2011 Annual Monitoring Report
Jones Road Landfill Site

Part of Lots 1 and 2 Concession I,
and Part of Lots 1 and 2, Concession II,
Townships of Pettypiece and Jackman,
District of Kenora

Prepared for:
The City of Kenora

Prepared by:
Azimuth Environmental
Consulting, Inc.

June 2012

AEC 12-020

AZIMUTH ENVIRONMENTAL CONSULTING, INC.
Environmental Assessments & Approvals

June 29, 2012 AEC 12-020

City of Kenora
Waste Management Department
60 14th Street
Kenora, Ontario
P9N 4M9

Attention: Mr. Bill Forster, C.E.T.
Civil Technologist

Re: **2011 Report on the Monitoring Programs at the Jones Road Landfill Site**

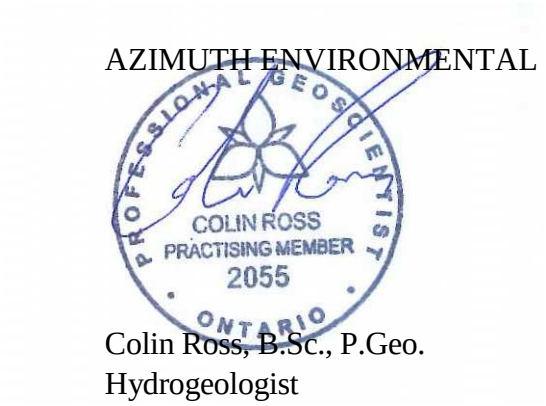
Dear Bill:

Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to present our report on the 2011 monitoring programs conducted at the Jones Road Landfill Site. In general, the monitoring data obtained in 2011 indicates that the landfill is not causing unacceptable impact on the surrounding environment. Currently, no quantifiable impacts to the ground water regime are observed within either the landfill footprint or at monitors situated immediately downgradient of the waste cells. In addition, only minor impacts were observed at SW-1 (closest to fill area), which are assumed to be a result of the construction/demolition and sewage sludge waste. All remaining downgradient surface water-monitoring stations indicate no impact.

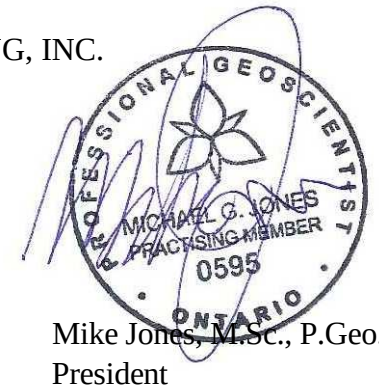
We would like to thank you for the opportunity to complete this project. If you have any questions or comments, please contact the undersigned.

Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.



Colin Ross, B.Sc., P.Geo.
Hydrogeologist



Mike Jones, M.Sc., P.Geo.
President

Attach:

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1.0 INTRODUCTION & BACKGROUND

The following information is provided as a summary of previous investigations to allow the reader to review this report in context. For more complete information, the reader should review the original documentation (see Section 5.0 References).

1.1 Location

The Jones Road landfill site is located immediately to the north of Highway 671 (Jones Road), and approximately 22 km northeast of the City of Kenora. Specifically, the site is located upon Part of Lots 1 and 2 of Concession I, and Part of Lots 1 and 2 of Concession II, in the Townships of Pettypiece and Jackman, of the District of Kenora (Figure 1). Construction of the site began on June 1, 2000, and was essentially complete by the end of the calendar year. The site is operated by the City of Kenora Solid Waste Department and is licensed by the Ministry of the Environment to receive "domestic, commercial, non-hazardous solid industrial and institutional, processed organic sewage sludge, sludge from future municipal or provincial fresh water treatment facilities, non-pathological agricultural and bio-medical, and grit and screenings from street cleaning and sediment basin clean-outs" under Certificate of Approval #A612018 (replaced C of A #A612016 (former MNR landfill)).

1.2 Geology

The Jones Road landfill site is situated within an interconnected bog/wetland complex that is surrounded by various bedrock ridges and knobs. In 1996, the local Quaternary and bedrock geology was characterized by Fenco MacLaren Inc. (Fenco) during an extensive field evaluation of the property. During this evaluation, they observed that the overburden within the bog was stratified, with three predominant layers observed, each of which is discussed in more detail below.

1.2.1 Peat

The surficial material existing within the bog consists of a dark brown to black peat. Field observations of the material indicate that the peat is fibrous at surface, consisting primarily of undecomposed organic material (i.e., rootlets, leaf litter). With increasing depth, the material becomes more hemic (i.e., muckier) as the proportion of decomposed material increases. The thickness of the peat within the bog was assessed through drilling and seismic monitoring by Fenco, and was found to range from essentially zero at the outer boundary to greater than 3 m at the center of the bog.

Testing of the vertical hydraulic conductivity of the peat was also conducted by Fenco during their evaluation. The results of this testing indicated a rate of $5x10^{-7}$ to $9x10^{-8}$ m/s under natural site conditions, given a porosity range of 0.81 to 0.95. Simulation of the vertical stress that the waste will potentially have upon the peat was also assessed through consolidation of the material under pressures of up to 800 kPa. In response to compaction, the vertical hydraulic conductivity of the material was observed to decrease by approximately three orders of magnitude to $5x10^{-11}$ m/s. The application of vertical pressure upon the peat also resulted in a decrease in the porosity of the material to about 0.67.

The horizontal hydraulic conductivity of the peat was only estimated during excavation of the peat, and was inferred to be much greater than vertical, in the order of about 10^{-5} m/s.

1.2.2 Clayey Silt

A layer of clayey silt exists beneath the surficial peat. Colouration of this material is variable, and provides an indicator of the degree of weathering the material has undergone. Unweathered material within this layer is generally blue-grey, while the weathered material possessed a green-brown colouration. During drilling by Fenco in 1996, it was determined that the material becomes siltier with depth, and that several thin, discontinuous sand seams were observed within the profile. The thickness of this material was found to range from approximately 2 to 8 m.

As with the overlying peat, vertical hydraulic conductivity testing was conducted in natural conditions as well as under the simulated load of the waste (i.e., pressures of up to 800 kPa). This testing indicated a vertical hydraulic conductivity of $2x10^{-9}$ to $3x10^{-9}$ m/s under natural conditions, while under load, a decrease of approximately three orders of magnitude was observed ($8x10^{-12}$ m/s). The application of 800 kPa of pressure also resulted in a decrease in the void ratio of the material by two-thirds, suggesting that consolidation of the material will be relatively rapid in response to the increased loading pressure of the waste. This consolidation will result in a rapid increase in the tensile strength of the material; however it will also result in a substantial decrease in its permeability to the underlying sediments.

1.2.3 Silty Sand Till

A basal layer of silty sand till exists between the clayey silt layer and the bedrock. The till is locally gravelly, and possesses several discontinuous lenses and layers of sand throughout its profile. The material also appears more lacustrine in nature at sporadic

locales throughout the site. The thickness of this material underlying the bog at the landfill site, as determined by Fenco, ranges from approximately 2 to 30 m.
The hydraulic conductivity of the till was determined through field and laboratory testing to range from $2x10^{-5}$ to $4x10^{-8}$ m/s, with a geometric mean of $8x10^{-7}$ m/s. Average linear ground water velocity in this unit ranges between 1 and 50 m/year based on the results provided.

1.2.4 Bedrock

The bedrock is granodioritic in composition (Barnett, *et al.*, 1991), and occurs at depths ranging from surficial exposure to greater than 20 m (based upon drilling and seismic monitoring) (Fenco, 1996). The rock quality designation (RQD) of the bedrock was noted by Fenco during coring of the bedrock at three locations throughout the area. RQD ranged from 63% to 100% within the three locations, suggesting that the bedrock is not highly fractured. Hydraulic conductivity testing was conducted by Fenco upon two wells drilled into the bedrock, indicating a range of $4x10^{-7}$ to $9x10^{-8}$m/s, with a geometric mean of $2x10^{-7}$m/s.

1.2.5 Hydrogeology

Overburden ground water flow in the vicinity of the property is controlled by the bedrock topography. Active natural ground water flow is restricted primarily to within the till, with the bedrock forming a lower boundary to the overburden aquifer. As discussed above, the mean hydraulic conductivity of the till and bedrock (i.e. bulk hydraulic conductivity, K) units are $8x10^{-7}$ m/s and $2x10^{-7}$ m/s, respectively. The landfill is located near the top of a small, unnamed watershed. Ground water flow within this watershed is directed toward the northeast, parallel to the apex of a small bedrock valley (Figure 2). Flow rates range within the till range from 1 to 50 m/year. Leachate flow will be northeasterly with the migration of ground water toward an area of surface water existing immediately to the west of a culvert passing beneath Jones Road, at a distance of about 750 m northeast of the waste cells. Migration time of ground water from the landfill to the surface water within the peat is estimated at approximately 5 to 10 years. During the migration period, leachate contaminants will be attenuated and biodegraded.

1.2.6 Hydrology

As discussed in Section 1.3, the site is near the top of a small, unnamed watershed that is situated between Crystal Bay (Silver Lake) to the north and Morgan Lake to the south. The watershed encompasses a total area of approximately 4 km^2, and ultimately discharges into Morgan Lake at a lateral distance of approximately 1.9 km southeast of the waste. Runoff from the area of the waste is directed primarily to the northeast through a bog/wetland complex toward a small surface water pond situated immediately

upgradient of the Jones Road culvert. Surface water flow then continues northeasterly through a series of channels, bogs, wetlands, and beaver ponds a further 700 m before finally shifting southward toward the eastern end of Morgan Lake (1,600 m). Morgan Lake lies within the larger Nelson River drainage system that encompasses the Lake Winnipeg River system and its tributaries, including the Little Black Sturgeon River, which flows both into and out of Morgan Lake.

To the northeast of the waste cells, a depression is noted in the topography (known as "the saddle") that may allow for a portion of the surface drainage from the site to migrate into Crystal Bay during spring freshet or in response to large precipitation events. Crystal Bay is located approximately 350 m north of the waste cells.

Along the southern extent of the site parallel to Jones Road, a portion of the landfill property is situated within a second watershed to the south. Flow within this watershed drains southwesterly and ultimately into the western end of Morgan Lake (~450 m). To note, the boundary of this watershed lies greater than 50 m south of the waste cells.

1.3 Site Design & Operations

The Jones Road landfill began accepting construction and demolition wastes on November 27, 2000 to provide a stable footprint for the waste cells. The site continued to collect these same waste materials through 2001 to 2009. As of November 18, 2009, the haul destination for all solid waste was revised from the Brady Road Landfill Site in Winnipeg, to the Jones Road Landfill. Wastes accepted by the site in 2011 included:

1. 3,313 tonnes of construction and demolition wastes,
2. 965 tonnes of contaminated waste from fuel tank removal sites and asbestos,
3. 2,379 tonnes of ash,
4. Tires (less than sixteen inches - 78 total; seventeen to twenty inches – 20 total.
5. 2,502 tonnes of sewage sludge
6. 7,187 tonnes of municipal solid waste

The site possesses an approved waste footprint of approximately 13.1 ha (Figure 3). As noted in Section 1.1, the site operates under MOE Certificate of Approval #A612018.

1.4 Cover Requirements, Erosion Protection

Throughout 2011, cover material was added as necessary to aid in grading and site access. Dewatered sewage sludge was also added to provide a relatively level working surface. No erosion was noted in 2011, which is expected given that the landfill is only

in the infancy of its lifespan (i.e., the volume of material held within the waste cells is small and of little vertical height).

1.5 Site Operations

As in previous years, no complaints concerning the operation of the Jones Road Landfill Site were received by the City of Kenora in 2011.

1.6 Quantities – De-Watered Sewage Sludge

Starting in April 2003, dewatered sewage sludge began to be accepted at Jones Road landfill. The quantities accepted at the site are as follows:

Table 1 – Sewage Sludge Volumes

Year	Sludge Volume (tonnes)
2003	2,168
2004	2,749
2005	3,022
2006	2,799
2007	2,627
2008	2,882
2009	2,729
2010	2,826
2011	2,502

2.0 SUMMARY OF 2011 MONITORING PROGRAMS

The 2011 monitoring of ground water, leachate, and surface water was facilitated through the collection of field measurements and water samples for laboratory analysis by City of Kenora staff. Ground water and leachate samples were collected in May and August, while surface water samples were collected in May, August and October, and sediment samples were collected in August of 2011.

The locations of the required sampling stations are depicted upon Figure 3. The scope of the 2011 monitoring program was based on the requirements outlined in the current MOE Certificate of Approval. The details of the 2011 monitoring program are summarized in Table 2 below. It is noted that several samples were not collected including MW4-6, MW4-18 and MW20-4 because the field notes indicated they were not working, while MW18-6 and MW19-6 were noted to be dry on both occasions. It should be noted that

the wells that were noted to not be working in 2011, should be either fixed or decommissioned and replaced.

Table 2: Summary of the Required 2011 Monitoring Programs

Monitor Location	Annual Frequency	Parameters
Ground Water		
2/9, 2/13, 3/8, 4/6, 4/18, 5/17, 6/5, 6/14, 7/4, 16/15, 20/4, and 21/7	August	comprehensive list
2/9, 2/13, 3/8, 4/6, 4/18, 5/17, 6/5, 6/14, 7/4, 8/22, 9/6, 10/17, 11/4, 12/4, 13/6, 13/14, 14/6, 14/21, 15/5, 15/17, 16/15, 17/15, 19/16, 20/4, 21/7, 22/5, 23/3, KGS-2 and 24/5	May & August	indicator list & water levels
2/9, 2/13, 3/8, 4/6, 4/18, 5/17, 6/5, 6/14, 7/4, 8/22, 9/6, 10/17, 11/4, 12/4, 13/6, 13/14, 14/6, 14/21, 15/5, 15/17, 16/15, 17/15, 19/16, 20/4, 21/7, 22/5, 23/3, and 24/5	October	VOC's
Surface Water		
SW-1, SW-2, SW-3, SW-4 and SW-5 (August only)	August & October	comprehensive list
SW-1, SW-2, SW-3, SW-4 and SW-5	May	indicator list
SW-2 and SW-3	May, August & October	flow measurement
SW-2	August	VOC's
Sediment		
SB-1, SB-2, and SB-R	August	major and minor inorganics & grain size
Landfill Gas		
Two Gas Probes	Bi-monthly under frozen ground conditions and quarterly otherwise	combustible gas concentrations (methane)

2.1 2011 QA/QC Samples

As part of any routine sampling program, duplicate samples should be collected and analyzed for quality assurance purposes. In 2011, City staff collected three QA/QC samples. The laboratory was not advised of the sample duplication prior to analysis of any of these samples. The results were within acceptable limits with only some minor exceptions which are summarized in Table 3.

Table 3: Summary of Notable QA/QC Variations

Occasion	COD	TDS
9/6 (Aug.)		102 &166
9/6 (May)	41 & 60	

* - all concentrations in mg/L

It should be noted that the results for the remaining parameters for each duplicate sample collected indicated very good correlation. It should also be noted that the inconsistencies observed were relatively small, within historical ranges and are notable mainly due to the very minimal and unimpacted concentrations at all duplicate locations. As such, although some inconsistencies are present, the general indication is that the majority of the results are consistent and generally acceptable. The variance in COD could be attributable to the fact that the bottles associated with these parameters are not field filtered. As such sediment within the sample bottles could result in some variance between sample bottles.

2.2 Ground Water & Leachate (Schedule "F")

During sampling in 2011, water level measurements were obtained by City staff prior to any disturbance of the piezometric surface within each monitor using an electronic water level meter (accuracy of +/- 0.2 cm). Ground water samples were then collected following purging of at least two borehole volumes of water from each monitoring well using dedicated check valve pumps and tubing. All ground water samples for inorganic analysis were also lab filtered.

Maxxam Analytics Inc. in Mississauga completed the analytical work in 2011. The laboratory provided all sample bottles, which were prepared with preservatives for consistency, as required. Samples were maintained in coolers with freezer packs and were delivered to the required laboratory within 24 to 36 hours of collection. A summary of the 2010 analytical data is included in Appendix C.

2.2.1 Ground Water & Leachate Flow

Throughout 2011, water levels were obtained prior to any disturbance of the static piezometric surface within all required ground water monitors using an electronic water level meter (accuracy of +/- 0.2 cm) as per Condition 2.4, Schedule F, of the current C of A. These measurements were then compared to background data observed by Fenco during installation of several of the existing monitors in 1996. As detailed in Table 4, the most recent water level data corresponds well with the available background data, indicating that ground water elevations in both the overburden as well as the shallow bedrock have remained relatively stable over the past nine years. Observed fluctuation in water table elevations during 2011 generally fall within 1 m, with only a few exceptions.

Active ground water flow occurs within the till and is constrained by the bedrock surface, which forms a physical barrier to further vertical migration of ground water (i.e., like a bathtub). Within the bog, low topographic relief exists, as indicated by a surface elevation change of less than 2 m between the waste and the small pond at SW-1 (a total distance of ~750-800 m). For descriptive purposes, the water table elevations measured at all ground water monitors in May of 2011 have been included upon Figure 4. As can be observed, the slope of the water table corresponds well with the orientation of the local topography, with large lateral hydraulic gradients occurring at watershed boundaries (i.e., up to 0.24) and lower gradients occurring within the bog (i.e., as low as 0.001).

A watershed divide exists to the northeast of the waste footprint, between monitors 2 and 13 (see Figure 4). This divide is due to a rise in the elevation of the bedrock topography related to the surrounding topographic highs to the east, west, and north that exist beneath the bog. Within this watershed divide, there is an area which is referred to as the "saddle" area. The saddle represents a depression in a bedrock ridge that extends to the northeast. Monitoring wells are located in and around this feature (Figure 3 & 4) to determine ground water flow directions and gradients. With the exception of May 2007, ground water elevations within the saddle have been elevated above those to the south by at least 0.36 m since 2002 (Figure 5) indicating there is a limited potential for leachate migration past this feature. It is unclear as to why the gradient reversed during May 2007. It is also noted that as a result of Ministry concerns, more frequent measurements (at least once per month) were completed throughout 2010 and 2011 with results appearing to correlate well to the historical database (Figure 5).

Table 4: 2011 Water Level Monitoring Data

Monitor	Target Zone	Ground Surface Elevation (m asl)	Trigger Elevation (m asl)	Background Fenco (10/96)	2011 Monitoring June	2011 Monitoring August	2011 Monitoring Fluctuation (m)
1/17	Till	351.44		350.87	349.50	351.44	**1.94**
2/9	**Till**	**351.07**		**350.08**	349.72	349.67	**-0.05**
2/13	Bedrock	350.85		350.06	350.16	350.07	**-0.09**
3/8	**Till**	**351.51**		**350.44**	350.25	350.13	**-0.12**
4/6	Till	351.48		350.36	350.52	N/A	**N/A**
4/18	Till	351.39		350.59	350.53	N/A	**N/A**
5/17	**Till / Bedrock**	**370.13**	**361.75**	**355.57**	353.58	354.68	**1.10**
6/5	Till	351.09		349.90	349.80	349.48	**-0.32**
6/14	Till	350.79		349.94	349.84	349.67	**-0.17**
7/4	Till	350.34		349.48	349.19	349.05	**-0.14**
8/22	Till	360.07		349.80	349.97	350.17	**0.20**
9/6	Bedrock	354.03		350.03	350.97	350.12	**-0.85**
10/17	Till	362.81		348.26	347.95	348.51	**0.56**
11/4	**Till**	**366.45**	**366.45**		362.53	362.58	**0.05**
12/4	Till	362.26			360.41	359.19	**-1.22**
13/6	**Till**	**355.02**			349.63	349.62	**-0.01**
13/14	**??**	**354.72**			350.26	349.63	**-0.63**
14/6	**Till**	**348.91**			347.61	346.98	**-0.63**
14/21	**??**	**348.68**			347.56	346.00	**-1.56**
15/5	**Till**	**352.17**			350.73	350.56	**-0.17**
15/17	**??**	**352.08**			350.75	350.66	**-0.09**
16/15	**??**	**362.25**	**362.25**		350.70	350.93	**0.23**
17/15	??	359.99			350.83	351.05	**0.22**
18/6	**Till**	**371.94**	**371.94**		dry	dry	**N/A**
19/6	**Till**	**364.15**	**364.15**		dry	dry	**N/A**
19/16	**??**	**364.27**	**364.27**		351.14	351.54	**0.40**
20/4	Peat	350.20			N/A	N/A	**N/A**
21/7	Peat	349.75			348.92	dry	**N/A**
22/5	Till	351.14			350.28	350.31	**0.03**
23/3	Peat	351.19			350.57	350.50	**-0.07**
24/5	Till	352.01			351.01	350.79	**-0.22**
KGS-2	??	351.38		350.37	349.97	348.95	**-1.02**

Note: **bold** denotes required monitoring location

?? denotes unknown target zone

2.2.2 Background Ground Water Quality

The background ground water geochemistry at the site is characterized by relatively low concentrations of most parameters (Table 5). Natural waters dissolve low quantities of elements through reaction with the soil minerals. Iron is derived through chemical weathering of soil and rock minerals and naturally occurs at levels approaching or greater than the Ontario Drinking Water Quality Standards (ODWQS).

Table 5: Background Chemistry

	Ca	Mg	Na	Cl	Alk.	SO4	NH3-N	TKN	Fe	Cond.	TDS
OWDS	---	---	20 or 200	250	30-500	500	org N=0.15	---	0.3	---	500
Overburden											
# of samples	39	39	39	37	39	37	39		39	39	39
Maximum	37	10	11	17	130	11	0		13	248	828
Average	7	2	5	2	29	5	0	N/A	1	70	116
Minimum	2	1	2	1	9	1	0		0	31	20
STD	6	2	3	3	23	2	0		2	40	156
Bedrock											
# of samples	17	17	17	16	17	16	17	9	17	17	17
Maximum	26	5.2	4.3	8	91	10	0.12	1	0.54	173	184
Average	21	4	4	2	79	3	0	0	0	158	116
Minimum	14	3	3	1	53	1	0	0	0	139	92
STD	3	1	0	2	10	2	0	0	0	10	23

All values are given in mg/L. Overburden data are from monitors 11/4 and 12/4 and bedrock data is from monitor 5/17.

(STD = standard deviation, nd = not detected, n/a = not applicable, nt = not tested)

2.2.3 Leachate Quality

Leachate quality is controlled by the availability of soluble contaminants in the waste pile, the residence time of infiltrating water in the waste, and the physical conditions, such as temperature, redox potential, and pH of the solution. Compared to background waters, leachate that is produced from landfill waste typically possesses elevated concentrations (x10 or more) of magnesium, sodium, potassium, iron, zinc, chloride, alkalinity, ammonia, total kjeldahl nitrogen, conductivity, total dissolved solids and phenols. Since municipal wastes have only been accepted for a short time, leachate has not been created that will be substantially different than background waters. The acceptance of de-watered sewage sludge and contaminated waste from the removal of fuel tanks as well as the construction, demolition and industrial waste the site received to date may affect the parameters in the leachate and downgradient water samples. High concentrations of total suspended solids (TSS) are explained by the lack of filtering of the general chemical samples in the field.

The quality of ground water underlying the waste following the tenth year of operation has remained consistent to very slightly elevated (for certain inorganic compounds such as calcium and alkalinity) compared with the background ground water geochemistry. Observation of the ground water geochemistry for each of the leachate monitors indicates that the ground water underlying the waste possesses low quantities of dissolved constituents.

2.2.4 Downgradient Ground Water Quality

As in previous years, the 2011 analytical data do not indicate that leachate generation from the waste has resulted in impact to ground water quality either immediately downgradient of the waste or at any of the other monitors installed within the Contaminant Attenuation Zone (CAZ). Since the landfill commenced operation in the

spring of 2001, the concentrations of parameters at all downgradient monitoring locations have remained at or very slightly above background levels, as can be observed in the time series graphs provided in Appendix I.

A suite of volatile organic compounds (VOC's) was analyzed at selected locations during sampling in August 2011, as per Condition 2.3(b) of Schedule F. No detections for any parameters were noted at any of the locations sampled in 2011.

It should be noted that there were no water quality samples collected from MW 1/17 during the May sampling event, while no samples from 4/6, 4/18 & 20/4 were collected during either sampling event. The field sheets were reviewed and it was indicated that these wells were "not working". It is recommended that these wells be fixed such that samples can be collected during the 2012 monitoring program.

2.3 Surface Water (Schedule "C")

City staff collected surface water samples in May, August and October 2011, with Maxxam Analytics Inc. in Mississauga completing the analytical work. The laboratory provided all sample bottles, which were prepared with preservatives for consistency, as required. The samples were kept in coolers with freezer packs and were delivered to the laboratory within 24-36 hours of collection. The 2011 analytical data have been summarized and are included in Appendix E.

2.3.1 Surface Water Flow

Ground water from the area of the waste flows in a northeasterly direction through a large bog/wetland complex before eventually discharging into a pond at the west side of the Jones Road Culvert (SW-1) that serves as the headwaters of an unnamed creek. Discharge into the pond from the bog includes both surface flow and interflow within the peat.

From the pond, the creek flows beneath the roadway and in a northeasterly direction for approximately 700 m, before turning southward and eventually discharging into a further bog/wetland complex south of a logging road about 800 m upgradient of Morgan Lake (SW-2). Along its route, the creek is discontinuous as it passes through various bogs, wetlands, and beaver ponds. Periodic discharge from the Lunch Lake sub-watershed commingles with flow in the creek, providing additional flow at SW-2.

Approximately 150 m northeast of the waste footprint, a depression is noted in the landscape, known locally as the "saddle". This area allows a portion of surface drainage to migrate into Crystal Bay during spring freshet or in response to large precipitation

events. Crystal Bay is located approximately 350 m north of the waste cells. Figure 2 shows the site's hydrologic features.

Estimates of stream flow were made by City Staff at SW-1, SW-2 and SW-4 during the May sampling and at SW-1, SW-2, and SW-5 during August, and both SW-1 and SW-2 in October sampling conducted in 2011, as per Condition 2.4, Schedule C of the current C of A. Flow velocity measurements are summarized in the following table. As in previous years, flows are shown to be low and intermittent.

