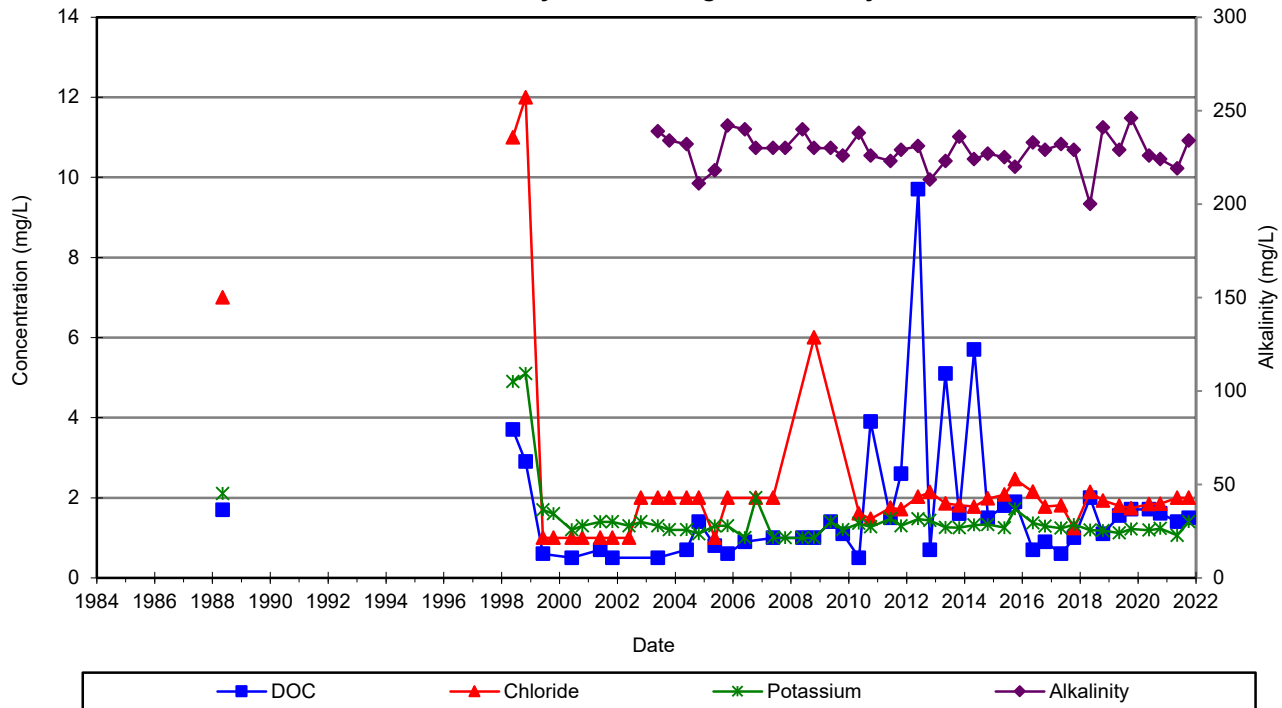
**Figure D-30: Concentration Versus Time
Inter-Till Sands - Monitoring Well 551R
Oxford County Waste Management Facility**



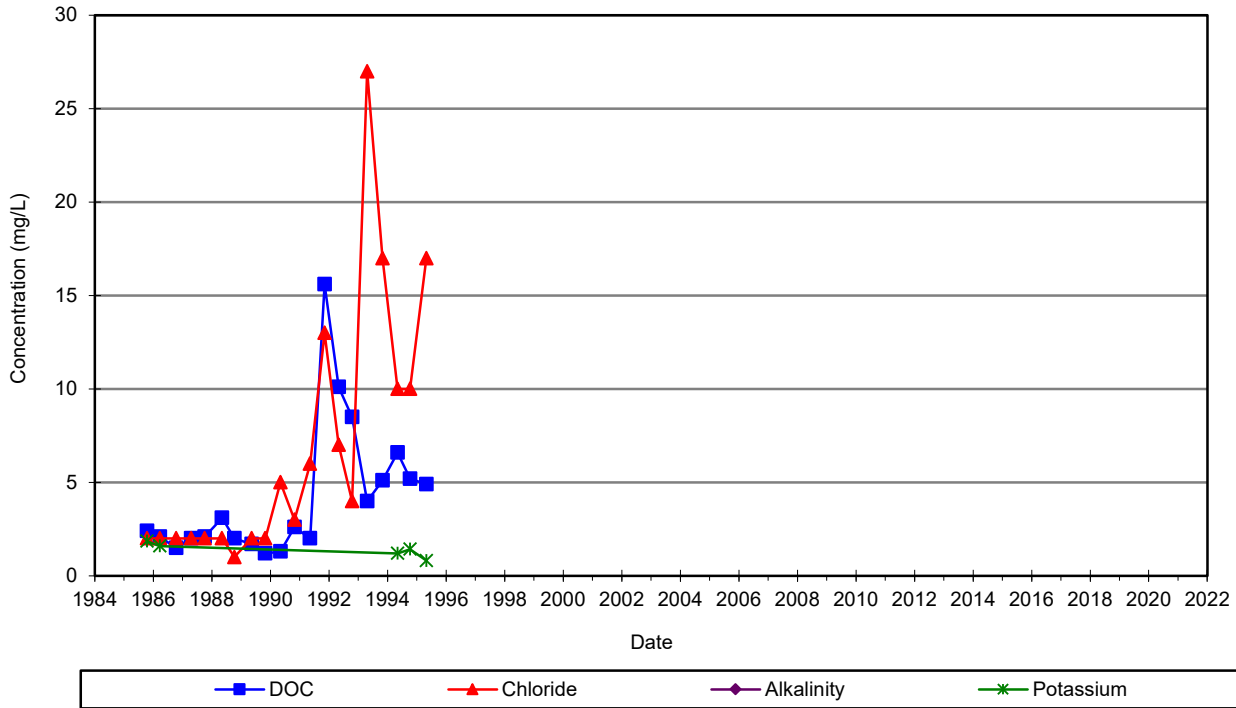
**Figure D-31: Concentration Versus Time
Inter-Till Sands - Monitoring Well 561
Oxford County Waste Management Facility**



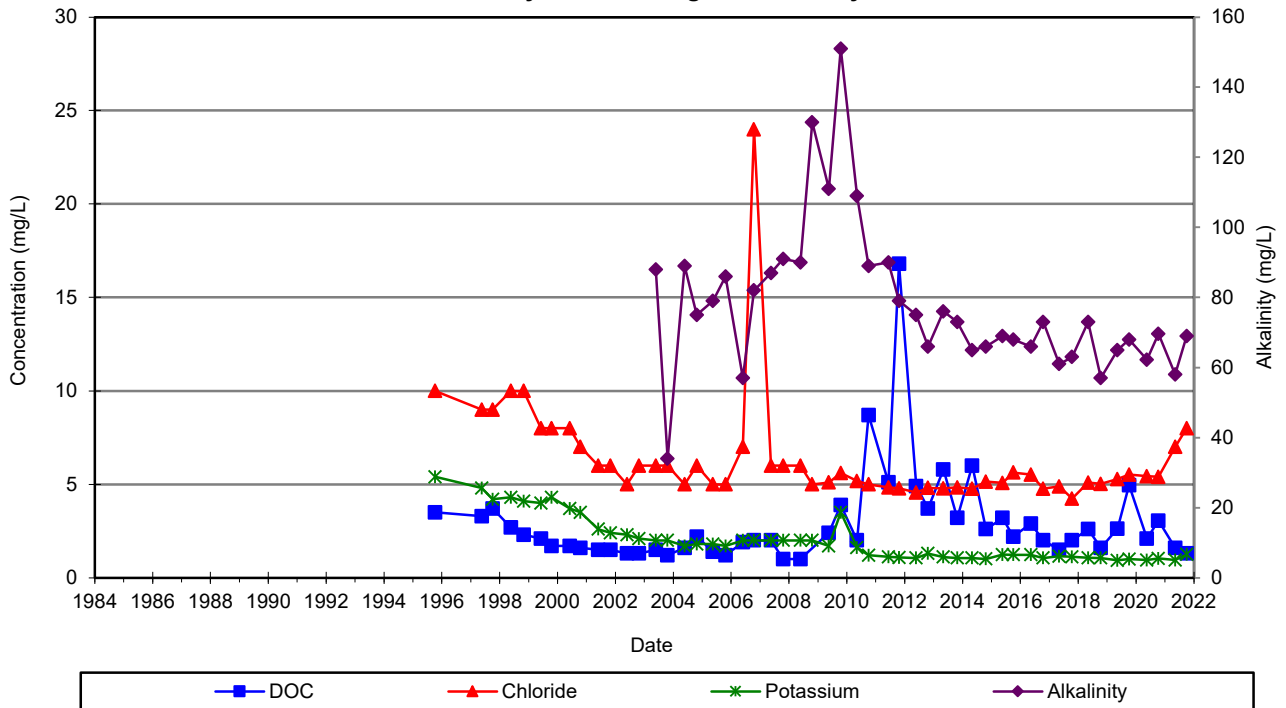
**Figure D-32: Concentration Versus Time
Inter-Till Sands - Monitoring Well 571
Oxford County Waste Management Facility**



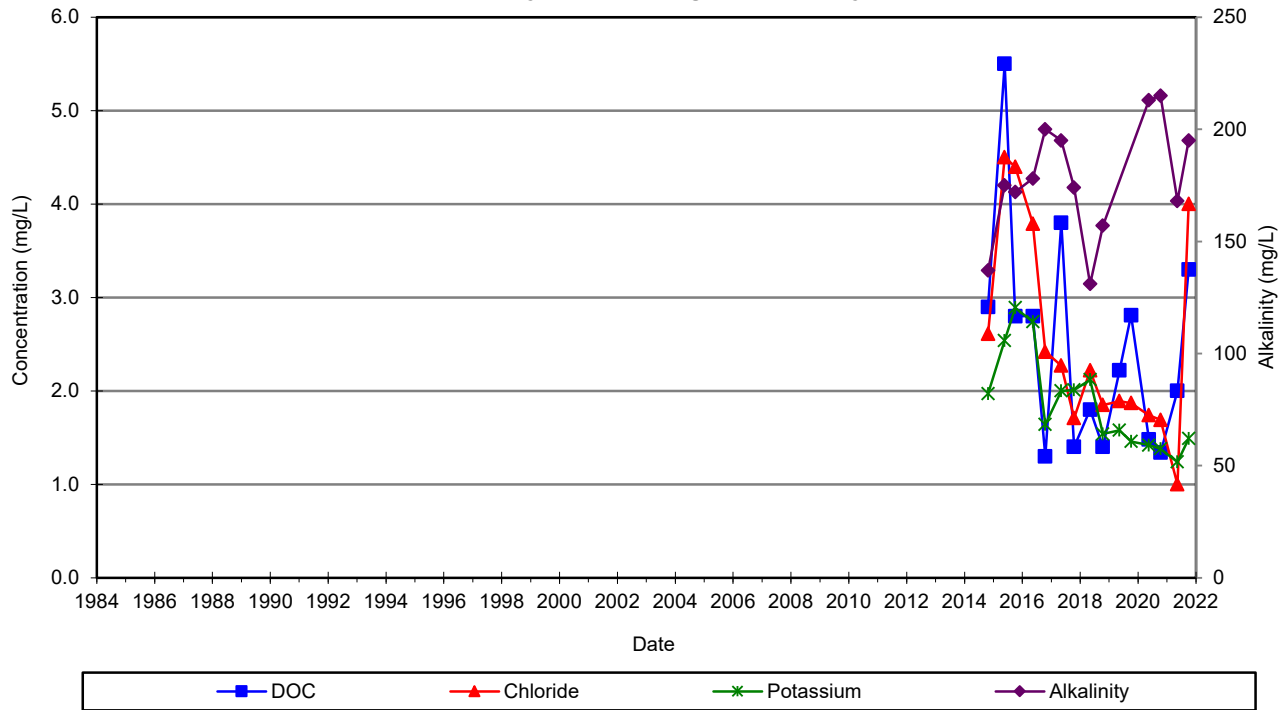
**Figure D-33: Concentration Versus Time
Inter-Till Sands - Monitoring Well 032
Oxford County Waste Management Facility**



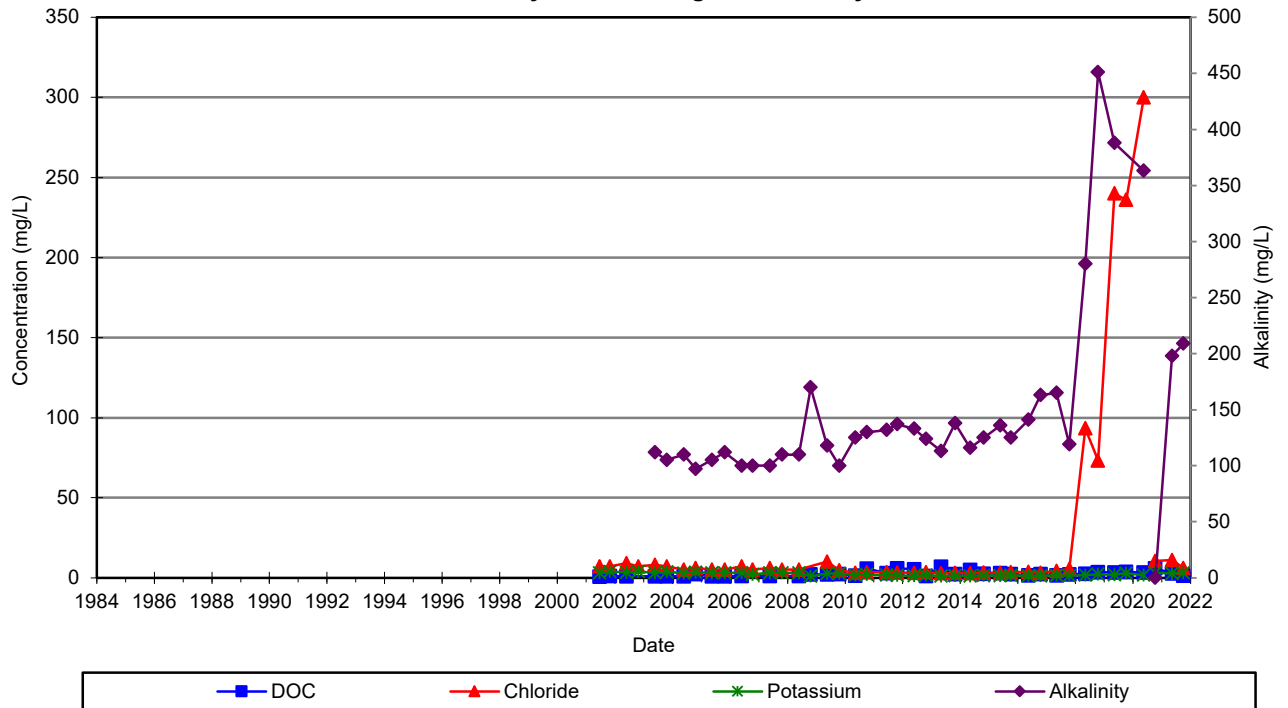
**Figure D-34: Concentration Versus Time
Inter-Till Sands - Monitoring Well 591
Oxford County Waste Management Facility**



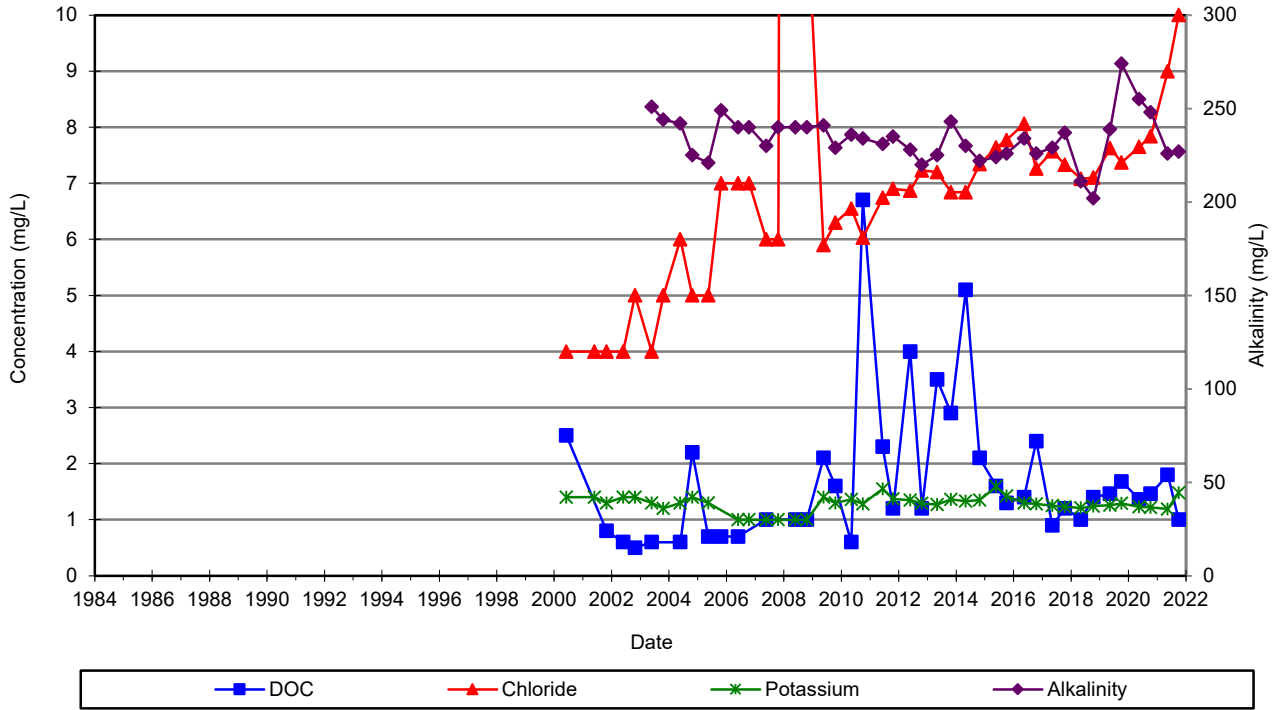
**Figure D-35: Concentration Versus Time
Inter-Till Sands - Monitoring Well 594
Oxford County Waste Management Facility**



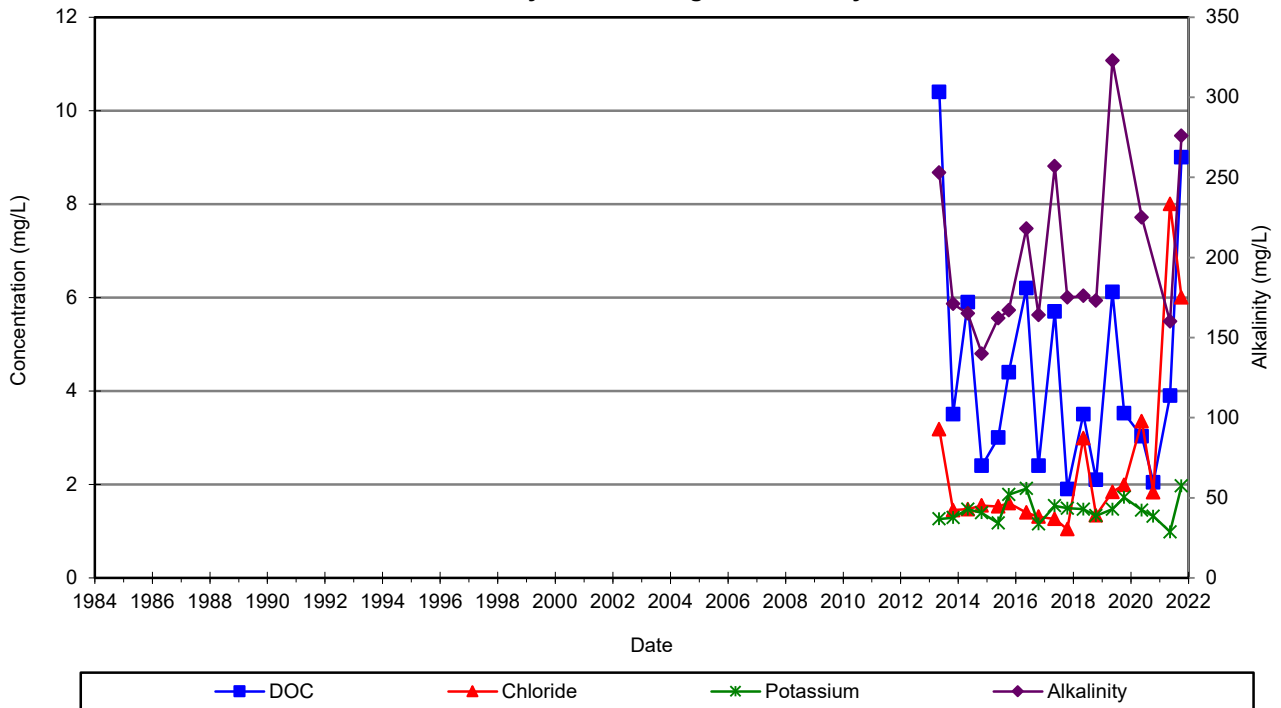
**Figure D-36: Concentration Versus Time
Inter-Till Sands - Monitoring Well 998 / 998R
Oxford County Waste Management Facility**



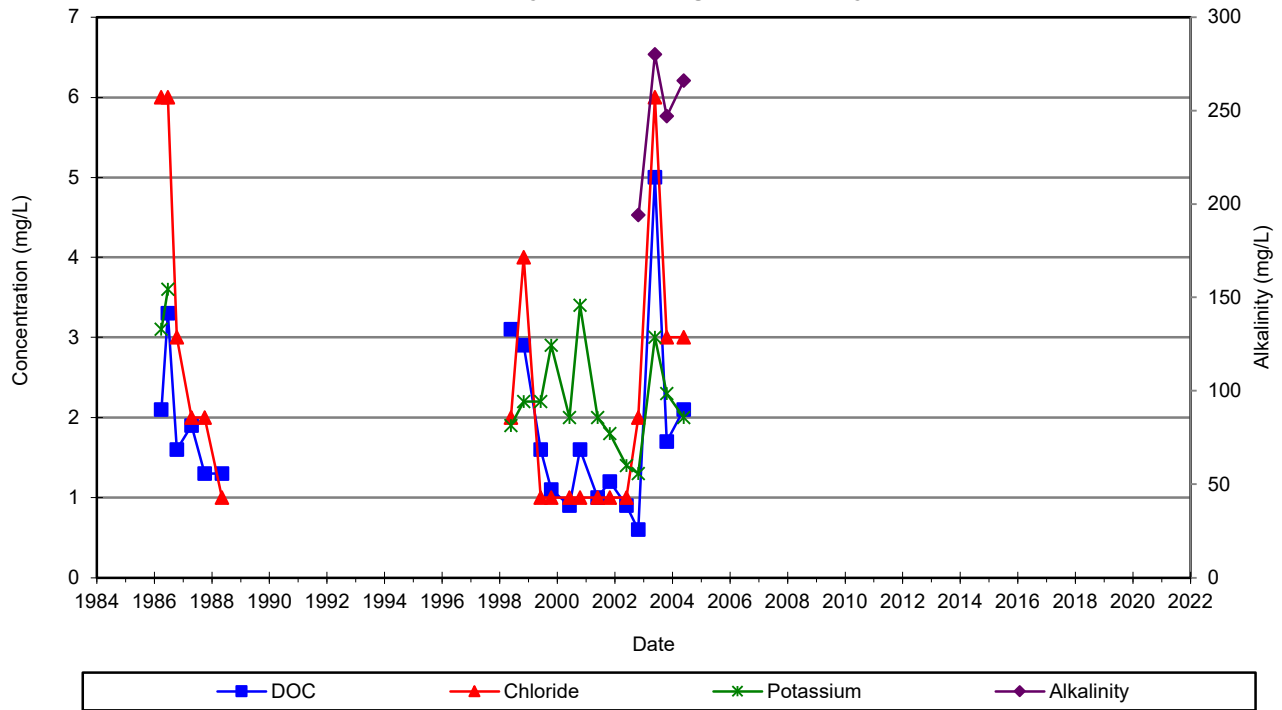
**Figure D-37: Concentration Versus Time
Inter-Till Sands - Monitoring Well 00-03
Oxford County Waste Management Facility**



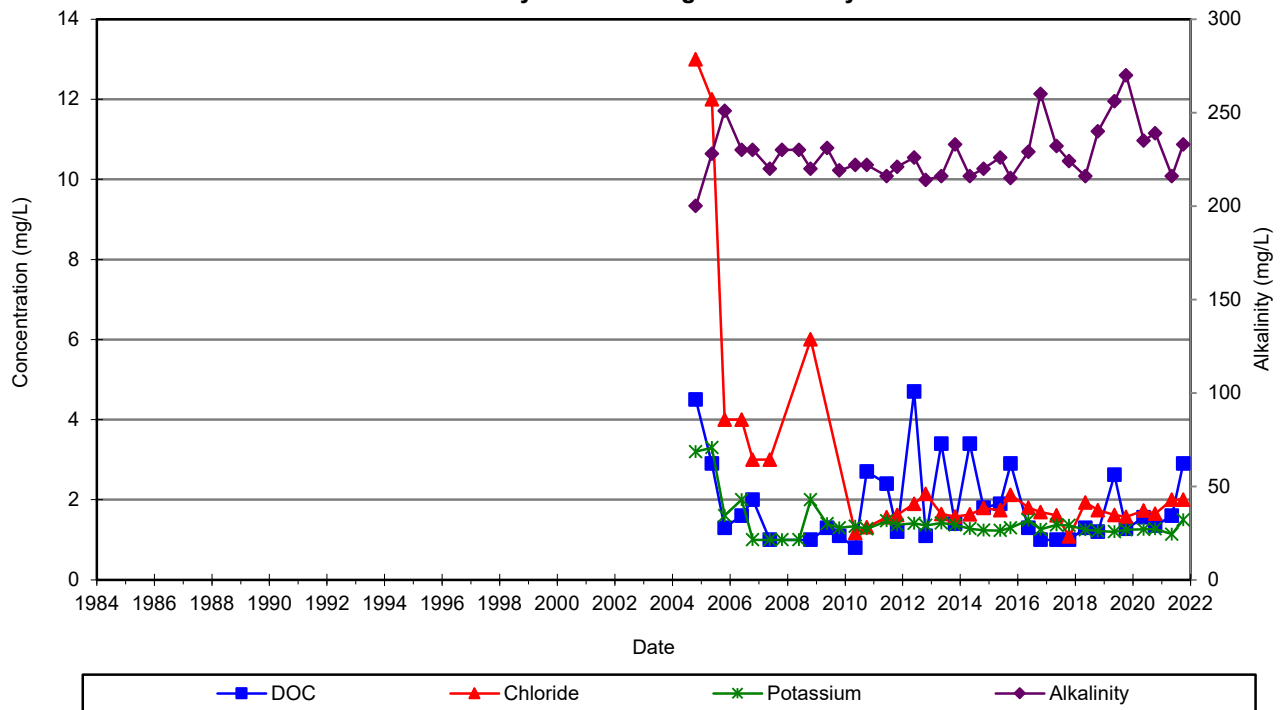
**Figure D-38: Concentration Versus Time
Lower Till - Monitoring Well 022R
Oxford County Waste Management Facility**



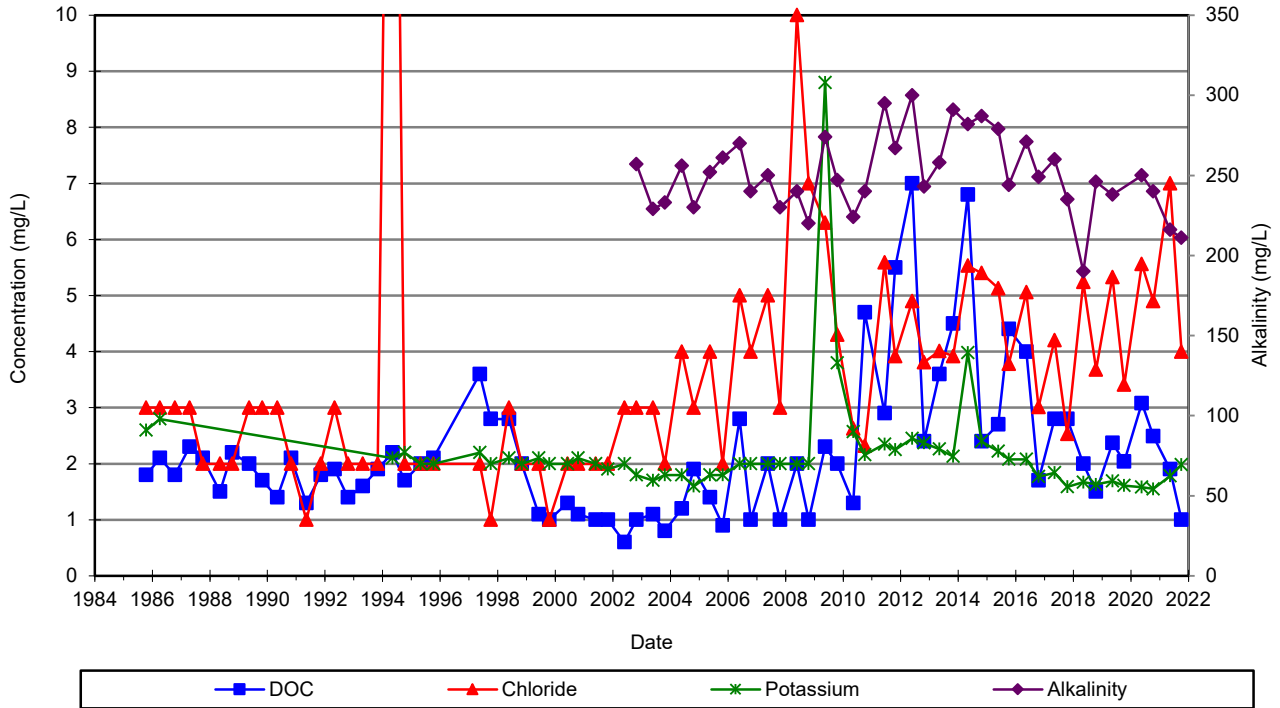
**Figure D-39: Concentration Versus Time
Lower Till - Monitoring Well 101
Oxford County Waste Management Facility**



**Figure D-40: Concentration Versus Time
Lower Till - Monitoring Well 101R
Oxford County Waste Management Facility**

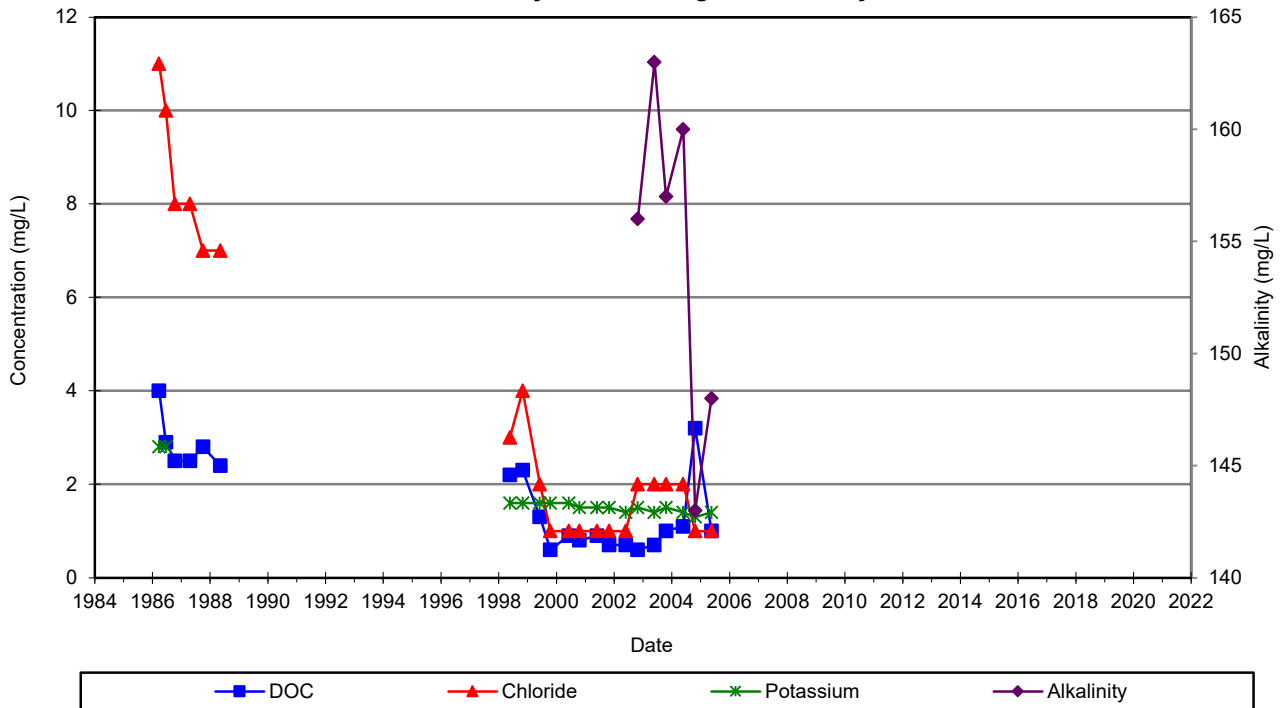


**Figure D-41: Concentration Versus Time
Lower Till - Monitoring Well 191
Oxford County Waste Management Facility**

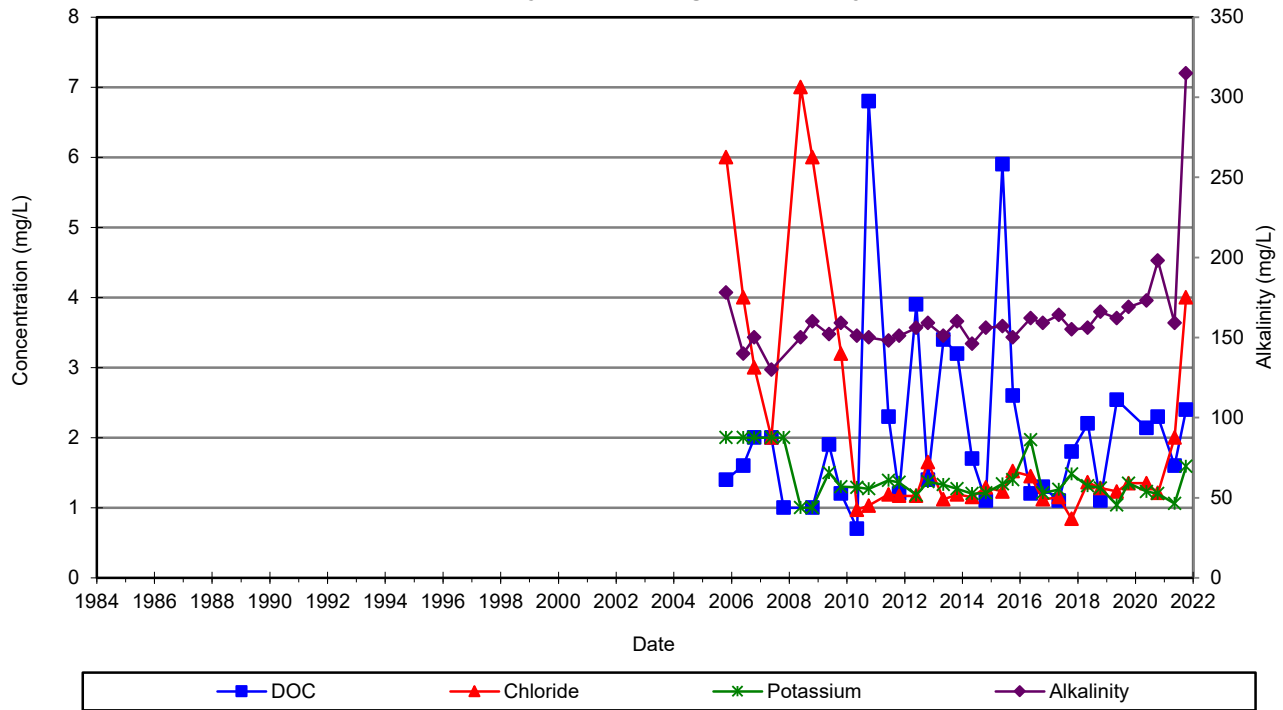


Note: Chloride - May 10/1994 = 23 mg/L

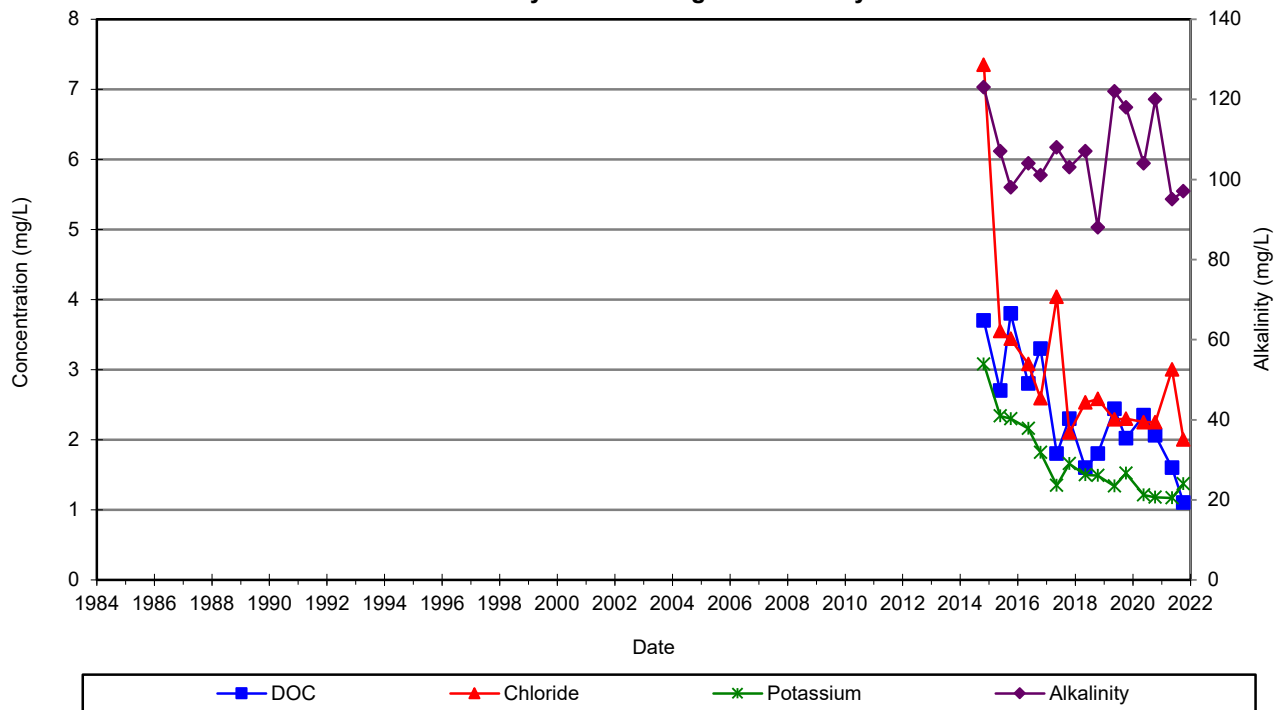
**Figure D-42: Concentration Versus Time
Lower Till - Monitoring Well 231
Oxford County Waste Management Facility**



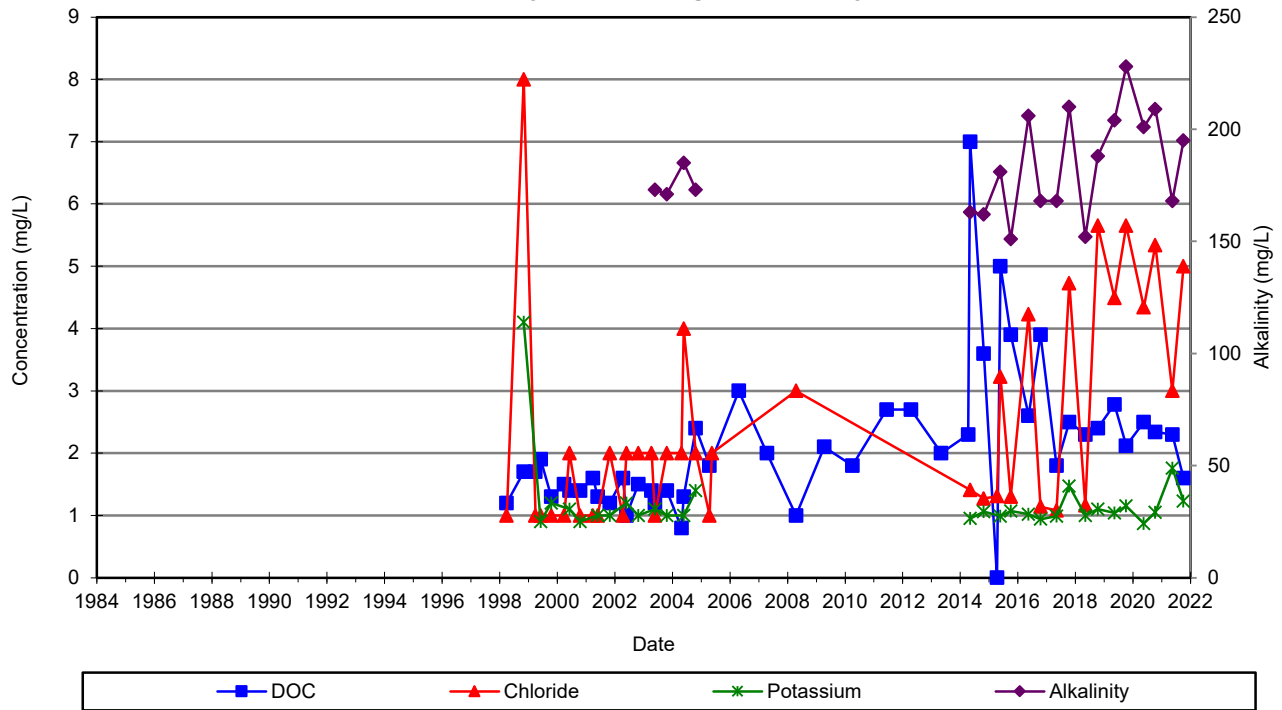
**Figure D-43: Concentration Versus Time
Lower Till - Monitoring Well 231R
Oxford County Waste Management Facility**



**Figure D-44: Concentration Versus Time
Lower Till- Monitoring Well 595
Oxford County Waste Management Facility**



**Figure D-45: Concentration Versus Time
Bedrock - Monitoring Well 999
Oxford County Waste Management Facility**



**Figure D-46: Concentration Versus Time
Refuse - Monitoring Well 03-08
Oxford County Waste Management Facility**

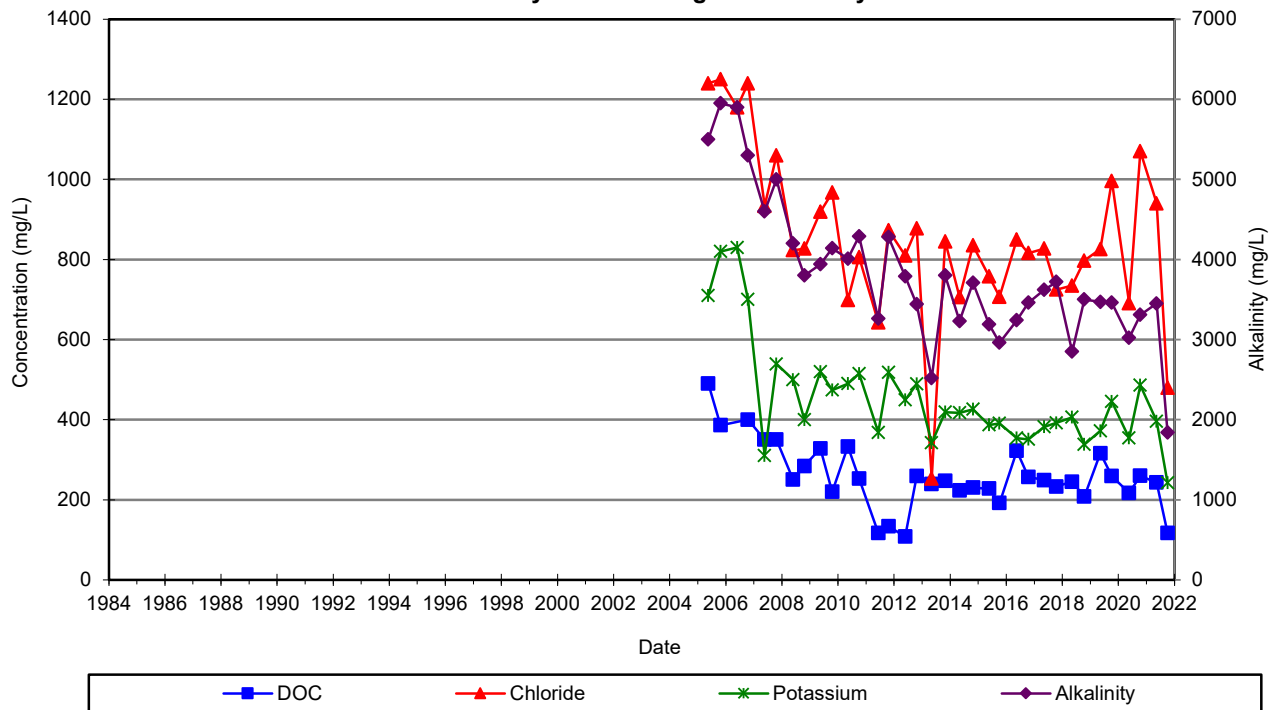


Figure D-47
Chloride Concentration Versus Time - Bedrock
Oxford County Waste Management Facility

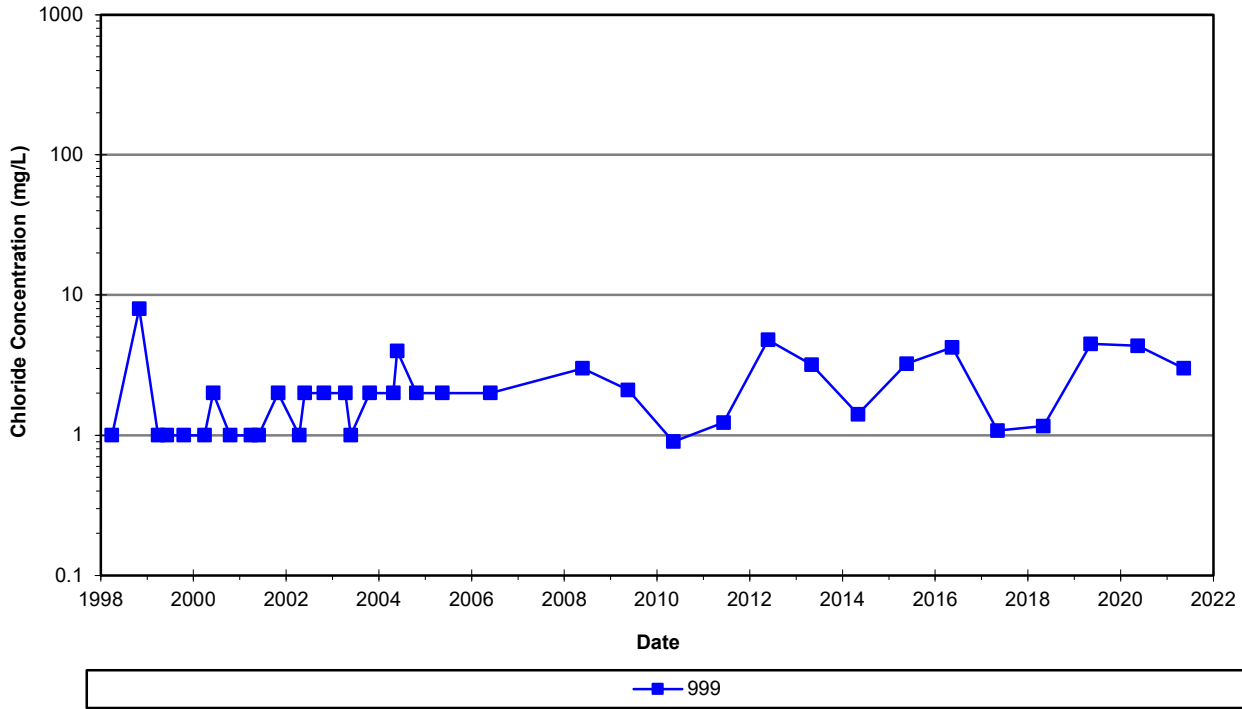


Figure D-48
Chloride Concentraion Versus Time - Lower Till
Oxford County Waste Management Facility

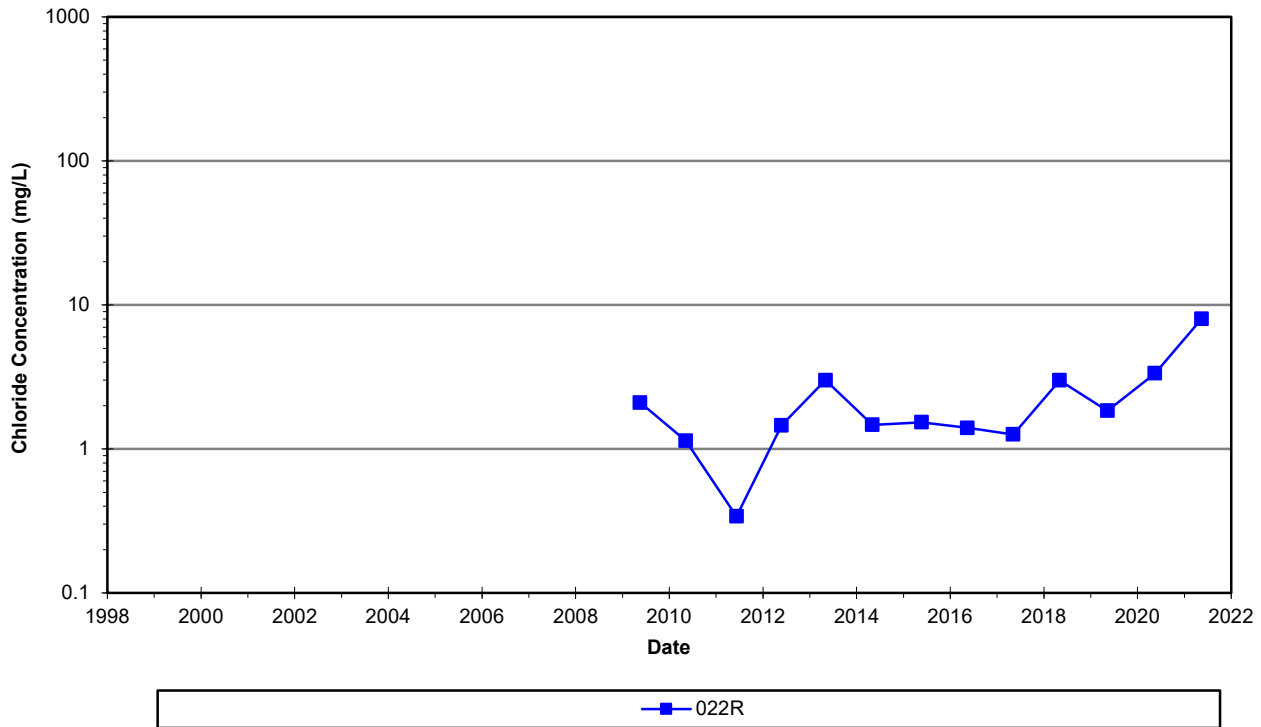


Figure D-49
Chloride Concentration Versus Time - Inter-Till Sands
Oxford County Waste Management Facility

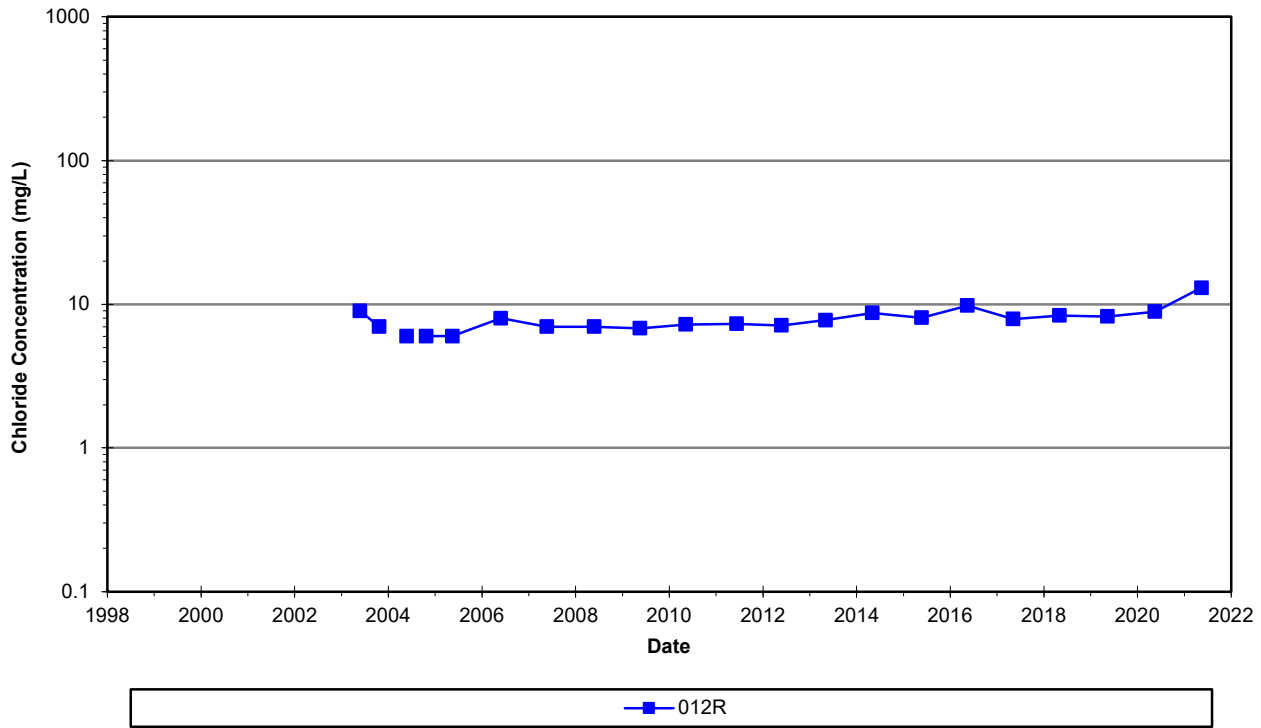


Figure D-50
Chloride Concentration Versus Time - Upper Till
Oxford County Waste Management Facility

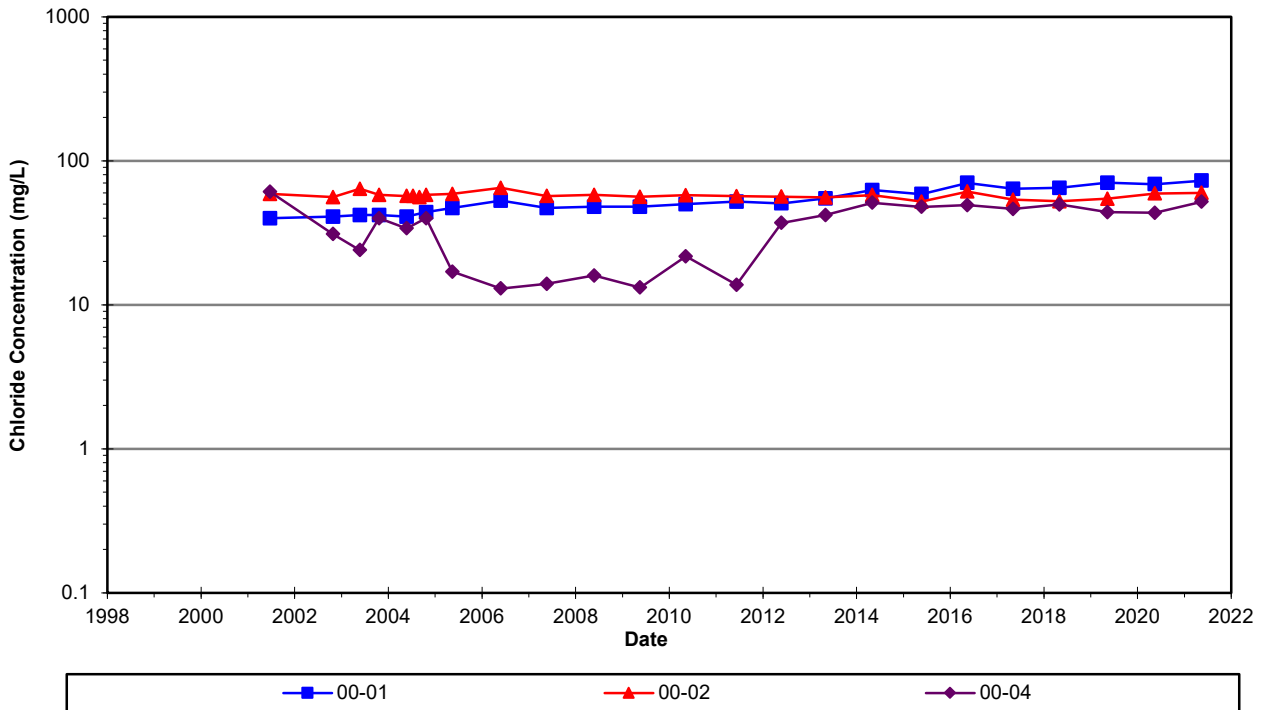


Figure D-51
Chloride Concentration Versus Time - Upper Till
Oxford County Waste Management Facility

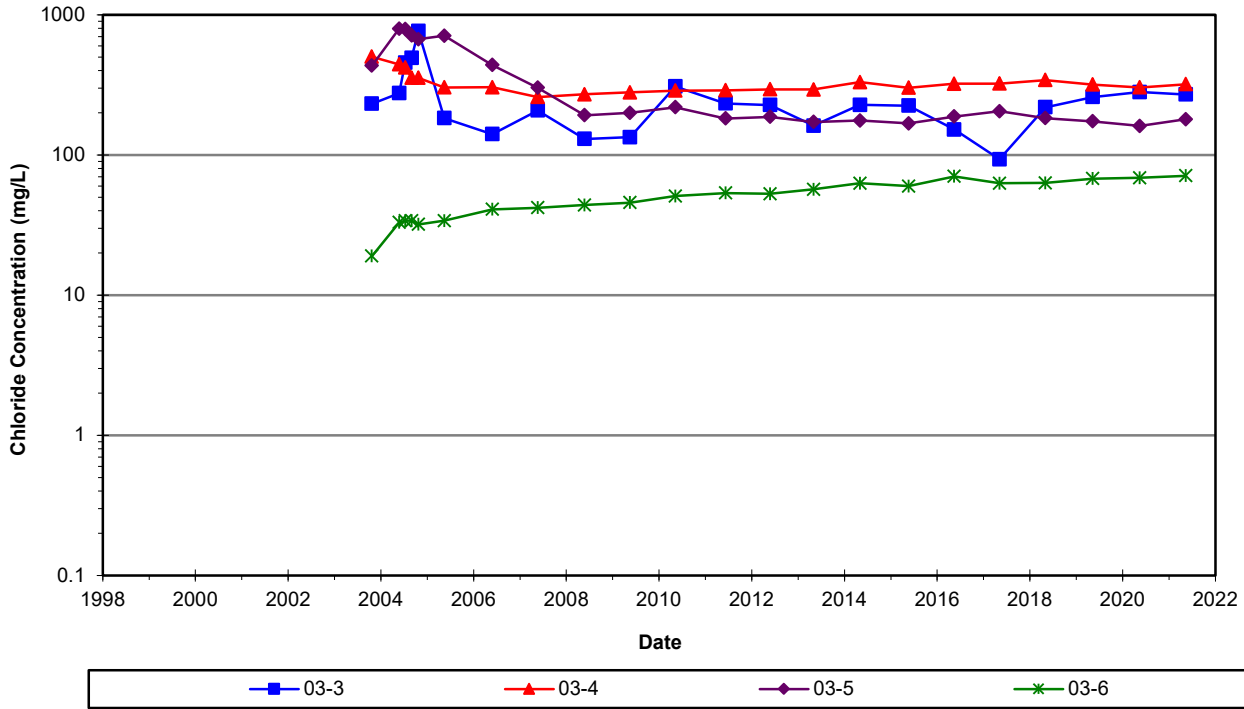


Figure D-52
Chloride Concentration Versus Time - Upper Till
Oxford County Waste Management Facility

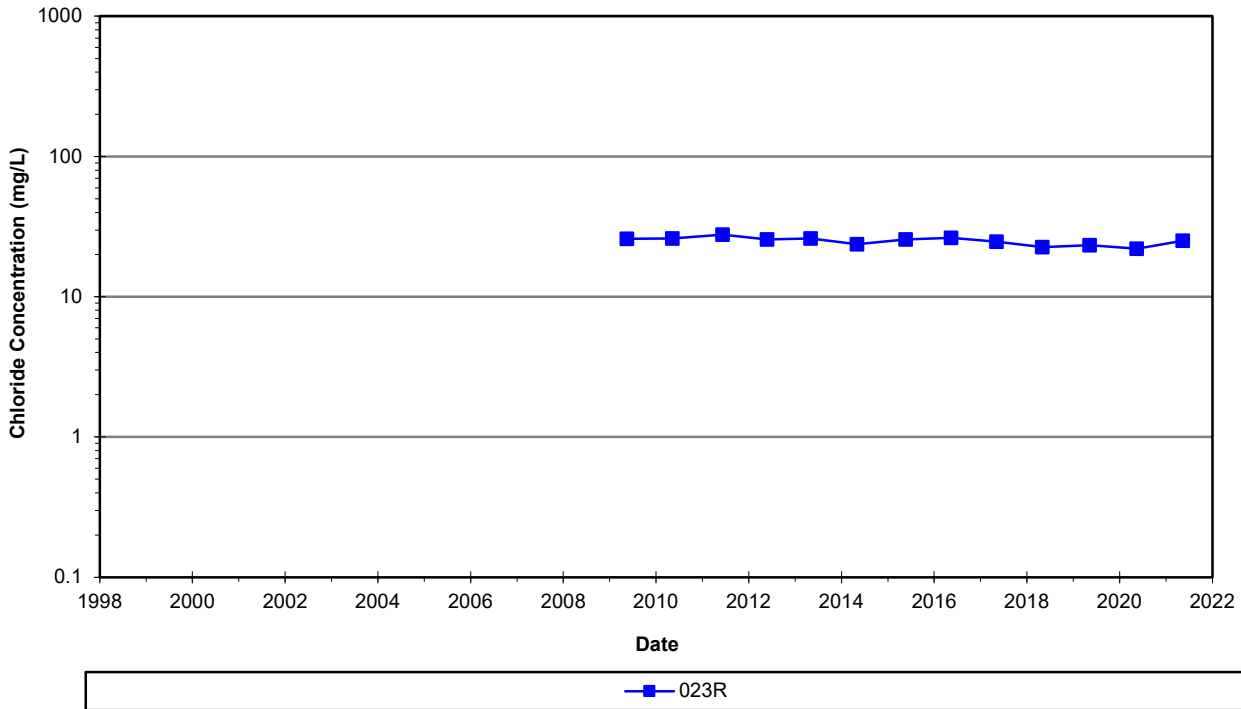


Figure D-53
Chloride Concentration Versus Time - Upper Till, Fractured Till
Oxford County Waste Management Facility

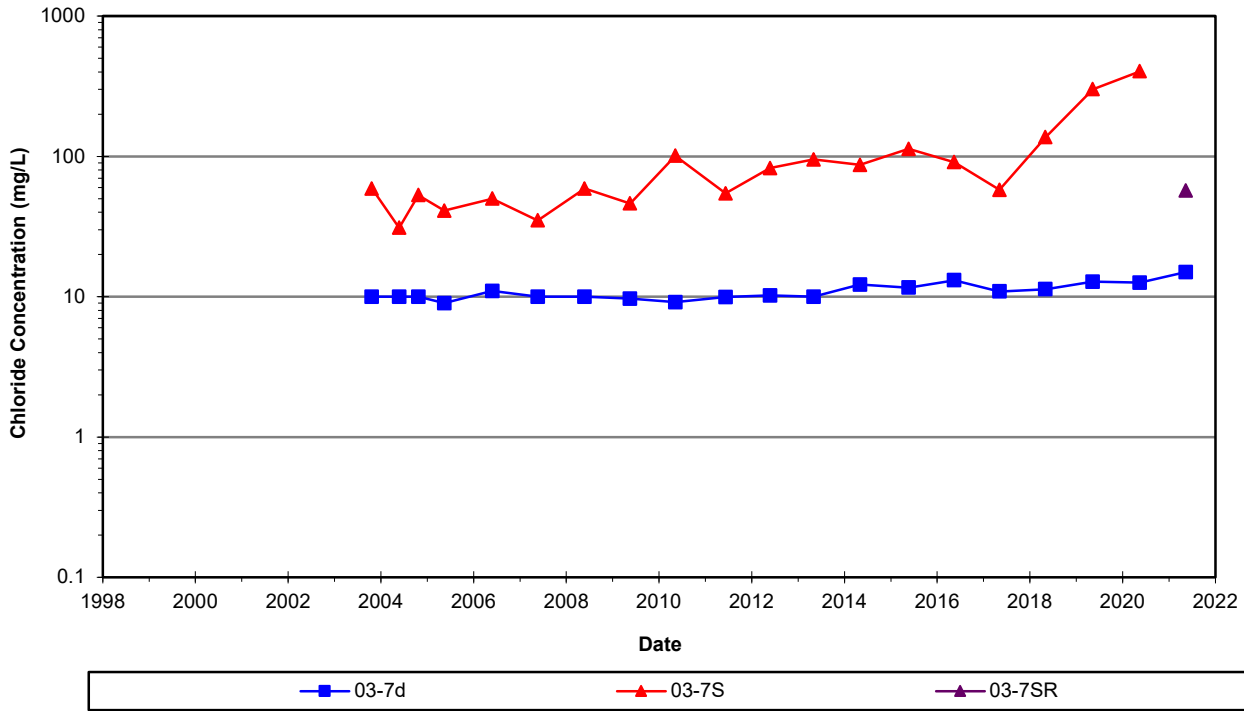


Figure D-54
Chloride Concentration Versus Time - Glaciolacustrine Unit
Oxford County Waste Management Facility

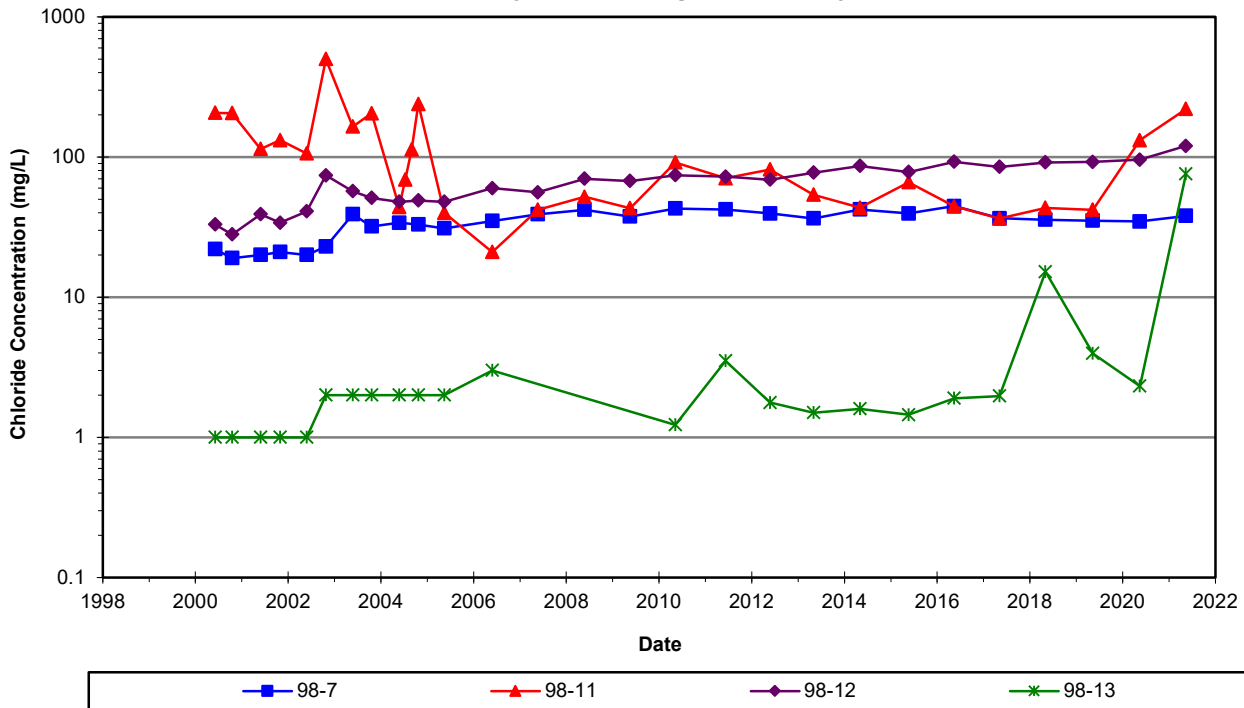
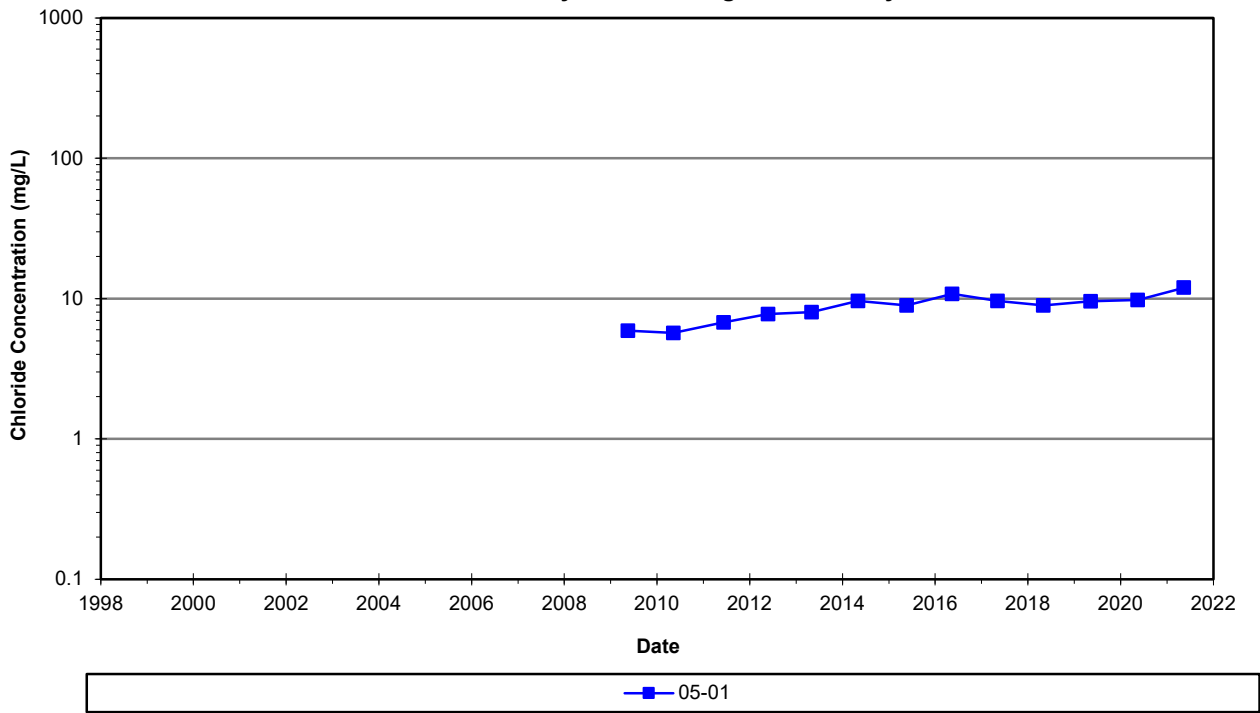


Figure D-55
Chloride Concentration Versus Time
Oxford County Waste Management Facility



APPENDIX

E

SURFACE WATER
CHEMISTRY



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L		unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L
		6.5 - 8.5	NC	field NC	NC	6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW1	08-Oct-85					7.80	416						15	62	
(971)	17-Dec-85					7.70	343						9	54	
	01-Apr-86					8.00	224						3	36	
	23-Jun-86					9.40	157						5	16	
	18-Sep-86					7.80	347						6	52	
	15-Dec-86					7.50	387						8	60	
	04-Mar-87					7.60	259						12	36	
	12-Jun-87					7.70	321						21	38	
	14-Sep-87								370						
	14-Dec-87					7.90	443		28	205			20	66	
	07-Mar-88					7.60	306		14	144			14	45	
	06-Jun-88					8.00	484		19	247			16	76	
	06-Sep-88					7.90	346		1053	175			11	55	
	12-Dec-88					8.10	481		8	226			10	70	
	14-Mar-89					8.10	340		7	135			20	43	
	18-Jun-89					7.90	526		30	236			32	75	
	11-Sep-89					7.90	450		99	197			46	58	
	11-Dec-89					8.10	541		3	254			32	78	
	05-Mar-90					7.90	337			152			17	49	
	11-Jun-90					8.40	424		15	205			20	64	
	17-Sep-90					7.80	356		74	174			25	55	
	02-Dec-90					8.80	411		14	200			16	62	
	11-Mar-91					8.10	357		22	164			14	52	
	17-Jun-91					8.20	387		7200	165			34	48	
	09-Sep-91					7.70	361		122	162			34	46	
	03-Dec-91					8.00	432		50	200			26	61	
	24-Mar-92					8.20	381		7	168			20	51	
	16-Jun-92					7.80	386		74	169			29	44	
	15-Sep-92					8.00	366		107	168			20	51	
	07-Dec-92					7.90	463			235			12	73	
	23-Mar-93					8.10	318		37	138			17	43	
	15-Jun-93					7.40	370		281	159			29	47	
	07-Sep-93					7.70	407		136	177			47	54	
	07-Dec-93					8.30	548		22	267			28	81	
	21-Mar-94					7.70	294		9	109			26	35	
	21-Jun-94					7.70	463		81	194			33	55	
	26-Sep-94					8.10	344		82	158			21	43	
	06-Dec-94					8.00	473		8	223			31	67	
	28-Mar-95					8.10	544		28	215			30	63	
	26-Jun-95					8.40	454		28	155			54	37	
	26-Sep-95					8.40	556		53	176			84	42	
	04-Dec-95					8.30	478		28	220			23	67	
	22-Apr-96					8.30	463		19	208			23	63	
	06-May-97						400		4	218			23	65	
	29-Sep-97						381		19	165			27	43	
	02-Dec-97						457		9	214			25	62	
	05-May-98					7.90	438	11	16	214			18	60	
	29-Jun-98					8.20	310	100	170	124			27	26	
	21-Sep-98					8.00	534	54	152	199			54	59	
	08-Dec-98					7.80	700		137	252			49	73	
	13-Apr-99					8.20	452	14	6	201			31	57	
	16-Jun-99					8.20	430	37		183			32	47	
	20-Sep-99					7.60	429	5	148	158			40	43	
	15-Nov-99					8.00	729	26	31	225			26	66	
	13-Apr-00					8.30	502	18	6	229			33	63	
	28-Jun-00					8.90	296	47	35	131			16	30	
	27-Sep-00					8.30	304	16	229	150			9	45	
	16-Nov-00					8.20	390	18	13	218			12	67	

Notes: - PWQO - Provincial Water Quality Objectives (July 1994) - * Values should be interpreted with caution - Units provided
 - NC - No criteria - Blank - Indicates data not available
 - ** Calculated value using the fraction of NH₃ from f = 1/(10⁶pKa-pH+1); where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.

