CITY OF TORONTO

2017 ANNUAL PROGRESS REPORT GREEN LANE LANDFILL

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1 Introduction

This 2017 Annual Progress Report for the operation and management of the Green Lane Landfill Site (Site) has been prepared by WSP Canada Inc., on behalf of the City of Toronto. WSP assumed the engineering and monitoring requirements under contract with the City of Toronto effective April 1, 2013. This report covers the monitoring period of January 2017 to December 2017. The Site currently operates under Amended Provisional Certificate of Approval (C of A) for a Waste Disposal Site No. A051601 issued to the City of Toronto on July 5, 2007, with amendments to March 10, 2011 (current ECA), and under Amended Environmental Compliance Approval (ECA) Number 0685-92VMQX issued on January 17, 2013 (LTP ECA).

The Site is located in portions of Lots 21, 22, and 23, north of Highway 401, Concession III, Southwold Township, County of Elgin. The regional Site location is shown on Figure 1.1, with a more specific Site location shown on Figure 1.2. The Site has a total area of 129.7 hectares, of which 71.2 hectares are approved for landfilling.

The Site was previously owned and operated by St. Thomas Sanitary Collection Service Limited Partnership (STSCS). The Site was purchased by the City of Toronto on April 2, 2007, and with the transfer of the Site, all relevant approvals were transferred to Toronto. Landfilling operations at the Site commenced in 1978 under Provisional C of A No. A051601 issued by the Ministry of the Environment and Climate Change (MOECC). The Site was operated under an open extension of the date of expiry of the C of A until September 1991. Copies of all historic C of As and amendments to the C of A, including a copy of the letter of extension are provided on USB in Appendix A. The amendments include the permitting of STSCS to operate a drum crusher at the Site under Generator Registration No. ON0263101.

1.1 Original Landfill Area

In 1978, after a Part V Environmental Protection Act (EPA) hearing, the originally approved landfilling footprint was 20.6 hectares. In 1985, the approved landfilling footprint was contracted to 12.6 hectares in the northern and northwestern portions of Lot 22, north of Highway 401 (Original Landfill Area). The approximate area of the Original Landfill Area (i.e., contracted landfilling footprint) is shown on Plan 1.

In August 1991, it was calculated that as of August 12, 1991, an estimated total of 1,014,125 cubic metres (m^3) of refuse had been disposed of at the Site. A report entitled "Landfill

Capacity Status, August 1991, Green Lane Landfill" was prepared to document the volume calculations and submitted to the MOECC in September 1991. Subsequently, in September 1991, the MOECC determined the Site to be at its approved capacity and landfilling operations ceased. Landfilling operations were limited to the Original Landfill Area.

Following cessation of landfilling operations, the previous owner received Provisional C of A No. A051603 from the MOECC on September 20, 1991 to operate a transfer area at the Site. Copies of historic C of As are provided on USB in Appendix A. The C of A allowed for a portion of the Original Landfill Area to be used for compacting waste brought to the Site and for transferring it onto tractor trailers to be hauled to an approved landfill site.

1.2 Interim Expansion Area

In April 1992, the previous owner submitted an Environmental Protection Act (EPA) application for the Interim Expansion of the Site. The EPA application for the Interim Expansion of the Site was supported by the following documentation:

→ "Green Lane Landfill, Design and Operations Report, October 1992" (October 1992 D&O Report);

→ "Green Lane Landfill, Design and Operations Amendment Report, May 1993" (May 1993 D&O Amendment Report);

→ "Green Lane Landfill, Hydrogeologic Investigation Report, October 1992" (October 1992 Hydrogeologic Investigation Report);

→ "Treatability Assessment at the St. Thomas Water Pollution Control Plant for the Green Lane Landfill Leachate, Green Lane Landfill Site 1992" (October 1992 Treatability Assessment Report);

→ "Traffic Impact Study for the Green Lane Landfill Site, Proposed Interim Expansion, April 1992" (April 1992 Traffic Impact Study);

→ "Financial Assurance for the Proposed Interim Expansion of the Green Lane Landfill, February 1993" (February 1993 Financial Assurance Report); and

→ "Green Lane Landfill, Ontario Water Resources Act Application for the Interim Expansion, January 1993" (January 1993 OWRA Application).

After an EPA hearing in 1993, the MOECC issued Provisional C of A No. A-051601, dated February 7, 1994, for a Waste Disposal Site in the Interim Expansion Area (Interim Expansion C of A). The Interim Expansion Area is situated within the remaining area of the originally approved landfilling footprint in the eastern and southeastern portion of Lot 22, north of Highway 401. The Interim Expansion Area is approximately 9.6 hectares, of which approximately 2.9 hectares overlaps with the Original Landfill Area. Combined, the Original Landfill Area and the Interim Expansion Area comprise approximately 19.3 hectares. The approximate area of the Interim Expansion Area is presented on Plan 1.

Landfilling operations at the Site recommenced in February 1994 in Stage 1, which is the area of overlap between the Original Landfill Area and the Interim Expansion Area. Landfilling within Stage 2 of the Interim Expansion Area began on December 28, 1994, following excavation activities and cell preparation in this stage. Construction of the western portion of Stage 5 was completed in September 2001. This represented completion of the landfill base for the Interim Expansion Area. The Interim Expansion Area C of A was replaced on February 5, 1999 with the Long-Term Expansion C of A, under which the landfill operated until September 14, 2006. Copies of historic C of As are provided on USB in Appendix A.

1.3 Long-Term Expansion Area

As part of a Solid Waste Management Environmental Assessment undertaken by the previous owner, the Site was identified as the Preferred Site for long-term waste disposal. An initial hydrogeologic assessment (1994 Hydrogeologic Assessment) was conducted in 1994 as part of the Environmental Assessment in an area of the Site preliminarily identified as acceptable for long-term landfill expansion (Long-Term Expansion Area). In 1995, subsequent to the Site being identified as the Preferred Site for the Environmental Assessment, an extensive hydrogeologic investigation of the Long-Term Expansion Area was undertaken (1995 Hydrogeologic Investigation).

In April 1996, the previous owner submitted an EPA application for the Long-Term Expansion of the Site. The EPA application for the Long-Term Expansion was supported by the following documentation:

→ "Hydrogeologic Investigation Report for the Long-Term Expansion of the Green Lane Landfill Site" (April 1996 Hydrogeologic Investigation Report);

→ "Design and Operations Report for the Long-Term Expansion of the Green Lane Landfill Site, April 1996" (April 1996 D&O Report);

→ "Dispute Resolution Report for the Long-Term Expansion of the Green Lane Landfill Site, August 1996" (August 1996 Resolution Report);

→ "Ontario Water Resources Act Application for the Long-Term Expansion of the Green Lane Landfill Site, October 1996" (October 1996 OWRA Application); and

→ "Financial Assurance Report for the Long-Term Expansion of the Green Lane Landfill Site, October 1996" (October 1996 Financial Assurance Report).

In November 1996, the previous owner submitted an environmental assessment to the Minister, pursuant to the Environmental Assessment Act (EAA). The EAA submission identified the Long-Term Expansion of the Site as part of the undertaking. This submission was supported by the following documentation:

→ "Solid Waste Management Environmental Assessment Report, St. Thomas Sanitary Collection Service Limited and Advance Container of Canada a Division of Green Lane Environmental Group Ltd., November 1996" (November 1996 EA Report).

On August 13, 1998, the MOECC granted approval under the EAA to proceed with the undertaking for the expansion of Green Lane Landfill, subject to a number of conditions. At the request of the Approvals Branch, the EPA application was supported by the following additional documentation:

→ "Ontario Water Resources Act Application for the Long-Term Expansion of the Green Lane Landfill Site, (re-issued) December 1998" (December 1998 OWRA Application); and

→ "Site Contingency Plan, Green Lane Landfill Site", January 1999, (January 1999 Site Contingency Plan), which superseded the October 1996 Financial Assurance Report.

The C of A for the Long-Term Expansion of the Green Lane Landfill was issued by the MOECC on February 5, 1999. The previous owner appealed certain aspects of the Long-Term Expansion C of A on February 16, 1999. The purpose of the appeal was to obtain clarification of some conditions/provisions of the C of A. All outstanding items were resolved during a hearing before the Environmental Appeal Board on October 27, 1999, attended by the previous owner, the MOECC, and other parties. The MOECC Approvals Branch issued amended conditions to the Long-Term Expansion C of A on November 24, 1999. Copies of historic C of As and amendments are provided on the USB in Appendix A.

The Long-Term Expansion Area is situated immediately south and west of the Original Landfill Area and west of the Interim Expansion Area, in portions of Lots 21 and 22, north of Highway 401. The Long-Term Expansion Area is approximately 33.6 hectares, of which approximately 9.0 hectares overlap with the Original Landfill Area and Interim Expansion Area. As such, the area of new refuse disposal for the Long-Term Expansion Area is 24.6 hectares. Combined together, the Original Landfill Area, the Interim Expansion Area and the Long-Term Expansion Area comprise an area of approximately 43.9 hectares. The approximate area of the Long-Term Expansion Area is shown on Plan 1.

1.4 Site Optimization Areas

In February 2002, the previous owner submitted Terms of Reference (ToR) under subsections 6(2) (c) and 6.1(3) of the EAA for the Optimization of the Site. The MOECC approved the ToR on March 28, 2002 (Approved ToR). An environmental assessment was undertaken as a continuation of the process that started in the early 1990s. In response to concerns that environmental assessments should have regard for clauses (a) through (e) of subsection 6.1(2) of the EAA, the process conducted by the previous owner voluntarily included additional material which was not required by the Approved ToR.

In November 2004, the previous owner submitted an EPA application for the Optimization of the Site, which was initially supported by the following documentation:

→ "Hydrogeologic Investigation Report for the Optimization of the Green Lane Landfill Site" (November 2004 Hydrogeologic Investigation Report); and

→ "Design and Operations Report for the Optimization of the Green Lane Landfill Site (November 2004 D&O Report).

In July 2005, an environmental assessment pursuant to the EAA was submitted to the MOECC by the previous owner. The EAA submission identified the Optimization of the Site as the undertaking. This submission and the November 2004 EPA submission were supported by the following documentation:

→ "Environmental Assessment for the Optimization of the Green Lane Landfill Site, Environmental Assessment Report" July 2005 (July 2005 EA Report);

→ "July 2005 Public and Agency Consultation Report";

→ "July 2005 First Nations Consultation Report";

→ "July 2005 Issues Identification and Resolution Program Report"; and

→ "Ontario Water Resources Act Application for the Optimization of the Green Lane Landfill Site" October 2005 (October 2005 OWRA Application Report).

In December 2005, the Minister directed mediation under the EAA in connection with surface water management for the proposed Site Optimization. The mediation was completed in February 2006 and as a result of the mediation, a report entitled "Surface Water Assessment Report for the Optimization of the Green Lane Landfill Site Report" (the "March 2006 SWAR Report") was issued in March 2006.

On June 28, 2006, the Minister issued the Environmental Assessment Act, Section 9, Notice of Approval to Proceed with the undertaking for the Environmental Assessment for the Optimization of the Green Lane Landfill dated May 26, 2006 and approved by Order in Council 1219/2006 dated June 7, 2006 (2006 EAA Approval) (Appendix A).

The 2006 EAA Approval for the Site Optimization approved a further 10,900,000 cubic metres (m^3) of air space for waste disposal (including daily cover materials and taking settlement into account) in addition to the areas previously approved for landfilling in the Original Landfill Area, the Interim Expansion Area and the Long-Term Expansion Area.

In July 2006, the previous owner submitted the following reports:

→ "Design and Operations Report for the Optimization of the Green Lane Landfill Site, July 2006" (July 2006 D&O Report);

→ "Hydrogeologic Investigation Report for the Optimization of the Green Lane Landfill Site, July 2006" (July 2006 Hydrogeologic Investigation Report);

→ "Stormwater Management Plan for the Optimization of the Green Lane Landfill Site, July 2006" (July 2006 SWM Plan); and

→ "Site Contingency Plan Report, Green Lane Landfill Site, 2006" (2006 Site Contingency Report), Appendix N of the July 2006 D&O Report.

The above reports issued in July 2006 supported the previous owner's application for a C of A under the EPA and the OWRA for the Optimization of the Site as envisioned by the 2006 EAA Approval. The July 2006 D&O Report and July 2006 Hydrogeologic Investigation Report represented the re-issuances of the November 2004 reports. The purpose of the re-issuances was to incorporate revisions to reflect operations updates since November 2004 and responses to MOECC technical review comments, as well as to reflect the March 2006 SWAR Report issued as a consequence of the EAA Minister-directed mediation.

The current ECA was issued under the EPA on September 15, 2006 as Amended Provisional Certificate of Approval Waste Disposal Site Number A051601, and subsequently amended and re-issued to the City of Toronto on July 5, 2007. A total of five (5) notices of amendment to the current ECA have been issued by the MOECC between 2009 and 2011. Notice No.1, dated May 1, 2009, incorporated the detailed design of the horizontal landfill gas collection trenches, ensuring that the Schedule "A" list of documents that forms part of the current ECA remains current. Notice No. 2 dated October 19, 2009 included amendments to Conditions 8(a), 64, and 66 to address concerns expressed by the Township of Southwold. Notice No. 3, dated November 13, 2009, approved the air monitoring program for the Site in Condition 108 and incorporated related documentation into Schedule "A". Notice No. 4, dated December 9, 2010, was issued to permit the City's incoming transfer station waste trailers to by-pass the Site weigh scale, provided that the City's transfer station and Site operate under integrated software systems. All vehicles continue to be required to weigh out. Notice No. 5, dated March 10, 2011, approved the final design specifications for the landfill gas header and leachate forcemain in the West Optimization Area (WOA). The current ECA and notices of amendments are provided in Appendix A.

The Site Optimization approves landfilling further west into Lot 21 and east into Lot 23, as well as higher over the total approved areas and deeper for areas yet to be developed. The area of new refuse disposal for the Site Optimization represents approximately 27.3 hectares. Combined, the Original Landfill Area, the Interim Expansion Area, the Long-Term Expansion Area, and the Site Optimization comprise an area of approximately 71.2 hectares. The approximate area of the Site Optimization is shown on Plan 1.

Amended Certificate of Approval Industrial Sewage Works Number 6602-6H5RBF, dated January 16, 2007, was issued under the OWRA (USB in Appendix A) and consolidated surface water management, stormwater management, and operation of the on-Site leachate plant into a single approval document. This amended C of A represented the last approval required to implement the Site Optimization.

On October 22, 2010, amended C of A No. 1131-88TK3K Industrial Sewage Works (Amended OWRA C of A) (Appendix A), was issued replacing C of A No. 6602-6H5RBF. The Amended OWRA C of A confirmed the approved design for the expansion of the existing on-Site LTP to increase the hydraulic processing capacity of the facility. In addition, the rated capacity of stormwater discharge from the Site was increased. Construction of the expanded LTP commenced in late November 2010 and was substantially completed in late October 2011.

Amended Environmental Compliance Approval (ECA) Number 0685-92VMQX was issued for the Site on January 17, 2013 (LTP ECA) (Appendix A), and replaced the Amended OWRA C of A. The LTP ECA includes the approved design of a stormwater management pond and pump station to control stormwater originating from the Site services catchment area.

It is noted that Certificates of Approval (C of A) are now known as Environmental Compliance Approvals (ECA) by recent amendments of the applicable legislation.

1.5 Objectives and Scope

The 2017 Annual Progress Report was prepared in compliance with Condition 76 of the current ECA and includes the following:

- → Summary of the groundwater, private well, surface water, stormwater, and leachate monitoring activities for the 2017 reporting period;
- → Evaluation and discussion of the groundwater, private well, surface water, stormwater, and leachate monitoring results for the 2017 reporting period;
- → Evaluation of the Site groundwater and boundary impact assessment in accordance with Regulation 232/98;
- → Summary of the benthic survey program and the results for the 2017 reporting period;
- → Summary of the landfill gas monitoring activities for the 2017 reporting period;
- → Evaluation and discussion of the landfill gas results for the 2017 reporting period;
- → Operation and management of the Site for the reporting period including:
  - Monthly summary of the quantity and type of waste deposited at the Site;
  - Any changes to the operation, equipment, or procedures at the Site;
  - Any operational problems encountered and the remedial measures taken;
  - An updated Site plan showing the areas of fill, buffer zones, contours, and monitoring locations;
  - Recorded quantities of leachate treated at the on-Site Leachate Treatment Plant;
  - A summary of complaints, if any, received by Green Lane Landfill and/or by the MOECC and what mitigation measures were taken, if any, to resolve the matter;

- General construction activities completed or in progress at the Site;
- The location, areal extent, and thickness of all sand and/or gravel lenses encountered in the base or sidewalls of constructed landfilling cells and a description of the remedial action taken;
- Annual report of compliance with the conditions of the 2006 EAA Approval; and
- Summary and recommendations regarding any proposed changes in the operation of the Site.

Appendix L of this report contains the required completed “Monitoring and Reporting Checklist” from the MOECC's Technical Guidance Document "Monitoring and Reporting for Waste Disposal Sites, Groundwater and Surface Water", dated November 2010.

2 Monitoring Programs

The 2017 Site monitoring programs were conducted in accordance with the current ECA and LTP ECA. The programs included monitoring of groundwater, surface water, stormwater, leachate, private wells and a benthic macroinvertebrate survey. The Site monitoring programs are discussed in the following subsections, along with a comparison of the 2017 monitoring results to the historical database for the Site.

2.1 Analytical Database Summary

2.1.1 Historical Monitoring Program

Monitoring of groundwater and surface water quality at on-Site sampling locations has occurred since April 1978. All historical results have been provided to the MOECC in successive annual reports since 1980.

From 1978 until May 1992, water quality analyses were conducted by the MOECC laboratory in London, Ontario. Between 1992 and the spring of 2002, water quality analyses were conducted by CRA's Analytical Services Division in Waterloo, Ontario. From the spring of 2002 to early 2006, water quality analyses were conducted by Enviro-Test Laboratories in Waterloo, Ontario. In early 2006, Enviro-Test Laboratories became a member of the ALS Laboratory Group, and completed water quality analyses until April 2013. Since April 2013, all water analyses have been conducted by AGAT Laboratories in Mississauga, Ontario.

Historically (1978 to 1993), samples collected at the Site were analyzed of the following general chemistry parameters:

General Chemistry	
pH	Total Phosphorus
Conductivity	Calcium
Hardness	Magnesium
Alkalinity	Nitrate
Chloride	Total Kjeldahl Nitrogen (TKN)
Phenols	Total Suspended Solids (TSS) - (surface water and leachate only)
Total Iron	Biological Oxygen Demand (BOD_5) - (surface water and leachate only)
Sulphate	

The Interim Expansion C of A expanded the parameters to be analyzed in groundwater. Commencing in 1994, the monitoring wells were sampled semi-annually (e.g., May and November) for the parameters previously mentioned, plus the following additional parameters:

Additional Parameters	
Nitrite	Dissolved Sodium
Chemical Oxygen Demand (COD)	Dissolved Manganese
Un-ionized (Free) Ammonia	Dissolved Organic Carbon (DOC)

The Interim Expansion C of A required monthly hydraulic monitoring of groundwater levels in the on-Site monitoring wells, leachate wells, and leachate system manholes. Also, once during the second year (i.e., 1995) and once during the fifth year (i.e., 1998) of landfill operation in the Interim Expansion Area, the on-Site groundwater monitoring wells were also required to be sampled for additional selected dissolved metals and for a volatile organic scan (EPA 624 list). This additional monitoring was initially performed during the November 1995 monitoring event, and then also in November 1998. Method detection limits (MDLs) for the analysis of these additional metals were below Ontario Drinking Water Objectives (ODWOs), where applicable.

Summary tables of all data collected since 2006, including the 2017 monitoring data, are presented in Appendix B. Concentration versus time graphs for the parameters listed below have been plotted for observation wells, private wells, and surface water sampling locations, and are provided in Appendices C, D, and E, respectively:

Concentration versus time graphs	
Alkalinity	Dissolved Boron (groundwater monitoring locations)
Chloride	Total Boron (surface water and leachate)
Conductivity (laboratory)	Dissolved Iron (groundwater monitoring locations)
Hardness	Total Iron (surface water and leachate)

2.1.2 Current Groundwater Monitoring Program

The current groundwater hydraulic monitoring and sampling requirements are set out in Schedule B of the current ECA. Measurement of groundwater elevations at 44 well locations is required on a quarterly basis, every February, May, August, and November. Groundwater samples are collected semi-annually, in May and November. The May event consists of sample collection at 28 well locations, for analysis of the following general chemistry parameters:

General Chemistry	
Alkalinity	Nitrate
Chemical Oxygen Demand (COD)	Nitrite
Chloride	Ammonia
Dissolved Organic Carbon (DOC)	Phenols
Field and Laboratory Conductivity	Sulphate
Field and Laboratory pH	Total Dissolved Solids (TDS)
Hardness	Total Kjeldahl Nitrogen (TKN)

In addition, these wells are required to be sampled every May for analysis of six (6) selected volatile organic compounds (VOCs) (benzene, 1,4-dichlorobenzene, dichloromethane, ethylbenzene, toluene, and vinyl chloride) and the following metals in the dissolved phase:

Metals (dissolved)	
Arsenic	Lead
Barium	Magnesium
Boron	Manganese
Cadmium	Mercury
Calcium	Phosphorus
Chromium	Potassium
Copper	Sodium
Iron	Zinc

The November event consists of groundwater sample collection at 11 well locations, for analysis of general chemistry parameters only.

All groundwater samples collected for DOC and dissolved metals analysis are filtered in the field using a 0.45-micron glass fibre in-line disposable filter, prior to placing the sample into the appropriate sample containers. Samples are collected directly into bottles provided by the laboratory, with appropriate preservatives added where required.

A summary of the installation details for all groundwater and leachate monitoring wells is provided in Table 2.1. A summary of the groundwater monitoring requirements specified in the current ECA is provided in Table 2.2.

2.1.3 Current Surface Water Monitoring Program

The surface water and stormwater monitoring requirements are set out in Schedule C of the current ECA and in the LTP ECA. A summary of the surface water monitoring program completed at the Site is provided in Table 2.2.

Under the current ECA and LTP ECA, all surface water runoff from developed areas of the Site, during the operational and post-closure contaminating lifespan periods, is to be diverted and stored in the stormwater management (SWM) Ponds and ultimately discharged to Dodd Creek. The LTP effluent forcemain discharge was re-directed from the Polishing Basin to SWM Pond 5B on September 26, 2011, in accordance with the approved design. As part of this work, the size of the effluent forcemain was also increased to accommodate the additional discharge flows from the expanded LTP. The re-directed forcemain will discharge treated effluent to SWM Pond 5B throughout the operational and post-operational lifespan period of the landfill.

During the operational period and the contaminating life associated with the landfill, the surface water quality monitoring network consists of two (2) monitoring locations on Dodd Creek; one (1) upstream of the discharge channel outlet (STA5) and one (1) downstream of the discharge channel outlet (STA6).

The surface water monitoring network is sampled on a quarterly (and seasonal) basis, when there is flowing water in the creek. A minimum of 45 days is required between these seasonal sampling events, and all locations are sampled on the same day. The spring and fall sampling events, which typically occur in May and November, consist of sample collection and analysis for the following general chemistry parameters:

General Chemistry	
Alkalinity	Hardness
Biological Oxygen Demand (BOD_5)	Nitrate
Carbonaceous Biological Oxygen Demand ($CBOD_5$)	Nitrite
Chemical Oxygen Demand (COD)	Un-ionized (Free) Ammonia
Chloride	Phenols
Field and Laboratory Conductivity	Sulphate
Field and Laboratory pH	Total Suspended Solids (TSS)
Field Dissolved Oxygen (DO)	Total Dissolved Solids (TDS)
Field Flow	Total Kjeldahl Nitrogen (TKN)
Field Temperature	Total Phosphorus

It is noted that $CBOD_5$ was added to the monitoring program on January 17, 2013, as a requirement of the current LTP ECA.

In addition, spring and fall samples collected from the surface water monitoring network are analyzed for the following total metals:

Metals (Total)	
Arsenic	Copper
Barium	Iron
Boron	Lead
Cadmium	Mercury (dissolved)
Chromium	Zinc

Every winter and summer (March and August), surface water locations are sampled and analyzed for the general chemistry parameter list presented above, and also for total iron.

In addition to the quarterly monitoring events and pursuant to the March 2006 SWAR Report, six (6) surface water monitoring events are completed each year in Dodd Creek, in general coordination with the watershed monitoring program undertaken by the Kettle Creek Conservation Authority (KCCA). Surface water samples are collected from the two (2) sample locations on Dodd Creek; one (1) upstream of the discharge channel outlet and one (1) downstream of the discharge channel outlet.

Surface water sampling is completed when there is flowing water in the creek. The surface water results from these six (6) sampling events are provided to the MOECC and KCCA in a timely manner. Surface water samples are analyzed for parameters consistent with the Provincial Water Quality Monitoring Network (PWQMN) parameters analyzed as part of the KCCA's surface water quality monitoring program for the Kettle Creek watershed.

This additional surface water quality monitoring will continue to be completed throughout the operational and post closure contaminating life of the Site as long as the KCCA, or its successor, continue to perform its surface water quality monitoring program, or an equivalent substitute program, for the Kettle Creek watershed.

As set out in the March 2006 SWAR Report, stormwater samples are collected from the “Stormwater Management Pond (at intake pipe or pump chamber)”. This location forms the stormwater monitoring network during the operational period and thereafter during the contaminating life of the Site.

In accordance with the LTP ECA, stormwater is pumped from SWM Pond 3 to SWM Pond 6. The stormwater then flows by gravity from SWM Pond 6 to the Polishing Basin, with ultimate discharge to Dodd Creek. The Polishing Basin is designed to adjust the overall water characteristics from the SWM ponds to be compatible with that of the watershed prior to discharge. Upgrades to the existing SWM Pond 3 pump station were completed in the summer of 2011 as approved, to increase the rated discharge capacity from 18.93 L/s to 37.86 L/s. Upgrades to the pump station included installation of a larger pump chamber and dual pumps (duty and standby), installation of a flow meter, and modifications to internal piping and control panels.

Prior to initiating a stormwater discharge event, water samples are collected from SWM Pond 3 and are submitted to the laboratory for analysis. In the absence of any discharge event, stormwater sampling from SWM Pond 3 is required at least quarterly for analysis of the following parameters:

General Chemistry	
Alkalinity	Chloride
Biological Oxygen Demand (BOD_5)	Hardness
Carbonaceous Biological Oxygen Demand ($CBOD_5$)	Nitrate as N
Chemical Oxygen Demand (COD)	Nitrite as N
Field and Laboratory Conductivity	Phenols
Field and Laboratory pH	Sulphate
Field Dissolved Oxygen (DO)	Total Suspended Solids (TSS)
Field Temperature	Total Dissolved Solids (TDS)
Total Ammonia	Total Kjeldahl Nitrogen (TKN)
Un-ionized (Free) Ammonia	Total Phosphorus
Metals (Total)	
Arsenic	Copper
Barium	Iron
Boron	Lead
Cadmium	Zinc
Chromium	

It is noted that $CBOD_5$ was added to the monitoring program on January 17, 2013, as a requirement of the current LTP ECA.

Upon receipt of the surface water quality results from the laboratory, the data is assessed against on-Site discharge criteria established in the current ECA and the LTP ECA for monitoring potential impact to Dodd Creek, and provided to MOECC and KCCA in a timely manner. Stormwater is only batch discharged from SWM Pond 3 if the quality meets the established criteria or in cases where a parameter may exceed the criteria from time to time, only after approval of the MOECC in consultation with KCCA.

The volume of surface water discharged from SWM Pond 3 during such a discharge event is measured and reported in a timely fashion to KCCA, and is reported in the Annual Reports for the Site. Future changes to the on-Site SWM monitoring program, if any, will be subject to MOECC approval in consultation with KCCA.

The surface water monitoring program also includes annual monitoring of the benthic community, as set out in Schedule C of the current ECA and in the LTP ECA. The May 2017 benthic monitoring program consisted of species richness and organism density monitoring in

Dodd Creek, at locations upstream and downstream of the discharge channel outlet. Between 1999 and 2001, prior to any Polishing Basin discharge to Dodd Creek, baseline monitoring was completed at these locations and provided an indication of any natural variation in benthic organism density (i.e., number of organisms and species richness), which may influence the assessment of upstream and downstream benthic data. The 2017 benthic monitoring program represented the sixteenth sampling event with discharge of Polishing Basin waters to Dodd Creek.

2.1.4 Current Leachate Monitoring Program

Hydraulic monitoring of leachate levels is completed on a monthly basis at leachate monitoring wells and collection system manholes, in accordance with the current ECA. Leachate monitoring locations include wells LW1-91, LW2-07, and LW3-91 (replaced in September 2016 with LW3-16), located in the Original Landfill Area, and wells LW4-04, LW5-04, LW6-04, and LW7-04 located in the Interim Expansion Area. Leachate collection system (LCS) manholes MH11, MH19, MH23, and MH29 are also included for hydraulic monitoring. A summary of the leachate monitoring program completed at the Site is provided in Table 2.2.

Two (2) additional leachate monitoring wells were installed in the fall of 2009, as per recommendations in the 2008 Annual Progress Report. Monitoring well LW7-09 was installed in the Interim Expansion Area, replacing monitoring well LW7-04 which was abandoned due to bio-fouling of the PVC well screen. Monitoring well LW8-09 was installed in Stage 1 of the Long-Term Expansion Area. Hydraulic monitoring at these two (2) locations began in November 2009. An additional leachate monitoring well, LW9-13, was also installed in the fall of 2013 in Stage 2 of the Long-Term Expansion Area. The locations of all leachate monitoring wells and manholes are presented on Figure 2.1.

Leachate levels in the leachate monitoring wells and manholes MH11, MH19, MH23, and MH29 are used to monitor the operation of the hydraulic trap conditions. The elevation of leachate within all leachate monitoring locations is compared to the groundwater potentiometric elevations adjacent to the fill area. The trigger level for the leachate elevation within the fill area is set at approximately 1 m below the historic low groundwater potentiometric elevations for the Interim Expansion Area (225 mASL), Long-Term Expansion Area and West Optimization Area (224 mASL), and East Optimization Area (227 mASL).

In addition to the existing 13 monitoring locations, 25 additional leachate monitoring points are scheduled for installation and monitoring as landfilling progresses to final contours and installation of final cover in the West Optimization Area (WOA) and East Optimization Area

(EOA) is completed. The proposed locations (23 leachate wells and 2 LCS manholes) are listed in Schedule B of the current ECA.

During 2017, leachate from the Original Landfill Area, Interim Expansion Area, Long-Term Expansion Area, and WOA was collected in the leachate holding tank. Between January 1995 and the fall of 2001, leachate from the leachate holding tank was pumped out on a regular basis, typically two (2) to three (3) times a week, and transported to the City of London's Dingman Creek Pumping Station. Off-Site transport of leachate stopped at the end of September 2001, as construction of the leachate treatment plant neared completion.

In accordance with the current ECA, leachate treated at the on-Site leachate treatment plant is required to be sampled once a month for the following parameters:

General Chemistry	
Alkalinity	Hardness
Biological Oxygen Demand (BOD_5)	Phenols
Chemical Oxygen Demand (COD)	Sulphate
Chloride	Total Suspended Solids (TSS)
Dissolved Organic Carbon (DOC)	Total Kjeldahl Nitrogen (TKN)
Field Conductivity	Total Calcium
Field pH	Total Iron
Ammonia	Total Magnesium
Nitrate as N	Total Phosphorous
Nitrite as N	Total Sodium

Leachate samples are collected directly from the holding tank or influent flow line within the leachate treatment plant, and are not filtered. Monthly leachate sampling was initiated in April 1995.

Annual leachate sample collection (in May) is also required from LW3-16, MH11, MH19, MH23, MH29, and the leachate holding tank, for analysis of an expanded list of parameters. These locations are sampled for the list of general parameters presented above, as well as total dissolved solids (TDS), laboratory pH, and laboratory conductivity. Additional parameters include six (6) select VOCs (benzene, ethylbenzene, toluene, vinyl chloride, 1,4-dichlorobenzene, and dichloromethane), and the following total metals:

Metals (Total)	
Arsenic	Barium
Boron	Cadmium
Chromium	Copper
Manganese	Lead
Mercury	Zinc
Potassium	

The volume of leachate pumped from the holding tank to the LTP and the effluent discharged after treatment is measured and documented. In 2017, the metered volume of treated effluent discharged from the LTP was 71,711 m^3.

2.2 Monitoring Activities

2.2.1 General

Compliance monitoring events were completed as required during the 2017 monitoring period. Groundwater and selected private well monitoring locations were sampled semi-annually in May and November 2017. Leachate samples were collected annually during the May sampling event, and monthly at the leachate holding tank. Quarterly compliance surface water samples were collected in March, May, August, and November 2017.

Semi-annual sampling programs were completed from May 17 to 25, and November 6 to 7, 2017. The spring quarterly surface water sampling event was completed on May 24, 2017, with the annual benthic community and density monitoring program also carried out on May 24, 2017. Additional sampling of surface waters for the winter, summer, and fall quarterly events were conducted on March 27, August 9, and November 6, 2017, respectively. Water and leachate samples collected during the sampling events were submitted to AGAT Laboratories in Mississauga, Ontario for analyses of general chemistry, metals, and VOC parameters summarized previously in Section 2.1.

A summary of the sampling program for on-Site observation wells, private wells, leachate wells, and surface water locations conducted in 2017 is presented in Table 2.2. Observation well, private well, surface water, and leachate sample collection activities are discussed in Sections 2.2.3 through 2.2.6, respectively.

All data collected as part of the May and November 2017 sampling events are summarized in the tables referred to in the following sections. Additional March and August 2017 sampling results are presented in the discussion of surface water quality.

Project quality assurance and quality control (QA/QC) was embedded through the various stages of sampling and analysis for the 2017 monitoring period. QA/QC during data collection was implemented through the use of standard monitoring protocols and procedures. Laboratory reports were reviewed for internal QA/QC results. Data quality validation for 2017 sampling events is presented in Table B-5, Appendix B. Where applicable, the data summarized in the tables referred to have been qualified accordingly.

2.2.2 Summary of the 2017 Monitoring Program

Select groundwater wells were sampled as part of the May and November 2017 semi-annual groundwater quality monitoring programs, in accordance with the current ECA. Groundwater liquid level elevations were collected quarterly in February, May, August, and November 2017.

The 2017 private well monitoring program consisted of semi-annual (May and November) sample collection at wells M and AA. Well M was reinstated to the semi-annual sampling program in May 2007, in accordance with the current ECA. Well M will continue to be sampled on a semi-annual basis for as long as the current property owner wishes to remain on the sampling program.

Leachate hydraulic monitoring was completed in wells LW1-91, LW2-07, and LW3-16 located in the Original Landfill Area, wells LW4-04, LW5-04, LW6-04, and LW7-09 located in the Interim Expansion Area, well LW8-09 and LW9-13 located in the Long-Term Expansion Area, and in leachate collection system manholes MH11, MH19, MH23, and MH29. Annual leachate samples were collected during the May 2017 sampling event at LW3-16, MH11, MH19, MH29, and the leachate holding tank. A leachate sample was unable to be collected from manhole MH23 in May 2017, as there was an obstruction within the manhole that prevented the collection of a sample. The leachate holding tank was also sampled monthly during 2017, in accordance with the current ECA.

The 2017 quarterly surface water monitoring events were completed at the two (2) required locations in Dodd Creek, upstream (STA5) and downstream (STA6) of the discharge channel outlet, in accordance with the current ECA and the LTP ECA. In addition to the quarterly sampling requirements, six (6) additional surface water monitoring events were conducted in Dodd Creek, in general coordination with the watershed monitoring program undertaken by

KCCA. The annual benthic community and density monitoring program at the two (2) required locations in Dodd Creek was also completed in May 2017.

In 2017, monitoring of stormwater quality occurred on two (2) occasions, with sample collection at the intake pipe in SWM Pond 3 as discussed in Section 2.2.5. Three (3) stormwater discharge events occurred during the 2017 reporting period. The volume of surface water discharged from SWM Pond 3 to SWM Pond 6 was measured and reported in a timely fashion to the KCCA.

As previously discussed, the LTP effluent forcemain discharge was re-directed from the Polishing Basin to SWM Pond 5B on September 26, 2011, in accordance with the approved design. As part of this work, the size of the effluent forcemain was also increased to accommodate the additional discharge flows from the expanded LTP. No discharge of treated leachate effluent occurred between early August 2011 and early March 2012 due to construction of the expanded LTP. Following commissioning of the expanded LTP, discharge of final effluent to SWM Pond 5B commenced on March 7, 2012. All subsequent discharge events of stormwater from SWM Pond 3 to SWM Pond 6 now include treated effluent from the LTP, following acceptable pre-discharge sampling results.

2.2.3 On-Site Groundwater Observation Wells

During the operational and post-closure periods under Site Optimization, the following wells form the groundwater hydraulic monitoring network under the current ECA:

Groundwater Hydraulic Monitoring Network					
OW20-91	OW23A-95	OW23B-95	OW24A-95	OW24B-95	OW27A-95
OW27B-95	OW28A-95	OW28B-95	OW29A-95	OW29B-95	OW30A-95
OW30B-95	OW31A-95	OW31B-95	OW32A-95	OW32B-95	OW34A-95
OW34B-95	OW37-97	OW38-97	OW39-99	OW40-99	OW41A-01
OW41B-01	OW42A-01	OW42B-01	OW43A-01	OW43B-01	OW44A-01
OW44B-01	OW45A-01	OW45B-01	OW46A-01	OW46B-01	OW47A-01
OW47B-01	OW48A-01	OW48B-01	OW50-01	OW51A-07	OW51B-07
OW52A-07	OW52B-07				

It is noted that the decommissioning of seven (7) groundwater observation wells (OW19-91, OW35A-95, OW35B-95, OW36A-95, OW36B-95, OW49A-01 and OW49B-01) took place in late January 2017, in accordance with Ontario Regulation 903, in advance of planned EOA excavation activities. As such, these observation wells were removed from the groundwater monitoring network.

Hydraulic monitoring was conducted on a quarterly basis at these 44 observation wells during 2017. Groundwater level elevations from the shallower "B" designated nested wells were used to generate shallow groundwater contours for May and November 2017 (Figures 2.2 and 2.3, respectively).

Similarly, groundwater level elevations from deeper "A" designated nested wells were used to generate contours of the deeper groundwater regime for May and November 2017 (Figures 2.4 and 2.5, respectively).

A select number of the 44 observation wells were included in the groundwater quality monitoring network for the spring sampling event. Specifically, the following 28 wells were sampled during the May 2017 monitoring event:

Groundwater Quality Monitoring Network – May 2017					
OW20-91	OW23B-95	OW24B-95	OW27A-95	OW27B-95	OW28B-95
OW29B-95	OW30B-95	OW31B-95	OW32B-95	OW34B-95	OW37-97
OW38-97	OW39-99	OW40-99	OW41B-01	OW42B-01	OW43B-01
OW44A-01	OW44B-01	OW45B-01	OW46B-01	OW47B-01	OW48B-01
OW50-01	OW51A-07	OW51B-07	OW52B-07		

The following 11 observation wells form the groundwater quality monitoring network for the fall sampling event, and were sampled in November 2017:

Groundwater Quality Monitoring Network – November 2017					
OW20-91	OW28B-95	OW31B-95	OW34B-95	OW37-97	OW42B-01
OW44B-01	OW46B-01	OW48B-01	OW50-01	OW52B-07	

A summary of the well locations sampled during 2017 is presented in Table 2.2. The locations of the observation wells sampled are presented on Figure 2.1 and on Plan 1. The monitoring results are discussed in Sections 2.3.1 to 2.3.4.

Prior to purging and sampling, depths to groundwater are measured in each well. All groundwater wells included in the sampling program have been equipped with dedicated sampling equipment consisting of a foot valve and inertial lift tubing. Following purging, groundwater wells are allowed to recover if required, prior to sampling.

A summary of the quarterly hydraulic monitoring data collected from the groundwater observation wells at the Site in 2017 is provided in Table 2.3. A summary of the monthly leachate levels in the leachate system manholes (MH11, MH19, MH23 and MH29) and the leachate wells at the Site for 2017 is provided in Table 2.4. Historical groundwater elevations for the on-Site observation wells are presented in Table F-1, Appendix F.

Groundwater elevations for nested observation wells were used to calculate vertical hydraulic gradients for February, May, August, and November 2017. The vertical hydraulic gradients are summarized in Table 2.5. Upward vertical hydraulic gradients were observed at a majority of the nested locations. Specifically, all but 9, 9, 5, and 4 locations yielded upward vertical gradients for February, May, August, and November, respectively. Downward vertical gradients are typically recorded in the winter and spring, due to the infiltration of snowmelt and precipitation in shallower wells of the nested pairs. With the exception of one well location to the south of the Long-Term Expansion Area (OW34A-95) during the spring, groundwater elevations observed in the deep overburden wells were higher than the leachate levels maintained within the LCS of the Interim, Long-Term and West Optimization Expansion Areas.

Hydrographs for the following selected observation wells, leachate wells, and leachate collection manholes are presented on Figures G-1 through G-25, Appendix G:

Hydrographs – Figures G-1 through G-25					
MH11	MH19	MH23	MH29	LW1-91	LW2-07
LW3-16	LW4-04	LW5-04	LW6-04	LW7-09	LW8-09
LW9-13	OW24A-95	OW24B-95	OW28A-95	OW28B-95	OW32A-95
OW32B-95	OW41A-01	OW41B-01	OW44A-01	OW44B-01	OW48A-01
OW48B-01					

Groundwater elevations for on-Site shallow observation wells and the inferred groundwater contours have been plotted for the May and November 2017 monitoring events, and are presented on Figures 2.2 and 2.3, respectively. Table 2.6 presents the monitoring network for the generation of shallow groundwater contours and the rationale for including each location. The groundwater contours presented on the figures illustrate that the horizontal groundwater flow across the Site is predominantly in a northwesterly to southwesterly direction. Similar results are evident for the deep overburden observation wells in May and November 2017, as presented on Figures 2.4 and 2.5, respectively. With the exception of the influence of the hydraulic trap in Stages 7 through 13 of the WOA, the deeper flow regime beneath the Site is also in a northeast to southwest direction. The shallow groundwater contours indicate that hydraulic containment was maintained in Stages 3 through 13 of the WOA, along the southern portion of the Long-Term Expansion Area and along the perimeter of the Interim Expansion Area in 2017.

Of note, artificially elevated leachate levels were observed in manhole MH19 at various times during 2017, as shown in Table 2.4. These levels were artificially elevated as a result of pumping into MH19 from leachate extraction activities in the Long Term Expansion Area, discussed later in this section and in Section 4.4. Therefore, the higher leachate levels observed in manhole MH19 at various times during 2017 were not representative of true hydraulic conditions along the southern portion of the Long-Term Expansion Area.

Hydraulic monitoring of the four (4) leachate wells installed in the Interim Expansion Area (LW4-04, LW5-04, LW6-04, and LW7-04) began in January 2005. These leachate observation wells are also used as landfill gas extraction wells. During the initial monitoring events in these wells, foam was often observed above the leachate, creating difficulties in determining the leachate levels at the wells. The foam was generated as a result of the extracted landfill gas agitating the leachate at the gas/liquid interface. To address this issue, 25 millimeter (mm) diameter PVC risers equipped with 1 m long well screens were installed in these leachate wells in July 2005. Subsequent monitoring of leachate levels at these locations has not encountered as many problems related to foam. Observation well LW7-04 was abandoned in October 2009 due to bio-fouling, and replacement well LW7-09 was installed. At the same time, leachate observation well LW8-09 was installed in the Long-term Expansion Area. An additional leachate monitoring well, LW9-13, was also installed in the fall of 2013 in Stage 2 of the Long-Term Expansion Area.

As shown on Figures 2.2 and 2.3, internal mounding of leachate continues to occur within the Interim Expansion Area, although hydraulic containment was being maintained around this area in 2017. The mounding is likely attributable to landfilling methods employed in the early stages of the Interim Expansion Area (see 1997 Annual Progress Report). In order to address the internal leachate mounding in the Interim Expansion Area, extraction of the leachate from the observation wells in the Interim Expansion Area was implemented. In the spring of 2006, leachate wells LW4-04 and LW5-04 were alternately instrumented with an explosion-proof pump to extract leachate and divert it to the LCS. Over the course of pumping in 2006, approximately 177 m^3 and 82 m^3 of leachate were removed from wells LW4-04 and LW5-04, respectively. Based on hydraulic monitoring in LCS manholes and wells, these pumped volumes had very little effect in lowering the leachate mound. Therefore, as recommended in the past, additional remedial measures are being implemented to assist with the reduction of the mound in the Interim Expansion Area (see Section 4.4).

Figures 2.2 and 2.3 also show that internal mounding of leachate is occurring within the northeastern portion of the Long-term Expansion Area (Stages 1 and 2). The remedial measures undertaken to address the internal leachate mounding in Stages 1 and 2 are detailed in Section 4.4. In summary, five (5) leachate extraction wells were installed and manhole MH21 was converted into an extraction well in 2011, to augment removal of leachate from Stages 1 and 2. In 2013, leachate extraction in the Long Term Expansion Area commenced via the five (5) leachate extraction wells and MH21. It is noted that hydraulic containment along the southern boundary is being maintained.

Mounding can also occur as a result of restricted flow in a LCS pipe, due to clogging of the pipe. A portion of the LCS was cleaned in June of 2006 between manholes MH13 and MH15 due to a suspected clog in the leachate collection pipe. The LCS between manholes MH11 and MH18 was cleaned and inspected in April 2007. During the spring of 2008, the LCS pipe east of manhole MH22 was connected to the leachate collection pipe extending west of MH21. A portion of the LCS pipe between manholes MH22 and MH24 was cleaned and inspected in late 2009, in accordance with the current ECA. Portions of the LCS perimeter and base collector pipes in Stages 2, 3, 4, and 5 were cleaned and inspected in late November 2012. Beginning in early December 2013, inspection and cleaning of the LCS in Stage 8 and 10 was performed. In late October and mid-November 2014, inspection and cleaning of the LCS in various areas of the Long-Term Expansion Area was performed. In September 2015, cleaning of the leachate collection system was completed via entry at cleanouts for MH29, MH30, and MH31. In mid-August 2016 and November 2016, cleaning of the leachate collection system was undertaken via entry at cleanouts for manholes MH24, MH29, MH30, and MH31. Results of the 2017 cleaning and inspections of leachate collection pipe on Site are further discussed in Section 4.4.

As shown on Figure 2.2 and 2.3, the leachate levels measured in leachate collection manhole MH11 were consistently lower than the groundwater elevations at shallow monitoring wells in the surrounding shallow groundwater regime. This creates an inward gradient and causes the Interim Expansion Area to act as a hydraulic trap, maintaining hydraulic containment.

Cross-section A-A’, as presented on Figure 2.6, also illustrates the inward hydraulic gradient towards the base of the Interim and Long-Term Expansion Areas. The inward hydraulic gradient is also shown on cross-section B-B' for the WOA, as presented on Figure 2.7. The lines of section for A-A' and B-B’ extend across these areas of the landfill from west to east and south to north, respectively, and are presented on Figure 2.3. The continuous pumping of leachate from the Long-Term and Interim Expansion Areas and WOA maintains the inward hydraulic gradient or trap, as evidenced by decreasing shallow groundwater contours in shallow monitoring wells in proximity of the landfill footprint.

As indicated by the shallow groundwater contour figures, the groundwater/leachate hydrographs, and cross-section A-A', the hydraulic containment was maintained along the perimeter of the Interim Expansion Area and Long-Term Expansion Area. Similarly, review of cross-section B-B', indicates that hydraulic containment is being maintained in the WOA and that the hydraulic trap is performing as designed.

The Interim and Long-Term Expansion Areas and WOA are underlain by significant sequences of silt/clay till. These sequences extend approximately 45 to 50 m beneath the base elevation of the deepest portion of the landfill (at Manhole 29 in the northeast corner of Stage 4 of the WOA) to the underlying bedrock. The bedrock groundwater contours generated based on MOECC well records, are presented on Figure 2.8. These contours indicate that the direction of groundwater flow in the limestone aquifer deep beneath the Site is from the northeast to the southwest, similar to the direction inferred by the shallow and deep groundwater contours (Figures 2.2 to 2.5).

2.2.4 Private Domestic Wells

As set out in the current ECA, the private well monitoring program consists of sample collection at Wells M, N, and AA. At Well M, the semi-annual samples were collected directly from the dug well and not the tap outside the home, as requested by the resident. The semi-annual samples for Well AA were collected from an outside tap which draws water from a drilled well. Samples from Well N have not been collected since the fall of 2008, as the resident was not home nor could a sample be obtained from the outside tap. Since May 2011, it was agreed through correspondence with the MOECC that no further attempts would be made to obtain semi-annual samples from Well N.

The locations of private wells within approximately 1.5 km of the Site, which are on record with the MOECC, are shown on Figure 2.9. Details of the private wells shown on Figure 2.9 are summarized in Table 2.7. This table also identifies the private wells which have been sampled historically and those wells which are included in the current monitoring program. The monitoring results are discussed in Section 2.3.4.

Before collecting a groundwater sample from a tap at a private well, the tap was allowed to run for a minimum of two (2) minutes prior to sampling. Private well groundwater samples are not field filtered.

2.2.5 Surface Water Monitoring

The 2017 quarterly surface water sampling events were completed in March, May, August, and November, at the two (2) required Dodd Creek sampling locations, upstream and downstream of the discharge channel outlet, in accordance with the current ECA. Surface water samples were collected only when flowing conditions existed and the samples were not filtered. Samples collected for dissolved mercury analysis were filtered and preserved at the laboratory. Surface water sampling locations are presented on Figure 2.10.

The 2017 monitoring results for upstream and downstream locations in Dodd Creek were assessed for the discrete and annual average exceedances of the trigger levels established for the parameters listed in the current ECA and LTP ECA. These assessments are summarized in Tables 2.15 through 2.19.

A summary of the 2017 surface water sampling program is presented in Table 2.2. Estimated flow rates at these locations, where applicable, are summarized in Table 2.20. The quarterly monitoring results are discussed in Section 2.3.5.

In addition to the quarterly monitoring events, six (6) additional surface water monitoring events were completed at the Dodd Creek sampling locations (upstream and downstream of the channel outlet) when flowing conditions existed. These additional surface water samples were analyzed for parameters consistent with the Provincial Water Quality Monitoring Network (PWQMN) parameters analyzed as part of the KCCA's surface water quality monitoring program for the Kettle Creek watershed. The results of the six (6) additional Dodd Creek sampling events are presented in Table 2.23.

In accordance with the LTP ECA, surface water samples were collected quarterly from the stormwater intake pipe in SWM Pond 3 during 2017. Because of planned cleaning and maintenance activities, the first and third quarter samples from SWM Pond 3 were not considered to be representative and were not included in the quarterly monitoring, as requested by the City of Toronto. The results of the quarterly stormwater monitoring are presented in Table 2.24.

During the 2017 reporting period, stormwater was discharged from SWM Pond 3 to SWM Pond 6 on three (3) occasions. Surface water collected and stored in SWM Pond 3 was sampled prior to any planned discharge, in accordance with the current ECA and LTP ECA. The results of the pre-discharge stormwater samples collected during the 2017 reporting period are presented in Table 2.25. The volume of surface water discharged during the discharge events was also measured and reported in a timely fashion to KCCA. The volume of surface water discharged during each event in 2017 is summarized in Table 2.26. The stormwater monitoring results are further discussed in Section 2.3.5.2.

As previously mentioned, discharge events of stormwater from SWM Pond 3 to SWM Pond 6 now include treated effluent from the expanded LTP, following acceptable pre-discharge sampling results.

2.2.6 Leachate Monitoring

Leachate samples were collected from leachate well LW3-16, the leachate holding tank, and manholes MH11, MH19, and MH29 in May 2017. A leachate sample was unable to be collected from manhole MH23 in May 2017, as there was an obstruction within the manhole that prevented the collection of a sample. As required by the current ECA, leachate samples were also collected monthly from the leachate holding tank. The leachate monitoring locations are presented on Figure 2.1, and the monitoring results are discussed in Section 2.3.6.

The leachate wells are equipped with dedicated tubing. Prior to purging and sampling, the depth to leachate is measured in the well. Following purging, the well is allowed to recover if required, prior to sampling. Samples collected from leachate well LW3-16, the leachate holding tank, and manholes MH11, MH19, MH23, and MH29 are placed directly into appropriate sample containers provided by the laboratory, and are not filtered.

2.3 2017 Monitoring Results

2.3.1 Upgradient (Background) Groundwater Observation Wells

The observation wells listed below are included in the groundwater quality monitoring network and are located upgradient of the Original Landfill Area, Interim Expansion Area, Long-Term Expansion Area and West Optimization Area. As a result, these wells monitor upgradient (background) groundwater quality with respect to the areas of former and present landfilling activities:

Upgradient (Background) Groundwater Quality					
OW29B-95	OW30B-95	OW31B-95	OW32B-95	OW38-97	OW40-99
OW41B-01	OW42B-01	OW43B-01	OW44A-01	OW44B-01	OW45B-01
OW46B-01	OW47B-01	OW50-01			

The 2017 on-Site groundwater chemistry results are summarized for general chemistry, dissolved metals, and VOCs in Table 2.8, Table 2.9, and Table 2.10, respectively. The MOECC Ontario Drinking Water Quality Standards Objectives and Guidelines (ODWQSO/Gs) are also provided in these tables for reference purposes. The historical database is presented in Appendix B. Chloride, conductivity, iron, hardness, alkalinity, and boron concentrations for each well location have also been plotted and are presented in Appendix C. The range of upgradient concentrations during the 2017 reporting period and a comparison to the OWDQSO/Gs is provided in Table 2.11.

The data summarized in Table 2.8 and 2.11 indicate that chloride concentrations for upgradient wells were variable and ranged from 4.30 milligrams per litre (mg/L) at OW40-99 to 72.0 mg/L at OW44A-01.

Values of field pH were at acceptable levels, ranging from 7.56 at OW42B-01 to a high of 8.40 at OW50-01. All background laboratory pH values were within the MOECC ODWSO/Gs acceptable range of 6.5 to 8.5. Laboratory pH results ranged from a value of 7.69 at monitoring location OW42B-01 to a high of 8.31 at well OW40-99.

At all background well locations, phenol concentrations were non-detectable at the laboratory reportable method detection limit (MDL) of 0.001 mg/L. There is no MOECC ODWQSO/G for phenol.

Alkalinity concentrations in groundwater samples collected from upgradient observation wells ranged from 99 mg/L at OW31B-95 to 294 mg/L at OW40-99. The alkalinity is attributed to interactions between the groundwater and carbonate-rich overburden material. Alkalinity concentrations in groundwater in the general area of the landfill are naturally occurring and represent long residence times of groundwater within carbonate-rich soil material. The MOECC ODWQSO/G for alkalinity is 30 to 500 mg/L.

Sulphate concentrations in groundwater samples from background observation wells also reflect the chemistry of the native overburden material and altering geochemical processes. The 2017 results indicate that sulphate concentrations were below the MOECC ODWQSO/G of 500 mg/L at all upgradient monitoring locations. Upgradient sulphate concentrations during 2017 ranged from 1.61 mg/L at OW32B-95 to 151 mg/L at OW31B-95.

DOC concentrations ranged from 1.2 mg/L at OW40-99 to 4.4 mg/L at OW32B-95, which complied with the MOECC ODWQSO/G for DOC (5.0 mg/L) during 2017. Hardness varied from 30.7 mg/L at OW32B-95 to 198 mg/L at OW40-99. As with the alkalinity concentrations, groundwater in the area also typically has higher hardness levels due to interaction between the groundwater and overburden soil material, which was derived from carbonate bedrock. Dissolved minerals resulting from the overburden yielded TDS concentrations ranging from

204 mg/L at OW32B-95 to 388 mg/L at OW50-01, below the MOECC ODWQSO/G for TDS (500 mg/L).

Dissolved metals results for upgradient wells are presented in Table 2.9. Concentration ranges for metals with applicable MOECC ODWQSO/Gs are summarized in Table 2.11. Upgradient iron concentrations ranged from non-detectable (at a detection limit of 0.010 mg/L) at several background locations to 0.046 mg/L at OW47B-01. Thus, iron concentrations in all upgradient wells were well below the MOECC ODWQSO/G of 0.30 mg/L. Manganese concentrations were also below the MOECC ODWQSO/G of 0.05 mg/L for all upgradient wells, ranging from non-detectable (<0.002 mg/L) at OW44A-01 to 0.028 mg/L at OW46B-01. The MOECC ODWQSO/G for iron and manganese relates to aesthetic water quality, and is not a human health objective.

Concentrations for the remaining dissolved metals were also below their respective MOECC ODWQSO/Gs for all upgradient background wells. Acceptable sodium concentrations were measured at levels ranging from 55.8 mg/L to 91.7 mg/L. Trace to low levels of barium and boron were noted at all upgradient wells. Arsenic concentrations ranged from non-detectable (<0.003 mg/L) at multiple locations to 0.008 mg/L at OW46B-01, which were well below the MOECC ODWQSO/G (0.025 mg/L). Copper levels were observed to be non-detectable (<0.003 mg/L) at all upgradient wells with the exception of one well (OW43B-01), in which copper was detected at a low level (0.030 mg/L); well below the MOECC ODWQSO/G of 1.0 mg/L. Non-detectable concentrations of cadmium, chromium, lead, and mercury were reported in all upgradient wells in 2017. Zinc concentrations ranged from non-detectable (<0.005 mg/L) at most locations to 0.020 mg/L at OW43B-01, which were well below the MOECC ODWQSO/G (5.0 mg/L).

During the May 2017 sampling event, groundwater sampling was conducted for six (6) selected VOCs. A summary of VOC analytical results for upgradient wells is found in Table 2.10. VOC concentrations were non-detectable above their respective MDLs at all background monitoring well locations sampled during the May 2017 event, with the exception of a toluene detection (0.29 µg/L) at OW50-01. The toluene detection is only marginally above the laboratory MDL of 0.20 µg/L and is much lower than the MOECC ODWQSO/G (24 µg/L). Given the upgradient location, the toluene detection is not related to landfill operations.

Summary

A summary of the 2017 analytical results for the upgradient wells is provided as follows:

- → Chloride concentrations measured in the upgradient wells during 2017 were similar to historic ranges and were well below the MOECC ODWQSO/G;
- → Phenol concentrations in all upgradient wells were non-detectable (<0.001 mg/L);
- → Field and laboratory pH levels were within the acceptable range for ODWQSO/Gs at all upgradient locations;
- → Manganese, which occurs naturally in the overburden of the region, was below the MOECC ODWQSO/G at all upgradient wells;
- → Elevated levels of hardness, attributed to interactions between groundwater and carbonate-rich overburden in the area, were occasionally measured in the upgradient wells;
- → TDS concentrations were below the MOECC ODWQSO/G at all upgradient wells;
- → Concentrations of iron, alkalinity, sodium, and sulphate, which are also reflective of the chemistry within the native overburden, were observed at acceptable levels at all upgradient wells;
- → DOC concentrations ranged from 1.2 mg/L to 4.4 mg/L, with no wells exceeding the MOECC ODWQSO/G for this parameter;
- → Concentrations of additional dissolved metals were below applicable MOECC ODWQSO/Gs at all upgradient locations. Concentrations were non-detectable for cadmium, chromium, lead, and mercury at all upgradient wells; and
- → Concentrations of VOCs were non-detectable at the respective MDLs for all upgradient well locations, with the exception of a low level toluene detection at OW50-01 which was much lower than the MOECC ODWQSO/G.

2.3.2 Downgradient Groundwater Observation Wells

The following observation wells included in the groundwater quality monitoring network are located downgradient of the Original Landfill Area, Interim Expansion Area, Long-Term Expansion Area, and the West Optimization Area. As a result, these wells monitor downgradient groundwater quality with respect to areas of former and present landfilling activities:

Downgradient Groundwater Quality					
OW20-91	OW23B-95	OW24B-95	OW27A-95	OW27B-95	OW28B-95
OW34B-95	OW37-97	OW39-99	OW48B-01	OW51A-07	OW51B-07
OW52B-07					

The 2017 groundwater chemistry results are summarized for general chemistry, dissolved metals, and VOCs in Table 2.8, Table 2.9, and Table 2.10, respectively. The historic database is presented in Appendix B. Chloride, conductivity, iron, hardness, alkalinity, and boron concentrations for each well location have been plotted and are presented in Appendix C. The range of downgradient concentrations during this reporting period and a comparison to MOECC ODWQSO/Gs are provided in Table 2.11, for both general chemistry and applicable dissolved metals.

The data summarized in Table 2.8 and 2.11 indicate that chloride concentrations at downgradient locations varied from 7.19 mg/L at OW51B-07 to 51.0 mg/L at OW27A-95. This range of chloride values is similar to that previously summarized for the upgradient wells.

All field and laboratory pH values were within the MOE ODWSO/Gs acceptable range of 6.5 to 8.5. Field pH varied from a value of 6.94 at OW27A-95 to 8.40 at OW34B-95, and laboratory pH results ranged from 7.62 at OW27A-95 to 8.29 at OW23B-95. The downgradient pH data was similar to the pH data observed for the upgradient wells.

Phenol concentrations were non-detectable (<0.001 mg/L) at all downgradient monitoring locations. There is no MOECC ODWQSO/G for phenol. The non-detectable phenols concentrations are similar to the results observed for upgradient wells.

Downgradient alkalinity concentrations were within the MOECC ODWQSO/G range of 30 to 500 mg/L. Results varied from 116 mg/L at OW24B-95 to 238 mg/L at OW23B-95. Downgradient hardness concentrations were higher than concentrations at the upgradient wells, ranging from 37.4 mg/L at OW20-91 to 250 mg/L at well OW52B-07. As indicated in Section 2.3.1, the higher levels of hardness in groundwater are related to carbonate-rich overburden material and reflect the chemistry of the native overburden and geochemical processes. Downgradient TDS concentrations ranged from 182 mg/L at OW39-99 to 440 mg/L at OW52B-07, which were less than the MOECC ODWQSO/G for TDS (500 mg/L). This range of TDS concentrations is higher than those for upgradient well locations.

Sulphate concentrations were below the ODWQSO/G of 500 mg/L at all downgradient monitoring locations, ranging from 0.15 mg/L to 165 mg/L. DOC concentrations ranged from 1.3 mg/L at OW51B-07 to 4.4 mg/L at OW20-91, which complied with the MOECC

ODWQSO/G for DOC (5.0 mg/L) during 2017. The observed range of DOC concentrations is similar to the range of concentrations measured at the upgradient wells. The ODWQSO/G for DOC relates to aesthetic water quality, and not to human health.

Dissolved iron concentrations ranged from non-detectable (<0.010 mg/L) at multiple downgradient wells to 0.110 mg/L at OW27B-95. Iron concentrations in all downgradient wells were below the MOECC ODWQSO/G of 0.30 mg/L. The observed range of iron concentrations is similar to, and slightly higher than the concentrations measured at the upgradient wells. Manganese concentrations were below the MOECC ODWQSO/G for all downgradient wells, ranging from non-detectable (<0.002 mg/L) at several wells to 0.026 mg/L at OW27B-95. The range of manganese concentrations observed in the downgradient wells is similar to the concentrations observed in the upgradient wells. Iron is known to occur naturally in the overburden within this general area, as documented in a 1981 study conducted by the MOECC (Thames basin River Study). Similarly, manganese is also known to occur naturally at high concentrations. The MOECC ODWQSO/Gs for these two (2) parameters are based on aesthetic considerations, and are not related to human health.

A review of the remaining dissolved metals results (Table 2.9) reveals that all concentrations were at acceptable levels for downgradient locations. Sodium concentrations varied from 51.3 mg/L to 88.6 mg/L, similar to the range of values observed at upgradient wells. Concentrations of cadmium, chromium, copper, lead, mercury, and zinc were non-detectable at all downgradient locations. These results are consistent with the results observed in the background data. Trace to low levels of barium and boron were noted at all downgradient wells, similar to the results observed in the upgradient wells. Non-detectable (at the associated MDLs) to low levels of arsenic were observed at downgradient well locations, similar to the concentrations observed in the background wells.

The VOC data for downgradient wells are presented in Table 2.10. VOC concentrations were below respective MDLs (i.e., non-detectable) at all downgradient monitoring well locations during the May 2017 sampling event.

Past reviews of the analytical results for downgradient monitoring locations have highlighted that chloride and phenol are typically considered to provide the best indication of municipal landfill impacts on groundwater, due to their relatively high concentrations in leachate and their mobility in groundwater. Downgradient chloride and phenol concentrations are consistent with the background chloride and phenol results. Therefore, the landfilling operations at the Site have not adversely impacted the downgradient groundwater quality.

Summary

A summary of the 2017 analytical groundwater results for the downgradient observation wells is as follows:

→ The range of chloride concentrations in downgradient wells was below the MOECC ODWQSO/G, and concentrations in the downgradient wells were similar to the range of concentrations observed at upgradient wells;

→ Phenol concentrations in all downgradient wells were non-detectable (<0.001 mg/L). This was consistent with the concentrations observed in upgradient wells;

→ DOC concentrations ranged from 1.3 mg/L to 4.4 mg/L, with no wells exceeding the MOECC ODWQSO/G for this parameter. This range of concentrations was similar to the range observed in upgradient wells;

→ Manganese and iron, which occur naturally in the overburden of the region, were below their respective MOECC ODWQSO/Gs at all downgradient wells;

→ Concentrations for alkalinity and hardness, including occasional elevated levels, were generally similar to concentrations observed at upgradient wells, and are attributed to interactions between the groundwater and carbonate-rich overburden in the area;

→ TDS concentrations were below the MOECC ODWQSO/G at all downgradient wells. The range of TDS concentrations was similar and slightly higher than the range observed in upgradient wells;

→ Ranges of field and laboratory pH levels were acceptable. These results were generally similar to the ranges observed in upgradient wells;

→ Sodium and sulphate concentrations in downgradient wells were below their respective MOECC ODWQSO/G;

→ Concentrations of additional dissolved metals were at acceptable levels at all downgradient observation well locations. Cadmium, chromium, copper, lead, mercury, and zinc concentrations were non-detectable at all downgradient locations; and

→ VOC concentrations were non-detectable at their respective MDLs for all downgradient well locations.

2.3.3 Boundary Impact Assessment

As set out in Schedule B of the current ECA, potential impacts on groundwater quality at the landfill site boundaries were determined by assessing the analytical results from property boundary wells against the maximum allowable concentration (C_m) as specified in Ontario Regulation 232/98, Part III, Section 10(3)2. The 2017 property boundary assessment was performed for the following parameters:

Boundary Assessment Parameters	
Chloride	Benzene
Boron	Ethylbenzene
Chromium	Vinyl chloride

The exceedance of 75 percent of the respective C_m for the above parameters (trigger levels) would initiate contingency plan activities, as appropriate.

Values of C_m were calculated using the following formula:

$$C_m = C_b + X (C_r - C_b)$$

Where:

C_b = the background concentration of the parameter,

C_r = the health related (MAC or IMAC) or aesthetic (AO) drinking water objective for the parameter, whichever is applicable, and

X = 0.25 if C_r is a health related drinking water objective, or 0.50 if C_r is an aesthetic drinking water objective.

The average background chloride concentration which was used for the C_m calculation is 26.0 mg/L for 2017. This level is similar to the average chloride concentration (28.3 mg/L) observed in upgradient wells for the 2016 monitoring event. The average background boron concentration for 2017 is 0.547 mg/L, which is very similar to the average boron concentration (0.542 mg/L) observed in the upgradient wells in 2016.

The chromium concentrations were non-detectable at upgradient wells in 2017. As such, the 2017 average background value (C_b) used for chromium was the MDL of 0.003 mg/L.

As indicated in Table 2.10, VOC (benzene, ethylbenzene, vinyl chloride) concentrations were non-detectable at all upgradient wells in 2017. The respective average background values (C_b) for these parameters were taken as the applicable MDL.

Thus, the trigger levels (i.e., 0.75 x C_m) for each parameter were calculated as follows:

Parameter	**C_r (mg/L)**	**C_b (mg/L)**	**C_m (mg/L)**	**Trigger (mg/L)**
Chloride	250 (AO)	26.0	138	104
Boron	5 (IMAC)	0.547	1.66	1.25
Chromium	0.05 (MAC)	0.003	0.015	0.011
Benzene	0.005 (MAC)	0.00020	0.0014	0.0011
Ethylbenzene	0.0024 (AO)	0.00010	0.0013	0.00094
Vinyl Chloride	0.002 (MAC)	0.00017	0.00063	0.00047

These trigger levels were compared to the downgradient parameter concentrations (Tables 2.8 to 2.11). Chloride concentrations in the downgradient wells ranged from 7.19 mg/L to 51.0 mg/L, which were notably below the trigger level of 104 mg/L. Boron concentrations in the downgradient wells ranged from 0.163 mg/L to 0.700 mg/L. All downgradient monitoring location results were below the trigger level of 1.25 mg/L for boron. Chromium concentrations in the downgradient wells were non-detectable at a MDL of 0.003 mg/L, which were all well below the trigger level of 0.011 mg/L.

Benzene, ethylbenzene, and vinyl chloride concentrations were non-detectable in all downgradient wells in 2017, thus respective trigger levels were not exceeded.

Summary

The 2017 boundary impact assessment indicates that the Site is in compliance with Regulation 232/98. Acceptable concentrations of chloride and boron were measured at all downgradient locations, and the remaining trigger level parameters (chromium, benzene, ethylbenzene, and vinyl chloride) were at non-detectable concentrations in all downgradient wells.

2.3.4 Private Well Water Quality

Private wells sampled as part of the 2017 semi-annual sampling events included wells M and AA.

Analytical results for the two (2) locations sampled in 2017 are summarized in Table 2.12. The 2016 sampling results are included in Table 2.12 for comparison purposes. Historical water quality results for the private wells are provided in Appendix B. Chloride, conductivity, iron, hardness, alkalinity, and boron concentrations for each well location have also been plotted and are presented in Appendix D. The locations of former and current private wells sampled as part of the residential well monitoring program are shown on Figure 2.9.

Well AA is a deep drilled well, located approximately 1,100 m north of the landfill. Well AA was added to the semi-annual program as part of the dispute resolution process commencing in May 1997. As set out in Schedule B of the current ECA, should the owner of Well AA be supplied with municipal water, sampling at this location will be discontinued at that time.

Well M is a shallow dug well, located about 1,000 m southwest of the Original Landfill Area. The resident at Well M received municipal water supply in the summer of 2002, and sampling was discontinued during the November 2002 event. Well M was reinstated to the sampling program in May 2007 at the request of the property owner.

In general, the 2017 water quality results for private Wells M and AA show that the measured parameters are within acceptable levels and are similar to 2016 and historic results. In accordance with the current ECA, individual sampling results were sent to the well owners in a timely manner, with copies provided to the Regional Director.

The 2017 private well results show that Wells M and AA had elevated hardness concentrations, which is characteristic of the groundwater in the area. Elevated hardness is attributed to interaction between the groundwater and native overburden material, which was derived from carbonate bedrock. All metal concentrations in the private wells were below their respective ODWQSO/Gs.

At Well AA, chloride concentrations ranged from 12.0 mg/L to 38.8 mg/L, which is marginally higher than historical results. At Well M, chloride concentrations ranged from 4.08 mg/L to 11.4 mg/L, which is consistent with historical results. Each of these chloride concentrations were below the MOECC ODWQSO/G of 250 mg/L for chloride.

The concentration of TDS was elevated above the associated ODWQSO/G of 500 mg/L in Well AA for the November 2017 sampling event. Sulphate concentrations did not exceed the ODWQSO/G of 500 mg/L in either well. DOC concentrations in Well AA were below the ODWQSO/G of 5.0 mg/L, while the DOC concentrations in Well M were above the ODWQSO/G of 5.0 mg/L. The ODWQSO/Gs for TDS and DOC are aesthetic objectives and are not health-related. Both the field and laboratory pH were within the acceptable range in both Wells M and AA.

The remaining parameter results at the private wells in 2017 were below or within their respective ODWQSO/Gs.

Based on the water quality results for the parameters tested, as presented in Table 2.12, the groundwater in the private wells sampled in 2017 have not been impacted by landfilling operations at the Site.

Summary

Both Wells M and AA exhibited elevated hardness concentrations (greater than the ODWQSO/G) due to interactions between groundwater and carbonate-rich overburden material in the region. Chloride concentrations in Wells M and AA were at acceptable levels, well below the ODWQSO/G. Exceedances of the ODWQSO/Gs were noted for DOC and TDS; however, these objectives are based on aesthetic water quality. Elevated levels of TDS are also common due to the amount of naturally occurring dissolved compounds in the water. Similarly, elevated DOC is likely due to the presence of naturally occurring organic deposits in the overburden.

The analytical results demonstrate that groundwater quality in the private wells has remained generally unchanged over the past year, and has not been impacted by landfilling operations at the Site.

2.3.5 Surface Water Quality

The 2017 surface water monitoring program consisted of quarterly sample collection from two (2) locations in Dodd Creek, which receives drainage from the active portions of the Site and treated effluent from the LTP, via SWM Pond 6 and the Polishing Basin. Stormwater quality monitoring was also completed for surface water collected and stored in SWM Pond 3, prior to discharge. As previously noted, three (3) stormwater discharge events were conducted during the 2017 reporting period.

In accordance with a recommendation presented in the 1999 Annual Progress Report, surface water sampling locations in Dodd Creek were moved to coincide with benthic invertebrate monitoring locations, prior to the May 2000 sampling event. The current sampling locations are designated Station 5 (STA5) and Station 6 (STA6), and are located approximately 30 m upstream and downstream, respectively, of the Polishing Basin discharge outlet (see Figure

2.10). The surface water locations were moved to determine if cause and effect relationships between creek water chemistry and benthic density at upstream and downstream locations could be established. Furthermore, the sampling points are now at locations approximately equal distance from the outlet structure.

A summary of the 2017 surface water general chemistry and metal results and corresponding MOECC Provincial Water Quality Objectives/Guidelines (PWQO/Gs), where applicable, is presented in Tables 2.13 and 2.14. The 2016 surface water quality general chemistry results are also included on Table 2.13 for comparison purposes.

Surface water quality trigger level assessments (Section 2.3.5.1) have been calculated for the upstream and downstream locations in Dodd Creek, in accordance with Schedule C of the current ECA and the LTP ECA. The discrete surface water chemistry trigger level assessments for each of the quarterly sampling events are provided in Table 2.15 (March), Table 2.16 (May), Table 2.17 (August), and Table 2.18 (November). The annual average surface water chemistry trigger level assessment is presented in Table 2.19. Historical surface water quality results are provided in Appendix B.

The estimated flow rates at stations STA5 and STA6 during the quarterly surface water sampling events are presented in Table 2.20. The initial seasonal quarterly monitoring event in 2017 was completed on March 27, 2017. The flow rates observed at the upstream and downstream locations (STA5 and STA6) were lower than those observed in March 2016, and were within the range of flow historically observed in the first quarter. The spring sampling event was conducted on May 24, 2017, before the annual benthic community and density monitoring program was completed. Flow rates observed at STA5 and STA6 were within the range of flows historically observed in May, and were significantly higher than the low flow conditions observed at both sampling locations during the May 2016 event. The summer sampling event was conducted on August 9, 2017 under low flow conditions (estimated at less than 5 L/s). As historical data indicates, low flow and nearly stagnant conditions are normally observed in Dodd Creek during the summer quarter. Surface water samples were also collected during the fall quarterly sampling event on November 6, 2017. The flow rates observed for Dodd Creek sampling locations STA5 and STA6 in November 2017 were within the range of flows historically observed in November, and were slightly higher than those observed in November 2016.

A comparison of the 2017 concentrations for parameters at the surface water monitoring station upstream (STA5) to the downstream station (STA6) is provided in Tables 2.13 and 2.14. In general, quarterly concentrations for most parameters in Dodd Creek were variable between upstream and downstream locations. Parameter concentrations at the downstream location were typically similar to the upstream quality range during the quarterly surface water events in 2017. Exceptions where the downstream concentrations were elevated relative to the upstream results included ammonia, COD, chloride, field/laboratory conductivity, iron, sulphate, TKN, TDS, boron, copper, and zinc concentrations in May 2017; and alkalinity, ammonia, un-ionized ammonia, COD, chloride, field/laboratory conductivity, nitrate, sulphate, TKN, and TDS concentrations in August 2017.

The variability between the quarterly upstream and downstream surface water quality results observed in 2017 was generally consistent with the variability observed in previous years. The elevated downstream concentrations in 2017 were within or lower than their respective historical ranges and consistent with previous monitoring results, with the exception of the copper and zinc concentrations in May 2017 and the alkalinity, un-ionized ammonia, COD, chloride, laboratory conductivity, TKN, and TDS concentrations in August 2017. Although several parameter concentrations were noted to be elevated in August 2017, these concentrations likely reflect the stressed nature of Dodd Creek and due to the extremely low, near stagnant flow conditions. Flow rates in August were estimated at less than 5 L/s for both STA5 and STA6.

As noted above, the concentrations for most parameters in the quarterly Dodd Creek samples were generally variable during 2017. Chloride concentrations observed in March 2017 ranged from 57.5 mg/L to 63.6 mg/L at stations STA5 and STA6, respectively. These chloride results are higher than those observed in March 2016. In May 2017, chloride concentrations measured in the Creek ranged from to 48.6 mg/L at STA5 to 114 mg/L at STA6, lower than the concentrations observed in May 2016. The low flow conditions observed in August 2017 yielded chloride concentrations of 236 mg/L at STA5 to 449 mg/L at STA6, significantly higher than observed in August 2016. In November 2017, the chloride levels in the Creek were 45.3 mg/L upstream (STA5) and 50.0 mg/L downstream (STA6); which are lower at the upstream and downstream stations compared to the November 2016 results.

Phenols concentrations were not detectable at a level of <0.001 mg/L in all surface water samples collected in 2017. Field and laboratory pH results for both sampling locations were within the acceptable range of 6.5 to 8.5 standard units.

Un-ionized ammonia levels were calculated for all surface water samples collected in 2017 using the respective field pH and temperature of each sample. Un-ionized ammonia concentrations were acceptable for both upstream (STA5) and downstream (STA6) locations in Dodd Creek for all 2017 sampling events, with concentrations well below the MOECC PWQO/G of 0.020 mg/L. The highest un-ionized ammonia concentration was observed in August 2017, with a concentration of 0.007 mg/L at downstream station STA6.

Total iron concentrations were typically above the PWQO/G of 0.30 mg/L at upstream and downstream Dodd Creek sampling locations during the 2017 monitoring period. Iron concentrations at upstream location STA5 ranged from 0.11 mg/L to 0.48 mg/L, with similar results (0.19 mg/L to 0.52 mg/L) observed at downstream location STA6. The levels of total iron for both locations were variable compared to historical results. Iron concentrations at both stations were higher for the March event and lower for the May, August, and November events compared to the 2016 results. These results indicate the riparian corridor is susceptible to naturally occurring events, such as fluctuations in the amount of surface water runoff, and that landfilling operations at the Site have not adversely impacted the surface water quality.

Total phosphorus concentrations observed at the surface water sampling locations for the 2017 sampling events ranged from 0.03 mg/L to 0.28 mg/L, with peak values observed during the November sampling event for both the upstream and downstream locations. This range of concentrations generally exceeded the PWQO/G of 0.03 mg/L for this parameter; however, background levels of total phosphorus are typically elevated in agricultural settings due to the application of fertilizers on crops. The 2017 levels at STA5 and STA6 were variable compared to previous results, with total phosphorus concentrations higher than those observed in 2016 for the March and November events, and lower for the May and August events.

Levels of TSS at upstream location STA5 ranged from <10 mg/L to 82 mg/L, with similar results (12 mg/L to 78 mg/L) observed at downstream location STA6. Peak concentrations of TSS were observed during the March 2017 sampling event.

BOD_5 and $CBOD_5$ concentrations were below the method detection limit at STA5 and STA6 during 2017. Nitrate concentrations at upstream STA5 ranged from 0.25 mg/L to 10.8 mg/L, with similar results (2.0 mg/L to 9.37 mg/L) observed at downstream STA6.

Concentrations of additional total metals were generally below their respective MOECC PWQO/G for the surface water sampling locations, with the exception of boron, copper, and zinc at STA6 in May 2017. Arsenic, cadmium, chromium, and dissolved mercury concentrations were non-detectable in all surface water samples collected in 2017. (Mercury is the only metal required to be filtered prior to sample preservation and analysis.) Non-detectable to low levels of barium and lead were observed in samples collected at STA5 and STA6 in May and November 2017.

Based on the surface water monitoring results, Dodd Creek is not being impacted by landfilling activities, which includes the discharge of treated leachate effluent and on-Site stormwater through the Polishing Basin discharge outlet.

Surface Water Chemistry Assessments

In accordance with Schedule C of the current ECA and the LTP ECA, surface water quality trigger level assessments were calculated for upstream and downstream locations in Dodd Creek. The discrete surface water chemistry trigger level assessments for each of the quarterly sampling events are provided in Table 2.15 (March), Table 2.16 (May), Table 2.17 (August), and Table 2.18 (November). The annual average surface water chemistry trigger level assessment is presented in Table 2.19. The surface water chemistry trigger levels have been established to assess the impact, if any, related to the discharge of on-Site surface water and treated effluent to Dodd Creek via the Polishing Basin.

The discrete surface water chemistry assessments for the quarterly (March, May, August, and November) sampling events consisted of establishing a discrete trigger level for un-ionized (free) ammonia, biological oxygen demand (BOD_5) carbonaceous biological oxygen demand ($CBOD_5$), nitrate, total suspended solids (TSS), and iron for each event, and then comparing the trigger level to the discrete downstream (STA6) concentration in Dodd Creek. The discrete trigger level for a given parameter at the downstream station is set as a 50% increase above the discrete upstream concentration in Dodd Creek. In instances where the result for the parameter determined at the upstream location is below the respective method detection limit, the value of the reported detection limit was used to determine the downstream trigger level.

Trigger level assessment parameter concentrations calculated for downstream location STA6 for March, May, August, and November sampling events did not exceed their respective trigger levels, with the exception of iron in May 2017, and nitrate and un-ionized ammonia in August 2017.

As shown in Table 2.16, the discrete trigger levels (ie. exceeds upstream concentration by greater than 50%) were satisfied for un-ionized ammonia, BOD_5, $CBOD_5$, nitrate, and TSS in May 2017. The iron concentration (0.19 mg/L) at STA6 was slightly above its discrete trigger concentration (0.17 mg/L). Although the discrete trigger was exceeded during this event, the iron concentration at the downstream location was below the PWQO/G of 0.3 mg/L for iron. This level is considered negligible, and does not impact the water quality in Dodd Creek. The noted exceedance for iron is not considered to be indicative of landfill related impacts.

As shown in Table 2.17, the discrete trigger levels (ie. exceeds upstream concentration by greater than 50%) were satisfied for BOD_5, $CBOD_5$, TSS, and iron in August 2017. The downstream un-ionized ammonia concentration (0.007 mg/L) and nitrate concentration (2.0 mg/L) were above their respective calculated discrete trigger concentrations (0.002 mg/L and 0.38 mg/L, respectively). Although the un-ionized ammonia trigger was exceeded during this event, the un-ionized ammonia level at the downstream location was well below the PWQO/G of 0.020 mg/L for un-ionized ammonia. The August 2017 un-ionized ammonia concentration at STA6 does not impact the water quality in Dodd Creek. It is also noted that there is no PWQO/G for nitrate. The 2017 monthly leachate monitoring results (as shown in Table 2.22) indicate that nitrate was not detected within the raw leachate at the Site. The elevated nitrate concentration at STA6 may be attributed to the presence of birds in the stormwater pond system; it is not considered to be indicative of landfill leachate related impacts. These exceedances also reflect the stressed nature of Dodd Creek due to the extremely low, near stagnant flow conditions. Flow rates in August were estimated at less than 5 L/s for STA5 and STA6. Thus, the noted exceedances for un-ionized ammonia and nitrate were not considered to be indicative of landfill-related impacts.

The annual average surface water chemistry assessment consists of comparing the average annual upstream concentration to the average annual downstream concentration in Dodd Creek for the parameters stated in the previous section. The annual average trigger level for a given parameter at the downstream station is set as a 33% increase above the annual average upstream concentration in Dodd Creek. If a parameter was determined to be below the respective parameter detection limit for any quarterly upstream or downstream sampling event, the value of the reported detection limit was used in determining the annual average upstream and downstream concentrations. The results of the annual average surface water chemistry assessment are presented in Table 2.19.

A review of Table 2.19 indicates that the average annual trigger of 33 percent was not exceeded at downstream surface water station STA6 for BOD_5, $CBOD_5$, nitrate, TSS and iron in 2017. The acceptable limit for un-ionized ammonia (0.002 mg/L) was slightly exceeded by the annual average downstream concentration at STA6 (0.003 mg/L). The acceptable limit for un-ionized ammonia was exceeded primarily as a result of the un-ionized ammonia level in August 2017. As discussed above, this un-ionized ammonia concentration at the downstream location was well below the PWQO/G of 0.020 mg/L for un-ionized ammonia. The concentration is considered negligible, and does not impact the water quality in Dodd Creek.

These results indicate that there have been no landfill-related impacts to surface water quality in Dodd Creek in 2017.

Stormwater Quality

In accordance with Schedule C of the current ECA and the LTP ECA, surface water samples were collected quarterly from the stormwater intake pipe in SWM Pond 3, and prior to any discharge event. Because of planned cleaning and maintenance activities, the first and third quarter samples from SWM Pond 3 were not considered to be representative and were not included in the quarterly monitoring, as requested by the City of Toronto. The results of the quarterly stormwater monitoring are presented in Table 2.24.

Condition 11 of the LTP ECA sets out the operating requirements and trigger parameters for SWM Pond 3, which is operated as a batch discharge facility. Prior to any planned discharge of the stormwater from SWM Pond 3 using the stormwater pumping station, a grab sample is collected from the intake pipe and analyzed for the trigger parameters specified in the current ECA and LTP ECA. In the event that a monitoring result exceeds a specified trigger concentration, a second round of sampling is conducted immediately to confirm the exceedance. Discharge of stormwater only occurred when the surface water parameter concentrations did not exceed the LTP ECA discharge trigger criteria; or in cases where a parameter concentration exceeded the criteria, only after approval from the MOECC in consultation with Kettle Creek Conservation Authority (KCCA).

Three stormwater discharge events were conducted during the 2017 reporting period. The first discharge event occurred between December 20, 2016 and March 14, 2017, based on acceptable pre-discharge sampling results from December 2016. These results were reported in the 2016 Annual Progress Report. The results of the pre-discharge stormwater samples collected during the 2017 reporting period are presented in Table 2.25. During 2017, pre-discharge stormwater samples were collected in April and November 2017. Trigger parameter concentrations from the pre-discharge samples were at acceptable levels. It is noted that the November 2017 pre-discharge sample required a confirmation sample for iron, which did not exceed LTP ECA discharge criteria.

The volume of stormwater discharged from SWM Pond 3 to SWM Pond 6 during the discharge events is summarized in Table 2.26. The first discharge event occurred between December 20, 2016 and March 14, 2017, with a total of 160,015 m^3 of stormwater discharged to SWM Pond 6. The second discharge event occurred between April 27 and August 4, 2017, during which a total of 152,354 m^3 of stormwater was discharged to SWM Pond 6. The third discharge event began on November 21, 2017 and continued into 2018. The total quantity of stormwater discharged during this event will be reported in the 2018 Annual Progress Report.

Summary

The 2017 surface water chemical results for upstream and downstream sampling locations in Dodd Creek revealed that parameter concentrations were variable. Chloride levels showed a varying trend as the year progressed, peaking in August at STA5 and STA6, which varied from the peaks in 2016 (May at STA6 and November at STA5).

Phenol concentrations were not detectable at a level of <0.0010 mg/L at all surface water sampling locations in 2017. Un-ionized ammonia concentrations were at acceptable levels for all 2017 sampling events at both upstream (STA5) and downstream (STA6) locations, well below the MOECC PWQO/G of 0.020 mg/L.

Slightly elevated iron levels were generally observed in surface water samples collected from Dodd Creek in 2017, including upstream location STA5. Elevated levels of phosphorus were also observed at both sampling locations during the reporting period; however, background levels of total phosphorus are typically elevated in agricultural settings due to the application of fertilizers on crops. Concentrations of additional total metals were below respective PWQO/Gs at both surface water sampling locations in 2017, with the exception of boron, copper, and zinc at STA6 in May 2017.

Surface water assessment parameters exceeded the discrete trigger levels for iron in May 2017, and un-ionized ammonia and nitrate in August 2017. Review of the trigger level assessment indicates that although the discrete trigger was exceeded for iron during the May 2017 event, the iron concentration at the downstream location was below the PWQO/G of 0.3 mg/L for iron. This level is considered negligible, and does not impact the water quality in Dodd Creek. Although the un-ionized ammonia trigger was exceeded in August 2017, the un-ionized ammonia level at the downstream location was well below the PWQO/G of 0.020 mg/L for un-ionized ammonia and does not impact the water quality in Dodd Creek. Although the nitrate trigger was also exceeded in August 2017, the exceedance is not considered to be indicative of landfill leachate related impacts. The elevated August 2017 nitrate concentration at STA6 may be attributed to the presence of birds in the stormwater pond system. The August 2017 exceedances also reflect the stressed nature of Dodd Creek due to the low, near stagnant flow conditions.

The annual average trigger level assessment parameters did not exceed their respective trigger levels at downstream surface water station STA6 in 2017, with the exception of un-ionized ammonia. The trigger level exceedance is a result of the elevated un-ionized ammonia level observed in August 2017. This un-ionized ammonia concentration at the downstream location was well below the PWQO/G of 0.020 mg/L for un-ionized ammonia. The concentration is considered negligible, and does not impact the water quality in Dodd Creek.

During 2017, three (3) stormwater discharge events were conducted. The first discharge event occurred between December 20, 2016 and March 14, 2017, based on acceptable pre-discharge sampling results from December 2016. These results were reported in the 2016 Annual Progress Report. During 2017, pre-discharge stormwater samples were collected in April and November 2017. Trigger parameter concentrations from the pre-discharge samples were at acceptable levels. It is noted that the November 2017 pre-discharge sample required a confirmation sample for iron, which did not exceed LTP ECA discharge criteria.

Based on the 2017 surface water monitoring results and surface water chemistry assessments, Dodd Creek is not being impacted by landfilling activities, which includes the discharge of on-Site surface water and treated leachate effluent via the Polishing Basin discharge outlet.

It is noted that there is a beaver dam in the east branch of Dodd Creek, upstream of surface water station STA5. The presence of the beaver dam is monitored during surface water sampling events.

2.3.6 Leachate Quality

The locations of the leachate observation wells, leachate system manholes, and the leachate holding tank are shown on Figure 2.1. The 2017 analytical results for selected leachate sampling locations (leachate holding tank, LW3-16, MH11, MH19, MH23, and MH29), including VOC and metals analyses, are summarized in Table 2.21.

In accordance with the current ECA, leachate was sampled from the leachate holding tank once a month in 2017, and was analyzed for the parameters identified in Section 2.1.4. The 2017 monthly leachate holding tank data is summarized in Table 2.22.

In general, the 2017 leachate quality at the Site within the Original Landfill Area (LW3-91), Interim Expansion Area (MH11), Long-Term Expansion Area (MH19) and West Optimization Area (MH23 and MH29) exhibited elevated levels of alkalinity, ammonia, BOD_5, COD, chloride, conductivity, phenols, DOC, TKN, TDS, boron, chromium, phosphorus, potassium, and sodium. Cadmium, copper, lead, mercury, and zinc were not detected at higher concentrations than their respective method detection limits in each of the leachate sampling locations during 2017. Detections of 1,4-dichlorobenzene, benzene, ethylbenzene, and toluene were observed in the leachate during 2017.

Concentrations of the detected compounds within the 2017 leachate samples indicate that the leachate quality at the Site is typical of landfills in southern Ontario.

Summary

Leachate collected from on-Site sampling locations in May 2017 exhibited elevated levels of alkalinity, ammonia, BOD_5, COD, chloride, conductivity, phenols, DOC, TKN, TDS, boron, chromium, phosphorus, potassium, and sodium. Cadmium, copper, lead, mercury, and zinc were not detected at higher concentrations than their respective method detection limits in each of the leachate sampling locations during 2017. Detections of 1,4-dichlorobenzene, benzene, ethylbenzene, and toluene were observed in the leachate during 2017. Similar results were observed for monthly samples collected from the leachate holding tank.

The 2017 leachate analytical results are typical of leachate quality in landfills in southern Ontario.

2.4 Benthic Community and Density Monitoring Program

2.4.1 Background and Approach

In accordance with the Schedule C of the current ECA and LTP ECA, a Benthic Community and Density Monitoring Program was completed by WSP in the spring of 2017. Benthic invertebrate samples were collected from Dodd Creek, which is the receiving watercourse for surface water drainage from the landfill. Between 1999 and 2001, benthic sampling was completed in Dodd Creek at locations upstream and downstream of the Polishing Basin outlet to establish background conditions. The background sampling results in the Creek provided an opportunity to characterize the benthic communities upstream and downstream of the outlet prior to commencing discharge of the Polishing Basin waters to Dodd Creek in the spring of 2002. The 2017 Benthic Macroinvertebrate Monitoring Report (2017 Benthic Report) is presented in Appendix H, and is summarized as follows.

Benthic invertebrates can provide a useful measure, or biological indicator, of environmental quality changes. Water quality parameters can be useful and can be measured directly; however the ecological tolerance and habitat requirements of benthic communities can be better indicators of long-term conditions. Discrete "grab" water quality samples provide an indication of the water quality condition at a point-in-time. However, the composition of a benthic community represents an overall measure of the habitat quality over time and not simply the point-in-time measure that the chemical water quality sample provides.

The objectives for the 2017 Benthic Monitoring program are as follows:

- → Determine if landfill activities are impacting the invertebrate communities of Dodd Creek;
- → Assess the degree to which the present monitoring protocols can determine landfill impacts; and,
- → Identify measures which can improve the effectiveness of the monitoring program in fulfilling the afore-mentioned objectives.

Benthic samples were collected from Dodd Creek on May 24, 2017 using standard methods outlined within the BioMAP protocol. Samples were identified to the lowest practical level, and then analyzed using BioMAP (q) and BioMAP (d) water quality indexes. The BioMAP Protocol method of sampling and analysis allows an assessment of a stream's water quality, based on the benthic invertebrate community structure. Further to BioMAP assessment, invertebrate densities in Dodd Creek upstream and downstream of the Polishing Basin outlet were compared using a variety of other common metrics. Comparison of upstream and downstream data provided a measure of variability, if any, which may exist in benthic community densities at these two (2) sampling locations, under discharge conditions. As set out in the current ECA and LTP ECA, a variation of ±20 percent as to the number of organisms and species richness will be considered an impact (i.e., trigger level). The comparison of 2017 upstream and downstream benthic results represents the 16th annual assessment of the ±20 percent trigger since the discharge of on-Site surface water to Dodd Creek commenced in the spring of 2002.

2.4.2 Dodd Creek Benthic Results

The Dodd Creek sampling locations upstream and downstream of the Polishing Basin outlet were chosen in consultation with the MOECC prior to the initial (1999) benthic sampling event. The locations, designated Station 5 (upstream) and Station 6 (downstream), are presented on Figure 1 (inset) of the 2017 Benthic Report (Appendix H). For the 2017 benthic monitoring program, two (2) Surber samples and two (2) timed kick-and-sweep samples were collected at each of the two (2) sample locations.

The BioMAP assessment has historically indicated that Dodd Creek is an impaired system, due partially to the absence of a riparian canopy. The Creek is an agricultural drain, and most of the canopy in its headwaters has been removed as a result of agricultural activity. BioMAP water quality values for 1999 to 2001 showed that essentially no difference existed in the degree of impairment at the upstream and downstream sampling points. The assessment also revealed that even prior to any discharge occurring (non-discharge conditions), the benthic results at the upstream sampling location were consistently more favourable than the downstream sampling location.

BioMAP water quality indices for streams have historically been used in previous reporting years for the benthic macroinvertabrate monitoring of Dodd Creek. It is evident, however, that the monitoring locations in Dodd Creek are located in a transitional watercourse that functions more as an agricultural drain than a stream. Factors that lend support to this interpretation included the stagnant to dry conditions periodically observed in this watercourse during summer months, along with its silty substrate. It was suggested in 2007 that the BioMAP expected range of values for creeks may be more appropriate for comparison. Therefore, for the 2017 reporting period, both stream and creek criteria were again assessed for comparison.

BioMap Assessment

BioMAP WQI (d) values of <14 for creeks, and <10 for streams infer an impaired watercourse. The quantitative sample replicates from Stations 5 and 6 each contained insufficient numbers (<100) to calculate the BioMap WQI (d) index. As indicated by Griffiths (1999), pooling of the results from both quantitative samples can be done, if necessary, to achieve the 100 individuals needed to complete the analysis. In this case, sample sizes were too low at both stations to reach the 100 individual threshold required to complete this analysis in 2017.

Historic BioMap WQI (d) values for Stations 5 and 6 have generally indicated impairment in pre- and post-discharge sampling events. Exceptions include single samples collected at Station 5 in 2001 and 2002, which exceeded the expected threshold value (>16) for unimpaired creeks, but were not conclusively supported by WQI (q) results.

BioMAP WQI (q) values of <3.2 for creeks, and <2.6 for streams infer an impaired watercourse. Stations 5 and 6 both had BioMAP WQI (q) values of 2.0 based on the 2017 sample data. These results suggest that both Station 5 and Station 6 are impaired when compared to expected values for creeks and streams. The interpreted impairment of stations both upstream and downstream of the discharge point is consistent with historic analyses, both pre- and post-discharge.

Additional Metrics

Results from the 2017 sampling events yielded similar species and assemblages as previous years. The benthic community at Station 5 was largely comprised of chironomids (predominantly *Orthocladius* sp.) and riffle beetles (*Dubiraphia* sp.). Caenid mayflies (*Caenis* sp.) were also relatively common within the sample. These genera are typically associated with erosional lentic environments, and have adapted to life in silty conditions. Their predominance within the benthic community at this site is consistent with historical results. When compared to expected values for unimpaired creeks and streams, five parameters fell outside the range of expected values for creeks and/or streams, namely density, taxonomic richness (per sample), taxonomic richness (per site), percent chironomids, and percent filter feeders.

In 2017, the average density at Station 5 (based on two quantitative samples), was 19 organisms per 0.05 m^2. This value is below the expected range of values for unimpaired creeks (50 – 200 organisms per 0.05 m^2) and streams (100 – 400 organisms per 0.05 m^2), and is considerably lower than the 2016 density of 109 organisms per 0.05 m^2. Taxonomic richness (per sample) and taxonomic richness (per site) were also found to be lower than the expected range of values for unimpaired creeks and streams with values of 12.5 and 19, respectively; whereas both metrics were within expected ranges during 2016 (22.5 and 32), respectively. While the 2017 values are lower than in 2016, the values are consistent with earlier data from 2015 (19 and 25) and 2013 (17.5 and 24), and likely reflect temporal fluctuations in population levels.

At 40%, average percent chironomids was higher than the expected values for unimpaired creeks and streams (10-30%), but is consistent with values observed in previous sample years. Chironomids are an important food source for a variety of aquatic organisms and thus, are important for a healthy food web within a riparian system. When a community contains a high proportion of chironomids it may be an indicator of environmental stress, as chironomids are commonly associated with organically enriched, silty conditions with relatively low dissolved oxygen conditions.

There were no filter feeders within the 2017 kick and sweep samples collected at Station 5; however, an average percent composition of 2% was obtained for the quantitative samples. Expected values for unimpaired creeks and streams are <10% and 10-30%, respectively. Percent filter feeders at this station have historically fallen below the expected range for unimpaired streams, and within the range for unimpaired creeks.

Percent Ephemeroptera/Plecoptera/Tricoptera (EPT) was higher than in recent years, at 18%; however, the genera represented in the sample are more tolerant taxa (e.g. *Caenis* sp.). Furthermore, there were no species with sensitivity values of 3 or 4 (most sensitive) within the samples at this station.

The results of the additional metrics support the impairment of sampling Station 5, inferred by the BioMAP WQI (q) analyses.

The Station 6 benthic community was similar in composition to that at Station 5, with a very high proportion of tolerant taxa, including *Dubiraphia*, *Orthocladius* and *Caenis* species. Seven parameters were found to be outside the expected range of values for unimpaired creeks and streams, including density, taxonomic richness (per sample), taxonomic richness (per site), percent chironomids, percent tubificids, percent shredders and percent filter feeders.

In 2017, the average density at Station 6 was seven (7) organisms per 0.05 m^2, which is considerably lower than the density observed in 2016 (45 organisms per 0.05 m^2). As with Station 5, the observed density at Station 6 is below the expected values for unimpaired creeks (50 – 200 organisms per 0.05 m^2) and streams (100 – 400 organisms per 0.05 m^2). Though the 2017 average density at Station 6 was lower than that observed at Station 5, both sample locations have typically had densities that are lower than those expected for unimpaired streams (100 to 400 organisms per 0.05 m^2). Differences between the two (2) stations during this sampling event may partly be accounted for by differences in flow rates, substrate composition, stream width, and stream depth.

Taxonomic richness (per sample) and (per site) at Station 6 were similar to those observed for Station 5, with values of 13.5 and 18. Both are below the expected range of values for unimpaired creeks and streams, but show a slight improvement over 2016 values for this station (9 and 11, respectively).

Percent chironomids (46%) and percent tubificids (4%) were outside the expected range for unimpaired creeks and streams. As with Station 5, percent filter feeders suggested possible impairment of water quality in Dodd Creek with a value of 5%, which is within the expected range of values for unimpaired creeks (<10%), but below that of unimpaired streams (10-30%). Percent shredders, with a value of 11%, was below the range of expected values for unimpaired creeks (20-40%), but was within the range for unimpaired streams (10-30%).

Percent EPTs was very similar for both stations, with 18% and 13% at Stations 5 and Station 6, respectively, and *Caenis* sp. accounting for the majority of the individuals at both stations. While the presence of EPTs is typically thought to indicate more favourable water quality, the most abundant species representing the EPT families had sensitivity values of 1 for both stations, which is consistent with more tolerant taxa (Griffiths, 1999).

The results of the additional metrics support the impairment of sampling Station 6 inferred by the BioMAP WQI (q) analyses. Given that dominant species at each station are similar, the higher number of parameters at Station 6 that fall outside expected values are likely a reflection in differences between the environments at the two stations, rather than a pronounced difference in water quality. Station 6 is characterized by siltier substrates, slower, deeper water, and reduced shading by riparian vegetation.

The results of the additional metrics support the impairment of sampling Station 6, inferred by the BioMAP analyses for the 2017 sampling event.

2.4.3 Trigger Level Assessment

The trigger level assessment, as shown in Table 8 of the 2017 Benthic Report, indicated that both the total number of organisms and taxonomic richness reported for Station 6 (the downstream station) were outside the ± 20% of Station 5 (upstream station), as per the current ECA and LTP ECA. The trigger analysis was completed using average values for the total number of organisms and taxonomic richness for the quantitative samples collected at each station. As identified in Section 2.4.2, less than 100 individuals were captured in the quantitative samples collected at Stations 5 and 6 in 2017. Numbers were still insufficient (< 100) when both quantitative samples were pooled for each station. These smaller sample sizes may be skewing the results. As a result, inferences based on this analysis may not be representative.

Review of the upstream and downstream water quality results for Dodd Creek indicate that difference in benthic results at upstream and downstream locations cannot be attributed to Polishing Basin discharge. As indicated in Tables 2.15 to 2.18, no water quality triggers were exceeded at the downstream location, with the exception of iron in May 2017 and un-ionized ammonia and nitrate in August 2017.

Although the discrete trigger level was exceeded for iron in May 2017, the iron concentration at the downstream location was below the PWQO/G of 0.3 mg/L for iron. This level is considered negligible, and does not impact the water quality in Dodd Creek. Although the un-ionized ammonia trigger was exceeded in August 2017, the un-ionized ammonia level at the downstream location was well below the PWQO/G of 0.020 mg/L for un-ionized ammonia and does not impact the water quality in Dodd Creek. Although the nitrate trigger was also exceeded in August 2017, the exceedance is not considered to be indicative of landfill leachate related impacts. The elevated August 2017 nitrate concentration at STA6 may be attributed to the presence of birds in the stormwater pond system. The August 2017 exceedances also reflect the stressed nature of Dodd Creek due to the low, near stagnant flow conditions. Based on these surface water analytical results, discharge of Polishing Basin waters is not resulting in any impairment to the benthic invertebrates in Dodd Creek.

The differences in upstream and downstream benthic monitoring results for 2017 can be attributed to characteristics inherent of the sampling locations. That is, the upstream location is typically narrower and is characterized by faster flow, whereas the Creek becomes wider and flow rates decrease at the downstream sampling location, which is a depositional area. Poorer benthic results (relative to upstream) have typically been observed at the downstream location, even under background (i.e., no discharge) conditions. This observation must always be considered when evaluating trigger level assessments for Dodd Creek benthic data.

2.4.4 Summary

Historic BioMAP analysis of the benthic data for Dodd Creek indicates that this watercourse is an impaired system, likely due to habitat modifications for agricultural practices in the Dodd Creek watershed. According to the 2017 benthic data, water quality at the upstream and downstream sampling locations in Dodd Creek indicate an overall impairment in the Creek.

The 1999 to 2001 benthic sampling events were completed under background (i.e., no discharge) conditions in Dodd Creek. Benthic density comparison in 1999 suggested that the natural variability in invertebrate abundance between upstream and downstream locations was appreciably greater than the ±20 percent trigger level cited in the current ECA and LTP ECA. The 2000 and 2001 benthic data produced acceptable comparison results within the range of ±20 percent trigger level. It appears that acceptable benthic results may be attributed in part to high flow rates in Dodd Creek. It is also evident, however, that even under non-discharge conditions the benthic results at the upstream sampling location have consistently been more favourable than the downstream sampling location due to more favourable habitat characteristics upstream. The 2017 comparison indicates that both the total number of organisms and taxonomic richness reported for Station 6 (the downstream station) were outside the ± 20% of Station 5 (upstream station). The trigger analysis was completed using average values for the total number of organisms and taxonomic richness for the quantitative samples collected at each station. As noted earlier, smaller than recommended quantitative sample sizes were obtained at both Station 5 and 6 (<100 organisms per sample). These smaller sample sizes may be skewing the results. As a result, inferences based on this analysis may not be representative.

Examination of Dodd Creek water quality results for the May 2017 sampling event (Table 2.13) indicates that levels of un-ionized ammonia were at acceptable levels and thus significantly below the respective PWQO/G at both upstream and downstream locations. BOD_5 and $CBOD_5$ concentrations were not detected at either sampling location. Nitrate levels were observed at almost equal concentrations for both sampling locations. Concentrations of phosphorus were at or above the PWQO/G at both upstream Station 5 and downstream Station 6; however, background levels of total phosphorus are typically elevated in agricultural settings due to the application of fertilizers on crops.

The water quality trigger level assessments summarized in Tables 2.15 to 2.18 were acceptable, with the exception of iron in May 2017, and un-ionized ammonia and nitrate in August 2017, as noted above. The downstream iron concentration in May 2017 is below its PWQO and is considered negligible, and does not impact the water quality in Dodd Creek. The August 2017 un-ionized ammonia level at the downstream location was well below its PWQO/G and does not impact the water quality in Dodd Creek. The downstream nitrate concentrations in August 2017 is not considered to be indicative of landfill leachate related impacts, and may be attributed to the presence of birds in the stormwater pond system. The August 2017 exceedances represent naturally occurring conditions in Dodd Creek under low, near stagnant flow conditions.

Comparison of both BioMAP creek and stream criteria in the 2017 Benthic Report suggest that the expected range of creek values may be more appropriate for comparison than stream criteria. It is recommended that the applicability of BioMAP creek criteria continue to be assessed for comparative purposes, in conjunction with stream criteria, for the 2018 monitoring event.

3 Gas Monitoring Program

3.1 Landfill Gas Management System

Approval to construct the landfill gas collection and flaring system was initially requested by Green Lane on August 4, 1999 via an application under the Environmental Protection Act. The application was placed on hold at the request of Green Lane while the Site examined landfill gas to electricity utilization options, but was reactivated in 2002. On February 26, 2003, the MOECC issued a C of A for a landfill gas management system at Green Lane. The construction of the first phase of the system was carried out in July 2004, with the installation of 11 vertical landfill gas extraction wells (including four (4) combined landfill gas and leachate hydraulic monitoring wells), with Flare 1 commissioned in September 2004. Subsequent expansions and upgrades to the gas collection system have been made since the installation of the initial system, as outlined below:

→ May and June 2005: Installation of 12 vertical landfill gas extraction wells (LFG12-05 through LFG23-05);

→ Summer 2006: Installation of a 300 metre long section of the landfill gas header along the south boundary of the Long Term Expansion Area;

→ February 2007: Installation of six (6) vertical landfill gas extraction wells in the Long Term Expansion Area (LFG24-07 through LFG29-07);

→ Fall 2008/February 2009: Installation of larger capacity centrifugal blower on Flare 1, and commissioning – purpose is to collect more landfill gas at a higher flow rate, thereby reducing off-site odour potential;

→ 2009: The first four (4) horizontal landfill gas collector trenches were installed in Stages 3 and 5, and 12 landfill gas extraction wells (LFG30-09 through LFG41-09) were installed and connected to the system;

→ 2010: Installation of horizontal gas collector trenches (H5-10 through H8-10) in Stages 1, 2 and 3. Connection of H5-10 and H6-10 to the existing system occurred in February 2010;

→ October 29, 2010: Amended C of A No. 0974-86VGU8 (Air C of A) is issued for the installation of Flare 2, with a design capacity of 3,200 cubic feet per minute (cfm);

- → March 2011: Notice 5 to amend the C of A is issued for the extension of the north and south landfill gas header into the WOA. Horizontal gas collector H7-10 is connected to the gas header;
- → May and June 2011: Installation of eight (8) vertical landfill gas extraction wells (LFG42-11 to LFG49-11) and two (2) horizontal gas collector trenches (H9-11 and H10-11);
- → Fall 2011: Completion of construction and commissioning of Flare 2. Installation of north landfill gas header in the WOA up to the northwest corner of Stage 6, and installation of the south landfill gas header south of the expanded leachate treatment plant and heavy equipment repair shop, extending east along the Original Landfill Area boundary and west along the north service road;
- → 2012: Completion of north landfill gas header installation activities from condensate trap CT-6 to valve chamber VC8. Installation of landfill gas sub-headers and valve chambers, to permanently connect landfill gas extraction points (eliminated above ground pipe runs). Installation and connection of nine (9) horizontal gas collectors (H11-12 through H19-12) and three (3) manholes (MH29, MH30, and MH31).
- → 2013: Installation and connection of 16 vertical landfill gas extraction wells (LFG50-13 through LFG60-13, LFG62-13, and LFG66-13 through LFG69-13) in the Original Landfill Area, the Interim Expansion Area, and the Long Term Expansion Area, along with seven (7) horizontal gas collectors (H21-13 through H27-13) installed in Stages 3, 4, 5, and 6. Two (2) additional horizontal gas collectors (H27-13 and H29-13) were installed east and west, respectively, of MH-23, pending future connection. Manhole MH23 was also connected to the landfill gas collection system. Fifteen (15) small diameter (50 mm) vertical landfill gas extraction wells (LFG70-13 through LFG84-13) were installed on the lower south slope in the Long Term Expansion Area, to remove localized gas generated in the area. These wells were installed in a vertical line on the lower 10 metres of the slope, beginning just above MH-18, and extending west in spacing intervals of 20 metres, and ending approximately 50 metres west of MH-21.
- → 2014: Connection of 15 small diameter (50mm) vertical landfill extraction wells (LFG70-13 through LFG84-13) and horizontal gas collectors H27-13, H28-13, and H29-13 to the landfill gas collection system. All of the aforementioned items were installed at the end of 2013. Installation and connection of 15 vertical landfill gas extraction wells (LFG85-14 through LFG99-14) in the Original Landfill Area and the Long Term Expansion Area, while seven (7) horizontal gas collectors (H30-14 through H36-14) were installed in the Long Term Expansion Area and connected to the landfill gas collection system. Installation and connection of 14 vertical landfill gas extraction wells (LFG61-14, LFG63-

14, LFG64-14, LFG65-14, and LFG100-14 through LFG109-14) which were installed in the Original Landfill Area, the Interim Expansion Area, and the Long-Term Expansion Area, along with two (2) horizontal gas collectors in the Long-Term Expansion Area (H37-14 and H38-14), and five (5) horizontal gas collectors in the Original Landfill Area (H39-14 through H43-14). Also, nearly all the wellheads on the existing collection system (excluding the small diameter wells at the toe of the south slope in the Long Term Expansion Area) were retrofitted with wellheads which permitted personnel to not only monitor gas levels, but to also collect flow reading data to determine the efficiency of each well. Control valves on the new wellheads also assist the operator in balancing the wellfield. In November and December 2014, nine (9) horizontal wells had p-traps installed, since the wells were installed to drain towards the edge of the landfill. Wellheads were also installed at the horizontal gas collector sample locations.

→ 2015: p-traps were installed at six (6) horizontal gas collectors, since the lines had been installed to drain toward the edge of the landfill. Wellheads were also installed at the horizontal gas collector sample locations. All remaining horizontal wells were retrofitted with wellheads only, as these lines were installed to drain condensate back into the waste (no p-traps required). In late April and May, horizontal gas collectors H44-15, H45-15, and H46-15 were installed in the Long Term Expansion Area. From early August through mid-September, a total of 19 vertical landfill gas extraction wells (LFG110-15 through LFG123-15, and LFG131-15 through LFG135-15) were installed in the Original Landfill Area and the Long Term Expansion Area, and these wells, along with horizontal collectors H44-15, H45-15, and H46-15, were connected to the system by early September. In October, the 400mm diameter landfill gas header was installed along the south access road from VC-5 extending west to a point near the southwest corner of the West Optimization Area. Condensate trap CT-4 was also installed at the west end of the landfill gas header. In November and December, nine (9) vertical landfill gas extraction wells (LFG 124-15 through LFG130-15, LFG136-15 and LFG137-15) were installed in the Original Landfill Area and Long Term Expansion Area. All wells with exception of LFG136-15 and LFG137-15 were connected to the system by the end of December.

→ 2016: connection of LFG136-15 and LFG137-15 to the existing system was completed. In late February and early March, horizontal gas collection lines H47-16 through H50-16 were installed in the southwest section of the Original Landfill Area and Stage 4 of the Long Term Expansion Area and were connected to the existing system. Also during this period, installation of the pump within condensate trap CT-4, and associated electrical connections for CT-4, were completed. In late May, work commenced on the installation of H51-16 through H55-16 in Stages 5 and 7 of the Long Term Expansion

Area, and these lines were connected to the system by mid-June. A new subheader was also installed during this period to horizontal gas collector H29-13 in the southwest section of Stage 5 in the Long Term Expansion Area. From late September through mid-October, vertical gas extraction wells LFG138-16 through LFG149-16 were installed in Stages 2 and 3 of the Long-Term Expansion Area, and these wells were connected to the gas management system in late November 2016.

In 2017, the Green Lane landfill gas collection system was enhanced and extended into the landfill footprint to increase landfill gas collection and enhance odour control. From early February to mid-March, a total of 18 vertical landfill gas extraction wells (LFG150-17 through LFG167-17) were installed in the northwest section of the Original Landfill Area and in various areas of Stages 2, 3, and 4 of the Long-Term Expansion Area. Also, three (3) horizontal gas collectors (H56-17 through H58-17) were installed in the crest of the landfill, within the same areas noted for the vertical landfill gas extraction wells. Connection of these vertical and horizontal landfill gas collectors to the gas management system was completed by late March 2017. In mid-August, work commenced on installation of five (5) horizontal gas collection lines (H59-17 through H63-17) in the west end of Stage 8 and in Stage 10 of the Long-Term Expansion Area, and these wells were connected to the existing collection system by late August. In late November, installation of the 400mm diameter landfill gas header extension was started along the north access road from valve chamber VC-8 extending west to a point east of the Stage 14 access ramp. Installation of condensate trap CT-7 near the Stages 8 and 10 limit was completed in early December, while installation of valve chamber VC-9, near the end of the landfill gas header pipe, was completed in mid-December. Installation of the pump within CT-7, and associated electrical connections for CT-7, are anticipated to be completed in early 2018.

The as-built drawing of the gas management system has been updated to reflect expansion activities in 2017. Please refer to Figure 3.1 for the landfill gas and collection system monitoring locations and the flare station.

In 2018, the status of landfilling will be monitored, and as operations allow, horizontal trench installation will proceed within various stages. Additional vertical landfill gas extraction wells may be installed as well. All of the aforementioned measures will continue to assist in controlling the occurrence of offsite odours.

The landfill gas collection and flaring system was in regular operation in 2017. Flare 2 operated for 99.7 percent of 2017 and was capable of handling the quantity of landfill gas collected from the decomposing waste. Flare 1 was in concurrent daily operation during parts of January, February, March, April, and May.

On April 26, 2017, the MOECC issued amended ECA No. 3857-ALRQSR for the flaring system at Green Lane. This approval, which revoked the previous ECA, amended the as-constructed dimensions for Flare 3. Construction and installation of Flare 3 was substantially completed in February 2017. The flare contractor continues to work on Flare 3 to resolve some warranty-related issues, which are anticipated to be fully resolved in 2018.

3.2 Current Gas Monitoring Program

As per Schedule D of the current ECA, a sample from the main landfill gas header (as identified on Figure 3.1) must be collected annually and analyzed for pressure (obtained via field measurement), non-methane organic compounds (NMOCs), carbon dioxide, carbon monoxide, methane, and oxygen. Please refer to Table 3.1 for the field measurements and analytical results from 2017, and for historical readings taken since the program commenced in May 2007. The results from the laboratory can be found in Appendix I of this report, along with the procedure for collecting the gas header sample, as authored by CRA, and followed by WSP for collecting the 2017 samples.

The May 2017 sample returned a methane reading of 50.4 percent, an oxygen level of 1.9 percent, and an NMOC value of 600 parts per million (ppm) methane equivalent. All of the parameters indicate that the landfill gas generated at the Site is at or near the peak methane generation rates, are typical of Ontario landfills of comparable size and waste streams, and are not considered anomalous. No changes are recommended to the monitoring program at this time.

In 2017, the landfill gas collection system was monitored on a monthly basis by WSP. The monthly monitoring data collected is used to determine gas levels and identify potential issues with the wellfield. Please refer to Table 3.2 of this report for a summary of monitoring locations (including vertical extraction wells, horizontal collection wells, and manholes) and the 2017 monthly landfill gas monitoring results. The data shows that the landfill gas collection system is performing adequately to collect landfill gas.

During each monitoring event, a review of the components of the landfill gas collection system is also completed, including the condition of the sample ports, valves, flex hose, and if any settlement around the well has occurred. Any deficiencies recorded during 2017 inspections were relayed to CRA Landfill Operations Limited (CRALOL), who addressed items as required.

In 2014 and 2015, nearly all of the landfill gas collection system sampling points, including horizontal monitoring locations, were retrofitted with wellheads that permit the operator to record and quantify slight adjustments to the well, and allows the operator to know if the well is fully open or closed. It is anticipated that the addition of the new wellheads (as discussed in Section 3.1) will assist the operator in collecting not only gas quality data but also flow rates, which will allow a more accurate interpretation of well performance and enhanced wellfield balancing.

In summary, the Green Lane gas collection system is in good operating condition and was well operated and maintained in 2017. Expansion of the system will continue as landfilling progression permits, to continue to reduce offsite odour impacts.

4 Site Operation and Management

4.1 Existing Conditions

As per Conditions 21 (c) (i) and 76 (a) of the current ECA, semi-annual surveys of the bottom and top waste contours to determine the air space used for waste disposal, along with the amount of daily cover material used, were performed in June and December 2017. The June 2017 survey is presented on Figure 4.1, while the December 2017 survey is presented on Plan 1. Details regarding 2017 air space utilization and remaining Site capacity can be found under Section 4.3.

4.2 General Operations January 2017 to December 2017

In 2017, landfilling was completed by CRALOL in Stages 3 through 8, the east half of Stage 9, and in Stage 10 and the east half of Stage 12 in the WOA. In regards to cell construction activities, removal of the remaining diversion berm in Stage 9 west and along the Stage 11 north limit was completed in early September 2017. Excavation of the remaining Stage 9 west base, a small area of the base in the south end of Stage 10 west and Stage 12 east, and a section of the north end of the Stage 11 base (formerly occupied by the diversion berm), was completed in mid-September 2017. Leachate collection system (LCS) installation activities were completed in the aforementioned areas, along with the placement of an additional top layer of the non-woven geotextile fabric in the entire Stage 11 area, by late September 2017. The west half of Stage 9 was commissioned in late November 2017. Some excavation of the diversion berm over the Stage 13 east base was completed in October 2017. This area is scheduled for completion and commissioning in 2018. Please refer to Section 4.6.1 for additional details regarding cell construction activities.

Also in 2017, work in the East Optimization Area (EOA) commenced, with the removal of all trees from the screening berms and from the area north of SWM Ponds 5A and 5B. Decommissioning of seven (7) groundwater observation wells in the EOA excavation area was also completed in late January 2017 pursuant to the current ECA, in advance of planned EOA excavation activities. In late February 2017, installation and connection of the replacement leachate holding tank to the LTP was completed. In early May 2017, landscaping at the Site entrance facility was completed. From June to October 2017, work on EOA infrastructure items was undertaken, including development of the internal access roads, construction of temporary surface water diversion features, construction of a gravel laydown area for equipment storage, partial excavation of Stages 15 through 19 inclusive for the development of a ramp into Stages 15 and 16, placement of fill along the north screening berm to increase the overall height, and installation of electrical power poles and power lines along the southeast perimeter of the landfill. In the WOA, installation of a supplemental pumping station on the east side of Pond 1, south of the forebay area, was completed in late August 2017, along with the installation of a supplemental forcemain from the Pond 1 pumping station to an area at the midpoint of the channel between SWM Ponds 1 and 2. Additional material was added to the swale at the southwest corner of SWM Pond 2 in early September 2017. Topsoil and vegetation of this area and of the former access ramp area at Stockpile 2, was completed in mid-September 2017. Installation of a litter fence along the south side of the south access road from the swale between SWM Ponds 2 and 3, extending west to the southwest corner and north along SWM Pond 2, commenced in September 2017 and was completed in mid-October 2017. Installation of the north landfill gas header extension from valve chamber VC-8 extending west to a point just east of the Stage 14 ramp, including installation of condensate trap CT-7 and valve chamber VC-9, commenced in late November 2017 and was substantially completed by late December 2017.

4.3 Quantity of Waste Disposal

Condition 76 (c) of the current ECA requires that the total quantities of each waste type received at Green Lane are summarized in the annual report.

A brief summary of waste quantities is provided below. Please refer to Table 4.1 for a complete summary of monthly waste disposal quantities, and to Appendix J for a copy of the waste disposal report for 2017.

In 2017, a total of 495,132 tonnes of waste was disposed at Green Lane, including:

→ 15,009 tonnes of residential waste;

→ 438,511 tonnes of transfer municipal waste, comprised of mixed residential and ICI wastes;

→ 41,611 tonnes of industrial/commercial/institutional (ICI) waste; including

  – 3,062 tonnes of municipal sewage sludge;

  – 331 tonnes of dewatered sludge from the leachate treatment plant (LTP) sludge tank, and

– 2,719 tonnes of crushed glass residuals, which were stockpiled onsite and utilized for road construction.

Based on the monthly waste composition totals presented on Table 4.2, and assuming that the transfer of municipal waste consisted of 90 percent residential and 10 percent ICI waste, the type and source of waste streams received in 2017 is summarized as follows:

→ 82.7 percent was derived from residential sources;

→ 16.0 percent was derived from ICI sources;

→ 0.6 percent was crushed glass residuals utilized for road construction; and

→ 0.7 percent was derived from municipal sewage sludge and dewatered sludge from the LTP sludge tank.

A summary of total waste quantities landfilled since ownership was transferred to the City of Toronto, is presented on Table 4.3.

Condition 76 (k) of the current ECA requires an estimate of the remaining disposal capacity and remaining Site life. A discussion of volume calculations derived from the 2017 semi-annual surveys, and the remaining disposal capacity and Site life, is provided below.

Condition 17 of the current ECA issued in July 2007 permits an additional air space volume of 10,900,000 cubic metres (m^3), including daily cover material and settlement, but excluding final cover material. Disposal areas covered by this volume include the completion of the Interim Expansion Area, the completion of the Long Term Expansion Area, and the West/East Optimization Areas. In accordance with the disposal volumes approved under the 1998 and 2006 Environmental Assessment Act (EAA) approvals, the total net volume of waste and daily cover permitted for disposal at the Green Lane Landfill is 16,750,000 m^3.

Using the information from semi-annual surveys performed in June 2017 and December 2017, volume calculations were completed to determine the volume of air space utilized in 2017. In 2017, a total of 495,131.57 tonnes of waste consumed an airspace of 524,591 m^3. This indicates that an airspace utilization factor (waste density) of 0.944 tonnes/m^3, including daily cover materials, was achieved in 2017.

Based on the above, the remaining air space volume available at the end of December 2017 for the disposal of waste and daily cover at Green Lane is approximately 9,428,768 m^3. If an annual net air space volume of 1,000,000 m^3 is assumed for 2018 and subsequent years, a minimum estimated remaining Site life of approximately 9.43 years is determined. It is noted that the estimated remaining Site life will be affected by the City of Toronto's long term waste management strategy, existing and future waste diversion initiatives, the actual tonnage of waste landfilled annually, the amount of waste decomposition and settlement, and the waste density.

Volume calculations presented do not include the volume of overbuild that has taken place in the Interim Expansion Area and in Stage 1. Currently, to follow the MOECC Fill Beyond Approved Limits (FBAL) guideline, any waste volume outside the approved limits would be deducted from the remaining airspace. Fill in this area is expected to settle to within approved limits before the Site is closed.

4.4 Leachate Collection System

In 2017, the leachate collection system (LCS) was completed in the remaining portion of the west half of Stage 9, in sections of the south end of Stage 10 west and Stage 12 east, and in a section of the north end of Stage 11 in the WOA. An additional non-woven geotextile top layer in Stage 11 was also placed. The west half of Stage 9 was commissioned for landfilling in 2017. Installation activities are discussed in further detail under Section 4.6.1.

As of December 2017, the leachate collection system has now been installed in the following areas at the Green Lane Landfill:

- → All stages of the Interim Expansion Area;
- → Stages 1 and 2 of the Long Term Expansion Area; and
- → Stages 3, 4, 5, 6, 7, 8, 9, 10, and 11, the east half of Stage 12, and the west half of Stage 13 of the WOA.

Condition 88 of the current ECA requires the leachate collection pipes be inspected at least annually for the first five (5) years after placement of waste on top of each collection pipe, and then as often as future inspections indicate to be necessary. Pipes will be cleaned whenever an inspection deems that cleaning is necessary.

In late December 2017, cleaning of the leachate collection system (LCS) was undertaken via entry at cleanouts for manholes MH31 and MH32. There was no issue in accessing the cleanout/manhole locations. While no issues were encountered with flushing of the lines associated with MH32, at MH31, it was difficult to advance the flushing nozzles past the 90 degree bends at the base of the manhole that transitions to the collection piping, constructed in accordance with the approved design specifications. These bends/transitions tend to obstruct the movement of the cleaning equipment. It should be noted that the perimeter and base collector pipes appear to be hydraulically connected and in operation, since leachate is able to readily flow between the adjacent LCS manholes. It is recommended that these cleanout sections be reviewed again in 2018. It is also recommended that future inspection and cleaning activities continue to be scheduled during suitable weather conditions.

As indicated in Section 2.2.3, contours of the shallow groundwater elevations and leachate levels from monitoring locations within the landfill reveal that similar to past years, the hydraulic trap condition is being maintained around the perimeter of the Interim Expansion Area. As previously noted, internal mounding of leachate continues to occur in the Interim Expansion Area. In accordance with recommendations cited in the 2009 Annual Progress Report, six (6) vertical leachate extraction wells were installed along the eastern perimeter of the Interim Expansion Area in 2010. These wells were retrofitted with pumps in the spring of 2012, with leachate extraction commencing in the summer of 2012. All extracted leachate is pumped to the LCS and collected in the leachate holding tank, for treatment at the LTP.

Five (5) leachate extraction wells and five (5) leachate monitoring wells were installed in 2011, to augment removal of leachate from Stages 1 and 2. In addition, manhole MH21 was retrofitted with a 450 mm HDPE riser pipe and clear stone, and converted into an extraction well. These contingency remedial works were completed in accordance with previous consultations with the MOECC in August 2010, and recommendations presented in the 2010 Annual Progress Report. In the spring of 2012, the five (5) extraction wells were retrofitted with pumps. In 2013, leachate extraction in the Long Term Expansion Area commenced via the five (5) leachate extraction wells and MH21. All extracted leachate is pumped to the LCS and collected in the leachate holding tank, for treatment at the LTP.

4.5 Leachate Treatment Facility

In 2017, the average daily volume of leachate pumped and treated at the Green Lane leachate treatment plant was approximately 196.5 m^3/day, slightly more than the 183.1 m^3/day that was treated at the facility in 2016. For additional information regarding the operation of the leachate treatment plant, the reader is referred to “2017 Annual Performance Report – Leachate Treatment Facility”, which was submitted to the MOECC on February 26, 2018, in accordance with Condition 13 of the LTP ECA.

4.6 Construction Activities

As per Condition 76 (b) of the current ECA, which in part requires a description of Site facilities installed during the reporting period, the following sections describe construction activities undertaken at Green Lane in 2017.

4.6.1 EOA Development

In 2017, work commenced on developing the EOA. Beginning in January, the woodlot area north of SWM Ponds 5A and 5B was removed. Also in late January, decommissioning of seven (7) groundwater observation wells (OW19-91, OW35A-95, OW35B-95, OW36A-95, OW36B-95, OW49A-01 and OW49B-01) took place, in accordance with Ontario Regulation 903, in advance of planned EOA excavation activities. In the spring, stripping of topsoil across the entire EOA occurred, including the north screening berm area, which was stockpiled in the southeast corner of the EOA in Stages 21 and 23. Construction of the EOA perimeter access roads also commenced at this time, using material excavated from Stages 15 through 19 to construct the road base. Granular material underlain by non-woven geotextile was placed on the northwest and north perimeter access roads, and a granular "laydown area" was constructed in the north sections of Stages 22 and 24. This laydown area will be used as a storage area for the manhole sections yet to be installed, along with miscellaneous supplies and various forms of heavy equipment.

From June through October 2017, excavation of material from Stages 15 through 19 took place. Material was hauled as daily cover to the active area, or was hauled to the north screening berm to increase the overall height of the berm to the elevation as listed in the 2006 Development and Operations report drawings. A small volume of material was hauled to Stockpile 3, and additional material was hauled to various portions of the landfill for use as interim cover material.

Also during this period, construction of temporary surface water diversion features were completed so that EOA surface water would be effectively directed to SWM Pond 5B.

4.6.2 Leachate Holding Tank Replacement

During 2016, it was noted that stormwater inflow into the leachate holding tank resulted in dilution and changes to operational characteristics of the influent. As a result, repair or replacement of the leachate holding tank was recommended to reduce inflow and infiltration into the system. The replacement leachate holding tank was installed and officially put into service on March 3, 2017. Some landscaping of the area surrounding the leachate holding tank is expected to be completed in spring 2018.

4.6.3 Cell Construction

Excavation of the separation berm occupying the west half of Stage 9 and along the north limit of Stage 11 in the WOA resumed in mid-August 2017 and was completed in early September 2017. Construction of the remaining portion of the base in the west half of Stage 9, in a small area of the south ends of Stage 10 west and Stage 12 east, and in the north section of Stage 11, commenced in late August, and was completed in mid-September. The leachate collection system, including installation of manhole MH26, and connection of the line extending west from MH25 to the newly installed line extending east from MH26, was installed in the west half of Stage 9 by mid-September 2017. The remaining leachate collection system in the south end of Stage 10 west, including the extension of cleanout CO33, was also completed in mid-September 2017, as was the remaining leachate collection system in a section of the north end of Stage 11, and in south end of Stage 12 east. An additional non-woven geotextile top layer was also placed in Stage 11. Some material was also excavated from the Stage 13 east containment berm for cell base liner material, and to construct a diversion berm from the Stage 12 high point extending southwest to the Stage 11 north limit, and extending west to the Stage 13 diversion berm. It is anticipated that excavation and leachate collection system installation in the east half of Stage 13 will be completed in 2018.

During cell excavation activities, WSP completed a detailed visual inspection for the presence of any permeable soils, namely sand and gravel lenses. In the west half of Stage 9, the entire cell base was excavated to ensure a suitably compacted base liner, while a small area in the south section of Stage 10 west and Stage 12 east, and a section of the Stage 11 north base, was excavated. Sub-excavation of entire cell bases followed by re-compaction with native clay has been found to be more efficient during construction. Please refer to Figure 4.2 for the delineated excavated base and the sideslope sand/gravel lens excavation in Stage 9 west. As the south sidewall of Stage 9 west was originally excavated in 2012 under the oversight of the previous consultant, WSP completed a detailed visual inspection of the as-constructed south sidewall upon removal of the diversion berm, and confirmed no sand and gravel lenses, nor any groundwater seeps, were visible in the slope.

Upon completion of base sub-excavation activities to a minimum depth of 1.5 metres below approved top of landfill base elevations, WSP observed the placement and compaction of competent native clay material placed in successive 300 mm lifts by a bulldozer equipped with a Global Positioning System (GPS) rover and compacted with vibratory sheepsfoot compactors. Once placement activities concluded, the dozer with the GPS conducted final grading activities, and confirmed that the base grades were constructed in accordance with those in the approved design. Final base grades were verified by WSP.

Following completion of compacted clay backfill activities, installation of the leachate collection system was installed in the west half of Stage 9, including connection of the leachate pipe extending east from MH26 along the south toe of slope to the pipe extending west from MH25 that was installed in 2012, and connection of the leachate pipe installed in 2014 along the south toe of slope in Stage 11 to the west end of MH26. A perforated length of 200mm diameter high density polyethylene (HDPE) pipe was also installed from MH26 extending north to the Stage 9 north limit. This pipe will be connected to a future cleanout. Please refer to Figure 4.3 for the location of the leachate collection system, along with the limits of the constructed landfilling footprint.

The leachate collection system is comprised of a woven geotextile filter fabric placed on the surface of the compacted clay base, followed by a continuous drainage layer of 25 to 50 mm diameter clear stone and a layer of non-woven geotextile filter fabric. Additional leachate collection system installation activities included the extension of CO33 to the south limit of Stage 10 west, placement of the leachate collection system over a section of the south end of Stage 10 west, over a section of the Stage 11 north limit, and over a section of the south end of the Stage 12 east limit. An additional non-woven geotextile top layer was also placed over the entire Stage 11 area. It is noted a containment berm constructed of compacted native clay material is currently in place at the high point of Stage 12, extending southwest, then west along the Stage 11 north limit. Other diversion berms are present along the Stage 13 high point, and along the northeast side of the west half of Stage 13. The purpose of these diversion berms is to contain surface water.

In accordance with Condition 86 of the current ECA, a Cell Preparation Report was prepared, documenting that all construction, Quality Assurance/Quality Control (QA/QC) activities, Site conditions, and all details of the construction of the west half of Stage 9, are in accordance with the approved design plans and specifications. The report for the west half of Stage 9 was submitted to the MOECC on November 21, 2017.

4.6.4 North Landfill Gas Header Extension

To accommodate future installation of landfill gas collection infrastructure as landfilling proceeds into the WOA, the landfill gas header along the north side of the landfill was installed in late November and throughout December 2017 in accordance with the approved specifications. The landfill gas header consists of a 400mm diameter HDPE solid pipe, and was installed from valve chamber VC-8 (located near the midpoint of Stage 6) extending west approximately 336 metres. Condensate trap CT-7 was installed approximately 107 metres west of VC-8, near the Stage 8 and Stage 10 limit, while VC-9 is located just east of the end of the landfill gas header, which stops near the Stage 14 ramp. A 50mm diameter HDPE solid pipe was installed in the same trench as the header for condensate removal, along with an electrical supply cable, which was extended west beyond VC-9 to the pumping station located at SWM Pond 1. Installation of the pump in CT-7, and connection of the electrical cable to the panel, is expected to be completed in 2018.

4.6.5 Flare 3 Construction

As discussed under Section 3.1, in July 2015 the MOECC issued ECA No. 6380-9WBQKG for approval for installation and operation of a third landfill gas collection flaring system (Flare 3) at the Site. This work was tendered following the City's policies for such work, and the contract was awarded to a successful contractor. The Order to Commence work was issued by the Owner in January 2016. Site work commenced in mid-May 2016, and was substantially completed in February 2017. On April 26, 2017, the MOECC issued ECA No. 3857-ALRQSR, which amended the dimensions of the Flare 3 stack, and revoked the previous ECA. Flare 3 commenced operations in May 2017, however, warranty-related issues were soon identified. At present, the flare contractor is working to resolve these issues, and it is anticipated the flare will commence full time operations in early 2018.

4.6.6 Power Line Installation

In order to accommodate future development in the West Optimization Area, additional power supply is required in this location. In late November 2016, installation of power poles along the northwest, west, and south perimeter of the landfill Site commenced by a subcontractor to CRALOL. The poles previously installed in the Original Landfill Area and Interim Expansion Area were removed in spring 2017, along with the three (3) phase power supply at the former landfill entrance, and the three (3) phase power supply was connected at the location near SWM Pond 3.

In order to accommodate future development in the East Optimization Area, additional power supply is required in this area. In summer 2017, installation of power poles along the southeast perimeter of the landfill Site, extending from SWM Pond 4 east to SWM Pond 6, and north up to the EOA, was completed by a sub-contractor to CRALOL. Power lines were installed at the time of the power pole installation.

4.7 Site Supervision

Conditions 28 (a) through (h) and 29 of the current ECA list the normal hours of operation for receiving waste at the landfill, procedures for requesting extension of the normal hours of operation, and security measures to be undertaken during non-operating hours.

Presently, Green Lane Landfill is open for waste disposal from Monday to Friday, 6:00 a.m. to 5:00 p.m., and Saturday 6:00 a.m. to 12:00 p.m., and these operating hours are posted at the landfill entrance off Third Line. During these times, the site is under the supervision of trained personnel in accordance with Condition 30 of the current ECA, and all incoming waste is weighed. During inclement weather events, including high winds, landfilling operations will cease.

In 2017, there were four (4) incidences of early site closures by the Owner due to extreme weather conditions, as follows:

→ Wednesday March 8, 2017 – site closed at 12:23 pm;

→ Friday March 10, 2017 – site closed at 10:37 am;

→ Wednesday March 15, 2017 – site closed at 11:20 am; and

→ Saturday May 6, 2017 – site closed at 10:00 am

4.8 Complaints

During 2017, a total of 61 complaints were reported, all in connection with odour. Approximately 95% of these complaints were reported directly to the Green Lane Landfill office with a few reported to the City's SWM office in Toronto, and with five (5) percent initially reported to the MOECC and subsequently forwarded to Green Lane staff. The complaints in 2017 originated from 19 residences or locations. 10 complainants made single reports and eight (8) complainants lodged more than one (1) complaint.

28 of the odour complaints, representing 46% of the total number of reports, were either not landfill related (about 11%) or it was not possible to make a determination due to a combination of factors such as delays in receipts of reports or insufficient details for follow up (about 89%).

Of the remaining 33 odour complaints, 11 reports or about 33% were attributed to primarily landfill gas odours as either confirmed or probable cause. Six (6) of the reports, or 18%, were attributed to a mixed odour of landfill gas and refuse. The remaining 16 reports, or 48%, were attributed to primarily refuse odours.

The 61 odour complaints received in 2017 represented a 21% increase compared to the number of reports in 2016 (total of 48). However, this continues to reflect an overall downward trend when compared to the prior years: a 16% decrease compared to 2015 (total of 73), a 35% decrease compared to 2014 (total of 94), a 69% decrease compared to 2013 (total of 197), and an 85% decrease compared to 2012 (total of 417).

During 2017, Green Lane staff continued to encourage residents to report odours whenever noticed, even if slight. Complaints received in a timely manner during business hours enabled staff to review current operations, weather conditions, attend at the location and, if possible and requested, meet with the complainant. Reports made directly to the Green Lane offices, whether during or after operational hours, generally resulted in a more timely and effective follow up.

With some exceptions, all complaints received by Green Lane either directly or forwarded from the MOECC were examined in detail. The exceptions related to complaints received after a significant time delay or when there were insufficient details available for follow up. Nonetheless, attempts were made to attribute cause. Of the complaints reported directly to Green Lane, some were confirmed at the time reported or following internal review. In accordance with the enhanced complaints procedure under the current ECA, all complaints were reported the MOECC Spills Action Centre as required, reported to the local MOECC office and subsequently reported to the PLC. Summary reports are also provided to the First Nations Liaison Committee. Green Lane's reports to the PLC are reviewed in detail at the quarterly meetings which are open to the general public. Members of the public who have questions or concerns regarding Site operations are encouraged to attend meetings. Copies of the Owner's reports prepared for the PLC meetings with details of the complaints received in 2017 and the Owner's responses are presented in Appendix K.

As noted, complaints reported directly to Green Lane facilitated a timely and effective follow up. As requested by the PLC at its June 2010 meeting, the following contact numbers for lodging complaints are provided in these annual reports:

Green Lane Landfill Office:	(519) 652-0909
MOECC London District Office:	(519) 873-5000
MOECC Spills Action Centre:	1 (800) 268-6060

The Township of Southwold's website contains information pertaining to Green Lane Landfill as well as the link to the City of Toronto's web pages about the Site and facilities. In addition, the Shedden Branch of the Elgin County Library includes a Green Lane reference section that is maintained by the Owner with current materials including reports, PLC meeting minutes and an informational brochure. The County of Elgin also maintains a photocopier at the Shedden library and copies of Green Lane materials are provided free of cost upon request.

The continuation of the overall reduction in off-Site odours has been due to many factors.

As reported previously, as a result of discussions with the MOECC, in late 2012 the Owner retained the services of a third party consultant that specializes in odour surveys and assessments. As requested by the MOECC, the Owner developed the June 2013 - Updated Odour Abatement Plan and Strategy that incorporated the recommendations of the consultant. The measures outlined in the updated plan were implemented in 2013 and 2014. Refuse-related odours were reduced by the planned development of protected and screened active disposal areas, the reduction of the size of the daily working area, deployment of additional mobile odour suppression spray stations, and the progressive elimination of most waste types requiring special handling by receiving trenches. Additional interim cover was applied to many areas of the Site.

The progressive overall decrease in the frequency of landfill gas-related odours since 2012 confirms the effectiveness of the measures taken to significantly advance the landfill gas collection infrastructure in 2013 through 2017.

As previously reported, on June 3, 2015 the MOECC requested that Green Lane cease use of an odour neutralizer intended to mitigate refuse odours until an ECA for its use has been issued. Upon receipt of that request, the mobile suppressant spraying stations were shut down and the equipment was demobilized from the landfilling areas. Based on current conditions and the continuing reduction in the number of odour complaints, there are no present plans by the Owner to seek ECA approval for mobile odour suppression units or stationary perimeter suppression system.

As reviewed in Section 3.0, in 2017 a total of eight (8) sections of horizontal landfill gas collection trenches were installed adding approximately 2,685 linear metres of new collection piping. Connection of three (3) of these trench sections (H56-17 through H58-17) to the flare system was completed in March 2017. The remaining five (5) of these trench sections, H59-17 through to H63-17, were connected to the flare system in late August of 2017. Landfill gas collection continues at nine (9) manholes (MH20 through to MH24, and MH29 through to MH32) along with seven leachate extraction wells along the eastern perimeter. Additional vertical landfill gas collection wells were also installed and connected to the collection system in 2017. Eighteen vertical wells, including LFG150-17 through to LFG167-17, were installed and connected to the system by March 2017.

Flare 2 was in operation throughout 2017, with Flare 1 operating concurrently at various times. The current rate of continuous landfill gas destruction by Flare 2 is approximately 3,800 cubic feet per minute. It is anticipated that Flare 3, installed in 2017, will soon be fully operational pending the completion of warranty-related work.

During 2018, measures will continue toward reducing off-Site odours. Further advancements of the landfill gas management system are planned. To update, as of March 2018, an additional 1,000 linear metres of horizontal collection trenches and an additional 20 vertical collection wells in previously landfilled areas have been or will be installed. These are in the process of being connected to the system. More trenches and wells are planned for later in 2018.

The measures outlined above will further mitigate the occurrence of off Site odours.

4.9 Occurrences

In 2017, there were no reportable occurrences.

4.10 Refusal of Waste Loads

There were no refusals of waste loads during the 2017 operational year as defined by Condition 25 of the current ECA.

4.11 Site Preparations and Facilities Planned for 2018

Part of Condition 76 (b) of the current ECA requires a description of Site preparations and facilities planned for installation during the next reporting period. The following is a brief summary of work planned at the Site in 2018:

4.11.1 Cell Development

In 2018, it is planned that the east half of Stage 13 will be completed and commissioned for landfilling activities. As required under Condition 86 of the current ECA, a Cell Preparation Report will be prepared and submitted to the MOECC confirming that all construction was completed in accordance with the approved design plans and specifications. It is also planned that preparation work will continue in the EOA for future cell development. The EOA preparations are expected to include continuation of soil excavation activities, perimeter access road construction, and perimeter berm augmentation.

4.11.2 Landfill Gas Collection System

In 2018, further advancements of the landfill gas collection system are planned. Work includes the installation of additional horizontal gas collectors in active areas under development, with potential for additional vertical landfill gas extraction wells in completed landfill areas.

4.11.3 Stormwater Management System Activities

For 2018, it is anticipated that installation of the pumps at the temporary surface water diversion pumping station in the EOA, and at the SWM Pond 1 pumping station in the WOA, will be completed, along with connection of these pumps to the power supply. Removal of accumulated sediment from the SWM Pond 1 forebay in the WOA is also anticipated to occur.

4.11.4 EOA Development

In 2018, it is anticipated that Site preparation activities will continue in the EOA. Work includes completing the increase in height of the north screening berm along Southminster Bourne, and continuing excavation activities in Stages 15 through 19.

5 2006 EAA Approval Annual Reporting Conditions

5.1 General

As reviewed in Section 1.0 of this Report, the 2006 EAA Approval to proceed with the Site Optimization undertaking dated May 26, 2006 was approved by Order in Council 1219/2006 on June 7, 2006, and was issued on June 28, 2006.

This section describes compliance with the Conditions of the 2006 EAA Approval during the 2017 calendar year of Site operations. This is the twelfth such annual report that is to be provided each year until the fifth year after the completion of the closing of the Site.

Conditions 1 to 8 of the 2006 EAA Approval are general and essentially administrative. A detailed review of the remaining Conditions 9 through 28 is presented below. A copy of the 2006 EAA Approval is provided in Appendix A.

In all respects, the Owner is in compliance with the 2006 EAA Approval Conditions.

5.2 EAA Monitoring and Annual Reporting

As required by Conditions 4 and 9 of the 2006 EAA Approval, this 2017 Annual Progress Report is to be distributed by the Owner as required: for the Public Record to the MOECC Director, the Regional Director, the District Manager, the Township of Southwold, the Green Lane Landfill Public Liaison Committee, and to the Participating First Nations of the First Nations Liaison Committee (Oneida Nation of the Thames and Chippewas of the Thames First Nation). The Owner will provide a copy to the Munsee Delaware First Nation.

The Owner must comply with the requirements in Condition 10. Copies of Annual Progress Reports and associated documentation of compliance monitoring activities are and will continue to be maintained at the Site administrative offices. As required, these materials will be retained for at least two (2) years after the last report is made, and are available to the MOECC upon request. Records under this section will be retained by the Owner for at least 10 years as required by Condition 11.

5.3 On-Site Inspection Activities

Conditions 12 through 14 of the 2006 EAA Approval relate to the environmental inspector that may be employed by the MOECC at the Owner's expense to inspect the Site under terms and conditions, after consultation with the Owner, deemed appropriate by the District Manager. There is an inspection frequency schedule available to the MOECC based on the annual rate of waste. These provisions are subject to implementation and modification by the District Manager.

When the current ECA was amended and reissued in July 2007, one of the changes instituted was the commencement of the one (1) day per week inspection frequency at the current rate of waste receipt. The MOECC conducted random facility inspections on this general basis since August 2007 through to March 2014.

As required by Condition 21 of the current ECA, the results of the June 2017 and December 2017 semi-annual air space surveys are provided by the Owner to the District Manager. These data are presented and reviewed in Section 4.3 of this Report.

5.4 Environmental Management System

Condition 15 of the 2006 EAA Approval recognizes the Environmental Management System (EMS) as a tool for managing and monitoring waste disposal operations at the Site toward ensuring that such activities are conducted in accordance with the EPA and OWRA Certificates of Approval and with applicable provisions of Ontario environmental legislation. Revisions to the EMS to reflect the approved optimization undertaking are required to be completed within one (1) year of the finalization of all Certificates of Approval under the EPA and OWRA for operation of the Optimized Site.

As previously reported, the current ECA was amended and reissued in July 2007 to the City of Toronto. Upon assuming ownership on April 2, 2007, the City contracted the Site operations to CRA Landfill Operations Limited and the engineering to Conestoga-Rovers & Associates under the City's environmental and Site contract management. Effective April 2013, WSP Canada Inc. assumed the engineering consulting support and design services under a long term contract with the City. As of April 2014, CRA Landfill Operations Limited continued under the next long term contract with the City for the operation, maintenance and construction services at the Site.

These operational and supervisory changes have essentially incorporated the primary elements of the former owner's previously proposed EMS program. These elements are reviewed by the Owner as part of its ongoing contract management activities.

5.5 Green Lane Landfill

Conditions 16 to 19 of the 2006 EAA Approval confirm the following.

The Site may accept for disposal only solid, non-hazardous wastes generated in Ontario, as also provided in Condition 16 of the current ECA. The 2006 approved optimization air space for waste disposal is 10,900,000 m^3 (including daily cover material and taking settlement into account, exclusive of clean final cover material) in addition to any remaining air space under previous approvals, as reiterated in Condition 17 of the current ECA. These operational aspects during 2017 are reviewed in detail in Section 4 of this Report.

As required, the boundary impact assessment for groundwater was applied to the perimeter of the Site, utilizing groundwater data from shallow monitoring wells which bound the Site on all sides. The results of the 2017 boundary impact assessment are presented in Section 2.3.3 of this Report.

The Owner shall replace trees lost as result of the Site Optimization or any mitigation or contingency measure in locations on or off Site in a manner that enlarges the existing interior habitat and/or connects fragmented wooded areas. This commitment is reiterated in the current ECA in Condition 60.

In connection with the above, between 2009 and 2017, the Owner participated in KCCA reforestation programs as follows;

→ 2009 - KCCA planted 1,200 spruce tree saplings along the southern slope of the Site perimeter berm facing Highway 401;

→ 2010 - KCCA planted an additional 1,700 saplings of mixed tree species to an extended section of the Site's south facing berm;

→ 2011 - KCCA planted 5,000 more trees and mixed vegetation;

→ 2012 - KCCA planted 5,800 new tree seedlings and replanted an additional 1,600 as infill;

→ 2013 - KCCA planted 6,000 new tree saplings and shrub mix west of the Site entrance, near the polishing basin and along the south berm facing Highway 401, plus infill of some replanted sections;

→ 2014 – No subsidy program offered;

→ 2015 - KCCA planted 6,000 new tree saplings and shrub mix between and adjacent to some of the SWM ponds, east of the Administration building, north and south of the berms around the polishing basin including on the berm south slope facing Highway 401 plus infill of some replanted sections. As an additional project this year, trees were planted in the Green Lane Habitat Restoration Project area east of the Site. This area is under the care of KCCA through a conservation covenant with the City of Toronto;

→ 2016 – KCCA planted 6,000 new tree saplings around the western edges of Stormwater Management Pond (SWMP) 1 and the channel leading to SWMP 2, in the area at the eastern end of the landfill property, as well as on a buffer land property located northwest of the Site; and

→ 2017 – KCCA planted 6,000 new tree saplings along the eastern slope of the berm at the western edge of the Site, along the southern bank of SWMP 1, as well as infill plantings in the areas planted in 2010, 2013 and 2016. Additional infill planting was also done on a buffer land property that was part of the 2016 planting plan.

There have been over 43,200 new and infill plantings by KCCA under this program to-date.

The Owner will continue its participation in these reforestation initiatives as they become available. The 2018 planting program is currently under review and will be determined in consultation with KCCA.

Pursuant to Condition 61 of the current ECA, the Owner retained qualified consultants to prepare a Proposed Site Landscaping Plan which was presented to the Green Lane Landfill Public Liaison Committee (PLC) at its March 21, 2017 meeting. A copy of the presentation was provided to the MOECC under separate cover. The PLC reviewed the Plan and members provided their input at its September 12, 2017 meeting.

To summarize, the Site Landscaping Plan is designed to be implemented in phases during the operational life of the Site with completion at closure/post-closure periods. While the Site is operational, the progress of the Landscaping Plan will be reviewed and reported to the PLC on an annual basis. The intent is to compensate for the loss of wooded area while providing linkages between retained woodlot features and proposed plantings. The key elements of the landscaping design include:

- → A variety of restored habitats such as upland mixed deciduous and conifer forests, thickets, and pond and swale banks;
- → Provide a variety of habitat features appropriate for the local ecosystem such as forest units, low shrub thickets, and nest boxes to enhance the diversity of available habitats in the restored area;
- → Use of native seeds across the restoration areas;
- → Planting of mixed tree communities on a phased-in approach to replace removed forest areas This builds upon and encourages the continuation of the reforestation work that has been implemented through planting activities with KCCA;
- → Application of pollinator-friendly seed mixes, vegetation and different models of pollinator boxes (bees, swallows, bats);
- → Utilize cleared vegetation materials for habitat features such as brush piles;
- → Review ongoing planting materials/species in consultation with KCCA and as possible source from within the local ecozone; and
- → Incorporating flexibility to address potential future requirements of an approved final closure/post-closure plan.

5.6 Public Liaison Committee

Conditions 20 to 23 of the 2006 EAA Approval pertain to the Green Lane Landfill Public Liaison Committee (PLC).

The PLC was initially established in 1994 and reconstituted in 1999 under Terms of Reference approved by the Regional Director.

In accordance with the 2006 EAA Approval, the PLC continued to meet during 2017 under its amended Terms of Reference. The PLC's mandate is to serve as a focal point for the dissemination, review, and exchange of information and monitoring results relevant to the Site operation including reports submitted to the MOECC. These 2006 EAA Approval requirements are reflected in the current ECA in Conditions 63 to 66.

The PLC meetings are open to the public and meeting notices are published in advance. Over the year, the quarterly PLC meetings were held on March 21, June 13, September 12, and December 5, 2017. All of these meetings were held at the Site administration offices.

Copies of meeting minutes are available upon request and are also publicly accessible at the Shedden Branch of the Elgin County Public Library, in the Green Lane Landfill reference section. As previously noted, copies of the reports prepared for PLC meetings about the complaints reported in 2017 and the Owner's responses are presented in Appendix K.

5.7 First Nation Liaison

Condition 24 of the 2006 EAA Approval provides that the Owner will consult in good faith with the Caldwell First Nation, the Walpole Island First Nation, and any of the Oneida Nation of the Thames, the Chippewas of the Thames First Nation or the Munsee Delaware First Nation that are not participating on the First Nations Liaison Committee (FNLC) to discuss, provide information, and attempt to resolve any environmental concerns related to the Site which may be identified from time to time during the operational life of the Site.

Prior to and following the City's purchase of the Site in April 2007, consultations were conducted between the City and, to varying degrees, the Oneida Nation of the Thames, the Chippewas of the Thames First Nation and the Munsee Delaware First Nation. The Munsee Delaware First Nation later declined to participate; however, the opportunity for their future participation and consultation remained open in 2008 and 2009.

In mid-2013, it was decided that more frequent meetings of this committee would be beneficial. This effort continued into 2017 with nine (9) FNLC meetings with elected and administrative representatives of the Participating First Nations (Oneida and Chippewas). These meetings were held on January 17, February 21, April 4, May 10, June 22, July 12, October 17, November 9, and December 12, 2017.

Topics discussed included the annual reports, odour complaint summaries, operational and environmental monitoring updates, status of construction of Site infrastructure, and City projects and initiatives. There are FNLC meetings planned for 2018.

During 2017, none of the other aforementioned First Nations communicated any desire to consult or communicate directly with the Owner in connection with the operation of the Site.

The Owner is available to engage in good faith consultations should any such communications be received.

5.8 Watershed Diversion

As previously reported, in accordance with Condition 26 of the 2006 EAA Approval, the technical applications under the EPA and OWRA were modified to incorporate the changes to the Site design and operations, monitoring program, and emergency response protocols relating to the management of surface water for the Site Optimization contemplated by the report entitled "Surface Water Assessment Report for the Optimization of the Green Lane Landfill Site" prepared by Conestoga-Rovers & Associates on behalf of the former owner of the Site and dated March 2006 (March 2006 SWAR). Taken together, the current ECA under the EPA and the Amended OWRA ECA, as subsequently amended and re-issued in January 2007, October 2010, and in January 2013, contain or incorporate by reference all of the requirements of the March 2006 SWAR.

The Owner is proceeding with the development of the Site Optimization in accordance with these technical approvals, as required.

Also in accordance with the current ECA and the Amended OWRA ECA, the diversion of surface water to the Dodd Creek continued during 2017 and the Owner is required to continue the diversion during the operational and post closure contaminating life of the Site.

5.9 Property Value Protection Plan

The Owner has continued to honour the requirements of the Property Value Protection Plan (PVPP), as set out in Condition 28 and Schedule A of the 2006 EAA Approval. In 2017, some property owners initiated discussions with the Owner about the PVPP, and it is expected that these discussions will continue into 2018.

5.10 Compliance with EAA Conditions

In all respects, the Owner is in compliance with the 2006 EAA Approval Conditions.

6 Summary and Recommendations

Based on the information contained within this 2017 Annual Progress Report, the following summary and recommendations are presented:

→ A hydraulic trap condition is being maintained along the perimeter of the Interim Expansion Area. However, internal mounding of leachate continues to occur in the Interim Expansion Area. In accordance with a recommendation in the 2009 Annual Progress Report, six (6) leachate extraction wells were installed in the Interim Expansion Area in 2010, as a remedial measure to address the mounding leachate. These wells were retrofitted with pumps in the spring of 2012, with leachate extraction commencing in the summer of 2012.

→ The hydraulic trap in the Long-Term Expansion Area is operating in accordance with the April 1996 D&O Report. However, cleaning and inspection activities completed in 2007 indicated that portions of the perimeter leachate collection pipe in Stages 1 and 2 are blocked or damaged, and the flow of leachate in the pipe is likely being impeded. Contingency remedial works were completed in 2011 along the south side of the Long Term Expansion Area, to augment removal of leachate from Stages 1 and 2. Five (5) leachate extraction wells and five (5) leachate monitoring wells were installed, and Manhole MH21 was converted into a leachate extraction well. These contingency remedial works were completed in accordance with previous consultations with the MOECC in August 2010, and recommendations presented in the 2010 Annual Progress Report. In the spring of 2012, the five (5) extraction wells were retrofitted with pumps. In 2013, leachate extraction in the Long Term Expansion Area commenced via the five (5) leachate extraction wells and MH21. All extracted leachate is pumped to the LCS and collected in the leachate holding tank, for treatment at the LTP.

→ On-Site sampling results during this monitoring period indicate that the downgradient groundwater and surface water quality have not been adversely impacted by landfilling activities. VOC concentrations were non-detectable at respective MDLs for all groundwater monitoring well locations, with the exception of a low level toluene detection at upgradient well OW50-01. The toluene detection at upgradient well OW50-01 was only marginally above the laboratory MDL and was much lower than the MOECC ODWQSO/G. Given the upgradient location, the toluene detection is not related to landfill operations.

→ The Site is in compliance with Regulation 232/98 regarding groundwater impact assessments at the property boundary. Acceptable levels of chloride and boron were measured at all downgradient locations, and the remaining trigger level parameters (chromium, ethylbenzene, benzene, and vinyl chloride) were at non-detectable concentrations in all downgradient wells.

→ The off-Site groundwater sampling results during 2017 indicate that there have been no significant changes in the private well data and the private wells have not been impacted by Landfill activities.

→ Surface water sampling results during the monitoring period indicate Dodd Creek is not being impacted by landfilling activities, including the discharge of on-Site surface water and treated leachate effluent via the Polishing Basin discharge outlet.

→ During the 2017 reporting year, three (3) stormwater discharge events were conducted. The November 2017 stormwater discharge event is ongoing. The 2017 stormwater pre-discharge sample results indicated all parameters were at acceptable levels. Discharge of stormwater from SWM Pond 3 to SWM Pond 6 to the Polishing Basin only occurred when the results of the surface water samples were determined to have met the LTP ECA discharge trigger parameter criteria; or in cases where a parameter concentration exceeded the criteria, only after approval from the MOECC in consultation with KCCA.

→ Operation of the landfill gas management system in 2017 was in accordance with its ECA (Air). Throughout the year, a total of 18 vertical extraction wells were installed in various locations of the Original and Long Term Expansion Area, along with installation/connection of eight (8) horizontal gas collectors in the Original Landfill Area and the Long Term Expansion Area. The extension of the north landfill gas header in the WOA was also completed, along with installation of condensate trap CT-7 and valve chamber VC-9. The electrical connections for CT-7, along with installation of the pump within the structure, is anticipated to be completed in 2018. Regular maintenance was performed on Flare 1 and 2 throughout the year. Construction of Flare 3 was substantially completed in February 2017; however, warranty-related issued were identified. It is anticipated these issues will be resolved in 2018.

→ Construction activities in 2017 included Site development activities of the EOA, including removal of the wooded area north of SWM Ponds 5A and 5B, decommissioning of seven (7) groundwater observation wells, topsoil stripping, construction of the perimeter access roads, construction of a granular “laydown area” for storage of manhole sections, miscellaneous items and heavy equipment, construction of temporary surface water diversion features in the EOA to convey this water to SWM Pond 5B, initial excavation in Stages 15 through 19, and placement of additional material along the north screening berm in the EOA and in various areas of the existing landfill. In the WOA, construction activities included the excavation of the remaining base in the west half of Stage 9 and of small sections in the south end of Stage 10 west and Stage 12 east, and of a small section in the north end of Stage 11. Installation of the leachate collection system in the west half of Stage 9 west, including manhole MH26, was completed, along with installation of the leachate collection system in a section of the south end of Stage 10 west (including the extension of cleanout CO33) and Stage 12 east, and in a section of the north end of Stage 11. The west half of Stage 9 was commissioned on November 21, 2017. Along with the improvements to the landfill gas collection system as noted in the previous paragraph, the leachate holding tank was replaced in order to reduce inflow and infiltration into the existing system, and was commissioned on March 3, 2017. A supplemental pumping station and forcemain was also constructed at SWM Pond 1 to convey surface water from this location to the channel between SWM Ponds 1 and 2. A litter fence was also constructed along the south side of the south access road beginning at the swale between SWM Ponds 2 and 3, and extending west and north along the limit of SWM Pond 2. Additional fill was added to the swale at the southwest end of SWM Pond 2, and the area was topsoiled and seeded, as was the former access ramp at Stockpile 2. Installation of power lines along the south and southeast perimeter of the EOA was also completed, along with the installation of three (3) phase power supply near SWM Pond 3. Also in 2017, removal of the power lines and poles from the Original Landfill Area and Interim Expansion Area, and the removal of the three (3) phase power supply from the former landfill entrance, was completed. Construction activities in 2018 are expected to include the excavation of the east half of Stage 13 in the WOA, installation of the leachate collection system in Stage 13 east, installation of the pump in CT-7, connection of the power supply to CT-7 and to the SWM Pond 1 pumping station in the WOA, and to the temporary surface water diversion features in the EOA, cleaning of the SWM Pond 1 forebay, and continued Site development and excavation activities in the EOA.

→ Cleaning and inspection of the LCS in the Long Term Expansion Area was conducted in late December 2017. Flushing of the lines associated with MH32 appeared to be successful, however, at MH31, it was difficult to ascertain if certain sections had system blockages or, more likely, that the 90 degree bends/transitions inherent in the approved leachate collection system design for manholes and cleanouts obstructed movement of the cleaning equipment. Despite this, the perimeter and base collector pipes continue to appear to remain hydraulically connected, since leachate is able to flow between the LCS manholes. It is recommended that these cleanout sections be reviewed again in 2018. It is also recommended that future inspection and cleaning activities continue to be scheduled during suitable weather conditions.

TABLES

TABLE 2.1
SUMMARY OF MONITORING WELL INSTALLATION DETAILS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Monitoring Well	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Borehole Depth		Screened Interval		Unit Description
			(m bgs)	(m ASL)	(m bgs)	(m ASL)	
OW20-91	227.51	228.41	30.48	197.03	24.38 - 25.91	203.13 - 201.60	Sand and Gravel
OW23A-95	227.91	228.87	30.48	197.43	21.29 - 24.34	206.62 - 203.57	Clayey Silt Till
OW23B-95	227.90	228.78	15.24	212.66	12.19 - 15.24	215.71 - 212.66	Clayey Silt Till
OW24A-95	227.32	228.18	29.57	197.75	21.64 - 24.69	205.68 - 202.63	Clayey Silt Till
OW24B-95	227.23	228.18	15.09	212.14	12.04 - 15.09	215.19 - 212.14	Clayey Silt Till
OW27A-95	230.76	231.48	35.80	194.96	32.75 - 35.80	198.01 - 194.96	Clayey Silt/Gravel
OW27B-95	230.70	231.56	25.03	205.67	20.68 - 23.73	210.02 - 206.97	Silty Sand
OW28A-95	230.28	231.32	32.94	197.34	24.70 - 27.75	205.58 - 202.53	Clayey Silt Till
OW28B-95	230.27	231.38	29.88	200.39	12.50 - 15.55	217.77 - 214.72	Clayey Silt Till
OW29A-95	229.88	231.28	33.33	196.55	24.34 - 27.39	205.54 - 202.49	Clayey Silt Till
OW29B-95	230.24	231.36	18.45	211.79	15.25 - 18.30	214.99 - 211.94	Clayey Silt Till
OW30A-95	232.92	233.72	30.41	202.51	27.36 - 30.41	205.56 - 202.51	Clayey Silt Till
OW30B-95	232.71	233.71	36.31	196.40	18.02 - 21.07	214.69 - 211.64	Clayey Silt Till
OW31A-95	233.39	234.04	36.09	197.30	28.24 - 31.29	205.15 - 202.10	Clayey Silt Till/Gravel
OW31B-95	233.08	233.69	22.02	211.06	18.82 - 21.87	214.26 - 211.21	Clayey Silt Till/Silty Sand
OW32A-95	228.80	229.60	30.48	198.32	24.99 - 28.04	203.81 - 200.76	Clayey Silt Till/Sand Laminations
OW32B-95	228.80	229.64	19.20	209.60	16.00 - 19.05	212.80 - 209.75	Clayey Silt Till/Silty Sands
OW34A-95	228.10	229.08	30.33	197.77	21.34 - 24.38	206.76 - 203.72	Clayey Silt Till
OW34B-95	228.05	228.98	21.34	206.71	12.19 - 15.24	215.86 - 212.81	Clayey Silt Till/Silty Sands
OW37-97	230.77	231.40	8.69	222.08	5.48 - 8.53	225.29 - 222.24	Clayey Silt Till/Silty Sands
OW38-97	232.20	232.83	10.21	221.99	7.01 - 10.06	225.19 - 222.14	Clayey Silt Till/Silty Sands
OW39-99	228.53	229.40	9.45	219.08	5.79 - 8.84	222.74 - 219.69	Clayey Silt Till/Silty Sands
OW40-99	229.00	229.84	8.31	220.69	4.59 - 7.64	224.41 - 221.36	Clayey Silt Till
OW41A-01	233.28	234.07	35.97	197.31	24.38 - 27.43	208.90 - 205.85	Clayey Silt Till
OW41B-01	233.27	234.17	12.34	220.93	9.14 - 12.19	224.13 - 221.08	Sand and Silt
OW42A-01	234.50	235.38	34.44	200.06	24.38 - 27.43	210.12 - 207.07	Clayey Silt Till

Notes:
- m ASL - metres above sea level
- mm denotes millimetres
- reference elevation is the top of the monitoring well riser pipe
- m bgs - metres below ground surface

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Monitoring Well	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Borehole Depth		Screened Interval						Unit Description
			(m bgs)	(m ASL)	(m bgs)			(m ASL)			
OW42B-01	234.50	235.15	13.26	221.24	10.05	-	13.11	224.45	-	221.39	Silty Sand
OW43A-01	234.18	235.00	35.97	198.21	24.38	-	27.43	209.80	-	206.75	Clayey Silt Till
OW43B-01	234.06	234.98	12.34	221.72	9.14	-	12.19	224.92	-	221.87	Clayey Silt Till
OW44A-01	233.81	234.66	45.72	188.09	24.38	-	27.43	209.43	-	206.38	Clayey Silt Till
OW44B-01	233.81	234.30	12.95	220.86	9.75	-	12.80	224.06	-	221.01	Silty Sand/Clayey Silt Till
OW45A-01	233.41	234.40	35.97	197.44	24.38	-	27.43	209.03	-	205.98	Clayey Silt Till
OW45B-01	233.40	234.34	10.82	222.58	7.62	-	10.67	225.78	-	222.73	Clayey Silt Till
OW46A-01	232.71	233.57	34.75	197.96	24.38	-	27.43	208.33	-	205.28	Clayey Silt Till
OW46B-01	232.63	233.53	12.73	219.90	9.07	-	12.12	223.56	-	220.51	Silty Sand/Clayey Silt Till
OW47A-01	230.84	231.77	34.44	196.40	24.38	-	27.43	206.46	-	203.41	Clayey Silt Till
OW47B-01	230.89	231.87	12.50	218.39	9.14	-	12.19	221.75	-	218.70	Clayey Silt Till
OW48A-01	230.18	231.20	29.87	200.31	22.86	-	25.91	207.32	-	204.27	Clayey Silt Till
OW48B-01	230.19	231.18	14.02	216.17	10.67	-	13.72	219.52	-	216.47	Sand
OW50-01	232.10	232.85	29.87	202.23	10.05	-	13.11	222.05	-	218.99	Silty Sand Seams in Clay
OW51A-07	231.10	231.92	35.05	196.05	21.40	-	24.44	209.70	-	206.66	Silty Sand/Gravel in Clayey Silt Till
OW51B-07	230.97	231.90	12.19	218.78	9.05	-	12.10	221.92	-	218.87	Silty Sand/Gravel in Clayey Silt Till
OW52A-07	227.15	227.99	35.05	192.10	24.38	-	27.43	202.77	-	199.72	Clayey Silt Till
OW52B-07	227.04	228.02	12.19	214.85	9.02	-	12.06	218.02	-	214.98	Clayey Silt Till
LW1-91	238.56	239.28	14.49	224.07	7.78	-	12.35	230.78	-	226.21	Refuse
LW2-07	254.34	255.25	27.31	227.03	19.94	-	26.03	234.40	-	228.31	Refuse
LW3-16	242.88	243.93	15.24	227.64	10.21	-	14.94	232.67	-	227.94	Refuse
LW4-04	239.45	240.74	17.03	222.42	4.11	-	16.92	235.34	-	222.53	Refuse
LW5-04	241.72	243.20	18.64	223.08	4.27	-	20.42	237.45	-	221.30	Refuse
LW6-04	241.32	242.55	14.60	226.72	4.27	-	16.46	237.05	-	224.86	Refuse
LW7-09	240.59	241.67	19.96	220.63	13.87	-	19.96	226.72	-	220.63	Refuse
LW8-09	245.91	246.64	26.72	219.19	16.46	-	25.60	229.45	-	220.31	Refuse
LW9-13	243.68	244.51	34.41	209.27	24.81	-	33.95	218.87	-	209.73	Refuse

Notes:
- m ASL - metres above sea level
- mm denotes millimetres
- reference elevation is the top of the monitoring well riser pipe
- m bgs - metres below ground surface

TABLE 2.2
SUMMARY OF MONITORING REQUIREMENTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Activity	Location	Frequency	Analysis / Measurement
Groundwater Level Monitoring	OW20-91, OW23A-95, OW23B-95, OW24A-95, OW24B-95, OW27A-95, OW27B-95, OW28A-95, OW28B-95, OW29A-95, OW29B-95, OW30A-95, OW30B-95, OW31A-95, OW31B-95, OW32A-95, OW32B-95, OW34A-95, OW34B-95, OW37-97, OW38-97, OW39-99, OW40-99, OW41A-01, OW41B-01, OW42A-01, OW42B-01, OW43A-01, OW43B-01, OW44A-01, OW44B-01, OW45A-01, OW45B-01, OW46A-01, OW46B-01, OW47A-01, OW47B-01, OW48A-01, OW48B-01, OW50-01, OW51A-07, OW51B-07, OW52A-07, OW52B-07	Quarterly	Water level measurement
Leachate Level Monitoring	**Leachate Wells:** LW1-91, LW2-07, LW3-16, LW4-04, LW5-04, LW6-04, LW7-09, LW8-09, LW9-13 **Manholes:** MH11, MH19, MH23, MH29	Monthly	Water level measurement
Groundwater Sampling	OW20-91, OW23B-95, OW24B-95, OW27A-95, OW27B-95, OW28B-95, OW29B-95, OW30B-95, OW31B-95, OW32B-95, OW34B-95, OW37-97, OW38-97, OW39-99, OW40-99, OW41B-01, OW42B-01, OW43B-01, OW44A-01, OW44B-01, OW45B-01, OW46B-01, OW47B-01, OW48B-01, OW50-01, OW51A-07, OW51B-07, OW52B-07	Annual - May	**Field Parameters:** pH, conductivity, temperature **General Parameters:** alkalinity, COD, chloride, DOC, conductivity, pH, hardness, nitrate, nitrite, un-ionized ammonia, phenols, sulphate, TDS, TKN **Dissolved Metals:** arsenic, barium, boron, cadmium, calcium, chromium, copper, iron, lead, magnesium, manganese, mercury, phosphorus, potassium, sodium, zinc **VOCs:** benzene, ethylbenzene, toluene, vinyl chloride, 1,4-dichlorobenzene, dichloromethane
	OW20-91, OW28B-95, OW31B-95, OW34B-95, OW37-97, OW42B-01, OW44B-01, OW46B-01, OW48B-01, OW50-01, OW52B-07	Annual - November	**Field Parameters:** pH, conductivity, temperature **General Parameters:** alkalinity, COD, chloride, DOC, conductivity, pH, hardness, nitrate, nitrite, un-ionized ammonia, phenols, sulphate, TDS, TKN
	Private Wells: M, AA	Semi-Annual	**Field Parameters:** pH, conductivity, temperature **General Parameters:** alkalinity, chloride, DOC, conductivity, pH, hardness, nitrate, un-ionized ammonia, sulphate, TDS **Total Metals:** barium, boron, calcium, iron, magnesium, sodium
Leachate Sampling	**Leachate Wells:** LW3-16 **Manholes:** MH11, MH19, MH23, MH29 **Leachate Holding Tank**	Annual - May	**Field Parameters:** pH, conductivity, temperature **General Parameters:** alkalinity, BOD_5, COD, chloride, DOC, conductivity, pH, hardness, nitrate, nitrite, un-ionized ammonia, phenols, sulphate, TDS, TKN, TSS **Total Metals:** arsenic, barium, boron, cadmium, calcium, chromium, copper, iron, lead, magnesium, manganese, mercury, phosphorus, potassium, sodium, zinc **VOCs:** benzene, ethylbenzene, toluene, vinyl chloride, 1,4-dichlorobenzene, dichloromethane
	Leachate Holding Tank	Monthly	**Field Parameters:** pH, conductivity, temperature **General Parameters:** alkalinity, BOD_5, COD, chloride, DOC, hardness, nitrate, nitrite, un-ionized ammonia, phenols, sulphate, TKN, TSS **Total Metals:** calcium, iron, magnesium, phosphorus, sodium

TABLE 2.2
SUMMARY OF MONITORING REQUIREMENTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Activity	Location and Geologic Unit	Frequency	Analysis / Measurement
Surface Water and Stormwater Sampling	**Station:** Dodd Creek STA5, Dodd Creek STA6	Semi-annual – March and August	**Field Parameters:** pH, conductivity, temperature, dissolved oxygen, flow rate **General Parameters:** alkalinity, BOD_5, $CBOD_5$, COD, chloride, conductivity, pH, hardness, nitrate, nitrite, un-ionized ammonia, phenols, sulphate, TDS, TKN, TSS, total phosphorus **Total Metals:** iron
	Station: SWM Pond 3	Quarterly	**Field Parameters:** pH, conductivity, temperature, dissolved oxygen **General Parameters:** alkalinity, BOD_5, $CBOD_5$, COD, chloride, conductivity, pH, hardness, nitrate, nitrite, total ammonia, un-ionized ammonia, phenols, sulphate, TDS, TKN, TSS, total phosphorus **Total Metals:** arsenic, barium, boron, cadmium, chromium, copper, iron, lead, zinc
	Station: Dodd Creek STA5, Dodd Creek STA6	Semi-annual – May and November	**Field Parameters:** pH, conductivity, temperature, dissolved oxygen, flow rate **General Parameters:** alkalinity, BOD_5, $CBOD_5$, COD, chloride, conductivity, pH, hardness, nitrate, nitrite, un-ionized ammonia, phenols, sulphate, TDS, TKN, TSS, total phosphorus **Total Metals:** arsenic, barium, boron, cadmium, chromium, copper, iron, lead, zinc **Dissolved Mercury**
	Station: Williams Pond	Semi-Annual	**Field Parameters:** pH, conductivity, temperature, dissolved oxygen, flow rate **General Parameters:** alkalinity, BOD_5, COD, chloride, conductivity, pH, hardness, nitrate, nitrite, un-ionized ammonia, phenols, sodium, sulphate, TDS, TKN, TSS, total phosphorus **Total Metals:** arsenic, barium, boron, cadmium, chromium, copper, iron, lead, zinc **Dissolved Mercury**
	Station: Dodd Creek STA5, Dodd Creek STA6	6 additional sampling events in conjunction with KCCA	**Field Parameters:** pH, conductivity, temperature, dissolved oxygen, flow rate **General Parameters:** alkalinity, BOD_5, COD, chloride, conductivity, pH, hardness, nitrate, nitrite, ammonia, un-ionized ammonia, phenols, sulphate, TDS, TKN, total phosphorus, TSS, calcium, magnesium, sodium, iron

TABLE 2.3
SUMMARY OF QUARTERLY GROUNDWATER ELEVATIONS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Groundwater Elevation (m ASL)			
			09-Feb-17	17-May-17	09-Aug-17	06-Nov-17
OW20-91	**227.45**	**228.44**	227.06	227.28	227.17	227.41
OW23A-95	**227.91**	**228.87**	227.12	227.43	227.02	227.25
OW23B-95	**227.90**	**228.78**	227.87	227.50	226.11	225.88
OW24A-95	**227.32**	**228.18**	224.36	224.62	224.40	224.64
OW24B-95	**227.23**	**228.18**	224.93	224.76	223.07	223.96
OW27A-95	**230.76**	**231.48**	224.47	223.97	223.52	223.52
OW27B-95	**230.70**	**231.56**	226.73	225.28	224.81	224.87
OW28A-95	**230.28**	**231.32**	227.56	226.97	226.80	226.51
OW28B-95	**230.27**	**231.38**	227.77	227.86	226.86	227.44
OW29A-95	**229.88**	**231.28**	228.85	228.39	228.22	228.18
OW29B-95	**230.24**	**231.36**	228.28	228.17	227.95	228.06
OW30A-95	**232.92**	**233.72**	228.62	230.20	230.17	230.26
OW30B-95	**232.71**	**233.71**	227.59	228.59	226.67	228.02
OW31A-95	**233.39**	**234.04**	228.06	228.24	227.76	227.78
OW31B-95	**233.08**	**233.69**	228.81	228.92	228.86	228.68
OW32A-95	**228.80**	**229.60**	229.10	229.10	229.60	229.60
OW32B-95	**228.80**	**229.64**	229.14	229.14	229.56	229.64
OW34A-95	**228.10**	**229.08**	226.38	226.14	226.09	226.06
OW34B-95	**228.05**	**228.98**	225.08	224.97	225.22	224.59
OW37-97	**230.77**	**231.40**	231.26	231.23	230.90	230.86
OW38-97	**232.20**	**232.83**	231.65	231.72	231.50	231.42
OW39-99	**228.53**	**229.40**	229.05	229.35	229.14	229.08
OW40-99	**229.00**	**229.84**	228.26	228.48	227.78	227.02
OW41A-01	**233.28**	**234.07**	232.92	232.88	233.00	233.23
OW41B-01	**233.27**	**234.17**	233.03	232.77	232.05	232.74
OW42A-01	**234.50**	**235.38**	234.29	234.27	234.14	234.73
OW42B-01	**234.50**	**235.15**	234.30	234.35	233.87	234.15
OW43A-01	**234.18**	**235.00**	233.85	233.82	233.65	233.71
OW43B-01	**234.06**	**234.98**	233.70	233.64	233.29	232.97
OW44A-01	**233.81**	**234.66**	233.58	233.40	232.31	232.78
OW44B-01	**233.81**	**234.30**	233.23	233.23	232.87	232.49
OW45A-01	**233.41**	**234.40**	232.65	232.58	232.35	231.84
OW45B-01	**233.40**	**234.34**	232.34	232.46	232.14	231.08
OW46A-01	**232.71**	**233.57**	232.43	232.29	232.26	231.78
OW46B-01	**232.63**	**233.53**	231.86	231.78	231.53	230.94
OW47A-01	**230.84**	**231.77**	230.57	230.51	230.29	230.69
OW47B-01	**230.89**	**231.87**	230.51	230.65	230.35	228.44
OW48A-01	**230.18**	**231.20**	228.24	228.10	227.70	227.56
OW48B-01	**230.19**	**231.18**	227.78	226.99	226.51	226.38
OW50-01	**232.10**	**232.85**	231.40	231.55	230.92	230.52
OW51A-07	**231.10**	**231.92**	227.64	227.69	227.42	226.86

TABLE 2.3
SUMMARY OF QUARTERLY GROUNDWATER ELEVATIONS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Groundwater Elevation (m ASL)			
			09-Feb-17	17-May-17	09-Aug-17	06-Nov-17
OW51B-07	230.97	231.90	227.65	227.66	227.37	226.67
OW52A-07	227.15	227.99	224.11	223.76	223.42	223.47
OW52B-07	227.04	228.02	219.66	226.69	220.50	219.00

Notes: • m ASL denotes metres above sea level.

TABLE 2.4
SUMMARY OF MONTHLY LEACHATE LEVELS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Measuring Point Elevation (m ASL)	Trigger Level (m ASL)	Leachate Level Elevation (m ASL)					
				05-Jan-17	09-Feb-17	14-Mar-17	13-Apr-17	17-May-17	14-Jun-17
LW1-91	**238.56**	**239.28**	**NA**	233.07	232.98	232.92	233.08	233.28	232.93
LW2-07	**254.34**	**255.25**	**NA**	237.40	237.58	237.55	237.59	237.77	237.20
LW3-16	**242.88**	**243.93**	**NA**	236.37	236.27	236.23	236.46	236.21	235.33
LW4-04	**239.45**	**240.74**	**225.00**	232.24	232.13	232.10	232.50	232.77	230.89
LW5-04	**241.72**	**243.20**	**225.00**	234.47	234.50	234.52	235.08	235.15	233.33
LW6-04	**241.32**	**242.55**	**225.00**	231.45	231.42	231.38	231.93	232.19	231.60
LW7-09	**240.59**	**241.67**	**225.00**	226.73	228.61	228.30	227.52	226.68	226.35
LW8-09	**245.91**	**246.64**	**224.00**	232.49	232.38	232.44	232.30	232.80	232.49
LW9-13	**243.68**	**244.51**	**224.00**	235.64	235.59	235.58	235.44	235.60	235.28
MH11 *	**233.61**	**234.40**	**225.00**	225.50	227.20	226.11	225.28	224.25	223.64
MH19	**241.05**	**242.51**	**224.00**	224.06	223.34	223.46	226.28	227.17	223.46
MH23	**231.41**	**232.41**	**224.00**	220.94	220.84	220.76	220.84	221.16	220.38
MH29	**235.95**	**236.95**	**224.00**	207.15	207.04	206.97	207.13	207.52	<206.45

Notes:
- m ASL denotes metres above sea level.
- NA - Not applicable; the well is within the Original Landfill Area for which there is no trigger level.
- * - a new manhole lid was installed on MH11 in late January 2017, which changed the measuring point elevation to 234.40 mASL.
- < - denotes that the liquid level is below this elevation; due to equipment constraints, a level was unable to be measured lower than this point.

TABLE 2.4
SUMMARY OF MONTHLY LEACHATE LEVELS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Measuring Point Elevation (m ASL)	Trigger Level (m ASL)	Leachate Level Elevation (m ASL)					
				06-Jul-17	09-Aug-17	05-Sep-17	03-Oct-17	06-Nov-17	06-Dec-17
LW1-91	**238.56**	**239.28**	**NA**	232.98	232.91	232.96	232.93	232.97	233.15
LW2-07	**254.34**	**255.25**	**NA**	237.20	237.13	237.32	237.25	237.54	237.79
LW3-16	**242.88**	**243.93**	**NA**	235.32	235.29	236.23	235.98	236.17	236.29
LW4-04	**239.45**	**240.74**	**225.00**	231.59	231.62	232.51	232.31	232.41	232.58
LW5-04	**241.72**	**243.20**	**225.00**	235.02	235.15	234.91	234.95	235.39	235.69
LW6-04	**241.32**	**242.55**	**225.00**	231.27	231.23	231.31	231.26	232.64	232.91
LW7-09	**240.59**	**241.67**	**225.00**	226.37	226.31	226.55	226.75	226.39	226.39
LW8-09	**245.91**	**246.64**	**224.00**	232.44	230.91	232.08	232.04	232.37	232.43
LW9-13	**243.68**	**244.51**	**224.00**	235.26	235.09	235.21	235.19	235.75	235.42
MH11	**233.61**	**234.40**	**225.00**	223.35	224.47	224.83	224.15	225.48	224.88
MH19	**241.05**	**242.51**	**224.00**	223.38	223.46	224.31	223.46	224.15	224.94
MH23	**231.41**	**232.41**	**224.00**	220.31	220.23	220.28	220.26	220.95	220.46
MH29	**235.95**	**236.95**	**224.00**	<206.45	<206.45	206.60	206.55	207.30	207.44

Notes:
- m ASL denotes metres above sea level.
- NA - Not applicable; the well is within the Original Landfill Area for which there is no trigger level.
- * - a new manhole lid was installed on MH11 in late January 2017, which changed the measuring point elevation to 234.40 mASL.
- < - denotes that the liquid level is below this elevation; due to equipment constraints, a level was unable to be measured lower than this point.

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TABLE 2.5
SUMMARY OF VERTICAL HYDRAULIC GRADIENTS FOR NESTED MONITORING WELLS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Nested Well Location	Vertical Gradient (m/m)							
	9-Feb-17		17-May-17		9-Aug-17		6-Nov-17	
OW23A/23B-95	-0.083	(downward)	-0.008	(downward)	0.100	(upward)	0.151	(upward)
OW24A/24B-95	-0.060	(downward)	-0.015	(downward)	0.140	(upward)	0.072	(upward)
OW27A/27B-95	-0.188	(downward)	-0.109	(downward)	-0.107	(downward)	-0.112	(downward)
OW28A/28B-95	-0.017	(downward)	-0.073	(downward)	-0.005	(downward)	-0.076	(downward)
OW29A/29B-95	0.059	(upward)	0.022	(upward)	0.028	(upward)	0.012	(upward)
OW30A/30B-95	0.113	(upward)	0.176	(upward)	0.383	(upward)	0.245	(upward)
OW31A/31B-95	-0.082	(downward)	-0.075	(downward)	-0.121	(downward)	-0.099	(downward)
OW32A/32B-95	-0.004	(downward)	-0.004	(downward)	0.004	(upward)	-0.004	(downward)
OW34A/34B-95	0.143	(upward)	0.129	(upward)	0.096	(upward)	0.162	(upward)
OW35A/35B-95	0.000	(upward)	0.000	(upward)	0.000	(upward)	0.000	(upward)
OW36A/36B-95	0.000	(upward)	0.000	(upward)	0.000	(upward)	0.000	(upward)
OW41A/41B-01	-0.007	(downward)	0.007	(upward)	0.062	(upward)	0.032	(upward)
OW42A/42B-01	-0.001	(downward)	-0.006	(downward)	0.019	(upward)	0.040	(upward)
OW43A/43B-01	0.010	(upward)	0.012	(upward)	0.024	(upward)	0.049	(upward)
OW44A/44B-01	0.024	(upward)	0.012	(upward)	-0.038	(downward)	0.020	(upward)
OW45A/45B-01	0.019	(upward)	0.007	(upward)	0.013	(upward)	0.045	(upward)
OW46A/46B-01	0.037	(upward)	0.033	(upward)	0.048	(upward)	0.055	(upward)
OW47A/47B-01	0.004	(upward)	-0.009	(downward)	-0.004	(downward)	0.147	(upward)
OW48A/48B-01	0.038	(upward)	0.091	(upward)	0.098	(upward)	0.097	(upward)
OW49A/49B-01	0.000	(upward)	0.000	(upward)	0.000	(upward)	0.000	(upward)
OW51A/51B-07	-0.001	(downward)	0.002	(upward)	0.004	(upward)	0.016	(upward)
OW52A/52B-07	0.292	(upward)	-0.192	(downward)	0.191	(upward)	0.293	(upward)

Notes: • Negative (-) vertical hydraulic gradients are downward.

TABLE 2.6
MONITORING NETWORK FOR THE GENERATION OF SHALLOW GROUNDWATER CONTOURS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Monitoring Well	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Borehole Depth		Screened Interval		Unit Description	Rationale
			(m bgs)	(m ASL)	(m bgs)	(m ASL)		
OW23B-95	227.90	228.78	15.24	212.66	12.19 - 15.24	215.71 - 212.66	Clayey Silt Till	Shallower Well of Nested Location
OW24B-95	227.23	228.18	15.09	212.14	12.04 - 15.09	215.19 - 212.14	Clayey Silt Till	Shallower Well of Nested Location
OW27B-95	230.70	231.56	25.03	205.67	20.68 - 23.73	210.02 - 206.97	Silty Sand	Shallower Well of Nested Location
OW28B-95	230.27	231.38	29.88	200.39	12.50 - 15.55	217.77 - 214.72	Clayey Silt Till	Shallower Well of Nested Location
OW29B-95	230.24	231.36	18.45	211.79	15.25 - 18.30	214.99 - 211.94	Clayey Silt Till	Shallower Well of Nested Location
OW30B-95	232.71	233.71	36.31	196.40	18.02 - 21.07	214.69 - 211.64	Clayey Silt Till	Shallower Well of Nested Location
OW31B-95	233.08	233.69	22.02	211.06	18.82 - 21.87	214.26 - 211.21	Clayey Silt Till/Silty Sand	Shallower Well of Nested Location
OW32B-95	228.80	229.64	19.20	209.60	16.00 - 19.05	212.80 - 209.75	Clayey Silt Till/Silty Sands	Shallower Well of Nested Location
OW34B-95	228.05	228.98	21.34	206.71	12.19 - 15.24	215.86 - 212.81	Clayey Silt Till/Silty Sands	Shallower Well of Nested Location
OW37-97	230.77	231.40	8.69	222.08	5.48 - 8.53	225.29 - 222.24	Clayey Silt Till/Silty Sands	Shallow Well
OW38-97	232.20	232.83	10.21	221.99	7.01 - 10.06	225.19 - 222.14	Clayey Silt Till/Silty Sands	Shallow Well
OW39-99	228.53	229.40	9.45	219.08	5.79 - 8.84	222.74 - 219.69	Clayey Silt Till/Silty Sands	Shallow Well
OW40-99	229.00	229.84	8.31	220.69	4.59 - 7.64	224.41 - 221.36	Clayey Silt Till	Shallow Well
OW41B-01	233.27	234.17	12.34	220.93	9.14 - 12.19	224.13 - 221.08	Sand and Silt	Shallower Well of Nested Location
OW42B-01	234.50	235.15	13.26	221.24	10.05 - 13.11	224.45 - 221.39	Silty Sand	Shallower Well of Nested Location
OW43B-01	234.06	234.98	12.34	221.72	9.14 - 12.19	224.92 - 221.87	Clayey Silt Till	Shallower Well of Nested Location
OW44B-01	233.81	234.30	12.95	220.86	9.75 - 12.80	224.06 - 221.01	Silty Sand/Clayey Silt Till	Shallower Well of Nested Location
OW45B-01	233.40	234.34	10.82	222.58	7.62 - 10.67	225.78 - 222.73	Clayey Silt Till	Shallower Well of Nested Location

Notes:
- m ASL - metres above sea level
- mm denotes millimetres
- reference elevation is the top of the monitoring well riser pipe
- m bgs - metres below ground surface

TABLE 2.6
MONITORING NETWORK FOR THE GENERATION OF SHALLOW GROUNDWATER CONTOURS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Monitoring Well	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Borehole Depth		Screened Interval				Unit Description	Rationale
			(m bgs)	(m ASL)	(m bgs)		(m ASL)			
OW46B-01	232.63	233.53	12.73	219.90	9.07	- 12.12	223.56	- 220.51	Silty Sand/Clayey Silt Till	Shallower Well of Nested Location
OW47B-01	230.89	231.87	12.50	218.39	9.14	- 12.19	221.75	- 218.70	Clayey Silt Till	Shallower Well of Nested Location
OW48B-01	230.19	231.18	14.02	216.17	10.67	- 13.72	219.52	- 216.47	Sand	Shallower Well of Nested Location
OW50-01	232.10	232.85	29.87	202.23	10.05	- 13.11	222.05	- 218.99	Silty Sand Seams in Clay	Shallow Well
OW51B-07	230.97	231.90	12.19	218.78	9.05	- 12.10	221.92	- 218.87	Silty Sand/Gravel in Clayey Silt Till	Shallower Well of Nested Location
OW52B-07	227.04	228.02	12.19	214.85	9.02	- 12.06	218.02	- 214.98	Clayey Silt Till	Shallower Well of Nested Location
LW1-91	238.56	239.28	14.49	224.07	7.78	- 12.35	230.78	- 226.21	Refuse	Leachate Well
LW2-07	254.34	255.25	27.31	227.03	19.94	- 26.03	234.40	- 228.31	Refuse	Leachate Well
LW3-16	242.88	243.93	15.24	227.64	10.21	- 14.94	232.67	- 227.94	Refuse	Leachate Well
LW4-04	239.45	240.74	17.03	222.42	4.11	- 16.92	235.34	- 222.53	Refuse	Leachate Well
LW5-04	241.72	243.20	18.64	223.08	4.27	- 20.42	237.45	- 221.30	Refuse	Leachate Well
LW6-04	241.32	242.55	14.60	226.72	4.27	- 16.46	237.05	- 224.86	Refuse	Leachate Well
LW7-09	240.59	241.67	19.96	220.63	13.87	- 19.96	226.72	- 220.63	Refuse	Leachate Well
LW8-09	245.91	246.64	26.72	219.19	16.46	- 25.60	229.45	- 220.31	Refuse	Leachate Well
LW9-13	243.68	244.51	34.41	209.27	24.81	- 33.95	218.87	- 209.73	Refuse	Leachate Well

Notes:
- m ASL - metres above sea level
- mm denotes millimetres
- reference elevation is the top of the monitoring well riser pipe
- m bgs - metres below ground surface

wsp

TABLE 2.7
SUMMARY OF PRIVATE WELL DETAILS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Private Well Label	Sampled Well Designation	Type of Well	Historical Residents
1	-	BORED	S. Parsons (1987)
2	-	BORED	J. Wolfe (1986)
3	-	BORED	K. Pearn (1989)
4	-	CABLE TOOL	K. Pearn (1989)
5	Y	CABLE TOOL	Dr. W.G. Sloan (1989) Sivyer/Carroll (1996-1999) R. Bramley (2000) Papineau (2001)
6	R	BORED	M. Hennessey (1986) I. Tasker (1991-2001)
7	K	DUG	R. Cole (1974)
8	-	BORED	J. McNiven (1986)
9	-	BORED	H. Pennings (1978)
10	-	BORED	S. Race (1964)
11	A	DUG	H. Monteith (1978) R.D. Jenken (1978-1981)
12	**AA***	BORED	W. Roelofs (1976-1995) A. Kimble (1996-1997) K. Hartviksen (1998-1999) **Roelofs (2001-2017)**

Notes:
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- C - supplies two residences.
- E - supplies the Ward residence and the Green Lane Landfill office, hauled water.
- A, D, E, K, L - wells supplemented by hauled water.
- M - monitored May 1989 to November 2002; monitoring resumed in May 2007.
- N, P, Q, R, S - monitored beginning November 1996.
- T, U, V, X, Y, Z - monitored beginning March 1997.
- AA - monitored beginning May 1997.

TABLE 2.7
SUMMARY OF PRIVATE WELL DETAILS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Private Well Label	Sampled Well Designation	Type of Well	Historical Residents
	B	DUG	Gatfield (1978-1979)
13	W	DRILLED	Gatfield (1981) H. Degraw (1996-2002)
14	-	DRILLED	R. Bogart (1952)
15	-	DRILLED	J. Volfs (1973)
16	-	BORED	Bowe (1976)
17	-	-	J. Janes (1974)
18	-	BORED	B. Koteles (1976)
19	-	BORED	B. Janes (1979)
20	-	BORED	K. Pearn (1976)
21	-	DRILLED	K. Pearn (1976)
22	-	BORED	J. Janes (1969)
23	-	BORED	M. Quinn (1984)
24	C	DRILLED AND BORED	Janes Pumphouse (1974-2000)
25	-	BORED	L. Patan (1978)
26	G	DUG	C. LaCroix (1978-1981) Roberts (1981-1987) T. Koerner (1989-1997) W. Schmidt (1997-2001)

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TABLE 2.7
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2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Private Well Label	Sampled Well Designation	Type of Well	Historical Residents
27	E	DUG	Landfill Office R. Whitcroft (1974-1984) Buko (1984-1987) Ward (1987-2001)
28	J	DRILLED	G. Hopper (1978-1984) David (1984-1987) Smurmanski (1988-1989) Stricker (1989-1994) S. Cerenzia (1994-2001)
29	-	BORED	J. Beharrell (1972)
30	-	DRILLED	J. Beharrell (1981)
31	H	DRILLED	D. Parsons (1979) D. Shore (1980-1981)
32	-	DRILLED	W. Latimer (1963)
33	-	DRILLED	W. Latimer (1963)
34	-	DRILLED	E. Latimer & Sons (1964)
35	D	SUMP	White (1974) E. Sararas (1978-1981) Debeck or Carr (a.k.a.)
36	L	DUG	H. Edison (1974-1989) R. McIntyre (1989-1995) D. Hepburn (1995-2000) Chambers (2001)

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- M - monitored May 1989 to November 2002; monitoring resumed in May 2007.
- N, P, Q, R, S - monitored beginning November 1996.
- T, U, V, X, Y, Z - monitored beginning March 1997.
- AA - monitored beginning May 1997.

TABLE 2.7
SUMMARY OF PRIVATE WELL DETAILS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Private Well Label	Sampled Well Designation	Type of Well	Historical Residents
37	F	DRILLED	J. Smith (1978-1981) Shearer (1981-1994) Dr. Baxter (1994-1999) Les Thomas (1999-2000) Peacock (2001-2003)
38	I	-	K. Bawden (1974)
39	**M***	DUG	**C.G. Williams (1989-2002; 2007-2017)**
40	-	DRILLED	Jerry Byloc (1975)
41	-	DRILLED	Elgin Lumber-Package (1975)
42	-	DRILLED	Larry Monteith (1975)
43	P	DUG	N. Hamacher (1989-2001)
44	Q	DRILLED	D. Harris
45	S	DRILLED	S. Francis (1996-2001)
47	N	DUG	E. Boswell (1989-2011)
48	T	DRILLED	T. Alden (1996-2003)
49	U	DUG	M. Bruce (1994-2003)
50	V	DRILLED	D. Clark (1996-1998)
51	X	DRILLED	C. Robertson (1976-2003)
52	Z	DRILLED	D. Thornton (1994-2001)
53	BB	DRILLED	J. McKinnon (1984-2003)

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- M - monitored May 1989 to November 2002; monitoring resumed in May 2007.
- N, P, Q, R, S - monitored beginning November 1996.
- T, U, V, X, Y, Z - monitored beginning March 1997.
- AA - monitored beginning May 1997.

TABLE 2.8
SUMMARY OF GROUNDWATER GENERAL CHEMISTRY RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	OW20-91				OW23B-95		OW24B-95		OW27A-95	
			9-May-16	9-Nov-16	17-May-17	7-Nov-17	9-May-16	18-May-17	9-May-16	17-May-17	12-May-16	19-May-17
General Chemistry												
Alkalinity	mg/L	30 - 500	138	130	134	136	252	238	127	116	139	140
Ammonia	mg/L	-	0.04	0.20	0.09	0.06	<0.02	0.04	<0.02	0.10	0.15	0.24
Chloride	mg/L	250	35.1	34.3	34.0	33.7	20.1	18.8	21.9	20.8	55.5	51.0
Field Conductivity	µS/cm	-	292	305	300	380	530	556	527	533	501	573
Laboratory Conductivity	µS/cm	-	373	356	364	363	674	656	675	641	633	581
Total Hardness	mg/L	80 - 100	39.6	35.6	37.7	37.4	174	161	109	98.0	105	81.7
Nitrate	mg/L	10.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.10	<0.10	<0.10
Nitrite	mg/L	1.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.10	<0.10	<0.10
Field pH	SU	6.5 - 8.5	7.84	8.78	7.92	8.20	7.49	7.78	7.92	8.03	7.75	6.94
Laboratory pH	SU	6.5 - 8.5	8.04	8.07	8.20	7.86	8.28	8.29	8.07	8.17	8.04	7.62
Phenols	mg/L	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	500	0.32	1.76	0.28	0.15	83.6	78.7	184	165	115	71
Total Kjeldahl Nitrogen	mg/L	-	0.26	0.29	0.29	0.45	0.22	0.15	0.19	0.23	0.40	0.56
Total Dissolved Solids	mg/L	500	204	200	192	196	380	344	376	368	356	302
Chemical Oxygen Demand	mg/L	-	6	<5	14	<5	<5	10	<5	14	10	6
Dissolved Organic Carbon	mg/L	5	5.6	3.9	4.4	4.2	2.2	2.4	4.2	2.2	5.5	4.1
Temperature	ºC	-	12.5	8.4	13.89	10.1	12.7	11.95	11.3	14.28	12.0	9.76

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre
- SU - Scientific Units, µS/cm - microSiemens per centimetre, ºC - degrees Celsius

TABLE 2.8
SUMMARY OF GROUNDWATER GENERAL CHEMISTRY RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	OW27B-95		OW28B-95				OW29B-95		OW30B-95	
			12-May-16	19-May-17	12-May-16	8-Nov-16	19-May-17	7-Nov-17	12-May-16	19-May-17	12-May-16	24-May-17
General Chemistry												
Alkalinity	mg/L	30 - 500	168	152	135	125	130	132	133	122	147	140
Ammonia	mg/L	-	0.12	0.19	<0.02	<0.02	0.10	<0.02	<0.02	0.05	<0.02	0.12
Chloride	mg/L	250	35.0	31.3	18.8	16.9	15.9	17.1	31.4	28.2	21.5	18.9
Field Conductivity	µS/cm	-	525	536	500	578	526	640	371	394	375	349
Laboratory Conductivity	µS/cm	-	666	626	622	593	606	606	473	461	430	433
Total Hardness	mg/L	80 - 100	130	106	107	98.8	97.3	93.3	56.7	56.4	49.1	48.0
Nitrate	mg/L	10.0	<0.25	<0.10	<0.10	<0.05	<0.10	<0.10	0.10	0.06	<0.05	<0.05
Nitrite	mg/L	1.0	<0.25	<0.10	<0.10	<0.05	<0.10	<0.10	<0.05	<0.05	<0.05	<0.05
Field pH	SU	6.5 - 8.5	7.77	7.65	7.81	8.45	7.84	8.02	8.00	8.00	7.70	8.28
Laboratory pH	SU	6.5 - 8.5	8.17	8.11	8.08	8.02	8.11	7.85	8.09	8.13	8.12	8.10
Phenols	mg/L	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	500	135	113	175	139	141	144	68.6	65.8	47.2	38.3
Total Kjeldahl Nitrogen	mg/L	-	0.22	0.30	<0.10	0.19	0.20	0.18	0.11	0.18	<0.10	0.27
Total Dissolved Solids	mg/L	500	382	344	358	358	338	348	264	242	232	226
Chemical Oxygen Demand	mg/L	-	5	11	<5	<5	6	<5	12	9	9	7
Dissolved Organic Carbon	mg/L	5	4.2	3.2	2.5	1.8	1.8	2.1	3.8	3.5	3.2	2.8
Temperature	ºC	-	12.5	11.0	12.5	12.0	11.69	10.6	12.7	10.86	12.2	12.54

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre
- SU - Scientific Units, µS/cm - microSiemens per centimetre, ºC - degrees Celsius

TABLE 2.8
SUMMARY OF GROUNDWATER GENERAL CHEMISTRY RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	OW31B-95				OW32B-95		OW34B-95			
			12-May-16	8-Nov-16	19-May-17	7-Nov-17	12-May-16	19-May-17	9-May-16	9-Nov-16	18-May-17	7-Nov-17
General Chemistry												
Alkalinity	mg/L	30 - 500	106	100	110	99	134	131	161	142	137	144
Ammonia	mg/L	-	0.11	0.38	0.11	0.13	0.10	0.26	0.03	0.14	0.22	0.09
Chloride	mg/L	250	30.9	28.0	26.0	27.6	27.0	24.2	31.5	30.0	30.2	30.3
Field Conductivity	µS/cm	-	455	504	526	570	267	280	354	365	364	460
Laboratory Conductivity	µS/cm	-	574	560	619	570	336	330	466	428	428	437
Total Hardness	mg/L	80 - 100	91.9	74.8	86.5	68.6	39.1	30.7	68.8	53.2	44.8	49.2
Nitrate	mg/L	10.0	<0.10	0.06	<0.10	<0.10	<0.05	<0.05	<0.05	0.07	<0.05	<0.05
Nitrite	mg/L	1.0	<0.10	<0.05	<0.10	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Field pH	SU	6.5 - 8.5	7.94	8.63	8.09	8.11	8.00	8.30	7.98	8.43	8.40	8.04
Laboratory pH	SU	6.5 - 8.5	7.98	7.91	8.06	7.73	8.15	8.27	8.17	8.09	8.22	7.80
Phenols	mg/L	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	500	155	128	151	132	2.97	1.61	33.3	29.9	30.3	31.9
Total Kjeldahl Nitrogen	mg/L	-	0.13	0.30	0.32	0.37	0.33	0.35	0.28	0.21	0.48	0.58
Total Dissolved Solids	mg/L	500	376	338	348	326	212	204	226	238	226	254
Chemical Oxygen Demand	mg/L	-	10	<5	10	<5	12	12	5	<5	22	<5
Dissolved Organic Carbon	mg/L	5	4.0	3.7	3.3	3.7	5.2	4.4	3.9	3.6	3.9	3.6
Temperature	ºC	-	12.8	11.3	11.38	10.1	12.0	11.33	10.5	8.9	12.41	10.3

Notes:
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- mg/L - milligrams per litre, µg/L - micrograms per litre
- SU - Scientific Units, µS/cm - microSiemens per centimetre, ºC - degrees Celsius

TABLE 2.8
SUMMARY OF GROUNDWATER GENERAL CHEMISTRY RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	OW37-97				OW38-97		OW39-99		OW40-99	
			11-May-16	8-Nov-16	19-May-17	7-Nov-17	12-May-16	24-May-17	11-May-16	19-May-17	12-May-16	19-May-17
General Chemistry												
Alkalinity	mg/L	30 - 500	149	141	142	144	225	232	139	142	257	294
Ammonia	mg/L	-	0.06	0.16	0.21	0.17	<0.02	0.05	0.03	0.10	<0.02	0.12
Chloride	mg/L	250	14.3	11.9	11.8	11.8	13.0	11.9	24.2	21.0	5.43	4.30
Field Conductivity	µS/cm	-	347	421	381	450	503	545	277	301	501	534
Laboratory Conductivity	µS/cm	-	429	430	436	445	637	627	348	343	624	631
Total Hardness	mg/L	80 - 100	80.1	73.3	77.3	74.6	167	159	61.4	59.9	199	198
Nitrate	mg/L	10.0	<0.05	<0.05	<0.05	<0.05	<0.10	<0.05	<0.05	<0.05	<0.10	<0.10
Nitrite	mg/L	1.0	<0.05	<0.05	<0.05	<0.05	<0.10	<0.05	<0.05	<0.05	<0.10	<0.10
Field pH	SU	6.5 - 8.5	7.98	8.57	8.02	8.01	7.83	7.59	7.81	7.88	7.45	7.63
Laboratory pH	SU	6.5 - 8.5	7.99	8.03	8.07	7.89	8.29	8.28	8.10	8.22	8.26	8.31
Phenols	mg/L	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	500	72.3	65.4	64.4	64.2	112	97.4	10.00	5.92	90.6	79.5
Total Kjeldahl Nitrogen	mg/L	-	0.21	0.28	0.28	0.32	0.14	0.14	0.17	0.22	0.13	0.15
Total Dissolved Solids	mg/L	500	252	252	240	220	350	364	186	182	352	334
Chemical Oxygen Demand	mg/L	-	<5	<5	7	<5	<5	<5	9	6	<5	<5
Dissolved Organic Carbon	mg/L	5	2.9	2.4	2.1	2.5	2.8	1.6	3.2	3.0	2.3	1.2
Temperature	°C	-	11.4	12.0	10.26	10.6	12.0	12.11	13.1	11.33	11.0	10.78

Notes:
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- SU - Scientific Units, µS/cm - microSiemens per centimetre, °C - degrees Celsius

TABLE 2.8
SUMMARY OF GROUNDWATER GENERAL CHEMISTRY RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	OW41B-01		OW42B-01				OW43B-01		OW44A-01	
			9-May-16	24-May-17	9-May-16	9-Nov-16	24-May-17	7-Nov-17	9-May-16	18-May-17	11-May-16	18-May-17
General Chemistry												
Alkalinity	mg/L	30 - 500	148	159	125	114	115	118	126	115	145	136
Ammonia	mg/L	-	0.05	0.11	<0.02	0.45	0.17	0.13	0.02	0.10	<0.02	0.05
Chloride	mg/L	250	20.7	19.3	26.1	27.7	24.5	24.8	24.8	22.7	78.2	72.0
Field Conductivity	µS/cm	-	369	380	422	420	442	540	417	442	438	449
Laboratory Conductivity	µS/cm	-	462	470	540	505	511	520	534	525	568	567
Total Hardness	mg/L	80 - 100	69.9	68.8	79.1	69.4	74.6	72.3	84.7	85.1	84.9	69.8
Nitrate	mg/L	10.0	0.06	<0.05	<0.05	0.09	0.41	<0.10	<0.05	<0.10	<0.10	0.12
Nitrite	mg/L	1.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.10	<0.05	<0.10	<0.10	<0.05
Field pH	SU	6.5 - 8.5	7.67	8.04	7.68	8.38	8.04	7.56	7.76	8.05	7.62	7.95
Laboratory pH	SU	6.5 - 8.5	8.15	8.30	8.14	8.01	8.12	7.69	8.13	8.12	8.11	8.17
Phenols	mg/L	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	500	74.3	72.0	109	98.9	98.4	101	112	106	39.5	37.2
Total Kjeldahl Nitrogen	mg/L	-	0.17	0.25	0.27	0.24	0.45	0.57	0.12	0.21	0.11	0.17
Total Dissolved Solids	mg/L	500	294	296	314	322	290	280	352	290	318	278
Chemical Oxygen Demand	mg/L	-	<5	10	<5	<5	11	<5	<5	18	<5	14
Dissolved Organic Carbon	mg/L	5	2.7	4.3	4.2	3.4	1.6	3.9	4.8	2.7	3.4	2.4
Temperature	ºC	-	10.0	12.06	10.1	11.9	12.58	10.3	10.5	12.98	12.1	13.69

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre
- SU - Scientific Units, µS/cm - microSiemens per centimetre, ºC - degrees Celsius

TABLE 2.8
SUMMARY OF GROUNDWATER GENERAL CHEMISTRY RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	OW44B-01				OW45B-01		OW46B-01			
			11-May-16	9-Nov-16	18-May-17	7-Nov-17	9-May-16	18-May-17	11-May-16	9-Nov-16	18-May-17	7-Nov-17
General Chemistry												
Alkalinity	mg/L	30 - 500	128	119	118	118	147	138	127	114	127	118
Ammonia	mg/L	-	<0.02	0.17	0.10	0.08	<0.02	0.08	0.11	0.25	0.17	0.14
Chloride	mg/L	250	47.4	42.2	42.1	38.7	31.0	30.3	28.4	27.4	23.2	28.1
Field Conductivity	µS/cm	-	446	437	449	540	445	460	363	437	429	430
Laboratory Conductivity	µS/cm	-	558	535	542	536	566	548	489	431	531	421
Total Hardness	mg/L	80 - 100	102	85.1	82.4	79.1	93.6	95.8	102	61.3	101	53.0
Nitrate	mg/L	10.0	0.14	0.15	0.08	<0.10	<0.05	0.05	<0.05	<0.05	<0.10	<0.05
Nitrite	mg/L	1.0	<0.10	<0.05	<0.05	<0.10	<0.05	<0.05	<0.05	<0.05	<0.10	<0.05
Field pH	SU	6.5 - 8.5	7.93	8.23	7.95	7.60	7.76	7.87	8.03	8.23	8.10	7.83
Laboratory pH	SU	6.5 - 8.5	8.06	8.00	8.12	7.74	8.16	8.17	8.03	8.02	8.08	7.74
Phenols	mg/L	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	500	104	84.2	86.7	88.8	96.1	90.7	97.1	58.1	105	53.3
Total Kjeldahl Nitrogen	mg/L	-	0.28	0.19	0.19	0.28	0.18	0.26	0.32	0.35	0.34	0.27
Total Dissolved Solids	mg/L	500	308	306	312	322	308	292	274	266	268	276
Chemical Oxygen Demand	mg/L	-	5	<5	13	<5	<5	11	9	<5	16	<5
Dissolved Organic Carbon	mg/L	5	2.8	2.7	2.8	3.1	3.5	2.6	3.2	3.0	3.0	3.6
Temperature	ºC	-	11.9	11.0	13.69	10.9	10.6	12.98	12.1	11.0	13.12	10.3

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre
- SU - Scientific Units, µS/cm - microSiemens per centimetre, ºC - degrees Celsius

TABLE 2.8
SUMMARY OF GROUNDWATER GENERAL CHEMISTRY RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	OW47B-01		OW48B-01				OW50-01			
			11-May-16	18-May-17	11-May-16	9-Nov-16	18-May-17	7-Nov-17	9-May-16	8-Nov-16	24-May-17	7-Nov-17
General Chemistry												
Alkalinity	mg/L	30 - 500	200	191	119	127	124	130	115	117	125	125
Ammonia	mg/L	-	0.11	0.21	0.05	0.17	0.11	0.09	0.12	0.17	0.16	0.12
Chloride	mg/L	250	13.8	12.9	85.4	47.3	48.3	47.7	21.4	20.2	20.1	21.1
Field Conductivity	µS/cm	-	362	389	391	334	341	420	340	348	355	430
Laboratory Conductivity	µS/cm	-	462	457	486	392	394	396	431	405	453	422
Total Hardness	mg/L	80 - 100	110	98.5	60.6	66.5	63.7	64.5	50.1	49.7	50.7	45.2
Nitrate	mg/L	10.0	<0.10	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite	mg/L	1.0	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Field pH	SU	6.5 - 8.5	7.70	7.82	8.05	8.50	8.14	7.97	8.14	8.57	8.40	8.08
Laboratory pH	SU	6.5 - 8.5	8.25	8.21	8.06	7.99	8.16	7.79	7.52	8.04	8.24	7.89
Phenols	mg/L	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	500	33.7	31.9	4.02	3.32	2.52	2.16	66.5	59.5	64.8	64.6
Total Kjeldahl Nitrogen	mg/L	-	<0.10	0.41	0.25	0.15	0.26	0.31	0.20	0.36	0.29	0.40
Total Dissolved Solids	mg/L	500	242	236	256	206	194	214	392	326	388	248
Chemical Oxygen Demand	mg/L	-	5	<5	<5	<5	16	<5	<5	<5	12	<5
Dissolved Organic Carbon	mg/L	5	3.2	2.0	3.5	2.5	2.5	2.7	3.6	3.0	3.5	3.7
Temperature	ºC	-	10.8	12.29	10.0	9.4	12.27	10.5	9.4	8.9	11.20	9.6

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre
- SU - Scientific Units, µS/cm - microSiemens per centimetre, ºC - degrees Celsius

TABLE 2.8
SUMMARY OF GROUNDWATER GENERAL CHEMISTRY RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	OW51A-07		OW51B-07		OW52B-07			
			11-May-16	18-May-17	11-May-16	18-May-17	9-May-16	9-Nov-16	17-May-17	7-Nov-17
General Chemistry										
Alkalinity	mg/L	30 - 500	210	162	164	167	243	230	214	227
Ammonia	mg/L	-	0.11	0.22	0.05	0.14	<0.02	<0.02	0.09	<0.02
Chloride	mg/L	250	38.5	36.6	7.36	7.19	29.8	28.2	30.5	25.7
Field Conductivity	µS/cm	-	413	476	301	323	623	630	614	760
Laboratory Conductivity	µS/cm	-	548	444	372	373	797	765	750	741
Total Hardness	mg/L	80 - 100	145	62.5	73.3	72.7	254	194	250	209
Nitrate	mg/L	10.0	0.12	<0.05	0.12	0.13	<0.10	<0.25	0.11	<0.10
Nitrite	mg/L	1.0	<0.10	<0.05	<0.05	<0.05	<0.10	<0.25	<0.10	<0.10
Field pH	SU	6.5 - 8.5	7.39	7.74	8.00	8.04	7.43	8.10	7.40	7.52
Laboratory pH	SU	6.5 - 8.5	8.18	8.25	8.12	8.20	8.27	8.03	8.15	8.02
Phenols	mg/L	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	500	31.4	11.8	31.7	27.9	171	161	140	131
Total Kjeldahl Nitrogen	mg/L	-	0.21	0.37	<0.10	0.26	0.18	<0.10	0.25	0.20
Total Dissolved Solids	mg/L	500	296	274	262	206	468	444	438	440
Chemical Oxygen Demand	mg/L	-	7	10	<5	7	<5	<5	15	<5
Dissolved Organic Carbon	mg/L	5	3.2	2.9	1.6	1.3	4.3	2.2	2.8	3.0
Temperature	°C	-	11.2	12.21	10.0	11.48	11.3	8.7	13.55	10.5

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre
- SU - Scientific Units, µS/cm - microSiemens per centimetre, °C - degrees Celsius

TABLE 2.9
SUMMARY OF GROUNDWATER METAL RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	OW20-91				OW23B-95		OW24B-95		OW27A-95	
			9-May-16	9-Nov-16	17-May-17	7-Nov-17	9-May-16	18-May-17	9-May-16	17-May-17	12-May-16	19-May-17
Dissolved Metals												
Arsenic	mg/L	0.025	<0.003	-	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Barium	mg/L	1.0	0.032	-	0.030	-	0.042	0.045	0.020	0.023	0.058	0.054
Boron	mg/L	5.0	0.685	-	0.700	-	0.368	0.356	0.560	0.637	0.503	0.451
Cadmium	mg/L	0.005	<0.002	-	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	-	10.7	9.57	10.3	9.74	37.7	35.0	26.8	24.6	25.9	20.2
Chromium	mg/L	0.05	<0.003	-	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	1.0	<0.003	-	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	0.3	0.080	-	0.079	-	<0.010	<0.010	<0.010	0.012	0.078	0.035
Lead	mg/L	0.01	<0.002	-	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	-	3.13	2.84	2.90	3.17	19.3	17.9	10.1	8.89	9.83	7.60
Manganese	mg/L	0.05	0.006	-	0.007	-	<0.002	<0.002	0.004	0.012	0.008	0.007
Mercury	mg/L	0.001	<0.0001	-	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	-	0.86	-	0.81	-	1.46	1.28	1.12	1.00	3.36	2.48
Sodium	mg/L	200	67.1	-	60.5	-	79.2	69.3	96.5	88.6	88.6	81.3
Zinc	mg/L	5.0	<0.005	-	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre
- It is noted that the MOECC ODWQSO/G for arsenic will be revised on January 1, 2018, to 0.01 mg/L. This criterion will be applied to sample data collected after January 1, 2018.