Table 6: Surface Water Flow Data

Location	Velocity (m/sec)		
	May 31, 2011	**August 24, 2011**	**October 25, 2011**
SW-1	0.24	0	0.
SW-2	0.18	0.18	0.61
SW-3	0	0	0
SW-4	0	0	0
SW-5	0	0.61	0

2.3.2 Surface Water Quality

Surface water quality data obtained in 2011 were compared to the background quality data obtained at SW-1 and SW-2 prior to the construction of the site in 2000, as well as to the Provincial Water Quality Objectives (PWQO). In general, the surface water quality is good and falls within the limits of the PWQO, with the exception of iron. Elevated concentrations of iron are due to natural sources, as indicated by similar ranges and variability of concentrations for both ground water and surface water at both background and downgradient stations.

As in previous years, PWQO exceedances are present for iron and total phosphorus and phenols, however it was noted that concentrations are consistent with background concentrations and likely indicative of the shallow and stagnant nature of these locations where sediment entrainment may cause elevations of these parameters, especially iron, while natural decay of organic materials is attributed to the elevated total phosphorus concentrations. As no impacts were observed at any ground water monitoring locations downgradient of the waste, and the composition of waste currently deposited at the site would not have generated a plume of sufficient size and strength to affect these locations, given the short residence time at the site, natural sources are believed to be the most likely source.

A time-trend analysis of selected leachate parameters at SW-1 since 1996 (Appendix I). The developing geochemical database is illustrating a slight increasing trend for select typical leachate related parameters including alkalinity, conductivity and sulphate**.** The elevations or these parameters specifically are not surprising as they are reflective of construction and demolition wastes (i.e. gypsum [calcium sulphate] wallboard). With the addition of municipal wastes over the last few years, a close watch will be kept on other parameters such as chloride and ammonia, which are good indicators or municipal wastes. As most leachate indicator parameters have remained at relatively low concentrations, these values are not seen as an issue at this time. As well, these parameters have limited potential for environmental impacts unless they reach very high levels. A similar time-trend analysis for SW-2 indicates the same general trend observed at SW-1 has begun in 2008, however to a smaller degree. These increasing trends indicate that possible impacts from construction, demolition and industrial waste fill are most apparent in the area closest to the waste area, while impacts are reduced further away from the footprint, indicating attenuation. SW-3 is a background location that receives water from the Lunch Lake watershed and it shows increased ranges as well, although not to the same degree.

2.4 Sediment (Schedule "D")

In 2011, City staff collected sediment quality samples on August 25th at three locations as specified in the current C of A (i.e., SB-1, SB-2 and SB-R). The 2011 analytical data have been summarized in Appendix F.

The analytical data obtained from each of the samples were compared to the criteria outlined in, *Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario* (MOE, 1993). Of the seventeen required parameters, not a single parameter exceeded in 2011 for either the lowest effect level (L.E.L.) or severe effect level (S.E.L.).

Grain size analysis was performed on the sediment samples in 2011. The results are located in Appendix F. Samples indicate that the three sample locations are coarse sands. The results are somewhat similar to those found in previous years.

2.5 Biological Effects (Schedule "E")

Benthic invertebrate monitoring was conducted from 2000 to 2003. The need for continued or additional benthic monitoring is not necessary, since the minimum of three (3) years of sampling, as stated in the C of A, has been fulfilled.

2.6 Landfill Gas (Schedule "G")

According to Schedule "G" of the current C of A, methane sampling is required to be completed on a bi-monthly basis during frozen ground conditions and quarterly during all other periods at the two proposed landfill gas monitors outlined in the SNC-Lavalin monitoring plan (September, 1999). The results provided in the table below indicate that concentrations are minimal and inconsistent, which is not surprising given the limited amount of wastes currently present at the site. The geochemical signature of the landfill leachate also indicates that the environment is not yet anaerobic and therefore will not produce methanogenic products at this time in the landfill's evolution. Over time this is expected to change, but will be monitored through multiple lines of evidence.

Table 7: Methane Results

Date	North Well	South Well
Jan 7, 2011	0	0
Mar 4, 2011	0	0
Apr 14, 2011	0	0
May 26, 2011	2	3
June 15, 2011	3	3
Aug 10, 2011	0	0
Sept 28, 2011	0	0
Nov 8, 2011	0	0

All results in ppm

2.7 Geotechnical Monitoring (Schedule "H")

Shear testing was completed by Eng-Tech Inc. in 2009 within Cell A prior to wastes being deposited in that area as stipulated in the C of A. Given the wastes are currently still being deposited in this cell, no further geotechnical work has been completed.

3.0 PROPOSED 2012 MONITORING PROGRAM

Given the large monitoring network, as well as the significant data set present for the Site, it is proposed that some modifications could be made to the monitoring program. Currently there are a 31 monitoring wells sampled semi-annually at the Site, all of which have shown little to no leachate impacts resulting from the wastes deposited at the site.

It is understood that the purpose of the existing monitoring network was to establish baseline ground water conditions at the site such that a strong understanding of the hydrogeological conditions could be developed. After 11 years of extensive data

collection, it is felt that there is a very good understanding of how this Site operates, as summarized in the annual reports. As such, it is recommended that several monitoring wells be removed from the current monitoring program. It is noted that these monitors are not to be decommissioned as they may be incorporated back into the monitoring program in the future if leachate impacts begin to be observed in specific areas within the proposed monitoring network. This reduced monitoring program will allow for the City to minimize monitoring expenses (i.e. field time & analytical costs), while maintaining a more focused approach to the review of the annual monitoring data for the waste footprint and area immediately surrounding it.

It is understood that the site recently began accepting municipal wastes and that the leachate geochemistry may evolve over the next several years, however, the site has been accepting sewage sludge as well as construction and demolition wastes since without any notable change to the ground water quality within the waste footprint. It is noted that these conditions are somewhat expected given the limited permeability of the bedrock as well as the overlying till and peat units.

The proposed monitoring network is outlined in Table 8.

Table 8: Proposed Monitoring Network

Monitoring Well	Annual Frequency	Parameters
1/17, 2/9, 2/13, 3/8, 4/6, 5/17, 6/5, 11/4, 16/15, 17/15, 19/16, 22/5, 23/3 & 24/5	May & August	comprehensive list & water levels

* Locations illustrated on Figure 8

The following table outlines the monitoring wells proposed to be removed including rationale.

Table 9: Proposed Monitoring Well Removals

Monitoring Well	Rationale
7/4, 9/6, 15/5, 20/4 & 21/7,	Distant Location
4/18, 6/14, 12/4,13/14, 14/21, 15/17 & 19/6	Redundant Location
9/6, 8/22, 13/6 & 14/6,	Different Watershed
18/6	Always Dry

Distant Locations: These monitoring wells will most likely be re-instated in monitoring program once the site is further developed, however, continued sample collected without

any observable leachate impacts within the waste footprint are considered unnecessary at this point in the Site life.

Redundant Locations: These locations with the exception of MW14/21 represent the second of a nested monitor pair. As they are most likely screened within the same aquifer, they represent redundant sampling locations. In the event leachate impacts begin to be observed at any of the locations, the opportunity exists to re-instate these locations. MW14/21 represents a redundant background location as there already is a dedicated overburden background location at MW11/4. Given the significant database present, a second background location is not necessary.

Different Watersheds: There are several monitoring well locations that have been shown to be in different watersheds. This is controlled by the presence of bedrock ridges that extend throughout the site and have been supported by the ground water elevation data (Figure 4). It is noted that these locations may be re-instated in the future if leachate impacts are observed near the boundary of a given watershed such that it can be confirmed whether a ground water connection exists between watersheds.

Given the observable, but limited leachate impacts observed in the surface water monitoring stations, it is felt that the current surface water monitoring program should be maintained as it outlined in the C of A and was completed in 2011. However, the sediment sampling program which occurs at several of the surface water monitoring locations is not seen as a necessary monitoring program at this point in the sites lifespan. Sampling data collected over the past 11 years provides a sufficient background dataset in the event site conditions change and this issue is to be revisited. However, it is felt that the surface water quality monitoring program is sufficient to determine the potential leachate impacts within the surrounding surface water features given the current state of the site.

Given the site has just begun to accept domestic wastes and landfill gas monitoring was just begun in 2010, it is recommended that this program continue in 2012 such that a sufficient dataset can be developed.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Operation of the City of Kenora Jones Road Landfill site is in compliance with the C of A and is performed as designed. The site is not creating any adverse impacts on the surrounding environment. Therefore there are no requirements for any mitigation / remedial measures based on the existing site performance data compilation. As the site has only been accepting construction, demolition, soil wastes, dewatered sewage sludge

and a limited quantity of old refuse from another landfill since November 27, 2000 to provide a stable base for the landfill, the material within the approved waste footprint has the potential to produce only slightly elevated concentrations of certain parameters typical of landfill leachate, which in this instance is considered to be iron, alkalinity, and conductivity. Monitoring data gathered throughout 2011 confirms this conclusion, as the analysis of ground water samples from both leachate footprint and downgradient monitors are consistent with the local background ground water geochemistry.

The abovementioned monitoring program revisions have been presented for consideration by the Ministry, however, until review comments are received the City should continue to complete the monitoring program as outlined in the C of A.

5.0 REFERENCES

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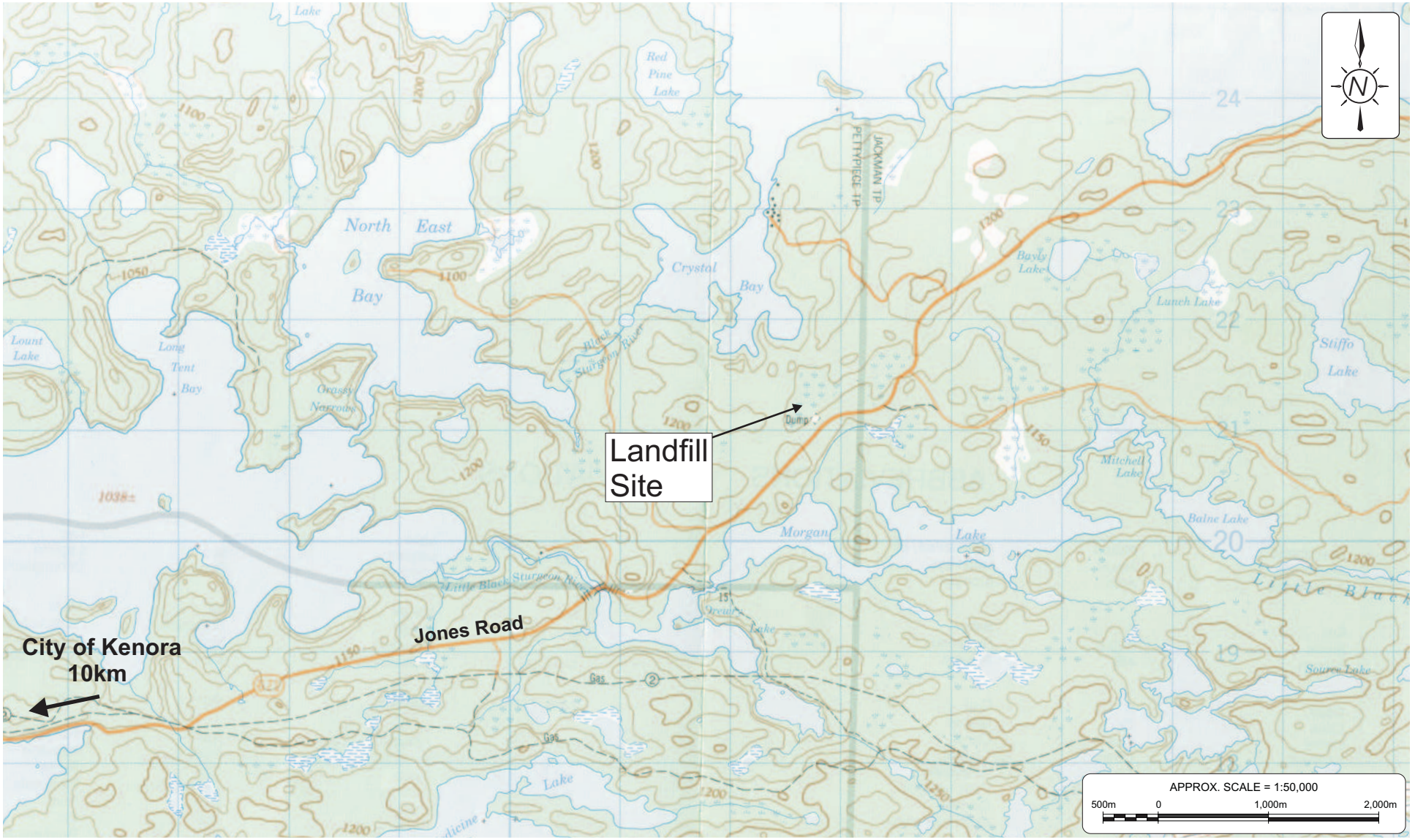
APPENDICES

Appendix A: Figures
Appendix B: MOE Certificate of Approval #A612018
Appendix C: Summary of Ground Water Quality Data
Appendix D: Summary of Detected Volatile Organic Compounds
Appendix E: Summary of Surface Water Quality Data
Appendix F: Sediment Sampling Data
Appendix G: Borehole Logs
Appendix H: Ground Water Elevation Data
Appendix I: Chemistry Over Time Graphs

APPENDIX A

Figures



Legend:

Source: Energy, Mines, and Resources Canada. 1996. 1:50,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

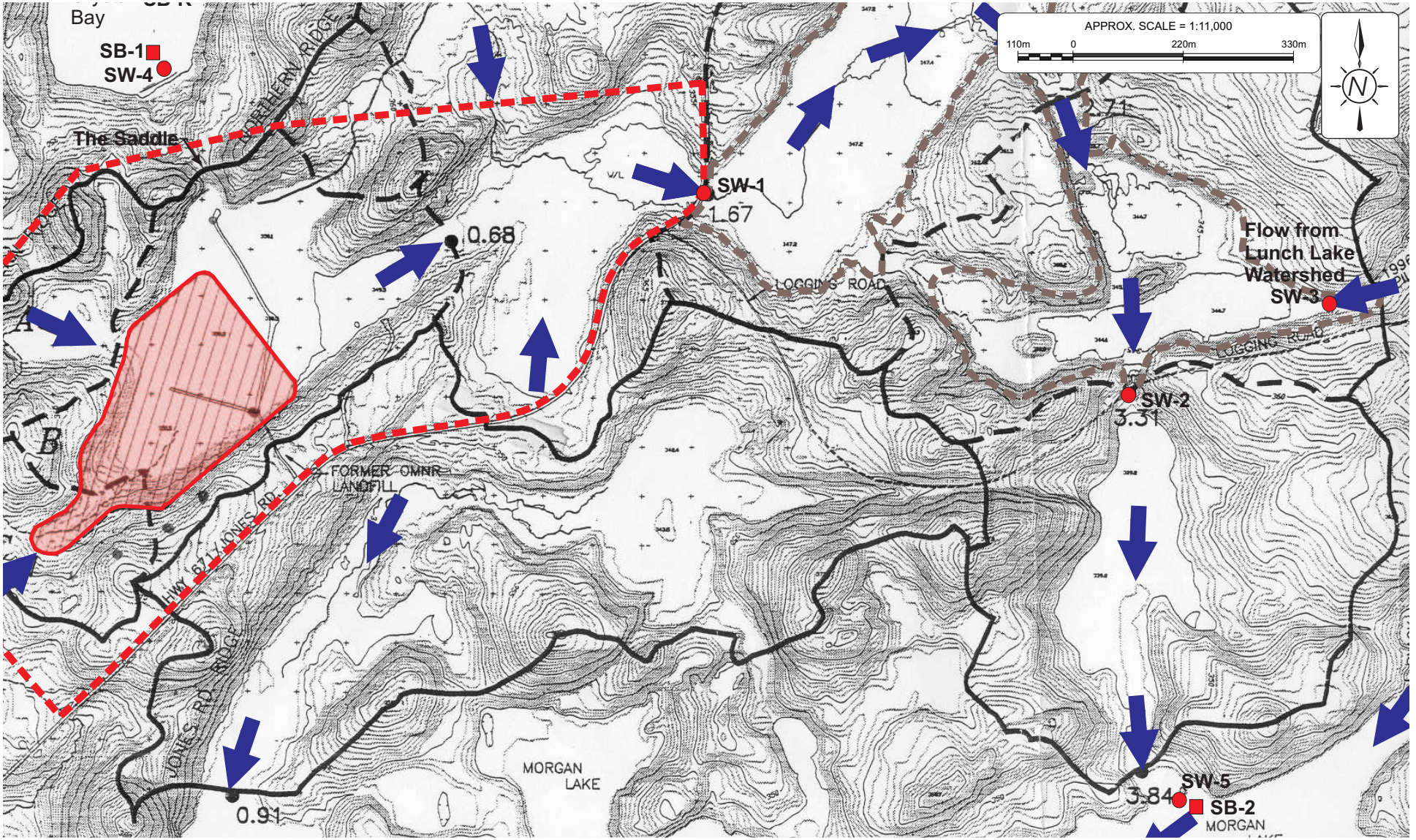
Site Location

Date Issued:	June 2012
Created By:	CMR
Project No.	12-020
File Name:	Figure 1 - Site Topo.CDR

2011 Annual Monitoring Report
Jones Road Landfill Site
City of Kenora

MOE Certificate of Approval No. A612016

Figure No.
1



Legend:

- Approved Waste Footprint
- Approximate Property Boundary
- Contaminant Attenuation Zone
- Watershed Boundary
- Surface Water Sampling Location
- Sediment/Benthic Sampling Location
- Surface Water Flow

Base Drawing: Fenco MacLaren (1997), Figure S3.1

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

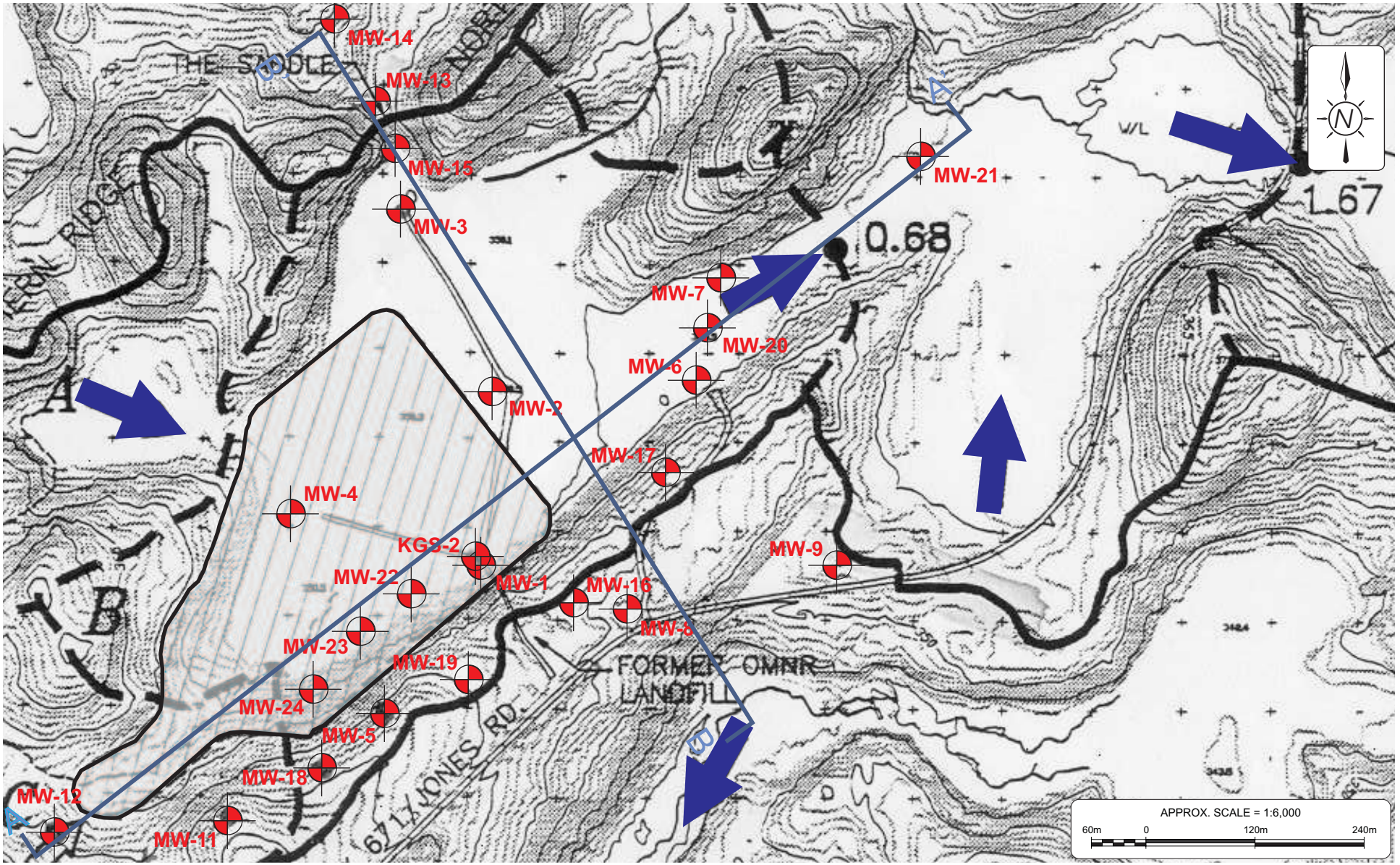
Hydrologic Features

Date Issued:	June 2012
Created By:	CMR
Project No.	12-020
File Name:	Figure 2 - Hydrologic Features.CDR

2011 Annual Monitoring Report
Jones Road Landfill Site
City of Kenora

MOE Certificate of Approval No. A612016

Figure No.
2



Legend:

- Approved Waste Footprint
- Ground Water Monitor
- Watershed Boundary
- Surface Water Flow

Base Drawing: Fenco MacLaren (1997), Figure S3.1

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

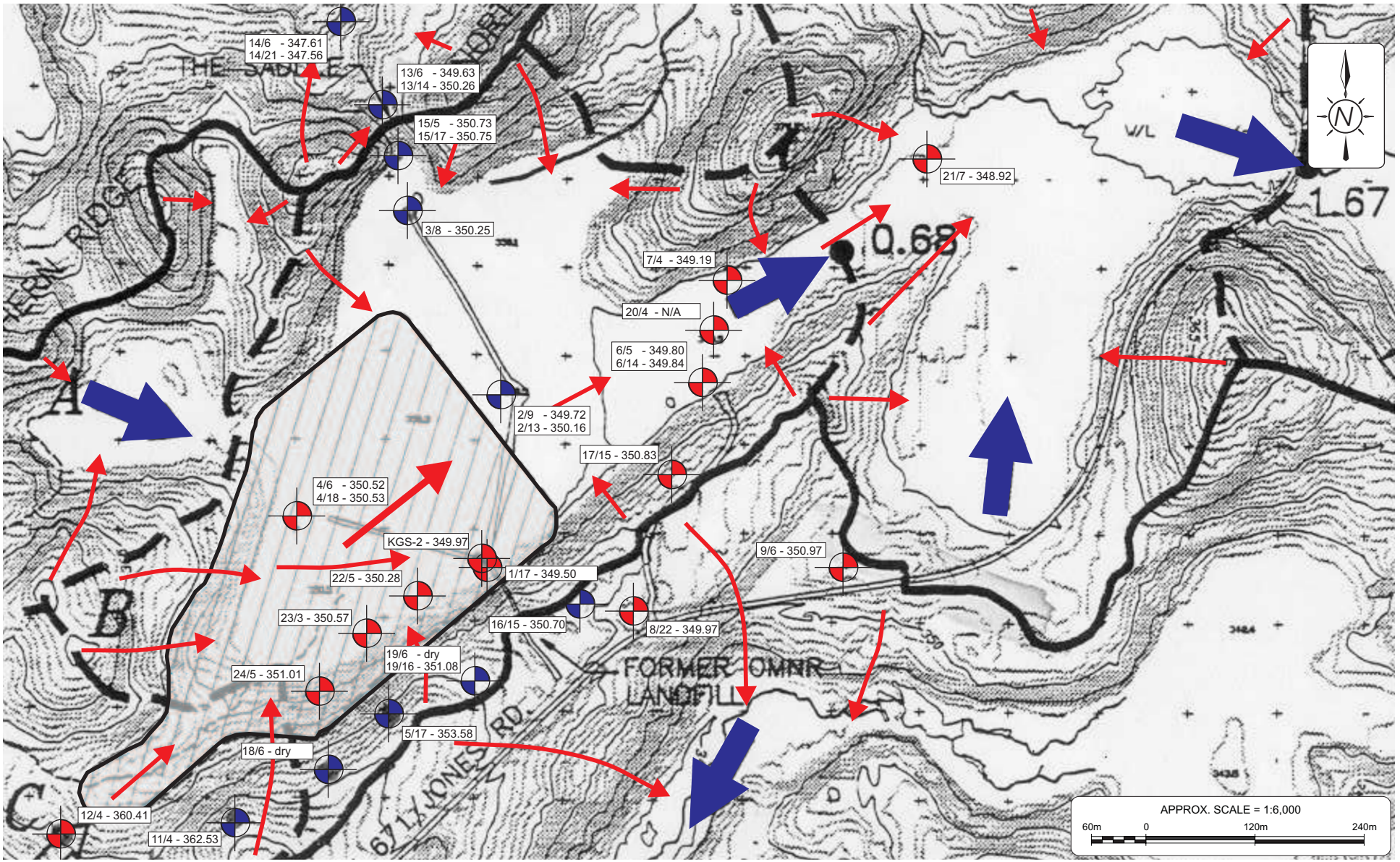
Ground Water Monitoring Locations

Date Issued:	June 2012
Created By:	CMR
Project No.	12-020
File Name:	Figure 3 - Ground Water Monitors.CDR

2011 Annual Monitoring Report
Jones Road Landfill Site
City of Kenora

MOE Certificate of Approval No. A612016

Figure No. **3**



Legend:

- Approved Waste Footprint
- Ground Water Monitor
- Required Ground Water Level Monitoring Location
- Watershed Boundary
- Ground Water Flow Direction
- Surface Water Flow Direction
- Sub-watershed Boundary

Base Drawing: Fenco MacLaren (1997), Figure S3.1

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Ground Water Monitoring (June 2011)

