CITY OF Welland

COUNCIL INFORMATION PACKAGE

Friday, November 28, 2025

		Pages
1.	Memorandum from the City of Welland re: Vista Park Update.	2 - 349
2.	Letter from the Niagara Peninsula Conservation re: Federal Program Changes - 2 Billion Trees.	350 - 354
3.	Letter from the Niagara Peninsula Conservation re: 2026 Meeting Schedule.	355 - 360
4.	Letter from the Niagara Peninsula Conservation re: Coyle and Draper's Creeks Floodplain Mapping.	361 - 367
5.	Letter from the Municipality of Wawa re: Upholding Women's Rights, Leadership, and Environmental Health in the Implementation of Bill 5.	368 - 370
6.	Letter from the Town of Goderich re: Proposed Amendments to Conservation Authorities Act.	371 - 373
7.	Letter from the Town of Wasaga Beach re: Advocacy for Funds to Effectively Manage the Emerald Ash Borer Infestation.	374 - 374
8.	Letter from the County of Northumberland re: Increased Income Support Thresholds for Veterans.	375 - 380
9.	Letter from the County of Northumberland re: Great Lakes and St. Lawrence Cities Initiative.	381 - 416
10.	Letter from the Municipality of Callander re: Township of Larder Lake - Resolution Requesting a Moratorium on Aerial Spraying of Glyphosate in the Timiskaming Forest.	417 - 419

MEMORANDUM

TO: **Welland City Council**

FROM: **Dave Steven**
Manager of Parks, Forestry and Cemeteries

Livia McEachern
Manager of Capital Engineering

DATE: **November 27, 2025**

SUBJECT: **Vista Park – Project Update**

This memorandum provides Council with an update on the Vista Park site and outlines the proposed plan to advance the project towards detailed design and construction.

Background:

Vista Park is planned to be located on the former Atlas Landfill site. This plan is subject to the conditions of an amended Environmental Compliance Approval (ECA) governing the landfill's Closure Plan issued in late 2019. In 2022, an ECA amendment was completed to incorporate the change of ownership to the City of Welland (Appendix I). As outlined in Section 3.1 of the landfill's Closure Plan, the City of Welland is in the process of implementing an end use plan to establish future uses for the site, which may include walking trails, grass berms, and look out points of the surrounding area.

In 2017, a team of Niagara College students worked collaboratively with the City of Welland and Dillon Consulting on a public campaign around the design of the park. The team used two engagement streams -- in-person surveying and social media -- to gather feedback. Through these methods, more than 836 individuals

participated in the survey. The results informed the development of the Vista Park Draft Concept Plan (Appendix II), which was intended to serve as a guide for future engagement throughout the subsequent phases of the project.

Next Steps:

Staff will prepare a Request for Proposal (RFP) to retain a consultant experienced in long-term landfill closure maintenance and monitoring, as well as landfill site rehabilitation. The consultant work with staff to guide the next stage of technical review and planning for the future Vista Park site. The RFP will include the following scope:

1. Consult with the Ministry of the Environment, Conservation and Parks (MECP) to confirm:
    - Site limitations and constraints (e.g., naturalized areas, infrastructure restrictions, cap integrity, settlement and stability concerns, etc.);
    - ECA requirements;
    - Potential site use beyond Section 3.1 of the Closure Plan; and
    - The land use designation as parkland.
2. Review potential liability considerations related to the current conceptual plan.
3. Refine the conceptual plan based on technical and regulatory feedback.
4. Re-engage the community to validate the updated conceptual plan.
5. Identify construction restrictions and constraints (e.g., construction phasing, erosion control, settlement and stability concerns, etc.)
6. Incorporate long-term maintenance and monitoring requirements before, during and after park implementation.
7. Finalize the preferred conceptual plan and determine a timeline for design and construction in accordance with the regulatory requirements.
8. Update the ECA to reflect the preferred conceptual plan and site end use.

Upon approval from the MECP, staff will progress to detailed park design. All existing background documentation, such as the previous Vista Park conceptual plans, monitoring reports, ECA amendments, and the Closure Plan, will be provided to the successful firm. Staff intend to release the RFP and retain a consultant in the first quarter of 2026.

Attachments:

Appendix I – Atlas Landfill Closure Plan

Appendix II – Vista Park Draft Concept Plan (2017)



CLOSURE PLAN

Atlas Landfill

685 River Rd.
Welland, Ontario
L3B 5N6

Atlas Landfill Closure Report
Table of Contents

INTRODUCTION

SECTION 1
- 1.1 – SITE DESCRIPTION
- 1.2 – SITE HISTORY and REGULATORY SETTING
- 1.3 – TOTAL WASTE DEPOSITED ON SITE

SECTION 2
- 2.1 – SITE APPEARANCE AFTER CLOSURE
- 2.2 – ADDITIONAL ENHANCEMENTS

SECTION 3
- 3.1 – DESCRIPTION OF END USE

SECTION 4 – PROCEDURES FOR CLOSURE OF THE SITE
- 4.1 – ADVANCE NOTIFICATION OF THE PUBLIC OF THE LANDFILL CLOSURE
- 4.2 – COMPLETION, INSPECTION and MAINTENANCE OF FINAL COVER AND LANDSCAPING
- 4.3 – SITE SECURITY
- 4.4 – REMOVAL OF UNNECESSARY LANDFILL RELATED STRUCTURES, BUILDINGS and FACILITIES
- 4.5 – FINAL CONSTRUCTION OF ANY CONTROL, TREATMENT, DISPOSAL AND MONITORING FACILITIES FOR LEACHATE, GROUNDWATER, SURFACE WATER AND LANDFILL GAS

SECTION 5 – TIME-PERIOD FOR IMPLEMENTATION OF ITEMS 4.1 TO 4.5

SECTION 6 – PROCEDURES FOR POST CLOSURE CARE FACILITIES
- 6.1 – LEACHATE
- 6.2 – GROUNDWATER
- 6.3 – SURFACE WATER
- 6.4 – LANDFILL GAS

SECTION 7 – COMPLAINT CONTACT AND RESPONSE

SECTION 8 – NEED OF IMPLEMENTING CONTINGENCY PLANS FOR LEACHATE and METHANE GAS
- 8.1 – LEACHATE
- 8.2 – LANDFILL GAS

SECTION 9 – ESTIMATE OF CONTAMINATING LIFESPAN

FIGURES

Figure 1 – Site Location

Figure 2 – Total Site Area

Figure 3 – Site and Adjacent Lands Zoning Designations

Figure 4 – Leachate Control, Force Mains & Pumping stations

Figure 5 – Final Contours and Site Drainage

Figure 6 – Monitoring Locations

Figure 7 – Site Enhancements

1) Flushing Manhole Installation (Leachate Forcemain)
2) Site Upper Level Access Road

APPENDICES

Appendix 1

1) Ontario Ministry of the Environment and Climate Change Compliance Approval: A120049
2) Ontario Ministry of the Environment and Climate Change Sewage Works Certificate of Approval: 6166-8HPHH4
3) Ontario Ministry of the Environment and Climate Change Permit to Take Water Permit: 0636-9A3RCR

Appendix 2 – Simulated site appearance after Closure (ECA)

Appendix 3 – Minutes from PLC Meeting – May 31, 2017

Appendix 4 – Monthly Inspection Form

Appendix 5 – Leachate, Ground Water, Surface Water and Landfill Gas Inspection and Monitoring,

1) Standard Operating Procedures, Schedules “B”, “C”, and “D”

Appendix 6 – Schedule A: Item 46 – Trigger Mechanism and Contingency Plans

1) Schedule A: Item 46 – Trigger Mechanism and Contingency Plans (Ground Water and Surface Water)
2) Schedule A: Item 15 – Sections 7.3.1 and 7.3.2 trigger mechanism and Contingency Plans (Landfill Gas)

Appendix 7 – ECA: A 120409 Closure Plan Requirements

Appendix 8 – Leachate, Ground Water, Surface Water and Landfill Gas:

1) Analysis Results
2) Analysis Interpretation

INTRODUCTION

Walker Environmental Group has prepared this Closure Report on behalf of the City of Welland for the Atlas Landfill (landfill) located at 685 River Road, in Welland, Ontario (site). The site location is shown in Figure 1. The report satisfies the closure plan requirements noted in Condition 103 (Appendix 7) of Amended Environmental Compliance Approval (ECA) No. A - 120409 for the landfill. A copy of the Amended ECA is provided in Appendix 1.

SECTION 1

1.1 – SITE DESCRIPTION

As shown in Figure 2, the site has a total area of 22.66 Hectares (Ha), of which 13.82 Ha represents the approved waste fill area. The waste fill area is divided into two areas referred to as “Cell 1” (9.9 Ha) and “Cell 2” (3.9 Ha). Cell 1 has been in operation for more than 70 years. Cell 2 was constructed by WEG in 2012.

Figure 3 shows the zoning designation for the site and adjacent lands. The site is bounded by undeveloped land zoned as rural agricultural to the north, land zoned as commercial to the east (currently being developed), Woodlawn Road and undeveloped public open space to the south, and the Welland River to the west.

The legal description of the Site is as follows:

- Part Lot 22, Concession 2 Crowland Township, Part 1 59R10922, Welland;
- Part 14, Plan 59R-12968 (Reg. # SN241895) – Part of Lot 22, Concession 2, former Township of Crowland being Part 14, Plan 59R-12968;
- Part 1, Plan 59R-13931 (Reg.# SN241899) – Part of Lot 22, Concession 2, former Township of Crowland being Part 1, Plan 59R-13931;
- PT LTS 21 & 22 CON 2 Crowland, PT TWP LT Broken Front 222 THLD, PT OF THE RIVER BED OF THE OLD WELLAND RIVER, ALL AS IN RO555366 (ELEVENTHLY); S/T RO555366; WELLAND; and
- Former Cambridge Road allowance between Concessions 2 and 3, Part 1 and 2, 59R-5212.

Access to the site is via the entrance off of River Road at the northeast end of the site as depicted on Figure 2.

The leachate management systems that will remain in place for Cell 1 upon closure include:

- A collection system toe-drain along the west perimeter
- A groundwater migration barrier wall (Waterloo Barrier®) along the west side
- A re-compacted clay groundwater migration barrier wall along the south, east and north perimeters and
- A leachate pumping station at the northwest corner (PS-1).

The leachate management systems that will remain in place for Cell 2 upon closure include:

- A compacted clay basal liner
- A granular leachate drainage layer / collection system and
- A leachate pumping station at the north end (PS-2)

All of these systems were completed in 2012.

The leachate collection system trench and groundwater migration barrier wall (Figure 4) are located along the west side of Cell 1. The collection system trench intercepts and conveys impacted groundwater/leachate from Cell 1 to Pump Station PS-1 (Figure 4) located at the northwest corner of Cell 1. PS-1 discharges via an HDPE force main to the Region of Niagara sanitary sewer at Woodlawn Road (Sanitary Sewer Maintenance Hole MHBB, (see Figure 4). The force main traverses around the north end of Cell 2 where it also receives discharge from Pump Station PS-2 (Figure 4) associated with Cell 2 prior to continuing southward to the sanitary sewer at Woodlawn Road.

The groundwater migration barrier wall was installed to cut-off lateral leachate migration from Cell 1 towards the Welland River. The total length of the groundwater migration barrier wall is approximately 560 m. The installed groundwater migration barrier ranges from 4.1 m to 11.0 m in depth.

The re-compacted clay groundwater migration barrier is approximately 3 m in depth and is located along the south, east and north perimeter of Cell 1 (Figure 4). It ties into the groundwater migration barrier wall at the northwest and southwest corners of Cell 1. All leachate from Cell 1 is conveyed to the leachate collection pumping station at the northwest corner of Cell 1 and managed as leachate through PS-1.

The Cell 2 leachate containment system consists of a 1 m thick re-compacted clay liner overlain by a 0.5 m thick clear stone drainage layer followed by a non-woven geotextile filter. Perforated pipes within the drainage layer convey leachate to an internal maintenance manhole at the north end of Cell 2. Leachate then flows by gravity through a non-perforated pipe to PS-2 (outside the north end of Cell 2) where it gets pumped into the force main that connects to the sanitary sewer at Woodlawn Road.

Ancillary features at the site during landfilling operations included access roads, a scale house/inspection station, a chain link property fence, drainage ditches, a leachate holding pond, a storm water management wetland/pond and groundwater and landfill gas monitoring wells. The storm water management wetland/pond was constructed in 2011 north of Cell 2. Its purpose is to manage storm water from the capped landfill as well as water drainage from River Road and the developments to the east of the site.

A below grade permanent power supply line was installed in 2013 to PS-1 from a 600V transformer located at the northeast corner of Cell 1. An above grade power supply line was installed from the 600V transformer to PS-2 in 2012.

1.2 – SITE HISTORY and REGULATORY SETTING

Atlas Specialty Steels started disposing of its plant wastes in the landfill (Cell 1) beginning in the 1930s or 1940s. Provincial Certificate of Approval (C of A) No. A120409 for the landfill was first issued by the MOE to Atlas Specialty Steels on July 3, 1980. As noted below WEG (IMS) did not become involved in this site's activities until 2010.

The plant wastes consisted of electric arc furnace slag, spent acids, baghouse dust, concrete, refractory brick and waste oils. Specific details regarding some of the plant waste types are summarized below:

- Electric arc furnace slag was the most common waste type and was deposited throughout the Cell 1,
- Waste oil was landfilled in the east-central area of Cell 1;
- Caustic sludge and spent acids consisting of sulphuric acid, nitric acid and hydrochloric acid were deposited in a waste acid pit centrally located within Cell 1. In 1983, disposal of waste acids was discontinued in response to a MECP control order. All acid remaining in the pit was removed and treated through an on-site acid treatment facility. As described in a letter from Golder to Niagara Waste Systems Limited dated October 16, 2012, the effect of the acid on hydraulic conductivity of the underlying clay soil layer is considered to be negligible. A copy of this letter was also provided to the MECP, and
- Filter cake from the waste acid treatment process was disposed of in the Cell 1 from 1985 to 1995.

The total quantity of historic waste from the steel plant operation that was placed in Cell 1 is approximately 735,000 m^3.

A leachate interceptor ditch and clay berm were constructed in 1979 along the west side of Cell 1 to intercept acidic leachate and divert it to a settling pond (leachate pond) where it was neutralized by mixing with alkaline leachate generated from slag waste at the landfill. This resulted in a neutral pH effluent that was then discharged to the Welland River (and later to the sanitary sewer).

On July 23, 1999, the MOE issued an amendment to the Provisional C of A to Atlas Specialty Steels permitting the reclamation of metals from the landfilled waste. The amendment also stipulated that a comprehensive two-year landfill gas, surface water, and groundwater monitoring program be developed.

In August 2000, Slater Steels acquired Atlas Specialty Steels and assumed responsibility for the Site, but ceased landfilling in 2003. Subsequently, in May 2004, the Site was purchased from bankrupt Slater Steels by Centre Steel Holdings Ltd.

On February 21, 2005, the MOE issued an Order (Order 1) to Centre Steel Holdings Ltd., requiring the company to take actions to prevent future discharges into the Welland River. Centre Steel did not comply with the requirements of the Order.

On March 24, 2005, the MOE issued another Order (Order 2) to the Regional Municipality of Niagara requiring the municipality to establish, operate, and maintain on-site sewage works to prevent discharge of leachate into the Welland River, until the Landfill is purchased by a new owner.

On August 16, 2010, amended C of A No. A120409 was issued to Integrated Municipal Services (IMS). As of November 18, 2010, IMS changed its name to Niagara Waste Systems Limited (NWSL). As of January 1, 2013, NWSL changed its name to Walker Environmental Group Inc. (WEG).

The list below provides a complete summary of the ECA and subsequent amendments for this site:

- Original C of A No. A120409 issued on July 3, 1980 to Atlas Specialty Steels;
- Amendment to Provisional C of A No. A120409 issued July 23, 1999 to Atlas Specialty Steels to permit the reclamation of metals from the waste and requiring a comprehensive two-year landfill gas, surface water, and groundwater monitoring program;
- Amendment to Provisional C of A No. A120409 issued February 21, 2003 to add documents to Schedule A and increase monitoring requirements;
- Amendment to Provisional C of A No. A120409 issued August 6, 2003 to amend financial assurance requirements;
- Amendment to Provisional C of A No. A120409 issued August 16, 2010 to Integrated Municipal Services (IMS) for the reconfiguration and remediation of the site. On November 18, 2010, IMS notified the MECP that NWSL will be the site operator;
- Amendment to Provisional C of A No. A120409 issued March 31, 2011 to Niagara Waste Systems Limited (NWSL) to acknowledge the change in the site operator name from Integrated Municipal Services Inc. (IMS) to NWSL.
- Amendment to Provisional C of A No A120409 issued May 26, 2011 to NWSL to add documents to Schedule A and to outline the requirements during construction of Phase A of the Remedial Works (i.e. groundwater migration barrier, groundwater collection system and clay groundwater migration barrier);
- Amendment to Provisional C OF A No A120409 issued July 12, 2011 to NWSL to add documents to Schedule A pertaining to quality control programs for the landfill construction and Phase A Remedial Works;

- Amendment to ECA No. A120409 issued March 7, 2012 to revise the due date for trigger mechanism and contingency plans for groundwater and surface water at the site;

- Amendment to ECA No. A120409 (Notice 1) issued May 29, 2012 to amend final capping requirements and approve Phase 2 construction. Additional documents were added to Schedule A;

- Amendment to ECA No. A120409 (Notice 2) issued September 19, 2012 to reference minor updates to the Design & Operations Report, dated June 2012. Additional documents were added to Schedule A;

- Letter from MECP advising notification of change in company name has been registered and on record for ECA No. A120409 issued May 16, 2013 to acknowledge the change in the site operator name from Niagara Waste Systems Limited (NWSL) to Walker Environmental Group Inc. (WEG), and

- Amendment to ECA No. A120409 (Notice 3) issued April 4, 2014 to revise the due date for trigger mechanisms and contingency plans for groundwater and surface water at the site.

The ECA (Appendix 1) allowed for the use and operation of a 13.82 Hectare landfill (fill area) on a 22.66

Hectare site. The accepted waste types were solid, non-hazardous waste, comprised primarily of the following:

- soils from brownfield site cleanups;
- soils from excavations;
- soils from underground storage tank (UST) removals
- industrial process wastes that are soil-like (e.g. foundry sands, slag, emission control dusts, treatment residues);
- sediments from dredging operations; and
- rubble and fines from construction and demolition projects and/or recycling operations;

The approved overall landfill capacity (Cell 1 and Cell 2, combined) including the historic wastes was 2,207,000 m3.

1.3 – TOTAL WASTE DEPOSITED ON SITE

The total quantity of waste within the site is approximately 2,168,296 m3 including approximately 735,000 m3 of previously placed waste from historic steel plant operations in Cell 1. Approximately 38,704 m3 of capacity was forfeited to accommodate the City of Welland's request to provide an access road to the top of the site which will be utilized as part of their final end use plan noted in Section 3.1 below.

SECTION 2

2.1 – SITE APPEARANCE AFTER CLOSURE/ ECA

The site has been developed and prepared for closure as shown in Figure 5 according to approved designs including:

- Final contours (ECA Condition: 59)
- Final Cap placed at minimum 1 m3 depth (ECA Condition: 56)
- Top Soil or other suitable growing medium at minimum 0.15 meters (ECA Condition: 56)
- Vegetative cover placed that is suited to local conditions and capable, with minimal care, of providing vigorous, plentiful cover no later than its 3rd growing season (ECA Condition: 57)
- Surface water drainage routes and infrastructure

A simulation of site appearance is provided in Appendix 2.

2.2 – ADDITIONAL ENHANCEMENTS

Two leachate flushing manholes were installed along the force main route, and will remain in place to enhance ongoing flushing and inspections into the future. The locations of the manholes are provided in Figure 7.

At the request of the City of Welland and as a means to improve monitoring activities an access road to the top of the site will remain in place as shown in Figure 7.

SECTION 3

3.1 – DESCRIPTION OF END USE

The City of Welland is in the process of implementing an end use plan which will establish future uses of the site which may include:

- Walking trails
- Grass berms
- Lookout vantage points of the surrounding areas

As stated in O. Reg. 153/04 Section 13(3), the City of Welland will not be required to submit an application to change the land use from industrial to parkland.

SECTION 4 – PROCEDURES FOR CLOSURE OF THE SITE

4.1 – ADVANCE NOTIFICATION OF THE PUBLIC OF THE LANDFILL CLOSURE

WEG has and will continue to meet with Public Liaison Committee (PLC) members prior to closure on a bi-annual basis. An update of site volumes and estimated operating years remaining until closure was provided in each PLC meeting and, as part of the site's Annual Report Reviews which occurred annually with the PLC.

A copy of the November 2017 presentation's slide introducing volumes accepted at the site and estimated site closure to the PLC members is included in Appendix 3. In addition, City of Welland representatives attended the November 2017 PLC meeting where the idea of a Public Consultation Process was introduced.

As a result, the City of Welland along with consultant (Dillon) started the public engagement process to announce the impending closure of the Atlas site and with input from the public, explore options of the site's use after closure in 2017.

- The first session for the Atlas Landfill Concept Plan was held Wednesday, June 28, 2017
- The second session was held Thursday, September 14, 2017

In addition, City of Welland representatives attended the November 2017 PLC meeting where site closure was discussed in more detail and the Public Consultation Process was introduced and is included in Appendix 3.

The City of Welland has also provided Advanced Notification to Welland residents via their website.

4.2 – COMPLETION, INSPECTION AND MAINTENANCE OF FINAL COVER AND LANDSCAPING

As described in Section 2.1 (above) the site has been prepared in accordance with ECA requirements. Monthly site inspections have been carried out during the years of WEG operating the site with no operational concerns identified with respect to final cover or landscaping as reported in Annual Reports prepared throughout the operation of the site. Ongoing inspections will continue after closure as identified in Section 6 below.

4.3 – SITE SECURITY

The site's current fencing will remain throughout the closure of the site and will be locked to restrict site access with the exception of those times when the City of Welland deems acceptable as part of the end use described in Section 3.1 (above).This fence is continual along the south, east and northern perimeter of the site (Figure 5) while the west side is bordered by the Welland River and its wetland. The site's access roads will be maintained throughout the year to permit maintenance activities, security and other inspections.

4.4 – REMOVAL OF UNNECESSARY LANDFILL RELATED STRUCTURES, BUILDINGS and FACILITIES

Upon closure of the site, all landfill related structures, buildings and facilities that are not required for ongoing site maintenance or post closure uses will be removed.

- Leachate pumping and power stations, monitoring wells, surface water control facilities, and perimeter fencing will remain while the landfill scale and scale deck will be removed within 6 months of closure.

4.5 – FINAL CONSTRUCTION OF ANY CONTROL, TREATMENT, DISPOSAL AND MONITORING FACILITIES FOR LEACHATE, GROUNDWATER, SURFACE WATER AND LANDFILL GAS

All facilities for landfill pre and post closure operations including leachate pumping and power stations, monitoring wells and surface water control facilities are in place and performing as designed.

At the time of this report's preparation surface water monitoring station SW-7 remained to be constructed. This facility will be completed in the near future once all final capping, seeding and surface water pathways are completed. There are no other control facilities required at the time of closure.

SECTION 5 – TIME-PERIOD FOR IMPLEMENTATION OF ITEMS 4.1 TO 4.5

As noted above the time-period for implementation of Items 4.1 to 4.5 of Section 4 are:

- 4.1 – ADVANCE NOTIFICATION
  - ***Completed***
- 4.2 – COMPLETION, INSPECTION and MAINTENANCE OF FINAL COVER AND LANDSCAPING
  - ***Completed / on-going***
- 4.3 – SITE SECURITY
  - ***Completed***
- 4.4 – REMOVAL OF UNNECESSARY LANDFILL RELATED STRUCTURES, BUILDINGS AND FACILITIES
  - ***Within 6 months of Closure***
- 4.5 – FINAL CONSTRUCTION OF ANY CONTROL, TREATMENT, DISPOSAL AND MONITORING FACILITIES FOR LEACHATE, GROUNDWATER, SURFACE WATER AND LANDFILL GAS
  - ***All leachate and ground water monitoring facilities – Completed***
  - ***Final surface water facility SW-7 will be completed by time of actual closure***

SECTION 6 – PROCEDURES FOR POST CLOSURE CARE OF CONTROL FACILITIES:

6.1 – OPERATION, INSPECTION, MAINTENANCE AND MONITORING OF THE LEACHATE CONTROL FACILITIES

- Operation
  - Leachate will continue to be collected at both existing pump stations (PS-1 and PS-2) and pumped via the exiting leachate force main leading to the Region of Niagara's sanitary sewer system as shown in Figure 4.
- Inspection
  - All leachate collection systems will be inspected on a monthly basis according to Standard Operating Procedure: City of Welland **ALF (A)**: (Appendix 5), and as shown on the *Monthly Inspection Report* (Appendix 4)

  - Inspections include:
    - Leachate Collector/Toe Drain manholes along Waterloo Barrier
    - PS1/PS2
    - Inspection of Leachate Force Main and Discharge Manhole

- Maintenance
  - Based on information noted on the *Monthly Inspection Reports* required adjustments *or* repairs can be made in a timely manner
  - In addition to maintenance based on *Monthly Inspection Report* results, the leachate collection force main system will be inspected by remote video camera on a biennial basis. Inspection schedules will be adjusted based on on-going results.
    - Flushing activities will occur based on the remote video images
- Monitoring and Reporting
  - Upon closure monitoring will continue as required by Condition 79 in accordance with Schedules “A” “B” and “C” of ECA 120409 (Appendix 1) and Standard Operating Procedure: **City of Welland ALF (A)** (Appendix 5)
  - The site’s Annual Post Closure Report prepared for the MECP may include recommendations to amend monitoring requirements based on future monitoring results
  - Monitoring locations are shown in Figure 6
  - The results of leachate analysis, the interpretations of the analysis, and the assessment of the need to modify the monitoring program from the most current site Annual Report (2016) is included in Appendix 8
  - Monthly Inspection Forms and monitoring results will be reported in the site’s Annual Post Closure Report

6.2 – INSPECTION, MAINTENANCE AND MONITORING OF THE GROUNDWATER CONTROL FACILITIES

- Inspection
  - All groundwater monitoring systems and locations will be inspected on a monthly basis according to Standard Operating Procedure: **City of Welland ALF (B)** (Appendix 5), and as shown on the *Monthly Inspection Report* (Appendix 4)
- Maintenance
  - Based on information noted on the *Monthly Inspection Reports required adjustments or* repairs can be made in timely manner
- Monitoring and Reporting

- Upon closure, monitoring will continue as required by Condition 79 in accordance with Schedules "B" of ECA A120409 (Appendix 1) and Standard Operating Procedure: **City of Welland ALF (B)** (Appendix 5)
- The site's Annual Post Closure Report prepared for the MECP may include recommendations to amend monitoring requirements based on future monitoring results
- Monitoring locations are shown in Figure 6
- The results of ground water analysis, the interpretations of the analysis, and the assessment of the need to modify the monitoring program from the most current site Annual Report (2016) is included in Appendix 8
- Monthly Inspection Forms and monitoring results will be reported in the site's Annual Post Closure Report

6.3 – INSPECTION, MAINTENANCE AND MONITORING OF THE SURFACE WATER CONTROL FACILITIES

- Operation
  - Surface water will continue to be collected at the existing storm water ponds and discharged through the existing conveyance system as shown in Figure 5
  - At this time, discharge of surface water will follow the site's existing Municipal and Private Sewage Works Approval – No. 6116-8HPHH4 as shown in Appendix 1.
- Inspection
  - All surface water control systems and locations will be inspected on a monthly basis according to Standard Operating Procedure: **City of Welland ALF (C)** (Appendix 5), and as shown on the *Monthly Inspection Report* (Appendix 4)
- Maintenance
  - Based on information noted on the *Monthly Inspection Reports required adjustments or* repairs can be made in timely manner
- Monitoring and Reporting
  - Upon closure, monitoring will continue as required by Condition 79 in accordance with Schedule "C" of ECA A120409 (Appendix 1) and Standard Operating Procedure: **City of Welland ALF (C)** (Appendix 5)
  - The site's Annual Post Closure Report prepared for the MECP may include recommendations to amend monitoring requirements based on future monitoring results
  - Monitoring locations are shown in Figure 6
  - The results of surface water analysis, the interpretations of the analysis, and the assessment of the need to modify the monitoring program from the most current site Annual Report (2016) is included in Appendix 8

- Monthly Inspection Forms and monitoring results will be reported in the site's Annual Post Closure Report

6.4 – INSPECTION, MAINTENANCE AND MONITORING OF THE LANDFILL GAS CONTROL FACILITIES

- Inspection
  - All landfill gas monitoring systems and locations will be inspected on a monthly basis as shown on the *Monthly Inspection Report* (Appendix 4)
- Maintenance
  - Based on information noted on the *Monthly Inspection Reports required adjustments or* repairs can be made in timely manner
- Monitoring and Reporting
  - Upon closure, monitoring will continue as required by Condition 79 in accordance with Schedule D of the ECA. (Appendix 5) by a third party consultant who specializes in landfill gas monitoring
  - The site's Annual Post Closure Report prepared for the MECP may include recommendations to amend monitoring requirements based on future monitoring results.
  - Monitoring locations are shown in Figure 6
  - The results of landfill gas analysis, the interpretations of the analysis, and the assessment of the need to modify the monitoring program from the most current site Annual Report (2016) is included in Appendix 8
  - Monthly Inspection Forms and monitoring results will be reported in the site's Annual Post Closure Report

SECTION 7 – COMPLAINT CONTACT AND RESPONSE PROCEDURES

- The City of Welland/Operator will ensure each complaint is recorded and numbered, either electronically or in a log book, and include the following information: the nature of the complaint, the name, address and telephone number of the complainant (if the complainant will provide) and the time and date of the complaint
- The City of Welland/Operator will initiate appropriate steps to determine if the cause of the complaint is related to the site, will take the necessary actions to address the cause of the complainant, and will replay to the complainant
- The City of Welland/Operator will complete and retain a written report listing the actions taken to resolve the complaint and actions or recommendations to reasonably avoid a similar recurrence

- The City of Welland/Operator will provide a Public Response telephone number and will ensure appropriate people are designated to respond to complainants in a timely manner.
- All complaints and actions to remedy the complaints will be summarized in each year's Annual Post Closure Report.
- The sign at the main entrance will have the complaint contact phone number on it.

SECTION 8 – NEED FOR IMPLEMENTING CONTINGENCIES PLANS FOR LEACHATE AND METHANE GAS

8.1 – LEACHATE

- **There is no need for leachate contingency at this time**
    - The constructed Waterloo Barrier between the landfill and the Welland River in conjunction with the on-site pumping stations/leachate collection system, collect and relay leachate to the sanitary sewer for treatment at the Region of Niagara's Waste Water Treatment Facility
    - Leachate is sampled twice annually at maintenance hole location MHBB and LCH-MH4 and compared against the Regional Municipality of Niagara sanitary sewer discharge limits (by-law No. 27-2017).
    - Monitoring results and applicable adjustment recommendations will be included in the site's Annual Post Closure Report prepared for the MECP.
    - If required, procedures outlined in the site's existing Leachate Management Plan – Contingency (Schedule A: Item 46 Appendix 6) will be followed.

8.2 – LANDFILL GAS

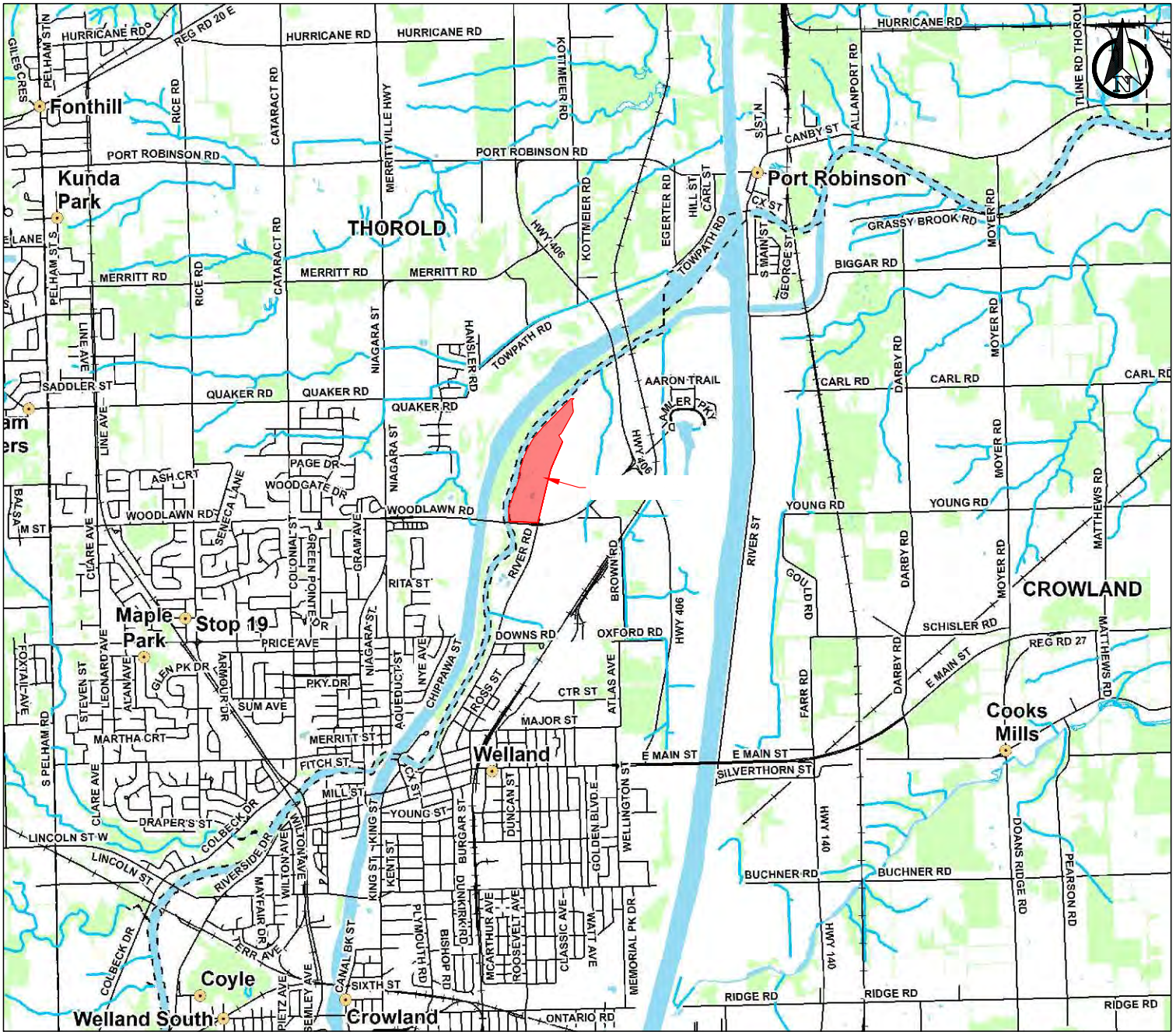
- **There is no need for landfill gas contingency at this time**
    - Concentrations at the landfill gas probes continue to range from 0% to 0.1% (by volume) and are much lower than the lower explosive limit for methane gas of 5% (by volume).
    - Landfill gas concentrations are not expected to rise given the low levels of methane gas detected and the low decomposable organic matter content of the waste fill.
    - Monitoring results and applicable adjustment recommendations will be included in the site's Annual Post Closure Report prepared for the MECP.
    - If required, procedures outlined in the site's existing Landfill Gas Management Plan - Contingency (Schedule A: Item 15 – Sections 7.3.1 and 7.3.2 Appendix 6) will be followed.

SECTION 9 – ESTIMATE OF CONTAMINATING LIFESPAN

- Due to the nature of the site and the limited time that inspections, monitoring and reporting efforts have been undertaken, the City of Welland/Operator will provide an updated estimate of the contaminating lifespan in the site's Annual Post Closure Report every 5th year starting from the year of site closure utilizing the information contained in Appendix 8 as the base line data.

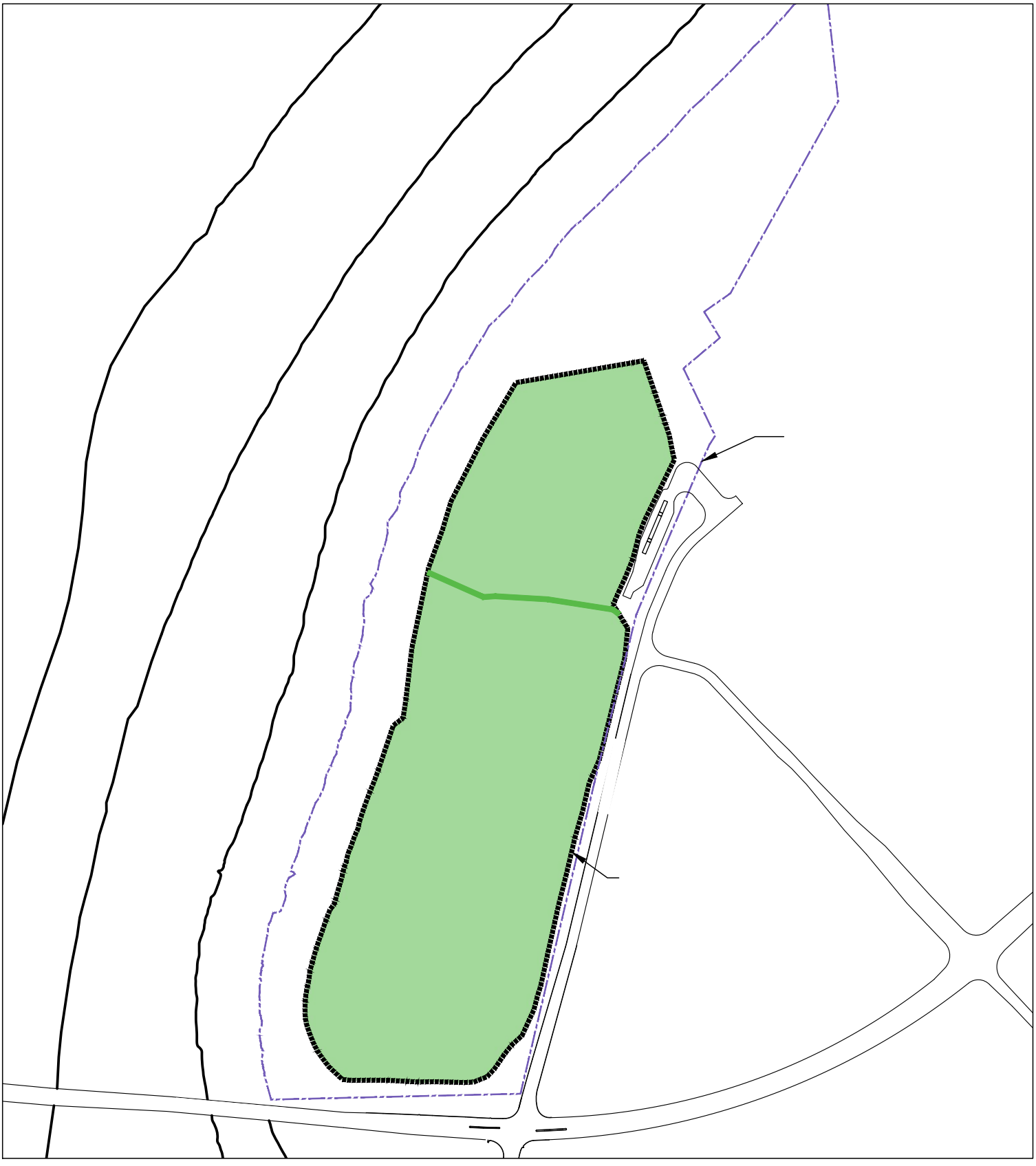
FIGURES

Figure 1
Site Location



File Name: G:\WEG\CAD & ENG\NWSL\93 - Atlas Landfill\4320.5 - Design\Closure Plans\Figure 1_ Site Location_(A)_16-2-18.dwg Plotted: Feb 20, 2018 @ 1:49pm by Tania

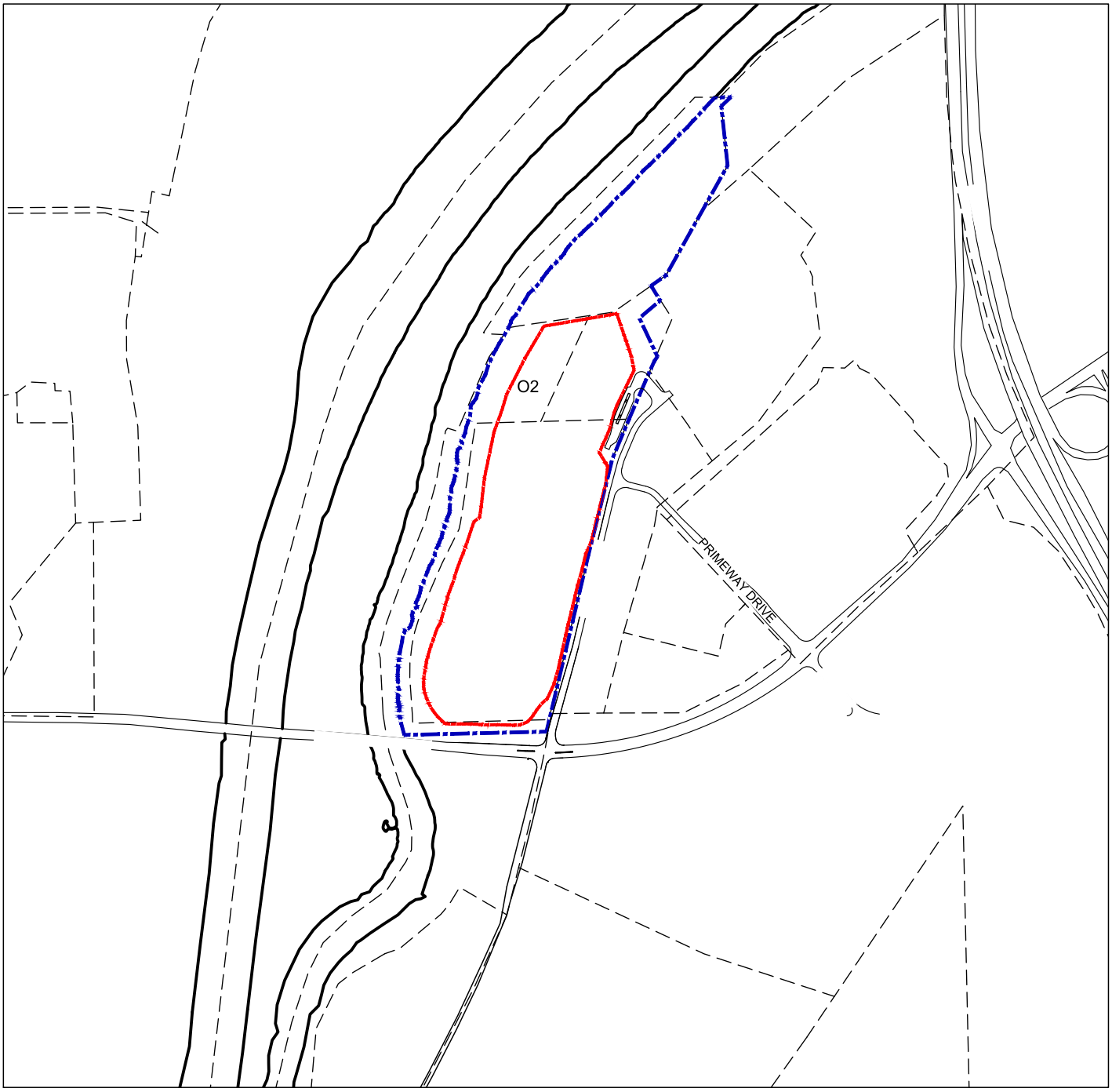
Figure 2
Total Site Area



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File Name: C:\Users\Tania\appdata\local\temp\AcPublish_6564\Figure 2_Site Areas (0)_20-2-18.dwg Plotted: Feb 20, 2018 @ 4:33pm by Tania

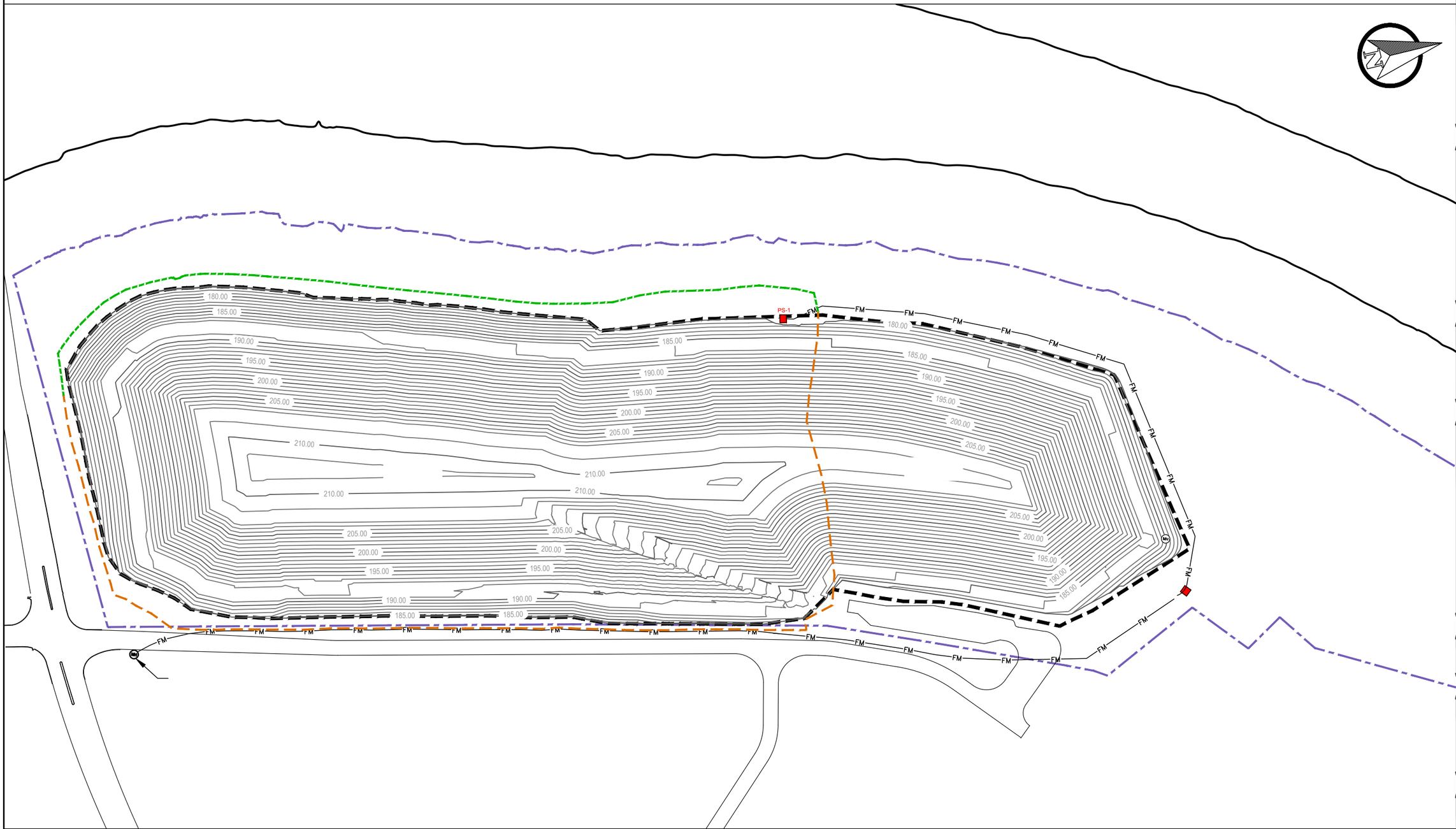
Figure 3
Site and Adjacent Lands Zoning Designation



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File Name: C:\Users\Tania\appdata\local\temp\AcPublish_6564\Figure 3_Site & Adjacent Lands Zoning Designations_(0)_20-2-18.dwg Plotted: Feb 20, 2018 @ 4:59pm by Tania

Figure 4
Leachate Control, Force mains & Pumping Stations

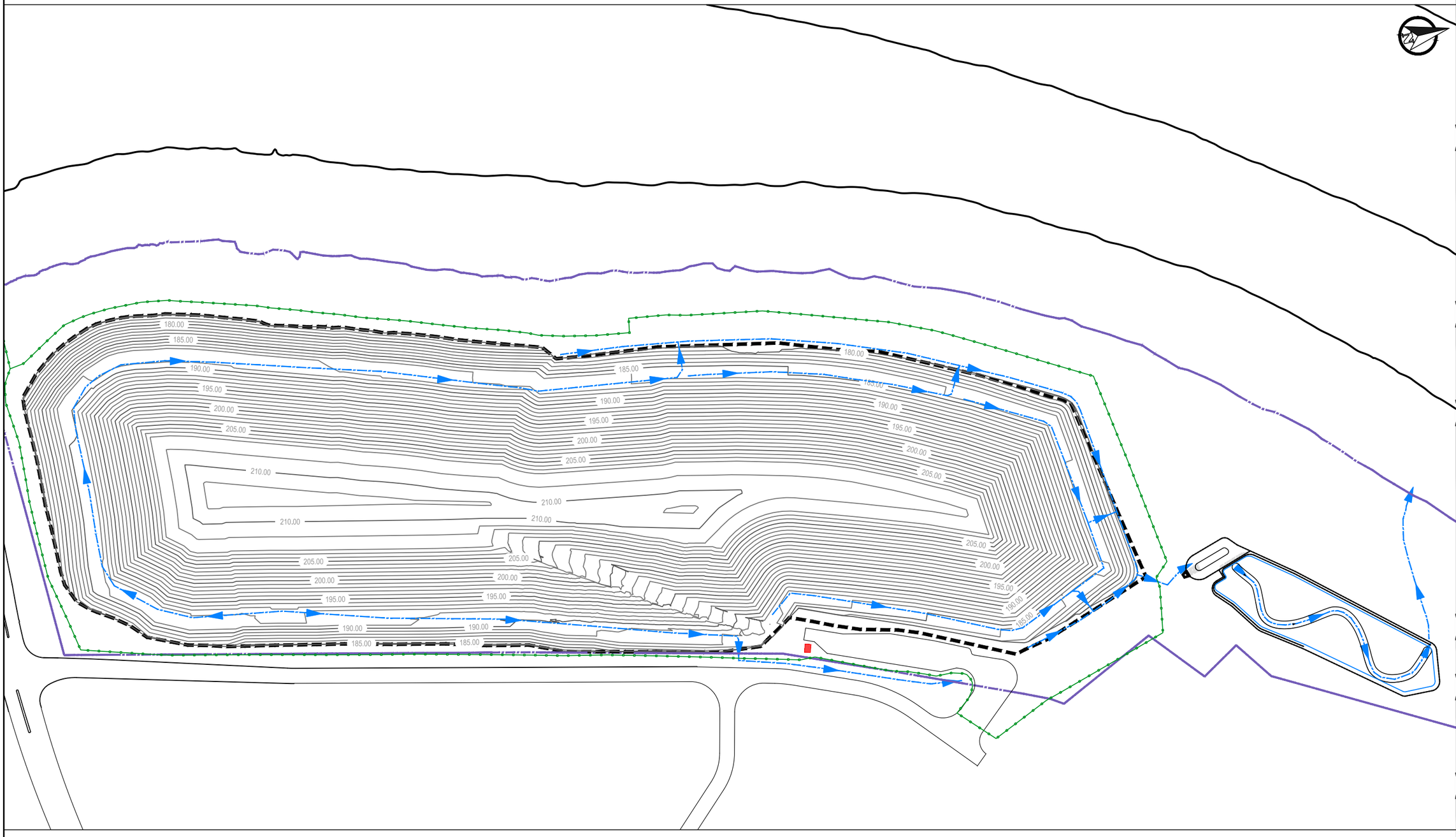


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Revision No. 0

Fig 4

Figure 5

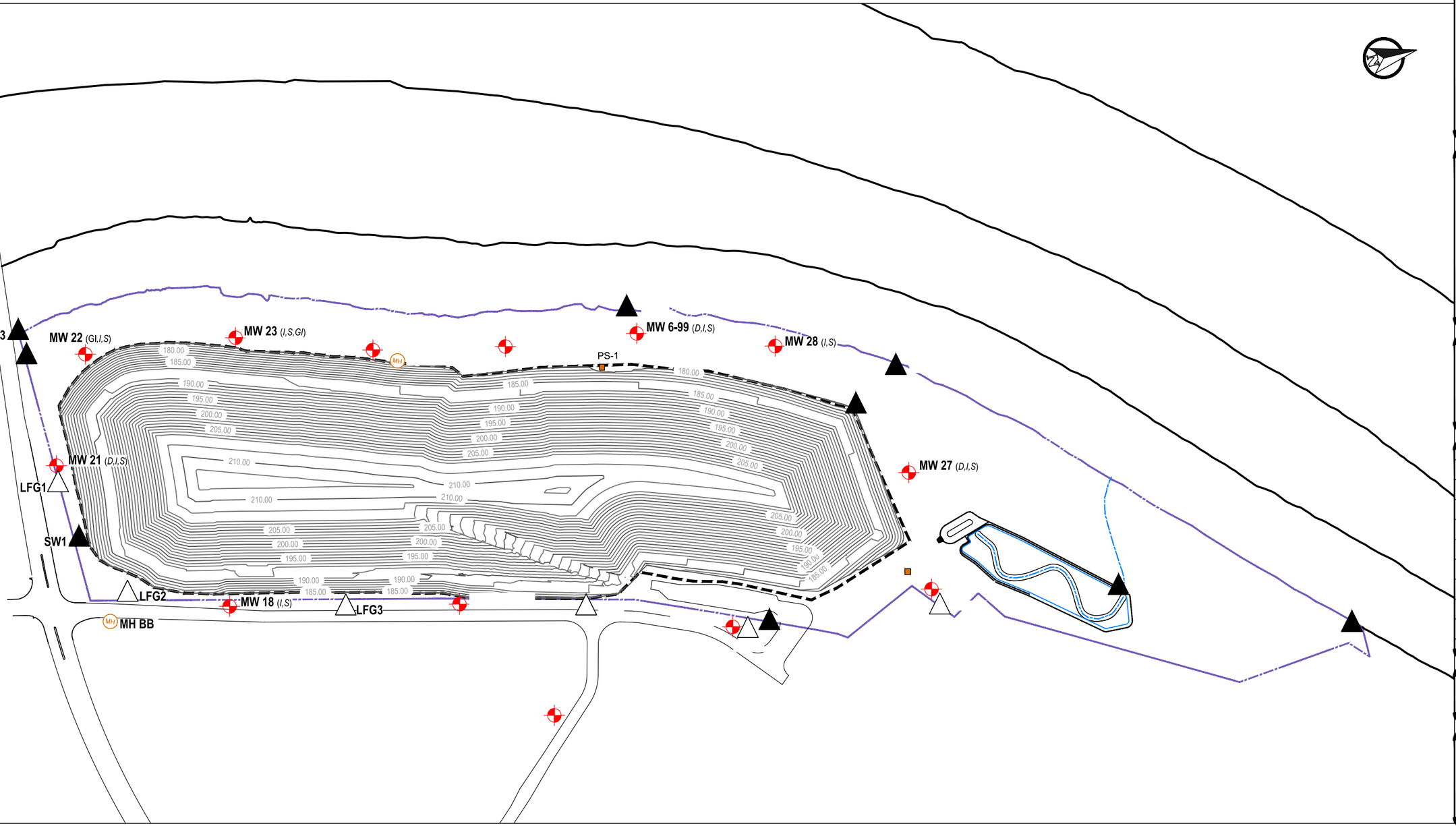
Final Contours and Site Drainage



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Fig 5 | Revision No. 0

Figure 6

Monitoring Locations



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1:2500

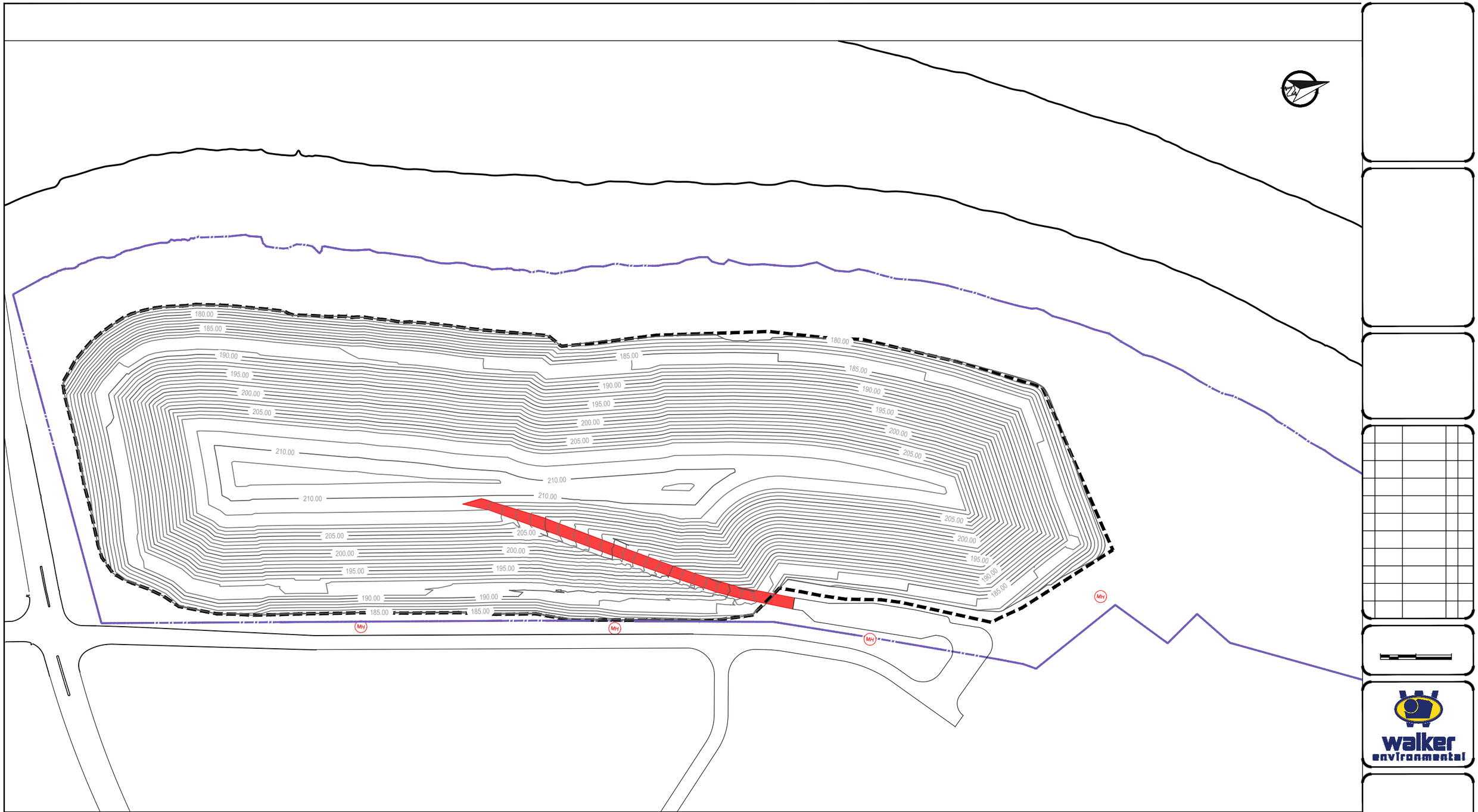
Revision No. 1

Figure 7

Site Enhancements

1) Leachate Forcemain Flushing Manholes

2) Access Road



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TMcVicar	Scale 1:2500
Fig 7	Revision No. 0

APPENDICES

Appendix 1:

1) Ontario Ministry of the Environment and Climate Change Compliance Approval ECA: A120409

2) Ontario Ministry of the Environment and Climate Change Sewage Works
ECA: 6166-8HPHH4

3) Ontario Ministry of the Environment and Climate Change Permit to Take Water Permit: 0636-9A3RCR

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER A120409
Issue Date: February 3, 2017

Walker Environmental Group Inc.
Post Office Box, No. 100
Thorold, Ontario
L2N 7S9

Site Location: Walker Environmental Group Inc. (Atlas Landfill)
685 River Rd
Welland City, Regional Municipality of Niagara
L3B 5N6

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 13.82 hectare landfill site within a total site area of 22.66 hectares.

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

"Adverse Effect" is defined under the Environmental Protection Act, R.S.O., 1990;

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

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

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

"EAAB"or **"EAB"** means the Environmental Assessment and Approvals Branch (now Environmental Approvals Branch) of the Ministry of the Environment and Climate Change;

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

"Guideline B-7" means the Ministry's Guideline B-7 also known as the Reasonable Use Policy Objectives;

"Ministry and MOECC" means the Ontario Ministry of the Environment and Climate Change;

"ODWS" means the Ministry's Ontario Drinking Water Standards;

"Operator" has the same meaning as "operator" as defined in s.25 of the EPA and in this Approval refers to Walker Environmental Group Inc.;

"Owner" means the Corporation of the City of Welland and its successors and assigns;

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

"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.

"PWQO" means the Ministry's Provincial Water Quality Objectives;

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

"Site" means the entire waste disposal site, including the buffer lands, located at 685 River Road, Welland Ontario and legally described as:
Part Lot 22, Concession 2 Crowland Township, Part 1 59R10922, Welland;
Part 14, Plan 59R-12968 (Reg # SN241895) - Part of Lot 22, Concession 2, former Township of Crowland being Part 14, Plan 59R-12968;
Part 1, Plan 59R-13931 (Reg. # SN241899) - Part of Lot 22, Concession 2, former Township of Crowland being Part 1, Plan 59R-13931;
PT LTS 21 & 22 CON 2 Crowland , PT TWP LT Broken Front 222 THLD, PT OF THE RIVER BED OF THE OLD WELLAND RIVER, ALL AS IN RO555366 (ELEVENTHLY); S/T RO555366 ; WELLAND; and
Former Cambridge Road allowance between Concessions 2 and 3, Part 1 and 2, 59R-5212; Welland, approved by this Approval.

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

TERMS AND CONDITIONS

GENERAL

Compliance

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

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

In Accordance

3. Except as otherwise provided for in this *Approval* , the *Site* shall be designed, developed, built, operated and maintained in accordance with the application for this *Approval* , dated July 29, 2008, and the supporting documentation listed in Schedule "A".

Other Legal Obligations

4. The issuance of, and compliance with, this *Approval* does not:

- relieve any person of any obligation to comply with any provision of the *EPA* or any other applicable statute, regulation or other legal requirement; or
- limit in any way the authority of the *Ministry* to require certain steps be taken or to request that any further information related to compliance with this *Approval* be provided to the *Ministry* ;

unless a provision of this *Approval* specifically refers to the other requirement or authority and clearly states that the other requirement or authority is to be replaced or limited by the this *Approval* .

Adverse Effect

5. The *Owner* and *Operator* shall take all reasonable steps to minimize and ameliorate any adverse effect or impairment of water quality resulting from the operation of the *Site* , including such accelerated or additional monitoring as may be necessary to determine the nature of the effect or impairment.

6. The *Owner* and *Operator* remain 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 of the Owner or Operator respectively that caused the adverse effect or impairment of water quality.

Furnish Information

7. Any information requested by the *Director* or a *Provincial Officer* concerning the *Site* and its operation under this *Approval* , including but not limited to any records required to be kept by this *Approval* shall be provided in a timely manner.

8. The receipt of any information by the *Ministry* or the failure of the *Ministry* to prosecute any person or to require any person to take any action, under this *Approval* or under any statute, regulation or subordinate legal instrument, in relation to the information, shall not be construed

as:

- an approval, waiver, or justification by the *Ministry* of any act or omission of any person that contravenes any condition of this *Approval* or any statute, regulation or other subordinate legal requirement; or
- acceptance by the *Ministry* of the information's completeness or accuracy.

Freedom of Information Act

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

Interpretation

10. Where there is a conflict between a provision of any document, including the application, referred to in this *Approval* , and the conditions of this *Approval,* the conditions in this *Approval* shall take precedence.

11. 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.

12. 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.

13. 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.

14. This Environmental Compliance Approval revokes and replaces all previous Approvals and amendments for this site.

Financial Assurance

15. Financial assurance is not required for this site provided the Owner of the Site continues to remain the Corporation of the City of Welland.

Certificate of Requirement

16. Pursuant to Section 197 of the *EPA* , no person having an interest to purchase the *Site* shall deal with the *Site* in any way without first giving a copy of this *Approval* to each person acquiring an interest in the *Site* as a result of the dealing.

17. Two copies of a completed Certificate of Requirement, containing a registerable description of the *Site* , shall be submitted to the Director for the Director's signature within 60 calendar days of the date of this *Approval.*

18. The Certificate of Requirement shall be registered in the appropriate land registry office on title to the *Site* and a duplicate registered copy shall be submitted to the *Director* within 10 calendar days of receiving the Certificate of Requirement signed by the *Director* .

No Transfer or Encumbrance

19. No portion of this *Site* shall be transferred or encumbered prior to or after closing of the *Site* unless the *Director* is notified in advance and is satisfied with the arrangements made to ensure that all conditions of this *Approval* will be carried out and that sufficient financial assurance is deposited with the *Ministry* to ensure that these conditions will be carried out.

Change of Owner

20. 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:
    - the ownership of the *Site* ;
    - the Operator of the *Site* ;
    - the address of the *Owner* or *Operator* ;
    - 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;
    - the name of the corporation where the *Owner* or *Operator* is or at any time becomes a corporation, other than a municipal 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.

21. In the event of any change in the 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 *Approval* , and a copy of such notice shall be forward to the *Director* and *District Manager* .

22. In the event of any change in the ownership of the works, other than a change to a successor municipality, the Owner shall ensure that a Financial Assurance plan is submitted to the Ministry prior to transference of ownership.

Inspections

23. No person shall hinder or obstruct a *Provincial Officer* from carrying out any and all inspections authorized by the *OWRA* , the *EPA* , or the *PA* , of any place to which this *Approval* relates, and without limiting the foregoing:
    - to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this *Approval* are kept;

- to have access to, inspect, and copy any records required to be kept by the conditions of this *Approval* ;
- to inspect the *Site,* related equipment and appurtenances;
- to inspect the practices, procedures, or operations required by the conditions of this *Approval* ; and
- to sample and monitor for the purposes of assessing compliance with the terms and conditions of this *Approval* or the *EPA* , the *OWRA* or the *PA* .

Site Ownership

24. The Owner or Operator is not permitted to undertake landfilling of waste until all parcels that form part of the legal description for the site are acquired by the Owner.

Commencement of Site Operation

Condition 25 has been satisfied and is hereby revoked.

Waste Type

26. Only the solid non-hazardous waste limited to the following shall be accepted at the *Site* :
    - soil from brownfield site clean ups;
    - soil from excavations;
    - soil from underground storage tank removals;
    - spill clean up residue;
    - industrial process waste that is soil-like (foundry sands, slag, emission control dusts, treatment residues);
    - sediment from dredging operations;
    - finished compost that does not meet the Ministry's quality standards for use as a soil amendment;
    - rubble and fines from construction and demolition projects and/or recycling operations;
    - concrete and brick; and
    - asbestos waste

27. Any waste type not listed in the previous condition shall not be accepted at the *Site* .

28. No curbside waste, liquid industrial or hazardous waste shall be disposed of at the Site.

Capacity

29. The *Operator* shall only accept and deposit waste at the site as long as there is available capacity as defined by the final contours for the *Site* approved by this *Approval* as shown in Drawing C-05 in Item 45 in Schedule "A".

30. The amount of waste deposited at the site shall not exceed the site capacity of 2,207,000 cubic metres.

Daily Waste Limit

31. No more than 5,000 tonnes of waste per day may be accepted at the *Site* .

Service Area

32. Only waste that is generated **within the Province of Ontario** shall be accepted at the *Site* .

CONSTRUCTION, INSTALLATION and PLANNING

Major Works

33. For the purposes of this *Approval* the following are *Major Works* :
- gas management system;
- leachate management system;
- groundwater management system;
- liner.

34. A final detailed design shall be prepared for each *Major Work* that is not approved by this Approval and is to be constructed at the *Site* along with any Supporting Documentation shall be submitted to the Director for approval.

35. The final detailed design of each *Major Work* shall include the following:
- design drawings and specifications;
- a detailed quality assurance / quality control (QA/QC) program for construction of the major work, including necessary precautions to avoid disturbance to the underlying soils; and
- details on the monitoring, maintenance, repair and replacement of the engineered components of the major work, if any.

36. No construction of a Major Work shall commence prior the Director approving, in writing, the final detailed design of that Major Work. Each major work shall be constructed in accordance with the approved final detailed design and the QA/QC procedures shall be implemented as approved by the Director.

Site Preparation Report

37. No person shall deposit any waste in the new fill area of the *Site* until a written *Preparation Report* has been submitted to the *Director* and *District Manager* documenting that:
- all construction;
- *QA/QC* activities;
- *Site* conditions; and,
- all details of the construction of the *Site* (or stage 1 of the *Site*);

are in accordance with the approved design plans and specifications.

As-built drawings

38. As-built drawings for all *Major Works* shall be retained on site and made available to *Ministry* staff for inspection.

Quality Control Program

39. (1) In accordance with Item 11 of Schedule "A", the *Operator* shall submit to the *Director* for approval a quality control program for the landfill construction. The quality control program shall include instrumentation to monitor ground movements, grain size analysis, in situ and laboratory permeameter tests, compaction and moisture control tests.

(2) The quality control program for the Phase A Remedial Works as approved by Condition No. 107 shall be completed in accordance with Items 36 and 37 in Schedule "A".

40. No landfill construction may occur until the Quality Control Program has been approved by the Director.

Signage

41. A sign shall be installed and maintained at the main entrance/exit to the *Site* on which is legibly displayed the following information:

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

Operation

Proper Operation

42. The *Site* shall be properly operated and maintained at all times. All waste shall be managed and disposed of in accordance with the *EPA* , *Regulation 347* , and the requirements of this *Approval.* At no time shall the discharge of a contaminant that causes or is likely to cause an adverse effect be permitted.

43. All loads of waste must be properly inspected by trained site personnel prior to acceptance at the site and waste vehicles must be diverted to appropriate areas for waste disposal.

Vermin, etc.

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

Scavenging

45. No scavenging is to occur at the Site.

Dust

46. The Operator shall control fugitive dust emissions from on site sources including but not limited to on-site roads, stockpiled cover material and, closed landfill area prior to seeding especially during times of dry weather conditions. If necessary, major sources of dust shall be treated with water and/or dust suppression materials to minimize the overall dust emissions from the site.

Noise

47. The Operator shall comply with noise criteria in MOE Guideline entitled "Noise Guidelines for Landfill Sites" and the Site shall comply with the limits set out in Ministry Publication NPC232 or NPC205, whichever is applicable, as amended from time to time.

Burning Waste Prohibited

48. Burning of waste at the *Site* is prohibited.

Landfill Gas

49. All buildings are to be free of any landfill gas accumulation. The Operator shall provide adequate ventilation systems to relieve landfill gas accumulations in buildings if necessary.

SURFACE WATER:

50. The Operator shall take all appropriate measures to minimize surface water from coming in contact with waste.

51. The Operator shall not discharge surface water to receiving water bodies without an approval under Section 53 of the OWRA.

Operations Manual

52. An operations and procedures manual that addresses the requirements of this *Approval* shall be prepared within 120 days of the issuance date of this *Approval* to the satisfaction of the *District* Manager and shall include:

- Health and safety;
- Operation and maintenance of the site;
- Waste acceptance;
- Waste disposal area and development;
- Nuisance management;
- Leachate management;
- Landfill gas management;
- Surface water/Storm water management;
- Inspections and monitoring;
- Contingency plans and emergency procedures;
- Complaints; and,
- Reporting and record keeping.

53. The operations and procedures manual shall be:
    - retained at the Site;
    - kept up to date through periodic revisions; and
    - be available for inspection by *Ministry* staff.

Waste Placement

54. No person shall deposit waste in a lake in accordance with Section 27 of the EPA.

55. Landfilling operations shall be conducted in accordance with Item 45 in Schedule "A" attached to this *Approval* .

Cover

56. Cover material shall be applied as follows:

    - Final Cover - In areas where landfilling has been completed to final contours, a minimum 1 metre thick layer of final cover soil shall be placed having a hydraulic conductivity value of 1.0×10^{-8} m/s or less followed by 0.15 metres of topsoil. Fill areas shall be progressively completed and rehabilitated as landfill development reaches final contours.

Vegetative Cover

57. A vegetative cover consisting of vegetation that is suited to local conditions and that is capable with minimal care of providing vigorous, plentiful cover no later than its 3rd growing season shall be established over all completed areas to control erosion and minimize evaportranspiration. Complete planting as soon as possible after reaching final contours.

58. If weather conditions do not allow timely placement of final and vegetative cover, silt curtains shall be employed to minimize silt loadings to surface water bodies.

Final Slopes

59. All final slopes of the landfill shall conform with the recommendations and the design as presented in Item 11 of Schedule "A". Any proposed changes to the final slopes would require certification by a Professional Engineer and approval of the Director.

Hours of Operation

60. Waste shall only be accepted at the Site during the following time periods:
    - 7 am to 7 pm - Monday to Friday (except statutory holidays); and
    - 7 am to 1 pm - Saturday.

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

62. Upon reasonable notice to the Director, contingency actions may take place outside normal hours of operation. Emergency response may occur at any time as required.

Site Security

63. During non-operating hours, the *Site* entrance and exit gates shall be locked and the *Site* shall be secured against access by unauthorized persons

64. Prior to the start of operations at the site, the Operator shall install "NO TRESPASSING" signs at intervals of at least 30 metres around the site perimeter fencing.

Site Access

65. Access to and exit from the *Site* for the transportation of waste shall only be permitted from River Road off of Woodlawn Road.

Waste Inspection:

66. The *Operator* shall develop and implement a program to inspect waste to ensure that the waste is of a type approved for acceptance under this *Approval* .

Access Roads

67. The Operator shall provide and maintain access roads and on-site roads so that vehicles hauling waste to and on the Site may travel readily on any operating day.

Leachate Collection System

68. The leachate collection system defined as pumping station(s), pumps, piping, and treatment systems (if applicable) for the landfill shall be operated and maintained by the Operator or Owner. The leachate collection system shall be inspected on a semi-annual basis and cleaned if the inspection suggests that it is necessary. Inspections shall be more frequent if circumstances

require, in order that the leachate collection system operates properly.

INSPECTIONS:

69. The Operator shall inspect the site monthly and document for:
- Presence of leachate seeps;
- Condition of surface water drainage works and ditches;
- condition of the leachate pond;
- Erosion and sedimentation in surface water drainage system;
- Presence of any ponded water that may cause an adverse effect;
- Adequacy of final cover material;
- Evidence of vegetative stress related to landfill performance;
- Condition of groundwater monitoring wells;
- Presence of insects, vermin, rodents and scavenging animals that may cause a nuisance;
- Condition of fence surrounding the site; and,
- General site appearance.

Employees and Training

70. A specific training plan for each employee who is part of any landfill operations at the Site shall be developed and implemented by the Operator. Only trained personnel shall operate any aspect of the Site or carry out any activity required under this Approval. Documentation of training and personnel who have taken the training shall be maintained at the Operator's main office at 2800 Thorold Townline Road, Thorold, Ontario.

MONITORING, RECORDING NOTIFICATION

Daily Inspections and Log Book

71. The Operator shall conduct a visual inspection of the Site each day operations are occurring to ensure that:
- the Site is secure;
- the operations of the Site are not causing any adverse effect on the environment.

Any deficiencies discovered as a result of the inspection shall be remedied immediately, including temporarily ceasing operations at the Site, if needed.

72. A record of the inspections shall be kept in a daily log book *or a dedicated electronic file* that includes:
- the name and signature of person that conducted the inspection;
- the date and time of the inspection;
- the list of any deficiencies discovered;
- the recommendations for remedial action; and
- the date, time and description of actions taken.

73. A record shall be kept in a daily log book or electronic file of all refusal of waste shipments, the reason(s) for refusal, and the origin of the waste, if known.

GROUNDWATER MONITORS

74. The Operator shall ensure all groundwater monitoring wells are properly capped, locked and protected from damage.

75. In areas where landfilling is to proceed around monitoring wells, suitable extensions shall be added to the wells and they shall be properly re-secured.

76. Any groundwater monitoring wells included in the monitoring program shall be assessed, repaired, replaced or decommissioned as required.

77. Upon notification in writing to the District Manager, the Operator shall repair or replace any monitoring well which is destroyed or in any way made inoperable for sampling such that no more than one sampling event is missed.

78. All monitoring wells that are no longer required as part of the groundwater monitoring program and have been approved by the Director for abandonment, shall be decommissioned in accordance with good standard practice that will prevent contamination through the abandoned well and in accordance with Ontario Regulation 903. A report on the decommissioning shall be provided in the annual monitoring report for the period during which the well was decommissioned.

Monitoring Program

79. Monitoring programs shall be carried out for groundwater, surface water, leachate, landfill gas in accordance with Schedules "B", "C" and "D" attached to this *Approval* .

80. No alterations to the groundwater, leachate, landfill gas or surface water monitoring programs shall be implemented prior to receiving written agreement from the District Manager and written approval from the Director.

Trigger Mechanisms and Contingency Plans for Surface Water and Groundwater

81. The Trigger Mechanisms and Contingency Plans as detailed in Item 46 of Schedule "A" is hereby approved.

Trigger Mechanisms for Landfill Gas

82. The Owner and/or Operator shall follow the trigger mechanisms and contingency plans as outlined in section 7.3.1 and 7.3.2 of Item 45 of Schedule "A".

Complaints Procedure

83. If at any time, the Operator receives complaints regarding the operation of the *Site* , the *Operator* shall respond to these complaints according to the following procedure:

a. The Operator 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 Operator, upon notification of the complaint, shall initiate appropriate steps to determine all possible causes related to the site of the complaint, proceed to take the necessary actions to eliminate the cause of the complaint and reply to the complainant; and
c. The Operator shall complete and retain on-site a report written within one (1) week of the complaint date, listing the actions taken to resolve the complaint and any recommendations for remedial measures, and managerial or operational changes to reasonably avoid the recurrence of similar incidents.

84. The Operator shall designate a person to receive any complaints and to respond as soon as possible. All complaints and the Operator's actions taken to remedy the complaints must be summarized in the Annual Report.

Daily and Monthly Records

85. Daily waste and monthly *Site* inspection records shall be prepared in accordance with Item 45 in Schedule "A" attached to this *Approval* .

86. The Operator shall keep the following records related to landfill operation:

- the type, date and time of arrival, hauler, and quantity (tonnes) of all waste received at the site;
- the area of the Site in which waste disposal operations are taking place;
- a calculation of the total quantity (tonnes) of waste received at the Site during each operating day and each operating week;
- the amount of any leachate removed, or treated and discharged from the Site;
- a record of litter collection activities and the application of any dust suppressants;
- a record of the daily inspections;
- a description of any out-of-service period of any control, treatment, disposal or monitoring facilities, the reasons for the loss of service, and action taken to restore and maintain service;
- type and amount of daily, intermediate and final cover used;
- maintenance and repairs performed on equipment employed at the site related to leachate collection and treatment;
- complaints received and actions taken to resolve them; and
- emergency situations and actions taken to resolve them.

Record Retention

87. Except as authorized in writing by the Director, all records required by this Approval shall be

retained by the Operator for a minimum of two (2) years from their date of creation.

88. The Operator shall retain all documentation listed in Schedule "A" for as long as this Approval is valid.

89. All monthly summary reports shall be kept electronically by the Operator until they are included in the Annual Report.

90. The Operator shall retain employee training records as required by Condition 70 as they pertain to the Site as long as the employee is working at the site.

91. The Operator shall make all of the above documents available for inspection upon request of Ministry staff.

EMERGENCY SITUATIONS:

92. In the event of a fire or discharge of a contaminant to the environment, the Operator shall contact the MOE Spills Action Centre (1-800-268-6060) or the District Office of the MOE.

93. The Operator shall submit to the District Manager a written report within 3 business days of the spill or incident, outlining the nature of the incident, remedial measures taken and measures taken to prevent future occurrences at the Site.

94. The Operator shall prepare an Emergency Response Manual for the site within one hundred and twenty (120) days of issuance of this Approval, in consultation with local emergency response agencies. The Emergency Response Manual should indicate the responsibility of each of the stakeholders with respect to handling possible emergency situations.

95. The Emergency Response Manual shall be updated on a regular basis and be provided to the District Manager within one month of the revision date.

96. The Operator shall ensure that fire fighting and contingency spill clean up equipment is available on Site and that emergency response personnel are familiar with its use and location.

PUBLIC LIAISON COMMITTEE (PLC)

97. The Operator shall make a reasonable effort to establish and maintain a PLC in respect of the site to ensure that public concerns are addressed and mitigation measures are undertaken where appropriate.

98. If there is interest in forming a PLC and members are willing to serve, the Operator shall establish a PLC. The PLC shall serve as the focal point for dissemination,review and exchange of information and monitoring results relevant to the Site.

99. If there is no interest from the public in continuing the existing PLC or establishing and

participating in a new committee (once sufficient notice has been given), the need for such a PLC should be reviewed yearly by the Operator.

100. If the PLC is not operating, the Operator shall publish a notice at least annually inviting expressions of interest in forming the PLC.

Annual Report

101. A written report on the development, operation and monitoring of the *Site* , shall be completed annually (the "Annual Report"). The Annual Report shall be submitted to the *District Manager* and the PLC, by March 31st of each calendar year. The Annual Report shall cover the previous 12 month calendar year period.

102. The Annual Report shall include the following:

a. the results and an interpretive analysis of the results of all leachate, groundwater, surface water and landfill gas monitoring, including an assessment of the need to amend the monitoring programs;
b. an assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the *Site* , and the adequacy of and need to implement the contingency plans;
c. site plans showing:
    i. the existing contours of the *Site;*
    ii. areas of landfilling operation during the reporting period;
    iii. areas of intended operation during the next reporting period;
    iv. areas of excavation during the reporting period;
    v. the progress of final cover and vegetative application;
    vi. previously existing site facilities;
    vii. facilities installed during the reporting period; and
    viii. site preparations and facilities planned for installation during the next reporting period;
d. calculations of the volume of waste and final cover deposited or placed at the *Site* during the reporting period and a calculation of the total volume of Site capacity used during the reporting period;
e. a calculation of the remaining capacity of the site, an estimate of the remaining site life and a comparison of actual capacity used to approved site capacity;
f. a summary of the quantity of any leachate or pre-treated leachate removed from the *Site* or leachate treated and discharged from the Site during each operating month;
g. a summary of the monthly, maximum daily and total annual quantity (tonnes) of waste received at the Site;
h. a summary of any complaints received and the responses made;
i. a discussion of any operational problems encountered at the *Site* and corrective action taken;
j. a report on the status of all monitoring wells and a statement as to compliance with Ontario Regulation 903;
k. a statement of compliance with all conditions of this Environmental Compliance Approval

and changes to site design, operation or procedures that vary substantially from those described in this Environmental Compliance Approval and the supporting documents contained in Schedule "A";

l. a summary of inspections undertaken at the site;
m. changes to the site design, operation, or procedures that vary substantially from those described in this Environmental Compliance Approval and the supporting documents contained in Schedule "A"; and,
n. recommendations regarding any proposed changes in operations of the site.

Closure Plan

103. At least 2 years prior or when 90% of the site capacity is reached, whichever comes first, the Owner shall submit to the Director for approval, with copies to the District Manager and the PLC , a detailed site closure plan pertaining to the termination of landfilling operations at this *Site* , post-closure inspection, maintenance and monitoring, and end use. The plan shall include the following:

a. a plan showing *Site* appearance after closure;
b. a description of the proposed end use of the *Site* ;
c. a descriptions of the procedures for closure of the *Site,* including:
    i. advance notification of the public of the landfill closure;
    ii. completion, inspection and maintenance of the final cover and landscaping;
    iii. site security;
    iv. removal of unnecessary landfill-related structures, buildings and facilities; and
    v. final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
d. a schedule indicating the time-period for implementing sub-conditions i) to vi) above;
e. descriptions of the procedures for post-closure care of the Site, including:
    i. operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
    ii. record keeping and reporting; and
    iii. complaint contact and response procedures;
f. an assessment of the adequacy of and need to implement the contingency plans for leachate and methane gas; and,
g. an updated estimate of the contaminating life span of the *Site* , based on the results of the monitoring programs to date.

104. The *Site* shall be closed in accordance with the closure plan as approved by the *Director.*

Air Quality Monitoring Program

105. Prior to the start of construction activities at the Site, the Owner or Operator shall submit to the *District Manager* for approval an air quality monitoring program for heavy metals for the site. The air quality monitoring program shall cover a six month period.

106. The Operator shall not start construction activities at the site until the air quality monitoring program has been approved by the *District Manager* .

Remedial Works

107 (1) The construction of the Phase A Remedial Works which addressed shall be completed in accordance with Item 35 in Schedule "A".

(2) The migration barrier as shown in Item 35 shall extend a minimum of 500 mm into the underlying silt till.

108. The final cover area as shown in Item 35 for the Phase A Remedial Works shall meet the requirements of final cover as described in Section 5.9.1 (Existing Fill Area) of Item 15 and Item 43 (ii) in Schedule 'A"

109. No later than **two business days** prior to operation commencement of the system, the *Owner* shall notify the *District Manager* in writing of the intent to operate the system.

110. Within 90 days of completing construction of the system, the owner shall submit to the *District Manager* , with a copy to the *Director* , a construction report detailing the construction activities and any design changes made to the system during construction. This report shall include but not be limited to the following topics:

i) drawing of the location of the system;
ii) a description of the various construction stages;
iii) quality assurance/quality control plan for the construction; and
iv) any changes to the design of the system.

111. The *Owner* is hereby approved for the construction of the Phase 2 in accordance with Items 40 through 43 in Schedule "A".

SCHEDULE "A":

1. Application dated July 28,1997 and attached supporting documentation.

2. Letter addressed to Mr. R. Lee Van Biesbrouck, P. Eng., from Mr. Lyle Parsons, B.E.S., Project Manager, Re: Atlas Specialty Steels, River Road Landfill Site and attached Proposal to Undertake Ground Water, Surface Water and Geotechnical Studies at the River Road Landfill, prepared for Atlas Specialty Steels, and dated April 26, 1999 and known as the Work Program.

3. Letter addressed to Mr. L. Van Biesbrouck, P. Eng., from Mr. Lyle Parsons, B.E.S., Project Manager, Re: Response to MOE Comments of Letter Dated June 21, 1999 Work Program - Atlas Specialty Steels, River Road Landfill Site, dated July 12, 1999.

4. Application for a Provisional Certificate of Approval for the former Atlas Steels Landfill, signed by

Mike Watt, Vice President, Integrated Municipal Services Inc., dated July 29, 2008.

5. Letter dated March 11, 2009 from Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOECC to Larry Oates, Integrated Municipal Services Inc..

6. Document entitled "Landfill Gas Management Plan Atlas Remediation Project Welland, Ontario" dated April 16, 2009 prepared by XCG Consultants Limited.

7. Letter dated June 5, 2009 from Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOE to Larry Oates, Integrated Municipal Services Inc..

8. Letter dated July 15, 2009 from Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOE to Larry Oates, Integrated Municipal Services Inc..

9. Document entitled "Atmospheric Emissions Assessment Atlas Remediation Project Welland Ontario" dated January 20, 2010 prepared by XCG Consultants Limited.

10. Document entitled "Noise Assessment Atlas Remediation Project Welland Ontario" dated January 20, 2010 prepared by XCG Consultants Limited.

11. Document entitled "Geotechnical Assessment Atlas Remediation Project Welland, Ontario" dated March 8, 2010 prepared by Alston Associates Inc..

12. Document entitled "Atlas Remediation Environmental Screening Report" dated March 9, 2010 prepared by Integrated Municipal Services Inc.

13. Document entitled "Atlas Remediation Project City of Welland, Ontario Existing Conditions Groundwater and Surface Water Quality Assessment" dated April 2010 prepared by Ecoplans Limited.

14. Document entitled "Landfill Gas Management Plan Atlas Remediation Project Welland Ontario" dated April 13, 2010 prepared by XCG Consultants Limited.

15. Document entitled "Design and Operations Plan Atlas Remediation Project Welland Ontario" dated April 14, 2010 prepared by XCG Consultants Limited.

16. Letter dated April 20, 2010 from Barbara Slattery, EA/Planning Coordinator, West Central Region, MOE to Joe Lyng, Integrated Municipal Services Inc..

17. Letter dated April 26, 2010 from Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOE to Larry Oates, Integrated Municipal Services Inc..

18. Memorandum dated May 11, 2010 from Cynthia Doughty, Hydrogeologist, Water Resources Unit, West Central Region, MOE to Sylvie Chartrand, MOE, Niagara District.

19. Letter dated May 12, 2010 from Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOE to Larry Oates, Integrated Municipal Services Inc..

20. Document entitled "Stormwater Management Plan Atlas Remediation Project Welland Ontario" dated April 13, 2010 prepared by XCG Consultants Limited.

21. Letter dated May 21, 2010 from Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOE to Larry Oates, Integrated Municipal Services Inc..

22. Letter dated September 5, 2008 from Rich Vickers, District Manager, MOE, Niagara District to Mike Watt, Vice-President, Walker Environmental Group.

23. Letter and attached draft Certificate of Approval dated May 21, 2010 from Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOE to Larry Oates, Integrated Municipal Services Inc..

24. Letter and attached documents dated June 9, 2010 from Joseph P. Lyng, General Manager, Strategic Growth, Walker Environmental Group to Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOE.

25. Statement of Completion Waste Management Projects for the Atlas Landfill Remediation project, signed and dated June 1, 2010.

26. Letter dated June 15, 2010 from Scott Ferguson, XCG Consultants Limited to Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOE.

27. Letter dated June 18, 2010 from Scott Ferguson, XCG Consultants Limited to Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOE.

28. Letter dated June 11, 2010 from Scott Ferguson, XCG Consultants Limited to Barbara Slattery, EA/Planning Coordinator, West Central Region, MOE.

29. Letter and attached draft Certificate of Approval dated June 25, 2010 from Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOE to Larry Oates, Integrated Municipal Services Inc..

30. Letter dated July 8, 2010 from Joseph P. Lyng, General Manager, Strategic Growth, Walker Environmental Group to Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOE.

31. Letter dated June 17, 2009 from Mike Watt, Vice-President, Walker Environmental Group to Rich Vickers, District Manager, MOE, Niagara District.

32. Letter and attached draft Certificate of Approval dated July 27, 2010 from Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOE to Larry Oates, Integrated Municipal Services Inc..

33. Letter dated July 28, 2010 from Joseph P. Lyng, General Manager, Strategic Growth, Walker

Environmental Group to Greg Washuta, Senior Waste Engineer, Waste Unit, EAAB, MOE.

34. Application for a Provisional Certificate of Approval (Amendment) to include new operator name and additional legal description of the site, dated November 18, 2010, and signed by Darren Fry, Site Manager, Atlas Landfill Remediation Project, including supporting documentation.

35. Document entitled "Phase A Remedial Works Existing Fill Area - Atlas Remediation Project, Welland Ontario" prepared by XCG Environmental Engineers and Scientists for Walker Industries. The package included the following drawings:

i. Drawing Sheet G-01 titled "Cover Page" and dated December 7, 2010
ii. Drawing Sheet C-01 titled "Existing Conditions" and dated December 7, 2010
iii. Drawing Sheet C-02 titled "Site Activity Plan" and dated December 7, 2010
iv. Drawing Sheet C-03 titled "West Side Plan Profile" and dated December 7, 2010
v. Drawing Sheet C-04 titled "West Side Cross Section STA 0+040" and dated December 7, 2010
vi. Drawing Sheet C-05 titled "West Side Cross Section STA 0+080" and dated December 7, 2010
vii. Drawing Sheet C-06 titled "West Side Cross Section STA 0+120" and dated December 7, 2010
viii Drawing Sheet C-07 titled "West Side Cross Section STA 0+160" and dated December 7, 2010
ix. Drawing Sheet C-08 titled "West Side Cross Section STA 0+200" and dated December 7, 2010
x. Drawing Sheet C-09 titled "West Side Cross Section STA 0+240" and dated December 7, 2010
xi. Drawing Sheet C-10 titled "West Side Cross Section STA 0+280" and dated December 7, 2010
xii. Drawing Sheet C-11 titled "West Side Cross Section STA 0+320" and dated December 7, 2010
xiii. Drawing Sheet C-12 titled "West Side Cross Section STA 0+360" and dated December 7, 2010
xiv. Drawing Sheet C-13 titled "West Side Cross Section STA 0+400" and dated December 7, 2010
xv. Drawing Sheet C-14 titled "West Side Cross Section STA 0+440" and dated December 7, 2010
xvi. Drawing Sheet C-15 titled "West Side Cross Section STA 0+480" and dated December 7, 2010
xvii. Drawing Sheet C-16 titled "West Side Cross Section STA 0+520" and dated December 7, 2010
xviii. Drawing Sheet C-17 titled "East Side Plan Profile" and dated December 7, 2010
xix. Drawing Sheet C-18 titled "East Side Cross Section STA 0+000 and STA 0+040" and dated December 7, 2010
xx. Drawing Sheet C-19 titled "East Side Cross Section STA 0+000 and STA 0+080" and

dated December 7, 2010

xxi. Drawing Sheet C-20 titled "East Side Cross Section STA 0+000 and STA 0+120" and dated December 7, 2010

xxii Drawing Sheet C-21 titled "East Side Cross Section STA 0+000 and STA 0+160" and dated December 7, 2010

xxiii. Drawing Sheet C-22 titled "East Side Cross Section STA 0+000 and STA 0+200" and dated December 7, 2010

xxiv. Drawing Sheet C-23 titled "East Side Cross Section STA 0+400" and dated December 7, 2010

xxv. Drawing Sheet C-24 titled "South Side Plan Profile" and dated December 7, 2010

xxvi. Drawing Sheet C-25 titled "South Side Cross Section STA 0+040 and STA 0+080" and dated December 7, 2010

xxvii. Drawing Sheet C-26 titled "South Side Cross Section STA 0+120 and STA 0+160" and dated December 7, 2010

xxviii. Drawing Sheet C-27 titled "North Side Plan Profile" and dated December 7, 2010

xxix. Drawing Sheet C-28 titled ""North Side Cross Section STA 0+040 and STA 0+080" and dated December 7, 2010

xxix. Drawing Sheet C-29 titled "North Side Cross Section STA 0+120 and STA 0+160" and dated December 7, 2010

xxx. Drawing Sheet C-30 titled "North Side Cross Section STA 0+200 and STA 0+240" and dated December 7, 2010;

xxxi. Drawing Sheet D-1 titled "Leachate Pond Details" and dated December 7, 2010;

xxxii. Drawing Sheet D-2 titled "Pumping Station 1 - Plan View" and dated December 7, 2010;

xxxiii. Drawing Sheet D-3 titled "Pumping Station - Details 1" and dated December 7, 2010;

xxxiv. Drawing Sheet D-4 titled "Pumping Station - Details 2" and dated December 7, 2010;

xxxv. Drawing Sheet D-5 titled "Pumping Station - Details 3" and dated December 7, 2010;

xxxvi. Drawing Sheet D-6 titled "Geologic Cross Section A" and dated December 7, 2010;

xxxvi. Drawing Sheet D-7 titled "Geologic Cross Section B" and dated December 7, 2010;

xxxvi. Drawing Sheet D-8 titled "Geologic Cross Section C" and dated December 7, 2010;

xxxvi. Drawing Sheet D-9 titled "Geologic Cross Section D" and dated December 7, 2010;

xxxvii. Drawing Sheet D-10 titled "Well Enclosure Detail" and dated December 7, 2010;

xxxviii. Drawing Sheet D-11 titled "West Side Entrance" and dated December 7, 2010;

xxxix. Drawing Sheet D-12 titled "Barrier Wall - Migration Barrier Transition Detail" and dated December 7, 2010;

xxxx. Drawing Sheet D-13 titled "Details 1" and dated December 7, 2010;

xxxxi. Drawing Sheet D-14 titled "Details 2" and dated December 7, 2010;

xxxvii. Drawing Sheet D-15 titled "Details 3" and dated December 7, 2010;

36. Letter dated October 13, 2010 addressed to Ms. Sylvie Chartrand, Ministry of the Environment from Mr. Scott Ferguson, XCG Consultants Ltd providing a response to surface water comments.

37. Report entitled "Construction Quality Assurance Plan (CQA Plan) Phase A Remedial Works - Existing Fill Area Atlas Remediation Project" prepared for Niagara Waste Systems Ltd by XCG Consultants Ltd. (XCG File No. 5-2041-03-13) dated February 17, 2011.

38. Letter dated May 25, 2011 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Darren Fry, Niagara Waste Systems Limited providing additional information on the CQA Plan for the Phase A Remedial Works.

39. Application dated February 14, 2012 for an Amendment to ECA A120409 Atlas Landfill Remediation Project, from Kevin Kehl, Environmental Specialist, Niagara Waste Systems Limited, including supporting documentation.

40. Letter dated February 3, 2012 addressed to Director, Ministry of the Environment, Environmental Assessment and Approvals Branch from Mr. Darren Fry, Niagara Waste Systems addressing the submission of Phase 2 of the Site as required by the ECA (Conditions 33, 34, 35 and 36). The supporting documentation attached to the letter include the following:

    i. Report entitles "Detailed Design Brief Cell 2 - Atlas Landfill - Welland, Ontario C of A No. A120409" prepared by Golder Associates (Report No. 11-1186-0053) dated February 2012; and
    ii. Report entitles "Quality Control and Quality Assurance Requirements Cell 2 - Atlas Landfill - Welland, Ontario C of A No. A120409" prepared by Golder Associates (Report No. 11-1186-0053) dated February 2012.

41. Detailed Design set drawings entitled "Cell 2 Detailed Design - Atlas Landfill - Welland, Ontario" prepared by Golder Associates (Project Number 11-1186-0053). Drawing set includes the following drawings:

    i. Drawing No. 1 - Title Page - prepared by Golder Associates and dated February 3, 2012;
    ii. Drawing No. 2 - Site Plan - prepared by Golder Associates and dated February 3, 2012;
    iii. Drawing No. 3 - Existing Conditions Cell 2 Area (October 2011) - prepared by Golder Associates and dated February 3, 2012;
    iv. Drawing No. 4 - Proposed Base Grade Contours (Prior to Base Liner Construction) - prepared by Golder Associates and dated February 3, 2012;
    v. Drawing No. 5 - Base Grade Cross Sections A-A' and B-B' - prepared by Golder Associates and dated February 3, 2012;
    vi. Drawing No. 6 - Proposed Base Liner and Leachate Collection System Layout - prepared by Golder Associates and dated February 3, 2012;
    vii. Drawing No. 7 - Proposed Final Base Contours Prior to Waste Placement - prepared by Golder Associates and dated February 3, 2012;
    viii. Drawing No. 8 - Typical Details - prepared by Golder Associates and dated February 3, 2012;
    ix. Drawing No. 9 - Typical Details - prepared by Golder Associates and dated February 3, 2012; and
    x. Drawing No. 10 - Typical Details - prepared by Golder Associates and dated February 3, 2012.

42. Letter dated April 4, 2012 addressed to Mr. Darren Fry, Niagara Waste Systems from Mr. Dale Gable, Ministry of the Environment requesting additional information on the detailed design of Phase 2

pertaining to Cell Design, specifications and soil stockpiling.

43. Letter dated April 20, 2012 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Darren Fry, Niagara Waste Systems providing a response to the additional information request. The supporting documentation included the following:

    i. Letter dated April 20, 2012 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Frank Barone, Golder Associates providing a response to the additional information request;
    ii. Technical Memorandum dated April 11, 2012 addressed to Mr. Darren Fry, Walker Industries from Mr. Frank Barone, Golder Associates (Project No. 11-1186-0053) providing rationale on the reduced compaction rationale for the sideslopes from 95 percent to 90 percent of the Standard Proctor Maximum Dry Density.

44. Letter dated April 23, 2012 addressed to Director, Environmental Approvals Access and Service Integration Branch from Mr. Kevin Kehl, Niagara Waste Systems Limited requesting amendment to the environmental monitoring plan (Schedule B). The supporting documentation included the following:

    i. Table for CofA 120409 Schedule "B"; and
    ii. Environmental Compliance Approval Application signed by Kevin Kehl, Niagara Waste Systems and dated April 23, 2012.

45. Report entitled "Updates of Design and Operations Remediation Project, Welland Ontario" prepared for Niagara Waste Systems by Golder Associates Ltd (Project No. 11-1186-0053) and dated June 2012.

46. Letter dated December 14, 2016 addressed to Lesley Clarke of Walker Industries, prepared by Golder Associates Re: Trigger and Contingency Plan Condition 81 of Amended ECA NO. A120409 Altas Landfill, Welland Ontario.

SCHEDULE "B": GROUNDWATER MONITORING

Groundwater sampling is to be completed twice per year in the spring and the fall.

Water levels are to be taken during each monitoring event.

Groundwater samples are to be analyzed for the following parameters:

GENERAL CHEMISTRY:
pH, conductivity, alkalinity, hardness, ion balance, calcium, sodium, potassium, chloride, fluoride, sulphate, nitrate, nitrite, total phosphorus, ammonia, unionized ammonia, Total Kjeldahl Nitrogen, phenols, Total Dissolved Solids, Dissolved Organic Carbon.

METALS:
Aluminium, antimony, arsenic, barium, beryllium, boron, bromide, cadmium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, zinc, zirconium.

POLYAROMATIC HYDROCARBONS
naphthalene, flourene, phenanthrene, anthacene, fluoroanthene, benzo (a) anthracene, chrysene, benzo (k) fluoranthene, benzo(a) pyrene, dibenzeo(a,h) anthacene, benzo(g, h, i) perylene

PCB's

Petroleum Hydrocarbons (PHC's)
to include F-1, F-2, F-3 and F-4 series

VOLATILE ORGANIC COMPOUNDS (VOCs) -
All VOCs with an ODWS criteria.

Detection limits shall be low enough in order to allow for comparison with the Ministry's Ontario Drinking Water Standards.

Conductivity, pH and temperature readings are to be taken from samples collected from each well during each sampling event.

One blind duplicate shall be collected for every 15 samples.

List of Monitoring locations

MW6-99-S	MW6-99-I	MW6-99-D	MW18-S	MW18-1	MW19-S	MW19-1	MW19-D
MW20-S	MW20-I	MW21-I	MW21-D	MW22-S	MW22-GI	MW22-I	MW-23-S
MW23-GI	MW23-I	MW24-S	MW24-GI	MW24-I	MW24-D	MW25-S	MW25-I
MW26-S	MW26-I	MW27-S	MW27-I	MW27-D	MW28-S	MW28-I	MW29-S
MW29-I	MW-29-D						

Schedule "C"

SCHEDULE "C": SURFACE WATER MONITORING

Surface water monitoring shall take place at stations SW-1, SW-2, SW-3, SW-4, SW-5, SW-6, SW-7, SW-8, SW-9, SW-10, SW-11, SW-12 and SW-13 in the spring and fall of each year. Semi-annual sampling be carried out immediately following precipitation events or snowmelt.

One blind duplicate sample shall be collected during each sampling event for quality assurance/quality control.

Velocity, depth and cross sectional area measurements shall be taken at each surface water station during each sampling event.

Surface water samples are to be collected from the downstream surface water station first then subsequent stations while traversing upstream.

Weather conditions during and 48 hours prior to the sampling event are to be observed and recorded.

Surface water samples shall be analyzed for the following:

GENERAL CHEMISTRY:
pH, conductivity, alkalinity, hardness, ion balance, calcium, sodium, potassium, chloride, fluoride, sulphate, nitrate, nitrite, total phosphorus, ammonia, unionized ammonia, Total Kjeldahl Nitrogen, phenols.

METALS:
Aluminium, aluminum (filtered), antimony, arsenic, barium, beryllium, boron, bromide, cadmium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, zinc, zirconium.

POLYAROMATIC HYDROCARBONS
naphthalene, flourene, phenanthrene, anthacene, fluoroanthene, benzo (a) anthracene, chrysene, benzo (k) fluoranthene, benzo(a) pyrene, dibenzeo(a,h) anthacene, benzo(g, h, i) perylene

PCB's

Petroleum Hydrocarbons (PHC's)
to include F-1, F-2, F-3 and F-4 series

VOLATILE ORGANIC COMPOUNDS (VOCs)
All VOCs with an PWQO criteria.

Detection limits shall be low enough in order to provide comparisons with the Ministry's Provincial Water Quality Objectives.

Conductivity, pH, temperature and Dissolved Oxygen readings are to be taken at each surface water station during each sampling event.

The Owner shall locate all surface water stations geospacially and co-locate each with a survey stake. Should any station become unusable due to construction or operational activities or be influenced by external sources to the point that data interpretation becomes difficult, the Owner shall determine a replacement location for that station and obtain written agreement from the District Manager to the

change in location.

SCHEDULE "D" : LANDFILL GAS MONITORING:

Landfill gas monitoring is to occur on a monthly basis from November to April and once in June and August of each year.

The proposed landfill gas monitoring locations are outlined below:

LFG1, LFG2, LFG3, LFG4, LFG5, LFG6

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

1. *The reason for the definitions is to define the specific meaning of terms and simplify the wording of conditions in this Environmental Compliance Approval.*

2. *The reason for Conditions 1 and 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.*

3. *The reason for Conditions 3 to 6 inclusive, 9 through 14 inclusive, 24, 25, 42, 51 and 106 is to clarify the legal rights and responsibilities of the Owner under this Environmental Compliance Approval.*

4. *Condition 15 is necessary in order to clarify that financial assurance is not necessary for this site provided that the site is owned by the City of Welland.*

5. *Conditions 16 to 18 inclusive is included, pursuant to subsection 197(1) of the EPA, to provide that any persons having an interest in the Site are aware that the land has been approved and used for the purposes of waste disposal.*

6. *The reasons for Condition 19 are to restrict potential transfer or encumbrance of the Site without the approval of the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Environmental Compliance Approval.*

7. *The reasons for Conditions 20 to 22 inclusive 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.*

8. *Conditions 7 and 8 are included to ensure that the appropriate Ministry staff have ready access to information and the operations of the Site, which are approved under this Approval.*

9. *The reason for Condition 23 is to ensure that appropriate Ministry staff have ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in this Environmental Compliance Approval. This condition is supplementary to the powers of entry*

afforded a Provincial Officer pursuant to the EPA and OWRA.

