FALL 2010 SEMI-ANNUAL MONITORING REPORT

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

Prepared for:

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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 2010 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 2010 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. Construction of the two new groundwater monitoring wells (M105 and M106) specified in Table 1 of the EMP (intermediate bedrock groundwater zone) was not completed at the time of the fall 2010 monitoring event; consequently these wells could not be used to record water levels or for sampling as part of this event.

The fall monitoring event was conducted between October 25 and October 28, 2010. A total of 39 groundwater monitors were sampled from 36 locations. Three (3) groundwater monitoring wells could not be sampled because they (a) had insufficient recovery for sampling after purging (M29 and M39), or (c) 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.

Eight (8) off-site domestic water supply wells were sampled on October 27, 2010. Water samples from private supply wells were analyzed for groundwater inorganic and general parameters, as well as for VOCs.

Fall surface water sampling was conducted on October 27, 2010 from locations S2, S3, S5 and S8R, while location S4R was dry. Surface water samples were analyzed for the surface water inorganic and general parameters.

Landfill gas migration monitoring was conducted on October 25, 2010. Field measurements were made with a RKI Eagle probe calibrated to methane gas response at six (6) gas monitors (GM1 and GM3 to GM6); GM2 was destroyed a few years ago during re-grading activities around the compost pad area.

Additionally, six (6) field duplicate samples, three (3) field blanks, and one (1) equipment blank were collected during the fall sampling event, for a total of 10 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 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[1], 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;
- 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.

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

3.1 GROUNDWATER RESULTS

3.1.1 Groundwater Elevations

Groundwater elevations from program monitoring wells were measured on October 25, 2010 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 2010 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 1). 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 2010 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, to the south-southeast from the southern edge of the landfill, and to the southwest from the southwest corner of the landfill. 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.

The deep groundwater is saline and not suitable for potable use. There is limited hydraulic interaction between the intermediate and deep bedrock flow zones because of the differences in groundwater density related to salinity. Deep bedrock groundwater will generally flow to the south and will generally flow in a horizontal direction, although vertical components of flow may also exist. The bulk rock hydraulic conductivity is generally lower at depths greater than 30 m below the top of bedrock, and the fracture apertures are generally smaller. It follows that groundwater flow in the deep bedrock flow zone will be slower than in the shallow and intermediate flow zones.

3.1.2 Groundwater Sampling Results and Evaluation

Results from the groundwater monitoring wells sampled in fall 2010 are presented in Table 5. Groundwater quality data for the fall 2010 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, M102and 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 indication 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 2010 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[2] (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.

Continued monitoring of the groundwater chemistry in the monitoring wells around the landfill and in the low head areas is warranted to assess any temporal trends in the groundwater conditions.

3.1.3 Results from Off-Site Domestic Water Supply Wells

Results from off-site private water supply wells sampled in fall 2010 are presented in Table 6.

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

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. 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 three (calcium, dissolved organic carbon and hardness at M96) 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 before again crossing Beechwood Road and travelling 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.

3.2.2 Surface Water Sampling Results and Data Evaluation

The results from the surface water locations sampled in fall 2010 are presented in Table 8. Surface water quality data for the fall 2010 monitoring event are similar to historical results.

Surface water quality from samples collected in fall 2010 were compared to the Provincial Water Quality Objectives (PWQO) (see Table 8). Upstream surface water quality is monitored from station S2 for Marysville Creek, while background surface water quality for Beechwood Ditch was recorded at station S5. 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 located south of the landfill was reconstructed in 2008 and now has an increased storage volume and, as a result, an increased retention time. A fourth pond receives runoff from the compost pad; however, there is no direct discharge from this pond to surface water. Water from this pond is disposed of at the Napanee Water Treatment Plant.

All constituents analysed in surface water samples were below their respective PWQO, with the exception of phosphorus which was detected at concentrations slightly exceeding the PWQO of 0.03 mg/L at downstream location S3 (0.031 mg/L), compared to 0.022 mg/L at upstream location S2 along Marysville Creek. The highest phosphorus concentration (0.11 mg/L) was measured at upstream location S5 along Beechwood Ditch, while the concentration was significantly lower and only slightly above the PWQO at location S8R (0.032 mg/L), located in Beechwood Ditch near the downstream extremity of the south pond system.

It should be noted that total phosphorus concentrations have historically been detected at concentrations above the PWQO at background locations (e.g., see 2009 Annual Monitoring Report), as well as downstream from the landfill site, and are not attributable to the landfill.

Results from fall 2010 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 S2) were well within the 20% margin of error.

3.3 SUBSURFACE GAS SAMPLING

On October 25, 2010, 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 9. Readings were between 0 ppm and 130 ppm, well below the lower explosive limit (LEL) of 5% or 50,000 ppm.

4.0 SUMMARY AND CONCLUSIONS

The fall 2010 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 25-28, 2010:

- Water levels were measured 65 groundwater monitoring wells (39 in the shallow groundwater flow zone and 22 in the intermediate bedrock flow zone)).
- 39 groundwater monitors were sampled from 36 locations (17 completed in the shallow zone and 22 in the intermediate bedrock).
- Eight (8) off-site domestic water supply wells located along Beechwood Road were sampled.
- Four (4) surface water locations were sampled.
- A total of 10 Quality Assurance/Quality Control (QA/QC) samples were collected (6 field duplicates, 3 field blanks and 1 equipment blank).

- Subsurface gas concentrations were recorded from six 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 2010 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).
- 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.

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 2010 sampling event at the upstream (S5) and downstream (S8R) locations in Beechwood Ditch, as well as downstream location in Marysville Creek.
- 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 2010 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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Senior Consulting Engineer

TABLES

Table 1: Summary of Environmental Monitoring Program

<table>
<tr><th colspan="2">Monitoring Locations</th><th>Parameter Suite</th><th>Monitoring Frequency</th></tr>
<tr><td colspan="4">Shallow Groundwater Flow Zone Monitors</td></tr>
<tr><td colspan="2">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</td><td>Groundwater Elevations</td><td>Semi-annual: Spring and Fall</td></tr>
<tr><td colspan="2">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</td><td>Groundwater Inorganic & General</td><td>Semi-annual: Spring and Fall</td></tr>
<tr><td colspan="2">M41, M58-4, M96, M97, M53-4, M54-4, M66-2, M67-2, M70-3, M80-2, M87-2, M101, M102, M103, OW37-s</td><td>VOCs</td><td>Annual: Spring</td></tr>
<tr><td colspan="4">Intermediate Bedrock Groundwater Flow Zone Monitors</td></tr>
<tr><td colspan="2">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*, OW54-i, OW54-d</td><td>Groundwater Elevations</td><td>Semi-annual: Spring and Fall</td></tr>
<tr><td colspan="2">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</td><td>Groundwater Inorganic & General</td><td>Semi-annual: Spring and Fall</td></tr>
<tr><td colspan="2">M5-3, M6-3, M9-3, M10-1, M49-1, M56-2, M57, M59-3, M70-1, M74, M75, M80-1, M82-1, M82-2, M91-1, M95-1</td><td>VOCs</td><td>Annual: Spring</td></tr>
<tr><td colspan="4">Surface Water Sampling Locations</td></tr>
<tr><td rowspan="2">Beechwood Ditch</td><td>S5, S4R and S8R</td><td>Surface Water Inorganic and General</td><td>Semi-annual: Spring and Fall</td></tr>
<tr><td>S8R</td><td>VOCs</td><td>Annual: Spring</td></tr>
<tr><td rowspan="2">Marysville Creek</td><td>S2 and S3</td><td>Surface Water Inorganic and General</td><td>Semi-annual: Spring and Fall</td></tr>
<tr><td>S2 and S3</td><td>VOCs</td><td>Annual: Spring</td></tr>
<tr><td colspan="4">Leachate Monitoring Locations</td></tr>
<tr><td colspan="2">North Chamber and South Chamber</td><td>Groundwater Inorganic & General
VOCs</td><td>Annual: Spring</td></tr>
<tr><td colspan="4">Landfill Gas Monitoring Wells</td></tr>
<tr><td colspan="2">GM1, GM2, GM3, GM4-1, GM4-2, GM5, GM6</td><td>% methane by volume</td><td>Semi-annual: Spring and Fall</td></tr>
<tr><td colspan="4">Off-site Domestic Water Supply Wells</td></tr>
<tr><td>1097 Beechwood Road
1121 Beechwood Road
1144 Beechwood Road
1181 Beechwood Road</td><td>1206 Beechwood Road
1250 Beechwood Road
1252 Beechwood Road
1264 Beechwood Road</td><td>Groundwater Inorganic & General, VOCs</td><td>Semi-annual: Spring and Fall</td></tr>
</table>