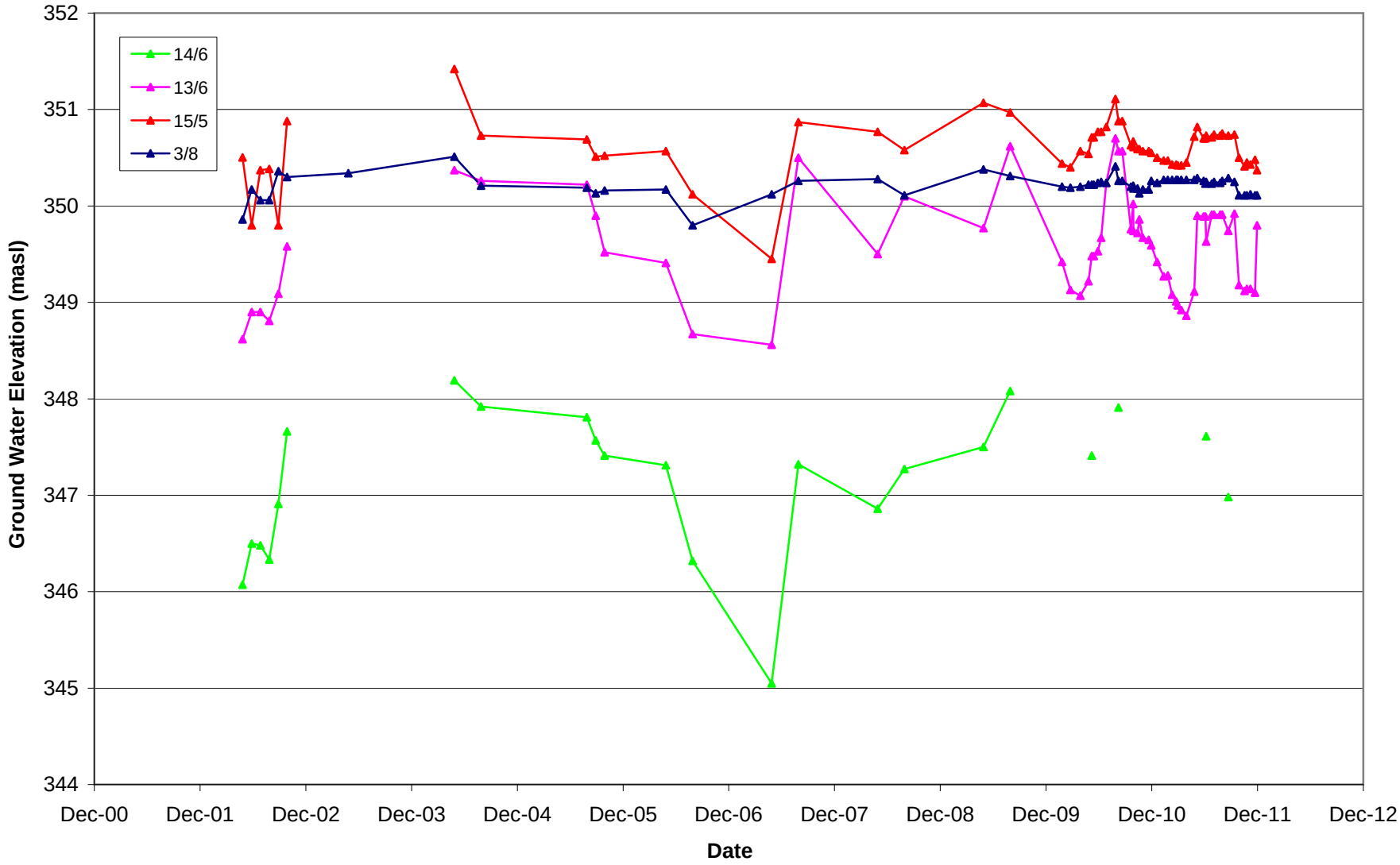
Date Issued:	June 2012
Created By:	CMR
Project No.	12-020
File Name:	Figure4 - Water Levels (May11).CDR

2011 Annual Monitoring Report
Jones Road Landfill Site
City of Kenora

MOE Certificate of Approval No. A612016

Figure No. **4**

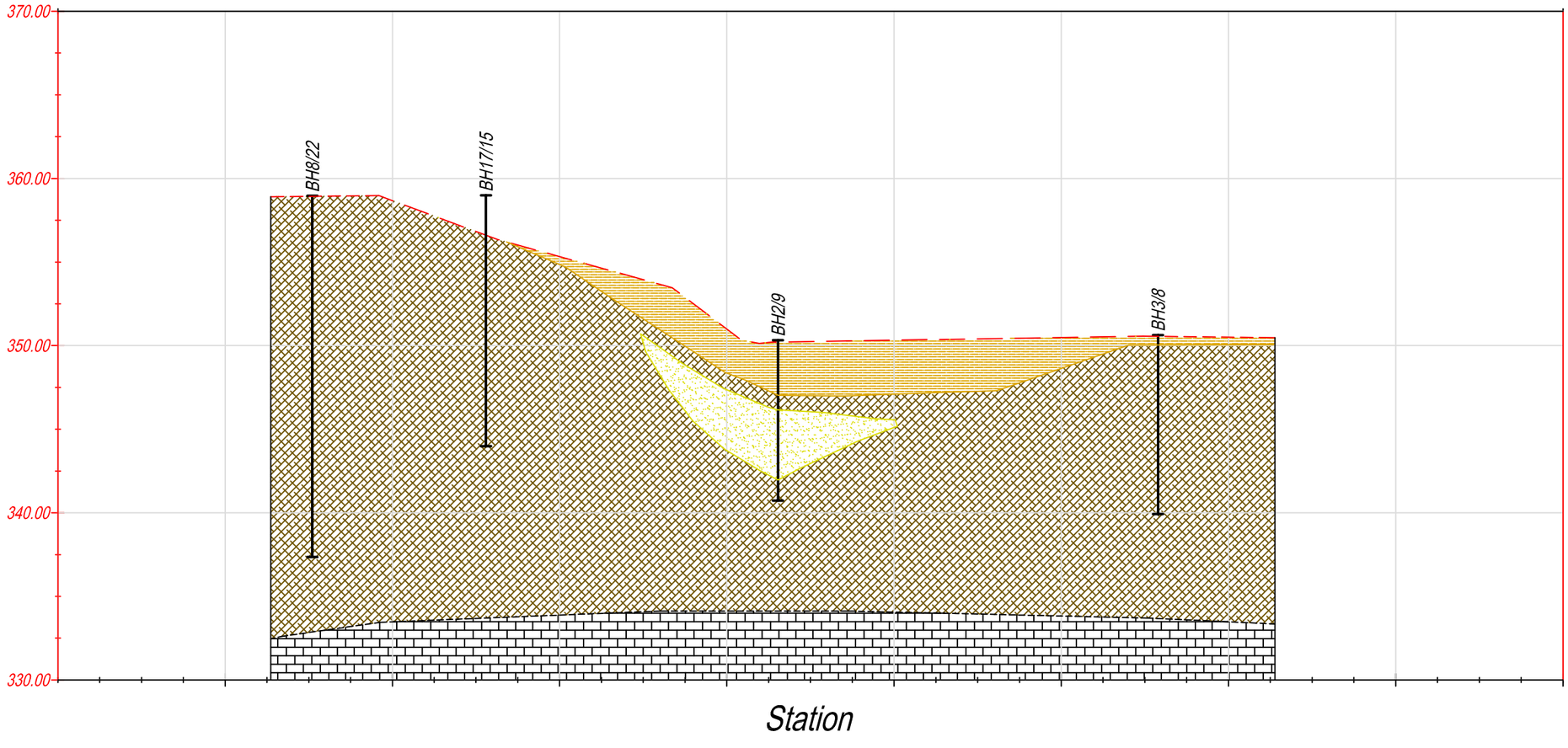
Figure 5 - Saddle Ground Water Elevations (overburden)



B

South-North

B'



LEGEND:

- Bedrock
- Peat
- Till
- Sand

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

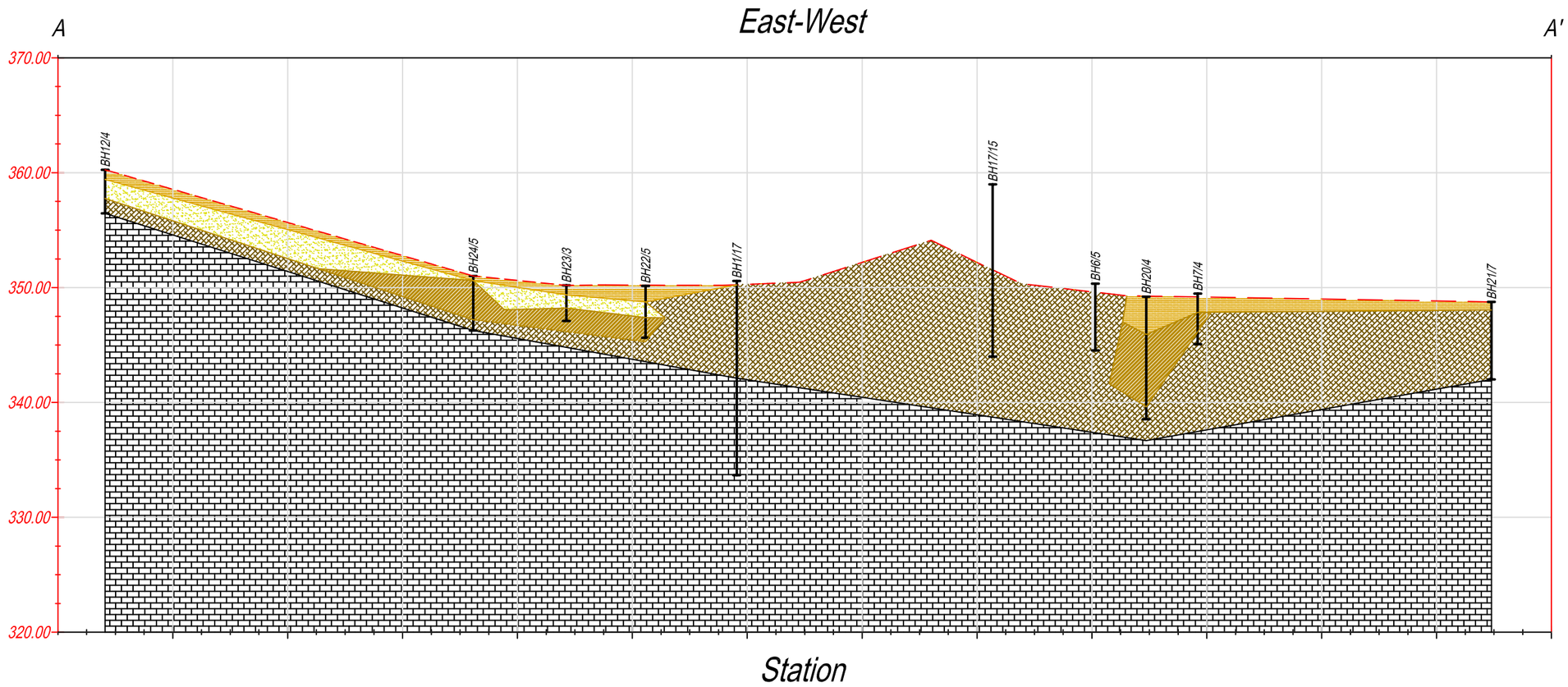
South-North Cross Section B-B'

Jones Road Landfill
City of Kenora

DATE ISSUED:	June 2012	Figure No. 7
CREATED BY:	JLM	
PROJECT NO.:	12-020	
REFERENCE:		

DAYSTAMP: M:\12 Projects\12-020 2011 Jones Road Landfill Monitoring Report\04.0 - Drafting\12-020.dwg

Plotted by: JMCCARTNEY on June 15, 2012 at 2:17pm
File: \\azimuthenv\Data2\projects2\12 Projects\12-020 2011 Jones Road Landfill Monitoring Report\04.0 - Drafting\12-020.dwg Layout: Figure 7 Plotscale: 0.1



LEGEND:

- Bedrock
- Peat
- Till
- Sand
- Clay

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

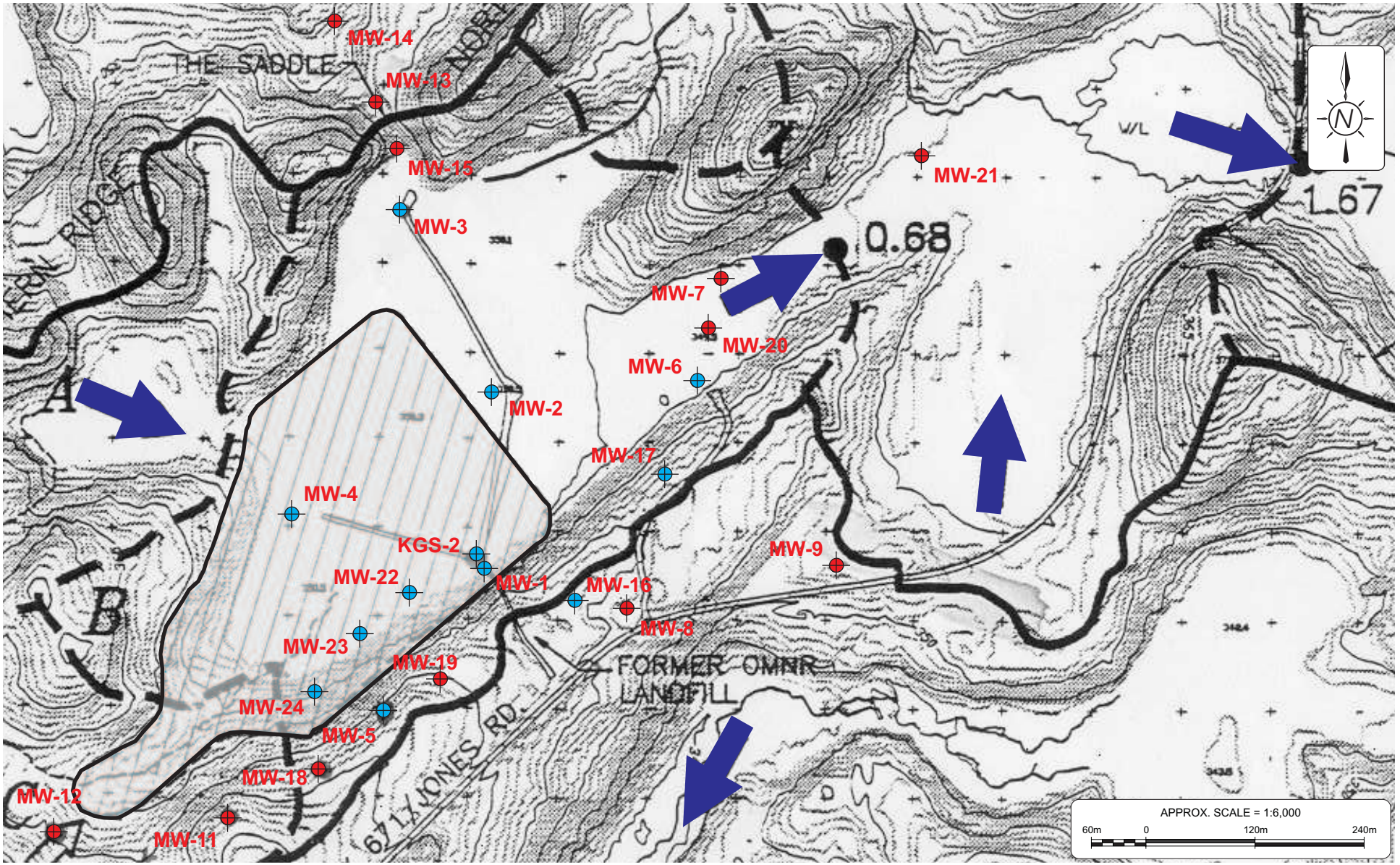
East-West Cross Section A-A'

Jones Road Landfill
City of Kenora

DATE ISSUED:	June 2012	Figure No.
CREATED BY:	JLM	6
PROJECT NO.:	12-020	
REFERENCE:		

DAYSTAMP: M:\12 Projects\12-020 2011 Jones Road Landfill Monitoring Report\04.0 - Drafting\12-020.dwg

Plotted by: JMCCARTNEY on June 15, 2012 at 2:17pm
File: \\azimutharv\Data2\projects2\12 Projects\12-020 2011 Jones Road Landfill Monitoring Report\04.0 - Drafting\12-020.dwg Layout: Figure 6 Plotscale: 0.1



Legend:

- Approved Waste Footprint
- Ground Water Monitor (Maintained)
- Ground Water Monitor (Removed)
- Watershed Boundary

Base Drawing: Fenco MacLaren (1997), Figure S3.1

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Proposed Ground Water Monitoring Network

Date Issued:	June 2012
Created By:	CMR
Project No.	12-020
File Name:	Figure 8 - Ground Water Monitors.CDR

2011 Annual Monitoring Report
Jones Road Landfill Site
City of Kenora

MOE Certificate of Approval No. A612016

Figure No.
8

APPENDIX B

MOE Certificate of Approval #A612018

Ontario

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

City of Kenora
1 Main Street South
Kenora, Ontario
P9N 3X2

for the use and operation of a 13.1 hectare landfilling area within a total site area of 108.1 hectares

all in accordance with the following plans and specifications:

as listed in Schedule "A"

Located: Parts of Lots 1 and 2, Concession I, and Parts of Lots 1 and 2, Concession II, Townships of Pettypiece and Jackman, District of Kenora

which includes the use of the site only for the disposal *of the following categories of waste (Note: Use of the site or additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval)* domestic, commercial, non-hazardous solid industrial and institutional, processed organic sewage sludge, sludge from future municipal or provincial fresh water treatment facilities, non-pathological agricultural and bio-medical, and grit and screenings from street cleaning and sediment basin clean-outs.

This Certificate of Approval Revokes and Replaces Certificate of Approval No. A 612016, dated November 5, 1999.

and subject to the following conditions:

DEFINITION OF TERMS

1. In this Provisional Certificate of Approval:

   a) "City" means the City of Kenora;

   b) "Director" means a Director of the Environmental Assessment and Approvals Branch, Ministry of the Environment;

   c) "Regional Director" means the Director , Ministry of the Environment, Northern Region;

   d) "District Manager" means the Kenora District Manager, Ministry of the Environment, Northern Region;

e) "Landfill" means Parts of Lots 1 and 2, Concession I, and Parts of Lots 1 and 2, Concession II, Townships of Pettypiece and Jackman, District of Kenora;

f) "MOE" means the Ministry of the Environment;

g) "ODWO" means the Ontario Drinking Water Objectives;

h) "O & M Manual" means the Operations and Maintenance Manual;

i) "PWQO" means the Provincial Water Quality Objectives;

j) "RUP" means the MOE's Reasonable Use Policy (Guideline B-7, formerly 15-08);

k) "This Certificate" means this Provisional Certificate of Approval as amended from time to time, including all Schedules attached to and forming part of this Certificate; and

l) LLC means the Landfill Liaison Committee.

GENERAL

2. The City shall establish a Board of Management in conjunction with the Town of Keewatin and the Town of Jaffray Melick who will act as its designated authority to oversee the development, operation, maintaining and monitoring of the Landfill.

The City shall be bound by the conditions of this Certificate. The conditions of this Certificate shall extend to and bind any successor or subsequent owner of the Landfill, which may be created through future restructuring.

3. No operation shall be carried out at the Landfill after 180 days from this condition becoming enforceable unless this Certificate has been registered by the City as an instrument in the appropriate Land Registry Office against title to the Landfill and a duplicate registered copy provided to the Director.

No operation shall be carried out at the Landfill after 180 days from this condition becoming enforceable unless the land control maps at the Ministry of Natural Resources and the Ministry of Northern Development and Mines (MNDM) show this Crown Site (the 108.1 ha site area identified in page 1) designated for sale and patent and the Ministry of Natural Resources (MNR) has issued an Interim Land Use Permit. Within 60 days of registration of the patent, this Certificate must be registered by the City as an instrument in the appropriate Land Registry Office against title to the Landfill and a duplicate registered copy provided to the Director.

4. Requirements specified in this Certificate are minimum requirements and do not abrogate the need to take all reasonable steps to avoid violating the provisions of other applicable legislation, regulations, approvals, orders, etc.

5. The requirements of this Certificate are severable. If any requirements of this Certificate to any circumstance is held invalid, the application of such requirement to other circumstance and the remainder of this Certificate shall not be affected thereby.

6. Despite any other term or condition in this Certificate, waste disposal shall be limited to:

   (i) the 13.1 ha landfilling area as shown on Fig. FW.2, Item 1 of Schedule "A", and

   (ii) the approved final contours as shown on Drawing S1-2, Item 1 of Schedule "A".

7. The City shall allow MOE personnel, or an MOE authorized representative(s), upon presentation of credentials, to:

   a) carry out any and all inspections authorized by the Environmental Protection Act, the Ontario Water Resources Act or the Pesticides Act, as amended from time to time, of any place to which this Certificate relates, and

   without restricting the generality of the foregoing, to:

   b) i) enter upon the premises or the location where the records required by the conditions of this Certificate are kept;

      ii) have access to and copy, at any reasonable time, any records required by the conditions of this Certificate;

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

      iv) sample and monitor, at reasonable times, for the purposes of assuring compliance with the conditions of this Certificate.

8. Schedules A, B, C, D, E, F, G and H are integral parts of these conditions.

LANDFILL OPERATIONS

General

9. The Landfill shall be developed, operated and maintained by the City in accordance with all of the plans and documents listed in Schedule "A". Should there be discrepancies between the documents listed in Schedule "A" and the conditions in this Certificate, the conditions shall take precedence. Should there be discrepancies between the documents listed in Schedule "A", the document bearing the most recent date shall take precedence.

10. a) The City shall operate the Landfill in accordance with an O & M Manual. The O & M Manual shall be prepared and submitted to the Regional Director and the LLC within 180 days of the date of issuance of this Certificate and shall cover the following issues:

- day-to-day operations and staff responsibilities;
- surface water management;
- equipment maintenance and inspection;
- stockpile management and use of daily and intermediate cover material;
- condition of applied cover and vegetation;
- odour, dust and litter control measures;
- traffic control measures;
- bird, bear, rodent and insect control measures;
- fire prevention measures;
- waste management control and record keeping procedures to ensure that only approved waste enters the site;
- operating instructions for management of any waste suspected to be hazardous which enters the site; and
- geotechnical and environmental monitoring procedures and protocols.

b) The O & M Manual shall also identify specific construction activities designed to minimize slope and bearing failures.

c) The O & M Manual may be revised based upon considerations or recommendations made to the Board of Management. These revisions shall be based upon information contained within the Annual Monitoring report mentioned in Condition 52, and directives contained within MOE regulations, policies and guidelines.

11. Scavenging of waste at the Landfill is prohibited.

Construction Activity

12. a) Heavy Equipment Usage

Heavy equipment shall not be used on the peat or, initially, on the waste over the bog unless the peat is sufficiently frozen to support the weight of this equipment.

b) Damage to Root Mat

Care shall be taken during construction to minimize damage to the root mat over the bog area. Areas where the mat is badly damaged shall be treated on a case-by-case basis.

13. **Side Slopes**

All temporary side slopes (i.e. prior to achieving final design grades) for the fill over the bog shall be held at 6H (horizontal):1V (vertical) (or less). The permanent side slopes for the finished portion of the Landfiill shall be restricted to 6H:1V for the east face, but may be up to 4H:1V elsewhere unless otherwise specified by the geotechnical engineer.

14. **Site Supervision**

The City shall ensure that the Site Supervisor has been adequately trained with respect to the following, without limitation:

i) conditions and schedules of this Certificate;

ii) the operation and management of the Landfill;

iii) relevant waste management regulations and legislation;

iv) environmental concerns related to the waste being handled at the Landfill;

v) occupational health and safety concerns pertaining to the waste being handled at the Landfill; and

vi) the placement of fill on the bog area in accordance with advice and/or specific instructions provided by a qualified geotechnical engineer.

Site Security & Operating Hours

15. The waste disposal operating hours of the Landfill shall be between 8:30 a.m. to 5:30 p.m., Monday to Saturday. The Landfill is closed on Sundays and statutory holidays.

16. The City shall not allow waste to be received for disposal at the Landfill except during operating hours when the Landfill is under the supervision of the Landfill attendants.

17. During non-operating hours, the Landfill entrance gate shall be locked by the City to secure against access by unauthorized persons.

18. In the event of a requirement to respond to emergency situations, waste may be received for disposal at the Landfill outside of the normal operating hours specified in Condition 15 above, under the supervision of the Landfill attendants and subject to the approval of the District Manager.

Site Entry Requirements

19. The City shall not allow the following wastes to be disposed of at the Landfill:
    - hazardous wastes as defined under Regulation 347;
    - industrial liquid or slurry wastes;
    - hazardous biomedical wastes; and

- barrels, drums or other similar containers which have been contaminated by hazardous substances.

20. The City shall use the weigh scale to be installed at the central public drop-off depot to monitor and record all incoming wastes. Such a depot shall be established in a central location in the Tri-Municipal Area. If this off-site scale malfunctions, alternative methods for weight determinations shall be implemented as soon as possible but not later than in 3 days. These could include the use of alternate weigh scales, estimation of load weights from historical records for specific haulers, or waste generation areas.

21. The City shall ensure that all vehicles entering the Landfill shall be identified by a licence number on the weigh scale billing notice.

Waste Cover Requirements

22. The City shall ensure that waste is deposited in a manner that minimizes the area of exposed waste at the Landfill working face and shall be compacted before cover material is applied.

23. The City shall ensure that from May 15 till September 15 at the end of each working day, and within two hours of the entrance gate closure, cover material is applied to all exposed waste material. Cover material shall be applied on a weekly basis during the rest of the year. The average depth of this material when soil is used shall be 15 cm.

24. Alternative MOE approved materials such as tarps, foams or processed sewage sludge can be used for daily cover subject to the Regional Director's approval.

25. The City shall provide a contingency supply of cover material equal to two working days worth to ensure that adequate cover is always available for application pursuant to Condition 23.

26. The City shall ensure that in areas where landfilling is not to be carried out for the period of 90 days or more, at least 20 cm of compacted clean earth cover will be applied over the wastes. If necessary, these areas may be hydroseeded during the earliest spring or fall planting season to stabilize the surface against erosion.