10. *The reason for the revocation of Condition No. 25 is that the information submitted has been reviewed and deemed acceptable. The information has been incorporated into the Certificate and is deemed approved by the Director.*

11. *The reason for Conditions 26, 27, 28 and 32 is to specify the approved areas from which waste may be accepted at the Site and the types and amounts of waste that may be accepted for disposal at the Site, based on the Owner's application and supporting documentation.*

12. *The reason for Conditions 29 and 30 is to specify restrictions on the extent of landfilling at this Site based on the Owner's application and supporting documentation. These limits define the approved volumetric capacity of the site. Approval to landfill beyond these limits would require an application with supporting documentation submitted to the Director.*

13. *Condition 31 is needed in order to specify the daily waste limit as determined through the Environmental Screening Process.*

14. *The reason for Conditions 33 to 36 inclusive 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 as approved by the Director.*

15. *Condition 37 has been included as per the Geotechnical Assessment and to ensure the protection of the environment at the site.*

16. *The reason for Condition 38 is to ensure the availability of as-built drawings for inspection and information purposes.*

17. *A Quality Assurance/Quality Control Report as per conditions 39 and 40 ensures that the site has been constructed in accordance with the detailed design and not in a fashion that the Director has not been asked to consider.*

18. *The reason for Condition 41 is to ensure that users of the Site are fully aware of important information and restrictions related to Site operations under this Environmental Compliance Approval.*

19. *The reasons for Conditions 60 to 62 inclusive are to specify the normal hours of operation for the landfill Site and a mechanism for amendment of the hours of operation.*

20. *Condition 65 is needed in order to specify the location of site access.*

21. *The reason for Condition 70 is to ensure that the Site is supervised and operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.*

22. *The reasons for Conditions 63 and 64 are to specify site access to/from the Site and to ensure the controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site attendant is on duty.*

23. *The reason for Condition 56 is to ensure that landfilling operations are conducted in an environmentally acceptable manner. The proper closure of a landfill site requires the application of a final cover which is aesthetically pleasing, controls infiltration, and is suitable for the end use planned for the site.*

24. *The reasons for Conditions 43, 44, 46, 49, 50, 52 to 55 inclusive, 57, 58, 59, 66, 67, 69 and 71 are to ensure that the Site is operated, inspected and maintained in an environmentally acceptable manner and does not result in a hazard or nuisance to the natural environment or any person.*

25. *The reason for Condition 73 is to ensure that accurate waste records are maintained to ensure compliance with the conditions in this Environmental Compliance Approval (such as fill rate, site capacity, record keeping, annual reporting requirements), the EPA and its regulations.*

26. *The reason for Condition 48 is that open burning of waste is unacceptable because of concerns with air emissions, smoke and other nuisance affects, and the potential fire hazard.*

27. *The reasons for Condition 45 are the protection of public health and safety and minimization of the potential for damage to environmental control, monitoring and other works at the landfill Site. Scavenging is the uncontrolled removal of material from waste at a landfill site.*

28. *The reason for Condition 47 is to ensure that noise from or related to the operation of the landfill is kept to within Ministry limits and does not result in a hazard or nuisance to any person.*

29. *The reasons for Condition 68 are to minimize the potential for clogging of leachate collection pipes and to ensure effective operation of the leachate collection system components for as long as they are required. Failure to clean out these components on a regular basis may result in a decrease in their service lives. Regular cleaning of the leachate collection pipes is especially important during stages of landfilling when the level of both organic and inorganic constituents in the leachate is high and, consequently, the potential for clogging due to encrustation is greatest. As the landfill reaches the more stable methane producing stage, pipe cleaning may be required less frequently.*

30. *The reason for Conditions 79, 80 & 105 is 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 an early warning of potential problems so that any necessary remedial/contingency action can be taken.*

31. *The reasons for Conditions 74 to 78 inclusive are to ensure protection of the natural environment and the integrity of the groundwater monitoring network.*

32. *The reason for Conditions 81 and 82 is to ensure that the Owner follows a plan with an organized set of procedures for identifying and responding to unexpected but possible problems at the Site. A*

remedial action / contingency plan is necessary to ensure protection of the natural environment.

33. *The reason for Conditions 83 and 84 and 97 to 100 inclusive is to establish a forum for the exchange of information and public dialogue on activities carried out at the landfill Site. Open communication with the public and local authorities is important in helping to maintain high standards for site operation and environmental protection.*

34. *The reasons for Conditions 72 and 85 to 91 inclusive are to provide for the proper assessment of effectiveness and efficiency of site design and operation, their effect or relationship to any nuisance or environmental impacts, and the occurrence of any public complaints or concerns. Record keeping is necessary to determine compliance with this Environmental Compliance Approval, the EPA and its regulations.*

35. *The reasons for Condition 101 and 102 are to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified. An annual report is an important tool used in reviewing site activities and for determining the effectiveness of site design.*

36. *The reasons for Condition 103 and 104 are to ensure that final closure of the Site is completed in an aesthetically pleasing manner and to ensure the long-term protection of the natural environment.*

37. *The reasons for Conditions 92 and 93 are to ensure that the Ministry is informed of any spills or fires at the Site and to provide public health and safety and environmental protection.*

38. *Conditions 94 to 96 inclusive is contained in the Approval to guarantee that appropriate measures are taken by the Owner to prevent future occurrences of spills or fires at the site and to protect public health and safety and the environment.*

39. *The reason for Condition 105 is to ensure that emergency response personnel are familiar with the operation and its associated hazards in the event of an emergency situation. Operation of the Site without this Condition would not be in the public interest.*

40. *The reason for Conditions 107 is to approve the remediation works to address leachate at the site and to ensure the natural environment is protected.*

41. *The reasons for the amendment to Condition No. 108 are to approve the amended compaction specification for the side slopes. This is ensure the final cover is constructed as per the submitted and approved documents.*

42. *Conditions 108, 109 and 110 is to ensure the protection of the natural environment and human health.*

43. *The reason for Condition No. 111 is to ensure the construction of Phase 2 is completed based on*

the submitted drawings. This is to ensure the environment and human health are protected.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). A120409 issued on July 23, 1999

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 and Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

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

DATED AT TORONTO this 3rd day of February, 2017

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

RL/

c: District Manager, MOECC Niagara
Lesley Clarke, Walker Environmental Group Inc.

JUL - 4 2011

Ontario

Ministry of the Environment
Ministère de l'Environnement

CERTIFICATE OF APPROVAL
MUNICIPAL AND PRIVATE SEWAGE WORKS
NUMBER 6116-8HPHH4
Issue Date: June 14, 2011

Niagara Waste Systems Limited
Post Office Box, No. 100
Thorold, Ontario
L2V 3Y8

Site Location: Niagara Business Park
Parts of Lots 21 & 22, Concession 2 of LRIN 25742 and 76716B, Part of Lots 21 & 22 and Part of Broken Front Lot 223, Concession 2 of LRIN 82903B
City of Welland, Regional Municipality of Niagara

You have applied in accordance with Section 53 of the Ontario Water Resources Act for approval of:

the establishment of stormwater management *Works* for the collection, transmission, treatment and disposal of stormwater runoff from a total catchment area of **28.83 hectares** (comprising the Atlas Landfill Remediation Project Site and the Niagara Business Park), to provide **Enhanced** water quality protection for the design storm events, discharging to the Welland River, consisting of the following:

Stormwater Management System

- a constructed ***wetland*** facility equipped with a sediment ***forebay*** and a main cell having a design minimum liquid retention volume of **1,969 cubic metres**, extended detention volume of **1,174 cubic metres**, and a minimum total storage volume of **3,027 cubic metres**, complete with inlet pipe and headwall, access road, 300 millimetre diameter PVC drain, 1.0 metre deep low flow channel, 1.0 metre wide ***outlet swale*** , 150 millimetre diameter ***reverse slope outlet pipe*** , ditch inlet, and 10 metres wide emergency ***overflow weir*** discharging to the Welland River;

- erosion/sedimentation control measures during construction, and

- all other appurtenances essential for the proper operation of the aforementioned *Works* ;

all in accordance with the following submitted supporting documents:

1. Application for Approval of Sewage Works submitted by Adam Keane, P.Eng., of Upper Canada Consultants, dated December 06, 2010, and signed by Mr. Darren Fry, Operations Manager,

Niagara Waste Systems Limited, including final plans and specifications prepared by Upper Canada Consultants; and

2. Stormwater Management Plan and enclosed plans/design drawings, dated November, 2010, prepared by Upper Canada Consultants.

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

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

(2) "*Director* " means any *Ministry* employee appointed by the Minister pursuant to section 5 of the Ontario Water Resources Act;

(3) "*District Manager* " means the District Manager of the Niagara District Office of the *Ministry* ;

(4) "*Ministry* " means the Ontario Ministry of the Environment;

(5) "*Owner* " means Niagara Waste Systems Limited, and includes its successors and assignees; and

(6) "*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* .

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

1.1 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.

1.2 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* .

1.3 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.

1.4 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.

1.5 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.

1.6 The issuance of, and compliance with the conditions of, this *Certificate* does not:

a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority necessary to construct or operate the sewage works; or

b) limit in any way the authority of the *Ministry* to require certain steps be taken to require the *Owner* to furnish any further information related to compliance with this *Certificate*.

2. EXPIRY OF APPROVAL

2.1 The approval issued by this *Certificate* will cease to apply to those parts of the *Works* which have not been constructed within **five (5) years** of the date of this *Certificate*.

3. CHANGE OF OWNER

3.1 The *Owner* shall notify the *District Manager* and the *Director*, in writing, of any of the following changes within **thirty (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*; and

(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. C39 shall be included in the notification to the *District Manager*.

4. OPERATION AND MAINTENANCE

4.1 The *Owner* shall make all necessary investigations, take all necessary steps and obtain all necessary approvals so as to ensure that the physical structure, siting and operations of the *Works* do not constitute a safety or health hazard to the general public.

4.2 The *Owner* shall ensure that the design minimum liquid retention volume(s) is maintained in the *Works* at all times, except when maintenance is required.

4.3 The *Owner* shall undertake an inspection of the condition of the *Works* , at least once a year, and undertake any necessary cleaning and maintenance to ensure that sediment, debris and excessive decaying vegetation are removed from the above noted *Works* to prevent the excessive build-up of sediment, debris and/or decaying vegetation to avoid reduction of capacity of the *Works* . The *Owner* shall also regularly inspect and clean out the inlet to and outlet from the *Works* to ensure that these are not obstructed.

4.4 The *Owner* shall prepare operational manual which should include, but not limited to, frequency and method of clean-out of *Works* within **six (6) months** from the date of issuance of this *Certificate* or the commissioning of the *Works* . The *Owner* shall keep the operations manual up to date with such revisions as may be required. Upon request, the *Owner* shall make the manual available for inspection by *Ministry* personnel and furnish a copy to the *Ministry* .

4.5 The *Owner* shall maintain a logbook to record the results of all inspections and any cleaning and maintenance operations undertaken and shall make the logbook available for inspection by the *Ministry* upon request.

5. RECORD KEEPING

5.1 The *Owner* shall retain for a minimum of **five (5) years** from the date of their creation, all records and information related to or resulting from the operation and maintenance activities required by this *Certificate* .

6. TEMPORARY SEDIMENT AND EROSION CONTROL

6.1 The *Owner* shall install and maintain temporary sediment and erosion control measures during construction and conduct inspections once every **two (2) weeks** and after each significant storm event. The inspections and maintenance of the temporary sediment and erosion control measures shall continue until they are no longer required and at which time they shall be removed and all disturbed areas reinstated properly.

6.2 The *Owner* shall maintain records of inspections and maintenance which shall be made available for inspection by the Ministry, upon request. The record shall include the name of the inspector, date of inspection, and the remedial measures. if any, undertaken to maintain the temporary sediment and erosion control measures.

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. Condition 1.6 is included to emphasize that the issuance of the certificate does not diminish any other statutory and regulatory

obligations to which the owner is subject in the construction, maintenance and operation of the works. The condition specifically highlights the need to obtain any necessary conservation authority approvals. The condition also emphasizes the fact that this *Certificate* doesn't limit the authority of the *Ministry* to require further information.

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 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 require that all records are retained for a sufficient time period to adequately evaluate the long-term operation and maintenance of the *Works* .

6. Condition 6 is included as installation, regular inspection and maintenance of the temporary sediment and erosion control measures is required to mitigate the impact on the downstream receiving watercourse during construction until they are no longer required.

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
655 Bay Street, 15th Floor
Toronto, Ontario

AND

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

M5G 1E5

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 14th day of June, 2011

THIS CERTIFICATE WAS MAILED
ON June 15 2011
SP
(Signed)

Ian Parrott, P.Eng.
Director
Section 53, *Ontario Water Resources Act*

AA/

c: District Manager, MOE Niagara District Office
Adam Keane, P. Eng., Upper Canada Consultants

Ministry of the Environment
West-Central Region
Technical Support Section
Water Resources
12th Floor
119 King St W
Hamilton ON L8P 4Y7
Fax: (905)521-7820
Tel: (905)521-7640

Ministère de l'Environnement
Direction régionale du Centre-Ouest
Secteur du Soutien Technique
Ressource en eau
12e étage
119 rue King W
Hamilton ON L8P 4Y7
Télécopieur: (905)521-7820
Tél:(905)521-7640

Ontario

July 31, 2013

Walker Environmental Group Inc.
Post Office Box 100
Thorold, Ontario
L2V 3Y8

Dear Sir/Madam:

RE: Lot 22, Concession 2
Geographic Township of Crowland
City of Welland
Regional Municipality of Niagara
Permit Number 0636-9A3RCR

Please find attached a Permit to Take Water which authorizes the withdrawal of water in accordance with the application for this Permit to Take Water, dated May 16, 2013 and signed by Kevin Kehl.

This Permit expires on August 31, 2023. Authorized rates and amounts are indicated on Table A.

Ontario Regulation 387/04 (Water Taking) requires all water takers to report daily water taking amounts to the Water Taking Reporting System (WTRS) electronic database. Daily water taking must be reported on a calendar year basis. If no water is taken, then a "no taking" report must be entered. Please consult the Regulation and Section 4 of this Permit for monitoring requirements.

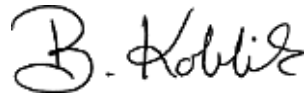
If you have questions about reporting requirements, please call the WTRS Help Desk at 416-235-6322 (toll free: 1-877-344-2011) or by email, WTRSHelpdesk@ontario.ca . It is preferred that you submit your data directly and electronically to the WTRS. Where this is impracticable, please use the Water Taking Submission Form *(included as Appendix C of the Technical Bulletin: Permit To Take Water (PTTW)-Monitoring and Reporting of Water Takings),* which can be downloaded from the above website, and fax your completed forms to 416-235-6549 or mail them to: Water User Reporting Section, 125 Resources Rd. Toronto, ON M9P 3V6.

Please also note Condition 1.4 specifically indicates that this Permit is not transferable to another

party. Any queries regarding a change in owner/operator should be made to the Permit to Take Water Evaluator at the above address.

Take notice that in issuing this Permit, terms and conditions pertaining to the taking of water and to the results of the taking have been imposed. The terms and conditions have been designed to allow for the development of water resources, while providing reasonable protection to existing water uses and users.

Yours truly,



Belinda Koblik
Director, Section 34
Ontario Water Resources Act, R.S.O. 1990
West Central Region

File Storage Number: AP29 WEWA

PERMIT TO TAKE WATER
Surface Water
NUMBER 0636-9A3RCR

Pursuant to Section 34 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

Walker Environmental Group Inc.
Post Office Box 100
Thorold, Ontario L2V 3Y8

For the water taking from: Welland River

Located at: Lot 22, Concession 2, Geographic Township of Crowland
Welland, Regional Municipality of Niagara

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

DEFINITIONS

(a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34, OWRA.

(b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.

(c) "Ministry" means Ontario Ministry of the Environment.

(d) "District Office" means the Niagara District Office.

(e) "Permit" means this Permit to Take Water No. 0636-9A3RCR including its Schedules, if any, issued in accordance with Section 34 of the OWRA.

(f) "Permit Holder" means Walker Environmental Group Inc..

(g) "OWRA " means the *Ontario Water Resources Act,* R.S.O. 1990, c. O. 40, as amended.

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

TERMS AND CONDITIONS

1. Compliance with Permit

1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated May 16, 2013 and signed by Kevin Kehl, and all Schedules included in this Permit.

1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.

1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.

1.4 This Permit is not transferable to another person.

1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.

1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.

1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

2.1 Inspections

The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act* , R.S.O. 1990, the *Pesticides Act* , R.S.O. 1990, or the *Safe Drinking Water Act*, S. O. 2002.

2.2 Other Approvals

The issuance of, and compliance with this Permit, does not:

(a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act* , and

the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

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

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

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

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

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 **Expiry**

This Permit expires on **August 31, 2023**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Welland River	River	Other - Remediation	Remediation	1,300	12	135,000	365	17 644032 4764601
						Total Taking:	135,000		

4. Monitoring

4.1 Under section 9 of O. Reg. 387/04, and as authorized by subsection 34(6) of the *Ontario Water Resources Act* , the Permit Holder shall, on each day water is taken under the authorization of this Permit, record the date, the volume of water taken on that date and the rate at which it was taken. The daily volume of water taken shall be measured by a flow meter or calculated in accordance with the method described in the application for this Permit, or as otherwise accepted by the Director. A separate record shall be maintained for each source. The Permit Holder shall keep all records required by this condition current and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request. The Permit Holder, unless otherwise required by the Director, shall submit, on or before March 31st in every year, the records required by this condition to the ministry's Water Taking Reporting System.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Surface-Water Takings

The taking of water (including the taking of water into storage and the subsequent or simultaneous withdrawal from storage) shall be carried out in such a manner that streamflow is not stopped and is not reduced to a rate that will cause interference with downstream uses of water or with the natural functions of the stream.

6. Director May Amend Permit

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act* , Section 100 (4).

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

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.

2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.

3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

*In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, you may by written notice served upon me, the Environmental Review Tribunal and the Environmental Commissioner, **Environmental Bill of Rights**, R.S.O. 1993, Chapter 28, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 101 of the Ontario Water Resources Act, as amended provides that the Notice requiring a hearing shall state:*

1. The portions of the Permit or each term or condition in the Permit 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.

In addition to these legal requirements, the Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit to Take Water number;
6. The date of the Permit to Take Water;
7. The name of the Director;
8. The municipality within which the works are located;

This notice must be served upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto ON
M5G 1E5
Fax: (416) 314-4506
Email:
ERTTribunalsecretary@ontario.ca

AND

The Environmental Commissioner
1075 Bay Street
6th Floor, Suite 605
Toronto, Ontario M5S 2W5

AND

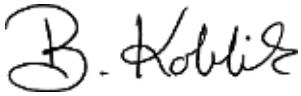
The Director, Section 34
Ministry of the Environment
12th Floor
119 King St W
Hamilton ON L8P 4Y7
Fax: (905)521-7820

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

by telephone at (416) 314-4600 ***by fax at (416) 314-4506*** ***by e-mail at www.ert.gov.on.ca***

*This instrument is subject to Section 38 of the **Environmental Bill of Rights** that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek to appeal for 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry, you can determine when the leave to appeal period ends.*

Dated at Hamilton this 31st day of July, 2013.



Belinda Koblik
Director, Section 34
Ontario Water Resources Act , R.S.O. 1990

Schedule A

This Schedule “A” forms part of Permit To Take Water 0636-9A3RCR, dated July 31, 2013.

Appendix 2

Simulated site appearance post closure / ECA

Appendix 2 – Simulated Site Appearance Post Closure

Current Completed Cap, Topsoil and Seeded Areas (Close up)



Current Completed Cap, Topsoil and Seeded Areas (From Distance)



Appendix 2 – Simulated Site Appearance Post Closure

Current Completed Surface Water Down chute



Current Completed Lower Drainage Bench



Appendix 2 – Simulated Site Appearance Post Closure

Simulation of Entire Site Post Closure



Appendix 3

Minutes from PLC meeting:
November 1, 2017

Atlas Landfill Remediation Project

PLC Meeting

Club Richelieu
Welland, ON
Wednesday, November 1, 2017

UPDATES - OPERATIONS

- 2017 Tonnes YTD
  - 281,129 tonnes
  - Expecting 310,000 tonnes by year end

- Based on annual volumes, the site is expected to reach capacity some time in 2019

NEW BUSINESS – END USE PLANNING PROJECT

- City in partnership with Dillon Consulting and Niagara College completed the public outreach portion of the project in August and results summarized.
- Public Info Session held in September introducing Draft Design plan options based on what was heard during the public outreach programs
- Dillon finalizing the Concept Plan based on feedback from September meeting, and preparing a final report.
- Once the final report has been reviewed by city staff, Dillon Consulting will present the report to council in November.

Atlas Remediation Project

Appendix 4

Monthly Inspection Report

ATLAS LANDFILL
REMEDIATION PROJECT
POST CLOSURE INSPECTION FORM

Title: Post Closure Monthly Inspections	Page 1 of 5
Section: ?? – Inspections and Monitoring	Date Issued:
Authorized by:	Revision Date:

1.0 Purpose:

1.1 To identify and eliminate any substandard condition that could cause harm to the environment, public, or cause non-compliance issues.

2.0 Background:

2.1 As part of the Atlas Landfill Post Closure Plan, the site requires monthly environmental inspections. These inspections include:

- Conduct and document a visual inspection of the leachate collection system on a monthly basis to assist in determining the need for more frequent cleaning and/or maintenance.
- The presence of leachate seeps
- Condition of surface water drainage works and ditches
- Erosion and sedimentation in the surface water drainage system
- Presence of any ponded water that may cause an adverse effect
- Adequacy of final cover material
- Evidence of vegetative stress related to landfill performance
- Conditions of groundwater monitoring wells
- Presence of insects, vermin, rodents and scavenging animals that may cause a nuisance
- Condition of the fence surrounding the site
- General site appearance

3.0 Responsibilities:

3.1 It is the responsibility of the Contractor to ensure that monthly inspections are completed, reviewed and items followed up on in a timely manner with City of Welland (City) representatives. The Contractor may designate a trained employee to conduct the monthly inspections with the approval of the City.

4.0 Procedure:

4.1 The contractor will conduct monthly inspections using the Monthly Inspection Form (attached).

4.2 Review any substandard condition found during the inspection that may adversely affect the environment or public or, are non-compliant with the site's Closure Plan, with the designated City representative(s).

4.3 Create an action plan and time frame to address the deficiencies/hazard (immediately deal with extreme conditions that may cause an adverse effect).

4.4 Keep copies of the monthly inspections forms on site in an organized manner that makes them easily retrievable for review for a minimum of **2** years.

Temperature: ◦C	**Wind direction:**	**Wind speed:** calm light moderate high severe					
Precipitation type:	**Precipitation intensity:**	**Sky:**					
(Circle one) None rain snow sleet hail fog	(circle one) light moderate heavy severe	Clear	mainly sunny	partially cloudy	mainly cloudy	Full cloud	**Site Activity:**

Documentation	**Yes**	**No**	**N/A**	**Actions/Comments**
• Is the Site's Environmental Documentation available and up to date? o Ontario Ministry of the Environment and Climate Change Compliance Approval: A120049 o Ontario Ministry of the Environment and Climate Change Sewage Works Certificate of Approval: 6166-8HPHH4 o Ontario Ministry of the Environment and Climate Change Permit to Take Water Permit: 0636-9A3RCR o Closure Plan				
• Any complaints, spills, incidents since last inspection? If so, have they been reported?				
Signage/Traffic	**Yes**	**No**	**N/A**	**Actions/Comments**
• Is the sign at Front entrance readable?				

Site Security	Yes	No	N/A	Actions/Comments
• Is existing fencing intact and in good condition?				
• Are entrance gates intact and lockable?				
• Are no trespassing signs posted a minimum of 30m apart?				
• Is the site free of any unauthorized people?				
• Has the condition of all groundwater and gas monitors been inspected? Are all locked and free from vandalism?				
• Are all the automatic alarm system, pumping stations working?				
Adverse Effects	**Yes**	**No**	**N/A**	**Actions/Comments**
• Are there vermin/rodents/scavenging animals (rats, mice) onsite that could create an adverse effect?				
• Are there vectors/insects (flies, mosquitoes etc.) onsite that could create an adverse effect?				
• Are odours that could cause an adverse effect noticeable off-site?				
• Is noise being created from on-site that could cause and adverse effect?				
• Is dust from on-site at a level that it could cause and adverse effect?				
• Is any ponded surface water present that may cause an adverse effect?				
• Are any leachate seeps visible?				
Cover.	**Yes**	**No**	**N/A**	**Actions/Comments**
• Do areas with final cover applied have a minimum of 1m of final cover and 150mm (6 inches) of topsoil in place?				
• Has any erosion of the final cover occurred that needs repair?				
• Are any leachate seeps noticeable from areas where final cover has been applied?				
• Is there evidence of vegetation stress related to the site's performance?				
Leachate Areas & Contact Water Ditches	**Yes**	**No**	**N/A**	**Actions/Comments**

LEACHATE HANDLING AREAS				
• Has sediment accumulated on the base of PS1 to the point that a clean out would be required?				
• Does leachate appear to be flowing into PS1 freely and properly?				
Leachate Collector/Toe Drain along Waterloo Barrier	**Yes**	**No**	**N/A**	**Actions/Comments**
• Visually inspect the leachate system by determining the level of leachate in the leachate collection system cleanout manholes. Is there a concern that the leachate system is not functioning properly?				
• Are the leachate collection pipe clean-outs manholes accessible?				
• Are clean-out structures marked with visual barriers to ensure against impact from vehicles & equipment?				
• Are the leachate collection pipe clean-outs in good condition?				
• Is there any evidence that the leachate pipes need to be cleaned (i.e. solids in pipe, leachate not flowing into pumping stations)?				
PS1/PS2	**Yes**	**No**	**N/A**	**Actions/Comments**
• Are all submersible pump(s) in the chamber operating properly?				
• Are the flow meters functioning?				
• Have the records of the inspection and maintenance been retained for a minimum of 2 years?				
• Are the floats, PLC, station automation, alarms functioning properly?				
• Is there any sign of excessive sediment/solids at the bottom of the chamber?				
• Are there any signs of vandalism or damage to pumping stations?				
• Are electrical panels secure, locked?				
• Are all valves operable?				
Inspection of Leachate Force Mains and Manhole BB				
(Discharge Manhole)	**Yes**	**No**	**N/A**	**Actions/Comments**

• Are there any signs or indications of excessive scaling, blockages or damage to the pipes?				
• Is there any evidence of leaks in the forcemain along its route?				
• Are there any signs of excessive scaling or damage in manhole MHBB where leachate is discharged?				
• Does forcemain appear to be flowing properly into manhole MHBB?				
• Has sediment accumulated on the base of MHBB to the point that clean out would be required?				
• Are records of the maintenance work conducted been kept for at least 2 years?				
Stormwater Ponds and Conveyance System	**Yes**	**No**	**N/A**	**Actions/Comments**
• Any signs of silting, blockage or deterioration of the discharge pipes?				
• If the pond is dry, are there any fissures noticeable?				
• Is there any erosion of the pond or ditches? Are repairs required?				
• Is there an accumulation of sedimentation that would require a clean-out of the pond or ditches?				
Groundwater Monitors	**Yes**	**No**	**N/A**	**Actions/Comments**
• Are the wells locked?				
• Are they labeled?				
• Are they free from damage?				

Name of Inspector:	Date/Time of Inspection:

Appendix 5

Leachate, Ground Water, Surface Water and Landfill Gas Inspection and Monitoring

Standard Operating Procedures

Schedules “B” “C” and “D”

SOP for leachate including Schedule “B”

SOP for ground water including Schedule “B”

SOP for surface water including Schedule “C”

SOP for landfill gas including Schedule “D”

- (SOP provided by third party consultant)

Title: SOP City of Welland ALF (A) - Monitoring of Leachate Quality and Quantity

Page 1 of 3

Section: Leachate Management Procedures

Date Issued: _____

Authorized by: _____

Revision Date: _____

1.0 PURPOSE

1.1 The Post Closure Report outlines the monitoring requirements with respect to the leachate quality and quantity of the Atlas Site.

2.0 BACKGROUND

2.1 This procedure assists in complying with the following conditions of the Post Closure Report for the Atlas Site:

2.2 Upon closure the City of Welland / Operator will continue to adhere to Condition 5 & 6 of ECA: A120049 (Appendix 1) to ensure appropriate steps and being taken to prevent an Adverse Effect

2.3 Upon closure the City of Welland / Operator will continue to adhere to Condition 42 of ECA: A120049 (Appendix 1) to ensure at no time a discharge of a contaminant that causes or is likely to cause an adverse effect

2.4 Upon closure the City of Welland / Operator will continue to adhere to Condition 79 of ECA: A120049 (Appendix 1) by ensuring leachate monitoring continues to be carried out

- Future monitoring results may point to adjustments to this schedule that will be recommended in future Post Closure Annual Reports to the MECP

2.5 Upon closure the City of Welland / Operator will continue to adhere to Condition 102a. of ECA: A120049 (Appendix 1) by providing the results and an interpretive analysis of the results for leachate in the site's Annual Post Closure Report submitted to the MECP

- Future Annual Post Closure Reports will likely recommend adjustments to monitoring and reporting requirements based on ongoing interpretations

2.6 Upon closure the City of Welland / Operator will continue to adhere to Condition 102 f. of ECA: A120049 (Appendix 1) by providing a summary of the quantity of any leachate removed from the site during each operating month leachate in the site's Annual Post Closure Report submitted to the MECP

2.7 Leachate quality and quantity discharged from the site must meet the Niagara Sewer-Use Bylaw.

3.0 SAMPLING and REPORTING: Environmental Monitoring Consultant

The leachate monitoring and sampling will be conducted by a fully trained and competent Environmental Monitoring Consultant, (third party to the City of Welland and Operator) who will be responsible for:

- **Collecting samples**:
  - 2 times per year from MHBB and LCS-MH4 as shown on Figure 6

- Semi-annually from surface water locations listed in Schedule C of the ECA
- Semi-annual from groundwater monitoring wells listed in Schedule B of the ECA

- **Providing and Having samples analyzed (at a CALA Accredited Laboratory) for**:
  - Alkalinity, calcium, sodium, potassium, chloride fluoride, sulphate, nitrate, nitrite pH, conductivity, total phosphorus, ammonia, unionized ammonia, Total Kjeldahl Nitrogen, phenols
  - VOC's
  - Petroleum Hydrocarbon compounds (fraction F1 through F4)
  - Total PCB's
  - PAHs
  - Dissolved metals – Aluminum, antimony, barium, beryllium, boron, bromide, cadmium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, zinc, zirconium.

- **Reporting any exceedances to the City of Welland and Operator immediately upon reviewing the analytical results**

- **Sampling protocols**

- **Record keeping**
  - Records of depths, volumes purged, sample collection, date sampled, initials, field measurements and any related observations are to be maintained by sampling staff. Surface Water and Groundwater Consultant(s) periodically reviews this information.

- **Field Measurements**
  - All field meters are to be calibrated with a two-point calibration prior to each sampling run. For pH meters use pH 7 and 10 buffers. For conductivity meters check the zero point and calibrate with a potassium chloride standard appropriate to the samples being collected. Typically, 0.01N (1412 µS/cm) should be used prior to surface water sampling and 0.1N (12890) prior to groundwater sampling. For dissolved oxygen check the zero point with fresh sodium sulphite solution and calibrate in air. Check the dissolved oxygen calibration with water saturated with air at 20^0C.
  - In general, follow manufacturer's instructions for calibration and storage.
  - Rinse field meters with distilled water between sampling locations. After use, let the meters dry out

on a lab bench overnight before storing.

- **Sample Containers and Preservation**
  - Sample container and preservation requirements are to be followed according to protocols established by the subcontracted testing laboratory
- **QA/QC Testing**
  - For each of the surface water group, the leachate group and the groundwater group, on average every seventh sample is to be collected in duplicate (ie one in eight samples submitted to the lab is a duplicate).A traveling volatiles blank is to accompany volatiles sampling.

- **Monitoring Well Maintenance**
  - If any monitoring wells are found to be in a condition that could affect security of installation, identification of the installation or analytical results it must be repaired. This shall be done immediately if such repairs are within the scope of field staff operations, and report to the City of Welland and Operator.
  - While carrying out routine elevations are responsible for installation of locks and routine lubrication of locks and hinges.
  - For casings that have broken, seized or slumped, pipes requiring repair, vegetation requiring removal or access needing improvement, and report to the City of Welland and Operator
  - Preparing quarterly summary reports on sampling activities for periodic review by the Surface Water and Groundwater Consultant(s) who will be preparing the site's Annual Post Closure Reports for submission to the MECP.

- **Leachate Volume Monitoring**
  - Leachate quantity discharged into the Niagara Region sanitary sewers will be monitored by a flow meter.

Leachate Analytical Criteria:

SCHEDULE "B": GROUNDWATER

GENAERL CHEMISTRY:

pH, conductivity, alkalinity, hardness, ion balance, calcium, sodium, potassium, chloride, fluoride, sulphate, nitrate, nitrite, total phosphorous, ammonia, unionized ammonia, Total Kjeldahl Nitrogen, phenols, Total Dissolved Solids, Dissolved Organic Carbon

METALS

Aluminum, antimony, arsenic, barium, beryllium, boron, bromide, cadmium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, selenium, silver, stronimum, thallium, tin, titanium, uranium, vanadium, zinc, zirconium

POLYAROMATIC HYDROCARBONS

Naphthalene, flourine, phenanthrene, anthacene, fluoroanthene, benzo(a)anthracene, chrysene, benzo(k)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthacene, benzo(g,h,i)perylene

PCB"s

PETROLEUM HYDROCARBONS (PHC's)

To include F-1, F-2, F-3 and F-4 series

VOLATILE ORGANIC COMPOUNDS (VOC's)

All VOC's with an ODWS criteria

Detection limits shall be low enough in order to allow for comparison with the Ministry's Ontario Drinking Water Standards

Conductivity, pH and temperature readings are to be taken from samples collected from each well during each sampling event

One blind duplicate shall be collected for every 15 samples

Title: SOP City of Welland ALF (B) Groundwater Monitoring | Page 1 of 4

Section: Inspections and Monitoring | Date Issued: _____

Authorized by: _____ | Revision Date: _____

1.0 Purpose

1.1. The Post Closure Report outlines the monitoring requirements with respect to the leachate quality and quantity of the Atlas Site.

2.0 Background

2.1. This procedure assists in complying with the following conditions of the Post Closure Report for the Atlas Site:

2.2. Upon closure the City of Welland / Operator will continue to adhere to Condition 5 & 6 of ECA: A120049 (Appendix 1) to ensure appropriate steps and being taken to prevent an Adverse Effect

2.3. Upon closure the City of Welland / Operator will continue to adhere to Condition 76, assess, repair, replace or decommission, as required any groundwater monitoring wells included in the monitoring program

2.4. Upon closure the City of Welland / Operator will continue to adhere to Condition 77 to repair or replace any groundwater monitoring well that has been made in operable so that no more than one sampling event is missed.

2.5. Upon closure the City of Welland / Operator will continue to adhere to Condition 78 to decommission all wells that are no longer needed properly

2.6. Upon closure the City of Welland / Operator will continue to adhere to Condition 79 of ECA: A120049 (Appendix 1) by ensuring groundwater monitoring continues to be carried out as outlined in Schedule B

- Future monitoring results may point to adjustments to this schedule that will be recommended in future Post Closure Annual Reports to the MECP

3.0 Sampling and REPORTING: Environmental Monitoring Consultant

The groundwater monitoring and sampling will be conducted by a fully trained and competent Environmental Monitoring Consultant, (third party to the City of Welland and Operator) who will be responsible for:

- **Collecting samples and Sample Protocols**:
- **Sample Analytical**
    - Providing samples for analyzing at a CALA Accredited Laboratory as outlined in Schedule “B” of ECA: A120409

- **Record keeping**
  - Records of depths, volumes purged, sample collection, date sampled, initials, field measurements and any related observations are to be maintained by sampling staff. Surface Water and Groundwater Consultant(s) periodically reviews this information.
- **Exceedance Reporting**
  - Report any exceedances to the City of Welland and Operator immediately upon reviewing the analytical results
- **Field Measurements**
- **Sample Containers and Preservation**
  - Sample container and preservation requirements are to be followed according to protocols established by the subcontracted testing laboratory
- **QA/QC Testing**
  - For each of the groundwater group, on average every seventh sample is to be collected in duplicate (ie one in eight samples submitted to the lab is a duplicate).A traveling volatiles blank is to accompany volatiles sampling.
- **Monitoring Well Maintenance**
  - If any monitoring wells are found to be in a condition that could affect security of installation, identification of the installation or analytical results it must be repaired. This shall be done immediately if such repairs are within the scope of field staff operations, and report to the City of Welland and Operator.
  - While carrying out routine elevations are responsible for installation of locks and routine lubrication of locks and hinges.
  - For casings that have broken, seized or slumped, pipes requiring repair, vegetation requiring removal or access needing improvement, and report to the City of Welland and Operator
  - Preparing quarterly summary reports on sampling activities for periodic review by the Surface Water and Groundwater Consultant(s) who will be preparing the site's Annual Post Closure Reports for submission to the MECP.
  - Inspect each well at each sampling station to ensure that it is locked and operating properly
  - Report deficiencies or problems with wells immediately to the City of Welland / Operator
  - Repair all wells that have deficiencies are are not operating properly so that not more than one sampling event is missed.
  - decommission all wells no longer needed for the monitoring program as per O. Reg 903

- obtain approval from the director before decommissioning any well
- submit the decommissioning report as part of the annual report.

4.0 Monitoring Program Reporting

4.1 All groundwater data will be compiled by the Environmental Monitoring Consultant and incorporated into and interpreted by a third party consultant responsible for compiling the Annual Post Closure Report

5.0 ECA: A120409 – Schedule "B"

SCHEDULE "B": GROUNDWATER MONITORING

Groundwater sampling is to be completed twice per year in the spring and fall

Water levels are to be taken during each monitoring event

Groundwater samples are to be analyzed for the following parameters:

GENAERL CHEMISTRY:

pH, conductivity, alkalinity, hardness, ion balance, calcium, sodium, potassium, chloride, fluoride, sulphate, nitrate, nitrite, total phosphorous, ammonia, unionized ammonia, Total Kjeldahl Nitrogen, phenols, Total Dissolved Solids, Dissolved Organic Carbon

METALS

Aluminum, antimony, arsenic, barium, beryllium, boron, bromide, cadmium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, selenium, silver, stronimum, thallium, tin, titanium, uranium, vanadium, zinc, zirconium

POLYAROMATIC HYDROCARBONS

Naphthalene, flourine, phenanthrene, anthacene, fluoroanthene, benzo(a)anthracene, chrysene, benzo(k)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthacene, benzo(g,h,i)perylene

PCB"s

PETROLEUM HYDROCARBONS (PHC's)

To include F-1, F-2, F-3 and F-4 series

VOLATILE ORGANIC COMPOUNDS (VOC's)

All VOC's with an ODWS criteria

Detection limits shall be low enough in order to allow for comparison with the Ministry's Ontario Drinking Water Standards

Conductivity, pH and temperature readings are to be taken from samples collected from each well during each sampling event

One blind duplicate shall be collected for every 15 samples

List of Monitoring Locations

MW6-99-S	MW6-99-I	MW6-99-D	MW18-S	MW18-I	MW19-s	MW19-I	MW19-D
Mw20-S	MW20-I	MW21-I	MW21-D	MW22-S	MW22-GI	MW22-I	MW-23-S
MW23-GI	MW23-I	MW24-S	MW24-GI	MW24-I	MW24-D	MW25-S	MW25-I
MW26-S	MW26-I	MW27-S	MW27-I	MW27-D	MW28-S	MW28-I	MW29-S
MW29-I	MW-29-D						

Title: SOP City of Welland ALF (C) – Surface Water Monitoring Section

Page 1 of 3

Section: Inspections and Monitoring

Date Issued: _____

Authorized by: _____

Revision Date: _____

1.0 Purpose

1.1. The Post Closure Report outlines the monitoring requirements with respect to the leachate quality and quantity of the Atlas Site.

2.0 Background

2.1. This procedure assists in complying with the following conditions of the Post Closure Report for the Atlas Site:

2.2. Upon closure the City of Welland / Operator will continue to adhere to Condition 5 & 6 of ECA: A120049 (Appendix 1) to ensure appropriate steps and being taken to prevent an Adverse Effect

2.3. Upon closure the City of Welland / Operator will continue to adhere to Condition 79 of ECA: A120049 (Appendix 1) by ensuring surface water monitoring continues to be carried out as outlined in Schedule "C"

- Future monitoring results may point to adjustments to this schedule that will be recommended in future Post Closure Annual Reports to the MECP

3.0 Sampling and REPORTING: Environmental Monitoring Consultant

The surface water monitoring and sampling will be conducted by a fully trained and competent Environmental Monitoring Consultant, (third party to the City of Welland and Operator) who will be responsible for:

- **Collecting samples and Sample Protocols**:
- **Sample Analytical**
  - Providing samples for analyzing at a CALA Accredited Laboratory as outlined in Schedule "C" of ECA: A120409 (Appendix 1)
- **Record keeping**
  - Records of depths, sample collection, date sampled, initials, field measurements and any related observations are to be maintained by sampling staff. Surface Water and Groundwater Consultant(s) periodically reviews this information.
- **Exceedance Reporting**
  - Report any exceedances to the City of Welland and Operator immediately upon reviewing the analytical results
- **Field Measurements**

- **Sample Containers and Preservation**
    - Sample container and preservation requirements are to be followed according to protocols established by the subcontracted testing laboratory
- **QA/QC Testing**
    - For each of the surface water group, on average every seventh sample is to be collected in duplicate (ie one in eight samples submitted to the lab is a duplicate).A traveling volatiles blank is to accompany volatiles sampling.

4.0 Monitoring Program Reporting

4.1 All surface water data will be compiled by the Environmental Monitoring Consultant and incorporated into and interpreted by a third party consultant responsible for compiling the Annual Post Closure Report

5.0 ECA: A120409 – Schedule "C" SURFACE WATER MONITORING

Surface water monitoring will take place at Stations SW-1, SW-2, SW-3, SW-4, SW -5, SW-6, SW-7, SW-8 SW-9, SW-10, SW-11, SW-12, and SW-13 in the Spring and Fall of each year. Semi-annual sampling will be carried out immediately following precipitation events or snowmelt

One blind duplicate sample will be collected during each sampling event for quality assurance / quality control

Velocity, depth and cross sectional area measurements will be taken at each surface water station during each sampling event

Surface water samples will be collected from the downstream surface water station first then subsequent stations while traversing upstream

Weather condition during and 48 hours prior to the sampling event will be observed and recorded

Surface water samples will be analyzed for the following:

General Chemistry - pH, conductivity, alkalinity, hardness, ion balance, calcium, sodium, potassium, chloride, fluoride, sulphate, nitrate, nitrite, total phosphorus, ammonia, unionized ammonia, Total Kjeldahl nitrogen, phenols

Metals – aluminum, aluminum (filtered), antimony, arsenic, barium, beryllium, boron, bromide, cadmium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, zinc and zirconium

Polyaromatic Hydrocarbons – naphthalene, fluorine, phenanthrene, anthacene, fluoroanthene, benzo (a) anthracene, chrysene, benzo (k) fluoranthene, benzo (a) pyrene, dibenzo (a,h) anthacene, benzo (g, h, i) perylene

PCB's

Petroleum Hydrocarbons (PHC's) – include F-1, F-2, F- 3 and F- 4 series

Volatile Organic Compounds (VOC's) – all VOC's with an ODWS criteria

Notes:
Detection Limits will be low enough in order to allow for comparison with the MECP's – Ontario Provincial Water Quality Objectives

Conductivity, pH and temperature and dissolved Oxygen readings will be taken at each surface water station during each sampling event

One blind duplicate will be collected for every 15 samples

The City will locate all surface water stations geospacially and co-locate each with a survey stake. Should any station become unusable due to construction or operational activities or be influenced by external sources to the point that data interpretation becomes difficult, the City will determine a replacement location for that station and obtain written agreement from the District Manager to the change in location

SCHEDULE “D”: LANDFILL GAS MONITORING

Landfill gas monitoring is to occur on a monthly basis from November to April and once in June and August of each year

The proposed landfill gas monitoring locations are outlined below:

LFG1, LFG2, LFG3, LFG4, LFG5, LFG6

Appendix 6

Schedule: A - Item 46 - Trigger Mechanism and Contingency Plans

- Ground water and Surface water

Schedule: A - Item 15 - Sections 7.3.1 and 7.3.2 Trigger Mechanism and Contingency Plans (Landfill Gas)

December 14, 2016 Project No. 11-1186-0053

Ms. Lesley Clarke, Environmental Performance Lead
Walker Industries
2800 Thorold Townline Road
Niagara Falls, Ontario
L2E 6S4

TRIGGER AND CONTINGENCY PLAN
CONDITION 81 OF AMENDED ECA NO. A120409
ATLAS LANDFILL
WELLAND, ONTARIO

Dear Ms. Clarke,

This letter provides the updated Trigger and Contingency Plan for the Atlas Landfill (Welland, Ontario), as required by Notice No. 3 of the Amended Environmental Compliance Approval (ECA) Number A120409 (dated April 4, 2014).

BACKGROUND ON TRIGGER AND CONTINGENCY PLAN DEVELOPMENT

An Interim Trigger and Contingency Plan document was submitted to the Ministry of Environment and Climate Change (MOECC) in July 2013 as required by Condition 81 of the ECA. The MOECC reviewed the document and provided comments to Walker Environmental Group in a letter dated February 27, 2014. In response to the MOECC comments, Golder proposed that the document be updated and re-issued by July 30, 2015 to allow time to collect additional groundwater and surface water quality data. The additional data were required to better identify appropriate trigger parameters and concentrations. The MOECC's acceptance of this approach was issued in Notice No. 3 of the ECA dated April 4, 2014.

Golder submitted the updated Trigger and Contingency Plan on July 27, 2015. The updated document incorporated the following changes to address the MOECC comments;

i) included Na, DOC, B and Mn as groundwater protection trigger parameters;

ii) included calculated Reasonable Use Guideline (RUG) values for the groundwater protection trigger parameters using background groundwater quality from Nest MW 29 located east of the landfill;

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iii) applied the RUG to groundwater Nests MW18, 19, 20 and 26 located along the east boundary of the site. Trigger concentrations were set at either the RUG value or the 95th percentile of the existing concentrations for the well, whichever is higher;

iv) identified a separate list of surface water protection trigger parameters having elevated leachate source concentrations relative to their respective Provincial Water Quality Objective (PWQO);

v) for groundwater Nests MW 21, 22, 23, 24, 25, 6-99, 27 and 28 located along the north, west and south side of the landfill in close proximity to the Welland River, trigger concentrations were set at either the PWQO value or the 95th percentile of the existing concentrations for the well, whichever is higher; and

vi) added additional discussion on potential contingency measures.

Golder recommended that RUG based trigger parameters/concentrations not be applied to groundwater monitoring wells adjacent the north, west and south side of the landfill, as drinking water is not considered a reasonable use of the groundwater on the narrow strip of land separating the landfill and the Welland River. The key receptor in this area is the river, hence the reason for establishing trigger parameters/concentrations aimed at surface water protection at these wells.

The MOECC reviewed the updated (July 27, 2015) Trigger and Contingency Plan and issued additional review comments in a letter dated January 11, 2016. Golder responded to these comments in a letter dated January 29, 2016. A copy of the responses is provided in Appendix A for reference. The MOECC indicated their acceptance of the responses in a letter dated October 25, 2016, and requested that the document be finalized incorporating the information provided in the responses.

This current document provides the final version of the Trigger and Contingency Plan. Note that the data used for establishing the trigger mechanism is the same as that in the previous (July, 2015) version and does not include subsequent monitoring data collected from the Fall 2015 and the Spring / Fall 2016 sampling events. As requested by the MOECC, the report will be updated after three years of leachate quality data is obtained from the proposed additional leachate sampling station at MH4 located along the leachate interceptor system on the west side of the landfill.

Information on landfill history, hydrogeological setting, design and performance is provided in the 2015 Annual Report (Golder, 2016) and is not repeated herein.

GROUNDWATER PROTECTION TRIGGER

The Reasonable Use Guideline (MOE, 1994) establishes limits for the allowable concentrations of contaminants in groundwater at the site boundary where drinking water is considered a reasonable use of the groundwater on the adjacent property. The guideline is based on the existing background groundwater quality on the adjacent property and the Ontario Drinking Water Objectives (ODWO). The RUG limits are set such that there would not be any significant effect on the use of the groundwater on the adjacent property as a source of drinking water.

In their review of the July 2013 Interim Trigger and Contingency Plan, the MOECC requested that the RUG be applied to the Site. Their request has been incorporated by applying the RUG to the east boundary of the Site. As noted above, it is recommended that the RUG not be applied to the north, west, and south boundaries which are in close proximity to the Welland River, as drinking water is not considered a reasonable use of the groundwater on the narrow strip of land separating the landfill and Welland River.

According to the RUG, the quality of groundwater at the east boundary of the Site should not be degraded by an amount in excess of:

- 50% of the difference between the existing background concentration and the ODWO for non-health related parameters (e.g., chloride), and
- 25% of the difference between the background concentration and the ODWO for health related parameters (e.g., lead)

Where background concentrations are naturally at or greater than the ODWO, the RUG requires that the groundwater not be degraded beyond the upper end of the range in background concentrations.

The proposed trigger parameters with respect to the RUG are: pH, chloride, fluoride, dissolved organic carbon, aluminum, boron, chromium, manganese, sodium and trichloroethylene. The selection of these trigger parameters is based on a comparison of leachate quality data and ODWO values as shown in Tables A.1 to A.4 (Attachment A). The selected trigger parameters have elevated concentrations in leachate compared to their respective ODWO value (i.e., up to about 10 times higher) and are relatively mobile/persistent. Note that sulphate, hardness and total dissolved solids are not included due to their naturally high and variable background concentrations, which make it difficult to distinguish between landfill related impacts and natural variations in groundwater quality. Further discussion on why these three parameters, as well as other parameters including Benzo(a)pyrene and Total PCBs are not included is given in Golder's responses to the MOECC's January 2016 comments (refer to Appendix A).

Table 1 presents the calculated RUG values for the selected trigger parameters. For each trigger parameter, the background concentration used in the calculation was the 95th percentile of the concentrations obtained from background well nest MW 29 located east of the landfill site. This background nest has wells screened in the shallow overburden, intermediate depth overburden and upper shale bedrock. The RUG values were calculated separately for each of these screened zones to account for differences in background concentrations between the zones. For pH, DOC and manganese, the calculated RUG value is higher than the respective ODWO value, due to background concentrations being higher than the ODWO.

The proposed RUG trigger monitoring wells are Nests MW18, 19, 20 and 26 located along the east boundary of the Site (Figure 1). Each nest was installed in 2012. Nests MW 18, 20 and 26 have wells screened in the shallow overburden (18-S, 20-S and 26-S) and the intermediate depth overburden (18-I, 20-I and 26-I). Nest MW 19 has wells screened in the shallow overburden (19-S), intermediate overburden (19-I) and the upper shale bedrock (19-D). Borehole logs are provided in the 2014 Annual Monitoring Report (Golder, 2015).

As presented in Golder's responses to the MOECC's January 2016 comments (refer to Appendix A), the shallow overburden trigger wells (18-S, 20-S and 26-S) have slightly higher sodium and chloride concentrations compared to background levels at Nest MW 29. The intermediate overburden trigger wells (18-I, 20-I and 26-I) have slightly higher concentrations of DOC, manganese and sodium compared to background. The upper shale bedrock trigger well (19-D) has slightly higher sodium concentrations compared to background.

Tables 2 to 5 compare the existing concentrations and calculated RUG values for the proposed trigger parameters/wells. Based on these data, the proposed trigger concentrations at each well are set at either the RUG value or the 95th percentile of the existing concentrations for the well, whichever is greater. This approach accounts for the fact that the existing impacts are from historical landfill operations prior to implementation of the site remedial works in 2012. The objective is that the impacted areas do not get progressively worse. A summary of the proposed trigger concentrations is given below:

Groundwater Protection Trigger Parameter	Ontario Drinking Water Objective (ODWO) (mg/L)	Proposed Groundwater Protection Trigger Concentrations (mg/L)								
		18-S	18-I	19-S	19-I	19-D	20-S	20-I	26-S	26-I
pH (field)	< 6.5-8.5 > (A)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)
Chloride (Cl)	[250] (A)	131	141	131	141	142	131	141	141	141
Fluoride (F)	1.5 (H)	0.6	1.2	0.6	1.2	1.4	0.6	1.2	1.2	1.2
Dissolved Organic Carbon (DOC)	[5] (A)	13	3.3	13	3.3	3.2	13	6.4	4.1	3.3
Aluminum (Al)	< 0.1 > (A)	0.06	0.06	0.09	0.06	0.06	0.06	0.06	0.06	0.06
Boron (B)	{5} (H)	1.3	2.0	1.3	2.0	2.3	1.3	2.0	2.0	2.2
Chromium (Cr)	0.05 (H)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Manganese (Mn)	[0.05] (A)	0.26	0.28	1.15	1.06	0.09	0.67	0.32	1.4	0.3
Sodium (Na)	[200] (A)	121	268	158	232	146	121	185	185	193
Trichloroethylene	0.005 (H)	0.0016	0.0015	0.0016	0.0015	0.0016	0.0016	0.0015	0.0015	0.0015

Notes:
(A) Aesthetic Drinking Water Objective
(H) Health Related Drinking Water Objective
* Refer to Tables 2 to 5

SURFACE WATER PROTECTION TRIGGER

Given that the primary potential receptor of any contaminant migration from the landfill is the Welland River, it is important that the trigger plan provide early warning of potential adverse impacts to the river. It is therefore proposed that groundwater in close proximity to the river comply with Provincial Water Quality Objectives (PWQO) for surface water. This approach is considered better than applying trigger concentrations to the river monitoring stations (e.g., SW-13) as it provides early warning of potential adverse impacts to the river. It is also considered better than applying trigger concentrations to other surface water stations such as SW-2 (outlet of non-contact ditch at the south-west corner of the Site) and SW-6 (outlet of the stormwater pond north of Cell 2), as concentrations at these stations are highly influenced by the suspended solids load at the time of sampling as well as inputs from off-site roads and developments, making it difficult to identify any impacts specific to the landfill.

The proposed trigger parameters for surface water protection are pH, phosphorus, un-ionized ammonia, total phenols, lead, molybdenum and vanadium. The selection of these trigger parameters is based on a comparison of leachate quality data and PWQO values as shown in Tables B.1 to B.4 (Attachment B). The selected trigger parameters have elevated concentrations in leachate compared to their respective PWQO value and are relatively mobile/persistent.

The proposed trigger monitoring wells for surface water protection are Nests MW 21, 22, 23, 24, 25, 27, 28 and 6-99, located along the north, west and south sides of the landfill in close proximity to the river. All nests except 6-99 were installed in 2012. Nest 6-99 was installed in 1999. Each nest has between two and four wells screened in different zones, referred to as shallow overburden, granular intermediate unit, intermediate depth overburden and upper shale bedrock. Borehole logs are provided in the 2014 Annual Monitoring Report (Golder, 2015).

Tables 6 to 13 show existing concentrations and PWQO values for the proposed trigger parameters / wells. Based on these data, proposed trigger concentrations at each well are set at either the PWQO value or the 95th percentile of the existing concentrations for the well, whichever is greater. A summary of the proposed surface water protection trigger concentrations is provided in the following table:

Surface Water Protection Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Proposed Surface Water Protection Trigger Concentrations (mg/L)*																					
		21-S	21-I	21-D	22-S	22-I	22-GI	23-S	23-I	23-GI	24-S	24-I	24-GI	24-D	25-S	25-I	6-99S	6-99I	6-99D	27-S	27-I	27-D	28-S	28-I
pH (field)	6.5-8.5	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.6 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 11.4 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.8 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)
Phosphorus	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	2.19	0.03	1.86	0.03	0.22	0.03	0.10	0.03	0.04	0.03	0.04	0.03	0.03	0.04
Unionized Ammonia	0.02	0.02	0.02	0.10	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Total Phenols	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.040	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Lead	0.001-0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Molybdenum	0.04	0.04	0.11	0.04	0.23	0.04	0.48	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.06	0.06	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Vanadium	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.010	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006

* Refer to Tables 6 to 13

PROPOSED TRIGGER MECHANISM AND RESPONSE PLAN

Figure 2 shows the proposed trigger mechanism and response plan applicable to both the groundwater and surface water protection triggers. The trigger mechanism for any given trigger well is two consecutive exceedances of a trigger concentration for one or more of the trigger parameters. The next steps would be to obtain two additional confirmatory samples after two weeks and four weeks of receipt of the laboratory results indicating the second consecutive exceedance. If the exceedance is confirmed by either of the two additional confirmatory sampling events, an assessment into the cause of the exceedance will be undertaken within a time period of one year from the date of receiving the lab results indicating the second consecutive exceedance. The assessment may involve additional monitoring and will be documented in the Annual Report. If the landfill is determined to be the cause, consideration will be given firstly to whether or not the situation can be improved by continued operation of the existing leachate controls with minor repairs/modifications. Consideration will also be given to the potential for adverse off-site impacts to groundwater and/or surface water. If it is determined that the situation cannot be remedied with the existing controls and there is a potential for adverse impacts off-site, then the design of a contingency measure will be prepared and submitted for MOE review/approval.

The contingency measure(s) will depend on the location, depth and lateral extent of the trigger exceedance and cannot be defined with certainty at this time. Potential alternatives include longitudinal extension of the leachate interceptor trench / barrier wall, installation of groundwater purge wells at the location of the impacts and installation of a geomembrane final cover system over the unlined Cell 1 waste fill area to minimize leachate generation. These contingency measures that can be designed to suit the conditions at the Site.

FUTURE RE-EVALUATION OF TRIGGER MECHANISM AND RESPONSE PLAN

In the 2015 Annual Report, Golder recommended that leachate sampling be carried out at MH4 of the Leachate Interceptor System along the west side of the landfill. This sampling location is expected to provide more representative leachate quality data than the current leachate monitoring station at the sanitary sewer connection (MHBB). The data from this additional proposed leachate sampling location will allow confirmation of the appropriateness of the selected trigger parameters. Sampling at this station commenced in 2016. In their review of the 2015 Annual Report, the MOECC requested that the Trigger and Contingency Plan be re-evaluated after 3 years of obtaining leachate samples from this additional location. Therefore, a re-evaluation of this Trigger and Contingency Plan is recommended by the end of 2018.

We trust that this updated Trigger and Contingency Plan meets your requirements. Please contact us should you have questions or require further clarification.

Yours truly,

GOLDER ASSOCIATES LTD.



Santosh Rimal

Santosh Rimal, Ph.D., P.Eng.
Geotechnical Engineer

Frank Barone, Ph.D, P. Eng.
Principal

SR/FSB/rb

Attachments Tables 1 to 13
Figures 1 and 2
Appendix A
Attachments A and B

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TABLES

Table 1: Reasonable Use Guideline Values

Trigger Parameter	Ontario Drinking Water Standard (ODWS[1]), Cr (mg/L)	X	Average Background Concentration at Nest MW29 (mg/L)			Standard Deviation of Background Concentrations at Nest MW29 (mg/L)			95th Percentile[2] Background Concentration, Cb (mg/L)			Reasonable Use Guideline[3], Maximum Allowable Concentration, Cm (mg/L)		
			Shallow	Intermediate	Deep	Shallow	Intermediate	Deep	Shallow	Intermediate	Deep	Shallow	Intermediate	Deep
pH (field)	< 6.5-8.5 > (A)	--	7.20	7.96	7.91	--	--	--	--	--	--	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)	6.5 (min.); 8.5 (max)
Dissolved Chloride (Cl)	[250] (A)	0.5	6.0	29.0	32.1	2.5	1.4	0.9	11.0	31.8	33.9	131	141	142
Fluoride (F)	1.5 (H)	0.25	0.2	1.0	1.2	0.0	0.1	0.1	0.3	1.2	1.4	0.6	1.2	1.4
Dissolved Organic Carbon (DOC)	[5] (A)	0.5	11.1	1.2	0.9	0.8	0.2	0.3	12.7	1.7	1.4	13	3	3
Aluminum (Al)	< 0.1 > (A)	0.5	<0.008	<0.008	<0.008	<0.003	<0.003	<0.003	<0.013	<0.013	<0.013	0.06	0.06	0.06
Boron (B)	{5} (H)	0.25	0.08	0.93	1.21	0.02	0.05	0.11	0.12	1.03	1.43	1.3	2.0	2.3
Chromium (Cr)	0.05 (H)	0.25	<0.004	<0.003	<0.002	<0.002	<0.002	<0.002	<0.007	<0.007	<0.006	0.02	0.02	0.02
Manganese (Mn)	[0.05] (A)	0.5	0.18	0.09	0.04	0.04	0.01	0.01	0.256	0.109	0.053	0.26	0.11	0.05
Sodium (Na)	[200] (A)	0.5	29.40	133.60	69.86	6.11	18.58	5.90	41.61	170.76	81.66	121	185	141
Trichloroethylene	0.005 (H)	0.25	<0.00022	<0.00022	<0.00024	<0.00011	<0.00009	<0.00010	<0.00	<0.00	<0.00	0.0016	0.0015	0.0016

Notes:

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

2. 95th percentile background concentration calculated as the average + 2 standard deviations of the background concentrations for the background well nest MW29 consisting of wells MW29S (shallow overburden), 29I (intermediate depth overburden) and MW29D (upper shale bedrock).

3. Reasonable Use Guideline (RUG):

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

where,

Cm = maximum allowable concentration for the contaminant

Cb = background concentration of the contaminant in the groundwater

Cr = the health related drinking water objective or aesthetic drinking water objective for the contaminant, whichever is applicable

X = 0.25, if Cr is health related drinking water objective or 0.50, if Cr is an aesthetic drinking water objective

- Reasonable use value exceeds the ODWS.

Table 2a: Trigger Concentrations for MW18-S

Trigger Parameter	Reasonable Use Guideline, Maximum Allowable Concentration (from Table 1), Cm (mg/L)	Existing Concentration Data for MW18-S (East of Cell 1)								95th Percentile of Existing Concentration Data for MW18-S (mg/L)	Recommended** Trigger Concentration (mg/L)
		11-Apr-12	14-Nov-12	13-May-13	8-Nov-13	28-May-14	28-May-14 (duplicate)	22-Oct-14	15-Apr-15		
pH (field)	8.5	7.3	7.6	7.5	7.4	7.1	7.1	7.0	7.4	--	6.5 (min.); 8.5 (max)
Dissolved Chloride (Cl)	131	34	38	35	34	33	34	29	34	39	131
Fluoride (F)	0.6	0.15	0.23	0.22	0.22	0.17	1.17*	0.2	0.23	0.3	0.6
Dissolved Organic Carbon (DOC)	13	6.3	4.8	3.2	3.9	2.8	3	2.6	2	6.4	13
Aluminum (Al)	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.006	<0.005	0.01	0.06
Boron (B)	1.3	0.1	0.12	0.11	0.12	0.14	0.11	0.1	0.11	0.14	1.3
Chromium (Cr)	0.02	0.003	0.003	0.002	0.001	<0.001	<0.001	<0.005	<0.005	0.01	0.02
Manganese (Mn)	0.26	0.17	0.17	0.1	0.14	0.1	0.08	0.1	0.036	0.21	0.26
Sodium (Na)	121	53	62	60	61	66	63	58	56	68	121
Trichloroethylene	0.0016	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	0.0004	0.0016

Notes:

* - anomalous, not included in the calculation for 95th percentile

** - recommended trigger concentration set at either the Reasonable Use Guideline value or the 95th percentile of the existing concentration data, whichever is highest.

Table 2b: Trigger Concentrations for MW18-I

Trigger Parameter	Reasonable Use Guideline, Maximum Allowable Concentration (from Table 1), Cm (mg/L)	Existing Concentration Data for MW18-I (East of Cell 1)							95th Percentile of Existing Concentration Data for MW18-I (mg/L)	Recommended** Trigger Concentration (mg/L)
		12-Apr-12	4-Dec-12	21-May-13	22-Nov-13	2-Jun-14	10-Nov-14	29-May-15		
pH (field)	8.5	7.9	8.0	7.9	8.4	7.6	7.8	7.6	--	6.5 (min.); 8.5 (max)
Dissolved Chloride (Cl)	141	29	17	14	14	14	13	14	28	141
Fluoride (F)	1.2	0.47	0.68	0.69	0.81	0.84	0.68	0.67	0.9	1.2
Dissolved Organic Carbon (DOC)	3.3	7.4*	3.1	1.5	2.3	1.8	1.9	1.5	3.2	3.3
Aluminum (Al)	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.01	0.06
Boron (B)	2.0	0.25	0.38	0.4	0.45	0.49	0.48	0.44	0.6	2.0
Chromium (Cr)	0.02	<0.001	<0.001	0.002	<0.001	<0.001	<0.005	<0.005	<0.01	0.02
Manganese (Mn)	0.11	0.2	0.22	0.21	0.12	0.2	0.13	0.056	0.28	0.28
Sodium (Na)	185	87*	240	256	248	219	250	230	268	268
Trichloroethylene	0.0015	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0004	0.0015

Notes:

* - anomalous, not included in the calculation for 95th percentile

** - recommended trigger concentration set at either the Reasonable Use Guideline value or the 95th percentile of the existing concentration data, whichever is highest.

Table 3a: Trigger Concentrations for MW19-S

Trigger Parameter	Reasonable Use Guideline, Maximum Allowable Concentration (from Table 1), Cm (mg/L)	Existing Concentration Data for MW19-S (East of Cell 1)							95th Percentile of Existing Concentration Data for MW19-S (mg/L)	Recommended** Trigger Concentration (mg/L)
		11-Apr-12	14-Nov-12	8-May-13	8-Nov-13	25-Apr-14	27-Oct-14	15-Apr-15		
pH (field)	8.5	7.1	7.2	7	7.1	6.9	7	7.1	--	6.5 (min.); 8.5 (max)
Dissolved Chloride (Cl)	131	18	27	27	25	25	26	25	31	131
Fluoride (F)	0.6	0.14	0.25	0.25	0.27	0.27	0.23	0.26	0.3	0.6
Dissolved Organic Carbon (DOC)	13	8.6	6	4.7	5.2	4.2	3.2	2.9	8.8	13
Aluminum (Al)	0.06	<0.01	<0.01	<0.10	<0.01	<0.01	<0.005	<0.005	<0.1	0.1
Boron (B)	1.3	0.17	0.13	0.3	0.16	0.14	0.15	0.14	0.29	1.3
Chromium (Cr)	0.02	0.002	0.004	<0.010	0.003	<0.001	<0.005	<0.005	<0.01	0.02
Manganese (Mn)	0.26	0.47	1.06	0.8	0.76	0.76	0.51	0.39	1.1	1.1
Sodium (Na)	121	101	143	139	138	133	130	130	158	158
Trichloroethylene	0.0016	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0004	0.0016

Notes:

* - anomalous, not included in the calculation for 95th percentile

** - recommended trigger concentration set at either the Reasonable Use Guideline value or the 95th percentile of the existing concentration data, whichever is highest.

Table 3b: Trigger Concentrations for MW19-I

Trigger Parameter	Reasonable Use Guideline, Maximum Allowable Concentration (from Table 1), Cm (mg/L)	Existing Concentration Data for MW19-I (East of Cell 1)							95th Percentile of Existing Concentration Data for MW19-I (mg/L)	Recommended** Trigger Concentration (mg/L)
		11-Apr-12	19-Nov-12	21-May-13	22-Nov-13	29-May-14	10-Nov-14	20-May-15		
pH (field)	8.5	7.7	8.1	7.9	8.3	7.8	7.9	7.6	--	6.5 (min.); 8.5 (max)
Dissolved Chloride (Cl)	141	26	28	26	30	32	32	30	34	141
Fluoride (F)	1.2	0.4	0.65	0.71	0.85	0.75	0.65	0.67	0.9	1.2
Dissolved Organic Carbon (DOC)	3.3	6.3*	2.4	1	1.4	1.8	1.4	1.1	2.5	3.3
Aluminum (Al)	0.06	<0.01	<0.01	<0.01	<0.01	<0.03	<0.01	<0.03	<0.03	0.06
Boron (B)	2.0	0.92	0.96	1.3	1.3	1.2	1.2	1.3	1.5	2.0
Chromium (Cr)	0.02	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.025	<0.02	0.02
Manganese (Mn)	0.11	0.65	0.6	0.93	0.25	0.53	0.35	0.036	1.06	1.06
Sodium (Na)	185	182	210	214	196	225	190	190	232	232
Trichloroethylene	0.0015	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0004	0.0015

Notes:

* - anomalous, not included in the calculation for 95th percentile

** - recommended trigger concentration set at either the Reasonable Use Guideline value or the 95th percentile of the existing concentration data, whichever is highest.

Table 3c: Trigger Concentrations for MW19-D

Trigger Parameter	Reasonable Use Guideline, Maximum Allowable Concentration (from Table 1), Cm (mg/L)	Existing Concentration Data for MW19-D (East of Cell 1)									95th Percentile of Existing Concentration Data for MW19-D (mg/L)	Recommended** Trigger Concentration (mg/L)
		11-Apr-12	14-Nov-12	8-May-13	12-Nov-13	12-Nov-13 (duplicate)	28-May-14	28-May-14 (duplicate)	22-Oct-14	15-Apr-15		
pH (field)	8.5	8.1	8.3	8.0	8.4	8.4	7.7	7.7	7.6	8.1	--	6.5 (min.); 8.5 (max)
Dissolved Chloride (Cl)	142	29	28	29	28	28	28	27	29	30	30	142
Fluoride (F)	1.4	1.08	1.17	1.1	1.19	1.17	0.83	0.84	0.95	1.0	1.3	1.4
Dissolved Organic Carbon (DOC)	3.2	1.40	1.30	1.30	1.00	1.10	1.00	1.20	0.91	0.73	2	3.2
Aluminum (Al)	0.06	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.005	<0.005	<0.01	0.06
Boron (B)	2.3	1.3	1.4	1.6	1.6	1.6	1.5	1.6	1.5	1.4	1.7	2.3
Chromium (Cr)	0.02	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.01	0.02
Manganese (Mn)	0.05	0.07	0.07	0.06	0.07	0.07	0.09	0.08	0.07	0.07	0.09	0.09
Sodium (Na)	141	103	113	129	135	132	136	128	120	120	146	146
Trichloroethylene	0.0016	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0004	0.0016

Notes:

* - anomalous, not included in the calculation for 95th percentile

** - recommended trigger concentration set at either the Reasonable Use Guideline value or the 95th percentile of the existing concentration data, whichever is highest.

Table 4a: Trigger Concentrations for MW20-S

Trigger Parameter	Reasonable Use Guideline, Maximum Allowable Concentration (from Table 1), Cm (mg/L)	Existing Concentration Data for MW20-S (East of Cell 2)							95th Percentile of Existing Concentration Data for MW20-S (mg/L)	Recommended** Trigger Concentration (mg/L)
		17-Apr-12	14-Nov-12	8-May-13	12-Nov-13	25-Apr-14	28-Oct-14	21-Apr-15		
	Shallow									
pH (field)	8.5	7.6	7.5	7.6	7.5	7	6.9	7.5	--	6.5 (min.); 8.5 (max)
Dissolved Chloride (Cl)	131	13	7	7	6	7	5.1	5.2	13	131
Fluoride (F)	0.6	0.34	0.29	0.28	0.34	0.31	0.31	0.33	0.4	0.6
Dissolved Organic Carbon (DOC)	13	--	6	3.8	3.4	2.4	1.8	1.8	6.4	13
Aluminum (Al)	0.06	<0.01	<0.01	0.01	<0.01	<0.01	<0.005	<0.005	<0.01	0.1
Boron (B)	1.3	0.2	0.18	0.18	0.24	0.2	0.21	0.19	0.24	1.3
Chromium (Cr)	0.02	<0.010	0.004	<0.001	0.003	<0.001	<0.005	<0.005	<0.01	0.02
Manganese (Mn)	0.26	0.69	0.29	0.13	0.16	0.03	0.081	0.012	0.7	0.7
Sodium (Na)	121	70	65	68	75	72	65	65	76	121
Trichloroethylene	0.0016	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0004	0.0016

Notes:

* - anomalous, not included in the calculation for 95th percentile

** - recommended trigger concentration set at either the Reasonable Use Guideline value or the 95th percentile of the existing concentration data, whichever is highest.

Table 4b: Trigger Concentrations for MW20-I

Trigger Parameter	Reasonable Use Guideline, Maximum Allowable Concentration (from Table 1), Cm (mg/L)	Existing Concentration Data for MW20-I (East of Cell 2)							95th Percentile of Existing Concentration Data for MW20-I (mg/L)	Recommended** Trigger Concentration (mg/L)
		5-Apr-12	19-Nov-12	21-May-13	22-Nov-13	2-Jun-14	10-Nov-14	20-May-15		
pH (field)	8.5	7.47	7.31	7.32	7.42	7.72	7.63	7.68	--	6.5 (min.); 8.5 (max)
Dissolved Chloride (Cl)	141	31	25	29	28	25	29	28	32	141
Fluoride (F)	1.2	0.66	0.96	0.9	1.03	1.03	0.82	0.86	1.2	1.2
Dissolved Organic Carbon (DOC)	3.3	6.7	2.8	0.6	1.4	1.5	1.8	1.3	6.4	6.4
Aluminum (Al)	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.01	0.06
Boron (B)	2.0	1.1	1.3	1.4	1.6	1.5	1.5	1.5	1.7	2.0
Chromium (Cr)	0.02	<0.001	0.001	0.001	<0.001	<0.001	<0.005	<0.005	<0.01	0.02
Manganese (Mn)	0.11	0.34	0.13	0.12	0.11	0.12	0.10	0.086	0.32	0.32
Sodium (Na)	185	159	161	173	159	172	170	170	179	185
Trichloroethylene	0.0015	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0004	0.0015

Notes:

* - anomalous, not included in the calculation for 95th percentile

** - recommended trigger concentration set at either the Reasonable Use Guideline value or the 95th percentile of the existing concentration data, whichever is highest.

Table 5a: Trigger Concentrations for MW26-S

Trigger Parameter	Reasonable Use Guideline, Maximum Allowable Concentration (from Table 1), Cm (mg/L)	Existing Concentration Data for MW26-S (North of Cell 2)								95th Percentile of Existing Concentration Data for MW26-S (mg/L)	Recommended** Trigger Concentration (mg/L)
		10-Apr-12	17-Apr-12	19-Nov-12	8-May-13	12-Nov-13	5-May-14	11-Nov-14	21-May-15		
pH (field)	8.5	NA	7.4	NA	NA	7.9	7.2	NA	NA	--	6.5 (min.); 8.5 (max)
Dissolved Chloride (Cl)	141	NA	11	NA	NA	4	8	NA	NA	15	141
Fluoride (F)	1.2	NA	0.15	NA	NA	0.2	0.15	NA	NA	0.2	1.2
Dissolved Organic Carbon (DOC)	3.3	11*	NA	NA	NA	2.6	3.4	NA	NA	4.1	4.1
Aluminum (Al)	0.06	NA	<0.01	NA	NA	<0.01	<0.01	NA	NA	<0.01	0.06
Boron (B)	2.0	NA	0.11	NA	NA	0.11	0.12	NA	NA	0.12	2.0
Chromium (Cr)	0.02	NA	<0.001	NA	NA	0.001	<0.001	NA	NA	<0.001	0.02
Manganese (Mn)	0.11	NA	0.97	NA	NA	0.05	<0.01	NA	NA	<1.4	1.4
Sodium (Na)	185	NA	NA	NA	NA	39	23	NA	NA	54	185
Trichloroethylene	0.0015	NA	<0.0003	NA	NA	<0.0003	<0.0003	NA	NA	<0.0003	0.0015

Notes:

* - anomalous, not included in the calculation for 95th percentile

** - recommended trigger concentration set at either the Reasonable Use Guideline value or the 95th percentile of the existing concentration data, whichever is highest.

Table 5b: Trigger Concentrations for MW26-I

Trigger Parameter	Reasonable Use Guideline, Maximum Allowable Concentration (from Table 1), Cm (mg/L)	Existing Concentration Data for MW26-I (North of Cell 2)								95th Percentile of Existing Concentration Data for MW26-I (mg/L)	Recommended** Trigger Concentration (mg/L)
		10-Apr-12	10-Apr-12 (duplicate)	4-Dec-12	21-May-13	13-Nov-13	2-Jun-14	11-Nov-14	21-May-15		
pH (field)	8.5	7.7	7.7	8.1	8.0	8.1	7.4	7.8	7.4	--	6.5 (min.); 8.5 (max)
Dissolved Chloride (Cl)	141	71	72	71	71	72	71	73	73	73	141
Fluoride (F)	1.2	0.58	0.56	0.76	0.73	0.83	0.81	0.63	0.66	0.9	1.2
Dissolved Organic Carbon (DOC)	3.3	3.1	1.7	1.1	<0.5	1.5	0.7	0.099	0.57	<3.1	3.3
Aluminum (Al)	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	0.0084	<0.01	0.06
Boron (B)	2.0	0.9	1.6	0.99	1.5	1.6	1.8	1.7	1.5	2.2	2.2
Chromium (Cr)	0.02	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	0.02
Manganese (Mn)	0.11	0.23	0.18	0.25	0.14	0.14	0.16	0.06	0.02	0.3	0.3
Sodium (Na)	185	142	157	139	170	173	174	170	180	193	193
Trichloroethylene	0.0015	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0004	0.0015

Notes:

* - anomalous, not included in the calculation for 95th percentile

** - recommended trigger concentration set at either the Reasonable Use Guideline value or the 95th percentile of the existing concentration data, whichever is highest.

Table 6a: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Shallow Well MW21-S; South of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW21-S (South of Cell 1)						95th Percentile of Existing Concentration Data for MW21-S (mg/L)	Recommended Trigger Concentration (mg/L)
		19-Nov-12	15-May-13	13-Nov-13	7-May-14	3-Nov-14	20-May-15		
pH (field)	6.5-8.5	7.6	7.4	7.4	7.0	6.9	7.0	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.01	<0.01	<0.01	<0.01	0.029	<0.02	<0.03	0.03
Unionized Ammonia	0.02	<0.0002	0.0001	<0.0002	<0.0001	0.0002	<0.0005	<0.0005	0.02
Total Phenols	0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.005	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.005
Molybdenum (Mo)	0.04	<0.005	<0.005	<0.005	<0.005	0.0019	0.0017	<0.01	0.04
Vanadium (V)	0.006	0.004	0.003	0.005	<0.001	0.00065	0.00054	<0.006	0.006

Notes:

* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 6b: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Shallow Well MW21-I; South of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW21-I (South of Cell 1)						95th Percentile of Existing Concentration Data for MW21-I (mg/L)	Recommended Trigger Concentration (mg/L)
		19-Nov-12	21-May-13	22-Nov-13	9-May-14	11-Nov-14	29-May-15		
pH (field)	6.5-8.5	8.3	8.0	8.5	7.3	8.9	7.5	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.01	<0.01	<0.01	<0.01	0.034	<0.02	<0.04	0.03
Unionized Ammonia	0.02	0.0129	0.0060	0.0078	0.0011	0.0094	<0.0005	<0.0159	0.02
Total Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.005
Molybdenum (Mo)	0.04	0.019	0.063	0.076	0.063	0.071	0.08	0.11	0.11
Vanadium (V)	0.006	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	<0.025	0.006

Notes:

* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 6c: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Shallow Well MW21-D; South of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW21-D (South of Cell 1)											95th Percentile of Existing Concentration Data for MW21-D (mg/L)	Recommended Trigger Concentration (mg/L)
		15-Nov-12	15-Nov-12	14-May-13	14-May-13	13-Nov-13	13-Nov-13	7-May-14	3-Nov-14	3-Nov-14	20-May-15	20-May-15		
			(duplicate)		(duplicate)		(duplicate)			(duplicate)		(Duplicate)		
pH (field)	6.5-8.5	8.0	8.0	7.9	7.9	7.9	7.9	7.4	7.4	7.4	7.4	7.4	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
Unionized Ammonia	0.02	0.0772	0.0846	0.0807	0.0715	0.0725	0.0651	0.0242	0.0252	0.0252	0.037	0.037	0.10	0.10
Total Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.005	<0.005	<0.005	0.005
Molybdenum (Mo)	0.04	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.0005	<0.005	<0.005	<0.008	0.04
Vanadium (V)	0.006	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.005	<0.005	<0.005	0.006

Notes:
* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 7a: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Shallow Well MW22-S; Southwest of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW22-S (Southwest of Cell 1)							95th Percentile of Existing Concentration Data for MW22-S (mg/L)	Recommended Trigger Concentration (mg/L)
		13-Apr-12	27-Nov-12	9-May-13	22-Nov-13	5-May-14	4-Nov-14	20-May-15		
pH (field)	6.5-8.5	7.60	7.60	7.40	7.70	7.00	7.00	6.90	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.03	<0.02	<0.03	0.03
Unionized Ammonia	0.02	0.0003	0.0007	0.0003	0.0006	0.0001	0.0002	<0.0005	<0.0008	0.02
Total Phenols	0.001	<0.001	<0.001	<0.005	<0.005	<0.002	<0.001	<0.001	<0.006	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.005
Molybdenum (Mo)	0.04	0.092	0.075	0.148	0.128	0.219	0.130	0.170	0.23	0.23
Vanadium (V)	0.006	0.003	0.004	0.003	0.005	<0.0010	<0.0005	<0.0005	<0.006	0.006

Notes:

* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 7b: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Intermediate Well MW22-I; Southwest of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW22-I (Southwest of Cell 1)							95th Percentile of Existing Concentration Data for MW22-I (mg/L)	Recommended Trigger Concentration (mg/L)
		17-Apr-12	4-Dec-12	17-May-13	27-Nov-13	2-Jun-14	11-Nov-14	29-May-15		
pH (field)	6.5-8.5	7.8	8.1	8.0	8.1	7.5	8.3	7.5	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.01	0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	0.03
Unionized Ammonia	0.02	0.0051	0.0101	0.0081	0.0100	0.0017	0.0088	0.0019	0.01	0.02
Total Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Molybdenum (Mo)	0.04	0.023	0.03	0.022	0.021	0.02	0.015	0.015	0.03	0.04
Vanadium (V)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0013	0.006

Notes:

* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 7c: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Granular Intermediate Well; MW22-GI Southwest of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW22-GI (Southwest of Cell 1)							95th Percentile of Existing Concentration Data for MW22-GI (mg/L)	Recommended Trigger Concentration (mg/L)
		17-Apr-12	29-Nov-12	15-May-13	27-Nov-13	9-May-14	12-Nov-14	29-May-15		
pH (field)	6.5-8.5	7.8	8	8.01	7.83	8.11	7.88	7.77	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.010	0.010	<0.010	<0.010	<0.010	0.031	<0.020	<0.03	0.03
Unionized Ammonia	0.02	0.0014	0.0014	0.0006	0.0017	0.0002	0.0005	<0.001	<0.0021	0.02
Total Phenols	0.001	<0.001	<0.01*	<0.005	<0.001	<0.001	<0.001	<0.001	<0.005	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Molybdenum (Mo)	0.04	0.335	0.317	0.299	0.397	0.409	0.45	0.40	0.48	0.48
Vanadium (V)	0.006	0.003	0.001	0.002	<0.001	<0.001	<0.0005	<0.0005	<0.0031	0.006

Notes:
* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 8a: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Shallow Well MW23-S; West of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW23-S (West of Cell 1)							95th Percentile of Existing Concentration Data for MW23-S (mg/L)	Recommended Trigger Concentration (mg/L)
		12-Apr-12	29-Nov-12	9-May-13	22-Nov-13	5-May-14	4-Nov-14	20-May-15		
pH (field)	6.5-8.5	7.3	7.1	6.9	7.1	6.8	7	6.7	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.01	NA	<0.08	<0.03	<0.01	<0.04	<0.02	<0.08	0.03
Unionized Ammonia	0.02	0.0004	NA	<0.000	<0.000	0.0001	<0.000	<0.001	<0.0006	0.02
Total Phenols	0.001	<0.001	<0.01*	<0.005	<0.005	<0.002	<0.005	<0.001	<0.007	0.001
Lead (Pb)	0.005	<0.010	NA	<0.001	<0.010	<0.001	<0.003	<0.003	<0.013	0.005
Molybdenum (Mo)	0.04	<0.050	NA	<0.005	<0.050	0.12*	0.003	0.0037	<0.07	0.04
Vanadium (V)	0.006	<0.010	NA	0.004	<0.010	<0.001	<0.0025	<0.0025	<0.013	0.006

Notes:
* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 8b: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Intermediate Well MW23-I; West of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW23-I (West of Cell 1)							95th Percentile of Existing Concentration Data for MW23-I (mg/L)	Recommended Trigger Concentration (mg/L)
		10-Apr-12	4-Dec-12	17-May-13	27-Nov-13	2-Jun-14	5-Nov-14	29-May-15		
pH (field)	6.5-8.5	7.9	8.0	8.1	8.3	7.6	7.7	7.4	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.04	<0.02	<0.04	0.03
Unionized Ammonia	0.02	0.0058	0.0083	0.0120	0.0180	0.0028	0.0045	0.0008	0.0193	0.02
Total Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Lead (Pb)	0.005	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.009	0.005
Molybdenum (Mo)	0.04	<0.050	0.013	0.018	0.011	0.018	0.017	0.017	<0.047	0.04
Vanadium (V)	0.006	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.009	0.006

Notes:

* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 8c: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Granular Intermediate Well MW23-GI ;West of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW23-GI (West of Cell 1)							95th Percentile of Existing Concentration Datafor MW23-GI (mg/L)	Recommended Trigger Concentration (mg/L)
		12-Apr-12	29-Nov-12	15-May-13	27-Nov-13	29-May-14	5-Nov-14	29-May-15		
pH (field)	6.5-8.5	7.4	7.2	7.1	7.1	7	6.7	6.6	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.010	0.02	0.01	0.41*	<0.010	<0.039	<0.020	<0.04	0.03
Unionized Ammonia	0.02	0.0021	0.0018	0.0005	0.0012	0.0008	0.0006	0.0006	0.0023	0.02
Total Phenols	0.001	<0.005	<0.01*	<0.005	<0.005	<0.005	<0.001	<0.001	<0.008	0.001
Lead (Pb)	0.005	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.009	0.005
Molybdenum (Mo)	0.04	<0.050	0.009	0.008	<0.005	<0.005	0.0012	0.0014	<0.05	0.04
Vanadium (V)	0.006	<0.010	<0.005	0.004	0.008	<0.001	<0.001	<0.001	<0.012	0.006

Notes:

* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 9a: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Shallow Well MW24-S; West of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW24-S (West of Cell 1)							95th Percentile of Existing Concentration Data for MW24-S (mg/L)	Recommended Trigger Concentration (mg/L)
		9-Apr-12	27-Nov-12	9-May-13	21-Nov-13	5-May-14	4-Nov-14	19-May-15		
pH (field)	6.5-8.5	6.9	6.9	6.7	6.8	6.6	6.6	6.5	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	0.03	0.42	1.33	1.47	1.6	1.02	1.3	2.19	2.19
Unionized Ammonia	0.02	0.0060	0.0114	0.0046	0.0060	0.0024	1.0042*	0.0036	0.01	0.02
Total Phenols	0.001	0.04	<0.001	<0.005	<0.001	<0.002	0.014	<0.001	<0.04	0.04
Lead (Pb)	0.005	<0.010	<0.010	<0.1*	<0.001	<0.001	<0.003	<0.001	<0.013	0.005
Molybdenum (Mo)	0.04	<0.050	<0.050	<0.5*	<0.005	<0.005	<0.003	<0.001	<0.07	0.04
Vanadium (V)	0.006	<0.001*	<0.001*	<0.001*	0.009	0.004	0.0046	0.0045	0.01	0.01

Notes:
* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table9b: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Intermediate Well MW24-I; West of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW24-I (West of Cell 1)							95th Percentile of Existing Concentration Data for MW24-I (mg/L)	Recommended Trigger Concentration (mg/L)
		9-Apr-12	28-Nov-12	14-May-13	26-Nov-13	29-May-14	6-Nov-14	7-May-15		
pH (field)	6.5-8.5	7.54	7.4	7.74	7.51	7.54	7.49	6.81	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.010	<0.010	<0.010	<0.010	<0.010	0.036	<0.020	<0.03	0.03
Unionized Ammonia	0.02	0.0144	0.0203	0.0162	0.0102	0.0065	0.0088	0.8*	0.02	0.02
Total Phenols	0.001	<0.01*	<0.001	<0.01*	<0.01*	<0.005	<0.001	<0.001	<0.006	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.005
Molybdenum (Mo)	0.04	0.006	<0.005	<0.005	<0.005	<0.005	0.0033	0.004	<0.006	0.04
Vanadium (V)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.006

Notes:

* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 9c: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Granular Intermediate Well MW24-GI; West of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW24-GI (West of Cell 1)							95th Percentile of Existing Concentration Data for MW24-GI (mg/L)	Recommended Trigger Concentration (mg/L)
		9-Apr-12	28-Nov-12	9-May-13	21-Nov-13	5-May-14	4-Nov-14	19-May-15		
pH (field)	6.5-8.5	6.7	6.9	6.8	6.9	6.7	6.8	6.6	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	1.4	<0.010	0.01	1.2	0.97	0.95	0.82	1.86	1.86
Unionized Ammonia	0.02	0.0051	0.0092	0.0051	0.0058	0.0028	0.0057	0.0029	0.01	0.02
Total Phenols	0.001	<0.01*	<0.001	<0.01*	<0.005	<0.002	<0.001	<0.001	<0.005	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.010	<0.001	<0.001	<0.001	<0.001	<0.009	0.005
Molybdenum (Mo)	0.04	<0.005	0.007	<0.050	<0.005	<0.005	0.0037	0.0019	<0.05	0.04
Vanadium (V)	0.006	0.003	<0.005	<0.010	<0.005	0.002	0.0016	0.0017	<0.010	0.006

Notes:

* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 9d: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Deep Monitoring Well MW24-D; West of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW24-D (West of Cell 1)											95th Percentile of Existing Concentration Data for MW24-D (mg/L)	Recommended Trigger Concentration (mg/L)
		9-Apr-12	28-Nov-12	28-Nov-12 (duplicate)	14-May-13	14-May-13 (duplicate)	21-Nov-13	29-May-14	4-Nov-14	4-Nov-14 (duplicate)	19-May-15	19-May-15 (duplicate)		
pH (field)	6.5-8.5	7.8	8.2	8.2	8.0	8.0	8.2	7.7	7.7	7.7	7.5	7.5	–	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.010	<0.010	<0.010	<0.010	<0.010	0.01	<0.010	0.036	<0.020	<0.020	<0.020	<0.032	0.03
Unionized Ammonia	0.02	0.0082	0.0227	0.0224	0.0148	0.0146	0.0246	0.0082	0.0092	0.0095	0.0072	0.0072	0.03	0.03
Total Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.006	<0.001	<0.001	0.0024	0.0034	<0.005	0.005
Lead (Pb)	0.005	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.007	0.005
Molybdenum (Mo)	0.04	<0.050	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0033	0.0045	0.0033	0.0032	<0.036	0.04
Vanadium (V)	0.006	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.0005	<0.007	0.006

Notes:
* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 10a: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Shallow Well MW25-S; West of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW25-S (West of Cell 1)							95th Percentile of Existing Concentration Data for MW25-S (mg/L)	Recommended Trigger Concentration (mg/L)
		Apr-12	29-Nov-12	9-May-13	21-Nov-13	5-May-14	12-Nov-14	4-Jun-15		
pH (field)	6.5-8.5	7.0	7.2	6.9	7.1	6.8	6.9	6.7	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	0.02	0.06	0.14	0.1	0.15	0.17	<0.020	<0.22	0.22
Unionized Ammonia	0.02	0.0156	0.0202	0.0079	0.0108	0.0041	0.0055	<0.0005	<0.02	0.02
Total Phenols	0.001	0.002	<0.01*	<0.005	<0.001	<0.002	<0.001	<0.001	<0.005	0.005
Lead (Pb)	0.005	<0.001	<0.001	<0.010	<0.001	<0.001	<0.015	<0.0005	<0.016	0.005
Molybdenum (Mo)	0.04	0.023	0.006	<0.050	<0.005	<0.005	0.0025	0.0065	<0.05	0.04
Vanadium (V)	0.006	0.009	<0.050	<0.050	0.01	0.007	0.0052	0.001	<0.062	0.006

Notes:
* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 10b: Trigger Concentrations for the Surface Water Protection Trigger Parameters

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW25-I (West of Cell 1)							95th Percentile of Existing Concentration Data for MW25-I (mg/L)	Recommended Trigger Concentration (mg/L)
		10-Apr-12	29-Nov-12	17-May-13	22-Nov-13	2-Jun-14	11-Nov-14	4-Jun-15		
pH (field)	6.5-8.5	7.7	8.3	8.2	8.4	7.9	8.1	7.6	--	6.5 (min.); 8.6 (max)
Phosphorus (P)	0.03	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.02	0.03
Unionized Ammonia	0.02	0.0097	0.0190	0.0112	0.0171	0.0075	0.0072	0.0019	0.02	0.02
Total Phenols	0.001	<0.001	<0.001	<0.01*	<0.005	<0.002	<0.001	<0.001	<0.005	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Molybdenum (Mo)	0.04	0.052	0.052	0.034	0.037	0.043	0.033	0.043	0.06	0.06
Vanadium (V)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.006

Notes:

* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 11a: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Shallow Well MW6-99S; West of Cell 2]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW6-99S (West of Cell 2)							95th Percentile of Existing Concentration Data for MW6-99S (mg/L)	Recommended Trigger Concentration (mg/L)
		9-Apr-12	29-Nov-12	17-May-13	22-Nov-13	29-May-14	12-Nov-14	29-May-15		
pH (field)	6.5-8.5	7.8	8.0	8.0	8.0	7.5	7.6	7.4	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.010	0.01	<0.010	0.25*	0.08	0.064	0.027	<0.10	0.10
Unionized Ammonia	0.02	0.0023	0.0052	0.0008	0.0271	0.0027	0.0027	0.0017	0.02	0.02
Total Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0011	<0.001	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Molybdenum (Mo)	0.04	0.051	0.042	0.041	0.016	0.022	0.026	0.022	0.06	0.06
Vanadium (V)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.006

Notes:
* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 11b: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Intermediate Well MW6-99I, West of Cell 2]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW6-99I (West of Cell 2)									95th Percentile of Existing Concentration Data for MW6-99I (mg/L)	Recommended Trigger Concentration (mg/L)
		9-Apr-12	29-Nov-12	17-May-13	22-Nov-13	29-May-14	29-May-14 (duplicate)	12-Nov-14	21-May-15	21-May-15 (duplicate)		
pH (field)	6.5-8.5	7.6	7.7	7.8	7.8	7.3	7.3	7.5	7.0	7.0	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.010	<0.010	0.01	<0.010	<0.010	<0.010	0.036	<0.020	<0.020	<0.03	0.03
Unionized Ammonia	0.02	0.0003	0.0038	0.0056	0.0043	0.0004	0.0005	0.0017	<0.001	<0.001	<0.006	0.02
Total Phenols	0.001	<0.001	<0.001	<0.001	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.004	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	0.005
Molybdenum (Mo)	0.04	0.016	0.043	0.012	0.011	0.008	0.007	0.0065	0.014	0.012	0.04	0.04
Vanadium (V)	0.006	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	0.006

Notes:
* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 11c: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Deep Well MW6-99D; West of Cell 2]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW6-99D (West of Cell 2)									95th Percentile of Existing Concentration Data for MW6-99D (mg/L)	Recommended Trigger Concentration (mg/L)
		5-Apr-12	27-Nov-12	27-Nov-12 (duplicate)	16-May-13	21-Nov-13	21-May-14	6-Nov-14	6-Nov-14 (duplicate)	7-May-15		
pH (field)	6.5-8.5	7.4	8.2	8.2	8.0	8.1	7.3	7.5	7.5	12.3	--	6.5 (min.); 11.4 (max)
Phosphorus (P)	0.03	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.036	0.035	<0.020	<0.04	0.04
Unionized Ammonia	0.02	0.0030	0.0187	0.0195	0.0130	0.0162	0.0032	0.0045	0.0044	0.93*	0.02	0.02
Total Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.005
Molybdenum (Mo)	0.04	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00056*	<0.001	<0.001	<0.008	0.04
Vanadium (V)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.006

Notes:
* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 12a: Trigger Concentrations for the Surface Water Protection Trigger Parameters

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW27-S (North of Cell 2)							95th Percentile of Existing Concentration Data for MW27-S (mg/L)	Recommended Trigger Concentration (mg/L)
		4-Apr-12	21-Nov-12	17-May-13	18-Nov-13	26-May-14	31-Oct-14	6-May-15		
pH (field)	6.5-8.5	7.5	7.6	7.6	7.5	7.3	6.9	6.9	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.010	<0.010	<0.010	<0.010	<0.010	0.029	<0.020	0.03	0.03
Unionized Ammonia	0.02	<0.000	0.0002	<0.000	<0.000	0.0011	<0.000	<0.001	<0.001	0.02
Total Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Molybdenum (Mo)	0.04	<0.005	<0.005	<0.005	<0.005	<0.005	0.0015	0.00092	<0.008	0.04
Vanadium (V)	0.006	0.004	0.002	0.002	0.002	<0.001	0.00059	0.00053	<0.004	0.006

Notes:
* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 12b: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Intermediate Well MW27-I, North of Cell 2]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW27-I (North of Cell 2)						95th Percentile of Existing Concentration Data for MW27-I (mg/L)	Recommended Trigger Concentration (mg/L)
		4-Dec-12	21-May-13	22-Nov-13	29-May-14	11-Nov-14	21-May-15		
pH (field)	6.5-8.5	8.2	8.1	8.4	7.8	8.4	7.5	--	6.5 (min.); 8.8 (max)
Phosphorus (P)	0.03	<0.010	<0.010	0.01	<0.010	0.039	<0.020	<0.04	0.04
Unionized Ammonia	0.02	0.0200	0.0117	0.0018	0.0010	0.0090	0.0013	0.02	0.02
Total Phenols	0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.005	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Molybdenum (Mo)	0.04	0.006	0.019	0.038	0.025	0.022	0.0069	0.04	0.04
Vanadium (V)	0.006	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	0.006

Notes:
* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 12c: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Deep Well MW27-D, West of Cell 1]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW27-D (West of Cell 1)												95th Percentile of Existing Concentration Data for MW27-D (mg/L)	Recommended Trigger Concentration (mg/L)
		5-Apr-12	5-Apr-12 (duplicate)	21-Nov-12	21-Nov-12 (duplicate)	17-May-13	17-May-13 (duplicate)	18-Nov-13	18-Nov-13 (duplicate)	26-May-14	21-Oct-14	22-Apr-15	22-Apr-15 (duplicate)		
pH (field)	6.5-8.5	7.6	7.6	8.1	8.1	7.8	7.8	7.9	7.9	7.6	7.4	7.8	7.8	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.034	<0.020	<0.020	<0.03	0.03
Unionized Ammonia	0.02	0.0064	0.0062	0.0174	0.0176	0.0090	0.0089	0.0124	0.0120	0.0072	0.0041	0.013	0.014	0.02	0.02
Total Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Molybdenum (Mo)	0.04	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0017	0.0018	0.0019	<0.007	0.04
Vanadium (V)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.006

Notes:
* - anomalous value, not included in the calculation

Table 13a: Trigger Concentrations for the Surface Water Protection Trigger Parameters [Shallow Well MW28-S; West of Cell 2]

Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW28-S (West of Cell 2)							95th Percentile of Existing Concentration Data for MW28-S (mg/L)	Recommended Trigger Concentration (mg/L)
		4-Apr-12	21-Nov-12	16-May-13	18-Nov-13	21-May-14	5-Nov-14	6-May-15		
pH (field)	6.5-8.5	7.6	7.5	7.4	7.4	6.9	7.0	6.9	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.010	<0.010	<0.010	<0.010	<0.010	<0.036	<0.020	<0.03	0.03
Unionized Ammonia	0.02	<0.000	0.0001	<0.0002	<0.000	0.0001	0.0002	<0.0005	<0.0005	0.02
Total Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Molybdenum (Mo)	0.04	<0.005	<0.005	<0.005	<0.005	<0.005	0.0021	0.00077	<0.008	0.04
Vanadium (V)	0.006	0.003	0.003	0.003	0.002	<0.001	<0.0005	<0.0005	<0.0042	0.006

Notes:
* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

Table 13b: Trigger Concentrations for the Surface Water Protection Trigger Parameters

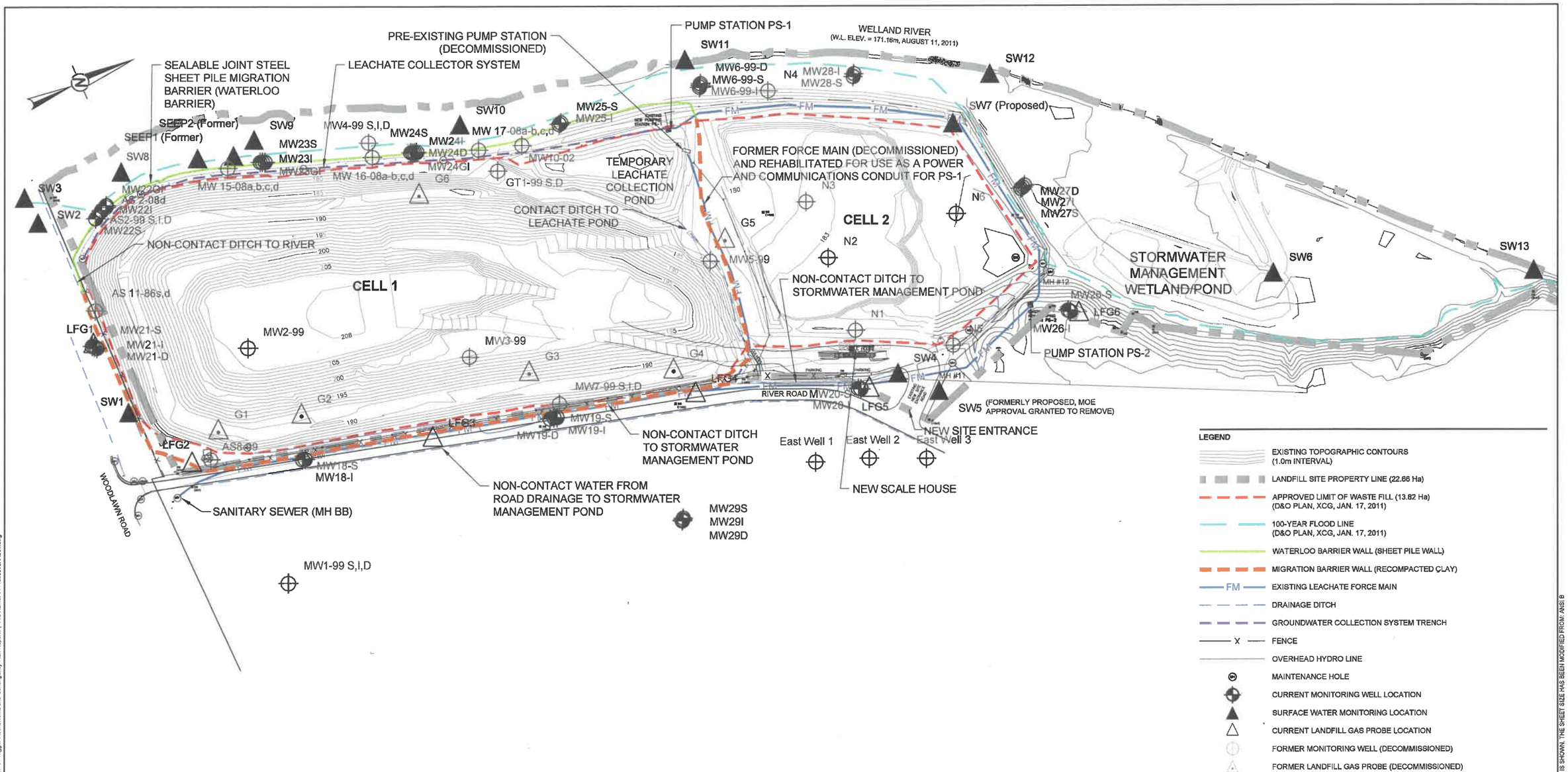
Trigger Parameter	Provincial Water Quality Objective (PWQO) (mg/L)	Existing Concentration Data for MW28-I (West of Cell 2)									95th Percentile of Existing Concentration Data for MW28-I (mg/L)	Recommended Trigger Concentration (mg/L)
		4-Apr-12	21-Nov-12	16-May-13	16-May-13 (duplicate)	18-Nov-13	21-May-14	5-Nov-14	5-Nov-14 (duplicate)	6-May-15		
pH (field)	6.5-8.5	7.8	8.0	7.9	7.9	8.0	7.3	7.4	7.4	7.3	--	6.5 (min.); 8.5 (max)
Phosphorus (P)	0.03	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.037	0.033	<0.020	<0.04	0.04
Unionized Ammonia	0.02	0.0061	0.0090	0.0073	0.0073	0.0092	0.0024	0.0025	0.0027	0.0026	0.01	0.02
Total Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.002	0.001
Lead (Pb)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Molybdenum (Mo)	0.04	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0037	0.004	0.0041	<0.006	0.04
Vanadium (V)	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.006

Notes:

* - anomalous value, not included in the calculation

- existing concentration exceeds the recommended trigger concentration

FIGURES



REFERENCE

1. GAS WELL AND MONITORING WELL LOCATIONS ARE BASED ON SITE SURVEY PROVIDED BY NIAGARA WASTE SYSTEM LIMITED ON MARCH 2013.
2. CELL 2 LAYOUT, FORCEMAIN AND PS-2 LOCATION IS BASED ON THE CELL 2 DETAILED DESIGN, REV. B, DATED FEB. 3, 2012 BY GOLDER ASSOCIATES.
3. CELL 1 PERIMETER LEACHATE COLLECTION SYSTEM MAINTENANCE HOLE LOCATIONS ARE BASED ON AS-BUILT SURVEY PROVIDED BY NIAGARA WASTE SYSTEMS LIMITED ON MARCH 2013.
4. TOPOGRAPHIC PLAN BASED ON A COMPILATION OF SURVEYS OF THE ATLAS SITE: AS-BUILT FACILITIES, AS OF JANUARY 2011 AND TOPOGRAPHIC SURVEY, DATED DECEMBER 9, 2014 PROVIDED BY NIAGARA WASTE SYSTEMS LIMITED.
5. SITE PROPERTY BOUNDARIES REVISED AS PER LEGAL SURVEY PLAN, FILE 98-25-10, DATED OCTOBER 2011, BY CHAMBERS AND ASSOCIATES SURVEYING LTD.
6. APPROVED LIMIT OF WASTE FILL BASED ON DESIGN AND OPERATIONS PLAN, DWG. NO. C-04, REV. 5, DATED JANUARY 17, 2010 BY XCG CONSULTANTS.
7. EXISTING MANHOLE INVERT ELEVATIONS AND UNDERGROUND PIPE LOCATIONS BASED ON NIAGARA CENTRE BUSINESS PARK (PHASE 2 - STAGE1) DESIGN DRAWINGS, REV. 2, DATED AUGUST 19, 2011 BY UPPER CANADA CONSULTANTS.

