FALL 2011 SEMI-ANNUAL MONITORING REPORT

WASTE MANAGEMENT OF CANADA
RICHMOND LANDFILL
TOWN OF GREATER NAPANEE, ONTARIO

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1.0 INTRODUCTION

The purpose of this document is to present results and to provide an interpretation of the data that were collected during the fall 2011 semi-annual monitoring event at the Waste Management of Canada Corporation (WM) Richmond Landfill.

The WM Richmond Landfill is approved as a 16.2 hectare waste disposal (landfilling) facility within a total site area of 138 hectares, located on parts of Lots 1, 2 and 3, Concession IV of the former Township of Richmond, now in the Town of Greater Napanee, Ontario.

2.0 MONITORING PROGRAM

2.1 PROGRAM METHODOLOGY

The fall 2011 semi-annual monitoring event was conducted in accordance to the updated Environmental Monitoring Plan for the site dated June 29, 2010 (herein referred to as the "EMP"). The EMP was submitted to the Ontario Ministry of the Environment (MOE) as required by the Amendment to Provisional Certificate of Approval (C of A) issued by the MOE on March 31, 2010. While the EMP is still under review by the MOE, the amended C of A stipulates (Condition 8(b)) that "*Pending final approval of the EMP by the Director, the Owner shall implement the EMP upon submission to Director.*"

The site layout and monitoring locations are shown on Figure 1. The groundwater and leachate monitoring program is summarized in Table 1, while the analytical parameters for water and leachate samples are summarized in Table 2. Table 3 presents the groundwater elevation monitoring locations in relation to the landfill footprint and hydrostratigraphic unit.

The fall monitoring event was conducted between October 24, 2011 and November 24, 2011. A total of 38 groundwater monitors were sampled from 36 locations. Six (6) groundwater monitoring wells could not be sampled because they (a) had insufficient recovery for sampling after purging (M29, M39, M53-4, M68-4 and M70-3), or (b) because they were damaged (the standpipe in M58-4 was broken below the ground surface and contained bentonite). Samples were analyzed for the suite of groundwater inorganic and general parameters (Table 2).

Six (6) off-site domestic water supply wells were sampled on October 26, 2011 (inorganic parameters) and November 24, 2011 (organic parameters). Water samples from private supply wells were analyzed for groundwater inorganic and general parameters, as well as for VOCs. Two (2) domestic water supply wells (1121 Beechwood Road and 1097 Beechwood Road) were removed from the domestic sampling program for the fall 2011 sampling event, on the basis of the consistent water quality results and the fact that they are dug wells located hydraulically upgradient from the landfill with respect to the shallow groundwater. For details, refer to *August*

2011 Quarterly Interim Report, Domestic Well Monitoring Program, Waste Management Richmond Landfill, Memorandum to Randy Harris dated September 8, 2011.

Fall surface water sampling was conducted on October 28, 2011 from locations S2, S3, S6 and S7, while location S4R, S5 and S8R were dry. Surface water samples were analyzed for the surface water inorganic and general parameters. As requested by MOE[1], surface water sampling locations S6 and S7, situated north of the landfill along Marysville Creek, were reintroduced into the sampling program for the fall 2011 sampling event.

Landfill gas migration monitoring was conducted on October 26, 2011. Field measurements were made with a RKI Eagle probe calibrated to methane gas response at six (6) gas monitors (GM1, GM3, GM4-1, GM4-2, GM5 and GM6).

Additionally, six (6) field duplicate samples, two (2) field blanks, and three (3) equipment blanks were collected during the fall sampling event, for a total of 11 Quality Assurance/Quality Control (QA/QC) samples. Deionised water for analysis of blank samples was supplied by the laboratory.

2.2 Sample Collection and Laboratory Analysis Methodology

Groundwater and surface water samples were collected in accordance with accepted industry protocols. Groundwater samples were collected using dedicated Waterra inertial lift pumps connected to dedicated polyethylene tubing. Between one and three casing volumes of water were removed from each monitoring well prior to the collection of groundwater samples. During purging, readings for pH, conductivity and temperature were recorded on a regular basis. The stabilization of the parameters was used to assess when well purging was complete. Low producing wells were purged dry and allowed to recover prior to sampling. If the monitoring well had not recovered sufficiently for sampling within 24 hours, the monitor was considered dry and a sample was not collected.

Domestic supply wells were sampled at an access point before any treatment system. A typical sampling location was a tap or access located near the pressure tank or when access to the treatment system was not available, the sample was collected from the kitchen tap (with the aerator screen removed). Prior to collecting the water sample, the water was allowed to run for a minimum of five but more typically closer to 10 minutes to ensure the volume of the pressure tank and supply line was purged and that the sample would be representative of well water conditions.

Surface water samples were taken using a 50 cc syringe and carefully collecting the surface water as not to disturb the bottom sediments. Surface water sampling locations were sampled from

[1] Memorandum (*RE: Richmond Landfill Site – 2010 Annual Monitoring Report*) from Victor Castro (MOE) to Dave Arnott (MOE), dated June 23, 2011.

downstream to upstream to prevent any re-suspension of sediment impacting the downstream sampling locations. The pH, temperature, and conductivity of the surface water were obtained in the field at all surface water sampling points while minimizing disturbance of the bottom sediment.

All water samples were placed in bottles supplied and prepared by the laboratory. The samples were packed in coolers with ice and shipped by courier to the laboratory. All samples were analysed by Maxxam Analytics Inc. of Mississauga, ON, which is accredited by the *Canadian Association for Laboratory Accreditation Inc. (CALA)*

3.0 MONITORING RESULTS AND DISCUSSION

Background information concerning the site geology and hydrogeology were described in detail in the Site Conceptual Model (SCM) report[2], and is summarized here. The SCM report describes the groundwater flow conditions at the Richmond Landfill. Based on the results from extensive studies conducted previously at the site, the basic hydrogeological framework for the facility has been defined as follows:

- the active groundwater flow zone at the site extends to a depth of approximately 30 metres below the top of bedrock;
- the shallow groundwater flow zone is conceptualized as the overburden, the overburden-bedrock contact and the upper one to two metres of bedrock;
- the direction of groundwater flow in the shallow flow zone is strongly influenced by topography;
- the intermediate bedrock flow zone extends from one to two metres below top of bedrock to a depth of approximately 30 metres below top of bedrock;
- groundwater flows through a well-connected network of fractures in the upper 30 metres of bedrock;
- the dominant fracture orientation is horizontal to sub-horizontal; however, vertical to subvertical fractures are present providing hydraulic connection between horizontal fractures;
- hydraulic connection of fractures exists in the intermediate bedrock flow zone to the west, south and east of the site (horizontal and vertical connections);
- intermediate bedrock flownets show that groundwater generally flows to the west from the western edge of the landfill, to the south-southeast from the southern edge of the landfill, to the southwest from the southwest corner of the landfill and north to northwest from the northwest portion of the landfill;

[2] *Site Conceptual Model Report, WM Richmond Landfill*, prepared by Dr. B.H. Kueper and WESA Inc., October 2009

- the hydraulic conductivity of the intermediate bedrock is lower to the north and east of the landfill compared to other areas of the site, implying that the rate of groundwater flow is lower than in areas south, southeast and west of the landfill; and
- flow directions in the intermediate bedrock zone are variable with season.

3.1 GROUNDWATER RESULTS

3.1.1 Groundwater Elevations

Groundwater elevations from program monitoring wells were measured on October 20, 2011 and are presented in Table 4. The groundwater flow direction within the shallow and intermediate bedrock groundwater flow zones are shown on Figures 2 and 3, respectively. The groundwater flow directions were inferred by interpolating the hydraulically responsive wells screened within the corresponding groundwater flow zone, and are consistent with historical results.

The fall 2011 shallow groundwater flownet (Figure 2) is consistent with historical results and shows that the Empey Hill drumlin southwest from the landfill creates a flow divide with shallow groundwater being directed both to the north and the south. The northerly flowing groundwater is oriented toward Marysville Creek, while shallow groundwater to the south flows towards Beechwood Ditch. Shallow groundwater south of Beechwood Road flows locally to the north-northwest, towards this area of lower hydraulic head that is also influenced by the pond system in the south part of the site (see Figure 2). Shallow groundwater east of the landfill is influenced by a local zone of higher water levels in the vicinity of monitoring well M96. Shallow groundwater north of M96 flows to the north while groundwater south of M96 flows to the south-southeast.

The fall 2011 intermediate bedrock zone flownet (Figure 3) shows that groundwater in the intermediate bedrock flow zone generally flows to the west from the western edge of the landfill, and to the south-southeast from the southern edge of the landfill. Monitors M57 and M70-1 were not used in the contouring as water levels at these locations were still recovering. The hydraulic influence of Empey Hill is seen in the intermediate flow zone in that a relatively stagnant zone (weaker hydraulic gradients) is created to the west and southwest of the landfill. In the southeastern portion of the site near Beechwood Road, groundwater flows to the east. Overall, the directions of groundwater flow within the intermediate flow zone are consistent with the regional directions of groundwater flow, towards the south.

3.1.2 Groundwater Sampling Results and Evaluation

Results from the groundwater monitoring wells sampled in fall 2011 are presented in Table 5. Groundwater quality data for the fall 2011 monitoring event are similar to historical results, and discussed in this section.