27. The City shall ensure that in areas where landfilling has been completed to the approved final contours, a minimum 750 mm thickness of clean earth cover will be placed over the compacted wastes. The lower 600 mm will consist of previously excavated and compacted tills, and the top 150 mm will consist of locally derived topsoil mixed with peat. These areas shall be hydroseeded during the earliest spring or fall planting season to provide protection against erosion.

Base Contours

28. The City shall ensure that extent of excavation shall be limited to base grades shown on Drawing S1-3 of Item 1, Schedule "A".

29. The City shall ensure that no excavation shall occur for those portions of the landfilling area situated over

the bog.

Waste Burning

30. The City shall ensure that there is no burning of waste at the Landfill.

31. The City shall ensure that site operations shall incorporate the fire prevention measures identified in Item 1 of Schedule "A".

Bears, Birds, Rodents and Insect Control

32. Bears, birds, rodents and insect control shall be undertaken by the City in accordance with procedures outlined in Item 1, Schedule "A".

Litter Control

33. The City shall implement all necessary measures to prevent off-site litter impact from landfilling operations. These measures shall include but not be limited to the following:

- the use and maintenance of suitable portable netting and snow fencing;
- weekly site litter inspections and clean-up; and
- daily inspection and no less than weekly litter pick up on Highway 671 in the vicinity of the Landfill;

34. The City shall ensure that no disposal of waste occurs if weather conditions make it difficult to prevent litter from leaving the Landfill.

Dust Control

35. In order to keep mud and dust from the Landfill to a minimum, the City shall implement a dust control program. This program shall include, but not be limited to the following measures:

- during dry periods when there are visible dust emissions, regular wetting of soil cover material prior to its spreading by bulldozers over the working face;
- during dry periods wetting of the unpaved roads and the use of dust suppressants;
- installation of speed bumps near the site entrance;
- reducing on-site vehicle speeds by posting a maximum speed limit of 30 km/h;
- paving the site entrance area;
- construction of the on-site crushed stone or gravel roads;

- covering of dust laden waste material as soon as possible; and
- minimizing wind erosion by stabilizing inactive areas using vegetation.

Noise Control

36. Noise from or related to the operation of the Landfill shall be kept to a minimum and, in any event, the City shall comply with the noise level limits outlined in the MOE's February 1997 "Noise Guidelines for Landfill Sites" as contained in Schedule "B".

Traffic Control

37. The City shall ensure that sufficient queueing space is available on-site to accommodate the peak traffic volumes anticipated.

38. During the first year of operation the City shall monitor site related and non-site related traffic levels to assess the potential need for Highway 671 improvements at the site entrance.

Site Maintenance

39. The City shall conduct regular site inspection(s) to ensure that all facilities and site works are maintained in a tidy condition and good working order. Such inspections will check for:

- damage to perimeter fences and the maintenance of litter fences;
- interior access road damage;
- blowing litter and other nuisance concerns;
- leachate springs or breakouts;
- ponded water and blocked surface drainage works;
- slope failure/erosion and final cover settlement; and
- the condition of vegetation.

Any necessary repair/remedial works will be performed at the earliest possible opportunity.

LANDFILL CONTAMINANT ATTENUATION ZONE

40. Within 180 days of the issuance of this Certificate the City shall establish the proposed contaminant attenuation zone shown on Fig. FW- 2 of Item 1, Schedule "A". This will be established through an MNR Land Use Permit and an MOE Certificate of Prohibition.

SURFACE WATER MANAGEMENT SYSTEM

41. Site grading and contours shall be maintained by the City such that all surface water run-off from the landfilling area is directed into the perimeter surface water management system.

42. Within the first year of operation following the date of this Certificate being issued, the perimeter surface water management system consisting of swales, ditches, retention basins and the controlled outlet facilities shall be completed by the City. It shall be operated and maintained by the City in accordance with the procedures outlined in Item 1, Schedule "A".

    The perimeter ditching, external run-off channels, and northern storm water retention basin shall be completed in accordance with the sequence of landfilling shown on Figure S1-5.1, Item 1 of Schedule "A".

SURFACE WATER MONITORING

43. Surface water monitoring shall be undertaken by the City in accordance with Schedule "C".

SEDIMENT MONITORING

44. Sediment monitoring shall be undertaken by the City in accordance with Schedule "D".

BIOLOGICAL MONITORING

45. Biological monitoring shall be undertaken by the City in accordance with Schedule "E".

GROUNDWATER MONITORING

46. Groundwater monitoring shall be undertaken by the City in accordance with Schedule "F".

LANDFILL GAS MONITORING

47. Landfill gas monitoring shall be undertaken by the City in accordance with Schedule "G".

GEOTECHNICAL MONITORING

48. Geotechnical monitoring shall be undertaken by the City in accordance with Schedule "H".

PUBLIC CONSULTATION

Landfill Liaison Committee (LLC)

49. The LLC shall be established based upon the conditions generally described in Appendix S7-A of Item 1, Schedule "A" and identified below:

a) The LLC should be established to monitor Landfill operations for the life of the site, ensuring the fulfilment of conditions outlined in this Certificate;

b) Terms of Reference for the LLC should be established by the Board of Management, referred to in Condition 2;

c) The LLC will also act as a Dispute Resolution Committee. Individuals wishing to express concern regarding the operation, safety or security of the Landfill may make deputations to the LLC, who upon deliberation, will make recommendations to the Board of Management of the problem; and

d) The LLC, in monitoring operational practices of the Landfill will make recommendations to the Board of Management for mitigation of impacts from the Landfill to the environment.

PUBLIC INVOLVEMENT/COMPLAINTS

50. The City shall establish the public complaints procedure upon issuance of this Certificate that shall include:

a) designating specific City staff to receive any complaints and , as soon as possible, to respond in writing indicating the proposed action to be undertaken;

b) posting the Landfill complaints telephone number at the Landfill entrance and providing a written notice explaining the complaints procedure to surrounding landowners located within approximately one kilometre of the Landfill;

c) keeping an accurate record of the following Landfill related complaints information:

- the name and address of the complainant,
- the date and time,
- the nature of the complaint,
- details of the City's response to the complainant and actions taken; and

d) providing copies of complaint records to the LLC and receiving any proposed recommendations of the LLC;

e) summarizing all complaints concerning the Landfill and the City responses/actions in the Annual report mentioned in Condition 52; and

f) both the O&M Manual, as identified under Condition10, and the Annual reports will be made available for review by the LLC as a basis for considering issues pertinent to the Landfill's operation.

51. The City in consultation with the Board of Management, the LLC and the District Manager, shall review the effectiveness of the public complaints procedure after two years of its commencement and may make revisions to the procedure, if required.

ANNUAL REPORT

52. The City shall prepare and submit an Annual report to the Regional Director by June 30th of the year following the calendar year covered by the report which shall include as a minimum, the following:

a) a summary of total annual quantities of waste received on a monthly basis at the site;

b) a drawing(s) of the Landfill indicating all groundwater, surface water, sediment, biological, gas, and geotechnical monitoring locations;

c) tables outlining monitoring locations, analytical parameters sampled, and frequency of sampling and measurements;

d) an analysis and interpretation of the surface water, sediment, biological, groundwater, leachate, gas and geotechnical monitoring data; a review of the adequacy of the monitoring programmes; conclusions of the monitoring data; and recommendations for any changes in monitoring programmes that may be necessary;

e) an assessment of surface water quality with respect to the PWQO Guidelines and trigger concentrations mentioned in Schedule "C";

f) an assessment of groundwater quality in relation to the RUP and ODWO;

g) an assessment of groundwater table elevations in relation to trigger elevations mentioned in Schedule "F";

h) an assessment of geotechnical conditions near the east face of the Landfill;

i) an assessment of the performance of the Contaminant Attenuation Zone;

j) an update of changes in operations, sequencing, equipment, or procedures made or produced at the Landfill, and any operating difficulties encountered;

k) drawings showing areas of fill, buffer areas, current Landfill contours, final Landfill contours, any recommended changes to the final contours, percentage of available space utilized, and an estimate of the remaining disposal capacity and Landfill site life;

l) a summary discussion of Landfill site daily and intermediate cover requirements and erosion protection;

m) a statement as to compliance with all Conditions and with the inspection and reporting requirements of the Conditions;

n) a summary of any complaints made regarding Landfill operation and the City's response and action taken;

o) an annual waste diversion statement that includes an updated summary of per capita waste diversion activities and quantity of waste diverted using 1987 as the base year;

p) recommendations respecting any proposed changes in the operation of the Landfill; and

q) any report of the LLC to the City.

CLOSURE PLAN

53. One year before the Landfill is expected to stop receiving waste, as determined according to Condition 6, the City shall develop and submit an updated Closure Plan. The Closure Plan shall be submitted for the Director's approval and outline post-closure maintenance and monitoring. The plan shall include, but not be limited to the following:

a) changes to the final contour plan that may have been previously identified in the annual reports or recommended in the development of the detailed Closure Plan;

b) fencing and access control;

c) details of any additional vegetative plantings planned;

d) the sequence and schedule for completion of final cover installation;

e) post-closure and end-use plans;

f) plans and schedules for the management and continued monitoring of surface water, groundwater, leachate and landfill gas;

g) plans and schedules for the routine monitoring and maintenance of the final cover, swales, ditches, retention basins and the controlled outlet facilities;

54. The final cover over the entire area which was landfilled shall be completed by the City within one full construction season following the date after the Landfill has stopped receiving waste. Formal notice shall be provided by the City to the Director upon receipt of the final load of waste to the Landfill.

SCHEDULE "A"

This Schedule "A" forms part of Provisional Certificate of Approval No. A 612018 *and contains documentation submitted in support to an application for the establishment and use of the Landfill.*

1. Kenora Area Waste Management Master Plan EPA Document prepared by Fenco MacLaren and dated February, 1997.

2. Letter dated April 10, 1997 - Fenco MacLaren (L. Torrens) to Ministry of Environment and Energy (E. Zaltsberg) - Subject: Application for a Certificate of Approval for a Waste Disposal Site.

3. Letter dated July 2, 1997 - Fenco MacLaren (T. Taylor) to Ministry of Environment and Energy (J. Barr) - Subject: Former Jones Road Waste Disposal Site.

4. Letter dated August 14, 1997 - Fenco MacLaren (L. Torrens) to Ministry of Environment and Energy (E. Zaltsberg) - Subject: Geotechnical Monitoring: Kenora Area WMMP EPA Studies Document

5. Kenora Area Waste Management Master Plan, October 1997 Photo supplements to EPA Studies Document prepared by Fenco MacLaren and dated February, 1997, and September, 1999.

6. Kenora Area Waste Management Master Plan EA Conditions of Approval Document prepared by SNC-Lavalin Engineers & Constructors Ltd. and dated January, 1999.

7. Figure S1-6.1 as amended September, 1999 - Proposed Monitoring Locations prepared by SNC-Lavalin Engineers & Constructors Ltd. and dated September 1999

8. Letter dated September 27, 1999 from Environment Canada (S. Michajluk) to the Ministry of the Environment (E. Zaltsberg), Subject: Kenora Area Waste Management Master Plan.

SCHEDULE "B"

This Schedule "B" forms part of Provisional Certificate of Approval No. A 612018. *It contains the Ministry of the Environment's February 1997 "Noise Guidelines for Landfill Sites" referred to in condition 36.*

1. SCOPE

This Publication establishes sound level limits for landfill operations affecting residential or other noise-sensitive areas. Three components of waste disposal operation are separately addressed in this guideline:

- the actual landfill site;
- facilities for reception, storage and mixing; and
- off-site source vehicles.

2. REFERENCES

Reference is made to the following technical publications:

[1] NPC-101 - Technical Definitions

[2] NPC-102 - Instrumentation

[3] NPC-103 - Procedures

[4] NPC-104 - Sound Level Adjustments

[5] NPC-205 - Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (urban)

[6] NPC-206 - Sound Levels due to Road Traffic

[7] NPC-232 - Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)

[8] NPC-233 - Information to be Submitted for Approval of Stationary Sources of Sound

[9] ORNAMENT, Ontario Road Noise Analysis Method for Environment and Transportation, Technical Document, Ontario Ministry of the Environment, ISBN 0-7729-6376 (1989).

References [1] to [4] can be found in the Model Municipal Noise Control By-Law, Ontario Ministry of Environment, Final Report, August 1978.

3. TECHNICAL DEFINITIONS

"Ambient sound level"

means Background sound level;

"Background sound level"

is the sound level that is present in the environment, produced by noise sources other than the source under impact assessment. Highly intrusive short duration noise caused by sources such as an aircraft fly-over or a train pass-by is excluded from the determination of the background sound level;

"Construction Equipment"

means any equipment or device designed and intended for use in construction, or material handling including but not limited to, air compressors, pile drivers, pneumatic or hydraulic tools, bulldozers, tractors, excavators, trenchers, cranes, derricks, loaders, scrapers, pavers, generators, off-highway haulers or trucks, ditchers, compactors and rollers, pumps, concrete mixers, graders, or other material handling equipment;

"Conveyance"

includes a vehicle and any other device employed to transport a person or persons or goods from place to place but does not include any such device or vehicle if operated only within the premises of a person;

"Point of Reception"

means any point on the premises of a person where sound or vibration originating from other than those premises is received.
For the purpose of noise impact assessment of a proposed landfill operation, or an expansion to an existing landfill operation, the point of reception may be located within 30 m of a dwelling or a camping area on any of the following existing or zoned for future use premises: permanent or seasonal residences, hotel/motels, nursing/retirement homes, rental residence, hospitals, camp grounds, and noise sensitive buildings such as schools and places of worship.

Other technical terms used in this publication are defined in Reference [1].

4. MEASUREMENTS, STANDARDS AND PROCEDURES

For the purpose of this Publication, all measurements shall be made in accordance with References [2], [3] and [4].

5. SOUND LEVEL LIMITS

(1) Landfill Site

(a) General Limits

The limits for sound levels due to the landfill site operation at a Point of Reception are 45dBA in any hour of the night, 7:00 PM - 7:00 AM, and 55 dBA in any hour of the day, 7:00 AM - 7:00 PM. These levels are expressed in terms of the One Hour Equivalent Sound Level (L_{eq}).

The above limits are applicable under the following conditions:

- the existing ambient noise climate is assumed to be rural, i.e. the daytime and nighttime environmental noise level is normally below the stated limitation. Should the environment be dominated by noise sources of man-made activity, such as industry, commerce or road transportation, which produce sound in excess of the above limits, the higher sound levels may be used as the limit, provided that the noise sources are not under consideration for noise abatement by the Municipality or the Ministry of Environment and Energy.

- landfill site operation involves only "construction equipment" or "conveyances", as defined in Section 3. In this case the landfill site itself is not considered a stationary noise source, and will not be governed by the limitations set out in References [5] or [7].

(b) Specific Limit - Impulsive Sounds

For impulsive sound from a pest control device employed in the operation of the landfill site, the sound level limit at a Point of Reception expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}) is 70 dBAI.

(2) Facilities for Reception, Storage and Mixing

A landfill site utilizing equipment that does not fall under the definition of "construction equipment" or "conveyance", as defined in Section 3 is considered a stationary noise source. The applicable sound level limits are those established for the assessment of stationary sources of sound given in References [5] and [7].

6. OFF-SITE SOURCE VEHICLES

For a landfill site employing off-site source vehicles which constitute a predominant component of the background noise, an access route shall be selected which will result in a minimum noise impact. The selection process shall be based on a detailed quantitative assessment of noise impact on individual receptors and the number of affected receptors along the alternative routes. The municipality and the affected residents must be clearly informed of any potential noise impact.

SCHEDULE "C"

This Schedule "C" forms part of Provisional Certificate of Approval No. A 612018. *It describes the surface water monitoring program referred to in Condition 43.*

1. OBJECTIVES

The objectives for the surface water monitoring program are:

- to evaluate background surface water quality;
- to evaluate the Landfill's impact on surface water quality downstream of the Landfill;
- to evaluate the efficiency of the proposed Contaminant Attenuation Zone;
- to monitor water quality at the downstream site/attenuation zone boundary and compare this quality with the MOE's PWQO; and
- to determine the need for a contingency implementation.

2. MONITORING PLAN

The surface water monitoring plan shall be carried out by the City to address the stated objectives and will include the following:

2.1 Stations

The surface water stations to be monitored are shown on Fig. S.1-6.1, Item 7, Schedule "A" and listed below:

- existing stations SW-1 (Jones Road culvert) and SW-2 (Beaubien Loop Logging Road culvert); and
- proposed stations SW-3 (Lunch Lake subwatershed control), SW-4 (Crystal Bay) and SW-5 (Morgan Lake).

2.2 Sampling Frequency

- During the first two years of the Landfill's operation water samples shall be taken at all stations monthly from April through October;
- Starting from the third year of the Landfill's operation water samples shall be taken three times per year in May, August and October at stations SW-1, SW-2, SW-3 and SW-4; station SW-5 shall be sampled annually in August.

- In addition, water samples shall be taken from any flowing spring or groundwater seepage identified within the saddle area during any sampling event.

2.3 Sample Analysis

During the first two years of operation the collected water samples shall be analyzed for the following lists of parameters:

a) the comprehensive list of parameters at all stations in May, August and October;

b) the indicator list of parameters at all stations in April, June, July and September;

c) volatile organic compounds, EPA method 624 at SW-2 in August of the second year; and

d) the indicator list of parameters at any flowing spring or groundwater seepage mentioned in 2.2.

Starting from the third year of operation, the collected water samples shall be analyzed for the following list of parameters:

a) the comprehensive list of parameters at all stations in August and October;

b) the indicator list of parameters at all stations in May;

c) volatile organic compounds, EPA method 624 at SW-2 in August, once every two years; and

d) the indicator list of parameters at any flowing spring or groundwater seepage mentioned in 2.2.

The comprehensive list includes the following parameters:

Inorganics

Alkalinity, Ammonia, Arsenic, Barium, Boron, Cadmium, Chloride, Chromium, Conductivity, Copper, Iron, Lead, Mercury, Nitrate, Nitrite, Total Kjeldahl Nitrogen, pH, Total Phosphorus, Suspended Solids, Total Dissolved Solids, Sulphate, Zinc.

Organics

Biochemical Oxygen Demand (BOD_5), Chemical Oxygen Demand, Phenol.

Field Parameters

Temperature, pH, Conductivity, Dissolved Oxygen.

The indicator list includes the following parameters:

Inorganics

Alkalinity, Ammonia, Chloride, Conductivity, Iron, Nitrate, Nitrite, Total Kjeldahl Nitrogen, pH, Total Phosphorus, Suspended Solids, Sulphate.

Organics

Biochemical Oxygen Demand (BOD_5), Chemical Oxygen Demand, Phenol.

Field Parameters

Temperature, pH, Conductivity, Dissolved Oxygen.

For all parameters with the established PWQO the minimum detection limits (MDL) used will be below the corresponding PWQO.

2.4 Flow Measurements

Stream flow measurements shall be performed at stations SW-2 and SW-3 three times per year, in April, August and October simultaneously with sampling events.

3. DRAINAGE

3.1 Drainage Required

Since a build up of water on, behind or within the waste may result in the loss of stability and, potentially, slope failure, drainage shall be provided around the waste. Water shall not be permitted to "dam up" behind the waste or pond on the waste.

3.2 Inspection of Drainage

The drainage provided in the design shall be regularly inspected to ensure that it has not been blocked (e.g., by beavers or other causes). Any blockages shall be cleared immediately.

4. TRIGGER MECHANISM

Within two years of the issuance of this Certificate the City shall develop and submit for the Director's approval the comprehensive surface water trigger mechanism which shall include the following:

- trigger location(s), trigger parameters, trigger concentrations, and re-sampling procedures.

The comprehensive surface water trigger mechanism will be attached as subsequent schedule of this Certificate upon the Director's approval.

5. CONTINGENCY MEASURES

If trigger concentrations at trigger location(s) referred to in 4 are exceeded and these exceedances are due to landfilling operations, then one of the following contingency measures shall be implemented:

- construction of a control berm or weir downstream of the landfilling area to increase retention time for contaminated surface water flow within the buffer/attenuation zone;
- construction of a dispersion channel downstream of the landfilling area to force contaminated surface water into the peat layer and create a more uniform dispersion throughout the buffer/attenuation zone; and
- enlargement of the attenuation zone.

Prior to implementation, the appropriate contingency measure(s) shall be discussed with and approved by the Director.

6. SUBSEQUENT MODIFICATIONS

After two years of operation the monitoring plan shall be re-evaluated and revised if necessary. If there is any future need to modify the monitoring plan and/or the trigger mechanism, a formal application shall be made by the City to the Regional Director requesting his/her approval of the necessary changes, and these changes may not be made without such approval.

SCHEDULE "D"

This Schedule "D" forms part of the Provisional Certificate of Approval No. A 612018. *It describes the sediment monitoring program referred to in Condition 44.*

1. OBJECTIVES

The objectives for the sediment quality monitoring program are:

- to provide a statistical measure of sediment quality in surface water environs suitable for determining and comparing existing and future sediment quality conditions in Morgan Lake and Crystal Bay (Silver Lake);
- to evaluate the Landfill's impact on sediment quality in Morgan Lake and Crystal Bay (Silver Lake);
- to provide additional information for evaluating the efficiency of the proposed Contaminant Attenuation Zone;
- to provide an additional level of protection for detecting any contaminant migration from the Landfill site; and
- to determine the need for a contingency implementation.

2. MONITORING PROGRAM

The sediment quality monitoring program shall be carried out by the City to address the stated objectives and will include the following:

2.1 Stations

The sediment stations to be monitored are shown on Figure S1-6.1, Item 7 of Schedule "A" (as amended September 1999) and listed below:

- station SB-1 in Crystal Bay (Silver Lake) and SB-2 in Morgan Lake; and
- reference station SB-R to be located upstream of any potential influence within Silver Lake.

Sediment sampling stations correspond with benthic sampling stations outlined in Schedule "E".

2.2 Sampling Frequency

All stations will be sampled annually and will be completed in the last two weeks of August.

2.3 Sample Analysis

Samples shall be submitted to a qualified laboratory for analysis of the following parameters:

- Aluminum, Arsenic, Cadmium, Cobalt, Copper, Chromium, Manganese, Nickel, Iron, Lead, Zinc, Mercury, Total Organic Carbon, Total Kjeldahl Nitrogen, Total Phosphorus, Oil, Grease and Ammonia.

Grain size analysis shall be performed on sediment samples.

2.4 Interpretation of the Result

Interpretation of the results of sediment sampling should be based on comparison to Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario (MOE, 1992 and updates).

SCHEDULE "E"

This Schedule "E" forms part of the Provisional Certificate of Approval No. A 612018. *It describes the biological effects monitoring program referred to in Condition 45.*

1. OBJECTIVE

The objectives for the biological effects monitoring program are:

- to provide a statistical measure of selected sensitive biological indicators (benthic and fish endpoints) suitable for determining and comparing existing and future ecological conditions in Morgan Lake and in Crystal Bay (Silver Lake);
- to evaluate the Landfill's impact on biological indicators and ecological conditions in Morgan Lake and Crystal Bay (Silver Lake);
- to permit evaluation of potential cause-effect relationships associated with any impacts detected in surface water and sediment quality monitoring as described in Schedule "C" and"D"; and
- to provide an additional level of protection regarding the need for a contingency implementation.

2. MONITORING PROGRAM

The biological effects monitoring program shall be carried out by the City to address the stated objectives and will include the following:

2.1 Benthic invertebrate community

2.1.1 Stations

The benthic invertebrate sampling stations to be monitored are shown on Figure S1-6.1, Item 7 of Schedule "A" (as amended September 1999) and listed below:

- station SB-1 in Crystal Bay (Silver Lake) and SB-2 in Morgan Lake; and
- reference station SB-R to be located upstream of any potential influence within Silver Lake.

Benthic sampling stations correspond with sediment sampling stations outlined in Schedule "D".

2.1.2 Sampling Frequency

All station will be sampled annually for a minimum of three (3) years. Sampling will be completed in the last two weeks of August.

The need for continued or additional benthic monitoring will be determined after the initial three year monitoring period.

2.1.3 Sample Collection Procedure and Analysis

Sampling procedures shall follow established protocols to be outlined in detail in the O&M Manual.

Samples shall be submitted to a qualified laboratory for taxonomic analysis. Biological endpoints to be evaluated will include:

- density (as number of organisms per square metre) of total benthic invertebrates; and
- density by taxon (to be identified in the O&M Manual).

2.2 Fish

2.1.1 Stations

Fish sampling shall be carried out in Morgan Lake and Crystal Bay (Silver Lake).

Fish sampling collections should be carried out in general proximity to sediment and benthic sampling stations SB-1 (Crystal Bay) and SB-2 (Morgan Lake) as shown on Figure S1-6.1, Item 7 of Schedule "A".

2.1.2 Sampling Frequency

Fish sampling shall be carried out proceeding or during the first year of operation in order to provide a baseline to permit comparison to any future conditions.

The need for continued or additional fish sampling will be determined if changes in surface water quality, sediment quality and/or the benthic invertebrate community are detected, which could indicate possible contaminant effects on these lakes.

2.1.3 Sample Collection Procedure and Analysis

A sentinel fish species and collection methods will be specified in the O&M Manual.

A total of 20 fish of the sentinel species will be sampled. The length, weight, sex, maturity and condition of each fish specimen will be recorded and a boneless, skinless fillet of dorsal muscle tissue will be submitted for chemical analysis according to standard MOE epaxial tissue sampling protocol. Tissue samples will be submitted to a qualified laboratory for analysis of the following parameters:

- Aluminum, Arsenic, Cadmium, Cobalt, Copper, Chromium, Manganese, Nickel, Iron, Lead, Zinc, Mercury, Polychlorinated Biphenyls, Total Polyaromatic Hydrocarbons, Dioxin and Furans.

Results of the biological monitoring program shall be analyzed statistically where appropriate, and interpreted by a qualified professional biologist and/or environmental scientist.

SCHEDULE "F"

This Schedule "F" forms part of Provisional Certificate of Approval No. A 612018 *. It describes the groundwater monitoring program referred to in Condition 46.*

1. OBJECTIVES

- to monitor groundwater quality in the refuse, the overburden and the bedrock;
- to identify and characterize movement of leachate-related contaminants in the overburden and the bedrock within the Landfill/Contaminant Attenuation Zone boundary;
- to monitor groundwater quality at the downgradient Landfill/Contaminant Attenuation Zone boundary and compare this quality with MOE's Objectives and Policies (ODWO, RUP);
- to confirm the existence of groundwater divides north and southeast of the landfilling area; and
- to determine the need for a contingency implementation.