TABLE 2.9
SUMMARY OF GROUNDWATER METAL RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/Gs	OW27B-95		OW28B-95				OW29B-95		OW30B-95	
			12-May-16	19-May-17	12-May-16	8-Nov-16	19-May-17	7-Nov-17	12-May-16	19-May-17	12-May-16	24-May-17
Dissolved Metals												
Arsenic	mg/L	0.025	0.004	<0.003	<0.003	-	<0.003	-	0.004	0.004	0.003	0.003
Barium	mg/L	1.0	0.041	0.045	0.026	-	0.031	-	0.028	0.032	0.032	0.036
Boron	mg/L	5.0	0.560	0.564	0.603	-	0.595	-	0.770	0.788	0.764	0.720
Cadmium	mg/L	0.005	<0.002	<0.002	<0.002	-	<0.002	-	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	-	32.5	25.6	26.5	24.9	24.4	22.9	14.3	14.7	12.2	12.1
Chromium	mg/L	0.05	<0.003	<0.003	<0.003	-	<0.003	-	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	1.0	<0.003	<0.003	<0.003	-	<0.003	-	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	0.3	1.09	0.110	<0.010	-	<0.010	-	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	0.01	<0.002	<0.002	<0.002	-	<0.002	-	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	-	11.8	10.2	9.86	8.90	8.83	8.77	5.10	4.79	4.52	4.33
Manganese	mg/L	0.05	0.071	0.026	<0.002	-	0.003	-	<0.002	0.003	<0.002	0.009
Mercury	mg/L	0.001	<0.0001	<0.0001	<0.0001	-	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	-	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	-	1.56	1.58	1.34	-	1.28	-	0.99	0.85	1.16	1.32
Sodium	mg/L	200	91.5	86.5	89.8	-	83.7	-	76.9	71.8	75.8	72.9
Zinc	mg/L	5.0	<0.005	<0.005	<0.005	-	<0.005	-	<0.005	<0.005	<0.005	<0.005

Notes:
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- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre
- It is noted that the MOECC ODWQSO/G for arsenic will be revised on January 1, 2018, to 0.01 mg/L. This criterion will be applied to sample data collected after January 1, 2018.

TABLE 2.9
SUMMARY OF GROUNDWATER METAL RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	OW31B-95				OW32B-95		OW34B-95			
			12-May-16	8-Nov-16	19-May-17	7-Nov-17	12-May-16	19-May-17	9-May-16	9-Nov-16	18-May-17	7-Nov-17
Dissolved Metals												
Arsenic	mg/L	0.025	<0.003	-	<0.003	-	0.003	<0.003	0.004	-	0.004	-
Barium	mg/L	1.0	0.045	-	0.045	-	0.021	0.023	0.032	-	0.028	-
Boron	mg/L	5.0	0.718	-	0.696	-	0.617	0.597	0.576	-	0.601	-
Cadmium	mg/L	0.005	<0.002	-	<0.002	-	<0.002	<0.002	<0.002	-	<0.002	-
Calcium	mg/L	-	22.6	19.0	22.2	16.8	9.49	8.04	18.3	14.2	11.4	12.1
Chromium	mg/L	0.05	<0.003	-	<0.003	-	<0.003	<0.003	<0.003	-	<0.003	-
Copper	mg/L	1.0	<0.003	-	<0.003	-	<0.003	<0.003	<0.003	-	<0.003	-
Iron	mg/L	0.3	<0.010	-	<0.010	-	<0.010	<0.010	<0.010	-	<0.010	-
Lead	mg/L	0.01	<0.002	-	<0.002	-	<0.002	<0.002	<0.002	-	<0.002	-
Magnesium	mg/L	-	8.62	6.64	7.55	6.48	3.73	2.59	5.61	4.30	3.97	4.61
Manganese	mg/L	0.05	0.006	-	0.006	-	0.004	0.004	0.020	-	0.012	-
Mercury	mg/L	0.001	<0.0001	-	<0.0001	-	<0.0001	<0.0001	<0.0001	-	<0.0001	-
Phosphorus	mg/L	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	-
Potassium	mg/L	-	4.92	-	1.31	-	2.39	0.59	0.91	-	0.70	-
Sodium	mg/L	200	88.8	-	91.7	-	63.1	59.1	71.7	-	67.5	-
Zinc	mg/L	5.0	<0.005	-	<0.005	-	0.008	<0.005	<0.005	-	<0.005	-

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre
- It is noted that the MOECC ODWQSO/G for arsenic will be revised on January 1, 2018, to 0.01 mg/L. This criterion will be applied to sample data collected after January 1, 2018.

TABLE 2.9
SUMMARY OF GROUNDWATER METAL RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/Gs	OW37-97				OW38-97		OW39-99		OW40-99	
			11-May-16	8-Nov-16	19-May-17	7-Nov-17	12-May-16	24-May-17	11-May-16	19-May-17	12-May-16	19-May-17
Dissolved Metals												
Arsenic	mg/L	0.025	0.010	-	0.010	-	0.004	0.004	<0.003	0.003	<0.003	<0.003
Barium	mg/L	1.0	0.034	-	0.035	-	0.032	0.036	0.030	0.037	0.036	0.040
Boron	mg/L	5.0	0.464	-	0.479	-	0.460	0.455	0.503	0.527	0.351	0.336
Cadmium	mg/L	0.005	<0.002	-	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	-	16.6	15.5	15.8	15.0	29.1	28.0	14.4	13.7	35.7	35.4
Chromium	mg/L	0.05	<0.003	-	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	1.0	<0.003	-	<0.003	-	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	0.3	<0.010	-	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	0.01	<0.002	-	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	-	9.38	8.40	9.18	9.01	22.9	21.7	6.19	6.23	26.6	26.5
Manganese	mg/L	0.05	0.007	-	0.007	-	<0.002	0.004	0.002	<0.002	0.004	0.005
Mercury	mg/L	0.001	<0.0001	-	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	-	1.77	-	1.08	-	1.77	1.33	1.35	1.01	1.47	1.43
Sodium	mg/L	200	66.4	-	65.2	-	76.4	76.1	53.6	51.3	62.3	60.5
Zinc	mg/L	5.0	<0.005	-	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre
- It is noted that the MOECC ODWQSO/G for arsenic will be revised on January 1, 2018, to 0.01 mg/L. This criterion will be applied to sample data collected after January 1, 2018.

TABLE 2.9
SUMMARY OF GROUNDWATER METAL RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	OW41B-01		OW42B-01				OW43B-01		OW44A-01	
			9-May-16	24-May-17	9-May-16	9-Nov-16	24-May-17	7-Nov-17	9-May-16	18-May-17	11-May-16	18-May-17
Dissolved Metals												
Arsenic	mg/L	0.025	0.003	0.003	0.003	-	0.005	-	<0.003	<0.003	<0.003	<0.003
Barium	mg/L	1.0	0.036	0.036	0.023	-	0.025	-	0.031	0.033	0.038	0.040
Boron	mg/L	5.0	0.534	0.564	0.373	-	0.407	-	0.368	0.398	0.620	0.662
Cadmium	mg/L	0.005	<0.002	<0.002	<0.002	-	<0.002	-	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	-	18.0	18.1	20.9	18.3	19.5	18.4	21.9	22.4	21.6	19.0
Chromium	mg/L	0.05	<0.003	<0.003	<0.003	-	<0.003	-	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	1.0	<0.003	<0.003	<0.003	-	<0.003	-	<0.003	0.030	<0.003	<0.003
Iron	mg/L	0.3	<0.010	<0.010	<0.010	-	<0.010	-	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	0.01	<0.002	<0.002	<0.002	-	<0.002	-	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	-	6.07	5.74	6.53	5.76	6.29	6.41	7.30	7.09	7.53	5.44
Manganese	mg/L	0.05	0.011	0.011	0.004	-	0.013	-	0.007	0.010	<0.002	<0.002
Mercury	mg/L	0.001	<0.0001	<0.0001	<0.0001	-	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	-	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	-	1.03	0.99	1.03	-	1.27	-	0.79	0.95	3.70	1.10
Sodium	mg/L	200	69.1	67.7	79.8	-	79.0	-	77.9	70.8	91.3	82.5
Zinc	mg/L	5.0	<0.005	<0.005	<0.005	-	<0.005	-	<0.005	0.020	<0.005	<0.005

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre
- It is noted that the MOECC ODWQSO/G for arsenic will be revised on January 1, 2018, to 0.01 mg/L. This criterion will be applied to sample data collected after January 1, 2018.

TABLE 2.9
SUMMARY OF GROUNDWATER METAL RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	OW44B-01				OW45B-01		OW46B-01			
			11-May-16	9-Nov-16	18-May-17	7-Nov-17	9-May-16	18-May-17	11-May-16	9-Nov-16	18-May-17	7-Nov-17
Dissolved Metals												
Arsenic	mg/L	0.025	0.005	-	0.007	-	<0.003	<0.003	0.008	-	0.008	-
Barium	mg/L	1.0	0.033	-	0.036	-	0.037	0.038	0.041	-	0.050	-
Boron	mg/L	5.0	0.489	-	0.480	-	0.351	0.388	0.499	-	0.519	-
Cadmium	mg/L	0.005	<0.002	-	<0.002	-	<0.002	<0.002	<0.002	-	<0.002	-
Calcium	mg/L	-	26.7	23.2	21.7	20.3	21.0	22.7	26.3	15.9	26.3	13.4
Chromium	mg/L	0.05	<0.003	-	<0.003	-	<0.003	<0.003	<0.003	-	<0.003	-
Copper	mg/L	1.0	<0.003	-	<0.003	-	<0.003	<0.003	<0.003	-	<0.003	-
Iron	mg/L	0.3	<0.010	-	<0.010	-	<0.010	<0.010	<0.010	-	0.042	-
Lead	mg/L	0.01	<0.002	-	<0.002	-	<0.002	<0.002	<0.002	-	<0.002	-
Magnesium	mg/L	-	8.68	6.59	6.86	6.89	10.0	9.51	8.76	5.25	8.67	4.75
Manganese	mg/L	0.05	<0.002	-	0.003	-	0.007	0.006	0.024	-	0.028	-
Mercury	mg/L	0.001	<0.0001	-	<0.0001	-	<0.0001	<0.0001	<0.0001	-	<0.0001	-
Phosphorus	mg/L	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	-
Potassium	mg/L	-	2.28	-	1.02	-	0.96	0.93	2.57	-	1.26	-
Sodium	mg/L	200	81.0	-	73.3	-	77.0	69.5	67.1	-	64.7	-
Zinc	mg/L	5.0	<0.005	-	<0.005	-	<0.005	<0.005	<0.005	-	<0.005	-

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre
- It is noted that the MOECC ODWQSO/G for arsenic will be revised on January 1, 2018, to 0.01 mg/L. This criterion will be applied to sample data collected after January 1, 2018.

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TABLE 2.9
SUMMARY OF GROUNDWATER METAL RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	OW47B-01		OW48B-01				OW50-01			
			11-May-16	18-May-17	11-May-16	9-Nov-16	18-May-17	7-Nov-17	9-May-16	8-Nov-16	24-May-17	7-Nov-17
Dissolved Metals												
Arsenic	mg/L	0.025	0.005	0.006	<0.003	-	<0.003	-	<0.003	-	<0.003	-
Barium	mg/L	1.0	0.080	0.093	0.042	-	0.079	-	0.039	-	0.038	-
Boron	mg/L	5.0	0.582	0.566	0.656	-	0.668	-	0.638	-	0.629	-
Cadmium	mg/L	0.005	<0.002	<0.002	<0.002	-	<0.002	-	<0.002	-	<0.002	-
Calcium	mg/L	-	25.1	22.3	15.0	15.1	14.3	13.9	12.4	12.3	12.9	10.8
Chromium	mg/L	0.05	<0.003	<0.003	<0.003	-	<0.003	-	<0.003	-	<0.003	-
Copper	mg/L	1.0	<0.003	<0.003	<0.003	-	<0.003	-	<0.003	-	<0.003	-
Iron	mg/L	0.3	0.026	0.046	0.050	-	<0.010	-	<0.010	-	<0.010	-
Lead	mg/L	0.01	<0.002	<0.002	<0.002	-	<0.002	-	<0.002	-	<0.002	-
Magnesium	mg/L	-	11.5	10.4	5.62	7.00	6.79	7.24	4.65	4.62	4.49	4.43
Manganese	mg/L	0.05	0.017	0.017	0.034	-	0.003	-	0.006	-	0.007	-
Mercury	mg/L	0.001	<0.0001	<0.0001	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001	-
Phosphorus	mg/L	-	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	-	<0.05	-
Potassium	mg/L	-	1.73	1.26	2.87	-	0.97	-	1.68	-	1.70	-
Sodium	mg/L	200	63.2	55.8	78.8	-	53.1	-	71.5	-	68.7	-
Zinc	mg/L	5.0	<0.005	<0.005	<0.005	-	<0.005	-	<0.005	-	<0.005	-

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre
- It is noted that the MOECC ODWQSO/G for arsenic will be revised on January 1, 2018, to 0.01 mg/L. This criterion will be applied to sample data collected after January 1, 2018.

TABLE 2.9
SUMMARY OF GROUNDWATER METAL RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	OW51A-07		OW51B-07		OW52B-07			
			11-May-16	18-May-17	11-May-16	18-May-17	9-May-16	9-Nov-16	17-May-17	7-Nov-17
Dissolved Metals										
Arsenic	mg/L	0.025	<0.003	<0.003	0.005	0.004	<0.003	-	<0.003	-
Barium	mg/L	1.0	0.042	0.037	0.041	0.043	0.027	-	0.030	-
Boron	mg/L	5.0	0.470	0.564	0.465	0.470	0.228	-	0.163	-
Cadmium	mg/L	0.005	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	-
Calcium	mg/L	-	33.7	14.2	15.7	15.8	64.8	49.2	65.4	52.4
Chromium	mg/L	0.05	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	-
Copper	mg/L	1.0	<0.003	<0.003	<0.003	<0.003	<0.003	-	<0.003	-
Iron	mg/L	0.3	0.018	0.050	<0.010	<0.010	<0.010	-	<0.010	-
Lead	mg/L	0.01	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	-
Magnesium	mg/L	-	14.8	6.6	8.27	8.08	22.3	17.3	21.0	18.9
Manganese	mg/L	0.05	0.008	0.007	0.003	0.004	<0.002	-	<0.002	-
Mercury	mg/L	0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	-
Phosphorus	mg/L	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	-
Potassium	mg/L	-	2.63	1.52	1.22	1.62	2.12	-	1.86	-
Sodium	mg/L	200	64.1	66.0	56.3	51.5	72.3	-	54.8	-
Zinc	mg/L	5.0	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	-

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre
- It is noted that the MOECC ODWQSO/G for arsenic will be revised on January 1, 2018, to 0.01 mg/L. This criterion will be applied to sample data collected after January 1, 2018.

TABLE 2.10
SUMMARY OF GROUNDWATER VOC RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/Gs	OW20-91	OW23B-95	OW24B-95	OW27A-95	OW27B-95	OW28B-95	OW29B-95	OW30B-95	OW31B-95
			17-May-17	18-May-17	17-May-17	19-May-17	19-May-17	19-May-17	19-May-17	24-May-17	19-May-17
VOCs											
1,4-Dichlorobenzene	µg/L	5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	50	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	1.6	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	1	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17

	Units	MOECC ODWQSO/Gs	OW32B-95	OW34B-95	OW37-97	OW38-97	OW39-99	OW40-99	OW41B-01	OW42B-01	OW43B-01
			19-May-17	18-May-17	19-May-17	24-May-17	19-May-17	19-May-17	24-May-17	24-May-17	05/18/2017
VOCs											
1,4-Dichlorobenzene	µg/L	5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	50	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	1.6	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	1	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- µg/L - micrograms per litre, VOCs - Volatile Organic Compounds

TABLE 2.10
SUMMARY OF GROUNDWATER VOC RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/Gs	OW44A-01	OW44B-01	OW45B-01	OW46B-01	OW47B-01	OW48B-01	OW50-01	OW51A-07
			18-May-17	18-May-17	18-May-17	18-May-17	18-May-17	18-May-17	24-May-17	18-May-17
VOCs										
1,4-Dichlorobenzene	µg/L	5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	50	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	1.6	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.29	<0.20
Vinyl Chloride	µg/L	1	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17

	Units	MOECC ODWQSO/Gs	OW51B-07	OW52B-07
			18-May-17	17-May-17
VOCs				
1,4-Dichlorobenzene	µg/L	5	<0.10	<0.10
Benzene	µg/L	1	<0.20	<0.20
Dichloromethane	µg/L	50	<0.30	<0.30
Ethylbenzene	µg/L	1.6	<0.10	<0.10
Toluene	µg/L	24	<0.20	<0.20
Vinyl Chloride	µg/L	1	<0.17	<0.17

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- µg/L - micrograms per litre, VOCs - Volatile Organic Compounds

TABLE 2.11
RANGE OF GROUNDWATER QUALITY PARAMETERS FOR MONITORING WELLS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MOECC ODWQSO/Gs	2017 Upgradient (Background) Groundwater	2017 Downgradient Groundwater
General Chemistry			
Alkalinity	30 - 500	99 - 294	116 - 238
Chloride	250	4.30 - 72.0	7.19 - 51.0
Field Conductivity (µS/cm)	-	280 - 570	300 - 760
Laboratory Conductivity (µS/cm)	-	330 - 631	343 - 750
Total Hardness	80 - 100	30.7 - 198	37.4 - 250
Nitrate	10.0	<0.05 - 0.41	<0.05 - 0.13
Nitrite	1.0	<0.05 - <0.10	<0.05 - <0.10
Field pH (SU)	6.5 - 8.5	7.56 - 8.40	6.94 - 8.40
Laboratory pH (SU)	6.5 - 8.5	7.69 - 8.31	7.62 - 8.29
Phenols	-	<0.001	<0.001
Sulphate	500	1.61 - 151	0.15 - 165
Total Kjeldahl Nitrogen	-	0.14 - 0.57	0.15 - 0.58
Total Dissolved Solids	500	204 - 388	182 - 440
Dissolved Organic Carbon	5	1.2 - 4.4	1.3 - 4.4
Dissolved Metals			
Arsenic	0.025	<0.003 - 0.008	<0.003 - 0.010
Barium	1.0	0.023 - 0.093	0.023 - 0.079
Boron	5.0	0.336 - 0.788	0.163 - 0.700
Cadmium	0.005	<0.002	<0.002
Chromium	0.05	<0.003	<0.003
Copper	1.0	<0.003 - 0.030	<0.003
Iron	0.3	<0.010 - 0.046	<0.010 - 0.110
Lead	0.01	<0.002	<0.002
Manganese	0.05	<0.002 - 0.028	<0.002 - 0.026
Mercury	0.001	<0.0001	<0.0001
Sodium	200	55.8 - 91.7	51.3 - 88.6
Zinc	5.0	<0.005 - 0.020	<0.005

Notes:
- Concentrations are in mg/L unless otherwise noted.
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µS/cm - microSiemens per centimetre
- SU - Scientific Units
- Upgradient groundwater quality measured in overburden wells OW29B-95, OW30B-95, OW31B-95, OW32B-95, OW38-97, OW40-99, OW41B-01, OW42B-01, OW43B-01, OW44A-01, OW44B-01, OW45B-01, OW46B-01, OW47B-01, and OW50-01 is used for the upgradient (background) range.
- Downgradient groundwater quality measured in overburden wells OW20-91, OW23B-95, OW24B-95, OW27A-95, OW27B-95, OW28B-95, OW34B-95, OW37-97, OW39-99, OW48B-01, OW51A-07, OW51B-07, OW52B-07
- It is noted that the MOECC ODWQSO/G for arsenic will be revised on January 1, 2018, to 0.01 mg/L. This criterion will be applied to sample data collected after January 1, 2018.

TABLE 2.12
SUMMARY OF PRIVATE WELL GENERAL CHEMISTRY RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Units	MOECC ODWQSO/ Gs	Well AA				Well M			
			10-May-16	7-Nov-16	19-May-17	6-Nov-17	9-May-16	7-Nov-16	19-May-17	6-Nov-17
General Chemistry										
Alkalinity	mg/L	30-500	346	336	289	350	198	152	175	129
Ammonia	mg/L	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chloride	mg/L	250	26.8	37.2	12.0	38.8	24.4	9.81	11.4	4.08
Field Conductivity	µS/cm	-	913	955	624	729	635	389	286	263
Laboratory Conductivity	µS/cm	-	854	987	702	924	454	354	399	267
Dissolved Organic Carbon	mg/L	5	1.0	1.6	2.8	1.6	4.8	7.9	5.4	7.2
Total Hardness	mg/L	80-100	418	466	320	461	194	165	174	133
Nitrate	mg/L	10	<0.25	<0.25	<0.25	0.11	0.81	0.87	0.78	0.55
Field pH	SU	6.5-8.5	7.42	7.45	7.12	7.85	7.32	7.73	7.36	7.96
Laboratory pH	SU	6.5-8.5	7.99	8.07	8.33	8.36	8.12	7.98	8.24	7.98
Sulphate	mg/L	500	125	138	87.9	138	6.61	5.68	16.8	5.87
Total Dissolved Solids	mg/L	500	530	582	390	588	246	208	188	198
Total Metals										
Barium	mg/L	1	0.059	0.055	0.043	0.049	0.031	0.024	0.029	0.029
Boron	mg/L	5	0.074	0.107	0.067	0.110	0.011	0.018	0.010	0.014
Calcium	mg/L	-	98.6	108	82.1	106	59.7	51.6	53.4	42.1
Iron	mg/L	0.3	2.28	3.03	0.188	0.179	0.044	<0.010	<0.010	0.082
Magnesium	mg/L	-	41.8	47.6	27.9	47.7	10.8	8.71	9.8	6.67
Sodium	mg/L	200	23.6	31.6	18.0	32.6	14.0	7.71	9.03	4.70

Notes:
- MOECC ODWQSO/Gs - Ministry of the Environment and Climate Change Ontario Drinking Water Quality Standards, Objectives, and Guidelines (June 2006)
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, µS/cm - microSiemens per centimetre
- SU - Scientific Units

wsp

TABLE 2.13
SUMMARY OF SURFACE WATER GENERAL CHEMISTRY RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MOECC PWQO/G	Dodd Creek Upstream (STA5) - 2016				Dodd Creek Upstream (STA5) - 2017			
		8-Mar-16	26-May-16	17-Aug-16	7-Nov-16	27-Mar-17	24-May-17	9-Aug-17	6-Nov-17
General Chemistry									
Alkalinity	-	147	221	197	228	158	236	285	122
Ammonia	-	<0.02	<0.02	0.04	0.04	0.03	0.10	<0.02	<0.02
Un-ionized Ammonia	0.02	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001
Biological Oxygen Demand	-	<5	<5	<5	<5	<5	<5	<5	<5
Carbonaceous Biological Oxygen Demand	-	<5	<5	<5	<5	<5	<5	<5	<5
Chemical Oxygen Demand	-	12	21	28	18	21	22	104	27
Chloride	-	35.8	92.0	96.4	101	57.5	48.6	236	45.3
Field Conductivity (µS/cm)	-	375	551	536	847	552	598	1180	377
Laboratory Conductivity (µS/cm)	-	473	735	729	844	594	676	1400	496
Total Hardness	-	189	266	209	289	231	299	214	199
Iron	0.3	0.311	0.22	0.58	0.56	0.386	0.11	0.258	0.48
Nitrate	-	7.78	2.80	1.14	4.65	8.15	7.34	0.25	10.8
Nitrite	-	<0.05	<0.25	<0.05	<0.25	<0.10	<0.25	<0.25	<0.05
Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Field pH (SU)	6.5 - 8.5	8.40	7.69	7.03	7.21	7.31	7.97	8.03	7.77
Laboratory pH (SU)	6.5 - 8.5	7.86	8.12	8.31	7.89	8.32	8.31	8.16	7.81
Sulphate	-	26.7	47.9	20.6	37.8	27.6	26.8	75.1	24.1
Total Kjeldahl Nitrogen	-	1.09	1.18	0.97	1.04	0.98	0.68	3.54	1.59
Total Phosphorus	0.03	0.16	0.04	0.15	0.11	0.17	0.03	0.09	0.25
Total Dissolved Solids	-	290	402	396	458	358	384	778	360
Total Suspended Solids	-	46	12	48	16	82	<10	33	37
Field Dissolved Oxygen	-	9.8	9.10	9.93	9.73	9.21	9.88	6.05	9.80
Field Temperature (C)	-	6.5	20.5	21.9	8.5	5.39	16.77	18.57	10.17

Notes:
- Concentrations are in mg/L (milligrams per litre), unless otherwise specified.
- µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius
- MOECC PWQO/G - Ministry of the Environment and Climate Change Provincial Water Quality Objectives and Guidelines (July 1994 with updates)
- < indicates parameter concentration not detected above the noted sample detection limit.
- Un-ionized ammonia concentration calculated based on the fraction of NH_3 (f) in the total ammonia.

where: f = 1/(10^{pKa-pH})+1)
pKa=0.09018 + 2729.92/T
T = ambient water temperature in Kelvin (K = C + 273.16)

TABLE 2.13
SUMMARY OF SURFACE WATER GENERAL CHEMISTRY RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MOECC PWQO/G	Dodd Creek Downstream (STA6) - 2016				Dodd Creek Downstream (STA6) - 2017			
		8-Mar-16	26-May-16	17-Aug-16	7-Nov-16	27-Mar-17	24-May-17	9-Aug-17	6-Nov-17
General Chemistry									
Alkalinity	-	153	241	179	239	167	273	499	127
Ammonia	-	<0.02	0.03	0.06	0.03	0.03	0.19	0.12	<0.02
Un-ionized Ammonia	0.02	<0.001	0.001	<0.001	<0.001	<0.001	0.004	0.007	<0.001
Biological Oxygen Demand	-	<5	<5	<5	<5	<5	<5	<5	<5
Carbonaceous Biological Oxygen Demand	-	<5	<5	<5	<5	<5	<5	<5	<5
Chemical Oxygen Demand	-	21	32	<5	16	26	50	154	24
Chloride	-	52.2	124	109	99.8	63.6	114	449	50.0
Field Conductivity (µS/cm)	-	430	698	576	879	624	886	2050	390
Laboratory Conductivity (µS/cm)	-	570	901	778	867	640	1000	2450	507
Total Hardness	-	195	264	219	298	238	267	211	193
Iron	0.3	0.389	0.39	0.53	0.55	0.443	0.19	0.296	0.52
Nitrate	-	8.00	3.86	0.72	5.30	8.24	7.31	2.0	9.37
Nitrite	-	<0.05	<0.25	<0.05	<0.25	<0.10	<0.25	<0.5	<0.05
Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Field pH (SU)	6.5 - 8.5	8.25	7.68	6.80	7.66	7.75	7.86	8.22	8.16
Laboratory pH (SU)	6.5 - 8.5	8.03	8.19	8.32	8.00	8.14	8.28	8.43	8.03
Sulphate	-	31.3	65.4	26.0	41.3	27.8	58.0	201	22.7
Total Kjeldahl Nitrogen	-	1.27	1.96	1.06	0.87	0.97	2.17	7.64	1.61
Total Phosphorus	0.03	0.15	0.07	0.13	0.10	0.16	0.05	0.09	0.28
Total Dissolved Solids	-	338	494	404	470	380	562	1450	342
Total Suspended Solids	-	48	28	43	12	78	14	12	43
Field Dissolved Oxygen	-	9.6	8.95	9.90	9.99	9.55	10.30	6.13	10.76
Field Temperature (C)	-	6.4	19.8	22.0	7.1	6.21	16.93	19.32	10.39

Notes:
- Concentrations are in mg/L (milligrams per litre), unless otherwise specified.
- µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius
- MOECC PWQO/G - Ministry of the Environment and Climate Change Provincial Water Quality Objectives and Guidelines (July 1994 with updates)
- < indicates parameter concentration not detected above the noted sample detection limit.
- Un-ionized ammonia concentration calculated based on the fraction of NH_3 (f) in the total ammonia.

where: f = 1/(10^{pKa-pH})+1)
pKa=0.09018 + 2729.92/T
T = ambient water temperature in Kelvin (K = C + 273.16)

TABLE 2.14
SUMMARY OF SURFACE WATER METALS RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MOECC PWQO/G	Dodd Creek Upstream (STA5)		Dodd Creek Downstream (STA6)	
		24-May-17	6-Nov-17	24-May-17	6-Nov-17
Total Metals					
Arsenic	0.005	<0.003	<0.003	<0.003	<0.003
Barium	-	0.038	0.051	0.042	0.053
Boron	0.2	0.023	0.030	0.275	0.028
Cadmium	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	0.0089	<0.003	<0.003	<0.003	<0.003
Copper	0.005	0.002	0.005	0.035	0.005
Lead	0.005	<0.001	<0.002	0.002	<0.002
Mercury (dissolved)	0.0002	<0.0001	<0.0001	<0.0001	<0.0001
Zinc	0.02	<0.005	0.009	0.021	0.010

Notes:
- Concentrations are in mg/L (milligrams per litre), unless otherwise specified.
- MOECC PWQO/G - Ministry of the Environment and Climate Change Provincial Water Quality Objectives and Guidelines (July 1994 with updates)
- < indicates parameter concentration not detected above the noted sample detection limit

TABLE 2.15
SUMMARY OF MARCH 2017 DISCRETE SURFACE WATER CHEMISTRY ASSESSMENT
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MOECC PWQO/G	STA5 (Dodd Creek Upstream)	STA6 (Dodd Creek Downstream)	Acceptable Limit	Result (Pass or Fail)	RPD (%) STA5 & STA6
Un-ionized Ammonia	0.02	<0.001	<0.001	0.002	Pass	0
Biological Oxygen Demand	-	<5	<5	7.5	Pass	0
Carbonaceous Biological Oxygen Demand	-	<5	<5	7.5	Pass	0
Nitrate	-	8.15	8.24	12.2	Pass	1
Total Suspended Solids	-	82	78	123	Pass	5
Iron	0.3	0.386	0.443	0.579	Pass	14

Notes:
- All concentrations are mg/L, unless otherwise noted.
- Acceptable Limit = less than 50% increase in excess of the discrete upstream results.
- MOECC PWQO/G - Ministry of the Environment and Climate Change Provincial Water Quality Objectives and Guidelines (July 1994 with updates)
- < indicates parameter concentration not detected above the noted sample detection limit
- RPD - Relative Percent Difference
- For calcuation purposes, the Method Detection Limit (MDL) was used for any non-detected values.
- Un-ionized ammonia concentration calculated based on the fraction of NH_3 (*f*) in the total ammonia.

  f = 1/(10^{pKa-pH})+1)
  pKa=0.09018 + 2729.92/T
  T = ambient water temperature in Kelvin (K = C + 273.16)

TABLE 2.16
SUMMARY OF MAY 2017 DISCRETE SURFACE WATER CHEMISTRY ASSESSMENT
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MOECC PWQO/G	STA5 (Dodd Creek Upstream)	STA6 (Dodd Creek Downstream)	Acceptable Limit	Result (Pass or Fail)	RPD (%) STA5 & STA6
Un-ionized Ammonia	0.02	0.003	0.004	0.005	Pass	29
Biological Oxygen Demand	-	<5	<5	7.5	Pass	0
Carbonaceous Biological Oxygen Demand	-	<5	<5	7.5	Pass	0
Nitrate	-	7.34	7.31	11.01	Pass	0
Total Suspended Solids	-	<10	14	15	Pass	33
Iron	0.3	0.11	0.19	0.17	Fail	53

Notes:
- All concentrations are mg/L, unless otherwise noted.
- Acceptable Limit = less than 50% increase in excess of the discrete upstream results.
- MOECC PWQO/G - Ministry of the Environment and Climate Change Provincial Water Quality Objectives and Guidelines (July 1994 with updates)
- < indicates parameter concentration not detected above the noted sample detection limit
- RPD - Relative Percent Difference
- For calcuation purposes, the Method Detection Limit (MDL) was used for any non-detected values.
- Un-ionized ammonia concentration calculated based on the fraction of NH_3 (f) in the total ammonia.

f = 1/(10^{pKa-pH})+1)
pKa=0.09018 + 2729.92/T
T = ambient water temperature in Kelvin (K = C + 273.16)

TABLE 2.17
SUMMARY OF AUGUST 2017 DISCRETE SURFACE WATER CHEMISTRY ASSESSMENT
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MOECC PWQO/G	STA5 (Dodd Creek Upstream)	STA6 (Dodd Creek Downstream)	Acceptable Limit	Result (Pass or Fail)	RPD (%) STA5 & STA6
Un-ionized Ammonia	0.02	<0.001	0.007	0.002	Fail	150
Biological Oxygen Demand	-	<5	<5	7.5	Pass	0
Carbonaceous Biological Oxygen Demand	-	<5	<5	7.5	Pass	0
Nitrate	-	0.25	2.0	0.38	Fail	156
Total Suspended Solids	-	33	12	49.5	Pass	93
Iron	0.3	0.258	0.296	0.39	Pass	14

Notes:
- All concentrations are mg/L, unless otherwise noted.
- Acceptable Limit = less than 50% increase in excess of the discrete upstream results.
- MOECC PWQO/G - Ministry of the Environment and Climate Change Provincial Water Quality Objectives and Guidelines (July 1994 with updates)
- < indicates parameter concentration not detected above the noted sample detection limit
- RPD - Relative Percent Difference
- For calcuation purposes, the Method Detection Limit (MDL) was used for any non-detected values.
- Un-ionized ammonia concentration calculated based on the fraction of NH_3 (f) in the total ammonia.

  f = 1/(10^{pKa-pH})+1)
  pKa=0.09018 + 2729.92/T
  T = ambient water temperature in Kelvin (K = C + 273.16)

TABLE 2.18
SUMMARY OF NOVEMBER 2017 DISCRETE SURFACE WATER CHEMISTRY ASSESSMENT
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MOECC PWQO/G	STA5 (Dodd Creek Upstream)	STA6 (Dodd Creek Downstream)	Acceptable Limit	Result (Pass or Fail)	RPD (%) STA5 & STA6
Un-ionized Ammonia	0.02	<0.001	<0.001	0.002	Pass	0
Biological Oxygen Demand	-	<5	<5	7.5	Pass	0
Carbonaceous Biological Oxygen Demand	-	<5	<5	7.5	Pass	0
Nitrate	-	10.8	9.37	16.2	Pass	14
Total Suspended Solids	-	37	43	56	Pass	15
Iron	0.3	0.48	0.52	0.72	Pass	8

Notes:
- All concentrations are mg/L, unless otherwise noted.
- Acceptable Limit = less than 50% increase in excess of the discrete upstream results.
- MOECC PWQO/G - Ministry of the Environment and Climate Change Provincial Water Quality Objectives and Guidelines (July 1994 with updates)
- < indicates parameter concentration not detected above the noted sample detection limit
- RPD - Relative Percent Difference
- For calcuation purposes, the Method Detection Limit (MDL) was used for any non-detected values.
- Un-ionized ammonia concentration calculated based on the fraction of NH_3 (f) in the total ammonia.

f = 1/(10^{pKa-pH})+1)
pKa=0.09018 + 2729.92/T
T = ambient water temperature in Kelvin (K = C + 273.16)

TABLE 2.19
SUMMARY OF ANNUAL 2017 SURFACE WATER CHEMISTRY ASSESSMENT
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MOECC PWQO/G	STA5 (Dodd Creek Upstream)					STA6 (Dodd Creek Downstream)					Acceptable Limit	Result (Pass or Fail)	RPD (%) STA5 & STA6
		Mar-17	May-17	Aug-17	Nov-17	Annual Average	Mar-17	May-17	Aug-17	Nov-17	Annual Average			
Un-ionized Ammonia	0.02	<0.001	0.003	<0.001	<0.001	0.002	<0.001	0.004	0.007	<0.001	0.003	0.002	Fail	74
Biological Oxygen Demand	-	<5	<5	<5	<5	5	<5	<5	<5	<5	5	6.7	Pass	0
Carbonaceous Biological Oxygen Demand	-	<5	<5	<5	<5	5	<5	<5	<5	<5	5	6.7	Pass	0
Nitrate	-	8.15	7.34	0.25	10.8	6.64	8.24	7.31	2.00	9.37	6.73	8.82	Pass	1
Total Suspended Solids	-	82	<10	33	37	41	78	14	12	43	37	54	Pass	10
Iron	0.3	0.386	0.11	0.258	0.48	0.309	0.443	0.19	0.296	0.52	0.362	0.41	Pass	16

Notes:
- All concentrations are mg/L, unless otherwise noted.
- Acceptable Limit = less than 33% increase in excess of the annual average upstream results.
- MOECC PWQO/G - Ministry of the Environment and Climate Change Provincial Water Quality Objectives and Guidelines (July 1994 with updates)
- < indicates parameter concentration not detected above the noted sample detection limit
- RPD - Relative Percent Difference
- For calcuation purposes, the Method Detection Limit (MDL) was used for any non-detected values.
- Un-ionized ammonia concentration calculated based on the fraction of NH_3 (*f*) in the total ammonia.

  f = 1/(10^{pKa-pH})+1)
  pKa=0.09018 + 2729.92/T
  T = ambient water temperature in Kelvin (K = C + 273.16)

TABLE 2.20
ESTIMATED FLOW RATES AT SURFACE WATER MONITORING LOCATIONS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Monitoring Location	Flow Rate (L/s) - 2016				Flow Rate (L/s) - 2017			
	Mar-16	May-16	Aug-16	Nov-16	Mar-17	May-17	Aug-17	Nov-17
Dodd Creek Upstream (STA5)	1798	<5	1178	791	1396	669	<5	859
Dodd Creek Downstream (STA6)	1669	<5	1018	749	1163	459	<5	793

Notes:
- L/s - Litres per second
- Station STA5 is the Dodd Creek sampling point located upstream of the Polishing Basin outlet
- Station STA6 is the Dodd Creek sampling point located downstream of the Polishing Basin outlet

TABLE 2.21
SUMMARY OF LEACHATE MONITORING RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Leachate Holding Tank	LW3-16	MH11	MH19	MH23	MH29
	25-May-17	25-May-17	25-May-17	25-May-17	25-May-17	25-May-17
General Chemistry						
Alkalinity	3390	4220	3330	5930		11800
Ammonia	404	566	472	1110		2550
Biological Oxygen Demand	263	72	271	126		15400
Chemical Oxygen Demand	1180	1060	1220	1690		10600
Chloride	1180	1250	1160	1460		2790
Field Conductivity (µS/cm)	9530	10100	9870	9770		30200
Laboratory Conductivity (µS/cm)	8870	10800	8780	13500		27100
Dissolved Organic Carbon	549	388	546	557	U	4830
Total Hardness	722	585	639	692	N	898
Nitrate	<5	<5	<5	<5	A	<10
Nitrite	<5	<5	<5	<5	B	<10
Field pH (SU)	7.99	8.05	8.15	8.31	L	7.73
Laboratory pH (SU)	8.31	8.13	8.37	8.15	E	7.82
Phenols	0.308	0.050	0.351	0.965		14.9
Sulphate	<10	263	<10	64	T	35
Total Kjeldahl Nitrogen	538	688	552	1280	O	2320
Total Dissolved Solids	4140	4800	4110	5080		12100
Total Suspended Solids	71	726	188	37	B	168
Field Temperature (C)	15.6	15.7	15.8	19.3	E	17.8
Total Metals						
Arsenic	0.26	<0.20	0.29	0.23	S	0.45
Barium	0.63	0.23	0.24	0.54	A	0.41
Boron	6.29	4.89	5.43	9.27	M	13.0
Cadmium	<0.40	<0.40	<0.40	<0.40	P	<0.40
Calcium	86.4	69.7	76.2	76.1	L	72.5
Chromium	<0.04	0.20	0.21	0.15	E	0.55
Copper	<0.10	<0.10	<0.10	<0.10	D	<0.10
Iron	8.6	1.3	2.1	2.3		10.9
Lead	<0.20	<0.20	<0.20	<0.20		<0.20
Magnesium	123	99.8	109	122		174
Manganese	0.10	0.11	0.13	0.16		0.13
Mercury	<0.0001	<0.0001	<0.0001	<0.0001		<0.0001
Phosphorus	5.27	3.49	4.75	7.58		13.6
Potassium	583	406	443	386		1090
Sodium	1190	1100	1220	1400		2620
Zinc	<0.2	<0.2	<0.2	<0.2		<0.2
VOCs						
1,4-Dichlorobenzene (µg/L)	<0.10	8.6	<1.00	<1.00		<4.00
Benzene (µg/L)	<0.20	<4.00	<2.00	<2.00		12
Dichloromethane (µg/L)	<0.30	<6.00	<3.00	<3.00		<12.0
Ethylbenzene (µg/L)	<0.10	13	<1.00	2.7		10
Toluene (µg/L)	<0.20	<4.00	<2.00	2.2		31
Vinyl Chloride (µg/L)	<0.17	<3.40	<1.70	<1.70		<6.80

Notes:
- Concentrations are in mg/L (milligrams per litre), unless otherwise specified.
- < - Parameter concentration not detected above the noted sample detection limit.
- >30000 - Parameter concentration greater than capabilities of field instrument.
- mg/L - milligrams per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre, C - degrees Celsius
- µg/L - micrograms per litre, VOCs - Volatile Organic Compounds

TABLE 2.22
MONTHLY LEACHATE ANALYTICAL RESULTS - HOLDING TANK
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	5-Jan-17	21-Feb-17	14-Mar-17	13-Apr-17	25-May-17	14-Jun-17	6-Jul-17	9-Aug-17	5-Sep-17	3-Oct-17	6-Nov-17	6-Dec-17
Alkalinity	3680	3720	4130	3510	3390	3160	3010	3100	3830	4760	2230	4030
Ammonia	555	523	551	524	404	361	323	420	535	682	311	582
Biological Oxygen Demand	118	493	377	339	263	81	113	108	191	252	113	219
Calcium	98.4	91.5	83.0	83.0	86.4	75.3	71.6	63.3	73.1	71.7	114	90.2
Chemical Oxygen Demand	1120	1900	1890	1620	1180	1420	1520	1360	1600	2050	572	1260
Chloride	1460	1300	1380	1220	1180	1250	1150	1090	1230	1490	597	1080
Conductivity (µS/cm)	10010	9830	9550	9100	9530	8810	8280	9090	10460	11920	7030	7640
Dissolved Organic Carbon	375	587	795	624	549	392	365	362	522	541	33.1	480
Total Hardness	699	719	673	636	722	612	566	525	640	661	599	670
Iron	2.49	3.36	2.49	2.33	8.6	0.89	0.82	0.97	1.13	1.53	1.35	1.1
Magnesium	110	119	113	104	123	103	94.1	89.2	111	117	76.4	108
Nitrate	<5	<5	<5	<5	<5	<2.5	<2.5	<5	<5	<5	<2.5	<5
Nitrite	<5	<5	<5	<5	<5	<2.5	<2.5	<5	<5	<5	<2.5	<5
pH (SU)	7.43	7.57	7.49	7.85	7.99	7.71	7.63	7.45	7.56	7.51	7.89	7.61
Phenols	0.132	0.356	0.234	0.186	0.308	0.083	0.059	0.099	0.135	0.127	0.118	0.180
Phosphorus	5.25	5.87	6.57	5.60	5.27	4.5	3.8	4.1	5.44	6.96	2.33	4.56
Sodium	1110	1250	1290	1090	1190	1140	1020	1040	1240	1270	599	1080
Sulphate	35	40	35	51	<10	13	13.7	38	14	23	218	56
Total Kjeldahl Nitrogen	565	630	675	570	538	448	392	520	695	848	345	715
Total Suspended Solids	57	86	84	90	71	39	63	49	83	66	87	54

Notes: • Concentrations are in mg/L (milligrams per litre), unless otherwise specified.
• mg/L - milligrams per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
• < - Parameter concentration not detected above the noted sample detection limit.

TABLE 2.23
SUMMARY OF ADDITIONAL DODD CREEK SURFACE WATER RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MOECC PWQO/G	9-Feb-17		13-Apr-17		14-Jun-17	
		Upstream (STA5)	Downstream (STA6)	Upstream (STA5)	Downstream (STA6)	Upstream (STA5)	Downstream (STA6)
Alkalinity	-	124	137	209	207	262	313
Ammonia	-	<0.02	<0.02	0.03	0.02	0.09	0.16
Un-ionized Ammonia	0.02	<0.001	<0.001	<0.001	<0.001	0.005	0.009
Biological Oxygen Demand	-	<5	<5	<5	<5	<5	<5
Chemical Oxygen Demand	-	22	20	15	16	33	71
Chloride	-	23.7	41.2	36.9	45.2	73.0	215
Field Conductivity (µS/cm)	-	419	432	603	628	592	1240
Laboratory Conductivity (µS/cm)	-	395	506	608	623	810	1640
Total Hardness	-	177	190	269	269	261	238
Iron	0.3	**0.406**	**0.571**	0.183	0.191	0.141	**0.354**
Nitrate	-	7.31	8.39	6.91	6.94	2.16	3.56
Nitrite	-	<0.05	<0.05	<0.10	<0.10	0.05	<0.25
Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Field pH (SU)	6.5 - 8.5	7.98	8.07	7.96	8.07	8.15	8.11
Laboratory pH (SU)	6.5 - 8.5	8.16	8.11	7.66	8.16	8.21	8.32
Sulphate	-	19.4	27.0	26.7	28.0	33.2	113
Total Kjeldahl Nitrogen	-	1.19	1.39	0.38	0.66	1.08	4.51
Total Phosphorus	0.03	**0.19**	**0.19**	**0.05**	**0.05**	**0.06**	**0.09**
Total Dissolved Solids	-	290	338	350	352	390	824
Total Suspended Solids	-	45	44	18	20	14	19
Calcium	-	55.9	58.3	83.4	82.7	73.1	48.3
Magnesium	-	9.18	10.8	14.8	15.1	19.1	28.4
Sodium	-	7.62	24.1	14.1	20.1	38.1	191
Field Dissolved Oxygen	-	9.93	10.11	10.12	12.65	7.65	9.27
Field Temperature (C)	-	0.3	0.5	6.4	6.9	22.0	22.4
Estimated Field Flow Rate (L/s)	-	3950	4150	720	733	334	378

Notes:
- Concentrations are in mg/L (milligrams per litre), unless otherwise specified.
- mg/L - milligrams per litre, µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius, L/s - Litres per second
- MOECC PWQO/G - Ministry of the Environment and Climate Change Provincial Water Quality Objectives and Guidelines (July 1994 with updates)
- < indicates parameter concentration not detected above the noted sample detection limit
- Un-ionized ammonia concentration calculated based on the fraction of NH_3 (f) in the total ammonia.

  where: f = 1/(10^{pKa-pH})+1)

  pKa=0.09018 + 2729.92/T

  T = ambient water temperature in Kelvin (K = C + 273.16)

TABLE 2.23
SUMMARY OF ADDITIONAL DODD CREEK SURFACE WATER RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MOECC PWQO/G	6-Jul-17		5-Sep-17		6-Dec-17	
		Upstream (STA5)	Downstream (STA6)	Upstream (STA5)	Downstream (STA6)	Upstream (STA5)	Downstream (STA6)
Alkalinity	-	222	379	333	464	158	182
Ammonia	-	0.02	0.09	0.03	0.03	<0.02	<0.02
Un-ionized Ammonia	0.02	<0.001	0.002	0.002	0.001	<0.001	<0.001
Biological Oxygen Demand	-	<5	<5	7	<5	<5	<5
Chemical Oxygen Demand	-	28	93	132	142	31	37
Chloride	-	52.2	266	300	384	49.7	78.4
Field Conductivity (µS/cm)	-	562	1470	1170	1810	455	614
Laboratory Conductivity (µS/cm)	-	724	1870	1780	2490	566	722
Total Hardness	-	254	225	177	246	219	219
Iron	0.3	0.191	**0.366**	**0.977**	**0.719**	**3.80**	**0.769**
Nitrate	-	4.52	4.75	<0.5	<1.0	8.76	9.75
Nitrite	-	<0.05	<0.25	<0.5	<1.0	<0.10	<0.10
Phenols	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Field pH (SU)	6.5 - 8.5	7.54	7.77	8.25	8.19	7.69	7.65
Laboratory pH (SU)	6.5 - 8.5	8.29	8.38	8.33	**8.60**	7.90	8.09
Sulphate	-	32.3	126	97.1	169	25.2	38.4
Total Kjeldahl Nitrogen	-	0.71	4.70	5.73	6.89	0.95	1.45
Total Phosphorus	0.03	**0.05**	**0.09**	**0.48**	**0.19**	**0.22**	**0.22**
Total Dissolved Solids	-	378	1010	1030	1480	342	438
Total Suspended Solids	-	13	26	207	46	34	32
Calcium	-	73.4	43.1	29.8	35.3	67.5	64.3
Magnesium	-	17.2	28.4	24.8	38.3	12.2	14.3
Sodium	-	25.1	221	268	398	20.2	49.8
Field Dissolved Oxygen	-	9.56	7.03	6.53	6.90	9.19	8.74
Field Temperature (C)	-	20.9	21.5	17.0	17.3	4.02	5.07
Estimated Field Flow Rate (L/s)	-	265	346	<5	<5	383	1116

Notes:
- Concentrations are in mg/L (milligrams per litre), unless otherwise specified.
- mg/L - milligrams per litre, µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius, L/s - Litres per second
- MOECC PWQO/G - Ministry of the Environment and Climate Change Provincial Water Quality Objectives and Guidelines (July 1994 with updates)
- < indicates parameter concentration not detected above the noted sample detection limit
- Un-ionized ammonia concentration calculated based on the fraction of NH_3 (f) in the total ammonia.

  where: f = 1/(10^{pKa-pH})+1)
  pKa=0.09018 + 2729.92/T
  T = ambient water temperature in Kelvin (K = C + 273.16)

TABLE 2.24
SUMMARY OF QUARTERLY STORMWATER ANALYTICAL RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	Stormwater Intake Pipe - SWM Pond 3	
	24-Apr-17	**14-Nov-17**
General Chemistry		
Alkalinity	481	476
Ammonia	0.04	0.12
Un-ionized Ammonia	0.001	0.006
Biological Oxygen Demand	<5	<5
Carbonaceous Biological Oxygen Demand	<5	<5
Chemical Oxygen Demand	150	123
Chloride	334	470
Field Conductivity (µS/cm)	2220	1450
Laboratory Conductivity (µS/cm)	2170	2580
Total Hardness	297	260
Nitrate	17.3	40.8
Nitrite	<0.5	<1.0
Phenols	<0.001	<0.001
Field pH (SU)	8.20	8.61
Laboratory pH (SU)	8.50	8.67
Sulphate	176	154
Total Kjeldahl Nitrogen	6.93	8.08
Total Phosphorus	0.09	0.15
Total Dissolved Solids	1300	1670
Total Suspended Solids	54	23
Field Dissolved Oxygen	11.39	16.81
Field Temperature (C)	13.55	6.28
Total Metals		
Arsenic	0.003	0.004
Barium	0.068	0.116
Boron	1.14	1.75
Cadmium	<0.0001	<0.0001
Chromium	0.013	0.016
Copper	0.005	0.007
Iron	0.50	0.66
Lead	<0.002	<0.002
Zinc	0.007	0.009

Notes:
- Concentrations are in mg/L (milligrams per litre), unless otherwise specified.
- µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius
- < indicates parameter concentration not detected above the noted sample detection limit.
- Un-ionized ammonia concentration calculated based on the fraction of NH_3 (f) in the total ammonia

  f = 1/(10^{pKa-pH})+1)

  pKa=0.09018 + 2729.92/T

  T = ambient water temperature in Kelvin (K = C + 273.16)

TABLE 2.25
SUMMARY OF STORMWATER ANALYTICAL RESULTS PRIOR TO PLANNED DISCHARGE
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Paramet	**Trigger Concentration**	**Stormwater Intake Pipe - Pond 3**		
		24-Apr-17	**14-Nov-17**	**17-Nov-17**
General Chemistry				
Alkalinity	-	481	476	-
Ammonia	-	0.04	0.12	-
Un-ionized Ammonia	0.03	0.001	0.006	-
Biological Oxygen Demand	-	<5	<5	-
Carbonaceous Biological Oxygen Demand	-	<5	<5	-
Chemical Oxygen Demand	-	150	123	-
Chloride	-	334	470	-
Field Conductivity (µS/cm)	-	2220	1450	-
Laboratory Conductivity (µS/cm)	-	2170	2580	-
Total Hardness	-	297	260	-
Nitrate	-	17.3	40.8	-
Nitrite	-	<0.5	<1.0	-
Phenols	0.005	<0.001	<0.001	-
Field pH (SU)	6.0 - 9.0	8.20	8.61	-
Laboratory pH (SU)	6.0 - 9.0	8.50	8.67	-
Sulphate	-	176	154	-
Total Kjeldahl Nitrogen	-	6.93	8.08	-
Total Phosphorus	-	0.09	0.15	-
Total Dissolved Solids	-	1300	1670	-
Total Suspended Solids	-	54	23	-
Field Dissolved Oxygen	> 2.0	11.39	16.81	-
Field Temperature (C)	-	13.55	6.28	-
Total Metals				
Arsenic	-	0.003	0.004	-
Barium	-	0.068	0.116	-
Boron	-	1.14	1.75	-
Cadmium	-	<0.0001	<0.0001	-
Chromium	-	0.013	0.016	-
Copper	-	0.005	0.007	-
Iron	0.5	0.50	**0.66**	0.455
Lead	-	<0.002	<0.002	-
Zinc	-	0.007	0.009	-

Notes: • Concentrations are in mg/L (milligrams per litre), unless otherwise specified.
• µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius
• Trigger concentrations are from *Table 8 - Trigger Parameters,* as presented in Amended Environmental Compliance Approval No. 0685-92VMQX, issued January 17, 2013. All triggers represent parameter concentrations which may not be exceeded, with the exception of Dissolved Oxygen (trigger >2.0 mg/L)
• < indicates parameter concentration not detected above the noted sample detection limit
• Un-ionized ammonia concentration calculated based on the fraction of NH_3 (f) in the total ammonia.
where: f = 1/(10^{pKa-pH})+1)
pKa=0.09018 + 2729.92/T
T = ambient water temperature in Kelvin (K = C + 273.16)

TABLE 2.26
SUMMARY OF STORMWATER DISCHARGE VOLUMES
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Discharge Event	Discharge Event	Volume m^3
1	December 20, 2016 - March 14, 2017	160,015
2	April 27, 2017 - August 4, 2017	152,354
	Total:	312,369

Notes: • A third discharge event began on November 21 and was still on-going at the time of preparation of the 2017 Annual Progress Report

TABLE 3.1
SUMMARY OF LANDFILL GAS ANALYSIS RESULTS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	Date	CO_2	H_2	O_2	CH_4	CO	NMOC (ppm)	Pressure (mm of water)
LFG Main Header	May 2005	39.8	<0.1	0.4	55.7	<0.1	531	325.1
	May 2006	37.5	<0.1	1.0	52.1	<0.1	159	480.06
	May 2007	35.8	-	1.3	48.6	<0.1	3800	586.74
	May 2008	35.6	-	1.3	49.0	<0.1	1400	579.12
	May 2009	36.9	-	1.2	54.2	<0.1	710	421.64
	May 2010	33.5	-	3.5	46.3	<0.1	1800	424.18
	May 2011	35.9	-	2.0	53.4	<0.1	1400	231.14
	May 2012	38.3	-	0.8	52.8	<0.1	2700	153.42
	May 2013 [1]	33.2	-	2.9	38.5	<0.0002	900	261.62
	Sept 2013	35.2	-	1.7	45.9	<0.0002	1530	274.32
	May 2014	32.9	-	0.9	49.6	<0.0002	448	308.61
	May 2015	33.6	-	0.5	62.2	<0.0002	484	214.88
	June 2016 [2]	37.6	-	1.5	50.5	<0.1	1800	204.47
	May 2017	36.3	-	1.9	50.4	<0.1	600	337.82

Notes:
- All concentrations are in % unless otherwise noted.
- < - Parameter concentration not detected above the noted sample detection limit.
- [1] A second landfill gas header sample was taken in September 2013 to confirm/refute the findings from the May 2013 sample event
- [2] The landfill gas header sample was taken in June 2016, as the May 2016 sample was anomalous due to an exceeded hold time.

TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	January 18 and 19, 2017				February 15 and 16, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG1-04	56.6	35.2	0.5	-38.4	60.1	34.7	0.0	-44.4
LFG2-04	64.3	31.0	0.0	-42.6	65.8	28.8	0.0	-45.1
LFG3-04	65.5	32.1	0.0	12.5	46.3	25.9	5.4	-25.6
LFG4-04	67.9	30.6	0.0	-42.8	63.7	30.7	0.1	-42.1
LFG5-04	58.9	36.6	0.0	-38.1	60.7	34.9	0.0	-43.9
LFG6-04	55.8	35.6	0.0	-25.1	57.8	36.5	0.0	-23.3
LFG7-04	63.8	34.1	0.0	-40.2	65.1	33.7	0.1	-44.4
LFG8-04	49.4	30.7	0.4	-40.7	58.9	34.6	0.0	-40.1
LFG9-04	52.0	35.1	2.3	-38.1	NM			
LFG10-04	56.5	38.0	0.0	-8.3	57.0	37.2	0.0	-8.2
LFG11-04	60.7	36.7	0.0	-33.7	61.1	35.1	0.0	-39.4
LFG12-05	59.2	36.6	0.0	-41.4	60.7	35.4	0.0	-45.5
LFG13-05	54.9	33.7	0.0	-31.4	60.1	35.5	0.0	-35.7
LFG14-05	59.2	36.8	0.0	-4.9	59.2	36.8	0.0	-4.0
LFG15-05	51.9	33.7	0.0	-33.3	52.8	34.0	0.0	-34.7
LFG16-05	65.5	32.8	0.0	-42.4	66.4	30.3	0.0	-45.5
LFG17-05	60.1	33.4	0.0	-15.6	16.9	11.2	16.3	-17.2
LFG18-05	46.8	36.4	0.0	-12.1	47.7	34.8	0.0	-11.8
LFG19-05	54.0	34.6	0.0	-15.5	56.3	37.4	0.2	-15.7
LFG20-05	57.3	37.5	0.0	-40.2	NM			
LFG21-05	55.2	34.4	0.0	-42.4	52.0	30.6	0.6	-43.1
LFG22-05	59.6	39.0	0.0	-32.6	59.6	37.4	0.0	-39.7
LFG23-05	67.8	30.0	0.0	0.1	65.0	32.1	0.0	-43.8
LFG24-07	56.9	36.2	0.3	-39.7	58.8	38.2	0.2	-39.8
LFG25-07	64.9	34.5	0.0	-39.7	63.1	34.0	0.6	-40.2
LFG26-07	58.5	39.3	0.0	-38.7	57.2	37.9	0.1	-39.7
LFG27-07	58.2	37.9	0.0	-38.8	59.5	35.6	0.0	-41.1
LFG28-07	56.8	36.5	0.0	-37.8	58.3	36.4	0.0	-38.4
LFG29-07	60.1	36.9	0.0	-37.3	59.3	35.7	0.0	-25.3
LFG30-09	59.6	33.7	0.0	-41.4	61.3	35.8	0.0	-42.4
LFG31-09	58.9	37.0	0.0	-35.7	57.8	39.0	0.4	-36.7
LFG33-09	57.0	35.0	0.0	-41.2	57.7	35.9	0.1	-42.1
LFG34-09	58.6	34.8	0.0	-30.6	61.3	35.2	0.0	-33.3
LFG35-09	60.2	33.2	0.0	-41.8	59.4	36.1	0.1	-42.3
LFG36-09	55.2	32.7	0.1	-42.5	61.2	35.3	0.0	-41.8
LFG37-09	57.4	38.7	0.0	-40.9	57.1	38.5	0.1	-42.4
LFG38-09	56.1	37.0	0.0	-41.1	58.1	39.2	0.0	-41.4
LFG39-09	58.1	34.0	0.0	-39.7	60.3	38.1	0.0	-39.4
LFG40-09	35.9	19.5	7.5	-13.5	22.1	14.9	15.1	-22.5
LFG41-09	59.1	35.2	0.0	-40.9	63.6	34.4	0.0	-42.4
LFG42-11	52.2	36.6	0.0	-0.2	56.3	36.7	0.0	0.3

Notes:
- All concentrations are in % unless otherwise noted.
- " NM " denotes not monitored due to inaccessible sample port (blocked or frozen) or other noted reasoning.

TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	January 18 and 19, 2017				February 15 and 16, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG43-11	59.0	36.6	0.0	-37.7	58.4	35.9	0.1	-37.4
LFG44-11	40.1	26.3	8.2	-41.2	NM			
LFG45-11	59.2	33.8	0.0	-41.4	61.7	35.6	0.1	-42.4
LFG46-11	NM - condensate				NM - condensate			
LFG47-11	59.8	35.1	0.0	-19.5	60.8	36.7	0.0	-22.2
LFG48-11	57.7	38.3	0.0	-4.4	NM			
LFG49-11	59.3	38.0	0.0	-37.4	51.2	30.0	1.0	-37.7
LFG50-13	55.7	39.5	0.6	-37.7	34.3	25.5	7.0	-25.3
LFG51-13	58.2	39.4	0.0	-34.3	56.6	36.3	0.1	-36.6
LFG52-13	62.0	36.5	0.0	-37.3	61.7	33.8	0.0	-36.4
LFG53-13	56.7	40.6	0.0	-37.7	56.6	37.4	0.0	-37.7
LFG55-13	7.1	8.1	21.2	-36.7	7.1	8.1	21.2	-36.7
LFG56-13	61.0	35.9	0.0	-40.1	51.4	24.8	4.8	-39.7
LFG57-13	60.0	35.7	0.0	-39.7	60.4	36.9	0.0	-42.0
LFG58-13	60.1	35.7	0.0	-41.1	59.9	33.5	1.1	-39.7
LFG59-13	54.4	33.9	0.0	-41.1	58.8	35.6	0.0	-43.6
LFG60-13	58.1	37.1	0.0	-37.7	60.0	36.7	0.0	-41.8
LFG61-14	51.0	33.7	2.2	-15.2	47.0	31.1	5.0	-11.7
LFG62-13	56.6	36.8	0.0	-39.1	58.3	37.2	0.0	-40.4
LFG63-14	57.3	38.8	0.0	-39.4	NM			
LFG64-14	53.1	37.1	0.9	-20.9	50.9	36.4	2.4	-22.9
LFG65-14	4.2	6.9	20.2	-0.8	NM			
LFG66-13	55.0	32.2	0.0	-42.1	60.3	34.4	0.0	-43.1
LFG67-13	57.8	36.2	0.3	-16.9	57.1	33.6	0.4	-16.2
LFG68-13	NM - Not accessible due to ponded water at base of well				NM - Not accessible due to ponded water at base of well			
LFG69-13	55.6	40.7	0.0	-39.6	57.3	40.8	0.1	-40.7
LFG70-13	59.9	33.3	0.0	-38.4	NM			
LFG71-13	60.3	34.2	0.0	-38.3	NM			
LFG72-13	60.6	35.4	0.0	-38.3	NM			
LFG73-13	61.1	34.9	0.0	-37.7	50.3	28.1	0.9	-37.7
LFG74-13	60.5	36.1	0.0	-38.6	60.0	32.9	0.3	-38.7
LFG75-13	57.8	36.1	0.0	-38.7	NM			
LFG76-13	60.1	36.9	0.0	-38.4	55.7	33.0	0.9	-39.3
LFG77-13	59.5	36.4	0.0	-15.4	59.2	34.4	0.0	-12.8
LFG78-13	58.9	35.0	0.0	-38.3	60.5	36.6	0.0	-38.7
LFG79-13	61.2	34.5	0.0	-39.0	59.7	35.9	0.1	-39.1
LFG80-13	61.4	34.0	0.0	-38.7	60.7	34.7	0.2	-39.4
LFG81-13	65.0	32.3	0.0	-38.7	62.2	33.3	0.1	-39.7
LFG82-13	57.7	30.9	0.0	-38.7	63.2	32.4	0.0	-38.7
LFG83-13	67.9	27.7	0.0	-39.1	67.9	27.7	0.0	-39.1
LFG84-13	63.6	21.0	0.6	-38.7	67.0	28.8	0.2	-39.4

Notes:
- All concentrations are in % unless otherwise noted.
- " NM " denotes not monitored due to inaccessible sample port (blocked or frozen) or other noted reasoning.

TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	January 18 and 19, 2017				February 15 and 16, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG85-14	47.0	36.2	0.0	-4.9	46.3	33.2	0.0	-5.7
LFG86-14	57.6	36.1	0.0	-30.5	54.3	34.3	0.0	-34.7
LFG87-14	56.6	35.8	0.5	-37.0	59.9	35.2	0.0	-37.4
LFG88-14	57.2	37.0	0.0	-36.7	59.4	36.4	0.0	-36.4
LFG89-14	56.5	37.0	0.0	-14.8	57.1	36.4	0.0	-1.9
LFG90-14	56.9	36.9	0.0	-40.4	60.2	36.9	0.1	-40.1
LFG91-14	57.0	39.0	0.0	-0.6	57.1	37.5	0.0	-0.5
LFG92-14	57.5	36.2	0.0	-11.8	59.0	36.0	0.0	-12.8
LFG94-14	57.1	36.3	0.0	-39.4	57.6	37.2	0.0	-0.4
LFG95-14	48.9	30.6	0.4	-33.0	55.6	36.7	0.0	-37.3
LFG96-14	59.7	36.2	0.0	-0.3	59.2	35.7	0.0	-1.1
LFG97-14	56.9	37.9	0.0	-40.7	55.0	37.3	0.8	-42.4
LFG98-14	55.3	37.1	0.0	-40.9	53.9	34.5	0.4	-42.2
LFG99-14	58.5	39.4	0.0	-37.7	54.3	34.3	0.5	-37.7
LFG100-14	54.2	38.9	0.0	-4.2	NM			
LFG101-14	50.4	35.0	0.0	-33.7	53.9	34.5	0.0	-39.7
LFG102-14	60.1	37.6	0.0	-7.4	59.5	34.0	0.0	-7.1
LFG103-14	55.0	36.9	0.0	-33.1	53.0	34.9	0.0	-39.7
LFG104-14	57.8	38.0	0.0	-7.4	56.7	35.6	0.0	-6.6
LFG105-14	56.3	38.1	0.0	-2.9	57.3	36.7	0.0	-1.6
LFG106-14	58.7	38.6	0.0	-38.7	58.2	36.9	0.1	-39.6
LFG107-14	57.9	38.5	0.0	-38.1	57.2	36.4	0.0	-39.7
LFG108-14	60.0	37.6	0.0	-38.7	58.0	36.5	0.3	-39.4
LFG109-14	59.0	37.4	0.0	-38.3	57.8	37.2	0.0	-38.7
LFG110-15	57.8	37.0	0.0	-37.3	58.4	35.6	0.1	-37.8
LFG111-15	58.2	38.9	0.0	-37.7	49.7	34.2	4.0	-34.7
LFG112-15	59.1	38.7	0.0	0.0	0.7	1.3	21.7	-33.3
LFG113-15	63.4	35.7	0.0	-39.1	57.2	32.1	0.7	-33.7
LFG114-15	59.2	37.5	0.0	-10.8	60.5	36.1	0.2	-33.3
LFG115-15	55.5	39.8	0.0	-26.4	13.2	12.3	17.7	-30.6
LFG116-15	20.8	17.8	13.8	8.4	51.2	33.6	2.6	4.7
LFG117-15	56.7	38.3	0.0	-27.3	56.5	38.9	0.0	-31.7
LFG118-15	60.3	36.8	0.0	-43.2	59.1	34.5	0.8	-36.4
LFG119-15	58.6	38.5	0.0	-25.9	65.0	33.8	0.0	20.0
LFG120-15	NM - condensate				57.3	37.7	0.0	-32.3
LFG121-15	45.5	41.3	1.7	4.4	49.6	42.4	0.8	-2.8
LFG122-15	54.0	38.5	0.0	-28.0	46.7	33.7	2.5	-26.3
LFG123-15	57.2	38.2	0.0	27.6	57.0	38.7	0.0	36.0
LFG124-15	58.5	38.1	0.0	-1.0	53.7	34.3	0.4	-12.5
LFG125-15	58.2	39.9	0.0	-2.3	58.8	36.2	0.0	-3.8
LFG126-15	57.6	39.2	0.0	-8.4	57.6	39.2	0.0	-8.4
LFG127-15	50.8	34.0	0.2	-2.5	54.6	38.3	0.0	-2.5

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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	January 18 and 19, 2017				February 15 and 16, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG128-15	52.9	41.4	0.3	-2.5	52.0	40.4	0.5	-2.7
LFG129-15	52.8	39.6	0.6	-21.2	53.5	40.6	0.7	-22.6
LFG130-15	12.6	10.2	20.3	-38.8	9.6	8.7	20.4	-23.5
LFG131-15	57.6	36.0	0.1	-39.1	57.0	34.1	0.4	-41.0
LFG132-15	54.1	35.4	0.0	-39.4	NM			
LFG133-15	54.8	39.3	0.0	-38.1	54.2	36.6	0.2	-39.4
LFG134-15	56.3	39.5	0.0	-39.5	49.5	33.0	3.6	-40.7
LFG135-15	55.9	40.1	0.0	-36.7	NM			
LFG136-15	47.5	36.9	0.0	-10.8	NM			
LFG137-15	52.9	43.5	0.0	-4.0	50.8	39.0	0.3	-5.0
LFG138-16	55.1	41.7	0.0	-21.6	55.1	41.7	0.0	-21.6
LFG139-16	53.8	40.7	0.0	-19.5	53.8	40.7	0.0	-19.5
LFG140-16	48.3	38.0	0.0	-3.0	48.3	38.0	0.0	-3.0
LFG141-16	55.5	39.4	0.0	-0.4	55.5	39.4	0.0	-0.4
LFG142-16	51.5	39.4	0.0	-1.9	51.5	39.4	0.0	-1.9
LFG143-16	53.7	41.4	0.0	-0.6	53.7	41.4	0.0	-0.6
LFG144-16	50.6	38.0	0.0	-2.6	50.6	38.0	0.0	-2.6
LFG145-16	51.8	39.0	0.0	-2.0	51.8	39.0	0.0	-2.0
LFG146-16	46.5	35.7	0.0	-6.1	46.5	35.7	0.0	-6.1
LFG147-16	56.1	41.5	0.0	-8.4	56.1	41.5	0.0	-8.4
LFG148-16	54.2	41.1	0.0	-9.4	54.2	41.1	0.0	-9.4
LFG149-16	50.2	40.0	1.5	-12.8	50.2	40.0	1.5	-12.8
LFG150-17	-	-	-	-	-	-	-	-
LFG151-17	-	-	-	-	-	-	-	-
LFG152-17	-	-	-	-	-	-	-	-
LFG153-17	-	-	-	-	-	-	-	-
LFG154-17	-	-	-	-	-	-	-	-
LFG155-17	-	-	-	-	-	-	-	-
LFG156-17	-	-	-	-	-	-	-	-
LFG157-17	-	-	-	-	-	-	-	-
LFG158-17	-	-	-	-	-	-	-	-
LFG159-17	-	-	-	-	-	-	-	-
LFG160-17	-	-	-	-	-	-	-	-
LFG161-17	-	-	-	-	-	-	-	-
LFG162-17	-	-	-	-	-	-	-	-
LFG163-17	-	-	-	-	-	-	-	-
LFG164-17	-	-	-	-	-	-	-	-
LFG165-17	-	-	-	-	-	-	-	-
LFG166-17	-	-	-	-	-	-	-	-
LFG167-17	-	-	-	-	-	-	-	-
H1-09	NM - condensate				NM - condensate			
H3-09	0.1	0.1	22.6	-28.6	0.3	0.5	21.4	-27.3

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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	January 18 and 19, 2017				February 15 and 16, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
H4-10	47.9	28.1	4.0	-35.0	59.3	37.2	0.0	-14.1
H5-10	70.0	23.6	0.0	-32.7	59.8	35.3	0.0	-23.6
H6-10	61.2	36.6	0.0	-15.2	66.5	32.4	0.0	-39.7
H7-10	NM - condensate				NM - condensate			
H9-11	57.3	35.3	0.0	-35.0	NM			
H10-11	68.7	29.0	0.0	-40.4	66.4	29.2	0.2	-43.8
H11-12	53.9	33.7	0.4	-2.2	47.1	30.2	4.4	-7.4
H12-12	20.4	21.9	3.0	-0.5	39.0	29.3	0.2	-0.1
H13-12	55.1	37.8	0.0	-3.3	56.5	37.6	0.0	-2.0
H14-12	54.7	37.5	0.0	-3.2	56.7	37.4	0.0	-2.0
H15-12	56.8	37.5	0.0	-32.5	56.1	37.2	0.0	-31.7
H16-12	56.5	35.8	0.2	-39.7	60.5	37.1	0.0	-39.7
H17-12	54.3	38.4	0.0	-38.8	NM			
H18-12	59.6	38.0	0.0	-40.4	61.0	34.0	0.0	-43.4
H19-12	61.8	36.9	0.0	-2.3	51.4	34.9	0.0	-15.5
H20-13	60.3	37.7	0.0	-39.1	NM			
H21-13	48.6	34.7	0.0	-12.5	53.4	34.4	0.0	-14.1
H22-13	51.6	35.0	0.0	-2.8	47.3	33.9	0.0	-8.0
H23-13	45.7	31.7	4.4	-7.4	49.0	32.2	3.1	-5.4
H24-13	52.8	30.3	1.0	-36.7	48.5	28.0	1.5	-37.4
H25-13	5.7	4.1	21.3	-39.7	NM			
H26-13	NM - condensate				NM - condensate			
H27-13	56.0	39.1	0.0	-29.6	56.1	37.7	0.2	-36.4
H28-14	NM - condensate				NM - condensate			
H29-13	NM - condensate				59.4	36.4	0.0	-37.4
H30-14	22.8	35.0	6.4	-16.2	2.3	4.4	20.7	-40.1
H31-14	49.6	40.0	0.0	-2.4	57.5	36.9	0.0	-37.4
H32-14	NM - condensate				NM - condensate			
H33-14	57.7	36.9	0.0	-32.7	58.6	38.0	0.0	-7.7
H34-14	51.5	32.4	0.4	-37.0	53.7	34.9	0.3	-37.4
H35-14	NM - condensate				NM - condensate			
H36-14	54.3	40.2	0.0	-26.9	NM - condensate			
H37-14	50.5	34.8	0.3	-1.8	NM			
H38-14	50.4	38.2	0.0	-9.6	50.6	40.0	0.0	-11.0
H39-14	57.0	36.7	0.0	-38.5	53.8	33.9	0.5	-37.0
H40-14	57.5	36.5	0.0	-41.4	59.5	37.9	0.0	-41.1
H41-14	58.6	37.2	0.0	-27.3	NM			
H42-14	58.1	35.4	0.0	-41.8	NM			
H43-14	53.8	34.7	0.0	-3.5	52.6	33.4	0.2	-3.6
H44-15	54.4	37.6	0.0	-28.0	53.3	37.4	0.2	-32.0
H45-15	55.7	38.7	0.0	-5.5	59.4	37.9	0.0	-7.3
H46-15	54.6	39.3	0.0	-19.1	56.7	38.4	0.0	-30.0

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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	January 18 and 19, 2017				February 15 and 16, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
H47-16	55.9	38.9	0.0	-8.2	NM			
H48-16	NM - condensate				48.5	39.4	0.0	-20.3
H49-16	53.8	41.2	0.0	-9.6	51.2	39.9	0.0	-10.1
H50-16	54.1	40.4	0.0	-2.5	53.2	40.1	0.0	-3.3
H51-16	50.3	34.3	0.4	-33.3	11.1	9.5	17.4	-25.2
H52-16	56.9	38.3	0.0	-2.0	NM - condensate			
H53-16	56.0	38.9	0.0	-4.1	47.7	31.5	0.7	-4.0
H54-16	49.4	36.0	0.5	-4.0	NM - condensate			
H55-16	50.3	38.3	0.0	-4.1	51.8	36.4	0.3	-4.6
H56-17	-	-	-	-	-	-	-	-
H57-17	-	-	-	-	-	-	-	-
H58-17	-	-	-	-	-	-	-	-
H59-17	-	-	-	-	-	-	-	-
H60-17	-	-	-	-	-	-	-	-
H61-17	-	-	-	-	-	-	-	-
H62-17	-	-	-	-	-	-	-	-
H63-17	-	-	-	-	-	-	-	-
MH20	-	-	-	-	-	-	-	-
MH21	-	-	-	-	-	-	-	-
MH22	52.8	32.8	2.9	-0.1	57.0	33.7	1.0	0.0
MH23	26.4	20.2	13.7	-0.1	57.8	35.6	0.9	0.0
MH24	-	-	-	-	-	-	-	-
MH29	25.0	14.0	13.3	-0.6	28.0	16.4	12.6	-0.2
MH30	42.1	29.5	6.5	-0.1	59.5	32.0	0.8	0.4
MH31	13.2	11.9	18.1	-0.2	15.8	10.3	16.1	-0.1
MH32	-	-	-	-	-	-	-	-

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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	March 21 and 22, 2017				April 18 and 19, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG1-04	58.4	33.7	0.2	-40.1	62.7	34.5	0.0	-38.0
LFG2-04	69.0	29.3	0.0	-42.1	69.4	30.1	0.0	-42.7
LFG3-04	60.0	28.9	1.9	-33.3	63.5	30.5	0.7	-36.7
LFG4-04	69.4	27.6	0.1	-43.8	70.8	28.4	0.0	-43.1
LFG5-04	60.7	35.0	0.1	-40.5	60.6	36.5	0.0	-38.1
LFG6-04	57.9	35.3	0.1	-22.6	57.9	35.9	0.0	-31.0
LFG7-04	64.3	31.2	1.1	-41.1	68.4	30.0	0.0	-41.1
LFG8-04	59.5	36.3	0.0	-42.2	60.2	37.4	0.0	-41.1
LFG9-04	52.9	33.1	2.7	-38.4	58.2	35.0	0.8	-38.1
LFG10-04	55.7	36.6	0.2	-13.1	54.7	36.8	0.0	-16.8
LFG11-04	62.3	33.5	0.2	-40.5	61.7	36.0	0.0	-34.7
LFG12-05	61.9	34.5	0.2	-43.4	63.1	35.2	0.0	-42.1
LFG13-05	59.8	34.3	0.2	-36.9	55.8	33.4	0.0	-39.0
LFG14-05	57.8	35.2	0.2	-6.7	60.7	36.8	0.0	-5.4
LFG15-05	52.7	33.4	0.2	-34.6	54.3	34.2	0.1	-33.7
LFG16-05	65.9	30.8	0.2	-43.1	68.0	31.5	0.0	-43.1
LFG17-05	62.7	33.2	0.2	-16.2	62.7	33.5	0.0	-15.5
LFG18-05	48.4	34.0	0.0	-13.1	54.7	35.4	0.0	-11.8
LFG19-05	54.4	36.9	0.3	-19.5	58.4	35.4	0.2	-17.5
LFG20-05	61.6	37.0	0.2	-41.0	61.1	36.1	0.0	-40.5
LFG21-05	54.8	31.3	0.2	-43.4	57.6	33.4	0.1	-43.1
LFG22-05	61.9	34.2	0.0	-39.4	61.9	35.0	0.0	-39.7
LFG23-05	67.6	28.3	0.2	-43.8	70.5	28.8	0.0	-42.4
LFG24-07	54.1	36.5	2.1	-40.1	49.0	31.6	3.7	-39.7
LFG25-07	58.1	29.1	1.7	-40.4	63.4	33.5	0.3	-40.1
LFG26-07	59.0	37.9	0.0	-38.6	59.1	37.7	0.0	-39.0
LFG27-07	58.8	36.7	0.1	-39.5	59.1	37.8	0.0	-39.7
LFG28-07	60.2	37.8	0.0	-38.1	60.6	37.7	0.1	-38.0
LFG29-07	60.8	36.5	0.1	-37.8	62.7	36.4	0.2	-38.4
LFG30-09	55.6	31.3	0.4	-42.3	60.1	33.3	0.1	-42.1
LFG31-09	56.3	32.6	2.7	-36.5	61.0	35.7	0.7	-37.0
LFG33-09	59.1	37.4	0.0	-40.5	59.5	37.7	0.0	-41.2
LFG34-09	59.1	35.1	0.9	-33.7	60.6	34.0	0.7	-34.0
LFG35-09	58.8	33.3	0.1	-42.1	62.4	33.7	0.1	-41.8
LFG36-09	60.7	34.1	0.0	-42.1	63.0	34.4	0.0	-42.1
LFG37-09	57.9	38.3	0.0	-42.7	57.9	36.8	0.2	-41.8
LFG38-09	57.8	37.2	0.1	-41.4	58.6	37.0	0.1	-40.7
LFG39-09	60.7	35.2	0.1	-36.4	61.8	35.7	0.0	-40.1
LFG40-09	22.4	13.3	13.1	-28.7	34.0	16.0	10.4	-18.0
LFG41-09	62.4	33.1	0.0	-41.9	63.4	34.8	0.0	-41.4
LFG42-11	38.5	31.5	3.0	-0.1	62.4	28.1	0.2	-1.1

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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	March 21 and 22, 2017				April 18 and 19, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG43-11	60.5	36.4	0.0	-38.4	61.6	36.3	0.1	-37.7
LFG44-11	42.2	25.7	7.4	-42.1	62.8	34.1	0.2	-41.8
LFG45-11	61.9	33.7	0.2	-42.5	59.0	31.7	1.0	-42.1
LFG46-11	NM - condensate				NM - condensate			
LFG47-11	61.3	35.3	0.0	-23.7	60.8	36.1	0.0	-22.9
LFG48-11	59.8	38.2	0.0	-9.1	59.6	37.1	0.0	-38.1
LFG49-11	60.5	36.2	0.0	-38.7	61.4	36.5	0.1	-36.7
LFG50-13	32.4	23.3	10.0	-39.0	51.1	35.5	3.5	-38.1
LFG51-13	NM - condensate				59.8	37.3	0.1	-36.8
LFG52-13	63.2	34.1	0.0	-39.1	64.2	34.9	0.1	-38.1
LFG53-13	57.3	36.6	0.0	-42.2	56.5	34.5	0.4	-38.4
LFG55-13	0.3	0.4	22.2	-38.5	1.5	2.2	22.6	-38.0
LFG56-13	68.9	28.3	1.0	-41.1	64.9	25.4	1.8	-40.4
LFG57-13	61.0	34.6	0.1	-41.4	62.0	35.8	0.0	-40.1
LFG58-13	52.7	32.8	2.1	-41.1	60.6	36.3	1.3	-41.1
LFG59-13	55.4	35.2	0.1	-43.8	55.9	35.3	0.0	-41.8
LFG60-13	59.1	35.3	0.2	-41.1	59.3	38.0	0.0	-36.7
LFG61-14	57.8	36.6	0.2	-12.8	58.4	36.2	0.1	-12.1
LFG62-13	59.2	36.5	0.1	-40.1	60.1	36.1	0.0	-39.4
LFG63-14	NM				58.9	39.3	0.0	-40.7
LFG64-14	56.8	38.4	0.3	-24.4	57.8	39.3	0.0	-24.2
LFG65-14	NM				2.7	5.9	17.0	-4.0
LFG66-13	59.4	33.5	0.1	-45.8	62.7	31.2	0.1	-42.4
LFG67-13	57.1	34.1	2.1	-18.2	60.4	37.5	0.0	-37.0
LFG68-13	51.1	36.5	2.9	-41.5	55.6	37.7	0.3	-40.7
LFG69-13	54.0	39.7	0.1	-41.5	52.8	38.6	0.0	-40.7
LFG70-13	62.9	34.6	0.2	-39.7	63.8	33.7	0.0	-39.1
LFG71-13	64.7	32.9	0.5	-39.4	64.5	32.5	0.2	-39.4
LFG72-13	22.5	15.1	14.4	-39.4	32.5	21.0	10.6	-39.1
LFG73-13	61.7	34.2	0.3	-38.4	62.8	34.5	0.1	-38.1
LFG74-13	50.3	28.9	4.3	-39.4	63.4	34.5	0.0	-39.1
LFG75-13	23.0	16.4	13.4	-39.7	59.3	35.8	0.1	-39.1
LFG76-13	48.6	29.2	4.2	-39.4	60.9	36.2	0.1	-39.1
LFG77-13	61.1	37.0	0.0	-17.9	59.3	35.5	0.0	-17.9
LFG78-13	60.9	35.1	0.2	-39.4	61.9	35.2	0.1	-38.8
LFG79-13	61.9	34.6	0.2	-39.4	62.2	33.2	0.2	-39.1
LFG80-13	62.5	32.5	0.4	-39.7	64.3	32.8	0.2	-39.6
LFG81-13	64.8	30.5	0.6	-39.4	65.3	30.7	0.6	-39.4
LFG82-13	60.6	31.1	1.2	-39.4	64.0	33.4	0.2	-39.1
LFG83-13	70.3	26.4	0.3	-40.1	69.6	30.4	0.0	-38.7
LFG84-13	72.3	23.6	0.4	-39.4	55.9	22.4	4.8	-38.8

Notes:
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	March 21 and 22, 2017				April 18 and 19, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG85-14	41.6	32.7	0.0	-7.8	40.5	32.6	0.0	-7.4
LFG86-14	54.3	34.7	0.0	-36.7	62.2	35.1	0.2	-37.0
LFG87-14	61.8	36.5	0.0	-38.7	62.6	35.8	0.1	-37.7
LFG88-14	60.3	38.7	0.0	-37.4	60.5	38.1	0.1	-36.7
LFG89-14	58.4	37.9	0.0	19.2	59.6	38.4	0.0	-11.1
LFG90-14	63.5	33.4	0.0	-41.8	64.4	33.7	0.0	-41.4
LFG91-14	56.4	35.9	0.0	-5.0	48.2	34.0	0.0	-17.5
LFG92-14	55.9	34.2	0.0	-13.5	53.3	33.5	0.0	-29.8
LFG94-14	57.2	37.0	0.2	-41.4	58.7	38.5	0.4	-41.1
LFG95-14	56.2	35.5	0.0	-35.0	56.6	36.4	0.6	-40.1
LFG96-14	51.7	30.2	3.2	-1.8	52.4	30.2	3.2	-4.1
LFG97-14	38.8	26.8	7.7	-42.4	57.5	36.2	0.6	-41.8
LFG98-14	54.3	35.0	1.4	-42.1	58.5	38.2	0.0	-41.8
LFG99-14	59.4	36.4	0.2	-37.3	59.6	36.7	0.0	-38.1
LFG100-14	NM				47.1	36.0	0.0	-6.1
LFG101-14	56.7	34.5	0.1	-40.4	59.3	35.4	0.0	-36.7
LFG102-14	34.1	21.2	10.1	-8.5	61.9	36.1	0.0	-7.1
LFG103-14	59.5	38.6	0.0	-7.9	57.8	36.6	0.0	-36.4
LFG104-14	59.0	37.2	0.0	-8.2	59.5	37.8	0.0	-6.7
LFG105-14	59.9	37.3	0.0	-2.7	59.4	37.1	0.0	-1.5
LFG106-14	59.8	38.1	0.0	-40.1	60.4	37.5	0.3	-39.0
LFG107-14	58.6	37.7	0.0	-39.1	58.7	38.1	0.0	-38.7
LFG108-14	59.4	36.8	0.2	-39.4	61.8	37.0	0.1	-38.9
LFG109-14	59.9	37.2	0.0	-39.1	60.6	38.3	0.0	-38.8
LFG110-15	58.9	36.5	0.0	-38.4	60.4	38.3	0.1	-38.4
LFG111-15	56.3	36.5	0.9	-38.9	58.9	37.5	0.5	-38.0
LFG112-15	45.5	30.6	4.8	-31.7	51.0	32.9	3.3	-37.7
LFG113-15	58.3	31.8	0.3	-39.0	64.5	34.7	0.2	-38.6
LFG114-15	61.3	34.9	0.2	-22.2	63.2	35.1	0.3	-33.3
LFG115-15	57.1	38.9	0.0	-32.8	56.6	39.1	0.6	-33.7
LFG116-15	24.2	19.7	12.7	-39.7	28.5	23.4	10.7	-39.4
LFG117-15	57.6	39.1	0.0	-32.7	58.7	37.8	0.2	-33.0
LFG118-15	62.3	35.3	0.0	-38.1	62.9	36.1	0.3	-37.4
LFG119-15	66.6	33.1	0.0	23.2	56.6	37.9	0.3	-19.5
LFG120-15	55.6	34.3	0.2	-35.0	61.1	37.6	0.1	-34.7
LFG121-15	45.4	35.8	3.6	-30.0	41.0	32.8	6.1	-34.0
LFG122-15	56.9	39.3	0.0	-34.3	55.0	38.0	0.9	-33.3
LFG123-15	57.9	38.6	0.0	20.4	59.2	40.3	0.1	4.0
LFG124-15	61.5	38.4	0.0	-3.0	59.8	36.9	0.0	-12.1
LFG125-15	60.6	39.4	0.0	-4.6	60.1	39.1	0.0	-4.6
LFG126-15	60.0	39.7	0.0	-2.9	59.0	39.2	0.0	-3.5
LFG127-15	56.8	38.7	0.0	-1.0	59.0	39.6	0.0	-2.8

Notes:
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	March 21 and 22, 2017				April 18 and 19, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG128-15	57.7	40.3	0.0	-1.5	52.9	38.3	1.7	-5.7
LFG129-15	55.0	39.4	0.8	-22.3	56.0	38.7	0.6	-20.2
LFG130-15	5.0	3.6	20.9	-37.0	18.6	11.7	15.3	-12.7
LFG131-15	61.9	38.0	0.1	-41.8	62.6	36.5	0.1	-40.4
LFG132-15	NM				57.6	36.7	0.0	-40.4
LFG133-15	58.5	39.2	0.2	-40.5	58.9	39.7	0.1	-39.5
LFG134-15	44.9	32.8	4.9	-42.1	46.4	33.0	4.3	-40.4
LFG135-15	57.1	39.8	0.0	-39.0	56.5	39.9	0.0	-38.7
LFG136-15	NM				48.2	36.8	0.0	-11.1
LFG137-15	54.6	40.3	0.7	-6.4	55.0	39.5	0.1	-20.5
LFG138-16	50.8	37.7	0.0	-11.4	46.8	37.8	0.0	-18.9
LFG139-16	54.1	39.1	0.0	-20.5	50.1	37.8	0.0	-27.7
LFG140-16	49.0	34.8	0.0	-2.1	34.5	32.3	0.1	-12.7
LFG141-16	41.4	28.9	6.3	-0.9	53.4	37.2	0.9	-8.1
LFG142-16	54.3	39.7	0.0	-1.0	17.3	27.1	0.6	-1.4
LFG143-16	49.0	36.9	0.0	-2.5	36.1	34.8	0.0	-2.9
LFG144-16	46.8	37.7	0.0	-2.8	34.9	34.6	0.0	-1.6
LFG145-16	43.0	34.6	0.1	-2.5	41.5	35.0	0.0	-1.5
LFG146-16	44.8	37.8	0.1	-6.4	42.5	35.9	0.1	-3.8
LFG147-16	NM - cannot safely access				54.1	41.3	0.0	-21.9
LFG148-16	51.1	37.9	0.1	-12.5	44.1	36.7	0.1	-20.2
LFG149-16	52.0	39.3	0.8	-17.9	50.7	37.7	0.6	-20.2
LFG150-17	-	-	-	-	48.2	39.2	0.0	-12.9
LFG151-17	-	-	-	-	46.4	39.9	0.9	-17.9
LFG152-17	-	-	-	-	43.6	38.3	0.0	-7.7
LFG153-17	-	-	-	-	45.5	39.7	0.0	-6.1
LFG154-17	-	-	-	-	40.1	39.6	0.0	-3.6
LFG155-17	-	-	-	-	48.9	41.0	0.4	-3.7
LFG156-17	-	-	-	-	42.1	38.1	0.1	-0.7
LFG157-17	-	-	-	-	38.1	38.0	0.1	-0.7
LFG158-17	-	-	-	-	20.0	29.5	0.0	-0.4
LFG159-17	-	-	-	-	30.5	35.3	0.0	-3.5
LFG160-17	-	-	-	-	40.8	37.3	0.0	-2.1
LFG161-17	-	-	-	-	46.4	39.8	0.0	-2.8
LFG162-17	-	-	-	-	47.3	40.8	0.0	-1.9
LFG163-17	-	-	-	-	53.5	43.7	0.0	-0.6
LFG164-17	-	-	-	-	53.1	42.2	0.0	-0.7
LFG165-17	-	-	-	-	44.4	37.7	1.3	-3.2
LFG166-17	-	-	-	-	40.2	35.4	0.0	-2.9
LFG167-17	-	-	-	-	53.9	40.8	0.0	-2.2
H1-09	NM - condensate				NM - condensate			
H3-09	0.6	0.9	22.2	-33.7	0.7	0.8	21.7	-29.0

Notes:
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	March 21 and 22, 2017				April 18 and 19, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
H4-10	7.2	7.4	18.5	-37.2	63.4	34.6	0.2	15.2
H5-10	58.7	36.3	0.2	-36.0	54.1	33.6	1.9	-36.0
H6-10	60.3	36.0	0.0	-15.8	60.5	36.8	0.0	-15.5
H7-10	NM - condensate				46.1	24.8	7.7	-32.7
H9-11	63.7	35.3	0.1	-39.7	61.9	34.7	0.2	-38.6
H10-11	71.3	28.2	0.5	-42.5	41.9	17.1	9.9	-40.7
H11-12	31.9	22.4	6.4	-2.2	20.7	14.6	13.1	-2.7
H12-12	2.0	10.0	10.3	-0.5	1.0	5.0	16.2	-1.0
H13-12	54.4	34.9	0.1	-3.2	56.9	36.9	0.0	-6.1
H14-12	54.6	35.1	0.0	-3.2	57.0	36.9	0.1	-5.9
H15-12	58.2	37.2	0.0	-36.0	62.9	35.6	0.1	-40.1
H16-12	62.0	35.3	0.2	-42.1	61.5	37.6	0.3	-40.7
H17-12	NM				57.9	40.4	0.0	-40.1
H18-12	NM				63.3	36.6	0.1	-41.1
H19-12	47.5	33.8	0.1	-15.2	56.3	34.7	0.0	-15.0
H20-13	NM				61.5	36.8	0.1	-40.1
H21-13	36.4	30.2	0.0	-6.1	51.0	31.8	0.1	-14.5
H22-13	NM				54.5	34.8	0.3	-6.4
H23-13	46.4	30.5	4.8	-5.2	51.4	33.1	3.0	-4.1
H24-13	61.5	34.5	0.7	-36.9	62.5	34.3	0.3	-37.0
H25-13	NM				1.7	1.2	21.5	-40.5
H26-13	56.5	36.7	0.3	-37.4	59.3	39.1	0.2	-36.2
H27-13	59.1	36.8	0.4	-28.9	53.8	35.0	1.0	-29.3
H28-14	55.1	36.6	0.1	-17.9	NM - condensate			
H29-13	58.7	36.3	0.2	-38.4	60.4	37.7	0.3	-36.7
H30-14	8.4	20.5	15.0	-42.1	12.0	20.3	13.2	-40.1
H31-14	58.1	39.2	0.0	-24.2	29.4	20.9	10.1	-40.1
H32-14	NM - condensate				NM - condensate			
H33-14	58.6	38.0	0.0	-7.7	NM - condensate			
H34-14	60.5	36.6	0.2	-39.4	61.4	36.7	0.1	-37.9
H35-14	46.4	30.3	0.5	-31.3	NM - condensate			
H36-14	55.1	37.1	0.0	-23.2	52.7	38.6	0.1	-25.6
H37-14	48.4	33.5	1.1	-2.7	47.6	35.9	0.2	-0.7
H38-14	50.2	39.4	0.0	-11.3	48.6	38.4	0.1	-12.6
H39-14	61.2	37.0	0.1	-38.4	61.3	37.0	0.1	-39.7
H40-14	60.3	37.2	0.1	-41.4	59.4	36.4	0.2	-40.1
H41-14	61.2	38.3	0.3	-34.4	61.1	37.8	0.3	-26.5
H42-14	7.7	9.3	19.4	-42.4	8.4	11.2	18.3	-41.8
H43-14	49.5	33.9	1.2	-3.4	47.8	33.2	1.3	-3.8
H44-15	54.2	37.7	0.3	-34.7	53.9	39.0	1.1	-35.7
H45-15	58.4	37.8	0.0	-7.9	56.8	39.4	0.1	-11.8
H46-15	57.0	37.7	0.1	-34.6	52.6	38.2	0.2	-34.7

Notes:
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	March 21 and 22, 2017				April 18 and 19, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
H47-16	46.3	37.4	0.4	-7.9	40.6	36.1	0.0	-7.2
H48-16	37.0	34.9	0.4	-23.6	47.1	38.5	0.0	-21.6
H49-16	43.0	39.8	0.0	-9.6	45.1	38.6	0.0	-2.6
H50-16	46.9	36.9	0.0	-3.1	44.2	37.2	0.0	-1.8
H51-16	48.7	33.7	1.1	-1.6	42.6	29.9	5.0	-1.2
H52-16	48.5	35.1	1.4	-4.4	45.1	32.9	3.0	-5.5
H53-16	52.5	36.4	0.5	-2.5	51.8	37.4	0.5	-5.5
H54-16	49.2	37.0	0.3	-3.8	43.1	34.9	1.6	-4.2
H55-16	51.5	36.3	0.6	-0.4	32.7	30.0	3.5	-0.9
H56-17	-	-	-	-	35.5	32.8	6.4	-0.2
H57-17	-	-	-	-	2.8	4.3	21.7	0.0
H58-17	-	-	-	-	3.7	18.2	5.9	-0.1
H59-17	-	-	-	-	-	-	-	-
H60-17	-	-	-	-	-	-	-	-
H61-17	-	-	-	-	-	-	-	-
H62-17	-	-	-	-	-	-	-	-
H63-17	-	-	-	-	-	-	-	-
MH20	-	-	-	-	21.7	13.7	14.4	-0.3
MH21	-	-	-	-	61.5	35.6	0.6	-0.3
MH22	61.4	33.1	0.1	0.0	54.9	32.9	2.9	-0.1
MH23	37.3	25.1	8.5	0.0	22.9	16.1	14.1	-0.1
MH24	-	-	-	-	58.7	38.4	0.1	-13.8
MH29			NM		29.0	16.5	12.6	-0.1
MH30			NM		34.9	24.3	9.4	-0.2
MH31	24.9	17.8	14.2	0.0	38.5	26.9	8.2	0.0
MH32	-	-	-	-	-	-	-	-

Notes: • All concentrations are in % unless otherwise noted.
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	May 16 and 17, 2017				June 7 and 8, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG1-04	62.6	34.2	0.0	-37.4	61.2	34.4	0.0	-35.8
LFG2-04	63.2	27.0	1.7	-42.8	67.1	28.0	0.0	-42.4
LFG3-04	66.7	32.4	0.0	-38.7	65.2	29.3	0.0	-40.1
LFG4-04	70.4	28.2	0.0	-43.4	64.7	28.1	0.0	-43.2
LFG5-04	61.2	35.8	0.0	-38.0	59.9	34.8	0.0	-36.5
LFG6-04	57.8	36.4	0.0	-32.7	58.2	35.3	0.0	-16.1
LFG7-04	42.2	22.0	5.9	-41.8	58.1	29.5	0.9	-41.3
LFG8-04	60.3	37.5	0.0	-41.1	59.1	37.4	0.0	-41.4
LFG9-04	58.5	35.0	0.5	-39.1	59.1	36.6	0.3	-38.4
LFG10-04	55.7	37.2	0.0	-22.2	54.2	36.8	0.0	-22.1
LFG11-04	62.1	35.8	0.0	-35.7	61.9	34.0	0.0	-35.4
LFG12-05	62.4	34.4	0.0	-42.8	61.5	35.6	0.0	-42.4
LFG13-05	54.1	33.7	0.0	-39.8	53.1	30.8	0.0	-40.1
LFG14-05	60.6	35.8	0.0	-7.4	60.3	36.5	0.0	-7.1
LFG15-05	54.8	34.1	0.1	-35.1	56.2	31.2	0.0	-35.0
LFG16-05	61.8	29.2	1.9	-43.4	65.0	30.1	0.2	-43.1
LFG17-05	57.2	30.9	1.8	-16.5	59.1	31.6	0.0	-17.7
LFG18-05	58.7	36.7	0.0	-13.5	57.6	34.9	0.0	-14.1
LFG19-05	56.8	36.3	0.0	-18.9	55.6	33.2	0.0	-18.9
LFG20-05	60.8	35.9	0.0	-41.1	60.4	35.4	0.0	-41.4
LFG21-05	59.0	33.5	0.1	-42.8	58.8	33.3	0.0	-42.7
LFG22-05	60.4	35.4	0.1	-41.1	59.3	37.7	0.0	-40.7
LFG23-05	69.9	30.1	0.0	-41.1	64.7	31.2	0.0	-42.8
LFG24-07	59.2	37.6	0.0	-40.6	54.8	35.5	0.2	-40.7
LFG25-07	61.7	33.6	1.1	-40.1	61.4	33.4	0.0	-40.7
LFG26-07	59.4	37.3	0.0	-39.4	56.4	36.0	0.0	-39.7
LFG27-07	59.3	37.6	0.0	-39.5	58.9	36.6	0.0	-39.7
LFG28-07	61.1	37.9	0.1	-38.2	58.9	35.6	0.0	-39.3
LFG29-07	61.6	36.8	0.0	-38.6	58.2	35.5	0.0	-38.7
LFG30-09	63.0	34.7	0.0	-42.1	62.0	33.6	0.0	-41.6
LFG31-09	58.7	33.3	1.2	-37.1	58.7	35.0	0.8	-36.0
LFG33-09	60.0	37.6	0.0	-41.8	56.8	34.5	0.0	-41.3
LFG34-09	58.1	31.3	1.8	-38.1	54.7	30.4	2.3	-39.6
LFG35-09	62.9	33.8	0.0	-41.8	61.8	35.1	0.0	-41.8
LFG36-09	62.7	34.8	0.0	-41.8	59.3	32.5	0.0	-41.4
LFG37-09	58.3	37.7	0.0	-42.1	57.9	37.4	0.0	-41.1
LFG38-09	58.4	37.0	0.0	-41.0	57.7	36.1	0.0	-40.7
LFG39-09	61.0	35.5	0.0	-40.7	60.7	35.7	0.0	-40.4
LFG40-09	52.0	24.3	4.6	-25.8	42.9	24.1	6.3	-13.8
LFG41-09	63.3	34.8	0.1	-41.8	59.4	31.9	0.2	-41.8
LFG42-11	0.8	8.3	11.1	-4.0	1.4	11.0	7.9	-2.8

Notes: • All concentrations are in % unless otherwise noted.
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	May 16 and 17, 2017				June 7 and 8, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG43-11	60.9	36.8	0.0	-38.4	55.5	33.9	0.0	-38.6
LFG44-11	53.4	31.1	2.9	-42.1	58.5	31.5	0.3	-41.6
LFG45-11	62.8	34.4	0.0	-42.2	57.8	31.7	0.3	-41.8
LFG46-11	NM - condensate				NM - condensate			
LFG47-11	61.5	36.8	0.0	-18.9	56.2	34.0	0.1	-19.9
LFG48-11	59.6	37.3	0.0	-38.7	58.2	36.0	0.2	-38.1
LFG49-11	60.2	37.3	0.0	-38.4	53.8	32.1	0.3	-39.0
LFG50-13	28.9	21.4	10.7	-38.6	53.6	34.8	1.0	-39.0
LFG51-13	58.9	38.9	0.2	-37.7	58.5	38.7	0.0	-37.6
LFG52-13	63.0	35.4	0.1	-38.1	58.9	32.8	0.0	-38.7
LFG53-13	56.7	38.1	0.0	-37.5	NM - condensate			
LFG55-13	43.1	32.8	4.9	-38.7	49.6	36.0	1.7	-38.1
LFG56-13	63.7	24.1	2.3	-41.1	65.7	29.1	0.0	-40.7
LFG57-13	62.1	35.4	0.0	-40.7	57.9	36.0	0.0	-40.4
LFG58-13	61.7	36.5	0.3	-41.8	59.4	34.1	0.3	-41.8
LFG59-13	54.8	35.1	0.0	-42.1	54.9	34.8	0.0	-42.1
LFG60-13	59.9	37.7	0.0	-37.0	58.5	36.1	0.0	-34.7
LFG61-14	54.9	34.9	0.3	-25.9	49.5	33.9	0.5	-25.9
LFG62-13	59.4	36.5	0.1	-39.7	58.0	35.2	0.0	-40.1
LFG63-14	57.1	39.3	0.0	-40.1	54.6	37.1	0.0	-40.4
LFG64-14	57.2	38.5	0.0	-23.9	54.1	34.9	0.0	-20.9
LFG65-14	0.3	0.4	21.5	-4.1	2.4	3.8	20.9	-1.9
LFG66-13	63.5	33.3	0.0	-42.1	62.1	33.2	0.0	-42.8
LFG67-13	58.5	37.3	0.0	-36.0	54.6	36.2	0.0	-37.8
LFG68-13	58.6	35.9	0.5	-40.1	59.7	35.7	0.0	-40.4
LFG69-13	56.5	38.0	0.0	-40.1	47.1	35.4	0.0	-40.2
LFG70-13	64.3	33.5	0.0	-39.4	61.6	34.0	0.1	-39.6
LFG71-13	64.5	32.4	0.3	-39.6	61.9	31.9	0.2	-39.6
LFG72-13	38.9	24.3	8.1	-38.9	46.6	27.5	6.1	-40.1
LFG73-13	62.6	34.7	0.0	-37.9	53.3	30.8	0.2	-38.6
LFG74-13	62.7	34.9	0.0	-39.4	58.5	32.3	0.2	-39.7
LFG75-13	59.4	37.5	0.1	-38.9	57.2	34.1	0.2	-39.7
LFG76-13	61.4	36.1	0.1	-39.4	57.6	34.8	0.6	-39.7
LFG77-13	61.1	36.0	0.0	-17.9	59.3	35.2	0.0	-19.9
LFG78-13	61.5	35.8	0.0	-38.7	59.8	36.2	0.0	-39.4
LFG79-13	62.5	34.5	0.0	-39.0	57.8	33.8	0.0	-39.7
LFG80-13	64.1	33.2	0.1	-40.7	63.7	34.2	0.0	-39.5
LFG81-13	62.0	28.6	1.1	-39.1	66.1	32.2	0.0	-39.9
LFG82-13	64.4	34.0	0.0	-39.1	62.8	33.1	0.0	-39.6
LFG83-13	56.0	21.8	4.7	-38.4	65.7	25.6	0.5	-40.1
LFG84-13	67.1	29.3	0.9	-38.7	63.4	22.8	1.3	-39.7

Notes:
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	May 16 and 17, 2017				June 7 and 8, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG85-14	59.2	38.0	0.0	-0.5	54.0	36.0	0.0	-0.9
LFG86-14	61.1	36.2	0.0	-37.0	58.8	37.7	0.0	-36.7
LFG87-14	62.2	36.2	0.0	-38.0	61.2	35.6	0.0	-38.4
LFG88-14	60.3	38.5	0.0	-37.0	57.5	34.6	0.0	-37.7
LFG89-14	58.9	38.5	0.0	-8.5	56.8	35.1	0.0	-12.5
LFG90-14	64.9	35.0	0.0	-42.1	61.6	34.3	0.0	-41.5
LFG91-14	46.5	33.2	0.0	-15.8	50.7	32.2	0.0	-15.5
LFG92-14	52.1	33.2	0.1	-28.6	50.3	34.1	0.0	-28.0
LFG94-14	59.0	37.6	0.2	-39.2	55.2	37.3	0.0	-40.6
LFG95-14	55.9	36.4	0.1	-39.7	53.6	35.0	0.0	-39.2
LFG96-14	55.8	34.7	0.0	-1.5	47.7	32.5	0.0	-1.8
LFG97-14	56.8	36.5	0.5	-42.1	55.5	36.0	0.2	-41.4
LFG98-14	57.5	37.5	0.2	-42.1	53.7	34.6	0.3	-41.5
LFG99-14	58.6	36.5	0.1	-39.1	54.6	33.0	0.0	-38.0
LFG100-14	53.7	36.8	0.1	-6.7	55.7	35.6	0.0	-6.4
LFG101-14	59.7	37.8	0.0	-38.1	56.7	33.1	0.0	-38.1
LFG102-14	62.7	35.3	0.0	-8.8	58.4	33.3	0.0	-9.1
LFG103-14	58.3	36.3	0.0	-34.3	56.9	36.8	0.0	-38.4
LFG104-14	58.7	36.6	0.1	-8.1	57.1	34.6	0.0	-8.4
LFG105-14	60.5	37.4	0.0	-3.0	58.2	36.1	0.0	-3.0
LFG106-14	59.0	38.2	0.2	-39.7	58.5	36.1	0.0	-39.7
LFG107-14	59.2	38.4	0.0	-39.0	58.2	37.9	0.0	-39.7
LFG108-14	61.2	36.3	0.0	-39.6	57.6	34.3	0.0	-39.7
LFG109-14	59.8	37.4	0.0	-39.4	57.8	35.1	0.0	-39.4
LFG110-15	59.9	37.7	0.0	-38.1	54.1	31.3	0.2	-39.0
LFG111-15	59.9	38.2	0.0	-38.4	57.2	35.2	0.2	-38.7
LFG112-15	55.1	36.0	0.8	-38.4	9.6	8.3	16.8	-39.0
LFG113-15	64.1	34.0	0.1	-39.1	57.8	35.0	0.1	-39.7
LFG114-15	61.1	35.2	0.3	-30.8	60.1	35.9	0.0	-39.6
LFG115-15	57.5	38.6	0.0	-34.1	55.7	38.8	0.0	-34.0
LFG116-15	23.3	18.3	12.4	-37.2	51.1	34.0	2.5	-39.3
LFG117-15	58.6	37.5	0.0	-34.1	56.6	38.0	0.0	-34.0
LFG118-15	62.1	36.3	0.0	-35.1	51.6	29.9	0.2	-38.7
LFG119-15	56.9	39.1	0.0	6.4	55.2	39.5	0.0	10.1
LFG120-15	59.8	37.3	0.1	-34.3	59.5	36.9	0.0	-35.7
LFG121-15	53.9	37.2	1.2	-29.3	51.0	32.9	1.2	-27.6
LFG122-15	57.2	40.0	0.0	-34.3	55.4	38.1	0.1	-34.0
LFG123-15	55.1	37.5	0.1	-20.5	54.8	36.5	0.0	-35.0
LFG124-15	50.4	35.4	0.0	-21.9	49.0	34.2	0.0	-23.2
LFG125-15	57.8	38.2	0.0	-22.9	53.6	36.1	0.0	-24.2
LFG126-15	55.3	39.5	0.0	-22.9	54.0	37.6	0.0	-22.9
LFG127-15	41.1	30.3	5.6	-9.2	52.5	39.4	0.0	-24.2

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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	May 16 and 17, 2017				June 7 and 8, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG128-15	49.6	38.1	1.6	-2.0	52.2	39.8	0.5	-0.9
LFG129-15	53.2	39.1	0.2	-23.9	53.9	37.0	0.0	-24.5
LFG130-15	45.1	28.2	5.7	1.2	22.4	13.9	13.7	-0.5
LFG131-15	60.9	36.5	0.0	-40.1	56.7	37.8	0.0	-37.8
LFG132-15	57.8	35.2	0.1	-39.7	56.7	35.0	0.0	-39.7
LFG133-15	57.6	39.6	0.0	-39.2	57.0	37.7	0.0	-37.5
LFG134-15	51.5	36.4	2.1	-15.8	40.8	32.4	4.7	-36.6
LFG135-15	54.8	39.3	0.0	-38.4	50.0	36.5	0.0	-38.4
LFG136-15	47.1	36.9	0.0	-10.2	45.6	36.0	0.0	-8.1
LFG137-15	53.6	39.0	0.0	-30.6	52.5	37.1	0.4	-31.1
LFG138-16	47.9	37.8	0.0	-11.5	45.4	35.7	0.0	-11.8
LFG139-16	52.6	38.0	0.0	-28.0	49.5	37.6	0.0	-27.6
LFG140-16	44.4	36.5	0.0	-5.9	41.1	35.3	0.0	-5.8
LFG141-16	52.3	38.2	0.0	-11.5	48.7	36.9	0.0	-12.1
LFG142-16	40.9	35.7	0.0	-0.3	31.7	33.1	0.0	-0.8
LFG143-16	47.4	36.4	0.0	-1.4	41.3	34.9	0.0	-1.0
LFG144-16	42.4	34.8	0.0	-0.5	38.0	33.5	0.0	-0.7
LFG145-16	47.3	37.3	0.0	-1.4	42.0	35.5	0.0	-1.1
LFG146-16	47.5	37.5	0.1	-1.4	47.5	36.7	0.0	-0.6
LFG147-16	55.8	40.0	0.0	-22.9	46.9	37.2	0.1	-22.9
LFG148-16	49.3	38.1	0.0	-12.3	47.0	38.0	0.0	-12.1
LFG149-16	53.2	39.1	0.2	-20.0	49.8	38.1	0.1	-21.5
LFG150-17	50.9	40.3	0.0	-6.8	39.4	34.1	2.3	-9.1
LFG151-17	50.3	40.8	0.0	-9.4	37.2	32.4	1.7	-6.7
LFG152-17	52.8	42.6	0.0	-4.3	47.8	40.1	1.0	-7.4
LFG153-17	52.2	42.5	0.0	-3.6	46.8	39.7	0.4	-6.4
LFG154-17	47.4	41.2	0.0	-1.2	44.9	40.6	0.3	-1.8
LFG155-17	52.3	43.0	0.0	-2.0	24.5	21.0	12.0	-1.4
LFG156-17	52.5	42.3	0.0	-0.4	NM - condensate			
LFG157-17	42.4	40.8	0.0	-0.4	42.1	38.3	0.1	-0.4
LFG158-17	42.5	37.7	0.0	-0.1	43.2	38.1	0.0	-0.1
LFG159-17	50.0	41.7	0.0	-1.0	45.7	39.2	0.3	-1.5
LFG160-17	53.1	41.7	0.0	-0.8	44.2	37.4	0.5	-0.8
LFG161-17	49.2	42.0	0.0	-1.7	44.9	41.2	0.3	-1.5
LFG162-17	46.3	41.0	0.0	-1.2	44.9	40.0	0.4	-1.0
LFG163-17	50.4	42.9	0.0	-0.6	47.1	39.8	1.3	-0.3
LFG164-17	36.7	34.8	0.0	-1.4	27.1	27.3	3.6	-0.9
LFG165-17	41.6	32.9	3.5	-1.1	50.2	36.7	0.5	-0.4
LFG166-17	35.5	31.1	0.1	-2.0	32.8	32.5	0.1	-0.9
LFG167-17	50.5	39.0	0.0	-2.5	42.0	36.9	0.3	-3.7
H1-09	NM - condensate				NM - condensate			
H3-09	59.8	18.3	4.7	-8.8	7.5	6.0	20.7	-30.4

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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	May 16 and 17, 2017				June 7 and 8, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
H4-10	17.0	12.7	13.7	-35.7	58.8	33.3	0.1	-35.3
H5-10	58.9	37.3	0.4	-36.0	58.4	37.1	0.0	-37.6
H6-10	59.6	37.6	0.0	-15.5	50.3	33.6	0.7	-16.6
H7-10	NM - condensate				NM - condensate			
H9-11	62.3	36.4	0.0	-39.7	61.5	34.4	0.0	-42.1
H10-11	54.8	22.7	4.7	-40.5	69.2	30.2	0.0	-41.8
H11-12	52.0	30.5	1.0	-8.1	58.0	33.9	0.1	-6.8
H12-12	1.2	9.2	11.1	-0.1	8.5	17.4	1.5	-0.1
H13-12	54.0	36.0	0.2	-4.9	46.8	34.4	1.8	-4.7
H14-12	53.4	36.2	0.3	-4.9	43.1	30.4	2.7	-4.1
H15-12	56.4	36.0	0.0	-38.9	56.4	35.4	0.0	-38.1
H16-12	60.1	37.2	0.0	-39.9	60.2	36.4	0.0	-40.7
H17-12	56.0	40.4	0.1	-40.7	55.8	40.6	0.0	-40.4
H18-12	62.0	37.2	0.0	-40.9	58.7	37.2	0.0	-41.8
H19-12	52.1	35.5	0.0	-16.5	48.8	33.5	0.0	-16.0
H20-13	60.8	36.5	0.2	-39.4	60.4	36.2	0.0	-40.2
H21-13	44.8	32.7	0.0	-4.8	35.5	29.7	0.2	-14.5
H22-13	50.5	32.9	0.2	-6.4	50.0	34.4	0.2	-7.4
H23-13	41.5	28.7	6.1	-4.0	35.7	25.9	7.8	-5.1
H24-13	62.5	34.9	0.3	-36.5	58.2	34.7	0.0	-37.7
H25-13	1.2	1.3	21.1	-40.1	19.2	10.4	20.2	-41.1
H26-13	59.3	38.8	0.0	-37.7	58.0	36.6	0.0	-38.4
H27-13	59.1	37.1	0.1	-31.0	55.5	36.5	0.0	-28.6
H28-14	52.5	30.6	3.2	-18.5	NM - condensate			
H29-13	50.6	31.3	2.7	-37.6	42.8	27.6	4.5	-38.6
H30-14	3.7	6.0	19.6	-39.7	14.1	20.7	15.0	-40.4
H31-14	58.4	36.0	0.1	-39.4	54.5	36.6	0.1	-40.1
H32-14	53.7	36.9	2.2	-27.3	NM - condensate			
H33-14	56.1	35.4	1.3	-29.9	NM - condensate			
H34-14	60.3	36.9	0.0	-37.6	NM - condensate			
H35-14	NM - condensate				NM - condensate			
H36-14	54.3	38.6	0.0	-25.6	51.6	37.2	0.0	-26.6
H37-14	51.1	36.6	0.0	-0.7	54.8	36.2	0.0	-0.2
H38-14	51.5	38.8	0.1	-12.4	52.6	38.7	0.0	-12.3
H39-14	59.8	36.6	0.0	-38.4	59.5	36.6	0.0	-39.7
H40-14	57.9	36.6	0.0	-40.4	56.3	35.3	0.0	-40.1
H41-14	60.0	37.4	0.0	-27.2	57.6	36.0	0.0	-29.6
H42-14	9.7	10.3	17.2	-41.1	19.0	16.6	17.1	-41.4
H43-14	49.1	33.4	0.7	-5.4	45.3	31.7	0.5	-2.3
H44-15	55.5	40.3	0.0	-35.0	54.5	37.5	0.0	-34.4
H45-15	56.0	39.1	0.0	-11.5	54.2	39.6	0.0	-12.0
H46-15	58.4	38.9	0.0	-34.9	53.3	35.3	0.0	-34.6

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2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	May 16 and 17, 2017				June 7 and 8, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
H47-16	57.6	38.5	0.0	-23.9	41.8	34.1	0.0	-0.9
H48-16	33.6	33.1	0.0	-25.2	34.9	34.6	0.0	-6.2
H49-16	44.8	38.5	0.0	-1.9	42.5	39.3	0.0	-1.1
H50-16	47.5	39.9	0.2	-2.1	47.2	37.9	0.0	-1.5
H51-16	54.7	36.9	0.6	-28.6	55.8	36.2	0.0	-0.2
H52-16	39.6	30.6	5.1	-18.6	54.8	37.6	0.0	-0.3
H53-16	47.7	36.5	1.6	-2.9	52.0	37.0	0.0	-2.5
H54-16	43.0	34.8	1.8	-2.0	49.0	37.0	0.3	-1.1
H55-16	58.0	37.5	0.0	0.0	55.8	37.5	0.0	-0.1
H56-17	52.7	40.8	0.3	-0.1	51.9	40.4	0.0	-1.2
H57-17	20.7	17.4	14.0	0.1	37.9	34.4	5.0	-0.5
H58-17	18.9	24.9	5.3	-0.1	16.5	22.9	8.2	-0.8
H59-17	-	-	-	-	-	-	-	-
H60-17	-	-	-	-	-	-	-	-
H61-17	-	-	-	-	-	-	-	-
H62-17	-	-	-	-	-	-	-	-
H63-17	-	-	-	-	-	-	-	-
MH20	19.1	12.7	15.2	-0.3	24.9	16.1	13.3	-0.3
MH21	13.0	10.6	15.6	-0.4	18.8	13.1	13.5	-0.4
MH22	59.8	33.8	1.1	-0.4	60.9	34.3	0.2	-0.1
MH23	22.1	14.7	14.0	0.0	22.6	15.1	14.4	-0.1
MH24	58.2	38.9	0.0	-9.9	56.9	35.2	0.2	-9.7
MH29	27.0	14.2	12.3	-0.1	29.6	16.8	11.9	-0.1
MH30	31.8	20.9	10.5	-0.3	29.8	22.2	11.3	-0.4
MH31	10.5	7.1	18.1	0.0	16.2	11.8	17.0	-0.1
MH32	-	-	-	-	-	-	-	-

Notes: • All concentrations are in % unless otherwise noted.
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	July 18 and 19, 2017				August 15 and 16, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG1-04	61.1	34.2	0.0	-40.7	61.7	34.6	0.1	-40.4
LFG2-04	64.5	27.9	1.0	-45.1	63.3	26.5	0.9	-42.8
LFG3-04	63.8	32.9	0.0	-43.1	66.0	32.0	0.0	-41.1
LFG4-04	68.9	29.2	0.0	-45.5	69.2	29.0	0.3	-43.1
LFG5-04	60.2	36.4	0.0	-40.7	59.2	36.4	0.0	-38.7
LFG6-04	54.8	35.3	0.0	-35.9	51.6	34.7	0.1	-36.2
LFG7-04	61.6	31.8	0.6	-42.9	61.4	31.5	0.8	-41.1
LFG8-04	54.6	35.9	0.0	-43.4	57.3	37.5	0.0	-41.1
LFG9-04	56.6	34.0	1.3	-41.2	47.3	32.7	1.9	-39.1
LFG10-04	48.7	33.6	0.2	-36.7	48.1	34.0	0.2	-33.4
LFG11-04	61.9	34.0	0.0	-35.4	61.9	34.7	0.0	-35.4
LFG12-05	60.7	35.9	0.0	-44.4	57.2	35.6	0.7	-42.2
LFG13-05	40.5	32.2	0.0	-40.2	42.3	31.3	0.0	-39.2
LFG14-05	52.4	35.4	0.0	-36.3	44.9	32.3	0.2	-33.5
LFG15-05	53.0	34.1	0.0	-43.8	54.4	34.2	0.0	-41.6
LFG16-05	65.5	30.1	0.7	-45.4	63.1	29.9	1.0	-42.8
LFG17-05	49.1	28.9	0.0	-27.5	47.8	30.2	0.4	-26.1
LFG18-05	45.8	32.2	0.0	-30.4	45.7	32.7	0.0	-26.6
LFG19-05	46.2	33.0	0.0	-31.0	47.2	35.2	0.1	-26.9
LFG20-05	59.4	34.7	0.0	-42.8	56.4	33.8	0.0	-41.3
LFG21-05	59.8	33.4	0.3	-44.8	59.4	35.2	0.0	-43.1
LFG22-05	55.5	36.6	0.0	-42.8	52.0	33.9	0.0	-40.3
LFG23-05	69.1	29.0	0.0	-45.5	66.3	31.2	0.0	-42.8
LFG24-07	57.8	36.6	0.3	-42.3	57.4	36.9	0.7	-40.4
LFG25-07	61.2	33.8	0.2	-41.8	61.5	34.3	0.1	-40.7
LFG26-07	57.5	36.8	0.0	-40.7	57.5	37.1	0.0	-39.7
LFG27-07	58.5	38.6	0.0	-41.1	59.3	37.1	0.0	-40.1
LFG28-07	58.2	36.3	0.0	-40.5	58.9	36.5	0.0	-39.5
LFG29-07	60.8	36.2	0.1	-39.4	59.0	35.8	0.2	-38.8
LFG30-09	58.0	31.3	0.0	-43.1	59.5	31.4	0.2	-41.3
LFG31-09	59.1	35.8	0.4	-37.0	54.3	33.1	2.8	-35.7
LFG33-09	58.7	36.8	0.0	-42.8	56.5	36.4	0.2	-40.5
LFG34-09	53.9	32.6	2.0	-41.1	57.4	31.9	2.1	-39.4
LFG35-09	58.9	36.2	0.0	-43.1	57.3	35.6	0.0	-41.1
LFG36-09	58.9	33.4	0.0	-43.4	59.4	35.5	0.0	-42.1
LFG37-09	57.1	35.9	0.0	-42.8	57.8	36.1	0.0	-41.5
LFG38-09	58.3	36.6	0.0	-42.1	58.5	37.7	0.0	-40.4
LFG39-09	61.3	35.4	0.0	-41.9	61.1	35.3	0.0	-40.5
LFG40-09	6.6	6.3	18.8	-0.6	15.9	11.8	18.4	-2.2
LFG41-09	61.9	35.4	0.0	-42.8	51.1	32.3	0.4	-41.1
LFG42-11	50.9	34.4	0.0	-0.2	58.8	38.8	0.0	-1.2

Notes: • All concentrations are in % unless otherwise noted.
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	July 18 and 19, 2017				August 15 and 16, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG43-11	59.6	36.6	0.0	-39.7	59.3	36.1	0.0	-38.8
LFG44-11	58.2	32.1	1.2	-42.8	57.0	31.3	1.1	-41.1
LFG45-11	61.6	33.0	0.0	-42.8	57.1	33.6	0.9	-41.4
LFG46-11	NM - condensate				NM - condensate			
LFG47-11	58.3	35.3	0.0	-20.2	54.2	32.1	0.3	-10.8
LFG48-11	58.2	36.0	0.2	-38.1	57.7	33.7	0.2	-37.8
LFG49-11	59.3	35.8	0.1	-39.7	51.3	31.7	2.0	-39.1
LFG50-13	55.5	36.2	0.6	-39.7	55.1	35.4	1.1	-38.7
LFG51-13	53.5	37.5	0.0	-38.4	47.6	32.9	0.2	-37.5
LFG52-13	59.9	32.7	0.0	-39.7	61.0	33.4	0.0	-39.4
LFG53-13	56.4	38.1	0.0	-39.3	56.8	37.5	0.0	-37.4
LFG55-13	50.9	33.6	1.6	-39.1	51.1	34.7	1.6	-38.8
LFG56-13	66.0	28.8	0.5	-43.1	63.9	30.4	0.3	-40.7
LFG57-13	59.6	35.9	0.0	-42.3	60.9	37.1	0.0	-40.4
LFG58-13	59.3	34.8	0.7	-42.4	59.1	34.4	0.8	-41.1
LFG59-13	51.3	33.8	0.0	-43.9	51.9	33.3	0.1	-41.8
LFG60-13	57.5	35.8	0.1	-39.6	56.3	35.1	0.0	-38.1
LFG61-14	53.4	34.9	0.0	-28.0	57.1	36.4	0.0	-24.2
LFG62-13	61.4	35.6	0.0	-41.8	59.1	36.5	0.0	-40.7
LFG63-14	56.1	36.6	0.0	-40.4	56.8	39.0	0.0	-40.0
LFG64-14	50.3	34.4	0.0	-31.1	49.2	35.3	0.2	-30.7
LFG65-14	6.8	7.0	20.3	-0.2	17.6	14.6	20.5	0.0
LFG66-13	58.3	33.9	0.0	-43.4	53.6	33.2	0.0	-41.5
LFG67-13	55.8	37.3	0.0	-37.5	52.2	36.7	0.0	-37.7
LFG68-13	56.9	34.9	0.0	-40.2	59.9	36.2	0.1	-40.4
LFG69-13	43.2	34.0	0.0	-39.7	42.1	30.7	0.4	-40.4
LFG70-13	57.5	31.7	0.0	-40.4	59.0	32.4	0.2	-39.1
LFG71-13	48.5	29.3	3.1	-40.7	19.4	12.7	13.3	-39.4
LFG72-13	12.3	7.2	17.1	-40.7	12.3	7.4	17.2	-39.9
LFG73-13	56.6	31.9	0.1	-40.1	51.6	28.4	0.9	-38.6
LFG74-13	60.4	33.9	0.0	-40.7	59.2	32.9	0.5	-40.1
LFG75-13	58.4	36.1	0.1	-40.4	57.8	35.5	0.5	-39.4
LFG76-13	39.6	25.1	7.6	-40.4	41.3	26.5	7.2	-39.7
LFG77-13	55.0	34.0	0.1	-20.9	1.6	1.9	20.5	-14.9
LFG78-13	60.0	36.6	0.0	-40.1	44.2	25.8	0.6	-39.4
LFG79-13	61.0	35.4	0.0	-40.3	55.3	31.4	0.7	-39.4
LFG80-13	62.4	32.7	0.0	-40.1	60.5	35.6	0.2	-39.5
LFG81-13	60.0	35.4	0.0	-39.7	61.8	33.6	0.2	-39.4
LFG82-13	61.3	31.7	0.0	-40.1	60.0	31.2	0.8	-40.7
LFG83-13	67.5	29.1	0.0	-40.1	64.4	31.5	0.3	-39.7
LFG84-13	62.9	24.8	1.6	-40.1	68.3	24.9	1.1	-39.4

Notes:
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	July 18 and 19, 2017				August 15 and 16, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG85-14	39.5	32.3	0.1	-6.1	48.8	33.5	0.0	-1.9
LFG86-14	60.1	36.2	0.0	-39.1	60.5	38.1	0.0	-38.6
LFG87-14	60.7	35.1	0.0	-39.7	59.3	36.4	0.0	-38.8
LFG88-14	59.3	36.5	0.0	-39.1	55.6	34.8	0.2	-38.1
LFG89-14	58.2	39.3	0.0	-38.6	56.6	36.3	0.1	-36.7
LFG90-14	61.3	35.7	0.0	-43.1	57.9	29.7	0.4	-42.1
LFG91-14	50.5	33.7	0.0	-18.2	59.2	35.4	0.0	-16.7
LFG92-14	39.6	30.5	1.1	-30.4	20.7	15.3	15.9	-17.2
LFG94-14	56.3	35.1	0.1	-42.3	54.9	36.2	0.3	-40.1
LFG95-14	46.2	32.7	0.0	-41.1	57.7	37.2	0.0	-39.7
LFG96-14	35.0	26.5	0.7	-4.4	52.8	33.8	0.0	-2.3
LFG97-14	55.2	35.5	0.6	-42.8	53.7	35.4	1.3	-41.4
LFG98-14	54.8	35.4	0.0	-42.4	55.8	35.8	0.2	-41.8
LFG99-14	59.4	37.9	0.1	-41.4	58.0	37.2	0.2	-40.1
LFG100-14	47.5	34.2	0.0	-9.9	51.6	38.0	0.1	-6.7
LFG101-14	58.2	34.5	0.0	-42.4	55.9	34.1	0.0	-39.7
LFG102-14	41.5	30.9	0.0	-24.8	37.4	28.3	0.0	-17.2
LFG103-14	53.3	35.0	0.0	-41.4	54.4	34.5	0.0	-39.1
LFG104-14	43.1	33.8	0.0	-24.8	45.9	34.1	0.0	-17.5
LFG105-14	44.0	31.7	3.1	-13.8	59.2	38.3	0.0	-6.4
LFG106-14	57.4	36.0	0.0	-40.8	56.1	35.3	0.0	-40.1
LFG107-14	58.5	38.6	0.0	-40.7	58.2	37.9	0.0	-39.4
LFG108-14	59.9	36.3	0.0	-41.1	58.6	36.6	0.1	-40.1
LFG109-14	57.9	36.2	0.0	-40.4	59.4	35.7	0.0	-39.7
LFG110-15	59.3	37.3	0.1	-39.7	58.5	36.8	0.0	-38.7
LFG111-15	58.7	38.3	0.0	-39.7	59.0	36.6	0.3	-38.8
LFG112-15	58.9	37.4	0.1	-39.7	55.9	36.8	0.5	-34.4
LFG113-15	61.3	35.2	0.6	-40.2	59.6	34.3	0.5	-39.7
LFG114-15	59.7	36.6	0.1	-40.1	57.9	34.5	0.3	-39.0
LFG115-15	55.7	36.7	0.0	-35.7	56.0	38.5	0.0	-33.7
LFG116-15	53.3	35.9	1.4	-40.0	45.6	30.3	1.5	-39.4
LFG117-15	56.6	36.0	0.0	-35.7	57.5	37.2	0.1	-33.6
LFG118-15	60.7	36.1	0.0	-39.7	58.5	33.7	0.2	-38.1
LFG119-15	55.4	37.5	0.0	-35.7	57.7	38.5	0.0	-35.7
LFG120-15	50.7	32.9	0.5	-37.0	52.7	31.8	0.7	-36.4
LFG121-15	44.0	28.4	1.3	-29.3	50.6	34.0	1.2	-24.0
LFG122-15	NM - condensate				55.2	37.5	0.1	-32.7
LFG123-15	46.1	31.9	3.6	-23.2	43.8	32.8	4.8	-20.2
LFG124-15	42.1	32.1	0.0	-11.8	37.9	27.0	6.5	-8.8
LFG125-15	54.4	36.8	0.0	-29.8	54.8	37.8	0.1	-30.6
LFG126-15	53.2	36.4	0.0	-31.3	35.9	27.0	9.9	-31.0
LFG127-15	50.4	33.2	2.1	-0.3	54.6	37.4	0.1	-0.3

Notes:
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	July 18 and 19, 2017				August 15 and 16, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG128-15	41.9	33.2	2.8	-23.9	47.2	36.8	3.6	-12.5
LFG129-15	47.3	36.2	0.0	-30.0	40.8	27.8	0.6	-30.0
LFG130-15	10.7	8.0	19.0	-26.3	8.2	6.5	19.9	-28.3
LFG131-15	55.9	34.5	0.0	-40.7	56.9	33.3	0.3	-40.0
LFG132-15	48.2	28.9	0.1	-40.1	56.8	37.6	0.0	-40.1
LFG133-15	55.0	36.5	0.0	-38.4	52.9	35.9	0.2	-39.1
LFG134-15	45.4	33.5	4.3	-40.4	7.3	10.9	12.3	-40.7
LFG135-15	52.0	36.9	0.0	-38.4	50.1	37.3	0.0	-38.7
LFG136-15	50.4	35.9	0.0	-5.1	50.2	35.8	0.0	-4.3
LFG137-15	48.3	34.4	0.0	-29.8	50.8	38.6	0.0	-30.4
LFG138-16	42.8	34.6	0.0	-7.7	53.2	38.0	0.0	-3.5
LFG139-16	45.1	33.9	0.0	-8.2	47.7	35.4	0.0	-6.7
LFG140-16	58.4	36.0	0.0	-3.7	47.3	34.9	0.0	-3.5
LFG141-16	51.0	36.4	0.0	-7.4	52.5	36.2	0.0	-5.4
LFG142-16	43.4	35.4	0.0	-1.3	52.3	38.8	0.0	-2.1
LFG143-16	46.2	34.6	0.0	-2.1	42.0	32.8	0.0	-2.7
LFG144-16	35.3	32.2	0.0	-0.8	36.9	33.3	0.0	-1.6
LFG145-16	36.9	33.6	0.0	-2.0	38.4	34.0	0.0	-1.5
LFG146-16	44.7	35.6	0.0	-3.4	53.1	38.4	0.0	-3.2
LFG147-16	54.4	39.3	0.0	-29.0	51.2	37.9	0.2	-29.3
LFG148-16	49.6	39.2	0.0	-29.4	51.2	39.2	0.1	-29.6
LFG149-16	49.4	37.2	0.0	-27.2	49.8	38.4	0.1	-27.9
LFG150-17	47.5	38.1	0.0	-7.2	36.5	30.2	8.0	-0.6
LFG151-17	49.2	38.6	0.0	-1.2	52.5	38.0	0.0	-0.3
LFG152-17	45.0	37.4	0.0	-4.4	47.0	39.5	0.0	-4.2
LFG153-17	41.4	37.2	0.0	-5.4	44.7	39.3	0.0	-5.4
LFG154-17	44.2	38.8	0.0	-4.7	46.8	41.0	0.0	-5.4
LFG155-17	49.3	40.6	0.0	-7.1	52.6	42.7	0.0	-7.5
LFG156-17	46.0	37.7	0.0	-0.8	52.6	41.4	0.0	-0.2
LFG157-17	34.6	36.4	0.0	-1.0	48.7	40.9	0.0	-0.9
LFG158-17	38.9	36.6	0.0	-0.4	52.0	42.1	0.0	-0.2
LFG159-17	40.3	37.2	0.0	-0.7	44.1	39.4	0.0	-0.6
LFG160-17	35.4	36.0	0.0	-0.8	36.6	36.9	0.0	-0.5
LFG161-17	42.1	36.1	0.0	-3.2	46.0	38.0	0.0	-3.0
LFG162-17	42.8	38.2	0.0	-1.3	46.6	41.5	0.7	-1.0
LFG163-17	44.4	39.5	0.0	-0.4	52.9	42.7	0.0	-0.3
LFG164-17	42.5	37.9	0.0	-0.9	56.0	42.6	0.0	-0.1
LFG165-17	47.3	36.6	0.0	-1.4	53.5	40.9	0.0	-0.8
LFG166-17	45.0	37.3	0.0	-0.9	55.9	40.0	0.0	-0.5
LFG167-17	48.9	38.8	0.0	-1.2	54.6	40.1	0.0	-1.1
H1-09	NM - condensate				NM - condensate			
H3-09	65.0	25.9	0.0	-37.7	NM - condensate			

Notes:
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	July 18 and 19, 2017				August 15 and 16, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
H4-10	58.6	36.1	0.0	-3.7	61.0	37.8	0.0	42.1
H5-10	59.1	32.8	0.0	-39.1	72.0	24.9	0.2	-38.7
H6-10	57.3	36.7	0.0	-20.2	58.4	37.8	0.1	-21.6
H7-10	NM - condensate				NM - condensate			
H9-11	63.5	35.8	0.0	-40.9	61.0	34.4	0.3	-39.2
H10-11	63.9	31.1	0.0	-42.1	69.1	28.4	0.2	-42.1
H11-12	27.2	22.4	4.9	-0.3	44.1	28.9	1.0	-0.1
H12-12	3.1	12.2	8.7	-0.1	33.1	29.0	0.0	-0.1
H13-12	35.3	26.4	6.4	-1.7	42.3	31.0	3.2	-0.1
H14-12	25.6	20.7	9.8	-1.6	54.5	35.7	0.0	0.0
H15-12	54.1	34.0	0.0	-37.4	56.2	37.7	0.0	-37.4
H16-12	58.9	35.6	0.0	-40.7	50.2	28.7	0.8	-40.7
H17-12	55.5	41.0	0.0	-41.3	53.9	40.1	0.8	-41.1
H18-12	62.9	36.4	0.0	-42.1	62.5	37.5	0.0	-42.1
H19-12	33.9	28.5	2.5	-17.6	54.9	35.9	0.0	-4.8
H20-13	56.6	34.9	0.0	-39.2	62.7	37.3	0.0	-39.3
H21-13	35.5	28.1	0.0	-14.1	33.3	29.0	0.0	-10.1
H22-13	46.1	31.9	0.4	-5.1	53.7	33.7	0.0	-4.2
H23-13	14.0	12.0	12.4	-1.6	13.8	12.8	13.5	-1.3
H24-13	61.1	36.8	0.0	-38.4	62.4	36.1	0.1	-37.7
H25-13	4.6	3.1	20.1	-40.9	0.8	0.6	21.4	-41.4
H26-13	57.7	38.2	0.0	-39.7	57.9	36.2	0.0	-39.1
H27-13	58.4	36.0	0.3	-36.1	58.8	36.1	0.3	-28.4
H28-14	NM - condensate				45.7	30.8	0.3	-23.2
H29-13	44.2	31.0	3.9	-39.1	46.0	33.8	2.6	-39.1
H30-14	2.5	2.5	20.1	-8.8	12.1	20.2	14.7	-39.7
H31-14	59.3	40.2	0.0	-38.1	56.1	38.3	0.3	-38.1
H32-14	NM - condensate				NM - condensate			
H33-14	NM - condensate				NM - condensate			
H34-14	58.5	36.4	0.3	-39.1	53.3	32.5	0.5	-39.7
H35-14	NM - condensate				NM - condensate			
H36-14	44.9	35.3	0.0	-34.0	45.8	35.8	2.4	-18.5
H37-14	51.8	37.3	0.0	-7.8	57.3	39.4	0.0	-9.6
H38-14	51.1	35.3	0.0	-14.0	52.1	37.7	0.0	-14.1
H39-14	57.3	35.4	0.0	-39.1	58.9	36.9	0.0	-38.9
H40-14	56.8	35.4	0.0	-41.1	59.0	37.0	0.0	-41.1
H41-14	59.8	37.2	0.0	-27.5	59.5	37.5	0.0	-34.3
H42-14	13.6	25.8	13.4	-4.9	14.1	33.0	9.2	-4.0
H43-14	43.7	32.9	0.4	-2.0	49.5	35.5	0.7	-1.3
H44-15	54.3	38.7	0.0	-36.1	52.2	37.1	0.2	-35.3
H45-15	50.7	36.6	0.0	-11.7	49.6	35.1	0.3	-12.1
H46-15	52.3	37.0	0.0	-35.4	56.9	38.1	0.0	-35.7

Notes: • All concentrations are in % unless otherwise noted.
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	July 18 and 19, 2017				August 15 and 16, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
H47-16	45.8	34.5	0.0	-0.9	49.5	34.8	0.1	-2.0
H48-16	50.0	37.0	0.0	-33.3	38.5	29.2	5.0	-33.7
H49-16	35.9	33.4	0.0	-0.5	51.1	39.4	0.0	-0.9
H50-16	41.2	35.8	0.0	-1.3	40.9	35.5	0.0	-1.0
H51-16	43.7	32.5	0.9	-0.2	41.1	30.6	3.6	-0.1
H52-16	43.0	34.9	1.3	-0.9	48.6	36.0	0.5	-0.2
H53-16	44.9	34.8	1.6	-1.7	30.3	26.8	6.6	-0.8
H54-16	44.4	34.2	0.5	-0.8	43.0	35.2	0.9	-1.1
H55-16	43.9	35.0	0.3	-0.5	42.8	34.9	0.4	-0.3
H56-17	50.3	40.7	0.0	-0.6	54.9	41.8	0.0	-0.6
H57-17	41.9	36.7	1.5	-0.8	51.8	40.8	0.0	-1.2
H58-17	21.3	30.6	0.4	-0.2	42.8	40.8	0.0	-0.1
H59-17	-	-	-	-	-	-	-	-
H60-17	-	-	-	-	-	-	-	-
H61-17	-	-	-	-	-	-	-	-
H62-17	-	-	-	-	-	-	-	-
H63-17	-	-	-	-	-	-	-	-
MH20	24.7	17.2	13.3	-0.3	24.0	15.8	13.4	-0.3
MH21	61.2	37.0	0.0	12.5	30.0	20.3	10.7	-1.3
MH22	47.9	29.1	4.9	-0.1	32.1	19.9	10.8	-0.1
MH23	24.3	16.4	12.7	0.0	28.3	20.6	11.8	0.0
MH24	55.6	38.7	0.0	-8.0	55.1	37.9	0.4	-13.1
MH29	28.9	16.5	11.8	-0.1	34.9	21.6	10.4	0.0
MH30	34.6	23.9	9.5	-0.4	39.2	26.9	7.8	-0.3
MH31	NM - condensate				NM - lack of access			
MH32	-	-	-	-	-	-	-	-

Notes:
- All concentrations are in % unless otherwise noted.
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	September 11 and 12, 2017				October 12 and 13, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG1-04	59.5	33.2	0.0	-42.7	61.0	35.4	0.0	-37.1
LFG2-04	62.6	28.2	0.4	-43.1	64.5	30.2	0.4	-42.7
LFG3-04	62.9	31.7	0.0	-40.4	57.4	31.5	2.0	-39.6
LFG4-04	66.6	29.5	0.0	-43.4	62.4	28.6	0.2	-42.3
LFG5-04	58.0	34.1	0.0	-43.1	58.0	35.7	0.0	-37.1
LFG6-04	51.7	34.0	0.0	-34.7	55.7	34.3	0.0	-34.1
LFG7-04	64.2	32.6	0.0	-41.7	59.8	31.0	0.7	-41.6
LFG8-04	57.1	34.9	0.0	-41.8	56.0	35.1	0.1	-41.1
LFG9-04	54.7	35.5	2.0	-39.1	51.1	33.1	2.0	-38.9
LFG10-04	47.2	33.6	0.0	-31.0	44.6	32.8	0.1	-29.7
LFG11-04	61.1	33.8	0.0	-35.4	60.8	33.9	0.0	-36.0
LFG12-05	58.5	33.6	0.3	-42.4	62.1	35.0	0.0	-42.5
LFG13-05	48.1	31.5	0.0	-39.1	48.2	31.9	0.0	-38.9
LFG14-05	56.9	35.2	0.0	-11.8	35.2	29.3	0.1	-20.9
LFG15-05	53.7	33.9	0.1	-41.4	56.2	33.4	0.4	-41.8
LFG16-05	64.7	30.3	0.0	-43.3	66.3	29.3	0.1	-43.5
LFG17-05	56.1	30.5	0.0	-24.2	59.4	31.7	0.0	-24.6
LFG18-05	46.0	35.4	0.0	-22.2	42.9	32.3	0.0	-22.9
LFG19-05	45.1	32.0	0.0	-21.9	45.2	32.0	0.1	-21.8
LFG20-05	58.8	33.3	0.0	-41.8	56.0	32.8	0.0	-41.5
LFG21-05	55.1	33.4	1.2	-42.5	57.4	32.9	0.7	-42.8
LFG22-05	50.7	36.6	0.0	-40.7	47.6	33.4	0.0	-40.5
LFG23-05	61.7	28.0	0.0	-43.1	57.8	27.8	0.6	-43.2
LFG24-07	49.0	32.7	3.9	-41.0	45.7	32.2	4.5	-41.1
LFG25-07	60.2	33.3	0.0	-40.9	59.3	32.8	0.2	-41.1
LFG26-07	54.8	37.7	0.0	-40.7	52.2	36.2	0.9	-40.5
LFG27-07	58.5	36.3	0.0	-40.4	57.8	36.2	0.0	-40.8
LFG28-07	57.1	36.4	0.0	-40.2	52.1	33.6	0.3	-39.7
LFG29-07	58.4	34.7	0.0	-38.1	58.9	35.1	0.1	-39.6
LFG30-09	58.6	32.7	0.0	-41.5	61.4	34.5	0.0	-42.1
LFG31-09	55.1	32.8	1.1	-36.0	58.5	33.3	0.2	-36.6
LFG33-09	59.1	36.9	0.0	-40.7	57.1	36.0	0.0	-41.5
LFG34-09	54.3	33.8	1.0	-39.7	56.7	34.0	1.1	-39.8
LFG35-09	55.3	34.7	0.0	-41.1	56.1	33.7	0.0	-41.1
LFG36-09	56.1	33.3	0.0	-41.4	54.7	33.7	0.0	-41.4
LFG37-09	56.0	35.3	0.0	-41.4	56.5	35.9	0.0	-42.1
LFG38-09	57.4	37.4	0.0	-40.4	58.2	37.9	0.0	-40.8
LFG39-09	59.7	34.8	0.0	-41.1	57.8	35.6	0.0	-41.6
LFG40-09	5.6	5.4	16.0	-4.7	7.5	7.2	15.4	-8.7
LFG41-09	38.3	26.7	3.1	-33.0	35.0	23.2	4.8	-29.0
LFG42-11	57.9	38.1	0.0	-4.6	21.6	25.7	2.9	-3.1

Notes: • All concentrations are in % unless otherwise noted.
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	September 11 and 12, 2017				October 12 and 13, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG43-11	57.2	36.8	0.0	-38.1	57.3	34.2	0.2	-38.6
LFG44-11	59.0	32.6	0.0	-41.4	43.7	26.4	7.0	-41.8
LFG45-11	59.1	32.7	0.6	-41.4	59.5	33.0	0.3	-42.1
LFG46-11	NM - condensate				NM - condensate			
LFG47-11	57.6	36.0	0.0	-8.2	58.2	36.2	0.0	-4.9
LFG48-11	58.6	36.2	0.0	-37.2	58.7	34.3	0.0	-38.1
LFG49-11	43.7	27.4	4.8	-38.1	59.8	36.7	0.0	45.1
LFG50-13	55.0	36.4	0.5	-37.0	55.3	35.6	0.4	-39.6
LFG51-13	52.8	38.0	0.0	-36.0	54.1	38.2	0.0	-37.1
LFG52-13	60.7	33.8	0.0	-39.8	59.9	32.4	0.0	-40.8
LFG53-13	51.5	35.0	0.0	-39.1	NM - condensate			
LFG55-13	51.3	35.2	1.2	-37.7	55.2	38.9	0.2	-39.4
LFG56-13	68.5	29.6	0.0	-41.4	63.9	30.1	0.0	-41.8
LFG57-13	58.8	36.7	0.0	-40.7	56.1	34.8	0.0	-41.1
LFG58-13	59.7	35.4	0.0	-41.8	59.4	37.0	0.0	-42.1
LFG59-13	52.1	33.1	0.0	-42.4	51.3	31.8	0.0	-41.8
LFG60-13	58.5	35.3	0.0	-39.7	57.6	35.3	0.0	-34.8
LFG61-14	49.7	33.1	0.0	-33.8	39.7	31.5	1.1	-33.6
LFG62-13	54.6	35.6	0.0	-40.7	53.5	34.4	0.2	-40.9
LFG63-14	52.9	37.3	0.0	-37.8	56.2	38.1	0.0	-37.6
LFG64-14	46.2	33.0	0.0	-33.7	46.0	35.4	0.0	-34.2
LFG65-14	2.8	3.2	20.5	-0.2	1.0	1.4	21.5	0.0
LFG66-13	49.2	31.6	0.0	-41.4	47.4	30.0	0.1	-41.6
LFG67-13	46.3	34.6	0.0	-35.4	42.2	33.7	0.0	-34.2
LFG68-13	56.4	36.2	0.0	-37.7	53.9	34.7	0.1	-38.3
LFG69-13	42.4	31.2	0.2	-36.4	49.9	37.0	0.0	-36.2
LFG70-13	59.3	33.3	0.0	-40.5	52.0	26.9	0.6	-39.2
LFG71-13	12.9	10.4	16.5	-39.7	5.5	4.7	19.8	-36.9
LFG72-13	7.3	5.7	17.7	-40.4	4.2	2.9	19.9	-39.6
LFG73-13	53.1	31.7	2.0	-39.5	34.4	20.8	9.2	-15.4
LFG74-13	59.7	33.5	0.1	-40.4	56.5	31.7	0.5	-39.6
LFG75-13	56.7	34.9	0.1	-40.4	56.4	34.2	0.4	-39.6
LFG76-13	55.4	35.4	0.6	-40.4	58.0	36.4	0.1	-39.6
LFG77-13	1.5	1.8	20.4	-0.8	52.1	34.0	2.1	-0.2
LFG78-13	40.6	29.0	0.9	-40.1	38.7	25.0	8.0	-0.2
LFG79-13	45.5	27.7	3.9	-40.1	38.8	23.8	8.1	-13.4
LFG80-13	56.4	34.3	0.3	-40.4	60.0	33.5	0.3	-39.6
LFG81-13	56.7	34.6	0.5	-40.2	57.8	34.4	0.5	-39.6
LFG82-13	60.0	33.1	0.2	-40.1	61.4	34.1	0.2	-39.6
LFG83-13	66.6	24.5	0.7	-39.7	63.2	23.2	0.6	-39.6
LFG84-13	71.8	23.5	0.0	-39.7	71.9	23.8	0.2	-39.9

Notes:
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	September 11 and 12, 2017				October 12 and 13, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG85-14	54.2	37.7	0.0	-2.5	50.8	34.6	0.0	-2.7
LFG86-14	57.7	37.0	0.0	-36.3	59.2	36.5	0.0	-37.9
LFG87-14	50.5	33.0	0.0	-37.2	52.5	34.6	0.0	-37.9
LFG88-14	57.1	35.8	0.0	-36.4	57.7	37.4	0.0	-37.5
LFG89-14	56.2	37.4	0.0	-30.7	54.8	35.9	0.0	-33.5
LFG90-14	56.8	34.7	0.0	-41.4	58.0	32.7	0.1	-39.8
LFG91-14	55.8	34.1	0.0	-16.2	54.6	31.2	0.2	-15.5
LFG92-14	58.7	36.0	0.0	-0.1	43.8	27.6	2.4	-0.1
LFG94-14	55.6	37.0	0.0	-41.1	55.6	36.4	0.0	-40.1
LFG95-14	56.8	38.5	0.0	-39.9	NM - condensate			
LFG96-14	51.2	33.3	2.8	-2.2	37.8	25.5	7.7	-0.3
LFG97-14	53.9	35.5	0.5	-41.1	53.1	35.9	0.7	-41.6
LFG98-14	57.7	35.5	0.0	-40.8	58.2	35.0	0.0	-41.6
LFG99-14	57.7	37.6	0.0	-39.7	44.1	27.8	0.5	-40.5
LFG100-14	54.6	36.9	0.0	-1.7	53.9	37.3	0.0	-3.8
LFG101-14	52.6	34.9	0.0	-37.4	51.1	33.7	0.0	-36.7
LFG102-14	55.7	33.8	0.0	-12.9	39.3	32.3	0.0	-14.4
LFG103-14	53.9	34.8	0.0	-37.6	52.3	33.9	0.0	-39.1
LFG104-14	40.7	32.0	0.0	-14.7	42.1	32.3	0.0	-14.5
LFG105-14	55.9	37.0	0.0	-4.0	47.7	32.0	2.9	-3.1
LFG106-14	54.7	35.0	0.0	-39.8	52.8	33.6	0.1	-40.5
LFG107-14	57.3	36.8	0.0	-39.8	56.5	36.5	0.0	-40.1
LFG108-14	59.0	35.1	0.0	-40.4	58.4	36.0	0.0	-40.6
LFG109-14	58.0	35.8	0.0	-39.8	58.8	37.9	0.0	-39.6
LFG110-15	54.8	36.4	0.0	-37.0	46.9	34.2	4.2	-38.1
LFG111-15	55.8	35.2	0.4	-38.1	57.5	35.8	0.2	-39.6
LFG112-15	56.4	36.4	0.0	-31.0	31.0	21.6	7.5	-36.7
LFG113-15	59.6	33.9	1.2	-39.7	58.1	33.8	0.5	-40.5
LFG114-15	56.9	34.1	0.1	-43.4	57.7	37.1	0.3	-40.5
LFG115-15	56.0	38.7	0.0	-35.7	56.2	40.4	0.0	-38.1
LFG116-15	28.9	21.6	9.7	-39.1	56.8	38.7	0.0	57.1
LFG117-15	53.1	35.8	0.0	-36.4	54.4	35.9	0.2	-37.5
LFG118-15	NM - condensate				55.8	33.4	1.3	-40.6
LFG119-15	49.4	32.5	0.2	-35.9	53.4	36.0	0.0	-38.4
LFG120-15	51.5	31.5	0.6	-35.3	57.9	36.4	0.4	-37.1
LFG121-15	55.1	37.2	1.0	-29.3	54.0	36.9	0.9	-30.0
LFG122-15	56.0	38.4	0.0	-35.1	55.6	35.7	0.0	-30.7
LFG123-15	44.2	30.8	0.6	-16.8	56.3	40.7	0.1	-9.5
LFG124-15	44.9	30.3	3.9	-1.7	56.4	38.0	0.4	-0.4
LFG125-15	54.4	37.6	0.0	-30.0	56.2	38.3	0.2	-29.8
LFG126-15	56.7	38.3	0.0	-0.1	56.5	38.1	0.0	-0.4
LFG127-15	55.5	37.0	0.0	-0.8	53.3	37.1	0.0	-0.2

Notes:
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	September 11 and 12, 2017				October 12 and 13, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG128-15	48.3	35.9	2.1	-6.7	51.2	37.0	1.6	-3.1
LFG129-15	49.0	36.4	0.0	-30.0	49.9	37.2	0.0	-30.5
LFG130-15	50.2	31.3	3.3	-0.1	3.1	2.3	20.9	-26.4
LFG131-15	48.7	28.9	0.2	-37.4	47.9	27.9	0.7	-37.9
LFG132-15	50.5	32.7	0.0	-37.4	55.2	34.8	0.3	-37.6
LFG133-15	51.4	36.2	0.0	-34.0	57.0	37.0	0.0	-36.4
LFG134-15	46.9	33.8	4.2	-37.7	43.9	30.7	5.9	-37.9
LFG135-15	46.8	35.6	0.0	-35.7	49.1	38.7	0.0	-21.2
LFG136-15	49.5	36.2	0.0	-3.1	55.3	38.6	0.0	-3.1
LFG137-15	51.8	38.8	0.0	-26.3	50.3	38.5	0.0	-31.2
LFG138-16	54.1	38.2	0.0	-0.3	55.1	39.3	0.0	-2.1
LFG139-16	56.2	39.3	0.0	-4.3	54.3	37.9	0.0	-4.0
LFG140-16	50.8	38.0	0.0	-5.7	50.3	37.0	0.0	-4.5
LFG141-16	48.2	36.7	0.0	-7.6	51.7	36.5	0.0	-5.4
LFG142-16	53.7	37.9	0.0	-1.7	45.7	37.1	0.0	-3.1
LFG143-16	51.9	37.7	0.0	-1.7	47.8	36.2	0.0	-0.9
LFG144-16	53.2	38.7	0.0	-0.6	43.0	36.3	0.0	-1.3
LFG145-16	51.0	37.2	0.0	-0.8	41.7	34.8	0.0	-0.9
LFG146-16	53.1	38.4	0.0	-3.8	48.6	36.9	0.1	-3.7
LFG147-16	50.2	36.8	0.0	-29.3	50.7	37.4	0.0	-30.1
LFG148-16	50.2	38.7	0.0	-30.6	47.2	37.0	0.0	-33.0
LFG149-16	49.4	37.2	0.0	-28.0	51.5	40.2	0.0	-30.1
LFG150-17	38.1	30.3	5.8	-0.2	53.3	37.6	0.0	-0.6
LFG151-17	52.7	39.0	0.0	-0.3	42.2	36.7	0.0	-2.2
LFG152-17	47.0	38.8	0.0	-4.1	48.7	37.6	0.0	-4.2
LFG153-17	44.9	38.6	0.0	-2.9	49.1	41.0	0.0	-2.9
LFG154-17	43.1	38.3	0.0	-3.2	46.0	39.6	0.0	-3.0
LFG155-17	42.8	38.7	0.0	-6.7	45.2	40.8	0.0	-6.5
LFG156-17	46.4	39.7	0.0	-0.2	38.3	34.9	4.2	-0.5
LFG157-17	43.4	40.3	0.0	-0.3	49.2	39.3	0.0	-2.3
LFG158-17	43.5	37.4	0.0	-0.2	46.0	39.9	0.0	-0.3
LFG159-17	42.7	38.0	0.0	-0.6	49.4	39.7	0.0	-0.4
LFG160-17	45.1	39.3	0.0	-0.3	46.1	38.9	0.0	-0.2
LFG161-17	50.6	40.8	0.0	-2.7	48.6	40.8	0.0	-4.7
LFG162-17	46.7	40.7	0.5	-0.7	45.9	41.2	0.9	-0.6
LFG163-17	49.3	39.4	0.0	-0.5	48.7	38.4	0.0	-0.6
LFG164-17	53.1	40.0	0.0	-0.7	45.4	36.9	0.0	-2.0
LFG165-17	50.5	37.6	0.0	-1.0	46.1	37.7	0.0	-0.6
LFG166-17	52.3	38.1	0.0	-0.9	51.1	37.3	0.0	-1.1
LFG167-17	51.9	39.2	0.0	-3.2	50.1	38.2	0.0	-3.1
H1-09	NM - condensate				NM - condensate			
H3-09	11.2	4.1	17.0	-34.0	NM - condensate			

Notes:
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	September 11 and 12, 2017				October 12 and 13, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
H4-10	46.1	32.9	2.1	-38.3	53.3	35.5	0.0	-2.2
H5-10	57.9	34.5	0.0	-37.1	53.8	35.2	1.6	-11.3
H6-10	45.7	32.0	4.5	-16.4	6.4	6.1	20.3	-9.3
H7-10	NM - condensate				NM - condensate			
H9-11	60.5	34.1	0.0	-37.4	NM - condensate			
H10-11	68.1	30.1	0.0	-39.1	67.5	31.1	0.1	-39.9
H11-12	57.8	34.8	0.0	-0.2	54.8	34.1	0.1	-0.1
H12-12	13.4	19.5	4.7	-0.1	12.3	19.1	4.5	0.0
H13-12	58.0	37.0	0.0	0.1	57.1	36.3	0.0	-0.1
H14-12	58.4	37.9	0.0	0.2	58.3	38.0	0.0	0.0
H15-12	48.1	32.3	0.0	-32.4	43.4	31.1	0.4	-37.0
H16-12	59.0	36.6	0.0	-37.7	44.8	26.2	0.9	-37.9
H17-12	50.8	40.0	0.6	-28.3	36.8	30.6	4.4	-38.7
H18-12	59.5	36.9	0.0	-34.7	44.4	29.3	2.5	-39.9
H19-12	49.6	33.4	0.0	-3.1	59.0	34.9	0.0	-1.0
H20-13	58.4	35.3	0.0	-33.9	60.6	35.7	0.0	-33.2
H21-13	34.8	27.7	0.0	-2.5	48.6	25.7	0.0	-13.0
H22-13	47.3	32.4	0.0	-3.5	58.5	34.6	0.0	-4.1
H23-13	53.7	33.3	0.2	-1.8	56.0	37.8	0.0	-1.0
H24-13	58.4	33.1	0.2	-38.3	56.2	36.1	0.9	-39.2
H25-13	15.5	8.8	18.8	-37.8	9.0	6.3	19.4	-38.3
H26-13	NM - condensate				45.3	31.0	3.0	-39.9
H27-13	54.5	35.4	0.7	-28.3	58.0	39.4	0.1	-29.8
H28-14	NM - condensate				NM - condensate			
H29-13	36.6	30.3	4.7	-39.7	NM - condensate			
H30-14	18.1	18.5	14.4	-26.3	27.2	33.2	9.1	-6.1
H31-14	57.2	38.9	0.0	-31.0	55.0	35.8	0.1	-29.7
H32-14	NM - condensate				NM - condensate			
H33-14	NM - condensate				NM - condensate			
H34-14	NM - condensate				NM - condensate			
H35-14	NM - condensate				NM - condensate			
H36-14	57.9	38.5	0.0	-0.2	55.2	38.1	0.0	-1.5
H37-14	54.4	35.9	0.0	-8.1	56.6	38.1	0.0	-8.4
H38-14	51.9	37.5	0.0	-12.4	53.2	38.7	0.1	-13.0
H39-14	56.3	36.8	0.0	-37.5	59.0	37.7	0.0	-38.3
H40-14	55.7	34.9	0.0	-39.1	58.1	35.9	0.0	-38.9
H41-14	58.7	36.5	0.0	-37.3	58.0	36.5	0.0	-28.5
H42-14	20.0	33.9	5.0	-4.4	25.7	33.9	2.4	-2.8
H43-14	53.6	36.4	0.0	-0.7	49.6	35.4	0.2	-0.7
H44-15	53.5	37.5	0.0	-36.1	55.0	37.8	0.0	-38.6
H45-15	48.2	35.2	0.4	-14.1	48.2	35.6	0.9	-10.8
H46-15	56.8	35.8	0.0	-35.7	54.0	37.7	1.3	-38.1

Notes:
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	September 11 and 12, 2017 CH_4	CO_2	O_2	Static Pressure (inches of water)	October 12 and 13, 2017 CH_4	CO_2	O_2	Static Pressure (inches of water)
H47-16	44.9	33.7	0.0	-2.2	42.0	35.9	0.0	-2.6
H48-16	54.5	35.1	0.0	-18.8	28.2	30.0	1.0	-22.4
H49-16	45.2	35.5	0.0	-0.8	40.3	35.3	2.4	-0.5
H50-16	43.1	35.3	0.6	-0.5	14.8	19.5	6.9	-0.3
H51-16	22.8	25.7	6.1	-38.1	51.1	36.4	0.2	-24.1
H52-16	48.1	36.7	0.3	-0.2	57.1	39.5	0.0	-0.1
H53-16	44.2	35.3	1.7	-0.3	51.1	44.6	0.0	-0.5
H54-16	44.9	32.5	0.3	-0.3	52.2	42.4	0.0	-0.2
H55-16	45.1	36.6	0.5	-0.1	43.1	42.1	0.3	-0.8
H56-17	48.2	39.8	0.0	-1.6	46.3	36.2	0.1	-1.7
H57-17	48.5	37.9	0.0	-2.2	46.6	39.3	0.0	-0.2
H58-17	37.6	36.7	0.4	-0.3	33.9	32.7	0.9	-0.3
H59-17	56.1	38.1	0.0	-0.2	42.9	33.4	2.3	-0.4
H60-17	56.1	39.2	0.0	-0.8	55.8	37.9	0.3	-0.7
H61-17	56.0	38.6	0.0	-0.6	55.2	38.1	0.0	-0.8
H62-17	57.3	39.5	0.0	-0.7	57.0	39.3	0.0	-0.9
H63-17	57.0	39.4	0.0	-0.7	55.8	39.4	0.0	-0.6
MH20	28.3	19.6	10.9	-0.1	39.3	26.0	8.0	-0.1
MH21	23.2	17.7	13.8	-12.0	44.5	28.0	5.6	-2.2
MH22	25.5	16.9	12.4	-0.1	34.7	20.8	9.2	-0.2
MH23	24.7	17.4	12.2	-0.1	54.6	35.9	0.0	0.0
MH24	4.7	6.2	20.3	-13.4	NM - condensate			
MH29	23.1	12.4	13.4	-0.1	14.8	7.7	17.3	0.0
MH30	56.1	35.4	0.0	-0.4	57.6	37.8	0.0	-0.2
MH31	NM - lack of access				NM - condensate			
MH32	-	-	-	-	-	-	-	-

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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	November 28 and 29, 2017				December 20 and 21, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG1-04	61.5	35.4	0.0	-42.3	58.0	31.1	0.2	-43.1
LFG2-04	65.9	28.6	0.0	-43.4	66.2	30.7	0.0	-42.4
LFG3-04	63.4	31.4	0.2	-38.3	63.7	31.4	0.0	-43.4
LFG4-04	67.8	28.7	0.0	-43.0	48.4	20.0	7.1	-43.5
LFG5-04	60.1	34.5	0.0	-42.7	58.7	34.8	0.0	-43.1
LFG6-04	59.9	35.5	0.0	-31.9	60.1	35.8	0.0	-43.1
LFG7-04	58.8	31.6	1.3	-40.4	58.4	28.2	2.0	-42.1
LFG8-04	59.0	35.9	0.0	-41.0	59.1	37.0	0.0	-42.1
LFG9-04	52.0	33.1	2.8	-38.3	51.7	31.1	3.3	-41.8
LFG10-04	50.0	36.7	0.0	-23.2	53.2	34.4	0.1	-41.8
LFG11-04	60.3	36.5	0.0	-35.4	60.9	34.8	0.0	-35.0
LFG12-05	62.1	34.9	0.0	-41.7	60.4	35.0	0.0	-43.0
LFG13-05	61.6	33.8	0.0	-37.0	61.1	33.8	0.0	-42.4
LFG14-05	46.6	29.2	4.7	-8.7	57.2	34.8	0.6	-42.8
LFG15-05	57.9	35.1	0.1	-41.0	57.9	34.4	0.3	-43.6
LFG16-05	61.6	30.5	0.3	-42.3	52.7	24.7	4.6	-43.4
LFG17-05	55.7	26.1	2.7	-18.3	51.6	23.9	4.6	-43.4
LFG18-05	46.9	35.3	0.0	-17.4	48.0	34.2	0.0	-42.1
LFG19-05	54.8	34.0	0.0	-17.3	54.8	36.1	0.1	-35.4
LFG20-05	57.3	34.6	0.0	-40.3	59.6	35.6	0.0	-43.1
LFG21-05	60.1	33.4	0.0	-42.1	60.9	34.4	0.1	-44.1
LFG22-05	58.5	36.1	0.0	-38.8	59.8	35.9	0.0	-42.4
LFG23-05	64.9	30.3	0.0	-42.3	65.6	27.9	0.9	-43.4
LFG24-07	41.8	27.8	7.1	-40.3	1.2	1.0	21.5	-41.8
LFG25-07	64.0	33.0	0.0	-40.1	46.4	25.3	5.4	-41.8
LFG26-07	58.4	37.9	0.0	-39.7	58.1	36.7	0.0	-41.3
LFG27-07	58.2	38.2	0.0	-39.0	58.0	36.9	0.0	-41.1
LFG28-07	58.7	37.5	0.0	-39.0	58.8	36.5	0.0	-40.4
LFG29-07	51.5	31.7	0.3	-37.3	61.9	35.7	0.0	-37.7
LFG30-09	61.1	34.9	0.0	-41.0	60.5	34.7	0.0	-42.4
LFG31-09	59.5	33.7	1.6	-35.6	39.5	23.9	7.7	-36.7
LFG33-09	58.3	36.7	0.0	-39.4	58.9	37.2	0.0	-41.8
LFG34-09	56.3	33.5	1.0	-38.0	60.8	35.1	0.0	-42.4
LFG35-09	60.1	34.1	0.0	-40.4	60.7	34.8	0.0	-42.1
LFG36-09	60.9	35.2	0.0	-41.3	62.4	36.1	0.0	-41.4
LFG37-09	56.6	36.7	0.0	-41.4	57.4	37.9	0.0	-43.4
LFG38-09	57.7	36.7	0.0	-40.3	56.2	35.6	0.6	-41.1
LFG39-09	60.7	35.8	0.0	-39.7	61.0	36.6	0.0	-41.8
LFG40-09	33.8	21.2	8.6	-21.8	20.9	14.2	14.2	-41.4
LFG41-09	62.9	34.4	0.0	-3.9	62.7	34.1	0.0	-42.4
LFG42-11	58.1	37.5	0.0	1.1	26.8	30.8	0.3	-40.7

Notes: • All concentrations are in % unless otherwise noted.
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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	November 28 and 29, 2017				December 20 and 21, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG43-11	59.8	36.1	0.0	-37.4	59.4	36.1	0.0	-39.4
LFG44-11	48.5	27.8	5.1	-39.4	26.3	16.7	12.9	-42.7
LFG45-11	37.8	21.7	9.0	-41.0	34.0	19.2	10.4	-43.1
LFG46-11	NM - condensate				59.5	36.1	0.0	-42.1
LFG47-11	60.0	36.4	0.0	-8.2	60.0	36.8	0.0	-11.8
LFG48-11	59.3	36.3	0.0	-37.3	59.9	38.5	0.1	-39.4
LFG49-11	53.9	33.2	0.2	-37.3	56.9	36.7	0.3	-39.4
LFG50-13	46.5	31.8	4.9	-37.6	15.4	11.4	16.1	-37.5
LFG51-13	59.1	38.4	0.0	-37.1	58.7	37.1	0.1	-40.4
LFG52-13	62.8	35.8	0.0	-39.0	62.4	34.8	0.1	-38.8
LFG53-13	54.3	37.1	0.2	-38.6	56.2	39.9	0.0	-40.4
LFG55-13	NM - standing water at base of well				55.2	37.5	0.2	-35.0
LFG56-13	68.6	29.9	0.0	-41.3	46.7	20.8	6.5	-42.1
LFG57-13	61.2	35.6	0.0	-40.1	61.2	35.9	0.1	-42.1
LFG58-13	59.6	35.6	0.1	-41.7	38.1	25.3	7.6	-41.8
LFG59-13	58.5	34.8	0.0	-41.7	60.3	34.3	0.0	-42.9
LFG60-13	59.0	36.6	0.0	-40.0	58.6	36.5	0.0	-40.4
LFG61-14	59.3	36.7	0.0	-30.2	58.2	36.9	0.0	-38.4
LFG62-13	59.9	36.7	0.0	-40.0	59.0	37.5	0.0	-41.8
LFG63-14	57.6	38.7	0.0	-33.9	56.6	39.1	0.0	-39.2
LFG64-14	49.5	35.9	0.0	-30.6	46.4	35.6	0.0	-39.1
LFG65-14	1.8	2.6	18.4	-0.3	0.6	1.1	21.7	-34.9
LFG66-13	55.9	33.2	0.0	-41.3	56.4	32.1	0.0	-42.1
LFG67-13	59.5	37.0	0.0	-24.8	59.0	38.1	0.0	-38.4
LFG68-13	58.9	37.1	0.0	-33.9	56.7	36.0	0.5	-40.1
LFG69-13	45.5	34.2	0.0	-32.9	40.8	34.3	0.5	-38.7
LFG70-13	61.6	35.3	0.0	-39.0	62.4	34.4	0.0	-40.1
LFG71-13	42.6	24.4	7.5	-39.0	62.9	33.7	0.1	-40.4
LFG72-13	15.8	10.0	17.4	-39.0	28.9	20.8	10.8	-41.4
LFG73-13	61.7	36.8	0.0	-11.0	60.9	35.5	0.0	-39.1
LFG74-13	47.4	29.5	4.9	-38.9	61.9	35.6	0.0	-39.7
LFG75-13	57.2	36.2	0.0	-38.6	59.1	36.6	0.0	-40.1
LFG76-13	60.6	35.0	0.2	-39.0	60.8	36.9	0.0	-39.9
LFG77-13	58.6	36.0	0.0	-27.5	58.6	36.3	0.0	-22.9
LFG78-13	59.2	36.2	0.0	-26.9	60.1	35.2	0.0	-21.1
LFG79-13	60.5	35.7	0.0	-29.6	62.0	34.7	0.0	-25.9
LFG80-13	60.2	35.4	0.0	-39.0	61.6	35.5	0.0	-39.1
LFG81-13	24.8	16.5	13.9	-38.9	61.1	34.9	0.0	-39.4
LFG82-13	61.7	35.2	0.0	-38.6	62.5	34.1	0.0	-37.4
LFG83-13	67.9	27.7	1.3	-39.3	71.8	26.1	0.0	-9.1
LFG84-13	72.8	23.6	0.1	-39.0	68.4	25.4	1.3	0.2

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TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	November 28 and 29, 2017				December 20 and 21, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG85-14	52.5	34.6	0.0	-3.0	54.1	35.7	0.0	-39.7
LFG86-14	59.3	35.9	0.0	-37.3	60.7	35.8	0.0	-39.4
LFG87-14	59.6	36.2	0.0	-37.3	60.0	36.1	0.0	-40.0
LFG88-14	58.3	37.2	0.0	-36.6	59.1	36.6	0.0	-39.7
LFG89-14	57.1	38.7	0.0	-34.3	56.1	39.1	0.3	-40.1
LFG90-14	61.3	35.7	0.0	-40.3	59.9	35.0	0.5	-42.4
LFG91-14	58.0	34.6	0.0	-14.4	59.0	34.8	0.0	-39.4
LFG92-14	59.6	36.0	0.0	0.5	60.9	36.8	0.0	-41.0
LFG94-14	58.6	37.9	0.0	-40.4	58.6	37.9	0.0	-42.4
LFG95-14	NM - excessive mud at base of well				58.7	37.7	0.0	-41.1
LFG96-14	60.4	36.0	0.0	0.8	15.6	10.2	17.2	-42.4
LFG97-14	58.1	36.4	0.0	-40.0	58.1	37.6	0.0	-41.2
LFG98-14	56.8	37.1	0.2	-40.4	56.5	36.0	0.3	-42.4
LFG99-14	57.7	38.1	0.0	-39.4	57.4	38.0	0.0	-41.1
LFG100-14	56.8	39.2	0.0	-8.3	54.5	38.4	0.0	-34.3
LFG101-14	NM - standing water at base of well				58.3	34.9	0.0	-39.7
LFG102-14	59.3	36.9	0.0	-9.9	0.5	0.6	22.2	-42.1
LFG103-14	57.6	36.0	0.0	-38.5	57.8	36.5	0.0	-39.1
LFG104-14	58.7	36.9	0.0	-9.5	12.6	8.7	17.9	-42.8
LFG105-14	58.2	37.2	0.0	-3.3	45.6	30.4	4.4	-35.7
LFG106-14	58.6	37.1	0.0	-39.3	58.2	36.3	0.0	-40.5
LFG107-14	58.2	38.3	0.0	-38.8	58.2	36.9	0.0	-41.4
LFG108-14	58.2	35.3	0.2	-39.7	57.9	34.2	0.5	-40.4
LFG109-14	58.7	36.6	0.0	-38.3	59.0	36.3	0.0	-40.0
LFG110-15	41.1	28.3	6.7	-34.3	49.1	33.2	3.5	-39.4
LFG111-15	52.5	34.1	2.0	-37.6	41.5	27.9	8.0	-37.4
LFG112-15	48.1	32.0	3.3	-27.3	27.4	20.3	11.0	-39.4
LFG113-15	59.7	31.6	1.1	-38.8	19.6	10.1	15.8	-38.4
LFG114-15	61.0	32.6	0.0	-39.0	10.5	6.8	18.9	-40.4
LFG115-15	54.4	37.4	0.7	-37.3	56.1	38.3	0.1	-39.0
LFG116-15	17.4	13.8	15.9	-18.9	0.5	0.5	22.0	-40.7
LFG117-15	59.8	38.5	0.0	-37.3	54.4	35.4	1.0	-37.5
LFG118-15	60.6	36.1	0.0	-38.0	59.8	34.9	0.0	-37.9
LFG119-15	57.8	38.6	0.0	-36.0	57.2	38.1	0.0	-38.4
LFG120-15	60.0	37.2	0.0	-35.1	59.5	36.5	0.0	-5.2
LFG121-15	5.0	5.9	20.3	-38.0	NM - no data found in the Envision file			
LFG122-15	56.8	37.3	0.0	-35.9	28.8	20.8	10.4	-37.7
LFG123-15	56.7	39.8	0.4	-38.0	54.0	36.5	1.0	-39.3
LFG124-15	58.9	36.4	0.0	-3.7	52.4	35.5	0.0	-31.1
LFG125-15	57.7	37.6	0.1	-30.2	57.9	37.9	0.2	-31.0
LFG126-15	58.7	39.1	0.0	-4.1	56.2	38.1	0.6	-32.4
LFG127-15	30.8	25.4	10.1	-1.2	35.3	28.0	8.3	-33.3

Notes:
- All concentrations are in % unless otherwise noted.
- " NM " denotes not monitored due to inaccessible sample port (blocked or frozen) or other noted reasoning.

TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	November 28 and 29, 2017				December 20 and 21, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
LFG128-15	51.8	36.2	1.3	-14.8	51.9	38.8	1.4	-33.5
LFG129-15	52.7	40.5	0.0	-30.6	52.1	37.3	0.7	-32.0
LFG130-15	3.2	3.3	21.9	-25.2	1.9	1.3	21.6	-39.4
LFG131-15	61.6	37.9	0.0	-37.0	60.9	37.7	0.0	-39.1
LFG132-15	60.6	38.5	0.0	-36.7	60.5	36.5	0.0	-39.4
LFG133-15	58.9	38.6	0.0	-33.3	57.2	38.6	0.0	-39.1
LFG134-15	62.9	33.5	0.0	-0.9	1.4	1.5	21.6	-39.7
LFG135-15	56.1	40.0	0.0	-20.8	54.6	40.4	0.0	-39.0
LFG136-15	57.1	38.5	0.0	-2.4	57.7	38.8	0.0	-39.9
LFG137-15	55.2	39.2	0.0	-29.0	51.4	38.1	0.0	-34.0
LFG138-16	52.9	39.3	0.0	-12.4	50.1	36.2	0.0	-38.8
LFG139-16	47.6	37.4	0.0	-10.1	36.2	29.6	3.5	-39.4
LFG140-16	49.9	37.2	0.0	-10.0	28.7	22.2	8.7	-38.4
LFG141-16	51.0	38.3	0.0	-9.5	50.2	37.0	0.0	-39.4
LFG142-16	30.2	32.6	0.0	-4.1	26.7	29.7	0.0	-36.7
LFG143-16	42.0	34.8	0.0	-3.7	39.2	32.7	0.0	-36.7
LFG144-16	40.1	34.5	0.0	-3.6	40.2	33.7	0.0	-39.4
LFG145-16	46.7	35.3	0.0	-3.1	46.5	35.3	0.0	-39.4
LFG146-16	41.2	36.0	0.0	-4.7	34.4	31.7	0.0	-39.8
LFG147-16	52.5	39.6	0.0	-30.2	50.6	39.2	0.0	-33.3
LFG148-16	48.3	37.8	0.0	-27.7	46.3	36.8	0.0	-36.4
LFG149-16	52.6	38.2	0.0	-30.2	52.1	38.0	0.0	-37.4
LFG150-17	54.7	38.3	0.0	-2.6	48.9	38.5	2.1	-38.1
LFG151-17	47.3	36.7	0.0	-1.7	41.0	32.7	0.7	-40.1
LFG152-17	41.9	35.6	0.0	-5.0	38.2	33.0	0.8	-32.7
LFG153-17	42.0	37.6	0.0	-4.9	39.2	36.7	0.0	-5.0
LFG154-17	41.5	38.0	0.0	-4.9	38.9	38.0	0.0	-5.1
LFG155-17	46.3	40.7	0.0	-1.5	40.1	36.9	0.0	-3.6
LFG156-17	2.2	4.0	21.7	-0.5	29.7	31.1	0.0	-1.1
LFG157-17	42.4	37.5	0.0	-1.3	0.3	0.8	21.4	0.0
LFG158-17	35.5	34.5	0.0	-0.9	38.7	38.2	0.0	-1.6
LFG159-17	35.6	36.5	0.0	-1.4	35.2	33.3	0.7	-32.7
LFG160-17	23.6	31.7	0.0	-0.8	24.5	31.0	0.4	-32.7
LFG161-17	43.8	37.8	0.0	-5.7	42.7	36.8	0.0	-4.3
LFG162-17	49.7	40.6	0.0	-2.0	49.4	42.5	0.0	-2.7
LFG163-17	46.2	38.7	0.0	-1.5	44.8	41.1	0.0	-2.3
LFG164-17	45.5	38.4	0.0	-1.6	33.3	32.2	0.0	-5.9
LFG165-17	52.4	39.5	0.0	-1.2	43.8	36.4	0.0	-2.5
LFG166-17	44.6	35.5	0.0	-2.2	41.2	35.7	0.0	-2.8
LFG167-17	40.8	35.5	0.0	-5.3	36.0	33.0	0.0	-5.9
H1-09	NM - condensate				60.8	39.1	0.0	-0.3
H3-09	NM - condensate				63.3	20.0	3.2	-2.8

Notes: • All concentrations are in % unless otherwise noted.
• " NM " denotes not monitored due to inaccessible sample port (blocked or frozen) or other noted reasoning.

TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	November 28 and 29, 2017				December 20 and 21, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
H4-10	63.9	30.7	0.0	33.8	5.8	2.9	20.3	-18.2
H5-10	60.4	35.9	0.0	-37.6	53.4	33.6	1.5	-30.1
H6-10	58.3	37.2	0.0	-17.8	50.5	30.4	2.4	-17.1
H7-10	NM - condensate				18.7	45.9	6.7	-26.9
H9-11	61.7	38.2	0.1	-37.9	61.7	35.8	0.0	-39.1
H10-11	66.2	33.2	0.0	-39.0	67.2	31.6	0.0	-40.1
H11-12	58.9	35.4	0.0	-2.5	43.1	31.7	2.1	-41.8
H12-12	17.5	20.9	3.1	-0.1	7.2	19.2	0.6	-41.2
H13-12	54.5	35.5	0.0	-2.9	58.4	37.1	0.0	-39.7
H14-12	54.9	35.7	0.2	-2.1	0.6	1.0	21.9	-40.4
H15-12	56.8	35.9	0.0	-36.4	54.4	36.7	0.0	-37.6
H16-12	61.6	37.0	0.0	-37.1	60.9	38.0	0.0	-38.4
H17-12	56.0	40.9	0.0	-38.3	55.8	41.0	0.0	-39.7
H18-12	61.9	37.7	0.0	-39.0	64.0	36.0	0.0	-40.1
H19-12	46.3	33.6	0.0	-10.2	42.9	32.0	0.2	-33.9
H20-13	61.4	36.7	0.0	-32.9	61.5	36.4	0.0	-33.7
H21-13	63.6	6.7	3.9	-1.9	23.2	24.8	0.7	-37.0
H22-13	46.9	32.8	0.0	-4.5	21.5	26.7	0.3	-37.4
H23-13	13.1	9.8	16.8	-0.3		NM		-39.4
H24-13	63.4	31.4	0.7	-39.1	42.2	23.0	7.3	-32.0
H25-13	42.2	16.1	0.0	-0.7	0.7	0.6	21.9	-36.0
H26-13	50.9	33.1	1.7	-38.3	17.2	12.5	15.1	-37.8
H27-13	61.8	35.8	0.0	-28.9	61.1	36.5	0.0	-25.9
H28-14	42.1	29.1	0.5	-19.1	57.7	37.8	0.0	-4.1
H29-13	NM - condensate				58.9	38.5	0.0	-33.5
H30-14	0.7	0.5	22.7	-3.5	0.9	1.0	21.8	-32.7
H31-14	58.1	39.8	0.0	-27.1	59.9	40.0	0.0	-32.1
H32-14	47.0	31.2	1.2	-37.3	57.8	38.0	0.0	-38.4
H33-14	59.4	36.2	0.0	-35.9	58.8	37.9	0.0	-35.7
H34-14	NM - condensate				57.8	38.6	0.2	-41.0
H35-14	NM - condensate				1.1	1.5	21.7	-39.4
H36-14	26.5	28.0	0.9	-14.7	16.6	24.2	0.9	-41.2
H37-14	59.2	39.4	0.0	-6.7	58.4	38.6	0.0	-22.6
H38-14	55.3	39.1	0.0	-10.9	54.3	38.2	0.0	-26.9
H39-14	59.7	36.1	0.0	-33.3	59.9	36.9	0.0	-39.5
H40-14	59.2	37.1	0.0	-34.3	58.1	36.1	0.0	-39.8
H41-14	60.6	37.6	0.0	-20.9	60.1	37.5	0.0	-31.3
H42-14	7.1	8.2	18.1	-15.9	50.2	34.9	0.5	-43.5
H43-14	54.4	34.1	0.0	-0.2	55.0	34.7	0.1	-41.8
H44-15	48.4	36.5	4.0	-37.2	27.4	20.2	11.4	-38.4
H45-15	55.0	37.6	0.0	-18.7	54.4	37.6	0.0	-31.6
H46-15	37.6	26.8	7.7	-36.5	29.5	16.9	11.4	-39.1

Notes:
- All concentrations are in % unless otherwise noted.
- " NM " denotes not monitored due to inaccessible sample port (blocked or frozen) or other noted reasoning.

TABLE 3.2
MONTHLY LANDFILL GAS FIELD PARAMETERS
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Sampling Location	November 28 and 29, 2017				December 20 and 21, 2017			
	CH_4	CO_2	O_2	Static Pressure (inches of water)	CH_4	CO_2	O_2	Static Pressure (inches of water)
H47-16	48.4	37.2	0.0	-2.7	35.0	34.0	0.0	-32.7
H48-16	60.9	35.9	0.3	-33.3	29.7	17.3	11.2	-32.8
H49-16	52.3	36.9	1.7	-16.2	37.7	36.6	0.0	-33.4
H50-16	46.4	35.7	0.0	-2.1	47.7	37.6	0.0	-31.3
H51-16	NM - condensate				0.8	0.9	21.7	-37.2
H52-16	NM - condensate				44.8	32.1	4.8	-25.6
H53-16	46.7	41.8	0.0	-1.5	45.2	37.3	0.0	-23.3
H54-16	48.1	40.6	0.0	-1.1	49.2	38.1	0.3	-27.3
H55-16	51.0	38.5	0.0	-2.0	3.6	2.7	20.6	-16.4
H56-17	44.0	35.5	0.0	-3.0	39.5	33.8	0.1	-3.3
H57-17	49.5	38.6	0.0	-5.4	50.6	39.1	0.0	-5.8
H58-17	22.1	25.2	6.4	-2.3	22.9	24.0	6.6	0.0
H59-17	26.6	22.6	7.9	-0.1	48.2	43.3	0.0	-0.3
H60-17	55.5	39.0	0.0	-0.7	53.9	41.7	0.0	-0.3
H61-17	56.3	39.1	0.1	-0.8	53.0	40.6	0.0	-0.7
H62-17	57.8	39.5	0.0	-1.9	58.1	41.0	0.0	-1.3
H63-17	57.1	39.9	0.0	-0.9	58.0	40.0	0.0	-0.9
MH20	27.6	18.4	12.3	-0.2	25.1	17.7	12.9	-0.2
MH21	19.1	13.1	16.1	-29.3	NM - no data found in the Envision file			
MH22	37.9	24.8	8.2	-18.3	24.9	16.5	13.4	-0.1
MH23	13.6	9.8	18.2	-0.2	24.2	16.9	13.3	0.0
MH24	NM - not connected to system				NM - not connected to system			
MH29	19.8	12.0	16.4	-1.0	59.4	30.1	1.7	0.0
MH30	43.9	29.7	6.1	-0.1	29.6	18.9	11.7	-0.3
MH31	28.8	18.4	11.8	0.0	29.6	21.0	11.7	0.0
MH32	NM - not connected to system				NM - not connected to system			

Notes: • All concentrations are in % unless otherwise noted.
• " NM " denotes not monitored due to inaccessible sample port (blocked or frozen) or other noted reasoning.

TABLE 4.1
SUMMARY OF MONTHLY WASTE DISPOSAL QUANTITIES FOR 2017
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Month (2017)		Quantity of Waste (tonnes)
January		41,862.61
February		34,761.65
March		44,652.33
April		39,865.93
May		47,582.95
June		47,860.50
July		46,084.04
August		32,698.83
September		42,055.70
October		41,954.76
November		42,080.49
December		33,671.78
	Total:	495,131.57

TABLE 4.2
SUMMARY OF MONTHLY WASTE COMPOSITION
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Month (2017)	Transfer Municipal Waste	Residential	Industrial/ Commercial	Sewage Sludge**	Dewatered Sludge from On-Site LTP**	Contaminated Soil**	Crushed Glass**
January	37,773.14	1,179.13	2,910.34	249.99	48.91	0.00	511.13
February	31,356.87	1,003.84	2,400.94	226.82	40.78	0.00	142.25
March	39,938.67	1,224.60	3,489.06	218.57	19.35	0.00	211.10
April	35,590.86	1,170.24	3,104.83	305.79	14.54	0.00	177.92
May	41,979.68	1,413.97	4,189.30	217.31	34.87	0.00	248.84
June	42,710.87	1,514.51	3,635.12	312.07	42.46	0.00	188.98
July	39,529.20	1,270.69	5,284.15	187.13	59.36	0.00	253.16
August	27,793.59	1,365.82	3,539.42	340.79	31.75	0.00	190.10
September	37,324.64	1,200.98	3,530.08	236.56	11.61	0.00	185.62
October	36,693.01	1,329.95	3,931.80	286.12	14.93	0.00	223.74
November	37,727.86	1,264.80	3,087.83	240.89	2.23	0.00	205.64
December	30,092.75	1,070.49	2,508.54	239.45	10.16	0.00	180.05
Totals:	438,511.14	15,009.02	41,611.41	3,061.49	330.95	0.00	2,718.53
Average per Month:	**36,542.60**	**1,250.75**	**3,467.62**	**255.12**	**27.58**	**0.00**	**226.54**

Notes:
- Units are in tonnes, unless otherwise specified.
- Transfer municipal waste is comprised of residential waste and industrial/commercial waste types.
- ** The Industrial/Commercial Waste column includes, but is not limited to, the quantities of sewage sludge, dewatered sludge from on-site LTP, contaminated soils, and crushed glass, listed as separate columns on this table. The total of these discrete waste streams is 6,111 tonnes. This total does not include the industrial/commercial component of the transfer municipal waste category.

TABLE 4.3
SUMMARY OF ANNUAL WASTE DISPOSAL QUANTITIES
UNDER CITY OF TORONTO OWNERSHIP
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Year	Quantity of Waste (tonnes)
2007	279,620
2008	386,376
2009	320,365
2010	317,719
2011	741,391
2012	742,626
2013	683,453
2014	470,960
2015	582,960
2016	552,563
2017	495,132

Note:
- City of Toronto assumed ownership of the Site on April 2, 2007.

FIGURES

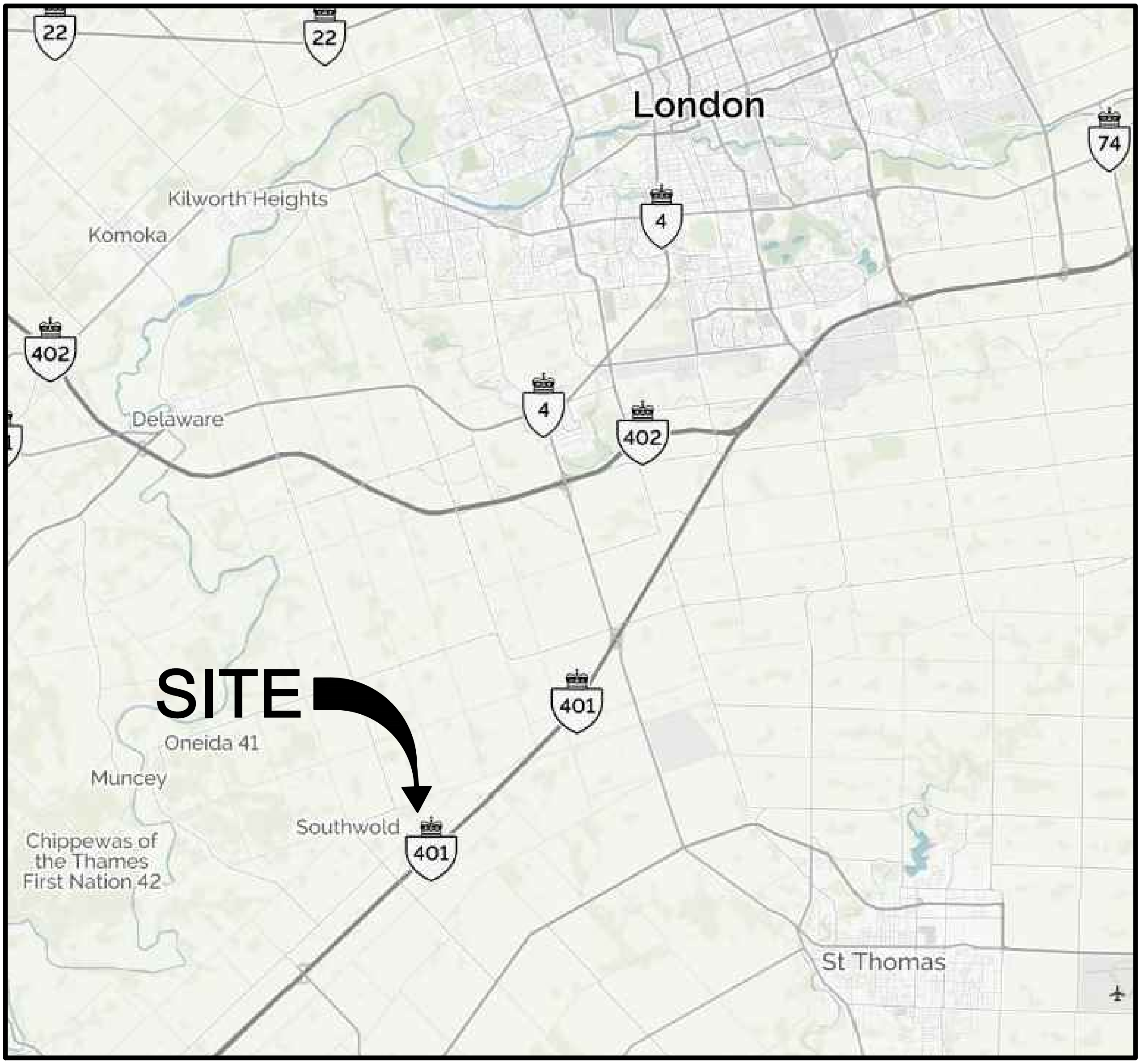
FIGURE 1.1 REGIONAL SITE LOCATION

General location of Green Lane Landfill shown on an enlarged map of southwestern Ontario.

TORONTO

Green Lane LANDFILL

MAP SOURCE: MAPQUEST 2015
SCALE: N T S



wsp
300 - 4 HUGHSON STREET SOUTH
HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 - FAX.: 905-521-2699 - WWW.WSP.COM

TITLE:

GREEN LANE LANDFILL SITE
REGIONAL SITE LOCATION
2017 ANNUAL PROGRESS REPORT

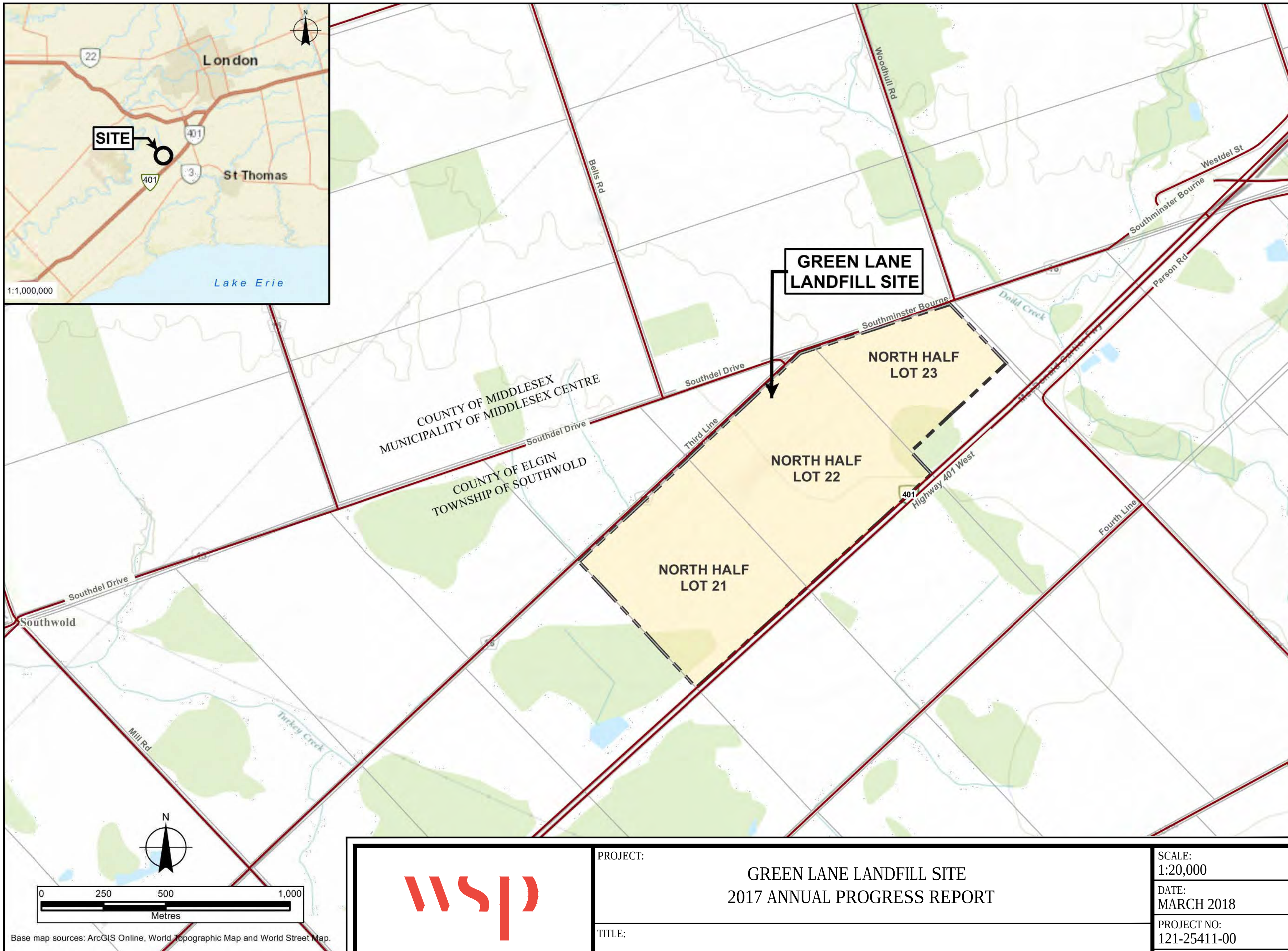
PROJECT NO: 121-25411-00

DATE: MARCH 2018

DRAWING NO: FIGURE 1.1

FIGURE 1.2 SITE LOCATION

Physical location of Green Lane Landfill as shown by highlighted North Half of Lots 21, 22, and 23, Township of Southwold, County of Elgin.

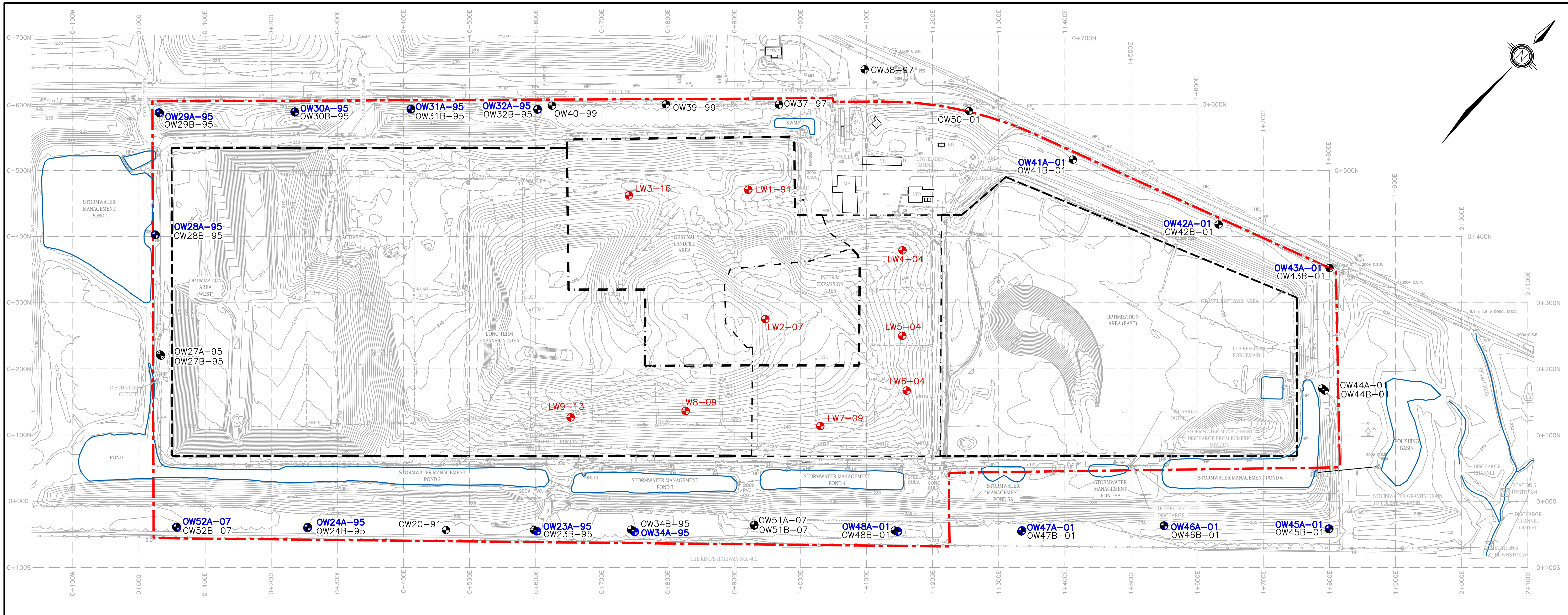


300 - 4 HUGHSON STREET SOUTH
HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 - FAX.: 905-521-2699 - WWW.WSP.COM

PROJECT:	GREEN LANE LANDFILL SITE 2017 ANNUAL PROGRESS REPORT
TITLE:	SITE LOCATION PLAN
SCALE:	1:20,000
DATE:	MARCH 2018
PROJECT NO:	121-25411-00
DRAWING NO:	FIGURE 1.2

FIGURE 2.1 EXISTING ON-SITE MONITORING LOCATIONS

Location of onsite monitoring points at the Green Lane Landfill. Wells in red indicate leachate monitoring wells, while those in blue and black indicate groundwater monitoring wells, or nested groundwater monitoring wells.



LEGEND

	GREEN LANE LANDFILL SITE BOUNDARY
	ORIGINAL LANDFILL AREA LIMITS OF REFUSE (BASED ON REVISED LIMITS OF REFUSE DISPOSAL - 1985)
	APPROVED LIMIT OF REFUSE DISPOSAL INTERIM EXPANSION AREA (1994)
	LONG-TERM EXPANSION AREA LIMITS OF REFUSE (1999)
	EAST AND WEST OPTIMIZATION AREA LIMITS OF REFUSE (2006)
EL	LTP EFFLUENT FORCEMAIN
LF	LEACHATE FORCEMAIN
L	LEACHATE COLLECTOR PIPE
SDF	STORMWATER DISCHARGE FORCEMAIN
233	EXISTING GROUND CONTOUR
	TREE LINE
	REFORESTATION
OW20-91	WATER QUALITY/HYDRAULIC MONITORING WELL LOCATION
OW47A-01	HYDRAULIC MONITORING WELL LOCATION
LW8-09	LEACHATE WELL LOCATION
⊠	SURFACE WATER MONITORING LOCATION
◦ MH	MANHOLE
◦ MH/PS	MANHOLE/PUMPING STATION
◦ CO	CLEANOUT
x	CHAIN LINK FENCE
	POST AND WIRE FENCE
	LITTER FENCE
	SILT FENCE

NOTES

1. BENCHMARK ELEVATION 232.364m (762.35 ft) - CONCRETE BASE OF RADIO TOWER, SOUTH OF OFFICE, AT WEST LEG.
2. THE EXISTING CONDITIONS FOR THE LANDFILL SITE ARE COMPILED FROM THE MOST RECENT SITE SURVEY CONDUCTED BY WSP ON DECEMBER 30, 2017.
3. EXISTING CONDITIONS FOR THE FLOOR AREA IN STAGE 12 WEST AND STAGE 13 WEST WERE NOT RECORDED, AS THE AREAS WERE SUBMERGED AT THE TIME OF THE SURVEY.
4. THE SOIL STOCKPILES NORTH OF THE LANDFILL FOOTPRINT WERE NOT SURVEYED IN DECEMBER DUE TO EXCESSIVE SNOW COVER AT THE TIME OF THE SURVEY.
5. THE GREEN LANE LANDFILL SITE IS LOCATED ON PARTS OF LOTS 21, 22, AND 23 CONCESSION III, SOUTHWOLD TOWNSHIP, COUNTY OF ELGIN, NORTH OF HIGHWAY 401.