Slightly elevated concentrations of a number of water quality parameters (e.g., alkalinity, chloride, conductivity, DOC, iron, manganese, sodium and/or TDS) were observed in some shallow groundwater zone monitoring wells located northwest and north of the unlined Phase 1 landfill footprint (M66-2, M101, M102 and M103). In other areas of the site, there is no evidence of groundwater impacts away from the landfill footprint in the shallow groundwater flow zone. Isolated occurrences of elevated concentrations of water quality parameters (i.e., one or two parameters per sample) are seen elsewhere on the Site, particularly immediately adjacent to the landfill footprint (e.g., at M41). No indications of elevated concentrations related to impacts are identified at the property boundary in the shallow flow zone.

Analytical results from intermediate bedrock groundwater monitors sampled in fall 2011 show that groundwater quality in this groundwater flow zone is highly variable across the site. These findings are consistent with historical results. Intermediate bedrock zone groundwater and surface water chemistry conditions south of the landfill were reviewed in a technical memorandum submitted to the MOE[3] (dated June 14, 2010). This study investigated the apparently increasing concentrations of some parameters (e.g., alkalinity, ammonia, COD, iron, chloride, sodium, etc.) over time at selected monitoring wells installed in the intermediate bedrock flow zone south (M9-2, M9-3, M10-1, M49-1, M49-2 and M71) and north/northwest (M5-2 and M6-3) of the site. It was concluded that the groundwater chemistry changes seen at these monitoring wells are most likely related to surface water infiltration and off-site sources. Wells immediately south of the landfill, such as M9-2 and M9-3, may have historically shown effects from leachate; however, there are no indications that these concentrations have resulted in off-site impact. Additional investigative work related to this observed chemistry is ongoing at this time.

3.1.3 Off-Site Domestic Water Supply Wells

Results from off-site private water supply wells sampled in fall 2011 are presented in Table 6.

Comparison with Ontario Drinking Water Quality Objectives and Guidelines (ODWSOG, 2006) revealed all parameters were below their respective maximum acceptable concentrations (MAC) or interim maximum acceptable concentrations (IMAC) as specified in Table 2 of the ODWSOG. The only exceptions were: (a) lead was found to slightly exceed ODWSOG for well at 1206 Beechwood Road (0.011 mg/L vs. 0.01 mg/L); and (b) chloride was found to exceed the

[3] *On-Site Groundwater and Surface Water Quality Assessment, Waste Management (WM) Richmond Landfill*, technical memorandum to Chris Prucha (WM), June 14, 2010.

ODWOG at 1181 Beechwood Road (500 mg/L vs. 250 mg/L). Some inorganic parameters (general chemistry and dissolved metals) were measured at concentrations exceeding their respective aesthetic objective (AO) or operational guideline (OG) from Table 4 of the ODWSOG.

As was the case in previous sampling events, most volatile organic compounds (VOCs) in off-site supply wells were reported below the laboratory reporting limit (RL) at all locations, with the exception of some VOCs that were detected in measurable quantities above the RL at some locations. In all cases, VOC concentrations were below the MAC or AO.

The moderate mineralization observed at the private water supply wells sampled (elevated alkalinity, hardness, TDS and sodium) is consistent with the local hydrogeological setting (carbonate aquifer with documented saline groundwater at depth). The origin of the elevated concentration in some dissolved metals (iron, manganese) and DOC at some locations is unknown. The low levels of VOCs observed at some locations adjacent to 1252 Beechwood Road are likely attributable to the historical release of VOCs at this location (former abattoir).

3.1.4 Groundwater Chemistry Quality Assurance / Quality Control (QA/QC)

An evaluation of the QA/QC data (from duplicate and blank samples) is included in Appendix A, where analytical results are compared between regular samples and their corresponding field duplicate samples, submitted to the laboratory without identifying the location they were collected from. A standard margin of error of 20% (relative percent difference (RPD) between regular sample and duplicate) was deemed acceptable for field duplicates. In general, the comparison between samples and duplicates shows very good correlation for the majority of analyzed constituents. All parameters for groundwater duplicate QA/QC sampling were well within the 20% margin of error with few exceptions as summarized in Appendix A. Of these few that had RPD greater than 20%, all except four (chemical oxygen demand and total phosphorus at M101, total phosphorus for M81 and total Kjeldahl nitrogen for M82-2) were measured at low concentrations (less than 5 times the MDL) and are therefore within acceptable margin of error. All parameters were near or below the MDL in equipment and field blanks.

3.2 SURFACE WATER RESULTS

The two water courses that may receive surface water/storm water runoff from the Richmond Landfill are Marysville Creek to the north of the waste mound and Beechwood Ditch to the south (Figure 1). The Beechwood Ditch is a man-made surface water course that flows from the east onto WM property. It then flows west across a portion of the site, then continues westward adjacent to Beechwood Rd, crossing Beechwood Road. The southwest storm water sedimentation retention pond discharge point confluence with Beechwood ditch is immediately before surface water sampling location S8R. Beechwood ditch then continues southwest to cross County Road 10, and joins Marysville Creek east of Highway 49 and north of Highway 401.

Both the Beechwood Ditch and Marysville Creek flow intermittently in the vicinity of the landfill. Marysville Creek has some base flow locally, and flows on a continuous basis west of County Road 10 (Deseronto Road). Marysville Creek eventually discharges into the Bay of Quinte at Hungry Bay.

All surface water monitoring locations are shown on Figure 1.

3.2.1 Surface Water Flow Rates

Visual observations of surface water flow and general water characteristics for the fall sampling program are summarized in Table 7. In general, surface water flow was below the recording capabilities of the flow meter, and as a result flow rates could not be measured. Two sampling locations located along Marysville Creek (S6 and S7) were reintroduced in the sampling program following a request by MOE.

3.2.2 Surface Water Sampling Results and Data Evaluation

The results from the surface water locations sampled in fall 2011 are presented in Table 8. Surface water quality data for the fall 2011 monitoring event are similar to historical results.

Surface water quality from samples collected in fall 2011 was compared to the Provincial Water Quality Objectives (PWQO) (see Table 8). Upstream surface water quality is monitored from station S2 for Marysville Creek; background surface water quality for Beechwood Ditch could not be recorded (station S5 was dry). Storm water runoff from the existing landfill area flows to one of three storm water sedimentation retention ponds, located to the northeast, northwest and south of the landfill footprint. The retention pond system located south of the landfill was reconstructed in 2008 and now has an increased storage volume and, as a result, an increased retention time.

All constituents analysed in surface water samples were below their respective PWQO, with the exception of (a) phosphorus which was detected at concentrations slightly exceeding the PWQO of 0.03 mg/L at all downstream and upstream locations except S2, ranging between 0.057 and 0.13 mg/L; and (b) phenols measured at 0.002 mg/L at S7, slightly exceeding the PWQO range (0.001 mg/L).

Results from fall 2011 indicate that the landfill is not causing any adverse impacts to surface water quality.

3.2.3 Surface Water Quality Assurance / Quality Control (QA/QC)

An evaluation of the QA/QC data (from duplicate and blank samples) is included in Appendix A, where analytical results are compared between regular samples and their corresponding field duplicate samples, submitted to the laboratory without identifying the location they were collected from. A standard margin of error of 20% was deemed acceptable for field duplicates. In general, the comparison between samples and duplicates shows very good correlation for the majority of analyzed constituents. All parameters for the surface water duplicate QA/QC sample (location S6) were well within the 20% margin of error with the exception of Total Phosphorus and Total Suspended Solids. Total Phosphorus and Total Suspended Solids had RPD greater than 20%, all except one (Phosphorus) were measured at low concentrations (less than 5 times the MDL) and are therefore within acceptable margin of error. All parameters were near or below the MDL in equipment and field blanks.

3.3 SUBSURFACE GAS SAMPLING

On October 26, 2011, WESA inspected the subsurface gas monitoring probes and obtained measurements where possible. Measurements were made using a RKI Eagle probe calibrated to methane gas response. The location and condition of the gas monitors and the measurement results are shown in Table 10. Readings were between 0 ppm and 5 ppm, well below the lower explosive limit (LEL) of 5% or 50,000 ppm.

4.0 SUMMARY AND CONCLUSIONS

The fall 2011 monitoring program included the collection of groundwater and surface water samples, as well as landfill gas monitoring, in accordance with the site groundwater monitoring requirements outlined in the revised EMP dated June 29, 2010, as specified in the C of A amendment issued on March 31, 2010.

The following were completed between October 20, 2010 and November 24, 2011:

- Water levels were measured at 64 groundwater monitoring wells: 34 in the shallow groundwater flow zone; and 30 in the intermediate bedrock flow zone.
- 38 groundwater monitors were sampled from 36 locations (14 completed in the shallow zone and 24 in the intermediate bedrock).
- Six (6) off-site domestic water supply wells located along Beechwood Road were sampled.
- Four (4) surface water locations were sampled.
- A total of 11 Quality Assurance/Quality Control (QA/QC) samples were collected (6 field duplicates, 2 field blanks and 3 equipment blanks).

- Subsurface gas concentrations were recorded from six (6) on-site gas monitoring wells at five locations.