**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	Fluoride	Magnesium	Ammonia	Un-ionized Ammonia **	Nitrate	Nitrite	TKN	Phenols	BOD ₅	COD	Phosphorous	DOC	Ortho-phosphate	Iron	TSS
		mg/L NC	mg/L NC	mg/L NC	mg/L 0.02	mg/L NC	mg/L NC	mg/L NC	mg/L NC	mg/L 0.001	mg/L NC	mg/L NC	mg/L 0.03	mg/L NC	mg/L NC	mg/L 0.30
SW1	08-Oct-85		9	0.07		0.01	0.01	1.16	0.0010			0.06	12			
(971)	17-Dec-85		8	0.03		1	0.01	0.57	0.0010			0.04	3.6			
	01-Apr-86		4	0.01		7.4	0.01	0.52	0.0010				2.5			
	23-Jun-86		5	0.01		0.1	0.01	0.69	0.0010			0.03	7.1			
	18-Sep-86		9	0.12					0.0010			0.09	9.1			
	15-Dec-86		10	0.1					0.0010			0.07	6.4			
	04-Mar-87		7	0.15					0.0010			0.09	8.1			
	12-Jun-87		9	0.02					0.0015			0.31	11.2			
	14-Sep-87			0.04								0.85				
	14-Dec-87		10	0.01					0.0020			0.19	13			
	07-Mar-88		8	0.3					0.0010			0.11	9.8			
	06-Jun-88		14	0.05					0.0010			0.09	12			
	06-Sep-88		9	0.01					0.0010			0.04	10			
	12-Dec-88		12	0.08					0.0015			0.08	7.2			
	14-Mar-89		7	0.3					0.0040			0.12	6.6			
	18-Jun-89		12	0.08					0.0035			0.16	11.2			
	11-Sep-89		13	0.01					0.0030			0.23	15.8			
	11-Dec-89		14	0.08					0.0040			0.05	10.6			
	05-Mar-90		7	0.06					0.0020			0.07	5.4			
	11-Jun-90		11	0.01					0.0025			0.14	10.6			
	17-Sep-90		9	0.18					0.0010			0.27	10.1			
	02-Dec-90		11	0.01					0.0010			0.01	9.1			
	11-Mar-91		8	0.01					0.0010			0.2	5.6			
	17-Jun-91		11	0.3					0.0010			0.43	13.3			
	09-Sep-91		11	0.01					0.0015			0.33	13			
	03-Dec-91		12	0.03					0.0050			0.17	10.2			
	24-Mar-92		10	0.04					0.0040			0.03	5			
	16-Jun-92		15	0.36					0.0050			0.33	16.4			
	15-Sep-92		10	0.05					0.0065			0.35	13.5			
	07-Dec-92		13						0.0030				6.3			
	23-Mar-93		7	0.33					0.0105			0.07	5.7			
	15-Jun-93		10	0.06					0.0050			0.93	14.5			
	07-Sep-93		11	0.04					0.0040			0.73	20			
	07-Dec-93		16	0.52					0.0061			0.14	12.8			
	21-Mar-94		6	1.11				2.2	0.0086			0.17	9			
	21-Jun-94		14	0.03					0.0027			0.41	16.2			
	26-Sep-94		12	0.04				4.5	0.0084			0.45	14.8			
	06-Dec-94		14	0.41				1.71	0.0084			0.11	12.2			
	28-Mar-95		14	0.15		0.1	0.01	1.92	0.0085			0.16	7.7			
	26-Jun-95		15	0.1		0.1	0.02	4.84	0.0066			0.52	21.5			
	26-Sep-95		17	0.13		0.1	0.02	5.74	0.0051			0.44	25.5			
	04-Dec-95		13	0.07		0.2	0.02	1.26	0.0063			0.08	7.7			
	22-Apr-96		12	0.13		0.1	0.02	1.28	0.0046			0.12	9			
	06-May-97		14	0.12		0.01	0.01	1.48	0.0010			0.08	6.1			
	29-Sep-97		14	0.08		0.05	0.01		0.0010			0.27	14.9			
	02-Dec-97		14	0.22		0.15	0.010		0.0010			0.06	12.4			
	05-May-98	0.2	16	0.06		<0.1	0.020	2.03	0.0020			0.22	10.6			
	29-Jun-98	0.2	14	<0.05		<0.1	0.030	13.4	0.0020			0.55	17.3			
	21-Sep-98	0.5	13	0.08		<0.1	<0.02	21.6	0.0010			1.72	31.2			
	08-Dec-98		17	0.05		<0.1	<0.02	8.14	<0.001			0.58	26.5			
	13-Apr-99	0.2	14	<0.05		<0.1	<0.02	1.17	<0.001			0.10	10.2			
	16-Jun-99	0.3	16	<0.05		<0.1	<0.02		<0.007			0.12	18			
	20-Sep-99	0.1	12	0.12		0.47	<0.02	8.88	<0.001			0.77	27.3			
	15-Nov-99	0.2	15	0.05		0.91	<0.02	3	<0.001			0.20	13.5			
	13-Apr-00	0.2	17	<0.05		0.21	<0.02	1.09	0.0010			0.08	9.9			
	28-Jun-00	0.2	14	<0.05		0.11	<0.02	1.26	0.0020			0.04	12.6			
	27-Sep-00	0.3	9	<0.05		0.16	<0.02	16	0.0010			0.23	7.9			
	16-Nov-00	0.2	13	<0.05		<0.1	<0.02	1.09	<0.001			0.06	8.3			

Notes: - PWQO - Provincial Water Quality Objectives (July 1994) * Values should be interpreted with caution - Units provided
 - NC - No criteria - Blank - Indicates data not available
 - ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L	unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		field				6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW1	10-Apr-01					7.90	377	<5	11	235			27	71	
cont.	21-Jun-01					8.60	354	20	25	140			32	34	
	19-Sep-01					8.00	494	34	463	179			56	49	
	22-Nov-01					8.30	496	22	12	257			29	75	
	24-Apr-02					8.30	474	7	18	239			15	66	
	27-Jun-02					8.20	370	42	45	146			19	33	
	12-Nov-02					8.20	414	25	192	205			30	59	
	26-Mar-03					7.80	185	<5	4	89			6	27	
	29-Apr-03					9.10	309	33	22	131			22	28	
	24-Jul-03					8.30	354	28	39	161			22	39	
	08-Oct-03					8.20	403	24	64	178			32	46	
	06-Nov-03					8.10	428	36	49	218			17	62	
	26-Apr-04					8.20	533	22	6	229			26	60	
	22-Jun-04					8.00	304	27	9	137			13	31	
	09-Nov-04					8.20	382	29	14	159			21	40	
	02-Dec-04					7.80	371	30	35	187			20	52	
	05-Apr-05					8.18	423	23	22	226			15	63	
	18-Jul-05						324		98	126			26	28	
	29-Sep-05						478		306	246			69	73	
	30-Nov-05					8.10	484	27		210			51	68	
	12-Apr-06					8.10	757	72	17	270			115	79	
	28-Jun-06					8.20	527	50	32	200			99	51	
	05-Sep-06					8.50	481	44	36	210			88	60	
	05-Oct-06					7.70	411	32	49	260			29	80	
	21-Nov-06					8.00	533	28	8	260			25	77	
	19-Apr-07					8.00	811	39	11	260			124	69	
	16-May-07					8.10	658	58	20	210			118	53	
	22-Nov-07					8.10	821	35	168	300			167	90	
	11-Jan-08	7.46	606	3.6	15.77	7.80	612	41	48	250			83	76	
	08-Apr-08	8.34	824	11.7	12.40	7.90	857	13	7	260			148	80	
	24-Jun-08	8.73	627	23.4	8.03	8.20	648	22	48	170			128	41	
	11-Aug-08	8.82	469	19.5	9.35	8.30	479	22	18	190			54	54	
	11-Mar-09	7.99	295	2.0	9.58	7.96	313	16	16	100			44	30.5	
	01-May-09	7.7	491	14.7	6.77	7.96	560	22	39	207			55.3	61.1	
	01-Oct-09	8.39	443	12.2	5.68	8.22	512	15	13	196			58	53	
	01-Dec-09	9.18	550	4.4	7.20	8.25	590	13	14	257			51.1	74.8	
	15-Mar-10	7.44	620	3.0	11.97	8.03	556				332	169	57.9		32.8
	10-May-10	8.98	440	12.6		8.43	352				260	413	61.7		36.7
	14-Jul-10	8.41	260	25.9	14.85	8.55	315				216	99	21		33.5
	04-Oct-10	8.08	490	11.7	12.92	8.27	459				326	140	42.7		50.2
	11-Apr-11	7.53	657	13.8	11.56	8.17	700				360	158	96.7		57.8
	13-Jun-11	7.19	379	18.9	7.39	8.14	414				256	128	46.3		31.6
	25-Aug-11	6.51	591	25.7	3.57	8.47	630				392	172	71		49.7
	24-Oct-11	7.41	729	14.3	10.06	8.15	583				416	179	63		84.9
	08-Mar-12	6.54	696	6.8	10.53	8.13	831				496	242	97.6		69
	24-May-12	8.65	840	27.0	10.81	8.04	781				460	160	140		64.5
	13-Aug-12	7.75	617	21.0	8.72	7.81	731				492	83	158		33
	23-Oct-12	7.19	888	11.9	7.90	8.29	686				496	177	116		54.2
	09-Apr-13	8.4	863	9.2	11.31	8.08	820				440	201	110		42
	08-May-13	8.56	602	21.2	14.10	8.06	586				338	118	73.6		57.8
	07-Aug-13	7.97	608	21.6	6.75	7.40	608	24	76.2	171	366	149	68.1	41.7	47.8
	31-Oct-13	8.43	640	10.0	7.13	8.16	601	25	31.3	70.4	374	188	48.3		58
	28-Mar-14	8.23	865	1.1	7.91	8.11	740	35	81.7	209	358	261	64.7		28.4
	08-May-14	8.14	722	11.9	9.80	8.15	705	23	12.9	218	448	162	76.3		70.3
	12-Aug-14	8.33	511	21.5	6.52	8.17	461	24	109	153	298	113	57.7		37.8
	20-Oct-14	7.22	660	11.2	9.75	8.08	685	29	20.5	246	368	186	58.1		53.7
	02-Apr-15	7.50	543	6.3	10.3	8.15	711	21	13.8	201	344	200	93.9		26.5
	25-May-15	7.15	620	17.5	9.5	8.28	805	24	38.3	212	448	196	113		40.3

Notes: - PWQO - Provincial Water Quality Objectives (July 1994) - * Values should be interpreted with caution - Units provided
 - NC - No criteria - Blank - Indicates data not available
 - ** Calculated value using the fraction of NH₃ from f = 1/(10^{pkA-pH+1}); where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	Fluoride	Magnesium	Ammonia	Un-ionized Ammonia **	Nitrate	Nitrite	TKN	Phenols	BOD ₅	COD	Phosphorous	DOC	Ortho-phosphate	Iron	TSS
		mg/L NC	mg/L NC	mg/L NC	mg/L 0.02	mg/L NC	mg/L NC	mg/L NC	mg/L NC	mg/L 0.001	mg/L NC	mg/L NC	mg/L 0.03	mg/L NC	mg/L NC	mg/L 0.30
SW1	10-Apr-01	3.2	14	0.05		<0.1	<0.02	1.25	0.0050			0.13	5.4			
cont.	21-Jun-01	0.2	14	<0.05		<0.1	<0.02	2.15	<0.001			0.11	12.2			
	19-Sep-01	0.43	14	0.1		0.51	<0.02	9.94	0.0015			1.46	27.6			
	22-Nov-01	0.22	17	<0.05		<0.1	<0.02	1.55	<0.001			0.13	11.4			
	24-Apr-02	0.21	18	<0.05		<0.1	<0.02	0.88	<0.002			0.06	8.4			
	27-Jun-02	<0.1	15	0.06		<0.1	<0.02	3.64	<0.002			0.21	14.7			
	12-Nov-02	0.25	14	<0.05		<0.1	<0.02	3.36	<0.002			0.01	15.8			
	26-Mar-03	<0.1	5	0.12		0.39	<0.02	0.93	<0.002			<0.08	3.3			
	29-Apr-03	0.14	15	<0.05		<0.1	<0.02	1.5	<0.002			0.08	9.1			
	24-Jul-03	0.2	16	<0.05		<0.1	<0.02	2.63	0.0020			0.1	14.2			
	08-Oct-03	0.22	15	<0.05		<0.1	<0.02	3.41	<0.002			0.34	15.7			
	06-Nov-03	0.2	15	<0.05		0.1	<0.02	1.79	<0.002			0.19	9.8			
	26-Apr-04	0.16	20	<0.05		<0.1	<0.02	1.45	<0.002			0.02	9.4	<0.002		
	22-Jun-04	0.19	15	0.06		<0.1	<0.02	2.13	<0.002			0.09	9.7	0.002		
	09-Nov-04	0.26	14	0.15		<0.1	<0.02	2.29	0.0030			0.15	35.5	<0.002		
	02-Dec-04	0.4	14	ND		0.4	ND	2	0.0020			0.17	17.8	ND		
	05-Apr-05	0.2	16	<0.05		0.1	<0.1	0.9	<0.001			0.07	7.3	0.017		
	18-Jul-05		15	0.07		<0.2	<0.3	5.4	<0.001			0.41	18.9	<0.005		
	29-Sep-05		16	<0.05		<2	<3	12.4	0.0010			0.94	20.7	0.027		
	30-Nov-05	0.2	15	0.39		0.4	<0.01						12.6			
	12-Apr-06	0.1	17	0.39		0.1	<0.1	2.2	<0.001			0.06	6	<0.3		
	28-Jun-06	0.2	17	<0.05		<0.1	<0.1	2.1	<0.001			0.13	8	<0.3		
	05-Sep-06	0.1	15	<0.05		<0.1	<0.1	1.5	<0.001			0.54	15	<0.3		
	05-Oct-06	0.2	14	0.11		0.2	<0.1	3.5	<0.001			0.27	7	<0.3		
	21-Nov-06	0.2	17	0.53		0.4	<0.1	1.6	<0.001			0.06	10	<0.3		
	19-Apr-07	0.2	22	0.28		0.5	<0.1	1.9	<0.001			0.06	9	<0.003		
	16-May-07	0.2	19	<0.05		<0.1	<0.1	5.9	<0.001			0.23	14	<0.003		
	22-Nov-07	0.2	20	2.3		0.6	<0.1	7.7	<0.001			0.7	30	0.004		
	11-Jan-08	0.2	14	0.56	0.002	0.6	<0.1	3.2	<0.001			0.24	10			
	08-Apr-08	0.1	16	0.08	0.004	0.3	<0.1	1.1	<0.001			0.05	8			
	24-Jun-08	0.4	17	0.06	0.013	<0.1	<0.1	1.1	<0.001			0.09	12			
	11-Aug-08	0.2	13	<0.05	<0.010	<0.1	<0.1	1.5	<0.001			0.11	8			
	11-Mar-09	<0.1	5.1	0.26	0.002	0.6	<0.1	0.81	<0.001			0.083	4	0.035		
	01-May-09	0.19	13.3	0.064	0.001	<0.10	<0.10	1.16	<0.0010			0.0929	9.2	<0.0030		
	01-Oct-09	0.21	15.5	0.068	0.003	0.21	<0.10	1.48	<0.0010			0.0916	25.2	0.0033		
	01-Dec-09	0.18	17.1	<0.050	<0.008	0.13	<0.10	1.16	<0.0010			0.0665	9	<0.0030		
	15-Mar-10			0.17	<0.001	0.29	<0.05	0.93	<0.001	<5	32	0.1			0.752	32
	10-May-10			<0.02	<0.004	<0.05	<0.05	0.9	<0.001	<5	25	0.13			0.69	20
	14-Jul-10			<0.02	<0.003	0.07	<0.05	5.33	<0.001	18	110	0.3			0.404	81
	04-Oct-10			<0.02	<0.001	<0.05	<0.05	2.93	<0.001	<5	30	0.26			0.86	49
	11-Apr-11			0.07	0.001	0.65	<0.05	1.73	<0.001	<5	26	0.07			0.45	32
	13-Jun-11			0.97	0.005	<0.05	<0.05	2.01	<0.001	<5	26	0.09			0.74	24
	25-Aug-11			0.04	<0.001	<0.05	<0.05	2.82	<0.001	10	70	0.23			0.99	44
	24-Oct-11			0.29	0.002	0.19	<0.05	1.65	<0.001	<5	32	0.06			0.48	33
	08-Mar-12			1.81	0.001	0.48	<0.05	4.56	<0.001	10	62	0.09			0.47	21
	24-May-12			<0.02	<0.005	<0.05	<0.05	1.92	<0.001	6	52	0.07			1.27	44
	13-Aug-12			0.03	0.001	<0.05	<0.05	8.9	<0.001	21	431	0.96			1.76	228
	23-Oct-12			<0.02	<0.001	<0.05	<0.05	2.37	<0.001	6	80	0.16			1.63	68
	09-Apr-13			1.11	0.047	0.46	<0.05	2.14	<0.001	<5	31	0.07			0.25	25
	08-May-13			<0.02	<0.001	<0.10	<0.10	2.16	0.001	19	68	0.19			0.74	60
	07-Aug-13	<0.05	16.3	<0.02	<0.001	<0.05	<0.05	3.27	0.001	9	74	0.24	14.6		1.54	94
	31-Oct-13	<0.10		0.35	0.017	0.23	<0.10	1.88	<0.001	<5	63	0.10	9.9		0.65	32
	28-Mar-14	0.16		17.0	0.257	0.82	<0.10	17.3	0.002	9	58	0.20	17.6		0.95	58
	08-May-14	<0.10		0.08	0.002	0.34	<0.10	1.5	<0.001	5	37	0.09	9.5		0.29	17
	12-Aug-14	0.11		0.02	0.002	<0.10	<0.10	4.69	<0.001	10	122	0.34	16.1		1.11	110
	20-Oct-14	<0.10		0.34	0.001	<0.10	<0.10	2.64	<0.001	14	37	0.11	8.9		0.31	25
	02-Apr-15	<0.25		4.85	0.021	<0.25	<0.25	6.35	<0.001	12	38	0.09	12.8		0.47	15
	25-May-15	<0.25		2.36	0.011	<0.25	<0.25	4.37	<0.001	6	57	0.15	14.3		0.51	36

Notes: - PWQO - Provincial Water Quality Objectives (July 1994)

- * Values should be interpreted with caution

- Units provided

- NC - No criteria

- Blank - Indicates data not available

- ** Calculated value using the fraction of NH₃ from f = 1/(10^{pKa-pH+1}); where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.

**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L		unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L
		6.5 - 8.5	NC	NC	NC	6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW1	26-Aug-15	9.05	470	18.6	7.40	8.22	498	32	173	133	318	117	70.7		16.3
cont.	29-Oct-15	8.12	590	9.9	7.46	7.96	517	31	286	177	366	129	60.9		33.9
	15-Mar-16	7.31	635	7.5	8.7	8.22	805	21	27.3	300	446	248	75.3		101
	16-May-16	7.8	403	9.5	9.3	7.96	492	8	26.0	153	262	123	50.5		70.1
	18-Aug-16	7.99	403	9.5	8.9	8.49	493	32	108	122	274	125	62.7		16.3
	17-Oct-16	8.82	520	18.2	7.9	8.01	545	30	114	135	310	117	66.1		44.1
	07-Mar-17	7.89	689	5.52	10.02	8.08	690	25	59.1	225	362	179	60.4		62.9
	08-May-17	8.27	577	8.53	7.98	8.33	626	34	36.3	227	340	220	25.2		52.2
	02-Aug-17	8.30	339	22.4	6.23	7.75	401	37	165	109	266	137	47.0		13.6
	17-Oct-17	7.76	392	10.95	7.47	8.08	485	25	207	159	310	135	51.4		51.1
	15-Mar-18	7.52	1020	3.06	8.59	8.02	923	18	8.3	272	550	203	190		60.7
	07-May-18	7.89	675	15.41	6.28	7.86	670	29	46.1	223	394	163	93.3		70.2
	20-Aug-18	7.48	458	23.30	7.25	8.16	500	16	41.3	134	284	119	70.0		28.6
	15-Oct-18	7.40	527	10.96	7.93	7.26	595	10	36.1	181	356	100	74.6		56.5
	15-Mar-19	7.13	255	1.06	10.35	7.59	270	35.9	33.9	81.8	169	81	28.2	25.7	12.3
	15-May-19	8.35	546	9.81	14.06	8.46	662	38.5	24.5	278	395	229	61.6	79.9	46.8
	28-Aug-19	7.07	436	21.3	5.76	8.04	558	21.3	24.8	188	340	158	62.5	49.1	35.8
	08-Oct-19	8.01	543	13.32	9.68	8.27	621	19.4	11.2	227	344	182	64.2	61.9	50.8
	16-Mar-20	7.47	773	2.31	10.8	7.99	797	17.3	13.3	311	436	234	97.1	90.2	52.3
	15-May-20	8.01	539	12.89	10.90	8.17	622	23.2	24.9	205	342	158	77.6	50.8	46.4
	10-Aug-20	7.39	561	23.9	6.89	8.42	621	24.3	26.1	185	356	155	86.1	41.2	27.4
	15-Oct-20	8.25	642	14.47	5.17	7.88	800	28.2	22.6	249	458	202	95.1	64.3	68.3
	15-Mar-21	7.67	2020	6.8	4.11	7.83	1640	63	81.6	515	1000	537	180		77
	17-May-21	8.44	1152	16.5	5.20	8.54	1180	52	21.7	224	683	287	200		69
Supplemental	10-Jun-21	7.79	962	24.2	9.80	8.22	1260	56	8.79	327	680	311	210		68
Supplemental	29-Jun-21	7.71	1040	22.3	9.57	8.46	1080	45	17.4	285	577	241	170		54
Supplemental	29-Jul-21	7.85	1080	23.4	10.42	8.13	1080	39	8.46	289	657	251	170		82
	12-Aug-21	7.79	939	23.7	6.36	8.17	1030	37	10.6	283	626	246	180		79
	04-Oct-21	7.46	664	17.5	9.87	7.76	719	50	5.07	241	440	180	87		65
SW4	18-Sep-86					7.40	458			225			5		73
(974)	15-Dec-86					6.60	408			202			7		61
	04-Mar-87					7.00	287			142			5		42
	14-Dec-87					7.80			17	126			3		37
	07-Mar-88					6.40	550		7	282			6		87
	06-Jun-88					7.40	540		12	302			3		44
	06-Sep-88					7.30	291		36	153			1		48
	12-Dec-88					6.70	836		161	462			9		145
	05-Mar-89					6.70	660		5	360			9		115
	14-Mar-89					7.00	140			56			4		17
	18-Jun-89					7.40	345		8	175			1		53
	11-Dec-89					6.50	580		198	304			9		94
	11-Mar-90					6.80	523			280			4		88
	11-Jun-90					8.10	316		9	171			1		52
	17-Sep-90					7.30	309		17	159			3		52
	02-Dec-90					7.60	442		13	226			6		70
	11-Mar-91								54						
	17-Jun-91					7.40	378		117	194			1		63
	03-Dec-91					7.00	364			179			7		54
	24-Mar-92					7.10	494		22	252			4		79
	15-Sep-92					7.40	363		75	187			3		63
	07-Dec-92					7.00	518			308			5		97
	23-Mar-93					7.50	270		17	116			7		38
	15-Jun-93					7.50	408		62	215			2		66
	07-Dec-93					8.10	376		6	196			4		60
	21-Mar-94					6.80	286		61	145			4		46
	21-Jun-94					7.70	499		82	274			2		87
	28-Mar-95					7.50	392		13	215			45		68
	04-Dec-95					7.20	394		3	193			5		59

Notes: PWQO - Provincial Water Quality Objectives (July 1994) * Values should be interpreted with caution Units provided
 NC - No criteria Blank - Indicates data not available
 ** Calculated value using the fraction of NH₃ from f = 1/(10^{pk}a-pH+1); where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	Fluoride mg/L	Magnesium mg/L	Ammonia mg/L	Un-ionized Ammonia ** mg/L	Nitrate mg/L	Nitrite mg/L	TKN mg/L	Phenols mg/L	BOD ₅ mg/L	COD mg/L	Phosphorous mg/L	DOC mg/L	Ortho-phosphate mg/L	Iron mg/L	TSS mg/L
		NC	NC	NC	0.02	NC	NC	NC	0.001	NC	NC	0.03	NC	NC	0.30	NC
SW1	26-Aug-15	<0.25		0.05	0.014	<0.25	<0.25	10.4	<0.001	31	273	0.85	28.3		1.94	255
cont.	29-Oct-15	<0.25		0.11	0.003	0.46	<0.25	8.82	<0.001	16	238	0.71	30.1		3.76	275
	15-Mar-16	<0.25		3.35	0.010	0.74	<0.25	4.53	0.005	7	39	0.10	10.9		0.39	31
	16-May-16	<0.05		<0.02	<0.001	<0.05	<0.05	1.67	<0.001	9	57	0.10	12.6		0.35	25
	18-Aug-16	<0.25		<0.02	<0.001	<0.25	<0.25	5.41	<0.001	15	143	0.38	22.6		2.08	85
	17-Oct-16	0.20		0.04	0.007	<0.05	<0.05	5.16	<0.001	14	142	0.49	20.1		1.52	139
	07-Mar-17	<0.25		1.80	0.018	0.62	<0.25	3.06	<0.001	<5	36	0.10	10.9		0.548	42
	08-May-17	<0.10		1.04	0.031	0.75	<0.10	2.09	<0.001	<5	31	0.07	10.1		0.38	30
	02-Aug-17	0.35		0.52	0.045	<0.05	<0.05	6.16	<0.001	27	176	0.35	23.8		2.26	123
	17-Oct-17	<0.05		0.04	<0.001	0.06	<0.05	6.43	<0.001	23	195	0.72	22.8		10.1	257
	15-Mar-18	<0.25		<0.02	<0.001	<0.25	<0.25	0.98	<0.001	<5	29	0.06	9.3		0.19	<10
	07-May-18	<0.10		0.03	0.001	0.13	<0.10	1.49	0.002	5	27	0.14	11.1		0.64	40
	20-Aug-18	<0.10		<0.02	<0.001	<0.10	<0.10	3.32	0.002	12	74	0.28	13.9		0.84	43
	15-Oct-18	<0.10		0.41	0.002	<0.10	0.490	3.35	0.001	10	49	0.17	12.2		0.554	39
	15-Mar-19	0.038	4.28	0.67	0.001	0.277	0.017	2.32	0.0012	6.1	45	0.578	10.9		1.21	23.9
	15-May-19	0.108	19.1	0.014	0.001	<0.020	<0.010	1.78	0.0028	6.1	41	0.103	12.0		0.916	25.0
	28-Aug-19	0.157	15.8	0.018	<0.001	<0.020	<0.010	2.69	<0.0010	5.9	64	0.129	14.4		0.940	31.0
	08-Oct-19	0.154	17.7	0.015	<0.001	<0.020	<0.010	2.22	0.0026	2.9	56	0.152	14.4		0.711	24.6
	16-Mar-20	0.111	20.7	0.263	0.001	0.172	<0.010	1.39	0.0062	4.8	41	0.054	12.9		0.538	13.5
	15-May-20	0.107	18.9	0.071	0.002	0.031	<0.010	1.58	0.0016	3.9	48	0.082	16.6		0.900	29.5
	10-Aug-20	0.159	19.9	0.026	<0.001	<0.020	<0.010	2.69	0.0037	5.0	69	0.138	25.6		0.886	27.2
	15-Oct-20	0.161	21.5	1.58	0.070	0.037	<0.010	4.96	0.0021	10.0	84	0.227	20.8		0.889	28.9
	15-Mar-21	0.15		37.2	0.249	<0.06	0.14	41	0.111	195	325	0.786	139		2.86	55
	17-May-21	0.13		16.5	1.28	<0.06	<0.03	20.8	0.004	19	123	0.340	29.0		0.11	57
Supplemental	10-Jun-21	0.13		14.7	0.47	<0.06	<0.03	18.4	0.003	11	98	0.298	35.1		0.38	19
Supplemental	29-Jun-21	0.14		6.2	0.15	0.88	0.52	10.0	0.001	16	81	0.217	15		0.32	42
Supplemental	29-Jul-21	0.14		2.5	0.086	0.13	0.12	5.8	0.001	4	71	0.133	24.7		0.17	19
	12-Aug-21	0.16		1.2	0.037	<0.06	0.06	4.0	0.003	12	80	0.120	22.7		0.12	21
	04-Oct-21	0.16		0.5	0.005	0.07	0.03	1.6	0.005	14	44	0.193	14.8		0.26	6
SW4	18-Sep-86		10	0.07					0.0015			0.23	15.3			
(974)	15-Dec-86		12	0.32					0.0030			0.4	18			
	04-Mar-87		9	0.15					0.0015			0.1	10.7			
	14-Dec-87		8	0.03					0.0010			0.12	14.1			
	07-Mar-88		16	1					0.0010			0.19	24.5			
	06-Jun-88		16	0.11					0.0010			0.07	23			
	06-Sep-88		8	0.03					0.0010			0.27	20			
	12-Dec-88		24	0.01					0.0130			2.4	20			
	05-Mar-89		18	0.12					0.0080			0.05	30			
	14-Mar-89		3						0.0085				11.8			
	18-Jun-89		10	0.12					0.0060			0.31	20			
	11-Dec-89		17	0.05					0.0555			1.12	37			
	11-Mar-90		14	1.8					0.0010			1.2	11.8			
	11-Jun-90		10	0.22					0.0025			0.31	23			
	17-Sep-90		7	0.02					0.0010			0.11	11.7			
	02-Dec-90		13						0.0015			0.06	14.2			
	11-Mar-91			0.26								0.44				
	17-Jun-91		9	0.02					0.0010			0.27	7.5			
	03-Dec-91		10	0.05					0.0200			0.4	22			
	24-Mar-92		13	0.09					0.0075			0.21	9.6			
	15-Sep-92		7	0.09					0.0075			0.35	11.2			
	07-Dec-92		16						0.0180				15.5			
	23-Mar-93		5	1.1					0.0300			0.23	16.2			
	15-Jun-93		12	0.09					0.0075			0.24	16			
	07-Dec-93		11	0.12					0.0178			0.18	19			
	21-Mar-94		7	1.08				2.8	0.0137			0.29	12.5			
	21-Jun-94		14	0.1					0.0059			0.26	22			
	28-Mar-95		11	0.05		0.1	0.01	1.23	0.0058			0.18	10.2			
	04-Dec-95		11	0.07		0.2	0.01	0.96	0.0128			0.16	15.2			

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 - NC - No criteria - Blank - Indicates data not available
 - ** Calculated value using the fraction of NH₃ from f = 1/(10^{pKa-pH}+1); where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L		unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L
		6.5 - 8.5	NC	field NC	NC	6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW4	22-Apr-96					7.50	356		2	186			3	57	
cont.	06-May-97						313		2	195			3	60	
	02-Dec-97						423		5	228			10	72	
	05-May-98					7.60	465	84	46	277			4	87	
	29-Jun-98														
	21-Sep-98														
	08-Dec-98														
	13-Apr-00					7.80	725	53	9	408			6	128	
	13-Apr-99					8.00	724	43	4	404			7	128	
	16-Jun-99					7.80	628	215	1	394			8	124	
	15-Nov-99					7.70	945	293	3	398			13	128	
	28-Jun-00					7.70	597	111	1	368			3	114	
	27-Sep-00					7.90	636	43	13	446			4	143	
	16-Nov-00					7.50	675	166	42	428			10	134	
	10-Apr-01					7.60	535	<5	13	414			5	131	
	21-Jun-01					7.60	509	108	40	285			6	86	
	22-Nov-01					7.90	929	134	9	567			12	183	
	24-Apr-02					8.20	578	51	9	336			4	106	
	27-Jun-02					8.20	802	116	17	244			119	71	
	12-Nov-02														
	26-Mar-03					8.10	431	47	5	250			5	81	
	29-Apr-03					8.20	588	159	5	309			8	99	
	24-Jul-03					8.00	437	102	5	252			4	80	
	06-Nov-03					7.60	647	1100	15	359			9	112	
	26-Apr-04					8.20	521	77	3	270			6	84	
	22-Jun-04					8.00	496	87	2	273			4	86	
	09-Nov-04														
	02-Dec-04					7.40	522	200	7	310			6	98	
	24-Apr-05					8.14	488	36	6	286			3.3	90	
	18-Jul-05														
	29-Sep-05														
	30-Nov-05					7.80	599	136		330			6	99	
	12-Apr-06					7.80	511	100	3	310			4	99	
	28-Jun-06					7.80	422	150	6	290			3	95	
	05-Sep-06					7.70	461	91	2	310			7	107	
	05-Oct-06					7.50	467	70	13	330			3	109	
	21-Nov-06					7.60	747	60	15	450			5	146	
	19-Apr-07					7.90	470	46	2	260			4	77	
	16-May-07					7.60	419	150	11	270			5	84	
	11-Jan-08	6.85	340	3.7	17.26	7.20	322	115	2	180			5	56	
	08-Apr-08	7.51	359	9.2	14.86	8.00	302	27	1	210			2	68	
	24-Jun-08	7.59	516	16.6	11.13	7.90	531	43	4	290			2	91	
	11-Aug-08	7.46	587	15.7	11.60	7.40	418	46	3	240			8	78	
	11-Mar-09	6.66	349	2.2	13.56	7.96	277	26	24	140			3	45.1	
	01-May-09	7.38	312	14	6.00	7.88	349	54	21	176			2.9	56.6	
	01-Oct-09	7.99	314	8.6	3.43	8.02	350	51	9	205			2.9	65.8	
	01-Dec-09	8.34	674	4.7	4.27	7.39	779	39	69	464			3.9	149	
	15-Mar-10	6.97	410	1.5	7.40	8.02	417	33	11	228			3.54	72.5	
	10-May-10	7.48	450	8.5		8.06	425	50	1	251			3.4	77.3	
	14-Jul-10	6.43	240	21.8	1.20	7.90	299	40	7	145			1.49	47.3	
	04-Oct-10	7.35	340	7.9	2.71	8.03	261	68	2	149			1.43	48.5	
	11-Apr-11	7.22	300	13.1	4.86	8.05	319	31	11	177			2.19	58.5	
	13-Jun-11	6.73	315	14.9	2.64	7.88	348	43	7	207			1.51	65.3	
	25-Aug-11	Dry													
	24-Oct-11	6.98	547	9.8	3.84	7.91	454	386	31.5	279			5.35	90.5	
	08-Mar-12	6.02	269	5	8.24	7.69	331	34	2.3	170			3.03	53.8	
	09-Apr-13	8.34	292	7.3	6.09	7.59	251	53	7.4	128			2.12	42.6	
	08-May-13	7.51	530	18.9	3.39	8.17	495	65	13.4	248			4.87	77.3	
	07-Aug-13	7.24	412	18.9	3.89	7.55	401	63	19.3	206			1.37	67.1	

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 - NC - No criteria - Blank - Indicates data not available
 - ** Calculated value using the fraction of NH₃ from $f = 1/(10^{(pKa-pH+1)})$; where $pKa = 0.09018 + 2729.92/T$ and $T =$ ambient water temperature in Kelvin ($K = °C + 273.16$). Field pH is used in the equation.



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	Fluoride mg/L NC	Magnesium mg/L NC	Ammonia mg/L NC	Un-ionized Ammonia ** mg/L 0.02	Nitrate mg/L NC	Nitrite mg/L NC	TKN mg/L NC	Phenols mg/L 0.001	BOD ₅ mg/L NC	COD mg/L NC	Phosphorous mg/L 0.03	DOC mg/L NC	Ortho-phosphate mg/L NC	Iron mg/L 0.30	TSS mg/L NC
SW4	22-Apr-96		11	0.05		0.1	0.02	0.8	0.0063			0.04	11.8			
cont.	06-May-97		11	0.83		0.01	0.01	1.02	0.0010			0.11	12.1			
	02-Dec-97		12	0.06		0.09	0.02		0.0070			0.51	24.5			
	05-May-98	0.2	15	0.08		<0.1	<0.02	0.58	<0.001			0.22	17.3			
	29-Jun-98	Dry														
	21-Sep-98	Dry														
	08-Dec-98	Dry														
	13-Apr-00	0.2	21	0.05		<0.1	<0.02	0.77	0.0020			0.06	12.9			
	13-Apr-99	0.1	20	0.05		0.11	<0.02	0.84	<0.001			<0.01	10			
	16-Jun-99	0.2	21	0.05		<0.1	<0.02	2.34	<0.001			1.23	38.9			
	15-Nov-99	0.2	19	0.05		0.47	<0.02	1.65	0.0010			0.32	24.2			
	28-Jun-00	0.2	20	0.07		<0.1	0.02	1.2	0.0020			0.11	18.2			
	27-Sep-00	0.2	22	0.13		<0.1	<0.02	1.02	<0.001			0.07	15.6			
	16-Nov-00	0.2	23	0.09		<0.1	<0.02	1.42	0.0750			1.00	31.5			
	10-Apr-01	<0.1	21	0.06		<0.1	<0.02	0.59	0.0060			0.09	7.1			
	21-Jun-01	0.2	17	0.14		<0.1	<0.02	4.6	<0.001			0.92	23			
	22-Nov-01	0.15	27	0.05		<0.1	<0.02	1.69	0.0012			0.31	22.4			
	24-Apr-02	0.23	17	0.05		<0.1	<0.02	1.41	<0.002			0.09	14.3			
	27-Jun-02	<0.1	16	0.06		<0.1	0.040	1.65	<0.002			0.2	20.7			
	12-Nov-02	Dry														
	26-Mar-03	0.11	12	<0.05		0.47	0.020	0.52	<0.002			0.02	6.4			
	29-Apr-03	0.15	15	<0.05		<0.1	<0.02	1.75	<0.002			0.10	23.9			
	24-Jul-03	0.13	13	<0.05		<0.1	<0.02	2.08	0.0020			0.27	24.1			
	06-Nov-03	0.12	19	<0.05		<0.1	0.02	1.43	0.0040			0.20	45.9			
	26-Apr-04	0.13	15	<0.05		<0.1	0.08	0.77	<0.002			<0.02	14.1	0.014		
	22-Jun-04	0.19	14	<0.05		<0.1	<0.02	2.08	<0.002			0.18	19.3	0.045		
	09-Nov-04	no data														
	02-Dec-04	0.4	16	0.09		ND	ND	1.5	0.0010			0.27	21.4	ND		
	24-Apr-05	0.1	14.9	<0.05		0.1	<0.1	0.5	0.0010			0.04	6.4	0.013		
	18-Jul-05	no data														
	29-Sep-05	no data														
	30-Nov-05	0.1	15	0.14		0.5	0.130						16.6			
	12-Apr-06	<0.1	15	<0.05		<0.1	<0.1	1.5	<0.001			0.08	12	<0.3		
	28-Jun-06	0.1	14	0.38		<0.1	<0.1	1.7	<0.001			0.76	22	<0.3		
	05-Sep-06	<0.1	10	<0.05		<0.1	<0.1	1.8	<0.001			0.55	19	<0.3		
	05-Oct-06	0.1	14	<0.05		<0.1	<0.1	0.8	<0.001			0.16	10	<0.3		
	21-Nov-06	0.1	21	<0.05		<0.1	<0.1	1	<0.001			0.1	14	<0.3		
	19-Apr-07	0.1	15	<0.05		<0.1	<0.1	1.1	<0.001			0.03	11	<0.003		
	16-May-07	0.1	15	0.19		<0.1	<0.1	1.9	<0.001			0.29	19	0.045		
	11-Jan-08	0.1	9	0.09	<0.001	0.4	<0.1	1.2	<0.001			0.08	12			
	08-Apr-08	<0.1	10	0.06	<0.001	<0.1	<0.1	0.7	0.0010			0.12	6			
	24-Jun-08	0.2	16	0.21	0.002	<0.1	<0.1	0.93	<0.001			0.15	12			
	11-Aug-08	0.1	11	0.13	0.001	<0.1	<0.1	1.2	0.0010			0.08	8			
	11-Mar-09	0.1	7.4	0.14	<0.001	0.7	<0.1	0.73	<0.001			0.063	5	0.008		
	01-May-09	0.1	8.44	0.091	0.001	<0.10	<0.10	1.01	<0.0010			0.0755	10.6	0.0099		
	01-Oct-09	<0.10	9.82	0.196	0.003	<0.10	<0.10	1.57	<0.0010			0.0754	26.6	0.0065		
	01-Dec-09	<0.10	22.1	0.058	0.002	<0.10	<0.10	2.79	0.033			0.677	21.9	0.0051		
	15-Mar-10	0.05	11.5	0.39	<0.001	0.17	<0.05	1.09	<0.001			0.13	11	<0.10		
	10-May-10	0.09	14.2	<0.02	<0.001	<0.05	<0.05	1.15	<0.001			0.12	16.2	<0.10		
	14-Jul-10	<0.05	6.55	0.11	<0.001	<0.05	<0.05	2.68	<0.001			0.29	9	<0.10		
	04-Oct-10	<0.05	6.77	<0.02	<0.001	<0.05	<0.05	2.45	0.0010			0.14	11.9	<0.10		
	11-Apr-11	<0.05	7.63	<0.02	<0.001	<0.05	<0.05	1.43	<0.001			0.11	9	<0.10		
	13-Jun-11	0.1	10.7	0.35	0.001	<0.05	<0.05	0.98	<0.001			0.20	13.7	<0.10		
	25-Aug-11															
	24-Oct-11	<0.05	12.8	0.03	<0.001	<0.05	<0.05	3.02	0.003			0.40	23.7	<0.10		
	08-Mar-12	<0.05	8.54	<0.02	<0.001	<0.05	<0.05	1.14	<0.001			0.11	8.3	<0.10		
	09-Apr-13	0.05	5.14	0.21	0.007	<0.05	<0.05	1.08	<0.001			0.15	6.6	<0.10		
	08-May-13	0.12	13.3	0.06	0.001	<0.05	<0.05	1.79	<0.001			0.33	18.9	<0.10	0.862	
	07-Aug-13	<0.05	9.43	0.14	0.001	<0.05	<0.05	1.38	0.0010			0.13	13	<0.10	0.507	

Notes: PWQO - Provincial Water Quality Objectives (July 1994)

* Values should be interpreted with caution

Units provided

NC - No criteria

Blank - Indicates data not available

** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.

**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L	unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		6.5 - 8.5	NC	field NC	NC	6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW4	31-Oct-13	8.26	485	9.8	4.61	8.15	449	192	13.2	251			2.88	79.2	
cont.	28-Mar-14	7.34	644	0.6	8.23	7.86	536	52	24.4	295			5.71	93.9	
	08-May-14	7.91	401	9.5	6.54	8.14	434	55	4.1	194			2.68	59.6	
	12-Aug-14	8.41	341	18.6	2.62	8.14	309	64	6.7	161			1.91	51.7	
	20-Oct-14	6.40	400	9.8	3.53	7.90	412	177	22.4	215			3.04	68.9	
	02-Apr-15	7.02	400	5.2	9.3	7.48	358	23	13.7	188			3.84	59.1	
	25-May-15	Dry													
	26-Aug-15	Dry													
	29-Oct-15	7.70	510	7.9	5.74	7.75	455	2270	14.2	274			4.47	81.4	
	15-Mar-16	6.60	302	7.3	8.5	7.93	360	43	8.7	183			4.47	58.3	
	16-May-16	7.29	423	8.8	8.7	8.15	487	28	87.1	239			9.43	71.6	
	18-Aug-16	Dry													
	17-Oct-16	Dry													
	07-Mar-17	7.05	415	2.91	8.73	8.01	397	76	11.0	180			4.36	57.0	
	08-May-17	8.08	368	7.18	5.35	8.14	398	67	11.0	178			2.36	56.2	
	02-Aug-17	Dry													
	17-Oct-17	Dry													
	15-Mar-18	Dry													
	07-May-18	7.92	311	12.23	3.50	7.95	334	97	26.8	168			4.16	52.8	
	20-Aug-18	Dry													
	15-Oct-18	8.24	391	9.20	4.68	7.77	450	48	7.4	245			2.18	80.3	
	15-Mar-19	8.20	246	2.42	7.00	7.55	247	30.2	92.9	123			3.07	40.0	
	15-May-19	7.71	312	10.77	7.71	7.78	363	48.4	5.02	199			2.89	59.2	
	28-Aug-19	6.54	253	18.0	5.57	7.79	319	56.1	31.0	163			1.84	52.0	
	08-Oct-19	7.78	297	11.02	7.79	7.62	304	48.3	8.92	164			1.44	52.4	
	16-Mar-20	8.10	320	1.20	8.38	7.22	418	52.0	52.2	253			4.65	79.2	
	15-May-20	8.42	315	12.17	7.38	7.66	365	83.5	3.73	201			3.27	59.1	
	10-Aug-20	Dry													
	15-Oct-20	Dry													
	15-Mar-21	7.09	670	3.5	6.45	7.41	336	25	5.34	199			4	63.7	
	17-May-21	7.16	485	12.0	4.65	7.91	453	62	1.67	223			7	67.1	
	12-Aug-21	8.05	280	20.8	6.12	8.09	290	50	3.56	166			<1	54.3	
	04-Oct-21	8.10	257	16.7	10.28	7.81	254	111	24.4	150			4	47.3	
SW7	08-Oct-85					8.00	311			137			16	46	
(977)	17-Dec-85					8.10	325			154			13	49	
	01-Apr-86					8.40	238			108			10	35	
	23-Jun-86					8.40	294			123			9	38	
	18-Sep-86					8.10	252			109			12	30	
	15-Dec-86					8.40	309			144			13	41	
	04-Mar-87					7.60	357			161			24	49	
	12-Jun-87					8.40	294			119			22	31	
	14-Sep-87								86						
	14-Dec-87					8.00	364		55	171			23	52	
	07-Mar-88					7.50	331		10	144			19	45	
	06-Jun-88					9.20	250		43	103			18	25	
	06-Sep-88					8.40	272		64	119			19	33	
	12-Dec-88					8.00	474		8	221			19	67	
	14-Mar-89					8.00	156		4	59			9	18	
	18-Jun-89					8.10	306		35	110			27	29	
	11-Sep-89					8.50	357		70	143			37	39	
	11-Dec-89					8.00	563		8	251			39	77	
	05-Mar-90					8.00	329			139			24	43	
	11-Jun-90					8.20	402		22	178			25	54	
	17-Sep-90					8.10	347		205	163			31	48	
	02-Dec-90					8.70	377		6	169			20	51	
	11-Mar-91					8.20	383		37	174			20	54	
	17-Jun-91					8.50	461		61	158			39	37	
	09-Sep-91					8.60	392		52	119			46	24	

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 - ** Calculated value using the fraction of NH₃ from f = 1/(10^{pKa-pH}+1); where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	Fluoride mg/L	Magnesium mg/L	Ammonia mg/L	Un-ionized Ammonia ** mg/L	Nitrate mg/L	Nitrite mg/L	TKN mg/L	Phenols mg/L	BOD ₅ mg/L	COD mg/L	Phosphorous mg/L	DOC mg/L	Ortho-phosphate mg/L	Iron mg/L	TSS mg/L
		NC	NC	NC	0.02	NC	NC	NC	0.001	NC	NC	0.03	NC	NC	0.30	NC
SW4	31-Oct-13	<0.10	12.9	0.04	0.001	<0.10	<0.10	1.3	0.007			0.22	15.9	<0.20	3.60	
cont.	28-Mar-14	0.12	14.7	1.13	0.002	0.13	<0.05	2.5	0.006			0.40	12.6	<0.10	7.45	
	08-May-14	<0.05	11.0	0.07	0.001	<0.05	<0.05	1.04	<0.001			0.14	9.3	<0.10	0.651	
	12-Aug-14	<0.10	7.82	0.10	0.008	<0.10	<0.10	1.29	<0.001			0.15	13.0	<0.20	0.859	
	20-Oct-14	<0.05	10.4	<0.02	<0.001	<0.05	<0.05	4.26	0.004			0.64	14.0	<0.10	5.18	
	02-Apr-15	<0.05	9.72	<0.02	<0.001	<0.05	<0.05	1.54	<0.001			0.21	7.7	<0.10	1.44	
	25-May-15															
	26-Aug-15															
	29-Oct-15	0.30	17.2	0.04	<0.001	<0.10	<0.10	2.34	0.008			0.12	21.6	0.37	1.40	
	15-Mar-16	<0.05	9.04	<0.02	<0.001	<0.05	<0.05	1.05	0.002			0.12	8.9	<0.10	0.629	
	16-May-16	0.10	14.7	0.14	<0.001	<0.05	<0.05	2.16	<0.001			0.42	20.4	<0.10	5.77	
	18-Aug-16															
	17-Oct-16															
	07-Mar-17	0.10	9.06	<0.02	<0.001	<0.05	<0.05	0.80	<0.001			0.08	10.9	<0.10	0.390	
	08-May-17	<0.05	9.13	0.10	0.002	<0.05	<0.05	1.03	<0.001			0.11	9.8	<0.10	0.69	
	02-Aug-17															
	17-Oct-17															
	15-Mar-18															
	07-May-18	<0.05	8.76	0.03	0.001	<0.05	<0.05	0.9	0.002			0.17	11.2	<0.10	0.825	
	20-Aug-18															
	15-Oct-18	<0.05	10.9	0.03	0.001	<0.05	<0.05	1.75	0.004			0.24	19.7	<0.10	1.54	
	15-Mar-19	0.053	5.64	0.600	0.009	0.100	<0.010	2.08	0.0012			0.147	9.40	<0.0030	3.21	
	15-May-19	0.090	12.4	<0.010	<0.001	<0.020	<0.010	1.18	0.0047			0.100	12.3	0.0248	0.507	
	28-Aug-19	0.097	8.02	0.144	<0.001	<0.020	<0.010	7.54	<0.010			0.970	15.7	0.0182	1.07	
	08-Oct-19	0.086	8.04	0.153	0.002	<0.020	<0.010	<1.5	0.0079			0.148	14.3	0.0117	1.46	
	16-Mar-20	0.079	13.3	0.123	0.001	0.020	<0.010	6.25	0.0048			1.19	18.0	0.098	6.82	
	15-May-20	0.096	12.9	0.063	0.003	<0.020	<0.010	1.57	0.0017			0.239	18.3	0.0113	2.35	
	10-Aug-20															
	15-Oct-20															
	15-Mar-21	<0.06	9.75	0.1	<0.001	<0.06	<0.03	<0.5	<0.002			0.581	6.6	0.13	3.48	
	17-May-21	0.12	13.4	<0.1	<0.001	<0.06	<0.03	1.6	<0.001			0.262	16	0.06	1.01	
	12-Aug-21	0.06	7.49	0.2	0.009	<0.06	<0.03	1.2	0.002			0.185	11.8	0.06	0.62	
	04-Oct-21	0.08	7.74	<0.1	<0.004	0.07	<0.03	0.6	<0.001			0.227	14.6	0.13	2.15	
SW7	08-Oct-85		6	0.05		0.01	0.01	0.85	0.0010			0.08	8			
(977)	17-Dec-85		8	0.03		1.9	0.01	0.82	0.0010			0.1	5.2			
	01-Apr-86		5	0.02		0.4	0.01	0.5	0.0015				4.5			
	23-Jun-86		7	0.01		0.1	0.01	1.1	0.0010			0.13	7.6			
	18-Sep-86		8	0.21					0.0010			0.09	10.2			
	15-Dec-86		10	0.01					0.0010			0.04	8.7			
	04-Mar-87		9	0.17					0.0015			0.06	8.6			
	12-Jun-87		10	0.01					0.0015			0.1	13.6			
	14-Sep-87			0.01								0.29				
	14-Dec-87		10	0.01					0.0010			0.14	11.3			
	07-Mar-88		7	0.2					0.0010			0.06	7.5			
	06-Jun-88		10	0.03					0.0010			0.13	13			
	06-Sep-88		9	0.08					0.0010			0.15	10.6			
	12-Dec-88		13						0.0010			0.04	8.2			
	14-Mar-89		3	0.37					0.0055			0.1	5.2			
	18-Jun-89		9						0.0010			0.15	8.3			
	11-Sep-89		11	0.01					0.0040			0.24	4.5			
	11-Dec-89		15	0.25					0.0065			0.08	13.6			
	05-Mar-90		8	0.06					0.0270			0.08	9			
	11-Jun-90		10	0.28					0.0020			0.14	10.9			
	17-Sep-90		10	0.03					0.0010			0.4	12			
	02-Dec-90		10	0.04					0.0010			0.01	8.8			
	11-Mar-91		10	0.01					0.0025			0.22	7.8			
	17-Jun-91		16	0.36					0.0010			0.24	18			
	09-Sep-91		14	0.01					0.0010			0.26	18.5			

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Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L		unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L
		field				6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
	PWQO	6.5 - 8.5	NC	NC	NC	6.5 - 8.5	NC	NC	NC	NC	NC	NC	NC	NC	NC
SW7	03-Dec-91					8.10	498		38	205			38	58	
cont.	24-Mar-92					8.50	343		9	135			25	38	
	16-Jun-92					8.00	377		153	154			34	38	
	15-Sep-92					8.60	319		37	118			33	30	
	07-Dec-92					8.00	469			226			22	70	
	23-Mar-93					7.80	411		16	174			30	49	
	15-Jun-93					8.40	361		61	108			42	24	
	07-Sep-93					8.80	396		102	117			59	29	
	07-Dec-93					7.80	480		96	173			43	47	
	21-Mar-94					7.40	327		4	121			29	37	
	21-Jun-94					7.80	444		105	146			46	39	
	26-Sep-94					8.00	434		171	187			42	54	
	06-Dec-94					7.90	494		29	210			37	64	
	28-Mar-95					8.20	432		64	170			82	51	
	26-Jun-95					8.10	474		19	149			64	38	
	26-Sep-95					7.90	549		175	145			100	35	
	04-Dec-95					8.40	480		28	179			44	53	
	22-Apr-96					8.40	348		33	134			34	40	
	06-May-97						345		6	159			38	47	
	29-Sep-97						440		375	205			50	55	
	02-Dec-97						471		185	191			54	56	
	05-May-98					8.30	448	9	36	176			40	47	
	29-Jun-98					8.20	516	20	101	162			76	39	
	21-Sep-98					7.60	1140	29	819	298			235	81	
	08-Dec-98														
	13-Apr-99					8.10	523	6	6	178			61	51	
	16-Jun-99					7.70	752	8	104	267			107	73	
	20-Sep-99					7.60	1420	17	94	537			211	157	
	15-Nov-99					8.00	755	8	30	225			39	69	
	13-Apr-00					8.30	609	16		249			66	69	
	28-Jun-00					8.50	371	19		146			24	39	
	27-Sep-00					8.30	332	10		143			18	42	
	16-Nov-00					8.20	411	12		196			24	59	
	10-Apr-01					8.00	309	<5	4	182			31	54	
	21-Jun-01					8.60	456	7	95	157			49	41	
	19-Sep-01														
	22-Nov-01					8.60	468	9	29	186			46	48	
	24-Apr-02					8.30	566	7	102	251			30	71	
	27-Jun-02					8.10	623	32	402	166			84	47	
	12-Nov-02					7.90	418	12	352	211			34	62	
	26-Mar-03					8.10	480	8	5	186			40	55	
	29-Apr-03					8.30	508	14	64	200			39	56	
	24-Jul-03					8.10	438	<5	32	167			37	45	
	08-Oct-03					8.00	455	6	43	173			35	47	
	06-Nov-03					8.10	429	22	93	186			29	52	
	26-Apr-04					8.20	499	20	32	149			40	31	
	22-Jun-04					8.10	403	15	8	158			23	43	
	09-Nov-04					8.30	456	58	49	156			31	39	
	02-Dec-04					8.20	423	5	511	172			30	45	
	24-Apr-05					8.22	553	33	215	221			48	61	
	18-Jul-05						537		404	145			55	66	
	29-Sep-05						517		764	346			44	105	
	30-Nov-05					8.40	413	14		150			38	80	
	12-Apr-06					8.40	366	640	>200	210			28	63	
	28-Jun-06					8.00	343	160	>200	210			28	64	
	05-Sep-06					8.40	322	190	133	190			25	57	
	05-Oct-06					8.10	297	10	150	200			18	62	
	21-Nov-06					8.20	340	110	104	170			15	52	
	19-Apr-07					8.10	402	180	105	180			24	54	

Notes: · PWQO - Provincial Water Quality Objectives (July 1994) · * Values should be interpreted with caution · Units provided
· NC - No criteria · Blank - Indicates data not available
· ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where $pKa = 0.09018 + 2729.92/T$ and T = ambient water temperature in Kelvin ($K = °C + 273.16$). Field pH is used in the equation.



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	Fluoride mg/L NC	Magnesium mg/L NC	Ammonia mg/L NC	Un-ionized Ammonia ** mg/L 0.02	Nitrate mg/L NC	Nitrite mg/L NC	TKN mg/L NC	Phenols mg/L 0.001	BOD ₅ mg/L NC	COD mg/L NC	Phosphorous mg/L 0.03	DOC mg/L NC	Ortho-phosphate mg/L NC	Iron mg/L 0.30	TSS mg/L NC
SW7	03-Dec-91		15	0.45					0.0065			0.19	17.5			
cont.	24-Mar-92		10	0.08					0.0065			0.05	6.9			
	16-Jun-92		14	0.54					0.0060			0.37	20			
	15-Sep-92		11	0.03					0.0060			0.29	14.3			
	07-Dec-92		13						0.0225				11.8			
	23-Mar-93		12	0.7					0.0130			0.16	13.8			
	15-Jun-93		11	0.02					0.0060			0.37	14.5			
	07-Sep-93		11	0.19					0.0060			0.50	21			
	07-Dec-93		13	1.35				4.55	0.0120			0.36	20			
	21-Mar-94		7	2.09					0.0100			0.35	10.8			
	21-Jun-94		12	0.04					0.0032			0.52	16.2			
	26-Sep-94		13	0.04				5	0.0099			0.57	18.2			
	06-Dec-94		12	0.25				2.52	0.0090			0.17	14.6			
	28-Mar-95		11	0.23		0.1	0.01	1.39	0.0045			0.19	6.5			
	26-Jun-95		13	0.08		0.1	0.02	3.8	0.0063			0.48	14.9			
	26-Sep-95		14	0.47		0.1	0.11	9.92	0.0068			0.61	51			
	04-Dec-95		11	0.5		0.4	0.02	1.99	0.0062			0.13	13.2			
	22-Apr-96		8	0.12		0.1	0.02	1.08	0.0043			0.10	7.4			
	06-May-97		10	0.18		0.01	0.01	1.18	0.0010			0.06	5.3			
	29-Sep-97		16	0.1		0.05	0.02		0.0010			1.32	21.8			
	02-Dec-97		13	1.73		0.17	0.070		0.0010			1.07	10.8			
	05-May-98	0.2	14	0.05		<0.1	<0.02	0.98	0.0010			<0.02	8			
	29-Jun-98	0.3	15	0.05		<0.1	0.020	4.64	<0.001			0.69	20.2			
	21-Sep-98	0.4	23	2.7		<0.1	<0.02	26.2	0.0040			4.43	86.5			
	08-Dec-98						dry						dry			
	13-Apr-99	<0.1	12	0.05		0.1	<0.02	0.98	0.0010			<0.01	8.7			
	16-Jun-99	0.3	21	0.05		<0.1	<0.02	7.23	<0.001			0.66	23.4			
	20-Sep-99	0.3	35	0.14		0.27	<0.02	5.43	<0.001			0.72	33.5			
	15-Nov-99	0.2	13	0.1		3.47	0.05	1.49	0.0020			0.10	8			
	13-Apr-00	0.3	18	0.06		<0.1	<0.02	1.49	0.0020			0.08	10.5			
	28-Jun-00	0.4	12	0.06		<0.1	<0.02	0.94	0.0010			0.04	8.9			
	27-Sep-00	0.4	9	0.18		0.27	0.02	1.25	0.0050			0.06	6.4			
	16-Nov-00	0.3	12	0.23		<0.1	<0.02	1.18	<0.001			0.06	6.1			
	10-Apr-01	<0.1	11	0.43		0.31	<0.02	1.19	0.0060			0.09	4.9			
	21-Jun-01	0.4	13	0.05		<0.1	<0.02	2.32	<0.001			0.16	8.9			
	19-Sep-01															
	22-Nov-01	0.29	16	0.19		<0.1	<0.02	1.98	<0.001			0.14	9.9			
	24-Apr-02	0.29	18	1.83		0.3	0.020	3.26	<0.002			0.17	8.6			
	27-Jun-02	<0.1	12	0.06		0.1	0.020	6.27	<0.002			0.75	11.9			
	12-Nov-02	0.3	14	0.85		1.95	0.080	3.06	<0.002			<0.01	6.5			
	26-Mar-03	0.17	12	1.78		1.22	0.040	3.51	<0.002			<0.08	7.6			
	29-Apr-03	0.24	15	2.11		1.12	0.040	3.89	<0.002			0.04	7.2			
	24-Jul-03	0.35	14	0.07		0.79	0.020	0.69	<0.002			<0.05	5.1			
	08-Oct-03	0.34	14	<0.05		0.97	0.020	0.65	<0.002			<0.05	5			
	06-Nov-03	0.3	14	0.41		1.04	0.030	1.54	<0.002				5.7			
	26-Apr-04	0.25	17	1.58		1.71	<0.02	3.82	<0.002			0.06	8.9	<0.002		
	22-Jun-04	0.34	12	0.4		0.1	0.040	1.59	<0.002			0.04	6.4	0.003		
	09-Nov-04	0.38	14	0.2		<0.1	<0.02	2.52	0.0030			0.3	19.9	<0.002		
	02-Dec-04	0.5	14	0.47		0.6	ND	3.8	0.0020			0.52	9.4	ND		
	24-Apr-05	0.3	17	9.04		0.4	<0.1	12.9	0.0020			0.24	12.9	<0.005		
	18-Jul-05		20	1.45		<0.2	<0.3	6.8	0.0010			0.46	10.1	<0.005		
	29-Sep-05		20	0.68		<0.2	<0.3	5.6	0.0010			0.68	8.2	0.012		
	30-Nov-05	0.2	20	0.29		0.2	<0.01						7.7			
	12-Apr-06	0.1	13	<0.05		<0.1	<0.1	0.6	<0.001			0.3	4	<0.3		
	28-Jun-06	0.2	13	<0.05		<0.1	<0.1	0.8	<0.001			0.42	4	<0.3		
	05-Sep-06	0.1	11	0.15		0.1	<0.1	1	<0.001			0.31	5	<0.3		
	05-Oct-06	0.1	10	0.37		0.2	<0.1	3.1	<0.001			0.27	5	<0.3		
	21-Nov-06	0.1	10	<0.05		0.3	<0.1	0.8	<0.001			0.17	5	<0.3		
	19-Apr-07	0.1	12	0.05		0.3	<0.1	1	<0.001			0.22	6	0.005		

Notes: - PWQO - Provincial Water Quality Objectives (July 1994)

- * Values should be interpreted with caution

- Units provided

- NC - No criteria

- Blank - Indicates data not available

- ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where $pKa = 0.09018 + 2729.92/T$ and $T =$ ambient water temperature in Kelvin ($K = ^\circ C + 273.16$). Field pH is used in the equation.