SCALE: 1:6,000

0 100 200 300 400m

TORONTO

Green Lane LANDFILL

wsp

4 HUGHSON STREET SOUTH, SUITE 300
HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 | FAX: 905-521-2699 | WWW.WSP.COM

PROJECT NO:	121-25411-00	DRAWN BY:	A M S
SCALE:	1:6,000	CHECKED BY:	J J O

TITLE:

EXISTING
ON-SITE MONITORING LOCATIONS
2017 ANNUAL PROGRESS REPORT

DRAWING NO:

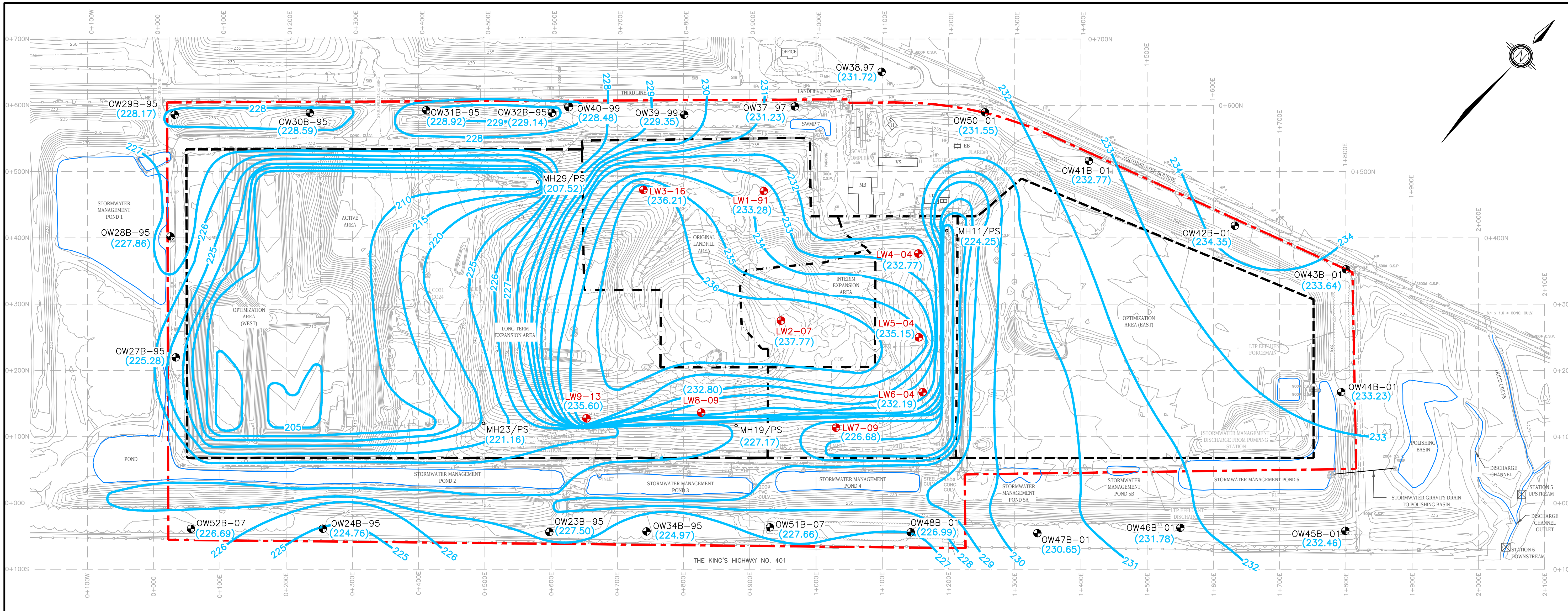
FIGURE 2.1

DATE: MARCH 2018

RV. # 0

FIGURE 2.2 SHALLOW OVERBURDEN GROUNDWATER CONTOURS (MAY 2017)

Appearance of shallow overburden groundwater contours based on elevation data collected during the May 17, 2017 groundwater monitoring event.



LEGEND:

- GREEN LANE LANDFILL SITE BOUNDARY
- ORIGINAL LANDFILL AREA LIMITS OF REFUSE (BASED ON REVISED LIMITS OF REFUSE DISPOSAL - 1985)
- APPROVED LIMIT OF REFUSE DISPOSAL INTERIM EXPANSION AREA (1994)
- LONG-TERM EXPANSION AREA LIMITS OF REFUSE (1999)
- EAST AND WEST OPTIMIZATION AREA LIMITS OF REFUSE (2006)
- FENCELINE
- 233 — EXISTING GROUND CONTOUR (m AMSL)
- OW39−99 — MONITORING WELL LOCATION
- LW2−07 — LEACHATE WELL LOCATION
- EL — LTP EFFLUENT FORCEMAIN
- LF — LEACHATE FORCEMAIN
- L — LEACHATE COLLECTOR PIPE
- SDF — STORMWATER DISCHARGE FORCEMAIN
- MH22 — MANHOLE
- MH21/PS — MANHOLE/PUMPING STATION
- CO22 — CLEANOUT
- MB — MAINTENANCE BUILDING
- LTP — LEACHATE TREATMENT PLANT
- VS — VEHICLE STORAGE FACILITY
- S — SECURITY HOUSE
- EB — ELECTRICAL BUILDING
- PB — PUMP BUILDING
- DITCH
- TREE LINE
- REFORESTATION
- (224.76) — SHALLOW GROUNDWATER ELEVATION (METRES AMSL) (MAY 17, 2017)
- 226 — SHALLOW GROUNDWATER CONTOUR (METRES AMSL) (MAY 17, 2017)
- SURFACE WATER MONITORING LOCATION

NOTES

1. BENCHMARK ELEVATION 232.364m (762.35 ft) - CONCRETE BASE OF RADIO TOWER, SOUTH OF OFFICE, AT WEST LEG.
2. THE EXISTING CONDITIONS FOR THE LANDFILL SITE ARE COMPILED FROM THE SITE SURVEY CONDUCTED BY WSP ON JUNE 30, 2017.
3. THE GREEN LANE LANDFILL SITE IS LOCATED ON PARTS OF LOTS 21, 22, AND 23 CONCESSION III, SOUTHWOLD TOWNSHIP, COUNTY OF ELGIN, NORTH OF HIGHWAY 401.

SCALE: 1:6,000
0 100 200 300 400m

TORONTO

Green Lane LANDFILL

wsp

4 HUGHSON STREET, SUITE 300
HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 | FAX: 905-521-2699 | WWW.WSP.COM

PROJECT NO:	121-25411-00	DRAWN BY:	A M S
SCALE:	1:6,000	CHECKED BY:	J J O

TITLE:

SHALLOW OVERBURDEN GROUNDWATER CONTOURS (MAY 17, 2017)
2017 ANNUAL PROGRESS REPORT

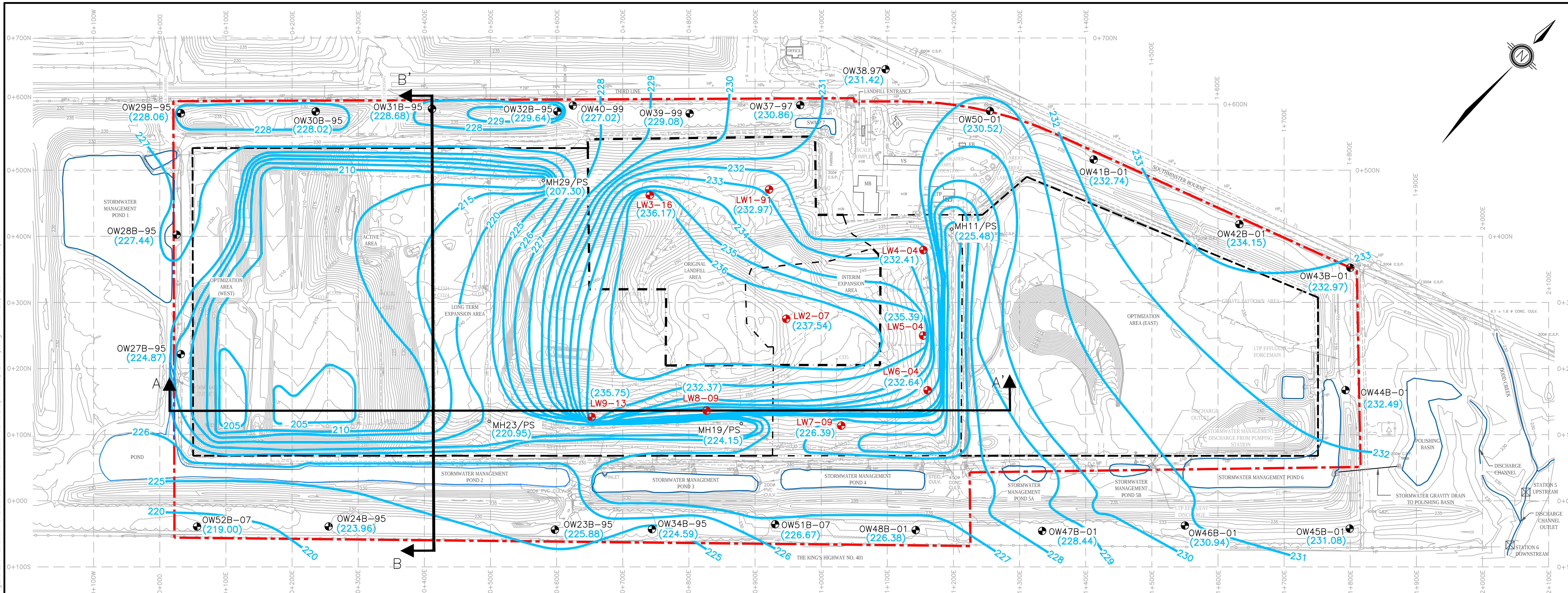
DRAWING NO: FIGURE 2.2

DATE: MARCH 2018

RV. #: 0

FIGURE 2.3 SHALLOW OVERBURDEN GROUNDWATER CONTOURS (NOVEMBER 2017)

Appearance of shallow overburden groundwater contours based on elevation data collected during the November 6, 2017 groundwater monitoring event. Profiles derived the cross section lines shown are displayed on Figures 2.5 and 2.6.



LEGEND:

- GREEN LANE LANDFILL SITE BOUNDARY
- ORIGINAL LANDFILL AREA LIMITS OF REFUSE (BASED ON REVISED LIMITS OF REFUSE DISPOSAL - 1985)
- APPROVED LIMIT OF REFUSE DISPOSAL INTERIM EXPANSION AREA (1994)
- LONG-TERM EXPANSION AREA LIMITS OF REFUSE (1999)
- EAST AND WEST OPTIMIZATION AREA LIMITS OF REFUSE (2006)
- 233 — EXISTING GROUND CONTOUR (m AMSL)
- OW39-99 — MONITORING WELL LOCATION
- LW2-07 — LEACHATE WELL LOCATION
- EL — LTP EFFLUENT FORCEMAIN
- LF — LEACHATE FORCEMAIN
- L — LEACHATE COLLECTOR PIPE
- SDF — STORMWATER DISCHARGE FORCEMAIN
- A — LINE OF CROSS-SECTION
- MH22 — MANHOLE
- MH21/PS — MANHOLE/PUMPING STATION
- CO22 — CLEANOUT
- MB — MAINTENANCE BUILDING
- LTP — LEACHATE TREATMENT PLANT
- VS — VEHICLE STORAGE FACILITY
- S — SECURITY HOUSE
- EB — ELECTRICAL BUILDING
- PB — PUMP BUILDING
- DITCH
- TREE LINE
- REFORESTATION
- (207.30) — SHALLOW GROUNDWATER ELEVATION (METRES AMSL) (NOVEMBER 6, 2017)
- 226 — SHALLOW GROUNDWATER CONTOUR (METRES AMSL) (NOVEMBER 6, 2017)
- SURFACE WATER MONITORING LOCATION
- CHAIN LINK FENCE
- POST AND WIRE FENCE
- LITTER FENCE
- SILT FENCE

NOTES

1. BENCHMARK ELEVATION 232.364m (762.35 ft) - CONCRETE BASE OF RADIO TOWER, SOUTH OF OFFICE, AT WEST LEG.
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5. THE GREEN LANE LANDFILL SITE IS LOCATED ON PARTS OF LOTS 21, 22, AND 23 CONCESSION III, SOUTHWOLD TOWNSHIP, COUNTY OF ELGIN, NORTH OF HIGHWAY 401.

SCALE: 1:6,000
0 100 200 300 400m

TORONTO

Green Lane LANDFILL

wsp
4 HUGHSON STREET SOUTH, SUITE 300
HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 | FAX: 905-521-2699 | WWW.WSP.COM

PROJECT NO:	121-25411-00	DRAWN BY:	A M S
SCALE:	1:6,000	CHECKED BY:	J J O

TITLE:

SHALLOW OVERBURDEN GROUNDWATER CONTOURS (NOVEMBER 6, 2017)
2017 ANNUAL PROGRESS REPORT

DRAWING NO: FIGURE 2.3

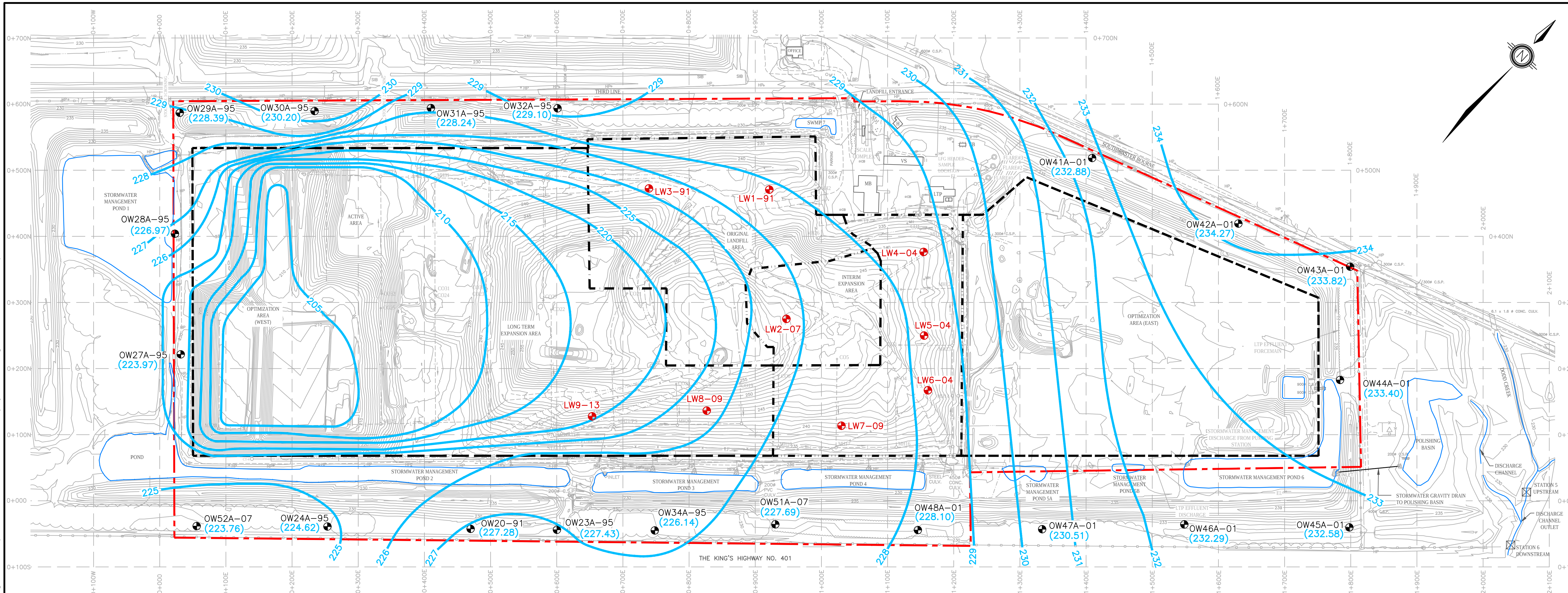
DATE: MARCH 2018

RV. # 0

G:\2012\OS\13-401 -Environmental\121-25411-00 - Green Lane\4.0 CAD\400 Drawings\Annual Rpts\2017\Figure 2.3-Shallow Overburden Groundwater Contours(Nov. 6, 2017).dwg Mar 23, 2018 - 1:33pm

FIGURE 2.4 DEEP OVERBUDEN GROUNDWATER CONTOURS (MAY 2017)

Appearance of deep overburden groundwater contours based on elevation data collected during the May 17, 2017 groundwater monitoring event.



LEGEND:

	GREEN LANE LANDFILL SITE BOUNDARY
	ORIGINAL LANDFILL AREA LIMITS OF REFUSE (BASED ON REVISED LIMITS OF REFUSE DISPOSAL - 1985)
	APPROVED LIMIT OF REFUSE DISPOSAL INTERIM EXPANSION AREA (1994)
	LONG-TERM EXPANSION AREA LIMITS OF REFUSE (1999)
	EAST AND WEST OPTIMIZATION AREA LIMITS OF REFUSE (2006)
	FENCELINE
233	EXISTING GROUND CONTOUR (m AMSL)
OW39-99	MONITORING WELL LOCATION
LW2-07	LEACHATE WELL LOCATION
EL	LTP EFFLUENT FORCEMAIN
LF	LEACHATE FORCEMAIN
L	LEACHATE COLLECTOR PIPE
SDF	STORMWATER DISCHARGE FORCEMAIN
MH22	MANHOLE
MH21/PS	MANHOLE/PUMPING STATION
CO22	CLEANOUT
MB	MAINTENANCE BUILDING
LTP	LEACHATE TREATMENT PLANT
VS	VEHICLE STORAGE FACILITY
S	SECURITY HOUSE
EB	ELECTRICAL BUILDING
PB	PUMP BUILDING
	DITCH
	TREE LINE
	REFORESTATION
(224.62)	SHALLOW GROUNDWATER ELEVATION (METRES AMSL) (MAY 17, 2017)
226	SHALLOW GROUNDWATER CONTOUR (METRES AMSL) (MAY17, 2017)
	SURFACE WATER MONITORING LOCATION

NOTES

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SCALE: 1:6,000
0 100 200 300 400m

TORONTO

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4 HUGHSON STREET SOUTH, SUITE 300
HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 | FAX: 905-521-2699 | WWW.WSP.COM

PROJECT NO:	121-25411-00	DRAWN BY:	A M S
SCALE:	1:6,000	CHECKED BY:	J J O

TITLE:

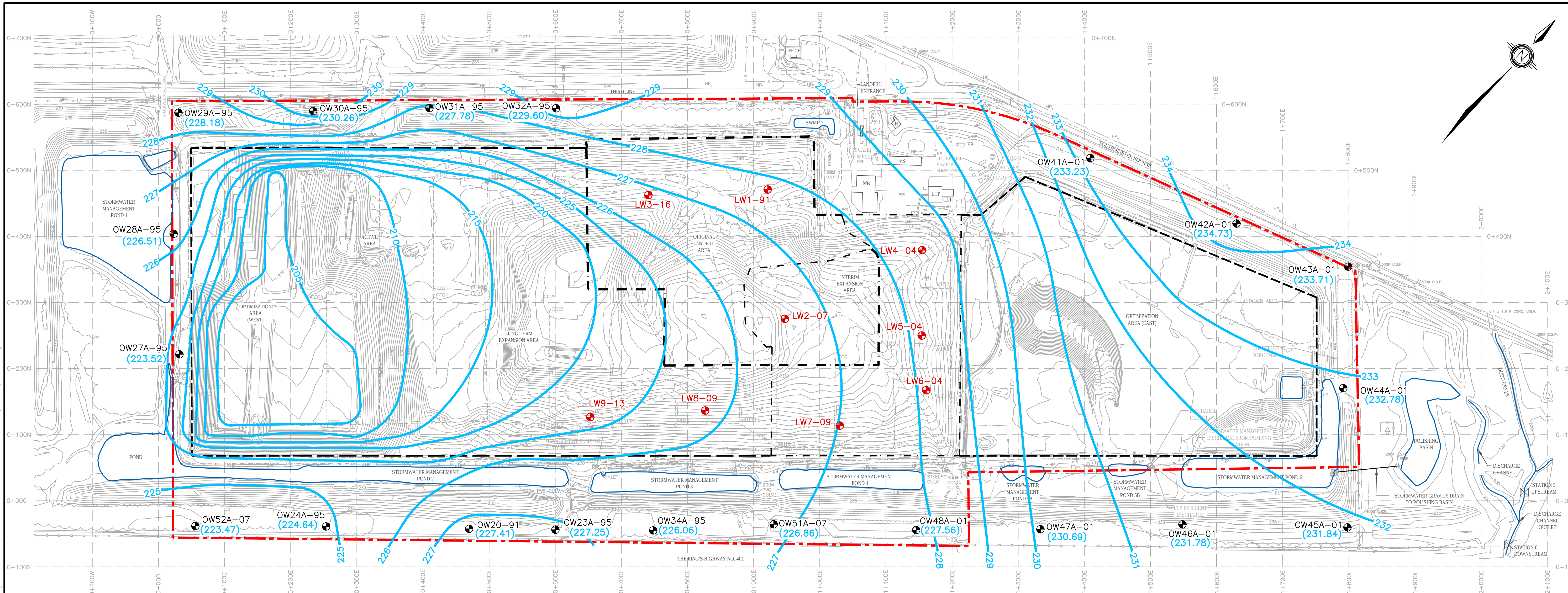
DEEP OVERBURDEN GROUNDWATER CONTOURS (MAY 17, 2017)
2017 ANNUAL PROGRESS REPORT

DRAWING NO: FIGURE 2.4

DATE: MARCH 2018 RV. # 0

FIGURE 2.5 DEEP OVERBURDEN GROUNDWATER CONTOURS (NOVEMBER 2017)

Appearance of deep overburden groundwater contours based on elevation data collected during the November 6, 2017 groundwater monitoring event.



LEGEND:

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- 233 — EXISTING GROUND CONTOUR (m AMSL)
- OW39−99 — MONITORING WELL LOCATION
- LW2−07 — LEACHATE WELL LOCATION
- EL — LTP EFFLUENT FORCEMAIN
- LF — LEACHATE FORCEMAIN
- L — LEACHATE COLLECTOR PIPE
- SDF — STORMWATER DISCHARGE FORCEMAIN
- MH22 — MANHOLE
- MH21/PS — MANHOLE/PUMPING STATION
- CO22 — CLEANOUT
- MB — MAINTENANCE BUILDING
- LTP — LEACHATE TREATMENT PLANT
- VS — VEHICLE STORAGE FACILITY
- S — SECURITY HOUSE
- EB — ELECTRICAL BUILDING
- PB — PUMP BUILDING
- DITCH
- TREE LINE
- REFORESTATION
- (227.25) — DEEP GROUNDWATER ELEVATION (METRES AMSL) (NOVEMBER 6, 2017)
- 226 — DEEP GROUNDWATER CONTOUR (METRES AMSL) (NOVEMBER 6, 2017)
- SURFACE WATER MONITORING LOCATION
- CHAIN LINK FENCE
- POST AND WIRE FENCE
- LITTER FENCE
- SILT FENCE

NOTES

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SCALE: 1:6,000

0 100 200 300 400m

TORONTO

Green Lane LANDFILL

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TEL.: 905-529-4414 | FAX: 905-521-2699 | WWW.WSP.COM

PROJECT NO:	121-25411-00	DRAWN BY:	A M S
SCALE:	1:6,000	CHECKED BY:	J J O

TITLE:

DEEP OVERBURDEN GROUNDWATER CONTOURS (NOVEMBER 6, 2017) 2017 ANNUAL PROGRESS REPORT

DRAWING NO: FIGURE 2.5

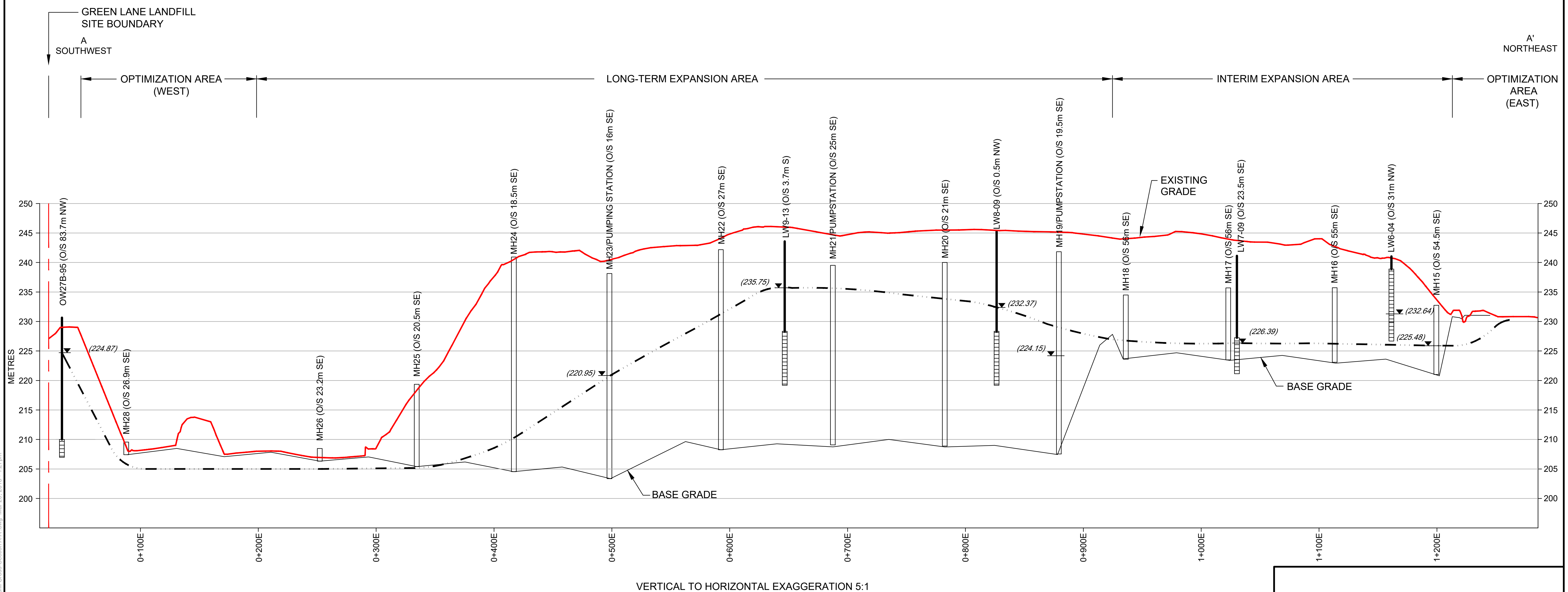
DATE: MARCH 2018

RV. # 0

G:\2012\OS\13-401 - Environmental\121-25411-00 - Green Lane\4.0 CAD\400 Drawings\Annual Rpts\2017\Figure 2.5-Deep Overburden Groundwater Contours(Nov. 6, 2017).dwg Mar 23, 2018 - 1:36pm

FIGURE 2.6 LANDFILL CROSS-SECTION A-A’

Profile of cross-section A-A’ as depicted on Figure 2.3. The cross-section displays the existing grade of the landfill, the base grades of as-constructed landfill cells, along with elevations recorded in groundwater and leachate monitoring locations across the profile (offset distances to monitoring locations are provided).



VERTICAL TO HORIZONTAL EXAGGERATION 5:1

LEGEND

(224.87) SHALLOW GROUNDWATER/LEACHATE ELEVATIONS (METRES ASL) (NOVEMBER 6, 2017)

INFERRED POTENTIOMETRIC SURFACE

wsp

4 HUGHSON STREET SOUTH, SUITE 300
HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 FAX: 905-521-2699 | WWW.WSP.COM

PROJECT NO:	121-25411-00	DRAWN BY:	A M S
SCALE:	N T S	CHECKED BY:	J J O

TITLE:

LANDFILL CROSS-SECTION A-A'
2017 ANNUAL PROGRESS REPORT

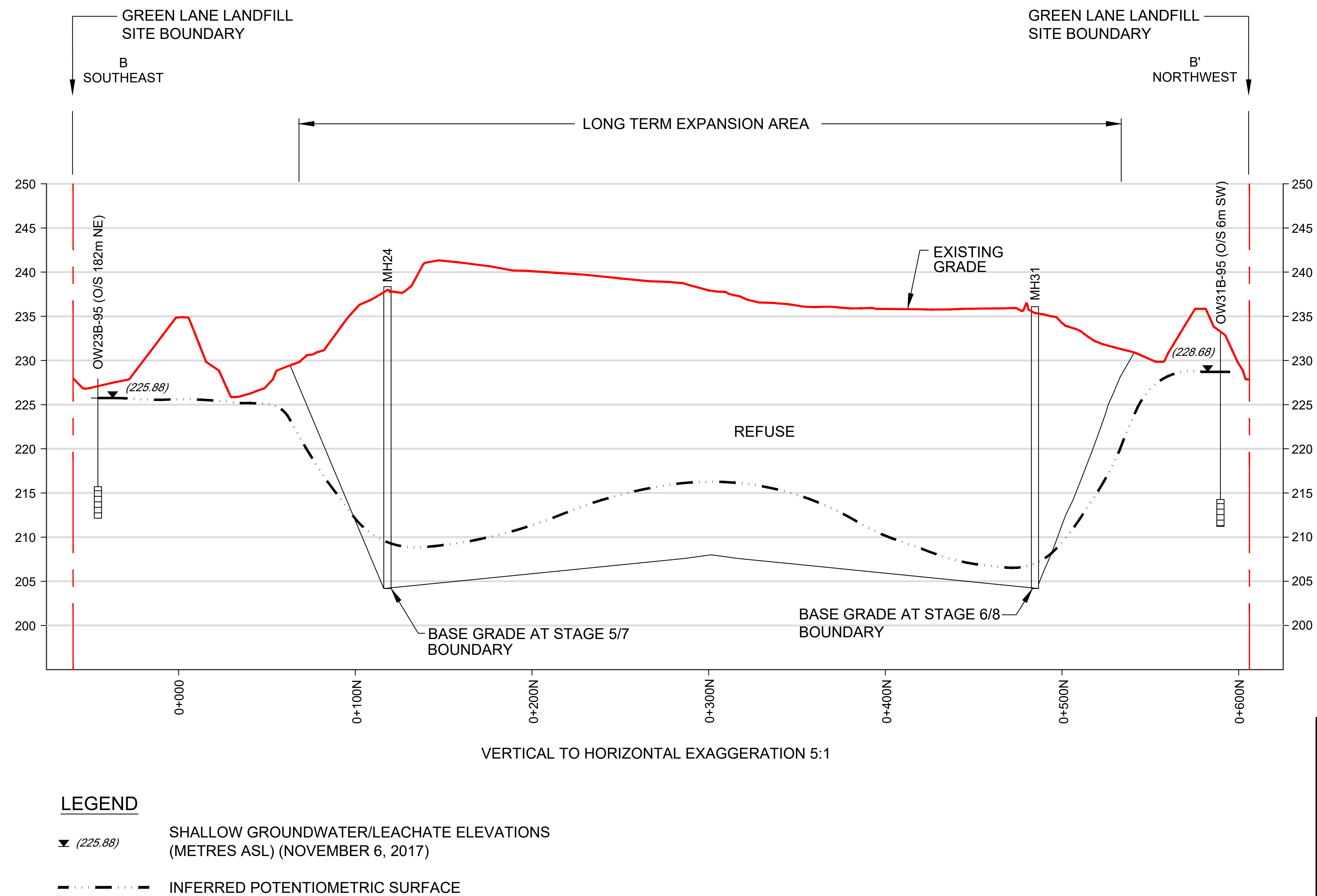
DRAWING NO: FIGURE 2.6

DATE: MARCH 2018

RV. # 0

FIGURE 2.7 LANDFILL CROSS-SECTION B-B'

Profile of cross-section B-B' as depicted on Figure 2.3. The cross-section displays the existing grade of the landfill the base grades of as-constructed landfill cells, along with elevations recorded in groundwater and leachate monitoring locations across the profile (offset distances to monitoring locations are provided).



TORONTO

Green Lane LANDFILL

wsp

4 HUGHSON STREET SOUTH, SUITE 300
HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 | FAX: 905-521-2699 | WWW.WSP.COM

PROJECT NO:	121-25411-00	DRAWN BY:	A M S
SCALE:	1:3,000 HORZ	CHECKED BY:	J J O

TITLE:

LANDFILL CROSS-SECTION B-B'
2017 ANNUAL PROGRESS REPORT

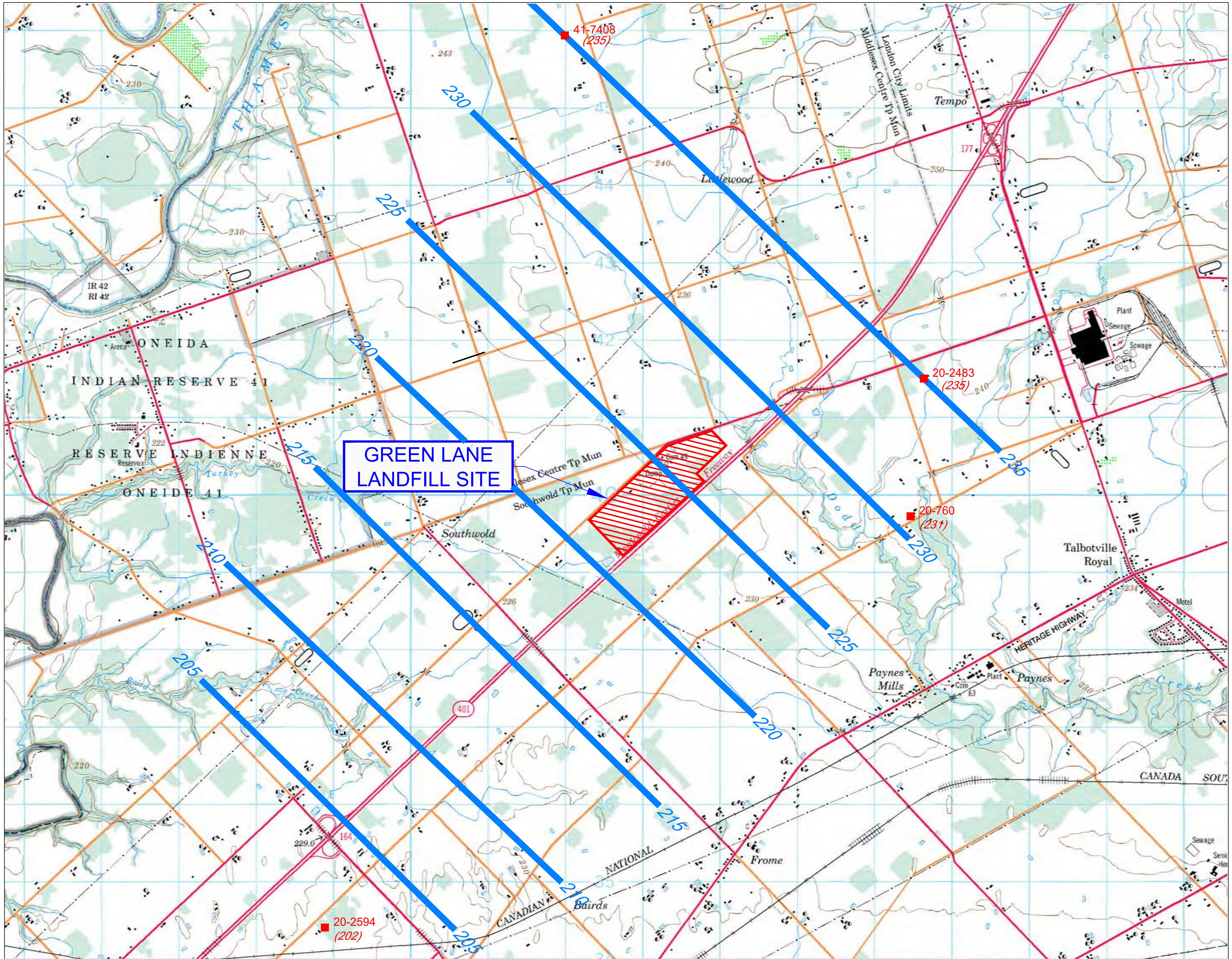
DRAWING NO: FIGURE 2.7

DATE: MARCH 2018

RV. # 0

FIGURE 2.8 BEDROCK GROUNDWATER CONTOURS

Map depicting Ministry of Environment and Climate Change (MOECC) bedrock wells, groundwater elevations (based on static well levels from MOECC well records), and bedrock groundwater contours.



LEGEND

20-2483 MOECC WELL DESIGNATION FOR BEDROCK WELL

(235) GROUNDWATER ELEVATION (m AMSL) (BASED ON STATIC WATER LEVEL FROM MOECC WELL RECORDS)

230 BEDROCK GROUNDWATER CONTOUR (m AMSL)

SCALE: 1:50,000
0 500 1000 2000m

TORONTO

Green Lane LANDFILL

wsp

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HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 | FAX: 905-521-2699 | WWW.WSP.COM

PROJECT NO:	121-25411-00	DRAWN BY:	A M S
SCALE:	1:50,000	CHECKED BY:	J J O

TITLE:

BEDROCK GROUNDWATER CONTOURS
2017 ANNUAL PROGRESS REPORT

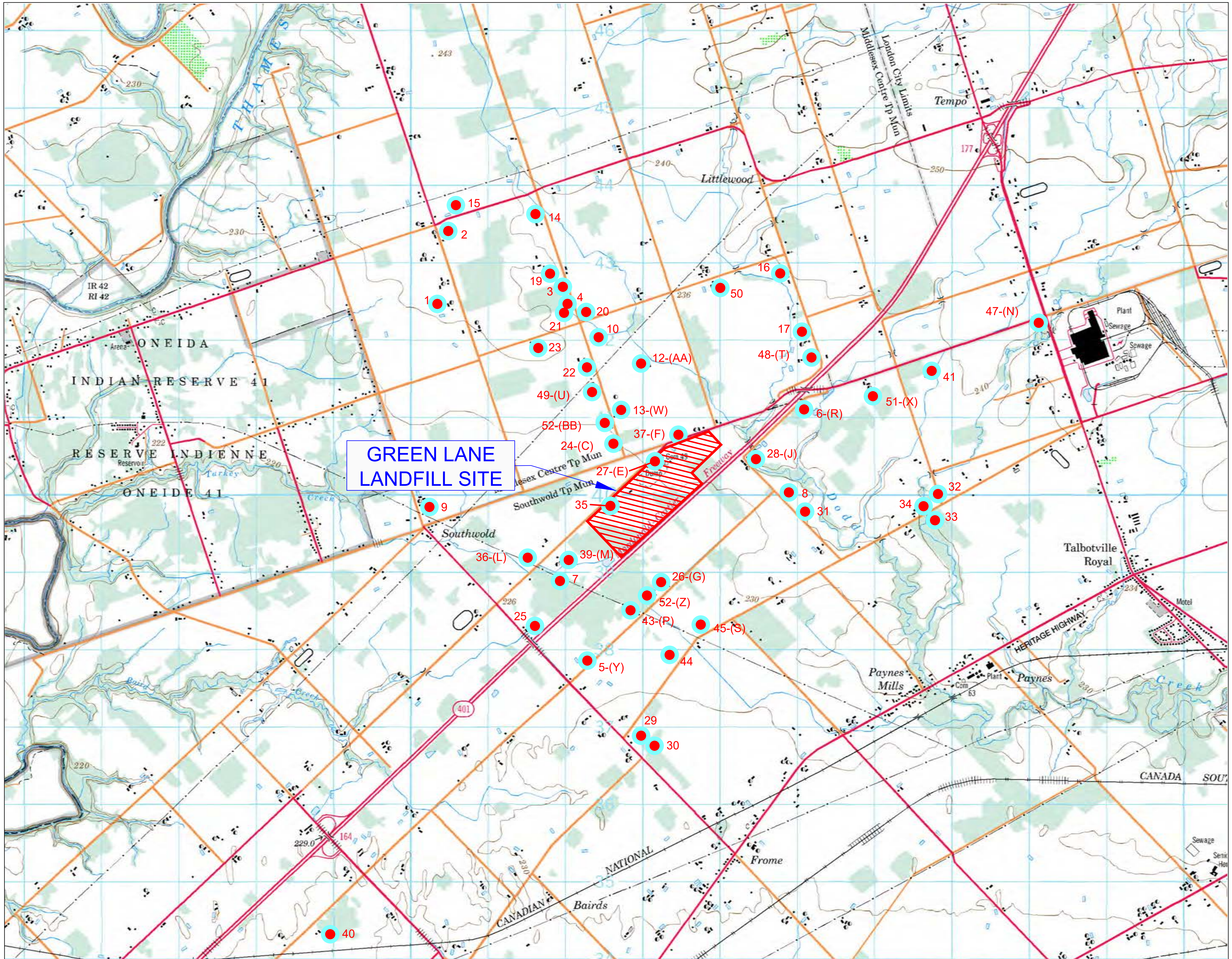
DRAWING NO:

FIGURE 2.8

DATE: MARCH 2018	RV. # 0

FIGURE 2.9 PRIVATE WATER WELL LOCATIONS

Map depicting domestic well locations. Wells with "-(A)" designation indicate domestic well sampling location.



LEGEND

12 DOMESTIC WELL LOCATION

45-(S) DESIGNATES DOMESTIC WELL SAMPLING LOCATION

SCALE: 1:50,000
0 500 1000 2000m

TORONTO

Green Lane LANDFILL

wsp

4 HUGHSON STREET SOUTH, SUITE 300
HAMILTON (ONTARIO) CANADA L8N 3Z1
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PROJECT NO:	121-25411-00	DRAWN BY:	A M S
SCALE:	1:50,000	CHECKED BY:	J J O

TITLE:

PRIVATE WATER WELL LOCATIONS
2017 ANNUAL PROGRESS REPORT

DRAWING NO:

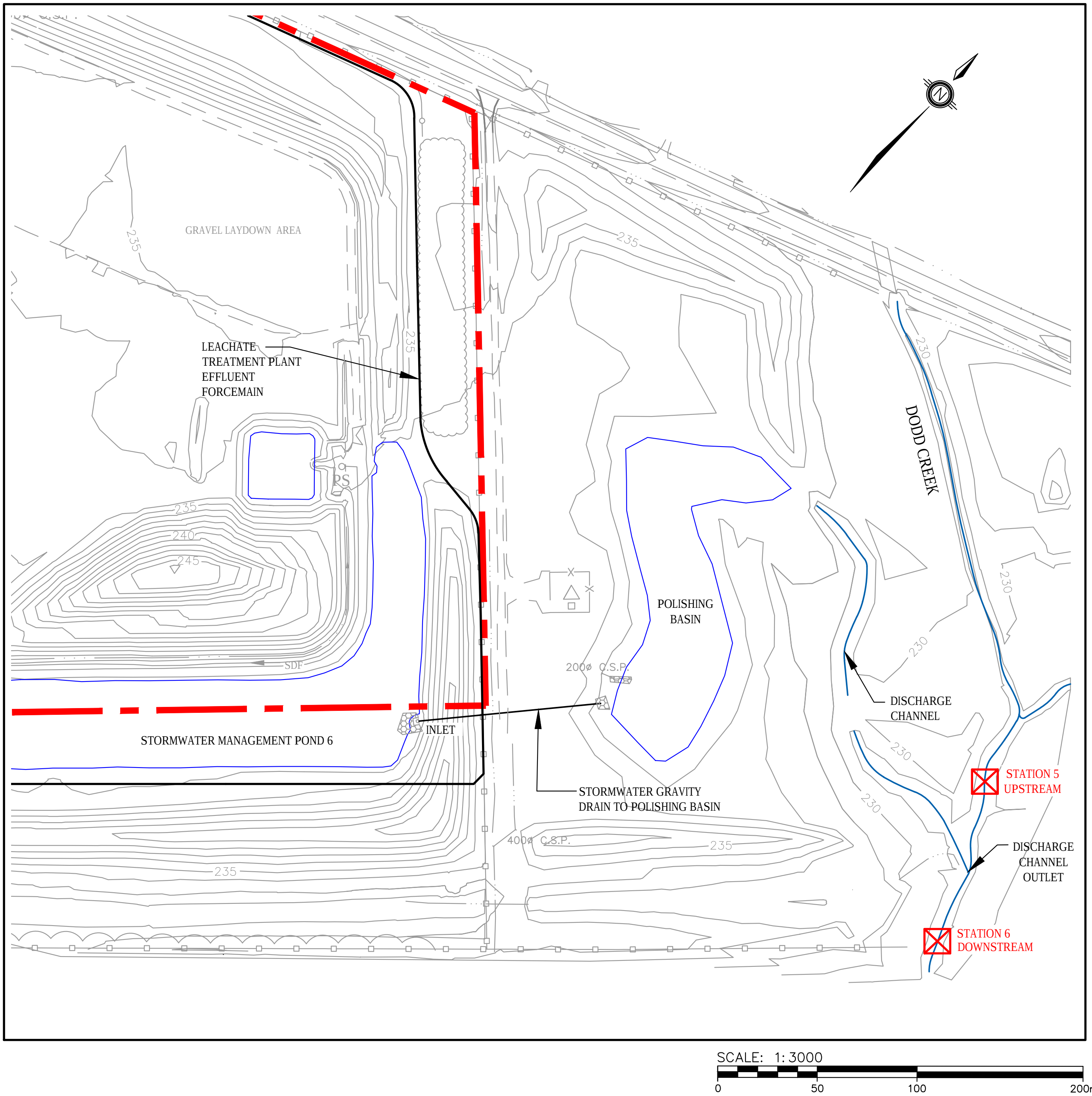
FIGURE 2.9

DATE:	RV. #
MARCH 2018	0

G:\2012\OS13-401 – Environmental\121-25411-00 - Green Lane\4.0 CAD\400 Drawings\Annual Rpts\2017\Figure 2.9-Private Water Well Locations.dwg Mar 20, 2018 - 1:30pm

FIGURE 2.10 DODD CREEK WATERSHED SAMPLING LOCATIONS

Map depicting the location of Station 5 Upstream and Station 6 Downstream in Dodd Creek – the location of surface water sampling locations.



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TEL.: 905-529-4414 - FAX.: 905-521-2699 - WWW.WSP.COM

TITLE:

DODD CREEK WATERSHED SAMPLING LOCATIONS
2017 ANNUAL PROGRESS REPORT

PROJECT NO: 121-25411-00

DATE: MARCH 2018

DRAWING NO: FIGURE 2.10

FIGURE 3.1 EXISTING LFG EXTRACTION WELLS AND FLARING STATION LOCATIONS

Map depicting as constructed information pertaining to the landfill gas collection system, including location of flaring stations, vertical wells, horizontal wells, collection piping, valve chambers, and condensate traps. Red indicates infrastructure installed in 2017.

LEGEND

	GREEN LANE LANDFILL SITE BOUNDARY
	ORIGINAL LANDFILL AREA LIMITS OF REFUSE (BASED ON REVISED LIMITS OF REFUSE DISPOSAL - 1985)
	APPROVED LIMIT OF REFUSE DISPOSAL INTERIM EXPANSION AREA (1994)
	LONG TERM EXPANSION AREA LIMITS OF REFUSE (1999)
	EAST AND WEST OPTIMIZATION AREA LIMITS OF REFUSE (2006)
SDF	STORMWATER DISCHARGE FORCEMAIN
L	LEACHATE COLLECTOR PIPE
LF	LEACHATE FORCEMAIN
EL	LTP EFFLUENT FORCEMAIN
MH32	EXISTING MANHOLE
CO24	EXISTING CLEAN OUT
MH23/PS	EXISTING MANHOLE/PUMPING STATION
MB	MAINTENANCE BUILDING
LTP	LEACHATE TREATMENT PLANT
VS	VEHICLE STORAGE FACILITY
PB	PUMP BUILDING
EB	ELECTRICAL BUILDING
C.S.P.	CORRUGATED STEEL PIPE
CB	CATCHBASIN
LP	LIGHT POLE
HP	HYDRO POLE
	DITCH
LFG151-17	2017 INSTALLED VERTICAL LANDFILL GAS EXTRACTION WELL LOCATION
	2017 INSTALLED LANDFILL GAS LATERAL PIPE LOCATION
H59-17	2017 INSTALLED HORIZONTAL LANDFILL GAS COLLECTION TRENCH
H59-17	2017 INSTALLED HORIZONTAL LANDFILL GAS SAMPLING LOCATION
GH	2017 INSTALLED LANDFILL GAS HEADER PIPE LOCATION
E	2017 INSTALLED ELECTRICAL SERVICE LINE
CT-7	2017 INSTALLED CONDENSATE TRAP LOCATION
VC9	2017 INSTALLED VALVE CHAMBER LOCATION
LFG27-07	EXISTING VERTICAL LANDFILL GAS EXTRACTION WELL LOCATION
	EXISTING LANDFILL GAS LATERAL PIPE LOCATION
H33-14	EXISTING HORIZONTAL LANDFILL GAS COLLECTION TRENCHES
H33-14	EXISTING HORIZONTAL LANDFILL GAS SAMPLING LOCATION
GH	EXISTING LANDFILL GAS HEADER LOCATION
CT-2	EXISTING CONDENSATE TRAP LOCATION
LFG70-13	EXISTING 50mm DIAMETER VERTICAL LANDFILL GAS EXTRACTION WELL LOCATION
VC8	EXISTING VALVE CHAMBER LOCATION

SCALE: 1:1,500

50 0 50 100m

INFORMATION PROVIDED ON THIS DRAWING REGARDING GAS AS-BUILT INFRASTRUCTURE PRIOR TO APRIL 2013 WAS PROVIDED BY CONESTOGA ROVERS AND ASSOCIATES. SUBSEQUENT GAS AS-BUILT INFORMATION IS PROVIDED BY MURPHY CONTRACTING.

ISSUED FOR - REVISION:

IS.	RV.	DATE	DESCRIPTION

SEAL:

TORONTO
Green Lane LANDFILL

CLIENT: CITY OF TORONTO GREEN LANE LANDFILL

CLIENT REF. #:

PROJECT: 2017 ANNUAL PROGRESS REPORT

PROJECT NO: 121-25411-00

DATE: MAR. 2018

WSP
300 - 4 HUGHSON STREET SOUTH
HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 - FAX.: 905-521-2699 - WWW.WSP.COM

ORIGINAL SCALE: 1:1,500

IF THIS BAR IS NOT 25.4mm LONG, ADJUST YOUR PLOTTING SCALE.

25.4mm

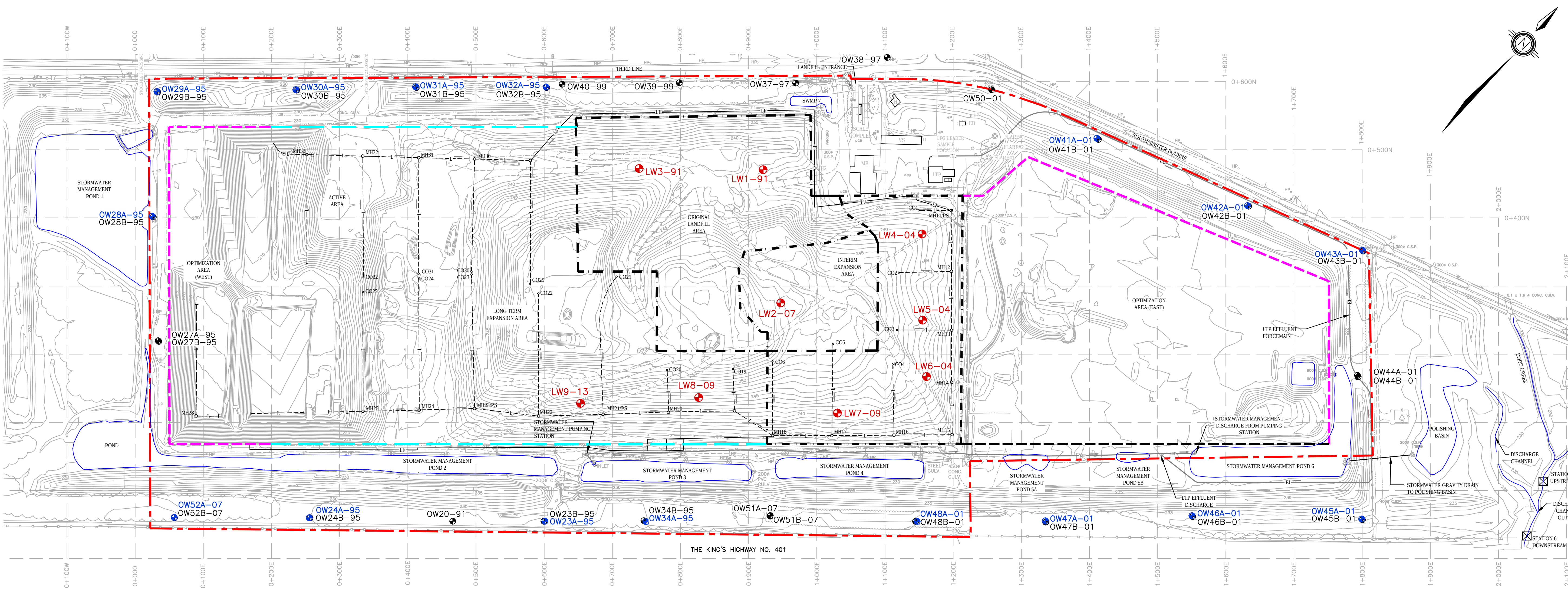
TITLE: EXISTING LANDFILL GAS EXTRACTION WELLS AND FLARING STATION LOCATIONS 2017 ANNUAL PROGRESS REPORT

SHEET NUMBER: FIGURE 3.1

DESIGNED BY: JJO
DRAWN BY: TCG/JLK
CHECKED BY: JJO
DISCIPLINE: ENVIRONMENTAL
ISSUE:
RV. #
DATE OF:

FIGURE 4.1 SEMI-ANNUAL SURVEY OF EXISTING CONDITIONS – JUNE 2017

Drawing of existing conditions of the landfill (ground elevation contours) based on the semi-annual survey completed June 30, 2017.



LEGEND:

- GREEN LANE LANDFILL SITE BOUNDARY
- ORIGINAL LANDFILL AREA LIMITS OF REFUSE (BASED ON REVISED LIMITS OF REFUSE DISPOSAL - 1985)
- INTERIM EXPANSION AREA LIMITS OF REFUSE (1994)
- LONG-TERM EXPANSION AREA LIMITS OF REFUSE (1999)
- EAST AND WEST OPTIMIZATION AREA LIMITS OF REFUSE (2006)
- 232.5 EXISTING GROUND CONTOUR
- FENCE LINE
- DRAINAGE SWALE
- TREE LINE
- REFORESTATION
- OW20−91 WATER QUALITY/HYDRAULIC MONITORING WELL LOCATION
- OW47A−01 HYDRAULIC MONITORING WELL LOCATION
- LW3−91 LEACHATE WELL LOCATION
- SURFACE WATER MONITORING LOCATION

NOTES

1. BENCHMARK ELEVATION 232.364m (762.35 ft) - CONCRETE BASE OF RADIO TOWER, SOUTH OF OFFICE, AT WEST LEG.
2. THE EXISTING CONDITIONS FOR THE LANDFILL SITE ARE COMPILED FROM THE SITE SURVEY CONDUCTED BY WSP ON JUNE 30, 2017.
3. THE GREEN LANE LANDFILL SITE IS LOCATED ON PARTS OF LOTS 21, 22, AND 23 CONCESSION III, SOUTHWOLD TOWNSHIP, COUNTY OF ELGIN, NORTH OF HIGHWAY 401.

SCALE: 1:6,000

0 100 200 300 400m

TORONTO

Green Lane LANDFILL

wsp

4 HUGHSON STREET SOUTH, SUITE 300
HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 | FAX: 905-521-2699 | WWW.WSP.COM

PROJECT NO:	121-25411-00	DESIGNED BY:	B D L
SCALE:	1:6,000	CHECKED BY:	J J O

TITLE:

SEMI-ANNUAL SURVEY OF
EXISTING CONDITIONS JUNE 30, 2017
2017 ANNUAL PROGRESS REPORT

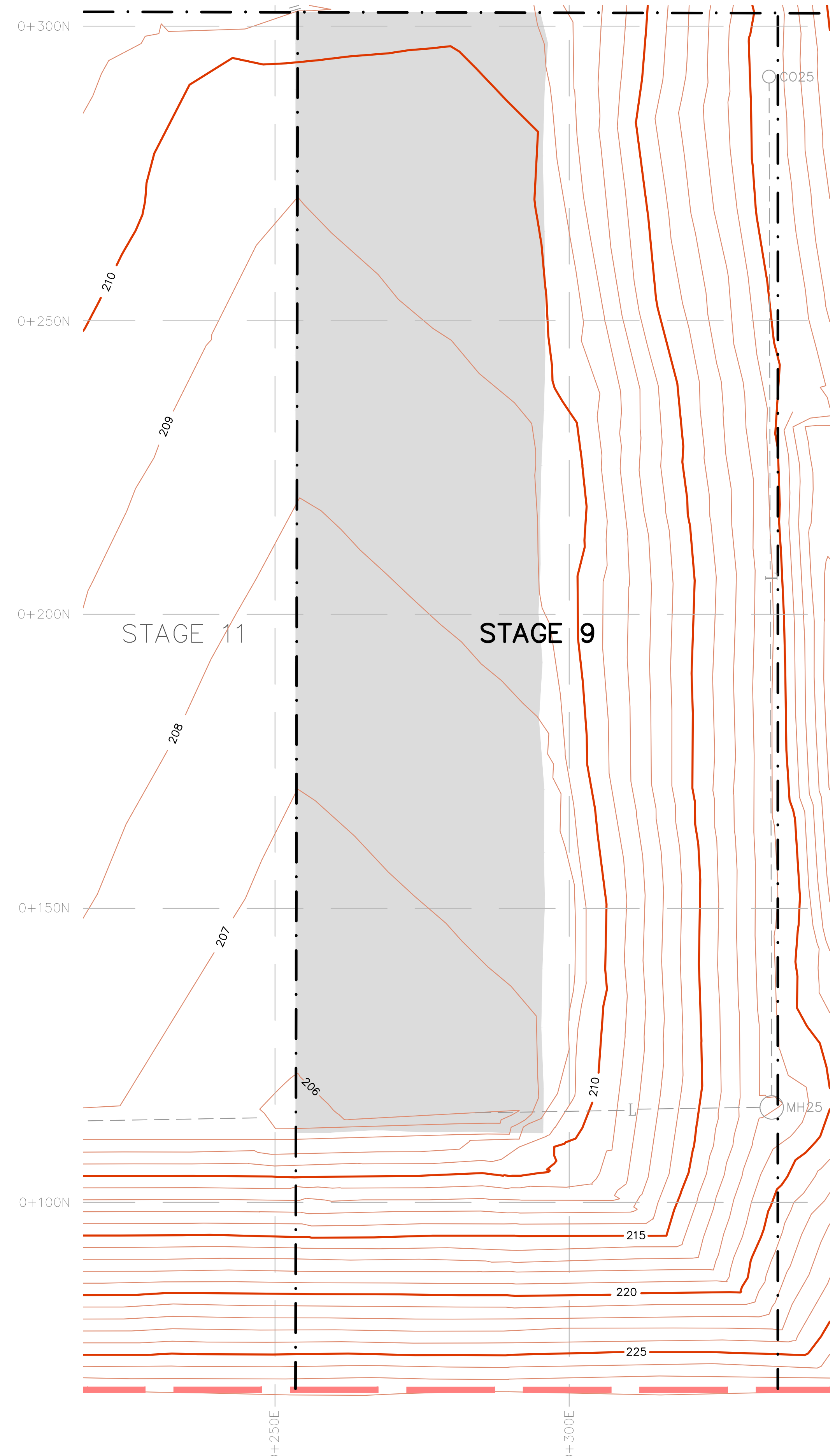
DRAWING NO: FIGURE 4.1

DATE: MARCH 2018

RV. #: 0

FIGURE 4.2 APPROXIMATE LIMITS OF BASE SUB-EXCAVATION – STAGE 9 WEST

Drawing depicting the sub-excavated limits (shown by grey hatch) of the Stage 9 west cell floor. The floor was excavated 1.5 metres to ensure the removal of sand and gravel lenses, and was then backfilled with clay in 300mm lifts and compacted using sheepsfoot compactors.



LEGEND

225 — EXISTING GROUND CONTOUR

STAGE BOUNDARY

LONG TERM EXPANSION AREA LIMIT OF REFUSE (1999)

EXCAVATED FLOOR AREA

NOTES:

1. ALL MATERIAL IN THE STAGE 9 WEST FLOOR, AS DENOTED BY THE HATCH, WAS SUB-EXCAVATED 1.5 METRES TO ENSURE ALL SAND AND GRAVEL LENSES WERE REMOVED FROM THE FLOOR OF THE STAGE AND REPLACED WITH A LOW PERMEABILITY CLAY BASE LINER. CLAY LINER MATERIAL USED FOR FLOOR BACKFILL ACTIVITIES WAS EXCAVATED FROM THE FORMER STAGE 9 DIVERSION BERM, THE FORMER STAGE 11 NORTH BERM AND THE STAGE 13 NORTHEAST BERM. MATERIAL WAS PLACED IN LIFTS NOT EXCEEDING 300mm THICK AND WAS COMPACTED WITH A SHEEPSFOOT COMPACTOR.

2. THE SOUTH SIDEWALL HAD PREVIOUSLY BEEN INSPECTED FOR SAND LENSES BY CONESTOGA ROVERS AND ASSOCIATES DURING 2012 CELL EXCAVATION ACTIVITIES. REFER TO THE STAGES 7 AND 9 CELL PREPARATION REPORT (JANUARY 2013) FOR ADDITIONAL INFORMATION. DURING 2016 AND 2017 CONSTRUCTION ACTIVITIES, WSP CONFIRMED NO SAND LENSES OR GROUNDWATER SEEPS WERE PRESENT ON THE SOUTH SIDEWALL.

0 10 20 30m

TORONTO

GREEN LANE LANDFILL

wsp

4 HUGHSON STREET SOUTH, SUITE 300
HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 | FAX: 905-521-2699 | WWW.WSP.COM

PROJECT NO:	ORIGINAL SCALE:
121-25411-01	1:1000

TITLE:

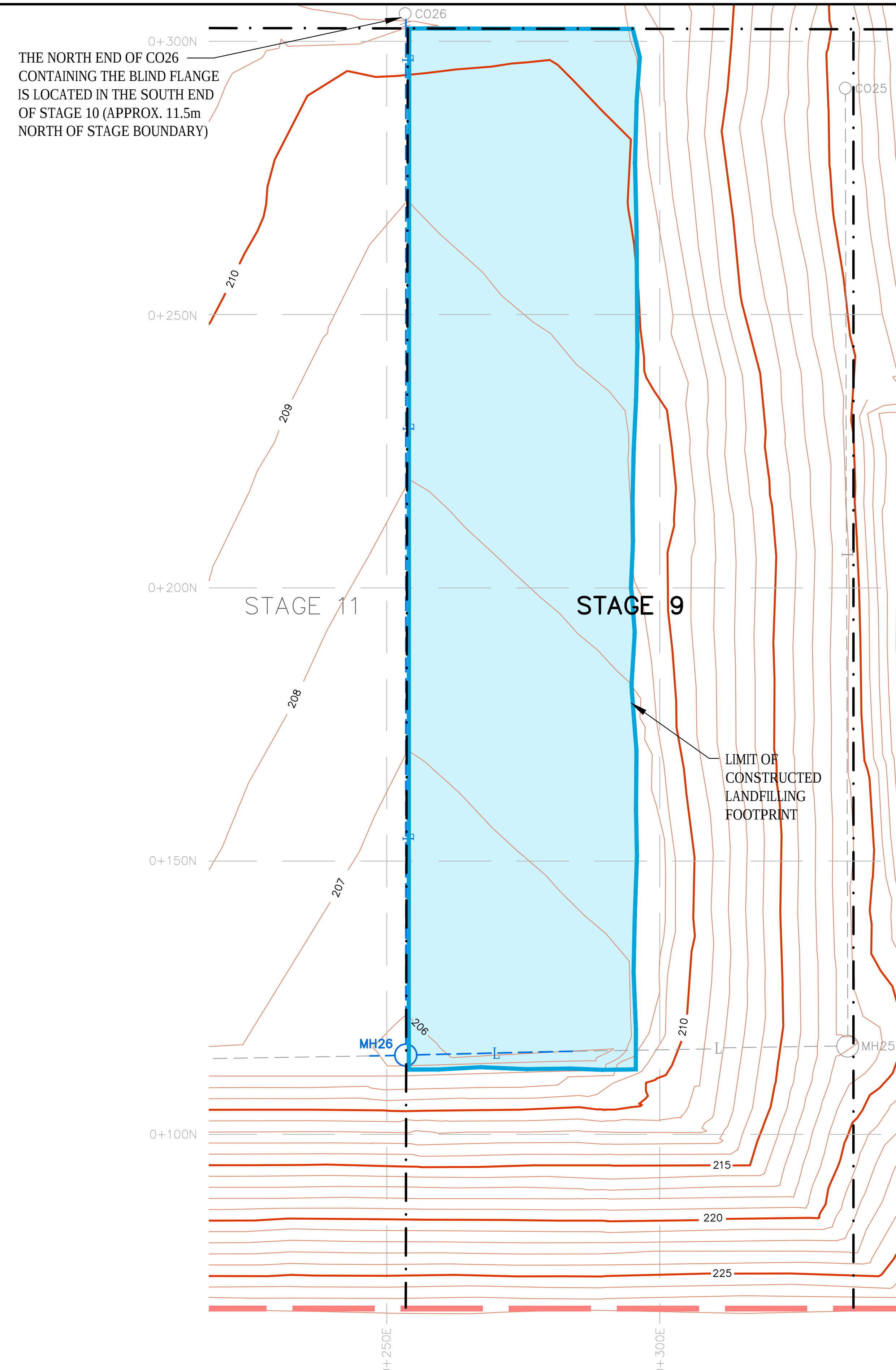
APPROXIMATE LIMITS OF BASE SUB-EXCAVATION
STAGE 9 WEST
2017 ANNUAL PROGRESS REPORT

DRAWING NO: FIGURE 4.2

DATE:	RV. #
MARCH 2018	0

FIGURE 4.3 LIMITS OF CONSTRUCTED LANDFILLING FOOTPRINT – STAGE 9 WEST

Drawing depicting the limits of constructed landfilling footprint (shown by blue hatch) of the Stage 9 west cell floor. Area shown in the drawing is the area commissioned as per the Stage 9 west cell preparation report.



LEGEND

- EXISTING GROUND CONTOUR (225)
- STAGE BOUNDARY
- LONG TERM EXPANSION AREA LIMIT OF REFUSE (1999)
- PREVIOUSLY INSTALLED 200mm PERFORATED HDPE LEACHATE COLLECTOR PIPE AND MANHOLE - MH25
- 200mm PERFORATED HDPE LEACHATE COLLECTOR PIPE AND MANHOLE - MH26
- CONSTRUCTED LANDFILLING FOOTPRINT

0 10 20 30m

TORONTO

GREEN LANE LANDFILL

wsp

4 HUGHSON STREET SOUTH, SUITE 300
HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 | FAX: 905-521-2699 | WWW.WSP.COM

PROJECT NO:	ORIGINAL SCALE:
121-25411-01	1:1000

TITLE:

LIMITS OF CONSTRUCTED LANDFILLING FOOTPRINT STAGE 9 WEST 2017 ANNUAL PROGRESS REPORT

DRAWING NO: FIGURE 4.3

DATE:	RV. #
MARCH 2018	0

PLAN 1

EXISTING CONDITIONS – DECEMBER 2017

PLAN 1 EXISTING CONDITIONS – DECEMBER 2017

Drawing of existing conditions of the landfill (ground elevation contours) based on the semi-annual survey completed December 29, 2017.

LEGEND

GREEN LANE LANDFILL SITE BOUNDARY
ORIGINAL LANDFILL AREA LIMITS OF REFUSE (BASED ON REVISED LIMITS OF REFUSE DISPOSAL - 1985)
APPROVED LIMIT OF REFUSE DISPOSAL INTERIM EXPANSION AREA (1994)
LONG TERM EXPANSION AREA LIMITS OF REFUSE (1999)
EAST AND WEST OPTIMIZATION AREA LIMITS OF REFUSE (2006)
SDF — STORMWATER DISCHARGE FORCEMAIN
EL — LTP EFFLUENT FORCEMAIN
LF — LEACHATE FORCEMAIN
L — LEACHATE COLLECTOR PIPE
GH — LANDFILL GAS MAIN HEADER
233 — EXISTING GROUND CONTOUR
DRAINAGE SWALE
DITCH

GRAVEL SURFACE ROAD
CLAY SURFACE ROAD
CHAIN LINK FENCE
POST AND WIRE FENCE
LITTER FENCE
SILT FENCE
ELECTRICAL
TREE LINE
REFORESTATION
OW52B-07 — WATER QUALITY/HYDRAULIC MONITORING WELL LOCATION
OW52A-07 — HYDRAULIC MONITORING WELL LOCATION
LW8-09 — LEACHATE WELL LOCATION
SURFACE WATER MONITORING LOCATION
MH — MANHOLE
MH/PS — MANHOLE/PUMPING STATION
CO — CLEANOUT
CT-3 — CONDENSATE TRAP

INCL. — INCLINOMETER
VC4 — VALVE CHAMBER
MB — MAINTENANCE BUILDING
LTP — LEACHATE TREATMENT PLANT
VS — VEHICLE STORAGE FACILITY
H — SECURITY HOUSE
EB — ELECTRICAL BUILDING
PB — PUMP BUILDING
RS — ROAD SIGN
SIB — STANDARD IRON BAR
BP — BELL PEDESTAL
C.S.P. — CORRUGATED STEEL PIPE
CB — CATCHBASIN
LP — LIGHT POLE
HP — HYDRO POLE

NOTES

1. BENCHMARK ELEVATION 232.364m (762.35 ft) - CONCRETE BASE OF RADIO TOWER, SOUTH OF OFFICE, AT WEST LEG.
2. THE EXISTING CONDITIONS FOR THE LANDFILL SITE ARE COMPILED FROM THE MOST RECENT SITE SURVEY CONDUCTED BY WSP ON DECEMBER 30, 2017.
3. EXISTING CONDITIONS FOR THE FLOOR AREA IN STAGE 12 WEST AND STAGE 13 WEST WERE NOT RECORDED, AS THE AREAS WERE SUBMERGED AT THE TIME OF THE SURVEY.
4. THE SOIL STOCKPILES NORTH OF THE LANDFILL FOOTPRINT WERE NOT SURVEYED IN DECEMBER DUE TO EXCESSIVE SNOW COVER AT THE TIME OF THE SURVEY.
5. THE GREEN LANE LANDFILL SITE IS LOCATED ON PARTS OF LOTS 21, 22, AND 23 CONCESSION III, SOUTHWOLD TOWNSHIP, COUNTY OF ELGIN, NORTH OF HIGHWAY 401.

GRID NOTE

GRID SHOWN ON THIS DRAWING IS BASED ON 0+000, 0+000 BEING ESTABLISHED FROM FIGURE 2.1 TITLED "EXISTING ON-SITE MONITORING LOCATIONS, ANNUAL PROGRESS REPORT, JANUARY 2012 - DECEMBER 2012" BY CONESTOGA ROVERS & ASSOCIATES, FILE NO. 00721-150(184)GN-WA003 MAR 27, 2013. GRID SHOWN ESTABLISHED SEPT. 16, 2014 BY WSP CANADA INC.

SCALE: 1: 3,000
0 100 200 300m

DISCLAIMER: COPYRIGHT:

CAUTION :

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

ISSUED FOR - REVISION:

IS.	RV.	DATE	DESCRIPTION

SEAL:

TORONTO
Green Lane LANDFILL

CLIENT: CITY OF TORONTO GREEN LANE LANDFILL

CLIENT REF. #:

PROJECT: 2017 ANNUAL PROGRESS REPORT

PROJECT NO: 121-25411-00

DATE: MAR. 2018

wsp
300 - 4 HUGHSON STREET SOUTH
HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 - FAX.: 905-521-2699 - WWW.WSP.COM

ORIGINAL SCALE: 1:3000

IF THIS BAR IS NOT 25.4mm LONG, ADJUST YOUR PLOTTING SCALE.

25.4mm

TITLE: EXISTING CONDITIONS DECEMBER 2017

SHEET NUMBER: PLAN 1

DESIGNED BY: JJO
DRAWN BY: TCG/JLK
CHECKED BY: JJO
DISCIPLINE: ENVIRONMENTAL
ISSUE:
RV. #: 0
DATE OF:

G:\2012\OS\13-401 -Environmental\121-25411-00 - Green Lane\4.0 CAD\400 Drawings\Annual Rpts\2017\PLAN 1 DEC 2017.dwg Mar 23, 2018 - 2:29pm

APPENDIX

A

APPROVAL DOCUMENTATION

APPENDIX

A HISTORICAL CERTIFICATE OF APPROVAL DOCUMENTATION

B HISTORICAL TABLES

DOCUMENTS ON USB STICK AVAILABLE UPON REQUEST

APPENDIX

A-1 *AMENDED PROVISIONAL CERTIFICATE OF APPROVAL NO. A051601, DATED JULY 5, 2007*

Ministry of the Environment

Ministère de l'Environnement

Ontario

AMENDED PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A051601
Issue Date: July 5, 2007

City of Toronto
55 John St 19th Floor
Toronto, Ontario
M5V 3C6

Site Location: Green Lane Landfill Site
38593 Third Line (Parts of Lots 21, 22 and 23, Concession III)
Southwold Township, County of Elgin

You have applied in accordance with Section 27 of the Environmental Protection Act for approval of:

for the use and operation of a 71.2 hectare landfilling site within a total site area of 129.7 hectares (as described in Section 1.2 in the Design and Operations Report, dated July 2006 - Item 6 in the attached Schedule "A"), all in accordance with the following plans and specifications as listed in the attached Schedule "A", which includes the use of the site only for the disposal of the following categories of waste:

municipal waste, including domestic,commercial and non-hazardous solid industrial waste, institutional waste, sewage sludge from municipal sewage treatment plants, and non-hazardous contaminated soils, and subject to the following conditions (Note: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval).

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

DEFINITIONS:

(1) "1998 EAA Approval" means the "Environmental Assessment Act, Section 9,Notice of Approval to Proceed with the Undertaking (and Order Under Subsection 12.4(3))" for the Environmental Assessment for the Expansion of the Green Lane Landfill located in Southwold Township, dated August 3, 1998 and approved by Order in Council 1888/98 dated August 13, 1998;

(2) "2006 EAA Approval" means the "Environmental Assessment Act, Section 9, Notice of Approval to Proceed with the undertaking for the Environmental Assessment for the Optimization of the Green Lane Landfill located in Southwold Township, dated May 26, 2006 and approved by Order in Council 12/19/2006 dated June 7, 2006;

(3) "Access Road" means that part of Southminster Bourne (formerly Elgin County Road 18) bounded on the east by Provincial Highway 4 and on the west by the Third Line (also formerly part of Elgin County Road 18) and that part of the Third Line from its intersection with Southminster Bourne on the east to the entrance to the Site on the west;

(4) "Access Road Payments" means the payments to be made by the Owner to insure proper maintenance of the Access Road;

(5) "Certificate" means this entire provisional Certificate of Approval document, issued in accordance with section 39 of the EPA, and includes any schedules to it, the application and the supporting documentation listed in schedule "A;

(6) "Contaminating Life Span" means the period of time during which the site will produce contaminants at concentrations that could have an unacceptable impact if they were to be discharged from the Site;

(7) "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;

(8) "District Manager" means the District Manager of the MOE London District Office;

(9) "EPA" means the Environmental Protection Act, R.S.O. 1990, as amended;

(10) "FNLC" means the First Nations Liaison Committee, if any, established under the terms and conditions of the 2006 EAA Approval (Item 5 in the attached Schedule "A") and as further defined by conditions of approval in this document;

(11) "PLC" means the Green Lane Landfill Public Liaison Committee, if any, established under the terms and conditions of the 2006 EAA Approval (Item 5 in the attached Schedule "A");

(12) "Inflation Factor" for a year means the factor determined by dividing the "all items" Consumer Price Index for Ontario (1992 = 100) published by Statistics Canada for the month of December in the second year preceding such year by the same index for the month of September 1991 (CPI for September 1991 = 98.24);

(13) "Interim Expansion Area" means the Interim Expansion Area identified in the Design and Operations Report, dated July 2006 (Item 6 in the attached Schedule "A");

(14) "Long Term Expansion Area" means the Long Term Expansion Area identified in the Design and Operations Report, dated July 2006 (Item 6 in the attached Schedule "A");

(15) "Major Works" is as defined in Condition 88);

(16) "Ministry" means the Ontario Ministry of the Environment;

(17) "MOE" means the Ontario Ministry of the Environment;

(18) "Municipal Waste" is defined by Regulation 347, made under the EPA;

(19) "ODWQS" means the Ontario Drinking Water Quality Standards, revised 2006, as amended;

(20) "Operator" has the same meaning as "operator" as defined in s.25 of the EPA;

(21) "Optimization Areas" mean the Optimization Areas identified in the Design and Operations Report, dated July 2006 (Item 6 in the attached Schedule "A");

(22) "Owner" means the City of Toronto and its successors and assigns;

(23) "OWRA" means the Ontario Water Resources Act, R.S.O. 1990, as amended;

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

(25) "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.

(26) "PWQO" means the Provincial Water Quality Objectives, revised July 1994, as amended;

(27) "Regional Director" means the Director of the MOE Southwestern Regional Office;

(28) "RUG" means the MOE Reasonable Use Guideline B-7, revised April 1994, as amended;

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

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

(31) "Site" means the entire waste disposal site of 129.7 hectares, including non-landfill lands, located at Parts of Lots 21, 22 and 23

(32) Concession III, Township of Southwold, County of Elgin, approved by this Certificate; and

(33) "Year" means a calendar year.

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

TERMS AND CONDITIONS

GENERAL CONDITIONS

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 *Certificate* and the applicable 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 applicable conditions of this *Certificate* .

3. This Certificate replaces and revokes all Certificates of Approval No. A051601 and Notices of Amendment issued prior to the date of this Certificate, except for;

   (a) The Certificate of Approval No. A051601 dated April 26, 1978, amended by the Notice dated March 23, 1988, granting approval to establish and operate a waste processing site for a barrel crushing operation which shall remain in force under this Certificate; and

   (b) The Certificate of Approval No. A051603 dated September 20, 1991, granting approval to operate a waste transfer station on the Site.

CERTIFICATE OF PROHIBITION:

4. Pursuant to Section 197 of the EPA, neither the Owner nor any person having an interest in the Site shall deal with the Site in any way without first giving a copy of this Certificate to each person acquiring an interest in the Site as a result of the dealing and in that connection the Owner has registered a Certificate of Prohibition on title to the Site and has submitted to the Director a duplicate registered copy.

IN ACCORDANCE:

5. Except as otherwise provided by these conditions, the Site shall be designed, developed, operated and maintained in accordance with the documentation listed in the attached Schedule "A", including the Design and Operations Reports for the Interim Expansion Area, for the Long Term Expansion Area and for the Optimization Areas (Items 1, 2 and 6 in the attached Schedule "A").

   If there is a conflict between documents in Schedule "A", the document bearing the most recent date shall apply.

If there is a conflict between a provision of any document in Schedule "A" and a provision of any condition in this Certificate, the provision in the condition shall apply.

The *Owner* and *Operator* shall provide funding to cover the reasonable expenses of the Oneida First Nation of the Thames, the Chippewa of the Thames First Nation, and the Munsee-Delaware First Nation, to establish the First Nation Liaison Committee (FNLC) and for their subsequent participation in, consultation about, and review of any new Design and Operation Plan, including the handling of sewage sludge from municipal sewage treatment plants and monitoring provisions.

The *Owner* and *Operator* shall provide funding to cover the reasonable expenses of the Public Liaison Committee (PLC) for their subsequent participation in, consultation about, and review of any new Design and Operation Plan, including the handling of sewage sludge from municipal sewage treatment plants and monitoring provisions.

The *Owner* and *Operator* shall identify to the Director how the FNLC and the PLC were consulted during the preparation and finalization of any new Design and Operation Plan prior to proceeding with any construction contemplated by the Plan.

LEGAL OBLIGATIONS:

6. The requirements of this Certificate are severable. If any requirement of this Certificate, or the application of any requirement of this Certificate to any circumstances, is held invalid, the application of such requirement to other circumstances and the remainder of this Certificate shall continue to apply.

7. The Owner shall be bound by the conditions of this Certificate. The conditions of this Certificate shall extend to and bind any successor and subsequent owner(s) of the Site.

8. The issuance of, and compliance with, this *Certificate* does not:
   (a) relieve any person of any obligation to comply with any provision of the *EPA* or any other applicable statute, regulation or other legal requirement including any agreement entered into between the *Owner* and *Operator* and any members of the FNLC; or

   (b) 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 *Certificate* be provided to the *Ministry* ;

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

9. The Owner shall ensure compliance with all terms and conditions of this Certificate. Any non-compliance constitutes a violation of the EPA and is grounds for enforcement.

ADVERSE EFFECT:

10. The *Owner* and *Operator* shall take all reasonable steps to prevent, 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.

CHANGE OF OWNER:

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

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

FURNISH INFORMATION:

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

14. 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 *Certificate* or under any statute, regulation, or Order or Direction issued pursuant to a statute or regulation, in relation to the information, shall not be construed as:
    (a) an approval, waiver, or justification by the *Ministry* of any act or omission of any person that contravenes any condition of this *Certificate* or any statute, regulation including an Orders or Direction issued pursuant to a statute or regulation; or
    (b) acceptance by the *Ministry* of the information's completeness or accuracy.

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

INSPECTIONS:

15. 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 *Certificate* relates, and without limiting the foregoing:

    (a) to enter upon the Site, or the location where the records required by the conditions of *this Certificate* are kept;
    (b) to have access to, inspect, and copy any records required to be kept by the conditions of this *Certificate* ;
    (c) to inspect the *Site,* related equipment and appurtenances;
    (d) to inspect the practices, procedures, or operations required by the conditions of this *Certificate* ; and
    (e) to sample and monitor for the purposes of assessing compliance with the terms and conditions of this *Certificate* or the *EPA* , the *OWRA* or the *PA* .

SERVICE AREA:

16. The Site may only accept for disposal municipal waste, including domestic, commercial and non-hazardous solid industrial waste, institutional waste, sewage sludge from municipal sewage treatment plants, and non-hazardous contaminated soils generated within the Province of Ontario.

SITE CAPACITY:

17. This Certificate permits the disposal of waste to complete the Interim Expansion Area, the disposal of waste to complete the Long Term Expansion Area, in accordance with Condition 5 and the disposal of waste in the Optimization Areas to fill an additional air space volume of 10,900,000 cubic metres, including daily cover material, excluding final cover material and taking anticipated settlement into account, as described in Section 4.0 of Item 6 in the attached Schedule "A". This additional disposal air space volume includes the waste disposal air space approved by the 1998 and 2006 EAA Approvals.

18. The amount of waste that may be disposed of at the *Site* in any given year may not exceed 1.1 million tonnes. The *Owner* and *Operator* shall notify the FNLC and the PLC before seeking any emergency approvals to deal with emergencies or unanticipated or unforeseen events.

19. Final waste limits shall conform with the bottom contours shown in Plan P5 and the final contours shown in Plan P6, in Item 6 in the attached Schedule "A".

LOCAL MUNICIPALITIES:

20. The Owner shall ensure, for the operational life of the Site, that municipal waste from the geographical Counties of Elgin and Middlesex, including the City of St. Thomas, but excluding the City of London, shall at all times receive first priority and precedence based upon 30,000 tonnes for 1999 and adjusted annually thereafter in proportion to the population change in the County and the City in the previous year.

ON-SITE INSPECTOR:

21. In accordance with Condition 12 and 13 of the 2006 EAA Approval (Item 5 in the attached Schedule "A"), the Owner shall permit an MOE Environmental Inspector, employed by the MOE to inspect the Site, during hours of waste disposal operations on such terms and conditions, after consultation with the Owner, as deemed appropriate by the District Manager and, for greater certainty:

    (a) the Owner shall provide the MOE Environmental Inspector with adequate office facilities, including a telephone, and a computer, for use at the Site, and appropriate arrangements for on-site transportation;

    (b) the Owner shall, on a semi-annual basis, reimburse the MOE for the reasonable costs of the MOE Environmental Inspector and associated expenses.

    (c) Implementation of this Condition shall be required of the Owner in accordance with the following conditions:

        i. The Owner shall undertake semi-annual air space surveys of the bottom and top waste contours of the air space used for waste disposal in order to determine the estimated semi-annual air space used for waste disposal in the prior six months. The air space survey shall include daily cover material and shall take into account settlement. The first air space survey shall be undertaken before the end of June 2007 with an air-space survey being completed semi-annually thereafter.

        ii. Wastes which the Owner has been ordered to dispose of at the Site by any Ministry, Department or agency of the federal or Provincial Crown shall be excluded from the air space survey calculations.

        iii. Each air space survey shall be conducted by an Ontario Land Surveyor or other qualified consultant and such air space survey shall be confirmed by the District Manager. The Owner shall keep a copy of each air space survey report on-Site and be made available to MOE personnel.

        iv. Based on the annual rate of waste received at the Site reflected by the most recent semi-annual air space survey, the MOE Environmental Inspector shall inspect the Site the following number of days per week as shown in the Table below:

Number of Days Per Week the MOE Environmental Inspector shall inspect the Site	Annual Rate of Waste Received at the Site in Cubic Metres
1	0 up to 500,000
2	500,000 up to 650,000
3	650,000 up to 800,000
4	800,000 up to 950,000
5	950,000 or more

v. Notwithstanding Condition 21(c)(iv), the requirement for an MOE Environmental Inspector shall not commence until the annual rate of waste received at the Site is equal to or greater than 350,000 cubic metres.

22. Notwithstanding Condition 21, the MOE Environmental Inspector's duties may, in consultation with the Owner, the FNLC and the PLC be increased, reduced, suspended, subject to the condition that the MOE Environmental Inspector be on-Site one (1) day per week and may require the MOE Environmental Inspector to be on-Site up to seven (7) days per week in cases of apparent non-compliance until such non-compliance is resolved.

WASTE MANAGEMENT RECORDS:

23. The Owner shall maintain on-Site a written record of all wastes received at this Site. The record shall be in the form of a log, all measurements shall be recorded in consistent units of measurement (i.e. tons or tonnes) and shall include date, quantity and type of all wastes received at the Site.

24. The Owner shall use and maintain weigh scales to weigh all incoming waste at the Site prior to disposal. The Owner shall keep all weigh scale records at the Site. The records shall identify the contents of the vehicles by the waste type and the quantity disposed at the Site. In the event of weigh scale malfunction, the Owner shall immediately notify the District Manager and take appropriate action to repair the malfunction as soon as practically possible.

25. If the Owner refuses a load of waste that arrives at the Site, because the category of waste is not approved for disposal at the Site or it originates from outside the approved service area, or where the waste type or service area could not be determined, the Owner shall record as much of the following information as is reasonably available:
(a) Date;
(b) Name of person(s) delivering the load;
(c) Company name on vehicle delivering the load;
(d) Vehicle license number;
(e) Source of waste;
(f) Waste hauler approval number; and
(g) Reason for refusing the load
and shall immediately provide such information to the District Manager.

SIGNAGE:

26. The Owner shall place signage at the main entrance to the Site on which is legibly displayed in prominent letters the following information:

    (a) The name of the Site and the Certificate of Approval number for the Site;
    (b) The name of the Owner;
    (c) The operating authority, telephone number and mailing address;
    (d) The hours the Site is normally open to accept waste;
    (e) The telephone number to which complaints may be directed;
    (f) The telephone number for reporting emergency situations occurring at the Site during non-operating hours;
    (g) The waste types acceptable and prohibited for disposal at the Site;
    (h) A warning against unauthorized access; and
    (i) A warning against dumping outside the Site entrance.

27. The Owner shall install and maintain signs to direct people and vehicles to appropriate locations within the Site.

LANDFILL OPERATIONS:

28. The normal hours of operation for receiving waste at the Site are:

    (a) Monday to Friday: 5 a.m. to 8 p.m.;
    (b) Saturday: 5:00 a.m. to 2:00 p.m.;
    (c) Under normal conditions, there shall be no operations on Sunday;
    (d) On Saturdays, on-site equipment may operate for up to two (2) hours beyond normal hours. At all times, the operations shall comply with MOE Noise Guidelines for Landfill Sites;
    (e) The normal hours of operation may be amended from time to time by the Regional Director based on a written request by the Owner;
    (f) With the prior written approval concurrence of the *District Manager* , the time periods may be extended to accommodate seasonal or unusual quantities of waste;
    (g) The Owner may provide limited hours of operation provided that the hours are posted at the landfill gate and that suitable notice is provided to the public of any change in operating hours; and
    (h) 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.

29. During non-operating hours, the Site shall be secured against access by unauthorized persons and the entrance to the landfilling area shall be securely locked.

RECEIPT OF WASTE:

30. No waste shall be received, landfilled or removed from the Site, unless a site supervisor or his/her alternate is present to supervise the operations. The Owner shall ensure that the site supervisor or designated contractor(s) have been adequately trained with respect to the following procedures without limitation:
    (a) Conditions, Schedules and supporting documentation of this Certificate, including the Design and Operations Report, dated July 2006 (Item 6 in the attached Schedule "A"), as amended, copies of which shall be kept at the Site;
    (b) The daily operation and maintenance of the Site;
    (c) Relevant waste management legislation and regulations;
    (d) Environmental conditions and concerns related to the waste handling operations at the Site; and
    (e) Occupational health and safety as well as workplace safety activities pertaining to the workplace and waste handling operations at the Site.

RECYCLING AND HHW:

31. The Owner shall offer to establish recycling and household hazardous waste (HHW) programs and facilities within the local community and/or at the Site to divert recyclables and potentially hazardous domestic waste (e.g. batteries, paints solvents, etc.) from disposal at the Site, including cooperating in establishment of recycling programs, composting programs and HHW collection programs.

WASTE COVER REQUIREMENTS:

32. Daily, weather permitting, the deposited waste shall be compacted and covered with a minimum of 15 cm of soil, or a suitable alternative cover material such as the following:
    (a) solid non-hazardous wastes such as contaminated soils, foundry sand, compost, or other material all of which must meet the leachate quality criteria as defined under Part V, Section 28(3) of Reg. 232;
    (b) wood chips; and
    (c) retractable tarping technologies.

33. The use of any other alternative materials as daily or intermediate cover material not referred to in Condition 32, is subject to approval by the Director.

34. In the event that weather conditions or operational problems prevent the daily application of cover material, the Owner shall immediately notify the District Manager of such an occurrence.

35. Clay soil daily cover shall be removed or scarified before placement of subsequent lifts of waste.

36. A thickness of at least 5 metres of compacted waste and cover material shall be maintained between any landfilled sewage sludge (solid non-hazardous as per Reg. 347) and the granular leachate collection layer.

37. A minimum of 30 cm of interim cover soil shall be applied as soon as practically possible to areas where no further landfilling is expected to occur for a period of 90 days or more.

38. The Owner shall ensure that a contingency supply of cover material equal to at least one month's supply is maintained at the Site to ensure that adequate cover material is always available for application pursuant to the conditions above.

39. Final Cover - In areas where landfilling has been completed to final contours, a minimum 0.9 metre thick layer of final cover soil consisting of clay shall be placed overlain by a 0.15 metre thick layer of topsoil. Fill areas shall be progressively completed and rehabilitated as landfill development reaches final contours.

40. Silt fencing shall be placed along the construction phase of the landfill during final cover placement in order to trap sediment.

SITE CONTROLS:

41. The burning of waste on the Site is prohibited.

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

43. The Owner shall take all reasonable steps to operate the *Site* such that vermin, vectors, dust, litter, odour, noise and traffic do not create a nuisance.

44. Vermin, vectors and flies shall be adequately controlled at the Site by the Owner. In the event that the vermin, vector and fly populations should increase and become a hazard, a licensed exterminator shall be engaged by the Owner at the necessary frequency to bring the problem under control.

45. The Owner 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 required, on-Site roads shall be treated with water or other dust suppressant material to minimize dust generation.

46. The Owner shall comply with the noise criteria in the MOE Guideline entitled "Noise Guidelines for Landfill Sites".

47. The Owner shall take all practical steps to prevent escape of litter from the site. Litter control shall be undertaken by the Owner for the Site in accordance with the procedures described below and in accordance with Section 14.0 in Item 6 in the attached Schedule "A":

(a) An inspection of the Site's perimeter shall be carried out to ensure litter is controlled at the Site;
(b) The Owner shall implement a program to prevent off-Site litter impacts from the Site by installing and maintaining litter control fencing;
(c) Disposal operations shall be reduced or stopped if the weather conditions make it difficult to control or prevent significant off-Site litter impacts;
(d) The Owner shall maintain an off-Site litter control program to monitor and address debris and litter occurring along the Access Road as result of the operation of the landfill site. The off-Site litter control program shall incorporate any concerns raised by the Ministry of Transportation and the local road authorities; and
(e) Subject to the consent of the neighbouring residents, the Owner shall, at its own expense, remove landfill related litter from neighbouring properties.

48. On-Site roads shall be provided and maintained in a manner that vehicles hauling waste to and on the site may travel readily and safely on any operating day. During winter months, when the Site is in operation, on-Site roads must be maintained to ensure safe access to the landfill working face. On-Site roads must be clear of mud, ice and debris which may create hazardous conditions.

LANDFILL GAS MANAGEMENT:

49. The Owner shall, manage landfill gas in accordance with the Design and Operations Report and based on the landfill gas management system constructed under the authority of the Amended Certificate of Approval (Air) issued therefore under Section 9 of the EPA, currently bearing Amended Certificate of Approval (Air) Number 3793-5K4TVG, as the same may be amended or replaced from time to time.

50. The Owner shall ensure that the landfill gas collection system is constructed under the supervision of a qualified consultant. Landfill gas shall be managed in accordance with Reg. 232.

LEACHATE CONTROL:

51. The leachate collection system shall be designed and constructed at the Site based on the conceptual design described in Section 5.0 in Item 6 in the attached Schedule "A". Any proposed design optimization or modification to the conceptual design, along with an explanation of the reasons for the change, shall be submitted to the Director for approval prior to construction of the part of the leachate collection system that includes the change. The Owner shall ensure that a hydraulic trap is developed and maintained beneath the Optimization Areas, the Long Term Expansion Area and the Interim Expansion Area.

52. The Owner shall ensure that the leachate collection system is constructed under the supervision of a qualified consultant. As-built drawings of the system shall be submitted to the Director and the District Manager.

53. In connection with groundwater monitoring, the Owner shall ensure that the RUG limits are applied at all site property boundaries.

LEACHATE RECIRCULATION:

54. Prior to implementing the leachate recirculation program , a detailed plan for leachate recirculation shall be submitted to the Director for review and approval. This plan shall include an assessment of the actual field capacity of waste *in situ* , trigger mechanisms and contingency plans and implementation of the leachate recirculation shall be in accordance with the Director's approval.

LEACHATE TREATMENT:

55. The Owner shall operate On-Site leachate treatment facilities constructed under the authority of the Amended Certificate of Approval issued under Section 53 of the Ontario Water Resources Act, currently bearing Amended Certificate of Approval Number 4834-6CXRL4, as the same may be amended or replaced from time to time.

SURFACE WATER CONTROL:

56. The Owner shall ensure that the storm water management system for the Site is designed and constructed based on Items 6 and 8 in the attached Schedule "A".

57. The diversion of surface water to Dodd Creek shall continue during the Contaminating Life Span of the Site and, thereafter, the Owner shall not re-direct surface water to the original, pre-development drainage pattern without first consulting with Southwold Township, the Oneida Nation of the Thames, the Chippewas of the Thames First Nation, the Munsee-Delaware First Nation, the Kettle Creek Conservation Authority, and the Ministry of Natural Resources Aylmer District Office) and then only in accordance with the prior approval of the Regional Director under the EPA and/or OWRA and, to provide greater certainty, only when the surface water flowing to Dodd Creek has met the Ontario drinking water standards.

58. The Owner shall take all appropriate measures to minimize surface water from coming in contact with waste. Temporary berms and ditches shall be constructed around active waste disposal areas to prevent extraneous surface water from coming in contact with the active working face.

59. The owner shall not discharge surface water to receiving water bodies otherwise in accordance with an approval under Section 53 of the OWRA.

TREE AND LANDSCAPING:

60. The Owner will replace trees lost as a result of the Site optimization, or any mitigation or contingency measure, in locations on- or off-Site in a manner that enlarges the existing interior habitat and/or connects fragmented wooded areas.

61. The Owner will retain a qualified consultant to prepare a landscaping plan for the Site which is to be presented to the PLC for review and comment. Subsequent to receiving the PLC input, the landscaping plan will be finalized by the Owner and implemented at the Site. The landscaping plan will be implemented on a phased-in approach over the years as landfilling at the Site progresses and will include a schedule of planting and maintenance activities associated with the plantings. A qualified consultant will conduct routine inspections of the ongoing planting and maintenance activities on-Site and report to the PLC on an annual basis.

CONTINGENCY PLANS:

62. In the event of unexpected, but possible exceedance of Site specific trigger levels relating to groundwater, leachate, surface water and landfill gas, the Owner shall follow the site contingency plans described in Section 18.0 and Appendix N in Item 6 in the attached Schedule "A".

PUBLIC LIAISON COMMITTEE:

63. In accordance with Conditions 20 through 23 of the 2006 EAA Approval (Item 5 in the attached Schedule "A"), the Owner shall make every reasonable effort to continue and maintain the existing PLC. This Committee shall serve as a focal point for dissemination, review and exchange of information and monitoring results relevant to the operation of the Site and shall include members from the public and the local municipalities that use the Site.

64. The Owner shall provide for the administrative costs of operating the PLC, including the cost of meeting places and clerical services. These costs may be paid by the Green Lane Community Trust Fund, as outlined in the July 23, 1997 agreement between the Owner and The Corporation of the Township of Southwold.

65. The presently approved Terms of Reference for the Committee shall continue. The Regional Director may amend the Terms of Reference, including the composition of Committee membership, from time to time, at the request of the Committee with the consent of the Owner.

66. The PLC and its consultants shall have reasonable access to the Site and its landfill related facilities for the purpose of carrying out its objective and mandate and to any reports prepared by or for the Owner relating to landfill operations or as identified in Schedules "B", "C", and "D". The frequency of access to the site and any safety and personal security terms and conditions relating to access shall be determined by consultation between the PLC and the Owner.

FIRST NATION LIAISON COMMITTEE (FNLC):

67. **Purpose**
The purpose of the FNLC for the Green Lane landfill site is to serve as a forum for meaningful and *bona fide* consultation and to facilitate expeditious, streamlined, and cost-effective relations, resolution of disputes between First Nation members of the FNLC and the Owner of the Site.

Participation in the FNLC does not lessen or diminish any separate treaty or aboriginal rights of the FNLC members for consultation and accommodation by the Crown, as represented by the Ministry, on those rights affected by the operation of the landfill site.

68. **Role**

In carrying out its purpose, the FNLC will:

(a) disseminate, exchange, and review information, including all reports submitted by the Owner and Operator of the Green Lane landfill site, about the design, development, operation, and maintenance and closure of the Green Lane landfill site; and

(b) disseminate and review complaints about the Site.

In addition, the FNLC will act as an advisory body to provide the Ministry with its views on matter described above when the FNLC deems it necessary.

The FNLC shall have reasonable access to the site and its landfill related facilities in order to discharge its purpose and to any reports prepared by or for the Owner relating to landfill operations or as identified in Schedules "B", "C", and "D". The frequency of access to the site and any safety and personal security terms and conditions relating to access shall be determined by consultation between the FNLC and the Owner.

ACCESS ROAD:

69. In accordance with Condition 8.0 of the 1998 EAA Approval, the Owner's commitments will continue under the Agreement dated April 5, 1999 and made with The Corporation of the County of Middlesex and The Corporation of the Township of Middlesex Centre, as the same may be amended from time to time, dealing with waste related vehicles in Middlesex County and limiting such vehicles to the Access Road other than those engaged for local pick-up.

70. Access Road Payments shall be made by the Owner to the Road Authority responsible for the maintenance and repair of the Access Road and the following conditions shall apply:

(a) Access Road Payments shall be made to the Road Authority responsible for maintenance of the Access Road on the first business day of each calendar year in which the Site is operated after the date of the issuance of this Certificate; and

(b) The amount of Access Road Payments required to be made under Condition 69(a) above shall be equal to the product of Twenty Two Thousand, Five Hundred Dollars ($22,500.00) and the Inflation Factor for the calendar year. If a payment is due before there is available the Consumer Price Index upon which the Inflation Factor adjustment is to be based, the payment shall be made at the rate applicable for the preceding year and in the case of an underpayment, an adjustment shall be made by the Owner within one (1) month after such Consumer Price Index is available or in the case of overpayment, the necessary reduction shall be made by the Owner in the next payment due after such Consumer Price Index is available.

SMALL CLAIMS TRUST FUND:

71. So long as the landfilling operations continue at the Site, the Owner shall make available in each calendar year no more than One Hundred Thousand Dollars ($100,000), to be known as the "No-Fault Small Claims Fund" which may be used to provide, on a no-fault basis, compensation for loss due to any bothersome, abnormal event or occurrence which may endanger health, cause a nuisance or adversely affect the environment or compensation for damage to property resulting from the operation of the Site or to provide, on a no-fault basis, compensation to mitigate or resolve any bothersome conditions existing for residents in the neighbourhood of the Site; and the following sub-conditions shall apply to the No-Fault Small Claims Fund:
    (a) The Owner shall maintain the No-Fault Small Claims Fund;
    (b) The maximum amount payable out of the No-Fault Small Claims Fund to any person, including immediate family members in the same household, shall be limited to Five Thousand ($5000.00) Dollars in any one calendar year.
    (c) Any decision that a payment should be made out of the No-Fault Small Claims Fund shall be without prejudice and specifically shall not be considered to be an admission of any liability by the Owner.
    (d) It is not intended that there be double indemnification out of the No-Fault Small Claims Funds so that payments made out of the No-Fault Small Claims Fund shall only be for such things not covered by insurance.
    (e) In the event that a Court of competent jurisdiction should determine that the Owner is legally liable to a person to whom a payment is made out of the No-Fault Small Claims Fund in respect of a matter or thing in connection with which such determination was made, then the Owner shall be entitled to credit against its legal liability for the amount so paid.

CLOSURE PLAN:

72. No later than the date when 90 per cent of the total waste disposal volume is reached or two (2) years before the anticipated date of closure, whichever comes first, the Owner shall submit to the Regional Director a written report on activities for the closure of the Site, activities for the post-closure care of the Site and the proposed end use of the Site. The plan shall include, but not limited to the following:
    (a) A plan showing site appearance after closure;
    (b) A description of the proposed end use of the site;
    (c) Descriptions of the procedures for closure of the site, including:
        (i) Advance notification of the public of the landfill closure;
        (ii) Posting of a sign at the site entrance indicating the landfill is closed and identifying any alternative waste disposal arrangements;
        (iii) Completion, inspection and maintenance of the final cover and landscaping;
        (iv) Site security;
        (v) Removal of unnecessary landfilled related structures, buildings and facilities; and
        (vi) Final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
    (d) 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;
- (e) An updated estimate of the Contaminating Life Span of the Site, based on the results of the monitoring programs to date;
- (f) An update of the cost estimates for financial assurance and the amount which has been provided to the Director; and
- (g) Copies of the plan shall be provided to the PLC and to the FNLC or, if the FNLC is not operative, to the Oneida Nation of the Thames.

MONITORING:

73. The Site shall be monitored in accordance with the attached Schedules "B", "C" and "D", for groundwater, leachate, surface water and landfill gas. Any alterations to the monitoring programs must be approved by the Director.

74. Within 60 days of receiving comments from the Ministry regarding the groundwater monitoring program, the Owner shall revise and submit it to the Director for approval.

ANNUAL REPORT:

75. The Owner shall retain, either on-Site or in another location approved by the Director, copies of the annual reports referred to in Condition 76 and any associated documentation of compliance monitoring activities for a period of at least two (2) years after the last report referred to in Condition 76 is made. The Owner shall make such documentation available to the MOE in a timely manner:
   - (a) when requested by the MOE during an on-Site inspection;
   - (b) in response to a pollution incident report; or
   - (c) when information concerning compliance is requested by the MOE.

76. The Owner shall prepare and submit an Annual Report to the Regional Director, the District Manager, the Kettle Creek Conservation Authority, the PLC and any FNLC by March 31st of the year following the calendar year covered by the report, which shall include, as a minimum, the following:
   - (a) Surveys of the bottom and top contours within the fill area, as required by Condition 21(c)(i) above;
   - (b) Site plans showing the existing contours of the site, areas of landfilling operation during the reporting period, areas of intended operation during the next reporting period, areas of excavation during the reporting period, the progress of final cover placement and any interim cover application, existing site facilities installed during the reporting period, and site preparations and facilities planned for installation during the next reporting period;
   - (c) A summary of the total annual quantities of each waste type received on monthly basis;
   - (d) A drawing(s) identifying all leachate, groundwater, surface water, and landfill gas monitoring locations;
   - (e) Tables outlining monitor locations, analytical parameters sampled and frequency of sampling;

(f) An interpretation of the surface water, groundwater, leachate and landfill gas monitoring data, a review of the adequacy of the monitoring programs, conclusions and recommendations for any changes to the monitoring programs;
(g) An assessment of groundwater quality as it relates to the RUG limits, ODWQS, and established trigger criteria;
(h) An assessment of surface water quality with respect to PWQO and established trigger criteria;
(i) A summary of the location, areal extent and thickness of all sand lenses encountered in the base or sidewalls of the disposal area, including a description of the remedial action taken;
(j) An update of changes in operations, equipment, or procedures made at the Site, and any operating difficulties encountered;
(k) An estimate of the remaining disposal capacity and remaining Site life;
(l) A summary discussion regarding the landfill daily cover requirements and erosion protection for the berms and cell slopes;
(m) A summary discussion of the hydraulic trap condition and operation of the leachate collection system;
(n) A summary discussion on the condition and operation of the landfill gas collection system;
(o) A summary of any occurrences or incidents where this Certificate was not complied with, the reasons for non-compliance and the measures undertaken and to be implemented to ensure that future non-compliance does not occur;
(p) A summary of any complaints made regarding the landfill operations and the responses from the Owner to the PLC and any FNLC and action taken to address these complaints; and
(q) Recommendations with respect to any proposed changes to the operation and monitoring of the landfill.

CLOSURE AND POST CLOSURE CARE:

77. The Owner and Operator of the landfill site shall provide a report to the Director on how its long term financial arrangements, which already exist for its other closed landfill sites, will be used to provide ongoing funding for the costs associated with the closure, post closure care, and contingency plans for the site. The report shall provide detailed financial information to the satisfaction of the Director. Copies of the report shall be provided to the PLC and to the FNLC or, if the FNLC is not operative, to the Oneida Nation of the Thames.

CONSTRUCTION, INSTALLATION AND PLANNING:

Major Works

78. For the purposes of this *Certificate* the following are *Major Works* :
    (a) landfill gas management system; and
    (b) leachate management system.

79. A final detailed design shall be prepared for each *Major Work* to be constructed at the *Site* consistent with the conceptual design of the *Site* as presented in the supporting documentation in Schedule "A".

80. The final detailed design of each *Major Work* shall include the following:
  (a) design drawings and specifications;
  (b) a detailed quality assurance / quality control (QA/QC) program for construction of the major work; and
  (c) details on the monitoring, maintenance, repair and replacement of the engineered components of the major work, if any.

81. Any design optimization or modification that is inconsistent with the conceptual design shall be clearly identified, along with an explanation of the reasons for the change.

82. The final detailed design of each *Major Work* shall be submitted to the *Director* , copied to the District Manager.

83. No construction of a new 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.

84. Any substantial improvement to a Major Work shall not be used until a written *Preparation Report* has been submitted to the *Director* and *District Manager* documenting that:
  (a) all construction;
  (b) *QA/QC* activities;
  (c) *Site* conditions; and,
  (d) all details of the construction of the improvement.

  are in accordance with the approved design plans and specifications.

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

SUBSEQUENT STAGES:

86. A subsequent stage shall not be used until a written *Preparation Report* has been submitted to the *Director* and *District Manager* documenting that:
  (a) all construction;
  (b) *QA/QC* activities;
  (c) *Site* conditions; and,
  (d) all details of the construction of the stage;

  are in accordance with the approved design plans and specifications.

GEOTECHNICAL ENGINEER:

87. A qualified professional geotechnical engineer shall inspect the excavation and construction within the clay underlying the *Site* and provide a report addressing whether the construction proceeded in accordance with approved detailed design plans, specifications and QA/QC procedures. The report shall be included in the *Preparation Reports* for each stage of the landfill.

CLEANING OF THE LEACHATE COLLECTION SYSTEM:

88. Leachate collection pipes shall be inspected at least annually for the first five years after placement of waste on top of each pipe and then as often as future inspections indicate to be necessary. Leachate collection pipes shall be cleaned whenever an inspection indicates that cleaning is necessary.

INSPECTIONS:

89. The Owner shall inspect the Site monthly for:
    (a) Condition of surface water drainage works;
    (b) Erosion and sedimentation in surface water drainage system;
    (c) Presence of any ponded water;
    (d) Adequacy of cover material;
    (e) Evidence of vegetative stress;
    (f) Condition of groundwater monitoring wells;
    (g) Presence of insects, vermin, rodents and scavenging animals;
    (h) Condition of fence surrounding the Site; and,
    (i) General site appearance.

90. The Owner shall inspect the Site on a weekly basis for the presence of leachate breakouts or seeps.

EMPLOYEES AND TRAINING:

91. A training plan for all employees that operate any aspect of the Site shall be developed and implemented by the *Operator* . Only trained employees shall operate any aspect of the *Site* or carry out any activity required under this *Certificate* . For the purpose of this *Certificate* "trained" means knowledgeable either through instruction or practice in:

    - the relevant waste management legislation *including EPA, O. Reg. 347 and 558* , regulations and guidelines;
    - major environmental *and occupational health and safety* concerns pertaining to the waste to be handled;
    - the proper handling of wastes;
    - the management procedures including the use and operation of equipment for the processes and wastes to be handled;

- the emergency response procedures;
- the specific written procedures for the control of nuisance conditions; and
- the *terms, conditions and operating* requirements of this *Certificate* and,
- proper inspection, receiving and recording procedures and the activities to be undertaken during and after a load rejection.

GROUNDWATER MONITORS:

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

93. 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.

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

95. The Owner 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.

96. 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.

COMPLAINTS PROCEDURE:

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

    (a) The *Owner* shall record and number each complaint, either electronically or in a log book, and shall include the following information: the nature of the complaint, the name, address and the telephone number of the complainant if the complainant will provide this information and the time and date of the complaint;

    (b) The Owner, upon notification of the complaint, shall immediately notify the Ministry's Spills Action Centre of the receipt of the complaint, initiate appropriate steps to determine all possible causes of the complaints, proceed to take all reasonable measures to mitigate the causes of the complaint, and forward a formal report to the Ministry, the FNLC, and the PLC within seven (7) days of the complaint; and

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

98. The Owner shall designate a person to receive any complaints and to respond with a written notice of action as soon as possible. The Owner shall post site complaints procedure at site entrance. All complaints and the Owner's actions taken to remedy the complaints must be summarized in the Annual Report.

RECORDS:

99. Records in the form of a written log or a dedicated electronic file shall include the following:
(a) the type, date and time of arrival, hauler, and quantity (tonnes) of all waste received at the site;
(b) the area of the Site in which waste disposal operations are taking place;
(c) a calculation of the total quantity (tonnes) of waste received at the Site during each month;
(d) the amount of any leachate removed, or treated and discharged from the Site;
(e) a record of any daily inspections;
(f) 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;
(g) type of daily, intermediate and final cover used;
(h) emergency situations and actions taken; and
(i) any other information required by the District Manager.

RECORD RETENTION:

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

101. The Owner shall retain all documentation listed in Schedule "A" for as long as this Certificate is valid.

102. All monthly summary reports are to be kept at the Site until they are included in the Annual Report.

103. The Owner shall retain employee training records as long as the employee is working at the Site.

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

EMERGENCY SITUATIONS:

105. In the event of a spill, as defined in the EPA, the Owner shall notify the District Office of the MOE or during outside of normal business hours the Spills Action Centre (1-800-268-6060).

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

107. The Owner shall ensure that adequate fire fighting and contingency spill clean up equipment is available and that emergency response personnel are familiar with its use and location.

AIR QUALITY:

108. Within 45 days of issuance of this approval, the Owner shall provide to the Director for approval an updated comprehensive air quality monitoring program that addresses the items listed below:
    - The landfill gas shall be monitored for Volatile Organic Compounds (VOC's) in addition to vinyl chloride.
    - A description of analytical methods for parameters.
    - An assessment of ambient levels of the Ministry target list be determined at the property line. These measurements should be performed at least twice a month during peak gas production periods.
    - Trigger levels for implementing contingency plans based upon Lower Explosion Limits (LEL).
    - Updated modelling based upon worst case scenarios.
    - Updated reporting for exceedances.
    - A quantitative trigger for dust mitigation and a monitoring program using upwind and downwind real time particle counters.

109. In the event that control measures proposed for air quality are deemed by the Ministry to be inadequate, the Owner shall submit to the Ministry other proposed mitigative measures.

COMPLIANCE WITH EAA APPROVAL:

110. The Owner shall monitor compliance with the conditions of the 2006 EAA Approval and will issue annually a report which describes compliance with the EAA and any of its conditions of approval. Such annual reporting shall continue until the fifth year after the completion of the closing of the Site; the reporting may be combined with the annual reporting required by Condition 76.

SCHEDULE "A"

This Schedule "A" forms part of Provisional Certificate of Approval No. A 051601:

1. Report entitled, "Green Lane Landfill, Design and Operations Report", prepared by Conestoga-Rovers & Associates, dated October 1992, as modified by the "Green Lane Landfill, Design and Operations Amendment Report", prepared by Conestoga-Rovers & Associates, dated May 1993.

2. Report entitled, "Design and Operations Report for the Long-Term Expansion of the Green Lane Landfill Site", prepared for St. Thomas Sanitary Collection Service Limited and Green Lane Environmental Group Ltd., prepared by Conestoga-Rovers & Associates, dated April 1996.

3. Application for Approval of a Waste Disposal Site, signed by R.A. McCaig, dated November 30, 2004.

4. Report entitled, "Surface Water Assessment Report for the Optimization of the Green Lane Landfill Site", prepared by Conestoga-Rovers & Associates, dated March 2006.

5. "Environmental Assessment Act, Section 9, Notice of Approval to Proceed with the Undertaking for the Optimization of Green Lane Landfill", dated May 26, 2006.

6. Report entitled, "Design and Operations Report for the Optimization of the Green Lane Landfill Site", prepared for St. Thomas Sanitary Collection Service Limited Partnership, prepared by Conestoga-Rovers & Associates, dated July 2006.

7. Report entitled, "Hydrogeologic Investigation Report for the Optimization of the Green Lane Landfill Site", prepared for St. Thomas Sanitary Collection Service Limited Partnership, prepared by Conestoga-Rovers & Associates, dated July 2006.

8. Report entitled, "Ontario Water Resources Act Application Report, Stormwater Management Plan for the Optimization of the Green Lane Landfill Site", prepared by Conestoga-Rovers & Associates, dated July 2006.

9. Plans P1 to P23 inclusive prepared by Conestoga-Rovers and Associates, dated July 2006.

SCHEDULE "B"

This Schedule "B" forms part of Provisional Certificate of Approval No. A 051601:

GROUNDWATER AND LEACHATE MONITORING PROGRAM:

This Schedule, which forms part of the Provisional Certificate of Approval No. A051601, for the Green Lane Landfill, defines the on-Site and off-Site groundwater monitoring programs to be implemented during both the operational and post-closure periods associated with the landfill.

I. ON-SITE GROUNDWATER MONITORING PROGRAM

This section describes the following on-Site groundwater monitoring program to be implemented at the landfill during its operational and post-closure periods:

- Groundwater monitoring well network including monitoring well construction details, and a schedule for abandonment of existing wells that will not be utilized for either hydraulic or quality monitoring;
- Groundwater hydraulic monitoring program including network and frequency; and
- Groundwater quality monitoring program including network, frequency, parameters, and maximum allowable concentration (Cm) boundary assessment parameters.

1. Groundwater Monitoring Well Network

Installation details for the existing on-Site groundwater monitoring wells, including depth of well, monitored interval and the monitored horizon, are summarized in Table 1.1, Attachment 1 of Appendix N, July 2006 Design and Operations Report for the Optimization of the Green Lane Landfill Site (Item 6, Appendix A in the attached Schedule "A"). Table 1.1 also identifies which wells will form the groundwater hydraulic monitoring network which wells will form the groundwater quality monitoring network, and which wells will be abandoned. The following wells, as identified in Table 1.1, will be abandoned within 6 months of issuance of this C of A:
OW1-82 OW2-82 OW11A-87 OW11B-87 OW22-92 OW25A-95 OW25B-95 OW26A-95 OW26B-95

The following wells, as identified in Table 1.1, will be abandoned within 6 months of commencement of soil excavation activities in the East Optimization Area:
OW19-91 OW35A-95 OW35B-95 OW36A-95 OW36B-95 OW49A-01 OW49B-01

2. Groundwater Hydraulic Monitoring Program

The following wells, as identified in Table 1.1, will form the groundwater hydraulic monitoring network:
OW20-91 OW23A-95 OW23B-95 OW24A-95 OW24B-95 OW27A-95 OW27B-95 OW28A-95 OW28B-95 OW29A-95 OW29B-95 OW30A-95 OW30B-95 OW31A-95 OW31B-95 OW32A-95 OW32B-95 OW34A-95 OW34B-95 OW37-97 OW38-97 OW39-99 OW40-99 OW41A-01 OW41B-01 OW42A-01 OW42B-01 OW43A-01 OW43B-01 OW44A-01 OW44B-01 0W45A-01 OW45B-01 OW46A-01 OW46B-01 OW47A-01 OW47B-01 OW48A-01 OW48B-01 OW50-01 0W51A (proposed) OW51B (proposed) OW52A (proposed) OW52B (proposed)

Groundwater hydraulic monitoring will be performed at the above-summarized wells on a quarterly basis, every February, May, August, and November.

3. Groundwater Quality Monitoring Program

The following wells, as identified in Table 1.1, will form the groundwater quality monitoring network:
OW20-91 OW23B-95 OW24B-95 OW27A-95 OW27B-95 OW28B-95 OW29B-95 OW30B-95 OW31B-95 OW32B-95 OW34B-95 OW37-97 OW38-97 OW39-99 OW40-99 OW41B-01 OW42B-01 OW43B-01 OW44A-01 OW44B-01 OW45B-01 OW46B-01 OW47B-01 OW48B-01 OW50-01 OW51A (proposed) OW51B (proposed) OW52B (proposed)

Groundwater quality monitoring will be performed at the above-summarized wells on an annual basis, every May. The wells will be sampled and analysed for the following parameters:
General Chemistry
Alkalinity Hardness
Chemical Oxygen Demand Nitrate as N
Chloride Nitrite as N
Dissolved Organic Carbon Phenols
Field and Laboratory Conductivity Sulphate
Field and Laboratory pH Total Dissolved Solids
Free Ammonia as N Total Kjeldahl Nitrogen
Metals (Dissolved)
Arsenic Calcium Lead Potassium
Barium Chromium Magnesium Sodium
Boron Copper Manganese Phosphorous
Cadmium Iron Mercury Zinc
VOCs
1,4-Dichlorobenzene Dichloromethane Toluene
Benzene Ethylbenzene Vinyl Chloride

Groundwater quality monitoring will be performed at the wells noted below on an annual basis, every November.
OW20-91 OW28B-95 OW31B-95 OW34B-95 OW37-97 OW42B-01 OW44B-01 OW46B-01 OW48B-01 OW50-01 OW52B (proposed)

The wells will be sampled and analyzed for the following parameters:
General Chemistry
Alkalinity Hardness
Chemical Oxygen Demand Nitrate as N
Chloride Nitrite as N
Dissolved Organic Carbon Phenols
Field and Laboratory Conductivity Sulphate
Field and Laboratory pH Total Dissolved Solids
Free Ammonia as N Total Kjeldahl Nitrogen

The groundwater quality data will be assessed annually. As part of the assessment, data from

property boundary wells will be assessed against the maximum allowable concentration (Cm) in accordance with the method specified in Ontario Regulation 232/98, Part III, Section10(3)2. The property boundary assessment will be performed for the parameters outlined below:
Benzene Boron Chloride Chromium Ethylbenzene Vinyl Chloride

The exceedance of 75 percent of the respective Cm for the above parameters (i.e., trigger levels) will initiate contingency plan activities, as appropriate.

II. OFF-SITE DOMESTIC WELL MONITORING PROGRAM

This section describes the off-Site domestic well monitoring program to be implemented at the landfill during its operational and post-closure periods. This program includes quality monitoring including network, frequency, and parameters.

1. Domestic Well Network

Available well details for the off-Site domestic wells are summarized in Section 1.2, Attachment 1 of Appendix N, July 2006 Design and Operations Report for the Optimization of the Green Lane Landfill Site (Item 6, Appendix A in the attached Schedule "A") (Item 7, Appendix A in the attached Schedule "A"). The following wells described in Section 1.2 will form the domestic well monitoring network:
AA N M

Should the owners of wells AA and N be supplied with municipal water in the future, sampling at these locations will be discontinued at that time. Sampling of well M will continue as long as the current property owner wishes to remain on this program.

2. Domestic Well Monitoring Program

Domestic well sampling will be performed at the above-summarized wells on a semi-annual basis, every May and November. The wells will be sampled and analyzed for the following parameters:
General Chemistry
Alkalinity Free Ammonia as N
Hardness Nitrate as N
Chloride Dissolved Organic Carbon
Field and Laboratory Conductivity Sulphate
Field and Laboratory pH Total Dissolved Solids
Metals (Total)
Barium Calcium Magnesium
Boron Iron Sodium

The domestic well quality data will be reviewed and summarized semi-annually. The individual sampling results will be sent to the well owner in a timely manner but in no case longer than 90 days of obtaining sample. The Maximum Acceptable and the Maximum Desirable concentrations as listed in the Ministry's Green Book (Ontario Drinking Water Quality Standards) will also be included with each set of results. The Regional Director will be copied when the results are mailed to the well owners.

III. LEACHATE MONITORING PROGRAM

This section describes the following on-Site leachate monitoring program to be implemented at the landfill during its operational and post-closure periods:

- Leachate monitoring well network including monitoring well construction details;
- Leachate hydraulic monitoring program including network and frequency; and
- Leachate quality monitoring program including network, frequency, and parameters.

1. Leachate Monitoring Well Network

Installation details for the existing on-Site leachate monitoring wells, including depth of well and monitored interval are summarized in Table 1.2, Attachment 1 of Appendix N, July 2006 Design and Operations Report for the Optimization of the Green Lane Landfill Site (Item 6, Appendix A in the attached Schedule "A"). Proposed wells, as summarized in Table 1.2, will be installed within 6 months of each cell being brought to final elevations.

2. Leachate Hydraulic Monitoring Program'

The following wells, as identified in Table 1.2, and leachate collection system components, will form the leachate hydraulic monitoring network:
LW1-91 (existing) LW2-91 (existing) LW3-91 (existing) LW4 (existing) LW5 (existing) LW6 (existing) LW7 (existing) LW8 (proposed) LW9 (proposed) LW10 (proposed) LW11 (proposed) LW12 (proposed) LW13 (proposed) LW14 (proposed) LW15 (proposed) LW16 (proposed) LW17 (proposed) LW18 (proposed) LW19 (proposed) LW20 (proposed) LW21 (proposed) LW22 (proposed) LW23 (proposed) LW24 (proposed) LW25 (proposed) LW26 (proposed) LW27 (proposed) LW28 (proposed) LW29 (proposed) LW30 (proposed) LW31 (proposed) LW32 (proposed) MH11 (existing) MH19 (existing) MH23 (proposed) MH29 (proposed) MH36 (proposed) MH42 (proposed)

Leachate hydraulic monitoring will be performed at a minimum of once per month at the above noted locations. Proposed leachate wells will be designed and installed in consultation with the MOE as landfilling progresses.

Leachate hydraulic data will monitor for operation of the hydraulic trap. The elevation of leachate within the leachate monitoring wells will be compared to the groundwater potentiometric elevations adjacent to the fill area. The trigger level for the leachate elevation within the fill area is set at approximately 1 metre below the historic low groundwater potentiometric elevations. If trigger levels are exceeded, the MOE will be consulted and contingency measures will be implemented, as appropriate.

3. Leachate Quality Monitoring Program

Leachate treated at the on-Site leachate treatment facility will be sampled, at a minimum, once

a month from the leachate holding tank for the following parameters:
General Chemistry
Alkalinity Hardness
Biological Oxygen Demand (BOD5) Nitrate as N
Chemical Oxygen Demand Nitrite as N
Chloride Phenols
Dissolved Organic Carbon Sulphate
Field Conductivity Suspended Solids
Field pH Total Kjeldahl Nitrogen
Free Ammonia as N
Metals (Total)
Calcium Magnesium Sodium
Iron Phosphorus

In addition, leachate will be sampled from LW3-91 (existing), MH11 (existing), MH19 (existing), MH23 (proposed), MH29 (proposed), MH36 (proposed), MH42 (proposed), and the leachate holding tank of the leachate collection system on an annual basis, every May. The leachate will be sampled and analyzed for the following parameters:
General Chemistry
Alkalinity Hardness
Biological Oxygen Demand (BOD5) Nitrate as N
Chemical Oxygen Demand Nitrite as N
Chloride Phenols
Dissolved Organic Carbon Sulphate
Field and Laboratory Conductivity Suspended Solids
Field and Laboratory pH Total Dissolved Solids
Free Ammonia as N Total Kjeldahl Nitrogen
Metals (Total)
Arsenic Calcium Lead Potassium
Barium Chromium Magnesium Phosphorus
Boron Copper Manganese Sodium
Cadmium Iron Mercury Zinc
VOCs
Benzene Ethylbenzene Toluene Vinyl Chloride
1,4-Dichlorobenzene Dichloromethane

The leachate quality data will be assessed monthly. As part of the assessment, all leachate data quality will be compared to discharge criteria for the receiving off-site treatment facility or will be utilized to assist in the on-Site treatment of leachate, as appropriate.

SCHEDULE "C"

This Schedule "C" forms part of Provisional Certificate of Approval No. A 051601:

SURFACE WATER MONITORING PROGRAM

This Schedule, which forms part of the Certificate of Approval No. A051601 for the Green Lane Landfill, defines the surface water monitoring program to be implemented during both the operational and post-closure periods associated with the landfill.

I. ON-SITE SURFACE WATER MONITORING PROGRAM

This section describes the following on-Site surface water monitoring program to be implemented at the landfill during operational and post-closure periods. This program includes network description, frequency, and water quality monitoring parameters.

1. Surface Water Chemistry Monitoring Network

The following locations will form the surface water chemistry monitoring network during the operational period and thereafter during the Contaminating Life Span of the Site:
Dodd Creek (upstream of discharge channel outlet)
Dodd Creek (downstream of discharge channel outlet)

Surface water chemistry monitoring will be performed at the above locations on a quarterly basis when there is flowing water in the creek. There must be a minimum of 45 days between the seasonal sampling events.

Every spring and fall, the above locations will be sampled on the same day and analysed for the following parameters:
General Chemistry
Alkalinity Hardness
Biological Oxygen Demand (BOD5) Nitrate as N
Chemical Oxygen Demand (COD) Nitrite as N
Chloride Phenols
Field and Laboratory Conductivity Sulphate
Field and Laboratory pH Suspended Solids
Field Dissolved Oxygen Total Dissolved Solids
Field flow Total Kjeldahl Nitrogen
Field temperature Total Phosphorus
Free Ammonia as N
Metals (Total)
Arsenic Barium Boron
Cadmium Chromium Copper
Iron, Lead, Zinc
Dissolved Mercury
Every winter and summer, the above locations will be sampled on the same day and analysed for the following parameters:
General Chemistry
Alkalinity Hardness
Biological Oxygen Demand (BOD5) Nitrate as N

Chemical Oxygen Demand (COD) Nitrite as N
Chloride Phenols
Field and Laboratory Conductivity Sulphate
Field and Laboratory pH Suspended Solids
Field Dissolved Oxygen Total Dissolved Solids
Field flow Total Kjeldahl Nitrogen
Field temperature Total Phosphorus
Free Ammonia as N
Metals (Total)
Iron

The flow will be estimated using visual observations at the time and location of the surface water chemistry sampling.

The surface water chemistry data will be assessed quarterly and annually. As part of the assessment, data will be compared against previous years sampling results and the Provincial Water Quality Objectives (PWQOs). The trigger levels for surface water chemistry will be set at the following :

- annual average downstream concentration in Dodd Creek exceeds annual average upstream (i.e., reference) concentration by 33%; or
- discrete downstream concentration in Dodd Creek exceeds discrete upstream (i.e., reference) concentration by 50%.

The chemical surface water trigger level assessment will be performed for the following parameters:
Biological Oxygen Demand (BOD5) Iron
Suspended Solids Nitrate as N
Free Ammonia as N

If trigger levels are exceeded, the MOE will be consulted forthwith and contingency measures will be implemented, as appropriate.

In addition to the quarterly sampling requirements, six surface water monitoring events will be completed in Dodd Creek, in general coordination with the watershed monitoring program undertaken by the Kettle Creek Conservation Authority (KCCA). Surface water sample collection will occur at the following locations during the operational period and thereafter during the Contaminating Life Span of the Site:
Dodd Creek (upstream of discharge channel outlet)
Dodd Creek (downstream of discharge channel outlet)

Surface water sampling will be performed when there is flowing water in the creek. Surface water samples will be analyzed for parameters consistent with the Provincial Water Quality Monitoring Network (PWQMN) parameters analyzed as part of the KCCA's surface water quality monitoring program for the Kettle Creek watershed.

This additional surface water quality monitoring will continue to be performed throughout the operational and post-closure Contaminating Life Span of the Site as long as KCCA, or its successor, continue to perform its surface water quality monitoring program, or an equivalent substitute program, for the Kettle Creek watershed.

II. STORMWATER MANAGEMENT MONITORING PROGRAM

This section describes the following stormwater management monitoring program to be implemented at the landfill during its operational and post-closure periods. This program includes network description, frequency, and quality monitoring.

1. Stormwater Chemistry Monitoring Network

The following location will form the stormwater chemistry monitoring network during the operational period and thereafter during the Contaminating Life Span of the Site:
Stormwater Management Pond (at intake pipe or pump chamber)
Surface water collected and stored in the final stormwater management (SWM) pond, including treated effluent from the leachate treatment plant, will be sampled immediately prior to discharge to the polishing basin. The surface water sample will be submitted to the laboratory for rush analyses.

Prior to stormwater discharge, the above location will be sampled and analyzed for the following parameters:
General Chemistry
Alkalinity Hardness
Biological Oxygen Demand (BOD5) Nitrate as N
Chemical Oxygen Demand (COD) Nitrite as N
Chloride Phenols
Field and Laboratory Conductivity Sulphate
Field and Laboratory pH Suspended Solids
Field Dissolved Oxygen Total Dissolved Solids
Field flow Total Kjeldahl Nitrogen
Field temperature Total Phosphorus
Free Ammonia as N
Metals (Total)
Iron

Upon receipt of the surface water data from the laboratory, the data will be provided to MOE and KCCA in a timely manner, and will be assessed against on-site discharge criteria established in the approvals under the Environmental Protection Act and Ontario Water Resources Act for monitoring potential impact to Dodd Creek. The surface water collected in the SWM pond will be batch discharged to the polishing basin with ultimate discharge to Dodd Creek, only if it meets the established criteria or in cases where a parameter may exceed the criteria from time-to-time, only after approval of the MOE in consultation with KCCA. The volume of surface water discharged from the SWM pond or ponds during such discharge event will be measured and thereafter reported in timely fashion to KCCA and further reported in the Annual Reports for the site.

Future changes to the on-Site SWM monitoring program, if any, will be subject to MOE approval in consultation with KCCA.

III. BENTHIC COMMUNITY AND DENSITY MONITORING PROGRAM

This section describes the following benthic community and density monitoring program to be implemented at the landfill during its operational and post-closure periods. This program includes network description, frequency, and quality monitoring.

1. Benthic Community and Density Monitoring Network

The following locations will form the benthic community and density monitoring network during the operational period and thereafter during the Contaminating Life Span of the Site:
Dodd Creek (upstream of discharge channel outlet)
Dodd Creek (downstream of discharge channel outlet)

Currently, benthic community and density monitoring is occurring at MOE-approved sampling locations within Dodd Creek. Benthic community and density monitoring will be performed at the above locations, as appropriate, on an annual basis, every spring. Benthic samples will be collected and analysed in accordance with industry practice and MOE guidelines. The benthic data will be assessed annually. As part of the assessment, upstream and downstream densities will be compared. A variation of +/- 20% as to the number of organisms and species richness shall be considered an impact (i.e., trigger level). Any benthic impact must result in notification of MOE forthwith and contingency measures will be implemented, as appropriate in consultation with MOE.

SCHEDULE "D"

This Schedule "D" forms part of Provisional Certificate of Approval No. A 051601:

LANDFILL GAS MONITORING PROGRAM

This Schedule, which forms part of the Provisional Certificate of Approval No. A051601 for the Green Lane Landfill, defines the landfill gas (LFG) monitoring program to be implemented during both the operational and post-closure periods associated with the landfill.

I. LANDFILL GAS MONITORING PROGRAM

This section describes the landfill gas monitoring program to be implemented at the landfill during its operational and post-closure periods. This program includes network description, frequency, and parameter monitoring.

1. Landfill Gas Monitoring Well Network

The following locations will form the landfill gas monitoring network during the operational and post-closure period associated with the landfill:
Main Landfill Gas Header of the Landfill Gas Management System Landfill gas monitoring will be performed at the above noted location on an annual basis, every May. The landfill gas will be sampled and analyzed for the following parameters:
Pressure (field measurement) Non-Methane Organic Compounds (NMOCs)
Carbon Dioxide Carbon Monoxide Methane Oxygen

Landfill gas data will be assessed annually and compared to the following trigger level criterion:

- repeated verified odour concerns and complaints being received at the Site from off- Site receptors.

Should the odour-related LFG trigger level be consistently exceeded, contingency activities (i.e., active LFG management system expansion) will be implemented.

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 Certificate of 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 Condition 3 is to clarify the status of this Certificate of Approval as it relates to previous approvals.

4. The reason for Condition 4 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.

5. The reason for Condition 5 is to ensure that the Site is designed, developed, operated,and maintained in accordance with the application and supporting documentation submitted by the Owner. It also makes provision for consultation with the First nation Liaison and Public Liaison Committees, and for documentation on how both bodies were consulted in the preparation and finalization of a new design and Operation Plan.

6. The reason for Conditions 6, 7, 8, 9 and 10 is to clarify the legal rights and responsibilities of the Owner under this Certificate of Approval.

7. The reason for Condition 11 is to ensure that the Site is operated under the name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes, and the FNLC and PLC are notified of changes.

8. The reason for Condition 12 is 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 Certificate of Approval.

9. The reason for Conditions 13, 14, and 15 is to ensure that appropriate Ministry staff have ready access to the Site for inspection and to information with respect to compliance with conditions in this Certificate of Approval. Condition 17 is supplementary to the powers of entry afforded a Provincial Officer pursuant to the EPA and OWRA.

10. The reason for Condition 16 is to specify the approved area from which waste may be accepted at the Site, based on the Owner's application and supporting documentation.

11. The reason for Conditions 17, 18 and 19 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. Condition 18 clarifies that the amount of waste for disposal at the Site may not exceed 1.1 million tonnes in any given year except in the case of emergencies or unanticipated or unforeseen events.

12. The reason for Condition 20 is to continue the current practice for providing local municipalities with waste disposal capacity.

13. The reason for Conditions 21 and 22 is to ensure that there is a person, reporting directly to the Ministry, with associated costs reimbursed by the Owner, who is responsible for inspecting the Site, based on the requirements in this Certificate of Approval to ensure that the Site is operated in an environmentally acceptable manner.

14. The reason for Conditions 23, 24 and 25 is to specify record keeping requirements which are necessary to determine compliance with this Certificate of Approval. Notification of the District Manager of load refusals is required to allow the MOE to consider and take appropriate action in a timely manner under this Certificate, the EPA or its regulations.

15. The reason for Conditions 26 and 27 is to ensure that users of the Site are fully aware of important information and restrictions related to the Site and the Certificate of Approval.

16. The reason for Condition 28 is to specify the hours of operation for the landfill site.

17. The reason for Condition 29 is to ensure the integrity of the Site by preventing unauthorized access when the Site is closed and no site attendant is on duty.

18. The reason for Condition 30 is to ensure that the Site is operated by properly trained staff in a manner which does not result in nuisance or a hazard to the health and safety of the environment or people.

19. The reason for Condition 31 is to encourage diversion of materials from disposal in the landfill site.

20. The reason for Conditions 32 to 40 inclusive is to ensure that landfilling operations are conducted in an environmentally acceptable manner. Daily and intermediate cover is used to control potential nuisance effects, to facilitate vehicle access on the site, and to ensure an acceptable site appearance is maintained. The proper closure of a landfill site requires the application of a final cover which is aesthetically pleasing, controls infiltration, and is suitable for the end use planned for the site.

21. The reason for Conditions 41 to 48 inclusive is to ensure that the Site is operated in an environmentally acceptable manner and does not result in a hazard to the health and safety of the environment or people.

22. The reason for Conditions 49 to 59 is to ensure that the engineered facilities for landfill gas, leachate and surface water control are operated in an environmentally acceptable manner.

23. The reason for Conditions 60 and 61 is to mitigate tree losses and to provide for progressive landscaping as landfilling operations proceed.

24. The reason for Condition 62 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 contingency plan is necessary to ensure protection of the natural environment.

25. The reason for Conditions 63 to 68 inclusive are to ensure consistency with the Notice of Approval under the Environmental Assessment Act and 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 and First Nation communities is important in helping to maintain high standards for site operation and environmental protection.

26. The reason for Condition 69 is to reflect the 1998 EAA Approval condition relating to the use of Middlesex County roads for local traffic.

27. The reason for Condition 70 is to ensure that the Owner provides payments for the maintenance and repair of the Access Road.

28. The reason for Condition 71 is to ensure that there exists a fund to provide compensation for individuals who have suffered an inconvenient occurrence as a result of the landfill site.

29. The reason for Condition 72 is to ensure that a final closure plan for the landfill site is completed in an aesthetically pleasing manner and to ensure the long-term protection of the natural environment, and that the PLC and FNLC receive copies of the plan.

30. The reason for Conditions 73 and 74 is to demonstrate that the landfill 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.

31. The reason for Condition 75 is to require the retention and availability of annual reports.

32. The reason for Condition 76 is 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.

33. The reason for Conditions 77 is to require a report on the long-term financial arrangements for

funding costs associated with closure, post-closure care, and contingency plans.

34. The reason for Conditions 78 to 87 is included in order to ensure that the site is designed and built in accordance with the conceptual design provided and that the construction does not result in adverse impact to the environment.

35. The reason for Condition 88 is required in order 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

36. The reason for Conditions 89 to 91 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.

37. The reason for Conditions 92 to 96 inclusive is to ensure protection of the natural environment and the integrity of the groundwater monitoring network.

38. The reason for Conditions 97 and 98 is to establish procedures for handling complaints, including notification of the Ministry, the FNLC, and PLC. Open communication with the public and local authorities is important in helping to maintain high standards for site operation and environmental protection.

39. The reason for Conditions 99 to 104 is 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 Certificate of Approval, the EPA and its regulations.

40. The reason for Conditions 105 to 107 is 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.

41. The reason for Conditions 108 and 109 is to contain provisions for an updated air quality monitoring quality monitoring program and control measures to deal with air quality which is deemed inadequate.

This Provisional Certificate of Approval revokes and replaces Certificate(s) of Approval No. A051601 issued on September 15, 2006.

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

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

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

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

DATED AT TORONTO this 5th day of July, 2007

Jas O'Mara

James O'Mara
Director
Section 39, *Environmental Protection Act*

NB/

c: District Manager, MOE London - District

APPENDIX

A-2 *AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL NO. A051601, DATED MAY 1, 2009*

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A051601
Notice No. 1
Issue Date: May 1, 2009

City of Toronto
55 John St
Toronto, Ontario
M5V 3C6

Site Location: Green Lane Landfill Site
38593 Third Line
Southwold Township, County of Elgin

You are hereby notified that I have amended Provisional Certificate of Approval No. A051601 issued on July 5, 2007 for for the use and operation of a 71.2 hectare landfilling site within a total site area of 129.7 hectares, being known the Green Lane Landfill , as follows:

The following items are hereby added to Schedule "A":

10. Letter dated November 14, 2008 addressed to Ms. Agatha Garcia-Wright, Ministry of the Environment from Mr. J. Duncan Millar, Conestoga-Rovers & Associates regarding design details for the Landfill Gas System - Horizontal Collection Trench Design and Implementation.

11. Letter dated March 31, 2009 addressed to Mr. J. Duncan Millar, Conestoga-Rovers & Associates from Mr. Rick Li, Ministry of the Environment requesting additional information regarding the horizontal trench design.

12. Letter dated April 9, 2009 addressed to Mr. Rick Li, Ministry of the Environment from Mr. Duncan Millar, Conestoga-Rovers & Associates in response to the Ministry's March 31, 2009 letter.

13. Design drawings for Landfill Gas Management System - Horizontal Collection Trench at the Green Lane Landfill Site:

(1) Drawing No. C-01 entitled "LFG Collection Trench Layout" dated April 2009 prepared by Conestoga-Rovers & Associates.

(2) Drawing No. C-02 entitled "LFG Collection Trench Layout Section A-A" dated April 2009 prepared by Conestoga-Rovers & Associates.

(3) Drawing No. C-03 entitled "LFG Collection Trench Layout Section B-B" dated April 2009 prepared by Conestoga-Rovers & Associates.

(4) Drawing No. C-04 entitled "LFG Collection Trench Details" dated April 2009 prepared by Conestoga-Rovers & Associates.

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

The reason for this amendment is to incorporate design details by reference to Conditions 79 to 82 of this Certificate so that the Schedule "A" list of documents that forms part of this Certificate remains current.

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A051601 dated July 5, 2007

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

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

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

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

DATED AT TORONTO this 1st day of May, 2009

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

RL/

c: District Manager, MOE London - District
J. Duncan Millar, Conestoga-Rovers & Associates

APPENDIX

A-3 *AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL NO. A051601, DATED OCTOBER 19, 2009*

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A051601
Notice No. 2
Issue Date: October 19, 2009

City of Toronto
55 John St 19th Floor, Metro Hall
Toronto, Ontario
M5V 3C6

Site Location: Green Lane Landfill Site
38593 Third Line
Southwold Township, County of Elgin, Ontario

You are hereby notified that I have amended Provisional Certificate of Approval No. A051601 issued on July 5, 2007 for the use and operation of a 71.2 hectare landfilling site within a total site area of 129.7 hectares , as follows:

The following item is added to the list of definitions:

"Road Authority" means the County of Elgin as the same may be amended from time to time;

Condition 8(a) created on July 5, 2007 is hereby revoked and replaced with the following:

8(a) relieve any person of any obligations to comply with the provisions of the EPA or any other applicable statute, regulation or other legal requirement, including any agreement entered into between the Owner and Operator, any municipality, the Ministry, the PLC, the FNLC and any members thereof; or

Condition 64 created on July 5, 2007 is hereby revoked and replaced with the following:

64. The Owner shall provide for the administrative costs of operating the PLC, including the cost of the meeting places, clerical services including advertisement and meetings, services of an independent chair and secretary retained by the PLC and, as appropriate, the costs of consultants to conduct peer reviews and in respect of new Major Works. These costs may be paid by the Green Lane Community Trust Fund, as outlined in the Host Community Agreement dated April 2, 2007 between the Owner and the Corporation of the Township of Southwold.

Condition 66 created on July 5, 2007 is hereby revoked and replaced with the following:

The PLC and its consultants shall have reasonable access to the Site and its landfill related facilities for the purpose of carrying out its objective and mandate. The PLC shall be provided with any reports or amendments thereto prepared by or for the Owner related to the Site operations, Major Works, or as identified in Schedules "A", "B", "C", and "D". The frequency of access to the Site and any safety and personnel security terms and conditions relating to access shall be determined by consultation between the PLC and the Owner. In the event of an unresolvable dispute regarding Site access, the PLC or the Owner shall report the failure to resolve the dispute to the District Manager within seven (7) days of the dispute.

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

1. *Road Authority has been added to the list of definitions in order to reflect that access road payments were in the past and are currently being made to County of Elgin.*

2. *Condition 8(a) has been amended in order to clarify the legal obligations of the Owner in collateral contracts affecting the Landfill or the landfill or the Site are not modified by the Certificate. The extension of the recognition to municipalities, the PLC and the FNLC is required to the extent that agreements exist or may exist with those entities, or any of them.*

3. *The reason for the amendment to Condition 64 is to reflect the updated Host Community Agreement entered into between the City of Toronto and the Township of Southwold dated April 2, 2007.*

4. *Condition 66 has been amended so that the District Manager is aware of any disputes regarding site access for the PLC.*

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A051601 dated July 5, 2007

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

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

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;

7. The name of the Director;
8. The municipality within which the waste disposal site is located;

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

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, 15th Floor Toronto, Ontario M5G 1E5	AND	The Director Section 39, *Environmental Protection Act* Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5

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

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

DATED AT TORONTO this 19th day of October, 2009

Tes Gebrezghi

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

GW/

c: District Manager, MOE London - District
Steve Whitter, Director, New Infrastructure Development & Contracted Services, City of Toronto
George South, City of Toronto
Anne Hiscock, Environmental Manager, Green Lane Landfill, City of Toronto
Green Lane Landfill First Nations Liaison Committee
Green Lane Landfill Public Liaison Committee
Chief of Oneida First Nation
Chief of Chippewas of Thames First Nation
Chief of Muncey Delaware First Nation

APPENDIX

A-4 *AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL NO. A051601, DATED NOVEMBER 13, 2009*

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A051601
Notice No. 3
Issue Date: November 13, 2009

City of Toronto
55 John St
Toronto, Ontario
M5V 3C6

Site Location: Green Lane Landfill Site
Lot 21, 22 & 23, Concession 3
Southwold Township, County of Elgin
N5P 3T2

You are hereby notified that I have amended Provisional Certificate of Approval No. A051601 issued on July 5, 2007 for the use an operation of a 71.2 hectare landfilling site within a total site area of 129.7 hectares , as follows:

Condition 108 created on July 5, 2007 is hereby revoked and replaced with the following condition:

108. The Owner shall undertake air quality and particulate monitoring in accordance with item 10 of schedule "A".

Item 10 is added to schedule "A" as follows

10. Report entitled "*Air Quality Monitoring Program* " prepared by Conestoga-Rovers and Associates dated December 2006.

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

To ensure that a comprehensive air quality and particulate monitoring program is in effect for the site thus ensuring protection of the environment.

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A051601 dated July 5, 2007 as amended.

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

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

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

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

DATED AT TORONTO this 13th day of November, 2009

Tes Gebrezghi

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

GW/

c: District Manager, MOE London - District
J. Duncan Millar, P. Eng., Conestoga -Rovers & Associates
Dave Thompson, MOE, London District
Dr. Gerald Diamond, MOE, Technical Support, Southwestern Region

APPENDIX

A-5 *AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL NO. A051601, DATED DECEMBER 9, 2010*

Ministry of the Environment
Ministère de l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A051601
Notice No. 4
Issue Date: December 9, 2010

City of Toronto
55 John St
Toronto, Ontario
M5V 3C6

Site Location: Green Lane Landfill Site
38593 Third Line
Southwold Township, County of Elgin

You are hereby notified that I have amended Provisional Certificate of Approval No. A051601 issued on July 5, 2007 and subsequently amended on May 1, 2009, October 19, 2009 and November 13, 2009 for the use an operation of a 71.2 hectare landfilling site within a total site area of 129.7 hectares, as follows:

Condition 24 (a) is hereby added to the Certificate of Approval as follows:

24(a) Notwithstanding condition 24, for incoming waste from the Owner's waste transfer stations, the weigh scale data generated at and electronically accessible from the Owner's transfer stations my be utilized; provided the weigh scales at the Site and the Owner's transfer stations continue to operate under integrated software programs.

The following items are added to Schedule "A":

14. Application for a Provisional Certificate of Approval for a Waste Disposal Site for the Green Lane Landfill, signed and dated September 9, 2010.

15. Letter dated September 9, 2010 and Attachment A from E. Anne Hiscock, Environmental Manager, Green Lane Landfill, City of Toronto to Ms. Doris Dumais, Director-Approvals Program, Environmental Assessment and Approvals Branch, Ministry of the Environment.

16. Document entitled "Additional Public Consultation Summary" from Anne Hiscock, Environmental Manager, Green Lane Landfill, City of Toronto.

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

To ease the flow of on-site traffic, effectively mitigate any potential for traffic congestion near the site entrance and internal roads and to optimize on-site management of the city's transfer station wastes.

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A051601 dated July 5, 2007 as amended.

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

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

The Notice should also include:

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

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

This Notice must be served upon:

The Secretary*	AND	The Director
Environmental Review Tribunal		Section 39, *Environmental Protection Act*
655 Bay Street, 15th Floor		Ministry of the Environment
Toronto, Ontario		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 waste disposal site is approved under Section 39 of the Environmental Protection Act.

DATED AT TORONTO this 9th day of December, 2010

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

GW/
c: District Manager, MOE London - District
E. Anne Hiscock, City of Toronto
George South, City of Toronto
Sybil Kyba, MOE, London District
Joanne Beaton, Secretary, Green Lane Landfill Public Liaison Committee
Donna Ethier, CAO/Clerk/Deputy Treasurer, Township of Southwold
Councillor C. Darlene Whitecalf, Chippewas of the Thames First Nation
Chief Patrick Waddilove, Munsee-Delaware First Nation
Councillor Clinton M. Cornelius, Oneida Nation of the Thames

APPENDIX

A-6 *AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL NO. A051601, DATED MARCH 10, 2011*

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A051601
Notice No. 5
Issue Date: March 10, 2011

City of Toronto
55 John St 20th Floor
Toronto, Ontario
M5V 3C6

Site Location: Green Lane Landfill Site
38593 Third Line
Southwold Township, County of Elgin, Ontario

You are hereby notified that I have amended Provisional Certificate of Approval No. A051601 issued on July 5, 2007 and subsequently amended on May 1, 2009, October 19, 2009, November 13, 2009 and December 9, 2010 for the use an operation of a 71.2 hectare landfilling site within a total site area of 129.7 hectares , as follows:

A. Approval is hereby given to construct the landfill gas collection system and leachate forcemain in accordance with items 17 to 33 inclusive on Schedule "A".

The following items are added to Schedule "A":

17. Letter dated August 27, 2010 from Joe Rothfischer P. Eng., Conestoga Rovers & Associates to Doris Dumais, Director, Approvals Program, Environmental Assessment and Approvals Branch, Ministry of the Environment.

18. Letter dated December 9, 2010 from Greg Washuta, Senior Waste Engineer, Waste Unit, Environmental Assessment and Approvals Branch, Ministry of the Environment to Anne Hiscock, City of Toronto.

19. Letter dated January 10, 2011 from Joe Rothfischer P. Eng., Conestoga Rovers & Associates to Greg Washuta, Senior Waste Engineer, Waste Unit, Environmental Assessment and Approvals Branch, Ministry of the Environment.

20. Drawing Number C-03A entitled "Landfill Gas Collection Header STA. 0+000 TO 0+300 (2004)", created by Conestoga-Rovers & Associates, signed, dated and stamped on February 11, 2011.

21. Drawing Number C-03B entitled "Landfill Gas Collection Header STA. 0+300 TO 0+600 (2005)", created by Conestoga-Rovers & Associates, signed, dated and stamped on February 11, 2011.

22. Drawing Number C-03C entitled "Landfill Gas Collection Header STA. 0+600 TO 0+900 (2006)", created by Conestoga-Rovers & Associates, signed, dated and stamped on February 11, 2011.

23. Drawing Number C-03D entitled "Landfill Gas Collection Header STA. 0+900 TO 1+200 (2011)", created by Conestoga-Rovers & Associates, signed, dated and stamped on February 11, 2011.

24. Drawing Number C-03E entitled "Landfill Gas Collection Header STA. 1+200 TO 1+488 (2011)", created by Conestoga-Rovers & Associates, signed, dated and stamped on February 11, 2011.

25. Drawing Number C-04A entitled "Landfill Gas Collection Header STA. 0+000 TO 0+300 (2011)", created by Conestoga-Rovers & Associates, signed, dated and stamped on February 11, 2011.

26. Drawing Number C-04B entitled "Landfill Gas Collection Header STA. 0+300 TO 0+600 (2011)", created by Conestoga-Rovers & Associates, signed, dated and stamped on February 11, 2011.

27. Drawing Number C-04C entitled "Landfill Gas Collection Header STA. 0+600 TO 0+900 (2011)", created by Conestoga-Rovers & Associates, signed, dated and stamped on February 11, 2011.

28. Drawing Number C-04D entitled "Landfill Gas Collection Header STA. 0+900 TO 1+193.4 (2011)", created by Conestoga-Rovers & Associates, signed, dated and stamped on February 11, 2011.

29. Drawing Number C-05A entitled "Leachate Forcemain STA. 0+000 TO 0+300 (2011)", created by Conestoga-Rovers & Associates, signed, dated and stamped on February 11, 2011.

30. Drawing Number C-05B entitled "Leachate Forcemain STA. 0+300 TO 0+600 (2011)", created by Conestoga-Rovers & Associates, signed, dated and stamped on February 11, 2011.

31. Drawing Number C-05C entitled "Leachate Forcemain STA. 0+600 TO 0+900 (2011)", created by Conestoga-Rovers & Associates, signed, dated and stamped on February 11, 2011.

32. Drawing Number C-07 entitled "Collection Field Details", created by Conestoga-Rovers & Associates, signed, dated and stamped on February 11, 2011.

33. Drawing Number P17 entitled "Manhole and Lift Station Details", created by Conestoga-Rovers & Associates, signed, dated and stamped on February 11, 2011.

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

- *To ensure that the landfill gas collection system and the leachate forcemain is constructed in accordance with the documentation submitted and not in a manner that the Director has not been asked to consider.*

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A051601 dated July 5, 2007 as amended.

In accordance with Section 139 of the <u>Environmental Protection Act</u>, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the <u>Environmental Protection Act</u>, 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 <u>each</u> portion appealed.

The Notice should also include:

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

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

This Notice must be served upon:

The Secretary***** Environmental Review Tribunal 655 Bay Street, 15th Floor Toronto, Ontario M5G 1E5	<u>AND</u>	The Director Section 39, *Environmental Protection Act* Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5

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

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

DATED AT TORONTO this 10th day of March, 2011

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

GW/
c: District Manager, MOE London - District (Kanina Blanchard)

Joe Rothfischer P. Eng., Conestoga Rovers & Associates
Anne Hiscock, City of Toronto
Sybil Kyba, MOE, London District
Joanne Beaton, Secretary, Green Lane Landfill Public Liaison Committee
Donna Ethier, CAO/Clerk/Deputy Treasurer, Township of Southwold
Councillor C. Darlene Whitecalf, Chippewas of the Thames First Nation
Chief Patrick Waddilove, Munsee-Delaware First Nation
Councillor Clinton M. Cornelius, Oneida Nation of the Thames

APPENDIX

A-7 *AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL NO. 0685-92VMQX, DATED JANUARY 17, 2013*

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 0685-92VMQX
Issue Date: January 17, 2013

City of Toronto
38593 Third Line
Rural Route, No. 7
St. Thomas, Ontario
N5P 3T2

Site Location: Green Lane Landfill Site
38593 Third Line
Southwold Township, County of Elgin

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:

Sewage works for the collection, transmission, treatment and disposal of landfill leachate, industrial wastewater, and stormwater from the Green Lane Landfill Site consisting of the following:

PROPOSED WORKS:

LANDFILL SERVICE AREA STORMWATER MANAGEMENT SYSTEM

Establishment of a stormwater management facility to service the upgraded Landfill Service Area designed to provide quantity control of stormwater run-off from the total drainage area of 4.74 ha for storm events up to 1:100 year return frequency, consisting of the following facilities:

- one (1) 40 m long 300 mm diameter storm sewer extending from CBMH14 to CBMH18 flowing by gravity to SWM Pond #7 described below;
- one (1) dry detention stormwater pond (**SWM Pond #7**) providing a total storage capacity of 5,780 m^3 and having a maximum depth of 2.0 m, discharging through an outlet structure to a stormwater pumping station described below;
- one (1) 2,400 mm diameter precast pumping station equipped with two (2) 37.86 L/sec @ 10.5 m TDH rated capacity stormwater pumps (one duty, one standby) and one (1) 30 m long

150 mm diameter forcemain discharging to an existing perimeter stormwater ditch located on the west side of the site; and

- including all controls and associated appurtenances.

All in accordance with the documentation listed in Schedule 'A'.

***PREVIOUS WORKS APPROVED ON* OCTOBER 22, 2010 (CofA #*1131-88TK3K*):**

LEACHATE COLLECTION AND TREATMENT SYSTEM

Expansion of the existing sewage works for the collection, transmission, treatment and disposal of landfill leachate from an existing *Rated Capacity* of 131 m^3/day to a *Rated Capacity* of 300 m^3/day consisting of the following:

Leachate Collection System

- approximately 560 m long 150 mm diameter perforated leachate collection PVC pipes constructed to service the Original Landfill Area, extending through three (3) 1500 mm diameter service manholes, discharging by gravity to pumping station manhole MH29 described below;

- approximately 600 m long 200 mm diameter perforated perimeter leachate collection HDPE pipes constructed to service the Interim Expansion Area of the landfill, extending through seven (7) 1500 mm diameter service manholes, discharging by gravity to pumping station MH11 and pumped to a 50,000 L leachate storage tank for treatment at the leachate treatment plant described below;

- approximately 290 m long 200 mm diameter perforated perimeter leachate collection HDPE pipes to be constructed to service the Long-Term Expansion Area of the landfill, extending through three (3) 1500 mm diameter service manholes, discharging by gravity to pumping station manhole MH19 described below;

- approximately 504 m long 200 mm diameter perforated perimeter leachate collection HDPE pipes to be constructed to service the south section of the West Optimization Area of the landfill, extending through six (6) 1500 mm diameter service manholes, discharging by gravity to pumping station manhole MH23 described below;

- approximately 492 m long 200 mm diameter perforated perimeter leachate collection HDPE pipes to be constructed to service the north section of the West Optimization Area of the landfill, extending through six (6) 1500 mm diameter service manholes, discharging by gravity to pumping station manhole MH29 described below;

- approximately 414 m long 200 mm diameter perforated perimeter leachate collection HDPE pipes to be constructed to service the south section of the East Optimization Area of the landfill, extending through five (5) 1500 mm diameter service manholes, discharging by gravity to pumping station manhole MH36 described below;

- approximately 403 m long 200 mm diameter perforated perimeter leachate collection HDPE pipes to be constructed to service the north section of the East Optimization Area of the landfill, extending through five (5) 1500 mm diameter service manholes, discharging by gravity to pumping station manhole MH42 described below;

- one (1) pumping station MH11 located at the Interim Expansion Area of the landfill Site consisting of one (1) 1500 mm diameter precast concrete manhole equipped with one (1) submersible leachate pump rated at 11.37 L/sec @ 13.7 m TDH, discharging through a 75 mm diameter forcemain to a 50,000 L leachate storage tank for treatment at the leachate treatment plant described below;

- one (1) pumping station MH19 located in the Long-Term Expansion Area of the landfill consisting of one (1) 1500 mm diameter precast concrete manhole equipped with one (1) submersible leachate pump rated at 6.44 L/sec @ 23.8 m TDH, discharging through a 75 mm diameter forcemain to manhole MH18 and then flowing by gravity to pumping station MH11 from where it is pumped to a 50,000 L leachate storage tank for treatment at the leachate treatment plant described below;

- one (1) pumping station MH23 located in the south section of West Optimization Area of the landfill consisting of one (1) 1500 mm diameter precast concrete manhole equipped with one (1) submersible leachate pump rated at 3.79 L/sec @ 31.4 m TDH, discharging through a 75 mm diameter forcemain to manhole MH18 and then flowing by gravity to pumping station MH11 from where it is pumped to a 50,000 L leachate storage tank for treatment at the leachate treatment plant described below;

- one (1) pumping station MH29 located in the north section of West Optimization Area of the landfill consisting of one (1) 1500 mm diameter precast concrete manhole equipped with one (1) submersible leachate pump rated at 4.09 L/sec @ 30.5 m TDH, discharging through a 75 mm diameter forcemain to a 50,000 L leachate storage tank for treatment at the leachate treatment plant described below;

- one (1) pumping station MH36 located in the south section of East Optimization Area of the landfill consisting of one (1) 1500 mm diameter precast concrete manhole equipped with one (1) submersible leachate pump rated at 5.38 L/sec @ 25.9 m TDH, discharging through a 75 mm diameter forcemain to manhole MH15 and then flowing by gravity to pumping station MH11 from where it is pumped to a 50,000 L leachate storage tank for treatment at the leachate treatment plant described below;

- one (1) pumping station MH42 located in the north section of East Optimization Area of the landfill consisting of one (1) 1500 mm diameter precast concrete manhole equipped with one (1) submersible leachate pump rated at 5.68 L/sec @ 24.4 m TDH, discharging through a 75 mm diameter forcemain to pumping station MH11 from where it is pumped to a 50,000 L leachate storage tank for treatment at the leachate treatment plant described below;

- including all controls and associated appurtenances.

Primary Treatment System

- one (1) 1.52 m diameter **pre-aeration column** with a total effective volume of 11 m^3 equipped with chemical addition lines, discharging to a flash mixing tank described below;

- one 1.0 m^3 **flash mixing tank** equipped with a 0.2 kilowatt mechanical mixer equipped with chemical addition lines, discharging to a flocculation tank described below;

- one (1) 1.52 m diameter **flocculation tank** with a total effective volume of 3.0 m^3, equipped with a 0.2 kilowatt mechanical flocculator/auger and chemical addition lines, discharging to a primary clarifier described below;

- one (1) 21 m^3 capacity **primary clarifier** with approximate dimensions of 3.05 m diameter and 2.9 m SWD discharging to an anoxic tank described below, equipped with four (4) 5 hp primary sludge pumps each with a rated capacity of 2.3 L/sec (two duty, two standby) discharging to an aerobic digester described below;

Secondary Treatment System

- two (2) parallel biological treatment trains each consisting of the following:

    - one (1) **anoxic tank** with a total effective volume of 85.0 m^3 and approximate dimensions of 3.0 m wide x 6.15 m long x 4.6 m SWD, equipped with a submersible mixer with a power rating of 1.7 kW and two (2) 8.7 L/sec capacity internal recirculation pumps, discharging to an aeration tank described below;

    - one (1) **aeration tank** with a total volume of 255 m^3 and approximate dimensions of 3.05 m wide x 18.3 m long x 4.6 m SWD, equipped with coarse bubble air diffusers, including recycle line and 2 re-circulation pumps to an anoxic tank, discharging to a secondary clarifier described below;

- one (1) 105 m^3 storage capacity 6.1 m diameter circular **secondary clarifier** with 3.6 m SWD, equipped with a sludge collection, scum removal mechanism, scum pumps, and two (2) 3.21 L/sec capacity return activated sludge pumps, discharging to an ozone contact tank with a bypass connection to a sand filter;

Tertiary Treatment System

- one (1) ozonation treatment system with discharge directed to an effluent filter, consisting of the following:

- < one (1) 0.3 kW **oxygen generator** with a rated capacity of 25.5 L/min of oxygen;
- < one (1) 8.4 kW **ozone generator** with a rated capacity of 10.08 kg/day of ozone;
- < one (1) 1.524 m diameter **ozone contactor tank** with a total effective volume of 10.5 m^3;
- < one (1) 0.102 m diameter x 0.559 m high **excess ozone destruction tank**;

- two (2) dual media effluent **sand filters** operating in parallel, each equipped with a dual media bed having a total filter area of 1.86 m^2, a media depth of 0.91 m, and effective sand size between 0.45 to 0.55 m, equipped with a 11.4 m^3 clear well, two (2) centrifugal backwash pumps each rated at 14.5 L/sec and two (2) centrifugal effluent pumps each rated at 3.5 L/sec, discharging through a realigned 75 mm diameter forcemain to **SWM Pond #5b** described below;

Sludge Management System

- one (1) 32.4 m^3 capacity gravity waste activated **sludge thickener** with approximate dimension of 4.11 m diameter and 2.44 m SWD to be used for concentrating waste activated sludge prior to aerobic digestion;

- one (1) 2-stage **aerobic sludge digester** with a total effective volume of 336.2 m^3 consisting of 139.8 m^3 capacity Tank No.1 (3.04 m wide x 10 m long x 4.6 m SWD), 68.5 m^3 capacity Tank No. 2 (3.04 m wide x 4.9 m long x 4.6 m SWD), 42.5 m^3 capacity Tank No. 3 (3.04 m wide x 3.04 m long x 4.6 m SWD), and 85.4 m^3 capacity Tank No. 4 (3.04 m wide x 6.15 m long x 4.6 m SWD), equipped with a diffused aeration system;

- one (1) 200 kg/hr solids processing capacity **screw press** with approximate dimensions of 6 m long x 1.5 m wide, designed to produce a cake with 20 to 25 percent solids concentration from a sludge with a concentration of 1.5% to 2.0 % dry suspended solids, equipped with sludge dewatering feed pump and a polymer storage tank, disposing dewatered sludge in an approved manner;

Air Blowers

- two (2) 40 hp **air blowers** (one duty, one standby) each having a capacity of 20.7 m^3/min;

- two (2) 75 hp **air blowers** (one duty, one standby) each having a capacity of 32.4 m^3/min;

Chemical Feed System

- one (1) 11 m^3 capacity **methanol storage tank** equipped with one (1) 0.5 L/min maximum capacity feed pump;

- one (1) 3.78 m^3 capacity s**ulphuric acid storage tank** equipped with one (1) 0.505 L/min maximum capacity feed pump;

- one (1) 0.57 m^3 capacity **polymer day storage tank** equipped with one (1) 0.14 L/min maximum capacity feed pump;

- two (2) 1.55 m^3 capacity **alum storage tanks**, each equipped with one (1) 0.22 L/min maximum capacity feed pump;

- one (1) 7.6 m^3 capacity **sodium hydroxide storage tank** equipped with two (2) 0.5 L/min maximum capacity feed pump;

- one (1) 1.89 m^3 capacity **phosphoric acid storage tank** equipped with two (2) 0.25 L/min maximum capacity feed pump;

Supplementary Treatment System

- one (1) **artificial wetland** consisting of the following:

    < a wetland pond encompassing approximately 1.7 ha and containing pools with submerged vegetation as well as emergent hydrophytes in wet meadow and emergent conditions, discharging into the stream corridor;

    < a stream corridor having a base flow channel, a wider storm flow channel and a flood plain to handle flows in excess of the storm channel, planted with appropriate vegetation, including trees, with the flood plain portion of the corridor maintained as a meadow, discharging to Dodd Creek;

- all other controls, electrical equipment, instrumentation, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage works;

Stormwater Pumping Station

one (1) stormwater pumping station located northwest of SWM Pond #3 consisting of one (1) 2,400 mm diameter precast concrete wet well equipped with two (2) submersible pumps (one duty, one standby) each with a rated capacity of 37.86 L/sec at 39.9 m TDH, liquid level float controls with alarm system, discharging through approximately 933 m long 150 mm diameter forcemain to a SWM Pond #6 described below and eventually to Dodd Creek described below; and

- including all controls and associated appurtenances.

All in accordance with the documentation listed in Schedule 'A'.

SEWAGE WORKS APPROVED ON JANUARY 16, 2007 (CofA # 6602-6H5RBF):

Upgrade and expansion of the existing stormwater management facility to service the expanded Green Lane Landfill Site designed to attenuate stormwater run-off from the total drainage area of 104.5 ha below the pre-development levels during storm events up to 1:100 year return frequency, consisting of the following facilities:

STORMWATER MANAGEMENT FACILITY

Stormwater Management Facility - SWM Pond #1

- one (1) approximately 1590 m long perimeter ditch extending from south of the leachate treatment plant to the inlet structure of SWM Pond #1 having a minimum depth of 1.0 m, a minimum base width of 0.5 m, and 3H:1V side slopes, discharging to the inlet structure of SWM Pond #1 described below;

- one (1) inlet structure consisting of two (2) 1600 mm diameter culverts and a rip rap apron;

- one (1) forebay approximately 45 m long and 2.0 m deep equipped with a rip-rap outlet berm;

- one (1) extended detention wet pond (SWM Pond #1) serving a total drainage area of 45.74 ha, located at the southwest corner of the site, having a permanent pool depth of 1.75 m and permanent storage capacity of 55,932 m^3 and an active storage depth of 0.75 m and active storage capacity of 27,147 m^3 (total storage capacity of 83,079 m^3), equipped with an outlet structure consisting of a rip rap berm and a 600 mm diameter culvert, discharging through a ditch to SWM Pond #2 described below; and

- including all controls and associated appurtenances.

Stormwater Management Facility - SWM Pond #2

- one (1) approximately 185 m long perimeter ditch extending from the outlet structure of SWM Pond #1 to the inlet structure of SWM Pond #2 having a minimum depth of 1.0 m, minimum base width of 0.5 m, and 3H:1V side slopes, receiving stormwater run-off through two (2) 375 mm diameter culverts and five (5) 525 mm diameter culverts, discharging to SWM Pond #2 described below;

- one (1) inlet structure consisting of one (1) 675 mm diameter culvert and a rip rap apron;

- one (1) extended detention wet pond (SWM Pond #2) serving an additional total drainage area of 18.65 ha, located at the southeast part of the site, having a permanent pool depth of 1.25 m and permanent storage capacity of 2,115 m^3 and an active storage depth of 1.25 m and active storage capacity of 15,021 m^3 (total storage capacity of 17,136 m^3), equipped with an outlet structure consisting of a 39 m long 675 mm diameter culvert, discharging to SWM Pond #3 described below; and

- including all controls and associated appurtenances.

Stormwater Management Facility - SWM Ponds #5a and #5b

- one (1) approximately 91 m long perimeter ditch extending from the inlet of SWM Pond #5a to the outlet of SWM Pond #5b having a minimum depth of 1.0 m, minimum base width of 0.5 m, and 3H:1V side slopes, receiving stormwater run-off through three (3) 525 mm diameter culverts, discharging to SWM Ponds #5a and #5b described below;

- two (2) extended detention wet ponds (SWM Pond #5a and #5b) serving a total drainage area of 9.0 ha, located at the northeast part of the site, having a total permanent storage capacity of 1,381 m^3 and a total active storage capacity of 3,522 m^3 (total storage capacity of 4,903 m^3), SWM Pond #5b equipped with outlet structure consisting of a rip rap berm and a 300 mm diameter PVC pipe fitted with 125 mm diameter orifice plate discharging through a stormwater swale to SWM Pond #5a which also discharges through a stormwater swale to SWM Pond #4 described below; and

- including all controls and associated appurtenances.

Stormwater Management Facility - SWM Pond #4

- one (1) approximately 100 m long perimeter ditch extending from the inlet of SWM Pond #4 to the outlet of SWM Pond #5a having a minimum depth of 1.0 m, minimum base width of 0.5 m, and 3H:1V side slopes, receiving stormwater run-off through three (3) 450 mm diameter culverts, discharging to SWM Pond #4 described below;

- one (1) inlet structure consisting of one (1) 300 mm diameter PVC pipe equipped with 125 mm diameter orifice plate connecting SWM Pond #5a to SWM Pond #4;

- one (1) extended detention wet pond (SWM Pond #4) serving an additional total drainage area of 7.5 ha, located at the eastern part of the site, having a permanent pool depth of 1.5 m and permanent storage capacity of 3,997 m^3 and an active storage depth of 1.5 m and active storage capacity of 8,313 m^3 (total storage capacity of 12,310 m^3), discharging through a 300 mm diameter PVC pipe to SWM Pond #3 described below; and

- including all controls and associated appurtenances.

Stormwater Management Facility - SWM Pond #3

- one (1) inlet structure consisting of one (1) 675 mm diameter culvert connecting SWM Pond #2 to SWM Pond #3 and one (1) inlet structure consisting of one (1) 300 mm diameter PVC pipe and a berm connecting SWM Pond #4 to SWM Pond #3;

- one (1) extended detention wet pond (SWM Pond #3) serving an additional total drainage area of 8.19 ha, located at the eastern part of the site, having a permanent pool depth of 0.5 m and permanent storage capacity of 1,846 m^3 and an active storage depth of 2.0 m and active storage capacity of 12,503 m^3 (total storage capacity of 14,349 m^3), connected through a 300 mm diameter pipe to an existing Stormwater Pumping Station described above; and

- including all controls and associated appurtenances.

Stormwater Management Facility - SWM Pond #6

- one (1) approximately 769 m long perimeter ditch extending around the northern part of the site having a minimum depth of 1.0 m, minimum base width of 0.5 m, and 3H:1V side slopes, discharging to the inlet structure of SWM Pond #6 described below;

- one (1) inlet structure consisting of two (2) 900 mm diameter culverts and a rip rap apron;

- one (1) forebay approximately 42 m long and 2.0 m deep equipped with rip-rap outlet berm;

- one (1) extended detention wet pond (SWM Pond #6) serving an additional drainage area of 14.15 ha, located at the northeast corner of the site, having a permanent pool depth of 1.75 m and permanent storage capacity of 13,135 m^3 and an active storage depth of 1.25 m and active storage capacity of 14,909 m^3 (total storage capacity of 28,044 m^3), equipped with an outlet structure consisting of a 90 m long 300 mm diameter culvert, discharging to an existing **Polishing Pond**, which discharges to Dodd Creek; and

- including all controls and associated appurtenances.

All in accordance with the documentation listed in Schedule 'A'.

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

"*Approval*" means this entire document and any schedules attached to it, and the application;

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

"*Director*" means a person appointed by the Minister pursuant to section 5 of the *EPA* for the purposes of Part II.1 of the *EPA*.

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

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

"*Ministry"* means the ministry of the government of Ontario responsible for the *EPA* and *OWRA* and includes all officials, employees or other persons acting on its behalf;

"*Owner* " means City of Toronto and its successors and assignees; and

"Previous Works" means those portions of the sewage works previously constructed and approved under an *Approval* ;

"*Proposed Works* " means the sewage works described in the *Owner's* application, this *Approval* , and to the extent approved by this *Approval* ;

"*Works* " means the sewage works described in the *Owner's* application and this *Approval* and includes both *Previous Works* and *Proposed Works* ;

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

TERMS AND CONDITIONS

PART I - GENERAL

1. GENERAL PROVISIONS

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

(2) Except as otherwise provided by these conditions, the *Owner* shall design, build, install, operate and maintain the *Works* in accordance with the description given in this *Approval,* and the application for approval of the Works.

(3) Where there is a conflict between a provision of any submitted document referred to in this *Approval* and the conditions of this *Approval,* the conditions in this *Approval* shall take precedence, and where there is a conflict between the listed submitted documents in the schedule, the document bearing the most recent date shall prevail.

(4) Where there is a conflict between the documents listed in the Schedule and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

(5) The 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.

2. EXPIRY OF APPROVAL

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

3. CHANGE OF OWNER

(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;*
(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;*

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

PART II - LEACHATE COLLECTION AND TREATMENT SYSTEM

4. OPERATION AND MAINTENANCE

(1) The *Owner* shall ensure that at all times, the *Works* and related equipment and appurtenances which are installed or used to achieve compliance with this *Approval* are properly operated and maintained.

(2) In furtherance of, but without limiting the generality of, the obligation imposed by subsection (1) the *Owner* shall ensure that:

(a) funding, staffing, training of staff, laboratory and process controls, quality assurance and quality control procedures of or in relation to the *Works* are adequate to achieve compliance with this *Approval* ; and,

(b) equipment and material are kept on hand and in good repair for immediate use in the event of:

(i) upset;
(ii) bypass;
(iii) abnormal loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment or interior of any building; or,
(iv) spill within the meaning of Part X of the *Environmental Protection Act* ,and staff are trained in the use of said equipment and material and in the methods and procedures to be employed upon the occurrence of such an event.

5. <u>OPERATIONS MANUAL</u>

(1) In furtherance of, but without limiting the generality of the obligation imposed by Condition 1, the *Owner* shall prepare a draft operations manual prior to the commencement of operation of the *Works* and shall revise and implement said operations manual within 3 months of the commencement of operation of the *Works* .
(2) The *Owner* shall ensure that both the draft and revised manuals include as a minimum:

(a) operating procedures for routine operation of the *Works* ;
(b) inspection programs, including frequency of inspection, for the *Works* and the methods or tests employed to detect when maintenance is necessary;
(c) repair and maintenance programs, including the frequency of repair and maintenance, for the *Works* ;
(d) any other plans and procedures which are necessary because of the special nature of the facilities served by the *Works* , the materials used in those facilities or in the *Works* , the *Works* itself or the location thereof;
(e) complaint procedures for receiving and responding to public complaints, including a reporting system which records what steps the *Owner* took to determine the cause of the complaint and what corrective measures were taken to alleviate the cause and prevent its recurrence;
(f) contingency plans and procedures setting out how equipment breakdowns in the *Works* , upsets, abnormal losses of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment or interior of any building and spills within the meaning of Part X of the *Environmental Protection Act* will be dealt with to prevent or minimize gas or odour emissions or sewage or other contaminant discharges, or any of them, into the natural environment, including:

(i) a list of equipment, material and personnel that will be available at the *Works* or will be called to the *Works* to deal with the situations noted above;
(ii) a description of methods and procedures to be employed in dealing with the situations noted above including restrictions on production to reduce sewage

flows; and,

(iii) the procedures to be used to notify the *Ministry* and, where relevant, municipal authorities forthwith, of the situation being encountered as well as the measures being taken and proposed to deal with it;

(g) contingency plans and procedures for dealing with potential bypass situations.

(3) The *Owner* shall maintain the operations manual, as revised from time to time, at the location of the *Works* for so long as it is in operation, and shall make it available for inspection and copying by *Ministry* employees upon request.

(4) The *Owner* shall keep the operations manual up to date through revisions undertaken from time to time, so as to reflect any changes in described operation and maintenance procedures for the *Works* or any newly introduced operation and maintenance procedures made necessary by good engineering practice, this *Approval* or the requirements of the *Ministry* .

6. EFFLUENT OBJECTIVES

(1) The *Owner* shall use best efforts to design, construct and operate the *Works* with the objective that the concentrations of the materials named in Table 1 as effluent parameters are not exceeded in the effluent from the *Works* .

Table 1
EFFLUENT OBJECTIVES

Column 1	Column 2
Effluent Parameters	Effluent Concentration (milligrams per litre unless otherwise indicated)
$CBOD_5$ (a)	5
$CBOD_5$ (b)	10
Total Suspended Solids (a)	5
Total Suspended Solids (b)	10
Total Ammonia Nitrogen (a)	2
Total Ammonia Nitrogen (b)	4
Total Phosphorus	0.3
Phenols (4AAP)	0.005
Color	100 Pt-Co Units
E. Coli	100/100 millilitres

Where: (a) when Dodd Creek is greater then 5 C
(b) when Dodd Creek is less than or equal to 5 C

(2) The *Owner* shall include in all reports submitted in accordance with Condition 13 a summary of the efforts made and results achieved under this Condition..

7. EFFLUENT LIMITS

(1) The *Owner* shall design, construct and operate the *Works* such that the concentrations of the materials named in Table 2 as effluent parameters are not exceeded in the effluent from the *Works* , calculated in accordance with subsection (2).

Table 2 - EFFLUENT LIMITS	
Column 1	Column 2
Effluent Parameters	Effluent Concentration (milligrams per litre unless otherwise indicated)
$CBOD_5$ (a)	10
$CBOD_5$ (b)	15
Total Suspended Solids (a)	10
Total Suspended Solids (b)	15
Total Ammonia Nitrogen (a)	3
Total Ammonia Nitrogen (b)	5
Total Phosphorus	0.5
Dissolved Oxygen (a)	4
Dissolved Oxygen (b)	5
pH	7.0 to 8.5
Color	250 Pt-Co Units
E. Coli	150/100 millilitres
Where: (a) when Dodd Creek is greater then 5 C (b) when Dodd Creek is less than or equal to 5 C	

(2) For the purposes of determining compliance with and enforcing subsection (1):

(a) exceedence of a maximum concentration, for all parameters except dissolved oxygen, pH, and E. Coli., is deemed to have occurred when the arithmetic mean concentration of all samples collected in a calendar month and analyzed for the parameter is greater than the corresponding maximum concentration set out in Column 2 of subsection (1);

(b) exceedence of pH is deemed to have occurred when any single measurement is outside of the range set out in Column 2 of subsection (1);

(c) exceedence of E. Coli. is deemed to have occurred when the geometric mean concentration for E. Coli. of all samples collected in a calendar month is greater than the corresponding maximum concentration set out in Column 2 of subsection (1); and

(d) non-compliance with respect to dissolved oxygen is deemed to have occurred when any single sample analyzed for dissolved oxygen is less than the corresponding concentration set out in Column 2 of subsection (1).

8. EFFLUENT MONITORING

The *Owner* shall establish and carry out, upon commencement of operations of the *Works*, the following effluent monitoring program:

(1) The effluent stream named below shall be sampled at the sampling point named below, in accordance with the measurement frequency and sample type specified for each parameter named in Table 3, unless otherwise required in writing by this *Approval* or by the *District Manager*:

Table 3 Stream A: Effluent being discharged from the Filters to SWM Pond #5b	
Frequency	Once every 2 weeks
Sample Type	Grab
Parameters	*$CBOD_5$*, Total Suspended Solids, Total Ammonia Nitrogen, Total Phosphorus, pH, Phenolics (4AAP), Color, E. Coli, Dissolved Oxygen

(2) The effluent stream named below shall be sampled at the sampling point named below, in accordance with the measurement frequency and sample type specified for each parameter named in Table 4, unless otherwise required in writing by this *Approval* or by the *District Manager*:

Table 4 Stream A: Effluent being discharged from the Filters to SWM Pond #5b	
Frequency	Once every 6 months
Sample Type	Grab
Parameters	**Metals Scan** Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Lead, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc, Aluminum, Calcium, Iron, Manganese, Lithium, Sodium, Potassium, Magnesium, Silicon and Strontium
	VOC Scan 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, 1,1-Dichloroethylene, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3-Dichlorobenzene, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, 1,4-Dichlorobenzene, 2-Chloroethylvinyl ether, Benzene, Bromodichloromethane, Bromoform, Bromomethane, Carbon Tetrachloride, Chlorobenzene, Chloroethane, Chloroform, Chloromethane, Dibromochloromethane, Dichloromethane (Methylene Chloride), Ethylbenzene, Tetrachloroethylene, Toluene, Trichloroethylene, Trichlorofluoromethane (FREON 11), Vinyl Chloride, o-Xylene and m+p-Xylenes

(3) The effluent stream named below shall be sampled at the sampling point named below, in

accordance with the measurement frequency and sample type specified for each parameter named in Table 5, unless otherwise required in writing by this *Approval* or by the *District Manager* :

Table 5 Stream A: Effluent being discharged from the Filters to SWM Pond #5b	
Frequency	Once a year
Sample Type	Grab
Parameters	**Base/Neutral and Acid Extractables Scan** 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,4,6-Trichlorophenol, 2,4-Dichlorophenol, 2,4-Dimethylphenol, 2,4-Dinitrophenol, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, 2-Chloronaphthalene, 2-Chlorophenol, 2-Nitrophenol, 3,3-Dichlorobenzidine, 4-Chloro-3-Methylphenol, 4,6-Dinitro-2-methylphenol, 4-Bromophenyl phenyl ether, 4-Chlorophenyl phenyl ether, 4-Nitrophenol, Acenaphthene, Acenaphthylene, Anthracene, Benzidine, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene, Bis(2-chloroethyl)ether, Bis(2-chloroethoxy)methane, Bis(2-ethylhexyl)phthalate, Benzyl butyl phthalate, Chrysene, Di-N-butyl phthalate, Di-N-octyl phthalate, Dibenzo(a,h)anthracene, Diethyl phthalate, Dimethyl phthalate, Fluoranthene, Fluorene, Hexachlorobenzene, Hexachlorobutadiene, Hexachlorocyclopentadiene, Hexachloroethane, Indeno(1,2,3-cd)pyrene, Isophorone, N-Nitroso-di-n-propylamine, N-Nitrosodimethylamine, Napthalene, Nitrobenzene, Nitrosodiphenylamine/Diphenylamine, Pentachlorophenol, Phenanthrene, Phenol and Pyrene

(4) The effluent streams named below shall be sampled at the sampling points named below on the same day, in accordance with the measurement frequency and sample type specified for each parameter named in Table 6 unless otherwise required in writing by this *Approval* or by the *District Manager* :

Table 6 Stream A: Effluent being discharged from the Filters to SWM Pond #5b Stream B: Effluent being discharged from the Polishing Pond	
Frequency	Quarterly
Sample Type	Grab
Parameter	Colour

(5) The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

(a) the *Ministry* 's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (August 1994), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions;

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

(6) The measurement frequencies specified in subsections (1), (2), (3) and (4) in respect of any parameter are minimum requirements which may, after 12 months of monitoring in accordance with this Condition, be modified by the *District Manager* in writing from time to time.

PART III - STORMWATER MANAGEMENT FACILITY

9. EXPIRY OF APPROVAL

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

10. MONITORING AND RECORDING

(1) The *Owner* shall, upon commencement of operation of the *Works* , carry out the following monitoring program. Grab samples shall be collected from Stormwater Pumping Station Intake Pipe **at a quarterly frequency** and analyzed for the following parameters listed in Table 7:

Table 7 - Stormwater Monitoring - SW Pumping Station		
General Parameters	**Metals**	**Field Parameters**
Alkalinity	Arsenic	Conductivity
Conductivity	Barium	Dissolved Oxygen
Hardness	Boron	pH
pH	Cadmium	Temperature
Chloride	Chromium	
Sulphate	Copper	
Nitrate as Nitrogen	Iron	
Nitrite as Nitrogen	Lead	
Total Ammonia	Zinc	
Total Suspended Solids		
Total Dissolved Solids		
Chemical Oxygen Demand		
Total Phosphorus		
Total Kjeldahl Nitrogen		
CBOD5		
Phenols		

(2) The methods and protocols for sampling, analysis and recording shall conform, in order

of precedence, to the methods and protocols specified in the following:

(a) the *Ministry* 's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (August 1994), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions;
(b) the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition) as amended from time to time by more recently published editions.

11. OPERATION AND MAINTENANCE

(1) Before the commencement of operation of the *Works* (**Stormwater Management Facility)**, the *Owner* shall ensure that a "Stormwater Contingency and Remedial Action Plan" for the *Works* is prepared, submitted to, and approved by the *District Manager* ;

(2) The *Owner* shall operate the stormwater management facility as a batch discharge facility (**Normal Operation Mode**);

(3) Prior to any planned discharge of stormwater from **Pond #3** using the Stormwater Pumping Station, the *Owner* shall collect a grab sample and analyse for the trigger parameters listed in Table 8. The *Owner* shall compare monitoring results with the corresponding trigger concentration of each parameter listed in Table 8;

Table 8 - Trigger Parameters

Parameter	**Trigger Concentration** (mg/L)
Ammonia (un-ionized)*	>0.03
Dissolved Oxygen (DO)	<2.0
Iron	>0.5
Phenols	>0.005
pH	6.0 to 9.0

*** Note:** Ammonia (un-ionized) concentration shall be calculated from the monitoring results of total ammonia, pH, and field temperature.

(4) In the event that a monitoring result for any of the trigger parameters listed in Table 8 exceeds the corresponding trigger concentration, the *Owner* shall immediately conduct a second round of sampling to confirm the exceedence;

(5) In the event that an exceedence of a trigger concentration for any trigger parameter is confirmed, the *Owner* shall implement the "Stormwater Management Contingency and Remedial Action Plan" approved under Condition 10(1) to identify the cause of contamination and implement remedial measures;

(6) After the implementation of remedial measures, the *Owner* shall ensure that the content of the stormwater pond deemed to be leachate contaminated is disposed in a pre-approved manner and shall maintain a record of each such events including the

volume, date, and method of disposal used;

(7) Discharge of leachate contaminated stormwater from the *Works* to the receiving surface water is prohibited, except where necessary to avoid loss of life, personal injury, danger to public health or severe property damage;

(8) The *Owner* shall notify the *District Manager* orally, as soon as possible, and in writing within seven days of the discharge of leachate contaminated stormwater to receiving surface water including assessment of the relative extent of leachate contamination, estimated volume of stormwater discharged, and proposed or completed remedial actions;

(9) The *Owner* shall maintain the water level in the detention pond at a level that ensures adequate storage is available for stormwater runoff associated with major storm events by ensuring that detained stormwater is disposed of in a timely manner to minimize the occurrence of emergency overflow during major storm events.

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

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

(a) the name of the *Works* ;
(b) the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed; and
(c) the volume of contaminated stormwater disposed off-site, the date, and the name of the receiving sewage treatment plant;

PART IV - SURFACE WATER MONITORING

12. SURFACE WATER MONITORING PROGRAM

The *Owner* shall establish and carry out the following surface water monitoring program during operational and post-closure periods in accordance with Schedule 'C' of the Provisional *Certificate* of Approval No. 051601 issued on July 5, 2007 for the Green Lane Landfill Site and as amended from time to time:

(1) Surface Water Chemistry Monitoring Network

The following locations will form the surface water chemistry monitoring network during the operational period and the contaminating life span of the landfill site:

Dodd Creek (upstream of discharge channel outlet)
Dodd Creek (downstream of discharge channel outlet)

Surface water grab samples shall be collected from the above noted sampling locations on a **quarterly frequency** maintaining a **minimum of 45 days** between seasonal sampling events and ensuring that sampling from the two sampling locations is conducted on the same day.

Every spring and fall, the above noted sampling locations shall be sampled and analyzed for the following parameters:

Table 9
Surface Water Sampling - Dodd Creek

General Chemistry		**Metals (Total)**
Alkalinity	Hardness	Arsenic
CBOD5	Nitrate as N	Barium
Chemical Oxygen Demand (COD)	Nitrite as N	Boron
Chloride	Phenols	Cadmium
Field and Laboratory Conductivity	Sulphate	Chromium
Field and Laboratory pH	Suspended Solids	Copper
Field Dissolved Oxygen	Total Dissolved Solids	Iron
Field Flow	Total Kjeldahl Nitrogen	Lead
Field Temperature	Total Phosphorus	Zinc
Free Ammonia as N		Dissolved Mercury

Every winter and summer, the above locations will be sampled on the same day and analyzed for the following parameters:

Table 10
Surface Water Sampling - Dodd Creek

General Chemistry		**Metals (Total)**
Alkalinity	Hardness	Iron
CBOD5	Nitrate as N	
Chemical Oxygen Demand (COD)	Nitrite as N	
Chloride	Phenols	
Field and Laboratory Conductivity	Sulphate	
Field and Laboratory pH	Suspended Solids	
Field Dissolved Oxygen	Total Dissolved Solids	
Field Flow	Total Kjeldahl Nitrogen	
Field Temperature	Total Phosphorus	
Free Ammonia as N		

The flow will be estimated using visual observations at the time and location of the surface water chemistry sampling.

The surface water chemistry data will be assessed **annually** to establish updated trigger levels. As part of the assessment, data will be compared against previous years sampling results and the Provincial Water Quality Objectives (PWQOs). The **trigger levels** for surface water chemistry will be set at the following :

- annual average downstream concentration in Dodd Creek exceeds annual average upstream (i.e., reference) concentration by 33%; or

- discrete downstream concentration in Dodd Creek exceeds discrete upstream (i.e., reference) concentration by 50%.

The chemical surface water trigger level assessment will be performed for the following parameters:

Table 11
Parameter
CBOD5
Suspended Solids
Free Ammonia as N
Nitrate as N
Iron

If trigger levels are exceeded, the MOE will be consulted forthwith and contingency measures will be implemented, as appropriate.

(2) Benthic Community and Density Monitoring Program

This section describes the following benthic community and density monitoring program to be implemented at the landfill during its operational and post-closure periods. This program includes network description, frequency, and quality monitoring.

(a) Benthic Community and Density Monitoring Network

Benthic community and density monitoring will be performed **every spring on an annual basis** at the following benthic community and density monitoring network locations during the operational period and the contaminating life span of the landfill site:

Dodd Creek (upstream of discharge channel outlet)
Dodd Creek (downstream of discharge channel outlet)

Benthic samples will be collected and analysed in accordance with industry practice and MOE guidelines. The benthic data will be assessed **annually**. As part of the assessment, upstream and downstream densities will be compared. A variation of +/-20% as to the number of organisms and species richness shall be considered an impact (i.e., trigger level). Any benthic impact must result in notification of MOE forthwith and contingency measures will be implemented, as appropriate in consultation with MOE

PART V - GENERAL

13. REPORTING

(1) The *Owner* shall prepare and submit a performance report to the *District Manager* on an annual basis, and the submission shall be made no later than 60 working days following the end of each calendar year. The first such report shall cover the period from the commencement of operation of the *Works* until the end of the first calendar year in which the *Works* is operated. The reports shall contain, but shall not be limited to, the following information in a format acceptable to the *District Manager* :

(a) a summary and a comprehensive interpretation of all monitoring data and analytical data collected under Condition 8 relative to the *Works* during the reporting period and a comparison to the Effluent Limits criteria described in Condition 7;
(b) a summary and a comprehensive interpretation of all monitoring data and analytical data collected under Condition 10 relative to the *Works* during the reporting period and a comparison to the operation and maintenance trigger levels outlined under Condition 11;
(c) a summary of the efforts made and results achieved with respect to meeting the Effluent Objectives outlined in Condition 6;
(d) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming a part of the *Works* ;
(e) a description of any operating problems encountered and corrective actions taken during the reporting period;
(f) a summary of any proposed alteration, extension or replacement in the process or operation of the *Works* to be completed over the next reporting period which may require approval under the *Ontario Water Resources Act* ;
(g) a tabulation of the volume of sludge generated from the leachate treatment works in the reporting period and an outline of anticipated volumes to be generated in the next reporting period; and
(h) an evaluation of the need for modifications to the leachate treatment works to improve performance and reliability and to minimize any upsets and bypasses.

14. RECORD KEEPING

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

Schedule 'A'

I. ***PREVIOUS WORKS APPROVED ON*** **JANUARY 16, 2007 (CofA # 6602-6H5RBF):**

1. Application for Approval of Industrial Sewage Works submitted by St. Thomas Sanitary Collection Service Limited Partnership dated August 4, 2006 and all supporting design specifications and drawings prepared by Conestoga-Rovers & Associates, Waterloo, Ontario.

2. "Stormwater Management Plan for the Optimization of the Green Lane Landfill Site" prepared by Conestoga-Rovers & Associates, Waterloo, Ontario, dated July 2006.

3. "Design and Operations Report for the Optimization of the Green Lane Landfill Site" prepared by Conestoga-Rovers & Associates, Waterloo, Ontario, dated July 2006.

4. "Surface Water Assessment Report for the Optimization of the Green Lane Landfill Site" prepared by Conestoga-Rovers & Associates, Waterloo, Ontario, dated March 2006.

5. Letter from Brian Verspagen, P. Eng., Conestoga-Rovers & Associates to Stefanos Habtom, P. Eng., MOE, dated November 17, 2006 containing response to additional information request.

6. Engineering drawings for the proposed Green Lane Landfill stormwater management facility dated December 2006, prepared by Conestoga-Rovers & Associates.

II. ***PREVIOUS WORKS APPROVED ON*** **OCTOBER 22, 2010 (CofA #*1131-88TK3K*):**

1) Application for the Approval of Industrial Sewage Works submitted by E. Anne Hiscock of Green Lane Landfill dated August 4, 1999;

2) Application for Certificate of Approval (Industrial Sewage Works) - Green Lane Landfill, St. Thomas Sanitary Collection Service Limited prepared by Conestoga-Rovers & Associates dated August 1999;

3) Letters and attachments dated August 12, 1999, September 8, 1999 and September 28, 1999 from Andy Lugowski of Conestoga-Rovers & Associates to Randy Chin of the Ministry of the Environment;

4) St. Thomas Sanitary Collection Service Limited - Green Lane Landfill Site - Leachate Treatment Plant, Technical Summary prepared by Conestoga-Rovers & Associates dated June 2000;

5) Engineering drawings prepared by Conestoga-Rovers & Associates;

6) Application for an amendment to Certificate of Approval (Industrial Sewage

Works) - Green Lane Landfill, St. Thomas Sanitary Collection Service Limited prepared by Conestoga-Rovers & Associates dated April 8, 2005;

7) St. Thomas Sanitary Collection Service Limited - Color Removal Investigative Study, Leachate Treatment Plant, Green Lane Landfill Site , prepared by Conestoga-Rovers & Associates dated December 2004;

8) Application for an Approval of Municipal and Private Sewage Works submitted by the City of Toronto dated July 6, 2010, and design brief and drawings dated July 2010 prepared by Conestoga-Rovers & Associates, Waterloo, Ontario;

9) Letter and attachments dated September 17, 2010 Joe Rothfischer, P. Eng., Conestoga-Rovers & Associates to Stefanos Habtom, P. Eng., Ontario Ministry of the Environment sent as a response to additional information request dated August 31, 2010; and

10) "Leachate Treatment Plant Expansion and Stormwater Management Pond Pumping Station Upgrade Technical Summary, Green Lane Landfill Site" dated September 2010, prepared by Conestoga-Rovers & Associates, Waterloo, Ontario.

III. ***PROPOSED WORKS*** **:**

1. Application for Environmental Compliance Approval submitted by City of Toronto dated June 12, 2012 and design specifications and drawings prepared by Conestoga-Rovers & Associates, Waterloo, Ontario.

2. "Stormwater Management Pond 7 Pumping Station Technical Summary - Green Lane Landfill Site" dated October 2012 prepared by Conestoga-Rovers & Associates, Waterloo, Ontario.

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 *Approval* and the practice that the *Approval* is based on the most current document, if several conflicting documents are submitted for review. The condition also advises the Owners their responsibility to notify any person they authorized to carry out work pursuant to this *Approval* the existence of this *Approval.*

2. Conditions 2 and 9 are included to ensure that the *Works* are constructed in a timely manner so that standards applicable at the time of approval of the *Works* are still applicable at the time of construction, to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the *Ministry* records are kept accurate and current with respect to the approved works and to ensure that subsequent owners of the *Works* are made aware of the *Approval* and continue to operate the *Works* in compliance with it.

4. Conditions 4 and 11 are included to ensure that the *Works* will be operated, maintained, funded, staffed and equipped in a manner enabling compliance with the terms and conditions of this *Approval* , such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented.

5. Condition 5 is included to ensure that a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the *Owner* and made available to the *Ministry* . Such a manual is an integral part of the operation of the *Works* . Its compilation and use should assist the *Owner* in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for *Ministry* staff when reviewing the *Owner* 's operation of the work.

6. Condition 6 is imposed to establish non-enforceable effluent quality objectives which the *Owner* is obligated to use best efforts to strive towards on an ongoing basis. It is the *Ministry* 's experience that the setting of such objectives coupled with the bona fide efforts of an *Owner* to achieve them tends to assist an *Owner* in complying with the generally less stringent effluent requirements contained in Condition 7, thereby serving the environmental goals set out in the reason for the latter condition.

7. Condition 7 is imposed to ensure that the effluent discharged from the *Works* to Dodd Creek meets the *Ministry* 's effluent quality requirements as specified on a continual basis thus minimizing environmental impact to the receiver.

8. Conditions 8, 10 and 12 are included to require the *Owner* to demonstrate on a continual basis that the quality of the effluent from the approved *Works* is consistent with the design objectives

and effluent limits specified in the *Approval* and that the approved *Works* does not cause any impairment to the receiving watercourse.

9. Condition 13 is included to provide a performance record for future references and to ensure that the *Ministry* is made aware of problems as they arise, so that the *Ministry* can work with the *Owner* in resolving the problems in a timely manner.

10. Condition 14 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* .

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 1131-88TK3K issued on October 22, 2010

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

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

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

The Notice should also include:

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

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

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-4506 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 17th day of January, 2013

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

SH/
c: District Manager, MOE London - District
Dilan Singaraja, Conestoga-Rovers & Associates

APPENDIX

A-8 *AMENDED CERTIFICATE OF APPROVAL AIR NO. 6054-6FLFKE, DATED SEPTEMBER 14, 2005*

Ontario

Ministry of the Environment

Ministère de l'Environnement

AMENDED CERTIFICATE OF APPROVAL
AIR
NUMBER 6054-6FLFKE
Issue Date: September 14, 2005

Green Lane Landfill
Division of St. Thomas Sanitary Collection Service Limited Partnership
38593 Third Line Road
St. Thomas, Ontario
N6P 1R7

Site Location: Green Lane Landfill Site
Lot 22, Concession 3
Township County of Elgin, Ontario

You have applied in accordance with Section 9 of the Environmental Protection Act for approval of:

- one (1) exhaust system serving one (1) ozone contact tank and one (1) pre-aeration tank associated with a landfill leachate treatment system, discharging to the atmosphere at a volumetric flow rate of 0.0354 cubic metre per second through a stack, having an exit diameter of 0.08 metre, extending 0.9 metre above the roof and 6.9 metres above grade;

all in accordance with the Application for Approval (Air) signed by Anne Hiscock of Green Lane Landfill, Division of St. Thomas Sanitary Collection Service Limited Partnership, dated March 15, 2005, the supporting information submitted by Conestoga-Rovers & Associates with the application, the additional information provided by Conestoga-Rovers & Associates, the Application for Approval (Air) dated July 23, 2002, including the supporting documentation and additional information associated with the application.

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

(1) "Act" means the *Environmental Protection Act;*

(2) "Certificate" means this Amended Certificate of Approval (Air) issued in accordance with Section 9 of the Act;

(3) "Company" means Green Lane Landfill, Division of St. Thomas Sanitary Collection Service Limited Partnership;

(4) "District Manager" means the District Manager, London District Office of the Southwestern Region of the Ministry;

(5) "Equipment" means the exhaust system and associated equipment as described in the Company's application, this Certificate and in the supporting documentation submitted with the application, to the extent approved by this Certificate;

(6) "Manual" means a document or set of documents that provide written instructions to staff of the Company;

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

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

TERMS AND CONDITIONS

TERMS AND CONDITIONS

1. The Company shall ensure that the Equipment is properly operated at all times. The Company shall:

   (1) prepare, not later than three months from the date of this Certificate, and update as necessary, a Manual outlining the operating procedures and a maintenance program for the Equipment, including:

      (a) the routine and emergency operating and maintenance procedures in accordance with good engineering practices and as recommended by equipment suppliers;

      (b) the procedures for any record keeping activities relating to the operation and maintenance of the Equipment;

      (c) the procedures for recording of and responding to environmental complaints;

   (2) implement the recommendations of the Manual.

2. The Company shall retain, for a minimum of two (2) years from the date of their creation, all records and information related to or resulting from the recording activities required by this Certificate. These records shall be made available to staff of the Ministry upon request. The Company shall retain as a minimum:

   (1) all measures taken to minimize odour emissions from the leachate treatment system;

   (2) all records of any odour complaints, including:

      (a) a description, time and date of each incident to which the complaint relates;

(b) wind direction at the time of the incident to which the complaint relates; and

(c) a description of the measures taken to address the cause of the incident to which the complaint relates and to prevent a similar occurrence in the future.

3. The Company shall notify the District Manager, in writing, of each odour complaint and the measures taken to address the cause of the complaint within two (2) business days of the complaint.

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

1. Condition 1 is included to emphasize that the Equipment must be maintained and operated according to a procedure that will result in compliance with the Act, the regulations and this Certificate.

2. Conditions 2 and 3 are included to require the Company to retain records and provide information to the Ministry so that the environmental impact and subsequent compliance with the Act, the regulations and this Certificate can be verified.

This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 9591-5EPSJR issued on ctober 8, 2002

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

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

The Notice should also include:

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

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

This Notice must be served upon:

The Secretary*
wironmental Review Tribunal
_300 Yonge St., 12th Floor

The Director
Section 9, *Environmental Protection Act*
Ministry of Environment and Energy

P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

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

The above noted works are approved under Section 9 of the Environmental Protection Act.

DATED AT TORONTO this 14th day of September, 2005

Victor Low, P.Eng.
Director
Section 9, *Environmental Protection Act*

KW/

c: District Manager, MOE London - District
Tara Bailey, Conestoga-Rovers & Associates Limited

APPENDIX

A-9 *AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL NO. 6380-9WBQKG, DATED JULY 8, 2015*

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 6380-9WBQKG
Issue Date: July 8, 2015

City of Toronto
38593 Third Line
Rural Route No. 7
St. Thomas, Ontario
N5P 3T2

Site Location: Green Lane Landfill
Lot 21, 22 & 23, Concession 3
Southwold Township, County of Elgin
N5P 3T2

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:

- a landfill gas incineration system comprising of an enclosed flare (Flare 1), having a maximum landfill gas burning capacity of 2,700 standard cubic metres per hour and equipped with a CEM system, exhausting into the atmosphere through a flare stack, having an inside diameter of 3.0 metres, extending 9.0 metres above grade;

- Acoustic berm 5 metres high and 100 metres long located 50 metres east of the blowers, centered on and perpendicular to the line from the blowers to the nearest residence east of the Facility;

- a correction to the sizing of an existing landfill gas incineration system comprising of an enclosed flare (Flare 2), having a maximum landfill gas burning capacity of 7,477 standard cubic metres per hour and equipped with a CEM system, exhausting into the atmosphere through a flare stack, having an inside diameter of 3.96 metres, extending 11.2 metres above grade; and

- an additional landfill gas incineration system comprising of an enclosed flare (Flare 3), having a maximum landfill gas burning capacity of 7,477 standard cubic metres per hour and equipped with a CEM system, exhausting into the atmosphere through a flare stack, having an inside diameter of 3.96 metres, extending 11.2 metres above grade.

all in accordance with the Application for Environmental Compliance Approval submitted by the City of Toronto dated November 7, 2014 and signed by E. Anne Hiscock and all supporting information prepared by WSP Canada Inc., including the additional information provided by Anne Hiscock (City of Toronto) and Bhuwan Prasad (WSP Canada Inc.), dated March 12, 2015, March 26, 2015 and March 27, 2015; all in accordance with the Application for Approval (Air & Noise) submitted by the City of Toronto dated January 18, 2010 and signed by Anne Hiscock, Environmental Manager and all supporting information prepared by Conestoga-Rovers & Associates, including the Acoustic Assessment Report signed by Bhuwan Prasad, WSP Canada Inc., dated November 6, 2014, and the additional information provided by Anne Hiscock (City of Toronto) and Tara Bailey, P.Eng. (Conestoga-Rovers & Associates) via email dated April 29, 2010, May 17, 2010 and May 20, 2010; all in accordance with the Application for Certificate of Approval, along with the supporting documentation prepared by Conestoga -Rovers & Associates, submitted by Green Lane Landfill, A Division of St. Thomas Sanitary Collection Service Limited, signed by E. Anne Hiscock dated August 4,1999; letters from Conestoga -Rovers & Associates to Ontario Ministry of the Environment dated October 27,1999 and May 15,2002; drawings and specifications included in the report (letter from G. Reusing to the Environmental Assessment and Approvals Branch of the Ministry Re: Response to MOE Request for Additional Information Review, Application for Certificate of Approval (Air) No. 8-1146-99, Green Lane Landfill, in the County of Elgin, Ontario), dated May 06, 2002, prepared by Conestoga-Rovers & Associates consultants and all the other supporting information.

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

1. "2006 EAA Approval" means the "Environmental Assessment Act, Section 9, Notice of Approval to Proceed with the undertaking for the Environmental Assessment for the Optimization of the Green Lane Landfill located in Southwold Township, dated May 26, 2006 and approved by Order in Council 12/19/2006 dated June 7, 2006;

2. "Approval" means this Environmental Compliance Approval, including the application and supporting documentation listed above;

3. "CEM System" means the continuous monitoring and recording systems and associated control systems used to optimize the operation of Equipment to minimize the emissions from the Equipment, as described in the Owner's application, this Approval, including Schedule "A", and in the supporting documentation submitted with the application, to the extent approved by this Approval;

4. "District Manager" means the District Manager of the appropriate local district office of the Ministry, where the Facility is geographically located;

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

6. "Equipment" means the three (3) enclosed flares described in the Owner's application, this Approval and in the supporting documentation submitted with the application, to the extent approved by this Approval;

7. "Facility" means the entire operation located on the property where the Equipment is located;

8. "FNLC" means the First Nations Liaison Committee, if any, established under the terms and conditions of the 2006 EAA Approval and as further defined by conditions of the Amended Provisional Certificate of Approval Waste Disposal Site Number A051601;

9. "Manual" means a document or a set of documents that provide written instructions to staff of the Owner;

10. "Ministry" means the ministry of the government of Ontario responsible for the EPA and includes all officials, employees or other persons acting on its behalf;

11. "Owner" means the City of Toronto, that is responsible for the construction or operation of the Facility and includes any successors and assigns;

12. "PLC" means the Green Lane Landfill Public Liaison Committee, if any, established under the terms and conditions of the 2006 EAA Approval;

13. "Publication NPC-300" means the Ministry Publication NPC-300, "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning, Publication NPC-300", August, 2013, as amended; and

14. "Site" means the entire waste disposal site of 129.7 hectares, including non-landfill lands, located at Parts of Lots 21, 22 and 23.

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

TERMS AND CONDITIONS

PERFORMANCE REQUIREMENTS

1. The Owner shall ensure that the Equipment is designed and operated to comply, at all times, with the following performance requirements:

OPERATING PARAMETERS

(1) the temperature in the combustion chamber, as recorded by the CEM System, shall be at least 875 degrees Celsius throughout the combustion cycle; and

(2) the residence time of the combustion gases in the combustion chamber shall be not less than 0.75 second at a temperature of not less than 875 degrees Celsius;

OPERATION AND MAINTENANCE

2. The Owner shall ensure that the combustion chamber is not loaded unless the CEM System is fully operational.

3. The Owner shall ensure that the Equipment, including the CEM System, is properly operated and maintained at all times. The Owner shall:

   (1) prepare, before commencement of operation of the Equipment, and update as necessary, a Manual outlining the operating procedures and a maintenance program for the Equipment, including:

      (a) routine operating and maintenance procedures in accordance with good engineering practices and as recommended by the Equipment and CEM System suppliers;

      (b) emergency procedures;

      (c) procedures for any record keeping activities relating to operation and maintenance of the Equipment;

      (d) procedures for calibrating the CEM System;

      (e) operator training which is to be provided by an individual experienced with the Equipment;

      (f) all appropriate measures to minimize noise, dust and odorous emissions from all potential sources;

      (g) periodic inspection of the Equipment which is to be conducted by individuals experienced with the Equipment; and timetables for work to be carried out; and

      (h) procedures to monitor and record the quality (combustible gas concentration) and quantity of landfill gas (landfill gas flow rate) delivered to the Flare for combustion;

   (2) implement the recommendations of the Manual.

CONTINUOUS MONITORING

4. The Owner shall, install and subsequently conduct and maintain a program to continuously monitor and record:

   (1) the landfill gas flow rate to the Equipment and combustible gas concentration; and

(2) the temperature at the location in the combustion chamber of the Equipment where the minimum retention time of the combustion gases at a minimum temperature of 875 degrees Celsius for at least 0.75 second is achieved.

The CEM system shall be equipped with continuous recording devices, including date and time, and shall comply with the requirements outlined in the attached Schedule "A".

SCHEDULE "A"

PARAMETER: Temperature

LOCATION: The sample point for the continuous temperature monitoring and recording system shall be located at a location where the minimum retention time of the combustion gases at a minimum temperature of 875 degrees Celsius for at least 0.75 second is achieved.

PERFORMANCE: The continuous temperature monitoring and recording system shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
Type:	shielded "K" type thermocouple, or equivalent
Accuracy:	±1.5 percent of the minimum gas temperature

DATA RECORDER: The data recorder must be capable of registering continuously the measurement of the monitoring system without a significant loss of accuracy and with a time resolution of 1 minute or better.

RELIABILITY: The monitoring system shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.

RECORD RETENTION

5. The Owner shall retain, for a minimum of two (2) years from the date of their creation, all records and information related to or resulting from the recording activities required by this Approval, and make these records available for review by staff of the Ministry upon request. The Owner shall retain:

(1) all records on the maintenance, repair and inspection of the Equipment and the CEM System, and original date that work was recommended;

(2) all records produced by the CEM System;

(3) all records on operator training;

(4) all records on the environmental complaints, including:

(a) a description, time and date of each incident to which the complaint relates;

(b) wind direction at the time of the incident to which the complaint relates; and

(c) a description of the measures taken to address the cause of the incident to which the complaint relates and to prevent a similar occurrence in the future.

(5) description of all upset conditions associated with the operation of the Equipment and remedial action taken.

(6) daily records of the quality (combustible gas concentration) and quantity of landfill gas (landfill gas flow rate) delivered to the Flare for combustion;

REPORTING

6. The Owner shall notify the District Manager, in writing, of the Equipment operation occurrence and the measures taken to ensure appropriate start up procedures within two (2) business days of the Equipment operation occurrence.

7. The Owner shall notify the District Manager, in writing, of any exceedances of the limits from Schedule "A", including the recommended remedial action, within two (2) business days of the monitored exceedance.

COMPLAINTS PROCEDURE

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

(1) The Owner shall record and number each complaint, either electronically or in a log book, and shall include the following information: the nature of the complaint, the name, address and the telephone number of the complainant if the complainant will provide this information and the time and date of the complaint;

(2) The Owner, upon notification of the complaint, shall immediately notify the Ministry's Spills Action Centre of the receipt of the complaint, initiate appropriate steps to determine all possible causes of the complaints, proceed to take all reasonable measures to mitigate the causes of the complaint, and forward a formal report to the Ministry, the FNLC, and the PLC within seven (7) days of the complaint; and

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

9. The Owner shall designate a person to receive any complaints and to respond with a written notice of action as soon as possible. The Owner shall post site complaints procedure at site entrance. All complaints and the Owner's actions taken to remedy the complaints must be summarized in the Annual Report.