4.1 GROUNDWATER

- Groundwater flow directions interpreted from monitors known to be hydraulically active were consistent with historical flownets:
    - Shallow groundwater flow is influenced by local topographic highs in the southwestern (Empey Hill Drumlin) and eastern (M96 area) portions of the site, and is characterized by a flow divide with shallow groundwater being directed both to the north (toward Marysville Creek) and the south (toward Beechwood Ditch).
    - Groundwater in the intermediate bedrock flow zone generally flows to the west from the western edge of the landfill, to the south-southeast from the southern edge of the landfill, and to the southwest from the southwest corner of the landfill. Overall, the directions of groundwater flow within the intermediate flow zone are consistent with the regional directions of groundwater flow, towards the south.
- Groundwater quality data from fall 2011 are generally consistent with historical results.
- Slightly elevated concentrations of a number of water quality parameters are seen in the shallow groundwater zone northwest and north of the Phase 1 landfill footprint. In other areas of the site, there is no evidence of groundwater impact away from the landfill footprint in the shallow groundwater flow zone.
- The geochemical results for the intermediate bedrock groundwater flow zone indicate higher concentrations of water quality parameters south of the landfill relative to the concentrations west and north of the landfill. The higher concentrations are downgradient from the landfill footprint and occur in monitoring wells that are known to be hydraulically connected to each other. These concentrations may reflect minor groundwater impacts from site activities.
- The moderate mineralization observed at the off-site private water supply wells along Beechwood Road (elevated alkalinity, hardness, TDS and sodium) is consistent with the local hydrogeological setting (carbonate aquifer with documented saline groundwater at depth). The origin of the elevated concentration in some dissolved metals (iron, manganese) and DOC at some locations is unknown. The low levels of VOCs observed at some locations adjacent to 1252 Beechwood Road are likely attributable to the historical release of VOCs at this location (former abattoir). Lead was found to slightly exceed ODWSOG for domestic well at 1206 Beechwood Road.

- Continued groundwater monitoring within the shallow and intermediate bedrock groundwater flow zones between the landfill footprint and the low-head areas is warranted in order to further examine groundwater quality and any trends over time.
- It is recommended that the following groundwater monitoring wells be removed from the monitoring network as they are unreliable for water level and/or quality monitoring as a result of these issues;
    - M29 and M39: low recovery small diameter (2.54 cm) overburden monitors that are often dry and/or cannot be sampled after being purged dry;
    - M58-4 and OW57; damaged monitors.

4.2 SURFACE WATER

- The concentrations observed are within the range of historical monitoring results.
- Similar to historic surface water quality, concentrations of total phosphorous exceeded the PWQO objective during the fall 2011 sampling event at all upstream and downstream locations, except for S2, phenols were slightly above the PWQO at the downstream (S7) location.
- The results indicate that surface water runoff from the site or discharge of contaminated groundwater is not affecting Marysville Creek or Beechwood Ditch.

4.3 SUBSURFACE GAS

- All measurements for methane gas were below the LEL of 5%, or 50,000 ppm.

5.0 LIMITING CONDITIONS

The fall 2011 monitoring program involved the collection of groundwater (from on-site monitoring wells and off-site domestic supply wells), surface water and sub-surface gas for analyses at the site monitoring locations. The data collected during this investigation represent the conditions at the sampled locations only.

The conclusions presented in this report represent our professional opinion, in light of the terms of reference, scope of work, and any limiting conditions noted herein.

Respectfully submitted,

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TABLES

Table 1: Summary of Environmental Monitoring Program

Monitoring Locations		Parameter Suite	Monitoring Frequency
Shallow Groundwater Flow Zone Monitors			
M12, M14, M15, M16, M18, M19, M23, M27, M28, M29, M30, M31, M35, M38, M39, M41, M47-3, M53-4, M54-4, M58-4, M60-4, M66-2, M67-2, M68-4, M70-3, M77, M80-2, M81, M87-2, M88-2, M89-2, M96, M97, M98, M99-2, M100, M101, M102, M103, OW37-s, OW57		Groundwater Elevations	Semi-annual: Spring and Fall
M29, M39, M41, M53-4, M54-4, M58-4, M66-2, M67-2, M68-4, M70-3, M80-2, M81, M87-2, M96, M97, M99-2, M101, M102, M103, OW37-s		Groundwater Inorganic & General	Semi-annual: Spring and Fall
Intermediate Bedrock Groundwater Flow Zone Monitors			
M3A-3, M9-3, M10-1, M49-1, M50-3, M56-2, M57, M58-3, M59-2, M59-3, M59-4, M60-1, M63-2, M64-2, M70-1, M71, M72, M73, M74, M80-1, M82-1, M82-2, M91-1, M95-1, M105, M106, M107*, M108*, OW54-i, OW54-d		Groundwater Elevations	Semi-annual: Spring and Fall
M5-3, M6-3, M9-3, M10-1, M49-1, M56-2, M57, M58-3, M59-2, M59-3, M59-4, M70-1, M71, M72, M74, M75, M80-1, M82-1, M82-2, M91-1, M95-1, M105, M106, OW54-d		Groundwater Inorganic & General	Semi-annual: Spring and Fall
Surface Water Sampling Locations			
Beechwood Ditch	S5, S4R, S8R, S6 and S7	Surface Water Inorganic and General	Semi-annual: Spring and Fall
Marysville Creek	S2 and S3	Surface Water Inorganic and General	Semi-annual: Spring and Fall
Landfill Gas Monitoring Wells			
GM1, GM3, GM4-1, GM4-2, GM5, GM6		% methane by volume	Semi-annual: Spring and Fall
Off-site Domestic Water Supply Wells			
1206 Beechwood Road 1144 Beechwood Road 1181 Beechwood Road	1250 Beechwood Road 1252 Beechwood Road 1264 Beechwood Road	Groundwater and Inorganic & General, VOCs	Semi-annual: Spring and Fall

Monitors M107 and M108 were added to assist in the interpretation of groundwater flow direction in the southeast portion of the site (intermediate bedrock groundwater flow zone)

Table 2. Analytical Parameters for Water and Leachate Samples

Groundwater Inorganic and General Parameters		
Alkalinity	Conductivity	Nitrite
Ammonia (total)	Copper	pH
Arsenic	Dissolved organic carbon	Phenols
Barium	Hardness	Phosphorus (total)
Biological oxygen demand	Iron	Potassium
Boron	Lead	Sodium
Cadmium	Magnesium	Sulphate
Calcium	Manganese	Total dissolved solids
Chemical oxygen demand	Mercury	Total Kjeldahl Nitrogen
Chloride	Naphthalene	Zinc
Chromium (total)	Nitrate	
Surface Water Inorganic and General Parameters		
Alkalinity	Cyanide (free)	Total dissolved solids
Ammonia (total)	Hardness	Total kjeldahl nitrogen
Arsenic	Iron	Total phosphorus
Barium	Lead	Total suspended solids
Biological oxygen demand	Magnesium	Zinc
Boron	Mercury	
Cadmium	Naphthalene	
Calcium	Nitrate	*Field measured:*
Chemical oxygen demand	Nitrite	conductivity
Chloride	Phenols	dissolved oxygen
Chromium (total)	Potassium	estimated flow rate
Conductivity	Sodium	pH
Copper	Sulphate	temperature

Table 3. Groundwater Elevation Monitoring Locations

Location	Shallow Groundwater Flow Zone			Intermediate Groundwater Flow Zone		
West of landfill footprint	M27	M58-4	M98	M3A-3	M59-4	M82-1
	M28	M67-2	M99-2	M56-2	M72	M82-2
	M29	M87-2	M100	M58-3	M73	M91-1
	M30	M88-2	M101	M59-2	M74	M95-1
	M31	M89-2	M102	M59-3		
	M38	M97	OW37-s			
North of landfill footprint	M35	M66-2		M60-1		
	M39	M103				
	M60-4					
South of landfill footprint	M12	M18	M80-2	M9-3	M64-2	M105
	M14	M41	M81	M10-1	M71	M106
	M15	M53-4	OW57	M49-1	M80-1	M107
	M16	M54-4		M57	OW54-i	M108
				M63-2	OW54-d	
East of landfill footprint	M19	M68-4	M96	M50-3		
	M23	M70-3		M70-1		
	M47-3	M77				

Table 4: Groundwater Elevations - October 20, 2011

Monitoring Well	Water Level (masl)	Monitoring Well	Water Level (masl)	Monitoring Well	Water Level (masl)	Monitoring Well	Water Level (masl)
Shallow Groundwater Flow Zone							
M12	124.56	M31	123.63	M67-2	122.13	M98	128.94
M14	125.06	M35	123.74	M68-4	DRY	M99-2	129.06
M15	DRY	M38	124.53	M70-3	DRY	M100	124.60
M16	124.26	M39	DRY	M77	123.89	M101	124.14
M18	DRY	M41	124.63	M80-2	122.93	M102	122.98
M19	126.38	M47-3	123.80	M81	124.33	M103	123.82
M23	127.01	M53-4	120.11	M87-2	122.53	OW37-s	121.94
M27	125.26	M54-4	124.09	M88-2	126.57	OW57	DAMAGED
M28	125.26	M58-4	123.76	M89-2	127.84		
M29	DRY	M60-4	123.85	M96	126.75		
M30	123.86	M66-2	122.12	M97	123.52		
Intermediate Bedrock Groundwater Flow Zone							
M3A-3	124.65	M59-2	122.80	M72	122.53	M105	119.02
M9-3	119.97	M59-3	122.77	M73	122.60	M106	122.68
M10-1	119.68	M59-4	122.75	M74	123.41	M107	119.68
M49-1	119.28	M60-1	122.54	M80-1	122.76	M108	119.51
M50-3	124.48	M63-2	120.91	M82-1	122.53	OW54-d	119.37
M56-2	122.74	M64-2	118.71	M82-2	122.54	OW54-i	119.37
M57	109.86	M70-1	111.55	M91-1	122.67		
M58-3	122.75	M71	119.68	M95-1	122.61		