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Oxford County Waste Management Facility**

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate	
		unitless	µS/cm	°C	mg/L		unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		field	NC	NC	NC		6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW7	16-May-07					8.10	340	250	>200	260			25	80		
cont.	22-Nov-07					8.20	435	13	117	280			30	82		
	11-Jan-08	7.64	419	3.2	14.33	7.80	412	16	21	230			25	70		
	08-Apr-08	8.59	358	10.5	11.56	8.30	368	17	32	180			18	56		
	24-Jun-08	8.42	340	21.8	8.49	8.20	347	6	>200	240			20	71		
	11-Aug-08	8.42	378	21.2	8.39	8.20	355	6	87	160			21	48		
	11-Mar-09	8.11	394	2.8	8.27	8.01	439	16	59	170			41	52.3		
	01-May-09	7.67	317	14.5	7.18	8.23	351	7	128	191			17.1	60.7		
	01-Oct-09	8.88	302	13.2	5.87	8.26	333	5	25	196			13.5	55.5		
	01-Dec-09	9.27	459	4.4	5.46	8.14	410	5	16	206			14.6	62.1		
	15-Mar-10	7.95	430	2.4	12.56	8.15	405				242	136	19.8		49.2	
	10-May-10	8.49	380	12.9	12.90	8.19	8.09 *				230	362	22.3		55.9	
	14-Jul-10	8.09	230	25.4	5.99	8.23	287				202	86	14.7		39.5	
	04-Oct-10	7.93	390	11.8	10.49	8.29	348				280	126	15.2		52	
Supplemental	04-Apr-11	7.22	431	10.9		8.25	449				296	126	38.9		42.2	
	11-Apr-11	7.29	436	10.7	11.03	8.18	482				250	127	44.6		48.5	
	13-Jun-11	6.99	336	18.0	7.89	8.14	362				260	96	33.4		52.7	
	25-Aug-11	7.02	410	25.4	5.18	8.33	371				286	104	31.3		44.6	
	24-Oct-11	7.54	423	10.4	8.63	8.16	361				262	126	28.2		55.9	
	08-Mar-12	6.9	522	5.4	10.90	8.16	545				330	166	39.7		63.9	
	24-May-12	8.60	500	26.0	9.44	7.99	455				252	114	49.5		60.9	
	13-Aug-12	7.36	389	22.5	6.14	7.65	440				276	106	44.1		37.1	
	23-Oct-12	7.48	416	11.2	8.60	8.17	417				312	134	35.1		53.8	
Supplemental	23-Oct-12	7.47	381	7.2	8.52	7.89	453				260	128	35.2		58.5	
Supplemental	15-Mar-13	8.67	363	0.9	8.39	7.76	264				148	84	15.7		17.4	
	09-Apr-13	8.41	557	8.7	9.97	7.94	505				290	155	43.6		35.2	
Supplemental	15-Apr-13	8.44	583	6.5	10.80	7.90	517				282	149	42.1		43.6	
	08-May-13	8.54	453	21.0	12.23	8.17	430				230	92	47.8		47.3	
	07-Aug-13	8.19	495	21.9	7.59	7.74	488	8	42.3	169	296	126	40.4	46.4	51.5	
Supplemental	07-Oct-13	7.65	381	17.2	11.48	8.25	428				256	104	24		2.21	
	31-Oct-13	8.49	553	9.0	7.81	8.14	510	14.0	79.8	58.5	308	148	37.7		59.8	
Supplemental	21-Mar-14	8.08	533	1.8	10.23	7.54	455				165	242	143	37.6	34.1	
	28-Mar-14	7.99	524	1.9	9.01	8.01	443	13.0	21.8	164	262	140	36.6		35.6	
	08-May-14	8.22	579	16.1	10.54	8.24	603	11.0	69.2	199	380	161	51.2		55.1	
	12-Aug-14	8.25	445	22.1	8.35	8.13	403	12.0	81.2	150	248	95	40.7		49.3	
	20-Oct-14	8.00	509	12.0	9.55	8.05	575	14.0	60.6	204	310	147	40.6		59.0	
	02-Apr-15	8.37	210	7.7	6.3	7.69	222	7.0	3.7	68	100	61	19.6		17.3	
Supplemental	10-Apr-15	7.45	540	9.0	9.9	8.05	623				328	188	60.4		50.3	
	25-May-15	7.25	420	17.1	8.8	8.40	562	12.0	28.3	161	342	129	68.4		53.5	
	26-Aug-15	8.28	540	19.1	4.12	8.28	567	12.0	50.5	168	290	150	58.2		42.7	
	29-Oct-15	8.13	560	8.5	8.29	7.98	510	12.0	141	189	310	131	48.6		57.1	
	15-Mar-16	7.75	605	8.2	9.3	8.09	764	20	55.3	281	438	228	65.5		104	
Supplemental	15-Apr-16	6.81	565	8.8	9.34	7.99	699				396	250	53.2		56.8	
	16-May-16	7.31	582	11.9	9.3	8.27	691	<5	45.1	246	386	236	58.8		65.2	
	18-Aug-16	7.77	383	23.5	8.9	8.22	592	14	124	158	310	130	59.8		62.5	
	17-Oct-16	8.75	610	18.5	8.3	8.11	644	11	54.8	184	346	145	55.0		76.6	
	07-Mar-17	7.98	579	4.77	5.52	8.16	582	12	215	208	304	160	37.6		72.0	
Supplemental	21-Mar-17	7.96	490	9.0	6.24	8.09	259				114	66	17.1		28.0	
Supplemental	21-Apr-17	8.03	568	10.01	8.7	8.00	584				320	189	39.1		62.5	
	08-May-17	8.30	581	9.13	6.76	8.22	635	25	168	196	312	199	37.2		60.8	
	02-Aug-17	8.08	426	22.74	6.19	7.88	516	16	61.4	156	286	156	44.8		44.0	
	17-Oct-17	7.21	402	13.13	5.16	8.10	500	17	39.2	170	300	130	46.8		63.9	
Supplemental	15-Mar-18	7.35	554	2.35	6.57	8.02	492	19	56	180	308	170	47.8		48.1	
Supplemental	17-Apr-18	8.18	449	2.0	9.67	8.01	607				368	180	64.8		64.5	
	07-May-18	8.00	573	15.50	5.20	7.96	621	18	135	209	350	174	67.6		67.3	
Supplemental	15-May-18	8.28	524	17.40	12.1	7.89	598				310	116	65.6		67.1	
	20-Aug-18	8.28	409	24.80	6.91	8.20	472	<5	45.7	153	270	101	54.9		55.3	
	15-Oct-18	7.57	510	12.25	5.79	7.46	572	7	33.1	185	324	116	55.6		62.7	
Supplemental	02-Nov-18	8.33	399	8.29	6.26	7.94	612				340	130	55.4		66.1	

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 - ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	Fluoride mg/L NC	Magnesium mg/L NC	Ammonia mg/L NC	Un-ionized Ammonia ** mg/L 0.02	Nitrate mg/L NC	Nitrite mg/L NC	TKN mg/L NC	Phenols mg/L 0.001	BOD ₅ mg/L NC	COD mg/L NC	Phosphorous mg/L 0.03	DOC mg/L NC	Ortho-phosphate mg/L NC	Iron mg/L 0.30	TSS mg/L NC
SW7	16-May-07	0.1	15	<0.05		<0.1	<0.1	5.3	<0.001			0.57	6	<0.003		
cont.	22-Nov-07	0.2	18	0.56		0.3	<0.1	2	<0.001			0.4	8	0.003		
	11-Jan-08	0.1	13	0.71	0.003	0.3	<0.1	2.9	0.0020			0.14	6			
	08-Apr-08	0.1	10	0.53	0.037	0.2	<0.1	1.4	0.0020			0.07	6			
	24-Jun-08	0.2	15	0.77	0.082	<0.1	<0.1		0.0020			0.3	7			
	11-Aug-08	0.2	11	0.23	0.023	0.3	<0.1	1.38	0.0001			0.16	5			
	11-Mar-09	0.1	10.7	0.73	0.010	0.7	<0.1	1.2	0.0010			0.084	5	0.004		
	01-May-09	0.12	9.5	0.198	0.002	0.42	<0.10	1.26	<0.0010			0.171	4.9	0.0123		
	01-Oct-09	0.21	14	0.13	0.020	0.22	<0.10	1.19	<0.0010			0.0849	12.6	0.0032		
	01-Dec-09	0.21	12.3	0.436	0.079	0.75	<0.10	1.79	0.0020			0.0296	7.3	<0.0030		
	15-Mar-10			0.77	0.007	0.23	<0.05	1.35	<0.001	<5	13	0.12			0.964	54
	10-May-10			<0.02	<0.001	0.16	<0.05	0.56	<0.001	<5	17	0.14			0.31	52
	14-Jul-10			<0.02	<0.001	0.34	<0.05	0.64	<0.001	<5	11	0.09			0.479	43
	04-Oct-10			0.14	0.003	0.25	<0.05	1.42	<0.001	<5	8	0.25			0.83	136
Supplemental	04-Apr-11			0.38	0.001	0.64	<0.05	1.6	<0.001	<5	15	0.07			0.494	57
	11-Apr-11			0.12	<0.001	0.72	<0.05	1.7	<0.001	<5	8	0.09			0.5	59
	13-Jun-11			0.04	<0.001	<0.05	<0.05	0.64	<0.001	<5	15	0.07			0.28	50
	25-Aug-11			0.02	<0.001	<0.05	<0.05	1.36	<0.001	<5	30	0.2			0.65	100
	24-Oct-11			0.53	0.003	0.18	<0.05	1.13	<0.001	<5	12	0.11			0.66	133
	08-Mar-12			0.54	0.001	0.61	<0.05	2.73	<0.001	5	47	0.13			0.56	74
	24-May-12			<0.02	<0.004	0.08	<0.05	0.75	<0.001	<5	18	0.06			0.53	48
	13-Aug-12			0.02	<0.001	<0.05	<0.05	0.64	<0.001	<5	30	0.31			0.83	114
	23-Oct-12			0.32	0.002	0.09	<0.05	1.24	<0.001	<5	32	0.09			0.68	53
Supplemental	23-Oct-12			0.5	0.002	0.17	<0.05	1.56	<0.001	<5	20	0.07			0.6	23
Supplemental	15-Mar-13			0.76	0.030	0.21	<0.05	1.68	<0.001	7	29	0.09			0.49	29
	09-Apr-13			1.58	0.065	0.13	<0.05	2.38	0.0010	<5	19	0.13			0.82	73
Supplemental	15-Apr-13			1.39	0.052	0.42	<0.05	3.24	<0.001	<5	25	0.12			0.56	67
	08-May-13			0.13	0.017	0.38	<0.05	0.88	<0.001	<5	23	0.05			0.37	30
	07-Aug-13	<0.05	13	0.23	0.015	0.05	<0.05	1.05	<0.001	<5	11	0.03	5.5		0.49	32
Supplemental	07-Oct-13			0.1	0.001	<0.05	<0.05	1.14	<0.001	<5	25	0.19			1.3	104
	31-Oct-13	<0.10		0.81	0.041	0.27	<0.10	1.74	<0.001	<5	29	0.06	6.5		0.61	60
Supplemental	21-Mar-14	<0.05		1.55	0.018	0.47	<0.05	4.78	0.001	7	8	0.12			1.11	39
	28-Mar-14	0.08		2.86	0.027	0.25	<0.05	3.84	<0.001	<5	22	0.09	7.2		0.25	15
	08-May-14	<0.05		1.68	0.079	0.98	<0.05	2.69	<0.001	<5	21	0.08	6.2		0.37	51
	12-Aug-14	0.11		0.03	0.002	<0.10	<0.10	0.84	<0.001	<5	26	0.13	6.0		0.50	62
	20-Oct-14	<0.05		0.82	0.017	0.22	<0.05	2.21	<0.001	<5	10	0.14	5.9		0.89	72
	02-Apr-15	<0.05		0.77	0.027	<0.05	<0.05	2.97	<0.001	5	19	0.09	6.0		0.04	<10
Supplemental	10-Apr-15			1.60	0.008	<0.25	<0.25	5.39	0.001	11	40	0.06			0.87	42
	25-May-15	0.12		0.14	0.001	0.45	<0.05	1.36	<0.001	<5	23	0.07	7.5		0.22	21
	26-Aug-15	<0.25		0.12	0.008	<0.25	<0.25	1.63	<0.001	<5	22	0.18	8.6		1.04	105
	29-Oct-15	0.15		0.19	0.004	0.24	<0.10	1.54	<0.001	<5	34	0.11	7.3		0.90	106
	15-Mar-16	<0.25		2.28	0.020	<0.25	<0.25	4.33	0.014	37	92	0.15	25.8		1.90	57
Supplemental	15-Apr-16			3.82	0.004	0.18	<0.10	5.17	0.003	16	54	0.16			1.66	62
	16-May-16	<0.10		3.36	0.015	0.11	<0.10	4.63	<0.001	5	36	0.12	10.9		0.37	40
	18-Aug-16	<0.25		0.11	0.003	<0.25	<0.25	1.99	<0.001	10	48	0.27	8.9		1.35	110
	17-Oct-16	0.18		0.35	0.058	<0.05	<0.05	2.02	<0.001	6	42	0.23	9		0.48	52
	07-Mar-17	0.09		1.17	0.014	0.42	<0.05	2.19	<0.001	<5	20	0.10	6.5		3.55	139
Supplemental	21-Mar-17			0.81	0.012	0.20	<0.05	1.24	<0.001	<5	<5	0.03			0.045	12
Supplemental	21-Apr-17			1.96	0.038	0.46	<0.05	3.19	<0.001	<5	21	0.18			0.63	73
	08-May-17	<0.10		2.18	0.073	0.32	<0.10	3.45	<0.001	10	32	0.18	9.6		1.03	113
	02-Aug-17	0.53		0.14	0.008	0.08	<0.05	1.35	<0.001	<5	41	0.10	10.1		0.44	42
	17-Oct-17	0.09		0.26	0.001	0.08	<0.05	1.44	<0.001	<5	37	0.09	10.1		0.35	26
Supplemental	15-Mar-18	<0.05		2.92	0.007	0.21	<0.05	3.7	<0.001	<5	23	0.12	8.5		0.54	35
Supplemental	17-Apr-18			2.68	0.039	0.91	<0.10	3.35	<0.001	9	37	0.29			0.96	89
	07-May-18	<0.10		1.98	0.055	0.52	<0.10	3.35	0.0010	7	25	0.10	10.3		0.67	87
Supplemental	15-May-18			1.22	0.072	0.49	<0.10	2.36	<0.001	6	25	0.15			0.43	51
	20-Aug-18	0.14		<0.02	<0.002	<0.05	<0.05	1.09	0.002	<5	23	0.10	7.7		0.39	33
	15-Oct-18	<0.10		0.40	0.003	0.16	<0.10	1.64	0.001	<5	15	0.08	8.3		0.29	27
Supplemental	02-Nov-18			1.49	0.050	0.31	<0.10	2.20	<0.001	5	36	0.12			0.635	71

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 - NC - No criteria - Blank - Indicates data not available
 - ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate	
		unitless	µS/cm	°C	mg/L		unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		field					6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW7 (cont.)	15-Mar-19	7.13	429	1.66	8.72	7.64	468	35.6	38.5	136	281	138	52.2	40.5	22.8	
Supplemental	15-Apr-19	7.95	727	5.94	8.04	8.05	707				413	224	82.6		35.6	
	15-May-19	8.37	601	9.93	11.53	8.33	723	26.7	94.6	247	433	237	77.5	65.4	44.0	
	28-Aug-19	7.83	449	21.1	5.50	8.27	572	12.6	60.0	158	346	135	73.5	35.8	40.8	
	08-Oct-19	8.21	571	14.05	7.00	8.40	650	14.1	19.7	197	350	172	73.9	47.3	51.7	
	16-Mar-20	7.69	691	2.06	8.33	7.96	711	18.0	44.1	282	390	226	69.5	79.3	48.1	
Supplemental	15-Apr-20	8.30	639	6.24	9.58	8.35	718				429	227	69.4		50.2	
	15-May-20	8.05	598	11.84	10.64	8.25	682	10.6	36.2	242	377	190	73.0	65.2	56.6	
	10-Aug-20	7.15	515	24.7	7.99	8.34	583	14.1	47.8	162	332	118	79.7	32.6	48.1	
	15-Oct-20	7.66	624	15.04	4.97	7.95	674	10.1	75.9	224	405	172	74.4	58.7	62.4	
	15-Mar-21	8.34	1060	4.6	12.32	8.19	823	19	20.2	307	486	262	83		62	
Supplemental	12-Apr-21	7.39	762	17.15	9.70	8.26	825	22	67.3	300	474	239	86		60	
Supplemental	26-Apr-21	7.81	662	9.73	8.54	8.26	767	18	61.4	256	486	215	88		64	
Supplemental	30-Apr-21	6.84	759	11.9												
Supplemental	04-May-21	7.81	840	15.4	10.83	8.27	753		23.5							
Supplemental	05-May-21	7.70	780	13.5	9.79	8.23	739		37.7							
Supplemental	07-May-21	7.68	810	11.1	13.23	8.33	726		34.4							
Supplemental	11-May-21	7.52	810	12.2	14.03	8.46	720		19.2							
	17-May-21	8.40	680	17.0	8.32	8.50	658	17	25.5	164	469	124	88		72	
	12-Aug-21	8.12	517	24.2	5.40	8.07	562	17	75.0	164	329	127	80		47	
	04-Oct-21	7.87	519	17.5	10.82	8.18	559	15	38.4	206	349	138	66		61	
Supplemental	04-Nov-21	8.15	826	6.13	10.30	8.18	721				409	199	70		67	
SW8	18-Jun-89					7.40	990		2	457			70	135		
(978)	11-Jun-90					7.70	818		1	395			43	117		
	17-Sep-90					7.70	916		5	431			52	130		
	02-Dec-90					8.00	839		1	410			34	121		
	11-Mar-91					7.50	692		2	326			31	97		
	17-Jun-91					7.30	800		4	366			34	109		
	03-Dec-91					7.80	759		2	345			47	101		
	24-Mar-92					7.70	726		1	330			46	94		
	15-Sep-92					7.40	851		1	417			36	124		
	07-Dec-92					7.50	756			403			30	120		
	15-Jun-93					7.60	751		1	371			30	112		
	07-Dec-93					6.00	724		9	357			27	107		
	21-Jun-94					7.20	784		1	407			24	121		
	06-Dec-94					7.80	873		1	424			57	124		
	28-Mar-95					7.80	715		1	364			36	106		
	04-Dec-95					7.70	691		2	317			30	95		
	22-Apr-96					7.40	545		343	235			37	68		
	06-May-97						599		1	349			27	104		
	02-Dec-97						703		1	369			35	119		
	05-May-98					7.60	724	5	1	359			42	106		
	29-Jun-98															
	21-Sep-98															
	08-Dec-98															
	13-Apr-99					7.80	758	8	1	317			82	96		
	16-Jun-99					8.10	716	12	1	387			35	117		
	20-Jul-99															
	21-Sep-99					7.50	1150	58	1	303			242	97		
	15-Nov-99					8.00	1140	8	1	406			63	122		
	13-Apr-00					7.80	780	<5	1	678			56	210		
	28-Jun-00					7.40	740	12	4	369			41	108		
	27-Sep-00					7.50	592	21	17	311			29	94		
	16-Nov-00					7.70	780	10	3	429			40	130		
	10-Apr-01					7.60	672	<5	3	389			74	117		
	21-Jun-01					7.90	833	<5	2	428			44	128		
	19-Sep-01						883	43	45	459			19	133		
	22-Nov-01					8.10	770	<5	1	379			68	113		

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 - ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH}+1)$; where $pKa = 0.09018 + 2729.92/T$ and $T =$ ambient water temperature in Kelvin ($K = °C + 273.16$). Field pH is used in the equation.



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Oxford County Waste Management Facility**

Surface Water Station	Date	Fluoride mg/L NC	Magnesium mg/L NC	Ammonia mg/L NC	Un-ionized Ammonia ** mg/L 0.02	Nitrate mg/L NC	Nitrite mg/L NC	TKN mg/L NC	Phenols mg/L 0.001	BOD ₅ mg/L NC	COD mg/L NC	Phosphorous mg/L 0.03	DOC mg/L NC	Ortho-phosphate mg/L NC	Iron mg/L 0.30	TSS mg/L NC
SW7 (cont.)	15-Mar-19	0.065	8.49	0.257	<0.001	0.212	0.015	4.70	0.0026	8.0	59	0.113	14.4		1.52	27.4
Supplemental	15-Apr-19			5.56	0.066	0.155	0.011	8.87	0.0055	5.5	66	0.179			2.96	39.4
	15-May-19	0.109	20.4	4.23	0.176	0.168	0.022	7.65	0.0013	3.1	60	0.110	15.6		2.41	29.4
	28-Aug-19	0.193	16.7	0.397	0.011	0.088	0.031	2.83	<0.0010	2.6	50	0.095	13.4		1.22	51.3
	08-Oct-19	0.178	19.1	0.662	0.026	0.152	0.034	2.26	0.0096	<2.0	44	0.071	13.3		0.527	19.8
	16-Mar-20	0.122	20.4	4.23	0.020	0.101	<0.010	6.40	0.0029	5.3	52	0.115	15.9		1.90	38.4
Supplemental	15-Apr-20			2.28	0.061	0.401	0.021	4.09	<0.0010	4.0	75	0.009			1.85	37.4
	15-May-20	0.129	19.3	0.65	0.015	0.478	0.019	2.31	0.0011	3.7	42	0.083	2.78		0.888	29.0
	10-Aug-20	0.171	19.6	0.037	<0.001	0.027	<0.010	2.30	0.0026	4.5	55	0.110	19.5		1.10	37.0
	15-Oct-20	0.189	18.7	1.27	0.016	0.257	0.053	2.84	0.0018	3.3	30	0.105	10.5		2.16	51.5
	15-Mar-21	0.13		5.7	0.147	0.09	<0.03	7.0	0.002	10	49	0.084	16.0		0.82	32
Supplemental	12-Apr-21	0.16		4.3	0.034	0.28	<0.03	6.3	<0.001	7	32	0.113	14.2		1.46	57
Supplemental	26-Apr-21	0.16		3.7	0.043	0.31	<0.03	4.8	<0.001	9	39	0.115	12		0.61	47
Supplemental	30-Apr-21			3.2	0.005											
Supplemental	04-May-21			2.5	0.045	0.42	<0.03	4.3								
Supplemental	05-May-21			2.6	0.031	0.35	<0.03	3.8								
Supplemental	07-May-21			2.2	0.021	0.34	<0.03	3.7								
Supplemental	11-May-21			1.9	0.014	0.40	<0.03	3.1								
	17-May-21	0.13		1.1	0.081	0.38	<0.03	2.6	<0.001	8	40	0.100	12		0.66	37
	12-Aug-21	0.18		0.2	0.013	<0.06	<0.03	1.5	<0.001	7	43	0.182	9.8		2.10	83
	04-Oct-21	0.19		0.7	0.017	0.69	0.16	1.6	0.004	10	28	0.072	10.6		0.99	40
Supplemental	04-Nov-21			1.8	0.034	1.18	0.10	5.0	<0.001	10	27	0.093			1.22	35
SW8	18-Jun-89		29	0.01								0.34	3.7			
(978)	11-Jun-90		25	0.01								0.03	3.1			
	17-Sep-90		26	0.29								0.02	4.5			
	02-Dec-90		26									0.02	3.1			
	11-Mar-91		20	0.29								0.26	3.1			
	17-Jun-91		23	0.01					0.0010			0.05	17			
	03-Dec-91		23	0.02					0.0010			0.07	4			
	24-Mar-92		23	0.39					0.0010			0.09	2.8			
	15-Sep-92		26	0.02					0.0010			0.04	3.3			
	07-Dec-92		25						0.0230				6			
	15-Jun-93		22	0.01					0.0010			0.03	3			
	07-Dec-93		22	0.03					0.0010				5.4			
	21-Jun-94		25	0.01					0.0010			0.04	4.5			
	06-Dec-94		27	0.1				0.56	0.0010			0.08	3.4			
	28-Mar-95		24	0.05		9.7	0.01	0.57	0.0010			0.06	2.5			
	04-Dec-95		19	0.16		20	0.02	0.77	0.0092			0.08	3.3			
	22-Apr-96		16	0.34		11.8	0.14	1.99	0.0036			0.78	6.6			
	06-May-97		22	0.12		8.4	0.01	0.69	0.0010			0.01	2.3			
	02-Dec-97		22	0.06		0.05	0.01		0.0010			0.02	1.8			
	05-May-98	0.1	23	<0.05		6.16	<0.02	0.42	<0.001			0.03	2			
	29-Jun-98	Dry		Dry												
	21-Sep-98	Dry		Dry												
	08-Dec-98	Dry		Dry												
	13-Apr-99	0.2	19	<0.05		19.7	<0.02	0.56	<0.001			0.05	3.1			
	16-Jun-99	0.2	23	<0.05		18.4	0.030	0.49	0.0010			0.07	4.2			
	20-Jul-99															
	21-Sep-99	0.2	15	0.18		1.22	0.04	1.28	0.0010			0.28	4.1			
	15-Nov-99	0.2	25	<0.05		21.4	0.02	0.6	<0.001			0.07	4.7			
	13-Apr-00	0.2	37	<0.05		15.4	<0.02	0.48	<0.001			0.01	3.1			
	28-Jun-00	0.2	24	<0.05		16.6	<0.02	0.29	<0.001			0.03	3			
	27-Sep-00	0.2	19	0.06		4.04	<0.02	0.65	<0.001			1.04	5			
	16-Nov-00	0.2	25	0.07		6.94	<0.02	0.33	<0.001			0.02	2.8			
	10-Apr-01	0.3	24	<0.05		9.66	<0.02	0.45	0.003			0.06	2.11			
	21-Jun-01	0.2	26	<0.05		20.9	<0.02	0.45	<0.001			0.03	2.8			
	19-Sep-01	0.27	31						<0.001			0.37				
	22-Nov-01	0.17	24	<0.05		9.71	<0.02	0.39	<0.001			0.06	2.9			

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Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L		unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L
PWQO	6.5 - 8.5	NC	field	NC	NC	6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW8	24-Apr-02					8.20	741	<5	2	352			52	105	
cont.	27-Jun-02					8.20	660	12	13	350			26	106	
	12-Nov-02					8.00	910	33	18	478			68	150	
	26-Mar-03					8.10	650	8	5	292			52	91	
	29-Apr-03					8.20	853	8	4	356			82	106	
	24-Jul-03					8.10	930	<5	3	458			74	142	
	08-Oct-03					8.10	1420	14	11	526			228	162	
	06-Nov-03					7.80	682	30	11	336			45	101	
	26-Apr-04					8.20	897	8	2	354			92	105	
	22-Jun-04					8.00	820	13	2	378			66	112	
	09-Nov-04					8.10	820	5	2	354			68	106	
	02-Dec-04					8.00	603	5	11	316			36	96	
	24-Apr-05					8.20	637	20	63	322			47	97	
	18-Jul-05						829		7	443			28	150	
	29-Sep-05						550		1010	447			35	149	
	30-Nov-05					8.10	530	50		240			38	76	
	12-Apr-06					7.60	792	25	4	370			78	111	
	28-Jun-06					7.50	799	41	17	390			59	119	
	05-Sep-06					7.60	866	16	3	410			90	132	
	05-Oct-06					7.80	313	82	>200	260			17	79	
	21-Nov-06					7.50	729	12	2	370			44	114	
	19-Apr-07					7.60	747	11	2	320			58	92	
	16-May-07					7.50	900	28	8	400			105	125	
	22-Nov-07					7.90	925	61	70	480			88	149	
	11-Jan-08	7.41	407	4.4	13.47	7.60	395	122	102	210			35	67	
	08-Apr-08	7.77	582	7.6	13.99	8.10	600	20	18	270			48	82	
	24-Jun-08	7.44	642	15.9	10.95	7.80	665	14	12	300			44	83	
	11-Aug-08	7.66	640	17.4	9.83	7.80	673	15	37	280			49	85	
	11-Mar-09	8.02	349	3.9	9.14	7.98	387	70	124	160			34	50.8	
	01-May-09	6.87	449	12.9	6.86	7.93	514	36	90	240			36.3	76	
	01-Oct-09	8.01	669	14.3	7.01	8.21	753	25	25	332			84.2	95.3	
	01-Dec-09	8.75	715	6.4	5.06	7.94	789	12	17	367			60.2	109	
	15-Mar-10	7.68	650	3.8	10.47	8.11	586	28	26.3	251			45.7	76.8	
	10-May-10	8.74	700	12.3		8.15	645	23	7.3	265			73.7	75.5	
	14-Jul-10	7.18	320	25.5	2.20	7.80	404	100	5.0	172			16.9	54.1	
	04-Oct-10	7.58	1090	14.1	8.21	8.19	887	71	32.0	308			131	91	
	11-Apr-11	7.66	682	11.8	11.26	8.22	717	28	35.1	314			60.2	94.1	
	13-Jun-11	6.92	606	16.6	9.84	8.10	672	27	29.6	303			60.8	87.4	
	25-Aug-11	7.55	618	24.7	8.26	8.45	604	101	67.7	179			86.3	45.5	
	24-Oct-11	7.33	722	12.7	8.52	8.09	631	45	403	311			49.6	93.8	
	08-Mar-12	7.1	652	6.8	10.45	8.22	724	26	9.3	314			49.9	91.6	
	24-May-12	7.85	880	16.0	11.03	8.05	746	14	4.1	383			46.2	111	
	13-Aug-12	7.03	546	21.1	6.93	7.90	589	114	51.1	207			70.9	53.9	
	23-Oct-12	7.12	653	11.8	6.60	8.32	624	56	99.9	292			65.2	87.9	
	09-Apr-13	8.27	885	6.2	10.16	8.08	814	12	25.2	351			62.3	104	
	08-May-13	7.82	804	14.3	8.73	8.24	769	<5	9.8	302			61.4	87	
	07-Aug-13	7.7	795	20.4	5.04	7.43	804	47	41.4	284			81.8	80.2	
	31-Oct-13	8.38	550	11.4	5.60	8.07	516	62	117	239			30.2	71.5	
	28-Mar-14	8.19	731	0.8	6.94	7.94	245	19	260	128			1.98	37.1	
	08-May-14	8.01	763	12.8	8.79	8.20	763	22	20.3	274			79.6	76.9	
	12-Aug-14	8.18	635	20.7	9.34	8.32	652	55	200	225			95.3	59.9	
	20-Oct-14	7.48	710	13.3	7.65	8.05	817	19	29.4	362			47.9	108	
	02-Apr-15	7.75	653	7.4	10.3	7.95	730	16	39.5	298			67.3	87.0	
	25-May-15	7.50	680	15.0	10.0	8.30	846	11	34.7	383			54.6	111	
	26-Aug-15	8.00	1140	16.3	5.50	8.14	1120	22	94	605			69.4	178	
	29-Oct-15	8.05	490	9.0	6.96	7.80	461	86	876	148			62.4	42.0	
	15-Mar-16	8.13	510	6.7	9.8	8.00	624	45	98.9	240			72.0	70.9	
	16-May-16	7.38	615	9.8	9.0	8.22	743	12	462	291			88.0	81.6	

Notes: - PWQO - Provincial Water Quality Objectives (July 1994) - * Values should be interpreted with caution - Units provided
- NC - No criteria - Blank - Indicates data not available
- ** Calculated value using the fraction of NH₃ from f = 1/(10^{pKa-pH}+1); where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	Fluoride mg/L NC	Magnesium mg/L NC	Ammonia mg/L NC	Un-ionized Ammonia ** mg/L 0.02	Nitrate mg/L NC	Nitrite mg/L NC	TKN mg/L NC	Phenols mg/L 0.001	BOD ₅ mg/L NC	COD mg/L NC	Phosphorous mg/L 0.03	DOC mg/L NC	Ortho-phosphate mg/L NC	Iron mg/L 0.30	TSS mg/L NC
SW8	24-Apr-02	0.18	22	<0.05		17.7	<0.02	0.5	<0.002			0.06	2.6			
cont.	27-Jun-02	<0.1	21	0.08		18.8	<0.02	0.91	<0.002			0.12	4.6			
	12-Nov-02	0.2	25	0.09		7.11	0.02	1.07	<0.002			0.06	9.9			
	26-Mar-03	0.13	16	<0.05		11	<0.02	1.09	<0.002			<0.08	4.3			
	29-Apr-03	0.12	22	<0.05		12.9	<0.02	0.58	<0.002			0.04	3			
	24-Jul-03	0.13	25	<0.05		15.4	<0.02	0.52	<0.002			<0.05	2.4			
	08-Oct-03	0.14	30	<0.05		7.11	<0.02	0.48	<0.002			0.09	5.4			
	06-Nov-03	0.17	20	<0.05		12.6	0.04	1.17	<0.002			0.53	4.5			
	26-Apr-04	0.16	22	<0.05		6.62	0.03	0.48	<0.002			0.05	3.2	0.025		
	22-Jun-04	0.19	24	<0.05		5.59	<0.02	0.38	<0.002			0.03	3.6	0.05		
	09-Nov-04	0.15	22	0.09		3.08	<0.02	0.48	0.003			0.05	7.6	<0.002		
	02-Dec-04	0.4	19	ND		10.4	ND	0.7	0.001			0.13	6.7	ND		
	24-Apr-05	0.1	19	0.1		10.9	<0.1	0.7	0.002			0.13	4.9	0.077		
	18-Jul-05		31	<0.05		7.8	<0.3	0.5	0.001			0.05	3.5	0.049		
	29-Sep-05		18	0.14		3	<0.3	2	0.003			0.69	4.8	0.021		
	30-Nov-05	0.1	15	<0.05		7.5	0.45						26.6			
	12-Apr-06	0.2	23	<0.05		11.4	<0.1	0.7	<0.001			0.03	3	<0.3		
	28-Jun-06	0.1	23	<0.05		13.1	<0.1	0.6	<0.001			0.07	2	<0.3		
	05-Sep-06	0.1	21	<0.05		4.8	<0.1	0.8	<0.001			0.09	3	<0.3		
	05-Oct-06	0.1	15	0.5		2.5	<0.1	1.4	<0.001			0.98	10	<0.3		
	21-Nov-06	0.1	21	<0.05		7.7	<0.1	0.9	<0.001			0.05	4	<0.3		
	19-Apr-07	0.1	23	<0.05		7.3	<0.1	0.6	<0.001			0.04	3	0.025		
	16-May-07	0.1	21	0.14		7.9	0.1	1.3	<0.001			0.11	5	0.069		
	22-Nov-07	0.2	27	1.7		10.2	0.2	4.2	0.002			3.2	16	1.9		
	11-Jan-08	0.2	11	0.06	<0.001	5.3	<0.1	2.4	<0.001			0.63	6			
	08-Apr-08	0.1	16	0.12	0.001	6.6	<0.1	0.9	<0.001			0.10	5			
	24-Jun-08	0.2	22	0.07	0.001	8.1	<0.1	0.58	<0.001			0.07	6			
	11-Aug-08	0.2	17	0.06	0.001	1.9	<0.1	0.8	0.0001			0.1	5			
	11-Mar-09	0.1	9.1	0.18	0.002	3.7	<0.1	1.64	0.003			0.61	15	0.24		
	01-May-09	0.13	12.3	0.121	<0.001	9	<0.10	1.25	<0.0010			0.367	8	0.0989		
	01-Oct-09	0.15	22.9	0.085	0.002	2	<0.10	2.26	<0.0010			0.257	<1.0	0.0067		
	01-Dec-09	0.14	22.8	0.093	0.007	4.34	<0.10	1.24	<0.0010			0.0858	6.3	0.0284		
	15-Mar-10	<0.05	14.3	<0.02	<0.001	10	<0.05	0.24	<0.001			0.16	8.2	<0.10		
	10-May-10	<0.05	18.5	<0.02	<0.002	4.48	<0.05	1.62	<0.001			0.1	7.2	<0.10		
	14-Jul-10	<0.05	9.07	0.08	0.001	2.15	0.420	2.06	0.001			0.3	13.7	0.23		
	04-Oct-10	<0.05	19.7	0.33	0.003	2.5	<0.05	3.36	<0.001			0.24	17.1	<0.10		
	11-Apr-11	<0.05	19.3	0.29	0.003	6.08	<0.05	1.43	<0.001			0.15	6.9	<0.10		
	13-Jun-11	<0.05	20.6	0.10	<0.001	8.3	<0.05	1.57	<0.001			0.12	8.1	<0.10		
	25-Aug-11	<0.05	15.9	0.11	0.002	<0.05	<0.05	4.85	<0.001			0.62	23.7	<0.10		
	24-Oct-11	<0.05	18.7	0.26	0.001	5.55	<0.05	2.14	<0.001			0.16	7.8	<0.10		
	08-Mar-12	<0.05	20.8	0.22	<0.001	4.23	<0.05	2.23	<0.001			0.04	9.4	<0.10		
	24-May-12	<0.05	25.6	0.03	0.001	5.42	<0.05	0.92	<0.001			0.15	5.7	<0.10		
	13-Aug-12	<0.05	17.6	0.02	<0.001	<0.05	<0.05	4.4	<0.001			0.76	26.1	<0.10		
	23-Oct-12	<0.05	17.5	0.07	<0.002	3.64	<0.05	2.34	<0.001			0.32	11.8	0.18		
	09-Apr-13	0.09	22.2	0.10	0.002	6.0	<0.05	<0.10	<0.001			0.08	5.2	<0.10		
	08-May-13	<0.25	20.6	0.05	0.001	5.94	<0.25	1.67	<0.001			0.50	5.5	<0.50	0.877	
	07-Aug-13	<0.10	20.3	0.69	0.014	1.86	<0.10	5.24	0.002			0.30	15.8	<0.20	1.02	
	31-Oct-13	<0.05	14.6	0.1	0.005	3.84	<0.05	1.51	<0.001			0.51	9.8	0.22	1.13	
	28-Mar-14	<0.05	8.48	0.49	0.007	0.35	<0.05	1.20	<0.001			0.27	5.3	<0.10	7.69	
	08-May-14	<0.10	19.9	0.05	0.001	5.38	<0.10	1.50	<0.001			0.07	6.4	<0.20	0.226	
	12-Aug-14	<0.10	18.4	<0.02	<0.001	0.41	<0.10	3.57	0.001			0.56	35	<0.20	2.17	
	20-Oct-14	<0.10	22.4	0.18	0.001	4.22	<0.10	1.26	<0.001			0.16	4.9	<0.20	0.634	
	02-Apr-15	<0.25	19.7	0.06	0.001	2.24	<0.25	0.99	<0.001			0.16	6.6	<0.50	0.539	
	25-May-15	<0.25	25.7	0.04	<0.001	3.44	<0.25	0.64	<0.001			0.10	4.9	<0.50	0.213	
	26-Aug-15	<0.25	39.1	0.60	0.018	1.33	<0.25	1.56	<0.001			0.21	14.4	<0.50	0.379	
	29-Oct-15	0.12	10.4	0.39	0.007	0.47	<0.10	6.45	<0.001			0.79	22.1	<0.20	4.69	
	15-Mar-16	<0.10	15.3	0.11	0.002	4.79	<0.10	1.69	0.005			0.26	9.9	<0.20	1.68	
	16-May-16	<0.25	21.1	0.52	0.002	3.62	<0.25	1.13	<0.001			0.74	5.7	<0.50	4.22	

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- NC - No criteria - Blank - Indicates data not available
- ** Calculated value using the fraction of NH₃ from f = 1/(10^{pKa-pH+1}), where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate	
		unitless	µS/cm	°C	mg/L		unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		field			NC		NC	6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC
SW8	18-Aug-16	7.27	783	21.1	9.3	8.20	1090	33	115	491			64.5	142		
cont.	17-Oct-16	7.27	620	18.7	8.5	8.10	627	78	156	212			61.6	56.7		
	07-Mar-17	7.90	435	5.66	6.67	7.99	426	43	718	150			28.7	45.1		
	08-May-17	8.13	508	9.44	9.63	8.24	574	40	57.9	200			29.5	61.0		
	02-Aug-17	7.46	916	17.7	5.32	8.12	1180	26	54.0	586			78.7	171		
	17-Oct-17	6.98	504	13.46	5.39	8.09	621	76	289	249			62.6	70.0		
	15-Mar-18	7.40	871	3.59	6.61	8.09	800	15	15	312			123	92.7		
	07-May-18	7.86	462	12.50	8.25	7.80	502	45	329	177			55.8	52.1		
	20-Aug-18	7.60	517	19.76	5.68	8.01	832	11	162	398			67.9	113		
	15-Oct-18	7.81	689	13.17	5.77	7.86	939	17	55.8	323			100	94.9		
	15-Mar-19	6.95	314	1.60	6.55	7.34	312	91.9	246	125			23.2	36.9		
	15-May-19	7.77	587	10.21	13.31	7.73	712	22.2	12.0	328			52.3	94.8		
	28-Aug-19	7.61	481	19.5	5.53	7.88	590	34.5	77.4	250			65.7	69.1		
	08-Oct-19	7.69	735	15.33	7.77	7.91	823	35.9	64.5	316			98.7	93.2		
	16-Mar-20	7.41	658	2.89	11.51	7.98	655	15.2	45.2	346			52.5	98.3		
	15-May-20	7.91	580	11.12	12.04	7.82	655	61.1	123	258			62.3	70.8		
	10-Aug-20	6.93	526	23.0	5.39	8.18	609	53.6	145	290			47.9	79.3		
	15-Oct-20	7.83	591	15.13	4.52	7.51	904	73.0	45.0	300			74.4	90.2		
	15-Mar-21	7.97	760	5.2	14.05	8.00	543	9	6.53	280			34	86.3		
Supplemental	12-Apr-21	7.19	643	14.32	10.90	8.19	645	29	18.2	362	389	181	80		27	
Supplemental	26-Apr-21	8.00	557	9.71	9.77	8.11	696	11	22.3	261	417	186	79		29	
	17-May-21	7.45	797	12.0	8.56	7.98	793	9	4.71	341			62	96.8		
	12-Aug-21	7.57	563	20.0	7.14	8.02	640	39	78.1	278			73	83.4		
	04-Oct-21	7.57	323	16.5	10.95	7.68	359	93	243	185			24	53.6		
SW9	27-Sep-00															
(979)	16-Nov-00					7.80	681	12	18	389			38	118		
	10-Apr-01															
	21-Jun-01					7.90	806	<5	28	398			46	119		
	19-Sep-01					8.20	812	<5	44	333			62	98		
	22-Nov-01					8.20	656	<5	11	302			60	87		
	24-Apr-02					8.20	620	<5	66	284			43	82		
	27-Jun-02					8.20	674	12	23	344			26	104		
	12-Nov-02					8.10	906	29	321	636			65	200		
	26-Mar-03					8.10	629	<5	5	285			51	89		
	29-Apr-03					8.20	821	8	12	355			79	106		
	24-Jul-03					8.10	616	<5	23	277			48	81		
	08-Oct-03					8.10	995	8	23	379			151	114		
	06-Nov-03					8.00	501	26	70	230			33	66		
	26-Apr-04					8.20	766	12	13	283			72	80		
	22-Jun-04					8.10	821	12	5	380			65	113		
	09-Nov-04					8.10	679	7	30	243			54	65		
	02-Dec-04					8.10	534	5	136	265			33	78		
	24-Apr-05					8.10	619	18	70	298			45	89		
	18-Jul-05						915		42	469			34	160		
	29-Sep-05						567		924	441			36	146		
	30-Nov-05					8.10	517	39		240			37	100		
	12-Apr-06					7.60	801	20	10	360			86	107		
	28-Jun-06					7.50	831	26	8	410			63	125		
	05-Sep-06					7.60	742	68	26	350			86	110		
	05-Oct-06					7.70	334	43	149	220			19	68		
	21-Nov-06					7.60	730	15	6	360			42	110		
	19-Apr-07					7.70	738	18	10	360			66	108		
	16-May-07					7.60	910	39	12	380			110	119		
	22-Nov-07					8.00	1010	61	74	440			115	138		
	08-Apr-08	7.75	584	7.6	13.42	8.10	593	14	18	240			49	72		
	11-Jan-08	7.37	452	4.4	13.89	7.50	432	83	69	210			41	65		

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· NC - No criteria · Blank - Indicates data not available
· ** Calculated value using the fraction of NH₃ from f = 1/(10^{pKa-pH}+1); where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	Fluoride mg/L	Magnesium mg/L	Ammonia mg/L	Un-ionized Ammonia ** mg/L	Nitrate mg/L	Nitrite mg/L	TKN mg/L	Phenols mg/L	BOD ₅ mg/L	COD mg/L	Phosphorous mg/L	DOC mg/L	Ortho-phosphate mg/L	Iron mg/L	TSS mg/L
		NC	NC	NC	0.02	NC	NC	NC	0.001	NC	NC	0.03	NC	NC	0.30	NC
SW8 cont.	18-Aug-16	<0.25	33.1	0.10	0.001	1.00	<0.25	2.62	<0.001			0.32	31.9	<0.5	1.50	
	17-Oct-16	0.09	17.2	0.26	0.002	<0.05	<0.05	5.97	<0.001			0.85	25.8	<0.10	2.41	
	07-Mar-17	0.11	9.18	<0.02	<0.001	4.88	<0.05	2.61	<0.001			0.71	7.0	<0.10	1.77	
	08-May-17	<0.05	11.7	0.24	0.006	1.73	<0.05	1.15	<0.001			0.17	5.8	<0.10	0.663	
	02-Aug-17	<0.25	38.7	0.15	0.001	2.56	<0.25	1.29	<0.001			0.09	20.9	<0.50	0.311	
	17-Oct-17	<0.10	18.1	0.24	0.001	2.14	<0.10	3.79	<0.001			0.52	22.8	<0.20	2.40	
	15-Mar-18	<0.25	19.5	<0.02	<0.001	5.83	<0.25	0.74	<0.001			0.06	6.2	<0.50	0.127	
	07-May-18	<0.10	11.3	0.26	0.004	4.66	<0.10	2.13	0.001			0.46	10.9	<0.20	0.823	
	20-Aug-18	<0.25	28.1	0.37	0.006	1.42	<0.25	2.71	0.002			0.44	15.9	<0.50	1.72	
	15-Oct-18	<0.25	20.8	5.8	0.088	2.80	<0.25	11.5	0.005			1.19	14.7	0.88	0.74	
	15-Mar-19	0.126	7.92	1.07	0.001	1.30	0.048	5.81	0.010			1.34	25.7	0.67	6.36	
	15-May-19	0.131	22.2	0.228	0.003	8.18	0.025	1.29	0.0018			0.109	8.97	0.0066	0.406	
	28-Aug-19	0.131	18.7	0.071	0.001	0.111	<0.010	3.86	0.0014			0.379	15.6	<0.0030	2.19	
	08-Oct-19	0.146	20.3	0.592	0.008	0.767	0.042	2.57	0.0062			0.290	15.9	0.0050	2.64	
	16-Mar-20	0.126	24.5	0.130	<0.001	5.92	0.026	1.03	0.0036			0.0993	7.42	0.0384	0.531	
	15-May-20	0.115	19.7	0.169	0.003	5.34	0.041	4.28	0.0019			0.682	16.4	0.158	2.63	
	10-Aug-20	0.151	22.3	0.020	<0.001	<0.020	<0.010	8.2	0.0028			0.972	64.1	<0.0030	4.41	
	15-Oct-20	0.134	18.3	11.6	0.212	0.021	<0.010	32.4	0.0119			3.00	79.1	1.89	2.15	
	15-Mar-21	0.12	15.7	<0.1	<0.001	3.08	<0.03	<0.5	<0.002			0.052	4.0	<0.03	0.35	
	Supplemental	12-Apr-21	0.13		<0.1	<0.001	1.96	<0.03	1.4	<0.001	4	29	0.233	11.3		1.86
Supplemental	26-Apr-21	0.10		<0.1	<0.002	5.14	<0.03	<0.5	<0.001	10	11	0.125	6		0.56	24
	17-May-21	0.16	24.0	<0.1	<0.001	5.63	<0.03	<0.5	<0.001			0.080	6	<0.03	0.67	
	12-Aug-21	0.14	16.9	0.4	0.006	2.07	<0.03	1.5	0.001			0.360	9.5	0.19	2.98	
	04-Oct-21	0.14	12.4	<0.1	<0.001	4.34	<0.03	1.0	<0.001			0.770	15.2	0.50	11.1	
SW9 (979)	27-Sep-00															
	16-Nov-00	0.2	23	0.18		5.43	<0.02	0.59	<0.001			0.02	3.2			
	10-Apr-01															
	21-Jun-01	0.2	25	0.07		18.9	0.02	0.7	<0.001			0.1	3.9			
	19-Sep-01	0.33	21	0.24		0.69	0.02	2.59	<0.001			0.73	9.8			
	22-Nov-01	0.22	21	0.08		5.7	<0.02	1.08	<0.001			<0.01	5.8			
	24-Apr-02	0.26	19	1.11		6.87	0.02	2.57	<0.002			0.19	6.7			
	27-Jun-02	<0.1	20	<0.05		17.7	0.02	0.94	<0.002			0.03	5.1			
	12-Nov-02	259	33	0.08		7.22	0.02	1.61	<0.002			0.06	9.3			
	26-Mar-03	0.12	15	0.06		11.1	<0.02	1.28	<0.002			<0.08	4.2			
	29-Apr-03	0.12	22	0.16		11.2	<0.02	1.02	<0.002			0.1	3.5			
	24-Jul-03	0.26	18	0.08		5.2	<0.02	0.63	<0.002			<0.05	4.1			
	08-Oct-03	0.21	23	0.05		4.4	<0.02	0.71	<0.002			0.08	5.6			
	06-Nov-03	0.28	16	0.25		4.98	0.03	1.4	<0.002			0.26	5.5			
	26-Apr-04	0.19	21	0.48		5.37	<0.02	2.06	<0.002			0.04	6.7	0.008		
	22-Jun-04	0.22	24	<0.05		5.67	<0.02	0.43	<0.002			0.05	3.6	0.04		
	09-Nov-04	0.24	19	4.59		5.07	<0.02	8.14	0.004			0.24	13.2	<0.002		
	02-Dec-04	0.4	17	0.12		6.9	ND	1.3	0.007			0.2	8.2	ND		
	24-Apr-05	0.1	19	2.27		8.8	<0.1	3.4	0.0010			0.16	5.4	<0.005		
	18-Jul-05		33	0.23		8.1	<0.3	1.2	<0.001			0.19	5.3	0.023		
	29-Sep-05		19	0.16		3.4	<0.3	2.3	0.0010			0.63	5.5	0.013		
	30-Nov-05	0.2	19	0.16		6.9	0.100						22.9			
	12-Apr-06	0.1	22	<0.05		9.9	<0.1	0.7	<0.001			0.04	3	<0.3		
	28-Jun-06	0.1	23	<0.05		11.8	<0.1	0.6	<0.001			0.05	2	<0.3		
	05-Sep-06	0.2	18	<0.05		3.2	<0.1	1	<0.001			0.24	5	<0.3		
	05-Oct-06	0.1	13	0.27		1.1	<0.1	3	<0.001			0.51	7	<0.3		
	21-Nov-06	0.1	20	0.07		6.8	<0.1	0.7	<0.001			0.07	5	<0.3		
	19-Apr-07	0.1	23	<0.05		5.7	<0.1	1	<0.001			0.06	4	0.008		
	16-May-07	0.1	21	0.15		7	0.1	1.2	<0.001			0.15	7	0.047		
	22-Nov-07	0.2	24	1.6		9	0.1	3.7	0.002			3.00	18	1.8		
	08-Apr-08	0.1	14	0.28	0.002	6	<0.1	1.1	<0.001			0.09	5			
	11-Jan-08	0.2	11	0.2	0.001	4.5	<0.1	2.7	<0.001			0.47	7			

Notes: · PWQO - Provincial Water Quality Objectives (July 1994) · * Values should be interpreted with caution · Units provided
· NC - No criteria · Blank - Indicates data not available
· ** Calculated value using the fraction of NH₃ from f = 1/(10^{pKa-pH}+1); where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	pH	Cond.	Temp.	Dissolved Oxygen	pH	Conductivity	Colour	Turbidity	Hardness	TDS	Alkalinity	Chloride	Calcium	Sulphate
		unitless	µS/cm	°C	mg/L	unitless	µS/cm	TCU	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		6.5 - 8.5	NC	field	NC	6.5 - 8.5	NC	NC	Narrative	NC	NC	NC	NC	NC	NC
SW9	24-Jun-08	7.53	620	17.4	10.13	7.80	569	13	38	290			56	85	
cont.	11-Aug-08	7.69	603	17.4	9.73	7.90	531	12	42	250			37	73	
	11-Mar-09	8.17	423	2.6	9.27	8.00	386	23	115	170			33	53.7	
	01-May-09	7.47	435	13.8	7.10	7.91	488	32	92	222			33.2	66	
	01-Oct-09	8.25	545	12.8	5.35	8.13	631	17	24	260			56.8	73.4	
	01-Dec-09	8.72	709	6.1	5.97	7.99	783	12	17	349			59.5	104	
	15-Mar-10	7.26	570	3.5	11.79	8.06	559	25	40	239			43.8	71.8	
	10-May-10	8.2	670	11.1		8.29	651	24	6	262			79.2	75.6	
	14-Jul-10	7.83	240	26.5	5.78	8.08	311	16	57	128			15.9	37.3	
	04-Oct-10	7.81	640	12.5	8.67	8.25	543	23	40	225			50.3	66.2	
	11-Apr-11	7.63	630	10.2	9.12	8.17	660	16	23.5	278			59.9	82.4	
	13-Jun-11	6.75	412	16.8	7.57	8.04	439	9	36.5	194			39.5	55.1	
	25-Aug-11	6.56	476	23.2	7.06	8.15	442	26	154	162			43.1	44.1	
	24-Oct-11	7.24	681	12.5	8.72	8.12	570	37	1140	267			48.9	80	
	08-Mar-12	6.73	629	5.9	10.98	8.14	744	21	11.5	331			44.4	95.1	
	24-May-12	7.53	840	14.5	9.58	8.00	739	9	10.9	368			47.6	107	
	23-Oct-12	7.19	602	11.7	7.70	8.27	597	32	1150	280			59	83.9	
	09-Apr-13	8.29	864	6.8	8.64	7.87	836	12	313	352			72.5	105	
	08-May-13	7.78	663	12.0	9.15	8.19	648	<5	376	240			57.5	67.3	
	07-Aug-13	7.36	662	20.7	5.31	7.33	671	26	26.9	232			60.8	65	
	31-Oct-13	8.29	484	11.1	5.89	7.97	465	76	148	214			27.7	65	
	28-Mar-14	8.48	222	1.3	9.62	7.67	191	27	64.9	78			11.9	23.7	
	08-May-14	7.63	789	11.6	9.53	8.13	796	15	25.5	318			71.3	90.8	
	12-Aug-14	8.07	661	19.5	9.80	8.28	600	43	142	239			82.4	65.5	
	20-Oct-14	7.27	709	13.5	8.03	8.05	791	18	423	343			47.9	102	
	02-Apr-15	7.70	620	7.1	10.8	7.82	702	13	64.3	285			68.2	83.7	
	25-May-15	7.70	580	15.5	9.8	8.23	740	14	727	296			59.3	83.7	
	26-Aug-15	7.80	820	17.5	4.20	8.30	808	18	58	328			60.0	95.9	
	29-Oct-15	7.95	580	9.4	8.44	7.88	523	60	718	176			61.6	50.5	
	15-Mar-16	7.70	492	6.5	9.9	8.00	609	50	109	236			67.0	69.3	
	16-May-16	7.46	599	9.8	9.0	8.21	733	13	39.5	280			96.7	77.3	
	18-Aug-16	7.38	653	20.3	8.9	8.06	955	20	1510	403			46.5	117	
	17-Oct-16	6.95	750	18.5	8.2	8.05	743	33	2120	255			58.0	72.3	
	07-Mar-17	7.62	558	7.02	8.47	8.01	455	49	1080	167			35.4	49.9	
	08-May-17	8.11	529	8.16	6.88	8.23	581	43	60.0	212			30.5	63.5	
	02-Aug-17	7.75	998	19.53	6.05	7.85	752	18	1070	294			49.1	82.8	
	17-Oct-17	6.97	502	13.64	6.65	8.12	619	50	510	245			60.3	67.1	
	15-Mar-18	7.21	849	3.73	6.93	7.99	775	14	50	297			117	88.3	
	07-May-18	7.68	408	12.18	8.71	7.74	439	43	491	172			39.7	51.6	
	20-Aug-18	8.39	419	24.14	5.57	8.23	472	<5	49.4	131			55.2	30.0	
	15-Oct-18	7.59	824	13.25	6.31	7.82	944	20	1260	323			93.0	95.4	
	15-Mar-19	7.02	311	3.03	7.42	7.29	318	145	305	144			21.7	42.4	
	15-May-19	7.96	584	11.36	10.79	7.83	708	22.2	26.9	329			54.9	97.3	
	28-Aug-19	7.42	577	19.4	5.10	7.93	758	29.3	276	456			89.7	123	
	08-Oct-19	7.52	774	15.04	5.82	7.80	905	31.2	31.9	324			109	92.5	
	16-Mar-20	7.35	705	2.38	9.45	7.84	729	13.1	72.2	330			67.8	95.9	
	15-May-20	7.49	674	11.82	7.94	7.73	629	48.8	228	321			43.1	89.2	
	10-Aug-20	7.23	602	21.8	8.62	8.11	691	38.0	446	471			53.5	137	
	15-Oct-20	7.71	634	14.88	4.61	7.67	783	26.0	1130	588			83.0	173	
	15-Mar-21	7.96	1100	4.4	8.92	8.01	876	20	11.2	346			89	99.3	
	17-May-21	7.99	749	13.7	7.42	7.96	749	13	38.4	591			76	166	
	12-Aug-21	7.85	576	20.1	5.69	8.03	632	26	790	511			75	162	
	04-Oct-21	7.53	334	16.4	6.33	7.74	356	101	252	190			24	57.5	

Notes: PWQO - Provincial Water Quality Objectives (July 1994) - * Values should be interpreted with caution - Units provided
 - NC - No criteria - Blank - Indicates data not available
 - ** Calculated value using the fraction of NH₃ from $f = 1/(10^{pKa-pH+1})$; where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



**Table E-1: Surface Water Chemistry
Oxford County Waste Management Facility**

Surface Water Station	Date	Fluoride mg/L	Magnesium mg/L	Ammonia mg/L	Un-ionized Ammonia ** mg/L	Nitrate mg/L	Nitrite mg/L	TKN mg/L	Phenols mg/L	BOD ₅ mg/L	COD mg/L	Phosphorous mg/L	DOC mg/L	Ortho-phosphate mg/L	Iron mg/L	TSS mg/L
		NC	NC	NC	0.02	NC	NC	NC	0.001	NC	NC	0.03	NC	NC	0.30	NC
SW9	24-Jun-08	0.2	20	0.09	0.001	5.1	<0.1	0.78	<0.001			0.10	6			
cont.	11-Aug-08	0.2	15	0.12	0.002	1.3	<0.1	1.2	<0.001			0.1	5			
	11-Mar-09	0.1	9.6	0.47	0.007	1.6	<0.1	1.2	0.002			0.26	8	0.038		
	01-May-09	0.16	13.8	0.289	0.002	6.65	<0.10	1.18	<0.0010			0.28	8.8	0.0271		
	01-Oct-09	0.16	18.7	0.201	0.008	1.4	<0.10	1.55	<0.0010			0.174	21.6	0.0039		
	01-Dec-09	0.14	21.5	0.099	0.007	3.99	<0.10	1	<0.0010			0.0654	6.7	0.0351		
	15-Mar-10	<0.05	14.5	0.02	<0.001	6.39	<0.05	1.01	<0.001			0.17	9.1	<0.10		
	10-May-10	<0.05	17.9	<0.02	<0.001	5.44	<0.05	1.79	<0.001			0.11	7.7	<0.10		
	14-Jul-10	<0.05	8.47	<0.02	<0.001	0.34	<0.05	1.06	<0.001			0.12	5.6	<0.10		
	04-Oct-10	0.09	14.6	0.07	<0.001	0.86	<0.05	1.64	<0.001			0.16	8.1	<0.10		
	11-Apr-11	<0.05	17.5	0.05	<0.001	4.27	<0.05	1.21	<0.001			0.11	5.6	<0.10		
	13-Jun-11	0.18	13.8	0.03	<0.001	2.17	<0.05	0.37	<0.001			0.09	5.2	<0.10		
	25-Aug-11	<0.05	12.7	0.05	<0.001	<0.05	<0.05	1.26	0.009			0.22	8.4	<0.10		
	24-Oct-11	<0.05	16.3	0.35	0.001	3.03	<0.05	3.43	<0.001			0.59	8.4	<0.10		
	08-Mar-12	<0.05	22.7	0.11	<0.001	4.05	<0.05	1.4	0.001			0.23	7.8	<0.10		
	24-May-12	<0.05	24.5	0.08	0.001	4.28	<0.05	0.69	<0.001			0.03	6.6	<0.10		
	23-Oct-12	<0.05	17.1	0.23	0.001	2.75	<0.05	10.1	<0.001			4.28	11.2	<0.10		
	09-Apr-13	0.12	21.8	0.19	0.005	5.14	<0.05	0.82	<0.001			0.13	4.2	<0.10		
	08-May-13	<0.25	17.4	0.08	0.001	3.85	<0.25	1.97	<0.001			0.92	6	<0.50	1.08	
	07-Aug-13	<0.10	16.9	0.18	0.002	0.59	<0.10	1.64	0.001			0.17	9.3	<0.20	1.17	
	31-Oct-13	0.14	12.6	0.11	0.004	4.4	<0.05	3.04	0.001			0.55	10.5	0.44	0.921	
	28-Mar-14	0.07	4.50	0.45	0.012	0.78	<0.05	1.28	<0.001			0.27	6.8	<0.10	0.820	
	08-May-14	<0.10	22.2	0.11	0.001	4.43	<0.10	1.37	<0.001			0.07	5.7	<0.20	0.476	
	12-Aug-14	0.13	18.3	<0.02	<0.001	0.57	<0.10	2.52	<0.001			0.41	12.7	<0.20	2.22	
	20-Oct-14	<0.10	21.4	0.30	0.001	3.54	<0.10	2.20	<0.001			0.43	4.2	<0.20	1.83	
	02-Apr-15	<0.25	18.5	0.18	0.001	2.10	<0.25	2.23	<0.001			0.53	5.8	<0.50	1.17	
	25-May-15	<0.25	21.2	0.16	0.002	2.01	<0.25	2.53	<0.001			0.54	5.8	<0.50	4.78	
	26-Aug-15	<0.25	21.6	3.00	0.061	<0.25	<0.25	3.98	<0.001			0.19	8.3	<0.50	3.87	
	29-Oct-15	<0.25	12.0	0.26	0.004	0.70	<0.25	6.68	<0.001			1.35	43.6	0.60	20.1	
	15-Mar-16	<0.10	15.2	0.23	0.002	4.52	<0.10	1.41	0.007			0.33	9.9	<0.20	2.54	
	16-May-16	<0.25	21.1	0.11	0.001	3.97	<0.25	0.70	<0.001			0.08	5.1	<0.50	0.262	
	18-Aug-16	<0.25	27.0	0.41	0.004	1.29	<0.25	1.93	<0.001			5.32	12.5	<0.5	19.9	
	17-Oct-16	0.14	18.2	0.68	0.002	0.74	<0.05	8.02	<0.001			1.93	9.3	<0.10	5.86	
	07-Mar-17	0.09	10.2	2.04	0.012	5.32	<0.05	5.01	0.002			1.10	23.6	<0.10	1.40	
	08-May-17	<0.05	13.0	0.28	0.006	2.60	<0.05	1.33	<0.001			0.19	6.2	<0.10	0.523	
	02-Aug-17	0.20	21.1	0.70	0.015	0.57	<0.05	1.60	<0.001			0.16	9.3	<0.10	2.06	
	17-Oct-17	<0.10	18.8	0.15	<0.001	1.82	<0.10	5.33	<0.001			1.86	14.6	0.43	4.79	
	15-Mar-18	<0.25	18.6	0.15	<0.001	4.76	<0.25	1.07	<0.001			0.16	6.3	<0.50	0.801	
	07-May-18	<0.05	10.5	0.21	0.002	6.29	<0.05	1.00	0.001			0.57	9.5	<0.10	0.829	
	20-Aug-18	0.13	13.6	<0.02	<0.002	<0.05	<0.05	1.23	0.002			0.11	8.2	<0.10	0.497	
	15-Oct-18	<0.25	20.5	7.52	0.069	4.66	0.49	21.2	0.013			5.14	21.7	1.53	5.14	
	15-Mar-19	0.161	9.31	1.77	0.002	0.519	0.053	9.62	<0.010			2.16	36.3	1.22	8.74	
	15-May-19	0.116	20.8	0.111	0.002	7.10	0.032	1.87	0.0028			0.20	8.61	0.0057	1.34	
	28-Aug-19	0.160	35.9	1.21	0.012	0.736	0.018	9.25	0.0017			1.57	16.5	<0.0030	22.3	
	08-Oct-19	0.147	22.6	1.26	0.011	0.737	0.054	2.75	0.0053			0.183	15.9	0.0033	2.40	
	16-Mar-20	0.135	21.9	0.99	0.002	4.14	0.032	2.65	0.0027			0.259	11.1	<0.0030	1.86	
	15-May-20	0.120	23.9	0.140	0.001	3.82	0.029	3.85	<0.0010			0.703	18.7	0.094	7.84	
	10-Aug-20	0.164	31.5	0.073	0.001	<0.020	<0.010	8.3	0.0036			1.18	46.7	<0.0030	18.7	
	15-Oct-20	0.174	38.2	0.705	0.010	1.22	0.059	20.0	0.0013			7.45	17.4	0.005	28.0	
	15-Mar-21	0.13	23.9	6.7	0.072	0.12	<0.03	8.3	<0.002			0.129	14.9	0.05	1.02	
	17-May-21	0.16	42.8	0.3	0.007	2.88	<0.03	1.3	<0.001			0.925	9	0.04	11.3	
	12-Aug-21	0.18	25.9	0.3	0.008	0.79	<0.03	1.6	0.002			0.817	10.6	0.31	6.73	
	04-Oct-21	0.18	11.2	<0.1	<0.001	4.98	<0.03	1.1	0.002			0.542	18.0	0.52	3.06	

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· NC - No criteria · Blank - Indicates data not available
· ** Calculated value using the fraction of NH₃ from f = 1/(10^{pKa-pH+1}); where pKa = 0.09018 + 2729.92/T and T = ambient water temperature in Kelvin (K = °C + 273.16). Field pH is used in the equation.



Figure E-1
Concentration Versus Time - SW1 (971)
Oxford County Waste Management Facility

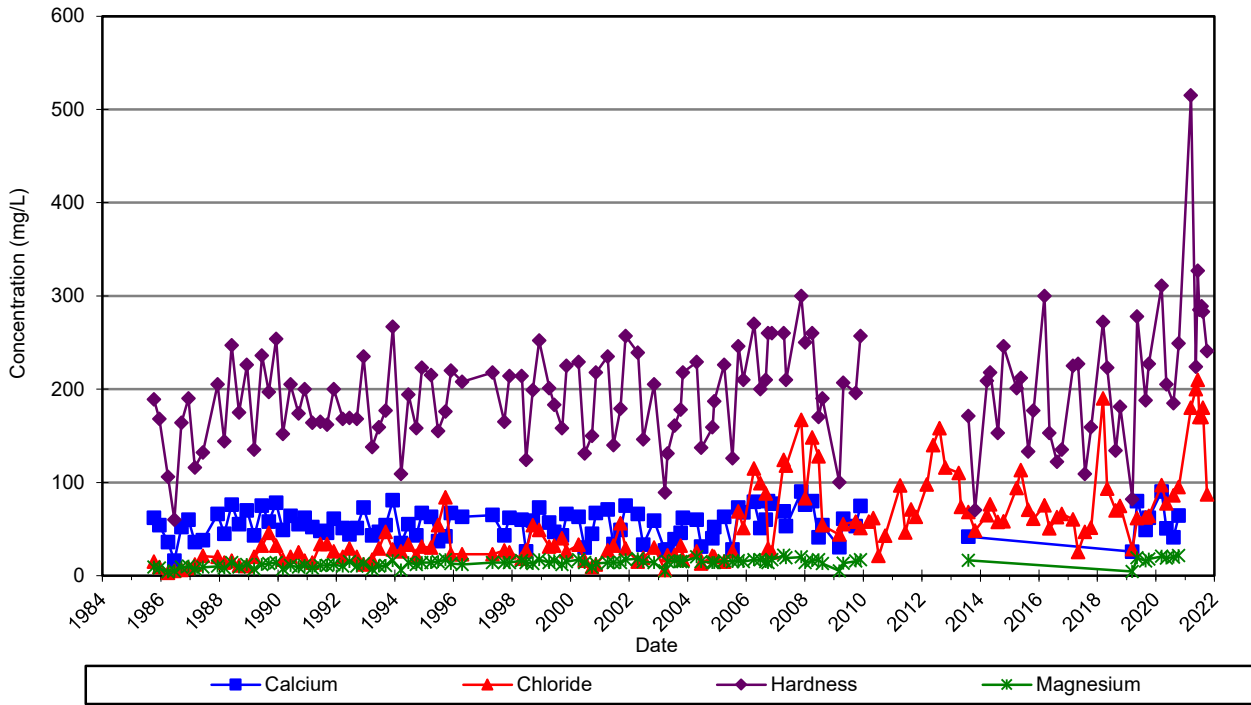
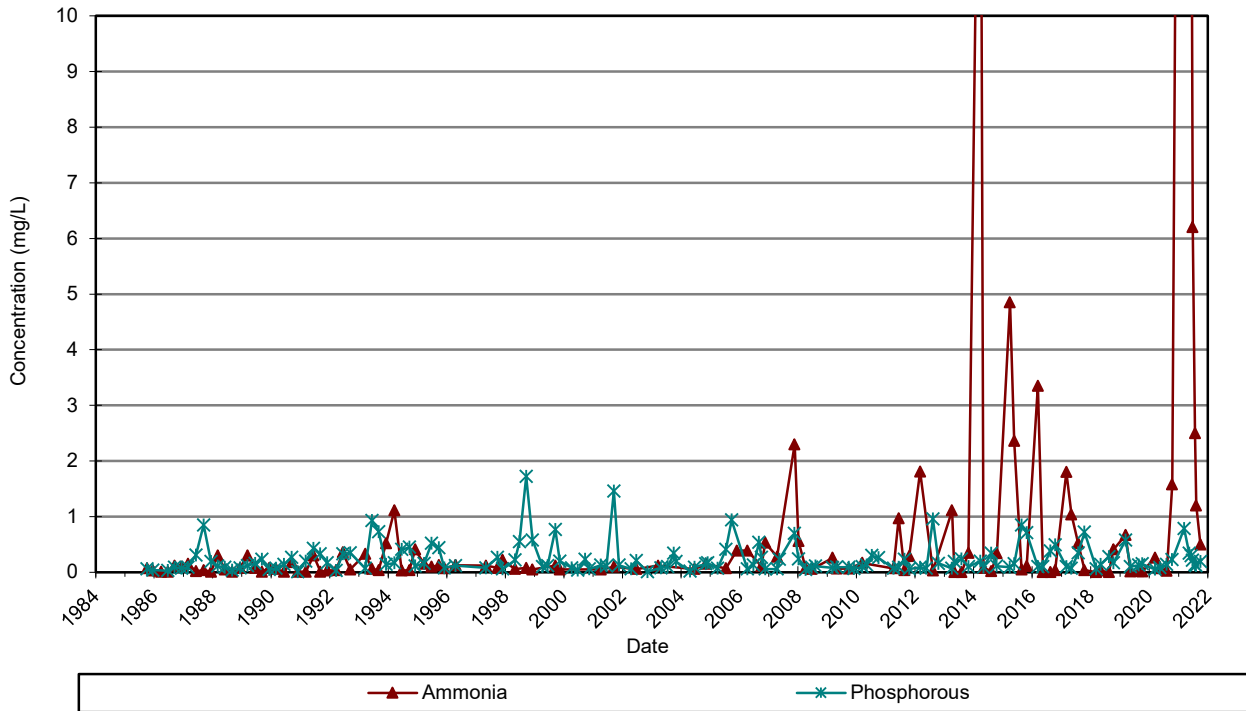
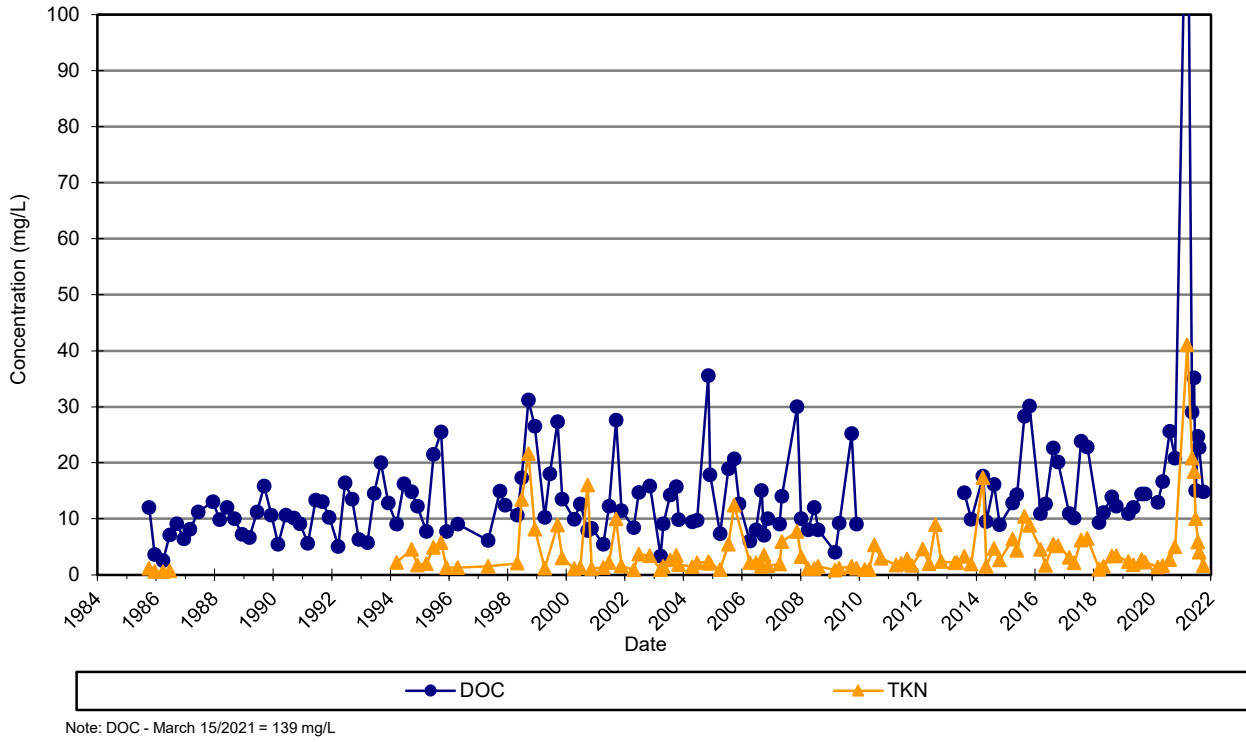


Figure E-2
Concentration Versus Time - SW1 (971)
Oxford County Waste Management Facility



Note: Ammonia - March 28/2014 = 17 mg/L; March 15/2021 = 37.2 mg/L; May 17/2021 = 16.5 mg/L; June 10/2021 = 14.7 mg/L

**Figure E-3
Concentration Versus Time - SW1 (971)
Oxford County Waste Management Facility**



**Figure E-4
Concentration Versus Time - SW4 (974)
Oxford County Waste Management Facility**

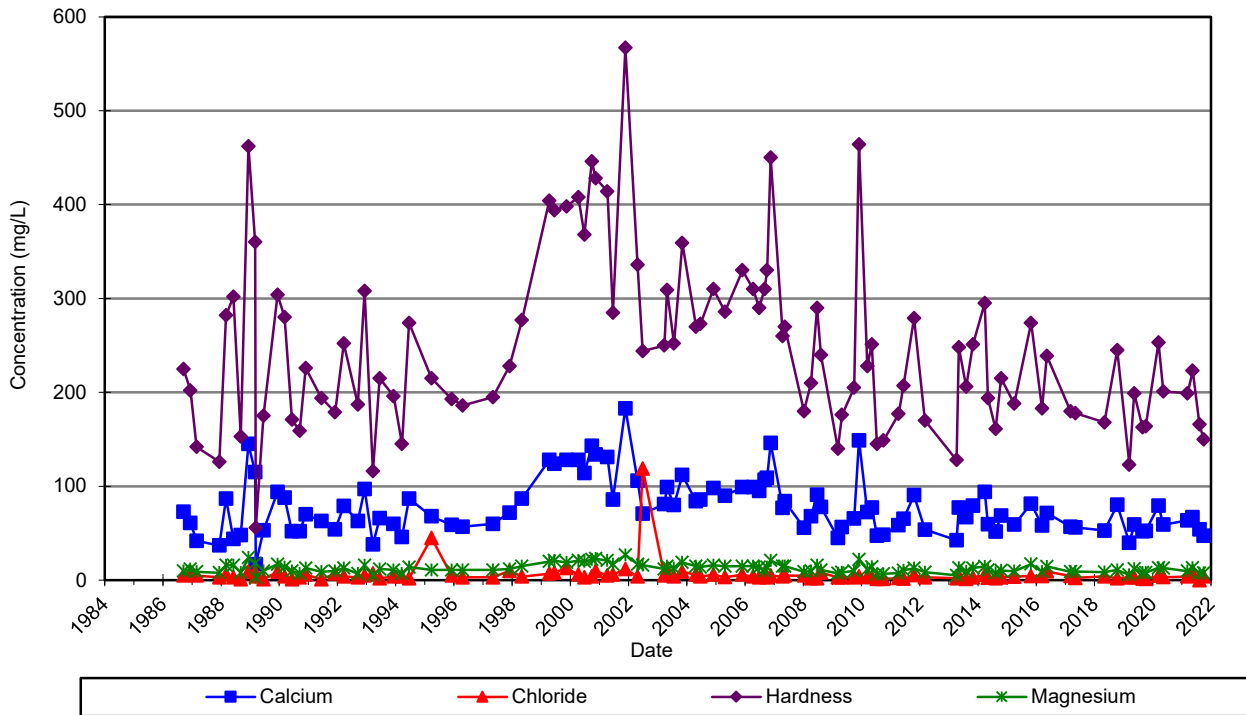


Figure E-5
Concentration Versus Time - SW4 (974)
Oxford County Waste Management Facility

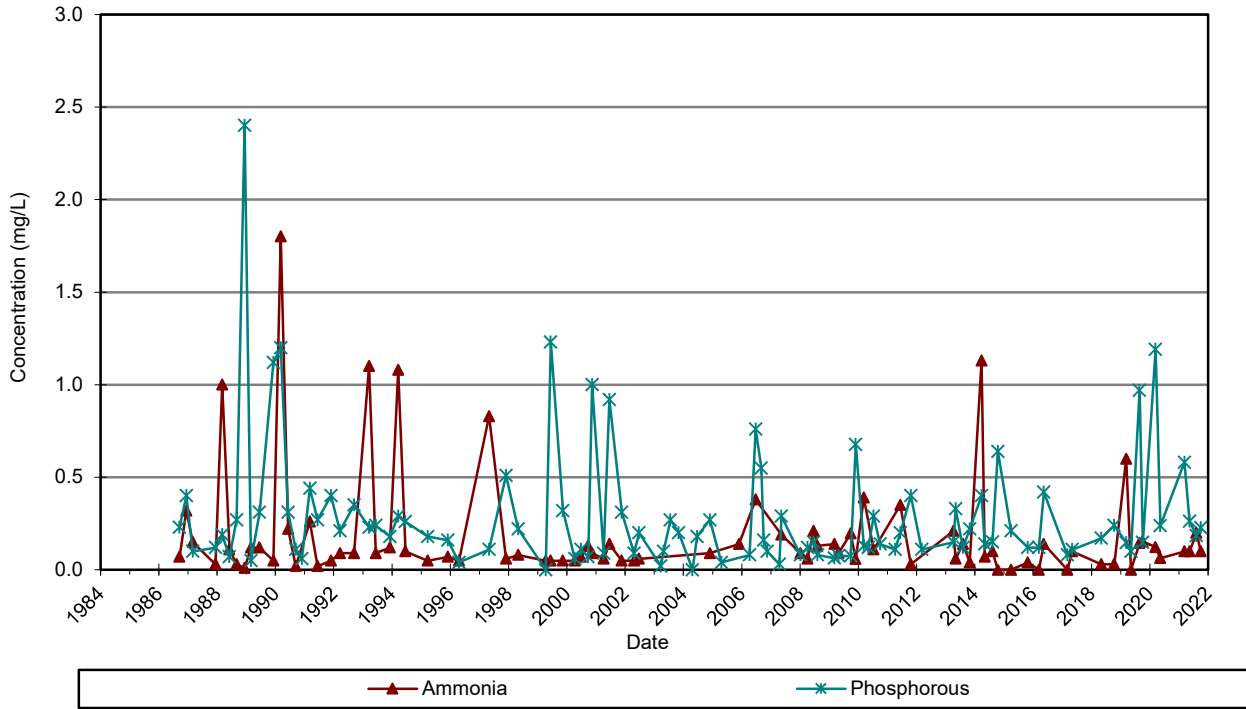


Figure E-6
Concentration Versus Time - SW4 (974)
Oxford County Waste Management Facility