2. MONITORING PLAN

The groundwater monitoring plan shall be carried out by the City to address the stated objectives and will include the following:

2.1 Monitors

The groundwater monitors to be sampled are shown on Fig. S1-6, Item 7, Schedule "A" and listed below:

- Existing monitors MW-1/17, MW-2/9, MW-2/13, KGS-2, MW-3/8, MW-4/6, MW-4/18, MW-5/17, MW-6/5, MW-6/14, MW-7/4, MW-8/22, MW-9/6, MW-10/17, -MW-13/16, MW-13/14, MW-14/6, MW-14/21, MW-15/5 and MW-15/17.
- proposed monitoring nests and single monitors MW-2, MW-11, MW-12, MW-16, MW-17, MW-18, MW-19, MW-20, MW-21, MW-22, MW-23 and MW-24.

2.2 Sampling Frequency

All monitors shall be sampled twice a year in May and August.

2.3 Sample Analysis

The collected samples shall be analyzed for the following list of parameters:

a) the comprehensive list of parameters in wells:

MW-1/17, MW-4/6, MW-4/18, MW-2, MW-2/9, MW-2/13, MW-3/8, MW-6/5, MW-6/14, MW-20, MW-7/4, MW-21, MW-5/17, MW-16, once a year, in August.

b) the indicator list of parameters:

- in wells listed in a) once a year, in May; and
- in the remaining wells listed in 2.1 twice a year, in May and August.

The comprehensive list includes the following parameters:

Inorganics

Alkalinity, Ammonia, Arsenic, Barium, Boron, Cadmium, Calcium, Chloride, Chromium, Conductivity, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nitrate, Nitrite, Total Kjeldahl Nitrogen, pH, Total Phosphorus, Potassium, Sodium, Suspended Solids (leachate only), Total Dissolved Solids, Sulphate, Zinc.

Volatile Organics

Benzene, 1,4 Dichlorobenzene, Dichloromethane, Toluene, Vinyl Chloride.

Other Organics

Biochemical Oxygen Demand (BOD_5, leachate only), Chemical Oxygen Demand, Dissolved Organic Carbon, Phenol.

Field Parameters

pH, Conductivity.

The indicator list includes the following parameters:

Inorganics

Alkalinity, Ammonia, Barium, Boron, Calcium, Chloride, Conductivity, Iron, Magnesium, Nitrate, pH, Sodium, Suspended Solids (leachate only), Total Dissolved Solids, Sulphate.

Organics

Biochemical Oxygen Demand (BOD_5, leachate only), Chemical Oxygen Demand, Dissolved Organic Carbon.

Field Parameters

pH, Conductivity.

For all parameters within the established ODWO the minimum detection limits (MDL) used shall be below the corresponding ODWO.

2.4 Measuring Water Levels

Water level measurements shall be conducted in all functional monitors twice per year, in May and August.

In addition, water level measurements shall be conducted once a month in June, July, September and October during the first two years of operation, in the following monitors:

MW-2/9, MW-3/8, MW-13/6, MW-13/14, MW-14/6, MW14/21, MW-15/5, MW-15/17, MW-11, MW-18, MW-5/17, MW-19, MW-16.

2.5 Monitoring System Maintenance

During each monitoring event, the monitoring network will be visually inspected. Changes in the physical conditions of each well will be noted and necessary repairs undertaken. Monitoring wells that are shown to be damaged beyond repair or whose integrity is in doubt for further monitoring, will be abandoned in accordance with standard procedures and replaced, if necessary.

3. TRIGGER MECHANISM

3.1 Based on the water level monitoring data from monitors MW-2, MW-3, MW-13, MW-14 and MW-15 and within two years of the issuance of this Certificate, the City shall develop and submit for the Director's approval the groundwater level trigger mechanism for contingency measure implementation(s)(if required) to protect water quality and aquatic life in Silver Lake.

3.2 Based on the water level monitoring data from monitors MW-11, MW-18, MW-5, MW-19, MW-16 and within two years of the issuance of this Certificate, the City shall develop and submit for the Director's approval the groundwater level trigger mechanism for contingency measure implementation(s) (if required) to protect water quality and aquatic life in Morgan Lake.

4. CONTINGENCY MEASURES

4.1 If groundwater level elevation(s) at trigger location(s) are equal or exceed trigger value(s), then one of the following contingency measures shall be implemented to protect water quality and aquatic life in Silver Lake:

- induce groundwater recharge by pumping water from Silver Lake into an infiltration gallery/

trench in order to sustain or enhance the existing groundwater divide in the saddle area;

- pressure grouting the overburden and the upper bedrock in the saddle area to eliminate contaminate migration through the subsurface;
- installation of a cut off wall in the saddle area to eliminate contaminant migration through the subsurface; and
- leachate collection system installation.

4.2 If groundwater level elevation(s) at trigger location(s) are equal to or exceed trigger value(s), then one of the following contingency measures shall be implemented to protect water quality and aquatic life in Morgan Lake:

- induce groundwater recharge by pumping water from Morgan Lake into an infiltration gallery/trench on the top of the ridge along the Jones Road in order to sustain or enhance the existing groundwater divide;
- installation of a cut off wall in the ridge along the Jones Road; and
- leachate collection system installation.

4.3 Prior to implementation, the appropriate contingency measure(s) shall be discussed with, and approved by, the Director.

5. SUBSEQUENT MODIFICATIONS

If there is any future need to modify the monitoring plan and/or trigger mechanisms, a formal application shall be made by the City to the Regional Director requesting his/her approval of the necessary changes and these changes may not be made without such approval.

SCHEDULE "G"

This Schedule "G" forms part of Provisional Certificate of Approval No. A 612018. It describes the landfill gas monitoring program referred to in Condition 47.

1. OBJECTIVE

To monitor combustible gas concentrations in the unsaturated zone along the southern buffer zone (drawing S1-2, Item 1, Schedule "A") between the landfill and the office/equipment storage building. The gas probes installed during the initial site construction works will ensure that there is no gas migration between the old MNR landfill (that is to be exhumed) and the office/equipment storage building.

2. MONITORING PLAN

The landfill gas monitoring plan shall be carried out by the City to address the stated objective and will include the following:

2.1 Gas Probes

Two gas probes to be sampled are shown on Fig. S.1-6.1, Item 7, Schedule "A".

2.2 Sampling Frequency

Two gas probes referred to in 2.1, shall be sampled bi-monthly during frozen ground conditions and quarterly otherwise using a portable combustible gas detector.

2.3 Sample Analysis

The collected samples shall be analyzed for combustible gas concentration (field instrument calibrated to methane)

3. SUBSEQUENT MODIFICATIONS

If there is any future need to modify the monitoring plan, a formal application shall be made by the City to the Regional Director requesting his/her approval of the necessary changes, and these changes may not be made without such approval.

4. CONTINGENCY MEASURES

Due to the relatively small portion of the Landfill below grade, the relatively high water table around the landfilling area and the distance separating this area from the on-site building, lateral migration of gases will not present a hazard. Therefore, it is not appropriate to develop any contingency measures at this time.

SCHEDULE "H"

This Schedule "H" forms part of Provisional Certificate of Approval No. A 612018. It describes the geotechnical monitoring program referred to in Condition 48.

1. OBJECTIVES

- to monitor pore pressures in the peat and very soft clay;
- to monitor the increase in the shear strength of the very soft clay with time; and
- to control the rate of landfilling (the thickness of waste and cover placed per day) and the Landfill development sequence.

2. PIEZOMETER INSTALLATIONS

2.1 At least four boreholes shall be drilled within Area A of the proposed landfilling area prior to the placement of waste over the peat. Their locations are shown on Figure S1-6.1, Item 7, Schedule "A". Each borehole shall be terminated 1 m below the soft clay/underlying deposit interface.

2.2 If unusual or unexpected conditions are encountered in any of the four boreholes mentioned in 2.1, additional boreholes may be drilled subject to the geotechnical engineer decision.

2.3 At each borehole location, one piezometer shall be installed near (within 0.3 m of) the peat/soft clay interface with the tip located within the peat layer. The second deeper peizometer shall be installed within the soft clay layer with the tip located approximately 0.4 m to 1.25m below the peat/soft clay interface depending on the thickness of the soft clay layer. In areas where the clay stratum is greater than 2m thick, the piezometer tip shall be located 0.75m to 1.25m below the peat/soft clay interface. In areas where the clay stratum is less than 2m thick, the tip shall be located 0.4m below the interface.

In order to ensure both a rapid response (no lag time) and accurate measurements of the stress induces porewater pressure changes, pneumatic type piezometers are recommended for installation.

3. INVESTIGATION

3.1 Initial Investigation

Prior to any landfilling operation, the initial geotechnical investigation shall be conducted in four boreholes mentioned in 2.1. The investigation shall include:

- obtaining field vane strength profiles in soft clay;
- obtaining samples of soft clay (using a piston sampler) and performing consolidation and strength

tests over a range of consolidation stress levels as necessary to provide parameters for use in stability analyses; and

- establishing the thickness of peat and soft clay layers, and the nature and hydraulic conductivity of the underlying firm deposit.

3.2 Geotechnical Analysis of Pore Pressures

Prior to any landfilling operation and based on the findings of the investigation mentioned in 3.1, a geotechnical engineer shall provide recommendations regarding the maximum pore pressure that can be developed in piezometers mentioned in 2.3 during the placement of waste and cover material.

3.3 Geotechnical Analysis of Shear Strength

Prior to any landfilling operation and based on the findings of the investigation stipulated in Section 3.1, a geotechnical engineer shall provide recommendations regarding the strength required in the very soft clay prior to the commencement of each new stage of construction.

4. MONITORING AND RESPONSE PLAN

4.1 Observations by Site Personnel

Site personnel shall advise the geotechnical engineer of any "unusual" behaviour or minor failures within the fill or peat/clay soil substrate, even if these can be readily fixed by site personnel as soon as they occur. Any such instances shall be evaluated by the geotechnical engineer in the context of the design and available information. The development plan shall be changed by the geotechnical engineer in order to prevent impacts on soil stability deemed to be geotechnically unacceptable.

4.2 Pore Pressure Monitoring

For the first year of each new stage of construction, the piezometers installed in the peat and soft clay shall be monitored daily during the first two weeks of landfilling and weekly for the remainder of the year. Subsequently, pore pressures may be measured once a month. The pore pressure data shall be reviewed monthly by the geotechnical engineer.

4.3 Rate of Landfilling

The measured pores pressures shall not be permitted to exceed the allowable levels mentioned in 3.2 without the written approval of the City's geotechnical engineer, otherwise, the rate of landfilling shall be reduced such that the allowable pore pressure levels are not exceeded.

The rate of landfilling (the thickness of waste and cover placed per day) in areas where there are no piezometer measurements shall not exceed the rate that was adopted in areas where pore pressures were measured.

4.4 Shear Strength Monitoring

At least four field vane tests shall be performed to confirm the shear strength increase in the soft clay prior to starting construction in each new stage near the east face and before placing final cover on the east face. The results from these tests shall be reviewed by the geotechnical engineer who shall give written approval before each new stage is commenced.

5. SUBSEQUENT MODIFICATIONS

This monitoring plan may be modified in accordance with experience gained during construction with the written notification of the Regional Director by the City and a supporting letter from the City's geotechnical engineer.

Modifications recommended by the geotechnical engineer shall be assessed as to their environmental significance by a qualified environmental consultant prior to the submission of the written notification to the Regional Director.

The Regional Director shall approve the necessary changes, and these changes shall not be made without such approval.

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

1. The reason for Condition No. 1 is to clarify the meaning of the terms used in this Certificate.

2. The reason for Condition No. 2 is to ensure that the City, its appointed agents or any successor or subsequent owner is bound by the Conditions of this Certificate.

3. The reason for Condition No. 3 is to ensure that this Certificate is registered against title in the appropriate Land Registry Office.

4. The reason for Condition No. 4 is to indicate that this Certificate of Approval identifies the minimum environmental requirements, and that the operation must have appropriate regard for other legislation, regulations, approvals and orders which may apply.

5. The reason for Condition No. 5 is to ensure that any circumstance that might lead to a specific condition being judged to be invalid, does not invalidate any of the other Conditions specified in this Certificate.

6. The reason for Condition No. 6 is to identify the landfilling area and final contours.

7. The reason for Condition No. 7 is to ensure that the appropriate MOE staff have ready access for inspection of the Landfill operating under this Certificate.

8. The reason for Condition No. 8 is to indicate that Schedules A, B, C, D, E, F and H are a part of this Certificate.

9. The reason for Condition No. 9 is to ensure that the Landfill shall be developed, operated, maintained and monitored by the City in accordance with all of the plans and documents listed in Schedule "A".

10. The reason for Condition No. 10 is to ensure that the City shall operate the Landfill in accordance with the O&M Manual.

11. The reason for Condition No. 11 is to ensure that scavenging of waste at the Landfill is prohibited.

12. The reason for Condition No. 12(a) is to ensure that heavy equipment shall not be used on the peat or on the waste over the bog unless the peat is frozen to support the weight of the equipment.

13. The reason for Condition No. 12(b) is to ensure that during the construction period care shall be taken to minimize damage to the root mat over the bog area.

14. The reason for Condition No. 13 is to specify the temporary and permanent side slopes at the Landfill.

15. The reason for Condition No. 14 is to ensure that the site Supervisor is adequately trained.

16. The reason for Condition No. 15 is to specify the operating hours of the Landfill.

17. The reason for Condition No. 16 is to ensure that the City will not allow waste to be received for disposal at the Landfill except during operating hours when the Landfill is under supervision of the Landfill attendant.

18. The reason for Condition No. 17 is to ensure that during non-operating hours, the Landfill entrance gate shall be locked by the City, to secure the Landfill against unauthorized persons.

19. The reason for Condition No. 18 is to allow the Landfill to accept waste beyond the normal operating hours at the discretion of the Board of Management, under conditions acceptable to the MOE.

20. The reason for Condition No. 19 is to identify those wastes that are not suitable for disposal at the Landfill.

21. The reason for Condition No. 20 is to ensure that an accurate record for all incoming waste is maintained by the City.

22. The reason for Condition No. 21 is to ensure that all vehicles entering the Landfill are identified by licence number on the weigh scale billing notice.

23. The reason for Condition No. 22 is to ensure that waste will be deposited in a manner that minimizes the Landfill working face and will be compacted before the cover material is applied.

24. The reason for Condition No. 23 is to ensure that cover material is applied daily from May 15th to September 15th and weekly during the rest of the year.

25. The reason for Condition No. 24 is to allow the use of a daily cover alternative material approved by the Regional Director.

26. The reason for Condition No. 25 is to ensure that the City will provide a contingency supply of cover material equal to two working days worth.

27. The reason for Condition No. 26 is to ensure that in areas where landfilling is not be carried out for a period of 90 days or more, at least 15cm of compacted, clean earth cover shall be applied over the waste.

28. The reason for Condition No. 27 is to ensure that areas that have reached approved limits, will be covered with final cover material and a suitable planting material will be employed to allow for effective re-vegetation.

29. The reason for Condition No. 28 is to ensure that the extent of the excavation will be limited to base grades shown on Drawing S1-3 of Item 1, Schedule "A".

30. The reason for Condition No. 29 is to ensure that no excavation shall occur for those portions of the landfilling area situated over the bog.

31. The reason for Condition No. 30 is to ensure that there will be no burning of waste at the Landfill.

32. The reason for Condition No. 31 is to ensure that site operations will incorporate the necessary fire prevention measures identified in Item 1 of Schedule "A".

33. The reason for Condition No. 32 is to ensure that bears, birds, rodents and insect control will be undertaken by the City in accordance with Item 1 of Schedule "A".

34. The reason for Condition No. 33 is to ensure that the City will implement all necessary measures to prevent any off-site litter impact from the landfilling operations.

35. The reason for Condition No. 34 is to ensure that no disposal of waste will occur if weather conditions make it difficult to prevent litter from leaving the Landfill.

36. The reason for Condition No. 35 is to ensure that a dust control program is implemented at the Landfill.

37. The reason for Condition No. 36 is to ensure that the City shall comply with the noise limits outlined in the MOE's February 1997 "Noise Guidelines for Landfill Sites".

38. The reason for Condition No. 37 is to ensure that sufficient queuing space will be available on-site to accommodate the peak traffic volumes anticipated.

39. The reason for Condition No. 38 is to ensure that the City will monitor site related and non-site related traffic levels to assess the potential need for Highway 671 improvements at the Site entrance.

40. The reason for Condition No. 39 is to ensure that the City will conduct regular site inspections in order to keep all facilities and site works in a tidy condition and good working order.

41. The reason for Condition No. 40 is to ensure that the City shall establish the proposed Contaminant Attenuation Zone shown on Figure FW-2 of Item 1, Schedule "A".

42. The reasons for Condition Nos. 41 and 42 are to ensure that the surface water management system will be in place.

43. The reason for Condition No. 43 is to ensure that surface water monitoring shall be conducted by the City in accordance with Schedule "C".

44. The reason for Condition No. 44 is to ensure that sediment monitoring shall be conducted by the City in accordance with Schedule "D".

45. The reason for Condition No. 45 is to ensure that biological monitoring shall be conducted by the City in accordance with Schedule "E".

APPENDIX C

Summary of Ground Water Quality Data

Ground Water Monitoring Data

Monitor	Date	*QA/QC*	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
1/17	6/1/2001			0.019	0.205	25.2				0.20		2.6	6.6	
	8/1/2001		0.001	0.011	0.021	27.8	< 0.001	0.002	< 0.001	0.14	< 0.001	2.6	7.0	0.008
	5/9/2002			< 0.001	0.037	26.1				0.14			5.9	
	8/6/2002		0.002	0.003	0.045	30.3	< 0.001	< 0.001	0.0040	**0.46**	< 0.001	3.1	6.8	0.020
	8/6/2003		< 0.002	0.007	0.021	23.9	< 0.0001	< 0.005	< 0.0005	< 0.03	< 0.00005	2.6	5.4	
	5/26/2004			<0.01	0.023	26.1				<0.01			6.2	
	5/16/2006			< 0.02	0.03	24.1				< 0.02			5.4	
	8/29/2006		0.002	< 0.02		25.0	< 0.0001	< 0.005	< 0.001	< 0.02	< 0.0001	3.0	5.6	
	5/15/2007			< 0.02	0.03	24.5				< 0.02			5.4	
	8/18/2009		<0.001	<0.01	0.019	26.0	<0.0001	<0.005	<0.001	<0.1		3.0	5.6	
	18/05/2010					29.2						2.9	6.5	
	25/08/2010	Limited Sample												0.044
	5/31/2011	no sample												
	8/23/2011		<0.001	<0.01	0.023	32.0	<0.0001	<0.005	<0.001	<0.1		3.6	7.2	0.034

Monitor	Date	*QA/QC*	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
1/17	6/1/2001		3.6			0.4		< 0.1	13.5	8.07	86	< 0.10	1.1	207
	8/1/2001		3.2	< 0.001	0.001		< 0.10	1.7		8.10	90	< 0.10	1.3	202
	5/9/2002		2.7			3.1		< 0.1	15.1	8.19	80	< 0.10	2.0	196
	8/6/2002		4.0	< 0.001	0.036	7.7	< 0.05	< 0.03	14.5	8.17	144	< 0.10	1.5	202
	8/6/2003		4.9	< 0.0005	< 0.005	0.7	< 0.2	< 0.2	18.8	8.09	71	0.11	1.4	188
	5/26/2004		4.4			0.5		<0.2	16.4	8.17	80	0.16	1.5	184
	5/16/2006		3.4			3		< 0.2	21	8.1	78	0.08	1.6	198
	8/29/2006		3.0	< 0.0005	< 0.005	4	< 0.01	< 0.1	24	8.1	76	0.08	1.7	185
	5/15/2007		6.5			5		< 0.1	23	7.7	72	< 0.05	1.7	221
	8/18/2009		2.7	<0.0005	<0.005	4	<0.01	<0.1	26	7.3	74	0.09	2.1	203
	18/05/2010		3.5			11			38	7.9	56	0.06	1.3	242
	24/08/2010		9.6	<0.0005	0.016	9	<0.1	<0.1	36	7.4	99		3.1	344
	5/31/2011	no sample												
	8/23/2011		3.4	<0.0005	<0.005	14	<0.1	<0.1	46	7.78	56	<0.05	1.8	263

Monitor	Date	*QA/QC*	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
1/17	6/1/2001		20			22					
	8/1/2001		249	0.09	< 0.005	< 20		< 1	< 0.001	8.2	70
	5/9/2002		81			< 20	< 1	2		8.0	110
	8/6/2002		140	< 0.05		< 20	< 1	2	< 0.001	8.1	150
	8/6/2003		100	0.12	2.60	8	< 0.5	3690	< 0.001	7.9	160
	5/26/2004		122			15				7.3	40
	5/16/2006		143			< 4	< 2	7500		8.1	200
	8/29/2006		135	0.3	18	14	< 2		< 0.001	**8.85**	183
	5/15/2007		138			< 4	< 2			**4.07**	
	8/14/2007	*Under water*									
	8/18/2009		128	0.8	0.7	26			<0.001	8.13	204
	18/05/2010		116			21				7.9	
	25/08/2010		166							7.4	
	5/31/2011	no sample									
	8/23/2011		214	0.5	0.07	11	<2		0.001	**6.47**	276

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	*QA/QC*	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
2/9	6/1/2001			0.038	0.303	24.1				0.29		5.4	7.2	
	8/1/2001		< 0.001	0.016	0.057	27.4	< 0.001	0.004	< 0.001	0.07	< 0.001	5.4	7.7	0.019
	8/6/2002		< 0.001	0.017	0.084	26.4	< 0.001	0.001	0.0090	**1.12**	< 0.001	6.3	7.1	0.043
	8/6/2003		< 0.002	0.021	0.062	25.3	< 0.0001	< 0.005	< 0.0005	< 0.03	< 0.00005	7.4	6.4	
	5/26/2004			0.020	0.061	26.8				<0.01			7.1	
	8/24/2004		< 0.002	0.015	0.055	26.9	< 0.0001	< 0.005	< 0.0005	< 0.03	< 0.0001	5.3	6.4	0.024
	8/3/2005			0.022	0.061	26.0				< 0.05			7.0	
	9/1/2005		< 0.001	0.024	0.059	29.0	< 0.0001	< 0.005	0.0023	< 0.05	< 0.0001	6.6	7.4	0.018
	5/16/2006			<0.02	0.06	25.1				< 0.02			6.3	
	8/29/2006		< 0.001	0.018	0.064	27.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	5.6	6.4	
	5/15/2007			< 0.02	0.06	26.2				< 0.02			6.4	
	8/14/2007		< 0.001	0.015	0.075	30.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	6.6	7.6	0.027
	5/21/2008			0.02	0.07	25.9				< 0.05			6.3	
	8/19/2008		< 0.001	0.02	0.064	26.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	5.5	7.4	0.025
	5/19/2009			<0.02	0.06	24.9				<0.02			6.2	
	8/18/2009		<0.001	0.018	0.071	25.0	<0.0001	<0.005	<0.001	<0.001		5.7	6.3	0.021
	18/05/2010			<0.02	0.07	26.6				<0.001			6.4	
	24/08/2010		0.001	0.021	0.091	26.0	< 0.0001	<0.005	<0.001	<0.001	<0.0001	6.3	6.3	0.016
	5/31/2011			0.02	0.06	28.5				<0.05			6.6	
	8/23/2011		<0.001	0.014	0.074	28.0	<0.0001	<0.005	<0.001	<0.1	<0.0001	5.7	6.9	0.026

Monitor	Date	*QA/QC*	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
2/9	6/1/2001		8.8			1.3		< 0.1	9.7	8.24	106	< 0.10	0.9	227
	8/1/2001		8.1	< 0.001	0.002		< 0.10	0.1		7.92	100	< 0.10	0.6	216
	8/6/2002		9.0	0.0060	0.047	13.5	< 0.05	< 0.03	9.1	8.23	125	0.05	0.5	222
	8/6/2003		7.4	< 0.0005	< 0.005	< 0.5	< 0.2	< 0.2	11.4	8.06	96	0.14	0.8	220
	5/26/2004		7.8			<0.5		<0.2	11.2	8.24	100	0.11	0.9	209
	8/24/2004		6.9	0.0010	0.021	< 0.5	< 0.2	< 0.2	12.2	8.16	101	0.09	0.7	216
	8/3/2005		8.0			< 1		< 0.2	12.3	8.25	105	0.05	0.8	208
	9/1/2005		11.0	< 0.0005	0.062	< 1	< 0.3	< 0.2	< 1	8.16	109	0.08	0.9	209
	5/16/2006		7			1		< 0.2	12	8.2	111	0.07	0.7	226
	8/29/2006		6.9	< 0.0005	< 0.005	2	< 0.01	< 0.1	11	8.2	115	0.17	0.9	216
	5/15/2007		7			< 1		< 0.1	11	8	111	0.11	1.2	234
	8/14/2007		7.6	< 0.0005	< 0.005	1	0.02	< 0.1	12	8.1	113	0.13	1	218
	5/21/2008		6.8			2		0.1	13	8.2	106	0.06	0.7	223
	8/19/2008		7.3	< 0.0005	< 0.005	1	< 0.01	< 0.1	10	8.3	106	0.08	1.1	225
	5/19/2009		7			<1		<0.1	11	7.3	105	0.10	0.8	224
	8/18/2009		6.8	<0.0005	<0.005	<1	<0.01	<0.1	13	7.6	108	0.09	1.3	221
	18/05/2010		7.2			1			11	8.1	103	0.05	0.8	225
	24/08/2010		7.3	<0.0005	<0.005	<1	0.01	<0.1	12	8.2	107	<0.05	0.8	228
	5/31/2011		6.7			<1			11	8.24	103	0.15	0.9	224
	8/23/2011		7	<0.0005	<0.005	<1	<0.01	<0.1	10	8.14	106	0.1	1.2	223