Table 5: Groundwater Quality Results - October 24-26, 2010

Name	Date	Alkalinity	Ammonia	Arsenic	Barium	Biochemical Oxygen Demand	Boron	Cadmium	Calcium	Chemical Oxygen Demand	Chloride	Chromium	Conductivity	Copper	Dissolved Organic Carbon	Hardness	Iron	Lead	Magnesium	Manganese	Mercury	Naphthalene	Nitrate	Nitrite	pH (Lab)	Phenols	Phosphorus (total)	Potassium	Sodium	Sulphate	Total Dissolved Solids	Total Kjeldahl Nitrogen	Zinc
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	unitless	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Shallow Groundwater Flow Zone*																																	
M41	25/10/2011	463	< 0.15	< 0.001	0.089	< 2	0.064	< 0.0001	170	14	170	< 0.005	1590	0.001	3.2	780	0.47	< 0.0005	83	0.056	< 0.0002	< 0.0005	0.1	< 0.01	7.79	< 0.001	0.06	14	41	90	1050	< 0.7	< 0.005
M54-4	24/10/2011	330	< 0.15	< 0.001	0.15	< 2	0.031	< 0.0001	120	< 4	62	0.006	876	< 0.001	2	390	< 0.1	< 0.0005	23	0.003	< 0.0002	< 0.0005	0.1	< 0.01	7.88	< 0.001	0.08	1.4	39	37	666	1	< 0.005
M66-2	24/10/2011	370	0.21	0.003	0.032	< 2	1.4	< 0.0001	98	10	120	< 0.005	1680	< 0.001	1.7	420	0.66	< 0.0005	43	0.032	< 0.0002	< 0.0005	< 0.1	< 0.01	8.05	< 0.001	0.05	9.7	220	310	1130	< 0.7	< 0.005
M67-2	24/10/2011	365	1.22	0.004	0.26	< 2	0.82	0.0002	50	24	5	0.006	798	< 0.001	2.9	240	1.6	< 0.0005	28	0.088	< 0.0002	< 0.0005	< 0.1	< 0.01	8.21	0.005	0.2	8.8	61	53	500	2.2	< 0.005
M80-2	24/10/2011	274	< 0.15	0.001	0.07	< 2	0.11	< 0.0001	73	85	27	0.017	741	< 0.001	1.7	350	0.69	< 0.0005	40	0.032	< 0.0002	< 0.0005	< 0.1	0.01	8.03	< 0.001	1.4	4.8	25	72	498	3	< 0.005
M81	24/10/2011	349	< 0.15	0.002	0.21	< 2	0.058	< 0.0001	100	8	48	< 0.005	897	< 0.001	1.4	450	0.44	< 0.0005	49	0.051	< 0.0002	< 0.0005	< 0.1	< 0.01	7.97	< 0.001	0.2	3.3	18	47	612	< 0.7	< 0.005
M87-2	25/10/2011	225	< 0.15	0.001	0.057	< 2	0.034	< 0.0001	59	110	27	0.038	623	< 0.001	1.3	310	< 0.1	< 0.0005	39	0.009	< 0.0002	< 0.0005	< 0.1	< 0.01	8.08	< 0.001	2.3	2.4	16	57	422	< 1	< 0.005
M96	25/10/2011	304	< 0.15	< 0.001	0.1	< 2	0.14	< 0.0001	72	11	6	0.007	675	< 0.001	1.7	340	< 0.1	< 0.0005	40	0.014	< 0.0002	< 0.0005	2.1	< 0.01	8.02	< 0.001	0.35	5.9	22	45	376	< 0.7	< 0.005
M97	25/10/2011	215	< 0.15	0.001	0.078	< 2	0.061	< 0.0001	36	5	7	0.011	527	< 0.001	2.5	230	< 0.1	< 0.0005	34	0.011	< 0.0002	< 0.0005	< 0.1	< 0.1	8.16	< 0.001	0.93	2.2	24	54	374	< 1	< 0.005
M99-2	25/10/2011	267	0.22	0.002	0.045	< 2	0.093	< 0.0001	66	19	30	0.025	837	< 0.001	2.5	430	0.98	< 0.0005	64	0.018	< 0.0002	< 0.0005	< 0.1	0.01	8.02	< 0.001	4.3	2.9	21	130	560	1	< 0.005
M101	24/10/2011	405	< 0.15	< 0.001	0.18	< 2	0.091	< 0.0001	160	190	87	0.005	1230	< 0.001	4.8	640	< 0.1	< 0.0005	56	0.032	< 0.0002	< 0.0005	< 0.1	0.02	7.89	< 0.001	0.16	4.4	18	120	814	1.3	< 0.005
M102	25/10/2011	434	< 0.15	< 0.001	0.13	< 2	0.054	< 0.0001	160	55	45	0.006	1050	0.001	3.2	540	1.1	< 0.0005	36	0.12	< 0.0002	< 0.0005	< 0.1	< 0.01	7.74	< 0.001	0.3	2.8	29	62	690	0.8	< 0.005
M103	26/10/2011	805	0.28	0.004	0.2	< 2	0.45	< 0.0001	150	24	120	< 0.005	1820	< 0.001	6.2	800	1.1	< 0.0005	100	0.034	< 0.0002	< 0.0005	< 0.1	< 0.01	7.79	0.001	0.16	9.6	160	43	1290	1	< 0.005
OW37-s	24/10/2011	126	< 0.15	< 0.001	0.097	< 2	0.078	< 0.0001	34	< 4	49	< 0.005	439	< 0.001	1.6	140	0.13	< 0.0005	13	0.25	< 0.0002	< 0.0005	< 0.1	< 0.01	8.15	< 0.001	< 0.06	7.5	30	2	328	< 0.7	< 0.005
Intermediate BedrockGroundwater Flow Zone																																	
M5-3	25/10/2011	451	1.36	< 0.001	0.19	11	1.2	< 0.0001	38	25	45	< 0.005	989	< 0.001	1.3	210	< 0.1	< 0.0005	28	0.003	< 0.0002	< 0.0005	< 0.1	< 0.01	8.12	0.053	0.05	14	150	1	656	1.4	< 0.005
M6-3	26/10/2011	2450	6.89	< 0.002	2.4	7	< 0.01	< 0.0001	1100	110	1000	0.02	5730	0.002	31.4	2700	< 0.1	0.0015	< 0.05	< 0.002	< 0.0002	< 0.003	< 0.1	< 0.01	7.6	0.018	0.2	77	560	9	6650	9	< 0.005
M9-3	26/10/2011	270	1.01	< 0.001	0.051	< 2	0.53	< 0.0001	50	12	70	< 0.005	757	< 0.001	1.9	240	0.21	< 0.0005	29	0.03	< 0.0002	< 0.0005	< 0.1	< 0.01	8.13	0.004	0.06	15	70	16	394	1.2	< 0.005
M10-1	26/10/2011	479	0.54	0.002	0.26	< 2	0.23	< 0.0001	170	30	150	< 0.005	1400	< 0.001	7.1	590	20	< 0.0005	43	0.91	< 0.0002	< 0.0005	< 0.1	< 0.01	7.71	0.001	0.06	5.5	63	15	860	1.1	< 0.005
M49-1	26/10/2011	376	1.34	< 0.001	0.047	8	0.96	< 0.0001	12	51	510	0.005	2410	< 0.002	3.1	57	< 0.1	< 0.0005	6.8	0.006	< 0.0002	< 0.0005	0.7	< 0.01	8.35	0.017	1.2	9.5	500	35	1290	< 10	< 0.005
M56-2	25/10/2011	282	< 0.15	< 0.001	0.2	< 2	0.074	< 0.0001	85	10	23	< 0.005	774	< 0.001	1.7	410	< 0.1	< 0.0005	48	0.063	< 0.0002	< 0.0005	< 0.1	< 0.01	8.03	< 0.001	0.06	3.4	13	96	476	< 0.7	< 0.005
M57	24/10/2011	169	4.61	0.007	0.018	9	1.1	< 0.0001	15	25	580	< 0.005	2640	< 0.001	5.2	43	< 0.1	< 0.0005	1.4	< 0.002	< 0.0002	< 0.0005	< 0.1	0.02	8.89	< 0.001	0.26	15	550	120	1790	6	< 0.005
M58-3	25/10/2011	324	< 0.15	< 0.001	0.19	< 2	0.017	< 0.0001	110	5	9	< 0.005	730	< 0.001	1.5	420	< 0.1	< 0.0005	34	< 0.002	< 0.0002	< 0.0005	0.2	< 0.01	8.02	< 0.001	< 0.03	1.9	7.8	61	428	< 0.7	< 0.005
M59-2	25/10/2011	418	0.45	< 0.001	0.22	< 2	0.23	< 0.0001	130	28	60	< 0.005	1030	< 0.001	6.9	480	< 0.1	< 0.0005	39	0.02	< 0.0002	< 0.0005	< 0.1	< 0.01	7.82	0.008	0.03	5.6	37	39	606	0.8	< 0.005
M59-3	25/10/2011	274	< 0.15	< 0.001	0.11	< 2	0.068	< 0.0001	110	12	28	< 0.005	721	< 0.001	3.3	350	0.32	< 0.0005	16	0.033	< 0.0002	< 0.0005	0.2	< 0.01	7.91	< 0.001	< 0.03	2.3	15	54	436	< 0.7	< 0.005
M59-4	25/10/2011	302	1.21	0.005	0.11	< 2	0.49	< 0.0001	61	10	5	< 0.005	622	< 0.001	1.9	290	1.2	< 0.0005	33	0.019	< 0.0002	< 0.0005	< 0.1	0.01	8.05	< 0.001	0.07	7	18	26	322	1.5	< 0.005
M70-1	25/10/2011	326	3.16	< 0.01	0.18	< 2	2.8	< 0.001	840	65	3300	< 0.005	10900	< 0.02	2.7	4600	9.9	< 0.005	620	0.16	< 0.0002	< 0.001	< 0.1	< 0.01	7.75	0.003	0.08	57	3600	380	5930	4	< 0.05
M71	25/10/2011	521	1.59	< 0.001	0.053	3	0.55	< 0.0001	140	28	150	< 0.005	1500	< 0.001	5.4	520	< 0.1	< 0.0005	42	0.013	< 0.0002	< 0.0005	< 0.1	< 0.01	7.74	0.008	0.1	13	120	12	996	2	< 0.005
M72	24/10/2011	264	0.49	< 0.001	0.15	12	0.4	< 0.0001	54	20	31	< 0.005	616	< 0.001	1.3	260	< 0.1	< 0.0005	31	0.003	< 0.0002	< 0.0005	< 0.1	< 0.01	8.13	0.021	< 0.03	7.7	17	17	478	< 0.7	< 0.005
M74	24/10/2011	300	0.98	< 0.001	0.11	3	0.99	< 0.0001	35	11	8	< 0.005	623	< 0.001	0.9	180	< 0.1	< 0.0005	24	0.007	< 0.0002	< 0.0005	< 0.1	< 0.01	8.14	0.008	0.11	11	62	18	428	3	< 0.005
M75	24/10/2011	465	< 0.15	0.003	0.032	30	1.3	< 0.0001	24	7	140	0.015	1400	< 0.001	1.6	120	< 0.1	< 0.0005	15	0.025	< 0.0002	< 0.0005	< 0.1	< 0.01	8.1	0.024	3.7	21	240	100	924	7	< 0.005
M80-1	24/10/2011	132	0.37	< 0.001	0.039	11	0.38	< 0.0001	23	15	8	< 0.005	369	< 0.001	0.9	110	< 0.1	< 0.0005	13	0.005	< 0.0002	< 0.0005	< 0.1	< 0.01	7.84	0.03	< 0.03	4.8	34	23	222	< 0.7	< 0.005
M82-1	24/10/2011	330	1.12	< 0.001	0.19	< 2	1	< 0.0001	51	46	44	< 0.005	903	< 0.001	2.9	240	< 0.1	< 0.0005	27	0.004	< 0.0002	< 0.0005	< 0.1	< 0.01	8.05	< 0.001	0.3	10	94	61	622	2	< 0.005
M82-2	24/10/2011	323	0.23	< 0.001	0.13	< 2	0.17	< 0.0001	110	20	33	< 0.005	820	< 0.001	3.2	410	< 0.1	< 0.0005	30	0.019	< 0.0002	< 0.0005	< 0.1	< 0.01	7.97	0.003	0.06	4.4	23	64	514	4	< 0.005
M91-1	25/10/2011	288	0.61	< 0.001	0.093	< 2	0.82	< 0.0001	49	7	15	< 0.005	658	< 0.001	1.1	230	0.14	< 0.0005	25	0.007	< 0.0002	< 0.0005	< 0.1	< 0.01	8.19	< 0.001	< 0.03	8.2	68	39	392	0.8	< 0.005
M95-1	25/10/2011	332	< 0.15	< 0.001	0.14	< 2	0.026	< 0.0001	120	9	9	< 0.005	765	< 0.001	1.6	430	0.18	< 0.0005	31	0.003	< 0.0002	< 0.0005	< 0.1	< 0.01	7.92	< 0.001	< 0.03	2.4	8.3	65	500	< 0.7	< 0.005
M105	25/10/2011	467	0.7	< 0.001	0.2	< 2	0.45	< 0.0001	130	25	120	< 0.005	1280	< 0.001	6.3	540	< 0.1	< 0.0005	54	0.009	< 0.0002	< 0.0005	< 0.1	< 0.01	7.77	0.013	< 0.03	8.5	98	14	728	1.2	< 0.005
M106	25/10/2011	357	1.92	< 0.001	0.078	21	1.6	< 0.0001	77	47	820	< 0.005	3360	< 0.001	1.3	400	< 0.1	< 0.0005	50	0.002	< 0.0002	< 0.0005	< 0.1	< 0.01	8.12	0.074	< 0.03	18	590	14	1830	2	< 0.005
OW54-d	25/10/2011	277	1.14	< 0.001	0.049	< 2	0.57	< 0.0001	45	11	74	< 0.005	817	< 0.001	2.6	230	< 0.1	< 0.0005	29	0.036	< 0.0002	< 0.0005	< 0.1	< 0.01	8.1	0.004	0.04	13	77	20	460	1.3	< 0.005