NOISE

10. The Owner shall, at all times, ensure that the noise emissions from the Facility comply with the limits set out in Ministry Publication NPC-300.

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

1. Condition Nos. 1 and 10 are included to outline the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Equipment/Facility.

2. Condition Nos. 2 and 3 are included to emphasize that the Equipment must be operated and maintained according to a procedure that will result in compliance with the EPA, the regulations and this Approval.

3. Condition No. 4 is included to require the Owner to gather accurate information on a continuous basis so that compliance with the EPA, the Regulations and this Approval can be verified.

4. Condition Nos. 5, 6 and 7 are included to require the Owner to keep records and provide information to staff of the Ministry so that compliance with the EPA, the regulations and this Approval can be verified.

5. Condition Nos. 8 and 9 are included to establish the procedures for handling complaints, including notification of the Ministry, the FNLC, and PLC. Open communication with the public and local authorities is important in helping to maintain high standards for site operation and environmental protection.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 0974-86VGU8 issued on October 29, 2010.

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 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-4506 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 8th day of July, 2015

Rudolf Wan

Rudolf Wan, P.Eng.

Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

RA/

c: District Manager, MOECC London - District
Joe Ovcjak, WSP Canada Inc.

APPENDIX

A-10 AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL NO. 3857-ALRQSR DATED APRIL 26, 2017

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 3857-ALRQSR
Issue Date: April 26, 2017

City of Toronto
38593 Third Line
Rural Route No. 7
St. Thomas, Ontario
N5P 3T2

Site Location: Green Lane Landfill Site
Lot 21, 22 & 23, Concession 3
Southwold Township, County of Elgin

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:*

- a landfill gas incineration system comprising of an enclosed flare (Flare 1), having a maximum landfill gas burning capacity of 2,700 standard cubic metres per hour and equipped with a CEM system, exhausting into the atmosphere through a flare stack, having an inside diameter of 3.0 metres, extending 9.0 metres above grade;

- Acoustic berm 5 metres high and 100 metres long located 50 metres east of the blowers, centered on and perpendicular to the line from the blowers to the nearest residence east of the Facility;

- a correction to the sizing of an existing landfill gas incineration system comprising of an enclosed flare (Flare 2), having a maximum landfill gas burning capacity of 7,477 standard cubic metres per hour and equipped with a CEM system, exhausting into the atmosphere through a flare stack, having an inside diameter of 3.96 metres, extending 11.2 metres above grade; and

- an additional landfill gas incineration system comprising of an enclosed flare (Flare 3), having a maximum landfill gas burning capacity of 7,477 standard cubic metres per hour and equipped with a CEM system, exhausting into the atmosphere through a flare stack, having an inside diameter of 3.49 metres, extending 12.2 metres above grade.

all in accordance with the Application for Environmental Compliance Approval submitted by the City of Toronto dated March 3, 2017 and signed by E. Anne Hiscock and all supporting information prepared by WSP Canada Inc.; all in accordance with the Application for Environmental Compliance Approval submitted by the City of Toronto dated November 7, 2014 and signed by E. Anne Hiscock and all supporting information prepared by WSP Canada Inc., including the additional information provided by Anne Hiscock (City of Toronto) and Bhuwan Prasad (WSP Canada Inc.), dated March 12, 2015, March 26, 2015 and March 27, 2015; all in accordance with the Application for Approval (Air & Noise) submitted by the City of Toronto dated ~~January 18, 2010 and signed by Anne Hiscock, Environmental Manager~~ and ~~all supporting information prepared~~ by Conestoga-Rovers & Associates, including the Acoustic Assessment Report signed by Bhuwan Prasad, WSP Canada Inc., dated November 6, 2014, and the additional information provided by Anne Hiscock (City of Toronto) and Tara Bailey, P.Eng. (Conestoga-Rovers & Associates) via email dated April 29, 2010, May 17, 2010 and May 20, 2010; all in accordance with the Application for Certificate of Approval, along with the supporting documentation prepared by Conestoga -Rovers & Associates, submitted by Green Lane Landfill, A Division of St. Thomas Sanitary Collection Service Limited, signed by E. Anne Hiscock dated August 4,1999; letters from Conestoga -Rovers & Associates to Ontario Ministry of the Environment dated October 27,1999 and May 15,2002; drawings and specifications included in the report (letter from G. Reusing to the Environmental Assessment and Approvals Branch of the Ministry Re: Response to MOE Request for Additional Information Review, Application for Certificate of Approval (Air) No. 8-1146-99, Green Lane Landfill, in the County of Elgin, Ontario), dated May 06, 2002, prepared by Conestoga-Rovers & Associates consultants and all the other supporting information.

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

1. "2006 EAA Approval" means the Environmental Assessment Act, Section 9, Notice of Approval to Proceed with the undertaking for the Environmental Assessment for the Optimization of the Green Lane Landfill located in Southwold Township, dated May 26, 2006 and approved by Order in Council 12/19/2006 dated June 7, 2006;

2. "Approval" means this Environmental Compliance Approval, including the application and supporting documentation listed above;

3. "CEM System" means the continuous monitoring and recording systems and associated control systems used to optimize the operation of Equipment to minimize the emissions from the Equipment, as described in the Owner's application, this Approval, including Schedule "A", and in the supporting documentation submitted with the application, to the extent approved by this Approval;

4. "District Manager" means the District Manager of the appropriate local district office of the Ministry, where the Facility is geographically located;

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

6. "Equipment" means the three (3) enclosed flares described in the Owner's application, this Approval and in the supporting documentation submitted with the application, to the extent approved by this Approval;

7. "Facility" means the entire operation located on the property where the Equipment is located;

8. "FNLC" means the First Nations Liaison Committee, if any, established under the terms and conditions of the 2006 EAA Approval and as further defined by conditions of the Amended Provisional Certificate of Approval Waste Disposal Site Number A051601;

9. "Manual" means a document or a set of documents that provide written instructions to staff of the Owner;

10. "Ministry" means the ministry of the government of Ontario responsible for the EPA and includes all officials, employees or other persons acting on its behalf;

11. "Owner" means the City of Toronto, that is responsible for the construction or operation of the Facility and includes any successors and assigns;

12. "PLC" means the Green Lane Landfill Public Liaison Committee, if any, established under the terms and conditions of the 2006 EAA Approval;

13. "Publication NPC-300" means the Ministry Publication NPC-300, "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning, Publication NPC-300", August, 2013, as amended; and

14. "Site" means the entire waste disposal site of 129.7 hectares, including non-landfill lands, located at Parts of Lots 21, 22 and 23.

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

TERMS AND CONDITIONS

PERFORMANCE REQUIREMENTS

1. The Owner shall ensure that the Equipment is designed and operated to comply, at all times, with the following performance requirements:

OPERATING PARAMETERS

(1) the temperature in the combustion chamber, as recorded by the CEM System, shall be at least 875 degrees Celsius throughout the combustion cycle; and

(2) the residence time of the combustion gases in the combustion chamber shall be not less than 0.75 second at a temperature of not less than 875 degrees Celsius;

OPERATION AND MAINTENANCE

2. The Owner shall ensure that the combustion chamber is not loaded unless the CEM System is fully operational.

3. The Owner shall ensure that the Equipment, including the CEM System, is properly operated and maintained at all times. The Owner shall:

    (1) prepare, before commencement of operation of the Equipment, and update as necessary, a Manual outlining the operating procedures and a maintenance program for the Equipment, including:

        (a) routine operating and maintenance procedures in accordance with good engineering practices and as recommended by the Equipment and CEM System suppliers;

        (b) emergency procedures;

        (c) procedures for any record keeping activities relating to operation and maintenance of the Equipment;

        (d) procedures for calibrating the CEM System;

        (e) operator training which is to be provided by an individual experienced with the Equipment;

        (f) all appropriate measures to minimize noise, dust and odorous emissions from all potential sources;

        (g) periodic inspection of the Equipment which is to be conducted by individuals experienced with the Equipment; and timetables for work to be carried out; and

        (h) procedures to monitor and record the quality (combustible gas concentration) and quantity of landfill gas (landfill gas flow rate) delivered to the Flare for combustion;

    (2) implement the recommendations of the Manual.

CONTINUOUS MONITORING

4. The Owner shall, install and subsequently conduct and maintain a program to continuously monitor and record:

    (1) the landfill gas flow rate to the Equipment and combustible gas concentration; and

(2) the temperature at the location in the combustion chamber of the Equipment where the minimum retention time of the combustion gases at a minimum temperature of 875 degrees Celsius for at least 0.75 second is achieved.

The CEM system shall be equipped with continuous recording devices, including date and time, and shall comply with the requirements outlined in the attached Schedule "A".

SCHEDULE "A"

PARAMETER: Temperature

LOCATION: The sample point for the continuous temperature monitoring and recording system shall be located at a location where the minimum retention time of the combustion gases at a minimum temperature of 875 degrees Celsius for at least 0.75 second is achieved.

PERFORMANCE: The continuous temperature monitoring and recording system shall meet the following minimum performance specifications for the following parameters.

PARAMETERS	SPECIFICATION
Type:	shielded "K" type thermocouple, or equivalent
Accuracy:	±1.5 percent of the minimum gas temperature

DATA RECORDER: The data recorder must be capable of registering continuously the measurement of the monitoring system without a significant loss of accuracy and with a time resolution of 1 minute or better.

RELIABILITY: The monitoring system shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.

RECORD RETENTION

5. The Owner shall retain, for a minimum of two (2) years from the date of their creation, all records and information related to or resulting from the recording activities required by this Approval, and make these records available for review by staff of the Ministry upon request. The Owner shall retain:

(1) all records on the maintenance, repair and inspection of the Equipment and the CEM System, and original date that work was recommended;

(2) all records produced by the CEM System;

(3) all records on operator training;

(4) all records on the environmental complaints, including:

(a) a description, time and date of each incident to which the complaint relates;

(b) wind direction at the time of the incident to which the complaint relates; and

(c) a description of the measures taken to address the cause of the incident to which the complaint relates and to prevent a similar occurrence in the future.

(5) description of all upset conditions associated with the operation of the Equipment and remedial action taken.

(6) daily records of the quality (combustible gas concentration) and quantity of landfill gas (landfill gas flow rate) delivered to the Flare for combustion;

REPORTING

6. The Owner shall notify the District Manager, in writing, of the Equipment operation occurrence and the measures taken to ensure appropriate start up procedures within two (2) business days of the Equipment operation occurrence.

7. The Owner shall notify the District Manager, in writing, of any exceedances of the limits from Schedule "A", including the recommended remedial action, within two (2) business days of the monitored exceedance.

COMPLAINTS PROCEDURE

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

(1) The Owner shall record and number each complaint, either electronically or in a log book, and shall include the following information: the nature of the complaint, the name, address and the telephone number of the complainant if the complainant will provide this information and the time and date of the complaint;

(2) The Owner, upon notification of the complaint, shall immediately notify the Ministry's Spills Action Centre of the receipt of the complaint, initiate appropriate steps to determine all possible causes of the complaints, proceed to take all reasonable measures to mitigate the causes of the complaint, and forward a formal report to the Ministry, the FNLC, and the PLC within seven (7) days of the complaint; and

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

9. The Owner shall designate a person to receive any complaints and to respond with a written notice of action as soon as possible. The Owner shall post site complaints procedure at site entrance. All complaints and the Owner's actions taken to remedy the complaints must be summarized in the Annual Report.

NOISE

10. The Owner shall, at all times, ensure that the noise emissions from the Facility comply with the limits set out in Ministry Publication NPC-300.

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

1. Condition Nos. 1 and 10 are included to outline the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Equipment/Facility.

2. Condition Nos. 2 and 3 are included to emphasize that the Equipment must be operated and maintained according to a procedure that will result in compliance with the EPA, the regulations and this Approval.

3. Condition No. 4 is included to require the Owner to gather accurate information on a continuous basis so that compliance with the EPA, the Regulations and this Approval can be verified.

4. Condition Nos. 5, 6 and 7 are included to require the Owner to keep records and provide information to staff of the Ministry so that compliance with the EPA, the regulations and this Approval can be verified.

5. Condition Nos. 8 and 9 are included to establish the procedures for handling complaints, including notification of the Ministry, the FNLC, and PLC. Open communication with the public and local authorities is important in helping to maintain high standards for site operation and environmental protection.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 6380-9WBQKG issued on July 8, 2015.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the

Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

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

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

The Notice should also include:

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

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

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment 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 26th day of April, 2017

Rudolf Wan

Rudolf Wan, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

RA/
c: District Manager, MOECC London - District
Wasef Jamil, WSP Canada Inc.

APPENDIX

B

HISTORICAL WATER ANALYSIS RESULTS

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW20-91						
		11-May-06	14-Nov-06	9-May-07	21-Jun-07	14-Nov-07	6-May-08	12-Nov-08
General Chemistry								
Alkalinity	mg/L	100	130	120	-	130	130	130
Ammonia	mg/L	<0.05	<0.05	0.10	-	0.09	0.08	0.14
Chloride	mg/L	33.0	36.0	33.0	-	33.0	32.0	34.0
Field Conductivity	µS/cm	296	341	319	-	316	356	326
Laboratory Conductivity	µS/cm	329	350	353	-	356	347	354
Total Hardness	mg/L	40	30 U	40	-	40	40 J	30
Nitrate	mg/L	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1
Nitrite	mg/L	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1
Field pH	SU	8.27	7.76	8.00	-	8.34	8.74	8.64
Laboratory pH	SU	8.29	8.16	8.08	-	8.32	8.33	8.43
Phenols	mg/L	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001
Sulphate	mg/L	<2	<2	<2	-	<2	<2	<2
Total Kjeldahl Nitrogen	mg/L	<0.2	1.1 U	0.4 U	-	0.40	0.18	0.58
Total Dissolved Solids	mg/L	220	220	240	-	200	170	270
Chemical Oxygen Demand	mg/L	<10	<10	20	-	<10	<10	<10
Dissolved Organic Carbon	mg/L	3 U	8.0	4.0	-	4.0	3.0	4.0
Temperature	ºC	11.6	9.2	9.7	-	10.9	8.5	9.9
Dissolved Metals								
Arsenic	mg/L	0.001	-	<0.001	-	-	0.002	-
Barium	mg/L	0.030	-	0.040	-	-	0.030	-
Boron	mg/L	0.750	-	0.790	-	-	0.730	-
Cadmium	mg/L	<0.0001	-	<0.0001	-	-	0.0004	-
Calcium	mg/L	9.2	7.8 U	10.9 U	-	11.2	11.5 J	8.1 U
Chromium	mg/L	<0.001	-	<0.001	-	-	0.002	-
Copper	mg/L	<0.001	-	<0.001	-	-	<0.001	-
Iron	mg/L	<0.05	-	<0.05	-	-	<0.05	-
Lead	mg/L	<0.001	-	<0.001	-	-	<0.001	-
Magnesium	mg/L	3.00	3.60	3.30	-	3.20	3.20	2.40
Manganese	mg/L	0.004	-	0.009 U	-	-	0.011 J	-
Mercury	mg/L	<0.0001	-	<0.0001	-	-	<0.0001	-
Phosphorus	mg/L	0.15 U	-	<0.03	-	-	0.06	-
Potassium	mg/L	<1	-	1.00	-	-	<1	-
Sodium	mg/L	73.5	-	77.7	-	-	66.0	-
Zinc	mg/L	<0.003	-	0.015	-	-	0.021 J	-
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	-	<0.5	<0.5	-	<0.5	-
Benzene	µg/L	<0.5	-	<0.5	<0.5	-	<0.5	-
Dichloromethane	µg/L	<0.5	-	<0.5	<0.5	-	<0.5	-
Ethylbenzene	µg/L	<0.5	-	1.10	<0.5	-	0.70	-
Toluene	µg/L	<0.5	-	8.00	0.60	-	3.40	-
Vinyl Chloride	µg/L	<0.5	-	<0.5	<0.5	-	<0.5	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- ºC - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW20-91						
		5-May-09	5-Nov-09	4-May-10	11-Nov-10	4-May-11	11-Nov-11	9-May-12
General Chemistry								
Alkalinity	mg/L	133	128	125	131	131	132	133
Ammonia	mg/L	0.088 U	0.07	0.16	0.08	0.07	0.07	0.08
Chloride	mg/L	31.2	27.9	31.6	31.7	30.2	31.1	32.0
Field Conductivity	µS/cm	324	325	330	367	310	321	347
Laboratory Conductivity	µS/cm	355	343	345	347	352	346	350
Total Hardness	mg/L	37	35	33	38	34	100	40
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Field pH	SU	8.37	8.36	8.22	8.50	8.46	7.47	8.50
Laboratory pH	SU	8.36	8.43	8.44	8.38	8.36	8.21	8.28
Phenols	mg/L	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	3.10	<2.0	<2.0	<2.0	<2.0	7.60	<2.0
Total Kjeldahl Nitrogen	mg/L	0.42	0.18	0.68	0.41	0.20	0.23	0.23
Total Dissolved Solids	mg/L	182	204	194	218	200	218	196
Chemical Oxygen Demand	mg/L	<10	23 U	59	19	<10	<10	<10
Dissolved Organic Carbon	mg/L	4.5	4.9	3.5	2.1	5.8	4.4	3.8
Temperature	C	11.5	9.5	10.6	10.6	8.3	9.5	10.1
Dissolved Metals								
Arsenic	mg/L	0.002	-	0.002	-	0.001	-	0.001
Barium	mg/L	0.032	-	0.028	-	0.032	-	0.035
Boron	mg/L	0.652	-	0.696	-	0.667	-	0.598
Cadmium	mg/L	0.0003	-	0.0003	-	0.0004	-	<0.00010
Calcium	mg/L	9.4	9.2	8.5	9.3	8.8	34.3	10.8
Chromium	mg/L	<0.0010	-	<0.0010	-	<0.0010	-	<0.0010
Copper	mg/L	<0.0010	-	<0.0010	-	<0.0010	-	<0.0010
Iron	mg/L	<0.050	-	<0.050	-	<0.050	-	0.132
Lead	mg/L	<0.0010	-	<0.0010	-	<0.0010	-	<0.0010
Magnesium	mg/L	3.19	2.82	2.88	3.61	3.04	3.62	3.12
Manganese	mg/L	0.009	-	0.007	-	0.005	-	0.015
Mercury	mg/L	<0.00010	-	<0.00010	-	<0.00010	-	<0.00010
Phosphorus	mg/L	0.04	-	0.03	-	<0.030	-	0.04
Potassium	mg/L	<1.0	-	<1.0	-	<1.0	-	<1.0
Sodium	mg/L	76.1	-	66.6	-	64.9	-	57.5
Zinc	mg/L	<0.0030	-	0.0039 U	-	<0.0030	-	0.009
VOCs								
1,4-Dichlorobenzene	µg/L	<0.50	<0.50	<0.50	-	<0.50	-	<0.50
Benzene	µg/L	<0.50	<0.50	<0.50	-	<0.50	-	<0.50
Dichloromethane	µg/L	<0.50	<0.50	<0.50	-	<0.50	-	<0.50
Ethylbenzene	µg/L	<0.50	<0.50	<0.50	-	<0.50	-	<0.50
Toluene	µg/L	<0.50	<0.50	<0.50	-	<0.50	-	<0.50
Vinyl Chloride	µg/L	<0.50	<0.50	<0.50	-	<0.50	-	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW20-91						
		6-Nov-12	**16-May-13**	**14-Nov-13**	**13-May-14**	**12-Nov-14**	**13-May-15**	**9-Nov-15**
General Chemistry								
Alkalinity	mg/L	128	128	131	125	133	131	134
Ammonia	mg/L	0.08	0.06	0.08	0.12	0.09	0.05	0.07
Chloride	mg/L	30.7	36.2	32.0	32.7	33.2	33.6	32.9
Field Conductivity	µS/cm	302	389	383	370	354	274	360
Laboratory Conductivity	µS/cm	307	369	354	356	357	359	358
Total Hardness	mg/L	43	40	35	34	36.9	38.8	38.0
Nitrate	mg/L	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite	mg/L	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Field pH	SU	8.52	8.50	8.36	7.92	8.36	8.46	8.38
Laboratory pH	SU	8.35	7.95	7.98	8.31	8.19	8.25	8.18
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	<2.0	0.42	0.22	0.20	0.29	0.38	0.15
Total Kjeldahl Nitrogen	mg/L	0.50	<0.10	0.41	<0.10	0.22	0.28	0.29
Total Dissolved Solids	mg/L	208	188	188	174	192	220	200
Chemical Oxygen Demand	mg/L	19	<5	9	11	6	<5	6
Dissolved Organic Carbon	mg/L	4.2	4.7	3.9	4.5	5.9	4.0	4.0
Temperature	C	8.8	10.0	9.8	11.0	6.5	10.4	10.8
Dissolved Metals								
Arsenic	mg/L	-	<0.003	-	<0.003	-	<0.003	-
Barium	mg/L	-	0.029	-	0.032	-	0.028	-
Boron	mg/L	-	0.698	-	0.694	-	0.695	-
Cadmium	mg/L	-	<0.002	-	<0.002	-	<0.002	-
Calcium	mg/L	12.2	10.6	9.34	8.80	9.34	10.1	9.91
Chromium	mg/L	-	<0.003	-	<0.003	-	<0.003	-
Copper	mg/L	-	<0.003	-	<0.003	-	<0.003	-
Iron	mg/L	-	0.038	-	0.077	-	0.029	-
Lead	mg/L	-	<0.002	-	<0.002	-	<0.002	-
Magnesium	mg/L	3.14	3.25	2.83	3.02	3.30	3.29	3.21
Manganese	mg/L	-	0.007	-	0.006	-	0.006	-
Mercury	mg/L	-	<0.0001	-	<0.0001	-	<0.0001	-
Phosphorus	mg/L	-	<0.05	-	<0.05	-	<0.05	-
Potassium	mg/L	-	0.98	-	0.83	-	1.09	-
Sodium	mg/L	-	65.5	-	64.7	-	66.7	-
Zinc	mg/L	-	<0.005	-	<0.005	-	<0.005	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.10	-	<0.10	-	<0.10	-
Benzene	µg/L	-	<0.20	-	<0.20	-	<0.20	-
Dichloromethane	µg/L	-	<0.30	-	<0.30	-	<0.30	-
Ethylbenzene	µg/L	-	<0.10	-	<0.10	-	<0.10	-
Toluene	µg/L	-	<0.20	-	<0.20	-	<0.20	-
Vinyl Chloride	µg/L	-	<0.17	-	<0.17	-	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW20-91			
		9-May-16	9-Nov-16	17-May-17	7-Nov-17
General Chemistry					
Alkalinity	mg/L	138	130	134	136
Ammonia	mg/L	0.04	0.20	0.09	0.06
Chloride	mg/L	35.1	34.3	34.0	33.7
Field Conductivity	µS/cm	292	305	300	380
Laboratory Conductivity	µS/cm	373	356	364	363
Total Hardness	mg/L	39.6	35.6	37.7	37.4
Nitrate	mg/L	<0.05	<0.05	<0.05	<0.05
Nitrite	mg/L	<0.05	<0.05	<0.05	<0.05
Field pH	SU	7.84	8.78	7.92	8.20
Laboratory pH	SU	8.04	8.07	8.20	7.86
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	0.32	1.76	0.28	0.15
Total Kjeldahl Nitrogen	mg/L	0.26	0.29	0.29	0.45
Total Dissolved Solids	mg/L	204	200	192	196
Chemical Oxygen Demand	mg/L	6	<5	14	<5
Dissolved Organic Carbon	mg/L	5.6	3.9	4.4	4.2
Temperature	C	12.5	8.4	13.89	10.1
Dissolved Metals					
Arsenic	mg/L	<0.003	-	<0.003	-
Barium	mg/L	0.032	-	0.030	-
Boron	mg/L	0.685	-	0.700	-
Cadmium	mg/L	<0.002	-	<0.002	-
Calcium	mg/L	10.7	9.57	10.3	9.74
Chromium	mg/L	<0.003	-	<0.003	-
Copper	mg/L	<0.003	-	<0.003	-
Iron	mg/L	0.080	-	0.079	-
Lead	mg/L	<0.002	-	<0.002	-
Magnesium	mg/L	3.13	2.84	2.90	3.17
Manganese	mg/L	0.006	-	0.007	-
Mercury	mg/L	<0.0001	-	<0.0001	-
Phosphorus	mg/L	<0.05	-	<0.05	-
Potassium	mg/L	0.86	-	0.81	-
Sodium	mg/L	67.1	-	60.5	-
Zinc	mg/L	<0.005	-	<0.005	-
VOCs					
1,4-Dichlorobenzene	µg/L	<0.10	-	<0.10	-
Benzene	µg/L	<0.20	-	<0.20	-
Dichloromethane	µg/L	<0.30	-	<0.30	-
Ethylbenzene	µg/L	<0.10	-	<0.10	-
Toluene	µg/L	<0.20	-	<0.20	-
Vinyl Chloride	µg/L	<0.17	-	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW23B-95						
		11-May-06	9-May-07	6-May-08	5-May-09	4-May-10	4-May-11	9-May-12
General Chemistry								
Alkalinity	mg/L	180	200	210	249	282	282	265
Ammonia	mg/L	<0.05	<0.05	0.07	0.087 U	0.08	0.05	<0.050
Chloride	mg/L	27.0	24.0	20.0	20.1	20.0	18.2	19.5
Field Conductivity	µS/cm	559	598	650	562	554	563	592
Laboratory Conductivity	µS/cm	642	668	654	625	657	684	665
Total Hardness	mg/L	190	550	220	164	148	161	154
Nitrate	mg/L	0.40	<0.1	0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Field pH	SU	7.76	7.63	8.21	7.86	7.77	7.86	7.91
Laboratory pH	SU	7.82	7.69	8.20	8.11	8.14	8.06	8.06
Phenols	mg/L	<0.001	<0.001	<0.001	0.001	<0.002	<0.001	<0.001
Sulphate	mg/L	114.0	112.0	97.0	99.5	74.3	73.3	77.0
Total Kjeldahl Nitrogen	mg/L	<0.2	0.2 U	0.59	1.56	0.53	<0.15	0.17
Total Dissolved Solids	mg/L	420	420	340	342	346	360	386
Chemical Oxygen Demand	mg/L	<10	10	<10	10	23	<10	<10
Dissolved Organic Carbon	mg/L	2 U	4.0	2.0	3.6	2.1	2.9	2.3
Temperature	C	10.3	9.8	9.0	11.1	9.6	8.5	10.1
Dissolved Metals								
Arsenic	mg/L	<0.001	<0.001	0.001	0.001	<0.0010	<0.0010	<0.0010
Barium	mg/L	0.050	0.070	0.040	0.035	0.037	0.044	0.045
Boron	mg/L	0.400	0.230	0.400	0.359	0.356	0.357	0.311
Cadmium	mg/L	<0.0001	0.0001	0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Calcium	mg/L	43.7	133.0	57.7	36.3	33.1	37.2	35.5
Chromium	mg/L	<0.001	<0.001	0.003	<0.0010	<0.0010	<0.0010	<0.0010
Copper	mg/L	<0.001	<0.001	0.002	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	<0.05	0.140	<0.05	<0.050	<0.050	<0.050	<0.050
Lead	mg/L	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium	mg/L	19.6	52.7	18.6	17.7	15.9	16.6	15.9
Manganese	mg/L	0.001	0.047	0.023	0.008	0.004	<0.0010	<0.0010
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Phosphorus	mg/L	<0.03	<0.03	<0.03	0.05	<0.030	<0.030	<0.030
Potassium	mg/L	2.00	3.00	2.00	1.20	1.20	1.30	1.30
Sodium	mg/L	89.7	57.3	82.0	94.9	77.1	78.8	69.9
Zinc	mg/L	<0.003	0.731	0.298	0.0157 U	<0.0030	0.007	<0.0030
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Benzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Dichloromethane	µg/L	<0.5	<0.5	<0.5	<0.50	0.69	<0.50	<0.50
Ethylbenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Toluene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW23B-95				
		16-May-13	13-May-14	13-May-15	9-May-16	18-May-17
General Chemistry						
Alkalinity	mg/L	220	232	244	252	238
Ammonia	mg/L	0.02	0.03	<0.10	<0.02	0.04
Chloride	mg/L	21.1	17.5	17.9	20.1	18.8
Field Conductivity	µS/cm	713	667	485	530	556
Laboratory Conductivity	µS/cm	653	656	650	674	656
Total Hardness	mg/L	160	161	165	174	161
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.05	<0.05
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.05	<0.05
Field pH	SU	8.24	7.40	8.20	7.49	7.78
Laboratory pH	SU	8.14	8.28	8.30	8.28	8.29
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	85.8	81.9	75.7	83.6	78.7
Total Kjeldahl Nitrogen	mg/L	<0.10	0.20	<0.10	0.22	0.15
Total Dissolved Solids	mg/L	352	354	358	380	344
Chemical Oxygen Demand	mg/L	7	<5	<5	<5	10
Dissolved Organic Carbon	mg/L	3.9	2.3	1.8	2.2	2.4
Temperature	C	10.0	10.4	10.0	12.7	11.95
Dissolved Metals						
Arsenic	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Barium	mg/L	0.040	0.046	0.037	0.042	0.045
Boron	mg/L	0.403	0.376	0.347	0.368	0.356
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	36.4	35.8	36.5	37.7	35.0
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	16.8	17.5	17.9	19.3	17.9
Manganese	mg/L	0.007	<0.002	0.002	<0.002	<0.002
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	1.43	1.35	1.36	1.46	1.28
Sodium	mg/L	81.1	76.7	78.4	79.2	69.3
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
VOCs						
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW24B-95						
		11-May-06	9-May-07	6-May-08	5-May-09	4-May-10	4-May-11	9-May-12
General Chemistry								
Alkalinity	mg/L	120	120	130	129	125	128	125
Ammonia	mg/L	<0.05	<0.05	0.08	0.092 U	0.09	0.07	0.05
Chloride	mg/L	20.0	20.0	19.0	18.6	19.2	17.8	19.8
Field Conductivity	µS/cm	522	572	647	577	602	588	630
Laboratory Conductivity	µS/cm	589	642	633	645	638	661	648
Total Hardness	mg/L	100	120	110	108	102	107	101
Nitrate	mg/L	<0.1	<0.1	<0.1	<0.50	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Field pH	SU	8.09	7.73	8.49	8.06	7.93	8.13	8.23
Laboratory pH	SU	8.05	7.88	8.21	8.21	8.19	8.20	8.12
Phenols	mg/L	<0.001	<0.001	<0.001	0.001	<0.002	<0.001	<0.001
Sulphate	mg/L	155	160	165	184	159	167	165
Total Kjeldahl Nitrogen	mg/L	<0.2	0.2 U	0.29	0.80	0.72	<0.15	<0.15
Total Dissolved Solids	mg/L	390	410	370	376	390	398	406
Chemical Oxygen Demand	mg/L	<10	20	<10	<10	59	<10	<10
Dissolved Organic Carbon	mg/L	2 U	4.0	2.0	2.9	2.2	2.7	2.1
Temperature	C	11.3	10.7	8.4	9.9	10.7	9.2	10.7
Dissolved Metals								
Arsenic	mg/L	0.003	0.003	0.003	0.002	0.001	0.001	0.002
Barium	mg/L	0.020	0.030	0.020	0.021	0.023	0.023	0.025
Boron	mg/L	0.680	0.730	0.660	0.567	0.622	0.608	0.534
Cadmium	mg/L	<0.0001	<0.0001	0.0002	0.0002	0.0002	0.0003	<0.00010
Calcium	mg/L	26.7	29.9	28.0	26.6	26.4	27.1	26.1
Chromium	mg/L	<0.001	<0.001	0.001	<0.0010	<0.0010	<0.0010	<0.0010
Copper	mg/L	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Lead	mg/L	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium	mg/L	8.80	9.90	9.10	10.20	8.76	9.60	8.76
Manganese	mg/L	0.030	0.007 U	0.026	0.013	0.042	0.008	0.014
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Phosphorus	mg/L	0.04 U	<0.03	0.08	0.03	<0.030	<0.030	<0.030
Potassium	mg/L	1.00	1.00	1.00	<1.0	<1.0	1.00	<1.0
Sodium	mg/L	108.0	116.0	101.0	115.0	99.9	97.9	90.5
Zinc	mg/L	<0.003	<0.003	<0.003	<0.0030	0.0074 U	<0.0030	<0.0030
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Benzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Dichloromethane	µg/L	<0.5	<0.5	<0.5	<0.50	0.57	<0.50	<0.50
Ethylbenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Toluene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW24B-95				
		16-May-13	13-May-14	13-May-15	9-May-16	17-May-17
General Chemistry						
Alkalinity	mg/L	122	123	123	127	116
Ammonia	mg/L	0.05	0.05	<0.02	<0.02	0.10
Chloride	mg/L	21.8	19.4	19.6	21.9	20.8
Field Conductivity	µS/cm	731	694	500	527	533
Laboratory Conductivity	µS/cm	679	688	669	675	641
Total Hardness	mg/L	112	110	115	109	98.0
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.05	<0.10
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.05	<0.10
Field pH	SU	8.33	7.61	8.44	7.92	8.03
Laboratory pH	SU	8.10	8.20	8.17	8.07	8.17
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	172	165	170	184	165
Total Kjeldahl Nitrogen	mg/L	0.40	<0.10	<0.10	0.19	0.23
Total Dissolved Solids	mg/L	390	416	390	376	368
Chemical Oxygen Demand	mg/L	<5	<5	<5	<5	14
Dissolved Organic Carbon	mg/L	2.2	3.9	2.0	4.2	2.2
Temperature	C	10.1	10.8	10.0	11.3	14.28
Dissolved Metals						
Arsenic	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Barium	mg/L	0.024	0.026	0.020	0.020	0.023
Boron	mg/L	0.668	0.641	0.644	0.560	0.637
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	28.3	27.6	28.4	26.8	24.6
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	<0.010	<0.010	<0.010	<0.010	0.012
Lead	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	9.93	9.92	10.6	10.1	8.89
Manganese	mg/L	0.011	0.012	0.003	0.004	0.012
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	1.31	1.11	1.22	1.12	1.00
Sodium	mg/L	97.7	98.3	102	96.5	88.6
Zinc	mg/L	<0.005	<0.005	0.008	<0.005	<0.005
VOCs						
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW27A-95						
		11-May-06	9-May-07	6-May-08	5-May-09	4-May-10	29-Jun-11	9-May-12
General Chemistry								
Alkalinity	mg/L	120	110	130	166	136	129	130
Ammonia	mg/L	0.06	0.24	0.10	0.12	0.13	0.08	0.10
Chloride	mg/L	52.0	53.0	50.0	49.7	50.2	50.1	27.6
Field Conductivity	µS/cm	376	386	467	387	412	417	391
Laboratory Conductivity	µS/cm	389	435	416	418	418	410	400
Total Hardness	mg/L	40	50	50	54	40	48	72
Nitrate	mg/L	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Field pH	SU	8.20	7.99	8.75	8.33	8.16	7.98	8.27
Laboratory pH	SU	8.29	8.09	8.35	8.43	8.38	8.32	8.18
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001
Sulphate	mg/L	7	6	6	5	5	<6.0	38
Total Kjeldahl Nitrogen	mg/L	0.4 U	0.5 UJ	0.48	0.23	0.63	0.29	0.27
Total Dissolved Solids	mg/L	250	290	260	310	220	212	333
Chemical Oxygen Demand	mg/L	10	20	20	<10	59	<10	<10
Dissolved Organic Carbon	mg/L	3 U	5.0	3.0	3.9	3.5	4.2	3.0
Temperature	C	10.3	9.6	8.8	9.6	10.0	11.6	10.5
Dissolved Metals								
Arsenic	mg/L	<0.001	<0.001	0.001	0.002	<0.0010	<0.0010	<0.0010
Barium	mg/L	0.080	0.070	0.070	0.087	0.063	0.079	0.089
Boron	mg/L	0.690	0.740	0.720	0.609	0.672	0.597	0.411
Cadmium	mg/L	<0.0001	<0.0001	0.0002	0.0002	0.0002	0.0002	<0.00010
Calcium	mg/L	10.6	12.3 U	13.8	13.8	10.2	11.8	19.3
Chromium	mg/L	<0.001	<0.001	0.003	0.002	<0.0010	<0.0010	<0.0010
Copper	mg/L	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	<0.05	0.100	<0.05	0.498	<0.050	<0.050	<0.050
Lead	mg/L	0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium	mg/L	3.80	4.00	4.20	4.66	3.63	4.55	5.75
Manganese	mg/L	0.005	0.007 U	0.006	0.013	0.004	0.004	0.013
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Phosphorus	mg/L	0.03 U	<0.03	<0.03	<0.030	<0.030	<0.030	<0.030
Potassium	mg/L	<1	1.00	<1	1.30	<1.0	<1.0	1.30
Sodium	mg/L	84.6	88.6	81.0	89.7	77.3	81.6	50.1
Zinc	mg/L	<0.003	0.005	0.052	<0.0030	0.0036 U	0.004	<0.0030
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Benzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Dichloromethane	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Toluene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW27A-95				
		15-May-13	13-May-14	15-May-15	12-May-16	19-May-17
General Chemistry						
Alkalinity	mg/L	136	165	129	139	140
Ammonia	mg/L	0.21	0.26	0.20	0.15	0.24
Chloride	mg/L	56.0	81.2	50.5	55.5	51.0
Field Conductivity	µS/cm	752	840	510	501	573
Laboratory Conductivity	µS/cm	658	768	637	633	581
Total Hardness	mg/L	139	128	126	105	81.7
Nitrate	mg/L	0.17	0.87	<0.05	<0.10	<0.10
Nitrite	mg/L	<0.10	<0.10	<0.05	<0.10	<0.10
Field pH	SU	8.44	7.41	7.02	7.75	6.94
Laboratory pH	SU	8.07	8.17	8.23	8.04	7.62
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	94.5	70.4	113	115	71
Total Kjeldahl Nitrogen	mg/L	0.74	0.52	0.63	0.40	0.56
Total Dissolved Solids	mg/L	358	440	368	356	302
Chemical Oxygen Demand	mg/L	<5	10	<5	10	6
Dissolved Organic Carbon	mg/L	7.2	9.2	4.2	5.5	4.1
Temperature	C	10.0	11.0	11.0	12.0	9.76
Dissolved Metals						
Arsenic	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Barium	mg/L	0.120	0.145	0.070	0.058	0.054
Boron	mg/L	0.352	0.489	0.483	0.503	0.451
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	36.0	31.2	30.9	25.9	20.2
Chromium	mg/L	0.003	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	0.035	0.012	0.128	0.078	0.035
Lead	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	11.9	12.1	11.9	9.83	7.60
Manganese	mg/L	0.050	0.025	0.013	0.008	0.007
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	8.05	9.47	3.80	3.36	2.48
Sodium	mg/L	73.4	101	84.0	88.6	81.3
Zinc	mg/L	0.018	<0.005	<0.005	<0.005	<0.005
VOCs						
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	0.55	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW27B-95						
		11-May-06	**9-May-07**	**6-May-08**	**5-May-09**	**4-May-10**	**29-Jun-11**	**9-May-12**
General Chemistry								
Alkalinity	mg/L	190 J	160	210	187	182	155	250
Ammonia	mg/L	0.43	0.17	0.23	0.14	0.08	0.07	0.13
Chloride	mg/L	21.0	28.0	21.0	23.1	25.2	27.6	15.0
Field Conductivity	µS/cm	904	721	950	744	657	659	662
Laboratory Conductivity	µS/cm	1090	812	946	839	717	651	742
Total Hardness	mg/L	330	180	280	183	146	136	249
Nitrate	mg/L	<0.1	<0.1	<0.1	<0.50	<0.10	<0.10	0.17
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Field pH	SU	7.67	7.73	8.13	7.83	7.80	7.79	7.71
Laboratory pH	SU	7.73	7.75	8.11	8.04	8.16	7.97	7.99
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.002	0.001	<0.001
Sulphate	mg/L	331	212	268	250	151	139	114
Total Kjeldahl Nitrogen	mg/L	0.7 U	0.3 U	0.50	0.67	0.51	0.20	0.27
Total Dissolved Solids	mg/L	740	540	570	504	424	384	454
Chemical Oxygen Demand	mg/L	<10	10	<10	<10	32	<10	11
Dissolved Organic Carbon	mg/L	2 U	4.0	2.0	3.7	2.8	3.6	3.1
Temperature	C	10.5	10.6	9.8	10.8	9.8	12.3	10.5
Dissolved Metals								
Arsenic	mg/L	0.002	<0.001	0.002	0.002	0.002	0.002	<0.0010
Barium	mg/L	0.080	0.060	0.070	0.048	0.038	0.041	0.051
Boron	mg/L	0.530	0.640	0.510	0.476	0.499	0.505	0.249
Cadmium	mg/L	<0.0001	<0.0001	0.0002	0.0002	0.0002	0.0002	<0.00010
Calcium	mg/L	66.2	41.0	64.1	37.7	34.3	30.2	65.4
Chromium	mg/L	<0.001	<0.001	0.002	<0.0010	<0.0010	<0.0010	<0.0010
Copper	mg/L	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Lead	mg/L	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium	mg/L	40.70	19.70	29.30	21.70	14.70	14.60	20.80
Manganese	mg/L	0.059	0.037	0.047	0.034	0.025	0.026	0.141
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Phosphorus	mg/L	0.03 U	<0.03	<0.03	0.04	<0.030	<0.030	<0.030
Potassium	mg/L	4.00	3.00	3.00	2.00	1.50	1.50	2.00
Sodium	mg/L	146.0	133.0	121.0	117.0	98.1	110.0	49.4
Zinc	mg/L	<0.003	<0.003	0.061	<0.0030	0.0051 U	0.021	<0.0030
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Benzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Dichloromethane	µg/L	<0.5	<0.5	<0.5	<0.50	0.79	<0.50	<0.50
Ethylbenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Toluene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW27B-95				
		15-May-13	13-May-14	15-May-15	12-May-16	19-May-17
General Chemistry						
Alkalinity	mg/L	187	179	174	168	152
Ammonia	mg/L	0.18	0.12	0.02	0.12	0.19
Chloride	mg/L	53.0	30.7	30.2	35.0	31.3
Field Conductivity	µS/cm	972	850	545	525	536
Laboratory Conductivity	µS/cm	863	809	681	666	626
Total Hardness	mg/L	215	187	154	130	106
Nitrate	mg/L	0.45	<0.25	<0.05	<0.25	<0.10
Nitrite	mg/L	<0.25	<0.25	<0.05	<0.25	<0.10
Field pH	SU	8.18	7.52	7.12	7.77	7.65
Laboratory pH	SU	8.19	8.26	8.32	8.17	8.11
Phenols	mg/L	0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	155	167	131	135	113
Total Kjeldahl Nitrogen	mg/L	0.82	<0.10	0.24	0.22	0.30
Total Dissolved Solids	mg/L	508	496	404	382	344
Chemical Oxygen Demand	mg/L	16	<5	<5	5	11
Dissolved Organic Carbon	mg/L	8.1	3.5	4.4	4.2	3.2
Temperature	C	10.1	11.3	11.5	12.5	11.0
Dissolved Metals						
Arsenic	mg/L	<0.003	<0.003	<0.003	0.004	<0.003
Barium	mg/L	0.068	0.068	0.045	0.041	0.045
Boron	mg/L	0.364	0.464	0.538	0.560	0.564
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	53.1	41.9	39.0	32.5	25.6
Chromium	mg/L	0.004	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	0.053	0.020	0.085	1.09	0.110
Lead	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	20.1	19.9	13.8	11.8	10.2
Manganese	mg/L	0.121	0.043	0.024	0.071	0.026
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	8.00	2.47	1.69	1.56	1.58
Sodium	mg/L	89.9	97.3	89.2	91.5	86.5
Zinc	mg/L	<0.005	0.007	<0.005	<0.005	<0.005
VOCs						
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW28B-95						
		11-May-06	**14-Nov-06**	**9-May-07**	**14-Nov-07**	**6-May-08**	**12-Nov-08**	**5-May-09**
General Chemistry								
Alkalinity	mg/L	110	98	120	130	130	130	126
Ammonia	mg/L	<0.05	<0.05	<0.05	0.05	0.06	<0.05	0.12
Chloride	mg/L	18.0	18.0	18.0	17.0	17.0	18.0	17.2
Field Conductivity	µS/cm	515	571	541	532	593	547	530
Laboratory Conductivity	µS/cm	580	613	615	604	593	591	591
Total Hardness	mg/L	110	100 U	220	110	110	100	100
Nitrate	mg/L	<0.1	<0.1	<0.1	0.40	<0.1	<0.1	<0.50
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Field pH	SU	8.02	7.23	7.87	8.22	8.46	8.27	8.04
Laboratory pH	SU	8.10	8.02	7.89	8.10	8.20	8.24	8.25
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Sulphate	mg/L	155	146	149	142	143	138	159
Total Kjeldahl Nitrogen	mg/L	0.3 U	0.7 U	1.1 U	0.20	0.64	0.58	1.28
Total Dissolved Solids	mg/L	390	400	400	370	320	380	350
Chemical Oxygen Demand	mg/L	<10	<10	10	<10	10	20 U	<10
Dissolved Organic Carbon	mg/L	2 U	3.0	3.0	2.0	3.0	2.0	2.9
Temperature	C	11.5	9.1	10.8	10.9	10.1	9.4	11.0
Dissolved Metals								
Arsenic	mg/L	0.002	-	<0.001	-	0.001	-	0.001
Barium	mg/L	0.030	-	0.040	-	0.030	-	0.027
Boron	mg/L	0.620	-	0.670	-	0.580	-	0.513
Cadmium	mg/L	<0.0001	-	<0.0001	-	0.0003	-	0.0003
Calcium	mg/L	28.2	23.8 U	68.8	28.9	29.5	26.0	25.4
Chromium	mg/L	<0.001	-	<0.001	-	0.001	-	<0.0010
Copper	mg/L	<0.001	-	0.006	-	0.001	-	0.001
Iron	mg/L	<0.05	-	0.110	-	<0.05	-	<0.050
Lead	mg/L	0.001	-	<0.001	-	<0.001	-	<0.0010
Magnesium	mg/L	8.90	10.80	11.30	9.10	8.70	8.30	8.97
Manganese	mg/L	0.002	-	0.040	-	0.007	-	0.013
Mercury	mg/L	<0.0001	-	<0.0001	-	<0.0001	-	<0.00010
Phosphorus	mg/L	<0.03	-	<0.03	-	<0.03	-	0.03
Potassium	mg/L	2.00	-	2.00	-	1.00	-	1.30
Sodium	mg/L	103.0	-	110.0	-	96.0	-	108.0
Zinc	mg/L	0.012	-	0.556	-	0.032	-	<0.0030
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Benzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Dichloromethane	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Ethylbenzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Toluene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Vinyl Chloride	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW28B-95						
		5-Nov-09	**4-May-10**	**11-Nov-10**	**4-May-11**	**11-Nov-11**	**9-May-12**	**6-Nov-12**
General Chemistry								
Alkalinity	mg/L	120	120	121	122	126	127	127
Ammonia	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/L	15.6	17.3	17.2	15.4	17.0	17.2	16.8
Field Conductivity	µS/cm	523	544	606	527	531	563	500
Laboratory Conductivity	µS/cm	569	582	580	592	584	580	579
Total Hardness	mg/L	94	95	104	88	110	94	124
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Field pH	SU	7.63	7.96	8.19	8.16	7.10	8.16	8.21
Laboratory pH	SU	8.25	8.21	8.22	8.22	8.09	8.14	8.11
Phenols	mg/L	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	121	142	137	139	138	138	137
Total Kjeldahl Nitrogen	mg/L	0.32	0.58	0.23	<0.15	0.36	<0.15	0.31
Total Dissolved Solids	mg/L	338	336	372	348	366	354	364
Chemical Oxygen Demand	mg/L	31 U	17	13	<10	11	<10	25
Dissolved Organic Carbon	mg/L	7.5	2.3	2.2	2.3	3.3	2.0	2.1
Temperature	C	9.9	11.0	10.8	7.5	10.3	10.7	9.4
Dissolved Metals								
Arsenic	mg/L	-	0.001	-	<0.0010	-	0.001	-
Barium	mg/L	-	0.026	-	0.028	-	0.029	-
Boron	mg/L	-	0.531	-	0.483	-	0.512	-
Cadmium	mg/L	-	0.0003	-	0.0003	-	<0.00010	-
Calcium	mg/L	25.3	24.4	25.6	24.0	30.6	24.5	34.9
Chromium	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Copper	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Iron	mg/L	-	<0.050	-	<0.050	-	<0.050	-
Lead	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Magnesium	mg/L	7.58	8.22	9.75	6.86	8.05	7.97	9.01
Manganese	mg/L	-	0.012	-	0.002	-	<0.0010	-
Mercury	mg/L	-	<0.00010	-	<0.00010	-	<0.00010	-
Phosphorus	mg/L	-	<0.030	-	<0.030	-	<0.030	-
Potassium	mg/L	-	1.10	-	1.00	-	1.20	-
Sodium	mg/L	-	89.2	-	82.8	-	78.3	-
Zinc	mg/L	-	0.0035 U	-	0.008	-	<0.0030	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Benzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Dichloromethane	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Ethylbenzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Toluene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Vinyl Chloride	µg/L	-	<0.50	-	<0.50	-	<0.50	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW28B-95						
		14-May-13	14-Nov-13	13-May-14	12-Nov-14	15-May-15	10-Nov-15	12-May-16
General Chemistry								
Alkalinity	mg/L	120	120	150	138	130	136	135
Ammonia	mg/L	0.21	<0.02	0.03	<0.02	<0.02	<0.02	<0.02
Chloride	mg/L	19.4	15.9	16.7	16.4	17.0	15.9	18.8
Field Conductivity	µS/cm	658	631	823	652	505	620	500
Laboratory Conductivity	µS/cm	589	586	831	677	639	644	622
Total Hardness	mg/L	115	89	174	129	118	115	107
Nitrate	mg/L	<0.10	<0.10	<0.25	<0.10	0.06	<0.10	<0.10
Nitrite	mg/L	<0.10	<0.10	<0.25	<0.10	<0.05	<0.10	<0.10
Field pH	SU	8.21	8.13	7.45	7.96	7.60	7.98	7.81
Laboratory pH	SU	7.99	7.93	8.27	8.18	8.26	8.12	8.08
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	155	137	229	177	163	148	175
Total Kjeldahl Nitrogen	mg/L	1.04	0.3	<0.10	<0.10	<0.10	<0.10	<0.10
Total Dissolved Solids	mg/L	358	338	516	396	380	382	358
Chemical Oxygen Demand	mg/L	7	<5	<5	<5	<5	<5	<5
Dissolved Organic Carbon	mg/L	2.3	6.4	1.8	2.6	2.2	3.8	2.5
Temperature	C	10.1	10.5	11.6	7.0	11.8	11.0	12.5
Dissolved Metals								
Arsenic	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Barium	mg/L	0.031	-	0.043	-	0.028	-	0.026
Boron	mg/L	0.589	-	0.579	-	0.599	-	0.603
Cadmium	mg/L	<0.002	-	<0.002	-	<0.002	-	<0.002
Calcium	mg/L	29.3	22.7	43.0	31.8	28.9	29.4	26.5
Chromium	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Copper	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Iron	mg/L	<0.010	-	<0.010	-	<0.010	-	<0.010
Lead	mg/L	<0.002	-	<0.002	-	<0.002	-	<0.002
Magnesium	mg/L	10.2	7.93	16.3	12.1	11.1	10.2	9.86
Manganese	mg/L	0.002	-	0.005	-	<0.002	-	<0.002
Mercury	mg/L	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001
Phosphorus	mg/L	<0.05	-	<0.05	-	<0.05	-	<0.05
Potassium	mg/L	1.34	-	1.63	-	1.39	-	1.34
Sodium	mg/L	93.5	-	106	-	91.4	-	89.8
Zinc	mg/L	0.010	-	<0.005	-	<0.005	-	<0.005
VOCs								
1,4-Dichlorobenzene	µg/L	<0.10	-	<0.10	-	<0.10	-	<0.10
Benzene	µg/L	<0.20	-	<0.20	-	<0.20	-	<0.20
Dichloromethane	µg/L	<0.30	-	<0.30	-	<0.30	-	<0.30
Ethylbenzene	µg/L	<0.10	-	<0.10	-	<0.10	-	<0.10
Toluene	µg/L	<0.20	-	<0.20	-	<0.20	-	<0.20
Vinyl Chloride	µg/L	<0.17	-	<0.17	-	<0.17	-	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW28B-95		
		8-Nov-16	19-May-17	7-Nov-17
General Chemistry				
Alkalinity	mg/L	125	130	132
Ammonia	mg/L	<0.02	0.10	<0.02
Chloride	mg/L	16.9	15.9	17.1
Field Conductivity	µS/cm	578	526	640
Laboratory Conductivity	µS/cm	593	606	606
Total Hardness	mg/L	98.8	97.3	93.3
Nitrate	mg/L	<0.05	<0.10	<0.10
Nitrite	mg/L	<0.05	<0.10	<0.10
Field pH	SU	8.45	7.84	8.02
Laboratory pH	SU	8.02	8.11	7.85
Phenols	mg/L	<0.001	<0.001	<0.001
Sulphate	mg/L	139	141	144
Total Kjeldahl Nitrogen	mg/L	0.19	0.20	0.18
Total Dissolved Solids	mg/L	358	338	348
Chemical Oxygen Demand	mg/L	<5	6	<5
Dissolved Organic Carbon	mg/L	1.8	1.8	2.1
Temperature	C	12.0	11.69	10.6
Dissolved Metals				
Arsenic	mg/L	-	<0.003	-
Barium	mg/L	-	0.031	-
Boron	mg/L	-	0.595	-
Cadmium	mg/L	-	<0.002	-
Calcium	mg/L	24.9	24.4	22.9
Chromium	mg/L	-	<0.003	-
Copper	mg/L	-	<0.003	-
Iron	mg/L	-	<0.010	-
Lead	mg/L	-	<0.002	-
Magnesium	mg/L	8.90	8.83	8.77
Manganese	mg/L	-	0.003	-
Mercury	mg/L	-	<0.0001	-
Phosphorus	mg/L	-	<0.05	-
Potassium	mg/L	-	1.28	-
Sodium	mg/L	-	83.7	-
Zinc	mg/L	-	<0.005	-
VOCs				
1,4-Dichlorobenzene	µg/L	-	<0.10	-
Benzene	µg/L	-	<0.20	-
Dichloromethane	µg/L	-	<0.30	-
Ethylbenzene	µg/L	-	<0.10	-
Toluene	µg/L	-	<0.20	-
Vinyl Chloride	µg/L	-	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW29B-95						
		9-May-07	6-May-08	5-May-09	4-May-10	4-May-11	9-May-12	14-May-13
General Chemistry								
Alkalinity	mg/L	94	120	136	116	122	120	120
Ammonia	mg/L	0.08	0.08	0.119 U	0.11	0.07	0.10	0.40
Chloride	mg/L	27.0	27.0	27.0	27.4	26.1	27.8	31.5
Field Conductivity	µS/cm	402	421	407	398	393	419	479
Laboratory Conductivity	µS/cm	452	431	452	418	439	431	465
Total Hardness	mg/L	50	60	54	48	63	50	59
Nitrate	mg/L	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.05
Nitrite	mg/L	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.05
Field pH	SU	8.03	8.75	8.10	8.18	8.33	8.42	8.22
Laboratory pH	SU	8.07	8.30	8.30	8.38	8.29	8.25	8.07
Phenols	mg/L	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001
Sulphate	mg/L	63	53	56	53	50	55	59.4
Total Kjeldahl Nitrogen	mg/L	0.3 U	0.15	0.35	0.63	<0.15	0.44	<0.10
Total Dissolved Solids	mg/L	310	300	270	242	256	258	298
Chemical Oxygen Demand	mg/L	20	<10	<10	61	11	<10	13
Dissolved Organic Carbon	mg/L	5.0	3.0	5.1	3.8	4.7	4.3	5.1
Temperature	°C	11.1	10.5	11.3	10.7	6.5	10.4	9.8
Dissolved Metals								
Arsenic	mg/L	0.004	0.005	0.004	0.004	0.004	0.004	0.004
Barium	mg/L	0.030	0.030	0.034	0.033	0.040	0.040	0.037
Boron	mg/L	0.840	0.810	0.687	0.706	0.814	0.643	0.778
Cadmium	mg/L	<0.0001	0.0004	0.0003	0.0004	0.0004	<0.00010	<0.002
Calcium	mg/L	13.2 U	14.8	13.7	12.3	16.5	13.1	15.3
Chromium	mg/L	<0.001	0.002	<0.0010	<0.0010	<0.0010	<0.0010	<0.003
Copper	mg/L	0.003	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.003
Iron	mg/L	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.010
Lead	mg/L	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.002
Magnesium	mg/L	4.60	4.60	4.75	4.24	5.21	4.23	5.07
Manganese	mg/L	0.009 U	0.010	0.014	0.009	0.011	0.011	0.010
Mercury	mg/L	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.0001
Phosphorus	mg/L	<0.03	<0.03	0.04	<0.030	0.03	<0.030	<0.05
Potassium	mg/L	<1	<1	<1.0	<1.0	<1.0	<1.0	0.82
Sodium	mg/L	86.9	77.0	81.1	75.8	69.8	67.1	79.3
Zinc	mg/L	<0.003	<0.003	<0.0030	<0.0030	0.004	<0.0030	0.008
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Benzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Dichloromethane	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.30
Ethylbenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Toluene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Vinyl Chloride	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- °C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	**Units**	**OW29B-95**			
		13-May-14	**15-May-15**	**12-May-16**	**19-May-17**
General Chemistry					
Alkalinity	mg/L	121	123	133	122
Ammonia	mg/L	0.12	<0.02	<0.02	0.05
Chloride	mg/L	28.1	27.0	31.4	28.2
Field Conductivity	μS/cm	470	370	371	394
Laboratory Conductivity	μS/cm	473	449	473	461
Total Hardness	mg/L	59	55.8	56.7	56.4
Nitrate	mg/L	<0.05	0.07	0.10	0.06
Nitrite	mg/L	<0.05	<0.05	<0.05	<0.05
Field pH	SU	7.74	7.85	8.00	8.00
Laboratory pH	SU	8.27	8.25	8.09	8.13
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	57.4	53.2	68.6	65.8
Total Kjeldahl Nitrogen	mg/L	<0.10	0.13	0.11	0.18
Total Dissolved Solids	mg/L	288	276	264	242
Chemical Oxygen Demand	mg/L	<5	5	12	9
Dissolved Organic Carbon	mg/L	4.3	3.3	3.8	3.5
Temperature	C	11.0	11.9	12.7	10.86
Dissolved Metals					
Arsenic	mg/L	0.003	0.003	0.004	0.004
Barium	mg/L	0.033	0.027	0.028	0.032
Boron	mg/L	0.640	0.739	0.770	0.788
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	15.1	14.5	14.3	14.7
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	5.21	4.75	5.10	4.79
Manganese	mg/L	0.010	<0.002	<0.002	0.003
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	1.39	0.76	0.99	0.85
Sodium	mg/L	75.5	71.9	76.9	71.8
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005
VOCs					
1,4-Dichlorobenzene	μg/L	<0.10	<0.10	<0.10	<0.10
Benzene	μg/L	<0.20	<0.20	<0.20	<0.20
Dichloromethane	μg/L	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	μg/L	<0.10	<0.10	<0.10	<0.10
Toluene	μg/L	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	μg/L	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, μg/L - micrograms per litre, SU - Scientific Units, μS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW30B-95						
		11-May-06	9-May-07	6-May-08	5-May-09	4-May-10	4-May-11	9-May-12
General Chemistry								
Alkalinity	mg/L	110	130	150	152	149	148	148
Ammonia	mg/L	<0.05	0.09	0.06	0.110 U	0.07	0.09	0.08
Chloride	mg/L	17.0	17.0	20.0	18.2	18.4	16.6	18.5
Field Conductivity	µS/cm	387	427	527	416	396	376	404
Laboratory Conductivity	µS/cm	434	472	518	458	422	418	414
Total Hardness	mg/L	60	60	100	57	48	48	46
Nitrate	mg/L	<0.1	<0.1	0.20	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Field pH	SU	8.02	7.82	8.70	8.16	8.07	8.34	8.32
Laboratory pH	SU	8.12	8.00	8.36	8.32	8.34	8.32	8.24
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001
Sulphate	mg/L	61	61	82	53	41	35	39
Total Kjeldahl Nitrogen	mg/L	0.3 U	0.3 U	0.31	0.56	0.54	<0.15	0.19
Total Dissolved Solids	mg/L	320	310	350	272	260	230	250
Chemical Oxygen Demand	mg/L	<10	10	10	<10	51	<10	<10
Dissolved Organic Carbon	mg/L	3 U	4.0	4.0	4.3	3.4	4.0	3.0
Temperature	C	10.2	12.1	10.1	11.1	11.4	6.4	10.3
Dissolved Metals								
Arsenic	mg/L	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Barium	mg/L	0.040	0.040	0.040	0.035	0.034	0.038	0.038
Boron	mg/L	0.740	0.760	0.690	0.636	0.676	0.719	0.599
Cadmium	mg/L	<0.0001	<0.0001	0.0004	0.0003	0.0003	0.0004	<0.00010
Calcium	mg/L	15.1	15.2 U	26.7	14.5	12.5	12.2	11.8
Chromium	mg/L	<0.001	<0.001	0.002	<0.0010	<0.0010	<0.0010	<0.0010
Copper	mg/L	<0.001	0.006	0.003	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Lead	mg/L	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium	mg/L	5.10	5.40	7.10	5.09	4.08	4.33	3.94
Manganese	mg/L	0.011	0.010 U	0.015	0.011	0.010	0.006	0.013
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Phosphorus	mg/L	0.04 U	<0.03	<0.03	0.04	<0.030	0.03	<0.030
Potassium	mg/L	2.00	2.00	2.00	1.30	1.10	1.10	1.10
Sodium	mg/L	92.4	94.5	90.0	92.3	78.5	60.9	67.4
Zinc	mg/L	<0.003	<0.003	0.090	0.0080 U	0.0102 U	<0.0030	<0.0030
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Benzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Dichloromethane	µg/L	<0.5	<0.5	<0.5	<0.50	0.74	<0.50	<0.50
Ethylbenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Toluene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW30B-95				
		14-May-13	13-May-14	15-May-15	12-May-16	24-May-17
General Chemistry						
Alkalinity	mg/L	143	142	142	147	140
Ammonia	mg/L	0.37	0.07	<0.02	<0.02	0.12
Chloride	mg/L	21.0	18.7	17.8	21.5	18.9
Field Conductivity	µS/cm	470	440	343	375	349
Laboratory Conductivity	µS/cm	438	444	433	430	433
Total Hardness	mg/L	53	53	52.2	49.1	48.0
Nitrate	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Field pH	SU	8.17	7.82	8.08	7.70	8.28
Laboratory pH	SU	8.08	8.29	8.31	8.12	8.10
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	41.0	39.3	43.3	47.2	38.3
Total Kjeldahl Nitrogen	mg/L	<0.10	<0.10	0.12	<0.10	0.27
Total Dissolved Solids	mg/L	272	274	260	232	226
Chemical Oxygen Demand	mg/L	<5	8	<5	9	7
Dissolved Organic Carbon	mg/L	4.4	4.8	3.5	3.2	2.8
Temperature	C	9.4	10.9	11.0	12.2	12.54
Dissolved Metals						
Arsenic	mg/L	<0.003	<0.003	<0.003	0.003	0.003
Barium	mg/L	0.037	0.038	0.032	0.032	0.036
Boron	mg/L	0.736	0.692	0.733	0.764	0.720
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	13.6	13.3	13.2	12.2	12.1
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	4.61	4.82	4.67	4.52	4.33
Manganese	mg/L	0.007	0.008	<0.002	<0.002	0.009
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	1.16	1.57	1.19	1.16	1.32
Sodium	mg/L	77.8	75.7	74.4	75.8	72.9
Zinc	mg/L	0.021	<0.005	<0.005	<0.005	<0.005
VOCs						
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW31B-95						
		11-May-06	14-Nov-06	9-May-07	15-Nov-07	6-May-08	18-Nov-08	5-May-09
General Chemistry								
Alkalinity	mg/L	59	110	73	98	91	85	93
Ammonia	mg/L	<0.05	0.09	0.11	0.14	0.10	0.07	0.119 U
Chloride	mg/L	28.0	34.0	28.0	32.0	26.0	27.0	26.2
Field Conductivity	µS/cm	488	623	484	535	540	545	529
Laboratory Conductivity	µS/cm	548	597	550	604	577	588	593
Total Hardness	mg/L	70	60 U	70	90	90	110	81
Nitrate	mg/L	<0.1	<0.1	<0.1	0.10	<0.1	0.20	<0.50
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Field pH	SU	8.13	7.44	8.10	7.69	8.86	8.64	8.33
Laboratory pH	SU	8.32	8.31	8.23	8.26	8.32	8.30	8.33
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	141	140	124	147	139	146	172
Total Kjeldahl Nitrogen	mg/L	0.3 U	0.4 U	0.4 U	2.30	0.34	0.91	<0.15
Total Dissolved Solids	mg/L	450	730	360	390	440	360	370
Chemical Oxygen Demand	mg/L	<10	<10	10	20	<10	<10	<10
Dissolved Organic Carbon	mg/L	3 U	10.0	5.0	4.0	5.0	4.0	4.2
Temperature	C	10.1	10.6	11.3	10.6	9.5	7.1	12.5
Dissolved Metals								
Arsenic	mg/L	0.003	-	0.002	-	0.003	-	0.003
Barium	mg/L	0.040	-	0.040	-	0.060	-	0.049
Boron	mg/L	0.700	-	0.760	-	0.700	-	0.628
Cadmium	mg/L	0.0001	-	<0.0001	-	0.0003	-	0.0003
Calcium	mg/L	16.9	14.2 U	19.0 U	24.4	23.5	30.2	19.8
Chromium	mg/L	<0.001	-	<0.001	-	0.002	-	<0.0010
Copper	mg/L	<0.001	-	0.009	-	<0.001	-	<0.0010
Iron	mg/L	<0.05	-	<0.05	-	<0.05	-	<0.050
Lead	mg/L	<0.001	-	<0.001	-	<0.001	-	<0.0010
Magnesium	mg/L	5.90	6.80	6.60	7.70	6.90	7.50	7.74
Manganese	mg/L	0.009	-	0.014 U	-	0.013	-	0.011
Mercury	mg/L	<0.0001	-	<0.0001	-	<0.0001	-	<0.00010
Phosphorus	mg/L	<0.03	-	<0.03	-	<0.03	-	<0.030
Potassium	mg/L	2.00	-	2.00	-	1.00	-	1.20
Sodium	mg/L	110.0	-	108.0	-	93.0	-	104.0
Zinc	mg/L	<0.003	-	0.021	-	0.052	-	<0.0030
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Benzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Dichloromethane	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Ethylbenzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Toluene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Vinyl Chloride	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW31B-95						
		5-Nov-09	4-May-10	11-Nov-10	4-May-11	11-Nov-11	9-May-12	6-Nov-12
General Chemistry								
Alkalinity	mg/L	97	96	89	93	92	100	98
Ammonia	mg/L	0.10	0.16	0.07	0.12	0.07	0.10	0.11
Chloride	mg/L	23.6	26.4	26.4	24.6	26.0	26.7	25.7
Field Conductivity	µS/cm	539	534	618	537	534	562	504
Laboratory Conductivity	µS/cm	582	584	590	599	595	587	601
Total Hardness	mg/L	80	87	86	81	93	77	103
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Field pH	SU	8.14	8.14	8.49	8.52	7.37	8.49	8.46
Laboratory pH	SU	8.33	8.33	8.31	8.31	8.17	8.23	8.05
Phenols	mg/L	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	138	151	153	156	153	152	145
Total Kjeldahl Nitrogen	mg/L	0.25	0.67	0.38	<0.15	<0.15	0.26	0.31
Total Dissolved Solids	mg/L	510	412	388	360	378	400	382
Chemical Oxygen Demand	mg/L	18 U	15	17	11	<10	<10	38
Dissolved Organic Carbon	mg/L	6.6	3.7	2.8	4.7	3.5	3.9	3.0
Temperature	C	9.9	10.6	11.2	6.2	10.0	9.4	9.5
Dissolved Metals								
Arsenic	mg/L	-	0.002	-	0.002	-	0.002	-
Barium	mg/L	-	0.053	-	0.058	-	0.055	-
Boron	mg/L	-	0.664	-	0.618	-	0.570	-
Cadmium	mg/L	-	0.0003	-	0.0003	-	<0.00010	-
Calcium	mg/L	21.4	23.4	20.9	20.6	25.9	19.8	29.1
Chromium	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Copper	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Iron	mg/L	-	<0.050	-	<0.050	-	<0.050	-
Lead	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Magnesium	mg/L	6.54	6.94	8.35	7.11	6.96	6.72	7.25
Manganese	mg/L	-	0.013	-	0.011	-	0.011	-
Mercury	mg/L	-	<0.00010	-	<0.00010	-	<0.00010	-
Phosphorus	mg/L	-	<0.030	-	<0.030	-	<0.030	-
Potassium	mg/L	-	1.20	-	1.30	-	1.30	-
Sodium	mg/L	-	94.1	-	90.4	-	80.5	-
Zinc	mg/L	-	0.064	-	<0.0030	-	<0.0030	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Benzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Dichloromethane	µg/L	-	0.64	-	<0.50	-	<0.50	-
Ethylbenzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Toluene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Vinyl Chloride	µg/L	-	<0.50	-	<0.50	-	<0.50	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW31B-95						
		14-May-13	14-Nov-13	13-May-14	12-Nov-14	15-May-15	10-Nov-15	12-May-16
General Chemistry								
Alkalinity	mg/L	94	88	94	104	98	105	106
Ammonia	mg/L	0.12	0.07	0.17	0.31	0.11	0.12	0.11
Chloride	mg/L	30.3	25.4	27.3	28.2	28.5	25.7	30.9
Field Conductivity	µS/cm	634	621	598	547	460	550	455
Laboratory Conductivity	µS/cm	602	570	598	566	568	566	574
Total Hardness	mg/L	88	70	79	76.4	80.8	78.6	91.9
Nitrate	mg/L	<0.10	<0.10	0.09	<0.05	0.15	<0.10	<0.10
Nitrite	mg/L	<0.10	<0.10	<0.05	<0.05	<0.05	<0.10	<0.10
Field pH	SU	8.25	8.13	7.95	8.39	8.06	8.50	7.94
Laboratory pH	SU	8.08	7.96	8.24	8.10	8.18	8.07	7.98
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	151	135	136	131	132	122	155
Total Kjeldahl Nitrogen	mg/L	0.15	6.8	<0.20	0.62	0.40	0.35	0.13
Total Dissolved Solids	mg/L	372	346	360	336	356	356	376
Chemical Oxygen Demand	mg/L	12	8	7	<5	8	<5	10
Dissolved Organic Carbon	mg/L	3.8	2.9	3.6	5.1	3.7	5.5	4.0
Temperature	C	9.8	10.2	11.5	7.2	11.5	10.0	12.8
Dissolved Metals								
Arsenic	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Barium	mg/L	0.047	-	0.053	-	0.047	-	0.045
Boron	mg/L	0.721	-	0.668	-	0.704	-	0.718
Cadmium	mg/L	<0.002	-	<0.002	-	<0.002	-	<0.002
Calcium	mg/L	22.6	17.9	20.0	19.2	20.7	20.0	22.6
Chromium	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Copper	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Iron	mg/L	<0.010	-	<0.010	-	<0.010	-	<0.010
Lead	mg/L	<0.002	-	<0.002	-	<0.002	-	<0.002
Magnesium	mg/L	7.71	6.22	6.99	6.90	7.07	6.95	8.62
Manganese	mg/L	0.010	-	0.007	-	0.006	-	0.006
Mercury	mg/L	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001
Phosphorus	mg/L	<0.05	-	<0.05	-	<0.05	-	<0.05
Potassium	mg/L	1.33	-	1.34	-	1.37	-	4.92
Sodium	mg/L	96.4	-	89.6	-	87.4	-	88.8
Zinc	mg/L	<0.005	-	<0.005	-	<0.005	-	<0.005
VOCs								
1,4-Dichlorobenzene	µg/L	<0.10	-	<0.10	-	<0.10	-	<0.10
Benzene	µg/L	<0.20	-	<0.20	-	<0.20	-	<0.20
Dichloromethane	µg/L	<0.30	-	<0.30	-	<0.30	-	<0.30
Ethylbenzene	µg/L	<0.10	-	<0.10	-	<0.10	-	<0.10
Toluene	µg/L	<0.20	-	<0.20	-	<0.20	-	<0.20
Vinyl Chloride	µg/L	<0.17	-	<0.17	-	<0.17	-	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW31B-95		
		8-Nov-16	19-May-17	7-Nov-17
General Chemistry				
Alkalinity	mg/L	100	110	99
Ammonia	mg/L	0.38	0.11	0.13
Chloride	mg/L	28.0	26.0	27.6
Field Conductivity	µS/cm	504	526	570
Laboratory Conductivity	µS/cm	560	619	570
Total Hardness	mg/L	74.8	86.5	68.6
Nitrate	mg/L	0.06	<0.10	<0.10
Nitrite	mg/L	<0.05	<0.10	<0.10
Field pH	SU	8.63	8.09	8.11
Laboratory pH	SU	7.91	8.06	7.73
Phenols	mg/L	<0.001	<0.001	<0.001
Sulphate	mg/L	128	151	132
Total Kjeldahl Nitrogen	mg/L	0.30	0.32	0.37
Total Dissolved Solids	mg/L	338	348	326
Chemical Oxygen Demand	mg/L	<5	10	<5
Dissolved Organic Carbon	mg/L	3.7	3.3	3.7
Temperature	C	11.3	11.38	10.1
Dissolved Metals				
Arsenic	mg/L	-	<0.003	-
Barium	mg/L	-	0.045	-
Boron	mg/L	-	0.696	-
Cadmium	mg/L	-	<0.002	-
Calcium	mg/L	19.0	22.2	16.8
Chromium	mg/L	-	<0.003	-
Copper	mg/L	-	<0.003	-
Iron	mg/L	-	<0.010	-
Lead	mg/L	-	<0.002	-
Magnesium	mg/L	6.64	7.55	6.48
Manganese	mg/L	-	0.006	-
Mercury	mg/L	-	<0.0001	-
Phosphorus	mg/L	-	<0.05	-
Potassium	mg/L	-	1.31	-
Sodium	mg/L	-	91.7	-
Zinc	mg/L	-	<0.005	-
VOCs				
1,4-Dichlorobenzene	µg/L	-	<0.10	-
Benzene	µg/L	-	<0.20	-
Dichloromethane	µg/L	-	<0.30	-
Ethylbenzene	µg/L	-	<0.10	-
Toluene	µg/L	-	<0.20	-
Vinyl Chloride	µg/L	-	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

wsp

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW32B-95						
		11-May-06	**9-May-07**	**6-May-08**	**5-May-09**	**4-May-10**	**4-May-11**	**9-May-12**
General Chemistry								
Alkalinity	mg/L	100	140	130	140	138	137	128
Ammonia	mg/L	<0.05	0.07	0.07	0.108 U	0.11	0.36	0.11
Chloride	mg/L	23.0	24.0	23.0	22.2	24.9	21.9	24.3
Field Conductivity	µS/cm	289	300	311	298	316	295	331
Laboratory Conductivity	µS/cm	316	332	324	324	329	326	318
Total Hardness	mg/L	40	40	40	30	30	32	28
Nitrate	mg/L	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Field pH	SU	8.06	8.08	8.82	8.37	8.11	8.55	8.65
Laboratory pH	SU	8.28	8.24	8.40	8.41	8.46	8.40	8.40
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.002	0.002	<0.001
Sulphate	mg/L	7	3	<2	2	6	<2.0	<2.0
Total Kjeldahl Nitrogen	mg/L	0.3 U	0.4 U	0.22	0.24	0.75	0.54	0.32
Total Dissolved Solids	mg/L	220	410	180	212	248	182	196
Chemical Oxygen Demand	mg/L	<10	20	10	<10	21	19	<10
Dissolved Organic Carbon	mg/L	3 U	6.0	3.0	5.4	3.9	5.1	4.1
Temperature	C	10.0	10.1	8.8	9.6	10.3	8.2	9.7
Dissolved Metals								
Arsenic	mg/L	0.005	0.003	0.004	0.004	0.004	0.003	0.002
Barium	mg/L	0.030	0.030	0.020	0.023	0.021	0.025	0.023
Boron	mg/L	0.600	0.640	0.620	0.564	0.574	0.580	0.481
Cadmium	mg/L	<0.0001	<0.0001	0.0004	0.0004	0.0004	0.0004	<0.00010
Calcium	mg/L	9.6	10.0 U	11.4	7.5	7.6	8.4	7.6
Chromium	mg/L	<0.001	<0.001	0.002	<0.0010	<0.0010	<0.0010	<0.0010
Copper	mg/L	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Lead	mg/L	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium	mg/L	2.90	3.10	2.90	2.76	2.62	2.65	2.28
Manganese	mg/L	0.011	0.014 U	0.012	0.009	0.004	0.011	0.004
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Phosphorus	mg/L	0.05 U	<0.03	<0.03	<0.030	<0.030	0.06	<0.030
Potassium	mg/L	<1	<1	<1	<1.0	<1.0	<1.0	<1.0
Sodium	mg/L	71.6	72.8	66.0	72.5	65.4	58.5	52.5
Zinc	mg/L	<0.003	0.007	0.032	<0.0030	<0.0030	<0.0030	0.009
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Benzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Dichloromethane	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Toluene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW32B-95				
		14-May-13	13-May-14	15-May-15	12-May-16	19-May-17
General Chemistry						
Alkalinity	mg/L	126	124	122	134	131
Ammonia	mg/L	0.33	0.14	0.09	0.10	0.26
Chloride	mg/L	28.0	24.4	25.1	27.0	24.2
Field Conductivity	µS/cm	360	341	260	267	280
Laboratory Conductivity	µS/cm	334	340	327	336	330
Total Hardness	mg/L	35	31	31.5	39.1	30.7
Nitrate	mg/L	0.06	<0.05	<0.05	<0.05	<0.05
Nitrite	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Field pH	SU	8.43	8.15	8.21	8.00	8.30
Laboratory pH	SU	8.17	8.36	8.30	8.15	8.27
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	3.1	0.63	0.89	2.97	1.61
Total Kjeldahl Nitrogen	mg/L	0.27	0.19	0.25	0.33	0.35
Total Dissolved Solids	mg/L	230	204	186	212	204
Chemical Oxygen Demand	mg/L	7	10	6	12	12
Dissolved Organic Carbon	mg/L	6.1	4.5	4.2	5.2	4.4
Temperature	C	9.6	11.3	12.0	12.0	11.33
Dissolved Metals						
Arsenic	mg/L	<0.003	<0.003	<0.003	0.003	<0.003
Barium	mg/L	0.027	0.022	0.016	0.021	0.023
Boron	mg/L	0.599	0.571	0.541	0.617	0.597
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	9.18	7.80	8.19	9.49	8.04
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	2.89	2.80	2.69	3.73	2.59
Manganese	mg/L	0.004	0.005	0.003	0.004	0.004
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	0.73	0.94	0.75	2.39	0.59
Sodium	mg/L	66.7	61.7	60.9	63.1	59.1
Zinc	mg/L	0.007	<0.005	<0.005	0.008	<0.005
VOCs						
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW34B-95						
		11-May-06	14-Nov-06	9-May-07	14-Nov-07	6-May-08	12-Nov-08	5-May-09
General Chemistry								
Alkalinity	mg/L	100	110	120	140	140	130	136
Ammonia	mg/L	<0.05	0.14	0.06	0.08	0.08	0.15	0.13
Chloride	mg/L	28.0	28.0	30.0	28.0	28.0	29.0	27.6
Field Conductivity	µS/cm	363	401	402	378	449	391	386
Laboratory Conductivity	µS/cm	403	439	435	438	429	425	416
Total Hardness	mg/L	50	70 U	60	60	50	60	57
Nitrate	mg/L	<0.1	<0.1	<0.1	0.10	<0.1	0.20	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Field pH	SU	8.33	7.70	7.70	8.19	8.66	8.44	8.29
Laboratory pH	SU	8.22	8.05	7.98	8.31	8.23	8.30	8.12
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Sulphate	mg/L	43	41	34	40	37	34	34
Total Kjeldahl Nitrogen	mg/L	0.4 U	0.7 U	0.2 U	0.30	0.87	0.92	0.37
Total Dissolved Solids	mg/L	290	270	320	260	220	280	224
Chemical Oxygen Demand	mg/L	<10	20	20	<10	20	30 U	<10
Dissolved Organic Carbon	mg/L	4 U	5.0	4.0	6.0	3.0	4.0	4.6
Temperature	C	11.1	9.2	10.3	10.5	8.4	9.7	11.0
Dissolved Metals								
Arsenic	mg/L	0.004	-	0.004	-	0.005	-	0.004
Barium	mg/L	0.030	-	0.040	-	0.030	-	0.032
Boron	mg/L	0.640	-	0.670	-	0.650	-	0.582
Cadmium	mg/L	<0.0001	-	<0.0001	-	0.001	-	0.0004
Calcium	mg/L	13.4	17.8 U	15.9 U	16.7	13.9	18.3	14.4
Chromium	mg/L	<0.001	-	<0.001	-	0.002	-	<0.0010
Copper	mg/L	<0.001	-	<0.001	-	<0.001	-	<0.0010
Iron	mg/L	<0.05	-	<0.05	-	<0.05	-	<0.050
Lead	mg/L	<0.001	-	<0.001	-	<0.001	-	<0.0010
Magnesium	mg/L	4.50	5.20	5.20	4.90	4.20	3.80	5.12
Manganese	mg/L	0.029	-	0.010 U	-	0.008	-	0.002
Mercury	mg/L	<0.0001	-	<0.0001	-	<0.0001	-	<0.00010
Phosphorus	mg/L	0.04 U	-	<0.03	-	0.03	-	0.04
Potassium	mg/L	<1	-	<1	-	<1	-	<1.0
Sodium	mg/L	85.5	-	90.4	-	77.0	-	89.1
Zinc	mg/L	<0.003	-	<0.003	-	0.010 U	-	<0.0030
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Benzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Dichloromethane	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Ethylbenzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Toluene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Vinyl Chloride	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW34B-95						
		5-Nov-09	4-May-10	11-Nov-10	4-May-11	11-Nov-11	9-May-12	6-Nov-12
General Chemistry								
Alkalinity	mg/L	140	130	141	136	142	146	136
Ammonia	mg/L	0.06	0.10	<0.050	0.10	<0.050	0.08	0.06
Chloride	mg/L	25.0	28.9	28.2	27.2	28.4	28.3	27.7
Field Conductivity	µS/cm	376	395	431	368	365	416	355
Laboratory Conductivity	µS/cm	413	399	416	406	418	418	353
Total Hardness	mg/L	59	43	59	43	64	50	69
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Field pH	SU	8.25	8.07	8.40	8.34	7.46	8.42	8.41
Laboratory pH	SU	8.34	8.38	8.29	8.36	8.20	8.25	8.28
Phenols	mg/L	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	31	28	33	24	30	33	28
Total Kjeldahl Nitrogen	mg/L	<0.15	0.58	0.33	0.18	0.23	0.25	0.40
Total Dissolved Solids	mg/L	252	236	288	228	274	252	250
Chemical Oxygen Demand	mg/L	20 U	59	19	<10	<10	<10	21
Dissolved Organic Carbon	mg/L	6.9	4.5	3.2	4.8	4.2	3.4	3.9
Temperature	C	9.2	10.6	10.5	9.1	9.3	9.9	8.1
Dissolved Metals								
Arsenic	mg/L	-	0.005	-	0.005	-	0.003	-
Barium	mg/L	-	0.023	-	0.025	-	0.032	-
Boron	mg/L	-	0.644	-	0.596	-	0.522	-
Cadmium	mg/L	-	0.0004	-	0.0005	-	<0.00010	-
Calcium	mg/L	16.6	11.2	14.6	11.4	18.1	13.0	19.4
Chromium	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Copper	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Iron	mg/L	-	<0.050	-	<0.050	-	<0.050	-
Lead	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Magnesium	mg/L	4.33	3.57	5.48	3.57	4.67	4.16	4.91
Manganese	mg/L	-	0.010	-	0.011	-	0.001	-
Mercury	mg/L	-	<0.00010	-	<0.00010	-	<0.00010	-
Phosphorus	mg/L	-	0.04	-	<0.030	-	0.03	-
Potassium	mg/L	-	<1.0	-	<1.0	-	<1.0	-
Sodium	mg/L	-	75.9	-	74.2	-	70.1	-
Zinc	mg/L	-	0.0081 U	-	0.004	-	<0.0030	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Benzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Dichloromethane	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Ethylbenzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Toluene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Vinyl Chloride	µg/L	-	<0.50	-	<0.50	-	<0.50	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW34B-95						
		16-May-13	14-Nov-13	13-May-14	12-Nov-14	13-May-15	9-Nov-15	9-May-16
General Chemistry								
Alkalinity	mg/L	140	139	145	147	139	146	161
Ammonia	mg/L	0.07	0.08	0.08	0.12	0.03	<0.02	0.03
Chloride	mg/L	32.1	28.3	28.8	30.0	28.4	28.9	31.5
Field Conductivity	µS/cm	465	469	460	432	324	430	354
Laboratory Conductivity	µS/cm	455	425	439	438	429	436	466
Total Hardness	mg/L	61	48	58	56.9	53.2	56.9	68.8
Nitrate	mg/L	<0.05	<0.05	<0.05	<0.05	<0.10	<0.05	<0.05
Nitrite	mg/L	<0.05	<0.05	<0.05	<0.05	<0.10	<0.05	<0.05
Field pH	SU	8.40	8.32	7.80	8.25	8.27	8.13	7.98
Laboratory pH	SU	8.11	7.99	8.28	8.15	8.23	8.25	8.17
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	35.2	31.1	31.3	32.6	29.4	29.3	33.3
Total Kjeldahl Nitrogen	mg/L	<0.10	0.46	<0.10	0.50	0.20	0.22	0.28
Total Dissolved Solids	mg/L	242	230	222	238	230	226	226
Chemical Oxygen Demand	mg/L	11	11	6	<5	<5	5	5
Dissolved Organic Carbon	mg/L	3.9	8.7	3.6	4.5	4.7	4.3	3.9
Temperature	C	10.0	9.9	10.4	7.1	10.0	11.1	10.5
Dissolved Metals								
Arsenic	mg/L	0.003	-	0.003	-	0.004	-	0.004
Barium	mg/L	0.029	-	0.031	-	0.024	-	0.032
Boron	mg/L	0.617	-	0.603	-	0.627	-	0.576
Cadmium	mg/L	<0.002	-	<0.002	-	<0.002	-	<0.002
Calcium	mg/L	15.6	12.1	15.1	14.4	13.5	14.9	18.3
Chromium	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Copper	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Iron	mg/L	<0.010	-	<0.010	-	<0.010	-	<0.010
Lead	mg/L	<0.002	-	<0.002	-	<0.002	-	<0.002
Magnesium	mg/L	5.30	4.20	5.04	5.08	4.74	4.78	5.61
Manganese	mg/L	0.014	-	0.010	-	0.009	-	0.020
Mercury	mg/L	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001
Phosphorus	mg/L	<0.05	-	<0.05	-	<0.05	-	<0.05
Potassium	mg/L	1.05	-	0.88	-	0.89	-	0.91
Sodium	mg/L	73.8	-	71.7	-	75.6	-	71.7
Zinc	mg/L	<0.005	-	<0.005	-	<0.005	-	<0.005
VOCs								
1,4-Dichlorobenzene	µg/L	<0.10	-	<0.10	-	<0.10	-	<0.10
Benzene	µg/L	<0.20	-	<0.20	-	<0.20	-	<0.20
Dichloromethane	µg/L	<0.30	-	<0.30	-	<0.30	-	<0.30
Ethylbenzene	µg/L	<0.10	-	<0.10	-	<0.10	-	<0.10
Toluene	µg/L	<0.20	-	<0.20	-	<0.20	-	<0.20
Vinyl Chloride	µg/L	<0.17	-	<0.17	-	<0.17	-	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW34B-95		
		9-Nov-16	**18-May-17**	**7-Nov-17**
General Chemistry				
Alkalinity	mg/L	142	137	144
Ammonia	mg/L	0.14	0.22	0.09
Chloride	mg/L	30.0	30.2	30.3
Field Conductivity	µS/cm	365	364	460
Laboratory Conductivity	µS/cm	428	428	437
Total Hardness	mg/L	53.2	44.8	49.2
Nitrate	mg/L	0.07	<0.05	<0.05
Nitrite	mg/L	<0.05	<0.05	<0.05
Field pH	SU	8.43	8.40	8.04
Laboratory pH	SU	8.09	8.22	7.80
Phenols	mg/L	<0.001	<0.001	<0.001
Sulphate	mg/L	29.9	30.3	31.9
Total Kjeldahl Nitrogen	mg/L	0.21	0.48	0.58
Total Dissolved Solids	mg/L	238	226	254
Chemical Oxygen Demand	mg/L	<5	22	<5
Dissolved Organic Carbon	mg/L	3.6	3.9	3.6
Temperature	C	8.9	12.41	10.3
Dissolved Metals				
Arsenic	mg/L	-	0.004	-
Barium	mg/L	-	0.028	-
Boron	mg/L	-	0.601	-
Cadmium	mg/L	-	<0.002	-
Calcium	mg/L	14.2	11.4	12.1
Chromium	mg/L	-	<0.003	-
Copper	mg/L	-	<0.003	-
Iron	mg/L	-	<0.010	-
Lead	mg/L	-	<0.002	-
Magnesium	mg/L	4.30	3.97	4.61
Manganese	mg/L	-	0.012	-
Mercury	mg/L	-	<0.0001	-
Phosphorus	mg/L	-	<0.05	-
Potassium	mg/L	-	0.70	-
Sodium	mg/L	-	67.5	-
Zinc	mg/L	-	<0.005	-
VOCs				
1,4-Dichlorobenzene	µg/L	-	<0.10	-
Benzene	µg/L	-	<0.20	-
Dichloromethane	µg/L	-	<0.30	-
Ethylbenzene	µg/L	-	<0.10	-
Toluene	µg/L	-	<0.20	-
Vinyl Chloride	µg/L	-	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW37-97						
		11-May-06	14-Nov-06	9-May-07	14-Nov-07	6-May-08	12-Nov-08	5-May-09
General Chemistry								
Alkalinity	mg/L	110	130	120	140	140	130	140
Ammonia	mg/L	0.07	0.12	0.15	0.16	0.12	0.12	0.15
Chloride	mg/L	12.0	16.0	13.0	13.0	12.0	12.0	11.7
Field Conductivity	µS/cm	488	390	383	366	424	393	378
Laboratory Conductivity	µS/cm	387	413	418	414	412	414	426
Total Hardness	mg/L	70	70 U	80	80	80	70	77
Nitrate	mg/L	0.10	<0.1	<0.1	<0.1	<0.1	0.10	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Field pH	SU	7.65	7.77	8.18	7.95	8.69	8.46	8.02
Laboratory pH	SU	8.23	8.30	8.00	8.37	8.30	8.34	8.12
Phenols	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	60.0	58.0	60	60	59	64	60
Total Kjeldahl Nitrogen	mg/L	0.5 U	0.5 U	0.3 U	0.40	0.15	0.18	0.35
Total Dissolved Solids	mg/L	500	310	270	260	260	290	220
Chemical Oxygen Demand	mg/L	<10	<10	<10	<10	<10	30 U	<10
Dissolved Organic Carbon	mg/L	2 U	4.0	3.0	2.0	2.0	3.0	3.9
Temperature	C	10.4	9.6	12.3	11.6	8.6	10.2	9.1
Dissolved Metals								
Arsenic	mg/L	0.009	-	0.008	-	0.012	-	0.011
Barium	mg/L	0.040	-	0.040	-	0.030	-	0.032
Boron	mg/L	0.480	-	0.470	-	0.500	-	0.468
Cadmium	mg/L	<0.0001	-	0.0001	-	0.0002	-	0.0002
Calcium	mg/L	14.5	11.6 U	19.3 U	17.9	17.2	15.6 U	15.7
Chromium	mg/L	<0.001	-	<0.001	-	0.003	-	<0.0010
Copper	mg/L	<0.001	-	<0.001	-	<0.001	-	<0.0010
Iron	mg/L	<0.05	-	<0.05	-	<0.05	-	<0.050
Lead	mg/L	<0.001	-	<0.001	-	<0.001	-	<0.0010
Magnesium	mg/L	8.4	9.8	8.7	8.3	8.7	7.3	9.29
Manganese	mg/L	0.007	-	0.013 U	-	0.012	-	0.009
Mercury	mg/L	<0.0001	-	<0.0001	-	<0.0001	-	<0.00010
Phosphorus	mg/L	0.05 U	-	<0.03	-	0.03	-	0.03
Potassium	mg/L	<1	-	<1	-	<1	-	<1.0
Sodium	mg/L	72.9	-	63.9	-	66.0	-	75.5
Zinc	mg/L	<0.003	-	0.104	-	0.050	-	0.009
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Benzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Dichloromethane	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Ethylbenzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Toluene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Vinyl Chloride	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW37-97						
		5-Nov-09	**4-May-10**	**11-Nov-10**	**4-May-11**	**11-Nov-11**	**9-May-12**	**6-Nov-12**
General Chemistry								
Alkalinity	mg/L	142	142	135	139	142	144	139
Ammonia	mg/L	0.10	0.120 J	0.07	0.13	0.09	0.07	0.07
Chloride	mg/L	10.6	11.9	12.0	10.5	12.4	12.0	11.9
Field Conductivity	µS/cm	384	389	444	377	381	434	365
Laboratory Conductivity	µS/cm	414	416	405	422	412	419	359
Total Hardness	mg/L	71	67	81	78	80	68	91
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Field pH	SU	8.08	7.09	8.39	8.30	7.22	7.59	8.45
Laboratory pH	SU	8.36	8.07	8.32	8.22	8.22	8.23	8.23
Phenols	mg/L	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	52.4	58.0	58	56	62	60	60
Total Kjeldahl Nitrogen	mg/L	<0.15	0.32	0.37	<0.15	<0.15	0.16	0.30
Total Dissolved Solids	mg/L	250	252	256	236	272 J	262	262
Chemical Oxygen Demand	mg/L	29 UJ	44	23	<10	<10	<10	27
Dissolved Organic Carbon	mg/L	4.8	1.9 J	2.4	2.4	2.5	2.2	2.0
Temperature	C	9.9	10.1	11.4	7.4	10.1	10.1	10.1
Dissolved Metals								
Arsenic	mg/L	-	0.009	-	0.011	-	0.009	-
Barium	mg/L	-	0.029	-	0.035	-	0.037	-
Boron	mg/L	-	0.451	-	0.527	-	0.390	-
Cadmium	mg/L	-	0.0002	-	0.0002	-	<0.00010	-
Calcium	mg/L	16.2	13.7	15.8	16.4	19.1	14.6	22.5
Chromium	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Copper	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Iron	mg/L	-	<0.050	-	<0.050	-	<0.050	-
Lead	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Magnesium	mg/L	7.37	7.94	9.99	8.93	7.73	7.69	8.44
Manganese	mg/L	-	0.007	-	0.014	-	0.007	-
Mercury	mg/L	-	<0.00010	-	<0.00010	-	<0.00010	-
Phosphorus	mg/L	-	<0.030	-	<0.030	-	0.03	-
Potassium	mg/L	-	<1.0	-	<1.0	-	<1.0	-
Sodium	mg/L	-	66.1	-	62.2	-	55.6	-
Zinc	mg/L	-	<0.0030	-	<0.0030	-	<0.0030	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Benzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Dichloromethane	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Ethylbenzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Toluene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Vinyl Chloride	µg/L	-	<0.50	-	<0.50	-	<0.50	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
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- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW37-97						
		14-May-13	**14-Nov-13**	**14-May-14**	**12-Nov-14**	**14-May-15**	**10-Nov-15**	**11-May-16**
General Chemistry								
Alkalinity	mg/L	136	135	135	140	135	141	149
Ammonia	mg/L	0.29	0.15	0.24	0.14	0.17	0.11	0.06
Chloride	mg/L	14.7	11.8	11.9	12.5	12.4	11.7	14.3
Field Conductivity	µS/cm	473	460	450	423	330	420	347
Laboratory Conductivity	µS/cm	446	424	452	435	428	439	429
Total Hardness	mg/L	77	71	79	74.2	72.0	76.1	80.1
Nitrate	mg/L	0.07	<0.05	<0.05	<0.05	<0.05	<0.10	<0.05
Nitrite	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.10	<0.05
Field pH	SU	8.23	8.16	7.84	8.43	7.92	8.25	7.98
Laboratory pH	SU	8.13	7.99	8.27	8.12	8.30	8.21	7.99
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	63.5	60.5	60.5	62.6	62.3	57.6	72.3
Total Kjeldahl Nitrogen	mg/L	<0.10	0.40	<0.10	0.35	0.27	0.21	0.21
Total Dissolved Solids	mg/L	266	232	244	234	264	244	252
Chemical Oxygen Demand	mg/L	6	10	<5	<5	<5	<5	<5
Dissolved Organic Carbon	mg/L	2.7	3.7	4.1	3.2	2.4	3.6	2.9
Temperature	C	9.1	10.4	9.9	7.3	10.5	10.2	11.4
Dissolved Metals								
Arsenic	mg/L	0.010	-	0.009	-	0.010	-	0.010
Barium	mg/L	0.034	-	0.035	-	0.032	-	0.034
Boron	mg/L	0.508	-	0.464	-	0.487	-	0.464
Cadmium	mg/L	<0.002	-	<0.002	-	<0.002	-	<0.002
Calcium	mg/L	16.0	14.8	16.7	15.2	14.4	15.7	16.6
Chromium	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Copper	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Iron	mg/L	<0.010	-	<0.010	-	<0.010	-	<0.010
Lead	mg/L	<0.002	-	<0.002	-	<0.002	-	<0.002
Magnesium	mg/L	9.03	8.20	9.01	8.79	8.75	8.97	9.38
Manganese	mg/L	0.009	-	0.007	-	0.006	-	0.007
Mercury	mg/L	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001
Phosphorus	mg/L	<0.05	-	<0.05	-	<0.05	-	<0.05
Potassium	mg/L	0.84	-	1.07	-	0.76	-	1.77
Sodium	mg/L	68.8	-	66.3	-	62.4	-	66.4
Zinc	mg/L	0.014	-	<0.005	-	<0.005	-	<0.005
VOCs								
1,4-Dichlorobenzene	µg/L	<0.10	-	<0.10	-	<0.10	-	<0.10
Benzene	µg/L	<0.20	-	<0.20	-	<0.20	-	<0.20
Dichloromethane	µg/L	<0.30	-	<0.30	-	<0.30	-	<0.30
Ethylbenzene	µg/L	<0.10	-	<0.10	-	<0.10	-	<0.10
Toluene	µg/L	<0.20	-	<0.20	-	<0.20	-	<0.20
Vinyl Chloride	µg/L	<0.17	-	<0.17	-	<0.17	-	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW37-97		
		8-Nov-16	**19-May-17**	**7-Nov-17**
General Chemistry				
Alkalinity	mg/L	141	142	144
Ammonia	mg/L	0.16	0.21	0.17
Chloride	mg/L	11.9	11.8	11.8
Field Conductivity	µS/cm	421	381	450
Laboratory Conductivity	µS/cm	430	436	445
Total Hardness	mg/L	73.3	77.3	74.6
Nitrate	mg/L	<0.05	<0.05	<0.05
Nitrite	mg/L	<0.05	<0.05	<0.05
Field pH	SU	8.57	8.02	8.01
Laboratory pH	SU	8.03	8.07	7.89
Phenols	mg/L	<0.001	<0.001	<0.001
Sulphate	mg/L	65.4	64.4	64.2
Total Kjeldahl Nitrogen	mg/L	0.28	0.28	0.32
Total Dissolved Solids	mg/L	252	240	220
Chemical Oxygen Demand	mg/L	<5	7	<5
Dissolved Organic Carbon	mg/L	2.4	2.1	2.5
Temperature	C	12.0	10.26	10.6
Dissolved Metals				
Arsenic	mg/L	-	0.010	-
Barium	mg/L	-	0.035	-
Boron	mg/L	-	0.479	-
Cadmium	mg/L	-	<0.002	-
Calcium	mg/L	15.5	15.8	15.0
Chromium	mg/L	-	<0.003	-
Copper	mg/L	-	<0.003	-
Iron	mg/L	-	<0.010	-
Lead	mg/L	-	<0.002	-
Magnesium	mg/L	8.40	9.18	9.01
Manganese	mg/L	-	0.007	-
Mercury	mg/L	-	<0.0001	-
Phosphorus	mg/L	-	<0.05	-
Potassium	mg/L	-	1.08	-
Sodium	mg/L	-	65.2	-
Zinc	mg/L	-	<0.005	-
VOCs				
1,4-Dichlorobenzene	µg/L	-	<0.10	-
Benzene	µg/L	-	<0.20	-
Dichloromethane	µg/L	-	<0.30	-
Ethylbenzene	µg/L	-	<0.10	-
Toluene	µg/L	-	<0.20	-
Vinyl Chloride	µg/L	-	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW38-97						
		11-May-06	9-May-07	6-May-08	5-May-09	4-May-10	4-May-11	9-May-12
General Chemistry								
Alkalinity	mg/L	220	220	200	227	238	232	223
Ammonia	mg/L	<0.05	<0.05	0.07	<0.050	0.06	0.06	<0.050
Chloride	mg/L	12.0	12.0	12.0	11.6	11.3	9.7	11.6
Field Conductivity	µS/cm	507	550	598	569	569	547	583
Laboratory Conductivity	µS/cm	585	602	621	630	615	635	629
Total Hardness	mg/L	180	190	170	173	163	167	158
Nitrate	mg/L	0.10	<0.1	0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Field pH	SU	7.87	7.85	8.12	7.78	7.88	7.99	8.04
Laboratory pH	SU	7.91	7.78	8.22	8.23	8.23	8.24	8.16
Phenols	mg/L	<0.001	<0.001	<0.001	0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	92.0	93.0	96	98	91	88	93
Total Kjeldahl Nitrogen	mg/L	<0.2	0.5 U	<0.15	0.31	<0.15	<0.15	<0.15
Total Dissolved Solids	mg/L	470	390	340	354	350	360	362
Chemical Oxygen Demand	mg/L	30	10	<10	85	25	<10	<10
Dissolved Organic Carbon	mg/L	2 U	3.0	2.0	2.1	1.4	2.2	1.5
Temperature	C	12.1	10.7	10.1	10.9	11.2	9.4	12.5
Dissolved Metals								
Arsenic	mg/L	0.003	0.003	0.005	0.004	0.004	0.004	0.004
Barium	mg/L	0.050	0.040	0.040	0.032	0.034	0.039	0.036
Boron	mg/L	0.470	0.520	0.490	0.407	0.418	0.403	0.382
Cadmium	mg/L	<0.0001	0.0001	0.0001	<0.00010	0.0001	0.0001	<0.00010
Calcium	mg/L	31.8	34.1	32.8	29.7	29.8	29.3	28.6
Chromium	mg/L	<0.001	<0.001	0.001	<0.0010	<0.0010	<0.0010	<0.0010
Copper	mg/L	<0.001	<0.001	<0.001	<0.0010	0.001	<0.0010	<0.0010
Iron	mg/L	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Lead	mg/L	0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium	mg/L	23.3	25.2	22.4	23.9	21.4	22.8	21.1
Manganese	mg/L	0.004	0.005 U	0.005	<0.0010	0.004	0.002	<0.0010
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Phosphorus	mg/L	<0.03	<0.03	<0.03	<0.030	<0.030	<0.030	<0.030
Potassium	mg/L	2.00	2.00	2.00	1.20	1.20	1.40	1.30
Sodium	mg/L	81.4	84.9	76.0	87.6	79.1	75.7	65.8
Zinc	mg/L	0.008	0.009	0.009 U	<0.0030	0.049	<0.0030	<0.0030
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Benzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Dichloromethane	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Toluene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW38-97				
		15-May-13	14-May-14	15-May-15	12-May-16	24-May-17
General Chemistry						
Alkalinity	mg/L	217	214	223	225	232
Ammonia	mg/L	0.02	0.28	0.02	<0.02	0.05
Chloride	mg/L	11.4	11.1	11.1	13.0	11.9
Field Conductivity	µS/cm	683	660	500	503	545
Laboratory Conductivity	µS/cm	638	650	624	637	627
Total Hardness	mg/L	164	169	165	167	159
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.10	<0.05
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.10	<0.05
Field pH	SU	7.65	7.46	7.80	7.83	7.59
Laboratory pH	SU	8.27	8.32	8.39	8.29	8.28
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	87.3	93.4	93.4	112	97.4
Total Kjeldahl Nitrogen	mg/L	<0.10	1.02	0.11	0.14	0.14
Total Dissolved Solids	mg/L	370	346	356	350	364
Chemical Oxygen Demand	mg/L	<5	<5	<5	<5	<5
Dissolved Organic Carbon	mg/L	5.6	1.7	1.6	2.8	1.6
Temperature	C	9.9	10.7	11.2	12.0	12.11
Dissolved Metals						
Arsenic	mg/L	0.004	0.004	0.004	0.004	0.004
Barium	mg/L	0.037	0.037	0.028	0.032	0.036
Boron	mg/L	0.473	0.415	0.386	0.460	0.455
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	29.6	29.7	29.0	29.1	28.0
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	0.003	<0.003	<0.003	<0.003
Iron	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	21.9	23.1	22.4	22.9	21.7
Manganese	mg/L	0.002	0.004	0.003	<0.002	0.004
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	1.51	1.47	1.52	1.77	1.33
Sodium	mg/L	77.1	75.3	73.1	76.4	76.1
Zinc	mg/L	<0.005	0.009	<0.005	<0.005	<0.005
VOCs						
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW39-99						
		11-May-06	9-May-07	6-May-08	5-May-09	4-May-10	4-May-11	9-May-12
General Chemistry								
Alkalinity	mg/L	120	120	130	135	126	126	129
Ammonia	mg/L	<0.05	0.08	0.08	0.084 U	0.08	0.07	<0.050
Chloride	mg/L	20.0	21.0	20.0	20.0	21.5	19.2	20.2
Field Conductivity	µS/cm	317	332	317	304	310	308	316
Laboratory Conductivity	µS/cm	311	329	332	328	307	324	320
Total Hardness	mg/L	70	80	50	54	45	46	57
Nitrate	mg/L	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Field pH	SU	7.73	8.04	8.55	8.09	7.43	8.21	8.04
Laboratory pH	SU	8.16	8.00	8.27	8.30	8.35	8.27	8.22
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001
Sulphate	mg/L	12.0	8.0	8	7	4	4	7
Total Kjeldahl Nitrogen	mg/L	0.3 U	0.3 U	<0.15	0.27	0.62	0.17	0.17
Total Dissolved Solids	mg/L	200	210	160	174	186	178	186
Chemical Oxygen Demand	mg/L	<10	20	<10	<10	40	11	<10
Dissolved Organic Carbon	mg/L	3 U	4.0	3.0	4.7	3.6	5.5	3.1
Temperature	C	10.2	10.5	9.1	9.7	10.4	8.0	10.1
Dissolved Metals								
Arsenic	mg/L	0.002	0.003	0.005	0.005	0.006	0.005	0.002
Barium	mg/L	0.050	0.040	0.030	0.028	0.025	0.028	0.037
Boron	mg/L	0.550	0.590	0.580	0.518	0.541	0.439	0.432
Cadmium	mg/L	<0.0001	<0.0001	0.0003	0.0003	0.0003	0.0004	<0.00010
Calcium	mg/L	17.0	21.5	12.4	12.3	11.2	11.8	13.6
Chromium	mg/L	<0.001	<0.001	0.003	<0.0010	<0.0010	<0.0010	<0.0010
Copper	mg/L	<0.001	0.003	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Lead	mg/L	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium	mg/L	7.5	6.1	5.1	5.75	4.2	4.04	5.47
Manganese	mg/L	<0.001	0.011 U	0.004	0.005	0.003	0.004	<0.0010
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Phosphorus	mg/L	0.04 U	<0.03	<0.03	<0.030	<0.030	<0.030	0.03
Potassium	mg/L	1.00	1.00	<1	<1.0	<1.0	<1.0	<1.0
Sodium	mg/L	63.3	63.0	56.0	58.9	54.0	38.7	45.9
Zinc	mg/L	<0.003	0.120	0.006 U	<0.0030	0.0131 U	<0.0030	<0.0030
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Benzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Dichloromethane	µg/L	<0.5	<0.5	<0.5	<0.50	0.64	<0.50	<0.50
Ethylbenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Toluene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW39-99				
		14-May-13	14-May-14	14-May-15	11-May-16	19-May-17
General Chemistry						
Alkalinity	mg/L	139	137	137	139	142
Ammonia	mg/L	0.03	0.07	<0.02	0.03	0.10
Chloride	mg/L	22.9	20.3	20.9	24.2	21.0
Field Conductivity	µS/cm	394	372	270	277	301
Laboratory Conductivity	µS/cm	360	361	342	348	343
Total Hardness	mg/L	66	63	61	61.4	59.9
Nitrate	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Field pH	SU	8.21	7.71	7.73	7.81	7.88
Laboratory pH	SU	8.10	8.32	8.28	8.10	8.22
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	7.68	7.23	7.30	10.00	5.92
Total Kjeldahl Nitrogen	mg/L	0.12	<0.10	0.14	0.17	0.22
Total Dissolved Solids	mg/L	208	180	194	186	182
Chemical Oxygen Demand	mg/L	9	<5	<5	9	6
Dissolved Organic Carbon	mg/L	3.8	3.3	2.9	3.2	3.0
Temperature	C	9.6	10.3	11.4	13.1	11.33
Dissolved Metals						
Arsenic	mg/L	<0.003	<0.003	<0.003	<0.003	0.003
Barium	mg/L	0.037	0.034	0.033	0.030	0.037
Boron	mg/L	0.585	0.492	0.536	0.503	0.527
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	15.4	14.6	14.1	14.4	13.7
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	6.73	6.39	6.16	6.19	6.23
Manganese	mg/L	0.002	<0.002	<0.002	0.002	<0.002
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	0.98	0.95	0.90	1.35	1.01
Sodium	mg/L	56.1	54.8	52.2	53.6	51.3
Zinc	mg/L	<0.005	0.005	<0.005	<0.005	<0.005
VOCs						
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW40-99						
		11-May-06	**9-May-07**	**6-May-08**	**5-May-09**	**4-May-10**	**4-May-11**	**9-May-12**
General Chemistry								
Alkalinity	mg/L	260	260	260	268	276	258	264
Ammonia	mg/L	<0.05	<0.05	0.09	0.069 U	0.07	0.10	<0.050
Chloride	mg/L	4.0	5.0	4.0	3.9	4.0	3.2	4.2
Field Conductivity	µS/cm	509	540	608	557	557	550	585
Laboratory Conductivity	µS/cm	379	600	612	621	607	623	619
Total Hardness	mg/L	220	230	250	212	192	221	189
Nitrate	mg/L	<0.1	0.10	0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Field pH	SU	7.56	7.65	8.12	7.70	7.37	7.78	7.77
Laboratory pH	SU	7.75	7.63	8.11	8.13	8.15	8.12	8.06
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.002	0.001	<0.001
Sulphate	mg/L	71.0	73.0	71	72	70	68	74
Total Kjeldahl Nitrogen	mg/L	0.2 U	0.2 U	<0.15	<0.15	0.17	<0.15	<0.15
Total Dissolved Solids	mg/L	370	360	330	342	364	352	358
Chemical Oxygen Demand	mg/L	<10	<10	<10	<10	30	<10	<10
Dissolved Organic Carbon	mg/L	2 U	4.0	2.0	3.8	2.7	1.9	1.6
Temperature	C	10.0	11.1	9.0	9.7	10.0	8.4	9.5
Dissolved Metals								
Arsenic	mg/L	0.004	0.001	0.001	0.002	0.001	0.001	0.001
Barium	mg/L	0.050	0.050	0.040	0.040	0.038	0.044	0.044
Boron	mg/L	0.360	0.380	0.360	0.320	0.305	0.341	0.277
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Calcium	mg/L	40.9	40.0	51.7	36.7	35.0	39.5	36.1
Chromium	mg/L	<0.001	<0.001	0.003	0.001	<0.0010	<0.0010	<0.0010
Copper	mg/L	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050
Lead	mg/L	0.002	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium	mg/L	29.5	30.8	28.3	29.2	25.3	29.6	24
Manganese	mg/L	0.002	<0.001	0.008	<0.0010	0.002	<0.0010	<0.0010
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Phosphorus	mg/L	<0.03	<0.03	0.34	<0.030	<0.030	<0.030	<0.030
Potassium	mg/L	2.00	2.00	2.00	1.30	1.30	1.50	1.30
Sodium	mg/L	68.2	73.0	61.0	74.6	63.4	57.9	53.5
Zinc	mg/L	0.003	0.004	0.066	<0.0030	0.0042 U	<0.0030	<0.0030
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Benzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Dichloromethane	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Toluene	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	µg/L	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW40-99				
		14-May-13	14-May-14	14-May-15	12-May-16	19-May-17
General Chemistry						
Alkalinity	mg/L	249	248	255	257	294
Ammonia	mg/L	0.33	0.03	<0.02	<0.02	0.12
Chloride	mg/L	5.08	4.37	4.74	5.43	4.30
Field Conductivity	µS/cm	686	651	480	501	534
Laboratory Conductivity	µS/cm	643	646	621	624	631
Total Hardness	mg/L	208	200	196	199	198
Nitrate	mg/L	<0.10	<0.10	<0.05	<0.10	<0.10
Nitrite	mg/L	<0.10	<0.10	<0.05	<0.10	<0.10
Field pH	SU	7.90	7.37	7.51	7.45	7.63
Laboratory pH	SU	8.17	8.34	8.41	8.26	8.31
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	79.4	76.6	79.0	90.6	79.5
Total Kjeldahl Nitrogen	mg/L	<0.10	0.97	<0.10	0.13	0.15
Total Dissolved Solids	mg/L	360	350	354	352	334
Chemical Oxygen Demand	mg/L	5	<5	<5	<5	<5
Dissolved Organic Carbon	mg/L	1.7	1.4	2.3	2.3	1.2
Temperature	C	9.1	9.0	10.9	11.0	10.78
Dissolved Metals						
Arsenic	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Barium	mg/L	0.043	0.041	0.037	0.036	0.040
Boron	mg/L	0.373	0.325	0.333	0.351	0.336
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	38.1	36.0	36.4	35.7	35.4
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	27.3	26.8	25.6	26.6	26.5
Manganese	mg/L	0.005	0.004	<0.002	0.004	0.005
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	1.44	1.42	1.40	1.47	1.43
Sodium	mg/L	66.6	64.3	60.1	62.3	60.5
Zinc	mg/L	0.009	<0.005	<0.005	<0.005	<0.005
VOCs						
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW41B-01						
		9-May-07	**6-May-08**	**5-May-09**	**4-May-10**	**4-May-11**	**9-May-12**	**15-May-13**
General Chemistry								
Alkalinity	mg/L	58	120	141	134	135	118	120
Ammonia	mg/L	0.16	0.10	<0.050	0.12	0.11	<0.050	0.06
Chloride	mg/L	20.0	20.0	17.8	19.6	18.1	19.5	20.6
Field Conductivity	µS/cm	401	438	397	398	405	438	511
Laboratory Conductivity	µS/cm	445	441	443	436	438	436	473
Total Hardness	mg/L	70	70	82	59	66	73	75
Nitrate	mg/L	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	0.12
Nitrite	mg/L	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.05
Field pH	SU	7.99	8.13	8.19	8.14	8.25	8.27	8.34
Laboratory pH	SU	8.21	8.30	8.40	8.34	8.34	8.17	8.13
Phenols	mg/L	0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001
Sulphate	mg/L	73.0	72.0	72	70	68	72	75.3
Total Kjeldahl Nitrogen	mg/L	0.6 U	0.50	<0.15	0.45	<0.15	<0.15	0.20
Total Dissolved Solids	mg/L	340	340	264	244	252	364	280
Chemical Oxygen Demand	mg/L	10	<10	<10	40	<10	<10	<5
Dissolved Organic Carbon	mg/L	5.0	3.0	7.7	3.4	4.1	3.2	3.7
Temperature	C	11.2	10.7	10.2	10.8	8.9	11.2	10.5
Dissolved Metals								
Arsenic	mg/L	0.004	0.004	0.002	0.004	0.004	0.002	0.004
Barium	mg/L	0.040	0.040	0.042	0.032	0.039	0.046	0.050
Boron	mg/L	0.950	0.860	0.668	0.711	0.698	0.548	0.683
Cadmium	mg/L	<0.0001	0.0003	0.0003	0.0003	0.0003	<0.00010	<0.002
Calcium	mg/L	17.4 U	18.1	22.0	15.2	17.1	20.2	20.2
Chromium	mg/L	<0.001	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.003
Copper	mg/L	0.003	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.003
Iron	mg/L	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.010
Lead	mg/L	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.002
Magnesium	mg/L	6.10	5.80	6.61	5.18	5.68	5.60	5.98
Manganese	mg/L	0.018 U	0.018	0.003	0.012	0.016	<0.0010	0.022
Mercury	mg/L	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.0001
Phosphorus	mg/L	<0.03	<0.03	0.03	<0.030	<0.030	<0.030	<0.05
Potassium	mg/L	1.00	1.00	1.10	<1.0	<1.0	<1.0	1.53
Sodium	mg/L	84.1	74.0	79.9	71.5	66.7	62.6	70.3
Zinc	mg/L	<0.003	0.004 U	<0.0030	<0.0030	<0.0030	<0.0030	<0.005
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Benzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Dichloromethane	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.30
Ethylbenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Toluene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Vinyl Chloride	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW41B-01			
		12-May-14	14-May-15	9-May-16	24-May-17
General Chemistry					
Alkalinity	mg/L	120	126	148	159
Ammonia	mg/L	0.15	<0.02	0.05	0.11
Chloride	mg/L	19.5	19.6	20.7	19.3
Field Conductivity	µS/cm	502	375	369	380
Laboratory Conductivity	µS/cm	456	461	462	470
Total Hardness	mg/L	70	74.1	69.9	68.8
Nitrate	mg/L	0.05	0.09	0.06	<0.05
Nitrite	mg/L	<0.05	<0.05	<0.05	<0.05
Field pH	SU	7.86	7.85	7.67	8.04
Laboratory pH	SU	8.26	8.24	8.15	8.30
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	71.2	72.7	74.3	72.0
Total Kjeldahl Nitrogen	mg/L	0.64	0.14	0.17	0.25
Total Dissolved Solids	mg/L	448	288	294	296
Chemical Oxygen Demand	mg/L	<5	<5	<5	10
Dissolved Organic Carbon	mg/L	5.9	3.8	2.7	4.3
Temperature	C	10.3	10.5	10.0	12.06
Dissolved Metals					
Arsenic	mg/L	0.003	0.003	0.003	0.003
Barium	mg/L	0.046	0.033	0.036	0.036
Boron	mg/L	0.608	0.608	0.534	0.564
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	18.0	19.7	18.0	18.1
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	5.97	6.05	6.07	5.74
Manganese	mg/L	0.020	0.004	0.011	0.011
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	1.25	1.03	1.03	0.99
Sodium	mg/L	69.4	68.7	69.1	67.7
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005
VOCs					
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW42B-01						
		14-Nov-06	9-May-07	14-Nov-07	6-May-08	12-Nov-08	5-May-09	5-Nov-09
General Chemistry								
Alkalinity	mg/L	110	86	110	100	99	99	102
Ammonia	mg/L	0.16	0.08	0.06	0.07	<0.05	<0.050	0.10
Chloride	mg/L	23.0	25.0	23.0	24.0	24.0	22.7	17.9
Field Conductivity	µS/cm	452	451	471	510	437	458	430
Laboratory Conductivity	µS/cm	492	468	517	512	475	480	470
Total Hardness	mg/L	70 U	80	90	70	80	82	62
Nitrate	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Field pH	SU	7.78	7.94	7.15	8.64	8.02	8.05	8.16
Laboratory pH	SU	8.17	8.08	8.16	8.20	8.27	8.31	8.33
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Sulphate	mg/L	100.0	96.0	102	96	117	105	69
Total Kjeldahl Nitrogen	mg/L	0.4 U	0.4 U	0.40	0.85	0.45	0.24	0.20
Total Dissolved Solids	mg/L	340	320	330	290	330	282	304
Chemical Oxygen Demand	mg/L	<10	10	<10	10	40 U	<10	18 U
Dissolved Organic Carbon	mg/L	4.0	4.0	3.0	3.0	4.0	8.1	4.5
Temperature	C	9.7	10.6	11.8	11.3	9.9	10.6	9.8
Dissolved Metals								
Arsenic	mg/L	-	0.004	-	0.009	-	0.005	-
Barium	mg/L	-	0.030	-	0.020	-	0.023	-
Boron	mg/L	-	0.450	-	0.440	-	0.354	-
Cadmium	mg/L	-	<0.0001	-	0.0003	-	0.0003	-
Calcium	mg/L	18.0 U	22.9	24.2	19.8	22.3	21.8	17.5
Chromium	mg/L	-	<0.001	-	0.001	-	<0.0010	-
Copper	mg/L	-	<0.001	-	<0.001	-	<0.0010	-
Iron	mg/L	-	<0.05	-	<0.05	-	<0.050	-
Lead	mg/L	-	<0.001	-	<0.001	-	<0.0010	-
Magnesium	mg/L	7.10	6.30	6.30	5.30	5.70	6.78	4.54
Manganese	mg/L	-	0.017 U	-	0.013	-	0.013	-
Mercury	mg/L	-	<0.0001	-	<0.0001	-	<0.00010	-
Phosphorus	mg/L	-	<0.03	-	<0.03	-	0.03	-
Potassium	mg/L	-	<1	-	<1	-	<1.0	-
Sodium	mg/L	-	93.4	-	78.0	-	95.5	-
Zinc	mg/L	-	0.004	-	0.016 U	-	0.0031 U	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Benzene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Dichloromethane	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Ethylbenzene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Toluene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Vinyl Chloride	µg/L	-	<0.5	-	<0.5	-	<0.50	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW42B-01						
		4-May-10	11-Nov-10	4-May-11	11-Nov-11	9-May-12	6-Nov-12	15-May-13
General Chemistry								
Alkalinity	mg/L	97	123	103	118	114	128	120
Ammonia	mg/L	0.09	0.05	<0.050	<0.050	<0.050	0.05	0.06
Chloride	mg/L	24.4	23.4	22.5	23.5	23.8	22.6	27.2
Field Conductivity	µS/cm	421	505	463	430	484	412	571
Laboratory Conductivity	µS/cm	471	475	478	501	487	428	532
Total Hardness	mg/L	58	97	78	90	76	98	79
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Field pH	SU	8.14	8.22	8.12	7.18	8.28	8.13	8.45
Laboratory pH	SU	8.28	8.25	8.29	7.88	8.22	8.11	8.05
Phenols	mg/L	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	90.7	99.0	91	93	97	95	95.5
Total Kjeldahl Nitrogen	mg/L	0.42	0.25	<0.15	0.25	0.16	0.25	<0.10
Total Dissolved Solids	mg/L	272	338	284	376	302	304	306
Chemical Oxygen Demand	mg/L	53	<10	<10	11	<10	27	<5
Dissolved Organic Carbon	mg/L	3.2	3.2	4.0	3.8	3.0	3.6	3.4
Temperature	C	11.4	10.3	9.0	10.0	11.3	9.6	10.4
Dissolved Metals								
Arsenic	mg/L	0.006	-	0.009	-	0.004	-	0.007
Barium	mg/L	0.023	-	0.023	-	0.025	-	0.023
Boron	mg/L	0.408	-	0.425	-	0.329	-	0.409
Cadmium	mg/L	0.0003	-	0.0003	-	<0.00010	-	<0.002
Calcium	mg/L	15.5	26.5	21.6	26.1	21.1	28.6	21.6
Chromium	mg/L	<0.0010	-	<0.0010	-	<0.0010	-	<0.003
Copper	mg/L	<0.0010	-	<0.0010	-	<0.0010	-	<0.003
Iron	mg/L	<0.050	-	<0.050	-	<0.050	-	<0.010
Lead	mg/L	<0.0010	-	<0.0010	-	<0.0010	-	<0.002
Magnesium	mg/L	4.74	7.45	5.77	5.93	5.53	6.37	6.13
Manganese	mg/L	0.002	-	0.009	-	0.014	-	0.018
Mercury	mg/L	<0.00010	-	<0.00010	-	<0.00010	-	<0.0001
Phosphorus	mg/L	<0.030	-	<0.030	-	<0.030	-	<0.05
Potassium	mg/L	<1.0	-	<1.0	-	<1.0	-	1.18
Sodium	mg/L	77.5	-	75.7	-	70.3	-	78.2
Zinc	mg/L	<0.0030	-	0.032	-	0.008	-	<0.005
VOCs								
1,4-Dichlorobenzene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.10
Benzene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.20
Dichloromethane	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.30
Ethylbenzene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.10
Toluene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.20
Vinyl Chloride	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW42B-01						
		14-Nov-13	12-May-14	11-Nov-14	14-May-15	10-Nov-15	9-May-16	9-Nov-16
General Chemistry								
Alkalinity	mg/L	120	115	124	118	117	125	114
Ammonia	mg/L	0.11	0.07	0.14	<0.02	0.08	<0.02	0.45
Chloride	mg/L	22.1	24.4	24.9	24.7	23.3	26.1	27.7
Field Conductivity	µS/cm	536	533	509	422	500	422	420
Laboratory Conductivity	µS/cm	507	515	520	528	519	540	505
Total Hardness	mg/L	71	74	75.5	80.9	67.6	79.1	69.4
Nitrate	mg/L	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	0.09
Nitrite	mg/L	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Field pH	SU	8.31	7.86	8.17	7.92	8.10	7.68	8.38
Laboratory pH	SU	7.98	8.19	8.09	8.24	8.06	8.14	8.01
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	88.8	92.1	95.3	96.2	93.5	109	98.9
Total Kjeldahl Nitrogen	mg/L	0.46	0.32	0.56	0.15	0.22	0.27	0.24
Total Dissolved Solids	mg/L	286	310	306	308	286	314	322
Chemical Oxygen Demand	mg/L	9	7	<5	<5	<5	<5	<5
Dissolved Organic Carbon	mg/L	2.9	3.6	3.7	4.0	4.5	4.2	3.4
Temperature	C	10.7	11.5	11.9	12.5	10.5	10.1	11.9
Dissolved Metals								
Arsenic	mg/L	-	0.007	-	0.004	-	0.003	-
Barium	mg/L	-	0.023	-	0.020	-	0.023	-
Boron	mg/L	-	0.401	-	0.387	-	0.373	-
Cadmium	mg/L	-	<0.002	-	<0.002	-	<0.002	-
Calcium	mg/L	18.6	19.6	20.0	21.6	17.3	20.9	18.3
Chromium	mg/L	-	<0.003	-	<0.003	-	<0.003	-
Copper	mg/L	-	<0.003	-	<0.003	-	<0.003	-
Iron	mg/L	-	0.032	-	<0.010	-	<0.010	-
Lead	mg/L	-	<0.002	-	<0.002	-	<0.002	-
Magnesium	mg/L	5.90	6.02	6.20	6.56	5.92	6.53	5.76
Manganese	mg/L	-	0.017	-	0.003	-	0.004	-
Mercury	mg/L	-	<0.0001	-	<0.0001	-	<0.0001	-
Phosphorus	mg/L	-	<0.05	-	<0.05	-	<0.05	-
Potassium	mg/L	-	0.78	-	0.85	-	1.03	-
Sodium	mg/L	-	79.6	-	79.8	-	79.8	-
Zinc	mg/L	-	0.006	-	<0.005	-	<0.005	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.10	-	<0.10	-	<0.10	-
Benzene	µg/L	-	<0.20	-	<0.20	-	<0.20	-
Dichloromethane	µg/L	-	<0.30	-	<0.30	-	<0.30	-
Ethylbenzene	µg/L	-	<0.10	-	<0.10	-	<0.10	-
Toluene	µg/L	-	<0.20	-	<0.20	-	<0.20	-
Vinyl Chloride	µg/L	-	<0.17	-	<0.17	-	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW42B-01	
		24-May-17	7-Nov-17
General Chemistry			
Alkalinity	mg/L	115	118
Ammonia	mg/L	0.17	0.13
Chloride	mg/L	24.5	24.8
Field Conductivity	µS/cm	442	540
Laboratory Conductivity	µS/cm	511	520
Total Hardness	mg/L	74.6	72.3
Nitrate	mg/L	0.41	<0.10
Nitrite	mg/L	<0.05	<0.10
Field pH	SU	8.04	7.56
Laboratory pH	SU	8.12	7.69
Phenols	mg/L	<0.001	<0.001
Sulphate	mg/L	98.4	101
Total Kjeldahl Nitrogen	mg/L	0.45	0.57
Total Dissolved Solids	mg/L	290	280
Chemical Oxygen Demand	mg/L	11	<5
Dissolved Organic Carbon	mg/L	1.6	3.9
Temperature	C	12.58	10.3
Dissolved Metals			
Arsenic	mg/L	0.005	-
Barium	mg/L	0.025	-
Boron	mg/L	0.407	-
Cadmium	mg/L	<0.002	-
Calcium	mg/L	19.5	18.4
Chromium	mg/L	<0.003	-
Copper	mg/L	<0.003	-
Iron	mg/L	<0.010	-
Lead	mg/L	<0.002	-
Magnesium	mg/L	6.29	6.41
Manganese	mg/L	0.013	-
Mercury	mg/L	<0.0001	-
Phosphorus	mg/L	<0.05	-
Potassium	mg/L	1.27	-
Sodium	mg/L	79.0	-
Zinc	mg/L	<0.005	-
VOCs			
1,4-Dichlorobenzene	µg/L	<0.10	-
Benzene	µg/L	<0.20	-
Dichloromethane	µg/L	<0.30	-
Ethylbenzene	µg/L	<0.10	-
Toluene	µg/L	<0.20	-
Vinyl Chloride	µg/L	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW43B-01						
		9-May-07	**6-May-08**	**5-May-09**	**4-May-10**	**4-May-11**	**9-May-12**	**15-May-13**
General Chemistry								
Alkalinity	mg/L	87	120	124	103	100	122	115
Ammonia	mg/L	0.11	0.08	0.081 U	0.06	0.06	<0.050	0.06
Chloride	mg/L	23.0	23.0	22.5	20.6	20.2	22.5	23.9
Field Conductivity	µS/cm	436	476	450	464	452	495	573
Laboratory Conductivity	µS/cm	479	475	511	489	484	519	531
Total Hardness	mg/L	180	90	87	71	84	85	87
Nitrate	mg/L	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.05
Nitrite	mg/L	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.05
Field pH	SU	7.92	8.70	8.13	8.05	8.19	8.22	8.38
Laboratory pH	SU	8.02	8.25	8.28	8.27	8.26	8.18	8.06
Phenols	mg/L	<0.001	<0.001	0.002	<0.002	<0.001	<0.001	<0.001
Sulphate	mg/L	99.0	93.0	99	103	97	100	99.9
Total Kjeldahl Nitrogen	mg/L	0.6 U	<0.15	0.60	0.42	<0.15	<0.15	<0.10
Total Dissolved Solids	mg/L	330	280	312	298	298	306	304
Chemical Oxygen Demand	mg/L	20	<10	18	61	<10	<10	6
Dissolved Organic Carbon	mg/L	4.0	3.0	4.1	3.2	4.0	2.7	2.8
Temperature	C	10.0	11.2	11.0	12.2	8.5	11.3	9.9
Dissolved Metals								
Arsenic	mg/L	0.005	0.002	0.002	0.002	0.002	0.003	0.003
Barium	mg/L	0.040	0.040	0.042	0.029	0.037	0.035	0.036
Boron	mg/L	0.520	0.410	0.372	0.365	0.364	0.328	0.408
Cadmium	mg/L	0.0001	0.0003	0.0002	0.0003	0.0003	<0.00010	<0.002
Calcium	mg/L	59.6	25.0	23.1	18.2	22.8	23.2	23.5
Chromium	mg/L	<0.001	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.003
Copper	mg/L	0.050	0.001	<0.0010	0.001	<0.0010	<0.0010	<0.003
Iron	mg/L	0.130	<0.05	<0.050	<0.050	<0.050	<0.050	<0.010
Lead	mg/L	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.002
Magnesium	mg/L	8.40	6.50	7.08	6.24	6.66	6.66	6.91
Manganese	mg/L	0.065	0.007 J	0.003	0.003	0.003	<0.0010	0.013
Mercury	mg/L	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.0001
Phosphorus	mg/L	<0.03	<0.03	<0.030	<0.030	<0.030	<0.030	<0.05
Potassium	mg/L	1.00	<1	<1.0	<1.0	<1.0	<1.0	1.13
Sodium	mg/L	90.5	75.0	88.6	76.5	75.0	65.9	74.9
Zinc	mg/L	0.530	0.058 J	<0.0030	<0.0030	<0.0030	<0.0030	0.009
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Benzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Dichloromethane	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.30
Ethylbenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Toluene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Vinyl Chloride	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW43B-01			
		12-May-14	14-May-15	9-May-16	18-May-17
General Chemistry					
Alkalinity	mg/L	118	118	126	115
Ammonia	mg/L	0.07	<0.02	0.02	0.10
Chloride	mg/L	22.7	23.0	24.8	22.7
Field Conductivity	µS/cm	548	403	417	442
Laboratory Conductivity	µS/cm	526	532	534	525
Total Hardness	mg/L	86	91.5	84.7	85.1
Nitrate	mg/L	<0.05	0.07	<0.05	<0.10
Nitrite	mg/L	<0.05	<0.05	<0.05	<0.10
Field pH	SU	7.67	7.87	7.76	8.05
Laboratory pH	SU	8.19	8.25	8.13	8.12
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	99.0	105	112	106
Total Kjeldahl Nitrogen	mg/L	<0.10	0.15	0.12	0.21
Total Dissolved Solids	mg/L	288	306	352	290
Chemical Oxygen Demand	mg/L	<5	<5	<5	18
Dissolved Organic Carbon	mg/L	5.1	2.8	4.8	2.7
Temperature	C	10.4	12.2	10.5	12.98
Dissolved Metals					
Arsenic	mg/L	<0.003	<0.003	<0.003	<0.003
Barium	mg/L	0.033	0.032	0.031	0.033
Boron	mg/L	0.368	0.395	0.368	0.398
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	22.6	24.0	21.9	22.4
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	0.030
Iron	mg/L	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	7.29	7.66	7.30	7.09
Manganese	mg/L	0.011	0.004	0.007	0.010
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	0.85	0.81	0.79	0.95
Sodium	mg/L	76.1	75.3	77.9	70.8
Zinc	mg/L	<0.005	<0.005	<0.005	0.020
VOCs					
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW44A-01						
		9-May-07	**6-May-08**	**5-May-09**	**4-May-10**	**4-May-11**	**9-May-12**	**15-May-13**
General Chemistry								
Alkalinity	mg/L	100	150	154	138	145	150	136
Ammonia	mg/L	0.18	0.06	0.064 U	0.07	0.12	<0.050	0.08
Chloride	mg/L	68.0	67.0	86.2	73.5	70.0	69.3	70.8
Field Conductivity	µS/cm	483	548	563	506	521	567	630
Laboratory Conductivity	µS/cm	552	583	627	553	583	596	581
Total Hardness	mg/L	320	90	81	64	66	78	70
Nitrate	mg/L	<0.1	<0.1	0.17	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Field pH	SU	7.96	8.49	8.08	8.00	8.27	8.23	8.28
Laboratory pH	SU	8.00	8.26	8.30	8.36	8.29	8.21	8.10
Phenols	mg/L	<0.001	<0.001	0.002	<0.002	0.001	<0.001	<0.001
Sulphate	mg/L	43.0	38.0	40	32	37	46	35.0
Total Kjeldahl Nitrogen	mg/L	0.8 U	0.32	<0.15	0.43	0.53	0.16	0.14
Total Dissolved Solids	mg/L	360	320	326	322	316	356	314
Chemical Oxygen Demand	mg/L	30	<10	<10	38	17	<10	5
Dissolved Organic Carbon	mg/L	50.0	12.0	6.2	7.1	8.7	2.5	3.0
Temperature	C	10.9	10.5	12.8	13.0	9.7	10.7	10.1
Dissolved Metals								
Arsenic	mg/L	0.001	0.003	0.002	0.002	0.002	0.002	<0.003
Barium	mg/L	0.060	0.050	0.055	0.045	0.050	0.058	0.045
Boron	mg/L	0.670	0.700	0.627	0.653	0.570	0.566	0.745
Cadmium	mg/L	<0.0001	0.0003	0.0002	0.0002	0.0003	<0.00010	<0.002
Calcium	mg/L	61.3	23.8	20.8	16.7	16.9	21.3	18.6
Chromium	mg/L	<0.001	0.003	0.002	<0.0010	<0.0010	<0.0010	0.004
Copper	mg/L	<0.001	<0.001	0.001	0.002	0.001	<0.0010	<0.003
Iron	mg/L	<0.05	<0.05	<0.050	<0.050	<0.050	0.108	<0.010
Lead	mg/L	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.002
Magnesium	mg/L	41.20	7.60	6.98	5.46	5.73	6.14	5.72
Manganese	mg/L	0.014 U	0.022	0.011	0.015	0.022	0.011	0.015
Mercury	mg/L	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.0001
Phosphorus	mg/L	<0.03	<0.03	<0.030	<0.030	<0.030	<0.030	<0.05
Potassium	mg/L	3.00	2.00	1.30	1.30	1.50	1.30	1.39
Sodium	mg/L	107.0	89.0	128.0	94.1	91.0	83.4	91.0
Zinc	mg/L	0.032	0.015 U	0.0041 U	0.0185 U	0.010	<0.0030	0.011
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Benzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Dichloromethane	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.30
Ethylbenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Toluene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Vinyl Chloride	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW44A-01			
		12-May-14	14-May-15	11-May-16	18-May-17
General Chemistry					
Alkalinity	mg/L	131	138	145	136
Ammonia	mg/L	0.07	<0.02	<0.02	0.05
Chloride	mg/L	68.7	69.5	78.2	72.0
Field Conductivity	µS/cm	576	435	438	449
Laboratory Conductivity	µS/cm	561	577	568	567
Total Hardness	mg/L	66	74.1	84.9	69.8
Nitrate	mg/L	0.06	0.09	<0.10	0.12
Nitrite	mg/L	<0.05	<0.05	<0.10	<0.05
Field pH	SU	7.71	7.90	7.62	7.95
Laboratory pH	SU	8.24	8.29	8.11	8.17
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	34.1	40.0	39.5	37.2
Total Kjeldahl Nitrogen	mg/L	1.13	0.10	0.11	0.17
Total Dissolved Solids	mg/L	304	314	318	278
Chemical Oxygen Demand	mg/L	<5	<5	<5	14
Dissolved Organic Carbon	mg/L	3.0	3.1	3.4	2.4
Temperature	C	12.0	12.0	12.1	13.69
Dissolved Metals					
Arsenic	mg/L	<0.003	<0.003	<0.003	<0.003
Barium	mg/L	0.041	0.040	0.038	0.040
Boron	mg/L	0.635	0.647	0.620	0.662
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	17.0	19.6	21.6	19.0
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	5.81	6.11	7.53	5.44
Manganese	mg/L	0.013	<0.002	<0.002	<0.002
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	1.18	1.22	3.70	1.10
Sodium	mg/L	90.9	90.8	91.3	82.5
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005
VOCs					
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW44B-01						
		14-Nov-06	9-May-07	14-Nov-07	6-May-08	12-Nov-08	5-May-09	5-Nov-09
General Chemistry								
Alkalinity	mg/L	120	110	120	120	110	124	122
Ammonia	mg/L	0.13	0.06	0.09	0.06	0.05	<0.050	0.15
Chloride	mg/L	45.0	38.0	36.0	36.0	38.0	52.8	40.4
Field Conductivity	µS/cm	471	466	436	518	456	516	467
Laboratory Conductivity	µS/cm	505	507	497	523	481	552	510
Total Hardness	mg/L	80 U	90	80	90	70	100	85
Nitrate	mg/L	<0.1	<0.1	<0.1	<0.1	0.10	<0.10	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Field pH	SU	7.78	7.93	8.01	8.48	8.07	8.04	8.04
Laboratory pH	SU	8.31	7.96	8.25	8.22	8.27	8.26	8.24
Phenols	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Sulphate	mg/L	74.0	78.0	77	75	84	83	73
Total Kjeldahl Nitrogen	mg/L	0.5 U	0.7 U	0.30	0.17	0.64	<0.15	<0.15
Total Dissolved Solids	mg/L	390	330	290	280	360	302	456
Chemical Oxygen Demand	mg/L	<10	10	<10	<10	20 U	<10	12 U
Dissolved Organic Carbon	mg/L	7.0	3.0	2.0	3.0	5.0	6.9	3.5
Temperature	C	9.6	10.6	11.2	10.5	9.7	11.6	9.8
Dissolved Metals								
Arsenic	mg/L	-	0.003	-	0.004	-	0.003	-
Barium	mg/L	-	0.040	-	0.030	-	0.038	-
Boron	mg/L	-	0.700	-	0.610	-	0.543	-
Cadmium	mg/L	-	<0.0001	-	0.0003	-	0.0003	-
Calcium	mg/L	20.0 U	24.6	23.6	27.5	20.1	25.9	23.8
Chromium	mg/L	-	<0.001	-	0.002	-	0.001	-
Copper	mg/L	-	0.003	-	0.001	-	0.002	-
Iron	mg/L	-	<0.05	-	<0.05	-	<0.050	-
Lead	mg/L	-	<0.001	-	<0.001	-	<0.0010	-
Magnesium	mg/L	7.50	6.60	6.20	6.40	5.30	8.46	6.20
Manganese	mg/L	-	0.013 U	-	0.012	-	<0.0010	-
Mercury	mg/L	-	<0.0001	-	<0.0001	-	<0.00010	-
Phosphorus	mg/L	-	<0.03	-	<0.03	-	<0.030	-
Potassium	mg/L	-	1.00	-	<1	-	<1.0	-
Sodium	mg/L	-	91.3	-	82.0	-	106.0	-
Zinc	mg/L	-	<0.003	-	0.069	-	0.0046 U	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Benzene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Dichloromethane	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Ethylbenzene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Toluene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Vinyl Chloride	µg/L	-	<0.5	-	<0.5	-	<0.50	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW44B-01						
		4-May-10	**11-Nov-10**	**4-May-11**	**11-Nov-11**	**9-May-12**	**6-Nov-12**	**15-May-13**
General Chemistry								
Alkalinity	mg/L	114	126	118	117	118	125	115
Ammonia	mg/L	<0.050	<0.050	0.06	0.16	<0.050	<0.050	0.05
Chloride	mg/L	41.4	42.3	36.5	37.2	37.8	36.6	38.3
Field Conductivity	µS/cm	498	526	468	449	503	439	568
Laboratory Conductivity	µS/cm	508	490	520	516	510	430	537
Total Hardness	mg/L	76	101	81	91	77	102	83
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Field pH	SU	7.93	8.19	8.21	7.47	8.21	7.99	8.30
Laboratory pH	SU	8.25	8.27	8.25	8.14	8.19	8.12	8.05
Phenols	mg/L	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	74.0	79.2	78	79	81	81	77.5
Total Kjeldahl Nitrogen	mg/L	0.46	0.21	0.37	0.24	<0.15	0.28	<0.10
Total Dissolved Solids	mg/L	300	332	306	322	308	326	302
Chemical Oxygen Demand	mg/L	40	11	<10	11	<10	17	8
Dissolved Organic Carbon	mg/L	2.8	2.7	3.3	3.6	2.8	3.1	3.1
Temperature	C	11.2	10.7	9.7	10.1	11.4	8.6	10.0
Dissolved Metals								
Arsenic	mg/L	0.008	-	0.006	-	0.005	-	0.004
Barium	mg/L	0.034	-	0.038	-	0.038	-	0.038
Boron	mg/L	0.526	-	0.483	-	0.422	-	0.591
Cadmium	mg/L	0.0002	-	0.0003	-	<0.00010	-	<0.002
Calcium	mg/L	20.5	27.8	22.7	26.7	21.4	30.2	22.8
Chromium	mg/L	<0.0010	-	<0.0010	-	<0.0010	-	0.004
Copper	mg/L	<0.0010	-	<0.0010	-	<0.0010	-	<0.003
Iron	mg/L	0.124	-	<0.050	-	<0.050	-	<0.010
Lead	mg/L	<0.0010	-	<0.0010	-	<0.0010	-	<0.002
Magnesium	mg/L	6.06	7.72	5.97	5.89	5.80	6.44	6.38
Manganese	mg/L	0.013	-	0.004	-	0.008	-	0.006
Mercury	mg/L	<0.00010	-	<0.00010	-	<0.00010	-	<0.0001
Phosphorus	mg/L	0.04	-	<0.030	-	<0.030	-	<0.05
Potassium	mg/L	<1.0	-	<1.0	-	<1.0	-	1.26
Sodium	mg/L	80.0	-	77.9	-	68.0	-	76.4
Zinc	mg/L	<0.0030	-	<0.0030	-	<0.0030	-	<0.005
VOCs								
1,4-Dichlorobenzene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.10
Benzene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.20
Dichloromethane	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.30
Ethylbenzene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.10
Toluene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.20
Vinyl Chloride	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW44B-01						
		14-Nov-13	12-May-14	11-Nov-14	14-May-15	10-Nov-15	11-May-16	9-Nov-16
General Chemistry								
Alkalinity	mg/L	113	114	120	115	122	128	119
Ammonia	mg/L	0.05	0.05	0.05	<0.02	<0.02	<0.02	0.17
Chloride	mg/L	36.0	38.5	39.1	40.4	39.7	47.4	42.2
Field Conductivity	µS/cm	563	560	556	392	510	446	437
Laboratory Conductivity	µS/cm	519	530	526	512	540	558	535
Total Hardness	mg/L	76	81	85.3	83.6	86.1	102	85.1
Nitrate	mg/L	<0.10	<0.05	<0.05	0.09	<0.10	0.14	0.15
Nitrite	mg/L	<0.10	<0.05	<0.05	<0.05	<0.10	<0.10	<0.05
Field pH	SU	8.12	7.78	8.01	7.66	7.98	7.93	8.23
Laboratory pH	SU	7.95	8.20	8.09	8.06	8.08	8.06	8.00
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	81	82.4	85.3	83.5	86.2	104	84.2
Total Kjeldahl Nitrogen	mg/L	2.46	<0.10	0.44	0.15	0.14	0.28	0.19
Total Dissolved Solids	mg/L	296	284	288	306	304	308	306
Chemical Oxygen Demand	mg/L	11	<5	<5	<5	<5	5	<5
Dissolved Organic Carbon	mg/L	6.9	3.1	4.2	4.1	3.5	2.8	2.7
Temperature	C	10.7	9.5	13.2	11.2	10.7	11.9	11.0
Dissolved Metals								
Arsenic	mg/L	-	0.004	-	0.005	-	0.005	-
Barium	mg/L	-	0.040	-	0.032	-	0.033	-
Boron	mg/L	-	0.488	-	0.504	-	0.489	-
Cadmium	mg/L	-	<0.002	-	<0.002	-	<0.002	-
Calcium	mg/L	20.3	21.6	22.5	22.2	23.2	26.7	23.2
Chromium	mg/L	-	<0.003	-	<0.003	-	<0.003	-
Copper	mg/L	-	<0.003	-	<0.003	-	<0.003	-
Iron	mg/L	-	<0.010	-	<0.010	-	<0.010	-
Lead	mg/L	-	<0.002	-	<0.002	-	<0.002	-
Magnesium	mg/L	6.08	6.68	7.06	6.83	6.85	8.68	6.59
Manganese	mg/L	-	0.008	-	<0.002	-	<0.002	-
Mercury	mg/L	-	<0.0001	-	<0.0001	-	<0.0001	-
Phosphorus	mg/L	-	<0.05	-	<0.05	-	<0.05	-
Potassium	mg/L	-	0.97	-	0.88	-	2.28	-
Sodium	mg/L	-	78.6	-	77.8	-	81.0	-
Zinc	mg/L	-	<0.005	-	<0.005	-	<0.005	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.10	-	<0.10	-	<0.10	-
Benzene	µg/L	-	<0.20	-	<0.20	-	<0.20	-
Dichloromethane	µg/L	-	<0.30	-	<0.30	-	<0.30	-
Ethylbenzene	µg/L	-	<0.10	-	<0.10	-	<0.10	-
Toluene	µg/L	-	<0.20	-	<0.20	-	<0.20	-
Vinyl Chloride	µg/L	-	<0.17	-	<0.17	-	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW44B-01	
		18-May-17	7-Nov-17
General Chemistry			
Alkalinity	mg/L	118	118
Ammonia	mg/L	0.10	0.08
Chloride	mg/L	42.1	38.7
Field Conductivity	µS/cm	449	540
Laboratory Conductivity	µS/cm	542	536
Total Hardness	mg/L	82.4	79.1
Nitrate	mg/L	0.08	<0.10
Nitrite	mg/L	<0.05	<0.10
Field pH	SU	7.95	7.60
Laboratory pH	SU	8.12	7.74
Phenols	mg/L	<0.001	<0.001
Sulphate	mg/L	86.7	88.8
Total Kjeldahl Nitrogen	mg/L	0.19	0.28
Total Dissolved Solids	mg/L	312	322
Chemical Oxygen Demand	mg/L	13	<5
Dissolved Organic Carbon	mg/L	2.8	3.1
Temperature	C	13.69	10.9
Dissolved Metals			
Arsenic	mg/L	0.007	-
Barium	mg/L	0.036	-
Boron	mg/L	0.480	-
Cadmium	mg/L	<0.002	-
Calcium	mg/L	21.7	20.3
Chromium	mg/L	<0.003	-
Copper	mg/L	<0.003	-
Iron	mg/L	<0.010	-
Lead	mg/L	<0.002	-
Magnesium	mg/L	6.86	6.89
Manganese	mg/L	0.003	-
Mercury	mg/L	<0.0001	-
Phosphorus	mg/L	<0.05	-
Potassium	mg/L	1.02	-
Sodium	mg/L	73.3	-
Zinc	mg/L	<0.005	-
VOCs			
1,4-Dichlorobenzene	µg/L	<0.10	-
Benzene	µg/L	<0.20	-
Dichloromethane	µg/L	<0.30	-
Ethylbenzene	µg/L	<0.10	-
Toluene	µg/L	<0.20	-
Vinyl Chloride	µg/L	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW45B-01						
		9-May-07	**6-May-08**	**5-May-09**	**4-May-10**	**4-May-11**	**9-May-12**	**15-May-13**
General Chemistry								
Alkalinity	mg/L	130	130	138	129	137	139	129
Ammonia	mg/L	0.07	<0.05	0.061 U	0.06	<0.050	0.05	0.04
Chloride	mg/L	17.0	28.0	27.6	28.3	26.8	28.9	28.0
Field Conductivity	µS/cm	479	511	466	493	479	511	600
Laboratory Conductivity	µS/cm	520	530	532	512	537	534	522
Total Hardness	mg/L	110	100	103	100	108	95	100
Nitrate	mg/L	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Field pH	SU	7.96	8.50	8.08	7.91	8.08	8.18	8.33
Laboratory pH	SU	7.90	8.21	8.23	8.24	8.22	8.15	8.11
Phenols	mg/L	<0.001	<0.001	0.001	<0.002	<0.001	<0.001	<0.001
Sulphate	mg/L	72.0	86.0	92	87	84	88	82.2
Total Kjeldahl Nitrogen	mg/L	0.4 U	<0.15	0.15	0.55	<0.15	<0.15	<0.10
Total Dissolved Solids	mg/L	340	360	290	322	306	304	324
Chemical Oxygen Demand	mg/L	10	<10	<10	25	<10	<10	<5
Dissolved Organic Carbon	mg/L	3.0	3.0	7.3	3.4	3.8	2.6	3.7
Temperature	C	10.8	10.1	11.9	10.4	9.1	11.4	9.9
Dissolved Metals								
Arsenic	mg/L	0.004	0.003	0.003	0.002	0.003	0.003	0.003
Barium	mg/L	0.050	0.040	0.042	0.041	0.042	0.041	0.040
Boron	mg/L	0.450	0.420	0.343	0.359	0.372	0.308	0.414
Cadmium	mg/L	<0.0001	0.0003	0.0002	0.0002	0.0003	<0.00010	<0.002
Calcium	mg/L	26.7	25.8	24.2	25.0	27.3	23.4	24.5
Chromium	mg/L	<0.001	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.003
Copper	mg/L	0.037	<0.001	<0.0010	0.001	<0.0010	<0.0010	<0.003
Iron	mg/L	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.010
Lead	mg/L	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.002
Magnesium	mg/L	10.20	9.50	10.40	9.04	9.75	8.83	9.44
Manganese	mg/L	0.017 U	0.008	0.014	0.004	0.017	0.007	0.012
Mercury	mg/L	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.0001
Phosphorus	mg/L	<0.03	<0.03	<0.030	<0.030	<0.030	<0.030	<0.05
Potassium	mg/L	1.00	<1	<1.0	<1.0	<1.0	<1.0	0.97
Sodium	mg/L	89.3	76.0	87.5	78.1	74.5	65.8	77.0
Zinc	mg/L	0.017	<0.003	<0.0030	0.041	0.032	<0.0030	0.028
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Benzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Dichloromethane	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.30
Ethylbenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Toluene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Vinyl Chloride	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW45B-01			
		12-May-14	13-May-15	9-May-16	18-May-17
General Chemistry					
Alkalinity	mg/L	138	137	147	138
Ammonia	mg/L	0.04	<0.02	<0.02	0.08
Chloride	mg/L	28.5	27.8	31.0	30.3
Field Conductivity	µS/cm	580	435	445	460
Laboratory Conductivity	µS/cm	550	547	566	548
Total Hardness	mg/L	103	108	93.6	95.8
Nitrate	mg/L	<0.05	<0.10	<0.05	0.05
Nitrite	mg/L	<0.05	<0.10	<0.05	<0.05
Field pH	SU	7.64	7.88	7.76	7.87
Laboratory pH	SU	8.22	8.23	8.16	8.17
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	86.9	90.8	96.1	90.7
Total Kjeldahl Nitrogen	mg/L	<0.10	<0.10	0.18	0.26
Total Dissolved Solids	mg/L	292	296	308	292
Chemical Oxygen Demand	mg/L	<5	<5	<5	11
Dissolved Organic Carbon	mg/L	2.8	2.6	3.5	2.6
Temperature	C	10.6	11.5	10.6	12.98
Dissolved Metals					
Arsenic	mg/L	<0.003	<0.003	<0.003	<0.003
Barium	mg/L	0.037	0.035	0.037	0.038
Boron	mg/L	0.349	0.380	0.351	0.388
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	24.6	24.6	21.0	22.7
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	10.2	11.3	10.0	9.51
Manganese	mg/L	0.007	0.004	0.007	0.006
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	0.94	1.18	0.96	0.93
Sodium	mg/L	76.8	78.8	77.0	69.5
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005
VOCs					
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW46B-01						
		14-Nov-06	9-May-07	14-Nov-07	6-May-08	12-Nov-08	5-May-09	5-Nov-09
General Chemistry								
Alkalinity	mg/L	170	150	130	150	120	141	127
Ammonia	mg/L	0.85	0.57	0.30	0.13	0.23	0.25	0.17
Chloride	mg/L	21.0	23.0	26.0	21.0	25.0	21.9	21.2
Field Conductivity	µS/cm	616	550	400	626	433	527	413
Laboratory Conductivity	µS/cm	595	613	478	637	465	564	474
Total Hardness	mg/L	180	220	120	180	90	169	128
Nitrate	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.50	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Field pH	SU	7.26	7.60	8.12	8.16	7.96	7.88	8.06
Laboratory pH	SU	7.78	7.61	8.30	8.09	8.25	8.19	8.26
Phenols	mg/L	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	133.0	132.0	99	142	111	146	84
Total Kjeldahl Nitrogen	mg/L	1.5 U	1.0 U	0.50	0.29	0.91 J	0.32	0.20
Total Dissolved Solids	mg/L	440	410	340	360	330	324	316
Chemical Oxygen Demand	mg/L	10	10	<10	<10	20 U	<10	<10
Dissolved Organic Carbon	mg/L	5.0	3.0	3.0	3.0	3.0	9.8	4.2
Temperature	C	10.7	11.0	11.2	10.4	10.0	11.6	10.4
Dissolved Metals								
Arsenic	mg/L	-	0.005	-	0.003	-	0.003	-
Barium	mg/L	-	0.050	-	0.050	-	0.049	-
Boron	mg/L	-	0.720	-	0.630	-	0.515	-
Cadmium	mg/L	-	<0.0001	-	0.0001	-	0.0001	-
Calcium	mg/L	46.2 U	64.6	33.8	53.1	26.8	46.0	37.3
Chromium	mg/L	-	<0.001	-	0.001	-	<0.0010	-
Copper	mg/L	-	<0.001	-	<0.001	-	<0.0010	-
Iron	mg/L	-	0.180	-	<0.05	-	<0.050	-
Lead	mg/L	-	<0.001	-	<0.001	-	<0.0010	-
Magnesium	mg/L	14.70	14.70	9.70	12.60	6.50	13.20	8.40
Manganese	mg/L	-	0.070	-	0.082	-	0.077	-
Mercury	mg/L	-	<0.0001	-	<0.0001	-	<0.00010	-
Phosphorus	mg/L	-	<0.03	-	<0.03	-	<0.030	-
Potassium	mg/L	-	2.00	-	1.00	-	1.20	-
Sodium	mg/L	-	77.5	-	71.0	-	73.3	-
Zinc	mg/L	-	0.004	-	0.014 U	-	0.0036 U	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Benzene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Dichloromethane	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Ethylbenzene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Toluene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Vinyl Chloride	µg/L	-	<0.5	-	<0.5	-	<0.50	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW46B-01						
		4-May-10	11-Nov-10	4-May-11	11-Nov-11	9-May-12	6-Nov-12	15-May-13
General Chemistry								
Alkalinity	mg/L	124	117	132	129	118	120	115
Ammonia	mg/L	0.16	0.09	0.15	0.11	0.15	0.12	0.14
Chloride	mg/L	24.9	25.9	21.4	26.5	24.0	24.8	29.2
Field Conductivity	µS/cm	506	439	501	399	490	349	506
Laboratory Conductivity	µS/cm	472	403	532	494	442	382	480
Total Hardness	mg/L	86	128	112	124	77	123	89
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.05
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.05
Field pH	SU	7.83	8.36	7.99	7.34	8.13	8.34	8.35
Laboratory pH	SU	8.24	8.30	8.18	8.13	8.22	8.18	8.07
Phenols	mg/L	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	76.4	63.0	99	76	93	68	74.6
Total Kjeldahl Nitrogen	mg/L	0.52	0.43	<0.15	0.25	0.37	0.41	0.10
Total Dissolved Solids	mg/L	284	276	310	318	300	342	300
Chemical Oxygen Demand	mg/L	53	13	<10	<10	<10	10 UJ	<5
Dissolved Organic Carbon	mg/L	4.1	2.7	3.6	4.4	2.9	3.6	5.4
Temperature	C	10.3	10.5	9.2	10.3	10.8	9.4	10.1
Dissolved Metals								
Arsenic	mg/L	0.006	-	0.005	-	0.008	-	0.007
Barium	mg/L	0.035	-	0.046	-	0.036	-	0.048
Boron	mg/L	0.557	-	0.523	-	0.444	-	0.590
Cadmium	mg/L	0.0002	-	0.0002	-	<0.00010	-	<0.002
Calcium	mg/L	23.2	34.1	30.8	35.7	21.0	35.3	23.9
Chromium	mg/L	<0.0010	-	<0.0010	-	<0.0010	-	<0.003
Copper	mg/L	<0.0010	-	<0.0010	-	<0.0010	-	<0.003
Iron	mg/L	<0.050	-	<0.050	-	<0.050	-	0.014
Lead	mg/L	<0.0010	-	<0.0010	-	<0.0010	-	<0.002
Magnesium	mg/L	6.71	10.30	8.51	8.44	5.88	8.38	7.05
Manganese	mg/L	0.054	-	0.020	-	0.030	-	0.040
Mercury	mg/L	<0.00010	-	<0.00010	-	<0.00010	-	<0.0001
Phosphorus	mg/L	<0.030	-	<0.030	-	<0.030	-	<0.05
Potassium	mg/L	<1.0	-	1.10	-	<1.0	-	1.97
Sodium	mg/L	65.5	-	69.6	-	57.0	-	64.5
Zinc	mg/L	<0.0030	-	<0.0030	-	<0.0030	-	<0.005
VOCs								
1,4-Dichlorobenzene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.10
Benzene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.20
Dichloromethane	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.30
Ethylbenzene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.10
Toluene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.20
Vinyl Chloride	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW46B-01						
		14-Nov-13	12-May-14	12-Nov-14	13-May-15	9-Nov-15	11-May-16	9-Nov-16
General Chemistry								
Alkalinity	mg/L	115	121	122	113	133	127	114
Ammonia	mg/L	0.18	0.23	0.28	0.08	0.16	0.11	0.25
Chloride	mg/L	22.4	24.1	26.1	27.1	27.6	28.4	27.4
Field Conductivity	µS/cm	530	516	556	370	430	363	437
Laboratory Conductivity	µS/cm	479	519	472	429	443	489	431
Total Hardness	mg/L	96	103	86.7	80.4	69.6	102	61.3
Nitrate	mg/L	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite	mg/L	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Field pH	SU	8.3	7.62	8.01	7.84	8.29	8.03	8.23
Laboratory pH	SU	7.98	8.21	8.10	8.18	8.22	8.03	8.02
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	89.9	90.8	79.3	60.8	60.2	97.1	58.1
Total Kjeldahl Nitrogen	mg/L	1.99	0.15	0.67	0.21	0.37	0.32	0.35
Total Dissolved Solids	mg/L	288	290	272	272	284	274	266
Chemical Oxygen Demand	mg/L	10	7	<5	7	5	9	<5
Dissolved Organic Carbon	mg/L	7.7	3.3	2.9	2.7	3.2	3.2	3.0
Temperature	C	10.7	10.3	8.0	11.7	11.5	12.1	11.0
Dissolved Metals								
Arsenic	mg/L	-	0.007	-	0.007	-	0.008	-
Barium	mg/L	-	0.046	-	0.032	-	0.041	-
Boron	mg/L	-	0.487	-	0.518	-	0.499	-
Cadmium	mg/L	-	<0.002	-	<0.002	-	<0.002	-
Calcium	mg/L	25.7	27.2	22.9	20.8	18.5	26.3	15.9
Chromium	mg/L	-	<0.003	-	<0.003	-	<0.003	-
Copper	mg/L	-	<0.003	-	<0.003	-	<0.003	-
Iron	mg/L	-	0.052	-	<0.010	-	<0.010	-
Lead	mg/L	-	<0.002	-	<0.002	-	<0.002	-
Magnesium	mg/L	7.75	8.62	7.17	6.92	5.69	8.76	5.25
Manganese	mg/L	-	0.033	-	0.020	-	0.024	-
Mercury	mg/L	-	<0.0001	-	<0.0001	-	<0.0001	-
Phosphorus	mg/L	-	<0.05	-	<0.05	-	<0.05	-
Potassium	mg/L	-	1.16	-	2.84	-	2.57	-
Sodium	mg/L	-	65.9	-	66.3	-	67.1	-
Zinc	mg/L	-	<0.005	-	<0.005	-	<0.005	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.10	-	<0.10	-	<0.10	-
Benzene	µg/L	-	<0.20	-	<0.20	-	<0.20	-
Dichloromethane	µg/L	-	<0.30	-	<0.30	-	<0.30	-
Ethylbenzene	µg/L	-	<0.10	-	<0.10	-	<0.10	-
Toluene	µg/L	-	<0.20	-	<0.20	-	<0.20	-
Vinyl Chloride	µg/L	-	<0.17	-	<0.17	-	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW46B-01	
		18-May-17	7-Nov-17
General Chemistry			
Alkalinity	mg/L	127	118
Ammonia	mg/L	0.17	0.14
Chloride	mg/L	23.2	28.1
Field Conductivity	µS/cm	429	430
Laboratory Conductivity	µS/cm	531	421
Total Hardness	mg/L	101	53.0
Nitrate	mg/L	<0.10	<0.05
Nitrite	mg/L	<0.10	<0.05
Field pH	SU	8.10	7.83
Laboratory pH	SU	8.08	7.74
Phenols	mg/L	<0.001	<0.001
Sulphate	mg/L	105	53.3
Total Kjeldahl Nitrogen	mg/L	0.34	0.27
Total Dissolved Solids	mg/L	268	276
Chemical Oxygen Demand	mg/L	16	<5
Dissolved Organic Carbon	mg/L	3.0	3.6
Temperature	C	13.12	10.3
Dissolved Metals			
Arsenic	mg/L	0.008	-
Barium	mg/L	0.050	-
Boron	mg/L	0.519	-
Cadmium	mg/L	<0.002	-
Calcium	mg/L	26.3	13.4
Chromium	mg/L	<0.003	-
Copper	mg/L	<0.003	-
Iron	mg/L	0.042	-
Lead	mg/L	<0.002	-
Magnesium	mg/L	8.67	4.75
Manganese	mg/L	0.028	-
Mercury	mg/L	<0.0001	-
Phosphorus	mg/L	<0.05	-
Potassium	mg/L	1.26	-
Sodium	mg/L	64.7	-
Zinc	mg/L	<0.005	-
VOCs			
1,4-Dichlorobenzene	µg/L	<0.10	-
Benzene	µg/L	<0.20	-
Dichloromethane	µg/L	<0.30	-
Ethylbenzene	µg/L	<0.10	-
Toluene	µg/L	<0.20	-
Vinyl Chloride	µg/L	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW47B-01						
		9-May-07	**6-May-08**	**5-May-09**	**4-May-10**	**4-May-11**	**9-May-12**	**15-May-13**
General Chemistry								
Alkalinity	mg/L	160	160	175	178	178	175	157
Ammonia	mg/L	0.14	0.09	0.13	0.12	0.08	0.10	0.09
Chloride	mg/L	22.0	20.0	20.8	18.3	15.8	17.7	18.0
Field Conductivity	µS/cm	407	423	373	371	370	384	451
Laboratory Conductivity	µS/cm	425	420	441	426	426	435	414
Total Hardness	mg/L	80	90	69	74	74	71	74
Nitrate	mg/L	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	0.06
Nitrite	mg/L	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.05
Field pH	SU	7.80	8.61	8.22	8.02	8.23	8.35	8.37
Laboratory pH	SU	8.11	8.29	8.29	8.28	8.30	8.25	8.19
Phenols	mg/L	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001
Sulphate	mg/L	30.0	27.0	24	26	22	24	24.9
Total Kjeldahl Nitrogen	mg/L	0.7 U	<0.15	0.27	0.67	<0.15	<0.15	0.14
Total Dissolved Solids	mg/L	290	250	236	246	244	266	254
Chemical Oxygen Demand	mg/L	10	<10	<10	11	<10	<10	7
Dissolved Organic Carbon	mg/L	3.0	2.0	5.0	2.4	3.1	2.4	2.7
Temperature	C	9.8	8.2	11.2	9.8	8.0	10.1	9.6
Dissolved Metals								
Arsenic	mg/L	0.005	0.006	0.005	0.004	0.006	0.004	0.006
Barium	mg/L	0.080	0.080	0.057	0.064	0.076	0.074	0.065
Boron	mg/L	1.50	1.68	1.16	1.27	1.14	0.817	0.948
Cadmium	mg/L	<0.0001	0.0003	0.0002	0.0002	0.0002	<0.00010	<0.002
Calcium	mg/L	19.8	20.7	16.5	18.0	17.7	17.2	18.0
Chromium	mg/L	<0.001	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.003
Copper	mg/L	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.003
Iron	mg/L	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.010
Lead	mg/L	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.002
Magnesium	mg/L	7.10	8.20	6.72	7.06	7.32	6.76	7.05
Manganese	mg/L	0.011 U	0.007	0.002	0.010	0.012	0.006	0.011
Mercury	mg/L	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.0001
Phosphorus	mg/L	<0.03	<0.03	<0.030	<0.030	<0.030	<0.030	<0.05
Potassium	mg/L	1.00	1.00	<1.0	<1.0	<1.0	<1.0	0.94
Sodium	mg/L	80.9	71.0	78.3	68.8	68.9	56.9	66.1
Zinc	mg/L	0.061	<0.003	<0.0030	0.0178 U	<0.0030	<0.0030	<0.005
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Benzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Dichloromethane	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.30
Ethylbenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Toluene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Vinyl Chloride	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW47B-01			
		12-May-14	13-May-15	11-May-16	18-May-17
General Chemistry					
Alkalinity	mg/L	168	172	200	191
Ammonia	mg/L	0.16	0.13	0.11	0.21
Chloride	mg/L	15.1	13.7	13.8	12.9
Field Conductivity	µS/cm	450	350	362	389
Laboratory Conductivity	µS/cm	429	429	462	457
Total Hardness	mg/L	74	86	110	98.5
Nitrate	mg/L	<0.05	<0.05	<0.10	0.08
Nitrite	mg/L	<0.05	<0.05	<0.10	<0.05
Field pH	SU	7.67	7.50	7.70	7.82
Laboratory pH	SU	8.31	8.22	8.25	8.21
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	25.4	28.1	33.7	31.9
Total Kjeldahl Nitrogen	mg/L	<0.10	0.18	<0.10	0.41
Total Dissolved Solids	mg/L	238	262	242	236
Chemical Oxygen Demand	mg/L	6	<5	5	<5
Dissolved Organic Carbon	mg/L	3.0	2.1	3.2	2.0
Temperature	C	9.9	11.2	10.8	12.29
Dissolved Metals					
Arsenic	mg/L	0.005	0.005	0.005	0.006
Barium	mg/L	0.076	0.065	0.080	0.093
Boron	mg/L	0.729	0.708	0.582	0.566
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	17.1	19.6	25.1	22.3
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	0.020	0.018	0.026	0.046
Lead	mg/L	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	7.60	8.96	11.5	10.4
Manganese	mg/L	0.014	0.014	0.017	0.017
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	1.06	1.38	1.73	1.26
Sodium	mg/L	65.2	66.3	63.2	55.8
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005
VOCs					
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW48B-01						
		11-May-06	14-Nov-06	9-May-07	14-Nov-07	6-May-08	12-Nov-08	5-May-09
General Chemistry								
Alkalinity	mg/L	140	110	120	130	130	120	131
Ammonia	mg/L	<0.05	<0.05	0.11	0.05	0.08	<0.05	<0.050
Chloride	mg/L	43.0	43.0	44.0	43.0	42.0	44.0	42.8
Field Conductivity	µS/cm	323	365	342	339	389	359	349
Laboratory Conductivity	µS/cm	360	384	384	387	387	387	386
Total Hardness	mg/L	70	70 U	70	80	90	70	70
Nitrate	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Field pH	SU	8.06	7.67	7.98	8.12	8.52	8.22	8.23
Laboratory pH	SU	8.17	8.12	7.98	8.22	8.22	8.29	8.30
Phenols	mg/L	<0.001	0.002	0.001	<0.001	<0.001	<0.001	0.001
Sulphate	mg/L	5.0	3.0	3	3	3	3	3
Total Kjeldahl Nitrogen	mg/L	0.3 U	0.5 U	0.5 U	0.20	0.23	0.47	0.20
Total Dissolved Solids	mg/L	290	230	240	220	170	210	188
Chemical Oxygen Demand	mg/L	<10	<10	<10	<10	<10	20 U	<10
Dissolved Organic Carbon	mg/L	2 U	3.0	4.0	3.0	2.0	3.0	3.1
Temperature	C	11.2	9.7	9.2	10.6	8.4	10.1	10.6
Dissolved Metals								
Arsenic	mg/L	0.005	-	0.003	-	0.004	-	0.004
Barium	mg/L	0.120	-	0.100	-	0.080	-	0.083
Boron	mg/L	0.800	-	0.790	-	0.740	-	0.669
Cadmium	mg/L	<0.0001	-	<0.0001	-	0.0003	-	0.0003
Calcium	mg/L	16.2	13.5 U	17.2 U	18.7	22.5	15.8 U	16.0
Chromium	mg/L	<0.001	-	<0.001	-	0.003	-	<0.0010
Copper	mg/L	<0.001	-	<0.001	-	<0.001	-	<0.0010
Iron	mg/L	<0.05	-	<0.05	-	<0.05	-	<0.050
Lead	mg/L	<0.001	-	<0.001	-	<0.001	-	<0.0010
Magnesium	mg/L	7.10	7.90	7.30	7.80	8.20	6.40	7.33
Manganese	mg/L	0.014	-	0.008 U	-	0.011	-	0.004
Mercury	mg/L	<0.0001	-	<0.0001	-	<0.0001	-	<0.00010
Phosphorus	mg/L	<0.03	-	0.03	-	<0.03	-	<0.030
Potassium	mg/L	1.00	-	1.00	-	<1	-	<1.0
Sodium	mg/L	65.0	-	67.1	-	60.0	-	70.4
Zinc	mg/L	<0.003	-	0.013	-	0.070	-	0.0169 UJ
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Benzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Dichloromethane	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Ethylbenzene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Toluene	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50
Vinyl Chloride	µg/L	<0.5	-	<0.5	-	<0.5	-	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW48B-01						
		5-Nov-09	4-May-10	11-Nov-10	4-May-11	11-Nov-11	9-May-12	6-Nov-12
General Chemistry								
Alkalinity	mg/L	123	123	127	125	127	129	132
Ammonia	mg/L	<0.050	0.07	<0.050	0.08	0.06	0.05	0.10
Chloride	mg/L	40.9	44.2	44.0	43.1	44.2	45.0	43.5
Field Conductivity	µS/cm	350	355	401	345	344	375	331
Laboratory Conductivity	µS/cm	376	378	375	387	379	390	333
Total Hardness	mg/L	64	63	76	71	76	64	86
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Field pH	SU	8.13	8.05	8.31	8.23	7.34	8.35	8.29
Laboratory pH	SU	8.34	8.17	8.27	8.26	8.16	8.23	8.23
Phenols	mg/L	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	<2.0	2.4	2	<2.0	3	3	<2.0
Total Kjeldahl Nitrogen	mg/L	<0.15	0.64	0.29	<0.15	<0.15	<0.15	0.73
Total Dissolved Solids	mg/L	208	204	244	206	222	208	230
Chemical Oxygen Demand	mg/L	20 U	68	15	<10	<10	<10	51
Dissolved Organic Carbon	mg/L	4.1	3.0	2.2	3.8	3.2	2.4	3.0
Temperature	C	9.9	9.6	10.5	8.6	9.8	10.8	9.2
Dissolved Metals								
Arsenic	mg/L	-	0.002	-	0.004	-	0.003	-
Barium	mg/L	-	0.073	-	0.094	-	0.096	-
Boron	mg/L	-	0.655	-	0.709	-	0.580	-
Cadmium	mg/L	-	0.0002	-	0.0003	-	<0.00010	-
Calcium	mg/L	15.3	14.1	16.4	16.6	19.8	15.2	22.7
Chromium	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Copper	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Iron	mg/L	-	<0.050	-	<0.050	-	<0.050	-
Lead	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-
Magnesium	mg/L	6.29	6.65	8.48	7.19	6.51	6.42	7.21
Manganese	mg/L	-	<0.0010	-	0.003	-	0.003	-
Mercury	mg/L	-	<0.00010	-	<0.00010	-	<0.00010	-
Phosphorus	mg/L	-	<0.030	-	<0.030	-	<0.030	-
Potassium	mg/L	-	<1.0	-	1.00	-	<1.0	-
Sodium	mg/L	-	57.3	-	57.8	-	51.0	-
Zinc	mg/L	-	<0.0030	-	0.004	-	<0.0030	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Benzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Dichloromethane	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Ethylbenzene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Toluene	µg/L	-	<0.50	-	<0.50	-	<0.50	-
Vinyl Chloride	µg/L	-	<0.50	-	<0.50	-	<0.50	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW48B-01						
		16-May-13	14-Nov-13	12-May-14	12-Nov-14	13-May-15	9-Nov-15	11-May-16
General Chemistry								
Alkalinity	mg/L	121	123	123	129	125	127	119
Ammonia	mg/L	0.06	0.06	0.07	0.05	<0.02	<0.02	0.05
Chloride	mg/L	52.1	45	46.7	48.1	48.0	47.2	85.4
Field Conductivity	µS/cm	433	419	421	375	320	400	391
Laboratory Conductivity	µS/cm	406	387	405	389	396	391	486
Total Hardness	mg/L	68	60	66	67.1	71.1	69.9	60.6
Nitrate	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Field pH	SU	8.41	8.25	7.70	8.40	6.94	8.25	8.05
Laboratory pH	SU	8.08	7.99	8.25	8.06	8.19	8.24	8.06
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	2.57	1.96	3.94	1.98	3.81	2.22	4.02
Total Kjeldahl Nitrogen	mg/L	<0.10	0.35	<0.10	0.20	<0.10	0.20	0.25
Total Dissolved Solids	mg/L	204	190	196	194	180	230	256
Chemical Oxygen Demand	mg/L	6	9	<5	<5	<5	<5	<5
Dissolved Organic Carbon	mg/L	5.1	2.5	3.0	3.6	2.5	2.3	3.5
Temperature	C	10.3	10.4	10.4	6.8	11.1	11.0	10.0
Dissolved Metals								
Arsenic	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Barium	mg/L	0.077	-	0.081	-	0.071	-	0.042
Boron	mg/L	0.659	-	0.672	-	0.703	-	0.656
Cadmium	mg/L	<0.002	-	<0.002	-	<0.002	-	<0.002
Calcium	mg/L	15.3	13.4	14.9	14.8	16.0	16.0	15.0
Chromium	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Copper	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Iron	mg/L	<0.010	-	<0.010	-	<0.010	-	0.050
Lead	mg/L	<0.002	-	<0.002	-	<0.002	-	<0.002
Magnesium	mg/L	7.23	6.35	7.04	7.32	7.56	7.28	5.62
Manganese	mg/L	0.004	-	0.005	-	0.003	-	0.034
Mercury	mg/L	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001
Phosphorus	mg/L	<0.05	-	<0.05	-	<0.05	-	<0.05
Potassium	mg/L	1.10	-	0.99	-	1.21	-	2.87
Sodium	mg/L	56.1	-	57.4	-	57.9	-	78.8
Zinc	mg/L	<0.005	-	<0.005	-	<0.005	-	<0.005
VOCs								
1,4-Dichlorobenzene	µg/L	<0.10	-	<0.10	-	<0.10	-	<0.10
Benzene	µg/L	<0.20	-	<0.20	-	<0.20	-	<0.20
Dichloromethane	µg/L	<0.30	-	<0.30	-	<0.30	-	<0.30
Ethylbenzene	µg/L	<0.10	-	<0.10	-	<0.10	-	<0.10
Toluene	µg/L	<0.20	-	<0.20	-	<0.20	-	<0.20
Vinyl Chloride	µg/L	<0.17	-	<0.17	-	<0.17	-	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW48B-01		
		9-Nov-16	18-May-17	7-Nov-17
General Chemistry				
Alkalinity	mg/L	127	124	130
Ammonia	mg/L	0.17	0.11	0.09
Chloride	mg/L	47.3	48.3	47.7
Field Conductivity	µS/cm	334	341	420
Laboratory Conductivity	µS/cm	392	394	396
Total Hardness	mg/L	66.5	63.7	64.5
Nitrate	mg/L	<0.05	<0.05	<0.05
Nitrite	mg/L	<0.05	<0.05	<0.05
Field pH	SU	8.50	8.14	7.97
Laboratory pH	SU	7.99	8.16	7.79
Phenols	mg/L	<0.001	<0.001	<0.001
Sulphate	mg/L	3.32	2.52	2.16
Total Kjeldahl Nitrogen	mg/L	0.15	0.26	0.31
Total Dissolved Solids	mg/L	206	194	214
Chemical Oxygen Demand	mg/L	<5	16	<5
Dissolved Organic Carbon	mg/L	2.5	2.5	2.7
Temperature	C	9.4	12.27	10.5
Dissolved Metals				
Arsenic	mg/L	-	<0.003	-
Barium	mg/L	-	0.079	-
Boron	mg/L	-	0.668	-
Cadmium	mg/L	-	<0.002	-
Calcium	mg/L	15.1	14.3	13.9
Chromium	mg/L	-	<0.003	-
Copper	mg/L	-	<0.003	-
Iron	mg/L	-	<0.010	-
Lead	mg/L	-	<0.002	-
Magnesium	mg/L	7.00	6.79	7.24
Manganese	mg/L	-	0.003	-
Mercury	mg/L	-	<0.0001	-
Phosphorus	mg/L	-	<0.05	-
Potassium	mg/L	-	0.97	-
Sodium	mg/L	-	53.1	-
Zinc	mg/L	-	<0.005	-
VOCs				
1,4-Dichlorobenzene	µg/L	-	<0.10	-
Benzene	µg/L	-	<0.20	-
Dichloromethane	µg/L	-	<0.30	-
Ethylbenzene	µg/L	-	<0.10	-
Toluene	µg/L	-	<0.20	-
Vinyl Chloride	µg/L	-	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW50-01						
		14-Nov-06	9-May-07	14-Nov-07	6-May-08	12-Nov-08	5-May-09	5-Nov-09
General Chemistry								
Alkalinity	mg/L	120	57	120	100	110	132	123
Ammonia	mg/L	0.27	0.14	0.19	0.08	0.12	0.15	<0.050
Chloride	mg/L	30 J	21.0	21.0	19.0	21.0	19.8	15.1
Field Conductivity	µS/cm	382	342	365	410	368	365	369
Laboratory Conductivity	µS/cm	403	400	418	412	401	404	414
Total Hardness	mg/L	40 U	100	50	80	40	49	48
Nitrate	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Field pH	SU	7.99	7.98	8.08	8.45	8.35	8.35	8.36
Laboratory pH	SU	8.47	8.36	8.38	8.33	8.50	8.43	8.52
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Sulphate	mg/L	58.0	60.0	60	63	66	60	45
Total Kjeldahl Nitrogen	mg/L	0.5 U	0.5 U	0.50	0.16	0.61	0.30	0.23
Total Dissolved Solids	mg/L	690 J	320	250	260	730	252	624
Chemical Oxygen Demand	mg/L	<10	<10	<10	<10	10 U	<10	23 U
Dissolved Organic Carbon	mg/L	7 J	4.0	2.0	3.0	3.0	7.1	3.7
Temperature	C	9.6	9.2	10.9	10.3	10.2	10.1	9.6
Dissolved Metals								
Arsenic	mg/L	-	<0.001	-	0.002	-	0.002	-
Barium	mg/L	-	0.040	-	0.030	-	0.037	-
Boron	mg/L	-	0.980	-	0.890	-	0.703	-
Cadmium	mg/L	-	<0.0001	-	0.0004	-	0.0003	-
Calcium	mg/L	8.7 U	31.0	11.7	23.1	11.8 U	11.5	12.6
Chromium	mg/L	-	<0.001	-	0.001	-	<0.0010	-
Copper	mg/L	-	0.108	-	0.001	-	<0.0010	-
Iron	mg/L	-	0.070	-	<0.05	-	<0.050	-
Lead	mg/L	-	<0.001	-	<0.001	-	<0.0010	-
Magnesium	mg/L	4.30	5.00	4.00	5.10	3.70	4.84	3.94
Manganese	mg/L	-	0.025	-	0.020	-	0.007	-
Mercury	mg/L	-	<0.0001	-	<0.0001	-	<0.00010	-
Phosphorus	mg/L	-	<0.03	-	<0.03	-	<0.030	-
Potassium	mg/L	-	2.00	-	1.00	-	1.20	-
Sodium	mg/L	-	89.7	-	71.0	-	86.7	-
Zinc	mg/L	-	0.236	-	0.121	-	<0.0030	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Benzene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Dichloromethane	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Ethylbenzene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Toluene	µg/L	-	<0.5	-	<0.5	-	<0.50	-
Vinyl Chloride	µg/L	-	<0.5	-	<0.5	-	<0.50	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW50-01						
		4-May-10	11-Nov-10	4-May-11	11-Nov-11	9-May-12	6-Nov-12	15-May-13
General Chemistry								
Alkalinity	mg/L	135	113	140	110	110	110	100
Ammonia	mg/L	0.11	0.07	0.12	0.07	0.10	0.11	0.16
Chloride	mg/L	19.5	20.4	17.8	19.5	20.0	19.1	23.5
Field Conductivity	µS/cm	370	421	360	360	389	350	452
Laboratory Conductivity	µS/cm	400	400	409	400	410	360	398
Total Hardness	mg/L	49	53	58	54	47	63	55
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.07
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.05
Field pH	SU	8.28	8.47	8.60	7.32	8.66	8.39	8.63
Laboratory pH	SU	8.43	8.40	8.41	8.36	8.24	8.23	8.04
Phenols	mg/L	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	58.9	59.7	56	60	60	61	60.6
Total Kjeldahl Nitrogen	mg/L	0.33	0.36	0.20	0.27	0.25	0.41	0.14
Total Dissolved Solids	mg/L	46	294	234	572	326	400	302
Chemical Oxygen Demand	mg/L	30	<10	<10	11	<10	15	9
Dissolved Organic Carbon	mg/L	3.3	3.1	3.7	3.8	3.3	3.2	3.4
Temperature	C	11.0	10.4	9.1	10.0	11.1	10.1	10.5
Dissolved Metals								
Arsenic	mg/L	0.002	-	0.002	-	0.002	-	<0.003
Barium	mg/L	0.028	-	0.036	-	0.045	-	0.041
Boron	mg/L	0.683	-	0.682	-	0.590	-	0.809
Cadmium	mg/L	0.0003	-	0.0003	-	<0.00010	-	<0.002
Calcium	mg/L	12.3	12.8	14.7	14.8	11.9	17.7	14.1
Chromium	mg/L	<0.0010	-	<0.0010	-	<0.0010	-	<0.003
Copper	mg/L	<0.0010	-	<0.0010	-	<0.0010	-	<0.003
Iron	mg/L	<0.050	-	<0.050	-	<0.050	-	<0.010
Lead	mg/L	<0.0010	-	0.001	-	<0.0010	-	<0.002
Magnesium	mg/L	4.49	5.20	5.28	4.04	4.29	4.51	4.70
Manganese	mg/L	0.017	-	0.017	-	0.008	-	0.007
Mercury	mg/L	<0.00010	-	<0.00010	-	<0.00010	-	<0.0001
Phosphorus	mg/L	<0.030	-	<0.030	-	<0.030	-	<0.05
Potassium	mg/L	<1.0	-	1.10	-	1.20	-	1.62
Sodium	mg/L	68.3	-	66.8	-	61.5	-	72.0
Zinc	mg/L	0.0039 U	-	<0.0030	-	<0.0030	-	<0.005
VOCs								
1,4-Dichlorobenzene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.10
Benzene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.20
Dichloromethane	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.30
Ethylbenzene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.10
Toluene	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.20
Vinyl Chloride	µg/L	<0.50	-	<0.50	-	<0.50	-	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
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- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW50-01						
		14-Nov-13	12-May-14	11-Nov-14	14-May-15	10-Nov-15	9-May-16	8-Nov-16
General Chemistry								
Alkalinity	mg/L	105	104	122	110	147	115	117
Ammonia	mg/L	0.15	0.18	0.18	0.14	0.11	0.12	0.17
Chloride	mg/L	19.5	20.2	20.3	20.6	19.5	21.4	20.2
Field Conductivity	µS/cm	440	425	415	327	400	340	348
Laboratory Conductivity	µS/cm	380	416	418	420	410	431	405
Total Hardness	mg/L	48	49	48.4	52.9	54.3	50.1	49.7
Nitrate	mg/L	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05
Nitrite	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Field pH	SU	8.37	8.10	8.41	7.95	8.48	8.14	8.57
Laboratory pH	SU	8.01	8.25	7.91	8.29	8.18	7.52	8.04
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	61.7	59.9	62.2	62.8	58.2	66.5	59.5
Total Kjeldahl Nitrogen	mg/L	1.55	0.35	0.62	0.33	0.26	0.20	0.36
Total Dissolved Solids	mg/L	332	364	360	334	380	392	326
Chemical Oxygen Demand	mg/L	9	8	<5	<5	<5	<5	<5
Dissolved Organic Carbon	mg/L	3.4	5.7	3.8	3.8	4.0	3.6	3.0
Temperature	C	9.6	10.9	11.0	10.5	10.1	9.4	8.9
Dissolved Metals								
Arsenic	mg/L	-	<0.003	-	<0.003	-	<0.003	-
Barium	mg/L	-	0.037	-	0.027	-	0.039	-
Boron	mg/L	-	0.635	-	0.489	-	0.638	-
Cadmium	mg/L	-	<0.002	-	<0.002	-	<0.002	-
Calcium	mg/L	12.2	12.3	11.9	13.4	13.8	12.4	12.3
Chromium	mg/L	-	<0.003	-	<0.003	-	<0.003	-
Copper	mg/L	-	<0.003	-	<0.003	-	<0.003	-
Iron	mg/L	-	0.017	-	<0.010	-	<0.010	-
Lead	mg/L	-	<0.002	-	<0.002	-	<0.002	-
Magnesium	mg/L	4.33	4.42	4.54	4.73	4.83	4.65	4.62
Manganese	mg/L	-	0.007	-	0.005	-	0.006	-
Mercury	mg/L	-	<0.0001	-	<0.0001	-	<0.0001	-
Phosphorus	mg/L	-	<0.05	-	<0.05	-	<0.05	-
Potassium	mg/L	-	1.53	-	1.47	-	1.68	-
Sodium	mg/L	-	69.4	-	67.0	-	71.5	-
Zinc	mg/L	-	<0.005	-	<0.005	-	<0.005	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.10	-	<0.10	-	<0.10	-
Benzene	µg/L	-	<0.20	-	<0.20	-	<0.20	-
Dichloromethane	µg/L	-	<0.30	-	<0.30	-	<0.30	-
Ethylbenzene	µg/L	-	<0.10	-	<0.10	-	<0.10	-
Toluene	µg/L	-	<0.20	-	<0.20	-	0.30	-
Vinyl Chloride	µg/L	-	<0.17	-	<0.17	-	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW50-01	
		24-May-17	7-Nov-17
General Chemistry			
Alkalinity	mg/L	125	125
Ammonia	mg/L	0.16	0.12
Chloride	mg/L	20.1	21.1
Field Conductivity	µS/cm	355	430
Laboratory Conductivity	µS/cm	453	422
Total Hardness	mg/L	50.7	45.2
Nitrate	mg/L	<0.05	<0.05
Nitrite	mg/L	<0.05	<0.05
Field pH	SU	8.40	8.08
Laboratory pH	SU	8.24	7.89
Phenols	mg/L	<0.001	<0.001
Sulphate	mg/L	64.8	64.6
Total Kjeldahl Nitrogen	mg/L	0.29	0.40
Total Dissolved Solids	mg/L	388	248
Chemical Oxygen Demand	mg/L	12	<5
Dissolved Organic Carbon	mg/L	3.5	3.7
Temperature	C	11.20	9.6
Dissolved Metals			
Arsenic	mg/L	<0.003	-
Barium	mg/L	0.038	-
Boron	mg/L	0.629	-
Cadmium	mg/L	<0.002	-
Calcium	mg/L	12.9	10.8
Chromium	mg/L	<0.003	-
Copper	mg/L	<0.003	-
Iron	mg/L	<0.010	-
Lead	mg/L	<0.002	-
Magnesium	mg/L	4.49	4.43
Manganese	mg/L	0.007	-
Mercury	mg/L	<0.0001	-
Phosphorus	mg/L	<0.05	-
Potassium	mg/L	1.70	-
Sodium	mg/L	68.7	-
Zinc	mg/L	<0.005	-
VOCs			
1,4-Dichlorobenzene	µg/L	<0.10	-
Benzene	µg/L	<0.20	-
Dichloromethane	µg/L	<0.30	-
Ethylbenzene	µg/L	<0.10	-
Toluene	µg/L	0.29	-
Vinyl Chloride	µg/L	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW51A-07						
		9-May-07	6-May-08	5-May-09	4-May-10	4-May-11	9-May-12	16-May-13
General Chemistry								
Alkalinity	mg/L	160	150	156	174	147	145	141
Ammonia	mg/L	0.21	0.15	0.17	0.15	0.15	0.14	0.15
Chloride	mg/L	24.0	26.0	27.4	30.4	26.9	28.2	37.9
Field Conductivity	µS/cm	345	362	323	337	317	342	480
Laboratory Conductivity	µS/cm	388	371	361	368	359	358	397
Total Hardness	mg/L	40	40	30	27	28	25	39
Nitrate	mg/L	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.05
Nitrite	mg/L	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.05
Field pH	SU	8.07	8.90	8.49	8.39	8.66	8.72	8.52
Laboratory pH	SU	8.23	8.41	8.46	8.50	8.36	8.43	8.15
Phenols	mg/L	<0.001	<0.001	0.001	<0.002	<0.001	<0.001	<0.001
Sulphate	mg/L	25.0	4.0	2	<2.0	<2.0	<2.0	5.22
Total Kjeldahl Nitrogen	mg/L	0.8 U	1.20	0.37	0.75	0.18	0.20	0.19
Total Dissolved Solids	mg/L	450	340	254	194	200	214	240
Chemical Oxygen Demand	mg/L	80	<10	12	25 J	<10	<10	<5
Dissolved Organic Carbon	mg/L	18.0	7.0	7.2	3.2	3.8	2.8	3.2
Temperature	C	8.8	8.6	9.7	9.7	8.0	10.3	9.9
Dissolved Metals								
Arsenic	mg/L	0.001	0.002	<0.0010	<0.0010	<0.0010	<0.0010	<0.003
Barium	mg/L	0.030	0.020	0.025	0.023	0.026	0.023	0.033
Boron	mg/L	0.610	0.600	0.575	0.591	0.602	0.524	0.613
Cadmium	mg/L	<0.0001	0.0002	0.0002	0.0002	0.0002	<0.00010	<0.002
Calcium	mg/L	11.7 U	11.1	7.3	6.7	7.1	6.4	9.47
Chromium	mg/L	<0.001	0.002	<0.0010	<0.0010	<0.0010	<0.0010	<0.003
Copper	mg/L	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.003
Iron	mg/L	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.010
Lead	mg/L	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.002
Magnesium	mg/L	3.40	2.60	2.78	2.46	2.55	2.22	3.76
Manganese	mg/L	0.010 U	0.007	0.006	0.004	0.005	0.004	0.005
Mercury	mg/L	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.0001
Phosphorus	mg/L	<0.03	<0.03	0.31	<0.030	<0.030	<0.030	<0.05
Potassium	mg/L	2.00	2.00	1.20	1.10	1.20	1.10	1.41
Sodium	mg/L	87.0	76.0	81.9	72.3	74.2	64.6	75.5
Zinc	mg/L	0.009	0.018 U	<0.0030	<0.0030	<0.0030	<0.0030	0.024
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Benzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Dichloromethane	µg/L	0.50	<0.5	<0.50	<0.50	<0.50	<0.50	<0.30
Ethylbenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Toluene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Vinyl Chloride	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW51A-07			
		13-May-14	14-May-15	11-May-16	18-May-17
General Chemistry					
Alkalinity	mg/L	165	260	210	162
Ammonia	mg/L	0.18	0.19	0.11	0.22
Chloride	mg/L	29.5	46.3	38.5	36.6
Field Conductivity	µS/cm	500	554	413	476
Laboratory Conductivity	µS/cm	431	704	548	444
Total Hardness	mg/L	66	214	145	62.5
Nitrate	mg/L	<0.05	<0.05	0.12	<0.05
Nitrite	mg/L	<0.05	<0.05	<0.10	<0.05
Field pH	SU	7.43	7.39	7.39	7.74
Laboratory pH	SU	8.27	8.30	8.18	8.25
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	8.06	47.1	31.4	11.8
Total Kjeldahl Nitrogen	mg/L	0.18	0.44	0.21	0.37
Total Dissolved Solids	mg/L	220	392	296	274
Chemical Oxygen Demand	mg/L	<5	<5	7	10
Dissolved Organic Carbon	mg/L	4.5	3.3	3.2	2.9
Temperature	C	10.5	10.4	11.2	12.21
Dissolved Metals					
Arsenic	mg/L	<0.003	<0.003	<0.003	<0.003
Barium	mg/L	0.048	0.098	0.042	0.037
Boron	mg/L	0.520	0.343	0.470	0.564
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	14.4	50.3	33.7	14.2
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	0.096	0.315	0.018	0.050
Lead	mg/L	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	7.27	21.4	14.8	6.6
Manganese	mg/L	0.010	0.037	0.008	0.007
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	1.63	2.44	2.63	1.52
Sodium	mg/L	67.1	65.5	64.1	66.0
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005
VOCs					
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17

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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW51B-07						
		9-May-07	6-May-08	5-May-09	4-May-10	4-May-11	9-May-12	16-May-13
General Chemistry								
Alkalinity	mg/L	100	160	162	167	165	157	149
Ammonia	mg/L	0.21	0.12	0.12	0.11	0.07	0.10	0.09
Chloride	mg/L	7.0	6.0	5.7	6.6	5.7	7.0	6.75
Field Conductivity	µS/cm	333	400	331	338	328	358	432
Laboratory Conductivity	µS/cm	366	398	370	356	367	362	377
Total Hardness	mg/L	130	70	71	63	73	67	82
Nitrate	mg/L	<0.1	0.10	<0.10	<0.10	<0.10	<0.10	0.06
Nitrite	mg/L	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.05
Field pH	SU	7.74	8.58	8.21	8.03	8.22	8.33	8.33
Laboratory pH	SU	7.96	8.27	8.25	8.31	8.22	8.25	8.14
Phenols	mg/L	0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001
Sulphate	mg/L	29.0	32.0	32	26	25	29	33.6
Total Kjeldahl Nitrogen	mg/L	0.9 U	0.27	0.32	0.48	<0.15	0.21	<0.10
Total Dissolved Solids	mg/L	280	310	216	204	206	283	210
Chemical Oxygen Demand	mg/L	<10	<10	<10	49	<10	<10	<5
Dissolved Organic Carbon	mg/L	3.0	2.0	2.3	8.9	2.8	1.4	6.9
Temperature	C	10.9	8.0	11.1	10.0	8.1	10.5	10.2
Dissolved Metals								
Arsenic	mg/L	0.002	0.004	0.004	0.004	0.005	0.004	0.004
Barium	mg/L	0.050	0.040	0.035	0.034	0.042	0.047	0.044
Boron	mg/L	0.570	0.520	0.454	0.474	0.488	0.409	0.494
Cadmium	mg/L	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.002
Calcium	mg/L	38.7	16.3	16.0	14.1	16.5	15.5	18.2
Chromium	mg/L	<0.001	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.003
Copper	mg/L	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.003
Iron	mg/L	0.070	<0.05	<0.050	<0.050	<0.050	<0.050	<0.010
Lead	mg/L	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.002
Magnesium	mg/L	7.80	6.90	7.56	6.66	7.71	6.86	8.80
Manganese	mg/L	0.034	0.013	0.010	0.010	0.009	0.007	0.007
Mercury	mg/L	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.0001
Phosphorus	mg/L	<0.03	<0.03	0.03	<0.030	<0.030	<0.030	<0.05
Potassium	mg/L	4.00	1.00	1.20	1.00	1.10	1.10	1.32
Sodium	mg/L	88.0	63.0	68.7	57.0	55.6	52.7	57.6
Zinc	mg/L	0.272	0.021	<0.0030	0.0048 U	0.004	<0.0030	0.012
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Benzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Dichloromethane	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.30
Ethylbenzene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.10
Toluene	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.20
Vinyl Chloride	µg/L	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.17

Notes:
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW51B-07			
		13-May-14	13-May-15	11-May-16	18-May-17
General Chemistry					
Alkalinity	mg/L	157	152	164	167
Ammonia	mg/L	0.19	0.04	0.05	0.14
Chloride	mg/L	7.07	6.81	7.36	7.19
Field Conductivity	µS/cm	385	275	301	323
Laboratory Conductivity	µS/cm	370	365	372	373
Total Hardness	mg/L	63	76.3	73.3	72.7
Nitrate	mg/L	<0.05	<0.05	0.12	0.13
Nitrite	mg/L	<0.05	<0.05	<0.05	<0.05
Field pH	SU	7.65	8.16	8.00	8.04
Laboratory pH	SU	8.31	8.26	8.12	8.20
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	26.2	26.6	31.7	27.9
Total Kjeldahl Nitrogen	mg/L	<0.10	0.10	<0.10	0.26
Total Dissolved Solids	mg/L	234	224	262	206
Chemical Oxygen Demand	mg/L	<5	<5	<5	7
Dissolved Organic Carbon	mg/L	1.8	1.9	1.6	1.3
Temperature	C	10.2	10.5	10.0	11.48
Dissolved Metals					
Arsenic	mg/L	0.004	0.004	0.005	0.004
Barium	mg/L	0.042	0.039	0.041	0.043
Boron	mg/L	0.469	0.461	0.465	0.470
Cadmium	mg/L	<0.002	<0.002	<0.002	<0.002
Calcium	mg/L	14.0	16.7	15.7	15.8
Chromium	mg/L	<0.003	<0.003	<0.003	<0.003
Copper	mg/L	<0.003	<0.003	<0.003	<0.003
Iron	mg/L	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	<0.002	<0.002	<0.002	<0.002
Magnesium	mg/L	6.91	8.41	8.27	8.08
Manganese	mg/L	0.004	0.003	0.003	0.004
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	<0.05	<0.05	<0.05	<0.05
Potassium	mg/L	1.15	2.05	1.22	1.62
Sodium	mg/L	57.3	57.5	56.3	51.5
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005
VOCs					
1,4-Dichlorobenzene	µg/L	<0.10	<0.10	<0.10	<0.10
Benzene	µg/L	<0.20	<0.20	<0.20	<0.20
Dichloromethane	µg/L	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	µg/L	<0.10	<0.10	<0.10	<0.10
Toluene	µg/L	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	<0.17	<0.17	<0.17	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW52B-07						
		9-May-07	14-Nov-07	6-May-08	12-Nov-08	5-May-09	5-Nov-09	4-May-10
General Chemistry								
Alkalinity	mg/L	130	210	180	210	199	230	236
Ammonia	mg/L	0.42	0.27	0.06	0.22	0.087 U	0.09	0.06
Chloride	mg/L	36.0	28.0	29.0	27.0	26.0	22.2	26.4
Field Conductivity	µS/cm	690	970	823	747	659	739	785
Laboratory Conductivity	µS/cm	770	1010	823	807	855	796	843
Total Hardness	mg/L	260	230	330	170	285	218	242
Nitrate	mg/L	<0.1	0.40	<0.1	<0.1	<0.50	<0.10	<0.10
Nitrite	mg/L	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Field pH	SU	7.40	7.57	8.04	7.90	7.63	7.52	7.62
Laboratory pH	SU	7.37	8.02	8.04	8.16	7.82	8.08	8.06
Phenols	mg/L	0.002	<0.001	<0.001	<0.001	<0.001	0.001	<0.002
Sulphate	mg/L	205.0	279.0	151	197	259	134	184
Total Kjeldahl Nitrogen	mg/L	0.8 U	1.00	<0.15	0.83	0.46	0.54	0.51
Total Dissolved Solids	mg/L	520	670	510	520	538	498	522
Chemical Oxygen Demand	mg/L	20	20	20	20 U	<10	29 U	95
Dissolved Organic Carbon	mg/L	8.0	9.0	4.0	7.0	4.0	3.7	2.8
Temperature	C	10.0	12.7	9.0	10.4	11.2	9.6	10.5
Dissolved Metals								
Arsenic	mg/L	0.002	-	<0.001	-	<0.0010	-	<0.0010
Barium	mg/L	0.030	-	0.030	-	0.023	-	0.020
Boron	mg/L	0.250	-	0.160	-	0.236	-	0.230
Cadmium	mg/L	<0.0001	-	<0.0001	-	<0.00010	-	<0.00010
Calcium	mg/L	69.9	63.0	92.1	49.1	72.9	57.1	62.1
Chromium	mg/L	<0.001	-	0.002	-	0.001	-	<0.0010
Copper	mg/L	<0.001	-	0.002	-	0.001	-	0.001
Iron	mg/L	<0.05	-	<0.05	-	<0.050	-	<0.050
Lead	mg/L	<0.001	-	<0.001	-	<0.0010	-	<0.0010
Magnesium	mg/L	19.9	18.6	24.7	12.3	25.1	18.2	21
Manganese	mg/L	0.041	-	0.040	-	0.022	-	0.004
Mercury	mg/L	<0.0001	-	<0.0001	-	<0.00010	-	<0.00010
Phosphorus	mg/L	<0.03	-	0.04	-	<0.030	-	<0.030
Potassium	mg/L	8.00	-	5.00	-	3.10	-	2.50
Sodium	mg/L	94.8	-	38.0	-	96.4	-	88.5
Zinc	mg/L	0.044	-	0.014 U	-	<0.0030	-	0.025
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	-	<0.5	-	<0.50	-	<0.50
Benzene	µg/L	<0.5	-	<0.5	-	<0.50	-	<0.50
Dichloromethane	µg/L	<0.5	-	<0.5	-	<0.50	-	<0.50
Ethylbenzene	µg/L	<0.5	-	<0.5	-	<0.50	-	<0.50
Toluene	µg/L	<0.5	-	<0.5	-	<0.50	-	<0.50
Vinyl Chloride	µg/L	<0.5	-	<0.5	-	<0.50	-	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW52B-07						
		11-Nov-10	4-May-11	11-Nov-11	9-May-12	6-Nov-12	16-May-13	14-Nov-13
General Chemistry								
Alkalinity	mg/L	234	218	206	244	223	229	233
Ammonia	mg/L	<0.050	<0.050	0.06	<0.050	<0.050	<0.02	0.02
Chloride	mg/L	24.0	18.5	19.4	18.8	18.3	21.8	18.0
Field Conductivity	µS/cm	845	737	714	766	709	801	801
Laboratory Conductivity	µS/cm	817	832	791	783	774	776	739
Total Hardness	mg/L	222	241	218	245	222	252	183
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.25	<0.25
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.25	<0.25
Field pH	SU	7.69	7.70	6.68	7.73	7.73	7.97	8.20
Laboratory pH	SU	8.07	8.04	7.97	8.05	8.06	8.27	8.05
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	166.0	192.0	175	168	173	155	126
Total Kjeldahl Nitrogen	mg/L	0.37	<0.15	0.25	<0.15	0.46	<0.10	0.32
Total Dissolved Solids	mg/L	504	508	506	498	522	442	432
Chemical Oxygen Demand	mg/L	23	<10	<10	<10	46	<5	9
Dissolved Organic Carbon	mg/L	3.0	3.9	4.3	2.6	2.5	2.6	7.0
Temperature	C	10.8	8.4	9.3	11.3	8.9	9.9	10.1
Dissolved Metals								
Arsenic	mg/L	-	<0.0010	-	<0.0010	-	<0.003	-
Barium	mg/L	-	0.023	-	0.027	-	0.026	-
Boron	mg/L	-	0.204	-	0.213	-	0.208	-
Cadmium	mg/L	-	<0.00010	-	<0.00010	-	<0.002	-
Calcium	mg/L	54.1	69.2	59.3	64.2	60.9	64.7	46.5
Chromium	mg/L	-	<0.0010	-	<0.0010	-	<0.003	-
Copper	mg/L	-	<0.0010	-	<0.0010	-	0.003	-
Iron	mg/L	-	<0.050	-	<0.050	-	<0.010	-
Lead	mg/L	-	<0.0010	-	<0.0010	-	<0.002	-
Magnesium	mg/L	21	16.6	17	20.5	17	21.9	16.2
Manganese	mg/L	-	0.005	-	0.017	-	0.003	-
Mercury	mg/L	-	<0.00010	-	<0.00010	-	<0.0001	-
Phosphorus	mg/L	-	<0.030	-	<0.030	-	<0.05	-
Potassium	mg/L	-	2.20	-	2.20	-	2.20	-
Sodium	mg/L	-	84.3	-	67.2	-	69.4	-
Zinc	mg/L	-	<0.0030	-	<0.0030	-	0.017	-
VOCs								
1,4-Dichlorobenzene	µg/L	-	<0.50	-	<0.50	-	<0.10	-
Benzene	µg/L	-	<0.50	-	<0.50	-	<0.20	-
Dichloromethane	µg/L	-	<0.50	-	<0.50	-	<0.30	-
Ethylbenzene	µg/L	-	<0.50	-	<0.50	-	<0.10	-
Toluene	µg/L	-	<0.50	-	<0.50	-	<0.20	-
Vinyl Chloride	µg/L	-	<0.50	-	<0.50	-	<0.17	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW52B-07						
		13-May-14	12-Nov-14	13-May-15	9-Nov-15	9-May-16	9-Nov-16	17-May-17
General Chemistry								
Alkalinity	mg/L	231	247	239	244	243	230	214
Ammonia	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.09
Chloride	mg/L	24.8	24.9	24.9	24.3	29.8	28.2	30.5
Field Conductivity	µS/cm	835	786	601	760	623	630	614
Laboratory Conductivity	µS/cm	820	772	774	768	797	765	750
Total Hardness	mg/L	281	220	250	228	254	194	250
Nitrate	mg/L	<0.10	<0.10	0.10	<0.25	<0.10	<0.25	0.11
Nitrite	mg/L	<0.10	<0.10	<0.10	<0.25	<0.10	<0.25	<0.10
Field pH	SU	7.19	7.65	7.87	7.96	7.43	8.10	7.40
Laboratory pH	SU	8.18	8.30	8.20	8.31	8.27	8.03	8.15
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	146	136	142	134	171	161	140
Total Kjeldahl Nitrogen	mg/L	<0.20	0.14	0.13	0.19	0.18	<0.10	0.25
Total Dissolved Solids	mg/L	490	458	466	436	468	444	438
Chemical Oxygen Demand	mg/L	10	<5	<5	<5	<5	<5	15
Dissolved Organic Carbon	mg/L	2.6	4.4	2.8	4.0	4.3	2.2	2.8
Temperature	C	10.5	7.0	9.0	10.7	11.3	8.7	13.55
Dissolved Metals								
Arsenic	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Barium	mg/L	0.030	-	0.026	-	0.027	-	0.030
Boron	mg/L	0.186	-	0.166	-	0.228	-	0.163
Cadmium	mg/L	<0.002	-	<0.002	-	<0.002	-	<0.002
Calcium	mg/L	73.0	55.5	62.5	57.5	64.8	49.2	65.4
Chromium	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Copper	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003
Iron	mg/L	<0.010	-	<0.010	-	<0.010	-	<0.010
Lead	mg/L	<0.002	-	<0.002	-	<0.002	-	<0.002
Magnesium	mg/L	23.9	19.7	22.8	20.6	22.3	17.3	21.0
Manganese	mg/L	<0.002	-	0.004	-	<0.002	-	<0.002
Mercury	mg/L	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001
Phosphorus	mg/L	<0.05	-	<0.05	-	<0.05	-	<0.05
Potassium	mg/L	2.40	-	2.30	-	2.12	-	1.86
Sodium	mg/L	64.0	-	63.2	-	72.3	-	54.8
Zinc	mg/L	0.006	-	<0.005	-	<0.005	-	<0.005
VOCs								
1,4-Dichlorobenzene	µg/L	<0.10	-	<0.10	-	<0.10	-	<0.10
Benzene	µg/L	<0.20	-	<0.20	-	<0.20	-	<0.20
Dichloromethane	µg/L	<0.30	-	<0.30	-	<0.30	-	<0.30
Ethylbenzene	µg/L	<0.10	-	<0.10	-	<0.10	-	<0.10
Toluene	µg/L	<0.20	-	<0.20	-	<0.20	-	<0.20
Vinyl Chloride	µg/L	<0.17	-	<0.17	-	<0.17	-	<0.17

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-1
ANALYTICAL RESULTS SUMMARY OF GROUNDWATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	OW52B-07
		7-Nov-17
General Chemistry		
Alkalinity	mg/L	227
Ammonia	mg/L	<0.02
Chloride	mg/L	25.7
Field Conductivity	µS/cm	760
Laboratory Conductivity	µS/cm	741
Total Hardness	mg/L	209
Nitrate	mg/L	<0.10
Nitrite	mg/L	<0.10
Field pH	SU	7.52
Laboratory pH	SU	8.02
Phenols	mg/L	<0.001
Sulphate	mg/L	131
Total Kjeldahl Nitrogen	mg/L	0.20
Total Dissolved Solids	mg/L	440
Chemical Oxygen Demand	mg/L	<5
Dissolved Organic Carbon	mg/L	3.0
Temperature	C	10.5
Dissolved Metals		
Arsenic	mg/L	-
Barium	mg/L	-
Boron	mg/L	-
Cadmium	mg/L	-
Calcium	mg/L	52.4
Chromium	mg/L	-
Copper	mg/L	-
Iron	mg/L	-
Lead	mg/L	-
Magnesium	mg/L	18.9
Manganese	mg/L	-
Mercury	mg/L	-
Phosphorus	mg/L	-
Potassium	mg/L	-
Sodium	mg/L	-
Zinc	mg/L	-
VOCs		
1,4-Dichlorobenzene	µg/L	-
Benzene	µg/L	-
Dichloromethane	µg/L	-
Ethylbenzene	µg/L	-
Toluene	µg/L	-
Vinyl Chloride	µg/L	-

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- C - degrees Celsius, VOCs - Volatile Organic Compounds
- U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-2
ANALYTICAL RESULTS SUMMARY OF RESIDENTIAL WELLS - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Well AA								
		10-May-06	15-Nov-06	29-May-07	16-Nov-07	2-May-08	18-Nov-08	4-May-09	4-Nov-09	13-May-10
General Chemistry										
Alkalinity	mg/L	220	310	310	340	250	310	293	362	355
Ammonia	mg/L	<0.05	<0.05	<0.05	0.11	0.08	<0.05	0.064 U	0.058	0.136
Chloride	mg/L	6	7	9	26	10	18	13	25.2	23.3
Field Conductivity	µS/cm	475	522	543	861	400	819	624	970	924
Laboratory Conductivity	µS/cm	434	562	632	908	481	880	753	947	930
Dissolved Organic Carbon	mg/L	4	5	5	2	6	2	3.1	3	2.5
Total Hardness	mg/L	270	290	390	430	310	450	393	489	433
Nitrate	mg/L	<0.1	<0.1	<0.1	0.2	<0.1	0.3	0.43	<0.10	<0.30
Field pH	SU	7.91	6.75	7.36	6.9	7.74	7.45	7.19	7.06	7.35
Laboratory pH	SU	7.42	7.21	7.42	7.38	7.57	7.90	7.86	7.12	7.71
Sulphate	mg/L	22	7	50	150	9	154	100	163	155
Total Dissolved Solids	mg/L	270	350	390	550	280	550	466	618	600
Total Metals										
Barium	mg/L	0.04	0.05	0.07	0.1	0.06	0.11	0.076	0.103	0.074
Boron	mg/L	0.07	0.08	<0.05	0.12	<0.05	0.17	0.077	0.144	0.089
Calcium	mg/L	80	90.1	114	96.9	98.4	115	98.6	117	105
Iron	mg/L	0.52	0.85	0.42	0.56	3.19	0.26	0.106	1.98	1.09
Magnesium	mg/L	15.9	15.2	25.9	46	14.5	40.6	35.7	47.9	41.9
Sodium	mg/L	4.1	2.3	9.2	28	2.5	21.7	15.6	28.8	26.4

Notes: • < - Parameter concentration not detected above the noted sample detection limit.
• mg/L - milligrams per litre, µg/L - micrograms per litre, µS/cm - microSiemens per centimetre
• SU - Scientific Units
• U - parameter was not present at or above the associated detection in the field blank.
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TABLE B-2
ANALYTICAL RESULTS SUMMARY OF RESIDENTIAL WELLS - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Well AA								
		3-Nov-10	11-May-11	10-Nov-11	10-May-12	8-Nov-12	15-May-13	13-Nov-13	14-May-14	10-Nov-14
General Chemistry										
Alkalinity	mg/L	328	318	314	350	318	335	226	317	327
Ammonia	mg/L	0.097	<0.050	0.053	0.067	<0.050	0.03	<0.02	0.28	0.06
Chloride	mg/L	26.9	18.1	18.1	23.6	23.4	24.8	11.2	14.9	19.2
Field Conductivity	µS/cm	970	695	910	870	728	958	588	815	889
Laboratory Conductivity	µS/cm	909	754	862	937	727	945	547	830	867
Dissolved Organic Carbon	mg/L	4.6	2.6	2.2	1.7	2.2	1.7	3.7	3.3	2.2
Total Hardness	mg/L	436	388	454	445	455	450	274	414	439
Nitrate	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.25	0.28	<0.10	<0.25
Field pH	SU	7.19	7.6	6.9	7.31	7.29	7.65	7.43	7.09	7.45
Laboratory pH	SU	7.87	7.27	7.55	7.88	7.66	8.08	8.24	8.27	7.72
Sulphate	mg/L	131	103	142	147	130	136	45.1	107	124
Total Dissolved Solids	mg/L	564	484	576	580	548	560	320	492	544
Total Metals										
Barium	mg/L	0.073	0.07	0.066	0.072	0.066	0.057	0.040	0.057	0.053
Boron	mg/L	0.153	0.09	0.117	0.103	0.195	0.135	0.075	0.067	0.104
Calcium	mg/L	100	98.8	112	107	108	110	75.7	106	107
Iron	mg/L	0.799	3.02	0.148	0.818	0.444	0.493	0.375	<0.010	<0.010
Magnesium	mg/L	45	34.4	42.1	43.1	44.6	42.6	20.7	36.3	41.7
Sodium	mg/L	28.3	18.3	26.9	24.5	26.5	26.8	9.62	18.8	24.8

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, µS/cm - microSiemens per centimetre
- SU - Scientific Units
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

wsp

TABLE B-2
ANALYTICAL RESULTS SUMMARY OF RESIDENTIAL WELLS - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Well AA					
		11-May-15	10-Nov-15	10-May-16	7-Nov-16	19-May-17	6-Nov-17
General Chemistry							
Alkalinity	mg/L	339	370	346	336	289	350
Ammonia	mg/L	0.06	<0.02	<0.02	<0.02	<0.02	<0.02
Chloride	mg/L	15.4	37.4	26.8	37.2	12.0	38.8
Field Conductivity	µS/cm	920	950	913	955	624	729
Laboratory Conductivity	µS/cm	865	1010	854	987	702	924
Dissolved Organic Carbon	mg/L	2.2	1.5	1.0	1.6	2.8	1.6
Total Hardness	mg/L	420	531	418	466	320	461
Nitrate	mg/L	<0.10	<0.25	<0.25	<0.25	<0.25	0.11
Field pH	SU	7.09	7.46	7.42	7.45	7.12	7.85
Laboratory pH	SU	8.29	8.14	7.99	8.07	8.33	8.36
Sulphate	mg/L	114	128	125	138	87.9	138
Total Dissolved Solids	mg/L	502	590	530	582	390	588
Total Metals							
Barium	mg/L	0.052	0.062	0.059	0.055	0.043	0.049
Boron	mg/L	0.071	0.123	0.074	0.107	0.067	0.110
Calcium	mg/L	105	123	98.6	108	82.1	106
Iron	mg/L	0.578	0.295	2.28	3.03	0.188	0.179
Magnesium	mg/L	38.3	54.3	41.8	47.6	27.9	47.7
Sodium	mg/L	21.6	36.1	23.6	31.6	18.0	32.6

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, µS/cm - microSiemens per centimetre
- SU - Scientific Units
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

wsp

TABLE B-2
ANALYTICAL RESULTS SUMMARY OF RESIDENTIAL WELLS - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Well M								
		29-May-07	16-Nov-07	8-May-08	18-Nov-08	4-May-09	4-Nov-09	3-May-10	3-Nov-10	11-May-11
General Chemistry										
Alkalinity	mg/L	320	360	320	240	237	323	319	224	133
Ammonia	mg/L	<0.05	<0.05	0.06	0.07	0.081 U	<0.050	<0.050	0.062	<0.050
Chloride	mg/L	26	26	31	24	27.3	25.5	31.1	17.4	4.5
Field Conductivity	µS/cm	643	782	566	598	553	707	685	591	242
Laboratory Conductivity	µS/cm	743	828	708	640	654	762	799	568	280
Dissolved Organic Carbon	mg/L	4	3	3	4	4.2	6.7	2.6	6.8	6
Total Hardness	mg/L	440	410	340	340	299	396	412	213	129
Nitrate	mg/L	5	4.9	1.8	2.1	3.65	5.8	6.19	3.5	0.39
Field pH	SU	7.61	6.87	7.74	7.63	7.58	7.43	6.76	7.87	7.88
Laboratory pH	SU	7.46	7.8	7.9	8.1	8.01	7.61	8.04	8.13	8.15
Sulphate	mg/L	57	58	48	44	49.5	48.3	50.6	27.6	2.8
Total Dissolved Solids	mg/L	480	490	410	350	386	490	502	574	172
Total Metals										
Barium	mg/L	0.12	0.14	0.09	0.09	0.088	0.103	0.093	0.062	0.027
Boron	mg/L	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Calcium	mg/L	124	113	97.2	97.9	76.4	112	116	61.9	40.9
Iron	mg/L	0.53	0.07	0.47	0.90	0.984	<0.050	<0.050	0.052	0.604
Magnesium	mg/L	31.8	31.8	23.5	23.3	26.4	28.2	29.5	14.3	6.51
Sodium	mg/L	17.3	18.8	15.6	14.9	15.2	17.4	19.3	10.7	5.33

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, µS/cm - microSiemens per centimetre
- SU - Scientific Units
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-2
ANALYTICAL RESULTS SUMMARY OF RESIDENTIAL WELLS - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Well M								
		10-Nov-11	10-May-12	7-Nov-12	15-May-13	13-Nov-13	14-May-14	10-Nov-14	11-May-15	10-Nov-15
General Chemistry										
Alkalinity	mg/L	168	122	182	169	155	104	191	170	130
Ammonia	mg/L	<0.050	0.054	<0.050	<0.02	<0.02	0.03	<0.02	0.02	<0.02
Chloride	mg/L	4.7	4.6	3.2	29.6	4.67	22.6	13.3	66.8	10.3
Field Conductivity	µS/cm	334	243	300	477	378	303	440	620	310
Laboratory Conductivity	µS/cm	349	263	304	435	332	305	420	564	303
Dissolved Organic Carbon	mg/L	5.9	12	6.4	3.4	8.1	6.2	6.9	5.8	7.5
Total Hardness	mg/L	191	122	196	179	172	104	211	192	142
Nitrate	mg/L	1.33	0.37	0.46	0.90	1.07	0.80	0.71	0.94	0.72
Field pH	SU	7	7.55	7.56	8.05	7.97	7.90	7.82	7.25	8.03
Laboratory pH	SU	7.8	7.93	7.87	8.12	8.25	8.03	8.08	8.21	8.12
Sulphate	mg/L	5.8	3.8	3.5	6.16	5.49	4.16	6.27	6.81	5.70
Total Dissolved Solids	mg/L	226	150	204	236	202	182	238	334	166
Total Metals										
Barium	mg/L	0.032	0.024	0.035	0.032	0.028	0.018	0.034	0.035	0.022
Boron	mg/L	<0.050	<0.050	<0.050	0.020	0.019	0.017	0.024	0.014	0.014
Calcium	mg/L	54.8	37.8	57.8	56.0	53.5	34.5	64.2	60.9	46.1
Iron	mg/L	0.057	0.256	0.074	<0.010	0.036	<0.010	<0.010	0.060	0.076
Magnesium	mg/L	13.2	6.83	12.5	9.5	9.33	4.26	12.2	9.62	6.52
Sodium	mg/L	5.38	4.39	4.12	15.8	4.05	18.6	8.93	35.2	8.29

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, µS/cm - microSiemens per centimetre
- SU - Scientific Units
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

wsp

TABLE B-2
ANALYTICAL RESULTS SUMMARY OF RESIDENTIAL WELLS - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Well M			
		9-May-16	7-Nov-16	19-May-17	6-Nov-17
General Chemistry					
Alkalinity	mg/L	198	152	175	129
Ammonia	mg/L	<0.02	<0.02	<0.02	<0.02
Chloride	mg/L	24.4	9.81	11.4	4.08
Field Conductivity	µS/cm	635	389	286	263
Laboratory Conductivity	µS/cm	454	354	399	267
Dissolved Organic Carbon	mg/L	4.8	7.9	5.4	7.2
Total Hardness	mg/L	194	165	174	133
Nitrate	mg/L	0.81	0.87	0.78	0.55
Field pH	SU	7.32	7.73	7.36	7.96
Laboratory pH	SU	8.12	7.98	8.24	7.98
Sulphate	mg/L	6.61	5.68	16.8	5.87
Total Dissolved Solids	mg/L	246	208	188	198
Total Metals					
Barium	mg/L	0.031	0.024	0.029	0.029
Boron	mg/L	0.011	0.018	0.010	0.014
Calcium	mg/L	59.7	51.6	53.4	42.1
Iron	mg/L	0.044	<0.010	<0.010	0.082
Magnesium	mg/L	10.8	8.71	9.8	6.67
Sodium	mg/L	14.0	7.71	9.03	4.70

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, µg/L - micrograms per litre, µS/cm - microSiemens per centimetre
- SU - Scientific Units
- U - parameter was not present at or above the associated detection in the field blank.
- J or * - estimated value - result interpreted with caution or considered questionable.