Monitor	Date	*QA/QC*	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
2/9	6/1/2001		86			31					
	8/1/2001		270	0.08	< 0.005	< 20		< 1	< 0.001	8.2	90
	8/6/2002		120	< 0.05		< 20	< 1	2	< 0.001	8.2	160
	8/6/2003		152	0.22	< 0.05	5	< 0.5	4600	< 0.001	7.9	190
	5/26/2004		134			12				7.3	320
	8/24/2004		126	0.15	0.18	< 5			< 0.001	8.1	NA
	8/3/2005		105			7	< 3	2500		6.8	190
	9/1/2005		212	0.30	3.72	4			0.0010	7.1	190
	5/16/2006		150			< 4	< 2	3900		8	230
	8/29/2006		150	0.4	0.44	< 4	< 2			**8.88**	211
	5/15/2007		157			< 4	< 2			**8.72**	
	8/14/2007		150	0.6	0.43	< 4	< 2		< 0.001	8.03	
	5/21/2008		148			< 4	< 2	4000		8.45	
	8/19/2008		150	1.3	1.3	< 4	< 2		< 0.001	**8.83**	
	5/19/2009		140			5				**8.85**	294
	8/18/2009		140	0.5	0.43	12			<0.001	**8.52**	218
	18/05/2010		156							8.1	
	25/08/2010		144	0.5	0.46	5			<0.001	8.2	
	5/31/2011		146			<4				8.11	226
	8/23/2011		160	<1	1.2	<4			<0.001	**5.98**	230

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	*QA/QC*	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
2/13	6/1/2001			0.027	0.107	19.7				**0.44**		5.4	6.6	
	8/1/2001		< 0.001	0.018	0.021	21.2	< 0.001	0.003	< 0.001	0.07	0.001	5.4	6.7	0.029
	5/7/2002			0.027	0.028	24.0				0.06			6.7	
	8/6/2002		< 0.001	0.024	0.038	22.9	< 0.001	0.001	0.0050	**0.42**	< 0.001	6.2	6.8	0.048
	5/21/2003			0.030	0.029	24.2				< 0.01			6.9	
	8/6/2003		< 0.002	0.024	0.035	23.1	< 0.0001	< 0.005	< 0.0005	< 0.03	< 0.00005	5.8	6.9	
	5/26/2004			0.030	0.031	24.1				<0.01			7.5	
	8/24/2004		< 0.002	0.018	0.028	23.5	< 0.0001	< 0.005	< 0.0005	< 0.03	< 0.0001	5.5	6.8	0.032
	8/3/2005			0.024	0.029	24.0				< 0.05			7.1	
	9/1/2005		< 0.001	0.022	0.025	23.0	< 0.0001	< 0.005	0.0020	< 0.05	< 0.0001	6.0	6.9	0.020
	5/16/2006			< 0.02	0.02	23.0				< 0.02			6.7	
	8/29/2006		< 0.001	0.022	0.028	27.0	< 0.0001	< 0.005	< 0.001	0.05	<0.0001	5.9	7.0	
	5/15/2007			0.03	0.03	23.9				< 0.05			7.0	
	8/14/2007		< 0.001	0.02	0.024	25.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	6.3	7.8	<0.002
	5/21/2008			<0.02	0.03	23.3				<0.05			6.7	
	8/19/2008		< 0.001	0.025	0.025	22.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	5.4	8.0	0.019
	5/19/2009			0.02	0.03	23.8				<0.02			7.0	
	8/18/2009		< 0.001	0.018	0.071	25.0	< 0.0001	< 0.005	< 0.001	<0.02		5.7	6.3	0.021
	5/18/2010			<0.02	0.02	23.3				<0.1			7.0	
	8/24/2010		< 0.001	0.022	0.025	24.0	<0.0001	<0.005	<0.001	<0.1		6.0	7.2	0.015
	5/31/2011			0.03	0.01	29.0				<0.05			7.9	
	8/23/2011		<0.001	0.018	0.021	24.0	<0.0001	<0.005	<0.001	<0.1			6.9	

Monitor	Date	*QA/QC*	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
2/13	6/1/2001		15.4			1.1		0.8	10.6	8.10	109	< 0.10	0.7	235
	8/1/2001		18.0	< 0.001	0.002		< 0.10	0.5		8.06	110	< 0.10	0.7	228
	5/7/2002		14.6			21.5		< 0.1	9.5	7.97	108	0.08	1.0	239
	8/6/2002		12.1	0.0090	0.010	17.3	< 0.05	< 0.03	9.3	8.24	206	0.03	< 0.2	226
	5/21/2003		10.4			< 0.5		< 0.2	1.1	**10.40**	105	0.04	0.7	226
	8/6/2003		10.3	< 0.0005	0.006	< 0.5	< 0.2	< 0.2	14.5	8.15	95	0.08	1.0	224
	5/26/2004		10.6			< 0.5		<0.2	11.4	8.27	102	0.08	0.7	212
	8/24/2004		8.7	0.0009	< 0.005	< 0.5	< 0.2	< 0.2	12.3	8.17	106	0.03	0.5	219
	8/3/2005		13.0			< 1		0.2	12.7	8.24	107	< 0.05	0.7	211
	9/1/2005		14.0	< 0.0005	< 0.005	< 1	< 0.3	0.2	2.0	8.18	111	0.06	0.7	212
	5/16/2006		8.6			1		< 0.2	13	8.2	112	< 0.05		229
	8/29/2006		10	< 0.0005	< 0.005	1	0.02	0.1	10	8.2	114	0.08	0.9	217
	5/15/2007		9			< 1		< 0.1	11	8.1	109	< 0.05	0.8	234
	8/14/2007		9.4	<0.0005	<0.005	< 1	< 0.01	0.1	14	8.1	104	0.07	1.1	209
	5/21/2008		8.3			< 1		< 0.1	13	8	110	< 0.05	0.8	240
	8/19/2008		8.8	< 0.0005	< 0.005	< 1	< 0.01	< 0.1	13	8.3	102	< 0.05	0.9	223
	5/19/2009		8.7			<1		<0.1	12	7.8	103	<0.05	0.7	234
	8/18/2009		8.2	< 0.0005	< 0.005	<1	< 0.01	<0.1	12	7.6	107	<0.05	1	219
	5/18/2010		8.8			<1			12	8.1	104	<0.05	0.7	228
	8/24/2010		7.3	<0.0005	<0.005	1	<0.01	0.05	12	8.2	103	<0.05	1.3	175
	5/31/2011		9.5			<1			11	8.1	114	0.37	5.9	253
	8/23/2011		7.9	<0.0005	<0.005	<1	<0.01	<0.1	12	8.14	102	0.21	1.1	221

Monitor	Date	*QA/QC*	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
2/13	6/1/2001		138			25					
	8/1/2001		165	0.37	< 0.005	< 20		37	< 0.001	8.0	90
	5/7/2002		196			< 20	5	0		7.8	
	8/6/2002		121	< 0.05		< 20	< 1	2	< 0.001	8.4	170
	5/21/2003		132			5	0.6			7.2	240
	8/6/2003		144	0.15	< 0.05	6	< 0.5	7860	< 0.001	8.0	180
	5/26/2004		130			6				7.1	290
	8/24/2004		128	0.17	0.35	< 5			< 0.001	8.1	NA
	8/3/2005		140			10	< 2	1900		6.5	190
	9/1/2005		220	0.40	6.60	< 4			< 0.001	7.5	190
	5/16/2006		141			< 4	< 2	2400		8	230
	8/29/2006		151	0.2	3.4	< 4	< 2		< 0.001	**8.97**	212
	5/15/2007		152			< 4	<2			**9**	
	8/14/2007		138	0.6	0.21	< 4	<2		< 0.001	**8.92**	
	5/21/2008		146			< 4	< 2	4500		**8.86**	
	8/19/2008		152	0.2	0.26	< 4	< 2		< 0.001	**8.92**	
	5/19/2009		145			<4				8.04	292
	8/18/2009		139	0.4	0.46	<4			< 0.001	**9.1**	216
	5/18/2010		140							8.12	199
	8/24/2010		144	0.3	0.19	5			<0.001	**11.37**	
	5/31/2011		160			16				7.64	265
	8/23/2011		160	0.6	0.24	<4			0.001	**5.6**	238

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
3/8	6/1/2001			0.019	0.201	23.8				**0.61**		2.2	3.4	
	8/1/2001		< 0.001	0.005	0.015	24.9	0.002	0.002	< 0.001	**0.33**	< 0.001	2.2	3.5	**0.137**
	5/7/2002			< 0.001	0.023	24.6				0.09			3.1	
	8/6/2002		< 0.001	0.003	0.062	25.4	< 0.001	0.002	0.0240	**1.93**	< 0.001	2.7	3.5	**0.157**
	8/6/2003		< 0.002	0.007	0.025	26.5	< 0.0001	< 0.005	0.0010	0.07	< 0.00005	2.5	3.3	
	5/26/2004			<0.01	0.020	27.1				0.08			3.5	
	8/24/2004		< 0.002	< 0.005	0.019	24.9	< 0.0001	< 0.005	< 0.0005	0.04	< 0.0001	2.3	3.1	**0.097**
	8/3/2005			< 0.01	0.019	27.0				< 0.05			3.4	
	9/1/2005		< 0.001	< 0.01	0.018	26.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	2.4	3.2	**0.078**
	5/16/2006			<0.02	0.020	24.9				< 0.05			3.0	
	8/29/2006		< 0.001	< 0.01	0.021	27.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	2.6	3.4	
	5/15/2007			<0.01	0.020	27.2				<0.05			3.2	
	8/14/2007		<0.001	<0.01	0.020	27.0	<0.0001	<0.005	<0.001	<0.05	<0.0001	2.8	3.5	0.047
	5/21/2008			< 0.01	< 0.01	24.5				< 0.05			2.9	
	8/19/2008		< 0.001	< 0.01	0.018	23.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	2.3	3.5	0.035
	5/19/2009			<0.02	0.020	24.5				<0.02			3.0	
	8/18/2009		< 0.001	<0.02	0.021	24.0	< 0.0001	< 0.005	< 0.001	<0.02		2.5	3.0	0.009
	5/18/2010				0.020	25.0				0.02			3.1	
	8/24/2010				0.02	24.0	<0.0001	<0.005	0.001			2.5	3.1	0.021
	5/31/2011			<0.02	0.03	28.8				<0.05			3.26	
	8/23/2011		<0.001	<0.01	0.021	25.0	<0.0001	<0.0005	<0.001	<0.10	<0.0001	2.4	3.3	0.015

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
3/8	6/1/2001		6.4			3.1		0.10	11.9	7.88	68	< 0.10	3.3	174
	8/1/2001		4.1	< 0.001	0.003		< 0.10	< 0.10		7.74	59	< 0.10	3.1	151
	5/7/2002		3.4			4.8		0.90	9.1	7.85	66	0.04	3.0	175
	8/6/2002		4.3	0.005	0.025	6.7	0.05	0.59	11.7	7.84	71	0.03	3.5	168
	8/6/2003		3.9	< 0.0005	< 0.005	1.7	< 0.2	< 0.2	16.7	7.82	71	0.03	**7.8**	185
	5/26/2004		3.8			1.4		0.20	17.3	7.85	70	0.03	**5.6**	171
	8/24/2004		3.4	0.001	0.005	1.8	< 0.2	0.50	19.7	7.92	72	0.04	**5.3**	172
	8/3/2005		4.0			1.0		0.20	19.9	8.00	65	< 0.05	**5.0**	160
	9/1/2005		3.7	< 0.0005	< 0.005	1.0	<0.3	1.30	8.0	7.92	65	< 0.05	**5.0**	169
	5/16/2006		3.5			2		0.6	18	7.90	73	< 0.05	4.5	183
	8/29/2006		3.7	< 0.0005	< 0.005	3	0.070	0.9	20	8.00	70	0.05	4.7	179
	5/15/2007		3.7			2		0.4	19	7.60	72	0.07	4.8	191
	8/14/2007		3.9	< 0.0005	< 0.005	3	0.010	1.2	21	7.80	62	< 0.05	4.7	170
	5/21/2008		3.4			2		0.5	20	8.00	64	< 0.05	4.4	174
	8/19/2008		3.5	< 0.0005	< 0.005	2	< 0.01	0.8	20	8.00	64	< 0.05	4.8	178
	5/19/2009		3.4			2		0.5	19	7.10	71	<0.05	4.2	175
	8/18/2009		3.2	< 0.0005	< 0.005	2	< 0.01	0.8	20	7.90	69	<0.05	4.1	177
	5/18/2010		3.3			2		0.7	18	7.90	64	0.05	3.6	176
	8/24/2010		3.3	<0.0005	<0.005	2	<0.01	1.2	18	8	62	<0.05	3.7	175
	5/31/2011		3.4			1		0.6	16	7.64	64	<0.05	3.6	176
	8/23/2011		3.4	<0.0005	<0.005	2	<0.01	0.8	17	7.83	67	<0.05	3.6	177

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
3/8	6/1/2001		110			28					
	8/1/2001		107	0.11	0.04	28		69.00	< 0.001	7.70	70
	5/7/2002		163			195	< 1	4.26		5.90	110
	8/6/2002		144	0.06		< 20	< 1	1.90	< 0.001	7.80	150
	8/6/2003		160	0.22	2.50	26	< 0.5	1920	< 0.001	7.30	150
	5/26/2004		130			20				6.20	40
	8/24/2004		122	0.37	3.10	15			< 0.001	7.70	NA
	8/3/2005		430			40	< 3	4800		4.20	160
	9/1/2005		237	1.70	2.92	22			0.003	7.10	360
	5/16/2006		118				< 2	2400		8.00	
	8/29/2006		141	0.400	2.300	8	< 2		< 0.001	8.37	
	5/15/2007		148			< 4	< 2			8.12	
	8/14/2007		118	0.800	2.800	27	< 2		< 0.001	7.23	163
	5/21/2008		128			17	< 2	1600		8.01	
	8/19/2008		120	1.000	1.500	< 4	< 2		< 0.001	7.98	
	5/19/2009		115			41				7.12	196
	8/18/2009		110	1.000	1.000	37			< 0.001	7.21	268
	5/18/2010		120			40				6.97	173
	8/24/2010		110	1.100	0.540	23			< 0.001	**11.19**	
	5/31/2011		108			11				7.63	185
	8/23/2011		177	1.000	1.300	11			<0.001	**5.71**	187

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
4/6	6/1/2001			0.007	0.021	24.4				0.15		2.6	5.1	
	8/1/2001		< 0.001	0.004	0.017	26.4	< 0.001	0.003	< 0.001	0.06	< 0.001	2.6	5.3	0.002
	8/6/2002		< 0.001	0.004	0.048	33.3	< 0.001	0.002	0.0150	**1.58**	< 0.001	3.7	6.8	0.040
	5/21/2003			< 0.01	0.021	27.9				< 0.01			5.1	
	8/6/2003		< 0.002	0.009	0.023	27.6	< 0.0001	< 0.005	0.0014	< 0.03	< 0.00005	2.7	5.2	
	5/26/2004			<0.01	0.024	26.0				0.02			5.3	
	8/24/2004		< 0.002	0.006	0.019	25.6	< 0.0001	< 0.005	0.0007	< 0.03	< 0.0001	2.7	5.5	0.006
	8/3/2005			< 0.01	0.020	28.0				< 0.05			5.3	
	9/1/2005		< 0.001	< 0.01	0.019	26.0	< 0.0001	< 0.005	0.0028	< 0.05	< 0.0001	2.8	5.1	< 0.002
	5/16/2006				0.020	26.0				< 0.02			4.8	
	8/29/2006		< 0.001	< 0.01	0.019	27.0	0.0002	< 0.005	0.001	< 0.05	< 0.0001	2.7	4.9	
	5/15/2007			< 0.01	0.020	26.1				< 0.05			4.7	
	8/14/2007		0.001	< 0.01	0.020	29.0	< 0.0002	< 0.005	< 0.001	< 0.05	< 0.0001	2.8	5.3	< 0.002
	5/21/2008			< 0.01	0.020	25.6				< 0.05			4.6	
	8/19/2008		0.001	< 0.01	0.019	24.0	< 0.0002	< 0.005	< 0.001	< 0.05	< 0.0001	2.4	5.5	< 0.002
	5/18/2010	*No Recovery*												
	8/24/2010	*No Recovery*												
	5/31/2011	*No Recovery*												
	8/23/2011	*No Recovery*												

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
4/6	6/1/2001		3.5			1.4		0.10	6.7	8.17	83	< 0.10	1.2	182
	8/1/2001		3.8	< 0.001	0.002		< 0.10	< 0.10		7.95	88	< 0.10	1.3	182
	8/6/2002		4.9	0.006	0.140	7.3	0.05	3.21	4.6	7.99	308	0.03	0.8	188
	5/21/2003		3.8			< 0.5		< 0.2	0.8	8.10	87	0.06	1.4	190
	8/6/2003		4.6	< 0.0005	< 0.005	< 0.5	< 0.2	< 0.2	11.1	8.04	88	0.03	1.3	191
	5/26/2004		4.1			<0.5		<0.2	6.9	8.20	94	0.05	1.1	184
	8/24/2004		5.9	0.001	0.009	< 0.5	< 0.2	< 0.2	7.1	8.06	92	0.07	1.2	195
	8/3/2005		7.7			< 1		0.60	< 1	8.18	90	< 0.05	1.4	175
	9/1/2005		6.2	< 0.0005	< 0.005	< 1	< 0.3	< 0.2	4.0	8.06	95	< 0.05	1.2	180
	5/16/2006		3.7			1			8	8.10	95	0.14	1.4	191
	8/29/2006		4	< 0.0005	< 0.005	2	< 0.01	< 0.1	10	8.10	98	0.07	1.7	186
	5/15/2007		6.5			1		< 0.1	8	7.90	95	0.15	2	198
	8/14/2007		6	< 0.0005	< 0.005	1	< 0.01	< 0.1	9	8.10	98	0.09	1.3	192
	5/21/2008		5.3			2		< 0.1	12	8.10	94	< 0.05	1.1	198
	8/19/2008		5.9	< 0.0005	< 0.005	1	< 0.01	< 0.1	8	8.20	97	0.12	1.5	199
	5/18/2010	*No Recovery*												
	8/24/2010	*No Recovery*												
	5/31/2011	*No Recovery*												
	8/23/2011	*No Recovery*												

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
4/6	6/1/2001		74			< 20					
	8/1/2001		143	0.42	< 0.005	22		< 1	< 0.001	8.10	90
	8/6/2002		236	< 0.05		< 20	2	16.23	< 0.001	8.40	160
	5/21/2003		126			7	< 0.5			7.90	7.6
	8/6/2003		144	0.07	0.08	6	< 0.5	3860	< 0.001	7.80	160
	5/26/2004		130			11				7.30	180
	8/24/2004		134	0.10	1.24	8			< 0.001	NA	NA
	8/3/2005		390			220	< 3	7900		**3.00**	160
	9/1/2005		315	2.30	5.63	71			< 0.001	6.90	160
	5/16/2006		128			95	< 2	7300		7.90	
	8/29/2006		136	0.300	13	110	< 2		< 0.001	**8.75**	
	5/15/2007		121			38	<2			**8.77**	
	8/14/2007		134	< 1	1	4	< 2		< 0.001	**8.61**	
	5/21/2008		135			5	< 2	10000		**8.70**	
	8/19/2008		130	6	140	29	< 2		< 0.001	**8.88**	
	5/18/2010	*No Recovery*									
	8/24/2010	*No Recovery*									
	5/31/2011	*No Recovery*									
	8/23/2011	*No Recovery*									

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
4/18	6/1/2001			0.008	0.032	25.0							6.0	
	8/1/2001		< 0.001	0.005	0.028	27.6	< 0.001	0.002	< 0.001	0.08	< 0.001	2.8	6.1	0.002
	8/6/2002		< 0.001	0.003	0.042	31.0	< 0.001	< 0.001	0.0070	**0.59**	< 0.001	3.4	7.2	0.016
	5/21/2003			< 0.01	0.028	28.2				0.02			6.0	
	8/6/2003		< 0.002	0.007	0.028	26.2	< 0.0001	< 0.005	0.0009	< 0.03	< 0.00005	2.8	5.8	
	5/26/2004			0.010	0.024	23.1				0.06			5.3	
	8/24/2004		< 0.002	0.006	0.027	26.7	< 0.0001	< 0.005	0.0007	< 0.03	< 0.0001	2.7	5.5	< 0.005
	8/3/2005			< 0.01	0.026	28.0				< 0.05			6.0	
	9/1/2005		< 0.001	< 0.01	0.025	26.0	< 0.0001	< 0.005	0.0028	< 0.05	< 0.0001	2.9	5.6	< 0.002
	5/16/2006				0.030	26.4				< 0.02			5.4	
	8/29/2006		< 0.001	< 0.01	0.026	26.0	< 0.0001	< 0.005	0.001	< 0.05	< 0.0001	3.0	5.6	
	8/14/2007		< 0.001	< 0.001	0.027	29.0	< 0.0001	< 0.005	0.001	< 0.05	< 0.0001	3.2	6.2	0.003
	5/21/2008			< 0.001	0.03	26.8				< 0.05			5.4	
	8/19/2008		< 0.001	< 0.001	0.027	27.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	3.1	6.7	< 0.005
	5/19/2009			<0.02	0.03	26.4				<0.02			5.4	
	5/18/2010			< 0.001	0.03	28.4				< 0.05			5.6	
	8/24/2010	*No Recovery*												
	5/31/2011	*No Recovery*												
	8/23/2011	*No Recovery*												

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
4/18	6/1/2001		3.5			0.4		< 0.10	8.3	8.19	88	< 0.10	1.0	199
	8/1/2001		3.6	< 0.001	0.002		< 0.10	< 0.10		7.81	88	< 0.10	0.7	194
	8/6/2002		4.3	0.004	0.009	7.1	< 0.05	< 0.03	7.7	8.13	149	0.03	**8.9**	
	5/21/2003		3.5			< 0.5		< 0.2	1.1	8.11	92	< 0.03	0.9	199
	8/6/2003		3.9	< 0.005	< 0.005	< 0.5	< 0.2	< 0.2	11.6	8.03	90	< 0.03	1.4	199
	5/26/2004		3.4			<0.5		<0.2	12.0	8.15	97	< 0.03	0.7	196
	8/24/2004		3.6	0.001	< 0.005	< 0.5	< 0.2	< 0.2	10.7	8.14	94	0.03	0.9	195
	8/3/2005		7.6			< 1		< 0.2	12.2	8.18	94	< 0.05	1.0	180
	9/1/2005		5.9	< 0.0005	< 0.005	< 1	< 0.3	< 0.2	< 1	8.07	99	< 0.05	1.0	193
	5/16/2006		3.5						11	8.10	99	< 0.05	1.1	203
	8/29/2006		3.7	< 0.0005	< 0.005	1	< 0.01	< 0.1	11	8.10	99	< 0.05	1.1	194
	8/14/2007		4	< 0.0005	< 0.005	1	< 0.01	0.5	14	8.00	95	< 0.05	1	192
	5/21/2008		3.7			< 1		< 0.1	11	8.10	91	< 0.05	1	199
	8/19/2008		4.1	< 0.0005	< 0.005	< 1	< 0.01	< 0.1	11	8.20	94	< 0.05	1.3	197
	5/19/2009		3.5			1		<0.1	10	7.40	93	0.10	1.4	205
	5/18/2010		3.7			1		<0.1	11	8.10	91	<0.05	1	199
	8/24/2010	*No Recovery*												
	5/31/2011	*No Recovery*												
	8/23/2011	*No Recovery*												

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
4/18	6/1/2001		87			< 20					
	8/1/2001		153	0.47	< 0.005	< 20		< 1	< 0.001	8.20	90
	8/6/2002		132	< 0.05		< 20	< 1	0.79	< 0.001	8.40	170
	5/21/2003		122			6	< 0.5			7.60	150
	8/6/2003		128	0.09	< 0.05	7	< 0.5	13800	< 0.001	8.00	160
	5/26/2004		130			<5				7.20	210
	8/24/2004		124	0.13	1.42	35			0.001	NA	NA
	8/3/2005		250			< 4	< 3	14000		**4.20**	160
	9/1/2005		136	0.20	1.20	< 4			< 0.001	7.90	190
	5/16/2006		133			< 4	< 2	870		7.90	
	8/29/2006		123	0.2	4.8	< 4	< 2		< 0.001	**8.71**	
	8/14/2007		130	< 1	0.83	< 4	< 2		< 0.001	**8.87**	
	5/21/2008		132			< 4	< 2	3500		**8.81**	
	8/19/2008		130	0.5	0.62	< 4	< 2		< 0.001	**8.84**	
	5/19/2009		125			<4				7.66	266
	5/18/2010		124			5				7.08	263
	8/24/2010	*No Recovery*									
	5/31/2011	*No Recovery*									
	8/23/2011	*No Recovery*									

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	*QA/QC*	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
5/17	6/1/2001			0.005	0.011	20.4				0.12		1.0	4.6	
	8/1/2001		< 0.001	0.001	0.009	22.7	< 0.001	0.002	0.002	0.08	< 0.001	1.0	3.9	< 0.001
	5/7/2002			< 0.001	0.010	17.9				0.07			3.5	
	8/6/2002		< 0.001	0.001	0.020	20.2	< 0.001	< 0.001	0.028	**0.57**	< 0.001	1.4	4.9	0.011
	5/26/2004			0.010	0.010	22.6				<0.01			4.6	
	8/24/2004		< 0.002	< 0.005	0.009	24.3	< 0.0001	< 0.005	0.002	< 0.03	< 0.0001	1.1	4.9	< 0.005
	8/3/2005			< 0.01	0.008	21.0				< 0.05			4.3	
	9/1/2005		< 0.001	< 0.01	0.008	22.0	< 0.0001	< 0.005	0.003	< 0.05	< 0.0001	0.9	4.3	< 0.002
	5/16/2006	*Dry*												
	8/29/2006	*Dry*												
	5/15/2007	*Dry*												
	8/14/2007		< 0.001	< 0.01	0.010	26.0	< 0.0001	< 0.005	0.004	< 0.05	< 0.0001	1.4	5.2	< 0.002
	5/21/2008			< 0.01	< 0.01	21.7				< 0.05			4.0	
	8/19/2008		< 0.001	< 0.01	0.008	22.0	< 0.0001	< 0.005	0.005	< 0.05	< 0.0001	1.2	5.1	< 0.002
	5/19/2009			<0.02	<0.02	20.9				<0.02			4.0	
	8/18/2009		< 0.001	<0.02	0.009	22.0	< 0.0001	< 0.005	0.003	<0.02		1.1	4.4	< 0.002
	5/18/2010				0.023	22.7				<0.02			4.3	
	8/24/2010		<0.001	<0.01	0.023	23.0	<0.0001	<0.005	0.005	<0.1	<0.0001	1.2	4.8	<0.002
	5/31/2011			<0.01	<0.01	24.9				<0.05			4.4	
	8/23/2011		<0.001	<0.01	0.009	22.0	<0.0001	<0.005	0.007	<0.1	<0.0001	1.3	4.5	<0.002