*** Shallow groundwater monitoring wells not sampled: M29, M39, M58-4, M68-4, M70-3 and M53-4 (see text for details)**

Table 6: Water Quality Results from Off-Site Domestic Supply Wells - October 26, 2011 (Inorganics and General Parameters)/ November 24, 2011 (Organics)

				1144 Beechwood Rd	1181 Beechwood Rd	1206 Beechwood Rd	1250 Beechwood Rd	1252 Beechwood Rd	1264 Beechwood Rd
Inorganic and General Parameters									
Reading Name	**Units**	**ODWSOG[1]**							
Alkalinity (as CaCO3)	mg/L	30-500	OG	453	331	463	482	391	388
Ammonia	mg/L			0.97	2.56	< 0.15	0.54	0.32	0.29
Arsenic	mg/L	0.025	IMAC	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001
Barium	mg/L	1	MAC	0.024	0.13	0.14	0.26	0.079	0.075
Biochemical Oxygen Demand	mg/L			< 2	15	< 2	< 2	< 2	< 2
Boron	mg/L	5	IMAC	0.27	1	0.054	0.11	0.18	0.15
Cadmium	mg/L	0.005	IMAC	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Calcium	mg/L			130	99	190	200	130	130
Chemical Oxygen Demand	mg/L			26	36	21	28	26	22
Chloride	mg/L	250	AO	93	500	150	160	100	100
Chromium	mg/L	0.05	MAC	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Conductivity	µS/cm			1210	2240	1440	1430	1090	1080
Copper	mg/L	1	AO	< 0.001	0.003	0.099	0.002	0.009	< 0.001
Dissolved Organic Carbon	mg/L	5	AO	5.6	3.9	3.5	7.1	4.4	4.6
Hardness (as CaCO3)	mg/L	80-100	OG	490	490	600	660	450	460
Iron	mg/L	0.3	AO	< 0.1	0.71	3.2	22	8.4	8.1
Lead	mg/L	0.01	MAC	< 0.0005	0.0021	0.011	< 0.0005	< 0.0005	< 0.0005
Magnesium	mg/L			43	59	30	42	33	31
Manganese	mg/L	0.05	AO	0.003	0.006	0.61	1.6	0.44	0.44
Mercury	mg/L	0.001	MAC	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Nitrate	mg/L	10	MAC	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nitrite	mg/L	1	MAC	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
pH (Lab)	unitless	6.5-8.5	OG	7.7	7.8	7.6	7.59	7.76	7.74
Phenols	mg/L			0.005	0.059	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus (total)	mg/L			< 0.03	0.05	0.19	< 0.03	< 0.03	< 0.03
Potassium	mg/L			10	18	9.7	4.4	5	5.1
Sodium	mg/L	200 20	AO[2]	76	280	78	57	64	61
Sulphate	mg/L	500	AO	28	27	43	16	29	30
Total Dissolved Solids	mg/L	500	AO	836	1540	980	966	750	756
Total Kjeldahl Nitrogen	mg/L			1.4	2.7	< 0.7	1.1	< 0.7	0.7
Zinc	mg/L	5	AO	< 0.005	0.046	0.022	0.064	0.046	< 0.005

Note 1: **ODWSOG**: Ontario Drinking Water Standards, Objectives and Guidelines (2006):
MAC: Maximum Acceptable Concentration; **IMAC**: Interim MAC; **AO**: Aesthetic Guideline; **OG**: Operational Guideline

Note 2: The AO for sodium in drinking water is 200 mg/L; local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L

Legend:

Concentrations below the laboratory reporting limit are greyed out	
Concentrations exceeding ODWSOG are highighted in yellow	
Sodium concentrations exceeding 20 mg/L are highighted in blue	

Table 6: Water Quality Results from Off-Site Domestic Supply Wells - October 26, 2011 (Inorganics and General Parameters)/ November 24, 2011 (Organics)