** M105 and M106: new monitors (unavailable at the time of fall 2010 semi-annual sampling event)*

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
Volatile Organic Compounds (VOCs)		
1,1,1,2-Tetrachloroethane	Benzene	m&p-Xylene
1,1,1-Trichloroethane	Bromodichloromethane	o-Xylene
1,1,2,2-Tetrachloroethane	Bromoform	Styrene
1,1,2-Trichloroethane	Bromomethane	Toluene
1,1-Dichloroethane	Carbon tetrachloride	Trans-1,2-Dichloroethylene
1,1-Dichloroethylene	Chlorobenzene	Trans-1,3-Dichloropropylene
1,2-Dibromoethane	Chloroethane	Tetrachloroethylene
1,2-Dichlorobenzene	Chloroform	Trichloroethylene
1,2-Dichloroethane	Chloromethane	Trichlorofluoromethane
1,2-Dichloropropane	Cis-1,2-Dichloroethylene	Vinyl chloride
1,3,5-Trimethylbenzene	Cis-1,3-Dichloropropylene	
1,3-Dichlorobenzene	Dichloromethane (methylene chloride)	
1,4-Dichlorobenzene	Ethylbenzene	

Table 3. Groundwater Elevation Monitoring Locations

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

** M105 and M106: new monitors (unavailable at the time of fall 2010 semi-annual sampling event)*

Table 4: Groundwater Elevations - October 25, 2010

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	125.10	M31	DRY	M67-2	122.38	M98	129.67
M14	125.82	M35	124.18	M68-4	124.18	M99-2	129.56
M15	DRY	M38	124.67	M70-3	127.25	M100	124.61
M16	124.11	M39	123.02	M77	124.48	M101	124.14
M18	126.49	M41	125.30	M80-2	123.46	M102	124.06
M19	126.59	M47-3	124.52	M81	124.33	M103	122.76
M23	125.56	M53-4	124.75	M87-2	123.26	OW37-s	122.15
M27	126.08	M54-4	124.08	M88-2	127.03	OW57	129.33
M28	126.53	M58-4	123.89	M89-2	128.92		
M29	122.98	M60-4	124.32	M96	127.53		
M30	124.17	M66-2	123.25	M97	123.88		
Intermediate Bedrock Groundwater Flow Zone							
M3A-3	124.72	M58-3	123.11	M70-1	119.95	M82-2	122.93
M9-3	120.57	M59-2	123.14	M71	120.51	M91-1	123.06
M10-1	120.39	M59-3	123.13	M72	122.92	M95-1	122.98
M49-1	120.11	M59-4	123.13	M73	122.98	OW54-d	119.98
M50-3	124.39	M60-1	122.36	M74	123.73	OW54-i	119.98
M56-2	123.10	M63-2	121.22	M80-1	123.15		
M57	120.29	M64-2	118.55	M82-1	122.86		