Monitor	Date	*QA/QC*	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
5/17	6/1/2001		3.1			1.1		< 0.10	2.7	8.07	78	< 0.10	1.4	159
	8/1/2001		3.7	< 0.001	0.003		< 0.10	< 0.10		7.90	78	< 0.10	1.0	143
	5/7/2002		3.3			5.1		< 0.10	1.4	7.98	73	0.03	1.0	148
	8/6/2002		4.3	0.0020	0.016	8.0	< 0.05	2.00	3.0	8.16	88	0.12	1.2	173
	5/26/2004		4.2			< 0.5		<.02	2.7	8.10	79	< 0.03	1.8	147
	8/24/2004		3.6	< 0.0005	0.014	< 0.5	< 0.2	< 0.2	2.7	8.20	91	0.03	0.9	163
	8/3/2005		3.4			< 1		< 0.2	3.0	8.24	77	< 0.05	1.4	139
	9/1/2005		3.4	< 0.0005	< 0.005	< 1	< 0.3	< 0.2	10.0	8.15	82	< 0.05	2.0	144
	5/16/2006	*Dry*												
	8/29/2006	*Dry*												
	5/15/2007	*Dry*												
	8/14/2007		3.8	< 0.0005	< 0.005	1	< 0.01	0.4	3	8	88	< 0.05	1.4	166
	5/21/2008		3.5			< 1		< 0.2	2	8	79	< 0.05	1.3	155
	8/19/2008		3.6	< 0.0005	< 0.005	< 1	< 0.01	< 0.1	2	8.1	85	< 0.05	1.3	163
	5/19/2009		3.9			1		<0.1	2	7.3	86	<0.05	1.2	159
	8/18/2009		3	< 0.0005	< 0.005	< 1	< 0.01	0.1	2	7.9	88	<0.05	1.3	165
	5/18/2010		3.8			1		<0.1	2	8	81	<0.05	1.3	164
	8/24/2010		3.4	<0.0005	<0.005	1	<0.01	0.2	2	8.1	85	<0.05	1.4	167
	5/31/2011		3.7			<1		<0.1	1	8.05	79	<0.05	1.5	161
	8/23/2011		3.6	<0.0005	<0.005	1	<0.01	<0.1	2	7.99	81	<0.05	1.4	162

Monitor	Date	*QA/QC*	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
5/17	6/1/2001		118			22					
	8/1/2001		131	0.20	< 0.005	22		< 1	< 0.001	8.3	70
	5/7/2002		102			84	< 1	1.30		8.3	90
	8/6/2002		125	0.06		70	< 1	4.94	0.002	7.9	130
	5/26/2004		92			6				7.3	140
	8/24/2004		116	0.08	< 0.05	10			< 0.001	NA	NA
	8/3/2005		150			15	< 3	6000		8.3	130
	9/1/2005		184	0.40	19.400	< 4			< 0.001	**3.4**	120
	5/16/2006	*Dry*									
	8/29/2006	*Dry*									
	5/15/2007	*Dry*									
	8/14/2007		122	< 1	1.00	< 4	< 2		< 0.001	**8.55**	164
	5/21/2008		104			5	< 2	1100		**9.12**	
	8/19/2008		110	0.3	0.29	< 4	< 2		< 0.001	**8.88**	
	5/19/2009		100			51				7.4	192
	8/18/2009		105	0.4	0.73	13			< 0.001	7.71	172
	5/18/2010		114			11				7.59	145
	8/24/2010		106	0.7	1.50	8			<0.001	**11.16**	
	5/31/2011		98			12				7.58	161
	8/23/2011		100	<1	1.50	<4			<0.001	6.76	170

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
6/5	6/1/2001			0.011	0.240	14.1				**0.42**		1.6	3.3	
	8/1/2001		< 0.001	< 0.001	0.013	16.8	< 0.001	< 0.001	< 0.001	0.08	< 0.001	1.6	2.9	< 0.001
	5/9/2002			< 0.001	0.014	24.3				0.08			4.7	
	8/6/2002		< 0.001	0.003	0.037	16.2	< 0.001	< 0.001	0.007	**1.05**	< 0.001	2.0	4.5	0.014
	5/21/2003			0.010	0.014	17.0				0.05			3.2	
	8/6/2003		< 0.002	0.005	0.013	15.4	< 0.0001	< 0.005	0.001	0.04	< 0.00005	1.7	3.3	
	5/26/2004			<0.01	0.012	15.6				0.01			3.4	
	8/24/2004		< 0.002	< 0.005	0.011	14.6	< 0.0001	< 0.005	0.001	< 0.03	< 0.0001	1.7	3.0	< 0.005
	8/3/2005			< 0.01	0.001	14.0				< 0.05			3.1	
	9/1/2005		< 0.001	< 0.01	0.013	16.0	< 0.0001	< 0.005	0.003	< 0.05	< 0.0001	1.8	3.2	0.004
	5/16/2006			< 0.02	< 0.02	15.0				< 0.02			2.9	
	8/29/2006		< 0.001	< 0.01	0.030	26.1	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	1.8	5.9	
	5/15/2007			< 0.02	< 0.02	16.4				< 0.02			3.3	
	8/14/2007		< 0.001	< 0.01	0.012	16.0	< 0.0001	< 0.005	0.001	< 0.05	< 0.0001	1.9	3.4	< 0.002
	5/21/2008			< 0.01	< 0.02	14.7				< 0.05			2.9	
	8/19/2008		< 0.001	< 0.01	0.012	15.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	1.7	3.4	< 0.002
	5/19/2009			<0.02	<0.02	15.2				<0.02			3.1	
	8/18/2009		< 0.001	<0.02	0.012	15.0	< 0.0001	< 0.005	< 0.001	<0.02		1.8	3.2	< 0.002
	5/18/2010			<0.02	<0.02	14.7				<0.02			3.0	
	8/24/2010		<0.001	<0.02	0.012	15.0	<0.0001	<0.005	<0.001	<0.01	<0.0001	1.8	3.1	0.003
	5/31/2011			<0.02	<0.02	17.3				<0.05			3.3	
	8/23/2011		<0.001	<0.02	0.013	16.0	<0.0001	<0.005	<0.001	<0.1	<0.0001	1.7	3.1	0.003

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
6/5	6/1/2001		3.0			1.2		0.10	6.7	7.88	50	< 0.10	2.0	115
	8/1/2001		2.6	< 0.001	0.002		< 0.10	0.30		7.62	55	< 0.10	1.2	112
	5/9/2002		3.9			5.1		< 0.10	5.6	8.19	56	0.01	3.0	120
	8/6/2002		3.7	0.0040	0.032	5.5	< 0.05	0.46	3.8	8.15	55	0.06	1.6	113
	5/21/2003		2.7			< 0.5		< 0.2	0.6	8.24	55	0.06	2.9	123
	8/6/2003		3.0	< 0.0005	< 0.005	< 0.5	< 0.2	< 0.2	7.0	8.05	53	< 0.03	2.4	121
	5/26/2004		2.8			<0.5		<0.2	6.0	8.19	52	<0.03	1.9	116
	8/24/2004		2.9	0.0010	0.015	< 0.5	< 0.2	< 0.2	4.9	8.17	51	< 0.03	1.5	114
	8/3/2005		3.0			< 1		1.30	7.0	8.09	53	< 0.05	2.0	106
	9/1/2005		3.1	< 0.0005	< 0.005	< 1	< 0.3	< 0.2	8.0	8.08	58	0.06	2.3	112
	5/16/2006		2.6			1		0.10	7.0	7.9	57	0.08	2.1	119
	8/29/2006		3.4	< 0.0005	< 0.005	57	< 0.01	< 0.1	6.0	8.1	57	< 0.05	1.9	113
	5/15/2007		2.6			2		< 0.1	8.0	7.7	59	< 0.05	2.0	134
	8/14/2007		3.2	< 0.0005	< 0.005	< 1	< 0.01	0.1	6.0	7.9	55	< 0.05	2.0	114
	5/21/2008		2.5			< 1		< 0.1	6.0	7.9	58	< 0.05	1.9	118
	8/19/2008		3.0	< 0.0005	< 0.005	< 1	< 0.01	0.1	6.0	8.1	54	< 0.05	1.9	115
	5/19/2009		2.6			<1		0.1	6.0	6.9	47	<0.05	1.8	122
	8/18/2009		2.9	< 0.0005	< 0.005	<1	< 0.01	0.2	6.0	7.9	56	<0.05	0.7	114
	5/18/2010		2.6			<1		0.1	6.0	7.9	51	<0.05	1.7	116
	8/24/2010		2.7	< 0.0005	< 0.005	<1	<0.01	0.1	6.0	8	52	0.09	1.7	118
	5/31/2011		2.6			<1		<0.1	5.0	7.81	54	0.05	1.7	119
	8/23/2011		2.7	<0.0005	<0.005	<1	<0.01	<0.1	9.0	7.59	52	<0.05	1.7	123

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
6/5	6/1/2001		92			22					
	8/1/2001		98	< 0.05	< 0.005	22		< 1	< 0.001	8.4	60
	5/9/2002		< 40			56	< 1	0.81		8.0	100
	8/6/2002		126	< 0.05		< 20	< 1	0.47	< 0.001	8.5	100
	5/21/2003		100			10	< 0.5			7.7	90
	8/6/2003		96	0.11	< 0.05	7	< 0.5	4840	< 0.001	8.2	90
	5/26/2004		74			6				7.1	30
	8/24/2004		88	0.11	< 0.05	8			< 0.001	NA	NA
	8/3/2005		136			5	< 2	860		6.5	100
	9/1/2005		150	0.50	0.710	7			0.003	**3.6**	100
	5/16/2006		80			9	< 2	1600		8	
	8/29/2006		70	0.2	0.390	6	< 2		< 0.001	**9.03**	110
	5/15/2007		82			6	< 2			**8.95**	
	8/14/2007		77	< 1	1.100	< 4	< 2		< 0.001	**9.47**	106
	5/21/2008		76			6	< 2	410		**8.7**	
	8/19/2008		80	0.4	0.950	< 4	< 2		< 0.001	**8.68**	
	5/19/2009		80			<4				8.38	132
	8/18/2009		76	0.7	0.560	12			< 0.001	7.68	140
	5/18/2010		74			<4				7.54	94
	8/24/2010		76	0.7	0.480	11			<0.001	**11.3**	
	5/31/2011		70			5				**6.8**	132
	8/23/2011		92	<1	0.400	5			<0.001	**6.27**	185

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
6/14	6/1/2001			0.068	0.218	23.7				0.16		3.7	5.9	
	8/1/2001		< 0.001	0.001	0.023	25.9	< 0.001	< 0.001	< 0.001	0.09	0.005	3.7	5.5	0.022
	5/7/2002			< 0.001	0.026	24.0				0.05			5.5	
	8/6/2002		< 0.001	0.007	0.032	32.5	< 0.001	< 0.001	0.005	0.26	< 0.001	4.2	7.6	0.036
	8/6/2003		< 0.002	0.008	0.016	22.3	< 0.0001	< 0.005	0.002	< 0.03	< 0.00005	3.5	3.3	
	8/24/2004		< 0.002	0.009	< 0.005	6.8	< 0.0001	< 0.005	< 0.0005	**10.10**	< 0.0001	2.3	1.3	**0.144**
	8/3/2005			0.019	< 0.005	4.2				**2.60**			0.7	
	9/1/2005		< 0.001	< 0.01	0.011	12.0	< 0.0001	< 0.005	0.001	**2.90**	< 0.0001	2.9	2.0	**0.160**
	5/16/2006			< 0.02	< 0.02	14.5				**0.49**			2.8	
	8/29/2006		< 0.001	< 0.01	0.016	19.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	3.3	4.0	
	5/15/2007			< 0.02	0.020	21.5				< 0.05			4.0	
	8/14/2007		< 0.001	< 0.01	0.008	17.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	3.5	3.6	**0.19**
	5/21/2008			< 0.01	< 0.02	16.4				< 0.05			2.8	
	8/19/2008		< 0.001	< 0.01	0.022	23.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	4.0	5.1	**1.8**
	5/19/2009			<0.02	<0.02	15.3				<0.05			3.0	
	8/18/2009		< 0.001	0.075	0.810	23.0	< 0.0001	< 0.005	< 0.001	<0.05		2.6	4.2	**0.11**
	5/18/2010			< 0.01	<0.02	24.2				<0.05			3.3	
	8/24/2010		< 0.001	<0.01	0.018	23.0	< 0.0001	< 0.005	<0.001	<0.05	< 0.0001	3.5	3.8	**0.16**
	5/31/2011			<0.01	<0.01	26.6				<0.05			5.0	
	8/23/2011		<0.001	<0.01	0.017	27.0	<0.0001	<0.005	<0.001	<0.05	<0.0001	3.6	4.8	**0.087**

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
6/14	6/1/2001		8.0			2.5		< 0.10	16.4	8.10	81	< 0.10	3.5	201
	8/1/2001		3.4	< 0.001	0.005		< 0.10	0.10		7.72	88	< 0.10	1.3	187
	5/7/2002		3.2			4.5		< 0.10	10.4	8.18	84	0.05	1.0	195
	8/6/2002		4.2	< 0.001	0.024	6.3	< 0.05	< 0.03	10.5	8.20	138	0.02	0.8	191
	8/6/2003		7.4	< 0.0005	0.423	0.5	< 0.2	< 0.2	18.0	7.92	79	0.08	1.4	150
	8/24/2004		23.3	0.0009	0.006	0.7	< 0.2	< 0.2	17.3	7.04	59	0.68	1.2	161
	8/3/2005		49.0			< 1		< 0.2	14.5	7.81	85	0.57	2.3	178
	9/1/2005		25.0	< 0.0005	< 0.005	< 1	< 0.3	< 0.2	2	7.84	99	0.44	1.5	191
	5/16/2006		12.0			1		< 0.1	10	7.90	94	0.08	1.3	194
	8/29/2006		10.0	< 0.0005	< 0.005	< 1	< 0.01	< 0.1	12	8.00	88	0.18	1.6	172
	5/15/2007		11.4			1		< 0.1	13	7.80	90	0.08	2.3	203
	8/14/2007		17.0	< 0.0005	< 0.005	4	0.02	< 0.1	17	8.00	82	0.15	1.5	178
	5/21/2008		17.9			2		< 0.1	16	8.20	89	< 0.1	1.1	196
	8/19/2008		9.4	< 0.0005	< 0.005	< 1	< 0.01	< 0.1	16	8.20	96	0.05	1.5	211
	5/19/2009		14.4			1		<0.1	12	7.00	69	0.09	1	181
	8/18/2009		14.0	< 0.0005	0.023	2	< 0.01	<0.1	16	8.00	94	0.07	1.3	202
	5/18/2010		15.9			1		<0.1	14	8.00	102	0.06	1.3	230
	8/24/2010		17	<0.0005	<0.005	1	0.01	<0.1	15	8.2	105	<0.05	1.3	275
	5/31/2011		8.8			<1		<0.1	14	8.09	86	0.06	1.5	196
	8/23/2011		5.9	<0.0005	<0.005	<1	<0.01	<0.1	14	8.01	93	<0.05	1.6	211

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
6/14	6/1/2001		129			25	< 1				
	8/1/2001		240	0.21	< 0.005	< 20		< 1	< 0.001	8.1	90
	5/7/2002		123			42	< 1	0.78		8.3	120
	8/6/2002		132	< 0.05		< 20	< 1	2.97	< 0.001	8.7	170
	8/6/2003		120	0.16	< 0.05	7	< 0.5	2720	< 0.001	7.9	150
	8/24/2004		90	0.68	< 0.05	33			< 0.001	NA	NA
	8/3/2005		260			57	6	7700		**4.8**	200
	9/1/2005		360	0.80	5.440	42			0.001	**3.4**	170
	5/16/2006		129			< 4	< 2	10000		7.9	
	8/29/2006		104	0.3	6.100	11	< 2		< 0.001	7.51	169
	5/15/2007		122			<4	<2			8.45	
	8/14/2007		131	0.4	0.180	<4	<2		<0.001	8.42	175
	5/21/2008		140			<4	<2	41000		8.01	
	8/19/2008		144	0.3	0.350	<4	<2		0.001	8.14	
	5/19/2009		120			<4				7.97	214
	8/18/2009		137	0.4	0.280	10			<0.001	7.88	236
	5/18/2010		148			<4				6.65	165
	8/24/2010		275	0.3	0.190	8			<0.001	**11.15**	
	5/31/2011		118			<4				**6.46**	240
	8/23/2011		150	<1	0.400	<4			<0.001	**6.41**	217

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	*QA/QC*	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
7/4	6/1/2001			0.020	0.337	10.7				**1.61**		3.9	3.9	
	8/1/2001		< 0.001	0.330	0.260	11.1	< 0.001	0.004	0.031	**2.45**	< 0.001	3.9	5.5	**0.168**
	5/7/2002			< 0.001	0.022	10.6				0.21			3.2	
	8/6/2002		0.002	0.008	0.138	17.6	< 0.001	0.013	0.087	**7.58**	< 0.001	7.2	6.0	**0.282**
	5/21/2003			< 0.01	0.023	11.7				0.10			3.3	
	8/6/2003		0.022	0.006	0.022	11.0	< 0.0001	< 0.005	< 0.0005	0.05	<0.00005	3.1	3.3	
	5/26/2004			<0.01	0.020	11.2				0.09			4.0	
	8/24/2004		< 0.002	0.008	0.022	11.7	< 0.0001	< 0.005	0.0017	0.16	0.0001	3.2	3.2	**0.198**
	8/3/2005			0.016	0.026	11.0				0.06			3.2	
	9/1/2005		< 0.001	< 0.01	0.017	11.0	< 0.0001	< 0.005	0.0043	< 0.05	< 0.0001	3.4	3.0	0.045
	5/16/2006			< 0.02	0.02	11.4				< 0.02			3.3	
	8/29/2006			< 0.02	0.02	11.0	< 0.0001	< 0.005	0.003	< 0.05	< 0.0001	3.3	3.2	
	5/15/2007			< 0.02	< 0.02	10.2				0.03			2.9	
	8/14/2007		< 0.001	< 0.01	0.2	12.0	< 0.0001	< 0.005	0.003	< 0.05	0.0001	3.6	3.5	**0.21**
	5/21/2008			< 0.01	< 0.02	11.1				< 0.05			3.0	
	8/19/2008		< 0.001	< 0.01	0.019	11.0	< 0.0001	< 0.005	0.003	< 0.05	< 0.0001	3.2	3.7	**0.2**
	5/19/2009			<0.02	<0.02	9.0				<0.05			2.5	
	8/18/2009		< 0.001	<0.02	0.02	11.0	< 0.0001	< 0.005	0.004	<0.05		3.2	3.0	**0.19**
	5/18/2010			<0.02	<0.02	10.7				0.03			3.0	
	8/24/2010		<0.001	<0.01	0.022	11.0	<0.0001	<0.005	<0.001	<0.01	<0.0001	3.4	3.2	**0.23**
	5/31/2011			<0.01	<0.01	11.4				<0.05			3.0	
	8/23/2011		<0.001	<0.01	0.018	11.0	<0.0001	<0.005	0.003	<0.1	<0.0001	3.0	3.2	**0.2**

Monitor	Date	*QA/QC*	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
7/4	6/1/2001		4.8			2.4		< 0.10	7.5	7.46	45	< 0.10	2.2	116
	8/1/2001		8.1	< 0.001	0.180		< 0.10	< 0.10				0.10	2.8	
	5/7/2002		4.3			6.1		< 0.10	5.1	7.13	50	0.04	3.0	115
	8/6/2002		5.9	**0.017**	0.045	8.9	< 0.05	< 0.03	3.2	6.80	53	0.04	2.5	111.7
	5/21/2003		4.3			< 0.5		< 0.2	< 0.5	7.01	49	0.06	4.4	127
	8/6/2003		4.7	<0.0005	<0.005	0.6	< 0.2	< 0.2	8.1	7.91	108	0.06	2.8	227
	5/26/2004		4.4			<0.5		<0.2	5.6	6.93	49	<0.03	3.6	110
	8/24/2004		4.5	0.001	< 0.005	1.0	< 0.2	0.40	5.6	6.98	50	0.08	3.9	125
	8/3/2005		4.8			< 1		2.30	8.0	7.53	40	< 0.05	3.3	95
	9/1/2005		4.8	< 0.0005	0.005	< 1	< 0.3	0.50	7.0	7.45	53	< 0.05	3.2	107
	5/16/2006		4.3			2.0			6	7.3	55	< 0.01	3.7	113
	8/29/2006		4.2	< 0.0005	< 0.005	1.0	< 0.01	0.2	6	7.3	53	0.1	3.8	107
	5/15/2007		4.3			2.0		< 0.1	6	7	49	< 0.05	4.8	111
	8/14/2007		4.8	< 0.0005	< 0.005	< 1	< 0.01	0.1	6	7.1	52	< 0.05	3.6	110
	5/21/2008		3.9			< 1		< 0.1	5	7.7	50	< 0.05	3.1	109
	8/19/2008		4.7	< 0.0005	< 0.005	< 1	< 0.01	< 0.1	7	7.6	51	< 0.05	3.3	110
	5/19/2009		3.4			<1		<0.1	4	6.6	42	<0.05	2.8	94
	8/18/2009		4	< 0.0005	< 0.005	<1	< 0.01	<0.1	5	7	53	<0.05	3.6	112
	5/18/2010		4			1.0		<0.1	5	7.3	49	<0.05	3.3	109
	8/24/2010		4.7	<0.0005	<0.005	1	<0.01	<0.1	5	7.1	51	<0.05	3.8	116
	5/31/2011		3.9			2		<0.1	9	7.14	46	<0.05	2.9	101
	8/23/2011		4.4	<0.0005	0.006	1	<0.01	<0.1	7	6.74	48	<0.05	3.3	115

Monitor	Date	*QA/QC*	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
7/4	6/1/2001		185			25	2				
	8/1/2001		218	0.46	0.07	36		< 1	< 0.001	7.2	50
	5/7/2002		**730**			195	< 1	13.47		7.0	70
	8/6/2002		146	0.07		< 20	< 1	4.55	< 0.001	7.1	100
	5/21/2003		180			14	< 0.5			7.4	90
	8/6/2003		132	0.18	< 0.05	9	< 0.5	3640	< 0.001	7.3	90
	5/26/2004		136			11				6.9	20
	8/24/2004		140	0.32	1.14	13			< 0.001	**6.2**	NA
	8/3/2005		410			22	< 3	2400		**3.3**	90
	9/1/2005		247	0.70	2.99	15			< 0.001	**4.4**	90
	5/16/2006		68			13	< 2	1100		7.0	
	8/29/2006		82	0.5	1.6	13	< 2		< 0.001	6.6	
	5/15/2007		72			5	< 2			6.9	
	8/14/2007		69	< 1	3.4	19	< 2		< 0.001	7.1	105
	5/21/2008		68			11	< 2	1500		7.5	
	8/19/2008		75	1.2	1.3	8	< 2		< 0.001	7.4	
	5/19/2009		60			16				7.5	100
	8/18/2009		72	1.6	2.2	34			< 0.001	7.6	152
	5/18/2010		74			13				7.2	85
	8/24/2010		74	1.6	0.79	19			<0.001	**11.0**	
	5/31/2011		66			18				**6.4**	118
	8/23/2011		100	0.6	0.50	11			<0.001	**6.3**	124

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	*QA/QC*	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
8/22	6/1/2001			0.007	0.015	16.2				0.10			3.50	
	8/1/2001			0.011	0.013	16.7				0.06			3.07	
	5/7/2002			< 0.001	0.015	15.8				0.07			3.16	
	8/6/2002			0.001	0.025	21.2				**0.44**			4.78	
	5/21/2003			< 0.01	0.014	17.0				0.01			3.32	
	8/6/2003			< 0.01	0.018	22.4				< 0.01			3.34	
	5/26/2004			<0.01	0.014	18.3				<0.01			3.71	
	8/24/2004			0.010	0.016	18.6				0.13			3.72	
	8/3/2005			< 0.01	0.013	18.0				< 0.05			3.50	
	9/1/2005			< 0.01	0.013	17.0				< 0.05			3.50	
	5/16/2006			< 0.02	< 0.02	17.0				< 0.05			3.19	
	8/29/2006			< 0.02	< 0.02	17.2				< 0.02			3.35	
	5/15/2007			< 0.02	< 0.02	16.7				< 0.02			3.18	
	8/14/2007			< 0.02	< 0.02	17.0				< 0.02			3.17	
	5/21/2008			< 0.02	< 0.02	16.2				< 0.02			2.99	
	8/19/2008			< 0.02	< 0.02	18.4				< 0.02			3.29	
	5/19/2009			<0.02	<0.02	16.9				<0.02			3.19	
	8/18/2009			< 0.02	< 0.02	17.1				<0.02			3.16	
	5/18/2010			< 0.02	< 0.03	17.0				< 0.06			3.25	
	8/24/2010			<0.02	<0.02	16.6				0.03			3.25	
	5/31/2011			<0.02	<0.02	18.7				<0.05			3.56	
	8/23/2011			<0.02	<0.02	17.4				<0.05			3.31	