TABLE B-3
ANALYTICAL RESULTS SUMMARY FOR LEACHATE - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Leachate Holding Tank						
		10-May-06	10-May-07	6-May-08	4-May-09	3-May-10	4-May-11	7-May-12
General Chemistry								
Alkalinity	mg/L	2400	3100	2400	2380	3060	3530	3700
Ammonia	mg/L	270	230	220	174	323	372	424
Biological Oxygen Demand	mg/L	110	200	810	135	61.1	547	330
Chemical Oxygen Demand	mg/L	840	720	1680	603	57	1650	1380
Chloride	mg/L	681	759	868	589	774	593	934
Field Conductivity	µS/cm	5600	8360	6820	5260	6730	5882	8680
Laboratory Conductivity	µS/cm	5760	6290	7050	5290	6990	7230	9960
Dissolved Organic Carbon	mg/L	277	280	600	150	320	1110	434
Total Hardness	mg/L	660	1200	1230	1140	998	844	865
Nitrate	mg/L	<2	<2	<2	<2.0	<2.0	<2.0	<2.0
Nitrite	mg/L	<2	<2	<2	<2.0	<2.0	<2.0	<2.0
Field pH	SU	6.82	8.65	6.1	7.06	7.08	6.42	7.4
Laboratory pH	SU	6.93	7.27	7.59	7.55	7.04	7.52	7.27
Phenols	mg/L	0.31	0.204	0.554	0.221	0.095	2.5	1.17
Sulphate	mg/L	<40	<40	57	42.1	<40	82.3	<40
Total Kjeldahl Nitrogen	mg/L	355	320	340	248	366	387	502
Total Dissolved Solids	mg/L	2920	3610	3960	2850	3150	3240	3980
Total Suspended Solids	mg/L	44	64	340	29	6	64	182
Total Metals								
Arsenic	mg/L	<0.01	0.01	<0.1	0.024	<0.10	<0.10	0.059
Barium	mg/L	0.5	0.6	<1	0.33	<1.0	<1.0	0.3
Boron	mg/L	5.5	3.1	<5	2.23	<5.0	<5.0	3.94
Cadmium	mg/L	<0.001	<0.001	<0.01	<0.0010	<0.010	<0.010	<0.00090
Calcium	mg/L	89	225	270	293	200	178	160
Chromium	mg/L	0.07	0.04	<0.1	0.031	<0.10	0.1	0.107
Copper	mg/L	<0.01	<0.01	<0.1	<0.010	<0.10	<0.10	0.074
Iron	mg/L	4.8	5.7	10	3.26	<5.0	<5.0	5.57
Lead	mg/L	<0.01	<0.01	<0.1	<0.010	<0.10	<0.10	<0.010
Magnesium	mg/L	107	155	130	98.3	121	97	113
Manganese	mg/L	0.47	0.64	0.9	1.11	0.6	0.82	0.315
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Phosphorus	mg/L	4	1.3	2.3	3.25	4.1	4.61	4.33
Potassium	mg/L	200	210	300	148	210	230	290
Sodium	mg/L	696	662	800	408	652	611	835
Zinc	mg/L	0.04	0.09	0.4	0.031	<0.30	<0.30	0.186
VOCs								
1,4-Dichlorobenzene	µg/L	-	4	2	<2.5	2.16	3.48	2.08
Benzene	µg/L	5.5	5	1.6	<2.5	2.75	2.79	1.51
Dichloromethane	µg/L	-	<3	8.9	<2.5	<0.50	<0.50	<0.50
Ethylbenzene	µg/L	5.3	6	4	4.3	3.75	9.57	3.41
Toluene	µg/L	6.2	19	10.9	10.9	6.15	14	3.96
Vinyl Chloride	µg/L	<0.5	<3	<0.5	<2.5	<0.50	<0.50	<0.50

Notes: • < - Parameter concentration not detected above the noted sample detection limit.
• mg/L - milligrams per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
• µg/L - micrograms per litre, VOCs - Volatile Organic Compounds
• >20000 - Parameter concentration greater than capabilities of field instrument.

TABLE B-3
ANALYTICAL RESULTS SUMMARY FOR LEACHATE - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Leachate Holding Tank				
		16-May-13	14-May-14	11-May-15	5-May-16	25-May-17
General Chemistry						
Alkalinity	mg/L	2990	4690	3300	3840	3390
Ammonia	mg/L	458	632	601	596	404
Biological Oxygen Demand	mg/L	155	487	513	402	263
Chemical Oxygen Demand	mg/L	960	2090	1900	1560	1180
Chloride	mg/L	919	1230	1110	1300	1180
Field Conductivity	µS/cm	8170	12280	10120	10040	9530
Laboratory Conductivity	µS/cm	8160	12600	9940	10400	8870
Dissolved Organic Carbon	mg/L	308	541	628	479	549
Total Hardness	mg/L	708	891	676	678	722
Nitrate	mg/L	<5	<5	<5	<5	<5
Nitrite	mg/L	<5	<5	<5	<5	<5
Field pH	SU	7.86	7.17	7.36	8.24	7.99
Laboratory pH	SU	7.60	7.91	8.19	8.34	8.31
Phenols	mg/L	0.257	0.344	0.974	0.285	0.308
Sulphate	mg/L	22.4	39.2	35	39	<10
Total Kjeldahl Nitrogen	mg/L	466	1620	690	685	538
Total Dissolved Solids	mg/L	3430	5250	4600	4890	4140
Total Suspended Solids	mg/L	39	123	46	68	71
Total Metals						
Arsenic	mg/L	0.052	0.057	0.06	0.053	0.26
Barium	mg/L	0.242	0.245	0.29	0.191	0.63
Boron	mg/L	4.06	4.89	4.77	4.03	6.29
Cadmium	mg/L	<0.002	<0.002	<0.001	<0.002	<0.40
Calcium	mg/L	117	149	101	88.6	86.4
Chromium	mg/L	0.115	0.250	0.14	0.224	<0.04
Copper	mg/L	0.004	0.008	<0.02	0.006	<0.10
Iron	mg/L	1.04	0.566	2.8	1.98	8.6
Lead	mg/L	<0.002	<0.002	<0.01	<0.004	<0.20
Magnesium	mg/L	101	126	103	111	123
Manganese	mg/L	0.254	0.489	0.24	0.155	0.10
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	2.96	7.5	4.61	5.71	5.27
Potassium	mg/L	279	458	354	458	583
Sodium	mg/L	760	1180	952	1240	1190
Zinc	mg/L	0.018	0.019	0.06	0.104	<0.2
VOCs						
1,4-Dichlorobenzene	µg/L	<0.10	<1.00	<1.00	<1.00	<0.10
Benzene	µg/L	<0.20	<2.00	2.1	<2.00	<0.20
Dichloromethane	µg/L	<0.30	<3.00	<3.00	<3.00	<0.30
Ethylbenzene	µg/L	0.17	1.5	1.7	<1.00	<0.10
Toluene	µg/L	0.46	8.5	6.8	5.1	<0.20
Vinyl Chloride	µg/L	<0.17	<1.70	<1.70	<1.70	<0.17

Notes: • < - Parameter concentration not detected above the noted sample detection limit.
• mg/L - milligrams per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
• µg/L - micrograms per litre, VOCs - Volatile Organic Compounds
• >20000 - Parameter concentration greater than capabilities of field instrument.

wsp

TABLE B-3
ANALYTICAL RESULTS SUMMARY FOR LEACHATE - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	LW3-91						
		10-May-06	10-May-07	6-May-08	4-May-09	3-May-10	4-May-11	7-May-12
General Chemistry								
Alkalinity	mg/L	4400	4300	4000	4210	4210	4190	4330
Ammonia	mg/L	580	450	430	539	477	393	464
Biological Oxygen Demand	mg/L	60	35	48	75.3	47.6	71.5	37.7
Chemical Oxygen Demand	mg/L	1020	880	1070	1220	110	960	900
Chloride	mg/L	1280	974	1290	1100	1280	1060	1140
Field Conductivity	µS/cm	9850	9900	9400	10970	9870	8167	9800
Laboratory Conductivity	µS/cm	10700	9300	10700	10200	10100	9880	11500
Dissolved Organic Carbon	mg/L	347	280	330	378	335	540	283
Total Hardness	mg/L	600	640	610	616	445	597	482
Nitrate	mg/L	<2	<2	<2	<2.0	<2.0	<2.0	<2.0
Nitrite	mg/L	<2	<2	<2	<2.0	<2.0	<2.0	<2.0
Field pH	SU	7.49	7.27	7.56	7.36	7.2	6.45	7.45
Laboratory pH	SU	7.34	7.6	7.73	7.75	7.19	7.51	7.35
Phenols	mg/L	0.018	0.043	0.021	0.043	<0.040	0.016	<0.010
Sulphate	mg/L	<40	<40	<40	<40	<40	<40	<40
Total Kjeldahl Nitrogen	mg/L	841	590	660	565	516	551	580
Total Dissolved Solids	mg/L	5000	4630	4870	5000	4660	3180	4370
Total Suspended Solids	mg/L	95	110	180	113	302	157	52
Total Metals								
Arsenic	mg/L	<0.01	0.01	<0.1	<0.10	<0.10	<0.10	<0.010
Barium	mg/L	0.4	0.9	<1	<1.0	<1.0	<1.0	0.54
Boron	mg/L	4.7	3.3	<5	<5.0	<5.0	<5.0	3.02
Cadmium	mg/L	0.002	<0.001	<0.01	<0.010	<0.010	<0.010	<0.00090
Calcium	mg/L	39	64	60	62	<50	63	38.6
Chromium	mg/L	0.05	0.04	<0.1	<0.10	<0.10	<0.10	0.0296
Copper	mg/L	0.02	<0.01	<0.1	<0.10	<0.10	<0.10	<0.010
Iron	mg/L	12.5	14.2	14	25.2	8.9	18.4	8.21
Lead	mg/L	0.1	0.06	0.1	0.18	<0.10	0.11	0.057
Magnesium	mg/L	123	115	110	112	108	107	93.7
Manganese	mg/L	0.09	0.08	<0.1	0.3	<0.10	0.12	0.046
Mercury	mg/L	<0.0001	<0.0001	<0.0001	0.00013	<0.00010	0.00013	<0.00010
Phosphorus	mg/L	9	4.1	4.6	4.11	4.2	4.23	4.45
Potassium	mg/L	740	620	700	690	580	730	630
Sodium	mg/L	1300	978	1110	1040	1020	1060	947
Zinc	mg/L	0.3	0.19	<0.3	0.31	<0.30	0.5	0.127
VOCs								
1,4-Dichlorobenzene	µg/L	-	17	14.5	15.5	13.8	11.3	7.86
Benzene	µg/L	9.7	6	2.7	3.9	5.93	5.91	2.76
Dichloromethane	µg/L	-	<3	<0.5	<2.5	<0.50	<0.50	<0.50
Ethylbenzene	µg/L	<0.5	117	<0.5	69	61.7	193	<0.50
Toluene	µg/L	<0.5	<3	<0.5	<2.5	1.96	5.96	<0.50
Vinyl Chloride	µg/L	<0.5	<3	<0.5	<2.5	<0.50	<0.50	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- µg/L - micrograms per litre, VOCs - Volatile Organic Compounds
- >20000 - Parameter concentration greater than capabilities of field instrument.

TABLE B-3
ANALYTICAL RESULTS SUMMARY FOR LEACHATE - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	LW3-91		
		16-May-13	14-May-14	11-May-15
General Chemistry				
Alkalinity	mg/L	3680	3800	3580
Ammonia	mg/L	543	387	641
Biological Oxygen Demand	mg/L	46	67	78
Chemical Oxygen Demand	mg/L	956	658	972
Chloride	mg/L	1210	927	1260
Field Conductivity	µS/cm	10100	9870	9350
Laboratory Conductivity	µS/cm	10200	9820	10200
Dissolved Organic Carbon	mg/L	299	262	333
Total Hardness	mg/L	507	493	431
Nitrate	mg/L	<5	<5	<5
Nitrite	mg/L	<5	<5	<5
Field pH	SU	7.77	7.9	7.99
Laboratory pH	SU	8.04	7.77	8.24
Phenols	mg/L	0.038	0.039	0.039
Sulphate	mg/L	<10	<10	32
Total Kjeldahl Nitrogen	mg/L	580	764	695
Total Dissolved Solids	mg/L	4290	3960	4370
Total Suspended Solids	mg/L	167	207	487
Total Metals				
Arsenic	mg/L	0.011	<0.030	<0.03
Barium	mg/L	0.464	0.537	0.32
Boron	mg/L	3.62	4.38	3.49
Cadmium	mg/L	<0.002	<0.020	<0.001
Calcium	mg/L	38.6	40.7	32.1
Chromium	mg/L	0.037	0.032	<0.03
Copper	mg/L	<0.003	<0.030	<0.02
Iron	mg/L	5.98	6.25	2.5
Lead	mg/L	<0.002	<0.020	<0.01
Magnesium	mg/L	99.7	95.0	85.2
Manganese	mg/L	0.035	0.028	0.13
Mercury	mg/L	<0.0001	<0.0001	0.0001
Phosphorus	mg/L	4.41	3.8	5.78
Potassium	mg/L	646	601	624
Sodium	mg/L	985	929	990
Zinc	mg/L	0.024	<0.050	0.07
VOCs				
1,4-Dichlorobenzene	µg/L	11	19	8.5
Benzene	µg/L	3.1	3.6	6.1
Dichloromethane	µg/L	<3.00	<3.00	<1.20
Ethylbenzene	µg/L	<1.00	11	88
Toluene	µg/L	<2.00	<2.00	2.1
Vinyl Chloride	µg/L	<1.70	<1.70	<0.68

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- µg/L - micrograms per litre, VOCs - Volatile Organic Compounds
- >20000 - Parameter concentration greater than capabilities of field instrument.

TABLE B-3
ANALYTICAL RESULTS SUMMARY FOR LEACHATE - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	LW3-16 25-May-17
General Chemistry		
Alkalinity	mg/L	4220
Ammonia	mg/L	566
Biological Oxygen Demand	mg/L	72
Chemical Oxygen Demand	mg/L	1060
Chloride	mg/L	1250
Field Conductivity	µS/cm	10100
Laboratory Conductivity	µS/cm	10800
Dissolved Organic Carbon	mg/L	388
Total Hardness	mg/L	585
Nitrate	mg/L	<5
Nitrite	mg/L	<5
Field pH	SU	8.05
Laboratory pH	SU	8.13
Phenols	mg/L	0.050
Sulphate	mg/L	263
Total Kjeldahl Nitrogen	mg/L	688
Total Dissolved Solids	mg/L	4800
Total Suspended Solids	mg/L	726
Total Metals		
Arsenic	mg/L	<0.20
Barium	mg/L	0.23
Boron	mg/L	4.89
Cadmium	mg/L	<0.40
Calcium	mg/L	69.7
Chromium	mg/L	0.20
Copper	mg/L	<0.10
Iron	mg/L	1.3
Lead	mg/L	<0.20
Magnesium	mg/L	99.8
Manganese	mg/L	0.11
Mercury	mg/L	<0.0001
Phosphorus	mg/L	3.49
Potassium	mg/L	406
Sodium	mg/L	1100
Zinc	mg/L	<0.2
VOCs		
1,4-Dichlorobenzene	µg/L	8.6
Benzene	µg/L	<4.00
Dichloromethane	µg/L	<6.00
Ethylbenzene	µg/L	13
Toluene	µg/L	<4.00
Vinyl Chloride	µg/L	<3.40

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- µg/L - micrograms per litre, VOCs - Volatile Organic Compounds
- >20000 - Parameter concentration greater than capabilities of field instrument.

TABLE B-3
ANALYTICAL RESULTS SUMMARY FOR LEACHATE - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	MH-11						
		10-May-06	10-May-07	6-May-08	4-May-09	3-May-10	4-May-11	7-May-12
General Chemistry								
Alkalinity	mg/L	2300	2500	1200	2200	3060	3590	4020
Ammonia	mg/L	280	200	96	160	297	380	509
Biological Oxygen Demand	mg/L	120	505	870	113	56.4	574	368
Chemical Oxygen Demand	mg/L	840	1180	1510	549	63	1900	1700
Chloride	mg/L	682	598	275	519	875	<40	1210
Field Conductivity	µS/cm	5660	5540	3390	5040	6710	6539	9300
Laboratory Conductivity	µS/cm	5870	5440	3360	5160	6810	7980	10900
Dissolved Organic Carbon	mg/L	226	410	500	150	240	1000	507
Total Hardness	mg/L	770	1100	760	1240	1020	971	872
Nitrate	mg/L	<2	<2	<2	<2.0	<2.0	<2.0	<2.0
Nitrite	mg/L	<2	<2	<2	<2.0	<2.0	<2.0	<2.0
Field pH	SU	6.68	7.01	6.27	7	7.03	6.33	7.55
Laboratory pH	SU	6.84	7.23	7.31	7.49	7.03	7.45	7.44
Phenols	mg/L	0.326	0.640	0.951	0.115	0.103	4.00	1.03
Sulphate	mg/L	<40	<40	<40	<40	<40	82.8	<40
Total Kjeldahl Nitrogen	mg/L	384	276	150	261	359	423	533
Total Dissolved Solids	mg/L	2910	3180	1910	2920	3080	3520	4290
Total Suspended Solids	mg/L	56	48	65	53.5	53.5	55	136
Total Metals								
Arsenic	mg/L	<0.01	0.01	<0.1	0.026	<0.10	<0.10	0.059
Barium	mg/L	0.5	0.5	<1	0.35	<1.0	<1.0	0.3
Boron	mg/L	5.6	2.4	<5	2.35	<5.0	<5.0	4.03
Cadmium	mg/L	<0.001	<0.001	<0.01	<0.0010	<0.010	<0.010	<0.00090
Calcium	mg/L	140	211	180	321	206	197	162
Chromium	mg/L	0.07	0.03	<0.1	0.033	<0.10	0.13	0.129
Copper	mg/L	<0.01	<0.01	<0.1	<0.010	<0.10	<0.10	<0.010
Iron	mg/L	3.7	5.1	<5	2.92	<5.0	<5.0	12.1
Lead	mg/L	0.01	<0.01	<0.1	<0.010	<0.10	<0.10	<0.010
Magnesium	mg/L	103	138	80	106	124	116	114
Manganese	mg/L	0.48	0.56	0.4	1.19	0.59	0.96	0.443
Mercury	mg/L	<0.0001	0.0008	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Phosphorus	mg/L	7	1.2	0.7	3.02	3.7	5.02	5.27
Potassium	mg/L	190	160	<100	140	210	270	300
Sodium	mg/L	734	517	290	401	688	762	851
Zinc	mg/L	0.12	0.07	<0.3	0.054	<0.30	<0.30	0.072
VOCs								
1,4-Dichlorobenzene	µg/L	-	<5	2.8	<2.5	1.59	2.32	1.86
Benzene	µg/L	6.6	6	2	<2.5	2.08	2.21	1.11
Dichloromethane	µg/L	-	<5	2	<2.5	<0.50	<0.50	0.82
Ethylbenzene	µg/L	5.3	11	9.3	4.5	2.71	3.47	3.58
Toluene	µg/L	4.4	33	30.3	12	3.96	7.54	5.48
Vinyl Chloride	µg/L	0.6	<5	<0.5	<2.5	<0.50	<0.50	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- µg/L - micrograms per litre, VOCs - Volatile Organic Compounds
- >20000 - Parameter concentration greater than capabilities of field instrument.

TABLE B-3
ANALYTICAL RESULTS SUMMARY FOR LEACHATE - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	MH-11				
		16-May-13	14-May-14	11-May-15	10-May-16	25-May-17
General Chemistry						
Alkalinity	mg/L	3020	4750	3220	3860	3330
Ammonia	mg/L	412	625	597	525	472
Biological Oxygen Demand	mg/L	288	435	605	666	271
Chemical Oxygen Demand	mg/L	1050	1830	1940	1480	1220
Chloride	mg/L	909	1190	1160	1200	1160
Field Conductivity	µS/cm	10110	12270	9850	9800	9870
Laboratory Conductivity	µS/cm	8160	12500	9980	10100	8780
Dissolved Organic Carbon	mg/L	328	565	600	471	546
Total Hardness	mg/L	708	904	664	670	639
Nitrate	mg/L	<5	<5	<5	<5	<5
Nitrite	mg/L	<5	<5	<5	<5	<5
Field pH	SU	7.42	6.94	7.62	7.71	8.15
Laboratory pH	SU	8.02	8.03	8.24	7.93	8.37
Phenols	mg/L	0.358	0.558	0.989	0.312	0.351
Sulphate	mg/L	27.5	37.0	36	23	<10
Total Kjeldahl Nitrogen	mg/L	530	1660	660	600	552
Total Dissolved Solids	mg/L	3390	5120	4560	4420	4110
Total Suspended Solids	mg/L	60	116	60	186	188
Total Metals						
Arsenic	mg/L	0.050	0.075	0.060	0.141	0.29
Barium	mg/L	0.244	0.343	0.27	0.199	0.24
Boron	mg/L	3.86	6.42	4.91	4.45	5.43
Cadmium	mg/L	<0.002	<0.002	0.001	<0.040	<0.40
Calcium	mg/L	117	151	97.6	88.4	76.2
Chromium	mg/L	0.120	0.291	0.16	0.107	0.21
Copper	mg/L	<0.003	0.004	<0.02	<0.010	<0.10
Iron	mg/L	0.376	0.347	2.6	5.03	2.1
Lead	mg/L	<0.002	<0.002	<0.01	<0.020	<0.20
Magnesium	mg/L	101	128	102	109	109
Manganese	mg/L	0.249	0.591	0.23	0.195	0.13
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	3.14	7.2	4.49	5.02	4.75
Potassium	mg/L	283	448	366	371	443
Sodium	mg/L	776	1180	986	1050	1220
Zinc	mg/L	0.011	0.021	<0.05	0.05	<0.2
VOCs						
1,4-Dichlorobenzene	µg/L	<1.00	<1.00	1.5	<0.40	<1.00
Benzene	µg/L	<2.00	<2.00	2.0	1.7	<2.00
Dichloromethane	µg/L	<3.00	<3.00	<1.20	<1.20	<3.00
Ethylbenzene	µg/L	2.0	3.2	2.1	1.3	<1.00
Toluene	µg/L	6.7	14	7.1	5.6	<2.00
Vinyl Chloride	µg/L	<1.70	<1.70	<0.68	<0.68	<1.70

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- µg/L - micrograms per litre, VOCs - Volatile Organic Compounds
- >20000 - Parameter concentration greater than capabilities of field instrument.

TABLE B-3
ANALYTICAL RESULTS SUMMARY FOR LEACHATE - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	MH-19						
		10-May-06	10-May-07	6-May-08	4-May-09	3-May-10	4-May-11	7-May-12
General Chemistry								
Alkalinity	mg/L	3400	2100	5200	1510	3090	1840	2160
Ammonia	mg/L	200	140	520	103	290	96.4	223
Biological Oxygen Demand	mg/L	6350	25	550	13.1	47.8	21.9	28.9
Chemical Oxygen Demand	mg/L	9600	500	2330	226	112	450	360
Chloride	mg/L	848	439	1180	322	621	678	494
Field Conductivity	µS/cm	7850	4540	9600	3440	6910	4123	5490
Laboratory Conductivity	µS/cm	8060	4370	10800	3480	7030	4180	5860
Dissolved Organic Carbon	mg/L	3490	170	700	90	260	300	175
Total Hardness	mg/L	3360	1090	850	799	1090	1480	832
Nitrate	mg/L	<2	<2	<2	<2.0	<2.0	<2.0	<2.0
Nitrite	mg/L	<2	<2	<2	<2.0	<2.0	<2.0	<2.0
Field pH	SU	5.92	6.61	6.75	6.8	7.34	6.34	7.7
Laboratory pH	SU	6.09	7.02	7.53	7.53	7.46	7.44	7.58
Phenols	mg/L	1.72	0.006	1.17	0.003	<2.00	<0.010	0.220
Sulphate	mg/L	509	139	<40	158	133	<40	131
Total Kjeldahl Nitrogen	mg/L	309	203	820	162	363	121	268
Total Dissolved Solids	mg/L	9070	2620	4880	1790	3330	2370	2500
Total Suspended Solids	mg/L	160	60	47	37	10.4	52	10
Total Metals								
Arsenic	mg/L	0.01	0.01	<0.1	<0.010	<0.10	<0.10	0.013
Barium	mg/L	0.4	0.7	<1	0.57	<1.0	<1.0	0.24
Boron	mg/L	3.8	3.4	7	2.51	<5.0	<5.0	3.26
Cadmium	mg/L	0.003	<0.001	<0.01	<0.0010	<0.010	<0.010	<0.00090
Calcium	mg/L	1060	163	130	126	130	265	98.3
Chromium	mg/L	0.15	0.05	0.1	0.017	<0.10	<0.10	0.0257
Copper	mg/L	0.06	0.02	<0.1	<0.010	<0.10	<0.10	<0.010
Iron	mg/L	71.2	5.7	6	3.84	<5.0	11.3	<0.50
Lead	mg/L	0.04	<0.01	<0.1	<0.010	<0.10	<0.10	<0.010
Magnesium	mg/L	175	166	130	118	185	199	142
Manganese	mg/L	14	1.44	0.3	1.1	0.8	2.64	0.138
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Phosphorus	mg/L	17	0.9	4.6	0.128	1.32	0.46	0.49
Potassium	mg/L	230	90	300	72	170	<100	141
Sodium	mg/L	749	393	1030	279	699	303	477
Zinc	mg/L	1.98	0.05	<0.3	<0.030	<0.30	<0.30	<0.030
VOCs								
1,4-Dichlorobenzene	µg/L	-	6.3	2.6	0.79	0.77	<0.50	<0.50
Benzene	µg/L	1.1	6.8	3.3	0.69	0.62	2.49	1.43
Dichloromethane	µg/L	-	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	µg/L	7.4	35.4	14.7	<0.50	1.93	0.62	1.63
Toluene	µg/L	45.5	23.5	4.1	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	µg/L	<0.5	1.3	<0.5	<0.50	<0.50	<0.50	<0.50

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- µg/L - micrograms per litre, VOCs - Volatile Organic Compounds
- >20000 - Parameter concentration greater than capabilities of field instrument.

TABLE B-3
ANALYTICAL RESULTS SUMMARY FOR LEACHATE - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	MH-19				
		16-May-13	14-May-14	12-May-15	10-May-16	25-May-17
General Chemistry						
Alkalinity	mg/L	1550	1620	3090	16300	5930
Ammonia	mg/L	183	184	592	4330	1110
Biological Oxygen Demand	mg/L	15	23	204	22800	126
Chemical Oxygen Demand	mg/L	248	364	995	33100	1690
Chloride	mg/L	404	447	1110	3840	1460
Field Conductivity	µS/cm	4270	4740	>3999	>20000	9770
Laboratory Conductivity	µS/cm	4270	4880	9550	38600	13500
Dissolved Organic Carbon	mg/L	101	130	409	11600	557
Total Hardness	mg/L	698	437	563	2110	692
Nitrate	mg/L	<2.5	9.44	<5	<50	<5
Nitrite	mg/L	<2.5	<2.0	<5	<50	<5
Field pH	SU	7.85	6.5	7.57	7.70	8.31
Laboratory pH	SU	7.63	7.75	8.40	7.79	8.15
Phenols	mg/L	0.004	0.012	0.052	23.1	0.965
Sulphate	mg/L	260	146	<10	<100	64
Total Kjeldahl Nitrogen	mg/L	203	272	605	4540	1280
Total Dissolved Solids	mg/L	1870	2210	4430	22700	5080
Total Suspended Solids	mg/L	31	58	68	577	37
Total Metals						
Arsenic	mg/L	0.011	0.009	0.03	0.32	0.23
Barium	mg/L	0.123	0.529	1.00	0.20	0.54
Boron	mg/L	3.48	3.49	6.58	18.5	9.27
Cadmium	mg/L	<0.002	<0.002	<0.001	<0.20	<0.40
Calcium	mg/L	60.2	84.3	74.2	371	76.1
Chromium	mg/L	0.024	0.034	0.08	0.50	0.15
Copper	mg/L	<0.003	0.024	<0.02	<0.05	<0.10
Iron	mg/L	0.592	1.43	4.1	2.2	2.3
Lead	mg/L	<0.002	0.002	<0.01	<0.10	<0.20
Magnesium	mg/L	133	54.9	91.7	287	122
Manganese	mg/L	0.033	0.198	0.20	0.88	0.16
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phosphorus	mg/L	0.2	0.52	2.99	18.7	7.58
Potassium	mg/L	106	107	260	1410	386
Sodium	mg/L	409	403	995	4020	1400
Zinc	mg/L	0.023	0.026	<0.05	<0.1	<0.2
VOCs						
1,4-Dichlorobenzene	µg/L	<0.10	<0.40	<1.00	<2.00	<1.00
Benzene	µg/L	<0.20	<0.80	<2.00	<4.00	<2.00
Dichloromethane	µg/L	<0.30	<1.20	<3.00	<6.00	<3.00
Ethylbenzene	µg/L	<0.10	0.81	1.9	4.3	2.7
Toluene	µg/L	<0.20	0.86	3.2	18	2.2
Vinyl Chloride	µg/L	<0.17	<0.68	<1.70	<3.40	<1.70

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- µg/L - micrograms per litre, VOCs - Volatile Organic Compounds
- >20000 - Parameter concentration greater than capabilities of field instrument.

TABLE B-3
ANALYTICAL RESULTS SUMMARY FOR LEACHATE - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	MH-23						
		6-May-08	4-May-09	3-May-10	4-May-11	7-May-12	16-May-13	14-May-14
General Chemistry								
Alkalinity	mg/L	2300	4880	14300	16400	4470	21200	20900
Ammonia	mg/L	180	491	1940	1930	450	4830	3850
Biological Oxygen Demand	mg/L	2020	6470	25000	337	149	7440	6160
Chemical Oxygen Demand	mg/L	3310	14700	31800	8450	880	19300	18100
Chloride	mg/L	878	1120	3220	2820	1150	6510	5320
Field Conductivity	µS/cm	7140	12190	28900	33501	9320	>30000	>20000
Laboratory Conductivity	µS/cm	7330	12200	28600	28300	10900	47100	49000
Dissolved Organic Carbon	mg/L	1040	450	970	3700	369	4480	5320
Total Hardness	mg/L	1770	4090	5540	517	865	745	877
Nitrate	mg/L	<2	<2.0	<2.0	<10	<2.0	<25	<5
Nitrite	mg/L	<2	<2.0	<2.0	<10	<2.0	<25	<5
Field pH	SU	6.59	6.48	7.01	7.34	7.94	7.82	7.19
Laboratory pH	SU	7.39	6.91	7.17	8.01	7.74	8.61	8.32
Phenols	mg/L	0.513	0.540	4.70	<0.10	0.405	0.0117	17.6
Sulphate	mg/L	268	724	<40	<200	<40	71.9	248
Total Kjeldahl Nitrogen	mg/L	300	645	2730	2100	598	4540	12900
Total Dissolved Solids	mg/L	5030	13100	22100	12800	4380	25000	22900
Total Suspended Solids	mg/L	1200	830	668	77	30	392	927
Total Metals								
Arsenic	mg/L	<0.1	<0.10	<0.10	0.36	0.027	0.504	0.463
Barium	mg/L	<1	<1.0	<1.0	1.1	0.13	0.122	0.100
Boron	mg/L	<5	<5.0	11.7	21.9	3.49	33.4	24.6
Cadmium	mg/L	<0.01	<0.010	<0.010	<0.010	<0.00090	<0.004	<0.020
Calcium	mg/L	430	1210	1450	54	150	29.5	46
Chromium	mg/L	<0.1	0.21	0.28	1.27	0.134	1.64	1.13
Copper	mg/L	<0.1	<0.10	<0.10	<0.10	<0.010	0.009	<0.030
Iron	mg/L	41	63.5	53.2	<5.0	2.34	2.37	11.7
Lead	mg/L	<0.1	<0.10	<0.10	<0.10	<0.010	<0.004	<0.020
Magnesium	mg/L	170	261	467	93	119	163	185
Manganese	mg/L	1.6	10.1	12.3	0.18	0.111	0.114	0.161
Mercury	mg/L	<0.0001	<0.00010	<0.0004	<0.0004	<0.00010	<0.0001	<0.0001
Phosphorus	mg/L	3.5	5.35	16.7	34.4	4.34	24.2	22.4
Potassium	mg/L	200	330	880	1220	330	2050	1790
Sodium	mg/L	900	863	2550	2750	935	5340	4760
Zinc	mg/L	0.8	<0.30	0.37	<0.30	0.056	0.097	0.085
VOCs								
1,4-Dichlorobenzene	µg/L	<0.5	<100	13	<10	0.55	<2.00	<4.00
Benzene	µg/L	1.5	<100	<10	<10	<0.50	6.5	8.3
Dichloromethane	µg/L	18.7	<100	<10	<10	<0.50	<6.00	<12.0
Ethylbenzene	µg/L	0.8	<100	21	<10	2.69	9.9	13
Toluene	µg/L	11.9	280	57	43	4.44	50	70
Vinyl Chloride	µg/L	<0.5	<100	<10	<10	<0.50	<3.40	<6.80

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- µg/L - micrograms per litre, VOCs - Volatile Organic Compounds
- >20000 - Parameter concentration greater than capabilities of field instrument.

TABLE B-3
ANALYTICAL RESULTS SUMMARY FOR LEACHATE - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	MH-23		
		11-May-15	**10-May-16**	**25-May-17**
General Chemistry				
Alkalinity	mg/L	16500	20500	
Ammonia	mg/L	3950	4470	
Biological Oxygen Demand	mg/L	11300	8110	
Chemical Oxygen Demand	mg/L	24100	20200	
Chloride	mg/L	4100	4760	
Field Conductivity	µS/cm	>20000	>20000	
Laboratory Conductivity	µS/cm	40500	42500	U
Dissolved Organic Carbon	mg/L	7790	7520	N
Total Hardness	mg/L	1480	299	A
Nitrate	mg/L	<25	<50	B
Nitrite	mg/L	<25	<50	L
Field pH	SU	7.99	8.42	E
Laboratory pH	SU	8.42	8.36	
Phenols	mg/L	14.8	4.12	T
Sulphate	mg/L	155	<100	O
Total Kjeldahl Nitrogen	mg/L	4520	5200	
Total Dissolved Solids	mg/L	20500	22400	B
Total Suspended Solids	mg/L	693	678	E
Total Metals				
Arsenic	mg/L	0.38	<0.010	S
Barium	mg/L	0.29	<0.05	A
Boron	mg/L	22.6	24.2	M
Cadmium	mg/L	0.017	<0.20	P
Calcium	mg/L	193	11	L
Chromium	mg/L	1.05	0.99	E
Copper	mg/L	<0.10	<0.05	D
Iron	mg/L	5.1	12.3	
Lead	mg/L	<0.05	<0.10	
Magnesium	mg/L	242	66	
Manganese	mg/L	1.35	0.28	
Mercury	mg/L	<0.0002	<0.0001	
Phosphorus	mg/L	6.59	15.0	
Potassium	mg/L	1510	1730	
Sodium	mg/L	3930	4460	
Zinc	mg/L	<0.25	<0.1	
VOCs				
1,4-Dichlorobenzene	µg/L	<4.00	<2.00	
Benzene	µg/L	<8.00	<4.00	
Dichloromethane	µg/L	<12.0	<6.00	
Ethylbenzene	µg/L	5.5	<2.00	
Toluene	µg/L	57	22	
Vinyl Chloride	µg/L	<6.80	<3.40	

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- µg/L - micrograms per litre, VOCs - Volatile Organic Compounds
- >20000 - Parameter concentration greater than capabilities of field instrument.

TABLE B-3
ANALYTICAL RESULTS SUMMARY FOR LEACHATE - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	MH-29						
		12-May-11	7-May-12	16-May-13	14-May-14	12-May-15	10-May-16	25-May-17
General Chemistry								
Alkalinity	mg/L	2030	3640	17800	13900	13000	10200	11800
Ammonia	mg/L	85.3	224	3460	2190	3260	2330	2550
Biological Oxygen Demand	mg/L	1690	2610	856	2530	1380	3530	15400
Chemical Oxygen Demand	mg/L	4560	4130	7380	6810	5580	8760	10600
Chloride	mg/L	516	731	3870	2980	3020	2310	2790
Field Conductivity	µS/cm	4780	7480	>30000	>20000	>20000	>20000	30200
Laboratory Conductivity	µS/cm	4860	8270	37500	32600	33100	23800	27100
Dissolved Organic Carbon	mg/L	1520	1660	1640	1940	1490	3260	4830
Total Hardness	mg/L	1630	1690	997	1160	1070	319	898
Nitrate	mg/L	<2.0	<2.0	<25	<5	<25	<25	<10
Nitrite	mg/L	<2.0	<2.0	<25	<5	<25	<25	<10
Field pH	SU	6.07	7.06	7.76	7.64	7.89	7.55	7.73
Laboratory pH	SU	6.11	6.94	8.04	8.06	8.28	7.87	7.82
Phenols	mg/L	0.299	2.21	0.269	2.68	0.986	3.58	14.9
Sulphate	mg/L	653	<40	129	<10	<50	<50	35
Total Kjeldahl Nitrogen	mg/L	136	346	3500	5140	3360	2410	2320
Total Dissolved Solids	mg/L	4480	6050	16300	12300	13000	10400	12100
Total Suspended Solids	mg/L	140	30	97	188	62	136	168
Total Metals								
Arsenic	mg/L	0.016	0.02	0.366	0.138	0.28	<0.10	0.45
Barium	mg/L	0.2	0.26	0.090	0.086	0.18	0.08	0.41
Boron	mg/L	2.49	1.86	19.1	8.99	12.6	8.84	13.0
Cadmium	mg/L	<0.0010	<0.00090	<0.004	<0.002	<0.005	<0.20	<0.40
Calcium	mg/L	519	484	26.6	42	56.3	26.4	72.5
Chromium	mg/L	0.093	0.0715	1.51	0.636	0.75	0.51	0.55
Copper	mg/L	0.018	0.013	0.009	0.004	<0.10	<0.05	<0.10
Iron	mg/L	34.5	6.07	4.14	2.02	4.4	8.2	10.9
Lead	mg/L	0.013	<0.010	<0.004	<0.002	<0.05	<0.10	<0.20
Magnesium	mg/L	82.2	118	226	256	226	61.4	174
Manganese	mg/L	2.21	3.1	0.035	0.064	0.10	<0.05	0.13
Mercury	mg/L	<0.00010	<0.00010	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001
Phosphorus	mg/L	5.73	15.2	28.2	10.2	13.0	12.4	13.6
Potassium	mg/L	170	222	1710	1140	1190	844	1090
Sodium	mg/L	456	703	3860	2770	2860	2060	2620
Zinc	mg/L	1.8	0.272	0.153	0.042	<0.25	<0.1	<0.2
VOCs								
1,4-Dichlorobenzene	µg/L	1.9	3.1	<2.00	<4.00	<2.00	<1.00	<4.00
Benzene	µg/L	<0.50	<1.0	4.1	8.0	5.7	8.5	12
Dichloromethane	µg/L	16.5	3.8	<6.00	<12.0	<6.00	<3.00	<12.0
Ethylbenzene	µg/L	1.59	2.5	5.1	12	10	19	10
Toluene	µg/L	16	13.8	32	93	56	76	31
Vinyl Chloride	µg/L	<0.50	<1.0	<3.40	<6.80	<3.40	<1.70	<6.80

Notes:
- < - Parameter concentration not detected above the noted sample detection limit.
- mg/L - milligrams per litre, SU - Scientific Units, µS/cm - microSiemens per centimetre
- µg/L - micrograms per litre, VOCs - Volatile Organic Compounds
- >20000 - Parameter concentration greater than capabilities of field instrument.

TABLE B-4
ANALYTICAL RESULTS SUMMARY FOR SURFACE WATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Dodd Creek Upstream (STA5)										
		17-Mar-06	10-May-06	11-Aug-06	15-Nov-06	20-Mar-07	8-May-07	28-Aug-07	29-Nov-07	17-Mar-08	2-May-08	14-Aug-08
General Chemistry												
Alkalinity	mg/L	130	200	280	280	220	230	190	170	78	220	110
Ammonia	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.31	0.09 U	0.05
Un-ionized Ammonia	mg/L	<0.00006	<0.00193	<0.00081	<0.00014	<0.00099	<0.00202	<0.00137	0.00047	0.0011	0.00215 U	0.0011
Biological Oxygen Demand	mg/L	<2	<2	<2	<2	<2	<2	<2	<2	7	<2	3
Carbonaceous Biological Oxygen Demand	mg/L	-	-	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	<10	20	10	10	20	<10	30	30 U	60	30	70
Chloride	mg/L	27	59	56	42	45	49	162	94	22	59	39
Field Conductivity	µS/cm	479	542	696	712	592	505	704	651	208	540	303
Laboratory Conductivity	µS/cm	451	608	692	740	621	641	917	789	268	661	385
Total Hardness	mg/L	190	310	350	340	270	260	290	270	120	340	160
Nitrate	mg/L	7.50	3.90	1.80	6.80	4.20	2.60	5.00	10.90	1.60	2.40	4.10
Nitrite	mg/L	<0.5	<0.1	<0.5	<0.1	<0.1	<0.1	0.10	<0.1	<0.1	<0.1	<0.1
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.002	<0.001	<0.001	0.003
Field pH	SU	7.09	8.20	7.70	7.33	8.24	8.25	7.85	7.96	7.52	8.11	7.85
Laboratory pH	SU	7.93	7.80	8.08	7.91	7.92	7.92	7.74	8.24	8.04	8.15	8.07
Sulphate	mg/L	33	47	31	37	32	33	52	48	11	41	15
Total Kjeldahl Nitrogen	mg/L	1.2	2.3 J	1	0.8 U	0.8	0.6 U	1	1.6 U	1.5	1.3	4.8
Total Phosphorus	mg/L	0.045	0.044	0.120	0.051	0.031	0.026	0.063	0.110	0.190	0.027	0.250
Total Dissolved Solids	mg/L	340	380	570	500	370	400	620	480	150	390	240
Total Suspended Solids	mg/L	7	19	5	4	4	<1	4	6	40	7	66
Field Dissolved Oxygen	mg/L	13.82	8.00	4.48	13.17	12.72	10.85	6.86	12.15	11.15	8.97	6.29
Field Temperature	°C	1.1	14.0	17.4	6.0	4.1	13.1	20.1	2.7	3.2	10.3	16.7
Estimated Field Flow Rate	L/s	625	129	36	914	750	400	31.3	225	1200	125	780
Total Metals												
Arsenic	mg/L	-	<0.001	-	<0.001	-	0.001	-	<0.001	-	0.001	-
Barium	mg/L	-	0.040	-	0.040	-	0.040	-	0.050	-	0.040	-
Boron	mg/L	-	0.060	-	0.070	-	<0.05	-	<0.05	-	<0.05	-
Cadmium	mg/L	-	<0.0001	-	<0.0001	-	0.0004	-	<0.0001	-	<0.0001	-
Chromium	mg/L	-	0.002	-	<0.001	-	0.002	-	0.002	-	0.002	-
Copper	mg/L	-	0.002	-	0.002	-	0.002	-	0.003	-	0.003	-
Iron	mg/L	1.09	0.440	0.390	0.500	0.250	0.380	0.340	0.970	1.34	0.120	5.20
Lead	mg/L	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-
Mercury (dissolved)	mg/L	-	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001	-
Zinc	mg/L	-	0.006	-	0.086	-	0.004 UJ	-	0.013 U	-	0.027 U	-

Notes:
- mg/L - milligrams per litre, µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius, L/s - Litres per second
- < indicates parameter concentration not detected above the noted sample detection limit
- Un-ionized ammonia concentration calculated based on the fraction of NH_3 (f) in the total ammonia.
  where: f = 1/(10^{pKa-pH})+1)
  pKa=0.09018 + 2729.92/T
  T = ambient water temperature in Kelvin (K = C + 273.16)
- U - parameter was not present at or above the associated detection in the field blank.
- J - estimated value - result interpreted with caution or considered questionable.

wsp

TABLE B-4
ANALYTICAL RESULTS SUMMARY FOR SURFACE WATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Dodd Creek Upstream (STA5)										
		11-Nov-08	13-Mar-09	4-May-09	5-Aug-09	2-Nov-09	8-Mar-10	3-May-10	10-Aug-10	3-Nov-10	14-Mar-11	12-May-11
General Chemistry												
Alkalinity	mg/L	250	136	228	257	274	187	260	206	268	143	214
Ammonia	mg/L	<0.05	0.09	0.098 U	0.058	<0.050	0.073	0.066	0.093	0.055	<0.050	<0.050
Un-ionized Ammonia	mg/L	<0.00087	0.00033	0.00133 U	0.0007	<0.00066	0.0006	0.00039	0.00091	0.0024	<0.000069	<0.001111
Biological Oxygen Demand	mg/L	<2	<2	<2.0	<2.0	3.1	2	<2.0	<2.0	<2.0	<2.0	<2.0
Carbonaceous Biological Oxygen Demand	mg/L	-	-	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	<10	40	<10	33	41 U	35	86	17	19	17	19
Chloride	mg/L	68	22	34.9	64.3	59.5	83.8	55.7	74.1	187	41.2	40.2
Field Conductivity	µS/cm	717	368	515	693	735	750	643	824	2280	444	548
Laboratory Conductivity	µS/cm	776	383	590	734	786	672	710	773	1200	486	617
Total Hardness	mg/L	360	180	270	338	334	256	326	285	347	194	266
Nitrate	mg/L	7.60	3.90	4.65	2.77	3.26	4.39	1.81	4.21	0.60	5.31	4.47
Nitrite	mg/L	0.10	<0.3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Phenols	mg/L	<0.001	0.002	<0.001	<0.001	0.003	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
Field pH	SU	8.14	7.63	7.83	7.53	7.87	7.93	7.28	7.35	8.60	7.06	7.97
Laboratory pH	SU	8.20	8.01	8.12	8.06	8.19	7.67	8.19	8.07	8.11	8.06	8.17
Sulphate	mg/L	42	20	27.3	32.5	40.1	23.9	33.1	67.7	62.5	19.3	29.2
Total Kjeldahl Nitrogen	mg/L	0.72 U	5.3	0.74	0.89	1.15	1.78	0.88	1.62	0.79 U	0.92	0.78
Total Phosphorus	mg/L	0.051	0.100	0.033	0.084	0.035	0.070	0.047	0.088	0.022	0.095	0.017
Total Dissolved Solids	mg/L	490	250	372	462	486	422	416	490	368	306	368
Total Suspended Solids	mg/L	4	31	3.2	32	5.6	14.8	8.4	16.8	<3.0	10.4	8
Field Dissolved Oxygen	mg/L	12.46	12.30	12.16	9.79	10.02	13.44	6.25	3.78	9.20	12.00	9.46
Field Temperature	C	5.3	0.7	11.2	18.0	9.7	1.1	16.6	21.5	4.2	4.6	13.5
Estimated Field Flow Rate	L/s	193	788	250	negligible	228	300	281	180	160	3656	163
Total Metals												
Arsenic	mg/L	<0.001	-	<0.0010	-	<0.0010	-	<0.0010	-	<0.0010	-	<0.0010
Barium	mg/L	0.040	-	0.035	-	0.050	-	0.040	-	0.061	-	0.038
Boron	mg/L	<0.05	-	<0.050	-	<0.050	-	<0.050	-	0.054	-	<0.050
Cadmium	mg/L	<0.0001	-	<0.00010	-	<0.00010	-	<0.00010	-	<0.00010	-	<0.00010
Chromium	mg/L	0.002	-	0.001	-	<0.0010	-	<0.0010	-	<0.0010	-	<0.0010
Copper	mg/L	0.004 U	-	0.003	-	0.002	-	0.003	-	0.002	-	0.003
Iron	mg/L	0.500	3.55	0.475	1.29	0.501	0.911	0.370	0.516	0.195	1.18	0.378
Lead	mg/L	<0.001	-	<0.0010	-	<0.0010	-	<0.0010	-	<0.0010	-	<0.0010
Mercury (dissolved)	mg/L	<0.0001	-	<0.00010	-	<0.00010	-	<0.00010	-	<0.00010	-	<0.00010
Zinc	mg/L	0.0040	-	0.0083 UJ	-	<0.0030	-	<0.0030	-	<0.0030	-	<0.0030

Notes:
- mg/L - milligrams per litre, µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius, L/s - Litres per second
- < indicates parameter concentration not detected above the noted sample detection limit
- Un-ionized ammonia concentration calculated based on the fraction of NH3 (f) in the total ammonia.
  where: f = 1/(10^{pKa-pH})+1)
  pKa=0.09018 + 2729.92/T
  T = ambient water temperature in Kelvin (K = C + 273.16)
- U - parameter was not present at or above the associated detection in the field blank.
- J - estimated value - result interpreted with caution or considered questionable.

TABLE B-4
ANALYTICAL RESULTS SUMMARY FOR SURFACE WATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Dodd Creek Upstream (STA5)										
		11-Aug-11	9-Nov-11	9-Feb-12	7-May-12	1-Aug-12	6-Nov-12	14-Mar-13	13-May-13	21-Aug-13	13-Nov-13	20-Mar-14
General Chemistry												
Alkalinity	mg/L	145	282	242	234	182	245	153	239	250	224	71
Ammonia	mg/L	0.073	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.07	<0.02	0.03	0.18
Un-ionized Ammonia	mg/L	0.0016	<0.000194	<0.000350	<0.002299	<0.00258	<0.000687	<0.001	0.001	<0.001	<0.001	0.001
Biological Oxygen Demand	mg/L	2.3	<2.0	<2.0	<2.0	3.3	<2.0	<2.0	<5	<5	<5	5
Carbonaceous Biological Oxygen Demand	mg/L	-	-	-	-	-	-	<2.0	<5	<5	<5	<5
Chemical Oxygen Demand	mg/L	30	19 U	13	13	53	30 U	25	11	23	16	22
Chloride	mg/L	48.9	43.3	32.9	63.2	115	48.9	28.9	61.5	44.2	38.1	8.16
Field Conductivity	µS/cm	464	649	620	677	1130	623	427	722	604	700	205
Laboratory Conductivity	µS/cm	549	714	595	686	1260	675	485	739	567	629	178
Total Hardness	mg/L	193	306	323	284	205	333	256	318	255	294	85.8
Nitrate	mg/L	8.11	3.92	4.78	2.28	1.36	9.27	5.45	3.59	<0.25	5.22	0.79
Nitrite	mg/L	<0.30	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.25	<0.25	<0.10	<0.05
Phenols	mg/L	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	<0.001	<0.001	<0.001
Field pH	SU	7.74	7.28	7.86	8.26	8.09	8.01	7.86	8.07	8.14	8.08	7.91
Laboratory pH	SU	8.10	8.12	8.14	8.00	8.18	8.13	8.06	8.52	7.85	8.31	7.88
Sulphate	mg/L	23.5	35	34.8	29.5	263	40.8	22.7	38.2	9.31	28.1	4.98
Total Kjeldahl Nitrogen	mg/L	1.23	0.38	0.41	0.92	2.45	0.83	0.92	0.59	0.37	0.68	0.93
Total Phosphorus	mg/L	0.147	0.031	0.032	0.024	0.085	0.062	0.086	<0.02	0.03	0.12	0.29
Total Dissolved Solids	mg/L	446	418	356	410	788	452	294	406	310	378	114
Total Suspended Solids	mg/L	17.6	7.6	12	10.8	18.8	8.8	15.2	<10	11	22	65
Field Dissolved Oxygen	mg/L	5.55	12.74	15.05	10.04	3.52	10.14	13.40	13.9	6.53	9.87	11.01
Field Temperature	C	20.1	11.2	2.0	14.6	21.5	6.1	2.1	10.0	23.2	4.2	0.4
Estimated Field Flow Rate	L/s	180	400	532	70	54	126.5	3750	65	<3	401	>5000
Total Metals												
Arsenic	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-	<0.003	-	<0.003	-
Barium	mg/L	-	0.044	-	0.038	-	0.044	-	0.035	-	0.037	-
Boron	mg/L	-	<0.050	-	<0.050	-	<0.050	-	0.059	-	0.022	-
Cadmium	mg/L	-	<0.00010	-	<0.00010	-	<0.00010	-	<0.0001	-	<0.0001	-
Chromium	mg/L	-	<0.0010	-	<0.0010	-	0.001	-	<0.003	-	<0.003	-
Copper	mg/L	-	0.002	-	0.002	-	0.003	-	0.002	-	0.002	-
Iron	mg/L	1.62	0.359	0.598	0.294	0.640	0.525	0.735	0.16	0.09	0.26	1.04
Lead	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-	<0.001	-	<0.001	-
Mercury (dissolved)	mg/L	-	<0.00010	-	<0.00010	-	<0.00010	-	<0.0001	-	<0.0001	-
Zinc	mg/L	-	<0.0030	-	0.0034	-	<0.0030	-	<0.005	-	<0.005	-

Notes:
- mg/L - milligrams per litre, µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius, L/s - Litres per second
- < indicates parameter concentration not detected above the noted sample detection limit
- Un-ionized ammonia concentration calculated based on the fraction of NH_3 (f) in the total ammonia.
  where: f = 1/(10^{pKa-pH})+1)
  pKa=0.09018 + 2729.92/T
  T = ambient water temperature in Kelvin (K = C + 273.16)
- U - parameter was not present at or above the associated detection in the field blank.
- J - estimated value - result interpreted with caution or considered questionable.

TABLE B-4
ANALYTICAL RESULTS SUMMARY FOR SURFACE WATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Dodd Creek Upstream (STA5)										
		15-May-14	14-Aug-14	10-Nov-14	24-Mar-15	12-May-15	12-Aug-15	6-Nov-15	8-Mar-16	26-May-16	17-Aug-16	7-Nov-16
General Chemistry												
Alkalinity	mg/L	117	180	288	210	246	168	227	147	221	197	228
Ammonia	mg/L	0.33	0.04	<0.02	0.02	0.05	0.02	<0.02	<0.02	<0.02	0.04	0.04
Un-ionized Ammonia	mg/L	0.007	0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Biological Oxygen Demand	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Carbonaceous Biological Oxygen Demand	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chemical Oxygen Demand	mg/L	50	17	<5	7	17	19	17	12	21	28	18
Chloride	mg/L	18.6	58.8	42.1	30.9	83.2	98.5	134	35.8	92.0	96.4	101
Field Conductivity	µS/cm	362	580	730	798	596	710	890	375	551	536	847
Laboratory Conductivity	µS/cm	366	574	739	541	762	701	921	473	735	729	844
Total Hardness	mg/L	160	218	362	255	305	222	343	189	266	209	289
Nitrate	mg/L	4.31	1.38	5.43	3.95	2.80	0.11	2.19	7.78	2.80	1.14	4.65
Nitrite	mg/L	<0.05	<0.10	<0.10	<0.25	<0.10	<0.05	<0.25	<0.05	<0.25	<0.05	<0.25
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Field pH	SU	7.95	7.95	7.83	7.59	7.30	8.04	7.87	8.40	7.69	7.03	7.21
Laboratory pH	SU	7.90	8.17	8.17	8.06	8.39	7.94	8.22	7.86	8.12	8.31	7.89
Sulphate	mg/L	11.2	19.2	33.5	23.3	29.2	23.3	45.0	26.7	47.9	20.6	37.8
Total Kjeldahl Nitrogen	mg/L	3.04	0.58	0.66	0.69	0.98	0.95	0.90	1.09	1.18	0.97	1.04
Total Phosphorus	mg/L	0.29	0.18	0.13	0.11	0.06	0.10	0.06	0.16	0.04	0.15	0.11
Total Dissolved Solids	mg/L	258	354	410	278	418	392	520	290	402	396	458
Total Suspended Solids	mg/L	210	54	15	27	22	25	11	46	12	48	16
Field Dissolved Oxygen	mg/L	11.03	8.3	10.45	8.7	6.76	8.7	6.01	9.8	9.10	9.93	9.73
Field Temperature	C	14.2	17.1	8.3	2.5	16.4	21.0	15.7	6.5	20.5	21.9	8.5
Estimated Field Flow Rate	L/s	>5000	260	477	935	126	<50	108	1798	<5	1178	791
Total Metals												
Arsenic	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003	-	<0.003	-	<0.003
Barium	mg/L	0.053	-	0.043	-	0.045	-	0.055	-	0.041	-	0.045
Boron	mg/L	0.028	-	0.024	-	0.024	-	0.031	-	0.078	-	0.030
Cadmium	mg/L	0.0001	-	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001
Chromium	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003	-	<0.003	-	0.006
Copper	mg/L	0.006	-	<0.002	-	0.002	-	0.004	-	0.003	-	0.002
Iron	mg/L	1.28	0.53	0.22	0.312	0.28	0.39	0.28	0.311	0.22	0.58	0.56
Lead	mg/L	0.003	-	<0.001	-	<0.002	-	<0.002	-	<0.002	-	<0.002
Mercury (dissolved)	mg/L	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001
Zinc	mg/L	0.015	-	<0.005	-	<0.005	-	0.010	-	<0.005	-	<0.005

Notes:
- mg/L - milligrams per litre, µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius, L/s - Litres per second
- < indicates parameter concentration not detected above the noted sample detection limit
- Un-ionized ammonia concentration calculated based on the fraction of NH3 (f) in the total ammonia.
  where: f = 1/(10^{pKa-pH})+1)
  pKa=0.09018 + 2729.92/T
  T = ambient water temperature in Kelvin (K = C + 273.16)
- U - parameter was not present at or above the associated detection in the field blank.
- J - estimated value - result interpreted with caution or considered questionable.

wsp

TABLE B-4
ANALYTICAL RESULTS SUMMARY FOR SURFACE WATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Dodd Creek Upstream (STA5)			
		27-Mar-17	24-May-17	9-Aug-17	6-Nov-17
General Chemistry					
Alkalinity	mg/L	158	236	285	122
Ammonia	mg/L	0.03	0.10	<0.02	<0.02
Un-ionized Ammonia	mg/L	<0.001	0.003	<0.001	<0.001
Biological Oxygen Demand	mg/L	<5	<5	<5	<5
Carbonaceous Biological Oxygen Demand	mg/L	<5	<5	<5	<5
Chemical Oxygen Demand	mg/L	21	22	104	27
Chloride	mg/L	57.5	48.6	236	45.3
Field Conductivity	µS/cm	552	598	1180	377
Laboratory Conductivity	µS/cm	594	676	1400	496
Total Hardness	mg/L	231	299	214	199
Nitrate	mg/L	8.15	7.34	0.25	10.8
Nitrite	mg/L	<0.10	<0.25	<0.25	<0.05
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001
Field pH	SU	7.31	7.97	8.03	7.77
Laboratory pH	SU	8.32	8.31	8.16	7.81
Sulphate	mg/L	27.6	26.8	75.1	24.1
Total Kjeldahl Nitrogen	mg/L	0.98	0.68	3.54	1.59
Total Phosphorus	mg/L	0.17	0.03	0.09	0.25
Total Dissolved Solids	mg/L	358	384	778	360
Total Suspended Solids	mg/L	82	<10	33	37
Field Dissolved Oxygen	mg/L	9.21	9.88	6.05	9.80
Field Temperature	C	5.39	16.77	18.57	10.17
Estimated Field Flow Rate	L/s	1396	669	<5	859
Total Metals					
Arsenic	mg/L	-	<0.003	-	<0.003
Barium	mg/L	-	0.038	-	0.051
Boron	mg/L	-	0.023	-	0.030
Cadmium	mg/L	-	<0.0001	-	<0.0001
Chromium	mg/L	-	<0.003	-	<0.003
Copper	mg/L	-	0.002	-	0.005
Iron	mg/L	0.386	0.11	0.258	0.48
Lead	mg/L	-	<0.001	-	<0.002
Mercury (dissolved)	mg/L	-	<0.0001	-	<0.0001
Zinc	mg/L	-	<0.005	-	0.009

Notes:
- mg/L - milligrams per litre, µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius, L/s - Litres per second
- < indicates parameter concentration not detected above the noted sample detection limit
- Un-ionized ammonia concentration calculated based on the fraction of NH3 (f) in the total ammonia.
  where: f = 1/(10^{pKa-pH})+1)
  pKa=0.09018 + 2729.92/T
  T = ambient water temperature in Kelvin (K = C + 273.16)
- U - parameter was not present at or above the associated detection in the field blank.
- J - estimated value - result interpreted with caution or considered questionable.

TABLE B-4
ANALYTICAL RESULTS SUMMARY FOR SURFACE WATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Dodd Creek Downstream (STA6)										
		17-Mar-06	10-May-06	11-Aug-06	15-Nov-06	20-Mar-07	8-May-07	28-Aug-07	29-Nov-07	17-Mar-08	2-May-08	14-Aug-08
General Chemistry												
Alkalinity	mg/L	150	210	250	290	220	230	210	180	83	220	130
Ammonia	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.07	0.32	0.31 U	0.06
Un-ionized Ammonia	mg/L	<0.00004	<0.00123	<0.00039	<0.00021	<0.00109	<0.00193	0.00239	0.00028	0.00092	0.00537 U	0.00154
Biological Oxygen Demand	mg/L	<2	<2	2	<2	<2	<2	3	<2	6	3	3
Carbonaceous Biological Oxygen Demand	mg/L	-	-	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	10	20	30	<10	20	<10	40	40 U	40	30	60
Chloride	mg/L	33	71	88	50	54	58	197	104	32	68	53
Field Conductivity	µS/cm	558	690	960	780	627	650	892	722	265	622	389
Laboratory Conductivity	µS/cm	482	701	907	765	662	720	1220	887	302	766	472
Total Hardness	mg/L	200	300	330	330	280	270	350	280	120	330	180
Nitrate	mg/L	7.30	3.60	1.40	6.20	4.20	2.60	5.60	12.40	1.60	3.10	3.80
Nitrite	mg/L	<0.5	<0.1	<0.5	<0.1	<0.1	<0.1	0.10	<0.1	<0.1	0.10	<0.1
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Field pH	SU	6.90	8.00	7.37	7.51	8.28	8.22	8.11	7.58	7.47	7.96	7.93
Laboratory pH	SU	7.92	7.61	8.07	7.96	7.95	8.00	8.04	8.21	8.02	8.13	8.07
Sulphate	mg/L	35	70	125	46	34	57	125	73	11	81	23
Total Kjeldahl Nitrogen	mg/L	1.7	1.4 U	1.8	1.4 U	0.8	0.6 U	1.4	1.5 U	1.4	2.1	4.4
Total Phosphorus	mg/L	0.063	0.051	0.190	0.042	0.034	0.021	0.058	0.110	0.190	0.038	0.200
Total Dissolved Solids	mg/L	360	450	640	480	400	450	800	530	180	440	270
Total Suspended Solids	mg/L	8.0	11.0	25.0	6.0	4.0	2 U	7.0	6.0	34.0	18.0	54.0
Field Dissolved Oxygen	mg/L	11.14	6.32	4.82	8.58	12.62	10.9	7.55	12.75	11.5	8.17	6.24
Field Temperature	°C	1.9	14	17.9	5.8	4.2	13.4	19.8	2.9	2	10.5	16.7
Field Flow Rate	L/s	800	100	27	1200	750	400	75.0	200	1440	133	1200
Total Metals												
Arsenic	mg/L	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-	0.002	-
Barium	mg/L	-	0.040	-	0.040	-	0.040	-	0.050	-	0.040	-
Boron	mg/L	-	0.100	-	0.090	-	0.070	-	0.060	-	0.140	-
Cadmium	mg/L	-	0.0001	-	<0.0001	-	0.0005	-	<0.0001	-	<0.0001	-
Chromium	mg/L	-	0.002	-	<0.001	-	0.002	-	0.002	-	0.003	-
Copper	mg/L	-	0.003	-	0.002	-	0.002	-	0.004	-	0.003	-
Iron	mg/L	0.660	0.370	0.910	0.500	0.270	0.400	0.380	0.970	1.10	0.240	5.10
Lead	mg/L	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-	<0.001	-
Mercury (dissolved)	mg/L	-	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001	-
Zinc	mg/L	-	0.0090	-	<0.003	-	0.029 U	-	0.060 U	-	0.045 U	-

Notes: • mg/L - milligrams per litre, µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius, L/s - Litres per second
• < indicates parameter concentration not detected above the noted sample detection limit
• Un-ionized ammonia concentration calculated based on the fraction of NH_3 (f) in the total ammonia.
where: f = 1/(10^{pKa-pH})+1)
pKa=0.09018 + 2729.92/T
T = ambient water temperature in Kelvin (K = C + 273.16)
• U - parameter was not present at or above the associated detection in the field blank.
• J - estimated value - result interpreted with caution or considered questionable.

wsp

TABLE B-4
ANALYTICAL RESULTS SUMMARY FOR SURFACE WATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Dodd Creek Downstream (STA6)										
		11-Nov-08	13-Mar-09	4-May-09	5-Aug-09	2-Nov-09	8-Mar-10	3-May-10	10-Aug-10	3-Nov-10	14-Mar-11	12-May-11
General Chemistry												
Alkalinity	mg/L	250	148	227	270	275	183	257	213	286	143	216
Ammonia	mg/L	0.05	0.1	0.052 U	0.156	<0.050	0.082	0.091	0.104	0.106	<0.050	<0.050
Un-ionized Ammonia	mg/L	0.00087	0.00039	0.00042 U	0.00152	<0.00062	0.000379	0.000459	0.0011	0.0033	<0.000072	<0.001111
Biological Oxygen Demand	mg/L	<2	<2	<2.0	<2.0	<2.0	<2.0	2	<2.0	<2.0	<2.0	<2.0
Carbonaceous Biological Oxygen Demand	mg/L	-	-	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	mg/L	<10	30	10	58	52 U	44	80	36	51	13	13
Chloride	mg/L	75	29	41.3	89.9	75.4	87.4	61.1	109	236	37.7	40.5
Field Conductivity	µS/cm	754	420	529	926	783	761	706	1280	2460	463	548
Laboratory Conductivity	µS/cm	827	442	628	991	849	695	772	1200	1750	483	617
Total Hardness	mg/L	350	190	266	318	334	256	342	199	334	193	269
Nitrate	mg/L	7.60	4.00	4.58	4.31	3.57	5.09	2.13	11.10	8.58	5.10	4.40
Nitrite	mg/L	0.10	<0.3	<0.10	0.18	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005	<0.001	<0.001	<0.001
Field pH	SU	8.14	7.65	7.60	7.43	7.84	7.70	7.21	7.35	8.43	7.09	7.96
Laboratory pH	SU	8.19	8.01	8.05	8.03	8.18	7.64	8.16	8.06	8.23	7.95	8.13
Sulphate	mg/L	53	24	30	116	46.9	31.1	58.4	216	252	23.6	34.1
Total Kjeldahl Nitrogen	mg/L	0.60 UJ	1.6	0.97	1.52	1.15	1.42	1.22	2.5	2.68	0.47	0.76
Total Phosphorus	mg/L	0.053	0.088	0.041	0.069	0.041	0.069	0.049	0.078	0.044	0.099	0.019
Total Dissolved Solids	mg/L	490	270	388	606	518	422	452	790	1110	290	360
Total Suspended Solids	mg/L	5.0	24.0	5.2	28.0	5.6	10.8	8.4	15.6	4.8	12.4	12.4
Field Dissolved Oxygen	mg/L	12.52	12.72	12.19	9.49	9.39	13.03	5.1	3.12	9.6	11.7	8.3
Field Temperature	C	5.3	0.7	11.3	18.9	9.8	1.4	16.8	22.8	4.6	4.2	13.8
Field Flow Rate	L/s	462	900	364	negligible	294	432	360	315	200	3750	176
Total Metals												
Arsenic	mg/L	<0.001	-	<0.0010	-	<0.0010	-	<0.0010	-	0.0017	-	<0.0010
Barium	mg/L	0.040	-	0.034	-	0.051	-	0.043	-	0.062	-	0.039
Boron	mg/L	<0.05	-	<0.050	-	0.057	-	0.077	-	0.474	-	<0.050
Cadmium	mg/L	<0.0001	-	<0.00010	-	<0.00010	-	<0.00010	-	<0.00010	-	<0.00010
Chromium	mg/L	0.002	-	0.001	-	0.001	-	0.001	-	0.0040 U	-	<0.0010
Copper	mg/L	0.003 U	-	0.003	-	0.002	-	0.006	-	0.002	-	0.003
Iron	mg/L	0.530	1.85	0.527	0.798	0.546	0.870	0.497	0.321	0.253	1.29	0.475
Lead	mg/L	<0.001	-	<0.0010	-	<0.0010	-	<0.0010	-	<0.0010	-	<0.0010
Mercury (dissolved)	mg/L	<0.0001	-	<0.00010	-	<0.00010	-	<0.00010	-	<0.00010	-	<0.00010
Zinc	mg/L	0.0060	-	0.0074 U	-	<0.0030	-	0.0278	-	<0.0030	-	0.0086

Notes:
- mg/L - milligrams per litre, µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius, L/s - Litres per second
- < indicates parameter concentration not detected above the noted sample detection limit
- Un-ionized ammonia concentration calculated based on the fraction of NH3 (f) in the total ammonia.
  where: f = 1/(10^{pKa-pH})+1)
  pKa=0.09018 + 2729.92/T
  T = ambient water temperature in Kelvin (K = C + 273.16)
- U - parameter was not present at or above the associated detection in the field blank.
- J - estimated value - result interpreted with caution or considered questionable.

TABLE B-4
ANALYTICAL RESULTS SUMMARY FOR SURFACE WATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Dodd Creek Downstream (STA6)										
		11-Aug-11	9-Nov-11	9-Feb-12	7-May-12	1-Aug-12	6-Nov-12	14-Mar-13	13-May-13	21-Aug-13	13-Nov-13	20-Mar-14
General Chemistry												
Alkalinity	mg/L	145	229	229	236	179	237	157	260	217	226	69
Ammonia	mg/L	0.122	<0.050	<0.050	<0.050	0.067	<0.050	0.075	0.07	0.05	0.03	0.19
Un-ionized Ammonia	mg/L	0.002	<0.000428	<0.000349	<0.00137	0.004	<0.000632	<0.001	0.003	0.005	<0.001	0.001
Biological Oxygen Demand	mg/L	2	<2.0	<2.0	<2.0	3.8	<2.0	<2.0	<5	<5	<5	5
Carbonaceous Biological Oxygen Demand	mg/L	-	-	-	-	-	-	<2.0	<5	<5	<5	<5
Chemical Oxygen Demand	mg/L	36	23 U	11	13	63	19 U	38	26	36	19	24
Chloride	mg/L	48.6	31.4	30.9	65.7	134	52.3	29.8	110	83.4	49.6	10.9
Field Conductivity	µS/cm	461	588	597	684	1450	655	453	1071	678	756	219
Laboratory Conductivity	µS/cm	543	622	577	691	1490	692	496	1030	640	676	181
Total Hardness	mg/L	189	263	285	264	202	299	249	317	231	287	83.4
Nitrate	mg/L	8.63	2.45	3.92	2.27	0.95	8.84	5.37	3.75	<0.25	5.08	0.81
Nitrite	mg/L	<0.30	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.25	<0.25	<0.10	<0.05
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	<0.001	<0.001	<0.001
Field pH	SU	7.68	7.63	7.84	8.03	8.13	7.98	7.83	8.31	8.27	8.14	7.78
Laboratory pH	SU	8.11	7.94	8.13	7.96	8.18	8.15	8.09	8.53	7.79	8.35	7.75
Sulphate	mg/L	22.9	52	44.2	29.5	348	41	24.8	86.9	12.3	30.3	5.31
Total Kjeldahl Nitrogen	mg/L	1.23	0.56	0.5	0.98	2.63	0.92	0.82	1.75	0.66	0.73	0.95
Total Phosphorus	mg/L	0.149	0.047	0.035	0.025	0.081	0.063	0.069	<0.02	0.08	0.09	0.28
Total Dissolved Solids	mg/L	406	364	354	414	940	476	302	558	350	390	132
Total Suspended Solids	mg/L	25.2	11.6	14.0	7.2	8.4	8.0	20.0	<10	39	24	75
Field Dissolved Oxygen	mg/L	5.77	11.2	14	9.54	4.83	9.67	13.05	11.9	5.97	9.69	11.24
Field Temperature	C	20.1	11.1	2.5	14.5	23.4	5.9	2.1	10.9	25.4	3.6	0.5
Field Flow Rate	L/s	180	500	572	72	159	137.5	4320	149	<11	718	>5000
Total Metals												
Arsenic	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-	<0.003	-	<0.003	-
Barium	mg/L	-	0.042	-	0.037	-	0.040	-	0.041	-	0.040	-
Boron	mg/L	-	<0.050	-	<0.050	-	<0.050	-	0.265	-	0.050	-
Cadmium	mg/L	-	<0.00010	-	<0.00010	-	<0.00010	-	<0.0001	-	<0.0001	-
Chromium	mg/L	-	<0.0010	-	<0.0010	-	0.001	-	0.003	-	<0.003	-
Copper	mg/L	-	0.002	-	0.002	-	0.002	-	0.003	-	0.002	-
Iron	mg/L	1.77	0.444	0.47	0.290	0.283	0.453	0.707	0.19	0.45	0.30	0.82
Lead	mg/L	-	<0.0010	-	<0.0010	-	<0.0010	-	<0.001	-	<0.001	-
Mercury (dissolved)	mg/L	-	<0.00010	-	<0.00010	-	<0.00010	-	<0.0001	-	<0.0001	-
Zinc	mg/L	-	<0.0030	-	0.0034	-	0.0037	-	<0.005	-	<0.005	-

Notes:
- mg/L - milligrams per litre, µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius, L/s - Litres per second
- < indicates parameter concentration not detected above the noted sample detection limit
- Un-ionized ammonia concentration calculated based on the fraction of NH3 (f) in the total ammonia.
  where: f = 1/(10^{pKa-pH})+1)
  pKa=0.09018 + 2729.92/T
  T = ambient water temperature in Kelvin (K = C + 273.16)
- U - parameter was not present at or above the associated detection in the field blank.
- J - estimated value - result interpreted with caution or considered questionable.

TABLE B-4
ANALYTICAL RESULTS SUMMARY FOR SURFACE WATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter	Units	Dodd Creek Downstream (STA6)										
		15-May-14	14-Aug-14	10-Nov-14	24-Mar-15	12-May-15	12-Aug-15	6-Nov-15	8-Mar-16	26-May-16	17-Aug-16	7-Nov-16
General Chemistry												
Alkalinity	mg/L	123	180	291	215	287	169	230	153	241	179	239
Ammonia	mg/L	0.33	0.05	0.04	0.03	0.05	0.02	<0.02	<0.02	0.03	0.06	0.03
Un-ionized Ammonia	mg/L	0.005	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001
Biological Oxygen Demand	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Carbonaceous Biological Oxygen Demand	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chemical Oxygen Demand	mg/L	51	29	<5	6	40	19	17	21	32	<5	16
Chloride	mg/L	26.9	60.3	45.8	38.1	142	98.2	140	52.2	124	109	99.8
Field Conductivity	µS/cm	598	591	717	835	889	750	920	430	698	576	879
Laboratory Conductivity	µS/cm	402	587	754	569	1080	711	947	570	901	778	867
Total Hardness	mg/L	162	220	350	258	280	226	360	195	264	219	298
Nitrate	mg/L	4.17	1.49	5.53	4.03	7.04	0.12	2.39	8.00	3.86	0.72	5.30
Nitrite	mg/L	<0.05	<0.10	<0.10	<0.25	<0.25	<0.05	<0.25	<0.05	<0.25	<0.05	<0.25
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Field pH	SU	7.74	7.83	7.63	7.88	7.01	7.20	7.96	8.25	7.68	6.80	7.66
Laboratory pH	SU	7.97	8.18	8.21	8.19	8.46	7.99	8.23	8.03	8.19	8.32	8.00
Sulphate	mg/L	12.5	19.9	32.5	21.7	60.4	24.1	47.4	31.3	65.4	26.0	41.3
Total Kjeldahl Nitrogen	mg/L	2.98	0.68	0.55	0.62	2.41	0.89	0.81	1.27	1.96	1.06	0.87
Total Phosphorus	mg/L	0.34	0.19	0.11	0.11	0.07	0.09	0.08	0.15	0.07	0.13	0.10
Total Dissolved Solids	mg/L	244	366	416	302	628	398	530	338	494	404	470
Total Suspended Solids	mg/L	255	50	11	28	23	28	22	48	28	43	12
Field Dissolved Oxygen	mg/L	10.89	8.2	10.62	9.2	6.42	8.9	6.83	9.6	8.95	9.90	9.99
Field Temperature	C	15.3	17.8	8.0	2.3	17.5	21.1	15.0	6.4	19.8	22	7.1
Field Flow Rate	L/s	>5000	263	493	964	191	<50	160	1669	<5	1018	749
Total Metals												
Arsenic	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003	-	<0.003	-	<0.003
Barium	mg/L	0.061	-	0.042	-	0.046	-	0.058	-	0.046	-	0.046
Boron	mg/L	0.033	-	0.023	-	0.333	-	0.042	-	0.198	-	0.029
Cadmium	mg/L	0.0001	-	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001
Chromium	mg/L	<0.003	-	<0.003	-	<0.003	-	<0.003	-	<0.003	-	0.006
Copper	mg/L	0.006	-	<0.002	-	0.003	-	0.003	-	0.004	-	0.003
Iron	mg/L	1.42	0.52	0.22	0.325	0.30	0.34	0.37	0.389	0.39	0.53	0.55
Lead	mg/L	0.004	-	<0.001	-	<0.002	-	<0.002	-	<0.002	-	<0.002
Mercury (dissolved)	mg/L	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001	-	<0.0001
Zinc	mg/L	0.016	-	<0.005	-	<0.005	-	<0.005	-	<0.005	-	<0.005

Notes:
- mg/L - milligrams per litre, µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius, L/s - Litres per second
- < indicates parameter concentration not detected above the noted sample detection limit
- Un-ionized ammonia concentration calculated based on the fraction of NH3 (f) in the total ammonia.
  where: f = 1/(10^{pKa-pH})+1)
  pKa=0.09018 + 2729.92/T
  T = ambient water temperature in Kelvin (K = C + 273.16)
- U - parameter was not present at or above the associated detection in the field blank.
- J - estimated value - result interpreted with caution or considered questionable.

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TABLE B-4
ANALYTICAL RESULTS SUMMARY FOR SURFACE WATER - 2006 TO PRESENT
GREEN LANE LANDFILL SITE

Parameter		Dodd Creek Downstream (STA6)			
		27-Mar-17	24-May-17	9-Aug-17	6-Nov-17
General Chemistry					
Alkalinity	mg/L	167	273	499	127
Ammonia	mg/L	0.03	0.19	0.12	<0.02
Un-ionized Ammonia	mg/L	<0.001	0.004	0.007	<0.001
Biological Oxygen Demand	mg/L	<5	<5	<5	<5
Carbonaceous Biological Oxygen Demand	mg/L	<5	<5	<5	<5
Chemical Oxygen Demand	mg/L	26	50	154	24
Chloride	mg/L	63.6	114	449	50.0
Field Conductivity	µS/cm	624	886	2050	390
Laboratory Conductivity	µS/cm	640	1000	2450	507
Total Hardness	mg/L	238	267	211	193
Nitrate	mg/L	8.24	7.31	2.0	9.37
Nitrite	mg/L	<0.10	<0.25	<0.5	<0.05
Phenols	mg/L	<0.001	<0.001	<0.001	<0.001
Field pH	SU	7.75	7.86	8.22	8.16
Laboratory pH	SU	8.14	8.28	8.43	8.03
Sulphate	mg/L	27.8	58.0	201	22.7
Total Kjeldahl Nitrogen	mg/L	0.97	2.17	7.64	1.61
Total Phosphorus	mg/L	0.16	0.05	0.09	0.28
Total Dissolved Solids	mg/L	380	562	1450	342
Total Suspended Solids	mg/L	78	14	12	43
Field Dissolved Oxygen	mg/L	9.55	10.30	6.13	10.76
Field Temperature	C	6.21	16.93	19.32	10.39
Field Flow Rate	L/s	1163	459	<5	793
Total Metals					
Arsenic	mg/L	-	<0.003	-	<0.003
Barium	mg/L	-	0.042	-	0.053
Boron	mg/L	-	0.275	-	0.028
Cadmium	mg/L	-	<0.0001	-	<0.0001
Chromium	mg/L	-	<0.003	-	<0.003
Copper	mg/L	-	0.035	-	0.005
Iron	mg/L	0.443	0.19	0.296	0.52
Lead	mg/L	-	0.002	-	<0.002
Mercury (dissolved)	mg/L	-	<0.0001	-	<0.0001
Zinc	mg/L	-	0.021	-	0.010

Notes:
- mg/L - milligrams per litre, µS/cm - microSiemens per centimetre, SU - Scientific Units, C - degrees Celsius, L/s - Litres per second
- < indicates parameter concentration not detected above the noted sample detection limit
- Un-ionized ammonia concentration calculated based on the fraction of NH3 (f) in the total ammonia.
  where: f = 1/(10^{pKa-pH})+1)
  pKa=0.09018 + 2729.92/T
  T = ambient water temperature in Kelvin (K = C + 273.16)
- U - parameter was not present at or above the associated detection in the field blank.
- J - estimated value - result interpreted with caution or considered questionable.

MEMORANDUM

Date:	January 11, 2018
To:	Joe Ovcjak (WSP)
From:	Albert Siertsema (WSP)
Copy:	Dan Mohr (WSP)
Project No.:	121-25411-00
Subject:	**Green Lane Landfill 2017 Annual Progress Report Data Quality Evaluation**

Project quality assurance and quality control (QA/QC) was embedded through the various stages of sampling and analysis for the 2017 monitoring period. QA/QC during data collection was implemented through the use of standard monitoring protocols and procedures. Field equipment was calibrated regularly as per standard operating procedures. Field observations were documented in a dedicated project field book and photographs were taken. Water samples collected in the field were placed in coolers with ice to maintain a constant temperature of about 4ºC and were delivered or couriered to the laboratory at the end of the day. Technical staff checked monitoring data against historic results in the field to determine that measurements were reasonable. Chemical results were provided by the laboratory in electronic format and downloaded directly into the database to avoid human data entry error. Reports and documents were peer reviewed by senior staff for technical accuracy and quality.

The laboratory QA/QC program included field-prepared duplicate samples, comparisons with field determined analytical results, laboratory-prepared blanks, matrix spikes, duplicates, and percent recovery of analysis and data review.

Analytical results for the field QA/QC sampling completed were evaluated for the relative percent difference (RPD) of parameter concentrations. For concentrations greater than five times the method detection limit (MDL), a concentration difference of less than or equal to 20% was deemed acceptable. For concentrations less than or equal to five times the MDL, a concentration difference of equal to or less than twice the MDL was deemed acceptable.

The field sampling QA/QC program is outlined in the following table.

Media	Monitoring Event	Field-prepared Duplicate (Original Sample)
Groundwater	May 17, 2017	GWDUP1 (OW24B-95)
	May 18, 2017	GWDUP2 (OW51A-07)
	May 24, 2017	GWDUP3 (OW50-01)
	November 7, 2017	OW100 (OW50-01)

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Media	Monitoring Event	Field-prepared Duplicate (Original Sample)
Surface Water	February 9, 2017	SWDUP (STA5)
	March 27, 2017	SWDUP (STA5)
	April 13, 2017	SWDUP (STA5)
	May 24, 2017	SWDUP (STA5)
	June 14, 2017	SWDUP (STA5)
	July 6, 2017	SWDUP (STA5)
	August 9, 2017	STA100 (STA5)
	September 5, 2017	STA100 (STA5)
	November 6, 2017	STA100 (STA5)
	December 6, 2017	STA100 (STA5)

No equipment rinse blanks were collected due to the use of dedicated sampling equipment. Filter blanks were not completed for analysis as part of the 2017 monitoring events.

Data Quality Evaluation – Groundwater

A summary of the 2017 blind duplicate results for groundwater samples is provided in **Table B-5**, attached.

Within the groundwater during May 2017, RPDs were generally acceptable for the tested constituents for GWDUP1, GWDUP2, and GWDUP3. One exception was noted for the RPD between the original and duplicate sample for ammonia concentrations at OW50-01, which was 32%. Acceptable data quality control including laboratory blanks, spiked blanks, laboratory duplicates, and laboratory percent recoveries of analysis indicated that the detected constituent concentrations were accurate and reflected actual groundwater conditions at the time of sample collection and are acceptable for inclusion into the database.

Within the groundwater during November 2017, RPDs were genearally acceptable for the tested constituents for OW100. One exception was noted for the RPD between the original and duplicate sample for DOC concentrations at OW50-01, which was 21%. Acceptable data quality control including laboratory blanks, spiked blanks, laboratory duplicates, and laboratory percent recoveries of analysis indicated that the detected constituent concentrations were accurate and reflected actual groundwater conditions at the time of sample collection and are acceptable for inclusion into the database.

Field temperatures recorded during the semi-annual monitoring events were reasonable, which varied between 9.6 and 14.3 °C. The field analytical values recorded for pH were reasonable and varied between 6.94 and 8.40 pH units. As expected in clayey silt soil, field conductivity values varied, with a range of 280 to 760 µS/cm for conductivity within groundwater monitoring wells.

Ion balances were calculated as a quality assurance procedure. Considering major ions and cations, an ion balance difference of 10% would initiate a thorough review of the chemical results and laboratory procedures. Ion charge balance errors in the groundwater were less than ten percent in May 2017. Ion charge balances could not be calculated for the November 2017 chemical results, as the full suite of parameters is not tested during the November groundwater event.

In summary, the field and laboratory QA/QC results indicated that the groundwater chemical results were representative of actual conditions at the time of sample collection.

Data Quality Evaluation – Surface Water

A summary of the 2017 blind duplicate results for surface water samples is provided in **Table B-5**, attached.

Within the surface water during 2017, RPDs were acceptable for the tested constituents of the applicable duplicate samples. Therefore, all of the surface water samples were considered representative of actual surface water quality at the time of sample collection and were considered in the compliance assessment.

During the 2017 monitoring events, the surface water temperatures varied between about 0.3 and 22.4 ^{o}C, which reflected the ambient air temperature during sampling. Field pH and conductivity values fluctuated with no notable anomalies.

In summary, the field and laboratory QA/QC results indicated that the surface water chemical results were representative of actual conditions at the time of sample collection

TABLE B-5
SUMMARY OF BLIND DUPLICATE SAMPLE RESULTS - SURFACE WATER
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MDL	9-Feb-17			27-Mar-17			13-Apr-17		
		Original	Duplicate	RPD	Original	Duplicate	RPD	Original	Duplicate	RPD
		STA5	SWDUP		STA5	SWDUP		STA5	SWDUP	
General Chemistry										
Alkalinity	5	124	123	1	158	158	0	209	210	0
Ammonia	0.02	<0.02	<0.02	<2MDL	0.03	0.02	<2MDL	0.03	0.04	<2MDL
Biological Oxygen Demand	5	<5	<5	<2MDL	<5	<5	<2MDL	<5	<5	<2MDL
Carbonaceous Biological Oxygen Demand	5	-	-	-	<5	<5	<2MDL	-	-	-
Chemical Oxygen Demand	5	22	23	4	21	21	0	15	16	6
Chloride	0.50	23.7	23.6	0	57.5	57.3	0	36.9	41.0	11
Laboratory Conductivity (µS/cm)	2	395	393	1	594	611	3	608	604	1
Total Hardness	0.5	177	178	1	231	236	2	269	271	1
Nitrate	0.25	7.31	7.29	0	8.15	8.45	4	6.91	7.45	8
Nitrite	0.25	<0.05	<0.05	<2MDL	<0.10	<0.10	<2MDL	<0.10	<0.10	<2MDL
Phenols	0.001	<0.001	<0.001	<2MDL	<0.001	<0.001	<2MDL	<0.001	<0.001	<2MDL
Sulphate	0.50	19.4	19.4	0	27.6	28.2	2	26.7	28.0	5
Total Kjeldahl Nitrogen	0.10	1.19	1.21	2	0.98	0.97	1	0.38	0.43	12
Total Phosphorus	0.02	0.19	0.18	5	0.17	0.16	6	0.05	0.05	0
Total Dissolved Solids	20	290	294	1	358	366	2	350	340	3
Total Suspended Solids	10	45	44	2	82	70	16	18	20	11
Calcium	0.05	55.9	56.1	0	-	-	-	83.4	83.7	0
Magnesium	0.05	9.18	9.16	0	-	-	-	14.8	15.0	1
Sodium	0.05	7.62	7.81	2	-	-	-	14.1	14.1	0
Total Metals										
Arsenic	0.003	-	-	-	-	-	-	-	-	-
Barium	0.002	-	-	-	-	-	-	-	-	-
Boron	0.010	-	-	-	-	-	-	-	-	-
Cadmium	0.0001	-	-	-	-	-	-	-	-	-
Chromium	0.003	-	-	-	-	-	-	-	-	-
Copper	0.002	-	-	-	-	-	-	-	-	-
Iron	0.010	0.406	0.463	13	0.386	0.417	8	0.183	0.196	7
Lead	0.001	-	-	-	-	-	-	-	-	-
Mercury (dissolved)	0.0001	-	-	-	-	-	-	-	-	-
Zinc	0.005	-	-	-	-	-	-	-	-	-

Notes:
- All concentrations are mg/L, unless otherwise noted.
- mg/L - milligrams per litre
- µS/cm - microSiemens per centimetre
- MDL - Method Detection Limit
- < indicates parameter concentration not detected above the noted sample detection limit
- <2MDL - Less than two times the Method Detection Limit
- RPD - Relative Percent Difference
- Bold values exceed an RPD of 20% or are greater than 2x MDL

TABLE B-5
SUMMARY OF BLIND DUPLICATE SAMPLE RESULTS - SURFACE WATER
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MDL	24-May-17 Original STA5	24-May-17 Duplicate SWDUP	24-May-17 RPD	14-Jun-17 Original STA5	14-Jun-17 Duplicate SWDUP	14-Jun-17 RPD	6-Jul-17 Original STA5	6-Jul-17 Duplicate SWDUP	6-Jul-17 RPD
General Chemistry										
Alkalinity	5	236	239	1	262	226	15	222	225	1
Ammonia	0.02	0.10	0.08	<2MDL	0.09	0.06	<2MDL	0.02	<0.02	<2MDL
Biological Oxygen Demand	5	<5	<5	<2MDL	<5	<5	<2MDL	<5	<5	<2MDL
Carbonaceous Biological Oxygen Demand	5	<5	<5	<2MDL	-	-	-	-	-	-
Chemical Oxygen Demand	5	22	24	9	33	32	3	28	27	4
Chloride	0.50	48.6	55.1	13	73.0	73.3	0	52.2	52.2	0
Laboratory Conductivity (µS/cm)	2	676	676	0	810	811	0	724	721	0
Total Hardness	0.5	299	297	1	261	262	0	254	252	1
Nitrate	0.25	7.34	7.92	8	2.16	2.06	5	4.52	4.50	0
Nitrite	0.25	<0.25	<0.25	<2MDL	0.05	<0.05	<2MDL	<0.05	<0.05	<2MDL
Phenols	0.001	<0.001	<0.001	<2MDL	<0.001	<0.001	<2MDL	<0.001	<0.001	<2MDL
Sulphate	0.50	26.8	28.2	5	33.2	31.4	6	32.3	32.2	0
Total Kjeldahl Nitrogen	0.10	0.68	0.71	4	1.08	1.19	10	0.71	0.80	12
Total Phosphorus	0.01	0.03	0.03	0	0.06	0.06	0	0.05	0.05	0
Total Dissolved Solids	20	384	388	1	390	396	2	378	378	0
Total Suspended Solids	10	<10	<10	<2MDL	14	14	0	13	13	0
Calcium	0.05	-	-	-	73.1	72.9	0	73.4	73.1	0
Magnesium	0.05	-	-	-	19.1	19.4	2	17.2	16.8	2
Sodium	0.05	-	-	-	38.1	38.2	0	25.1	25.1	0
Total Metals										
Arsenic	0.003	<0.003	<0.003	<2MDL	-	-	-	-	-	-
Barium	0.002	0.038	0.038	0	-	-	-	-	-	-
Boron	0.010	0.023	0.027	16	-	-	-	-	-	-
Cadmium	0.0001	<0.0001	<0.0001	<2MDL	-	-	-	-	-	-
Chromium	0.003	<0.003	<0.003	<2MDL	-	-	-	-	-	-
Copper	0.002	0.002	<0.002	<2MDL	-	-	-	-	-	-
Iron	0.01	0.11	0.10	10	0.141	0.122	14	0.191	0.165	15
Lead	0.001	<0.001	<0.001	<2MDL	-	-	-	-	-	-
Mercury (dissolved)	0.0001	<0.0001	<0.0001	<2MDL	-	-	-	-	-	-
Zinc	0.005	<0.005	<0.005	<2MDL	-	-	-	-	-	-

Notes:
- All concentrations are mg/L, unless otherwise noted.
- mg/L - milligrams per litre
- µS/cm - microSiemens per centimetre
- MDL - Method Detection Limit
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- RPD - Relative Percent Difference
- Bold values exceed an RPD of 20% or are greater than 2x MDL

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TABLE B-5
SUMMARY OF BLIND DUPLICATE SAMPLE RESULTS - SURFACE WATER
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MDL	9-Aug-17 Original STA5	9-Aug-17 Duplicate STA100	9-Aug-17 RPD	5-Sep-17 Original STA5	5-Sep-17 Duplicate STA100	5-Sep-17 RPD	6-Nov-17 Original STA5	6-Nov-17 Duplicate STA100	6-Nov-17 RPD
General Chemistry										
Alkalinity	5	285	283	1	333	333	0	122	121	1
Ammonia	0.02	<0.02	<0.02	<2MDL	0.03	0.03	0	<0.02	<0.02	<2MDL
Biological Oxygen Demand	5	<5	<5	<2MDL	7	6	15	<5	<5	<2MDL
Carbonaceous Biological Oxygen Demand	5	<5	<5	<2MDL	-	-	-	<5	<5	<2MDL
Chemical Oxygen Demand	10	104	102	2	132	121	9	27	27	0
Chloride	0.50	236	232	2	300	294	2	45.3	45.0	1
Laboratory Conductivity (µS/cm)	2	1400	1390	1	1780	1780	0	496	491	1
Total Hardness	0.5	214	215	0	177	177	0	199	202	1
Nitrate	0.25	0.25	0.25	0	<0.5	<0.5	<2MDL	10.8	10.9	1
Nitrite	0.25	<0.25	<0.25	<2MDL	<0.5	<0.5	<2MDL	<0.05	<0.05	<2MDL
Phenols	0.001	<0.001	<0.001	<2MDL	<0.001	<0.001	<2MDL	<0.001	<0.001	<2MDL
Sulphate	0.50	75.1	73.9	2	97.1	96.1	1	24.1	24.2	0
Total Kjeldahl Nitrogen	0.10	3.54	3.48	2	5.73	6.21	8	1.59	1.46	9
Total Phosphorus	0.02	0.09	0.09	0	0.48	0.52	8	0.25	0.25	0
Total Dissolved Solids	20	778	780	0	1030	1000	3	360	356	1
Total Suspended Solids	10	33	33	0	207	206	0	37	37	0
Calcium	0.05	-	-	-	29.8	29.8	0	-	-	-
Magnesium	0.05	-	-	-	24.8	24.9	0	-	-	-
Sodium	0.05	-	-	-	268	271	1	-	-	-
Total Metals										
Arsenic	0.003	-	-	-	-	-	-	<0.003	<0.003	<2MDL
Barium	0.002	-	-	-	-	-	-	0.051	0.058	13
Boron	0.010	-	-	-	-	-	-	0.030	0.029	3
Cadmium	0.0001	-	-	-	-	-	-	<0.0001	<0.0001	<2MDL
Chromium	0.003	-	-	-	-	-	-	<0.003	<0.003	<2MDL
Copper	0.002	-	-	-	-	-	-	0.005	0.005	0
Iron	0.01	0.26	0.24	7	0.977	0.993	2	0.48	0.56	15
Lead	0.001	-	-	-	-	-	-	<0.002	<0.002	<2MDL
Mercury (dissolved)	0.0001	-	-	-	-	-	-	<0.0001	<0.0001	<2MDL
Zinc	0.005	-	-	-	-	-	-	0.009	0.008	12

Notes:
- All concentrations are mg/L, unless otherwise noted.
- mg/L - milligrams per litre
- µS/cm - microSiemens per centimetre
- MDL - Method Detection Limit
- < indicates parameter concentration not detected above the noted sample detection limit
- <2MDL - Less than two times the Method Detection Limit
- RPD - Relative Percent Difference
- Bold values exceed an RPD of 20% or are greater than 2x MDL

TABLE B-5
SUMMARY OF BLIND DUPLICATE SAMPLE RESULTS - SURFACE WATER
2017 ANNUAL PROGRESS REPORT
GREEN LANE LANDFILL SITE

Parameter	MDL	Original STA5 (6-Dec-17)	Duplicate STA100 (6-Dec-17)	RPD
General Chemistry				
Alkalinity	5	158	153	3
Ammonia	0.02	<0.02	<0.02	<2MDL
Biological Oxygen Demand	5	<5	<5	<2MDL
Carbonaceous Biological Oxygen Demand	5	-	-	-
Chemical Oxygen Demand	10	31	29	7
Chloride	0.20	49.7	49.5	0
Laboratory Conductivity (µS/cm)	2	566	567	0
Total Hardness	0.5	219	217	1
Nitrate	0.10	8.76	8.64	1
Nitrite	0.10	<0.10	<0.10	<2MDL
Phenols	0.001	<0.001	<0.001	<2MDL
Sulphate	0.20	25.2	24.8	2
Total Kjeldahl Nitrogen	0.10	0.95	0.94	1
Total Phosphorus	0.04	0.22	0.21	5
Total Dissolved Solids	20	342	348	2
Total Suspended Solids	10	34	24	<2MDL
Calcium	0.05	67.5	66.8	1
Magnesium	0.05	12.2	12.3	1
Sodium	0.05	20.2	20.9	3
Total Metals				
Arsenic	0.003	-	-	-
Barium	0.002	-	-	-
Boron	0.010	-	-	-
Cadmium	0.0001	-	-	-
Chromium	0.003	-	-	-
Copper	0.002	-	-	-
Iron	0.01	3.80	4.26	11
Lead	0.001	-	-	-
Mercury (dissolved)	0.0001	-	-	-
Zinc	0.005	-	-	-

Notes:
- All concentrations are mg/L, unless otherwise noted.
- mg/L - milligrams per litre
- µS/cm - microSiemens per centimetre
- MDL - Method Detection Limit
- < indicates parameter concentration not detected above the noted sample detection limit
- <2MDL - Less than two times the Method Detection Limit
- RPD - Relative Percent Difference
- Bold values exceed an RPD of 20% or are greater than 2x MDL

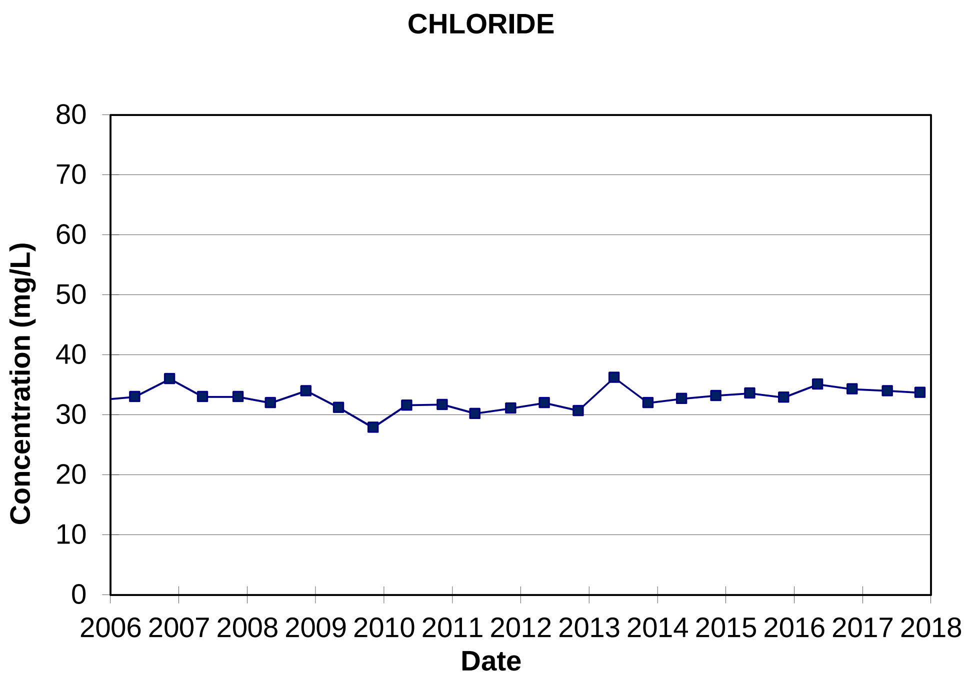
APPENDIX

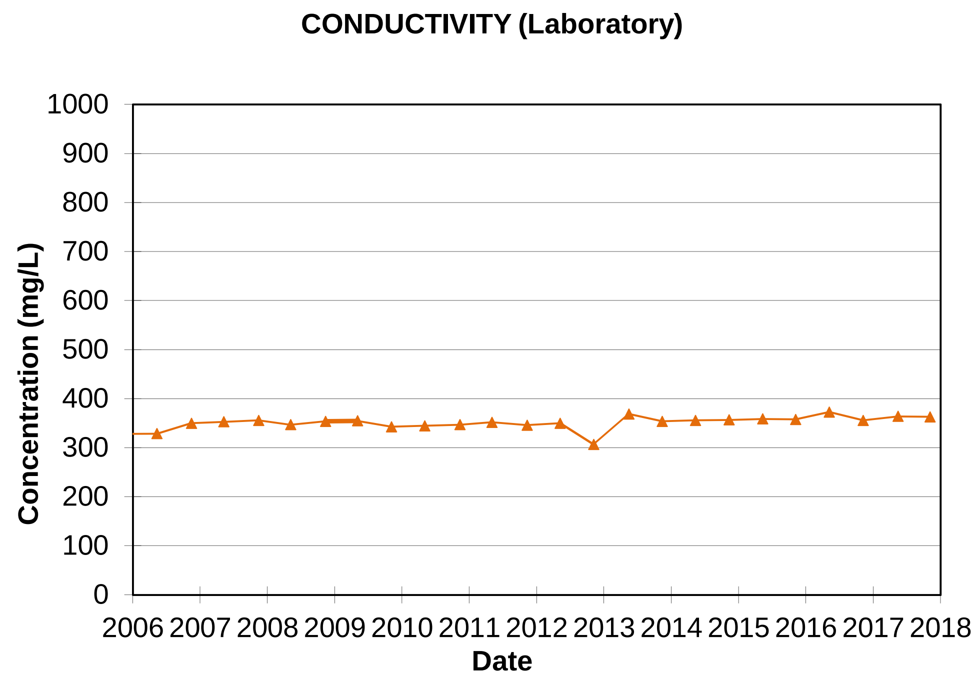
C

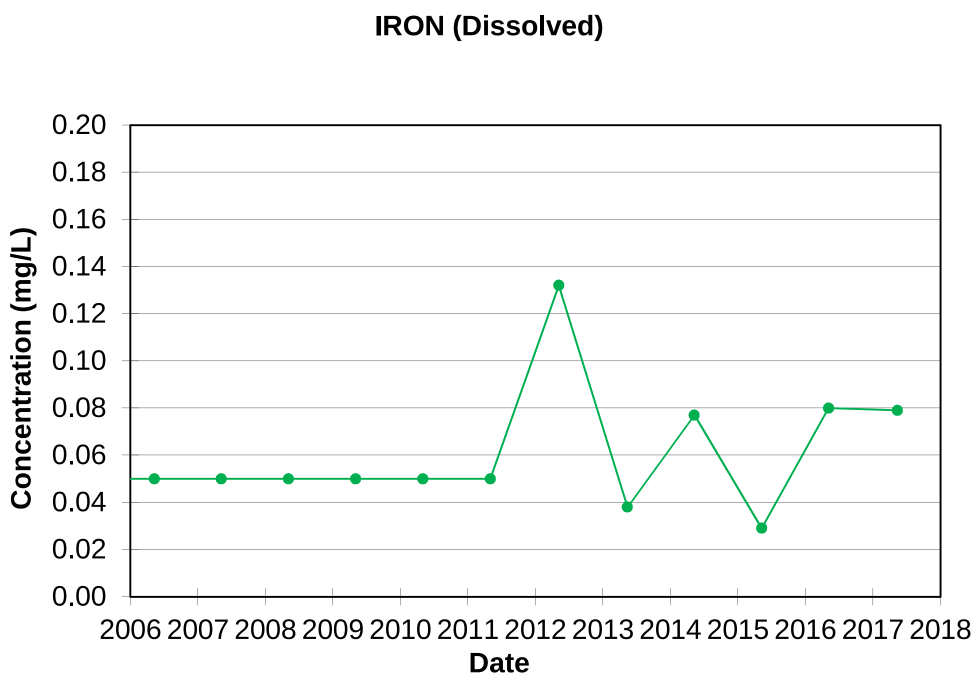
HISTORICAL WATER DATA GRAPHS – OBSERVATION WELLS

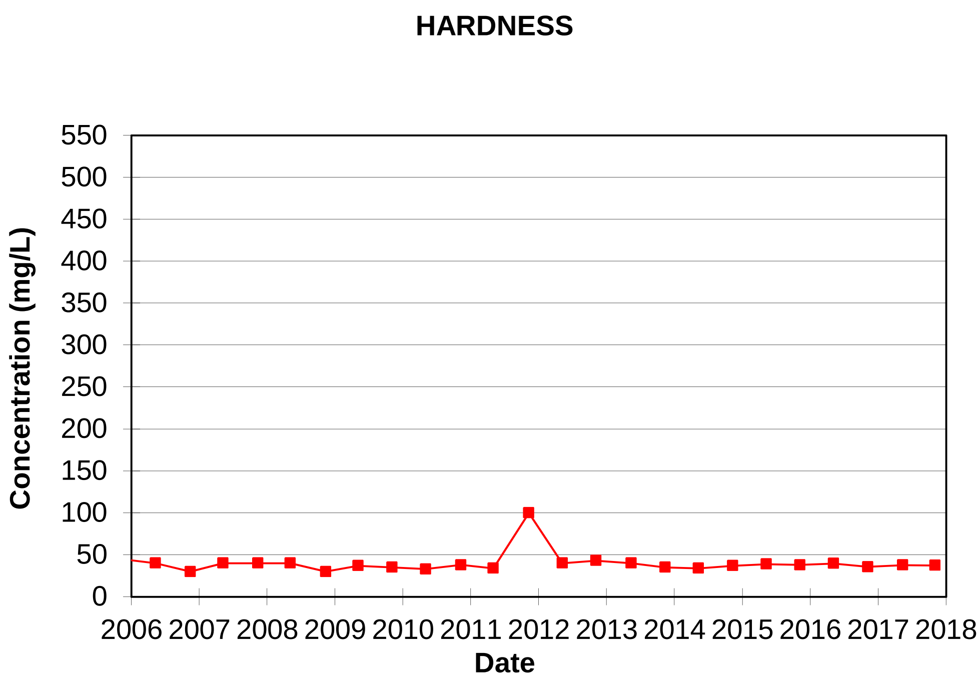
FIGURE C-1 - OW20-91

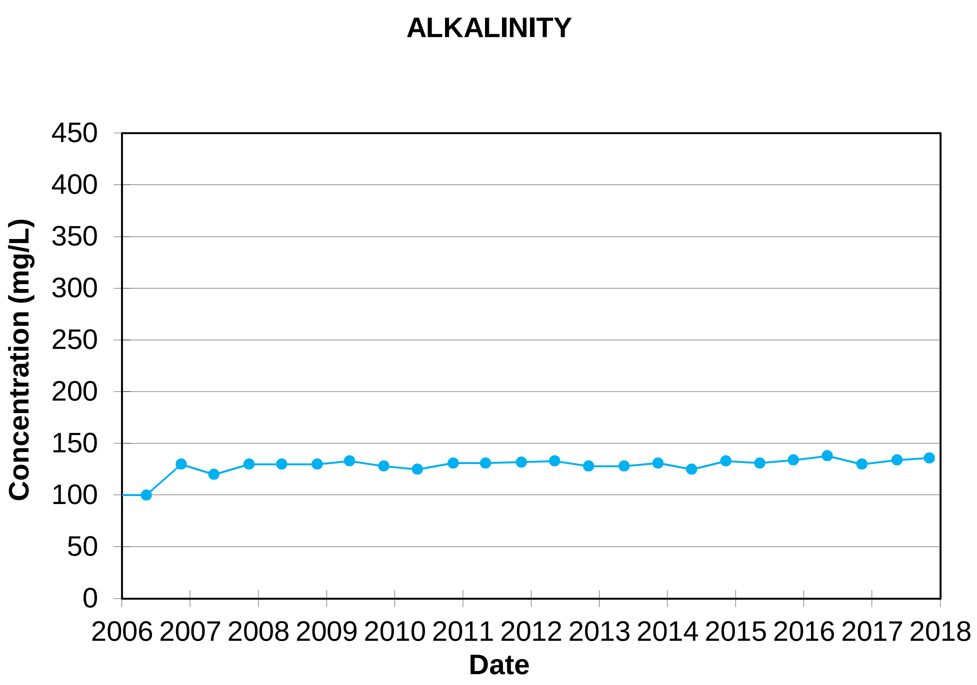
GREEN LANE LANDFILL SITE











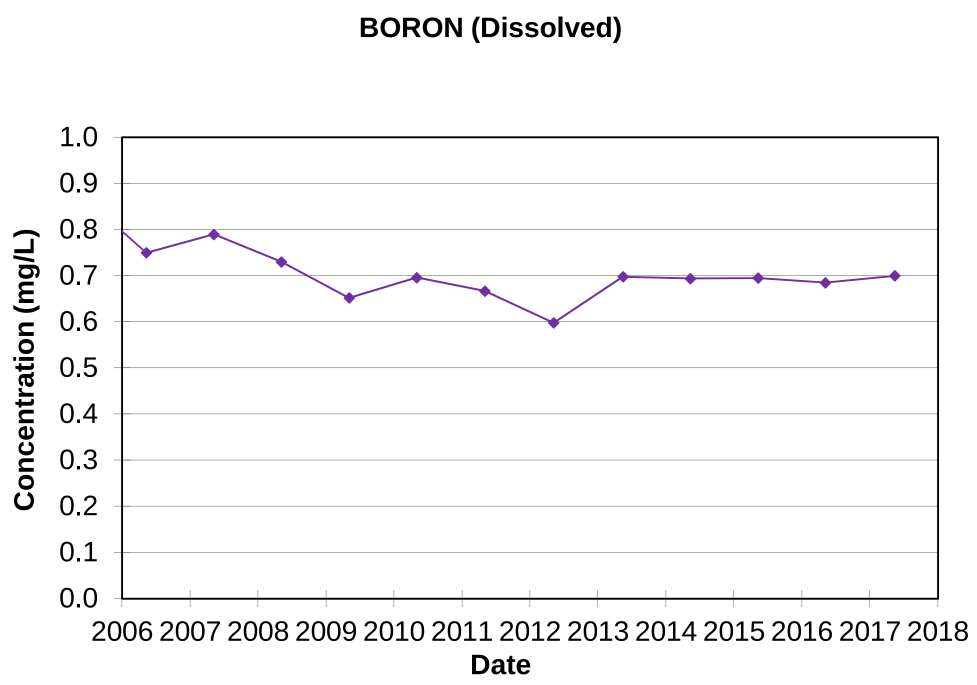
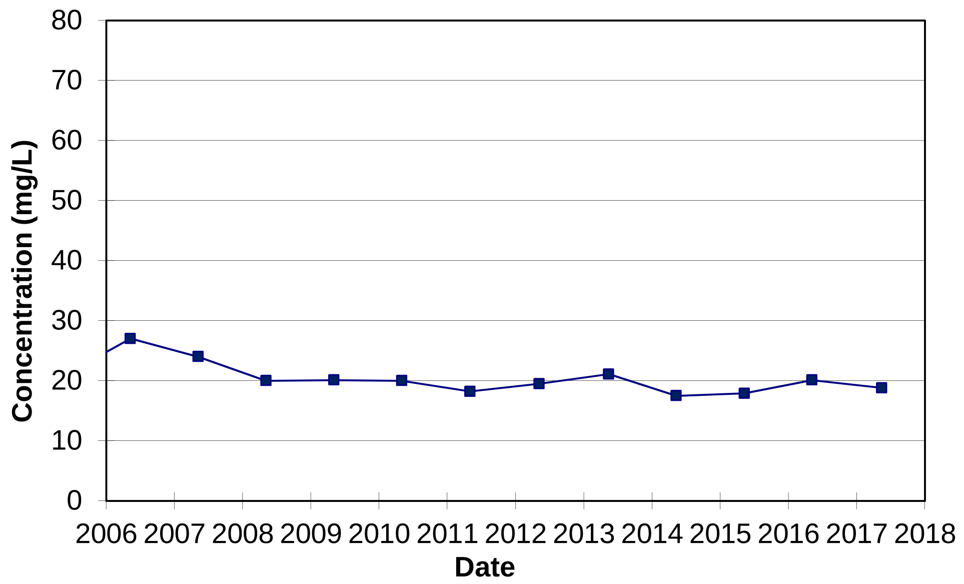


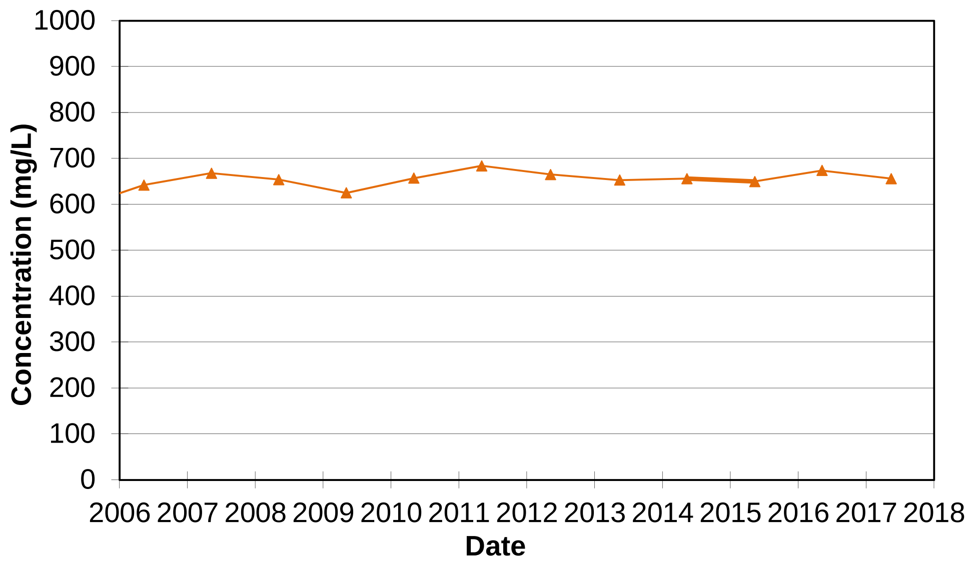
FIGURE C-2 - OW23B-95

GREEN LANE LANDFILL SITE

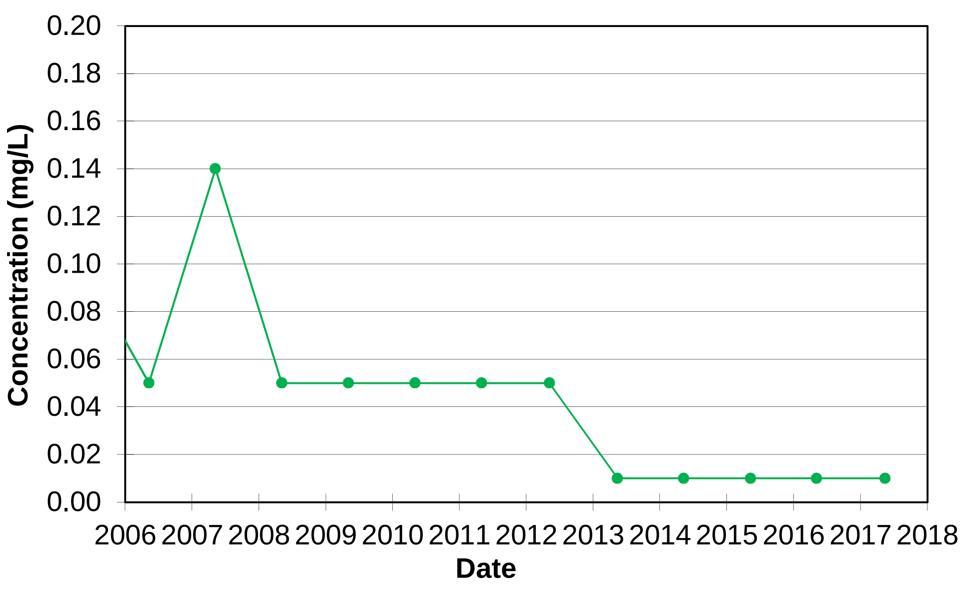
CHLORIDE



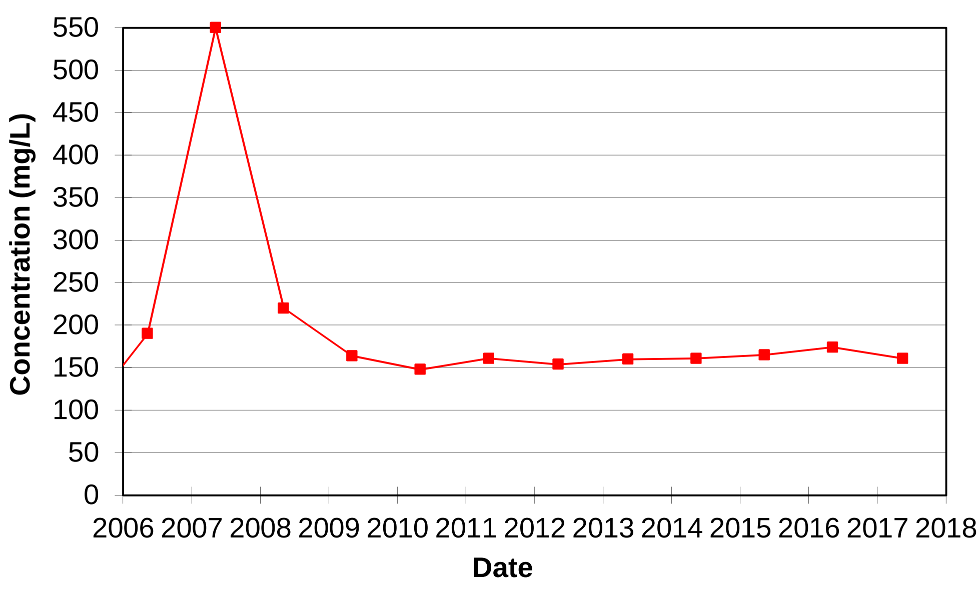
CONDUCTIVITY (Laboratory)



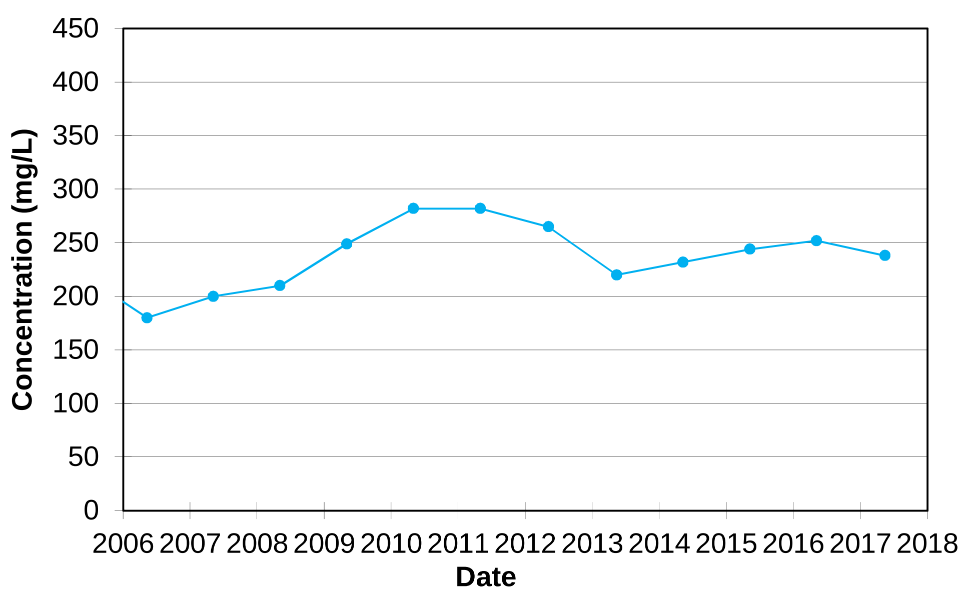
IRON (Dissolved)



HARDNESS



ALKALINITY



BORON (Dissolved)

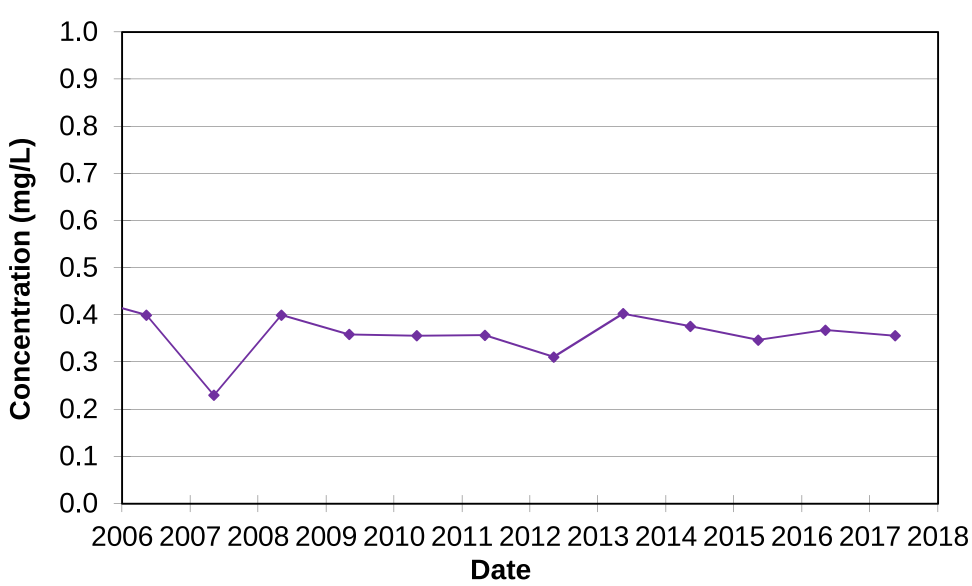
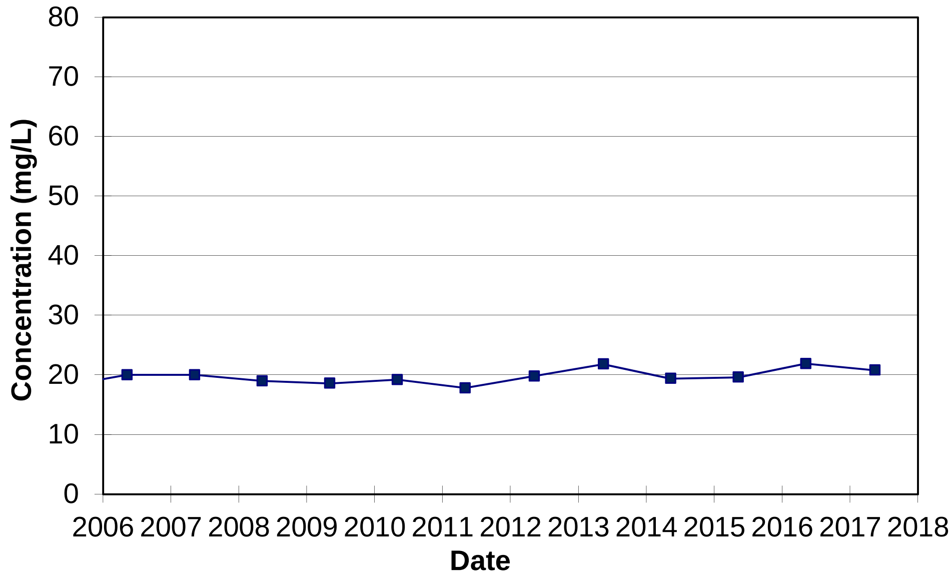


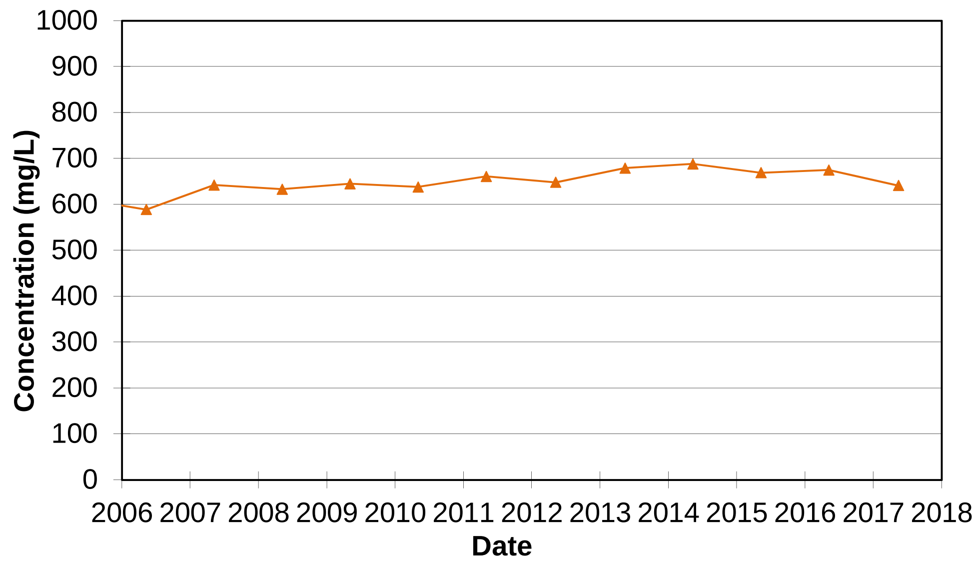
FIGURE C-3 - OW24B-95

GREEN LANE LANDFILL SITE

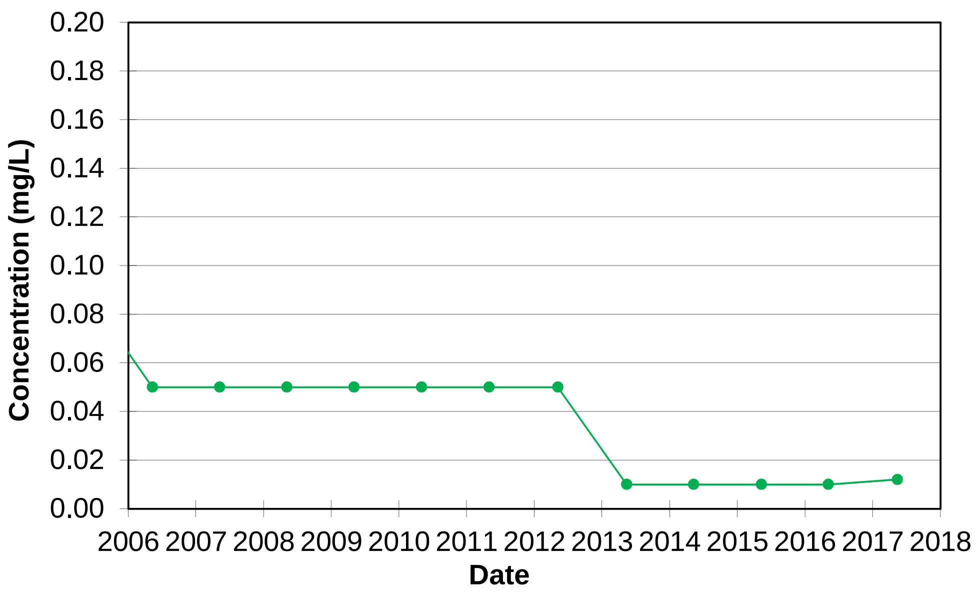
CHLORIDE



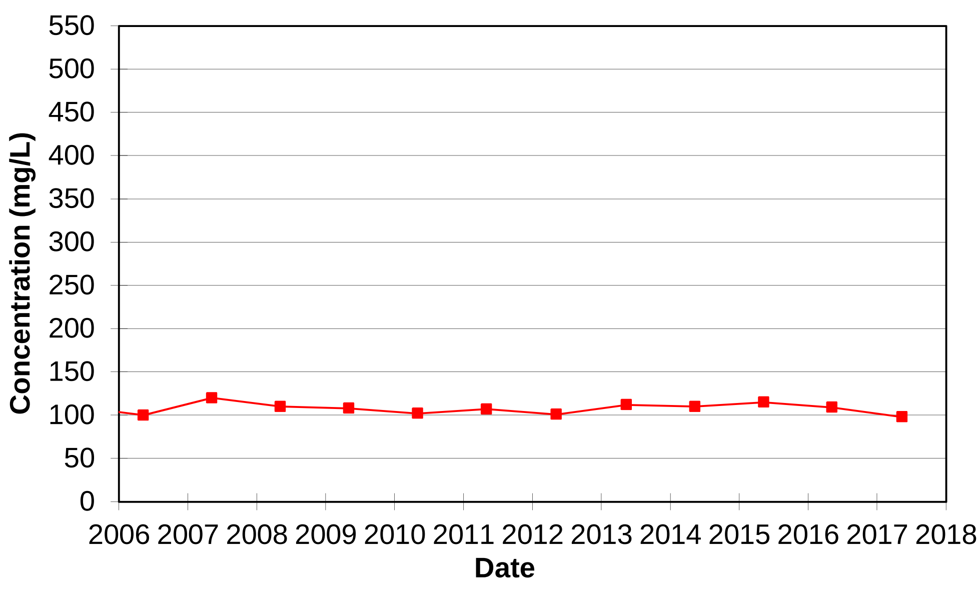
CONDUCTIVITY (Laboratory)



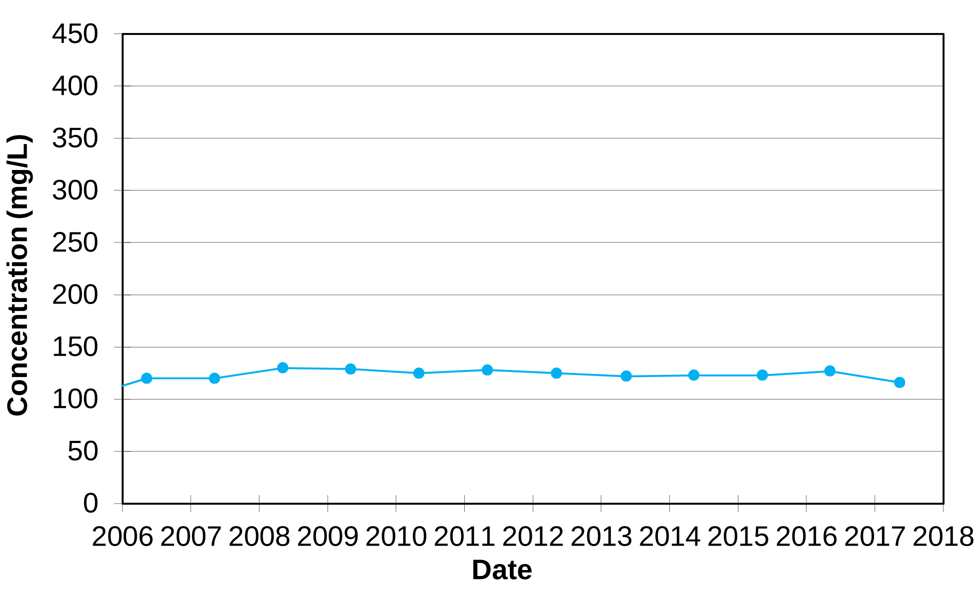
IRON (Dissolved)



HARDNESS



ALKALINITY



BORON (Dissolved)

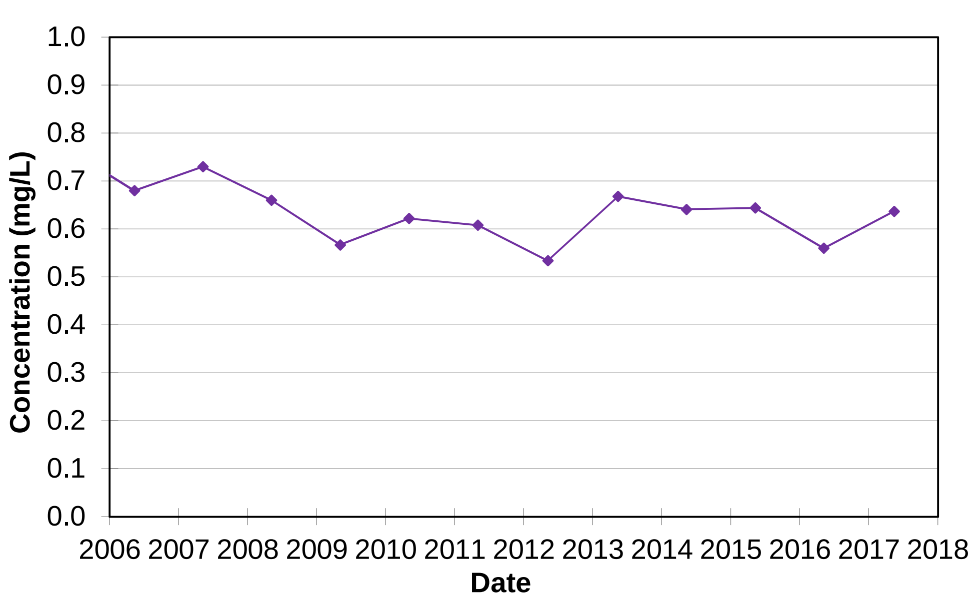
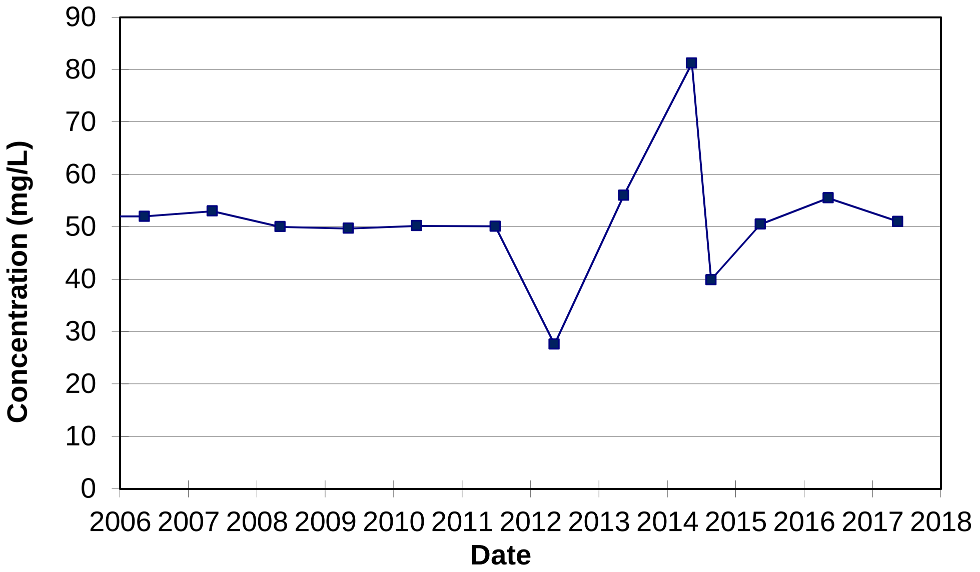


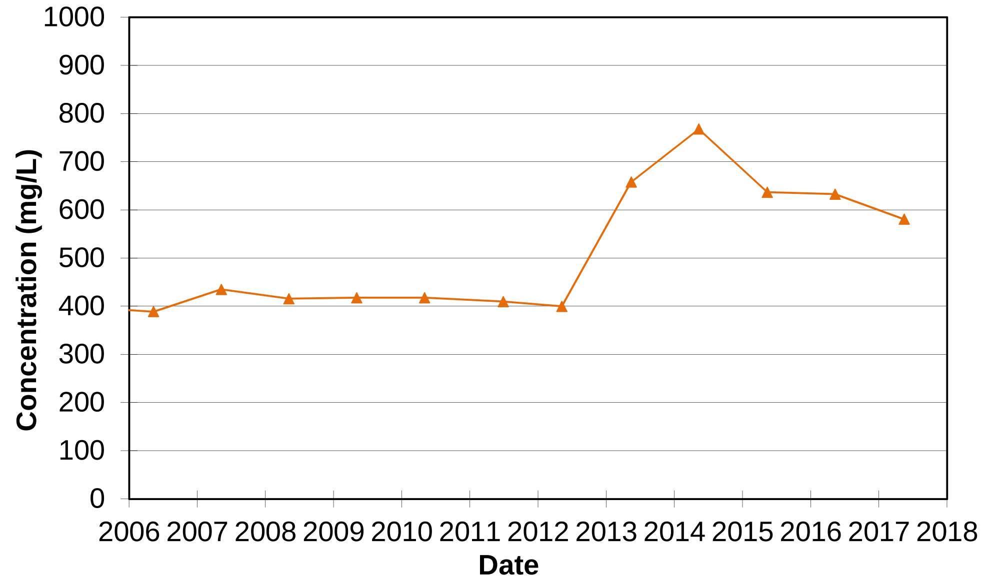
FIGURE C-4 - OW27A-95

GREEN LANE LANDFILL SITE

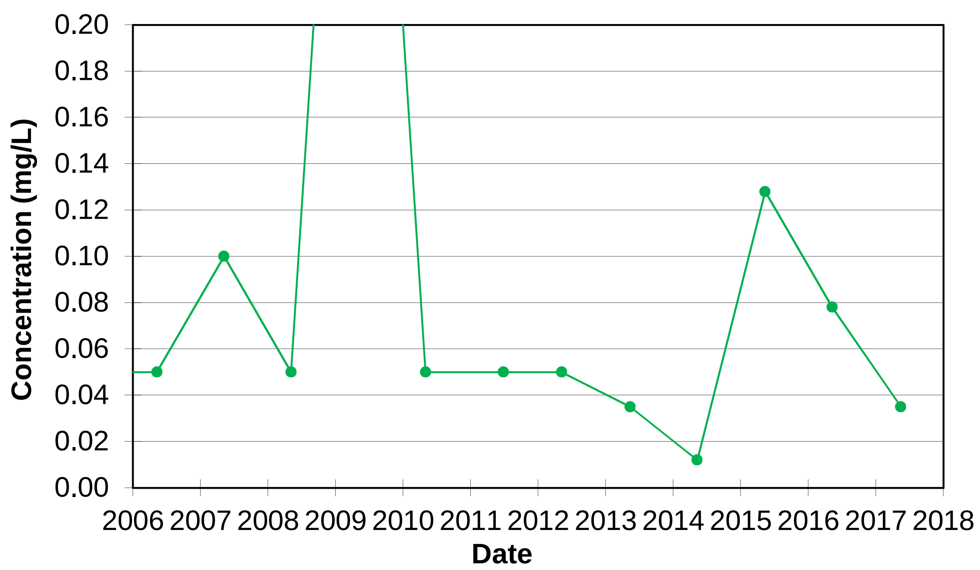
CHLORIDE



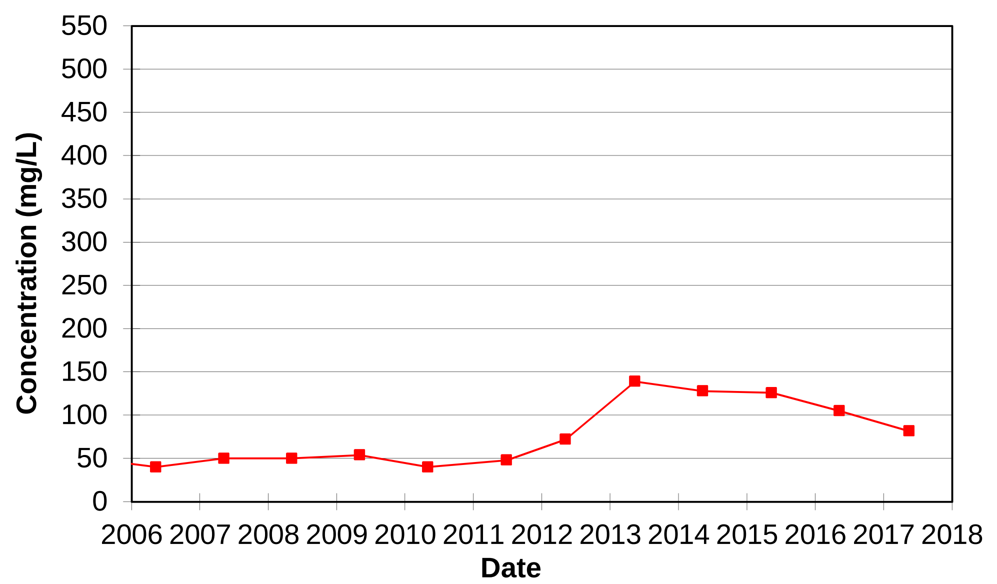
CONDUCTIVITY (Laboratory)



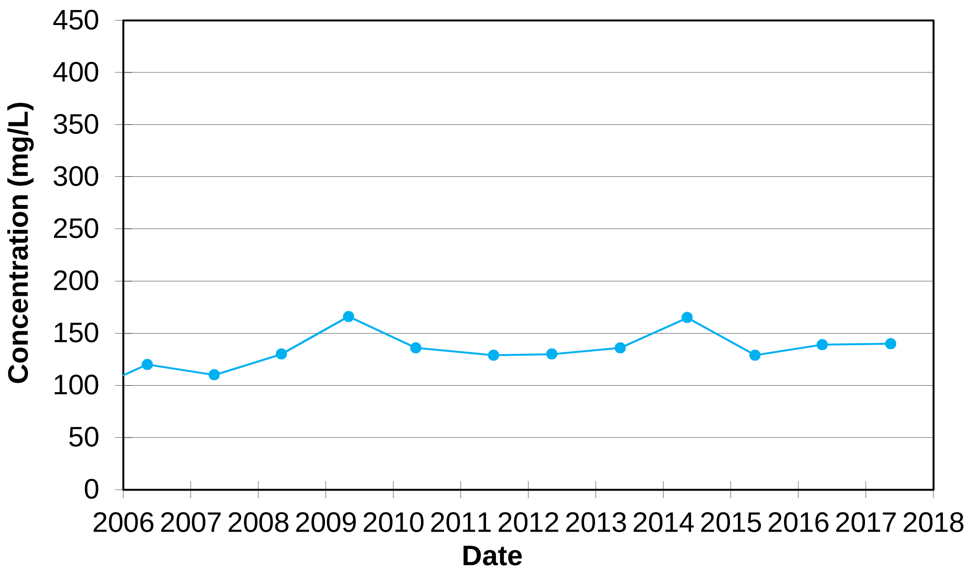
IRON (Dissolved)



HARDNESS



ALKALINITY



BORON (Dissolved)

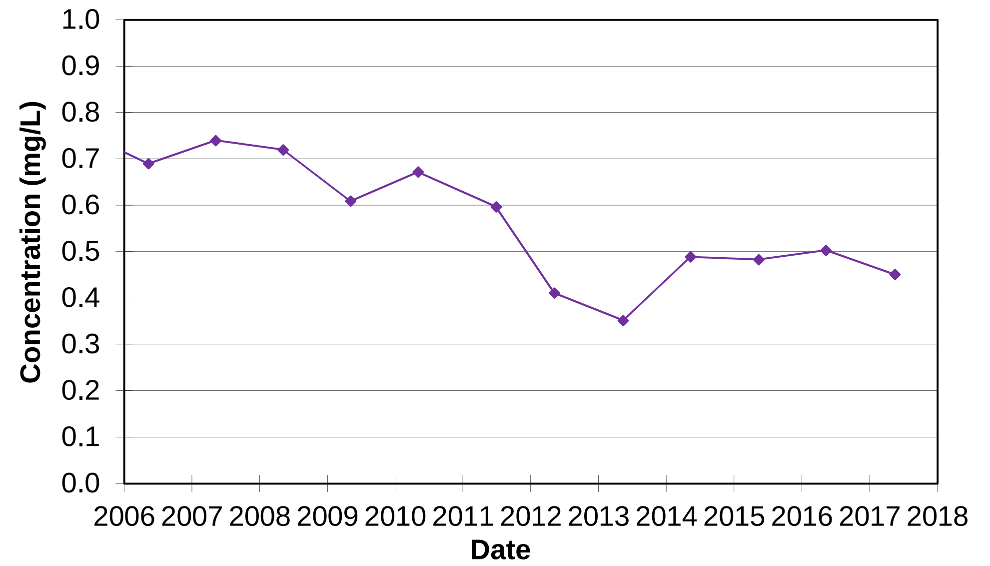
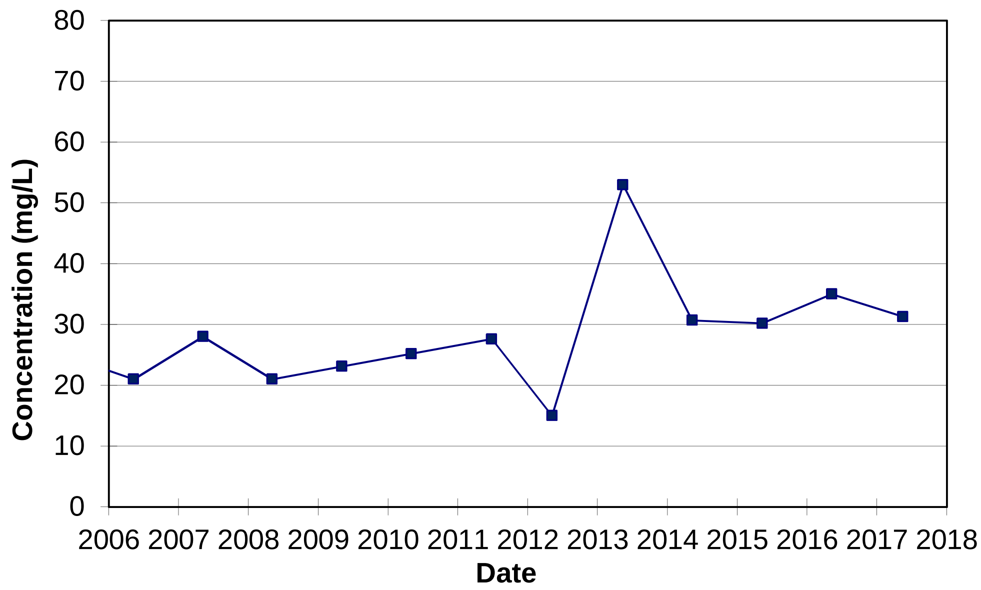


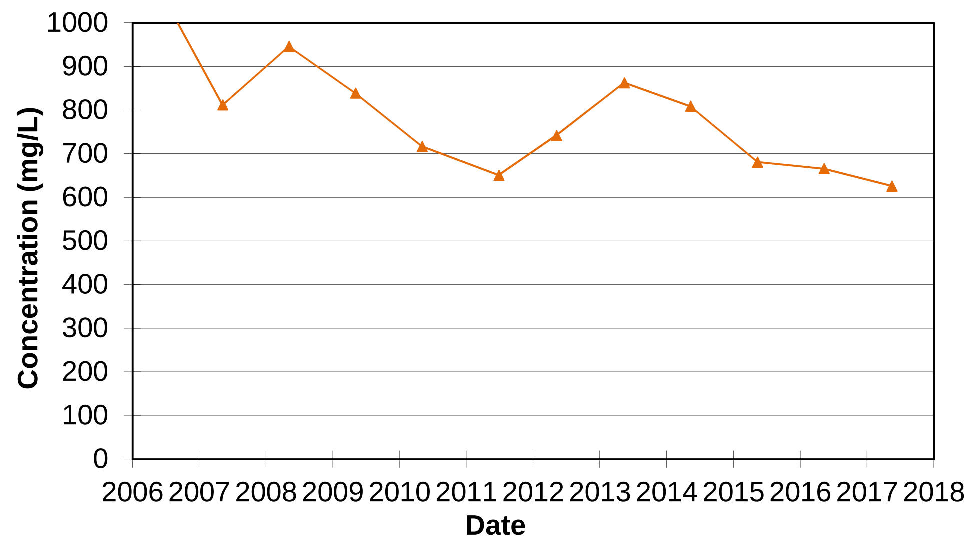
FIGURE C-5 - OW27B-95

GREEN LANE LANDFILL SITE

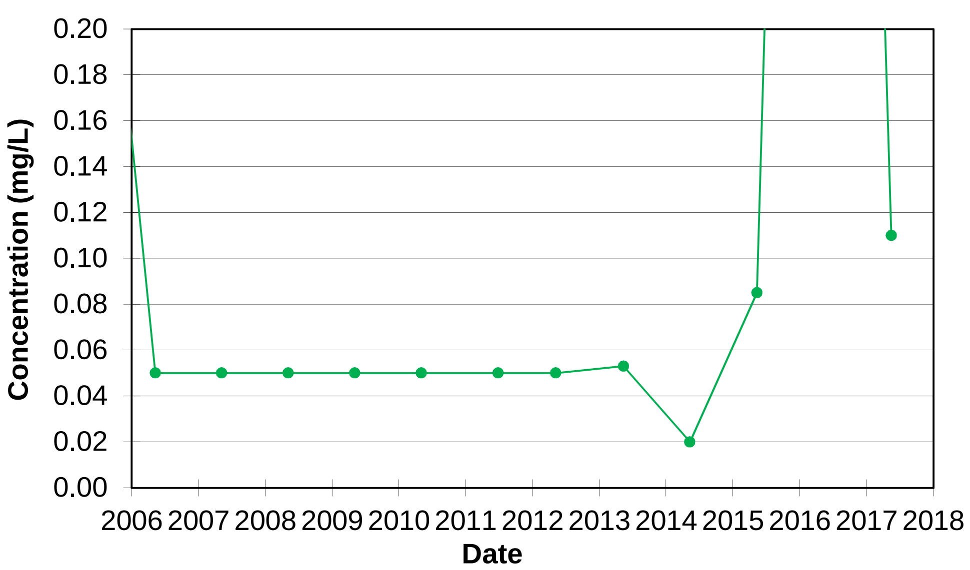
CHLORIDE



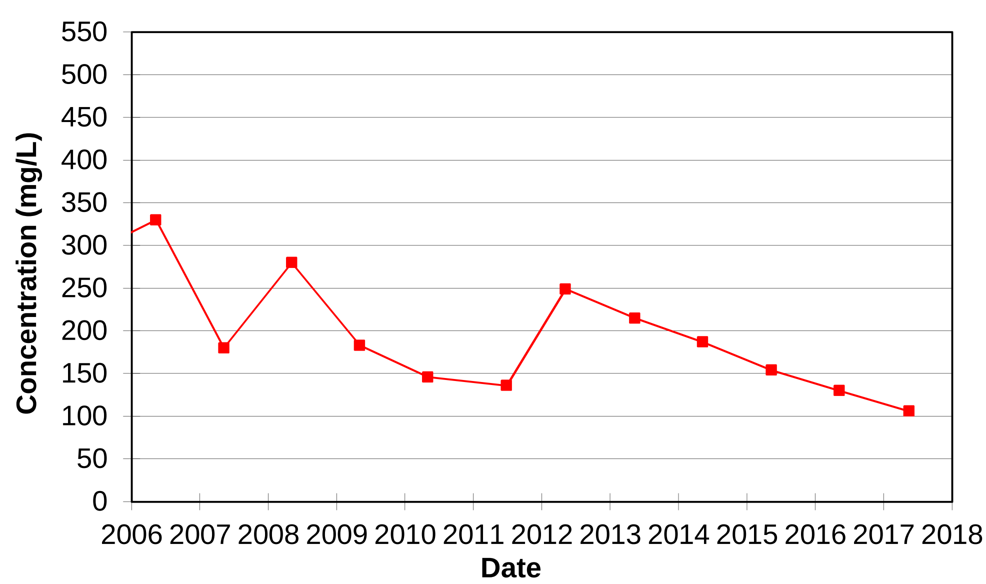
CONDUCTIVITY (Laboratory)



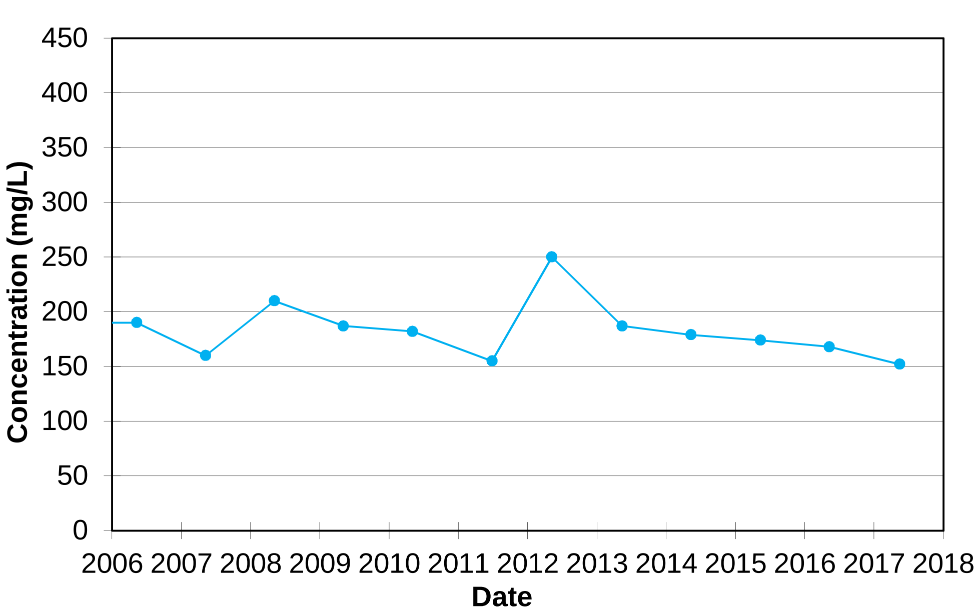
IRON (Dissolved)



HARDNESS



ALKALINITY



BORON (Dissolved)

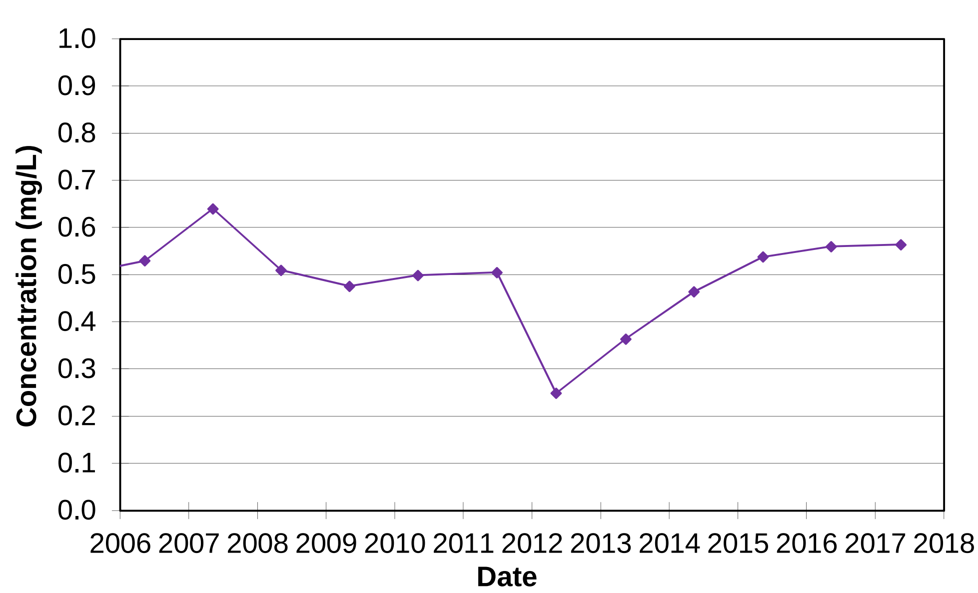
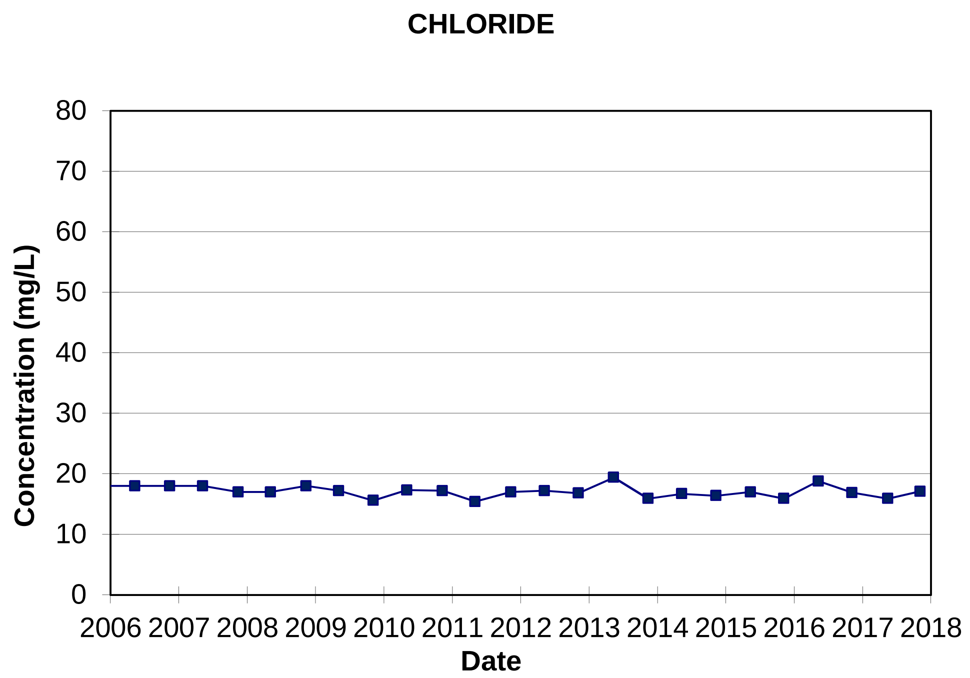
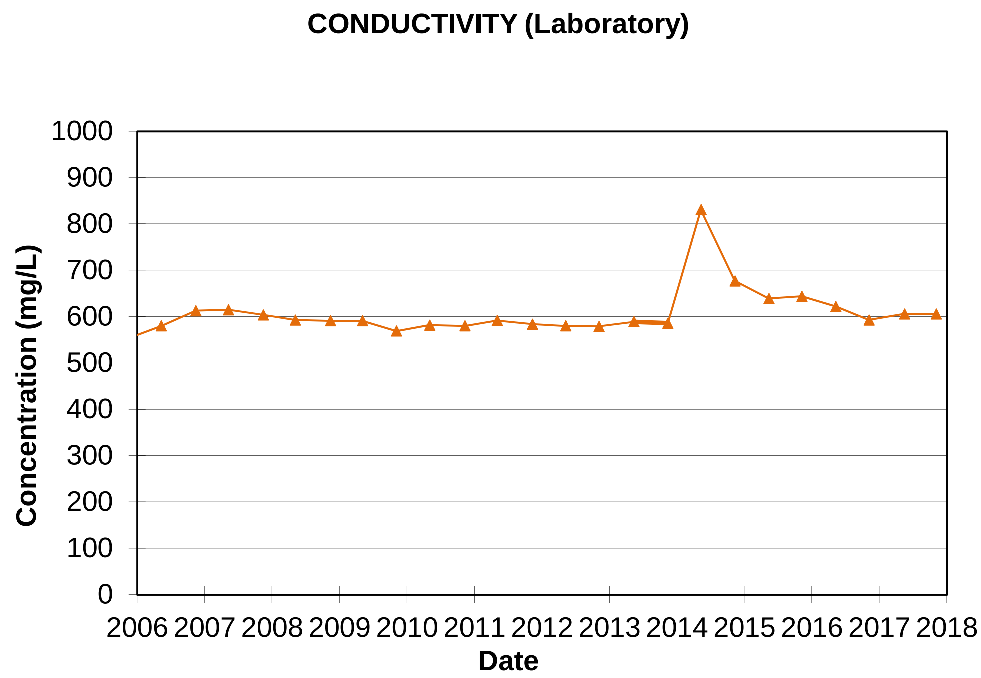
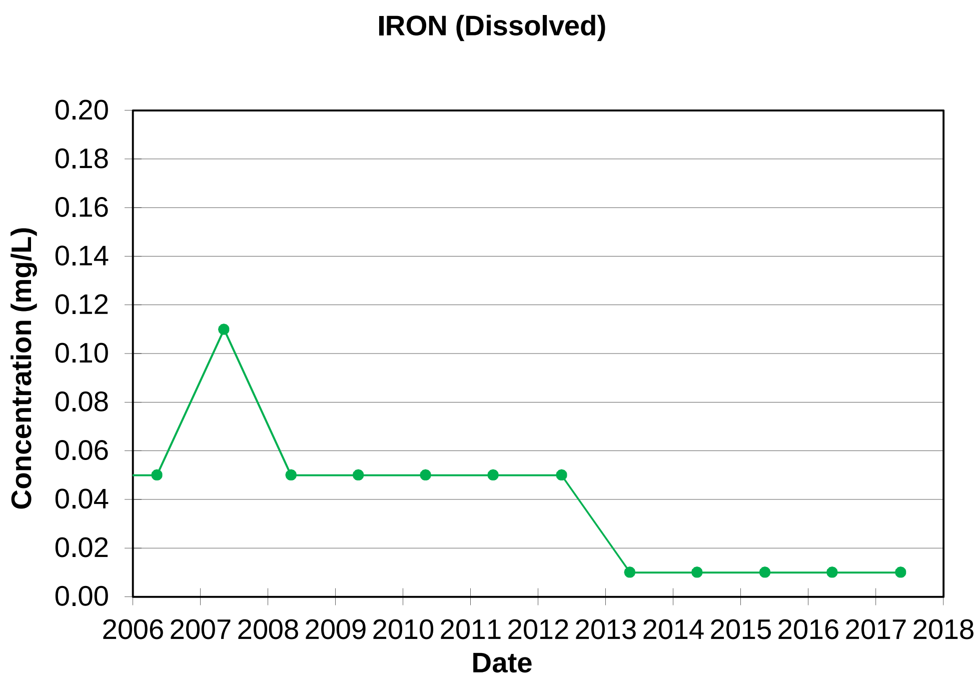


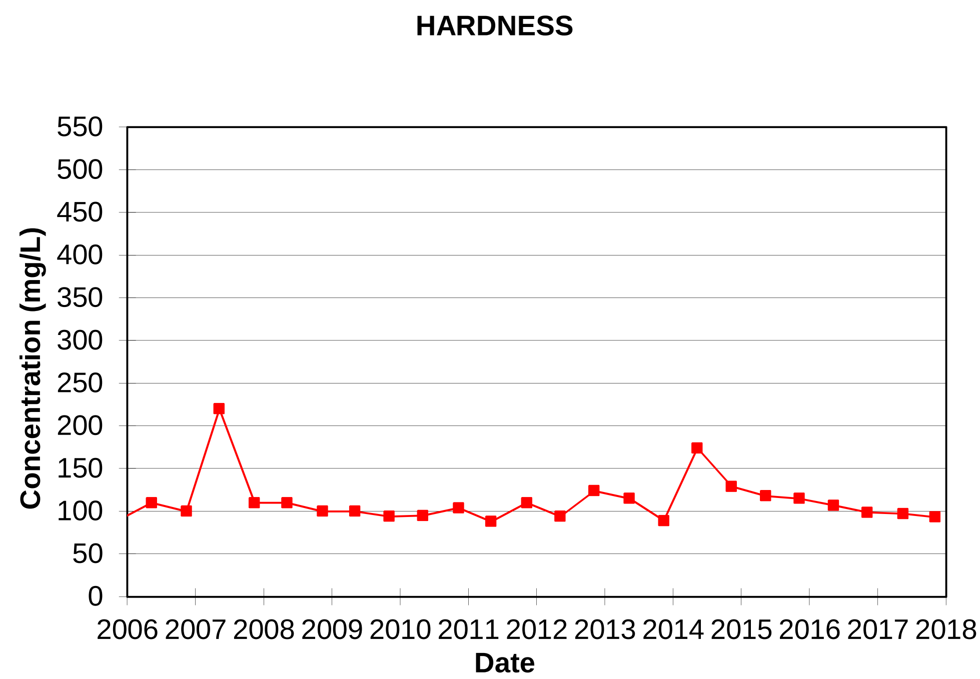
FIGURE C-6 - OW28B-95

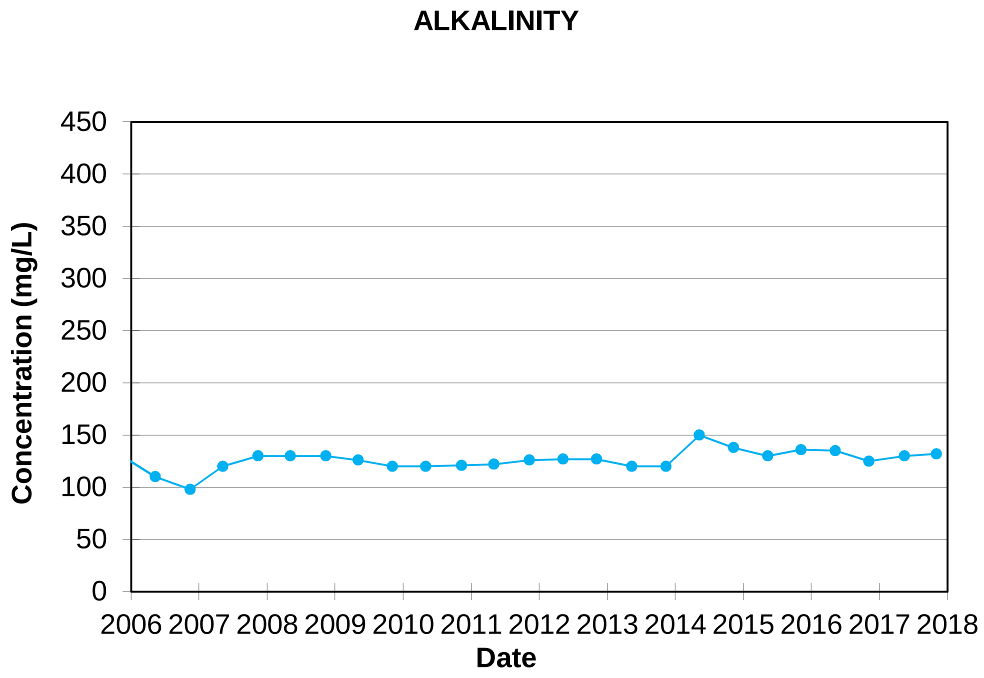
GREEN LANE LANDFILL SITE











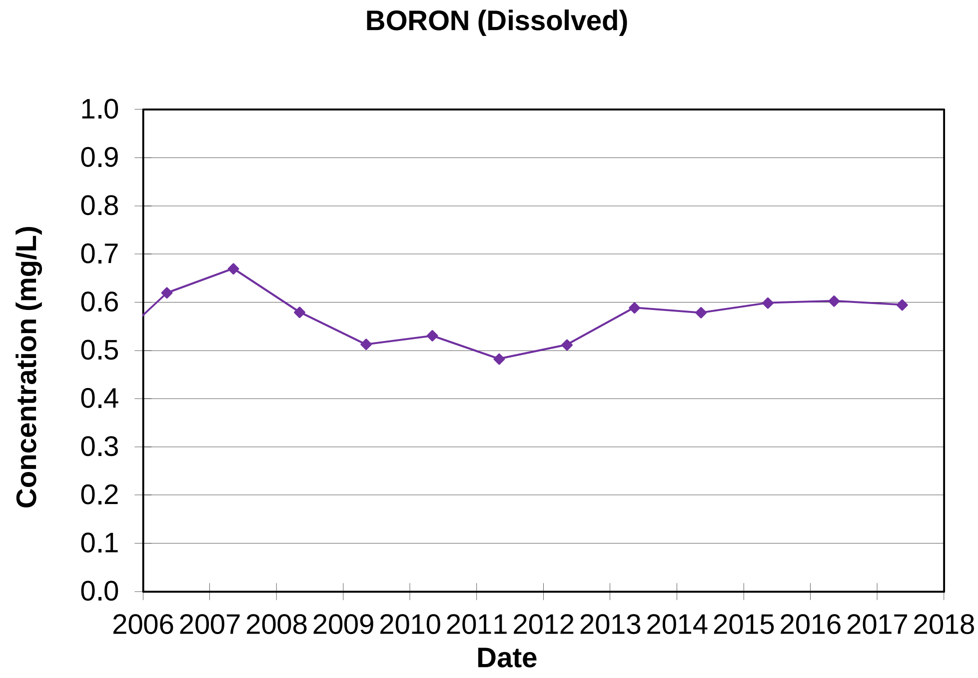
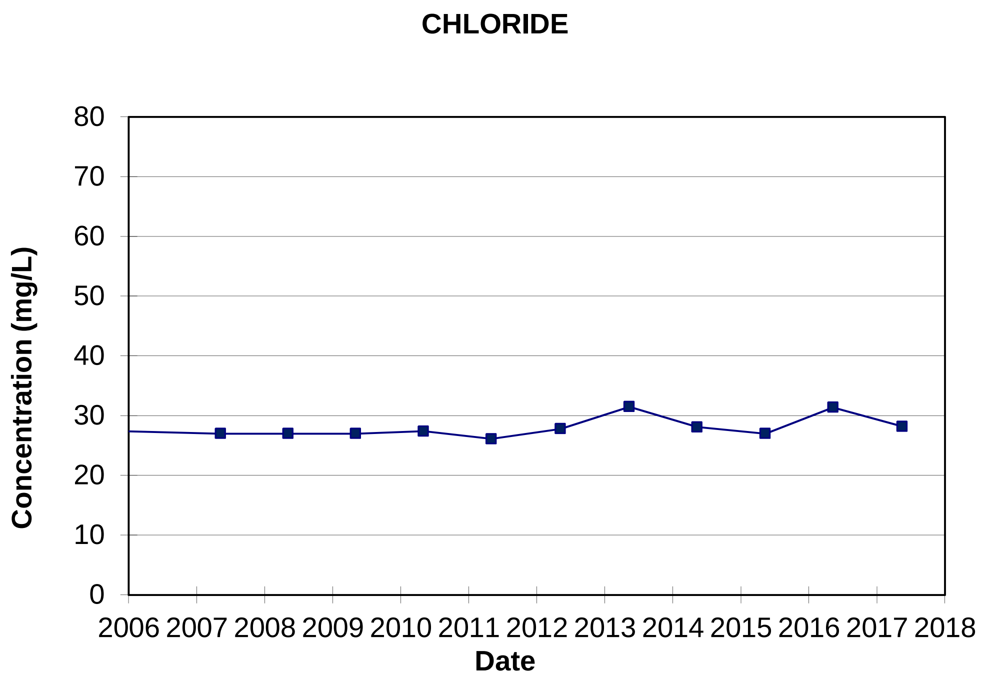
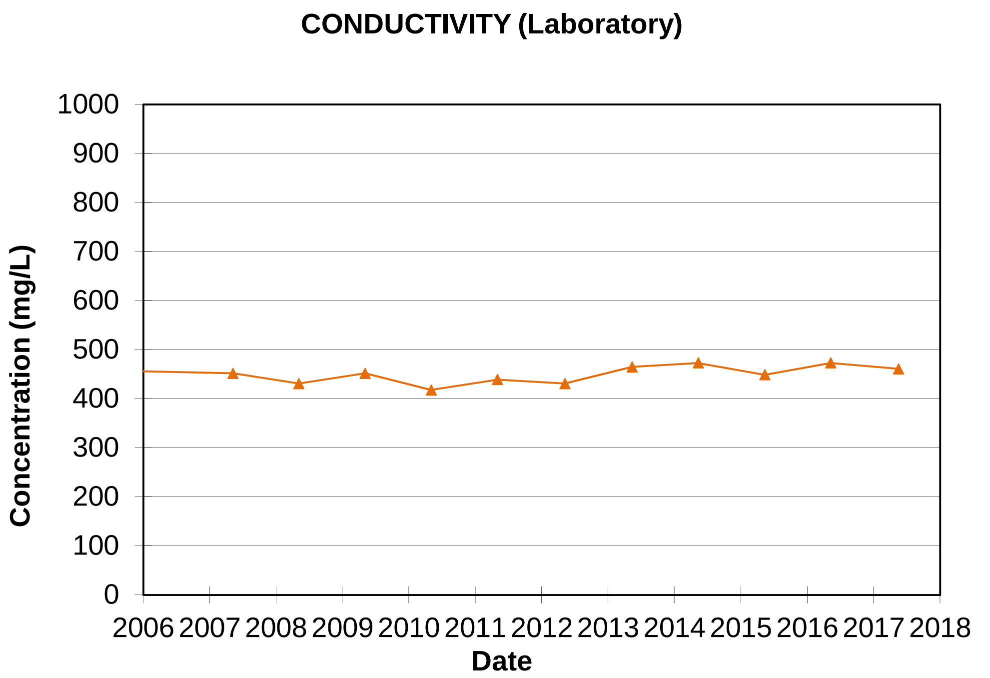
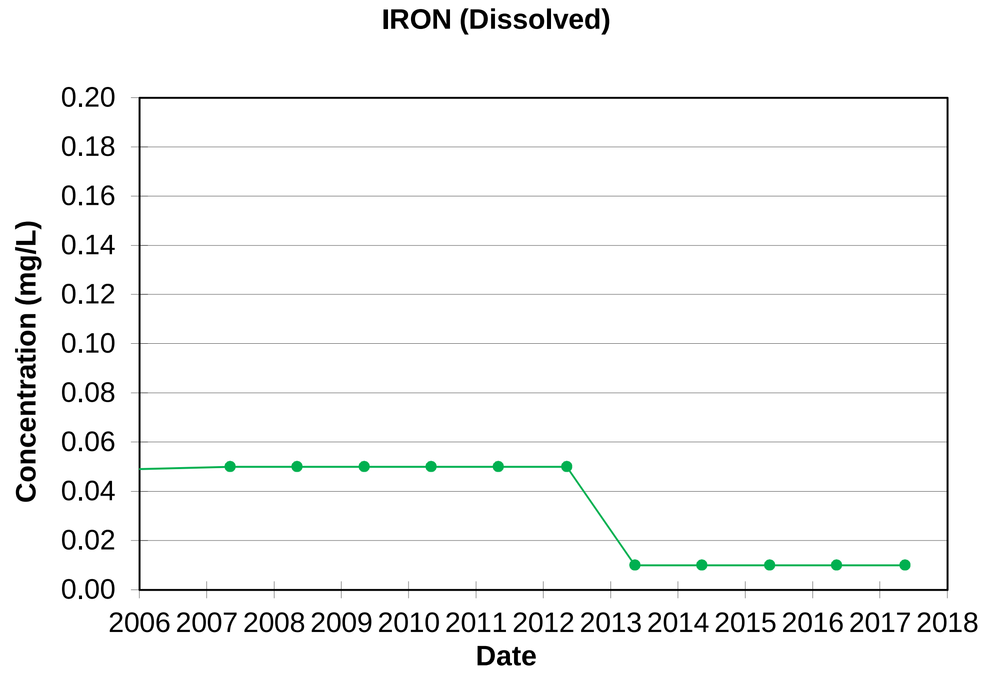


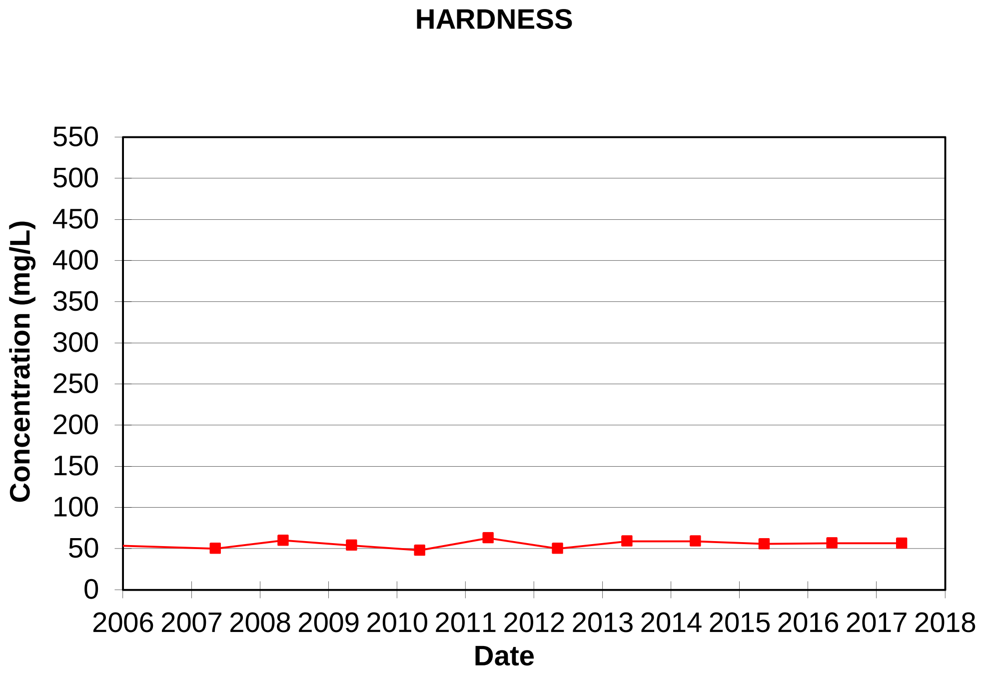
FIGURE C-7 - OW29B-95

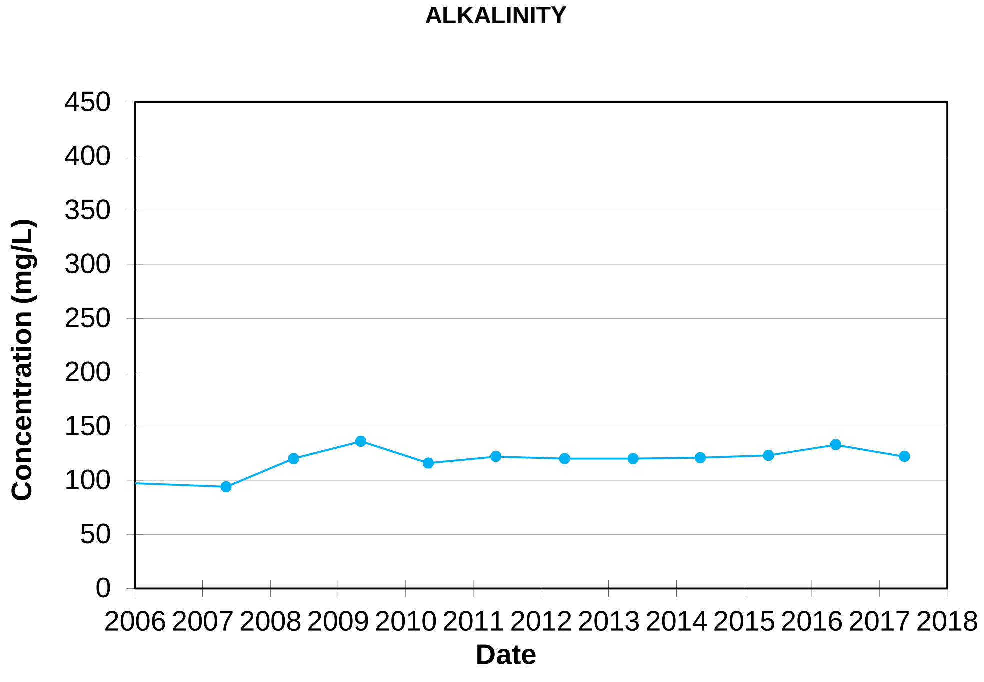
GREEN LANE LANDFILL SITE











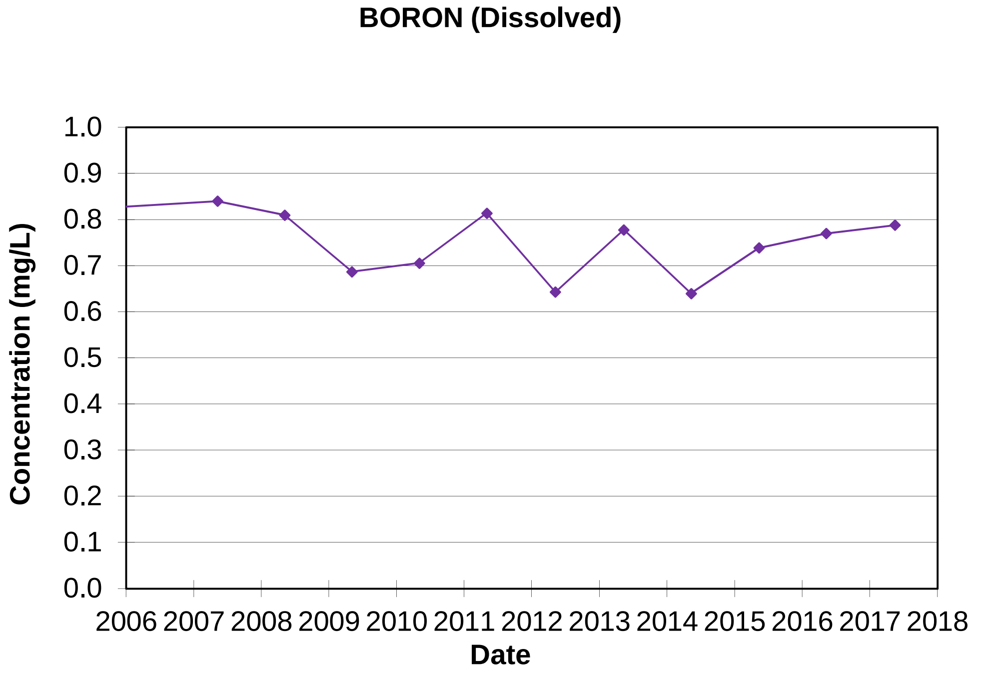
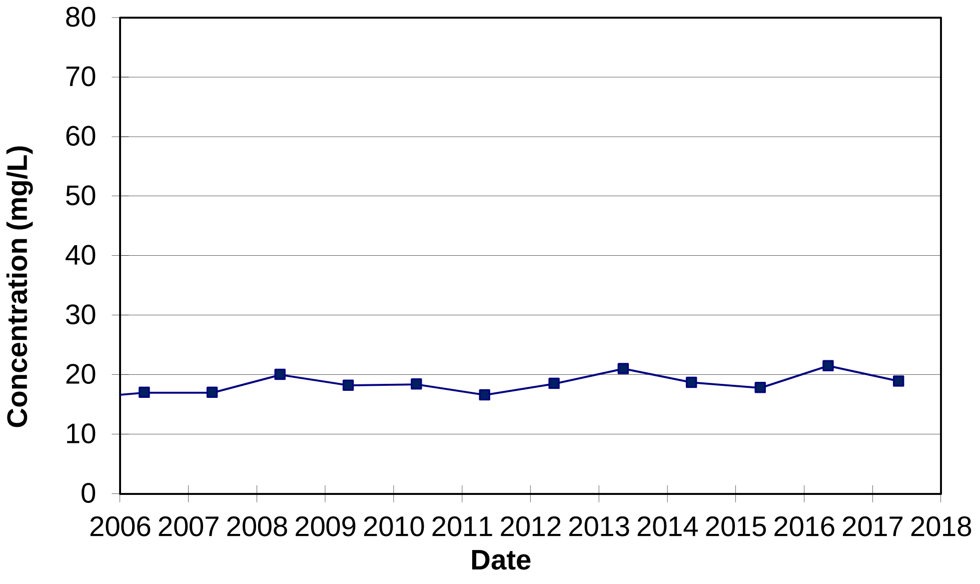


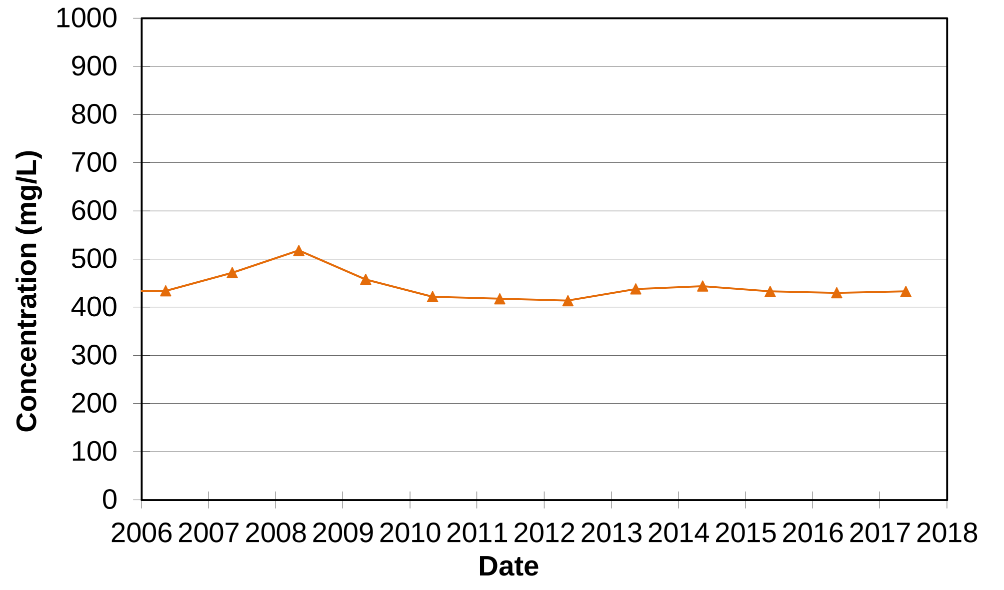
FIGURE C-8 - OW30B-95

GREEN LANE LANDFILL SITE

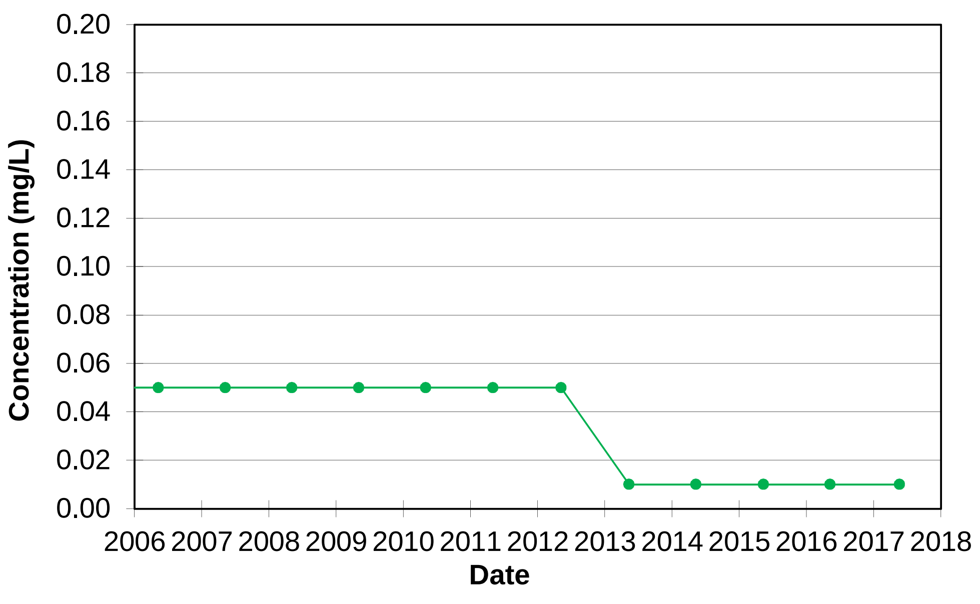
CHLORIDE



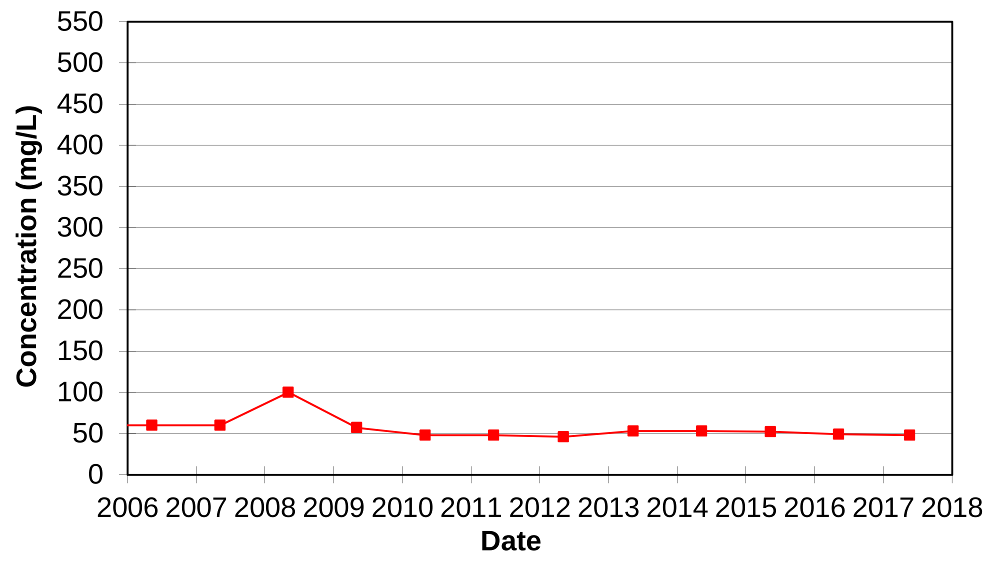
CONDUCTIVITY (Laboratory)



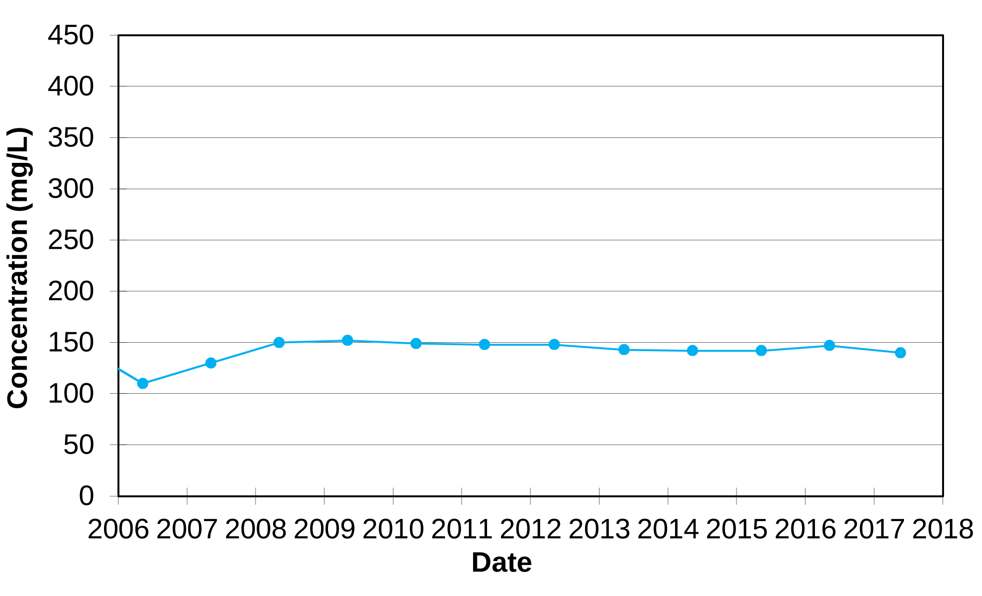
IRON (Dissolved)



HARDNESS



ALKALINITY



BORON (Dissolved)

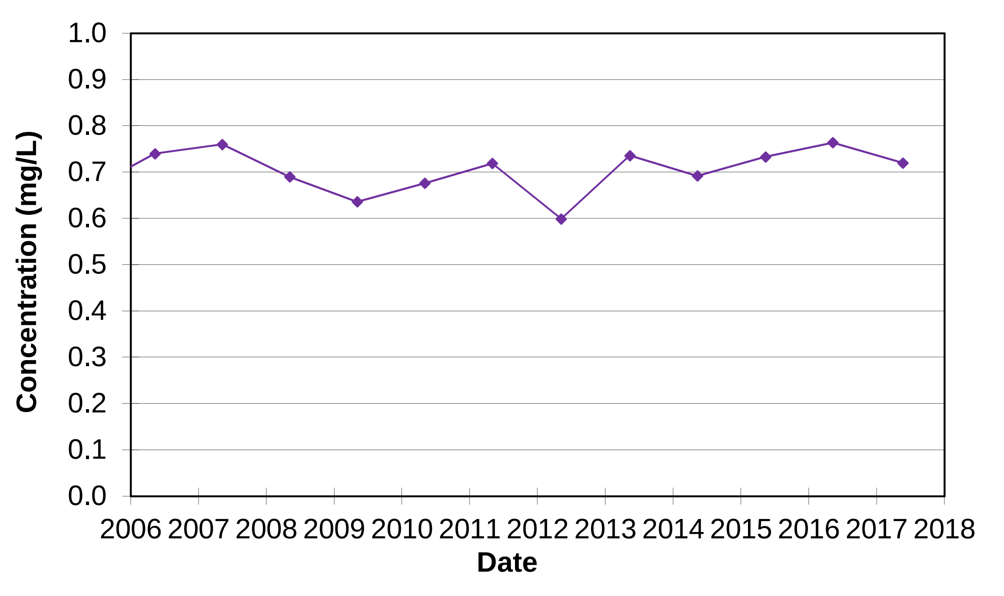
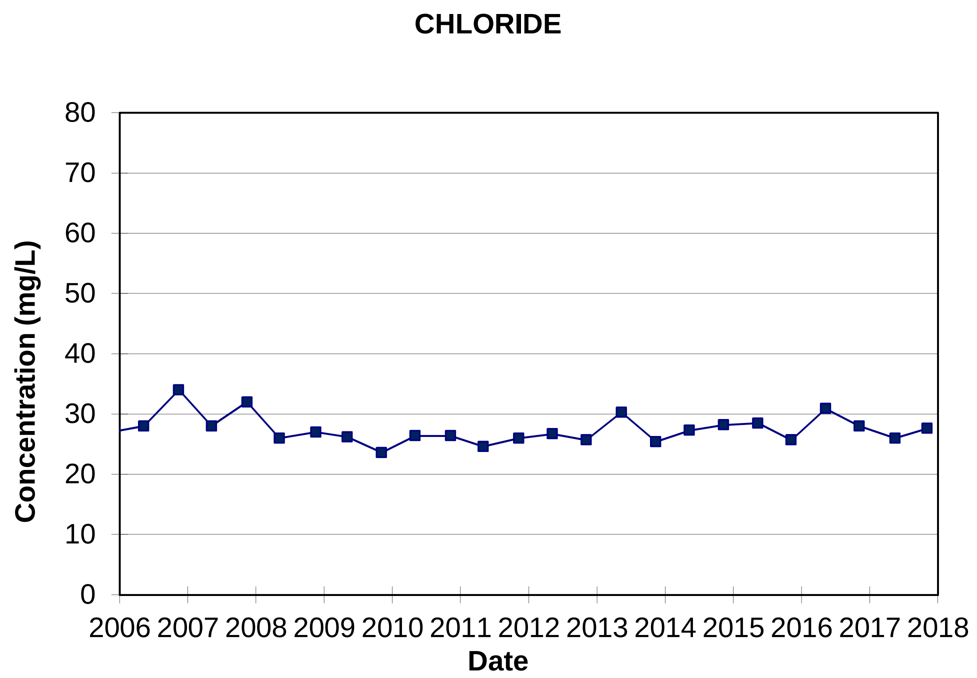
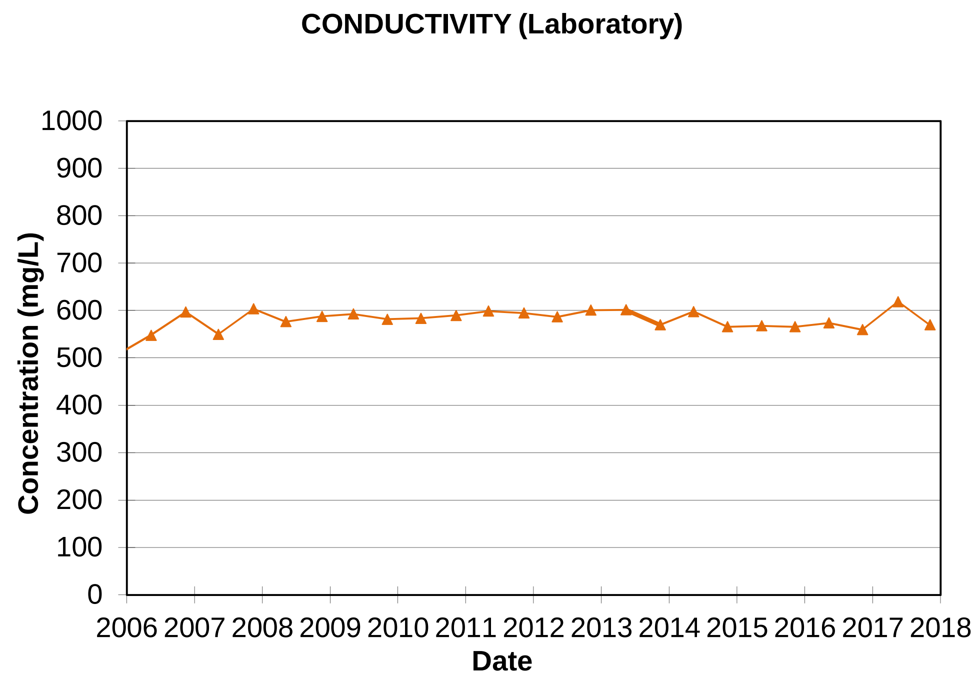
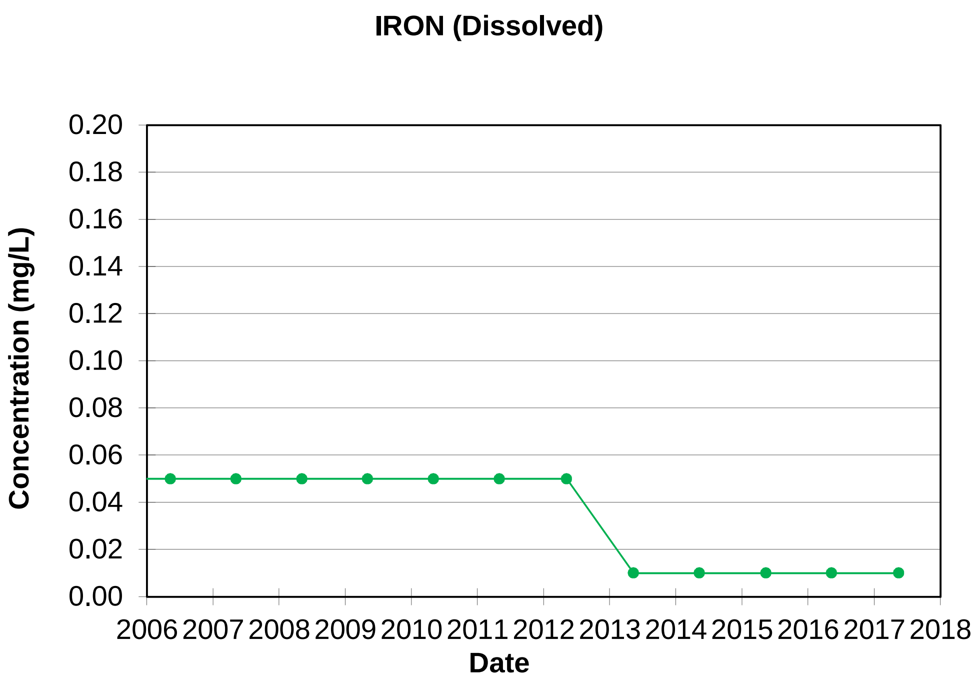