Table 5: Groundwater Quality Results - October 26-28, 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	28/10/2010	464	< 0.05	< 0.001	0.087	< 2	0.07	< 0.0001	145	18	170	< 0.005	1550	< 0.002	3.7	680	0.55	< 0.0005	78.5	0.069	< 0.0001	< 0.0005	< 0.1	0.01	7.76	< 0.004	< 0.03	18	41.6	86	992	< 0.7	< 0.01
M53-4	28/10/2010	362	< 0.05	< 0.001	0.05	< 2	< 0.02	< 0.0001	134	14	5	< 0.005	1010	< 0.002	3	450	< 0.02	< 0.0005	29.2	< 0.002	< 0.0001	< 0.0005	< 0.1	< 0.01	7.7	< 0.004	0.03	< 1	55.3	180	648	< 0.7	< 0.01
M54-4	26/10/2010	363	< 0.05	< 0.001	0.18	< 2	0.037	< 0.0001	131	9	78	0.034	980	< 0.002	2.2	430	< 0.02	< 0.0005	25.4	0.002	< 0.0001	< 0.0005	0.2	< 0.01	7.8	< 0.004	2.5	1	54.8	39	620	3	< 0.01
M66-2	26/10/2010	341	0.33	0.002	0.025	< 2	1.4	< 0.0001	101	14	140	0.015	1720	< 0.002	2.3	430	1.11	< 0.0005	43.6	0.027	< 0.0001	< 0.0005	0.3	< 0.01	8.03	< 0.004	0.08	8	218	340	1070	0.9	< 0.01
M67-2	26/10/2010	388	1.7	0.008	0.27	< 2	0.77	< 0.0001	47.6	21	5	0.008	881	< 0.002	2.6	230	0.59	< 0.0005	27.1	0.082	< 0.0001	< 0.0005	0.3	0.4	8.13	0.007	0.23	9	76.6	77	552	6	< 0.01
M68-4	28/10/2010	368	< 0.05	< 0.001	0.17	< 2	< 0.02	< 0.0001	147	16	55	0.013	901	< 0.002	2.9	460	0.4	< 0.0005	22.4	0.1	< 0.0001	< 0.0005	< 0.1	< 0.01	7.52	< 0.004	0.9	< 1	19.7	26	562	1	< 0.01
M70-3	27/10/2010	254	< 0.05	< 0.001	0.024	< 2	< 0.02	< 0.0001	141	51	35	0.032	882	< 0.002	4.2	450	< 0.02	< 0.0005	23.1	< 0.002	< 0.0001	< 0.0005	< 0.1	< 0.01	7.78	< 0.004	1	< 1	18.8	130	552	7	< 0.01
M80-2	26/10/2010	296	0.46	< 0.001	0.074	< 2	0.074	< 0.0001	70.2	36	18	0.042	772	< 0.002	1.5	330	0.52	< 0.0005	36.8	0.019	< 0.0001	< 0.0005	< 0.1	< 0.01	7.97	< 0.004	2.6	3	17.5	93	502	3	< 0.01
M81	26/10/2010	353	0.13	0.003	0.041	< 2	0.19	< 0.0001	96.1	28	49	0.044	915	< 0.002	2.4	420	3.74	< 0.0005	44.8	0.061	< 0.0001	< 0.0005	< 0.1	< 0.01	7.89	< 0.004	2.4	6	62	58	592	1.1	< 0.01
M87-2	27/10/2010	221	< 0.05	0.001	0.058	< 2	0.043	< 0.0001	57.6	23	29	0.059	611	< 0.002	1.2	300	< 0.02	< 0.0005	38.7	0.007	< 0.0001	< 0.0005	< 0.1	< 0.01	7.98	< 0.004	2.1	2	16.3	53	392	2	< 0.01
M96	27/10/2010	306	< 0.05	< 0.001	0.14	< 2	0.071	< 0.0001	77.8	8	5	< 0.005	670	< 0.002	2	330	< 0.02	< 0.0005	34	0.006	< 0.0001	< 0.0005	2.1	< 0.01	7.96	< 0.004	0.14	4	17.3	40	438	< 0.7	< 0.01
M97	27/10/2010	211	0.07	0.002	0.081	< 2	0.067	< 0.0001	36.5	17	7	0.023	520	< 0.002	1.6	230	0.02	< 0.0005	34.8	0.02	< 0.0001	< 0.0005	< 0.1	< 0.01	8.12	< 0.004	1.3	2	21.6	50	328	1.5	< 0.01
M99-2	26/10/2010	282	0.19	0.002	0.05	< 2	0.094	< 0.0001	63.1	28	33	0.026	838	< 0.002	3.1	400	1.21	< 0.0005	59.8	0.015	< 0.0001	< 0.0005	< 0.1	< 0.01	7.96	< 0.004	5.7	3	20.8	130	518	3	< 0.01
M101	26/10/2010	367	0.11	0.002	0.25	< 2	0.1	< 0.0001	245	16	140	< 0.005	1320	0.007	7.3	870	6.28	0.0034	62.6	0.23	< 0.0001	< 0.0005	0.2	< 0.01	7.93	< 0.004	0.41	6	18.5	130	822	1.3	0.027
M102	26/10/2010	473	0.19	0.002	0.15	< 2	0.044	< 0.0001	168	14	51	< 0.005	1130	< 0.002	5.4	570	1.12	< 0.0005	37.1	0.31	< 0.0001	< 0.0005	< 0.1	< 0.01	7.84	< 0.004	0.3	2	28.2	61	726	1.1	< 0.01
M103	26/10/2010	852	0.36	0.003	0.18	< 2	0.4	< 0.0001	145	22	140	0.006	1940	< 0.002	7.7	750	1.19	< 0.0005	94.3	0.043	< 0.0001	< 0.0005	< 0.1	0.18	7.9	< 0.004	0.19	8	159	43	1190	1.6	< 0.01
OW37-s	27/10/2010	132	< 0.05	< 0.001	0.11	< 2	0.088	< 0.0001	39	7	71	< 0.005	514	< 0.002	1.5	150	0.42	< 0.0005	13.8	0.3	< 0.0001	< 0.0005	< 0.1	< 0.01	7.9	< 0.004	< 0.15	8	35	9	326	< 0.7	< 0.01
Intermediate BedrockGroundwater Flow Zone																																	
M5-3	26/10/2010	424	1.2	< 0.001	0.19	8	1.1	< 0.0001	35	9	40	< 0.005	978	< 0.002	1.8	190	0.03	< 0.0005	26	0.003	< 0.0001	< 0.0005	< 0.1	< 0.01	7.88	0.054	0.04	13	141	29	624	1.8	< 0.01
M6-3	26/10/2010	1690	8.6	0.002	2.2	< 2	< 0.02	< 0.0001	937	100	980	0.018	11400	0.002	30.4	2300	< 0.2	0.0016	< 0.5	< 0.002	< 0.0001	< 0.005	< 0.1	< 0.01	12.4	0.01	< 0.15	79	509	< 1	7590	12	< 0.01
M9-3	28/10/2010	579	0.64	< 0.001	0.26	< 2	0.28	< 0.0001	152	33	160	< 0.005	1520	< 0.002	10.5	540	7.08	< 0.0005	38.2	0.26	< 0.0001	< 0.0005	< 0.1	< 0.01	7.17	< 0.004	0.09	6	102	12	948	1.5	< 0.01
M10-1	28/10/2010	587	0.49	0.003	0.27	2	0.26	< 0.0001	188	33	150	< 0.005	1530	< 0.002	10	650	28.2	< 0.0005	44.2	1.2	< 0.0001	< 0.0005	< 0.1	< 0.01	7.27	< 0.004	0.04	6	89.8	25	960	1.3	< 0.01
M49-1	28/10/2010	372	0.56	< 0.001	0.023	< 2	0.86	< 0.0001	8.19	16	240	< 0.005	1590	< 0.002	2.9	37	0.03	< 0.0005	4.04	0.007	< 0.0001	< 0.0005	< 0.1	0.12	8.19	< 0.004	0.12	7	328	22	1000	1.2	< 0.01
M56-2	27/10/2010	272	0.11	< 0.001	0.2	< 2	0.08	< 0.0001	80.1	8	25	< 0.005	757	< 0.002	1.5	390	0.09	< 0.0005	46.7	0.055	< 0.0001	< 0.0005	< 0.1	< 0.01	7.96	< 0.004	0.03	3	12.8	90	482	< 0.7	< 0.01
M57	28/10/2010	80	9.3	0.009	0.012	< 2	0.7	< 0.0001	8.39	25	610	< 0.005	2330	0.002	3.3	21	< 0.02	< 0.0005	0.12	< 0.002	< 0.0001	< 0.0005	< 0.1	0.06	9.59	< 0.004	0.06	13	430	71	1450	9.3	< 0.01
M58-3	26/10/2010	313	< 0.05	< 0.001	0.15	< 2	< 0.02	< 0.0001	96.3	< 4	6	< 0.005	686	< 0.002	1.1	370	< 0.02	< 0.0005	31.4	< 0.002	< 0.0001	< 0.0005	0.3	< 0.01	7.98	< 0.004	< 0.03	1	5.9	48	432	< 0.7	< 0.01
M59-2	26/10/2010	419	0.44	< 0.001	0.21	< 2	0.23	< 0.0001	128	26	61	< 0.005	997	< 0.002	8.2	470	< 0.02	< 0.0005	36.9	0.013	< 0.0001	< 0.0005	< 0.1	< 0.01	7.91	0.005	0.06	5	34.1	38	628	2	< 0.01
M59-3	26/10/2010	267	< 0.05	< 0.001	0.063	< 2	0.025	< 0.0001	102	6	18	< 0.005	592	< 0.002	2.8	300	0.08	< 0.0005	11	0.01	< 0.0001	< 0.0005	< 0.1	< 0.01	7.94	< 0.004	< 0.03	< 1	8.2	26	378	< 0.7	< 0.01
M59-4	26/10/2010	323	2.3	0.005	0.12	< 2	0.56	< 0.0001	63.1	40	4	< 0.005	643	< 0.002	3.5	300	0.63	< 0.0005	33.5	0.02	< 0.0001	< 0.0005	< 0.1	0.01	8.01	< 0.004	0.26	8	23.1	23	418	6.6	< 0.01
M70-1	27/10/2010	210	6.6	< 0.01	0.31	< 2	3.1	< 0.001	922	120	8400	0.005	25100	< 0.04	2.6	4900	18.9	< 0.005	640	0.23	< 0.0001	< 0.0005	0.3	< 0.01	7.36	< 0.004	0.15	55	3330	270	15100	7.7	< 0.1
M71	28/10/2010	610	2	< 0.001	0.081	7	0.46	< 0.0001	169	26	230	< 0.005	1840	< 0.002	8.3	640	< 0.02	< 0.0005	52.3	0.009	< 0.0001	< 0.0005	< 0.1	< 0.01	7.29	0.008	0.07	15	131	19	1180	3.1	< 0.01
M72	28/10/2010	255	0.46	< 0.001	0.15	9	0.37	< 0.0001	55.1	13	22	< 0.005	605	< 0.002	1.6	270	< 0.02	< 0.0005	32.1	< 0.002	< 0.0001	< 0.0005	< 0.1	< 0.01	7.86	0.043	< 0.03	8	17.6	32	384	2	< 0.01
M74	28/10/2010	298	1.2	< 0.001	0.1	3	0.93	< 0.0001	33.4	14	17	< 0.005	670	< 0.002	2.3	170	0.15	< 0.0005	22	0.01	< 0.0001	< 0.0005	< 0.1	0.01	8.12	0.005	0.16	12	72.5	30	428	2	< 0.01
M75	28/10/2010	506	2.9	0.002	0.051	9	1.3	< 0.0001	29.5	100	96	0.011	1260	< 0.002	12	150	0.77	0.005	18	0.025	< 0.0001	< 0.001	< 0.1	0.03	7.93	0.034	1.7	18	202	75	798	9	< 0.01
M80-1	26/10/2010	187	0.44	< 0.001	0.034	7	0.4	< 0.0001	27.1	18	9	< 0.005	406	< 0.002	1.4	120	< 0.02	< 0.0005	12.8	0.009	< 0.0001	< 0.0005	< 0.1	< 0.01	8.33	0.044	0.04	5	44.2	38	280	3	< 0.01
M82-1	27/10/2010	316	0.84	< 0.001	0.18	3	1.1	< 0.0001	48	11	45	< 0.005	862	< 0.002	2.2	230	0.09	< 0.0005	26.9	< 0.002	< 0.0001	< 0.0005	< 0.1	< 0.01	7.86	< 0.004	< 0.03	10	94.7	55	542	1.4	< 0.01
M82-2	27/10/2010	328	0.25	< 0.001	0.14	< 2	0.19	< 0.0001	111	13	35	< 0.005	829	< 0.002	2.9	400	< 0.02	< 0.0005	29.7	0.019	< 0.0001	< 0.0005	< 0.1	< 0.01	7.8	< 0.004	< 0.03	4	22.8	63	528	1.1	< 0.01
M91-1	26/10/2010	275	0.47	< 0.001	0.085	< 2	0.53	< 0.0001	50	22	25	0.016	722	< 0.002	2.4	230	0.84	< 0.0005	24.4	0.007	< 0.0001	< 0.0005	0.5	< 0.01	8.19	< 0.004	0.34	9	59.4	63	462	1.7	< 0.01
M95-1	28/10/2010	322	< 0.05	< 0.001	0.13	< 2	0.024	< 0.0001	115	8	10	< 0.005	751	< 0.002	2.2	400	0.38	< 0.0005	27.6	0.006	< 0.0001	< 0.0005	0.1	< 0.01	7.71	< 0.004	0.06	2	7.6	64	476	< 0.7	< 0.01
OW54-d	28/10/2010	261	0.97	< 0.001	0.047	2	0.55	< 0.0001	42.9	4	72	< 0.005	772	< 0.002	1.3	220	< 0.02	< 0.0005	26.6	0.037	< 0.0001	< 0.0005	< 0.1	< 0.01	7.95	< 0.004	< 0.03	13	72.7	20	482	1.3	< 0.01