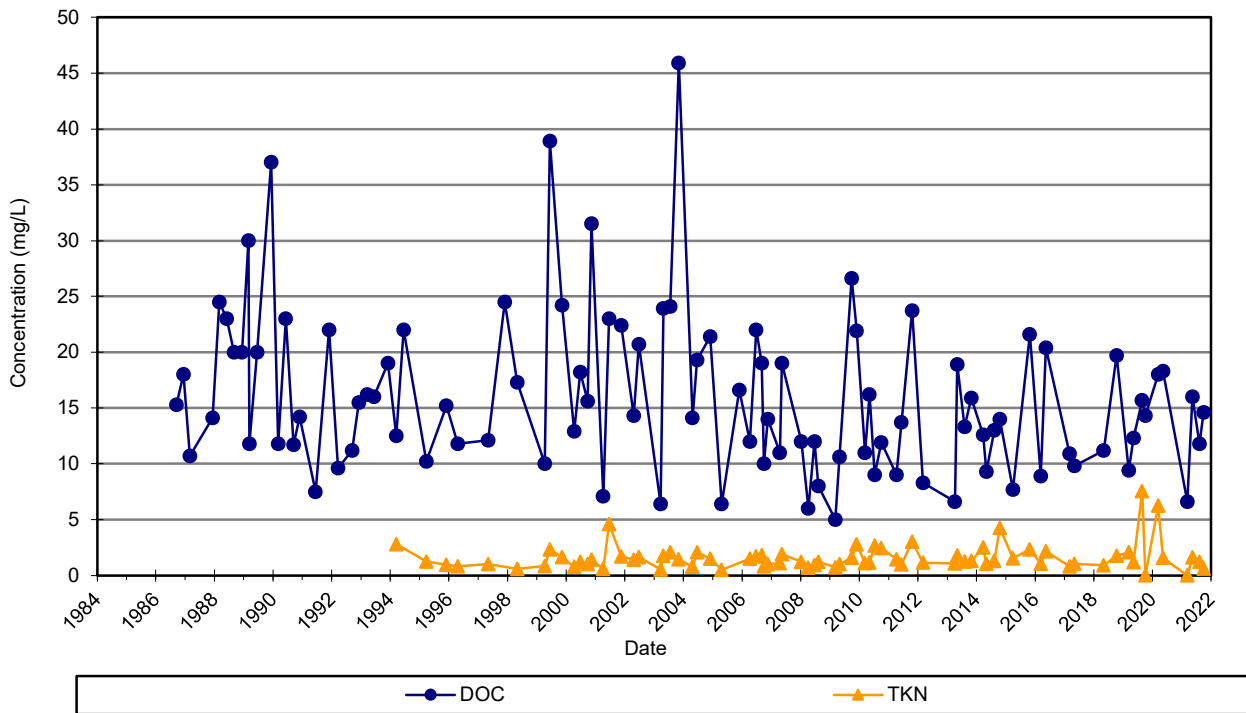


Figure E-7
Concentration Versus Time - SW7 (977)
Oxford County Waste Management Facility

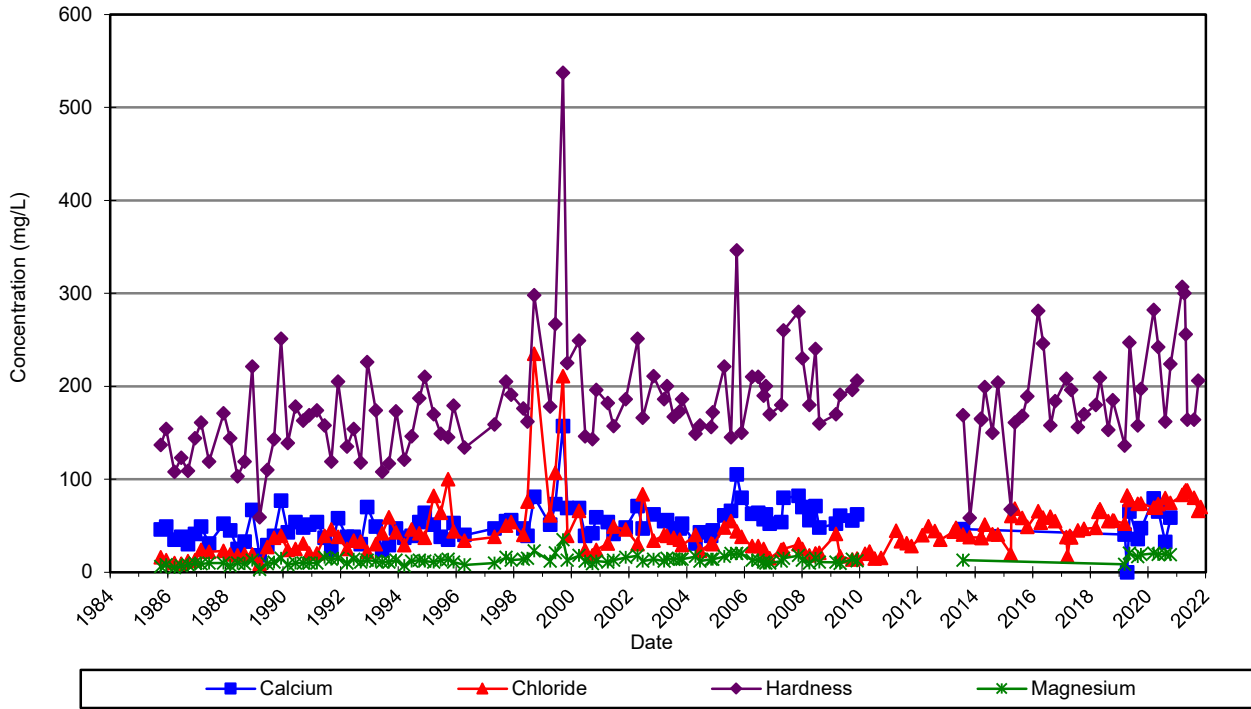


Figure E-8
Concentration Versus Time - SW7 (977)
Oxford County Waste Management Facility

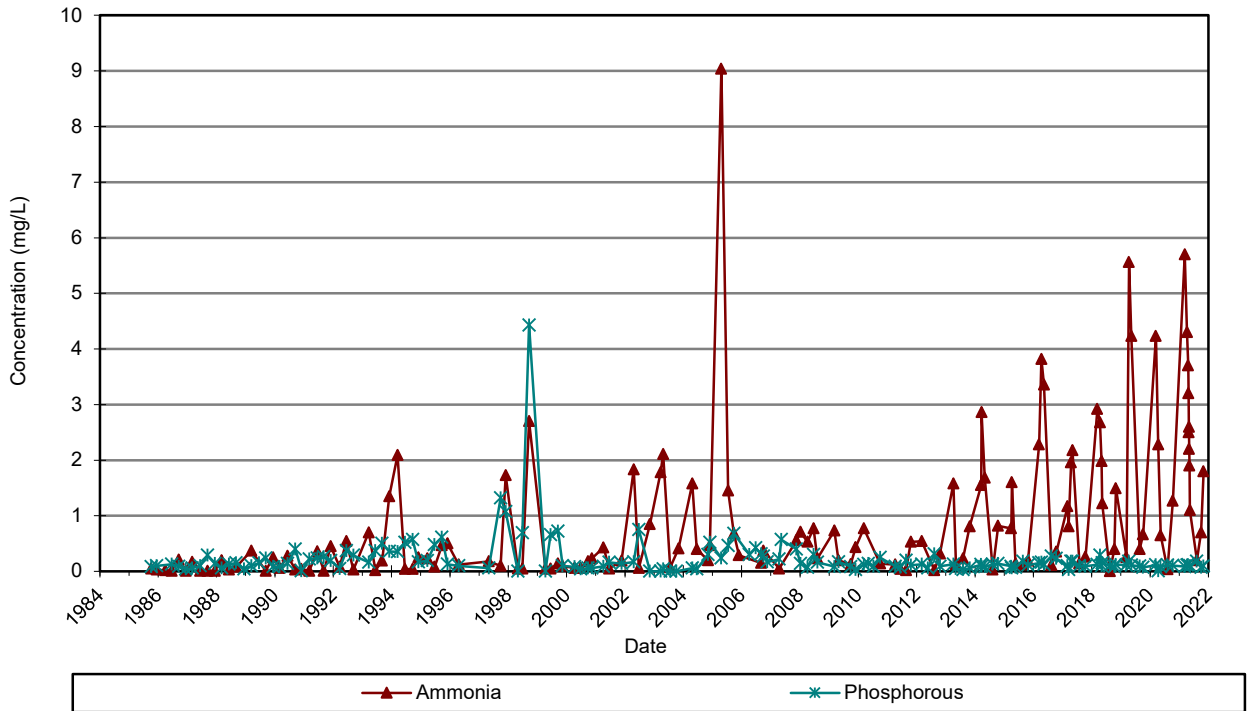


Figure E-9
Concentration Versus Time - SW7 (977)
Oxford County Waste Management Facility

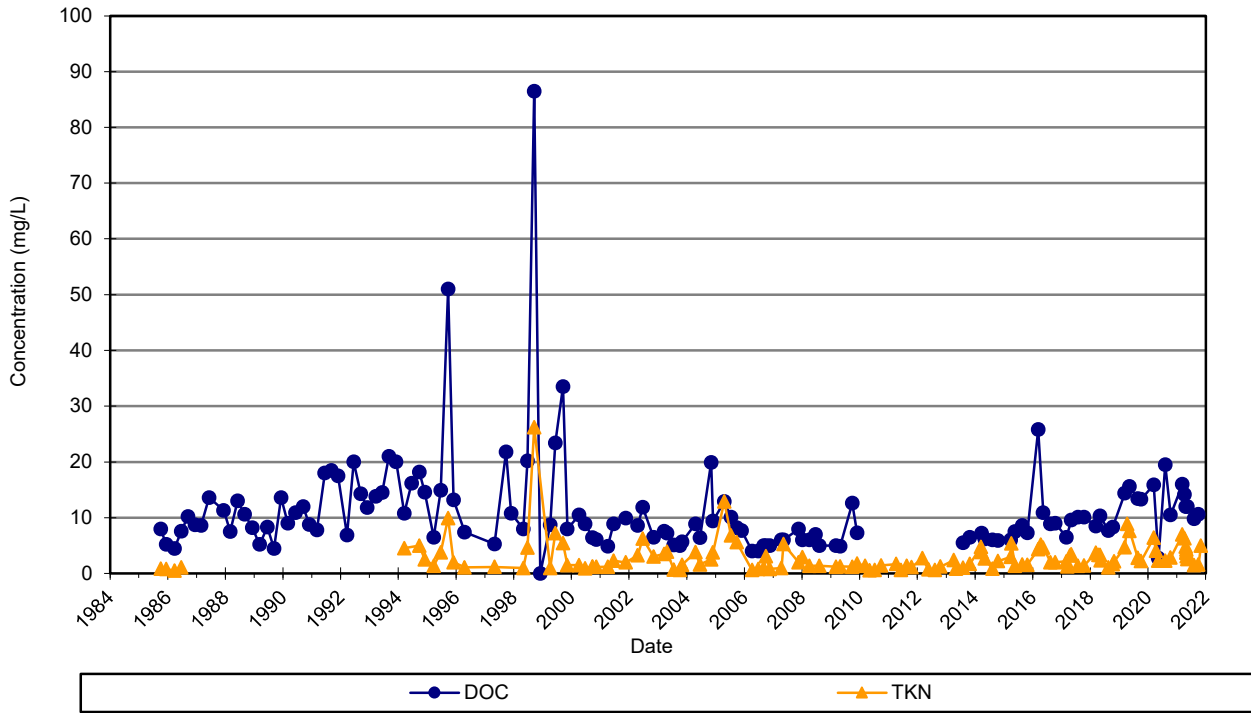


Figure E-10
Concentration Versus Time - SW8 (978)
Oxford County Waste Management Facility

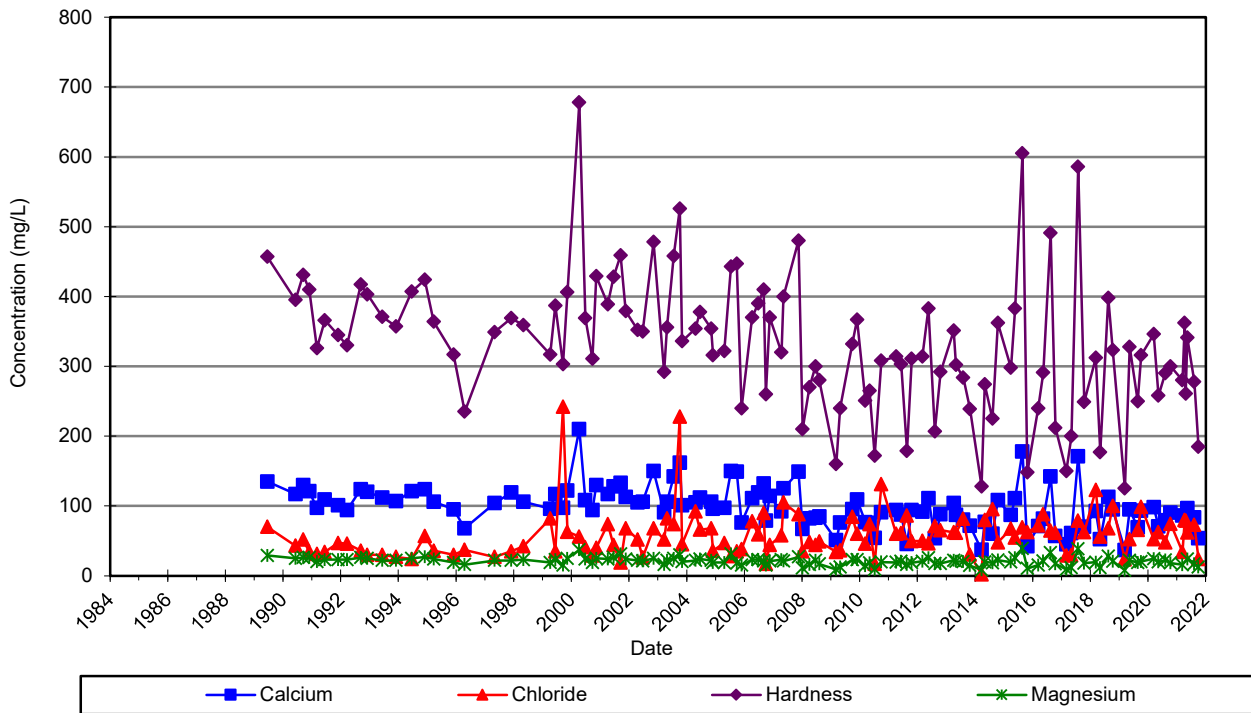
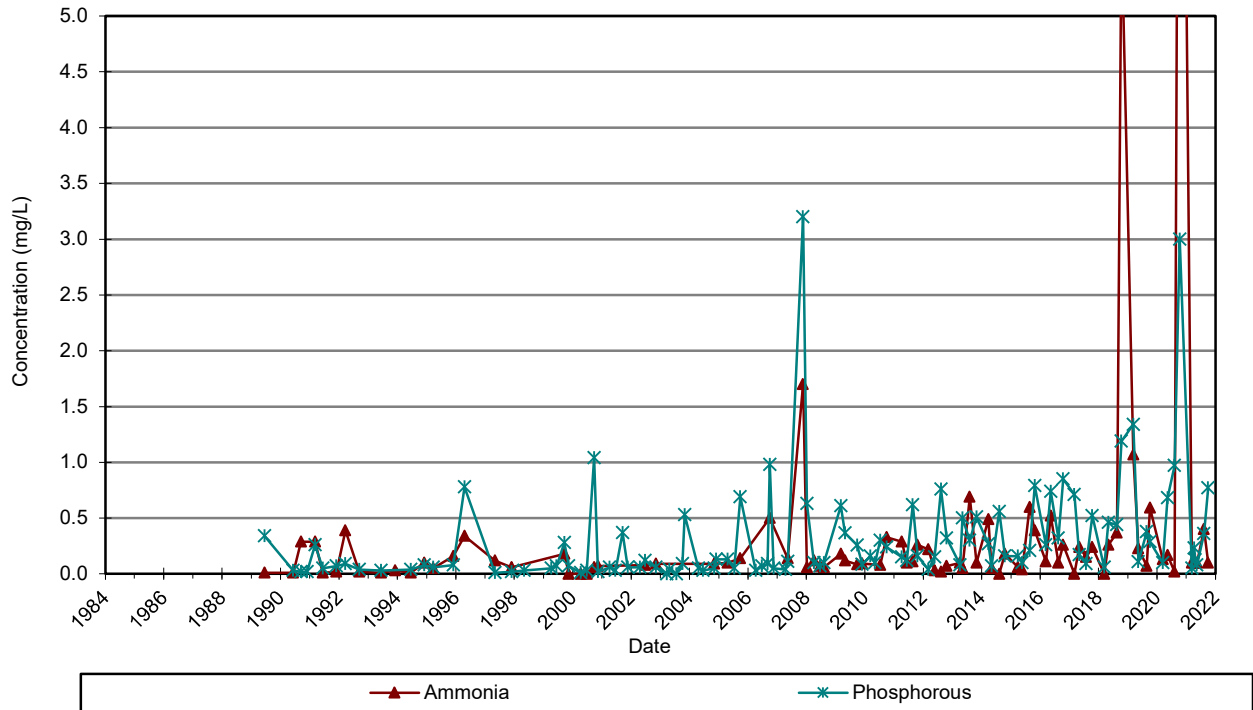
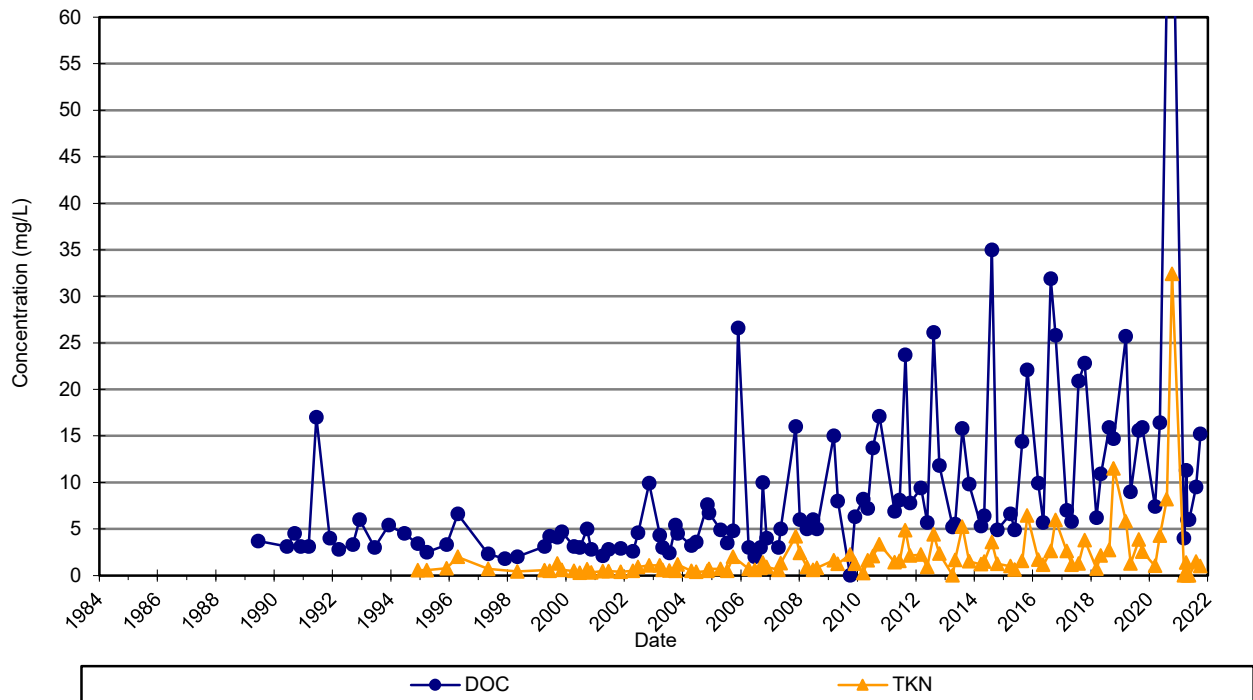


Figure E-11
Concentration Versus Time - SW8 (978)
Oxford County Waste Management Facility



Note: Ammonia - October 15/2018 = 5.8 mg/L, October 15/2020 = 11.69 mg/L

Figure E-12
Concentration Versus Time - SW8 (978)
Oxford County Waste Management Facility



Note: DOC - August 10/2020 = 64.1 mg/L, October 15/2020 = 79.1 mg/L

Figure E-13
Concentration Versus Time - SW9 (979)
Oxford County Waste Management Facility

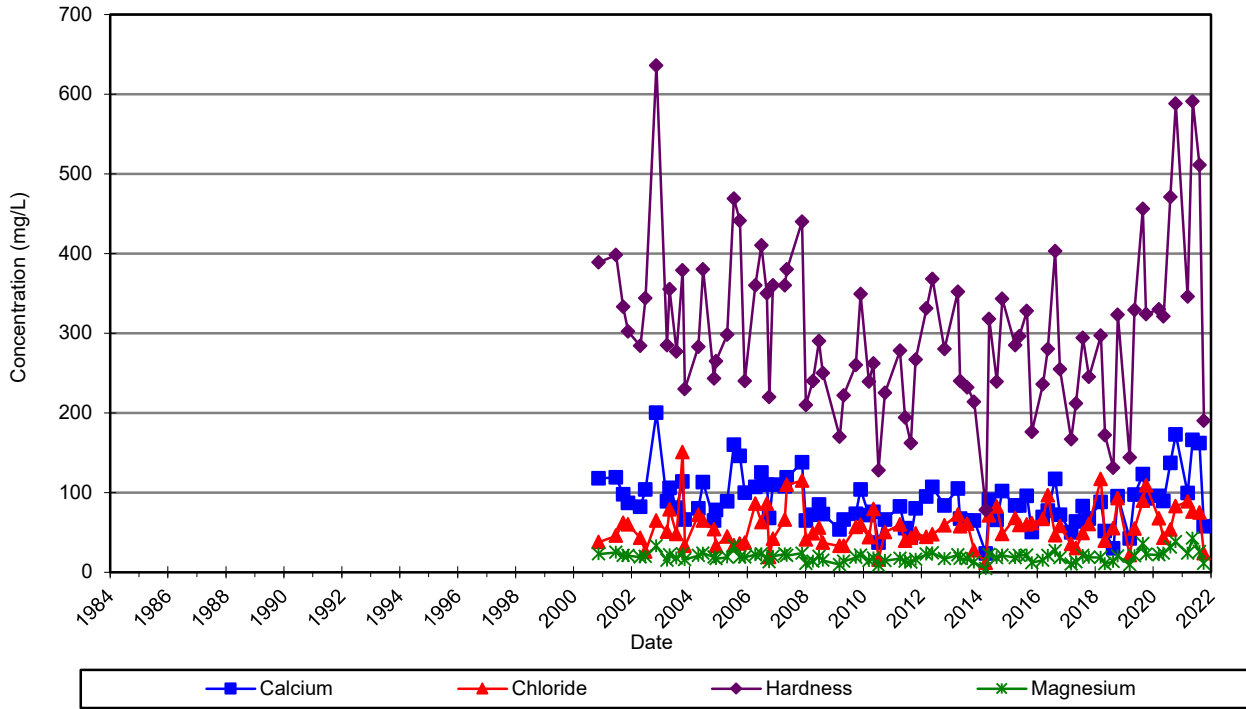


Figure E-14
Concentration Versus Time - SW9 (979)
Oxford County Waste Management Facility

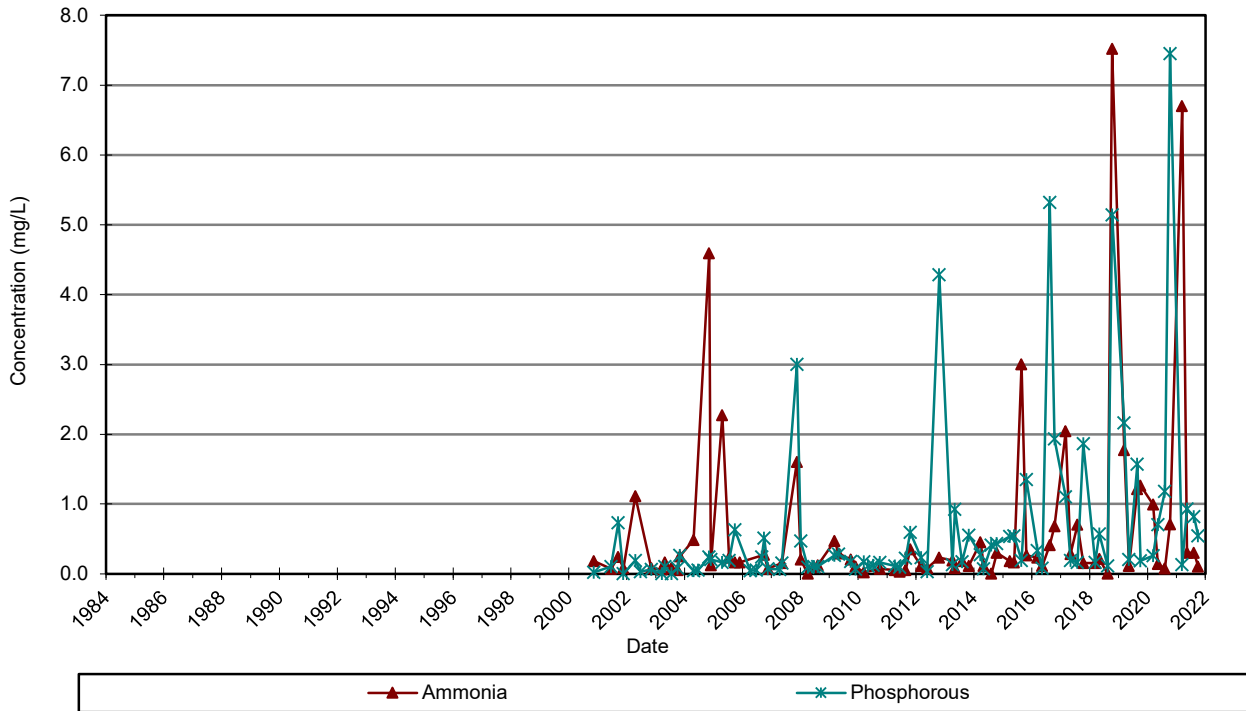
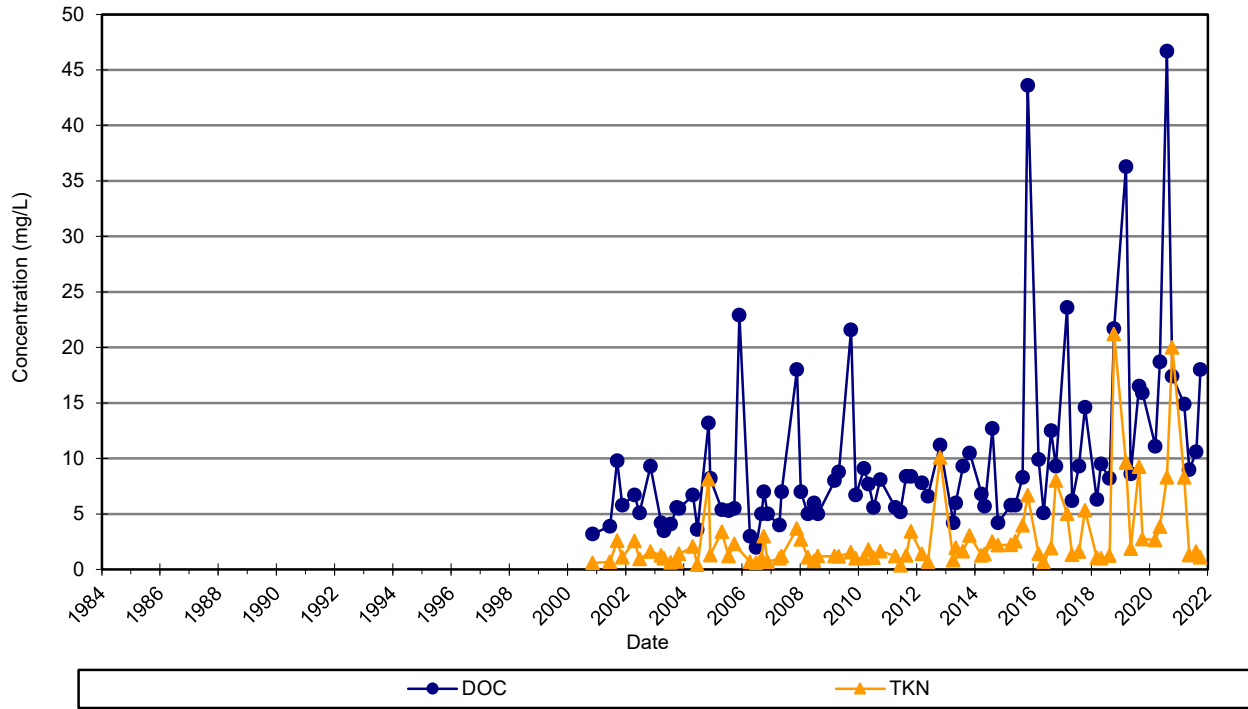


Figure E-15
Concentration Versus Time - SW9 (979)
Oxford County Waste Management Facility



APPENDIX

F

LEACHATE CHEMISTRY



**Table F-1: Leachate Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	pH	Conductivity	Colour	Turbidity	TKN	TSS	H ₂ S	Sulphate	Hardness	Total O&G	BOD	Chloride	Fluoride	DOC	Phenol	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth
		unitless	µS/cm	TCU	NTU	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
By-law limits		5.5 to 10.5				350	1500		100	300	1500	10	1	50	5	1					5	
MH1	May-07	7.61				166	104	<0.02	16		7	52	570	0.42		0.037	0.44	<0.01	<0.008	0.532	<0.0001	<0.03
	Oct-08					325	120	<0.2	6		6	63	600	0.47		0.037	0.70	<0.01	0.008	0.514	<0.0001	<0.03
	Nov-09	7.44				226	28	<0.6	6		9	61	620	0.45		<0.02	0.03	<0.01	<0.008	0.505	<0.0001	<0.03
	Mar-10	7.53		208	159	311	46	<0.2	8	1010	19	24	570	0.44	97.2	0.01	0.07	<0.01	<0.008	0.507	<0.0001	<0.03
	May-10	7.66		147	214	211	87	<0.2	5	1090	6	23	400	0.47	91.3	0.012	0.23	0.02	<0.008	0.547	<0.0001	<0.03
	Jul-18	7.29	6280	280	151	283	62	0.03	5	1360	2	211	580	0.48	110	0.095	0.19	0.02	0.02	0.440	<0.0009	<0.05
MH16	Jan-07	7.32				232	45	19.20	92		13	506	710	0.29		0.62	0.54	0.03	0.022	0.464	<0.0001	<0.03
	Jan-07	7.28				337	305	10.00	120		26	1570	830	0.24		1.20	1.07	<0.01	0.035	0.605	<0.0001	<0.03
	Feb-07	7.32				519	470	1.44	47		25	2090	1300	0.35		0.91	1.58	0.02	0.010	0.519	<0.0001	<0.03
	Mar-07	7.73				628	178	0.30	35		18		1200	0.41		0.65	0.92	<0.01	<0.008	0.522	<0.0001	<0.03
	Apr-07	7.70				203	72	1.72	48		16	668	460	0.34		0.47	0.42	<0.01	<0.008	0.413	<0.0001	<0.03
	May-07	7.55				494	348	1.74	120		16	1000	1900	0.48		0.24	8.46	0.012		0.556	0.0002	<0.03
	May-07	7.42				368	1100	3.97	63		48	2900	790	0.26		4.59	3.65	<0.01	0.016	0.343	0.0004	<0.03
	Jun-07	7.65				485	1380	1.23	26		17	1440	1200	0.26		0.48	23.30	<0.01	0.010	0.669	0.0001	<0.03
	Jun-07	7.75				654	240	0.40	53		13	2420	1400	0.46		0.67	2.07	0.06	0.012	0.604	<0.0001	<0.03
	Jul-07	7.63				226	84	2.23	27		14	601	950	0.42		0.37	0.81	<0.01	0.014	0.466	<0.0001	0.07
	Jul-07	7.58				605	100	0.48	56		20	511	2300	0.55		0.83	0.75	0.02	0.011	0.626	<0.0001	<0.03
	Sep-07	7.82				737	110	0.64	32		13	1160	1400	0.63		0.62	1.14	<0.01	0.013	0.616	<0.0001	<0.03
	Oct-07	7.76				802	84	1.21	55		19	1320	1600	0.77		0.52	0.74	<0.01	0.012	0.624	<0.0001	<0.03
	Jan-08	7.37				169	96	0.22	130		7	284	360	0.29		0.20	2.71	<0.01	0.010	0.349	0.0001	<0.03
	Feb-08	7.54				707	108	2.04	61		22	488	1800	0.40		0.98	0.44	<0.01	0.015	0.792	<0.0001	<0.03
	Mar-08	7.42				730	200	9.86	27		13	2130	1900	0.31		0.87	5.39	0.02	0.017	0.853	<0.0001	<0.03
	Apr-08	7.63				684	126	8.35	33		20	1540	1800	0.41		1.03	1.83	<0.01	0.018	0.918	0.0001	<0.03
	May-08	7.62				143	82	0.24	14		17	769	440	0.23		0.38	1.30	<0.01	<0.008	0.346	<0.0001	<0.03
	Jun-08	7.72				355	153	1.66	75		14	868	860	0.36		1.16	0.13	<0.01	<0.008	0.336	<0.0001	<0.03
	Jul-08	7.52				114	114	0.78	28		18	237	460	0.34		0.091	1.25	<0.01	<0.008	0.571	<0.0001	<0.03
	Sep-08	7.39				416	88	<0.2	13		10	349	1000	0.43		0.20	0.75	<0.01	0.010	0.873	<0.0001	<0.03
	Oct-08	7.99				445	36	<0.2	16		9	391	1000	0.44		0.14	0.35	<0.01	<0.008	0.856	<0.0001	<0.03
	Nov-08	7.71				148	132	0.14	46		12	870	1300	0.48		0.12	0.70	<0.01	<0.008	0.720	<0.0001	<0.03
	Jan-09	7.61				453	50	0.28	22		8	211	1100	0.47		0.082	0.51	<0.01	0.010	1.05	<0.0001	<0.03
Feb-09	6.77				117	95	1.13	170		5	1020	380	<0.06		0.22	0.62	<0.01	0.027	0.282	<0.0001	<0.03	
Mar-09	6.60				66	98	0.98	180		10	912	240	0.19		0.21	1.05	<0.01	<0.008	0.197	<0.0001	<0.03	
Apr-09	7.19				223	32	6.89	100		15	1080	560	0.23		0.28	0.56	<0.01	<0.008	0.330	<0.0001	<0.03	
Apr-09	7.42				280	94	9.46	65		14	360	690	0.38		NR	0.57	<0.01	0.008	0.683	<0.0001	<0.03	
May-09	7.79				297	67	7.17	48		12	308	730	0.40			1.13	<0.01	0.020	0.564	<0.0001	<0.03	
Aug-09	7.78				677	46	<0.6	27		45	408	1600	0.46		0.148	0.36	<0.01	<0.008	0.974	<0.0001	<0.03	
Sep-09	7.60				435	146	26.10	54		33	1100	1700	0.38		2.00	1.91	0.02	0.030	0.717	<0.0001	<0.03	
Oct-09	7.79				196	122	<0.2	370		7	49	710	0.35		0.037	1.37	<0.01	<0.008	0.561	<0.0001	<0.03	
Nov-09	7.60				741	69	<0.6	24		11	742	1700	0.48		0.20	0.30	<0.01	0.011	1.09	<0.0001	<0.03	
Jan-10	7.90				611	67	<0.6	14		19	314	1700	0.47		0.10	0.39	<0.01	<0.008	0.909	<0.0001	<0.03	
Feb-10	7.77				754	90	<0.6	22		16	335	2100	0.52		0.088	0.23	<0.01	0.013	0.693	<0.0001	<0.03	

Notes: Concentrations in mg/L unless otherwise noted

By-law limits = Oxford County Sewer Discharge By-Law No. 2719-87

**Table F-1: Leachate Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silver	Tin	Titanium	Vanadium	Zinc	COD	Total Cyanide
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
By-law limits		1	5	5	2	50	5	5	0.1	5	2	10	5	5	5	5	5	2		2
MH1	May-07	0.002	0.021	0.006	0.039	24.7	0.009	0.430	<0.0001	<0.005	0.02	1.34	<0.02	<0.005	<0.03	0.031	0.007	0.06		<0.1
	Oct-08	<0.002	0.021	0.005	0.010	20.0	0.011	0.364	<0.0001	<0.005	0.03	1.19	<0.02	<0.007	<0.03	0.038	0.007	0.06	380	<0.01
	Nov-09	<0.002	0.021	0.004	0.017	15.5	0.006	0.368	<0.0001	<0.005	0.05	1.11	<0.02	<0.005	<0.03	0.019	0.006	0.03		<0.01
	Mar-10	<0.002	0.019	0.007	0.010	17.1	0.006	0.332	<0.0001	<0.005	0.03	1.32	<0.02	<0.005	<0.03	0.018	0.005	0.03	440	<0.01
	May-10	<0.002	0.018	0.010	0.004	22.5	0.006	0.067	<0.0001	<0.005	0.03	1.26	<0.02	0.178	<0.03	0.026	0.005	0.04	300	<0.01
	Jul-18	<0.001	0.027	0.013	0.027	17.6	<0.007	0.505	0.00002	<0.01	0.050	1.55	<0.01	<0.08	<0.02	0.024	0.008	0.053	485	0.01
MH16	Jan-07	<0.002	0.047	0.004	0.038	4.42	0.010	1.10	<0.0001	0.022	0.04	6.50	<0.02	<0.005	<0.03	0.045	0.012	0.65		<0.3
	Jan-07	0.002	0.071	0.004	0.240	15.2	0.013	2.37	<0.0001	0.005	0.07	18.9	<0.02	<0.005	<0.03	0.052	0.016	1.83		<0.1
	Feb-07	0.003	0.081	0.013	0.061	28.7	0.006	1.98	<0.0001	0.005	0.09	10.7	<0.02	<0.005	<0.03	0.077	0.016	0.60		<0.1
	Mar-07	<0.002	0.080	0.010	0.018	10.9	<0.005	1.66	<0.0001	0.006	0.08	9.17	<0.02	<0.005	<0.03	0.084	0.016	0.37		0.010
	Apr-07	<0.02	0.031	0.006	0.254	4.00	<0.005	1.45	<0.0001	<0.005	0.03	12.1	<0.02	<0.005	<0.03	0.025	0.010	0.55		<0.1
	May-07	0.002	0.095	0.012	0.099	25.6	0.016	1.15	<0.0001	0.010	0.09	7.31	<0.02	<0.005	<0.03	0.356	0.029	0.39	1500	<0.1
	May-07	0.002	0.052	0.008	0.498	15.5	0.008	1.91	<0.0001	<0.005	0.06	70.1	<0.02	<0.005	<0.03	0.058	0.019	2.52		<0.1
	Jun-07	0.002	0.100	0.009	0.351	17.9	0.014	1.74	<0.0001	0.006	0.09	20.2	<0.02	<0.005	<0.03	0.065	0.017	0.61		<0.1
	Jun-07	0.003	0.082	0.011	0.014	31.6	0.007	1.70	<0.0001	0.016	0.09	10.5	<0.02	<0.005	<0.03	0.105	0.016	0.37		0.040
	Jul-07	<0.002	0.046	0.006	0.014	7.12	0.009	0.839	<0.0001	<0.005	0.06	3.96	<0.02	<0.005	<0.03	0.044	0.014	0.22		<0.1
	Jul-07	<0.002	0.097	0.012	0.033	19.9	0.008	1.37	<0.0001	0.006	0.10	9.89	<0.02	<0.005	<0.03	0.069	0.016	0.29		0.030
	Sep-07	<0.002	0.091	0.015	0.012	10.2	0.008	1.04	<0.0001	0.014	0.09	8.85	<0.02	<0.005	<0.03	0.078	0.016	0.21		<0.1
	Oct-07	<0.002	0.098	0.009	0.008	15.4	0.008	1.09	<0.0001	<0.005	0.11	9.32	<0.02	<0.005	<0.03	0.071	0.015	0.27	2300	0.020
	Jan-08	<0.002	0.031	0.005	0.022	8.99	0.006	0.913	<0.1	<0.005	0.03	3.31	<0.02	<0.01	<0.03	0.098	0.011	0.23	600	<0.01
	Feb-08	<0.002	0.084	0.012	0.018	11.7	0.007	1.72	<0.0001	<0.005	0.11	9.44	<0.02	<0.005	<0.03	0.053	0.016	0.46	2280	0.010
	Mar-08	0.002	0.108	0.009	0.978	24.1	0.033	2.56	<0.0001	<0.005	0.13	10.20	<0.02	<0.005	<0.03	0.060	0.018	1.46		<0.01
	Apr-08	0.003	0.101	0.011	0.086	16.1	0.018	2.30	<0.0001	<0.005	0.11	8.65	<0.02	<0.005	<0.03	0.067	0.017	1.00	2600	<0.1
	May-08	<0.002	0.025	<0.003	0.021	12.9	0.009	1.75	<0.0001	<0.005	0.03	2.77	<0.02	<0.005	<0.03	0.019	0.005	0.22	1000	<0.1
	Jun-08	<0.002	0.023	<0.003	0.074	16.2	<0.005	1.34	<0.0001	0.010	0.05	15.2	<0.02	<0.005	<0.03	0.010	0.006	0.22	1430	<0.01
	Jul-08	<0.002	0.021	<0.003	0.032	11.6	0.007	0.597	<0.0001	<0.005	0.03	3.43	<0.02	<0.005	<0.03	0.041	0.006	0.30	530	<0.1
	Sep-08	<0.002	0.059	0.006	0.103	7.06	<0.005	1.02	<0.0001	<0.005	0.07	6.42	<0.02	<0.005	<0.03	0.034	0.010	0.49	880	<0.01
	Oct-08	<0.002	0.049	0.009	0.006	5.43	<0.005	0.807	<0.0001	0.006	0.05	5.81	<0.02	<0.007	<0.03	0.032	0.011	0.14	820	<0.01
	Nov-08	<0.002	0.076	0.012	0.005	9.62	0.010	0.812	<0.0001	<0.005	0.10	7.54	<0.02	<0.01	<0.03	0.059	0.013	0.19	1900	0.010
	Jan-09	<0.002	0.061	0.008	0.016	4.94	<0.005	0.796	<0.0001	<0.005	0.07	6.07	<0.02	<0.005	<0.03	0.040	0.014	0.15	500	<0.01
Feb-09	<0.002	0.032	0.005	0.057	19.6	0.009	1.81	<0.0001	<0.005	0.04	4.70	<0.02	<0.005	<0.03	0.027	0.008	1.10	1420	<0.1	
Mar-09	<0.002	0.035	0.009	0.052	15.3	0.008	1.82	<0.0001	<0.005	0.03	4.63	<0.02	<0.005	<0.03	0.036	0.007	1.06	1410	<0.01	
Apr-09	<0.002	0.044	0.004	0.051	5.65	<0.005	1.52	<0.0001	0.006	0.05	7.11	<0.02	<0.005	<0.03	0.030	0.008	0.59	1500	<0.1	
Apr-09	<0.002	0.037	0.005	0.027	3.54	<0.005	1.33	<0.0001	<0.005	0.04	8.91	<0.02	<0.005	<0.03	0.035	0.010	0.30	1400	<0.03	
May-09	<0.002	0.047	0.007	0.017	5.72	<0.005	1.30	<0.0001	<0.005	0.05	6.96	<0.02	<0.007	<0.03	0.047	0.013	0.32	800	<0.01	
Aug-09	<0.002	0.083	0.014	0.008	3.94	<0.005	0.866	<0.0001	<0.005	0.11	7.44	<0.02	<0.005	<0.03	0.058	0.016	0.10	NR	<0.01	
Sep-09	<0.002	0.060	0.006	0.059	5.87	0.023	1.940	<0.0001	0.006	0.06	13.2	<0.02	<0.005	<0.03	0.066	0.019	0.48	2300	<0.1	
Oct-09	<0.002	0.025	<0.003	0.019	5.71	0.011	0.764	<0.0001	<0.005	0.04	3.30	<0.02	<0.005	<0.03	0.057	0.009	0.08	400	<0.01	
Nov-09	<0.002	0.092	0.013	0.023	10.0	0.014	0.906	<0.0001	<0.005	0.13	6.46	<0.02	<0.005	<0.03	0.058	0.017	0.012	1200	0.010	
Jan-10	<0.002	0.087	0.016	0.009	4.24	0.009	0.822	<0.0001	<0.005	0.12	6.95	<0.02	<0.005	<0.03	0.063	0.018	0.07	1030	<0.01	
Feb-10	<0.002	0.090	0.016	0.011	5.90	<0.005	0.716	<0.0001	<0.005	0.13	5.76	<0.02	<0.005	<0.03	0.048	0.014	0.08	1210	<0.1	

Notes: · Concentrations in mg/L unless otherwise noted · By-law limits = Oxford County Sewer Discharge By-Law No. 2719-87



**Table F-1: Leachate Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	pH	Conductivity	Colour	Turbidity	TKN	TSS	H ₂ S	Sulphate	Hardness	Total O&G	BOD	Chloride	Fluoride	DOC	Phenol	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth
		unitless	µS/cm	TCU	NTU	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
By-law limits		5.5 to 10.5				350		1500		100	300	1500	10	1	50	5	1				5	
MH16	Mar-10	7.25				54	82	<0.6	110		6	108	240	0.20		0.043	0.60	<0.01	<0.008	0.202	<0.0001	<0.03
cont.	Apr-10	7.96		500	48	699	53	<0.2	45	1000	36	147	1100	0.43	170	0.05	0.47	<0.01	0.012	0.726	<0.0001	<0.03
	Jun-10	7.69		184	86	8	79	<0.6	250	457	2	20	160	0.33	18.6	0.014	1.22	<0.01	0.008	0.314	<0.0001	<0.02
	Jul-10	7.83		440	32	489	27	0.12	24	1226	7	73	1200	0.49	167	0.029	0.25	<0.01	0.006	1.04	<0.0001	<0.02
	Aug-10	7.72		710	136	619	154	0.30	12	1025	12	87	1700	0.55	268	0.055	1.69	<0.01	0.009	0.976	<0.0001	<0.02
	Sep-10	7.75		12	36	592	43	<0.6	26	1370	10	281	1200	0.44	311	0.160	0.17	0.01	0.008	0.801	<0.0001	<0.02
	Oct-10	7.55		280	46	444	26	<0.6	83	935	7	160	950	0.49	191.0	0.043	0.33	<0.01	<0.004	0.765	<0.0001	<0.02
	Nov-10	7.71		210	205	222	254	0.07	170	751	4	71	580	0.35	92.3	0.018	3.36	<0.01	0.013	0.626	0.0001	<0.02
	Dec-10	7.59		494	101	493	25	<0.2	28	1050	7	167	1100	<0.06	236	0.091	0.29	<0.01	0.016	1.01	<0.0001	0.03
	Jan-11	7.64		9	78	470	26	0.11	41	1210	27	122	1000	0.29	197	0.058	0.19	0.01	0.005	1.05	<0.0001	<0.02
	Feb-11	7.81		650	42	578	20	0.07	12	1360	10	113	1600	0.55	183	0.028	0.22	0.02	0.015	1.52	<0.0001	<0.02
	Mar-11	7.84		220	134	273	158	0.47	180	840	22	243	730	0.40	276	0.092	0.68	0.02	<0.004	0.645	<0.0001	<0.02
	Apr-11	7.58		35	145	40	124	0.12	100	553	<2	103	180	0.24	43.7		0.28	<0.01	0.007	0.289	<0.0001	<0.02
	May-11	7.42		157	110	164	67	0.44	32	774	8	80	460	0.36	74.9	0.144	0.70	<0.01	<0.004	0.742	<0.0001	<0.02
	Jun-11	7.73		350	19	247	19	0.16	12	1030	4	53	770	0.38	116	<0.06	0.20	<0.01	0.009	1.10	<0.0001	<0.02
	Jul-11	7.76		298	94	368	25	<0.6	34	1300	<2	52	810	0.45	140	0.016	0.22	<0.01	0.018	1.21	<0.0001	<0.02
	Aug-11	7.82		638	25	601	37	0.05	9	1250	6	77	1300	0.57	254	<0.02	0.34	<0.01	0.009	1.24	<0.0001	<0.02
	Sep-11	7.53		151	164	248	276	0.19	190	1200	3	<30	520	0.47	153	0.059	2.68	<0.01	0.006	0.545	0.0001	<0.02
	Oct-11	7.94		390	80	417	62	69.00	0	957	5	113	740	0.47	106	<0.002	0.48	<0.01	0.006	0.743	<0.0001	<0.02
	Nov-11	7.81		400	62	740	11		22	1180	9	140	1200	0.62	112	0.082	0.18	<0.01	0.011	1.50	<0.0001	0.04
	Dec-11	7.56		110	139	146	44		110	591	7	210	300	0.31	127	0.054	1.65	<0.01	<0.004	0.442	<0.0001	0.04
	Jan-12	7.77		122	382	156	320	0.36	120	861	5	541	600	0.22	823	0.24	5.41	<0.01	0.011	0.659	0.0001	<0.02
	Feb-12	7.88		330	144	490	18	0.77	25	1060	3	67	820	0.39	91.8	0.20	0.29	0.01	0.007	1.01	0.0001	0.02
	Mar-12	7.63		400	174	711	20	1.40	73	1290	8	63	960	0.51	185	0.20	0.38	<0.01	0.020	1.25	<0.0001	<0.02
	Apr-12	7.78		500	21	275	12	<0.02	20	1230	2	92	1100	0.51	149	0.012	0.15	0.01	0.006	1.02	<0.0001	<0.02
	May-12	7.78		530	40	589	27	<0.02	13	1280	4	88	1300	0.51	251	0.26	0.17	<0.01	0.007	1.02	<0.0001	<0.02
	Jun-12	7.91		700	97	574	57	0.03	41	1300	12	151	1400	0.58	212	0.27	0.64	0.01	0.011	1.53	<0.0001	<0.02
	Jul-12	7.81		500	22	605	29	<0.02	12	1240	NR	129	1600	0.57	265.0	0.019	0.28	0.01	0.006	1.38	<0.0001	0.03
	Aug-12	7.93		900	21	620	19	<0.02	13	1190	10	176	1600	0.65	197	0.41	0.22	<0.01	0.016	1.59	<0.0001	<0.02
	Sep-12	7.85		200	179	492	268	NR	810	1470	4	62	980	0.54	149	<0.02	3.26	0.03	0.023	0.737	0.0001	0.04
	Oct-12	7.88		750	140	434	12	0.72	180	1190	5	136	1300	0.54	219	0.046	0.29	<0.01	0.015	0.758	<0.0001	<0.02
	Nov-12	8.03		122	55	94	63	<0.02	320	735	22	32	380	0.37	64	<0.002	0.77	<0.01	0.004	0.282	<0.0001	0.02
	Dec-12	7.91		242	32	141	23	0.06	360	990	6	41	700	0.39	180	0.063	0.45	0.05	0.005	0.672	<0.0001	<0.02
	Jan-13	7.85	9950	710	77	824	19	0.08	39	1080	2	163	1100	0.55	210	0.012	0.26	<0.01	0.020	0.929	<0.0001	<0.02
	Feb-13	7.77	5030	275	33	247	23	0.04	120	796	ND	51	530	0.30	72.4	0.003	0.54	<0.01	<0.004	0.443	<0.0001	<0.02
	Mar-13	8.03	6630	230	143	206	86	<0.02	140	1260	2	47	680	0.51	116	0.031	0.69	<0.01	0.010	0.799	<0.0001	0.02
	Apr-13	8.02	1840	57	114	73	102	<0.02	130	504	<2	16	140	0.20	29.3	<0.002	1.63	<0.01	0.007	0.233	<0.0001	0.02
	May-13	8.11	4120	193	19	158	29	<0.02	110	682	2	29	380	<0.06	96.1	0.007	0.16	0.02	0.006	0.437	<0.0001	<0.02
	Jun-13	7.90	3860	145	372	142	327	<0.02	230	723	<2	35	480	0.39	86.3	0.005	4.48	<0.01	0.012	0.544	0.0001	0.03
	Jul-13	7.94	11500	600	172	650	254	0.03	28	1400	7	67	1600	0.56	221	<0.02	2.73	<0.01	0.011	1.30	0.0001	<0.02

Notes: - Concentrations in mg/L unless otherwise noted

- By-law limits = Oxford County Sewer Discharge By-Law No. 2719-87

**Table F-1: Leachate Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silver	Tin	Titanium	Vanadium	Zinc	COD	Total Cyanide
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
By-law limits		1	5	5	2	50	5	5	0.1	5	2	10	5	5	5	5	5	2		2
MH16	Mar-10	<0.002	0.007	<0.003	0.020	18.7	<0.005	0.889	<0.0001	<0.005	0.02	1.35	<0.02	<0.005	<0.03	0.029	0.004	0.12	250	<0.01
cont.	Apr-10	<0.002	0.071	0.013	0.007	3.07	0.007	0.834	<0.0001	<0.005	0.09	5.74	<0.02	<0.005	<0.03	0.058	0.015	0.10	730	<0.01
	Jun-10	<0.0005	0.003	0.001	0.039	3.14	0.011	0.375	<0.0001	<0.01	0.01	0.42	<0.01	<0.08	<0.03	0.035	0.003	0.08	130	<0.01
	Jul-10	<0.0005	0.069	0.017	0.005	2.57	<0.005	0.833	<0.0001	<0.01	0.09	5.31	<0.01	<0.08	<0.03	0.046	0.016	0.07	590	<0.01
	Aug-10	<0.0005	0.089	0.022	0.021	6.01	<0.005	0.703	<0.0001	<0.01	0.11	6.98	<0.01	<0.08	<0.03	0.086	0.015	0.13	900	<0.1
	Sep-10	<0.0005	0.067	0.015	0.004	3.20	<0.005	0.642	<0.0001	<0.01	0.08	5.10	<0.01	<0.08	<0.03	0.044	0.013	0.07	1010	<0.01
	Oct-10	<0.0005	0.051	0.013	0.003	3.30	<0.005	0.610	<0.0001	<0.01	0.06	4.21	<0.01	<0.08	<0.03	0.059	0.011	0.07	540	<0.01
	Nov-10	0.001	0.033	0.010	0.037	7.86	0.009	0.474	<0.0001	<0.01	0.05	2.21	<0.01	<0.08	<0.03	0.104	0.013	0.10	450	<0.01
	Dec-10	<0.0005	0.059	0.014	0.004	4.14	0.006	0.582	<0.0001	<0.01	0.07	4.38	<0.01	<0.08	<0.03	0.011	0.011	0.056	133	<0.01
	Jan-11	<0.0005	0.059	0.019	0.010	6.63	0.008	0.682	<0.0001	<0.01	0.08	5.67	<0.01	<0.08	<0.03	0.043	0.012	0.100	690	<0.01
	Feb-11	<0.0005	0.083	0.022	0.010	4.10	0.011	0.643	<0.0001	<0.01	0.11	5.99	<0.01	<0.08	<0.03	0.057	0.016	0.14	770	<0.01
	Mar-11	0.001	0.043	0.014	0.018	12.4	<0.005	1.07	<0.0001	<0.01	0.07	3.16	<0.01	<0.08	<0.03	0.055	0.012	0.33	1400	<0.01
	Apr-11	0.001	0.006	0.004	0.021	9.31	<0.005	1.56	<0.0001	<0.01	0.03	1.38	<0.01	<0.08	<0.03	0.011	0.001	0.07	330	<0.01
	May-11	<0.0005	0.023	0.006	0.015	4.81	<0.005	1.53	<0.0001	<0.01	0.03	2.77	<0.01	<0.08	<0.03	0.036	0.008	0.08	338	<0.01
	Jun-11	<0.0005	0.046	0.010	0.008	2.35	<0.005	1.34	<0.0001	<0.01	0.05	3.71	<0.01	<0.08	<0.03	0.038	0.012	0.03	440	<0.01
	Jul-11	0.001	0.044	0.016	0.020	12.2	0.008	0.775	<0.0001	<0.01	0.06	3.20	0.02	<0.08	<0.03	0.037	0.011	0.05	172	<0.01
	Aug-11	0.001	0.083	0.020	0.008	3.45	<0.005	0.721	<0.0001	<0.01	0.10	6.26	<0.01	<0.08	<0.03	0.058	0.014	0.06	770	0.010
	Sep-11	<0.0005	0.024	0.006	0.045	17.1	0.008	0.596	<0.0001	<0.01	0.05	1.50	<0.01	<0.08	<0.03	0.105	0.012	0.10	320	<0.01
	Oct-11	<0.0005	0.053	0.015	0.007	2.31	0.007	0.684	<0.0001	<0.01	0.07	4.45	<0.01	<0.08	<0.03	0.045	0.013	0.04	430	<0.01
	Nov-11	<0.0005	0.073	0.018	0.002	3.35	0.013	0.714	<0.0001	<0.01	0.09	5.30	<0.01	<0.08	<0.03	0.050	0.015	0.02	750	<0.01
	Dec-11	<0.0005	0.020	0.005	0.037	6.61	0.007	0.689	<0.0001	<0.01	0.03	1.80	<0.01	<0.08	<0.03	0.063	0.008	0.200	470	<0.01
	Jan-12	0.001	0.033	0.010	0.091	16.60	0.018	1.09	<0.0001	<0.01	0.05	1.76	<0.01	<0.08	<0.03	0.208	0.015	0.351	1340	0.010
	Feb-12	0.001	0.044	0.011	0.005	1.58	0.006	0.837	0.0001	0.010	0.05	3.49	0.01	0.08	0.03	0.041	0.013	0.031	460	0.010
	Mar-12	<0.0005	0.071	0.016	0.006	1.67	0.006	0.916	<0.0001	<0.01	0.08	4.85	<0.01	<0.08	<0.03	0.057	0.018	0.043	380	0.070
	Apr-12	<0.0005	0.073	0.019	0.004	3.02	<0.005	0.742	<0.0001	<0.01	0.08	5.00	<0.01	<0.08	<0.03	0.058	0.017	0.031	1330	0.020
	May-12	<0.0005	0.082	0.021	0.003	3.28	<0.005	0.690	<0.0001	<0.01	0.10	5.62	<0.01	<0.08	<0.03	0.062	0.017	0.026	730	0.010
	Jun-12	<0.0005	0.091	0.023	0.006	3.89	0.010	0.692	<0.0001	<0.01	0.10	6.15	<0.01	<0.08	<0.03	0.083	0.019	0.048	840	0.010
	Jul-12	<0.0005	0.098	0.023	0.010	2.83	0.008	0.660	<0.0001	<0.01	0.11	7.03	<0.01	<0.08	<0.03	0.075	0.021	0.054	680	0.010
	Aug-12	<0.0005	0.104	0.026	0.004	3.18	<0.005	0.577	<0.0001	<0.01	0.11	7.15	<0.01	<0.08	<0.03	0.073	0.018	0.035	350	0.020
	Sep-12	0.001	0.070	0.021	0.080	10.5	0.020	1.16	<0.0001	<0.01	0.08	3.87	<0.01	<0.08	<0.03	0.150	0.021	0.187	520	<0.01
	Oct-12	<0.0005	0.082	0.020	0.004	1.16	0.009	0.644	<0.0001	<0.01	0.09	5.51	<0.01	<0.08	<0.03	0.058	0.017	0.025	630	<0.01
	Nov-12	<0.0005	0.022	0.006	0.026	3.77	0.018	0.601	0.00001	<0.01	0.03	1.25	<0.01	<0.08	<0.03	0.030	0.006	0.125	210	<0.01
	Dec-12	<0.0005	0.034	0.010	0.023	2.97	0.016	0.636	<0.00001	<0.01	0.05	2.37	<0.01	<0.08	<0.03	0.032	0.009	0.041	400	<0.01
	Jan-13	<0.0005	0.084	0.020	0.002	2.33	0.005	0.621	0.00003	<0.01	0.09	5.66	<0.01	<0.08	<0.03	0.066	0.018	0.032	790	<0.01
	Feb-13	<0.0005	0.040	0.012	0.008	3.50	0.020	0.915	0.00028	<0.01	0.05	2.86	<0.01	<0.08	<0.03	0.043	0.012	0.080	370	<0.01
	Mar-13	0.001	0.042	0.016	0.007	15.5	0.009	0.633	<0.00001	<0.01	0.05	2.87	<0.01	<0.08	<0.03	0.050	0.009	0.041	470	<0.01
	Apr-13	<0.0005	0.009	0.005	0.020	3.96	<0.005	1.06	<0.00001	<0.01	0.02	1.31	<0.01	<0.08	<0.03	0.053	0.005	0.084	220	<0.01
	May-13	<0.0005	0.026	0.008	0.006	2.21	<0.005	0.655	0.00002	<0.01	0.04	2.06	<0.01	<0.08	<0.03	0.023	0.007	0.034	286	<0.01
	Jun-13	0.001	0.032	0.009	0.039	10.9	0.016	0.617	0.00002	<0.01	0.05	1.69	<0.01	<0.08	<0.03	0.140	0.015	0.123	262	<0.01
	Jul-13	0.001	0.108	0.027	0.018	10.2	0.011	0.774	<0.00001	<0.01	0.12	6.68	<0.01	<0.08	<0.03	0.160	0.024	0.096	1010	0.010

Notes: - Concentrations in mg/L unless otherwise noted

- By-law limits = Oxford County Sewer Discharge By-Law No. 2719-87

**Table F-1: Leachate Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	pH	Conductivity	Colour	Turbidity	TKN	TSS	H ₂ S	Sulphate	Hardness	Total O&G	BOD	Chloride	Fluoride	DOC	Phenol	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth
		unitless	µS/cm	TCU	NTU	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
By-law limits		5.5 to 10.5					350		1500		100	300	1500	10		1	50	5	1			5
MH16	Aug-13	7.86	14900	1350	24	851	19	<0.02	9	1400	3	168	1900	0.64	420	0.052	0.24	0.02	0.012	1.11	<0.0001	0.03
cont.	Sep-13	7.98	1720	50	142	36	110	<0.02	170	369	<2	<12	260	0.41	36.7	<0.002	2.14	<0.01	0.011	0.223	<0.0001	<0.02
	Oct-13	7.98	9070	600	41	519	74	<0.02	52	1010	<2	122	1100	0.53	1440	0.01	0.44	<0.01	0.006	1.05	<0.0001	0.03
	Nov-13	7.91	5290	300	90	318	76	0.04	56	598	3	88	620	<0.06	104	0.02	1.68	<0.01	0.004	0.412	<0.0001	<0.02
	Dec-13	8.26		550	51	496	80	<0.02	28	912	<2	56	980	0.57	183	0.018	0.77	<0.01	0.009	0.843	<0.0001	0.02
	Jan-14	7.91	8060	375	66	460	26	<0.02	11	1050	3	48	960	0.52	176	0.014	0.13	<0.01	0.004	1.16	<0.0001	<0.02
	Feb-14	8.21	8670	550	19	511	8	<0.02	14	1150	54	58	1000	0.52	194	0.023	0.14	<0.02	0.020	1.55	<0.0001	<0.05
	Mar-14	7.83	10800	710	13	657	15	<0.02	31	1400	<2	64	1400	0.57	220	0.016	0.12	<0.02	<0.01	1.22	0.0001	<0.05
	Apr-14	8.13	7050	355	23	547	26	<0.02	18	902	3	57	750	0.50	124	0.036	0.37	0.02	0.010	0.874	<0.0001	<0.05
	May-14	7.91	10900	655	20	712	21	<0.02	19	1240	2	83	1400	0.59	10.4	0.037	0.23	<0.02	0.020	1.48	0.0001	<0.05
	Jun-14	7.93	9420	515	31	543	27	<0.02	11	1200	7	81	1100	0.54	7.9	0.003	0.32	<0.02	0.020	1.30	<0.0001	<0.05
	Jul-14	8.07	11700	550	> 4000	830	5860	0.46	18	2210	6	492	1600	0.62	340	0.12	29.10	<0.02	0.010	1.86	0.0014	0.13
	Aug-14	7.98	6900	550	65	303	23	<0.2	82	812	<2	68	900	0.45	148	0.006	1.15	<0.02	<0.01	0.602	0.0001	<0.05
	Sep-14	7.78	8800	440	143	458	78	<0.02	7	1540	<2	72	890	0.62	227	0.016	0.87	<0.02	0.010	0.699	<0.0001	0.06
	Oct-14	7.92	10100	675	42	552	79	<0.02	38	1080	2	92	1300	0.57	192		1.00	<0.02	0.010	0.972	0.0001	<0.05
	Nov-14	8.16	10500	730	22	642	26	0.04	16	1130	2	99	1400	0.60	280	<0.002	0.14	<0.02	0.010	1.43	<0.0001	<0.05
	Dec-14	7.88	8730	600	23	543	11	<0.02	26	896	<2	146	1100	0.49	195	0.17	0.23	<0.02	<0.01	1.10	<0.0001	<0.05
	Jan-15	7.98	13100	1050	11.4	899	6	<0.02	46	1360	<2	50	1900	0.59	389	0.260	0.16	<0.02	<0.01	1.34	0.0001	<0.05
	Feb-15	7.99	14600	1100	17.5	883	7	<0.02	75	1240	<2	90	1800	0.65	393	0.35	0.22	<0.02	0.01	1.26	<0.0001	<0.05
	Mar-15	7.82	11300	760	28.4	484	28	<0.2	11	1150	<2	56	1500	0.67	323	0.12	0.41	<0.02	<0.01	1.97	<0.0001	<0.05
	Apr-15	7.70	8780	600	NA	500	29	0.03	18	951	<2	26	1000	0.52	185	0.005	0.44	<0.02	<0.01	0.960	0.0001	<0.05
	May-15	7.88	9740	630	11.8	537	24	<0.02	15	1100	5	67	1300	0.53	211	0.006	0.11	<0.02	0.02	1.45	0.0002	<0.05
	Jun-15	8.07	9630	624	19.4	606	21	<0.02	<1	1200	<2	79	1200	0.54	230	0.006	0.12	<0.02	<0.01	1.38	<0.0001	<0.05
	Jul-15	8.03	10000	904	10.6	644	9	0.02	<1	1020	<2	68	1400	0.58	304	0.085	0.17	<0.02	0.02	1.23	0.0001	<0.05
	Aug-15	7.86	12900	1380	14.6	1150	8	<0.02	<1	1060	11	100	1700	0.64	304	0.008	0.21	<0.02	0.03	0.944	<0.0001	<0.05
	Sep-15	7.78	10100	640	19.3	49	8	<0.06	4	1030	5	60	1200	0.64	217	0.003	0.08	<0.02	0.02	1.86	<0.0009	<0.05
	Oct-15	8.03	14200	1260	10.5	1000	9	<0.02	55	1020	6	116	1900	0.71	120	0.011	0.16	<0.02	<0.01	1.11	<0.0009	<0.05
	Nov-15	7.99	13500	1190	17.5	857	9	<0.02	<1	1149	<2	75	1700	0.67	329	0.006	<0.01	0.14	0.07	1.28	<0.0009	<0.05
	Dec-15	7.82	7960	490	78.5	483	40	<0.02	<1	974	<2	55	1000	0.57	270	0.022	0.21	<0.02	<0.01	1.09	<0.0009	<0.05
	Jan-16	7.87	12300	-	-	730	5	<0.02	1	-	<2	89	1500	0.62	-	0.016	0.17	<0.02	0.02	1.11	<0.0009	<0.05
	Feb-16	7.93	8760	650	20.3	478	17	0.04	83	849	<2	83	1100	0.55	149	0.090	0.25	<0.02	0.01	0.749	<0.0009	<0.05
	Mar-16	7.88	5520	300	27.2	292	25	0.24	1	692	5	57	690	0.39	108	0.071	0.26	<0.02	<0.01	0.571	<0.0009	<0.05
	Apr-16	7.90	2490	154	82.8	80.6	72	0.07	86	683	<2	394	280	0.23	82.6	0.064	1.47	<0.02	0.01	0.242	<0.0009	0.06
	May-16	7.49	8410	415	97.7	15.1	65	0.02	3	1003	4	58	920	0.55	150	0.084	0.19	<0.02	<0.01	0.798	<0.0009	<0.05
	Jun-16	8.03	13500	1250	28.1	788	61	0.03	100	1060	2	695	2000	0.58	321	0.008	0.31	0.02	0.02	0.772	<0.0009	<0.05
	Jul-16	7.69	12800	1100	8.94	844	8	0.05	<10	1090	<2	103	1800	0.60	287	0.094	0.12	<0.02	0.02	1.08	<0.0009	<0.05
	Aug-16	7.49	12300	1000	24.9	587	43	0.05	<1	1100	2	106	35	0.61	337	0.066	0.12	<0.02	<0.01	1.23	<0.0009	<0.05
	Sep-16	7.99	11800	44	15.5	753	16	<0.02	<1	1230	6	76	1400	0.68	357	0.060	0.11	0.02	<0.01	1.37	<0.0009	<0.05
	Oct-16	7.67	11200	800	36.1	602	18	0.04	4	1130	<2	193	1600	0.68	308	0.004	0.07	<0.02	<0.01	1.95	<0.0009	<0.05
	Nov-16	7.80	3240	48	145	608	323	0.20	640	1140	4	277	870	0.78	20.0	0.058	0.11	<0.02	0.02	1.66	<0.0009	<0.05