				1144 Beechwood Rd	1181 Beechwood Rd	1206 Beechwood Rd	1250 Beechwood Rd	1252 Beechwood Rd	1264 Beechwood Rd
Volatile Organic Compounds (VOC)									
1,1,1,2-Tetrachloroethane	mg/L			< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0003	< 0.0001
1,1,1-Trichloroethane	mg/L			< 0.0001	< 0.0002	< 0.0001	< 0.0001	0.047	< 0.0001
1,1,2,2-Tetrachloroethane	mg/L			< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0005	< 0.0002
1,1,2-Trichloroethane	mg/L			< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0005	< 0.0002
1,1-Dichloroethane	mg/L			< 0.0001	< 0.0002	0.0007	0.0053	0.093	0.0062
1,1-Dichloroethylene	mg/L	0.014	MAC	< 0.0001	< 0.0002	< 0.0001	0.0002	0.0092	0.0008
1,2-Dibromoethane	mg/L			< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0005	< 0.0002
1,2-Dichlorobenzene (o)	mg/L	0.2 0.003	MAC AO	< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0005	< 0.0002
1,2-Dichloroethane	mg/L	0.005	IMAC	< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0005	< 0.0002
1,2-Dichloropropane	mg/L			< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0003	< 0.0001
1,3,5-Trimethylbenzene	mg/L			< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,3-Dichlorobenzene (m)	mg/L			< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0005	< 0.0002
1,4-Dichlorobenzene (p)	mg/L	0.005 0.001	MAC AO	< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0005	< 0.0002
Benzene	mg/L	0.005	MAC	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0003	0.0002
Bromodichloromethane	mg/L			< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0003	< 0.0001
Bromoform	mg/L			< 0.0002	< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0005
Bromomethane	mg/L			< 0.0005	< 0.001	< 0.0005	< 0.0005	< 0.001	< 0.0005
Carbon Tetrachloride	mg/L	0.005	MAC	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0003	< 0.0001
Chlorobenzene	mg/L			< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0003	< 0.0001
Chloroethane	mg/L			0.0005	< 0.0004	0.0013	0.003	0.011	0.017
Chloroform	mg/L			< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0003	< 0.0001
Chloromethane	mg/L			< 0.0005	< 0.001	< 0.0005	< 0.0005	< 0.001	< 0.0005
Cis-1,2-Dichloroethylene	mg/L			< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0003	< 0.0001
Cis-1,3-Dichloropropylene	mg/L			< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0005	< 0.0002
Dichloromethane	mg/L	0.05	MAC	< 0.0005	< 0.001	< 0.0005	< 0.0005	< 0.001	< 0.0005
Ethylbenzene	mg/L	0.0024	AO	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0003	< 0.0001
m+p-Xylene	mg/L			< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0003	< 0.0001
o-Xylene	mg/L			< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0003	< 0.0001
Styrene	mg/L			< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0005	< 0.0002
Tetrachloroethylene	mg/L	0.03	MAC	< 0.0001	< 0.0002	< 0.0001	< 0.0001	0.0004	< 0.0001
Toluene	mg/L	0.024	AO	< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0005	< 0.0002
Trans-1,2-dichloroethylene	mg/L			< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0003	< 0.0001
Trans-1,3-dichloropropene	mg/L			< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0005	< 0.0002
Trichloroethylene	mg/L	0.005	MAC	< 0.0001	< 0.0002	< 0.0001	< 0.0001	0.0005	< 0.0001
Trichlorofluoromethane	mg/L			< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0005	< 0.0002
Vinyl Chloride	mg/L	0.002	MAC	< 0.0002	< 0.0004	0.0003	< 0.0002	< 0.0005	< 0.0002

Note 1: **ODWSOG**: Ontario Drinking Water Standards, Objectives and Guidelines (2006):
MAC: Maximum Acceptable Concentration; **IMAC**: Interim MAC; **AO**: Aesthetic Guideline; **OG**: Operational Guideline

Note 2: The AO for sodium in drinking water is 200 mg/L; local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L

Legend:	
Concentrations below the laboratory reporting limit are greyed out	
Concentrations exceeding ODWSOG are highighted in yellow	
Sodium concentrations exceeding 20 mg/L are highighted in blue	

Table 7: Surface Water Characteristics - October 28, 2011

Date	Parameter		Surface Water Station						
			S2	S3	S4R	S5	S6	S7	S8R
28-Oct-11	Velocity:	m/s	NM	NM	Dry	Dry	NM	NM	Dry
	Depth:	m	0.19	0.14	Dry	Dry	0.04	0.10	Dry
	Width:	m	1.80	0.83	Dry	Dry	0.18	1.16	Dry
	Estimated Flow Rate:	m^3/s	NM	NM	Dry	Dry	NM	NM	Dry

*** Flow Rate not taken for all Surface Water Stations (see text for details)**

NM: Not Measured (flow was insufficient to register on the flow meter - very small flow observed)

Table 8: Surface Water Quality Results - October 28, 2011

			Marysville Creek		Marysville Creek	
			S2	S6	S7	S3
			(upstream)	(upstream)	(downstream)	(downstream)
		Date	28/10/2011	28/10/2011	28/10/2011	28/10/2011
Reading Name	Units	PWQO				
Inorganic and General Parameters						
Alkalinity	mg/L		172	152	142	150
Ammonia	mg/L		< 0.15	< 0.15	< 0.15	< 0.15
Ammonia (unionized)	mg/L	0.02	< 0.02	< 0.02	< 0.02	< 0.02
Arsenic	mg/L	0.1	< 0.001	< 0.001	< 0.001	< 0.001
Barium	mg/L		0.056	0.052	0.071	0.067
Biochemical Oxygen Demand	mg/L		< 2	< 2	< 2	< 2
Boron	mg/L	0.2	< 0.02	0.024	0.038	0.043
Cadmium	mg/L	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Calcium	mg/L		77	69	71	74
Chemical Oxygen Demand	mg/L		25	28	33	28
Chloride	mg/L		23	24	26	40
Chromium	mg/L	0.01	< 0.005	< 0.005	< 0.005	< 0.005
Conductivity	µS/cm		525	499	489	588
Copper	mg/L	0.005	0.002	0.003	0.003	0.003
Cyanide (free)	mg/L	0.005	< 0.002	< 0.002	< 0.002	< 0.002
Hardness	mg/L		260	230	220	250
Iron	mg/L	0.3	< 0.1	0.12	0.14	0.24
Lead	mg/L	0.025	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Magnesium	mg/L		10	11	12	11
Mercury	mg/L	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Naphthalene	mg/L	0.007	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Nitrate	mg/L		< 0.1	< 0.1	< 0.1	< 0.1
Nitrite	mg/L		< 0.01	< 0.01	< 0.01	< 0.01
Phenols	mg/L	0.001	0.001	< 0.001	0.002	< 0.001
Phosphorus (total)	mg/L	0.03	0.02	0.066	0.13	0.057
Potassium	mg/L		3.1	5.1	8.3	7.1
Sodium	mg/L		7.9	11	13	21
Sulphate	mg/L		55	57	58	74
Total Dissolved Solids	mg/L		340	344	338	402
Total Kjeldahl Nitrogen	mg/L		< 0.7	0.8	0.9	< 0.7
Total Suspended Solids	mg/L		< 1	2	7	1
Zinc	mg/L	0.03	< 0.01	< 0.01	< 0.01	< 0.01
Field Measured						
Conductivity (Field)	µS/cm		534	492	483	581
Dissoved Oxygen (Field)	mg/L		5.61	7.63	8.52	12.85
pH (Field)	unitless	6.5-8.5	7.3	7.54	7.48	6.8
Temperature (Field)	°C		4.05	3.07	3.46	4.05

Table 9: Subsurface Gas Monitoring Results - October 26, 2011

Gas Monitor	Location	Reading (ppm)
GM1	North of garage area, south of waste mound	0
GM3	North-east corner of waste mound	5
GM4-1	South-east corner of waste mound	5
GM4-2		5
GM5	North-west corner of waste mound	5
GM6	North of waste mound	0

FIGURES

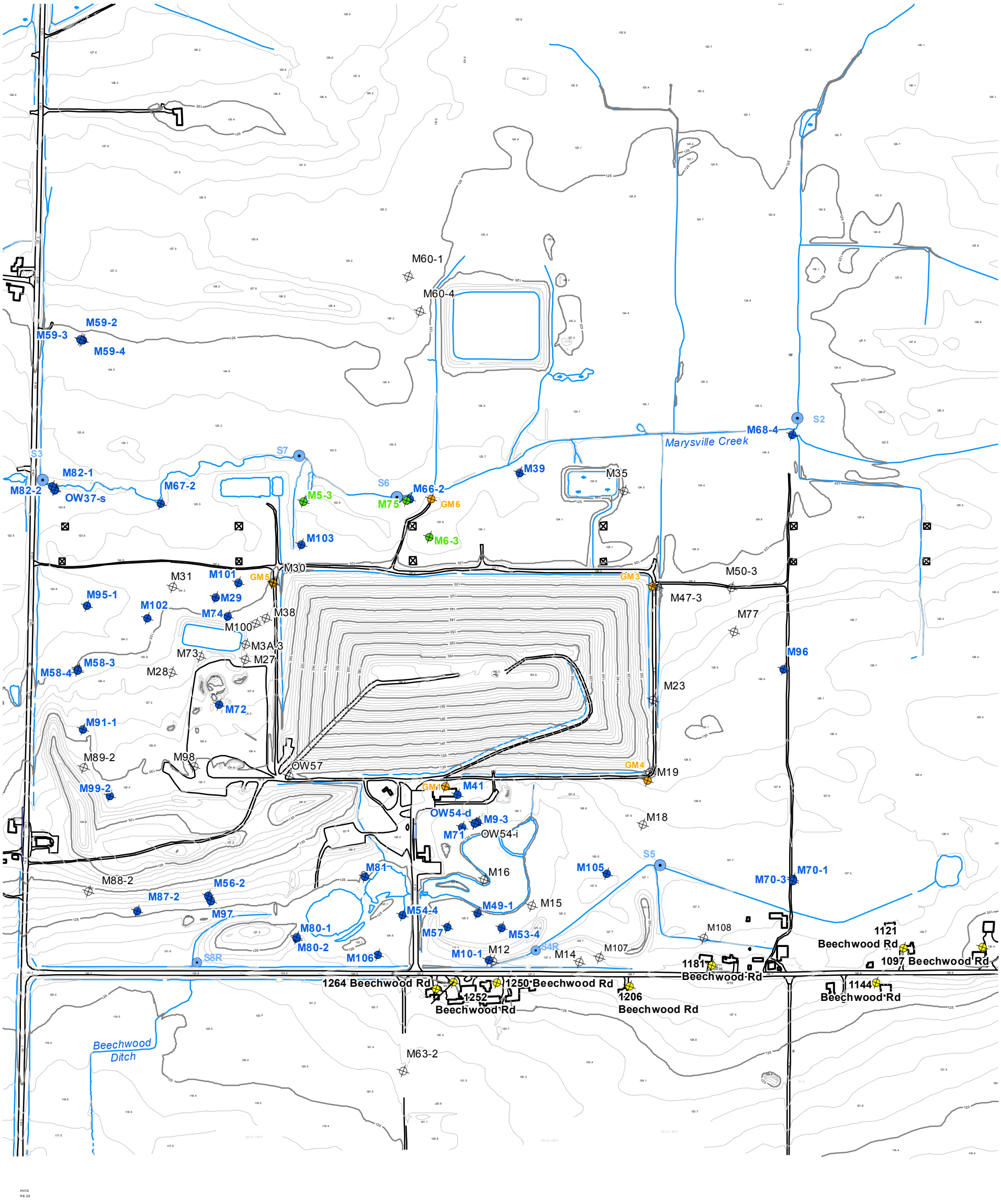

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Figure 1:
Site Plan and Monitoring Locations