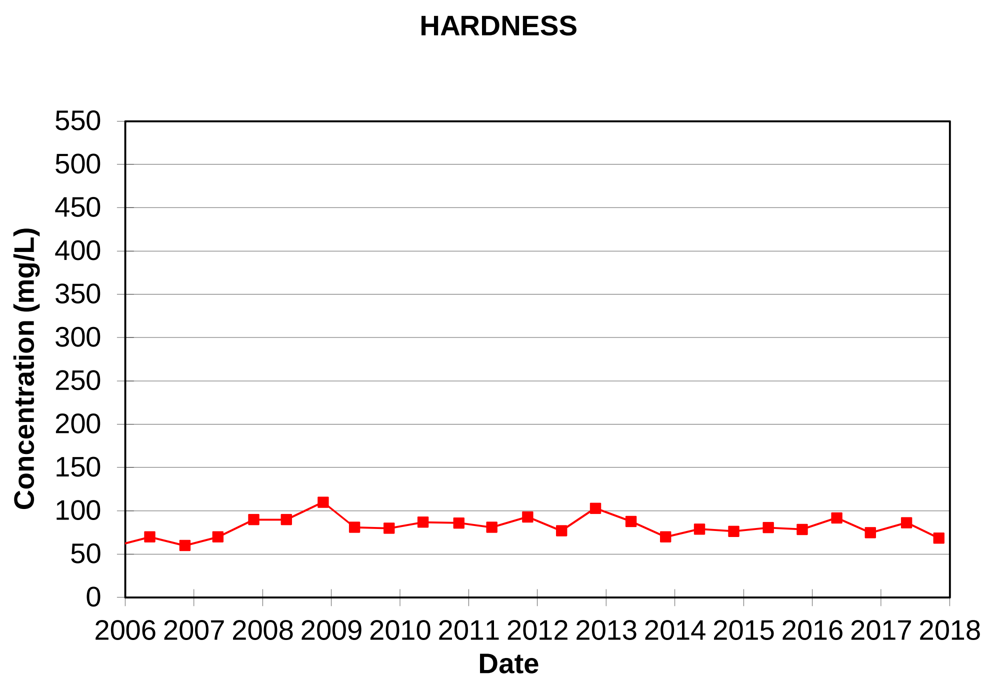
FIGURE C-9 - OW31B-95

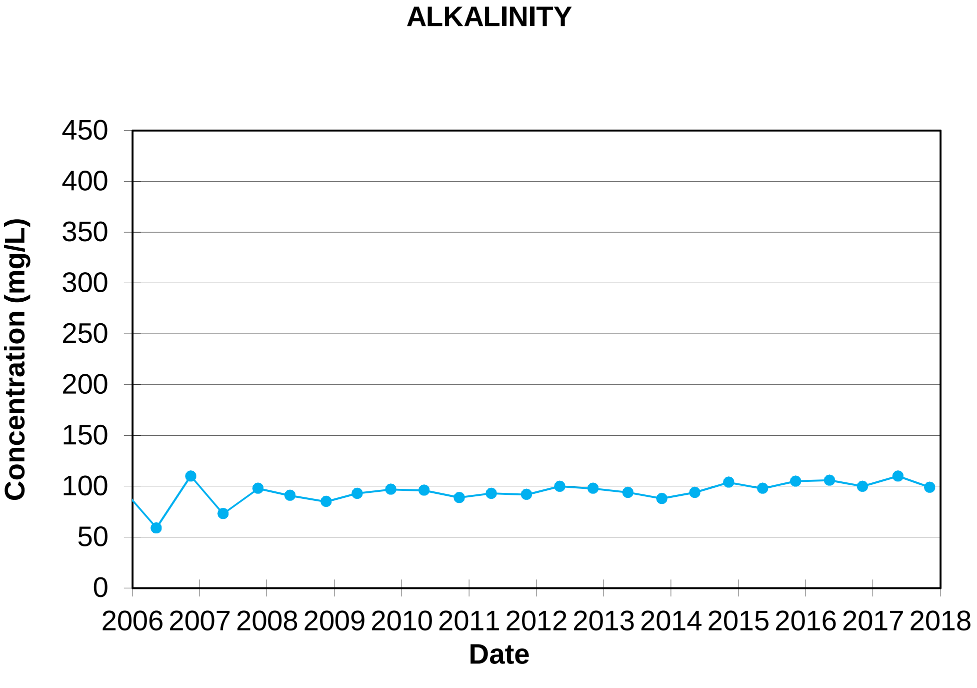
GREEN LANE LANDFILL SITE











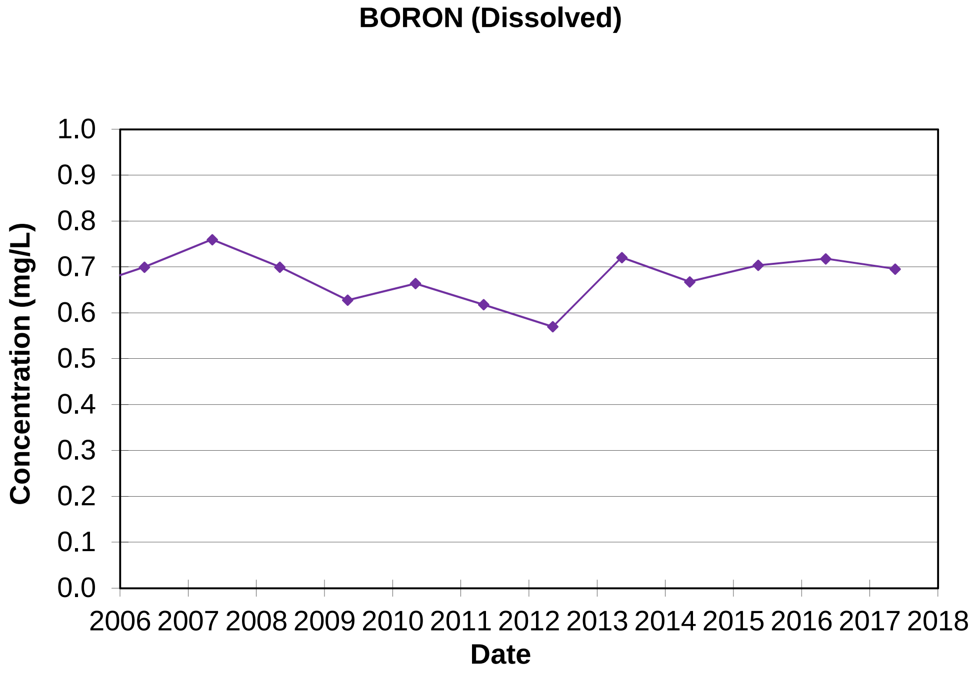
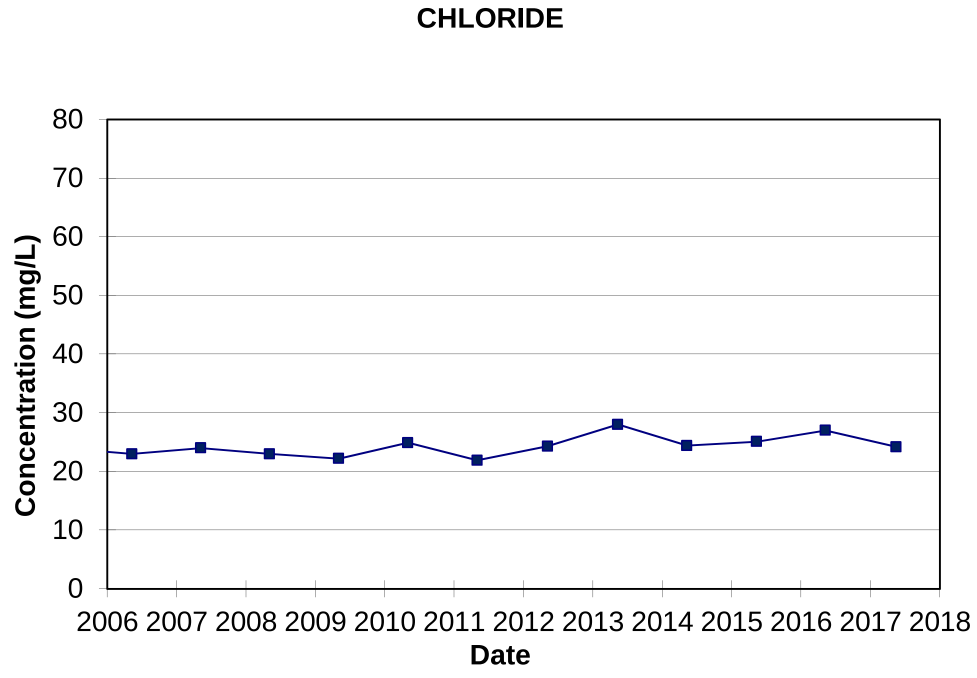
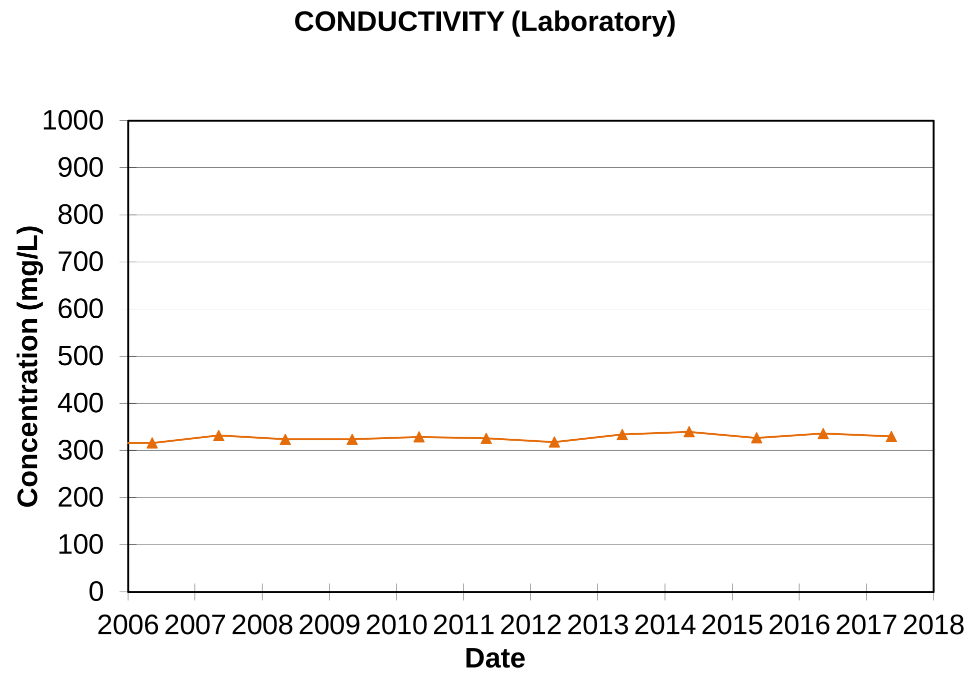
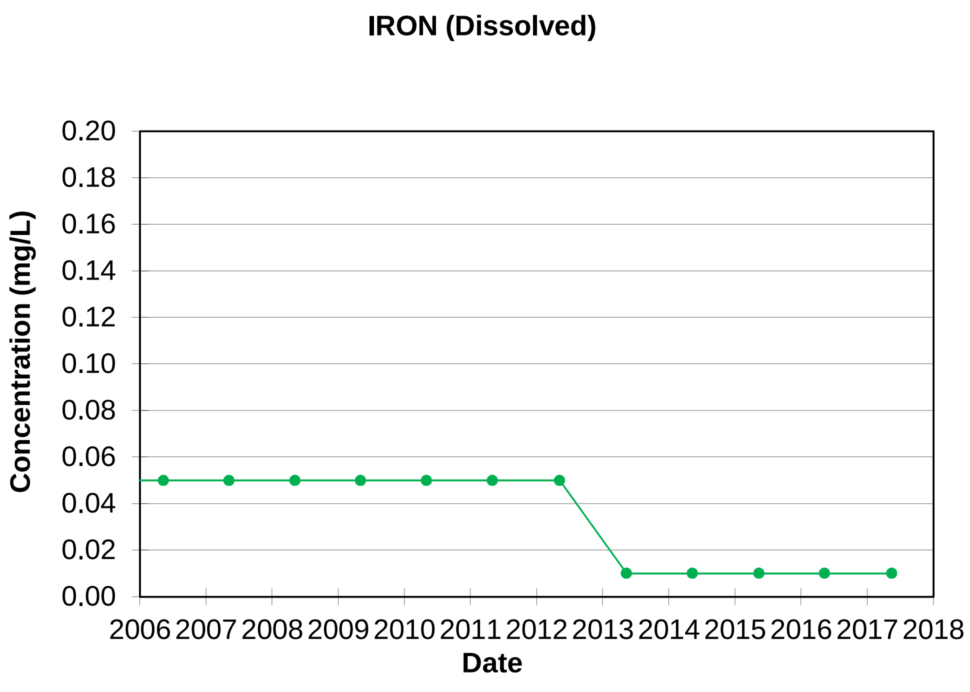


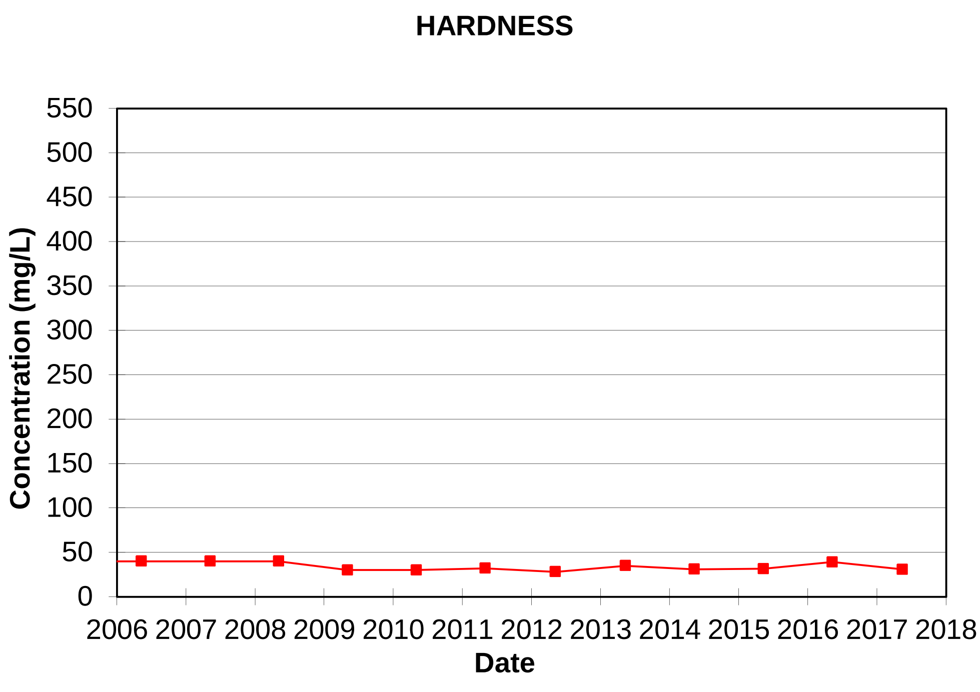
FIGURE C-10 - OW32B-95

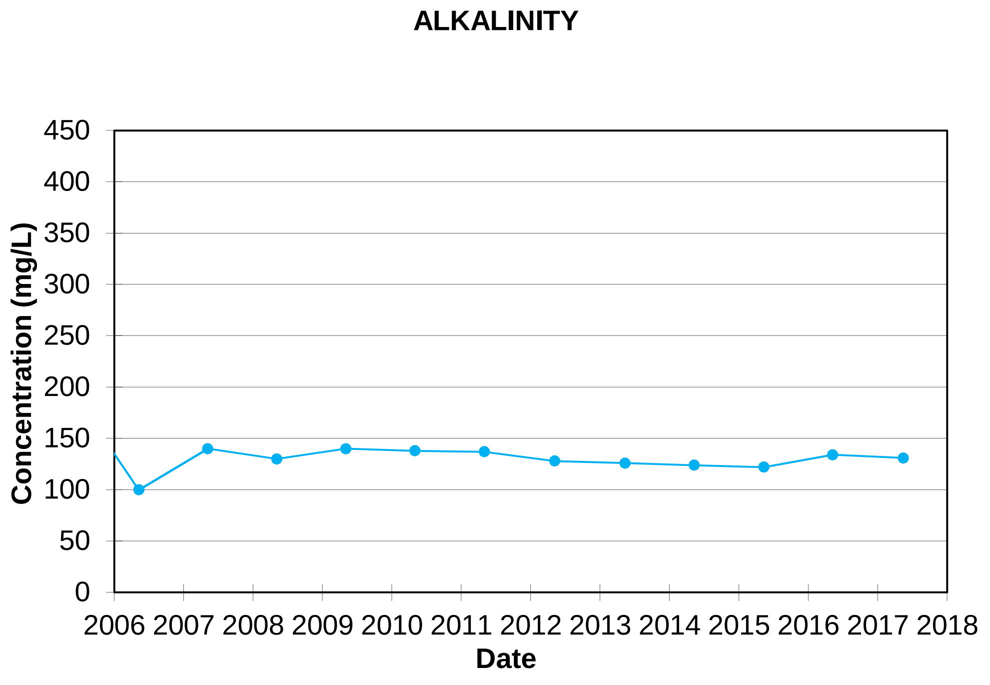
GREEN LANE LANDFILL SITE











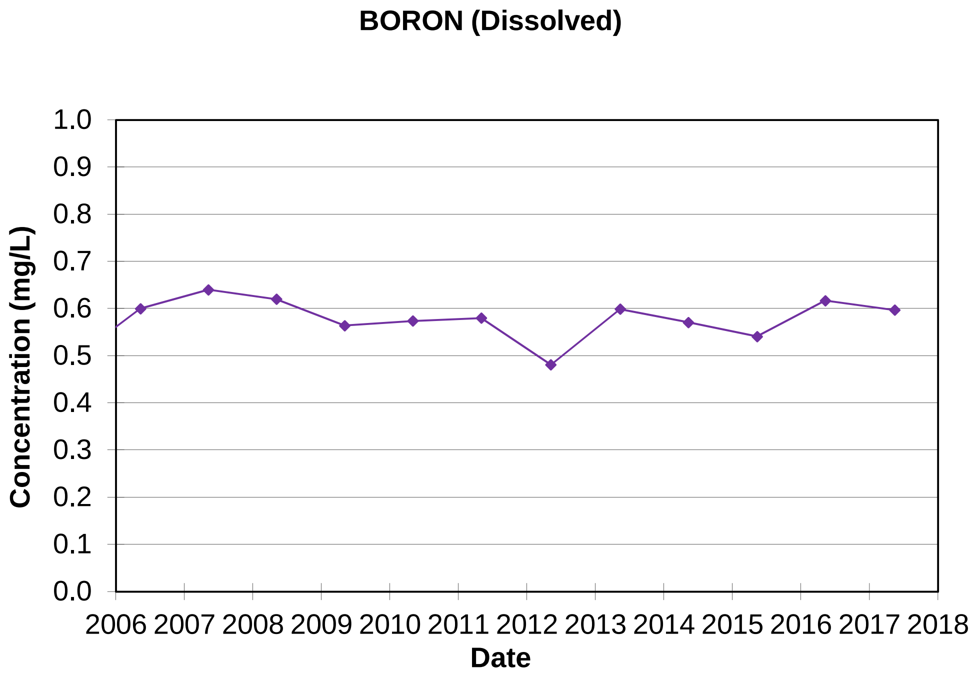
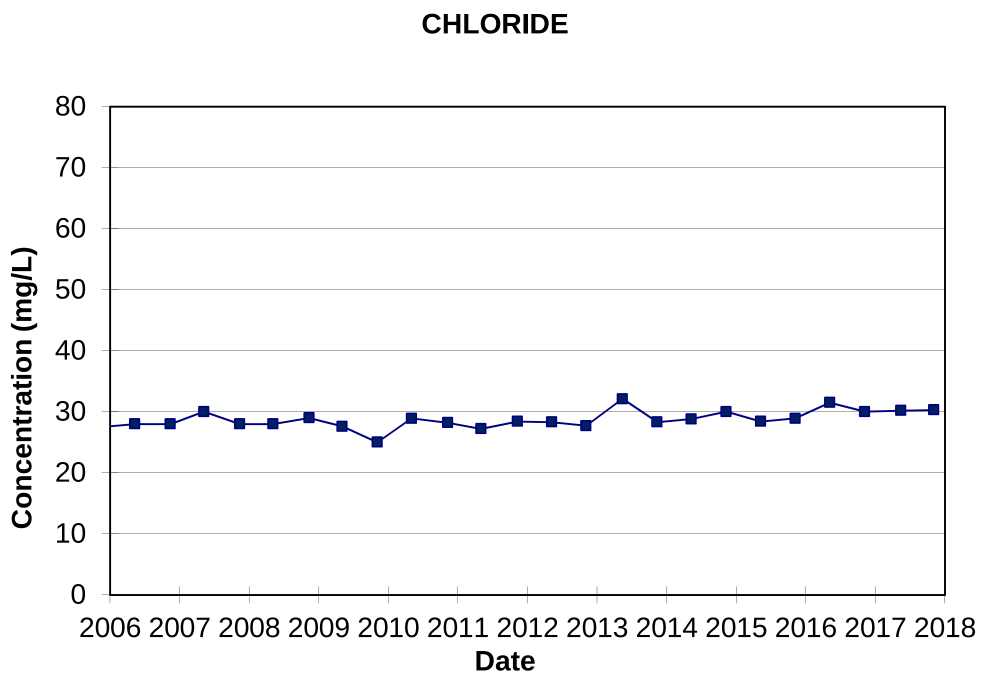
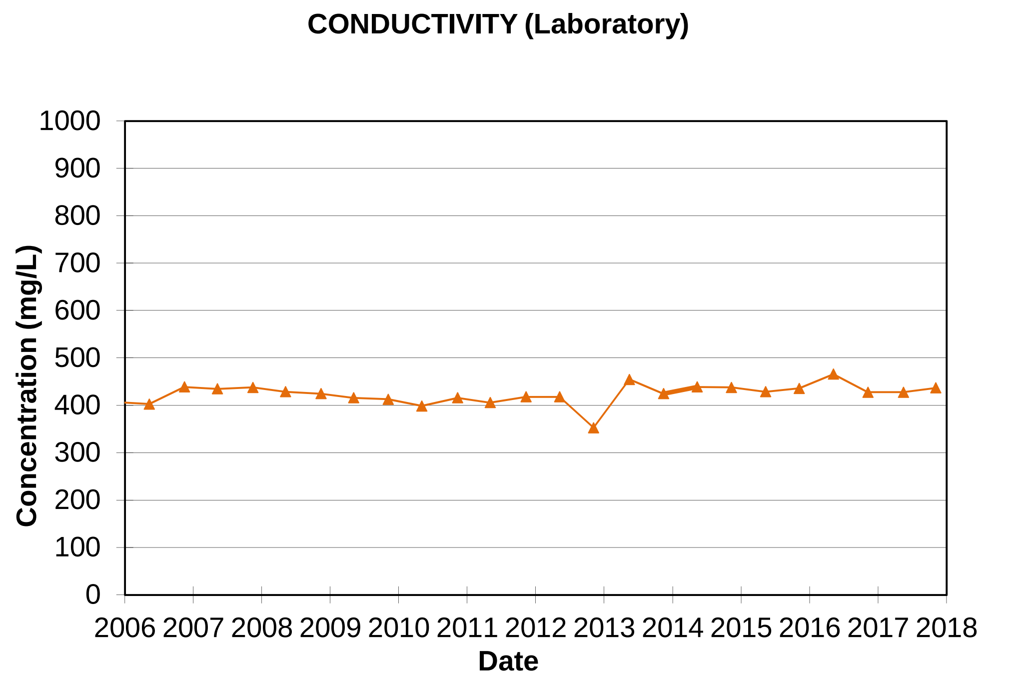
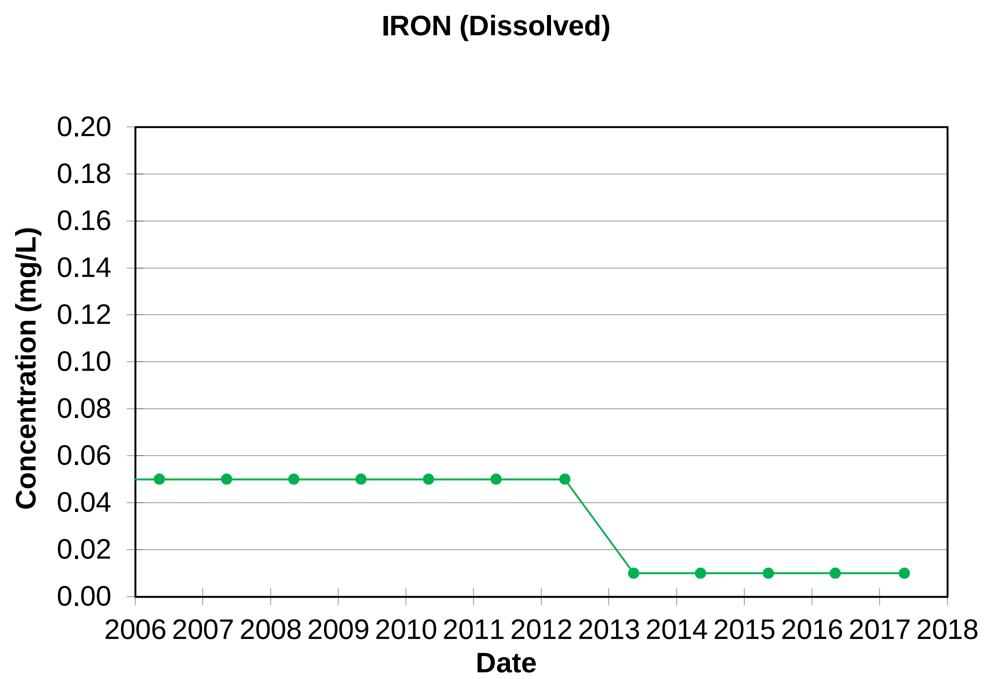


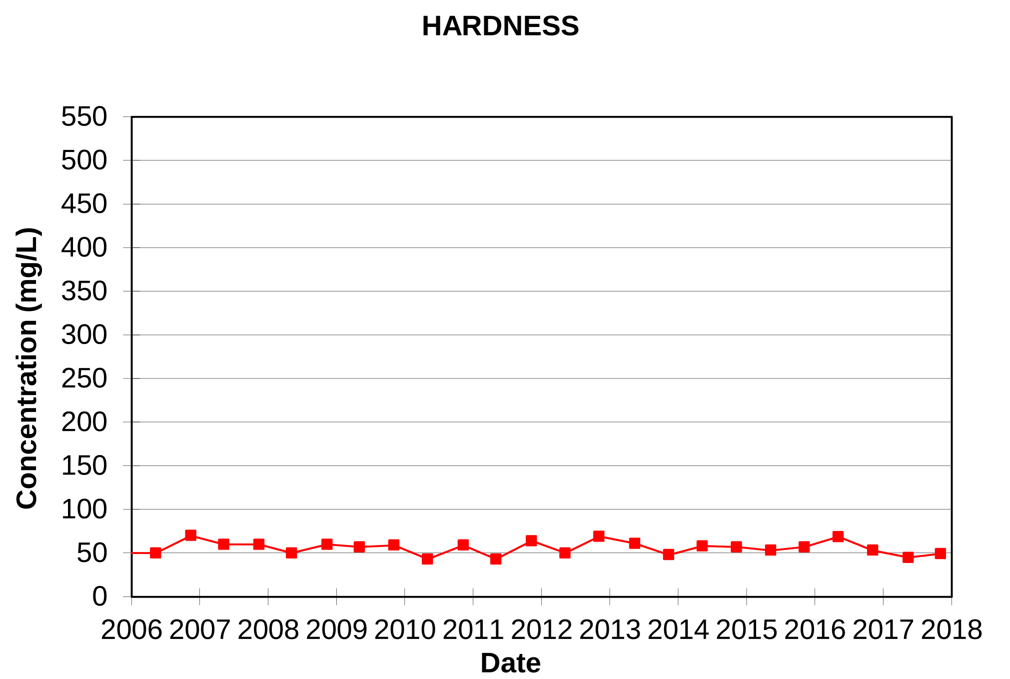
FIGURE C-11 - OW34B-95

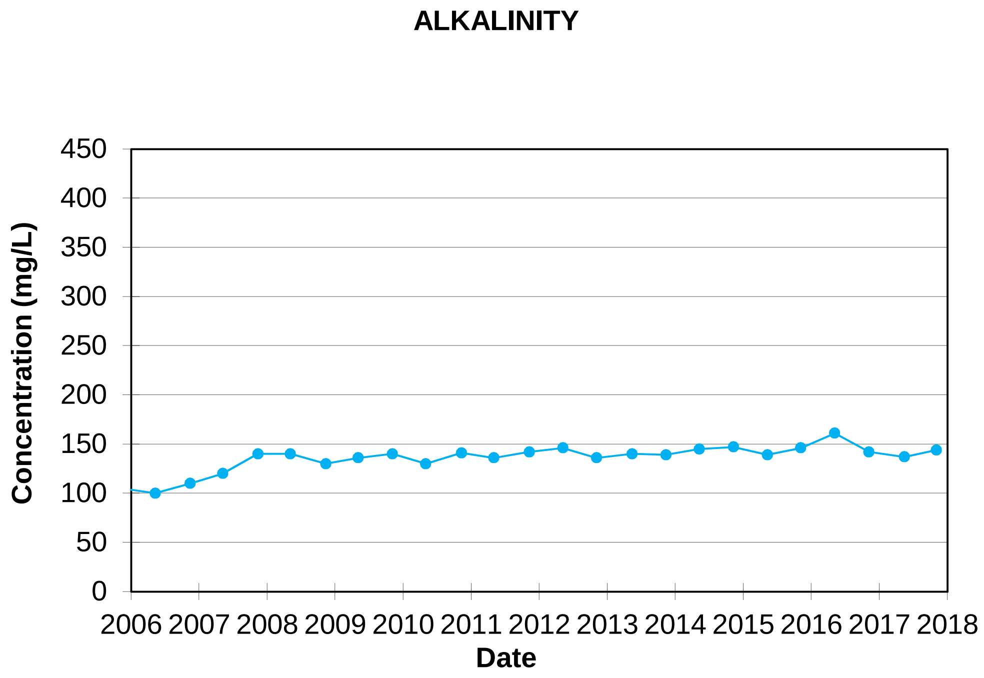
GREEN LANE LANDFILL SITE











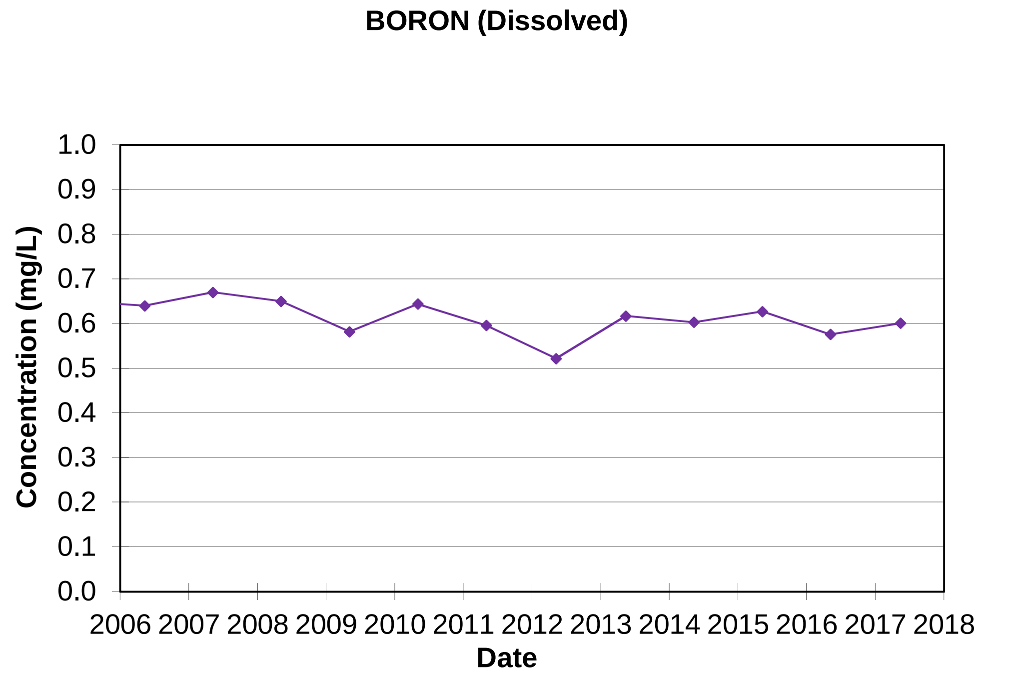
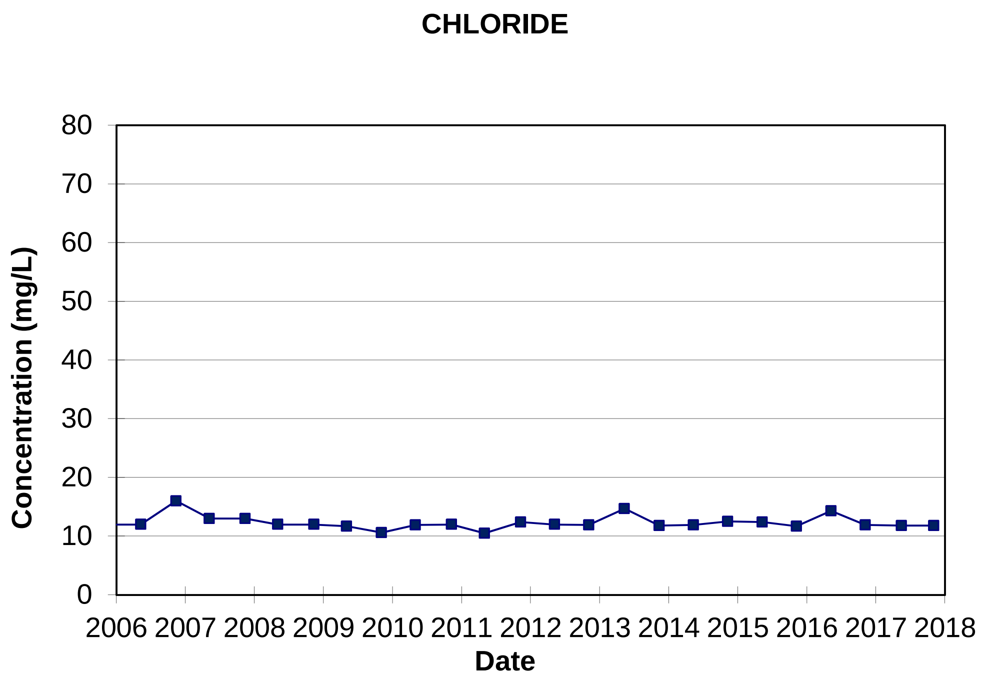
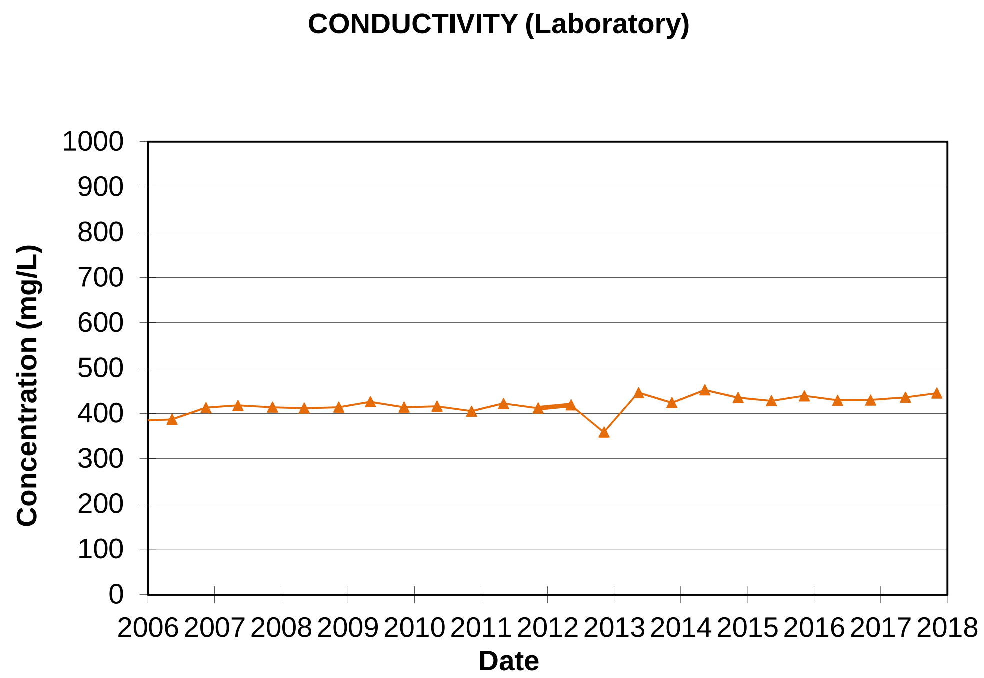
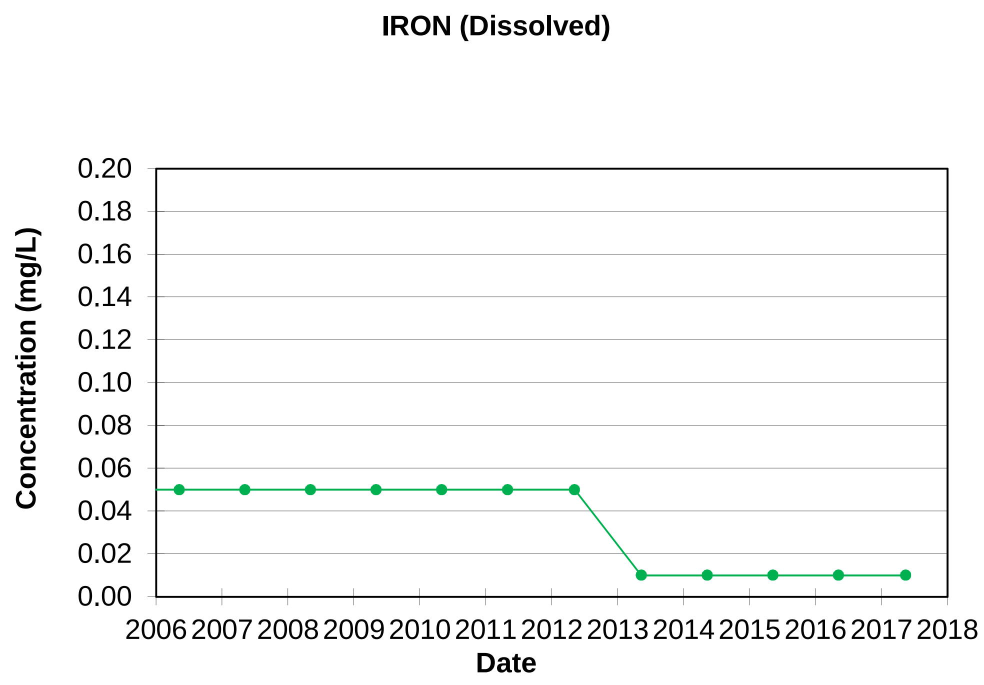


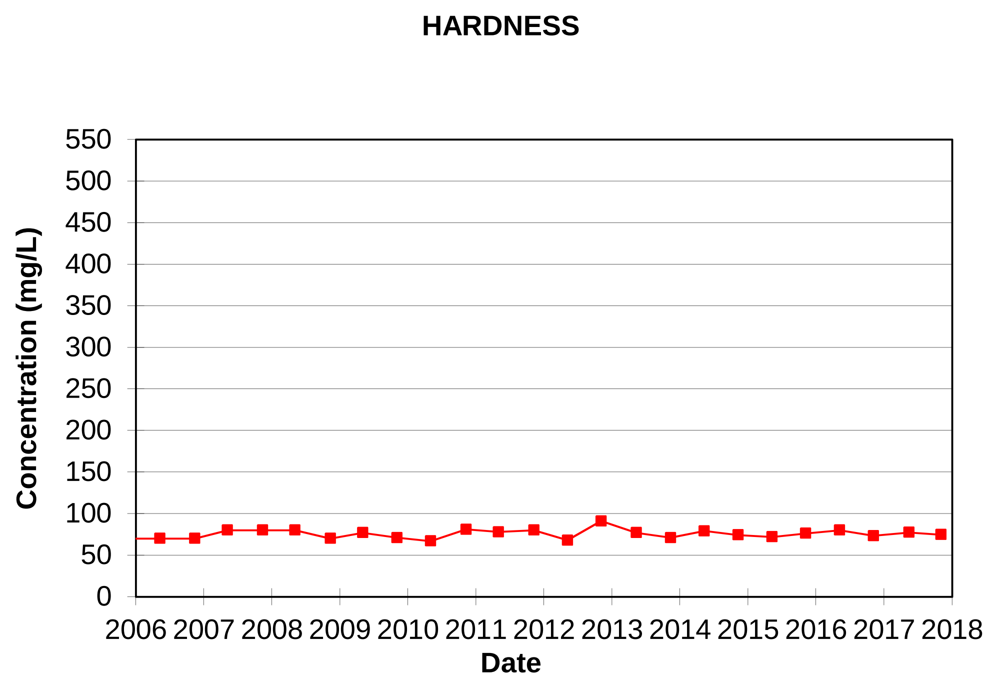
FIGURE C-12 - OW37-97

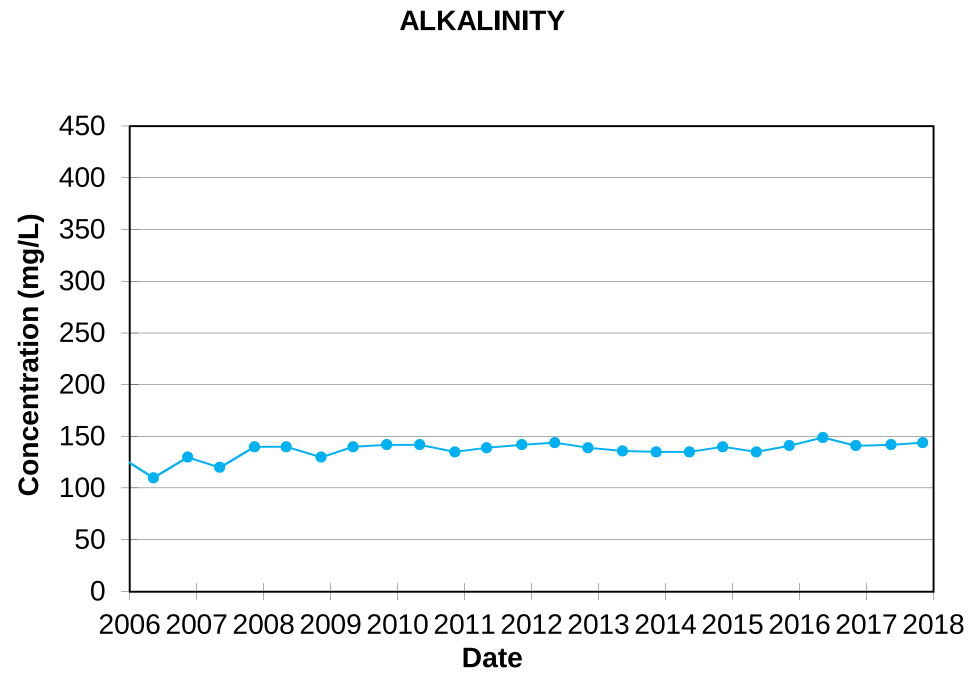
GREEN LANE LANDFILL SITE











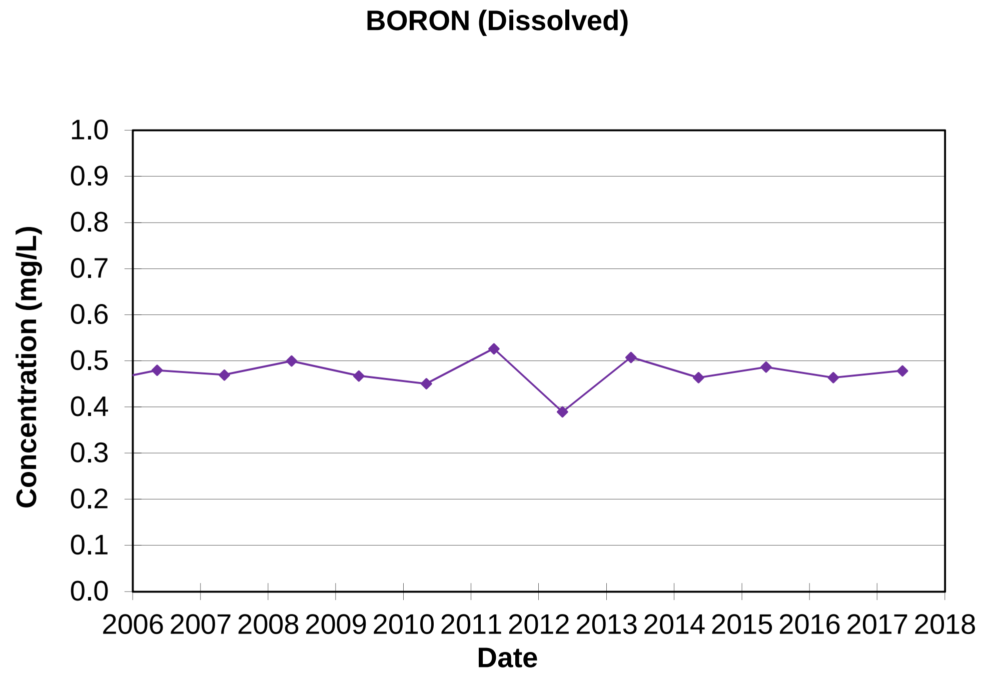
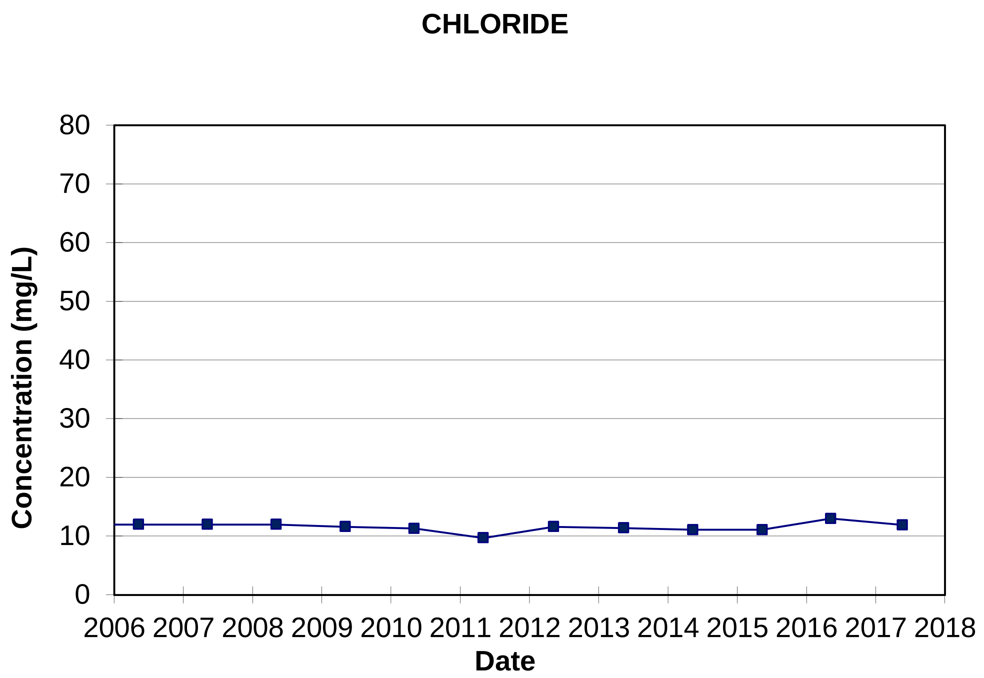
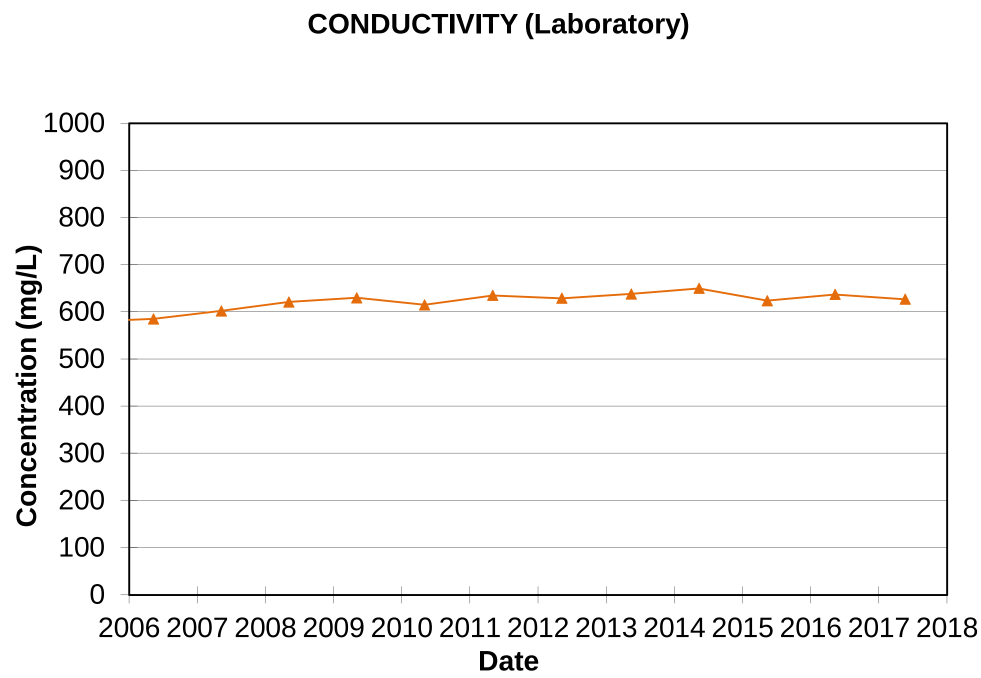
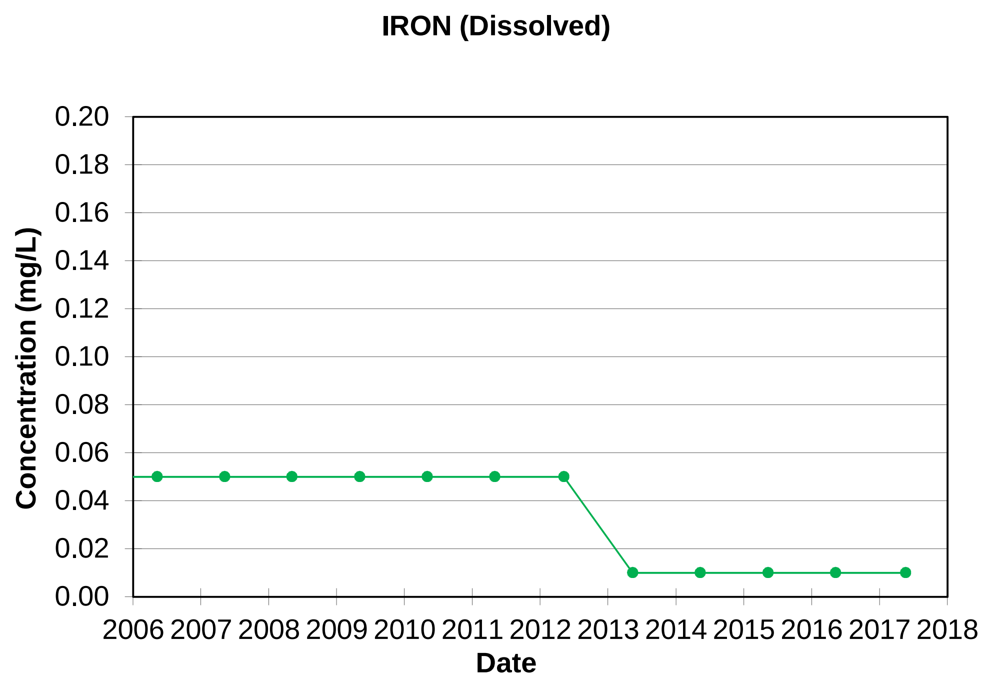


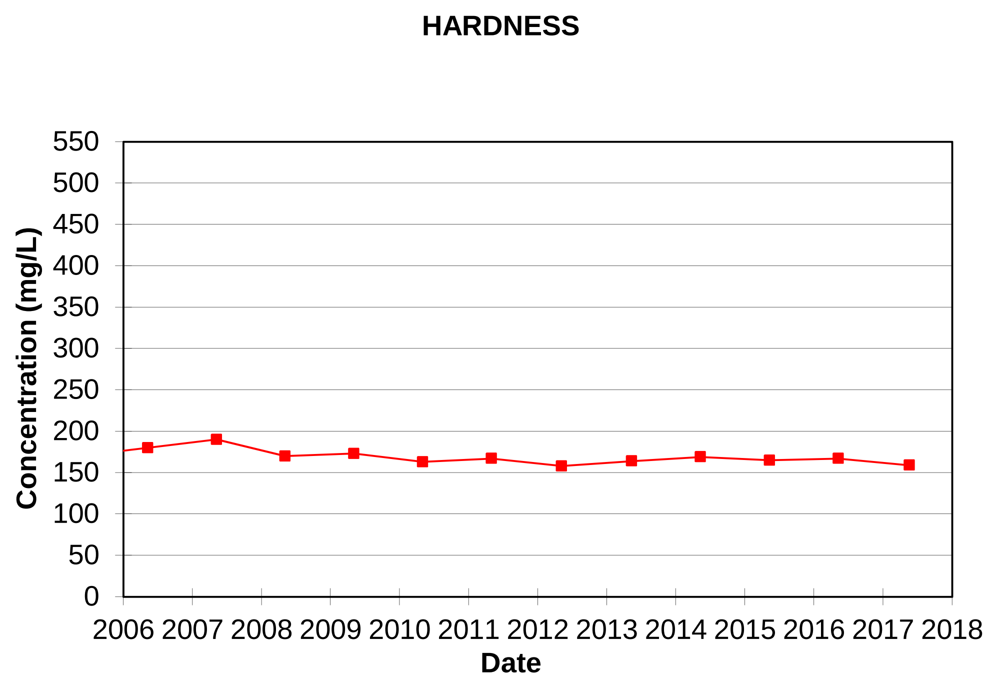
FIGURE C-13 - OW38-97

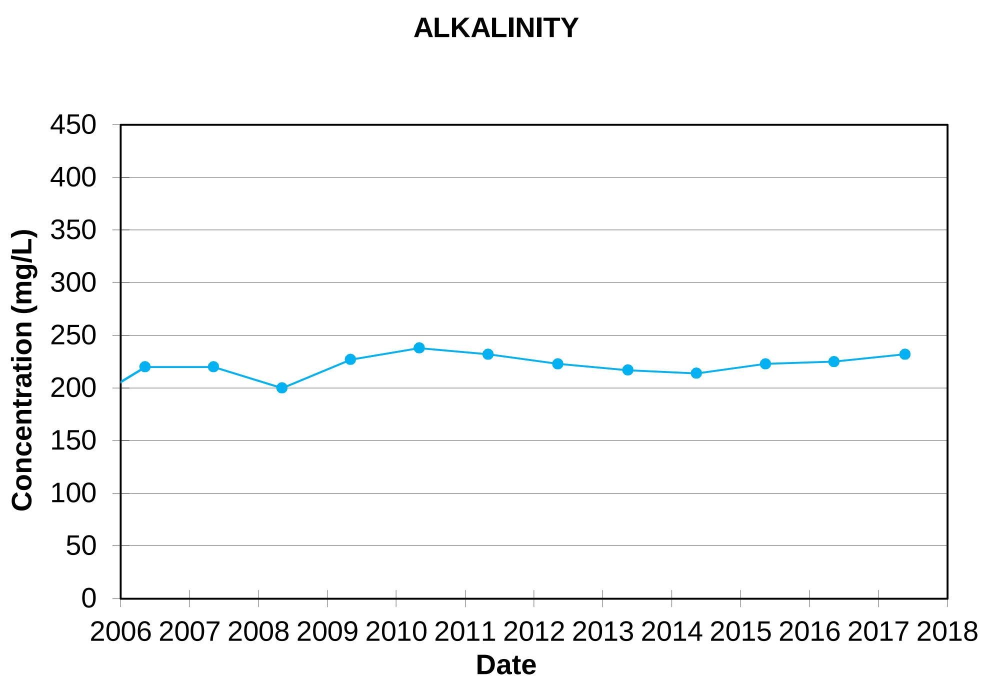
GREEN LANE LANDFILL SITE











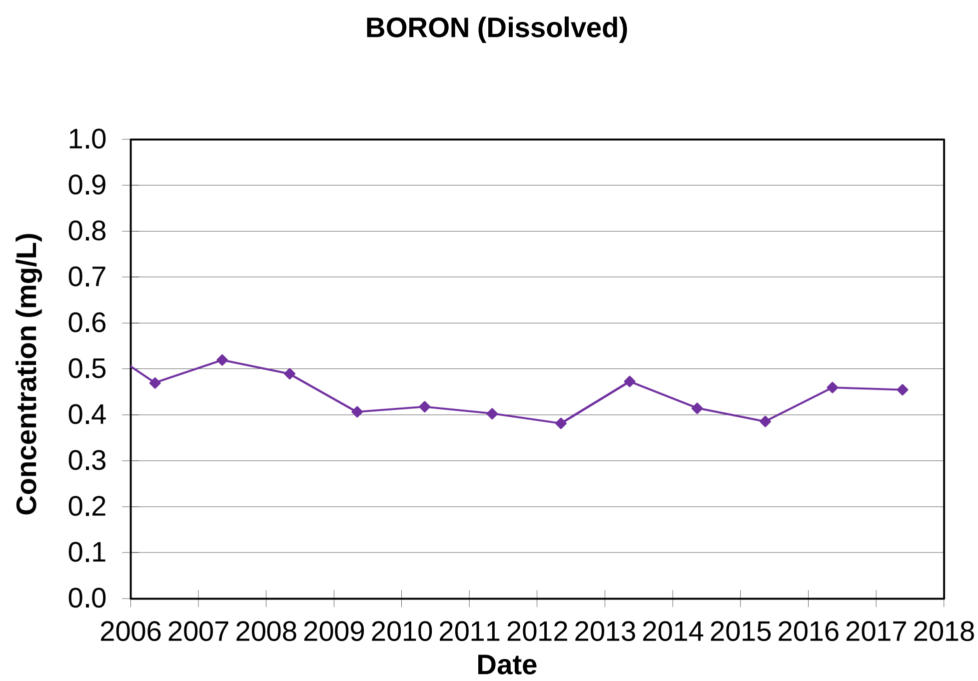
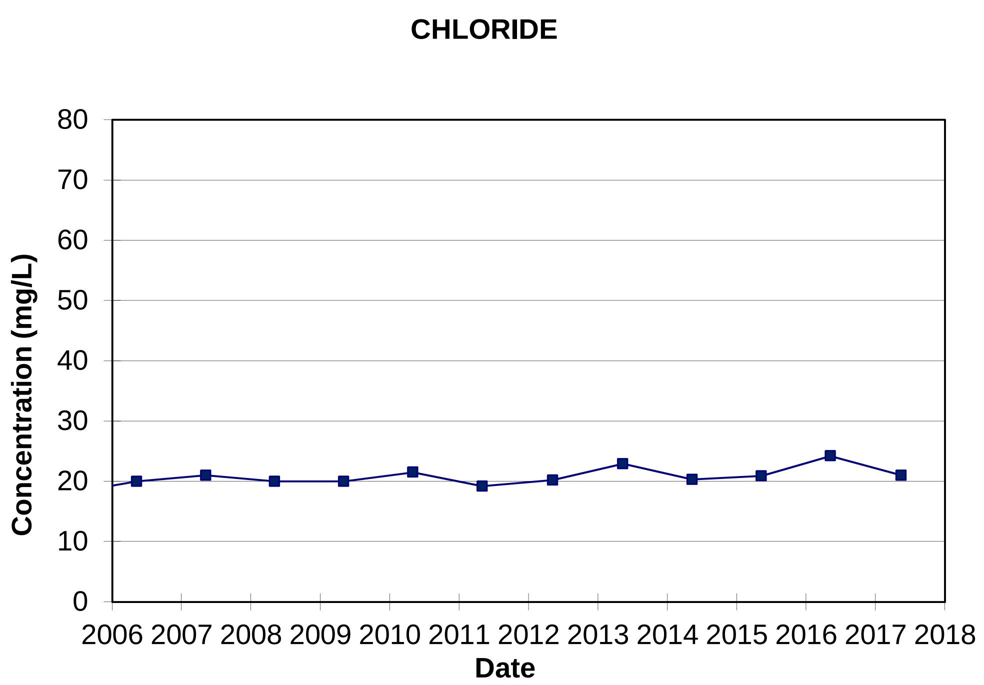
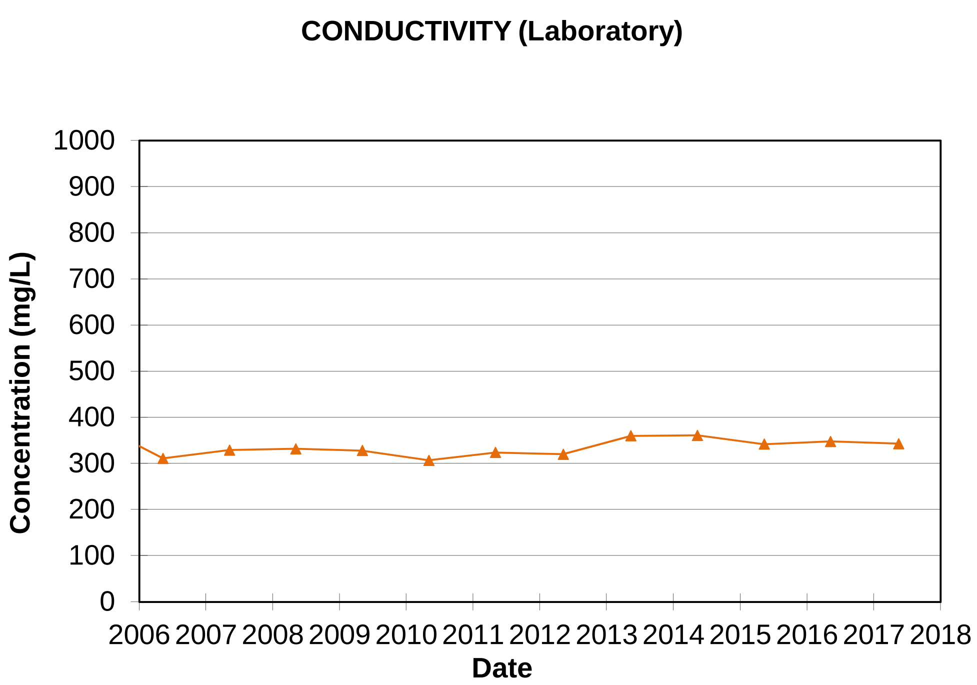
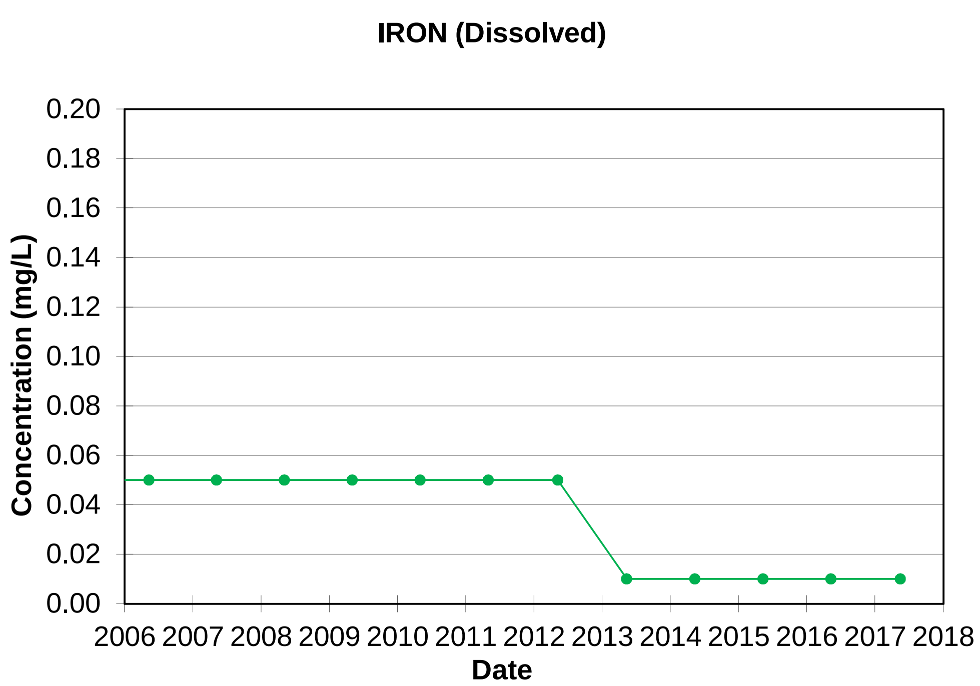


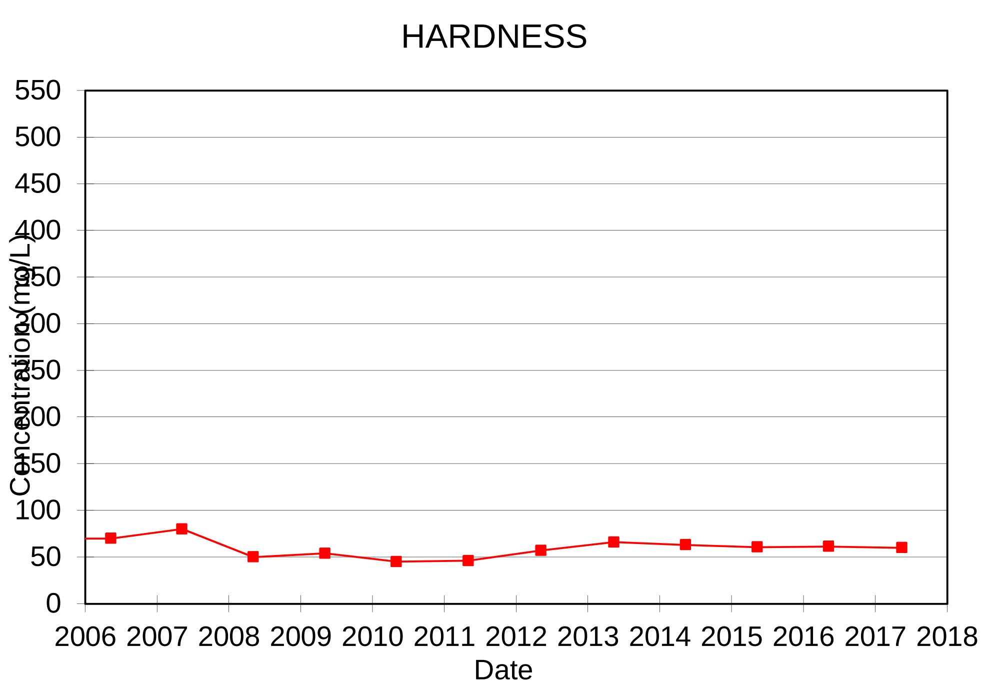
FIGURE C-14 - OW39-99

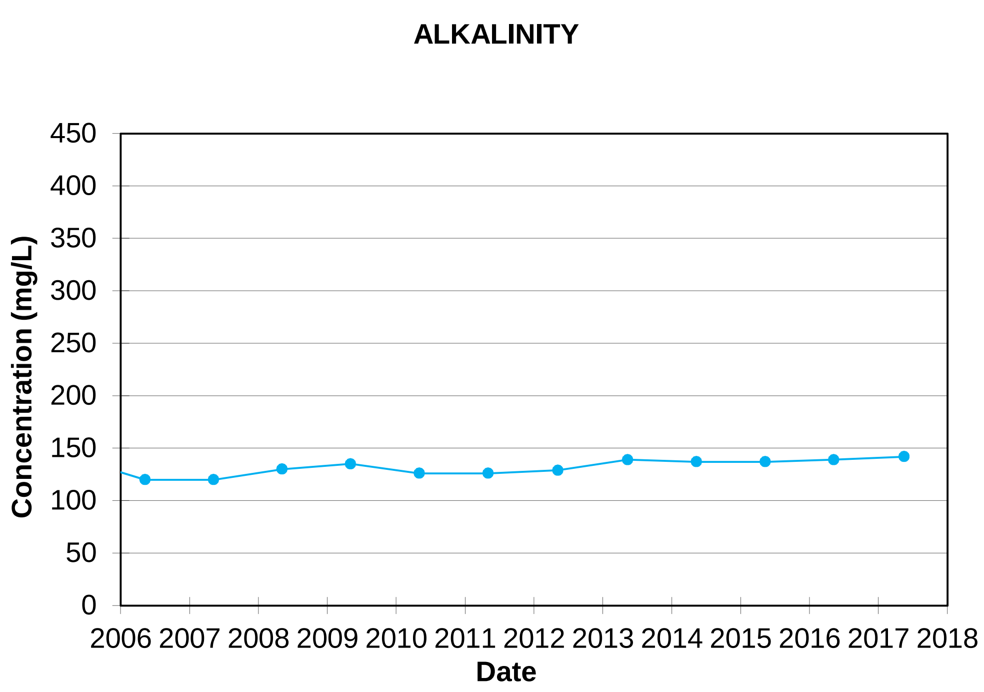
GREEN LANE LANDFILL SITE











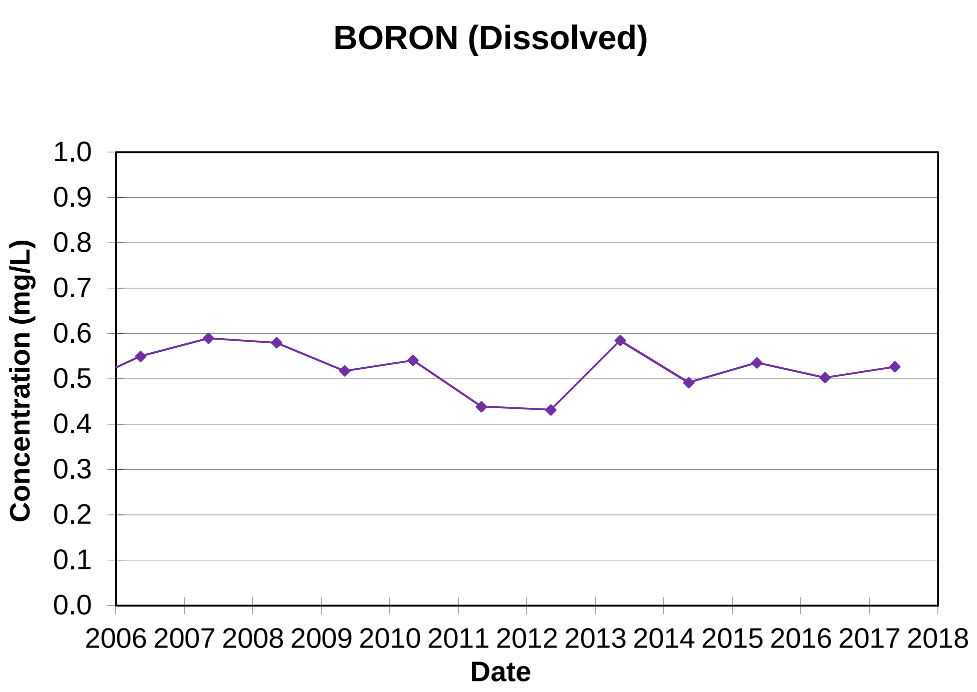
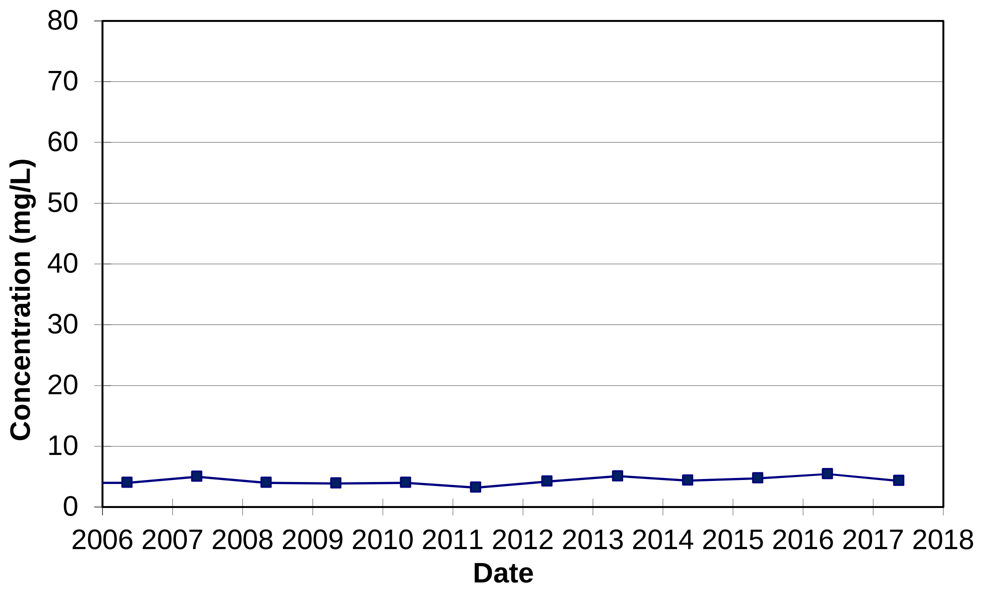


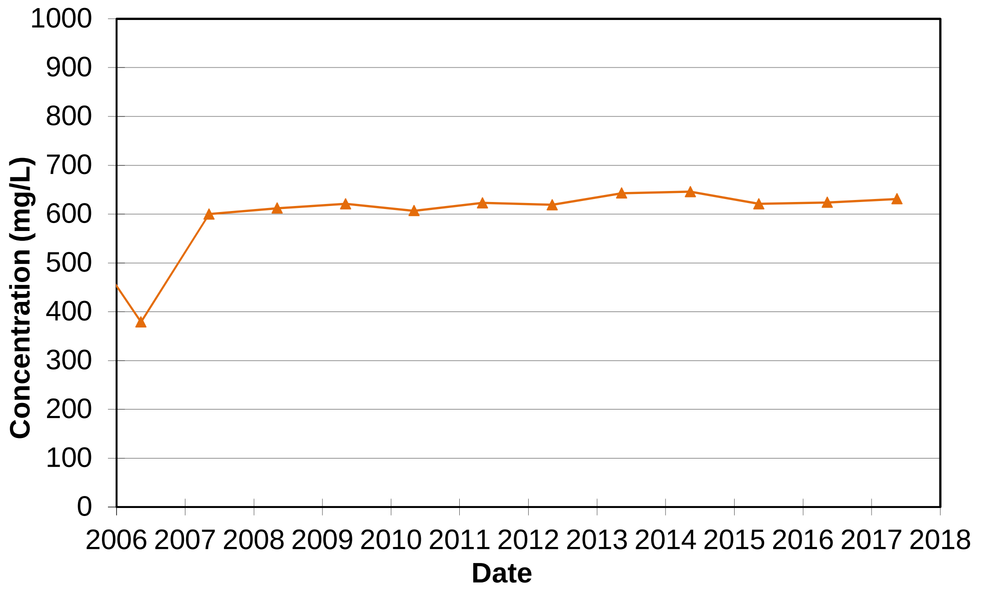
FIGURE C-15 - OW40-99

GREEN LANE LANDFILL SITE

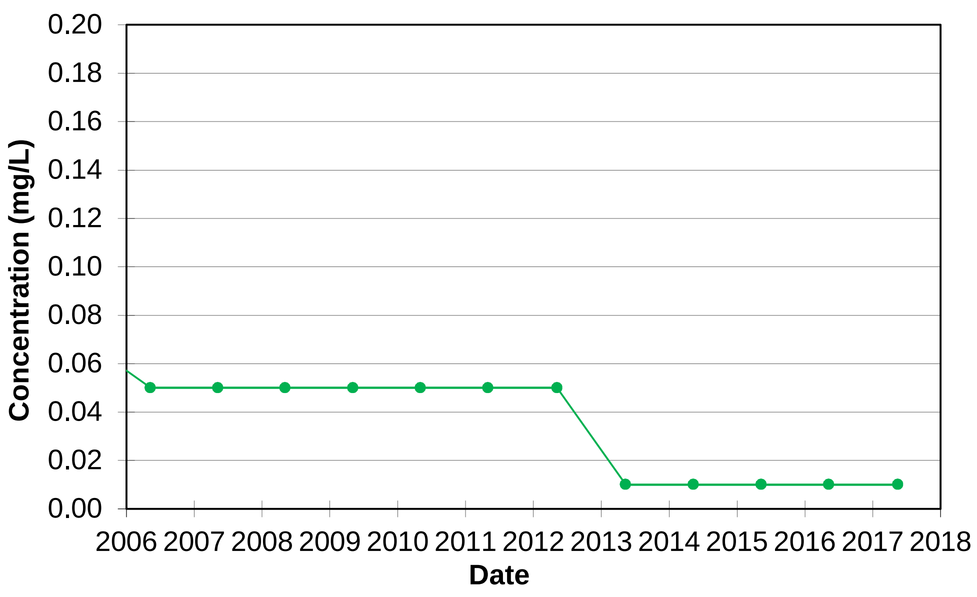
CHLORIDE



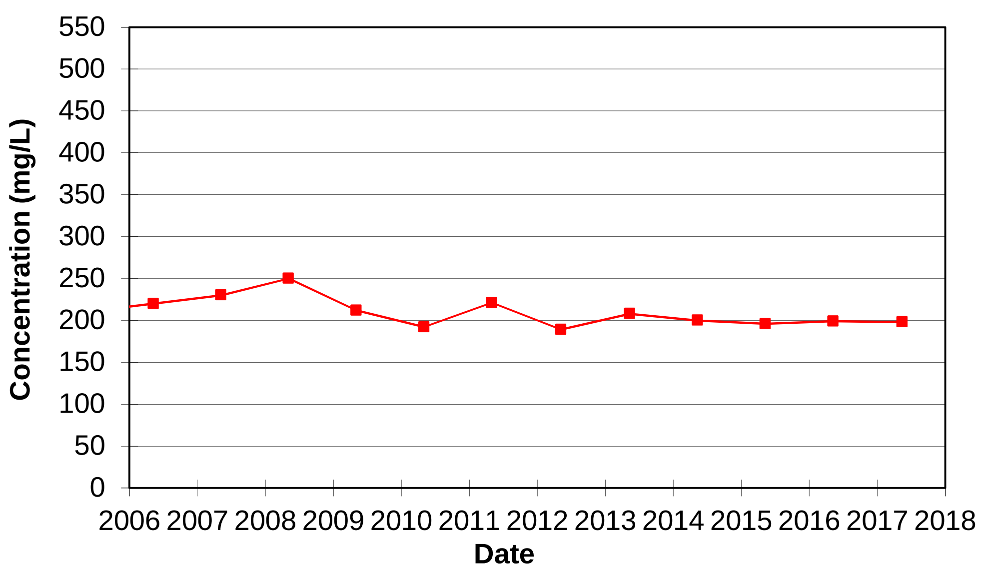
CONDUCTIVITY (Laboratory)



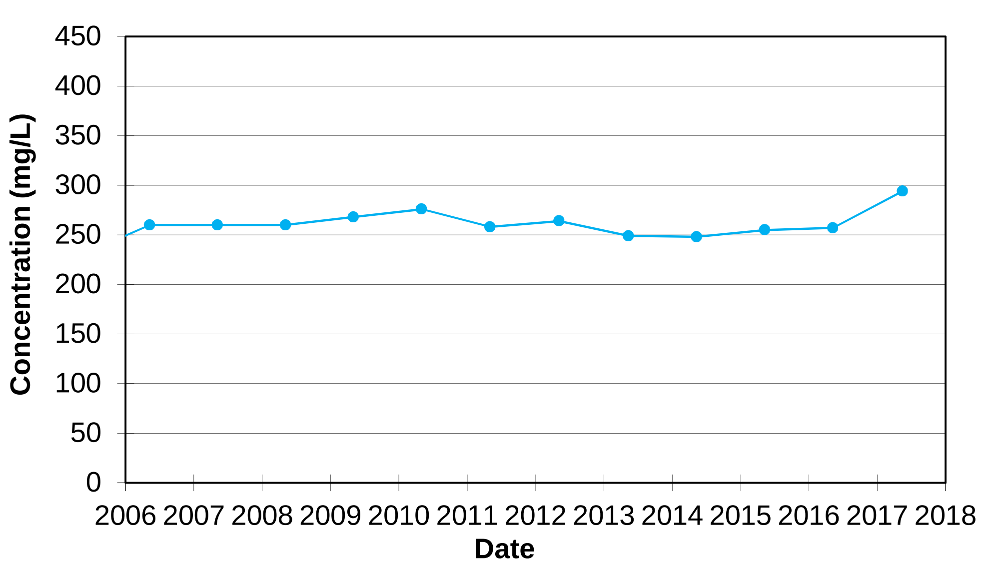
IRON (Dissolved)



HARDNESS



ALKALINITY



BORON (Dissolved)

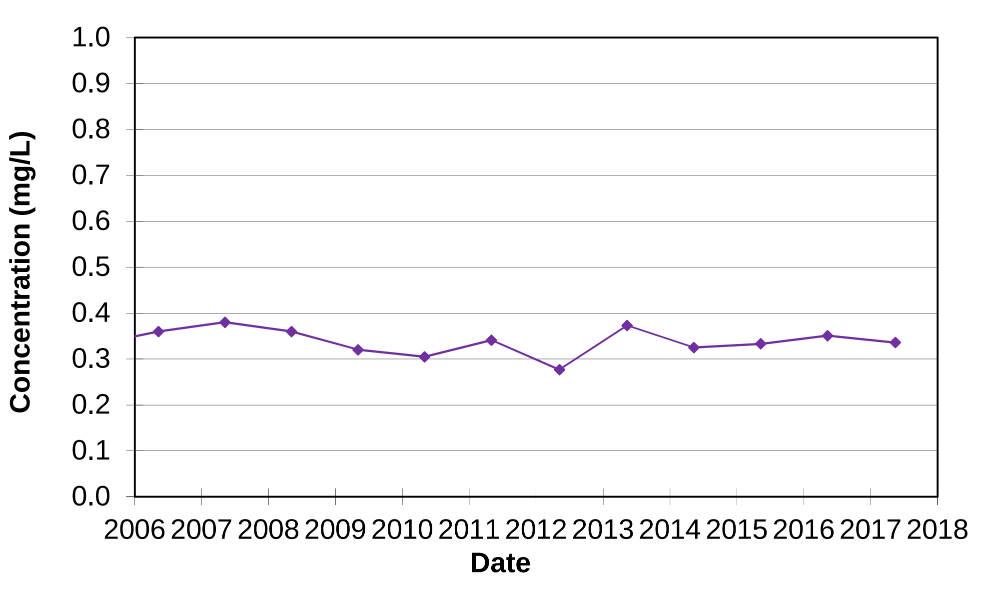
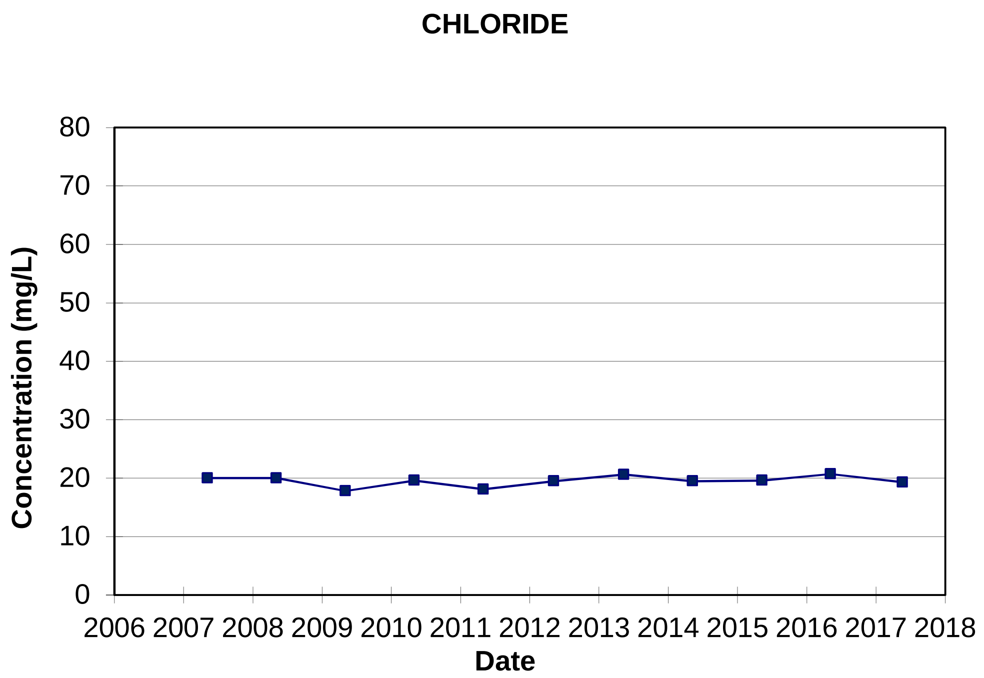
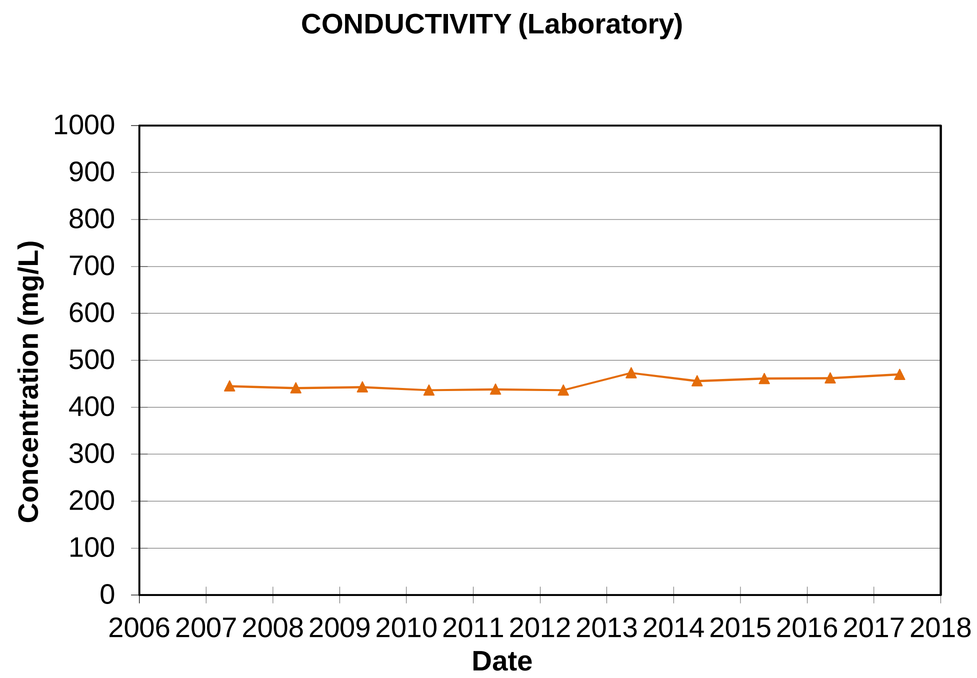
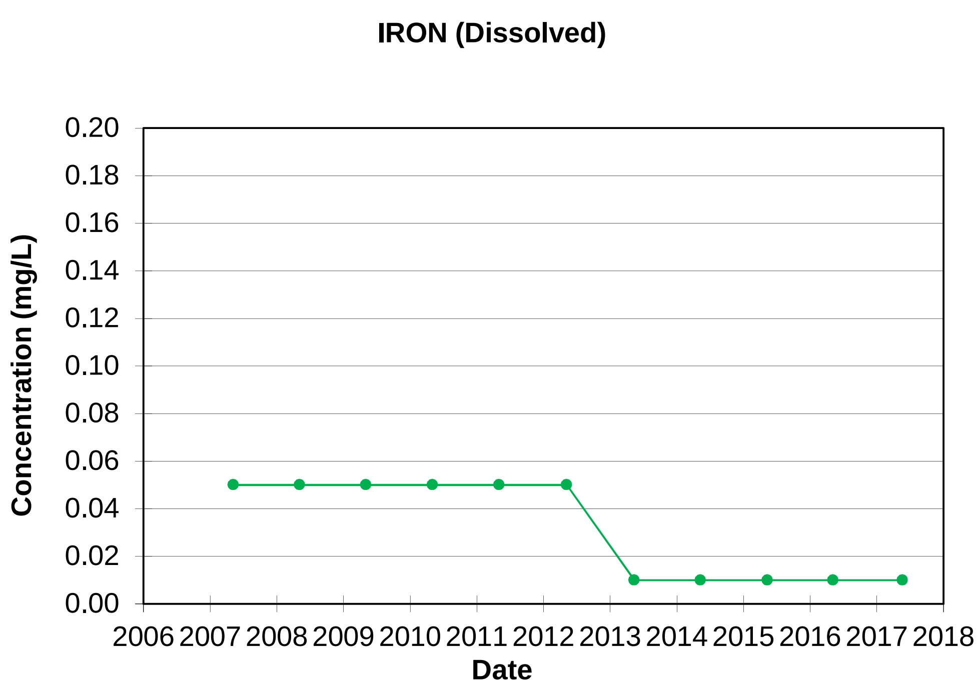


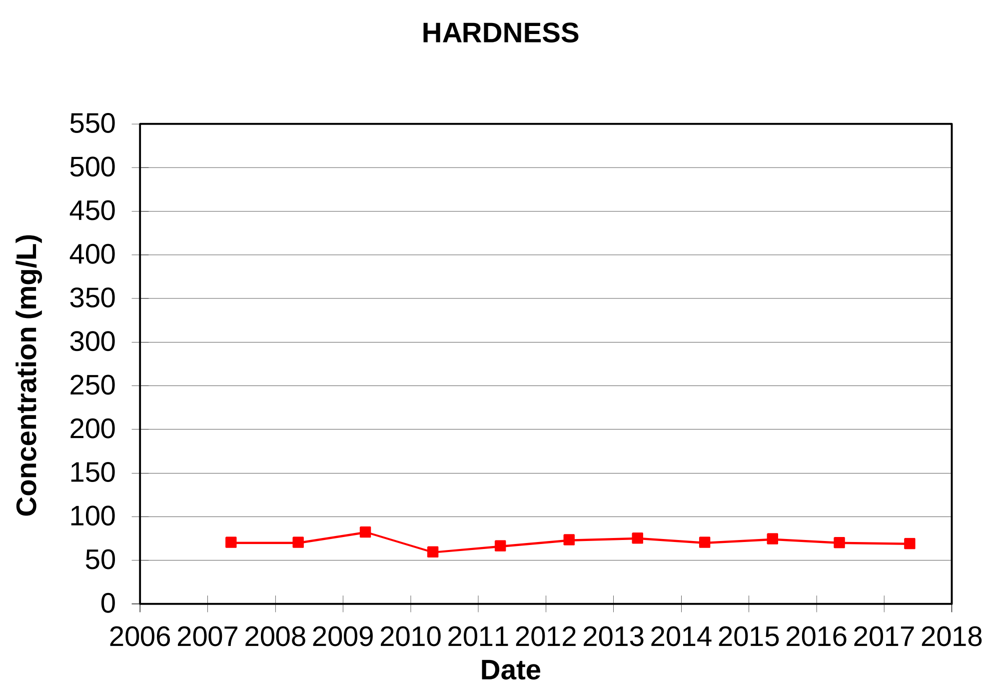
FIGURE C-16 - OW41B-01

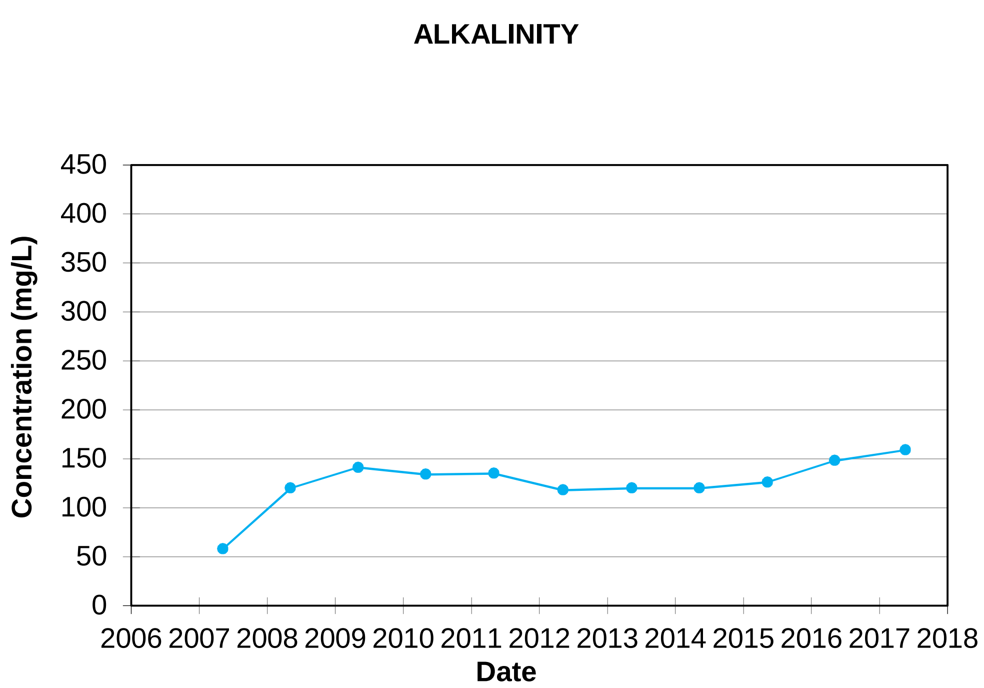
GREEN LANE LANDFILL SITE











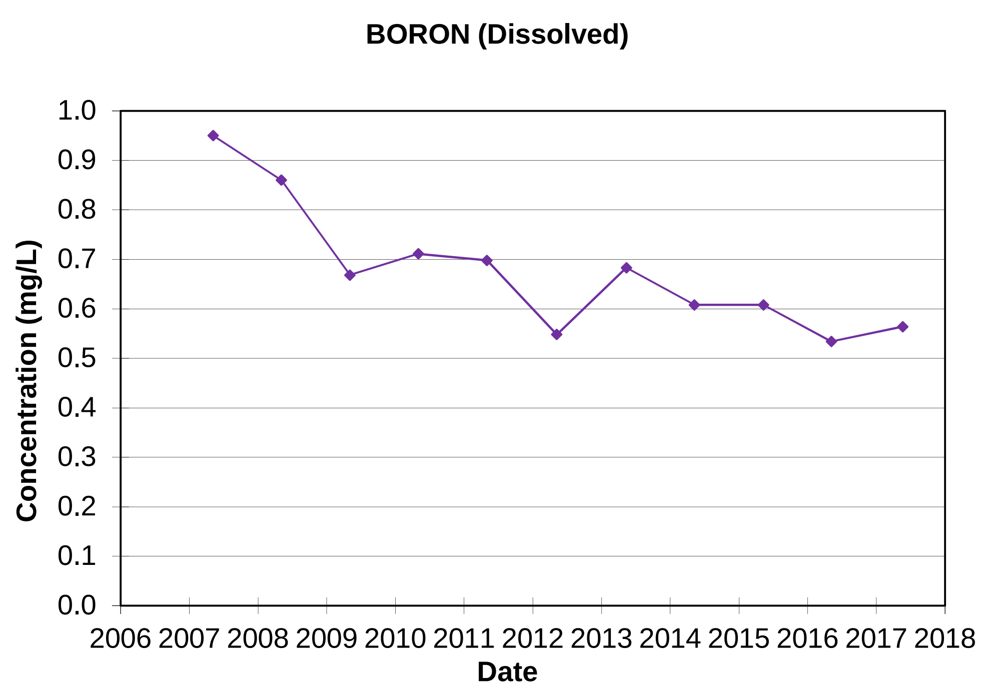
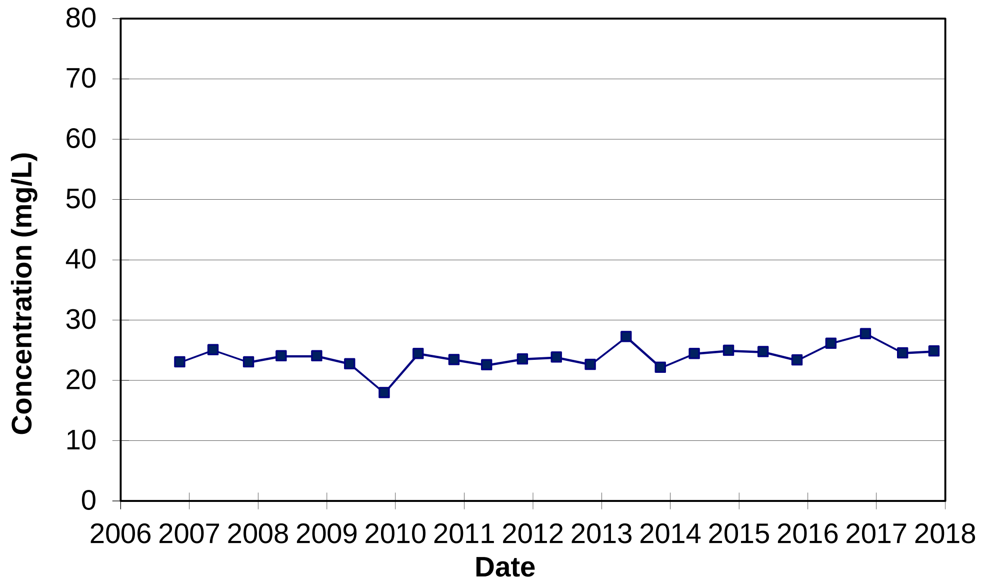


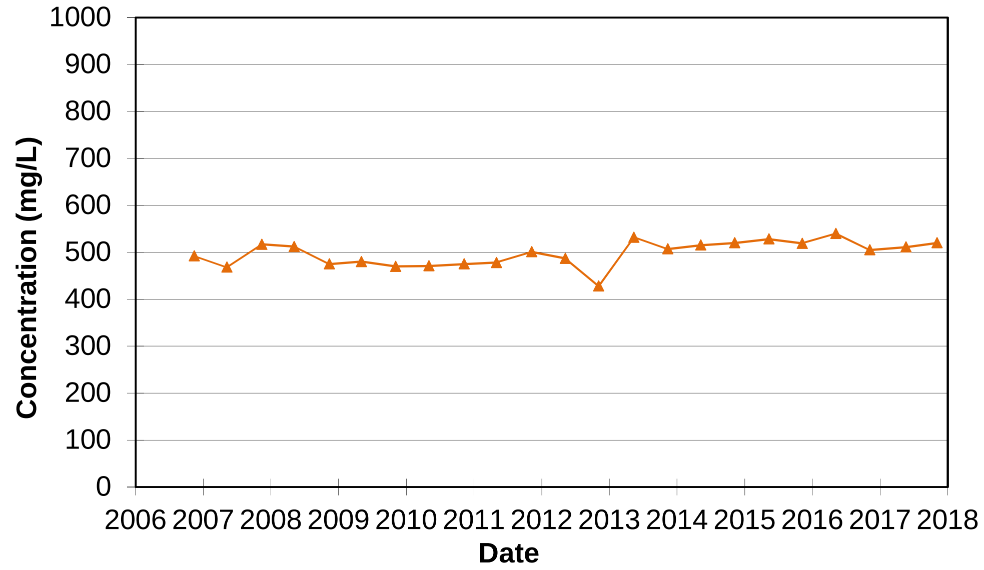
FIGURE C-17 - OW42B-01

GREEN LANE LANDFILL SITE

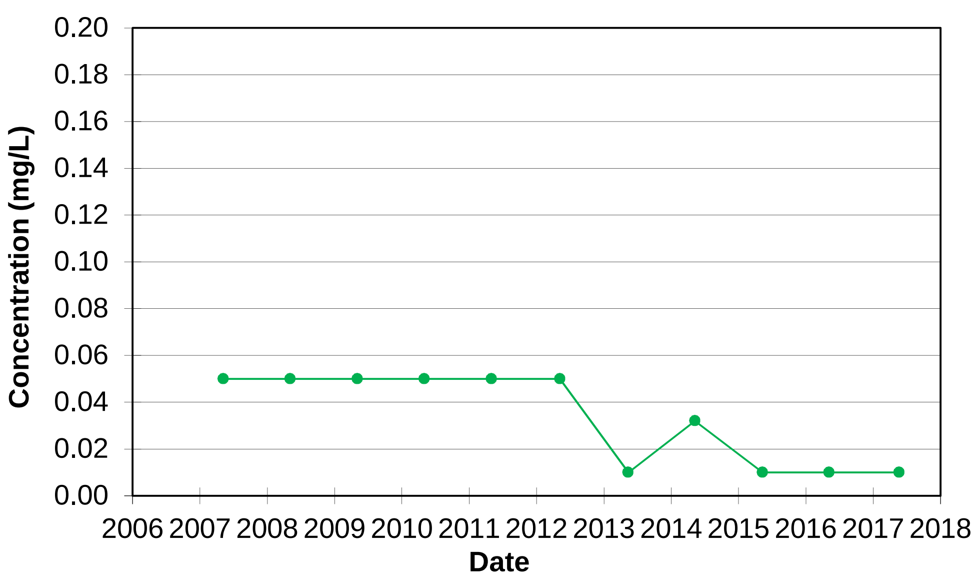
CHLORIDE



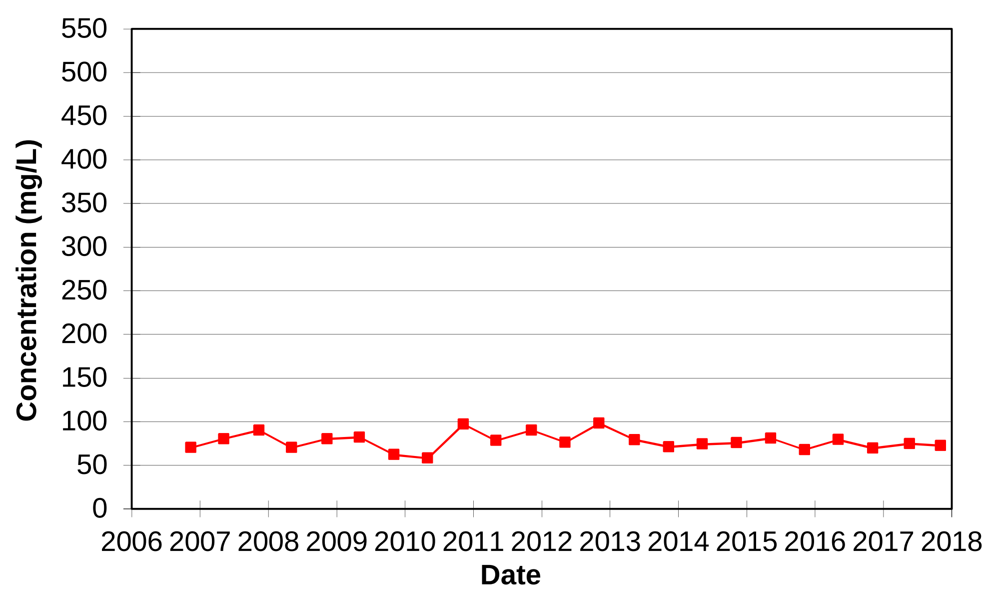
CONDUCTIVITY (Laboratory)



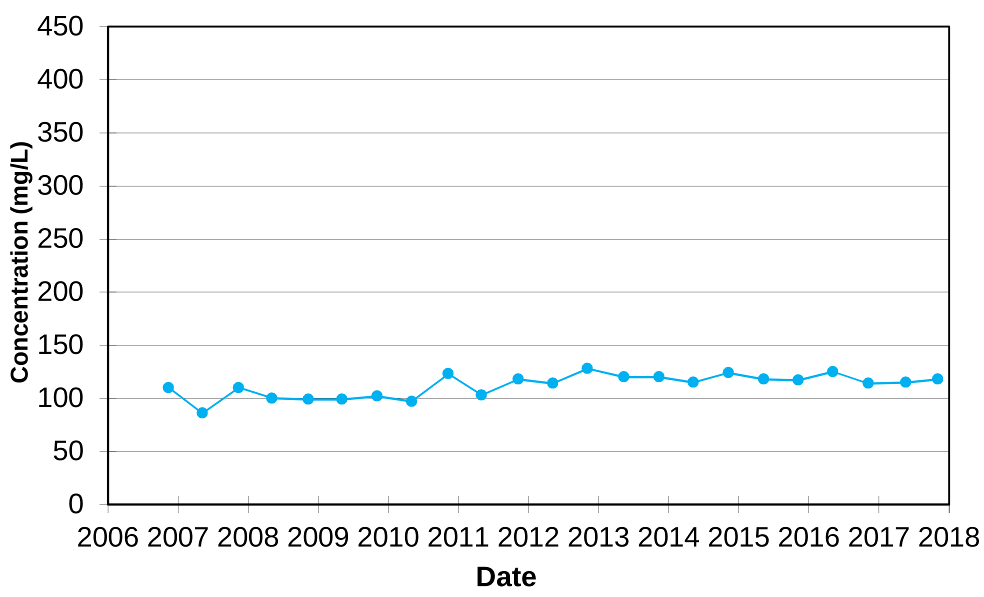
IRON (Dissolved)



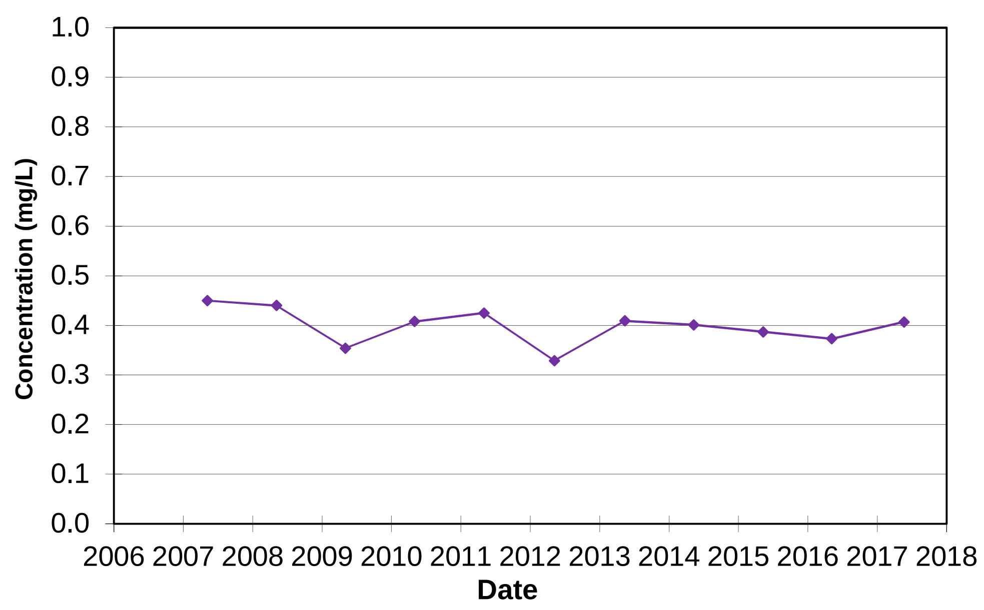
HARDNESS



ALKALINITY



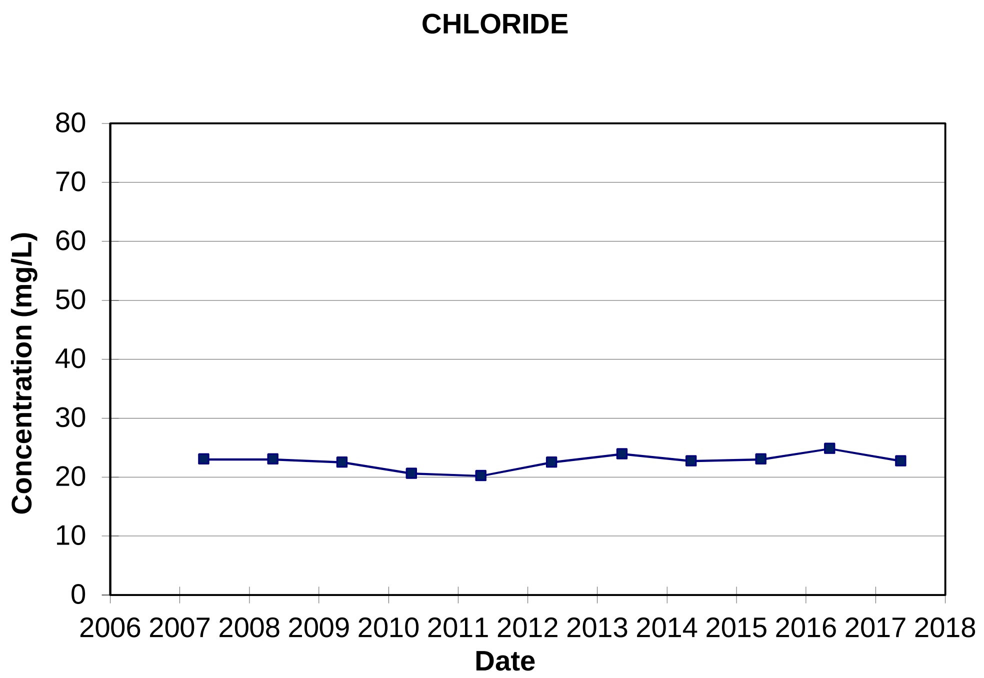
BORON (Dissolved)

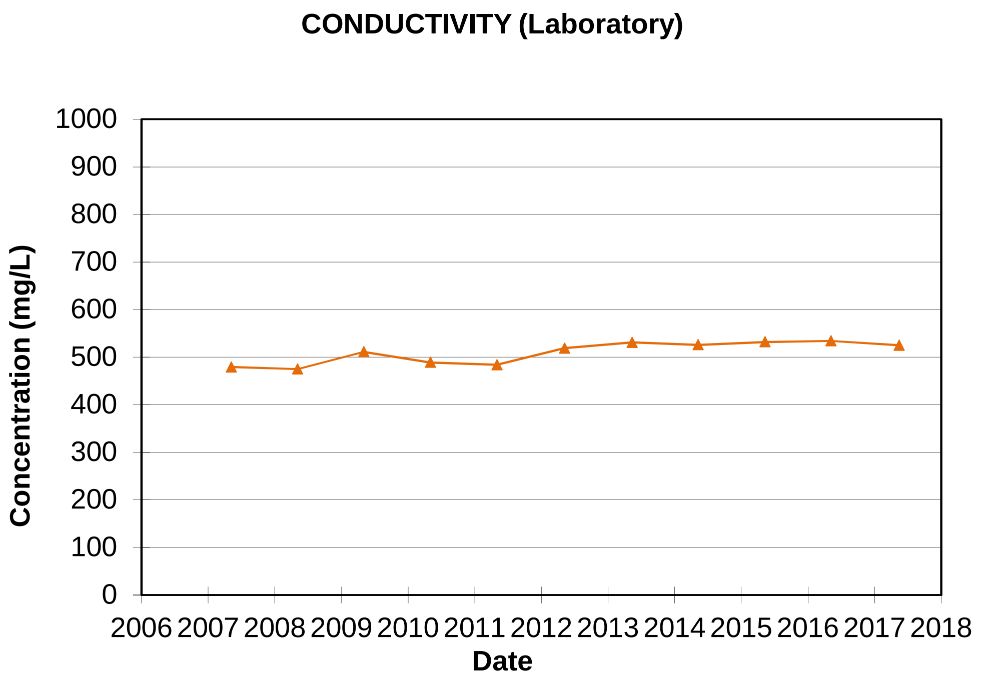


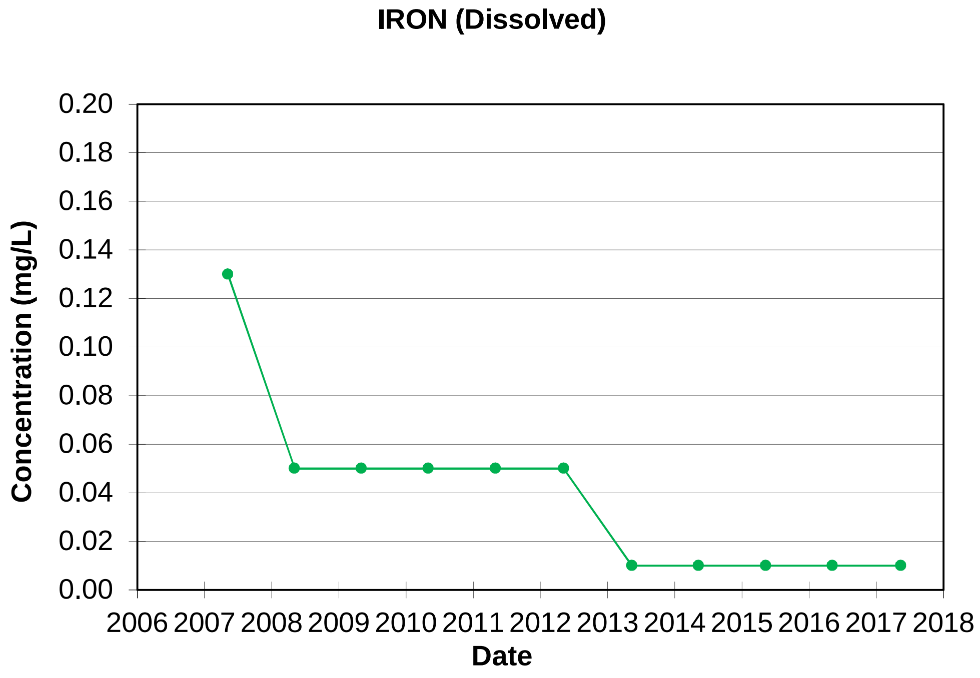
wsp

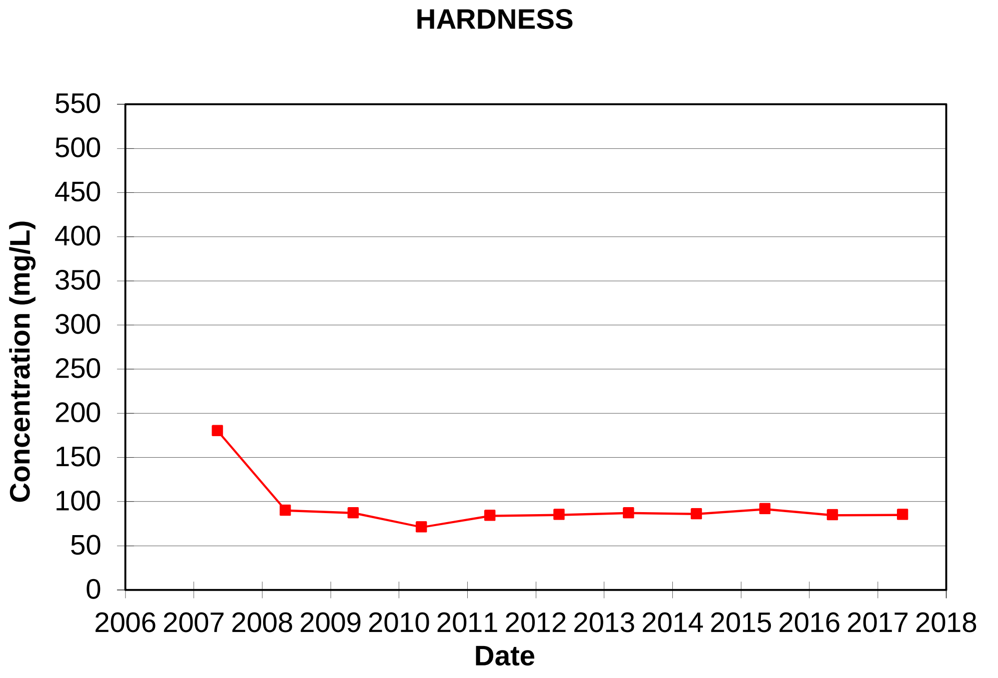
FIGURE C-18 - OW43B-01

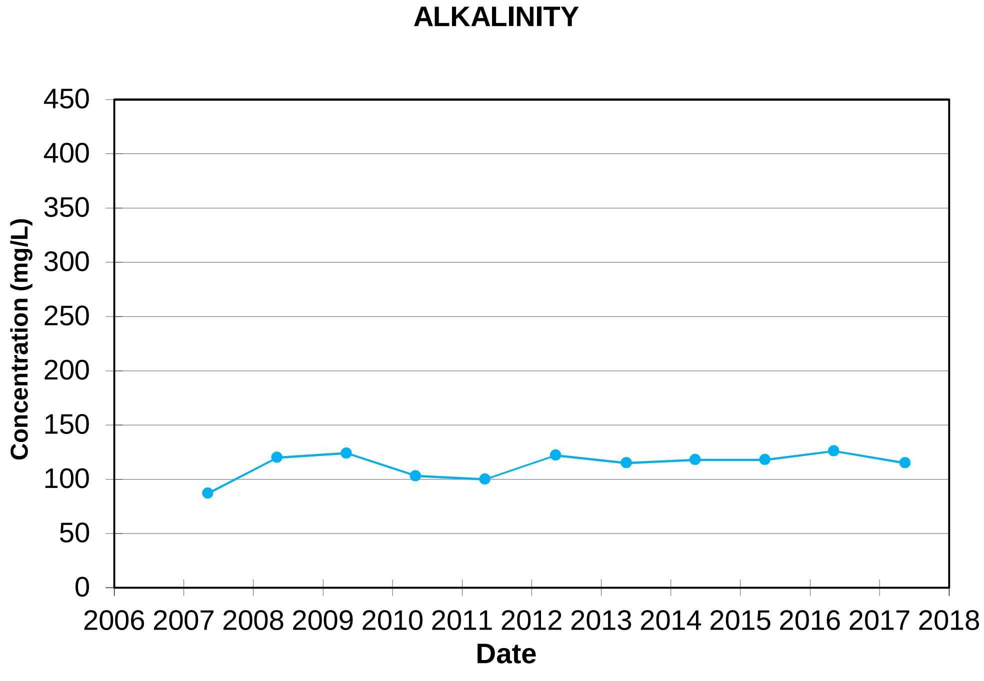
GREEN LANE LANDFILL SITE











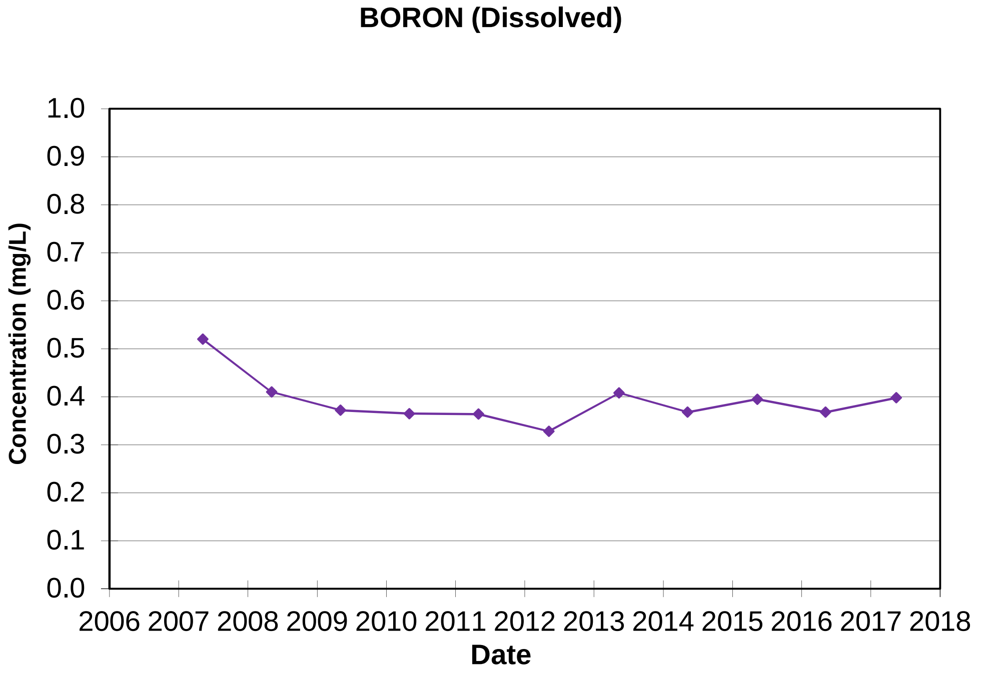
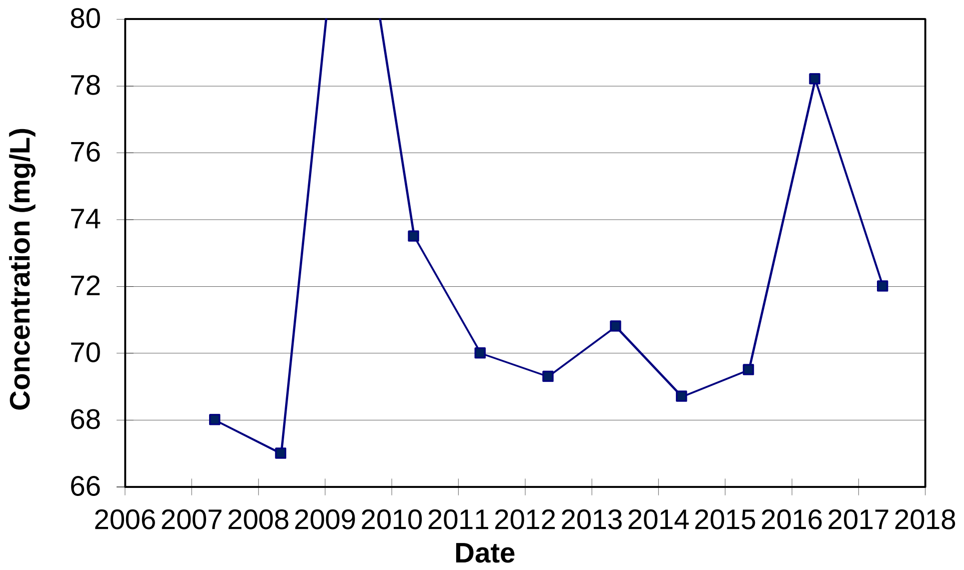


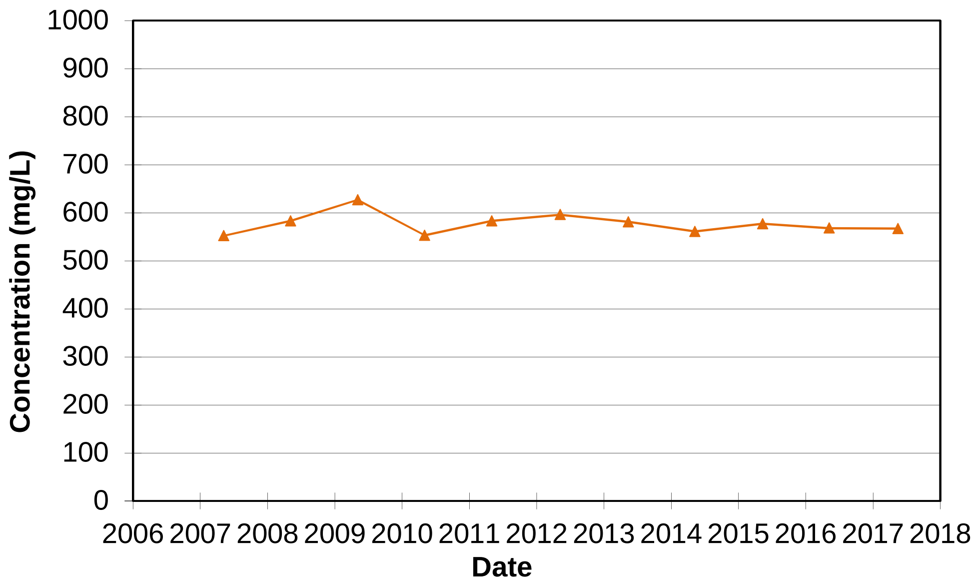
FIGURE C-19 - OW44A-01

GREEN LANE LANDFILL SITE

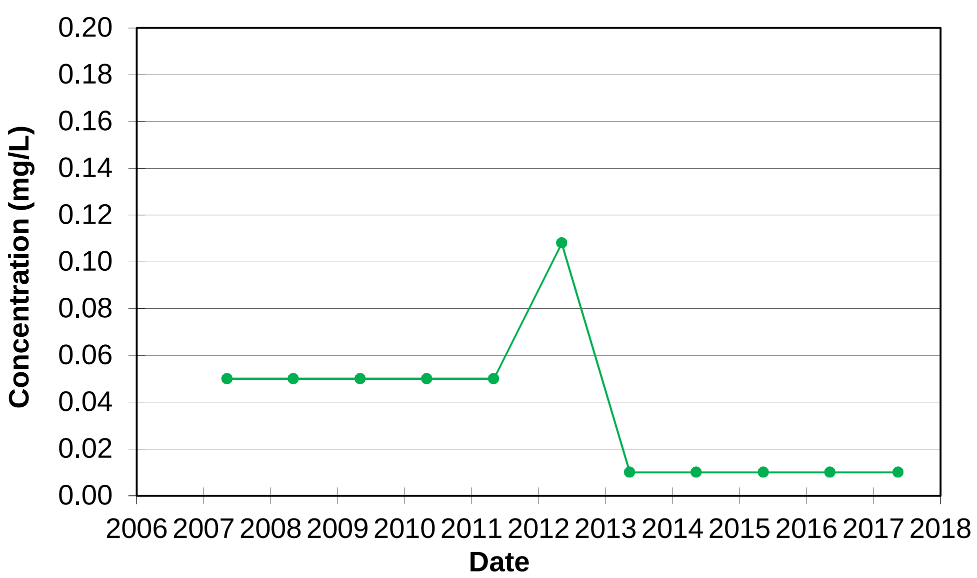
CHLORIDE



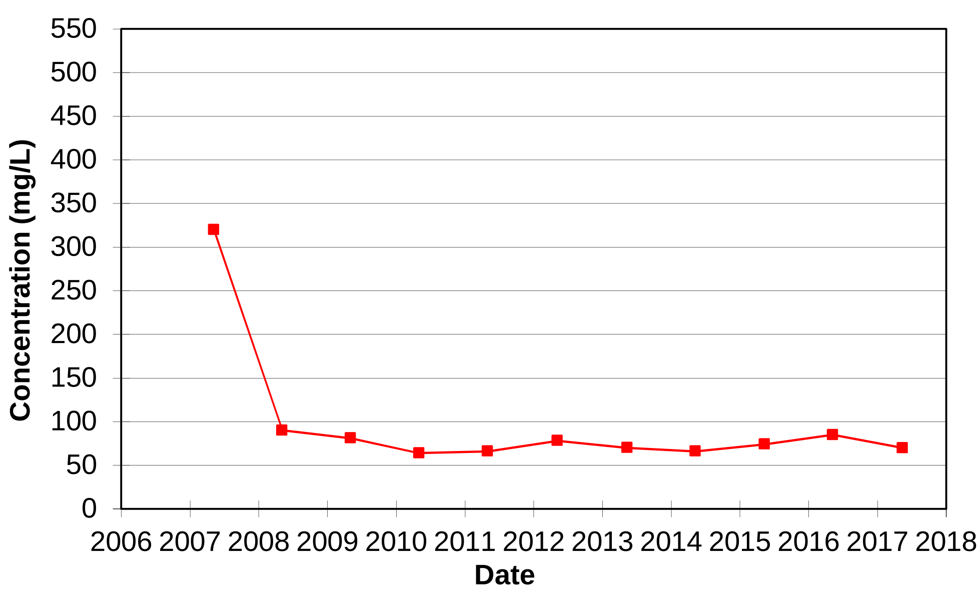
CONDUCTIVITY (Laboratory)



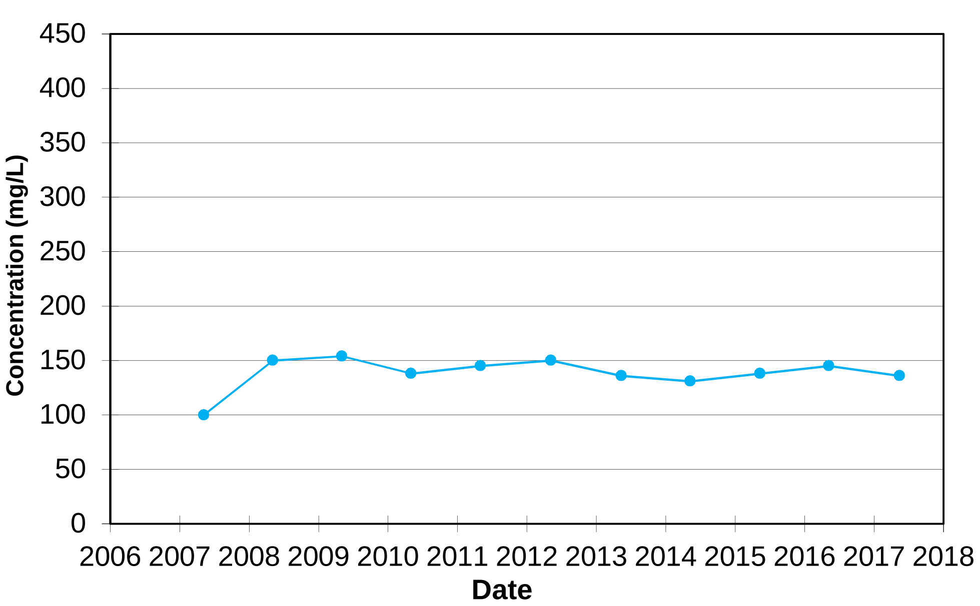
IRON (Dissolved)



HARDNESS



ALKALINITY



BORON (Dissolved)

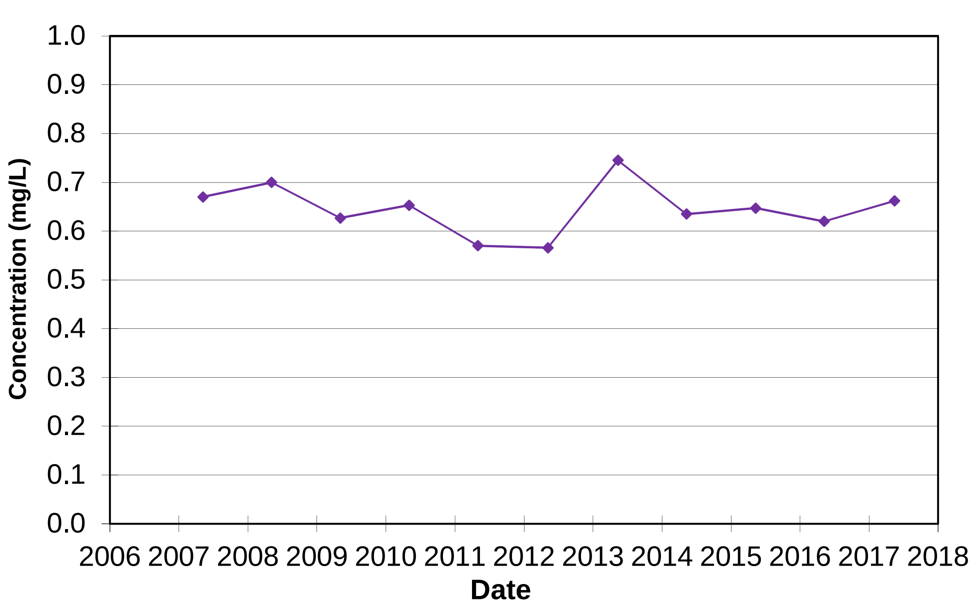
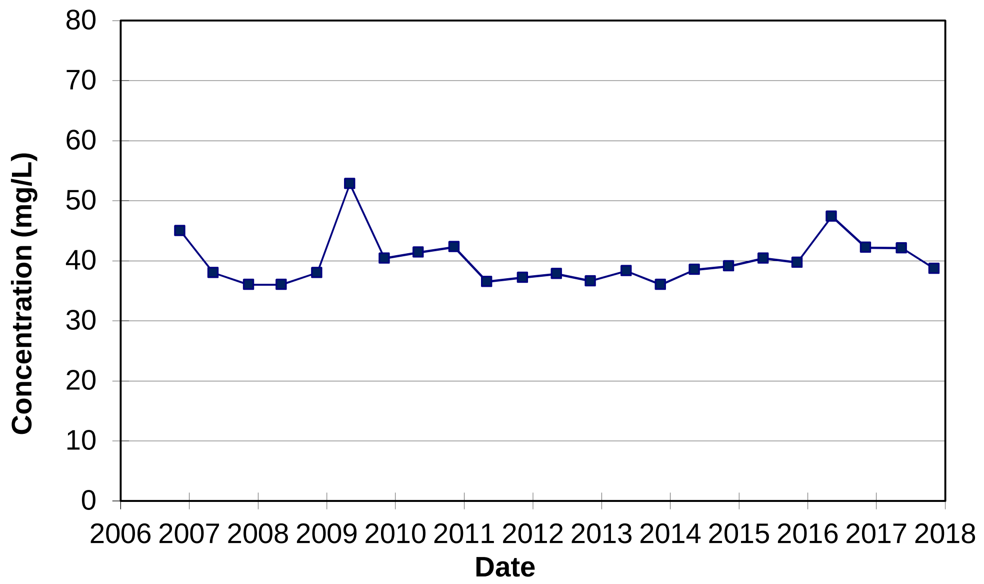


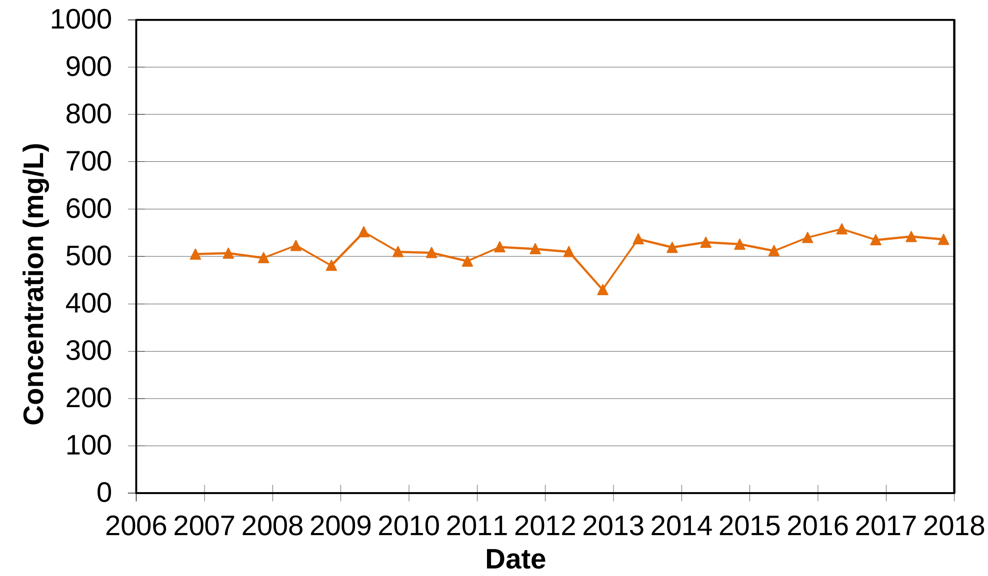
FIGURE C-20 - OW44B-01

GREEN LANE LANDFILL SITE

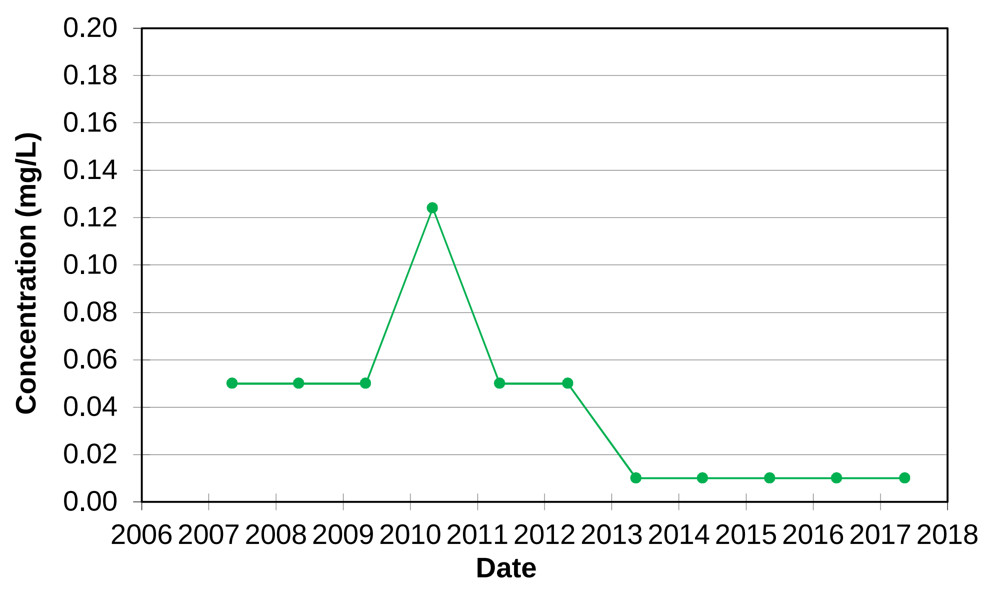
CHLORIDE



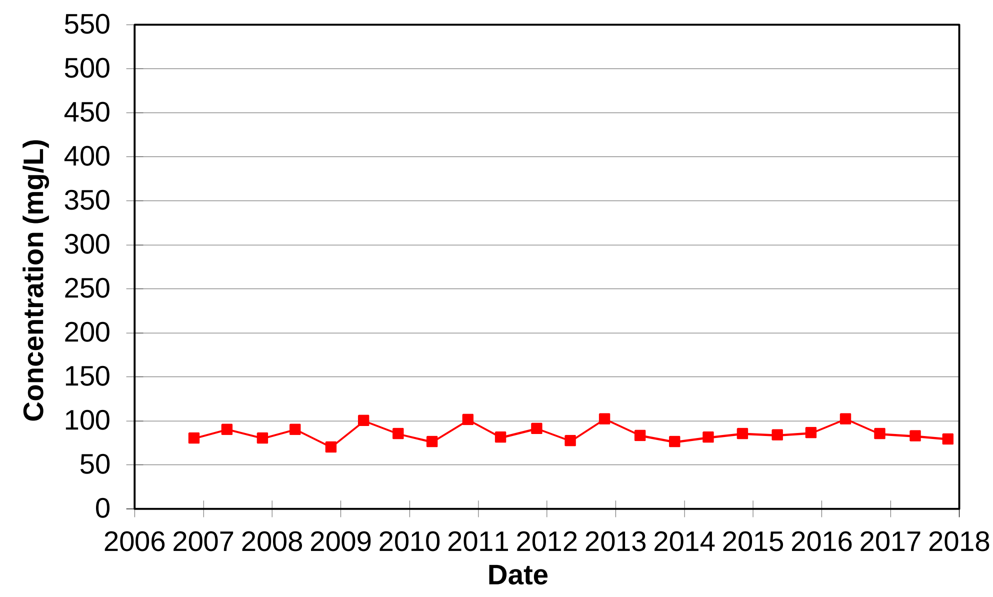
CONDUCTIVITY (Laboratory)



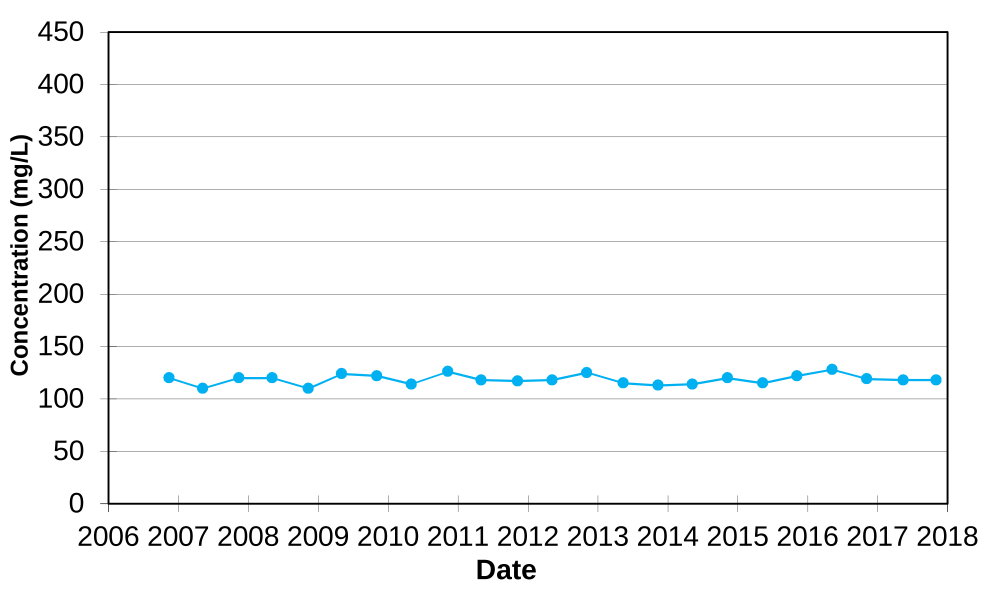
IRON (Dissolved)



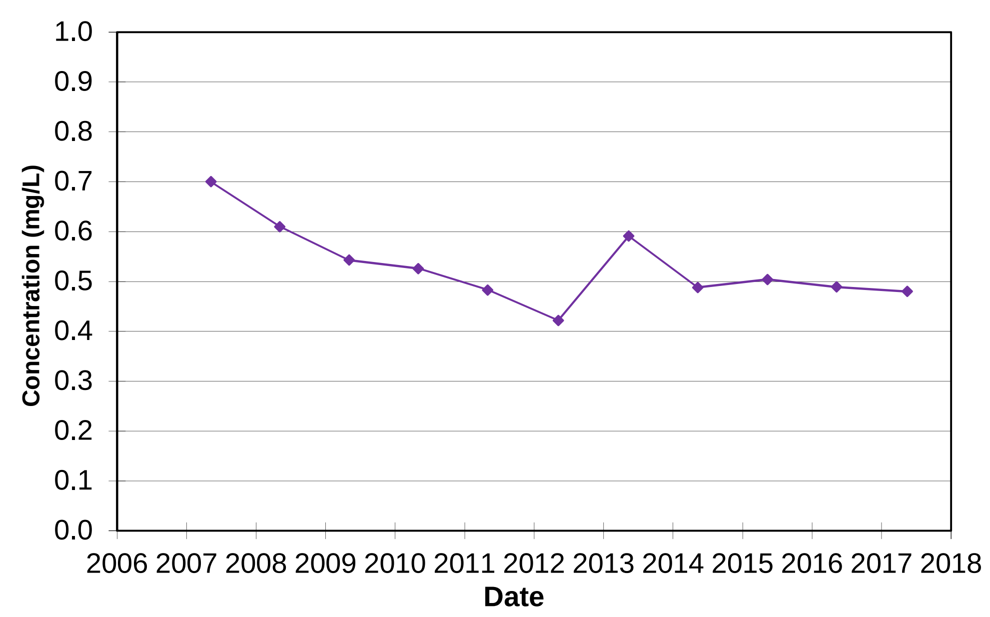
HARDNESS



ALKALINITY



BORON (Dissolved)

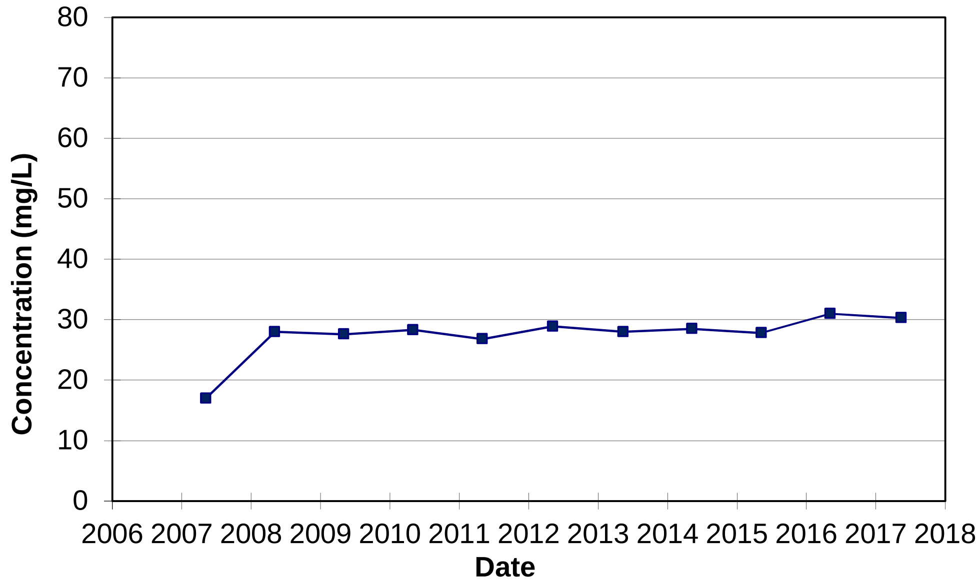


wsp

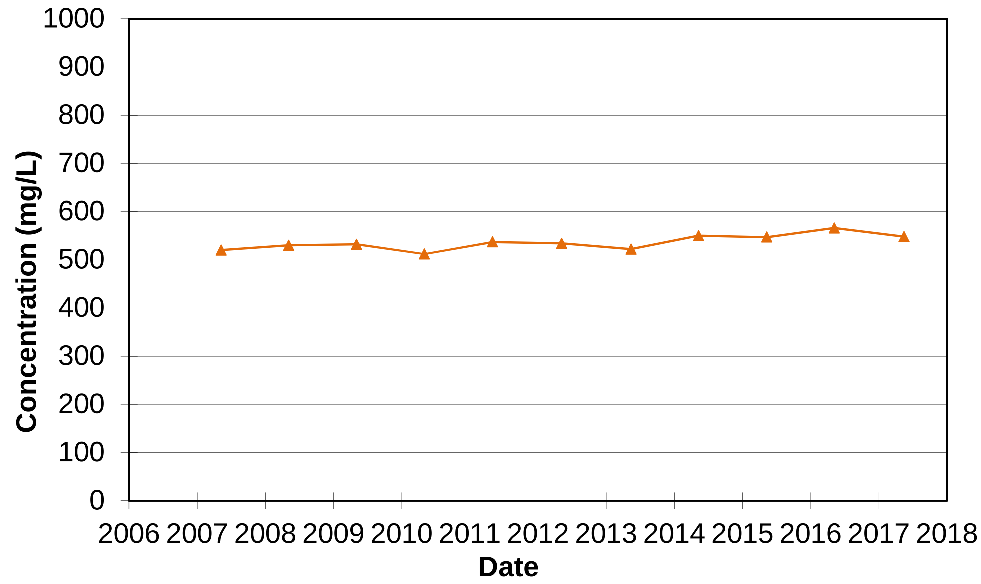
FIGURE C-21 - OW45B-01

GREEN LANE LANDFILL SITE

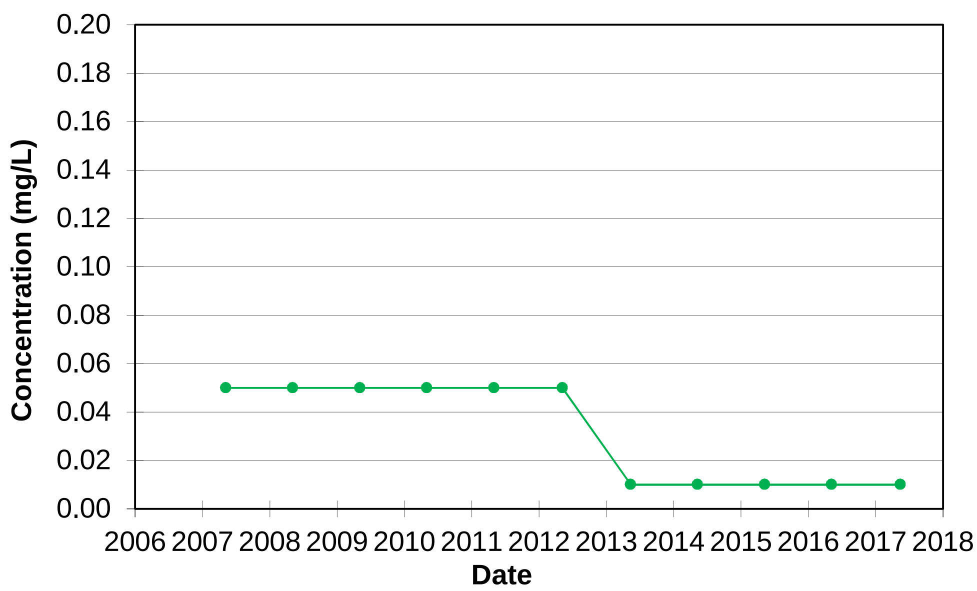
CHLORIDE



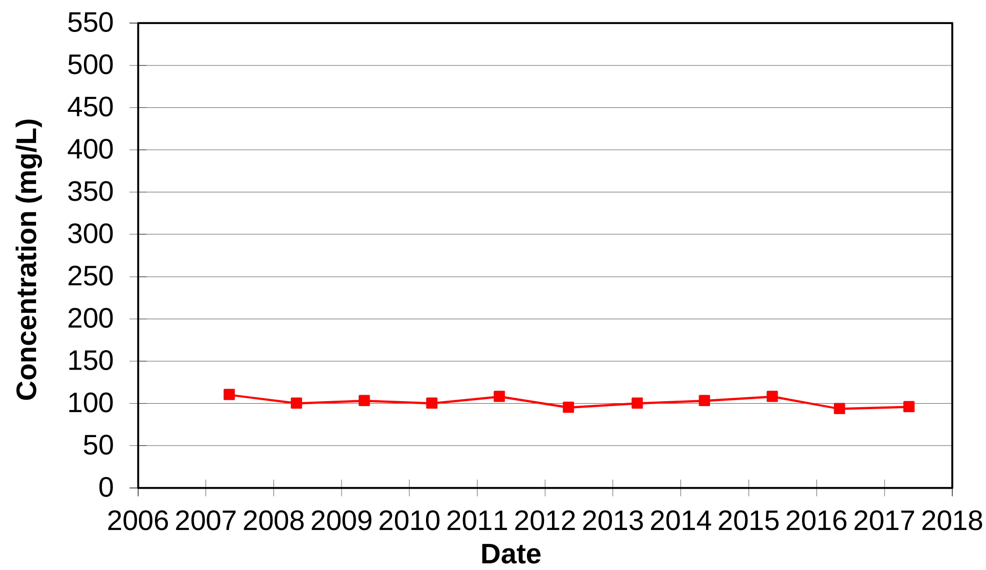
CONDUCTIVITY (Laboratory)



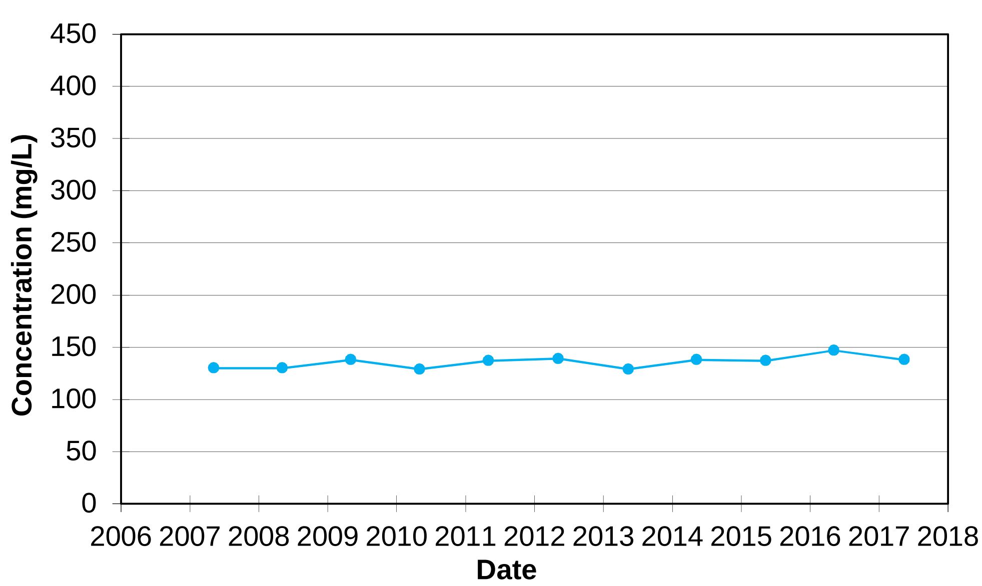
IRON (Dissolved)



HARDNESS



ALKALINITY



BORON (Dissolved)

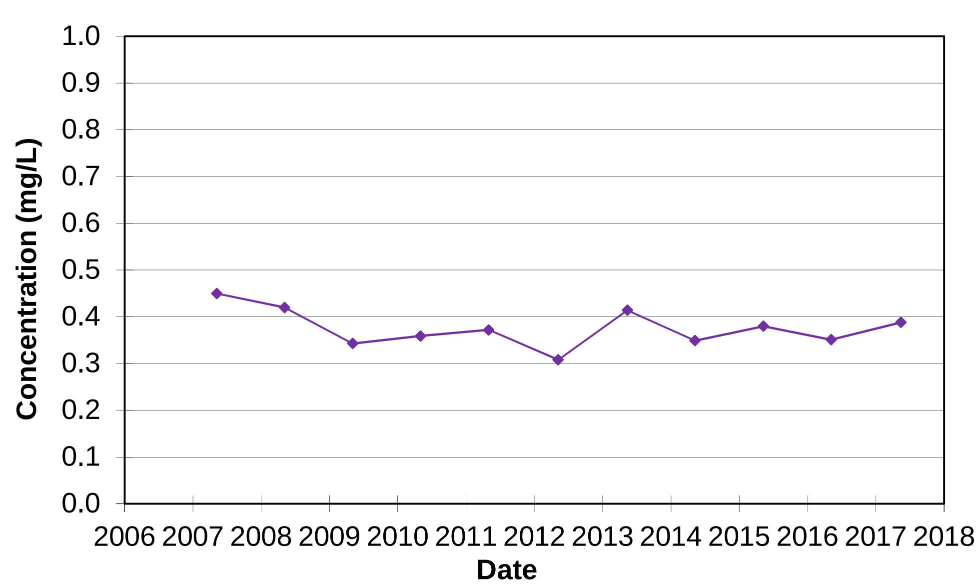
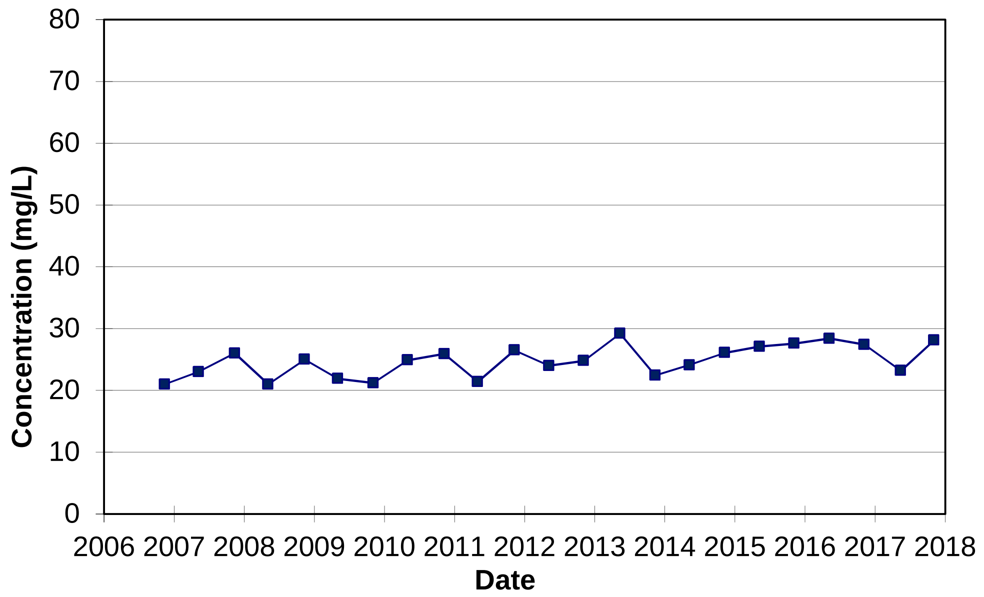


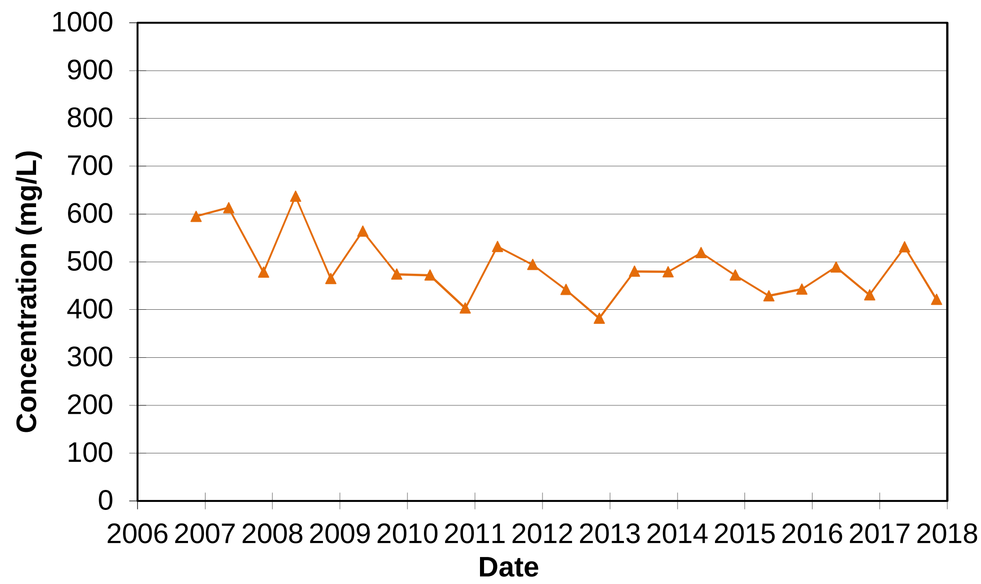
FIGURE C-22 - OW46B-01

GREEN LANE LANDFILL SITE

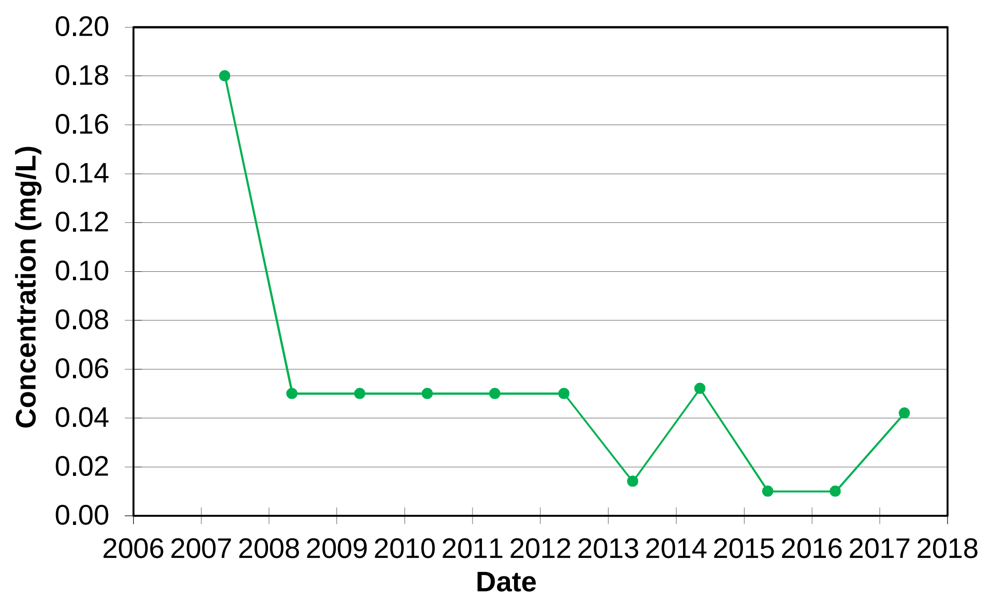
CHLORIDE



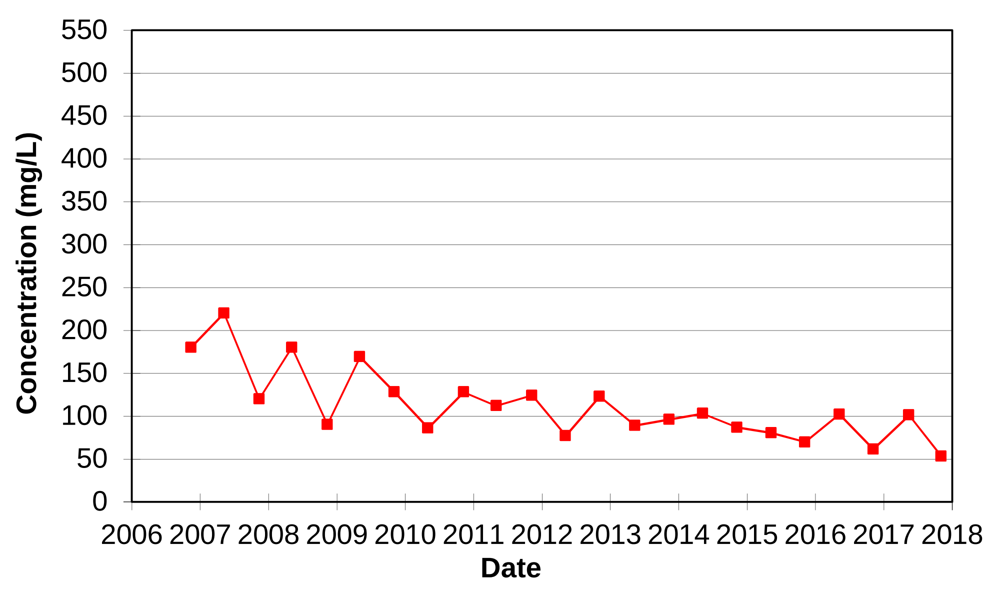
CONDUCTIVITY (Laboratory)



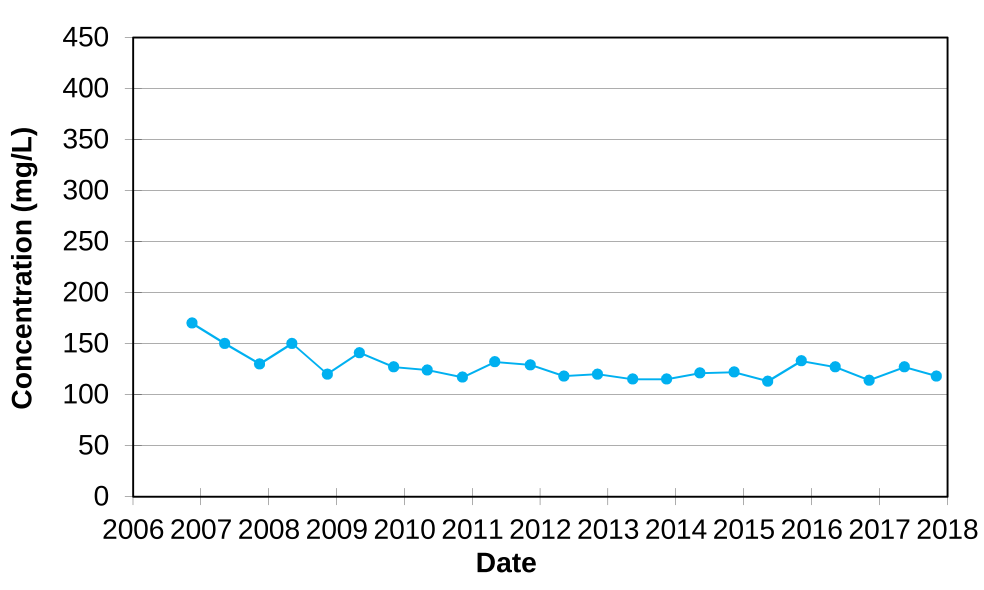
IRON (Dissolved)



HARDNESS



ALKALINITY



BORON (Dissolved)

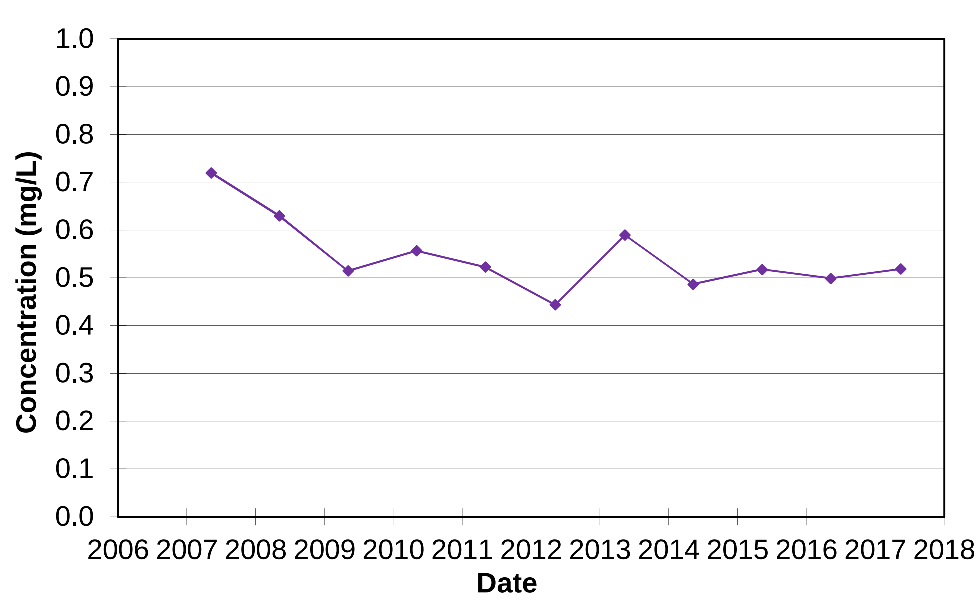
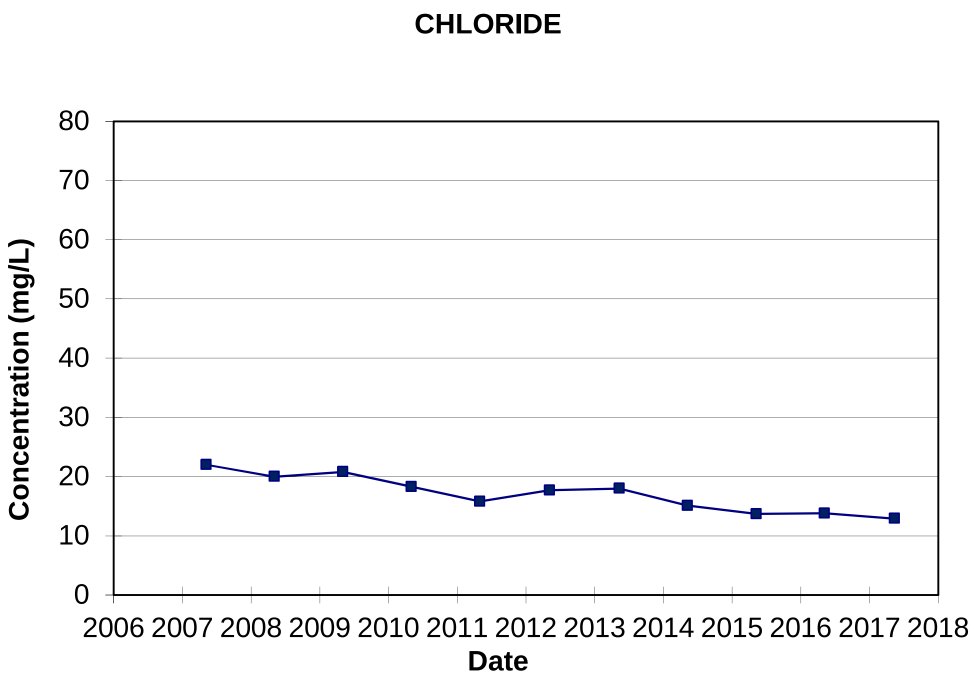
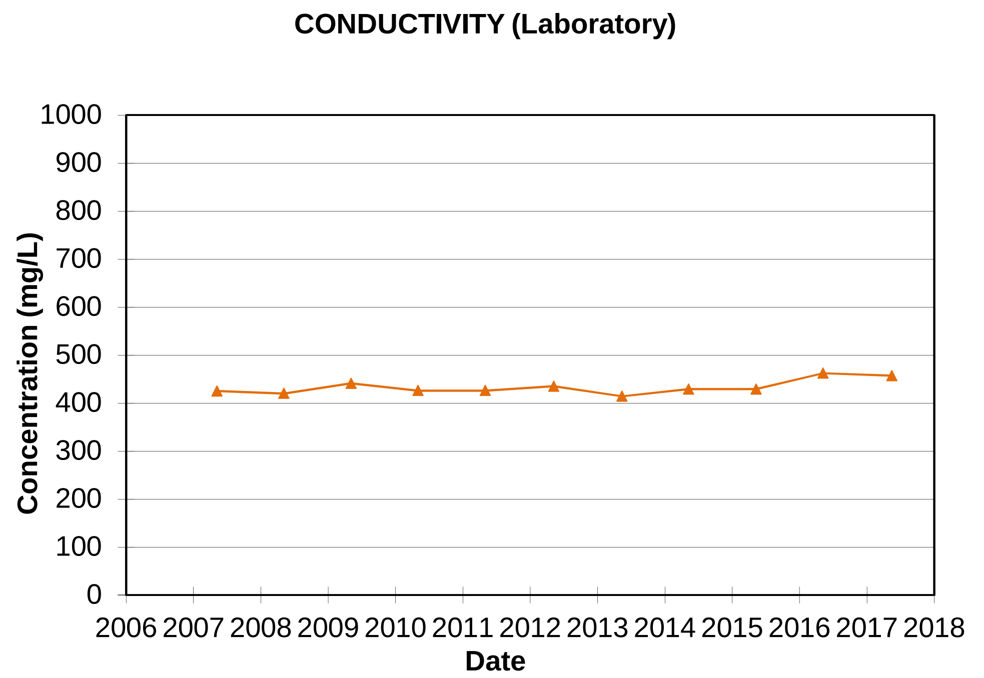
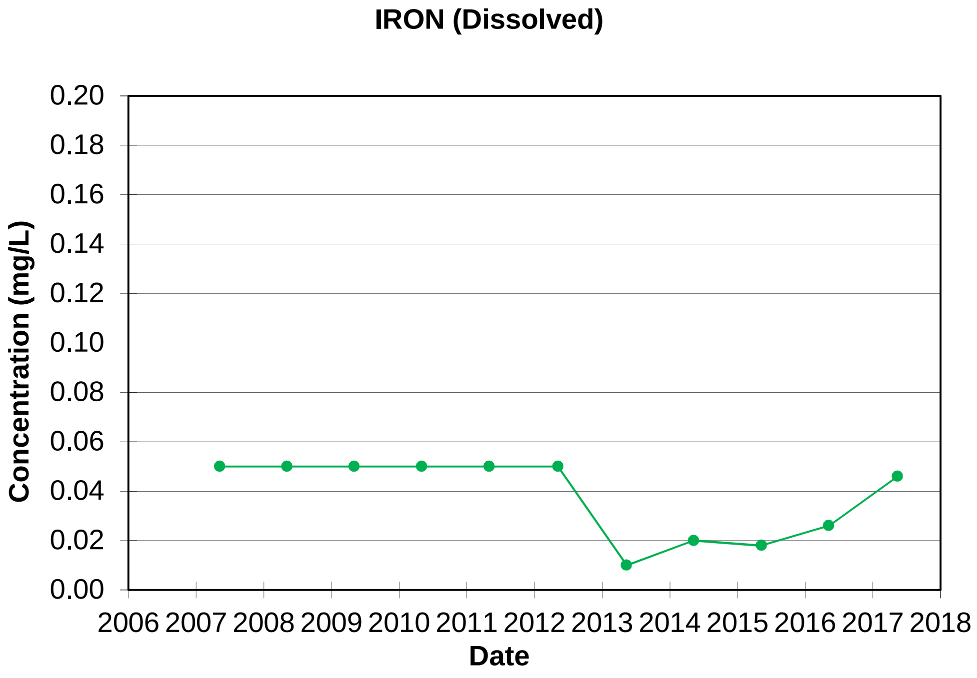


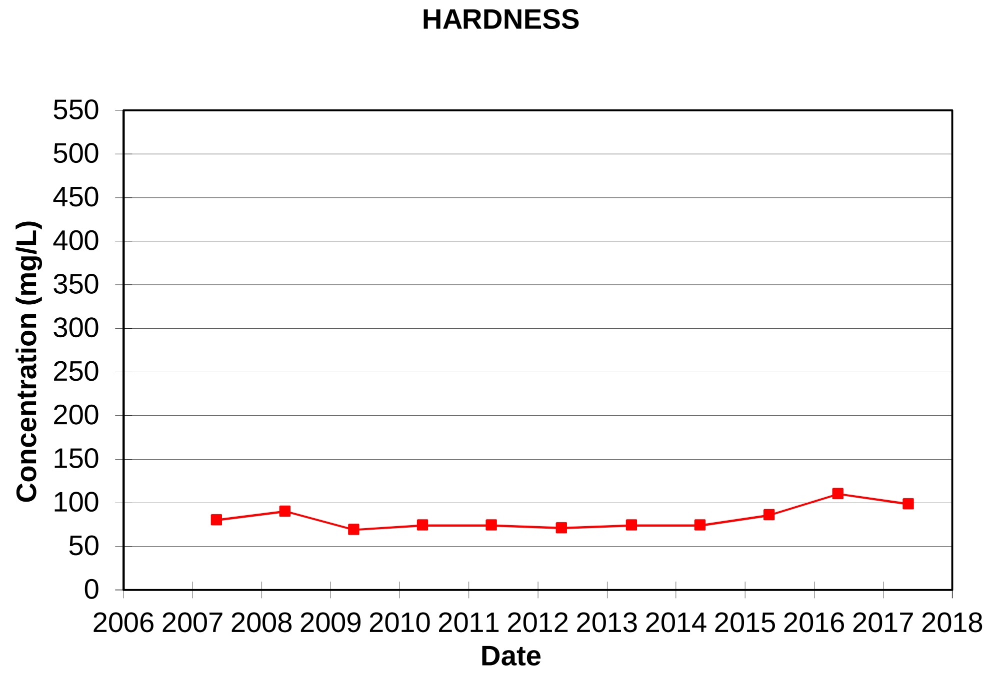
FIGURE C-23 - OW47B-01

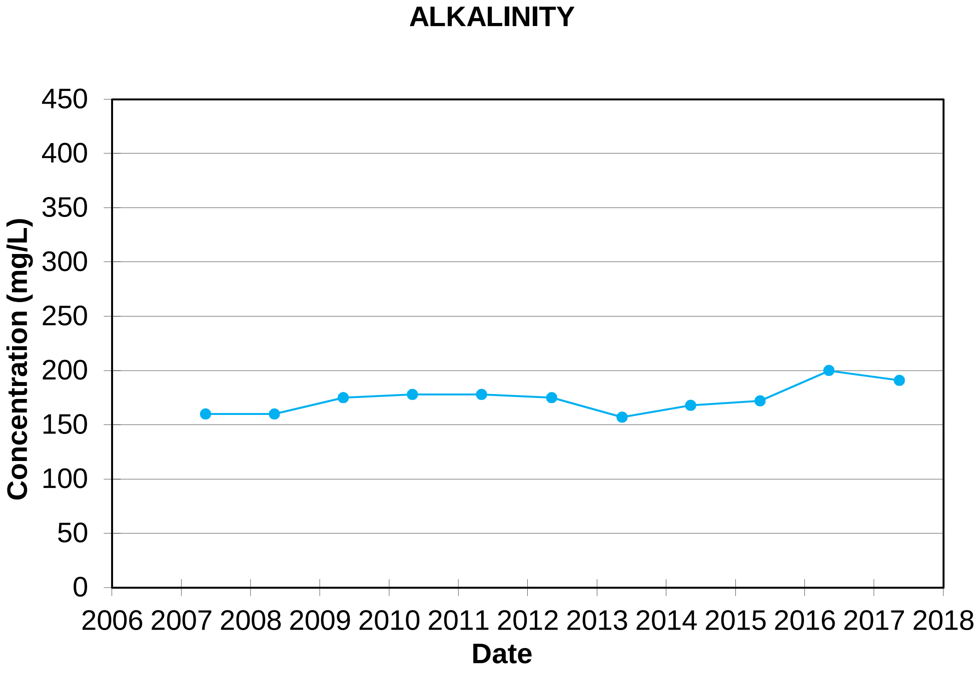
GREEN LANE LANDFILL SITE











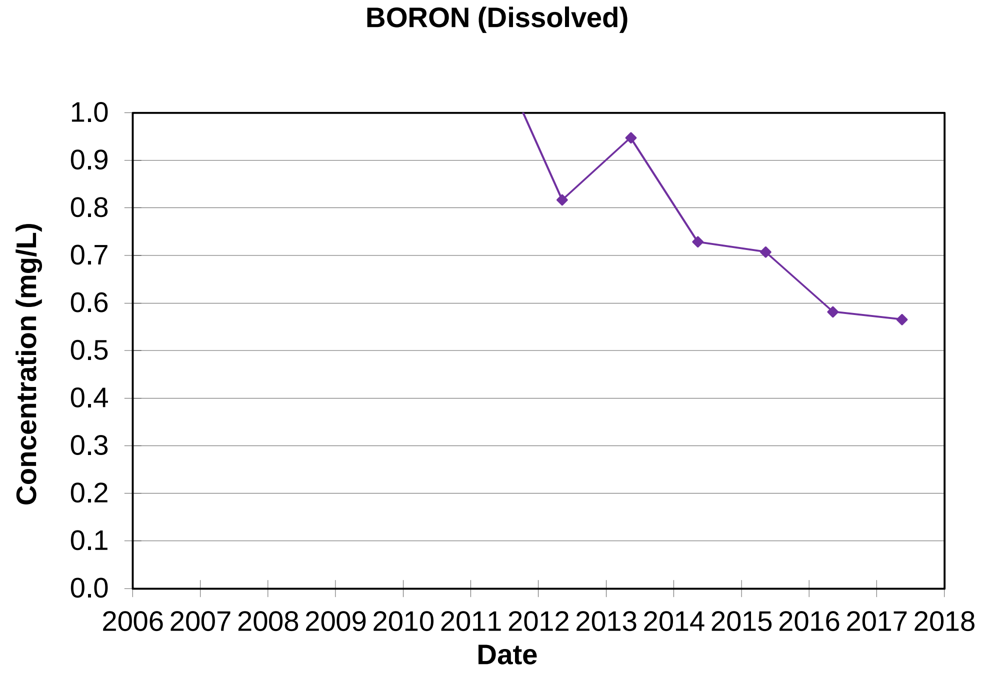
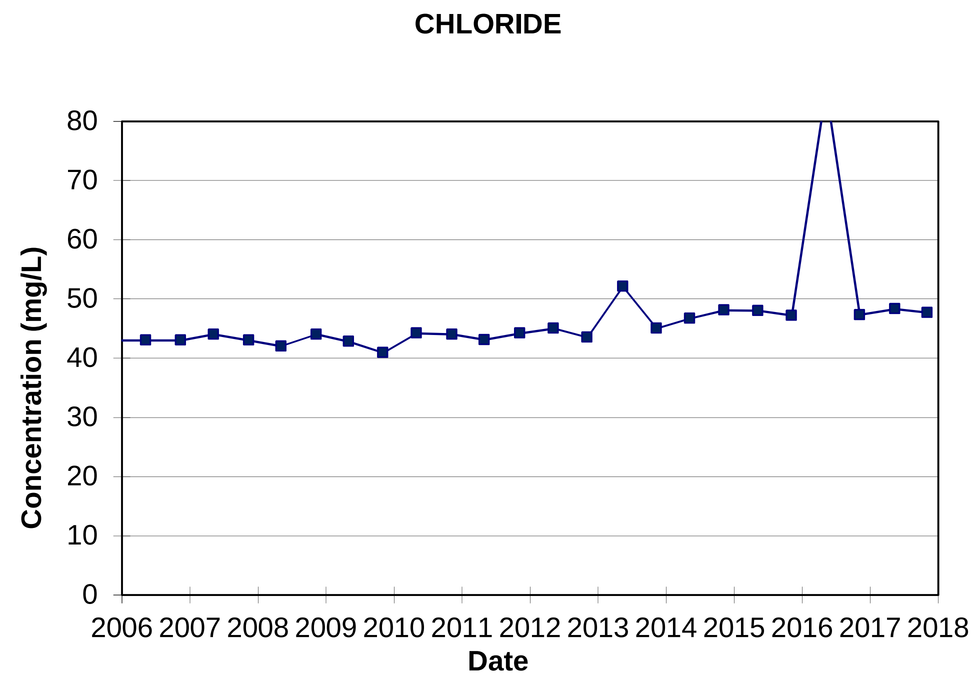
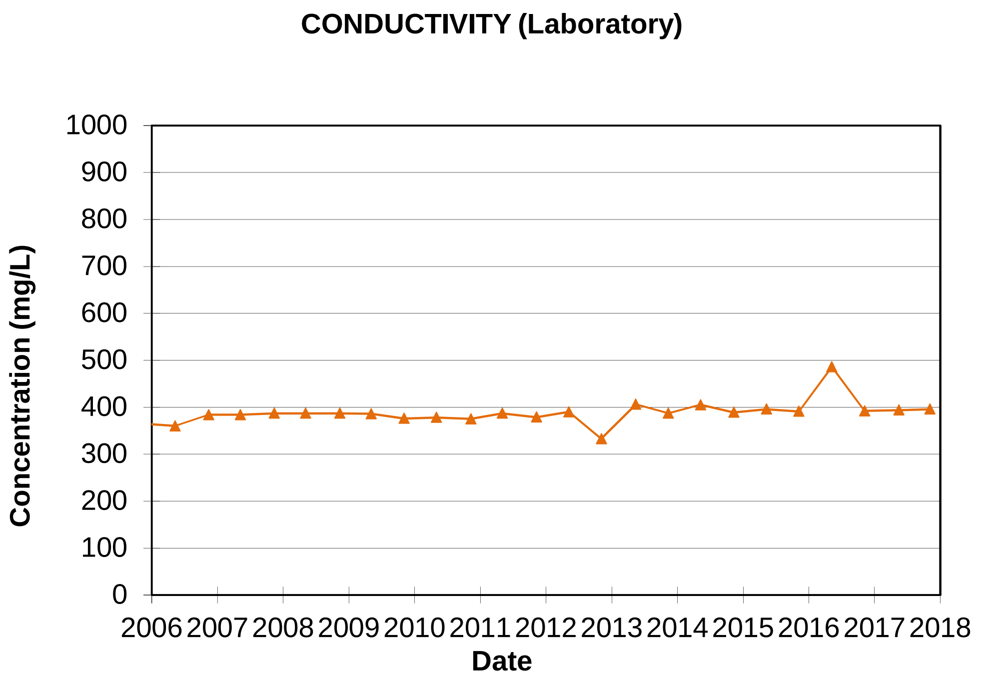
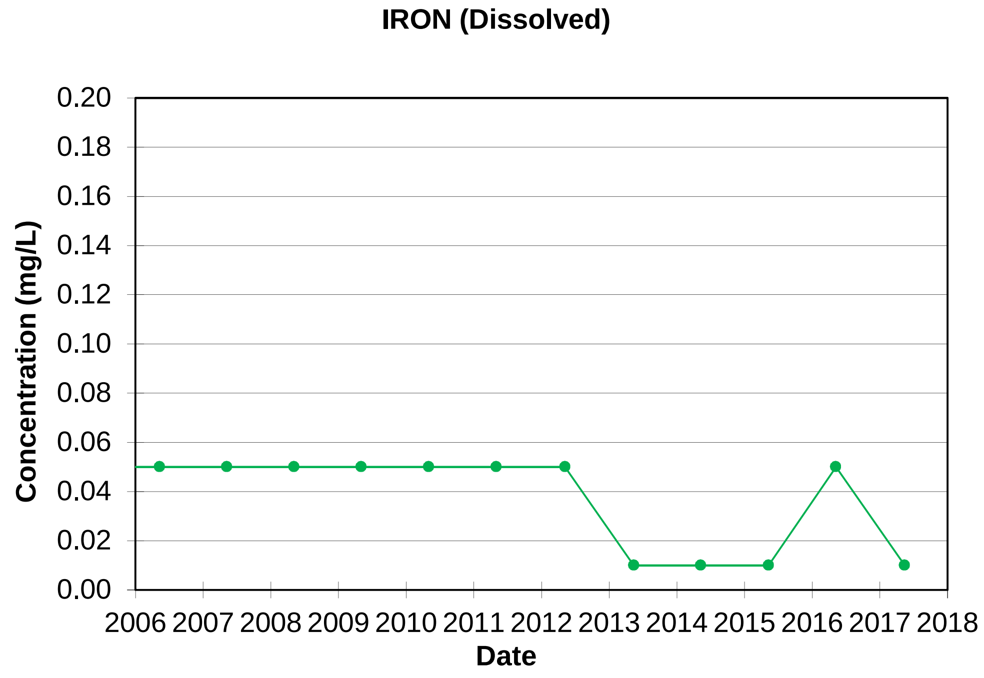


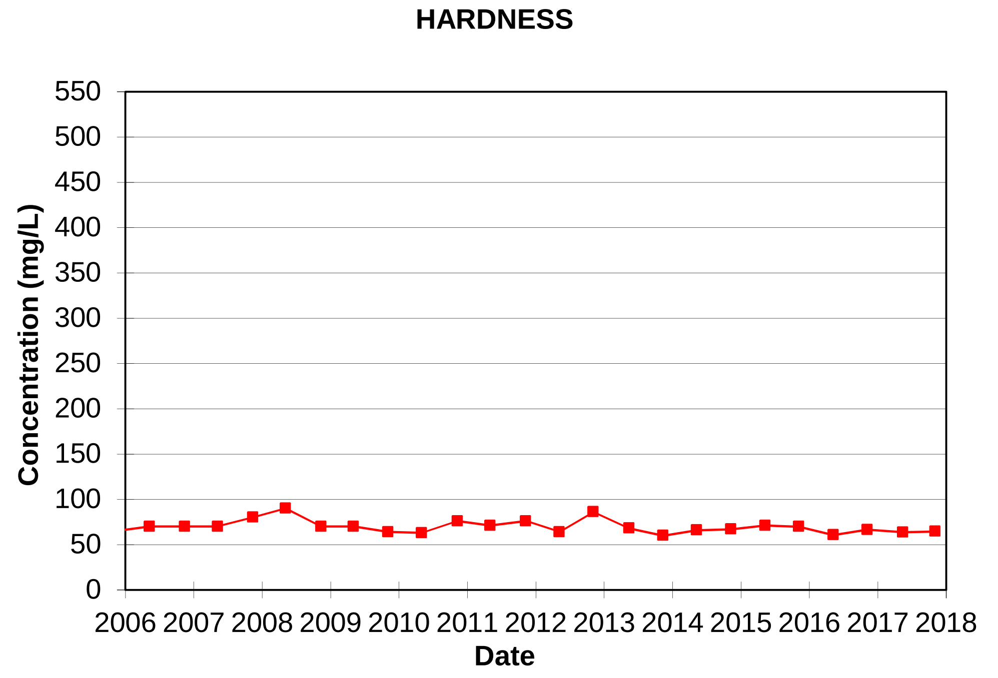
FIGURE C-24 - OW48B-01

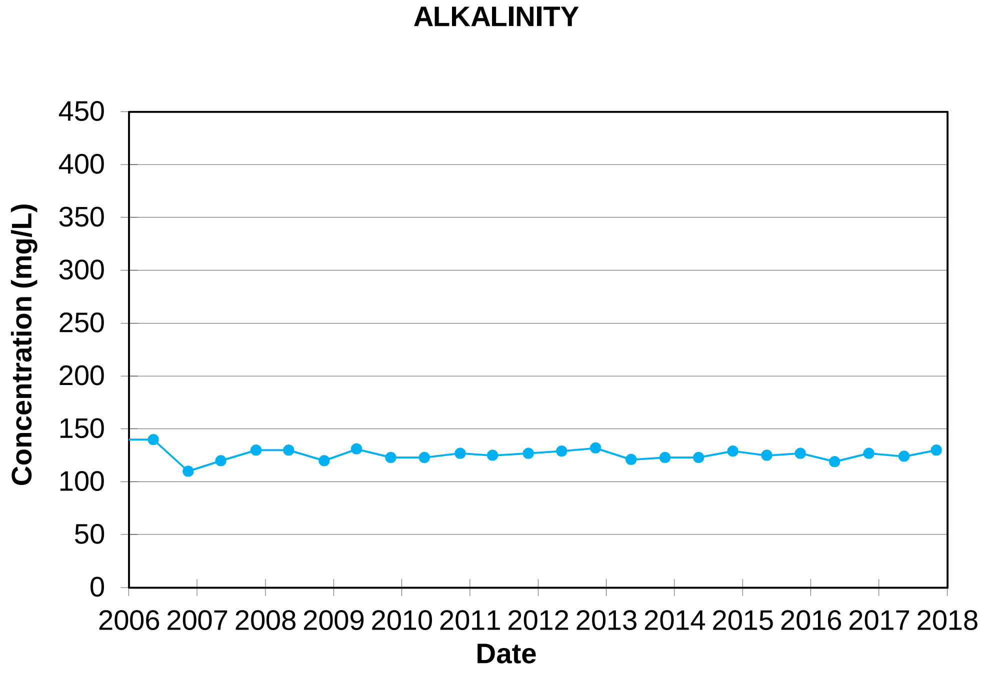
GREEN LANE LANDFILL SITE











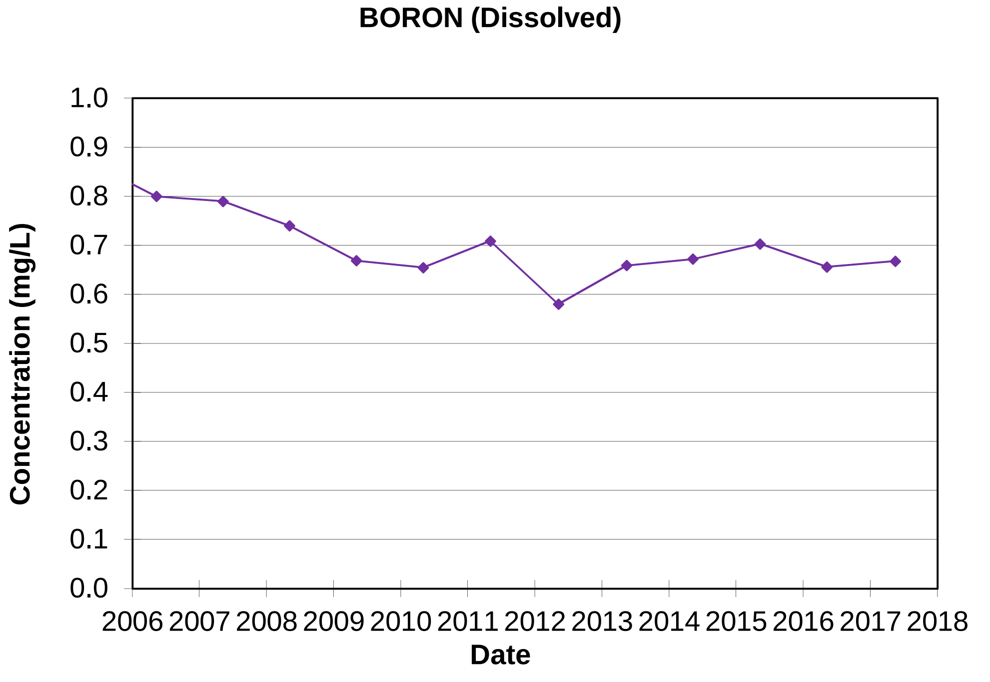
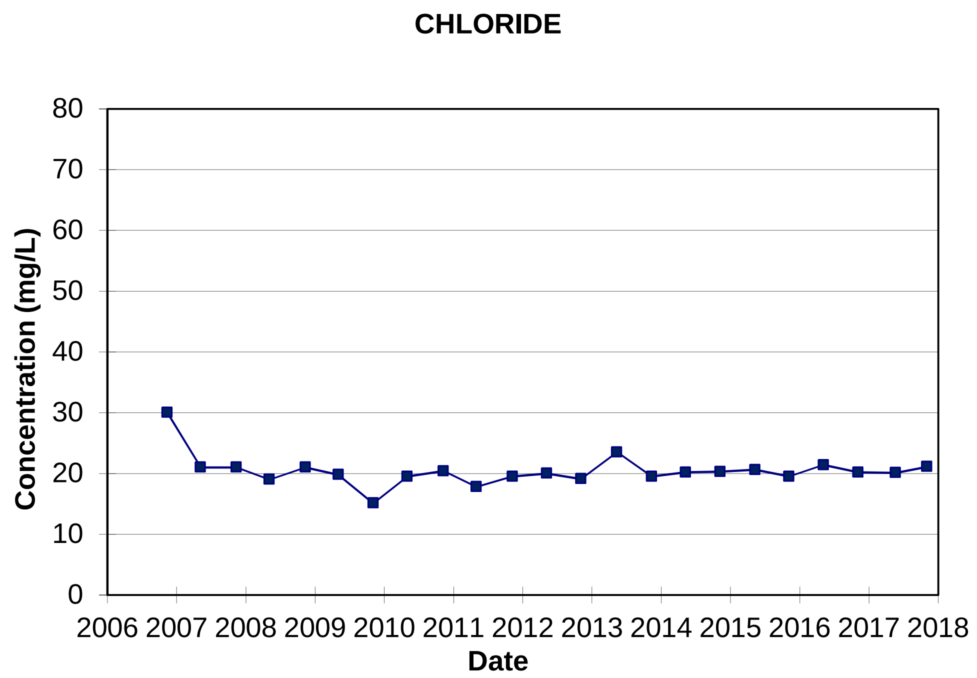
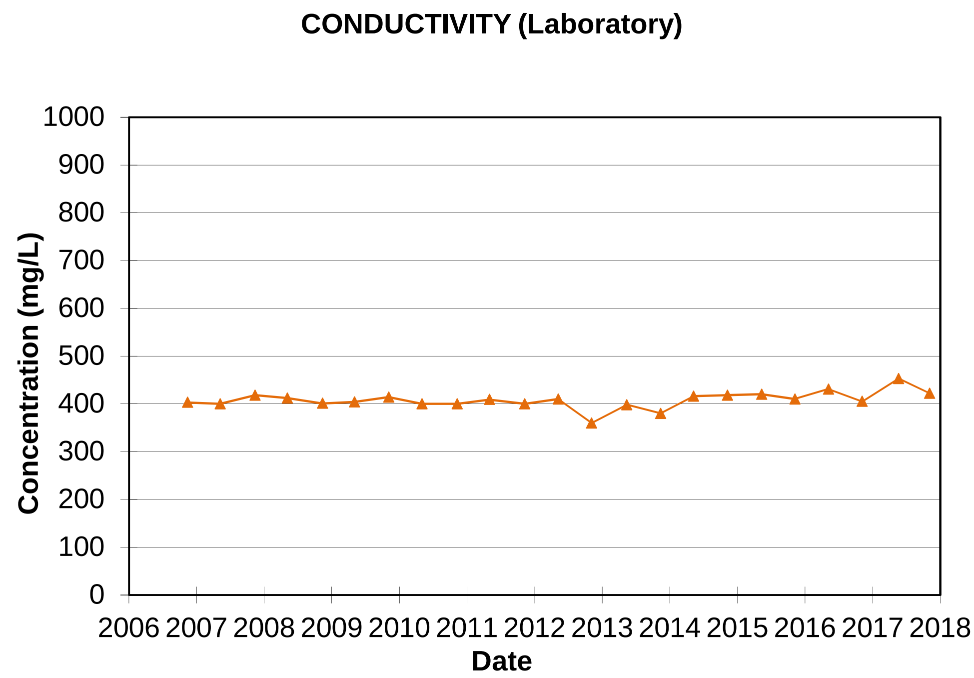
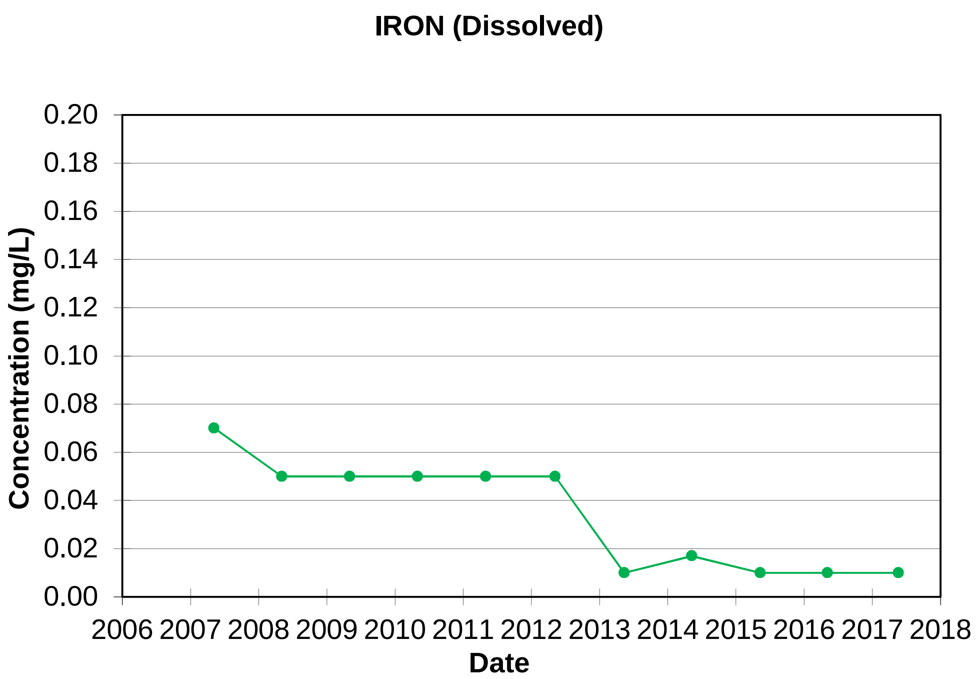


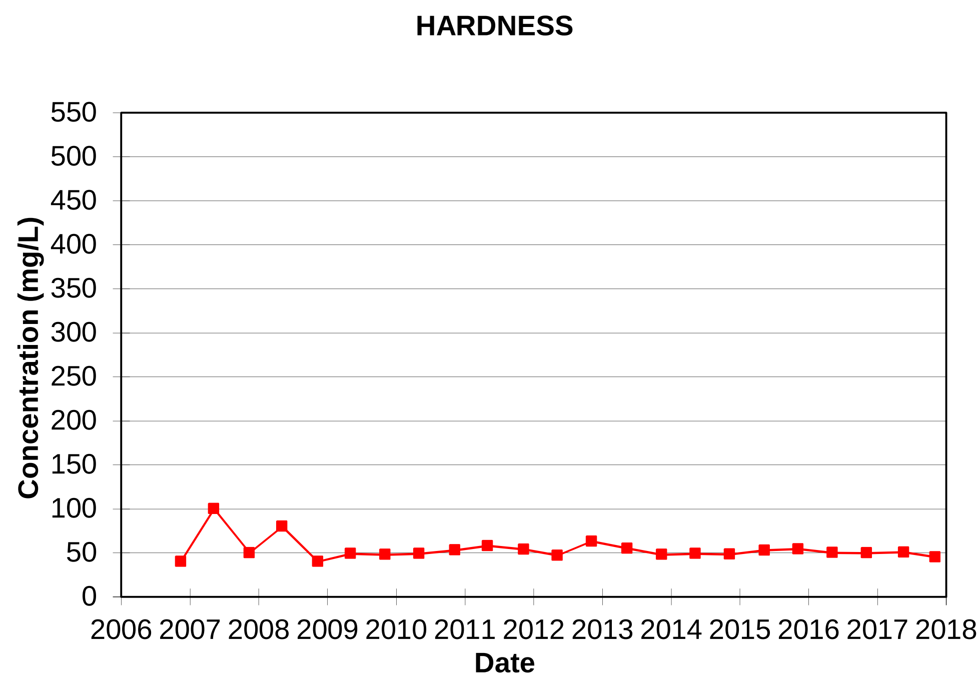
FIGURE C-25 - OW50-01

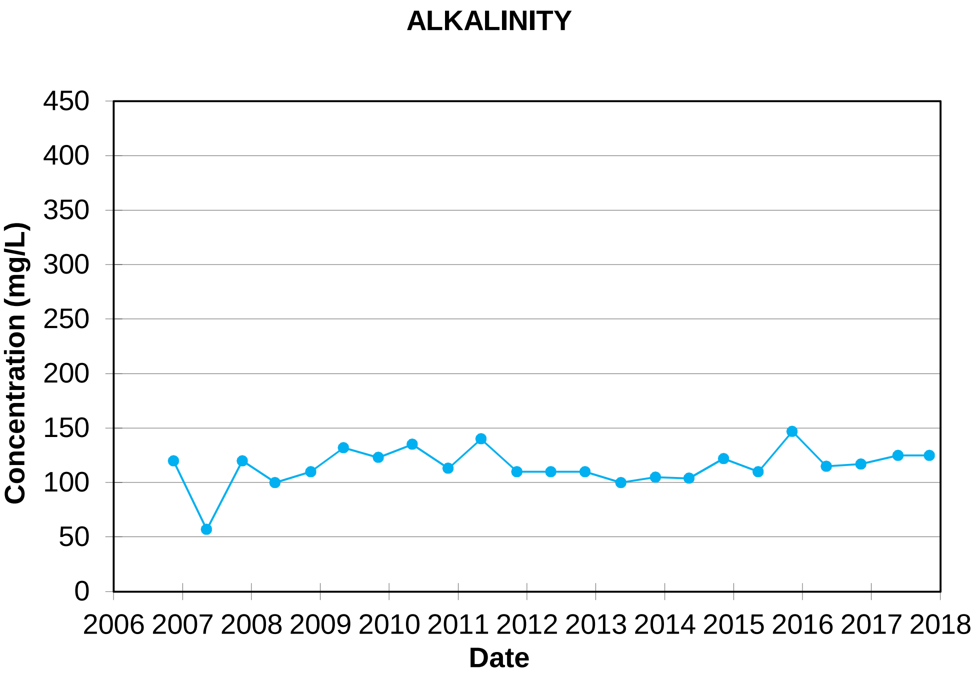
GREEN LANE LANDFILL SITE











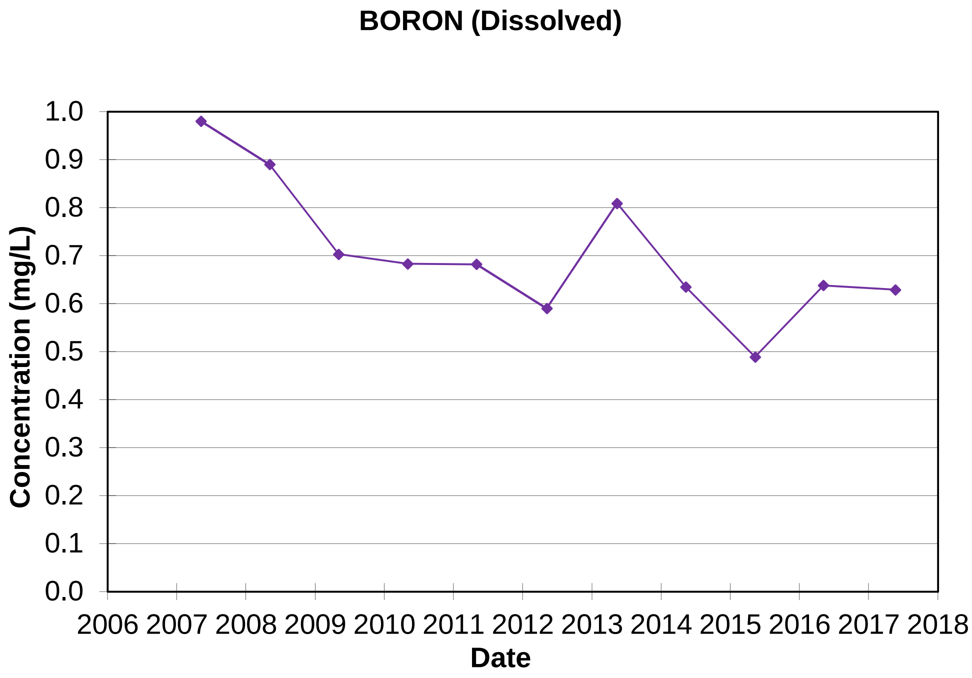
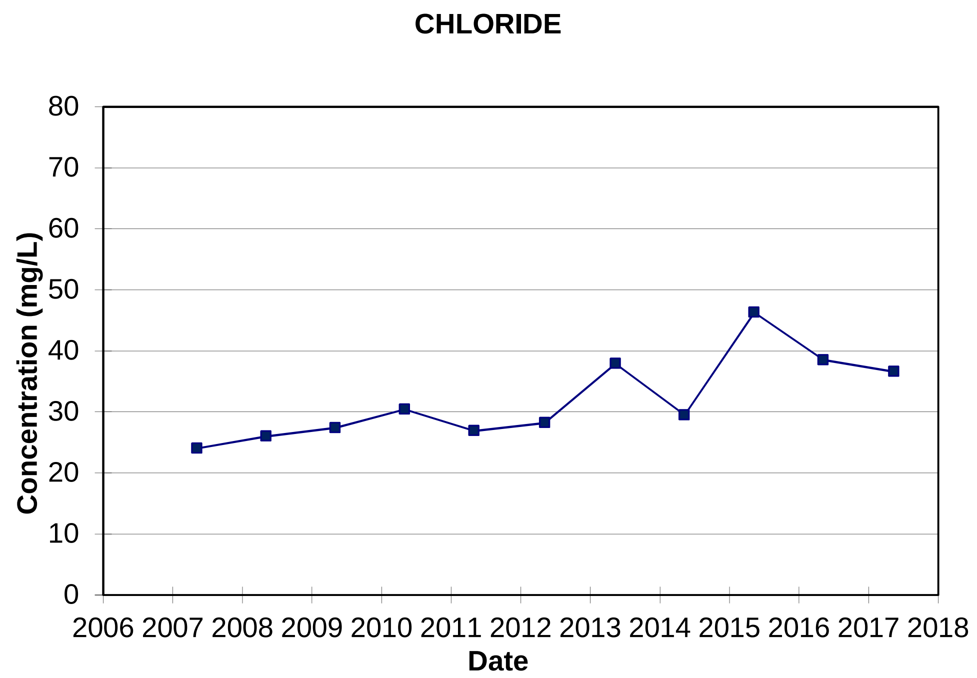
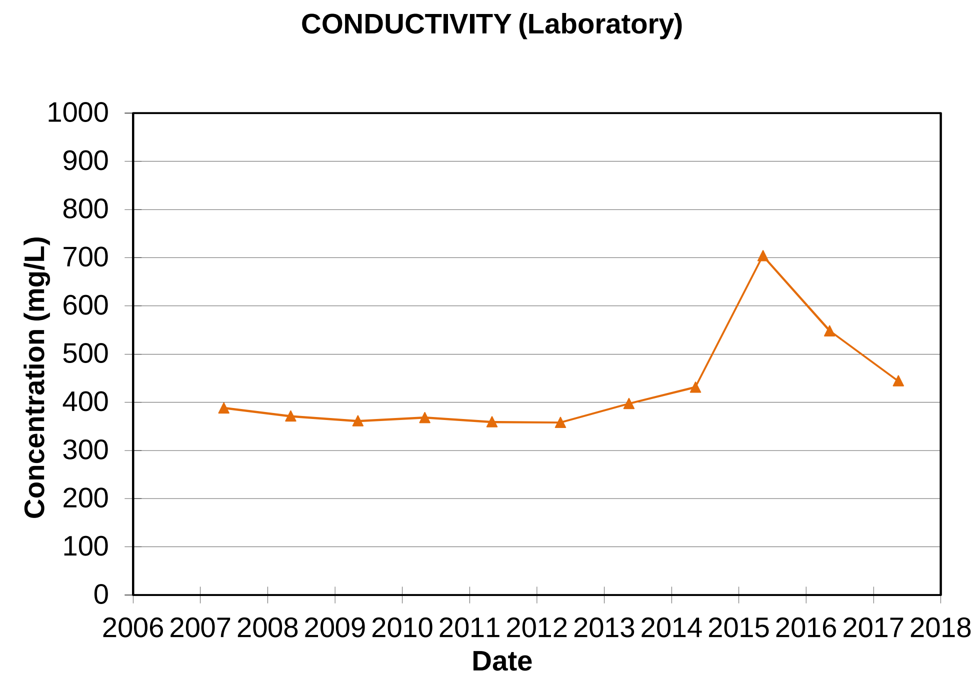
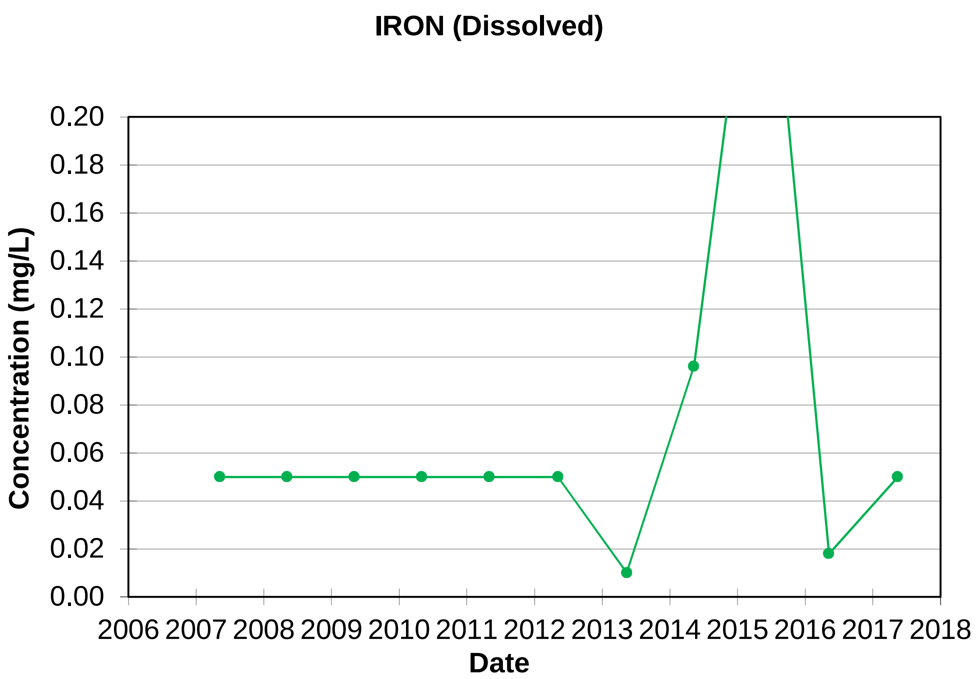