Notes: - Concentrations in mg/L unless otherwise noted

- By-law limits = Oxford County Sewer Discharge By-Law No. 2719-87

**Table F-1: Leachate Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silver	Tin	Titanium	Vanadium	Zinc	COD	Total Cyanide
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
By-law limits		1	5	5	2	50	5	5	0.1	5	2	10	5	5	5	5	5	2		2
MH16	Aug-13	<0.0005	0.152	0.035	0.006	2.66	0.009	0.644	0.00001	<0.01	0.16	8.86	<0.01	<0.08	<0.03	0.085	0.020	0.093	465	0.020
cont.	Sep-13	<0.0005	0.009	0.004	0.030	4.21	<0.005	0.200	0.00001	<0.01	0.02	0.403	<0.01	<0.08	<0.03	0.062	0.006	0.049	124	<0.01
	Oct-13	<0.0005	0.083	0.017	0.013	3.91	0.011	0.712	<0.00001	<0.01	0.09	5.04	<0.01	<0.08	<0.03	0.062	0.014	0.083	820	0.010
	Nov-13	0.001	0.042	0.012	0.014	3.33	0.010	0.741	<0.00001	<0.01	0.05	3.78	<0.01	<0.08	<0.03	0.083	0.011	0.087	500	<0.01
	Dec-13	<0.0005	0.087	0.018	0.008	3.48	0.006	0.698	0.00001	<0.01	0.08	5.42	<0.01	<0.08	<0.03	0.063	0.0140	0.071	950	<0.01
	Jan-14	<0.0005	0.048	0.013	0.009	7.77	0.010	0.522	<0.00001	<0.01	0.06	3.42	<0.01	<0.08	<0.03	0.032	0.009	0.038	530	<0.01
	Feb-14	<0.001	0.080	0.018	0.007	3.26	<0.007	0.683	<0.00001	<0.01	0.09	4.94	<0.01	<0.08	<0.03	0.053	0.015	0.048	360	<0.01
	Mar-14	<0.001	0.103	0.025	0.015	3.31	0.010	0.589	<0.00001	<0.01	0.11	5.68	<0.01	<0.08	0.03	0.069	0.017	0.036	810	0.010
	Apr-14	<0.001	0.057	0.015	0.025	3.12	<0.007	0.728	<0.00001	<0.01	0.07	3.53	0.01	<0.08	<0.02	0.042	0.010	0.051	570	<0.01
	May-14	<0.001	0.099	0.024	0.027	4.62	<0.007	0.663	0.00002	<0.01	0.11	5.54	0.01	<0.08	<0.02	0.058	0.015	0.057	760	0.010
	Jun-14	<0.001	0.072	0.018	0.021	4.78	<0.007	0.605	<0.00001	<0.01	0.09	4.06	<0.01	<0.08	<0.02	0.052	0.013	0.044	710	<0.01
	Jul-14	<0.001	0.154	0.049	0.115	76.6	0.042	2.84	0.00002	<0.01	0.16	8.27	<0.01	<0.08	<0.02	0.763	0.072	0.482	1080	0.010
	Aug-14	<0.001	0.053	0.017	0.017	2.79	<0.007	0.406	0.00002	<0.01	0.07	4.21	<0.01	<0.08	<0.02	0.078	0.013	0.048	560	<0.01
	Sep-14	<0.001	0.055	0.017	0.056	20.5	0.008	0.515	0.00003	<0.01	0.07	3.06	<0.01	<0.08	<0.02	0.072	0.015	0.090	640	<0.01
	Oct-14	<0.001	0.100	0.025	0.019	5.68	0.010	0.564	<0.00001	<0.01	0.10	5.93	<0.01	<0.08	<0.02	0.088	0.018	0.059	810	<0.01
	Nov-14	<0.001	0.096	0.023	0.007	4.20	<0.007	0.539	<0.00001	<0.01	0.10	5.23	<0.01	<0.08	<0.02	0.056	0.015	0.027	820	<0.01
	Dec-14	<0.001	0.078	0.020	0.006	2.92	<0.007	0.487	<0.00001	<0.01	0.08	4.30	<0.01	<0.08	<0.02	0.054	0.013	0.018	650	<0.01
	Jan-15	<0.001	0.157	0.035	0.012	3.29	<0.007	0.622	0.00002	<0.01	0.143	7.75	0.01	<0.08	<0.02	0.092	0.021	0.046	1120	0.01
	Feb-15	<0.001	0.176	0.039	0.009	2.52	<0.007	0.510	<0.00001	<0.01	0.147	7.94	<0.01	<0.08	<0.02	0.096	0.022	0.042	1170	0.01
	Mar-15	<0.001	0.098	0.024	0.005	3.65	<0.007	0.463	<0.00001	<0.01	0.105	5.41	<0.01	<0.08	<0.02	0.071	0.018	0.057	800	<0.01
	Apr-15	<0.001	0.103	0.022	0.004	3.55	0.007	0.589	0.00002	<0.01	0.088	5.58	<0.01	<0.08	<0.02	0.065	0.016	0.025	500	<0.01
	May-15	<0.001	0.082	0.021	<0.003	3.33	<0.007	0.534	0.00002	<0.01	0.099	4.55	<0.01	<0.08	<0.02	0.053	0.014	0.012	730	0.01
	Jun-15	<0.001	0.085	0.020	0.005	4.18	<0.007	0.522	<0.00001	<0.01	0.099	4.60	<0.01	<0.08	<0.02	0.054	0.016	0.016	400	<0.01
	Jul-15	<0.001	0.110	0.023	0.006	2.81	<0.007	0.483	0.00001	<0.01	0.098	6.05	<0.01	<0.08	0.02	0.064	0.016	0.032	800	0.01
	Aug-15	<0.001	0.164	0.036	0.020	4.40	<0.007	0.489	<0.00001	<0.01	0.140	8.16	<0.01	<0.08	<0.02	0.090	0.020	0.056	1190	0.01
	Sep-15	<0.001	0.080	0.021	0.008	5.22	<0.007	0.466	0.00001	<0.01	0.088	4.49	<0.01	<0.08	<0.02	0.051	0.015	0.024	740	0.01
	Oct-15	<0.001	0.137	0.033	0.009	2.91	<0.007	0.413	<0.00001	<0.01	0.133	7.24	<0.01	<0.08	<0.02	0.078	0.017	0.026	1160	0.02
	Nov-15	0.001	0.308	0.039	0.007	2.95	0.021	0.521	<0.00001	0.02	0.158	7.26	<0.01	<0.08	0.07	0.087	0.015	0.032	1150	0.01
	Dec-15	<0.001	0.059	0.019	0.019	10.2	<0.007	0.470	<0.00001	<0.01	0.071	3.39	<0.01	<0.08	0.02	0.044	0.011	0.033	640	<0.01
	Jan-16	<0.001	0.122	0.032	<0.003	2.78	0.008	0.528	<0.00001	0.01	0.104	6.35	<0.01	<0.08	<0.02	0.071	0.017	0.034	940	0.01
	Feb-16	<0.001	0.079	0.022	0.014	4.21	<0.007	0.660	0.00002	<0.01	0.086	4.65	<0.01	<0.08	<0.02	0.053	0.012	0.082	730	<0.01
	Mar-16	<0.001	0.035	0.011	0.010	2.85	<0.007	0.538	<0.00001	<0.01	0.044	2.61	<0.01	<0.08	<0.02	0.031	0.008	0.029	460	<0.01
	Apr-16	<0.001	0.010	0.012	0.015	8.16	0.011	0.944	0.00001	0.01	0.028	1.22	<0.01	<0.08	<0.02	0.063	0.008	0.127	780	<0.01
	May-16	0.001	0.056	0.016	0.005	12.3	<0.007	0.609	0.00002	<0.01	0.068	3.30	<0.01	<0.08	<0.02	0.036	0.011	0.026	620	<0.01
	Jun-16	<0.001	0.173	0.037	0.009	3.34	0.020	0.511	0.00003	<0.01	0.144	7.97	<0.01	<0.08	<0.02	0.072	0.018	0.039	1200	0.02
	Jul-16	<0.001	0.126	0.029	0.004	1.97	<0.007	0.497	0.00003	<0.01	0.110	6.60	<0.01	<0.08	<0.02	0.064	0.016	0.022	1040	0.01
	Aug-16	<0.001	0.120	0.026	0.010	2.18	<0.007	0.529	<0.00001	<0.01	0.112	7.94	<0.01	<0.08	<0.02	0.072	0.018	0.071	920	<0.01
	Sep-16	<0.001	0.098	0.025	0.019	4.05	<0.007	0.477	<0.00001	<0.01	0.114	5.51	<0.01	<0.08	<0.02	0.060	0.016	0.071	870	0.02
	Oct-16	<0.001	0.087	0.023	<0.003	3.40	<0.007	0.455	<0.00001	<0.01	0.096	4.71	<0.01	<0.08	<0.02	0.057	0.015	0.015	870	0.01
	Nov-16	<0.001	0.078	0.022	0.004	2.18	<0.007	0.407	<0.00001	<0.01	0.095	4.13	<0.01	<0.08	<0.02	0.053	0.015	0.026	580	<0.01

Notes: - Concentrations in mg/L unless otherwise noted

- By-law limits = Oxford County Sewer Discharge By-Law No. 2719-87

**Table F-1: Leachate Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	pH	Conductivity	Colour	Turbidity	TKN	TSS	H ₂ S	Sulphate	Hardness	Total O&G	BOD	Chloride	Fluoride	DOC	Phenol	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth
		unitless	µS/cm	TCU	NTU	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
By-law limits		5.5 to 10.5				350		1500			100	300	1500	10	1		50	5	1			5
MH16	04-Jan-17	8.07	10800	800	-	644	25	<0.02	<2	1000	<2	64	1500	0.57	437	0.052	0.23	<0.02	0.02	1.22	<0.0009	<0.05
cont.	06-Feb-17	7.89	7320	460	91.3	396	62	0.02	<2	931	7	410	1100	0.39	170	0.056	1.37	0.03	0.01	0.756	<0.0009	<0.05
	16-Mar-17	7.75	5920	340	297	320	29	0.31	3	1190	9	1220	900	0.33	510	0.150	0.88	<0.02	0.01	0.751	<0.0009	<0.05
	29-Apr-17	7.93	9280	940	24.0	780	17	<0.02	<2	1110	<2	198	1500	0.49	266	0.033	0.32	<0.02	0.02	0.994	<0.0009	<0.05
	03-May-17	7.82	5510	270	56.7	221	62	0.03	<2	1060	5	927	750	0.29	221	0.170	0.84	<0.02	<0.01	0.513	<0.0009	<0.05
	08-Jun-17	8.17	9390	560	20.3	86	42	<0.02	4	1260	<2	56	1100	0.53	172	0.090	0.19	<0.02	0.02	1.25	<0.0009	<0.05
	12-Jul-17	7.93	10400	700	40.4	582	45	<0.02	<2	1050	<2	99	1300	0.56	180	0.007	1.45	<0.02	<0.01	1.00	<0.0009	<0.05
	19-Aug-17	7.91	12300	750	201	761	184	<0.02	<2	955	<2	112	1800	0.71	186	0.013	5.97	<0.02	0.01	1.39	<0.0009	<0.05
	25-Sep-17	7.96	11800	830	106	723	97	0.02	<2	962	4	142	1700	0.58	343	0.018	1.70	<0.02	0.02	0.878	<0.0009	<0.05
	11-Oct-17	7.54	9820	450	256	385	37	0.13	210	1110	5	1140	1600	0.57	249	0.280	4.69	<0.02	0.02	1.13	<0.0009	<0.05
	08-Nov-17	7.68	6930	390	276	297	125	0.14	170	839	6	693	980	0.32	163	0.290	2.10	<0.02	0.01	0.700	<0.0009	<0.05
	06-Dec-17	7.62	3910	410	295	154	157	0.75	350	1230	7	1600	750	0.37	224	0.330	1.39	0.06	<0.01	0.535	<0.0009	<0.05
	11-Jan-18	7.56	12000	940	57.5	562	50	0.27	160	1280	6	326	1500	0.62	249	0.063	0.55	<0.02	0.02	0.99	<0.0009	0.05
	15-Feb-18	7.13	8480	470	822	405	106	14.1	460	1540	8	3010	980	0.31	268	0.005	1.34	0.10	0.02	0.609	<0.0009	0.07
	22-Mar-18	6.57	8050	2710	382	359	161	4.9	630	1700	17	4950	890	0.33	628	1.24	1.89	0.11	0.05	0.535	<0.0009	0.10
	19-Apr-18	6.83	4380	980	607	186	70	14.7	1100	1900	11	2120	590	0.37	681	0.81	1.10	0.05	0.01	0.179	<0.0009	0.08
	16-May-18	7.17	5680	400	1160	139	180	12.2	910	2300	28	1760	450	0.28	348	0.89	0.97	0.04	0.02	0.238	<0.0009	0.05
	05-Jun-18	7.36	8080	320	2540	252	196	22.5	410	2410	25	4370	810	0.37	1110	1.11	0.66	0.03	0.01	0.546	<0.0009	0.12
	20-Jun-18																7.20	0.0344	0.0386	0.933	0.0004	0.00029
	17-Jul-18	7.38	5830	750	1300	421	345	26.3	390	4350	12	6560	1200	0.40	1980	1.86	1.32	0.0182	0.0227	0.691	0.00004	0.000030
	14-Aug-18	7.54	7900	500	798	266	100	30	85	2251	19	1870	820	0.40	361	0.64	0.51	<0.02	0.02	0.708	<0.0009	<0.05
	21-Aug-18	7.70	10100	700	1200	482	156	8.1	30	2450	30	1850	1100	0.38	574	1.09	0.90	0.03	0.02	0.853	<0.0009	<0.05
	05-Sep-18	7.75	7250	420	895	282	152	9.3	91	1840	32	804	780	0.37	130	0.87	1.21	0.03	0.02	0.704	<0.0009	<0.05
	25-Sep-18	7.63	9920	595	221	480	310	0.95	3	1640	13	307	1300	0.47	286	0.24	3.08	<0.02	<0.01	0.966	<0.0009	<0.05
	10-Oct-18	7.81	11100	670	284	555	79	2.2	3	1840	23	658	1500	0.50	204	0.44	0.40	<0.02	0.04	1.16	<0.0009	<0.05
	24-Oct-18	7.95	8740	790	122	561	77	0.34	<2	1500	5	528	1700	0.46	347	0.51	0.29	<0.02	0.02	0.914	<0.0009	<0.05
	15-Nov-18	7.78	9770	630	121	496	42	0.17	2	1220	5	258	1200	0.47	178	0.15	0.31	0.03	0.04	0.880	<0.0009	<0.05
	13-Dec-18	8.15	7120	770	17.6	469	26	<0.02	<20	1170	3	200	1400	0.49	292	0.26	0.30	0.05	0.02	0.975	<0.0009	<0.05
	09-Jan-19	8.03	4520	710	279	534	69	2.9	100	1420	11	208	1400	0.44	185	0.259	0.37	<0.02	0.05	1.02	<0.0009	<0.05
	11-Feb-19	7.96	11000	830	46.0	273	16	<0.02	<2	1080	5	206	1500	0.55	207	0.021	0.22	0.07	0.02	1.02	<0.0009	<0.05
	11-Mar-19	7.91	7990	700	57.6	545	25	0.05	<2	1230	9	92	1300	0.41	272	0.024	0.29	<0.02	0.03	1.06	<0.0009	<0.05
	15-Apr-19	7.82	7420	330	85.4	286	147	0.04	4	1410	2	194	820	0.39	115	0.028	0.19	0.02	0.02	0.659	<0.0009	<0.05
	22-May-19	7.75	6100	280	77.4	282	108	0.28	3	1190	8	894	840	0.33	304	0.20	0.247	0.0044	0.0086	0.479	0.000017	<0.000007
	18-Jun-19	7.85	9190	600	34.7	464	39	0.03	<2	1390	7	94	1400	0.52	181	<0.002	0.303	0.0050	0.0125	0.959	0.000021	0.000080
	25-Jul-19	7.43	3900	215	121	244	347	0.16	<2	1820	9	561	790	0.26	117	0.73	0.440	0.0052	0.0086	0.403	0.000023	0.000033
	22-Aug-19	8.20	7100	415	27.5	304	46	<0.02	59	1490	2	260	930	0.32	107	0.013	0.240	0.0054	0.0159	0.633	0.000012	0.000016
	11-Sep-19	7.88	11900	1100	20.4	732	31	0.03	41	1450	5	201	1800	0.59	196	0.020	0.278	0.0057	0.0181	0.884	0.000013	0.000017
	08-Oct-19	7.82	8180	450	51.3	380	47	1.8	53	1630	12	204	1100	0.52	95	0.084	0.366	0.0056	0.0193	0.899	0.000025	0.000043
	06-Nov-19	7.97	4940	375	169	309	48	1.9	10	1280	13	112	740	0.39	123	0.057	0.414	0.0043	0.0146	0.652	0.000026	0.000027
	12-Dec-19	7.99	8550	550	127	409	64	0.05	6	1430	10	133	1000	0.47	175	0.037	0.785	0.0059	0.0176	0.736	0.000053	0.000090
	23-Jan-20	7.88	7990	490	158	414	47	0.04	9	1420	14	210	1000	0.32	189	0.087	0.493	0.0059	0.0195	0.634	0.000024	0.00004

Notes: · Concentrations in mg/L unless otherwise noted

· By-law limits = Oxford County Sewer Discharge By-Law No. 2719-87

**Table F-1: Leachate Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silver	Tin	Titanium	Vanadium	Zinc	COD	Total Cyanide
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
By-law limits		1	5	5	2	50	5	5	0.1	5	2	10	5	5	5	5	5	2		2
MH16	04-Jan-17	<0.001	0.094	0.024	0.054	2.14	<0.007	0.495	0.00003	<0.01	0.109	5.54	<0.01	<0.08	<0.02	0.063	0.016	0.086	800	0.01
cont.	06-Feb-17	<0.001	0.057	0.015	0.331	3.17	0.011	0.855	0.00009	<0.01	0.072	3.23	<0.01	<0.08	<0.02	0.046	0.011	0.352	1120	<0.01
	16-Mar-17	<0.001	0.051	0.014	0.019	7.00	<0.007	1.55	0.00004	<0.01	0.074	3.06	<0.01	<0.08	<0.02	0.059	0.010	0.270	2020	<0.01
	29-Apr-17	<0.001	0.133	0.030	0.006	3.64	<0.007	0.695	0.00001	<0.01	0.114	6.86	<0.01	<0.08	<0.02	0.066	0.014	0.031	910	0.01
	03-May-17	<0.001	0.032	0.010	0.014	4.78	<0.007	1.56	0.00003	<0.01	0.057	2.63	<0.01	<0.08	<0.02	0.053	0.007	0.068	2000	<0.01
	08-Jun-17	<0.001	0.072	0.021	0.007	4.10	<0.007	0.789	<0.00001	<0.01	0.087	4.15	<0.01	<0.08	<0.02	0.048	0.012	0.022	680	<0.01
	12-Jul-17	<0.001	0.087	0.027	0.007	3.15	<0.007	0.561	0.00001	<0.01	0.102	4.79	<0.01	<0.08	<0.02	0.114	0.018	0.014	730	<0.01
	19-Aug-17	<0.001	0.102	0.043	0.043	9.72	<0.007	0.563	0.00006	<0.01	0.163	4.20	<0.01	<0.08	0.03	0.405	0.038	0.045	860	<0.01
	25-Sep-17	<0.001	0.108	0.031	0.012	3.97	<0.007	0.493	0.00002	<0.01	0.133	5.61	<0.01	<0.08	<0.02	0.116	0.024	0.022	970	0.01
	11-Oct-17	<0.001	0.066	0.026	0.034	9.12	<0.007	0.695	<0.00001	<0.01	0.131	3.98	<0.01	<0.08	<0.02	0.250	0.026	0.150	1180	0.02
	08-Nov-17	<0.001	0.049	0.017	0.020	5.32	0.008	1.03	0.00006	<0.01	0.078	3.52	<0.01	<0.08	<0.02	0.089	0.016	0.215	1190	0.01
	06-Dec-17	0.002	0.048	0.015	0.038	9.57	0.013	1.63	0.00005	<0.01	0.072	5.02	0.02	<0.08	<0.02	0.055	0.015	0.700	2000	0.01
	11-Jan-18	0.001	0.110	0.029	0.018	4.03	<0.007	0.604	0.00002	<0.01	0.118	6.15	<0.01	<0.08	<0.02	0.087	0.022	0.388	1070	0.02
	15-Feb-18	0.001	0.090	0.021	0.042	15.6	0.018	2.29	0.00008	0.01	0.107	12.7	<0.01	<0.08	<0.02	0.071	0.019	2.14	3500	0.03
	22-Mar-18	0.004	0.183	0.036	0.052	41.6	0.030	4.39	0.00014	0.02	0.206	27.1	<0.01	<0.08	<0.02	0.160	0.022	8.48	6100	0.01
	19-Apr-18	0.002	0.058	0.014	0.053	23.7	0.036	2.52	0.00007	0.02	0.098	7.07	<0.01	<0.08	0.03	0.061	0.009	3.18	2850	<0.01
	16-May-18	0.001	0.044	0.008	0.021	19.0	0.016	2.50	0.00014	<0.01	0.060	6.72	<0.01	<0.08	<0.02	0.058	0.011	3.44	2720	0.02
	05-Jun-18	0.002	0.084	0.014	0.018	24.5	0.009	2.91	0.00008	<0.01	0.088	12.4	<0.01	<0.08	0.03	0.054	0.014	2.03	3750	<0.01
	20-Jun-18	0.00326	0.165	0.0657	0.080	232	0.0388	4.32	0.00005	0.0165	0.217	21.6	0.00165	0.00041	0.00987	0.287	0.0344	7.23		
	17-Jul-18	0.00059	0.105	0.0144	0.015	21.5	0.0133	5.91	0.00007	0.0123	0.0983	16.8	0.00112	0.00011	0.00526	0.080	0.0207	1.06	7250	0.01
	14-Aug-18	<0.001	0.058	0.010	0.016	3.51	<0.003	2.12	0.00012	<0.01	0.056	7.80	<0.01	<0.08	<0.02	0.042	0.013	0.435	2380	<0.01
	21-Aug-18	<0.001	0.080	0.016	0.019	5.54	<0.007	2.40	0.00003	<0.01	0.073	9.44	<0.01	<0.08	<0.02	0.064	0.016	0.516	2900	0.02
	05-Sep-18	<0.001	0.051	0.012	0.014	4.50	<0.007	1.75	0.00007	<0.01	0.055	6.02	<0.01	<0.08	0.04	0.080	0.013	0.224	1320	<0.01
	25-Sep-18	<0.001	0.071	0.020	0.010	6.41	<0.007	0.907	<0.00001	<0.01	0.081	5.10	0.01	<0.08	<0.02	0.142	0.019	0.154	900	0.02
	10-Oct-18	<0.001	0.096	0.022	0.014	3.17	<0.007	1.27	<0.00001	<0.01	0.096	6.81	<0.01	<0.08	0.02	0.062	0.019	0.107	1420	0.02
	24-Oct-18	<0.001	0.092	0.020	0.009	1.73	0.009	0.998	0.00001	<0.01	0.089	5.94	0.02	<0.08	0.02	0.065	0.018	0.080	1270	<0.01
	15-Nov-18	<0.001	0.073	0.020	0.005	1.50	<0.007	0.738	<0.00001	<0.01	0.084	5.34	0.02	<0.08	<0.02	0.069	0.016	0.081	700	0.02
	13-Dec-18	<0.001	0.091	0.021	0.004	1.66	<0.007	0.602	0.00001	<0.01	0.089	5.44	0.02	<0.08	<0.02	0.060	0.016	0.030	780	0.02
	09-Jan-19	<0.001	0.098	0.019	0.004	2.05	<0.007	0.892	<0.00001	<0.01	0.083	5.68	0.02	<0.08	<0.02	0.062	0.017	0.102	900	0.02
	11-Feb-19	<0.001	0.104	0.023	0.005	2.12	<0.007	0.631	<0.00001	<0.01	0.101	6.01	0.01	<0.08	0.02	0.061	0.016	0.040	790	0.02
	11-Mar-19	<0.001	0.083	0.017	<0.003	1.89	<0.007	0.796	0.00004	<0.01	0.080	5.57	<0.01	<0.08	<0.02	0.061	0.017	0.070	600	0.02
	15-Apr-19	0.001	0.049	0.014	0.022	13.4	0.007	0.816	0.00002	<0.01	0.064	3.07	<0.01	<0.08	<0.02	0.033	0.011	0.067	620	0.02
	22-May-19	0.000175	0.0444	0.00726	0.0051	5.40	0.00125	1.67	<0.00001	0.00147	0.0417	6.62	0.00054	<0.00005	0.00161	0.0300	0.00827	0.313	1520	0.01
	18-Jun-19	0.000096	0.0817	0.0170	0.0051	3.93	0.00148	1.30	<0.00001	0.00244	0.0814	6.51	0.00064	<0.00005	0.00537	0.0511	0.0134	0.113	710	0.02
	25-Jul-19	0.000116	0.0331	0.00505	0.0067	8.75	0.00137	2.79	<0.00001	0.00231	0.0332	7.30	0.00047	<0.00005	0.00282	0.0273	0.00662	0.110	870	0.01
	22-Aug-19	0.000030	0.0413	0.00729	0.0078	1.56	0.00121	1.49	0.00002	0.00153	0.0415	6.44	0.00053	<0.00005	0.00241	0.0336	0.00956	0.041	460	<0.01
	11-Sep-19	0.000065	0.144	0.0270	0.0040	2.24	0.00100	1.13	0.00002	0.00495	0.0997	8.11	0.00121	<0.00005	0.00781	0.0859	0.0205	0.038	1020	0.02
	08-Oct-19	0.000067	0.0514	0.0102	0.0120	1.79	0.00231	1.31	0.00002	0.00252	0.0563	8.15	0.00066	<0.00005	0.00268	0.0425	0.0122	0.093	810	0.01
	06-Nov-19	0.000104	0.0481	0.0101	0.0094	2.47	0.00280	1.12	<0.00001	0.00206	0.0505	6.36	0.00059	<0.00005	0.00195	0.04351	0.0120	0.130	570	<0.01
	12-Dec-19	0.000095	0.0584	0.0118	0.0110	2.47	0.00387	1.03	0.00002	0.00326	0.0586	6.38	0.00081	<0.00005	0.00355	0.0608	0.0125	0.086	690	0.01
	23-Jan-20	0.000099	0.0522	0.00888	0.0139	2.85	0.00245	1.10	0.00001	0.00309	0.0455	7.96	0.00078	<0.00005	0.00310	0.0447	0.0108	0.113	680	0.01

Notes: Concentrations in mg/L unless otherwise noted

By-law limits = Oxford County Sewer Discharge By-Law No. 2719-87

**Table F-1: Leachate Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	pH	Conductivity	Colour	Turbidity	TKN	TSS	H ₂ S	Sulphate	Hardness	Total O&G	BOD	Chloride	Fluoride	DOC	Phenol	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth
		unitless	µS/cm	TCU	NTU	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
By-law limits		5.5 to 10.5				350	1500				100	300	1500	10	1	50	5	1				5
MH16	10-Feb-20	7.93	7300	405	94.8	398	38	<0.02	35	1310	9	190	850	0.34	163	0.065	0.838	0.0050	0.0137	0.697	0.00010	0.00135
cont.	10-Mar-20	7.98	6970	455	143	393	24	0.52	3	1200	11	200	840	0.32	170	0.051	0.470	<0.009	0.0160	0.503	<0.00007	<0.00007
	23-Apr-20	7.73	4950	325	267	256	231	0.05	59	1380	<4	628	620	0.24	308	0.200	5.13	0.0046	0.0144	0.867	0.000159	0.000338
	19-May-20	8.06	10900	910	21.3	684	17	<0.02	<2	1290	<6	83	1300	0.48	246	0.003	0.291	0.0059	0.0148	0.745	<0.000007	0.000045
	17-Jun-20	7.75	9680	595	19.0	528	12	<0.02	<20	1270	9	78	1300	0.44	217	0.045	0.100	<0.09	<0.02	0.702	<0.0007	<0.0007
	14-Jul-20	7.97	10100	625	27.7	613	14	0.03	2	1760	6	209	1400	0.50	230	0.033	0.150	<0.009	0.0150	0.828	<0.00007	<0.00007
	20-Aug-20	7.70	9000	745	276	653	137	1.5	210	1880	15	674	1300	0.38	335	0.219	1.54	0.0138	0.0281	0.432	0.000055	0.000764
	17-Sep-20	8.14	8560	665	74.1	453	28	0.64	160	1380	20	195	1100	0.40	220	0.065	0.319	0.0050	0.0163	0.704	0.000017	0.000074
	27-Oct-20	7.91	8700	510	187	463	83	0.52	60	1500	20	203	1100	0.47	143	0.074	0.841	0.0052	0.0169	0.918	0.000057	0.000071
	17-Nov-20	8.05	12600	2000	56.3	560	38	0.12	<2	1420	13	257	1800	0.45	357	0.110	0.267	0.0073	0.0169	0.836	0.000030	0.000760
	03-Dec-20	7.69	9850	710	63.9	543	40	0.30	<2	1680	10	328	1400	0.39	221	<0.002	0.278	0.0064	0.0179	0.963	0.000020	0.000238
	20-Jan-21	7.61	8600	360	103	486	109	0.06	7	1500	7	211	930	0.29	198	0.076	1.30	0.0040	0.0150	0.820	0.000053	0.000078
	18-Feb-21	8.05	11000	1140	25.5	699	5	<0.02	<2	1260	<8	104	1500	0.49	279	0.025	0.288	0.0040	0.0154	0.995	0.000020	0.000070
	09-Mar-21	7.58	6630	405	667	369	31	3.5	260	1510	28	777	770	0.30	381	0.983	0.355	0.0087	0.0172	0.419	0.000018	0.000074
	12-Apr-21	7.69	13700	1090	17.4	446	70	<0.2	<20	1260	38	113	1800	0.56	278	0.039	0.218	0.0052	0.0208	0.874	<0.000007	0.00004
	04-May-21	7.75	8930	925	13.6	734	7	0.04	<2	1240	11	88	1500	0.51	269	0.048	0.150	<0.009	0.0140	1.09	<0.00007	<0.0001
	09-Jun-21	7.69	9140	450	118	470	50	<0.12	<2	1800	4	126	960	0.49	215	0.028	0.113	0.0036	0.0128	0.603	0.000017	0.00017
	08-Jul-21	7.93	13100	1140	172	716	224	0.02	88	1290	10	392	2000	0.54	321	0.042	2.45	0.0048	0.0221	1.00	0.00012	0.00016
	31-Aug-21	7.67	8650	670	117	499	294	0.05	350	1540	9	117	960	0.44	201	0.020	3.35	0.0043	0.0204	1.14	0.000101	0.00024
	08-Sep-21	8.13	14000	1380	16.6	1020	33	<0.02	54	1140	10	83	2100	0.64	<1	0.056	0.200	<0.009	0.0160	1.01	<0.00007	<0.0001
	13-Oct-21	7.49	4820	1040	101	205	228	0.33	14	1080	6	1430	590	0.32	641	0.003	1.70	0.0232	0.0569	0.441	0.000094	0.00093
	18-Nov-21	7.88	7490	650	28.5	504	24	<0.02	110	853	7	75	930	0.44	206	<0.02	0.260	<0.009	0.0170	0.715	<0.00007	<0.0001
	02-Dec-21	7.84	6540	308	83.6	373	40	<0.02	5	1320	<4	102	740	0.48	199	<0.02	0.110	<0.009	0.0080	0.607	<0.00007	<0.0001

Notes: - Concentrations in mg/L unless otherwise noted

- By-law limits = Oxford County Sewer Discharge By-Law No. 2719-87

**Table F-1: Leachate Chemical Results
Oxford County Waste Management Facility**

Monitor	Date	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silver	Tin	Titanium	Vanadium	Zinc	COD	Total Cyanide
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
By-law limits		1	5	5	2	50	5	5	0.1	5	2	10	5	5	5	5	5	2		2
MH16	10-Feb-20	0.0002	0.0559	0.0121	0.0317	5.07	0.0178	0.997	0.00001	0.00749	0.0603	5.69	0.00091	0.00012	0.00712	0.049	0.0133	0.175	660	0.01
cont.	10-Mar-20	0.00009	0.0546	0.0106	0.0080	2.80	0.0022	0.997	<0.00001	0.0022	0.0520	5.50	0.00050	<0.0005	0.00300	0.0441	0.0104	0.090	560	0.01
	23-Apr-20	0.000231	0.0387	0.00884	0.0298	11.4	0.012	1.44	0.00001	0.00522	0.0418	6.08	0.00073	0.00007	0.00207	0.224	0.0196	0.195	1170	0.01
	19-May-20	0.000020	0.09997	0.0224	0.0094	1.99	0.00106	0.868	<0.00001	0.00355	0.0897	7.61	0.00122	<0.00005	0.00745	0.0646	0.0152	0.068	1210	0.02
	17-Jun-20	<0.0003	0.070	0.0161	0.0200	5.30	0.00000	0.781	<0.00001	<0.004	0.0900	4.50	<0.004	<0.005	<0.006	0.0400	0.0100	<0.2	670	0.02
	14-Jul-20	0.00005	0.0892	0.0198	0.0040	3.85	0.00180	0.986	<0.00001	0.00440	0.0920	7.51	0.00110	<0.0005	0.00590	0.0507	0.0142	0.070	660	0.02
	20-Aug-20	0.000571	0.0725	0.0145	0.0554	5.80	0.01150	1.57	0.00007	0.00508	0.0752	13.7	0.00166	0.00024	0.00893	0.0906	0.0126	0.589	1600	0.02
	17-Sep-20	0.000088	0.0691	0.0127	0.0072	1.20	0.00146	1.05	<0.00001	0.00570	0.0609	7.36	0.00077	<0.00005	0.00404	0.0581	0.0135	0.107	715	0.01
	27-Oct-20	0.000175	0.0747	0.0155	0.0136	3.00	0.00238	1.10	0.00002	0.00409	0.0732	7.63	0.00151	0.00006	0.00539	0.0686	0.0171	0.187	745	0.02
	17-Nov-20	0.000180	0.101	0.0203	0.0108	1.71	0.00173	0.845	<0.00001	0.00327	0.0920	7.85	0.00104	<0.00005	0.00597	0.0560	0.0144	0.242	1240	0.02
	03-Dec-20	0.000321	0.080	0.0133	0.0055	2.54	0.00198	1.11	<0.00001	0.00620	0.0655	6.15	0.00090	0.00007	0.00462	0.0465	0.0122	0.129	1010	0.02
	20-Jan-21	0.000191	0.0694	0.0156	0.0104	13.2	0.00538	0.905	0.00002	0.00574	0.0721	4.57	0.00455	0.00005	0.00478	0.0707	0.0147	0.100	665	0.01
	18-Feb-21	0.00006	0.116	0.0209	0.0190	1.60	0.0014	0.756	<0.00001	0.0033	0.092	7.17	0.00140	<0.00005	0.00580	0.0614	0.0171	0.080	910	0.02
	09-Mar-21	0.00055	0.0755	0.0113	0.0072	4.26	0.0060	1.93	0.00002	0.017	0.0584	5.82	0.00068	<0.00005	0.00310	0.0421	0.0104	0.284	1440	<0.01
	12-Apr-21	0.00017	0.151	0.0253	0.0055	1.51	0.00148	0.722	<0.00001	0.0047	0.106	9.11	0.00090	<0.00005	0.00657	0.0711	0.0166	0.082	1120	0.02
	04-May-21	<0.00003	0.116	0.0211	0.0060	1.44	<0.0009	0.688	<0.00001	0.0242	0.0990	6.74	0.00100	<0.0005	0.0045	0.0689	0.0164	0.050	880	0.01
	09-Jun-21	0.000094	0.0607	0.0227	0.0214	19.6	0.00489	0.550	0.00002	0.00255	0.0859	3.54	0.00111	<0.00005	0.0154	0.0447	0.0115	0.063	790	<0.01
	08-Jul-21	0.00014	0.146	0.0274	0.0201	4.89	0.00366	0.768	<0.00001	0.0105	0.1080	9.26	0.00196	0.00005	0.00573	0.149	0.0234	0.093	1170	0.02
	31-Aug-21	0.00022	0.116	0.0248	0.0551	8.46	0.00638	1.14	0.00002	0.0318	0.113	6.73	0.00083	0.00009	0.00442	0.166	0.0228	0.087	640	0.01
	08-Sep-21	0.00003	0.158	0.0279	0.0130	1.50	<0.0009	0.544	0.00001	0.0043	0.115	8.10	0.00110	<0.0005	0.0060	0.0783	0.0186	0.030	134	0.01
	13-Oct-21	0.00030	0.131	0.00738	0.0329	6.51	0.00747	1.07	0.00002	0.0187	0.0631	4.32	0.00158	0.00008	0.00309	0.0805	0.0296	0.147	1720	0.02
	18-Nov-21	<0.00003	0.0794	0.01706	0.0070	1.20	0.00090	0.602	<0.00001	0.0033	0.074	4.90	0.00040	<0.0005	0.0037	0.0437	0.0121	0.070	700	0.01
	02-Dec-21	0.00008	0.0367	0.0117	0.0060	11.6	0.00228	0.528	<0.0001	0.0021	0.048	2.70	<0.0004	<0.0005	0.0043	0.0222	0.0058	0.030	520	0.01

Notes: - Concentrations in mg/L unless otherwise noted

- By-law limits = Oxford County Sewer Discharge By-Law No. 2719-87

**Table F-2: Leachate Level Elevations
Oxford County Waste Management Facility**

Manhole / Well No.	1	7	8	12	13	16	17	03-8
Measuring Point Elevation	301.27	299.53	308.39	312.03	301.47	297.86	302.20	312.16
Jan-07	297.85	297.38	<304.491	<292.215	298.12	289.94	288.70	303.64
Feb-07	295.17	297.11	<304.491	292.78	297.92	289.49	288.66	303.50
Apr-07	295.36	297.10	<304.491	<292.215	297.87	288.74	290.89	303.56
May-07	294.89	297.05	<304.491	<292.215	298.04	286.03	289.57	303.52
May-07	294.37	297.05	<304.491	<292.215	298.17	289.70	288.45	303.50
Jul-07	294.32	297.05	<304.491	<292.215	296.32	289.46	290.09	303.48
Aug-07	293.62	297.06	<304.491	298.28	295.19	291.15	293.35	303.45
Sep-07	292.87	297.05	<304.491	294.24	295.13	286.93	290.79	305.01
Oct-07	293.27	297.03	<304.491	<292.215	Removed	287.61	288.48	303.41
Nov-07	293.62	297.03	<304.491	<292.215		288.06	290.89	303.91
Dec-07	294.57	297.13	<304.491	<292.215		288.07	288.80	303.26
Jan-08	296.73	297.12	<304.491	<292.215		291.97	290.71	303.56
Feb-08	295.99	297.13	<304.491	<292.215		290.76	289.45	303.54
Mar-08	294.77	297.13	<304.491	<292.215		288.08	290.93	303.56
Apr-08	296.09	297.08	<304.491	298.18		289.44	290.95	303.55
May-08	296.70	297.08	<304.491	297.58		293.68	292.30	303.56
Jun-08	296.69	297.13	<304.491	299.03		293.89	293.20	303.67
Jul-08	296.25	297.13	<304.491	294.59		293.22	291.96	303.68
Aug-08	294.94	297.07	<304.491	300.31		290.96	290.45	303.69
Sep-08	295.12	297.05	<304.491	292.93		287.86	286.76	303.59
Oct-08	294.44	297.07	<304.491	293.64		290.66	288.39	304.28
Nov-08	296.06	297.13	<304.491	297.83		289.24	297.95	303.77
Dec-08	296.06	297.11	<304.491	294.78		292.22	290.90	303.81
Jan-09	293.31	297.10	<304.491	295.03		288.83	290.44	303.76
Feb-09	295.10	297.13	<304.491	<292.215		291.20	290.55	303.79
Mar-09	296.83	297.13	<304.491	<292.215		292.93	291.69	303.60
Apr-09	295.22	297.13	<304.491	293.36		287.19	291.70	303.56
May-09	295.22	297.06	<304.491	<292.215		289.19	289.19	303.88
Jun-09	294.31	297.03	<304.491	<292.215		288.31	288.52	303.87
Jul-09	294.27	297.13	<304.491	<292.215		287.26	290.86	303.84
Aug-09	294.77	297.12	<304.491	294.46		291.20	292.00	303.76
Sep-09	295.40	297.06	<304.491	292.95		290.71	289.45	303.72
Oct-09	294.54	297.12	<304.491	293.19		285.97	293.87	303.97
Nov-09	294.52	297.11	<304.491	293.76		289.01	291.86	303.76
Dec-09	296.75	297.07	<304.491	293.51		289.28	291.01	303.65
Jan-10	296.32	297.11	<304.491	293.21		291.91	291.85	303.86
Feb-10	295.77	297.12	<304.491	295.53		291.16	289.84	304.31
Mar-10	293.22	297.11	<304.491	293.37		288.94	288.00	303.82
Apr-10	295.99	297.13	<304.491	293.93		291.98	290.58	303.63
May-10	295.12	297.12	<304.491	294.18		292.20	292.20	303.86
Jun-10	295.81	297.10	<304.491	292.97		293.22	292.99	303.99
Jul-10	294.02	sealed	sealed	sealed		288.62	sealed	304.29
Aug-10	292.41	sealed	sealed	sealed		291.57	sealed	304.10
Sep-10	295.17	sealed	sealed	sealed		290.90	sealed	304.04
Oct-10	295.47	sealed	sealed	sealed		288.71	sealed	304.06
Nov-10	295.51	sealed	sealed	sealed		289.86	sealed	304.06
Dec-10	294.82	sealed	sealed	sealed		289.51	sealed	303.85
Jan-11	296.14	sealed	sealed	sealed		289.33	sealed	304.10
Feb-11	293.69	sealed	sealed	sealed		290.09	sealed	304.13
Mar-11	295.47	sealed	sealed	sealed		290.71	sealed	304.21
Apr-11	296.47	sealed	sealed	sealed		294.06	sealed	304.56
May-11	296.02	sealed	sealed	sealed		291.90	sealed	304.72

Notes: · All elevations in metres above sea level
· Blank indicates data not available

**Table F-2: Leachate Level Elevations
Oxford County Waste Management Facility**

Manhole / Well No.	1	7	8	12	13	16	17	03-8
Measuring Point Elevation	301.27	299.53	308.39	312.03	301.47	297.86	302.20	312.16
Jun-11	295.32	sealed	sealed	sealed		290.99	sealed	304.51
Jul-11	294.13	sealed	sealed	sealed		289.60	sealed	304.10
Aug-11	294.17	sealed	sealed	sealed		290.02	sealed	304.76
Sep-11	292.17	sealed	sealed	sealed		292.40	sealed	304.81
Oct-11	293.71	sealed	sealed	sealed		292.11	sealed	304.60
Nov-11	295.27	sealed	sealed	sealed		295.39	sealed	304.71
Dec-11	296.02	sealed	sealed	sealed		291.16	sealed	304.90
Jan-12	296.23	sealed	sealed	sealed		289.68	sealed	304.31
Feb-12	292.42	sealed	sealed	sealed		293.88	sealed	305.26
Mar-12	295.34	sealed	sealed	sealed		289.26	sealed	305.46
Apr-12	292.72	sealed	sealed	sealed		288.36	sealed	305.41
May-12	294.28	sealed	sealed	sealed		289.30	sealed	305.14
Jun-12	294.32	sealed	sealed	sealed		286.89	sealed	305.11
Jul-12	292.50	sealed	sealed	sealed		287.84	sealed	305.06
Aug-12	292.90	sealed	sealed	sealed		288.28	sealed	305.01
Sep-12	294.57	sealed	sealed	sealed		290.61	sealed	304.91
Oct-12	294.37	sealed	sealed	sealed		292.76	sealed	305.06
Nov-12	294.46	sealed	sealed	sealed		292.00	sealed	304.91
Dec-12	294.84	sealed	sealed	sealed		289.58	sealed	305.27
Jan-13	296.49	sealed	sealed	sealed		292.86	sealed	305.49
Feb-13	296.50	sealed	sealed	sealed		292.34	sealed	305.40
Mar-13	295.69	sealed	sealed	sealed		292.36	sealed	305.41
Apr-13	296.48	sealed	sealed	sealed		292.63	sealed	305.77
May-13	294.42	sealed	sealed	sealed		292.21	sealed	305.26
Jun-13	294.10	sealed	sealed	sealed		292.11	sealed	305.11
Jul-13	294.48	sealed	sealed	sealed		292.03	sealed	305.22
Aug-13	295.30	sealed	sealed	sealed		288.66	sealed	305.36
Sep-13	294.52	sealed	sealed	sealed		287.86	sealed	305.26
Oct-13	294.12	sealed	sealed	sealed		291.96	sealed	305.21
Nov-13	294.59	sealed	sealed	sealed		291.06	sealed	305.31
Dec-13	294.69	sealed	sealed	sealed		291.00	sealed	305.46
Jan-14	296.62	sealed	sealed	sealed		293.66	sealed	305.11
Feb-14	296.84	sealed	sealed	sealed		291.26	sealed	305.16
Mar-14	296.27	sealed	sealed	sealed		289.64	sealed	305.27
Apr-14	293.42	sealed	sealed	sealed		289.91	sealed	305.26
May-14	294.35	sealed	sealed	sealed		290.26	sealed	305.33
Jun-14	295.77	sealed	sealed	sealed		288.74	sealed	305.33
Jul-14	295.25	sealed	sealed	sealed		292.28	sealed	305.29
Aug-14	295.84	sealed	sealed	sealed		291.90	sealed	305.21
Sep-14	295.42	sealed	sealed	sealed		290.51	sealed	305.29
Oct-14	294.62	sealed	sealed	sealed		287.01	sealed	305.31
Nov-14	295.84	sealed	sealed	sealed		291.28	sealed	304.23
Dec-14	296.24	sealed	sealed	sealed		290.92	sealed	305.42
Jan-15	295.55	sealed	sealed	sealed		290.66	sealed	305.56
Feb-15	296.88	sealed	sealed	sealed		291.86	sealed	305.62
Mar-15	296.26	sealed	sealed	sealed		290.16	sealed	305.29
Apr-15	296.52	sealed	sealed	sealed		290.72	sealed	305.46
May-15	296.87	sealed	sealed	sealed		291.46	sealed	305.48
Jun-15	297.33	sealed	sealed	sealed		292.67	sealed	305.56
Jul-15	297.43	sealed	sealed	sealed		292.06	sealed	305.44
Aug-15	296.70	sealed	sealed	sealed		292.43	sealed	305.43
Sep-15	296.52	sealed	sealed	sealed		292.74	sealed	305.26

Notes: · All elevations in metres above sea level
· Blank indicates data not available

**Table F-2: Leachate Level Elevations
Oxford County Waste Management Facility**

Manhole / Well No.	1	7	8	12	13	16	17	03-8
Measuring Point Elevation	301.27	299.53	308.39	312.03	301.47	297.86	302.20	312.16
Oct-15	296.36	sealed	sealed	sealed		291.24	sealed	305.26
Nov-15	297.22	sealed	sealed	sealed		291.46	sealed	305.32
Dec-15	296.12	sealed	sealed	sealed		292.55	sealed	305.40
Jan-16	295.62	sealed	sealed	sealed		292.25	sealed	305.46
Feb-16	297.16	sealed	sealed	sealed		293.54	sealed	305.74
Mar-16	297.24	sealed	sealed	sealed		293.54	sealed	305.74
Apr-16	294.82	sealed	sealed	sealed		292.76	sealed	305.55
May-16	294.82	sealed	sealed	sealed		291.01	sealed	305.86
Jun-16	295.37	sealed	sealed	sealed		292.36	sealed	305.86
Jul-16	296.53	sealed	sealed	sealed		294.15	sealed	305.80
Aug-16	296.67	sealed	sealed	sealed		293.43	sealed	305.54
Sep-16	295.79	sealed	sealed	sealed		293.94	sealed	305.53
Oct-16	295.59	sealed	sealed	sealed		292.66	sealed	305.53
Nov-16	297.11	sealed	sealed	sealed		292.21	sealed	305.60
Dec-16	296.80	sealed	sealed	sealed		292.47	sealed	305.55
Jan-17	295.53	sealed	sealed	sealed		292.62	sealed	305.50
Feb-17	296.58	sealed	sealed	sealed		293.08	sealed	305.58
Mar-17	296.31	sealed	sealed	sealed		289.78	sealed	305.56
Apr-17	296.48	sealed	sealed	sealed		291.54	sealed	306.14
May-17	295.49	sealed	sealed	sealed		292.75	sealed	305.99
Jun-17	295.53	sealed	sealed	sealed		292.62	sealed	305.50
Jul-17	295.28	sealed	sealed	sealed		290.61	sealed	305.82
Aug-17	295.72	sealed	sealed	sealed		291.34	sealed	305.79
Sep-17	296.58	sealed	sealed	sealed		291.09	sealed	305.73
Oct-17	295.44	sealed	sealed	sealed		291.39	sealed	305.64
Nov-17	295.64	sealed	sealed	sealed		292.76	sealed	305.63
Dec-17	297.16	sealed	sealed	sealed		291.11	sealed	305.73
Jan-18	296.72	sealed	sealed	sealed		293.16	sealed	305.63
Feb-18	297.82	sealed	sealed	sealed		293.73	sealed	305.78
Mar-18	297.65	sealed	sealed	sealed		294.63	sealed	305.87
Apr-18	298.05	sealed	sealed	sealed		295.56	sealed	305.94
May-18	297.59	sealed	sealed	sealed		296.13	sealed	306.26
Jun-18	298.12	sealed	sealed	sealed		294.31	sealed	306.00
Jul-18	298.09	sealed	sealed	sealed		294.28	sealed	306.03
Aug-18	298.42	sealed	sealed	sealed		295.30	sealed	305.80
Sep-18	298.52	sealed	sealed	sealed		294.51	sealed	305.85
Oct-18	297.91	sealed	sealed	sealed		293.08	sealed	305.91
Nov-18	298.53	sealed	sealed	sealed		291.14	sealed	305.87
Dec-18	298.11	sealed	sealed	sealed		290.28	sealed	306.04
Jan-19	298.74	sealed	sealed	sealed		290.84	sealed	306.16
Feb-19	295.73	sealed	sealed	sealed		291.43	sealed	306.10
Mar-19	297.63	sealed	sealed	sealed		290.44	sealed	306.03
Apr-19	298.36	sealed	sealed	sealed		290.22	sealed	306.01
May-19	297.50	sealed	sealed	sealed		292.80	sealed	306.25
Jun-19	297.88	sealed	sealed	sealed		291.66	sealed	306.58
Jul-19	298.60	sealed	sealed	sealed		295.51	sealed	306.19
Aug-19	297.77	sealed	sealed	sealed		295.51	sealed	306.06
Sep-19	298.16	sealed	sealed	sealed		294.41	sealed	305.96
Oct-19	297.44	sealed	sealed	sealed		293.91	sealed	305.86
Nov-19	298.44	sealed	sealed	sealed		294.20	sealed	305.86
Dec-19	298.37	sealed	sealed	sealed		292.45	sealed	305.85

Notes: · All elevations in metres above sea level
· Blank indicates data not available

**Table F-2: Leachate Level Elevations
Oxford County Waste Management Facility**

Manhole / Well No.	1	7	8	12	13	16	17	03-8
Measuring Point Elevation	301.27	299.53	308.39	312.03	301.47	297.86	302.20	312.16
Jan-20	298.96	sealed	sealed	sealed		295.84	sealed	306.22
Feb-20	296.79	sealed	sealed	sealed		292.25	sealed	306.38
Mar-20	297.87	sealed	sealed	sealed		294.32	sealed	306.27
Apr-20	298.90	sealed	sealed	sealed		293.47	sealed	306.52
May-20	297.40	sealed	sealed	sealed		293.70	sealed	306.39
Jun-20	298.54	sealed	sealed	sealed		293.18	sealed	306.46
Jul-20	296.52	sealed	sealed	sealed		294.38	sealed	305.76
Aug-20	297.60	sealed	sealed	sealed		295.18	sealed	306.12
Sep-20	298.06	sealed	sealed	sealed		294.76	sealed	305.89
Oct-20	298.43	sealed	sealed	sealed		294.94	sealed	305.87
Nov-20	298.87	sealed	sealed	sealed		295.21	sealed	306.10
Dec-20	298.60	sealed	sealed	sealed		296.58	sealed	306.16
Jan-21	298.43	sealed	sealed	sealed		294.77	sealed	306.41
Feb-21	296.47	sealed	sealed	sealed		292.78	sealed	306.25
Mar-21	297.30	sealed	sealed	sealed		293.89	sealed	306.41
Apr-21	297.50	sealed	sealed	sealed		292.38	sealed	306.39
May-21	295.58	sealed	sealed	sealed		292.57	sealed	306.32
Jun-21	292.42	sealed	sealed	sealed		290.51	sealed	305.28
Jul-21	296.99	sealed	sealed	sealed		293.84	sealed	306.60
Aug-21	296.99	sealed	sealed	sealed		293.84	sealed	306.60
Sep-21	296.99	sealed	sealed	sealed		293.84	sealed	306.60
Oct-21	297.81	sealed	sealed	sealed		293.10	sealed	306.36
Nov-21	298.07	sealed	sealed	sealed		292.62	sealed	306.45
Dec-21	297.26	sealed	sealed	sealed		294.52	sealed	306.46

Notes: · All elevations in metres above sea level
· Blank indicates data not available

APPENDIX

G

COMBUSTIBLE GAS DATA



**Table G-1: Combustible Gas Monitoring Results
Oxford County Waste Management Facility**

Date	Gas Reading	Storage Trailer	Coverall Building	Green Barn		Scalehouse	HHW Building	Transfer Station Building	Gas Monitoring Wells				House				Landfill Office Building
				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
5-Jan-07	% LEL	0	0	0	0	0			too much mud	0	0	0	0	0	0	0	
11-Jan-07	% LEL	0	0	0	0	0			3.8	0	0	0	0	0	0	0	
19-Jan-07	% LEL	0	0	0	0	0			0.8	0	0	0	0	0	0.1	0	
26-Jan-07	% LEL	0	0	0	0	0			0.6	0	0	0	0	0	0	0	
12-Feb-07	% LEL	0	0	0	0	0			37*	0	0	0.2	0	0	0	0	
21-Feb-07	% LEL	0	0	0	0	0			24*	0	0.1	0.1	0	0	0	0	
7-Mar-07	% LEL	0	0	0	0	0			47*	37*	0	0	0	0	0	0	
16-Mar-07	% LEL	0	0	0	0	0			21*	25*	0	0	0	0	0	0	
23-Mar-07	% LEL	0	0	0	0	0			too much mud	55*	0	0	0	0	0	0	
29-Mar-07	% LEL	0	0	0	0	0			23*	0	0	0	0	0	0	0	
13-Apr-07	% LEL	0	0	0	0	0			15*	0	0	0	0	0	0	0	
30-Apr-07	% LEL	0	0	0	0	0			25*	0	0	0	0	0	0	0	
17-May-07	% LEL	0	0	0	0	0			46*	0	0	0	0	0	0	0	
25-May-07	% LEL	0	0	0	0	0			49*	1.4	0	0.1	0	0	0	0	
31-May-07	% LEL	0	0	0	0	0			27*	2.9	0	0.3	0	0	0	0	
8-Jun-07	% LEL	0	0	0	0	0			24*	7.7	0	0.5	0	0	0	0	
15-Jun-07	% LEL	0	0	0	0	0			22*	0.2	0.3	0.5	0	0	0	0	
13-Jul-07	% LEL	0	0	0	0	0			0.8	16	0	0.2	0	0	0	0	
26-Jul-07	% LEL	0	0	0	0	0			0.7	8.2	0.4	0.4	0	0	0	0	
10-Aug-07	% LEL	0	0	0	0	0			0.5	16*	0	0.2	0	0	0	0	
17-Aug-07	% LEL	0	0	0	0	0			Forgot to read	10*	0.2	0.2	0	0	0	0	
24-Aug-07	% LEL	0	0	0	0	0			31	8*	0	0.2	0	0	0	0	
4-Sep-07	% LEL	0	0	0	0	0			63*	6*	0.4	0.4	0	0	0	0	
14-Sep-07	% LEL	0	0	0	0	0				1.2	0	0.2	0	0	0	0	
21-Sep-07	% LEL	0	0	0	0	0				0.5	0	0.2	0	0	0	0	
5-Oct-07	% LEL	0	0	0	0	0				0.4	0	0	0	0	0	0	
2-Nov-07	% LEL	0	0	0	0	0				0.7	0	0.2	0	0	0	0	
16-Nov-07	% LEL	0	0	0	0	0				33	0	0.2	0	0	0	0	
6-Dec-07	% LEL	0	0	0	0	0				0	0	0.1	0	0	0	0	
21-Dec-07	% LEL	0	0	0	0	0				0	0	0	0	0	0	0	

Notes: · Combustible gas readings are in % LEL (% Lower Explosive Limit for Methane)
· Gas monitoring well GW1 (south of lunchroom) decommissioned on September 10, 2007

· * Result is in % of Methane by volume in air (100% LEL for Methane = 5% Methane in air)
· Blank denotes data not available

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Oxford County Waste Management Facility**

Date	Gas Reading	Storage Trailer	Coverall Building	Green Barn		Scalehouse	HHW Building	Transfer Station Building	Gas Monitoring Wells				House				Landfill Office Building
				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
16-Jan-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
8-Feb-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
22-Feb-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
28-Feb-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
10-Mar-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
8-Apr-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
18-Apr-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
1-May-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
12-May-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
5-Jun-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
19-Jun-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
26-Jun-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
10-Jul-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
25-Jul-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
31-Jul-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
14-Aug-08	% LEL	0	0	0	0				0	0	0	0	0.5	0	0		
21-Aug-08	% LEL	0	0	0	0				0	0	0	0	0.5	0	0		
28-Aug-08	% LEL	0	0	0	0				0	0.4	0.7	0	0	0	0		
3-Sep-08	% LEL	0	0	0	0				0	0.5	0.5	0	0	0	0		
11-Sep-08	% LEL	0	0	0	0				0	0	0.2	0	0	0	0		
10-Oct-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
17-Oct-08	% LEL	0	0	0	0				0	0	0.5	0	0	0	0		
31-Oct-08	% LEL	0	0	0	0				0	0	0.5	0	0	0	0		
6-Nov-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
21-Nov-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		
12-Dec-08	% LEL	0	0	0	0				0	0	0	0	0	0	0		

Notes: · Combustible gas readings are in % LEL (% Lower Explosive Limit for Methane)
· Gas monitoring well GW1 (south of lunchroom) decommissioned on September 10, 2007

· * Result is in % of Methane by volume in air (100% LEL for Methane = 5% Methane in air)
· Blank denotes data not available

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Oxford County Waste Management Facility**

Date	Gas Reading	Storage Trailer	Coverall Building	Green Barn		Scalehouse	HHW Building	Transfer Station Building	Gas Monitoring Wells				House				Landfill Office Building
				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
9-Jan-09	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
23-Jan-09	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
6-Feb-09	% LEL	0	0	0	0	0			0.6	0	0	0	0	0	0		
13-Feb-09	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
25-Feb-09	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
13-Mar-09	% LEL	0	0	Locked	0	0			0	0	0	0	0	0	0		
27-Mar-09	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
24-Apr-09	% LEL	0	0	0	0	0			0	0	0.1	0	0	0	0		
30-Apr-09	% LEL	0	0	0	0	0			0	0	0.1	0	0	0	0		
28-May-09	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
5-Jun-09	% LEL	0	0	0	0	0.1			0	0	0	0	0	0	0		
25-Jun-09	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
10-Jul-09	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
17-Jul-09	% LEL	0	0	0	0	0			0.1	0	1.2	0	0	0	0		
30-Jul-09	% LEL	0	0	0	0	0			0	0	0.3	0	0	0	0		
14-Aug-09	% LEL	0	0	0	0	0			0	0	0.1	0	0	0	0		
28-Aug-09	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
20-Oct-09	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
9-Nov-09	% LEL	0	0	0	0	0			0	0	0.4	0	0	0	0		
18-Nov-09	% LEL	0	0	0	0	0			0	0.1	0.4	0	0	0	0		
26-Nov-09	% LEL	0	0	0	0	0			0	0	0.4	0	0	0	0		
3-Dec-09	% LEL	0	0	0	0	0			0	0	0.2	0	0	0	0		
16-Dec-09	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		

Notes: · Combustible gas readings are in % LEL (% Lower Explosive Limit for Methane)
· Gas monitoring well GW1 (south of lunchroom) decommissioned on September 10, 2007

· * Result is in % of Methane by volume in air (100% LEL for Methane = 5% Methane in air)
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Date	Gas Reading	Storage Trailer	Coverall Building	Green Barn		Scalehouse	HHW Building	Transfer Station Building	Gas Monitoring Wells				House				Landfill Office Building
				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
8-Jan-10	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
15-Jan-10	% LEL	0	0	0	0	0			0.2	0.2	0.5	0	0	0	0		
29-Jan-10	% LEL	0	0	0	0	0			0.5	0	0	0	0	0	0		
5-Feb-10	% LEL	0	0	0	0	0			0.1	0	0	0	0	0	0		
11-Feb-10	% LEL	0	0	0	0	0			0.4	0	0.3	0	0	0.1	0		
19-Feb-10	% LEL	0	0	0	0	0			0.2	0	0.1	0	0	0	0		
5-Mar-10	% LEL	0	0	0	0	0			0.2	0	0.2	0	0	0	0		
19-Mar-10	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
24-Mar-10	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
22-Apr-10	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
3-May-10	% LEL	0	0	0	0	0			0.3	0	0.3	0	0	0	0		
10-May-10	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
19-May-10	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
25-May-10	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
11-Jun-10	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
25-Jun-10	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
15-Jul-10	% LEL	0	0.3	0	0	0			0	0	0.3	0	0	0	0		
28-Jul-10	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
20-Aug-10	% LEL	0	0	0	0	0			0	0.3	0.8	0	0	0	0		
7-Oct-10	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
15-Oct-10	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
19-Oct-11	% LEL	0	0	0	0	0			0.1	0	0	0	0	0	0		
1-Nov-10	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
19-Nov-10	%LEL	0	0	0	0	0			0	0	0.3	0	0	0	0		

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				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
7-Jan-11	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
13-Jan-11	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
10-Feb-11	% LEL	0	0	0	0	0			0	0	0.5	0	0	0	0		
23-Feb-11	% LEL	0	0	0	0	0			0.2	0	0	0	0	0	0		
8-Mar-11	% LEL	0	0	0	0	0			0	0	0	0	0.3	0	0		
1-Apr-11	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
7-Apr-11	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
29-Apr-11	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
6-May-11	% LEL	0.1	0	0	0	0			0	0	0	0	0	0	0		
27-May-11	% LEL	0.1	0	0	0	0			0	0	0	0	0	0	0		
7-Jun-11	% LEL	0	0	0.2	0.3	0			0	0.2	0.2	0.1	0.1	0.1	0		
8-Jul-11	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
14-Jul-11	% LEL	0	0	0	0	0			0	0.3	0.4	0	0	0	0		
26-Jul-11	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
11-Aug-11	% LEL	0	0	0	0	0			0	0	0.2	0	0	0	0		
23-Aug-11	% LEL	0	0	0	0	0			0.2	0	0.6	0	0	0	0		
1-Sep-11	% LEL	0.1	0	0	0	0			0.1	0.1	0.2	0	0	0	0		
9-Sep-11	% LEL	0.1	0	0	0	0			0	0	0.6	0	0	0	0		
16-Sep-11	% LEL	0	0	0	0	0			0	0	0.6	0	0.2	0	0		
7-Oct-11	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
25-Oct-11	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
18-Nov-11	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
25-Nov-11	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
7-Dec-11	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		

Notes: · Combustible gas readings are in % LEL (% Lower Explosive Limit for Methane)
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				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
5-Jan-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
13-Jan-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
13-Feb-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
6-Mar-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
13-Mar-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
21-Mar-12	% LEL	0	0	0	0	0			0	0	0.5	0	0	0	0		
29-Mar-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
12-Apr-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
19-Apr-12	% LEL	0	0	0	0	0			0.1	0	1	0	0	0	0		
11-May-12	% LEL	0	0	0	0	0			0	0	0.7	0	0	0	0		
15-May-12	% LEL	0	0	0	0	0			0	0	0.6	0	0	0	0		
25-May-12	% LEL	0	0	0	0	0			0.5	0.3	0.2	0	0	0	0		
6-Jun-12	% LEL	0	0	0	0	0			0	0	0.2	0	0	0	0		
22-Jun-12	% LEL	0	0	0	0	0			0.8	0	1.9	0	0	0	0		
29-Jun-12	% LEL	0	0	0	0	0			1	0	1.1	0	0	0	0		
13-Jul-12	% LEL	0	0	0	0	0			0.9	0.7	1.1	0	0	0	0		
21-Jul-12	% LEL	0	0	0	0	0			0.9	0.7	1	0	0	0	0		
2-Aug-12	% LEL	0	0	0	0	0			1	0	0.9	0	0	0	0		
17-Aug-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
24-Aug-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
21-Sep-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
1-Oct-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
8-Nov-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
14-Nov-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
22-Nov-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
7-Dec-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
13-Dec-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
21-Dec-12	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		

Notes: · Combustible gas readings are in % LEL (% Lower Explosive Limit for Methane)
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				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
18-Jan-13	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
25-Jan-13	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
5-Feb-13	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
13-Feb-13	% LEL	0	0	0	0	0			0	0	0	0	0	0.2	0		
28-Feb-13	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
7-Mar-13	% LEL	0	0	0	0	0			0	0	0.1	0	0	0	0		
15-Mar-13	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
22-Mar-13	% LEL	0	0	0	0	0			0	0	0.2	0	0	0.1	0		
28-Mar-13	% LEL	0	0	0	0	0.4			0	0.3	0.2	0	0	0	0		
3-May-13	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
9-May-13	% LEL	0	0	0	0	0			0	0	0	0	0	0	0.3		
31-May-13	% LEL	0	0.1	0	0	0			0	0.2	0.8	0	0	0	0.2		
14-Jun-13	% LEL	0	0.3	0	0	0			0	0	0	0	0	0	0		
5-Jul-13	% LEL	0	0.1	0	0	0			0.3	0	0.2	0	0	0	0		
19-Jul-13	% LEL	0.2	0	0	0	0			0.2	1.0	0.2	0	0	0	0		
2-Aug-13	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
16-Aug-13	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
20-Sep-13	% LEL	0	0	0	0	0			0	0	0.9	0	0	0	0		
3-Oct-13	% LEL	0	0	0	0	0			0	0.5	0	0	0	0	0		
1-Nov-13	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
2-Dec-13	% LEL	0	0	0	0	0			0	0	0.1	0	0	0	0		
30-Dec-13	% LEL	0	0	0	0	0			0	0	0.1	0	0	0	0		

Notes: · Combustible gas readings are in % LEL (% Lower Explosive Limit for Methane)
· Gas monitoring well GW1 (south of lunchroom) decommissioned on September 10, 2007

· * Result is in % of Methane by volume in air (100% LEL for Methane = 5% Methane in air)
· Blank denotes data not available

**Table G-1: Combustible Gas Monitoring Results
Oxford County Waste Management Facility**

Date	Gas Reading	Storage Trailer	Coverall Building	Green Barn		Scalehouse	HHW Building	Transfer Station Building	Gas Monitoring Wells				House				Landfill Office Building
				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
17-Jan-14	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
14-Feb-14	% LEL	0	0	0	0	0			10.4	0	1.0	0	0	0	0		
28-Feb-14	% LEL	0	0	0	0	0				0.2	0	0	0	0	0		
21-Mar-14	% LEL	0	0	0	0	0			8.3	0	0	0	0	0	0		
30-May-14	% LEL	0	0	0	0	0			0.3	0	0	0	0	0	0		
6-Jun-14	% LEL	0	0	0	0	0			0.5	0	0	0	0	0	0		
20-Jun-14	% LEL	0	0	0	0	0			0.1	0	0	0	0	0	0		
4-Jul-14	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
11-Jul-14	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
25-Jul-14	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
1-Aug-14	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
15-Aug-14	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
22-Aug-14	% LEL	0	0	0	0	0			0.3	0	0.1	0	0	0	0		
12-Sep-14	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
26-Sep-14	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
11-Nov-14	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
5-Dec-14	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
12-Dec-14	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		
19-Dec-14	% LEL	0	0	0	0	0			0	0	0	0	0	0	0		

Notes: · Combustible gas readings are in % LEL (% Lower Explosive Limit for Methane)
· Gas monitoring well GW1 (south of lunchroom) decommissioned on September 10, 2007

· * Result is in % of Methane by volume in air (100% LEL for Methane = 5% Methane in air)
· Blank denotes data not available

**Table G-1: Combustible Gas Monitoring Results
Oxford County Waste Management Facility**

Date	Gas Reading	Storage Trailer	Coverall Building	Green Barn		Scalehouse	HHW Building	Transfer Station Building	Gas Monitoring Wells				House				Landfill Office Building
				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
									South of Lunchroom	Beside Storage Trailer	Parking Lot	By Sedimentation Pond A					
2-Jan-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
9-Jan-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
16-Jan-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
23-Jan-15	% LEL	0	0	0	0	0				8.1	0	0	0	0	0		
6-Feb-15	% LEL	0	0	0	0	0				4.1	0.1	0	0	0	0		
13-Feb-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
20-Feb-15	% LEL	0	0	0	0	0				0	0	0.1	0	0	0		
27-Feb-15	% LEL	0	0	0	0	0				0	0.1	0	0	0	0		
13-Mar-15	% LEL	0	0	0	0	0				6.9	0	0	0	0	0		
20-Mar-15	% LEL	0	0	0	0	0				47	0	0	0	0	0		
10-Apr-15	% LEL	1	0.4	0	0	0				100	0	0.7	0	0	0		
1-May-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
8-May-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
5-Jun-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
12-Jun-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
23-Jun-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
3-Jul-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
22-Jul-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
7-Aug-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
21-Aug-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
4-Sep-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
30-Sep-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
26-Oct-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
16-Nov-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
27-Nov-15	% LEL	0	0	0	0	0				0	0	0	0	0	0		
15-Dec-15	% LEL	0	0	0	0	0				0	0.1	0	0	0	0		
29-Dec-15	% LEL	0	0	0	0	0				0	0	0.3	0.2	0	0		

Notes: · Combustible gas readings are in % LEL (% Lower Explosive Limit for Methane)
· Gas monitoring well GW1 (south of lunchroom) decommissioned on September 10, 2007

· * Result is in % of Methane by volume in air (100% LEL for Methane = 5% Methane in air)
· Blank denotes data not available

**Table G-1: Combustible Gas Monitoring Results
Oxford County Waste Management Facility**

Date	Gas Reading	Storage Trailer	Coverall Building	Green Barn		Scalehouse	HHW Building	Transfer Station Building	Gas Monitoring Wells				House				Landfill Office Building
				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
26-Jan-16	% LEL	0	0	0	0	0				0	0	0.1	0	0	0	0	
4-Feb-16	% LEL	0	0	0	0	0				0	0	0	0	0	0	0	
10-Feb-16	% LEL	0	0	0	0	0				0	0	0	0	0	0	0	
17-Feb-16	% LEL	0	0	0	0	0				0	0	0	0	0	0	0	
24-Feb-16	% LEL	0	0	0	0	0				0	0	0	0	0	0.2	0	
2-Mar-16	% LEL	0	0	0	0	0				0	0	0	0	0	0	0	
10-Mar-16	% LEL	0	0	0	0	0				0	0	0	0	0	0	0	
23-Mar-16	% LEL	0	0	0	0	0				0	0	0	0	0	0	0	
20-Apr-16	% LEL	0	0	0	0	0				0	0	0	0	0	0	0	
13-May-16	% LEL	0	0	0	0	0	0	0		0	0	0	0	0	0	0	
19-May-16	% LEL	0.3	0	0.2	0.3	0.3	0.3	0.3		0.2	0.2	0	0	0.1	0	0.3	
16-Jul-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
25-Jul-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
2-Aug-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
8-Aug-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
15-Aug-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
25-Aug-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
30-Aug-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
7-Sep-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
20-Sep-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
28-Sep-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
4-Oct-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
11-Oct-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
17-Oct-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
24-Oct-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
31-Oct-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
8-Nov-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
15-Nov-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
21-Nov-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
28-Nov-16	% LEL		0	0	0	0	0	0		0	0	0	0	0	0	0	
13-Dec-16	% LEL		0	0	0	0	0.2	0		Frozen	Frozen	0	0	0	0	0	

Notes: · Combustible gas readings are in % LEL (% Lower Explosive Limit for Methane)
 · * Result is in % of Methane by volume in air (100% LEL for Methane = 5% Methane in air)
 · Blank denotes data not available

· Gas monitoring well GW1 (south of lunchroom) decommissioned on September 10, 2007
 · Storage trailer removed from site in the summer of 2016 and lunchroom moved to the Green Barn shop in September 2016.
 · HHW Building and Transfer Station Building added to the program in May 2016.



**Table G-1: Combustible Gas Monitoring Results
Oxford County Waste Management Facility**

Date	Gas Reading	Storage Trailer	Coverall Building	Green Barn		Scalehouse	HHW Building	Transfer Station Building	Gas Monitoring Wells				House				Landfill Office Building
				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
9-Jan-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
18-Jan-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
26-Jan-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
9-Feb-17	% LEL		0	0	0	0	0	0		Frozen	Frozen	Frozen	0	0	0		
17-Feb-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
23-Feb-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
3-Mar-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
14-Mar-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
22-Mar-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
30-Mar-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
5-Apr-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
3-May-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
10-May-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
17-May-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
24-May-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
31-May-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
7-Jun-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
15-Jun-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
21-Jun-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
6-Jul-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
14-Jul-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
27-Jul-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
3-Aug-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
10-Aug-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
15-Aug-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
29-Aug-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
6-Sep-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
14-Sep-17	% LEL		0	5	5	5	0	0	0.1	0.1	0	0	0	0	0		
21-Sep-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
28-Sep-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
5-Oct-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
13-Oct-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
20-Oct-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
27-Oct-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
3-Nov-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
9-Nov-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
17-Nov-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
24-Nov-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
1-Dec-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
8-Dec-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		
15-Dec-17	% LEL		0	0	0	0	0	0	0	0	0	0	0	0	0		

Notes: · Combustible gas readings are in % LEL (% Lower Explosive Limit for Methane)

· * Result is in % of Methane by volume in air (100% LEL for Methane = 5% Methane in air)

· Blank denotes data not available

· Gas monitoring well GW1 (south of lunchroom) decommissioned on September 10, 2007

· Storage trailer removed from site in the summer of 2016 and lunchroom moved to the Green Barn shop in September 2016.

· GW2 was decommissioned in mid-May 2017.