M35	Monitoring Well Used to Measure Water Level (Not Sampled)
M53-4	Monitoring Well Used to Measure Water Level and Sampled for Chemistry
M5-3	Monitoring Well Sampled for Chemistry (Not used for Water Levels)
1097 Beechwood	Domestic Water Supply Well Sampled for Chemistry
GM1	Gas Monitoring Well
S2	Surface Water Monitoring Location

Project : K-B9479-00-04
Data Source: WM Canada, WESA, HPA Ltd. Base Mapping 2009
Date: October 2011

0 12.5 25 50 75 100
Metres

Prepared by:
WESA Geomatics

Units:
UTM NAD 83 Zone 18

Scale: 1:6000

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M60-4
123.85

123

M68-4
DRY

OW37-S
121.94

M67-2
122.13

M66-2
122.12

M39
DRY

M35
123.74

M103
123.82

122

M31
123.63

M30
123.86

M101
124.14

M102
122.98

M29
DRY

M38
124.53

M47-3
123.80

M77
123.89

M96
126.75

M58-4
123.76

M28
125.26

M27
125.26

M100
124.60

M23
127.01

M98
128.94

M89-2
127.84

M99-2
129.06

OW57

M19
126.38

M41
124.63

M18
DRY

M81
124.33

M16
124.26

M70-3
DRY

M88-2
126.57

M97
123.52

M87-2
122.53

M80-2
122.93

M54-4
124.09

M15
DRY

M53-4
124.30

M12
124.56

M14
125.06

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Figure 2:
Shallow Groundwater Flow Zone Potentiometric Surface - October 20, 2011

M58-4 Shallow Groundwater Zone Elevation Monitor
Topographic Contour Lines
Surface Water
Hydro Tower
Potentiometric Surface (masl)
Inferred Groundwater Flow Direction
Note: OW57 Damaged

Project : K-B9479-00-04
Data Source: WM Canada, WESA, HPA Ltd. Base Mapping 2009
Date: October 2011

0 12.5 25 50 75 100
Meters

Prepared by:
WESA Geomatics

Units:
UTM NAD 83 Zone 18

Scale: 1:5000

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M60-1
122.54

M59-2
122.8

M59-4
122.75

M59-3
122.77

M82-1
122.53

M82-2
122.54

123

124

M4-3
124.83

M50-3
124.48

M95-1
122.61

M74
123.41

M3A-3
124.65

M58-3
122.75

M73
122.6

M91-1
122.67

M72
122.53

122

121

120

OW54-i
119.37

M9-3
119.97

M71
119.68

OW54-d
119.37

M105
119.02

M70-1
111.55

M56-2
122.74

M49-1
119.28

M80-1
122.76

M57
109.86

M108
119.51

M10-1
119.68

M106
122.68

M107
119.68

M63-2
120.91

119

M64-2
118.71

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M58-3 Intermediate Groundwater Zone Elevation Monitor
Topographic Contour Lines
Potentiometric Surface (masl)
Inferred Groundwater Flow Direction

Hydro Tower
Surface Water

Note: M57, M70-1
Not used in contouring
(see text for details)

Project : K-B9479-00-04
Data Source: WM Canada, WESA, HPA Ltd. Base Mapping 2009
Date: October 2011

50 25 0 50 100
Meters

Prepared by:
WESA Geomatics

Units:
UTM NAD 83 Zone 18

Scale: 1:5000

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Figure 3:
Intermediate Bedrock Groundwater Flow Zone Potentiometric Surface - October 20, 2011

APPENDIX A

APPENDIX A - RESULTS FROM QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROGRAM

Summary of Results with Relative Percent Difference (RPD[1]) greater than 20%

Well	Parameter	Unit	Regular Sample	Field Duplicate	RPD (%)	MDL[2]	Comment
M101	Chemical Oxygen Demand	mg/L	190	16	168.93	4	
M101	Phosphorus (total)	mg/L	0.16	0.2	22.22	0.002	
M101	Total Kjeldahl Nitrogen	mg/L	1.3	2	42.42	0.7	Less than ~5 x MDL
M58-3	Boron	mg/L	0.017	0.022	25.64	0.01	Less than ~5 x MDL
M58-3	Chemical Oxygen Demand	mg/L	5	9	57.14	4	Less than ~5 x MDL
M81	Arsenic	mg/L	0.002	0.001	66.67	0.001	Less than ~5 x MDL
M81	Phosphorus (total)	mg/L	0.2	0.12	50.00	0.002	
M82-2	Phenols	mg/L	0.003	0.002	40.00	0.001	Less than ~5 x MDL
M82-2	Total Kjeldahl Nitrogen	mg/L	4	1.2	107.69	0.7	
S6	Phosphorus (total)	mg/L	0.066	0.093	33.96	0.002	
S6	Total Suspended Solids	mg/L	2	4	66.67	1	Less than ~5 x MDL

Note 1: RPD (%) = 100 * ABS (Regular Sample - Duplicate Sample) / ([Regular Sample + Duplicate Sample] / 2)
Note 2: MDL = Laboratory Method Detection Limit

Detailed Results from Field Duplicate vs. Regular Samples - Fall 2011

Parameter	Units	M101 (Regular Sample)	M101 (Field Duplicate)	RPD (%)
Alkalinity	mg/L	405	405	0.00
Ammonia (total)	mg/L	< 0.15	< 0.15	0.00
Arsenic	mg/L	< 0.001	< 0.001	0.00
Barium	mg/L	0.18	0.18	0.00
Biochemical Oxygen Demand	mg/L	< 2	< 2	0.00
Boron	mg/L	0.091	0.091	0.00
Cadmium	mg/L	< 0.0001	< 0.0001	0.00
Calcium	mg/L	160	160	0.00
Chemical Oxygen Demand	mg/L	190	16	168.93
Chloride	mg/L	87	87	0.00
Chromium	mg/L	0.005	0.006	18.18
Conductivity	µS/cm	1230	1220	0.82
Copper	mg/L	< 0.001	< 0.001	0.00
Dissolved Organic Carbon	mg/L	4.8	5.1	6.06
Hardness	mg/L	640	630	1.57
Iron	mg/L	< 0.1	< 0.1	0.00
Lead	mg/L	< 0.0005	< 0.0005	0.00
Magnesium	mg/L	56	55	1.80
Manganese	mg/L	0.032	0.033	3.08
Mercury	mg/L	< 0.0002	< 0.0002	0.00

Detailed Results from Field Duplicate vs. Regular Samples - Fall 2011 (continued)

Parameter	Units	M101 (Regular Sample)	M101 (Field Duplicate)	RPD (%)
Naphthalene	mg/L	< 0.0005	< 0.0005	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	0.02	0.02	0.00
pH (Lab)	mg/L	7.89	7.86	0.38
Phenols	mg/L	< 0.001	< 0.001	0.00
Phosphorus (total)	mg/L	0.16	0.2	22.22
Potassium	mg/L	4.4	4.3	2.30
Sodium	mg/L	18	18	0.00
Sulphate	mg/L	120	120	0.00
Total Dissolved Solids	mg/L	814	840	3.14
Total Kjeldahl Nitrogen	mg/L	1.3	2	42.42
Zinc	mg/L	< 0.005	< 0.005	0.00

Detailed Results from Field Duplicate vs. Regular Samples - Fall 2011 (continued)

Parameter	Units	M105 (Regular Sample)	M105 (Field Duplicate)	RPD (%)
Alkalinity	mg/L	467	471	0.85
Ammonia	mg/L	0.7	0.73	4.20
Arsenic	mg/L	< 0.001	< 0.001	0.00
Barium	mg/L	0.2	0.2	0.00
Biochemical Oxygen Demand	mg/L	< 2	3	0.00
Boron	mg/L	0.45	0.45	0.00
Cadmium	mg/L	< 0.0001	< 0.0001	0.00
Calcium	mg/L	130	120	8.00
Chemical Oxygen Demand	mg/L	25	23	8.33
Chloride	mg/L	120	120	0.00
Chromium	mg/L	< 0.005	< 0.005	0.00
Conductivity	µS/cm	1280	1280	0.00
Copper	mg/L	< 0.001	< 0.001	0.00
Dissolved Organic Carbon	mg/L	6.3	5.9	6.56
Hardness	mg/L	540	530	1.87
Iron	mg/L	< 0.1	< 0.1	0.00
Lead	mg/L	< 0.0005	< 0.0005	0.00
Magnesium	mg/L	54	54	0.00
Manganese	mg/L	0.009	0.009	0.00
Mercury	mg/L	< 0.0002	< 0.0002	0.00
Naphthalene	mg/L	< 0.0005	< 0.0005	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
pH (Lab)	unitless	7.77	7.76	0.13
Phenols	mg/L	0.013	0.015	14.29
Phosphorus (total)	mg/L	< 0.03	< 0.03	0.00
Potassium	mg/L	8.5	8.5	0.00
Sodium	mg/L	98	97	1.03
Sulphate	mg/L	14	14	0.00
Total Dissolved Solids	mg/L	728	832	13.33
Total Kjeldahl Nitrogen	mg/L	1.2	1.1	8.70
Zinc	mg/L	< 0.005	< 0.005	0.00