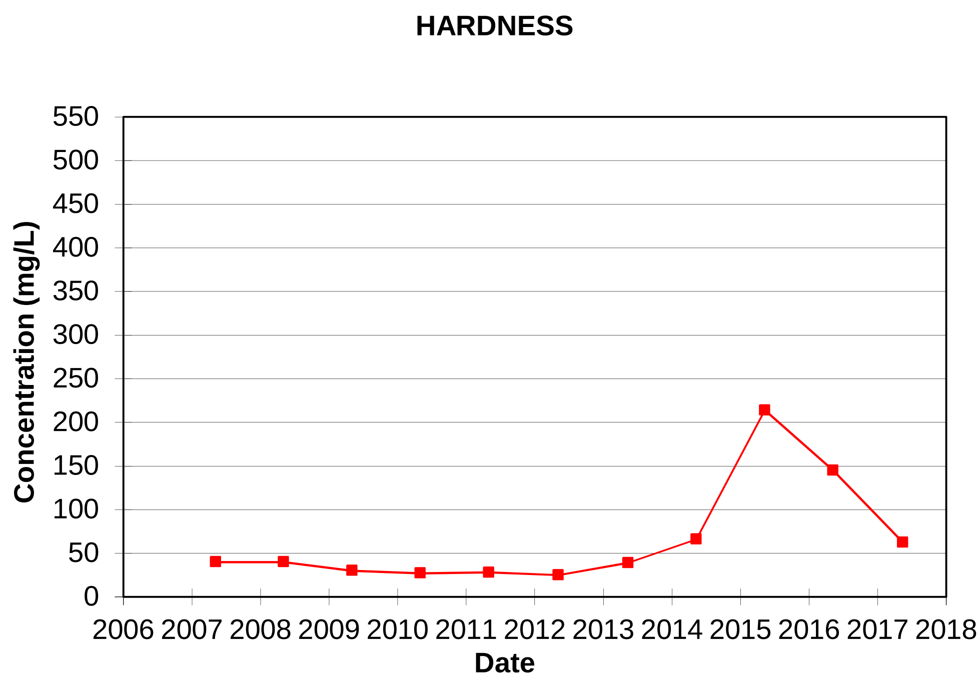
FIGURE C-26 - OW51A-07

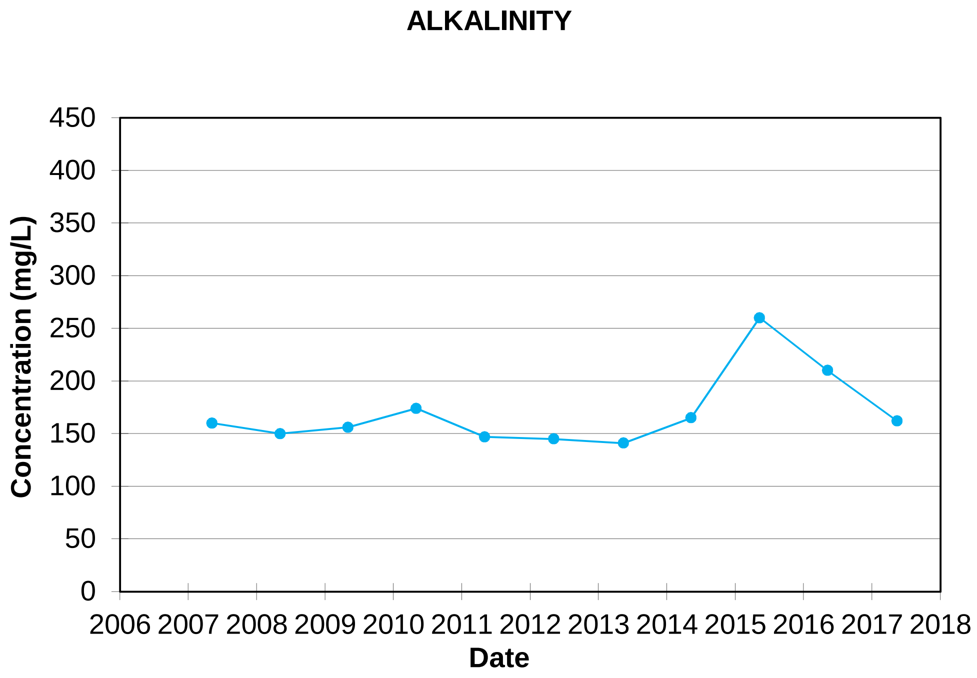
GREEN LANE LANDFILL SITE

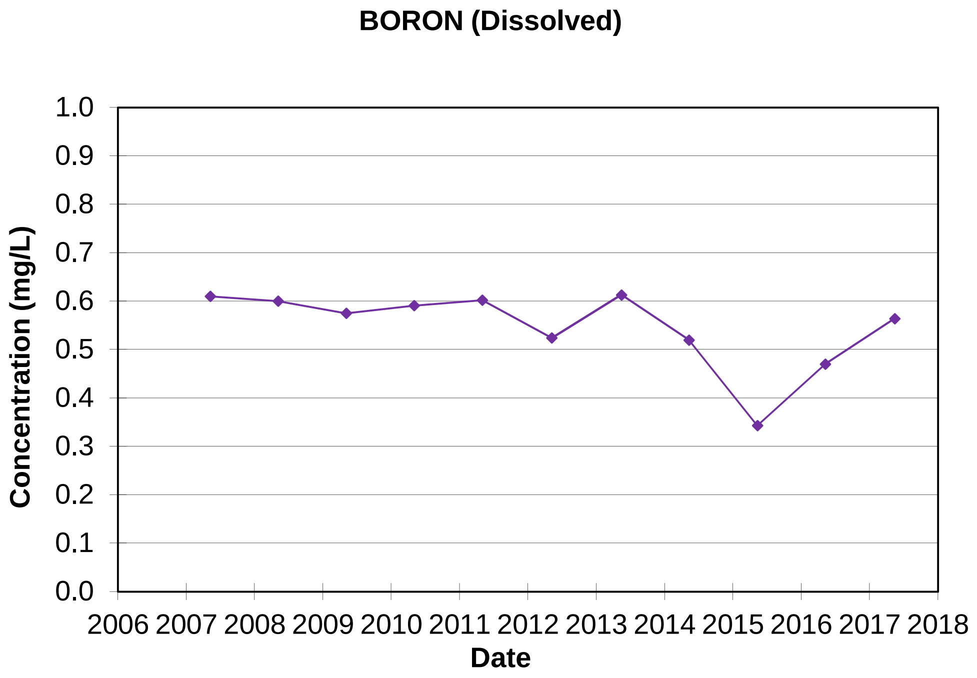










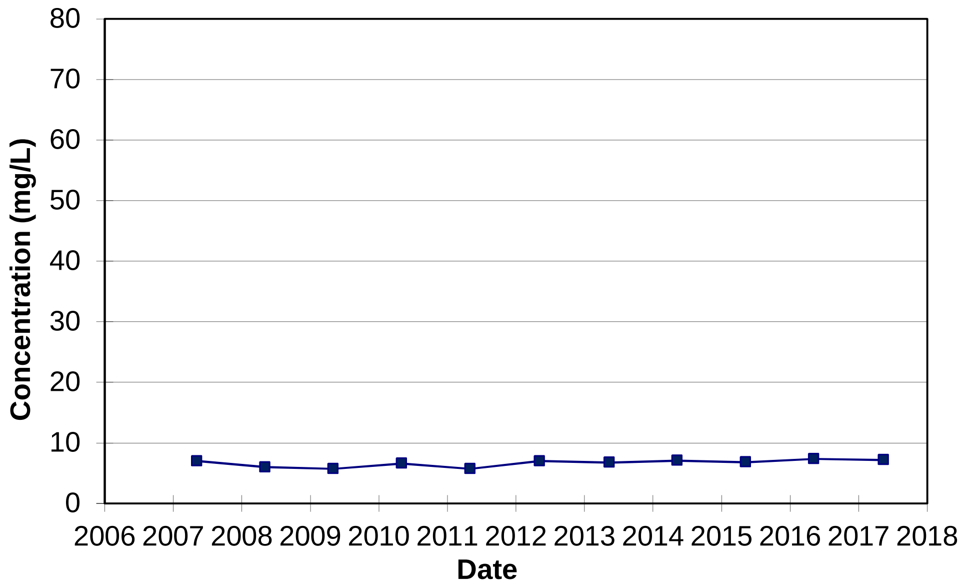


wsp

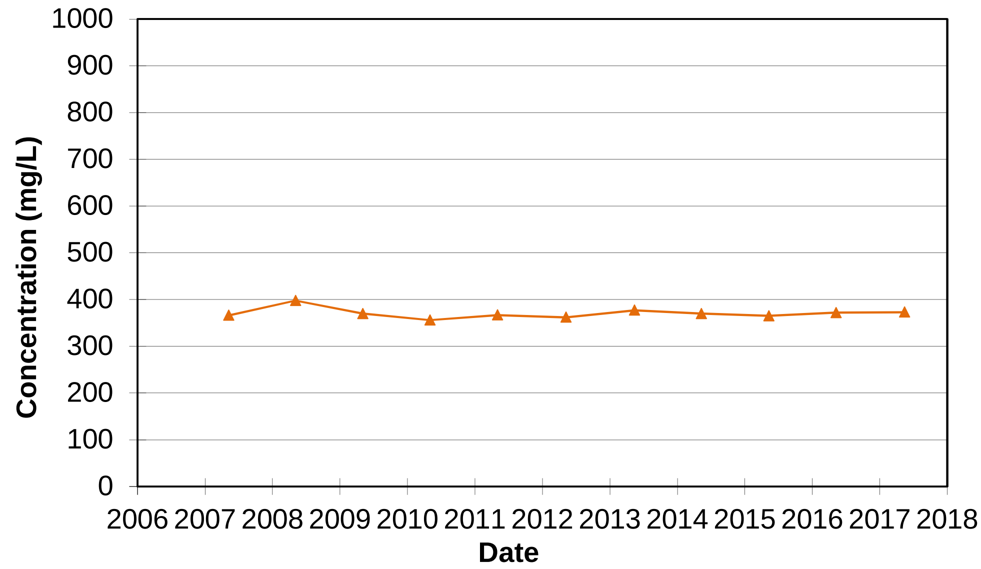
FIGURE C-27 - OW51B-07

GREEN LANE LANDFILL SITE

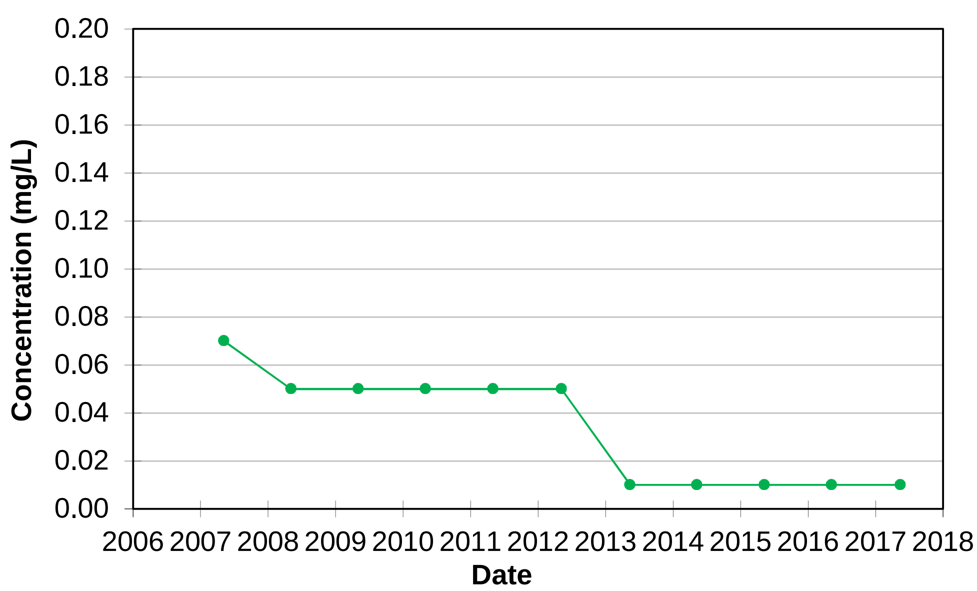
CHLORIDE



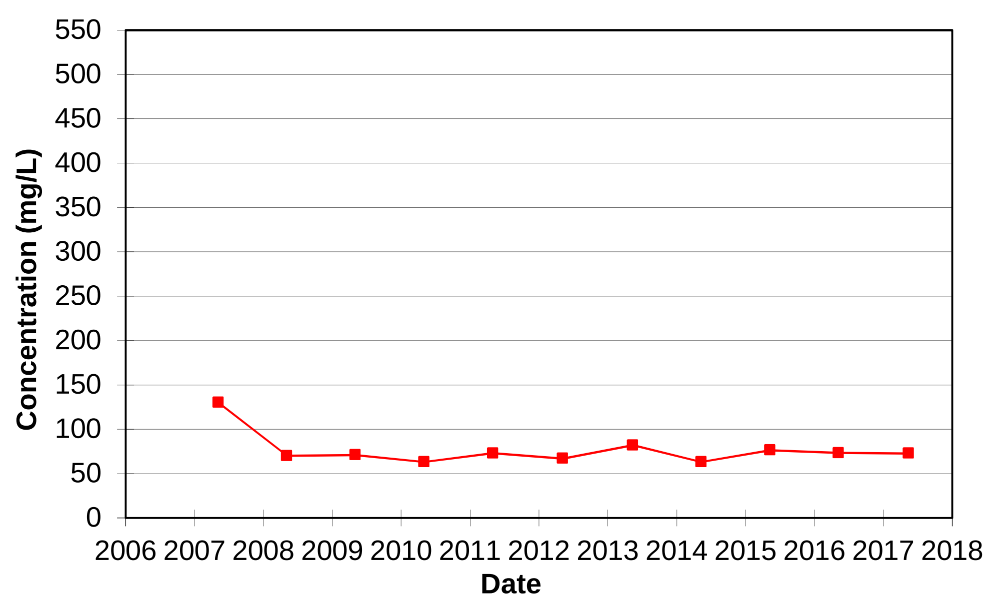
CONDUCTIVITY (Laboratory)



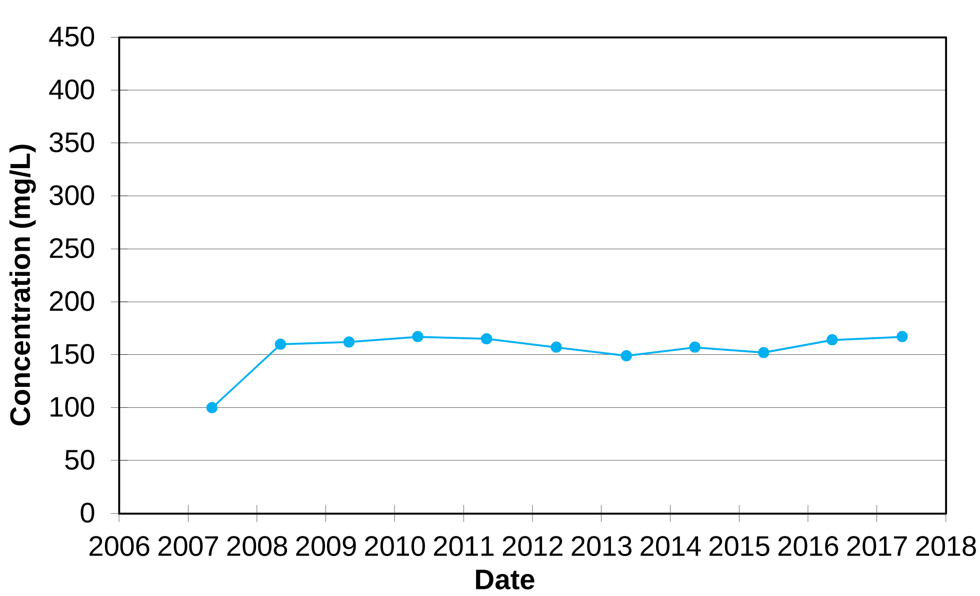
IRON (Dissolved)



HARDNESS



ALKALINITY



BORON (Dissolved)

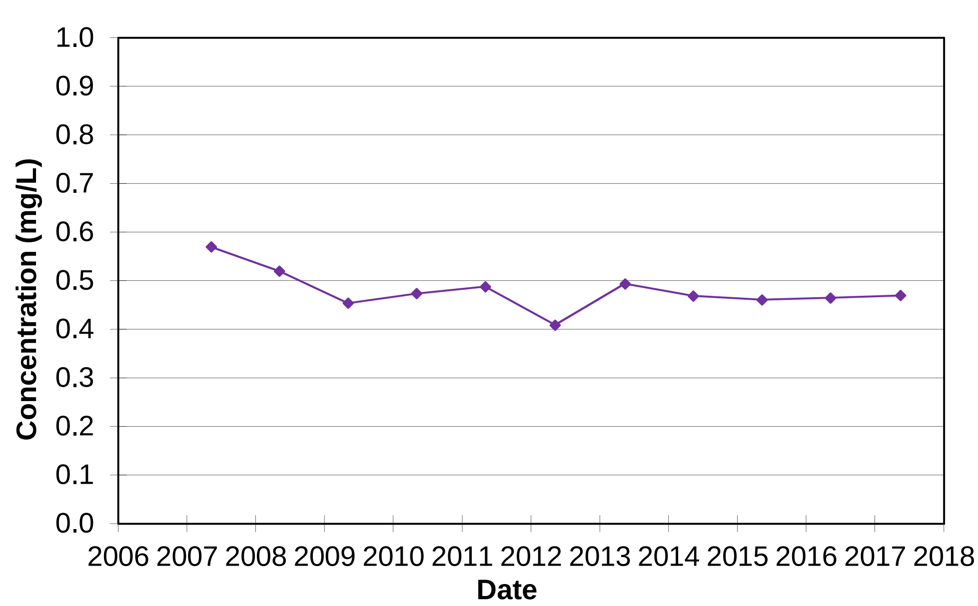


FIGURE C-28 - OW52B-07

GREEN LANE LANDFILL SITE

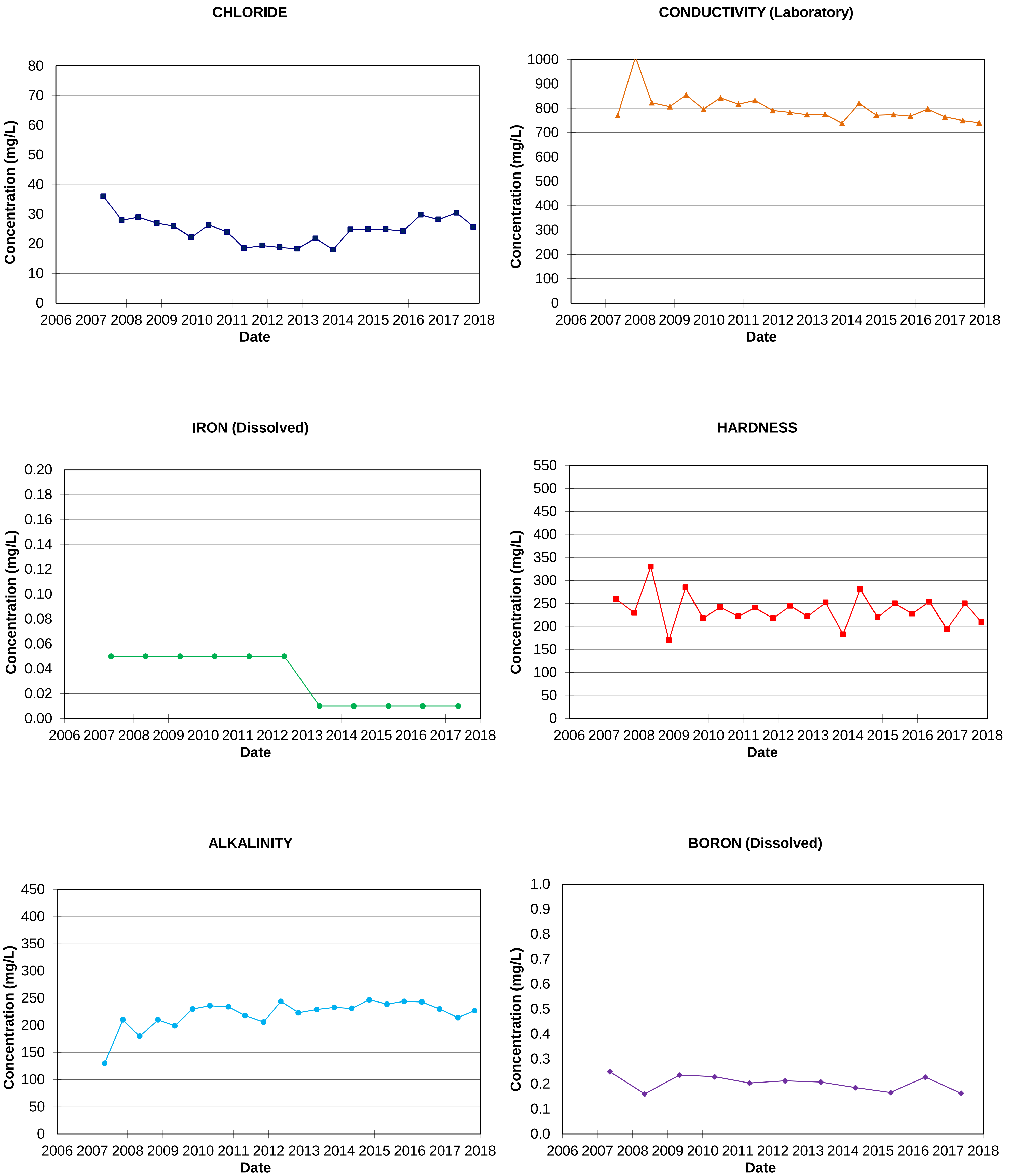
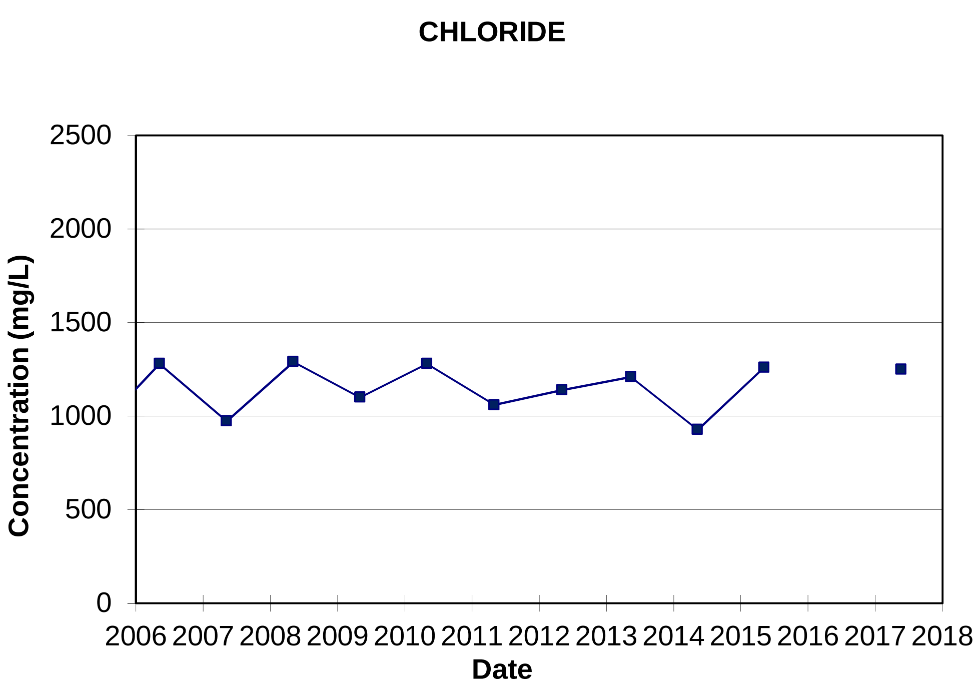
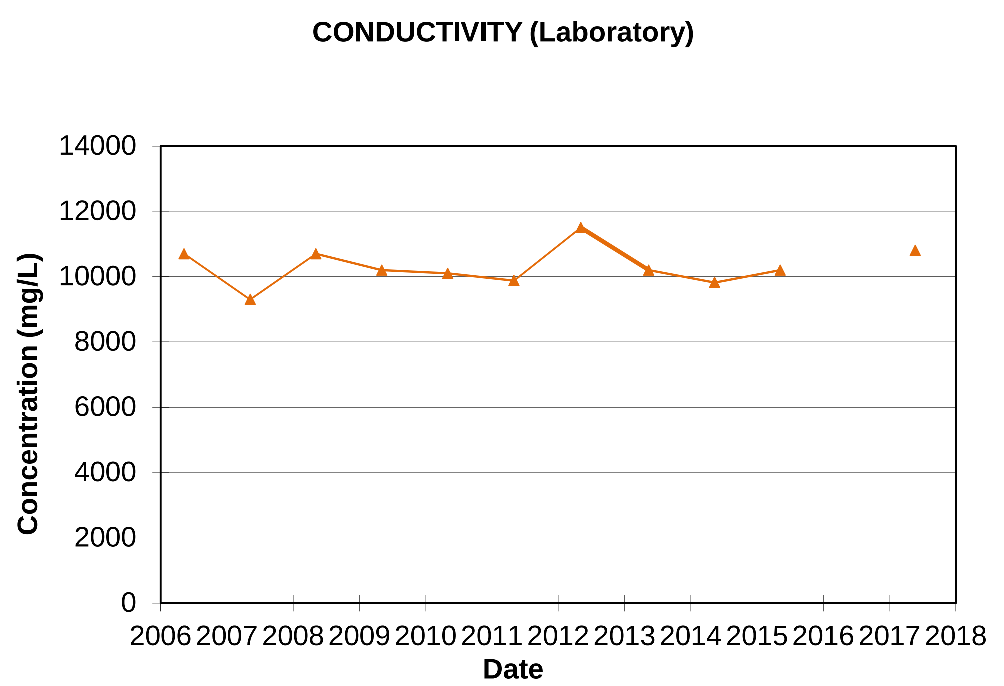
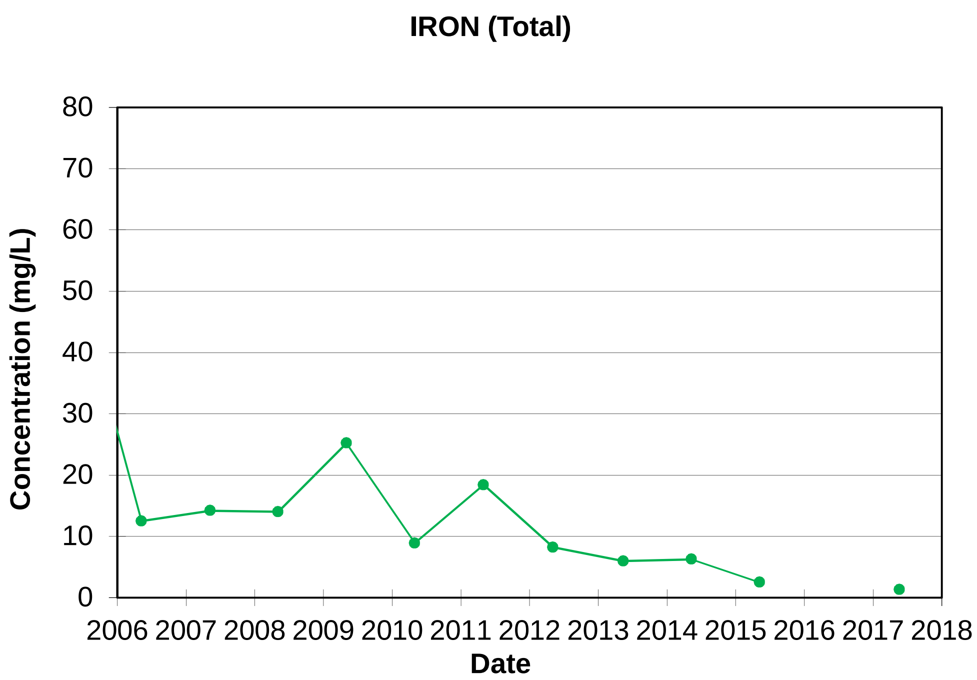
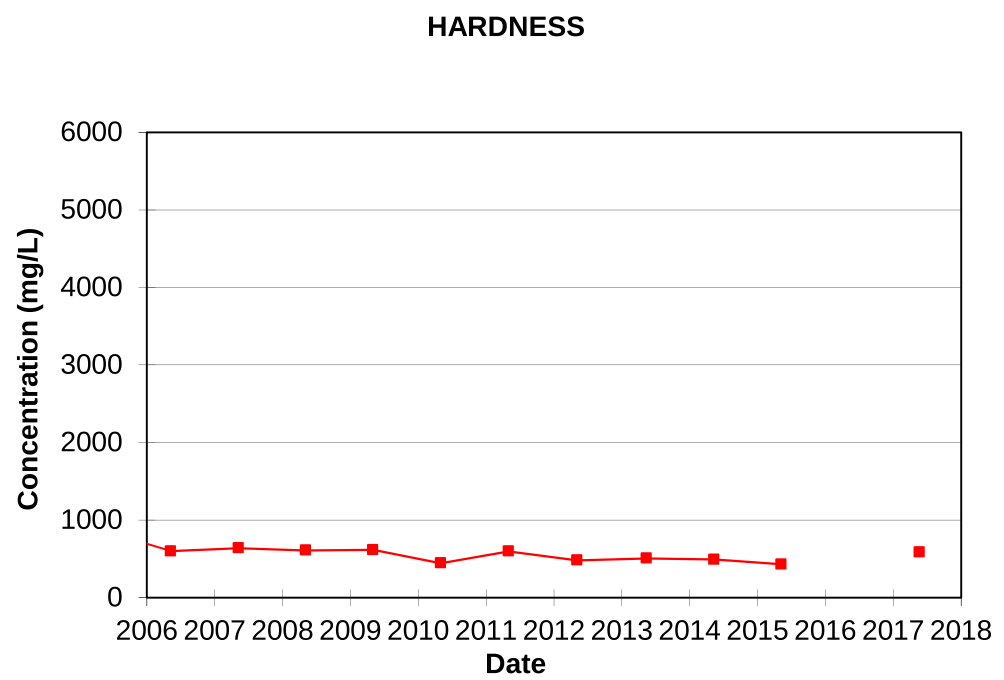


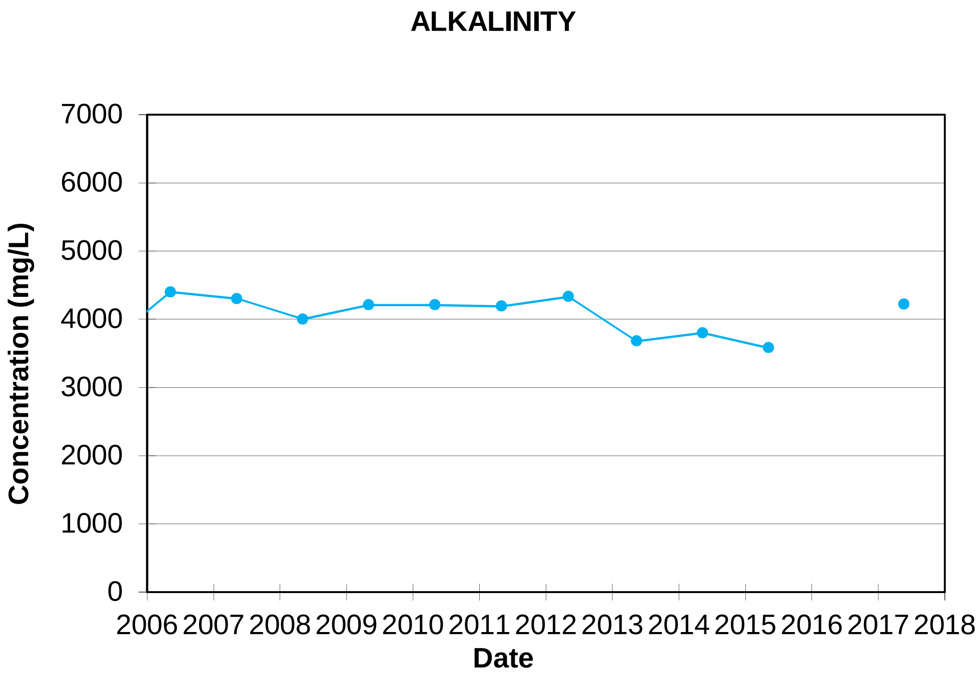
FIGURE C-29 - LW3-91 / LW3-16
GREEN LANE LANDFILL SITE











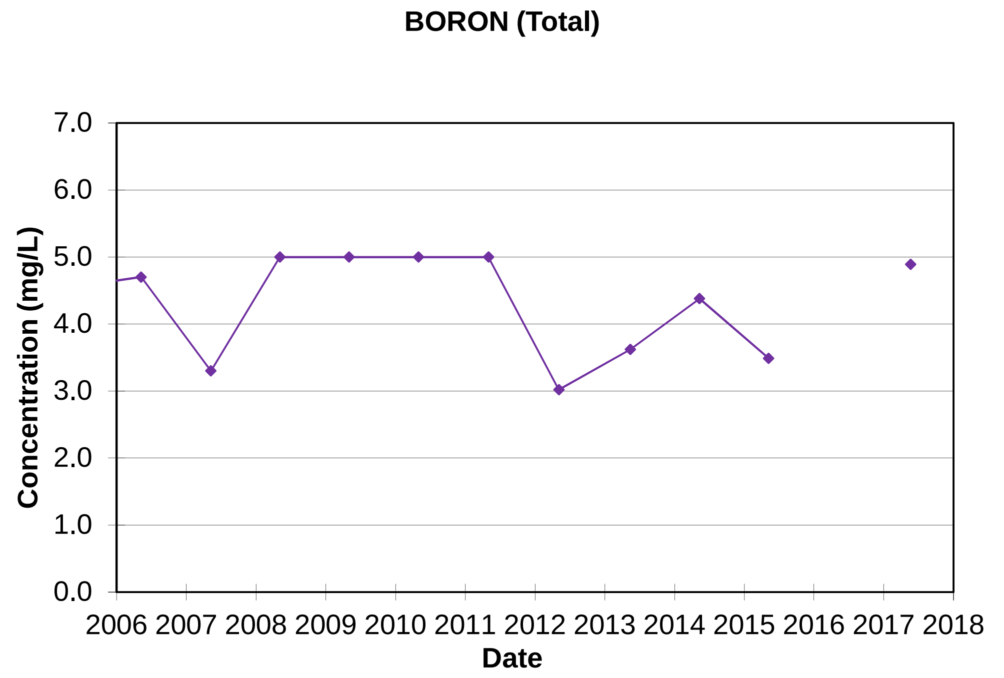
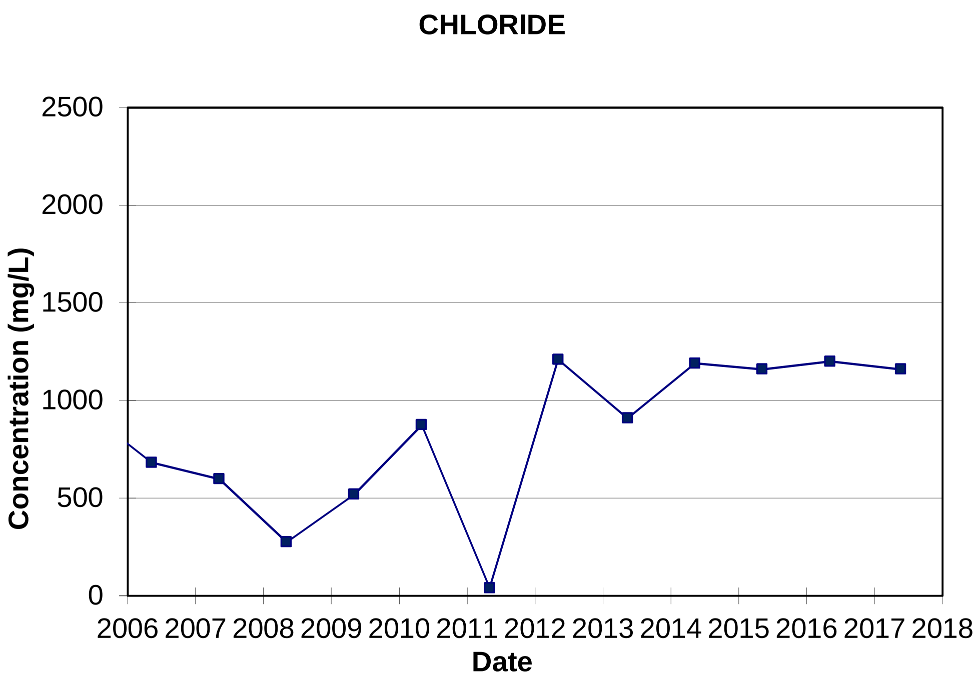
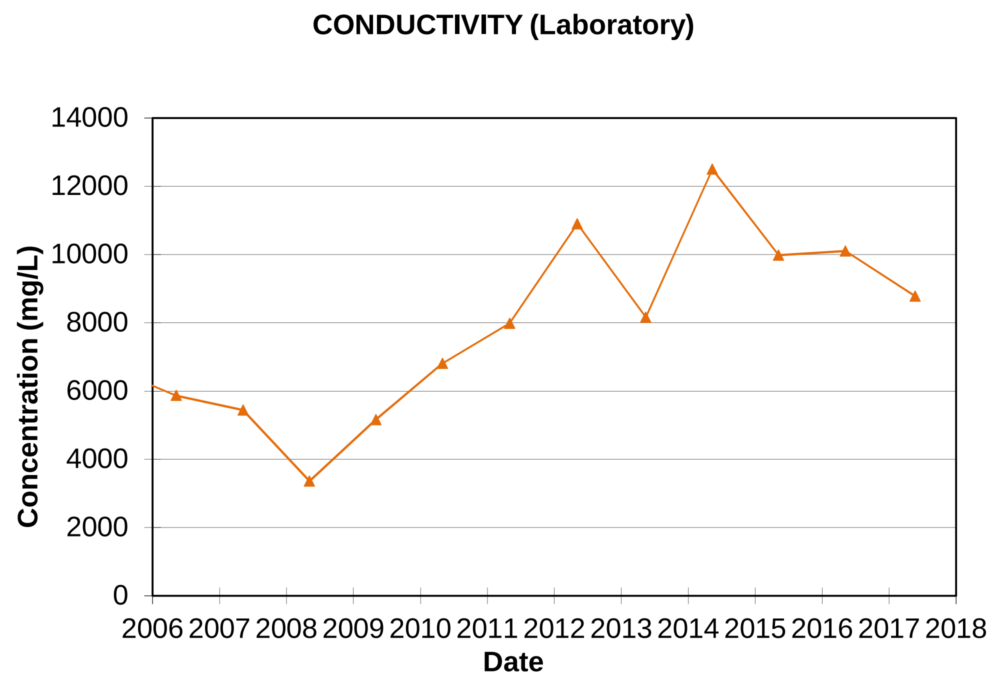
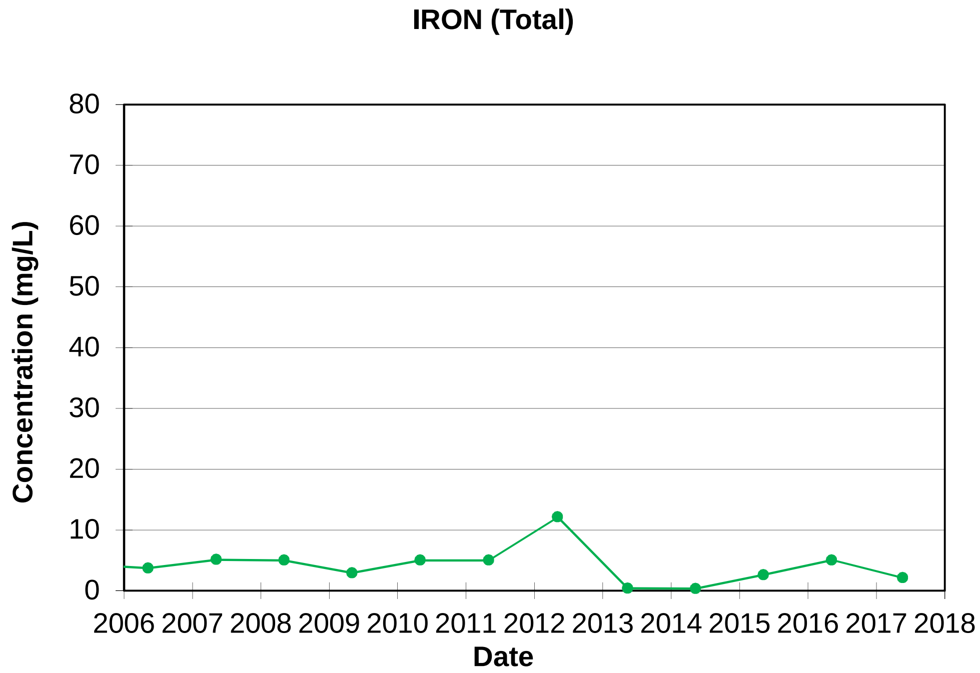
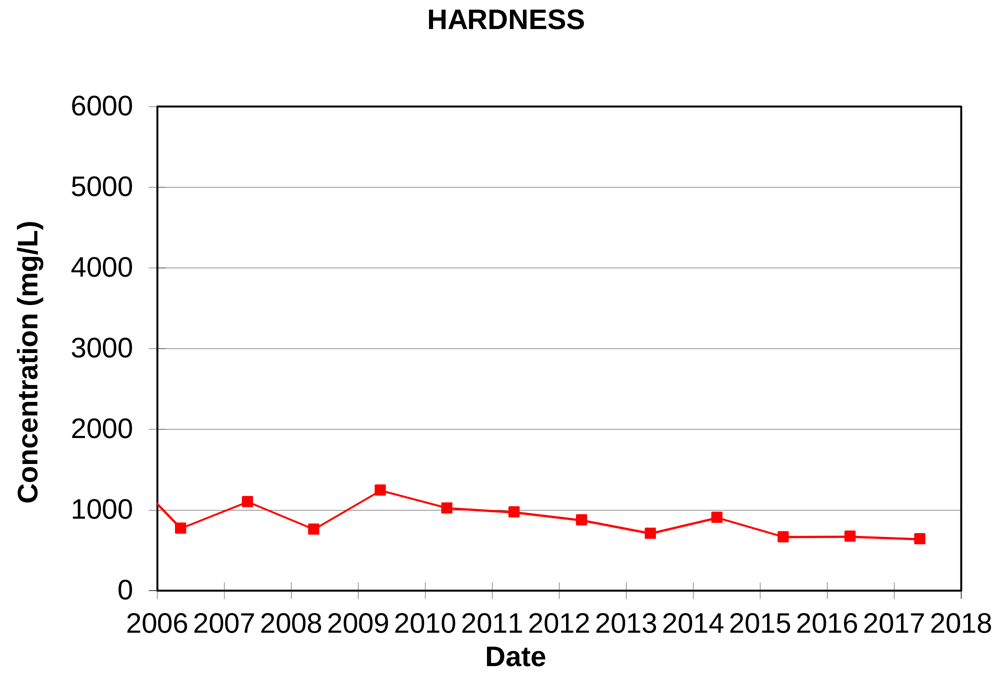


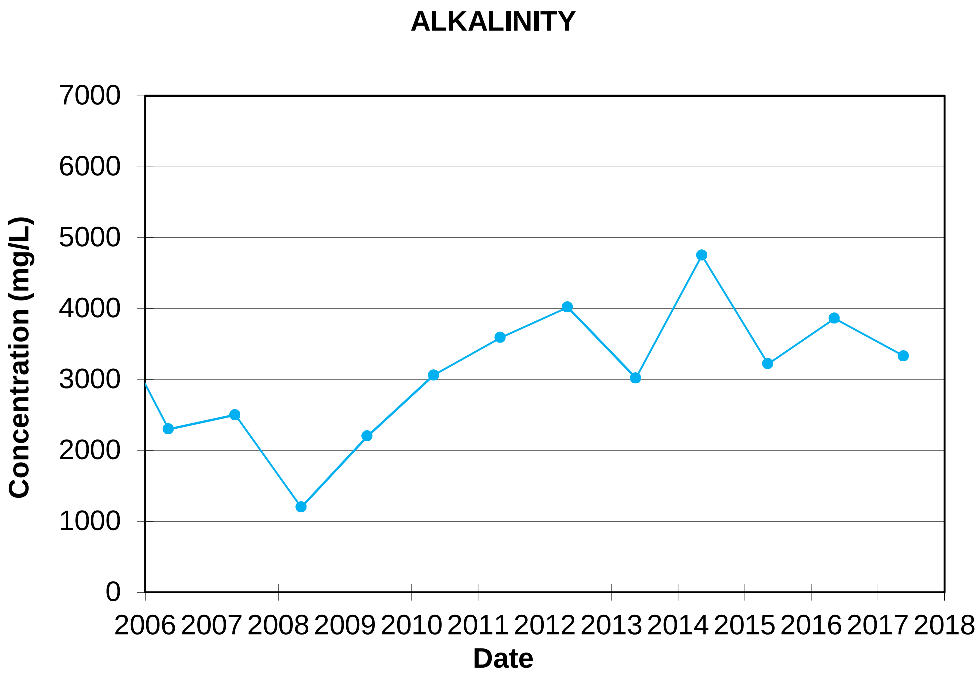
FIGURE C-30 - MH-11
GREEN LANE LANDFILL SITE











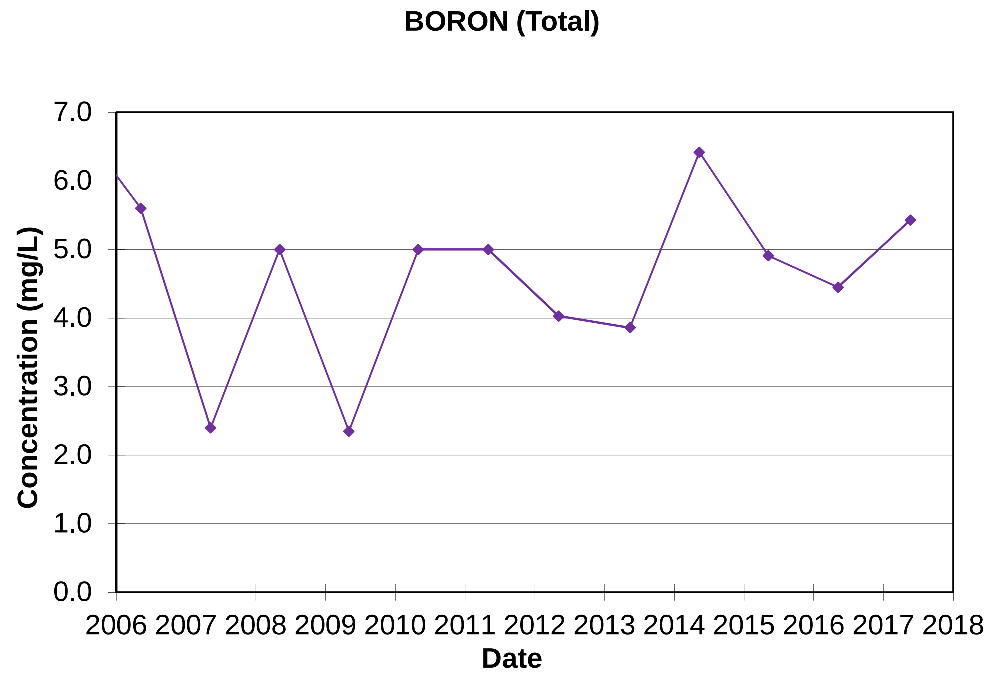
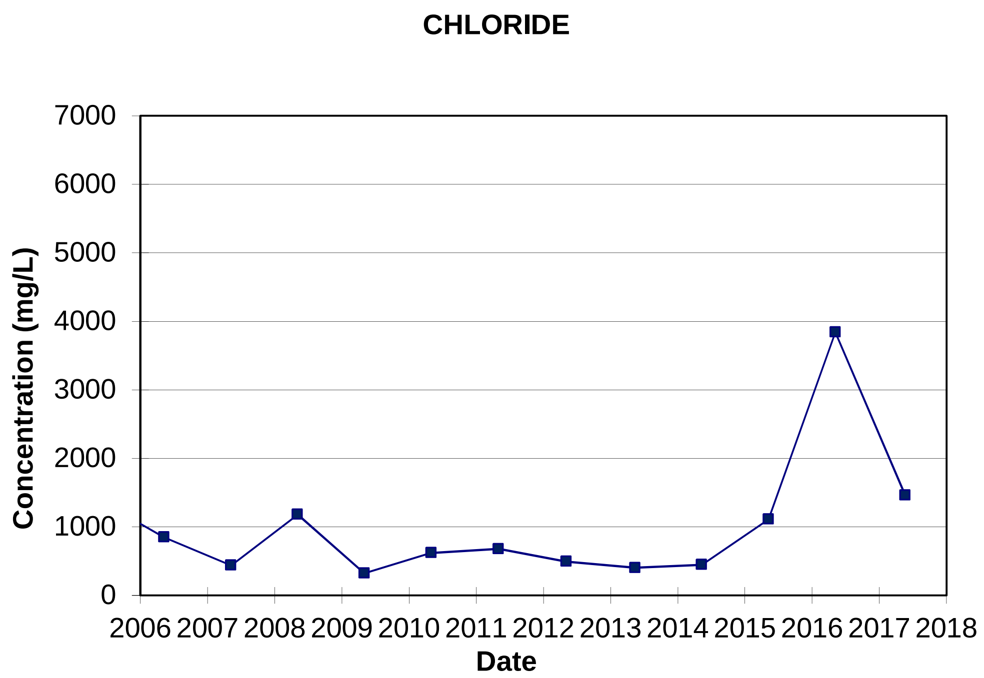
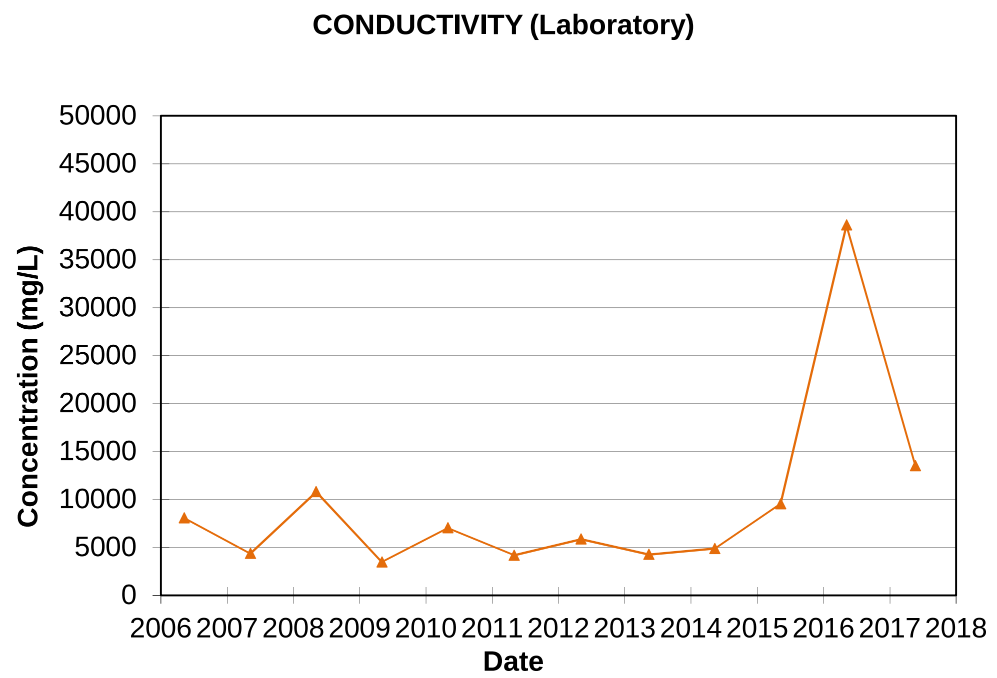
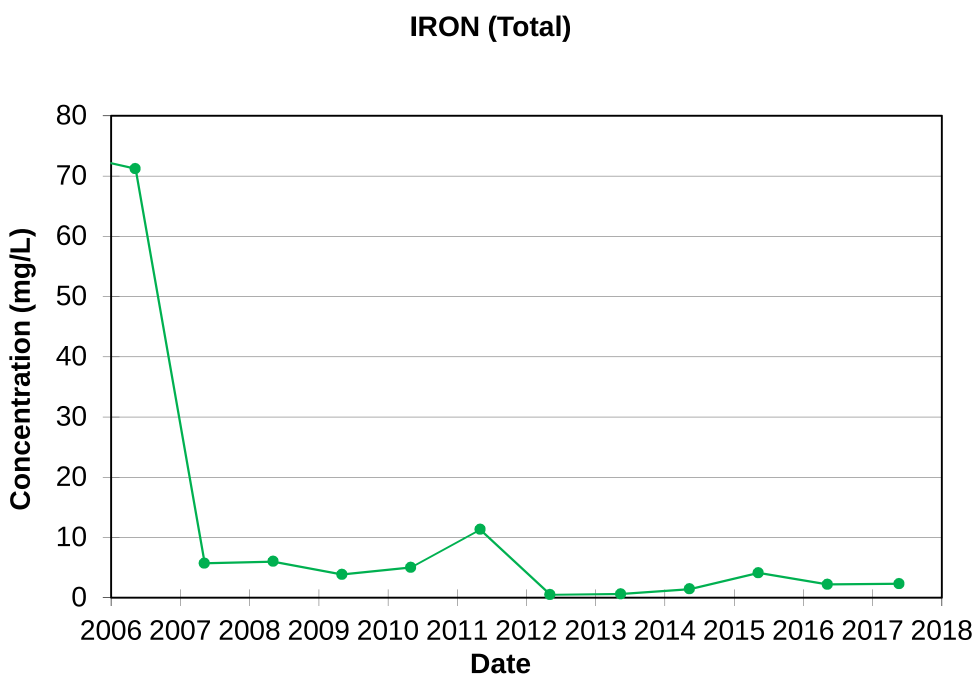


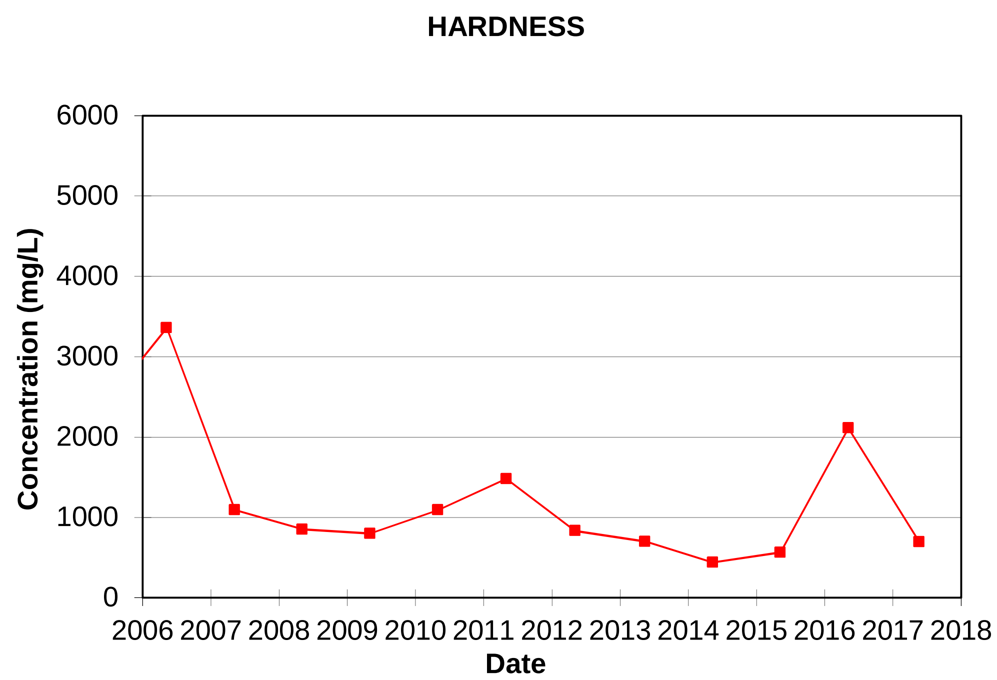
FIGURE C-31 - MH-19

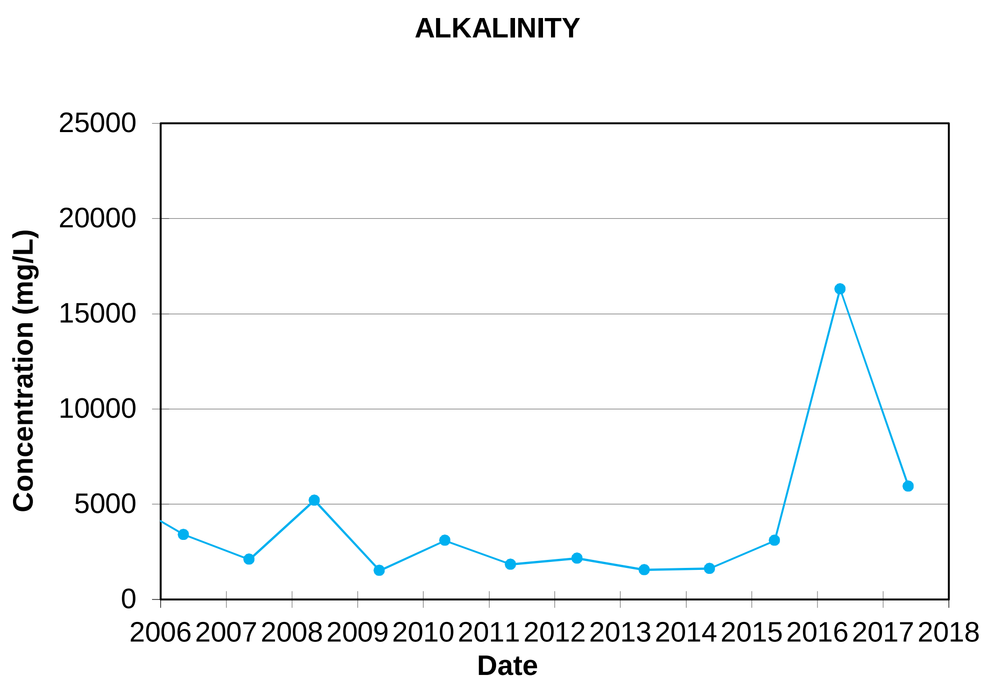
GREEN LANE LANDFILL SITE











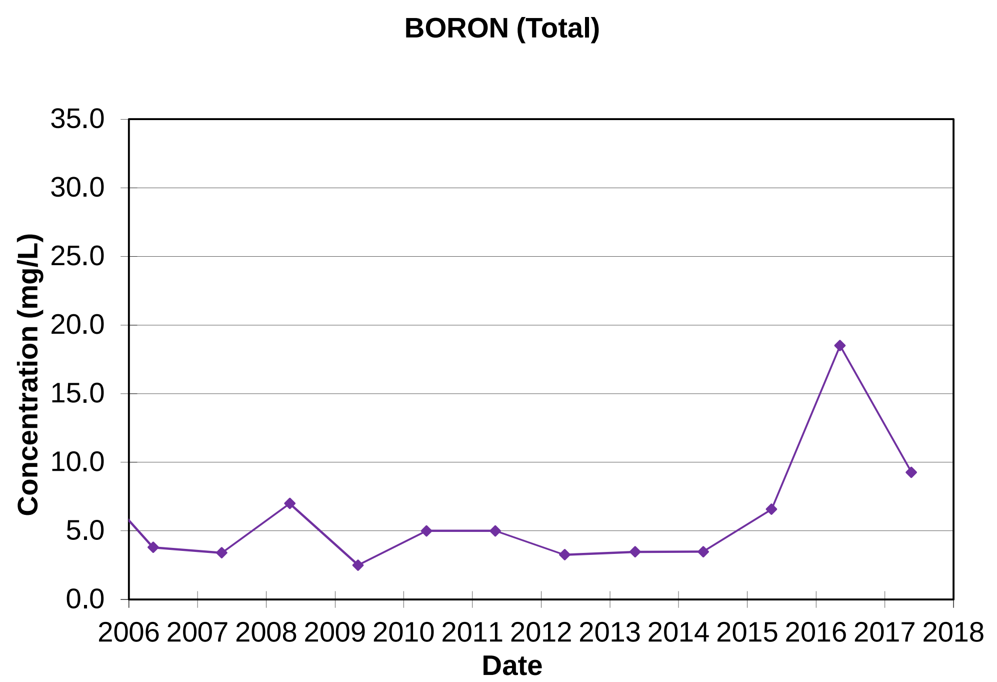
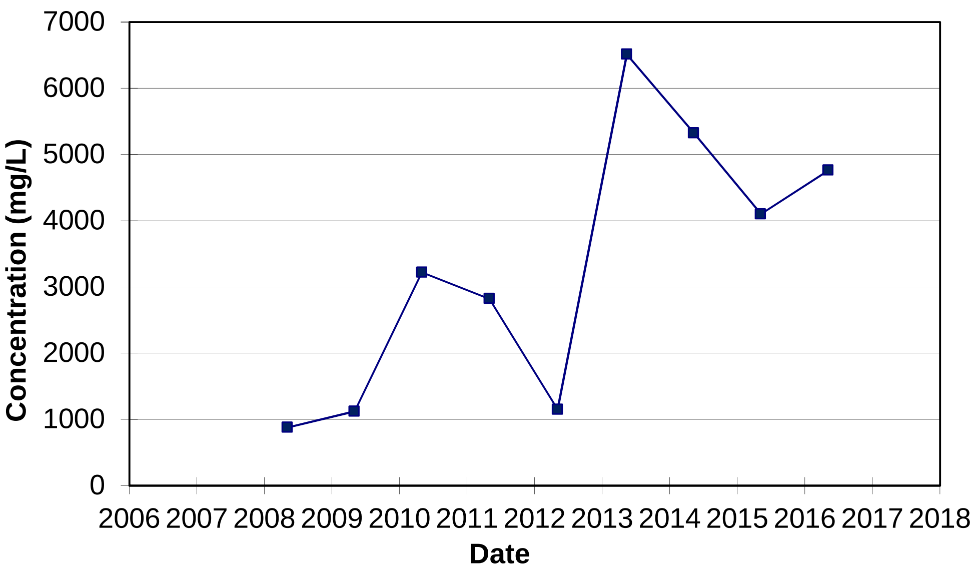


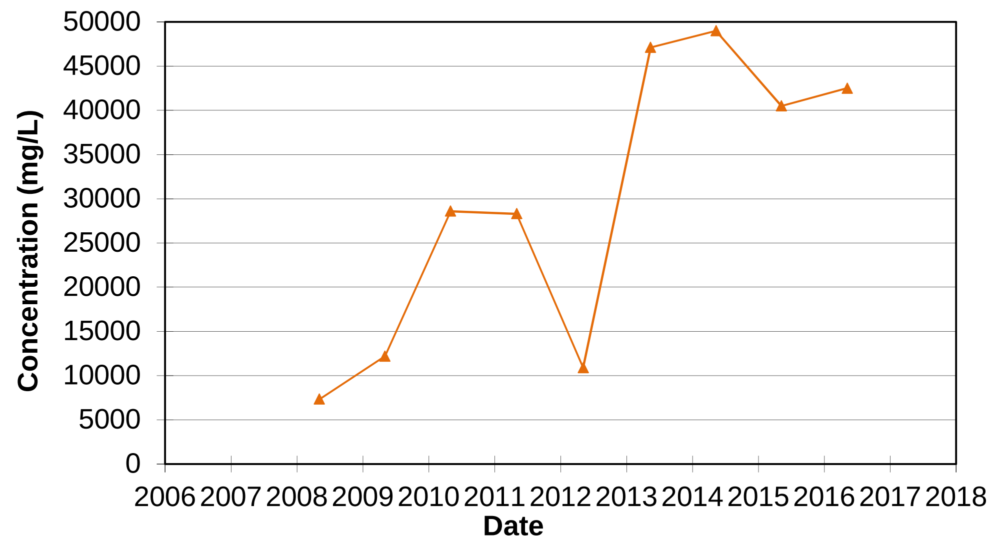
FIGURE C-32 - MH-23

GREEN LANE LANDFILL SITE

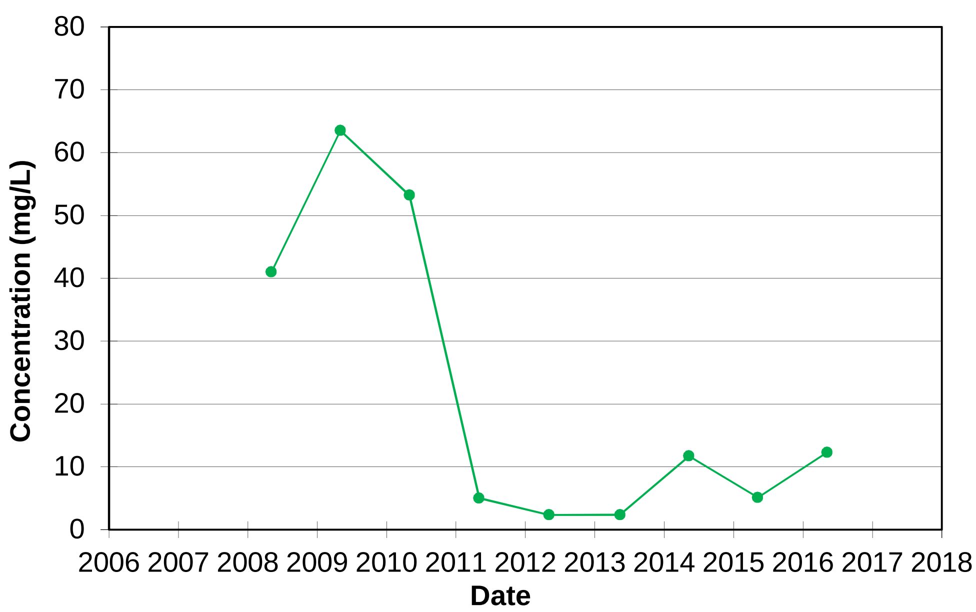
CHLORIDE



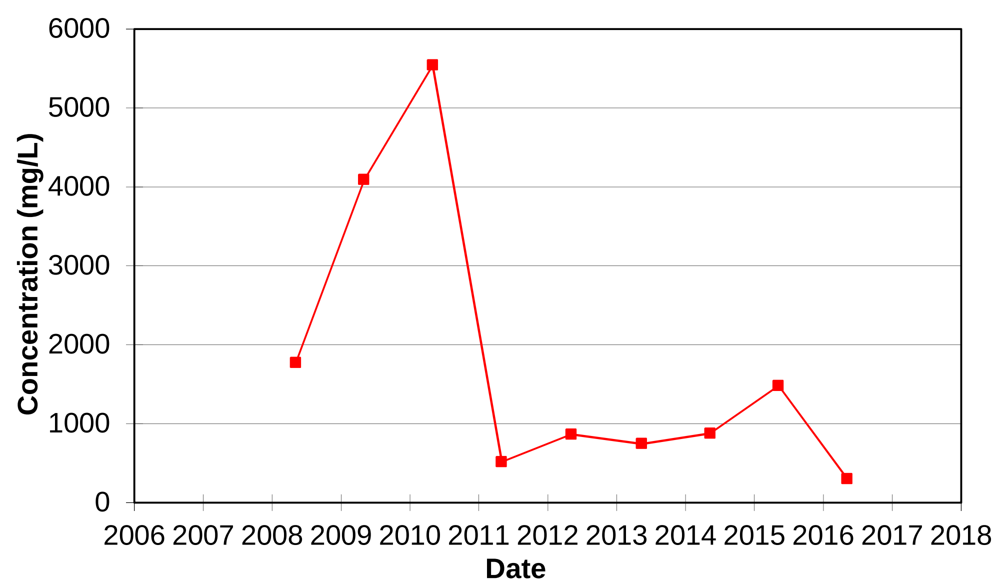
CONDUCTIVITY (Laboratory)



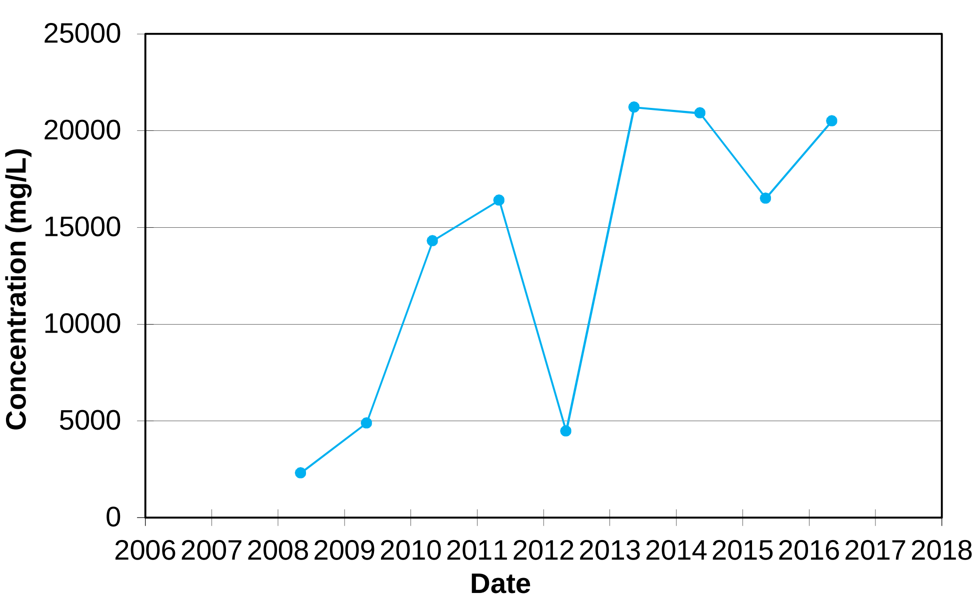
IRON (Total)



HARDNESS



ALKALINITY



BORON (Total)

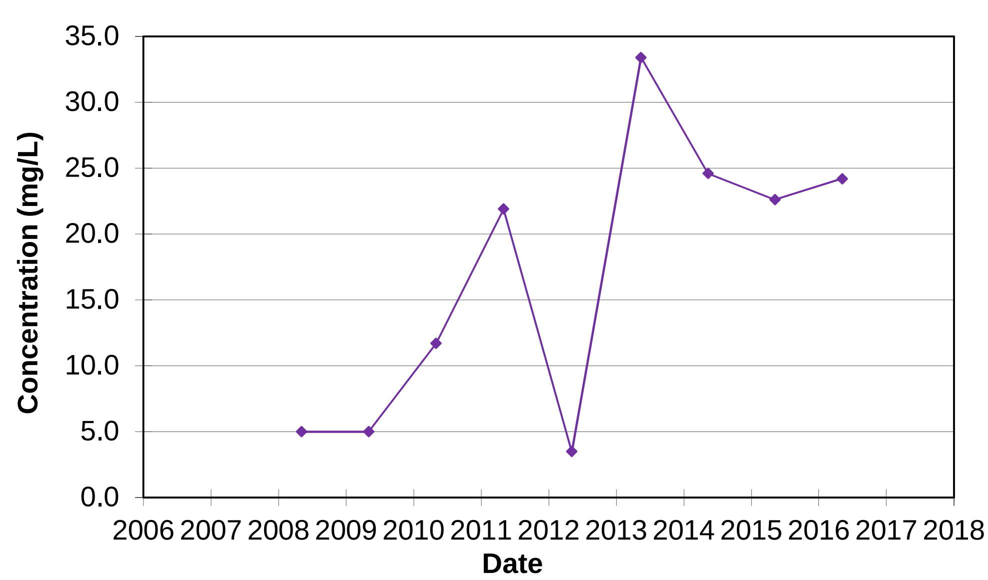
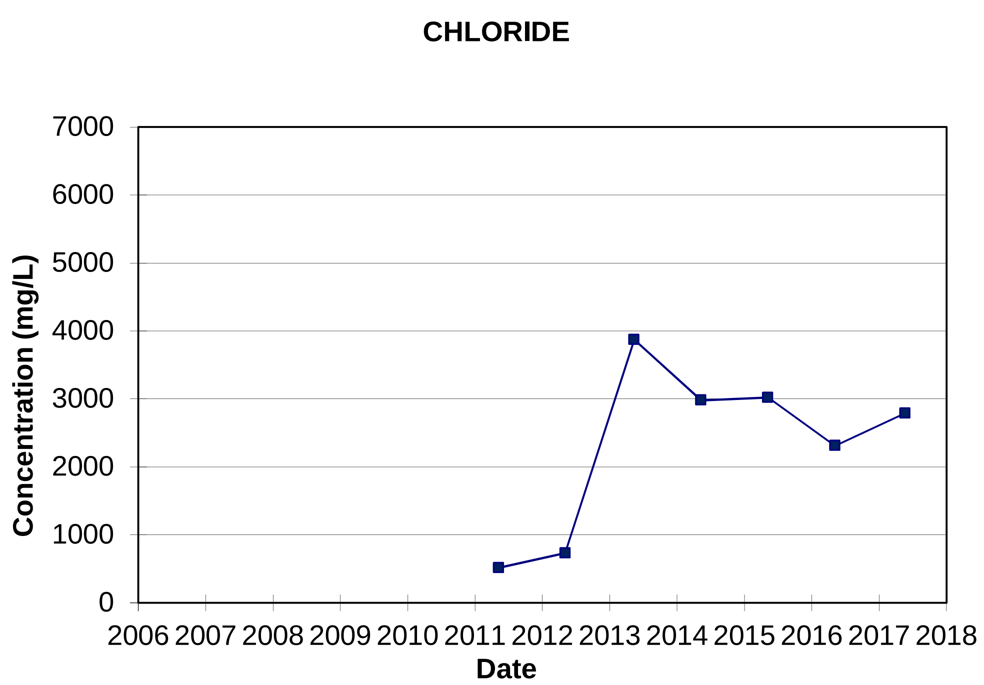
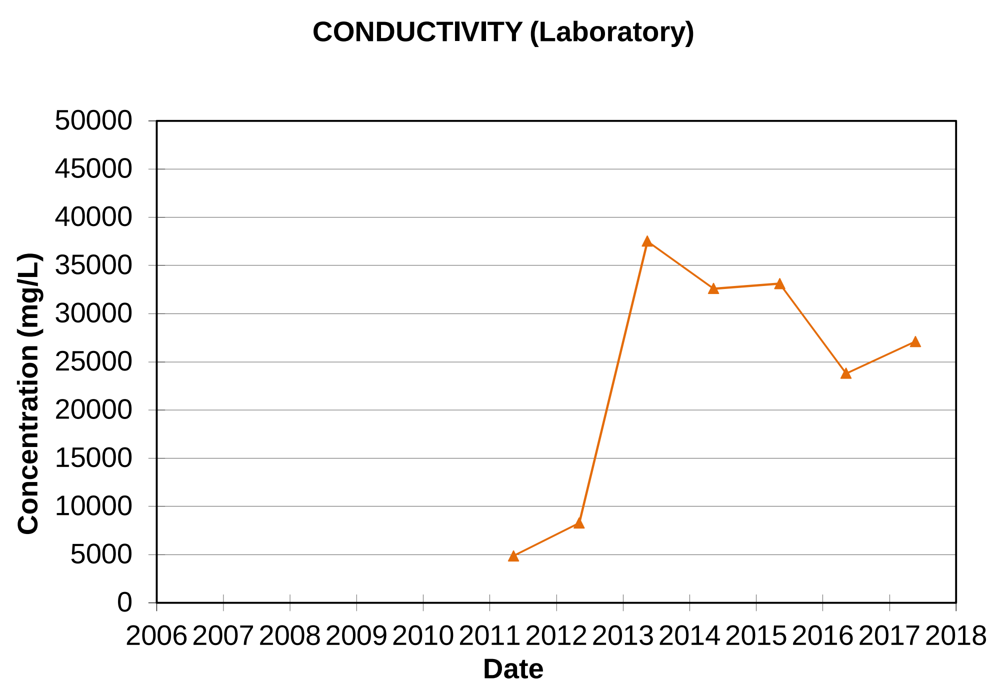
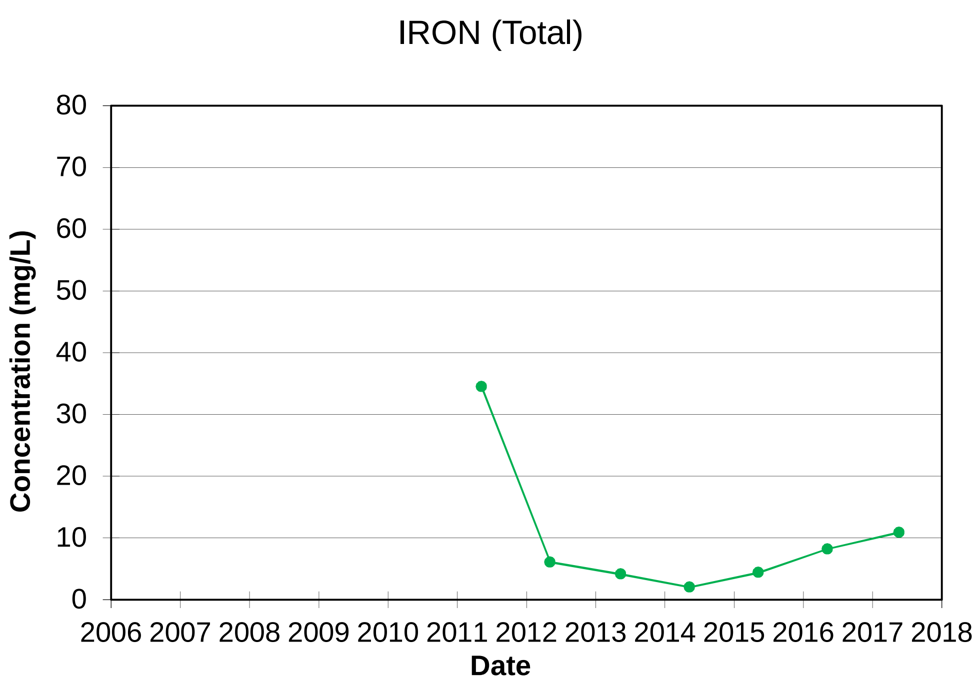


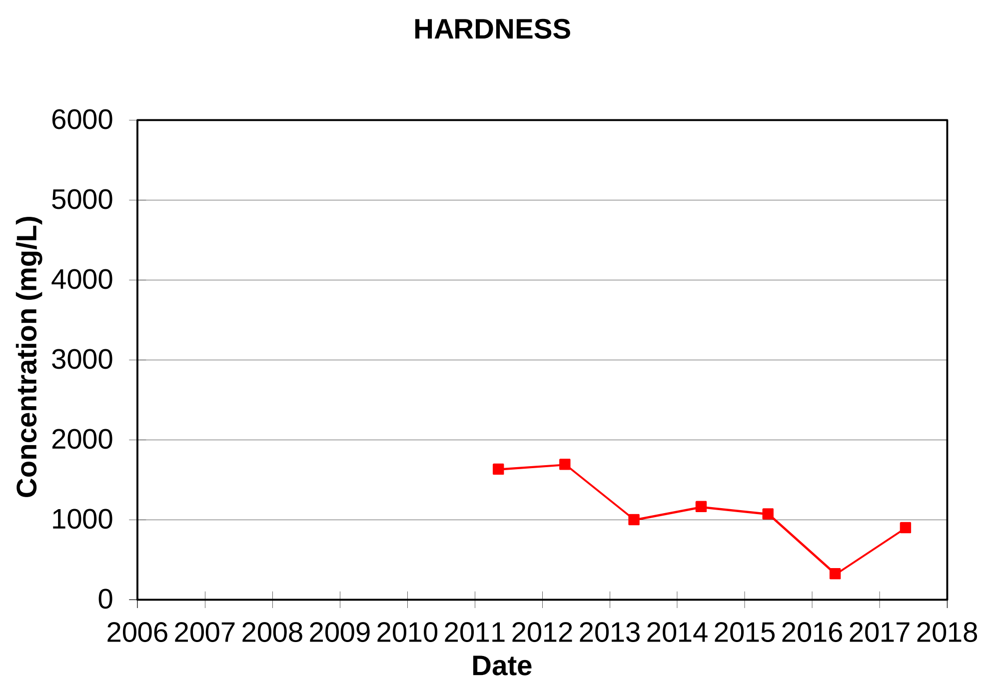
FIGURE C-33 - MH-29

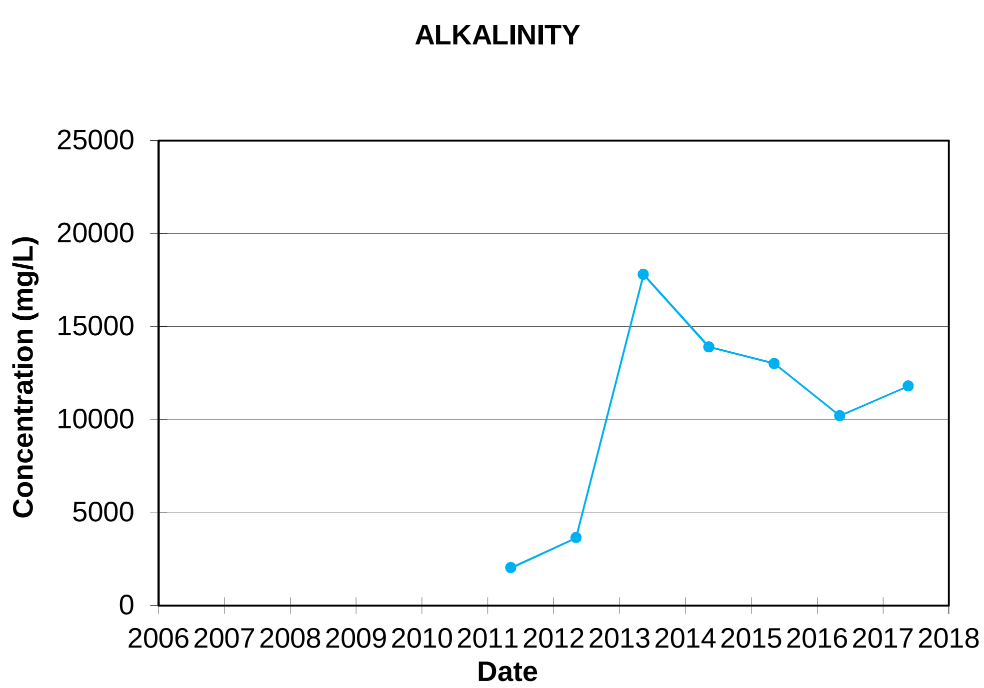
GREEN LANE LANDFILL SITE











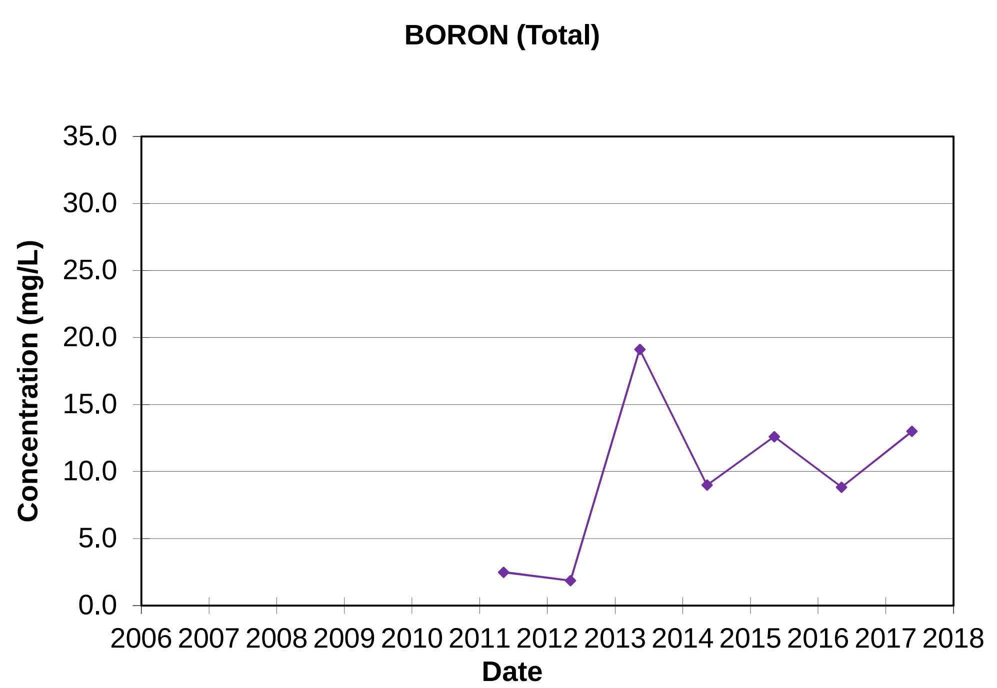
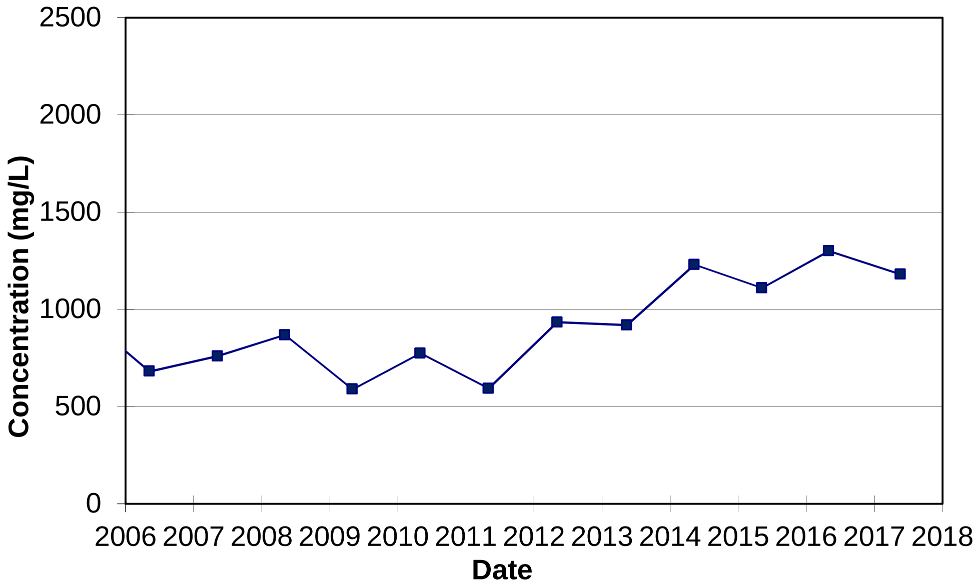
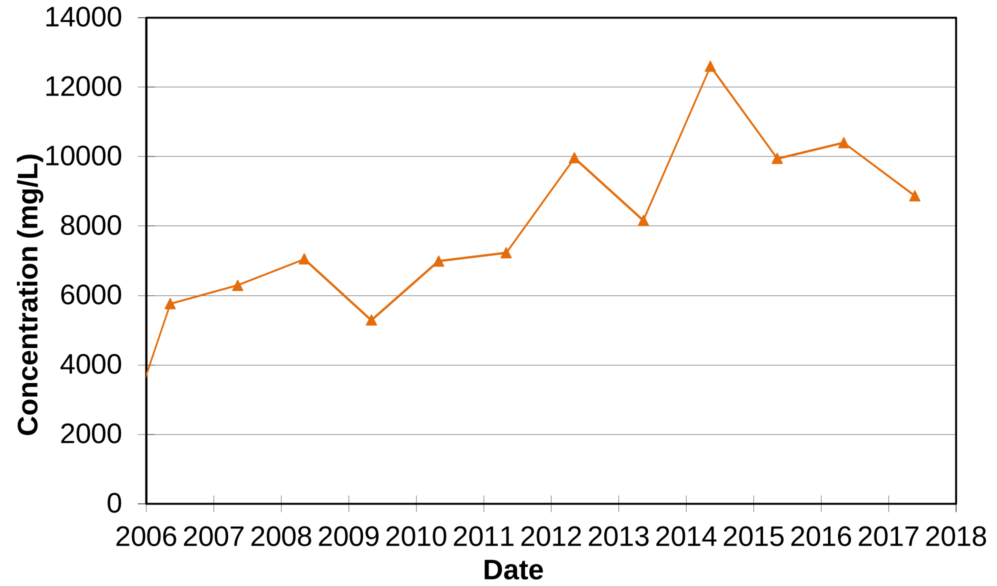


FIGURE C-34 - HOLDING TANK
GREEN LANE LANDFILL SITE

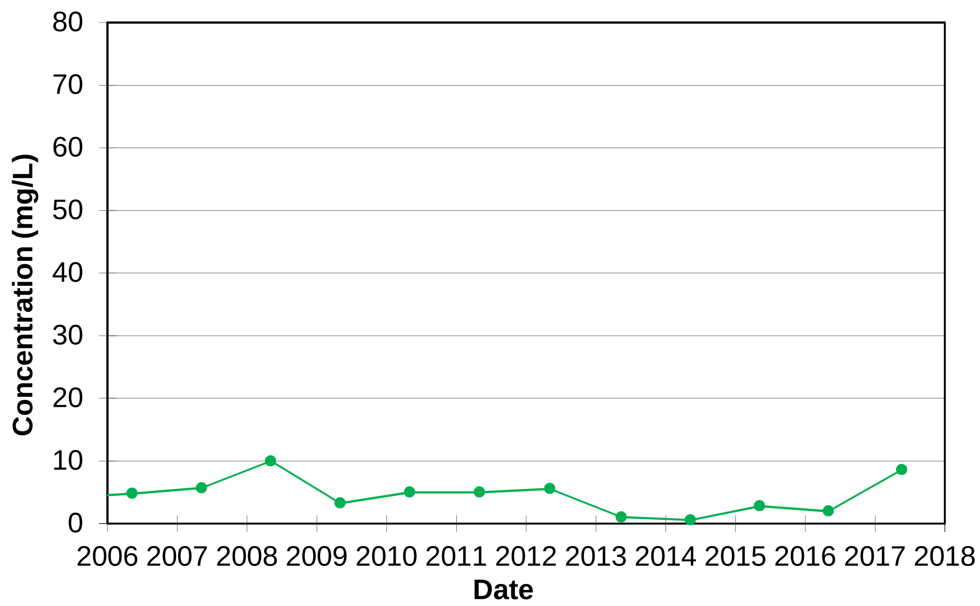
CHLORIDE



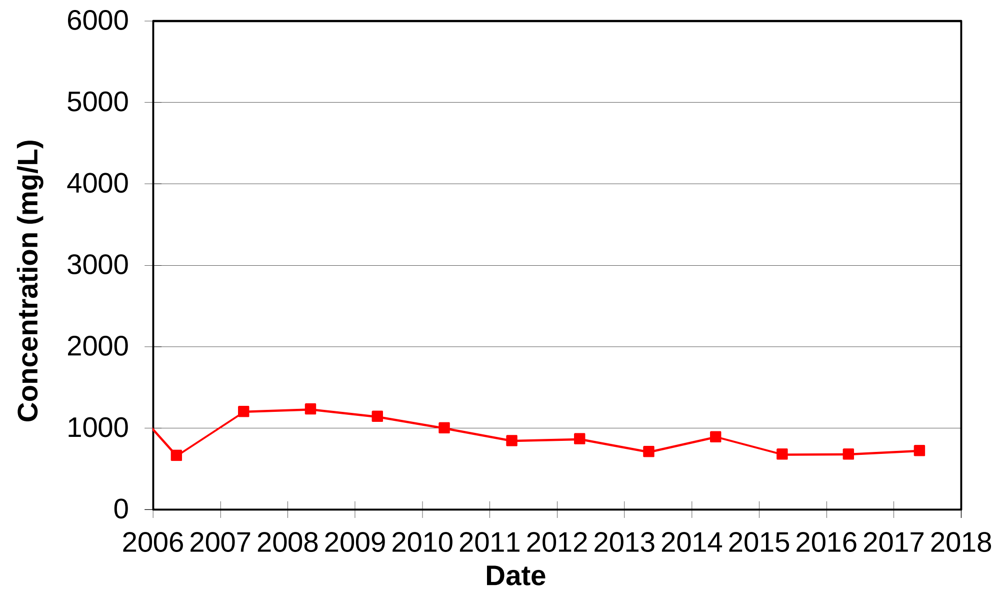
CONDUCTIVITY (Laboratory)



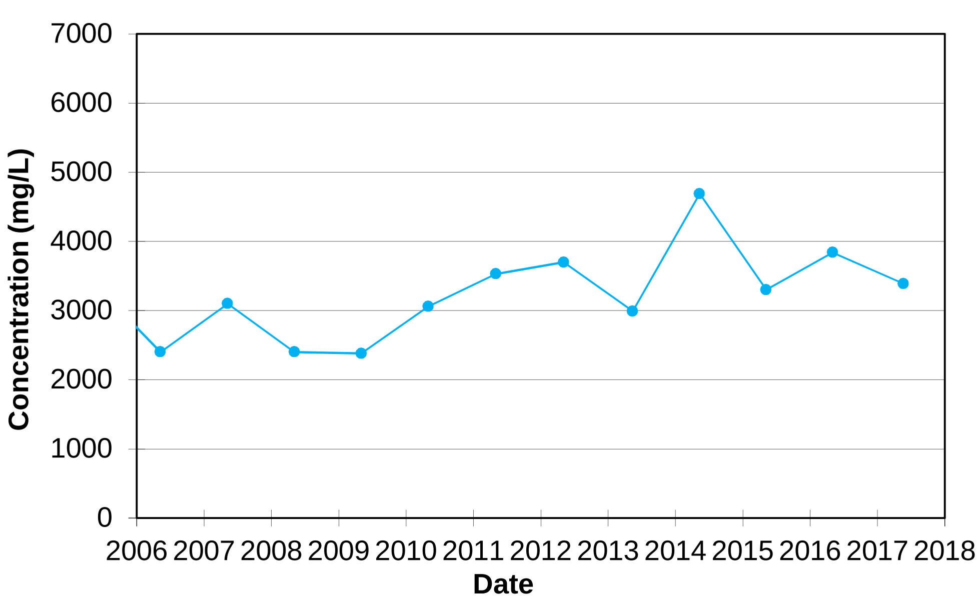
IRON (Total)



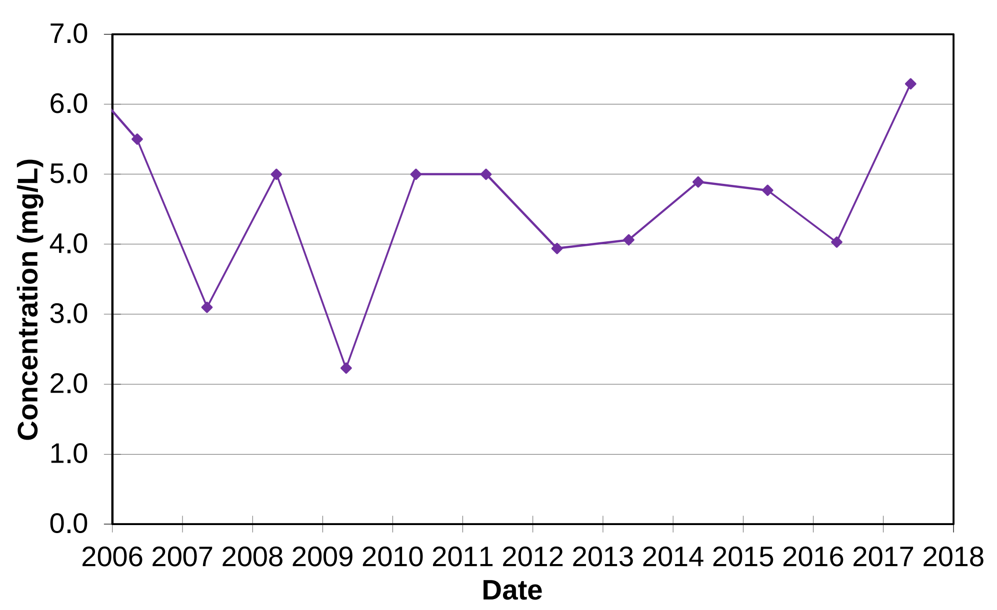
HARDNESS



ALKALINITY



BORON (Total)



APPENDIX

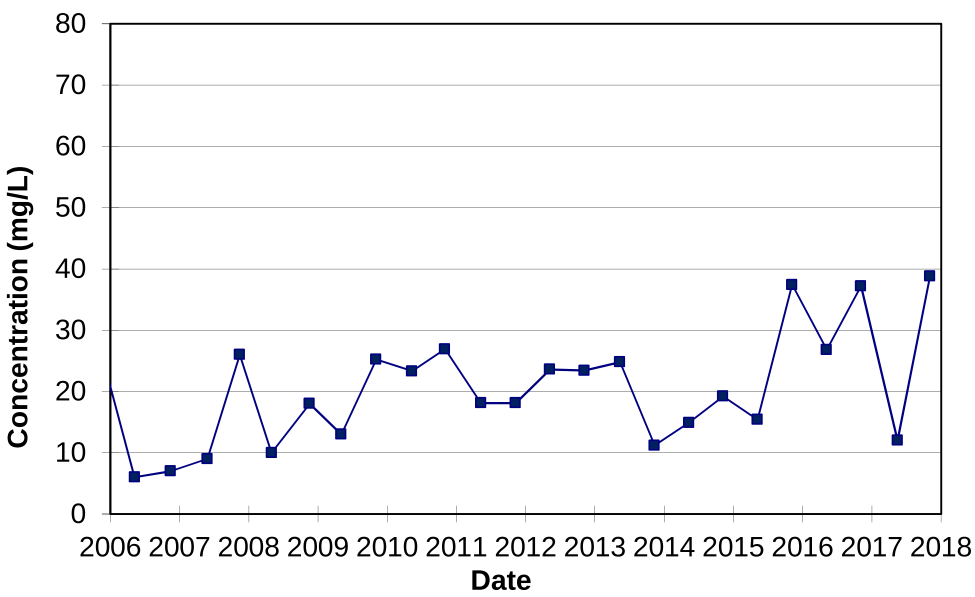
D

HISTORICAL WATER DATA GRAPHS – PRIVATE WELLS

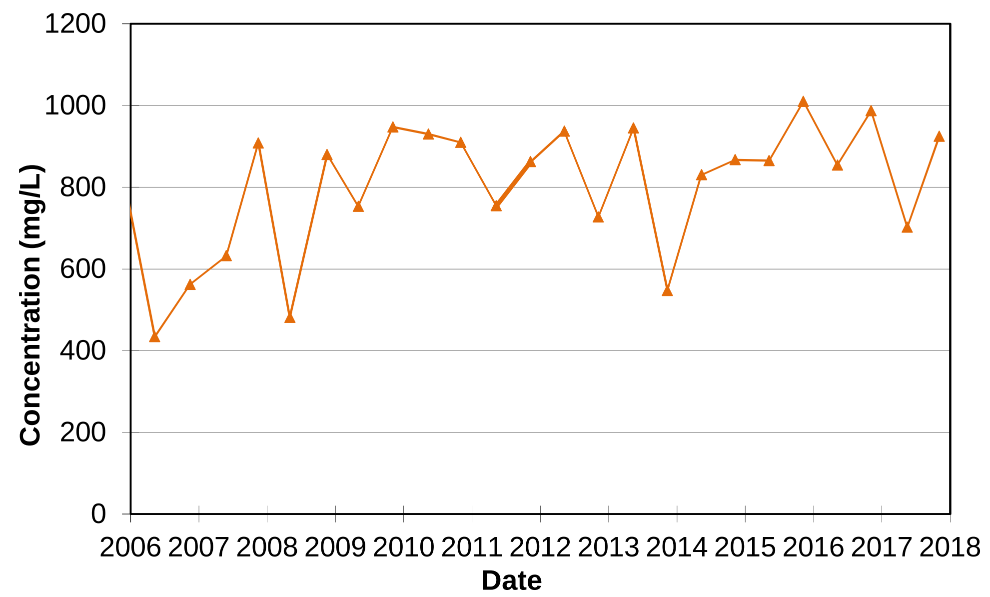
FIGURE D-1 - WELL AA

GREEN LANE LANDFILL SITE

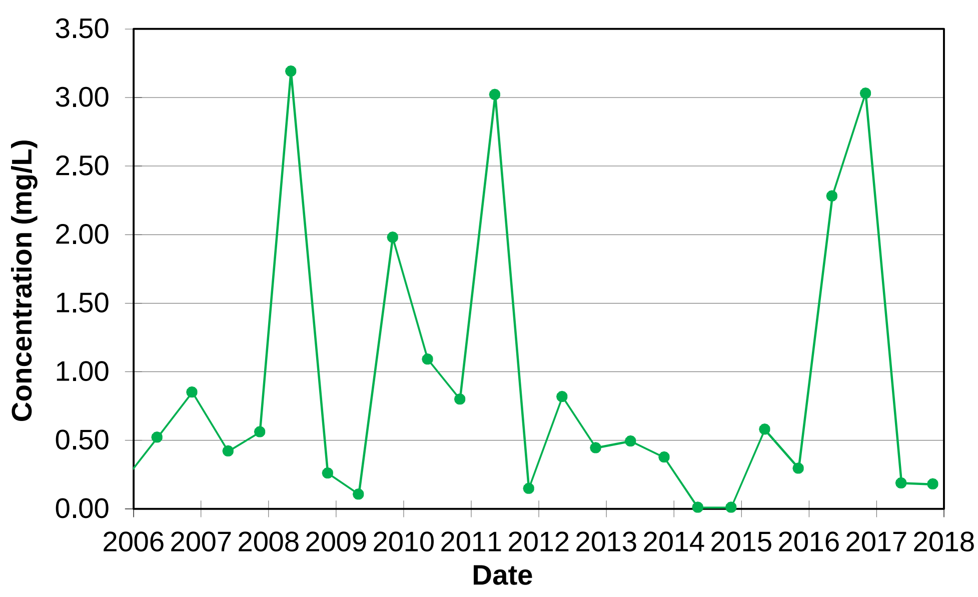
CHLORIDE



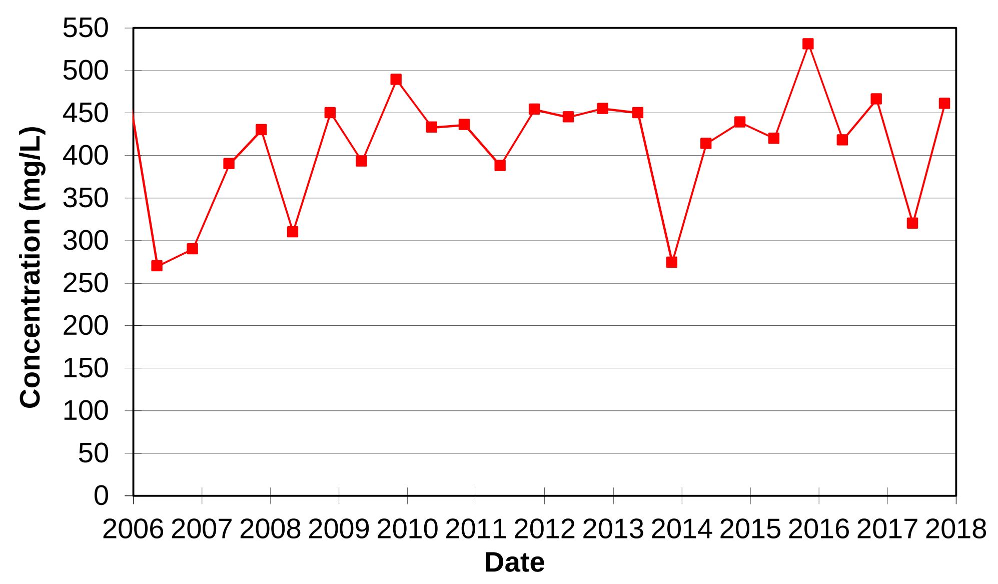
CONDUCTIVITY (Laboratory)



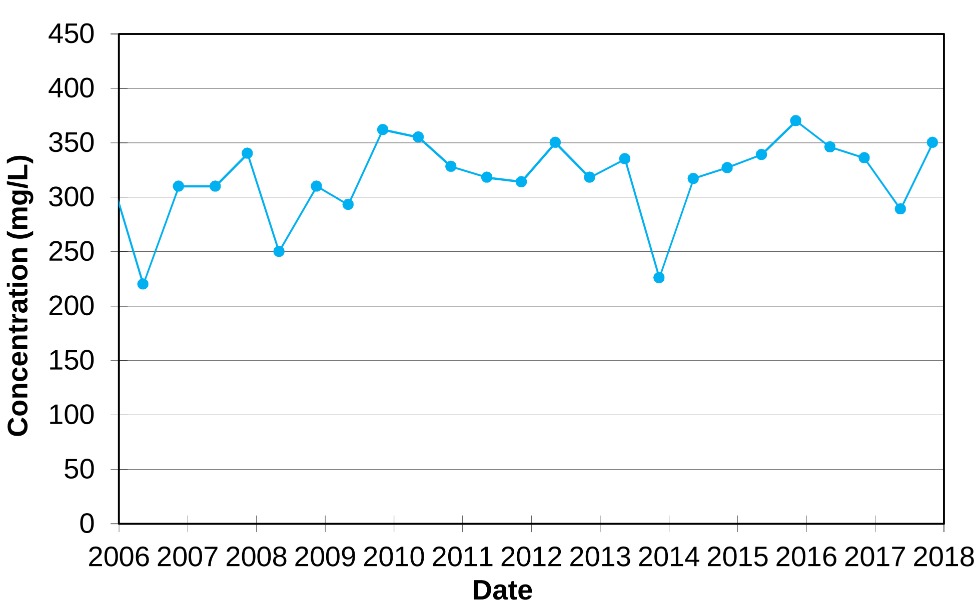
IRON (Total)



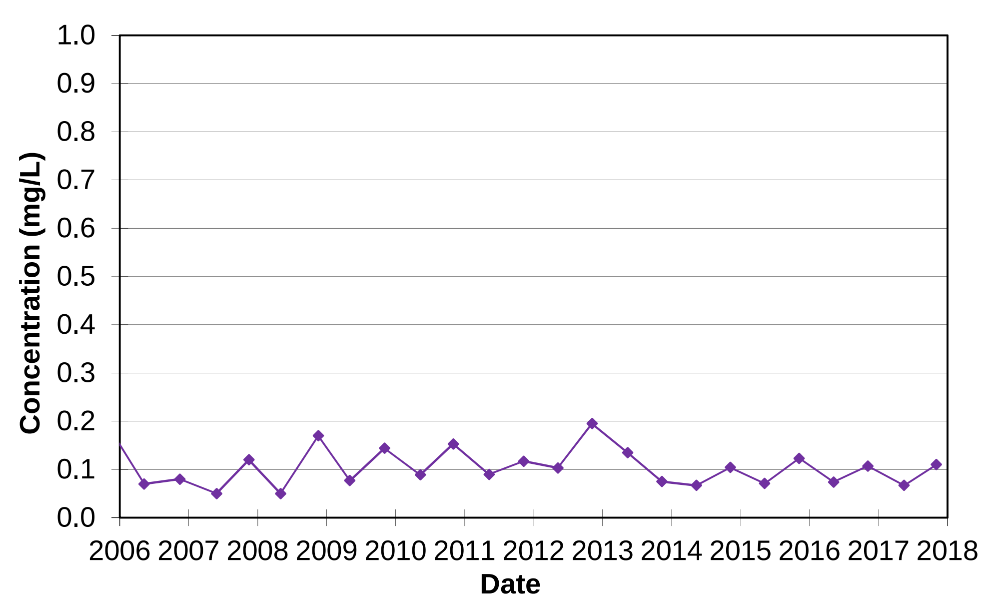
HARDNESS



ALKALINITY



BORON (Total)

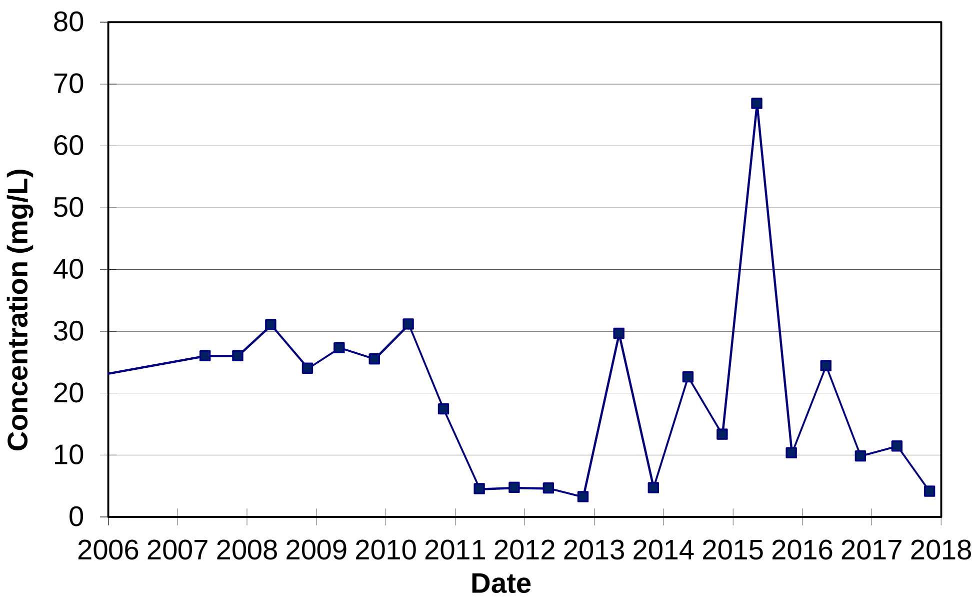


wsp

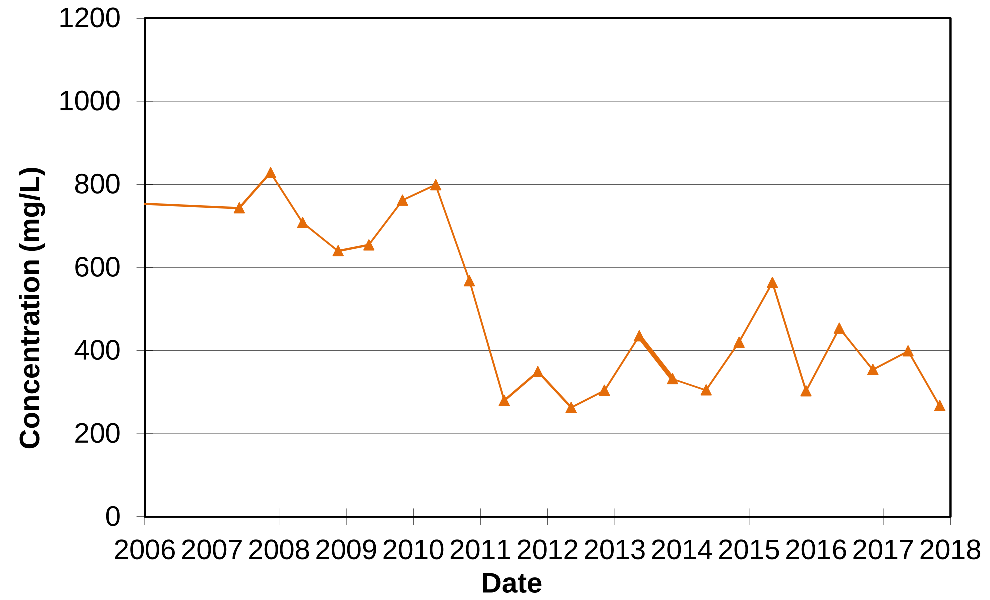
FIGURE D-2 - WELL M

GREEN LANE LANDFILL SITE

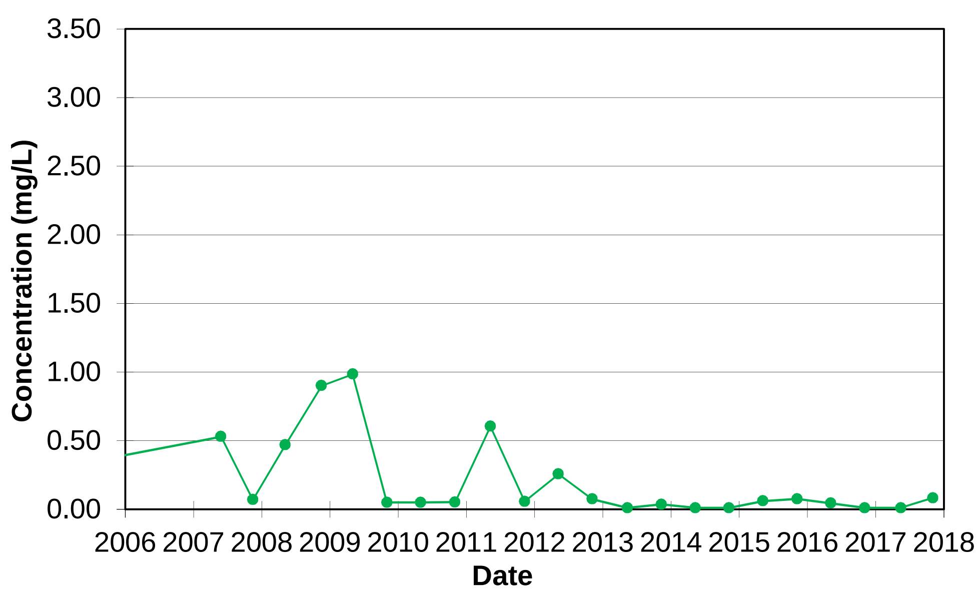
CHLORIDE



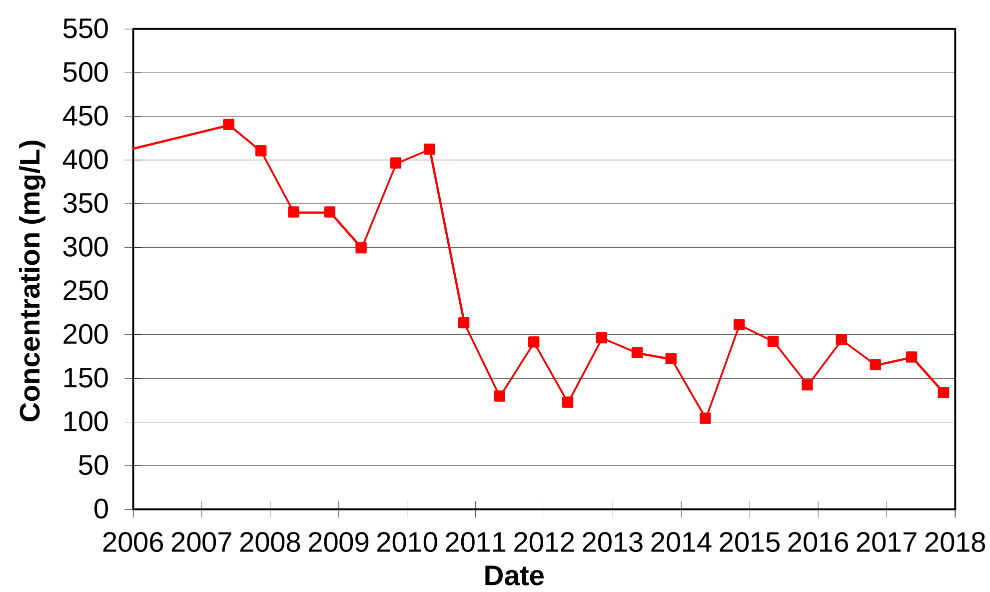
CONDUCTIVITY (Laboratory)



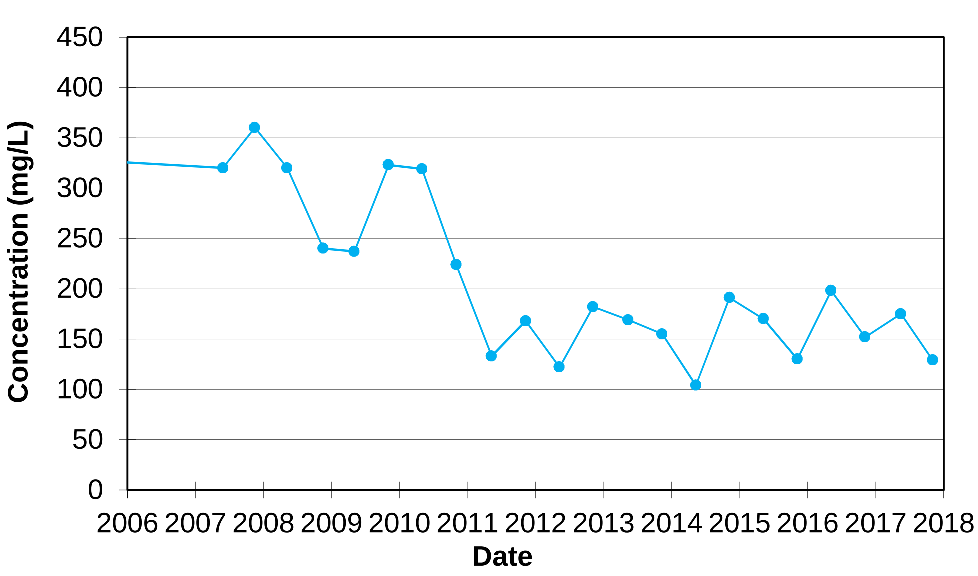
IRON (Total)



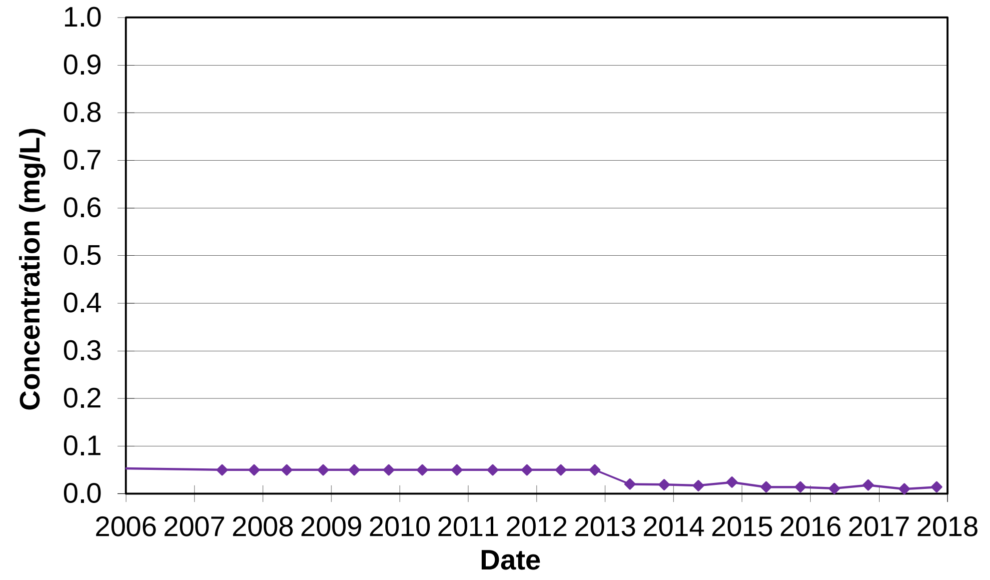
HARDNESS



ALKALINITY



BORON (Total)



wsp

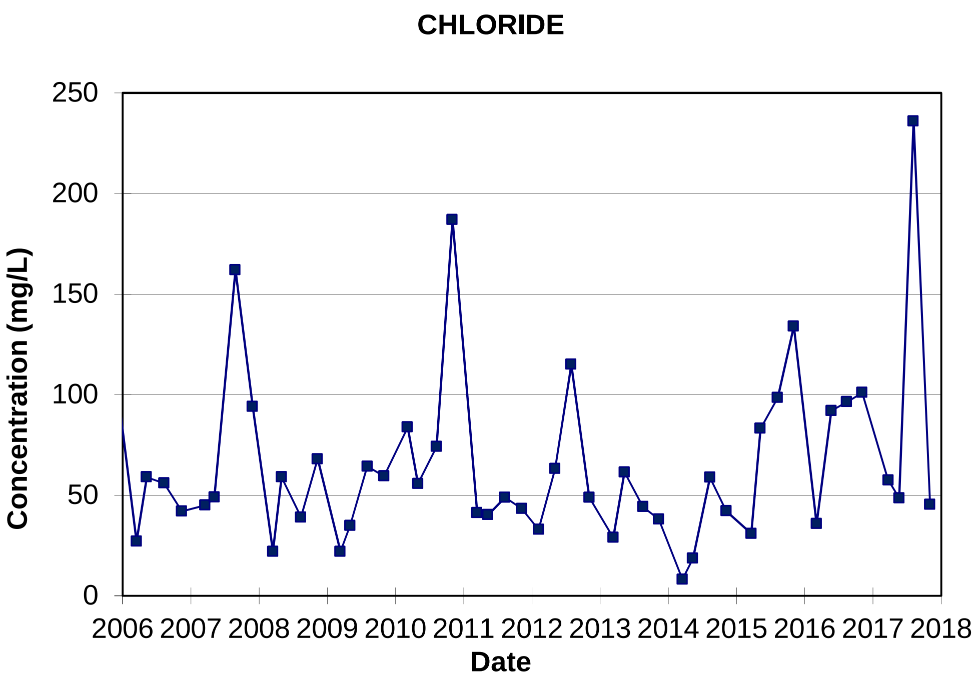
APPENDIX

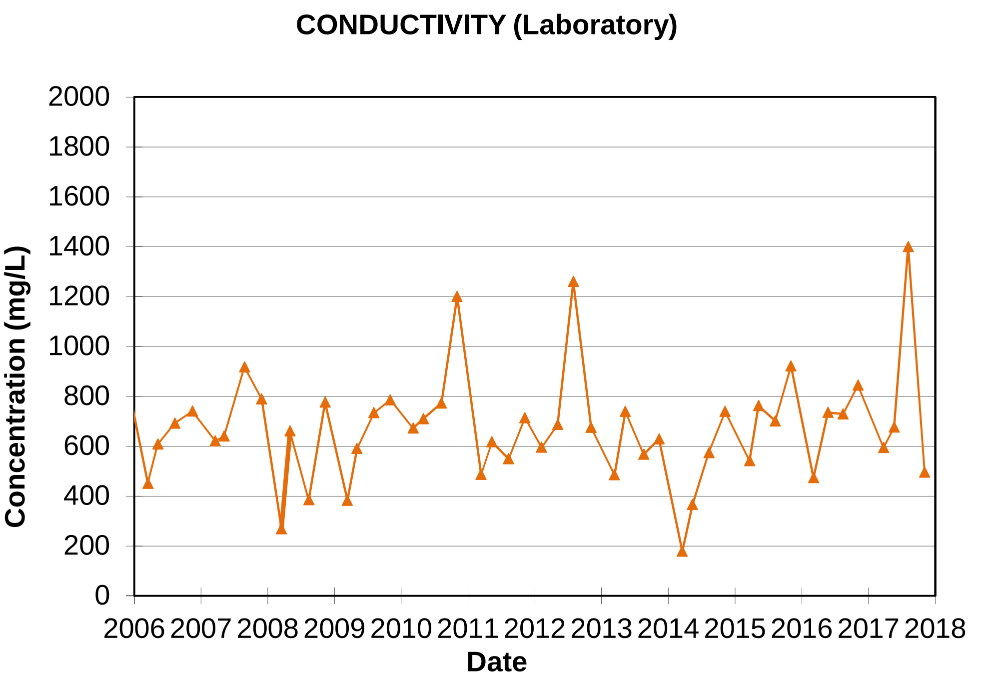
E

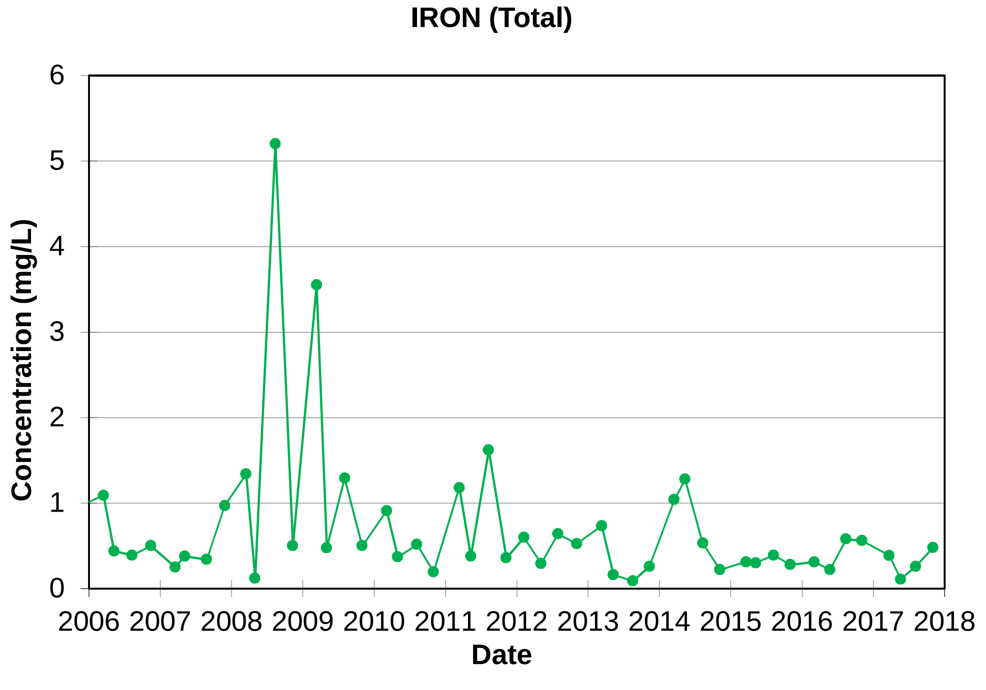
HISTORICAL WATER DATA GRAPHS – SURFACE WATER

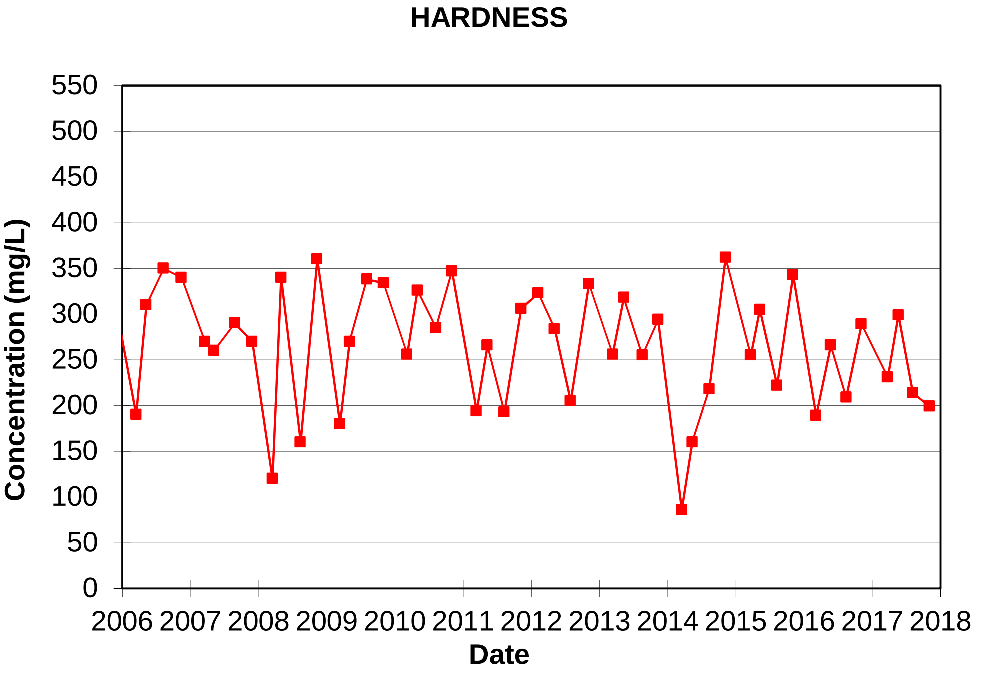
FIGURE E-1 - DODD CREEK - STA5

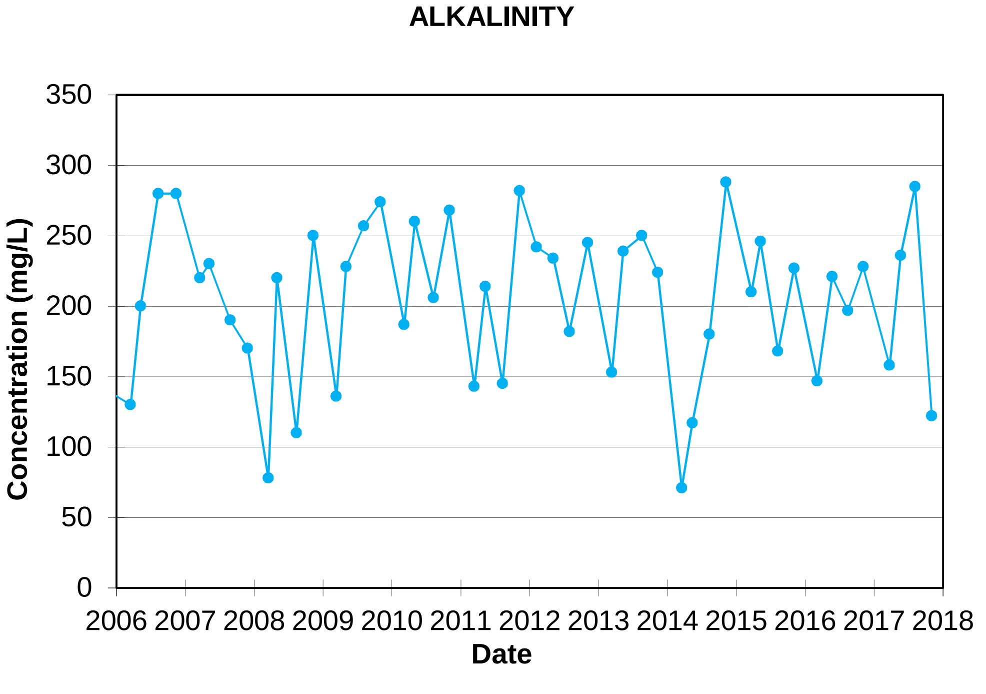
GREEN LANE LANDFILL SITE











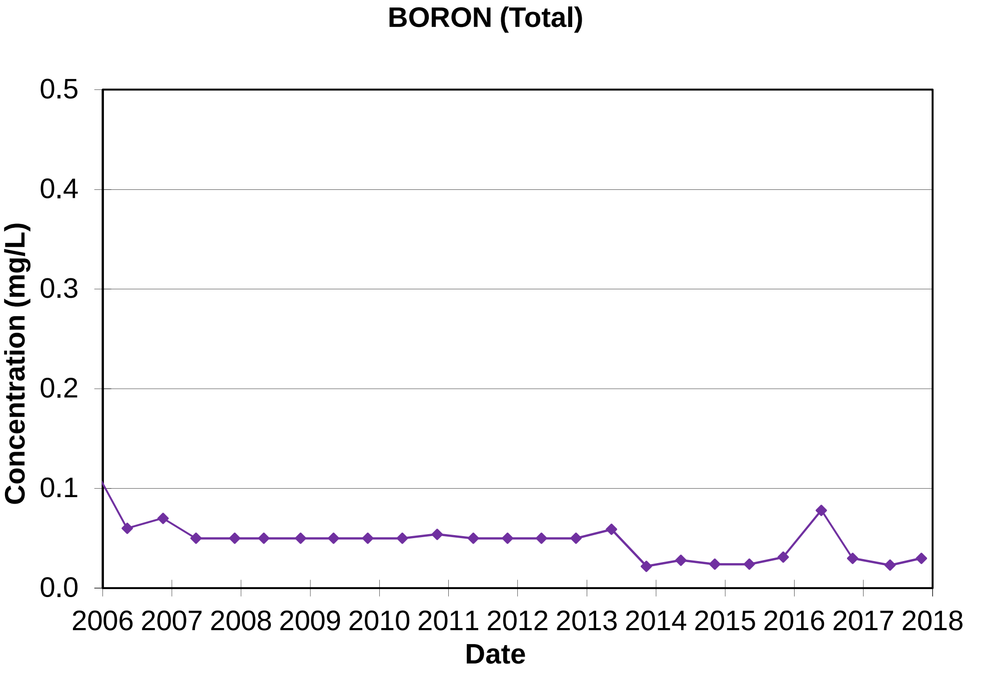
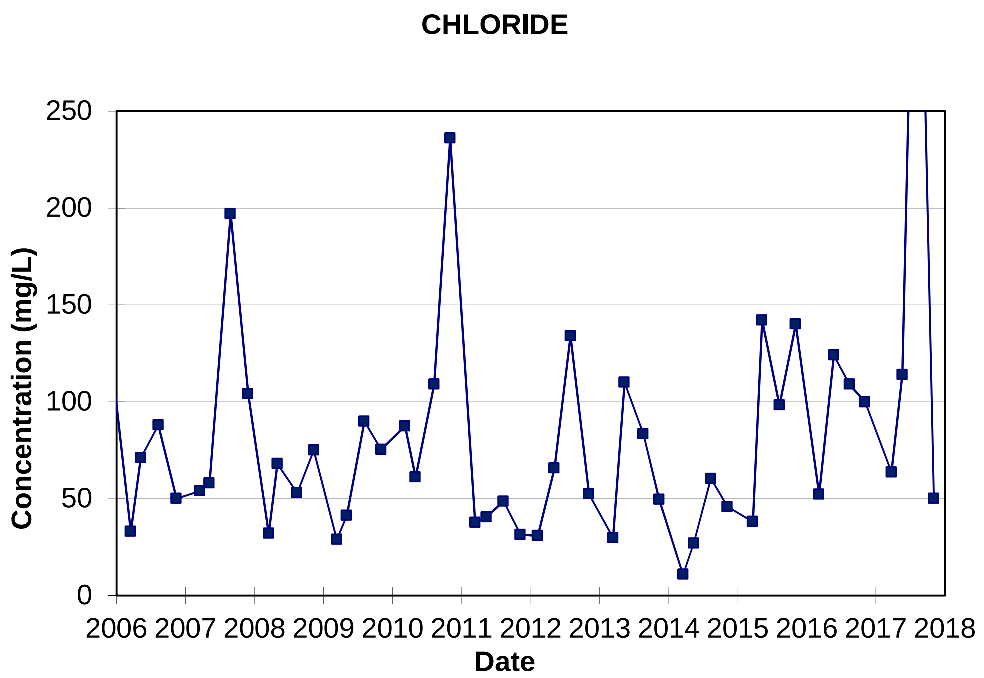
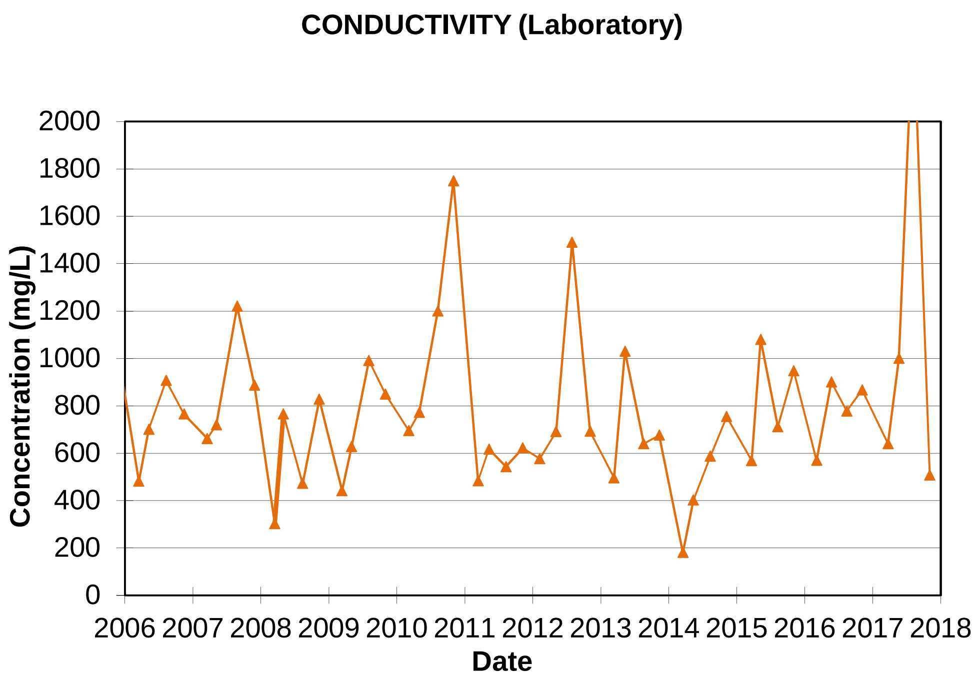
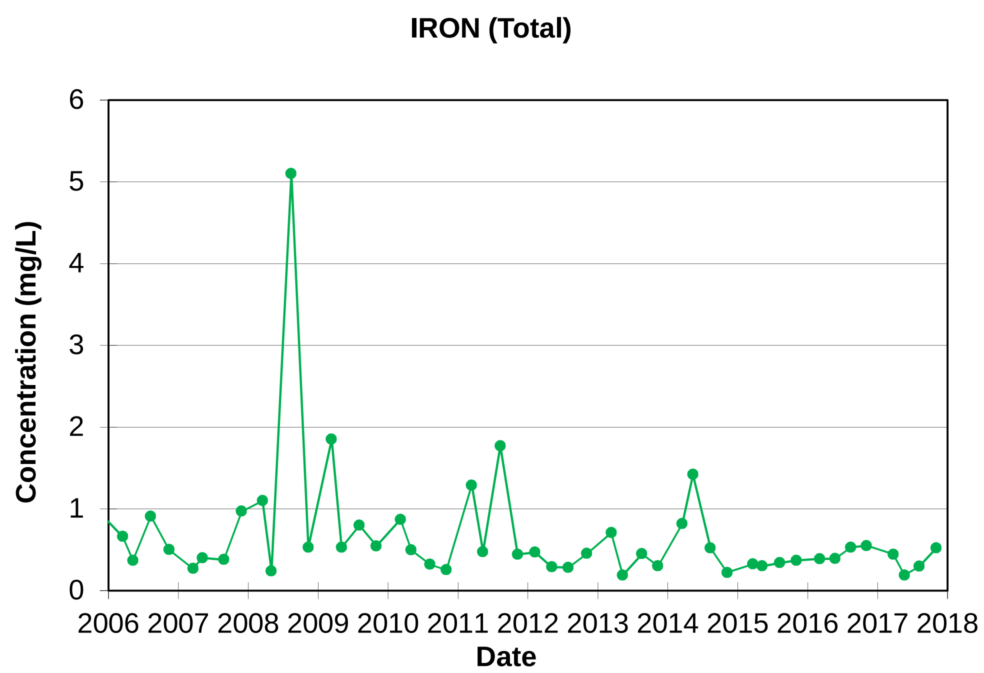
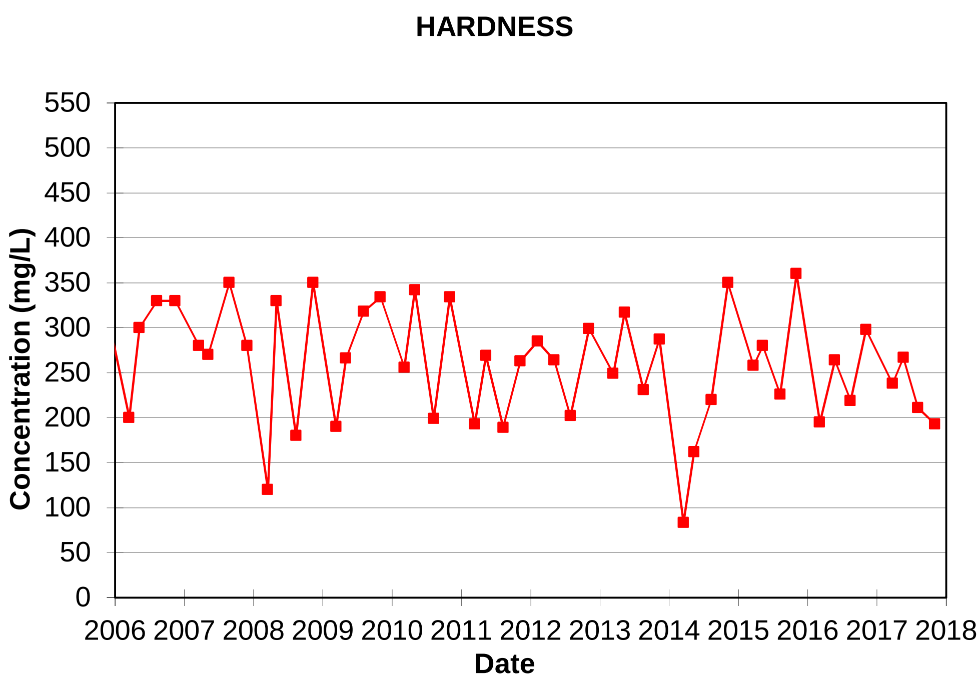


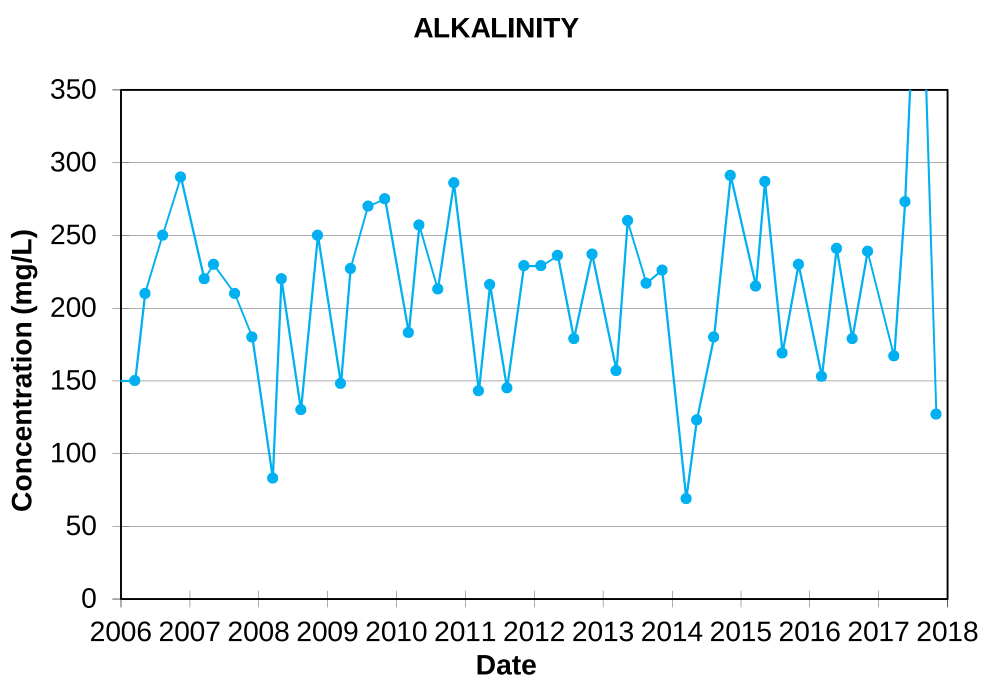
FIGURE E-2 - DODD CREEK - STA6
GREEN LANE LANDFILL SITE

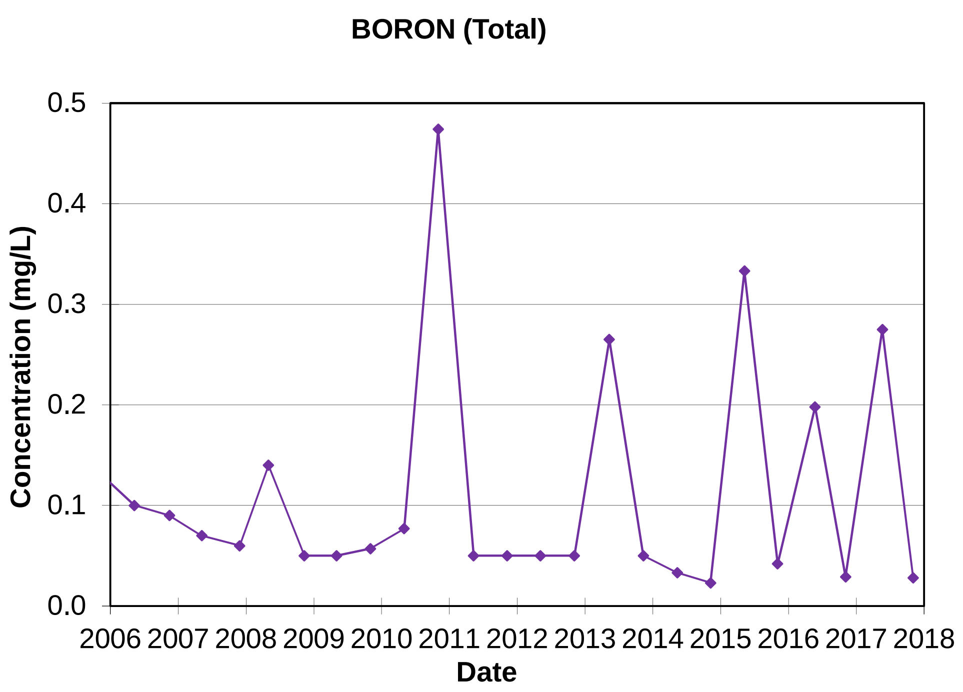












APPENDIX

F

HISTORICAL WATER LEVEL DATA

TABLE F-1
HISTORICAL SEMI-ANNUAL/QUARTERLY GROUNDWATER AND LEACHATE ELEVATIONS
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Groundwater Elevation (m ASL)							
			Jan-92	May-92	Nov-92	May-93	Nov-93	May-94	Nov-94	May-95
OW19-91	232.19	232.97	230.31	231.14	231.55	231.27	230.21	231.06	231.14	231.30
OW20-91	227.51	228.41	226.39	226.28	226.53	226.35	226.56	226.08	226.58	226.64
OW23A-95	227.91	228.87	--	--	--	--	--	--	--	--
OW23B-95	227.90	228.78	--	--	--	--	--	--	--	--
OW24A-95	227.32	228.18	--	--	--	--	--	--	--	--
OW24B-95	227.23	228.18	--	--	--	--	--	--	--	--
OW27A-95	230.76	231.48	--	--	--	--	--	--	--	--
OW27B-95	230.70	231.56	--	--	--	--	--	--	--	--
OW28A-95	230.28	231.32	--	--	--	--	--	--	--	--
OW28B-95	230.27	231.38	--	--	--	--	--	--	--	--
OW29A-95	229.88	231.28	--	--	--	--	--	--	--	--
OW29B-95	230.24	231.36	--	--	--	--	--	--	--	--
OW30A-95	232.92	233.72	--	--	--	--	--	--	--	--
OW30B-95	232.71	233.71	--	--	--	--	--	--	--	--
OW31A-95	233.39	234.04	--	--	--	--	--	--	--	--
OW31B-95	233.08	233.69	--	--	--	--	--	--	--	--
OW32A-95	228.80	229.60	--	--	--	--	--	--	--	--
OW32B-95	228.80	229.64	--	--	--	--	--	--	--	--
OW34A-95	228.10	229.08	--	--	--	--	--	--	--	--
OW34B-95	228.05	228.98	--	--	--	--	--	--	--	--
OW35A-95	232.16	233.05	--	--	--	--	--	--	--	--
OW35B-95	231.94	232.90	--	--	--	--	--	--	--	--
OW36A-95	231.12	232.02	--	--	--	--	--	--	--	--
OW36B-95	231.12	232.16	--	--	--	--	--	--	--	--
OW37-97	230.77	231.40	--	--	--	--	--	--	--	--
OW38-97	232.20	232.83	--	--	--	--	--	--	--	--
OW39-99	228.53	229.40	--	--	--	--	--	--	--	--
OW40-99	229.00	229.84	--	--	--	--	--	--	--	--
OW41A-01	233.28	234.07	--	--	--	--	--	--	--	--
OW41B-01	233.27	234.17	--	--	--	--	--	--	--	--
OW42A-01	234.50	235.38	--	--	--	--	--	--	--	--
OW42B-01	234.50	235.15	--	--	--	--	--	--	--	--
OW43A-01	234.18	235.00	--	--	--	--	--	--	--	--
OW43B-01	234.06	234.98	--	--	--	--	--	--	--	--
OW44A-01	233.81	234.66	--	--	--	--	--	--	--	--
OW44B-01	233.81	234.30	--	--	--	--	--	--	--	--
OW45A-01	233.41	234.40	--	--	--	--	--	--	--	--
OW45B-01	233.40	234.34	--	--	--	--	--	--	--	--
OW46A-01	232.71	233.57	--	--	--	--	--	--	--	--
OW46B-01	232.63	233.53	--	--	--	--	--	--	--	--
OW47A-01	230.84	231.77	--	--	--	--	--	--	--	--
OW47B-01	230.89	231.87	--	--	--	--	--	--	--	--
OW48A-01	230.18	231.20	--	--	--	--	--	--	--	--
OW48B-01	230.19	231.18	--	--	--	--	--	--	--	--
OW49A-01	233.25	234.00	--	--	--	--	--	--	--	--
OW49B-01	233.32	234.14	--	--	--	--	--	--	--	--
OW50-01	232.10	232.85	--	--	--	--	--	--	--	--
OW51A-07	231.10	231.92	--	--	--	--	--	--	--	--
OW51B-07	230.97	231.90	--	--	--	--	--	--	--	--
OW52A-07	227.15	227.99	--	--	--	--	--	--	--	--
OW52B-07	227.04	228.02	--	--	--	--	--	--	--	--
LW1-91	238.56	239.28	230.70	230.73	231.00	231.04	230.88	231.09	231.06	231.21
LW2-07	254.34	255.25	--	--	--	--	--	--	--	--
LW3-91	241.97	243.15	227.23	230.93	230.85	231.04	229.93	230.67	230.16	230.25
LW3-16	242.88	243.93	--	--	--	--	--	--	--	--
LW4-04	239.45	240.74	--	--	--	--	--	--	--	--
LW5-04	241.72	243.20	--	--	--	--	--	--	--	--
LW6-04	241.32	242.55	--	--	--	--	--	--	--	--
LW7-09	240.59	241.67	--	--	--	--	--	--	--	--
LW8-09	245.91	246.64	--	--	--	--	--	--	--	--
LW9-13	243.68	244.51	--	--	--	--	--	--	--	--
MH11	233.61	234.63	--	--	--	--	--	--	Installed	No Access
MH19	241.05	242.51	--	--	--	--	--	--	--	--
MH23	231.41	232.41	--	--	--	--	--	--	--	--
MH29	235.95	236.95	--	--	--	--	--	--	--	--

Notes: • m ASL denotes metres above sea level.
• NM - Not measured.
• Frozen - unable to obtain level as water was frozen inside riser pipe, or cap frozen on riser pipe.
• No Access - monitoring well or manhole inaccessible for liquid level measurement.
• Wasp Nest - monitoring well inaccessible for water level measurement due to safety concerns.
• Blocked - monitoring well inaccessible due to blockage in riser pipe.
• Damaged - monitoring well damaged and inaccessible.
• Decom - monitoring well decommissioned

TABLE F-1
HISTORICAL SEMI-ANNUAL/QUARTERLY GROUNDWATER AND LEACHATE ELEVATIONS
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Groundwater Elevation (m ASL)							
			Nov-95	May-96	Nov-96	May-97	Nov-97	May-98	Nov-98	Feb-99
OW19-91	**232.19**	**232.97**	230.50	231.34	231.33	231.46	231.25	231.49	230.06	229.79
OW20-91	**227.51**	**228.41**	224.43	226.59	226.64	226.78	226.80	226.68	226.73	226.30
OW23A-95	**227.91**	**228.87**	Installed	226.36	226.20	226.17	226.23	226.33	225.77	224.03
OW23B-95	**227.90**	**228.78**	Installed	227.38	226.16	227.63	225.78	227.57	225.05	223.26
OW24A-95	**227.32**	**228.18**	Installed	--	--	224.59	224.77	224.79	224.80	224.76
OW24B-95	**227.23**	**228.18**	Installed	--	--	225.24	224.76	225.36	224.70	223.95
OW27A-95	**230.76**	**231.48**	Installed	--	--	223.31	223.43	223.63	223.65	223.67
OW27B-95	**230.70**	**231.56**	Installed	--	--	224.89	224.81	200.53	224.75	224.48
OW28A-95	**230.28**	**231.32**	Installed	--	--	225.96	226.02	226.19	226.00	226.10
OW28B-95	**230.27**	**231.38**	Installed	--	--	226.33	226.28	226.43	226.13	226.09
OW29A-95	**229.88**	**231.28**	Installed	--	--	226.05	226.04	226.22	225.94	Blocked
OW29B-95	**230.24**	**231.36**	Installed	--	--	226.31	226.24	226.46	225.84	225.88
OW30A-95	**232.92**	**233.72**	Installed	--	--	226.18	226.21	226.37	226.15	226.09
OW30B-95	**232.71**	**233.71**	Installed	--	--	226.21	226.10	226.38	225.95	225.67
OW31A-95	**233.39**	**234.04**	Installed	--	--	227.07	227.00	227.20	226.85	226.58
OW31B-95	**233.08**	**233.69**	Installed	--	--	227.22	227.09	227.35	226.67	226.50
OW32A-95	**228.80**	**229.60**	Installed	--	--	227.87	227.89	228.01	227.71	227.45
OW32B-95	**228.80**	**229.64**	Installed	--	--	227.98	227.82	228.06	227.60	227.20
OW34A-95	**228.10**	**229.08**	Installed	--	--	224.92	225.61	225.00	225.58	223.76
OW34B-95	**228.05**	**228.98**	Installed	--	--	224.84	225.28	225.00	224.95	223.92
OW35A-95	**232.16**	**233.05**	Installed	--	--	229.91	227.62	228.23	227.87	227.82
OW35B-95	**231.94**	**232.90**	Installed	--	--	229.33	227.17	227.78	227.38	227.76
OW36A-95	**231.12**	**232.02**	Installed	--	--	228.97	228.57	228.14	228.56	224.95
OW36B-95	**231.12**	**232.16**	Installed	--	--	230.86	230.02	230.28	228.55	228.84
OW37-97	**230.77**	**231.40**	Installed	--	--	230.50	230.34	230.50	229.70	230.14
OW38-97	**232.20**	**232.83**	Installed	--	--	231.43	231.47	231.66	230.10	230.90
OW39-99	**228.53**	**229.40**	--	--	--	--	--	--	--	--
OW40-99	**229.00**	**229.84**	--	--	--	--	--	--	--	--
OW41A-01	**233.28**	**234.07**	--	--	--	--	--	--	--	--
OW41B-01	**233.27**	**234.17**	--	--	--	--	--	--	--	--
OW42A-01	**234.50**	**235.38**	--	--	--	--	--	--	--	--
OW42B-01	**234.50**	**235.15**	--	--	--	--	--	--	--	--
OW43A-01	**234.18**	**235.00**	--	--	--	--	--	--	--	--
OW43B-01	**234.06**	**234.98**	--	--	--	--	--	--	--	--
OW44A-01	**233.81**	**234.66**	--	--	--	--	--	--	--	--
OW44B-01	**233.81**	**234.30**	--	--	--	--	--	--	--	--
OW45A-01	**233.41**	**234.40**	--	--	--	--	--	--	--	--
OW45B-01	**233.40**	**234.34**	--	--	--	--	--	--	--	--
OW46A-01	**232.71**	**233.57**	--	--	--	--	--	--	--	--
OW46B-01	**232.63**	**233.53**	--	--	--	--	--	--	--	--
OW47A-01	**230.84**	**231.77**	--	--	--	--	--	--	--	--
OW47B-01	**230.89**	**231.87**	--	--	--	--	--	--	--	--
OW48A-01	**230.18**	**231.20**	--	--	--	--	--	--	--	--
OW48B-01	**230.19**	**231.18**	--	--	--	--	--	--	--	--
OW49A-01	**233.25**	**234.00**	--	--	--	--	--	--	--	--
OW49B-01	**233.32**	**234.14**	--	--	--	--	--	--	--	--
OW50-01	**232.10**	**232.85**	--	--	--	--	--	--	--	--
OW51A-07	**231.10**	**231.92**	--	--	--	--	--	--	--	--
OW51B-07	**230.97**	**231.90**	--	--	--	--	--	--	--	--
OW52A-07	**227.15**	**227.99**	--	--	--	--	--	--	--	--
OW52B-07	**227.04**	**228.02**	--	--	--	--	--	--	--	--
LW1-91	**238.56**	**239.28**	231.18	231.40	229.87	231.46	231.30	231.43	231.26	231.22
LW2-07	**254.34**	**255.25**	--	--	--	--	--	--	--	--
LW3-91	**241.97**	**243.15**	230.90	231.22	229.92	231.41	230.79	231.26	230.29	230.71
LW3-16	**242.88**	**243.93**	--	--	--	--	--	--	--	--
LW4-04	**239.45**	**240.74**	--	--	--	--	--	--	--	--
LW5-04	**241.72**	**243.20**	--	--	--	--	--	--	--	--
LW6-04	**241.32**	**242.55**	--	--	--	--	--	--	--	--
LW7-09	**240.59**	**241.67**	--	--	--	--	--	--	--	--
LW8-09	**245.91**	**246.64**	--	--	--	--	--	--	--	--
LW9-13	**243.68**	**244.51**	--	--	--	--	--	--	--	--
MH11	**233.61**	**234.63**	No Access	No Access	No Access	224.95	220.19	222.47	223.46	222.64
MH19	**241.05**	**242.51**	--	--	--	--	--	--	--	--
MH23	**231.41**	**232.41**	--	--	--	--	--	--	--	--
MH29	**235.95**	**236.95**	--	--	--	--	--	--	--	--

Notes: • m ASL denotes metres above sea level.
• NM - Not measured.
• Frozen - unable to obtain level as water was frozen inside riser pipe, or cap frozen on riser pipe.
• No Access - monitoring well or manhole inaccessible for liquid level measurement.
• Wasp Nest - monitoring well inaccessible for water level measurement due to safety concerns.
• Blocked - monitoring well inaccessible due to blockage in riser pipe.
• Damaged - monitoring well damaged and inaccessible.
• Decom - monitoring well decommissioned

TABLE F-1
HISTORICAL SEMI-ANNUAL/QUARTERLY GROUNDWATER AND LEACHATE ELEVATIONS
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Groundwater Elevation (m ASL)							
			May-99	Aug-99	Nov-99	Feb-00	May-00	Aug-00	Nov-00	Feb-01
OW19-91	**232.19**	**232.97**	230.87	230.13	229.59	230.79	231.13	231.45	231.45	231.64
OW20-91	**227.51**	**228.41**	226.48	226.29	226.52	226.59	226.71	226.58	226.82	226.98
OW23A-95	**227.91**	**228.87**	226.34	225.21	223.90	225.85	226.15	226.33	226.42	227.29
OW23B-95	**227.90**	**228.78**	226.30	225.89	225.26	226.54	227.47	227.49	227.30	227.79
OW24A-95	**227.32**	**228.18**	224.53	224.21	224.23	224.29	224.28	224.17	224.30	224.55
OW24B-95	**227.23**	**228.18**	224.28	222.53	223.62	224.07	224.55	223.48	224.74	225.37
OW27A-95	**230.76**	**231.48**	223.58	223.03	223.20	223.21	223.21	222.94	223.21	223.43
OW27B-95	**230.70**	**231.56**	224.61	224.21	223.96	224.19	224.39	223.32	224.57	224.05
OW28A-95	**230.28**	**231.32**	226.12	225.97	226.00	226.13	226.01	225.90	225.90	226.11
OW28B-95	**230.27**	**231.38**	226.12	225.30	225.48	225.03	225.52	225.41	226.25	226.25
OW29A-95	**229.88**	**231.28**	226.09	226.01	226.07	226.06	226.00	226.00	226.08	226.27
OW29B-95	**230.24**	**231.36**	226.15	225.85	225.90	225.72	225.94	226.11	226.29	226.47
OW30A-95	**232.92**	**233.72**	226.04	225.95	226.10	225.91	225.82	225.83	225.98	226.23
OW30B-95	**232.71**	**233.71**	225.80	223.93	225.47	225.11	225.48	225.21	225.94	226.33
OW31A-95	**233.39**	**234.04**	226.73	226.75	226.54	226.67	226.79	226.90	226.98	227.14
OW31B-95	**233.08**	**233.69**	226.92	226.71	226.32	226.87	227.02	227.06	227.17	227.34
OW32A-95	**228.80**	**229.60**	227.46	227.48	227.48	227.53	227.62	227.76	227.86	228.01
OW32B-95	**228.80**	**229.64**	227.50	227.49	227.32	227.52	227.67	227.79	227.89	228.04
OW34A-95	**228.10**	**229.08**	224.58	224.61	224.67	224.83	224.71	224.88	225.07	225.03
OW34B-95	**228.05**	**228.98**	223.56	223.81	223.84	224.04	224.08	224.47	224.43	224.40
OW35A-95	**232.16**	**233.05**	227.92	228.31	228.00	228.52	228.94	228.62	227.86	228.92
OW35B-95	**231.94**	**232.90**	227.24	227.80	227.72	228.22	228.79	228.26	227.53	228.72
OW36A-95	**231.12**	**232.02**	228.17	225.41	227.55	228.52	229.03	226.49	228.44	229.28
OW36B-95	**231.12**	**232.16**	229.77	228.80	228.30	229.70	230.00	230.12	230.10	230.38
OW37-97	**230.77**	**231.40**	230.27	229.86	229.67	230.18	230.39	230.48	230.30	230.53
OW38-97	**232.20**	**232.83**	231.20	230.43	229.88	231.11	231.53	231.66	231.54	231.73
OW39-99	**228.53**	**229.40**	Installed	227.77	227.38	228.01	228.23	228.49	228.62	228.48
OW40-99	**229.00**	**229.84**	Installed	227.31	226.91	227.52	227.93	227.97	227.92	228.02
OW41A-01	**233.28**	**234.07**	--	--	--	--	--	--	--	Installed
OW41B-01	**233.27**	**234.17**	--	--	--	--	--	--	--	Installed
OW42A-01	**234.50**	**235.38**	--	--	--	--	--	--	--	Installed
OW42B-01	**234.50**	**235.15**	--	--	--	--	--	--	--	Installed
OW43A-01	**234.18**	**235.00**	--	-	--	--	--	--	--	Installed
OW43B-01	**234.06**	**234.98**	--	--	--	--	--	--	--	Installed
OW44A-01	**233.81**	**234.66**	--	--	--	--	--	--	--	Installed
OW44B-01	**233.81**	**234.30**	--	--	--	--	--	--	--	Installed
OW45A-01	**233.41**	**234.40**	--	--	--	--	--	--	--	Installed
OW45B-01	**233.40**	**234.34**	--	--	--	--	--	--	--	Installed
OW46A-01	**232.71**	**233.57**	--	--	--	--	--	--	--	Installed
OW46B-01	**232.63**	**233.53**	--	--	--	--	--	--	--	Installed
OW47A-01	**230.84**	**231.77**	--	--	--	--	--	--	--	Installed
OW47B-01	**230.89**	**231.87**	--	--	--	--	--	--	--	Installed
OW48A-01	**230.18**	**231.20**	--	--	--	--	--	--	--	Installed
OW48B-01	**230.19**	**231.18**	--	--	--	--	--	--	--	Installed
OW49A-01	**233.25**	**234.00**	--	--	--	--	--	--	--	Installed
OW49B-01	**233.32**	**234.14**	--	--	--	--	--	--	--	Installed
OW50-01	**232.10**	**232.85**	--	--	--	--	--	--	--	Installed
OW51A-07	**231.10**	**231.92**	--	--	--	--	--	--	--	--
OW51B-07	**230.97**	**231.90**	--	--	--	--	--	--	--	--
OW52A-07	**227.15**	**227.99**	--	--	--	--	--	--	--	--
OW52B-07	**227.04**	**228.02**	--	--	--	--	--	--	--	--
LW1-91	**238.56**	**239.28**	231.42	231.08	231.14	231.04	231.38	231.36	231.42	231.49
LW2-07	**254.34**	**255.25**	--	--	--	--	--	--	--	--
LW3-91	**241.97**	**243.15**	230.92	230.11	230.00	230.54	231.34	231.22	231.27	231.57
LW3-16	**242.88**	**243.93**	--	--	--	--	--	--	--	--
LW4-04	**239.45**	**240.74**	--	--	--	--	--	--	--	--
LW5-04	**241.72**	**243.20**	--	--	--	--	--	--	--	--
LW6-04	**241.32**	**242.55**	--	--	--	--	--	--	--	--
LW7-09	**240.59**	**241.67**	--	--	--	--	--	--	--	--
LW8-09	**245.91**	**246.64**	--	--	--	--	--	--	--	--
LW9-13	**243.68**	**244.51**	--	--	--	--	--	--	--	--
MH11	**233.61**	**234.63**	220.40	222.80	223.74	--	--	220.79	220.74	224.69
MH19	**241.05**	**242.51**	--	--	--	--	--	--	--	--
MH23	**231.41**	**232.41**	--	--	--	--	--	--	--	--
MH29	**235.95**	**236.95**	--	--	--	--	--	--	--	--

Notes: • m ASL denotes metres above sea level.
• NM - Not measured.
• Frozen - unable to obtain level as water was frozen inside riser pipe, or cap frozen on riser pipe.
• No Access - monitoring well or manhole inaccessible for liquid level measurement.
• Wasp Nest - monitoring well inaccessible for water level measurement due to safety concerns.
• Blocked - monitoring well inaccessible due to blockage in riser pipe.
• Damaged - monitoring well damaged and inaccessible.
• Decom - monitoring well decommissioned

TABLE F-1
HISTORICAL SEMI-ANNUAL/QUARTERLY GROUNDWATER AND LEACHATE ELEVATIONS
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Groundwater Elevation (m ASL)							
			May-01	Aug-01	Nov-01	Feb-02	May-02	Aug-02	Nov-02	Feb-03
OW19-91	**232.19**	**232.97**	231.51	231.15	231.02	231.49	231.49	231.06	230.35	230.54
OW20-91	**227.51**	**228.41**	227.03	227.15	227.71	227.85	227.98	228.42	NM	Frozen
OW23A-95	**227.91**	**228.87**	227.34	226.50	226.53	227.29	227.45	226.44	226.00	227.15
OW23B-95	**227.90**	**228.78**	227.49	226.48	227.68	227.78	227.72	226.20	225.29	227.15
OW24A-95	**227.32**	**228.18**	224.56	224.61	224.91	225.27	225.18	NM	226.00	225.79
OW24B-95	**227.23**	**228.18**	225.41	224.28	224.80	225.48	225.56	224.30	225.21	225.18
OW27A-95	**230.76**	**231.48**	223.47	223.24	223.35	223.45	223.49	223.13	223.40	223.43
OW27B-95	**230.70**	**231.56**	225.18	224.66	224.50	224.88	225.06	224.65	224.32	224.76
OW28A-95	**230.28**	**231.32**	226.09	225.84	226.00	226.19	226.26	226.18	226.10	226.23
OW28B-95	**230.27**	**231.38**	226.31	225.79	226.36	225.98	226.43	225.36	225.86	225.67
OW29A-95	**229.88**	**231.28**	226.30	226.17	226.06	226.28	226.35	226.24	226.90	226.97
OW29B-95	**230.24**	**231.36**	226.47	226.13	226.14	226.52	226.54	226.22	226.68	226.39
OW30A-95	**232.92**	**233.72**	226.28	226.17	226.20	226.24	226.32	226.50	227.11	Frozen
OW30B-95	**232.71**	**233.71**	226.35	225.36	225.88	226.18	226.34	225.58	226.52	226.28
OW31A-95	**233.39**	**234.04**	227.14	227.05	226.93	227.06	227.21	227.52	227.87	227.80
OW31B-95	**233.08**	**233.69**	227.33	227.08	226.94	227.24	227.43	227.47	227.51	227.56
OW32A-95	**228.80**	**229.60**	228.00	228.04	228.00	228.03	228.22	228.26	228.17	227.96
OW32B-95	**228.80**	**229.64**	228.04	228.09	227.92	228.08	228.31	228.39	228.13	227.99
OW34A-95	**228.10**	**229.08**	224.94	225.39	225.63	225.46	225.22	225.32	225.68	225.59
OW34B-95	**228.05**	**228.98**	224.57	225.31	225.00	224.48	224.66	225.10	225.17	224.72
OW35A-95	**232.16**	**233.05**	228.90	228.08	228.82	229.60	229.79	229.17	228.35	229.11
OW35B-95	**231.94**	**232.90**	228.70	227.78	228.74	229.49	229.65	228.91	228.17	228.97
OW36A-95	**231.12**	**232.02**	229.45	225.47	227.91	229.23	229.73	225.05	228.22	229.33
OW36B-95	**231.12**	**232.16**	230.29	229.89	230.08	230.46	230.66	230.21	229.50	230.83
OW37-97	**230.77**	**231.40**	230.35	230.03	230.20	230.38	230.40	229.96	229.90	229.95
OW38-97	**232.20**	**232.83**	231.60	231.12	231.74	231.87	231.71	230.75	230.87	231.48
OW39-99	**228.53**	**229.40**	228.44	228.26	228.33	228.56	228.47	228.16	227.87	227.90
OW40-99	**229.00**	**229.84**	228.06	227.54	227.70	228.10	228.06	227.40	227.17	227.42
OW41A-01	**233.28**	**234.07**	232.63	220.16	230.44	229.78	232.37	232.77	232.73	232.60
OW41B-01	**233.27**	**234.17**	232.82	232.25	233.01	232.95	232.89	231.70	231.32	232.40
OW42A-01	**234.50**	**235.38**	232.39	221.58	231.78	233.81	234.14	234.12	234.00	233.92
OW42B-01	**234.50**	**235.15**	233.16	233.81	233.98	234.38	234.35	233.80	233.32	233.88
OW43A-01	**234.18**	**235.00**	232.03	225.36	232.46	233.43	233.60	233.11	233.39	233.39
OW43B-01	**234.06**	**234.98**	233.21	233.36	233.71	233.85	233.62	233.43	232.67	233.09
OW44A-01	**233.81**	**234.66**	231.97	223.01	231.61	233.12	233.34	233.28	233.10	232.60
OW44B-01	**233.81**	**234.30**	233.67	233.75	233.33	233.59	233.52	233.06	232.49	232.94
OW45A-01	**233.41**	**234.40**	232.90	226.93	231.97	231.38	232.55	232.59	232.39	232.34
OW45B-01	**233.40**	**234.34**	233.15	232.63	232.51	232.54	232.48	231.85	232.03	231.63
OW46A-01	**232.71**	**233.57**	230.38	220.00	229.51	231.11	231.41	231.45	230.98	231.31
OW46B-01	**232.63**	**233.53**	231.68	231.06	230.75	231.42	231.59	230.88	230.30	230.65
OW47A-01	**230.84**	**231.77**	230.26	223.05	229.08	227.69	229.30	229.92	229.77	Frozen
OW47B-01	**230.89**	**231.87**	230.68	227.91	227.11	229.52	230.38	227.71	226.91	227.04
OW48A-01	**230.18**	**231.20**	227.05	226.37	226.66	227.09	227.37	227.56	227.14	226.96
OW48B-01	**230.19**	**231.18**	226.14	225.42	225.59	226.29	227.12	226.46	225.52	225.89
OW49A-01	**233.25**	**234.00**	230.96	222.54	230.91	229.13	231.94	232.45	232.50	232.59
OW49B-01	**233.32**	**234.14**	230.81	230.76	231.95	232.74	232.84	232.35	231.34	231.02
OW50-01	**232.10**	**232.85**	231.51	230.71	231.17	231.69	231.72	231.05	230.60	231.13
OW51A-07	**231.10**	**231.92**	--	--	--	--	--	--	--	--
OW51B-07	**230.97**	**231.90**	--	--	--	--	--	--	--	--
OW52A-07	**227.15**	**227.99**	--	--	--	--	--	--	--	--
OW52B-07	**227.04**	**228.02**	--	--	--	--	--	--	--	--
LW1-91	**238.56**	**239.28**	231.57	231.27	231.34	231.54	231.64	231.60	231.63	231.37
LW2-07	**254.34**	**255.25**	--	--	--	--	--	--	--	--
LW3-91	**241.97**	**243.15**	231.42	230.59	231.04	231.34	231.42	231.11	231.22	230.84
LW3-16	**242.88**	**243.93**	--	--	--	--	--	--	--	--
LW4-04	**239.45**	**240.74**	--	--	--	--	--	--	--	--
LW5-04	**241.72**	**243.20**	--	--	--	--	--	--	--	--
LW6-04	**241.32**	**242.55**	--	--	--	--	--	--	--	--
LW7-09	**240.59**	**241.67**	--	--	--	--	--	--	--	--
LW8-09	**245.91**	**246.64**	--	--	--	--	--	--	--	--
LW9-13	**243.68**	**244.51**	--	--	--	--	--	--	--	--
MH11	**233.61**	**234.63**	224.03	222.58	225.45	226.28	226.45	225.77	224.55	225.61
MH19	**241.05**	**242.51**	--	--	--	--	--	--	--	--
MH23	**231.41**	**232.41**	--	--	--	--	--	--	--	--
MH29	**235.95**	**236.95**	--	--	--	--	--	--	--	--

Notes:
- m ASL denotes metres above sea level.
- NM - Not measured.
- Frozen - unable to obtain level as water was frozen inside riser pipe, or cap frozen on riser pipe.
- No Access - monitoring well or manhole inaccessible for liquid level measurement.
- Wasp Nest - monitoring well inaccessible for water level measurement due to safety concerns.
- Blocked - monitoring well inaccessible due to blockage in riser pipe.
- Damaged - monitoring well damaged and inaccessible.
- Decom - monitoring well decommissioned

TABLE F-1
HISTORICAL SEMI-ANNUAL/QUARTERLY GROUNDWATER AND LEACHATE ELEVATIONS
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Groundwater Elevation (m ASL)							
			May-03	Aug-03	Nov-03	Feb-04	May-04	Aug-04	Nov-04	Feb-05
OW19-91	**232.19**	**232.97**	231.07	231.05	231.07	231.41	231.61	231.11	230.60	231.15
OW20-91	**227.51**	**228.41**	228.54	228.36	228.40	Frozen	228.50	228.40	228.38	Frozen
OW23A-95	**227.91**	**228.87**	227.64	226.57	227.32	227.65	227.61	Blocked	226.05	227.33
OW23B-95	**227.90**	**228.78**	227.78	226.67	227.83	227.94	227.66	226.26	226.20	227.88
OW24A-95	**227.32**	**228.18**	225.68	225.47	225.51	225.56	225.47	225.45	225.55	225.53
OW24B-95	**227.23**	**228.18**	225.52	224.12	225.05	225.69	225.77	224.93	225.21	225.22
OW27A-95	**230.76**	**231.48**	223.39	223.08	223.19	223.30	223.29	222.99	223.23	223.42
OW27B-95	**230.70**	**231.56**	225.03	224.37	224.59	225.13	225.22	224.52	224.37	224.69
OW28A-95	**230.28**	**231.32**	226.25	No Access	226.08	226.10	226.03	Wasp Nest	225.95	226.10
OW28B-95	**230.27**	**231.38**	226.22	No Access	225.75	225.31	225.93	Wasp Nest	225.79	225.03
OW29A-95	**229.88**	**231.28**	227.00	226.91	227.23	Frozen	227.84	227.94	227.76	Frozen
OW29B-95	**230.24**	**231.36**	226.63	226.68	227.27	Frozen	227.79	227.56	227.37	Frozen
OW30A-95	**232.92**	**233.72**	227.18	227.05	227.34	Frozen	227.42	Wasp Nest	227.46	Frozen
OW30B-95	**232.71**	**233.71**	226.58	225.43	226.73	227.27	227.25	226.20	226.92	226.77
OW31A-95	**233.39**	**234.04**	227.84	227.79	227.67	227.89	227.84	227.70	227.54	227.54
OW31B-95	**233.08**	**233.69**	227.63	227.51	227.46	227.71	227.71	227.46	227.22	227.45
OW32A-95	**228.80**	**229.60**	228.03	227.93	228.44	228.01	228.03	228.04	228.01	227.80
OW32B-95	**228.80**	**229.64**	227.99	227.96	227.90	228.08	228.11	228.06	227.93	227.78
OW34A-95	**228.10**	**229.08**	225.26	225.22	225.30	225.05	224.81	224.96	225.08	225.09
OW34B-95	**228.05**	**228.98**	224.47	224.73	224.45	224.06	224.29	224.64	224.28	224.09
OW35A-95	**232.16**	**233.05**	229.72	229.22	229.21	230.03	230.84	228.98	228.31	229.24
OW35B-95	**231.94**	**232.90**	229.61	228.98	229.08	230.07	230.71	228.68	227.92	229.02
OW36A-95	**231.12**	**232.02**	229.86	225.18	228.36	229.77	230.30	225.99	228.49	229.51
OW36B-95	**231.12**	**232.16**	230.92	230.26	230.76	230.68	230.83	230.21	229.62	230.49
OW37-97	**230.77**	**231.40**	230.34	230.26	230.55	230.80	231.00	230.64	230.49	Frozen
OW38-97	**232.20**	**232.83**	231.79	231.77	231.97	231.73	231.86	231.61	231.58	231.62
OW39-99	**228.53**	**229.40**	228.08	228.10	228.25	228.50	228.40	228.24	227.67	228.12
OW40-99	**229.00**	**229.84**	227.94	227.60	227.71	228.07	228.08	227.45	226.61	227.86
OW41A-01	**233.28**	**234.07**	232.64	232.75	232.76	232.84	232.86	232.89	232.78	232.69
OW41B-01	**233.27**	**234.17**	232.67	231.88	232.72	232.96	232.59	231.75	231.35	232.83
OW42A-01	**234.50**	**235.38**	234.00	234.05	234.06	234.19	234.23	Blocked	234.14	234.11
OW42B-01	**234.50**	**235.15**	234.09	233.86	233.96	234.32	234.33	233.93	233.57	233.76
OW43A-01	**234.18**	**235.00**	233.47	233.42	233.43	233.63	233.66	Wasp Nest	234.49	233.63
OW43B-01	**234.06**	**234.98**	233.41	233.27	233.57	233.63	233.63	233.37	233.00	233.52
OW44A-01	**233.81**	**234.66**	232.98	Wasp Nest	232.99	233.59	233.41	233.24	233.62	233.67
OW44B-01	**233.81**	**234.30**	232.82	232.84	232.98	233.37	233.32	Wasp Nest	233.78	233.87
OW45A-01	**233.41**	**234.40**	232.29	232.30	232.32	232.50	232.56	232.45	232.61	233.16
OW45B-01	**233.40**	**234.34**	232.03	231.88	231.81	232.40	232.48	232.16	232.04	232.53
OW46A-01	**232.71**	**233.57**	231.55	231.57	231.65	232.11	232.29	232.69	233.10	233.26
OW46B-01	**232.63**	**233.53**	231.04	231.27	231.26	231.73	231.74	Blocked	232.79	Damaged
OW47A-01	**230.84**	**231.77**	229.15	229.76	230.28	230.35	230.61	231.02	231.05	230.59
OW47B-01	**230.89**	**231.87**	229.10	229.20	228.62	230.28	230.67	229.43	228.14	229.90
OW48A-01	**230.18**	**231.20**	227.33	226.51	227.33	227.43	228.18	Wasp Nest	227.84	227.89
OW48B-01	**230.19**	**231.18**	227.13	226.37	225.48	227.94	228.29	227.18	226.40	227.04
OW49A-01	**233.25**	**234.00**	232.30	232.26	232.28	232.58	232.70	232.77	232.68	232.77
OW49B-01	**233.32**	**234.14**	231.77	Wasp Nest	231.74	232.88	232.96	232.63	232.29	232.76
OW50-01	**232.10**	**232.85**	231.61	231.22	231.35	231.68	231.83	231.16	230.70	231.41
OW51A-07	**231.10**	**231.92**	--	--	--	--	--	--	--	--
OW51B-07	**230.97**	**231.90**	--	--	--	--	--	--	--	--
OW52A-07	**227.15**	**227.99**	--	--	--	--	--	--	--	--
OW52B-07	**227.04**	**228.02**	--	--	--	--	--	--	--	--
LW1-91	**238.56**	**239.28**	231.57	231.81	231.93	232.15	232.51	232.39	232.33	232.77
LW2-07	**254.34**	**255.25**	--	--	--	--	--	--	--	--
LW3-91	**241.97**	**243.15**	231.48	231.49	231.67	232.16	232.54	232.26	232.16	233.12
LW3-16	**242.88**	**243.93**	--	--	--	--	--	--	--	--
LW4-04	**239.45**	**240.74**	--	--	--	--	--	--	Installed	232.32
LW5-04	**241.72**	**243.20**	--	--	--	--	--	--	Installed	232.45
LW6-04	**241.32**	**242.55**	--	--	--	--	--	--	Installed	228.94
LW7-09	**240.59**	**241.67**	--	--	--	--	--	--	--	--
LW8-09	**245.91**	**246.64**	--	--	--	--	--	--	--	--
LW9-13	**243.68**	**244.51**	--	--	--	--	--	--	--	--
MH11	**233.61**	**234.63**	226.64	225.64	225.16	228.81	228.55	224.52	222.91	225.03
MH19	**241.05**	**242.51**	--	--	--	--	--	--	--	213.74
MH23	**231.41**	**232.41**	--	--	--	--	--	--	--	--
MH29	**235.95**	**236.95**	--	--	--	--	--	--	--	--

Notes:
- m ASL denotes metres above sea level.
- NM - Not measured.
- Frozen - unable to obtain level as water was frozen inside riser pipe, or cap frozen on riser pipe.
- No Access - monitoring well or manhole inaccessible for liquid level measurement.
- Wasp Nest - monitoring well inaccessible for water level measurement due to safety concerns.
- Blocked - monitoring well inaccessible due to blockage in riser pipe.
- Damaged - monitoring well damaged and inaccessible.
- Decom - monitoring well decommissioned

TABLE F-1
HISTORICAL SEMI-ANNUAL/QUARTERLY GROUNDWATER AND LEACHATE ELEVATIONS
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Groundwater Elevation (m ASL)							
			May-05	Aug-05	Nov-05	Feb-06	May-06	Aug-06	Nov-06	Feb-07
OW19-91	**232.19**	**232.97**	231.36	230.83	230.11	231.08	231.29	231.12	231.58	231.58
OW20-91	**227.51**	**228.41**	228.19	227.98	227.98	Frozen	227.83	227.75	227.78	Frozen
OW23A-95	**227.91**	**228.87**	227.55	225.67	224.23	226.79	226.82	226.73	227.13	226.93
OW23B-95	**227.90**	**228.78**	227.58	226.36	225.49	227.57	227.46	226.31	227.81	227.13
OW24A-95	**227.32**	**228.18**	225.37	225.20	224.20	225.08	224.93	224.77	224.90	224.87
OW24B-95	**227.23**	**228.18**	225.37	224.18	224.63	224.59	224.81	223.48	224.83	225.26
OW27A-95	**230.76**	**231.48**	223.30	222.95	223.13	223.20	223.09	222.68	222.84	222.75
OW27B-95	**230.70**	**231.56**	224.83	224.13	223.82	224.30	224.33	223.56	223.74	223.89
OW28A-95	**230.28**	**231.32**	226.24	225.98	226.04	225.97	225.76	225.46	225.42	225.87
OW28B-95	**230.27**	**231.38**	225.89	225.05	224.85	223.18	224.28	223.71	225.19	224.62
OW29A-95	**229.88**	**231.28**	227.73	227.60	227.52	Frozen	227.42	227.38	227.39	Frozen
OW29B-95	**230.24**	**231.36**	227.49	227.16	226.95	227.05	227.19	227.09	227.19	Frozen
OW30A-95	**232.92**	**233.72**	227.38	227.26	227.45	227.09	227.04	226.98	227.01	226.97
OW30B-95	**232.71**	**233.71**	226.87	225.56	226.71	226.30	226.55	225.17	226.46	226.75
OW31A-95	**233.39**	**234.04**	227.56	227.41	227.13	227.14	227.28	227.24	227.42	227.62
OW31B-95	**233.08**	**233.69**	227.49	227.14	226.76	227.21	227.33	227.11	227.54	227.76
OW32A-95	**228.80**	**229.60**	227.76	227.80	226.73	227.38	227.39	227.52	227.64	227.66
OW32B-95	**228.80**	**229.64**	227.85	227.79	227.55	227.39	227.53	227.59	227.73	227.79
OW34A-95	**228.10**	**229.08**	224.82	224.92	225.09	224.97	224.80	224.96	225.23	225.09
OW34B-95	**228.05**	**228.98**	223.96	224.24	223.95	223.96	224.11	224.35	224.47	224.47
OW35A-95	**232.16**	**233.05**	229.10	228.34	227.91	229.53	228.28	228.23	228.85	228.69
OW35B-95	**231.94**	**232.90**	228.89	228.10	227.53	229.58	227.82	228.02	228.67	228.31
OW36A-95	**231.12**	**232.02**	229.92	225.75	228.35	229.14	229.66	225.03	228.46	229.38
OW36B-95	**231.12**	**232.16**	230.52	229.63	228.93	230.25	230.37	229.97	230.43	230.37
OW37-97	**230.77**	**231.40**	231.40	230.72	230.69	Frozen	231.07	230.92	231.18	Frozen
OW38-97	**232.20**	**232.83**	231.73	231.63	231.66	231.91	231.47	231.72	232.03	231.61
OW39-99	**228.53**	**229.40**	228.42	227.93	227.34	227.94	228.18	228.27	228.65	228.49
OW40-99	**229.00**	**229.84**	228.02	226.95	225.79	227.71	227.82	227.48	227.97	227.85
OW41A-01	**233.28**	**234.07**	232.73	232.78	232.63	232.46	232.57	232.72	232.73	232.80
OW41B-01	**233.27**	**234.17**	232.62	231.35	231.00	232.68	232.44	231.93	232.82	232.49
OW42A-01	**234.50**	**235.38**	234.16	234.17	234.00	233.94	234.04	234.11	234.18	234.26
OW42B-01	**234.50**	**235.15**	234.22	233.59	233.12	234.08	234.16	233.92	234.31	234.37
OW43A-01	**234.18**	**235.00**	233.66	233.54	233.44	233.53	233.59	233.56	233.63	233.72
OW43B-01	**234.06**	**234.98**	233.55	233.02	232.65	233.52	233.47	233.37	233.85	233.60
OW44A-01	**233.81**	**234.66**	233.66	233.67	233.67	233.67	233.66	233.67	233.67	233.66
OW44B-01	**233.81**	**234.30**	233.75	233.25	232.92	233.38	233.50	233.35	233.68	233.80
OW45A-01	**233.41**	**234.40**	233.17	232.56	232.89	232.90	232.93	232.93	232.98	233.05
OW45B-01	**233.40**	**234.34**	232.59	231.85	231.43	232.48	232.40	232.11	232.67	232.58
OW46A-01	**232.71**	**233.57**	233.14	232.97	232.80	232.78	232.73	232.68	232.69	232.80
OW46B-01	**232.63**	**233.53**	232.06	232.05	231.21	Damaged	Repaired	231.60	231.83	231.66
OW47A-01	**230.84**	**231.77**	230.60	230.63	230.66	230.23	230.32	230.68	230.60	230.68
OW47B-01	**230.89**	**231.87**	230.47	228.87	227.89	229.98	230.50	229.47	230.14	No Access
OW48A-01	**230.18**	**231.20**	227.95	227.58	227.40	227.67	227.87	227.27	227.21	227.04
OW48B-01	**230.19**	**231.18**	226.96	226.38	226.59	227.44	226.00	225.69	225.84	225.55
OW49A-01	**233.25**	**234.00**	232.83	232.49	232.61	232.71	232.76	232.81	232.92	Frozen
OW49B-01	**233.32**	**234.14**	232.88	232.60	231.69	232.49	232.76	232.56	232.99	Frozen
OW50-01	**232.10**	**232.85**	231.48	230.74	230.39	231.47	231.33	231.03	231.51	231.42
OW51A-07	**231.10**	**231.92**	--	--	--	--	--	--	Installed	226.37
OW51B-07	**230.97**	**231.90**	--	--	--	--	--	--	Installed	226.44
OW52A-07	**227.15**	**227.99**	--	--	--	--	--	--	Installed	200.73
OW52B-07	**227.04**	**228.02**	--	--	--	--	--	--	Installed	216.74
LW1-91	**238.56**	**239.28**	233.48	233.01	232.78	233.16	233.16	232.99	233.11	232.94
LW2-07	**254.34**	**255.25**	--	--	--	--	--	--	Installed	239.04
LW3-91	**241.97**	**243.15**	233.12	232.76	232.54	232.89	232.85	232.61	232.76	232.58
LW3-16	**242.88**	**243.93**	--	--	--	--	--	--	--	--
LW4-04	**239.45**	**240.74**	232.32	231.86	231.64	232.11	NM	231.29	NM	230.68
LW5-04	**241.72**	**243.20**	230.51	230.58	229.80	231.79	229.52	230.20	230.40	230.03
LW6-04	**241.32**	**242.55**	229.18	228.82	228.90	229.55	229.54	229.16	229.42	229.74
LW7-09	**240.59**	**241.67**	--	--	--	--	--	--	--	--
LW8-09	**245.91**	**246.64**	--	--	--	--	--	--	--	--
LW9-13	**243.68**	**244.51**	--	--	--	--	--	--	--	--
MH11	**233.61**	**234.63**	224.77	224.19	222.58	227.19	221.00	223.23	223.77	222.80
MH19	**241.05**	**242.51**	204.30 (dry)	No Access	No Access	No Access	No Access	No Access	215.79	217.97
MH23	**231.41**	**232.41**	--	--	--	--	--	--	--	--
MH29	**235.95**	**236.95**	--	--	--	--	--	--	--	--

Notes: • m ASL denotes metres above sea level.
• NM - Not measured.
• Frozen - unable to obtain level as water was frozen inside riser pipe, or cap frozen on riser pipe.
• No Access - monitoring well or manhole inaccessible for liquid level measurement.
• Wasp Nest - monitoring well inaccessible for water level measurement due to safety concerns.
• Blocked - monitoring well inaccessible due to blockage in riser pipe.
• Damaged - monitoring well damaged and inaccessible.
• Decom - monitoring well decommissioned

TABLE F-1
HISTORICAL SEMI-ANNUAL/QUARTERLY GROUNDWATER AND LEACHATE ELEVATIONS
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Groundwater Elevation (m ASL)							
			May-07	Aug-07	Nov-07	Feb-08	May-08	Aug-08	Nov-08	Feb-09
OW19-91	**232.19**	**232.97**	231.57	230.80	229.99	230.74	231.15	230.86	230.29	231.80
OW20-91	**227.51**	**228.41**	227.69	226.70	227.28	226.87	227.11	227.08	227.19	226.94
OW23A-95	**227.91**	**228.87**	227.33	225.97	224.17	225.90	226.37	226.46	226.53	226.63
OW23B-95	**227.90**	**228.78**	227.49	226.30	225.60	227.48	227.22	226.19	225.58	227.38
OW24A-95	**227.32**	**228.18**	225.10	225.09	225.18	225.12	224.84	224.52	224.56	224.59
OW24B-95	**227.23**	**228.18**	225.61	224.20	224.63	224.62	224.73	223.38	223.95	224.52
OW27A-95	**230.76**	**231.48**	222.94	223.32	223.88	224.06	223.89	223.44	223.47	223.39
OW27B-95	**230.70**	**231.56**	224.34	224.55	224.51	224.77	224.68	223.78	223.70	223.88
OW28A-95	**230.28**	**231.32**	226.25	227.31	227.58	Frozen	227.58	227.58	227.57	Frozen
OW28B-95	**230.27**	**231.38**	225.78	226.85	227.16	Frozen	227.13	227.76	227.76	Frozen
OW29A-95	**229.88**	**231.28**	227.47	NM	NM	Frozen	232.71	232.64	232.68	Frozen
OW29B-95	**230.24**	**231.36**	227.31	NM	NM	Frozen	233.09	232.70	233.30	Frozen
OW30A-95	**232.92**	**233.72**	227.18	NM	NM	Frozen	232.17	233.30	232.92	Frozen
OW30B-95	**232.71**	**233.71**	226.89	NM	NM	229.81	228.88	229.35	229.39	230.39
OW31A-95	**233.39**	**234.04**	228.09	NM	NM	229.84	228.51	229.43	229.56	229.28
OW31B-95	**233.08**	**233.69**	228.63	NM	NM	No Access	231.63	231.51	231.43	231.35
OW32A-95	**228.80**	**229.60**	228.16	228.49	228.20	227.92	227.87	227.88	227.83	227.83
OW32B-95	**228.80**	**229.64**	228.52	228.64	228.19	227.96	227.97	227.97	227.85	227.91
OW34A-95	**228.10**	**229.08**	225.39	225.97	226.28	226.03	225.77	225.77	225.87	225.77
OW34B-95	**228.05**	**228.98**	225.21	226.69	225.18	224.91	224.87	224.95	224.73	224.57
OW35A-95	**232.16**	**233.05**	228.96	228.79	228.06	228.91	228.40	228.53	228.88	229.56
OW35B-95	**231.94**	**232.90**	228.88	228.51	227.84	228.78	228.27	228.30	228.86	229.28
OW36A-95	**231.12**	**232.02**	229.66	229.70	229.29	229.07	229.43	229.64	229.28	229.75
OW36B-95	**231.12**	**232.16**	230.35	229.61	228.73	231.13	231.01	229.69	229.39	231.08
OW37-97	**230.77**	**231.40**	230.90	230.18	230.57	Frozen	231.26	231.00	231.08	Frozen
OW38-97	**232.20**	**232.83**	231.62	230.66	230.39	231.69	231.50	231.25	231.72	231.73
OW39-99	**228.53**	**229.40**	228.57	228.06	227.32	228.16	228.42	228.32	228.18	228.70
OW40-99	**229.00**	**229.84**	228.10	226.87	224.93	227.48	227.76	227.28	226.88	227.84
OW41A-01	**233.28**	**234.07**	232.83	232.81	232.63	232.49	232.62	232.67	232.63	232.66
OW41B-01	**233.27**	**234.17**	232.51	231.58	231.17	232.63	232.43	231.67	231.70	232.60
OW42A-01	**234.50**	**235.38**	234.31	234.21	234.05	233.97	234.05	234.04	233.97	234.11
OW42B-01	**234.50**	**235.15**	234.33	233.65	233.15	234.01	234.13	233.73	233.60	234.23
OW43A-01	**234.18**	**235.00**	233.77	233.60	233.46	233.57	233.60	233.50	233.47	233.37
OW43B-01	**234.06**	**234.98**	233.62	233.03	232.57	233.45	233.45	233.15	233.10	233.58
OW44A-01	**233.81**	**234.66**	233.66	No Access	232.92	233.52	233.64	232.03	233.23	233.54
OW44B-01	**233.81**	**234.30**	233.49	233.13	232.72	233.21	233.34	233.05	232.80	233.40
OW45A-01	**233.41**	**234.40**	233.07	232.93	231.07	232.56	232.72	232.71	231.62	232.60
OW45B-01	**233.40**	**234.34**	232.54	231.48	231.02	232.29	232.34	231.66	231.50	232.34
OW46A-01	**232.71**	**233.57**	232.69	232.47	232.35	232.28	232.31	232.04	231.99	232.35
OW46B-01	**232.63**	**233.53**	231.64	230.97	230.48	231.02	231.42	231.25	231.00	231.47
OW47A-01	**230.84**	**231.77**	230.70	230.92	No Access	229.94	230.00	230.47	230.47	230.17
OW47B-01	**230.89**	**231.87**	230.70	228.29	227.42	229.55	230.40	229.21	228.50	230.05
OW48A-01	**230.18**	**231.20**	227.17	227.13	227.01	227.03	227.09	227.44	227.57	228.21
OW48B-01	**230.19**	**231.18**	225.93	226.49	225.53	226.28	225.83	226.77	227.80	227.81
OW49A-01	**233.25**	**234.00**	232.78	232.52	231.63	232.76	232.79	232.77	232.74	232.85
OW49B-01	**233.32**	**234.14**	232.97	232.35	231.80	232.52	232.70	232.29	231.80	232.77
OW50-01	**232.10**	**232.85**	231.44	230.78	230.25	231.33	231.38	230.89	230.86	231.50
OW51A-07	**231.10**	**231.92**	226.76	226.86	226.37	226.84	226.60	227.06	227.29	227.55
OW51B-07	**230.97**	**231.90**	226.83	226.70	226.12	226.77	226.62	226.98	227.20	227.59
OW52A-07	**227.15**	**227.99**	203.79	220.65	222.86	223.76	224.14	223.44	223.57	223.84
OW52B-07	**227.04**	**228.02**	224.50	222.18	221.50	226.82	226.88	221.75	220.55	226.79
LW1-91	**238.56**	**239.28**	232.82	232.28	232.76	233.27	233.30	233.20	233.15	233.27
LW2-07	**254.34**	**255.25**	238.64	239.50	241.44	No Access	240.78	240.48	240.33	240.28
LW3-91	**241.97**	**243.15**	231.81	231.22	231.14	232.11	232.55	232.66	232.63	232.74
LW3-16	**242.88**	**243.93**	--	--	--	--	--	--	--	--
LW4-04	**239.45**	**240.74**	231.66	232.05	232.10	232.20	231.93	231.88	232.12	232.07
LW5-04	**241.72**	**243.20**	230.78	231.65	230.49	231.36	230.88	231.31	232.40	232.86
LW6-04	**241.32**	**242.55**	229.94	229.85	229.79	230.41	230.51	230.00	230.15	230.95
LW7-09	**240.59**	**241.67**	--	--	--	--	--	--	--	--
LW8-09	**245.91**	**246.64**	--	--	--	--	--	--	--	--
LW9-13	**243.68**	**244.51**	--	--	--	--	--	--	--	--
MH11	**233.61**	**234.63**	224.95	224.84	224.25	224.84	224.21	224.84	226.32	227.17
MH19	**241.05**	**242.51**	221.08	224.93	227.89	207.61	219.02	220.16	223.67	225.15
MH23	**231.41**	**232.41**	--	--	--	--	206.93	No Access	206.09	No Access
MH29	**235.95**	**236.95**	--	--	--	--	--	--	--	--

Notes:
- m ASL denotes metres above sea level.
- NM - Not measured.
- Frozen - unable to obtain level as water was frozen inside riser pipe, or cap frozen on riser pipe.
- No Access - monitoring well or manhole inaccessible for liquid level measurement.
- Wasp Nest - monitoring well inaccessible for water level measurement due to safety concerns.
- Blocked - monitoring well inaccessible due to blockage in riser pipe.
- Damaged - monitoring well damaged and inaccessible.
- Decom - monitoring well decommissioned

TABLE F-1
HISTORICAL SEMI-ANNUAL/QUARTERLY GROUNDWATER AND LEACHATE ELEVATIONS
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Groundwater Elevation (m ASL)							
			May-09	Aug-09	Nov-09	Feb-10	May-10	Aug-10	Nov-10	Feb-11
OW19-91	232.19	232.97	231.49	231.45	231.47	231.62	231.62	231.35	230.72	231.35
OW20-91	227.51	228.41	227.25	227.24	227.39	227.26	227.47	227.40	227.45	227.23
OW23A-95	227.91	228.87	226.68	226.79	226.89	227.03	227.12	227.07	227.20	227.14
OW23B-95	227.90	228.78	227.76	227.45	227.69	227.48	227.54	226.79	225.78	227.52
OW24A-95	227.32	228.18	224.57	224.50	224.61	224.82	224.95	225.08	225.24	225.19
OW24B-95	227.23	228.18	224.89	223.64	224.96	225.54	225.76	224.46	225.11	225.22
OW27A-95	230.76	231.48	223.23	222.70	223.16	223.54	223.59	223.12	223.18	223.43
OW27B-95	230.70	231.56	224.19	223.79	224.15	224.70	224.68	224.41	224.56	224.88
OW28A-95	230.28	231.32	227.58	227.58	227.58	Frozen	226.73	227.53	227.52	227.52
OW28B-95	230.27	231.38	227.28	Wasp Nest	226.94	226.92	227.33	226.99	227.61	227.04
OW29A-95	229.88	231.28	232.64	232.60	232.50	Frozen	232.36	232.24	232.11	232.06
OW29B-95	230.24	231.36	232.92	232.67	232.58	Frozen	232.18	231.79	232.03	232.01
OW30A-95	232.92	233.72	232.92	233.15	233.04	Frozen	232.90	232.91	232.90	232.90
OW30B-95	232.71	233.71	229.94	229.56	229.93	230.04	230.00	229.91	229.65	229.75
OW31A-95	233.39	234.04	229.84	230.28	228.68	228.71	228.59	228.70	228.72	228.60
OW31B-95	233.08	233.69	230.33	229.82	229.57	229.53	229.23	229.08	228.52	229.01
OW32A-95	228.80	229.60	227.88	227.71	228.13	Frozen	229.56	229.60	229.56	Frozen
OW32B-95	228.80	229.64	227.78	227.58	227.76	Frozen	229.59	229.64	229.64	Frozen
OW34A-95	228.10	229.08	225.58	225.66	225.93	225.94	225.93	226.26	226.44	226.43
OW34B-95	228.05	228.98	224.77	225.09	225.23	225.27	225.48	226.00	225.60	225.44
OW35A-95	232.16	233.05	229.50	229.38	229.65	229.66	229.31	229.29	229.42	229.52
OW35B-95	231.94	232.90	229.40	229.30	229.51	229.43	229.13	229.16	229.33	229.43
OW36A-95	231.12	232.02	230.04	230.01	230.06	230.05	230.45	230.12	229.90	230.07
OW36B-95	231.12	232.16	231.11	230.60	231.12	231.17	231.10	230.41	230.06	231.30
OW37-97	230.77	231.40	231.40	231.30	231.34	Frozen	231.04	230.49	230.38	230.48
OW38-97	232.20	232.83	231.78	231.87	231.96	231.73	231.67	231.51	231.60	231.83
OW39-99	228.53	229.40	228.69	229.38	229.40	Frozen	229.40	229.40	229.12	Frozen
OW40-99	229.00	229.84	228.09	227.73	227.82	228.06	228.08	227.72	227.48	227.94
OW41A-01	233.28	234.07	232.75	232.84	232.82	232.89	232.93	232.92	232.82	232.77
OW41B-01	233.27	234.17	232.80	232.45	232.84	232.65	232.68	232.10	231.79	232.74
OW42A-01	234.50	235.38	234.22	234.23	234.24	234.34	234.38	234.32	234.23	234.22
OW42B-01	234.50	235.15	234.31	234.14	234.27	234.40	234.34	234.01	233.65	234.24
OW43A-01	234.18	235.00	233.70	233.66	233.66	233.78	233.85	233.73	233.66	233.78
OW43B-01	234.06	234.98	233.63	233.59	233.76	233.72	233.65	233.48	233.22	233.61
OW44A-01	233.81	234.66	233.61	231.83	233.24	232.65	232.74	230.56	232.39	232.91
OW44B-01	233.81	234.30	233.51	233.43	233.19	232.67	232.79	232.83	232.74	233.10
OW45A-01	233.41	234.40	232.75	232.74	232.81	232.75	232.77	232.76	232.64	232.69
OW45B-01	233.40	234.34	232.54	232.29	232.31	232.41	232.36	232.05	231.63	232.21
OW46A-01	232.71	233.57	232.31	232.32	232.33	232.34	232.34	232.34	232.04	232.37
OW46B-01	232.63	233.53	231.66	231.60	231.61	232.23	231.83	231.64	231.26	231.52
OW47A-01	230.84	231.77	230.37	230.62	230.68	230.59	230.69	230.78	230.73	230.35
OW47B-01	230.89	231.87	230.62	230.17	229.75	230.44	230.67	229.58	228.70	230.09
OW48A-01	230.18	231.20	228.41	228.43	228.47	228.66	228.50	228.43	228.50	228.55
OW48B-01	230.19	231.18	228.55	228.12	228.17	227.87	228.51	227.96	227.62	227.43
OW49A-01	233.25	234.00	233.03	232.79	233.00	232.78	232.79	232.80	232.79	232.80
OW49B-01	233.32	234.14	232.99	232.68	233.02	232.84	232.75	232.58	232.49	232.82
OW50-01	232.10	232.85	231.61	231.38	231.48	231.63	231.58	231.23	230.91	231.43
OW51A-07	231.10	231.92	227.93	227.78	227.77	227.76	227.68	227.79	227.66	227.68
OW51B-07	230.97	231.90	228.02	227.85	227.85	227.84	227.73	227.82	227.60	227.65
OW52A-07	227.15	227.99	223.75	223.24	223.28	226.74	223.55	223.31	223.61	223.98
OW52B-07	227.04	228.02	226.97	225.84	222.59	223.33	226.94	224.45	223.09	226.73
LW1-91	238.56	239.28	233.28	233.11	233.06	233.14	232.98	232.22	232.09	232.11
LW2-07	254.34	255.25	240.14	239.99	239.95	239.95	239.82	239.79	239.61	239.81
LW3-91	241.97	243.15	232.71	232.34	232.02	232.21	231.66	230.48	230.14	230.21
LW3-16	242.88	243.93	--	--	--	--	--	--	--	--
LW4-04	239.45	240.74	232.16	231.12	232.16	232.40	232.45	232.25	231.66	231.79
LW5-04	241.72	243.20	232.44	231.84	232.18	232.69	232.09	231.65	231.63	231.49
LW6-04	241.32	242.55	230.73	230.46	230.57	230.80	230.84	230.62	230.95	230.96
LW7-09	240.59	241.67	--	Installed	232.47	232.54	226.23	230.82	227.86	227.15
LW8-09	245.91	246.64	--	Installed	232.66	232.74	232.75	232.81	232.91	233.06
LW9-13	243.68	244.51	--	--	--	--	--	--	--	--
MH11	233.61	234.63	225.95	226.40	226.55	225.72	224.88	225.80	226.10	226.17
MH19	241.05	242.51	226.04	221.08	224.00	224.32	226.17	227.11	228.07	229.23
MH23	231.41	232.41	211.09	209.36	211.41	No Access	214.69	212.51	214.13	214.07
MH29	235.95	236.95	--	--	--	--	--	--	--	--

Notes:
- m ASL denotes metres above sea level.
- NM - Not measured.
- Frozen - unable to obtain level as water was frozen inside riser pipe, or cap frozen on riser pipe.
- No Access - monitoring well or manhole inaccessible for liquid level measurement.
- Wasp Nest - monitoring well inaccessible for water level measurement due to safety concerns.
- Blocked - monitoring well inaccessible due to blockage in riser pipe.
- Damaged - monitoring well damaged and inaccessible.
- Decom - monitoring well decommissioned

TABLE F-1
HISTORICAL SEMI-ANNUAL/QUARTERLY GROUNDWATER AND LEACHATE ELEVATIONS
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Groundwater Elevation (m ASL)							
			May-11	Aug-11	Nov-11	Feb-12	May-12	Aug-12	Nov-12	14-Feb-13
OW19-91	**232.19**	**232.97**	231.62	231.17	231.29	231.70	231.62	231.20	230.89	231.58
OW20-91	**227.51**	**228.41**	227.41	227.30	227.22	227.03	227.33	227.22	227.14	226.98
OW23A-95	**227.91**	**228.87**	227.24	226.84	227.07	228.04	227.31	226.89	227.10	227.10
OW23B-95	**227.90**	**228.78**	227.94	226.13	227.13	227.13	227.65	226.46	226.99	227.67
OW24A-95	**227.32**	**228.18**	225.18	225.08	224.99	225.05	224.96	225.97	224.97	224.86
OW24B-95	**227.23**	**228.18**	225.51	224.55	224.72	225.15	225.37	223.68	224.55	224.77
OW27A-95	**230.76**	**231.48**	No Access	222.43	223.15	No Access	224.06	223.30	223.54	No Access
OW27B-95	**230.70**	**231.56**	No Access	224.31	224.83	No Access	225.87	225.03	225.28	226.36 *
OW28A-95	**230.28**	**231.32**	227.56	227.53	227.53	227.61	227.48	227.51	227.53	227.75
OW28B-95	**230.27**	**231.38**	227.52	227.11	227.85	227.39	227.63	226.71	227.66	227.71
OW29A-95	**229.88**	**231.28**	231.96	231.77	231.77	231.74	231.62	231.42	231.34	231.40
OW29B-95	**230.24**	**231.36**	231.87	231.64	231.69	231.61	231.53	231.23	231.38	231.30
OW30A-95	**232.92**	**233.72**	232.77	232.43	232.36	232.18	232.04	231.86	231.90	231.76
OW30B-95	**232.71**	**233.71**	229.85	229.21	229.43	229.42	229.34	228.79	229.06	229.27
OW31A-95	**233.39**	**234.04**	228.68	228.76	228.59	228.52	228.45	228.48	228.51	228.58
OW31B-95	**233.08**	**233.69**	229.07	228.85	228.42	228.46	228.58	228.64	228.85	229.08
OW32A-95	**228.80**	**229.60**	229.56	229.60	229.60	229.55	229.60	229.60	229.58	229.60
OW32B-95	**228.80**	**229.64**	229.57	229.64	229.64	229.58	229.64	229.58	229.59	229.57
OW34A-95	**228.10**	**229.08**	226.23	226.23	226.34	226.27	226.10	226.36	226.60	226.49
OW34B-95	**228.05**	**228.98**	225.32	225.52	225.35	225.16	225.35	225.71	225.60	225.31
OW35A-95	**232.16**	**233.05**	229.70	228.90	229.91	230.04	228.97	228.79	229.25	229.24
OW35B-95	**231.94**	**232.90**	229.55	228.75	230.00	229.94	228.69	228.66	229.24	229.13
OW36A-95	**231.12**	**232.02**	230.25	230.11	229.92	230.26	230.33	230.10	229.79	229.95
OW36B-95	**231.12**	**232.16**	231.20	230.00	231.10	231.17	231.09	230.04	231.12	231.18
OW37-97	**230.77**	**231.40**	230.84	230.45	230.73	231.18	231.03	230.90	230.95	Frozen
OW38-97	**232.20**	**232.83**	231.93	231.25	231.93	231.99	231.49	231.28	231.88	231.75
OW39-99	**228.53**	**229.40**	229.05	229.34	229.32	229.14	228.99	229.06	229.19	229.06
OW40-99	**229.00**	**229.84**	228.36	227.76	228.04	228.55	228.25	227.93	227.81	228.32
OW41A-01	**233.28**	**234.07**	232.85	232.90	232.87	232.89	232.96	232.96	232.84	232.86
OW41B-01	**233.27**	**234.17**	233.01	231.91	232.69	233.02	232.76	232.03	232.50	232.76
OW42A-01	**234.50**	**235.38**	234.30	234.27	234.26	234.32	234.38	234.33	234.24	234.29
OW42B-01	**234.50**	**235.15**	234.38	233.97	234.13	234.46	234.33	233.94	233.78	234.33
OW43A-01	**234.18**	**235.00**	233.84	233.72	233.75	233.86	233.89	233.79	233.74	233.88
OW43B-01	**234.06**	**234.98**	233.73	233.37	233.74	233.86	233.62	233.39	233.42	233.68
OW44A-01	**233.81**	**234.66**	233.10	230.96	232.83	233.21	233.32	231.71	233.03	233.30
OW44B-01	**233.81**	**234.30**	233.14	232.91	233.12	233.39	233.20	232.93	232.87	233.28
OW45A-01	**233.41**	**234.40**	232.72	232.72	232.76	232.79	232.81	232.76	232.73	232.72
OW45B-01	**233.40**	**234.34**	232.54	231.94	232.18	232.67	232.27	231.85	231.79	232.35
OW46A-01	**232.71**	**233.57**	232.40	232.22	232.35	232.45	232.46	232.40	232.19	232.39
OW46B-01	**232.63**	**233.53**	231.85	231.54	231.55	231.94	231.82	231.49	231.24	231.64
OW47A-01	**230.84**	**231.77**	230.47	230.72	230.54	230.48	230.67	230.79	230.67	230.37
OW47B-01	**230.89**	**231.87**	230.63	229.17	229.64	230.50	230.67	229.38	228.89	230.41
OW48A-01	**230.18**	**231.20**	228.59	Wasp Nest	228.30	228.79	228.90	228.26	228.05	228.08
OW48B-01	**230.19**	**231.18**	227.89	227.40	228.35	228.42	227.12	227.23	227.44	227.69
OW49A-01	**233.25**	**234.00**	233.27	Wasp Nest	232.90	233.29	232.90	232.78	233.24	233.19
OW49B-01	**233.32**	**234.14**	233.30	232.57	232.96	233.28	232.95	232.59	233.14	233.01
OW50-01	**232.10**	**232.85**	231.75	231.07	231.45	231.76	231.36	230.97	230.96	231.52
OW51A-07	**231.10**	**231.92**	227.84	227.75	227.77	228.28	228.18	228.01	227.99	228.25
OW51B-07	**230.97**	**231.90**	227.90	227.69	227.81	228.34	228.13	227.91	227.88	228.22
OW52A-07	**227.15**	**227.99**	224.16	223.83	224.04	224.20	223.78	223.68	223.95	224.31
OW52B-07	**227.04**	**228.02**	227.04	223.70	222.44	226.97	226.93	222.86	222.21	226.91
LW1-91	**238.56**	**239.28**	232.16	232.02	232.15	232.37	232.65	232.43	232.43	232.75
LW2-07	**254.34**	**255.25**	239.63	239.34	239.24	239.18	239.18	238.95	238.87	239.05
LW3-91	**241.97**	**243.15**	230.42	230.30	230.33	231.02	231.39	231.24	231.33	231.59
LW3-16	**242.88**	**243.93**	--	--	--	--	--	--	--	--
LW4-04	**239.45**	**240.74**	232.37	232.66	232.57	232.20	NM	231.55	231.52	232.00
LW5-04	**241.72**	**243.20**	231.84	231.54	232.37	232.90	232.36	231.63	232.12	232.78
LW6-04	**241.32**	**242.55**	231.08	230.87	230.97	231.24	231.13	231.12	231.16	231.47
LW7-09	**240.59**	**241.67**	228.22	228.36	228.46	228.68	226.73	227.07	228.16	228.33
LW8-09	**245.91**	**246.64**	232.93	232.79	232.81	233.21	233.80	234.23	234.38	234.66
LW9-13	**243.68**	**244.51**	--	--	--	--	--	--	--	--
MH11	**233.61**	**234.63**	225.85	225.30	227.99	226.99	223.62	224.99	225.69	225.80
MH19	**241.05**	**242.51**	230.01	230.22	No Access	232.44	232.50	233.79	233.85	234.24
MH23	**231.41**	**232.41**	214.74	214.91	215.77	216.56	216.82	210.85	205.68	207.25
MH29	**235.95**	**236.95**	205.80	208.94	204.33	206.69	207.79	210.38	216.14	216.68

Notes:
- m ASL denotes metres above sea level.
- NM - Not measured.
- Frozen - unable to obtain level as water was frozen inside riser pipe, or cap frozen on riser pipe.
- No Access - monitoring well or manhole inaccessible for liquid level measurement.
- Wasp Nest - monitoring well inaccessible for water level measurement due to safety concerns.
- Blocked - monitoring well inaccessible due to blockage in riser pipe.
- Damaged - monitoring well damaged and inaccessible.
- * Groundwater level collected on February 25, 2013 after ice receded and well casing was accessible.