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

Table 6: Water Quality Results from Off-Site Domestic Supply Wells - October 27, 2010

Parameter	Units	1097 Beechwood Road	1121 Beechwood Road	1144 Beechwood Road	1181 Beechwood Road	1206 Beechwood Road	1250 Beechwood Road	1252 Beechwood Road	1264 Beechwood Road
Inorganic and General Parameters									
Alkalinity	mg/L	266	300	498	409	334	614	362	572
Ammonia	mg/L	< 0.05	< 0.05	0.85	1.2	< 0.05	0.47	0.13	0.18
Arsenic	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.003	< 0.001	< 0.001
Barium	mg/L	0.093	0.07	0.025	0.079	0.078	0.3	0.16	0.11
Biochemical Oxygen Demand	mg/L	< 2	< 2	< 2	4	< 2	< 2	< 2	< 2
Boron	mg/L	0.062	0.03	0.24	0.61	0.027	0.19	0.11	0.27
Cadmium	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Calcium	mg/L	86	90	140	86	120	190	110	170
Chemical Oxygen Demand	mg/L	6	5	17	13	12	31	5	28
Chloride	mg/L	14	31	110	150	47	140	60	140
Chromium	mg/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Conductivity	µS/cm	628	791	1300	1280	823	1560	950	1470
Copper	mg/L	0.003	0.002	< 0.001	0.002	0.014	0.002	0.005	< 0.001
Dissolved Organic Carbon	mg/L	2	1.5	5.9	3.2	3.8	8	1.8	7.4
Hardness	mg/L	300	370	540	370	380	650	410	590
Iron	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	0.15	32	9	13
Lead	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0015	< 0.0005	< 0.0005	< 0.0005
Magnesium	mg/L	21	36	44	38	18	42	30	41
Manganese	mg/L	< 0.002	0.022	0.002	< 0.002	0.006	1.9	0.25	0.72
Mercury	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Naphthalene	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.003	< 0.0005
Nitrate	mg/L	1.8	1.2	< 0.1	< 0.1	0.5	< 0.1	0.3	< 0.1
Nitrite	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01
pH (Lab)	unitless	8.1	8.03	7.7	7.92	7.83	7.54	7.86	7.65
Phenols	mg/L	< 0.001	< 0.001	0.002	0.026	< 0.001	< 0.001	< 0.001	< 0.001
Phosphorus (total)	mg/L	0.03	0.03	< 0.02	0.02	0.04	< 0.02	< 0.02	< 0.02
Potassium	mg/L	8.2	2.6	10	11	6.3	4.7	3.1	5.6
Sodium	mg/L	13	20	68	120	22	80	41	86
Sulphate	mg/L	39	74	35	26	24	30	50	24
Total Dissolved Solids	mg/L	408	498	828	778	520	968	606	908
Total Kjeldahl Nitrogen	mg/L	0.4	0.3	1.5	1.4	0.5	1.4	0.5	0.9
Zinc	mg/L	0.012	0.032	0.016	< 0.005	< 0.005	0.058	0.017	< 0.005

Table 6: Water Quality Results from Off-Site Domestic Supply Wells - October 27, 2010

Parameter	Units	1097 Beechwood Road	1121 Beechwood Road	1144 Beechwood Road	1181 Beechwood Road	1206 Beechwood Road	1250 Beechwood Road	1252 Beechwood Road	1264 Beechwood Road
Volatile Organic Compounds (VOCs)									
1,1,1,2-Tetrachloroethane	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0001
1,1,1-Trichloroethane	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.043	< 0.0001
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002
1,1,2-Trichloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002
1,1-Dichloroethane	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0061	0.079	0.0006
1,1-Dichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	0.0082	0.0004
1,2-Dibromoethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002
1,2-Dichlorobenzene (o)	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002
1,2-Dichloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002
1,2-Dichloropropane	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0001
1,3,5-Trimethylbenzene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002
1,3-Dichlorobenzene (m)	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002
1,4-Dichlorobenzene (p)	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002
Benzene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Bromodichloromethane	mg/L	0.001	< 0.0001	0.0002	0.0012	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Bromoform	mg/L	< 0.0002	< 0.0002	< 0.0002	0.0012	< 0.0002	< 0.0002	< 0.001	< 0.0002
Bromomethane	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.003	< 0.0005
Carbon Tetrachloride	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Chlorobenzene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Chloroethane	mg/L	< 0.0002	< 0.0002	0.0004	0.0012	< 0.0002	0.0038	0.009	0.022
Chloroform	mg/L	0.0043	0.0008	0.0024	0.0008	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Chloromethane	mg/L	< 0.0005	< 0.0005	< 0.0005	0.0021	< 0.0005	< 0.0005	< 0.003	< 0.0005
Cis-1,2-Dichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Cis-1,3-Dichloropropylene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002
Dichloromethane	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.003	< 0.0005
Ethylbenzene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0001
m+p-Xylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0001
o-Xylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Styrene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002
Tetrachloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Toluene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002
Trans-1,2-dichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Trans-1,3-dichloropropene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002
Trichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Trichlorofluoromethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002
Vinyl Chloride	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002

Table 7: Surface Water Characteristics - October 25, 2010

Date	Parameter		Surface Water Station				
			S2	S3	S4R	S5	S8R
25-Oct-10	Velocity:	m/s	NM	NM	DRY	NM	NM
	Depth:	m	0.60	0.22		0.12	0.1
	Width:	m	1.50	0.83		0.76	0.35
	Estimated Flow Rate:	m^3/s	NM	NM		NM	NM

Ponded water present at S5. No flow.

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

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Table 8: Surface Water Quality Results - October 25, 2010

			Marysville Creek		Beechwood Ditch		
			S2	S3	S5	S4R	S8R
			(upstream)	(downstream)	(upstream)	(downstream)	(downstream)
Reading Name	Units	PWQO				DRY	
Alkalinity	mg/L		248	250	276		253
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		0.061	0.056	0.073		0.079
Biochemical Oxygen Demand	mg/L		< 2	< 2	< 2		< 2
Boron	mg/L	0.2	0.024	0.034	< 0.02		0.027
Cadmium	mg/L	0.0002	0.0001	< 0.0001	0.0002		< 0.0001
Calcium	mg/L		95	95	99		96
Chemical Oxygen Demand	mg/L		43	36	32		13
Chloride	mg/L		30	35	32		18
Chromium	mg/L	0.01	< 0.005	< 0.005	< 0.005		< 0.005
Conductivity	µS/cm		574	613	616		637
Copper	mg/L	0.005	< 0.002	< 0.002	0.004		< 0.002
Cyanide (free)	mg/L	0.005	< 0.002	< 0.002	< 0.002		< 0.002
Hardness	mg/L		250	260	310		280
Iron	mg/L	0.3	0.18	0.12	0.19		< 0.1
Lead	mg/L	0.025	< 0.0005	< 0.0005	< 0.0005		< 0.0005
Magnesium	mg/L		14	15	20		20
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		0.2
Nitrite	mg/L		< 0.01	< 0.01	< 0.01		< 0.01
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001		< 0.001
Phosphorus (total)	mg/L	0.03	0.022	**0.031**	**0.11**		**0.032**
Potassium	mg/L		3.7	3.9	5.2		2.7
Sodium	mg/L		12	19	8.2		17
Sulphate	mg/L		13	21	13		63
Total Dissolved Solids	mg/L		360	392	392		392
Total Kjeldahl Nitrogen	mg/L		1.3	1	1.1		< 0.7
Total Suspended Solids	mg/L		< 1	2	18		< 1
Zinc	mg/L	0.03	< 0.01	< 0.01	< 0.01		< 0.01
Field Measured							
Estimated Flow Rate*	m^3/s		NM	NM	NM		NM
Conductivity (Field)	µS/cm		579	601	609		627
Dissoved Oxygen (Field)	mg/L		7.4	9.7	7.52		11.36
pH (Field)	unitless	6.5-8.5	7.25	6.49	7.48		7.73
Temperature (Field)	°C		7.70	7.24	8.03		8.80

* NM: not measured (negligible flow observed)

Table 9: Subsurface Gas Monitoring Results - October 25, 2010

Gas Monitor	Location	Reading (ppm)
GM1	North of garage area, south of waste mound	130
GM2	West of waste mound, near compost area	*NM*
GM3	North-east corner of waste mound	0
GM4-1	South-east corner of waste mound	0
GM4-2		0
GM5	North-west corner of waste mound	130
GM6	North of waste mound	0

NM – Not Measured. GM2 has been destroyed and is no longer accessible.