NOTES

1. LOCAL SITE GRID SYSTEM BENCHMARKS:

MH #11 44207.693E 65133.034N 181.098m
~75m NE OF NEW SCALE HOUSE

MH #12 44172.579E 65231.439N 175.438m
~160m NW OF NEW SCALE HOUSE

CLIENT
WALKER ENVIRONMENTAL GROUP INC.
WELLAND, ONTARIO

CONSULTANT
Golder Associates

YYYY-MM-DD	2015-07-15
PREPARED	TDR
DESIGN	
REVIEW	SR
APPROVED	FSB

PROJECT
ATLAS LANDFILL
TRIGGER AND CONTINGENCY MECHANISMS

TITLE
SITE PLAN AND MONITORING LOCATIONS

PROJECT No.	PHASE NO.	Rev.	FIGURE
11-1186-0053	7000	A	1

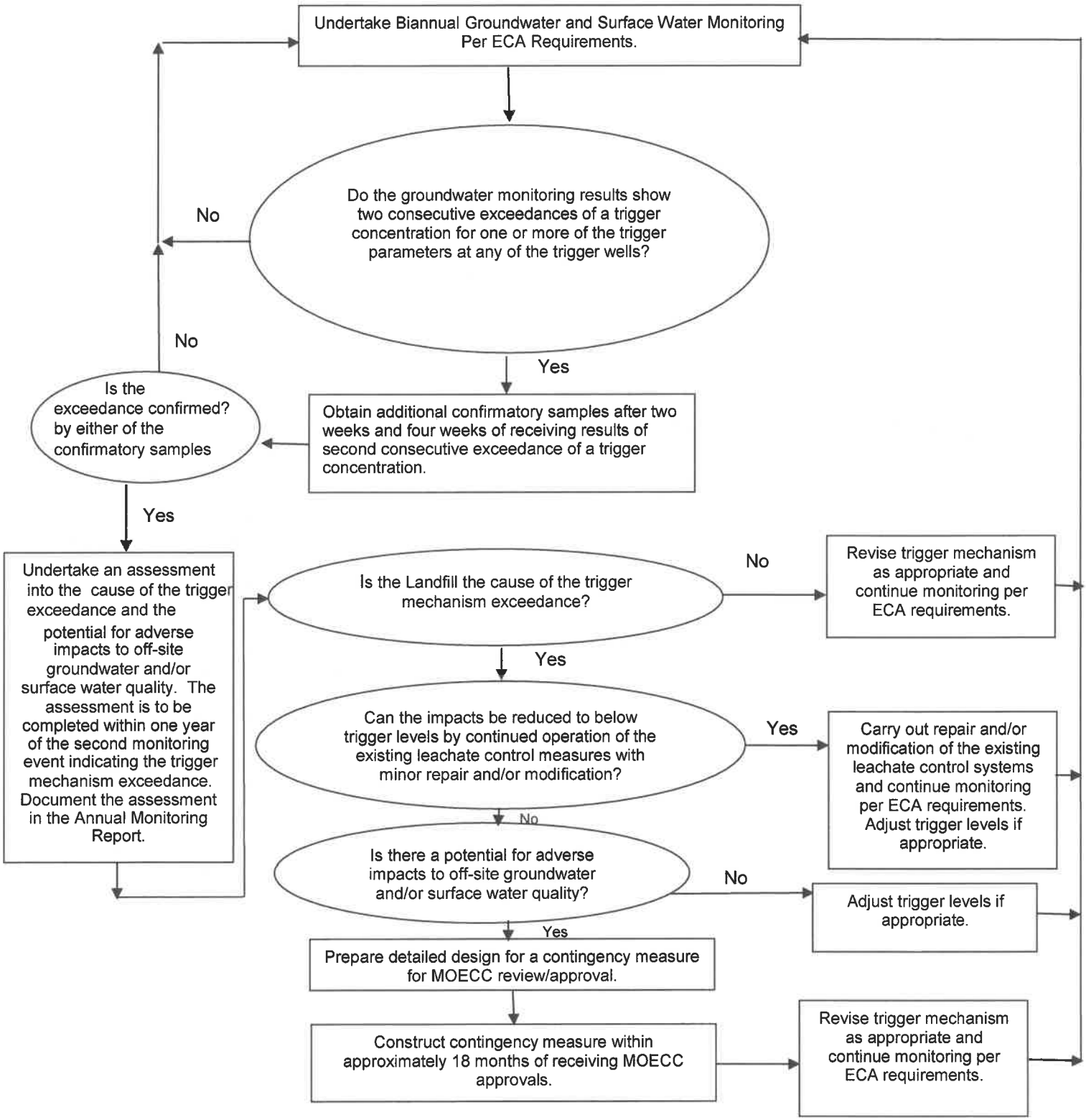
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm

0

Path: \\golder.gds\gal\niagara\active\2011\1186-0053 (WEG, Atlas Landfill, Welland)\11-XA-Trigger Mechanisms and Contingency Plan Report\ | File Name: 11186005303X001.dwg

FIGURE 2: PROPOSED TRIGGER MECHANISM



APPENDIX A

January 29, 2016 Project No. 11-1186-0053

Ms. Lesley Clarke
Environmental Performance Lead
Walker Industries
2800 Thorold Townline Road
Niagara Falls, Ontario
L2E 6S4

RE: RESPONSE TO MOECC COMMENTS ON TRIGGER AND CONTINGENCY PLAN
CONDITION 81 OF AMENDED-ECA NO. A120409
ATLAS LANDFILL
WELLAND, ONTARIO

Dear Ms. Clarke

This letter provides our responses to the comments received from the Ministry of Environment and Climate Change (MOECC) on the Updated Trigger and Contingency Plan for the Atlas Landfill (Welland, Ontario). The MOECC comments were provided in a Technical Memorandum dated January 11, 2016 from Cynthia Doughty (hydrogeologist, Water Resources Unit) to Linda Gabriele (Environmental Officer – Niagara District). Also included in the memorandum are review comments on the 2014 Annual Report for the Atlas Landfill. As requested by the MOECC, this response letter addresses only the comments on the Trigger and Contingency Plan (i.e., Comment Nos. 10 to 14). The comments on the 2014 Annual Report will be addressed in the next (2015) Annual Report.

Trigger Mechanism Comments and Responses

10. Sulphate, hardness and Total Dissolved Solids (TDS) were eliminated as potential trigger parameters due to their naturally high and variable background concentrations, which make it difficult to distinguish between landfill related impacts and natural variations in groundwater quality. Sulphate, hardness and TDS play a significant role in the annual reports when assessing whether a well has been historically impacted by leachate. It is potentially problematic to eliminate sulphate, hardness and TDS as trigger parameters.

Response – Yes, hardness, sulphate and TDS data are considered when assessing landfill impacts; however, rarely have we concluded that a particular well has been impacted by the landfill based solely on these three parameters. Consideration is also given to the suite of key leachate indicator parameters identified by Ecoplans (2010, refer to Section 6.1 of the 2014 Annual Report). This suite of leachate indicator parameters does not include hardness, sulphate and TDS, but does include each of our proposed trigger parameters.

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As noted by the reviewer, the primary reason for not including hardness, sulphate and TDS as trigger parameters is that that their background concentrations have relatively high spatial variability. This is apparent when comparing concentrations at the current background Nest MW 29 versus Nest MW 1-99 (historical background nest east of the landfill) and Nest MW 26 (cross-gradient of the landfill at northeast end). Neither of these nests is impacted by leachate, yet they show markedly different concentrations of hardness, sulphate and TDS amongst them. For example, as shown in Table 1 (attached), concentrations vary by as much as one order of magnitude amongst the shallow wells of these nests. This level of variation can make it difficult to distinguish between landfill impacts and variations in background groundwater quality for these parameters.

Another issue with the use of hardness, sulphate and TDS as trigger parameters is that in some cases their concentrations in leachate are comparable to or lower than background concentrations. For example, at the current leachate monitoring location MHBB, the maximum hardness concentration of 1,900 mg/L obtained in 2014 is comparable to the maximum background concentrations of 1,790 mg/L and 1,867 mg/L obtained for the intermediate and deep groundwater flow zones, respectively, at background Nest MW-29. For sulphate, the maximum concentration of 1,040 mg/L obtained at MHBB in 2014 is less than the maximum background concentrations of 1,800 mg/L and 1,700 mg/L obtained for the intermediate and deep flow zones, respectively, at background Nest MW-29.

In the Annual Monitoring reports, we will continue to review and discuss the results for hardness, sulphate and TDS when assessing potential leachate impacts. For the purpose of the trigger mechanism, we consider sodium and chloride to be reasonable surrogates in lieu of hardness, sulphate and TDS.

10 (cont'd) – Elevated concentrations of two of the selected trigger parameters (manganese and sodium) were used in the Annual Report when concluding whether some of the wells were historically impacted by leachate. The 2014 Annual Report and the Trigger/Contingency Report do not discuss whether the other selected trigger parameters (pH, chloride, fluoride, DOC, aluminum, boron and chromium) are currently elevated above background in wells impacted by historical landfill operations. The consultant should discuss whether the concentrations of these trigger parameters in the trigger monitoring wells are currently elevated above background and the appropriateness of the trigger parameters selected for indicating historical landfill impacts at the trigger monitoring wells.

Response – The 2014 Annual Report was prepared prior to the Trigger Report and therefore does not refer to specific trigger parameters/concentrations at monitoring wells. However, the Annual Report does identify parameters that are above background levels at each well. In addition to manganese and sodium, several of the other selected trigger parameters including chloride, DOC, fluoride and boron were identified as being elevated above background (e.g., see discussion for Wells 25-S, 6-99-S, 21-D in the 2014 Annual Report).

The attached Tables 2a to 2c show the 95th percentiles of the current concentrations for the trigger parameters at the shallow, intermediate and deep trigger wells, respectively, along the east property boundary. Also provided for comparison are the 95th percentiles of the background concentrations for the trigger parameters based on data from the background Nest MW 29. For the shallow trigger wells (Table 2a), concentrations of sodium and chloride are slightly higher than background levels. For the intermediate wells (Table 2b), concentrations of DOC, manganese and sodium are slightly higher than background levels. Well 19-D is the only deep trigger well and gave slightly higher sodium concentrations compared to background.

We do not consider it necessary that current concentrations for a given parameter at the trigger wells be elevated compared to background in order for it to be considered as a trigger parameter. The trigger wells are located along the up-gradient east side of the landfill as this is the only boundary applicable to the RUG. Given their location up-gradient of the landfill, leachate signatures at these wells are minor and not all of the selected trigger parameters are currently above background levels.

11. The rationale for not including benzo(a)pyrene and Total PCBs as trigger parameters should be provided.

Response - Benzo(a)pyrene and Total PCBs were not included as trigger parameters due to their low leachate concentrations relative to Ontario Drinking Water Standards (refer to Table A.4 of the Trigger/Contingency Report). Furthermore, they have relatively low mobility in the types of soils encountered at the site. Based on the data in the 2014 Annual Report, current concentrations for these two parameters at the trigger wells are below the method detection limit with the exception of a one time detection of benzo(a)pyrene at 0.02 ug/L (two times the Ontario Drinking Water Standard of 0.01 ug/L) in April 2012 at trigger wells MW 19-D and MW 26-I. In comparison, the selected trigger parameters have leachate concentrations as much as ten times the Drinking Water Standard and are more mobile in the groundwater flow system.

12. The response plan should specify the timing of the re-sampling to confirm the exceedances. The Consultant should specify the number of confirmatory samples that will be collected and the time between confirmatory samples, if applicable.

Response – We recommend that two confirmatory samples be collected from any trigger well that gives two consecutive exceedances of a trigger concentration for one or more of the trigger parameters. The confirmatory samples should be taken after two weeks and four weeks of receipt of the laboratory results indicating the second consecutive exceedance.

13. Within one year of the last monitoring event indicating the trigger mechanism exceedance, an assessment into the cause of the exceedances will be completed. The Consultant should clarify if the one year time frame is based on the second monitoring event that would trigger the confirmatory sampling or is it based on the last confirmatory sampling event.

Response – The one year time frame is relative to the second consecutive exceedance that triggers the confirmatory sampling.

14. A stamped copy of the Trigger and Contingency Plan should be provided.

A stamped copy will be provided as requested.

We trust that the above responses adequately address the MOECC comments on the Trigger and Contingency Plan. If the responses are acceptable to the MOECC, we will revise the document incorporating additional information discussed above and will issue a final stamped copy of the document.

GOLDER ASSOCIATES LTD.

Frank Barone

Frank Barone, Ph.D, P.Eng.
Principal

FSB/rb

Attachments: Table 1
Tables 2a – 2c

\\golder.gds\gal\cambridge\active\2011 projects\1186 construction services\11-1186-0053 - walker - atlas - welland\trigger mechanism 2015\11-1186-0053 final ltr moecc comments_trigger_contingency plan_2016jan29.docx

Table 1: Comparison of Sulphate, Hardness and TDS Concentrations Amongst Shallow Wells Not Impacted by the Landfill

Parameter	MW 29-S (current background well)	MW 1S-99 (historical background well east of landfill, decommissioned)	MW 26-S (cross-gradient at North East End of Cell 2)
Sulphate	90-160	101-400	933-1700
Hardness	543-596	N/A	1871-1246
TDS	628-722	N/A	1510-2000

N/A – Not Analyzed

Table 2a: Comparison of Trigger Parameter Concentrations at the East Boundary Trigger Wells Versus Background Concentrations [Shallow Trigger Wells]

Trigger Parameter	95th Percentile of Background[1] Concentration at Nest MW 29-S	95th Percentile of Concentrations at East Trigger Wells[2]			
		18-S	19-S	20-S	26-S
Chloride	11	39	31	13	15
Fluoride	0.3	0.3	0.3	0.4	0.2
Dissolved Organic Carbon	13	6.4	8.8	6.4	4.1
Aluminum	<0.013	0.01	<0.1	<0.01	<0.01
Boron	0.12	0.14	0.29	0.24	0.12
Chromium	<0.007	0.01	<0.01	<0.01	<0.001
Manganese	0.256	0.21	1.1	0.7	<1.4
Sodium	42	68	158	76	54
Trichloroethylene	<0.0002	0.0004	<0.0004	<0.0004	<0.0003

1. From Table 1 of Trigger / Contingency Report
2. From Tables 2 to 5 of Trigger / Contingency Report

Table 2b: Comparison of Trigger Parameter Concentrations at the East Boundary Trigger Wells Versus Background Concentrations [Intermediate Trigger Wells]

Trigger Parameter	95th Percentile of Background[1] Concentration at Nest MW 29-I	95th Percentile of Concentrations at East Trigger Wells[2]			
		18-I	19-I	20-I	26-I
Chloride	32	28	34	32	73
Fluoride	1.2	0.9	0.9	1.2	0.9
Dissolved Organic Carbon	1.7	3.2	2.5	6.4	3.1
Aluminum	<0.013	<0.01	<0.3	<0.01	<0.01
Boron	1.03	0.6	1.5	1.7	2.2
Chromium	<0.007	<0.01	<0.02	<0.01	<0.005
Manganese	0.109	0.28	1.06	0.32	0.3
Sodium	170	268	232	179	193
Trichloroethylene	<0.0002	<0.0004	<0.0004	<0.0004	<0.0004

1. From Table 1 of Trigger / Contingency Report
2. From Tables 2 to 5 of Trigger / Contingency Report

Table 2c: Comparison of Trigger Parameter Concentrations at the East Boundary Trigger Wells Versus Background Concentrations [Deep Trigger Wells]

Trigger Parameter	95th Percentile of Background[1] Concentration at MW 29-D	95th Percentile of Concentrations at East Trigger[2] Wells
		19-D
Chloride	34	30
Fluoride	1.4	1.3
Dissolved Organic Carbon	1.4	2.0
Aluminum	<0.013	<0.01
Boron	1.4	1.7
Chromium	<0.006	<0.01
Manganese	0.053	0.09
Sodium	82	146
Trichloroethylene	<0.0002	<0.0004

1. From Table 1 of Trigger / Contingency Report
2. From Tables 2 to 5 of Trigger / Contingency Report

ATTACHMENT A

TABLE A.1
SELECTION OF REASONABLE USE TRIGGER PARAMETERS [GENERAL CHEMISTRY, NUTRIENTS AND PHENOLS]
ATLAS LANDFILL, WELLAND, ONTARIO

A) SHALLOW WELLS

Parameter	Units	ODWS (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Shallow Monitoring Well					Overall Background Range	
				PS-1 Sample		MHBB Sample						Historical Leachate Wells* (GT1-99S, MW3-99, MW5-99)		MW29-S						
				13-Apr-12	13-Apr-12 (duplicate)	16-Jan-13	12-Jul-13	15-Nov-13	25-Apr-14	12-Nov-14	14-May-15	Min.	Max.	15-May-13	11-Nov-13	29-May-14	29-Oct-14	21-Apr-15	Min.	Max.
General Chemistry																				
pH (field)		< 6.5-8.5 > (A)	6.5-8.5	12.4	12.4	12.4	8.2	--	6.9	9.3	7.2	--	--	7.5	7.3	7	6.9	7.3	6.90	7.50
pH (lab)		< 6.5-8.5 > (A)	6.5-8.5	10.8	11.1	11.3	7.98	11.7	7.71	9.88	7.7	7.9	11.7	7.76	7.65	7.41	7.70	7.58	7.41	7.76
Alkalinity (Total as $CaCO_3$)	mg/L	< 30-500 > (A)	--	102	155	189	96	303	111	40	140	234	507	497	495	493	490	460	460	497
Hardness ($CaCO_3$)	mg/L	< 80-100 > (A)	--	1040	944	716	1160	705	1900	627	2000	--	--	598	573	574	543	560	543	598
Conductivity (lab)	µmho/cm	--	--	3200	3290	2790	2070	3970	4390	1900	5900	960	1928	1070	1060	997	1100	1100	997	1100
Nutrients																				
Bromide (Br)	mg/L	--	--	0.78	0.78	0.33	0.31	0.7	6.82	5	<10	0.72	1.23	<0.25	<0.25	<0.25	<1	<1.0	<0.25	<1
Dissolved Chloride (Cl)	mg/L	[250] (A)	--	265	270	267	77	401	858	210	1200	13	223	8	4	3	6.4	8.8	3	8.8
Fluoride (F)	mg/L	1.5 (H)	--	2.85	3.06	2.77	1.79	4.54	1.97	2.6	1.2	0.74	14.3	0.18	0.25	0.21	0.21	0.22	0.18	0.25
Dissolved Organic Carbon (DOC)	mg/L	[5] (A)	--	15.4	16.2	10.6	7.5	17.5	11.1	10	12	11.7	11.7	9.9	11.6	11	12	11	9.9	12
Phosphorus (P)	mg/L	--	0.03	0.02	0.03	0.06	0.03	<0.01	0.01	0.067	0.021	0.02	0.5	0.01	<0.01	<0.01	0.028	<0.020	<0.01	0.028
Sulphate (SO_4)	mg/L	[500] (A)	--	1200	1100	696	963	750	1040	545	1400	25.9	1025	126	82	90	100	160	90	160
Ammonia-N	mg/L	--	--	7.22	7.36	7.49	0.57	0.75	1.56	5.4	0.28	0.03	10.4	0.61	0.61	0.36	0.69	0.25	0.25	0.69
Nitrite	mg/L	1 (A)	--	3.73	3.44	1.89	0.15	3.26	0.73	0.95	0.167	0.03	0.061	<0.1	<0.1	<0.1	<0.1	0.012	<0.1	<0.1
Nitrate	mg/L	10 (H)	--	4.5	4.93	8.43	5.6	12.75	8.84	3.42	14.5	0.889	0.889	<0.1	<0.1	<0.1	<0.01	<0.10	<0.01	<0.1
Total Dissolved Solids (TDS)	mg/L	[500] (A)	--	2560	2630	2090	1680	2980	3510	1270	4470	624	624	696	689	648	626	722	626	722
Total Kjeldahl Nitrogen (TKN)	mg/L	--	--	7.5	7.78	7.98	1.31	12.7	2.25	5.9	3.3	0.29	12.1	0.87	0.76	0.71	1	0.75	0.87	1
Phenols																				
Total Phenols	mg/L	--	0.001	0.002	0.003	0.003	<0.001	0.002	0.002	0.0048	<0.0010	0.007	0.093	<0.005	<0.001	<0.005	<0.001	<0.0010	<0.001	<0.005

B) INTERMEDIATE WELLS

Parameter	Units	ODWS (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Intermediate Monitoring Well					Overall Background Range	
				PS-1 Sample		MHBB Sample						Historical Leachate Wells* (GT1-99S, MW3-99, MW5-99)		MW29-I						
				13-Apr-12	13-Apr-12 (duplicate)	16-Jan-13	12-Jul-13	15-Nov-13	25-Apr-14	12-Nov-14	14-May-15	Min.	Max.	15-May-13	11-Nov-13	29-May-14	29-Oct-14	16-Apr-15	Min.	Max.
General Chemistry																				
pH (field)		< 6.5-8.5 > (A)	6.5-8.5	12.4	12.4	12.4	8.2	--	6.9	9.3	7.2	--	--	8.00	8.40	7.80	7.80	8.00	7.80	8.40
pH (lab)		< 6.5-8.5 > (A)	6.5-8.5	10.8	11.1	11.3	7.98	11.7	7.71	9.88	7.7	7.9	11.7	7.69	7.76	7.88	7.48	7.84	7.48	7.76
Alkalinity (Total as $CaCO_3$)	mg/L	< 30-500 > (A)	--	102	155	189	96	303	111	40	140	234	507	61	49	58	56	56	49	61
Hardness ($CaCO_3$)	mg/L	< 80-100 > (A)	--	1040	944	716	1160	705	1900	627	2000	--	--	1830	1820	1790	1668	1700	1668	1830
Conductivity (lab)	µmho/cm	--	--	3200	3290	2790	2070	3970	4390	1900	5900	960	1928	2810	3070	2890	3000	2900	2810	3070
Nutrients																				
Bromide (Br)	mg/L	--	--	0.78	0.78	0.33	0.31	0.7	6.82	5	<10	0.72	1.23	<0.25	<0.25	0.26	<1	<10	<0.25	0.26
Dissolved Chloride (Cl)	mg/L	[250] (A)	--	265	270	267	77	401	858	210	1200	13	223	30	27	28	30	30	27	30
Fluoride (F)	mg/L	1.5 (H)	--	2.85	3.06	2.77	1.79	4.54	1.97	2.6	1.2	0.74	14.3	0.96	1.1	1.09	0.95	0.96	0.95	1.1
Dissolved Organic Carbon (DOC)	mg/L	[5] (A)	--	15.4	16.2	10.6	7.5	17.5	11.1	10	12	11.7	11.7	1.8	1.1	1.1	1.2	0.99	0.99	1.8
Phosphorus (P)	mg/L	--	0.03	0.02	0.03	0.06	0.03	<0.01	0.01	0.067	0.021	0.02	0.5	<0.01	<0.01	<0.01	0.028	<0.020	<0.01	<0.01
Sulphate (SO_4)	mg/L	[500] (A)	--	1200	1100	696	963	750	1040	545	1400	25.9	1025	1770	1880	1760	1800	1700	1700	1880
Ammonia-N	mg/L	--	--	7.22	7.36	7.49	0.57	0.75	1.56	5.4	0.28	0.03	10.4	0.53	0.48	0.44	0.4	0.44	0.4	0.53
Nitrite	mg/L	1 (A)	--	3.73	3.44	1.89	0.15	3.26	0.73	0.95	0.17	0.03	0.061	<0.1	<0.1	<0.1	<0.1	<0.010	<0.1	<0.1
Nitrate	mg/L	10 (H)	--	4.5	4.93	8.43	5.6	12.75	8.84	3.42	14.5	0.889	0.889	<0.1	<0.1	<0.1	<0.01	<0.10	<0.1	<0.1
Total Dissolved Solids (TDS)	mg/L	[500] (A)	--	2560	2630	2090	1680	2980	3510	1270	4470	624	624	2250	2480	2310	2730	2680	2250	2730
Total Kjeldahl Nitrogen (TKN)	mg/L	--	--	7.5	7.78	7.98	1.31	12.7	2.25	5.9	3.3	0.29	12.1	0.72	0.47	0.42	0.63	0.65	<0.1	0.72
Phenols																				
Total Phenols	mg/L	--	0.001	0.002	0.003	0.003	<0.001	0.002	0.002	0.0048	<0.0010	0.007	0.093	<0.01	<0.001	<0.005	<0.001	<0.0010	<0.001	<0.01

C) DEEP WELLS

Parameter	Units	ODWS (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Deep Monitoring Well							Overall Background Range	
				PS-1 Sample		MHBB Sample						Historical Leachate Wells* (GT1-99S, MW3-99, MW5-99)		MW29-D								
				13-Apr-12	13-Apr-12 (duplicate)	16-Jan-13	12-Jul-13	15-Nov-13	25-Apr-14	12-Nov-14	14-May-15	Min.	Max.	15-May-13	11-Nov-13	11-Nov-13 (duplicate)	29-May-14	29-May-14 (duplicate)	29-Oct-14	16-Apr-15	Min.	Max.
General Chemistry																						
pH (field)		< 6.5-8.5 > (A)	6.5-8.5	12.4	12.4	12.4	8.2	--	6.9	9.3	7.2	--	--	8.00	8.10	8.10	7.20	7.20	9.00	7.8	7.2	9.0
pH (lab)		< 6.5-8.5 > (A)	6.5-8.5	10.8	11.1	11.3	7.98	11.7	7.71	9.88	7.7	7.9	11.7	7.50	7.70	7.71	7.59	7.56	7.59	7.48	7.48	7.71
Alkalinity (Total as $CaCO_3$)	mg/L	< 30-500 > (A)	--	102	155	189	96	303	111	40	140	234	507	73	72	72	71	72	71	67	67	73
Hardness ($CaCO_3$)	mg/L	< 80-100 > (A)	--	1040	944	716	1160	705	1900	627	2000	--	--	1880	1700	1680	1887	1650	1702	1700	1680	1880
Conductivity (lab)	µmho/cm	--	--	3200	3290	2790	2070	3970	4390	1900	5900	960	1928	2880	2740	2740	2750	2750	2900	2800	2880	2900
Nutrients																						
Bromide (Br)	mg/L	--	--	0.78	0.78	0.33	0.31	0.7	6.82	5	<10	0.72	1.23	0.27	<0.25	<0.25	0.27	0.28	<5	<10	0.26	0.27
Dissolved Chloride (Cl)	mg/L	[250] (A)	--	265	270	267	77	401	858	210	1200	13	223	33	32	32	31	31	33	33	31	33
Fluoride (F)	mg/L	1.5 (H)	--	2.85	3.06	2.77	1.79	4.54	1.97	2.6	1.2	0.74	14.3	1.16	1.27	1.25	1.19	1.2	0.99	1	0.99	1.27
Dissolved Organic Carbon (DOC)	mg/L	[5] (A)	--	15.4	16.2	10.6	7.5	17.5	11.1	10	12	11.7	11.7	1	0.6	0.6	1	1.1	1.3	0.7	0.6	1.3
Phosphorus (P)	mg/L	--	0.03	0.02	0.03	0.06	0.03	<0.01	0.01	0.067	0.021	0.02	0.5	<0.01	<0.01	<0.01	<0.01	<0.01	0.031	<0.020	<0.01	<0.01
Sulphate (SO_4)	mg/L	[500] (A)	--	1200	1100	696	963	750	1040	545	1400	25.9	1025	1730	1640	1670	1670	1690	1700	1600	1600	1730
Ammonia-N	mg/L	--	--	7.22	7.36	7.49	0.57	0.75	1.56	5.4	0.28	0.03	10.4	0.57	0.57	0.56	0.53	0.53	0.43	0.49	0.43	0.57
Nitrite	mg/L	1 (A)	--	3.73	3.44	1.89	0.15	3.26	0.73	0.95	0.17	0.03	0.061	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.010	<0.1	<0.1
Nitrate	mg/L	10 (H)	--	4.5	4.93	8.43	5.6	12.75	8.84	3.42	14.5	0.889	0.889	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.10	<0.1	<0.1
Total Dissolved Solids (TDS)	mg/L	[500] (A)	--	2560	2630	2090	1680	2980	3510	1270	4470	624	624	2130	2190	2190	2200	2200	2830	2650	2130	2850
Total Kjeldahl Nitrogen (TKN)	mg/L	--	--	7.5	7.78	7.98	1.31	12.7	2.25	5.9	3.3	0.29	12.1	0.51	0.55	0.64	0.53	0.77	0.81	0.72	0.51	0.81
Phenols																						
Total Phenols	mg/L	--	0.001	0.002	0.003	0.003	<0.001	0.002	0.002	0.0048	<0.0010	0.007	0.093	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

- Maximum of leachate concentrations > 2 times ODWS
- Maximum of leachate concentrations > 5 times ODWS
- Maximum of leachate concentrations > 10 times ODWS
- Maximum of leachate concentrations > 100 times ODWS

Notes:
NA — Parameter not analyzed
-- — No value

1. Ontario Drinking Water Standard (ODWS):
a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) — Aesthetic Drinking Water Objective
(H) — Health Related Drinking Water Objective

2. Provincial Water Quality Objective (PWQO)
* - Decommissioned

TABLE A.2
SELECTION OF REASONABLE USE TRIGGER PARAMETERS [METALS]
ATLAS LANDFILL, WELLAND, ONTARIO

A) SHALLOW WELLS

Parameter	units	ODWS (2003)[1]	PWQO (1994)[2]	Leachate Quality										Background Quality, Shallow Monitoring Well					Overall Background Range	
				PS-1 Sample		MHBB Sample						Historical Leachate Wells* (GT1-89S, MW3-89, MW5-89)		MW29-S						
				12-Apr-12	13-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	16-Nov-13	25-Apr-14	12-Nov-14	14-May-15	Min.	Max.	15-May-13	11-Nov-13	28-May-14	29-Oct-14	21-Apr-15	Min.	Max.
Metals																				
Aluminum (Al)	mg/L	< 0.1 > (A)	--	0.18	0.23	0.30	0.11	0.06	0.10	0.81	0.034	0.161	1.59	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.01
Antimony (Sb)	mg/L	{0.006} (H)	0.02	<0.0005	<0.0005	0.0016	0.0028	<0.0005	0.0026	0.0014	0.003	0.0007	<0.006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Arsenic (As)	mg/L	{0.025} (H)	0.1	<0.01	<0.01	<0.01	<0.01	<0.1	0.003	0.0047	0.002	0.016	<0.1	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.01
Barium (Ba)	mg/L	1 (H)	--	0.08	0.07	0.07	0.07	0.06	0.12	0.051	0.065	0.017	0.037	0.09	0.09	0.11	0.16	0.17	0.09	0.17
Beryllium (Be)	mg/L	--	0.011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003	<0.0005	<0.0005	<0.005	<0.0005	<0.0005	<0.0005	<0.005
Boron (B)	mg/L	{5} (H)	0.2	0.1	0.1	0.11	0.26	0.06	0.27	0.2	0.38	<0.02	0.218	0.06	0.1	0.1	0.092	0.062	0.06	0.1
Cadmium (Cd)	mg/L	0.005 (H)	0.0005	0.0003	0.0004	0.0001	0.0002	0.0004	0.0005	0.0005	0.00053	0.003	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium (Ca)	mg/L	--	--	415	378	277	353	279	520	180	530	14.1	448	157	137	149	140	150	137	157
Chromium (Cr)	mg/L	0.05 (H)	0.0089	0.089	0.085	<0.5	0.002	0.134	0.004	0.028	<0.005	<0.006	0.047	0.0040	0.0030	<0.001	<0.005	<0.005	<0.001	<0.005
Cobalt (Co)	mg/L	--	0.0009	0.0017	0.0016	0.0013	0.0043	0.0011	0.0014	0.001	0.0015	<0.0002	0.007	0.0021	0.0021	0.0012	0.0016	0.0011	0.0011	0.0021
Copper (Cu)	mg/L	[1] (A)	0.005	0.018	0.02	0.013	0.009	0.015	0.01	0.017	0.0089	<0.001	0.03	0.001	<0.001	0.001	<0.001	0.0017	<0.001	0.001
Iron (Fe)	mg/L	[0.3] (A)	0.3	0.17	0.22	0.29	0.24	0.06	0.2	1	0.19	<0.03	0.368	0.09	2.94	0.14	0.31	<0.1	<0.03	2.94
Lead (Pb)	mg/L	0.01 (H)	0.001-0.005	0.001	0.001	0.007	0.001	0.018	0.001	0.01	0.0014	<0.001	0.073	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001
Magnesium (Mg)	mg/L	--	--	2	<1	6	68	2	146	43	170	0.61	<1	50	58	49	47	45	45	58
Manganese (Mn)	mg/L	[0.05] (A)	--	<0.01	<0.01	0.03	0.17	0.03	0.21	0.053	0.14	<0.002	0.506	0.21	0.23	0.14	0.17	0.18	0.14	0.23
Mercury (Hg)	mg/L	0.001 (H)	0.0002	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.0001
Molybdenum (Mo)	mg/L	--	0.04	1.88	2.01	1.29	0.271	2.4	0.397	0.087	0.16	<0.013	3.882	0.011	0.009	<0.005	0.0042	3.9	<0.005	0.011
Nickel (Ni)	mg/L	--	0.025	0.024	0.024	0.022	0.013	0.032	0.014	0.012	0.015	<0.003	0.045	<0.005	<0.005	<0.005	<0.003	0.0021	<0.003	<0.005
Potassium (K)	mg/L	--	--	58	54	51	8	86	43	32	74	7.75	115.3	7	5	3	3.7	3.5	3	7
Selenium (Se)	mg/L	0.01 (H)	0.1	<0.1	<0.1	0.014	<0.01	<0.1	0.004	0.0072	0.0076	0.008	<0.1	<0.01	<0.001	<0.001	<0.002	<0.002	<0.001	<0.01
Silver (Ag)	mg/L	--	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00011	<0.0001	<0.003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium (Na)	mg/L	[200] (A)	--	282	259	284	50	539	315	220	310	116	277.6	40	26	27	25	29	25	40
Strontium (Sr)	mg/L	--	--	3.07	2.82	1.93	2.69	1.8	5.15	1.4	4.7	0.106	6.95	0.73	0.929	0.853	0.81	0.88	0.73	0.93
Thallium (Tl)	mg/L	--	--	0.0001	0.0001	<0.0001	0.0002	<0.0001	0.0003	<0.00005	0.00028	<0.0001	<0.12	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0001
Tin (Sn)	mg/L	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01	<0.01	<0.01	<0.01	<0.005	<0.001	<0.005	<0.01
Titanium (Ti)	mg/L	--	--	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.005	<0.002	0.015	<0.01	0.012	0.007	0.0053	<0.005	<0.01	0.012
Uranium (U)	mg/L	0.02 (H)	0.005	<0.001	<0.001	<0.001	0.0030	<0.001	0.0030	0.0012	0.0067	<0.001	<0.002	0.013	0.007	<0.001	0.00062	0.0042	0.00062	0.013
Vanadium (V)	mg/L	--	0.006	0.002	0.002	0.005	0.001	0.013	<0.001	0.0054	0.0011	<0.002	0.163	0.002	<0.002	<0.002	<0.001	0.00074	<0.001	0.002
Zinc (Zn)	mg/L	[5] (A)	0.02	<0.01	<0.01	<0.01	0.01	<0.01	0.03	0.014	0.044	<0.004	0.026	<0.01	<0.01	<0.01	<0.001	<0.005	<0.01	<0.01
Zirconium (Zr)	mg/L	--	0.004	<0.002	<0.02	0.002	<0.02	0.007	<0.002	<0.001	<0.001	<0.003	<0.004	<0.002	<0.01	<0.01	<0.005	<0.001	<0.002	<0.01

B) INTERMEDIATE WELLS

Parameter	Units	ODWS (2003)[1]	PWQO (1994)[2]	Leachate Quality										Background Quality, Intermediate Monitoring Well					Overall Background Range	
				PS-1 Sample		MHBB Sample						Historical Leachate Wells* (GT1-89S, MW3-89, MW5-89)		MW29-I						
				12-Apr-12	13-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	16-Nov-13	25-Apr-14	12-Nov-14	14-May-15	Min.	Max.	13-May-13	11-Nov-13	28-May-14	29-Oct-14	16-Apr-15	Min.	Max.
Metals																				
Aluminum (Al)	mg/L	< 0.1 > (A)	--	0.18	0.23	0.30	0.11	0.06	0.10	0.81	0.03	0.161	1.59	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.01
Antimony (Sb)	mg/L	{0.006} (H)	0.02	<0.0005	<0.0005	0.0016	0.0028	<0.0005	0.0026	0.0014	0.003	0.0007	<0.006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005
Arsenic (As)	mg/L	{0.025} (H)	0.1	<0.01	<0.01	<0.01	<0.01	<0.1	0.003	0.0047	0.002	0.016	<0.1	<0.01	<0.01	0.002	0.0012	0.0015	<0.001	<0.01
Barium (Ba)	mg/L	1 (H)	--	0.08	0.07	0.07	0.07	0.06	0.12	0.051	0.065	0.017	0.037	0.02	0.01	0.01	0.01	0.01	0.01	0.02
Beryllium (Be)	mg/L	--	0.011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron (B)	mg/L	{5} (H)	0.2	0.1	0.1	0.11	0.26	0.06	0.27	0.2	0.38	<0.02	0.218	0.9	0.88	0.99	0.91	0.97	0.88	0.99
Cadmium (Cd)	mg/L	0.005 (H)	0.0005	0.0003	0.0004	0.0001	0.0002	0.0004	0.0005	0.0005	0.00053	0.003	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium (Ca)	mg/L	--	--	415	378	277	353	279	520	180	530	14.1	448	520	495	514	470	470	470	520
Chromium (Cr)	mg/L	0.05 (H)	0.0089	0.089	0.085	<0.5	0.002	0.134	0.004	0.028	<0.005	<0.006	0.047	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.01
Cobalt (Co)	mg/L	--	0.0009	0.0017	0.0016	0.0013	0.0043	0.0011	0.0014	0.001	0.0015	<0.0002	0.007	0.0012	0.0007	<0.0002	<0.001	<0.001	0.0007	0.0012
Copper (Cu)	mg/L	[1] (A)	0.005	0.018	0.02	0.013	0.009	0.015	0.01	0.017	0.0089	<0.001	0.03	0.001	0.002	<0.001	<0.001	<0.001	<0.001	0.002
Iron (Fe)	mg/L	[0.3] (A)	0.3	0.17	0.22	0.29	0.24	0.06	0.2	1	0.19	<0.03	0.368	0.07	0.07	0.85	0.47	0.81	0.07	0.85
Lead (Pb)	mg/L	0.01 (H)	0.001-0.005	0.001	0.001	0.007	0.001	0.018	0.001	0.01	0.0014	<0.001	0.073	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001
Magnesium (Mg)	mg/L	--	--	2	<1	6	68	2	146	43	170	0.61	<1	130	143	123	120	120	120	143
Manganese (Mn)	mg/L	[0.05] (A)	--	<0.01	<0.01	0.03	0.17	0.03	0.21	0.053	0.14	<0.002	0.506	0.09	0.1	0.1	0.08	0.067	0.08	0.1
Mercury (Hg)	mg/L	0.001 (H)	0.0002	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.0001
Molybdenum (Mo)	mg/L	--	0.04	1.88	2.01	1.29	0.271	2.4	0.397	0.087	0.16	<0.013	3.882	0.018	0.023	0.012	0.012	13	0.012	13
Nickel (Ni)	mg/L	--	0.025	0.024	0.024	0.022	0.013	0.032	0.014	0.012	0.015	<0.003	0.045	0.015	0.014	<0.005	<0.002	<0.001	<0.002	0.015
Potassium (K)	mg/L	--	--	58	54	51	8	86	43	32	74	7.75	115.3	10	7	4	5.2	5.2	4	10
Selenium (Se)	mg/L	0.01 (H)	0.1	<0.1	<0.1	0.014	<0.01	<0.1	0.004	0.0072	0.0076	0.008	<0.1	<0.01	<0.01	<0.001	<0.002	<0.002	<0.001	<0.01
Silver (Ag)	mg/L	--	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00011	<0.0001	<0.003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium (Na)	mg/L	[200] (A)	--	282	259	284	50	539	315	220	310	116	277.6	123	166	129	120	130	120	166
Strontium (Sr)	mg/L	--	--	3.07	2.82	1.93	2.69	1.8	5.15	1.4	4.7	0.106	6.95	9.86	10.9	10.8	10	10	9.86	10.9
Thallium (Tl)	mg/L	--	--	0.0001	0.0001	<0.0001	0.0002	<0.0001	0.0003	<0.00005	0.00028	<0.0001	<0.12	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.0001
Tin (Sn)	mg/L	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01	<0.01	<0.01	<0.01	<0.005	<0.001	<0.005	<0.01
Titanium (Ti)	mg/L	--	--	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.005	<0.002	0.015	<0.01	<0.001	<0.001	0.0002	<0.005	<0.01	0.0002
Uranium (U)	mg/L	0.02 (H)	0.005	<0.001	<0.001	<0.001	0.0030	<0.001	0.0030	0.0012	0.0067	<0.001	<0.002	<0.001	<0.001	<0.001	<0.0005	0.00016	<0.0005	<0.001
Vanadium (V)	mg/L	--	0.006	0.002	0.002	0.005	0.001	0.013	<0.001	0.0054	0.0011	<0.002	0.163	<0.001	<0.002	<0.002	<0.001	<0.0005	<0.001	<0.002
Zinc (Zn)	mg/L	[5] (A)	0.02	<0.01	<0.01	<0.01	0.01	<0.01	0.03	0.014	0.044	<0.004	0.028	<0.01	<0.01	<0.01	<0.001	<0.025	<0.01	<0.001
Zirconium (Zr)	mg/L	--	0.004	<0.002	<0.02	0.002	<0.02	0.007	<0.002	<0.001	<0.001	<0.003	<0.004	<0.002	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01

C) DEEP WELLS

Parameter	Units	ODWS (2003)[1]	PWQO (1994)[2]	Leachate Quality										Background Quality, Intermediate Monitoring Well							Overall Background Range	
				PS-1 Sample		MHBB Sample						Historical Leachate Wells* (GT1-89S, MW3-89, MW5-89)		MW29-D								
				12-Apr-12	13-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	16-Nov-13	25-Apr-14	12-Nov-14	14-May-15	Min.	Max.	13-May-13	11-Nov-13	11-Nov-13 (duplicate)	29-May-14	29-May-14 (duplicate)	30-Oct-14	16-Apr-15	Min.	Max.
Metals																						
Aluminum (Al)	mg/L	< 0.1 > (A)	--	0.18	0.23	0.30	0.11	0.06	0.10	0.81	0.03	0.161	1.59	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01
Antimony (Sb)	mg/L	{0.006} (H)	0.02	<0.0005	<0.0005	0.0016	0.0028	<0.0005	0.0026	0.0014	0.003	0.0007	<0.006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic (As)	mg/L	{0.025} (H)	0.1	<0.01	<0.01	<0.01	<0.01	<0.1	0.003	0.0047	0.002	0.016	<0.1	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01
Barium (Ba)	mg/L	1 (H)	--	0.08	0.07	0.07	0.07	0.06	0.12	0.051	0.065	0.017	0.037	0.01	0.01	0.01	0.007	0.0088	<0.01	0.007		
Beryllium (Be)	mg/L	--	0.011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	**<0.0005**	**<0.0005**
Boron (B)	mg/L	{5} (H)	0.2	0.1	0.1	0.11	0.26	0.06	0.27	0.2	0.38	<0.02	0.218	1.2	1.2	1.2	1.4	1.3	1.1	1.1	1.1	1.4
Cadmium (Cd)	mg/L	0.005 (H)	0.0005	0.0003	0.0004	0.0001	0.0002	0.0004	0.0005	0.0005	0.00053	0.003	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium (Ca)	mg/L	--	--	415	378	277	353	279	520	180	530	14.1	448	577	532	524	578	578	520	520	520	578
Chromium (Cr)	mg/L	0.05 (H)	0.0089	0.089	0.085	<0.5	0.002	0.134	0.004	0.028	<0.005	<0.006	0.047	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.005
Cobalt (Co)	mg/L	--	0.0009	0.0017	0.0016	0.0013	0.0043	0.0011	0.0014	0.001	0.0015	<0.0002	0.007	0.0007	0.0007	0.0007	<0.0002	<0.0002	<0.001	<0.001	<0.0002	<0.001
Copper (Cu)	mg/L	[1] (A)	0.005	0.018	0.02	0.013	0.009	0.015	0.01	0.017	0.0089	<0.001	0.03	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (Fe)	mg/L	[0.3] (A)	0.3	0.17	0.22	0.29	0.24	0.06	0.2	1	0.19	<0.03	0.368	0.33	0.49	0.52	0.46	0.45	0.5	0.56	0.33	0.56
Lead (Pb)	mg/L	0.01 (H)	0.001-0.005	0.001	0.001	0.007	0.001	0.018	0.001	0.01	0.0014	<0.001	0.073	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	**<0.0005**	<0.001
Magnesium (Mg)	mg/L	--	--	2	<1	6	68	2	146	43	170	0.61	<1	108	91	90	103	100	98	98	90	108
Manganese (Mn)	mg/L	[0.05] (A)	--	<0.01	<0.01	0.03	0.17	0.03	0.21	0.053	0.14	<0.002	0.506	0.04	0.04	0.04	0.05	0.05	0.038	0.041	0.038	0.05
Mercury (Hg)	mg/L	**0.001 (H)**	0.0002	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum (Mo)	mg/L	--	0.04	1.88	2.01	1.29	0.271	2.4	0.397	0.087	0.16	<0.013	3.882	<0.005	<0.005	<0.005	<0.005	<0.005	0.0047	4.8	<0.005	<0.005
Nickel (Ni)	mg/L	--	0.025	0.024	0.024	0.022	0.013	0.032	0.014	0.012	0.015	<0.003	0.045	0.007	0.005	0.006	<0.005	<0.005	<0.002	<0.005	<0.002	0.006
Potassium (K)	mg/L	--	--	58	54	51	8	86	43	32	74	7.75	115.3	11	9	8	8	7	8.7	7.8	8.7	11
Selenium (Se)	mg/L	0.01 (H)	0.1	<0.1	<0.1	0.014	<0.01	<0.1	0.004	0.0072	0.0076	0.008	<0.1	<0.01	<0.01	<0.01	<0.002	<0.002	<0.002	<0.002	<0.001	<0.01
Silver (Ag)	mg/L	--	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00011	<0.0001	<0.003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium (Na)	mg/L	[200] (A)	--	282	259	284	50	539	315	220	310	116	277.6	68	64	64	78	72	77	66	64	78
Strontium (Sr)	mg/L	--	--	3.07	2.82	1.93	2.69	1.8	5.15	1.4	4.7	0.106	6.95	8.77	10	9.97	11.3	10	11.2	9.8	8.77	11.3
Thallium (Tl)	mg/L	--	--	0.0001	0.0001	<0.0001	0.0002	<0.0001	0.0003	<0.00005	0.00028	<0.0001	<0.12	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0001
Tin (Sn)	mg/L	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.001	<0.005	<0.01
Titanium (Ti)	mg/L	--	--	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.005	<0.002	0.015	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.01
Uranium (U)	mg/L	0.02 (H)	0.005	<0.001	<0.001	<0.001	0.0030	<0.001	0.0030	0.0012	0.0067	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	0.00011	<0.0005	<0.001
Vanadium (V)	mg/L	--	0.006	0.002	0.002	0.005	0.001	0.013	<0.001	0.0054	0.0011	<0.002	0.163	<0.001	<0.002	0.002	<0.002	<0.002	<0.001	<0.0005	<0.001	0.002
Zinc (Zn)	mg/L	[5] (A)	0.02	<0.01	<0.01	<0.01	0.01	<0.01	0.03	0.014	0.044	<0.004	0.028	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.025	<0.01	<0.01
Zirconium (Zr)	mg/L	--	0.004	<0.002	<0.02	0.002	<0.02	0.007	<0.002	<0.001	<0.001	<0.003	<0.004	0.002	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	0.002

- Maximum of leachate concentrations > 2 times ODWS
- Maximum of leachate concentrations > 5 times ODWS
- Maximum of leachate concentrations > 10 times ODWS
- Maximum of leachate concentrations > 100 times ODWS

Notes:
NA — Parameter not analyzed
-- — No value

1. Ontario Drinking Water Standard (ODWS):
a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective
(H) Health Related Drinking Water Objective

2. Provincial Water Quality Objective (PWQO)
* - Decommissioned

TABLE A.3
SELECTION OF REASONABLE USE TRIGGER PARAMETERS [VOLATILE ORGANIC COMPOUNDS]
ATLAS LANDFILL, WELLAND, ONTARIO

A) SHALLOW WELLS

Parameter	Units	ODWS (2003)[1]	PWQO (1994)[2]	Leachate Quality										Background Quality, Shallow Monitoring Well						Overall Background Range	
				PS-1 Sample		MHBB Sample							Historical Leachate Wells* (GT1-89S, MW3-89, MW6-89)		MW29-S						
				13-Apr-12	13-Apr-12 (duplicate)	16-Jan-13	12-Jul-13	15-Nov-13	25-Apr-14	12-Nov-14	14-May-15		Min.	Max.	15-May-13	11-Nov-13	28-May-14	29-Oct-14	21-Apr-15	Min.	Max.
Volatile Organic Compounds																					
1,1,1,2-Tetrachloroethane	µg/L	--	20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20		<0.2	<1	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	--	10	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10		<0.4	<0.8	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
1,1,2,2-Tetrachloroethane	µg/L	--	70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20		<0.2	<1	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	--	800	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.4	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,1-Dichloroethane	µg/L	--	200	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10		<0.4	<0.8	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
1,1-Dichloroethylene	µg/L	14 (H)	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.5	<1	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,2-Dichloroethane	µg/L	[5] (H)	100	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20		<0.4	<1	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
1,2-Dichloropropane	µg/L	--	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.4	<1	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
1,3,5-Trimethylbenzene	µg/L	--	3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	--	--		--	--	<0.3	<0.3	<0.3	<0.1	--	<0.1	<0.3
1,3-Dichlorobenzene	µg/L	--	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
Benzene	µg/L	5 (H)	100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.4	0.7	<0.5	<0.5	<0.5	0.14	<0.10	0.14	<0.5
Bromodichloromethane	µg/L	100 (H)	200	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10		<0.2	<0.8	<0.3	<0.3	<0.3	<0.1	<0.10	<0.1	<0.3
Bromoform	µg/L	100 (H)	60	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
Bromomethane	µg/L	--	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<3.50		<0.4	<3	<0.5	<0.5	<0.5	<0.5	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10		<0.4	<1	<0.2	<0.2	<0.2	<0.1	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/60] (A/H)	15	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10		<0.2	<0.5	<0.2	<0.2	<0.2	<0.1	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	40	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20		<0.2	<0.8	<0.3	<0.3	<0.3	<0.2	<0.20	<0.2	<0.3
Chloroethane	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--		<0.4	<2	<0.2	<0.2	<0.2	NA	--	<0.2	<0.2
Chloroform	µg/L	100 (H)	--	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.1	<0.10		<0.2	<1	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Chloromethane	µg/L	--	700	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--		<0.8	<2	<0.2	<0.2	<0.2	NA		<0.2	<0.2
cis-1,2-Dichloroethylene	µg/L	--	200	3.3	3.9	0.6	<0.4	5.5	<0.4	0.56	<0.10		<0.4	33	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
cis-1,3-Dichloropropylene	µg/L	--	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20		<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
Dichlorodifluoromethane	µg/L	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50		--	--	<0.5	<0.5	NA	<0.1	<0.50	<0.1	<0.5
Ethylbenzene	µg/L	[2.4] (A)	8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.2	<5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Ethylene Dibromide	µg/L	--	5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20		<0.4	<2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
m & p-Xylene	µg/L	300 (A)	2 and 30	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.4	<2	<0.5	<0.5	<0.5	<0.1	0.24	<0.1	<0.5
Methylene chloride	µg/L	50 (H)	100	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<0.5	<0.50		<0.6	<4	<4	<4	<4	<0.5	<0.50	<0.5	<4
o-Xylene	µg/L	300 (A)	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.2	<1	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Styrene	µg/L	--	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20		<0.2	<1	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	50	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10		<0.2	<0.8	<0.3	<0.3	<0.3	<0.1	<0.10	<0.1	<0.3
Toluene	µg/L	[24] (A)	0.8	0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20		<0.4	1.5	<0.5	<0.5	<0.5	0.28	0.28	0.28	<0.5
trans-1,2-Dichloroethylene	µg/L	--	200	<0.4	0.4	<0.4	<0.4	<0.4	<4.0	<0.1	<0.10		<0.4	1.7	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
trans-1,3-Dichloropropylene	µg/L	--	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20		<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
Trichloroethylene	µg/L	5 (H)	20	15.9	21	2.3	<0.3	29.2	<0.3	4.6	<0.10		<0.6	8	<0.3	<0.3	<0.3	<0.1	<0.1	<0.1	<0.3
Trichlorofluoromethane	µg/L	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20		<0.5	<2	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	600	0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20		<0.34	2.3	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	--	--	--	--	--	--	--	<0.1	<0.10		<0.4	<3	NA	NA	NA	<0.1	0.24	<0.1	<0.1

B) INTERMEDIATE WELLS

Parameter	Units	ODWS (2003)[1]	PWQO (1994)[2]	Leachate Quality										Background Quality, Intermediate Monitoring Well					Overall Background Range	
				PS-1 Sample		MHBB Sample							Historical Leachate Wells* (GT1-89S, MW3-89, MW6-89)		MW29-I					
				13-Apr-12	13-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	15-Nov-13	25-Apr-14	12-Nov-14	14-May-15		Min.	Max.	13-May-13	11-Nov-13	28-May-14	29-Oct-14	15-Apr-15	Min.	Max.
Volatile Organic Compounds																					
1,1,1,2-Tetrachloroethane	µg/L	-	20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20		<0.2	<1	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	10	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10		<0.4	<0.8	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
1,1,2,2-Tetrachloroethane	µg/L	-	70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20		<0.2	<1	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	800	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.4	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,1-Dichloroethane	µg/L	-	200	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10		<0.4	<0.8	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
1,1-Dichloroethylene	µg/L	14 (H)	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.5	<1	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,2-Dichloroethane	µg/L	[5] (H)	100	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20		<0.4	<1	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
1,2-Dichloropropane	µg/L	-	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.4	<1	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
1,3,5-Trimethylbenzene	µg/L	-	3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	--	--		--	--	<0.3	<0.3	<0.3	<0.2	NA	<0.2	<0.3
1,3-Dichlorobenzene	µg/L	-	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
Benzene	µg/L	5 (H)	100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.4	0.7	<0.5	<0.5	<0.5	0.14	0.12	0.14	<0.5
Bromodichloromethane	µg/L	100 (H)	200	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10		<0.2	<0.8	<0.3	<0.3	<0.3	<0.1	<0.10	<0.1	<0.3
Bromoform	µg/L	100 (H)	60	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
Bromomethane	µg/L	-	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50		<0.4	<3	<0.5	<0.5	<0.5	<0.5	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10		<0.4	<1	<0.2	<0.2	<0.2	<0.1	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/60] (A/H)	15	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10		<0.2	<0.5	<0.2	<0.2	<0.2	<0.1	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	40	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20		<0.2	<0.8	<0.3	<0.3	<0.3	<0.2	<0.20	<0.2	<0.3
Chloroethane	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--		<0.4	<2	<0.2	<0.2	<0.2	NA	NA	<0.2	<0.2
Chloroform	µg/L	100 (H)	--	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.1	<0.10		<0.2	<1	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Chloromethane	µg/L	-	700	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--		<0.8	<2	<0.2	<0.2	<0.2	NA	NA	<0.2	<0.2
cis-1,2-Dichloroethylene	µg/L	-	200	3.3	3.9	0.6	<0.4	5.5	<0.4	0.56	<0.10		<0.4	33	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
cis-1,3-Dichloropropylene	µg/L	-	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20		<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
Dichlorodifluoromethane	µg/L	-	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50		--	--	<0.5	<0.5	NA	<0.1	<0.50	<0.1	<0.5
Ethylbenzene	µg/L	[2.4] (A)	8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.2	<5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Ethylene Dibromide	µg/L	-	5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20		<0.4	<2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
m & p-Xylene	µg/L	300 (A)	2 and 30	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.4	<2	<0.5	<0.5	<0.5	0.27	0.22	0.27	<0.5
Methylene chloride	µg/L	50 (H)	100	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<0.5	<0.50		<0.6	<4	<4	<4	<4	<0.5	<0.50	<0.5	<4
o-Xylene	µg/L	300 (A)	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.2	<1	<0.5	<0.5	<0.5	0.1	<0.10	0.1	<0.5
Styrene	µg/L	-	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20		<0.2	<1	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	50	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10		<0.2	<0.8	<0.3	<0.3	<0.3	<0.1	<0.10	<0.1	<0.3
Toluene	µg/L	[24] (A)	0.8	0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20		<0.4	1.5	<0.5	<0.5	<0.5	0.28	0.28	0.28	<0.5
trans-1,2-Dichloroethylene	µg/L	-	200	<0.4	0.4	<0.4	<0.4	<0.4	<4.0	<0.1	<0.10		<0.4	1.7	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
trans-1,3-Dichloropropylene	µg/L	-	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20		<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
Trichloroethylene	µg/L	5 (H)	20	15.9	21	2.3	<0.3	29.2	<0.3	4.6	<0.10		<0.6	8	<0.3	<0.3	<0.3	<0.1	<0.1	<0.1	<0.3
Trichlorofluoromethane	µg/L	-	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20		<0.5	<2	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	600	0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20		<0.34	2.3	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	--	--	--	--	--	--	--	<0.1	<0.10		<0.4	<3	NA	NA	NA	<0.1	0.22	<0.1	<0.1

C) DEEP WELLS

Parameter	Units	ODWS (2003)[1]	PWQO (1994)[2]	Leachate Quality										Background Quality, Deep Monitoring Well							Overall Background Range	
				PS-1 Sample		MHBB Sample							Historical Leachate Wells* (GT1-89S, MW3-89, MW6-89)		MW29-D							
				13-Apr-12	13-Apr-12 (duplicate)	16-Jan-13	12-Jul-13	15-Nov-13	25-Apr-14	12-Nov-14	14-May-15		Min.	Max.	13-May-13	11-Nov-13	11-Nov-13 (duplicate)	28-May-14	29-May-14 (duplicate)	30-Oct-14	15-Apr-15	Min.	Max.
Volatile Organic Compounds																						
1,1,1,2-Tetrachloroethane	µg/L	-	20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20		<0.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	10	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10		<0.4	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
1,1,2,2-Tetrachloroethane	µg/L	-	70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20		<0.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	800	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.4	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,1-Dichloroethane	µg/L	-	200	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10		<0.4	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
1,1-Dichloroethylene	µg/L	14 (H)	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.2	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,2-Dichloroethane	µg/L	[5] (H)	100	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20		<0.4	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
1,2-Dichloropropane	µg/L	-	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.4	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
1,3,5-Trimethylbenzene	µg/L	-	3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	--	--		--	--	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	NA	<0.2	<0.3
1,3-Dichlorobenzene	µg/L	-	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.2	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.2	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
Benzene	µg/L	5 (H)	100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.4	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Bromodichloromethane	µg/L	100 (H)	200	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10		<0.2	<0.8	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.1	<0.3
Bromoform	µg/L	100 (H)	60	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20		<0.2	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
Bromomethane	µg/L	-	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50		<0.4	<3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10		<0.4	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/60] (A/H)	15	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10		<0.2	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	40	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20		<0.2	<0.8	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	<0.2	<0.3
Chloroethane	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--		<0.4	<2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	<0.2	<0.2
Chloroform	µg/L	100 (H)	--	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.1	<0.10		<0.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Chloromethane	µg/L	-	700	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--		<0.8	<2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	<0.2	<0.2
cis-1,2-Dichloroethylene	µg/L	-	200	3.3	3.9	0.6	<0.4	5.5	<0.4	0.56	<0.10		<0.4	33	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
cis-1,3-Dichloropropylene	µg/L	-	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20		<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
Dichlorodifluoromethane	µg/L	-	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50		--	--	<0.5	<0.5	NA	NA	NA	<0.1	<0.50	<0.1	<0.5
Ethylbenzene	µg/L	[2.4] (A)	8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.2	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Ethylene Dibromide	µg/L	-	5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20		<0.4	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
m & p-Xylene	µg/L	300 (A)	2 and 30	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.4	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Methylene chloride	µg/L	50 (H)	100	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<0.5	<0.50		<0.6	<4	<4	<4	<4	<4	<4	<0.5	<0.50	<0.5	<4
o-Xylene	µg/L	300 (A)	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10		<0.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Styrene	µg/L	-	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20		<0.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	50	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10		<0.2	<0.8	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.1	<0.3
Toluene	µg/L	[24] (A)	0.8	0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20		<0.4	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
trans-1,2-Dichloroethylene	µg/L	-	200	<0.4	0.4	<0.4	<0.4	<0.4	<4.0

TABLE A.4
SELECTION OF REASONABLE USE TRIGGER PARAMETERS [SEMI-VOLATILE ORGANIC COMPOUNDS]
ATLAS LANDFILL, WELLAND, ONTARIO

A) SHALLOW WELLS

Parameter	Units	ODWS (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Shallow Monitoring Wells					Overall Background Range	
				PS-1 Sample		MHBS Samples						Historical Leachate Wells* (GT1-89S, MW3-89, MW5-89)		MW28-S						
				13-Apr-12	13-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	15-Nov-13	23-Apr-14	12-Nov-14	14-May-15	Min.	Max.	15-May-13	11-Nov-13	29-May-14	29-Oct-14	21-Apr-15	Min.	Max.
Polycyclic Aromatic Hydrocarbons (PAHs)																				
Naphthalene	µg/L	--	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.075	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.05	<0.2
Acenaphthylene	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.2	NA	NA	<0.2	<0.2
Acenaphthene	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.2	NA	NA	<0.2	<0.2
Fluorene	µg/L	--	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.05	<0.2
Phenanthrene	µg/L	--	0.03	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.13	<0.030	<0.05	<0.2	<0.2	<0.05	<0.2	<0.03	<0.030	<0.03	<0.2
Anthracene	µg/L	--	0.0008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.050	<0.05	<0.5	<0.2	<0.01	<0.2	<0.05	<0.050	<0.01	<0.2
Fluoranthene	µg/L	--	0.0008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.18	<0.050	<0.05	<0.2	<0.2	<0.01	<0.2	<0.05	<0.050	<0.01	<0.2
Pyrene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	14.7	<0.2	<0.01	<0.2	NA	NA	<0.01	<0.2
Benzo(a)anthracene	µg/L	--	0.0004	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2	<0.2	<0.01	<0.2	<0.05	<0.050	<0.01	<0.2
Chrysene	µg/L	--	0.0001	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.055	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.05	<0.2
Benzo(b)fluoranthene	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.2	NA	NA	<0.05	<0.2
Benzo(k)fluoranthene	µg/L	--	0.0002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.05	<0.2
Benzo(a)pyrene	µg/L	0.01 (H)	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.016	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.03	<0.2	<0.2	<0.05	<0.2	NA	NA	<0.05	<0.2
Dibenzo(a,h)anthracene	µg/L	--	0.002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.09	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.05	<0.2
Benzo(g,h,i)perylene	µg/L	--	0.00002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.06	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.05	<0.2
Poly Chlorinated Biphenyls (PCBs)																				
Total PCB's	µg/L	(3) (H)	0.001	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.13	<0.05	<0.1	13	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.1
Petroleum Hydrocarbons (PHCs)																				
C6 - C10 (F1)	**µg/L**	**--**	**--**	<0.1	<0.1	<100	<100	<100	<25	--	<25	<0.025	<100	<100	<100	NA	<25	<25	<25	<100
C10 - C16 (F2)	**µg/L**	**--**	**--**	<0.1	<0.1	<100	<100	400	480	--	<100	<0.1	<100	<100	<100	NA	<100	<100	<100	<100
C16 - C34 (F3)	**µg/L**	**--**	**--**	<0.2	<0.2	400	<200	5500	9100	--	<200	<0.2	<500	700	<200	NA	<200	<200	<200	700
C34 - C50 (F4)	**µg/L**	**--**	**--**	<0.2	<0.2	<200	<200	<200	330	--	<200	<0.2	<500	200	<200	NA	<200	<200	<200	200

B) INTERMEDIATE WELLS

Parameter	Units	ODWS (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Intermediate Bedrock Wells					Overall Background Range	
				PS-1 Sample		MHBS Samples						Historical Leachate Wells* (GT1-89S, MW3-89, MW5-89)		MW28-I						
				13-Apr-12	13-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	15-Nov-13	23-Apr-14	12-Nov-14	14-May-15	Min.	Max.	15-May-13	11-Nov-13	29-May-14	29-Oct-14	16-Apr-15	Min.	Max.
Polycyclic Aromatic Hydrocarbons (PAHs)																				
Naphthalene	µg/L	-	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.075	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.05	<0.2
Acenaphthylene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.2	NA	NA	<0.05	<0.2
Acenaphthene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.2	NA	NA	<0.05	<0.2
Fluorene	µg/L	-	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.05	<0.2
Phenanthrene	µg/L	-	0.03	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.13	<0.030	<0.05	<0.2	<0.2	<0.05	<0.2	<0.03	<0.030	<0.03	<0.2
Anthracene	µg/L	-	0.0008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.050	<0.05	<0.5	<0.2	<0.01	<0.2	<0.05	<0.050	<0.01	<0.2
Fluoranthene	µg/L	-	0.0008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.18	<0.050	<0.05	<0.2	<0.2	<0.01	<0.2	<0.05	<0.050	<0.01	<0.2
Pyrene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	14.7	<0.2	<0.01	<0.2	NA	NA	<0.01	<0.2
Benzo(a)anthracene	µg/L	-	0.0004	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2	<0.2	<0.01	<0.2	<0.05	<0.050	<0.01	<0.2
Chrysene	µg/L	-	0.0001	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.055	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.05	<0.2
Benzo(b)fluoranthene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.2	NA		<0.05	<0.2
Benzo(k)fluoranthene	µg/L	-	0.0002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.05	<0.2
Benzo(a)pyrene	µg/L	0.01 (H)	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.016	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	0.02
Indeno(1,2,3-cd)pyrene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.03	<0.2	<0.2	<0.05	<0.2	NA	NA	<0.05	<0.2
Dibenzo(a,h)anthracene	µg/L	-	0.002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.09	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.05	<0.2
Benzo(g,h,i)perylene	µg/L	-	0.00002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.06	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.05	<0.2
Poly Chlorinated Biphenyls (PCBs)																				
Total PCB's	µg/L	(3) (H)	0.001	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.13	<0.05	<0.1	13	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.1
Petroleum Hydrocarbons (PHCs)																				
C6 - C10 (F1)	µg/L	--	--	<0.1	<0.1	<100	<100	<100	<25	--	<25	<0.025	<100	<100	<100	NA	<25	<25	<25	<100
C10 - C16 (F2)	µg/L	--	--	<0.1	<0.1	<100	<100	400	480	--	<100	<0.1	<100	<100	<100	NA	<100	<100	<100	<100
C16 - C34 (F3)	µg/L	--	--	<0.2	<0.2	400	<200	5500	9100	--	<200	<0.2	<500	600	<200	NA	<200	<200	<200	600
C34 - C50 (F4)	µg/L	--	--	<0.2	<0.2	<200	<200	<200	330	--	<200	<0.2	<500	<200	<200	NA	<200	<200	<200	<200

C) DEEP WELLS

Parameter	Units	ODWS (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Deep Monitoring Wells						Overall Background Range	
				PS-1 Sample		MHBS Sample						Historical Leachate Wells* (GT1-89S, MW3-89, MW5-89)		MW28-D							
				13-Apr-12	13-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	15-Nov-13	23-Apr-14	12-Nov-14	14-May-15	Min.	Max.	15-May-13	11-Nov-13	11-Nov-13 (duplicate)	29-May-14	29-May-14 (duplicate)	30-Oct-14	16-Apr-15	Min.	Max.
Polycyclic Aromatic Hydrocarbons (PAHs)																						
Naphthalene	µg/L	-	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.075	<0.050	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2		<0.050	<0.05	<0.2
Acenaphthylene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	NA	NA	<0.05	<0.2
Acenaphthene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	NA	NA	<0.05	<0.2
Fluorene	µg/L	-	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.050	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2
Phenanthrene	µg/L	-	0.03	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.13	<0.030	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.03	<0.030	<0.03	<0.2
Anthracene	µg/L	-	0.0008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.050	<0.05	<0.5	<0.2	<0.01	<0.01	<0.2	<0.2	<0.05	<0.050	<0.01	<0.2
Fluoranthene	µg/L	-	0.0008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.18	<0.050	<0.05	<0.2	<0.2	<0.01	<0.01	<0.2	<0.2	<0.05	<0.050	<0.01	<0.2
Pyrene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	14.7	<0.2	<0.01	<0.01	<0.2	<0.2	NA	NA	<0.01	<0.2
Benzo(a)anthracene	µg/L	-	0.0004	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2	<0.2	<0.01	<0.01	<0.2	<0.2	<0.05	<0.050	<0.01	<0.2
Chrysene	µg/L	-	0.0001	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.055	<0.050	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2
Benzo(b)fluoranthene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	NA	NA	<0.05	<0.2
Benzo(k)fluoranthene	µg/L	-	0.0002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2
Benzo(a)pyrene	µg/L	0.01 (H)	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.016	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.03	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	NA	NA	<0.05	<0.2
Dibenzo(a,h)anthracene	µg/L	-	0.002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.09	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2
Benzo(g,h,i)perylene	µg/L	-	0.00002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.06	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2
Poly Chlorinated Biphenyls (PCBs)																						
Total PCB's	µg/L	(3) (H)	0.001	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.13	<0.05	<0.1	13	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.1
Petroleum Hydrocarbons (PHCs)																						
C6 - C10 (F1)	µg/L	--	--	<0.1	<0.1	<100	<100	<100	<25	--	<25	<0.025	<100	<100	<100	<100	NA	NA	<25	<25	<25	<100
C10 - C16 (F2)	µg/L	--	--	<0.1	<0.1	<100	<100	400	480	--	<100	<0.1	<100	<100	<100	<100	NA	NA	<100	<100	<100	<100
C16 - C34 (F3)	µg/L	--	--	<0.2	<0.2	400	<200	5500	9100	--	<200	<0.2	<500	<200	<200	<200	NA	NA	<200	<200	<200	<200
C34 - C50 (F4)	µg/L	--	--	<0.2	<0.2	<200	<200	<200	330	--	<200	<0.2	<500	<200	<200	<200	NA	NA	<200	<200	<200	<200

- Maximum of leachate concentrations > 10 times upper bound background levels
- Maximum of leachate concentrations > 100 times upper bound background levels

Notes:
NA — Parameter not analyzed
-- — No value

1. Ontario Drinking Water Standard (ODWS)
a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) — Aesthetic Drinking Water Objective
(H) — Health Related Drinking Water Objective

2. Provincial Water Quality Objective (PWQO)

* - Decommissioned

ATTACHMENT B

TABLE B.1
SELECTION OF SURFACE WATER PROTECTION TRIGGER PARAMETERS [GENERAL CHEMISTRY, NUTRIENTS AND PHENOLS]
ATLAS LANDFILL, WELLAND, ONTARIO

A) SHALLOW WELLS

Parameter	Units	ODWS (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Shallow Monitoring Well					Overall Background Range	
				PS-1 Sample		MHBB Sample						Historical Leachate Wells* (GT1-99S, MW3-99, MW5-99)		MW28-S						
				13-Apr-12	13-Apr-12 (duplicate)	16-Jan-13	12-Jul-13	15-Nov-13	25-Apr-14	12-Nov-14	14-May-15	Min.	Max.	15-May-13	11-Nov-13	25-May-14	25-Oct-14	21-Apr-15	Min.	Max.
General Chemistry																				
pH (lab)		< 6.5-8.5 > (A)	6.5-8.5	10.8	11.1	11.3	7.98	11.7	7.71	9.88	7.7	7.9	11.7	7.78	7.65	7.41	7.70	7.58	7.41	7.78
Alkalinity (Total as $CaCO_3$)	mg/L	< 30-500 > (A)	--	102	155	189	96	303	111	40	140	234	507	497	495	493	490	480	480	497
Hardness ($CaCO_3$)	mg/L	< 80-100 > (A)	--	1040	944	716	1160	705	1900	627	2000	--	--	598	573	574	543	560	543	598
Conductivity (lab)	µmho/cm	--	--	3200	3290	2790	2070	3970	4390	1900	5900	960	1928	1070	1060	997	1100	1100	997	1100
Nutrients																				
Bromide (Br)	mg/L	--	--	0.78	0.78	0.33	0.31	0.7	6.82	5	<10	0.72	1.23	<0.25	<0.25	<0.25	<1	<1.0	<0.25	<1
Dissolved Chloride (Cl)	mg/L	[250] (A)	--	265	270	267	77	401	858	210	1200	13	223	6	4	3	6.4	8.8	3	8.8
Fluoride (F)	mg/L	1.5 (H)	--	2.85	3.06	2.77	1.79	4.54	1.97	2.6	1.2	0.74	14.3	0.18	0.25	0.21	0.21	0.22	0.18	0.25
Dissolved Organic Carbon (DOC)	mg/L	[5] (A)	--	15.4	16.2	10.6	7.5	17.5	11.1	10	12	11.7	11.7	9.9	11.6	11	12	11	9.9	12
Phosphorus (P)	mg/L	--	0.03	0.02	0.03	0.06	0.03	<0.01	0.01	0.067	0.021	0.02	0.5	0.01	<0.01	<0.01	0.026	<0.020	<0.01	0.026
Sulphate (SO_4)	mg/L	[500] (A)	--	1200	1100	696	963	750	1040	545	1400	25.9	1025	126	92	90	100	160	90	160
Ammonia-N	mg/L	--	--	7.22	7.36	7.49	0.57	0.75	1.58	5.4	0.28	0.03	10.4	0.61	0.61	0.38	0.89	0.25	0.25	0.89
[redacted]	mg/L	--	0.02	7.20	[redacted]	7.39	0.02	0.00	0.0021	1.58	0.0011	--	--	0.0038	0.0025	0.0007	0.0014	0.0011	0.0007	0.0038
Nitrite	mg/L	1 (A)	--	3.73	3.44	1.89	0.15	3.26	0.73	0.95	0.167	0.03	0.081	<0.1	<0.1	<0.1	<0.1	0.012	<0.1	<0.1
Nitrate	mg/L	10 (H)	--	4.5	4.93	8.43	5.6	12.75	8.84	3.42	14.5	0.889	0.889	<0.1	<0.1	<0.1	<0.01	<0.10	<0.01	<0.1
Total Dissolved Solids (TDS)	mg/L	[500] (A)	--	2560	2630	2090	1660	2980	3510	1270	4470	624	624	696	689	648	628	722	628	722
Total Kjeldahl Nitrogen (TKN)	mg/L	--	--	7.5	7.78	7.98	1.31	12.7	2.25	5.9	3.3	0.29	12.1	0.67	0.76	0.71	1	0.75	0.67	1
Phenols																				
Total Phenols	mg/L	--	0.001	0.002	0.003	0.003	<0.001	0.002	0.002	0.0048	<0.0010	0.007	0.093	<0.005	<0.001	<0.005	<0.001	<0.0010	<0.001	<0.005

B) INTERMEDIATE WELLS

Parameter	Units	ODWS (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Intermediate Monitoring Well					Overall Background Range	
				PS-1 Sample		MHBB Sample						Historical Leachate Wells* (GT1-99S, MW3-99, MW5-99)		MW28-I						
				13-Apr-12	13-Apr-12 (duplicate)	16-Jan-13	12-Jul-13	15-Nov-13	25-Apr-14	12-Nov-14	14-May-15	Min.	Max.	13-May-13	11-Nov-13	25-May-14	29-Oct-14	15-Apr-15	Min.	Max.
General Chemistry																				
pH (lab)		< 6.5-8.5 > (A)	6.5-8.5	10.8	11.1	11.3	7.98	11.7	7.71	9.88	7.7	7.9	11.7	7.69	7.76	7.68	7.48	7.84	7.48	7.76
Alkalinity (Total as $CaCO_3$)	mg/L	< 30-500 > (A)	--	102	155	189	96	303	111	40	140	234	507	61	49	58	58	58	49	61
Hardness ($CaCO_3$)	mg/L	< 80-100 > (A)	--	1040	944	716	1160	705	1900	627	2000	--	--	1830	1820	1790	1668	1700	1668	1830
Conductivity (lab)	µmho/cm	--	--	3200	3290	2790	2070	3970	4390	1900	5900	960	1928	2810	3070	2890	3000	2900	2810	3070
Nutrients																				
Bromide (Br)	mg/L	--	--	0.78	0.78	0.33	0.31	0.7	6.82	5	<10	0.72	1.23	<0.25	<0.25	0.26	<1	<10	<0.25	0.26
Dissolved Chloride (Cl)	mg/L	[250] (A)	--	265	270	267	77	401	858	210	1200	13	223	30	27	28	30	30	27	30
Fluoride (F)	mg/L	1.5 (H)	--	2.85	3.06	2.77	1.79	4.54	1.97	2.6	1.2	0.74	14.3	0.96	1.1	1.09	0.95	0.96	0.95	1.1
Dissolved Organic Carbon (DOC)	mg/L	[5] (A)	--	15.4	16.2	10.6	7.5	17.5	11.1	10	12	11.7	11.7	1.6	1.1	1.1	1.2	0.99	0.99	1.6
Phosphorus (P)	mg/L	--	0.03	0.02	0.03	0.06	0.03	<0.01	0.01	0.067	0.021	0.02	0.5	<0.01	<0.01	<0.01	0.028	<0.020	<0.01	<0.01
Sulphate (SO_4)	mg/L	[500] (A)	--	1200	1100	696	963	750	1040	545	1400	25.9	1025	1770	1860	1760	1800	1700	1700	1860
Ammonia-N	mg/L	--	--	7.22	7.36	7.49	0.57	0.75	1.58	5.4	0.28	0.03	10.4	0.63	0.48	0.44	0.4	0.44	0.4	0.63
[redacted]	mg/L	--	0.02	7.20	[redacted]	7.39	0.02	0.00	0.0021	1.58	0.0011	--	--	0.0109	0.0217	0.0038	0.0049	0.012	0.0038	0.0217
Nitrite	mg/L	1 (A)	--	3.73	3.44	1.89	0.15	3.26	0.73	0.95	0.17	0.03	0.081	<0.1	<0.1	<0.1	<0.1	<0.010	<0.1	<0.1
Nitrate	mg/L	10 (H)	--	4.5	4.93	8.43	5.6	12.75	8.84	3.42	14.5	0.889	0.889	<0.1	<0.1	<0.1	<0.01	<0.10	<0.1	<0.1
Total Dissolved Solids (TDS)	mg/L	[500] (A)	--	2560	2630	2090	1660	2980	3510	1270	4470	624	624	2250	2460	2310	2730	2690	2250	2730
Total Kjeldahl Nitrogen (TKN)	mg/L	--	--	7.5	7.78	7.98	1.31	12.7	2.25	5.9	3.3	0.29	12.1	0.72	0.47	0.42	0.83	0.85	<0.1	0.72
Phenols																				
Total Phenols	mg/L	--	0.001	0.002	0.003	0.003	<0.001	0.002	0.002	0.0048	<0.0010	0.007	0.093	<0.01	<0.001	<0.005	<0.001	<0.0010	<0.001	<0.01

C) DEEP WELLS

Parameter	Units	ODWS (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Deep Monitoring Well							Overall Background Range	
				PS-1 Sample		MHBB Sample						Historical Leachate Wells* (GT1-99S, MW3-99, MW5-99)		MW28-D								
				13-Apr-12	13-Apr-12 (duplicate)	16-Jan-13	12-Jul-13	15-Nov-13	25-Apr-14	12-Nov-14	14-May-15	Min.	Max.	13-May-13	11-Nov-13	11-Nov-13 (duplicate)	28-May-14	29-May-14 (duplicate)	29-Oct-14	16-Apr-15	Min.	Max.
General Chemistry																						
pH (lab)		< 6.5-8.5 > (A)	6.5-8.5	10.8	11.1	11.3	7.98	11.7	7.71	9.88	7.7	7.9	11.7	7.5	7.7	7.71	7.59	7.56	7.59	7.46	7.46	7.71
Alkalinity (Total as $CaCO_3$)	mg/L	< 30-500 > (A)	--	102	155	189	96	303	111	40	140	234	507	73	72	72	71	72	71	67	67	73
Hardness ($CaCO_3$)	mg/L	< 80-100 > (A)	--	1040	944	716	1160	705	1900	627	2000	--	--	1880	1700	1680	1867	1650	1702	1700	1680	1880
Conductivity (lab)	µmho/cm	--	--	3200	3290	2790	2070	3970	4390	1900	5900	960	1928	2880	2740	2740	2750	2750	2900	2800	2880	2900
Nutrients																						
Bromide (Br)	mg/L	--	--	0.78	0.78	0.33	0.31	0.7	6.82	5	<10	0.72	1.23	0.27	<0.25	<0.25	0.27	0.26	<5	<10	0.26	0.27
Dissolved Chloride (Cl)	mg/L	[250] (A)	--	265	270	267	77	401	858	210	1200	13	223	33	32	32	31	31	33	33	31	33
Fluoride (F)	mg/L	1.5 (H)	--	2.85	3.06	2.77	1.79	4.54	1.97	2.6	1.2	0.74	14.3	1.18	1.27	1.25	1.18	1.2	0.99	1	0.99	1.27
Dissolved Organic Carbon (DOC)	mg/L	[5] (A)	--	15.4	16.2	10.6	7.5	17.5	11.1	10	12	11.7	11.7	1	0.6	0.6	1	1.1	1.3	0.7	0.6	1.3
Phosphorus (P)	mg/L	--	0.03	0.02	0.03	0.06	0.03	<0.01	0.01	0.067	0.021	0.02	0.5	<0.01	<0.01	<0.01	<0.01	<0.01	0.031	<0.020	<0.01	<0.01
Sulphate (SO_4)	mg/L	[500] (A)	--	1200	1100	696	963	750	1040	545	1400	25.9	1025	1730	1640	1670	1670	1690	1700	1600	1600	1730
Ammonia-N	mg/L	--	--	7.22	7.36	7.49	0.57	0.75	1.58	5.4	0.28	0.03	10.4	0.57	0.57	0.58	0.53	0.53	0.43	0.49	0.43	0.57
[redacted]	mg/L	--	0.02	7.20	[redacted]	7.39	0.02	0.00	0.0021	1.58	0.0011	--	--	0.0088	0.0132	0.0130	0.0016	0.0016	0.0701	0.0078	0.0016	0.0701
Nitrite	mg/L	1 (A)	--	3.73	3.44	1.89	0.15	3.26	0.73	0.95	0.17	0.03	0.081	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.010	<0.1	<0.1
Nitrate	mg/L	10 (H)	--	4.5	4.93	8.43	5.6	12.75	8.84	3.42	14.5	0.889	0.889	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.10	<0.1	<0.1
Total Dissolved Solids (TDS)	mg/L	[500] (A)	--	2560	2630	2090	1660	2980	3510	1270	4470	624	624	2130	2190	2190	2200	2200	2630	2650	2130	2650
Total Kjeldahl Nitrogen (TKN)	mg/L	--	--	7.5	7.78	7.98	1.31	12.7	2.25	5.9	3.3	0.29	12.1	0.51	0.55	0.64	0.53	0.77	0.81	0.72	0.51	0.81
Phenols																						
Total Phenols	mg/L	--	0.001	0.002	0.003	0.003	<0.001	0.002	0.002	0.0048	<0.0010	0.007	0.093	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

- Maximum of leachate concentrations > 2 times PWQO
- Maximum of leachate concentrations > 5 times PWQO
- Maximum of leachate concentrations > 10 times PWQO
- Maximum of leachate concentrations > 100 times PWQO

Notes:

NA	Parameter not analyzed
--	No value

1. Ontario Drinking Water Standard (ODWS).
a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10
b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}
c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]
d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A)	Aesthetic Drinking Water Objective
(H)	Health Related Drinking Water Objective

2. Provincial Water Quality Objective (PWQO)
* - Decommissioned

TABLE B.2
SELECTION OF SURFACE WATER PROTECTION TRIGGER PARAMETERS [METALS]
ATLAS LANDFILL, WELLAND, ONTARIO

A) SHALLOW WELLS

Parameter	Units	ODWS (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Shallow Monitoring Well					Overall Background Range	
				PS-1 Sample		MHBB Sample						Historical Leachate Wells* (GT1-89S, MW3-89, MW5-89)		MW29-S						
				13-Apr-12	13-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	18-Nov-13	28-Apr-14	13-Nov-14	14-May-15	Min.	Max.	16-May-13	11-Nov-13	28-May-14	28-Oct-14	21-Apr-15	Min.	Max.
Metals																				
Aluminum (Al)	mg/L	< 0.1 > (A)	--	0.16	0.23	0.30	0.11	0.08	0.10	0.81	0.034	0.161	1.59	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.01
Antimony (Sb)	mg/L	{0.006} (H)	0.02	<0.0005	<0.0005	0.0016	0.0028	<0.0005	0.0026	0.0014	0.003	0.0007	<0.006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Arsenic (As)	mg/L	{0.025} (H)	0.1	<0.01	<0.01	<0.01	<0.01	<0.1	0.003	0.0047	0.002	0.016	<0.1	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.01
Barium (Ba)	mg/L	1 (H)	--	0.08	0.07	0.07	0.07	0.08	0.12	0.051	0.085	0.017	0.037	0.09	0.09	0.11	0.16	0.17	0.09	0.16
Beryllium (Be)	mg/L	--	0.011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003	<0.0005	<0.0005	<0.005	<0.0005	<0.0005	<0.0005	<0.005
Boron (B)	mg/L	{5} (H)	0.2	0.1	0.1	0.11	0.26	0.06	0.27	0.2	0.38	<0.02	0.218	0.06	0.1	0.1	0.062	0.062	0.062	0.1
Cadmium (Cd)	mg/L	0.005 (H)	0.0005	0.0003	0.0004	0.0001	0.0002	0.0004	0.0005	0.0005	0.00053	0.003	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium (Ca)	mg/L	--	--	415	378	277	353	279	520	180	530	14.1	448	157	137	149	140	150	137	157
Chromium (Cr)	mg/L	0.05 (H)	0.0089	0.089	0.085	<0.5	0.002	0.134	0.004	0.028	<0.005	<0.006	0.047	0.004	0.003	<0.001	<0.005	<0.005	<0.001	0.004
Cobalt (Co)	mg/L	--	0.0009	0.0017	0.0016	0.0013	0.0043	0.0011	0.0014	0.001	0.0015	<0.0002	0.007	0.0021	0.0021	0.0012	0.0016	0.0011	0.0011	0.0021
Copper (Cu)	mg/L	[1] (A)	0.005	0.018	0.02	0.013	0.009	0.015	0.01	0.017	0.0089	<0.001	0.03	0.001	<0.001	0.001	<0.001	0.0017	<0.001	0.001
Iron (Fe)	mg/L	[0.3] (A)	0.3	0.17	0.22	0.29	0.24	0.08	0.2	1	0.19	<0.03	0.836	0.09	2.84	0.14	0.31	<0.1	<0.03	2.84
Lead (Pb)	mg/L	0.01 (H)	0.001-0.005	0.001	0.001	0.007	0.001	0.018	0.001	0.01	0.0014	<0.001	0.073	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001
Magnesium (Mg)	mg/L	--	--	2	<1	6	68	2	146	43	170	0.61	<1	50	56	49	47	45	45	56
Manganese (Mn)	mg/L	[0.05] (A)	--	<0.01	<0.01	0.03	0.17	0.03	0.21	0.053	0.14	<0.002	0.506	0.21	0.23	0.14	0.17	0.18	0.14	0.23
Mercury (Hg)	mg/L	0.001 (H)	0.0002	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.0001
Molybdenum (Mo)	mg/L	--	0.04	1.88	2.01	1.29	0.271	2.4	0.397	0.087	0.16	<0.013	3.882	0.011	0.009	<0.005	0.0042	3.9	<0.005	0.011
Nickel (Ni)	mg/L	--	0.025	0.024	0.024	0.022	0.013	0.032	0.014	0.012	0.015	<0.003	0.045	<0.005	<0.005	<0.005	<0.003	0.0021	<0.003	<0.005
Potassium (K)	mg/L	--	--	58	54	51	8	86	43	32	74	7.75	115.3	7	5	3	3.7	3.5	3	7
Selenium (Se)	mg/L	0.01 (H)	0.1	<0.1	<0.1	0.014	<0.01	<0.1	0.004	0.0072	0.0076	0.008	<0.1	<0.01	<0.001	<0.001	<0.002	<0.002	<0.001	<0.01
Silver (Ag)	mg/L	--	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00011	<0.0001	<0.003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium (Na)	mg/L	[200] (A)	--	282	259	284	50	528	315	220	310	116	277.6	40	26	27	25	29	25	40
Strontium (Sr)	mg/L	--	--	3.07	2.82	1.93	2.69	1.8	5.15	1.4	4.7	0.106	6.95	0.73	0.929	0.853	0.81	0.88	0.81	0.93
Thallium (Tl)	mg/L	--	--	0.0001	0.0001	<0.0001	0.0002	<0.0001	0.0003	<0.00005	0.00028	<0.0001	<0.12	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0001
Tin (Sn)	mg/L	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01	<0.01	<0.01	<0.01	<0.005	<0.001	<0.005	<0.01
Titanium (Ti)	mg/L	--	--	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.005	<0.002	0.015	<0.01	0.012	0.007	0.0053	<0.005	<0.01	0.012
Uranium (U)	mg/L	0.02 (H)	0.005	<0.001	<0.001	<0.001	0.0030	<0.001	0.0030	0.0012	0.0067	<0.001	<0.002	0.013	0.007	<0.001	0.00062	0.0042	0.00062	0.013
Vanadium (V)	mg/L	--	0.006	0.002	0.002	0.005	0.001	0.013	<0.001	0.0054	0.0011	<0.002	0.163	0.002	<0.002	<0.002	<0.001	0.00074	<0.001	0.002
Zinc (Zn)	mg/L	[5] (A)	0.02	<0.01	<0.01	<0.01	0.01	<0.01	0.03	0.014	0.044	<0.004	0.028	<0.01	<0.01	<0.01	<0.001	<0.005	<0.01	<0.01
Zirconium (Zr)	mg/L	--	0.004	<0.002	<0.02	0.002	<0.02	0.007	<0.002	<0.001	<0.001	<0.003	<0.004	<0.002	<0.01	<0.01	<0.005	<0.001	<0.002	<0.01

B) INTERMEDIATE WELLS

Parameter	Units	ODWS (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Intermediate Monitoring Well					Overall Background Range	
				PS-1 Sample		MHBB Sample						Historical Leachate Wells* (GT1-89S, MW3-89, MW5-89)		MW29-I						
				13-Apr-12	13-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	18-Nov-13	28-Apr-14	13-Nov-14	14-May-15	Min.	Max.	16-May-13	11-Nov-13	28-May-14	28-Oct-14	16-Apr-15	Min.	Max.
Metals																				
Aluminum (Al)	mg/L	< 0.1 > (A)	--	0.18	0.23	0.30	0.11	0.08	0.10	0.81	0.03	0.161	1.59	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.01
Antimony (Sb)	mg/L	{0.006} (H)	0.02	<0.0005	<0.0005	0.0016	0.0028	<0.0005	0.0026	0.0014	0.003	0.0007	<0.006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005
Arsenic (As)	mg/L	{0.025} (H)	0.1	<0.01	<0.01	<0.01	<0.01	<0.1	0.003	0.0047	0.002	0.016	<0.1	<0.01	<0.01	0.002	0.0012	0.0015	<0.001	<0.01
Barium (Ba)	mg/L	1 (H)	--	0.08	0.07	0.07	0.07	0.08	0.12	0.051	0.085	0.017	0.037	0.02	0.01	0.01	0.01	0.01	0.01	0.02
Beryllium (Be)	mg/L	--	0.011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron (B)	mg/L	{5} (H)	0.2	0.1	0.1	0.11	0.26	0.06	0.27	0.2	0.38	<0.02	0.218	0.9	0.86	0.99	0.91	0.97	0.86	0.99
Cadmium (Cd)	mg/L	0.005 (H)	0.0005	0.0003	0.0004	0.0001	0.0002	0.0004	0.0005	0.0005	0.00053	0.003	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium (Ca)	mg/L	--	--	415	378	277	353	279	520	180	530	14.1	448	520	495	514	470	470	470	520
Chromium (Cr)	mg/L	0.05 (H)	0.0089	0.089	0.085	<0.5	0.002	0.134	0.004	0.028	<0.005	<0.006	0.047	<0.001	0.001	<0.001	<0.005	<0.005	<0.001	<0.005
Cobalt (Co)	mg/L	--	0.0009	0.0017	0.0016	0.0013	0.0043	0.0011	0.0014	0.001	0.0015	<0.0002	0.007	0.0012	0.0007	<0.0002	<0.001	<0.001	0.0007	0.0012
Copper (Cu)	mg/L	[1] (A)	0.005	0.018	0.02	0.013	0.009	0.015	0.01	0.017	0.0089	<0.001	0.03	0.001	0.002	<0.001	<0.001	<0.001	<0.001	0.002
Iron (Fe)	mg/L	[0.3] (A)	0.3	0.17	0.22	0.29	0.24	0.08	0.2	1	0.19	<0.03	0.836	0.07	0.07	0.65	0.47	0.81	0.07	0.65
Lead (Pb)	mg/L	0.01 (H)	0.001-0.005	0.001	0.001	0.007	0.001	0.018	0.001	0.01	0.0014	<0.001	0.073	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001
Magnesium (Mg)	mg/L	--	--	2	<1	6	68	2	146	43	170	0.61	<1	130	143	123	120	120	120	143
Manganese (Mn)	mg/L	[0.05] (A)	--	<0.01	<0.01	0.03	0.17	0.03	0.21	0.053	0.14	<0.002	0.506	0.09	0.1	0.1	0.08	0.087	0.08	0.1
Mercury (Hg)	mg/L	0.001 (H)	0.0002	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.0001
Molybdenum (Mo)	mg/L	--	0.04	1.88	2.01	1.29	0.271	2.4	0.397	0.087	0.16	<0.013	3.882	0.018	0.023	0.012	0.012	13	0.012	13
Nickel (Ni)	mg/L	--	0.025	0.024	0.024	0.022	0.013	0.032	0.014	0.012	0.015	<0.003	0.045	0.015	0.014	<0.005	<0.002	<0.001	<0.002	0.015
Potassium (K)	mg/L	--	--	58	54	51	8	86	43	32	74	7.75	115.3	10	7	4	5.2	5.2	4	10
Selenium (Se)	mg/L	0.01 (H)	0.1	<0.1	<0.1	0.014	<0.01	<0.1	0.004	0.0072	0.0076	0.008	<0.1	<0.01	<0.01	<0.001	<0.002	<0.002	<0.001	<0.01
Silver (Ag)	mg/L	--	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00011	<0.0001	<0.003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium (Na)	mg/L	[200] (A)	--	282	259	284	50	528	315	220	310	116	277.6	123	166	129	120	130	120	166
Strontium (Sr)	mg/L	--	--	3.07	2.82	1.93	2.69	1.8	5.15	1.4	4.7	0.106	6.95	9.86	10.9	10.6	10	10	9.86	10.9
Thallium (Tl)	mg/L	--	--	0.0001	0.0001	<0.0001	0.0002	<0.0001	0.0003	<0.00005	0.00028	<0.0001	<0.12	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0001
Tin (Sn)	mg/L	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01	<0.01	<0.01	<0.01	<0.005	<0.001	<0.005	<0.01
Titanium (Ti)	mg/L	--	--	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.005	<0.002	0.015	<0.01	<0.001	<0.001	0.0002	<0.005	<0.01	0.0002
Uranium (U)	mg/L	0.02 (H)	0.005	<0.001	<0.001	<0.001	0.0030	<0.001	0.0030	0.0012	0.0067	<0.001	<0.002	<0.001	<0.001	<0.001	<0.0005	0.00016	<0.0005	<0.001
Vanadium (V)	mg/L	--	0.006	0.002	0.002	0.005	0.001	0.013	<0.001	0.0054	0.0011	<0.002	0.163	<0.001	<0.002	<0.002	<0.001	<0.0005	<0.001	<0.002
Zinc (Zn)	mg/L	[5] (A)	0.02	<0.01	<0.01	<0.01	0.01	<0.01	0.03	0.014	0.044	<0.004	0.028	<0.01	<0.01	<0.01	<0.001	<0.025	<0.01	<0.001
Zirconium (Zr)	mg/L	--	0.004	<0.002	<0.02	0.002	<0.02	0.007	<0.002	<0.001	<0.001	<0.003	<0.004	<0.002	<0.01	<0.01	<0.01	<0.001	<0.002	<0.01

C) DEEP WELLS

Parameter	Units	ODWS (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Intermediate Monitoring Well							Overall Background Range	
				PS-1 Sample		MHBB Sample						Historical Leachate Wells* (GT1-89S, MW3-89, MW5-89)		MW29-D								
				13-Apr-12	13-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	18-Nov-13	28-Apr-14	13-Nov-14	14-May-15	Min.	Max.	16-May-13	11-Nov-13	11-Nov-13 (duplicate)	28-May-14	28-May-14 (duplicate)	30-Oct-14	16-Apr-15	Min.	Max.
Metals																						
Aluminum (Al)	mg/L	< 0.1 > (A)	--	0.18	0.23	0.30	0.11	0.08	0.10	0.81	0.03	0.161	1.59	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01
Antimony (Sb)	mg/L	{0.006} (H)	0.02	<0.0005	<0.0005	0.0016	0.0028	<0.0005	0.0026	0.0014	0.003	0.0007	<0.006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic (As)	mg/L	{0.025} (H)	0.1	<0.01	<0.01	<0.01	<0.01	<0.1	0.003	0.0047	0.002	0.016	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	0.0068	<0.01	0.007
Barium (Ba)	mg/L	1 (H)	--	0.08	0.07	0.07	0.07	0.08	0.12	0.051	0.085	0.017	0.037	<0.01	<0.01	<0.01	<0.01	<0.01	0.007	0.0068	<0.01	0.007
Beryllium (Be)	mg/L	--	0.011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron (B)	mg/L	{5} (H)	0.2	0.1	0.1	0.11	0.26	0.06	0.27	0.2	0.38	<0.02	0.218	1.2	1.2	1.2	1.4	1.3	1.1	1.1	1.1	1.4
Cadmium (Cd)	mg/L	0.005 (H)	0.0005	0.0003	0.0004	0.0001	0.0002	0.0004	0.0005	0.0005	0.00053	0.003	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium (Ca)	mg/L	--	--	415	378	277	353	279	520	180	530	14.1	448	577	532	524	578	576	520	520	520	578
Chromium (Cr)	mg/L	0.05 (H)	0.0089	0.089	0.085	<0.5	0.002	0.134	0.004	0.028	<0.005	<0.006	0.047	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.005
Cobalt (Co)	mg/L	--	0.0009	0.0017	0.0016	0.0013	0.0043	0.0011	0.0014	0.001	0.0015	<0.0002	0.007	0.0007	0.0007	0.0007	<0.0002	<0.0002	<0.001	<0.001	<0.0002	<0.001
Copper (Cu)	mg/L	[1] (A)	0.005	0.018	0.02	0.013	0.009	0.015	0.01	0.017	0.0089	<0.001	0.03	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (Fe)	mg/L	[0.3] (A)	0.3	0.17	0.22	0.29	0.24	0.08	0.2	1	0.19	<0.03	0.836	0.33	0.49	0.52	0.46	0.45	0.5	0.56	0.33	0.52
Lead (Pb)	mg/L	0.01 (H)	0.001-0.005	0.001	0.001	0.007	0.001	0.018	0.001	0.01	0.0014	<0.001	0.073	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Magnesium (Mg)	mg/L	--	--	2	<1	6	68	2	146	43	170	0.61	<1	108	91	90	103	100	98	96	90	108
Manganese (Mn)	mg/L	[0.05] (A)	--	<0.01	<0.01	0.03	0.17	0.03	0.21	0.053	0.14	<0.002	0.506	0.04	0.04	0.04	0.05	0.05	0.038	0.041	0.038	0.05
Mercury (Hg)	mg/L	0.001 (H)	0.0002	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.0001
Molybdenum (Mo)	mg/L	--	0.04	1.88	2.01	1.29	0.271	2.4	0.397	0.087	0.16	<0.013	3.882	<0.005	<0.005	<0.005	<0.005	<0.005	0.0047	4.8	<0.005	<0.005
Nickel (Ni)	mg/L	--	0.025	0.024	0.024	0.022	0.013	0.032	0.014	0.012	0.015	<0.003	0.045	0.007	0.005	0.006	<0.005	<0.005	<0.002	<0.005	<0.002	0.006
Potassium (K)	mg/L	--	--	58	54	51	8	86	43	32	74	7.75	115.3	11	9	8	8	7	6.7	7.6	6.7	11
Selenium (Se)	mg/L	0.01 (H)	0.1	<0.1	<0.1	0.014	<0.01	<0.1	0.004	0.0072	0.0076	0.008	<0.1	<0.01	<0.01	<0.01	<0.001	<0.002	<0.002	<0.002	<0.001	<0.01
Silver (Ag)	mg/L	--	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00011	<0.0001	<0.003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium (Na)	mg/L	[200] (A)	--	282	259	284	50	528	315	220	310	116	277.6	68	64	64	78	72	77	88	64	78
Strontium (Sr)	mg/L	--	--	3.07	2.82	1.93	2.69	1.8	5.15	1.4	4.7	0.106	6.95	8.77	10	9.97	11.3	10	11.2	9.8	8.77	11.3
Thallium (Tl)	mg/L	--	--	0.0001	0.0001	<0.0001	0.0002	<0.0001	0.0003	<0.00005	0.00028	<0.0001	<0.12	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0001
Tin (Sn)	mg/L	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.001	<0.005	<0.01
Titanium (Ti)	mg/L	--	--	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.005	<0.002	0.015	<0.01	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.005	<0.0001	<0.01
Uranium (U)	mg/L	0.02 (H)	0.005	<0.001	<0.001	<0.001	0.0030	<0.001	0.0030	0.0012	0.0067	<0.001	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.0005	0.00011	<0.0005	<0.001
Vanadium (V)	mg/L	--	0.006	0.002	0.002	0.005	0.001	0.013	<0.001	0.0054	0.0011	<0.002	0.163	<0.001	<0.002	0.002	<0.002	<0.002	<0.001	<0.0005	<0.001	0.002
Zinc (Zn)	mg/L	[5] (A)	0.02	<0.01	<0.01	<0.01	0.01	<0.01	0.03	0.014	0.044	<0.004	0.028	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.025	<0.001	<0.01
Zirconium (Zr)	mg/L	--	0.004	<0.002	<0.02	0.002	<0.02	0.007	<0.002	<0.001	<0.001	<0.003	<0.004	0.002	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	0.002

- Maximum of leachate concentrations > 2 times PWQO
- Maximum of leachate concentrations > 5 times PWQO
- Maximum of leachate concentrations > 10 times PWQO
- Maximum of leachate concentrations > 100 times PWQO

Notes:

NA — Parameter not analyzed
-- — No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) — Aesthetic Drinking Water Objective
(H) — Health Related Drinking Water Objective