TABLE F-1
HISTORICAL SEMI-ANNUAL/QUARTERLY GROUNDWATER AND LEACHATE ELEVATIONS
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Groundwater Elevation (m ASL)							
			14-May-13	21-Aug-13	13-Nov-13	19-Feb-14	12-May-14	19-Aug-14	11-Nov-14	09-Feb-15
OW19-91	**232.19**	**232.97**	231.64	231.50	231.56	231.47	231.81	231.42	231.65	231.52
OW20-91	**227.51**	**228.41**	227.17	227.19	227.37	227.30	227.42	227.19	227.34	227.28
OW23A-95	**227.91**	**228.87**	227.22	226.98	227.02	227.17	227.23	226.94	227.11	227.28
OW23B-95	**227.90**	**228.78**	227.41	226.35	227.74	227.61	227.71	226.65	227.68	227.59
OW24A-95	**227.32**	**228.18**	224.78	224.75	224.92	224.90	224.88	224.78	224.68	224.76
OW24B-95	**227.23**	**228.18**	225.00	223.83	224.66	225.18	225.33	224.11	224.91	225.39
OW27A-95	**230.76**	**231.48**	226.25	No Access	226.32	224.46	225.60	226.04	224.41	224.54
OW27B-95	**230.70**	**231.56**	226.81	No Access	226.85	226.17	226.43	227.63	226.42	226.79
OW28A-95	**230.28**	**231.32**	227.60	227.65	227.67	Frozen	227.68	227.17	227.69	227.67
OW28B-95	**230.27**	**231.38**	227.74	227.05	227.79	227.50	227.66	227.08	227.82	227.80
OW29A-95	**229.88**	**231.28**	231.32	231.13	231.16	231.14	231.07	228.83	228.92	228.87
OW29B-95	**230.24**	**231.36**	231.17	230.93	231.02	231.04	230.90	228.02	228.25	228.32
OW30A-95	**232.92**	**233.72**	231.47	230.80	230.69	230.67	230.56	230.42	231.05	230.67
OW30B-95	**232.71**	**233.71**	228.91	228.37	228.59	228.98	228.80	228.43	229.06	228.80
OW31A-95	**233.39**	**234.04**	228.65	228.49	227.83	227.94	228.04	228.10	228.38	227.96
OW31B-95	**233.08**	**233.69**	228.99	228.73	228.60	228.81	228.78	228.94	229.07	228.83
OW32A-95	**228.80**	**229.60**	229.57	229.60	229.60	Frozen	229.57	229.56	229.56	229.54
OW32B-95	**228.80**	**229.64**	229.64	229.64	229.64	229.56	229.56	229.56	229.56	229.56
OW34A-95	**228.10**	**229.08**	226.26	226.32	226.28	226.00	225.90	226.14	226.39	226.35
OW34B-95	**228.05**	**228.98**	225.26	225.64	225.19	224.90	225.20	225.63	225.62	225.61
OW35A-95	**232.16**	**233.05**	229.23	229.62	229.67	229.44	229.39	229.18	229.40	229.43
OW35B-95	**231.94**	**232.90**	229.06	229.57	229.57	229.40	229.35	229.00	229.40	229.40
OW36A-95	**231.12**	**232.02**	230.12	230.00	230.23	230.15	230.45	230.25	230.13	230.15
OW36B-95	**231.12**	**232.16**	231.12	230.26	231.18	231.15	230.96	230.55	231.13	231.16
OW37-97	**230.77**	**231.40**	231.22	230.93	231.22	Frozen	231.38	231.08	231.32	231.28
OW38-97	**232.20**	**232.83**	231.67	231.41	231.95	231.69	231.83	231.71	231.68	231.66
OW39-99	**228.53**	**229.40**	229.01	229.05	229.22	Frozen	229.08	229.15	229.31	229.09
OW40-99	**229.00**	**229.84**	228.36	228.45	228.14	228.39	228.45	228.01	228.21	228.41
OW41A-01	**233.28**	**234.07**	232.94	232.96	232.93	232.95	232.97	233.00	232.96	232.92
OW41B-01	**233.27**	**234.17**	232.62	231.94	232.85	232.79	232.82	232.24	232.84	232.72
OW42A-01	**234.50**	**235.38**	234.37	234.30	234.27	234.35	234.39	234.37	234.36	234.38
OW42B-01	**234.50**	**235.15**	234.33	233.92	234.13	234.45	234.36	234.07	234.27	234.42
OW43A-01	**234.18**	**235.00**	233.91	233.75	233.79	233.95	233.95	233.80	233.83	233.96
OW43B-01	**234.06**	**234.98**	233.64	233.36	233.72	233.62	233.64	233.54	233.82	233.71
OW44A-01	**233.81**	**234.66**	233.44	231.87	233.16	233.48	233.54	231.57	233.19	233.56
OW44B-01	**233.81**	**234.30**	233.36	232.98	233.16	233.43	233.35	233.10	233.28	233.43
OW45A-01	**233.41**	**234.40**	232.77	232.73	232.78	232.80	232.83	232.78	232.82	232.85
OW45B-01	**233.40**	**234.34**	232.40	231.91	232.21	232.40	232.49	232.06	232.23	232.39
OW46A-01	**232.71**	**233.57**	232.44	232.36	232.37	232.47	232.46	232.41	232.44	232.50
OW46B-01	**232.63**	**233.53**	231.81	231.48	231.56	231.82	231.89	231.60	231.72	231.86
OW47A-01	**230.84**	**231.77**	230.59	230.82	230.68	230.69	230.78	230.63	230.76	230.69
OW47B-01	**230.89**	**231.87**	230.65	229.38	229.99	230.57	230.71	230.42	230.24	230.52
OW48A-01	**230.18**	**231.20**	228.27	228.38	228.55	228.71	228.66	228.40	228.30	228.25
OW48B-01	**230.19**	**231.18**	227.66	228.10	227.94	227.76	227.88	227.08	226.80	226.81
OW49A-01	**233.25**	**234.00**	232.85	232.76	233.25	233.21	233.13	232.83	233.04	232.83
OW49B-01	**233.32**	**234.14**	232.96	232.83	233.26	233.16	232.93	232.62	232.95	232.79
OW50-01	**232.10**	**232.85**	231.49	231.16	231.44	231.49	231.53	231.14	231.31	231.40
OW51A-07	**231.10**	**231.92**	228.42	228.39	228.03	227.71	228.19	228.01	227.95	227.79
OW51B-07	**230.97**	**231.90**	228.43	228.34	228.03	227.82	228.27	227.96	227.96	227.82
OW52A-07	**227.15**	**227.99**	224.44	223.84	223.98	224.37	224.18	223.35	223.33	223.18
OW52B-07	**227.04**	**228.02**	226.92	223.19	221.50	226.82	227.02	223.03	221.92	226.75
LW1-91	**238.56**	**239.28**	232.76	232.59	232.67	232.93	233.02	233.03	232.97	232.93
LW2-07	**254.34**	**255.25**	238.87	238.55	238.76	238.70	238.19	238.26	238.04	237.88
LW3-91	**241.97**	**243.15**	231.56	231.45	231.58	232.03	232.06	231.83	No Access	233.20
LW3-16	**242.88**	**243.93**	--	--	--	--	--	--	--	--
LW4-04	**239.45**	**240.74**	232.78	233.06	233.16	233.14	232.35	232.27	232.44	232.34
LW5-04	**241.72**	**243.20**	233.16	233.62	234.21	234.18	234.23	233.99	234.03	234.18
LW6-04	**241.32**	**242.55**	231.39	231.17	231.41	231.47	231.07	230.98	231.10	231.13
LW7-09	**240.59**	**241.67**	229.68	228.41	227.91	Frozen	228.20	228.40	228.38	226.70
LW8-09	**245.91**	**246.64**	234.63	233.52	233.47	233.65	233.33	233.32	233.24	233.07
LW9-13	**243.68**	**244.51**	--	--	--	--	--	--	--	--
MH11	**233.61**	**234.63**	224.19	227.26	225.68	225.57	226.13	225.18	224.34	223.80
MH19	**241.05**	**242.51**	234.27	219.50	215.31	215.31	226.41	226.21	223.36	226.85
MH23	**231.41**	**232.41**	220.01	218.11	221.22	220.31	213.51	213.06	218.79	210.67
MH29	**235.95**	**236.95**	215.44	213.83	214.96	206.66	206.65	208.05	206.84	212.96

Notes:
- m ASL denotes metres above sea level.
- NM - Not measured.
- Frozen - unable to obtain level as water was frozen inside riser pipe, or cap frozen on riser pipe.
- No Access - monitoring well or manhole inaccessible for liquid level measurement.
- Wasp Nest - monitoring well inaccessible for water level measurement due to safety concerns.
- Blocked - monitoring well inaccessible due to blockage in riser pipe.
- Damaged - monitoring well damaged and inaccessible.
- Decom - monitoring well decommissioned

TABLE F-1
HISTORICAL SEMI-ANNUAL/QUARTERLY GROUNDWATER AND LEACHATE ELEVATIONS
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Groundwater Elevation (m ASL)							
			06-May-15	13-Aug-15	05-Nov-15	10-Feb-16	06-May-16	17-Aug-16	08-Nov-16	09-Feb-17
OW19-91	232.19	232.97	231.80	231.44	231.56	231.54	231.83	230.95	230.59	Decom
OW20-91	227.51	228.41	227.39	227.24	227.38	227.24	227.41	226.90	227.38	227.06
OW23A-95	227.91	228.87	227.37	227.17	227.25	227.31	227.40	227.17	226.11	227.12
OW23B-95	227.90	228.78	227.62	226.69	226.13	227.94	227.75	227.23	227.20	227.87
OW24A-95	227.32	228.18	224.86	224.96	225.19	225.17	225.12	225.05	225.27	224.36
OW24B-95	227.23	228.18	225.59	224.89	225.17	225.28	225.55	225.33	224.68	224.93
OW27A-95	230.76	231.48	224.73	224.32	223.98	224.51	224.40	223.35	223.78	224.47
OW27B-95	230.70	231.56	226.80	226.30	225.90	226.76	226.02	224.89	225.11	226.73
OW28A-95	230.28	231.32	228.42	226.83	226.16	227.68	227.79	226.49	226.49	227.56
OW28B-95	230.27	231.38	227.74	226.91	227.71	227.82	227.90	227.30	227.65	227.77
OW29A-95	229.88	231.28	228.80	228.52	228.34	228.83	228.43	228.26	228.25	228.85
OW29B-95	230.24	231.36	228.37	228.15	228.14	228.30	228.21	228.04	228.17	228.28
OW30A-95	232.92	233.72	230.92	230.62	230.57	228.77	230.33	230.23	230.26	228.62
OW30B-95	232.71	233.71	228.88	228.37	228.46	227.68	229.13	229.40	228.47	227.59
OW31A-95	233.39	234.04	228.38	228.37	228.30	228.19	228.35	227.84	227.97	228.06
OW31B-95	233.08	233.69	228.93	228.94	228.89	228.83	228.96	228.78	228.71	228.81
OW32A-95	228.80	229.60	229.54	229.60	229.60	229.55	229.55	229.55	229.55	229.10
OW32B-95	228.80	229.64	229.54	229.64	229.64	229.59	229.59	229.64	229.64	229.14
OW34A-95	228.10	229.08	226.30	226.45	226.71	226.75	226.53	225.58	226.49	226.38
OW34B-95	228.05	228.98	225.75	226.18	225.98	225.79	225.85	225.83	225.36	225.08
OW35A-95	232.16	233.05	229.33	229.05	229.21	229.55	229.62	228.59	228.92	Decom
OW35B-95	231.94	232.90	229.13	228.90	229.02	229.48	229.55	228.54	228.90	Decom
OW36A-95	231.12	232.02	230.30	230.66	230.09	230.12	230.18	229.94	229.66	Decom
OW36B-95	231.12	232.16	231.18	230.27	230.71	231.06	231.18	230.07	230.93	Decom
OW37-97	230.77	231.40	231.28	231.40	231.40	231.25	231.17	231.10	230.90	231.26
OW38-97	232.20	232.83	231.71	231.58	231.66	231.65	231.58	231.46	231.60	231.65
OW39-99	228.53	229.40	229.18	229.21	229.15	229.05	229.35	229.04	229.23	229.05
OW40-99	229.00	229.84	228.40	228.01	228.04	228.29	228.43	227.60	227.63	228.26
OW41A-01	233.28	234.07	233.05	233.04	233.02	232.90	232.96	232.75	232.83	232.92
OW41B-01	233.27	234.17	232.74	232.23	232.27	233.02	232.91	232.74	231.76	233.03
OW42A-01	234.50	235.38	234.44	234.39	234.38	234.48	234.54	234.40	234.14	234.29
OW42B-01	234.50	235.15	234.35	234.07	234.38	234.32	234.38	234.34	233.48	234.30
OW43A-01	234.18	235.00	233.96	233.83	233.92	233.88	233.95	233.57	233.65	233.85
OW43B-01	234.06	234.98	233.65	233.51	233.58	233.70	233.66	233.23	232.90	233.70
OW44A-01	233.81	234.66	233.64	233.06	233.40	233.51	233.60	233.34	233.22	233.58
OW44B-01	233.81	234.30	233.49	233.12	232.93	233.18	233.44	233.20	232.55	233.23
OW45A-01	233.41	234.40	232.83	232.77	232.72	232.71	232.77	232.65	232.30	232.65
OW45B-01	233.40	234.34	232.41	232.05	231.72	232.35	232.48	232.35	231.23	232.34
OW46A-01	232.71	233.57	232.50	232.44	231.93	232.38	232.38	232.38	231.89	232.43
OW46B-01	232.63	233.53	231.89	231.64	231.28	231.86	231.89	231.86	230.84	231.86
OW47A-01	230.84	231.77	230.67	230.62	230.87	230.61	230.74	230.41	230.38	230.57
OW47B-01	230.89	231.87	230.54	230.30	229.35	230.53	230.72	230.45	228.58	230.51
OW48A-01	230.18	231.20	228.36	228.17	227.93	228.00	227.90	227.55	227.46	228.24
OW48B-01	230.19	231.18	227.55	227.27	226.50	226.99	227.01	226.36	226.63	227.78
OW49A-01	233.25	234.00	232.84	232.89	232.89	233.31	233.03	232.57	232.32	Decom
OW49B-01	233.32	234.14	232.75	232.58	232.66	233.28	232.94	232.42	231.92	Decom
OW50-01	232.10	232.85	231.43	230.97	230.93	231.39	231.50	231.13	230.78	231.40
OW51A-07	231.10	231.92	227.88	227.75	227.29	227.47	227.47	227.00	227.01	227.64
OW51B-07	230.97	231.90	227.94	227.73	227.18	227.49	227.53	227.02	226.90	227.65
OW52A-07	227.15	227.99	223.18	223.24	223.62	224.09	223.98	223.82	223.96	224.11
OW52B-07	227.04	228.02	226.88	223.96	222.01	226.90	226.88	221.18	220.16	219.66
LW1-91	238.56	239.28	232.88	233.03	233.21	232.88	233.10	232.87	232.98	232.98
LW2-07	254.34	255.25	237.81	237.50	237.44	239.85	239.90	239.00	237.35	237.58
LW3-91	241.97	243.15	233.21	234.33	234.77	Blocked	Blocked	Blocked	Decom	--
LW3-16	242.88	243.93	--	--	--	--	--	--	236.24	236.27
LW4-04	239.45	240.74	232.39	232.39	232.26	232.07	232.64	232.17	232.33	232.13
LW5-04	241.72	243.20	234.36	234.30	234.24	234.17	234.67	234.24	234.58	234.50
LW6-04	241.32	242.55	231.38	231.35	231.24	231.20	231.85	231.26	231.30	231.42
LW7-09	240.59	241.67	227.17	228.15	225.84	225.40	226.76	226.32	226.73	228.61
LW8-09	245.91	246.64	232.98	232.86	232.99	237.09	232.90	232.41	232.37	232.38
LW9-13	243.68	244.51	--	235.93	235.72	233.49	235.86	235.61	235.55	235.59
MH11	233.61	234.63	224.35	225.33	224.70	220.67	223.82	224.24	225.87	227.20
MH19	241.05	242.51	222.82	222.77	224.21	225.59	224.14	223.41	223.58	223.34
MH23	231.41	232.41	220.82	211.92	213.26	211.90	221.01	212.74	217.06	220.84
MH29	235.95	236.95	212.85	212.65	210.11	213.85	213.45	211.92	221.28	207.04

Notes:
- m ASL denotes metres above sea level.
- NM - Not measured.
- Frozen - unable to obtain level as water was frozen inside riser pipe, or cap frozen on riser pipe.
- No Access - monitoring well or manhole inaccessible for liquid level measurement.
- Wasp Nest - monitoring well inaccessible for water level measurement due to safety concerns.
- Blocked - monitoring well inaccessible due to blockage in riser pipe.
- Damaged - monitoring well damaged and inaccessible.
- Decom - monitoring well decommissioned

TABLE F-1
HISTORICAL SEMI-ANNUAL/QUARTERLY GROUNDWATER AND LEACHATE ELEVATIONS
GREEN LANE LANDFILL SITE

Monitoring Location	Ground Elevation (m ASL)	Reference Elevation (m ASL)	Groundwater Elevation (m ASL)		
			17-May-17	09-Aug-17	06-Nov-17
OW19-91	**232.19**	**232.97**	--	--	--
OW20-91	**227.51**	**228.41**	227.28	227.17	227.41
OW23A-95	**227.91**	**228.87**	227.43	227.02	227.25
OW23B-95	**227.90**	**228.78**	227.50	226.11	225.88
OW24A-95	**227.32**	**228.18**	224.62	224.40	224.64
OW24B-95	**227.23**	**228.18**	224.76	223.07	223.96
OW27A-95	**230.76**	**231.48**	223.97	223.52	223.52
OW27B-95	**230.70**	**231.56**	225.28	224.81	224.87
OW28A-95	**230.28**	**231.32**	226.97	226.80	226.51
OW28B-95	**230.27**	**231.38**	227.86	226.86	227.44
OW29A-95	**229.88**	**231.28**	228.39	228.22	228.18
OW29B-95	**230.24**	**231.36**	228.17	227.95	228.06
OW30A-95	**232.92**	**233.72**	230.20	230.17	230.26
OW30B-95	**232.71**	**233.71**	228.59	226.67	228.02
OW31A-95	**233.39**	**234.04**	228.24	227.76	227.78
OW31B-95	**233.08**	**233.69**	228.92	228.86	228.68
OW32A-95	**228.80**	**229.60**	229.10	229.60	229.60
OW32B-95	**228.80**	**229.64**	229.14	229.56	229.64
OW34A-95	**228.10**	**229.08**	226.14	226.09	226.06
OW34B-95	**228.05**	**228.98**	224.97	225.22	224.59
OW35A-95	**232.16**	**233.05**	--	--	--
OW35B-95	**231.94**	**232.90**	--	--	--
OW36A-95	**231.12**	**232.02**	--	--	--
OW36B-95	**231.12**	**232.16**	--	--	--
OW37-97	**230.77**	**231.40**	231.23	230.90	230.86
OW38-97	**232.20**	**232.83**	231.72	231.50	231.42
OW39-99	**228.53**	**229.40**	229.35	229.14	229.08
OW40-99	**229.00**	**229.84**	228.48	227.78	227.02
OW41A-01	**233.28**	**234.07**	232.88	233.00	233.23
OW41B-01	**233.27**	**234.17**	232.77	232.05	232.74
OW42A-01	**234.50**	**235.38**	234.27	234.14	234.73
OW42B-01	**234.50**	**235.15**	234.35	233.87	234.15
OW43A-01	**234.18**	**235.00**	233.82	233.65	233.71
OW43B-01	**234.06**	**234.98**	233.64	233.29	232.97
OW44A-01	**233.81**	**234.66**	233.40	232.31	232.78
OW44B-01	**233.81**	**234.30**	233.23	232.87	232.49
OW45A-01	**233.41**	**234.40**	232.58	232.35	231.84
OW45B-01	**233.40**	**234.34**	232.46	232.14	231.08
OW46A-01	**232.71**	**233.57**	232.29	232.26	231.78
OW46B-01	**232.63**	**233.53**	231.78	231.53	230.94
OW47A-01	**230.84**	**231.77**	230.51	230.29	230.69
OW47B-01	**230.89**	**231.87**	230.65	230.35	228.44
OW48A-01	**230.18**	**231.20**	228.10	227.70	227.56
OW48B-01	**230.19**	**231.18**	226.99	226.51	226.38
OW49A-01	**233.25**	**234.00**	--	--	--
OW49B-01	**233.32**	**234.14**	--	--	--
OW50-01	**232.10**	**232.85**	231.55	230.92	230.52
OW51A-07	**231.10**	**231.92**	227.69	227.42	226.86
OW51B-07	**230.97**	**231.90**	227.66	227.37	226.67
OW52A-07	**227.15**	**227.99**	223.76	223.42	223.47
OW52B-07	**227.04**	**228.02**	226.69	220.50	219.00
LW1-91	**238.56**	**239.28**	233.28	232.91	232.97
LW2-07	**254.34**	**255.25**	237.77	237.13	237.54
LW3-91	**241.97**	**243.15**	--	--	--
LW3-16	**242.88**	**243.93**	236.21	235.29	236.17
LW4-04	**239.45**	**240.74**	232.77	231.62	232.41
LW5-04	**241.72**	**243.20**	235.15	235.15	235.39
LW6-04	**241.32**	**242.55**	232.19	231.23	232.64
LW7-09	**240.59**	**241.67**	226.68	226.31	226.39
LW8-09	**245.91**	**246.64**	232.80	230.91	232.37
LW9-13	**243.68**	**244.51**	235.60	235.09	235.75
MH11	**233.61**	**234.63**	224.25	224.47	225.48
MH19	**241.05**	**242.51**	227.17	223.46	224.15
MH23	**231.41**	**232.41**	221.16	220.23	220.95
MH29	**235.95**	**236.95**	207.52	<206.45	207.30

Notes:
- m ASL denotes metres above sea level.
- NM - Not measured.
- Frozen - unable to obtain level as water was frozen inside riser pipe, or cap frozen on riser pipe.
- No Access - monitoring well or manhole inaccessible for liquid level measurement.
- Wasp Nest - monitoring well inaccessible for water level measurement due to safety concerns.
- Blocked - monitoring well inaccessible due to blockage in riser pipe.
- Damaged - monitoring well damaged and inaccessible.
- Decom - monitoring well decommissioned
- < - denotes that the liquid level is below this elevation; due to equipment constraints, a level was unable to be measured lower than this point.

wsp

APPENDIX

G

HYDROGRAPHS FOR SELECTED MONITORING WELLS

FIGURE G-1
GROUNDWATER HYDROGRAPH - OW24A-95
GREEN LANE LANDFILL

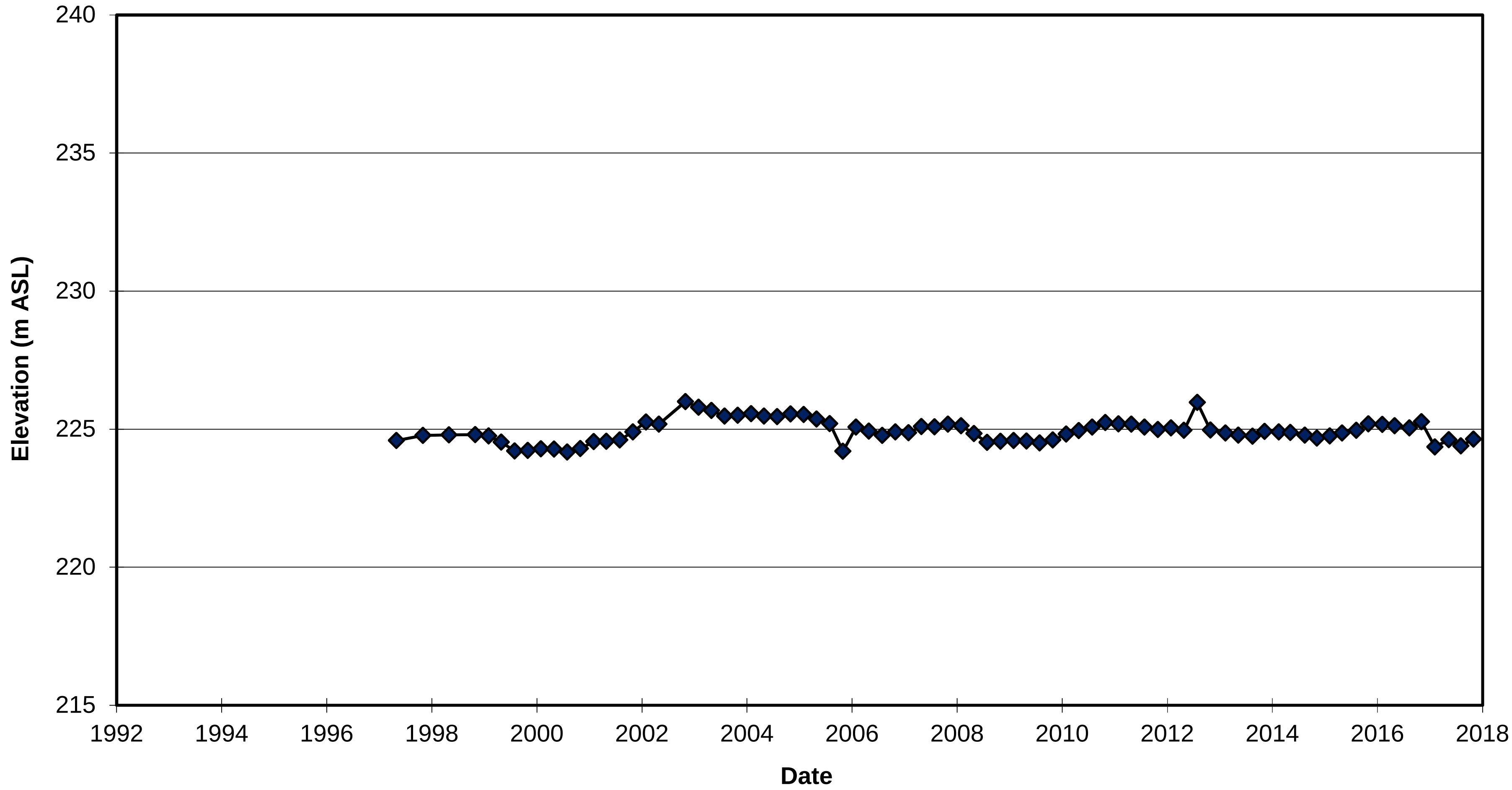


FIGURE G-2
GROUNDWATER HYDROGRAPH - OW24B-95
GREEN LANE LANDFILL

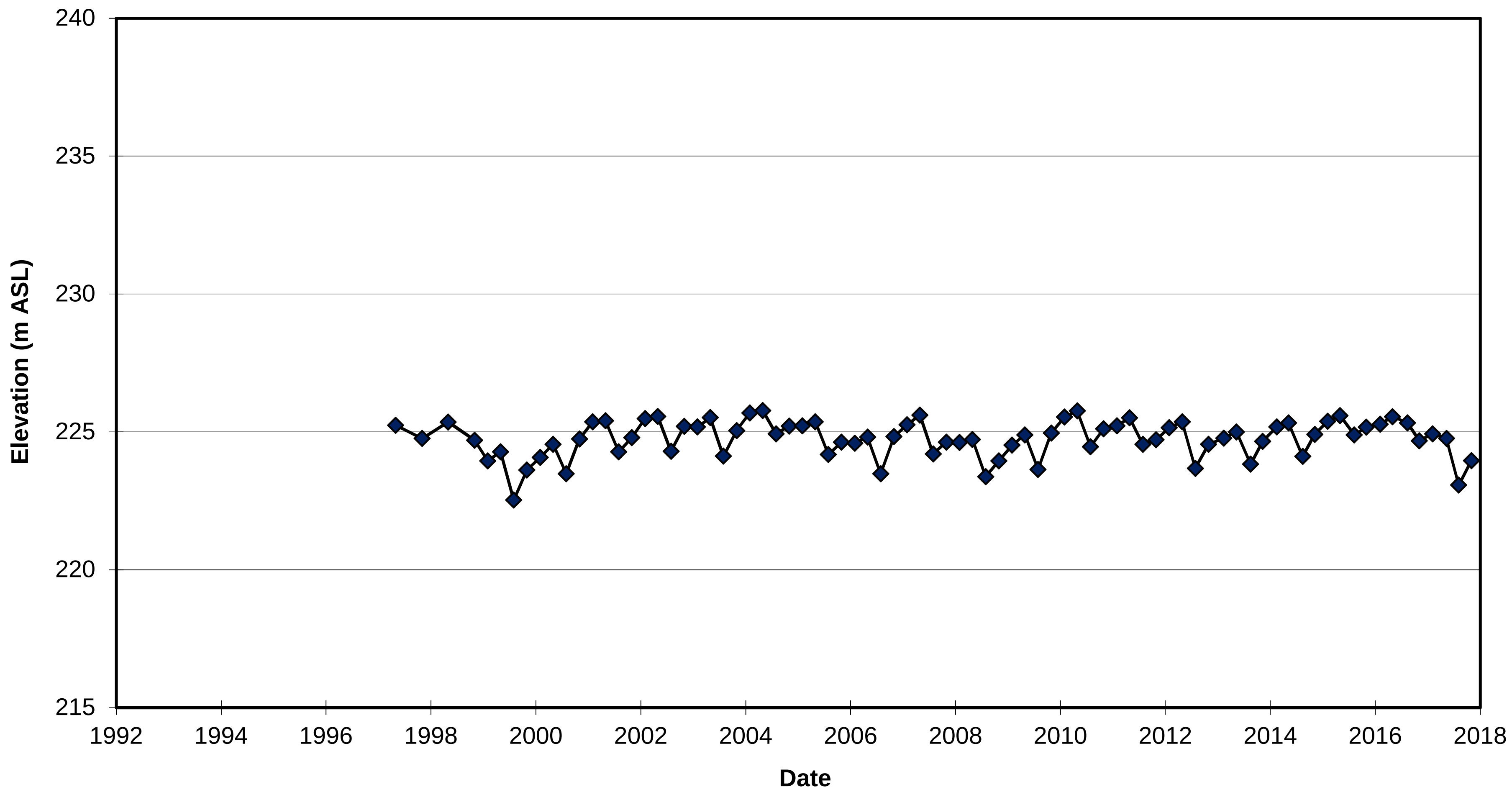


FIGURE G-3
GROUNDWATER HYDROGRAPH - OW28A-95
GREEN LANE LANDFILL

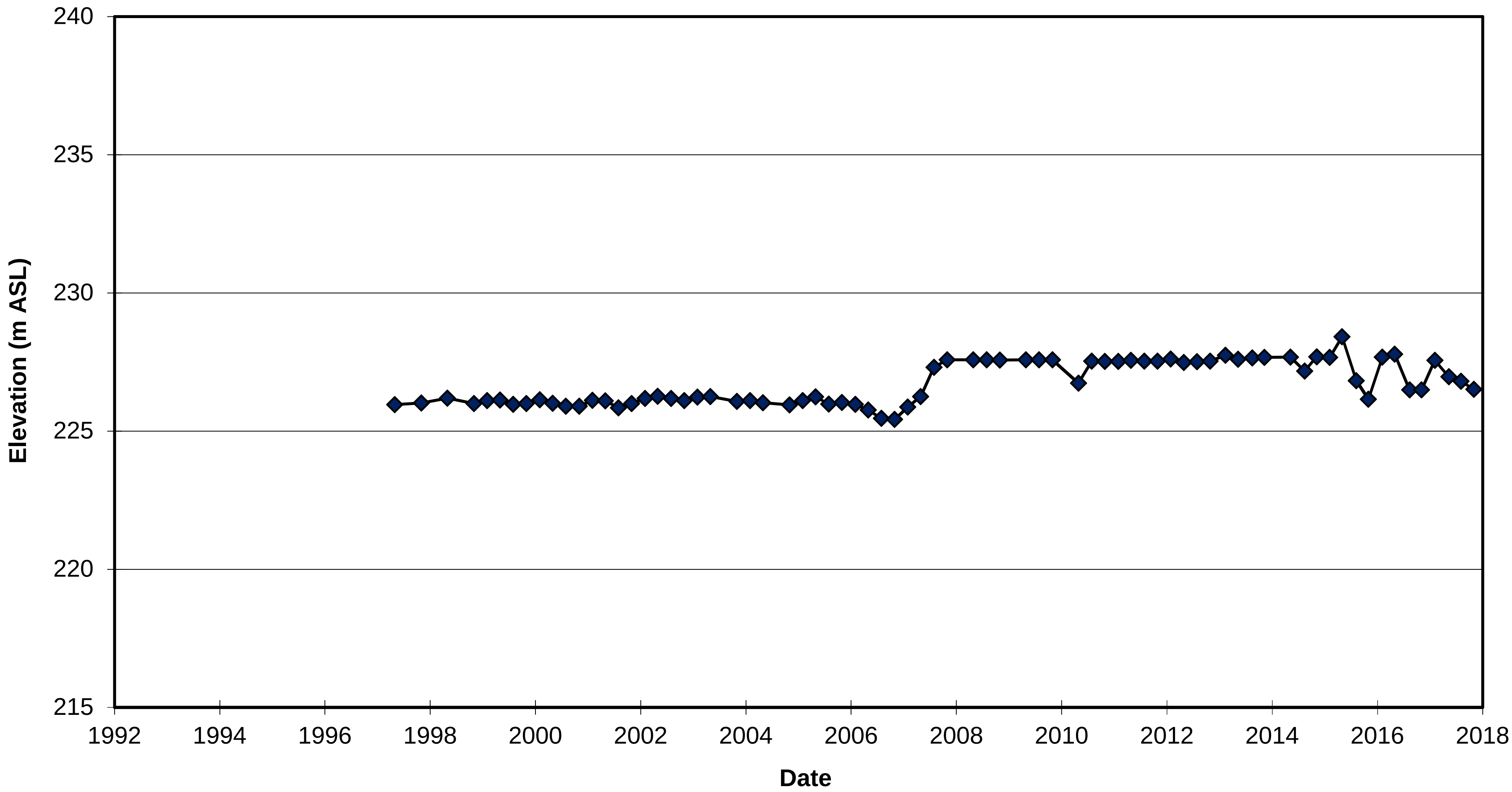


FIGURE G-4
GROUNDWATER HYDROGRAPH - OW28B-95
GREEN LANE LANDFILL

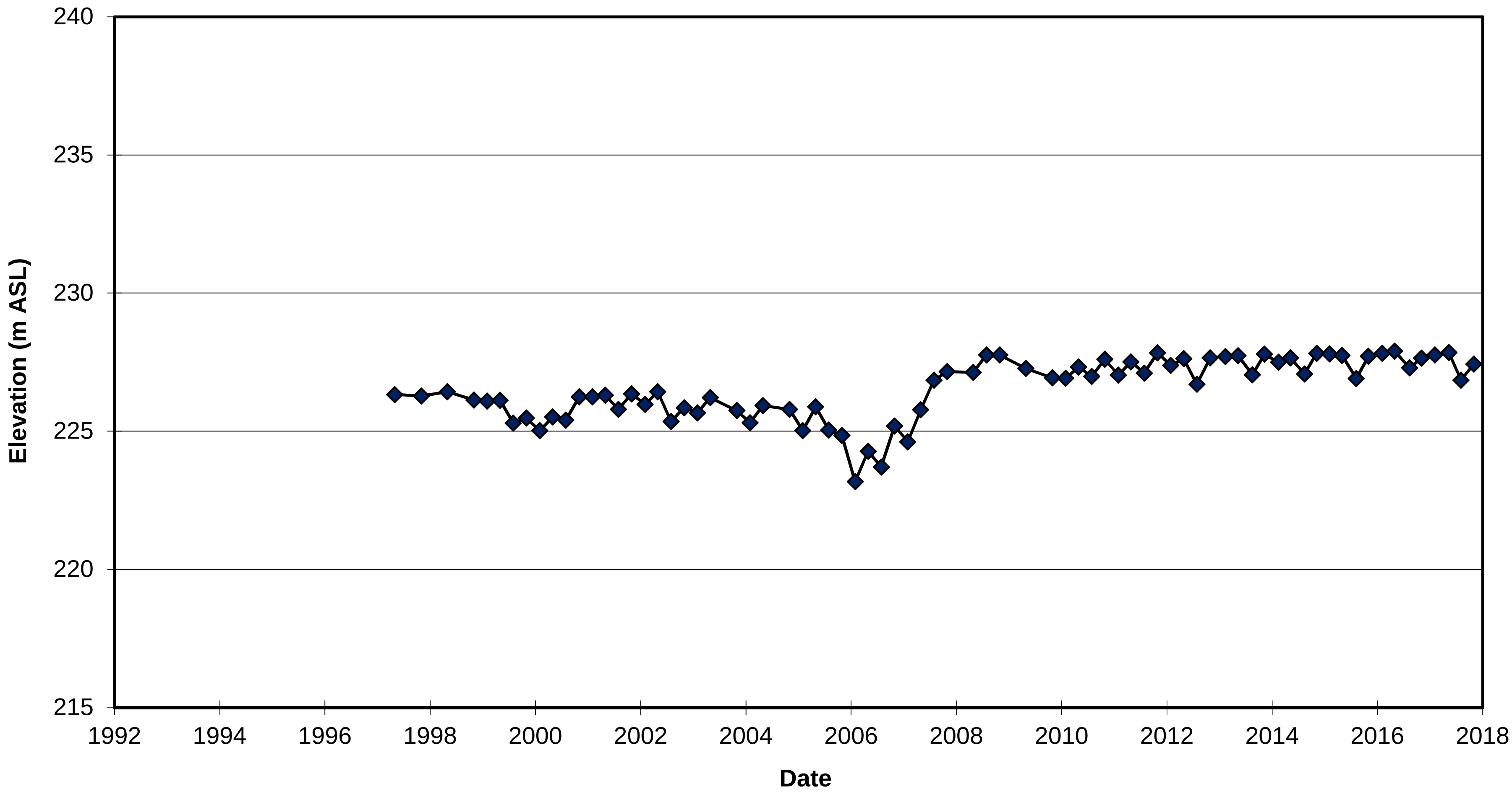


FIGURE G-5
GROUNDWATER HYDROGRAPH - OW32A-95
GREEN LANE LANDFILL

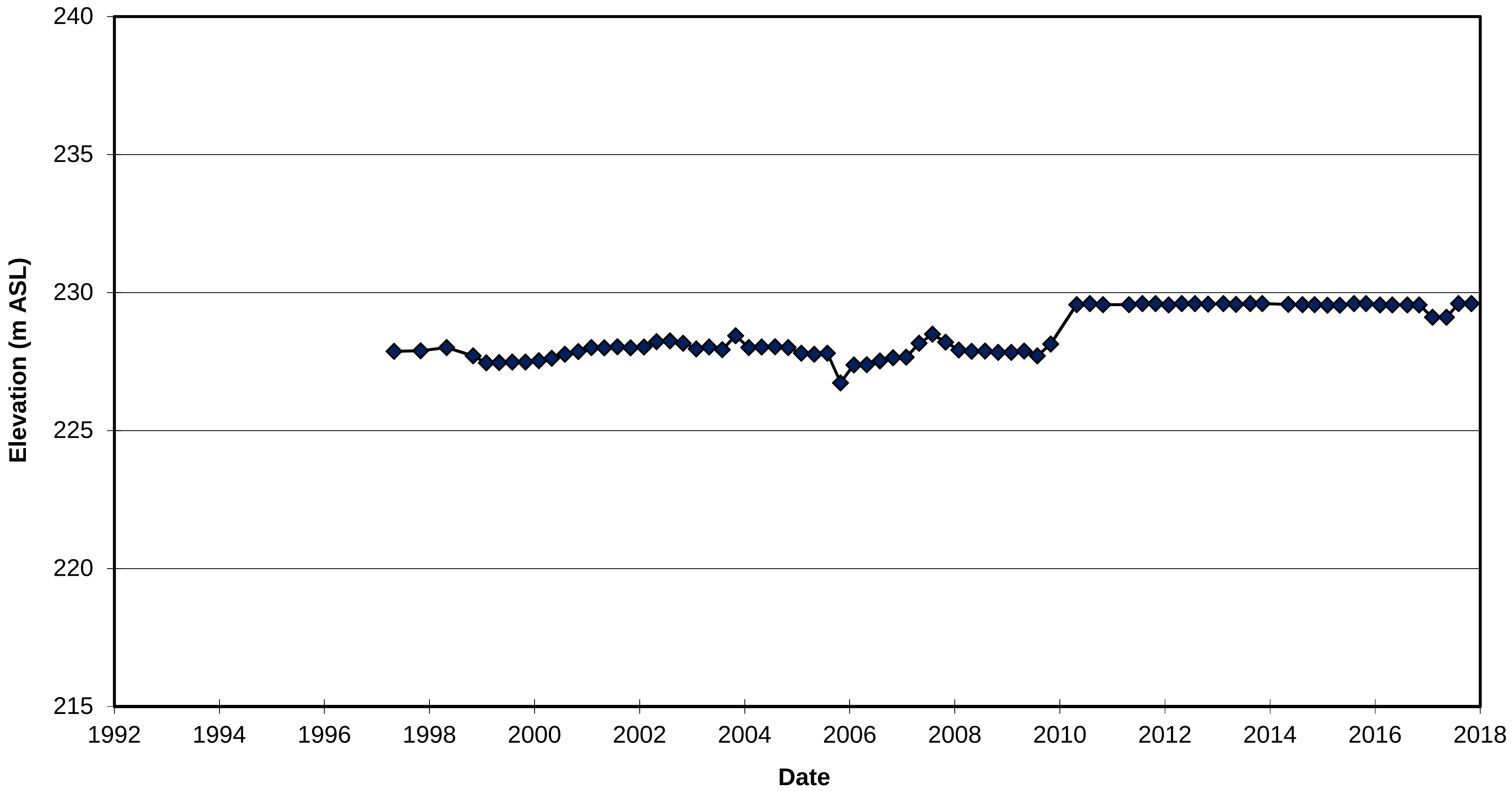


FIGURE G-6
GROUNDWATER HYDROGRAPH - OW32B-95
GREEN LANE LANDFILL

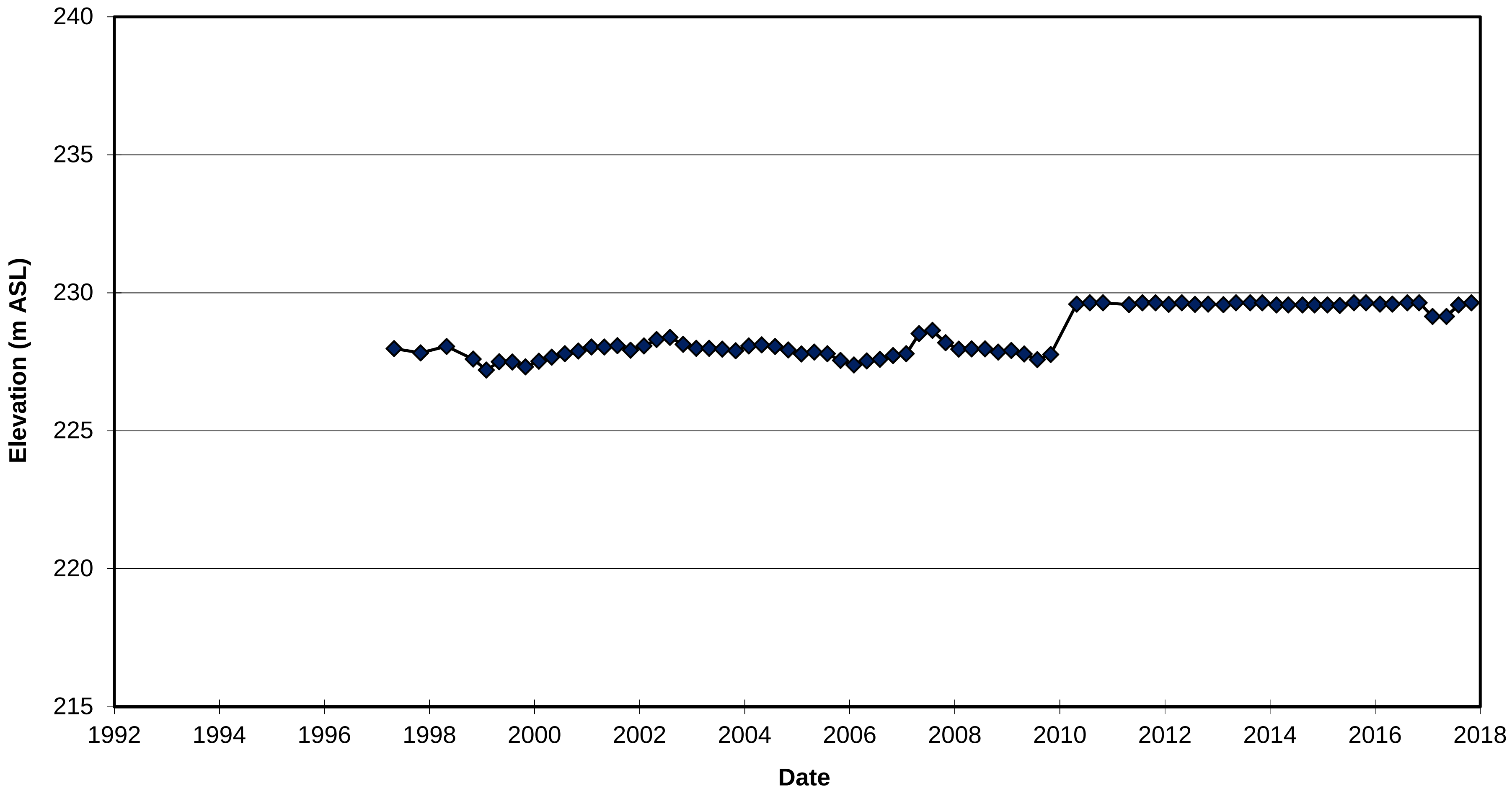


FIGURE G-7
GROUNDWATER HYDROGRAPH - OW41A-01
GREEN LANE LANDFILL

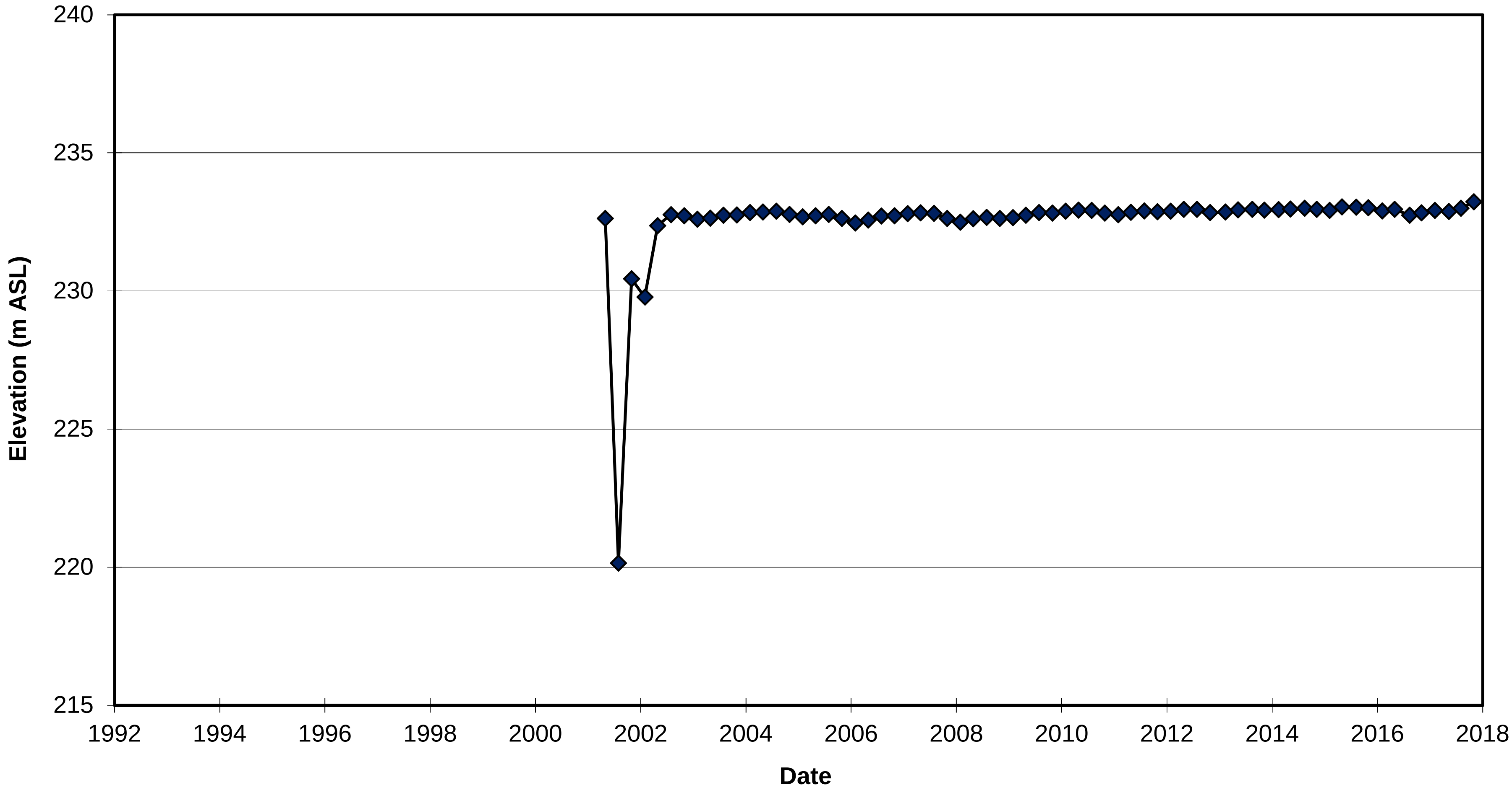


FIGURE G-8
GROUNDWATER HYDROGRAPH - OW41B-01
GREEN LANE LANDFILL

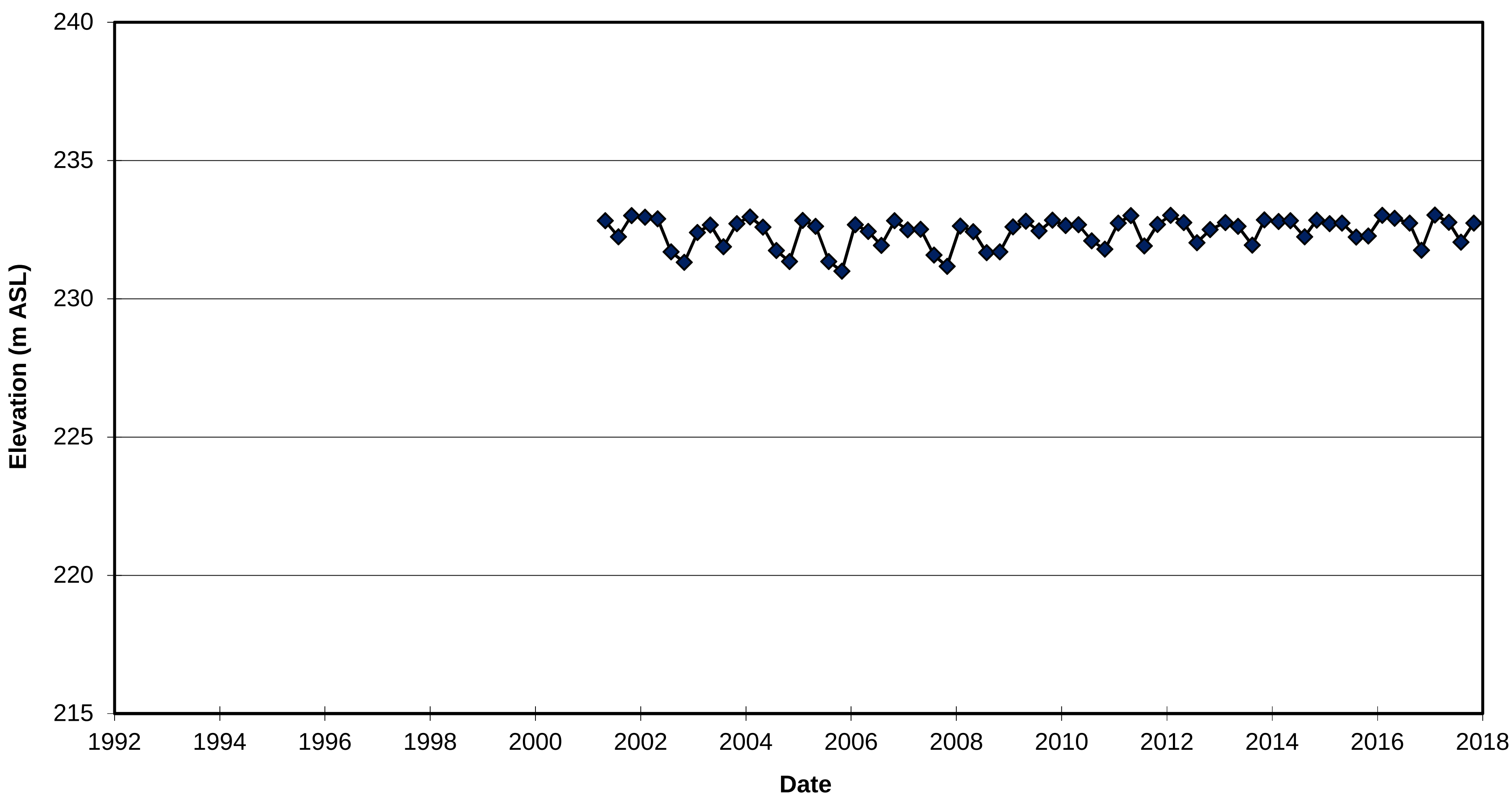


FIGURE G-9
GROUNDWATER HYDROGRAPH - OW44A-01
GREEN LANE LANDFILL

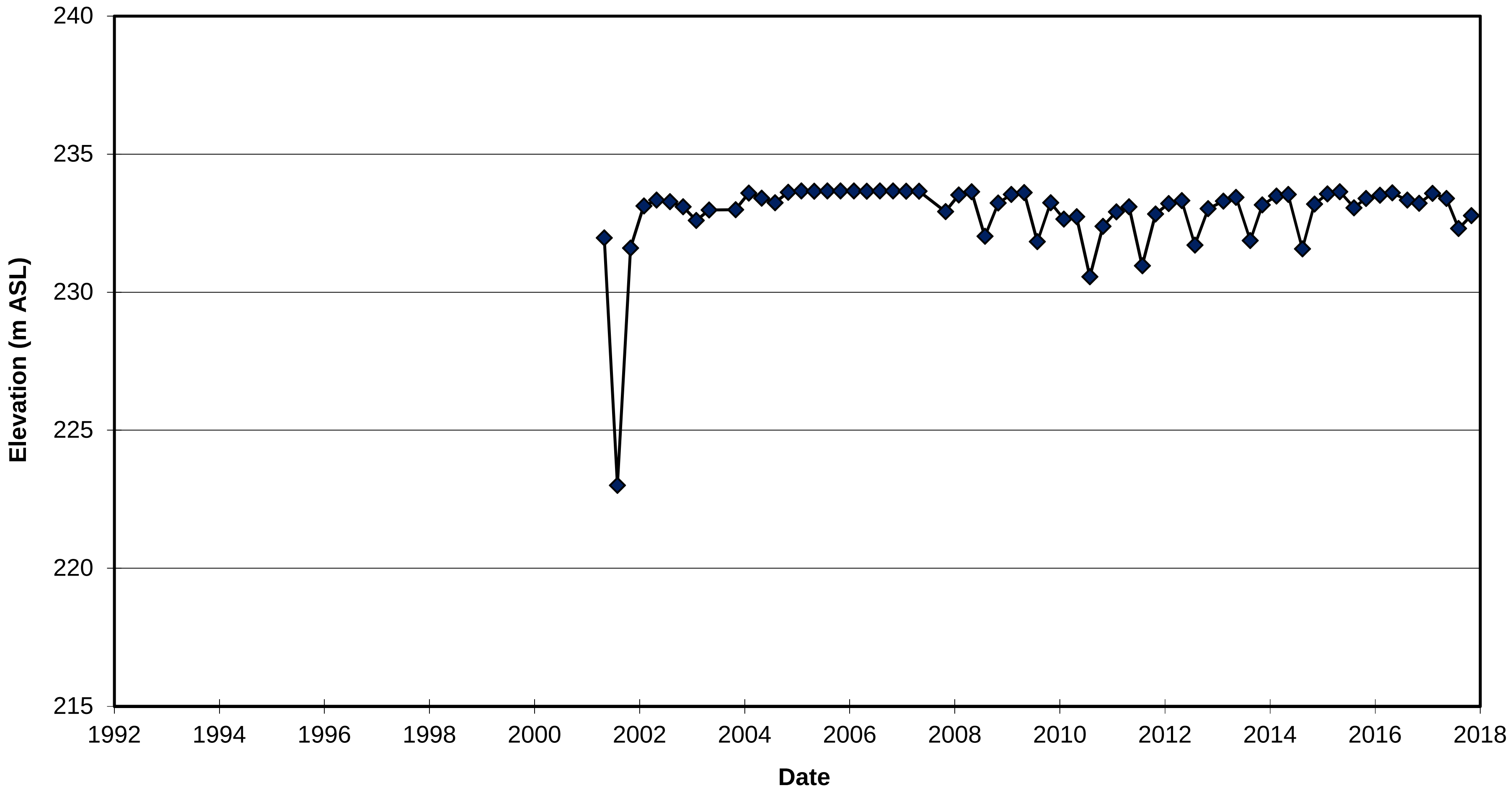


FIGURE G-10
GROUNDWATER HYDROGRAPH - OW44B-01
GREEN LANE LANDFILL

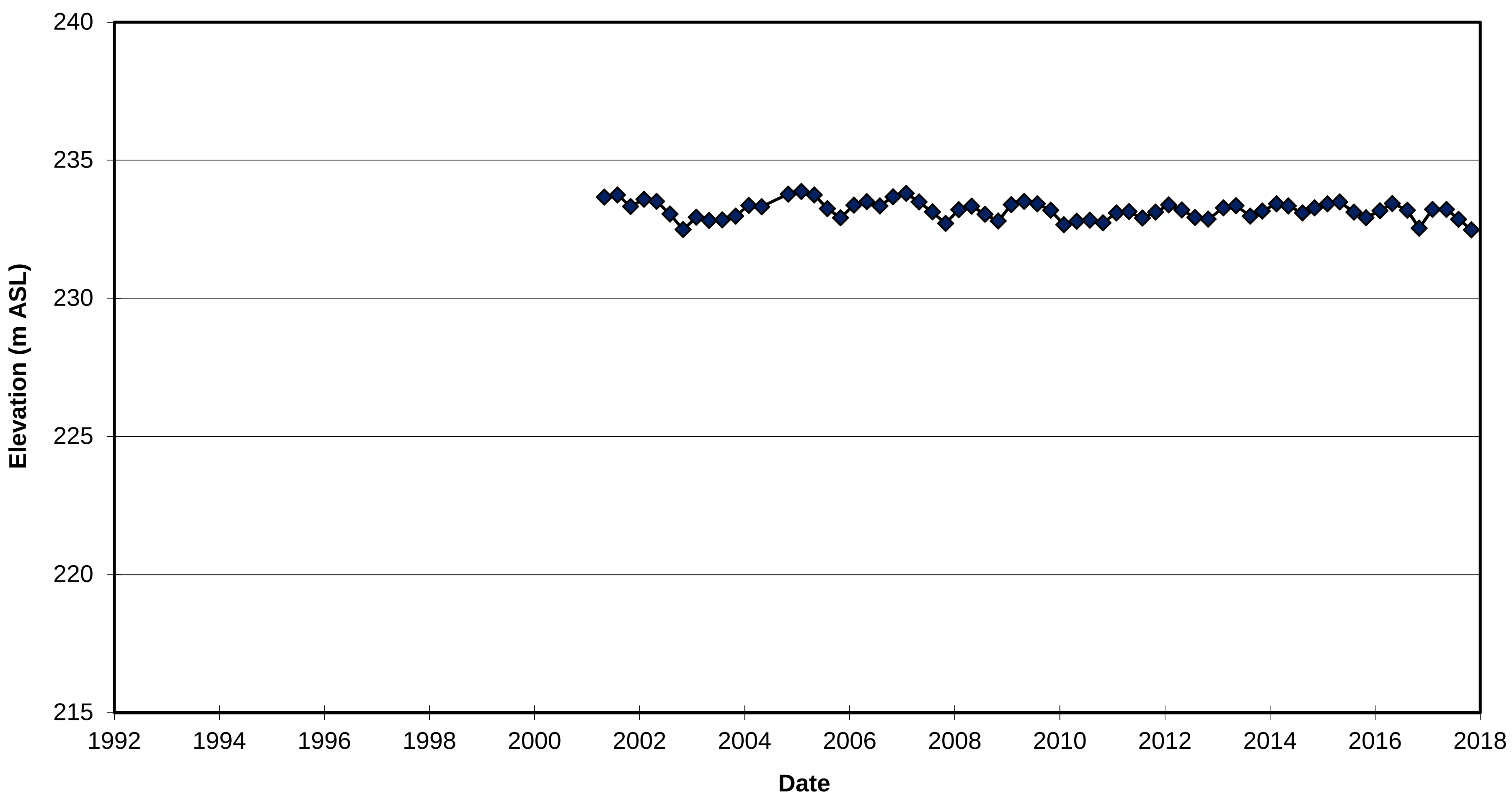


FIGURE G-11
GROUNDWATER HYDROGRAPH - OW48A-01
GREEN LANE LANDFILL

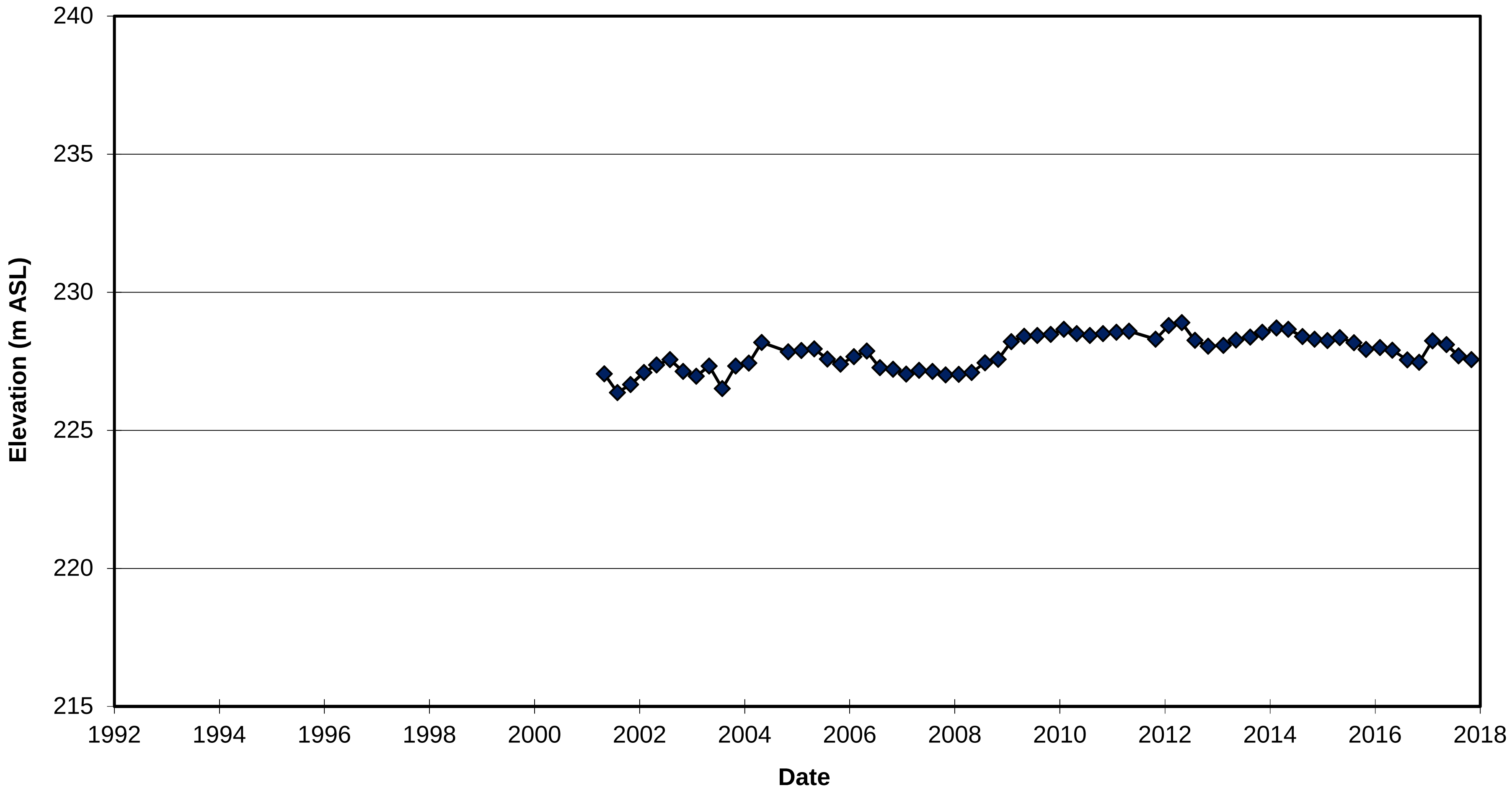


FIGURE G-12
GROUNDWATER HYDROGRAPH - OW48B-01
GREEN LANE LANDFILL

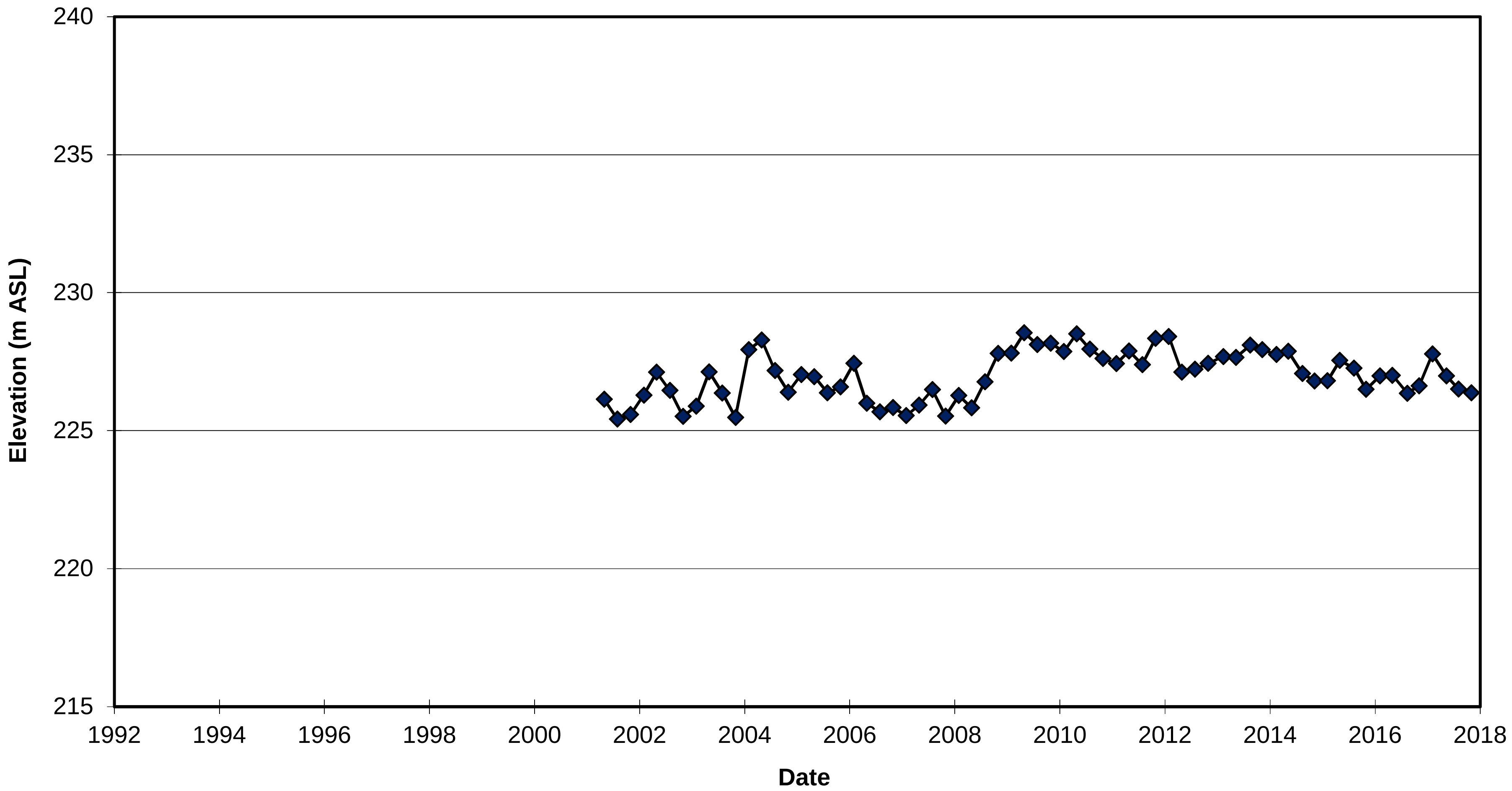


FIGURE G-13
LEACHATE HYDROGRAPH - LW1-91
GREEN LANE LANDFILL

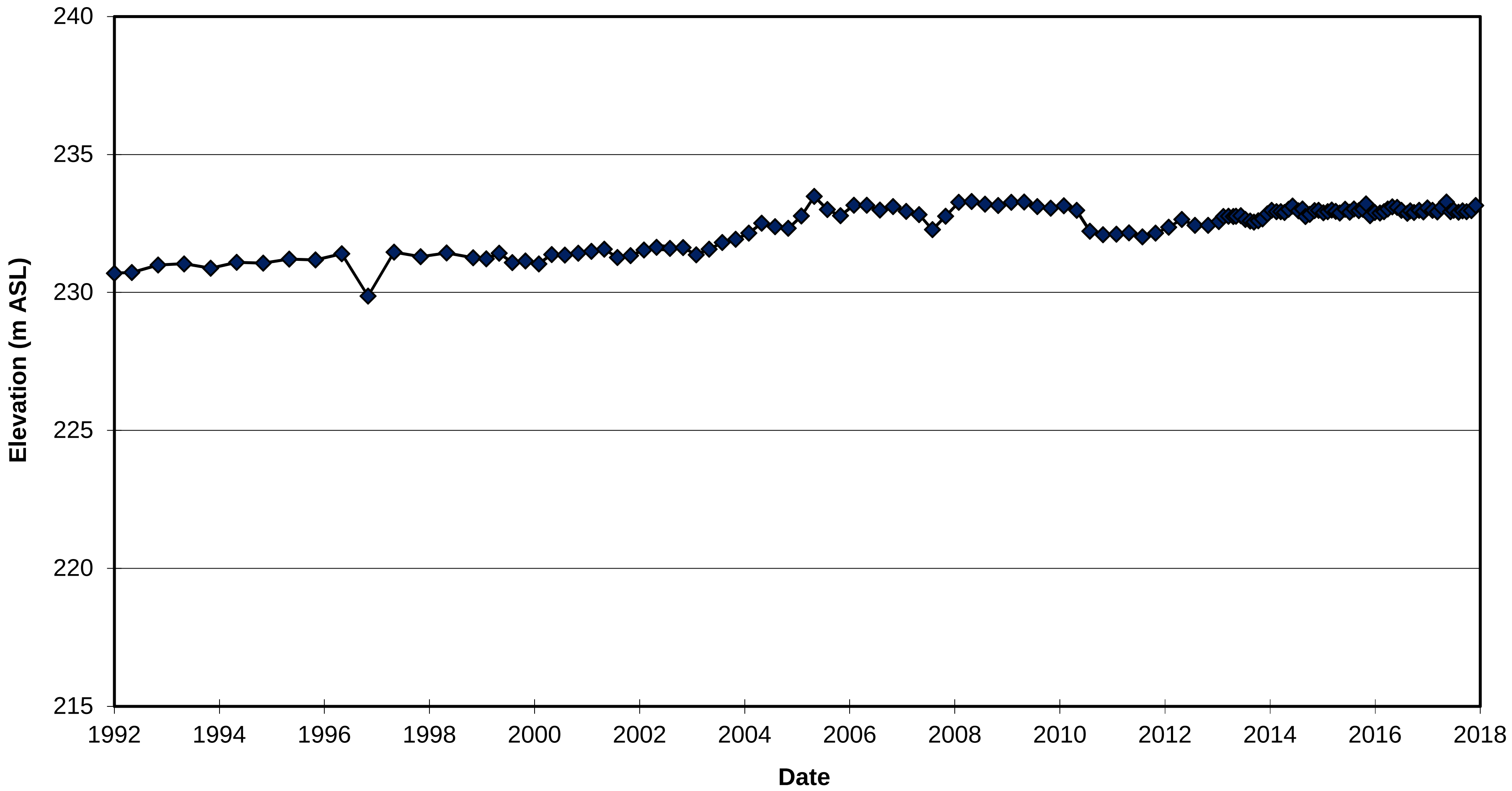


FIGURE G-14
LEACHATE HYDROGRAPH - LW2-07
GREEN LANE LANDFILL

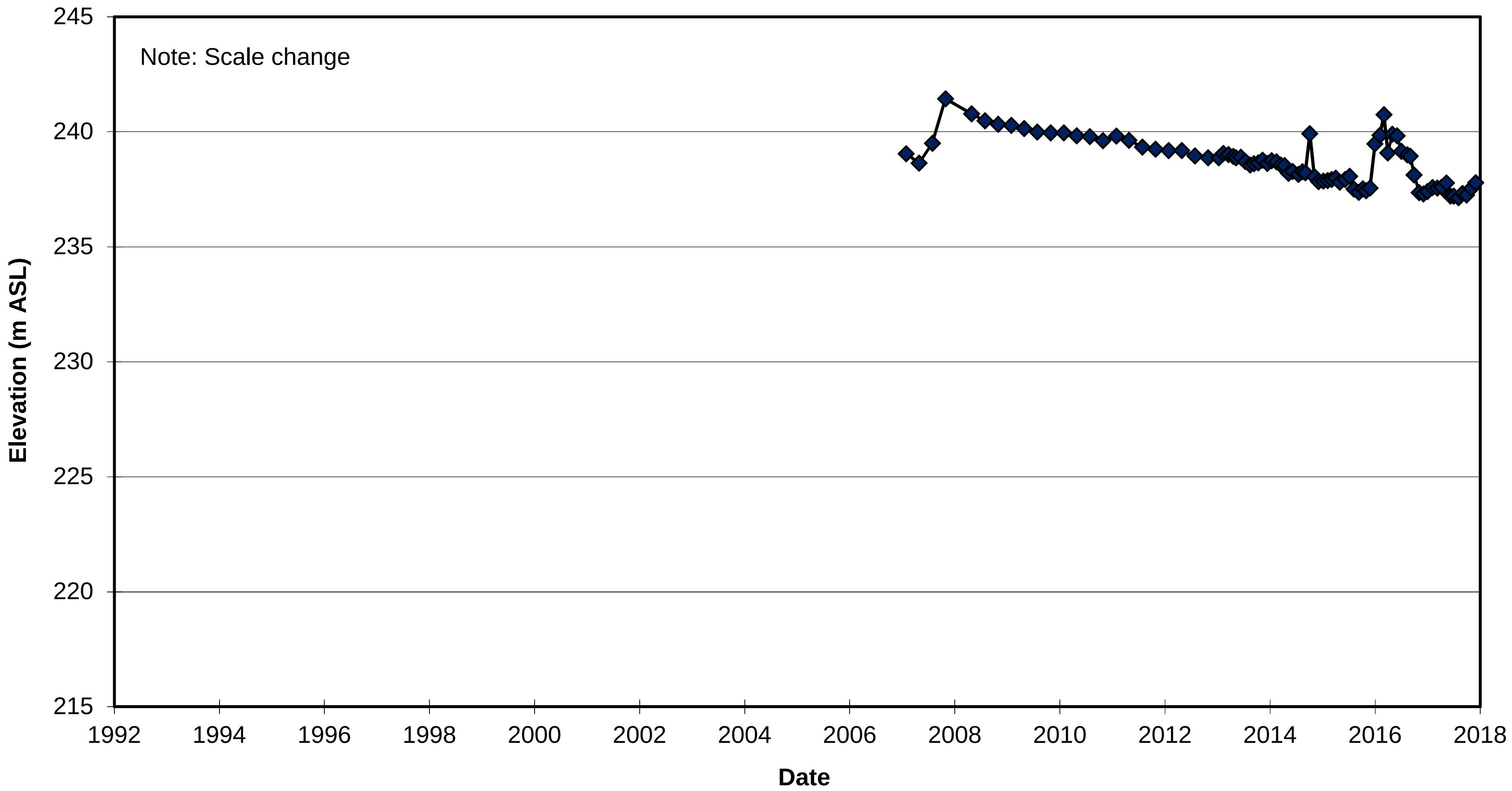


FIGURE G-15
LEACHATE HYDROGRAPH - LW3-91 / LW3-16
GREEN LANE LANDFILL

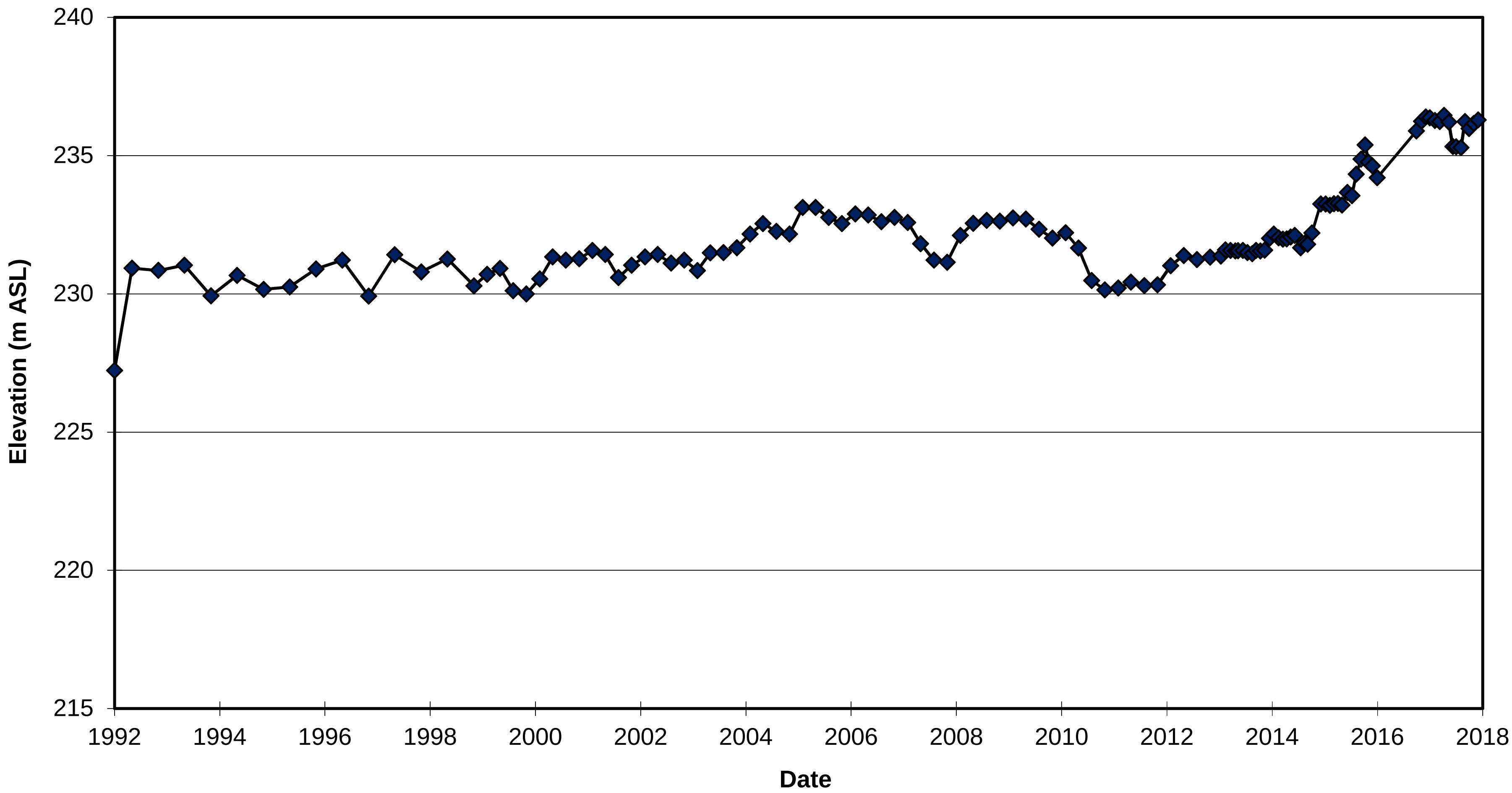


FIGURE G-16
LEACHATE HYDROGRAPH - LW4-04
GREEN LANE LANDFILL

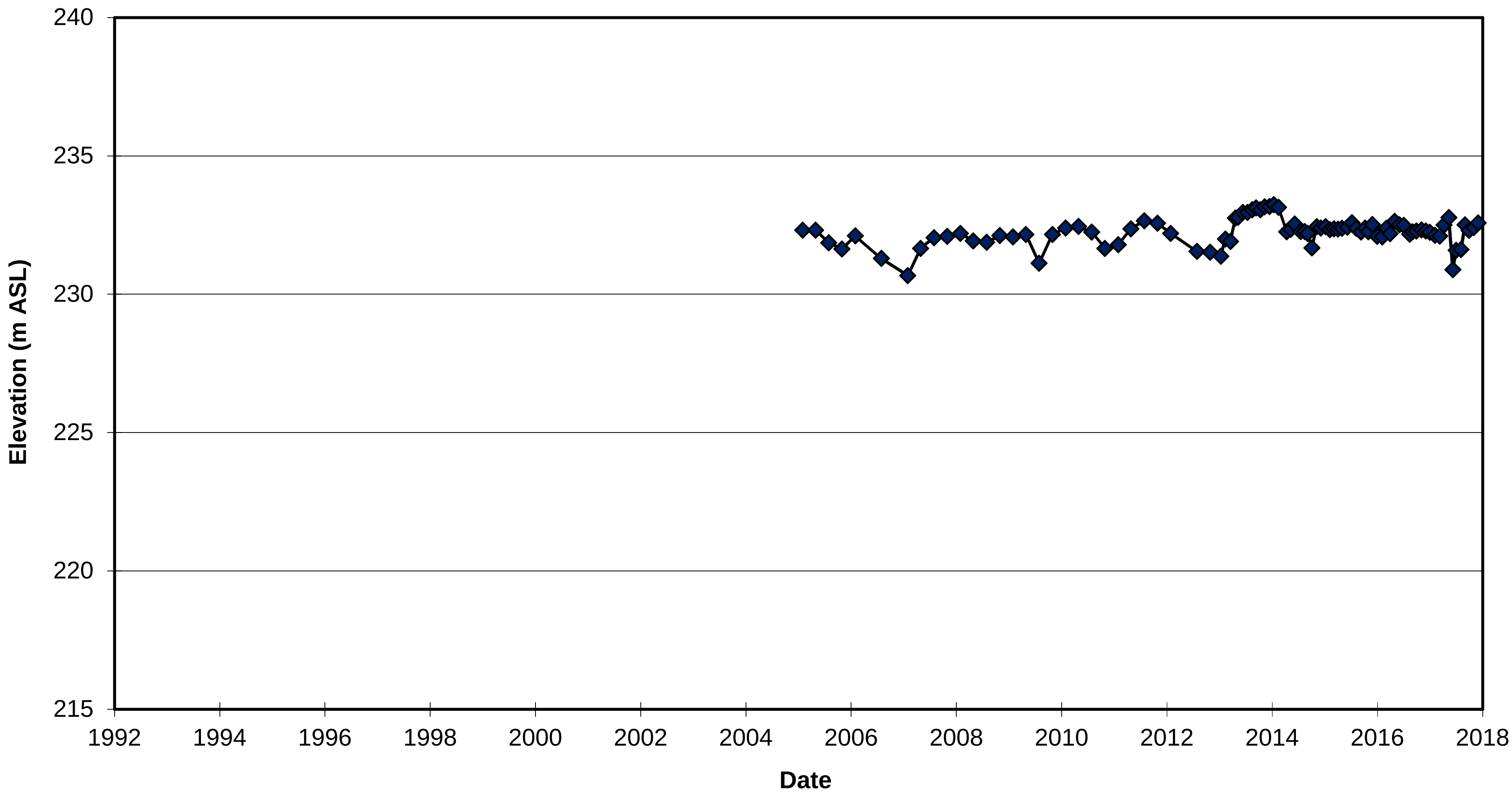


FIGURE G-17
LEACHATE HYDROGRAPH - LW5-04
GREEN LANE LANDFILL

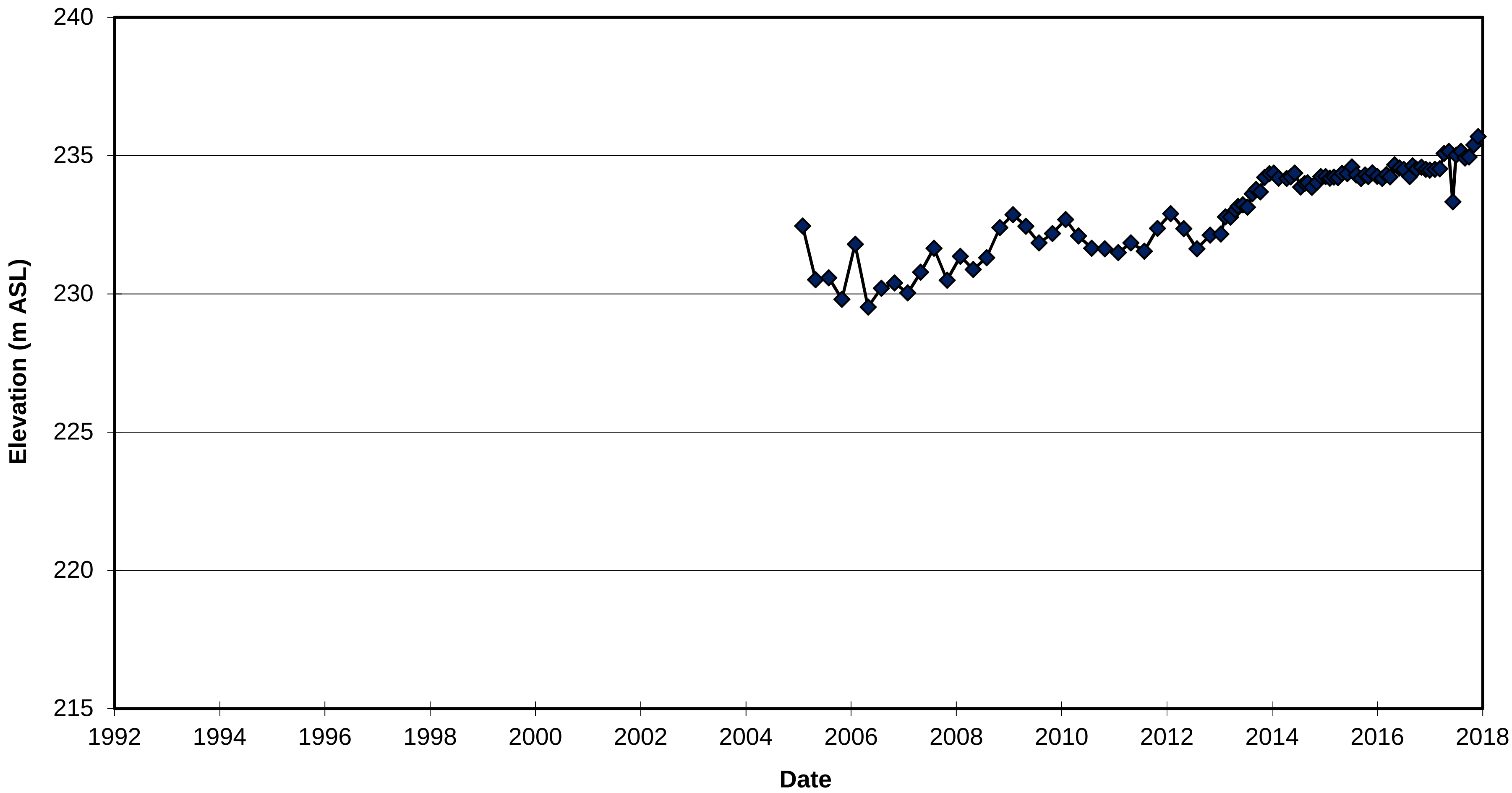


FIGURE G-18
LEACHATE HYDROGRAPH - LW6-04
GREEN LANE LANDFILL

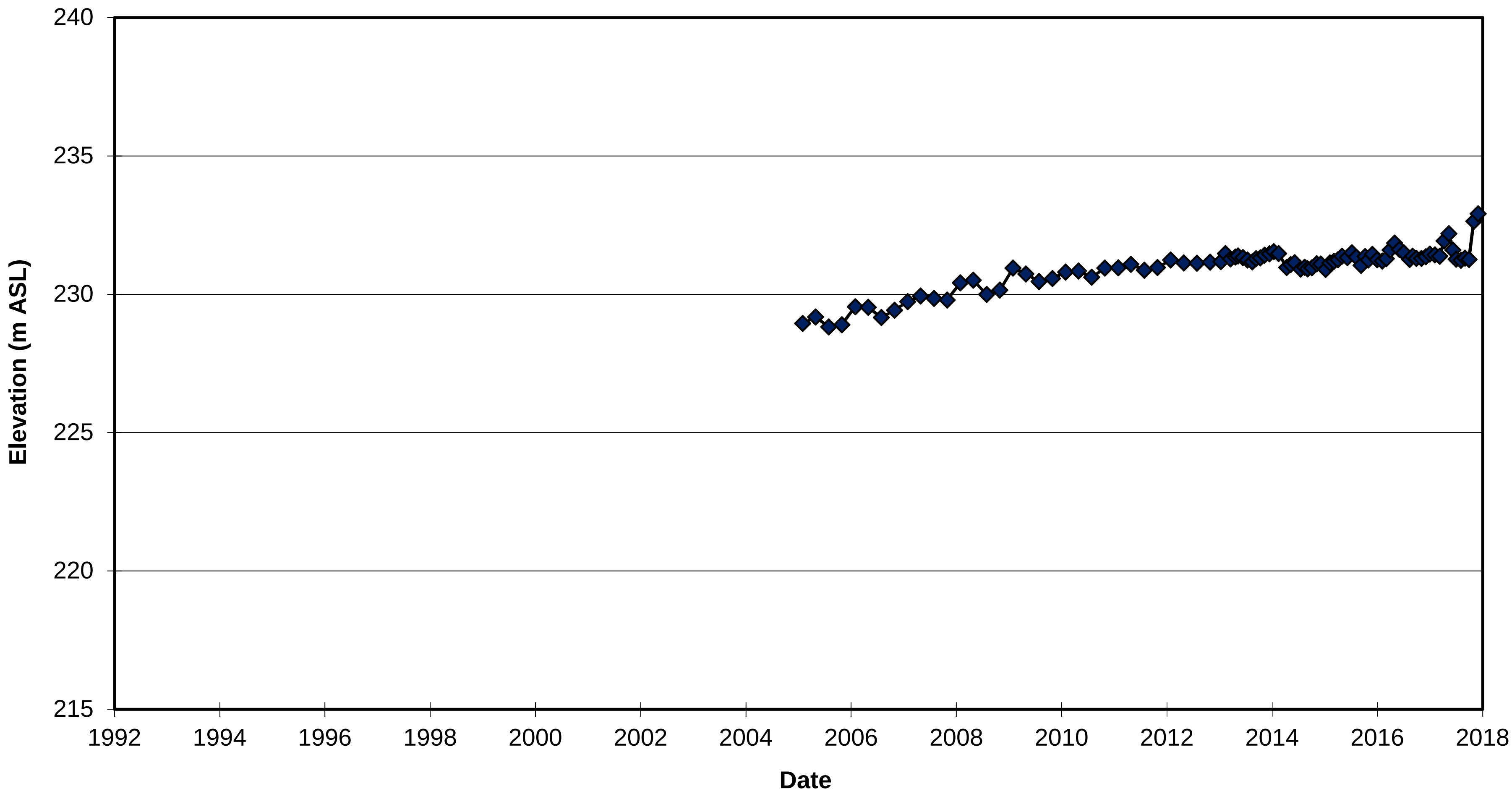


FIGURE G-19
LEACHATE HYDROGRAPH - LW7-09
GREEN LANE LANDFILL

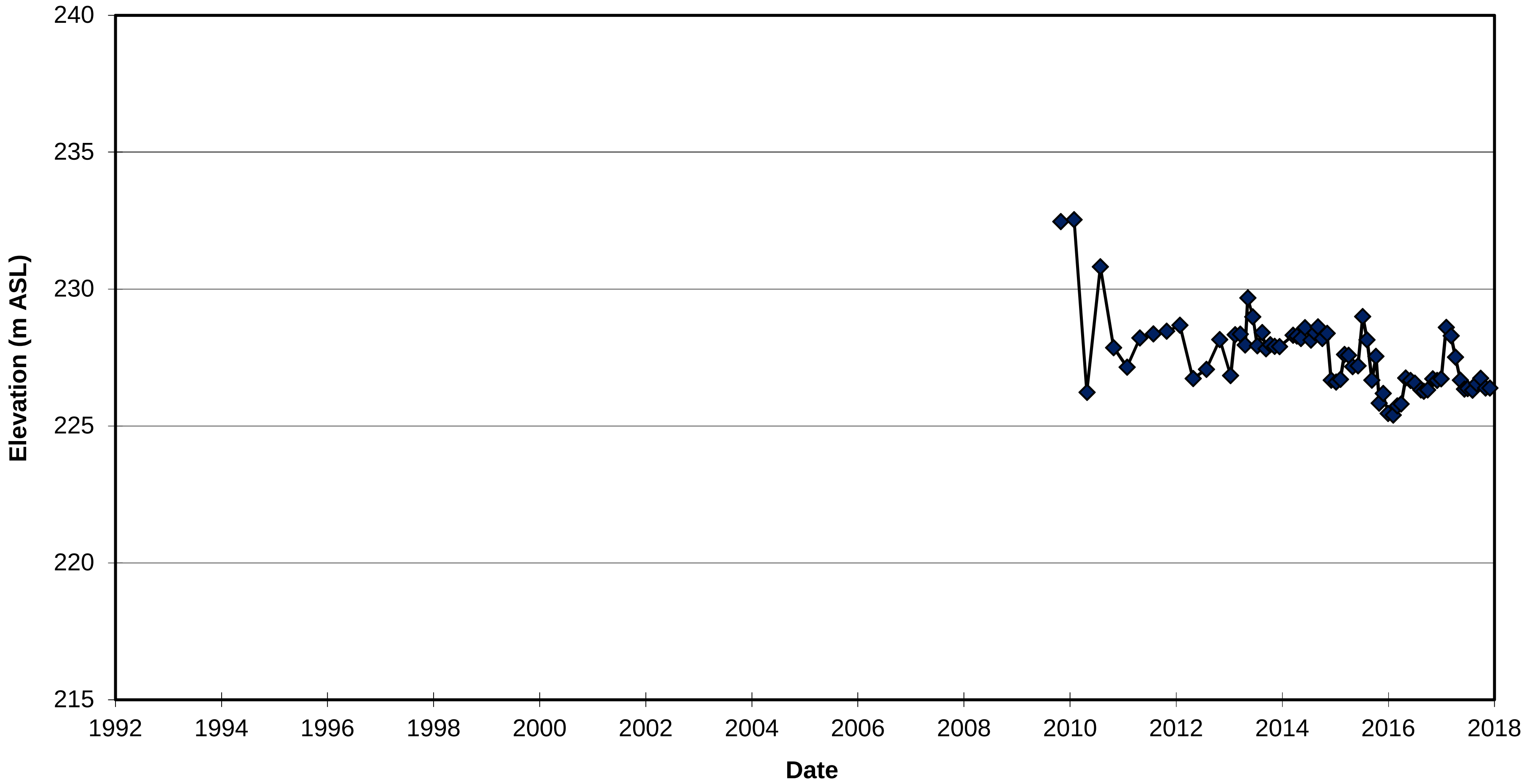


FIGURE G-20
LEACHATE HYDROGRAPH - LW8-09
GREEN LANE LANDFILL

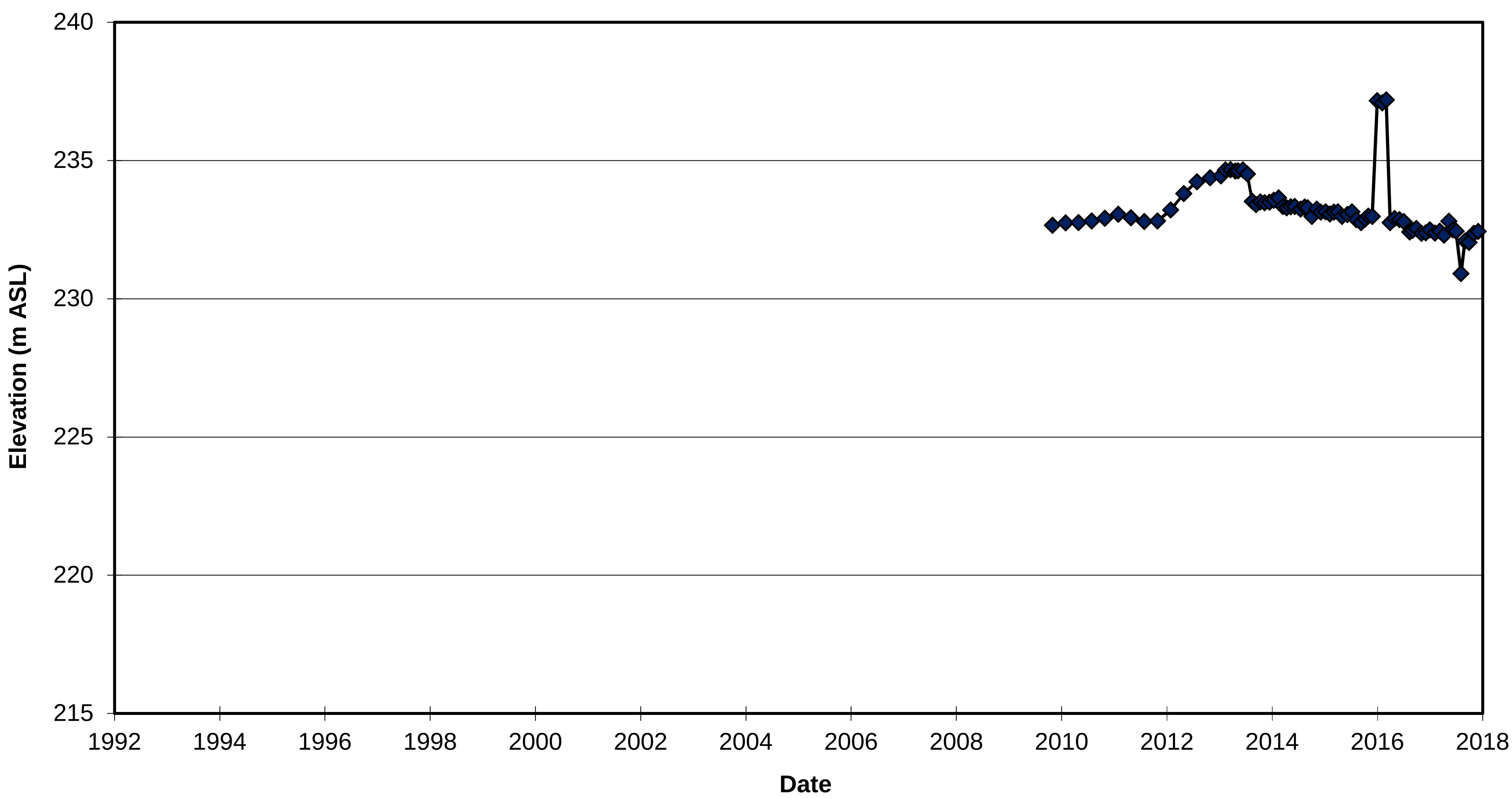


FIGURE G-21
LEACHATE HYDROGRAPH - LW9-13
GREEN LANE LANDFILL

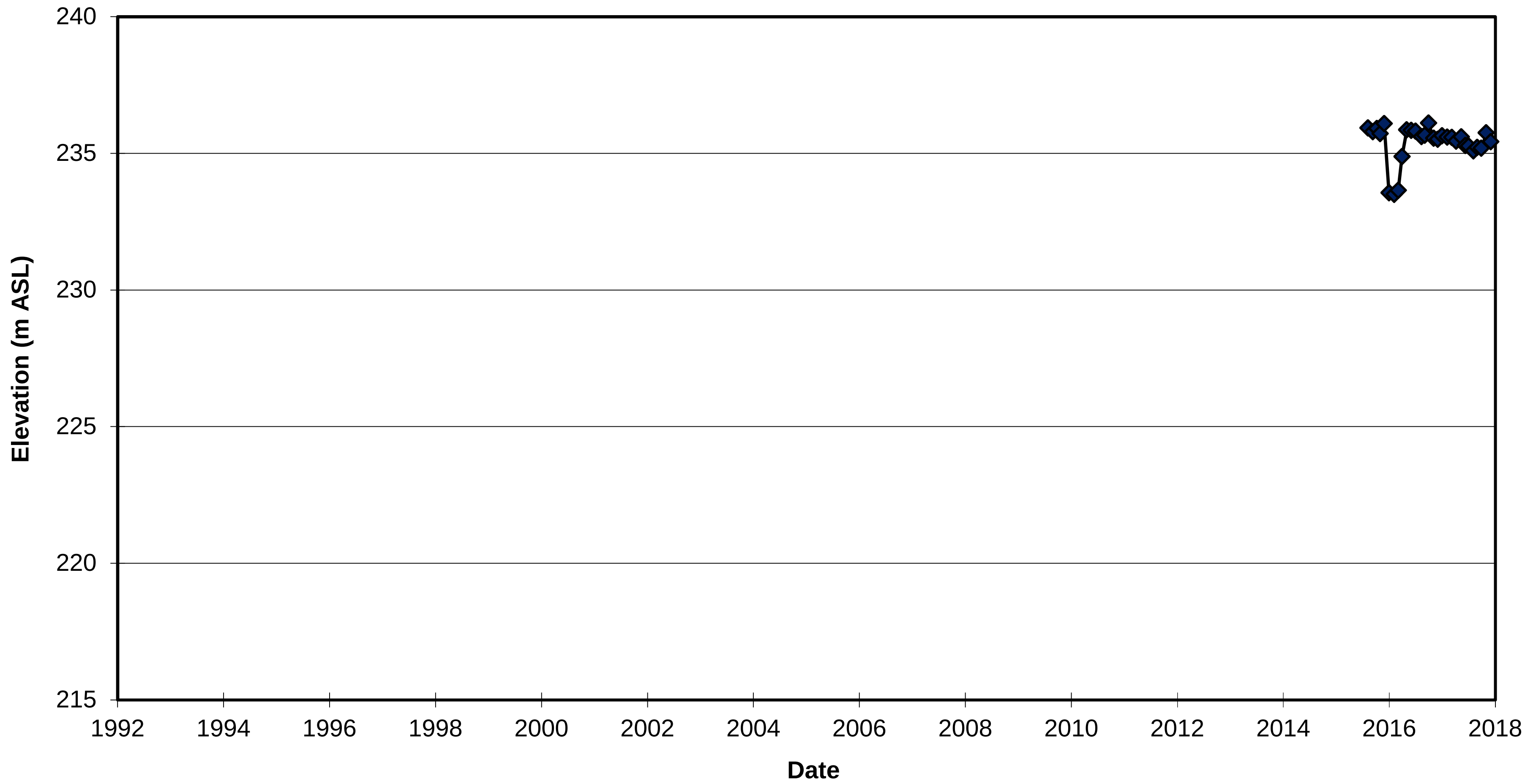


FIGURE G-22
LEACHATE HYDROGRAPH - MH11
GREEN LANE LANDFILL

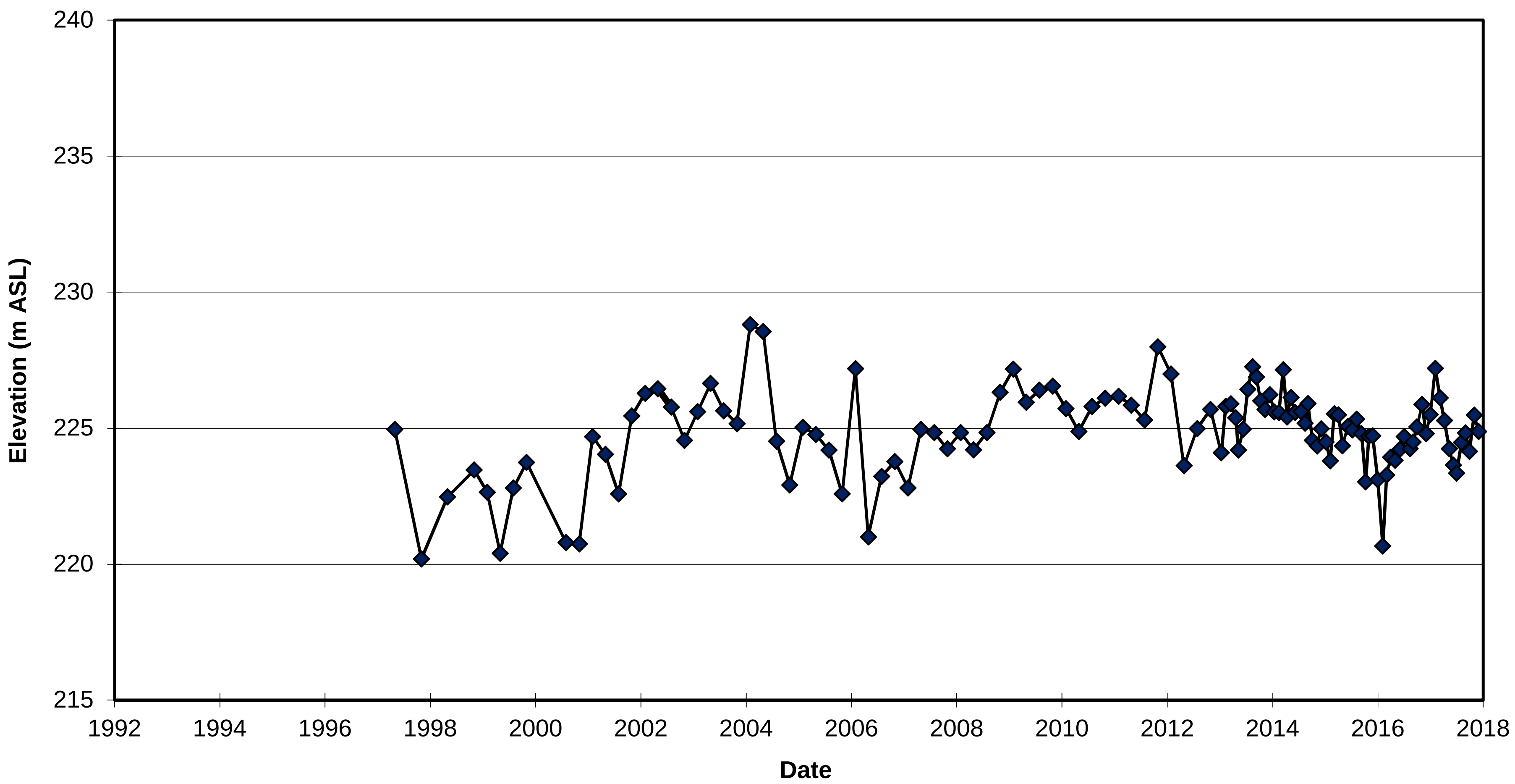


FIGURE G-23
LEACHATE HYDROGRAPH - MH19
GREEN LANE LANDFILL

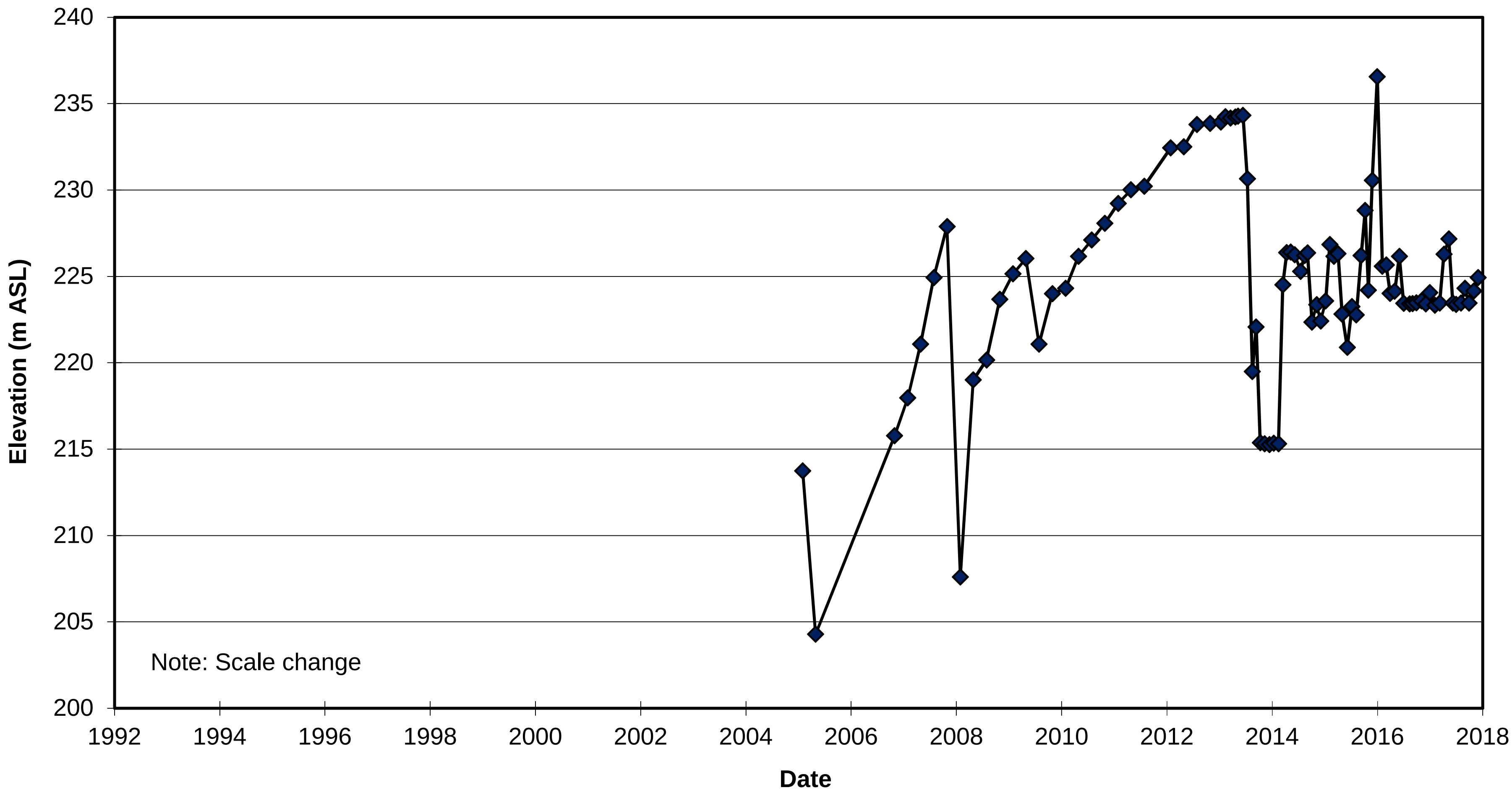
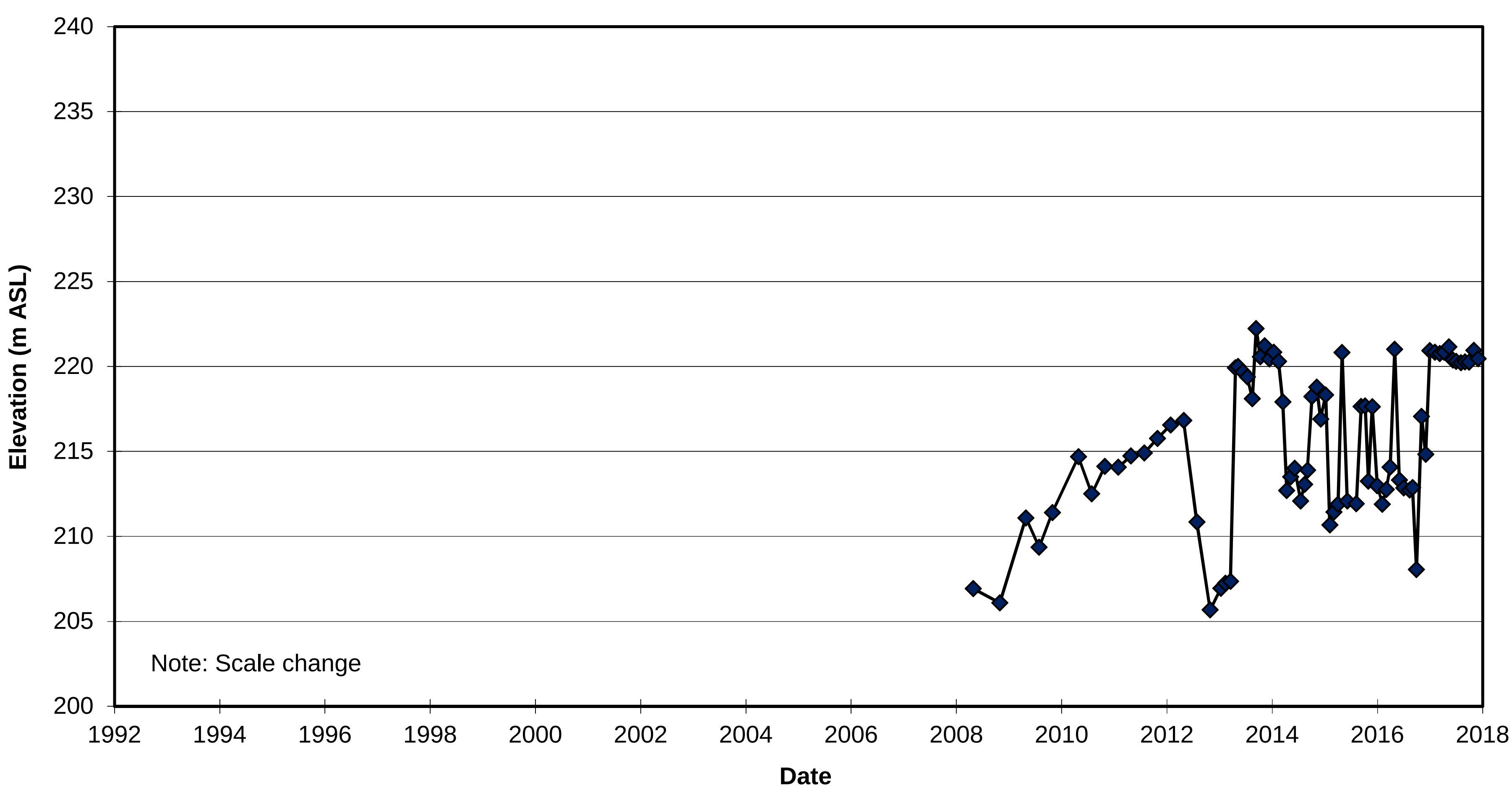
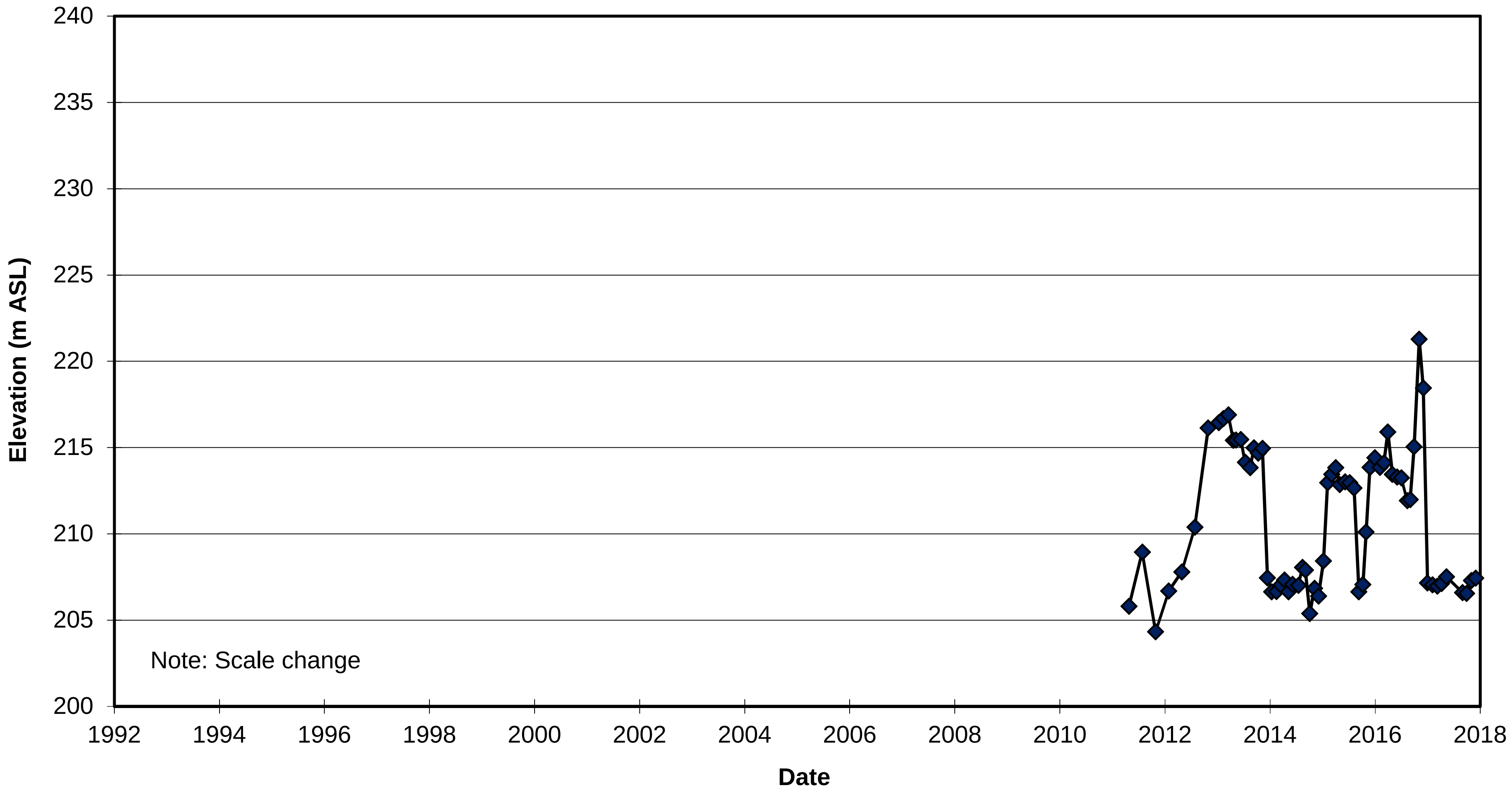


FIGURE G-24
LEACHATE HYDROGRAPH - MH23
GREEN LANE LANDFILL



wsp

FIGURE G-25
LEACHATE HYDROGRAPH - MH29
GREEN LANE LANDFILL



APPENDIX

H

2017 BENTHIC MICROINVERTEBRATE MONITORING REPORT

CITY OF TORONTO

2017 BENTHIC MACROINVERTEBRATE MONITORING REPORT

GREEN LANE LANDFILL

FEBRUARY 2018

2017 BENTHIC MACROINVERTEBRATE MONITORING REPORT

GREEN LANE LANDFILL

CITY OF TORONTO

PROJECT NO.: 121-25411-00
DATE: FEBRUARY 2018

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1 Introduction

The following 2017 Benthic Macroinvertebrate Monitoring Report for the Green Lane Landfill Site has been prepared by WSP Canada Inc. (WSP) on behalf of the City of Toronto. The Landfill Site is currently owned and operated by the City of Toronto and is located on portions of Lots 21, 22, and 23, Concession 3, Southwold Township, County of Elgin, Ontario. The Landfill Site is just north of Highway 401 and occupies a total area of approximately 129.7 hectares.

This report was prepared in compliance with the Amended Provisional Certificate of Approval (CofA) for a Waste Disposal Site No. A051601 issued on July 5, 2007 with amendments to March 10, 2011 (current CofA). A benthic sampling and reporting program is also required as part of the Amended Environmental Compliance Approval (ECA) Number 0685-92VMQX issued on January 17, 2013 (LTP ECA).

In late September 2011, the treated effluent forcemain was redirected from the Polishing Basin to Stormwater Management (SWM) Pond 5B, in accordance with the LTP design. Discharge of final effluent to SWM Pond 5B commenced in March 2012. From SWM Pond 5B, the treated effluent and stormwater flow through SWM Ponds 5A and 4 to SWM Pond 3, from which it is pumped to SWM Pond 6 following acceptable pre-discharge sampling results. The stormwater and treated effluent then flows via gravity from SWM Pond 6 to the Polishing Basin, ultimately discharging to Dodd Creek.

The annual benthic monitoring program involves monitoring of two stations along Dodd Creek; one upstream (Station 5) of the discharge channel outlet, and one downstream (Station 6). Baseline macroinvertebrate sampling and analysis was completed in 1999, 2000, and 2001, prior to the commencement of surface water and treated LTP effluent discharge to Dodd Creek. From 2002 through 2006, Natural Resource Solutions Inc. (NSRI) completed the benthic monitoring programs, and then from 2007 through 2012 the programs were completed by Conestoga-Rovers & Associates (CRA). In 2013, WSP took over the monitoring programs. The results of the 2017 benthic monitoring program are presented within this report.

A map indicating the location of monitoring stations, SWM Pond 6, the Polishing Basin, discharge channel, and Dodd Creek is presented as Figure 1. General characteristics of Dodd Creek are presented in Table 1.

1.1 Objectives for 2017

The objectives for the 2017 benthic monitoring program are as follows:

- Determine if landfill activities are impacting the invertebrate communities of Dodd Creek;

- Assess the degree to which the present monitoring protocols can determine landfill impacts; and,
- Identify measures which can improve the effectiveness of the monitoring program in fulfilling the afore-mentioned objectives.

2 Methodology

2.1 Sample Collection

The 2017 benthic macroinvertebrate monitoring program was conducted on May 24, 2017. Two Surber samples and two timed kick-and-sweep samples were collected at both sample locations (Station 5 and Station 6). Station 5 is located upstream of the discharge outlet channel, and Station 6 is located downstream of the discharge outlet channel. The sample station locations are presented on Figure 1.

Sample collection involved standard methods as outlined within the BioMAP protocol (Griffiths, 1999). Quantitative sample collection was completed using a 500 micron (µm) mesh 30 cm x 30 cm Surber sampler. All gravel, cobble, and detritus located within the sample area were scrubbed to remove any potentially attached benthic macroinvertebrates for inclusion in the sample containers. Care was taken to include all materials within the sample location before being replaced within the watercourse.

A 500 micron mesh kick net was then used to collect standardized three (3) minute timed ‘kick and sweep’ samples, with one sample and one replicate at each station. As with the quantitative sampling methodology, care was taken to scrub any materials present within the sample area to remove any potentially attached benthic macroinvertebrates.

Samples were preserved in isopropanol solution and submitted to Dr. Richard Bland of Bland Associates in London, Ontario, for taxonomic identification and enumeration. Specimens were identified to the lowest practical level.

Water quality measurements were collected at both sample stations using a Hanna Combo pH and EC waterproof tester to obtain temperature, pH, and conductivity data, and a YSI ProDO handheld optical dissolved oxygen meter to measure dissolved oxygen.

2.2 Biomap Values

The BioMAP Water Quality Index (WQI) was originally developed to provide a single ‘tolerance value’ representing the average of all tolerance values for all species within a benthic community. BioMAP WQI were calculated for the macroinvertebrate data as per the methods set out in Griffiths (1999). The two measures of BioMAP water quality are BioMAP WQI (d) and BioMAP WQI (q).

The BioMap WQI (d) expresses water quality as an abundance-weighted sensitivity value. This metric provides a quantitative indication of stream water quality. The following equation is used to calculate the WQI (d) from quantitative samples:

$$WQI(d) = \frac{[\sum (e^{SV_i} * \ln (x_i + 1))]}{[\sum \ln (x_i + 1)]}$$

Where:
SV_i is the sensitivity of the i^{th} taxon
X_i is the density of the i^{th} taxon
n is the number of taxa in the sample for which sensitivity values are available
ln is the natural logarithm
e is the number 2.718

Taxa without a sensitivity value, including damaged or unknown specimens and juveniles, are not included in the analysis.

The BioMAP WQI (q) expresses water quality based on the presence of taxa in a sample. The index is a qualitative assessment and takes into account the total taxonomic diversity at a given site, whether or not a sensitivity value is available. The following equation is used to calculate this index:

$$WQI(q) = 1/k\ [\sum (SV_i)]$$

Where:
k is an integer (n/4), k ≥ 4;
SVi is the integer value of the i^{th} ranked taxon (highest to lowest); and
n is the total number of taxa in the sample.

All taxa collected (from both quantitative and qualitative samples) were combined to create a single list of taxa for each station. The list was prepared in rank order from highest to lowest BioMAP sensitivity value.

Taxa without an assigned sensitivity value were not included in the analysis. WQI (q) is an assessment of the average sensitivity value for the top quartile of taxa at each station.

BioMAP WQI (q) and (d) values were developed for impaired versus unimpaired streams, creeks, and rivers (Griffiths, 1999). Values between the impaired and unimpaired ranges exist for each type of watercourse, and are identified as a ‘grey zone’ range. This zone was established to address uncertainty among experts in classifying water quality (Griffiths, 1999). BioMAP values that fall within the grey zone are not conclusive, and thus, water quality inferences are interpreted based on the BioMAP analyses in conjunction with additional community structure analyses.

Ranges of expected values for BioMAP were developed from gravel-bottom Ontario watercourses. Benthic monitoring of Dodd Creek at Green Lane has historically been compared to BioMAP WQI values for streams. The upper portion of Dodd Creek, in which Stations 5 and 6 are located, functions more as an agricultural drain than a defined creek or stream. It does not receive significant groundwater input. The drainage area for this portion of Dodd Creek is comprised of a clay plain, and thus the substrate in this section is extremely fine-grained and not representative of a typical southern Ontario gravel-bottom watercourse. These factors suggest that the monitoring locations are situated in a transitional watercourse that may not be accurately represented by the assumptions of the BioMAP protocol. Due to the transitional nature of Dodd Creek within the study area, the expected range of values for creeks may be more representative than comparison to the stream criteria. Within this report, the calculated BioMAP values have been compared to the expected range of values for both creeks and streams, as has been done over the past several years. The expected ranges of BioMAP WQI (q) and (d) values for both unimpaired and impaired creeks and streams are presented in Table 2.

2.3 Additional Metrics

In order to better interpret those samples which fall within the 'grey zone' of BioMAP water quality indices and to gain a better understanding of overall community structure, analysis of a large set of additional benthic metrics is recommended (Jones et al., 2007). Fifteen additional common metrics were calculated for complementary analysis of the BioMAP indices. Together, these metrics provide a comprehensive picture of the benthic macroinvertebrate community structure. They include:

- Density (total number of organisms per unit area);
- Taxa Richness per sample;
- Taxa Richness per Station;
- Percent Insects;
- Percent Chironomids;
- Percent Crustaceans;
- Percent Isopods;
- Percent Snails;
- Percent Bivalves;
- Percent Annelids;
- Percent Tubificids;
- Percent Flatworms;
- Percent Shredders;

- Percent Filter Feeders; and,
- Percent EPT (Ephemeroptera/Plecoptera/Tricoptera).

The expected range of values for these metrics in unimpaired, gravel substrate creeks and streams, as postulated by Griffiths (1999), are provided in Table 3. Impaired water quality is inferred when the results of these metrics fall outside of the expected ranges.

Ephemeroptera, Plecoptera and Tricoptera (EPT) are insects which are considered to be sensitive to pollution and are commonly found in all flowing systems. The EPT ratio is the total number of individuals found in the Ephemeroptera, Plecoptera and Tricoptera families divided by the total number of individuals in a sample. A higher EPT ratio is considered to represent more favourable water quality (Jones et al., 2007).

2.4 Certificate of Approval Trigger Level

Trigger levels as defined within the current CofA and the LTP ECA are defined as a variation of greater than twenty (20) percent as to the number of organisms as well as species richness observed between the two sampling locations; upstream and downstream of the discharge channel. While this is used as a general guideline to follow, the Ministry of Environment and Climate Change (MOECC) considers the trigger analysis a general guideline to determine if or when further investigation may be warranted.

3 Results and Discussion

3.1 Habitat Characterization

Both sampling stations are situated along Dodd Creek; one (Station 6) located approximately 25 m downstream of the discharge channel, with the other (Station 5) located approximately 25 m upstream of the discharge channel. Refer to Figure 1 for sampling station locations. Specific habitat characteristics at the time of the sampling event are outlined in Table 1.

Grasses and herbaceous plants were abundant along the banks of Dodd Creek at both sampling stations. Occasional trees and shrubs were present approximately 5-10 m from the creek edge on both banks. Planted trees dominate the west bank, with naturally growing deciduous trees on the east bank. Canopy cover at Station 5 was estimated to fall within the 25-49% range, which is an increase over previous years (0-24%). Canopy cover remained within the 0-24% range at Station 6.

Station 5 is located within a reach characterized by more natural pool/riffle sequences. The substrate was predominately hardpan clay, with small areas of gravel and cobble; though a higher proportion of silt was noted within pools. Small patches of emergent and submergent vegetation were present within the sampling area, generally within slower moving sections. Detritus and woody debris were present at the Station 5 sample locations. The substrate at Station 6 consisted of silty deposits within slower moving areas along the west stream bank, with hardpan clay and gravel within deeper areas of the central and eastern sections of the creek. Riffle conditions were not present in the vicinity of Station 6. There were no macrophytes or algae noted in the vicinity of Station 6, though woody debris and detritus were present. Refer to Appendix H-2 for a photographic record of the sampling stations.

At the time of the May 24, 2017 sample collection, the hydraulic characteristics of the creek at Stations 5 and 6 were more disparate than in previous years. The average wetted widths and average sample depths were generally lower at Station 5 than at Station 6. Average wetted widths were 4.0 m and 5.3 m at Stations 5 and 6, respectively, while average depths at the sample locations were 0.3 m and 0.7 m, respectively (Table 4). The hydraulic head at each station was measured as a surrogate for current speed. As expected based on channel measurements, the average hydraulic head was higher at Station 5 (6.8 mm) than Station 6 (2.5 mm). Measured water quality parameters (temperature, dissolved oxygen, pH, and conductivity) were slightly different between stations, with Station 6 having a lower conductivity, but higher temperature, pH, and dissolved oxygen (Table 5).

3.2 BioMAP Analyses

BioMAP Water Quality Indices were calculated from the samples collected at Station 5 and Station 6. The current results are summarized and presented in comparative tables with data from previous years for comparison (Table 6). Raw data is presented in Appendix H-1. All taxa identified during the 2017 monitoring event have sensitivity values of 0, 1 or 2; values which are typically associated with lentic (still water) systems such as lakes or ponds (0), large rivers or riverine marshes (1), or rivers and rocky near shore areas of lakes (2) (Griffiths, 1999). Species with sensitivity values in this range are generally tolerant of more extreme conditions. The absence of species with higher sensitivity values at both upstream and downstream locations, could be interpreted as impairment, as a system such as Dodd Creek should be predominantly represented by taxa commonly found within streams (sensitivity values of 3).

BioMAP WQI (d) values of <14 for creeks, and <10 for streams infer an impaired watercourse. The quantitative sample replicates from Stations 5 and 6 each contained insufficient numbers (<100) to calculate the BioMap WQI (d) index. As indicated by Griffiths (1999), pooling of the results from both quantitative samples can be done, if necessary, to achieve the 100 individuals needed to complete the analysis. In this case, sample sizes were too low at both stations to reach the 100 individual threshold required to complete this analysis in 2017.

Historic BioMap WQI (d) values for Stations 5 and 6 have generally indicated impairment in pre- and post-discharge sampling events. Exceptions include single samples collected at Station 5 in 2001 and 2002, which exceeded the expected threshold value (>16) for unimpaired creeks, but were not conclusively supported by WQI (q) results.

BioMAP WQI (q) values of <3.2 for creeks, and <2.6 for streams infer an impaired watercourse. Stations 5 and 6 both had BioMAP WQI (q) values of 2.0 based on the 2017 sample data. These results suggest that both Station 5 and Station 6 are impaired when compared to expected values for creeks and streams. The interpreted impairment of stations both upstream and downstream of the discharge point is consistent with historic analyses, both pre- and post-discharge.

3.3 Additional Metrics

The results of the additional metrics analyzed for Station 5 and Station 6 are presented within Table 7, and are further discussed in the following sections. The total yield using all sampling methodologies (two Surber samples and two kick-and-sweep samples) for the upstream station (Station 5) was 162 representing 28 taxa, while the downstream station (Station 6) was 97 representing 18 taxa. These yields are considerably lower than in previous years, particularly at Station 5, where totals of 2023 and 852 were captured in 2016 and 2015, respectively. At Station 6, yields decreased from 1405 in 2015 to 381 in 2016. The number of individuals captured at each station has fluctuated historically; however, the very low samples sizes obtained at both stations during 2017 are lower than recent historical ranges. Despite these lower yields, taxonomic richness for 2017 is similar to that observed in 2015 (29) and 2013 (29) at Station 5, and 2016 (21) and 2013 (22) at Station 6.

The conditions at both locations (high water levels, high turbidity) made it difficult to obtain a high quality Surber sample. Chronically low numbers within the quantitative samples may be linked to hydraulic conditions at the sample locations, but may be further exacerbated by temporal fluctuations in the benthic macroinvertebrate populations. Continued annual sampling will help to determine if the depressed yields are part of a longer-term shift in community structure and population density in Dodd Creek. Lower than normal yields cannot be attributed to effects of landfill discharge as yields at both the upstream (Station 5) and downstream (Station 6) stations were similarly depressed when compared to historical data.

Unless otherwise noted, results presented in the following sections focus primarily on the average values calculated for the kick and sweep samples. Due to the low samples sizes (< 100 individuals) obtained in 2017, the weighting of these metrics may be artificially skewed.

3.3.1 Station 5

Results from the 2017 sampling events yielded similar species and assemblages as previous years. The benthic community at Station 5 was largely comprised of chironomids (predominantly *Orthocladius* sp.) and riffle beetles (*Dubiraphia* sp.). Caenid mayflies (*Caenis* sp.) were also relatively common within the sample. These genera are typically associated with erosional lentic environments, and have adapted to life in silty conditions (Merritt, Cummins and Berg, 2008; Hellawell, 1986). Their predominance within the benthic community at this site is consistent with historical results (Conestoga-Rovers & Associates, 2013; WSP, 2017).

When compared to expected values for unimpaired creeks and streams, five parameters fell outside the range of expected values for creeks and/or streams, namely density, taxonomic richness (per sample), taxonomic richness (per site), percent chironomids, and percent filter feeders (Table 7).

In 2017, the average density at Station 5 (based on two quantitative samples), was 19 organisms per 0.05 m^2. This value is below the expected range of values for unimpaired creeks (50 – 200 organisms per 0.05 m^2) and streams (100 – 400 organisms per 0.05 m^2), and is considerably lower than the 2016 density of 109 organisms per 0.05 m^2. Taxonomic richness (per sample) and taxonomic richness (per site) were also found to be lower than the expected range of values for unimpaired creeks and streams with values of 12.5 and 19, respectively; whereas both metrics were within expected ranges during 2016 (22.5 and 32), respectively. While the 2017 values are lower than in 2016, the values are consistent with earlier data from 2015 (19 and 25) and 2013 (17.5 and 24), and likely reflect temporal fluctuations in population levels.

At 40%, average percent chironomids was higher than the expected values for unimpaired creeks and streams (10-30%), but is consistent with values observed in previous sample years. Chironomids are an important food source for a variety of aquatic organisms and thus, are important for a healthy food web within a riparian system. When a community contains a high proportion of chironomids it may be an indicator of environmental stress, as chironomids are commonly associated with organically enriched, silty conditions with relatively low dissolved oxygen conditions.

There were no filter feeders within the 2017 kick and sweep samples collected at Station 5; however, an average percent composition of 2% was obtained for the quantitative samples. Expected values for unimpaired creeks and streams are <10% and 10-30%, respectively. Percent filter feeders at this station have historically fallen below the expected range for unimpaired streams, and within the range for unimpaired creeks.

Percent EPT was higher than in recent years, at 18%; however, the genera represented in the sample are more tolerant taxa (e.g. *Caenis* sp.). Furthermore, there were no species with sensitivity values of 3 or 4 (most sensitive) within the samples at this station.

The results of the additional metrics support the impairment of sampling Station 5, inferred by the BioMAP WQI (q) analyses.

3.3.2 Station 6

The Station 6 benthic community was similar in composition to that at Station 5, with a very high proportion of tolerant taxa, including *Dubiraphia*, *Orthocladius* and *Caenis* species. Seven parameters were found to be outside the expected range of values for unimpaired creeks and streams, including density, taxonomic richness (per sample), taxonomic richness (per site), percent chironomids, percent tubificids, percent shredders and percent filter feeders.

In 2017, the average density at Station 6 was 7 organisms per 0.05 m^2, which is considerably lower than the density observed in 2016 (45 organisms per 0.05 m^2). As with Station 5, the observed density at Station 6 is below the expected values for unimpaired creeks (50 – 200 organisms per 0.05 m^2) and streams (100 – 400 organisms per 0.05 m^2). Though the 2017 average density at Station 6 was lower than that observed at Station 5, both sample locations have typically had densities that are lower than those expected for unimpaired streams (100 to 400 organisms per 0.05 m^2). Differences between the two stations during this sampling event may partly be accounted for by differences in flow rates, substrate composition, stream width, and stream depth.

Taxonomic richness (per sample) and (per site) at Station 6 were similar to those observed for Station 5, with values of 13.5 and 18. Both are below the expected range of values for unimpaired creeks and streams, but show a slight improvement over 2016 values for this station (9 and 11, respectively).

Percent chironomids (46%) and percent tubificids (4%) were outside the expected range for unimpaired creeks and streams. As with Station 5, percent filter feeders suggested possible impairment of water quality in Dodd Creek with a value of 5%, which is within the expected range of values for unimpaired creeks (<10%), but below that of unimpaired streams (10-30%). Percent shredders, with a value of 11%, was below the range of expected values for unimpaired creeks (20-40%), but was within the range for unimpaired streams (10-30%).

Percent EPTs was very similar for both stations, with 18% and 13% at Stations 5 and Station 6, respectively, and *Caenis* sp. accounting for the majority of the individuals at both stations. While the presence of EPTs is typically thought to indicate more favourable water quality, the most abundant species representing the EPT families had sensitivity values of 1 for both stations, which is consistent with more tolerant taxa (Griffiths, 1999).

The results of the additional metrics support the impairment of sampling Station 6 inferred by the BioMAP WQI (q) analyses. Given that dominant species at each station are similar, the higher number of parameters at Station 6 that fall outside expected values are likely a reflection in differences between the environments at the two stations, rather than a pronounced difference in water quality. Station 6 is characterized by siltier substrates, slower, deeper water, and reduced shading by riparian vegetation.

3.4 Certificate of Approval Trigger Analysis

A comparison of the total number of organisms and species richness for each station is presented within Table 8. As per the current CofA and LTP ECA, variations of ± 20% of the upstream values were calculated for both criteria. Table 8 also outlines the trigger values and acceptable ranges as outlined within approval documentation. The trigger level assessment indicated that both the total number of organisms and taxonomic richness reported for Station 6 (the downstream station) were outside the ± 20% of Station 5 (upstream station). The trigger analysis was completed using average values for the total number of organisms and taxonomic richness for the quantitative samples collected at each station. As identified in Section 3.3, smaller than recommended sample sizes were obtained at both Stations 5 and 6 (<100 organisms per sample). These smaller sample sizes may be skewing the results. Differences in substrate between the two stations may also influence community composition and structure. In addition, community composition differed between Station 5 and Station 6 within the quantitative samples used in this analysis; whereas the composition was more similar between the kick and sweep samples. Given these factors, inferences based on this analysis may not be representative.

4 Conclusions and Recommendations

The 2017 and historic benthic analysis of Stations 5 and 6 indicate that Dodd Creek is an impaired watercourse. The results of this sampling event suggest that the discharge outlet waters are not negatively impacting the water quality of Dodd Creek, with the differences between upstream and downstream benthic communities being similar to historic pre- and post-discharge values. Based on the results of the 2017 monitoring program, the following conclusions are presented:

— A biomonitoring profile consistent with impacted systems was observed at both upstream and downstream sampling locations.

— Sample sizes at the upstream and downstream stations were appreciably lower than in previous years. As these lower yields were obtained at both sample stations, and were not associated with significant shifts in community structure, these depressed numbers are not attributed to the discharge outlet waters. If low numbers persist, increasing sampling effort (longer kick and sweeps, multiple replicates per Surber sample) should be considered to increase yields.

— Less than 100 individuals were captured in the quantitative samples collected at Stations 5 and 6 in 2017. Numbers were still insufficient (< 100) when both quantitative samples were pooled for each station. As a result BioMAP WQI (d) values were not calculated for either station.

- Both the upstream and the downstream sampling stations were found to be impaired using the BioMAP WQI (q). This is consistent with findings from the pre- (1999 to 2001) and post-discharge (2002 to 2017) sampling events.
- The total number of organisms and the taxonomic richness reported for Station 6 was not within 20% of those reported for Station 5. Lower samples sizes (< 50% of Station 5 totals) for Station 6 may be skewing the results of this analysis, while differences in substrate between the two stations may also influence community composition and structure. Inferences based on this analysis may not be an accurate representation of the system.

The current approval documentation requires that benthic sampling be completed each year. It is recommended that sampling be continued to satisfy the requirements of the current CofA and LTP ECA, and that monitoring results continue to be compared to both creek and stream metrics for future sampling events and reporting.

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TABLES

Table 1
May 2017 Habitat Characteristics
2017 Benthic Macroinvertebrate Monitoring Report
Green Lane Landfill

Characteristics[(1)]	Station 5	Station 6
Substrate		
Dominant Substrate	Hard pan clay	Silt
Secondary Substrate	Gravel	Hard pan clay/gravel
Riparian Vegetative Community[(2)]		
Zone 1: 1.5 – 10 m[(3)]	Deciduous Forest/Deciduous Forest	Deciduous Forest/Meadow
Zone 2: 10 – 30 m	Deciduous Forest/Scrubland	Deciduous Forest/Meadow
Zone 3: 30 – 100 m	Deciduous Forest/Meadow	Deciduous Forest/Scrubland
Canopy Cover	25 – 49%	0 – 24%
Aquatic Macrophytes and Algae		
Macrophytes	Emergent and submergent macrophytes present	Macrophytes absent
Algae	Attached and floating algae, slimes present	Attached algae absent
Bankfull Width	4.2 m to 5.0 m	5.8 m to 6.3 m
Watercourse Characterization	Perennial	Perennial
Additional Observations	Little to no flow observed Better riffle conditions at this sample location	Little to no flow observed; Riffle conditions were not present at this location

(1) Habitat characteristics described according to the Ontario Benthos Biomonitoring Network Field Sheet for Streams (Jones et al., 2007).
(2) Riparian vegetation is listed as right bank / left bank, facing upstream (e.g. Station 6 Zone 1, the right bank is deciduous forest and the left bank is meadow).
(3) Distances are approximated from the water's edge.

Table 2
Range of BioMAP Values
2017 Benthic Macroinvertebrate Monitoring Report
Green Lane Landfill

Watercourse Type	Water Quality Index[1]	Impaired	Unimpaired
Creek			
	BioMAP (d)	< 14	> 16
	BioMAP (q)	< 3.2	> 3.4
Stream			
	BioMAP (d)	< 10	> 12
	BioMAP (q)	< 2.6	> 3.0

[1] Source: Griffiths, R.W. 1999. BioMAP: Bioassessment of Water Quality.

Table 3
Range of Expected Values for Metrics
2017 Benthic Macroinvertebrate Monitoring Report
Green Lane Landfill

	Range of Expected Unimpaired Values Creeks[(1)]	**Range of Expected Unimpaired Values Streams[(1)]**
Density (no./per 0.05 m^2)	50 – 200	100 - 400
Taxa Richness (per sample)	15 – 30	20 - 40
Taxa Richness (per site)	20 – 40	30 - 60
% Insects	> 90	> 80
% Chironomids	10 – 30	10 - 30
% Crustaceans	< 3	< 10
% Isopods	< 1	< 3
% Snails	< 1	< 5
% Bivalves	< 3	< 5
% Annelids	< 5	< 5
% Tubificids	< 1	< 2
% Flatworms	< 3	< 3
% Shredders	20 – 40	10 - 30
% Filter Feeders	< 10	10 – 40

(1) Source: Griffiths, R.W. 1999. BioMAP: Bioassessment of Water Quality, Range of expected values for unimpaired, gravel-bottom creeks and streams.

Table 4
May 2017 Sampling Station Properties
2017 Benthic Macroinvertebrate Monitoring Report
Green Lane Landfill

Station	Sample	Sampling Depth (m)	Wetted Width (m)	Hydraulic Head (mm)	Collection Method
Station 5	5-S1	0.06	3.7	4	Surber
	5-S2	0.3	3.7	13	Surber
	5-1	0.4	3.8	7	Kick and Sweep (3 min)
	5-2	0.6	4.8	3	Kick and Sweep (3 min)
Station 6	6-S1	0.6	5.3	3	Surber
	6-S2	0.7	5.3	3	Surber
	6-1	0.8	5.0	1	Kick and Sweep (3 min)
	6-2	0.6	5.7	3	Kick and Sweep (3 min)

Table 5
Measured Water Quality
2017 Benthic Macroinvertebrate Monitoring Report
Green Lane Landfill

Station	Water Temperature (°C)	pH	Dissolved Oxygen (mg/L)	Conductivity (mS/cm)
Station 5	16.2	7.14	11.2	590
Station 6	16.8	8.11	12.3	565

Table 6
Comparative BioMAP Analyses
2017 Benthic Macroinvertebrate Monitoring Report
Green Lane Landfill

Pre-discharge BioMAP Water Quality Indices

Year	1999				2000				2001			
Station	5		6		5		6		5		6	
Duplicate	1	2	1	2	1	2	1	2	1	2	1	2
BioMAP (d)	6.09	5.91	5.97	6.12	12.16	7.75	7.74	11.67	5.97	16.81	5.94	6.03
BioMAP (q)	2.5		2.6		2.5		2.6		2.4		2.2	

Post-discharge BioMAP Water Quality Indices

Year	2002				2003				2004				2005			
Station	5		6		5		6		5		6		5		6	
Duplicate	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
BioMAP (d)	13.49	16.75	7.49	5.84	11.71	IN	5.09	6.23	IN	7.05	IN	IN	7.73	9.69	IN	9.41
BioMAP (q)	2.6		2.3		2.75		2.29		2.22		2.56		2.22		2.28	

Year	2006				2007				2008				2009			
Station	5		5		5		6		5		6		5		6	
Duplicate	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
BioMAP (d)	NC		NC		4.82	4.92	5.0	5.06	IN	IN	3.9	IN	IN		IN	
BioMAP (q)	2.5		2.5		2.2		2.1		2.4		2.6		2.09		2.33	

Year	2010				2011				2012				2013			
Station	5		6		5		6		5		6		5		6	
Duplicate	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
BioMAP (d)	IN	6.79	IN		IN		IN		3.37	3.81	IN	IN	4.05	4.69	4.70	3.92
BioMAP (q)	2.11		2.09		2.36		2.10		2.10		1.95		1.84		2.00	

Year	2014				2015				2016				2017			
Station	5		6		5		6		5		6		5		6	
Duplicate	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
BioMAP (d)	IN		IN		5.11		IN		4.25	4.54	NC		IN		IN	
BioMAP (q)	2.2		2.2		2.33		2.57		2.4		2.0		2.0		2.0	

Notes: Sampling and analysis from 1999 to 2006 was conducted by Natural Resource Solutions Inc. (NRSI); sampling and analysis from 2007 to 2012 was conducted by Conestoga-Rovers and Associates (CRA); sampling for 2013 to 2017 was completed by WSP Canada Inc.
IN – Insufficient numbers to calculate the index (<100 individuals per sample); NC – Not comparable to previous years (replicates were pooled)

Table 7
Additional Benthic Macroinvertebrate Metrics
2017 Benthic Macroinvertebrate Monitoring Report
Green Lane Landfill

	Range of Expected Unimpaired Values	Range of Expected Unimpaired Values	Station 5						Station 6					
	Creeks[1]	Streams[1]	Surber: Replicate 1	Surber: Replicate 2	Surber: Average	Kick and Sweep: Sample 1	Kick and Sweep: Sample 2	Kick and Sweep: Average	Surber: Replicate 1	Surber: Replicate 2	Surber: Average	Kick and Sweep: Sample 1	Kick and Sweep: Sample 2	Kick and Sweep: Average
Density (No. per 0.05 m^2) [2]	50 - 200	100 - 400	16	23	**19**	n/a	n/a	**n/a**	6	8	**7**	n/a	n/a	**n/a**
Taxa Richness (per sample)	15 - 30	20 - 40	11	10	**10.5**	16	9	**12.5**	5	5	**5**	15	12	**13.5**
Taxa Richness (per site)	20 - 40	30 - 60			**17 (pooled)**			**19 (pooled)**			**6 (pooled)**			**18 (pooled)**
% Insects	> 90	> 80	93	97	**95**	97	95	**96**	80	93	**87**	98	91	**94**
% Chironomids	10 - 30	10 - 30	57	45	**51**	32	47	**40**	30	40	**35**	40	53	**46**
% Crustaceans	< 3	< 10	4	0	**2**	3	0	**1**	0	0	**0**	0	3	**2**
% Isopods	< 1	< 3	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
% Gastropods	< 1	< 5	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
% Bivalves	< 3	< 5	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
% Annelids	< 5	< 5	4	2	**3**	0	5	**2**	20	7	**13**	2	6	**4**
% Tubificids	< 1	< 2	4	0	**2**	0	0	**0**	20	7	**13**	2	6	**4**
% Flatworms	< 3	< 3	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
% Shredders	20 - 40	10 - 30	32	33	**33**	13	38	**25**	0	13	**7**	3	19	**11**
% Filter Feeders	< 10	10 – 40	4	0	**2**	0	0	**0**	10	0	**5**	8	3	**5**
% EPT	N/A	N/A	7	7	**7**	23	14	**18**	10	3	**7**	18	9	**13**

(1) Source: Griffiths, R.W. 1999. BioMAP: Bioassessment of Water Quality, Range of expected values for unimpaired gravel bottom creeks and streams
(2) Rounded to nearest whole value
n/a – Data cannot be calculated using the noted sampling methodology.

Table 8
Certificate of Approval Trigger Values
2017 Benthic Macroinvertebrate Monitoring Report
Green Lane Landfill

Criteria[1]	Station 5 (Dodd Upstream)	Station 6 (Dodd Downstream)	20% of Station 5	Acceptable Range (+/- 20% of Station 5) [3]	Within Range (Yes/No)
Total number of organisms [2]	35	12.5	7	28 – 42	NO
Taxonomic richness [2]	10.5	5	2	8 – 13	NO

[1] Criteria as required in Schedule 'C' Certificate of Approval A051601.
[2] Based on the average of the Surber sample results.
[3] Rounded to the nearest whole value.

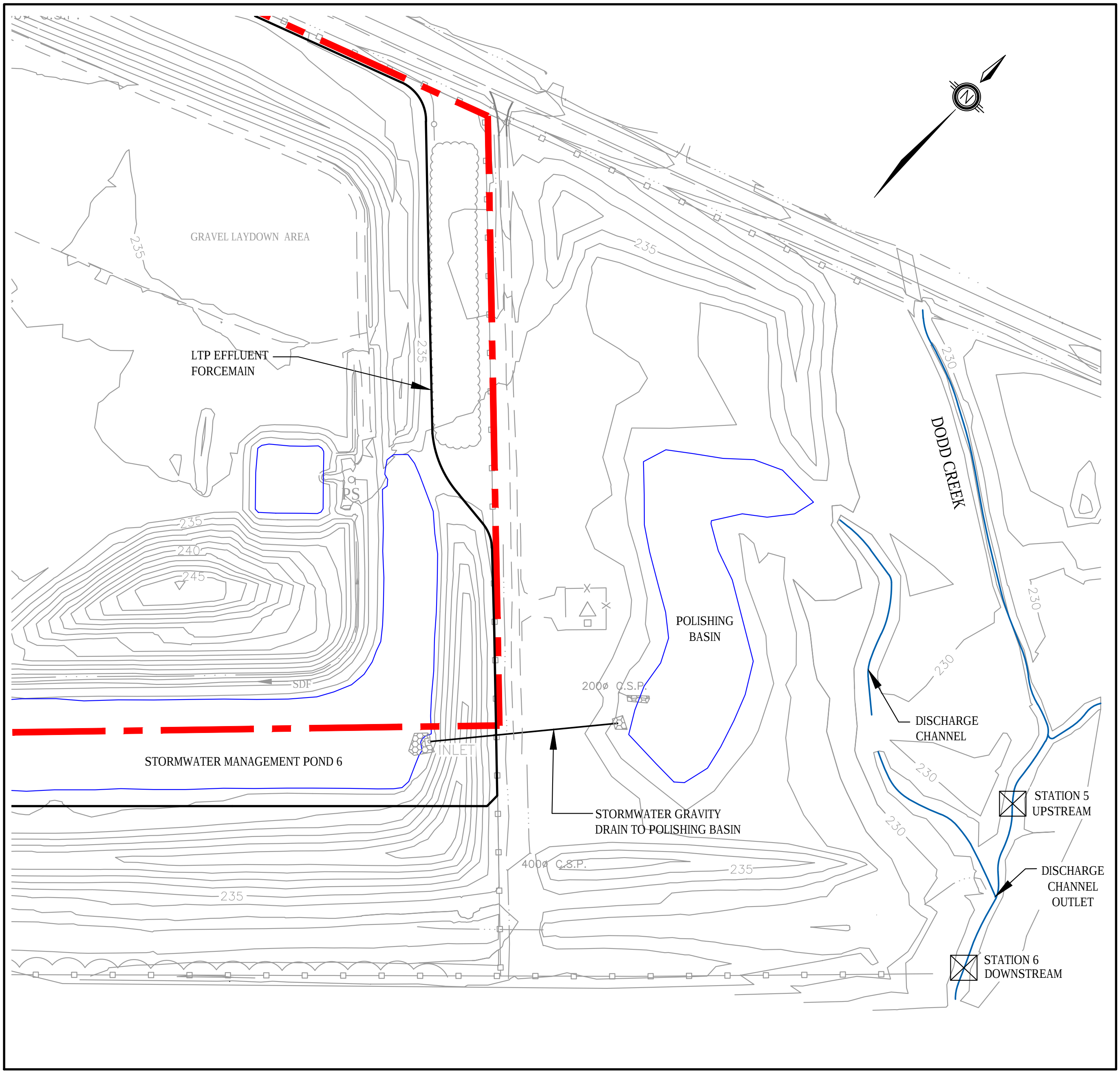
FIGURES

FIGURE 1 DODD CREEK WATERSHED SAMPLING LOCATIONS

Map depicting the location of Station 5 Upstream and Station 6 Downstream in Dodd Creek – the location of surface water sampling locations.

Green Lane LANDFILL

TORONTO



wsp

300 - 4 HUGHSON STREET SOUTH
HAMILTON (ONTARIO) CANADA L8N 3Z1
TEL.: 905-529-4414 - FAX.: 905-521-2699 - WWW.WSP.COM

TITLE:

DODD CREEK WATERSHED SAMPLING LOCATIONS
2017 BENTHIC MACROINVERTEBRATE
MONITORING REPORT

PROJECT NO: 121-25411-00

DATE: FEBRUARY 2018

DRAWING NO: FIGURE 1

H-1 RAW DATA COUNTS

Appendix H-1: 2017 Benthic Macroinvertebrate Monitoring Raw Data Counts: Green Lane Landfill (May 24, 2017)

			Station 5				Station 6			
Group	**Family**	**Taxon**	**Surber-1**	**Surber-2**	**K&S-1**	**K&S-2**	**Surber-1**	**Surber-2**	**K&S-1**	**K&S-2**
HIRUDINEA	Glossiphoniidae	Glossiphonia complanata				1				
OLIGOCHAETA	Lumbricidae	Lumbricidae juvs		1						
	Tubificidae	Immatures without hair chaetae	1				2	1	1	2
AMPHIPODA	Hyalellidae	Hyalella azteca	1		2					1
COLEOPTERA	Dytiscidae	Agabus sp. larvae	1							
	Elmidae	Dubiraphia sp. larvae	6	5	23	5	4	6	10	9
		Dubiraphia minima		10	6	2			3	
		Stenelmis sp. larvae		1						
		Stenelmis crenata		3						
	Scirtidae	Prionocyphon sp.							2	
DIPTERA	Ceratopogonidae	Ceratopogonidae type I							1	
	Chironomidae	Pupae	2						2	2
	Chironominae	Chironomus sp.			2	1	2	4	1	2
		Cladopelma sp.							1	
		Cryptochironomus sp.			1					
		Endochironomus sp.							1	1
		Microtendipes sp.			1					
		Polypedilum halterale				2				
		Stictochironomus sp.		2		4		2		4
		Tribelos sp.								1
		Cladotanytarsus sp.					1		2	1
		Paratanytarsus sp.	1						1	
	Orthocladiinae	Chaetocladius sp.			1	1				
		Orthocladius sp.	8	12	6	2				
		Orthocladiinae early instars	4	5	11				7	5
	Tanypodinae	Conchapelopia sp.			1					
		Procladius sp.	1						1	1
EPHEMEROPTERA	Caenidae	Caenis sp.	2	2	12	3	1	2	5	3
	Heptageniidae	Stenonema femoratum							2	
HEMIPTERA	Corixidae	Corixidae nymphs			1					
		Trichocorixa pb borealis	1							
PLECOPTERA	Perlidae	pb Perlesta placida incpte		1	1					
	Perlodidae	Isoperla nana			1					
TRICHOPTERA	Leptoceridae	Nectopsyche sp.			1					
	Limnephilidae	Limnephilidae early instars			1					
		Totals	**28**	**42**	**71**	**21**	**10**	**15**	**40**	**32**

H-2 PHOTO LOG

Appendix H-2: Photo Log
2017 Benthic Macroinvertebrate Monitoring Report, Green Lane Landfill

Image 1: Dodd Creek, upstream of LTP discharge at Station 5, looking upstream.

Image 2: Dodd Creek, upstream of LTP discharge at Station 5, looking downstream.

Image 3: Dodd Creek, downstream of LTP discharge at Station 6, looking upstream.

Image 4: Dodd Creek, downstream of LTP discharge at Station 6, looking downstream.

APPENDIX

I

GAS ANALYSIS RESULTS/GAS SAMPLE COLLECTION PROTOCOL

LANDFILL GAS COLLECTION AND SAMPLE HANDLING PROTOCOLS

GREEN LANE LANDFILL

The following summarizes the landfill gas sample collection and handling protocols:

- Take a pressure measurement by connecting a digital manometer to the landfill gas sampling port on the pressure side of the blower on the main header located at the flaring station, and take a reading;
- Take a field measurement of the landfill gas composition with a combustible gas meter. Initially purge the gas meter according to the manufacturer's recommendations in ambient air. Then connect the combustible gas meter directly to the landfill gas sampling port on the pressure side of the blower on the main header, take a reading, and remove the combustible gas meter;
- Attach a Tedlar bag to the sampling port on the pressure side of the blower on the main header and slowly let the bag inflate due to the landfill gas, purging the Tedlar bag. Deflate the Tedlar bag in order to prepare for the sample collection. Repeat twice;
- Inflate the Tedlar bag a third time to collect the sample. Let the Tedlar bag slowly inflate until it is nearly filled (ie. allow for some expansion of bag) and attach the sample identification label. Store Tedlar bags in cooler for transport to the laboratory;
- Ship to laboratory within 24 hours of sample collection and under a chain of custody. The landfill gas samples collected are to be analyzed for the following parameters: oxygen, carbon dioxide, carbon monoxide, methane, and non-methane organic compounds; and
- All sample collection information is to be written in a bound field book.

APPENDIX

J

MONTHLY WASTE REPORTS

TORONTO

E. Anne Hiscock
Manager

Green Lane Landfill
Solid Waste Management Services
38593 Third Line, R.R. 7
St. Thomas, ON N5P 3T2

Tel: 519-652-0909
Fax: 519-652-9286
ahiscoc@toronto.ca

January 4, 2018

Mr. Joe Ovcjak, P.Eng., DCE
Director Waste Management Ontario
Environment
WSP Canada Inc.
4 Hughson Street South Suite 300
Hamilton, ON L8N 3Z1

Dear Mr. Ovcjak:

Re: Green Lane Landfill, Amended Environmental Compliance Approval No. A051601
2017 Tonnage Summary

This letter will confirm the waste tonnages disposed of at Green Lane Landfill during the 2017 calendar year of operations. These data were previously provided to WSP Canada Inc. on a regular basis throughout the year.

The summary of waste quantities disposed of in 2017 by month is presented in Attachment A.

Yours truly,

E. Anne Hiscock, B.A., LL.B.
Manager – Green Lane Landfill
Solid Waste Management Services
City of Toronto

cc: Derek Angove, Director
Processing & Resource Management
City of Toronto

TORONTO

ATTACHMENT A

Green Lane Landfill
Summary of Waste Disposal Quantities in 2017

Month (2017)		*Quantity of Waste (tonnes)*
January		41,862.61
February		34,761.65
March		44,652.33
April		39,865.93
May		47,582.95
June		47,860.50
July		46,084.04
August		32,698.83
September		42,055.70
October		41,954.76
November		42,080.49
December		33,671.78
	Total:	495,131.57

APPENDIX

K

COMPLAINTS RECEIVED BY MOECC AND GREEN LANE LANDFILL

Summary of Complaints & Green Lane Landfill's Responses prepared for the Green Lane Landfill Public Liaison Committee

Amended Certificate of Approval dated July 5, 2007
Condition 76 p and Condition 97

Reporting Period: January 1, 2017 to March 21, 2017

JANUARY 2017 (6 complaints – odour)

Jan. 9, 2017
Details: On Mon. Jan. 9th, Shayne Peake at 7079 Colonel Talbot Road called the landfill offices at about 3:30 pm to report that the landfill was "smelling up his farm" at the time of his call. No other details about the odour were provided during this call.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

Staff conducted an investigation of this report and were at the complainant's location at about 3:50 pm. Staff did not detect any landfill-related odours in the complainant's general or immediate area. In addition staff did not detect any other types of odours in the vicinity. Similar observations were made during a routine vicinity tour by staff earlier on the day of this report. Our weather data showed the winds to be out of the W-SW at low to moderate speeds, in the general direction of the complainant's location. Based on the above, the source of the odour reported could not be confirmed.

Report to MOECC: Reported to SAC at 4:10 pm and MOECC Jeff Mills at 4:16 pm as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Jan. 12, 2017
Details: On Thurs. Jan. 12th, Ted Farrington at 38727 Talbot Line called our offices at about 1:28 pm to report a landfill odour at his location.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the NW at low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill related odour at the complainant's location immediately following receipt of this report; however, staff did confirm faint refuse odour at points NW of his location. Based on the above, the source of the reported odour was likely refuse-related.

Report to MOECC: Reported to SAC at 2:18 pm and MOECC Jeff Mills at 2:29 pm as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Jan. 15, 2017
Details: On Sun. Jan. 15th, Barry Harrison at 40075 Longhurst Line called our offices afterhours at about 10:29 am to report an odour from the landfill. The complainant stated that the odour was strong. No other details were provided in this message. This message was retrieved the next morning.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of your report, weather data indicated the winds were out of the W-NW at very low speeds, therefore toward the general direction of the complainant's location relative to the site. As this report was received on a Sun., there were no staff available to conduct a timely investigation. Acceptance of waste at the Site ceased at noon on Sat. Jan. 14th. Based on the above, the source of the reported odour could not be confirmed.

Report to MOECC: Reported to SAC on Mon. Jan. 16th at 6:40 am and MOECC Jeff Mills at 9:00 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Jan. 24, 2017
Details: On Tues. Jan. 24th, Ted Farrington at 38727 Talbot Line called the landfill offices at about 1:12 pm to report a landfill odour at his location at the time of his call. The complainant stated that he had been noticing this odour since 1:00 pm and he described the odour as being a landfill odour but not smelling like garbage.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the NW at low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff confirmed a very faint odour at the complainant's location immediately following receipt of this report but were unable to identify the odour. Additionally, staff did confirm faint to slight refuse odour at points NW of the complainant's location. Based on the above, the source of the reported odour may have been refuse-related.

Report to MOECC: Reported to SAC at 2:08 pm and MOECC Jeff Mills at 2:12 pm as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Jan. 29, 2017
Details: On Sun. Jan. 29th, Ted Farrington at 38727 Talbot Line called the landfill offices afterhours at about 4:30 pm and left a voicemail reporting a strong landfill odour at the time of his call. This message was retrieved the next morning.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at low speeds, therefore toward the general direction of the complainant's location relative to the site. As this report was received on a Sun. there were no staff available to conduct a timely investigation. However, staff happened to be traveling on Hwy 401 about an hour before and detected strong landfill gas odour. Based on the above, the source of the reported odour was likely LFG-related.

Report to MOECC: Reported to SAC on Jan. 30th at 5:55 am and MOECC Jeff Mills at 9:12 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Jan. 30, 2017
Details: On Mon. Jan. 30th, Ted Farrington at 38727 Talbot Line called the landfill offices at about 5:18 pm reporting a strong garbage odour at his location at the time of his call.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at very low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff were in the complainant's vicinity approximately two hours prior to the time of this report and did not detect any landfill-related odour at his location; however, faint landfill gas odour was confirmed at points NW of the complainant's location. Based on the above, the source of the reported odour was likely LFG-related.

Report to MOECC: Reported to SAC on Jan. 30th at 5:21 pm and MOECC Jeff Mills on Jan. 31st at 8:36 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

FEBRUARY 2017 (3 complaints – odour)

Feb. 9, 2017
Details: On the afternoon of Thurs. Feb. 9th, Ted Farrington at 38727 Talbot Line called the landfill offices at about 12:25 pm to report a landfill odour at his location at the time of his call. The complainant stated that he had been noticing this odour since 12:00 pm and he described the odour as being a garbage odour.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at moderate speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at the complainant's location immediately following receipt of this report. Staff did confirm odour relating to a stockpile of poultry manure located near the intersection of Longhurst Line and Paynes Mills Road which is NW of the complainant's location. Similar findings were made during a tour of the vicinity approximately one hour prior to this report. Based on the above, the source of the reported odour could not be confirmed.

Report to MOECC: Reported to SAC at 1:04 pm and MOECC Jeff Mills at 1:12 pm as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Feb. 15, 2017
Details: On Wed. Feb. 15th, Ted Farrington at 38727 Talbot Line called the landfill offices at about 11:54 am to report a landfill odour at the time of his call. The complainant stated that he had been noticing this odour since about 11:40 am and that it may have been a landfill gas odour.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the NW at moderate speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at the complainant's location during a vicinity tour that included Talbot Line that was conducted just prior to receipt of this report; however, staff did confirm very faint refuse odour NW of the complainant's location during this tour. Based on the above, the source of the reported odour may have been refuse-related.

Report to MOECC: Reported to SAC at 12:09 pm and MOECC Jeff Mills at 12:15 pm as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Feb. 21, 2017
Details: On Tues. Feb. 21st, Mike Broome at 10257 Little Church Drive called our offices at about 4:45 pm to report a landfill odour at his location.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the SE at low speeds, and therefore toward the complainant's general direction. About an hour and a half prior to this report, staff had noted faint mixed LFG and refuse odour along Third Line to the S of the complainant's residence. Also during this time, installations of an additional 18 vertical landfill gas collection wells are underway. On the day of this report, intermittent odours related to landfill gas were occurring in the vicinity of that work and upwind to the complainant. While some off-Site odours can result during such well installations, it is also indicative that the selected well locations will be productive for collecting gas for flaring and thereby reducing potential odours in future. Based on all these factors, the source of the odour reported was likely from a mixture of LFG and refuse.

Report to MOECC: Reported to SAC at 4:47 pm and MOECC Jeff Mills on Feb. 22nd at 8:23 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

MARCH 2017 (3 complaints – odour, month to date)

Mar. 16, 2017
Details: On the afternoon of Thurs. Mar. 16th, Ted Farrington at 38727 Talbot Line called the landfill offices at about 3:30 pm to report a landfill odour at his location at the time of his call. The

complainant stated that he had been noticing this odour since 3:15 pm and he described the odour as being a garbage odour that "gets your attention".

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at low to moderate speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at the complainant's location immediately following receipt of this report. Staff did confirm moderate odour relating to a stockpile of poultry manure located near the intersection of Longhurst Line and Paynes Mills Road which is NW of the complainant's location. Staff also confirmed faint refuse odour NW of the complainant's location. Based on the above, the source of the reported odour may have been refuse related combined with odour related to a poultry manure stockpile.

Report to MOECC: Reported to SAC at 4:05 pm and MOECC Jeff Mills at 4:09 pm as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Mar. 17, 2017

Details: On the afternoon of Fri. Mar. 17th, Clinton Cornelius at 2585 Longhouse Road called the landfill offices at about 9:00 am to report a gas odour at his location at the time of his call. The complainant stated that he had been noticing this odour for about five minutes prior to his call. He described the odour a not being very strong.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the SE at calm to very low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff confirmed faint LFG odour in the vicinity of the complainant immediately following receipt of this report. Staff also confirmed faint to slight mixed odour of LFG and refuse at points southeast of the complainant's location. Based on the above, the source of the reported order was LFG-related.

Report to MOECC: Reported to SAC at 9:35 am and MOECC Jeff Mills at 9:44 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Mar. 21, 2017

Details: On the morning of Tues. Mar. 21st, Barry Harrison at 40075 Longhurst Line called the landfill offices at about 8:19 am to report a landfill odour at his location at the time of his call. The complainant stated that he had been noticing this odour since 8:00 am and he described the odour as being a garbage odour that was not as strong at the time of his call as it was when he first noticed it.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W at calm to very low speeds, therefore toward the general direction of the complainant's location relative to the site.

Staff did not detect any landfill-related odour at the complainant's location immediately following receipt of this report. Staff confirmed faint to moderate LFG and mixed LFG/refuse odour in the complainant's vicinity and at points between the complainant's location and the site immediately following receipt of this report. A moderate manure odour was also detected near the complainant's location. Work on connecting the newly installed vertical LFG collection wells to the system is underway which involves some trenching into waste which may be contributing to the off-site odour. Based on the above, the source of the reported odour was LFG/refuse-related.

Report to MOECC: Reported to SAC at 8:54 am and MOECC Jeff Mills at 8:56 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Summary of Complaints & Green Lane Landfill's Responses prepared for the Green Lane Landfill Public Liaison Committee

Amended Certificate of Approval dated July 5, 2007
Condition 76 p and Condition 97

Reporting Period: March 22 to June 13, 2017

MARCH 2017 (1 complaint – odour, from meeting date to month end)

Mar. 23, 2017
Details: On Thurs. Mar. 23rd, Felicia Huff at 187 Chippewas Road (Munsee-Delaware First Nation) called our offices at about 9:22 am to report an odour at her location that she believed to be from the landfill. The complainant stated that she had first noticed this odour approximately an hour prior to her call. When asked, the complainant was unable to tell if the odour was that of refuse or gas.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

Staff had toured the general vicinity earlier that morning, around 6:00 am, and no odours had been detected at that time. Immediately following receipt of this complaint, staff drove to the vicinity and did not detect any odours. At the time of this report, weather data indicated the winds were out of the SE at low speeds, therefore toward the general direction of the complainant's location relative to the Site. As result of our observations, we were not able to confirm that the odour reported was landfill-related.

Report to MOECC: Reported to SAC at 10:16 am and MOECC Jeff Mills at 10:20 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

APRIL 2017 (3 complaints – odour)

Apr. 8, 2017
Details: On Sat. Apr. 8th, Ted Farrington at 38727 Talbot Line called our offices at about 8:25 am to report a landfill odour at his location. The complainant stated that he had begun to notice this odour at approximately 8:10 am. The complainant also stated that the odour was a garbage odour.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at very low speeds, therefore toward the general direction of the complainant's location relative to the site. As this report was received on a Sat., there were no staff available to perform an investigation. Based on the above, we are unable to confirm the source of the reported odour.

Report to MOECC: Reported to SAC on Apr. 8th at 8:34 am and MOECC Jeff Mills on Apr. 10th at 10:19 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Apr. 21, 2017
Details: On Fri. Apr. 21st, Ted Farrington at 38727 Talbot Line called our offices afterhours at about 5:59 pm to report a landfill odour at his location. No other details were provided in the complainant's message.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the NW at low speeds, therefore toward the general direction of the complainant's location relative to the site. As this report was received afterhours, there were no staff available to perform a timely investigation. Based on the above, we are unable to confirm the source of the reported odour.

Report to MOECC: Reported to SAC on Sat. Apr. 22nd at 6:05 am and MOECC Jeff Mills on Mon. Apr. 24th at 9:01 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Apr. 23, 2017
Details: On Sun. Apr. 23rd, Ted Farrington at 38727 Talbot Line called our offices afterhours at about 8:01 am reporting an oppressive landfill odour at his location. At the time of this report winds were at times out of the W-NW at very low speeds, therefore toward the general direction of the complainant's location relative to the site.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

As this report was received on a Sun. when the Site was closed, there were no staff available to conduct a timely investigation of conditions. Based on the above, we are unable to confirm the source of the reported odour.

During a follow up call made to the complainant by Sara Little on Mon. Apr. 24th, when asked the complainant clarified that the odour as reported on Apr. 23rd was uncharacteristically intense and that he felt that he should report it to us in case there was an issue at the Site. Sara re-confirmed that the Site had been closed that day and further on the day before, Saturday, no wastes loads had been received.

Report to MOECC: Reported to SAC on Apr. 24th at 6:05 am and MOECC Jeff Mills on Apr. 24th at 9:01 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

MAY 2017 (3 complaints – odour)

May 9, 2017
Details: On Tues. May 9th, Stephanie Haynes at 36213 Stafford Line called our offices at about 7:36 am to report an odour at her location that she believed to be from the landfill. The complainant

stated that the odour she was experiencing at her home was similar to odour she detects on Hwy 401 when driving past the landfill.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were calm to out of the E-NE at very low speeds, therefore toward the general direction of the complainant's location relative to the Site. Staff had toured the general vicinity earlier that morning, around 6:00 am, and no off-Site odours had been detected at that time. Immediately following receipt of this complaint, staff did not detect any landfill-related odour at the complainant's location; however, a faint mixed odour of landfill gas and refuse was confirmed N of her location. Based on our observations, the reported odour may have been related to a mixture of landfill gas and refuse.

Report to MOECC: Reported to SAC at 7:40 am and MOECC Jeff Mills at 8:33 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

<u>May 15, 2017</u>
Details: On Mon. May 15th, Ted Farrington at 38727 Talbot Line called our offices at about 10:27 am to report a landfill odour at his location. The complainant stated that he had begun to notice this odour at approximately 10:00 am. The complainant also stated that the odour was a garbage odour and that the intensity of the odour was decreasing.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were generally out of the NW at very low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at the complainant's location immediately following receipt of this report; however, very faint refuse odour was confirmed at points NW of his location. Similar findings were observed during a routine vicinity tour at approximately 6:00 am that morning. Based on the above, the source of the reported odour may have been refuse-related.

Report to MOECC: Reported to SAC at 11:29 am and MOECC Jeff Mills at 11:34 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

<u>May 26, 2017</u>
Details: On Fri. May 26th, Ted Farrington at 38727 Talbot Line called our offices at about 11:33 am to report a landfill odour at his location. The complainant stated that he had first noticed this odour at approximately 9:00 am and then again just prior to his call. The complainant also stated that the odour was a refuse-type odour.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were variable between being from out of the N to out of the W-NW at low speeds, therefore at times toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at the complainant's location immediately following receipt of this report; however, faint mixed odour of landfill gas and refuse was confirmed at points NW of his location. Based on the above, the source of the reported odour was likely related to a mixture of landfill gas and refuse.

Report to MOECC: Reported to SAC at 12:20 pm and MOECC Jeff Mills at 12:25 pm as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

JUNE 2017 (1 complaint – odour, month to date)

June 1, 2017
Details: On Thurs. June 1st, Ted Farrington at 38727 Talbot Line called our offices at about 12:48 pm to report a landfill odour at his location. The complainant stated that he had just began to notice this odour. The complainant also stated that the odour was a garbage-type odour.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at the complainant's location immediately following receipt of this report; however, faint refuse odour was confirmed at points NW of his location. Based on the above, the source of the reported odour was likely related to refuse.

Report to MOECC: Reported to SAC at 1:34 pm and MOECC Jeff Mills at 1:40 pm as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Summary of Complaints & Green Lane Landfill's Responses prepared for the Green Lane Landfill Public Liaison Committee

Amended Certificate of Approval dated July 5, 2007
Condition 76 p and Condition 97

Reporting Period: June 14 to September 12, 2017

JUNE 2017 (2 complaints – odour, from meeting date to month end)

June 21, 2017
Details: On Wed. June 21st, Ted Farrington at 38727 Talbot Line called our offices at about 10:26 am to report a landfill odour at his location. The complainant stated that he had just began to notice this odour. The complainant also stated that the odour was a garbage-type odour that was quite noticeable. During a follow up call made to the complainant by Sara Little following City staff's investigation, it was communicated to the complainant that no odour was detected by staff. The complainant advised Sara that he had spoken with his neighbours that morning about the odour and they had not detected any odour that morning.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the NW at very low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any off-site landfill-related odour immediately following receipt of this report. Based on the above, the source of the reported odour could not be confirmed

Report to MOECC: Reported to SAC at 11:13 am and MOECC Jeff Mills at 11:21 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

June 26, 2017
Details: On Mon. June 26th, Ted Farrington at 38727 Talbot Line called our offices at about 5:10 pm to report a landfill odour at his location. The complainant stated that he had been outside for about an hour and had just begun to notice the odour, which he described as smelling like garbage.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at low to moderate speeds, therefore somewhat in the general direction of the complainant's location relative to the site. As this report was received after City staff's office hours had ended for the day there were no staff available to conduct a timely investigation.

Report to MOECC: Reported to SAC at 5:15 pm and MOECC Jeff Mills on Tues. June 27th at 9:20 am as required. Based on the above, the source of the reported odour could not be confirmed

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

JULY 2017 (4 complaints – odour)

July 6, 2017
Details: On Thurs. July 6th, Linda Jacques at 38728 Talbot Line called our offices at about 9:13 am to report a landfill odour at her location. The complainant stated that she had been noticing this odour since about 7:00 am that morning.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the NW at very low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at the complainant's location immediately following receipt of this report; however, faint refuse odour was confirmed at points both NW and W of her location. Based on the above, the source of the reported odour was refuse related.

Report to MOECC: Reported to SAC at 10:17 am and MOECC Jeff Mills at 10:20 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

July 20, 2017
Details: On Thurs. July 20th, Ted Farrington at 38727 Talbot Line called our offices at about 5:00 pm to report a landfill odour at his location. The complainant stated that the odour was a garbage-type odour.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at very low speeds, therefore toward the general direction of your location relative to the site. As this report was received after City staff's office hours had ended for the day there were no staff available to conduct a timely investigation; however, off-site odour observations earlier that day were of slight to moderate refuse odour. Based on the above, the source of the reported odour may have been refuse-related.

Report to MOECC: Reported to SAC at 5:05 pm and MOECC Jeff Mills on Fri. July 21st at 9:07 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

July 24, 2017
Details: On Mon. July 24th, Ted Farrington at 38727 Talbot Line called our offices at about 11:08 am to report a landfill odour at his location. The complainant stated that he had started to notice the odour at about 10:50 am.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at low to moderate speeds, therefore toward the general direction of the complainant's location relative to the site. Staff were conducting a routine tour of the vicinity at the time of this report and did not detect any landfill-related odour at the complainant's location immediately following receipt of this report; however, faint to slight refuse odour had been confirmed at points NW of the complainant's location. Based on the above, the source of the reported odour may have been refuse-related.

Report to MOECC: Reported to SAC at 11:37 am and MOECC Jeff Mills at 11:42 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

July 25, 2017

Details: On Tues. July 25th, Linda Jacques at 38728 Talbot Line called our offices at about 8:33 am to report a landfill odour at her location. The complainant stated that she had just began noticing this odour at the time of her call. She also stated that the odour was very heavy and was more of a gas odour rather than garbage.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the NE at low speeds, therefore not toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at the complainant's location immediately following receipt of this report; however, faint to slight manure odour was confirmed at points both NW and W of the complainant's location where a freshly treated field was observed by staff. Based on the above, the source of the reported odour was not likely landfill-related.

Report to MOECC: Reported to SAC at 9:09 am and MOECC Jeff Mills at 10:11 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

AUGUST 2017 (9 complaints – odour)

Aug. 8, 2017

Details: On Tues. Aug. 8th, Brenda McArthur at 10300 Talbotville Gore Road called our offices at about 8:25 am to report a landfill odour at her location. The complainant stated that she had begun noticing this odour just prior to her call.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W at very low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at the complainant's location immediately following receipt of this report. Based on the above, the source of the reported odour could not be confirmed.

Report to MOECC: Reported to SAC at 9:28 am and MOECC Jeff Mills at 9:38 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Aug. 9, 2017
Details: On Wed. Aug. 9th, Wendy Neil at 37588 Talbot Line called our offices at about 10:08 am to report a landfill odour at her location. The complainant stated that she had begun noticing this odour at about 8:30 am that morning.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at very low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any off-site landfill-related odour during our investigation immediately following receipt of this report; however, mixed manure odours were confirmed at points W of the complainant's location. Based on the above, the source of the reported odour is not believed to be landfill-related.

Report to MOECC: Reported to SAC at 10:53 am and MOECC Jeff Mills at 10:59 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Aug. 10, 2017
Details: On Thurs. Aug. 10th, MOECC Officer Jeff Mills advised us of a call to the MOECC's London District Office on Wed. Aug. 9th at about 1:30 pm by Janice Fisher at 10435 Talbotville Gore Road to report a landfill odour at her location. The complainant described the odour as a pungent typical landfill odour. As of the date of reply to the complainant, no further details had yet been made available to us from the MOECC regarding this call.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this reported detection, weather data indicated the winds were out of the W-SW at very low speeds, therefore not toward the general direction of the complainant's location relative to the site. As staff were not made aware of this report until the day following the call, a timely investigation could not be conducted. Based on the above, the source of the reported odour could not be confirmed.

Report to MOECC: n/a

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Aug. 13, 2017
Details: On Sun. Aug. 13th, Ted Farrington at 38727 Talbot Line left a voicemail at our offices afterhours at about 8:13 am to report a landfill odour at his location. The complainant stated that the odour was a very strong garbage odour. The complainant also stated that he had started to notice the odour at about 8:05 am. We retrieved this message the next business day.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at very low speeds, therefore toward the general direction of the complainant's location relative to the site. As this report was received on a Sun. the Site was closed and there were no staff available to conduct a timely investigation. Based on the above, the source of the reported odour could not be confirmed.

Report to MOECC: Reported to SAC on Aug. 14th at 6:00 am and MOECC Jeff Mills on Aug. 14th at 8:44 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

<u>Aug. 14, 2017</u>
Details: On Mon. Aug. 14th, Elsie Hutchings at 37010 Second Line called our offices at about 8:55 am to report a landfill odour at her location. The complainant also stated that she had started to notice the odour at about 8:00 am.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were generally out of the E at very low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff confirmed faint to slight refuse odour at the complainant's location immediately following receipt of this report. Based on the above, the source of the reported odour was refuse-related.

Report to MOECC: Reported to SAC at 9:28 am and MOECC Jeff Mills at 9:33 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

<u>Aug. 16, 2017</u>
Details: On Wed. Aug. 16th, Brenda McArthur called our offices at about 9:53 am to report a landfill odour at her location, 35482 Third Line (the complainant's son's residence). The complainant stated that she had begun noticing this odour about fifteen minutes prior to her call. The complainant also stated that the odour was more of a gas smell rather than garbage.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the E-NE at very low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at her location immediately following receipt of this report. Faint refuse odour was confirmed in close proximity to the landfill site and slight poultry manure odour was detected in the complainant's vicinity. Based on the above, the source of the reported odour was not likely landfill-related.

Report to MOECC: Reported to SAC at 10:33 am and MOECC Jeff Mills at 10:36 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

<u>Aug. 23, 2017</u>
Details: On Wed. Aug. 23rd, Ted Farrington at 38727 Talbot Line left a voicemail at our offices afterhours at about 5:56 pm to report a landfill odour at his location. The complainant stated that

the odour was a garbage odour that he had started to notice at about 5:50 pm. We retrieved this message the next business day.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

In connection with this report, weather data indicated the winds were out of the NW at low speeds, therefore toward the general direction of the complainant's location relative to the site. As this report was received afterhours there were no staff available to conduct a timely investigation. Based on the above, the source of the reported odour could not be confirmed.

Report to MOECC: Reported to SAC on Thurs. Aug. 24th at 6:25 am and MOECC Jeff Mills at 10:01 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

<u>Aug. 24, 2017</u>
Details: On Thurs. Aug. 24th, Ted Farrington at 38727 Talbot Line called the landfill offices at about 8:39 am to report a landfill odour that he described as a strong and oppressive refuse odour. The complainant stated that he had been noticing this odour since about 8:30 am.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

For this report, weather data indicated that the winds were out of the W-NW at very low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at the complainant's location immediately following receipt of this report; however, faint refuse odour was confirmed at points NW of his location. Based on the above, the source of the reported odour was likely refuse-related.

Report to MOECC: Reported to SAC at 9:28 am and MOECC Jeff Mills at 9:34 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

<u>Aug. 25, 2017</u>
Details: On Fri. Aug. 25th, Ted Farrington at 38727 Talbot Line left a voicemail at our offices afterhours at about 6:05 pm reporting a landfill odour. The complainant stated that the odour was a fairly strong garbage odour. This message was retrieved the next business day.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

For this report, weather data indicated the winds were out of the N-NW at low speeds, therefore toward the general direction of the complainant's location relative to the site. As this report was received afterhours there were no staff available to conduct a timely investigation. Based on the above, the source of the reported odour could not be confirmed.

Report to MOECC: Reported to SAC on Aug. 26th at 6:30 am and MOECC Jeff Mills on Aug. 28th at 8:47am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

SEPTEMBER 2017 (2 complaints – odour, month to date)

Sept. 5, 2017

Details: On Tues. Sept. 5th, Ted Farrington at 38727 Talbot Line called our offices at about 5:08 pm to report a landfill odour at his location. The complainant stated that he had begun to notice this odour at about 5:00 pm and had also noticed a fainter odour at about 3:00 pm. The complainant also stated that the odour was a garbage-type odour.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at low speeds, therefore toward the general direction of the complainant's location relative to the site. As this report was received after office hours of City of Toronto staff, a timely investigation could not be conducted. Based on the above, the source of the reported odour could not be confirmed.

Report to MOECC: Reported to SAC at 5:15 pm and MOECC Jeff Mills on Sept. 6th at 9:15 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Sept. 6, 2017

Details: On Wed. Sept. 6th, Ted Farrington at 38727 Talbot Line called our offices at about 8:23 am to report a landfill odour at his location. The complainant stated that the odour was very heavy and that it was a garbage odour. The complainant also stated that he had begun to notice this odour at about 8:10 am.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at very low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff confirmed faint LFG odour at the complainant's location immediately following receipt of this report. Based on the above, the source of the reported odour was LFG-related.

Report to MOECC: Reported to SAC at 9:11 am and MOECC Jeff Mills at 9:15 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Summary of Complaints & Green Lane Landfill's Responses prepared for the Green Lane Landfill Public Liaison Committee

Amended Certificate of Approval dated July 5, 2007
Condition 76 p and Condition 97

Reporting Period: September 13 to December 5, 2017

SEPTEMBER 2017 (3 complaints – odour, from meeting date to month end)

Sept. 15, 2017
Details: On Fri. Sept. 15th, Teresa Nicholas at 2315 Keystone Place (Oneida Head Start) called our offices at about 8:31 am to report a gas odour at her location. The complainant stated that she had begun to notice this odour upon her arrival to work. The complainant also stated that the odour was strong.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were essentially calm with occasional gusts out of the E, therefore toward the general direction of the complainant's location relative to the site. Staff confirmed slight LFG odour in the vicinity of the complainant's location immediately following receipt of this report. Based on the above, the source of the reported odour was LFG-related.

Report to MOECC: Reported to SAC at 9:07 am and MOECC Jeff Mills at 9:14 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Sept. 27, 2017
Details: On Wed. Sept. 27th, Ted Farrington at 38727 Talbot Line called our offices at about 12:49 pm to report a landfill odour at his location. The complainant stated that he had just begun to notice this odour. The complainant also stated that the odour was a garbage-type odour.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff confirmed faint, intermittent refuse odour W of the complainant's location immediately following receipt of this report. Based on the above, the source of the reported odour was refuse-related.

Report to MOECC: Reported to SAC at 1:33 pm and MOECC Jeff Mills at 1:38 pm as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Sept. 28, 2017
Details: On Thurs. Sept. 28th, Ted Farrington at 38727 Talbot Line called the landfill offices at about 2:48 pm to report a landfill odour. The complainant stated that the odour was powerful, however

he could not discern if it was more of a gas odour or a garbage odour. The complainant also stated that he had begun to notice this odour at about 2:30 pm.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at very low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at the complainant's location; however, staff did confirmed faint to slight refuse odour NW of his location immediately following receipt of this report. Based on the above, the source of the reported odour was likely refuse-related.

Report to MOECC: Reported to SAC at 3:55 pm and MOECC Jeff Mills at 3:57 pm as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

OCTOBER 2017 (4 complaints – odour)

Oct. 5, 2017
Details: On Tues. Oct. 10th, MOECC Officer Jeff Mills advised us of a call made to him by Janice Fisher at 10435 Talbotville Gore Road on Thurs. Oct. 5th at about 8:30 am to report a landfill odour at her location. Officer Mills advised that in the complainant's voicemail, she stated that she noticed this odour for about an hour that morning.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this reported detection, weather data indicated the winds were out of the W at very low speeds, therefore in the general direction of the complainant's location relative to the site. As staff were not made aware of this report until several days after the call, a timely investigation could not be conducted. Based on the above, we are unable to confirm the source of the reported odour.

Report to MOECC: n/a

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Oct. 15, 2017
Details: On Sun. Oct. 15th, Ted Farrington at 38727 Talbot Line called our offices afterhours at about 5:45 pm to report a landfill odour at his location. The complainant stated that the odour was a garbage-type odour. This voicemail was retrieved the next business day.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

In connection with this report, weather data indicated the winds were out of the W at moderate speeds, therefore somewhat toward the general direction of the complainant's location relative to the site. As this report was received afterhours, there were no staff available to conduct a timely investigation. Based on the above, we were unable to confirm the source of the reported odour.

Report to MOECC: Reported to SAC on Oct. 16th at about 6:30 am and MOECC Jeff Mills at about 8:36 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

<u>Oct. 16, 2017</u>
Details: On Mon. Oct. 16th, Albert Vanderploeg at 9872 Paynes Mills Road called our offices at about 9:15 am to report a landfill odour at his location. The complainant stated that he had been noticing this odour since about 8:45 am that morning and he described the odour as being putrid. During the complainant's call he also mentioned how impressed he had been with the Site's odour control over the past few years. During a follow up call made to the complainant by Sara Little on Oct. 16th following City staff's investigation, the observations of City staff were communicated to him. The complainant said he appreciated the call and thought perhaps the wind direction had begun to shift leading to the odour findings of City staff.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the N-NW at very low speeds, therefore toward the general direction of the complainant's location relative to the Site. Staff did not detect any landfill-related odour at the complainant's location immediately following receipt of this report; however, faint to slight wet refuse odour was confirmed at points NW of his location. Based on the above, the source of the reported odour was refuse-related.

Report to MOECC: Reported to SAC at 10:04 am and MOECC Jeff Mills at 10:06 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

<u>Oct. 21, 2017</u>
Details: On Sat. Oct. 21st, Clinton Cornelius at 2585 Longhouse Road called our offices afterhours at about 9:43 pm to report an odour at his location that he believed to be coming from the landfill. No other details about the odour were provided in the message. This voicemail was retrieved the next business day.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the SE at low speeds, therefore toward the general direction of the complainant's location relative to the Site. As this report was received afterhours there were no City staff available to conduct a timely investigation. Based on the above, we are unable to confirm the source of the reported odour.

Report to MOECC: Reported to SAC on Mon. Oct. 30th at about 6:20 am and MOECC Jeff Mills on Nov. 6th at about 10:32 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

NOVEMBER 2017 (9 complaints – odour)

Nov. 8, 2017

Details: On Wed. Nov. 8th, Clinton Cornelius at 2585 Longhouse Road called the landfill offices at about 9:11 am to report a landfill odour at his location. The complainant stated that the odour was more like garbage than gas and that he had been noticing this odour for about 20 to 25 minutes prior to his call.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were essentially calm with gusts out of the N-NW at very low speeds, therefore not towards the general direction of the complainant's location relative to the Site. Staff did not detect any landfill-related odour in the complainant's vicinity immediately following receipt of this report; however, faint landfill gas odour had be confirmed in close proximity of the Site earlier that morning. Based on the above, the source of the reported odour may have been LFG-related.

Report to MOECC: Reported to SAC at 10:05 am and MOECC Jeff Mills at 10:13 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Nov. 8, 2017

Details: On Wed. Nov. 8th, Ted Farrington at 38727 Talbot Line called our offices at about 10:28 am to report a landfill odour at his location. The complainant stated that he had been noticing this odour since about 9:45 am. The complainant also stated that the odour was a garbage-type odour and it was not as strong at the time of his call as it had been earlier.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at the complainant's location immediately following receipt of this report; however, faint refuse odour was confirmed at points NW of his location. Based on the above, the source of the reported odour was likely refuse-related.

Report to MOECC: Reported to SAC at 11:32 am and MOECC Jeff Mills at 11:42 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Nov. 8, 2017

Details: On Wed. Nov. 10th, Janice Fisher at 10435 Talbotville Gore Road called the landfill offices at about 11:20 am and left a voicemail message to report a landfill odour in her neighbourhood. The complainant stated that she noticed this odour for about half an hour between 9:30 and 10:00 am that morning. The complainant described the odour as smelling like rotting garbage.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this reported detection, weather data indicated the winds were out of the W-NW at low speeds, therefore in the general direction of the complainant's location relative to the site. Staff were travelling through the area on a routine tour and had noted faint mixed odours of landfill gas and refuse at points W of the complainant's location. Based on the above, the source of the reported odour may have been a mixture of landfill gas and refuse.

Report to MOECC: Reported to SAC at 11:32 am and MOECC Jeff Mills at 11:42 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Nov. 13, 2017
Details: On Mon. Nov. 13th, Ted Farrington at 38727 Talbot Line called the landfill offices at about 2:55 pm to report a landfill odour. The complainant stated that the odour was getting stronger and that it smelled like garbage. The complainant also stated that he had begun to notice this odour at about 2:15 pm.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the NW at low speeds, therefore toward the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at his location; however, staff did confirmed faint to slight refuse odour NW of his location immediately following receipt of this report. Based on the above, the source of the reported odour was likely refuse-related.

Report to MOECC: Reported to SAC at 3:37 pm and MOECC Jeff Mills 3:40 pm as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Nov. 14, 2017
Details: On Tues. Nov. 14th, Everett Gaudon at 38956 Longhurst Line called the landfill offices at about 9:14 am to report a landfill at his location. The complainant stated that he had been noticing this odour since about 7:30 am that morning. The complainant described the odour as a gassy-garbage type odour. He also stated during his call that things had been really good regarding odours.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this reported detection, weather data indicated the winds were out of the W-NW at very low speeds, therefore in the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour at the complainant's location immediately following receipt of this report; however, faint mixed odour of landfill gas and refuse was confirmed at points N of his location. Based on the above, the source of the reported odour was a mixture of landfill gas and refuse.

Report to MOECC: Reported to SAC at 10:01 am and MOECC Jeff Mills at 10:04 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Nov. 14, 2017
Details: On Tues. Nov. 14th, Clinton Cornelius at 2585 Longhouse Road called the landfill offices afterhours at about 8:28 pm reporting a gas odour at his location that he believed was from the landfill. The complainant's voicemail was retrieved on the morning of Nov. 15th.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the SE at very low speeds, therefore in the general direction of the complainant's location relative to the site. As this report was received afterhours there were no staff available to conduct a timely investigation. Based on the above, the source of the reported odour was likely landfill gas-related.

Report to MOECC: Reported to SAC on Nov. 15th at about 6:20 am and MOECC Jeff Mills at about 10:13 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Nov. 15, 2017
Details: On Wed. Nov. 15th Clinton Cornelius at 2585 Longhouse Road called the landfill offices afterhours at about 1:28 am reporting a methane odour. The complainant's voicemail from the afterhours call was retrieved on the morning of Nov. 15th.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

In connection with this report, weather data indicated the winds were out of the SE at very low speeds, therefore in the general direction of the complainant's location relative to the site. As this report was received afterhours there were no staff available to conduct a timely investigation. Based on the above, the source of the reported odour was likely landfill gas-related.

Report to MOECC: Reported to SAC on Nov. 15th at about 6:20 am and MOECC Jeff Mills at about 10:13 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Nov. 25, 2017
Details: On Sat. Nov. 25th, Ted Farrington at 38727 Talbot Line called our offices afterhours at about 4:07 pm to report a landfill odour at his location. The complainant stated that the odour was a garbage-type odour. This message was retrieved the next business day.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

For this report, weather data indicated the winds were out of the W-NW at low speeds, therefore toward the general direction of the complainant's location relative to the site. As this report was received at a time when there are no City staff on site, a timely investigation could not be conducted. Based on the above, we are unable to confirm the source of the reported odour.

Report to MOECC: Reported to SAC on Nov. 27th at 6:15 am and MOECC Jeff Mills at 8:20 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Nov. 29, 2017
Details: On Thurs. Nov. 29th, Ted Farrington at 38727 Talbot Line called the landfill offices at about 5:05 pm to report a landfill odour. The complainant stated that the odour smelled like garbage. The complainant also stated that he had just begun to notice this odour.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

For this report, weather data indicated the winds were out of the W-NW at low speeds, therefore toward the general direction of the complainant's location relative to the site. As this report was received at a time when there are no City staff on site, a timely investigation could not be conducted. Based on the above, we are unable to confirm the source of the reported odour.

Report to MOECC: Reported to SAC on Nov. 29th at 5:13 pm and MOECC Jeff Mills on Nov. 30th at 8:48am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

DECEMBER 2017 (4 complaints – odour, month to date)

Dec. 2, 2017
Details: On Sat. Dec. 2nd, Ira Doxtator at 665 Hazel Drive called the landfill offices at about 7:20 am reporting a strong landfill odour at his location. The complainant stated that he had first noticed this odour at about 2:00 am and it was still present at the time of his call.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were calm to very light out of the E-NE to E, therefore in the complainant's general direction at times. As this report was received on a Saturday there were no City staff available to conduct a timely investigation so we are unable to confirm the source of this reported odour.

Report to MOECC: Reported to SAC on Dec. 2nd at 7:30 am and MOECC Jeff Mills on Dec. 4th at 11:06 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Dec. 3, 2017
Details: On Sun. Dec. 3rd, Janice Fisher at 10435 Talbotville Gore Road called the landfill offices and left a voicemail message at about 8:53 am reporting a strong, pungent landfill odour at her location. The complainant stated that she had been noticing this odour since 8:00 am. This message was retrieved the next business day.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at very low speeds, therefore in the general direction of the complainant's location relative to the site. As this message was received afterhours on a Sunday there were no City staff available to conduct a timely investigation therefore we are unable to confirm the source of these reported odour.

Report to MOECC: Reported to SAC on Dec. 4th at 10:10 am and MOECC Jeff Mills at 11:06 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Dec. 3, 2017
Details: On Sun. Dec. 3rd, Brenda McArthur at 10435 Talbotville Gore Road called the landfill offices and left a voicemail message at about 9:12 am reporting a strong, pungent landfill odour at her location. The complainant stated that she had been noticing this odour since 8:00 am. This message was retrieved the next business day.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the W-NW at very low speeds, therefore in the general direction of the complainant's location relative to the site. As this message was received afterhours on a Sun. there were no City staff available to conduct a timely investigation therefore we are unable to confirm the source of these reported odour.

Report to MOECC: Reported to SAC on Dec. 4th at 10:10 am and MOECC Jeff Mills at 11:06 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Dec. 4, 2017
Details: On Mon. Dec. 4th, Shayne Peake at 7079 Colonel Talbot Road called the landfill offices at about 10:15 am to report a pungent odour that he described as smelling like human waste. The complainant inquired if we were taking biosolids here and staff advised him that we currently only take the treated municipal sewage sludge from the City of St. Thomas.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this report, weather data indicated the winds were out of the S-SE at low speeds, therefore not in the general direction of the complainant's location relative to the site. Staff did not detect any landfill-related odour between the site and the complainant's location. Moderate to strong manure odour was confirmed on Colonel Talbot Road at the complainant's location. While reporting this call to Jeff Mills of the MOECC, Mr. Mills informed Sara Little that he had been called by Mr. Peake as well and was currently investigating the call. Mr. Mills advised Ms. Little that he noticed the same odour on Colonel Talbot Road and had observed farmer's fields being spread with manure during his investigation. He also stated that he would call Mr. Peake to advise him of his observations regarding the odour. Based on the above, the source of the reported odour was not landfill-related.

Report to MOECC: Reported to SAC at 11:03 am and MOECC Jeff Mills at 11:06 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Summary of Complaints & Green Lane Landfill's Responses prepared for the Green Lane Landfill Public Liaison Committee

Amended Certificate of Approval dated July 5, 2007
Condition 76 p and Condition 97

Reporting Period: December 6 – 31, 2017

DECEMBER 2017 (4 complaints – odour)

Dec. 18, 2017
Details: On Mon. Dec.18th, a member of the Oneida community with the last name Chrisjohn called the landfill offices afterhours at about 1:00 am to report a methane odour at the time of his call. In his voicemail message the complainant stated that the odour he was reporting was overbearing. No other details were provided in the message. In an effort to obtain important contact details about this complainant, Sara Little contacted Clinton Cornelius, a Councillor with the Oneida Nation, on the morning of Dec. 18th to establish if he knew Mr. Chrisjohn. During a conversation between Mr. Cornelius and Ms. Little on Dec. 20th, Mr. Cornelius stated that he did know the complainant and was willing to contact him to ask that he call the landfill offices so that we could acquire some more details regarding his report. It was communicated to Mr. Cornelius in a voicemail from Ms. Little on Dec. 20th that if Mr. Chrisjohn had not been in contact with the landfill by 4:00 pm that day this correspondence would be sent to Mr. Cornelius' attention with the hopes that it would be passed on to Mr. Chrisjohn.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

In connection with this report, weather data indicated the winds were out of the E-SE at very low speeds, therefore towards the general direction of the complainant's location relative to the Site. As this report was received afterhours there were no staff on duty to conduct a timely investigation; however, early morning odour observations by staff on Mon. Dec. 18th confirmed faint to moderate LFG odour NW of the Site. Based on the above, the source of the reported odour was likely landfill gas-related.

Report to MOECC: Reported to SAC on Dec. 21st at about 8:37 am and MOECC Jeff Mills at about 8:40 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Dec. 23, 2017
Details: On Sat., Dec. 23, 2017 Ken Howe at 38079 Talbot Line telephoned the landfill weigh scale office at about 11:45 am to report odour at his location. The complainant described there was a strong odour of methane gas detected at and in the barn. The complainant advised the odour was unacceptable and wondered what we were doing different. Mr. Howe also noted that he had called Jeff Yurek (MPP Elgin-Middlesex) to complain about the smell. As follow up, Anne Hiscock telephoned the complainant the next business day, Wed., Dec. 27, 2017 to confirm that his complaint had been received. Ms. Hiscock confirmed that the landfill had been open and received City of Toronto transfer station waste on that Sat., Dec. 23rd. Ms. Hiscock also confirmed that we had not been doing anything different. Ms. Hiscock noted that City staff were not on duty that day and therefore we were not able to conduct our investigation at the time of this report. During the

discussion, the complainant added that the odour in the barn was still noticeable the next day. The complainant also commented that, overall, we were doing much better lately regarding odours and that we should continue to do better.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this complaint, area weather data indicated that winds were out of the NNW at about 16 km/hr., therefore in the complainant's general direction. It was relatively mild and snowing. Based on Ms. Hiscock's review including the discussion had with the complainant, the source of the reported odour was likely landfill gas-related.

Report to MOECC: Reported to SAC on Dec. 23rd at about 11:50 am and MOECC Jeff Mills on Dec. 27th at about 9:25 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Dec. 26, 2017

Details: On Tues. Dec. 26, 2017, Shayne Peake at 7079 Colonel Talbot Road called the MOECC's Spills Action Centre (SAC) at about 7:09 pm to report a rotting garbage odour at his location. The complainant stated in his report to SAC that there was a W wind at the time of his report. The details of this report were provided to City of Toronto staff on Wed. January 10, 2018 by MOECC Officer Jeff Mills.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

At the time of this reported detection, weather data indicated the winds were out of the W-SW at low speeds, therefore in the general direction of the complainant's location relative to the Site. On the date of this report, the Site was closed due to it being Boxing Day and no waste had been received at the Site since Sat. Dec. 23rd at noon. Additionally, receipt of details of this report was delayed by several days. Based on the above, we are unable to confirm the source of the reported odour. On Jan. 10, 2018, a call was made to Mr. Peake by Sara Little, Site Contract Manager here at Green Lane. This call was made in response to Mr. Peake's phone call to the City of Toronto City Manager's office on Mon. Jan. 8th. During this conversation Mr. Peake advised Ms. Little that his call to the City Manager's office was not specifically made regarding odours noticed on Dec. 26th but that the odours were quite bad during the week of Dec. 25, 2017. The complainant also stated that he had made more than one call to the MOECC over the holidays. Ms. Little stated that she would follow up with Officer Mills regarding any other record of reports from Mr. Peake. It was agreed that making note of this conversation in this reply letter was an acceptable way to document it.

Report to MOECC: n/a

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

Dec. 29, 2017

Details: On Fri., Dec. 29, 2017 Everett Gaudon at 38956 Longhurst Line called our offices at about 9:25 am and spoke to Anne Hiscock to report a landfill odour at his location. The complainant described it as a bad landfill gas smell, like rotten eggs. The complainant advised that he had noticed the odour earlier that morning and it was still there.

Actions Taken: Review of possible causes including weather conditions, Site conditions and operations as follows:

During Ms. Hiscock's review, at 9:36 am she confirmed moderate landfill gas odours roadside at the complainant's location. The odour was fainter closer to the landfill. The weather data showed very cold and calm conditions. The winds picked up by early afternoon. There were no unusual Site activities or construction that day. Based on staff review, the source of this odour was confirmed to be landfill gas-related.

Report to MOECC: Reported to SAC at 9:48 am and MOECC Jeff Mills at 10:05 am as required.

Formal Reports: As required, written reports forwarded to MOECC, PLC and FNLC (once established).

APPENDIX

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MONITORING AND REPORTING CHECKLIST

Appendix D-Monitoring and Screening Checklist
General Information and Instructions

General Information: The checklist is to be completed, and submitted with the Monitoring Report.
Instructions: A complete checklist consists of:
(a) a completed and signed checklist, including any additional pages of information which can be attached as needed to provide further details where indicated.
(b) completed contact information for the Competent Environmental Practitioner (CEP)
(c) self-declaration that CEP(s) meet(s) the qualifications as set out below and in Section 1.2 of the Technical Guidance Document.

Definition of Groundwater CEP:
For groundwater, the CEP must have expertise in hydrogeology and meet one of the following:
(a) the person holds a licence, limited licence or temporary licence under the *Professional Engineers Act*; or
(b) the person holds a certificate of registration under the *Professional Geoscientists Act, 2000* and is a practicing member, temporary, member or limited member of the Association of Professional Geoscientists of Ontario. O. Reg. 66/08, s. 2..
Definition of Surface water CEP:
A CEP for surface water assessments is a scientist, professional engineer or professional geoscientist as described in (a) and (b) above with demonstrated experience and post-secondary education, either a diploma or degree, in hydrology, aquatic ecology, limnology, aquatic biology, physical geography with specialization in surface water, and/or water resource management.

The type of scientific work that a CEP performs must be consistent with that person's education and experience. If an individual has appropriate training and credentials in both groundwater and surface water and is responsible for both areas of expertise, the CEP may then complete and validate both sections of the checklist.

Monitoring Report and Site Information

Waste Disposal Site (WDS) Name	Green Lane Landfill
Location (e.g. street address, lot, concession)	38593 Third Line, RR7, St. Thomas, Ontario
GPS Location (taken within the property boundary at front gate/ front entry)	NAD 83, Zone 17, 473175 E, 4740510 N
Municipality	Southwold Township, Elgin County
Client and/or Site Owner	City of Toronto
Monitoring Period (Year)	2017
This Monitoring Report is being submitted under the following:	
Environmental Compliance Approval (ECA) Number (formerly "Certificate of Approval" (C of A)) :	Amended Provisional Certificate of Approval No. A051601
Director's Order No.:	
Provincial Officer's Order No.:	

Other:			
Report Submission Frequency	(●) Annual ( ) Other		
The site is: **(Operation Status)**	(●) Open ( ) Inactive ( ) Closed		
Is there an active waste transfer station at the site?	( ) Yes (●) No		
Does this WDS have a Closure Plan?	(●) Not yet submitted ( ) Submitted and under review ( ) Submitted and approved		
Total Approved Capacity	16,750,000	*Units*	Cubic Metres
Maximum Approved Fill Rate	1,100,000	*Units*	Tonnes per Year
Total Waste Received within Monitoring Period (Year)	495,131.57	*Units*	Tonnes
Total Waste Received within Monitoring Period (Year) *Describe the methodology used to determine this quantity*	Weighed		
Estimated Remaining Capacity	9,428,768	*Units*	Cubic Metres
Estimated Remaining Capacity *Describe the methodology used to determine this quantity*	Direct Survey (GPS/Total Station)		
Estimated Remaining Capacity *Date Last Determined*	30-Dec-2017		
Non-Hazardous Approved Waste Types	[X] Domestic [X] Industrial, Commercial & Institutional (IC&I) [ ] Source Separated Organics (Green Bin) [ ] Tires	[X] Contaminated Soil [ ] Wood Waste [ ] Blue Box Material [ ] Processed Organics [ ] Leaf and Yard Waste	[ ] Food Processing/Preparation Operations Waste [X] Hauled Sewage Other:
Subject Waste Approved Waste Classes: Hazardous & Liquid Industrial *(separate waste classes by comma)*			

Year Site Opened *(enter the Calendar Year only)*	1978	**Current ECA Issue Date**	5-Jul-2007

Is your Site required to submit Financial Assurance?	○ **Yes** ◉ **No**
Describe how your WDS is designed.	○ Natural Attenuation only ◉ Fully engineered Facility ○ Partially engineered Facility
Does your Site have an approved Contaminant Attenuation Zone?	○ **Yes** ◉ **No**
If closed, specify ECA, control or authorizing document closure date:	Select Date
Has the nature of the operations at the site changed during this monitoring period?	○ **Yes** ◉ **No**
If yes, provide details:	

Have any measurements been taken since the last reporting period that indicate landfill gas volumes have exceeded the MOE limits for subsurface or adjacent buildings? (i.e. exceeded the LEL for methane)	◯ Yes ◉ No

Groundwater WDS Verification:

Based on all available information about the site and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

1) The monitoring program continues to effectively characterize site conditions and any groundwater discharges from the site. All monitoring wells are confirmed to be in good condition and are secure:	◉ **Yes** ◯ **No**	
2) All groundwater, leachate and landfill gas sampling and monitoring for the monitoring period being reported on was successfully completed as required by ECA or other relevant authorizing/ control document(s):	◉ **Yes** ◯ **No** ◯ **Not Applicable**	If no, list exceptions below or attach information.

Groundwater Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date

3) a) Some or all groundwater, leachate and landfill gas sampling and monitoring requirements have been established or defined outside of a ministry ECA, authorizing, or control document.	○ **Yes** ◉ **No** ○ **Not Applicable**

b) If yes, the sampling and monitoring identified under 3(a) for the monitoring period being reported on was successfully completed in accordance with established protocols, frequencies, locations, and parameters developed as per the Technical Guidance Document:	○ **Yes** ○ **No** ◉ **Not Applicable**	If no, list exceptions below or attach additional information.

Groundwater Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**

4) All field work for groundwater investigations was done in accordance with Standard Operating Procedures (SOP) as established/outlined per the Technical Guidance Document (including internal/external QA/QC requirements) (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	(•) Yes ( ) No	
Sampling and Monitoring Program Results/WDS Conditions and Assessment:		
5) The site has an adequate buffer, Contaminant Attenuation Zone (CAZ) and/or contingency plan in place. Design and operational measures, including the size and configuration of any CAZ, are adequate to prevent potential human health impacts and impairment of the environment.	(•) Yes ( ) No	
6) The site meets compliance and assessment criteria.	(•) Yes ( ) No	
7) The site continues to perform as anticipated. There have been no unusual trends/changes in measured leachate and groundwater levels or concentrations.	(•) Yes ( ) No	

1) Is one or more of the following risk reduction practices in place at the site: *(a)* There is minimal reliance on natural attenuation of leachate due to the presence of an effective waste liner and active leachate collection/ treatment; or *(b)* There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or *(c)* The site meets the following two conditions (typically achieved after 15 years or longer of site operation): *i.*The site has developed stable leachate mound(s) and stable leachate plume geometry/ concentrations; and *ii.*Seasonal and annual water levels and water quality fluctuations are well understood.	◉ Yes ◯ No	Note which practice(s):	☒ (a) ☐ (b) ☐ (c)
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	◯ Yes ◉ No ◯ Not Applicable		

Groundwater CEP Declaration:

I am a licensed professional Engineer or a registered professional geoscientist in Ontario with expertise in hydrogeology, as defined in Appendix D under Instructions. Where additional expertise was needed to evaluate the site monitoring data, I have relied on individuals who I believe to be experts in the relevant discipline, who have co-signed the compliance monitoring report or monitoring program status report, and who have provided evidence to me of their credentials.

I have examined the applicable Environmental Compliance Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended), and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories,* or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature and will be rectified for the next monitoring/reporting period. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

23-Mar-2018

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

(•) **No changes to the monitoring program are recommended**	
( ) **The following change(s) to the monitoring program is/are recommended:**	
(•) **No Changes to site design and operation are recommended**	
( ) **The following change(s) to the site design and operation is/are recommended:**	
Name:	Dan Mohr
Seal:	Add Image LICENSED PROFESSIONAL ENGINEER 23-03-2018 D. S. MOHR Dan Mohr PROVINCE OF ONTARIO

Signature:	Dan Mohr	**Date:**	23-Mar-2018
CEP Contact Information:	Dan Mohr		
Company:	WSP Canada Inc.		
Address:	55 King Street, Suite 600, St. Catharines, Ontario, L2R 3H5		
Telephone No.:	905-687-1771	Fax No. :	905-687-1773
E-mail Address:	dan.mohr@wsp.com		
Co-signers for additional expertise provided:			
Signature:		**Date:**	
Signature:		**Date:**	

Surface Water WDS Verification:

Provide the name of surface water body/bodies potentially receiving the WDS effluent and the approximate distance to the waterbody (including the nearest surface water body/bodies to the site):	
Name (s)	Dodd Creek

Distance(s)	Approximately 250 metres northeast of the Site

Based on all available information and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

1) The current surface water monitoring program continues to effectively characterize the surface water conditions, and includes data that relates upstream/background and downstream receiving water conditions:	◉ **Yes** ○ **No**	
2) All surface water sampling for the monitoring period being reported was successfully completed in accordance with the ECA or relevant authorizing/control document(s) (if applicable):	◉ **Yes** ○ **No** ○ **Not applicable**	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date

3) a) Some or all surface water sampling and monitoring program requirements for the monitoring period have been established outside of a ministry ECA or authorizing/control document.	○ **Yes** ◉ **No** ○ **Not Applicable**	
b) If yes, all surface water sampling and monitoring identified under 3 (a) was successfully completed in accordance with the established program from the site, including sampling protocols, frequencies, locations and parameters) as developed per the Technical Guidance Document:	○ **Yes** ○ **No** ◉ **Not Applicable**	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date

4) All field work for surface water investigations was done in accordance with SOP, including internal/external QA/QC requirements, as established/outlined as per the Technical Guidance Document, MOE 2010, or as amended. (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	(•) Yes ( ) No	

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

5) The receiving water body meets surface water-related compliance criteria and assessment criteria: i.e., there are no exceedances of criteria, based on MOE legislation, regulations, Water Management Policies, Guidelines and Provincial Water Quality Objectives and other assessment criteria (e.g., CWQGs, APVs), as noted in Table A or Table B in the Technical Guidance Document (Section 4.6):	( ) Yes (•) No

If no, list parameters that exceed criteria outlined above and the amount/percentage of the exceedance as per the table on the following page or provide details in an attachment:

Parameter	Compliance or Assessment Criteria or Background	Amount by which Compliance or Assessment Criteria or Background Exceeded
e.g. Nickel	e.g. ECA limit, PWQO, background	e.g. X% above PWQO
Please see Section 2.3.5 of the 2017 Annual Progress Report.		
6) In my opinion, any exceedances listed in Question 5 are the result of non-WDS related influences (such as background, road salting, sampling site conditions)?	◉ **Yes** ◯ **No**	Please see Section 2.3.5 of the 2017 Annual Progress Report.

7) All monitoring program surface water parameter concentrations fall within a stable or decreasing trend. The site is not characterized by historical ranges of concentrations above assessment and compliance criteria.	(•) **Yes** ( ) **No**	Please see Section 2.3.5 of the 2017 Annual Progress Report.
8) For the monitoring program parameters, does the water quality in the groundwater zones adjacent to surface water receivers exceed assessment or compliance criteria (e.g. , PWQOs, CWQGs, or toxicity values for aquatic biota (APVs)):	( ) Yes (•) No ( ) Not Known ( ) Not Applicable	Though groundwater quality adjacent to Dodd Creek naturally exceeds surface water compliance criteria for some parameters, Dodd Creek is situated hydraulically upgradient and is not a surface water receiver for groundwater from the site.
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	(•) **Yes** ( ) **No** ( ) **Not Applicable**	Please see Section 2.3.5.1 of the 2017 Annual Progress Report.

Surface Water CEP Declaration:

I, the undersigned hereby declare that I am a Competent Environmental Practitioner as defined in Appendix D under Instructions, holding the necessary level of experience and education to design surface water monitoring and sampling programs, conduct appropriate surface water investigations and interpret the related data as it pertains to the site for this monitoring period.

I have examined the applicable Environmental Compliance Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended) and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories,* or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature or will be rectified for future monitoring events. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

23-Mar-2018

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

(●) **No Changes to the monitoring program are recommended** ( ) **The following change(s) to the monitoring program is/are recommended:**	
(●) **No changes to the site design and operation are recommended** ( ) **The following change(s) to the site design and operation is/ are recommended:**	

CEP Signature	Dan Mohr
Relevant Discipline	Professional Engineer
Date:	23-Mar-2018
CEP Contact Information:	Dan Mohr
Company:	WSP Canada Inc.
Address:	55 King Street, Suite 601, St. Catharines, Ontario, L2R 3H5
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