FIGURES

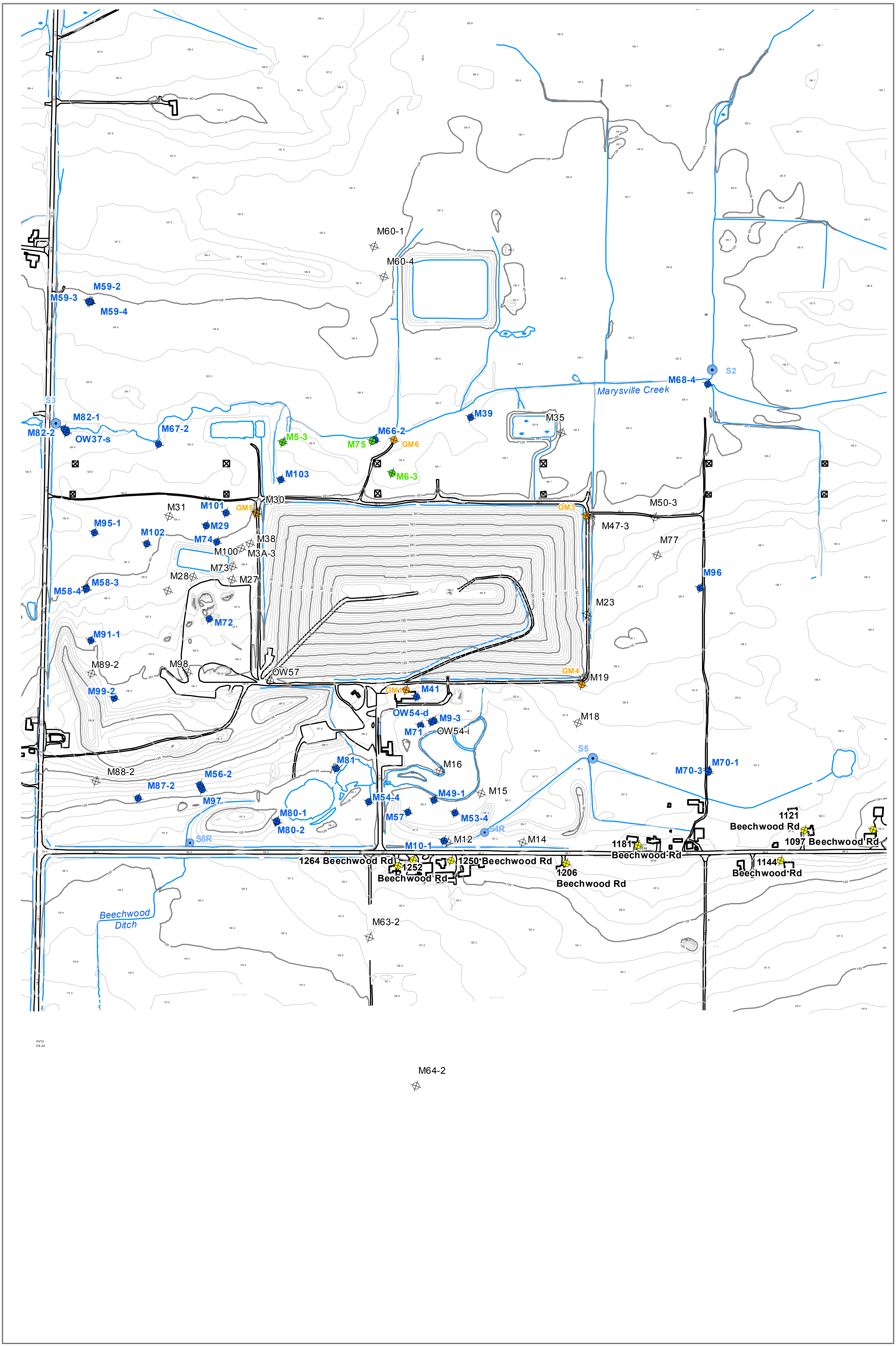

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Figure 1:
Site Plan and Monitoring Locations

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-B8578-00-04
Data Source: WM Canada, WESA, HPA Ltd. Base Mapping 2009
Date: December 2010

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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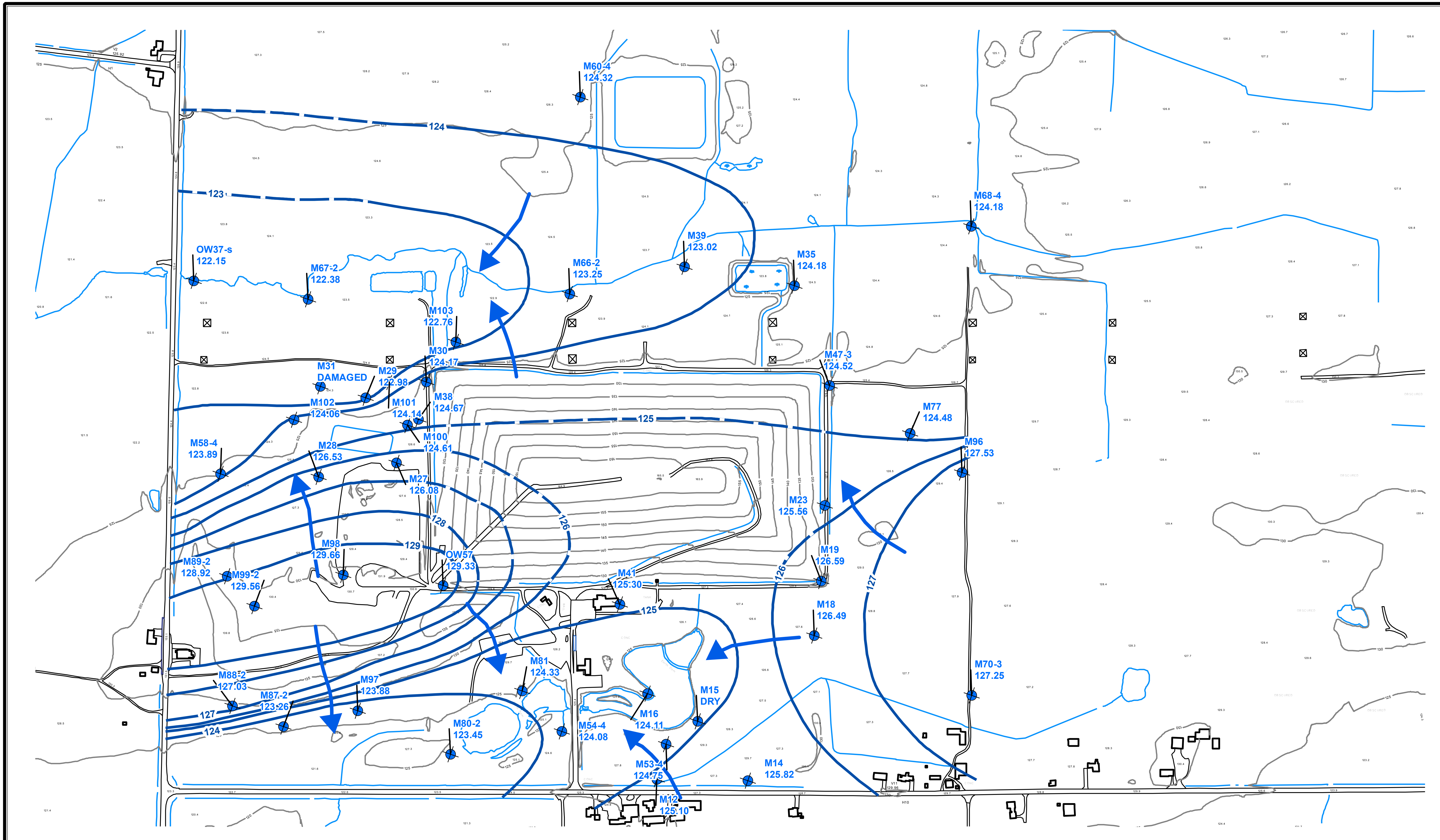

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M58-4 Shallow Groundwater Zone Elevation Monitor
Topographic Contour Lines
Surface Water
Hydro Tower
Potentiometric Surface (masl)
Inferred Groundwater Flow Direction

Project : K-B8578-00-04
Data Source: WM Canada, WESA, HPA Ltd. Base Mapping 2009
Date: December 2010