2. Provincial Water Quality Objective (PWQO)

* - Decommissioned

TABLE B.3
SELECTION OF SURFACE WATER PROTECTION TRIGGER PARAMETERS [VOLATILE ORGANIC COMPOUNDS]
ATLAS LANDFILL, WELLAND, ONTARIO

A) SHALLOW WELLS

Parameter	Units	ODWS (2003)[1]	PWQO (1994)[2]	Leachate Quality										Background Quality, Shallow Monitoring Well						Overall Background Range	
				PS-1 Sample		MHBR Sample						Historical Leachate Wells[3] (GT1-99S, MW2-99, MW5-99)		MW2S-S							
				12-Apr-12	12-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	15-Nov-13	28-Apr-14	12-Nov-14	14-May-15	Min.	Max.	15-May-13	11-Nov-13	29-May-14	29-Oct-14	21-Apr-15	Min.	Max.
Volatile Organic Compounds																				
1,1,1,2-Tetrachloroethane	µg/L	--	20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<1	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	--	10	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.4	<0.8	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
1,1,2,2-Tetrachloroethane	µg/L	--	70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<1	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	--	600	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.4	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,1-Dichloroethane	µg/L	--	200	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.4	<0.8	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
1,1-Dichloroethylene	µg/L	14 (H)	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.5	<1	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,2-Dichloroethane	µg/L	(5) (H)	100	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.4	<1	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
1,2-Dichloropropane	µg/L	--	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.4	<1	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
1,3,5-Trimethylbenzene	µg/L	--	3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	--	--	--	--	<0.3	<0.3	<0.3	<0.1	--	<0.1	<0.3
1,3-Dichlorobenzene	µg/L	--	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
Benzene	µg/L	5 (H)	100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.4	0.7	<0.5	<0.5	<0.5	0.14	<0.10	0.14	<0.5
Bromodichloromethane	µg/L	100 (H)	200	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.2	<0.8	<0.3	<0.3	<0.3	<0.1	<0.10	<0.1	<0.3
Bromoform	µg/L	100 (H)	60	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
Bromomethane	µg/L	--	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.4	<3	<0.5	<0.5	<0.5	<0.5	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.4	<1	<0.2	<0.2	<0.2	<0.1	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/60] (A/H)	15	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.2	<0.5	<0.2	<0.2	<0.2	<0.1	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	40	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	<0.2	<0.6	<0.3	<0.3	<0.3	<0.2	<0.20	<0.2	<0.3
Chloroethane	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.4	<2	<0.2	<0.2	<0.2	NA	--	<0.2	<0.2
Chloroform	µg/L	100 (H)	--	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.1	<0.10	<0.2	<1	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Chloromethane	µg/L	--	700	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.8	<2	<0.2	<0.2	<0.2	NA		<0.2	<0.2
cis-1,2-Dichloroethylene	µg/L	--	200	3.3	3.9	0.6	<0.4	5.5	<0.4	0.56	<0.10	<0.4	33	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
cis-1,3-Dichloropropylene	µg/L	--	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
Dichlorodifluoromethane	µg/L	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	--	--	<0.5	<0.5	NA	<0.1	<0.50	<0.1	<0.5
Ethylbenzene	µg/L	[2.4] (A)	8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.2	<5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Ethylene Dibromide	µg/L	--	5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.4	<2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
m & p-Xylene	µg/L	300 (A)	2 and 30	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.4	<2	<0.5	<0.5	<0.5	<0.1	0.24	<0.1	<0.5
Methylene chloride	µg/L	50 (H)	100	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<0.5	<0.50	<0.6	<4	<4	<4	<4	<4	<0.5	<0.50	<0.5	<4
o-Xylene	µg/L	300 (A)	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.2	<1	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Styrene	µg/L	--	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<1	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	50	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.2	<0.6	<0.3	<0.3	<0.3	<0.1	<0.10	<0.1	<0.3
Toluene	µg/L	[24] (A)	0.8	0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.4	1.5	<0.5	<0.5	<0.5	<0.2	1.3	<0.2	<0.5
trans-1,2-Dichloroethylene	µg/L	--	200	<0.4	0.4	<0.4	<0.4	<0.4	<4.0	<0.1	<0.10	<0.4	1.7	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
trans-1,3-Dichloropropylene	µg/L	--	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.6	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
Trichloroethylene	µg/L	5 (H)	20	15.9	21	2.3	<0.3	25.3	<0.3	4.6	<0.10	<0.6	8	<0.3	<0.3	<0.3	<0.1	<0.10	<0.1	<0.3
Trichlorofluoromethane	µg/L	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.5	<2	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	600	0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.34	2.3	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	--	--	--	--	--	--	--	<0.1	<0.10	<0.4	<3	NA	NA	NA	<0.1	0.24	<0.1	<0.1

B) INTERMEDIATE WELLS

Parameter	Units	ODWS (2003)[1]	PWQO (1994)[2]	Leachate Quality										Background Quality, Intermediate Monitoring Well						Overall Background Range	
				PS-1 Sample		MHBR Sample						Historical Leachate Wells[3] (GT1-99S, MW2-99, MW5-99)		MW2S-I							
				12-Apr-12	12-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	15-Nov-13	28-Apr-14	12-Nov-14	14-May-15	Min.	Max.	13-May-13	11-Nov-13	29-May-14	29-Oct-14	16-Apr-15	Min.	Max.
Volatile Organic Compounds																				
1,1,1,2-Tetrachloroethane	µg/L	--	20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<1	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	--	10	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.4	<0.8	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
1,1,2,2-Tetrachloroethane	µg/L	--	70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<1	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	600	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.4	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,1-Dichloroethane	µg/L	-	200	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.4	<0.8	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
1,1-Dichloroethylene	µg/L	14 (H)	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.5	<1	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,2-Dichloroethane	µg/L	(5) (H)	100	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.4	<1	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
1,2-Dichloropropane	µg/L	-	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.4	<1	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
1,3,5-Trimethylbenzene	µg/L	-	3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	--	--	--	--	<0.3	<0.3	<0.3	<0.2	NA	<0.2	<0.3
1,3-Dichlorobenzene	µg/L	-	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
Benzene	µg/L	5 (H)	100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.4	0.7	<0.5	<0.5	<0.5	0.14	0.12	0.14	<0.5
Bromodichloromethane	µg/L	100 (H)	200	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.2	<0.6	<0.3	<0.3	<0.3	<0.1	<0.10	<0.1	<0.3
Bromoform	µg/L	100 (H)	60	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.8	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
Bromomethane	µg/L	-	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.4	<3	<0.5	<0.5	<0.5	<0.5	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.4	<1	<0.2	<0.2	<0.2	<0.1	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/60] (A/H)	15	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.2	<0.5	<0.2	<0.2	<0.2	<0.1	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	40	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	<0.2	<0.6	<0.3	<0.3	<0.3	<0.2	<0.20	<0.2	<0.3
Chloroethane	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.4	<2	<0.2	<0.2	<0.2	NA	NA	<0.2	<0.2
Chloroform	µg/L	100 (H)	--	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.1	<0.10	<0.2	<1	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Chloromethane	µg/L	-	700	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.8	<2	<0.2	<0.2	<0.2	NA	NA	<0.2	<0.2
cis-1,2-Dichloroethylene	µg/L	-	200	3.3	3.9	0.6	<0.4	5.5	<0.4	0.56	<0.10	<0.4	33	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
cis-1,3-Dichloropropylene	µg/L	-	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
Dichlorodifluoromethane	µg/L	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	--	--	<0.5	<0.5	NA	<0.1	<0.50	<0.1	<0.5
Ethylbenzene	µg/L	[2.4] (A)	8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.2	<5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Ethylene Dibromide	µg/L	-	5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.4	<2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
m & p-Xylene	µg/L	300 (A)	2 and 30	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.4	<2	<0.5	<0.5	<0.5	0.27	0.22	0.27	<0.5
Methylene chloride	µg/L	50 (H)	100	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<0.5	<0.50	<0.6	<4	<4	<4	<4	<0.5	<0.50	<0.5	<4
o-Xylene	µg/L	300 (A)	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.2	<1	<0.5	<0.5	<0.5	<0.1	<0.10	0.1	<0.5
Styrene	µg/L	-	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<1	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	50	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.2	<0.6	<0.3	<0.3	<0.3	<0.1	<0.10	<0.1	<0.3
Toluene	µg/L	[24] (A)	0.8	0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.4	1.5	<0.5	<0.5	<0.5	0.28	0.26	0.28	<0.5
trans-1,2-Dichloroethylene	µg/L	-	200	<0.4	0.4	<0.4	<0.4	<0.4	<4.0	<0.1	<0.10	<0.4	1.7	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
trans-1,3-Dichloropropylene	µg/L	-	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.6	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
Trichloroethylene	µg/L	5 (H)	20	15.9	21	2.3	<0.3	25.3	<0.3	4.6	<0.10	<0.6	8	<0.3	<0.3	<0.3	<0.1	<0.10	<0.1	<0.3
Trichlorofluoromethane	µg/L	-	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.5	<2	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	600	0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.34	2.3	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	--	--	--	--	--	--	--	<0.1	<0.10	<0.4	<3	NA	NA	NA	NA	NA	<0.1	<0.1

C) DEEP WELLS

Parameter	Units	ODWS (2003)[1]	PWQO (1994)[2]	Leachate Quality										Background Quality, Deep Monitoring Well							Overall Background Range	
				PS-1 Sample		MHBR Sample						Historical Leachate Wells[3] (GT1-99S, MW2-99, MW5-99)		MW2S-D								
				12-Apr-12	12-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	15-Nov-13	28-Apr-14	12-Nov-14	14-May-15	Min.	Max.	13-May-13	11-Nov-13	11-Nov-13 (duplicate)	28-May-14	28-May-14 (duplicate)	30-Oct-14	16-Apr-15	Min.	Max.
Volatile Organic Compounds																						
1,1,1,2-Tetrachloroethane	µg/L	-	20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	10	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.4	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
1,1,2,2-Tetrachloroethane	µg/L	-	70	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	600	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.4	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,1-Dichloroethane	µg/L	-	200	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.4	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
1,1-Dichloroethylene	µg/L	14 (H)	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,2-Dichloroethane	µg/L	(5) (H)	100	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.4	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
1,2-Dichloropropane	µg/L	-	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.4	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
1,3,5-Trimethylbenzene	µg/L	-	3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	--	--	--	--	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	NA	<0.2	<0.3
1,3-Dichlorobenzene	µg/L	-	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
Benzene	µg/L	5 (H)	100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.4	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Bromodichloromethane	µg/L	100 (H)	200	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.2	<0.8	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.1	<0.3
Bromoform	µg/L	100 (H)	60	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.2	<0.4
Bromomethane	µg/L	-	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.4	<3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.4	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/60] (A/H)	15	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.2	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	40	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	<0.2	<0.6	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	<0.2	<0.3
Chloroethane	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.4	<2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	<0.2	<0.2
Chloroform	µg/L	100 (H)	--	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.1	<0.10	<0.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Chloromethane	µg/L	-	700	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.8	<2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	<0.2	<0.2
cis-1,2-Dichloroethylene	µg/L	-	200	3.3	3.9	0.6	<0.4	5.5	<0.4	0.56	<0.10	<0.4	33	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
cis-1,3-Dichloropropylene	µg/L	-	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
Dichlorodifluoromethane	µg/L	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	--	--	<0.5	<0.5	<0.5	NA	NA	<0.1	<0.50	<0.1	<0.5
Ethylbenzene	µg/L	[2.4] (A)	8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.2	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Ethylene Dibromide	µg/L	-	5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.4	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
m & p-Xylene	µg/L	300 (A)	2 and 30	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.4	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Methylene chloride	µg/L	50 (H)	100	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<0.5	<0.50	<0.6	<4	<4	<4	<4	<4	<4	<0.5	<0.50	<0.5	<4
o-Xylene	µg/L	300 (A)	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.1	<0.5
Styrene	µg/L	-	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	50	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.2	<0.6	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.1	<0.3
Toluene	µg/L	[24] (A)	0.8	0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.4	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.2	<0.5
trans-1,2-Dichloroethylene	µg/L	-	200	<0.4	0.4	<0.4	<0.4	<0.4	<4.0	<0.1	<0.10	<0.4	1.7	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.1	<0.4
trans-1,3-Dich

TABLE B.4
SELECTION OF SURFACE WATER PROTECTION TRIGGER PARAMETERS [SEMI-VOLATILE ORGANIC COMPOUNDS]
ATLAS LANDFILL, WELLAND, ONTARIO

A) SHALLOW WELLS

Parameter	Units	CCME (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Shallow Monitoring Wells						Overall Background Range	
				FS-1 Sample		MHRB Samples						Historical Leachate Wells* (GT1-96S, MW3-96, MW5-96)		MW2B-S							
				13-Apr-12	13-Apr-12 (duplicate)	16-Jan-13	12-Jul-13	15-Nov-13	29-Apr-14	12-Nov-14	14-May-15	Min	Max	15-May-13	11-Nov-13	29-May-14	29-Oct-14	21-Apr-15		Min	Max
Polycyclic Aromatic Hydrocarbons (PAHs)																					
Naphthalene	µg/L	--	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.075	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050		<0.05	<0.2
Acenaphthylene	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.2	NA	NA		<0.2	<0.2
Acenaphthene	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.2	NA	NA		<0.2	<0.2
Fluorene	µg/L	--	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050		<0.05	<0.2
Phenanthrene	µg/L	--	0.03	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.13	<0.030	<0.05	<0.2	<0.2	<0.05	<0.2	<0.03	<0.030		<0.03	<0.2
Anthracene	µg/L	--	0.0008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.050	<0.05	<0.5	<0.2	<0.01	<0.2	<0.05	<0.050		<0.01	<0.2
Fluoranthene	µg/L	--	0.0008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.18	<0.050	<0.05	<0.2	<0.2	<0.01	<0.2	<0.05	<0.050		<0.01	<0.2
Pyrene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	14.7	<0.2	<0.01	<0.2	NA	NA		<0.01	<0.2
Benzo(a)anthracene	µg/L	--	0.0004	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2	<0.2	<0.01	<0.2	<0.05	<0.050		<0.01	<0.2
Chrysene	µg/L	--	0.0001	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.055	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050		<0.05	<0.2
Benzo(b)fluoranthene	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.2	NA	NA		<0.05	<0.2
Benzo(k)fluoranthene	µg/L	--	0.0002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050		<0.05	<0.2
Benzo(a)pyrene	µg/L	0.01 (H)	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.018	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010		<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.03	<0.2	<0.2	<0.05	<0.2	NA	NA		<0.05	<0.2
Dibenzo(a,h)anthracene	µg/L	--	0.002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.09	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050		<0.05	<0.2
Benzo(g,h,i)perylene	µg/L	--	0.00002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.06	<0.050	<0.08	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050		<0.05	<0.2
Poly Chlorinated Biphenyls (PCBs)																					
[redacted]	µg/L	(3) (H)	0.001	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.13	<0.05	<0.1	[redacted]	<0.1	<0.1	<0.1	<0.05	<0.05		<0.05	<0.1
Petroleum Hydrocarbons (PHCs)																					
C6 - C10 (F1)	µg/L	--	--	<0.1	<0.1	<100	<100	<100	<25	--	<25	<0.025	<100	<100	<100	NA	<25	<25		<25	<100
C10 - C16 (F2)	µg/L	--	--	<0.1	<0.1	<100	<100	400	480	--	<100	<0.1	<100	<100	<100	NA	<100	<100		<100	<100
C16 - C34 (F3)	µg/L	--	--	<0.2	<0.2	400	<200	5500	9100	--	<200	<0.2	<500	700	<200	NA	<200	<200		<200	700
C34 - C50 (F4)	µg/L	--	--	<0.2	<0.2	<200	<200	<200	330	--	<200	<0.2	<500	200	<200	NA	<200	<200		<200	200

B) INTERMEDIATE WELLS

Parameter	Units	CCME (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Intermediate Monitoring Wells						Overall Background Range	
				FS-1 Sample		MHRB Samples						Historical Leachate Wells* (GT1-96S, MW3-96, MW5-96)		MW3B-I							
				13-Apr-12	13-Apr-12 (duplicate)	16-Jan-13	12-Jul-13	15-Nov-13	29-Apr-14	12-Nov-14	14-May-15	Min	Max	13-May-13	11-Nov-13	29-May-14	29-Oct-14	16-Apr-15		Min	Max
Polycyclic Aromatic Hydrocarbons (PAHs)																					
Naphthalene	µg/L	-	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.075	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050		<0.05	<0.2
Acenaphthylene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.2	NA	NA		<0.05	<0.2
Acenaphthene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.2	NA	NA		<0.05	<0.2
Fluorene	µg/L	-	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050		<0.05	<0.2
Phenanthrene	µg/L	-	0.03	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.13	<0.030	<0.05	<0.2	<0.2	<0.05	<0.2	<0.03	<0.030		<0.03	<0.2
Anthracene	µg/L	-	0.0008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.050	<0.05	<0.5	<0.2	<0.01	<0.2	<0.05	<0.050		<0.01	<0.2
Fluoranthene	µg/L	-	0.0008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.18	<0.050	<0.05	<0.2	<0.2	<0.01	<0.2	<0.05	<0.050		<0.01	<0.2
Pyrene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	14.7	<0.2	<0.01	<0.2	NA	NA		<0.01	<0.2
Benzo(a)anthracene	µg/L	-	0.0004	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2	<0.2	<0.01	<0.2	<0.05	<0.050		<0.01	<0.2
Chrysene	µg/L	-	0.0001	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.055	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050		<0.05	<0.2
Benzo(b)fluoranthene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.2	NA			<0.05	<0.2
Benzo(k)fluoranthene	µg/L	-	0.0002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050		<0.05	<0.2
Benzo(a)pyrene	µg/L	0.01 (H)	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.018	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010		<0.01	0.02
Indeno(1,2,3-cd)pyrene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.03	<0.2	<0.2	<0.05	<0.2	NA	NA		<0.05	<0.2
Dibenzo(a,h)anthracene	µg/L	-	0.002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.09	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050		<0.05	<0.2
Benzo(g,h,i)perylene	µg/L	-	0.00002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.08	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050		<0.05	<0.2
Poly Chlorinated Biphenyls (PCBs)																					
[redacted]	µg/L	(3) (H)	0.001	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.13	<0.05	<0.1	[redacted]	<0.1	<0.1	<0.1	<0.05	<0.05		<0.05	<0.1
Petroleum Hydrocarbons (PHCs)																					
C6 - C10 (F1)	µg/L	--	--	<0.1	<0.1	<100	<100	<100	<25	--	<25	<0.025	<100	<100	<100	<100	NA	NA		<25	<100
C10 - C16 (F2)	µg/L	--	--	<0.1	<0.1	<100	<100	400	480	--	<100	<0.1	<100	<100	<100	<100	NA	NA		<100	<100
C16 - C34 (F3)	µg/L	--	--	<0.2	<0.2	400	<200	5500	9100	--	<200	<0.2	<500	<200	<200	<200	NA	NA		<200	<200
C34 - C50 (F4)	µg/L	--	--	<0.2	<0.2	<200	<200	<200	330	--	<200	<0.2	<500	<200	<200	<200	NA	NA		<200	<200

C) DEEP WELLS

Parameter	Units	CCME (2003) [1]	PWQO (1994) [2]	Leachate Quality										Background Quality, Deep Monitoring Wells						Overall Background Range	
				FS-1 Sample		MHRB Samples						Historical Leachate Wells* (GT1-96S, MW3-96, MW5-96)		MW3B-D							
				13-Apr-12	13-Apr-12 (duplicate)	16-Jan-13	12-Jul-13	15-Nov-13	29-Apr-14	12-Nov-14	14-May-15	Min	Max	13-May-13	11-Nov-13	11-Nov-13 (duplicate)	29-May-14	29-May-14 (duplicate)	29-Oct-14	16-Apr-15	Min	Max
Polycyclic Aromatic Hydrocarbons (PAHs)																					
Naphthalene	µg/L	-	7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.075	<0.050	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2
Acenaphthylene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	NA	NA	<0.05	<0.2
Acenaphthene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	NA	NA	<0.05	<0.2
Fluorene	µg/L	-	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.050	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2
Phenanthrene	µg/L	-	0.03	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.13	<0.030	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.03	<0.030	<0.03	<0.2
Anthracene	µg/L	-	0.0008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.050	<0.05	<0.5	<0.2	<0.01	<0.01	<0.2	<0.2	<0.05	<0.050	<0.01	<0.2
Fluoranthene	µg/L	-	0.0008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.18	<0.050	<0.05	<0.2	<0.2	<0.01	<0.01	<0.2	<0.2	<0.05	<0.050	<0.01	<0.2
Pyrene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	14.7	<0.2	<0.01	<0.01	<0.2	<0.2	NA	NA	<0.01	<0.2
Benzo(a)anthracene	µg/L	-	0.0004	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2	<0.2	<0.01	<0.01	<0.2	<0.2	<0.05	<0.050	<0.01	<0.2
Chrysene	µg/L	-	0.0001	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.055	<0.050	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2
Benzo(b)fluoranthene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	NA	NA	<0.05	<0.2
Benzo(k)fluoranthene	µg/L	-	0.0002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2
Benzo(a)pyrene	µg/L	0.01 (H)	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.018	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.03	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	NA	NA	<0.05	<0.2
Dibenzo(a,h)anthracene	µg/L	-	0.002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.09	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2
Benzo(g,h,i)perylene	µg/L	-	0.00002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.08	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.05	<0.2
Poly Chlorinated Biphenyls (PCBs)																					
[redacted]	µg/L	(3) (H)	0.001	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.13	<0.05	<0.1	[redacted]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.1
Petroleum Hydrocarbons (PHCs)																					
C6 - C10 (F1)	µg/L	--	--	<0.1	<0.1	<100	<100	<100	<25	--	<25	<0.025	<100	<100	<100	<100	NA	NA	<25	<25	<25	<100
C10 - C16 (F2)	µg/L	--	--	<0.1	<0.1	<100	<100	400	480	--	<100	<0.1	<100	<100	<100	<100	NA	NA	<100	<100	<100	<100
C16 - C34 (F3)	µg/L	--	--	<0.2	<0.2	400	<200	5500	9100	--	<200	<0.2	<500	<200	<200	<200	NA	NA	<200	<200	<200	<200
C34 - C50 (F4)	µg/L	--	--	<0.2	<0.2	<200	<200	<200	330	--	<200	<0.2	<500	<200	<200	<200	NA	NA	<200	<200	<200	<200

[redacted] - Maximum of leachate concentrations > 2 times PWQO
- Maximum of leachate concentrations > 5 times PWQO
- Maximum of leachate concentrations > 10 times PWQO
- Maximum of leachate concentrations > 100 times PWQO

Notes:

NA	Parameter not analyzed
--	No value

1. Ontario Drinking Water Standard (ODWS)

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A)	Aesthetic Drinking Water Objective
(H)	Health Related Drinking Water Objective

2. Provincial Water Quality Objective (PWQO)

* - Decommissioned

Trigger Mechanisms: Landfill Gas (Item 15 – Schedule A)

7.3.1 Trigger Mechanisms

A trigger concentration for implementation of contingency measures 0f 1.0 percent by volume (20% LEL) of methane gas was selected for all gas probe locations

7.3.2 Contingency

The contingency plan includes the following steps and associated elements:

Step 1 Regular gas monitoring plan. If any of the established trigger levels are exceeded, the MECP will be notified and Step 2 is initiated

Step 2 Undertake confirmatory analysis: recalibration and retesting with portable combustible gas analyzer. If trigger level is exceeded, undertake laboratory analytical confirmation for methane, carbon dioxide, oxygen, nitrogen, hydrogen sulphide, and non-methanogenic organic compounds. Review analytical results within five days of receipt. If trigger level is exceeded, determine if the exceedance is landfill related. If landfill related, the MECP will be notified and Step 3 is initiated

Step 3 The performance of existing engineered management controls shall be evaluated to determine if the impact might have need caused by the failure of one or more of these controls. If failure identified, remedial measures shall be undertaken and gas monitoring program continued to monitor the effectiveness of repairs. If remedial measures cannot be undertaken, then Step 4 is initiated.

Step 4 An evaluation of potential receptors shall be undertaken. Additional soil gas probes shall be installed in proximity to the identified receptors. The frequency of the soil gas monitoring program shall be re-evaluated and re-evaluated and altered as deemed necessary. The extent of impact shall be evaluated to delineate the extent of lateral migration. A risk evaluation shall be made to determine if mitigation measures are warranted. If mitigation measures are warranted, Step 5 is initiated

Step 5 A review and assessment of potential mitigation measures shall be undertaken. The preferred mitigation measure shall be identified, designed, and implemented. The soil gas monitoring program will be modified to monitor the effectiveness of the measure undertaken

Appendix 7

ECA: A120409
Closure Plan Requirements

Closure Plan

103. At least 2 years prior or when 90% of the site capacity is reached, whichever comes first, the Owner shall submit to the Director for approval, with copies to the District Manager and the PLC , a detailed site closure plan pertaining to the termination of landfilling operations at this *Site* , post-closure inspection, maintenance and monitoring, and end use. The plan shall include the following:

    a. a plan showing *Site* appearance after closure;
    b. a description of the proposed end use of the *Site* ;
    c. a descriptions of the procedures for closure of the *Site,* including:
        i. advance notification of the public of the landfill closure;
        ii. completion, inspection and maintenance of the final cover and landscaping;
        iii. site security;
        iv. removal of unnecessary landfill-related structures, buildings and facilities; and
        v. final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
    d. a schedule indicating the time-period for implementing sub-conditions i) to vi) above;
    e. descriptions of the procedures for post-closure care of the Site, including:
        i. operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
        ii. record keeping and reporting; and
        iii. complaint contact and response procedures;
    f. an assessment of the adequacy of and need to implement the contingency plans for leachate and methane gas; and,
    g. an updated estimate of the contaminating life span of the *Site* , based on the results of the monitoring programs to date.

104. The *Site* shall be closed in accordance with the closure plan as approved by the *Director.*

Appendix 8

Results of analysis, interpretations of the analysis, and assessment of the need to modify the monitoring program from the most current site Annual Report (2016).

1) Leachate
2) Ground Water
3) Surface Water
4) Landfill Gas

MONITORING

As required by Condition 79 of the ECA, the environmental monitoring program has included monitoring of leachate, groundwater, surface water and landfill gas in accordance with Schedules B, C, and D of ECA: A120409 (Appendix 1).

Below is a summary of the 2016 Atlas Annual Report that provides the results and interpretive analysis of the results of all leachate, groundwater, surface water, and landfill gas monitoring, including an assessment of the need to amend the monitoring programs.

Leachate Quality

Leachate quality monitoring was carried out during Spring 2016 at the sanitary sewer maintenance hole MHBB located northeast of the Woodlawn Road and River Road intersection (Figure 6) and for the first time during Fall 2016 at the leachate collection system trench maintenance hole LCS-MH4 located at downstream end of the system near the Cell 1 leachate collection pond (Figure 6). The leachate sample from MHBB was collected on May 6, 2016 while the leachate pumping stations were discharging. The sample was not filtered. The leachate sample from LCS-MH4 was collected on November 2, 2016 and was filtered for inorganics and metals analyses to remove suspended solids.

Leachate quality results since the start of monitoring at the Sanitary Sewer MHBB in 2013 are provided in Table 1 a, b, c, and d (Appendix 8) along with the results for MH4. Concentrations at MHBB between 2013 and 2016 fluctuate with no apparent increasing or decreasing trend. The following parameters had concentrations exceeding the Ontario Drinking Water Standard (ODWS) and/or Provincial Water Quality Objective (PWQO) in 2016.

Parameter	Maximum Concentration in 2016 @ MHBB and LCS-MH4	ODWS	PWQO
Field pH	12.3 (LCS-MH4)	6.5-8.5	6.5-8.5
Hardness (mg/L)	3500 (MHBB)	100	---
Chloride (mg/L)	3800 (MHBB)	250	--
Fluoride (mg/L)	4.5 (LCS-MH4)	1.5	--
Dissolved Organic Carbon (mg/L)	25 (MHBB)	5	--
Sulphate (mg/L)	960 (MHBB)	500	--
Unionized Ammonia (mg/L)	21.0 (LCS-MH4)	--	0.02
Nitrate (mg/L)	11.8 (MHBB)	10	--
Nitrite (mg/L)	4.81 (LCS-MH4)	1	--
Total Dissolved Solids (mg/L)	8050 (MHBB)	500	--
Phenols (mg/L)	0.025 (MHBB)	--	0.001
Aluminum (mg/L) (Filtered)	0.052 (MHBB)	0.1	0.075 (filtered)
Boron (mg/L)	0.65 (MHBB)	5	0.2
Chromium (mg/L)	0.064 (LCS-MH4)	0.05	0.0089
Cobalt (mg/L)	0.0012 (LCS-MH4)	--	0.0009
Copper (mg/L)	0.023 (MHBB)	1	0.005
Manganese (mg/L)	0.22 (MHBB)	0.05	--
Molybdenum (mg/L)	2.2 (LCS-MH4)	--	0.04
Selenium (mg/L)	0.026 (LCS-MH4)	0.01	0.1
Silver (mg/L)	0.0012 (MHBB)	--	0.0001
Sodium (mg/L)	1200 (MHBB)	200	--
Thallium (mg/L)	0.00037 (MHBB)	--	0.0003
Zinc (mg/L)	0.063 (MHBB)	5	0.02
Trichloroethylene (µg/L)	23 (LCS-MH4)	5	20
Fluoranthene (µg/L)	2.8 (LCS-MH4)	--	0.0008

Parameter	Maximum Concentration in 2016 @ MHBB and LCS-MH4	ODWS	PWQO
Benzo(a)anthracene (µg/L)	0.56 (LCS-MH4)	--	0.0004
Benzo(k)fluoranthene (µg/L)	0.098 (LCS-MH4)	--	0.0002
Benzo(a)pyrene (µg/L)	0.21 (LCS-MH4)	0.01	0.0002
Benzo(g,h,i)perylene (µg/L)	0.12 (LCS-MH4)	--	0.00002
Total PCBs (µg/L)	1.1 (LCS-MH4)	3	0.001
Crysene (µg/L)	0.8 (LCS-MH4)	--	0.0001

It should be noted that leachate collected at MHBB may not be indicative of "full strength" leachate due to dilution by contact water run-off that is collected at PS-1 and PS-2 pumping stations. Leachate collected LCS-MH4 located at the downstream end of the leachate collector near the Cell 1 leachate pond provides better representation of the average leachate quality within the overall Cell 1 area of the landfill.

Historical leachate quality data is provided in Appendix D. Ecoplans (2010) characterized leachate quality based on samples collected from former monitoring wells completed within the waste fill area (i.e. GT1-99S, MW2-99 and MW3-99) and at the edge of the waste fill area (i.e. MW5-99). They noted the following list of leachate indicator parameters having concentrations greater than the Ontario Drinking Water Standard and/or Provincial Water Quality Objective.

General Chemistry and Nutrients	Dissolved Metals	Volatile Organic Carbon (VOC) Parameters	Polycyclic Aromatic Hydrocarbon (PAH) Parameters	Poly Chlorinated Biphenyl (PCB) Parameters
un-ionized ammonia	aluminum	cis 1,2-dichloroethylene	acenaphthene	arochlors 1254 and 1260
alkalinity	arsenic	trans 1,2-dichloroethylene	acenaphthylene	
chloride	boron	toluene	anthracene	
fluoride	chromium	trichloroethylene	benzo (a) anthracene	
pH	cobalt	vinyl chloride	benzo (b) fluoranthene	
phenols			benzo (k) fluoranthene	
total Kjeldahl nitrogen	iron			
	manganese		benzo (g,h,i) perylene	
	molybdenum		chrysene,	
			dibenzo (a,h) anthracene	
	sodium		fluoranthene	
	titanium		fluorene	
	vanadium		indeno (1,2,3-cd) pyrene	
			naphthalene	
			pyrene	
			phenanthrene	

Table 1a
Leachate Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	PWQO (1999)[2]	PS-1 Sample (unfiltered)		MHBB (unfiltered)								MH-4 (filtered)
				13-Apr-12	13-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	15-Nov-13	25-Apr-14	12-Nov-14	14-May-15	4-Nov-15	6-May-16	2-Nov-16
Field Measurements														
pH		< 6.5-8.5 > (A)	6.5-8.5	12.4	12.4	12.4	8.2	–	6.9	9.3	7.2	7.1	7.3	12.3
Temperature	°C	--	--	10	10	6.2	15.5	–	8.5	11.4	11.9	15.7	12.6	14.8
Conductivity	µmho/cm	--	--	3780	–	3360	2220	–	4560	3570	5120	8580	12400	4460
General Chemistry														
pH (lab)		< 6.5-8.5 > (A)	6.5-8.5	10.8	11.1	11.3	7.98	11.7	7.71	9.88	7.7	7.5	7.41	11.8
Alkalinity (Total as $CaCO_3$)	mg/L	< 30-500 > (A)	--	102	155	189	96	303	111	40	140	110	120	470
Hardness ($CaCO_3$)	mg/L	< 80-100 > (A)	--	1040	944	716	1160	705	1900	627	2000	3100	3500	510
Conductivity (lab)	µmho/cm	--	--	3200	3290	2790	2070	3970	4390	1900	5900	9300	12000	5200
Ion Balance	(%)	--	--	-0.66	-4.11	2.64	2.17	7.40	4.05	11.54	8.36	2.79	2.44	-0.57
Bromide (Br)	mg/L	--	--	0.78	0.78	0.33	0.31	0.7	6.82	5	<10	<20	-	<10
Dissolved Chloride (Cl)	mg/L	[250] (A)	--	265	270	267	77	401	858	210	1200	2500	3800	560
Fluoride (F)	mg/L	1.5 (H)	--	2.85	3.06	2.77	1.79	4.54	1.97	2.6	1.2	1.1	1.3	4.5
Dissolved Organic Carbon (DOC)	mg/L	[5] (A)	--	15.4	16.2	10.6	7.5	17.5	11.1	10	12	17	25	19
Phosphorus (P)	mg/L	--	0.03	0.02	0.03	0.06	0.03	<0.01	0.01	0.067	0.021	0.17	0.028	<0.02
Sulphate (SO_4)	mg/L	[500] (A)	--	1200	1100	696	963	750	1040	545	1400	1000	960	900
Ammonia-N	mg/L	--	--	7.22	7.36	7.49	0.57	0.75	1.58	5.4	0.28	1.3	32	21
Unionized Ammonia	mg/L	--	0.020	7.20	7.34	7.39	0.025	0.000	0.00210	1.58	0.00110	0.00580	0.145	21.0
Nitrite	mg/L	1 (A)	--	3.73	3.44	1.89	0.15	3.26	0.73	0.95	0.167	0.843	0.274	4.81
Nitrate	mg/L	10 (H)	--	4.5	4.93	8.43	5.6	12.75	8.84	3.42	14.5	10.7	11.8	2.7
Total Dissolved Solids (TDS)	mg/L	[500] (A)	--	2560	2630	2090	1660	2980	3510	1270	4470	7020	8050	2840
Total Kjeldahl Nitrogen (TKN)	mg/L	--	--	7.5	7.78	7.98	1.31	12.7	2.25	5.9	3.3	4.1	35	22
Phenols														
Total Phenols	mg/L	--	0.001	0.002	0.003	0.003	<0.001	0.002	0.002	0.0048	<0.0010	0.0039	0.025	0.011

Notes:

NA	Parameter not analyzed
--	No value

1. Ontario Drinking Water Standard (ODWS):
a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10
b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}
c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]
d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A)	Aesthetic Drinking Water Objective
(H)	Health Related Drinking Water Objective
2. PWQO	Water Management Policies, Guidelines, Provincial Water Quality Objectives of the Ontario Ministry of the Environment and Energy, July 1994, Reprinted February 1999.
	Exceeds ODWS and/or PWQO

Table 1b
Leachate Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	PWQO (1999)[2]	PS-1 Sample (unfiltered)		MHBB (unfiltered)								MH-4 (filtered)
				13-Apr-12	13-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	15-Nov-13	25-Apr-14	12-Nov-14	14-May-15	4-Nov-15	6-May-16	2-Nov-16
Metals														
Aluminum (Al)	mg/L	< 0.1 > (A)	0.075* (filtered)	0.18	0.23	0.30	0.11	0.08	0.10	0.81	0.034	1.100	0.052	0.032
Antimony (Sb)	mg/L	{0.006} (H)	0.02 I	<0.0005	<0.0005	0.0016	0.0028	<0.0005	0.0026	0.0014	0.0028	0.008	0.003	<0.0005
Arsenic (As)	mg/L	{0.025} (H)	0.1	<0.01	<0.01	<0.01	<0.01	<0.1	0.003	0.0047	0.0020	0.0025	<0.005	0.0043
Barium (Ba)	mg/L	1 (H)	--	0.08	0.07	0.07	0.07	0.06	0.12	0.051	0.065	0.22	0.26	0.057
Beryllium (Be)	mg/L	--	0.011**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0025	<0.0005
Boron (B)	mg/L	{5} (H)	0.2 I	0.1	0.1	0.11	0.26	0.06	0.27	0.2	0.38	0.7	0.65	0.053
Cadmium (Cd)	mg/L	0.005 (H)	0.0005 I	0.0003	0.0004	0.0001	0.0002	0.0004	0.0005	0.0005	0.0005	0.0023	0.0014	<0.0005
Calcium (Ca)	mg/L	--	--	415	378	277	353	279	520	180	530	940	1200	200
Chromium (Cr)	mg/L	0.05 (H)	0.0089***	0.069	0.085	<0.5	0.002	0.134	0.004	0.028	<0.005	0.0099	<0.025	0.064
Cobalt (Co)	mg/L	--	0.0009	0.0017	0.0016	0.0013	0.0043	0.0011	0.0014	0.001	0.0015	0.0026	<0.0025	0.0012
Copper (Cu)	mg/L	[1] (A)	0.005	0.018	0.02	0.013	0.009	0.015	0.01	0.017	0.0085	0.035	0.023	0.019
Iron (Fe)	mg/L	[0.3] (A)	0.3	0.17	0.22	0.29	0.24	0.08	0.2	1	0.19	1.8	<0.5	<0.1
Lead (Pb)	mg/L	0.01 (H)	0.001-0.005 I****	0.001	0.001	0.007	0.001	0.018	0.001	0.01	0.0011	0.015	0.004	0.0034
Magnesium (Mg)	mg/L	--	--	2	<1	6	68	2	146	43	170	180	160	3.4
Manganese (Mn)	mg/L	[0.05] (A)	--	<0.01	<0.01	0.03	0.17	0.03	0.21	0.053	0.14	0.32	0.22	0.0072
Mercury (Hg)	mg/L	0.001 (H)	0.0002	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.0001	<0.0001
Molybdenum (Mo)	mg/L	--	0.04 I	1.88	2.01	1.29	0.271	2.4	0.397	0.087	0.16	0.12	0.57	2.2
Nickel (Ni)	mg/L	--	0.025	0.024	0.024	0.022	0.013	0.032	0.014	0.012	0.01	0.02	0.027	<0.002
Potassium (K)	mg/L	--	--	58	54	51	8	86	43	32	74	230	370	110
Selenium (Se)	mg/L	0.01 (H)	0.1	<0.1	<0.1	0.014	<0.01	<0.1	0.004	0.0072	0.0076	0.0033	<0.01	0.026
Silver (Ag)	mg/L	--	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00014	0.0012	<0.0001
Sodium (Na)	mg/L	[200] (A)	--	282	259	284	50	528	315	220	310	750	1200	710
Strontium (Sr)	mg/L	--	--	3.07	2.82	1.93	2.69	1.8	5.15	1.4	4.7	7.7	10	2
Thallium (Tl)	mg/L	--	0.0003	0.0001	0.0001	<0.0001	0.0002	<0.0001	0.0003	<0.00005	0.00028	0.00074	0.00037	<0.00005
Tin (Sn)	mg/L	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	0.0024	<0.005	<0.001
Titanium (Ti)	mg/L	--	--	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.005	0.04	<0.025	<0.005
Uranium (U)	mg/L	0.02 (H)	0.005 I	<0.001	<0.001	<0.001	0.0030	<0.001	0.0030	0.0012	0.0067	0.0059	0.0046	<0.0001
Vanadium (V)	mg/L	--	0.006 I	0.002	0.002	0.005	0.001	0.013	<0.001	0.0054	0.0011	0.0063	<0.0025	0.0030
Zinc (Zn)	mg/L	[5] (A)	0.02 I	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.03	0.014	0.04	0.11	0.063	<0.01
Zirconium (Zr)	mg/L	--	0.004	<0.002	<0.02	0.002	<0.02	0.007	<0.002	<0.001	<0.001	0.002	<0.005	<0.001

Notes:

NA — Parameter not analyzed
-- — No value

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b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}
c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]
d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) — Aesthetic Drinking Water Objective
(H) — Health Related Drinking Water Objective

2. PWQO — Water Management Policies, Guidelines, Provincial Water Quality Objectives of the Ontario Ministry of the Environment and Energy, July 1994, Reprinted February 1999.

I — Interim PWQO

* — Aluminum is pH dependent, when pH is between 6.5 and 9.0, PWQO is 75 µg/L, value is for a clay-free sample.

** — Hardness dependent, lowest PWQO used

*** — Trivalent Chromium

**** — Lead is hardness dependent:

Hardness as $CaCO_3$ (mg/L)	Interim PQWO (µg/L)
<30	1
30 to 80	3
>80	5

Exceeds ODWS and/or PWQO

Table 1c
Leachate Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	PWQO (1999)[2]	PS-1 Sample (unfiltered)		MHBB (unfiltered)								MH-4 (unfiltered)
				13-Apr-12	13-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	15-Nov-13	25-Apr-14	12-Nov-14	14-May-15	4-Nov-15	6-May-16	2-Nov-16
Volatile Organic Compounds														
1,1,1,2-Tetrachloroethane	µg/L	--	20 I	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	--	10 I	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	--	20 I	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	--	800 I	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	--	200 I	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	40 I	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	100 I	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	--	0.7 I	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	--	3 I	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	--	--	--	-	-
1,3-Dichlorobenzene	µg/L	--	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	100 I	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	200 I	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	60 I	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	--	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	15	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	40 I	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	<0.20	<0.2	<0.5
Chloroethane	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	--	-	-
Chloroform	µg/L	100 (H)	--	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.1	<0.10	<0.10	<0.1	0.68
Chloromethane	µg/L	--	700 I	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	--	-	-
cis-1,2-Dichloroethylene	µg/L	--	200 I	3.3	3.9	0.6	<0.4	5.5	<0.4	0.56	<0.10	<0.10	<0.1	6.9
cis-1,3-Dichloropropylene	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	-	-
Ethylbenzene	µg/L	[2.4] (A)	8 I	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	--	5 I	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	32 I	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Methylene chloride	µg/L	50 (H)	100 I	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<0.5	<0.50	<0.50	<0.5	<0.5
o-Xylene	µg/L	300 (A)	40 I	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	--	4 I	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	50 I	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	0.8 I	0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	--	200 I	<0.4	0.4	<0.4	<0.4	<0.4	<4.0	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	--	7 I	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	20 I	15.9	21	2.3	<0.3	25.3	<0.3	4.6	<0.10	0.38	0.11	23
Trichlorofluoromethane	µg/L	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	600 I	0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	72 I	--	--	--	--	--	--	<0.1	<0.10	<0.10	<0.1	<0.2

Notes:

NA	Parameter not analyzed
--	No value

1. Ontario Drinking Water Standard (ODWS):
a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10
b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}
c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]
d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A)	Aesthetic Drinking Water Objective
(H)	Health Related Drinking Water Objective
2. PWQO	Water Management Policies, Guidelines, Provincial Water Quality Objectives of the Ontario Ministry of the Environment and Energy, July 1994, Reprinted February 1999.
I	Interim PWQO
	Exceeds ODWS and/or PWQO

Table 1d
Leachate Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	PWQO (1999)[2]	PS-1 Sample (unfiltered)		MHBB (unfiltered)								MH-4 (unfiltered)
				13-Apr-12	13-Apr-12 (duplicate)	15-Jan-13	12-Jul-13	15-Nov-13	25-Apr-14	12-Nov-14	14-May-15	4-Nov-15	6-May-16	2-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)														
Naphthalene	µg/L	--	7 I	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.075	<0.050	<0.050	<0.05	<0.1
Acenaphthylene	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	--	-	-
Acenaphthene	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	--	-	-
Fluorene	µg/L	--	0.2 I	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.050	<0.050	<0.05	<2.5
Phenanthrene	µg/L	--	0.03 I	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.13	<0.030	0.093	<0.03	<2
Anthracene	µg/L	--	0.0008 I	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.050	<0.050	<0.05	<4
Fluoranthene	µg/L	--	0.0008 I	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.18	<0.050	0.14	<0.05	2.8
Pyrene	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	--	-	-
Benzo(a)anthracene	µg/L	--	0.0004 I	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	0.063	<0.05	0.56
Chrysene	µg/L	--	0.0001 I	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.055	<0.050	0.058	<0.05	0.8
Benzo(b)fluoranthene	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	--	-	-
Benzo(k)fluoranthene	µg/L	--	0.0002 I	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	0.098
Benzo(a)pyrene	µg/L	0.01 (H)	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.016	<0.010	0.066	<0.01	0.21
Indeno(1,2,3-cd)pyrene	µg/L	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	-	-	-	-
Dibenzo(a,h)anthracene	µg/L	--	0.002 I	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	--	0.00002 I	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	0.12
Poly Chlorinated Biphenyls (PCBs)														
Total PCB's	µg/L	{3} (H)	0.001	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.13	<0.050	<0.050	<0.5	1.1
Petroleum Hydrocarbons (PHCs)														
C6 - C10 (F1)	µg/L	--	--	<100	<100	<100	<100	<100	<25	--	<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	--	<100	<100	<100	<100	400	480	--	<100	<100	<100	9300
C16 - C34 (F3)	µg/L	--	--	<200	<200	400	<200	5500	9100	--	<200	<200	<200	150000
C34 - C50 (F4)	µg/L	--	--	<200	<200	<200	<200	<200	330	--	<200	<200	<200	4600

Notes:

NA	Parameter not analyzed
--	No value

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(A)	Aesthetic Drinking Water Objective
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I	Interim PWQO
	Exceeds ODWS and/or PWQO

Groundwater

The groundwater quality monitoring program is described in Schedule B (Appendix 5) of ECA: A 120409 (Appendix 1). The current monitoring well locations are shown in Figure 6. Note that all of the historical monitoring wells except monitoring well nest MW6-99 were decommissioned in 2011. The decommissioning was necessary to allow the installation of the sheet pile wall along the west side of Cell 1 and to allow development work over the rest of the Site.

In accordance with the updated Design and Operations Plan (Golder, 2012a), monitoring wells were installed at ten (10) new well nest locations (Nests MW18 to MW28) across the site in 2012 and a background well nest MW29 was installed in 2013.

A standardized approach was used for the well and screen interval designations of the new (2012) nests MW18 to MW28, as shown below:

Hydrogeological System	Designation	Screen Placement
Shallow Flow System	S	**Near the water table** – well screened entirely or partially in the upper weathered portion of the glaciolacustrine unit including soil fill. [Exception is MW18-S which is screened in the unweathered portion of the glaciolacustrine unit which is considered an aquitard]
Granular Intermediate Flow System	GI	**In the granular deposit** – well screened in the granular deposit separating the glaciolacustrine unit and glacial till
Intermediate Zone (Aquitard)	I	**In the middle to lower portion of the glacial till unit**
Deep Flow System	D	**In the upper 3 m of bedrock**

In 2016, groundwater quality and levels were monitored at the new groundwater monitoring well nests (MW18 to MW29) and at the historic nest MW6-99 in Spring and Fall. The monitoring parameters include general chemistry, major anions and cations, nutrients, phenols, metals, volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), petroleum hydrocarbons (PHC) and PCBs, capturing all of the leachate indicator parameters identified by Ecoplans (2010).

Groundwater Quality – Cell 1 Area

The groundwater quality results for the 2016 spring and fall sampling events are provided in Table 2. At least one blind duplicate sample was collected for every 9 samples during each sampling event for quality assurance / quality control. The groundwater quality results for monitoring wells in the Cell 1 area are discussed below relative to ODWS and background quality as inferred from water quality at Nest MW29 located east of Cell 1. Note that the impacts at the shallow and granular intermediate monitoring wells located west (i.e., downgradient) of the sheet pile barrier wall are considered to be related to historical leachate impacts in this area that originated from Cell 1 prior to the barrier wall construction. These historical impacts are expected to disperse and gradually dissipate over time due to cut-off of leachate migration by the sheet pile wall and collector system trench. However, in the short term, the dispersion of these historical impacts can result in an increase in concentrations at some wells and a decrease at others.

Background Well Nest MW29 (East of Cell 1)

Background monitoring well nest MW29 was installed east of Cell 1 in March 2013 (Figure 6). Only eight sets of groundwater quality results are available for this well nest. The groundwater quality results for this background well nest and the former background well nest MW1-99 (decommissioned 2011) are provided in Tables 2a to 2d. The tables are organized such that the data from the same flow system are adjacent to each other and a concentration range is provided for each flow system.

MW29-S (Shallow background well screened in upper weathered silty clay to clayey silt glaciolacustrine unit)

- During the spring monitoring event, hardness (630 mg/L versus 100 mg/L), dissolved organic carbon (9 mg/L versus 5 mg/L), total dissolved solids (944 mg/L versus 500 mg/L) and manganese (0.13 mg/L versus 0.05 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (680 mg/L versus 100 mg/L), dissolved organic carbon (8.9 mg/L versus 5 mg/L), total dissolved solids (874 mg/L versus 500 mg/L), iron (0.53 mg/L versus 0.3 mg/L) and manganese (0.3 mg/L versus 0.05 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PHCs and PCBs were detected.
- Historically, hardness, dissolved organic carbon and total dissolved solids, iron and manganese have exceeded the ODWS.
- There does not appear to be any increasing or decreasing trend in the concentration data.

MW29-I (Intermediate background well screened in glacial till unit across a thin sand seam)

- During the spring monitoring event, hardness (1700 mg/L versus 100 mg/L), sulphate (1800 mg/L versus 500 mg/L), total dissolved solids (3050 mg/L versus 500 mg/L), iron (0.56 mg/L versus 0.3 mg/L) and manganese (0.082 mg/L versus 0.05 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (1800 mg/L versus 500 mg/L), total dissolved solids (2770 mg/L versus 500 mg/L), aluminum (0.28 mg/L versus 0.1 mg/L), iron (0.93 mg/L versus 0.3 mg/L) and manganese (0.099 mg/L versus 0.05 mg/L), exceeded the ODWS.
- Benzene, toluene and m&p-xylene were detected during the spring event (at concentrations below ODWS). Benzene and toluene were detected during the fall event. No PAHs, PCBs and PHCs were detected.
- Historically, hardness, sulphate, total dissolved solids, iron and manganese have exceeded the ODWS.
- There does not appear to be any increasing or decreasing trend in the concentration data. Detections of the VOC parameters were also noted in 2015.

MW29-D (Deep background well screened in shale bedrock)

- During the spring monitoring event, hardness (1700 mg/L versus 100 mg/L), sulphate (1700 mg/L versus 500 mg/L), total dissolved solids (3060 mg/L versus 500 mg/L) and iron (0.59 mg/L versus 0.3 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1700 mg/L versus 100 mg/L), sulphate (1600 versus 500 mg/L), total dissolved solids (2680 mg/L versus 500 mg/L) and iron (0.56 mg/L versus 0.3 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Historically, hardness, sulphate, total dissolved solids and iron have exceeded the ODWS.
- There does not appear to be any increasing and decreasing trend in the concentration data.

Well Nest MW18 (East of Cell 1)

MW18-S (Shallow well screened in unweathered silty clay glaciolacustrine unit)

- During the spring 2016 monitoring event, hardness (1100 mg/L versus 100 mg/L), sulphate (680 mg/L versus 500 mg/L), total dissolved solids (1540 mg/L versus 500 mg/L) and manganese (0.057 mg/L versus 0.05 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1100 mg/L versus 100 mg/L), sulphate (650 mg/L versus 500 mg/L), total dissolved solids (1400 mg/L versus 500 mg/L) and manganese (0.060 mg/L versus 0.05 mg/L) exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are above the range of background levels (from Tables 2a-d) for hardness, sulphate and total dissolved solids, possibly reflecting historical leachate impacts from Cell 1. The concentrations are generally consistent with the 2012 to 2015 monitoring results except for iron which is following a decreasing trend. Concentrations are expected to decrease gradually after completion of the final capping in Cell 1.

MW18-I (Intermediate well screened in sandy clayey silt till unit)

- During the spring monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (2200 mg/L versus 500 mg/L), total dissolved solids (3370 mg/L versus 500 mg/L), manganese (0.089 mg/L versus 0.05 mg/L) and sodium (240 mg/L versus 200 mg/L) exceeded the ODWS.
- During the fall monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (2100 mg/L versus 500 mg/L), total dissolved solids (3370 mg/L versus 500 mg/L) and sodium (230 mg/L versus 200 mg/L) exceeded the ODWS.
- m&p-xylene (0.17 µg/L) was detected during the spring event and phenanthrene were detected during both events (0.24 and 0.05 µg/L. No other PHCs nor PCBs were detected.
- Concentrations are similar to or slightly higher than the background range for sulphate, total dissolved solids and sodium, possibly reflecting historical leachate impacts from Cell 1. Concentrations are generally consistent with the 2012 to 2015 monitoring results.

Well Nest MW19 (East of Cell 1)

MW19-S (Shallow well screened in upper weathered silty clay glaciolacustrine unit)

- During the spring monitoring event, alkalinity (600 mg/L versus 500 mg/L), hardness (2600 mg/L versus 100 mg/L), sulphate (2200 mg/L versus 500 mg/L), total dissolved solids (3880 mg/L versus 500 mg/L), iron (0.35 mg/L versus 0.3 mg/L), manganese (0.31 mg/L versus 0.05 mg/L) and uranium (0.032 mg/L versus 0.02 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1200 mg/L versus 100 mg/L), sulphate (750 mg/L versus 500 mg/L), total dissolved solids (1400 mg/L versus 500 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are significantly above the background range for hardness, sulphate, sodium and total dissolved solids, possibly reflecting historical leachate impacts from Cell 1. The results are generally consistent with the 2012 to 2015 monitoring results. It is expected that concentration will decrease gradually after completion of final capping in Cell 1.

MW19-I (Intermediate well screened in silt and sand till unit)

- During the spring monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (2000 mg/L versus 500 mg/L), total dissolved solids (3030 mg/L versus 500 mg/L), manganese (0.12 mg/L versus 0.05 mg/L) and sodium (220 mg/L versus 200 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1900 mg/L versus 100 mg/L), sulphate (2000 mg/L versus 500 mg/L), total dissolved solids (2940 mg/L versus 500 mg/L) and sodium (220 mg/L versus 200 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PHCs and PCBs were detected.
- Concentrations are generally consistent with background levels and with the 2012 to 2015 monitoring results.

MW19-D (Deep well screened in shale bedrock)

- During the spring monitoring event, hardness (1700 mg/L versus 100 mg/L), sulphate (2000 mg/L versus 500 mg/L), total dissolved solids (2990 mg/L versus 500 mg/L), iron (0.46 mg/L versus 0.3 mg/L) and manganese (0.066 mg/L versus 0.05 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1900 mg/L versus 100 mg/L), sulphate (1800 mg/L versus 500 mg/L), total dissolved solids (2910 mg/L versus 500 mg/L), iron (0.50 mg/L versus 0.3 mg/L) and manganese (0.065 mg/L versus 0.05 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are generally consistent with background levels and with the 2012 to 2015 monitoring results.

Well Nest MW21 (South of Cell 1)

MW21-S (Shallow well screened in clay fill and weathered/ clayey silt glaciolacustrine unit)

- During the spring monitoring event, hardness (1700 mg/L versus 100 mg/L), chloride (1100 mg/L versus 250 mg/L), sulphate (580 mg/L versus 500 mg/L), total dissolved solids (3300 mg/L versus 500 mg/L) and sodium (370 mg/L versus 200 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1800 mg/L versus 100 mg/L), chloride (1100 mg/L versus 250 mg/L), sulphate (550 mg/L versus 500 mg/L), total dissolved solids (3280 mg/L versus 500 mg/L) and sodium (390 mg/L versus 200 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are elevated compared to the background range for hardness, chloride, sulphate, sodium and total dissolved solids, possibly reflecting historical leachate impacts from Cell 1 and/or road salt impacts from Woodlawn Road. The results are generally consistent with the 2012 to 2015 monitoring results except for higher chloride concentrations in 2016. Concentrations are expected to decrease gradually after completion of the final capping in Cell 1.

MW21-I (Intermediate well screened in gravelly silty sand till unit)

- During the spring monitoring event, hardness (1700 mg/L versus 100 mg/L), sulphate (2000 mg/L versus 500 mg/L), total dissolved solids (3070 mg/L versus 500 mg/L) and manganese (0.055 mg/L versus 0.05 mg/L), exceeded the ODWS.

- During the fall monitoring event, hardness (1700 mg/L versus 100 mg/L), sulphate (1900 mg/L versus 500 mg/L) and total dissolved solids (2940 mg/L versus 500 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are generally comparable to background levels and the 2012 to 2015 monitoring results.

MW21-D (Deep well screened in shale bedrock)

- During the spring monitoring event, hardness (1700 mg/L versus 100 mg/L), fluoride (2.0 mg/L versus 1.5 mg/L), sulphate (2300 mg/L versus 500 mg/L), total dissolved solids (3860 mg/L versus 500mg/L), boron (13 mg/L versus 5 mg/L), iron (0.37 mg/L versus 0.3 mg/L) and sodium (380 mg/L versus 200 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1700 mg/L versus 100 mg/L), sulphate (1700 mg/L versus 500 mg/L), total dissolved solids (2620 mg/L versus 500 mg/L), iron (0.45 mg/L versus 0.3 mg/L) and manganese (0.054 mg/L versus 0.05 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are above background for fluoride, sulphate, total dissolved solids, boron and sodium, possibly reflecting historical leachate impacts from Cell 1. The results are generally consistent with the 2012 to 2015 monitoring results. Concentrations are expected to decrease gradually after completion of the final capping in Cell 1.

Well Nest MW22 (Southwest of Cell 1 - Downgradient of Sheet Pile Wall)

MW22-S (Shallow well screened in clay fill and weathered clayey silt glaciolacustrine unit)

- During the spring monitoring event, alkalinity (660 mg/L versus 500 mg/L), hardness (660 mg/L versus 100 mg/L), fluoride (3.3 mg/L versus 1.5 mg/L), dissolved organic carbon (7.0 mg/L versus 5 mg/L), total dissolved solids (1240 mg/L versus 500 mg/L) and manganese (0.44 mg/L versus 0.05 mg/L), exceeded the ODWS.
- During the fall monitoring event, alkalinity (620 mg/L versus 500 mg/L), hardness (620 mg/L versus 100 mg/L), fluoride (2.3 mg/L versus 1.5 mg/L), dissolved organic carbon (6.4 mg/L versus 5 mg/L), total dissolved solids (1180 mg/L versus 500 mg/L) and manganese (1.2 mg/L versus 0.05 mg/L), exceeded the ODWS.
- cis-1,2-Dichloroethylene was detected during the fall event (0.44 µg/L). No PAHs, PCBs and PHCs were detected.
- Concentrations are above background for alkalinity, fluoride, total dissolved solids and manganese, reflecting historical leachate impacts from Cell 1. The results are generally consistent with the 2012 to 2015 monitoring results, with the exception of decreasing concentrations for dissolved organic carbon, iron and manganese, likely reflecting cut-off of leachate migration by the sheet pile wall. The detection of cis-1,2-Dichloroethylene at very low levels was also noted in 2012, 2014 and 2015.

MW22-GI (Granular intermediate well screened in sand and gravel deposit)

- During the spring monitoring event, hardness (470 mg/L versus 100 mg/L), dissolved organic carbon (13 mg/L versus 5 mg/L), total dissolved solids (1160 mg/L versus 500 mg/L), manganese (0.44 mg/L versus 0.05 mg/L) and sodium (240 mg/L versus 200 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (420 mg/L versus 100 mg/L), dissolved organic carbon (13 mg/L versus 5 mg/L), total dissolved solids (1170 mg/L versus 500 mg/L), iron (0.51 mg/L versus 0.3 mg/L), manganese (0.41 mg/L versus 0.05 mg/L) and sodium (240 mg/L versus 200 mg/L), exceeded the ODWS.

- cis-1,2-Dichloroethylene was detected during the spring (2.2 µg/L) and fall (2.0 µg/L) events. No PAHs, PCBs and PHCs were detected.
- Concentrations are above background for dissolved organic carbon, manganese and sodium, reflecting historical leachate impacts from Cell 1. The results are generally consistent with the 2012 to 2015 monitoring results with the exception of a decreasing trend for chloride and total dissolved solids which are now within the background range. The detection of cis-1,2-Dichloroethylene at very low levels was also noted in 2013, 2014 and 2015.

MW22-I (Intermediate well screened in sandy silt till unit)

- During the spring monitoring event, hardness (1700 mg/L versus 100 mg/L), sulphate (1900 mg/L versus 500 mg/L), total dissolved solids (2860 mg/L versus 500 mg/L) and manganese (0.13 mg/L versus 0.05 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1700 mg/L versus 100 mg/L), sulphate (1800 mg/L versus 500 mg/L), total dissolved solids (2880 mg/L versus 500 mg/L) and manganese (0.15 mg/L versus 0.05 mg/L) , exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are generally comparable to background values and are consistent with the 2012 to 2015 monitoring results. Dissolved organic carbon concentrations are following a slightly decreasing trend.

Well Nest MW23 (West of Cell 1 – Downgradient of Sheet Pile Wall)

MW23-S (Shallow well screened in clay fill)

- During the spring monitoring event hardness (4100 mg/L versus 100 mg/L), chloride (1500 mg/L versus 250 mg/L), dissolved organic carbon (7.6 mg/L versus 5 mg/L), sulphate (2200 mg/L versus 500 mg/L), total dissolved solids (6260 mg/L versus 500 mg/L), arsenic (0.033 mg/L versus 0.025 mg/L), manganese (0.065 mg/L versus 0.05 mg/L) and sodium (390 mg/L versus 200 mg/L), exceeded the ODWS.
- During the fall monitoring event alkalinity (510 mg/L versus 500 mg/L), hardness (4100 mg/L versus 100 mg/L), chloride (1400 mg/L versus 250 mg/L), dissolved organic carbon (8.5 mg/L versus 5 mg/L), sulphate (2100 mg/L versus 500 mg/L), total dissolved solids (6390 mg/L versus 500 mg/L), manganese (0.12 mg/L versus 0.05 mg/L) and sodium (340 mg/L versus 200 mg/L), exceeded the ODWS.
- Naphthalene was detected during the fall monitoring event (0.089 µg/L). No VOCs, PCBs and PHCs were detected.
- Concentrations are well above background for hardness, chloride, sulphate, total dissolved solids and arsenic reflecting historical leachate impacts from Cell 1. These results are generally consistent with the 2012 to 2015 monitoring results.

MW23-GI (Granular intermediate well screened in sandy gravel formation)

- During the spring monitoring event, alkalinity (780 mg/L versus 500 mg/L), hardness (2100 mg/L versus 100 mg/L), chloride (280 mg/L versus 250 mg/L), dissolved organic carbon (6.3 mg/L versus 5 mg/L), sulphate (1200 mg/L versus 500 mg/L), total dissolved solids (2860 mg/L versus 500 mg/L), iron (16 mg/L versus 0.3 mg/L) and manganese (2.1 mg/L versus 0.05 mg/L), exceeded the ODWS.
- During the fall monitoring event, alkalinity (810 mg/L versus 500 mg/L), hardness (1900 mg/L versus 100 mg/L), chloride (270 mg/L versus 250 mg/L), dissolved organic carbon (7.5 mg/L versus 5 mg/L), sulphate (1100 mg/L

versus 500 mg/L), total dissolved solids (2750 mg/L versus 500 mg/L), iron (15 mg/L versus 0.3 mg/L) and manganese (2.0 mg/L versus 0.05 mg/L), exceeded the ODWS.

- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are above background levels for alkalinity, hardness, chloride, total dissolved solids, iron and manganese reflecting historical impacts from Cell 1. The results are generally consistent with the 2012 to 2015 monitoring results, although there appears to be a decreasing trend for hardness, chloride, total dissolved solids, sodium and sulphate and an increasing trend for iron. The detections of VOCs was also noted in 2014 but not in previous years due to higher detection limits. Of note is that the total dissolved solids concentration is within the range of background values.

MW23-I (Intermediate well screened in clayey sandy silt till)

- During the spring monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (2000 mg/L versus 500 mg/L), total dissolved solids (3010 mg/L versus 500 mg/L) and manganese (0.10 mg/L versus 0.05 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (1800 mg/L versus 500 mg/L) and total dissolved solids (2990 mg/L versus 500 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are generally comparable to background and consistent with the 2012 to 2015 monitoring results.

Well Nest MW24 (West of Cell 1 – Downgradient of Sheet Pile Wall)

MW24-S (Shallow well screened in clay fill and weathered silty clay glaciolacustrine unit)

- During the spring monitoring event, alkalinity (1400 mg/L versus 500 mg/L), hardness (2100 mg/L versus 100 mg/L), chloride (600 mg/L versus 250 mg/L), dissolved organic carbon (54 mg/L versus 5 mg/L), sulphate (940 mg/L versus 500 mg/L) total dissolved solids (3670 mg/L versus 500 mg/L), iron (64 mg/L versus 0.3 mg/L), manganese (16 mg/L versus 0.05 mg/L) and sodium (580 mg/L versus 200 mg/L), exceeded the ODWS.
- During the fall monitoring event, alkalinity (1800 mg/L versus 500 mg/L), hardness (1900 mg/L versus 100 mg/L), chloride (490 mg/L versus 250 mg/L), dissolved organic carbon (79 mg/L versus 5 mg/L), total dissolved solids (3030 mg/L versus 500 mg/L), iron (47 mg/L versus 0.3 mg/L), manganese (8.9 mg/L versus 0.05 mg/L) and sodium (370 mg/L versus 200 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are well above background levels for alkalinity, hardness, chloride, dissolved organic carbon, sulphate, total dissolved solids, iron, manganese and sodium reflecting historical leachate impacts from Cell 1. The results are generally consistent with the 2012 to 2015 monitoring results.

MW24-GI (Granular intermediate well screened in sandy gravel)

- During the spring monitoring event, alkalinity (850 mg/L versus 500 mg/L), hardness (2300 mg/L versus 100 mg/L), chloride (480 mg/L versus 250 mg/L), dissolved organic carbon (9.8 mg/L versus 5 mg/L), sulphate (1600 mg/L versus 500 mg/L), total dissolved solids (3890 mg/L versus 500 mg/L), iron (32 mg/L versus 0.3 mg/L), manganese (3.6 mg/L versus 0.05 mg/L) and sodium (380 mg/L versus 200 mg/L), exceeded the ODWS.

- During the fall monitoring event, alkalinity (880 mg/L versus 500 mg/L), hardness (2200 mg/L versus 100 mg/L), chloride (490 mg/L versus 250 mg/L), dissolved organic carbon (9.0 mg/L versus 5 mg/L), sulphate (1400 mg/L versus 500 mg/L), total dissolved solids (3790 mg/L versus 500 mg/L), iron (31 mg/L versus 0.3 mg/L), manganese (3.4 mg/L versus 0.05 mg/L) and sodium (370 mg/L versus 200 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are above background for alkalinity, hardness, chloride, total dissolved solids, iron, manganese and sodium, reflecting historical leachate impacts from Cell 1. The results are generally consistent with the 2012 to 2015 monitoring results.

MW24-I (Intermediate well screened in clayey sandy silt till)

- During the spring monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (1900 mg/L versus 500 mg/L), total dissolved solids (2850 mg/L versus 500 mg/L), iron (0.85 mg/L versus 0.3 mg/L) and manganese (0.10 mg/L versus 0.05 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (1800 mg/L versus 500 mg/L), total dissolved solids (2930 mg/L versus 500 mg/L) and manganese (0.14 mg/L versus 0.05 mg/L), exceeded the ODWS.
- Benzene (0.11 µg/L), m&p-xylene (0.26 µg/L), and toluene (0.24 µg/L) were detected during the spring event although concentrations are well below ODWS. No PAHs, PCBs and PHCs were detected with the exception of phenanthrene in the spring and fall event (0.03 mg/L). Their presence reflects historical impacts from Cell 1.
- Concentrations are comparable to background and are generally consistent with the 2012 to 2015 monitoring results. The VOCs and phenanthrene were detected in 2014 and 2015 as well, but not in previous years due to a higher detection limit. Their presence reflects historical leachate impacts from Cell 1.

MW24-D (Deep well screened in shale bedrock)

- During the spring monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (2000 mg/L versus 500 mg/L), total dissolved solids (3150 mg/L versus 500 mg/L) and iron (0.34 mg/L versus 0.3 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (1900 mg/L versus 500 mg/L), total dissolved solids (3190 mg/L versus 500 mg/L) and iron (0.40 mg/L versus 0.3 mg/L), exceeded the ODWS.
- No VOCs, PAH, PCBs and PHCs were detected.
- Concentrations are within the range of background with the exception of slightly elevated levels of sulphate and total dissolved solids and are generally consistent with the 2012 to 2015 monitoring results.

Well Nest MW25 (West of Cell 1 – Downgradient of Sheet Pile Wall)

MW25-S (Shallow well MW25-S screened in clay silt fill and weathered silty clay glaciolacustrine unit)

- During the spring monitoring event, hardness (820 mg/L versus 100 mg/L), dissolved organic carbon (6.6 mg/L versus 5 mg/L), sulphate (630 mg/L versus 500 mg/L), total dissolved solids (1310 mg/L versus 500 mg/L) and manganese (0.2 mg/L versus 0.05 mg/L), exceeded the ODWS.
- During the fall monitoring event, alkalinity (530 mg/L versus 500 mg/L), hardness (610 mg/L versus 100 mg/L), dissolved organic carbon (12 mg/L versus 5 mg/L), total dissolved solids (1130 mg/L versus 500 mg/L), iron (9.4 mg/L versus 0.3 mg/L) and manganese (1.2 mg/L versus 0.05 mg/L), exceeded the ODWS.

- Naphthalene was detected in the fall event (0.051 µg/L). No VOCs, PCBs and PHCs were detected.
- Concentrations are above background for hardness, total dissolved solids, iron and manganese, reflecting historical leachate impacts from Cell 1. The results indicate a decreasing trend for chloride, dissolved organic carbon, total dissolved solids, iron, manganese and sodium.

MW25-I (Intermediate well screened in sandy silt till unit)

- During the spring monitoring event, hardness (1900 mg/L versus 100 mg/L), sulphate (2300 mg/L versus 500 mg/L), total dissolved solids (3690 mg/L versus 500 mg/L), manganese (0.065 mg/L versus 0.05 mg/L) and sodium (250 mg/L versus 200 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1900 mg/L versus 100 mg/L), sulphate (2200 mg/L versus 500 mg/L), total dissolved solids (3590 mg/L versus 500 mg/L) and sodium (290 mg/L versus 200 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are slightly above background for hardness, sulphate, total dissolved solids and sodium. The results are generally consistent with the 2012 to 2015 monitoring results although a slightly increasing trend for total dissolved solids.

Summary of Groundwater Quality for Cell 1 Area [2015]

Shallow and Granular Intermediate Flow Systems:

All of the current shallow flow system wells located along the perimeter of Cell 1 (east, south and west sides) typically show concentrations above background levels for hardness, sulphate, total dissolved solids, iron and manganese and at some locations for chloride, sodium and fluoride. The shallow wells are screened in fill and/or the upper weathered portion of the glaciolacustrine unit. The impacts likely reflect historical leachate impacts from Cell 1, although along the south sides of Cell 1 the impacts may also be from road salting. Concentrations in 2016 are generally consistent with those obtained in 2012 to 2015 with exception of a decreasing trend for iron at MW 18-S (east side of Cell 1), a decreasing trend for dissolved organic carbon, iron, manganese and sodium at MW 22-S (west of sheet pile wall) and a decreasing trend for chloride, dissolved organic carbon, total dissolved solids, iron, manganese and sodium at MW 25-S (west of sheet pile wall). The decreasing trends at MW 25-S and MW 25-S likely reflect cut-off of leachate migration by the sheet pile wall.

All of the current granular intermediate flow system wells (MW 22-GI, 23-GI and 24-GI) are located along the west side of the landfill west (downgradient) of the sheet pile barrier wall and indicate concentrations above background levels for alkalinity, hardness, chloride, total dissolved solids, iron, manganese and sodium. The impacts likely reflect historical leachate impacts from Cell 1. Concentrations in 2016 are generally consistent with those obtained in 2012 to 2015 with the exception of Well 22-GI which shows a decreasing trend for chloride and total dissolved solids and Well 23-GI which shows a decreasing trend in concentration for hardness, chloride, total dissolved solids, sodium and sulphate but an increasing trend for iron. The decreasing trends likely reflect cut-off of leachate migration by the sheet pile wall.

Cis-1,2-dichloroethylene was detected in 2016 at very low concentrations at the Cell 1 shallow and granular intermediate wells 22-S and 22-GI. Naphthalene was detected at very low concentrations in Well 23-S and 25-S. No PCBs and PHCs were detected.

The historical impacts in the shallow and granular intermediate flow systems along the west side of Cell 1 downgradient of the sheet pile wall are expected to disperse and gradually dissipate over time due to cut-off of leachate migration by the sheet pile wall and collector trench. However, in the short term, the dispersion of these historical impacts can result in an increase in concentrations for some wells/parameters and a decrease for others. The historical impacts in the shallow wells along the south and east side of Cell 1 are expected to decrease gradually after completion of the final capping in Cell1.

Intermediate Zone (Aquitard)

The intermediate zone (aquitard) wells (MW 18-I, 19-I, 21-I, 22-I, 23-I, 24-I and 25-I) located along the perimeter of Cell 1 (east, south and west sides) show concentrations generally similar to background quality except at MW18-I (east side) and MW25-I (west side) where concentrations slightly higher than background were noted for parameters including hardness, total dissolved solids, sodium and sulphate. The slightly elevated concentrations likely reflect historical leachate impacts from Cell 1. VOCs including benzene, xylenes and toluene were detected at very low concentrations (well below ODWS) at Wells 18-I and 24-I during the spring monitoring event in 2016. The PAH phenanthrene was detected at Well 18-I on both monitoring events at very low concentrations (0.24 and 0.05 µg/L). No PCBs and PHCs were detected. Concentrations obtained in 2016 are generally consistent with those obtained in 2012 to 2015.

Deep Flow System (Upper Fractured Bedrock)

Upper bedrock wells 21-D (south side) and 24-D (west side) show some elevated concentrations compared to background, likely relating to historical leachate impacts from Cell 1. For Well 24-D, the impacts are minor and include the parameters sulphate and total dissolved solids. Well 21-D shows the highest impacts amongst the bedrock wells, with the elevated parameters being sulphate, total dissolved solids, boron, fluoride and sodium. Overall, concentrations obtained in 2016 at 21-D and 24-D are generally consistent with those obtained in 2012 to 2015. For upper bedrock well 19-D (east side), concentrations are generally consistent with background levels. No VOCs, PAHs, PCBs and PHCs were detected.

Groundwater Quality for Cell 2 Area

Well Nest MW20 (East of Cell 2)

MW20-S (Shallow well screened in upper weathered clayey silt glaciolacustrine unit)

- During the spring monitoring event, alkalinity (620 mg/L versus 500 mg/L), hardness (800 mg/L versus 100 mg/L) and total dissolved solids (1100 mg/L versus 500 mg/L) exceeded the ODWS.
- During the fall monitoring event, alkalinity (610 mg/L versus 500 mg/L), hardness (810 mg/L versus 100 mg/L), total dissolved solids (1030 mg/L versus 500 mg/L) and manganese (0.075 mg/L versus 0.05 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are slightly above background levels for alkalinity, hardness and total dissolved solids, possibly reflecting historical leachate impacts from Cell 1. Concentrations are showing a decreasing trend for sulphate, total dissolved solids, DOC, iron and manganese, likely reflecting cut-off of shallow leachate migration by the migration barrier wall.

MW20-I (Intermediate well screened in sandy silt till unit)

- During the spring monitoring event, hardness (1500 mg/L versus 100 mg/L), sulphate (1700 mg/L versus 500 mg/L), total dissolved solids (2580 mg/L versus 500 mg/L) and manganese (0.086 mg/L versus 0.05 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1500 mg/L versus 100 mg/L), sulphate (1700 mg/L versus 500 mg/L), total dissolved solids (2680 mg/L versus 500 mg/L) and manganese (0.080 mg/L versus 0.05 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are consistent with background levels and the 2012 to 2015 monitoring results.

Well Nest MW26 (North of Cell 2)

MW26-S (Shallow well screened in upper weathered silty clay/clayey silt glaciolacustrine unit)

- During the spring monitoring event, hardness (2100 mg/L versus 100 mg/L), sulphate (1600 mg/L versus 500 mg/L), total dissolved solids (2650 mg/L versus 500 mg/L) and uranium (0.03 mg/L versus 0.02 mg/L), exceeded the ODWS.
- During the fall monitoring event, MW26-S was dry.
- Concentrations are above background for hardness sulphate and total dissolved sulphate, possibly reflecting historical impacts from Cell 1. There is insufficient data to comment on any trend in concentrations as the well was dry during most of the monitoring events.

MW26-I (Intermediate well screened in clayey silt till unit)

- During the spring monitoring event, hardness (1700 mg/L versus 100 mg/L), sulphate (1900 mg/L versus 500 mg/L) and total dissolved solids (3030 mg/L versus 500 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1700 mg/L versus 100 mg/L), sulphate (2000 mg/L versus 500 mg/L) and total dissolved solids (2960 mg/L versus 500 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are generally comparable to background and consistent with the 2012 to 2015 monitoring results.

Well Nest MW27 (North of Cell 2)

MW27-S (Shallow well screened in upper weathered silty clay/clayey silt glaciolacustrine unit)

- During the spring monitoring event, hardness (890 mg/L versus 100 mg/L), sulphate (540 mg/L versus 500 mg/L) and total dissolved solids (1160 mg/L versus 500 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (810 mg/L versus 100 mg/L), total dissolved solids (1110 mg/L versus 500 mg/L), aluminum (0.11 mg/L versus 0.1 mg/L) and manganese (0.059 mg/L versus 0.05 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are slightly above background for sulphate and total dissolved solids, likely reflecting natural variability in background quality. The results are generally consistent with the 2012 to 2015 monitoring results.

MW27-I (Intermediate well screened in sandy clayey silt till unit)

- During the spring monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (1900 mg/L versus 500 mg/L), total dissolved solids (2940 mg/L versus 500 mg/L) and manganese (0.12 mg/L versus 0.05 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (1900 mg/L versus 500 mg/L), total dissolved solids (2920 mg/L versus 500 mg/L) and manganese (0.051 mg/L versus 0.05 mg/L), exceeded the ODWS.
- Benzene, m&p-xylene (0.23 µg/L) and toluene (0.25 µg/L) were detected during the spring event. No PAHs, PCBs and PHCs were detected except for phenanthrene during the spring event (0.1 µg/L). The presence of these trace organic parameters may be indicative of historical impacts from Cell 1.

- Concentrations are generally comparable to background levels and consistent with the 2012 to 2015 monitoring results. The VOC concentration are well below ODWS.

MW27-D (Deep well screened in shale bedrock)

- During the spring monitoring event, hardness (1900 mg/L versus 100 mg/L), sulphate (1800 mg/L versus 500 mg/L), total dissolved solids (2750 mg/L versus 500 mg/L) and iron (0.51 mg/L versus 0.3 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (1700 mg/L versus 500 mg/L), total dissolved solids (2770 mg/L versus 500 mg/L) and iron (0.51 mg/L and versus 0.3 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are comparable to background and generally consistent with the 2012 to 2015 monitoring results.

Well Nest MW28 (West of Cell 2)

MW28-S (Shallow well screened in sandy silt/silt and upper weathered glaciolacustrine unit)

- During the spring monitoring event, hardness (490 mg/L versus 100 mg/L) and total dissolved solids (636 mg/L versus 500 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (890 mg/L versus 100 mg/L), sulphate (760 mg/L versus 500 mg/L), total dissolved solids (1470 mg/L versus 500 mg/L) and manganese (0.71 mg/L versus 0.05 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected. Not enough sample was recovered for during the fall event for PAH and PHC (F2, F3, F4) analyses.
- Concentrations are slightly above background for hardness, sulphate and total dissolved solids possibly reflecting historical impacts from Cell 1 and/or natural variability in background quality and are generally consistent with the 2012 to 2015 monitoring results. Hardness, sulphate and total dissolved solids are noted to be significantly higher for the Fall events compared to Spring events. The cause of this pattern is unknown but is unlikely related to the landfill.

MW28-I (Intermediate well screened in sandy clayey silt till)

- During the spring monitoring event, hardness (1700 mg/L versus 100 mg/L), sulphate (1800 mg/L versus 500 mg/L), total dissolved solids (2770 mg/L versus 500 mg/L), iron (0.79 mg/L versus 0.3 mg/L) and manganese (0.053 mg/L versus 0.05 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1700 mg/L versus 100 mg/L), sulphate (1700 mg/L versus 500 mg/L), total dissolved solids (2670 mg/L versus 500 mg/L), iron (0.84 mg/L versus 0.3 mg/L) and manganese (0.051 mg/L versus 0.05 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are comparable to background levels and generally consistent with the 2012 to 2015 monitoring results.

Well Nest MW6-99 (West of Cell 2)

MW6-99-S (Well screened in un-weathered clay and silt glaciolacustrine unit)

- During the spring monitoring event, hardness (1500 mg/L versus 100 mg/L), sulphate (1800 mg/L versus 500 mg/L), total dissolved solids (2610 mg/L versus 500 mg/L), manganese (0.27 mg/L versus 0.05 mg/L) and sodium (240 mg/L versus 200 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1700 mg/L versus 100 mg/L), sulphate (1700 mg/L versus 500 mg/L), total dissolved solids (2870 mg/L versus 500 mg/L) and iron (0.64 mg/L versus 0.3 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are above background levels for hardness, sulphate and total dissolved solids, reflecting historical leachate impacts from Cell 1. The results are generally consistent with the 2012 to 2015 monitoring results. Concentrations are expected to decrease gradually after completion of waste placement and final capping in Cell 1.

MW6-99-I (Intermediate well screened in sand till unit)

- During the spring monitoring event, hardness (1300 mg/L versus 100 mg/L), sulphate (1300 mg/L versus 500 mg/L), total dissolved solids (1440 mg/L versus 500 mg/L), boron (7.5 mg/L versus 5 mg/L) and manganese (0.15 mg/L versus 0.05 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1200 mg/L versus 100 mg/L), sulphate (1500 mg/L versus 500 mg/L), total dissolved solids (2620 mg/L versus 500 mg/L), manganese (0.21 mg/L versus 0.05 mg/L) and sodium (230 mg/L versus 200 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations exceeded background levels for boron reflecting historical leachate impacts from Cell 1. The results are generally consistent with the 2012 to 2015 monitoring results.

MW6-99-D (Deep well screened in silt till unit)

- During the spring monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (1900 mg/L versus 500 mg/L), total dissolved solids (2800 mg/L versus 500 mg/L) and iron (0.67 mg/L versus 0.3 mg/L), exceeded the ODWS.
- During the fall monitoring event, hardness (1800 mg/L versus 100 mg/L), sulphate (1800 mg/L versus 500 mg/L), total dissolved solids (2830 mg/L versus 500 mg/L), boron (7.9 mg/L versus 5 mg/L) and iron (2 mg/L versus 0.3 mg/L and manganese (0.13 mg/L), exceeded the ODWS.
- No VOCs, PAHs, PCBs and PHCs were detected.
- Concentrations are above background for boron and iron reflecting historical leachate impacts from Cell 1. The results are consistent with the 2012 to 2015 monitoring results.

Summary of Groundwater Quality for Cell 2 Area [2015]

Shallow Flow System (Upper Weathered Glaciolacustrine Unit)

The three shallow wells screened in the upper weathered glaciolacustrine unit along the perimeter of Cell 2 (i.e. 20-S, 26-S, 27-S and 28-S) indicate concentrations above background for parameters such as alkalinity, hardness, total dissolved solids and sulphate. For the wells 20-S and 28-S which are closest to Cell 1, the elevated levels may reflect historical impacts from Cell 1. At MW 20-S, concentrations are showing a decreasing trend for sulphate, total dissolved solids, DOC, iron and manganese, likely reflecting cut-off of

shallow leachate migration by the re-compacted clay migration barrier. At 28-S, concentrations are comparable to previous years. For 27-S which is furthest from Cell 1, the slightly elevated concentrations may reflect natural variability in background levels. No VOCs, PAHs, PCBs and PHCs were detected at wells 20-S, 27-S and 28-S.

Intermediate (Aquitard) Zone

There are six intermediate (aquitard) zone wells screened in the till unit along the perimeter of Cell 2 (i.e., 20-I, 26-I, 27-I, 28-I, 6-99-I and 6-99-D). Nest 6-99 which is close to the north-west corner of Cell 1 shows concentrations above background levels for Well 6-99-I and 6-99-D with the elevated parameter being boron. The impact for boron may be related to leachate migration from Cell 1. The other intermediate zone well 6-99-D show concentrations comparable to background levels. The VOCs benzene, m&p-xylene and toluene were detected during the spring event at Well 27-I are within the range of background levels and are well below the ODWS. For all intermediate zone wells, concentrations obtained in 2016 are generally consistent with those obtained in 2012 to 2015. There is no indication of leachate impacts from Cell 2.

Table 2a Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW29-S (East of Cell 1)								Shallow Background Well Concentration Range		MW29-I (East of Cell 1)								Intermediate Background Well Concentration Range		Deep (Bedrock) MW29-D (East of Cell 1)									Deep Background Well Concentration Range	
			15-May-13	11-Nov-13	29-May-14	29-Oct-14	21-Apr-15	20-Oct-15	24-May-16	10-Nov-16	Min.	Max.	13-May-13	11-Nov-13	29-May-14	29-Oct-14	16-Apr-15	20-Oct-15	24-May-16	10-Nov-16	Min.	Max.	13-May-13	11-Nov-13	11-Nov-13 (duplicate)	29-May-14	29-May-14 (duplicate)	29-Oct-14	16-Apr-15	15-Oct-15	24-May-16	17-Nov-16	Min.	Max.
Field Measurements																																	
pH		< 6.5-8.5 > (A)	7.5	7.3	7	6.9	7.3	6.6	6.9	7	6.6	7.5	8.0	8.4	7.6	7.8	8	7.4	7.7	7.7	7.4	8.4	8.0	8.1	8.1	7.2	7.2	9.0	7.8	7.2	7.4	6.6	6.6	9.0
Temperature	°C	--	10.9	11.2	10.6	13.8	9.8	12.6	12.6	13.3	9.8	13.8	9.3	10.2	12.2	10.7	12.5	12.3	11.7	10.8	9.3	12.5	9.2	10.2	10.2	10.7	10.7	10.6	11.5	11.4	11.8	10.7	9.2	11.8
Conductivity	µmho/cm	--	1090	915	993	824	904	1060	1030	922	824	1090	3090	2820	2920	1850	1780	2830	2580	1850	1780	3090	2960	2600	NA	2700	NA	1700	1680	2650	2490	1800	1680	2960
General Chemistry																																	
pH (lab)		< 6.5-8.5 > (A)	7.78	7.65	7.41	7.7	7.58	7.64	7.72	7.6	7.41	7.78	7.69	7.76	7.68	7.48	7.64	7.49	7.57	7.58	7.48	7.76	7.5	7.7	7.71	7.59	7.56	7.59	7.46	7.66	7.52	7.52	7	8
Alkalinity (Total as $CaCO_3$)	mg/L	< 30-500 > (A)	497	495	493	490	460	440	420	400	400	497	61	49	58	58	56	54	57	57	49	61	73	72	72	71	72	71	67	69	68	67	67	73
Hardness ($CaCO_3$)	mg/L	< 80-100 > (A)	598	573	574	543	560	630	630	680	543	680	1830	1820	1790	1668	1700	1800	1700	1800	1668	1830	1880	1700	1680	1867	1850	1702	1700	1800	1700	1700	1680	1880
Conductivity (lab)	µmho/cm	--	1070	1060	997	1100	1100	1200	1200	1300	997	1300	2810	3070	2890	3000	2900	2900	2900	3000	2810	3070	2660	2740	2740	2750	2750	2900	2800	2700	2800	2700	2660	2900
Ion Balance	(%)	--	4.23	3.35	3.74	0.09	0.85	5.02	2.83	5.36	0.09	5.36	4.16	3.56	3.63	1.00	1.84	2.50	1.52	0.85	0.85	4.16	3.01	0.82	0.72	4.96	3.87	0.55	1.57	5.84	-1.02	2.19	-1.02	5.84
Bromide (Br)	mg/L	--	<0.25	<0.25	<0.25	<1.0	<1.0	<1.0	<1.0	<1.0	<0.05	<1.0	<0.25	<0.25	0.26	<1	<10	<5.0	<5	<5	<0.05	0.26	0.27	<0.25	<0.25	0.27	0.26	<5	<10	<5.0	<5	<5	<0.25	0.27
Dissolved Chloride (Cl)	mg/L	[250] (A)	8	4	3	6.4	8.8	10	9.6	10	3	10	30	27	28	30	30	35	28	32	27	35	33	32	32	31	31	33	33	29	32	29	29	33
Fluoride (F)	mg/L	1.5 (H)	0.18	0.25	0.21	0.21	0.22	0.21	0.23	0.24	0.18	0.25	0.98	1.1	1.09	0.95	0.96	0.92	1.0	1.0	0.92	1.1	1.18	1.27	1.25	1.18	1.2	0.99	1.0	1.0	1.1	1.0	1.0	1.3
Dissolved Organic Carbon (DOC)	mg/L	[5] (A)	9.9	11.6	11	12	11	11	9	8.9	8.9	12	1.6	1.1	1.1	1.2	0.99	0.9	1.2	1.2	0.89	1.6	1	0.6	0.6	1	1.1	1.3	0.7	0.6	1.1	0.9	0.6	1.3
Phosphorus (P)	mg/L	--	0.01	<0.01	<0.01	0.028	<0.020	<0.020	<0.02	0.047	0.01	0.047	<0.01	<0.01	<0.01	0.028	<0.020	<0.020	<0.02	<0.02	<0.01	0.028	<0.01	<0.01	<0.01	<0.01	<0.01	0.031	<0.020	<0.020	<0.02	<0.02	<0.01	0.031
Sulphate (SO_4)	mg/L	[500] (A)	126	92	90	100	160	190	240	290	90	290	1770	1880	1760	1800	1700	1800	1800	1800	1700	1880	1730	1640	1670	1670	1690	1700	1600	1600	1700	1600	1600	1730
Ammonia-N	mg/L	--	0.61	0.61	0.38	0.69	0.25	0.48	0.13	0.5	<0.03	0.69	0.63	0.48	0.44	0.4	0.44	0.38	0.36	0.37	0.36	0.63	0.57	0.57	0.56	0.53	0.53	0.43	0.49	0.42	0.43	0.46	0.42	0.57
Unionized Ammonia	mg/L	--	0.0038	0.0025	0.0007	0.0014	0.0011	0.0005	0.0002	0.0012	0.0002	0.0038	0.0109	0.0217	0.0038	0.0049	0.012	0.0026	0.0038	0.0036	0.0026	0.0217	0.0098	0.0132	0.0130	0.0016	0.0016	0.0701	0.0078	0.0017	0.0023	0.0004	0.0004	0.0701
Nitrite	mg/L	1 (A)	<0.1	<0.1	<0.1	<0.1	0.012	<0.010	<0.01	<0.01	<0.004	0.012	<0.1	<0.1	<0.1	<0.1	<0.010	<0.010	<0.01	<0.01	<0.010	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.010	<0.010	<0.01	<0.01	<0.010	<0.1
Nitrate	mg/L	10 (H)	<0.1	<0.1	<0.1	<0.01	<0.10	<0.10	<0.1	<0.1	0	0	<0.1	<0.1	<0.1	<0.01	<0.10	<0.10	<0.1	<0.1	<0.10	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.10	<0.10	<0.1	<0.1	<0.01	<0.10
Total Dissolved Solids (TDS)	mg/L	[500] (A)	696	689	648	628	722	748	994	874	628	994	2250	2460	2310	2730	2690	2760	3050	2770	2250	3050	2130	2190	2190	2200	2200	2630	2650	2650	3060	2680	2130	3060
Total Kjeldehl Nitrogen (TKN)	mg/L	--	0.67	0.76	0.71	1	0.75	1.1	0.51	0.85	0.51	1.1	0.72	0.47	0.42	0.63	0.65	0.78	1.1	0.65	0.42	1.1	0.51	0.55	0.64	0.53	0.77	0.81	0.72	0.74	1.1	0.5	0.50	1.10
Phenols																																	
Total Phenols	mg/L	--	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.01	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005

Notes:
NA Parameter not analyzed
-- No value

1. Ontario Drinking Water Standard,
a. Unbracketed numbers represent Maximum Acceptable Concentrations,
b. Brace bracketed numbers represent Interim Maximum Acceptable
c. Square bracketed numbers represent Aesthetic Objective, i.e.
d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >
(A) Aesthetic Drinking Water Objective
(H) Health Related Drinking Water Objective
Exceeds ODWS

Table 2b Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW29-S (East of Cell 1)								Shallow Background Well Concentration Range		MW29-I (East of Cell 1)								Intermediate Background Well Concentration Range		Deep (Bedrock) MW29-D (East of Cell 1)									Deep Background Well Concentration Range	
			15-May-13	11-Nov-13	29-May-14	29-Oct-14	21-Apr-15	20-Oct-15	24-May-16	10-Nov-16	Min.	Max.	13-May-13	11-Nov-13	29-May-14	29-Oct-14	16-Apr-15	20-Oct-15	24-May-16	17-Nov-16	Min.	Max.	13-May-13	11-Nov-13	11-Nov-13 (duplicate)	29-May-14	29-May-14 (duplicate)	30-Oct-14	16-Apr-15	15-Oct-15	24-May-16	17-Nov-16	Min.	Max.
Metals																																	
Aluminum (Al)	mg/L	< 0.1 > (A)	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	0	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	0.008	0.28	<0.005	0.28	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01
Antimony (Sb)	mg/L	{0.006} (H)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic (As)	mg/L	{0.025} (H)	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	0.002	0.0012	0.0015	0.0014	0.0013	0.0014	0.0012	0.002	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01
Barium (Ba)	mg/L	1 (H)	0.09	0.09	0.11	0.16	0.17	0.15	0.11	0.1	0.09	0.17	0.02	0.01	0.01	0.01	0.01	0.011	0.0096	0.012	0.0096	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.007	0.0068	0.0068	0.0066	0.0066	0.0066	<0.01
Beryllium (Be)	mg/L	–	<0.0005	<0.0005	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron (B)	mg/L	{5} (H)	0.06	0.1	0.1	0.092	0.062	0.89	0.067	0.072	0.06	0.89	0.9	0.86	0.99	0.91	0.97	1.0	0.95	1	0.86	1.0	1.2	1.2	1.2	1.4	1.3	1.1	1.1	1.2	1.1	1.1	1.1	1.4
Cadmium (Cd)	mg/L	0.005 (H)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium (Ca)	mg/L	–	157	137	149	140	150	160	170	180	137	180	520	495	514	470	470	510	500	500	470	520	577	532	524	578	576	520	520	560	510	520	510	578
Chromium (Cr)	mg/L	0.05 (H)	0.004	0.003	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	0.004	<0.001	0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005
Cobalt (Co)	mg/L	–	0.0021	0.0021	0.0012	0.0016	0.0011	<0.001	0.00091	0.0017	<0.0005	0.0021	0.0012	0.0007	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.003	0.0007	0.0007	0.0007	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.001
Copper (Cu)	mg/L	[1] (A)	0.001	<0.001	0.001	<0.001	0.0017	<0.001	0.0018	<0.001	0.001	0.0018	0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001
Iron (Fe)	mg/L	[0.3] (A)	0.09	2.94	0.14	0.31	<0.1	0.27	<0.1	0.53	<0.01	2.94	0.07	0.07	0.65	0.47	0.61	0.34	0.56	0.93	0.07	0.93	0.33	0.49	0.52	0.46	0.45	0.5	0.56	0.55	0.59	0.56	0.33	0.59
Lead (Pb)	mg/L	0.01 (H)	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.016	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	0.00066	<0.0005	<0.016	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Magnesium (Mg)	mg/L	–	50	56	49	47	45	54	52	56	45	56	130	143	123	120	120	130	120	120	120	143	106	91	90	103	100	98	96	100	99	96	90	106
Manganese (Mn)	mg/L	[0.05] (A)	0.21	0.23	0.14	0.17	0.16	0.23	0.13	0.3	0.13	0.3	0.09	0.1	0.1	0.08	0.087	0.087	0.082	0.099	0.08	0.1	0.04	0.04	0.04	0.05	0.05	0.038	0.041	0.04	0.039	0.039	0.038	0.05
Mercury (Hg)	mg/L	0.001 (H)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum (Mo)	mg/L	–	0.011	0.009	<0.005	0.0042	0.0039	0.0032	0.0026	0.0024	<0.002	0.011	0.018	0.023	0.012	0.012	0.013	0.011	0.011	0.01	0.01	0.023	<0.005	<0.005	<0.005	<0.005	<0.005	0.0047	0.0048	0.0047	0.0051	0.0046	0.0046	<0.005
Nickel (Ni)	mg/L	–	<0.005	<0.005	<0.005	<0.003	0.0021	0.03	0.0025	0.0029	0.0021	0.03	0.015	0.014	<0.005	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	0.015	0.007	0.005	0.006	<0.005	<0.005	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	0.007
Potassium (K)	mg/L	–	7	5	3	3.7	3.5	3.9	3.3	3.9	3	7	10	7	4	5.2	5.2	5.4	4.9	5.2	4	10	11	9	8	8	7	6.7	7.6	7.9	7.6	7.4	6.7	11
Selenium (Se)	mg/L	0.01 (H)	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.004	<0.01	<0.01	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.01	<0.01	<0.01	<0.01	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.01
Silver (Ag)	mg/L	–	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium (Na)	mg/L	[200] (A)	40	26	27	25	29	37	37	51	25	51	123	166	129	120	130	130	130	120	120	166	68	64	64	78	72	77	66	75	71	69	64	78
Strontium (Sr)	mg/L	–	0.728	0.929	0.853	0.81	0.86	8.7	0.85	0.88	0.728	8.7	9.86	10.9	10.6	10	10	11	10	9.8	9.8	11	8.77	10	9.97	11.3	10	11.2	9.8	9.7	10	9.6	8.77	11.3
Thallium (Tl)	mg/L	–	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.012	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0001
Tin (Sn)	mg/L	–	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01
Titanium (Ti)	mg/L	–	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	0.012	0.012	0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01
Uranium (U)	mg/L	0.02 (H)	0.013	0.012	0.007	0.0053	0.0042	0.03	0.0026	0.0022	0.0022	0.03	<0.001	<0.001	<0.001	0.0002	0.00016	0.0017	0.0002	0.00029	0.00016	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	0.00011	<0.0001	0.00018	<0.0001	<0.0001	0.00018
Vanadium (V)	mg/L	–	0.002	0.007	<0.001	0.00062	0.00074	0.0062	0.00057	0.00052	0.00052	0.007	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	0.00054	<0.0005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Zirconium (Zr)	mg/L	–	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.005	<0.002	<0.002	<0.002	<0.001	<0.025	<0.001	<0.001	<0.001	<0.001	<0.025	0.002	<0.002	0.002	<0.002	<0.002	<0.001	<0.025	<0.001	<0.001	<0.001	<0.001	<0.025
Zinc (Zn)	mg/L	[5] (A)	<0.01	<0.01	<0.01	<0.005	<0.001	<0.005	0.0051	<0.005	<0.001	0.0051	<0.01	<0.01	<0.01	<0.01	<0.001	<0.025	<0.025	<0.025	<0.001	<0.025	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.025	<0.025	<0.01	<0.001	<0.025

Notes:

NA	Parameter not analyzed
–	No value

1. Ontario Drinking Water Standard
a. Unbracketed numbers represent Maximum Accepable Concentrations, i.e. <0.01>
b. Brace bracketed numbers represent Interim Maximum Accepable Aesthetic Objective, i.e. {500}
c. Square bracketed numbers represent Operational Guidelines, i.e. <5 >
d. Bracketed < > numbers represent

(A) Aesthetic Drinking Water Objective
(H) Health Related Drinking Water Objective
Exceeds ODWS

Table 2c Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW29-S (East of Cell 1)								Shallow Background Well Concentration Range		MW29-I (East of Cell 1)								Intermediate Background Well Concentration Range		Deep (Bedrock) MW29-D (East of Cell 1)									Deep Background Well Concentration Range	
			15-May-13	11-Nov-13	29-May-14	29-Oct-14	21-Apr-15	20-Oct-15	24-May-16	10-Nov-16	Min.	Max.	13-May-13	11-Nov-13	29-May-14	29-Oct-14	16-Apr-15	20-Oct-15	24-May-16	10-Nov-16	Min.	Max.	13-May-13	11-Nov-13	11-Nov-13 (duplicate)	29-May-14	29-May-14 (duplicate)	30-Oct-14	16-Apr-15	15-Oct-15	24-May-16	17-Nov-16	Min.	Max.
Volatile Organic Compounds																																	
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.4
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.4
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.4
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.1	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.4
1,2-Dichloroethane	µg/L	(5) (H)	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.1	NA	NA	-	-	<0.1	<0.3	<0.3	<0.3	<0.3	<0.2	NA	NA	-	-	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	NA	NA	-	-	<0.1	<0.3
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.1	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.4
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.1	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.4
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	0.14	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	0.14	0.12	0.12	0.13	0.12	0.12	0.14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.3
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.1	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.4
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.2	<0.20	NA	<0.2	<0.2	<0.1	<0.2	<0.3	<0.3	<0.3	<0.2	<0.20	NA	<0.2	<0.2	<0.1	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	NA	<0.2	<0.2	<0.2	<0.3
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	NA	NA	NA	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	-	-	<0.2	<0.2
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	NA	NA	NA		-	<0.2	<0.4	<0.2	<0.2	<0.2	NA	NA	NA		-	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	NA	NA	NA			-	<0.2	<0.2
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.4
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
Dichlorodifluromethane	µg/L	-	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	NA	NA	<0.1	<0.50	<0.50	<0.5	<0.5	<0.1	<0.5
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.1	0.24	<0.20	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	0.27	0.22	<0.20	0.21	<0.1	<0.2	0.27	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.20	<0.1	<0.1	<0.1	<0.5
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<0.5	<0.3	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<0.5	<0.3	<4	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<0.5	<0.5	<4
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	0.1	<0.10	0.19	<0.1	<0.1	0.1	0.19	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.5
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.3
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.2	1.3	<0.20	<0.2	<0.2	<0.2	1.3	<0.5	<0.5	<0.5	0.28	0.26	<0.20	0.22	0.22	<0.2	0.28	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.5
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.4
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.3
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	0.19	<0.2	<0.2	0.19	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.2	<0.1	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.17	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.17	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	<0.1	0.24	<0.10	<0.1	<0.1	<0.1	0.24	NA	NA	NA	<0.1	0.22	<0.10	0.21	<0.2	<0.1	0.22	NA	NA	NA	NA	NA	<0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1

Notes:
NA Parameter not analyzed
-- No value

1. Ontario Drinking Water Standard
a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10
b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}
c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]
d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >
(A) Aesthetic Drinking Water Objective
(H) Health Related Drinking Water Objective
Exceeds ODWS