**Table G-1: Combustible Gas Monitoring Results
Oxford County Waste Management Facility**

Date	Gas Reading	Storage Trailer	Coverall Building	Green Barn		Scalehouse	HHW Building	Transfer Station Building	Gas Monitoring Wells				House				Landfill Office Building
				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
3-Jan-18	% LEL		0	0	0	0	0	0			0	0	0				
12-Jan-18	% LEL		0	0	0	0	0	0			0.2	0	0	0	0		
19-Jan-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
26-Jan-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
15-Feb-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
2-Mar-18	% LEL		0	0	0	0	0	0			frozen	0	0	0	0		
9-Mar-18	% LEL		0	0	0	0	0	0			frozen	0	0	0	0		
23-Mar-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
6-Apr-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
9-Apr-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
12-Apr-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
16-Apr-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
19-Apr-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
23-Apr-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
27-Apr-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
30-Apr-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
11-May-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
25-May-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
8-Jun-18	% LEL		0	0	0	0	0	0			0	0	0	0	0		
28-Jun-18	% LEL		0	0	0	0	0	0			0	0	0	0	0	0	
13-Jul-18	% LEL		0	0	0	0	0	0			0	0	0	0	0	0	
27-Jul-18	% LEL		0	0	0	0	0	0			0	0	0	0	0	0	
10-Aug-18	% LEL		0	0	0	0	0	0			0	0	0	0	0	0	
23-Aug-18	% LEL		0	0	0	0	0	0			0	0	0	0	0	0	
7-Sep-18	% LEL		0	0	0	0	0	0			0	0	0	0	0	0	
20-Sep-18	% LEL		0	0	0	0	0	0			0	0	0	0	0	0	
17-Oct-18	% LEL		0	0	0	0	0	0			0	0	0	0	0	0	
2-Nov-18	% LEL		0	0	0	0	0	0			0	0	0	0	0	0	
15-Nov-18	% LEL		0	0	0	0	0	0			0	0	0	0	0	0	
28-Nov-18	% LEL		0	0	0	0	0	0			frozen	frozen	0	0	0	0	
11-Dec-18	% LEL		0	0	0	0	0	0			0	0	0	0	0	0	
20-Dec-18	% LEL		0	0	0	0	0	0			0	0	0	0	0	0	

Notes: · Combustible gas readings are in % LEL (% Lower Explosive Limit for Methane)
 · * Result is in % of Methane by volume in air (100% LEL for Methane = 5% Methane in air)
 · Blank denotes data not available
 · Moved into new office building in late June 2018; began monitoring.

· Gas monitoring well GW1 (south of lunchroom) decommissioned on September 10, 2007
 · Storage trailer removed from site in the summer of 2016 and lunchroom moved to the Green Barn shop in September 2016.
 · GW2 was decommissioned in mid-May 2017.
 · Former office (house) was demolished in August 2018; discontinued monitoring



**Table G-1: Combustible Gas Monitoring Results
Oxford County Waste Management Facility**

Date	Gas Reading	Storage Trailer	Coverall Building	Green Barn		Scalehouse	HHW Building	Transfer Station Building	Gas Monitoring Wells				House				Landfill Office Building
				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
10-Jan-19	% LEL		0	0	0	0	0	0			0	0					0
24-Jan-19	% LEL		0	0	0	0	0	0			0	0					0
5-Feb-19	% LEL		0	0	0	0	0	0			0	0					0
22-Feb-19	% LEL		0	0	0	0	0	0			0	0					0
28-Feb-19	% LEL		0	0	0	0	0	0			frozen	0					0
14-Mar-19	% LEL		0	0	0	0	0	0			0	0					0
29-Mar-19	% LEL		0	0	0	0	0	0			0	0					0
11-Apr-19	% LEL		0	0	0	0	0	0			0	0					0
24-Apr-19	% LEL		0	0	0	0	0	0			0	0					0
9-May-19	% LEL		0	0	0	0	0	0			0	0					0
23-May-19	% LEL		0	0	0	0	0	0			0	0					0
5-Jun-19	% LEL		0	0	0	0	0	0			0	0					0
21-Jun-19	% LEL		0	0	0	0	0	0			0	0					0
4-Jul-19	% LEL		0	0	0	0	0	0			0	0					0
4-Jul-19	% LEL		0	0	0	0	0	0			0	0					0
1-Aug-19	% LEL		0	0	0	0	0	0			0	0					0
15-Aug-19	% LEL		0	0	0	0	0	0			0	0					0
29-Aug-19	% LEL		0	0	0	0	0	0			0	0					0
12-Sep-19	% LEL		0	0	0	0	0	0			0	0					0
26-Sep-19	% LEL		0	0	0	0	0	0			0	0					0
9-Oct-19	% LEL		0	0	0	0	0	0			0	0					0
25-Oct-19	% LEL		0	0	0	0	0	0			0	0					0
4-Nov-19	% LEL		0	0	0	0	0	0			0	0					0
19-Nov-19	% LEL		0	0	0	0	0	0			0	0					0
4-Dec-19	% LEL		0	0	0	0	0	0			0	0					0
23-Dec-19	% LEL		0	0	0	0	0	0			0	0					0

Notes: - Combustible gas readings are in % LEL (% Lower Explosive Limit for Methane)
 - * Result is in % of Methane by volume in air (100% LEL for Methane = 5% Methane in air)
 - Blank denotes data not available
 - Moved into new office building in late June 2018; began monitoring.

- Gas monitoring well GW1 (south of lunchroom) decommissioned on September 10, 2007
 - Storage trailer removed from site in the summer of 2016 and lunchroom moved to the Green Barn shop in September 2016.
 - GW2 was decommissioned in mid-May 2017.
 - Former office (house) was demolished in August 2018; discontinued monitoring



**Table G-1: Combustible Gas Monitoring Results
Oxford County Waste Management Facility**

Date	Gas Reading	Storage Trailer	Coverall Building	Green Barn		Scalehouse	HHW Building	Transfer Station Building	Gas Monitoring Wells				House				Landfill Office Building
				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
15-Jan-20	% LEL		0	0	0	0	0	0			0	0					0
27-Jan-20	% LEL		0	0	0	0	0	0			0	0					0
06-Feb-20	% LEL		0	0	0	0	0	0			0	0					0
25-Feb-20	% LEL		0	0	0	0	0	0			0	0					0
09-Mar-20	% LEL		0	0	0	0	0	0			0	0					0
25-Mar-20	% LEL		0	0	0	0	0	0			0	0					0
15-Apr-20	% LEL		0	0	0	0	0	0			0	0					0
28-Apr-20	% LEL		0	0	0	0	0	0			0	0					0
07-May-20	% LEL		0	0	0	0	0	0			0	0					0
21-May-20	% LEL		0	0	0	0	0	0			0	0					0
10-Jun-20	% LEL		0	0	0	0	0	0			0	0					0
23-Jun-20	% LEL		0	0	0	0	0	0			0	0					0
15-Jul-20	% LEL		0	0	0	0	0	0			0	0					0
24-Jul-20	% LEL		0	0	0	0	0	0			0	0					0
05-Aug-20	% LEL		0	0	0	0	0	0			0	0					0
09-Sep-20	% LEL		0	0	0	0	0	0			0	0					0
02-Oct-20	% LEL		0	0	0	0	0	0			0	0					0
21-Oct-20	% LEL		0	0	0	0	0	0			0	0					0
05-Nov-20	% LEL		0	0	0	0	0	0			0	0					0
30-Nov-20	% LEL		0	0	0	0	0	0			0	0					0
10-Dec-20	% LEL		0	0	0	0	0	0			0	0					0
23-Dec-20	% LEL		0	0	0	0	0	0			0	0					0
07-Jan-21	% LEL		0	0	0	0	0	0			0	0					0
14-Jan-21	% LEL		0	0	0	0	0	0			0	0					0
04-Feb-21	% LEL		0	0	0	0	0	0			0	0					0
10-Feb-21	% LEL		0	0	0	0	0	0			0	0					0
26-Feb-21	% LEL		0	0	0	0	0	0			frozen	0					0
10-Mar-21	% LEL		0	0	0	0	0	0			0	0					0
18-Mar-21	% LEL		0	0	0	0	0	0			0	0					0
25-Mar-21	% LEL		0	0	0	0	0	0			0	0					0

Notes: · Combustible gas readings are in % LEL (% Lower Explosive Limit for Methane)

· * Result is in % of Methane by volume in air (100% LEL for Methane = 5% Methane in air)

· Blank denotes data not available

· Moved into new office building in late June 2018; began monitoring.

· Gas monitoring well GW1 (south of lunchroom) decommissioned on September 10, 2007

· Storage trailer removed from site in the summer of 2016 and lunchroom moved to the Green Barn shop in September 2016.

· GW2 was decommissioned in mid-May 2017.

· Former office (house) was demolished in August 2018; discontinued monitoring

**Table G-1: Combustible Gas Monitoring Results
Oxford County Waste Management Facility**

Date	Gas Reading	Storage Trailer	Coverall Building	Green Barn		Scalehouse	HHW Building	Transfer Station Building	Gas Monitoring Wells				House				Landfill Office Building
				Shop	Storage				GW1	GW2	GW3	GW5	Main Floor	Basement	Upstairs	Lunchroom	
08-Apr-21	% LEL		0	0	0	0	0	0			0	0					0
15-Apr-21	% LEL		0	0	0	0	0	0			0	0					0
30-Apr-21	% LEL		0	0	0	0	0	0			0	0					0
07-May-21	% LEL		0	0	0	0	0	0			0	0					0
13-May-21	% LEL		0	0	0	0	0	0			0	0					0
20-May-21	% LEL		0	0	0	0	0	0			0	0					0
27-May-21	% LEL		0	0	0	0	0	0			0	0					0
04-Jun-21	% LEL		0	0	0	0	0	0			0	0					0
10-Jun-21	% LEL		0	0	0	0	0	0			0	0					0
24-Jun-21	% LEL		0	0	0	0	0	0			0	0					0
09-Jul-21	% LEL		0	0	0	0	0	0			0	0					0
16-Jul-21	% LEL		0	0	0	0	0	0			0	0					0
23-Jul-21	% LEL		0	0	0	0	0	0			0	0					0
05-Aug-21	% LEL		0	0	0	0	0	0			0	0					0
12-Aug-21	% LEL		0	0	0	0	0	0			0	0					0
19-Aug-21	% LEL		0	0	0	0	0	0			0	0					0
26-Aug-21	% LEL		0	0	0	0	0	0			0	0					0
02-Sep-21	% LEL		0	0	0	0	0	0			0	0					0
16-Sep-21	% LEL		0	0	0	0	0	0			0	0					0
23-Sep-21	% LEL		0	0	0	0	0	0			0	0					0
01-Oct-21	% LEL		0	0	0	0	0	0			0	0					0
14-Oct-21	% LEL		0	0	0	0	0	0			0	0					0
21-Oct-21	% LEL		0	0	0	0	0	0			0	0					0
28-Oct-21	% LEL		0	0	0	0	0	0			0	0					0
01-Nov-21	% LEL		0	0	0	0	0	0			0	0					0
12-Nov-21	% LEL		0	0	0	0	0	0			0	0					0
19-Nov-21	% LEL		0	0	0	0	0	0			0	0					0
26-Nov-21	% LEL		0	0	0	0	0	0			0	0					0
02-Dec-21	% LEL		0	0	0	0	0	0			0	0					0
10-Dec-21	% LEL		0	0	0	0	0	0			0	0					0
23-Dec-21	% LEL		0	0	0	0	0	0			0	0					0
27-Dec-21	% LEL		0	0	0	0	0	0			0	0					0

Notes: · Combustible gas readings are in % LEL (% Lower Explosive Limit for Methane)

· * Result is in % of Methane by volume in air (100% LEL for Methane = 5% Methane in air)

· Blank denotes data not available

· Moved into new office building in late June 2018; began monitoring.

· Gas monitoring well GW1 (south of lunchroom) decommissioned on September 10, 2007

· Storage trailer removed from site in the summer of 2016 and lunchroom moved to the Green Barn shop in September 2016.

· GW2 was decommissioned in mid-May 2017.

· Former office (house) was demolished in August 2018; discontinued monitoring

APPENDIX

H

LABORATORY
CERTIFICATES OF ANALYSIS

APPENDIX

H-1 GROUNDWATER



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Project : 111-5306-05-100-1002, GW

31-May-2021

Date Rec. : 18 May 2021
LR Report: CA14746-MAY21
Reference: 111-5306-05-100-1002, Albert Siertsema

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed Date	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: 00-01	7: 98-7	8: 98-12	9: 03-6	10: 98-11	11: 012R	12: 013R
Sample Date & Time						17-May-21 13:30	17-May-21 12:40	17-May-21 12:50	17-May-21 13:15	17-May-21 13:00	17-May-21 12:00	17-May-21 12:15
Temp Upon Receipt [@ London Lab °C]	***	***	***	***	***	***	***	***	***	***	***	***
Temp Upon Receipt [@ Lakefield Lab °C]	---	---	---	---	---	14.0	14.0	14.0	14.0	14.0	14.0	14.0
pH [No unit]	20-May-21	08:06	20-May-21	15:47	0.05	---	---	---	---	---	---	---
Conductivity [uS/cm]	20-May-21	08:06	20-May-21	15:47	2	---	---	---	---	---	---	---
Alkalinity [mg/L as CaCO3]	20-May-21	08:06	20-May-21	15:47	2	---	---	---	---	---	---	---
Turbidity [NTU]	19-May-21	16:47	20-May-21	08:57	---	---	---	---	---	---	---	---
Colour [TCU]	21-May-21	11:03	21-May-21	11:22	---	---	---	---	---	---	---	---
CO3 [mg/L as CaCO3]	20-May-21	08:06	20-May-21	15:47	2	---	---	---	---	---	---	---
HCO3 [mg/L as CaCO3]	20-May-21	08:06	20-May-21	15:47	2	---	---	---	---	---	---	---
F [mg/L]	26-May-21	14:23	26-May-21	16:08	---	---	---	---	---	---	---	---
DOC [mg/L]	19-May-21	22:27	25-May-21	15:29	1.0	---	---	---	---	---	---	---
Cl [mg/L]	26-May-21	06:28	31-May-21	16:16	1	73	38	120	71	220	13	11
SO4 [mg/L]	26-May-21	06:28	31-May-21	16:16	2	---	---	---	---	---	---	---
NO2 [as N mg/L]	21-May-21	14:09	26-May-21	11:09	0.03	---	---	---	---	---	---	---
NO3 [as N mg/L]	21-May-21	14:09	26-May-21	11:09	0.06	---	---	---	---	---	---	---
4AAP-Phenolics [mg/L]	19-May-21	12:26	20-May-21	10:01	0.002	---	---	---	---	---	---	---
Hardness [mg/L as CaCO3]	21-May-21	18:05	27-May-21	16:25	---	---	---	---	---	---	---	---
Ca (diss) [mg/L]	21-May-21	18:05	27-May-21	16:25	0.01	---	---	---	---	---	---	---

Online LIMS

0002513230



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Project : 111-5306-05-100-1002, GW

LR Report : CA14746-MAY21

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: 00-01	7: 98-7	8: 98-12	9: 03-6	10: 98-11	11: 012R	12: 013R
Mg (diss) [mg/L]	21-May-21	18:05	27-May-21	16:25	0.001	---	---	---	---	---	---	---
Na (diss) [mg/L]	21-May-21	18:05	27-May-21	16:25	0.01	---	---	---	---	---	---	---
K (diss) [mg/L]	21-May-21	18:05	27-May-21	16:25	0.009	---	---	---	---	---	---	---

Analysis	13: 00-02	14: 98-13	15: CH1-DUP	16: 03-5	17: 03-3	18: 03-4
Sample Date & Time	17-May-21 13:45	17-May-21 12:25	17-May-21	17-May-21 14:45	17-May-21 14:30	17-May-21 14:00
Temp Upon Receipt [@ London Lab °C]	***	***	***	***	***	***
Temp Upon Receipt [@ Lakefield Lab °C]	14.0	14.0	14.0	14.0	14.0	14.0
pH [No unit]	---	---	---	7.87	7.89	7.93
Conductivity [uS/cm]	---	---	---	1350	1420	1400
Alkalinity [mg/L as CaCO3]	---	---	---	462	412	325
Turbidity [NTU]	---	---	---	70.7	15.4	4.32
Colour [TCU]	---	---	---	7	10	< 3
CO3 [mg/L as CaCO3]	---	---	---	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	---	---	---	462	412	325
F [mg/L]	---	---	---	0.23	0.08	0.31
DOC [mg/L]	---	---	---	6.9	4.5	2.9
Cl [mg/L]	60	76	11	180	270	320
SO4 [mg/L]	---	---	---	190	63	50
NO2 [as N mg/L]	---	---	---	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	---	---	---	< 0.06	0.91	0.30
4AAP-Phenolics [mg/L]	---	---	---	< 0.002	< 0.002	< 0.002
Hardness [mg/L as CaCO3]	---	---	---	629	527	592
Ca (diss) [mg/L]	---	---	---	143	157	156
Mg (diss) [mg/L]	---	---	---	66.0	32.7	49.1
Na (diss) [mg/L]	---	---	---	84.8	121	100
K (diss) [mg/L]	---	---	---	2.62	6.74	2.96

Temperature of Sample upon Receipt: 14 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar -solution	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Bicarbonate	Bicarbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Calcium (dissolved)	Ca by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Carbonate	Carbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness (dissolved)	Hardness (CaCO3) by ICP-MS dissolved	ME-CA-[ENV]SPE-LAK-AN-003
Magnesium (dissolved)	Mg by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Potassium (dissolved)	K by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sodium (dissolved)	Na by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003

Brad Moore Hon. B.Sc
Project Specialist,
Environment, Health & Safety



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Project : 111-5306-05-100-1002, GW
LR Report : CA14746-MAY21

Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
						%							
<i>Alkalinity - QCBatchID: EWL0383-MAY21</i>													
Alkalinity	2	mg/L as Ca	< 2			3	20	96	80	120	NA		
<i>Anions by discrete analyzer - QCBatchID: DIO5072-MAY21</i>													
Chloride	1	mg/L	<1			0	20	101	80	120	85	75	125
Sulphate	2	mg/L	<2			0	20	108	80	120	95	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5089-MAY21</i>													
Chloride	1	mg/L	<1			ND	20	103	80	120	111	75	125
<i>Anions by IC - QCBatchID: DIO0405-MAY21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	101	80	120	98	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	99	80	120	100	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0380-MAY21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			6	20	102	90	110	101	75	125
<i>Carbonate/Bicarbonate - QCBatchID: EWL0383-MAY21</i>													
Bicarbonate	2	mg/L as Ca	< 2			3	10	NA	90	110	NA		
Carbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
<i>Colour - QCBatchID: EWL0415-MAY21</i>													
Colour	3	TCU	< 3			ND	10	105	80	120	NA		
<i>Conductivity - QCBatchID: EWL0383-MAY21</i>													
Conductivity	2	uS/cm	< 2			2	20	97	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0487-MAY21</i>													
Fluoride	0.06	mg/L	<0.06			0	10	102	90	110	103	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0103-MAY21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			2	20	102	90	110	102	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			2	20	110	90	110	100	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			1	20	104	90	110	100	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			2	20	107	90	110	99	70	130
<i>pH - QCBatchID: EWL0383-MAY21</i>													
pH	0.05	No unit	NA			0		101			NA		
<i>Phenols by SFA - QCBatchID: SKA0198-MAY21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	94	80	120	89	75	125
<i>Turbidity - QCBatchID: EWL0366-MAY21</i>													
Turbidity	0.10	NTU	< 0.10			1	10	100	90	110	NA		



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27-May-2021

Date Rec. : 18 May 2021
LR Report: CA14748-MAY21
Reference: 111-5306-05-100-1002, Albert Siertsema

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CERTIFICATE OF ANALYSIS Final Report

Analysis	1: Analysis Start Date	3: Analysis Completed Date	5: RL	6: 141R	7: 111R	8: 00-03	9: 551R
Sample Date & Time				18-May-21 09:00	18-May-21 09:20	18-May-21 09:40	18-May-21 10:00
Temp Upon Receipt [@ London Lab °C]	***	***	***	***	***	***	***
Temp Upon Receipt [@ Lakefield Lab °C]	---	---	---	14.0	14.0	14.0	14.0
pH [No unit]	20-May-21	21-May-21	0.05	7.48	8.21	8.21	8.20
Conductivity [uS/cm]	20-May-21	21-May-21	2	2050	363	484	485
Alkalinity [mg/L as CaCO3]	20-May-21	21-May-21	2	614	135	226	228
Turbidity [NTU]	19-May-21	20-May-21		68.8	272	52.9	14.0
Colour [TCU]	21-May-21	21-May-21	3	8	9	< 3	< 3
CO3 [mg/L as CaCO3]	20-May-21	21-May-21	2	< 2	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	20-May-21	21-May-21	2	614	135	226	228
F [mg/L]	26-May-21	26-May-21	0.06	0.29	1.29	0.82	0.84
DOC [mg/L]	19-May-21	25-May-21	1.0	1.9	3.4	1.8	1.7
Cl [mg/L]	26-May-21	27-May-21	1	8	5	9	9
SO4 [mg/L]	26-May-21	27-May-21	2	610	76	44	44
NO2 [as N mg/L]	21-May-21	26-May-21	0.03	0.53	< 0.03	< 0.03	< 0.03



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LR Report : CA14748-MAY21

Analysis	1: Analysis Start Date	3: Analysis Completed Date	5: RL	6: 141R	7: 111R	8: 00-03	9: 551R
NO3 [as N mg/L]	21-May-21	26-May-21	0.06	0.24	0.08	< 0.06	< 0.06
4AAP-Phenolics [mg/L]	19-May-21	20-May-21	0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hardness [mg/L as CaCO3]	21-May-21	27-May-21		1170	114	268	279
Ca (diss) [mg/L]	21-May-21	27-May-21	0.01	331	28.7	60.1	63.6
Mg (diss) [mg/L]	21-May-21	27-May-21	0.001	83.0	10.2	28.6	29.2
Na (diss) [mg/L]	21-May-21	27-May-21	0.01	25.3	41.7	13.6	12.8
K (diss) [mg/L]	21-May-21	27-May-21	0.009	1.71	0.993	1.19	1.18

Analysis	10: 552RA	11: 00-04	12: 999
Sample Date & Time	18-May-21 10:20	18-May-21 10:40	18-May-21 11:00
Temp Upon Receipt [@ London Lab °C]	***	***	***
Temp Upon Receipt [@ Lakefield Lab °C]	14.0	14.0	14.0
pH [No unit]	8.11	8.23	8.18
Conductivity [uS/cm]	701	691	363
Alkalinity [mg/L as CaCO3]	245	262	168
Turbidity [NTU]	22.1	80.7	0.16
Colour [TCU]	< 3	5	7
CO3 [mg/L as CaCO3]	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	245	262	168
F [mg/L]	0.50	0.66	2.05
DOC [mg/L]	5.6	1.8	2.3
Cl [mg/L]	65	52	3
SO4 [mg/L]	54	57	21
NO2 [as N mg/L]	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	0.06	< 0.06	0.12
4AAP-Phenolics [mg/L]	< 0.002	< 0.002	< 0.002



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Analysis	10: 552RA	11: 00-04	12: 999
Hardness [mg/L as CaCO3]	373	312	129
Ca (diss) [mg/L]	97.8	65.4	28.5
Mg (diss) [mg/L]	31.3	36.2	14.2
Na (diss) [mg/L]	19.1	41.6	34.4
K (diss) [mg/L]	1.26	2.08	1.76

Temperature of Sample upon Receipt: 14 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar -solution	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Bicarbonate	Bicarbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Calcium (dissolved)	Ca by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Carbonate	Carbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness (dissolved)	Hardness (CaCO3) by ICP-MS dissolved	ME-CA-[ENV]SPE-LAK-AN-003
Magnesium (dissolved)	Mg by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Potassium (dissolved)	K by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sodium (dissolved)	Na by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



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LR Report : CA14748-MAY21

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Project : 111-5306-05-100-1002, GW

LR Report : CA14748-MAY21

Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
						%							
<i>Alkalinity - QCBatchID: EWL0383-MAY21</i>													
Alkalinity	2	mg/L as Ca	< 2			3	20	96	80	120	NA		
<i>Alkalinity - QCBatchID: EWL0386-MAY21</i>													
Alkalinity	2	mg/L as Ca	< 2			3	20	98	80	120	NA		
<i>Anions by discrete analyzer - QCBatchID: DIO5072-MAY21</i>													
Chloride	1	mg/L	<1			0	20	101	80	120	85	75	125
Sulphate	2	mg/L	<2			0	20	108	80	120	95	75	125
<i>Anions by IC - QCBatchID: DIO0405-MAY21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	101	80	120	98	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	99	80	120	100	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0380-MAY21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			6	20	102	90	110	101	75	125
<i>Carbonate/Bicarbonate - QCBatchID: EWL0383-MAY21</i>													
Bicarbonate	2	mg/L as Ca	< 2			3	10	NA	90	110	NA		
Carbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
<i>Carbonate/Bicarbonate - QCBatchID: EWL0386-MAY21</i>													
Bicarbonate	2	mg/L as Ca	< 2			3	10	NA	90	110	NA		
Carbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
<i>Colour - QCBatchID: EWL0415-MAY21</i>													
Colour	3	TCU	< 3			ND	10	105	80	120	NA		
<i>Conductivity - QCBatchID: EWL0383-MAY21</i>													
Conductivity	2	uS/cm	< 2			2	20	97	90	110	NA		
<i>Conductivity - QCBatchID: EWL0386-MAY21</i>													
Conductivity	2	uS/cm	< 2			2	20	100	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0487-MAY21</i>													
Fluoride	0.06	mg/L	<0.06			0	10	102	90	110	103	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0103-MAY21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			2	20	102	90	110	102	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			2	20	110	90	110	100	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			1	20	104	90	110	100	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			2	20	107	90	110	99	70	130
<i>pH - QCBatchID: EWL0383-MAY21</i>													
pH	0.05	No unit	NA			0		101			NA		
<i>pH - QCBatchID: EWL0386-MAY21</i>													
pH	0.05	No unit	NA			1		101			NA		
<i>Phenols by SFA - QCBatchID: SKA0198-MAY21</i>													



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LR Report : CA14748-MAY21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	94	80	120	89	75	125
<i>Turbidity - QCBatchID: EWL0366-MAY21</i>													
Turbidity	0.10	NTU	< 0.10			1	10	100	90	110	NA		



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27-May-2021

Date Rec. : 14 May 2021
LR Report: CA30270-MAY21
Reference: 111-53036-05-100, Albert Siertsema

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CERTIFICATE OF ANALYSIS Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Start Date	4: Analysis Start Time Completed	5: RL	6: 381R	7: 231R	8: 232R	9: 233R
Sample Date & Time						13-May-21 09:45	13-May-21 10:00	13-May-21 10:10	13-May-21 11:00
Temp Upon Receipt [@ London Lab °C]	---	---	---	---	---	7.1	7.1	7.1	7.1
Temp Upon Receipt [@ Lakefield Lab °C]	---	---	---	---	---	8.0	8.0	8.0	8.0
Turbidity [NTU]	14-May-21	14:30	18-May-21	11:56		599	>4000	17.1	725
pH [No unit]	18-May-21	16:36	19-May-21	14:12	0.05	8.25	8.22	8.30	7.88
Conductivity [uS/cm]	18-May-21	16:36	19-May-21	14:12	2	866	340	522	1440
Alkalinity [mg/L as CaCO3]	18-May-21	16:36	19-May-21	14:12	2	395	159	221	479
CO3 [mg/L as CaCO3]	18-May-21	16:36	19-May-21	14:12		< 2	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	18-May-21	16:36	19-May-21	14:12		395	159	221	479
Colour [TCU]	21-May-21	11:03	21-May-21	11:24	3	< 3	6	3	< 3
F [mg/L]	20-May-21	15:35	21-May-21	08:03	0.06	0.31	1.72	0.91	< 0.06
DOC [mg/L]	18-May-21	14:56	20-May-21	19:51	1.0	2.2	1.6	1.7	3.3
Cl [mg/L]	27-May-21	12:05	27-May-21	16:23	1	7	2	10	5
SO4 [mg/L]	27-May-21	12:01	27-May-21	16:24	2	88	23	48	430
NO2 [as N mg/L]	19-May-21	13:09	21-May-21	12:57	0.03	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	19-May-21	13:09	21-May-21	12:57	0.06	< 0.06	< 0.06	0.13	< 0.06
4AAP-Phenolics [mg/L]	17-May-21	13:49	18-May-21	12:51	0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hardness [mg/L as CaCO3]	20-May-21	17:44	26-May-21	17:37		367	104	196	765
Ca (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.01	70.7	21.9	35.0	201
Mg (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.001	46.4	12.1	26.4	64.2
Na (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.01	22.1	33.8	34.1	9.25

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LR Report : CA30270-MAY21


Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Date	4: Analysis Completed Time	5: RL	6: 381R	7: 231R	8: 232R	9: 233R
K (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.009	2.00	1.06	1.28	1.61

Analysis	10: 101R	11: 562	12: 561	13: 263R	14: 571	15: 581	16: 591	17: 14
Sample Date & Time	13-May-21 12:00	13-May-21 13:30	13-May-21 14:00	13-May-21 15:00	13-May-21 15:30	13-May-21 15:45	13-May-21 16:00	13-May-21 15:10
Temp Upon Receipt [@ London Lab °C]	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
Temp Upon Receipt [@ Lakefield Lab °C]	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Turbidity [NTU]	305	189	1006	74.9	38.7	141	93.1	1053
pH [No unit]	8.28	8.19	8.26	8.26	8.22	8.16	7.81	8.29
Conductivity [uS/cm]	433	640	400	688	440	582	679	390
Alkalinity [mg/L as CaCO3]	216	258	204	281	219	243	58	202
CO3 [mg/L as CaCO3]	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	216	258	204	281	219	243	58	202
Colour [TCU]	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
F [mg/L]	0.91	0.58	1.10	0.33	0.95	0.44	0.98	1.08
DOC [mg/L]	1.6	1.9	2.1	1.6	1.4	1.8	1.6	1.8
Cl [mg/L]	2	9	< 1	4	2	6	7	< 1
SO4 [mg/L]	17	76	11	92	17	49	280	11
NO2 [as N mg/L]	< 0.03	< 0.03	0.05	< 0.03	< 0.03	< 0.03	< 0.03	0.06
NO3 [as N mg/L]	0.13	0.09	0.07	0.16	0.06	5.89	0.30	0.44
4AAP-Phenolics [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hardness [mg/L as CaCO3]	195	262	179	299	194	250	113	167
Ca (diss) [mg/L]	41.0	60.9	35.1	66.0	41.9	52.1	23.7	32.9
Mg (diss) [mg/L]	22.6	26.7	22.3	32.7	21.7	29.1	13.0	20.7
Na (diss) [mg/L]	12.6	17.5	13.2	23.8	10.8	9.19	89.7	12.2
K (diss) [mg/L]	1.14	0.898	1.13	1.85	1.06	1.08	0.945	1.05

Temperature of Sample upon Receipt: 8 degrees C
 Cooling Agent Present: Yes
 Custody Seal Present: Yes
 Note: Turbidity samples processed undecanted.

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar -solution	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Bicarbonate	Bicarbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Calcium (dissolved)	Ca by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Carbonate	Carbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness (dissolved)	Hardness (CaCO ₃) by ICP-MS dissolved	ME-CA-[ENV]SPE-LAK-AN-003
Magnesium (dissolved)	Mg by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Potassium (dissolved)	K by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sodium (dissolved)	Na by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



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Project : 111-53036-05-100, GW

LR Report : CA30270-MAY21

Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
						%							
<i>Alkalinity - QCBatchID: EWL0345-MAY21</i>													
Alkalinity	2	mg/L as Ca	< 2			0	20	100	80	120	NA		
<i>Anions by discrete analyzer - QCBatchID: DIO5081-MAY21</i>													
Chloride	1	mg/L	<1			2	20	101	80	120	94	75	125
Sulphate	2	mg/L	<2			0	20	104	80	120	94	75	125
<i>Anions by IC - QCBatchID: DIO0340-MAY21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	101	80	120	103	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	99	80	120	101	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0343-MAY21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			3	20	102	90	110	106	75	125
<i>Carbonate/Bicarbonate - QCBatchID: EWL0345-MAY21</i>													
Bicarbonate	2	mg/L as Ca	< 2			0	10	NA	90	110	NA		
Carbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
<i>Colour - QCBatchID: EWL0415-MAY21</i>													
Colour	3	TCU	< 3			ND	10	105	80	120	NA		
<i>Conductivity - QCBatchID: EWL0345-MAY21</i>													
Conductivity	2	uS/cm	< 2			0	20	98	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0403-MAY21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	97	90	110	99	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0100-MAY21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			2	20	92	90	110	91	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			0	20	97	90	110	91	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			0	20	94	90	110	91	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			2	20	96	90	110	112	70	130
<i>pH - QCBatchID: EWL0345-MAY21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0170-MAY21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	95	80	120	100	75	125
<i>Turbidity - QCBatchID: LON8001-MAY21</i>													
Turbidity	0.10	NTU	< 0.10			0	10	100	90	110	NA		



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01-June-2021

Date Rec. : 14 May 2021
LR Report: CA30278-MAY21
Reference: 111-53036-05-100, Albert Siertsema

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CERTIFICATE OF ANALYSIS Final Report

Analysis	1: Analysis Start Date	2: Analysis Start TimeCompleted Date	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: O3-8	7: 531R	8: 592	9: 593	10: 594	11: 191	12: 15
Sample Date & Time						14-May-21 09:00	14-May-21 09:30	14-May-21 09:40	14-May-21 09:20	14-May-21 09:00	14-May-21 09:45	14-May-21 09:50
Temp Upon Receipt [@ London Lab °C]	---	---	---	---	---	12.9	12.9	12.9	12.9	12.9	12.9	12.9
Temp Upon Receipt [@ Lakefield Lab °C]	---	---	---	---	---	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Turbidity [NTU]	14-May-21	14:30	18-May-21	11:57		126	42.6	694	245	222	144	131
pH [No unit]	18-May-21	16:36	19-May-21	14:13	0.05	8.12	8.32	8.12	8.33	8.25	8.31	8.33
Conductivity [uS/cm]	18-May-21	16:36	19-May-21	14:13	2	8740	692	615	562	366	581	582
Alkalinity [mg/L as CaCO3]	18-May-21	16:36	19-May-21	14:13	2	3450	308	301	227	168	216	217
CO3 [mg/L as CaCO3]	18-May-21	16:36	19-May-21	14:13		< 2	4	< 2	3	< 2	< 2	3
HCO3 [mg/L as CaCO3]	18-May-21	16:36	19-May-21	14:13		3450	304	301	224	168	216	214
Colour [TCU]	21-May-21	11:03	21-May-21	11:24	3	430	< 3	< 3	< 3	3	< 3	< 3
F [mg/L]	20-May-21	15:35	21-May-21	08:03	0.06	0.77	0.31	0.11	0.57	1.50	0.82	0.77
DOC [mg/L]	18-May-21	14:56	20-May-21	19:51	1.0	243	1.9	2.9	2.0	2.0	1.9	2.4
Cl [mg/L]	27-May-21	09:54	01-Jun-21	13:36	1	940	5	3	6	1	7	6
SO4 [mg/L]	27-May-21	09:50	01-Jun-21	13:36	2	< 2	69	44	68	22	85	85
NO2 [as N mg/L]	19-May-21	22:23	25-May-21	12:27	0.03	< 0.3	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	19-May-21	22:23	25-May-21	12:27	0.06	< 0.06	0.08	0.06	0.13	0.36	2.08	2.07
4AAP-Phenolics [mg/L]	17-May-21	13:49	21-May-21	16:43	0.002	0.031	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hardness [mg/L as CaCO3]	20-May-21	17:44	26-May-21	17:37		950	263	271	230	85.4	265	250
Ca (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.01	104	56.6	66.0	43.9	17.2	50.2	48.7
Mg (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.001	168	29.5	25.7	29.1	10.3	33.9	31.1

OnLine LIMS

00025114320



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LR Report : CA30278-MAY21

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: O3-8	7: 531R	8: 592	9: 593	10: 594	11: 191	12: 15
Na (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.01	574	31.5	6.30	28.7	44.2	19.0	18.0
K (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.009	396	1.65	1.24	1.51	1.24	1.78	1.66

Analysis	13: O23R	14: O22R	15: 16	16: 998	17: 05-01	18: 03-7D	19: 03-7S	20: 595	21: 541
Sample Date & Time	14-May-21 10:10	14-May-21 10:40	14-May-21 10:15	14-May-21 11:15	14-May-21 11:00	14-May-21 11:45	14-May-21 11:50	14-May-21 12:30	14-May-21 12:10
Temp Upon Receipt [@ London Lab °C]	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9
Temp Upon Receipt [@ Lakefield Lab °C]	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Turbidity [NTU]	52.3	1053	55.3	>4000	177	7.39	2122	36.3	55.1
pH [No unit]	8.15	8.20	8.13	8.33	8.38	8.13	8.07	7.89	8.11
Conductivity [uS/cm]	1360	372	1320	482	552	440	903	611	626
Alkalinity [mg/L as CaCO3]	344	160	326	198	241	118	331	95	273
CO3 [mg/L as CaCO3]	< 2	< 2	< 2	2	7	< 2	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	344	160	326	196	235	118	331	95	273
Colour [TCU]	< 3	9	< 3	< 3	< 3	4	< 3	< 3	< 3
F [mg/L]	0.31	0.61	0.29	1.05	0.72	1.07	< 0.06	1.19	0.38
DOC [mg/L]	2.7	3.9	3.0	2.6	1.4	2.0	3.2	1.6	1.8
Cl [mg/L]	25	8	25	11	12	15	57	3	3
SO4 [mg/L]	450	19	460	57	47	81	51	210	67
NO2 [as N mg/L]	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	< 0.06	2.44	< 0.06	< 0.06	< 0.06	0.11	4.02	0.52	< 0.06
4AAP-Phenolics [mg/L]	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hardness [mg/L as CaCO3]	698	154	692	185	243	122	361	151	293
Ca (diss) [mg/L]	129	41.5	128	38.6	44.9	31.3	98.2	40.2	67.2
Mg (diss) [mg/L]	91.2	12.2	90.6	21.7	31.7	10.8	28.1	12.3	30.5
Na (diss) [mg/L]	28.2	15.1	28.4	28.4	26.7	39.4	24.1	69.1	16.1
K (diss) [mg/L]	2.68	0.983	2.79	2.69	1.61	0.968	14.7	1.17	1.41

Temperature of Sample upon Receipt: degrees C
 Cooling Agent Present:
 Custody Seal Present:
 Note: Turbidity samples processed undecanted.

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar -solution	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Bicarbonate	Bicarbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Calcium (dissolved)	Ca by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Carbonate	Carbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness (dissolved)	Hardness (CaCO3) by ICP-MS dissolved	ME-CA-[ENV]SPE-LAK-AN-003
Magnesium (dissolved)	Mg by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Potassium (dissolved)	K by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sodium (dissolved)	Na by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003

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Quality Control Report

Parameter	Reporting Limit	Unit	Method Blank	Inorganic Analysis									
				Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Alkalinity - QCBatchID: EWL0345-MAY21</i>													
Alkalinity	2	mg/L as Ca	< 2			0	20	100	80	120	NA		
<i>Anions by discrete analyzer - QCBatchID: DIO5000-JUN21</i>													
Chloride	1	mg/L	<1			ND	20	98	80	120	104	75	125
Sulphate	2	mg/L	<2			1	20	105	80	120	91	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5080-MAY21</i>													
Chloride	1	mg/L	<1			1	20	101	80	120	101	75	125
Sulphate	2	mg/L	<2			1	20	105	80	120	89	75	125
<i>Anions by IC - QCBatchID: DIO0362-MAY21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			14	20	103	80	120	103	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	101	80	120	103	75	125
<i>Anions by IC - QCBatchID: DIO0379-MAY21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	102	80	120	91	75	125
Nitrite (as N)	0.03	mg/L	<0.03			7	20	97	80	120	100	75	125
<i>Anions by IC - QCBatchID: DIO0387-MAY21</i>													
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	97	80	120	96	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0343-MAY21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			3	20	102	90	110	106	75	125
<i>Carbonate/Bicarbonate - QCBatchID: EWL0345-MAY21</i>													
Bicarbonate	2	mg/L as Ca	< 2			0	10	NA	90	110	NA		
Carbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
<i>Colour - QCBatchID: EWL0415-MAY21</i>													
Colour	3	TCU	< 3			ND	10	105	80	120	NA		
<i>Conductivity - QCBatchID: EWL0345-MAY21</i>													
Conductivity	2	uS/cm	< 2			0	20	98	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0403-MAY21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	97	90	110	99	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0100-MAY21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			2	20	92	90	110	91	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			0	20	97	90	110	91	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			0	20	94	90	110	91	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			2	20	96	90	110	112	70	130
<i>pH - QCBatchID: EWL0345-MAY21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0170-MAY21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	95	80	120	100	75	125



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Project : 111-53036-05-100, GW
LR Report : CA30278-MAY21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Phenols by SFA - QCBatchID: SKA0181-MAY21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	95	80	120	81	75	125
<i>Turbidity - QCBatchID: LON8001-MAY21</i>													
Turbidity	0.10	NTU	< 0.10			0	10	100	90	110	NA		



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Project : 111-53036-05, Oxford County
Landfill- Salford Landfill Site

19-November-2021

WSP Canada Inc.
Attn : Albert Siertsema

Date Rec. : 28 October 2021
LR Report: CA14730-OCT21
Reference: 111-53036-05, Albert
Siertsema

55 King Street, Suite 700, St. Catharines
Canada, L2R 3H5
Phone: 905-687-1771 x 240, Fax:

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Date Completed	4: Analysis Time Completed	5: RL	6: 191	7: 531R	8: 022R
Sample Date & Time						05-Oct-21 08:20	05-Oct-21 09:00	05-Oct-21 10:00
Alkalinity [mg/L as CaCO3]	28-Oct-21	15:17	29-Oct-21	14:10	2	---	297	---
Ca (diss) [mg/L]	01-Nov-21	14:11	02-Nov-21	17:26	0.01	45.3	70.0	85.1
Ca (diss) [mg/L]	01-Nov-21	14:11	19-Nov-21	11:40	0.01	---	---	---
Mg (diss) [mg/L]	01-Nov-21	14:11	02-Nov-21	17:26	0.001	32.0	35.9	26.9
Mg (diss) [mg/L]	01-Nov-21	14:11	19-Nov-21	11:40	0.001	---	---	---
Na (diss) [mg/L]	01-Nov-21	14:11	02-Nov-21	17:26	0.01	23.8	31.8	7.94
Na (diss) [mg/L]	01-Nov-21	14:11	19-Nov-21	11:40	0.01	---	---	---
K (diss) [mg/L]	01-Nov-21	14:11	02-Nov-21	17:26	0.009	1.98	2.11	1.97
K (diss) [mg/L]	01-Nov-21	14:11	19-Nov-21	11:40	0.009	---	---	---
Hardness [mg/L as CaCO3]	01-Nov-21	14:11	02-Nov-21	17:26	0.05	245	322	323
Hardness [mg/L as CaCO3]	01-Nov-21	14:11	19-Nov-21	11:40	0.05	---	---	---

Analysis	9: 05-01	10: 998	11: 03-7S	12: 551R	13: 552RA	14: 00-03	15: 111R	16: 141R
Sample Date & Time	05-Oct-21 10:30	05-Oct-21 11:00	05-Oct-21 12:00	05-Oct-21 12:30	05-Oct-21 12:50	05-Oct-21 13:45	05-Oct-21 13:30	06-Oct-21 11:00
Alkalinity [mg/L as CaCO3]	---	---	---	---	---	---	---	233
Ca (diss) [mg/L]	32.5	41.8	45.2	38.7	59.8	38.9	36.1	---
Ca (diss) [mg/L]	---	---	---	---	---	---	---	69.5
Mg (diss) [mg/L]	33.9	23.7	29.2	29.6	30.3	30.1	10.3	---
Mg (diss) [mg/L]	---	---	---	---	---	---	---	70.5
Na (diss) [mg/L]	28.2	25.4	34.7	13.7	19.9	14.9	42.4	---
Na (diss) [mg/L]	---	---	---	---	---	---	---	26.5
K (diss) [mg/L]	2.02	3.04	18.9	1.44	1.60	1.48	1.15	---
K (diss) [mg/L]	---	---	---	---	---	---	---	1.70
Hardness [mg/L as CaCO3]	221	202	233	218	274	221	132	---
Hardness [mg/L as CaCO3]	---	---	---	---	---	---	---	464

Temperature of Sample upon Receipt: 9 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: N/A

Reassay from CA40061-OCT21

Method Descriptions

Parameter	Description	SGS Method Code
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Calcium (dissolved)	Ca by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Calcium (dissolved)	Ca by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Hardness (dissolved)	Hardness (CaCO3) by ICP-MS dissolved	ME-CA-[ENV]SPE-LAK-AN-003
Hardness (dissolved)	Hardness (CaCO3) by ICP-MS dissolved	ME-CA-[ENV]SPE-LAK-AN-003
Magnesium (dissolved)	Mg by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Magnesium (dissolved)	Mg by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Potassium (dissolved)	K by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Potassium (dissolved)	K by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sodium (dissolved)	Na by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sodium (dissolved)	Na by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006



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Project : 111-53036-05, Oxford County Landfill-
 Salford Landfill Site
LR Report : CA14730-0021

Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Alkalinity - QCBatchID: EWL0642-OCT21</i>													
Alkalinity	2	mg/L as Ca	< 2			4	20	109	80	120	NA		
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0003-NOV21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			0	20	106	90	110	103	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			6	20	104	90	110	98	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			0	20	104	90	110	115	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			2	20	105	90	110	70	70	130
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0007-NOV21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			0	20	106	90	110	111	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			2	20	105	90	110	71	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			1	20	107	90	110	115	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			3	20	102	90	110	105	70	130
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0104-NOV21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			2	20	100	90	110	101	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			0	20	100	90	110	100	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			1	20	100	90	110	96	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			2	20	97	90	110	98	70	130



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WSP Canada Inc.

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L2R 3H5, Canada

Phone: 905-687-1771 x 240

Fax:

Project : 111-53036-05, Salford GW

21-October-2021

Date Rec. : 05 October 2021

LR Report: CA40044-OCT21

Reference: 111-53036-05, Albert Siertsema

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Date Completed	4: Analysis Time Completed	5: RL	6: 381R	7: 231R	8: 232R	9: 233R	10: 101R	11: 561	12: 562
Sample Date & Time						04-Oct-21 10:00	04-Oct-21 10:30	04-Oct-21 10:45	04-Oct-21 11:00	04-Oct-21 11:30	04-Oct-21 11:45	04-Oct-21 12:00
Temp Upon Receipt [°C]	***	***	***	***	***	***	***	***	***	***	***	***
pH [No unit]	07-Oct-21	16:17	11-Oct-21	20:47	0.05	7.87	8.26	8.35	7.57	8.18	8.24	8.06
Conductivity [uS/cm]	07-Oct-21	16:17	11-Oct-21	20:47	2	848	504	326	1500	417	380	658
Alkalinity [mg/L as CaCO3]	07-Oct-21	16:17	11-Oct-21	20:47	2	426	224	315	585	233	326	315
Turbidity [NTU]	05-Oct-21	21:07	06-Oct-21	10:18	0.1	316	11.1	>4000	615	126	2530	97.2
Colour [TCU]	14-Oct-21	10:07	15-Oct-21	07:04	3	4	< 3	14	3	4	5	4
DOC [mg/L]	07-Oct-21	14:21	08-Oct-21	16:50	1.0	6.7	3.3	2.4	2.5	2.9	1.8	5.1
CO3 [mg/L as CaCO3]	07-Oct-21	16:17	11-Oct-21	20:47	2	< 2	< 2	2	< 2	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	07-Oct-21	16:17	11-Oct-21	20:47	2	426	224	313	585	233	326	315
F [mg/L]	14-Oct-21	16:22	15-Oct-21	09:09	0.06	0.31	1.01	1.71	< 0.06	0.96	1.07	0.60
Cl [mg/L]	07-Oct-21	17:49	12-Oct-21	08:12	1	8	11	4	6	2	1	9
SO4 [mg/L]	07-Oct-21	14:50	12-Oct-21	08:12	2	82	50	24	450	16	10	67
NO2 [as N mg/L]	06-Oct-21	15:00	08-Oct-21	13:42	0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	06-Oct-21	15:00	08-Oct-21	13:42	0.06	< 0.06	0.15	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
4AAP-Phenolics [mg/L]	07-Oct-21	09:26	08-Oct-21	11:13	0.002	< 0.002	0.003	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Ca (diss) [mg/L]	08-Oct-21	10:30	21-Oct-21	09:52	0.01	116	47.9	36.4	305	54.6	46.9	97.6
Mg (diss) [mg/L]	08-Oct-21	10:30	21-Oct-21	09:52	0.001	51.0	28.2	12.4	70.1	24.7	24.5	32.9
Na (diss) [mg/L]	08-Oct-21	10:30	21-Oct-21	09:52	0.01	25.7	39.7	36.4	12.1	15.0	14.9	18.5
K (diss) [mg/L]	08-Oct-21	10:30	21-Oct-21	09:52	0.009	2.78	1.71	1.59	2.37	1.50	1.58	1.52

OnLine LIMS

0002483821



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Project : 111-53036-05, Salford GW

LR Report : CA40044-OCT21

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Date Completed	4: Analysis Time Completed	5: RL	6: 381R	7: 231R	8: 232R	9: 233R	10: 101R	11: 561	12: 562
Hardness [mg/L as CaCO3]	08-Oct-21	10:30	21-Oct-21	09:52		499	235	142	1050	238	218	379


Analysis	13: 263R	14: 571	15: 581	16: 591	17: 592	18: 593	19: 594	20: 775	21: 776
Sample Date & Time	04-Oct-21 12:30	04-Oct-21 13:00	04-Oct-21 13:30	04-Oct-21 14:00	04-Oct-21 15:00	04-Oct-21 14:45	04-Oct-21 14:30	04-Oct-21	04-Oct-21
Temp Upon Receipt [°C]	***	***	***	***	***	***	***	***	***
pH [No unit]	8.10	8.21	8.16	8.00	7.97	8.25	8.33	7.52	8.22
Conductivity [uS/cm]	625	425	611	676	654	537	354	1520	538
Alkalinity [mg/L as CaCO3]	287	234	296	69	377	264	195	630	268
Turbidity [NTU]	49.8	32.3	77.5	145	75.9	455	207	698	406
Colour [TCU]	3	< 3	< 3	< 3	3	5	10	6	5
DOC [mg/L]	3.1	1.5	2.5	1.3	4.3	1.7	3.3	3.0	1.0
CO3 [mg/L as CaCO3]	< 2	< 2	< 2	< 2	< 2	< 2	3	< 2	< 2
HCO3 [mg/L as CaCO3]	287	234	296	69	377	264	192	630	268
F [mg/L]	0.34	0.94	0.41	1.11	0.06	0.57	1.57	< 0.06	0.57
Cl [mg/L]	5	2	9	8	3	7	4	5	6
SO4 [mg/L]	70	17	39	260	44	68	19	430	69
NO2 [as N mg/L]	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	0.32	< 0.06	4.88	< 0.06	< 0.06	0.10	0.17	< 0.06	0.10
4AAP-Phenolics [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Ca (diss) [mg/L]	79.4	56.5	90.8	37.7	112	59.8	23.5	259	115
Mg (diss) [mg/L]	32.7	24.5	32.2	14.4	28.9	32.5	10.8	65.8	42.3
Na (diss) [mg/L]	23.8	12.5	10.5	98.6	11.4	31.9	48.4	10.1	32.2
K (diss) [mg/L]	2.61	1.40	1.67	1.25	1.94	1.86	1.49	1.91	5.61
Hardness [mg/L as CaCO3]	333	242	359	154	398	283	103	918	461

Temperature of Sample upon Receipt: 15 degrees C

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar -solution	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006

Parameter	Description	SGS Method Code
Bicarbonate	Bicarbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Calcium (dissolved)	Ca by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Carbonate	Carbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness (dissolved)	Hardness (CaCO ₃) by ICP-MS dissolved	ME-CA-[ENV]SPE-LAK-AN-003
Magnesium (dissolved)	Mg by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Potassium (dissolved)	K by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sodium (dissolved)	Na by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



Brad Moore Hon. B.Sc
Project Specialist,
Environment, Health & Safety



Quality Control Report

Parameter	Reporting Limit	Unit	Method Blank	Inorganic Analysis									
				Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Alkalinity - QCBatchID: EWL0152-OCT21</i>													
Alkalinity	2	mg/L as Ca	< 2			3	20	98	80	120	NA		
<i>Anions by discrete analyzer - QCBatchID: DIO5026-OCT21</i>													
Chloride	1	mg/L	<1			3	20	102	80	120	111	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5028-OCT21</i>													
Sulphate	2	mg/L	<2			1	20	105	80	120	104	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5029-OCT21</i>													
Chloride	1	mg/L	<1			1	20	101	80	120	104	75	125
Sulphate	2	mg/L	<2			2	20	105	80	120	86	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5030-OCT21</i>													
Chloride	1	mg/L	<1			1	20	100	80	120	96	75	125
Sulphate	2	mg/L	<2			1	20	110	80	120	102	75	125
<i>Anions by IC - QCBatchID: DIO0120-OCT21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	101	90	110	100	75	125
Nitrite (as N)	0.03	mg/L	<0.03			1	20	97	90	110	97	75	125
<i>Anions by IC - QCBatchID: DIO0132-OCT21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			14	20	102	90	110	106	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	91	90	110	96	75	125
<i>Anions by IC - QCBatchID: DIO0145-OCT21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	102	90	110	102	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	93	90	110	96	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0143-OCT21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			0	20	102	90	110	94	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0147-OCT21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			ND	20	100	90	110	105	75	125
<i>Carbonate/Bicarbonate - QCBatchID: EWL0152-OCT21</i>													
Bicarbonate	2	mg/L as Ca	< 2			3	10	NA	90	110	NA		
Carbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
<i>Colour - QCBatchID: EWL0288-OCT21</i>													
Colour	3	TCU	< 3			ND	10	100	80	120	NA		
<i>Conductivity - QCBatchID: EWL0152-OCT21</i>													
Conductivity	2	uS/cm	< 2			1	20	100	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0303-OCT21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	102	90	110	95	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0046-OCT21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			2	20	96	90	110	101	70	130



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Project : 111-53036-05, Salford GW
LR Report : CA40044-OCT21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
Magnesium (dissolved)	0.001	mg/L	<0.001			2	20	100	90	110	105	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			2	20	100	90	110	109	70	130
Sodium (dissolved)	0.01	mg/L	0.01			2	20	104	90	110	111	70	130
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0091-OCT21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			1	20	101	90	110	104	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			3	20	107	90	110	103	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			0	20	107	90	110	98	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			2	20	105	90	110	107	70	130
<i>pH - QCBatchID: EWL0152-OCT21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0089-OCT21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	105	80	120	104	75	125
<i>Turbidity - QCBatchID: EWL0101-OCT21</i>													
Turbidity	0.10	NTU	< 0.10			5	10	99	90	110	NA		



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WSP Canada Inc.

Attn : Albert Siertsema

55 King Street, Suite 700
St. Catharines, ON
L2R 3H5, Canada

Phone: 905-687-1771 x 240

Fax:

Project : 111-53036-05

26-October-2021

Date Rec. : 06 October 2021

LR Report: CA40061-OCT21

Reference: 111-53036-05, Albert Siertsema

Copy: 1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Date Completed	4: Analysis Time Completed	5: RL	6: 191	7: 531R	8: 022R	9: 023R	10: 05-01	11: 998	12: 03-7S	
Sample Date & Time						05-Oct-21	08:2005-Oct-21	09:0005-Oct-21	10:0005-Oct-21	09:3005-Oct-21	10:3005-Oct-21	11:0005-Oct-21	12:00
Temp Upon Receipt [°C]	---	---	---	---	---	9.0	9.0	9.0	9.0	9.0	9.0	9.0	
pH [No unit]	12-Oct-21	15:36	14-Oct-21	15:50	0.05	8.48	8.01	8.08	7.95	8.29	8.41	8.13	
Conductivity [uS/cm]	12-Oct-21	15:36	14-Oct-21	12:07	2	500	802	611	1390	566	446	1030	
Alkalinity [mg/L as CaCO3]	12-Oct-21	15:36	14-Oct-21	12:07	2	211	193	276	373	255	209	367	
Turbidity [NTU]	06-Oct-21	21:10	07-Oct-21	10:23	0.1	79.1	14.7	2240	10.4	133	>4000	3700	
Colour [TCU]	14-Oct-21	10:07	15-Oct-21	07:05	3	< 3	6	22	3	6	5	3	
DOC [mg/L]	13-Oct-21	13:46	14-Oct-21	14:00	1.0	1.0	1.1	9.0	1.7	< 1.0	1.3	2.0	
CO3 [mg/L as CaCO3]	12-Oct-21	15:36	14-Oct-21	12:07	2	14	< 2	< 2	< 2	< 2	6	< 2	
HCO3 [mg/L as CaCO3]	12-Oct-21	15:36	14-Oct-21	12:07	2	197	193	276	373	255	203	367	
F [mg/L]	15-Oct-21	08:31	15-Oct-21	13:21	0.06	0.94	0.35	0.32	0.32	0.73	1.05	0.06	
Cl [mg/L]	13-Oct-21	07:23	18-Oct-21	11:52	1	4	7	6	26	13	6	77	
SO4 [mg/L]	13-Oct-21	07:34	15-Oct-21	11:10	2	59	71	52	420	44	48	43	
NO2 [as N mg/L]	08-Oct-21	13:22	14-Oct-21	07:16	0.03	< 0.03	< 0.03	0.08	< 0.03	< 0.03	< 0.03	< 0.03	
NO3 [as N mg/L]	08-Oct-21	13:22	14-Oct-21	07:16	0.06	0.83	0.07	1.47	< 0.06	< 0.06	< 0.06	6.30	
4AAP-Phenolics [mg/L]	08-Oct-21	13:53	13-Oct-21	15:16	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Ca (diss) [mg/L]	08-Oct-21	10:30	26-Oct-21	16:03	0.01	70.9	86.1	341	163	162	1420	342	
Mg (diss) [mg/L]	08-Oct-21	10:30	13-Oct-21	15:51	0.001	33.9	34.4	62.8	94.6	56.0	57.3	52.0	
Na (diss) [mg/L]	08-Oct-21	10:30	13-Oct-21	15:51	0.01	23.1	28.6	7.22	30.0	27.1	24.7	29.3	
K (diss) [mg/L]	08-Oct-21	10:30	13-Oct-21	15:51	0.009	1.93	2.12	2.72	2.91	2.03	5.11	16.1	

OnLine LIMS

0002690485



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Project : 111-53036-05

LR Report : CA40061-OCT21

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Date Completed	4: Analysis Time Completed	5: RL	6: 191	7: 531R	8: 022R	9: 023R	10: 05-01	11: 998	12: 03-7S
Hardness [mg/L as CaCO3]	08-Oct-21	10:30	26-Oct-21	16:03		317	356	1110	797	634	3790	1070

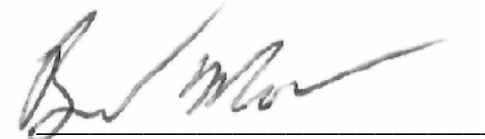
Analysis	13: 03-7D	14: 551R	15: 552RA	16: 00-03	17: 111R	18: 541	19: 595	20: 777	21: 00-04	22: 999	23: 03-8	24: 141R
Sample Date & Time	05-Oct-21 11:30	05-Oct-21 12:30	05-Oct-21 12:50	05-Oct-21 13:45	05-Oct-21 13:30	05-Oct-21 14:30	05-Oct-21 15:00		05-Oct-21 08:30	05-Oct-21 09:00	05-Oct-21 10:00	05-Oct-21 11:00
Temp Upon Receipt [°C]	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
pH [No unit]	7.91	8.22	8.19	8.29	8.21	8.09	7.94	8.04	8.04	8.17	7.86	8.26
Conductivity [uS/cm]	427	521	778	499	383	647	609	1360	684	427	4790	11
Alkalinity [mg/L as CaCO3]	113	234	264	227	107	289	97	366	302	195	1840	142
Turbidity [NTU]	5.19	48.8	1250	119	3310	48.8	43.8	10.3	118	0.22	52.6	381
Colour [TCU]	5	4	< 3	3	6	< 3	4	< 3	< 3	5	220	5
DOC [mg/L]	2.6	1.5	< 1.0	< 1.0	1.0	1.0	1.1	1.7	1.0	1.6	117	4.0
CO3 [mg/L as CaCO3]	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	113	234	264	227	107	289	97	366	302	195	1840	142
F [mg/L]	1.13	0.85	0.50	0.82	1.29	0.42	1.18	0.31	0.69	1.82	0.56	0.27
Cl [mg/L]	17	10	69	10	6	4	2	26	51	5	480	7
SO4 [mg/L]	75	42	49	43	73	61	200	430	49	26	28	350
NO2 [as N mg/L]	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.3	< 0.03
NO3 [as N mg/L]	0.15	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	0.25	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
4AAP-Phenolics [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.009	< 0.002
Ca (diss) [mg/L]	39.6	89.9	229	116	462	102	53.0	153	87.1	35.7	115	508
Mg (diss) [mg/L]	11.6	34.6	45.4	37.4	46.2	34.7	13.7	89.7	40.6	17.9	97.3	105
Na (diss) [mg/L]	41.6	13.2	18.0	14.0	39.7	17.9	73.6	29.1	40.0	31.8	335	25.2
K (diss) [mg/L]	1.11	1.46	2.51	1.51	1.96	1.80	1.37	2.84	2.27	1.23	242	1.85
Hardness [mg/L as CaCO3]	147	367	759	445	1340	398	189	752	385	163	687	1700

Temperature of Sample upon Receipt: 9 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Raise RL for NO2 due to matrix interference

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar -solution	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Bicarbonate	Bicarbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Calcium (dissolved)	Ca by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Carbonate	Carbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness (dissolved)	Hardness (CaCO ₃) by ICP-MS dissolved	ME-CA-[ENV]SPE-LAK-AN-003
Magnesium (dissolved)	Mg by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Potassium (dissolved)	K by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sodium (dissolved)	Na by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



Brad Moore Hon. B.Sc
Project Specialist,
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Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
							%		Low	High		Low	High
<i>Alkalinity - QCBatchID: EWL0229-OCT21</i>													
Alkalinity	2	mg/L as Ca	< 2			ND	20	100	80	120	NA		
<i>Alkalinity - QCBatchID: EWL0235-OCT21</i>													
Alkalinity	2	mg/L as Ca	< 2			0	20	100	80	120	NA		
<i>Alkalinity - QCBatchID: EWL0261-OCT21</i>													
Alkalinity	2	mg/L as Ca	< 2			1	20	100	80	120	NA		
<i>Anions by discrete analyzer - QCBatchID: DIO5037-OCT21</i>													
Chloride	1	mg/L	<1			0	20	106	80	120	97	75	125
Sulphate	2	mg/L	<2			ND	20	102	80	120	106	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5040-OCT21</i>													
Sulphate	2	mg/L	<2			0	20	107	80	120	95	75	125
<i>Anions by IC - QCBatchID: DIO0163-OCT21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	101	90	110	103	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	97	90	110	100	75	125
<i>Anions by IC - QCBatchID: DIO0165-OCT21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			6	20	100	90	110	106	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	98	90	110	81	75	125
<i>Anions by IC - QCBatchID: DIO0204-OCT21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			2	20	102	90	110	96	75	125
Nitrite (as N)	0.03	mg/L	<0.03			9	20	100	90	110	95	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0260-OCT21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			1	20	101	90	110	116	75	125
<i>Carbonate/Bicarbonate - QCBatchID: EWL0229-OCT21</i>													
Bicarbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
Carbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
<i>Carbonate/Bicarbonate - QCBatchID: EWL0235-OCT21</i>													
Bicarbonate	2	mg/L as Ca	< 2			0	10	NA	90	110	NA		
Carbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
<i>Carbonate/Bicarbonate - QCBatchID: EWL0261-OCT21</i>													
Bicarbonate	2	mg/L as Ca	< 2			1	10	NA	90	110	NA		
Carbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
<i>Colour - QCBatchID: EWL0288-OCT21</i>													
Colour	3	TCU	< 3			ND	10	100	80	120	NA		
<i>Conductivity - QCBatchID: EWL0229-OCT21</i>													
Conductivity	2	uS/cm	< 2			0	20	98	90	110	NA		
<i>Conductivity - QCBatchID: EWL0235-OCT21</i>													



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Project : 111-53036-05
LR Report : CA40061-OCT21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
Conductivity	2	uS/cm	< 2			0	20	100	90	110	NA		
<i>Conductivity - QCBatchID: EWL0261-OCT21</i>													
Conductivity	2	uS/cm	< 2			1	20	98	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0317-OCT21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	97	90	110	95	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0046-OCT21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			2	20	96	90	110	101	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			2	20	100	90	110	105	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			2	20	100	90	110	109	70	130
Sodium (dissolved)	0.01	mg/L	0.01			2	20	104	90	110	111	70	130
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0053-OCT21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			4	20	96	90	110	104	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			4	20	99	90	110	101	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			4	20	97	90	110	100	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			4	20	97	90	110	100	70	130
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0068-OCT21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			1	20	97	90	110	102	70	130
<i>pH - QCBatchID: EWL0229-OCT21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>pH - QCBatchID: EWL0235-OCT21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>pH - QCBatchID: EWL0261-OCT21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>pH - QCBatchID: EWL0289-OCT21</i>													
pH	0.05	No unit	NA			0		101			NA		
<i>Phenols by SFA - QCBatchID: SKA0107-OCT21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	100	80	120	93	75	125
<i>Phenols by SFA - QCBatchID: SKA0130-OCT21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	101	80	120	95	75	125
<i>Turbidity - QCBatchID: EWL0133-OCT21</i>													
Turbidity	0.10	NTU	< 0.10			7	10	99	90	110	NA		

APPENDIX

H-2 PRIVATE WELLS



SOUTHWESTERN PUBLIC HEALTH
ATTN: NIELS DUBE
21 REEVE ST
PO BOX 1614
WOODSTOCK ON N4S 7Y3

Date Received: 26-OCT-21
Report Date: 10-NOV-21 09:05 (MT)
Version: FINAL

Client Phone: 519-539-9800

Certificate of Analysis

Lab Work Order #: L2655778
Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Gayle Braun
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 309 Exeter Road Unit #29, London, ON N6L 1C1 Canada | Phone: +1 519 652 6044 | Fax: +1 519 652 0671
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2655778-1	L2655778-2	L2655778-3	L2655778-4	L2655778-5
		Description	WATER	WATER	WATER	WATER	WATER
		Sampled Date	26-OCT-21	26-OCT-21	26-OCT-21	26-OCT-21	26-OCT-21
		Sampled Time	09:25	09:44	09:54	10:08	10:21
		Client ID	1-383958	2-364074	3-364077	4-364004	5-363988
Grouping	Analyte						
WATER							
Physical Tests	Colour, True (CU)	<2.0	<2.0	2.6	4.1	4.8	
	Conductivity (umhos/cm)	469	360	340	339	399	
	Hardness (as CaCO3) (mg/L)	<1.3 ^{HTC}	118 ^{HTC}	104 ^{HTC}	<1.3 ^{HTC}	<1.3 ^{HTC}	
	pH (pH units)	8.49	8.33	8.43	8.31	8.34	
	Turbidity (NTU)	0.99	1.69	2.52	0.30	0.22	
Anions and Nutrients	Chloride (Cl) (mg/L)	2.33	1.94	0.78	1.66	2.52	
	Fluoride (F) (mg/L)	0.996	1.67	1.77	2.31	2.34	
	Nitrate (as N) (mg/L)	<0.020	0.040	<0.020	<0.020	<0.020	
	Nitrite (as N) (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	
Organic / Inorganic Carbon	Dissolved Carbon Filtration Location	LAB	LAB	LAB	LAB	LAB	
	Dissolved Organic Carbon (mg/L)	1.85	2.44	2.10	2.59	3.33	
Total Metals	Calcium (Ca)-Total (mg/L)	<0.50	21.2	17.7	<0.50	<0.50	
	Magnesium (Mg)-Total (mg/L)	<0.050	15.7	14.6	<0.050	<0.050	
Aggregate Organics	Phenols (4AAP) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2655778-6 WATER 26-OCT-21 10:34 6-333597	L2655778-7 WATER 26-OCT-21 11:03 7-384060	L2655778-8 WATER 26-OCT-21 11:25 8-383971	L2655778-9 WATER 26-OCT-21 13:07 9-383946	L2655778-10 WATER 26-OCT-21 13:26 10-333633	
Grouping	Analyte					
WATER						
Physical Tests	Colour, True (CU)	3.5	3.4	4.2	5.2	2.1
	Conductivity (umhos/cm)	344	439	332	368	339
	Hardness (as CaCO3) (mg/L)	85.7 ^{HTC}	157 ^{HTC}	76.0 ^{HTC}	84.4 ^{HTC}	<1.3 ^{HTC}
	pH (pH units)	8.22	8.07	8.26	8.21	8.28
	Turbidity (NTU)	1.09	<0.10	0.17	0.27	<0.10
Anions and Nutrients	Chloride (Cl) (mg/L)	1.25	4.24	1.88	4.63	1.12
	Fluoride (F) (mg/L)	2.18	1.76	2.23	2.23	1.97
	Nitrate (as N) (mg/L)	<0.020	<0.020	<0.020	0.259	<0.020
	Nitrite (as N) (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Organic / Inorganic Carbon	Dissolved Carbon Filtration Location	LAB	LAB	LAB	LAB	LAB
	Dissolved Organic Carbon (mg/L)	2.36	2.44	2.41	2.93	2.57
Total Metals	Calcium (Ca)-Total (mg/L)	16.4	31.7	13.4	16.5	<0.50
	Magnesium (Mg)-Total (mg/L)	10.9	18.9	10.4	10.5	<0.050
Aggregate Organics	Phenols (4AAP) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2655778-11 WATER 26-OCT-21 13:49 11-364160	L2655778-12 WATER 26-OCT-21 14:09 12-333662	L2655778-13 WATER 26-OCT-21 14:28 13-333624	L2655778-14 WATER 26-OCT-21 14:45 14-383931	L2655778-15 WATER 26-OCT-21 16:12 15-364138	
Grouping	Analyte					
WATER						
Physical Tests	Colour, True (CU)	<2.0	12.9	7.1	2.5	4.2
	Conductivity (umhos/cm)	693	341	707	659	407
	Hardness (as CaCO3) (mg/L)	311 ^{HTC}	70.0 ^{HTC}	334 ^{HTC}	<1.3 ^{HTC}	155 ^{HTC}
	pH (pH units)	7.84	8.14	7.90	8.24	8.08
	Turbidity (NTU)	0.70	0.27	0.16	<0.10	0.22
Anions and Nutrients	Chloride (Cl) (mg/L)	26.3	1.46	6.29	21.7	2.14
	Fluoride (F) (mg/L)	0.449	2.08	0.439	0.873	1.39
	Nitrate (as N) (mg/L)	0.113	0.534	2.44	<0.020	0.698
	Nitrite (as N) (mg/L)	<0.010	<0.010	<0.010	<0.010	0.112
Organic / Inorganic Carbon	Dissolved Carbon Filtration Location	LAB	LAB	LAB	LAB	LAB
	Dissolved Organic Carbon (mg/L)	2.37	2.51	4.42	1.73	1.95
Total Metals	Calcium (Ca)-Total (mg/L)	72.4	14.3	79.3	<0.50	30.3
	Magnesium (Mg)-Total (mg/L)	31.6	8.31	32.9	<0.050	19.4
Aggregate Organics	Phenols (4AAP) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Dissolved Organic Carbon	MS-B	L2655778-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Fluoride (F)	MS-B	L2655778-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2655778-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2655778-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
COLOUR-TRUE-WT	Water	Colour, True	APHA 2120C
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			
DOC-WT	Water	Dissolved Organic Carbon	APHA 5310B
Sample is filtered through a 0.45um filter, then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.			
EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
EC-WT	Water	Conductivity	APHA 2510 B
Water samples can be measured directly by immersing the conductivity cell into the sample.			
F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-WT	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
PH-WT	Water	pH	APHA 4500 H-Electrode
Water samples are analyzed directly by a calibrated pH meter.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days			

Reference Information

PHENOLS-4AAP-WT Water Phenol (4AAP) EPA 9066

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

TURBIDITY-WT Water Turbidity APHA 2130 B

Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2655778

Report Date: 10-NOV-21

Page 1 of 5

Client: SOUTHWESTERN PUBLIC HEALTH
 21 REEVE ST PO BOX 1614
 WOODSTOCK ON N4S 7Y3

Contact: NIELS DUBE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT								
	Water							
Batch	R5632492							
WG3647872-12	LCS							
Chloride (Cl)			100.1		%		90-110	28-OCT-21
WG3647872-7	LCS							
Chloride (Cl)			100.1		%		90-110	28-OCT-21
WG3647872-11	MB							
Chloride (Cl)			<0.50		mg/L		0.5	28-OCT-21
WG3647872-6	MB							
Chloride (Cl)			<0.50		mg/L		0.5	28-OCT-21
COLOUR-TRUE-WT								
	Water							
Batch	R5629674							
WG3646933-3	DUP	L2655778-1						
Colour, True		<2.0	<2.0	RPD-NA	CU	N/A	20	27-OCT-21
WG3646933-2	LCS							
Colour, True			98.3		%		85-115	27-OCT-21
WG3646933-1	MB							
Colour, True			<2.0		CU		2	27-OCT-21
DOC-WT								
	Water							
Batch	R5632429							
WG3647130-2	LCS							
Dissolved Organic Carbon			97.7		%		80-120	28-OCT-21
WG3647130-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-OCT-21
Batch	R5632497							
WG3646925-2	LCS							
Dissolved Organic Carbon			94.6		%		80-120	28-OCT-21
WG3646925-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-OCT-21
EC-WT								
	Water							
Batch	R5631016							
WG3646556-2	LCS							
Conductivity			101.9		%		90-110	27-OCT-21
WG3646556-1	MB							
Conductivity			<1.0		umhos/cm		1	27-OCT-21
Batch	R5631018							
WG3646557-2	LCS							
Conductivity			101.8		%		90-110	27-OCT-21
WG3646557-1	MB							
Conductivity			<1.0		umhos/cm		1	27-OCT-21

Quality Control Report

Workorder: L2655778

Report Date: 10-NOV-21

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WT		Water						
Batch	R5631193							
WG3646559-2	LCS							
Conductivity			101.2		%		90-110	28-OCT-21
WG3646559-1	MB							
Conductivity			<1.0		umhos/cm		1	28-OCT-21
Batch	R5632778							
WG3647530-2	LCS							
Conductivity			102.2		%		90-110	28-OCT-21
WG3647530-1	MB							
Conductivity			<1.0		umhos/cm		1	28-OCT-21
F-IC-N-WT		Water						
Batch	R5632492							
WG3647872-12	LCS							
Fluoride (F)			102.8		%		90-110	28-OCT-21
WG3647872-7	LCS							
Fluoride (F)			102.3		%		90-110	28-OCT-21
WG3647872-11	MB							
Fluoride (F)			<0.020		mg/L		0.02	28-OCT-21
WG3647872-6	MB							
Fluoride (F)			<0.020		mg/L		0.02	28-OCT-21
MET-T-CCMS-WT		Water						
Batch	R5629588							
WG3646235-2	LCS							
Calcium (Ca)-Total			101.3		%		80-120	27-OCT-21
Magnesium (Mg)-Total			109.2		%		80-120	27-OCT-21
WG3646235-1	MB							
Calcium (Ca)-Total			<0.050		mg/L		0.05	27-OCT-21
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	27-OCT-21
NO2-IC-WT		Water						
Batch	R5632492							
WG3647872-12	LCS							
Nitrite (as N)			100.0		%		90-110	28-OCT-21
WG3647872-7	LCS							
Nitrite (as N)			100.3		%		90-110	28-OCT-21
WG3647872-11	MB							
Nitrite (as N)			<0.010		mg/L		0.01	28-OCT-21
WG3647872-6	MB							
Nitrite (as N)			<0.010		mg/L		0.01	28-OCT-21

Quality Control Report

Workorder: L2655778

Report Date: 10-NOV-21

Page 3 of 5

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-WT		Water						
Batch	R5632492							
WG3647872-12	LCS							
Nitrate (as N)			99.7		%		90-110	28-OCT-21
WG3647872-7	LCS							
Nitrate (as N)			99.8		%		90-110	28-OCT-21
WG3647872-11	MB							
Nitrate (as N)			<0.020		mg/L		0.02	28-OCT-21
WG3647872-6	MB							
Nitrate (as N)			<0.020		mg/L		0.02	28-OCT-21
PH-WT		Water						
Batch	R5631016							
WG3646556-2	LCS							
pH			7.00		pH units		6.9-7.1	27-OCT-21
Batch	R5631018							
WG3646557-2	LCS							
pH			7.01		pH units		6.9-7.1	27-OCT-21
Batch	R5631193							
WG3646559-2	LCS							
pH			7.00		pH units		6.9-7.1	28-OCT-21
Batch	R5632778							
WG3647530-2	LCS							
pH			7.00		pH units		6.9-7.1	28-OCT-21
PHENOLS-4AAP-WT		Water						
Batch	R5631169							
WG3646592-3	DUP	L2655778-7						
Phenols (4AAP)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-OCT-21
WG3646592-2	LCS							
Phenols (4AAP)			98.5		%		85-115	27-OCT-21
WG3646592-1	MB							
Phenols (4AAP)			<0.0010		mg/L		0.001	27-OCT-21
WG3646592-4	MS	L2655778-7						
Phenols (4AAP)			96.3		%		75-125	27-OCT-21
TURBIDITY-WT		Water						



Quality Control Report

Workorder: L2655778

Report Date: 10-NOV-21

Page 4 of 5

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-WT	Water							
Batch	R5629570							
WG3646209-3	DUP	L2655778-6						
Turbidity		1.09	1.13		NTU	3.6	15	27-OCT-21
WG3646209-2	LCS							
Turbidity			99.96		%		85-115	27-OCT-21
WG3646209-1	MB							
Turbidity			<0.10		NTU		0.1	27-OCT-21

Quality Control Report

Workorder: L2655778

Report Date: 10-NOV-21

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2655778-COFC

Number: 17 - 870877

Page 1 of 2

Mc

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Report To Contact and company name below will appear on the final report Company: SOUTH WESTERN PUBLIC HEALTH Contact: Phone:		Report Format / Distribution Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		ct your AM to confirm all E&P TATs (surcharges may apply) Regular (R) <input type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply Priority (Business days): 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/> EMERGENCY 1 Business day [E - 100%] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/> Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm For tests that can not be performed according to the service level selected, you will be contacted.																																																																
Company address below will appear on the final report Street: 410 BULLOCK ST City/Province: WOODSTOCK ON Postal Code: N4S 4N2		Email 1 or Fax Email 2 Email 3		Analysis Request Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below <table border="1"> <tr> <td colspan="12" style="text-align: center; vertical-align: middle;">SEE QUOTE</td> </tr> </table>		SEE QUOTE																																																														
SEE QUOTE																																																																				
Invoice To Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax Email 2		NUMBER OF CONTAINERS (vertical text) SAMPLES ON HOLD (vertical text) SUSPECTED HAZARD (see Special Instructions) (vertical text)																																																																
Project Information ALS Account # / Quote #: Job #: PO / AFE: LSD:		Oil and Gas Required Fields (client use) AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:																																																																		
ALS Lab Work Order # (lab use only): L2655778		ALS Contact: Sampler:																																																																		
<table border="1"> <thead> <tr> <th>ALS Sample # (lab use only)</th> <th>Sample Identification and/or Coordinates (This description will appear on the report)</th> <th>Date (dd-mmm-yy)</th> <th>Time (hh:mm)</th> <th>Sample Type</th> </tr> </thead> <tbody> <tr><td>1</td><td>383953</td><td>10/26/21</td><td>9:25</td><td></td></tr> <tr><td>2</td><td>364074</td><td></td><td>9:44</td><td></td></tr> <tr><td>3</td><td>364077</td><td></td><td>9:54</td><td></td></tr> <tr><td>4</td><td>364004</td><td></td><td>10:08</td><td></td></tr> <tr><td>5</td><td>363988</td><td></td><td>10:21</td><td></td></tr> <tr><td>6</td><td>333597</td><td></td><td>10:34</td><td></td></tr> <tr><td>7</td><td>384060</td><td></td><td>11:03</td><td></td></tr> <tr><td>8</td><td>383971</td><td></td><td>11:25</td><td></td></tr> <tr><td>9</td><td>383940</td><td></td><td>13:07</td><td></td></tr> <tr><td>10</td><td>333633</td><td></td><td>13:26</td><td></td></tr> <tr><td>11</td><td>364160</td><td></td><td>13:49</td><td></td></tr> <tr><td>12</td><td>333662</td><td></td><td>14:09</td><td></td></tr> </tbody> </table>		ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	1	383953	10/26/21	9:25		2	364074		9:44		3	364077		9:54		4	364004		10:08		5	363988		10:21		6	333597		10:34		7	384060		11:03		8	383971		11:25		9	383940		13:07		10	333633		13:26		11	364160		13:49		12	333662		14:09	
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12	333662		14:09																																																																	
Drinking Water (DW) Samples (client use) Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only) 7.7°C		SAMPLE CONDITION AS RECEIVED (lab use only) Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input type="checkbox"/> INITIAL COOLER TEMPERATURES °C: 7.7°C FINAL COOLER TEMPERATURES °C: 8.9°C																																																																
SHIPMENT RELEASE (client use) Released by: Date: Time:		INITIAL SHIPMENT RECEPTION (lab use only) Received by: Date: Time:		FINAL SHIPMENT RECEPTION (lab use only) Received by: Date: Time:																																																																

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2016 FRONT

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

APPENDIX

H-3 *SURFACE WATER*

**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.
 Lakefield - Ontario - K0L 2H0
 Phone: 705-652-2000 FAX: 705-652-6365

Project : Salford Landfill, Sedimentation
 Ponds

24-March-2021

WSP Canada Inc.