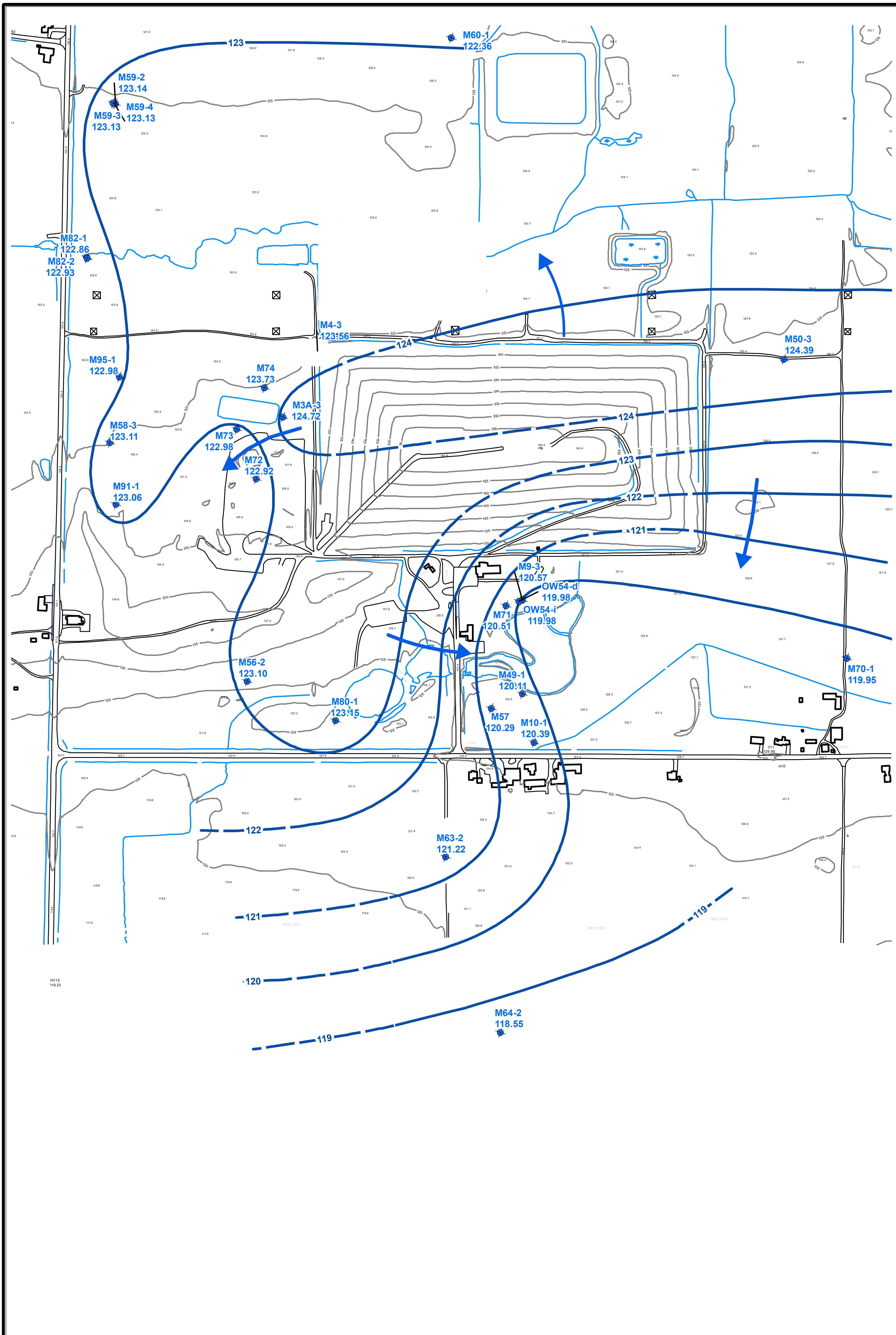
Prepared by:
WESA Geomatics

Units:
UTM NAD 83 Zone 18

Scale: 1:5000

0 12.5 25 50 75 100
Meters

Figure 2:
Shallow Groundwater Flow Zone Potentiometric Surface - October 25, 2010



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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

Project : K-B8578-00-04
Data Source: WM Canada, WESA, HPA Ltd. Base Mapping 2009
Date: December 2010

30 15 0 30 60
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 25, 2010

APPENDIX A

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

Well (DUP)	Parameter	MDL[2]	Unit	Regular Sample	Field Duplicate	RPD (%)	Comment
M56-2 (DUP5-F10)	Chemical Oxygen Demand	4	mg/L	8	10	22.2	Less than ~5 x MDL
M96 (DUP1-F10)	Boron	0.02	mg/L	0.071	0.091	24.7	Less than ~5 x MDL
M96 (DUP1-F10)	Calcium	1	mg/L	77.8	103	27.9	
M96 (DUP1-F10)	Dissolved Organic Carbon	0.02	mg/L	2	1.6	22.2	
M96 (DUP1-F10)	Hardness	1	mg/L	330	410	21.6	
M96 (DUP1-F10)	Manganese	0.002	mg/L	0.006	0.066	166.7	Less than ~5 x MDL
M96 (DUP1-F10)	Potassium	1	mg/L	4	5	22.2	Less than ~5 x MDL
M95-1 (DUP3-F10)	Phosphorus (total)	0.03	mg/L	0.06	0.04	40.0	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 2010

Parameter	Units	M56-2 (Regular Sample)	Dup5-F10 (Field Duplicate)	RPD (%)	M58-3 (Regular Sample)	Dup4-F10 (Field Duplicate)	RPD (%)
Alkalinity	mg/L	272	276	1.46	313	314	0.32
Ammonia	mg/L	0.11	0.1	9.52	< 0.05	< 0.05	0.00
Arsenic	mg/L	< 0.001	< 0.001	0.00	< 0.001	< 0.001	0.00
Barium	mg/L	0.2	0.2	0.00	0.15	0.15	0.00
Biochemical Oxygen Demand	mg/L	< 2	< 2	0.00	< 2	< 2	0.00
Boron	mg/L	0.08	0.079	1.26	< 0.02	< 0.02	0.00
Cadmium	mg/L	< 0.0001	< 0.0001	0.00	< 0.0001	< 0.0001	0.00
Calcium	mg/L	80.1	79.3	1.00	96.3	95.9	0.42
Chemical Oxygen Demand	mg/L	8	10	22.22	< 4	< 4	0.00
Chloride	mg/L	25	25	0.00	6	6	0.00
Chromium	mg/L	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00
Conductivity	µS/cm	757	758	0.13	686	696	1.45
Copper	mg/L	< 0.002	< 0.002	0.00	< 0.002	< 0.002	0.00
Dissolved Organic Carbon	mg/L	1.5	1.6	6.45	1.1	1.1	0.00
Hardness	mg/L	390	390	0.00	370	370	0.00
Iron	mg/L	0.09	0.09	0.00	< 0.02	< 0.02	0.00
Lead	mg/L	< 0.0005	< 0.0005	0.00	< 0.0005	< 0.0005	0.00
Magnesium	mg/L	46.7	46.1	1.29	31.4	31.1	0.96
Manganese	mg/L	0.055	0.055	0.00	< 0.002	< 0.002	0.00
Mercury	mg/L	< 0.0001	< 0.0001	0.00	< 0.0001	< 0.0001	0.00
Naphthalene	mg/L	< 0.0005	< 0.0005	0.00	< 0.0005	< 0.0005	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00	0.3	0.3	0.00
Nitrate + Nitrite	mg/L	< 0.1	< 0.1	0.00	0.3	0.3	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00	< 0.01	< 0.01	0.00
pH (Lab)	unitless	7.96	8.01	0.63	7.98	7.93	0.63
Phenols	mg/L	< 0.004	< 0.004	0.00	< 0.004	< 0.004	0.00
Phosphorus (total)	mg/L	0.03	< 0.03	0.00	< 0.03	< 0.03	0.00
Potassium	mg/L	3	3	0.00	1	1	0.00
Sodium	mg/L	12.8	12.8	0.00	5.9	5.8	1.71
Sulphate	mg/L	90	92	2.20	48	52	8.00
Total Dissolved Solids	mg/L	482	488	1.24	432	442	2.29
Total Kjeldahl Nitrogen	mg/L	< 0.7	1	0.00	< 0.7	< 0.7	0.00
Zinc	mg/L	< 0.01	< 0.01	0.00	< 0.01	< 0.01	0.00

Detailed Results from Field Duplicate vs. Regular Samples - Fall 2010 (continued)