Table 2d Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW29-S (East of Cell 1)								Shallow Background Well Concentration Range		MW29-I (East of Cell 1)								Intermediate Background Well Concentration Range		Deep (Bedrock) MW29-D (East of Cell 1)									Deep Background Well Concentration Range	
			15-May-13	11-Nov-13	29-May-14	29-Oct-14	21-Apr-15	20-Oct-15	24-May-16	10-Nov-16	Min.	Max.	13-May-13	11-Nov-13	29-May-14	29-Oct-14	16-Apr-15	20-Oct-15	24-May-16	10-Nov-16	Min.	Max.	13-May-13	11-Nov-13	11-Nov-13 (duplicate)	29-May-14	29-May-14 (duplicate)	30-Oct-14	16-Apr-15	15-Oct-15	24-May-16	17-Nov-16	Min.	Max.
Polycyclic Aromatic Hydrocarbons (PAHs)																																	
Naphthalene	µg/L	-	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2
Acenaphthylene	µg/L	-	<0.2	<0.05	<0.2	NA	NA	NA	-	-	<0.05	<0.2	<0.2	<0.05	<0.2	NA	NA	NA	-	-	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	NA	NA	NA	-	-	<0.05	<0.2
Acenaphthene	µg/L	-	<0.2	<0.05	<0.2	NA	NA	NA	-	-	<0.05	<0.2	<0.2	<0.05	<0.2	NA	NA	NA	-	-	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	NA	NA	NA	-	-	<0.05	<0.2
Fluorene	µg/L	-	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2
Phenanthrene	µg/L	-	<0.2	<0.05	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03	<0.03	<0.2	<0.2	<0.05	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03	<0.03	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03	<0.03	<0.2
Anthracene	µg/L	-	<0.2	<0.01	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.01	<0.2	<0.2	<0.01	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.01	<0.2	<0.2	<0.01	<0.01	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.01	<0.2
Fluoranthene	µg/L	-	<0.2	<0.01	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.01	<0.2	<0.2	<0.01	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.01	<0.2	<0.2	<0.01	<0.01	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.01	<0.2
Pyrene	µg/L	-	<0.2	<0.01	<0.2	NA	NA	NA	-	-	<0.01	<0.2	<0.2	<0.01	<0.2	NA	NA	NA	-	-	<0.01	<0.2	<0.2	<0.01	<0.01	<0.2	<0.2	NA	NA	NA	-	-	<0.01	<0.2
Benzo(a)anthracene	µg/L	-	<0.2	<0.01	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.01	<0.2	<0.2	<0.01	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.01	<0.2	<0.2	<0.01	<0.01	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.01	<0.2
Chrysene	µg/L	-	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.05	<0.2	NA	NA	NA	-	-	<0.05	<0.2	<0.2	<0.05	<0.2	NA	NA	NA	-	-	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	NA	NA	NA	NA	-	-	<0.05	<0.2
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01	<0.01	<0.09	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01	<0.01	<0.09	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.05	<0.2	NA	NA	NA	-	-	<0.03	<0.2	<0.2	<0.05	<0.2	NA	NA	NA	-	-	<0.03	<0.2	<0.2	<0.05	<0.05	<0.2	NA	NA	NA	NA	-	-	<0.05	<0.2
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05	<0.05	<0.2
Poly Chlorinated Biphenyls (PCBs)																																	
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Petroleum Hydrocarbons (PHCs)																																	
C6 - C10 (F1)	µg/L	--	<100	<100	NA	<25	<25	<25	<25	<25	<25	<100	<100	<100	NA	<25	<25	<25	<25	<25	<25	<100	<100	<100	<100	NA	NA	<25	<25	<25	<25	<25	<25	<100
C10 - C16 (F2)	µg/L	--	<100	<100	NA	<100	<100	<100	<100	<100	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	NA	NA	<100	<100	<100	<100	<100	<100	<100
C16 - C34 (F3)	µg/L	--	700	<200	NA	<200	<200	<200	<200	<200	<200	700	600	<200	NA	<200	<200	<200	<200	<200	<200	600	<200	<200	<200	NA	NA	<200	<200	<200	<200	<200	<200	<200
C34 - C50 (F4)	µg/L	--	200	<200	NA	<200	<200	<200	<200	<200	<200	200	<200	<200	NA	<200	<200	<200	<200	<200	<200	<500	<200	<200	<200	NA	NA	<200	<200	<200	<200	<200	<200	<200

Notes:
NA Parameter not analyzed
-- No value

1. Ontario Drinking Water Standard (ODWS):
a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10
b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}
c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]
d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >
(A) Aesthetic Drinking Water Objective
(H) Health Related Drinking Water Objective
Exceeds ODWS

Table 2e Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		pH (field)	Temp. (field)	Conductivity (field)	pH (lab)	Total Alkalinity	Hardness ($CaCO_3$)	Conductivity (lab)	Ion Balance	Bromide (Br)	Dissolved Chloride (Cl)	Fluoride (F)	Dissolved Organic Carbon (DOC)	Phosphorus (P)	Sulphate (SO_4)	Ammonia-N	Unionized Ammonia	Nitrite	Nitrate	Total Dissolved Solids (TDS)	Total Kjeldehl Nitrogen (TKN)	Total Phenols
Units			°C	µmho/cm		mg/L	mg/L	µmho/cm	(%)	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS (2003)[1]		< 6.5-8.5 > (A)	–	–	< 6.5-8.5 > (A)	< 30-500 > (A)	< 80-100 > (A)	–	–	–	[250] (A)	1.5 (H)	[5] (A)	–	[500] (A)	–	–	1 (A)	10 (H)	[500] (A)	–	–
Background Range Shallow Wells		6.6 - 7.5	9.8 - 13.8	824 - 1090	7.41 - 7.78	400 - 497	543 - 680	997 - 1300	0.09 - 5.36	<0.05 - <1.0	3 - 10	0.18 - 0.25	8.9 - 12	0.01 - 0.047	90 - 290	<0.03 - 0.69	0.0002 - 0.0038	<0.004 - 0.012	0 - 0	628 - 994	0.51 - 1.1	<0.001 - <0.005
Background Range Intermediate Wells		7.4 - 8.4	9.3 - 12.5	1780 - 3090	7.48 - 7.76	49 - 61	1668 - 1830	2810 - 3070	0.85 - 4.16	<0.05 - 0.26	27 - 35	0.92 - 1.1	0.89 - 1.6	<0.01 - 0.028	1700 - 1880	0.36 - 0.63	0.0026 - 0.0217	<0.010 - 0	<0.10 - 0	2250 - 3050	0.42 - 1.1	<0.001 - <0.01
Background Range Deep Wells		6.6 - 9	9.2 - 11.8	1680 - 2960	7.46 - 7.71	67 - 73	1680 - 1880	2660 - 2900	-1.02 - 5.84	<0.25 - 0.27	29 - 33	0.99 - 1.27	0.6 - 1.3	<0.01 - 0.031	1600 - 1730	0.42 - 0.57	0.0004 - 0.0701	<0.010 - <0.1	<0.01 - <0.10	2130 - 3060	0.5 - 1.1	<0.001 - <0.005
MW18-S (East of Cell 1)																						
11-Apr-12		7.3	8.7	1960	7.70	462	1060	1940	-1.14	<0.25	34	0.15	6.3	<0.01	667	<0.02	<0.0001	<0.1	<0.1	1460	0.25	<0.001
14-Nov-12		7.6	10.9	2200	7.88	514	1210	2060	1.08	<0.25	38	0.23	4.8	0.01	720	0.03	0.0002	<0.1	<0.1	1540	0.16	<0.001
13-May-13		7.5	9.3	2160	7.68	488	1180	1910	4.60	<0.25	35	0.22	3.2	<0.01	679	<0.02	<0.0002	<0.1	<0.1	1430	0.1	<0.001
8-Nov-13		7.4	11.7	1650	7.58	475	1120	2000	-0.26	<0.25	34	0.22	3.9	<0.01	715	0.03	0.0002	<0.1	<0.1	1500	0.19	<0.001
28-May-14		7.1	13	1859	7.71	488	1189	1940	3.83	<0.25	33	0.17	2.8	<0.01	677	0.06	0.0002	<0.1	<0.1	1460	0.13	<0.001
28-May-14	(duplicate)	7.1	13	NA	7.71	491	1160	1920	2.23	<0.25	34	1.17	3	<0.01	679	0.06	0.0002	<0.1	<0.1	1440	0.16	<0.001
22-Oct-14		7.0	11.4	1410	7.75	480	1132	1900	3.11	<1	29	0.2	2.6	0.026	640	<0.05	0.0001	<0.1	<0.01	1420	<0.1	<0.001
15-Apr-15		7.4	10.8	1390	7.88	490	1000	1900	2.31	<5.0	34	0.23	2.0	0.021	660	<0.050	<0.0005	<0.010	<0.10	1410	0.19	<0.0010
14-Oct-15		6.8	12.5	1860	7.75	470	1100	1900	1.31	<2.0	35	0.21	2.3	<0.020	710	<0.050	<0.0005	<0.010	<0.10	1420	0.24	<0.0010
19-May-16		7.0	10.5	1610	7.91	470	1100	1800	0.32	<5	32	0.23	2.4	<0.02	680	<0.05	<0.0001	<0.01	<0.1	1540	<0.1	<0.001
17-Nov-16		6.7	13.1	1320	7.72	490	1100	2000	0.62	<2	32	0.22	2.5	<0.02	650	<0.05	<0.0001	<0.01	<0.1	1400	<0.1	<0.001
MW18-I (East of Cell 1)																						
12-Apr-12		7.9	10.1	1580	7.91	142	638	1510	-2.27	<0.25	29	0.47	7.4	<0.01	667	0.23	0.0034	<0.1	<0.1	1130	0.63	<0.001
4-Dec-12		8.0	10.2	3650	7.60	74	1880	3320	4.45	<0.25	17	0.68	3.1	<0.01	2020	0.22	0.0041	<0.1	<0.1	2660	0.4	<0.005
21-May-13		7.9	9.8	3410	7.65	68	1870	3390	6.94	<0.25	14	0.69	1.5	<0.01	1950	0.08	0.0011	<0.1	0.5	2710	0.23	<0.001
22-Nov-13		8.4	10.2	3290	7.49	59	1830	3510	-0.37	<0.25	14	0.81	2.3	<0.01	2220	0.04	0.0018	<0.1	0.7	2810	0.5	<0.001
2-Jun-14		7.6	12.5	3280	7.76	57	1906	3490	4.73	<0.25	14	0.84	1.8	<0.01	2010	0.15	0.0013	0.67	<0.1	2790	0.29	<0.001
10-Nov-14		7.8	10.7	3250	7.66	59	1906	3500	1.76	10	13	0.68	1.9	0.02	2200	<0.05	<0.0006	0.3	<0.01	3350	0.3	<0.001
29-May-15		7.6	13.3	3360	7.51	53	1700	3500	0.92	<10	14	0.67	1.5	<0.020	2100	<0.050	<0.0005	<0.010	0.46	3540	0.72	<0.0010
22-Oct-15		7.3	11	3260	7.52	49	1800	3500	0.07	<1.0	13	0.7	1.6	<0.020	2100	<0.050	<0.0005	<0.010	0.3	3300	0.55	<0.0010
19-May-16		8.0	11.2	3060	7.49	49	1800	3300	-0.66	<10	10	0.74	1.7	<0.02	2200	<0.05	<0.0010	<0.01	0.41	3370	0.26	<0.001
17-Nov-16		6.7	12.1	2670	7.58	51	1800	3500	0.38	<10	16	0.65	1.8	<0.02	2100	<0.05	<0.0001	<0.01	0.13	3340	<0.1	<0.001
MW19-S (East of Cell 1)																						
11-Apr-12		7.1	8.1	3920	7.51	547	2370	3700	-3.15	<0.25	18	0.14	8.6	<0.01	2099	<0.02	<0.00004	<0.1	<0.1	2960	0.33	0.002
14-Nov-12		7.2	11.8	5010	7.66	690	3540	4780	4.18	0.63	27	0.25	6	0.02	2700	0.04	0.0001	<0.1	<0.1	3820	0.29	<0.001
8-May-13		7.0	11	4750	7.23	651	3250	4580	3.96	1.21	27	0.25	4.7	0.01	2490	<0.02	<0.0002	<0.1	<0.1	3660	<0.5	<0.001
8-Nov-13		7.1	13	4160	7.27	636	3450	4640	4.30	1.16	25	0.27	5.2	0.01	2660	0.04	0.0001	<0.1	<0.1	3710	0.24	<0.001
25-Apr-14		6.9	8.4	4570	7.43	655	3561	4560	4.74	0.44	25	0.27	4.2	0.01	2700	0.07	0.0001	<0.1	<0.1	3650	0.25	<0.001
27-Oct-14		7.0	14.4	3880	7.34	650	3099	4500	-0.17	<10	26	0.23	3.2	0.03	2600	<0.05	<0.0001	<0.1	<0.01	4410	0.34	<0.001
15-Apr-15		7.1	10.8	3890	7.31	650	3000	4400	1.41	<10	25	0.26	2.9	0.022	2600	<0.050	<0.0005	<0.010	<0.10	4460	0.26	<0.0010
15-Oct-15		6.6	13.4	4270	7.54	630	3300	4400	0.08	<10	38	0.24	2.7	<0.020	2800	<0.050	<0.0005	<0.010	<0.10	4570	<0.50 (1)	
19-May-16		6.9	13.6	3530	7.72	600	2600	3700	-0.87	<5	22	0.28	3	<0.02	2200	<0.05	<0.0001	<0.01	<0.1	3880	0.24	<0.001
9-Nov-16		7.0	13.3	1300	7.57	330	1200	1800	6.01	<5	14	0.59	4	<0.02	750	<0.05	<0.0001	<0.01	0.25	1400	0.4	<0.001

Table 2e Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		pH (field)	Temp. (field)	Conductivity (field)	pH (lab)	Total Alkalinity	Hardness ($CaCO_3$)	Conductivity (lab)	Ion Balance	Bromide (Br)	Dissolved Chloride (Cl)	Fluoride (F)	Dissolved Organic Carbon (DOC)	Phosphorus (P)	Sulphate (SO_4)	Ammonia-N	Unionized Ammonia	Nitrite	Nitrate	Total Dissolved Solids (TDS)	Total Kjeldehl Nitrogen (TKN)	Total Phenols
Units			°C	µmho/cm		mg/L	mg/L	µmho/cm	(%)	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS (2003)[1]		< 6.5-8.5 > (A)	–	–	< 6.5-8.5 > (A)	< 30-500 > (A)	< 80-100 > (A)	–	–	–	[250] (A)	1.5 (H)	[5] (A)	–	[500] (A)	–	–	1 (A)	10 (H)	[500] (A)	–	–
Background Range Shallow Wells		6.6 - 7.5	9.8 - 13.8	824 - 1090	7.41 - 7.78	400 - 497	543 - 680	997 - 1300	0.09 - 5.36	<0.05 - <1.0	3 - 10	0.18 - 0.25	8.9 - 12	0.01 - 0.047	90 - 290	<0.03 - 0.69	0.0002 - 0.0038	<0.004 - 0.012	0 - 0	628 - 994	0.51 - 1.1	<0.001 - <0.005
Background Range Intermediate Wells		7.4 - 8.4	9.3 - 12.5	1780 - 3090	7.48 - 7.76	49 - 61	1668 - 1830	2810 - 3070	0.85 - 4.16	<0.05 - 0.26	27 - 35	0.92 - 1.1	0.89 - 1.6	<0.01 - 0.028	1700 - 1880	0.36 - 0.63	0.0026 - 0.0217	<0.010 - 0	<0.10 - 0	2250 - 3050	0.42 - 1.1	<0.001 - <0.01
Background Range Deep Wells		6.6 - 9	9.2 - 11.8	1680 - 2960	7.46 - 7.71	67 - 73	1680 - 1880	2660 - 2900	-1.02 - 5.84	<0.25 - 0.27	29 - 33	0.99 - 1.27	0.6 - 1.3	<0.01 - 0.031	1600 - 1730	0.42 - 0.57	0.0004 - 0.0701	<0.010 - <0.1	<0.01 - <0.10	2130 - 3060	0.5 - 1.1	<0.001 - <0.005
MW19-I (East of Cell 1)																						
11-Apr-12		7.7	8	2910	7.94	181	1580	2860	3.39	<0.25	26	0.40	6.3	<0.01	1570	0.28	0.0022	<0.1	<0.1	2290	0.52	<0.001
19-Nov-12		8.1	10.3	3420	7.52	64	1610	3210	4.14	<0.25	28	0.65	2.4	<0.01	1730	0.32	0.0075	<0.1	<0.1	2570	0.43	<0.01
21-May-13		7.9	11	3110	7.57	53	1880	3090	4.81	0.26	26	0.71	1	<0.01	1960	0.17	0.0027	<0.1	<0.1	2470	0.24	<0.001
22-Nov-13		8.3	9.3	2880	7.48	41	1770	3240	1.98	0.26	30	0.85	1.4	<0.01	1950	0.18	0.0061	<0.1	0.21	2590	0.4	<0.001
29-May-14		7.8	12.9	3090	7.67	49	1887	3180	4.94	0.27	32	0.75	1.8	<0.01	1980	0.34	0.0049	<0.1	<0.1	2540	0.67	<0.002
10-Nov-14		7.9	11	2990	7.62	45	1815	3200	3.75	<5	32	0.65	1.4	0.034	1900	<0.05	<0.0008	0.25	<0.01	3080	0.25	<0.001
20-May-15		7.6	11.5	3110	7.68	45	1700	3200	0.32	<5.0	30	0.67	1.1	<0.020	2000	<0.050	<0.0005	<0.010	0.22	3110	0.42	<0.0010
22-Oct-15		7.4	11.4	3020	7.44	45	1700	3200	3.19	<1.0	27	0.69	1.1	<0.020	1800	<0.050	<0.0005	<0.010	0.29	3010	0.46	<0.0010
19-May-16		7.6	11.3	2870	7.49	46	1800	3000	2.41	<5	31	0.7	1.3	<0.02	2000	<0.05	<0.0004	<0.01	0.21	3030	0.38	<0.001
9-Nov-16		7.9	12.3	2540	7.55	47	1900	3300	3.98	<10	26	0.67	1.2	<0.02	2000	<0.05	<0.0009	<0.01	0.29	2940	0.51	<0.001
MW19-D (East of Cell 1)																						
11-Apr-12		8.1	9.8	3190	7.76	47	1800	3020	-1.69	<0.25	29	1.08	1.4	<0.01	1930	0.48	0.0108	<0.1	<0.1	2420	0.51	<0.001
14-Nov-12		8.3	10	3290	7.39	49	1980	3100	3.33	<0.25	28	1.17	1.3	<0.01	1920	0.46	0.0164	<0.1	<0.1	2480	0.44	<0.001
8-May-13		8.0	10.5	3220	7.36	43	1940	3010	2.03	<0.25	29	1.11	1.3	<0.01	1976	0.47	0.0089	<0.1	<0.1	2410	0.53	<0.001
12-Nov-13		8.4	9.5	2890	7.48	43	1930	3040	1.80	0.27	28	1.19	1	<0.01	1990	0.46	0.0197	<0.1	<0.1	2430	0.58	<0.001
12-Nov-13	(duplicate)	8.4	9.5	NA	7.50	47	1910	3030	0.79	0.26	28	1.17	1.1	<0.01	2000	0.47	0.0202	<0.1	<0.1	2420	0.52	<0.001
28-May-14		7.7	12.9	2950	7.56	46	2004	3030	5.64	0.31	28	0.83	1	<0.01	1896	0.52	0.0060	<0.1	<0.1	2420	0.55	<0.001
28-May-14	(duplicate)	7.7	12.9	NA	7.56	47	2086	3020	6.80	0.31	27	0.84	1.2	<0.01	1902	0.52	0.0060	<0.1	<0.1	2420	0.52	<0.001
22-Oct-14		7.6	10.9	2780	7.42	43	1841	3100	1.13	<5	29	0.95	0.91	0.032	1900	0.55	0.0043	<0.1	<0.01	3000	0.69	<0.001
15-Apr-15		8.1	11.5	1890	7.47	51	1800	3100	0.52	<5.0	30	1	0.73	<0.020	1800	0.47	0.015	<0.010	<0.10	2920	0.74	<0.0010
15-Oct-15		7.5	10.9	2910	7.48	49	1900	3100	5.9	<5.0	26	0.97	0.81	<0.020	1800	0.42	0.0032	<0.010	<0.10	2930	0.58	<0.0010
19-May-16		7.6	11.3	2800	7.48	40	1700	2900	-3.39	<5	27	1.1	0.89	<0.02	2000	0.43	0.0035	<0.01	<0.1	2990	0.62	<0.001
23-Nov-16		7.3	11.8	*1690*	7.46	42	1900	3100	4.56	<5	27	1	0.78	<0.02	1800	0.45	0.0019	<0.01	<0.1	2910	0.52	<0.001
MW20-S (East of Cell 2)																						
17-Apr-12		7.6	8.5	1820	7.83	495	866	1780	-4.69	<0.25	13	0.34	NA	<0.01	592	0.33	0.0022	<0.1	<0.1	1340	2.33	NA
19-Apr-12		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.001
14-Nov-12		7.5	11.8	1720	7.85	562	905	1640	1.61	<0.25	7	0.29	6	<0.01	431	0.07	0.0005	<0.1	<0.1	1150	0.26	<0.001
8-May-13		7.6	9.3	1640	7.58	582	909	1650	1.98	<0.25	7	0.28	3.8	<0.01	414	<0.02	<0.0002	<0.1	<0.1	1160	0.11	<0.001
12-Nov-13		7.5	10.9	1350	7.65	613	928	1640	4.02	<0.25	6	0.34	3.4	<0.01	378	0.04	0.0003	<0.1	<0.1	1150	<0.1	<0.005
25-Apr-14		7.0	8.9	1522	7.78	590	902	1570	4.25	<0.25	7	0.31	2.4	<0.01	364	0.08	0.0001	<0.1	<0.1	1100	0.19	0.0005
28-Oct-14		6.9	15.2	1190	8.03	610	856	1600	1.68	<1	5.1	0.31	1.8	0.026	340	<0.05	<0.0001	<0.1	<0.01	1040	0.16	<0.001
21-Apr-15		7.5	9	1200	7.71	590	800	1600	0.72	<1.0	5.2	0.33	1.8	<0.020	350	<0.050	<0.0005	<0.010	<0.10	1030	0.1	<0.0010
15-Oct-15		6.8	13.2	1490	7.91	600	850	1600	3.85	<1.0	5.8	0.3	1.5	<0.020	320	<0.050	<0.0005	<0.010	<0.10	1050	<0.10	<0.0010
18-May-16		*7.0*	10.9	1360	8.06	620	800	1500	-1.52	<1	7.2	0.31	1.5	<0.02	330	<0.05	<0.0001	<0.01	<0.1	1100	<0.1	<0.001
7-Nov-16		7.2	13.8	*1040*	7.84	610	810	1600	2.23	<5	<5	0.37	2.2	0.026	320	<0.05	<0.0002	<0.01	<0.1	1030	0.1	<0.001

Table 2e Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters	pH (field)	Temp. (field)	Conductivity (field)	pH (lab)	Total Alkalinity	Hardness ($CaCO_3$)	Conductivity (lab)	Ion Balance	Bromide (Br)	Dissolved Chloride (Cl)	Fluoride (F)	Dissolved Organic Carbon (DOC)	Phosphorus (P)	Sulphate (SO_4)	Ammonia-N	Unionized Ammonia	Nitrite	Nitrate	Total Dissolved Solids (TDS)	Total Kjeldehl Nitrogen (TKN)	Total Phenols
Units		°C	µmho/cm		mg/L	mg/L	µmho/cm	(%)	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS (2003)[1]	< 6.5-8.5 > (A)	–	–	< 6.5-8.5 > (A)	< 30-500 > (A)	< 80-100 > (A)	–	–	–	[250] (A)	1.5 (H)	[5] (A)	–	[500] (A)	–	–	1 (A)	10 (H)	[500] (A)	–	–
Background Range Shallow Wells	6.6 - 7.5	9.8 - 13.8	824 - 1090	7.41 - 7.78	400 - 497	543 - 680	997 - 1300	0.09 - 5.36	<0.05 - <1.0	3 - 10	0.18 - 0.25	8.9 - 12	0.01 - 0.047	90 - 290	<0.03 - 0.69	0.0002 - 0.0038	<0.004 - 0.012	0 - 0	628 - 994	0.51 - 1.1	<0.001 - <0.005
Background Range Intermediate Wells	7.4 - 8.4	9.3 - 12.5	1780 - 3090	7.48 - 7.76	49 - 61	1668 - 1830	2810 - 3070	0.85 - 4.16	<0.05 - 0.26	27 - 35	0.92 - 1.1	0.89 - 1.6	<0.01 - 0.028	1700 - 1880	0.36 - 0.63	0.0026 - 0.0217	<0.010 - 0	<0.10 - 0	2250 - 3050	0.42 - 1.1	<0.001 - <0.01
Background Range Deep Wells	6.6 - 9	9.2 - 11.8	1680 - 2960	7.46 - 7.71	67 - 73	1680 - 1880	2660 - 2900	-1.02 - 5.84	<0.25 - 0.27	29 - 33	0.99 - 1.27	0.6 - 1.3	<0.01 - 0.031	1600 - 1730	0.42 - 0.57	0.0004 - 0.0701	<0.010 - <0.1	<0.01 - <0.10	2130 - 3060	0.5 - 1.1	<0.001 - <0.005
MW20-I (East of Cell 2)																					
5-Apr-12	7.9	10	2950	7.47	74	1370	2750	3.93	0.32	31	0.66	6.7	<0.01	1420	0.34	0.0049	<0.1	<0.1	2200	0.78	<0.001
19-Nov-12	8.3	9.5	3110	7.31	51	1560	2850	3.03	0.28	25	0.96	2.8	<0.01	1650	0.33	0.0114	<0.1	<0.1	2280	0.44	<0.001
21-May-13	8.0	10.2	2880	7.32	46	1630	2760	3.95	0.35	29	0.9	0.6	<0.01	1710	0.43	0.0080	<0.1	<0.1	2210	0.45	<0.001
22-Nov-13	8.3	9.5	2490	7.42	42	1570	2860	-1.36	0.35	28	1.03	1.4	<0.01	1820	0.38	0.0131	<0.1	<0.1	2290	0.46	<0.001
2-Jun-14	7.5	11.4	2740	7.72	45	1583	2800	4.37	0.33	25	1.03	1.5	<0.01	1650	0.35	0.0023	0.23	<0.1	2240	0.43	<0.001
10-Nov-14	8.2	12	2600	7.63	46	1549	2900	1.81	<5	29	0.82	1.8	<0.02	1700	0.33	0.0110	0.31	<0.01	2590	0.5	<0.001
20-May-15	7.7	12.2	2670	7.68	45	1500	2900	0.34	<5.0	28	0.86	1.3	<0.020	1700	0.073	0.00097	<0.010	0.41	2710	0.51	<0.0010
4-Nov-15	7.3	10.8	2700	7.15	40	1500	2900	0.60	<5.0	32	0.85	1.3	<0.020	1700	<0.050	<0.0005	<0.010	0.29	2580	0.54	<0.0010
25-May-16	7.7	11.2	2470	7.26	40	1500	2900	0.17	<5	21	0.87	1.3	<0.02	1700	0.077	0.0008	0.045	0.13	2580	0.25	<0.001
7-Nov-16	7.9	12.2	*1750*	7.40	39	1500	2900	-0.01	<5	26	0.79	1.2	<0.02	1700	0.1	0.0017	<0.01	0.29	2680	0.13	<0.001
MW21-S (South of Cell 1)																					
19-Nov-12	7.6	11.3	3610	7.99	511	1310	3450	3.77	<0.25	553	0.32	2.6	<0.01	550	<0.02	<0.0002	<0.1	<0.1	2590	0.13	<0.001
15-May-13	7.4	10.5	3180	7.89	494	1340	3010	0.76	<0.25	456	0.31	1.7	<0.01	619	0.02	0.000	<0.1	<0.1	2260	<0.1	<0.005
13-Nov-13	7.4	10.9	2810	7.88	497	1250	3110	-0.72	<0.25	454	0.38	1.8	<0.01	579	<0.02	<0.0002	<0.1	<0.1	2330	<0.1	<0.001
7-May-14	7.0	9	3200	7.66	477	1417	3180	3.03	<0.25	511	0.36	1.8	<0.01	607	0.06	<0.0001	<0.1	<0.1	2380	0.19	<0.001
3-Nov-14	6.9	11.8	2930	7.53	470	1438	3400	1.79	<5	560	0.30	1.5	0.029	590	<0.05	0.0002	<0.1	<0.01	2340	<0.1	<0.001
20-May-15	7.0	12.7	3430	7.94	430	1400	3600	0.24	<1.0	680	0.29	1.3	<0.020	590	<0.050	<0.0005	<0.010	<0.10	2630	0.32	<0.0010
30-Nov-15	6.8	10.7	3800	7.69	440	1700	4100	4.40	<10	810	0.29	1.3	<0.020	560	<0.050	<0.0005	<0.010	<0.10	3090	0.38	<0.0010
11-May-16	7.0	10	4410	7.78	430	1700	4800	-1.77	<10	1100	0.25	1.4	<0.02	580	<0.05	<0.0001	<0.01	<0.1	3300	0.18	<0.001
29-Nov-16	7.0	11.8	5220	7.74	460	1800	5000	1.66	<10	1100	0.27	2.1	<0.02	550	<0.05	<0.0001	<0.01	<0.1	3280	0.41	<0.001
MW21-I (South of Cell 1)																					
19-Nov-12	8.3	10.4	3420	7.69	36	1730	3190	2.99	<0.25	12	1.02	1.8	<0.01	1820	0.35	0.0129	<0.1	<0.1	2550	0.46	<0.001
21-May-13	8.0	11.1	3270	7.23	36	1990	3060	3.56	<0.25	15	0.9	0.7	<0.01	2096	0.3	0.0060	<0.1	<0.1	2450	0.42	<0.001
22-Nov-13	8.5	10.1	2780	7.43	32	1740	3210	-1.20	<0.25	14	1.05	1.3	<0.01	2050	0.14	0.0078	<0.1	0.14	2570	0.31	<0.001
9-May-14	7.3	10.3	3030	7.18	37	1892	3200	4.14	<0.25	13	1.07	1.2	<0.01	2000	0.29	0.0011	<0.1	<0.1	2560	0.42	<0.001
11-Nov-14	8.9	10.9	2970	7.53	35	1808	3300	2.37	<10	17	0.78	1.3	0.034	2000	0.069	0.0094	<0.1	<0.01	3030	0.43	<0.001
29-May-15	7.5	12.4	3010	7.46	35	1700	3200	0.2	<10	16	0.77	1.2	<0.020	2000	<0.050	<0.0005	<0.010	0.13	3280	0.36	<0.0010
2-Dec-15	7.7	9.9	3020	7.55	34	1700	3300	1.01	<5.0	12	0.8	1.1	<0.020	2000	<0.050	<0.0005	<0.010	0.1	3020	0.37	<0.0010
25-May-16	7.8	11.2	2820	7.18	37	1700	3300	0.45	<5	11	0.82	1.3	<0.02	2000	<0.05	<0.0006	<0.01	0.11	3070	0.15	<0.001
29-Nov-16	7.9	11.5	*1750*	7.48	36	1700	3300	3.37	<5	16	0.79	1.2	<0.02	1900	<0.05	<0.0008	<0.01	<0.1	2940	0.21	<0.001

Table 2e Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		pH (field)	Temp. (field)	Conductivity (field)	pH (lab)	Total Alkalinity	Hardness ($CaCO_3$)	Conductivity (lab)	Ion Balance	Bromide (Br)	Dissolved Chloride (Cl)	Fluoride (F)	Dissolved Organic Carbon (DOC)	Phosphorus (P)	Sulphate (SO_4)	Ammonia-N	Unionized Ammonia	Nitrite	Nitrate	Total Dissolved Solids (TDS)	Total Kjeldehl Nitrogen (TKN)	Total Phenols
Units			°C	µmho/cm		mg/L	mg/L	µmho/cm	(%)	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS (2003)[1]		< 6.5-8.5 > (A)	–	–	< 6.5-8.5 > (A)	< 30-500 > (A)	< 80-100 > (A)	–	–	–	[250] (A)	1.5 (H)	[5] (A)	–	[500] (A)	–	–	1 (A)	10 (H)	[500] (A)	–	–
Background Range Shallow Wells		6.6 - 7.5	9.8 - 13.8	824 - 1090	7.41 - 7.78	400 - 497	543 - 680	997 - 1300	0.09 - 5.36	<0.05 - <1.0	3 - 10	0.18 - 0.25	8.9 - 12	0.01 - 0.047	90 - 290	<0.03 - 0.69	0.0002 - 0.0038	<0.004 - 0.012	0 - 0	628 - 994	0.51 - 1.1	<0.001 - <0.005
Background Range Intermediate Wells		7.4 - 8.4	9.3 - 12.5	1780 - 3090	7.48 - 7.76	49 - 61	1668 - 1830	2810 - 3070	0.85 - 4.16	<0.05 - 0.26	27 - 35	0.92 - 1.1	0.89 - 1.6	<0.01 - 0.028	1700 - 1880	0.36 - 0.63	0.0026 - 0.0217	<0.010 - 0	<0.10 - 0	2250 - 3050	0.42 - 1.1	<0.001 - <0.01
Background Range Deep Wells		6.6 - 9	9.2 - 11.8	1680 - 2960	7.46 - 7.71	67 - 73	1680 - 1880	2660 - 2900	-1.02 - 5.84	<0.25 - 0.27	29 - 33	0.99 - 1.27	0.6 - 1.3	<0.01 - 0.031	1600 - 1730	0.42 - 0.57	0.0004 - 0.0701	<0.010 - <0.1	<0.01 - <0.10	2130 - 3060	0.5 - 1.1	<0.001 - <0.005
MW21-D (South of Cell 1)																						
15-Nov-12		8.0	9.8	4820	7.77	83	1620	4590	0.43	1.35	125	2.57	0.6	<0.01	2270	4.3	0.0772	<0.1	<0.1	3670	4.87	<0.001
15-Nov-12	(duplicate)	8.0	9.8	NA	7.78	84	1750	4600	3.18	1.32	125	2.57	0.6	<0.01	2410	4.71	0.0846	<0.1	<0.1	3680	4.83	<0.001
14-May-13		7.9	10.5	4710	7.77	81	1850	4420	4.90	1.9	147	2.37	<0.5	<0.01	2405	5.34	0.0807	<0.1	<0.1	3540	5.72	<0.001
14-May-13	(duplicate)	7.9	10.5	NA	7.76	83	1860	4460	4.83	2.22	152	2.38	1	<0.01	2380	4.73	0.0715	<0.1	<0.1	3570	4.84	<0.001
13-Nov-13		7.9	9.6	4050	7.73	79	1780	4540	4.77	1.75	179	2.66	0.6	<0.01	2270	5.14	0.0725	<0.1	<0.1	3630	4.41	<0.001
13-Nov-13	(duplicate)	7.9	9.6	NA	7.75	81	1850	4540	6.35	1.45	150	2.61	0.6	<0.01	2320	4.62	0.0651	<0.1	<0.1	3630	5.17	<0.001
7-May-14		7.4	10.4	4430	7.55	80	1926	4440	4.79	1.45	146	2.7	0.6	<0.01	2450	5.06	0.0242	<0.1	<0.1	3550	5.15	<0.001
3-Nov-14		7.4	10.8	NA	7.56	78	1791	4600	2.66	<10	140	2.1	0.3	<0.02	2400	5.1	0.0252	<0.1	<0.01	3960	5.2	<0.001
3-Nov-14	(duplicate)	7.4	10.8	3930	7.64	80	1791	4500	0.54	<10	150	2.1	0.37	<0.02	2500	5.1	0.0252	<0.1	<0.01	4100	5.2	<0.001
20-May-15		7.4	12.8	4300	7.69	74	1700	4500	1.55	1.4	140	2.3	<0.20	<0.020	2500	5.3	0.037	<0.010	<0.10	4040	5.6	0.001
20-May-15	(duplicate)	7.4	12.8	4300	7.82	81	1700	4500	1.99	1.4	140	2.1	<0.20	<0.020	2400	5.3	0.037	<0.010	<0.10	4100	5.8	<0.0010
30-Nov-15		7.3	9.8	4230	7.73	100	1000	2800	3.31	<5.0	150	1.1	1.0	<0.020	1200	1.9	0.0083	<0.010	0.51	4040	2	<0.0010
30-Nov-15	(duplicate)	7.3	9.8	4230	7.39	72	1900	4500	3.74	<10	130	2.1	0.3	<0.020	2400	5.4	0.0240	<0.010	<0.10	4100	5.2	<0.0010
11-May-16		7.4	10.9	3720	7.66	76	1700	4000	-2.85	<10	120	2.0	0.44	<0.02	2300	4.1	0.0204	<0.01	<0.1	3760	4.5	<0.001
11-May-16	(duplicate)	7.4	10.9		7.56	76	1700	4100	-1.32	<10	130	2.0	0.43	<0.02	2300	4.8	0.0239	<0.01	<0.1	3860	4.9	<0.001
29-Nov-16		7.7	15.3	*1550*	7.70	60	1700	2900	1.65	<5	57	1.1	0.75	<0.02	1700	0.53	0.0073	<0.01	<0.1	2500	1.3	<0.001
29-Nov-16	(duplicate)	7.7	15.3		7.53	58	1700	3000	-0.28	<5	56	1.1	1.2	<0.02	1700	0.5	0.0069	<0.01	<0.1	2620	1	<0.001
MW22-S (Southwest of Cell 1)																						
13-Apr-12		7.6	9.4	2340	7.67	403	729	2250	-1.50	1.04	257	0.58	17.4	<0.01	459	0.04	0.0003	<0.1	<0.1	1580	0.46	<0.001
27-Nov-12		7.6	12.4	1890	7.62	464	614	1860	-0.68	0.88	150	1.08	11.8	<0.01	314	0.08	0.0007	<0.1	<0.1	1300	0.24	<0.001
9-May-13		7.4	8.9	1720	7.73	560	658	1760	5.09	1.19	142	2.51	10.5	<0.01	208	0.07	0.0003	<0.1	<0.1	1140	0.31	<0.005
22-Nov-13		7.7	12.4	1480	7.62	571	644	1920	2.45	0.86	160	2.77	10.2	<0.01	231	0.05	0.0006	<0.1	<0.1	1250	0.42	<0.005
5-May-14		7.0	8.1	1588	7.62	577	561	1580	1.93	0.38	104	4.28	6.5	<0.01	184	0.06	0.0001	0.11	<0.1	1030	0.24	<0.002
4-Nov-14		7.0	12.4	1340	7.62	580	575	1800	2.48	<2	140	1.8	6.6	0.029	200	0.072	0.0002	<0.1	<0.01	1040	<0.1	<0.001
20-May-15		6.9	12.3	1780	7.79	590	630	1900	1.23	<10	150	2.8	7.3	<0.020	240	<0.050	<0.0005	<0.010	<0.10	1210	0.37	<0.0010
4-Nov-15		6.6	13.8	1730	7.54	560	580	1900	0.27	<2.0	170	2.0	7.7	<0.020	230	<0.050	<0.0005	<0.010	<0.10	1100	0.34	<0.0010
10-May-16		6.9	11.4	1700	7.77	660	660	2000	-0.84	<2	120	3.3	7.0	<0.02	270	<0.05	<0.0001	<0.01	<0.1	1240	0.22	<0.001
17-Nov-16		6.8	15.9	*1260*	7.71	620	620	2000	-1.73	<2	140	2.3	6.4	<0.02	260	<0.05	<0.0001	<0.01	<0.1	1180	0.18	<0.001
MW22-I (Southwest of Cell 1)																						
17-Apr-12		7.8	11	3210	7.31	55	1680	3040	-2.35	0.26	24	0.85	3.2	<0.01	1900	0.41	0.0051	<0.1	<0.1	2430	0.59	<0.001
4-Dec-12		8.1	10.7	3290	7.16	51	1840	3090	2.32	<0.25	21	1.00	2.1	0.02	1920	0.42	0.0101	<0.1	<0.1	2470	0.45	<0.001
17-May-13		8.0	11.7	3210	7.55	50	1930	3010	3.53	<0.25	22	0.98	2.2	<0.01	1960	0.39	0.0081	<0.1	<0.1	2410	0.4	<0.001
27-Nov-13		8.1	10.6	2770	7.58	46	1720	3110	-2.50	0.26	23	0.99	2.1	<0.01	1960	0.42	0.0100	<0.1	<0.1	2490	0.43	<0.001
2-Jun-14		7.5	11.5	2970	7.67	53	1936	3090	4.85	0.29	22	1.08	1.7	<0.01	1890	0.26	0.0017	0.12	0.11	2470	0.36	<0.001
11-Nov-14		8.3	11.5	2850	7.63	48	1824	3100	1.58	<10	29	0.90	1.3	<0.02	1900	0.22	0.0088	0.17	0.021	2880	0.38	<0.001
29-May-15		7.5	13.3	2940	7.56	46	1700	3100	0.43	<10	24	0.96	1.1	<0.020	1800	0.2	0.0019	0.037	<0.10	3110	0.79	<0.0010
10-Nov-15		7.2	12.3	2870	7.46	41	1700	3100	0.24	<5.0	23	0.98	1.1	<0.020	1900	0.14	0.0006	0.015	0.27	2870	0.25	<0.0010
10-May-16		7.6	11.5	2820	7.45	39	1700	3000	-1.77	<5	23	0.97	1.1	<0.02	1900	0.14	0.0012	<0.01	0.32	2860	0.27	<0.001
23-Nov-16		7.3	13.5	*1760*	7.52	43	1700	3100	1.91	<5	23	0.94	0.88	<0.02	1800	0.15	0.0007	0.013	0.28	2880	0.32	<0.001

Table 2e Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters	pH (field)	Temp. (field)	Conductivity (field)	pH (lab)	Total Alkalinity	Hardness ($CaCO_3$)	Conductivity (lab)	Ion Balance	Bromide (Br)	Dissolved Chloride (Cl)	Fluoride (F)	Dissolved Organic Carbon (DOC)	Phosphorus (P)	Sulphate (SO_4)	Ammonia-N	Unionized Ammonia	Nitrite	Nitrate	Total Dissolved Solids (TDS)	Total Kjeldehl Nitrogen (TKN)	Total Phenols
Units		°C	µmho/cm		mg/L	mg/L	µmho/cm	(%)	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS (2003)[1]	< 6.5-8.5 > (A)	–	–	< 6.5-8.5 > (A)	< 30-500 > (A)	< 80-100 > (A)	–	–	–	[250] (A)	1.5 (H)	[5] (A)	–	[500] (A)	–	–	1 (A)	10 (H)	[500] (A)	–	–
Background Range Shallow Wells	6.6 - 7.5	9.8 - 13.8	824 - 1090	7.41 - 7.78	400 - 497	543 - 680	997 - 1300	0.09 - 5.36	<0.05 - <1.0	3 - 10	0.18 - 0.25	8.9 - 12	0.01 - 0.047	90 - 290	<0.03 - 0.69	0.0002 - 0.0038	<0.004 - 0.012	0 - 0	628 - 994	0.51 - 1.1	<0.001 - <0.005
Background Range Intermediate Wells	7.4 - 8.4	9.3 - 12.5	1780 - 3090	7.48 - 7.76	49 - 61	1668 - 1830	2810 - 3070	0.85 - 4.16	<0.05 - 0.26	27 - 35	0.92 - 1.1	0.89 - 1.6	<0.01 - 0.028	1700 - 1880	0.36 - 0.63	0.0026 - 0.0217	<0.010 - 0	<0.10 - 0	2250 - 3050	0.42 - 1.1	<0.001 - <0.01
Background Range Deep Wells	6.6 - 9	9.2 - 11.8	1680 - 2960	7.46 - 7.71	67 - 73	1680 - 1880	2660 - 2900	-1.02 - 5.84	<0.25 - 0.27	29 - 33	0.99 - 1.27	0.6 - 1.3	<0.01 - 0.031	1600 - 1730	0.42 - 0.57	0.0004 - 0.0701	<0.010 - <0.1	<0.01 - <0.10	2130 - 3060	0.5 - 1.1	<0.001 - <0.005
MW22-GI (Southwest of Cell 1)																					
17-Apr-12	7.6	11.9	2210	7.80	319	480	2120	-4.90	1.07	331	0.73	12	<0.01	285	0.16	0.0014	<0.1	<0.1	1380	0.66	<0.001
29-Nov-12	7.9	10.7	2410	8.00	360	580	2200	1.03	2.21	331	0.75	9.1	0.01	292	0.09	0.0014	<0.1	<0.1	1430	0.18	<0.01
15-May-13	7.6	10.9	2340	8.01	366	548	2100	2.30	3.59	345	0.74	9.1	<0.01	221	0.07	0.0006	<0.1	<0.1	1360	0.17	<0.005
27-Nov-13	7.8	11.7	1640	7.83	361	470	2130	-1.54	1.46	321	0.85	10.6	<0.01	215	0.13	0.0017	<0.1	<0.1	1380	0.25	<0.001
9-May-14	7.0	9.4	2080	8.11	370	523	2100	-1.89	1.14	315	1.01	9.2	<0.01	223	0.14	0.0002	<0.1	<0.1	1360	0.23	<0.001
12-Nov-14	7.3	11.7	1720	7.88	370	489	2000	1.34	<5	290	0.91	12	0.031	240	0.12	0.0005	<0.1	<0.01	1250	0.23	<0.001
29-May-15	7.1	12.7	1860	7.77	350	460	2000	0.94	<10	290	0.81	12	<0.020	260	0.11	<0.0005	<0.010	<0.10	1280	0.32	<0.0010
10-Nov-15	6.9	12.7	1780	7.82	360	460	2000	1.12	<5.0	270	0.85	13	<0.020	250	0.099	<0.0005	<0.010	<0.10	1180	0.41	<0.0010
10-May-16	7.0	12.8	1680	7.80	340	470	1900	1.19	<2	250	0.75	13	<0.02	270	0.076	0.0002	<0.01	<0.1	1160	0.25	<0.001
17-Nov-16	6.9	14.1	*1220*	7.84	350	420	1900	0.14	<2	230	0.81	13	<0.02	260	0.13	0.0003	<0.01	<0.1	1170	0.24	<0.001
MW23-S (West of Cell 1)																					
12-Apr-12	7.3	8.5	5750	7.73	629	3310	5530	0.26	0.84	678	0.49	15.1	<0.01	2050	0.12	0.0004	0.43	3.32	4420	1.51	<0.001
29-Nov-12	7.1	12.4	6920	NA	NA	NA	NA	NA	NA	NA	NA	9.4	NA	NA	NA	NA	NA	NA	NA	NA	<0.01
9-May-13	6.9	9.4	6910	7.50	709	3730	6730	-1.39	<0.25	1130	0.62	7.2	0.08	1940	<0.02	<0.0002	<0.1	8.14	5380	<0.5	<0.005
22-Nov-13	7.1	12.2	5530	7.48	587	4400	7440	3.00	3.21	1320	0.76	7.5	0.03	2170	<0.02	<0.0002	<0.1	7.14	5950	0.5	<0.005
5-May-14	6.8	8	7070	7.27	485	3481	6990	3.66	1.41	1200	0.4	6	<0.01	2100	0.1	0.0001	0.67	<0.1	5590	46	<0.002
4-Nov-14	7.0	12.8	5850	7.27	500	4047	7900	4.36	<20	1400	0.5	7.1	0.038	2100	<0.05	<0.0001	0.6	0.032	5880	0.5	<0.005
20-May-15	6.7	12.8	7150	7.76	510	4000	7500	1.53	<10	1400	0.54	6.3	<0.020	2100	<0.050	<0.0005	<0.010	3.75	6620	1.1	<0.0010
3-Nov-15	6.7	13.9	7050	7.57	530	4000	7800	2.23	<10	1600	0.58	7.4	<0.020	2200	<0.050	<0.0005	0.038	3.04	6680	0.79	<0.0010
4-May-16	6.7	9.8	6910	7.22	490	4100	6800	0.37	<10	1500	0.57	7.6	0.03	2200	<0.05	<0.0000	0.018	2.9	6260	0.95	<0.001
29-Nov-16	6.6	13.8	8300	7.26	510	4100	7700	1.61	<10	1400	0.6	8.5	0.029	2100	<0.05	<0.0000	0.113	2.76	6390	0.92	<0.001
MW23-I (West of Cell 1)																					
10-Apr-12	7.9	9	2810	7.83	96	1440	2830	-3.94	0.35	43	0.93	4.8	<0.01	1595	0.43	0.0058	<0.1	<0.1	2260	0.9	<0.001
4-Dec-12	8.0	11.3	3330	7.35	54	1910	3100	2.72	0.25	29	1.33	1.9	<0.01	1930	0.41	0.0083	<0.1	<0.1	2480	0.45	<0.001
17-May-13	8.1	11.5	3240	7.71	53	1970	3020	4.28	0.31	29	1.28	1.2	<0.01	1950	0.47	0.0120	<0.1	<0.1	2420	0.46	<0.001
27-Nov-13	8.3	10.4	2710	7.64	45	1870	3140	0.10	0.29	27	1.35	2	<0.01	1990	0.49	0.0180	<0.1	<0.1	2510	0.72	<0.001
2-Jun-14	7.6	11.4	3060	7.75	51	1830	3120	1.59	0.34	27	1.49	1	<0.01	1910	0.34	0.0028	0.18	<0.0	2500	0.36	<0.001
5-Nov-14	7.7	13.3	2690	7.39	51	1816	3200	-1.05	<5	30	1.2	1.1	0.038	2000	0.38	0.0045	<0.1	<0.01	2980	0.49	<0.001
29-May-15	7.4	14.1	2900	7.49	52	1800	3100	0.22	<10	30	1.2	1	<0.020	1900	0.1	0.0008	<0.010	0.35	3190	0.43	<0.0010
5-Nov-15	7.3	12.2	2870	7.27	49	1800	3100	1.05	<5.0	28	1.3	1.2	<0.020	1900	0.11	0.0006	<0.010	<0.10	2980	<0.50 (3)	<0.0010
10-May-16	7.5	10.8	2820	7.60	49	1800	3100	-2.41	<5	26	1.3	0.89	<0.02	2000	<0.05	<0.0003	<0.01	0.27	3010	0.15	<0.001
23-Nov-16	7.3	12.6	*1670*	7.57	52	1800	3100	3.50	<5	24	1.2	0.84	<0.02	1800	0.056	0.0003	<0.01	0.14	2990	0.15	<0.001

Table 2e Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters	pH (field)	Temp. (field)	Conductivity (field)	pH (lab)	Total Alkalinity	Hardness ($CaCO_3$)	Conductivity (lab)	Ion Balance	Bromide (Br)	Dissolved Chloride (Cl)	Fluoride (F)	Dissolved Organic Carbon (DOC)	Phosphorus (P)	Sulphate (SO_4)	Ammonia-N	Unionized Ammonia	Nitrite	Nitrate	Total Dissolved Solids (TDS)	Total Kjeldehl Nitrogen (TKN)	Total Phenols
Units		°C	µmho/cm		mg/L	mg/L	µmho/cm	(%)	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS (2003)[1]	< 6.5-8.5 > (A)	–	–	< 6.5-8.5 > (A)	< 30-500 > (A)	< 80-100 > (A)	–	–	–	[250] (A)	1.5 (H)	[5] (A)	–	[500] (A)	–	–	1 (A)	10 (H)	[500] (A)	–	–
Background Range Shallow Wells	6.6 - 7.5	9.8 - 13.8	824 - 1090	7.41 - 7.78	400 - 497	543 - 680	997 - 1300	0.09 - 5.36	<0.05 - <1.0	3 - 10	0.18 - 0.25	8.9 - 12	0.01 - 0.047	90 - 290	<0.03 - 0.69	0.0002 - 0.0038	<0.004 - 0.012	0 - 0	628 - 994	0.51 - 1.1	<0.001 - <0.005
Background Range Intermediate Wells	7.4 - 8.4	9.3 - 12.5	1780 - 3090	7.48 - 7.76	49 - 61	1668 - 1830	2810 - 3070	0.85 - 4.16	<0.05 - 0.26	27 - 35	0.92 - 1.1	0.89 - 1.6	<0.01 - 0.028	1700 - 1880	0.36 - 0.63	0.0026 - 0.0217	<0.010 - 0	<0.10 - 0	2250 - 3050	0.42 - 1.1	<0.001 - <0.01
Background Range Deep Wells	6.6 - 9	9.2 - 11.8	1680 - 2960	7.46 - 7.71	67 - 73	1680 - 1880	2660 - 2900	-1.02 - 5.84	<0.25 - 0.27	29 - 33	0.99 - 1.27	0.6 - 1.3	<0.01 - 0.031	1600 - 1730	0.42 - 0.57	0.0004 - 0.0701	<0.010 - <0.1	<0.01 - <0.10	2130 - 3060	0.5 - 1.1	<0.001 - <0.005
MW23-GI (West of Cell 1)																					
12-Apr-12	7.4	9.5	6300	7.58	922	2880	6080	-3.38	1.11	779	0.55	9.2	<0.01	1890	0.46	0.0021	<0.1	0.37	4860	1	<0.005
29-Nov-12	7.2	11.2	6110	7.70	848	2540	5700	-1.81	3.39	699	0.66	8.2	0.02	1800	0.56	0.0018	<0.1	<0.1	4560	0.88	<0.01
15-May-13	7.1	10.4	5240	7.65	862	2600	5310	0.20	4.3	650	0.62	6.8	0.01	1660	0.19	0.0005	0.11	0.29	4250	0.52	<0.005
27-Nov-13	7.1	12	3760	7.29	903	2670	4620	-2.69	1.44	502	0.66	7.2	0.41	1940	0.44	0.0012	<0.1	<0.1	3700	0.76	<0.005
29-May-14	7.0	9.7	4150	7.02	765	2366	4200	3.19	0.9	399	0.53	6.9	<0.01	1350	0.42	0.0008	<0.01	<0.1	3360	0.67	<0.005
5-Nov-14	6.7	12.3	3310	7.35	780	2088	4000	0.79	<10	340	0.48	5.9	0.039	1200	0.54	0.0006	<0.1	<0.1	3120	0.9	<0.001
29-May-15	6.6	15.3	3620	7.33	780	2000	3800	1.06	<10	310	0.48	6	<0.020	1200	0.45	0.0006	<0.010	<0.10	3310	0.89	<0.0010
3-Nov-15	6.4	12.5	3520	7.53	790	2000	3800	2.23	<5.0	290	0.47	5.8	0.11	1100	0.54	<0.0005	<0.010	<0.10	3000	0.73	<0.0010
4-May-16	6.7	11.2	3400	7.12	780	2100	3500	1.75	<5	280	0.48	6.3	0.082	1200	0.52	0.0005	<0.01	<0.1	2860	0.74	<0.001
29-Nov-16	6.6	13.1	3890	7.42	810	1900	3600	-1.72	<5	270	0.47	7.5	0.077	1100	0.52	0.0005	<0.01	<0.1	2750	1.1	<0.001
MW24-S (West of Cell 1)																					
9-Apr-12	6.9	9.3	3330	6.83	1440	1910	3090	4.38	1.32	268	0.31	115	0.03	166	4.29	0.0060	<0.1	<0.1	2010	10.1	0.04
27-Nov-12	6.9	12.3	4380	7.05	1681	1990	3840	1.02	<0.25	331	0.52	145	0.42	207	6.46	0.0114	<0.1	<0.1	2500	12.1	<0.001
9-May-13	6.7	9.4	4870	6.77	1840	2230	4500	-2.73	2.93	446	0.42	106	1.33	437	5.23	0.0046	<0.1	<0.1	3150	10.5	<0.005
21-Nov-13	6.8	12.1	4340	6.93	1700	2160	5130	-1.10	1.9	600	0.49	78.9	1.47	700	4.36	0.0060	<0.1	<0.1	3850	5.63	<0.001
5-May-14	6.6	12.2	4200	6.88	1460	2203	4830	2.81	<10	514	0.39	55.8	1.6	717	3.63	0.0024	<0.1	<0.1	3680	7.3	<0.002
4-Nov-14	6.6	8.5	4920	7.11	1600	2089	5100	1.11	1.22	570	0.38	76	1.02	680	4.8	1.0042	<0.1	<0.01	3620	6.19	0.014
19-May-15	6.5	11.7	5140	7.06	1500	2200	5200	2.2	<10	630	0.34	73	1.3	850	4.4	0.0036	<0.010	<0.10	3790	8	<0.0010
5-Nov-15	6.3	15.2	3670	6.94	1200	1600	4100	4.38	<5.0	430	0.38	51.0	1.5	560	3.4	0.0023	<0.010	<0.10	2890	5.2	<0.0020 (2)
6-May-16	6.5	11.4	4770	7.03	1400	2100	5200	2.08	<5	600	0.38	54	1.4	940	4.2	0.0027	<0.01	<0.1	3670	4.4	0.0043
5-Dec-16	6.9	10.9	4910	7.16	1800	1900	4700	-1.82	<5	490	0.46	79	0.97	350	4	0.0063	<0.01	<0.1	3030	7.3	<0.001
MW24-I (West of Cell 1)																					
9-Apr-12	8.0	10.3	3020	7.54	61	1730	3000	-1.89	0.68	70	1.16	2.5	<0.01	1810	0.77	0.0144	<0.1	<0.1	2400	0.84	<0.01
28-Nov-12	8.2	10.4	3340	7.40	50	1840	3090	3.90	0.69	61	1.23	0.8	<0.01	1730	0.69	0.0203	<0.1	<0.1	2470	0.7	<0.001
14-May-13	8.1	10.2	3110	7.74	49	1970	2980	4.66	0.87	67	1.25	1.5	<0.01	1820	0.7	0.0162	<0.1	<0.1	2380	0.63	<0.01
26-Nov-13	7.9	10.4	2680	7.51	43	1710	3090	-3.34	0.79	65	1.22	1.1	<0.01	1865	0.68	0.0102	<0.1	0.12	2470	0.67	<0.01
29-May-14	7.7	10.9	2960	7.54	45	1799	3040	1.31	<0.25	63	1.32	0.7	<0.01	1820	0.66	0.0065	<0.1	<0.1	2430	0.68	<0.005
6-Nov-14	7.8	10.9	1720	7.49	42	1857	3100	2.59	<10	62	1.1	0.73	0.036	1800	0.71	0.0088	<0.1	<0.01	2900	0.72	<0.001
7-May-15	13.3	7.5	2880	6.81	47	1800	3100	0.9	<10	67	1.2	0.55	<0.020	1900	0.66	0.8	<0.010	<0.10	2800	0.8	<0.0010
5-Nov-15	7.5	12.7	2890	7.02	45	1800	3000	0.83	<5.0	60	1.1	0.6	<0.020	1800	0.63	0.0055	<0.010	<0.10	2910	0.62	<0.0010
5-May-16	7.0	10.6	2820	7.53	41	1800	3000	0.52	<5	56	1.2	0.85	<0.02	1900	0.64	0.0012	<0.01	<0.1	2850	0.72	<0.001
5-Dec-16	8.1	12.1	3260	7.53	52	1800	3100	0.18	<5	60	1.1	0.9	<0.02	1800	0.44	0.0118	0.047	<0.1	2930	0.43	<0.001

Table 2e Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		pH (field)	Temp. (field)	Conductivity (field)	pH (lab)	Total Alkalinity	Hardness ($CaCO_3$)	Conductivity (lab)	Ion Balance	Bromide (Br)	Dissolved Chloride (Cl)	Fluoride (F)	Dissolved Organic Carbon (DOC)	Phosphorus (P)	Sulphate (SO_4)	Ammonia-N	Unionized Ammonia	Nitrite	Nitrate	Total Dissolved Solids (TDS)	Total Kjeldehl Nitrogen (TKN)	Total Phenols
Units			°C	µmho/cm		mg/L	mg/L	µmho/cm	(%)	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS (2003)[1]		< 6.5-8.5 > (A)	–	–	< 6.5-8.5 > (A)	< 30-500 > (A)	< 80-100 > (A)	–	–	–	[250] (A)	1.5 (H)	[5] (A)	–	[500] (A)	–	–	1 (A)	10 (H)	[500] (A)	–	–
Background Range Shallow Wells		6.6 - 7.5	9.8 - 13.8	824 - 1090	7.41 - 7.78	400 - 497	543 - 680	997 - 1300	0.09 - 5.36	<0.05 - <1.0	3 - 10	0.18 - 0.25	8.9 - 12	0.01 - 0.047	90 - 290	<0.03 - 0.69	0.0002 - 0.0038	<0.004 - 0.012	0 - 0	628 - 994	0.51 - 1.1	<0.001 - <0.005
Background Range Intermediate Wells		7.4 - 8.4	9.3 - 12.5	1780 - 3090	7.48 - 7.76	49 - 61	1668 - 1830	2810 - 3070	0.85 - 4.16	<0.05 - 0.26	27 - 35	0.92 - 1.1	0.89 - 1.6	<0.01 - 0.028	1700 - 1880	0.36 - 0.63	0.0026 - 0.0217	<0.010 - 0	<0.10 - 0	2250 - 3050	0.42 - 1.1	<0.001 - <0.01
Background Range Deep Wells		6.6 - 9	9.2 - 11.8	1680 - 2960	7.46 - 7.71	67 - 73	1680 - 1880	2660 - 2900	-1.02 - 5.84	<0.25 - 0.27	29 - 33	0.99 - 1.27	0.6 - 1.3	<0.01 - 0.031	1600 - 1730	0.42 - 0.57	0.0004 - 0.0701	<0.010 - <0.1	<0.01 - <0.10	2130 - 3060	0.5 - 1.1	<0.001 - <0.005
MW24-GI (West of Cell 1)																						
9-Apr-12		6.7	9.9	4360	6.87	1190	2220	4270	0.93	0.79	297	0.29	14.3	1.4	1100	5.55	0.0051	<0.1	<0.1	3420	6.54	<0.01
28-Nov-12		6.9	10.9	5140	7.05	1160	1830	4800	-4.64	1.28	413	0.30	14.5	<0.01	1270	5.85	0.0092	<0.1	<0.1	3840	6.6	<0.001
9-May-13		6.8	10.6	4860	6.97	1040	2420	4590	-5.18	1.9	378	0.33	11.5	0.01	1970	4.12	0.0051	<0.1	<0.1	3670	4.92	<0.01
21-Nov-13		6.9	10.7	4060	7.21	956	2410	4770	4.39	1.06	410	0.41	11.5	1.2	1400	3.75	0.0058	<0.1	<0.1	3820	3.67	<0.005
5-May-14		6.7	10.2	4880	7.04	1030	2605	4890	3.99	0.95	425	0.41	11.2	0.97	1470	2.95	0.0028	0.12	<0.1	3910	3.25	<0.002
4-Nov-14		6.8	13.8	4030	7.06	920	2262	5100	-0.16	<10	480	0.31	10	0.95	1500	3.6	0.0057	<0.1	<0.01	4000	3.8	<0.001
19-May-15		6.6	11	4750	7.16	890	2400	4900	0.63	<10	490	0.35	9.8	0.82	1500	3	0.0029	<0.010	<0.10	3960	3.8	<0.0010
5-Nov-15		6.4	13.3	4600	7.03	880	2300	4900	0.76	<10	520	0.39	9.3	0.91	1500	3.2	0.0023	<0.010	<0.10	3920	3.4	<0.0010
5-May-16		6.5	10.5	4370	7.15	850	2300	4700	-2.31	<5	480	0.38	9.8	0.91	1600	2.8	0.0017	0.016	<0.1	3890	3.3	<0.001
5-Dec-16		6.7	11.1	5170	7.08	880	2200	4900	0.17	<5	490	0.36	9.0	0.99	1400	2.9	0.0029	<0.01	<0.1	3790	3.1	<0.001
MW24-D (West of Cell 1)																						
9-Apr-12		7.8	9.8	3210	7.35	64	1810	3060	-0.75	0.64	47	1.29	1.8	<0.01	1900	0.72	0.0082	<0.1	<0.1	2450	0.74	<0.001
28-Nov-12		8.2	10.4	3520	7.36	65	1780	3190	1.11	0.51	44	1.32	1.3	<0.01	1830	0.77	0.0227	<0.1	<0.1	2550	0.75	<0.001
28-Nov-12	(duplicate)	8.2	10.4	NA	7.26	65	1820	3180	2.28	0.62	45	1.31	1.7	<0.01	1820	0.76	0.0224	<0.1	<0.1	2540	0.83	<0.001
14-May-13		8.0	10.2	3370	7.77	67	2000	3110	1.98	0.66	50	1.33	1.4	<0.01	2010	0.8	0.0148	<0.1	<0.1	2490	0.81	<0.001
14-May-13	(duplicate)	8.0	10.2	NA	7.72	65	1920	3110	2.36	0.64	50	1.32	1.1	<0.01	1910	0.79	0.0146	<0.1	<0.1	2490	0.73	<0.001
21-Nov-13		8.2	10.8	2880	7.27	65	1850	3160	-1.05	0.57	47	1.52	1.4	0.01	1991	0.81	0.0246	<0.1	<0.1	2530	0.81	<0.001
29-May-14		7.7	10.9	3100	7.49	66	1745	3150	-1.14	<0.25	51	1.36	1	<0.01	1890	0.83	0.0082	<0.1	<0.1	2520	0.96	<0.006
4-Nov-14		7.7	11.6	1900	7.50	65	1841	3300	-1.11	<5	47	1.2	0.95	0.036	2000	0.88	0.0092	<0.1	<0.01	3020	0.96	<0.001
4-Nov-14	(duplicate)	7.7	11.6	NA	7.60	65	1841	3300	-1.14	<5	47	1.2	0.72	<0.02	2000	0.91	0.0095	<0.1	<0.01	3040	0.99	<0.001
19-May-15		7.5	11.6	3180	7.41	69	1700	3200	2.07	<10	55	1.1	0.61	<0.020	1900	0.89	0.0072	<0.010	<0.10	3050	1.4	0.0024
19-May-15	(duplicate)	7.5	11.6	3180	7.51	65	1800	3200	0.1	<10	53	1.1	0.55	<0.020	1900	0.89	0.0072	<0.010	<0.10	3030	1.1	0.0034
5-Nov-15		7.2	11.7	3010	7.51	67	1700	3200	2.40	<5.0	51	1.3	0.7	<0.020	1900	0.84	0.0034	<0.010	<0.10	3130	1.1	0.033
5-Nov-15	(duplicate)	7.2	11.7	3010	7.53	67	1700	3200	1.93	<5.0	50	1.2	0.6	<0.020	1900	0.85	0.0035	<0.010	<0.10	3060	0.91	0.073
4-May-16		6.8	10.4	3030	7.63	68	1800	3200	-2.80	<5	48	1.2	0.77	<0.02	2000	0.88	0.0011	<0.01	<0.1	3150	0.98	0.002
4-May-16	(duplicate)	6.8	10.4		7.64	67	1800	3100	-1.26	<5	49	1.1	0.74	<0.02	2000	0.89	0.0011	<0.01	<0.1	2940	1.1	0.0022
5-Dec-16		7.8	10.9	3480	7.24	70	1800	3300	1.80	<5	53	1.2	0.94	<0.02	1900	0.86	0.0107	<0.01	<0.1	3040	0.83	0.0015
5-Dec-16	(duplicate)	7.8	10.9		7.60	70	1800	3300	4.12	<5	48	1.1	0.56	<0.02	1800	0.85	0.0106	<0.01	<0.1	3190	0.84	<0.001
MW25-S (West of Cell 1)																						
10-Apr-12		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	45	NA	NA	NA	NA	NA	NA	NA	NA	0.002
17-Apr-12		7.0	7.9	2710	7.49	856	1120	2620	-0.59	0.98	371	0.84	NA	NA	43	9.92	0.0156	<0.1	<0.1	1700	NA	NA
19-Apr-12		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02	NA	9.8	NA	NA	NA	NA	16.2	NA
29-Nov-12		7.2	11.8	3250	7.35	947	1070	3030	1.51	1.52	391	0.37	31.6	0.06	134	5.99	0.0202	<0.1	<0.1	1970	9.18	<0.01
9-May-13		6.9	7.9	3400	7.17	1100	1140	3150	-2.85	1.81	435	0.28	36.3	0.14	77	6.34	0.0079	<0.1	<0.1	2050	9.23	<0.005
21-Nov-13		7.1	12.2	2950	7.14	994	1120	3220	3.07	1.6	416	0.35	29.2	0.1	126	3.91	0.0108	<0.1	<0.1	2090	4.73	<0.001
5-May-14		6.8	7.6	3320	7.17	1110	1240	3160	-1.88	1.31	435	0.31	37.5	0.15	97	4.24	0.0041	<0.1	<0.1	2050	6.73	<0.002
12-Nov-14		6.9	11.5	2950	7.21	960	1085	2800	3.20	<5	330	0.4	22	0.17	130	3.3	0.0055	<0.1	0.015	1650	4	<0.001
4-Jun-15		6.7	10.5	1600	7.23	380	790	1800	2.16	<2.0	77	0.62	6.3	<0.020	490	0.13	<0.0005	<0.010	0.22	1260	0.69	<0.0010
30-Nov-15		6.7	11.3	1490	7.66	420	580	1500	6.33	<1.0	43	0.63	8.5	0.026	310	0.32	<0.0005	0.014	1.12	1020	0.89	<0.0010
10-May-16		6.9	8.3	1490	7.44	350	820	1700	-2.54	<1	20	0.72	6.6	<0.02	630	0.096	0.0001	<0.01	0.49	1310	0.56	<0.001
6-Dec-16		7.3	11.8	1890	7.43	530	610	1800	0.86	<1	49	0.69	12	0.051	340	3	0.0127	0.084	0.43	1130	6.6	0.021

Table 2e Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		pH (field)	Temp. (field)	Conductivity (field)	pH (lab)	Total Alkalinity	Hardness ($CaCO_3$)	Conductivity (lab)	Ion Balance	Bromide (Br)	Dissolved Chloride (Cl)	Fluoride (F)	Dissolved Organic Carbon (DOC)	Phosphorus (P)	Sulphate (SO_4)	Ammonia-N	Unionized Ammonia	Nitrite	Nitrate	Total Dissolved Solids (TDS)	Total Kjeldehl Nitrogen (TKN)	Total Phenols
Units			°C	µmho/cm		mg/L	mg/L	µmho/cm	(%)	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS (2003)[1]		< 6.5-8.5 > (A)	–	–	< 6.5-8.5 > (A)	< 30-500 > (A)	< 80-100 > (A)	–	–	–	[250] (A)	1.5 (H)	[5] (A)	–	[500] (A)	–	–	1 (A)	10 (H)	[500] (A)	–	–
Background Range Shallow Wells		6.6 - 7.5	9.8 - 13.8	824 - 1090	7.41 - 7.78	400 - 497	543 - 680	997 - 1300	0.09 - 5.36	<0.05 - <1.0	3 - 10	0.18 - 0.25	8.9 - 12	0.01 - 0.047	90 - 290	<0.03 - 0.69	0.0002 - 0.0038	<0.004 - 0.012	0 - 0	628 - 994	0.51 - 1.1	<0.001 - <0.005
Background Range Intermediate Wells		7.4 - 8.4	9.3 - 12.5	1780 - 3090	7.48 - 7.76	49 - 61	1668 - 1830	2810 - 3070	0.85 - 4.16	<0.05 - 0.26	27 - 35	0.92 - 1.1	0.89 - 1.6	<0.01 - 0.028	1700 - 1880	0.36 - 0.63	0.0026 - 0.0217	<0.010 - 0	<0.10 - 0	2250 - 3050	0.42 - 1.1	<0.001 - <0.01
Background Range Deep Wells		6.6 - 9	9.2 - 11.8	1680 - 2960	7.46 - 7.71	67 - 73	1680 - 1880	2660 - 2900	-1.02 - 5.84	<0.25 - 0.27	29 - 33	0.99 - 1.27	0.6 - 1.3	<0.01 - 0.031	1600 - 1730	0.42 - 0.57	0.0004 - 0.0701	<0.010 - <0.1	<0.01 - <0.10	2130 - 3060	0.5 - 1.1	<0.001 - <0.005
MW25-I (West of Cell 1)																						
10-Apr-12		7.7	10	3090	7.83	68	1650	2990	-1.77	0.48	51	0.74	4.2	<0.01	1815	1.05	0.0097	<0.1	<0.1	2390	1.38	<0.001
29-Nov-12		8.3	10.3	3830	7.40	41	2060	3600	1.02	0.54	56	0.91	1.3	<0.01	2160	0.52	0.0190	<0.1	<0.1	2880	0.54	<0.001
17-May-13		8.2	11.5	3780	7.74	39	2150	3560	6.36	0.73	60	0.22	1.3	<0.01	2130	0.35	0.0112	<0.1	<0.1	2850	0.35	<0.01
22-Nov-13		8.4	10.5	3160	7.67	36	2090	3710	1.57	0.64	59	1.03	1	<0.01	2310	0.37	0.0171	<0.1	<0.1	2970	0.61	<0.005
2-Jun-14		7.9	10.9	3550	7.78	44	2199	3780	3.96	0.73	59	1.01	0.9	<0.01	2270	0.48	0.0075	<0.1	<0.1	3020	0.67	<0.002
11-Nov-14		8.1	10.3	3360	7.62	35	2105	3700	4.01	<10	62	0.81	1.1	<0.02	2200	0.31	0.0072	<0.1	<0.011	3630	0.45	<0.001
4-Jun-15		7.6	12.2	3540	7.40	42	2000	3700	1.85	<10	65	0.8	0.83	<0.020	2200	0.18	0.0019	<0.010	0.36	3640	0.34	<0.0010
2-Dec-15		7.7	10.4	3430	7.65	40	2000	3800	1.48	<1.0	57	0.84	0.9	<0.020	2200	0.15	0.0017	0.02	0.15	3590	0.53	<0.0010
10-May-16		7.7	10.3	3420	7.58	40	1900	3700	-1.53	<10	57	0.82	0.91	<0.02	2300	<0.05	<0.0005	<0.01	0.23	3690	0.11	<0.001
6-Dec-16		8.2	12.8	4090	7.21	48	1900	3800	2.62	<10	51	0.8	0.67	<0.02	2200	0.069	0.0024	<0.01	0.37	3590	0.25	<0.001
MW26-S (North of Cell 2)																						
10-Apr-12		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11	NA	NA	NA	NA	NA	NA	NA	NA	0.002
17-Apr-12		7.4	9	3060	8.12	289	NA	2910	NA	<0.25	11	0.15	NA	NA	1700	NA	NA	NA	NA	NA	NA	NA
19-Nov-12		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8-May-13		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12-Nov-13		7.9	10.9	1510	7.88	287	1240	1890	2.63	<0.25	4	0.2	2.6	<0.01	933	0.02	0.0003	<0.1	0.34	1510	0.34	<0.001
5-May-14		7.2	8.2	2490	7.73	295	1871	2500	3.20	<0.25	8	0.15	3.4	<0.01	1440	0.05	0.0001	0.32	<0.1	2000	0.18	<0.001
11-Nov-14		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
21-May-15		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nov-15		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8-Apr-16		7.0	8.2	2750	7.67	350	2100	2800	1.65	<5	7.4	0.18	3.5	<0.02	1600	<0.05	<0.0001	<0.01	0.47	2650	2.1	<0.001
7-Nov-16		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW26-I (North of Cell 2)																						
10-Apr-12		7.7	9.4	3220	7.44	42	1820	3100	-2.55	1.04	71	0.58	3.1	<0.01	2020	0.37	0.0033	<0.1	<0.1	2480	0.65	<0.001
10-Apr-12	(duplicate)	7.7	9.4	NA	7.43	43	1640	3090	-4.87	1.04	72	0.56	1.7	<0.01	1930	0.39	0.0034	<0.1	<0.1	2470	0.4	<0.001
4-Dec-12		8.1	9.2	3520	7.17	38	1920	3220	2.56	0.84	71	0.76	1.1	<0.01	1940	0.24	0.0052	<0.1	0.3	2580	0.27	<0.001
21-May-13		8.0	10.2	3350	7.30	38	2020	3090	4.63	1.01	71	0.73	<0.5	<0.01	1960	0.03	0.0006	<0.1	0.54	2470	<0.1	<0.001
13-Nov-13		8.1	9.5	2940	7.61	39	1920	3240	1.25	0.86	72	0.83	1.5	<0.01	2020	0.11	0.0024	<0.1	0.47	2590	0.26	<0.001
2-Jun-14		7.4	10.4	3240	7.69	40	1934	3240	3.93	0.85	71	0.81	0.7	<0.01	1920	0.16	0.0008	0.45	<0.1	2590	0.19	<0.001
11-Nov-14		7.8	10.4	2980	7.42	37	1865	3300	2.70	<10	73	0.63	0.099	<0.02	1900	<0.05	<0.0006	0.53	0.01	3040	0.18	<0.001
21-May-15		7.4	11.8	3080	7.58	37	1900	3200	3.02	<10	73	0.66	0.57	<0.020	1900	<0.050	<0.0005	<0.010	0.53	3150	0.78	<0.0010
4-Nov-15		7.3	10.9	3030	7.38	36	1800	3300	0.24	<5.0	72	0.7	0.6	<0.020	1900	<0.050	<0.0005	<0.010	0.4	3080	0.54	<0.0010
13-Apr-16		7.7	8.7	3040	7.11	39	1700	3200	-1.28	<1	66	0.7	0.75	<0.02	1900	<0.05	<0.0004	<0.01	0.4	3030	0.38	<0.001
7-Nov-16		7.6	11.1	*1990*	7.43	35	1700	3300	-4.46	<5	64	0.65	0.72	<0.02	2000	<0.05	<0.0004	<0.01	0.44	2960	<0.1	<0.001

Table 2e Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		pH (field)	Temp. (field)	Conductivity (field)	pH (lab)	Total Alkalinity	Hardness ($CaCO_3$)	Conductivity (lab)	Ion Balance	Bromide (Br)	Dissolved Chloride (Cl)	Fluoride (F)	Dissolved Organic Carbon (DOC)	Phosphorus (P)	Sulphate (SO_4)	Ammonia-N	Unionized Ammonia	Nitrite	Nitrate	Total Dissolved Solids (TDS)	Total Kjeldehl Nitrogen (TKN)	Total Phenols
Units			°C	µmho/cm		mg/L	mg/L	µmho/cm	(%)	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS (2003)[1]		< 6.5-8.5 > (A)	–	–	< 6.5-8.5 > (A)	< 30-500 > (A)	< 80-100 > (A)	–	–	–	[250] (A)	1.5 (H)	[5] (A)	–	[500] (A)	–	–	1 (A)	10 (H)	[500] (A)	–	–
Background Range Shallow Wells		6.6 - 7.5	9.8 - 13.8	824 - 1090	7.41 - 7.78	400 - 497	543 - 680	997 - 1300	0.09 - 5.36	<0.05 - <1.0	3 - 10	0.18 - 0.25	8.9 - 12	0.01 - 0.047	90 - 290	<0.03 - 0.69	0.0002 - 0.0038	<0.004 - 0.012	0 - 0	628 - 994	0.51 - 1.1	<0.001 - <0.005
Background Range Intermediate Wells		7.4 - 8.4	9.3 - 12.5	1780 - 3090	7.48 - 7.76	49 - 61	1668 - 1830	2810 - 3070	0.85 - 4.16	<0.05 - 0.26	27 - 35	0.92 - 1.1	0.89 - 1.6	<0.01 - 0.028	1700 - 1880	0.36 - 0.63	0.0026 - 0.0217	<0.010 - 0	<0.10 - 0	2250 - 3050	0.42 - 1.1	<0.001 - <0.01
Background Range Deep Wells		6.6 - 9	9.2 - 11.8	1680 - 2960	7.46 - 7.71	67 - 73	1680 - 1880	2660 - 2900	-1.02 - 5.84	<0.25 - 0.27	29 - 33	0.99 - 1.27	0.6 - 1.3	<0.01 - 0.031	1600 - 1730	0.42 - 0.57	0.0004 - 0.0701	<0.010 - <0.1	<0.01 - <0.10	2130 - 3060	0.5 - 1.1	<0.001 - <0.005
MW27-S (North of Cell 2)																						
4-Apr-12		7.5	8.4	1290	7.70	354	708	1240	1.59	<0.25	8	0.30	2.8	<0.01	359	<0.02	<0.0001	<0.1	<0.1	868	0.32	<0.001
21-Nov-12		7.6	10.9	1450	7.78	314	762	1390	-4.94	<0.25	11	0.38	2.3	<0.01	464	0.02	0.0002	2.08	25.1	973	0.11	<0.001
17-May-13		7.6	9.9	1380	7.71	329	894	1370	5.35	<0.25	13	0.34	1.9	<0.01	488	<0.02	<0.0002	<0.1	3.58	959	0.14	<0.001
18-Nov-13		7.5	10.8	1200	7.42	324	823	1440	2.13	<0.25	17	0.39	2.8	<0.01	490	<0.02	<0.0002	<0.1	0.97	1010	<0.1	<0.001
26-May-14		7.3	13.8	1408	7.99	382	866	1460	2.33	<0.25	16	0.37	2.2	<0.01	472	0.23	0.0011	0.17	<0.1	1020	0.19	<0.002
31-Oct-14		6.9	12.7	1150	7.74	350	845	1500	1.21	<1	15	0.33	1.8	0.029	510	<0.05	<0.0001	0.14	<0.01	1110	0.17	<0.001
6-May-15		6.9	13.6	1440	7.59	340	860	1600	3.24	<1.0	54	0.29	2.2	<0.020	560	<0.050	<0.0005	<0.010	0.27	1180	0.22	<0.0010
10-Nov-15		6.9	11.9	1340	7.59	350	680	1300	1.12	<1.0	7	0.27	1.6	<0.020	390	<0.050	<0.0005	<0.010	<0.10	916	0.13	<0.0010
13-Apr-16		7.0	7.6	1430	7.64	360	890	1500	0.97	<1	14	0.32	1.7	<0.02	540	<0.05	<0.0001	<0.01	0.3	1160	0.28	<0.001
7-Dec-16		7.4	11	1540	7.64	330	810	1500	1.76	<2	16	0.36	1.8	<0.02	480	<0.05	<0.0003	<0.01	0.57	1110	<0.1	<0.001
MW27-I (North of Cell 2)																						
4-Apr-12		7.7	9.9	2930	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Dec-12		8.2	9.6	3660	7.28	40	2210	3330	4.82	0.37	35	1.01	<0.5	<0.01	2070	0.72	0.0200	<0.1	<0.1	2660	0.8	<0.001
21-May-13		8.1	10.1	3580	7.60	48	1420	3260	4.26	0.39	32	1.01	<0.5	<0.01	1930	0.51	0.0117	<0.1	0.85	2610	0.49	<0.001
22-Nov-13		8.4	9.9	3050	7.64	51	1000	3430	-1.44	0.35	32	1.06	0.8	0.01	1990	0.04	0.0018	<0.1	1.63	2740	0.22	<0.001
29-May-14		7.8	13.3	3240	7.67	51	1208	3310	4.59	0.41	31	0.95	0.9	<0.01	1820	0.07	0.0010	1.41	<0.1	2650	<0.1	<0.005
11-Nov-14		8.4	12.4	3060	7.70	51	1493	3200	-0.31	<10	34	0.84	1.2	0.039	1900	0.17	0.0090	0.72	<0.01	2920	0.32	<0.001
21-May-15		7.5	11.1	3110	7.53	34	1900	3100	1.84	<5.0	32	0.94	0.62	<0.020	2000	0.17	0.0013	<0.010	0.53	3100	0.81	<0.0010
2-Dec-15		7.6	10.8	3070	7.57	42	1700	3200	0.41	<1.0	30	0.87	1.1	<0.020	1900	<0.050	<0.0005	<0.010	0.53	2990	0.74	<0.0010
13-Apr-16		7.8	8	3030	7.25	39	1800	3100	1.76	<5	28	0.97	0.69	<0.02	1900	0.091	0.0009	0.042	0.19	2940	0.4	<0.001
7-Dec-16		8.0	11.8	3330	7.45	35	1800	3000	0.42	<5	28	0.95	0.52	<0.02	1900	<0.05	<0.0010	<0.01	0.42	2920	<0.2	<0.001
MW27-D (North of Cell 2)																						
5-Apr-12		7.6	8.7	3100	7.49	77	2110	2930	4.95	0.51	33	1.27	1.5	<0.01	1900	0.96	0.0064	<0.1	<0.1	2340	1.05	<0.001
5-Apr-12	(duplicate)	7.6	8.7	NA	7.63	76	1990	2880	3.28	0.4	32	1.27	1.1	<0.01	1850	0.94	0.0062	<0.1	<0.1	2300	0.94	<0.001
21-Nov-12		8.1	9.2	3260	7.67	75	1710	2970	5.02	<0.5	30	1.25	0.6	<0.01	1540	0.81	0.0174	<0.1	<0.1	2380	0.89	<0.001
21-Nov-12	(duplicate)	8.1	9.2	NA	7.65	76	1710	2970	4.00	<0.5	32	1.24	0.6	<0.01	1580	0.82	0.0176	<0.1	<0.1	2380	0.79	<0.001
17-May-13		7.8	9.9	3090	7.70	78	2040	2900	5.18	0.4	32	1.29	0.6	<0.01	1860	0.78	0.0090	<0.1	<0.1	2320	0.71	<0.001
17-May-13	(duplicate)	7.8	9.9	NA	7.74	77	1960	2880	3.13	0.4	31	1.27	0.7	<0.01	1850	0.77	0.0089	<0.1	<0.1	2300	0.65	<0.001
18-Nov-13		7.9	10.2	2700	7.53	71	2020	2890	4.62	0.037	32	1.29	0.7	<0.01	1850	0.84	0.0124	<0.1	<0.1	2310	0.7	<0.001
18-Nov-13	(duplicate)	7.9	10.2	NA	7.49	69	1730	2890	3.77	<0.25	31	1.28	0.7	<0.01	1620	0.81	0.0120	<0.1	<0.1	2310	0.69	<0.001
26-May-14		7.6	11.5	2950	7.62	74	1973	2940	4.12	0.36	27	1.44	0.8	<0.01	1820	0.87	0.0072	<0.1	<0.1	2350	0.92	<0.001
21-Oct-14		7.4	10.8	1920	7.52	72	1784	3000	-0.09	<5	30	1.1	0.48	0.034	1800	0.82	0.0041	<0.1	<0.01	2760	0.96	<0.001
22-Apr-15		7.8	10.1	1830	7.47	70	1700	2900	1.49	<5.0	30	1.2	0.34	<0.020	1800	0.93	0.013	<0.010	<0.10	2760	0.97	<0.0010
22-Apr-15	(duplicate)	7.8	10.1	1830	7.55	71	1700	2900	2.16	<5.0	29	1.2	0.33	<0.020	1800	0.99	0.014	<0.010	<0.10	2780	1	<0.0010
17-Nov-15		7.2	10.8	2700	7.64	71	1700	2900	1.59	<5.0	32	1.2	0.5	<0.020	1800	0.98	0.0037	<0.010	<0.10	2820	1.3	<0.0010
17-Nov-15	(duplicate)	7.2	10.8	2700	7.58	70	1700	2900	1.12	<5.0	31	1.2	0.3	<0.020	1800	0.85	0.0032	<0.010	<0.10	2820	1.1	<0.0010
13-Apr-16		7.4	9.3	2830	7.38	73	1800	2900	-0.85	<5	38	1.2	0.43	<0.02	1800	0.9	0.0040	<0.01	<0.1	2750	0.95	<0.001
13-Apr-16	(duplicate)	7.4	9.3		7.64	71	1900	2900	2.03	<5	28	1.2	0.52	<0.02	1800	0.74	0.0033	<0.01	<0.1	2750	0.88	<0.001
7-Dec-16		7.9	10	3140	7.58	71	1800	2900	2.83	<5	29	1.1	2.6	<0.02	1700	0.76	0.0111	<0.01	<0.1	2770	0.69	<0.001
7-Dec-16	(duplicate)	7.9	10		7.58	69	1800	2900	4.07	5.7	30	1.1	0.67	<0.02	1700	0.77	0.0112	<0.01	<0.1	2750	0.66	<0.001

Table 2e Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameters		pH (field)	Temp. (field)	Conductivity (field)	pH (lab)	Total Alkalinity	Hardness ($CaCO_3$)	Conductivity (lab)	Ion Balance	Bromide (Br)	Dissolved Chloride (Cl)	Fluoride (F)	Dissolved Organic Carbon (DOC)	Phosphorus (P)	Sulphate (SO_4)	Ammonia-N	Unionized Ammonia	Nitrite	Nitrate	Total Dissolved Solids (TDS)	Total Kjeldehl Nitrogen (TKN)	Total Phenols
Units			°C	µmho/cm		mg/L	mg/L	µmho/cm	(%)	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS (2003)[1]		< 6.5-8.5 > (A)	–	–	< 6.5-8.5 > (A)	< 30-500 > (A)	< 80-100 > (A)	–	–	–	[250] (A)	1.5 (H)	[5] (A)	–	[500] (A)	–	–	1 (A)	10 (H)	[500] (A)	–	–
Background Range Shallow Wells		6.6 - 7.5	9.8 - 13.8	824 - 1090	7.41 - 7.78	400 - 497	543 - 680	997 - 1300	0.09 - 5.36	<0.05 - <1.0	3 - 10	0.18 - 0.25	8.9 - 12	0.01 - 0.047	90 - 290	<0.03 - 0.69	0.0002 - 0.0038	<0.004 - 0.012	0 - 0	628 - 994	0.51 - 1.1	<0.001 - <0.005
Background Range Intermediate Wells		7.4 - 8.4	9.3 - 12.5	1780 - 3090	7.48 - 7.76	49 - 61	1668 - 1830	2810 - 3070	0.85 - 4.16	<0.05 - 0.26	27 - 35	0.92 - 1.1	0.89 - 1.6	<0.01 - 0.028	1700 - 1880	0.36 - 0.63	0.0026 - 0.0217	<0.010 - 0	<0.10 - 0	2250 - 3050	0.42 - 1.1	<0.001 - <0.01
Background Range Deep Wells		6.6 - 9	9.2 - 11.8	1680 - 2960	7.46 - 7.71	67 - 73	1680 - 1880	2660 - 2900	-1.02 - 5.84	<0.25 - 0.27	29 - 33	0.99 - 1.27	0.6 - 1.3	<0.01 - 0.031	1600 - 1730	0.42 - 0.57	0.0004 - 0.0701	<0.010 - <0.1	<0.01 - <0.10	2130 - 3060	0.5 - 1.1	<0.001 - <0.005
MW28-S (West of Cell 2)																						
4-Apr-12		7.6	8.6	1040	7.65	311	554	1020	1.89	<0.25	6	0.21	2.4	<0.01	254	<0.02	<0.0001	<0.1	<0.1	663	0.33	<0.001
21-Nov-12		7.5	12	1330	7.79	358	703	1280	0.37	<0.25	12	0.30	2.7	<0.01	364	0.02	0.0001	<0.1	0.62	896	<0.1	<0.001
16-May-13		7.4	10.5	1140	7.76	367	682	1100	4.67	<0.25	9	0.30	2.1	<0.01	268	<0.02	<0.0002	<0.1	0.38	715	0.13	<0.001
18-Nov-13		7.4	10.9	993	7.30	387	625	1140	0.22	<0.25	7	0.25	2	<0.01	267	<0.02	<0.0002	<0.1	<0.1	741	<0.1	<0.001
21-May-14		6.9	12.7	1001	7.60	380	623	1020	2.40	<0.25	7	0.26	2	<0.01	234	0.05	0.0001	<0.1	<0.1	663	0.32	<0.001
5-Nov-14		7.0	11.7	1250	7.76	280	837	1500	0.28	<1	10	0.25	1.8	0.036	600	0.11	0.0002	<0.1	<0.01	1240	0.23	<0.001
6-May-15		6.9	10.9	940	7.56	340	500	980	2.31	<1.0	5.1	0.25	2.5	<0.020	200	<0.050	<0.0005	<0.010	<0.10	634	0.3	<0.0010
10-Nov-15		6.7	11.7	1430	7.63	330	830	1600	1.96	<5.0	25	0.36	2.3	<0.020	580	<0.050	<0.0005	<0.010	0.26	1170	0.18	<0.0010
14-Apr-16		6.9	7.8	878	7.65	310	490	940	-0.90	<1	3.5	0.24	1.9	<0.02	200	<0.05	<0.0001	<0.01	<0.1	636	0.28	<0.001
30-Dec-16		7.7	9.9	1990	7.63	250	890	1700	-3.80	<5	12	0.29	1.3	<0.02	760	0.09	0.0008	<0.01	<0.1	1470	0.24	<0.001
MW28-I (West of Cell 2)																						
4-Apr-12		7.8	9.7	3020	7.57	66	1700	2860	-3.40	<0.25	29	1.27	1.5	<0.01	1810	0.54	0.0061	<0.1	<0.1	2290	0.7	<0.001
21-Nov-12		8.0	10.4	3160	7.52	69	1770	2930	4.87	0.34	26	1.18	0.6	<0.01	1610	0.48	0.0090	<0.1	<0.1	2340	0.46	<0.001
16-May-13		7.9	11.2	3030	7.68	68	1910	2820	3.85	0.31	26	1.28	0.6	<0.01	1804	0.46	0.0073	<0.1	<0.1	2260	0.42	<0.001
16-May-13	(duplicate)	7.9	11.2	NA	7.65	68	1860	2810	2.12	0.31	26	1.27	0.6	<0.01	1800	0.46	0.0073	<0.1	<0.1	2250	0.47	<0.001
18-Nov-13		8.0	10.4	2630	7.47	66	1890	2820	2.95	<0.25	26	1.22	0.7	<0.01	1790	0.49	0.0092	<0.1	<0.1	2260	0.72	<0.001
21-May-14		7.3	12.6	2820	7.58	67	2014	2870	4.76	0.32	26	1.38	0.7	<0.01	1830	0.53	0.0024	<0.1	<0.1	2300	0.56	<0.002
5-Nov-14		7.4	10.5	1600	7.55	67	1743	2900	-1.37	<5	27	1.1	0.45	0.037	1800	0.52	0.0025	<0.1	<0.01	2780	0.59	<0.001
5-Nov-14	(duplicate)	7.4	10.5	NA	7.53	66	1743	2800	-1.45	<5	30	1.1	0.47	0.033	1800	0.55	0.0027	<0.1	<0.01	2780	0.56	<0.001
6-May-15		7.3	11.7	2710	6.93	67	1600	2900	1.08	<1.0	24	1.1	0.6	<0.020	1700	0.51	0.0026	<0.010	<0.10	2750	0.63	<0.0010
17-Nov-15		7.2	10.9	2770	7.52	66	1600	2800	3.72	<5.0	29	1.2	0.4	<0.020	1800	0.51	0.0020	<0.010	<0.10	2800	0.74	<0.0010
14-Apr-16		7.4	9.7	2710	7.35	70	1700	2800	-1.96	<5	25	1.2	0.53	<0.02	1800	0.47	0.0021	<0.01	<0.1	2770	0.61	<0.001
26-Dec-16		7.8	10.4	2850	7.45	66	1700	2900	1.66	<5	24	1.1	2.3	<0.1	1700	0.45	0.0054	<0.01	<0.1	2670	0.49	<0.001
MW6-99S (West of Cell 2)																						
9-Apr-12		7.8	8.6	3130	7.63	64	1140	2940	-2.63	0.36	48	0.47	2.3	<0.01	1630	0.22	0.0023	<0.1	0.34	2350	0.31	<0.001
29-Nov-12		8.0	10.2	3260	7.73	66	1300	3030	-1.20	0.35	46	0.54	1.4	0.01	1650	0.28	0.0052	<0.1	0.17	2420	0.31	<0.001
17-May-13		8.0	10.6	3110	7.73	77	1390	2940	4.10	0.51	48	0.22	1.3	<0.01	1660	0.04	0.0008	<0.1	<0.1	2350	<0.1	<0.001
22-Nov-13		8.0	9.8	2630	7.73	85	1440	3070	0.40	0.44	46	0.6	1.4	0.25	1740	1.51	0.0271	<0.1	<0.1	2460	1.49	<0.001
29-May-14		7.5	11.7	2840	7.57	78	1466	3010	4.73	0.4	46	0.51	1.1	0.08	1670	0.4	0.0027	<0.1	<0.1	2410	0.39	<0.001
12-Nov-14		7.6	10.2	2810	7.48	61	1450	3100	-0.02	<5	45	0.5	1.3	0.064	1800	0.36	0.0027	<0.1	0.019	2840	0.38	<0.001
29-May-15		7.4	14.5	2740	7.35	50	1400	3100	0.26	<10	49	0.51	1.1	0.027	1800	0.21	0.0017	<0.010	0.36	3000	0.55	0.0011
2-Dec-15		7.5	10.3	2880	7.70	91	1300	3000	1.69	<1.0	47	0.47	1.7	0.14	1600	1.4	0.0100	<0.010	<0.10	2580	1.8	0.0012
18-Apr-16		7.5	9.5	2700	7.40	68	1500	3100	0.62	<5	0.41	0.49	0.0023	0.033	1800	<0.1	<0.01	1.2	42	2610	0.37	<0.001
6-Dec-16		7.7	13.5	2750	7.52	72	1700	2900	1.78	<5	0.65	1	0.0078	<0.02	1700	<0.1	<0.01	0.41	46	2870	0.62	<0.001

Table 2e Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		pH (field)	Temp. (field)	Conductivity (field)	pH (lab)	Total Alkalinity	Hardness ($CaCO_3$)	Conductivity (lab)	Ion Balance	Bromide (Br)	Dissolved Chloride (Cl)	Fluoride (F)	Dissolved Organic Carbon (DOC)	Phosphorus (P)	Sulphate (SO_4)	Ammonia-N	Unionized Ammonia	Nitrite	Nitrate	Total Dissolved Solids (TDS)	Total Kjeldehl Nitrogen (TKN)	Total Phenols
Units			°C	µmho/cm		mg/L	mg/L	µmho/cm	(%)	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS (2003)[1]		< 6.5-8.5 > (A)	–	–	< 6.5-8.5 > (A)	< 30-500 > (A)	< 80-100 > (A)	–	–	–	[250] (A)	1.5 (H)	[5] (A)	–	[500] (A)	–	–	1 (A)	10 (H)	[500] (A)	–	–
Background Range Shallow Wells		6.6 - 7.5	9.8 - 13.8	824 - 1090	7.41 - 7.78	400 - 497	543 - 680	997 - 1300	0.09 - 5.36	<0.05 - <1.0	3 - 10	0.18 - 0.25	8.9 - 12	0.01 - 0.047	90 - 290	<0.03 - 0.69	0.0002 - 0.0038	<0.004 - 0.012	0 - 0	628 - 994	0.51 - 1.1	<0.001 - <0.005
Background Range Intermediate Wells		7.4 - 8.4	9.3 - 12.5	1780 - 3090	7.48 - 7.76	49 - 61	1668 - 1830	2810 - 3070	0.85 - 4.16	<0.05 - 0.26	27 - 35	0.92 - 1.1	0.89 - 1.6	<0.01 - 0.028	1700 - 1880	0.36 - 0.63	0.0026 - 0.0217	<0.010 - 0	<0.10 - 0	2250 - 3050	0.42 - 1.1	<0.001 - <0.01
Background Range Deep Wells		6.6 - 9	9.2 - 11.8	1680 - 2960	7.46 - 7.71	67 - 73	1680 - 1880	2660 - 2900	-1.02 - 5.84	<0.25 - 0.27	29 - 33	0.99 - 1.27	0.6 - 1.3	<0.01 - 0.031	1600 - 1730	0.42 - 0.57	0.0004 - 0.0701	<0.010 - <0.1	<0.01 - <0.10	2130 - 3060	0.5 - 1.1	<0.001 - <0.005
MW6-99I (West of Cell 2)																						
9-Apr-12		7.6	9	1060	7.71	229	1000	2030	-0.39	<0.25	29	0.64	2.5	<0.01	979	0.04	0.0003	<0.1	0.26	1620	0.15	<0.001
29-Nov-12		7.7	9.2	1420	7.96	172	1340	2770	-3.16	<0.5	35	0.79	1.7	<0.01	1490	0.44	0.0038	<0.1	0.18	2220	0.48	<0.001
17-May-13		7.8	10.3	1250	7.82	246	1280	2150	4.01	<0.25	21	0.2	1.7	0.01	1080	0.47	0.0056	<0.1	0.16	1720	0.54	<0.001
22-Nov-13		7.8	9.8	844	7.78	229	1220	2140	-1.00	<0.25	18	0.65	1.6	<0.01	1130	0.38	0.0043	<0.1	0.21	1710	0.54	<0.005
29-May-14		7.3	10.6	1033	7.71	282	850	1570	2.48	<0.25	15	0.63	1.5	<0.01	606	0.11	0.0004	0.32	<0.1	1180	0.18	<0.002
29-May-14	(duplicate)	7.3	10.6	NA	7.56	243	1180	1980	3.36	<0.25	17	0.61	1.5	<0.01	950	0.12	0.0005	0.32	<0.1	1580	0.17	<0.001
12-Nov-14		7.5	10	1670	7.56	160	1700	2800	-1.74	<5	28	0.6	1.4	0.036	1700	0.29	0.0017	<0.1	0.08	2570	0.34	<0.001
21-May-15		7.0	11.5	1140	7.93	210	1200	2200	4.45	<5.0	27	0.67	0.95	<0.020	1000	<0.050	<0.0005	0.014	0.26	1520	0.57	<0.0010
21-May-15	(duplicate)	7.0	11.5	1140	7.85	180	1400	2500	2.11	<10	28	0.64	0.97	<0.020	1300	0.091	<0.0005	0.035	0.3	1520	0.58	<0.0010
2-Dec-15		7.0	10.1	2250	7.78	210	1100	2200	0.83	<1.0	22	0.66	1.4	<0.020	1000	0.24	0.0005	<0.010	0.29	1880	0.84	<0.0010
18-Apr-16		7.2	9.9	1460	7.67	190	1300	2500	-0.16	<5	0.099	0.71	0.0003	<0.02	1300	0.24	0.031	1.2	31	1440	0.33	<0.001
6-Dec-16		7.2	11.2	2480	7.61	95	1200	3000	0.40	<5	0.57	0.44	0.0018	0.066	1500	<0.1	<0.01	1.2	38	2620	0.73	0.0037
MW6-99D (West of Cell 2)																						
5-Apr-12		7.4	9	3150	7.48	67	1960	2910	3.36	0.94	39	1.21	0.8	<0.01	1840	0.7	0.0030	<0.1	<0.1	2330	0.67	<0.001
27-Nov-12		8.2	9.3	3270	7.55	71	1740	3050	3.39	0.49	41	1.29	0.8	<0.01	1640	0.69	0.0187	<0.1	<0.1	2440	0.69	<0.001
27-Nov-12	(duplicate)	8.2	9.3	NA	7.61	72	1820	3030	4.72	0.46	40	1.28	0.8	<0.01	1660	0.72	0.0195	<0.1	<0.1	2420	0.66	<0.001
16-May-13		8.0	10.4	3160	7.73	72	1960	2940	4.09	0.54	43	1.3	0.7	<0.01	1858	0.69	0.0130	<0.1	<0.1	2350	0.64	<0.001
21-Nov-13		8.1	10	2780	7.71	69	1860	2980	-0.08	0.48	45	1.36	0.9	<0.01	1889	0.71	0.0162	<0.1	<0.1	2380	0.75	<0.001
21-May-14		7.3	11.4	2980	7.62	74	1982	3010	3.80	0.55	48	1.36	<0.5	<0.01	1860	0.78	0.0032	<0.1	<0.1	2410	0.91	<0.001
6-Nov-14		7.5	10.1	1670	7.51	70	1784	3100	0.01	<10	51	1.1	0.51	0.036	1800	0.76	0.0045	<0.1	<0.01	2900	0.92	<0.001
6-Nov-14	(duplicate)	7.5	10.1	NA	7.44	70	1784	3100	0.25	<10	44	1	0.58	0.035	1800	0.75	0.0044	<0.1	<0.01	2860	0.87	<0.001
7-May-15		12.3	7.2	2820	7.18	76	1800	3000	1.18	<5.0	56	1.1	0.45	<0.020	1800	0.76	0.93	<0.010	<0.10	2790	0.87	<0.0010
30-Nov-15		7.3	9.8	2900	7.60	72	2000	3000	4.53	<10	63	1	0.4	<0.020	1800	0.71	0.0032	<0.010	<0.10	3010	0.85	<0.0010
30-Nov-15	(duplicate)	7.3	9.8	2900	7.64	70	2000	3000	5.25	<5.0	47	1.1	0.3	<0.020	1800	0.71	0.0032	<0.010	<0.10	2980	0.83	<0.0010
18-Apr-16		7.4	10	2810	7.34	71	1800	3000	-2.34	<5	0.7	1.1	0.0033	<0.02	1900	<0.1	<0.01	0.54	47	2780	0.66	<0.001
18-Apr-16	(duplicate)	7.4	10	NA	7.19	71	1700	3000	-3.13	<5	0.68	1.1	0.0032	<0.02	1900	<0.1	<0.01	0.61	51	2800	0.62	<0.001
6-Dec-16		7.9	10.4	3230	7.58	150	1700	3000	4.07	<5	0.34	0.68	0.0051	<0.02	1600	0.19	<0.01	1.3	32	2760	0.51	<0.001
6-Dec-16	(duplicate)	7.9	10.4	NA	7.44	72	1800	3100	0.32	<5	0.67	1	0.0100	<0.02	1800	<0.1	<0.01	0.42	46	2830	0.69	<0.001

Notes:

NA Parameter not analyzed (well was dry)