Detailed Results from Field Duplicate vs. Regular Samples - Fall 2011 (continued)

Parameter	Units	M58-3 (Regular Sample)	M58-3 (Field Duplicate)	RPD (%)
Alkalinity	mg/L	324	330	1.83
Ammonia (total)	mg/L	< 0.15	< 0.15	0.00
Arsenic	mg/L	< 0.001	< 0.001	0.00
Barium	mg/L	0.19	0.18	5.41
Biochemical Oxygen Demand	mg/L	< 2	< 2	0.00
Boron	mg/L	0.017	0.022	25.64
Cadmium	mg/L	< 0.0001	< 0.0001	0.00
Calcium	mg/L	110	110	0.00
Chemical Oxygen Demand	mg/L	5	9	57.14
Chloride	mg/L	9	9	0.00
Chromium	mg/L	< 0.005	< 0.005	0.00
Conductivity	µS/cm	730	744	1.90
Copper	mg/L	< 0.001	< 0.001	0.00
Dissolved Organic Carbon	mg/L	1.5	1.5	0.00
Hardness	mg/L	420	430	2.35
Iron	mg/L	< 0.1	< 0.1	0.00
Lead	mg/L	< 0.0005	< 0.0005	0.00
Magnesium	mg/L	34	36	5.71
Manganese	mg/L	< 0.002	< 0.002	0.00
Mercury	mg/L	< 0.0002	< 0.0002	0.00
Naphthalene	mg/L	< 0.0005	< 0.0005	0.00
Nitrate	mg/L	0.2	0.2	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
pH (Lab)	unitless	8.02	7.94	1.00
Phenols	mg/L	< 0.001	< 0.001	0.00
Phosphorus (total)	mg/L	< 0.03	< 0.03	0.00
Potassium	mg/L	1.9	1.9	0.00
Sodium	mg/L	7.8	8	2.53
Sulphate	mg/L	61	60	1.65
Total Dissolved Solids	mg/L	428	436	1.85
Total Kjeldahl Nitrogen	mg/L	< 0.7	< 0.7	0.00
Zinc	mg/L	< 0.005	< 0.005	0.00

Detailed Results from Field Duplicate vs. Regular Samples - Fall 2011 (continued)

Parameter	Units	M81 (Regular Sample)	M81 (Field Duplicate)	RPD (%)
Alkalinity	mg/L	349	349	0.00
Ammonia (total)	mg/L	< 0.15	< 0.15	0.00
Arsenic	mg/L	0.002	0.001	66.67
Barium	mg/L	0.21	0.21	0.00
Biochemical Oxygen Demand	mg/L	< 2	< 2	0.00
Boron	mg/L	0.058	0.062	6.67
Cadmium	mg/L	< 0.0001	< 0.0001	0.00
Calcium	mg/L	100	100	0.00
Chemical Oxygen Demand	mg/L	8	8	0.00
Chloride	mg/L	48	48	0.00
Chromium	mg/L	< 0.005	< 0.005	0.00
Conductivity	µS/cm	897	894	0.34
Copper	mg/L	< 0.001	< 0.001	0.00
Dissolved Organic Carbon	mg/L	1.4	1.6	13.33
Hardness	mg/L	450	470	4.35
Iron	mg/L	0.44	0.44	0.00
Lead	mg/L	< 0.0005	< 0.0005	0.00
Magnesium	mg/L	49	51	4.00
Manganese	mg/L	0.051	0.051	0.00
Mercury	mg/L	< 0.0002	< 0.0002	0.00
Naphthalene	mg/L	< 0.0005	< 0.0005	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
pH (Lab)	unitless	7.97	7.97	0.00
Phenols	mg/L	< 0.001	< 0.001	0.00
Phosphorus (total)	mg/L	0.2	0.12	50.00
Potassium	mg/L	3.3	3.5	5.88
Sodium	mg/L	18	19	5.41
Sulphate	mg/L	47	47	0.00
Total Dissolved Solids	mg/L	612	620	1.30
Total Kjeldahl Nitrogen	mg/L	< 0.7	< 0.7	0.00
Zinc	mg/L	< 0.005	< 0.005	0.00

Detailed Results from Field Duplicate vs. Regular Samples - Fall 2011 (continued)

Parameter	Units	M82-2 (Regular Sample)	M82-2 (Field Duplicate)	RPD (%)
Alkalinity	mg/L	323	324	0.31
Ammonia (total)	mg/L	0.23	0.22	4.44
Arsenic	mg/L	< 0.001	< 0.001	0.00
Barium	mg/L	0.13	0.13	0.00
Biochemical Oxygen Demand	mg/L	< 2	< 2	0.00
Boron	mg/L	0.17	0.17	0.00
Cadmium	mg/L	< 0.0001	< 0.0001	0.00
Calcium	mg/L	110	110	0.00
Chemical Oxygen Demand	mg/L	20	22	9.52
Chloride	mg/L	33	32	3.08
Chromium	mg/L	< 0.005	< 0.005	0.00
Conductivity	µS/cm	820	820	0.00
Copper	mg/L	< 0.001	< 0.001	0.00
Dissolved Organic Carbon	mg/L	3.2	3.4	6.06
Hardness	mg/L	410	400	2.47
Iron	mg/L	< 0.1	< 0.1	0.00
Lead	mg/L	< 0.0005	< 0.0005	0.00
Magnesium	mg/L	30	31	3.28
Manganese	mg/L	0.019	0.019	0.00
Mercury	mg/L	< 0.0002	< 0.0002	0.00
Naphthalene	mg/L	< 0.0005	< 0.0005	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
pH (Lab)	unitless	7.97	8	0.38
Phenols	mg/L	0.003	0.002	40.00
Phosphorus (total)	mg/L	0.06	0.07	15.38
Potassium	mg/L	4.4	4.4	0.00
Sodium	mg/L	23	23	0.00
Sulphate	mg/L	64	63	1.57
Total Dissolved Solids	mg/L	514	560	8.57
Total Kjeldahl Nitrogen	mg/L	4	1.2	107.69
Zinc	mg/L	< 0.005	< 0.005	0.00

Detailed Results from Field Duplicate vs. Regular Samples - Fall 2011 (continued)

Parameter	Units	S6 (Regular Sample)	S6 (Field Duplicate)	RPD (%)
Alkalinity	mg/L	152	151	0.66
Aluminum	mg/L	0.081	0.083	2.44
Ammonia	mg/L	< 0.15	< 0.15	
Ammonia (unionized)	mg/L	< 0.02	< 0.02	0.00
Antimony	mg/L	< 0.001	< 0.001	0.00
Arsenic	mg/L	< 0.001	< 0.001	0.00
Barium	mg/L	0.052	0.052	0.00
Beryllium	mg/L	< 0.0006	< 0.0006	0.00
Biochemical Oxygen Demand	mg/L	< 2	3	0.00
Boron	mg/L	0.024	0.024	0.00
Cadmium	mg/L	< 0.0001	< 0.0001	0.00
Calcium	mg/L	69	72	4.26
Chemical Oxygen Demand	mg/L	28	30	6.90
Chloride	mg/L	24	25	4.08
Chromium	mg/L	< 0.005	< 0.005	0.00
Cobalt	mg/L	< 0.0005	< 0.0005	0.00
Conductivity	µS/cm	499	499	0.00
Copper	mg/L	0.003	0.003	0.00
Cyanide (free)	mg/L	< 0.002	< 0.002	0.00
Field Temperature	°C	3.07	3.07	0.00
Hardness	mg/L	230	230	0.00
Iron	mg/L	0.12	< 0.1	0.00
Lead	mg/L	< 0.0005	< 0.0005	0.00
Magnesium	mg/L	11	12	8.70
Manganese	mg/L	0.008	0.008	0.00
Mercury	mg/L	< 0.0002	< 0.0002	0.00
Molybdenum	mg/L	< 0.002	< 0.002	0.00
Naphthalene	mg/L	< 0.0005	< 0.0005	0.00
Nickel	mg/L	< 0.001	< 0.001	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrate + Nitrite	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
pH (Field)	unitless	7.54	7.54	0.00
Phenols	mg/L	< 0.001	< 0.001	0.00
Phosphorus (total)	mg/L	0.066	0.093	33.96
Potassium	mg/L	5.1	5.5	7.55

Detailed Results from Field Duplicate vs. Regular Samples - Fall 2011 (continued)

Parameter	Units	S6 (Regular Sample)	S6 (Field Duplicate)	RPD (%)
Selenium	mg/L	< 0.005	< 0.005	0.00
Silver	mg/L	< 0.0004	< 0.0004	0.00
Sodium	mg/L	11	11	0.00
Strontium	mg/L	0.19	0.2	5.13
Sulphate	mg/L	57	57	0.00
Thallium	mg/L	< 0.0002	< 0.0002	0.00
Tin	mg/L	< 0.002	< 0.002	0.00
Titanium	mg/L	0.005	0.006	18.18
Total Dissolved Solids	mg/L	344	324	5.99
Total Kjeldahl Nitrogen	mg/L	0.8	0.9	11.76
Total Suspended Solids	mg/L	2	4	66.67
Uranium	mg/L	0.0007	0.0007	0.00
Vanadium	mg/L	< 0.001	< 0.001	0.00
Zinc	mg/L	< 0.01	< 0.01	0.00