Parameter	Units	M82-2 (Regular Sample)	Dup2-F10 (Field Duplicate)	RPD (%)	M96 (Regular Sample)	Dup1-F10 (Field Duplicate)	RPD (%)
Alkalinity	mg/L	328	325	0.92	306	309	0.98
Ammonia	mg/L	0.25	0.22	12.77	< 0.05	< 0.05	0.00
Arsenic	mg/L	< 0.001	< 0.001	0.00	< 0.001	< 0.001	0.00
Barium	mg/L	0.14	0.14	0.00	0.14	0.14	0.00
Biochemical Oxygen Demand	mg/L	< 2	< 2	0.00	< 2	< 2	0.00
Boron	mg/L	0.19	0.17	11.11	0.071	0.091	24.69
Cadmium	mg/L	< 0.0001	< 0.0001	0.00	< 0.0001	< 0.0001	0.00
Calcium	mg/L	111	110	0.90	77.8	103	27.88
Chemical Oxygen Demand	mg/L	13	11	16.67	8	8	0.00
Chloride	mg/L	35	35	0.00	5	5	0.00
Chromium	mg/L	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00
Conductivity	µS/cm	829	828	0.12	670	669	0.15
Copper	mg/L	< 0.002	< 0.002	0.00	< 0.002	0.002	0.00
Dissolved Organic Carbon	mg/L	2.9	2.9	0.00	2	1.6	22.22
Hardness	mg/L	400	400	0.00	330	410	21.62
Iron	mg/L	< 0.02	< 0.02	0.00	< 0.02	1.47	0.00
Lead	mg/L	< 0.0005	< 0.0005	0.00	< 0.0005	0.0007	0.00
Magnesium	mg/L	29.7	29.5	0.68	34	36.5	7.09
Manganese	mg/L	0.019	0.019	0.00	0.006	0.066	166.67
Mercury	mg/L	< 0.0001	< 0.0001	0.00	< 0.0001	< 0.0001	0.00
Naphthalene	mg/L	< 0.0005	< 0.0005	0.00	< 0.0005	< 0.0005	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00	2.1	2.2	4.65
Nitrate + Nitrite	mg/L	< 0.1	< 0.1	0.00	2.1	2.2	4.65
Nitrite	mg/L	< 0.01	< 0.01	0.00	< 0.01	< 0.01	0.00
pH (Lab)	unitless	7.8	7.77	0.39	7.96	7.93	0.38
Phenols	mg/L	< 0.004	< 0.004	0.00	< 0.004	< 0.004	0.00
Phosphorus (total)	mg/L	< 0.03	< 0.03	0.00	0.14	0.14	0.00
Potassium	mg/L	4	4	0.00	4	5	22.22
Sodium	mg/L	22.8	22.6	0.88	17.3	20.1	14.97
Sulphate	mg/L	63	62	1.60	40	40	0.00
Total Dissolved Solids	mg/L	528	538	1.88	438	436	0.46
Total Kjeldahl Nitrogen	mg/L	1.1	1.3	16.67	< 0.7	< 0.7	0.00
Zinc	mg/L	< 0.01	< 0.01	0.00	< 0.01	< 0.01	0.00

Detailed Results from Field Duplicate vs. Regular Samples - Fall 2010 (continued)

Parameter	Units	M95-1 (Regular Sample)	Dup3-F10 (Field Duplicate)	RPD (%)
Alkalinity	mg/L	322	324	0.62
Ammonia	mg/L	< 0.05	< 0.05	0.00
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	0.024	0.021	13.33
Cadmium	mg/L	< 0.0001	< 0.0001	0.00
Calcium	mg/L	115	118	2.58
Chemical Oxygen Demand	mg/L	8	9	11.76
Chloride	mg/L	10	9	10.53
Chromium	mg/L	< 0.005	< 0.005	0.00
Conductivity	µS/cm	751	741	1.34
Copper	mg/L	< 0.002	< 0.002	0.00
Dissolved Organic Carbon	mg/L	2.2	1.9	14.63
Hardness	mg/L	400	410	2.47
Iron	mg/L	0.38	0.39	2.60
Lead	mg/L	< 0.0005	< 0.0005	0.00
Magnesium	mg/L	27.6	28.2	2.15
Manganese	mg/L	0.006	0.007	15.38
Mercury	mg/L	< 0.0001	< 0.0001	0.00
Naphthalene	mg/L	< 0.0005	< 0.0005	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 (Lab)	unitless	7.71	7.76	0.65
Phenols	mg/L	< 0.004	< 0.004	0.00
Phosphorus (total)	mg/L	0.06	0.04	40.00
Potassium	mg/L	2	2	0.00
Sodium	mg/L	7.6	7.7	1.31
Sulphate	mg/L	64	62	3.17
Total Dissolved Solids	mg/L	476	478	0.42
Total Kjeldahl Nitrogen	mg/L	< 0.7	< 0.7	0.00
Zinc	mg/L	< 0.01	< 0.01	0.00

Detailed Results from Field Duplicate vs. Regular Samples - Fall 2010 (continued)

Parameter	Units	S2 (Regular Sample)	DUP6-F10 (Field Duplicate)	RPD (%)
1,1,1,2-Tetrachloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1,1-Trichloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1,2-Trichloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1-Dichloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1-Dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
1,2-Dibromoethane	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichlorobenzene (o)	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichloropropane	mg/L	< 0.0001	< 0.0001	0.00
1,3,5-Trimethylbenzene	mg/L	< 0.0002	< 0.0002	0.00
1,3-Dichlorobenzene (m)	mg/L	< 0.0002	< 0.0002	0.00
1,4-Dichlorobenzene (p)	mg/L	< 0.0002	< 0.0002	0.00
Alkalinity	mg/L	248	248	0.00
Ammonia	mg/L	< 0.15	< 0.15	0.00
Ammonia (unionized)	mg/L	< 0.02	< 0.02	0.00
Arsenic	mg/L	< 0.001	< 0.001	0.00
Barium	mg/L	0.061	0.061	0.00
Benzene	mg/L	< 0.0001	< 0.0001	0.00
Biochemical Oxygen Demand	mg/L	< 2	< 2	0.00
Boron	mg/L	0.024	< 0.02	0.00
Bromodichloromethane	mg/L	< 0.0001	< 0.0001	0.00
Bromoform	mg/L	< 0.0002	< 0.0002	0.00
Bromomethane	mg/L	< 0.0005	< 0.0005	0.00
Cadmium	mg/L	0.0001	< 0.0001	0.00
Calcium	mg/L	95	110	14.63
Carbon Tetrachloride	mg/L	< 0.0001	< 0.0001	0.00
Chemical Oxygen Demand	mg/L	43	45	4.55
Chloride	mg/L	30	30	0.00
Chlorobenzene	mg/L	< 0.0001	< 0.0001	0.00
Chlorodibromomethane	mg/L	< 0.0002	< 0.0002	0.00
Chloroethane	mg/L	< 0.0002	< 0.0002	0.00
Chloroform	mg/L	< 0.0001	< 0.0001	0.00
Chloromethane	mg/L	< 0.0005	< 0.0005	0.00
Chromium	mg/L	< 0.005	< 0.005	0.00
Cis-1,2-Dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Cis-1,3-Dichloropropylene	mg/L	< 0.0002	< 0.0002	0.00

Detailed Results from Field Duplicate vs. Regular Samples - Fall 2010 (continued)

Parameter	Units	S2 (Regular Sample)	DUP6-F10 (Field Duplicate)	RPD (%)
Conductivity	µS/cm	574	573	0.17
Copper	mg/L	< 0.002	< 0.002	0.00
Cyanide (free)	mg/L	< 0.002	< 0.002	0.00
Dichloromethane	mg/L	< 0.0005	< 0.0005	0.00
Ethylbenzene	mg/L	< 0.0001	< 0.0001	0.00
Field Temperature	°C	7.7	7.7	0.00
Hardness	mg/L	250	270	7.69
Iron	mg/L	0.18	0.15	18.18
Lead	mg/L	< 0.0005	< 0.0005	0.00
m+p-Xylene	mg/L	< 0.0001	< 0.0001	0.00
Magnesium	mg/L	14	14	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
Nitrate + Nitrite	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
o-Xylene	mg/L	< 0.0001	< 0.0001	0.00
pH (Field)	unitless	7.25	7.25	0.00
Phenols	mg/L	< 0.001	< 0.001	0.00
Phosphorus (total)	mg/L	0.022	0.021	4.65
Potassium	mg/L	3.7	3.6	2.74
Sodium	mg/L	12	12	0.00
Styrene	mg/L	< 0.0002	< 0.0002	0.00
Sulphate	mg/L	13	12	8.00
Tetrachloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Toluene	mg/L	< 0.0002	< 0.0002	0.00
Total Dissolved Solids	mg/L	360	360	0.00
Total Kjeldahl Nitrogen	mg/L	1.3	1.2	8.00
Total Suspended Solids	mg/L	< 1	3	0.00
Trans-1,2-dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Trans-1,3-dichloropropene	mg/L	< 0.0002	< 0.0002	0.00
Trichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Trichlorofluoromethane	mg/L	< 0.0002	< 0.0002	0.00
Vinyl Chloride	mg/L	< 0.0002	< 0.0002	0.00
Zinc	mg/L	< 0.01	0.053	0.00