Attn : Albert Siertsema

55 King Street, Suite 700
 St. Catharines, ON
 L2R 3H5, Canada

Phone: 905-687-1771 x 240
 Fax:

Date Rec. : 17 March 2021
LR Report: CA14326-MAR21
Reference: Oxford County Landfill,
 Albert Siertsema

Copy: 1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: SW1	6: SW7
Sample Date & Time					15-Mar-21 13:00	15-Mar-21 14:00
Temp Upon Receipt [°C]	---	---	---	---	6.0	6.0
BOD5 [mg/L]	17-Mar-21	17:39	22-Mar-21	13:54	195	10
pH [No unit]	18-Mar-21	16:08	23-Mar-21	08:10	7.83	8.19
Alkalinity [mg/L as CaCO3]	18-Mar-21	16:08	23-Mar-21	08:10	537	262
Conductivity [uS/cm]	17-Mar-21	14:26	18-Mar-21	11:32	1640	823
TSS [mg/L]	17-Mar-21	10:55	19-Mar-21	09:54	55	32
TDS [mg/L]	17-Mar-21	09:05	18-Mar-21	15:21	1000	486
Colour [TCU]	17-Mar-21	09:33	18-Mar-21	09:22	63	19
Turbidity [NTU]	17-Mar-21	10:42	17-Mar-21	14:02	81.6	20.2
COD [mg/L]	17-Mar-21	12:00	22-Mar-21	13:55	325	49
F [mg/L]	17-Mar-21	12:50	18-Mar-21	08:09	0.15	0.13
DOC [mg/L]	17-Mar-21	15:14	18-Mar-21	16:48	139	16
Cl [mg/L]	24-Mar-21	08:22	24-Mar-21	14:25	180	83
SO4 [mg/L]	24-Mar-21	08:25	24-Mar-21	14:25	77	62
NO2 [as N mg/L]	19-Mar-21	01:09	19-Mar-21	14:32	0.14	< 0.03
NO3 [as N mg/L]	19-Mar-21	01:09	19-Mar-21	14:32	< 0.06	0.09
NO2+NO3 [as N mg/L]	19-Mar-21	01:09	19-Mar-21	14:32	0.14	0.09
NH3+NH4 [as N mg/L]	17-Mar-21	18:18	20-Mar-21	14:03	37.2	5.7
TKN [as N mg/L]	17-Mar-21	19:31	22-Mar-21	13:48	41.0	7.0
4AAP-Phenolics [mg/L]	17-Mar-21	14:00	22-Mar-21	13:02	0.111	0.002
Hardness [mg/L as CaCO3]	22-Mar-21	13:51	23-Mar-21	16:29	515	307
P (tot) [mg/L]	22-Mar-21	13:51	23-Mar-21	16:29	0.786	0.084
Fe (tot) [mg/L]	22-Mar-21	13:51	23-Mar-21	16:29	2.86	0.820

Temperature of Sample upon Receipt: 6 degrees C
 Cooling Agent Present: Yes
 Custody Seal Present: Yes

Chain of Custody Number: NA

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar -solution	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Biochemical Oxygen Demand (BOD5)	Biochemical Oxygen Demand (BOD5)	ME-CA-[ENV]EWL-LAK-AN-007
Chemical Oxygen Demand	Chemical Oxygen Demand	ME-CA-[ENV]EWL-LAK-AN-009
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness	Hardness (CaCO3) by ICP	ME-CA-[ENV]SPE-LAK-AN-003
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrate + Nitrite (as N)	Total Nitrate/Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Total Dissolved Solids	Total Dissolved Solids by Gravimetric	ME-CA-[ENV]EWL-LAK-AN-005
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Total Suspended Solids	Total Suspended Solids	ME-CA-[ENV]EWL-LAK-AN-004
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003

Brad Moore Hon. B.Sc
Project Specialist,
Environment, Health & Safety



Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
						%							
<i>Alkalinity - QCBatchID: EWL0308-MAR21</i>													
Alkalinity	2	mg/L as Ca	< 2			2	20	104	80	120	NA		
<i>Ammonia by SFA - QCBatchID: SKA0164-MAR21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			1	10	99	90	110	93	75	125
<i>Ammonia by SFA - QCBatchID: SKA0177-MAR21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			3	10	97	90	110	86	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5030-MAR21</i>													
Chloride	1	mg/L	<1			0	20	105	80	120	91	75	125
Sulphate	2	mg/L	<2			2	20	101	80	120	81	75	125
<i>Anions by IC - QCBatchID: DIO0304-MAR21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	100	80	120	99	75	125
Nitrate + Nitrite (as N)	0.06	mg/L	<0.06			NA		NA			NA		
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	96	80	120	96	75	125
<i>Biochemical Oxygen Demand - QCBatchID: BOD0037-MAR21</i>													
Biochemical Oxygen Demand (BOD5)	2	mg/L	< 2			12	30	99	70	130	NV	70	130
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0286-MAR21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			0	20	99	90	110	100	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0276-MAR21</i>													
Chemical Oxygen Demand	8	mg/L	<8			4	20	98	80	120	100	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0295-MAR21</i>													
Chemical Oxygen Demand	8	mg/L	<8			6	20	98	80	120	99	75	125
<i>Colour - QCBatchID: EWL0272-MAR21</i>													
Colour	3	TCU	< 3			0	10	100	80	120	NA		
<i>Conductivity - QCBatchID: EWL0283-MAR21</i>													
Conductivity	2	uS/cm	< 2			0	20	99	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0278-MAR21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	93	90	110	93	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0108-MAR21</i>													
Iron (total)	0.007	mg/L	<0.007			ND	20	98	90	110	NV	70	130
Phosphorus (total)	0.003	mg/L	<0.003			ND	20	96	90	110	NV	70	130
<i>pH - QCBatchID: EWL0308-MAR21</i>													
pH	0.05	No unit	NA			0		101			NA		
<i>Phenols by SFA - QCBatchID: SKA0161-MAR21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	118	80	120	99	75	125
<i>Phenols by SFA - QCBatchID: SKA0194-MAR21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	110	80	120	91	75	125



SGS Canada Inc.
 P.O. Box 4300 - 185 Concession St.
 Lakefield - Ontario - KOL 2H0
 Phone: 705-652-2000 FAX: 705-652-6365

Project : Salford Landfill, Sedimentation Ponds
LR Report : CA14326-MAR21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
%													
<i>Solids Analysis - QCBatchID: EWL0270-MAR21</i>													
Total Dissolved Solids	30	mg/L	<30			2	20	96	90	110	NA		
<i>Suspended Solids - QCBatchID: EWL0275-MAR21</i>													
Total Suspended Solids	2	mg/L	< 2			5	10	98	90	110	NA		
<i>Total Nitrogen - QCBatchID: SKA0175-MAR21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			0	10	98	90	110	94	75 125	
<i>Total Nitrogen - QCBatchID: SKA0189-MAR21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			1	10	97	90	110	114	75 125	
<i>Turbidity - QCBatchID: EWL0274-MAR21</i>													
Turbidity	0.10	NTU	< 0.10			2	10	99	90	110	NA		



SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

WSP Canada Inc.
Attn : Albert Siertsema

55 King Street, Suite 700
St. Catharines, ON
L2R 3H5, Canada

Phone: 905-687-1771 x 240
Fax:

Project : Salford Landfill, SW Stations

24-March-2021

Date Rec. : 17 March 2021
LR Report: CA14327-MAR21
Reference: Oxford County Landfill, Albert Siertsema

Copy: 1

CERTIFICATE OF ANALYSIS Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: SW4	6: SW8	7: SW9	8: SWDUP
Sample Date & Time					15-Mar-21 11:40	15-Mar-21 13:30	15-Mar-21 12:15	15-Mar-21
Temp Upon Receipt [°C]	---	---	---	---	6.0	6.0	6.0	6.0
pH [No unit]	18-Mar-21	11:38	18-Mar-21	15:35	7.41	8.00	8.01	8.10
Conductivity [uS/cm]	17-Mar-21	14:26	18-Mar-21	11:32	336	543	876	542
Colour [TCU]	17-Mar-21	09:33	18-Mar-21	09:22	25	9	20	8
Turbidity [NTU]	17-Mar-21	10:42	17-Mar-21	14:02	5.34	6.53	11.2	6.99
Cl [mg/L]	24-Mar-21	08:22	24-Mar-21	14:28	4	34	89	34
F [mg/L]	17-Mar-21	12:50	18-Mar-21	08:09	< 0.06	0.12	0.13	0.12
Tot.Reactive P [mg/L]	17-Mar-21	10:51	17-Mar-21	14:14	0.13	< 0.03	0.05	0.03
DOC [mg/L]	23-Mar-21	16:37	24-Mar-21	15:11	6.6	4.0	14.9	3.8
NO2 [as N mg/L]	19-Mar-21	01:09	19-Mar-21	14:32	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	19-Mar-21	01:09	19-Mar-21	14:32	< 0.06	3.08	0.12	3.19
NO2+NO3 [as N mg/L]	19-Mar-21	01:09	19-Mar-21	14:32	< 0.06	3.08	0.12	3.19
NH3+NH4 [as N mg/L]	17-Mar-21	18:18	18-Mar-21	14:45	0.1	< 0.1	6.7	< 0.1
TKN [as N mg/L]	17-Mar-21	19:31	22-Mar-21	13:49	< 0.5	< 0.5	8.3	< 0.5



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.

Lakefield - Ontario - KOL 2HO

Phone: 705-652-2000 FAX: 705-652-6365

Project : Salford Landfill, SW Stations

LR Report : CA14327-MAR21

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: SW4	6: SW8	7: SW9	8: SWDUP
4AAP-Phenolics [mg/L]	17-Mar-21	14:00	18-Mar-21	14:59	< 0.002	< 0.002	< 0.002	< 0.002
Hardness [mg/L as CaCO3]	19-Mar-21	12:32	24-Mar-21	10:18	199	280	346	293
Ca (tot) [mg/L]	19-Mar-21	12:32	24-Mar-21	10:18	63.7	86.3	99.3	89.8
Fe (tot) [mg/L]	19-Mar-21	12:32	24-Mar-21	10:18	3.48	0.350	1.02	0.365
P (tot) [mg/L]	19-Mar-21	12:32	24-Mar-21	10:18	0.581	0.052	0.129	0.057
Mg (tot) [mg/L]	19-Mar-21	12:32	24-Mar-21	10:18	9.75	15.7	23.9	16.7

Temperature of Sample upon Receipt: 6 degrees C

Cooling Agent Present: Yes

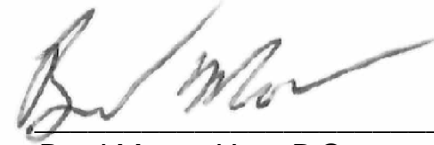
Custody Seal Present: Yes

Chain of Custody Number: NA

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar -solution	ME-CA-[ENV]SFA-LAK-AN-006
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Calcium (total)	Ca by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness	Hardness (CaCO3) by ICP	ME-CA-[ENV]SPE-LAK-AN-003
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Magnesium (total)	Mg by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrate + Nitrite (as N)	Total Nitrate/Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Phosphorus (total reactive)	Tot. Reactive Phos. by Skalar or Spec.- no reagents or heat	ME-CA-[ENV]SFA-LAK-AN-004

Parameter	Description	SGS Method Code
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



*Brad Moore Hon. B.Sc
Project Specialist,
Environment, Health & Safety*



Quality Control Report

Parameter	Reporting Limit	Unit	Method Blank	Inorganic Analysis									
				Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
				%									
<i>Ammonia by SFA - QCBatchID: SKA0164-MAR21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			1	10	99	90	110	93	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5030-MAR21</i>													
Chloride	1	mg/L	<1			0	20	105	80	120	91	75	125
<i>Anions by IC - QCBatchID: DIO0304-MAR21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	100	80	120	99	75	125
Nitrate + Nitrite (as N)	0.06	mg/L	<0.06			NA		NA			NA		
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	96	80	120	96	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0381-MAR21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			6	20	99	90	110	109	75	125
<i>Colour - QCBatchID: EWL0272-MAR21</i>													
Colour	3	TCU	< 3			0	10	100	80	120	NA		
<i>Conductivity - QCBatchID: EWL0283-MAR21</i>													
Conductivity	2	uS/cm	< 2			0	20	99	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0278-MAR21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	93	90	110	93	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0104-MAR21</i>													
Calcium (total)	0.01	mg/L	<0.01			5	20	105	90	110	101	70	130
Iron (total)	0.007	mg/L	<0.007			2	20	104	90	110	NV	70	130
Magnesium (total)	0.001	mg/L	<0.001			7	20	107	90	110	102	70	130
Phosphorus (total)	0.003	mg/L	<0.003			9	20	101	90	110	NV	70	130
<i>pH - QCBatchID: EWL0296-MAR21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0161-MAR21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	118	80	120	99	75	125
<i>Phenols by SFA - QCBatchID: SKA0166-MAR21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	100	80	120	86	75	125
<i>Reactive Phosphorus by SFA - QCBatchID: SKA0155-MAR21</i>													
Phosphorus (total reactive)	0.03	mg/L	<0.03			ND	10	100	90	110	90	75	125
<i>Total Nitrogen - QCBatchID: SKA0160-MAR21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			2	10	95	90	110	98	75	125
<i>Total Nitrogen - QCBatchID: SKA0175-MAR21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			0	10	98	90	110	94	75	125
<i>Total Nitrogen - QCBatchID: SKA0189-MAR21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			1	10	97	90	110	114	75	125
<i>Turbidity - QCBatchID: EWL0274-MAR21</i>													



SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

Project : Salford Landfill, SW Stations
LR Report : CA14327-MAR21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
Turbidity	0.10	NTU	< 0.10			2	10	99	90	110	NA		



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

WSP Canada Inc.

Attn : Albert Siertsema

1821 Provincial Road, Unit 10, Windsor
Canada, N8W 5V7
Phone: 905-687-1771 x 240, Fax:

Project : 111-53036-05, Salford Landfill

19-April-2021

Date Rec. : 13 April 2021

LR Report: CA14345-APR21

Reference: 111-53036-05, Salford Landfill, Albert Siertsema

Copy: 1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: SW7	7: SW8
Sample Date & Time						12-Apr-21 08:00	12-Apr-21 08:00
Temp Upon Receipt [°C]	---	---	---	---	---	9.0	9.0
BOD5 [mg/L]	13-Apr-21	16:24	19-Apr-21	13:29	2	7	4
pH [No unit]	13-Apr-21	10:26	13-Apr-21	15:46	0.05	8.26	8.19
Conductivity [uS/cm]	13-Apr-21	10:26	13-Apr-21	15:46	2	825	645
TDS [mg/L]	13-Apr-21	14:27	15-Apr-21	15:16	30	474	389
TSS [mg/L]	13-Apr-21	09:42	15-Apr-21	10:14	2	57	30
Turbidity [NTU]	13-Apr-21	22:16	14-Apr-21	08:25	0.10	67.3	18.2
\ [TCU]	14-Apr-21	09:49	15-Apr-21	15:51	3	22	29
DOC-Low [mg/L]	14-Apr-21	15:48	16-Apr-21	09:33		14.2	11.3
Hardness [mg/L as CaCO3]	16-Apr-21	13:19	16-Apr-21	17:01	0.05	300	362
Alkalinity [mg/L as CaCO3]	13-Apr-21	10:26	13-Apr-21	15:46	2	239	181
F [mg/L]	14-Apr-21	08:35	14-Apr-21	14:49		0.16	0.13
Cl [mg/L]	14-Apr-21	13:56	14-Apr-21	15:58	1	86	80
SO4 [mg/L]	14-Apr-21	13:51	14-Apr-21	15:58	2	60	27
NO2 [as N mg/L]	13-Apr-21	15:20	14-Apr-21	10:36	0.03	< 0.03	< 0.03
NO3 [as N mg/L]	13-Apr-21	15:20	14-Apr-21	10:36	0.06	0.28	1.96
NO2+NO3 [as N mg/L]	13-Apr-21	15:20	14-Apr-21	10:36	0.06	0.28	1.96
NH3+NH4 [as N mg/L]	13-Apr-21	19:10	14-Apr-21	15:32	0.1	4.3	< 0.1
TKN [as N mg/L]	13-Apr-21	19:39	14-Apr-21	08:00	0.5	6.3	1.4



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2H0
Phone: 705-652-2000 FAX: 705-652-6365

Project : 111-53036-05, Salford Landfill

LR Report : CA14345-APR21

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: SW7	7: SW8
4AAP-Phenolics [mg/L]	13-Apr-21	12:18	13-Apr-21	15:49	0.001	< 0.001	< 0.001
P (tot) [mg/L]	16-Apr-21	13:19	16-Apr-21	17:01	0.003	0.113	0.233
COD [mg/L]	14-Apr-21	09:28	16-Apr-21	16:16	8	32	29
Fe (tot) [mg/L]	16-Apr-21	13:19	16-Apr-21	17:01	0.01	1.46	1.86

PWQO - Provincial Water Quality Objectives

Limits based on MOE PIBS 3303E publication July 1994 reprinted February 1999

a PWQO limit based on pH >6.5-9.0 (at pH 4.5-5.5 PWQO = 15ug/L, pH >5.5-6.5 PWQO 10% above background levels in geological area.

b PWQO limit based on Hardness <75 mg/L (For Hardness >75 mg/L PWQO = 1100 ug/L)

c PWQO limit based on Hardness 0-100 mg/L (For Hardness >100 mg/L PWQO = 0.5 ug/L)

d PWQO limit based on Cr VI (PWQO limit for Cr III = 8.9 ug/L)

e PWQO limit based on Hardness 0-20 (For Hardness >20 mg/L PWQO = 5 ug/L)

f PWQO limit based on Hardness <30 (For Hardness 30-80 PWQO = 3 ug/L, & >80 PWQO=5)

Temperature of Sample upon Receipt: 9 degrees C

Cooling Agent Present: Yes

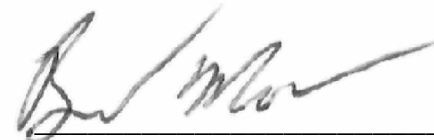
Custody Seal Present: Yes

Chain of Custody Number: NA

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar - surface waters	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Biochemical Oxygen Demand (BOD5)	Biochemical Oxygen Demand (BOD5)	ME-CA-[ENV]EWL-LAK-AN-007
Chemical Oxygen Demand	Chemical Oxygen Demand	ME-CA-[ENV]EWL-LAK-AN-009
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness	Hardness (CaCO3) by ICP	ME-CA-[ENV]SPE-LAK-AN-003
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006

Parameter	Description	SGS Method Code
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrate + Nitrite (as N)	Total Nitrate/Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Total Dissolved Solids	Total Dissolved Solids by Gravimetric	ME-CA-[ENV]EWL-LAK-AN-005
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Total Suspended Solids	Total Suspended Solids	ME-CA-[ENV]EWL-LAK-AN-004
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



Brad Moore Hon. B.Sc
Project Specialist,
Environment, Health & Safety



Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
						%							
<i>Alkalinity - QCBatchID: EWL0203-APR21</i>													
Alkalinity	2	mg/L as Ca	< 2			2	20	102	80	120	NA		
<i>Ammonia by SFA - QCBatchID: SKA0120-APR21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			5	10	96	90	110	100	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5030-APR21</i>													
Chloride	1	mg/L	<1			0	20	105	80	120	103	75	125
Sulphate	2	mg/L	<2			1	20	106	80	120	104	75	125
<i>Anions by IC - QCBatchID: DIO0180-APR21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	103	80	120	104	75	125
Nitrate + Nitrite (as N)	0.06	mg/L	<0.06			NA		NA			NA		
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	97	80	120	102	75	125
<i>Biochemical Oxygen Demand - QCBatchID: BOD0026-APR21</i>													
Biochemical Oxygen Demand (BOD5)	2	mg/L	< 2			5	30	113	70	130	114	70	130
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0241-APR21</i>													
Dissolved Organic Carbon	0.5	mg/L	<0.5			0	20	100	90	110	102	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0226-APR21</i>													
Chemical Oxygen Demand	8	mg/L	<8			8	20	90	80	120	98	75	125
<i>Colour - QCBatchID: EWL0227-APR21</i>													
Colour	3	TCU	< 3			0	10	100	80	120	NA		
<i>Conductivity - QCBatchID: EWL0203-APR21</i>													
Conductivity	2	uS/cm	< 2			1	20	98	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0223-APR21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	97	90	110	105	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0064-APR21</i>													
Iron (total)	0.01	mg/L	<0.007			0	20	98	90	110	102	70	130
Phosphorus (total)	0.003	mg/L	<0.003			ND	20	97	90	110	NV	70	130
<i>pH - QCBatchID: EWL0203-APR21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0111-APR21</i>													
4AAP-Phenolics	0.001	mg/L	<0.001			ND	10	107	90	110	98	75	125
<i>Solids Analysis - QCBatchID: EWL0200-APR21</i>													
Total Dissolved Solids	30	mg/L	<30			1	20	94	90	110	NA		
<i>Suspended Solids - QCBatchID: EWL0202-APR21</i>													
Total Suspended Solids	2	mg/L	< 2			0	10	100	90	110	NA		
<i>Total Nitrogen - QCBatchID: SKA0113-APR21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			3	10	94	90	110	NV	75	125



SGS Canada Inc.
 P.O. Box 4300 - 185 Concession St.
 Lakefield - Ontario - KOL 2H0
 Phone: 705-652-2000 FAX: 705-652-6365

Project : 111-53036-05, Salford Landfill
LR Report : CA14345-APR21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Turbidity - QCBatchID: EWL0220-APR21</i>													
Turbidity	0.10	NTU	< 0.10			1	10	99	90	110	NA		

29-April-2021

WSP Canada Inc.
Attn : Albert Siertsema

1821 Provincial Road, Unit 10, Windsor
Canada, N8W 5V7
Phone: 905-687-1771 x 240, Fax:

Date Rec. : 26 April 2021
LR Report: CA30387-APR21
Reference: 191-06761-01, Albert Siertsema

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CERTIFICATE OF ANALYSIS

Preliminary Report

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: SW7	7: SW8
Sample Date & Time						26-Apr-21 08:30	26-Apr-21 09:00
Temp Upon Receipt [@ London Lab °C]	***	***	***	***	***	***	***
Temp Upon Receipt [@ Lakefield Lab °C]	***	***	***	***	***	***	***
BOD5 [mg/L]	***	***	***	***	***	***	***
pH [No unit]	27-Apr-21	14:03	29-Apr-21	11:21	0.05	8.26	8.11
Conductivity [uS/cm]	27-Apr-21	14:03	29-Apr-21	11:21	2	767	696
TDS [mg/L]	27-Apr-21	16:16	29-Apr-21	10:05	30	486	417
TSS [mg/L]	27-Apr-21	08:09	29-Apr-21	13:39	2	47	24
Hardness [mg/L as CaCO3]	29-Apr-21	10:48	29-Apr-21	15:01	0.05	256	261
Alkalinity [mg/L as CaCO3]	27-Apr-21	14:03	29-Apr-21	11:21	2	215	186
Cl [mg/L]	29-Apr-21	10:52	29-Apr-21	15:53	1	88	79
SO4 [mg/L]	29-Apr-21	10:47	29-Apr-21	15:53	2	64	29
NO2 [as N mg/L]	27-Apr-21	16:27	28-Apr-21	15:47	0.03	< 0.03	< 0.03
NO3 [as N mg/L]	27-Apr-21	16:27	28-Apr-21	15:47	0.06	0.31	5.14
NO2+NO3 [as N mg/L]	27-Apr-21	16:27	28-Apr-21	15:47	0.06	0.31	5.14
NH3+NH4 [as N mg/L]	27-Apr-21	17:05	29-Apr-21	09:20	0.1	3.7	< 0.1
TKN [as N mg/L]	27-Apr-21	15:49	28-Apr-21	09:53	0.5	4.8	< 0.5
4AAP-Phenolics [mg/L]	27-Apr-21	07:11	28-Apr-21	14:02	0.001	< 0.001	< 0.001
P (tot) [mg/L]	29-Apr-21	10:48	29-Apr-21	15:01	0.003	0.115	0.125
COD [mg/L]	28-Apr-21	08:07	29-Apr-21	09:44	8	39	11
Fe (tot) [mg/L]	29-Apr-21	10:48	29-Apr-21	15:01	0.01	0.61	0.56
DOC [mg/L]	27-Apr-21	12:17	28-Apr-21	13:06	1	12	6
F [mg/L]	27-Apr-21	10:15	27-Apr-21	13:27	0.06	0.16	0.10
Colour [TCU]	27-Apr-21	10:14	29-Apr-21	14:20	3	18	11
Turbidity [NTU]	27-Apr-21	20:06	28-Apr-21	09:05	0.10	61.4	22.3

PWQO - Provincial Water Quality Objectives

Limits based on MOE PIBS 3303E publication July 1994 reprinted February 1999

a PWQO limit based on pH >6.5-9.0 (at pH 4.5-5.5 PWQO = 15ug/L, pH >5.5-6.5 PWQO 10% above background levels in geological area.

b PWQO limit based on Hardness <75 mg/L (For Hardness >75 mg/L PWQO = 1100 ug/L)

c PWQO limit based on Hardness 0-100 mg/L (For Hardness >100 mg/L PWQO = 0.5 ug/L)

d PWQO limit based on Cr VI (PWQO limit for Cr III = 8.9 ug/L)

e PWQO limit based on Hardness 0-20 (For Hardness >20 mg/L PWQO = 5 ug/L)

f PWQO limit based on Hardness <30 (For Hardness 30-80 PWQO = 3 ug/L, & >80 PWQO=5)

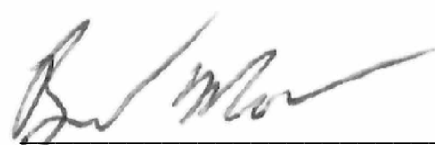
Temperature of Sample upon Receipt: degrees C

Cooling Agent Present:

Custody Seal Present:
Chain of Custody Number:

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar - surface waters	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EJWL-LAK-AN-006
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Biochemical Oxygen Demand (BOD5)	Biochemical Oxygen Demand (BOD5)	ME-CA-[ENV]EJWL-LAK-AN-007
Chemical Oxygen Demand	Chemical Oxygen Demand	ME-CA-[ENV]EJWL-LAK-AN-009
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EJWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EJWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EJWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Skalar	ME-CA-[ENV]SFA-LAK-AN-009
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EJWL-LAK-AN-014
Hardness	Hardness (CaCO3) by ICP	ME-CA-[ENV]SPE-LAK-AN-003
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrate + Nitrite (as N)	Total Nitrate/Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EJWL-LAK-AN-006
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EJWL-LAK-AN-026
Total Dissolved Solids	Total Dissolved Solids by Gravimetric	ME-CA-[ENV]EJWL-LAK-AN-005
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Total Suspended Solids	Total Suspended Solids	ME-CA-[ENV]EJWL-LAK-AN-004
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EJWL-LAK-AN-003



Brad Moore Hon. B.Sc
Project Specialist,
Environment, Health & Safety



Quality Control Report

Parameter	Reporting Limit	Unit	Method Blank	Inorganic Analysis									
				Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
				%									
<i>Alkalinity - QCBatchID: EWL0466-APR21</i>													
Alkalinity	2	mg/L as Ca	< 2			ND	20	98	80	120	NA		
<i>Ammonia by SFA - QCBatchID: SKA0255-APR21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			1	10	99	90	110	101	75	125
<i>Ammonia by SFA - QCBatchID: SKA0259-APR21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			ND	10	98	90	110	91	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5066-APR21</i>													
Chloride	1	mg/L	<1			0	20	105	80	120	98	75	125
Sulphate	2	mg/L	<2			2	20	105	80	120	103	75	125
<i>Anions by IC - QCBatchID: DIO0452-APR21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	104	80	120	106	75	125
Nitrate + Nitrite (as N)	0.06	mg/L	<0.06			NA		NA			NA		
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	97	80	120	91	75	125
<i>Carbon by SFA - QCBatchID: SKA0249-APR21</i>													
Dissolved Organic Carbon	1	mg/L	<1			1	20	101	90	110	99	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0481-APR21</i>													
Chemical Oxygen Demand	8	mg/L	<8			2	20	102	80	120	103	75	125
<i>Colour - QCBatchID: EWL0457-APR21</i>													
Colour	3	TCU	< 3			2	10	105	80	120	NA		
<i>Conductivity - QCBatchID: EWL0466-APR21</i>													
Conductivity	2	uS/cm	< 2			2	20	99	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0458-APR21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	103	90	110	102	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0143-APR21</i>													
Iron (total)	0.01	mg/L	<0.007			0	20	100	90	110	125	70	130
Phosphorus (total)	0.003	mg/L	<0.003			ND	20	106	90	110	NV	70	130
<i>pH - QCBatchID: EWL0466-APR21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0251-APR21</i>													
4AAP-Phenolics	0.001	mg/L	<0.001			6	10	99	90	110	102	75	125
<i>Solids Analysis - QCBatchID: EWL0455-APR21</i>													
Total Dissolved Solids	30	mg/L	<30			2	20	99	90	110	NA		
<i>Suspended Solids - QCBatchID: EWL0451-APR21</i>													
Total Suspended Solids	2	mg/L	< 2			4	10	94	90	110	NA		
<i>Total Nitrogen - QCBatchID: SKA0244-APR21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			ND	10	98	90	110	88	75	125



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Project : 191-0671-01
LR Report : CA30387-APR21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Turbidity - QCBatchID: EWL0478-APR21</i>													
Turbidity	0.10	NTU	< 0.10			1	10	96	90	110	NA		



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WSP Canada Inc.
Attn : Albert Siertsema

55 King Street, Suite 700
St. Catharines, ON
L2R 3H5, Canada

Phone: 905-687-1771 x 240
Fax:

Project : 111-5306-05-100-1002, GW

31-May-2021

Date Rec. : 18 May 2021
LR Report: CA14746-MAY21
Reference: 111-5306-05-100-1002, Albert Siertsema

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed Date	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: 00-01	7: 98-7	8: 98-12	9: 03-6	10: 98-11	11: 012R	12: 013R
Sample Date & Time						17-May-21 13:30	17-May-21 12:40	17-May-21 12:50	17-May-21 13:15	17-May-21 13:00	17-May-21 12:00	17-May-21 12:15
Temp Upon Receipt [@ London Lab °C]	***	***	***	***	***	***	***	***	***	***	***	***
Temp Upon Receipt [@ Lakefield Lab °C]	---	---	---	---	---	14.0	14.0	14.0	14.0	14.0	14.0	14.0
pH [No unit]	20-May-21	08:06	20-May-21	15:47	0.05	---	---	---	---	---	---	---
Conductivity [uS/cm]	20-May-21	08:06	20-May-21	15:47	2	---	---	---	---	---	---	---
Alkalinity [mg/L as CaCO3]	20-May-21	08:06	20-May-21	15:47	2	---	---	---	---	---	---	---
Turbidity [NTU]	19-May-21	16:47	20-May-21	08:57	---	---	---	---	---	---	---	---
Colour [TCU]	21-May-21	11:03	21-May-21	11:22	---	---	---	---	---	---	---	---
CO3 [mg/L as CaCO3]	20-May-21	08:06	20-May-21	15:47	2	---	---	---	---	---	---	---
HCO3 [mg/L as CaCO3]	20-May-21	08:06	20-May-21	15:47	2	---	---	---	---	---	---	---
F [mg/L]	26-May-21	14:23	26-May-21	16:08	---	---	---	---	---	---	---	---
DOC [mg/L]	19-May-21	22:27	25-May-21	15:29	1.0	---	---	---	---	---	---	---
Cl [mg/L]	26-May-21	06:28	31-May-21	16:16	1	73	38	120	71	220	13	11
SO4 [mg/L]	26-May-21	06:28	31-May-21	16:16	2	---	---	---	---	---	---	---
NO2 [as N mg/L]	21-May-21	14:09	26-May-21	11:09	0.03	---	---	---	---	---	---	---
NO3 [as N mg/L]	21-May-21	14:09	26-May-21	11:09	0.06	---	---	---	---	---	---	---
4AAP-Phenolics [mg/L]	19-May-21	12:26	20-May-21	10:01	0.002	---	---	---	---	---	---	---
Hardness [mg/L as CaCO3]	21-May-21	18:05	27-May-21	16:25	---	---	---	---	---	---	---	---
Ca (diss) [mg/L]	21-May-21	18:05	27-May-21	16:25	0.01	---	---	---	---	---	---	---

Online LIMS

0002513230



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Project : 111-5306-05-100-1002, GW
LR Report : CA14746-MAY21

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: 00-01	7: 98-7	8: 98-12	9: 03-6	10: 98-11	11: 012R	12: 013R
Mg (diss) [mg/L]	21-May-21	18:05	27-May-21	16:25	0.001	---	---	---	---	---	---	---
Na (diss) [mg/L]	21-May-21	18:05	27-May-21	16:25	0.01	---	---	---	---	---	---	---
K (diss) [mg/L]	21-May-21	18:05	27-May-21	16:25	0.009	---	---	---	---	---	---	---

Analysis	13: 00-02	14: 98-13	15: CH1-DUP	16: 03-5	17: 03-3	18: 03-4
Sample Date & Time	17-May-21 13:45	17-May-21 12:25	17-May-21	17-May-21 14:45	17-May-21 14:30	17-May-21 14:00
Temp Upon Receipt [@ London Lab °C]	***	***	***	***	***	***
Temp Upon Receipt [@ Lakefield Lab °C]	14.0	14.0	14.0	14.0	14.0	14.0
pH [No unit]	---	---	---	7.87	7.89	7.93
Conductivity [uS/cm]	---	---	---	1350	1420	1400
Alkalinity [mg/L as CaCO3]	---	---	---	462	412	325
Turbidity [NTU]	---	---	---	70.7	15.4	4.32
Colour [TCU]	---	---	---	7	10	< 3
CO3 [mg/L as CaCO3]	---	---	---	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	---	---	---	462	412	325
F [mg/L]	---	---	---	0.23	0.08	0.31
DOC [mg/L]	---	---	---	6.9	4.5	2.9
Cl [mg/L]	60	76	11	180	270	320
SO4 [mg/L]	---	---	---	190	63	50
NO2 [as N mg/L]	---	---	---	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	---	---	---	< 0.06	0.91	0.30
4AAP-Phenolics [mg/L]	---	---	---	< 0.002	< 0.002	< 0.002
Hardness [mg/L as CaCO3]	---	---	---	629	527	592
Ca (diss) [mg/L]	---	---	---	143	157	156
Mg (diss) [mg/L]	---	---	---	66.0	32.7	49.1
Na (diss) [mg/L]	---	---	---	84.8	121	100
K (diss) [mg/L]	---	---	---	2.62	6.74	2.96

Temperature of Sample upon Receipt: 14 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar -solution	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Bicarbonate	Bicarbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Calcium (dissolved)	Ca by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Carbonate	Carbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness (dissolved)	Hardness (CaCO3) by ICP-MS dissolved	ME-CA-[ENV]SPE-LAK-AN-003
Magnesium (dissolved)	Mg by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Potassium (dissolved)	K by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sodium (dissolved)	Na by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003

Brad Moore Hon. B.Sc
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Project : 111-5306-05-100-1002, GW

LR Report : CA14746-MAY21

Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
						%							
<i>Alkalinity - QCBatchID: EWL0383-MAY21</i>													
Alkalinity	2	mg/L as Ca	< 2			3	20	96	80	120	NA		
<i>Anions by discrete analyzer - QCBatchID: DIO5072-MAY21</i>													
Chloride	1	mg/L	<1			0	20	101	80	120	85	75	125
Sulphate	2	mg/L	<2			0	20	108	80	120	95	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5089-MAY21</i>													
Chloride	1	mg/L	<1			ND	20	103	80	120	111	75	125
<i>Anions by IC - QCBatchID: DIO0405-MAY21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	101	80	120	98	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	99	80	120	100	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0380-MAY21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			6	20	102	90	110	101	75	125
<i>Carbonate/Bicarbonate - QCBatchID: EWL0383-MAY21</i>													
Bicarbonate	2	mg/L as Ca	< 2			3	10	NA	90	110	NA		
Carbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
<i>Colour - QCBatchID: EWL0415-MAY21</i>													
Colour	3	TCU	< 3			ND	10	105	80	120	NA		
<i>Conductivity - QCBatchID: EWL0383-MAY21</i>													
Conductivity	2	uS/cm	< 2			2	20	97	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0487-MAY21</i>													
Fluoride	0.06	mg/L	<0.06			0	10	102	90	110	103	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0103-MAY21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			2	20	102	90	110	102	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			2	20	110	90	110	100	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			1	20	104	90	110	100	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			2	20	107	90	110	99	70	130
<i>pH - QCBatchID: EWL0383-MAY21</i>													
pH	0.05	No unit	NA			0		101			NA		
<i>Phenols by SFA - QCBatchID: SKA0198-MAY21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	94	80	120	89	75	125
<i>Turbidity - QCBatchID: EWL0366-MAY21</i>													
Turbidity	0.10	NTU	< 0.10			1	10	100	90	110	NA		



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Project : 111-5306-05-100-1002, GW

27-May-2021

Date Rec. : 18 May 2021
LR Report: CA14748-MAY21
Reference: 111-5306-05-100-1002, Albert Siertsema

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CERTIFICATE OF ANALYSIS Final Report

Analysis	1: Analysis Start Date	3: Analysis Completed Date	5: RL	6: 141R	7: 111R	8: 00-03	9: 551R
Sample Date & Time				18-May-21 09:00	18-May-21 09:20	18-May-21 09:40	18-May-21 10:00
Temp Upon Receipt [@ London Lab °C]	***	***	***	***	***	***	***
Temp Upon Receipt [@ Lakefield Lab °C]	---	---	---	14.0	14.0	14.0	14.0
pH [No unit]	20-May-21	21-May-21	0.05	7.48	8.21	8.21	8.20
Conductivity [uS/cm]	20-May-21	21-May-21	2	2050	363	484	485
Alkalinity [mg/L as CaCO3]	20-May-21	21-May-21	2	614	135	226	228
Turbidity [NTU]	19-May-21	20-May-21		68.8	272	52.9	14.0
Colour [TCU]	21-May-21	21-May-21	3	8	9	< 3	< 3
CO3 [mg/L as CaCO3]	20-May-21	21-May-21	2	< 2	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	20-May-21	21-May-21	2	614	135	226	228
F [mg/L]	26-May-21	26-May-21	0.06	0.29	1.29	0.82	0.84
DOC [mg/L]	19-May-21	25-May-21	1.0	1.9	3.4	1.8	1.7
Cl [mg/L]	26-May-21	27-May-21	1	8	5	9	9
SO4 [mg/L]	26-May-21	27-May-21	2	610	76	44	44
NO2 [as N mg/L]	21-May-21	26-May-21	0.03	0.53	< 0.03	< 0.03	< 0.03



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Project : 111-5306-05-100-1002, GW

LR Report : CA14748-MAY21

Analysis	1: Analysis Start Date	3: Analysis Completed Date	5: RL	6: 141R	7: 111R	8: 00-03	9: 551R
NO3 [as N mg/L]	21-May-21	26-May-21	0.06	0.24	0.08	< 0.06	< 0.06
4AAP-Phenolics [mg/L]	19-May-21	20-May-21	0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hardness [mg/L as CaCO3]	21-May-21	27-May-21		1170	114	268	279
Ca (diss) [mg/L]	21-May-21	27-May-21	0.01	331	28.7	60.1	63.6
Mg (diss) [mg/L]	21-May-21	27-May-21	0.001	83.0	10.2	28.6	29.2
Na (diss) [mg/L]	21-May-21	27-May-21	0.01	25.3	41.7	13.6	12.8
K (diss) [mg/L]	21-May-21	27-May-21	0.009	1.71	0.993	1.19	1.18

Analysis	10: 552RA	11: 00-04	12: 999
Sample Date & Time	18-May-21 10:20	18-May-21 10:40	18-May-21 11:00
Temp Upon Receipt [@ London Lab °C]	***	***	***
Temp Upon Receipt [@ Lakefield Lab °C]	14.0	14.0	14.0
pH [No unit]	8.11	8.23	8.18
Conductivity [uS/cm]	701	691	363
Alkalinity [mg/L as CaCO3]	245	262	168
Turbidity [NTU]	22.1	80.7	0.16
Colour [TCU]	< 3	5	7
CO3 [mg/L as CaCO3]	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	245	262	168
F [mg/L]	0.50	0.66	2.05
DOC [mg/L]	5.6	1.8	2.3
Cl [mg/L]	65	52	3
SO4 [mg/L]	54	57	21
NO2 [as N mg/L]	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	0.06	< 0.06	0.12
4AAP-Phenolics [mg/L]	< 0.002	< 0.002	< 0.002



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Project : 111-5306-05-100-1002, GW
LR Report : CA14748-MAY21

Analysis	10: 552RA	11: 00-04	12: 999
Hardness [mg/L as CaCO3]	373	312	129
Ca (diss) [mg/L]	97.8	65.4	28.5
Mg (diss) [mg/L]	31.3	36.2	14.2
Na (diss) [mg/L]	19.1	41.6	34.4
K (diss) [mg/L]	1.26	2.08	1.76

Temperature of Sample upon Receipt: 14 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar -solution	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Bicarbonate	Bicarbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Calcium (dissolved)	Ca by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Carbonate	Carbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness (dissolved)	Hardness (CaCO3) by ICP-MS dissolved	ME-CA-[ENV]SPE-LAK-AN-003
Magnesium (dissolved)	Mg by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Potassium (dissolved)	K by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sodium (dissolved)	Na by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



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Project : 111-5306-05-100-1002, GW

LR Report : CA14748-MAY21

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Project : 111-5306-05-100-1002, GW

LR Report : CA14748-MAY21

Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
						%							
<i>Alkalinity - QCBatchID: EWL0383-MAY21</i>													
Alkalinity	2	mg/L as Ca	< 2			3	20	96	80	120	NA		
<i>Alkalinity - QCBatchID: EWL0386-MAY21</i>													
Alkalinity	2	mg/L as Ca	< 2			3	20	98	80	120	NA		
<i>Anions by discrete analyzer - QCBatchID: DIO5072-MAY21</i>													
Chloride	1	mg/L	<1			0	20	101	80	120	85	75	125
Sulphate	2	mg/L	<2			0	20	108	80	120	95	75	125
<i>Anions by IC - QCBatchID: DIO0405-MAY21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	101	80	120	98	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	99	80	120	100	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0380-MAY21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			6	20	102	90	110	101	75	125
<i>Carbonate/Bicarbonate - QCBatchID: EWL0383-MAY21</i>													
Bicarbonate	2	mg/L as Ca	< 2			3	10	NA	90	110	NA		
Carbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
<i>Carbonate/Bicarbonate - QCBatchID: EWL0386-MAY21</i>													
Bicarbonate	2	mg/L as Ca	< 2			3	10	NA	90	110	NA		
Carbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
<i>Colour - QCBatchID: EWL0415-MAY21</i>													
Colour	3	TCU	< 3			ND	10	105	80	120	NA		
<i>Conductivity - QCBatchID: EWL0383-MAY21</i>													
Conductivity	2	uS/cm	< 2			2	20	97	90	110	NA		
<i>Conductivity - QCBatchID: EWL0386-MAY21</i>													
Conductivity	2	uS/cm	< 2			2	20	100	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0487-MAY21</i>													
Fluoride	0.06	mg/L	<0.06			0	10	102	90	110	103	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0103-MAY21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			2	20	102	90	110	102	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			2	20	110	90	110	100	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			1	20	104	90	110	100	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			2	20	107	90	110	99	70	130
<i>pH - QCBatchID: EWL0383-MAY21</i>													
pH	0.05	No unit	NA			0		101			NA		
<i>pH - QCBatchID: EWL0386-MAY21</i>													
pH	0.05	No unit	NA			1		101			NA		
<i>Phenols by SFA - QCBatchID: SKA0198-MAY21</i>													



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Project : 111-5306-05-100-1002, GW
LR Report : CA14748-MAY21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	94	80	120	89	75	125
<i>Turbidity - QCBatchID: EWL0366-MAY21</i>													
Turbidity	0.10	NTU	< 0.10			1	10	100	90	110	NA		



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Project : 111-53036-05-100, GW

27-May-2021

Date Rec. : 14 May 2021
LR Report: CA30270-MAY21
Reference: 111-53036-05-100, Albert Siertsema

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CERTIFICATE OF ANALYSIS Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Start Date	4: Analysis Start Time Completed	5: RL	6: 381R	7: 231R	8: 232R	9: 233R
Sample Date & Time						13-May-21 09:45	13-May-21 10:00	13-May-21 10:10	13-May-21 11:00
Temp Upon Receipt [@ London Lab °C]	---	---	---	---	---	7.1	7.1	7.1	7.1
Temp Upon Receipt [@ Lakefield Lab °C]	---	---	---	---	---	8.0	8.0	8.0	8.0
Turbidity [NTU]	14-May-21	14:30	18-May-21	11:56		599	>4000	17.1	725
pH [No unit]	18-May-21	16:36	19-May-21	14:12	0.05	8.25	8.22	8.30	7.88
Conductivity [uS/cm]	18-May-21	16:36	19-May-21	14:12	2	866	340	522	1440
Alkalinity [mg/L as CaCO3]	18-May-21	16:36	19-May-21	14:12	2	395	159	221	479
CO3 [mg/L as CaCO3]	18-May-21	16:36	19-May-21	14:12		< 2	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	18-May-21	16:36	19-May-21	14:12		395	159	221	479
Colour [TCU]	21-May-21	11:03	21-May-21	11:24	3	< 3	6	3	< 3
F [mg/L]	20-May-21	15:35	21-May-21	08:03	0.06	0.31	1.72	0.91	< 0.06
DOC [mg/L]	18-May-21	14:56	20-May-21	19:51	1.0	2.2	1.6	1.7	3.3
Cl [mg/L]	27-May-21	12:05	27-May-21	16:23	1	7	2	10	5
SO4 [mg/L]	27-May-21	12:01	27-May-21	16:24	2	88	23	48	430
NO2 [as N mg/L]	19-May-21	13:09	21-May-21	12:57	0.03	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	19-May-21	13:09	21-May-21	12:57	0.06	< 0.06	< 0.06	0.13	< 0.06
4AAP-Phenolics [mg/L]	17-May-21	13:49	18-May-21	12:51	0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hardness [mg/L as CaCO3]	20-May-21	17:44	26-May-21	17:37		367	104	196	765
Ca (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.01	70.7	21.9	35.0	201
Mg (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.001	46.4	12.1	26.4	64.2
Na (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.01	22.1	33.8	34.1	9.25

OnLine LIMS

0002508903



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Project : 111-53036-05-100, GW

LR Report : CA30270-MAY21


Analysis	1: Analysis Start Date	2: Analysis Start Time Completed Date	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: 381R	7: 231R	8: 232R	9: 233R
K (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.009	2.00	1.06	1.28	1.61

Analysis	10: 101R	11: 562	12: 561	13: 263R	14: 571	15: 581	16: 591	17: 14
Sample Date & Time	13-May-21 12:00	13-May-21 13:30	13-May-21 14:00	13-May-21 15:00	13-May-21 15:30	13-May-21 15:45	13-May-21 16:00	13-May-21 15:10
Temp Upon Receipt [@ London Lab °C]	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
Temp Upon Receipt [@ Lakefield Lab °C]	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Turbidity [NTU]	305	189	1006	74.9	38.7	141	93.1	1053
pH [No unit]	8.28	8.19	8.26	8.26	8.22	8.16	7.81	8.29
Conductivity [uS/cm]	433	640	400	688	440	582	679	390
Alkalinity [mg/L as CaCO3]	216	258	204	281	219	243	58	202
CO3 [mg/L as CaCO3]	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	216	258	204	281	219	243	58	202
Colour [TCU]	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
F [mg/L]	0.91	0.58	1.10	0.33	0.95	0.44	0.98	1.08
DOC [mg/L]	1.6	1.9	2.1	1.6	1.4	1.8	1.6	1.8
Cl [mg/L]	2	9	< 1	4	2	6	7	< 1
SO4 [mg/L]	17	76	11	92	17	49	280	11
NO2 [as N mg/L]	< 0.03	< 0.03	0.05	< 0.03	< 0.03	< 0.03	< 0.03	0.06
NO3 [as N mg/L]	0.13	0.09	0.07	0.16	0.06	5.89	0.30	0.44
4AAP-Phenolics [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hardness [mg/L as CaCO3]	195	262	179	299	194	250	113	167
Ca (diss) [mg/L]	41.0	60.9	35.1	66.0	41.9	52.1	23.7	32.9
Mg (diss) [mg/L]	22.6	26.7	22.3	32.7	21.7	29.1	13.0	20.7
Na (diss) [mg/L]	12.6	17.5	13.2	23.8	10.8	9.19	89.7	12.2
K (diss) [mg/L]	1.14	0.898	1.13	1.85	1.06	1.08	0.945	1.05

Temperature of Sample upon Receipt: 8 degrees C
 Cooling Agent Present: Yes
 Custody Seal Present: Yes
 Note: Turbidity samples processed undecanted.

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar -solution	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Bicarbonate	Bicarbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Calcium (dissolved)	Ca by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Carbonate	Carbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness (dissolved)	Hardness (CaCO3) by ICP-MS dissolved	ME-CA-[ENV]SPE-LAK-AN-003
Magnesium (dissolved)	Mg by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Potassium (dissolved)	K by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sodium (dissolved)	Na by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



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Project : 111-53036-05-100, GW
LR Report : CA30270-MAY21

Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
						%							
<i>Alkalinity - QCBatchID: EWL0345-MAY21</i>													
Alkalinity	2	mg/L as Ca	< 2			0	20	100	80	120	NA		
<i>Anions by discrete analyzer - QCBatchID: DIO5081-MAY21</i>													
Chloride	1	mg/L	<1			2	20	101	80	120	94	75	125
Sulphate	2	mg/L	<2			0	20	104	80	120	94	75	125
<i>Anions by IC - QCBatchID: DIO0340-MAY21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	101	80	120	103	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	99	80	120	101	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0343-MAY21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			3	20	102	90	110	106	75	125
<i>Carbonate/Bicarbonate - QCBatchID: EWL0345-MAY21</i>													
Bicarbonate	2	mg/L as Ca	< 2			0	10	NA	90	110	NA		
Carbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
<i>Colour - QCBatchID: EWL0415-MAY21</i>													
Colour	3	TCU	< 3			ND	10	105	80	120	NA		
<i>Conductivity - QCBatchID: EWL0345-MAY21</i>													
Conductivity	2	uS/cm	< 2			0	20	98	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0403-MAY21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	97	90	110	99	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0100-MAY21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			2	20	92	90	110	91	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			0	20	97	90	110	91	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			0	20	94	90	110	91	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			2	20	96	90	110	112	70	130
<i>pH - QCBatchID: EWL0345-MAY21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0170-MAY21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	95	80	120	100	75	125
<i>Turbidity - QCBatchID: LON8001-MAY21</i>													
Turbidity	0.10	NTU	< 0.10			0	10	100	90	110	NA		



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Project : 111-53036-05-100, GW

01-June-2021

Date Rec. : 14 May 2021
LR Report: CA30278-MAY21
Reference: 111-53036-05-100, Albert Siertsema

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CERTIFICATE OF ANALYSIS Final Report

Analysis	1: Analysis Start Date	2: Analysis Start TimeCompleted Date	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: O3-8	7: 531R	8: 592	9: 593	10: 594	11: 191	12: 15
Sample Date & Time						14-May-21 09:00	14-May-21 09:30	14-May-21 09:40	14-May-21 09:20	14-May-21 09:00	14-May-21 09:45	14-May-21 09:50
Temp Upon Receipt [@ London Lab °C]	---	---	---	---	---	12.9	12.9	12.9	12.9	12.9	12.9	12.9
Temp Upon Receipt [@ Lakefield Lab °C]	---	---	---	---	---	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Turbidity [NTU]	14-May-21	14:30	18-May-21	11:57		126	42.6	694	245	222	144	131
pH [No unit]	18-May-21	16:36	19-May-21	14:13	0.05	8.12	8.32	8.12	8.33	8.25	8.31	8.33
Conductivity [uS/cm]	18-May-21	16:36	19-May-21	14:13	2	8740	692	615	562	366	581	582
Alkalinity [mg/L as CaCO3]	18-May-21	16:36	19-May-21	14:13	2	3450	308	301	227	168	216	217
CO3 [mg/L as CaCO3]	18-May-21	16:36	19-May-21	14:13		< 2	4	< 2	3	< 2	< 2	3
HCO3 [mg/L as CaCO3]	18-May-21	16:36	19-May-21	14:13		3450	304	301	224	168	216	214
Colour [TCU]	21-May-21	11:03	21-May-21	11:24	3	430	< 3	< 3	< 3	3	< 3	< 3
F [mg/L]	20-May-21	15:35	21-May-21	08:03	0.06	0.77	0.31	0.11	0.57	1.50	0.82	0.77
DOC [mg/L]	18-May-21	14:56	20-May-21	19:51	1.0	243	1.9	2.9	2.0	2.0	1.9	2.4
Cl [mg/L]	27-May-21	09:54	01-Jun-21	13:36	1	940	5	3	6	1	7	6
SO4 [mg/L]	27-May-21	09:50	01-Jun-21	13:36	2	< 2	69	44	68	22	85	85
NO2 [as N mg/L]	19-May-21	22:23	25-May-21	12:27	0.03	< 0.3	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	19-May-21	22:23	25-May-21	12:27	0.06	< 0.06	0.08	0.06	0.13	0.36	2.08	2.07
4AAP-Phenolics [mg/L]	17-May-21	13:49	21-May-21	16:43	0.002	0.031	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hardness [mg/L as CaCO3]	20-May-21	17:44	26-May-21	17:37		950	263	271	230	85.4	265	250
Ca (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.01	104	56.6	66.0	43.9	17.2	50.2	48.7
Mg (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.001	168	29.5	25.7	29.1	10.3	33.9	31.1

OnLine LIMS

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Project : 111-53036-05-100, GW

LR Report : CA30278-MAY21

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: O3-8	7: 531R	8: 592	9: 593	10: 594	11: 191	12: 15
Na (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.01	574	31.5	6.30	28.7	44.2	19.0	18.0
K (diss) [mg/L]	20-May-21	17:44	26-May-21	17:37	0.009	396	1.65	1.24	1.51	1.24	1.78	1.66

Analysis	13: O23R	14: O22R	15: 16	16: 998	17: 05-01	18: 03-7D	19: 03-7S	20: 595	21: 541
Sample Date & Time	14-May-21 10:10	14-May-21 10:40	14-May-21 10:15	14-May-21 11:15	14-May-21 11:00	14-May-21 11:45	14-May-21 11:50	14-May-21 12:30	14-May-21 12:10
Temp Upon Receipt [@ London Lab °C]	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9
Temp Upon Receipt [@ Lakefield Lab °C]	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Turbidity [NTU]	52.3	1053	55.3	>4000	177	7.39	2122	36.3	55.1
pH [No unit]	8.15	8.20	8.13	8.33	8.38	8.13	8.07	7.89	8.11
Conductivity [uS/cm]	1360	372	1320	482	552	440	903	611	626
Alkalinity [mg/L as CaCO3]	344	160	326	198	241	118	331	95	273
CO3 [mg/L as CaCO3]	< 2	< 2	< 2	2	7	< 2	< 2	< 2	< 2
HCO3 [mg/L as CaCO3]	344	160	326	196	235	118	331	95	273
Colour [TCU]	< 3	9	< 3	< 3	< 3	4	< 3	< 3	< 3
F [mg/L]	0.31	0.61	0.29	1.05	0.72	1.07	< 0.06	1.19	0.38
DOC [mg/L]	2.7	3.9	3.0	2.6	1.4	2.0	3.2	1.6	1.8
Cl [mg/L]	25	8	25	11	12	15	57	3	3
SO4 [mg/L]	450	19	460	57	47	81	51	210	67
NO2 [as N mg/L]	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	< 0.06	2.44	< 0.06	< 0.06	< 0.06	0.11	4.02	0.52	< 0.06
4AAP-Phenolics [mg/L]	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hardness [mg/L as CaCO3]	698	154	692	185	243	122	361	151	293
Ca (diss) [mg/L]	129	41.5	128	38.6	44.9	31.3	98.2	40.2	67.2
Mg (diss) [mg/L]	91.2	12.2	90.6	21.7	31.7	10.8	28.1	12.3	30.5
Na (diss) [mg/L]	28.2	15.1	28.4	28.4	26.7	39.4	24.1	69.1	16.1
K (diss) [mg/L]	2.68	0.983	2.79	2.69	1.61	0.968	14.7	1.17	1.41

Temperature of Sample upon Receipt: degrees C
Cooling Agent Present:
Custody Seal Present:
Note: Turbidity samples processed undecanted.

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar -solution	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Bicarbonate	Bicarbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Calcium (dissolved)	Ca by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Carbonate	Carbonate by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness (dissolved)	Hardness (CaCO3) by ICP-MS dissolved	ME-CA-[ENV]SPE-LAK-AN-003
Magnesium (dissolved)	Mg by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Potassium (dissolved)	K by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sodium (dissolved)	Na by ICP-MS solution (dissolved)	ME-CA-[ENV]SPE-LAK-AN-006
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003

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Project Specialist,
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Quality Control Report

Parameter	Reporting Limit	Unit	Method Blank	Inorganic Analysis									
				Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
				%									
<i>Alkalinity - QCBatchID: EWL0345-MAY21</i>													
Alkalinity	2	mg/L as Ca	< 2			0	20	100	80	120	NA		
<i>Anions by discrete analyzer - QCBatchID: DIO5000-JUN21</i>													
Chloride	1	mg/L	<1			ND	20	98	80	120	104	75	125
Sulphate	2	mg/L	<2			1	20	105	80	120	91	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5080-MAY21</i>													
Chloride	1	mg/L	<1			1	20	101	80	120	101	75	125
Sulphate	2	mg/L	<2			1	20	105	80	120	89	75	125
<i>Anions by IC - QCBatchID: DIO0362-MAY21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			14	20	103	80	120	103	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	101	80	120	103	75	125
<i>Anions by IC - QCBatchID: DIO0379-MAY21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	102	80	120	91	75	125
Nitrite (as N)	0.03	mg/L	<0.03			7	20	97	80	120	100	75	125
<i>Anions by IC - QCBatchID: DIO0387-MAY21</i>													
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	97	80	120	96	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0343-MAY21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			3	20	102	90	110	106	75	125
<i>Carbonate/Bicarbonate - QCBatchID: EWL0345-MAY21</i>													
Bicarbonate	2	mg/L as Ca	< 2			0	10	NA	90	110	NA		
Carbonate	2	mg/L as Ca	< 2			ND	10	NA	90	110	NA		
<i>Colour - QCBatchID: EWL0415-MAY21</i>													
Colour	3	TCU	< 3			ND	10	105	80	120	NA		
<i>Conductivity - QCBatchID: EWL0345-MAY21</i>													
Conductivity	2	uS/cm	< 2			0	20	98	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0403-MAY21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	97	90	110	99	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0100-MAY21</i>													
Calcium (dissolved)	0.01	mg/L	<0.01			2	20	92	90	110	91	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			0	20	97	90	110	91	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			0	20	94	90	110	91	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			2	20	96	90	110	112	70	130
<i>pH - QCBatchID: EWL0345-MAY21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0170-MAY21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	95	80	120	100	75	125



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Project : 111-53036-05-100, GW
LR Report : CA30278-MAY21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Phenols by SFA - QCBatchID: SKA0181-MAY21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			ND	10	95	80	120	81	75	125
<i>Turbidity - QCBatchID: LON8001-MAY21</i>													
Turbidity	0.10	NTU	< 0.10			0	10	100	90	110	NA		



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Project : 111-53036-05-100-1002, SW

05-July-2021

WSP Canada Inc.

Attn : Albert Siertsema

55 King Street, Suite 700
St. Catharines, ON
L2R 3H5, Canada

Phone: 905-687-1771 x 240
Fax:

Date Rec. : 29 June 2021
LR Report: CA14555-JUN21
Reference: 111-53036-05-100-1002,
Albert Siertsema

Copy: 1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: RL	6: SW1
Sample Date & Time						29-Jun-21 07:30
Temp Upon Receipt [°C]	---	---	---	---	---	5.0
BOD5 [mg/L]	30-Jun-21	17:03	05-Jul-21	14:20	2	16
pH [No unit]	30-Jun-21	14:55	05-Jul-21	15:39	0.05	8.46
Conductivity [uS/cm]	30-Jun-21	14:55	05-Jul-21	15:39	2	1080
TDS [mg/L]	30-Jun-21	14:20	05-Jul-21	16:00	30	577
TSS [mg/L]	03-Jul-21	12:46	05-Jul-21	16:02	2	42
F [mg/L]	30-Jun-21	13:45	02-Jul-21	09:05	0.06	0.14
Colour [TCU]	30-Jun-21	14:22	02-Jul-21	13:39	3	45
Turbidity [NTU]	30-Jun-21	15:57	02-Jul-21	09:14	0.10	17.4
COD [mg/L]	02-Jul-21	11:06	05-Jul-21	14:20		81
Alkalinity [mg/L as CaCO3]	30-Jun-21	14:55	05-Jul-21	15:54	2	241
Cl [mg/L]	01-Jul-21	12:38	02-Jul-21	11:25	1	170
SO4 [mg/L]	01-Jul-21	12:12	02-Jul-21	11:25	2	54
NO2 [as N mg/L]	30-Jun-21	23:02	02-Jul-21	15:52	0.03	0.52
NO3 [as N mg/L]	30-Jun-21	23:02	02-Jul-21	15:52	0.06	0.88
NO2+NO3 [as N mg/L]	30-Jun-21	23:02	02-Jul-21	15:52	0.06	1.40
DOC [mg/L]	30-Jun-21	22:06	05-Jul-21	16:51	1	15
NH3+NH4 [as N mg/L]	30-Jun-21	18:00	02-Jul-21	13:04	0.1	6.2
TKN [as N mg/L]	02-Jul-21	11:30	02-Jul-21	16:57	0.5	10.0
4AAP-Phenolics [mg/L]	30-Jun-21	15:11	02-Jul-21	11:54	0.001	0.001
Hardness [mg/L as CaCO3]	02-Jul-21	10:32	05-Jul-21	13:01		285
P (tot) [mg/L]	02-Jul-21	10:32	05-Jul-21	13:01	0.003	0.217
Fe (tot) [mg/L]	02-Jul-21	10:32	05-Jul-21	13:01		0.32

PWQO - Provincial Water Quality Objectives

Limits based on MOE PIBS 3303E publication on July 1994 reprinted February 1999

a PWQO limit based on pH >6.5-9.0 (at pH 4.5-5.5 PWQO = 15ug/L, pH >5.5-6.5 PWQO 10% above background levels in geological area.)

b PWQO limit based on Hardness <75 mg/L (For Hardness >75 mg/L PWQO = 1100 ug/L)

Data reported represents the sample submitted to SGS. Reproduction of this analytical report in full or in part is prohibited without prior written approval. Please refer to SGS General Conditions of Services located at <https://www.sgs.ca/en/terms-and-conditions> (Printed copies are available upon request.)