-- No value

1. Ontario Drinking Water Standard, (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Magnesium (Mg)
Units		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
ODWS (2003)[1]		< 0.1 > (A)	{0.006} (H)	{0.025} (H)	1 (H)	--	{5} (H)	0.005 (H)	--	0.05 (H)	--	[1] (A)	[0.3] (A)	0.01 (H)	--
Background Range Shallow Wells		<0.01 - 0	<0.0005 - <0.0005	<0.001 - <0.01	0.09 - 0.17	<0.0005 - <0.0005	0.06 - 0.89	<0.0001 - <0.0001	137 - 180	<0.001 - 0.004	<0.0005 - 0.0021	0.001 - 0.0018	<0.01 - 2.94	<0.0005 - <0.016	45 - 56
Background Range Intermediate Wells		<0.005 - 0.28	<0.0005 - <0.006	0.0012 - 0.002	0.0096 - 0.02	<0.0005 - <0.003	0.86 - 1	<0.0001 - <0.005	470 - 520	<0.001 - <0.006	<0.0002 - <0.003	<0.001 - 0.002	0.07 - 0.93	<0.0005 - <0.016	120 - 143
Background Range Deep Wells		<0.005 - <0.01	<0.0005 - <0.0005	<0.001 - <0.01	0.0066 - <0.01	<0.0005 - <0.0005	1.1 - 1.4	<0.0001 - <0.0001	510 - 578	<0.001 - <0.005	<0.0002 - <0.001	<0.001 - <0.001	0.33 - 0.59	<0.0005 - <0.001	90 - 106
MW18-S (East of Cell 1)															
11-Apr-12		<0.01	<0.0005	<0.01	0.02	<0.0005	0.1	<0.0001	150	0.003	0.007	0.002	<0.03	<0.001	166
14-Nov-12		<0.01	<0.0005	<0.01	0.02	<0.0005	0.12	<0.0001	168	0.003	0.0024	<0.001	5.11	<0.001	191
13-May-13		<0.01	<0.0005	<0.01	0.01	<0.0005	0.11	<0.0001	161	0.002	0.0033	<0.001	0.85	<0.001	200
8-Nov-13		<0.01	<0.0005	<0.01	0.02	<0.0005	0.12	<0.0001	146	0.001	0.0046	<0.001	1.71	<0.001	184
28-May-14		<0.01	<0.0005	<0.001	0.02	<0.0005	0.14	<0.0001	163	<0.001	0.004	<0.001	0.53	<0.001	190
28-May-14	(duplicate)	<0.01	<0.0005	<0.001	0.02	<0.0005	0.11	<0.0001	158	<0.001	0.004	<0.001	0.34	<0.001	186
22-Oct-14		0.006	<0.0005	<0.001	0.014	<0.0005	0.11	<0.0001	140	<0.005	0.0037	0.0012	0.18	<0.0005	190
15-Apr-15		<0.005	<0.0005	<0.001	0.013	<0.0005	0.11	<0.0001	140	<0.005	0.0016	0.0017	0.26	<0.0005	170
14-Oct-15		<0.005	<0.0005	<0.001	0.015	<0.0005	0.11	<0.0001	150	<0.005	0.0031	<0.001	0.29	<0.0005	180
19-May-16		<0.005	<0.0005	<0.001	0.013	<0.0005	0.12	<0.0001	140	<0.005	0.002	<0.001	0.16	<0.0005	180
17-Nov-16		0.014	<0.0005	<0.001	0.013	<0.0005	0.13	<0.0001	140	<0.005	0.0023	<0.001	0.25	<0.0005	180
MW18-I (East of Cell 1)															
12-Apr-12		<0.01	<0.0005	<0.01	0.05	<0.0005	0.25	<0.0001	145	<0.001	0.0009	<0.001	0.06	<0.001	67
4-Dec-12		<0.01	0.0006	<0.001	0.03	<0.0005	0.38	<0.0001	448	<0.001	0.0015	0.003	<0.03	<0.001	184
21-May-13		<0.01	<0.0005	<0.001	0.03	<0.0005	0.4	<0.0001	453	0.002	0.002	0.003	<0.03	<0.001	180
22-Nov-13		<0.01	<0.0005	<0.001	0.02	<0.0005	0.45	<0.0001	456	<0.001	0.0013	0.002	<0.03	<0.001	168
2-Jun-14		<0.01	0.0007	<0.001	0.02	<0.0005	0.49	<0.0001	483	<0.001	<0.001	<0.001	0.06	<0.001	170
10-Nov-14		<0.005	<0.0005	<0.001	0.016	<0.0005	0.48	<0.0001	450	<0.005	<0.001	0.0017	<0.1	0.0005	190
29-May-15		<0.005	<0.0005	<0.001	0.015	<0.0005	0.44	<0.0001	420	<0.005	<0.001	<0.001	<0.1	<0.0005	170
22-Oct-15		<0.025	<0.0025	<0.005	0.015	<0.0025	0.42	<0.0005	430	<0.025	<0.0025	<0.005	<0.5	<0.0025	170
19-May-16		0.041	<0.0005	<0.001	0.014	<0.0005	0.46	<0.0001	440	<0.005	<0.001	<0.001	0.15	<0.0005	170
17-Nov-16		<0.005	<0.0005	<0.001	0.014	<0.0005	0.48	<0.0001	430	<0.005	<0.001	<0.001	<0.1	<0.0005	170
MW19-S (East of Cell 1)															
11-Apr-12		<0.01	<0.0005	<0.01	0.01	<0.0005	0.17	<0.0001	318	0.002	0.0072	0.0020	<0.03	<0.001	382
14-Nov-12		<0.01	<0.0005	<0.01	0.01	<0.0005	0.13	<0.0001	506	0.004	0.0023	0.002	3.88	<0.001	552
8-May-13		<0.1	<0.005	<0.01	<0.1	<0.005	0.3	<0.001	412	<0.01	<0.002	<0.01	0.7	<0.01	539
8-Nov-13		<0.01	<0.0005	<0.01	0.01	<0.0005	0.16	<0.0001	446	0.003	0.0014	<0.001	2.1	<0.001	567
25-Apr-14		<0.01	<0.0005	0.002	0.01	<0.005	0.14	<0.0001	468	<0.001	0.0007	<0.001	0.71	<0.001	581
27-Oct-14		<0.005	<0.0005	0.0021	0.012	<0.0005	0.15	<0.0001	400	<0.005	<0.001	<0.001	1.1	<0.0005	510
15-Apr-15		<0.005	<0.0005	<0.001	0.0093	<0.0005	0.14	<0.0001	400	<0.005	<0.001	<0.001	0.35	<0.0005	480
15-Oct-15		<0.005	<0.0005	0.0012	0.012	<0.0005	0.16	<0.0001	420	<0.005	<0.001	<0.001	0.84	<0.50	530
19-May-16		<0.005	<0.0005	<0.001	0.013	<0.0005	0.15	<0.0001	360	<0.005	<0.001	<0.001	0.35	<0.0005	410
9-Nov-16		<0.005	<0.0005	<0.001	0.017	<0.0005	0.11	<0.0001	210	<0.005	0.0005	0.0019	<0.1	<0.0005	150

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameters		Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zirconium (Zr)	Zinc (Zn)
Units		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
ODWS (2003)[1]		[0.05] (A)	0.001 (H)	--	--	--	0.01 (H)	--	[200] (A)	--	--	--	--	0.02 (H)	--	--	[5] (A)
Background Range Shallow Wells		0.13 - 0.3	<0.0001 - <0.0001	<0.002 - 0.011	0.0021 - 0.03	3 - 7	<0.001 - <0.004	<0.0001 - <0.003	25 - 51	0.728 - 8.7	<0.00005 - <0.012	<0.001 - <0.01	<0.002 - <0.01	0.0022 - 0.03	0.00052 - 0.007	<0.001 - <0.005	<0.001 - 0.0051
Background Range Intermediate Wells		0.08 - 0.1	<0.0001 - <0.0001	0.01 - 0.023	<0.001 - 0.015	4 - 10	<0.001 - <0.01	<0.0001 - <0.003	120 - 166	9.8 - 11	<0.00005 - <0.012	<0.001 - <0.01	0.012 - 0.012	0.00016 - <0.002	<0.0005 - <0.002	<0.001 - <0.025	<0.001 - <0.025
Background Range Deep Wells		0.038 - 0.05	<0.0001 - <0.0001	0.0046 - <0.005	<0.002 - 0.007	6.7 - 11	<0.001 - <0.01	<0.0001 - <0.0001	64 - 78	8.77 - 11.3	<0.00005 - <0.0001	<0.001 - <0.01	<0.005 - <0.01	<0.0001 - 0.00018	<0.0005 - <0.001	<0.001 - <0.025	<0.001 - <0.025
MW18-S (East of Cell 1)																	
11-Apr-12		0.17	<0.0001	0.016	0.033	4	<0.01	<0.0001	53	1.93	<0.0001	<0.01	<0.01	0.016	0.005	0.002	<0.01
14-Nov-12		0.17	<0.0001	0.01	0.014	5	<0.01	<0.0001	62	2.27	<0.0001	<0.01	<0.01	0.019	0.005	<0.002	<0.01
13-May-13		0.1	<0.0001	<0.005	0.014	7	<0.001	<0.0001	60	2.07	<0.0001	<0.01	<0.01	0.017	0.003	<0.002	<0.01
8-Nov-13		0.14	<0.0001	<0.005	0.017	5	<0.001	<0.0001	61	2.12	<0.0001	<0.01	<0.01	0.017	0.002	<0.002	<0.01
28-May-14		0.1	<0.0001	<0.005	0.015	5	<0.001	<0.0001	66	2.21	<0.0001	<0.01	<0.01	0.014	<0.001	<0.002	<0.01
28-May-14	(duplicate)	0.08	<0.0001	<0.005	0.017	5	<0.001	<0.0001	63	2.22	<0.0001	<0.01	<0.01	0.014	<0.001	<0.002	<0.01
22-Oct-14		0.058	<0.0001	0.0032	0.029	4.8	<0.002	0.00011	58	2	<0.00005	<0.001	<0.005	0.015	<0.0005	<0.001	<0.005
15-Apr-15		0.036	<0.00010	0.0033	0.021	4.6	<0.002	<0.0001	56	1.9	<0.00005	<0.001	<0.005	0.016	<0.0005	<0.005	<0.001
14-Oct-15		0.083	<0.00010	0.0031	0.019	5.1	<0.002	<0.0001	59	2.3	<0.00005	<0.001	<0.005	0.016	<0.0005	<0.001	<0.005
19-May-16		0.057	<0.0001	0.0028	0.011	4.9	<0.002	<0.0001	62	2.1	<0.00005	<0.001	<0.005	0.016	0.00073	<0.001	<0.005
17-Nov-16		0.060	<0.0001	0.0029	0.016	5.2	<0.002	<0.0001	60	2	<0.00005	<0.001	<0.005	0.017	0.00061	<0.001	<0.005
MW18-I (East of Cell 1)																	
12-Apr-12		0.2	<0.0001	0.066	0.01	9	<0.01	<0.0001	87	5.7	<0.0001	<0.01	<0.01	0.0060	0.001	0.002	<0.01
4-Dec-12		0.22	<0.0001	0.052	0.016	7	<0.001	<0.0001	240	11.7	<0.0001	<0.01	<0.01	0.004	<0.001	<0.002	<0.01
21-May-13		0.21	<0.0001	0.062	0.02	6	<0.001	<0.0001	256	12.4	<0.0001	<0.01	<0.01	0.003	<0.001	0.004	<0.01
22-Nov-13		0.12	<0.0001	0.062	0.017	5	<0.01	<0.0001	248	12.7	<0.0001	<0.01	<0.01	0.003	<0.001	<0.002	<0.01
2-Jun-14		0.2	<0.0001	0.059	0.009	5	<0.001	<0.0001	219	9.91	<0.0001	<0.01	<0.01	0.003	<0.001	<0.002	<0.01
10-Nov-14		0.13	<0.0001	0.05	0.013	4.1	<0.002	<0.0001	250	12	<0.00005	<0.001	<0.005	0.0026	<0.0005	<0.001	<0.025
29-May-15		0.056	<0.00010	0.046	0.0076	3.8	<0.002	<0.0001	230	11	<0.00005	<0.001	<0.005	0.0024	<0.0005	<0.025	<0.001
22-Oct-15		0.071	<0.00010	0.042	0.007	4	<0.01	<0.0005	240	11	<0.00025	<0.005	<0.025	0.0019	<0.0025	<0.005	<0.025
19-May-16		0.089	<0.0001	0.047	0.0063	3.8	<0.002	<0.0001	240	11	<0.00005	<0.001	0.0097	0.002	<0.0005	<0.001	<0.025
17-Nov-16		0.044	<0.0001	0.044	0.0047	3.8	<0.002	<0.0001	230	11	<0.00005	<0.001	<0.005	0.0025	<0.0005	<0.001	<0.025
MW19-S (East of Cell 1)																	
11-Apr-12		0.47	<0.0001	0.014	0.025	4	<0.01	<0.0001	101	5.01	<0.0001	<0.01	<0.01	0.034	0.005	0.004	<0.01
14-Nov-12		1.06	<0.0001	0.007	0.015	3	<0.01	<0.0001	143	6.56	<0.0001	<0.01	<0.01	0.05	0.008	0.004	<0.01
8-May-13		0.8	<0.0001	<0.05	<0.05	3	<0.01	<0.001	139	5.97	<0.001	<0.1	<0.1	0.04	<0.01	<0.002	<0.1
8-Nov-13		0.76	<0.0001	<0.005	0.012	3	<0.01	<0.0001	138	6.63	<0.0001	<0.01	<0.01	0.048	0.005	<0.002	<0.01
25-Apr-14		0.76	<0.0001	<0.005	<0.005	2	<0.001	<0.0001	133	7.6	<0.0001	<0.01	<0.01	0.033	<0.001	<0.002	<0.01
27-Oct-14		0.51	<0.0001	0.0029	0.005	2.6	<0.002	<0.0001	130	6.3	<0.00005	<0.001	<0.005	0.0019	<0.0005	<0.001	<0.025
15-Apr-15		0.39	<0.00010	0.0022	0.004	2.4	<0.002	<0.0001	130	5.5	<0.00005	<0.001	<0.005	0.043	<0.0005	<0.025	<0.001
15-Oct-15		0.39	<0.00010	0.0028	0.0047	3.1	<0.002	<0.0001	140	6	<0.00005	<0.001	<0.005	0.043	<0.0005	<0.001	<0.025
19-May-16		0.31	<0.0001	0.0024	0.0033	2.6	<0.002	<0.0001	130	4.9	<0.00005	<0.001	<0.005	0.032	0.0005	<0.001	<0.025
9-Nov-16		0.04	<0.0001	0.006	0.0027	1.7	<0.002	<0.0001	61	1.5	<0.00005	<0.001	<0.005	0.0093	0.00087	<0.001	<0.005

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Magnesium (Mg)
Units		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
ODWS (2003)[1]		< 0.1 > (A)	{0.006} (H)	{0.025} (H)	1 (H)	--	{5} (H)	0.005 (H)	--	0.05 (H)	--	[1] (A)	[0.3] (A)	0.01 (H)	--
Background Range Shallow Wells		<0.01 - 0	<0.0005 - <0.0005	<0.001 - <0.01	0.09 - 0.17	<0.0005 - <0.0005	0.06 - 0.89	<0.0001 - <0.0001	137 - 180	<0.001 - 0.004	<0.0005 - 0.0021	0.001 - 0.0018	<0.01 - 2.94	<0.0005 - <0.016	45 - 56
Background Range Intermediate Wells		<0.005 - 0.28	<0.0005 - <0.006	0.0012 - 0.002	0.0096 - 0.02	<0.0005 - <0.003	0.86 - 1	<0.0001 - <0.005	470 - 520	<0.001 - <0.006	<0.0002 - <0.003	<0.001 - 0.002	0.07 - 0.93	<0.0005 - <0.016	120 - 143
Background Range Deep Wells		<0.005 - <0.01	<0.0005 - <0.0005	<0.001 - <0.01	0.0066 - <0.01	<0.0005 - <0.0005	1.1 - 1.4	<0.0001 - <0.0001	510 - 578	<0.001 - <0.005	<0.0002 - <0.001	<0.001 - <0.001	0.33 - 0.59	<0.0005 - <0.001	90 - 106
MW19-I (East of Cell 1)															
11-Apr-12		<0.01	<0.0005	<0.01	0.02	<0.0005	0.92	<0.0001	338	<0.001	0.002	0.002	<0.03	<0.001	178
19-Nov-12		<0.01	<0.0005	<0.001	0.01	<0.0005	0.96	<0.0001	400	<0.001	0.00180	0.003	<0.03	<0.001	148
21-May-13		<0.01	<0.0005	<0.01	0.01	<0.0005	1.3	<0.0001	461	0.001	0.00120	0.002	<0.03	<0.001	176
22-Nov-13		<0.01	<0.0005	<0.001	0.01	<0.0005	1.3	<0.0001	455	<0.001	0.00110	0.002	<0.03	<0.001	154
29-May-14		0.03	<0.0005	<0.001	0.01	<0.005	1.2	<0.0001	464	<0.001	0.00090	0.001	0.04	<0.001	177
10-Nov-14		<0.005	<0.0005	<0.001	0.011	<0.0005	1.2	<0.0001	430	<0.005	<0.001	0.0013	<0.1	<0.0005	180
20-May-15		<0.025	<0.0025	<0.005	0.011	<0.0025	1.3	<0.0005	430	<0.025	<0.0025	<0.005	<0.5	<0.0025	160
22-Oct-15		<0.025	<0.0025	<0.005	0.011	<0.0025	1.1	<0.0005	420	<0.025	<0.0025	<0.005	<0.5	<0.0025	150
19-May-16		<0.005	<0.0005	<0.001	0.011	<0.0005	1.3	<0.0001	440	<0.005	<0.001	<0.001	<0.1	<0.0005	170
9-Nov-16		<0.005	<0.0005	<0.001	0.012	<0.0005	1.2	<0.0001	450	<0.005	<0.001	<0.001	<0.1	<0.0005	180
MW19-D (East of Cell 1)															
11-Apr-12		<0.01	<0.0005	<0.01	<0.01	<0.0005	1.32	<0.0001	528	<0.001	0.0006	0.001	0.26	<0.001	116
14-Nov-12		<0.01	<0.0005	<0.01	<0.01	<0.0005	1.4	<0.0001	590	0.002	0.0005	0.001	0.5	<0.001	123
8-May-13		<0.01	<0.0005	<0.01	<0.01	<0.0005	1.6	<0.0001	545	<0.001	0.0005	<0.001	0.42	<0.001	141
12-Nov-13		<0.01	<0.0005	<0.01	<0.01	<0.0005	1.6	<0.0001	551	<0.001	0.0005	0.001	0.47	<0.001	135
12-Nov-13	(duplicate)	<0.01	<0.0005	<0.01	<0.01	<0.0005	1.6	<0.0001	545	<0.001	0.0005	0.001	0.46	<0.001	133
28-May-14		<0.01	<0.0005	0.001	<0.01	<0.005	1.5	<0.0001	565	<0.001	<0.0002	<0.001	0.57	<0.001	144
28-May-14	(duplicate)	<0.01	<0.0005	0.001	<0.01	<0.005	1.6	<0.0001	588	<0.001	<0.0002	<0.001	0.56	<0.001	150
22-Oct-14		<0.005	<0.0005	<0.001	0.005	<0.0005	1.5	<0.0001	490	<0.005	<0.001	<0.001	0.45	<0.0005	150
15-Apr-15		<0.005	<0.0005	<0.001	0.0044	<0.0005	1.4	<0.0001	490	<0.005	<0.001	<0.001	0.46	<0.0005	130
15-Oct-15		<0.005	<0.0005	<0.001	0.0051	<0.0005	1.6	<0.0001	530	<0.005	<0.001	<0.001	0.48	<0.50	140
19-May-16		<0.005	<0.0005	<0.001	0.0043	<0.0005	1.5	<0.0001	470	<0.005	<0.001	<0.001	0.46	<0.0005	140
23-Nov-16		<0.005	<0.0005	<0.001	0.0049	<0.0005	1.5	<0.0001	510	<0.005	<0.001	<0.001	0.50	<0.0005	140
MW20-S (East of Cell 2)															
17-Apr-12		<0.01	<0.0005	<0.01	0.03	<0.0005	0.2	<0.0001	111	<0.01	0.0025	0.003	1.8	<0.001	143
14-Nov-12		<0.01	<0.0005	<0.1	0.03	<0.0005	0.18	<0.0001	105	0.004	0.0019	<0.001	7.13	<0.001	156
8-May-13		0.01	<0.0005	<0.01	0.02	<0.0005	0.18	<0.0001	92	<0.001	0.0016	<0.001	0.34	<0.001	165
12-Nov-13		<0.01	<0.0005	<0.01	0.02	<0.0005	0.24	<0.0001	93	0.003	0.0018	0.001	0.94	<0.001	169
25-Apr-14		<0.01	<0.0005	<0.001	0.03	<0.005	0.2	<0.0001	86	<0.001	0.0006	<0.001	0.06	<0.001	167
25-Oct-14		<0.005	<0.0005	0.0016	0.023	<0.0005	0.21	<0.0001	79	<0.005	0.0006	<0.001	0.26	<0.0005	160
21-Apr-15		<0.005	<0.0005	<0.001	0.021	<0.0005	0.19	<0.0001	80	<0.005	<0.0005	<0.001	<0.1	<0.0005	150
15-Oct-15		<0.005	<0.0005	<0.001	0.023	<0.0005	0.25	<0.0001	85	<0.005	0.00059	<0.001	<0.01	<0.50	160
18-May-16		<0.005	<0.0005	<0.001	0.022	<0.0005	0.19	<0.0001	70	<0.005	0.0005	<0.001	<0.1	<0.0005	150
7-Nov-16		0.052	<0.0005	0.0011	0.03	<0.0005	0.23	<0.0001	77	<0.005	0.0008	0.0032	<0.1	<0.0005	150

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameters		Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zirconium (Zr)	Zinc (Zn)
Units		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
ODWS (2003)[1]		[0.05] (A)	0.001 (H)	--	--	--	0.01 (H)	--	[200] (A)	--	--	--	--	0.02 (H)	--	--	[5] (A)
Background Range Shallow Wells		0.13 - 0.3	<0.0001 - <0.0001	<0.002 - 0.011	0.0021 - 0.03	3 - 7	<0.001 - <0.004	<0.0001 - <0.003	25 - 51	0.728 - 8.7	<0.00005 - <0.012	<0.001 - <0.01	<0.002 - <0.01	0.0022 - 0.03	0.00052 - 0.007	<0.001 - <0.005	<0.001 - 0.0051
Background Range Intermediate Wells		0.08 - 0.1	<0.0001 - <0.0001	0.01 - 0.023	<0.001 - 0.015	4 - 10	<0.001 - <0.01	<0.0001 - <0.003	120 - 166	9.8 - 11	<0.00005 - <0.012	<0.001 - <0.01	0.012 - 0.012	0.00016 - <0.002	<0.0005 - <0.002	<0.001 - <0.025	<0.001 - <0.025
Background Range Deep Wells		0.038 - 0.05	<0.0001 - <0.0001	0.0046 - <0.005	<0.002 - 0.007	6.7 - 11	<0.001 - <0.01	<0.0001 - <0.0001	64 - 78	8.77 - 11.3	<0.00005 - <0.0001	<0.001 - <0.01	<0.005 - <0.01	<0.0001 - 0.00018	<0.0005 - <0.001	<0.001 - <0.025	<0.001 - <0.025
MW19-I (East of Cell 1)																	
11-Apr-12		0.65	<0.0001	0.055	0.015	8	<0.01	<0.0001	182	7.04	<0.0001	<0.01	<0.01	0.012	<0.001	<0.002	<0.01
19-Nov-12		0.6	<0.0001	0.039	0.011	4	<0.001	<0.0001	210	9.18	<0.0001	<0.01	<0.01	0.004	<0.001	<0.002	<0.01
21-May-13		0.93	<0.0001	0.035	0.008	4	<0.001	<0.0001	214	10.3	<0.0001	<0.01	<0.01	0.002	<0.001	0.004	<0.01
22-Nov-13		0.25	<0.0001	0.029	0.008	3	<0.01	<0.0001	196	11.9	<0.0001	<0.01	<0.01	0.002	<0.001	<0.002	<0.01
29-May-14		0.53	<0.0001	0.032	<0.005	3	<0.001	<0.0001	225	10.7	<0.0001	<0.01	<0.01	0.002	<0.001	<0.002	<0.01
10-Nov-14		0.35	<0.0001	0.028	0.023	2.9	<0.002	<0.0001	190	11	<0.00005	<0.001	<0.005	0.0019	<0.0005	<0.001	<0.025
20-May-15		0.036	<0.00010	0.03	<0.005	2.9	<0.01	<0.0005	190	10	<0.00025	<0.005	<0.025	0.0019	<0.0025	<0.025	<0.005
22-Oct-15		0.065	<0.00010	0.023	<0.005	3	<0.01	<0.0005	180	10	<0.00025	<0.005	<0.025	0.0015	<0.0025	<0.005	<0.025
19-May-16		0.12	<0.0001	0.035	<0.002	3.2	<0.002	<0.0001	220	11	<0.00005	<0.001	<0.005	0.0018	<0.0005	<0.001	<0.025
9-Nov-16		<0.002	<0.0001	0.026	<0.002	3.5	<0.002	<0.0001	220	11	<0.00005	<0.001	<0.005	0.0016	<0.0005	<0.001	<0.025
MW19-D (East of Cell 1)																	
11-Apr-12		0.07	<0.0001	0.01	0.013	6	<0.01	<0.0001	103	10.6	<0.0001	<0.01	<0.01	<0.001	<0.001	0.01	<0.01
14-Nov-12		0.07	<0.0001	0.01	0.01	5	<0.01	<0.0001	113	10.8	<0.0001	<0.01	<0.01	<0.001	<0.001	0.002	<0.01
8-May-13		0.06	<0.0001	0.01	0.011	6	<0.001	<0.0001	129	9.88	<0.0001	<0.01	<0.01	<0.001	<0.001	0.002	<0.01
12-Nov-13		0.07	<0.0001	0.01	0.012	6	<0.01	<0.0001	135	9.92	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
12-Nov-13	(duplicate)	0.07	<0.0001	0.01	0.012	6	<0.001	<0.0001	132	9.89	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
28-May-14		0.09	<0.0001	0.01	<0.005	5	<0.001	<0.0001	136	11.4	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
28-May-14	(duplicate)	0.08	<0.0001	0.01	<0.005	6	<0.001	<0.0001	128	11.5	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
22-Oct-14		0.069	<0.0001	0.0095	<0.002	5.5	<0.002	0.00019	120	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
15-Apr-15		0.065	<0.00010	0.01	<0.002	5.6	<0.002	<0.0001	120	9.4	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.025	<0.001
15-Oct-15		0.074	<0.00010	0.011	<0.002	6.1	<0.002	<0.0001	130	10	<0.00005	<0.001	<0.005	0.00052	<0.0005	<0.001	<0.025
19-May-16		0.066	<0.0001	0.01	<0.002	6	<0.002	<0.0001	120	9.6	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
23-Nov-16		0.065	<0.0001	0.011	<0.002	6.5	<0.002	<0.0001	130	9.7	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
MW20-S (East of Cell 2)																	
17-Apr-12		0.69	<0.0001	0.025	0.01	8	<0.01	<0.0001	70	1.74	<0.0001	<0.01	<0.01	0.023	0.007	<0.002	0.02
14-Nov-12		0.29	<0.0001	0.023	<0.005	7	<0.01	<0.0001	65	1.56	<0.0001	<0.01	<0.01	0.012	0.006	<0.002	<0.01
8-May-13		0.13	<0.0001	0.013	<0.005	6	<0.001	<0.0001	68	1.7	<0.0001	<0.01	<0.01	0.011	0.006	<0.002	<0.01
12-Nov-13		0.16	<0.0001	0.012	<0.005	7	<0.001	<0.0001	75	1.74	<0.0001	<0.01	<0.01	0.013	0.006	<0.002	<0.01
25-Apr-14		0.03	<0.0001	0.013	<0.005	6	<0.001	<0.0001	72	1.87	<0.0001	<0.01	<0.01	0.01	<0.001	<0.002	<0.01
25-Oct-14		0.081	<0.0001	0.0069	0.002	5.8	<0.002	<0.0001	65	1.6	<0.00005	<0.001	<0.005	0.011	<0.0005	<0.001	<0.005
21-Apr-15		0.012	<0.00010	0.008	0.0017	5.8	<0.002	<0.0001	65	1.6	<0.00005	<0.001	<0.005	0.012	<0.0005	<0.005	<0.001
15-Oct-15		0.044	<0.00010	0.007	0.0016	6.4	<0.002	<0.0001	71	1.6	<0.00005	<0.001	<0.005	0.011	<0.0005	<0.001	<0.005
18-May-16		0.0053	<0.0001	0.0063	0.0018	5.4	<0.002	<0.0001	67	1.5	<0.00005	<0.001	<0.005	0.0088	0.00085	<0.001	<0.005
7-Nov-16		0.075	<0.0001	0.0071	0.0017	6.2	<0.002	<0.0001	81	1.6	<0.00005	<0.001	<0.005	0.0092	<0.0005	<0.001	<0.005

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Magnesium (Mg)
Units	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
ODWS (2003)[1]	< 0.1 > (A)	{0.006} (H)	{0.025} (H)	1 (H)	--	{5} (H)	0.005 (H)	--	0.05 (H)	--	[1] (A)	[0.3] (A)	0.01 (H)	--
Background Range Shallow Wells	<0.01 - 0	<0.0005 - <0.0005	<0.001 - <0.01	0.09 - 0.17	<0.0005 - <0.0005	0.06 - 0.89	<0.0001 - <0.0001	137 - 180	<0.001 - 0.004	<0.0005 - 0.0021	0.001 - 0.0018	<0.01 - 2.94	<0.0005 - <0.016	45 - 56
Background Range Intermediate Wells	<0.005 - 0.28	<0.0005 - <0.006	0.0012 - 0.002	0.0096 - 0.02	<0.0005 - <0.003	0.86 - 1	<0.0001 - <0.005	470 - 520	<0.001 - <0.006	<0.0002 - <0.003	<0.001 - 0.002	0.07 - 0.93	<0.0005 - <0.016	120 - 143
Background Range Deep Wells	<0.005 - <0.01	<0.0005 - <0.0005	<0.001 - <0.01	0.0066 - <0.01	<0.0005 - <0.0005	1.1 - 1.4	<0.0001 - <0.0001	510 - 578	<0.001 - <0.005	<0.0002 - <0.001	<0.001 - <0.001	0.33 - 0.59	<0.0005 - <0.001	90 - 106
MW20-I (East of Cell 2)														
5-Apr-12	<0.01	<0.0005	<0.01	0.02	<0.005	1.1	<0.0001	293	<0.001	0.0013	0.002	0.16	<0.001	155
19-Nov-12	<0.01	<0.0005	<0.01	0.02	<0.0005	1.3	<0.0001	374	0.001	0.0006	0.001	0.75	<0.001	152
21-May-13	<0.01	<0.0005	<0.001	0.02	<0.0005	1.4	<0.0001	357	0.001	0.0005	0.001	0.43	<0.001	180
22-Nov-13	<0.01	<0.0005	<0.001	0.02	<0.0005	1.6	<0.0001	361	<0.001	0.0005	0.001	0.16	<0.001	162
2-Jun-14	<0.01	<0.0005	<0.001	0.02	<0.005	1.5	<0.0001	385	<0.001	0.0004	<0.001	0.11	<0.001	151
10-Nov-14	<0.005	<0.0005	<0.001	0.017	<0.0005	1.5	<0.0001	340	<0.005	<0.001	<0.001	<0.1	<0.0005	170
20-May-15	<0.005	<0.0005	<0.001	0.015	<0.0005	1.5	<0.0001	340	<0.005	<0.001	<0.001	<0.1	<0.0005	160
4-Nov-15	<0.005	<0.0005	<0.001	0.016	<0.0005	1.5	<0.0001	340	<0.005	<0.001	<0.001	<0.1	<0.0005	160
25-May-16	<0.005	<0.0005	<0.001	0.015	<0.0005	1.5	<0.0001	350	<0.005	<0.001	<0.001	0.11	<0.0005	150
7-Nov-16	0.0068	<0.0005	<0.001	0.014	<0.0005	1.5	<0.0001	350	<0.005	<0.001	<0.001	<0.1	<0.0005	150
MW21-S (South of Cell 1)														
19-Nov-12	<0.01	<0.0005	<0.001	0.06	<0.0005	0.15	<0.0001	175	0.005	0.0011	0.002	<0.03	<0.001	213
15-May-13	<0.01	<0.0005	<0.001	0.04	<0.0005	0.1	<0.0001	178	0.007	0.0003	0.002	<0.03	<0.001	217
13-Nov-13	<0.01	<0.0005	<0.001	0.04	<0.0005	0.14	<0.0001	167	<0.005	0.0006	0.002	<0.03	<0.001	203
7-May-14	<0.01	<0.0005	<0.001	0.03	<0.005	0.27	<0.0001	185	<0.001	<0.0002	<0.001	0.03	<0.001	232
3-Nov-14	<0.005	<0.0005	<0.001	0.033	<0.0005	0.15	<0.0001	180	<0.005	<0.0005	<0.001	0.1	<0.0005	240
20-May-15	<0.005	<0.0005	<0.001	0.03	<0.0005	0.13	<0.0001	190	<0.005	<0.0005	<0.001	<0.1	<0.0005	240
30-Nov-15	<0.005	<0.0005	<0.001	0.036	<0.0005	0.14	<0.0001	230	<0.005	<0.0005	<0.001	<0.1	<0.0005	270
11-May-16	<0.005	<0.0005	<0.001	0.036	<0.0005	0.14	<0.0001	230	<0.005	0.0005	<0.001	<0.1	<0.0005	270
29-Nov-16	0.038	<0.0005	<0.001	0.037	<0.0005	0.14	<0.0001	250	<0.005	0.0005	<0.001	<0.1	<0.0005	290
MW21-I (South of Cell 1)														
19-Nov-12	<0.01	<0.0005	<0.01	0.02	<0.0005	1.1	<0.0001	449	<0.001	0.0006	0.001	<0.03	<0.001	147
21-May-13	<0.01	<0.0005	<0.01	0.02	<0.0005	1.2	<0.0001	517	<0.001	0.0008	0.002	0.06	<0.001	170
22-Nov-13	<0.01	<0.0005	<0.01	0.02	<0.0005	1.3	<0.0001	449	0.001	0.0005	0.001	<0.03	<0.001	150
9-May-14	<0.01	<0.0005	<0.001	0.02	<0.005	1.4	<0.0001	494	<0.001	0.0003	<0.001	0.03	<0.001	160
11-Nov-14	<0.005	<0.0005	<0.001	0.017	<0.0005	1.2	<0.0001	460	<0.005	<0.001	<0.001	<0.1	<0.0005	160
29-May-15	<0.005	<0.0005	0.0011	0.017	<0.0005	1.1	<0.0001	440	<0.005	<0.001	<0.001	<0.1	<0.0005	150
2-Dec-15	<0.005	<0.0005	<0.001	0.016	<0.0005	1.2	<0.0001	450	<0.005	<0.001	<0.001	<0.1	<0.0005	150
25-May-16	<0.005	<0.0005	0.0011	0.016	<0.0005	1.2	<0.0001	440	<0.005	<0.001	<0.001	<0.1	<0.0005	150
29-Nov-16	<0.005	<0.0005	<0.001	0.015	<0.0005	1.1	<0.0001	450	<0.005	<0.001	<0.001	<0.1	<0.0005	150

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zirconium (Zr)	Zinc (Zn)
Units	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
ODWS (2003)[1]	[0.05] (A)	0.001 (H)	--	--	--	0.01 (H)	--	[200] (A)	--	--	--	--	0.02 (H)	--	--	[5] (A)
Background Range Shallow Wells	0.13 - 0.3	<0.0001 - <0.0001	<0.002 - 0.011	0.0021 - 0.03	3 - 7	<0.001 - <0.004	<0.0001 - <0.003	25 - 51	0.728 - 8.7	<0.00005 - <0.012	<0.001 - <0.01	<0.002 - <0.01	0.0022 - 0.03	0.00052 - 0.007	<0.001 - <0.005	<0.001 - 0.0051
Background Range Intermediate Wells	0.08 - 0.1	<0.0001 - <0.0001	0.01 - 0.023	<0.001 - 0.015	4 - 10	<0.001 - <0.01	<0.0001 - <0.003	120 - 166	9.8 - 11	<0.00005 - <0.012	<0.001 - <0.01	0.012 - 0.012	0.00016 - <0.002	<0.0005 - <0.002	<0.001 - <0.025	<0.001 - <0.025
Background Range Deep Wells	0.038 - 0.05	<0.0001 - <0.0001	0.0046 - <0.005	<0.002 - 0.007	6.7 - 11	<0.001 - <0.01	<0.0001 - <0.0001	64 - 78	8.77 - 11.3	<0.00005 - <0.0001	<0.001 - <0.01	<0.005 - <0.01	<0.0001 - 0.00018	<0.0005 - <0.001	<0.001 - <0.025	<0.001 - <0.025
MW20-I (East of Cell 2)																
5-Apr-12	0.34	<0.0001	0.04	0.015	9	<0.01	<0.0001	159	11.3	<0.0001	<0.01	<0.01	0.004	<0.001	<0.002	<0.01
19-Nov-12	0.13	<0.0001	0.04	0.007	6	<0.01	<0.0001	161	10.1	<0.0001	<0.01	<0.01	0.002	<0.001	<0.002	<0.01
21-May-13	0.12	<0.0001	0.053	0.006	9	<0.01	<0.0001	173	12.3	<0.0001	<0.01	<0.01	0.001	<0.001	0.005	<0.01
22-Nov-13	0.11	<0.0001	0.051	0.006	7	<0.01	<0.0001	159	12.7	<0.0001	<0.01	<0.01	0.001	<0.001	<0.002	<0.01
2-Jun-14	0.12	<0.0001	0.053	<0.005	5	<0.001	<0.0001	172	9.29	<0.0001	<0.01	<0.01	0.001	<0.001	<0.002	<0.01
10-Nov-14	0.1	<0.0001	0.05	<0.002	6.1	<0.002	<0.0001	170	11	<0.00005	<0.001	<0.005	0.001	<0.0005	<0.001	<0.025
20-May-15	0.086	<0.00010	0.049	<0.002	6.5	<0.002	<0.0001	170	11	<0.00005	<0.001	<0.005	0.00087	<0.0005	<0.010	<0.001
4-Nov-15	0.095	<0.00010	0.047	<0.002	6.5	<0.002	<0.0001	160	11	<0.00005	<0.001	<0.005	0.00079	<0.0005	<0.001	<0.025
25-May-16	0.086	<0.0001	0.045	<0.002	6	<0.002	<0.0001	160	10	<0.00005	<0.001	<0.005	0.00071	<0.0005	<0.001	<0.01
7-Nov-16	0.08	<0.0001	0.043	<0.002	5.9	<0.002	<0.0001	160	11	<0.00005	<0.001	<0.005	0.00079	<0.0005	<0.001	<0.025
MW21-S (South of Cell 1)																
19-Nov-12	0.26	<0.0001	<0.005	<0.005	6	<0.001	<0.0001	317	3.53	<0.0001	<0.01	<0.01	0.017	0.004	<0.002	<0.01
15-May-13	0.04	<0.0001	<0.005	0.005	5	<0.001	<0.0001	214	3.72	<0.0001	<0.01	<0.01	0.014	0.003	<0.002	<0.01
13-Nov-13	0.12	<0.0001	<0.005	0.007	5	<0.001	<0.0001	210	3.48	<0.0001	<0.01	<0.01	0.014	0.005	<0.002	<0.01
7-May-14	<0.01	<0.0001	<0.005	<0.005	5	<0.001	<0.0001	240	3.73	<0.0001	<0.01	<0.01	0.014	<0.001	<0.002	<0.01
3-Nov-14	0.012	<0.0001	0.0019	<0.001	4.6	<0.002	<0.0001	230	3.9	<0.00005	<0.001	<0.005	0.015	0.00065	<0.001	<0.005
20-May-15	<0.002	<0.00010	0.0017	<0.001	4.5	<0.002	<0.0001	250	3.8	<0.00005	<0.001	<0.005	0.015	0.00054	<0.005	<0.001
30-Nov-15	0.0022	<0.00010	0.0014	<0.001	5.1	<0.002	<0.0001	300	4.3	<0.00005	<0.001	<0.005	0.014	<0.0005	<0.001	<0.005
11-May-16	<0.002	<0.0001	0.0013	0.0011	4.7	<0.002	<0.0001	370	4.3	<0.00005	<0.001	<0.005	0.016	<0.001	<0.001	<0.005
29-Nov-16	0.01	<0.0001	0.0014	0.0012	5	<0.002	<0.0001	390	4.3	<0.00005	<0.001	<0.005	0.016	<0.001	<0.001	<0.005
MW21-I (South of Cell 1)																
19-Nov-12	0.15	<0.0001	0.019	0.0080	4	<0.001	<0.0001	155	10.4	<0.0001	<0.01	<0.01	0.001	<0.001	<0.002	<0.01
21-May-13	0.17	<0.0001	0.063	0.0080	4	<0.001	<0.0001	188	10.9	<0.0001	<0.01	<0.01	0.001	<0.001	0.01	<0.01
22-Nov-13	0.16	<0.0001	0.076	0.0070	4	<0.001	<0.0001	180	9.96	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
9-May-14	0.17	<0.0001	0.063	<0.005	2	<0.001	<0.0001	197	10.3	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
11-Nov-14	0.12	<0.0001	0.071	<0.002	3.2	<0.002	<0.0001	200	11	<0.00005	<0.001	<0.005	0.0009	<0.0005	<0.001	<0.025
29-May-15	0.1	<0.00010	0.08	<0.002	3.3	<0.002	<0.0001	200	10	<0.00005	<0.001	<0.005	0.00098	<0.0005	<0.025	<0.001
2-Dec-15	0.089	<0.00010	0.073	<0.002	3.3	<0.002	<0.0001	200	10	<0.00005	<0.001	<0.005	0.00096	<0.0005	<0.001	<0.025
25-May-16	0.055	<0.0001	0.071	<0.002	3.2	<0.002	<0.0001	200	10	<0.00005	<0.001	<0.005	0.00099	<0.0005	<0.001	<0.025
29-Nov-16	0.022	<0.0001	0.062	<0.002	3.3	<0.002	<0.0001	200	9.9	<0.00005	<0.001	<0.005	0.00088	<0.0005	<0.001	<0.025

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Magnesium (Mg)
Units		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
ODWS (2003)[1]		< 0.1 > (A)	{0.006} (H)	{0.025} (H)	1 (H)	--	{5} (H)	0.005 (H)	--	0.05 (H)	--	[1] (A)	[0.3] (A)	0.01 (H)	--
Background Range Shallow Wells		<0.01 - 0	<0.0005 - <0.0005	<0.001 - <0.01	0.09 - 0.17	<0.0005 - <0.0005	0.06 - 0.89	<0.0001 - <0.0001	137 - 180	<0.001 - 0.004	<0.0005 - 0.0021	0.001 - 0.0018	<0.01 - 2.94	<0.0005 - <0.016	45 - 56
Background Range Intermediate Wells		<0.005 - 0.28	<0.0005 - <0.006	0.0012 - 0.002	0.0096 - 0.02	<0.0005 - <0.003	0.86 - 1	<0.0001 - <0.005	470 - 520	<0.001 - <0.006	<0.0002 - <0.003	<0.001 - 0.002	0.07 - 0.93	<0.0005 - <0.016	120 - 143
Background Range Deep Wells		<0.005 - <0.01	<0.0005 - <0.0005	<0.001 - <0.01	0.0066 - <0.01	<0.0005 - <0.0005	1.1 - 1.4	<0.0001 - <0.0001	510 - 578	<0.001 - <0.005	<0.0002 - <0.001	<0.001 - <0.001	0.33 - 0.59	<0.0005 - <0.001	90 - 106
MW21-D (South of Cell 1)															
15-Nov-12		<0.01	<0.0005	<0.001	<0.01	<0.0005	15.1	<0.0001	428	0.002	0.0005	0.004	0.33	<0.001	133
15-Nov-12	(duplicate)	<0.01	<0.0005	<0.001	<0.01	<0.0005	14.8	<0.0001	483	0.001	0.0005	0.004	0.32	<0.001	133
14-May-13		<0.01	<0.0005	<0.1	<0.01	<0.0005	17	<0.0001	504	0.001	0.0005	0.003	0.39	<0.001	153
14-May-13	(duplicate)	<0.01	<0.0005	<0.1	<0.01	<0.0005	17	<0.0001	519	<0.001	0.0005	0.003	0.38	<0.001	136
13-Nov-13		<0.01	<0.0005	<0.01	<0.01	<0.0005	18	<0.0001	489	0.002	0.0006	0.003	0.43	<0.001	135
13-Nov-13	(duplicate)	<0.01	<0.0005	<0.01	<0.01	<0.0005	18	<0.0001	510	0.002	0.0005	0.003	0.41	<0.001	140
7-May-14		<0.01	<0.0005	<0.001	<0.01	<0.005	18.3	<0.0001	514	<0.001	<0.0002	<0.001	0.5	<0.001	156
3-Nov-14		<0.005	<0.0005	<0.001	0.003	<0.005	18	<0.0001	470	<0.005	<0.001	<0.002	0.41	<0.0005	150
3-Nov-14	(duplicate)	<0.005	<0.0005	<0.001	0.003	<0.0005	19	<0.0001	470	<0.005	<0.001	<0.002	0.41	<0.0005	150
20-May-15		<0.05	<0.0005	<0.01	<0.02	<0.005	17	<0.001	440	<0.05	<0.005	<0.01	<1	<0.005	140
20-May-15	(duplicate)	<0.05	<0.0005	<0.01	<0.02	<0.005	17	<0.001	440	<0.05	<0.005	<0.01	<1	<0.005	140
30-Nov-15		<0.005	<0.0005	<0.001	0.022	<0.0005	7.1	<0.0001	260	<0.005	<0.0005	<0.001	0.13	<0.0005	91
30-Nov-15	(duplicate)	<0.05	<0.005	<0.01	<0.02	<0.005	17	<0.001	510	<0.05	<0.005	<0.01	<1	<0.005	150
11-May-16		<0.005	<0.0005	<0.001	0.003	<0.0005	13	<0.0001	460	<0.005	<0.001	<0.001	0.36	<0.0005	120
11-May-16	(duplicate)	<0.005	<0.0005	<0.001	0.003	<0.0005	13	<0.0001	460	<0.005	<0.001	<0.001	0.37	<0.0005	130
29-Nov-16		<0.005	<0.0005	<0.001	0.0041	<0.0005	1.2	<0.0001	520	<0.005	<0.001	<0.001	0.45	<0.0005	110
29-Nov-16	(duplicate)	<0.005	<0.0005	<0.001	0.0043	<0.0005	1.1	<0.0001	510	<0.005	<0.001	<0.001	0.44	<0.0005	100
MW22-S (Southwest of Cell 1)															
13-Apr-12		<0.01	<0.0005	<0.01	0.02	<0.0005	0.1	<0.0001	147	<0.005	0.0067	0.003	0.66	<0.001	88
27-Nov-12		<0.01	<0.0005	<0.01	0.04	<0.0005	0.17	<0.0001	132	0.006	0.003	0.002	0.91	<0.001	69
9-May-13		<0.01	<0.0005	<0.01	0.04	<0.0005	0.2	<0.0001	120	0.005	0.0011	0.002	<0.03	<0.001	87
22-Nov-13		<0.01	<0.0005	<0.01	0.05	<0.0005	0.24	<0.0001	116	0.005	0.0018	0.002	0.21	<0.001	86
5-May-14		<0.01	<0.0005	<0.001	0.04	<0.005	0.2	<0.0001	96	<0.001	0.0002	0.002	<0.03	<0.001	78
4-Nov-14		0.006	<0.0005	0.0017	0.037	<0.0005	0.18	<0.0001	100	<0.005	0.0015	<0.001	0.15	<0.0005	79
20-May-15		<0.005	<0.0005	<0.001	0.043	<0.0005	0.23	<0.0001	110	<0.005	<0.00099	0.0011	<0.1	<0.0005	86
4-Nov-15		0.029	<0.0005	<0.001	0.045	<0.0005	0.21	<0.0001	110	<0.005	0.00083	0.0013	<0.1	<0.0005	76
10-May-16		<0.005	<0.0005	<0.001	0.049	<0.0005	0.23	<0.0001	110	<0.005	0.00069	0.0011	<0.1	<0.0005	92
17-Nov-16		<0.005	<0.0005	<0.001	0.052	<0.0005	0.22	<0.0001	110	<0.005	0.0012	<0.001	<0.1	<0.0005	82
MW22-I (Southwest of Cell 1)															
17-Apr-12		<0.01	<0.0005	<0.01	0.01	<0.0005	1.4	<0.0001	427	<0.001	0.0028	0.002	0.32	<0.001	150
4-Dec-12		0.09	<0.0005	<0.01	0.02	<0.0005	0.86	<0.0001	449	0.001	0.0018	0.002	1.05	<0.001	175
17-May-13		<0.01	<0.0005	<0.01	0.01	<0.0005	1.8	<0.0001	488	<0.001	0.0016	0.001	0.5	<0.001	173
27-Nov-13		<0.01	<0.0005	<0.01	0.01	<0.0005	1.6	<0.0001	445	<0.001	0.0017	0.001	<0.03	<0.001	148
2-Jun-14		<0.01	<0.0005	<0.001	0.01	<0.005	1.9	<0.0001	510	<0.001	0.0008	<0.001	0.03	<0.001	161
11-Nov-14		<0.005	<0.0005	<0.001	0.012	<0.0005	1.7	<0.0001	450	<0.005	<0.001	<0.001	0.1	<0.0005	170
29-May-15		<0.005	<0.0005	<0.001	0.01	<0.0005	1.5	<0.0001	430	<0.005	<0.001	<0.01	0.36	<0.0005	160
10-Nov-15		0.0057	<0.0005	0.0011	0.011	<0.0005	1.6	<0.0001	440	<0.005	<0.001	<0.001	<0.1	<0.0005	160
10-May-16		<0.005	<0.0005	0.0015	0.011	<0.0005	1.5	<0.0001	430	<0.005	0.001	<0.001	<0.1	<0.0005	150
23-Nov-16		0.017	<0.0005	0.001	0.011	<0.0005	1.6	0.00011	440	<0.005	0.001	<0.001	<0.1	<0.0005	150

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameters		Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zirconium (Zr)	Zinc (Zn)
Units		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
ODWS (2003)[1]		[0.05] (A)	0.001 (H)	--	--	--	0.01 (H)	--	[200] (A)	--	--	--	--	0.02 (H)	--	--	[5] (A)
Background Range Shallow Wells		0.13 - 0.3	<0.0001 - <0.0001	<0.002 - 0.011	0.0021 - 0.03	3 - 7	<0.001 - <0.004	<0.0001 - <0.003	25 - 51	0.728 - 8.7	<0.00005 - <0.012	<0.001 - <0.01	<0.002 - <0.01	0.0022 - 0.03	0.00052 - 0.007	<0.001 - <0.005	<0.001 - 0.0051
Background Range Intermediate Wells		0.08 - 0.1	<0.0001 - <0.0001	0.01 - 0.023	<0.001 - 0.015	4 - 10	<0.001 - <0.01	<0.0001 - <0.003	120 - 166	9.8 - 11	<0.00005 - <0.012	<0.001 - <0.01	0.012 - 0.012	0.00016 - <0.002	<0.0005 - <0.002	<0.001 - <0.025	<0.001 - <0.025
Background Range Deep Wells		0.038 - 0.05	<0.0001 - <0.0001	0.0046 - <0.005	<0.002 - 0.007	6.7 - 11	<0.001 - <0.01	<0.0001 - <0.0001	64 - 78	8.77 - 11.3	<0.00005 - <0.0001	<0.001 - <0.01	<0.005 - <0.01	<0.0001 - 0.00018	<0.0005 - <0.001	<0.001 - <0.025	<0.001 - <0.025
MW21-D (South of Cell 1)																	
15-Nov-12		<0.01	<0.0001	<0.005	0.008	46	<0.01	<0.0001	440	8.8	<0.0001	<0.01	<0.01	<0.001	<0.001	0.002	<0.01
15-Nov-12	(duplicate)	<0.01	<0.0001	<0.005	0.007	46	<0.01	<0.0001	517	8.78	<0.0001	<0.01	<0.01	<0.001	0.001	0.008	<0.01
14-May-13		<0.01	<0.0001	<0.005	0.013	56	<0.1	<0.0001	507	9.15	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
14-May-13	(duplicate)	<0.01	<0.0001	<0.005	0.012	58	<0.1	<0.0001	511	9	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
13-Nov-13		<0.01	<0.0001	<0.005	0.014	55	<0.01	<0.0001	506	8.97	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
13-Nov-13	(duplicate)	<0.01	<0.0001	<0.005	0.012	57	<0.01	<0.0001	523	9.21	<0.0001	<0.01	<0.01	<0.001	<0.001	0.006	<0.01
7-May-14		<0.01	<0.0001	<0.005	<0.005	59	<0.001	<0.0001	508	9.9	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
3-Nov-14		0.006	<0.0001	<0.0005	<0.002	58	<0.002	<0.0001	480	9.5	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
3-Nov-14	(duplicate)	0.007	<0.0001	<0.0005	<0.002	58	<0.002	<0.0001	480	9.5	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
20-May-15		<0.02	<0.00010	<0.005	<0.01	54	<0.02	<0.001	460	8.5	<0.0005	<0.01	<0.05	<0.001	<0.005	<0.05	<0.01
20-May-15	(duplicate)	<0.02	<0.00010	<0.005	<0.01	53	<0.02	<0.001	450	8.7	<0.0005	<0.01	<0.05	<0.001	<0.005	<0.05	<0.01
30-Nov-15		0.0083	<0.00010	0.0043	<0.001	27	<0.002	<0.0001	280	5.5	<0.00005	<0.001	<0.005	0.0017	<0.0005	<0.001	<0.01
30-Nov-15	(duplicate)	<0.02	<0.00010	<0.005	<0.01	54	<0.02	<0.001	480	8.3	<0.0005	<0.01	<0.05	<0.001	<0.005	<0.01	<0.05
11-May-16		0.017	<0.0001	0.00054	<0.002	43	<0.002	<0.0001	360	8.7	<0.00005	<0.001	<0.005	0.00012	<0.0005	<0.001	<0.025
11-May-16	(duplicate)	0.015	<0.0001	<0.0005	<0.002	46	<0.002	<0.0001	380	8.7	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
29-Nov-16		0.053	<0.0001	0.0019	<0.002	7.7	<0.002	<0.0001	98	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
29-Nov-16	(duplicate)	0.054	<0.0001	0.0018	<0.002	6.7	<0.002	<0.0001	93	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
MW22-S (Southwest of Cell 1)																	
13-Apr-12		3.03	<0.0001	0.092	0.015	3	<0.01	<0.0001	218	3.33	<0.0001	<0.01	<0.01	0.006	0.003	<0.002	<0.01
27-Nov-12		2.67	<0.0001	0.075	0.011	3	<0.01	<0.0001	171	1.9	<0.0001	<0.01	<0.01	0.008	0.004	0.003	<0.01
9-May-13		1.9	<0.0001	0.148	<0.005	3	<0.01	<0.0001	193	1.64	<0.0001	<0.01	<0.01	0.009	0.003	<0.002	<0.01
22-Nov-13		2.75	<0.0001	0.128	0.006	3	<0.01	<0.0001	203	1.71	<0.0001	<0.01	<0.01	0.011	0.005	0.003	<0.01
5-May-14		0.85	<0.0001	0.219	<0.005	3	<0.001	<0.0001	178	1.18	<0.0001	<0.01	<0.01	0.009	<0.001	<0.002	<0.01
4-Nov-14		1.9	<0.0001	0.13	<0.002	3.4	<0.002	<0.0001	210	2.2	<0.00005	<0.001	<0.005	0.0087	<0.0005	<0.001	<0.005
20-May-15		0.44	<0.00010	0.170	0.003	2.9	<0.002	<0.0001	200	1.7	<0.00005	<0.001	<0.005	0.012	<0.0005	<0.005	<0.001
4-Nov-15		0.66	<0.00010	0.11	0.0032	2.9	<0.002	<0.0001	210	2.3	<0.00005	<0.001	<0.005	0.011	<0.0005	<0.001	<0.005
10-May-16		0.44	<0.0001	0.23	0.0032	2.9	<0.002	<0.0001	200	1.7	<0.00005	<0.001	<0.005	0.016	<0.0005	<0.001	<0.005
17-Nov-16		1.2	<0.0001	0.15	0.0035	3.2	<0.002	<0.0001	200	2.5	<0.00005	<0.001	<0.005	0.016	<0.0005	<0.001	<0.005
MW22-I (Southwest of Cell 1)																	
17-Apr-12		0.26	<0.0001	0.023	0.0130	8	<0.01	<0.0001	128	9.98	<0.0001	<0.01	<0.01	0.004	<0.001	<0.002	<0.01
4-Dec-12		0.16	<0.0001	0.03	0.012	7	<0.001	<0.0001	151	9.68	<0.0001	<0.01	<0.01	0.004	<0.001	0.005	<0.01
17-May-13		0.17	<0.0001	0.022	0.015	7	<0.01	<0.0001	155	11.1	<0.0001	<0.01	<0.01	0.003	<0.001	<0.002	<0.01
27-Nov-13		0.15	<0.0001	0.021	0.011	6	<0.01	<0.0001	132	11.1	<0.0001	<0.01	<0.01	0.002	<0.001	<0.002	<0.01
2-Jun-14		0.21	<0.0001	0.02	<0.005	5	<0.001	<0.0001	147	9.36	<0.0001	<0.01	<0.01	0.002	<0.001	<0.002	<0.01
11-Nov-14		0.18	<0.0001	0.015	<0.002	5.1	<0.002	<0.0001	140	11	<0.00005	<0.001	<0.005	0.0019	<0.0005	<0.001	<0.025
29-May-15		0.26	<0.00010	0.015	<0.002	5.1	<0.002	<0.0001	140	10	<0.00005	<0.001	<0.005	0.0017	<0.0005	<0.025	<0.001
10-Nov-15		0.15	<0.00010	0.01	<0.002	5	<0.002	<0.0001	140	11	<0.00005	<0.001	<0.005	0.0012	<0.0005	<0.001	<0.025
10-May-16		0.13	<0.0001	0.0093	<0.002	4.9	<0.002	<0.0001	130	9.8	<0.00005	<0.001	<0.005	0.0011	<0.0005	<0.001	<0.025
23-Nov-16		0.15	<0.0001	0.011	0.0034	5	<0.002	<0.0001	140	10	0.000053	<0.001	<0.005	0.0013	<0.0005	<0.001	<0.025

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameters	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Magnesium (Mg)
Units	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
ODWS (2003)[1]	< 0.1 > (A)	{0.006} (H)	{0.025} (H)	1 (H)	--	{5} (H)	0.005 (H)	--	0.05 (H)	--	[1] (A)	[0.3] (A)	0.01 (H)	--
Background Range Shallow Wells	<0.01 - 0	<0.0005 - <0.0005	<0.001 - <0.01	0.09 - 0.17	<0.0005 - <0.0005	0.06 - 0.89	<0.0001 - <0.0001	137 - 180	<0.001 - 0.004	<0.0005 - 0.0021	0.001 - 0.0018	<0.01 - 2.94	<0.0005 - <0.016	45 - 56
Background Range Intermediate Wells	<0.005 - 0.28	<0.0005 - <0.006	0.0012 - 0.002	0.0096 - 0.02	<0.0005 - <0.003	0.86 - 1	<0.0001 - <0.005	470 - 520	<0.001 - <0.006	<0.0002 - <0.003	<0.001 - 0.002	0.07 - 0.93	<0.0005 - <0.016	120 - 143
Background Range Deep Wells	<0.005 - <0.01	<0.0005 - <0.0005	<0.001 - <0.01	0.0066 - <0.01	<0.0005 - <0.0005	1.1 - 1.4	<0.0001 - <0.0001	510 - 578	<0.001 - <0.005	<0.0002 - <0.001	<0.001 - <0.001	0.33 - 0.59	<0.0005 - <0.001	90 - 106
MW22-GI (Southwest of Cell 1)														
17-Apr-12	<0.01	<0.0005	<0.01	0.04	<0.0005	0.46	<0.0001	100	0.008	0.0005	0.001	0.13	<0.001	56
29-Nov-12	<0.01	<0.0005	<0.01	0.05	<0.0005	0.42	<0.0001	117	0.004	0.0004	<0.001	0.61	<0.001	70
15-May-13	<0.01	<0.0005	<0.01	0.04	<0.0005	0.25	<0.0001	114	0.004	0.0006	0.001	<0.03	<0.001	64
27-Nov-13	<0.01	<0.0005	<0.01	0.05	<0.0005	0.28	<0.0001	96	0.002	0.0006	<0.001	<0.03	<0.001	56
9-May-14	<0.01	<0.0005	0.002	0.05	<0.005	0.37	<0.0001	112	<0.001	<0.0005	<0.001	0.03	<0.001	59
12-Nov-14	0.009	<0.0005	0.0057	0.046	<0.0005	0.37	<0.0001	100	<0.005	<0.0005	<0.001	0.7	<0.0005	58
29-May-15	<0.005	<0.0005	0.0015	0.04	<0.0005	0.34	<0.0001	92	<0.005	0.00052	0.0012	<0.1	<0.0005	56
10-Nov-15	<0.005	<0.0005	0.0045	0.043	<0.0005	0.38	<0.0001	95	<0.005	<0.0005	<0.001	0.38	<0.0005	54
10-May-16	<0.005	<0.0005	0.0032	0.043	<0.0005	0.41	<0.0001	97	<0.005	0.0005	<0.001	0.3	<0.0005	56
17-Nov-16	<0.005	<0.0005	0.0052	0.039	<0.0005	0.39	<0.0001	87	<0.005	0.0005	<0.001	0.51	<0.0005	50
MW23-S (West of Cell 1)														
12-Apr-12	<0.1	<0.005	<0.1	<0.1	<0.005	0.7	<0.001	683	<0.01	0.012	<0.01	0.3	<0.01	390
9-May-13	<0.01	<0.0005	<0.1	0.01	<0.0005	0.85	0.0007	706	0.007	0.0028	0.003	<0.03	<0.001	477
22-Nov-13	<0.1	<0.005	<0.1	<0.1	<0.005	1.2	<0.001	804	<0.1	0.002	<0.01	<0.3	<0.01	582
5-May-14	<0.01	<0.0005	0.014	0.01	<0.005	0.49	0.0003	675	<0.001	0.0026	<0.001	0.47	<0.001	436
4-Nov-14		<0.0025	0.018	0.017	<0.0005	0.65	0.0006	730	<0.025	<0.0025	<0.005	0.5	<0.0025	540
20-May-15	<0.025	<0.0025	0.031	0.014	<0.0025	0.79	0.00068	750	<0.025	<0.0025	<0.005	<0.5	<0.0025	520
3-Nov-15	<0.005	<0.0005	0.029	0.019	<0.0005	0.9	0.00068	740	<0.005	<0.0025	0.0016	0.12	<0.0005	530
4-May-16	<0.005	<0.0005	0.033	0.014	<0.0005	0.74	0.00051	750	<0.005	0.0025	0.0016	<0.1	<0.0005	540
29-Nov-16	<0.005	<0.0005	0.0033	0.016	<0.0005	0.85	0.00062	750	<0.005	0.0025	0.0023	<0.1	<0.0005	540
MW23-I (West of Cell 1)														
10-Apr-12	<0.1	<0.005	<0.01	<0.1	<0.005	1.3	<0.001	377	<0.01	<0.002	<0.01	<0.3	<0.01	120
4-Dec-12	<0.01	<0.0005	<0.001	0.01	<0.0005	0.95	<0.0001	506	<0.001	0.0017	0.001	<0.03	<0.001	156
17-May-13	<0.01	<0.0005	<0.01	0.02	<0.0005	1.8	<0.0001	531	<0.001	0.0013	0.002	<0.03	<0.001	156
27-Nov-13	<0.01	<0.0005	<0.01	0.01	<0.0005	1.6	<0.0001	521	<0.001	0.0013	0.001	<0.03	<0.001	138
2-Jun-14	<0.01	<0.0005	0.001	0.02	<0.005	1.8	<0.0001	497	<0.001	<0.001	<0.001	<0.03	<0.001	143
5-Nov-14	<0.005	<0.0005	0.0014	0.013	<0.0005	1.6	<0.0001	480	<0.005	<0.001	<0.001	<0.1	<0.0005	150
29-May-15	<0.005	<0.0005	<0.001	0.011	<0.0005	1.5	<0.0001	470	<0.005	<0.001	0.0013	<0.1	<0.0005	140
5-Nov-15	<0.005	<0.0005	0.0014	0.013	<0.0005	1.6	<0.0001	480	<0.005	<0.001	<0.001	<0.1	<0.0005	140
10-May-16	<0.005	<0.0005	<0.001	0.0098	<0.0005	1.5	<0.0001	480	<0.005	<0.001	<0.001	<0.1	<0.0005	140
23-Nov-16	<0.005	<0.0005	<0.001	0.011	<0.0005	1.5	<0.0001	460	<0.005	<0.001	<0.001	<0.1	<0.0005	150

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameters	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zirconium (Zr)	Zinc (Zn)
Units	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
ODWS (2003)[1]	[0.05] (A)	0.001 (H)	--	--	--	0.01 (H)	--	[200] (A)	--	--	--	--	0.02 (H)	--	--	[5] (A)
Background Range Shallow Wells	0.13 - 0.3	<0.0001 - <0.0001	<0.002 - 0.011	0.0021 - 0.03	3 - 7	<0.001 - <0.004	<0.0001 - <0.003	25 - 51	0.728 - 8.7	<0.00005 - <0.012	<0.001 - <0.01	<0.002 - <0.01	0.0022 - 0.03	0.00052 - 0.007	<0.001 - <0.005	<0.001 - 0.0051
Background Range Intermediate Wells	0.08 - 0.1	<0.0001 - <0.0001	0.01 - 0.023	<0.001 - 0.015	4 - 10	<0.001 - <0.01	<0.0001 - <0.003	120 - 166	9.8 - 11	<0.00005 - <0.012	<0.001 - <0.01	0.012 - 0.012	0.00016 - <0.002	<0.0005 - <0.002	<0.001 - <0.025	<0.001 - <0.025
Background Range Deep Wells	0.038 - 0.05	<0.0001 - <0.0001	0.0046 - <0.005	<0.002 - 0.007	6.7 - 11	<0.001 - <0.01	<0.0001 - <0.0001	64 - 78	8.77 - 11.3	<0.00005 - <0.0001	<0.001 - <0.01	<0.005 - <0.01	<0.0001 - 0.00018	<0.0005 - <0.001	<0.001 - <0.025	<0.001 - <0.025
MW22-GI (Southwest of Cell 1)																
17-Apr-12	0.43	<0.0001	0.335	<0.005	1	<0.01	<0.0001	230	5.73	<0.0001	<0.01	<0.01	0.008	0.003	<0.002	<0.01
29-Nov-12	0.47	<0.0001	0.317	<0.005	2	<0.01	<0.0001	263	6.44	<0.0001	<0.01	<0.01	0.004	0.001	<0.002	<0.01
15-May-13	0.48	<0.0001	0.299	<0.005	2	<0.01	<0.0001	268	4.8	<0.0001	<0.01	<0.01	0.003	0.002	<0.002	<0.01
27-Nov-13	0.47	<0.0001	0.397	<0.005	2	<0.01	<0.0001	245	5.42	<0.0001	<0.01	<0.01	0.003	<0.001	<0.002	<0.01
9-May-14	0.53	<0.0001	0.409	<0.005	2	<0.001	<0.0001	222	5.31	<0.0001	<0.01	<0.01	0.003	<0.001	<0.002	<0.01
12-Nov-14	0.45	<0.0001	0.45	<0.002	2.3	<0.002	<0.0001	260	5.3	<0.00005	<0.001	<0.005	0.0042	<0.0005	<0.001	<0.005
29-May-15	0.43	<0.00010	0.4	0.0021	2.3	<0.002	<0.0001	250	4.5	<0.00005	<0.001	<0.005	0.0039	<0.0005	<0.005	<0.001
10-Nov-15	0.43	<0.00010	0.4	0.0016	2.2	<0.002	<0.0001	260	4.9	<0.00005	<0.001	<0.005	0.0039	<0.0005	<0.001	<0.005
10-May-16	0.44	<0.0001	0.31	0.0016	2	<0.002	<0.0001	240	4.9	<0.00005	<0.001	<0.005	0.0031	<0.0005	<0.001	<0.005
17-Nov-16	0.41	<0.0001	0.48	0.0014	2.1	<0.002	<0.0001	240	4.3	<0.00005	<0.001	<0.005	0.0034	<0.0005	<0.001	<0.005
MW23-S (West of Cell 1)																
12-Apr-12	2.8	<0.0001	<0.05	<0.05	3	<0.01	<0.001	202	11.1	<0.001	<0.1	<0.1	0.02	<0.01	<0.02	<0.1
9-May-13	0.34	<0.0001	<0.005	0.013	1	<0.01	<0.0001	233	13.3	<0.0001	<0.01	<0.01	0.012	0.004	<0.002	<0.01
22-Nov-13	0.2	<0.0001	<0.05	<0.05	1	<0.01	<0.001	287	16.2	<0.001	<0.1	<0.1	0.01	<0.01	0.002	<0.1
5-May-14	0.13	<0.0001	0.12	0.009	3	<0.001	<0.0001	559	10.8	<0.0001	<0.01	<0.01	0.014	<0.001	<0.002	<0.01
4-Nov-14	0.36	<0.0001	0.003	<0.005	1.3	<0.01	<0.0005	480	13	<0.00005	<0.005	<0.025	0.02	<0.0025	<0.005	<0.025
20-May-15	0.093	<0.00010	0.0037	0.0065	<1000	<0.01	<0.0005	360	13	<0.00025	<0.005	<0.025	0.016	<0.0025	<0.025	<0.005
3-Nov-15	0.12	<0.00010	0.0022	0.0054	1.3	<0.002	<0.0001	360	15	<0.00005	<0.001	<0.005	0.015	<0.001	<0.001	<0.025
4-May-16	0.065	<0.0001	0.0019	<0.005	1.1	<0.002	<0.0001	390	13	<0.00005	<0.001	<0.005	0.014	<0.001	<0.001	<0.025
29-Nov-16	0.12	<0.0001	0.0019	<0.005	1.2	<0.002	<0.0001	340	13	<0.00005	<0.001	<0.005	0.012	<0.001	<0.001	<0.025
MW23-I (West of Cell 1)																
10-Apr-12	0.2	<0.0001	<0.05	<0.05	9	<0.01	<0.001	107	7.8	<0.001	<0.1	<0.1	<0.01	<0.01	<0.02	<0.1
4-Dec-12	0.26	<0.0001	0.013	0.0140	8	<0.01	<0.0001	141	8.78	<0.0001	<0.01	<0.01	0.002	<0.001	0.002	<0.01
17-May-13	0.2	<0.0001	0.018	0.0140	10	<0.01	<0.0001	153	10.4	<0.0001	<0.01	<0.01	0.002	<0.001	<0.002	<0.01
27-Nov-13	0.2	<0.0001	0.011	0.0120	9	<0.01	<0.0001	128	11	<0.0001	<0.01	<0.01	0.002	<0.001	<0.002	<0.01
2-Jun-14	0.32	<0.0001	0.018	<0.005	9	<0.001	<0.0001	140	9.96	<0.0001	<0.01	<0.01	0.003	<0.001	<0.002	<0.01
5-Nov-14	0.68	<0.0001	0.017	<0.002	7.8	<0.002	<0.0001	140	10	<0.00005	<0.001	<0.005	0.0013	<0.0005	<0.001	<0.025
29-May-15	0.22	<0.00010	0.017	0.0	8	<0.002	<0.0001	140	9.5	<0.00005	<0.001	<0.005	0.0015	<0.0005	<0.025	<0.001
5-Nov-15	0.067	<0.00010	0.013	0.0022	8.3	<0.002	<0.0001	140	10	<0.00005	<0.001	<0.005	0.0013	<0.0005	<0.001	<0.025
10-May-16	0.10	<0.0001	0.012	0.0033	8.1	<0.002	<0.0001	130	9.5	<0.00005	<0.001	<0.005	0.0013	<0.0005	<0.001	<0.025
23-Nov-16	0.012	<0.0001	0.012	0.0021	8.9	<0.002	<0.0001	150	9.6	<0.00005	<0.001	<0.005	0.0012	<0.0005	<0.001	<0.025

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Magnesium (Mg)
Units	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
ODWS (2003)[1]	< 0.1 > (A)	{0.006} (H)	{0.025} (H)	1 (H)	--	{5} (H)	0.005 (H)	--	0.05 (H)	--	[1] (A)	[0.3] (A)	0.01 (H)	--
Background Range Shallow Wells	<0.01 - 0	<0.0005 - <0.0005	<0.001 - <0.01	0.09 - 0.17	<0.0005 - <0.0005	0.06 - 0.89	<0.0001 - <0.0001	137 - 180	<0.001 - 0.004	<0.0005 - 0.0021	0.001 - 0.0018	<0.01 - 2.94	<0.0005 - <0.016	45 - 56
Background Range Intermediate Wells	<0.005 - 0.28	<0.0005 - <0.006	0.0012 - 0.002	0.0096 - 0.02	<0.0005 - <0.003	0.86 - 1	<0.0001 - <0.005	470 - 520	<0.001 - <0.006	<0.0002 - <0.003	<0.001 - 0.002	0.07 - 0.93	<0.0005 - <0.016	120 - 143
Background Range Deep Wells	<0.005 - <0.01	<0.0005 - <0.0005	<0.001 - <0.01	0.0066 - <0.01	<0.0005 - <0.0005	1.1 - 1.4	<0.0001 - <0.0001	510 - 578	<0.001 - <0.005	<0.0002 - <0.001	<0.001 - <0.001	0.33 - 0.59	<0.0005 - <0.001	90 - 106
MW23-GI (West of Cell 1)														
12-Apr-12	<0.1	<0.005	<0.1	<0.1	<0.005	0.8	<0.001	657	<0.01	0.007	<0.01	0.5	<0.01	300
29-Nov-12	<0.01	<0.0005	<0.1	0.03	<0.0005	0.8	<0.0001	672	<0.005	0.006	0.005	2.69	<0.001	210
15-May-13	<0.01	<0.0005	<0.01	0.03	<0.0005	0.53	<0.0001	607	<0.005	0.004	0.004	0.42	<0.001	263
27-Nov-13	<0.01	<0.0005	<0.1	0.02	<0.0005	0.63	<0.0001	636	0.008	0.005	0.003	3.78	<0.001	263
29-May-14	<0.01	<0.0005	0.01	0.03	<0.005	0.63	<0.0001	573	<0.001	0.004	<0.001	6.8	<0.001	227
5-Nov-14	<0.005	<0.0005	0.0097	0.025	<0.0005	0.63	<0.0001	490	<0.005	0.003	<0.001	11	<0.0005	210
29-May-15	<0.005	<0.0005	0.0036	0.022	<0.0005	0.62	<0.0001	460	<0.005	0.0028	<0.001	2.9	<0.0005	200
3-Nov-15	0.0062	<0.0005	0.015	0.026	<0.0005	0.71	<0.0001	490	<0.005	0.003	<0.001	16	0.00066	190
4-May-16	<0.005	<0.0005	0.015	0.024	<0.0005	0.63	<0.0001	500	<0.005	0.0025	<0.001	16	0.0005	200
29-Nov-16	<0.005	<0.0005	0.013	0.023	<0.0005	0.66	<0.0001	440	<0.005	0.0026	<0.001	15	<0.0005	180
MW24-S (West of Cell 1)														
9-Apr-12	<0.1	<0.005	<0.1	0.1	<0.005	0.5	<0.001	419	<0.1	0.008	<0.01	35.9	<0.01	210
27-Nov-12	<0.1	<0.005	<0.1	0.2	<0.005	<0.1	<0.001	426	<0.1	0.003	<0.01	78.2	<0.01	226
9-May-13	<1	<0.05	<0.1	<1	<0.05	<1	<0.01	496	<0.1	<0.02	<0.1	118	<0.1	240
21-Nov-13	0.05	<0.0005	<0.1	0.22	<0.0005	0.05	<0.0001	469	0.018	0.0028	0.003	85.9	<0.001	241
5-May-14	0.05	<0.0005	0.012	0.24	<0.0025	0.03	<0.0001	470	0.004	0.001	<0.001	75.5	<0.001	235
4-Nov-14	0.47	<0.0025	0.021	0.15	<0.0005	0.063	<0.0005	449	<0.025	<0.0025	<0.005	81	<0.0025	250
19-May-15	0.039	<0.0005	0.019	0.23	<0.0005	0.038	<0.0001	490	<0.005	0.0014	<0.001	79	<0.0005	240
5-Nov-15	0.039	<0.0005	0.014	0.18	<0.0005	0.07	<0.0001	360	<0.005	<0.001	<0.001	43	<0.0005	170
6-May-16	0.032	<0.0005	0.01	0.22	<0.0005	0.06	<0.0001	470	<0.005	<0.001	<0.002	64	<0.0005	220
5-Dec-16	0.031	<0.0005	0.0092	0.26	<0.0005	0.036	<0.0001	410	<0.005	0.0015	<0.002	47	<0.0005	220
MW24-I (West of Cell 1)														
9-Apr-12	<0.01	<0.0005	<0.01	0.02	<0.0005	1.5	<0.0001	441	<0.001	0.0012	0.001	1.69	<0.001	152
28-Nov-12	<0.01	<0.0005	<0.01	<0.01	<0.0005	1.7	<0.0001	494	<0.001	0.0007	0.001	0.11	<0.001	148
14-May-13	<0.01	<0.0005	<0.01	<0.01	<0.0005	1.6	<0.0001	532	<0.001	0.0005	<0.001	<0.03	<0.001	155
26-Nov-13	<0.01	<0.0005	<0.01	<0.01	<0.0005	1.3	<0.0001	451	<0.001	0.0005	<0.001	0.83	<0.001	141
29-May-14	<0.01	<0.0005	<0.001	<0.01	<0.005	1.8	<0.0001	450	<0.001	0.0002	<0.001	0.12	<0.001	164
6-Nov-14	<0.005	<0.0005	<0.001	0.009	<0.0005	1.6	<0.0001	480	<0.005	<0.001	<0.001	0.1	<0.0005	160
7-May-15	<0.005	<0.0005	0.0016	0.0086	<0.0005	1.5	<0.0001	480	<0.005	<0.001	<0.001	0.69	<0.0005	140
5-Nov-15	<0.005	<0.0005	0.0016	0.0091	<0.0005	1.6	<0.0001	480	<0.005	<0.001	<0.001	0.87	<0.0005	150
5-May-16	<0.005	<0.0005	0.0014	0.0085	<0.0005	1.7	<0.0001	500	<0.005	<0.001	<0.001	0.85	<0.0005	150
5-Dec-16	<0.005	0.00057	<0.001	0.01	<0.0005	1.6	<0.0001	460	<0.005	<0.001	<0.001	<0.1	<0.0005	150

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameters	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zirconium (Zr)	Zinc (Zn)
Units	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
ODWS (2003)[1]	[0.05] (A)	0.001 (H)	--	--	--	0.01 (H)	--	[200] (A)	--	--	--	--	0.02 (H)	--	--	[5] (A)
Background Range Shallow Wells	0.13 - 0.3	<0.0001 - <0.0001	<0.002 - 0.011	0.0021 - 0.03	3 - 7	<0.001 - <0.004	<0.0001 - <0.003	25 - 51	0.728 - 8.7	<0.00005 - <0.012	<0.001 - <0.01	<0.002 - <0.01	0.0022 - 0.03	0.00052 - 0.007	<0.001 - <0.005	<0.001 - 0.0051
Background Range Intermediate Wells	0.08 - 0.1	<0.0001 - <0.0001	0.01 - 0.023	<0.001 - 0.015	4 - 10	<0.001 - <0.01	<0.0001 - <0.003	120 - 166	9.8 - 11	<0.00005 - <0.012	<0.001 - <0.01	0.012 - 0.012	0.00016 - <0.002	<0.0005 - <0.002	<0.001 - <0.025	<0.001 - <0.025
Background Range Deep Wells	0.038 - 0.05	<0.0001 - <0.0001	0.0046 - <0.005	<0.002 - 0.007	6.7 - 11	<0.001 - <0.01	<0.0001 - <0.0001	64 - 78	8.77 - 11.3	<0.00005 - <0.0001	<0.001 - <0.01	<0.005 - <0.01	<0.0001 - 0.00018	<0.0005 - <0.001	<0.001 - <0.025	<0.001 - <0.025
MW23-GI (West of Cell 1)																
12-Apr-12	1.7	<0.0001	<0.05	<0.05	4	<0.01	<0.001	390	12.6	<0.001	<0.1	<0.1	0.02	<0.01	<0.02	<0.1
29-Nov-12	1.55	<0.0001	0.009	0.019	4	<0.01	<0.0001	473	9.36	<0.0001	<0.01	<0.01	0.017	<0.005	0.004	0.02
15-May-13	1.66	<0.0001	0.008	0.013	5	<0.01	<0.0001	422	10.7	<0.0001	<0.01	<0.01	0.013	0.004	<0.002	0.02
27-Nov-13	2.07	<0.0001	<0.005	0.008	3	<0.01	<0.0001	352	9.47	<0.0001	<0.01	<0.01	0.008	0.008	0.002	0.03
29-May-14	2.79	<0.0001	<0.005	<0.005	2	<0.001	<0.0001	251	10.4	<0.0001	<0.01	<0.01	0.005	<0.001	<0.002	0.03
5-Nov-14	2.3	<0.0001	0.0012	0.004	2.6	<0.002	<0.0001	210	8.8	<0.00005	<0.001	<0.005	0.0044	<0.0005	<0.001	0.037
29-May-15	2.1	<0.00010	0.0014	0.0	2.6	<0.002	<0.0001	200	8.2	<0.00005	<0.001	<0.005	0.0042	<0.0005	31	<0.001
3-Nov-15	2.2	<0.00010	0.0013	0.0029	2.8	<0.002	<0.0001	200	8.6	<0.00005	<0.001	<0.005	0.004	<0.0005	<0.001	0.037
4-May-16	2.1	<0.0001	0.0013	0.0024	2.7	<0.002	<0.0001	200	7.6	<0.00005	<0.001	<0.005	0.0035	<0.0005	<0.001	0.036
29-Nov-16	2.0	<0.0001	0.0013	0.0025	2.5	<0.002	<0.0001	190	7.5	<0.00005	<0.001	<0.005	0.0037	<0.0005	<0.001	0.034
MW24-S (West of Cell 1)																
9-Apr-12	3.5	<0.0001	<0.05	<0.05	7	<0.01	<0.001	110	2.42	<0.001	<0.1	<0.1	<0.01	<0.1	0.011	<0.1
27-Nov-12	5.2	<0.0001	<0.05	<0.05	5	<0.01	<0.001	179	3.07	<0.001	<0.1	<0.1	<0.01	<0.1	<0.02	<0.1
9-May-13	9	<0.0001	<0.5	<0.5	5	<0.1	<0.01	238	3.6	<0.01	<5	<1	<0.1	<0.1	<0.2	<1
21-Nov-13	11.8	<0.0001	<0.005	0.0120	4	<0.01	<0.0001	469	3.4	<0.0001	<0.01	0.02	<0.001	0.009	0.009	<0.01
5-May-14	9.7	<0.0001	<0.005	<0.005	4.5	<0.01	<0.0001	440	1.96	<0.0001	<0.01	<0.01	<0.001	0.004	<0.002	<0.01
4-Nov-14	12	<0.0001	<0.0025	<0.005	5	<0.001	<0.0005	457	2.9	<0.00025	<0.005	<0.025	<0.0005	0.0046	<0.005	<0.025
19-May-15	13	<0.00010	<0.0005	0.0024	5.4	<0.002	<0.0001	480	3	<0.00005	<0.001	<0.005	0.00056	0.0045	<0.005	0.0026
5-Nov-15	9.6	<0.00010	0.00053	<0.002	5.7	<0.002	<0.0001	420	2.2	<0.00005	<0.001	<0.005	0.00017	0.0041	0.0018	<0.005
6-May-16	16	<0.0001	<0.0005	0.0024	5.5	<0.002	<0.0001	580	2.8	<0.00005	<0.001	<0.005	0.00034	0.0041	0.0022	<0.01
5-Dec-16	8.9	<0.0001	0.00093	<0.002	4.2	<0.002	<0.0001	370	2.7	<0.00005	<0.001	<0.005	0.00042	0.0047	0.0026	<0.005
MW24-I (West of Cell 1)																
9-Apr-12	0.11	<0.0001	0.006	0.014	13	<0.01	<0.0001	103	11.8	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
28-Nov-12	0.09	<0.0001	<0.005	0.011	11	<0.01	<0.0001	109	8.51	<0.0001	<0.01	<0.01	<0.001	<0.001	0.002	<0.01
14-May-13	0.09	<0.0001	<0.005	0.01	12	<0.01	<0.0001	117	10.7	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
26-Nov-13	0.09	<0.0001	<0.005	0.011	10	<0.01	<0.0001	102	11.2	<0.0001	<0.01	<0.01	<0.001	<0.001	0.003	<0.01
29-May-14	0.12	<0.0001	<0.005	<0.005	9	<0.001	<0.0001	125	10.8	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
6-Nov-14	0.1	<0.0001	0.0033	<0.002	9.9	<0.002	<0.0001	110	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
7-May-15	0.096	<0.00010	0.004	<0.002	10	<0.002	<0.0001	100	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.025	<0.001
5-Nov-15	0.099	<0.00010	0.0043	<0.002	10	<0.002	<0.0001	110	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
5-May-16	0.10	<0.0001	0.0042	<0.002	11	<0.002	<0.0001	110	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
5-Dec-16	0.14	<0.0001	0.005	<0.005	10	<0.002	<0.0001	110	11	<0.00005	<0.001	<0.005	0.00012	<0.0005	<0.001	<0.025

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Magnesium (Mg)
Units		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
ODWS (2003)[1]		< 0.1 > (A)	{0.006} (H)	{0.025} (H)	1 (H)	--	{5} (H)	0.005 (H)	--	0.05 (H)	--	[1] (A)	[0.3] (A)	0.01 (H)	--
Background Range Shallow Wells		<0.01 - 0	<0.0005 - <0.0005	<0.001 - <0.01	0.09 - 0.17	<0.0005 - <0.0005	0.06 - 0.89	<0.0001 - <0.0001	137 - 180	<0.001 - 0.004	<0.0005 - 0.0021	0.001 - 0.0018	<0.01 - 2.94	<0.0005 - <0.016	45 - 56
Background Range Intermediate Wells		<0.005 - 0.28	<0.0005 - <0.006	0.0012 - 0.002	0.0096 - 0.02	<0.0005 - <0.003	0.86 - 1	<0.0001 - <0.005	470 - 520	<0.001 - <0.006	<0.0002 - <0.003	<0.001 - 0.002	0.07 - 0.93	<0.0005 - <0.016	120 - 143
Background Range Deep Wells		<0.005 - <0.01	<0.0005 - <0.0005	<0.001 - <0.01	0.0066 - <0.01	<0.0005 - <0.0005	1.1 - 1.4	<0.0001 - <0.0001	510 - 578	<0.001 - <0.005	<0.0002 - <0.001	<0.001 - <0.001	0.33 - 0.59	<0.0005 - <0.001	90 - 106
MW24-GI (West of Cell 1)															
9-Apr-12		<0.01	<0.0005	<0.01	0.17	<0.0005	0.53	<0.0001	539	0.004	0.0011	0.003	24.3	<0.001	212
28-Nov-12		<0.01	<0.0005	<0.01	0.11	<0.0005	0.9	<0.0001	400	<0.005	0.0009	0.003	14.3	<0.001	202
9-May-13		<0.1	<0.005	<0.01	0.1	<0.005	0.8	<0.001	567	<0.05	<0.002	<0.01	22.6	<0.01	245
21-Nov-13		<0.01	<0.0005	<0.1	0.14	<0.0005	0.81	<0.0001	568	<0.005	0.0009	0.003	30.3	<0.001	240
5-May-14		<0.01	<0.0005	0.007	0.14	<0.005	0.8	<0.0001	613	<0.001	0.0003	<0.001	36.8	<0.001	261
4-Nov-14		<0.005	<0.0005	0.0049	0.13	<0.0005	0.82	<0.0001	510	<0.005	<0.001	<0.002	31	<0.0005	240
19-May-15		0.0066	<0.0005	0.0085	0.13	<0.0005	0.81	<0.0001	570	<0.005	<0.001	<0.001	33	<0.0005	230
5-Nov-15		<0.005	<0.0005	0.0072	0.14	<0.0005	0.9	<0.0001	550	<0.005	<0.001	<0.001	32	<0.0005	230
5-May-16		<0.005	<0.0005	0.0062	0.13	<0.0005	0.87	<0.0001	540	<0.005	<0.001	<0.001	32	<0.0005	230
5-Dec-16		<0.005	<0.0005	<0.001	0.13	<0.0005	0.94	<0.0001	510	<0.005	<0.001	<0.002	31	<0.0005	230
MW24-D (West of Cell 1)															
9-Apr-12		<0.1	<0.005	<0.01	<0.1	<0.005	1.8	<0.001	501	<0.01	<0.002	<0.01	0.5	<0.01	136
28-Nov-12		<0.01	<0.0005	<0.01	<0.01	<0.0005	2	<0.0001	485	<0.001	0.0008	0.005	0.4	<0.001	139
28-Nov-12	(duplicate)	<0.01	<0.0005	<0.01	<0.01	<0.0005	2	<0.0001	501	<0.001	0.0008	0.001	0.41	<0.001	139
14-May-13		<0.01	<0.0005	<0.01	<0.01	<0.0005	2.1	<0.0001	563	<0.001	0.0005	<0.001	0.42	<0.001	144
14-May-13	(duplicate)	<0.01	<0.0005	<0.01	<0.01	<0.0005	2	<0.0001	542	<0.001	0.0006	<0.001	0.43	<0.001	138
21-Nov-13		<0.01	<0.0005	<0.01	<0.01	<0.0005	2	<0.0001	511	<0.001	0.0005	<0.001	0.45	<0.001	140
29-May-14		<0.01	<0.0025	<0.001	<0.01	<0.005	2.4	<0.0001	450	<0.001	<0.0002	<0.001	0.45	<0.001	151
4-Nov-14		<0.025	<0.0025	<0.005	<0.01	<0.005	1.9	<0.0005	490	<0.025	<0.0025	<0.005	0.5	<0.0025	150
4-Nov-14	(duplicate)	<0.025	<0.0025	<0.005	<0.01	<0.0005	2	<0.0005	490	<0.025	<0.0025	<0.005	0.5	<0.0025	150
19-May-15		<0.005	<0.0005	<0.001	0.0058	<0.0005	2.4	<0.0001	450	<0.005	<0.001	<0.001	0.38	<0.0005	140
19-May-15	(duplicate)	<0.005	<0.0005	<0.001	0.0056	<0.0005	2.4	<0.0001	490	<0.005	<0.001	<0.001	0.39	<0.0005	140
5-Nov-15		<0.005	<0.0005	0.001	0.0051	<0.0005	2.2	<0.0001	470	<0.005	<0.001	<0.001	0.36	<0.0005	130
5-Nov-15	(duplicate)	<0.005	<0.0005	<0.001	0.0058	<0.0005	2.3	<0.0001	430	<0.005	<0.001	<0.001	0.38	<0.0005	140
4-May-16		<0.005	<0.0005	<0.001	0.0059	<0.0005	2.7	<0.0001	470	<0.005	<0.001	<0.001	0.34	<0.0005	140
4-May-16		<0.005	<0.0005	<0.001	0.0059	<0.0005	2.7	<0.0001	480	<0.005	<0.001	<0.001	0.33	<0.0005	150
5-Dec-16		0.0065	<0.0005	<0.001	0.0061	<0.0005	2.7	<0.0001	470	<0.005	<0.001	<0.001	0.40	<0.0005	160
5-Dec-16		<0.005	<0.0005	<0.001	0.0057	<0.0005	2.7	<0.0001	480	<0.005	<0.001	<0.001	0.39	<0.0005	150
MW25-S (West of Cell 1)															
17-Apr-12		0.02	0.0005	<0.1	0.14	<0.0005	0.13	<0.0001	225	<0.05	0.0083	0.005	10.6	<0.001	136
29-Nov-12		0.02	<0.0005	<0.1	0.19	<0.0005	0.18	<0.0001	213	<0.05	0.0061	0.001	42.6	<0.001	130
9-May-13		<0.1	<0.005	<0.05	0.2	<0.005	0.2	<0.001	226	<0.05	0.005	<0.01	45.7	<0.01	140
21-Nov-13		0.02	<0.0005	<0.1	0.14	<0.0005	0.16	<0.0001	228	0.01	0.0046	0.001	32	<0.001	134
5-May-14		0.03	<0.0005	0.013	0.14	<0.005	0.12	<0.0001	246	0.002	0.0042	<0.001	33.6	<0.001	152
12-Nov-14		0.022	<0.0005	0.016	0.15	<0.0005	0.14	<0.0001	220	<0.005	0.002	<0.001	42	<0.015	130
4-Jun-15		0.0075	<0.0005	0.0033	0.093	<0.0005	0.09	<0.0001	170	<0.005	0.0015	<0.001	14	<0.0005	86
30-Nov-15		0.0059	<0.0005	0.0012	0.063	<0.0005	0.21	<0.0001	140	<0.005	0.00079	0.0043	1.1	<0.0005	53
10-May-16		<0.005	<0.0005	<0.001	0.066	<0.0005	0.13	<0.0001	190	<0.005	0.0005	0.0032	0.15	<0.0005	83
6-Dec-16		0.023	<0.0005	0.0038	0.074	<0.0005	0.22	<0.0001	150	<0.005	0.0035	<0.001	9.4	<0.0005	57

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zirconium (Zr)	Zinc (Zn)
Units		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
ODWS (2003)[1]		[0.05] (A)	0.001 (H)	--	--	--	0.01 (H)	--	[200] (A)	--	--	--	--	0.02 (H)	--	--	[5] (A)
Background Range Shallow Wells		0.13 - 0.3	<0.0001 - <0.0001	<0.002 - 0.011	0.0021 - 0.03	3 - 7	<0.001 - <0.004	<0.0001 - <0.003	25 - 51	0.728 - 8.7	<0.00005 - <0.012	<0.001 - <0.01	<0.002 - <0.01	0.0022 - 0.03	0.00052 - 0.007	<0.001 - <0.005	<0.001 - 0.0051
Background Range Intermediate Wells		0.08 - 0.1	<0.0001 - <0.0001	0.01 - 0.023	<0.001 - 0.015	4 - 10	<0.001 - <0.01	<0.0001 - <0.003	120 - 166	9.8 - 11	<0.00005 - <0.012	<0.001 - <0.01	0.012 - 0.012	0.00016 - <0.002	<0.0005 - <0.002	<0.001 - <0.025	<0.001 - <0.025
Background Range Deep Wells		0.038 - 0.05	<0.0001 - <0.0001	0.0046 - <0.005	<0.002 - 0.007	6.7 - 11	<0.001 - <0.01	<0.0001 - <0.0001	64 - 78	8.77 - 11.3	<0.00005 - <0.0001	<0.001 - <0.01	<0.005 - <0.01	<0.0001 - 0.00018	<0.0005 - <0.001	<0.001 - <0.025	<0.001 - <0.025
MW24-GI (West of Cell 1)																	
9-Apr-12		2.99	<0.0001	<0.005	0.006	6	<0.01	<0.0001	258	8.06	<0.0001	<0.01	0.01	<0.001	0.003	0.003	<0.01
28-Nov-12		2.24	<0.0001	0.007	0.0080	6	<0.001	<0.0001	430	5.78	<0.0001	<0.01	<0.01	<0.001	<0.005	0.002	<0.01
9-May-13		2.9	<0.0001	<0.05	<0.05	4	<0.01	<0.001	379	9.01	<0.001	<0.1	<0.1	<0.01	<0.01	<0.002	<0.1
21-Nov-13		3.16	<0.0001	<0.005	0.0090	5	<0.01	<0.0001	387	9.79	<0.0001	<0.01	0.01	<0.001	<0.005	0.003	<0.01
5-May-14		4.22	<0.0001	<0.005	<0.005	5	<0.01	<0.0001	369	10	<0.0001	<0.01	<0.01	<0.001	0.002	<0.002	<0.01
4-Nov-14		3.3	<0.0001	0.0037	<0.01	4.6	<0.002	<0.0001	400	9.5	<0.00005	<0.001	<0.005	<0.0001	0.0016	0.0011	<0.01
19-May-15		3.6	<0.00010	0.0019	<0.002	4	<0.002	<0.0001	350	9.5	<0.00005	<0.001	<0.005	0.00014	0.0017	<0.01	0.0012
5-Nov-15		3.4	<0.00010	0.0023	<0.002	4.3	<0.002	<0.0001	380	9.5	<0.00005	<0.001	<0.005	0.00013	0.0015	<0.001	<0.01
5-May-16		3.6	<0.0001	0.0013	<0.002	4.1	<0.002	<0.0001	340	9.4	<0.00005	<0.001	<0.005	0.0001	0.0016	<0.001	<0.01
5-Dec-16		3.4	<0.0001	0.002	<0.005	4	<0.002	<0.0001	370	9.5	<0.00005	<0.001	<0.005	0.00012	0.0013	<0.001	<0.01
MW24-D (West of Cell 1)																	
9-Apr-12		<0.1	<0.0001	<0.05	<0.05	12	<0.01	<0.001	115	11	<0.001	<0.1	<0.1	<0.01	<0.01	<0.002	<0.1
28-Nov-12		0.05	<0.0001	<0.005	0.015	12	<0.01	<0.0001	128	8.46	<0.0001	<0.01	<0.01	<0.001	<0.001	0.003	<0.01
28-Nov-12	(duplicate)	0.05	<0.0001	<0.005	0.015	12	<0.01	<0.0001	128	8.59	<0.0001	<0.01	<0.01	<0.001	<0.001	0.005	<0.01
14-May-13		0.05	<0.0001	<0.005	0.012	14	<0.01	<0.0001	139	9.76	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
14-May-13	(duplicate)	0.05	<0.0001	<0.005	0.014	13	<0.01	<0.0001	132	9.62	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
21-Nov-13		0.05	<0.0001	<0.005	0.008	12	<0.01	<0.0001	133	10.1	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
29-May-14		0.06	<0.0001	<0.005	<0.005	11	<0.001	<0.0001	137	10.3	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
4-Nov-14		0.049	<0.0001	0.0033	<0.005	14	<0.01	<0.0005	140	9.9	<0.00025	<0.005	<0.025	<0.0005	<0.0025	<0.005	<0.025
4-Nov-14	(duplicate)	0.047	<0.0001	0.0045	<0.005	13	<0.01	<0.0005	140	9.5	<0.00025	<0.005	<0.025	<0.0005	<0.0025	<0.005	<0.025
19-May-15		0.047	<0.00010	0.0033	<0.002	14	<0.002	<0.0001	150	9.9	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.025	<0.001
19-May-15	(duplicate)	0.048	<0.00010	0.0032	<0.002	14	<0.002	<0.0001	150	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.025	<0.001
5-Nov-15		0.044	<0.00010	0.0029	<0.002	12	<0.002	<0.0001	130	9.1	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
5-Nov-15	(duplicate)	0.05	<0.00010	0.003	<0.002	14	<0.002	<0.0001	140	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
4-May-16		0.046	<0.0001	0.0029	<0.002	15	<0.002	<0.0001	150	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
4-May-16		0.046	<0.0001	0.0029	<0.002	15	<0.002	<0.0001	150	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
5-Dec-16		0.049	<0.0001	0.003	<0.005	15	<0.002	<0.0001	160	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
5-Dec-16		0.05	<0.0001	0.0028	<0.005	15	<0.002	<0.0001	160	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
MW25-S (West of Cell 1)																	
17-Apr-12		3.94	<0.0001	0.023	0.0240	6	<0.01	<0.0001	112	3.11	<0.0001	<0.01	<0.01	0.007	0.009	0.007	0.02
29-Nov-12		3.31	<0.0001	0.006	0.013	2	<0.01	<0.0001	275	2.89	<0.0001	<0.01	<0.01	0.006	<0.05	0.007	<0.01
9-May-13		4	<0.0001	<0.05	<0.05	2	<0.01	<0.001	243	3.42	<0.001	<0.5	<0.1	<0.01	<0.05	<0.02	<0.1
21-Nov-13		3.13	<0.0001	<0.005	0.007	2	<0.01	<0.0001	314	3.22	<0.0001	<0.01	<0.01	0.003	0.01	0.011	<0.01
5-May-14		3.93	<0.0001	<0.005	<0.005	2	<0.001	<0.0001	230	3.26	<0.0001	<0.01	<0.01	0.002	0.007	0.008	<0.01
12-Nov-14		2.5	<0.0001	0.0025	<0.005	2.1	<0.002	<0.0001	260	2.7	<0.00005	<0.001	<0.005	0.0031	0.0052	0.0042	<0.005
4-Jun-15		1.4	<0.00010	0.0065	0.0037	2.2	<0.002	<0.0001	100	1.6	<0.00005	<0.001	<0.005	0.0032	0.001	<0.005	<0.001
30-Nov-15		0.18	<0.00010	0.011	0.0021	3.2	<0.002	<0.0001	150	1.2	<0.00005	<0.001	<0.005	0.0043	0.00073	<0.001	<0.005
10-May-16		0.2	<0.0001	0.011	0.003	2.4	<0.002	<0.0001	76	1.2	<0.00005	<0.001	<0.005	0.0053	<0.0005	<0.001	<0.005
6-Dec-16		1.2	<0.0001	0.0063	0.0035	2.9	<0.002	<0.0001	160	1.3	<0.00005	<0.001	<0.005	0.0039	0.0014	<0.001	<0.005

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Magnesium (Mg)
Units		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
ODWS (2003)[1]		< 0.1 > (A)	{0.006} (H)	{0.025} (H)	1 (H)	--	{5} (H)	0.005 (H)	--	0.05 (H)	--	[1] (A)	[0.3] (A)	0.01 (H)	--
Background Range Shallow Wells		<0.01 - 0	<0.0005 - <0.0005	<0.001 - <0.01	0.09 - 0.17	<0.0005 - <0.0005	0.06 - 0.89	<0.0001 - <0.0001	137 - 180	<0.001 - 0.004	<0.0005 - 0.0021	0.001 - 0.0018	<0.01 - 2.94	<0.0005 - <0.016	45 - 56
Background Range Intermediate Wells		<0.005 - 0.28	<0.0005 - <0.006	0.0012 - 0.002	0.0096 - 0.02	<0.0005 - <0.003	0.86 - 1	<0.0001 - <0.005	470 - 520	<0.001 - <0.006	<0.0002 - <0.003	<0.001 - 0.002	0.07 - 0.93	<0.0005 - <0.016	120 - 143
Background Range Deep Wells		<0.005 - <0.01	<0.0005 - <0.0005	<0.001 - <0.01	0.0066 - <0.01	<0.0005 - <0.0005	1.1 - 1.4	<0.0001 - <0.0001	510 - 578	<0.001 - <0.005	<0.0002 - <0.001	<0.001 - <0.001	0.33 - 0.59	<0.0005 - <0.001	90 - 106
MW25-I (West of Cell 1)															
10-Apr-12		0.02	<0.0005	<0.01	0.02	<0.0005	1.7	0.0001	395	0.001	0.0012	0.002	1.02	<0.001	161
29-Nov-12		<0.01	0.0005	<0.01	0.01	<0.0005	3.6	<0.0001	558	0.001	0.001	0.003	<0.03	<0.001	163
17-May-13		<0.01	<0.0005	<0.01	0.01	<0.0005	3.3	<0.0001	489	<0.001	0.001	0.002	<0.03	<0.001	225
22-Nov-13		<0.01	<0.0005	<0.01	0.01	<0.0005	3.5	<0.0001	502	<0.001	0.0008	0.002	<0.03	<0.001	204
2-Jun-14		<0.01	<0.0005	<0.001	0.01	<0.005	3.4	<0.0001	551	<0.001	0.0005	<0.001	0.07	<0.001	200
11-Nov-14		<0.005	<0.0005	<0.001	0.01	<0.0005	3.4	<0.0001	480	<0.005	<0.001	<0.001	0.1	<0.0005	220
4-Jun-15		<0.005	<0.0005	<0.001	0.01	<0.0005	3	<0.0001	470	<0.005	<0.001	<0.001	<0.1	<0.0005	190
2-Dec-15		<0.005	<0.0005	<0.001	0.012	<0.0005	3.2	<0.0001	480	<0.005	<0.001	<0.001	<0.1	<0.0005	190
10-May-16		<0.005	<0.0005	<0.001	0.01	<0.0005	3	<0.0001	460	<0.005	0.001	<0.001	<0.1	<0.0005	180
6-Dec-16		<0.005	<0.0005	<0.001	0.013	<0.0005	3.3	<0.0001	450	<0.005	0.001	<0.001	<0.1	<0.0005	190
MW26-S (North of Cell 2)															
17-Apr-12		<0.01	0.0005	<0.001	0.04	<0.0005	0.11	<0.0001		<0.001	0.0043	0.003	<0.03	<0.001	
8-May-13		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12-Nov-13		<0.01	<0.0005	<0.001	0.08	<0.005	0.11	<0.0001	312	0.001	0.0006	0.002	<0.03	<0.001	113
5-May-14		<0.01	<0.0005	<0.001	0.05	<0.0005	0.12	<0.0001	441	<0.001	<0.0002	<0.002	0.03	<0.001	187
12-Nov-14		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
21-May-15		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nov-15		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8-Apr-16		<0.005	<0.0005	<0.001	0.042	<0.0005	0.085	<0.0001	520	<0.005	<0.001	0.0024	<0.1	<0.0005	180
7-Nov-16		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW26-I (North of Cell 2)															
10-Apr-12		<0.01	<0.0005	<0.01	0.03	<0.0005	0.9	<0.0001	457	<0.001	0.0008	0.001	<0.03	<0.001	164
10-Apr-12	(duplicate)	<0.01	<0.0005	<0.001	0.02	<0.0005	1.6	<0.0001	447	<0.001	0.0004	0.001	<0.03	<0.001	196
4-Dec-12		<0.01	<0.0005	<0.01	0.03	<0.0005	0.99	<0.0001	386	<0.001	0.0008	0.001	0.04	<0.001	165
21-May-13		<0.01	<0.0005	<0.001	0.02	<0.0005	1.5	<0.0001	497	<0.001	0.0006	0.001	<0.03	<0.001	188
13-Nov-13		<0.01	<0.0005	<0.01	0.02	<0.0005	1.6	<0.0001	481	<0.001	0.0007	0.002	<0.03	<0.001	175
2-Jun-14		<0.01	<0.0005	<0.001	0.02	<0.005	1.8	<0.0001	494	<0.001	0.0003	<0.001	0.03	<0.001	170
11-Nov-14		<0.005	<0.0005	<0.001	0.017	<0.0005	1.7	<0.0001	450	<0.005	<0.001	<0.001	0.1	<0.0005	180
21-May-15		0.0084	<0.0005	<0.001	0.016	<0.0005	1.5	<0.0001	470	<0.005	<0.001	<0.001	<0.1	<0.0005	170
4-Nov-15		<0.005	<0.0005	<0.001	0.016	<0.0005	1.7	<0.0001	450	<0.005	<0.001	<0.001	<0.1	<0.0005	170
13-Apr-16		<0.005	<0.0005	<0.001	0.015	<0.0005	1.6	<0.0001	420	<0.005	<0.001	<0.001	<0.1	<0.0005	160
7-Nov-16		0.005	<0.0005	<0.001	0.014	<0.0005	1.5	<0.0001	430	<0.005	<0.001	<0.001	<0.1	<0.0005	150