Detailed Results from Equipment Blank Sample - Fall 2010

Date	Parameter	Conc.	Units
28/10/2010	Alkalinity	< 1	mg/L
28/10/2010	Ammonia	< 0.05	mg/L
28/10/2010	Arsenic	< 0.001	mg/L
28/10/2010	Barium	< 0.005	mg/L
28/10/2010	Biochemical Oxygen Demand	< 2	mg/L
28/10/2010	Boron	< 0.02	mg/L
28/10/2010	Cadmium	< 0.0001	mg/L
28/10/2010	Calcium	< 0.05	mg/L
28/10/2010	Chemical Oxygen Demand	< 4	mg/L
28/10/2010	Chloride	< 1	mg/L
28/10/2010	Chromium	< 0.005	mg/L
28/10/2010	Conductivity	2	µS/cm
28/10/2010	Copper	< 0.002	mg/L
28/10/2010	Dissolved Organic Carbon	1.7	mg/L
28/10/2010	Hardness	< 1	mg/L
28/10/2010	Iron	< 0.02	mg/L
28/10/2010	Lead	< 0.0005	mg/L
28/10/2010	Magnesium	< 0.05	mg/L
28/10/2010	Manganese	< 0.002	mg/L
28/10/2010	Mercury	< 0.0001	mg/L
28/10/2010	Naphthalene	< 0.0005	mg/L
28/10/2010	Nitrate	< 0.1	mg/L
28/10/2010	Nitrate + Nitrite	< 0.1	mg/L
28/10/2010	Nitrite	< 0.01	mg/L
28/10/2010	pH (Lab)	5.98	unitless
28/10/2010	Phenols	< 0.004	mg/L
28/10/2010	Phosphorus (total)	< 0.03	mg/L
28/10/2010	Potassium	< 1	mg/L
28/10/2010	Sodium	< 0.5	mg/L
28/10/2010	Sulphate	< 1	mg/L
28/10/2010	Total Dissolved Solids	< 10	mg/L
28/10/2010	Total Kjeldahl Nitrogen	< 0.7	mg/L
28/10/2010	Zinc	< 0.01	mg/L

Detailed Results from Field Blank Samples - Fall 2010

Date	Parameter	Conc.	Units
27/10/2010	Alkalinity	< 1	mg/L
27/10/2010	Ammonia	< 0.05	mg/L
27/10/2010	Arsenic	< 0.001	mg/L
27/10/2010	Barium	< 0.005	mg/L
27/10/2010	Biochemical Oxygen Demand	< 2	mg/L
27/10/2010	Boron	< 0.02	mg/L
27/10/2010	Cadmium	< 0.0001	mg/L
27/10/2010	Calcium	< 0.05	mg/L
27/10/2010	Chemical Oxygen Demand	5	mg/L
27/10/2010	Chloride	< 1	mg/L
27/10/2010	Chromium	< 0.005	mg/L
27/10/2010	Conductivity	2	µS/cm
27/10/2010	Copper	< 0.002	mg/L
27/10/2010	Dissolved Organic Carbon	0.3	mg/L
27/10/2010	Hardness	< 1	mg/L
27/10/2010	Iron	< 0.02	mg/L
27/10/2010	Lead	< 0.0005	mg/L
27/10/2010	Magnesium	< 0.05	mg/L
27/10/2010	Manganese	< 0.002	mg/L
27/10/2010	Mercury	< 0.0001	mg/L
27/10/2010	Naphthalene	< 0.0005	mg/L
27/10/2010	Nitrate	< 0.1	mg/L
27/10/2010	Nitrate + Nitrite	< 0.1	mg/L
27/10/2010	Nitrite	< 0.01	mg/L
27/10/2010	pH (Lab)	6	unitless
27/10/2010	Phenols	< 0.004	mg/L
27/10/2010	Phosphorus (total)	< 0.03	mg/L
27/10/2010	Potassium	< 1	mg/L
27/10/2010	Sodium	< 0.5	mg/L
27/10/2010	Sulphate	< 1	mg/L
27/10/2010	Total Dissolved Solids	< 10	mg/L
27/10/2010	Total Kjeldahl Nitrogen	< 0.7	mg/L
27/10/2010	Zinc	< 0.01	mg/L

Detailed Results from Field Blank Samples - Fall 2010 (continued)

Date	Parameter	Conc.	Units
28/10/2010	Alkalinity	1	mg/L
28/10/2010	Ammonia	< 0.05	mg/L
28/10/2010	Arsenic	< 0.001	mg/L
28/10/2010	Barium	< 0.005	mg/L
28/10/2010	Biochemical Oxygen Demand	< 2	mg/L
28/10/2010	Boron	< 0.02	mg/L
28/10/2010	Cadmium	< 0.0001	mg/L
28/10/2010	Calcium	< 0.05	mg/L
28/10/2010	Chemical Oxygen Demand	< 4	mg/L
28/10/2010	Chloride	< 1	mg/L
28/10/2010	Chromium	< 0.005	mg/L
28/10/2010	Conductivity	3	µS/cm
28/10/2010	Copper	< 0.002	mg/L
28/10/2010	Dissolved Organic Carbon	0.4	mg/L
28/10/2010	Hardness	< 1	mg/L
28/10/2010	Iron	< 0.02	mg/L
28/10/2010	Lead	< 0.0005	mg/L
28/10/2010	Magnesium	< 0.05	mg/L
28/10/2010	Manganese	< 0.002	mg/L
28/10/2010	Mercury	< 0.0001	mg/L
28/10/2010	Naphthalene	< 0.1	mg/L
28/10/2010	Nitrate	< 0.1	mg/L
28/10/2010	Nitrate + Nitrite	< 0.1	mg/L
28/10/2010	Nitrite	< 0.01	mg/L
28/10/2010	pH (Lab)	6.15	unitless
28/10/2010	Phenols	< 0.004	mg/L
28/10/2010	Phosphorus (total)	< 0.03	mg/L
28/10/2010	Potassium	< 1	mg/L
28/10/2010	Sodium	< 0.5	mg/L
28/10/2010	Sulphate	< 1	mg/L
28/10/2010	Total Dissolved Solids	< 10	mg/L
28/10/2010	Total Kjeldahl Nitrogen	< 0.7	mg/L
28/10/2010	Zinc	< 0.01	mg/L

Detailed Results from Field Blank Samples - Fall 2010 (continued)

Date	Parameter	Conc.	Units
28/10/2010	Alkalinity	2	mg/L
28/10/2010	Ammonia	< 0.05	mg/L
28/10/2010	Arsenic	< 0.001	mg/L
28/10/2010	Barium	< 0.005	mg/L
28/10/2010	Biochemical Oxygen Demand	< 2	mg/L
28/10/2010	Boron	< 0.02	mg/L
28/10/2010	Cadmium	< 0.0001	mg/L
28/10/2010	Calcium	0.08	mg/L
28/10/2010	Chemical Oxygen Demand	< 4	mg/L
28/10/2010	Chloride	< 1	mg/L
28/10/2010	Chromium	< 0.005	mg/L
28/10/2010	Conductivity	2	µS/cm
28/10/2010	Copper	< 0.002	mg/L
28/10/2010	Dissolved Organic Carbon	0.4	mg/L
28/10/2010	Hardness	< 1	mg/L
28/10/2010	Iron	< 0.02	mg/L
28/10/2010	Lead	< 0.0005	mg/L
28/10/2010	Magnesium	< 0.05	mg/L
28/10/2010	Manganese	< 0.002	mg/L
28/10/2010	Mercury	< 0.0001	mg/L
28/10/2010	Naphthalene	< 0.0005	mg/L
28/10/2010	Nitrate	< 0.1	mg/L
28/10/2010	Nitrate + Nitrite	< 0.1	mg/L
28/10/2010	Nitrite	< 0.01	mg/L
28/10/2010	pH (Lab)	6.01	unitless
28/10/2010	Phenols	< 0.004	mg/L
28/10/2010	Phosphorus (total)	< 0.03	mg/L
28/10/2010	Potassium	< 1	mg/L
28/10/2010	Sodium	< 0.5	mg/L
28/10/2010	Sulphate	< 1	mg/L
28/10/2010	Total Dissolved Solids	< 10	mg/L
28/10/2010	Total Kjeldahl Nitrogen	< 0.7	mg/L
28/10/2010	Zinc	< 0.01	mg/L