Test method information available upon request. *Temperature Upon Receipt* is representative of the whole shipment and may not reflect the temperature of individual samples. SGS Canada Inc. Environment-Health & Safety statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

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Project : 111-53036-05-100-1002, SW

LR Report : CA14555-JUN21

- c PWQO limit based on Hardness 0-100 mg/L (For Hardness >100 mg/L PWQO = 0.5 ug/L)
- d PWQO limit based on Cr VI (PWQO limit for Cr III = 8.9 ug/L)
- e PWQO limit based on Hardness 0-20 (For Hardness >20 mg/L PWQO = 5 ug/L)
- f PWQO limit based on Hardness <30 (For Hardness 30-80 PWQO = 3 ug/L, & >80 PWQO=5)

Temperature of Sample upon Receipt: 5 degrees C

Cooling Agent Present: Yes

Custody Seal Present: Yes

Chain of Custody Number: NA

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar - surface waters	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Biochemical Oxygen Demand (BOD5)	Biochemical Oxygen Demand (BOD5)	ME-CA-[ENV]EWL-LAK-AN-007
Chemical Oxygen Demand	Chemical Oxygen Demand	ME-CA-[ENV]EWL-LAK-AN-009
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Skalar	ME-CA-[ENV]SFA-LAK-AN-009
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness	Hardness (CaCO3) by ICP	ME-CA-[ENV]SPE-LAK-AN-003
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]JIC-LAK-AN-001
Nitrate + Nitrite (as N)	Total Nitrate/Nitrite by Ion Chromatography	ME-CA-[ENV]JIC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]JIC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Total Dissolved Solids	Total Dissolved Solids by Gravimetric	ME-CA-[ENV]EWL-LAK-AN-005
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Total Suspended Solids	Total Suspended Solids	ME-CA-[ENV]EWL-LAK-AN-004
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003

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 Project Specialist,
 Environment, Health & Safety



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Project : 111-53036-05-100-1002, SW

LR Report : CA14555-JUN21

Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
							%		Low	High		Low	High
<i>Alkalinity - QCBatchID: EWL0017-JUL21</i>													
Alkalinity	2	mg/L as Ca	< 2			0	20	96	80	120	NA		
<i>Ammonia by SFA - QCBatchID: SKA0004-JUL21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			0	10	98	90	110	94	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5002-JUL21</i>													
Chloride	1	mg/L	<1			ND	20	99	80	120	106	75	125
Sulphate	2	mg/L	<2			ND	20	100	80	120	103	75	125
<i>Anions by IC - QCBatchID: DIO0529-JUN21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	100	90	110	100	75	125
Nitrate + Nitrite (as N)	0.06	mg/L	<0.06			NA		NA			NA		
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	94	90	110	98	75	125
<i>Biochemical Oxygen Demand - QCBatchID: BOD0065-JUN21</i>													
Biochemical Oxygen Demand (BOD5)	2	mg/L	< 2			7	30	98	70	130	115	70	130
<i>Carbon by SFA - QCBatchID: SKA0032-JUL21</i>													
Dissolved Organic Carbon	1	mg/L	<1			ND	20	100	90	110	NV	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0008-JUL21</i>													
Chemical Oxygen Demand	8	mg/L	<8			8	20	104	80	120	97	75	125
<i>Colour - QCBatchID: EWL0592-JUN21</i>													
Colour	3	TCU	< 3			ND	10	105	80	120	NA		
<i>Conductivity - QCBatchID: EWL0594-JUN21</i>													
Conductivity	2	uS/cm	< 2			0	20	98	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0591-JUN21</i>													
Fluoride	0.06	mg/L	<0.06			0	10	93	90	110	95	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0006-JUL21</i>													
Iron (total)	0.01	mg/L	< 0.007			6	20	109	90	110	NV	70	130
Phosphorus (total)	0.003	mg/L	< 0.003			12	20	109	90	110	NV	70	130
<i>pH - QCBatchID: EWL0594-JUN21</i>													
pH	0.05	No unit	NA			1		101			NA		
<i>Phenols by SFA - QCBatchID: SKA0010-JUL21</i>													
4AAP-Phenolics	0.001	mg/L	<0.001			ND	10	103	90	110	94	75	125
<i>Solids Analysis - QCBatchID: EWL0580-JUN21</i>													
Total Dissolved Solids	30	mg/L	<30			1	20	102	90	110	NA		
<i>Suspended Solids - QCBatchID: EWL0023-JUL21</i>													
Total Suspended Solids	2	mg/L	< 2			6	10	101	90	110	NA		
<i>Total Nitrogen - QCBatchID: SKA0016-JUL21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			1	10	99	90	110	97	75	125



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Project : 111-53036-05-100-1002, SW
LR Report : CA14555-JUN21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Turbidity - QCBatchID: EWL0597-JUN21</i>													
Turbidity	0.10	NTU	< 0.10			ND	10	99	90	110	NA		



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Project : 121-12676-05

16-June-2021

WSP Canada Inc.
Attn : Albert Siertsema

Date Rec. : 10 June 2021
LR Report: CA15269-JUN21
Reference: 111-53036-05, Oxford county Landfill

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L2R 3H5, Canada

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Date Completed	4: Analysis Time Completed	5: Client Reporting Limits	6: RL	7: PWQO Limits	8: SW1
Sample Date & Time								10-Jun-21 08:30
Temp Upon Receipt [°C]				---	---	---	---	4.0
BOD5 [mg/L]	11-Jun-21	17:22	16-Jun-21	13:42		2		11
pH [No unit]	11-Jun-21	15:20	14-Jun-21	13:48		0.05	6.5-8.5	8.22
Conductivity [uS/cm]	11-Jun-21	15:20	14-Jun-21	13:48		2		1260
TSS [mg/L]	11-Jun-21	07:52	14-Jun-21	12:28		2		19
TDS [mg/L]	11-Jun-21	09:04	15-Jun-21	10:13		30		680
Turbidity [NTU]	11-Jun-21	14:01	11-Jun-21	14:14		0.1		8.79
Colour [TCU]	11-Jun-21	12:57	11-Jun-21	15:14		3		56
Alkalinity [mg/L as CaCO3]	11-Jun-21	15:20	15-Jun-21	14:35		2		311
F [mg/L]	11-Jun-21	10:01	11-Jun-21	14:10		0.06		0.13
DOC [mg/L]	11-Jun-21	17:51	15-Jun-21	07:48		1.0		35.1
COD [mg/L]	11-Jun-21	11:47	15-Jun-21	13:16		2		98
Cl [mg/L]	14-Jun-21	13:19	15-Jun-21	17:42		1		210
SO4 [mg/L]	14-Jun-21	14:16	15-Jun-21	17:52		2		68
NO3 [as N mg/L]	11-Jun-21	12:30	11-Jun-21	16:24		0.06		< 0.06
NO2 [as N mg/L]	11-Jun-21	12:30	11-Jun-21	16:24		0.03		< 0.03
NH3+NH4 [as N mg/L]	11-Jun-21	12:32	13-Jun-21	21:55		0.1		14.7
TKN [as N mg/L]	14-Jun-21	20:00	15-Jun-21	15:50		0.5		18.4
4AAP-Phenolics [mg/L]	11-Jun-21	11:43	13-Jun-21	20:36		0.001	0.001	0.003
P (tot) [mg/L]	15-Jun-21	12:45	15-Jun-21	17:21		---	0.00001	0.298
Hardness [mg/L as CaCO3]	15-Jun-21	12:45	15-Jun-21	17:21		---		327
Fe (tot) [mg/L]	15-Jun-21	12:45	15-Jun-21	17:21		---	0.3	0.38

PWQO - Provincial Water Quality Objectives

- Limits based on MOE PIBS 3303E publication July 1994 reprinted February 1999
- a PWQO limit based on pH >6.5-9.0 (at pH 4.5-5.5 PWQO = 15ug/L, pH >5.5-6.5 PWQO 10% above background levels in geological area.
 - b PWQO limit based on Hardness <75 mg/L (For Hardness >75 mg/L PWQO = 1100 ug/L)
 - c PWQO limit based on Hardness 0-100 mg/L (For Hardness >100 mg/L PWQO = 0.5 ug/L)
 - d PWQO limit based on Cr VI (PWQO limit for Cr III = 8.9 ug/L)
 - e PWQO limit based on Hardness 0-20 (For Hardness >20 mg/L PWQO = 5 ug/L)
 - f PWQO limit based on Hardness <30 (For Hardness 30-80 PWQO = 3 ug/L, & >80 PWQO=5)

Temperature of Sample upon Receipt: 4 degrees C
Cooling Agent Present: Yes
Custody Seal Present: Yes

Chain of Custody Number: NA

BOD spike high, results accepted based on dups and 2nd seed std being acceptable

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar - surface waters	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Ammonia+Ammonium (N)	NH ₃ +NH ₄ by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Biochemical Oxygen Demand (BOD5)	Biochemical Oxygen Demand (BOD5)	ME-CA-[ENV]EWL-LAK-AN-007
Chemical Oxygen Demand	Chemical Oxygen Demand	ME-CA-[ENV]EWL-LAK-AN-009
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness	Hardness (CaCO ₃) by ICP	ME-CA-[ENV]SPE-LAK-AN-003
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]JIC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]JIC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Total Dissolved Solids	Total Dissolved Solids by Gravimetric	ME-CA-[ENV]EWL-LAK-AN-005
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Total Suspended Solids	Total Suspended Solids	ME-CA-[ENV]EWL-LAK-AN-004
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



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Project : 121-12676-05
LR Report : CA15269-JUN21

Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
							%		Low	High		Low	High
<i>Alkalinity - QCBatchID: EWL0256-JUN21</i>													
Alkalinity	2	mg/L as Ca	2			0	20	100	80	120	NA		
<i>Ammonia by SFA - QCBatchID: SKA0128-JUN21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			ND	10	99	90	110	93	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5042-JUN21</i>													
Chloride	1	mg/L	<1			ND	20	104	80	120	112	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5045-JUN21</i>													
Sulphate	2	mg/L	<2			0	20	108	80	120	98	75	125
<i>Anions by IC - QCBatchID: DIO0200-JUN21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	100	90	110	101	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	98	90	110	103	75	125
<i>Biochemical Oxygen Demand - QCBatchID: BOD0025-JUN21</i>													
Biochemical Oxygen Demand (BOD5)	2	mg/L	< 2			1	30	98	70	130	136	70	130
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0260-JUN21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			0	20	102	90	110	102	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0247-JUN21</i>													
Chemical Oxygen Demand	8	mg/L	<8			ND	20	94	80	120	105	75	125
<i>Colour - QCBatchID: EWL0249-JUN21</i>													
Colour	3	TCU	< 3			2	10	95	80	120	NA		
<i>Conductivity - QCBatchID: EWL0256-JUN21</i>													
Conductivity	2	uS/cm	< 2			0	20	99	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0242-JUN21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	98	90	110	98	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0088-JUN21</i>													
Iron (total)	0.01	mg/L	<0.007			1	20	108	90	110	125	70	130
Phosphorus (total)	0.003	mg/L	<0.003			0	20	99	90	110	NV	70	130
<i>pH - QCBatchID: EWL0256-JUN21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0127-JUN21</i>													
4AAP-Phenolics	0.001	mg/L	<0.001			ND	10	103	90	110	NV	75	125
<i>Solids Analysis - QCBatchID: EWL0240-JUN21</i>													
Total Dissolved Solids	30	mg/L	<30			ND	20	99	90	110	NA		
<i>Suspended Solids - QCBatchID: EWL0236-JUN21</i>													
Total Suspended Solids	2	mg/L	< 2			4	10	99	90	110	NA		
<i>Total Nitrogen - QCBatchID: SKA0146-JUN21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			9	10	97	90	110	113	75	125



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Project : 121-12676-05
LR Report : CA15269-JUN21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Turbidity - QCBatchID: EWL0251-JUN21</i>													
Turbidity	0.10	NTU	< 0.10			0	10	99	90	110	NA		



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WSP Canada Inc.
Attn : Albert Siertsema

55 King Street, Suite 700
St. Catharines, ON
L2R 3H5, Canada

Phone: 905-687-1771 x 240
Fax:

Project : 111-53036-06, Sedimentation Ponds

04-August-2021

Date Rec. : 29 July 2021
LR Report: CA30570-JUL21
Reference: 111-53036-06, Albert Siertsema

Copy: 1

CERTIFICATE OF ANALYSIS Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Date Completed	4: Analysis Time Completed	5: Client Reporting Limits	6: RL	7: PWQO Limits	8: SW1
Sample Date & Time								29-Jul-21 08:00
Temp Upon Receipt [@ London Lab °C]	***	***	***	***	***	***	***	***
Temp Upon Receipt [°C]	***	***	***	***	***	***	***	***
BOD5 [mg/L]	30-Jul-21	17:45	04-Aug-21	12:58		2		4
pH [No unit]	30-Jul-21	14:11	04-Aug-21	09:42		0.05	6.5-8.5	8.13
Conductivity [uS/cm]	30-Jul-21	14:11	04-Aug-21	09:42		2		1080
TSS [mg/L]	30-Jul-21	11:39	03-Aug-21	11:51		2		19
TDS [mg/L]	30-Jul-21	16:16	03-Aug-21	14:25		30		657
Turbidity [NTU]	30-Jul-21	16:25	03-Aug-21	10:41		0.1		8.46
Colour [TCU]	03-Aug-21	15:02	04-Aug-21	13:03		3		39
Alkalinity [mg/L as CaCO3]	30-Jul-21	14:11	04-Aug-21	09:43		2		251
F [mg/L]	03-Aug-21	11:28	04-Aug-21	09:49		0.06		0.14
DOC [mg/L]	30-Jul-21	10:09	04-Aug-21	10:37		1.0		24.7
COD [mg/L]	03-Aug-21	11:14	04-Aug-21	13:08		2		71
Cl [mg/L]	04-Aug-21	09:22	04-Aug-21	13:16		1		170
SO4 [mg/L]	04-Aug-21	09:48	04-Aug-21	13:16		2		82
NO3 [as N mg/L]	30-Jul-21	20:25	03-Aug-21	14:02		0.06		0.13
NO2 [as N mg/L]	30-Jul-21	20:25	03-Aug-21	14:02		0.03		0.12
NH3+NH4 [as N mg/L]	30-Jul-21	12:02	03-Aug-21	11:12		0.1		2.5
TKN [as N mg/L]	03-Aug-21	17:37	04-Aug-21	12:24		0.5		5.8
4AAP-Phenolics [mg/L]	30-Jul-21	14:44	03-Aug-21	14:00		0.001	0.001	0.001



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Project : 111-53036-06, Sedimentation Ponds

LR Report : CA30570-JUL21

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Date Completed	4: Analysis Time Completed	5: Client Reporting Limits	6: RL	7: PWQO Limits	8: SW1
P (tot) [mg/L]	04-Aug-21	11:30	04-Aug-21	18:13		---	0.00001	0.133
Hardness [mg/L as CaCO3]	04-Aug-21	11:30	04-Aug-21	18:13		---		289
Fe (tot) [mg/L]	04-Aug-21	11:30	04-Aug-21	18:13		---	0.3	0.17

PWQO - Provincial Water Quality Objectives

Limits based on MOE PIBS 3303E publication July 1994 reprinted February 1999

a PWQO limit based on pH >6.5-9.0 (at pH 4.5-5.5 PWQO = 15ug/L, pH >5.5-6.5 PWQO 10% above background levels in geological area.

b PWQO limit based on Hardness <75 mg/L (For Hardness >75 mg/L PWQO = 1100 ug/L)

c PWQO limit based on Hardness 0-100 mg/L (For Hardness >100 mg/L PWQO = 0.5 ug/L)

d PWQO limit based on Cr VI (PWQO limit for Cr III = 8.9 ug/L)

e PWQO limit based on Hardness 0-20 (For Hardness >20 mg/L PWQO = 5 ug/L)

f PWQO limit based on Hardness <30 (For Hardness 30-80 PWQO = 3 ug/L, & >80 PWQO=5)

Temperature of Sample upon Receipt: 14 degrees C

Cooling Agent Present: Yes

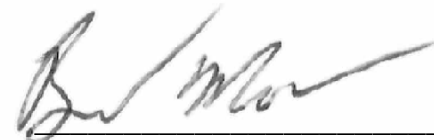
Custody Seal Present: Yes

Chain of Custody Number: NA

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar - surface waters	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Biochemical Oxygen Demand (BOD5)	Biochemical Oxygen Demand (BOD5)	ME-CA-[ENV]EWL-LAK-AN-007
Chemical Oxygen Demand	Chemical Oxygen Demand	ME-CA-[ENV]EWL-LAK-AN-009
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness	Hardness (CaCO3) by ICP	ME-CA-[ENV]SPE-LAK-AN-003
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001

Parameter	Description	SGS Method Code
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Total Dissolved Solids	Total Dissolved Solids by Gravimetric	ME-CA-[ENV]EWL-LAK-AN-005
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Total Suspended Solids	Total Suspended Solids	ME-CA-[ENV]EWL-LAK-AN-004
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



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Project : 111-53036-06, Sedimentation Ponds
LR Report : CA30570-JUL21

Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
						%							
<i>Alkalinity - QCBatchID: EWL0523-JUL21</i>													
Alkalinity	2	mg/L as Ca	< 2			0	20	102	80	120	NA		
<i>Ammonia by SFA - QCBatchID: SKA0008-AUG21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			3	10	99	90	110	NV	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5000-AUG21</i>													
Chloride	1	mg/L	<1			1	20	107	80	120	104	75	125
Sulphate	2	mg/L	<2			1	20	107	80	120	98	75	125
<i>Anions by IC - QCBatchID: DIO0467-JUL21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			9	20	103	90	110	103	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	97	90	110	98	75	125
<i>Biochemical Oxygen Demand - QCBatchID: BOD0060-JUL21</i>													
Biochemical Oxygen Demand (BOD5)	2	mg/L	< 2			1	30	90	70	130	97	70	130
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0511-JUL21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			0	20	100	90	110	98	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0006-AUG21</i>													
Chemical Oxygen Demand	8	mg/L	<8			0	20	100	80	120	99	75	125
<i>Colour - QCBatchID: EWL0015-AUG21</i>													
Colour	3	TCU	< 3			0	10	105	80	120	NA		
<i>Conductivity - QCBatchID: EWL0523-JUL21</i>													
Conductivity	2	uS/cm	< 2			0	20	104	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0008-AUG21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	106	90	110	102	75	125
<i>pH - QCBatchID: EWL0523-JUL21</i>													
pH	0.05	No unit	NA			2		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0010-AUG21</i>													
4AAP-Phenolics	0.001	mg/L	<0.001			ND	10	100	90	110	101	75	125
<i>Solids Analysis - QCBatchID: EWL0525-JUL21</i>													
Total Dissolved Solids	30	mg/L	<30			3	20	102	90	110	NA		
<i>Suspended Solids - QCBatchID: EWL0519-JUL21</i>													
Total Suspended Solids	2	mg/L	< 2			3	10	92	90	110	NA		
<i>Total Nitrogen - QCBatchID: SKA0017-AUG21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			ND	10	98	90	110	93	75	125
<i>Turbidity - QCBatchID: LON8005-JUL21</i>													
Turbidity	0.10	NTU	< 0.10			0	10	98	90	110	NA		



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Project : 111-53036-05, SW Stations

19-August-2021

Date Rec. : 13 August 2021
LR Report: CA14767-AUG21
Reference: 111-53036-05, Albert Siertsema

Copy: 1

CERTIFICATE OF ANALYSIS Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Reporting Limits	6: RL	7: PWQO Limits	8: SW4	9: SW8	10: SW9
Sample Date & Time								12-Aug-21 08:50	12-Aug-21 10:20	12-Aug-21 09:45
Temp Upon Receipt [°C]	***	***	***	***	***	***	***	***	***	***
pH [No unit]	13-Aug-21	15:39	17-Aug-21	12:39		0.05	6.5-8.5	8.09	8.02	8.03
Conductivity [uS/cm]	13-Aug-21	15:39	17-Aug-21	12:39		2		290	640	632
Turbidity [NTU]	13-Aug-21	13:25	13-Aug-21	13:57		0.1		3.56	78.1	790
Colour [TCU]	13-Aug-21	13:03	13-Aug-21	16:16		3		50	39	26
F [mg/L]	17-Aug-21	08:32	17-Aug-21	13:42		0.06		0.06	0.14	0.18
DOC [mg/L]	13-Aug-21	12:22	19-Aug-21	10:32		1.0		11.8	9.5	10.6
Cl [mg/L]	17-Aug-21	07:17	18-Aug-21	11:06		1		< 1	73	75
NO3 [as N mg/L]	14-Aug-21	10:25	16-Aug-21	14:27		0.06		< 0.06	2.07	0.79
NO2 [as N mg/L]	14-Aug-21	10:25	16-Aug-21	14:27		0.03		< 0.03	< 0.03	< 0.03
Tot.Reactive P [mg/L]	14-Aug-21	09:00	16-Aug-21	12:21		0.03		0.06	0.19	0.31
NH3+NH4 [as N mg/L]	13-Aug-21	19:43	16-Aug-21	15:20		0.1		0.2	0.4	0.3
TKN [as N mg/L]	14-Aug-21	09:56	18-Aug-21	16:22		0.5		1.2	1.5	1.6
4AAP-Phenolics [mg/L]	13-Aug-21	11:12	16-Aug-21	13:34		0.001	0.001	0.002	0.001	0.002

OnLine LIMS

0002408736



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Project : 111-53036-05, SW Stations

LR Report : CA14767-AUG21

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Reporting Limits	6: RL	7: PWQO Limits	8: SW4	9: SW8	10: SW9
Ca (tot) [mg/L]	18-Aug-21	17:38	19-Aug-21	12:22		---		54.3	83.4	162
Mg (tot) [mg/L]	18-Aug-21	17:38	19-Aug-21	12:22		---		7.49	16.9	25.9
P (tot) [mg/L]	18-Aug-21	17:38	19-Aug-21	12:22		---	0.00001	0.185	0.360	0.817
Hardness [mg/L as CaCO3]	18-Aug-21	17:38	19-Aug-21	12:22		---		166	278	511
Fe (tot) [mg/L]	18-Aug-21	17:38	19-Aug-21	12:22		---	0.3	0.62	2.98	6.73

Analysis	11: SWDUP
Sample Date & Time	12-Aug-21
Temp Upon Receipt [°C]	***
pH [No unit]	7.97
Conductivity [uS/cm]	297
Turbidity [NTU]	2.71
Colour [TCU]	48
F [mg/L]	0.08
DOC [mg/L]	11.9
Cl [mg/L]	< 1
NO3 [as N mg/L]	< 0.06
NO2 [as N mg/L]	< 0.03
Tot.Reactive P [mg/L]	0.07
NH3+NH4 [as N mg/L]	0.1
TKN [as N mg/L]	1.2
4AAP-Phenolics [mg/L]	0.002
Ca (tot) [mg/L]	53.4
Mg (tot) [mg/L]	7.43
P (tot) [mg/L]	0.195

Analysis	11: SWDUP
Hardness [mg/L as CaCO ₃]	164
Fe (tot) [mg/L]	0.61

PWQO - Provincial Water Quality Objectives

Limits based on MOE PIBS 3303E publication on July 1994 reprinted February 1999

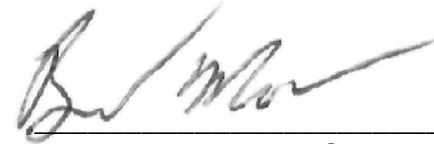
- a PWQO limit based on pH >6.5-9.0 (at pH 4.5-5.5 PWQO = 15ug/L, pH >5.5-6.5 PWQO 10% above background levels in geological area.
- b PWQO limit based on Hardness <75 mg/L (For Hardness >75 mg/L PWQO = 1100 ug/L)
- c PWQO limit based on Hardness 0-100 mg/L (For Hardness >100 mg/L PWQO = 0.5 ug/L)
- d PWQO limit based on Cr VI (PWQO limit for Cr III = 8.9 ug/L)
- e PWQO limit based on Hardness 0-20 (For Hardness >20 mg/L PWQO = 5 ug/L)
- f PWQO limit based on Hardness <30 (For Hardness 30-80 PWQO = 3 ug/L, & >80 PWQO=5)

Temperature of Sample upon Receipt: 20 degrees C

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar - surface waters	ME-CA-[ENV]SFA-LAK-AN-006
Ammonia+Ammonium (N)	NH ₃ +NH ₄ by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Calcium (total)	Ca by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness	Hardness (CaCO ₃) by ICP	ME-CA-[ENV]SPE-LAK-AN-003
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Magnesium (total)	Mg by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Phosphorus (total reactive)	Tot. Reactive Phos. by Skalar or Spec.- no reagents or heat	ME-CA-[ENV]SFA-LAK-AN-004
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003

Parameter	Description	SGS Method Code
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



*Brad Moore Hon. B.Sc
Project Specialist,
Environment, Health & Safety*



Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
							%		Low	High		Low	High
<i>Ammonia by SFA - QCBatchID: SKA0145-AUG21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			ND	10	99	90	110	77	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5024-AUG21</i>													
Chloride	1	mg/L	<1			0	20	107	80	120	89	75	125
<i>Anions by IC - QCBatchID: DIO0238-AUG21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	101	90	110	92	75	125
Nitrite (as N)	0.03	mg/L	<0.03			1	20	96	90	110	92	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0235-AUG21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			ND	20	99	90	110	99	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0266-AUG21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			4	20	99	90	110	99	75	125
<i>Colour - QCBatchID: EWL0236-AUG21</i>													
Colour	3	TCU	< 3			2	10	105	80	120	NA		
<i>Conductivity - QCBatchID: EWL0239-AUG21</i>													
Conductivity	2	uS/cm	3			1	20	99	90	110	NA		
<i>Conductivity - QCBatchID: EWL0245-AUG21</i>													
Conductivity	2	uS/cm	< 2			0	20	100	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0280-AUG21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	100	90	110	100	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0090-AUG21</i>													
Calcium (total)	0.01	mg/L	<0.01			0	20	99	90	110	104	70	130
Iron (total)	0.01	mg/L	<0.007			9	20	100	90	110	100	70	130
Magnesium (total)	0.001	mg/L	<0.001			3	20	101	90	110	84	70	130
Phosphorus (total)	0.003	mg/L	<0.003			10	20	98	90	110	NV	70	130
<i>pH - QCBatchID: EWL0239-AUG21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>pH - QCBatchID: EWL0245-AUG21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0148-AUG21</i>													
4AAP-Phenolics	0.001	mg/L	<0.001			ND	10	103	90	110	95	75	125
<i>Reactive Phosphorus by SFA - QCBatchID: SKA0144-AUG21</i>													
Phosphorus (total reactive)	0.03	mg/L	<0.03			ND	10	101	90	110	80	75	125
<i>Total Nitrogen - QCBatchID: SKA0173-AUG21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			1	10	99	90	110	114	75	125
<i>Turbidity - QCBatchID: EWL0237-AUG21</i>													
Turbidity	0.10	NTU	< 0.10			0	10	99	90	110	NA		



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WSP Canada Inc.

Attn : Albert Siertsema

55 King Street, Suite 700
St. Catharines, ON
L2R 3H5, Canada

Phone: 905-687-1771 x 240
Fax:

Project : 111-53036-05, Sedimentation Pond

19-August-2021

Date Rec. : 13 August 2021
LR Report: CA14768-AUG21
Reference: 111-53036-05, Albert Siertsema
Copy: 1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Date Completed	4: Analysis Time Completed	5: Client Reporting Limits	6: RL	7: PWQO Limits	8: SW1	9: SW7
Sample Date & Time								12-Aug-21 09:10	12-Aug-21 09:30
Temp Upon Receipt [°C]	---	---	---	---	---	---	--	21.0	21.0
BOD5 [mg/L]	13-Aug-21	11:42	18-Aug-21	13:46		2		12	7
pH [No unit]	13-Aug-21	15:39	17-Aug-21	12:39		0.05	6.5-8.5	8.17	8.07
Conductivity [uS/cm]	13-Aug-21	15:39	17-Aug-21	12:39		2		1030	562
TSS [mg/L]	18-Aug-21	17:18	19-Aug-21	15:11		2		21	83
TDS [mg/L]	13-Aug-21	19:06	17-Aug-21	12:54		30		626	329
Turbidity [NTU]	13-Aug-21	13:25	13-Aug-21	13:58		0.1		10.6	75.0
Colour [TCU]	13-Aug-21	13:03	13-Aug-21	16:17		3		37	17
Alkalinity [mg/L as CaCO3]	13-Aug-21	15:39	17-Aug-21	12:40		2		246	127
F [mg/L]	17-Aug-21	08:32	17-Aug-21	13:42		0.06		0.16	0.18
DOC [mg/L]	13-Aug-21	12:22	19-Aug-21	08:31		1.0		22.7	9.8
COD [mg/L]	17-Aug-21	14:55	19-Aug-21	13:02		2		80	43
Cl [mg/L]	17-Aug-21	07:17	18-Aug-21	11:06		1		180	80
SO4 [mg/L]	17-Aug-21	07:30	18-Aug-21	11:06		2		79	47
NO3 [as N mg/L]	14-Aug-21	10:25	16-Aug-21	14:27		0.06		< 0.06	< 0.06
NO2 [as N mg/L]	14-Aug-21	10:25	16-Aug-21	14:27		0.03		0.06	< 0.03
NH3+NH4 [as N mg/L]	13-Aug-21	19:43	16-Aug-21	15:20		0.1		1.2	0.2
TKN [as N mg/L]	14-Aug-21	09:56	18-Aug-21	16:22		0.5		4.0	1.5
4AAP-Phenolics [mg/L]	13-Aug-21	11:12	16-Aug-21	13:34		0.001	0.001	0.003	< 0.001
P (tot) [mg/L]	18-Aug-21	17:38	19-Aug-21	12:22		---	0.00001	0.120	0.182

OnLine LIMS

0002469193



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Project : 111-53036-05, Sedimentation Pond

LR Report : CA14768-AUG21

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Date Completed	4: Analysis Time Completed	5: Client Reporting Limits	6: RL	7: PWQO Limits	8: SW1	9: SW7
Hardness [mg/L as CaCO3]	18-Aug-21	17:38	19-Aug-21	12:22		---		283	164
Fe (tot) [mg/L]	18-Aug-21	17:38	19-Aug-21	12:22		---	0.3	0.12	2.10

PWQO - Provincial Water Quality Objectives

Limits based on MOE PIBS 3303E publication July 1994 reprinted February 1999

a PWQO limit based on pH >6.5-9.0 (at pH 4.5-5.5 PWQO =15ug/L, pH >5.5-6.5 PWQO 10% above background levels in geological area.

b PWQO limit based on Hardness <75 mg/L (For Hardness >75 mg/L PWQO = 1100 ug/L)

c PWQO limit based on Hardness 0-100 mg/L(For Hardness >100 mg/L PWQO = 0.5 ug/L)

d PWQO limit based on Cr VI (PWQO limit for Cr III = 8.9 ug/L)

e PWQO limit based on Hardness 0-20 (For Hardness >20 mg/L PWQO = 5 ug/L)

f PWQO limit based on Hardness <30 (For Hardness 30-80 PWQO = 3 ug/L, & >80 PWQO=5)

Temperature of Sample upon Receipt: 20 degrees C

Cooling Agent Present: Yes

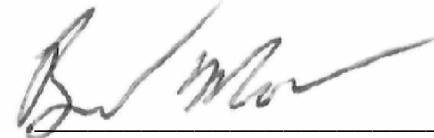
Custody Seal Present: Yes

Chain of Custody Number: Na

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar - surface waters	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Biochemical Oxygen Demand (BOD5)	Biochemical Oxygen Demand (BOD5)	ME-CA-[ENV]EWL-LAK-AN-007
Chemical Oxygen Demand	Chemical Oxygen Demand	ME-CA-[ENV]EWL-LAK-AN-009
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness	Hardness (CaCO3) by ICP	ME-CA-[ENV]SPE-LAK-AN-003
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001

Parameter	Description	SGS Method Code
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Total Dissolved Solids	Total Dissolved Solids by Gravimetric	ME-CA-[ENV]EWL-LAK-AN-005
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Total Suspended Solids	Total Suspended Solids	ME-CA-[ENV]EWL-LAK-AN-004
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



*Brad Moore Hon. B.Sc
Project Specialist,
Environment, Health & Safety*



Quality Control Report

Parameter	Reporting Limit	Unit	Method Blank	Inorganic Analysis									
				Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Alkalinity - QCBatchID: EWL0245-AUG21</i>													
Alkalinity	2	mg/L as Ca	< 2			0	20	102	80	120	NA		
<i>Ammonia by SFA - QCBatchID: SKA0145-AUG21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			ND	10	99	90	110	77	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5024-AUG21</i>													
Chloride	1	mg/L	<1			0	20	107	80	120	89	75	125
Sulphate	2	mg/L	<2			2	20	109	80	120	93	75	125
<i>Anions by IC - QCBatchID: DIO0238-AUG21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	101	90	110	92	75	125
Nitrite (as N)	0.03	mg/L	<0.03			1	20	96	90	110	92	75	125
<i>Biochemical Oxygen Demand - QCBatchID: BOD0027-AUG21</i>													
Biochemical Oxygen Demand (BOD5)	2	mg/L	< 2			0	30	94	70	130	NV	70	130
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0266-AUG21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			4	20	99	90	110	99	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0293-AUG21</i>													
Chemical Oxygen Demand	8	mg/L	<8			0	20	106	80	120	108	75	125
<i>Colour - QCBatchID: EWL0236-AUG21</i>													
Colour	3	TCU	< 3			2	10	105	80	120	NA		
<i>Conductivity - QCBatchID: EWL0245-AUG21</i>													
Conductivity	2	uS/cm	< 2			0	20	100	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0280-AUG21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	100	90	110	100	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0090-AUG21</i>													
Iron (total)	0.01	mg/L	<0.007			9	20	100	90	110	100	70	130
Phosphorus (total)	0.003	mg/L	<0.003			10	20	98	90	110	NV	70	130
<i>pH - QCBatchID: EWL0245-AUG21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0148-AUG21</i>													
4AAP-Phenolics	0.001	mg/L	<0.001			ND	10	103	90	110	95	75	125
<i>Solids Analysis - QCBatchID: EWL0249-AUG21</i>													
Total Dissolved Solids	30	mg/L	<30			1	20	99	90	110	NA		
<i>Suspended Solids - QCBatchID: EWL0316-AUG21</i>													
Total Suspended Solids	2	mg/L	< 2			6	10	94	90	110	NA		
<i>Total Nitrogen - QCBatchID: SKA0173-AUG21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			1	10	99	90	110	114	75	125
<i>Turbidity - QCBatchID: EWL0237-AUG21</i>													



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Project : 111-53036-05, Sedimentation Pond
LR Report : CA14768-AUG21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
Turbidity	0.10	NTU	< 0.10			0	10	99	90	110	NA		



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Project : 111-53036-05, Sedimentation Ponds

12-October-2021

WSP Canada Inc.
Attn : Albert Siertsema

Date Rec. : 05 October 2021
LR Report: CA40045-OCT21
Reference: 111-53036-05, Albert Siertsema

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L2R 3H5, Canada

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Reporting Limits	6: RL	7: PWQO Limits
Sample Date & Time							
Temp Upon Receipt [°C]	***	***	***	***	***	***	***
BOD5 [mg/L]	06-Oct-21	17:15	12-Oct-21	13:57		2	
pH [No unit]	06-Oct-21	16:26	07-Oct-21	12:26		0.05	6.5-8.5
Conductivity [uS/cm]	06-Oct-21	16:26	07-Oct-21	12:26		2	
TSS [mg/L]	08-Oct-21	10:10	08-Oct-21	16:30		2	
TDS [mg/L]	07-Oct-21	15:07	08-Oct-21	15:36		30	
Turbidity [NTU]	05-Oct-21	21:07	06-Oct-21	10:19		0.1	
Colour [TCU]	08-Oct-21	15:32	08-Oct-21	16:32		3	
Alkalinity [mg/L as CaCO3]	06-Oct-21	16:26	07-Oct-21	12:26		2	
F [mg/L]	08-Oct-21	10:21	08-Oct-21	14:34		0.06	
DOC [mg/L]	07-Oct-21	13:38	08-Oct-21	16:50		1.0	
COD [mg/L]	07-Oct-21	11:11	07-Oct-21	15:20		8	
Cl [mg/L]	06-Oct-21	20:44	08-Oct-21	06:27		1	
SO4 [mg/L]	07-Oct-21	14:50	07-Oct-21	16:14		2	
NO3 [as N mg/L]	06-Oct-21	15:00	08-Oct-21	07:57		0.06	
NO2 [as N mg/L]	06-Oct-21	15:00	08-Oct-21	07:57		0.03	
NH3+NH4 [as N mg/L]	06-Oct-21	18:00	07-Oct-21	14:46		0.1	
TKN [as N mg/L]	08-Oct-21	08:24	08-Oct-21	13:50		0.5	
4AAP-Phenolics [mg/L]	07-Oct-21	09:26	08-Oct-21	11:13		0.001	0.001
P (tot) [mg/L]	12-Oct-21	10:00	12-Oct-21	17:10		0.003	0.00001
Hardness [mg/L as CaCO3]	12-Oct-21	10:00	12-Oct-21	17:10		0.05	
Fe (tot) [mg/L]	12-Oct-21	10:00	12-Oct-21	17:10		0.01	0.3

Analysis	8: SW1	9: SW7
Sample Date & Time	04-Oct-21 09:30	04-Oct-21 09:50
Temp Upon Receipt [°C]	***	***
BOD5 [mg/L]	14	10
pH [No unit]	7.76	8.18
Conductivity [uS/cm]	719	559
TSS [mg/L]	6	40
TDS [mg/L]	440	349
Turbidity [NTU]	5.07	38.4
Colour [TCU]	50	15
Alkalinity [mg/L as CaCO3]	180	138
F [mg/L]	0.16	0.19
DOC [mg/L]	14.8	10.6
COD [mg/L]	44	28
Cl [mg/L]	87	66
SO4 [mg/L]	65	61
NO3 [as N mg/L]	0.07	0.69
NO2 [as N mg/L]	0.03	0.16
NH3+NH4 [as N mg/L]	0.5	0.7
TKN [as N mg/L]	1.6	1.6
4AAP-Phenolics [mg/L]	0.005	0.004
P (tot) [mg/L]	0.193	0.072
Hardness [mg/L as CaCO3]	241	206
Fe (tot) [mg/L]	0.26	0.99

PWQO - Provincial Water Quality Objectives

Limits based on MOE PIBS 3303E publication July 1994 reprinted February 1999

a PWQO limit based on pH >6.5-9.0 (at pH 4.5-5.5 PWQO = 15ug/L, pH >5.5-6.5 PWQO 10% above background levels in geological area.)

b PWQO limit based on Hardness <75 mg/L (For Hardness >75 mg/L PWQO = 1100 ug/L)

c PWQO limit based on Hardness 0-100 mg/L (For Hardness >100 mg/L PWQO = 0.5 ug/L)

d PWQO limit based on Cr VI (PWQO limit for Cr III = 8.9 ug/L)

e PWQO limit based on Hardness 0-20 (For Hardness >20 mg/L PWQO = 5 ug/L)

f PWQO limit based on Hardness <30 (For Hardness 30-80 PWQO = 3 ug/L, & >80 PWQO=5)

Temperature of Sample upon Receipt: 2 degrees C

Cooling Agent Present: Yes

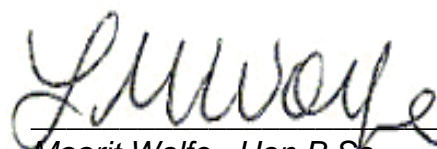
Custody Seal Present: Yes

Chain of Custody Number: NA

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar - surface waters	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Biochemical Oxygen Demand (BOD5)	Biochemical Oxygen Demand (BOD5)	ME-CA-[ENV]EWL-LAK-AN-007

Parameter	Description	SGS Method Code
Chemical Oxygen Demand	Chemical Oxygen Demand	ME-CA-[ENV]EWL-LAK-AN-009
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness	Hardness (CaCO3) by ICP	ME-CA-[ENV]SPE-LAK-AN-003
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]JIC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]JIC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Total Dissolved Solids	Total Dissolved Solids by Gravimetric	ME-CA-[ENV]EWL-LAK-AN-005
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Total Suspended Solids	Total Suspended Solids	ME-CA-[ENV]EWL-LAK-AN-004
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003



Maarit Wolfe, Hon.B.Sc
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Project : 111-53036-05, Sedimentation Ponds
LR Report : CA40045-OCT21

Quality Control Report

Parameter	Reporting Limit	Unit	Method Blank	Inorganic Analysis									
				Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Alkalinity - QCBatchID: EWL0125-OCT21</i>													
Alkalinity	2	mg/L as Ca	< 2			1	20	100	80	120	NA		
<i>Ammonia by SFA - QCBatchID: SKA0071-OCT21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			ND	10	99	90	110	100	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5026-OCT21</i>													
Chloride	1	mg/L	<1			3	20	102	80	120	111	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5028-OCT21</i>													
Sulphate	2	mg/L	<2			1	20	105	80	120	104	75	125
<i>Anions by IC - QCBatchID: DIO0119-OCT21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	101	90	110	105	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	97	90	110	93	75	125
<i>Anions by IC - QCBatchID: DIO0120-OCT21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	101	90	110	100	75	125
Nitrite (as N)	0.03	mg/L	<0.03			1	20	97	90	110	97	75	125
<i>Biochemical Oxygen Demand - QCBatchID: BOD0009-OCT21</i>													
Biochemical Oxygen Demand (BOD5)	2	mg/L	< 2			2	30	96	70	130	114	70	130
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0143-OCT21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			0	20	102	90	110	94	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0141-OCT21</i>													
Chemical Oxygen Demand	8	mg/L	<8			5	20	104	80	120	103	75	125
<i>Colour - QCBatchID: EWL0178-OCT21</i>													
Colour	3	TCU	< 3			ND	10	90	80	120	NA		
<i>Conductivity - QCBatchID: EWL0125-OCT21</i>													
Conductivity	2	uS/cm	< 2			2	20	99	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0168-OCT21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	100	90	110	94	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0048-OCT21</i>													
Iron (total)	0.01	mg/L	<0.007			5	20	99	90	110	100	70	130
Phosphorus (total)	0.003	mg/L	<0.003			14	20	104	90	110	NV	70	130
<i>pH - QCBatchID: EWL0125-OCT21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0089-OCT21</i>													
4AAP-Phenolics	0.001	mg/L	<0.001			ND	10	105	90	110	104	75	125
<i>Solids Analysis - QCBatchID: EWL0149-OCT21</i>													
Total Dissolved Solids	30	mg/L	<30			0	20	99	90	110	NA		
<i>Solids Analysis - QCBatchID: EWL0153-OCT21</i>													



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Project : 111-53036-05, Sedimentation Ponds
LR Report : CA40045-OCT21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
Total Dissolved Solids	30	mg/L	<30			0	20	103	90	110	NA		
<i>Suspended Solids - QCBatchID: EWL0166-OCT21</i>													
Total Suspended Solids	2	mg/L	< 2			5	10	96	90	110	NA		
<i>Total Nitrogen - QCBatchID: SKA0094-OCT21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			ND	10	106	90	110	104	75	125
<i>Turbidity - QCBatchID: EWL0101-OCT21</i>													
Turbidity	0.10	NTU	< 0.10			5	10	99	90	110	NA		



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 Lakefield - Ontario - K0L 2H0
 Phone: 705-652-2000 FAX: 705-652-6365

Project : 111-53036-05, Salford Landfill
 Site SW

13-October-2021

WSP Canada Inc.
 Attn : Albert Siertsema

55 King Street, Suite 700
 St. Catharines, ON
 L2R 3H5, Canada

Phone: 905-687-1771 x 240
 Fax:

Date Rec. : 05 October 2021
LR Report: CA40046-OCT21
Reference: 111-53036-05, Albert
 Siertsema

Copy: 2

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Reporting Limits	6: RL	7: PWQO Limits
Sample Date & Time							
Temp Upon Receipt [°C]	***	***	***	***	***	***	***
pH [No unit]	06-Oct-21	08:19	07-Oct-21	12:27		0.05	6.5-8.5
Conductivity [uS/cm]	06-Oct-21	08:19	07-Oct-21	12:27		2	
Turbidity [NTU]	05-Oct-21	21:07	06-Oct-21	10:19		0.1	
Colour [TCU]	08-Oct-21	15:32	08-Oct-21	16:32		3	
F [mg/L]	06-Oct-21	14:59	08-Oct-21	14:34		0.06	
DOC [mg/L]	07-Oct-21	13:38	08-Oct-21	16:50		1.0	
Cl [mg/L]	06-Oct-21	20:44	08-Oct-21	06:42		1	
NO3 [as N mg/L]	06-Oct-21	08:11	08-Oct-21	07:58		0.06	
NO2 [as N mg/L]	06-Oct-21	08:11	08-Oct-21	07:58		0.03	
Tot.Reactive P [mg/L]	06-Oct-76	16:46	07-Oct-21	13:35		0.03	
NH3+NH4 [as N mg/L]	06-Oct-21	11:45	07-Oct-21	14:46		0.1	
TKN [as N mg/L]	06-Oct-21	16:36	08-Oct-21	13:51		0.5	
4AAP-Phenolics [mg/L]	07-Oct-21	09:26	08-Oct-21	11:13		0.001	0.001
Ca (tot) [mg/L]	07-Oct-21	16:15	12-Oct-21	17:11		---	
Mg (tot) [mg/L]	07-Oct-21	16:15	12-Oct-21	17:11		---	
P (tot) [mg/L]	07-Oct-21	16:15	12-Oct-21	17:11		---	0.00001
Hardness [mg/L as CaCO3]	07-Oct-21	16:15	12-Oct-21	17:11		---	
Fe (tot) [mg/L]	07-Oct-21	16:15	12-Oct-21	17:11		---	0.3

Analysis	8: SW 4	9: SW 8	10: SW 9	11: SW DUP
Sample Date & Time	04-Oct-21 08:40	04-Oct-21 10:20	04-Oct-21 10:10	04-Oct-21
Temp Upon Receipt [°C]	***	***	***	***

Analysis	8: SW 4	9: SW 8	10: SW 9	11: SW DUP
pH [No unit]	7.81	7.68	7.74	7.85
Conductivity [uS/cm]	254	359	356	256
Turbidity [NTU]	24.4	243	252	21.1
Colour [TCU]	111	93	101	109
F [mg/L]	0.08	0.14	0.18	0.08
DOC [mg/L]	14.6	15.2	18.0	14.7
Cl [mg/L]	4	24	24	3
NO3 [as N mg/L]	0.07	4.34	4.98	< 0.06
NO2 [as N mg/L]	< 0.03	< 0.03	< 0.03	< 0.03
Tot.Reactive P [mg/L]	0.13	0.50	0.52	0.14
NH3+NH4 [as N mg/L]	< 0.1	< 0.1	< 0.1	< 0.1
TKN [as N mg/L]	0.6	1.0	1.1	< 0.5
4AAP-Phenolics [mg/L]	< 0.001	< 0.001	0.002	0.003
Ca (tot) [mg/L]	47.3	53.6	57.5	43.8
Mg (tot) [mg/L]	7.74	12.4	11.2	6.94
P (tot) [mg/L]	0.227	0.770	0.542	0.247
Hardness [mg/L as CaCO3]	150	185	190	138
Fe (tot) [mg/L]	2.15	11.1	3.06	1.98

PWQO - Provincial Water Quality Objectives

Limits based on MOE PIBS 3303E publication July 1994 reprinted February 1999

a PWQO limit based on pH >6.5-9.0 (at pH 4.5-5.5 PWQO = 15ug/L, pH >5.5-6.5 PWQO 10% above background levels in geological area.

b PWQO limit based on Hardness <75 mg/L (For Hardness >75 mg/L PWQO = 1100 ug/L)

c PWQO limit based on Hardness 0-100 mg/L (For Hardness >100 mg/L PWQO = 0.5 ug/L)

d PWQO limit based on Cr VI (PWQO limit for Cr III = 8.9 ug/L)

e PWQO limit based on Hardness 0-20 (For Hardness >20 mg/L PWQO = 5 ug/L)

f PWQO limit based on Hardness <30 (For Hardness 30-80 PWQO = 3 ug/L, & >80 PWQO=5)

Temperature of Sample upon Receipt: 2 degrees C

Cooling Agent Present: Yes

Custody Seal Present: Yes

Chain of Custody Number: N/A

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar - surface waters	ME-CA-[ENV]SFA-LAK-AN-006
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Calcium (total)	Ca by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EWL-LAK-AN-026
Colour	True Colour by colourmetric method	ME-CA-[ENV]EWL-LAK-AN-002
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EWL-LAK-AN-006
Dissolved Organic Carbon	DOC by Combustion/Oxidation	ME-CA-[ENV]EWL-LAK-AN-023
Fluoride	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
Hardness	Hardness (CaCO3) by ICP	ME-CA-[ENV]SPE-LAK-AN-003

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Project : 111-53036-05, Salford Landfill

LR Report : Site SW CA40046-OCT21

Parameter	Description	SGS Method Code
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Magnesium (total)	Mg by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]JC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]JC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EWL-LAK-AN-006
Phosphorus (total reactive)	Tot. Reactive Phos. by Skalar or Spec.- no reagents or heat	ME-CA-[ENV]SFA-LAK-AN-004
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Turbidity	Turbidity - APHA.AWWA.WPCF 18th 2130B	ME-CA-[ENV]EWL-LAK-AN-003

Maarit Wolfe, Hon.B.Sc
 Project Specialist,
 Environment, Health & Safety



Quality Control Report

Parameter	Reporting Limit	Unit	Method Blank	Inorganic Analysis									
				Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Ammonia by SFA - QCBatchID: SKA0063-OCT21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			ND	10	98	90	110	NV	75	125
<i>Ammonia by SFA - QCBatchID: SKA0071-OCT21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			ND	10	99	90	110	100	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5026-OCT21</i>													
Chloride	1	mg/L	<1			3	20	102	80	120	111	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5031-OCT21</i>													
Chloride	1	mg/L	<1			0	20	101	80	120	85	75	125
<i>Anions by IC - QCBatchID: DIO0101-OCT21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	101	90	110	78	75	125
Nitrite (as N)	0.03	mg/L	<0.03			1	20	100	90	110	80	75	125
<i>Anions by IC - QCBatchID: DIO0119-OCT21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	101	90	110	105	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	97	90	110	93	75	125
<i>Carbon by Combustion/Oxidation - QCBatchID: EWL0143-OCT21</i>													
Dissolved Organic Carbon	1.0	mg/L	<1.0			0	20	102	90	110	94	75	125
<i>Colour - QCBatchID: EWL0178-OCT21</i>													
Colour	3	TCU	< 3			ND	10	90	80	120	NA		
<i>Conductivity - QCBatchID: EWL0106-OCT21</i>													
Conductivity	2	uS/cm	< 2			ND	20	99	90	110	NA		
<i>Conductivity - QCBatchID: EWL0125-OCT21</i>													
Conductivity	2	uS/cm	< 2			2	20	99	90	110	NA		
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0119-OCT21</i>													
Fluoride	0.06	mg/L	<0.06			9	10	100	90	110	91	75	125
<i>Fluoride by Specific Ion Electrode - QCBatchID: EWL0168-OCT21</i>													
Fluoride	0.06	mg/L	<0.06			ND	10	100	90	110	94	75	125
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0038-OCT21</i>													
Calcium (total)	0.01	mg/L	<0.01			2	20	90	90	110	116	70	130
Iron (total)	0.01	mg/L	<0.007			1	20	101	90	110	125	70	130
Magnesium (total)	0.001	mg/L	<0.001			5	20	101	90	110	NV	70	130
Phosphorus (total)	0.003	mg/L	<0.003			15	20	103	90	110	NV	70	130
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0048-OCT21</i>													
Calcium (total)	0.01	mg/L	<0.01			4	20	108	90	110	112	70	130
Iron (total)	0.01	mg/L	<0.007			5	20	99	90	110	100	70	130
Magnesium (total)	0.001	mg/L	0.001			6	20	104	90	110	108	70	130
Phosphorus (total)	0.003	mg/L	<0.003			14	20	104	90	110	NV	70	130



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Project : 111-53036-05, Salford Landfill Site SW

LR Report : CA40046-OCT21

Parameter	Reporting Limit	Unit	Method Blank	Inorganic Analysis									
				Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0058-OCT21</i>													
Calcium (total)	0.01	mg/L	<0.01			2	20	96	90	110	104	70	130
Iron (total)	0.01	mg/L	<0.007			4	20	98	90	110	100	70	130
Magnesium (total)	0.001	mg/L	<0.001			4	20	99	90	110	101	70	130
Phosphorus (total)	0.003	mg/L	0.003			0	20	96	90	110	NV	70	130
<i>pH - QCBatchID: EWL0106-OCT21</i>													
pH	0.05	No unit	NA			1		100			NA		
<i>pH - QCBatchID: EWL0125-OCT21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0089-OCT21</i>													
4AAP-Phenolics	0.001	mg/L	<0.001			ND	10	105	90	110	104	75	125
<i>Reactive Phosphorus by SFA - QCBatchID: SKA0074-OCT21</i>													
Phosphorus (total reactive)	0.03	mg/L	<0.03			ND	10	101	90	110	83	75	125
<i>Total Nitrogen - QCBatchID: SKA0068-OCT21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			ND	10	106	90	110	108	75	125
<i>Total Nitrogen - QCBatchID: SKA0094-OCT21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			ND	10	106	90	110	104	75	125
<i>Turbidity - QCBatchID: EWL0101-OCT21</i>													
Turbidity	0.10	NTU	< 0.10			5	10	99	90	110	NA		



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Project : 111-5306-05-100-1002

15-November-2021

WSP Canada Inc.

Attn : Craig Leger

55 King Street, Suite 700, St. Catharines
Canada, L2R 3H5
Phone: 905-687-1771 x 240, Fax:

Date Rec. : 05 November 2021
LR Report: CA30123-NOV21
Reference: 111-5306-05-100-1002,
Craig Leger

Copy: 1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Date Completed	4: Analysis Time Completed	6: RL	7: PWQO Limits	8: SW7
Sample Date & Time							04-Nov-21 10:00
Temp Upon Receipt [°C]	***	***	***	***	***	***	***
BOD5 [mg/L]	08-Nov-21	15:11	15-Nov-21	08:46			10
pH [No unit]	08-Nov-21	16:21	09-Nov-21	16:57	0.05	6.5-8.5	8.18
Conductivity [uS/cm]	08-Nov-21	16:21	09-Nov-21	16:57	2		721
TSS [mg/L]	10-Nov-21	07:46	10-Nov-21	15:25	2		35
TDS [mg/L]	08-Nov-21	14:45	10-Nov-21	11:54	30		409
Alkalinity [mg/L as CaCO3]	08-Nov-21	16:21	09-Nov-21	16:58	2		199
COD [mg/L]	08-Nov-21	08:41	12-Nov-21	15:39	2		27
Cl [mg/L]	08-Nov-21	15:19	10-Nov-21	06:36	1		70
SO4 [mg/L]	08-Nov-21	15:35	10-Nov-21	06:36	2		67
NO3 [as N mg/L]	05-Nov-21	22:11	08-Nov-21	14:39	0.06		1.18
NO2 [as N mg/L]	05-Nov-21	22:11	08-Nov-21	14:39	0.03		0.10
NH3+NH4 [as N mg/L]	06-Nov-21	11:20	08-Nov-21	14:50	0.1		1.8
TKN [as N mg/L]	06-Nov-21	13:15	08-Nov-21	14:17	0.5		5.0
4AAP-Phenolics [mg/L]	09-Nov-21	10:45	10-Nov-21	10:32	0.001	0.001	< 0.001
P (tot) [mg/L]	10-Nov-21	12:31	12-Nov-21	10:41	---	0.00001	0.093
Fe (tot) [mg/L]	10-Nov-21	12:31	12-Nov-21	10:41	---	0.3	1.22

PWQO - Provincial Water Quality Objectives

- Limits based on MOE PIBS 3303E publication July 1994 reprinted February 1999
- a PWQO limit based on pH >6.5-9.0 (at pH 4.5-5.5 PWQO = 15ug/L, pH >5.5-6.5 PWQO 10% above background levels in geological area.
 - b PWQO limit based on Hardness <75 mg/L (For Hardness >75 mg/L PWQO = 1100 ug/L)
 - c PWQO limit based on Hardness 0-100 mg/L (For Hardness >100 mg/L PWQO = 0.5 ug/L)
 - d PWQO limit based on Cr VI (PWQO limit for Cr III = 8.9 ug/L)
 - e PWQO limit based on Hardness 0-20 (For Hardness >20 mg/L PWQO = 5 ug/L)
 - f PWQO limit based on Hardness <30 (For Hardness 30-80 PWQO = 3 ug/L, & >80 PWQO=5)

Temperature of Sample upon Receipt: degrees C
Cooling Agent Present:
Custody Seal Present:

Chain of Custody Number: 023276

Method Descriptions

Parameter	Description	SGS Method Code
4AAP-Phenolics	phenol by Skalar - surface waters	ME-CA-[ENV]SFA-LAK-AN-006
Alkalinity	Alkalinity by Titration	ME-CA-[ENV]EJWL-LAK-AN-006
Ammonia+Ammonium (N)	NH3+NH4 by Skalar - solution	ME-CA-[ENV]SFA-LAK-AN-007
Biochemical Oxygen Demand (BOD5)	Biochemical Oxygen Demand (BOD5)	ME-CA-[ENV]EJWL-LAK-AN-007
Chemical Oxygen Demand	Chemical Oxygen Demand	ME-CA-[ENV]EJWL-LAK-AN-009
Chloride	Chloride by discrete colourmetric analysis	ME-CA-[ENV]EJWL-LAK-AN-026
Conductivity	Conductivity by Conductivity Meter	ME-CA-[ENV]EJWL-LAK-AN-006
Iron (total)	Fe by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-006
Nitrate (as N)	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
Nitrite (as N)	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
pH	pH - solution	ME-CA-[ENV]EJWL-LAK-AN-006
Phosphorus (total)	P by ICP-MS solution	ME-CA-[ENV]SPE-LAK-AN-003
Sulphate	Sulphate by discrete colourmetric analysis	ME-CA-[ENV]EJWL-LAK-AN-026
Total Dissolved Solids	Total Dissolved Solids by Gravimetric	ME-CA-[ENV]EJWL-LAK-AN-005
Total Kjeldahl Nitrogen	Tot. kjeldahl Nitrogen by Skalar	ME-CA-[ENV]SFA-LAK-AN-002
Total Suspended Solids	Total Suspended Solids	ME-CA-[ENV]EJWL-LAK-AN-004



Brad Moore Hon. B.Sc
Project Specialist,
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Project : 111-5306-05-100-1002

LR Report : CA30123-NOV21

Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
						%							
<i>Alkalinity - QCBatchID: EWL0170-NOV21</i>													
Alkalinity	2	mg/L as Ca	< 2			0	20	102	80	120	NA		
<i>Ammonia by SFA - QCBatchID: SKA0093-NOV21</i>													
Ammonia+Ammonium (N)	0.1	as N mg/L	<0.1			ND	10	100	90	110	NV	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5023-NOV21</i>													
Chloride	1	mg/L	<1			0	20	106	80	120	92	75	125
Sulphate	2	mg/L	<2			ND	20	108	80	120	116	75	125
<i>Anions by IC - QCBatchID: DIO0146-NOV21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			ND	20	97	90	110	104	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	99	90	110	101	75	125
<i>Biochemical Oxygen Demand - QCBatchID: BOD0014-NOV21</i>													
Biochemical Oxygen Demand (BOD5)	2	mg/L	< 2			0	30	106	70	130	NV	70	130
<i>Chemical Oxygen Demand - QCBatchID: EWL0152-NOV21</i>													
Chemical Oxygen Demand	8	mg/L	<8			4	20	94	80	120	91	75	125
<i>Conductivity - QCBatchID: EWL0170-NOV21</i>													
Conductivity	2	uS/cm	< 2			0	20	98	90	110	NA		
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0058-NOV21</i>													
Iron (total)	0.01	mg/L	<0.007			0	20	107	90	110	125	70	130
Phosphorus (total)	0.003	mg/L	<0.003			0	20	105	90	110	NV	70	130
<i>pH - QCBatchID: EWL0170-NOV21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0116-NOV21</i>													
4AAP-Phenolics	0.001	mg/L	<0.001			8	10	106	90	110	91	75	125
<i>Solids Analysis - QCBatchID: EWL0154-NOV21</i>													
Total Dissolved Solids	30	mg/L	<30			2	20	92	90	110	NA		
<i>Suspended Solids - QCBatchID: EWL0204-NOV21</i>													
Total Suspended Solids	2	mg/L	< 2			2	10	97	90	110	NA		
<i>Total Nitrogen - QCBatchID: SKA0090-NOV21</i>													
Total Kjeldahl Nitrogen	0.5	as N mg/L	<0.5			6	10	101	90	110	75	75	125

APPENDIX



MONITORING AND SCREENING CHECKLIST



Appendix D-Monitoring and Screening Checklist

General Information and Instructions

General Information: The checklist is to be completed, and submitted with the Monitoring Report.

Instructions: A complete checklist consists of:

- (a) a completed and signed checklist, including any additional pages of information which can be attached as needed to provide further details where indicated.
- (b) completed contact information for the Competent Environmental Practitioner (CEP)
- (c) self-declaration that CEP(s) meet(s) the qualifications as set out below and in Section 1.2 of the Technical Guidance Document.

Definition of Groundwater CEP:

For groundwater, the CEP must have expertise in hydrogeology and meet one of the following:

- (a) the person holds a licence, limited licence or temporary licence under the *Professional Engineers Act*; or
- (b) the person holds a certificate of registration under the *Professional Geoscientists Act, 2000* and is a practicing member, temporary, member or limited member of the Association of Professional Geoscientists of Ontario. O. Reg. 66/08, s. 2..

Definition of Surface water CEP:

A CEP for surface water assessments is a scientist, professional engineer or professional geoscientist as described in (a) and (b) above with demonstrated experience and post-secondary education, either a diploma or degree, in hydrology, aquatic ecology, limnology, aquatic biology, physical geography with specialization in surface water, and/or water resource management.

The type of scientific work that a CEP performs must be consistent with that person's education and experience. If an individual has appropriate training and credentials in both groundwater and surface water and is responsible for both areas of expertise, the CEP may then complete and validate both sections of the checklist.

Monitoring Report and Site Information	
Waste Disposal Site (WDS) Name	Oxford County Waste Management Facility
Location (e.g. street address, lot, concession)	384060 Salford Road, Salford, ON N0J 1W0
GPS Location (taken within the property boundary at front gate/ front entry)	NAD 83, Zone 17, N 4760856, E 515606
Municipality	Township of South-West Oxford
Client and/or Site Owner	County of Oxford
Monitoring Period (Year)	2021
This Monitoring Report is being submitted under the following:	
Environmental Compliance Approval (ECA) Number (formerly "Certificate of Approval" (C of A)) :	ECA (Waste) A070808, CofA (Sewage) 4504-74CKZ2
Director's Order No.:	
Provincial Officer's Order No.:	

Other:			
Report Submission Frequency	<input checked="" type="radio"/> Annual <input type="radio"/> Other		
The site is: (Operation Status)	<input checked="" type="radio"/> Open <input type="radio"/> Inactive <input type="radio"/> Closed		
Is there an active waste transfer station at the site?	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Does this WDS have a Closure Plan?	<input checked="" type="radio"/> Not yet submitted <input type="radio"/> Submitted and under review <input type="radio"/> Submitted and approved		
Total Approved Capacity	2,356,200	Units	Tonnes
Maximum Approved Fill Rate		Units	
Total Waste Received within Monitoring Period (Year)	83,782	Units	Tonnes
Total Waste Received within Monitoring Period (Year) <i>Describe the methodology used to determine this quantity</i>	Weighed		
Estimated Remaining Capacity	2,468,661	Units	Cubic Metres
Estimated Remaining Capacity <i>Describe the methodology used to determine this quantity</i>	Aerial Photogrammetry		
Estimated Remaining Capacity <i>Date Last Determined</i>	January 2022		
Non-Hazardous Approved Waste Types	<input checked="" type="checkbox"/> Domestic <input checked="" type="checkbox"/> Industrial, Commercial & Institutional (IC&I) <input type="checkbox"/> Source Separated Organics (Green Bin) <input type="checkbox"/> Tires	<input checked="" type="checkbox"/> Contaminated Soil <input type="checkbox"/> Wood Waste <input type="checkbox"/> Blue Box Material <input type="checkbox"/> Processed Organics <input type="checkbox"/> Leaf and Yard Waste	<input type="checkbox"/> Food Processing/Preparation Operations Waste <input type="checkbox"/> Hauled Sewage Other: Asbestos
Subject Waste Approved Waste Classes: Hazardous & Liquid Industrial <i>(separate waste classes by comma)</i>			

Year Site Opened <i>(enter the Calendar Year <u>only</u>)</i>	<div style="border: 1px solid black; padding: 5px; width: 100%;">1986</div>	Current ECA Issue Date	11/07/2013
Is your Site required to submit Financial Assurance?		<input type="radio"/> Yes <input checked="" type="radio"/> No	
Describe how your WDS is designed.		<input type="radio"/> Natural Attenuation only <input type="radio"/> Fully engineered Facility <input checked="" type="radio"/> Partially engineered Facility	
Does your Site have an approved Contaminant Attenuation Zone?		<input type="radio"/> Yes <input checked="" type="radio"/> No	
If closed, specify ECA, control or authorizing document closure date:		Select Date	
Has the nature of the operations at the site changed during this monitoring period?	<input type="radio"/> Yes <input checked="" type="radio"/> No		
If yes, provide details:			

<p>Have any measurements been taken since the last reporting period that indicate landfill gas volumes have exceeded the MOE limits for subsurface or adjacent buildings? (i.e. exceeded the LEL for methane)</p>	<p><input type="radio"/> Yes</p> <p><input checked="" type="radio"/> No</p>
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Groundwater WDS Verification:

Based on all available information about the site and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

<p>1) The monitoring program continues to effectively characterize site conditions and any groundwater discharges from the site. All monitoring wells are confirmed to be in good condition and are secure:</p>	<p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>	
<p>2) All groundwater, leachate and landfill gas sampling and monitoring for the monitoring period being reported on was successfully completed as required by ECA or other relevant authorizing/control document(s):</p>	<p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input type="radio"/> Not Applicable</p>	<p>If no, list exceptions below or attach information.</p>

Groundwater Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date

3) a) Some or all groundwater, leachate and landfill gas sampling and monitoring requirements have been established or defined outside of a ministry ECA, authorizing, or control document.	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Applicable	
b) If yes, the sampling and monitoring identified under 3(a) for the monitoring period being reported on was successfully completed in accordance with established protocols, frequencies, locations, and parameters developed as per the Technical Guidance Document:	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> Not Applicable	If no, list exceptions below or attach additional information.

Groundwater Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date

<p>4) All field work for groundwater investigations was done in accordance with Standard Operating Procedures (SOP) as established/outlined per the Technical Guidance Document (including internal/external QA/QC requirements) (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):</p>	<p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>	<p>Field work for groundwater monitoring was completed in accordance with standard operating procedures. The field QA/QC program included blind duplicate field duplicates; however, travel spiked blanks were not part of the field QA/QC program.</p> <p>The laboratory QA/QC control program was extensive and included method blanks, duplicates, spiked blanks, matrix spikes, and surrogate recovery.</p>
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Sampling and Monitoring Program Results/WDS Conditions and Assessment:

<p>5) The site has an adequate buffer, Contaminant Attenuation Zone (CAZ) and/or contingency plan in place. Design and operational measures, including the size and configuration of any CAZ, are adequate to prevent potential human health impacts and impairment of the environment.</p>	<p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>	
<p>6) The site meets compliance and assessment criteria.</p>	<p><input type="radio"/> Yes</p> <p><input checked="" type="radio"/> No</p>	<p>Please see Sections 6.2.4, 6.2.5, 6.2.6, and 6.3 of the 2021 Operations and Monitoring Report.</p>
<p>7) The site continues to perform as anticipated. There have been no unusual trends/ changes in measured leachate and groundwater levels or concentrations.</p>	<p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>	

<p>1) Is one or more of the following risk reduction practices in place at the site:</p> <p>(a) There is minimal reliance on natural attenuation of leachate due to the presence of an effective waste liner and active leachate collection/ treatment; or</p> <p>(b) There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or</p> <p>(c) The site meets the following two conditions (typically achieved after 15 years or longer of site operation):</p> <p><i>i.</i> The site has developed stable leachate mound(s) and stable leachate plume geometry/ concentrations; and</p> <p><i>ii.</i> Seasonal and annual water levels and water quality fluctuations are well understood.</p>	<p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>	<p>Note which practice(s):</p>	<p><input type="checkbox"/> (a)</p> <p><input type="checkbox"/> (b)</p> <p><input checked="" type="checkbox"/> (c)</p>
<p>9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):</p>	<p><input type="radio"/> Yes</p> <p><input checked="" type="radio"/> No</p> <p><input type="radio"/> Not Applicable</p>	<p>Please see Section 6.2.6 of the 2021 Operations and Monitoring Report.</p>	

Groundwater CEP Declaration:

I am a licensed professional Engineer or a registered professional geoscientist in Ontario with expertise in hydrogeology, as defined in Appendix D under Instructions. Where additional expertise was needed to evaluate the site monitoring data, I have relied on individuals who I believe to be experts in the relevant discipline, who have co-signed the compliance monitoring report or monitoring program status report, and who have provided evidence to me of their credentials.

I have examined the applicable Environmental Compliance Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended), and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories, or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature and will be rectified for the next monitoring/reporting period. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

No changes to the monitoring program are recommended

The following change(s) to the monitoring program is/are recommended:

No Changes to site design and operation are recommended

The following change(s) to the site design and operation is/are recommended:


Name:

Albert Siertsema

Seal:

Add Image



Signature:		Date:	14-Feb-2022
CEP Contact Information:	Albert Siertsema		
Company:	WSP Canada Inc.		
Address:	1821 Provincial Road, Suite 100, Windsor, ON N8W 5V7		
Telephone No.:	519-383-0366	Fax No. :	
E-mail Address:	albert.siertsema@wsp.com		
Co-signers for additional expertise provided:			
Signature:		Date:	
Signature:		Date:	
Surface Water WDS Verification:			
Provide the name of surface water body/bodies potentially receiving the WDS effluent and the approximate distance to the waterbody (including the nearest surface water body/bodies to the site):			
Name (s)	The Site is located in the Thames River watershed, on a watershed boundary between two sub-basins. Surface water flows to a tributary of Reynold's Creek to the southwest and to Hooper Drain to the northwest.		

Distance(s)	Reynold's Creek tributary - originates on the Site south buffer lands Hooper Drain - crosses northeast corner of the Site, within a closed concrete pipe Thames River - 7,500 m northwest of Site
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Based on all available information and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

1) The current surface water monitoring program continues to effectively characterize the surface water conditions, and includes data that relates upstream/background and downstream receiving water conditions:	<input checked="" type="radio"/> Yes <input type="radio"/> No	If no, identify issues (Type Here):
2) All surface water sampling for the monitoring period being reported was successfully completed in accordance with the ECA or relevant authorizing/control document(s) (if applicable):	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not applicable	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date

3) a) Some or all surface water sampling and monitoring program requirements for the monitoring period have been established outside of a ministry ECA or authorizing/control document.	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Applicable
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b) If yes, all surface water sampling and monitoring identified under 3 (a) was successfully completed in accordance with the established program from the site, including sampling protocols, frequencies, locations and parameters) as developed per the Technical Guidance Document:	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> Not Applicable	If no, specify below or provide details in an attachment.
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Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date

<p>4) All field work for surface water investigations was done in accordance with SOP, including internal/external QA/QC requirements, as established/outlined as per the Technical Guidance Document, MOE 2010, or as amended. (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):</p>	<p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>	<p>Field work for groundwater monitoring was completed in accordance with standard operating procedures. The field QA/QC program included blind duplicate field duplicates; however, travel spiked blanks were not part of the field QA/QC program.</p> <p>The laboratory QA/QC control program was extensive and included method blanks, duplicates, spiked blanks, matrix spikes, and surrogate recovery.</p>
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Sampling and Monitoring Program Results/WDS Conditions and Assessment:

<p>5) The receiving water body meets surface water-related compliance criteria and assessment criteria: i.e., there are no exceedances of criteria, based on MOE legislation, regulations, Water Management Policies, Guidelines and Provincial Water Quality Objectives and other assessment criteria (e.g., CWQGs, APVs), as noted in Table A or Table B in the Technical Guidance Document (Section 4.6):</p>	<p><input type="radio"/> Yes</p> <p><input checked="" type="radio"/> No</p>
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If no, list parameters that exceed criteria outlined above and the amount/percentage of the exceedance as per the table on the following page or provide details in an attachment:

Parameter	Compliance or Assessment Criteria or Background	Amount by which Compliance or Assessment Criteria or Background Exceeded
e.g. Nickel	e.g. ECA limit, PWQO, background	e.g. X% above PWQO
Please see Section 7 of the 2021 Operations and Monitoring Report.		
<p>6) In my opinion, any exceedances listed in Question 5 are the result of non-WDS related influences (such as background, road salting, sampling site conditions)?</p>	<p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>	<p>With the exception of the leachate impacts identified within the surface water in Sedimentation Pond A in March 2021, which subsequently impacted water quality in Sedimentation Pond B and downstream of the Site, surface water exceedances were generally related to background and sampling site conditions.</p>

<p>7) All monitoring program surface water parameter concentrations fall within a stable or decreasing trend. The site is not characterized by historical ranges of concentrations above assessment and compliance criteria.</p>	<p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>	
<p>8) For the monitoring program parameters, does the water quality in the groundwater zones adjacent to surface water receivers exceed assessment or compliance criteria (e.g., PWQOs, CWQGs, or toxicity values for aquatic biota (APVs)):</p>	<p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input type="radio"/> Not Known</p> <p><input checked="" type="radio"/> Not Applicable</p>	
<p>9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):</p>	<p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input checked="" type="radio"/> Not Applicable</p>	

Surface Water CEP Declaration:

I, the undersigned hereby declare that I am a Competent Environmental Practitioner as defined in Appendix D under Instructions, holding the necessary level of experience and education to design surface water monitoring and sampling programs, conduct appropriate surface water investigations and interpret the related data as it pertains to the site for this monitoring period.


I have examined the applicable Environmental Compliance Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended) and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories, or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature or will be rectified for future monitoring events. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

<p><input checked="" type="radio"/> No Changes to the monitoring program are recommended</p> <p><input type="radio"/> The following change(s) to the monitoring program is/are recommended:</p>	
<p><input checked="" type="radio"/> No changes to the site design and operation are recommended</p> <p><input type="radio"/> The following change(s) to the site design and operation is/are recommended:</p>	

CEP Signature		
Relevant Discipline	Geological Engineer	
Date:	14-Feb-2022	
CEP Contact Information:	Albert Siertsema	
Company:	WSP Canada Inc.	
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Telephone No.:	519-383-0366	
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E-mail Address:	albert.siertsema@wsp.com	
Save As		Print Form