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameters		Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zirconium (Zr)	Zinc (Zn)
Units		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
ODWS (2003)[1]		[0.05] (A)	0.001 (H)	--	--	--	0.01 (H)	--	[200] (A)	--	--	--	--	0.02 (H)	--	--	[5] (A)
Background Range Shallow Wells		0.13 - 0.3	<0.0001 - <0.0001	<0.002 - 0.011	0.0021 - 0.03	3 - 7	<0.001 - <0.004	<0.0001 - <0.003	25 - 51	0.728 - 8.7	<0.00005 - <0.012	<0.001 - <0.01	<0.002 - <0.01	0.0022 - 0.03	0.00052 - 0.007	<0.001 - <0.005	<0.001 - 0.0051
Background Range Intermediate Wells		0.08 - 0.1	<0.0001 - <0.0001	0.01 - 0.023	<0.001 - 0.015	4 - 10	<0.001 - <0.01	<0.0001 - <0.003	120 - 166	9.8 - 11	<0.00005 - <0.012	<0.001 - <0.01	0.012 - 0.012	0.00016 - <0.002	<0.0005 - <0.002	<0.001 - <0.025	<0.001 - <0.025
Background Range Deep Wells		0.038 - 0.05	<0.0001 - <0.0001	0.0046 - <0.005	<0.002 - 0.007	6.7 - 11	<0.001 - <0.01	<0.0001 - <0.0001	64 - 78	8.77 - 11.3	<0.00005 - <0.0001	<0.001 - <0.01	<0.005 - <0.01	<0.0001 - 0.00018	<0.0005 - <0.001	<0.001 - <0.025	<0.001 - <0.025
MW25-I (West of Cell 1)																	
10-Apr-12		0.13	<0.0001	0.052	0.022	18	<0.01	<0.0001	131	14.2	<0.0001	<0.01	<0.01	0.002	<0.001	0.005	<0.01
29-Nov-12		0.12	<0.0001	0.052	0.014	8	<0.01	<0.0001	158	15.4	<0.0001	<0.01	<0.01	0.002	<0.001	<0.002	<0.01
17-May-13		0.11	<0.0001	0.034	0.014	6	<0.01	<0.0001	232	11.6	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
22-Nov-13		0.12	<0.0001	0.037	0.009	7	<0.01	<0.0001	231	10.8	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
2-Jun-14		0.17	<0.0001	0.043	<0.005	8	<0.001	<0.0001	224	11.5	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
11-Nov-14		0.13	<0.0001	0.033	<0.002	8.5	<0.002	<0.0001	230	12	<0.00005	<0.001	<0.005	<0.0005	<0.0005	<0.001	<0.025
4-Jun-15		0.054	<0.00010	0.043	<0.002	6	<0.002	<0.0001	270	11	<0.00005	<0.001	<0.005	0.0012	<0.0005	<0.025	<0.001
2-Dec-15		0.11	<0.00010	0.036	0.0022	5.3	<0.002	<0.0001	250	11	<0.00005	<0.001	<0.005	0.001	<0.0005	<0.001	<0.025
10-May-16		0.065	<0.0001	0.04	0.0024	6.2	<0.002	<0.0001	250	10	<0.00005	<0.001	<0.005	0.0015	<0.0005	<0.001	<0.025
6-Dec-16		0.024	<0.0001	0.041	<0.002	4.8	<0.002	<0.0001	290	11	<0.00005	<0.001	<0.005	0.0021	<0.0005	<0.001	<0.025
MW26-S (North of Cell 2)																	
17-Apr-12		0.97		<0.005	0.015		<0.001	<0.0001		4.75	<0.0001	<0.01	<0.01	0.02	<0.001	<0.002	0.01
8-May-13		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12-Nov-13		0.05	<0.0001	<0.005	0.008	4	<0.01	<0.0001	39	3	<0.0001	<0.01	<0.01	0.014	0.003	0.003	<0.01
5-May-14		<0.01	<0.0001	<0.005	<0.005	5	<0.001	<0.0001	23	4.56	<0.0001	<0.01	<0.01	0.022	<0.001	<0.002	<0.01
12-Nov-14		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
21-May-15		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nov-15		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8-Apr-16		<0.002	<0.0001	0.0011	0.0049	4.1	<0.002	<0.0001	24	4.9	<0.00005	<0.001	<0.005	0.03	<0.0005	<0.001	<0.01
7-Nov-16		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW26-I (North of Cell 2)																	
10-Apr-12		0.23	<0.0001	0.027	0.016	7	<0.01	<0.0001	142	10.6	<0.0001	<0.01	<0.01	0.001	<0.001	0.008	<0.01
10-Apr-12	(duplicate)	0.18	<0.0001	0.036	0.008	7	<0.01	<0.0001	157	9.62	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
4-Dec-12		0.25	<0.0001	0.027	0.0130	7	<0.01	<0.0001	139	10	<0.0001	<0.01	<0.01	0.001	<0.001	0.003	<0.01
21-May-13		0.14	<0.0001	0.037	0.0080	7	<0.01	<0.0001	170	11.2	<0.0001	<0.01	<0.01	<0.001	<0.001	0.004	<0.01
13-Nov-13		0.14	<0.0001	0.038	0.0140	4	<0.01	<0.0001	173	11.3	<0.0001	<0.01	<0.01	0.001	<0.001	<0.002	<0.01
2-Jun-14		0.16	<0.0001	0.039	<0.005	4	<0.001	<0.0001	174	13.1	<0.0001	<0.01	<0.01	0.001	<0.001	<0.002	<0.01
11-Nov-14		0.063	<0.0001	0.033	<0.002	3.5	<0.002	<0.0001	170	11	<0.00005	<0.001	<0.005	0.0011	<0.0005	<0.001	<0.025
21-May-15		0.02	<0.00010	0.031	<0.002	3.9	<0.002	<0.0001	180	10	<0.00005	<0.001	<0.005	0.0012	<0.0005	<0.025	<0.001
4-Nov-15		0.015	<0.00010	0.029	<0.002	3.6	<0.002	<0.0001	160	11	<0.00005	<0.001	<0.005	0.0012	<0.0005	<0.001	<0.025
13-Apr-16		0.011	<0.0001	0.026	<0.002	3.2	<0.002	<0.0001	160	12	<0.00005	<0.001	<0.005	0.0012	<0.0005	<0.001	<0.025
7-Nov-16		0.0079	<0.0001	0.025	<0.002	3.2	<0.002	<0.0001	150	11	<0.00005	<0.001	<0.005	0.0012	<0.0005	<0.001	<0.025

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Magnesium (Mg)
Units		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
ODWS (2003)[1]		< 0.1 > (A)	{0.006} (H)	{0.025} (H)	1 (H)	--	{5} (H)	0.005 (H)	--	0.05 (H)	--	[1] (A)	[0.3] (A)	0.01 (H)	--
Background Range Shallow Wells		<0.01 - 0	<0.0005 - <0.0005	<0.001 - <0.01	0.09 - 0.17	<0.0005 - <0.0005	0.06 - 0.89	<0.0001 - <0.0001	137 - 180	<0.001 - 0.004	<0.0005 - 0.0021	0.001 - 0.0018	<0.01 - 2.94	<0.0005 - <0.016	45 - 56
Background Range Intermediate Wells		<0.005 - 0.28	<0.0005 - <0.006	0.0012 - 0.002	0.0096 - 0.02	<0.0005 - <0.003	0.86 - 1	<0.0001 - <0.005	470 - 520	<0.001 - <0.006	<0.0002 - <0.003	<0.001 - 0.002	0.07 - 0.93	<0.0005 - <0.016	120 - 143
Background Range Deep Wells		<0.005 - <0.01	<0.0005 - <0.0005	<0.001 - <0.01	0.0066 - <0.01	<0.0005 - <0.0005	1.1 - 1.4	<0.0001 - <0.0001	510 - 578	<0.001 - <0.005	<0.0002 - <0.001	<0.001 - <0.001	0.33 - 0.59	<0.0005 - <0.001	90 - 106
MW27-S (North of Cell 2)															
4-Apr-12		<0.01	<0.0005	<0.001	0.05	<0.0005	0.18	<0.0001	155	0.001	0.0003	<0.001	<0.03	<0.001	78
21-Nov-12		<0.01	<0.0005	<0.001	0.04	<0.0005	0.19	<0.0001	170	<0.001	0.0003	<0.001	<0.03	<0.001	82
17-May-13		0.04	<0.0005	<0.001	0.04	<0.0005	0.16	<0.0001	198	0.002	0.0002	<0.001	0.05	<0.001	97
18-Nov-13		<0.01	<0.0005	<0.001	0.04	<0.0005	0.22	<0.0001	168	<0.001	<0.0002	<0.001	<0.03	<0.001	98
26-May-14		<0.01	<0.0005	<0.001	0.04	<0.005	0.2	<0.0001	187	<0.001	<0.0002	<0.001	0.03	<0.001	97
21-Oct-14		<0.005	<0.0005	<0.001	0.036	<0.0005	0.2	<0.0001	180	<0.005	<0.0005	<0.001	0.1	<0.0005	96
6-May-15		<0.005	<0.0005	<0.001	0.031	<0.0005	0.14	<0.0001	190	<0.005	<0.0005	<0.001	<0.1	<0.0005	95
10-Nov-15		<0.005	<0.0005	<0.001	0.043	<0.0005	0.2	<0.0001	170	<0.005	<0.0005	<0.001	<0.1	<0.0005	64
13-Apr-16		<0.005	<0.0005	<0.001	0.029	<0.0005	0.18	<0.0001	190	<0.005	0.0005	0.0014	<0.1	<0.0005	99
7-Dec-16		0.11	<0.0005	<0.001	0.031	<0.0005	0.22	<0.0001	180	<0.005	0.0005	<0.001	0.14	<0.0005	88
MW27-I (North of Cell 2)															
4-Dec-12		<0.01	<0.0005	<0.001	0.01	<0.0005	0.96	<0.0001	491	<0.001	0.0007	0.001	<0.03	<0.001	238
21-May-13		<0.01	<0.0005	<0.001	0.01	<0.0005	1.3	<0.0001	341	<0.001	0.0006	0.002	0.12	<0.001	138
22-Nov-13		<0.01	0.0009	<0.01	0.01	<0.0005	1.4	<0.0001	272	<0.001	0.0006	0.003	<0.03	<0.001	79
29-May-14		<0.01	<0.0005	<0.001	0.02	<0.005	1.6	<0.0001	322	<0.001	0.0003	<0.001	0.08	<0.001	98
11-Nov-14		<0.005	<0.0005	<0.001	0.016	<0.0005	1.4	<0.0001	400	<0.005	<0.001	<0.001	0.1	<0.0005	120
21-May-15		0.0065	<0.0005	<0.001	0.011	<0.0005	1.3	<0.0001	500	<0.005	<0.001	<0.001	<0.1	<0.0005	170
2-Dec-15		0.0082	<0.0005	<0.001	0.019	<0.0005	1.4	<0.0001	450	<0.005	<0.001	<0.001	<0.1	<0.0005	140
13-Apr-16		<0.005	<0.0005	<0.001	0.013	<0.0005	1.3	<0.0001	480	<0.005	<0.001	<0.001	<0.1	<0.0005	160
7-Dec-16		0.014	<0.0005	<0.001	0.011	<0.0005	1.4	<0.0001	490	<0.005	<0.001	<0.001	<0.1	<0.0005	150
MW27-D (North of Cell 2)															
5-Apr-12		<0.01	<0.0005	<0.01	<0.01	<0.0005	1.8	<0.0001	637	<0.001	0.0005	<0.001	0.72	<0.001	126
5-Apr-12	(duplicate)	<0.01	<0.0005	<0.001	<0.01	<0.0005	1.7	<0.0001	490	<0.001	0.0006	<0.001	0.49	<0.001	117
21-Nov-12		<0.01	<0.0005	<0.01	<0.01	<0.0005	1.7	<0.0001	602	<0.001	0.0005	<0.001	0.65	<0.001	118
21-Nov-12	(duplicate)	<0.01	<0.0005	<0.001	<0.01	<0.0005	1.7	<0.0001	493	<0.001	0.0005	<0.001	0.48	<0.001	117
17-May-13		<0.01	<0.0005	<0.001	<0.01	<0.0005	1.8	<0.0001	583	<0.001	0.0005	<0.001	0.43	<0.001	141
17-May-13	(duplicate)	<0.01	<0.0005	<0.001	<0.01	<0.0005	2	<0.0001	576	<0.001	0.0005	<0.001	0.43	<0.001	126
18-Nov-13		<0.01	<0.0005	<0.001	<0.01	<0.0005	1.9	<0.0001	598	<0.001	0.0004	<0.001	0.5	<0.001	129
18-Nov-13	(duplicate)	<0.01	<0.0005	<0.001	<0.01	<0.0005	1.9	<0.0001	488	<0.001	0.0004	<0.001	0.5	<0.001	124
26-May-14		<0.01	<0.0005	<0.001	<0.01	<0.005	1.86	<0.0001	566	<0.001	<0.0002	<0.001	0.54	<0.001	136
21-Oct-14		<0.005	<0.0005	<0.001	0.004	<0.0005	2	<0.0001	500	<0.005	<0.001	<0.001	0.44	<0.0005	130
22-Apr-15		<0.005	<0.0005	<0.001	0.0039	<0.0005	1.9	<0.0001	480	<0.005	<0.001	<0.001	0.47	<0.0005	120
22-Apr-15	(duplicate)	<0.005	<0.0005	<0.001	0.0039	<0.0005	1.8	<0.0001	490	<0.005	<0.001	<0.001	0.47	<0.0005	120
17-Nov-15		<0.005	<0.0005	<0.001	0.004	<0.0005	1.8	<0.0001	500	<0.005	<0.001	<0.001	0.42	<0.0005	120
17-Nov-15	(duplicate)	<0.005	<0.0005	<0.001	0.004	<0.0005	1.7	<0.0001	500	<0.005	<0.001	<0.001	0.47	<0.0005	120
13-Apr-16		<0.005	<0.0005	<0.001	0.0039	<0.0005	1.8	<0.0001	510	<0.005	<0.001	<0.001	0.45	<0.0005	120
13-Apr-16	(duplicate)	<0.005	<0.0005	<0.001	0.0054	<0.0005	1.6	<0.0001	550	<0.005	<0.001	<0.001	0.51	<0.0005	120
7-Dec-16		<0.005	<0.0005	<0.001	0.004	<0.0005	2	<0.0001	520	<0.005	<0.001	<0.001	0.45	<0.0005	120
7-Dec-16	(duplicate)	<0.005	<0.0005	<0.001	0.0037	<0.0005	1.9	<0.0001	540	<0.005	<0.001	<0.001	0.48	<0.0005	120

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameters		Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zirconium (Zr)	Zinc (Zn)
Units		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
ODWS (2003)[1]		[0.05] (A)	0.001 (H)	--	--	--	0.01 (H)	--	[200] (A)	--	--	--	--	0.02 (H)	--	--	[5] (A)
Background Range Shallow Wells		0.13 - 0.3	<0.0001 - <0.0001	<0.002 - 0.011	0.0021 - 0.03	3 - 7	<0.001 - <0.004	<0.0001 - <0.003	25 - 51	0.728 - 8.7	<0.00005 - <0.012	<0.001 - <0.01	<0.002 - <0.01	0.0022 - 0.03	0.00052 - 0.007	<0.001 - <0.005	<0.001 - 0.0051
Background Range Intermediate Wells		0.08 - 0.1	<0.0001 - <0.0001	0.01 - 0.023	<0.001 - 0.015	4 - 10	<0.001 - <0.01	<0.0001 - <0.003	120 - 166	9.8 - 11	<0.00005 - <0.012	<0.001 - <0.01	0.012 - 0.012	0.00016 - <0.002	<0.0005 - <0.002	<0.001 - <0.025	<0.001 - <0.025
Background Range Deep Wells		0.038 - 0.05	<0.0001 - <0.0001	0.0046 - <0.005	<0.002 - 0.007	6.7 - 11	<0.001 - <0.01	<0.0001 - <0.0001	64 - 78	8.77 - 11.3	<0.00005 - <0.0001	<0.001 - <0.01	<0.005 - <0.01	<0.0001 - 0.00018	<0.0005 - <0.001	<0.001 - <0.025	<0.001 - <0.025
MW27-S (North of Cell 2)																	
4-Apr-12		0.09	<0.0001	<0.005	<0.005	1	<0.01	<0.0001	25	1.97	<0.0001	<0.01	<0.01	0.006	0.004	<0.002	<0.01
21-Nov-12		0.08	<0.0001	<0.005	<0.005	1	<0.001	<0.0001	28	1.99	<0.0001	<0.01	<0.01	0.005	0.002	<0.002	<0.01
17-May-13		0.02	<0.0001	<0.005	<0.005	1	<0.001	<0.0001	33	2.18	<0.0001	<0.01	<0.01	0.006	0.002	<0.002	<0.01
18-Nov-13		0.06	<0.0001	<0.005	<0.005	2	<0.001	<0.0001	34	2.03	<0.0001	<0.01	<0.01	0.006	0.002	<0.002	<0.01
26-May-14		0.06	<0.0001	<0.005	<0.005	1	<0.001	<0.0001	33	2.62	<0.0001	<0.01	<0.01	0.006	<0.001	<0.002	<0.01
21-Oct-14		0.039	<0.0001	0.0015	<0.001	1.5	<0.002	<0.0001	36	2.3	<0.00005	<0.001	<0.005	0.0065	0.00059	<0.001	<0.005
6-May-15		0.015	<0.00010	0.00092	<0.001	1.1	<0.002	<0.0001	36	2.1	<0.00005	<0.001	<0.005	0.0074	0.00053	<0.005	<0.001
10-Nov-15		0.11	<0.00010	0.0013	0.0011	1.4	<0.002	<0.0001	27	2	<0.00005	<0.001	<0.005	0.0027	<0.0005	<0.001	<0.005
13-Apr-16		0.014	<0.0001	0.00088	<0.002	1.2	<0.002	<0.0001	36	2.3	<0.00005	<0.001	0.0054	0.0072	<0.0005	<0.001	<0.005
7-Dec-16		0.059	<0.0001	0.0012	<0.002	1.3	<0.002	<0.0001	33	2.2	<0.00005	<0.001	0.0059	0.0066	0.00059	<0.001	<0.005
MW27-I (North of Cell 2)																	
4-Dec-12		0.08	<0.0001	0.006	0.014	19	<0.01	<0.0001	111	12.1	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
21-May-13		0.1	<0.0001	0.019	0.007	12	<0.001	<0.0001	394	11.6	<0.0001	<0.01	<0.01	<0.001	<0.001	0.004	<0.01
22-Nov-13		0.08	<0.0001	0.038	<0.005	6	<0.001	<0.0001	506	6.62	<0.0001	<0.01	<0.01	0.004	<0.001	0.01	<0.01
29-May-14		0.08	<0.0001	0.025	<0.005	6	<0.001	<0.0001	447	8	<0.0001	<0.01	<0.01	0.003	<0.001	<0.002	<0.01
11-Nov-14		0.11	<0.0001	0.022	<0.002	6.9	<0.002	<0.0001	260	9.7	<0.00005	<0.001	<0.005	0.0023	<0.0005	<0.001	<0.025
21-May-15		0.11	<0.00010	0.0069	<0.002	13	<0.002	<0.0001	110	10	<0.00005	<0.001	<0.005	0.00023	<0.0005	<0.025	<0.001
2-Dec-15		0.12	<0.00010	0.014	0.0036	9.1	<0.002	<0.0001	170	10	<0.00005	<0.001	<0.005	0.0019	<0.0005	<0.001	<0.025
13-Apr-16		0.12	<0.0001	0.0087	<0.002	11	<0.002	<0.0001	120	12	<0.00005	<0.001	<0.005	0.00073	<0.0005	<0.001	<0.025
7-Dec-16		0.051	<0.0001	0.0065	<0.002	11	<0.002	<0.0001	100	11	<0.00005	<0.001	<0.005	0.00051	<0.0005	<0.001	<0.025
MW27-D (North of Cell 2)																	
5-Apr-12		0.03	<0.0001	<0.005	0.007	18	<0.001	<0.0001	86	10.5	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
5-Apr-12	(duplicate)	0.04	<0.0001	<0.005	0.011	14	<0.01	<0.0001	82	9.94	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
21-Nov-12		0.03	<0.0001	<0.005	0.008	17	<0.001	<0.0001	80	10.5	<0.0001	<0.01	<0.01	<0.001	<0.001	0.002	<0.01
21-Nov-12	(duplicate)	0.04	<0.0001	<0.005	0.0100	15	<0.01	<0.0001	83	8.97	<0.0001	<0.01	<0.01	<0.001	<0.001	0.005	<0.01
17-May-13		0.03	<0.0001	<0.005	0.0100	18	<0.01	<0.0001	103	10.4	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
17-May-13	(duplicate)	0.03	<0.0001	<0.005	0.0080	16	<0.01	<0.0001	92	10.5	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
18-Nov-13		0.03	<0.0001	<0.005	0.0070	16	<0.001	<0.0001	89	9.24	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
18-Nov-13	(duplicate)	0.03	<0.0001	<0.005	0.0070	16	<0.001	<0.0001	87	9.22	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
26-May-14		0.04	<0.0001	<0.005	<0.005	16	<0.001	<0.0001	85	13.2	<0.0001	<0.01	<0.01	<0.001	<0.001	0.003	<0.01
21-Oct-14		0.03	<0.0001	0.0017	<0.002	15	<0.002	<0.0001	83	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
22-Apr-15		0.034	<0.00010	0.0018	<0.002	16	<0.002	<0.0001	86	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.025	<0.001
22-Apr-15	(duplicate)	0.034	<0.00010	0.0019	<0.002	15	<0.002	<0.0001	84	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.025	<0.001
17-Nov-15		0.03	<0.00010	0.0016	<0.002	17	<0.002	<0.0001	81	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
17-Nov-15	(duplicate)	0.034	<0.00010	0.0018	<0.002	16	<0.002	<0.0001	80	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
13-Apr-16		0.031	<0.0001	0.0017	<0.002	17	<0.002	<0.0001	81	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
13-Apr-16	(duplicate)	0.039	<0.0001	0.0022	<0.002	14	<0.002	<0.0001	83	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
7-Dec-16		0.033	<0.0001	0.002	<0.002	17	<0.002	<0.0001	81	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
7-Dec-16	(duplicate)	0.033	<0.0001	0.0021	<0.002	15	<0.002	<0.0001	82	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Magnesium (Mg)
Units		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
ODWS (2003)[1]		< 0.1 > (A)	{0.006} (H)	{0.025} (H)	1 (H)	--	{5} (H)	0.005 (H)	--	0.05 (H)	--	[1] (A)	[0.3] (A)	0.01 (H)	--
Background Range Shallow Wells		<0.01 - 0	<0.0005 - <0.0005	<0.001 - <0.01	0.09 - 0.17	<0.0005 - <0.0005	0.06 - 0.89	<0.0001 - <0.0001	137 - 180	<0.001 - 0.004	<0.0005 - 0.0021	0.001 - 0.0018	<0.01 - 2.94	<0.0005 - <0.016	45 - 56
Background Range Intermediate Wells		<0.005 - 0.28	<0.0005 - <0.006	0.0012 - 0.002	0.0096 - 0.02	<0.0005 - <0.003	0.86 - 1	<0.0001 - <0.005	470 - 520	<0.001 - <0.006	<0.0002 - <0.003	<0.001 - 0.002	0.07 - 0.93	<0.0005 - <0.016	120 - 143
Background Range Deep Wells		<0.005 - <0.01	<0.0005 - <0.0005	<0.001 - <0.01	0.0066 - <0.01	<0.0005 - <0.0005	1.1 - 1.4	<0.0001 - <0.0001	510 - 578	<0.001 - <0.005	<0.0002 - <0.001	<0.001 - <0.001	0.33 - 0.59	<0.0005 - <0.001	90 - 106
MW28-S (West of Cell 2)															
4-Apr-12		<0.01	<0.0005	<0.001	0.04	<0.0005	0.05	<0.0001	141	0.001	0.0003	<0.001	<0.03	<0.001	49
21-Nov-12		<0.01	<0.0005	<0.001	0.05	<0.0005	0.16	<0.0001	181	<0.001	0.0004	0.001	<0.03	<0.001	61
16-May-13		<0.01	<0.0005	<0.001	0.04	<0.0005	0.08	<0.0001	176	0.002	0.0002	<0.001	<0.03	<0.001	59
18-Nov-13		<0.01	<0.0005	<0.001	0.04	<0.0005	0.07	<0.0001	166	<0.001	0.0002	<0.001	<0.03	<0.001	51
21-May-14		<0.01	<0.0005	<0.001	0.03	<0.005	0.08	<0.0001	167	<0.001	<0.0002	<0.001	0.03	<0.001	50
5-Nov-14		<0.005	<0.0005	<0.001	0.045	<0.0005	0.41	<0.0001	210	<0.005	0.0007	<0.001	0.1	<0.0005	76
6-May-15		<0.005	<0.0005	<0.001	0.033	<0.0005	0.059	<0.0001	130	<0.005	<0.0005	0.0012	<0.1	<0.0005	41
10-Nov-15		<0.005	<0.0005	<0.001	0.034	<0.0005	0.13	<0.0001	190	<0.005	<0.0005	<0.001	<0.1	<0.0005	89
14-Apr-16		<0.005	<0.0005	<0.001	0.031	<0.0005	0.037	<0.0001	130	<0.005	0.0005	<0.001	<0.1	<0.0005	38
30-Dec-16		0.0053	<0.0005	<0.001	0.035	<0.0005	0.64	<0.0001	210	<0.005	0.0015	0.0058	<0.1	<0.0005	85
MW28-I (West of Cell 2)															
4-Apr-12		<0.01	<0.0005	<0.01	<0.01	<0.0005	1	<0.0001	508	<0.001	0.0007	<0.001	0.86	<0.001	105
21-Nov-12		<0.01	<0.0005	<0.001	<0.01	<0.0005	1.1	<0.0001	531	<0.001	0.0005	<0.001	0.87	<0.001	109
16-May-13		<0.01	<0.0005	<0.001	<0.01	<0.0005	1	<0.0001	544	<0.001	0.0005	<0.001	0.82	<0.001	135
16-May-13	(duplicate)	<0.01	<0.0005	<0.001	<0.01	<0.0005	0.96	<0.0001	542	<0.001	0.0005	<0.001	0.76	<0.001	122
18-Nov-13		<0.01	<0.0005	<0.001	<0.01	<0.0005	1.1	<0.0001	559	<0.001	0.0005	<0.001	0.89	<0.001	119
21-May-14		<0.01	<0.0005	<0.001	<0.01	<0.005	1.23	<0.0001	589	<0.001	<0.0002	<0.001	1.02	<0.001	132
5-Nov-14		<0.005	<0.0005	<0.001	0.006	<0.005	1.1	<0.0001	500	<0.005	<0.001	<0.001	0.88	<0.0005	120
5-Nov-14	(duplicate)	<0.005	<0.0005	<0.001	0.006	<0.0005	1.1	<0.0001	500	<0.005	<0.001	<0.001	0.9	<0.0005	120
6-May-15		<0.005	<0.0005	<0.001	0.0055	<0.0005	1.1	<0.0001	480	<0.005	<0.001	<0.001	0.83	<0.0005	110
17-Nov-15		<0.005	<0.0005	<0.001	0.0054	<0.0005	1	<0.0001	480	<0.005	<0.001	<0.001	0.84	<0.0005	110
14-Apr-16		<0.005	0.0012	<0.001	0.0059	<0.0005	1.1	<0.0001	510	<0.005	<0.001	<0.001	0.79	<0.0005	110
26-Dec-16		<0.005	<0.0005	<0.001	0.0054	<0.0005	1.1	<0.0001	520	<0.005	<0.001	<0.001	0.84	<0.0005	110
MW6-99S (West of Cell 2)															
9-Apr-12		<0.01	<0.0005	<0.01	0.02	<0.0005	3.8	<0.0001	262	<0.001	0.0004	0.003	0.1	<0.001	119
29-Nov-12		<0.01	<0.0005	<0.01	0.01	<0.0005	4.2	<0.0001	354	0.001	0.0008	0.004	0.31	<0.001	102
17-May-13		<0.01	<0.0005	<0.01	0.01	<0.0005	5.2	<0.0001	337	<0.001	0.0004	0.002	<0.03	<0.001	132
22-Nov-13		<0.01	<0.0005	<0.01	0.02	<0.0005	3.2	<0.0001	353	<0.001	0.0003	0.002	0.24	<0.001	135
29-May-14		<0.01	<0.0005	0.005	0.01	<0.0005	4.1	<0.0001	371	<0.001	<0.0002	<0.001	0.24	<0.001	131
12-Nov-14		<0.005	<0.0005	0.0032	0.012	<0.0005	2.7	<0.0001	350	<0.005	<0.001	<0.001	0.15	<0.0005	140
29-May-15		<0.005	<0.0005	0.0019	0.01	<0.0005	2.2	<0.0001	340	<0.005	<0.001	<0.001	<0.1	<0.0005	130
2-Dec-15		<0.005	<0.0005	0.0055	0.012	<0.0005	3.9	<0.0001	320	<0.005	<0.001	<0.001	0.12	<0.0005	120
18-Apr-16		<0.005	<0.0005	0.0032	0.012	<0.0005	3	<0.0001	370	<0.005	<0.001	<0.001	0.19	<0.0005	140
6-Dec-16		<0.005	<0.0005	<0.001	0.0069	<0.0005	2	<0.0001	500	<0.005	<0.001	<0.001	0.64	<0.0005	120

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameters		Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zirconium (Zr)	Zinc (Zn)
Units		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
ODWS (2003)[1]		[0.05] (A)	0.001 (H)	--	--	--	0.01 (H)	--	[200] (A)	--	--	--	--	0.02 (H)	--	--	[5] (A)
Background Range Shallow Wells		0.13 - 0.3	<0.0001 - <0.0001	<0.002 - 0.011	0.0021 - 0.03	3 - 7	<0.001 - <0.004	<0.0001 - <0.003	25 - 51	0.728 - 8.7	<0.00005 - <0.012	<0.001 - <0.01	<0.002 - <0.01	0.0022 - 0.03	0.00052 - 0.007	<0.001 - <0.005	<0.001 - 0.0051
Background Range Intermediate Wells		0.08 - 0.1	<0.0001 - <0.0001	0.01 - 0.023	<0.001 - 0.015	4 - 10	<0.001 - <0.01	<0.0001 - <0.003	120 - 166	9.8 - 11	<0.00005 - <0.012	<0.001 - <0.01	0.012 - 0.012	0.00016 - <0.002	<0.0005 - <0.002	<0.001 - <0.025	<0.001 - <0.025
Background Range Deep Wells		0.038 - 0.05	<0.0001 - <0.0001	0.0046 - <0.005	<0.002 - 0.007	6.7 - 11	<0.001 - <0.01	<0.0001 - <0.0001	64 - 78	8.77 - 11.3	<0.00005 - <0.0001	<0.001 - <0.01	<0.005 - <0.01	<0.0001 - 0.00018	<0.0005 - <0.001	<0.001 - <0.025	<0.001 - <0.025
MW28-S (West of Cell 2)																	
4-Apr-12		0.03	<0.0001	<0.005	<0.005	<1	<0.001	<0.0001	24	0.786	<0.0001	<0.01	<0.01	0.003	0.003	<0.002	<0.01
21-Nov-12		0.09	<0.0001	<0.005	<0.005	2	<0.001	<0.0001	26	1.48	<0.0001	<0.01	<0.01	0.003	0.003	<0.002	<0.01
16-May-13		0.02	<0.0001	<0.005	<0.005	1	<0.001	<0.0001	19	0.947	<0.0001	<0.01	<0.01	0.002	0.003	<0.002	<0.01
18-Nov-13		0.03	<0.0001	<0.005	<0.005	<1	<0.001	<0.0001	24	0.754	<0.0001	<0.01	<0.01	0.002	0.002	<0.002	<0.01
21-May-14		0.06	<0.0001	<0.005	<0.005	1	<0.001	<0.0001	19	0.549	<0.0001	<0.01	<0.01	0.002	<0.001	<0.002	<0.01
5-Nov-14		0.55	<0.0001	0.0021	<0.002	1.7	<0.002	<0.0001	39	3.5	<0.00005	<0.001	<0.005	0.0022	<0.0005	<0.001	<0.005
6-May-15		0.003	<0.00010	0.00077	<0.001	0.72	<0.002	<0.0001	16	0.6	<0.00005	<0.001	<0.005	0.0034	<0.0005	<0.005	<0.001
10-Nov-15		0.0073	<0.00010	0.0012	<0.001	1.2	<0.002	<0.0001	45	1.9	<0.00005	<0.001	<0.005	0.0072	0.0005	<0.001	<0.005
14-Apr-16		0.022	<0.0001	<0.0005	<0.001	0.35	<0.002	<0.0001	15	0.48	<0.00005	<0.001	<0.005	0.002	<0.0005	<0.001	<0.005
30-Dec-16		0.71	<0.0001	0.0034	0.0035	2	<0.002	<0.0001	48	4.6	<0.00005	<0.001	<0.005	0.0016	<0.0005	<0.001	<0.005
MW28-I (West of Cell 2)																	
4-Apr-12		0.06	<0.0001	<0.005	0.009	9	<0.01	<0.0001	68	11.2	<0.0001	<0.01	<0.01	<0.001	<0.001	0.002	<0.01
21-Nov-12		0.06	<0.0001	<0.005	0.01	9	<0.01	<0.0001	82	9.28	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
16-May-13		0.05	<0.0001	<0.005	0.009	11	<0.1	<0.0001	98	10.6	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
16-May-13	(duplicate)	0.05	<0.0001	<0.005	0.01	10	<0.01	<0.0001	90	9.97	<0.0001	<0.01	<0.01	<0.001	<0.001	0.003	<0.01
18-Nov-13		0.06	<0.0001	<0.005	0.007	10	<0.001	<0.0001	86	9.66	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
21-May-14		0.07	<0.0001	<0.005	<0.005	7	<0.001	<0.0001	86	11.1	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
5-Nov-14		0.058	<0.0001	0.0037	<0.005	8.5	<0.002	0.00013	79	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
5-Nov-14	(duplicate)	0.058	<0.0001	0.004	<0.002	8.6	<0.002	<0.0001	79	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
6-May-15		0.057	<0.00010	0.0041	<0.002	9.1	<0.002	<0.0001	76	9.9	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.025	<0.001
17-Nov-15		0.055	<0.00010	0.0038	<0.002	9	<0.002	<0.0001	77	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
14-Apr-16		0.053	<0.0001	0.0038	<0.002	9	<0.002	<0.0001	76	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
26-Dec-16		0.051	<0.0001	0.0037	<0.002	9.2	<0.002	<0.0001	78	9.6	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
MW6-99S (West of Cell 2)																	
9-Apr-12		0.13	<0.0001	0.051	0.01	4	<0.01	<0.0001	270	7.58	<0.0001	<0.01	<0.01	0.003	<0.001	<0.002	<0.01
29-Nov-12		0.26	<0.0001	0.042	0.012	3	<0.01	<0.0001	229	6.77	<0.0001	<0.01	<0.01	0.002	<0.001	<0.002	<0.01
17-May-13		0.09	<0.0001	0.041	0.008	4	<0.01	<0.0001	296	7.46	<0.0001	<0.01	<0.01	0.003	<0.001	<0.002	<0.01
22-Nov-13		0.41	<0.0001	0.016	<0.005	4	<0.1	<0.0001	244	8.85	<0.0001	<0.01	<0.01	0.001	<0.001	0.003	<0.01
29-May-14		0.32	<0.0001	0.022	<0.005	2	<0.001	<0.0001	276	8.57	<0.0001	<0.01	<0.01	0.001	<0.001	0.002	<0.01
12-Nov-14		0.32	<0.0001	0.026	<0.002	2.8	<0.002	<0.0001	250	8.5	<0.00005	<0.001	<0.005	0.0009	<0.0005	<0.001	<0.025
29-May-15		0.27	<0.00010	0.022	<0.002	2.7	<0.002	<0.0001	250	7.7	<0.00005	<0.001	<0.005	0.00049	<0.0005	<0.01	<0.001
2-Dec-15		0.25	<0.00010	0.0067	<0.002	3.4	<0.002	<0.0001	220	7.8	<0.00005	<0.001	<0.005	0.0018	<0.0005	<0.001	<0.01
18-Apr-16		0.27	<0.0001	0.028	<0.002	3.1	<0.002	<0.0001	240	7.8	<0.00005	<0.001	<0.005	0.0012	<0.0005	<0.001	<0.025
6-Dec-16		0.041	<0.0001	0.0006	<0.002	12	<0.002	<0.0001	100	9.7	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameters		Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Magnesium (Mg)
Units		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
ODWS (2003)[1]		< 0.1 > (A)	{0.006} (H)	{0.025} (H)	1 (H)	--	{5} (H)	0.005 (H)	--	0.05 (H)	--	[1] (A)	[0.3] (A)	0.01 (H)	--
Background Range Shallow Wells		<0.01 - 0	<0.0005 - <0.0005	<0.001 - <0.01	0.09 - 0.17	<0.0005 - <0.0005	0.06 - 0.89	<0.0001 - <0.0001	137 - 180	<0.001 - 0.004	<0.0005 - 0.0021	0.001 - 0.0018	<0.01 - 2.94	<0.0005 - <0.016	45 - 56
Background Range Intermediate Wells		<0.005 - 0.28	<0.0005 - <0.006	0.0012 - 0.002	0.0096 - 0.02	<0.0005 - <0.003	0.86 - 1	<0.0001 - <0.005	470 - 520	<0.001 - <0.006	<0.0002 - <0.003	<0.001 - 0.002	0.07 - 0.93	<0.0005 - <0.016	120 - 143
Background Range Deep Wells		<0.005 - <0.01	<0.0005 - <0.0005	<0.001 - <0.01	0.0066 - <0.01	<0.0005 - <0.0005	1.1 - 1.4	<0.0001 - <0.0001	510 - 578	<0.001 - <0.005	<0.0002 - <0.001	<0.001 - <0.001	0.33 - 0.59	<0.0005 - <0.001	90 - 106
MW6-99I (West of Cell 2)															
9-Apr-12		<0.01	0.0008	<0.001	0.03	<0.0005	3.8	<0.0001	257	<0.001	0.0002	0.001	<0.03	<0.001	88
29-Nov-12		<0.01	<0.0005	<0.001	0.03	<0.0005	14	<0.0001	385	0.002	0.0009	0.003	0.16	<0.001	93
17-May-13		<0.01	<0.0005	<0.01	0.03	<0.0005	8.8	<0.0001	353	0.001	0.0005	0.001	2.22	<0.001	96
22-Nov-13		<0.01	<0.0005	<0.001	0.03	<0.0005	6.6	<0.0001	347	0.001	0.0004	<0.001	1.64	<0.001	86
29-May-14		<0.01	<0.0005	<0.001	0.02	<0.0005	3.2	<0.0001	230	<0.001	<0.0002	<0.001	0.33	<0.001	67
29-May-14	(duplicate)	<0.005	<0.0005	<0.001	0.02	<0.0005	3.7	<0.0001	334	<0.001	<0.0002	<0.001	0.03	<0.0005	85
12-Nov-14		<0.005	<0.0005	<0.001	0.023	<0.0005	6.8	<0.0001	490	<0.005	<0.001	<0.001	0.73	<0.0005	110
21-May-15		0.0066	<0.0005	<0.001	0.019	<0.0005	5.3	<0.0001	320	<0.005	<0.001	<0.001	0.32	<0.0005	92
21-May-15	(duplicate)	0.0062	<0.0005	<0.001	0.019	<0.0005	6.1	<0.0001	390	<0.005	<0.001	<0.001	<0.1	<0.0005	99
2-Dec-15		<0.005	<0.0005	<0.001	0.02	<0.0005	5	<0.0001	310	<0.005	<0.001	<0.001	0.23	<0.0005	89
18-Apr-16		<0.005	<0.0005	<0.001	0.016	<0.0005	7.5	<0.0001	350	<0.005	<0.001	<0.001	<0.1	<0.0005	96
6-Dec-16		<0.025	<0.0005	<0.001	0.012	<0.0025	4.5	<0.0005	290	<0.005	0.0025	<0.001	<0.5	<0.0005	120
MW6-99D (West of Cell 2)															
5-Apr-12		0.06	<0.0005	<0.001	<0.01	<0.0005	1.8	<0.0001	572	<0.001	0.0004	<0.001	0.56	<0.001	129
27-Nov-12		<0.01	<0.0005	<0.001	<0.01	<0.0005	2	<0.0001	498	0.002	0.0009	0.001	0.56	<0.001	121
27-Nov-12	(duplicate)	<0.01	<0.0005	<0.001	<0.01	<0.0005	1.9	<0.0001	527	0.001	0.0007	0.001	0.51	<0.001	122
16-May-13		<0.01	<0.0005	<0.001	<0.01	<0.0005	2	<0.0001	539	<0.001	0.0006	<0.001	0.53	<0.001	150
21-Nov-13		<0.01	<0.0005	<0.001	<0.01	<0.0005	2	<0.0001	532	<0.001	0.0004	<0.001	0.56	<0.001	128
21-May-14		<0.01	<0.0005	<0.001	<0.01	<0.0005	2.5	<0.0001	563	<0.001	<0.0002	0.002	0.68	<0.001	140
6-Nov-14		<0.005	<0.0005	<0.001	0.007	<0.0005	2	<0.0001	500	<0.005	<0.001	<0.001	0.68	<0.0005	130
6-Nov-14	(duplicate)	<0.005	<0.0005	<0.001	0.008	<0.0005	2.1	<0.0001	500	<0.005	<0.001	<0.001	0.59	<0.0005	130
7-May-15		<0.005	<0.0005	<0.001	0.0064	<0.0005	2.1	<0.0001	500	<0.005	<0.001	<0.001	0.53	<0.0005	130
30-Nov-15		<0.005	<0.0005	<0.001	0.0073	<0.0005	1.9	<0.0001	570	<0.005	<0.001	<0.001	0.53	<0.0005	130
30-Nov-15	(duplicate)	<0.005	<0.0005	<0.001	0.0068	<0.0005	2	<0.0001	580	<0.005	<0.001	<0.001	0.60	<0.0005	130
18-Apr-16		<0.005	<0.0005	<0.001	0.0067	<0.0005	2	<0.0001	500	<0.005	<0.001	<0.001	0.53	<0.0005	130
18-Apr-16	(duplicate)	<0.005	<0.0005	<0.001	0.0071	<0.0005	1.9	<0.0001	490	<0.005	<0.001	<0.001	0.67	<0.0005	130
6-Dec-16		<0.005	<0.0005	<0.001	0.017	<0.0005	7.9	<0.0001	460	<0.005	<0.001	<0.001	2	<0.0005	130
6-Dec-16	(duplicate)	<0.005	<0.0005	<0.001	0.0069	<0.0005	1.9	<0.0001	520	<0.005	<0.001	<0.001	0.57	<0.0005	120

Table 2f Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameters		Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Potassium (K)	Selenium (Se)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zirconium (Zr)	Zinc (Zn)
Units		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
ODWS (2003)[1]		[0.05] (A)	0.001 (H)	--	--	--	0.01 (H)	--	[200] (A)	--	--	--	--	0.02 (H)	--	--	[5] (A)
Background Range Shallow Wells		0.13 - 0.3	<0.0001 - <0.0001	<0.002 - 0.011	0.0021 - 0.03	3 - 7	<0.001 - <0.004	<0.0001 - <0.003	25 - 51	0.728 - 8.7	<0.00005 - <0.012	<0.001 - <0.01	<0.002 - <0.01	0.0022 - 0.03	0.00052 - 0.007	<0.001 - <0.005	<0.001 - 0.0051
Background Range Intermediate Wells		0.08 - 0.1	<0.0001 - <0.0001	0.01 - 0.023	<0.001 - 0.015	4 - 10	<0.001 - <0.01	<0.0001 - <0.003	120 - 166	9.8 - 11	<0.00005 - <0.012	<0.001 - <0.01	0.012 - 0.012	0.00016 - <0.002	<0.0005 - <0.002	<0.001 - <0.025	<0.001 - <0.025
Background Range Deep Wells		0.038 - 0.05	<0.0001 - <0.0001	0.0046 - <0.005	<0.002 - 0.007	6.7 - 11	<0.001 - <0.01	<0.0001 - <0.0001	64 - 78	8.77 - 11.3	<0.00005 - <0.0001	<0.001 - <0.01	<0.005 - <0.01	<0.0001 - 0.00018	<0.0005 - <0.001	<0.001 - <0.025	<0.001 - <0.025
MW6-99I (West of Cell 2)																	
9-Apr-12		0.06	<0.0001	0.016	<0.005	9	<0.001	<0.0001	122	6.29	0.0001	<0.01	<0.01	0.004	<0.001	<0.002	<0.01
29-Nov-12		0.21	<0.0001	0.043	0.016	7	<0.01	<0.0001	143	9.74	<0.0001	<0.01	<0.01	0.002	<0.001	<0.002	<0.01
17-May-13		0.27	<0.0001	0.012	0.009	9	<0.001	<0.0001	105	12	<0.0001	<0.01	<0.01	0.002	<0.001	<0.002	<0.01
22-Nov-13		0.17	<0.0001	0.011	0.006	8	<0.01	<0.0001	79	12.2	<0.0001	<0.01	<0.01	0.002	0.001	<0.002	<0.01
29-May-14		0.1	<0.0001	0.008	<0.005	7	<0.001	<0.0001	57	11.8	<0.0001	<0.01	<0.01	0.003	<0.001	0.002	<0.01
29-May-14	(duplicate)	0.18	<0.0001	0.007	<0.005	7	<0.001	<0.0001	70	15	<0.0001	<0.01	<0.01	0.002	<0.001	0.002	<0.01
12-Nov-14		0.17	<0.0001	0.0065	<0.002	6.8	<0.002	<0.0001	100	14	<0.00005	<0.001	<0.005	0.001	<0.0005	<0.001	<0.01
21-May-15		0.11	<0.00010	0.014	<0.002	8	<0.002	<0.0001	120	11	<0.00005	<0.001	<0.005	0.0031	<0.0005	<0.01	<0.001
21-May-15	(duplicate)	0.16	<0.00010	0.012	<0.002	7.9	<0.002	<0.0001	120	12	<0.00005	<0.001	<0.005	0.002	<0.0005	<0.01	<0.001
2-Dec-15		0.12	<0.00010	0.0097	<0.002	7.2	<0.002	<0.0001	90	12	<0.00005	<0.001	<0.005	0.0034	<0.0005	<0.001	<0.01
18-Apr-16		0.15	<0.0001	0.016	<0.002	7.7	<0.002	<0.0001	140	12	<0.00005	<0.001	<0.005	0.0023	<0.0005	<0.001	0.01
6-Dec-16		0.21	<0.0001	0.016	<0.002	3.6	<0.01	<0.0005	230	6.9	<0.00005	<0.005	<0.025	0.0017	<0.0005	<0.005	<0.025
MW6-99D (West of Cell 2)																	
5-Apr-12		0.05	<0.0001	<0.005	0.008	12	<0.001	<0.0001	94	10.4	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
27-Nov-12		0.05	<0.0001	<0.005	0.015	11	<0.01	<0.0001	96	8.9	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
27-Nov-12	(duplicate)	0.04	<0.0001	<0.005	0.013	12	<0.01	<0.0001	95	8.72	<0.0001	<0.01	<0.01	<0.001	<0.001	0.002	<0.01
16-May-13		0.04	<0.0001	<0.005	0.012	14	<0.01	<0.0001	120	10.8	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
21-Nov-13		0.04	<0.0001	<0.005	0.008	12	<0.01	<0.0001	103	10.3	<0.0001	<0.01	<0.01	<0.001	<0.001	<0.002	<0.01
21-May-14		0.06	<0.0001	<0.005	<0.005	9	<0.001	<0.0001	114	11.1	<0.0001	<0.01	<0.01	<0.001	<0.001	0.005	<0.01
6-Nov-14		0.045	<0.0001	0.00056	<0.002	11	<0.002	<0.0001	100	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
6-Nov-14	(duplicate)	0.044	<0.0001	<0.0005	<0.002	11	<0.002	<0.0001	100	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
7-May-15		0.043	<0.00010	<0.0005	<0.002	12	<0.002	<0.0001	100	9.9	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.025	<0.001
30-Nov-15		0.046	<0.00010	<0.0005	<0.002	13	<0.002	<0.0001	110	11	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
30-Nov-15	(duplicate)	0.045	<0.00010	0.0005	<0.002	13	<0.002	<0.0001	110	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
18-Apr-16		0.047	<0.0001	<0.0005	<0.002	13	<0.002	<0.0001	100	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
18-Apr-16	(duplicate)	0.044	<0.0001	0.00063	<0.002	12	<0.002	<0.0001	100	10	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025
6-Dec-16		0.13	<0.0001	0.0094	<0.002	7.5	<0.002	<0.0001	150	15	<0.00005	<0.001	<0.005	0.0017	<0.0005	<0.001	0.01
6-Dec-16	(duplicate)	0.044	<0.0001	<0.0005	<0.002	12	<0.002	<0.0001	99	9.7	<0.00005	<0.001	<0.005	<0.0001	<0.0005	<0.001	<0.025

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW18-S (East of Cell 1)										
			11-Apr-12	14-Nov-12	13-May-13	8-Nov-13	28-May-14	28-May-14	28-Oct-14	15-Apr-15	14-Oct-15	19-May-16	17-Nov-16
								(duplicate)					
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	NA	NA	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.1
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.1
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	<0.20	<0.2	<0.2
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	NA	NA	<0.1	<0.50	<0.50	<0.5	<0.5
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW18-S (East of Cell 1)										
			11-Apr-12	14-Nov-12	13-May-13	8-Nov-13	28-May-14	28-May-14	28-Oct-14	15-Apr-15	14-Oct-15	19-May-16	17-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<0.5
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	0.5	0.7	<0.2	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	NA	<0.1	<0.10	<0.10	<0.1	<0.1

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW18-I (East of Cell 1)									
			12-Apr-12	4-Dec-12	21-May-13	22-Nov-13	2-Jun-14	10-Nov-14	29-May-15	22-Oct-15	19-May-16	17-Nov-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	NA	NA	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	0.12	<0.1	<0.1
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.2
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.1
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.1
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	NA	<0.2	<0.2
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	NA
Chloroform	µg/L	100 (H)	2.9	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<0.5
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.1
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.20	0.17	<0.1

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW18-I (East of Cell 1)									
			12-Apr-12	4-Dec-12	21-May-13	22-Nov-13	2-Jun-14	10-Nov-14	29-May-15	22-Oct-15	19-May-16	17-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<0.5
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	0.24	<0.1	<0.1
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.1
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.1
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	0.24	<0.2	<0.2
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	<0.1	<0.10	<0.10	0.17	<0.1

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW19-S (East of Cell 1)									
			11-Apr-12	14-Nov-12	8-May-13	8-Nov-13	25-Apr-14	27-Oct-14	15-Apr-15	15-Oct-15	19-May-16	9-Nov-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	0.11	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW19-S (East of Cell 1)									
			11-Apr-12	14-Nov-12	8-May-13	8-Nov-13	25-Apr-14	27-Oct-14	15-Apr-15	15-Oct-15	19-May-16	9-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	1.4	<0.2	0.21	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	<0.1	0.11	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW19-I (East of Cell 1)									
			11-Apr-12	19-Nov-12	21-May-13	22-Nov-13	29-May-14	10-Nov-14	20-May-15	22-Oct-15	19-May-16	9-Nov-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	-	-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	-	-	NA	NA
Chloroform	µg/L	100 (H)	0.8	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	-	-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW19-I (East of Cell 1)									
			11-Apr-12	19-Nov-12	21-May-13	22-Nov-13	29-May-14	10-Nov-14	20-May-15	22-Oct-15	19-May-16	9-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	<0.1	<0.10	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW19-D (East of Cell 1)											
			11-Apr-12	14-Nov-12	8-May-13	12-Nov-13	12-Nov-13 (duplicate)	28-May-14	28-May-14 (duplicate)	28-Oct-14	15-Apr-15	15-Oct-15	19-May-16	23-Nov-16
Volatile Organic Compounds														
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW19-D (East of Cell 1)											
			11-Apr-12	14-Nov-12	8-May-13	12-Nov-13	12-Nov-13	28-May-14	28-May-14	28-Oct-14	15-Apr-15	15-Oct-15	19-May-16	23-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.10	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW20-S (East of Cell 2)									
			17-Apr-12	14-Nov-12	8-May-13	12-Nov-13	25-Apr-14	28-Oct-14	21-Apr-15	15-Oct-15	18-May-16	7-Nov-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	NA	<0.5	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	0.13	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW20-S (East of Cell 2)									
			17-Apr-12	14-Nov-12	8-May-13	12-Nov-13	25-Apr-14	28-Oct-14	21-Apr-15	15-Oct-15	18-May-16	7-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	1.2	<0.2	0.95	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	<1	NA	NA	NA	<0.1	<0.1	0.13	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW20-I (East of Cell 2)									
			5-Apr-12	19-Nov-12	21-May-13	22-Nov-13	2-Jun-14	10-Nov-14	20-May-15	4-Nov-15	25-May-16	7-Nov-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW20-I (East of Cell 2)									
			5-Apr-12	19-Nov-12	21-May-13	22-Nov-13	2-Jun-14	10-Nov-14	20-May-15	4-Nov-15	25-May-16	7-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	<1	NA	NA	NA	NA	<0.1	<0.10	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW21-S (South of Cell 1)								
			19-Nov-12	15-May-13	13-Nov-13	7-May-14	3-Nov-14	20-May-15	30-Nov-15	11-May-16	29-Nov-16
Volatile Organic Compounds											
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	0.6	<0.1	<0.10	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW21-S (South of Cell 1)								
			19-Nov-12	15-May-13	13-Nov-13	7-May-14	3-Nov-14	20-May-15	30-Nov-15	11-May-16	29-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	1.6	<0.2	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	<0.1	<0.10	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW21-I (South of Cell 1)								
			19-Nov-12	21-May-13	22-Nov-13	9-May-14	11-Nov-14	29-May-15	2-Dec-15	25-May-16	29-Nov-16
Volatile Organic Compounds											
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW21-I (South of Cell 1)								
			19-Nov-12	21-May-13	22-Nov-13	9-May-14	11-Nov-14	29-May-15	2-Dec-15	25-May-16	29-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	<0.1	<0.10	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW21-D (South of Cell 1)										
			15-Nov-12	15-Nov-12	14-May-13	14-May-13	13-Nov-13	13-Nov-13	7-May-14	3-Nov-14	3-Nov-14	20-May-15	20-May-15
				(duplicate)		(duplicate)		(duplicate)			(duplicate)		(duplicate)
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2		
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1	<0.10	<0.10
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.10	<0.10
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.10	<0.10
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2	<0.20	<0.20
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA		
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA		
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
Dichlorodifluromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	<0.1	<0.1	<0.50	<0.50
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW21-D (South of Cell 1)										
			15-Nov-12	15-Nov-12	14-May-13	14-May-13	13-Nov-13	13-Nov-13	7-May-14	3-Nov-14	3-Nov-14	20-May-15	20-May-15
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<4	<4	<0.5	<0.5	<0.50	<0.50
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1	<0.10	<0.10
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1	<0.10	<0.10
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.10	<0.10

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW21-D (South of Cell 1)						MW22-S (Southwest of Cell 1)									
			30-Nov-15	30-Nov-15	11-May-16	11-May-16	29-Nov-16	29-Nov-16	13-Apr-12	27-Nov-12	9-May-13	22-Nov-13	5-May-14	4-Nov-14	20-May-15	4-Nov-15	10-May-16	17-Nov-16
				(duplicate)		(duplicate)		(duplicate)										
Volatile Organic Compounds																		
1,1,1,2-Tetrachloroethane	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<1.0	<0.2	<0.2
1,1,1-Trichloroethane	µg/L	-	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.50	<0.1	<0.1
1,1,2,2-Tetrachloroethane	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<1.0	<0.2	<0.2
1,1,2-Trichloroethane	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<1.0	<0.2	<0.2
1,1-Dichloroethane	µg/L	-	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.50	<0.1	<0.1
1,1-Dichloroethylene	µg/L	14 (H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.50	<0.1	<0.1
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<1.0	<0.2	<0.2
1,2-Dichloroethane	µg/L	{5} (H)	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<1.0	<0.2	<0.2
1,2-Dichloropropane	µg/L	-	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.50	<0.1	<0.1
1,3,5-Trimethylbenzene	µg/L	-	-	-	NA	NA	NA	NA	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<1.0	<0.2	<0.2
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<1.0	<0.2	<0.2
Benzene	µg/L	5 (H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	0.6	<0.1	<0.10	<0.50	<0.1	<0.1
Bromodichloromethane	µg/L	100 (H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.50	<0.1	<0.1
Bromoform	µg/L	100 (H)	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<1.0	<0.2	<0.2
Bromomethane	µg/L	-	<0.50	<0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<2.5	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.50	<0.1	<0.1
Chlorobenzene	µg/L	[30/80] (A/H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.50	<0.1	<0.1
Chlorodibromomethane	µg/L	100 (H)	-	-	<0.2	<0.2	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.2
Chloroethane	µg/L	-	-	-	NA	NA	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	1.7	<0.1	<0.10	<0.50	<0.1	<0.1
Chloromethane	µg/L	-	-	-	NA	NA	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.10	<0.10	<0.1	<0.1	<0.5	<0.5	5.3	<0.4	<0.4	<0.4	<0.4	0.49	0.13	<0.50	<0.1	0.44
cis-1,3-Dichloropropylene	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.3	<0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<1.0	<0.2	<0.2
Dichlorodifluromethane	µg/L	-	<0.50	<0.50	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<2.5	<0.5	<0.5
Ethylbenzene	µg/L	[2.4] (A)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.50	<0.1	<0.1
Ethylene Dibromide	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<1.0	<0.2	<0.2
m & p-Xylene	µg/L	300 (A)	<0.20	<0.20	<0.1	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	1.4	<0.1	<0.10	<1.0	<0.1	<0.1

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW21-D (South of Cell 1)						MW22-S (Southwest of Cell 1)									
			30-Nov-15	30-Nov-15	11-May-16	11-May-16	29-Nov-16	29-Nov-16	13-Apr-12	27-Nov-12	9-May-13	22-Nov-13	5-May-14	4-Nov-14	20-May-15	4-Nov-15	10-May-16	17-Nov-16
Methylene chloride	µg/L	50 (H)	<0.50	<0.50	<0.5	<0.5	<2	<2	<4	<4	<4	<4	<4	<0.5	<0.50	<2.5	<0.5	<0.5
o-Xylene	µg/L	300 (A)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	0.6	<0.1	<0.10	<0.50	<0.1	<0.1
Styrene	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<1.0	<0.2	<0.2
Tetrachloroethylene	µg/L	30 (H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.50	<0.1	<0.1
Toluene	µg/L	[24] (A)	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	8.2	<0.2	<0.20	<1.0	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.10	<0.10	<0.1	<0.1	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.50	<0.1	<0.1
trans-1,3-Dichloropropylene	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.4	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<1.0	<0.2	<0.2
Trichloroethylene	µg/L	5 (H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	0.6	<0.3	<0.3	<0.3	<0.3	0.14	<0.10	<0.50	<0.1	<0.1
Trichlorofluoromethane	µg/L	-	<0.10	<0.10	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.50	<0.2	<0.2
Vinyl Chloride	µg/L	2 (H)	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	0.8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<1.0	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	NA	NA	NA	NA	NA	<0.1	<0.10	<0.50	<0.1	<0.1

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW22-I (Southwest of Cell 1)									
			17-Apr-12	4-Dec-12	17-May-13	27-Nov-13	2-Jun-14	11-Nov-14	29-May-15	10-Nov-15	10-May-16	23-Nov-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW22-I (Southwest of Cell 1)									
			17-Apr-12	4-Dec-12	17-May-13	27-Nov-13	2-Jun-14	11-Nov-14	29-May-15	10-Nov-15	10-May-16	23-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	<0.1	<0.10	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW22-GI (Southwest of Cell 1)									
			17-Apr-12	29-Nov-12	15-May-13	27-Nov-13	9-May-14	12-Nov-14	29-May-15	10-Nov-15	10-May-16	17-Nov-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<4.0	<1	<0.2
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<2.0	<0.5	<0.1
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<4.0	<1	<0.2
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<4.0	<1	<0.2
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<2.0	<0.5	<0.1
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<2.0	<0.5	<0.1
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<4.0	<1	<0.2
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<4.0	<1	<0.2
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<2.0	<0.5	<0.1
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	0.84		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<4.0	<1	<0.2
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<4.0	<1	<0.2
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<2.0	<0.5	<0.1
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<2.0	<0.5	<0.1
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<4.0	<1	<0.2
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<10	<2.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<2.0	<0.5	<0.1
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<2.0	<0.5	<0.1
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<1	<0.2
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<2.0	<0.5	<0.1
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	0.5	<0.4	<0.4	3.6	2.3	<2.0	2.2	2
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<4.0	<1	<0.2
Dichlorodifluromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<10	<2.5	<0.5
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<2.0	<0.5	<0.1
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<4.0	<1	<0.2
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<4.0	<0.5	<0.1

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW22-GI (Southwest of Cell 1)									
			17-Apr-12	29-Nov-12	15-May-13	27-Nov-13	9-May-14	12-Nov-14	29-May-15	10-Nov-15	10-May-16	17-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<10	<2.5	<0.5
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<2.0	<0.5	<0.1
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<4.0	<1	<0.2
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<2.0	<0.5	<0.1
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<4.0	<1	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<2.0	<0.5	<0.1
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<4.0	<1	<0.2
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<2.0	<0.5	<0.1
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<2.0	<1	<0.2
Vinyl Chloride	µg/L	2 (H)	<0.2	1.6	<0.2	<0.2	<0.2	0.84	<0.20	<4.0	<1	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	<0.1	<0.10	<2.0	<0.5	<0.1

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW23-S (West of Cell 1)									
			12-Apr-12	29-Nov-12	9-May-13	22-Nov-13	5-May-14	4-Nov-14	20-May-15	3-Nov-15	4-May-16	29-Nov-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	0.8	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	1.2	<0.1	<0.10	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW23-S (West of Cell 1)									
			12-Apr-12	29-Nov-12	9-May-13	22-Nov-13	5-May-14	4-Nov-14	20-May-15	3-Nov-15	4-May-16	29-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	4.3	0.22	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	<0.1	<0.10	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW23-I (West of Cell 1)									
			10-Apr-12	4-Dec-12	17-May-13	27-Nov-13	2-Jun-14	5-Nov-14	29-May-15	5-Nov-15	10-May-16	23-Nov-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	0.19	0.15	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW23-I (West of Cell 1)									
			10-Apr-12	4-Dec-12	17-May-13	27-Nov-13	2-Jun-14	5-Nov-14	29-May-15	5-Nov-15	10-May-16	23-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	0.22	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	0.19	0.15	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW23-GI (West of Cell 1)									
			12-Apr-12	29-Nov-12	15-May-13	27-Nov-13	29-May-14	5-Nov-14	29-May-15	3-Nov-15	4-May-16	29-Nov-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	0.13	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	0.23	0.23	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW23-GI (West of Cell 1)									
			12-Apr-12	29-Nov-12	15-May-13	27-Nov-13	29-May-14	5-Nov-14	29-May-15	3-Nov-15	4-May-16	29-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	0.27	0.29	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	<1	NA	NA	NA	NA	0.23	0.23	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-S (West of Cell 1)									
			9-Apr-12	27-Nov-12	9-May-13	21-Nov-13	5-May-14	4-Nov-14	19-May-15	5-Nov-15	6-May-16	5-Dec-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.4	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.2	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.4	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.4	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.2	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.2	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.4	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.4	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.2	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	-	-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.4	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.4	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.2	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.2	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.4	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<1	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.2	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.2	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	-	-	<0.4	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	-	-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	0.5	<0.1	<0.10	<0.10	<0.2	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	-	-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.2	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.4	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<1	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.2	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.4	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	0.5	<0.1	<0.20	<0.20	<0.2	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-S (West of Cell 1)									
			9-Apr-12	27-Nov-12	9-May-13	21-Nov-13	5-May-14	4-Nov-14	19-May-15	5-Nov-15	6-May-16	5-Dec-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<1	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.2	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.4	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.2	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	1.8	<0.2	<0.20	<0.20	<0.4	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.2	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.4	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.2	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.10	<0.10	<0.4	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.4	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	<0.1	<0.10	<0.10	<0.2	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-I (West of Cell 1)									
			9-Apr-12	28-Nov-12	14-May-13	26-Nov-13	29-May-14	6-Nov-14	7-May-15	5-Nov-15	5-May-16	5-Dec-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	0.18	0.17	0.13	0.11	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	0.38	0.35	<0.20	0.26	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-I (West of Cell 1)									
			9-Apr-12	28-Nov-12	14-May-13	26-Nov-13	29-May-14	6-Nov-14	7-May-15	5-Nov-15	5-May-16	5-Dec-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	0.13	0.12	0.23	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	4.4	0.35	0.45	0.25	0.24	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	0.23	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	0.51	0.47	<0.10	0.26	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-GI (West of Cell 1)									
			9-Apr-12	28-Nov-12	9-May-13	21-Nov-13	5-May-14	4-Nov-14	19-May-15	5-Nov-15	5-May-16	5-Dec-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	0.11	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	1.1	0.17	0.15	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-GI (West of Cell 1)									
			9-Apr-12	28-Nov-12	9-May-13	21-Nov-13	5-May-14	4-Nov-14	19-May-15	5-Nov-15	5-May-16	5-Dec-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	4.4	<0.2	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	0.17	0.15	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-D (West of Cell 1)										
			9-Apr-12	28-Nov-12	28-Nov-12 (duplicate)	14-May-13	14-May-13 (duplicate)	21-Nov-13	29-May-14	4-Nov-14	4-Nov-14 (duplicate)	19-May-15	19-May-15 (duplicate)
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2		
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1	<0.10	<0.10
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.10	<0.10
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.10	<0.10
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2	<0.20	<0.20
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA		
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA		
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	<0.5	<0.5	NA	<0.1	<0.1	<0.50	<0.50
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-D (West of Cell 1)										
			9-Apr-12	28-Nov-12	28-Nov-12	14-May-13	14-May-13	21-Nov-13	29-May-14	4-Nov-14	4-Nov-14	19-May-15	19-May-15
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<4	<4	<0.5	<0.5	<0.50	<0.50
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1	<0.10	<0.10
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1	<0.10	<0.10
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.10	<0.10

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-D (West of Cell 1)						MW25-S (West of Cell 1)									
			5-Nov-15	5-Nov-15	5-May-16	5-May-16	5-Dec-16	5-Dec-16	17-Apr-12	29-Nov-12	9-May-13	21-Nov-13	5-May-14	12-Nov-14	4-Jun-15	30-Nov-15	10-May-16	6-Dec-16
				(duplicate)		(duplicate)		(duplicate)										
Volatile Organic Compounds																		
1,1,1,2-Tetrachloroethane	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	-	-	NA	NA	NA	NA	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	1	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.50	<0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	-	-	<0.2	<0.2	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	-	-	NA	NA	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	6.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	-	-	NA	NA	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.10	<0.10	<0.1	<0.1	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.3	<0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	<0.50	<0.50	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	0.9	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.20	<0.20	<0.1	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	2.4	0.17	<0.10	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-D (West of Cell 1)						MW25-S (West of Cell 1)									
			5-Nov-15	5-Nov-15	5-May-16	5-May-16	5-Dec-16	5-Dec-16	17-Apr-12	29-Nov-12	9-May-13	21-Nov-13	5-May-14	12-Nov-14	4-Jun-15	30-Nov-15	10-May-16	6-Dec-16
Methylene chloride	µg/L	50 (H)	<0.50	<0.50	<0.5	<0.5	<2	<2	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	0.9	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	12.8	<0.2	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.10	<0.10	<0.1	<0.1	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.20	<0.20	<0.2	<0.2	<0.4	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.10	<0.10	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2	<1	NA	NA	NA	NA	<0.1	<0.10	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW25-I (West of Cell 1)									
			10-Apr-12	29-Nov-12	17-May-13	22-Nov-13	2-Jun-14	11-Nov-14	4-Jun-15	2-Dec-15	10-May-16	6-Dec-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	0.14	<0.10	0.1000	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	0.31	<0.10	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW25-I (West of Cell 1)									
			10-Apr-12	29-Nov-12	17-May-13	22-Nov-13	2-Jun-14	11-Nov-14	4-Jun-15	2-Dec-15	10-May-16	6-Dec-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	0.1	<0.10	0.21	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	0.33	<0.20	0.24	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	0.21	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	0.41	<0.10	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW26-S (North of Cell 2)							
			17-Apr-12	12-Nov-13	5-May-14	12-Nov-14	21-May-15	4-Nov-15	8-Apr-16	7-Nov-16
Volatile Organic Compounds										
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	NA	NA	NA	<0.2	NA
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	NA	NA	NA	<0.1	NA
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	NA	NA	NA	<0.2	NA
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	NA	NA	NA	<0.2	NA
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	NA	NA	NA	<0.1	NA
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	NA	NA	NA	<0.1	NA
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	NA	NA	NA	<0.2	NA
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	NA	NA	NA	<0.2	NA
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	NA	NA	NA	<0.1	NA
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	NA	NA	NA	<0.2	NA
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	NA	NA	NA	<0.2	NA
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	NA	NA	NA	<0.1	NA
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	NA	NA	NA	<0.1	NA
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	NA	NA	NA	<0.2	NA
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	NA	NA	NA	<0.5	NA
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	NA	NA	NA	<0.1	NA
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	NA	NA	NA	<0.1	NA
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	NA	NA	NA	<0.2	NA
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	NA	NA	NA	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	NA	NA	NA	<0.1	NA
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	NA	NA	NA	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	NA	NA	NA	<0.1	NA
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	NA	NA	NA	<0.2	NA
Dichlorodifluromethane	µg/L	-	<0.5	<0.5	NA	NA	NA	NA	<0.5	NA
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	NA	NA	NA	<0.1	NA
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	NA	NA	NA	<0.2	NA
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	NA	NA	NA	<0.1	NA

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW26-S (North of Cell 2)							
			17-Apr-12	12-Nov-13	5-May-14	12-Nov-14	21-May-15	4-Nov-15	8-Apr-16	7-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	NA	NA	NA	<0.5	NA
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	NA	NA	NA	<0.1	NA
Styrene	µg/L	-	<0.5	<0.5	<0.5	NA	NA	NA	<0.2	NA
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	NA	NA	NA	<0.1	NA
Toluene	µg/L	[24] (A)	<0.5	<0.5	0.7	NA	NA	NA	<0.2	NA
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	NA	NA	NA	<0.1	NA
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	NA	NA	NA	<0.2	NA
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	NA	NA	NA	<0.1	NA
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	NA	NA	NA	<0.2	NA
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	NA	NA	NA	<0.2	NA
Xylenes (total)	µg/L	300 (A)	<1	NA	NA	NA	NA	NA	<0.1	NA

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW26-I (North of Cell 2)										
			10-Apr-12	10-Apr-12 (duplicate)	4-Dec-12	21-May-13	13-Nov-13	2-Jun-14	11-Nov-14	21-May-15	4-Nov-15	13-Apr-16	7-Nov-16
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	NA	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	NA	NA	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW26-I (North of Cell 2)										
			10-Apr-12	10-Apr-12	4-Dec-12	21-May-13	13-Nov-13	2-Jun-14	11-Nov-14	21-May-15	4-Nov-15	13-Apr-16	7-Nov-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	NA	<0.1	<0.10	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW27-S (North of Cell 2)									
			4-Apr-12	21-Nov-12	17-May-13	18-Nov-13	26-May-14	21-Oct-14	6-May-15	10-Nov-15	13-Apr-16	7-Dec-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	0.11	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW27-S (North of Cell 2)									
			4-Apr-12	21-Nov-12	17-May-13	18-Nov-13	26-May-14	21-Oct-14	6-May-15	10-Nov-15	13-Apr-16	7-Dec-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	0.25	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	<0.1	0.11	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW27-I (North of Cell 2)								
			4-Dec-12	21-May-13	22-Nov-13	29-May-14	11-Nov-14	21-May-15	2-Dec-15	13-Apr-16	7-Dec-16
Volatile Organic Compounds											
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	0.12	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	0.6	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	0.14	0.16	<0.20	0.23	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW27-I (North of Cell 2)								
			4-Dec-12	21-May-13	22-Nov-13	29-May-14	11-Nov-14	21-May-15	2-Dec-15	13-Apr-16	7-Dec-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	0.25	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	0.14	0.16	<0.10	0.23	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW27-D (North of Cell 2)									
			5-Apr-12	5-Apr-12	21-Nov-12	21-Nov-12	17-May-13	17-May-13	18-Nov-13	18-Nov-13	26-May-14	21-Oct-14
				(duplicate)		(duplicate)		(duplicate)		(duplicate)		
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorodifluromethane	µg/L	-	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	<0.1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW27-D (North of Cell 2)									
			5-Apr-12	5-Apr-12	21-Nov-12	21-Nov-12	17-May-13	17-May-13	18-Nov-13	18-Nov-13	26-May-14	21-Oct-14
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<4	<4	<4	<4	<0.5
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW27-D (North of Cell 2)							
			22-Apr-15	22-Apr-15 (duplicate)	17-Nov-15	17-Nov-15 (duplicate)	13-Apr-16	13-Apr-16 (duplicate)	7-Dec-16	7-Dec-16 (duplicate)
Volatile Organic Compounds										
1,1,1,2-Tetrachloroethane	µg/L	-	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
1,1-Dichloroethane	µg/L	-	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
1,2-Dichloropropane	µg/L	-	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
1,3,5-Trimethylbenzene	µg/L	-			-	-	NA	NA	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
Benzene	µg/L	5 (H)	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Bromoform	µg/L	100 (H)	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
Bromomethane	µg/L	-	<0.50	<0.50	<0.50	<0.50	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.20	<0.20	NA	NA	<0.2	<0.2	<0.5	<0.5
Chloroethane	µg/L	-	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	µg/L	100 (H)	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Chloromethane	µg/L	-	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.5	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.3	<0.3
Dichlorodifluromethane	µg/L	-	<0.50	<0.50	<0.50	<0.50	<0.5	<0.5	<1	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Ethylene Dibromide	µg/L	-	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
m & p-Xylene	µg/L	300 (A)	<0.10	<0.10	<0.20	<0.20	<0.1	<0.1	<0.2	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW27-D (North of Cell 2)							
			22-Apr-15	22-Apr-15	17-Nov-15	17-Nov-15	13-Apr-16	13-Apr-16	7-Dec-16	7-Dec-16
Methylene chloride	µg/L	50 (H)	<0.50	<0.50	<0.50	<0.50	<0.5	<0.5	<2	<2
o-Xylene	µg/L	300 (A)	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Styrene	µg/L	-	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Toluene	µg/L	[24] (A)	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.5	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.4	<0.4
Trichloroethylene	µg/L	5 (H)	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Trichlorofluoromethane	µg/L	-	<0.20	<0.20	<0.10	<0.10	<0.2	<0.2	<0.5	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW28-S (West of Cell 2)									
			4-Apr-12	21-Nov-12	16-May-13	18-Nov-13	21-May-14	5-Nov-14	6-May-15	10-Nov-15	14-Apr-16	6-Dec-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	0.12	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	0.13	0.3	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW28-S (West of Cell 2)									
			4-Apr-12	21-Nov-12	16-May-13	18-Nov-13	21-May-14	5-Nov-14	6-May-15	10-Nov-15	14-Apr-16	6-Dec-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	0.11	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	0.52	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	0.13	0.41	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW28-I (West of Cell 2)											
			4-Apr-12	21-Nov-12	16-May-13	16-May-13	18-Nov-13	21-May-14	5-Nov-14	5-Nov-14	6-May-15	17-Nov-15	14-Apr-16	6-Dec-16
										(duplicate)				
Volatile Organic Compounds														
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	<0.5	NA	<0.1	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW28-I (West of Cell 2)											
			4-Apr-12	21-Nov-12	16-May-13	16-May-13	18-Nov-13	21-May-14	5-Nov-14	5-Nov-14	6-May-15	17-Nov-15	14-Apr-16	6-Dec-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<4	<0.5	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW6-99S (West of Cell 2)									
			9-Apr-12	29-Nov-12	17-May-13	22-Nov-13	29-May-14	12-Nov-14	29-May-15	2-Dec-15	18-Apr-16	6-Dec-16
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2		-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	NA	<0.1	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW6-99S (West of Cell 2)									
			9-Apr-12	29-Nov-12	17-May-13	22-Nov-13	29-May-14	12-Nov-14	29-May-15	2-Dec-15	18-Apr-16	6-Dec-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	<0.1	<0.10	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW6-99I (West of Cell 2)											
			9-Apr-12	29-Nov-12	17-May-13	22-Nov-13	29-May-14	29-May-14 (duplicate)	4-Nov-14	21-May-15	21-May-15 (duplicate)	2-Dec-15	18-Apr-16	6-Dec-16
Volatile Organic Compounds														
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2			-	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2	<0.20	<0.20	-	<0.2	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA			-	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.10	<0.1	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA			-	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.10	<0.1	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	NA	NA	<0.1	<0.50	<0.50	<0.50	<0.5	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.10	<0.1	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.20	<0.1	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW6-99I (West of Cell 2)											
			9-Apr-12	29-Nov-12	17-May-13	22-Nov-13	29-May-14	29-May-14	4-Nov-14	21-May-15	21-May-15	2-Dec-15	18-Apr-16	6-Dec-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<4	<0.5	<0.50	<0.50	<0.50	<0.5	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.10	<0.10	<0.10	<0.1	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.20	<0.2	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.10	<0.1	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.10	<0.10	<0.10	<0.1	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.10	<0.10	<0.10	<0.1	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.20	<0.20	<0.10	<0.2	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	NA	<0.1	<0.10	<0.10	<0.10	<0.1	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW6-99D (West of Cell 2)										MW6-99D (West of Cell 2)			
			5-Apr-12	27-Nov-12	27-Nov-12 (duplicate)	16-May-13	21-Nov-13	21-May-14	6-Nov-14	6-Nov-14 (duplicate)	7-May-15	30-Nov-15	30-Nov-15 (duplicate)	18-Apr-16	18-Apr-16 (duplicate)	6-Dec-16	6-Dec-16 (duplicate)
Volatile Organic Compounds																	
1,1,1,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
1,1,1-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
1,1,2,2-Tetrachloroethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
1,1,2-Trichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
1,1-Dichloroethane	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
1,1-Dichloroethylene	µg/L	14 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
1,2-Dichlorobenzene	µg/L	[3/200] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
1,2-Dichloroethane	µg/L	{5} (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
1,2-Dichloropropane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
1,3,5-Trimethylbenzene	µg/L	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2		-	-	NA	NA	NA	NA
1,3-Dichlorobenzene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
1,4-Dichlorobenzene	µg/L	[1/5] (A/H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
Benzene	µg/L	5 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Bromodichloromethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Bromoform	µg/L	100 (H)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
Bromomethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	5 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Chlorobenzene	µg/L	[30/80] (A/H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Chlorodibromomethane	µg/L	100 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.2	<0.2	<0.20	-	-	<0.2	<0.2	<0.5	<0.5
Chloroethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA		-	-	NA	NA	NA	NA
Chloroform	µg/L	100 (H)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Chloromethane	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA		-	-	NA	NA	NA	NA
cis-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.5	<0.5
cis-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.3	<0.3
Dichlorodifluromethane	µg/L	-	NA	<0.5	<0.5	<0.5	<0.5	NA	<0.1	<0.1	<0.50	<0.50	<0.50	<0.5	<0.5	<1	<1
Ethylbenzene	µg/L	[2.4] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Ethylene Dibromide	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
m & p-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.20	<0.20	<0.1	<0.1	<0.2	<0.2

Table 2g Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW6-99D (West of Cell 2)										MW6-99D (West of Cell 2)			
			5-Apr-12	27-Nov-12	27-Nov-12	16-May-13	21-Nov-13	21-May-14	6-Nov-14	6-Nov-14	7-May-15	30-Nov-15	30-Nov-15	18-Apr-16	18-Apr-16	6-Dec-16	6-Dec-16
Methylene chloride	µg/L	50 (H)	<4	<4	<4	<4	<4	<4	<0.5	<0.5	<0.50	<0.50	<0.50	<0.5	<0.5	<2	<2
o-Xylene	µg/L	300 (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Styrene	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.5	<0.5
Tetrachloroethylene	µg/L	30 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Toluene	µg/L	[24] (A)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.73	0.67	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
trans-1,2-Dichloroethylene	µg/L	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.5	<0.5
trans-1,3-Dichloropropylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.4	<0.4
Trichloroethylene	µg/L	5 (H)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2
Trichlorofluoromethane	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.2	<0.20	<0.10	<0.10	<0.2	<0.2	<0.5	<0.5
Vinyl Chloride	µg/L	2 (H)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
Xylenes (total)	µg/L	300 (A)	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.2	<0.2

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW18-S (East of Cell 1)										
			11-Apr-12	14-Nov-12	13-May-13	8-Nov-13	28-May-14	28-May-14 (duplicate)	22-Oct-14	15-Apr-15	14-Oct-15	19-May-16	17-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)													
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.2	0.055	<0.050	0.43	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.2	NA	NA	NA	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.2	NA	NA	NA	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.2	<0.03	<0.030	0.095	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.01	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.01	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.01	<0.2	<0.2	NA	NA	NA	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.01	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.2	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.2	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)													
Total PCB's	µg/L	{3} (H)	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)													
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100	NA	NA	NA	NA	NA	<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	NA	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200	NA	NA	NA	NA	NA	NA	NA	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW18-I (East of Cell 1)									
			12-Apr-12	4-Dec-12	21-May-13	22-Nov-13	2-Jun-14	10-Nov-14	29-May-15	22-Oct-15	19-May-16	17-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	0.4	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	-	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	-	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	0.2	<0.2	<0.2	0.2	<0.2	0.16	<0.030	0.19	0.24	0.049
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	-	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	-	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA		-	-	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA			-	-	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	680	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200			NA			-	-	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW19-S (East of Cell 1)									
			11-Apr-12	14-Nov-12	8-May-13	8-Nov-13	25-Apr-14	27-Oct-14	15-Apr-15	15-Oct-15	19-May-16	9-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.01	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.01	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.01	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.01	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.05	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW19-I (East of Cell 1)									
			11-Apr-12	19-Nov-12	21-May-13	22-Nov-13	29-May-14	10-Nov-14	20-May-15	22-Oct-15	19-May-16	9-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	0.08	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	180	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	1330	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	480	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW19-D (East of Cell 1)									
			11-Apr-12	14-Nov-12	8-May-13	12-Nov-13	12-Nov-13 (duplicate)	28-May-14	28-May-14 (duplicate)	22-Oct-14	15-Apr-15	15-Oct-15
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.03	<0.030	<0.030
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050
Benzo(a)pyrene	µg/L	0.01 (H)	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	<100	NA	NA	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100							<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	<100	NA	NA	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100				NA	NA			-
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	<200	NA	NA	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200				NA	NA			-
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	<200	NA	NA	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW19-D (East of Cell 1)		MW20-S (East of Cell 2)							
			19-May-16	23-Nov-16	5-Apr-12	9-Apr-12	17-Apr-12	19-Apr-12	14-Nov-12	8-May-13	12-Nov-13	25-Apr-14
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.05	<0.05	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	-	NA	NA	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthene	µg/L	-	NA	NA	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Fluorene	µg/L	-	<0.05	<0.05	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Phenanthrene	µg/L	-	<0.03	<0.03	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Anthracene	µg/L	-	<0.05	<0.05	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Fluoranthene	µg/L	-	<0.05	<0.05	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pyrene	µg/L	-	NA	NA	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)anthracene	µg/L	-	<0.05	<0.05	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chrysene	µg/L	-	<0.05	<0.05	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(b)fluoranthene	µg/L	-	NA	NA	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(k)fluoranthene	µg/L	-	<0.05	<0.05	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	NA	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	NA	NA	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dibenzo(a,h)anthracene	µg/L	-	<0.05	<0.05	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(g,h,i)perylene	µg/L	-	<0.05	<0.05	NA	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.05	<0.05	<0.1	NA	NA	NA	<0.1	<0.1	<0.1	<0.2
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<25	<25	NA	<100	NA	NA	<100	<100	<100	NA
C6 - C10 (F1 minus BTEX)	µg/L	--	<25	<25	NA	NA	NA	NA	<100			
C10 - C16 (F2)	µg/L	--	<100	<100	NA	<100	NA	NA	<100	<100	<100	NA
C10 - C16 (F2 minus Napthalene)	µg/L	--	NA	NA	NA	NA	NA	NA	<100			NA
C16 - C34 (F3)	µg/L	--	<200	<200	NA	<200	NA	NA	<200	<200	<200	NA
C16 - C34 (F3 minus PAHs)	µg/L	--	NA	NA	NA	NA	NA	NA	<200			NA
C34 - C50 (F4)	µg/L	--	<200	<200	NA	<200	NA	NA	<200	<200	<200	NA

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW20-S (East of Cell 2)				
			28-Oct-14	21-Apr-15	15-Oct-15	18-May-16	7-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)							
Naphthalene	µg/L	-	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)							
Total PCB's	µg/L	{3} (H)	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)							
C6 - C10 (F1)	µg/L	--	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--		<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW20-I (East of Cell 2)										
			4-Apr-12	5-Apr-12	19-Nov-12	21-May-13	22-Nov-13	2-Jun-14	10-Nov-14	20-May-15	4-Nov-15	25-May-16	7-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)													
Naphthalene	µg/L	-	NA	<0.2	0.3	<0.2	0.4	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	NA	<0.2	0.4	<0.2	<0.2	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	NA	<0.2	0.5	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	NA	<0.2	0.4	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	NA	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)													
Total PCB's	µg/L	{3} (H)	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)													
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	NA	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	NA	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	NA	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	NA	<200	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	NA	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW21-S (South of Cell 1)								
			19-Nov-12	15-May-13	13-Nov-13	7-May-14	3-Nov-14	20-May-15	30-Nov-15	11-May-16	29-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)											
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)											
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)											
C6 - C10 (F1)	µg/L	--	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW21-I (South of Cell 1)								
			19-Nov-12	21-May-13	22-Nov-13	9-May-14	11-Nov-14	29-May-15	2-Dec-15	25-May-16	29-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)											
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)											
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.2	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)											
C6 - C10 (F1)	µg/L	--	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW21-D (South of Cell 1)								
			15-Nov-12	15-Nov-12 (duplicate)	14-May-13	14-May-13 (duplicate)	13-Nov-13	13-Nov-13 (duplicate)	7-May-14	3-Nov-14	3-Nov-14 (duplicate)
Polycyclic Aromatic Hydrocarbons (PAHs)											
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	NA
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)											
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)											
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	<100	<100	NA	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100							
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	<100	<100	NA	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100					NA		
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	<200	<200	NA	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200					NA		
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	<200	<200	NA	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW21-D (South of Cell 1)							
			20-May-15	20-May-15 (duplicate)	30-Nov-15	30-Nov-15 (duplicate)	11-May-16	11-May-16 (duplicate)	29-Nov-16	29-Nov-16 (duplicate)
Polycyclic Aromatic Hydrocarbons (PAHs)										
Naphthalene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/L	-	NA	NA	-	-	NA	NA	NA	NA
Acenaphthene	µg/L	-	NA	NA	-	-	NA	NA	NA	NA
Fluorene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/L	-	<0.030	<0.030	<0.030	<0.030	<0.03	<0.03	<0.03	<0.03
Anthracene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/L	-	NA	NA	-	-	NA	NA	NA	NA
Benzo(a)anthracene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	NA	NA	-	-	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	NA	NA	-	-	NA	NA	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)										
Total PCB's	µg/L	{3} (H)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)										
C6 - C10 (F1)	µg/L	--	<25	<25	<25	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<25	<25	<25	<25	<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--			-	-	NA	NA	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--			-	-	NA	NA	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW22-S (Southwest of Cell 1)									
			13-Apr-12	27-Nov-12	9-May-13	22-Nov-13	5-May-14	4-Nov-14	20-May-15	4-Nov-15	10-May-16	17-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2		NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<1	<0.5	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	200	560	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW22-I (Southwest of Cell 1)									
			17-Apr-12	4-Dec-12	17-May-13	27-Nov-13	2-Jun-14	11-Nov-14	29-May-15	10-Nov-15	10-May-16	23-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	0.035	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW22-GI (Southwest of Cell 1)									
			17-Apr-12	29-Nov-12	15-May-13	27-Nov-13	9-May-14	12-Nov-14	29-May-15	10-Nov-15	10-May-16	17-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	400	<200	<200	400	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	400	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW23-S (West of Cell 1)										
			10-Apr-12	12-Apr-12	29-Nov-12	9-May-13	22-Nov-13	5-May-14	4-Nov-14	20-May-15	3-Nov-15	4-May-16	29-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)													
Naphthalene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	0.089
Acenaphthylene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	NA	0.3	<0.2	<0.2	<0.2	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	NA	0.3	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)													
Total PCB's	µg/L	{3} (H)	<1	NA	<0.1	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)													
C6 - C10 (F1)	µg/L	--	<100	NA	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	NA	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	NA	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	NA	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	NA	<200	200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	NA	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	NA	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW23-I (West of Cell 1)									
			10-Apr-12	4-Dec-12	17-May-13	27-Nov-13	2-Jun-14	5-Nov-14	29-May-15	5-Nov-15	10-May-16	23-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	0.3	<0.2	0.075	0.035	0.042	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<1	<0.1	<0.1	<0.1	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW23-GI (West of Cell 1)									
			10-Apr-12	29-Nov-12	15-May-13	27-Nov-13	29-May-14	5-Nov-14	29-May-15	3-Nov-15	4-May-16	29-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	NA	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	NA	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	NA	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	NA	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-S (West of Cell 1)									
			9-Apr-12	27-Nov-12	9-May-13	21-Nov-13	5-May-14	4-Nov-14	19-May-15	5-Nov-15	6-May-16	5-Dec-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	1.5	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	0.3	0.2	<0.2	0.4	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	0.4	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	0.3	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	<0.5	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	300	300	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-I (West of Cell 1)									
			9-Apr-12	28-Nov-12	14-May-13	26-Nov-13	29-May-14	6-Nov-14	7-May-15	5-Nov-15	5-May-16	5-Dec-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	0.065	0.065	0.064	0.031	0.033
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	300	200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	300			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-GI (West of Cell 1)									
			9-Apr-12	28-Nov-12	9-May-13	21-Nov-13	5-May-14	4-Nov-14	19-May-15	5-Nov-15	5-May-16	5-Dec-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	0.3	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	0.8	<0.2	<0.2	<0.2	<0.03	0.055	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	1	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	0.8	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	400	<200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	400			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-D (West of Cell 1)												
			9-Apr-12	28-Nov-12	28-Nov-12 (duplicate)	14-May-13	14-May-13 (duplicate)	21-Nov-13	29-May-14	4-Nov-14	4-Nov-14 (duplicate)	19-May-15	19-May-15 (duplicate)	5-Nov-15	5-Nov-15 (duplicate)
Polycyclic Aromatic Hydrocarbons (PAHs)															
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	-	-
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	-	-
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.03	<0.03	<0.030	<0.030	0.064	0.084
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	-	-
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	-	-
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.010
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	-	-
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Poly Chlorinated Biphenyls (PCBs)															
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)															
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100	<100							<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100	<100				NA					-	-
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	<200	<200	NA	<200	<200	<200	<200	310	370
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200	<200				NA					-	-
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW24-D (West of Cell 1)			
			5-May-16	5-May-16 (duplicate)	5-Dec-16	5-Dec-16 (duplicate)
Polycyclic Aromatic Hydrocarbons (PAHs)						
Naphthalene	µg/L	-	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/L	-	NA	NA	NA	NA
Acenaphthene	µg/L	-	NA	NA	NA	NA
Fluorene	µg/L	-	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/L	-	<0.03	<0.03	<0.03	<0.03
Anthracene	µg/L	-	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/L	-	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/L	-	NA	NA	NA	NA
Benzo(a)anthracene	µg/L	-	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/L	-	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	NA	NA	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.05	<0.05	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)						
Total PCB's	µg/L	{3} (H)	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)						
C6 - C10 (F1)	µg/L	--	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	NA	NA	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	NA	NA	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW25-S (West of Cell 1)									
			10-Apr-12	29-Nov-12	9-May-13	21-Nov-13	5-May-14	12-Nov-14	4-Jun-15	30-Nov-15	10-May-16	6-Dec-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	NA	<0.2	<0.2	0.3	<0.2	<0.05	<0.050	<0.050	<0.05	0.051
Acenaphthylene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	NA	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	NA	<0.1	<0.2	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	NA	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	300	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	NA	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	NA	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW25-I (West of Cell 1)									
			10-Apr-12	29-Nov-12	17-May-13	22-Nov-13	2-Jun-14	11-Nov-14	4-Jun-15	2-Dec-15	10-May-16	6-Dec-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW26-S (North of Cell 2)							
			10-Apr-12	12-Nov-13	5-May-14	12-Nov-14	21-May-15	4-Nov-15	8-Apr-16	7-Nov-16
Polycyclic Aromatic Hydrocarbons (PAHs)										
Naphthalene	µg/L	-	NA	<0.2	<0.2	NA	NA	NA	<0.05	NA
Acenaphthylene	µg/L	-	NA	<0.2	<0.2	NA	NA	NA	NA	NA
Acenaphthene	µg/L	-	NA	<0.2	<0.2	NA	NA	NA	NA	NA
Fluorene	µg/L	-	NA	<0.2	<0.05	NA	NA	NA	<0.05	NA
Phenanthrene	µg/L	-	NA	<0.2	<0.03	NA	NA	NA	<0.03	NA
Anthracene	µg/L	-	NA	<0.2	<0.05	NA	NA	NA	<0.05	NA
Fluoranthene	µg/L	-	NA	<0.2	<0.05	NA	NA	NA	<0.05	NA
Pyrene	µg/L	-	NA	<0.2	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	µg/L	-	NA	<0.2	<0.2	NA	NA	NA	<0.05	NA
Chrysene	µg/L	-	NA	<0.2	<0.05	NA	NA	NA	<0.05	NA
Benzo(b)fluoranthene	µg/L	-	NA	<0.2	<0.2	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	-	NA	<0.2	<0.05	NA	NA	NA	<0.05	NA
Benzo(a)pyrene	µg/L	0.01 (H)	NA	<0.01	<0.01	NA	NA	NA	<0.01	NA
Indeno(1,2,3-cd)pyrene	µg/L	-	NA	<0.2	<0.2	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	NA	<0.2	<0.05	NA	NA	NA	<0.05	NA
Benzo(g,h,i)perylene	µg/L	-	NA	<0.2	<0.05	NA	NA	NA	<0.05	NA
Poly Chlorinated Biphenyls (PCBs)										
Total PCB's	µg/L	{3} (H)	NA	<0.1	<0.1	NA	NA	NA	<0.05	NA
Petroleum Hydrocarbons (PHCs)										
C6 - C10 (F1)	µg/L	--	NA	NA	NA	NA	NA	NA	<25	NA
C6 - C10 (F1 minus BTEX)	µg/L	--	NA	NA		NA	NA	NA	<25	NA
C10 - C16 (F2)	µg/L	--	NA	NA	NA	NA	NA	NA	<100	NA
C10 - C16 (F2 minus Napthalene)	µg/L	--	NA	NA	NA	NA	NA	NA	NA	NA
C16 - C34 (F3)	µg/L	--	NA	NA	NA	NA	NA	NA	<200	NA
C16 - C34 (F3 minus PAHs)	µg/L	--	NA	NA	NA	NA	NA	NA	NA	NA
C34 - C50 (F4)	µg/L	--	NA	NA	NA	NA	NA	NA	<200	NA

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW26-I (North of Cell 2)										
			10-Apr-12	10-Apr-12	4-Dec-12	21-May-13	13-Nov-13	2-Jun-14	11-Nov-14	21-May-15	4-Nov-15	13-Apr-16	7-Nov-16
				(duplicate)									
Polycyclic Aromatic Hydrocarbons (PAHs)													
Naphthalene	µg/L	-	<0.2	0.8	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)													
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)													
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW27-S (North of Cell 2)									
			4-Apr-12	21-Nov-12	17-May-13	18-Nov-13	26-May-14	21-Oct-14	21-May-15	10-Nov-15	13-Apr-16	7-Dec-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW27-I (North of Cell 2)								
			4-Dec-12	21-May-13	22-Nov-13	26-May-14	11-Nov-14	6-May-15	2-Dec-15	13-Apr-16	7-Dec-16
Polycyclic Aromatic Hydrocarbons (PAHs)											
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	0.21	0.06	0.039	0.1	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)											
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)											
C6 - C10 (F1)	µg/L	--	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW27-D (North of Cell 2)									
			5-Apr-12	5-Apr-12 (duplicate)	21-Nov-12	21-Nov-12 (duplicate)	17-May-13	17-May-13 (duplicate)	18-Nov-13	18-Nov-13 (duplicate)	26-May-14	21-Oct-14
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	<100	<100	<100	<100	NA	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100	<100	<100						
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	<100	<100	<100	<100	NA	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100	<100	<100					NA	
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	<200	<200	<200	<200	NA	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200	<200	<200					NA	
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	<200	<200	<200	<200	NA	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements, General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW27-D (North of Cell 2)							
			22-Apr-15	22-Apr-15 (duplicate)	17-Nov-15	17-Nov-15 (duplicate)	13-Apr-16	13-Apr-16 (duplicate)	7-Dec-16	7-Dec-16 (duplicate)
Polycyclic Aromatic Hydrocarbons (PAHs)										
Naphthalene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/L	-	NA	NA	-	-	NA	NA	NA	NA
Acenaphthene	µg/L	-	NA	NA	-	-	NA	NA	NA	NA
Fluorene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/L	-	<0.030	<0.030	<0.030	<0.030	<0.03	<0.03	<0.03	<0.03
Anthracene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/L	-	NA	NA	-	-	NA	NA	NA	NA
Benzo(a)anthracene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	NA	NA	-	-	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	NA	NA	-	-	NA	NA	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)										
Total PCB's	µg/L	{3} (H)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)										
C6 - C10 (F1)	µg/L	--	<25	<25	<25	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<25	<25	<25	<25	<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--			-	-	NA	NA	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--			-	-	NA	NA	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW28-S (West of Cell 2)									
			4-Apr-12	21-Nov-12	16-May-13	18-Nov-13	21-May-14	5-Nov-14	6-May-15	10-Nov-15	14-Apr-16	6-Dec-16
												Dry not full smpl
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	1.3	<0.2	<0.05	<0.050	<0.050	<0.05	NA
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	NA
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	0.3	<0.2	<0.03	<0.030	<0.030	<0.03	NA
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	NA
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	NA
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	NA
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	NA
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	NA
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	NA
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	NA
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	NA
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	<100	<100	<100	<100	NA
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	NA
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	NA

Notes:

NA — Parameter not analyzed

-- — No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW28-I (West of Cell 2)											
			4-Apr-12	21-Nov-12	16-May-13	16-May-13 (duplicate)	18-Nov-13	29-May-14	5-Nov-14	5-Nov-14 (duplicate)	6-May-15	17-Nov-15	14-Apr-16	6-Dec-16
Polycyclic Aromatic Hydrocarbons (PAHs)														
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.03	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)														
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)														
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100							<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100				NA				-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200				NA				-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW6-99S (West of Cell 2)									
			9-Apr-12	29-Nov-12	17-May-13	22-Nov-13	29-May-14	12-Nov-14	29-May-15	2-Dec-15	18-Apr-16	6-Dec-16
Polycyclic Aromatic Hydrocarbons (PAHs)												
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.03	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)												
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)												
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100					<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA			-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	300	NA	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200			NA			-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW6-99I (West of Cell 2)											
			9-Apr-12	29-Nov-12	17-May-13	22-Nov-13	29-May-14	29-May-14 (duplicate)	12-Nov-14	21-May-15	21-May-15 (duplicate)	2-Dec-15	18-Apr-16	6-Dec-16
Polycyclic Aromatic Hydrocarbons (PAHs)														
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.050	<0.05	<0.05
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	-	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	-	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.050	<0.05	<0.05
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.03	<0.030	<0.030	<0.030	<0.03	<0.03
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.050	<0.05	<0.05
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.050	<0.05	<0.05
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	-	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050	<0.050	<0.050	<0.05	<0.05
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.050	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	-	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.050	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	-	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.050	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050	<0.050	<0.050	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)														
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)														
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	NA	NA	<25	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100						<25	<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	NA	NA	<100	<100	170	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100			NA	NA				-	NA	NA
C16 - C34 (F3)	µg/L	--	<200	500	200	<200	NA	NA	<200	<200	<200	300	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	500			NA	NA				-	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	NA	NA	<200	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	MW6-99D (West of Cell 2)								
			5-Apr-12	27-Nov-12	27-Nov-12 (duplicate)	16-May-13	21-Nov-13	21-May-14	6-Nov-14	6-Nov-14 (duplicate)	7-May-15
Polycyclic Aromatic Hydrocarbons (PAHs)											
Naphthalene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050
Acenaphthylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA
Acenaphthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA
Fluorene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050
Phenanthrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.03	<0.03	<0.030
Anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050
Fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050
Pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA
Benzo(a)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050
Chrysene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050
Benzo(b)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050
Benzo(a)pyrene	µg/L	0.01 (H)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010
Indeno(1,2,3-cd)pyrene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.050
Benzo(g,h,i)perylene	µg/L	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.050
Poly Chlorinated Biphenyls (PCBs)											
Total PCB's	µg/L	{3} (H)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)											
C6 - C10 (F1)	µg/L	--	<100	<100	<100	<100	<100	NA	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<100	<100	<100						<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	<100	NA	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	<100	<100	<100			NA			
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	<200	NA	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	<200	<200	<200			NA			
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	<200	NA	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Table 2h Background Wells:
Groundwater Quality Results, Field Measurements,
General Chemistry and Phenols - Atlas Landfill

Parameter	Units	ODWS (2003) [1]	30-Nov-15	30-Nov-15 (duplicate)	18-Apr-16	18-Apr-16 (duplicate)	6-Dec-16	6-Dec-16 (duplicate)
Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	µg/L	-	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/L	-	-	-	NA	NA	NA	NA
Acenaphthene	µg/L	-	-	-	NA	NA	NA	NA
Fluorene	µg/L	-	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/L	-	<0.030	<0.030	<0.03	<0.03	<0.03	<0.03
Anthracene	µg/L	-	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/L	-	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/L	-	-	-	NA	NA	NA	NA
Benzo(a)anthracene	µg/L	-	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/L	-	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/L	-	-	-	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	-	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.01 (H)	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	-	-	-	NA	NA	NA	NA
Dibenzo(a,h)anthracene	µg/L	-	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/L	-	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Poly Chlorinated Biphenyls (PCBs)								
Total PCB's	µg/L	{3} (H)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Petroleum Hydrocarbons (PHCs)								
C6 - C10 (F1)	µg/L	--	<25	<25	<25	<25	<25	<25
C6 - C10 (F1 minus BTEX)	µg/L	--	<25	<25	<25	<25	<25	<25
C10 - C16 (F2)	µg/L	--	<100	<100	<100	<100	<100	<100
C10 - C16 (F2 minus Napthalene)	µg/L	--	-	-	NA	NA	NA	NA
C16 - C34 (F3)	µg/L	--	<200	<200	<200	<200	<200	<200
C16 - C34 (F3 minus PAHs)	µg/L	--	-	-	NA	NA	NA	NA
C34 - C50 (F4)	µg/L	--	<200	<200	<200	<200	<200	<200

Notes:

NA Parameter not analyzed

-- No value

1. Ontario Drinking Water Standard (ODWS):

a. Unbracketed numbers represent Maximum Acceptable Concentrations, i.e. 10

b. Brace bracketed numbers represent Interim Maximum Acceptable Concentrations, i.e. {10}

c. Square bracketed numbers represent Aesthetic Objective, i.e. [500]

d. Bracketed < > numbers represent Operational Guidelines, i.e. < 5 >

(A) Aesthetic Drinking Water Objective

(H) Health Related Drinking Water Objective

Exceeds ODWS

Sanitary Sewer

Sanitary sewer use compliance monitoring was conducted on four occasions in 2016 (January, June, July and November). The samples were obtained from the maintenance hole MHBB located north east of the intersection of Woodlawn Road and River Road (see Figure 2 for location). MHBB receives the discharge from the landfill site leachate forcemain prior to discharge to the trunk sanitary sewer on Woodlawn Road. The sanitary sewer water quality results are presented in Table 4 and meet the Regional Municipality of Niagara sanitary sewer discharge limits (By-Law No. 47-2008, dated May 22, 2008) except for elevated lab pH (11.6 versus 11 during the June sampling event), lab pH (11.2 versus 11 during July sampling event) and solvent extractables (minerals or synthetic in origin) (16 mg/L versus 15 mg/L during November sampling event).

Table 4
Atlas Landfill Sanitary Sewer Water Quality Results

Parameter	Units	The Regional Municipality of Niagara Sanitary Sewer Discharge Limit†	Atlas Landfill Pumping Discharge to Sanitary Sewer (Sampled at MHBB)											
			21-Jan-14	25-Apr-14	21-Jul-14	12-Nov-14	12-Feb-15	14-May-15	09-Jul-15	04-Nov-15	26-Jan-16	06-Jun-16	28-Jul-16	02-Nov-16
pH (field)	--	6 - 11	--	--	--	9.3	-	-	-	-	9.3	7.5	8.3	9.6
pH (lab)	--	6 - 11	11.6	7.7	7.6	9.88	7.79	7.7	7.6	7.48	8.65	11.6	11.2	8.92
Antimony, Total	mg/L	5	<0.01	<0.01	0.0027	0.0014	0.0018	0.003	0.0038	0.0069	0.0019	<0.0025	0.00092	0.0019
Arsenic, Total	mg/L	1	<0.02	<0.02	0.0047	0.0047	0.0014	0.0015	0.0026	0.0025	0.0036	<0.005	0.0062	0.0036
Benzene	mg/L	0.01	<0.0005	<0.0005	0.0014	<0.00010	<0.00010	<0.00010	<0.00025	<0.00010	NA	<0.001	<0.0005	<0.001
Biochemical Oxygen Demand	mg/L	300	19	6	2	<2.0	<2.0	<2.0	8	3	9	8	<2	<2
Cadmium, Total	mg/L	0.7	<0.008	<0.008	0.00049	<0.50	0.0003	0.0004	0.0013	0.0024	0.00022	0.00082	<0.0005	0.00039
Chloroform	mg/L	0.04	0.0007	0.0005	0.00042	<0.00001	<0.00010	<0.00010	<0.00025	<0.00010	NA	<0.001	0.00078	<0.001
Chromium, Total	mg/L	3	0.19	0.05	ND	0.028	<0.005	<0.005	<0.005	0.0096	0.025	<0.025	0.044	0.018
Cobalt, Total	mg/L	5	<0.01	<0.01	ND	0.001	0.0012	0.0019	0.0043	0.0025	0.003	<0.0025	0.00094	0.0025
Copper, Total	mg/L	3	0.02	0.02	0.0093	0.017	0.012	0.0099	0.017	0.035	0.021	0.024	0.012	0.031
Cyanide, Total	mg/L	1	0.009	0.049	0.14	0.017	0.1	0.12	0.13	0.13	0.011	0.15	0.0076	0.075
1,2-dichlorobenzene	mg/L	0.05	NA	NA	ND	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	NA	<0.002	<0.001	<0.002
1,4-dichlorobenzene	mg/L	0.08	<0.0004	<0.0004	ND	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	NA	<0.002	<0.001	<0.002
Ethylbenzene	mg/L	0.16	<0.0005	<0.0005	ND	<0.00010	<0.00010	<0.00010	<0.00025	<0.00010	NA	<0.001	<0.0005	<0.001
Fluoride	mg/L	10	5.0	1.9	1.7	2.6	1.6	1.2	1.1	1.1	1.8	4.5	3.5	2.0
Kjeldahl Nitrogen, Total	mg/L	100	12.9	2.3	5.8	5.9	4.1	3.3	4.6	4.5	3.6	43	13	8.5
Lead, Total	mg/L	1	0.01	0.01	0.0033	0.01	0.0018	0.0014	0.002	0.013	0.013	0.003	0.0034	0.0067
Mercury, Total	mg/L	0.01	<0.0001	<0.0001	ND	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001
Methylene Chloride	mg/L	0.21	<0.004	<0.004	ND	<0.0050	<0.00050	<0.00050	<0.0013	<0.00050	NA	<0.005	<0.0025	<0.005
Molybdenum, Total	mg/L	5	2.32	0.4	1	0.087	0.58	0.13	0.12	0.15	0.35	0.75	1.8	1.0
Nickel, Total	mg/L	2	0.03	0.02	0.015	0.012	0.014	0.015	0.029	0.019	0.015	0.034	0.022	0.026
o-Xylene	mg/L	0.52	<0.0005	<0.0005	ND	<0.0010	<0.00010	<0.00010	<0.00025	<0.00010	NA	<0.001	<0.0005	<0.001
Phenolics (4AAP)	mg/L	1	0.005	0.037	0.0077	0.0048	0.0041	<0.0010	0.0048	0.0042	0.0018	0.0058	0.0017	0.0016
Phosphorus, Total	mg/L	10	0.05	0.02	0.012	0.067	0.023	<0.01	0.042	0.11	0.2	0.034	0.046	0.067
Selenium, Total	mg/L	1	<0.02	<0.02	0.0045	0.0072	0.0049	0.0028	0.0034	0.0036	0.0034	<0.01	0.013	0.0071
Silver, Total	mg/L	5	<0.01	<0.01	0.00011	<0.10	<0.0001	0.00011	0.00014	0.00017	0.00016	0.00064	<0.0001	<0.0001
Solvent Extractables – animal or vegetable in origin	mg/L	150	6	1	3.2	9.1	1.8	<0.50	<0.50	<0.50	22	9.3	3.8	50
Solvent Extractables – mineral or synthetic in origin	mg/L	15	<1	1	ND	1.3	<0.50	<0.50	<0.50	<0.50	4.2	0.9	<0.5	16
Sulphate	mg/L	1500	781	1050	1200	520	1200	1400	1300	1000	380	400	440	920
Sulphides, Total	mg/L	1	<0.01	<0.01	ND	<0.020	<0.020	<0.020	<0.020	<0.020	<0.02	<0.02	<0.02	<0.02
Suspended Solids, Total	mg/L	350	68	5	13	210	24	16	10	39	190	54	190	120
1,1,2,2 – Tetrachloroethane	mg/L	0.04	<0.0005	<0.0005	ND	<0.0020	<0.00020	<0.00020	<0.00050	<0.00020	NA	<0.002	<0.001	<0.002
Tetrachloroethylene	mg/L	0.05	<0.0003	<0.0003	0.00011	<0.0010	<0.00010	<0.00010	<0.00025	<0.00010	NA	<0.001	<0.0005	<0.001
Tin, Total	mg/L	5	<0.1	<0.1	ND	<0.1	<0.001	<0.001	<0.001	0.002	0.0021	<0.005	<0.001	<0.001
Toluene	mg/L	0.2	<0.0005	<0.0005	0.00021	<0.00020	<0.00020	<0.00020	<0.00050	<0.00020	NA	<0.002	<0.001	<0.002
Trichloroethylene	mg/L	0.05	0.0247	<0.3	0.03	0.0046	0.0066	<0.00010	<0.00025	<0.00010	NA	0.038	0.032	0.013
Zinc, Total	mg/L	3	<0.04	<0.04	0.028	0.014	0.035	0.044	0.045	0.12	0.057	0.05	0.013	0.032

Note:

† - The Regional Municipality of Niagara, Sewer Use By-Law, By-Law No. 27-2014 (February 27, 2014), "A By-Law to Regulate Discharges to the Sanitary and Storm Sewer Systems of the Regional Municipality of Niagara and to Repeal By-Law No. 47-2008.

NA - not analyzed

ND - non detect

- exceeds Sanitary Sewer Discharge Limit

Landfill Gas

Landfill gas monitoring was carried out at the landfill gas monitoring probes LFG1, LFG2, LFG3, LFG4, LFG5 and LFG6. The probes were installed in 2012 at the locations shown in Figure 6. The ECA requires sampling of these probes on a monthly basis from November to April and once in June and August of each year.

The gas probe monitoring program requires all gas readings to be taken after a volume of gas equal to three times the probe and the annulus air space has been evacuated. To complete this task, a calibrated SKC Pump which purges the probe at a known volumetric flow rate is used. If at any time during this process the pump cannot perform the flow rate required, the pump will shut off and have a flow fault error. This flow fault would occur if the screened portion of the gas probe is partially blocked or completed flooded. With limited or no open screen the pump will "dead head" and not be able to perform the purge cycle.

The landfill gas monitoring data for 2016 are provided in Table 5a - d. The monitoring frequency met the requirement of the ECA. Methane concentrations in all of the monitors ranged from 0% to 0.1% (by volume) which is significantly less than the lower explosive limit of 5% (by volume).

During gas sampling in 2016 water levels were collected at the probes and the probes were then purged dry prior to collection of a gas sample. The water level elevations at the landfill gas probes are provided in Table 9b. The results indicate that the probe intake screens were completely or mostly submerged during the sampling events. This situation could limit how much landfill gas enters the probe. However, the subsequent purging of the probes dry would allow entrance of landfill gas if present within the unsaturated zone at the well location.

The ground surface elevation for LFG1 is not available. It is recommended that the ground surface elevation and the top of probe standpipe elevation be determined for LFG1 in 2016.

Considering the low methane levels obtained at the landfill gas probes and the fact that the waste fill has a low decomposable organic content, it is recommended that the monitoring frequency for the landfill gas probes be reduced to twice per year (February and August).

Due to the naturally high groundwater table along the landfill perimeter, the gas probe screens can at time be fully submerged. When this happens, the air column in the probe becomes trapped and can fluctuate between positive and negative pressure in response to increases and decreases, respectively, in groundwater level. This would affect the "initial" pressure readings given in Table 9a. Once the probe is purged of groundwater and the gas vacuum pump is reconnected, the final pressure can be negative if the groundwater level quickly rebounds and submerges the screen. The negative pressure is not considered significant from a gas generation / migration perspective.

SUMMARY AND RECOMMENDATIONS

Summary

- The total quantity of waste landfilled during 2016 was 390,722 tonnes (217,068 m^3 assuming an in-place waste density of 1.8 tonnes/m^3. The waste types were remedial soils, profiled ash, waste asbestos and construction waste.
- The volume of leachate discharged to sanitary sewer during 2016 was 39,088 m^3, consisting of 25,485 m^3 from Cell 1 and 13,603 m^3 from Cell 2. These leachate quantities agree well with estimates based on water budget means for the area. This support that the leachate collection system for Cells 1 and 2 are effective in capturing the contact water from these cells.
- Leachate quality monitoring was completed at MHBB and LCS-MH4 in 2016. A number of parameters including pH, hardness, dissolved organic carbon, major ions (e.g. chloride, sodium and sulphate), metals, phenols, phosphorous and semi-volatile organic compounds exceeded the PWQO and/or ODWS.
- The downgradient groundwater quality results obtained for 2016 are generally consistent with results obtained in 2012 to 2015 with the exception of decreasing trends in leachate indicator parameter concentrations (including chloride, dissolved

organic carbon, total dissolved solids, iron, manganese and sodium) at shallow and granular intermediate flow zone wells 22-S, 25-S, 22-GI and 23-GI located along the west side of the landfill. The decreasing trends likely reflect the cut-off of leachate migration by the sheet pile wall constructed in 2012. A decreasing trend was also noted for iron at MW 18-S at the southeast end of the landfill.

- Surface water quality monitoring results are generally consistent with historic results. There are no discernable differences in water quality at the Welland River Stations upstream and downstream of the site that may be indicative of landfill leachate impacts.
- Sanitary sewer use compliance monitoring was conducted on four occasions at MHBB in 2016. The sanitary sewer water quality results mostly meet the Regional Municipality of Niagara sanitary sewer discharge limits except for slight exceedances for lab pH during two sampling events and exceedance for solvent extractables (minerals or synthetic in origin) during one sampling event.
- Methane concentrations at the landfill gas probes in 2016 ranged from 0% to 0.1% (by volume) and are much lower than the lower explosive limit for methane gas of 5% (by volume).
- There were no changes in 2016 in the design, operations or procedures at the site from those described in the ECA and the supporting documents.

Recommendations

- The landfill gas monitoring frequency should be reduced to twice per year (February and August) given the low levels of methane gas detected and the low decomposable organic matter content of the waste fill.
- The ground elevation and the top of standpipe elevation at the gas probe LFG1 should be surveyed in 2017.
- Leachate samples should be collected twice annually (spring and fall) from the collector system maintenance hole LCS-MH4. The samples should be analyzed for the same list of parameters as the groundwater samples. The samples should be filtered.
- There is no need to implement contingency plans at this time. Notice 3 of ECA (dated April 4, 2014) required that a Trigger Mechanism and Contingency Plan Document be submitted by July 30, 2015 for review by the MOECC. The Trigger and Contingency Plan report (Golder Associates, July 27, 2015) was submitted to the MOECC. Responses to comments received from the MOECC (dated January 11, 2016) on the document were prepared by Golder and submitted to the MOECC on January 29, 2016. The finalized/approved trigger mechanism will need to be applied to the monitoring data in subsequent annual monitoring reports.

Table 5a
Landfill Gas Monitoring Results - Atlas Landfill

Date	27-Jun-12		09-Aug-12		14-Nov-12		19-Dec-12	
	Purge Time:		Purge Time: 14 mins		Purge Time: 2 mins		Purge Time: 3 mins	
LFG 1	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	Not	-	1.12	-1.37	0.12	-0.24	0.03	-0.08
CH4 (%)	Installed	-	0.00	0.00	0.00	0.00	0.10	0.10
CO2 (%)	-	-	0.00	0.00	0.00	0.00	0.00	0.00
O2 (%)	-	-	20.70	20.60	21.30	21.40	21.40	21.30
					Purge Time: 2 mins			
	Purge Time: 15 mins		Purge Time: 13 mins				Purge Time: 2 mins	
LFG 2	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.47	-3.86	-0.01	-0.17	0.07	-2.13	0.03	-0.74
CH4 (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10
CO2 (%)	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O2 (%)	20.10	20.70	20.40	20.70	21.30	21.50	21.30	21.40
	Purge Time: 15 mins		Purge Time: 13 mins		Purge Time: 2 mins		Purge Time: 2 mins	
LFG 3	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.00	-0.01	-0.06	-0.07	0.05	0.08	0.00	-0.01
CH4 (%)	0.60	0.60	0.50	0.60	0.00	0.00	0.10	0.10
CO2 (%)	0.10	0.10	0.40	0.50	0.00	0.00	0.00	0.00
O2 (%)	19.90	19.80	18.70	18.10	21.60	21.60	21.50	21.60
	Purge Time: 15 mins		Purge Time: 12 mins		Purge Time: 2 mins		Purge Time: 2 mins	
LFG 4	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	-0.02	0.00	0.00	0.01	0.04	0.01	0.13	-0.61
CH4 (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10
CO2 (%)	0.00	0.20	0.70	1.10	0.00	0.00	0.10	0.00
O2 (%)	20.80	19.00	15.30	15.10	21.50	21.60	21.20	21.50
	Purge Time: 15 mins		Purge Time: 12 mins		Purge Time: 2 mins		Purge Time: 2 mins	
LFG 5	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	-0.01	-0.01	-0.02	-0.05	0.12	0.04	0.03	0.02
CH4 (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10
CO2 (%)	0.00	0.50	0.00	1.00	0.00	0.00	0.00	0.00
O2 (%)	20.70	20.10	20.50	18.60	21.50	21.80	21.30	21.50
	Purge Time: 15 mins		Purge Time: 12 mins		Purge Time: 2 mins		Purge Time: 2 mins	
LFG 6	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	-0.02	-0.02	0.01	-0.04	0.00	0.01	0.01	-0.02
CH4 (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 (%)	0.00	0.60	4.70	4.80	0.00	0.00	0.10	0.00
O2 (%)	20.00	18.00	12.60	12.40	21.10	21.30	20.60	21.00

Notes:
- Landfill gas monitoring carried out by Comcor

Table 5a
Landfill Gas Monitoring Results - Atlas Landfill

Date	January 2013		06-Mar-13		27-Mar-13		10-Apr-13		18-Jun-13		22-Aug-13		30-Nov-13		18-Dec-13	
	Purge Time: 3 mins		Purge Time: 3 mins		Purge Time: 3 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins	
LFG 1	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	NA		0.06	0.05	0.09	0.05	0.14	0.08	0.06	-0.10	0.00	-0.06	0.00	-0.21	0.00	-0.58
CH4 (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00
CO2 (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O2 (%)			21.90	21.60	20.80	21.00	21.60	21.80	20.30	20.30	20.00	20.00	21.00	21.80	21.00	21.30
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 3mins		Purge Time: 3 mins	
LFG 2	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	NA		0.02	-1.04	0.05	-0.12	0.08	-0.05	0.03	-0.16	0.00	-1.89	0.00	-2.37	0.00	-2.17
CH4 (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00
CO2 (%)			0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O2 (%)			22.10	22.10	20.90	20.90	21.70	21.90	20.50	20.60	20.00	20.00	21.80	22.10	20.70	20.80
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 3mins		Purge Time: 3 mins	
LFG 3	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	NA		0.01	0.00	0.01	-0.01	0.07	0.05	0.05	0.06	0.03	0.02	0.00	-0.58	0.00	-0.62
CH4 (%)			0.40	0.00	0.00	0.00	1.40	0.00	0.60	0.50	0.10	0.10	0.00	0.00	0.00	0.00
CO2 (%)			0.40	0.10	0.00	0.00	0.80	0.00	1.60	1.30	1.50	4.90	0.00	0.00	0.20	0.00
O2 (%)			20.40	22.00	20.70	20.80	18.00	22.00	18.80	20.10	16.60	9.90	20.30	22.00	20.10	21.10
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 3 mins		Purge Time: 3mins	
LFG 4	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	NA		0.04	0.00	0.02	-0.01	0.07	-0.11	0.06	-0.08	0.01	0.01	0.01	-1.53	0.01	-1.87
CH4 (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.00	0.00	0.00
CO2 (%)			0.00	0.00	0.00	0.00	0.10	0.00	0.20	0.00	0.20	0.00	0.00	0.00	0.00	0.00
O2 (%)			22.00	22.20	21.00	21.10	21.80	22.00	19.70	20.40	19.30	20.00	21.30	21.60	21.00	21.10
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 3 mins		Purge Time: 2mins	
LFG 5	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	NA		0.12	-0.02	0.03	-0.03	0.01	-0.17	0.06	-0.06	0.02	0.00	0.00	-0.05	0.00	-0.13
CH4 (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.20	0.00	0.00	0.00
CO2 (%)			0.00	0.00	0.10	0.00	0.10	0.00	0.30	0.00	0.10	0.00	0.00	0.00	0.10	0.10
O2 (%)			21.80	22.00	20.80	21.10	21.30	21.50	19.70	20.40	19.60	19.80	20.70	21.00	20.80	20.80
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2mins	
LFG 6	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	NA		0.00	-0.01	0.06	-14.02	0.10	-0.18	-0.08	-2.97	0.05	0.05	0.02	-3.24	0.00	-2.86
CH4 (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.20	0.20	0.00	0.00
CO2 (%)			0.00	0.00	0.10	0.00	1.80	0.10	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00
O2 (%)			21.70	21.80	20.40	20.80	17.40	21.80	20.50	20.50	18.20	20.00	20.00	20.40	20.80	20.70

Notes:
- Landfill gas mor

Table 5a
Landfill Gas Monitoring Results - Atlas Landfill

Date	28-Jan-14		28-Jan-14		12-Feb-14		15-Mar-14		30-Apr-14		09-Jun-14		22-Aug-14		07-Nov-14		07-Dec-14	
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 3 mins		Purge Time: 2 mins		Purge Time: 3 mins		Purge Time: 2 mins		Purge Time: 2 mins	
LFG 1	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.07	0.05	0.07	0.05	0.00	-0.66	0.01	0.00	0.00	-0.02	-0.01	-0.38	NA		0.08	-0.79	0.28	-1.99
CH4 (%)	0.20	0.20	0.20	0.20	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00			0.20	0.20	0.00	0.00
CO2 (%)	0.20	0.20	0.20	0.20	0.00	0.10	0.10	0.10	0.00	0.00	0.00	0.00			0.00	0.60	0.00	0.00
O2 (%)	20.50	20.30	20.50	20.30	20.80	20.80	21.30	21.30	21.70	21.70	19.10	19.00			21.20	20.60	24.00	24.00
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 3 mins		Purge Time: 3 mins		Purge Time: 2 mins		Purge Time: 3 mins		Purge Time: 3 mins		Purge Time: 2 mins		Purge Time: 2 mins	
LFG 2	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.10	0.09	0.10	0.09	0.00	-1.19	0.02	-0.09	0.01	-0.98	0.00	-0.84	0.00	-0.01	-0.01	-0.04	0.01	-0.10
CH4 (%)	0.20	0.20	0.20	0.20	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00
CO2 (%)	0.20	0.20	0.20	0.20	0.00	0.10	0.10	0.10	0.00	0.00	0.00	0.00	1.50	3.30	0.40	0.00	0.00	0.00
O2 (%)	19.70	20.70	19.70	20.70	20.90	20.70	21.30	21.40	21.60	21.70	18.90	19.00	18.20	16.40	20.10	21.10	24.00	24.10
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 3 mins		Purge Time: 3 mins		Purge Time: 2 mins		Purge Time: 3 mins		Purge Time: 3 mins		Purge Time: 2 mins		Purge Time: 2 mins	
LFG 3	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.12	0.18	0.12	0.18	0.00	-0.61	0.07	0.08	0.01	-0.15	-0.01	-0.03	0.00	0.00	0.04	-0.03	0.00	0.00
CH4 (%)	0.20	0.20	0.20	0.20	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00
CO2 (%)	0.20	0.20	0.20	0.20	0.00	0.10	0.50	1.10	0.10	0.00	0.20	0.00	1.40	2.50	0.00	0.30	0.20	0.20
O2 (%)	20.40	20.10	20.40	20.10	20.80	20.70	20.90	19.80	21.10	21.60	18.70	18.90	18.50	17.50	21.20	20.80	23.10	23.20
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 3 mins		Purge Time: 2 mins		Purge Time: 3 mins		Purge Time: 3 mins		Purge Time: 2 mins		Purge Time: 2 mins	
LFG 4	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.17	0.10	0.17	0.10	0.00	-0.86	0.06	-0.03	0.04	-0.09	-0.01	-2.65	0.01	-0.02	0.01	-0.11	-0.01	0.00
CH4 (%)	0.20	0.20	0.20	0.20	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00
CO2 (%)	0.10	0.10	0.10	0.10	0.10	0.00	0.30	0.10	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.30	0.50
O2 (%)	20.50	20.50	20.50	20.50	20.80	20.70	21.40	21.90	21.20	21.60	18.90	19.00	19.70	20.40	20.90	21.10	21.40	20.40
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 3 mins		Purge Time: 3 mins		Purge Time: 2 mins		Purge Time: 3 mins		Purge Time: 2 mins		Purge Time: 2 mins	
LFG 5	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.30	0.20	0.30	0.20	0.00	-0.24	0.04	0.00	-0.04	-0.05	0.00	-0.44	0.02	0.01	0.03	0.00	0.01	0.00
CH4 (%)	0.20	0.20	0.20	0.20	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00
CO2 (%)	0.10	0.10	0.10	0.10	0.00	0.00	0.30	0.10	0.20	0.00	0.10	0.00	0.40	0.00	1.00	3.60	0.10	0.10
O2 (%)	21.10	21.30	21.10	21.30	20.80	20.80	21.50	21.90	20.60	21.50	19.20	19.20	19.60	20.20	20.70	17.30	22.80	23.00
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 3 mins		Purge Time: 3 mins		Purge Time: 2 mins		Purge Time: 3 mins		Purge Time: 2 mins		Purge Time: 2 mins	
LFG 6	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.35	0.33	0.35	0.33	0.00	-0.43	0.12	0.00	0.11	-0.14	-0.01	-3.80	0.01	-0.05	0.04	-0.47	-0.02	-0.21
CH4 (%)	0.10	0.10	0.10	0.10	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00
CO2 (%)	0.10	0.10	0.10	0.10	0.00	0.10	1.10	0.10	0.30	0.00	0.70	0.00	0.40	0.00	0.40	0.00	1.30	0.30
O2 (%)	20.30	20.90	20.30	20.90	20.90	20.90	20.00	21.80	20.60	21.30	17.80	19.30	18.40	20.20	19.90	21.30	15.30	20.60

Notes:
- Landfill gas mor

Table 5a
Landfill Gas Monitoring Results - Atlas Landfill

Date	07-Jan-15		27-Feb-15		16-Mar-15		13-Apr-15		05-Jun-15		10-Aug-15		16-Nov-15		11-Dec-15	
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 8 mins		Purge Time: 2 mins		Purge Time: 8 mins		Purge Time: 8 mins		Purge Time: 2 mins	
LFG 1	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.14	0.09	0.08	0.06	0.10	0.05	0.05	0.02	0.79	0.78	0.06	-0.02	0.03	0.02	0.06	0.03
CH4 (%)	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 (%)	0.00	0.00	0.20	0.20	0.00	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00
O2 (%)	21.10	21.30	19.90	19.90	22.50	22.40	20.20	20.00	19.40	19.50	20.00	20.10	20.60	20.50	20.70	20.70
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		13 mins		3 mins		13 mins		13 mins		3 mins	
LFG 2	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.04	0.02	0.02	0.02	0.19	-0.04	0.00	-0.06	-0.24	-0.21	0.00	0.01	0.00	-0.01	0.01	0.02
CH4 (%)	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 (%)	0.00	0.00	0.20	0.20	0.00	0.00	0.00	0.00	0.10	0.00	0.50	1.20	0.30	0.60	0.00	0.00
O2 (%)	21.40	21.30	19.70	19.90	22.30	22.40	20.60	20.60	19.90	19.80	13.50	8.70	15.60	12.20	20.90	20.80
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		13 mins		3 mins		13 mins		13 mins		3 mins	
LFG 3	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.01	-0.05	0.05	0.03	0.00	-0.02	-0.01	-0.04	0.02	-0.03	0.00	0.01	0.06	0.04	0.05	0.03
CH4 (%)	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 (%)	0.00	0.20	0.40	0.20	0.10	0.00	0.10	0.00	0.00	0.00	1.60	2.50	0.20	0.40	0.30	0.40
O2 (%)	21.30	21.20	18.90	19.60	22.40	22.40	20.40	20.50	19.90	19.70	18.80	17.80	20.70	20.40	19.90	20.10
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		12 mins		2 mins		12 mins		12 mins		2 mins	
LFG 4	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	-0.02	-0.08	0.01	0.00	0.00	-0.04	0.03	-0.12	0.01	-0.02	0.00	0.02	0.09	-0.12	0.02	0.01
CH4 (%)	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 (%)	0.10	0.40	0.90	0.70	0.00	0.00	0.00	0.00	0.00	0.00	1.50	2.60	0.00	0.00	0.00	0.00
O2 (%)	21.00	20.70	17.20	18.70	22.40	22.30	20.40	20.20	19.80	19.90	18.50	18.70	21.00	21.00	20.60	20.50
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		12 mins		2 mins		12 mins		12 mins		2 mins	
LFG 5	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	-0.01	-0.02	0.03	0.01	0.00	-0.01	-0.02	-0.04	-0.10	-0.09	0.01	0.00	0.06	0.04	0.00	0.02
CH4 (%)	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00
CO2 (%)	0.00	0.00	0.20	0.20	0.10	0.00	0.10	0.10	0.10	0.00	3.30	6.10	0.10	0.30	0.00	0.00
O2 (%)	20.90	21.10	20.20	20.00	22.20	22.30	20.00	20.10	19.40	19.50	18.30	17.70	20.30	20.30	20.40	20.60
	Purge Time: 2 mins		Purge Time: 2 mins		Purge Time: 2 mins		11 mins		2 mins		11 mins		11 mins		2 mins	
LFG 6	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	-0.05	-0.12	-0.02	-0.03	0.01	-0.02	-0.03	-0.04	-0.06	-0.05	0.02	-0.25	0.00	-0.01	0.01	-1.15
CH4 (%)	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00
CO2 (%)	0.30	0.50	0.20	0.20	0.10	0.00	0.00	0.00	0.00	0.00	1.20	1.20	1.10	1.70	0.80	0.00
O2 (%)	19.70	18.80	20.40	20.40	21.60	21.90	20.90	20.90	19.80	19.90	18.70	18.40	17.70	16.20	16.90	20.50

Notes:
- Landfill gas mor

Table 5a
Landfill Gas Monitoring Results - Atlas Landfill

Date	20-Jan-16		05-Feb-16		1-Mar-16		8-Apr-16		13-Jun-16		02-Aug-16		01-Nov-16		22-Dec-16	
	2 mins		8 mins		2 mins		2 mins		2 mins		2 mins		2 mins		2 mins	
LFG 1	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.33	0.28	0.08	0.05	0.08	0.05	0.00	-0.10	0.00	-0.01	0.00	0.00	0.38	0.28	0.06	0.02
CH4 (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 (%)	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.60	0.90	0.20	0.10	0.40	0.50
O2 (%)	21.30	21.40	22.30	22.50	22.30	22.50	21.20	21.20	20.00	20.00	20.10	19.60	20.00	21.00	20.20	20.00
	3 mins		13 mins		3 mins		3 mins		3 mins		3 mins		3 mins		3 mins	
LFG 2	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.01	0.02	0.14	0.10	0.14	0.10	0.70	0.40	0.04	0.02	0.01	0.00	0.03	0.01	0.01	0.00
CH4 (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 (%)	0.00	0.00	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	1.10	1.30	1.40	2.70	0.90	1.60
O2 (%)	20.90	20.80	21.90	22.20	21.90	22.20	22.00	22.20	20.10	20.10	19.80	19.70	17.90	14.60	19.90	18.50
	3 mins		13 mins		3 mins		3 mins		3 mins		3 mins		3 mins		3 mins	
LFG 3	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.05	0.03	-0.01	-0.03	-0.01	-0.03	0.10	0.10	0.01	0.00	-0.02	-0.05	0.02	0.00	-0.01	-0.02
CH4 (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00
CO2 (%)	0.30	0.40	0.10	0.10	0.10	0.10	0.10	0.00	0.20	0.00	3.40	3.30	2.10	2.80	1.60	2.00
O2 (%)	19.90	20.10	22.40	22.60	22.40	22.60	22.00	21.90	20.30	20.40	16.90	17.00	18.90	17.80	18.80	17.60
	3 mins		12 mins		3 mins		3 mins		3 mins		3 mins		3 mins		3 mins	
LFG 4	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.02	0.01	0.04	0.03	0.04	0.03	0.00	-0.10	-0.03	-0.04	0.00	-0.01	0.01	0.01	0.01	-0.01
CH4 (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00
CO2 (%)	0.00	0.00	0.10	0.10	0.10	0.10	0.00	0.00	1.40	0.30	1.60	1.50	1.10	1.80	0.70	1.40
O2 (%)	20.60	20.50	22.50	22.60	22.50	22.60	22.10	22.00	18.10	20.10	18.20	18.20	19.90	19.20	19.60	18.80
	2 mins		12 mins		2 mins		2 mins		2 mins		2 mins		2 mins		2 mins	
LFG 5	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.00	0.02	0.00	-0.04	0.00	-0.04	0.00	0.00	0.02	-0.03	-0.02	-0.02	0.02	0.01	0.00	-0.01
CH4 (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	1.40	2.50	0.50	2.10	2.30	2.80
O2 (%)	20.40	20.60	21.80	22.40	21.80	22.40	22.90	23.00	20.50	20.10	19.10	18.70	20.40	18.60	18.50	17.20
	2 mins		12 mins		2 mins		2 mins		2 mins		2 mins		2 mins		2 mins	
LFG 6	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**	**Initial**	**After**
Pressure ("WC)	0.01	-1.15	0.02	0.00	0.01	-0.02	0.10	0.00	0.00	-0.01	0.00	0.00	0.00	-0.01	0.01	-0.03
CH4 (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2 (%)	0.80	0.00	0.30	0.10	0.00	0.00	0.10	0.00	0.40	0.00	1.70	2.30	2.50	3.40	0.80	1.90
O2 (%)	16.90	20.50	19.90	20.70	20.90	20.80	22.70	22.90	20.10	20.50	16.00	15.30	18.70	17.30	19.40	17.80

Notes:
- Landfill gas mor

Table 5b
Water Levels at Landfill Gas Probes - Atlas Landfill

Landfill Gas Probe	Ground Surface Elevation (masl)	Measuring* Point Elevation (masl)	Screen Interval (masl)		Water Level (2014) (masl)			Water Level (2015) (masl)								Water Level (2016) (masl)							
				(masl)	15-Mar-14	07-Nov-14	08-Dec-14	07-Jan-15	27-Feb-15	16-Mar-15	13-Apr-15	05-Jun-15	10-Aug-15	16-Nov-15	11-Dec-15	20-Jan-16	05-Feb-16	01-Mar-16	08-Apr-16	13-Jun-16	02-Aug-16	01-Nov-16	22-Dec-16
LFG1	177.2	178.10	170.49 to	175.72	DRY	176.40	176.45	176.35	176.06	NA	NA	177.85	176.47	176.55	178.10	NA	NA	NA	NA	177.45	177.40	178	178
LFG2	183.5	184.41	171.09 to	181.98	182.16	179.86	179.96	180.01	179.62	182.41	NA	182.55	181.41	182.17	182.73	183.06	183.01	182.49	183.19	181.01	181.31	182.18	182.28
LFG3	183.2	184.11	171.01 to	181.68	179.81	179.81	179.91	179.81	179.20	180.66	NA	180.91	180.99	182.11	181.73	182.01	182.11	181.79	181.98	180.86	181.93	181.24	181.58
LFG4	182.7	183.61	171.39 to	181.18	171.41	180.51	180.41	180.46	179.62	181.05	180.96	180.83	179.84	181.41	181.08	181.36	181.46	181.23	181.60	180.51	180.61	180.90	180.68
LFG5	182.5	183.41	171.53 to	180.98	172.98	180.91	180.76	180.61	179.36	179.67	181.00	180.01	179.67	181.09	181.22	181.41	181.36	181.37	181.64	180.96	180.71	180.88	181.03
LFG6	181.3	182.21	170.94 to	179.78	177.85	175.61	175.56	175.46	175.53	178.17	179.95	178.66	175.66	175.74	175.99	178.91	180.01	179.92	180.14	177.46	177.66	175.11	174.83

Notes:

* Measuring point is top of standpipe.

NA = not available

- Screen fully submerged in water.

WELLAND VISTA PARK

DRAFT CONCEPT PLAN

DILLON CONSULTING · Welland · Niagara College Canada APPLIED DREAMS.



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November 24, 2025
SENT ELECTRONICALLY

City of Hamilton
Haldimand County
Regional Municipality of Niagara
Local Area Municipalities

RE: Federal Program Changes – 2 Billion Trees

At the NPCA's Full Authority Meeting held on November 21, 2025, the following resolution was passed:

> **Resolution No. FA-125-2025**
> Moved by: Robert Foster
> Seconded by: Brian Grant
>
> **WHEREAS** the existing commitment through 2 Billion Trees to NPCA's *Trees for All* program is affirmed through to 2028;
>
> **WHEREAS** NPCA has entered into agreements with partners across the watershed to enhance natural canopy through the *Trees for All* program;
>
> **WHEREAS** tree planting initiatives provide vital community benefits by sequestering carbon, enhancing biodiversity and natural habitats, improving human health and well-being, and creating opportunities for
>
> **THAT** Report No. FA-55-25 RE: Federal Program Changes – 2 Billion Trees **BE RECEIVED;**
>
> **AND FURTHER THAT** Report No. FA-55-25 RE: Federal Program Changes – 2 Billion Trees **BE CIRCULATED** to partner and local area municipalities for information.
>
> **CARRIED**

A copy of Report No. FA-55-25 has been attached for your convenience.

Sincerely,

Melanie Davis
Manager, Office of the CAO & Board
Niagara Peninsula Conservation Authority

Report To: **Board of Directors**

Subject: **Federal Program Changes – 2 Billion Trees**

Report No: **FA-55-25**

Date: **November 21, 2025**

Recommendation:

WHEREAS the existing commitment through 2 Billion Trees to NPCA's *Trees for All* program is affirmed through to 2028;

WHEREAS NPCA has entered into agreements with partners across the watershed to enhance natural canopy through the *Trees for All* program;

WHEREAS tree planting initiatives provide vital community benefits by sequestering carbon, enhancing biodiversity and natural habitats, improving human health and well-being, and creating opportunities for civic engagement;

BE IT RESOLVED THAT Report No. FA-55-25 RE: Federal Program Changes – 2 Billion Trees **BE RECEIVED**;

AND FURTHER THAT Report No. FA-55-25 RE: Federal Program Changes – 2 Billion Trees **BE CIRCULATED** to partner and local area municipalities for information.

Purpose:

The purpose of this report is to advise the Board of Directors of changes to the federally-funded 2 Billion Trees program and inform municipal partners of resources readily available to subsidize tree planting initiatives through NPCA's *Trees for All* program.

Background:

NPCA is a demonstrated leader and tree planting subject matter expert as developed through restoration programming. *Trees for All* provides project management support while securing external funding to reduce expenses for participating landowners and organizations. Under the program, tree planting projects require an extensive year-long implementation cycle that will benefit from confirmed partnerships and formal service

commitments. Increased financial incentives, demand, and local tree planting ambitions further support a collaborative approach in the Niagara Peninsula watershed that leads to effective tree planting program delivery that achieves shared goals and objectives.

O. Reg. 686/21: *Mandatory Programs and services* identifies tree planting and other restoration endeavors as either non-mandatory Category 2 or 3 programs and services. These services are either conducted collaboratively through levy neutral cost-sharing approaches, via fee-for-service at the request of a municipality, or as determined and recommended by the Conservation Authority to further the purposes of the *Conservation Authorities Act* as in the recommended agreement for services.

O. Reg 687/21: Transition Plans and Agreements for Programs and Services under the *Conservation Authorities Act* stipulates that agreements are required for Programs and Services under Categories 2 and 3.

Lower-tier municipalities in Niagara Region, which are not levied for CA services, can enter into Agreements of Services on a fee-for-service basis when a local municipality wishes to procure NPCA to deliver services that are not procured through the Region.

Trees for All is a multi-year, high-volume tree planting program built on a cost-sharing approach designed for public and private lands in both urban and rural areas within the Niagara Peninsula watershed. NPCA, on behalf of a broad local partnership, has successfully secured funding from the federal 2 Billion Trees program and its aggregators (Forests Canada and Tree Canada) as well as several other third-party sources and the Niagara Peninsula Conservation Foundation (NPCF) to deliver *Trees for All*.

Discussion:

On November 4, 2025, the *2025 Budget: Building Canada Strong* was tabled in the House of Commons and passed its third reading on November 17, 2025. The budget includes targeted savings and program changes, including any additional commitments to 2 Billion Trees.

Pre-existing contribution agreements will continue to be honoured without interruption, including NPCA's agreement that is in place until 2028. There are no anticipated changes to NPCA's *Trees for All* program related to the modification of the federal government's 2 Billion Trees program. When the contribution agreement expires, any uncommitted funds would be returned.

NPCA has agreements in place with many of our local area municipalities and partner agencies for services provided through *Trees for All* and have been actively engaged in the program to enhance tree canopies in their communities. To date, municipal partners have also offered over 200 public properties that could accommodate tree plantings and **13** community tree plantings were hosted with municipal and agency partners throughout 2025.

NPCA continues to leverage Conservation Ontario's partnership with Tree Canada in the National Greening Program to subsidize bareroot stock-oriented planting projects with private landowners. Funds have also been secured through the Ontario Power Generation's Regional Biodiversity Fund and the Royal Bank of Canada to bring tree planting initiatives to the community.

NPCA will continue to work closely with NPCF to leverage funding opportunities in the environmental sector that will further support tree planting initiatives in the Niagara Peninsula watershed.

Financial Implications:

The financial implications of this initiative were outlined in Report No. FA-45-24 which was presented to the Board in September 2024.

Trees for All is funded, in part, through a Contribution Agreement with Natural Resources Canada which outlines the financial contributions and deliverables to March 31, 2028. If financial impacts change, NPCA Staff will update the Board, as appropriate.

Links to Policy/Strategic Plan:

Goal 1.1: Support evidence-based decision-making for climate-resilient watersheds and shorelines.

Goal 1.3: Restore and enhance natural habitat, water resources, and forest cover.

Goal 4.2: Foster relationships with the community, non-government organizations, businesses, agriculture, industry, and academic institutions for collective outcomes and impact.

Goal 6.1: Ensure responsible, sustainable, and sound fiscal practices.

Related Reports and Appendices:

Report No. FA-45-24 RE: Trees for All Update

Authored by:

Original Signed by:

Melanie Davis, M.A.
Manager, Office of the CAO & Board

Reviewed by:

Original Signed by:

Natalie Green, M.Sc., PMP
Director, Watershed Strategies & Climate Change

Submitted by:

Original Signed by:

Leilani Lee-Yates, BES, MSPL.RPD, MCIP, RPP
Chief Administrative Officer/Secretary-Treasurer

Niagara Peninsula CONSERVATION nature for all

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November 24, 2025
SENT ELECTRONICALLY

City of Hamilton
Haldimand County
Regional Municipality of Niagara
Local Area Municipalities

RE: Board of Directors' 2026 Meeting Schedule

At the NPCA's Full Authority Meeting held on November 21, 2025, the following resolution was passed:

> **Resolution No. FA-124-2025**
> Moved by: Brian Grant
> Seconded by: Albert Witteveen
>
> **THAT** Report No. FA-52-25 RE: Board of Directors' 2026 Meeting Schedule **BE RECEIVED;**
>
> **AND THAT** Appendix 1 to Report No. FA-52-25 RE: Board of Directors' 2026 Meeting Schedule **BE APPROVED**;
>
> **AND THAT** the meeting schedule be **BE PUBLISHED** on NPCA's website for public information;
>
> **AND FURTHER THAT** the meeting schedule **BE CIRCULATED** to participating and local area municipalities.
>
> **CARRIED**

A copy of Report No. FA-52-25 and associated appendices has been attached for your convenience.

Sincerely,

Melanie Davis
Manager, Office of the CAO & Board
Niagara Peninsula Conservation Authority

Report To: **Board of Directors**

Subject: **Board of Directors' 2026 Meeting Schedule**

Report No: **FA-52-25**

Date: **November 21, 2025**

Recommendation:

THAT Report No. FA-52-25 RE: Board of Directors' 2026 Meeting Schedule **BE RECEIVED**;

AND THAT Appendix 1 to Report No. FA-52-25 RE: Board of Directors' 2026 Meeting Schedule **BE APPROVED**;

AND THAT the meeting schedule **BE PUBLISHED** on NPCA's website for public information;

AND FURTHER THAT the meeting schedule **BE CIRCULATED** to participating and local area municipalities.

Purpose:

The purpose of this report is to establish the NPCA Board of Directors' 2026 meeting schedule for internal business planning purposes and promoting public awareness of the meeting schedule for the upcoming year.

Background:

In 2024, staff consulted with the Full Authority Board to incorporate feedback in the development of the 2025 Meeting Schedule, resulting in Full Authority Meetings being scheduled at 10:00a.m. to accommodate changes in travel requirements related to the relocation of Full Authority meetings to the Administrative Office in Thorold, ON.

At the February 21, 2025 Full Authority Annual General Meeting, the Full Authority Board adopted the revised NPCA Administrative By-Law, providing increased flexibility for the scheduling of meetings.

Discussion:

The 2026 Meeting Schedule has been prepared to avoid overlapping with statutory holidays, days of significance, and organizational initiatives, such as the Ball's Falls Thanksgiving Festival.

While Full Authority Board meetings have typically been held on the third Friday of each month, it has been common practice to shift the meeting date depending on scheduling demands. To provide a consistent timeline for internal workflow processes, it is recommended that Full Authority meetings be held on the fourth Friday of each month, except for December, due to holiday closures.

Governance Committee meetings will continue to be scheduled immediately following the Full Authority meetings throughout 2026, or as needed at the Committee Chair's discretion. Additional Governance Committee meetings have been recommended to ensure the Committee is engaged in developments regarding the proposed transition to regional conservation authorities and the establishment of the Ontario Provincial Conservation Agency.

Finance Committee meetings are scheduled to align with NPCA's Audit and Budget approval timelines. Public Advisory Committee meetings will be held in March, May, and November, and continue to be scheduled on Tuesdays at 5:00p.m.

Financial Implications:

There are no new or additional financial implications posed by adoption of the Board of Directors' 2026 Meeting Schedule as presented.

Links to Policy/Strategic Plan:

Goal 5.2: Improve internal operations and processes
Goal 5.3: Provide high standards of customer service

Related Reports and Appendices:

Appendix 1: NPCA Board of Directors' 2026 Meeting Schedule and Calendar

Authored by:

Original Signed by:

Melanie Davis, M.A.
Manager, Office of the CAO & Board

Reviewed and Submitted by:

Original Signed by:

Leilani Lee-Yates, BES, MSPL.RPD MCIP, RPP
Chief Administrative Officer / Secretary – Treasurer

January

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
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25	26	27	28	29	30	31

February

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March

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29	30	31				

April

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26	27	28	29	30		

May

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24	25	26	27	28	29	30
31						

June

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28	29	30				

July

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30	31					

September

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27	28	29	30			

October

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18	19	20	21	22	23	24
25	26	27	28	29	30	31

November

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22	23	24	25	26	27	28
29	30					

December

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6	7	8	10	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Full Authority Board Meeting
Public Advisory Committee
Statutory Holiday / Office Closure
Governance Committee, following Full Authority
Finance Committee

Full Authority Board Meetings

Friday, February 27 – **Annual General Meeting**
Friday, March 27
Friday, April 24
Friday, May 22
Friday, June 26
Friday, July 24
Friday, September 25
Friday, October 23
Friday, November 27
Friday, December 18

Note: there will be a Source Protection Authority Board meeting scheduled for February 27, 2025 to coincide with the Full Authority Board meeting.

Committees of the Board

Finance Committee Meetings

Wednesday, April 15
Wednesday, July 15
Wednesday, September 16

Governance Committee Meetings

Friday, March 27
Friday, May 22
Friday, July 24
Friday, September 25
Friday, November 27

Public Advisory Committee Meetings

Tuesday, March 10
Tuesday, May 12
Tuesday, November 17

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nature for all

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November 24, 2025
SENT ELECTRONICALLY

City of Welland
Town of Pelham

RE: Coyle and Draper's Creek Floodplain Mapping

At the NPCA's Full Authority Meeting held on November 21, 2025, the following resolution was passed:

> **Resolution No. FA-122-2025**
> Moved by: Stew Beattie
> Seconded by: Mark Tadeson
>
> **THAT** Report No. FA-54-25 RE: Coyle and Draper's Creek Floodplain Mapping **BE RECEIVED;**
>
> **AND THAT** the NPCA Board of Directors **APPROVE** the Coyle and Draper's Creeks Floodplain Mapping reports and associated floodplain maps for use in the implementation of Ontario Regulation 41/24 and policies;
>
> **AND THAT** the approved floodplain maps of Coyle and Draper's Creeks **BE MADE PUBLICLY AVAILABLE**;
>
> **AND FURTHER THAT** Report No. FA-54-25 **BE CIRCULATED** to the City of Welland and the Town of Pelham for information.
>
> **CARRIED**

A copy of Report No. FA-54-25 and associated appendices has been attached for your convenience.

Sincerely,

Melanie Davis
Manager, Office of the CAO & Board
Niagara Peninsula Conservation Authority

cc: Natalie Green, Director, Watershed Strategies & Climate Change
Brendan Buggeln, Manager, Natural Hazard Management & Resiliency

Report To: **Board of Directors**

Subject: **Coyle and Draper's Creeks Floodplain Mapping Approval**

Report No: **FA-54-25**

Date: **November 21, 2025**

Recommendation:

THAT Report No. FA-54-24 RE: Coyle and Draper's Creeks Floodplain Mapping Approval **BE RECEIVED**;

AND THAT the NPCA Board of Directors **APPROVE** the Coyle and Draper's Creeks Floodplain Mapping reports and associated floodplain maps for use in the implementation of the Ontario Regulation 41/24 and policies;

AND THAT the approved floodplain maps of Coyle and Draper's Creeks **BE MADE PUBLICLY AVAILABLE;**

AND FURTHER THAT Report No. FA-54-25 **BE CIRCULATED** to the City of Welland and the Town of Pelham for information.

Purpose:

To obtain approval of the Coyle and Draper's Creeks Floodplain Mapping report and associated floodplain maps for use in the NPCA's implementation of Ontario Regulation 41/24 and Policies for Planning and Development in the Watersheds of the Niagara Peninsula Conservation Authority.

Background:

Under the *Conservation Authorities Act*, the NPCA is mandated to provide programs and services related to the risk of natural hazards. NPCA has a well-developed regulatory floodplain mapping program that aims to produce and maintain mapping and data to inform and manage development within flood risk areas. This exercise is an important step in safeguarding people and properties from natural hazards such as flooding and erosion.

Coyle and Draper's Creeks are significant tributaries to the Welland River with subwatershed areas of 41km^2 and 10km^2, respectively. Coyle Creek predominantly drains the Town of Pelham with agriculture as the predominant land use. Draper's Creek is partially developed and drains areas of the Town of Pelham and the City of Welland. Refer to the Key Plan (Figure 1) which illustrates the location of the subwatershed areas.

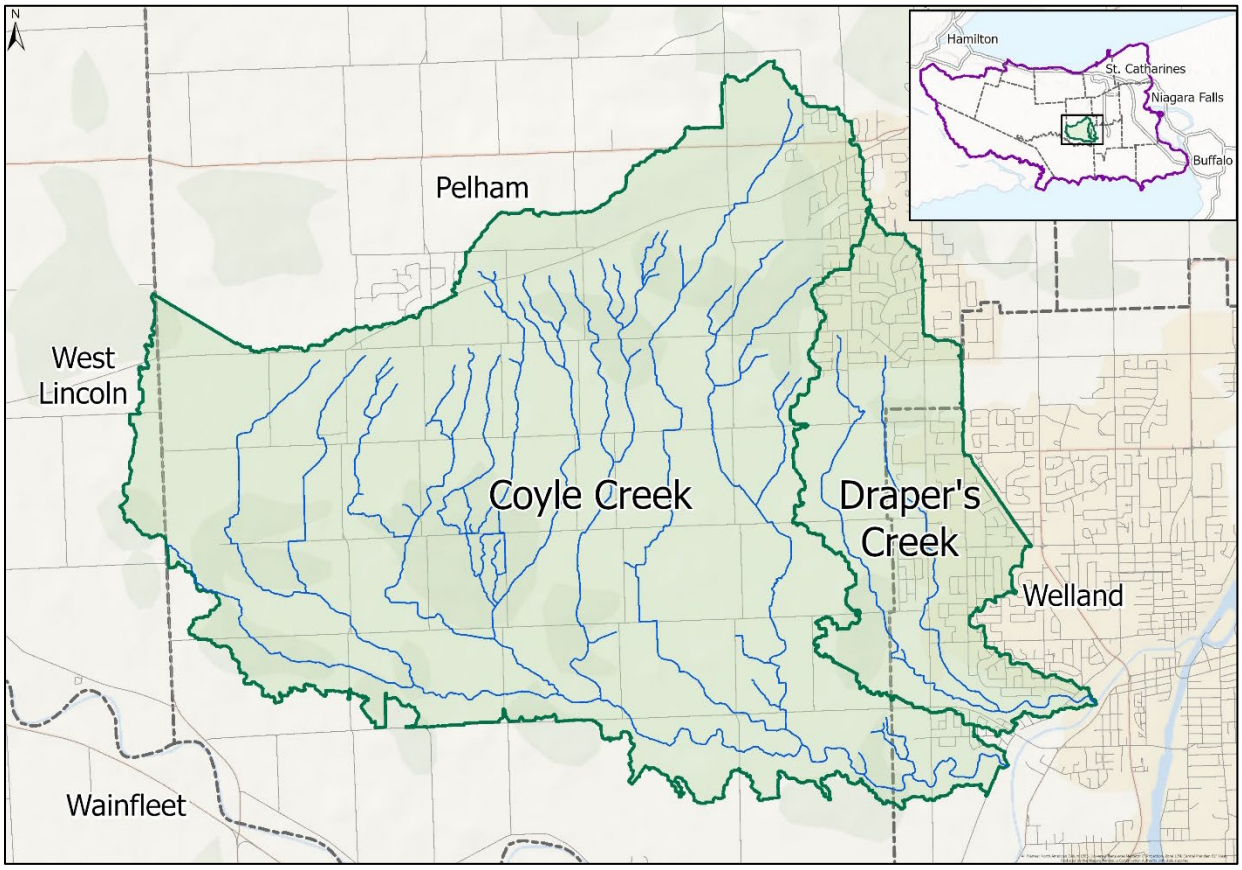


Figure 1. Key Plan of Floodplain Mapping for Coyle and Draper's Creeks (shown in green outline).

Floodplain mapping for a seven-kilometre stretch of the main branch of Coyle Creek and a four-kilometre stretch of the main branch of Draper's Creek was last undertaken in 1976. The remainder of the subwatersheds have never been provided with floodplain mapping.

Discussion:

NPCA retained Aquafor Beech Limited to undertake the work necessary to generate floodplain mapping for approximately 40km of Coyle Creek, 10km of Draper's Creek, and their tributaries using the latest computer technology, digital mapping, and climate data. Additionally, a robust public engagement campaign was carried out throughout the project to inform the community and obtain feedback. The outcome of this project is regulatory floodplain mapping that is accurate and technically supported to inform NPCA's implementation of *O. Reg. 41/24* and policies, which are intended to reduce the negative impacts of natural hazards including flooding on people and property.

Floodplain Mapping

The Coyle and Draper's Creeks Floodplain Mapping project generated 1:100-year regulatory floodplain mapping for approximately 40km of Coyle Creek, 10km of Draper's Creek, and their tributaries.

The updated floodplain mapping along Coyle Creek was up to 1m higher than the 1976 mapping for the 7km of overlap. For Draper's Creek, the new mapping is between 0.5m and 1m lower than the 1976 mapping for the overlapping branch.

The floodplain mapping can be viewed online through the project 'Get Involved' webpage: https://getinvolved.npca.ca/coyle-creek-drapers-creek-floodplain.

Impacted Buildings

It was determined that one hundred eight (108) buildings are affected by regulatory flooding in the Coyle and Draper's Creeks watersheds, including residential homes, barns, industrial structures, sheds, and garages. Most of these are in newly mapped areas. In previously mapped areas, twelve (12) buildings are newly identified as being within the floodplain and nine (9) buildings have been removed from the floodplain, resulting in a net increase of three (3) structures within the floodplain.

Climate Change

The effects of climate change were also considered in this project. To better inform flood risk assessment and management at a local level, a climate change scenario was conducted by introducing the 200-year storm event onto the watersheds. This methodology is proposed by Natural Resources Canada under their 'Flood Hazard Identification and Mapping Program'.

The study determined that the additional 200-year storm flows resulted in twelve (12) additional buildings being affected by flooding, bringing the total number of impacted buildings to one hundred and twenty (120). The depth of flooding generally increased by 20-30 cm for the buildings already experiencing flooding during the 100-year storm event. Based on this analysis, it can be concluded that the Coyle and Draper's Creeks watersheds contain a reasonable degree of resiliency against the negative impacts of flooding as a result of a changing climate.

Summary of Public Engagement

NPCA's process of undertaking rigorous public consultation before obtaining a resolution by the Board of Directors for adopting major floodplain mapping updates was endorsed by Conservation Ontario as a best management practice in their 'Procedure for Updating Section 28 Mapping' (April 2018).

A robust outreach and engagement plan was developed leveraging various methods and tools (e.g., 10,000 direct mailed postcards to people living within the Coyle and Draper's Creeks watersheds, a broad-reaching social media campaign, information posted on the Get Involvement online engagement portal, and in-person meetings) to ensure that property owners and other interested parties were aware of the floodplain mapping project and any potential impact(s) to their property. Additionally, a key goal of the engagement process was to obtain input from property owners and the public to be incorporated into the technical process before draft floodplain maps are prepared.

Between April 2023 and August 2025, four (4) public meetings were held at the Meridian Community Centre in Fonthill, ON and Civic Square in Welland, ON at key project milestones (e.g., kickoff, overview of floodplain policies, and presentation of draft floodplain maps). Typically, only three (3) public meetings are held for a project of this nature. However, valid concerns were raised with respect to the draft mapping presented at the third meeting, so additional modeling and mapping was completed to refine the draft flood maps. This new mapping was presented at the fourth and final meeting, held in August 2025.

Each meeting included a formal presentation and facilitated question and answer period, followed by an informal session at the end of the meeting where participants could speak with technical experts from the project team. In total, over 75 people participated in the public information sessions. All presentation slide decks and associated reports are posted to the Get Involved project page for interested parties to review at their convenience.

A 30-day public commenting period was open from August 29 to September 28, 2025 providing another opportunity for people to review the proposed final mapping, ask questions, and submit feedback. The community was notified of this additional feedback opportunity through emails to past attendees of public meetings, emails to municipal officials, and a social media campaign. During this commenting period, additional concerns were raised with the mapping which led to some minor adjustments to be made to the proposed floodplain. As a result, an additional 30-day commenting period was held from October 21 to November 20, 2025. The same approach (i.e., direct emails and social media) was used to inform the community.

During the commenting periods, the Get Involved project page received over 1,000 visits from approximately 800 visitors that viewed or engaged with the content. Overall, the feedback received was focused on site/property specific questions, concerns about property tax implications, and concerns about fallen trees impeding water flow.

Financial Implications:

There are no financial implications to implementing the updated flood mapping resulting from this project.

Funding for the Coyle and Draper's Creeks Flood Mapping Project was provided jointly by the NPCA capital budget and the federal Flood Hazard Identification and Mapping Program.

Funding from the Flood Hazard Identification and Mapping Program	$ 71,212
NPCA capital budget funding	$ 82,563
Total project cost (including non-recoverable tax)	$ 153,774

Links to Policy/Strategic Plan:

Goal 1.1: Support evidence-based decision-making for climate-resilient watersheds and shorelines.
Goal 1.2: Protect people and properties from natural hazards and climate impacts.

Related Reports and Appendices:

Appendix 1: Changes to Existing Floodplain Mapping – Coyle and Draper's Creek Floodplain Mapping Project

Authored by:

Original Signed by:

Brendan Buggeln, P.Eng.
Manager, Natural Hazard Management and Resiliency

Reviewed by:

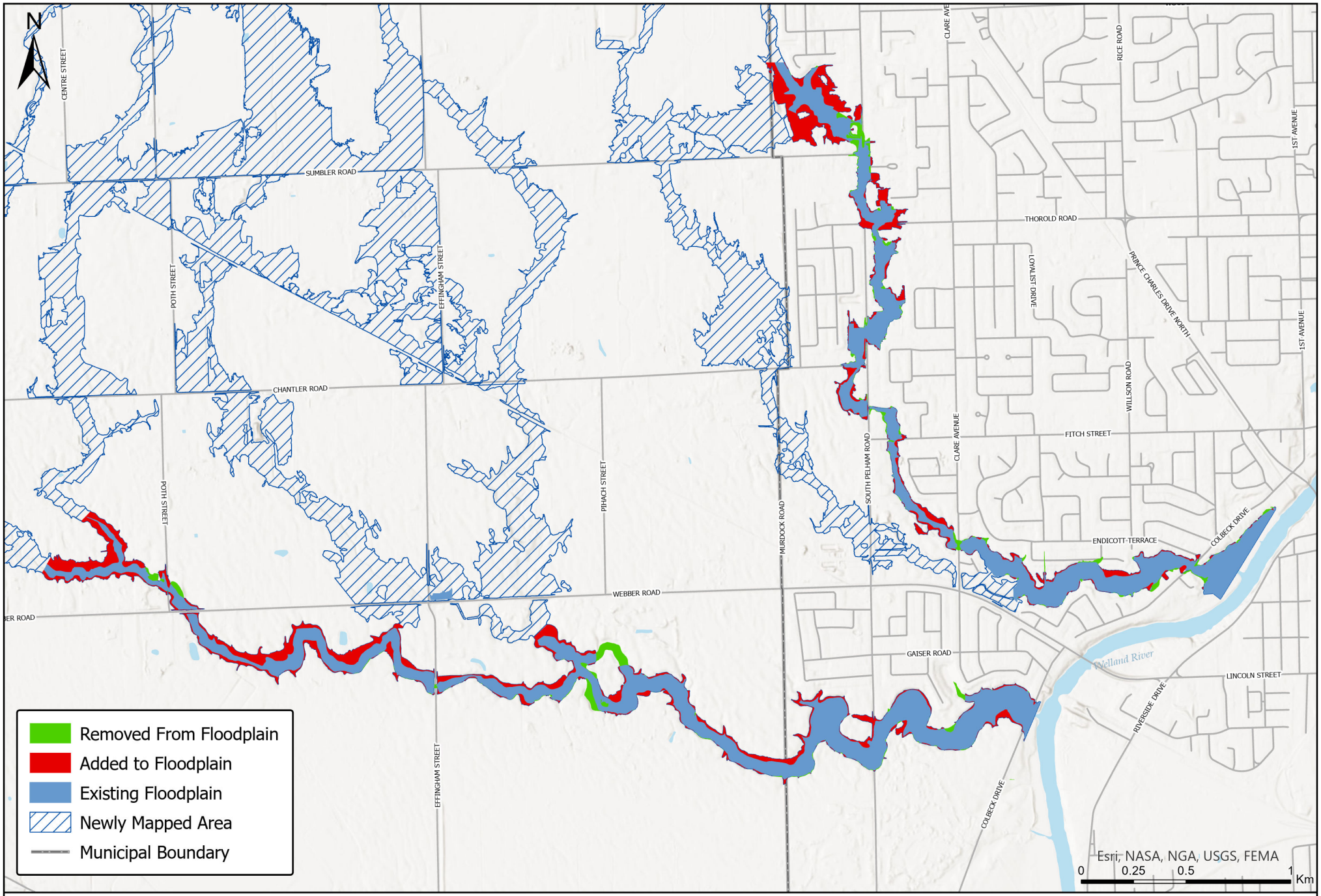
Original Signed by:

Natalie Green, M.Sc., PMP
Director, Watershed Strategies & Climate Change

Submitted by:

Original Signed by:

Leilani Lee-Yates, BES, MSPL.RPD, MCIP, RPP
Chief Administrative Officer/Secretary-Treasurer



Appendix 1 - Changes to Existing Floodplain Mapping
Coyle and Draper's Creek Floodplain Mapping Project

The Corporation of the Municipality of Wawa

REGULAR COUNCIL MEETING

RESOLUTION

Tuesday, November 18, 2025

Resolution # RC25195	**Meeting Order: 7**
Moved by:	**Seconded by:**

WHEREAS The Government of Ontario has passed Bill 5, Protect Ontario by Unleashing Our Economy Act, 2025, aiming to facilitate and accelerate resource development in Northern Ontario; and

WHEREAS Bill 5 presents far-reaching implications for municipalities, First Nations, and Indigenous communities across Northern Ontario—particularly affecting natural ecosystems and regions where women, Two-Spirit, and gender-diverse people have historically borne the brunt of unchecked development and continue to face systemic disparities and heightened risks tied to resource extraction; and

WHEREAS Women are too often included in economic and development decisions as an afterthought, rather than as proactive and central stakeholders, despite their increasing presence in leadership across municipalities, First Nations governments, community services, and economic development organizations; and

WHEREAS First Nations of Ontario women continue to be underrepresented at decision-making tables, despite significant leadership: as of recent reports, women hold over 35% of elected Chief positions in First Nations of Ontario, and significantly more leadership positions within community organizations, health, and education boards - positions that bring deep experience in balancing development with community well-being; and

WHEREAS The legacy of natural resource development in Northern Ontario has contributed to environmental degradation and social disruption, including clear links to the ongoing crisis of Missing and Murdered Indigenous Women, Girls, and Two-Spirit People (MMIWG2S); and

WHEREAS The National Inquiry into Missing and Murdered Indigenous Women, Girls, and Two-Spirit People (MMIWG2S) identified extractive industries as a key contributor to increased vulnerability to violence, especially in isolated development zones lacking oversight and safeguards; and

Part 2…

WHEREAS Resource extraction has historically contributed to environmental degradation, increased cost-of-living, housing instability, and elevated levels of gender-based violence, particularly in rural and remote areas; and

WHEREAS Without gender-based and culturally informed planning, development under Bill 5 risks reproducing the same harmful patterns of exclusion, exploitation, and environmental harm that have characterized previous waves of resource development; and

WHEREAS Development under Bill 5 also presents opportunities for women's economic empowerment—including entry into skilled trades, environmental monitoring, and leadership roles in infrastructure and project planning—if such pathways are made intentional, accessible, and equitable; and

WHEREAS Environmental degradation is directly linked to the health and well-being of women and children, particularly in remote and Indigenous communities where access to clean water, healthy food systems, and cultural practices are tied to land-based knowledge; and

WHEREAS The Province of Ontario has an obligation to ensure that economic growth is not achieved at the expense of women's safety, human rights, or environmental integrity.

NOW, THEREFORE, BE IT RESOLVED THAT The Corporation of the Municipality of Wawa calls on the Province of Ontario to:

1. Ensure that women, Two-Spirit, and gender-diverse people—particularly from Indigenous and Northern communities—are actively engaged at the forefront of all planning, consultation, and implementation processes under Bill 5, from concept to completion;

2. Establish a dedicated Ministerial role or mandate for overseeing and safeguarding women's rights, safety, and economic opportunity throughout the resource development process, including authority to apply gender-based impact assessments to proposed projects;

3. Mandate gender-based and intersectional impact assessments be carried out on all developments enabled by Bill 5, particularly with regard to safety, housing, transportation, healthcare access, and cultural impacts on women and girls;

Part 3...

4. Ensure environmental protections are explicitly tied to community health outcomes, especially for women and children, by investing in environmental monitoring and enforcing strong environmental safeguards tied to traditional ecological knowledge and include community-led, land-based health indicators;

5. Invest in training, apprenticeship, and leadership programs to ensure women and girls—particularly those in remote, Indigenous, and underserved communities—can access opportunities in the skilled trades, environmental sciences, project management, and public service tied to resource development;

6. Recognize and act on the findings of the MMIWG2S Inquiry by implementing protective measures around development zones, including funding for shelters, safe transportation, trauma-informed care, community safety initiatives, and anti-violence strategies embedded in community agreements;

7. Publish annual, public-facing progress reports on the gendered impacts of development under Bill 5, including employment statistics, leadership inclusion, environmental outcomes, and indicators of community safety and wellness; and

BE IT FURTHER RESOLVED THAT This resolution be forwarded to the Premier of Ontario, the Minister of Energy and Mines, the Minister of Indigenous Affairs and First Nations Economic Reconciliation, the Associate Minister of Women's Social and Economic Opportunity, Minister of Municipal Affairs and Housing, and the Minister of the Environment, Conservation and Parks, FONOM, NOMA, as well as all Northern Ontario municipalities and First Nations governments.

RESOLUTION RESULT	RECORDED VOTE		
☑ CARRIED	MAYOR AND COUNCIL	YES	NO
☐ DEFEATED	Mitch Hatfield		
☐ TABLED	Cathy Cannon		
☐ RECORDED VOTE (SEE RIGHT)	Melanie Pilon		
☐ PECUNIARY INTEREST DECLARED	Jim Hoffmann		
☐ WITHDRAWN	Joseph Opato		

Disclosure of Pecuniary Interest and the general nature thereof.

☐ Disclosed the pecuniary interest and general name thereof and abstained from the discussion, vote and influence.

Clerk:_____

MAYOR – MELANIE PILON	CLERK – MAURY O'NEILL
M. Pilon	Maury O'Neill

The Town of Goderich
57 West Street
Goderich, Ontario
N7A 2K5
519-524-8344
townhall@goderich.ca
www.goderich.ca

November 21, 2025

SENT VIA EMAIL - minister.mecp@ontario.ca

The Honourable Todd J. McCarthy
Minister of Environment, Conservation and Parks
College Park, 5th Floor
777 Bay Street
TORONTO, Ontario
M7A 2J3

Dear Minister McCarthy:

On October 31, 2025, the Ontario Ministry of Environment, Conservation and Parks (MECP) announced proposed amendments to the *Conservation Authorities Act* (CAA), to establish the Ontario Provincial Conservation Agency (OPCA) to provide leadership, governance, and strategic direction to Conservation Authorities (CAs). The agency will be responsible for:

- Developing a single digital permitting platform;
- Streamlining and standardizing service delivery by setting provincewide performance, standards

  as well as maintaining centralized data and updated floodplain mapping; and
- Overseeing the consolidation of Conservation Authorities.

The Ministry of Environment, Conservation and Parks are proposing that the agency would require the local Conservation Authorities to pay for the costs of the Ontario Provincial Conservation Agency.

Additionally, the MECP has introduced an amendment to the Conservation Authorities Act that outlines the proposed boundaries for establishing Regional Conservation Authorities. The proposed consolidation will entail, including reducing the number of Conservation Authorities from 36 to 7.

MECP has indicated that they plan to consult with stakeholders, municipalities, conservation authorities, and Indigenous communities. This consultation includes a policy proposal notice period posted on the Environmental Registry of Ontario for 45 days, inviting feedback on the

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proposed boundaries and criteria for the regional consolidation of Ontario's 36 CAs with a deadline of December 22, 2025.

The Town understands that the timelines for the proposed CAA amendments are as follows:

- Consultation occurs throughout the Q1 2026;
- Conservation authorities operate within current governance structure until after the 2026 Municipal election; and
- Changes come into force January 1, 2027.

The Town of Goderich has identified several concerns relating to the proposed CAA amendments:

- What is the cost of establishing and operating the proposed Ontario Provincial Conservation Agency (OPCA)? The OPCA would require significant resources while local watershed advisory boards would still be needed to guide priorities and provide oversight.

- What is the anticipated total cost of consolidating the 36 Conservation Authorities to 7?

- As a local organization, the Maitland Conservation is responsive to community needs. Municipalities, landowners and community partners drive the services and priorities of the organization. A move to the OPCA, and the consolidation of Conservation Authorities, would mean less municipal input on service priorities, yet member municipalities currently financially contribute over 80% of the MVCA's operating budget, while the Province provides approximately 2%.

- Will the needs of rural communities and the agricultural sector will be adequately recognized and prioritized in this consolidation? Particularly since the lead Conservation Authority, for each of the 7 new regional conservation authorities, is expected to be in an urban setting in each region.

- A core priority for Maitland Valley Conservation Authority is reducing the risk of loss of life and community damage caused by flooding and erosion. MVCA are responsible for approving development in or near natural hazard areas, ensuring that new construction and additions are not at risk from flooding or erosion in floodplains or along the Lake Huron shoreline.

- MVCA's permitting process is efficient and consistent. In 2024, the average time to process all types of permits was just 5.7 days. The average time for reviewing and issuing permits by all conservation authorities is 12.5 business days.

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- From start to finish, MVCA staff work closely with landowners, emphasizing customer service and helping them identify safe building locations outside hazardous areas. Will the proposed digital permitting platform be able to match MVCA's turnaround times and maintain this high level of customer experience? Additionally, what will the costs be for developing, implementing and maintaining this new platform?

The Town of Goderich encourages the Provincial government to partner with the current Conservation Authorities to build capacity and support local solutions to watershed issues. This will require a multi-year commitment to reinvesting in Conservation Authorities.

In order to protect Ontario's prosperity, the Town would like to see an emphasis placed on developing and protecting the health of watersheds. They are the foundation of not only our economic prosperity but our life support system as well. Clean water, diverse forests and healthy soils directly support key sectors like tourism, forestry and agriculture, which in turn support economically strong local communities.

Healthy Lake Huron (HLH) is a model of collaboration between federal, provincial and county agencies, 5 Conservation Authorities and several community groups. HLH has been successful in supporting stewardship initiatives aimed at improving water quality along the Lake Huron shoreline. Using this collaborative approach across all the watersheds in Ontario to build healthy watersheds would result in effective, cost-efficient results.

Working seamlessly together, we can achieve superior results.

Respectfully,

Janice Hallahan
Chief Administrative Officer

Cc: The Honourable Doug Ford, Premier of Ontario
The Honourable Lisa Thompson, Minister of Rural Affairs, and MPP for Huron-Bruce
The Honourable Rob Flack, Ministry of Municipal Affairs and Housing
Association of Municipalities of Ontario
Environmental Registry of Ontario
Ed McGugan, Chair of the Maitland Valley Conservation Authority

TOWN OF WASAGA BEACH

30 Lewis Street, Wasaga Beach
Ontario, Canada L9Z 1A1
Tel (705) 429-3844
mayor@wasagabeach.com

OFFICE OF THE MAYOR

November 24, 2025

Relevant Provincial and Federal Ministries and Agencies.

BY EMAIL ONLY

RE: Resolution from the Town of Wasaga Beach – Advocacy for Funds to Effectively Manage the Emerald Ash Borer Infestation

Please be advised that the Council of the Town of Wasaga Beach, during their November 13, 2025 Council meeting, and at the request of the Township of Stone Mills, passed the following resolution regarding Advocacy for Funds to Effectively Manage the Emerald Ash Borer Infestation.

Whereas the Emerald Ash Borer (EAB) infestation has caused a significant increase in dead ash trees across Ontario, creating ecological, financial, and public safety challenges;

And whereas the removal and replacement of affected trees has placed a substantial financial burden on municipalities, organizations, and property owners;

Therefore, be it resolved that the Town of Wasaga Beach supports the Township of Stone Mills motion to urge the Provincial and Federal governments to establish a dedicated fund to assist with the removal and replanting of trees impacted by the EAB infestation.

Be it further resolved that this letter of support be submitted to the relevant Provincial and Federal ministries and agencies to strengthen regional advocacy efforts on this issue.

Should you have any questions, please contact me at mayor@wasagabeach.com or (705) 429-3844 ext. 2225.

Sincerely,

Brian Smith
Mayor, Town of Wasaga Beach

/mps

The Corporation of the
County of Northumberland
555 Courthouse Road
Cobourg, ON, K9A 5J6

Northumberland County
Council Resolution

SENT VIA EMAIL **November 25, 2025**

Right Honourable Mark Carney (Prime Minister of Canada),
Honourable Jill McKnight (Minister of Veterans Affairs and Associate Minister of National Defence),
Honourable Andrew Scheer (Acting Leader of the Official Opposition),
Philip Lawrence (Member of Parliament for Northumberland-Clarke),
Honourable David Piccini (Minister of Labour, Immigration, Training and Skills Development and MPP for Northumberland - Peterborough South),
Federation of Canadian Municipalities (FCM),
Association of Municipalities of Ontario (AMO),
All Ontario Municipalities

Re: Correspondence, Municipality of Shuniah
'Increased Income Support Thresholds for Veterans'

At a meeting held on November 19th, 2025 Northumberland County Council approved Council Resolution # 2025-11-19-926, adopting the below recommendation from the November 5, 2025 Social Services Committee meeting:

Moved by: Councillor Lucas Cleveland
Seconded by: Councillor Mandy Martin

"**That** the Social Services Committee support the correspondence from the Municipality of Shuniah regarding 'Increased Income Support Thresholds for Veterans' for information; and

Further That the Committee recommend that County Council support this correspondence."

Council Resolution # 2025-11-19-926 **Carried**

If you have any questions regarding this matter, please do not hesitate to contact the undersigned at bennettt@northumberland.ca or by telephone at 905-372-3329 ext. 2238.

Sincerely,
Tonia Bennett

Manager of Legislative Services / Clerk
Northumberland County

Council Resolution

Moved By L. Cleveland (LC)

Seconded By M. Martin (MM)

Agenda Item 10

Resolution Number 2025-11-19- 926

Council Date: November 19, 2025

"**That** Council adopt all recommendations from the five Standing Committees, as contained within the Committee Minutes (meetings held November 3rd, 4th and 5th, 2025), with the exception of the following items (referenced from the Standing Committee Minutes), that will be held for discussion:

- Economic Development Committee, Item 7.a, Correspondence, Future of Community Natural Gas Expansion' - **Held by Councillor Cleveland**
- Economic Development Committee, Item 7.c, Correspondence, Great Lakes and St. Lawrence Cities Initiative '2024 Annual Report and Presentation – **Held by Councillor Cleveland**
- Economic Development Committee, Item 8.c, Report 2025-219 'Alnwick/Haldimand Plan of Subdivision-D12-AH2301 (New Danforth)- **Held by Councillor Cleveland**
- Social Services Committee, Item 9.b, 310 Division Street Community Liaison Committee, Meeting Minutes– **Held by Councillor Cleveland**

And Further That the items listed above and held for separate discussion each require a separate resolution."

Recorded Vote Requested by _____ **Councillor's Name**

Carried _____ **Warden's Signature**

Deferred _____ **Warden's Signature**

Defeated _____ **Warden's Signature**

Social Services Committee Resolution

Committee Meeting Date: November 5, 2025

Agenda Item: 7.b

Resolution Number: 2025-11-05-887

Moved by: B. Ostrander

Seconded by: J. Logel

Council Meeting Date: November 19, 2025

"**That** the Social Services Committee support the correspondence from the Municipality of Shuniah regarding 'Increased Income Support Thresholds for Veterans' for information; and

Further That the Committee recommend that County Council support this correspondence."

Carried _____
Committee Chair's Signature

Defeated _____
Committee Chair's Signature

Deferred _____
Committee Chair's Signature

MUNICIPALITY OF
SHUNIAH

COUNCIL RESOLUTION

Resolution No.: 295-25

Date: Sep 23, 2025

Moved By: _____

Seconded By: _____

THAT Council hereby receives and supports the resolution from Perry regarding Increased Income Support Thresholds for Veterans;

AND THAT Council directs the Clerk to forward a copy of this resolution to Prime Minister Mark Carney, Minister of Veterans Affairs Jill Mcknight, Leader of the Conservative Party of Canada Pierre Poilievre, Leader of the Bloc Quebecois Yves-Francois Blanchet, Member of Parliament for Thunder Bay Superior-North Patty Hajdu, the Federation of Canadian Municipalities (FCM), the Association of Municipalities of Ontario (AMO), and all Ontario Municipalities;

AND THAT the same be filed in the Clerk's Office.

☑ **Carried** ☐ **Defeated** ☐ **Amended** ☐ **Deferred**

Wendy Landry
Signature

The Corporation of the Township of Perry

Box 70 1695 Emsdale Road Emsdale, Ontario P0A 1J0

Date: September 3, 2025

Resolution No.: **2025-** 310

Moved By: Joe Lumley **Seconded By:** Paul Sowrey

Whereas the Township of Perry recognizes the selfless service and enduring sacrifices made by Canadian Armed Forces veterans in the defence of our country and values;

Whereas the 2021 Census, conducted by Statistics Canada, identified more than 460,000 veterans residing across Canada, a significant population segment deserving of comprehensive, accessible, and modernized federal support;

Whereas Veterans Affairs Canada (VAC) currently administers income support programs to assist veterans in need, including the Income Replacement Benefit (IRB) program;

Whereas the eligibility threshold for the Income Replacement Benefit (IRB) program which was created in 2019 – set at $20,000 annually for a single-person household – fails to reflect today's economic reality, particularly in light of inflation, soaring housing costs, and the general increase in cost of living;

Whereas such low eligibility thresholds may disincentivize employment and community participation by penalizing veterans for earning beyond an outdated benchmark, thereby discouraging reintegration and contribution to civic life;

Whereas it is the duty of all levels of government to stand in unified support of our veterans and to advocate for policy changes that enable them to live with dignity and financial stability;

Therefore, be it resolved that the Council of the Corporation of the Township of Perry formally calls on the Government of Canada and all federal parties to increase the eligibility threshold for the Income Replacement Benefit (IRB) program from $20,000 to no less than $40,000 annually for a single-person household; and

That Council urges Veterans Affairs Canada to review all income support programs with the intent to modernize eligibility criteria in line with the current cost of living across Canada;

That this motion be formally endorsed and sent to:
- The Right Honourable Mark Carney, Prime Minister of Canada;
- The Honourable Jill McKnight, Minister of Veterans Affairs;
- The Honourable Andrew Scheer, Acting Leader of the Official Opposition;
- Scott Aitchison, Member of Parliament for Parry Sound-Muskoka;
- All 444 municipalities across the Province of Ontario;
- The Federation of Canadian Municipalities (FCM) and the Association of Municipalities of Ontario (AMO) for broader distribution and endorsement;

Carried: ✓ **Defeated:** _____

Norm Hofstetter, Mayor

RECORDED VOTE			
Council		**For**	**Against**
Councillors	Jim Cushman		
	Joe Lumley		
	Margaret Ann MacPhail		
	Paul Sowrey		
Mayor	**Norm Hofstetter**		

The Corporation of the County of Northumberland
555 Courthouse Road
Cobourg, ON, K9A 5J6

Northumberland County
Council Resolution

SENT VIA EMAIL **November 25, 2025**

All Ontario Municipalities

Re: Correspondence, Great Lakes and St. Lawrence Cities Initiative '2024 Annual Report and Presentation'

At a meeting held on November 19th, 2025 Northumberland County Council approved Council Resolution # 2025-11-19-929, adopting the below resolution:

Moved by: Councillor Lucas Cleveland
Seconded by: Councillor Robert Crate

"**Whereas** the Economic Development, Tourism, and Land Use Planning Committee (November 5, 2025) considered Correspondence, Great Lakes and St. Lawrence Cities Initiative '2024 Annual Report and Presentation', and County Council identified this item for separate discussion at the November 19, 2025 County Council meeting;

Now Therefore Be It Resolved That County Council adopt the following:

- **That** County Council approve the Northumberland County Warden to serve as the Northumberland County representative to the Great Lakes and St. Lawrence Cities Initiative and direct staff to submit a membership application.

Further That this motion be distributed to all Ontario municipalities."

Council Resolution # 2025-11-19-929 **Carried**

If you have any questions regarding this matter, please do not hesitate to contact the undersigned at bennettt@northumberland.ca or by telephone at 905-372-3329 ext. 2238.

Sincerely,
Tonia Bennett

Manager of Legislative Services / Clerk
Northumberland County

Council Resolution

Moved By (L.C.) L. Cleveland

Seconded By (B.C.) R. Crate

Agenda Item 11.b (2)

Resolution Number 2025-11-19- 929

Council Date: November 19, 2025

"**Whereas** the Economic Development, Tourism, and Land Use Planning Committee (November 5, 2025) considered Correspondence, Great Lakes and St. Lawrence Cities Initiative '2024 Annual Report and Presentation', and County Council identified this item for separate discussion at the November 19, 2025 County Council meeting;

Now Therefore Be It Resolved That County Council adopt the following:

- **That** County Council approve the Northumberland County Warden to serve as the Northumberland County representative to the Great Lakes and St. Lawrence Cities Initiative and direct staff to submit a membership application.

Further That this motion be distributed to all Ontario municipalities."

Recorded Vote Requested by _____
Councillor's Name

Carried _____
Warden's Signature

Deferred _____
Warden's Signature

Defeated _____
Warden's Signature



GREAT LAKES AND ST. LAWRENCE
CITIES INITIATIVE
L'ALLIANCE DES VILLES
DES GRANDS LACS ET DU SAINT-LAURENT

Mayors Securing the Future of Our Basin

Annual Report 2024

Great Lakes and St. Lawrence Cities Initiative
P.O. Box 1332 New Lenox, IL 60451
312.201.4518

www.glslcities.org

Executive Summary

A YEAR OF ACCOMPLISHMENTS

In 2024, our organization deepened its commitment to fostering resilient and thriving communities across the Great Lakes and St. Lawrence River Basin, emerging as a leading advocate for preparing for a changing climate and advancing sustainable economic development. With over 70 organizations (business, government, and non-profit partners) joining the Mayors Commission on Economic Transformation, we have built an unprecedented coalition to chart the development of our region's economy. We remain dedicated to a prosperous and sustainable future for all our communities — that means ensuring that your residents have access to good jobs, reliable and safe infrastructure, communities that are resilient to extreme weather, and access to all the opportunities that come with being in a region that makes up over 80 percent of North America's fresh water.

$420 M

Supported the launch of the independent **Canada Water Agency** and securing the first phase of funding under Canada's **$420 million** Great Lakes and St. Lawrence River protection commitment.

UP TO $425 M

Provided project planning and grant support for **62 projects** through the **Resilient Coastal Projects Initiative** for a total project value of up to **$425 million.***

$400 M

Advocated for nearly **$400 million** in funding to prevent the devastating spread of invasive carp through the Brandon Road Interbasin Project.

450

Trained approximately **450 participants** through webinars, workshops, and sessions on sustainable solutions for coastal resilience challenges.

OVER 750

Presented at various conferences to a **total audience of over 750**, highlighting the climate action initiatives spearheaded by the Cities Initiative and its members.



Photo by Ryan Hagerty/USFWS



350

Hosted **12 workshops** with industry, agency, and non-profit partners in The Blue Mountains, Montreal, and Upstate New York with a **total of 350 people participating.**

OVER $2 B

Helped secure over **$2 billion** for water infrastructure funding across Canada to accelerate housing construction in our basin.

Letter from Our Co-Chairs

Dear Members,

As we reflected on 2024, our organization celebrated a year of delivering meaningful support to advance your priorities. We provided and secured financial resources, technical training, and instructional programs to help you and your staff implement effective green solutions for challenges facing your communities. We also worked alongside you and your teams to advocate for legislation and policies that improved your residents' lives. Our coalition grew to nearly 270 communities, supported by a dedicated team committed to providing the resources needed to make a real difference.

As mayors, we understood the immense challenges faced by our communities, especially when resources were limited. Our organization remained hyper-focused on helping your residents live healthy and fulfilling lives. Our mission was to safeguard the resilience and success of all communities across the basin for future generations.

Protecting the environment and a freshwater resource that is the envy of the world was critical to our region's ongoing success and ability to attract the best and brightest people, companies, and changemakers. We empowered you and your staff to address the most pressing issues impacting your residents, including flooding, coastal erosion, aging infrastructure, and ensuring that every resident had access to clean and affordable water.

We also recognized the potential for our basin to become a leading blue-green economic corridor. In 2025, our Mayors Commission on Economic Transformation planned to deliver a 10-year plan to remake our fresh coast economy and ensure that the basin remained an ideal place to live, work, invest, and play for the next 50 years.

We looked forward to your continued commitment to the Cities Initiative. Please review this report, and don't hesitate to reach out with any questions or concerns. Let's aim to make 2025 an even more successful year for our coalition.

Mayor Gino Moretti, Co-Chair
Saint-Anicet, QC



Mayor Ryan Sorenson, Co-Chair
Sheboygan, WI



Protecting Our Environment. Securing Our Future.

KEY DELIVERABLES ACHIEVED

1 Advocated for the Brandon Road Interbasin Project, unlocking **$274 million** in federal funding and **$114 million** in non-federal funding, advancing the project to the construction phase to **prevent the spread of invasive carp.**

2 Pushed for the **implementation of the CAD $500 million Blue Fund in Québec** through increased royalties on important water users to finance water-quality protection initiatives, including **$80 million** for water-infrastructure including upgrades.

3 Supported the launch of the independent **Canada Water Agency** to strengthen coordination of freshwater policy and securing the roll out of the first phase of enhanced funding under Canada's **$420+ million** Great Lakes and St. Lawrence River protection commitment.

4 **Endorsed the Great Lakes Restoration Initiative (GLRI) Act of 2024,** encouraging the U.S. Congress to extend the GLRI's authorization for an additional five years while increasing spending to **$500 million** annually.

5 Advocated to the U.S. Environmental Protection Agency for fair distribution of lead service line funding under the **Infrastructure Investment and Jobs Act**, resulting in funding increases for five of eight Great Lakes states and a **$16 million award to Milwaukee** for lead service line replacement funding.

over **$1.9B** Funding Secured Thanks to the Cities Initiative





Coastal and Climate Resilience

US PROGRAMMING

40

Provided training and technical assistance to **40 communities,** including **28 vulnerable ones**, though our Initiative for Resilient Great Lakes Coasts partnership program with NOAA.

up to $425M

Provided project planning and grant support for **62 projects** through the Resilient Coastal Projects Initiative for a total project value of up to **$425 million.***

22

Provided engineering and design support for **22 projects** through our coastal programs, moving these projects one step closer to construction.

over $24M

Submitted over **$24 million in grant applications to American funding** agencies for new programming at the Cities Initiative to support our members with their resilience and source water protection concerns.



ONTARIO, CA

Pursuing new federal program funding in partnership with **Conservation Ontario** and over 15 member municipalities to create **new coastal programs** on three Great Lakes over the next three years.



QUÉBEC, CA

Working to foster stakeholder collaboration among municipalities from **Greater Québec City with a hands-on workshop** to support the metropolitan community's climate adaptation mandate.

*Source: Estimated average funding per project based on 2024 data from the National Oceanic and Atmospheric Administration (NOAA), indicating Coastal Resilience projects at approximately $6.88 million each.





Enhancing International Cooperation and Influence

Signed a Memorandum of Understanding with the **Council of the Great Lakes Region** — an organization dedicated to maintaining the Great Lakes region's economic competitiveness through sustainable development — to help guide our new strategic pillar on Economic Transformation.

Established a **Memorandum of Cooperation with Conservation Ontario** to address coastal erosion, flooding and storm impacts for member communities in addition to partnering on a briefing for elected officials at the **Association of Municipalities of Ontario's Annual Conference in Ottawa.**

Recruited more than 70 businesses, government agencies, and non-profit organizations to serve as **advisors to the Mayors Commission on Economic Transformation.**

Co-organized a **Mayoral Reception at the Dutch Ambassador's residence** with Climate Mayors and Mississippi River Cities and Towns Initiative, which was attended by more than 100 thought leaders and government officials, including Senator Amy Klobuchar of Minnesota and John Podesta, Senior Advisor to the President for Clean Energy Innovation and Implementation.

Hosted an educational public event in Chicago entitled, "Honoring Our Waters," to **showcase strong partnership between Indigenous and Municipal leaders,** co-hosted by our partners at the Biinaagami Initiative, Canadian Geographic, Swim Drink Fish, and the City of Chicago.



2024 Highlights

BUILDING A SUSTAINABLE FUTURE FOR THE BASIN



Great Lakes Coastal Resiliency Study

Hosted a high-impact policy roundtable in Washington D.C., led by the Mayors Commission on Coastal Resilience, to strengthen municipal engagement with the Great Lakes Coastal Resiliency Study. This event featured Major General Mark C. Quander, Commander of the Great Lakes and Ohio River Division of the U.S. Army Corps of Engineers, alongside other key project partners, resulting in a renewed commitment to collaborative resilience planning and actionable support for Great Lakes communities.



Great Lakes Lead Pipes Partnership at the Water Summit

Launched the Great Lakes Lead Pipes Partnership at the White House Water Summit in April 2024, led by three Mayors Commission on Water Equity members – Mayor Brandon Johnson of Chicago, Mayor Mike Duggan of Detroit, and Mayor Cavalier Johnson of Milwaukee – to expedite lead service line replacement in Great Lakes big cities with the heaviest lead burdens.





Basin-Wide Declaration Signed by Major Cities and Endorsed by All Members

With record attendance, the Cities Initiative's launched the Mayors Commission on Economic Transformation at its 2024 Annual Conference in Montréal, QC. Mayors Valérie Plante of Montréal, Mayor Brandon Johnson of Chicago, IL and Mayor Cavalier Johnson of Milwaukee, WI signed a declaration, endorsed by all Cities Initiative members, to collaborate on an Action Plan that will guide the way for our region to become a leading blue-green economic corridor



Québec Government's New Maritime Strategy

Teamed up with the Québec Union of Municipalities and the Saint-Lawrence Economic Development Network to position mayors and industry leaders as key partners as the Québec government renews its maritime strategy. This vital and strategic industry supports over 27,000 jobs in the province, and more than 350,000 jobs across the Great Lakes-St. Lawrence Seaway, while connecting the heart of North America to the Atlantic Ocean.

Be a Part of Economic Transformation

A shift from traditional industry to a sustainable blue-green economic corridor that attracts eco-friendly industries, revitalizes waterfronts, adopts renewable energy, and enhances water-based commerce, establishing the Great Lakes and St. Lawrence River Basin as a leader in sustainable development while preserving freshwater resources for future generations.

GREAT LAKES AND ST. LAWRENCE
CITIES INITIATIVE
L'ALLIANCE DES VILLES
DES GRANDS LACS ET DU SAINT-LAURENT



Today, the economy and environment are inextricably linked, and our success depends on integrating them seamlessly. Our 2024 initiatives—Coastal and Climate Resilience, Economic Transformation, and Enhancing International Cooperation and Influence—are vital to unlocking the Great Lakes and St. Lawrence River Basin's immense growth potential for the next 50 years. Building a blue-green economic corridor is essential for driving sustainable progress in our communities while protecting the invaluable resources that define our region.

— Jon Altenberg, CEO, Great Lakes and St. Lawrence Cities Initiative

Great Lakes and St. Lawrence Cities Initiative
P.O. Box 1332 New Lenox, IL 60451
312.201.4518

www.glslcities.org

Photo Credit: USEPA Environmental Protection Agency











THE FUTURE OF FRESH WATER

Mark your calendar now for May 14-16, 2025, in Milwaukee!





Introducing the Cities Initiative

Local government leaders at the heart of North America

L'ALLIANCE DES VILLES
DES GRANDS LACS ET DU SAINT-LAURENT
GREAT LAKES AND ST. LAWRENCE
CITIES INITIATIVE

ABOUT US

THE CITIES INITIATIVE



Founded in 2003 by the Mayors of Chicago and Toronto to:

- Give communities in the region a **voice in protecting and managing the Great Lakes and St. Lawrence**
- Unite cities that share a critical resource that:
  - Provides **drinking water to 40 million Canadians and Americans**
  - Supports an **$10T regional economy**

OUR MISSION

We are a **multinational coalition of local government leaders** working to:

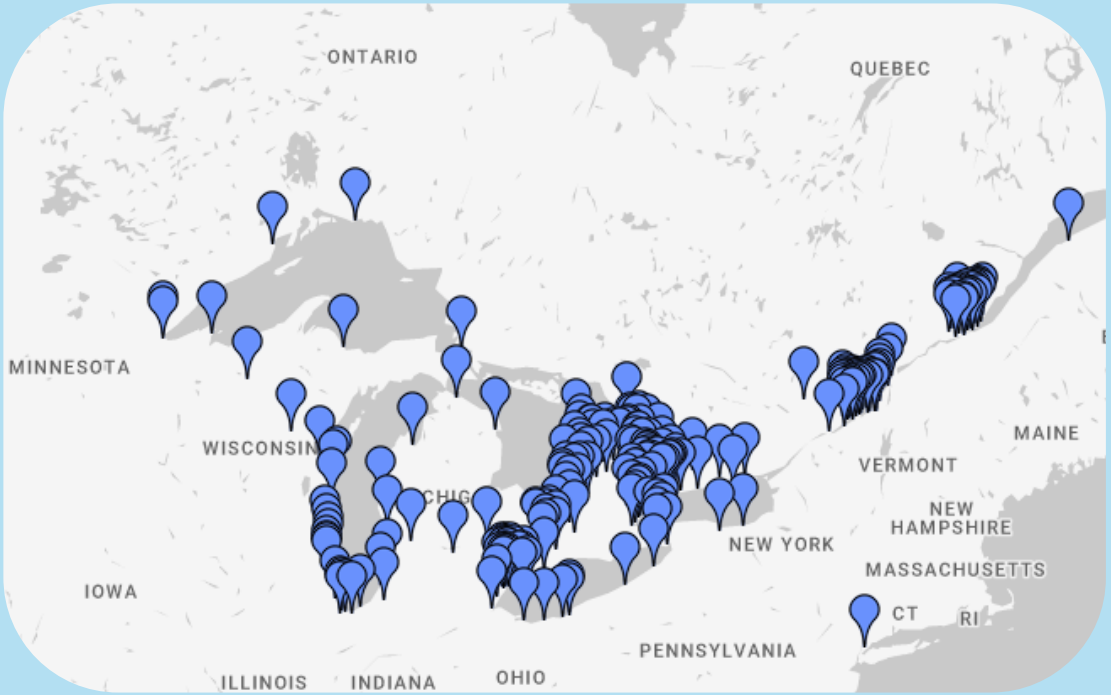
- **promote economic prosperity**
- **protect our fresh water** for the benefit of current and future generations.





A GROWING COALITION

- Cities Initiative members **represents more than 350 communities and over 21 million residents** across the region
- Membership **spans from Duluth, MN to Gaspé, QC**
- Broadening our coalition with **Tribes and First Nations**
- **New Allies program** of associate memberships for non-profits, colleges/universities



GREAT LAKES AND ST. LAWRENCE CITIES INITIATIVE
L'ALLIANCE DES VILLES DES GRANDS LACS ET DU SAINT-LAURENT

OUR PILLARS & PRIORITIES



Healthy Lakes and Rivers



Climate and Coastal Resilience



Safe and Affordable Water



Economic Transformation

ECONOMIC TRANSFORMATION

ECONOMIC TRANSFORMATION ACTION PLAN

- **Launched Sept 24** in NYC as part of Climate Week
- More than **60 attendees**, including Mayors Johnson (Chicago), Plante (Montréal), and Bibb (Cleveland)
- Broadcast online live for press in the region to tune in





ECONOMIC TRANSFORMATION ACTION PLAN

- **One Vision: Develop the Fresh Coast Economic Corridor**
- Five Regional Goals
- Four Transformational Pillars
- 17 Strategies, 76 Actions, and 12 Program Concepts



FRESH COAST™
ECONOMIC CORRIDOR

Scan to consult our Action Plan

REGIONAL GOALS

1. ATTRACT HALF A MILLION NEW BUSINESSES
2. CREATE 18 MILLION NEW JOBS
3. AVOID INCREASE IN % WATER LOSS
4. IMPROVE WATER QUALITY FROM "FAIR" TO "GOOD"
5. REDUCE EMISSIONS BY 300 MILLION MT

Together, let's build a prosperous, resilient, and sustainable future for the Great Lakes and St. Lawrence River Region.

CANADA-U.S. RELATIONS

A GREAT LAKES-ST. LAWRENCE STRONG RESPONSE

- Given the current climate, the Cities Initiative provides a **network of municipal leaders and partners dedicated to maintaining strong ties** between both nations

#GLSLSTRONG

- In February, we took our ***Great Lakes-St. Lawrence Strong* position** on the trade war and launched a binational Mayors Transition Team to strategize on new CAD and U.S. federal governments and current trade context



- Reinforced during Great Lakes Day in D.C. and at our May 2025 Annual Conference in Milwaukee

ENGAGING WITH US

MEMBER ENGAGEMENT

POLICY & ADVOCACY

- Mayors Commissions
- U.S. and Canadian Days on the Hill
- Policy Resolutions



COLLABORATION & LEARNING

- Project-based partnerships
- Conferences
- International Events
- Webinars



STRATEGIC INPUT

- Board of Directors
- Ontario Regional Advisory Council
- Industry Leaders Circle



MAYORS COMMISSIONS

COMMISSIONS

- Water Access
- Community Resilience
- Economic Transformation

CORE FUNCTIONS

- Policy Development
- Advocacy
- Regional Collaboration
- Media Engagement





MAYORS COMMISSIONS

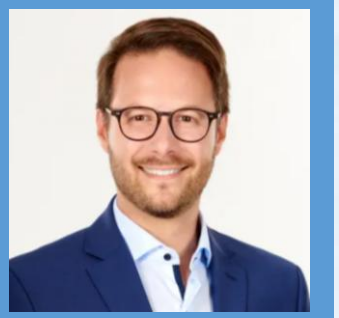
COMMUNITY RESILIENCE






Help municipalities plan for, and take action to strengthen their **resiliency to impacts from climate change**

WATER ACCESS



Promote equitable access to safe and affordable water for all residents of our region

ECONOMIC TRANSFORMATION








Transform our region into a thriving Fresh Coast Economic Corridor by promoting sustainable, inclusive, and resilient economic development and freshwater stewardship

OTHER MEMBER BENEFITS

- **REGION-WIDE COLLABORATION –** Build relationships with local leaders from ON, QC and the US
- **DIRECT ADVOCACY –** Help move forward your priorities with provincial and federal officials
- **PROGRAM PARTNERSHIP –** We are always on the lookout for willing members to partner with us on innovative projects
- **WEGE AWARD –** Annual prize of up to $7,500 for communities with populations under 100,000 that advance innovative water solutions
- **STAFF AND COUNCIL ENGAGEMENT –** Staff and council members are encouraged to participate in Cities Initiative events
- **PUBLIC RELATIONS –** Your work with us gets covered



UPCOMING EVENTS

- **November 13 – Ontario Water Leaders Summit –** Oakville, ON
- **December 8 – Great Lakes-St. Lawrence Day on the Hill –** Ottawa, ON
- **March 2026 – Great Lakes Day –** Washington, DC
- **May 6- 8, 2026 – 2026 Annual Conference –** Hamilton, ON





Scan to register for the Ontario Water Leaders Summit

Thank You! Questions?

Phil Murphy-Rhéaume
COO / Canadian Managing Director
phillipe.murphy-rheaume@glslcities.org



ANNEX – MAYORS COMMISSIONS

MAYORS COMMISSION ON WATER ACCESS

Leadership in Canada: Grey County (ON), Repentigny (QC)

Mission Statement: *Ensuring access to safe, secure and affordable drinking water; and safekeeping the water quality and ecosystems health of our lakes and rivers.*

Priority areas:

- Ensure dedicated **long-term, predictable funding for water, wastewater and stormwater infrastructure** that is not in competition with other needs. (mix of shovel-ready and other projects)
- Supporting the implementation of historic **freshwater funding** from the federal government, including direct funding in municipal projects.
- Working towards better **public access** to water assets in our regions
- Tackling **emerging pollutants and invasive aquatic species** through better monitoring, adapted standards and increased enforcement
- Supporting the **bi-national legal framework** protecting Great Lakes water quality

MAYORS COMMISSION – COMMUNITY RESILIENCE

Leadership in Canada: Tecumseh (ON), Contrecoeur (QC)

Mission Statement: *Supporting our communities in their adaptation to climate change, striving for resilience of the municipalities and their infrastructure against erosion, urban flooding.*

Priority areas:

- Securing appropriate **funding for municipal resilience programs**, especially through the Disaster Mitigation and Adaptation Fund – Advocacy through the Climate Proof Coalition.
- Building **municipal capacity** through resilience programming, best practices and federal programs such as the Flood Hazard Identification and Mapping Program
- Re-establishing the **shoreline erosion funding** that had been canceled in 1997.

MAYORS COMMISSION – ECONOMIC TRANSFORMATION

Leadership in Canada: Cobourg (ON), Montréal (QC), Québec City (QC)

Mission Statement: *Charting a roadmap for the region and our cities to ensure that economic development goes hand in hand with climate action and social equity.*



Priority areas:

- Attracting **new sustainable jobs and industries** in the region, as well as supporting the creation of new regional industrial champions.
- Supporting the development of a **decarbonised energy grid** and the decarbonisation of municipal energy utilities.
- Expanding **decarbonised shipping,** supporting a modal shift to maritime/rail shipping, with better integration of the cities and their ports.
- **Redeveloping our waterfronts** to foster resilience, multi-use and publicly accessible areas in the city that support increased life quality, new developments and public access.

Callander

MUNICIPALITY OF CALLANDER Tuesday, November 18, 2025

Moved by Councillor	___ Carr	___ Dell	✓ McMartin	___ Smit
Seconded by Councillor	___ Carr	✓ Dell	___ McMartin	___ Smit

RESOLUTION NO. 2025/11/342

That Report 2025-072 ADMIN: Request for Support for Moratorium on Glyphosate Spraying in Timiskaming Forest be received, and

That Council support the Township of Larder Lake's Resolution #18 by forwarding a copy of this resolution of support, along with a copy of Resolution #18, to the appropriate provincial ministries, agencies, and municipalities as outlined in the request from the Township of Larder Lake regarding the aerial spraying of glyphosate-based herbicides in the Timiskaming Forest, and

That staff be directed to prepare and send the attached letter to the Minister of Natural Resources and Forestry, Minister of Health, Vic Fedeli, MPP Nipissing, the Association of Municipalities of Ontario and the Federation of Northern Ontario Municipalities, requesting that aerial spraying of glyphosate not proceed due its potential impact on water quality, ecosystems, and public health.

Mayor

CARRIED / DEFEATED / AMENDED / DEFERRED

THE CORPORATION OF THE TOWNSHIP OF LARDER LAKE
69 FOURTH AVENUE, P. O. BOX 40, LARDER LAKE, ON P0K 1L0
PH: 705-643-2158 FAX: 705-643-2311
LARDERLAKE.CA

September 10, 2025

To whom it May Concern:

RE: Resolution #18, September 9, 2025 - Resolution Requesting a Moratorium on Aerial Spraying of Glyphosate in the Timiskaming Forest

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Please be advised that at the Township of Larder Lake's Regular Council Meeting held on Tuesday, September 9th, 2025, the following resolution was adopted:

Moved by: Councillor Armstrong
Seconded by: Councillor Kelly

CARRIED

WHEREAS the Province of Ontario, through the Ministry of Natural Resources and Forestry, plans to begin aerial spraying of glyphosate-based herbicides starting on or before August 10th, 2025, in the Timiskaming Forest; and

WHEREAS the Timiskaming Forest covers a significant portion of the Municipality of Larder Lake, and this activity may impact residents and ecosystems; and

WHEREAS new scientific evidence published since Health Canada's last assessment of glyphosate in 2017 has linked glyphosate-based end-use products to cancer, metabolic and neurological diseases, reproductive toxicity, and ecosystem harm; and

WHEREAS the Province of Quebec banned the use of glyphosate for forestry purposes in 2001 and replaced aerial herbicide spraying with manual forest thinning as a safer alternative forest management method; and

WHEREAS many residents have expressed concern regarding the potential environmental and public health risks associated with aerial spraying of glyphosate-based herbicides;

NOW THEREFORE BE IT RESOLVED THAT the Council of the Municipality of Larder Lake formally requests that the Honourable Mike Harris Jr., Minister of Natural Resources and Forestry, reconsider the planned use of glyphosate-based herbicides in the Timiskaming Forest and suspend the aerial spraying initiative until further independent research and updated risk assessments are completed and reviewed; and

BE IT FURTHER RESOLVED THAT this resolution be forwarded to:

The Honourable Mike Harris Jr., Minister of Natural Resources and Forestry

The Honourable Sylvia Jones, Minister of Health

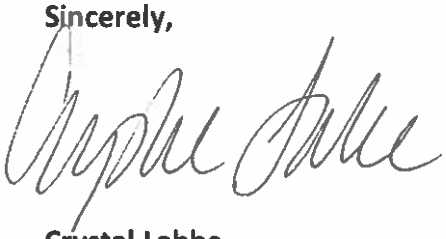
MPP John Vanthof, Timiskaming–Cochrane

AMO (Association of Municipalities of Ontario)

FONOM (Federation of Northern Ontario Municipalities)

All municipalities within Northeastern Ontario

Sincerely,



Crystal Labbe
CAO/ Clerk Treasurer