Monitor	Date	*QA/QC*	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
8/22	6/1/2001		2.5			1.5		0.10	5.3	8.05	56	< 0.10	1.1	125
	8/1/2001		3.0					0.20		7.79	60	< 0.10	2.0	119
	5/7/2002		2.6			3.1		< 0.10	3.6	8.09	58	0.01	1.0	124
	8/6/2002		3.9			6.0		< 0.03	4.0	8.21	60	0.05	1.6	123
	5/21/2003		2.5			< 0.5		< 0.2	< 0.5	8.33	58	< 0.03	1.5	124
	8/6/2003		2.8			0.9		< 0.2	17.6	8.22	58	< 0.03	1.3	126
	5/26/2004		2.9			0.5		<0.2	4.9	8.24	56	<0.03	1.5	126
	8/24/2004		2.9			0.8		< 0.2	4.9	8.22	59	< 0.03	1.3	125
	8/3/2005		2.9			< 1		< 0.2	7.0	8.26	60	< 0.05	1.7	121
	9/1/2005		4.9			< 1		0.20	8.0	8.20	62	< 0.05	1.6	122
	5/16/2006		2.6			1.0		< 0.1	7	8.1	61	0.06	1.8	127
	8/29/2006		2.6			2.0		< 0.1	8	8.1	64	< 0.05	2	125
	5/15/2007		2.6			2.0		< 0.1	7	7.7	58	< 0.05	1.8	131
	8/14/2007		2.6			1.0		< 0.1	12	8	58	< 0.05	1.7	122
	5/21/2008		2.5			2.0		< 0.1	7	8.1	57	< 0.05	2	126
	8/19/2008		3.5			2.0		< 0.1	7	8	61	< 0.05	2.8	136
	5/19/2009		2.5			1.0		<0.1	7	7.5	59	<0.05	1.7	133
	8/18/2009		2.7			1.0		<0.1	7	7.6	59	<0.05	1.9	126
	5/18/2010		2.6			2.0		< 0.1	7	8.1	56	< 0.05	1.8	129
	8/24/2010		2.7			2.0		<0.1	7	8.2	56	<0.05	1.8	129
	5/31/2011		2.6			1.0		<0.1	7	8.01	54	<0.05	2	129
	8/23/2011		2.6			1.0		<0.1	7	7.74	57	<0.05	2.5	132

Monitor	Date	*QA/QC*	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
8/22	6/1/2001		99			< 20				8.2	50
	8/1/2001		214			< 20				8.2	60
	5/7/2002		179			< 20	1	1.08		**8.7**	80
	8/6/2002		92			114	< 1	0.91		8.4	100
	5/21/2003		90			< 5	0.7			8.1	90
	8/6/2003		94			6	< 0.5			8.2	100
	5/26/2004		88			5				7.2	130
	8/24/2004		112			6				NA	NA
	8/3/2005		268			20	< 2	640		**4.9**	90
	9/1/2005		146			8				**4.9**	110
	5/16/2006		75			< 4	< 2	770		8	
	8/29/2006		92			5	< 2			**9.34**	
	5/15/2007		82			< 4	< 2			**9.29**	
	8/14/2007		87			< 4	< 2	1200		**9.4**	117
	5/21/2008		88			8	< 2	1500		**9.4**	
	8/19/2008		92			< 4	< 2	810		**9.38**	
	5/19/2009		80			4				**9.15**	158
	8/18/2009		80			9				8.48	116
	5/18/2010		90			<4				8.11	123
	8/24/2010		84			15				**11.13**	
	5/31/2011		80			<4				6.96	152
	8/23/2011		92			12				7.25	145

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	*QA/QC*	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS - Units -		0.025 mg/L	5 mg/L	1 mg/L	mg/L	0.005 mg/L	0.05 mg/L	1 mg/L	0.3 mg/L	0.001 mg/L	mg/L	mg/L	0.05 mg/L
9/6	6/1/2001			0.047	0.287	15.8				**1.17**			6.05	
	8/1/2001			0.005	0.018	20.2				0.14			5.63	
	5/7/2002			< 0.001	0.033	53.9				0.20			13.70	
	8/6/2002			0.009	0.105	28.3				**7.88**			11.28	
	8/6/2003			< 0.01	0.042	89.7				< 0.01			22.10	
	5/26/2004			< 0.01	0.015	17.6				0.12			5.72	
	8/24/2004			0.010	0.032	40.8				0.05			12.90	
	8/3/2005			< 0.01	0.017	20.0				< 0.05			6.20	
	9/1/2005			< 0.01	0.023	28.0				< 0.05			8.90	
	5/16/2006			< 0.02	0.04	54.9				< 0.02			15.70	
	8/29/2006			< 0.02	0.04	88.0				< 0.02			21.00	
	5/15/2007			< 0.02	0.04	96.5				< 0.02			22.50	
	8/14/2007			< 0.02	< 0.02	20.2				0.05			5.68	
	5/21/2008			< 0.02	< 0.02	14.5				0.04			4.27	
	8/19/2008			< 0.02	0.02	26.0				< 0.02			7.51	
	5/19/2009			< 0.02	0.09	1.1				**0.84**			3.86	
	8/18/2009			< 0.02	0.09	16.9				0.03			4.63	
	5/18/2010			< 0.03	0.02	21.1				**0.87**			6.01	
	8/24/2010			0.11	0.8	14.9				0.19			4.24	
	5/31/2011			<0.02	<0.02	13.0				0.05			3.91	
	5/31/2011	*Duplicate*		<0.02	<0.02	16.9				0.07			4.54	
	8/23/2011			<0.02	<0.02	19.6				0.04			5.31	
	8/23/2011	*Duplicate*		<0.02	<0.02	20.1				0.04			5.51	

Monitor	Date	*QA/QC*	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS - Units -		200 mg/L	0.01 mg/L	5 mg/L	250 mg/L	mg/L	10 mg/L	500 mg/L	6.5 - 8.5 n/a	mg/L	mg/L	5.0 mg/L	mg/L
9/6	6/1/2001		9.6			4.5		0.40	4.2	7.01	70	< 0.10	**10.6**	166
	8/1/2001		8.3					0.70		6.65	68	< 0.10	**15.2**	164
	8/6/2002		12.1			21.0		< 0.03	4.0	7.31	94	0.09	**8.5**	256
	5/21/2003	*Frozen*												
	8/6/2003		8.7			15.5		0.20	7.9	7.55	301	< 0.03	**7.3**	618
	5/26/2004		9.5			18.8		<0.2	3.1	6.93	54	<0.03	**12.1**	181
	8/24/2004		13.2			13.5		0.20	6.6	7.09	148	< 0.03	**10.4**	333
	8/3/2005		11.0			9.0		0.40	4.0	7.44	103	< 0.05	**12.0**	219
	9/1/2005		14.0			9.0		0.30	9.0	7.51	170	< 0.05	**11.1**	323
	8/29/2006		11.6			31.0		0.1	9.0	7.9	313	0.12	**6.2**	607
	8/29/2006	*Duplicate*	11.3			29.0		0.1	9.0	8.1	318	< 0.05	**6.4**	607
	5/15/2007		8.7			14.0		< 0.1	10.0	8	352	< 0.05	**6.4**	671
	8/14/2007		15			20.0		0.1	4.0	7.4	84	< 0.05	**11.9**	219
	5/21/2008		10.6			20.0		0.2	3.0	7.6	51	< 0.05	**9.2**	171
	8/19/2008		18.4			38.0		0.1	6.0	7.8	84	< 0.05	**5.9**	300
	5/19/2009		14.5			12.0		<0.1	<1	6.7	59	<0.05	**9.3**	163
	8/18/2009		13			16.0		0.2	<1	6.7	70	<0.05	**10.7**	190
	5/18/2010		13.7			21.0		0.3	<1	7.2	78	<0.05	**6.4**	227
	8/24/2010		18.1			18.0		0.2	<1	6.9	69	<0.05	**7.9**	182
	5/31/2011		11.8			11.0		0.2	<1	6.9	59	0.08	**8.2**	160
	5/31/2011	*Duplicate*	11.5			9.0		0.1	<1	6.89	64	0.06	**9.1**	165
	8/23/2011		13.6			16.0		0.2	<1	6.89	81	<0.05	**6.2**	215
	8/23/2011	*Duplicate*	14			16.0		0.2	<1	6.91	86	<0.05	**6.1**	221

Monitor	Date	*QA/QC*	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS - Units -		500 mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	6.5 - 8.5 mg/L	mg/L
9/6	6/1/2001		181			56				**6.4**	70
	8/1/2001		282			61				6.7	80
	8/6/2002		365			< 20	1	0.31		**6.4**	210
	5/21/2003	*Frozen*									
	8/6/2003		368			21	< 0.5			7.2	440
	5/26/2004		266			33				6.2	40
	8/24/2004		250			32				NA	NA
	8/3/2005		**640**			56	< 3	45		**3.6**	210
	9/1/2005		**512**			33				6.8	280
	8/29/2006		396			28	< 2			7.31	
	8/29/2006	*Duplicate*	372			27	< 2			7.31	
	5/15/2007		440			18	< 2			7.39	
	8/14/2007		131			43	< 2	140		7.11	170
	5/21/2008		115			34	< 2	43		7.34	171
	8/19/2008		200			19	< 2	46		7.8	
	5/19/2009		100			38				7.3	196
	8/18/2009		126			58				7.45	168
	5/18/2010		150			32				7.41	210
	8/24/2010		118			48				**11.25**	
	5/31/2011		96			41				6.66	166
	5/31/2011	*Duplicate*	100			60				6.66	166
	8/23/2011		102			26				6.66	200
	8/23/2011	*Duplicate*	166			24				6.66	200

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
10/17	6/1/2001			0.008	0.029	45.1				**0.31**			12.1	
	8/1/2001			0.001	0.025	54.1				0.19			11.6	
	5/7/2002			< 0.001	0.025	54.6				0.11			12.4	
	5/26/2004			<0.01	0.025	47.3				< 0.01			11.5	
	8/24/2004			0.010	0.029	56.8				0.02			12.5	
	8/3/2005			0.011	0.025	51.0				< 0.05			12.0	
	9/1/2005			< 0.01	0.023	48.0				< 0.05			12.0	
	5/16/2006			< 0.02	0.02	45.4				< 0.02			10.6	
	8/29/2006			< 0.02	0.02	46.5				< 0.05			10.8	
	8/14/2007			< 0.02	0.02	47.0				< 0.05			10.6	
	5/21/2008			< 0.02	0.02	45.5				< 0.05			10.2	
	8/19/2008			< 0.02	0.02	50.0				< 0.05			11.2	
	5/19/2009			<0.02	0.02	43.6				<0.02			10.1	
	8/18/2009			<0.02	0.02	49.8				<0.02			11.1	
	5/18/2010			<0.03	0.02	46.0				<0.03			10.6	
	8/24/2010			<0.02	0.02	46.4				<0.02			11.0	
	5/31/2011			<0.02	0.02	49.7				<0.05			10.6	
	8/23/2011			<0.02	0.02	48.5				<0.03			10.8	

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
10/17	6/1/2001		4.4			11.4		6.20	4.2	8.16	159	< 0.10	1.5	354
	8/1/2001		4.5					3.40		7.81	64	< 0.10	1.6	357
	5/7/2002		4.3			7.2		3.80	2.6	8.24	161	0.01	1.0	365
	5/26/2004		3.6			14.1		2.40	3.9	8.20	138	< 0.03	1.3	315
	8/24/2004		4.7			16.3		1.90	3.9	8.05	163	< 0.03	1.4	330
	8/3/2005		4.7			12.9		1.30	5.0	8.22	163	< 0.05	1.3	330
	9/1/2005		6.7			12.7		1.10	10.6	8.07	174	< 0.05	1.3	341
	5/16/2006		4.3			15.0		1.20	4.0	8.1	164	< 0.05	1.3	345
	8/29/2006		4.5			16.0		1.00	4.0	8.1	158	< 0.05	1.2	326
	8/14/2007		4.3			39.0		0.50	5.0	8.1	125	< 0.05	1.2	330
	5/21/2008		4.2			20.0		0.70	4.0	8.2	145	< 0.05	1.6	338
	8/19/2008		4.4			18.0		0.50	4.0	8.3	156	< 0.05	1.3	355
	5/19/2009		4.1			14.0		0.50	3.0	7.6	142	<0.05	1.1	326
	8/18/2009		4.4			18.0		0.50	3.0	7.7	162	<0.05	1.5	356
	5/18/2010		4.3			15.0		0.40	4.0	8.1	145	<0.05	1.4	337
	8/24/2010		4.3			17		0.3	3	8	152	<0.05	1.5	355
	5/31/2011		4			15		0.3	3	8.16	144	<0.05	1.5	329
	8/23/2011		4.1			19		0.2	4	8.04	153	<0.05	2.5	345

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
10/17	6/1/2001		220			31	< 1			7.5	150
	8/1/2001		358			33				7.3	180
	5/7/2002		236			< 20	< 1	0.36		8.0	240
	5/26/2004					5				NA	NA
	8/24/2004		228			5				NA	NA
	8/3/2005		240			16	< 2	410		6.8	320
	9/1/2005		284			9				6.2	300
	5/16/2006		228			< 4	< 2	2900		8.1	
	8/29/2006		207			< 4	< 2			8.35	
	8/14/2007		228			< 4	< 2	2900		8.26	352
	5/21/2008		215			17	< 2	190		8.28	
	8/19/2008		228			< 4	< 2	360		8.78	
	5/19/2009		215			6				8.33	414
	8/18/2009		228			9				7.84	358
	5/18/2010		216			5				7.92	318
	8/24/2010		226			5				**11.6**	
	5/31/2011		208			5				7.86	335
	8/23/2011		212			20				**6.45**	363

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	*QA/QC*	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
11/4	6/1/2001			0.012	0.023	10.7				0.10			3.5	
	8/1/2001			< 0.001	0.035	11.7				**0.43**			3.6	
	5/7/2002			< 0.001	0.025	11.1				0.13			3.1	
	8/6/2002			< 0.001	0.049	14.6				**1.02**			4.6	
	5/26/2004			<0.01	0.022	9.3				0.04			2.9	
	8/24/2004			0.01	0.023	11.9				0.03			3.2	
	8/3/2005			< 0.01	0.025	12.0				< 0.05			3.5	
	9/1/2005			< 0.01	0.026	12.0				< 0.05			3.7	
	8/14/2007			< 0.02	< 0.02	8.2				< 0.05			2.3	
	5/21/2008			< 0.02	< 0.02	7.7				< 0.05			2.2	
	8/19/2008			< 0.02	< 0.02	7.7				< 0.05			2.3	
	5/19/2009			0.09	1.010	8.0				0.52			2.4	
	8/18/2009			< 0.02	< 0.02	8.3				< 0.05			2.4	
	5/18/2010			<0.02	0.02	8.7				0.06			2.5	
	8/24/2010			0.18	0.850	7.6				0.03			2.3	
	5/31/2011			<0.02	<0.02	8.3				<0.05			2.5	
	8/23/2011			<0.02	<0.02	9.0				<0.02			2.5	

Monitor	Date	*QA/QC*	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
11/4	6/1/2001		5.9			1.2		0.10	3.5	7.89	46.0	< 0.10	4.9	78
	8/1/2001		6.5					0.30		6.99	30.0	< 0.10	2.7	115
	5/7/2002		5.4			7.3		< 0.10	3.3	6.94	50.0	0.04	3.0	109
	8/6/2002		7.4			11.0		< 0.03	4.0	7.30	46.0	0.03	2.4	98.2
	5/26/2004		6.0			<0.5		<0.2	4.3	6.69	41.0	<0.03	**6.3**	97
	8/24/2004		5.9			0.9		0.30	4.7	6.66	42.0	0.09	3.9	101
	8/3/2005		9.8			< 1		1.30	7.0	7.19	51.4	< 0.05	**5.3**	104
	9/1/2005		9.2			< 1		0.30	10.4	7.10	52.8	0.05	**5.9**	103
	8/14/2007		5.3			< 1		< 0.1	5	7.20	43	0.08	**6.1**	90
	5/21/2008		5.3			< 1		< 0.1	5	7.20	36	< 0.1	4.4	82
	8/19/2008		5.8			< 1		< 0.1	4	7.30	39	< 0.1	**6.2**	84
	5/19/2009		9.1			<1		<0.1	4	6.60	38	0.06	3.5	93
	8/18/2009		5.9			<1		0.1	4	6.60	44	0.07	4.2	91
	5/18/2010		6			<1		<0.1	4	7.00	43	0.12	3.7	96
	8/24/2010		11.3			<1		0.1	4	6.8	43	<0.05	4.2	92
	5/31/2011		5.6			<1		<0.1	3	6.99	41	0.1	3.9	92
	8/23/2011		6.1			<1		<0.1	4	6.73	42	<0.05	3.9	92

Monitor	Date	*QA/QC*	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
11/4	6/1/2001		136			36	7.9				
	8/1/2001		219			33					
	5/7/2002		184			84	3.0	3.74		7.0	60
	8/6/2002		152			28	< 1	0.45		6.7	90
	5/26/2004		354			18				6.9	120
	8/24/2004		176			13				NA	NA
	8/3/2005		175			< 4	< 2	7700		**5.4**	70
	9/1/2005		**550**			14				**4.8**	90
	8/14/2007		60			37	<2	7200		6.94	89
	5/21/2008		56			< 4	< 2	27000		7.54	
	8/19/2008		60			15	< 2	14000		7.68	
	5/19/2009		60			28				6.83	100
	8/18/2009		57			53				6.63	88
	5/18/2010		64			83				7.52	91
	8/24/2010		58			26				**11.15**	
	5/31/2011		54			9				**6.26**	100
	8/23/2011		74			11				6.51	93

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
12/4	6/1/2001			0.008	0.011	5.0				0.20			1.827	
	8/1/2001			< 0.001	0.009	4.5				**0.62**			1.285	
	5/7/2002			< 0.001	0.010	4.4				**0.35**			1.382	
	8/6/2002			< 0.001	0.133	4.8				**13.05**			2.542	
	5/21/2003			< 0.01	0.016	3.1				0.20			1.330	
	8/6/2003			< 0.01	0.009	2.7				0.11			1.090	
	5/26/2004			<0.01	0.010	2.7				**0.52**			1.010	
	8/24/2004			< 0.01	0.007	6.0				0.11			1.980	
	8/3/2005			< 0.01	0.005	6.3				0.10			1.200	
	9/1/2005			< 0.01	0.006	3.1				< 0.05				
	5/16/2006			< 0.02	< 0.02	2.4				0.10			0.88	
	8/29/2006			< 0.02	< 0.02	2.2				0.06			0.75	
	5/15/2007			< 0.02	< 0.02	3.5				0.03			1.14	
	8/14/2007			< 0.02	< 0.02	2.3				0.09			0.82	
	5/21/2008			< 0.02	< 0.02	2.4				0.06			0.86	
	8/19/2008			< 0.02	< 0.02	3.0				0.06			1.06	
	5/19/2009			0.1	0.760	2.5				**1.45**			1.02	
	8/18/2009			< 0.02	< 0.02	2.4				0.05			0.94	
	5/18/2010			< 0.02	< 0.02	2,71				**0.14**			0.94	
	8/24/2010			0.2	0.42	2.0				0.2			0.78	
	5/31/2011			<0.02	<0.02	2.8				0.08			1	
	8/23/2011			<0.02	<0.02	3.0				0.08			0.97	

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
12/4	6/1/2001		8.0			1.2		0.10	4.2	7.70	34.0	< 0.10	4.2	106
	8/1/2001		8.0					0.10		6.60	10.0	< 0.10	4.1	72
	5/7/2002		3.7			5.9		< 0.10	4.5	**6.33**	21.0	0.06	3.0	51
	8/6/2002		5.8			9.0		< 0.03	4.0	6.79	15.0	0.15	4.3	41.6
	5/21/2003		2.5			< 0.5		< 0.2	< 0.5	6.61	12.0	< 0.03	4.7	81
	8/6/2003		3.2			< 0.5		< 0.2	4.1	**6.09**	15.0	< 0.03	4.1	42
	5/26/2004		2.7			< 0.5		< 0.2	4.5	**6.12**	< 10	< 0.03	**13.2**	42
	8/24/2004		6.3			1.0		0.40	4.5	6.61	16.0	< 0.03	**6.7**	42
	8/3/2005		6.1			< 1		1.40	6.0	6.57	12.6	< 0.05	**7.7**	36
	9/1/2005		4.1			< 1		0.20	11.3	6.67	14.3	< 0.05	**7.2**	630
	5/16/2006		2			< 1		< 0.1	5	6.60	16	< 0.05	**9.9**	40
	8/29/2006		2.4			4		< 0.1	5	**6.30**	11	< 0.05	**6**	32
	5/15/2007		2.4			1		0.4	6	**6.40**	14	< 0.05	4.1	45
	8/14/2007		2.4			< 1		0.2	6	6.50	9	0.06	**6.8**	37
	5/21/2008		2.1			4		< 0.1	5	6.70	12	0.1	**8**	34
	8/19/2008		2.8			< 1		0.1	6	6.80	12	0.05	**13.6**	43
	5/19/2009		6			2		<0.1	4	**6.10**	11	0.06	**7.1**	38
	8/18/2009		2.8			< 1		0.1	5	**6.30**	14	0.06	**5.3**	37
	5/18/2010		2.4			<1		<0.1	4	**6.30**	16	0.05	4.8	36
	8/24/2010		9.2			17		0.1	4	**6.20**	12	0.09	**5.5**	41
	5/31/2011		2.3			<1		<0.1	3	**6.14**	11	0.07	4.6	36
	8/23/2011		4.1			3		0.1	3	**6.34**	14	0.19	**5.4**	53

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
12/4	6/1/2001		82			47	8.2				
	8/1/2001		187			28					
	5/7/2002		144			84	< 1	5.77		**6.1**	20
	8/6/2002		116			81	1.0	2.32		**5.8**	30
	5/21/2003		38			13	< 0.5			**6.3**	30
	8/6/2003		76			12	< 0.5			**6.3**	30
	5/26/2004		**828**			34				6.7	40
	8/24/2004		88			20				NA	NA
	8/3/2005		480			12	< 3	5200		**5.0**	30
	9/1/2005		**630**			30				**2.6**	30
	5/16/2006		23			29	< 2	3000		6.80	
	8/29/2006		26			17	< 2			**5.58**	
	5/15/2007		29			7	< 2			**6.38**	
	8/14/2007		23			21	< 2	3100		7.51	30
	5/21/2008		30			17	< 2	33000		**6.20**	
	8/19/2008		30			74	< 2	3000		6.62	
	5/19/2009		25			66				7.13	34
	8/18/2009		25			82				7.17	32
	5/18/2010		26			72				7.03	32
	8/24/2010		26			98				**11.04**	
	5/31/2011		20			40				6.36	38
	8/23/2011		42			36				**6.92**	304

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
13/6	6/1/2001			0.009	0.085	3.5				**0.40**			1.103	
	8/1/2001			< 0.001	0.008	2.2				0.17			0.907	
	5/7/2002			< 0.001	0.006	3.0				0.13			0.964	
	8/6/2002			0.002	0.022	2.7				**0.58**			1.026	
	5/21/2003			< 0.01	0.026	3.1				0.16			1.140	
	8/6/2003			<0.01	0.007	3.1				0.04			1.090	
	5/26/2004			<0.01	0.013	3.9				0.22			1.240	
	8/24/2004			< 0.01	0.008	3.1				0.23			1.490	
	8/3/2005			< 0.01	0.007	2.7				< 0.05			0.840	
	9/1/2005			< 0.01	0.008	3.3				< 0.05			1.000	
	5/16/2006			0.03	< 0.02	2.5				0.02			0.83	
	8/29/2006			< 0.02	< 0.02	3.1				< 0.05			1.06	
	5/15/2007			< 0.02	< 0.02	2.3				< 0.05			0.82	
	8/14/2007			< 0.02	<0.02	2.3				< 0.05			0.84	
	5/21/2008			< 0.02	< 0.02	2.3				0.08			0.084	
	8/19/2008			< 0.02	< 0.02	2.4				< 0.05			0.88	
	5/19/2009			<0.02	<0.02	2.8				0.14			1.11	
	8/18/2009			<0.02	<0.02	2.3				0.12			0.9	
	5/18/2010			<0.02	<0.02	3.0				0.12			1.2	
	8/24/2010	Limited Sample								0.05				
	5/31/2011			<0.02	<0.02	4.2				0.05			1.32	
	8/23/2011			<0.02	<0.02	2.9				**0.98**			0.98	

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
13/6	6/1/2001		1.9			0.3		< 0.10	2.7	6.58	9.0	< 0.10	**13.7**	34
	8/1/2001		1.9					0.20		**6.48**	23.0	< 0.10	**9.8**	30
	5/7/2002		1.7			2.2		0.30	4.6	**3.12**	8.0	0.02	**9.0**	31
	8/6/2002		2.7			0.5		0.30	2.8	**6.16**	11.0	0.02	4.1	31.2
	5/21/2003		1.9			< 0.5		< 0.2	5.1	**6.27**	8.0	0.03	**12.5**	36
	8/6/2003		2.5			< 0.5		< 0.2	4.1	**5.97**	15.0	< 0.03	3.0	42
	5/26/2004		1.6			< 0.5		< 0.2	4.1	**5.96**	10.0	< 0.03	**13.6**	34
	8/24/2004		2.5			< 0.5		< 0.2	6.1	7.39	8.0	< 0.03	**10.1**	55
	8/3/2005		2.0			< 1		0.06	4.0	7.03	10.6	< 0.05	4.8	31
	9/1/2005		3.9			< 1		0.30	10.9	6.94	12.9	< 0.05	3.6	34
	5/16/2006		1.7			1		< 0.1	5.0	6.60	10.0	0.06	**5.7**	32
	8/29/2006		2.2			< 1		< 0.1	5.0	6.80	14.0	< 0.05	3.6	37
	5/15/2007		1.6			< 1		< 0.1	4.0	**6.20**	13.0	< 0.05	2.9	33
	8/14/2007		1.9			2		< 0.1	5.0	6.60	10.0	< 0.05	4.8	32
	5/21/2008		1.7			1		< 0.1	6.0	6.70	6.0	< 0.05	**7.1**	29
	8/19/2008		1.8			< 1		< 0.1	5.0	7.10	10.0	< 0.05	3.8	31
	5/19/2009		1.6			1		<0.1	<1	6.20	6.0	<0.05	**14.9**	33
	8/18/2009		2.2			< 1		<0.1	4.0	6.00	6.0	<0.05	**12.6**	31
	5/18/2010		2			<1		<0.1	7.0	6.50	7.0	<0.05	**7.8**	39
	8/24/2010	Limited Sample				2		<0.1	4	6.8	10	<0.05	**6.7**	33
	5/31/2011		1.8			2		<0.1	11	6.54	13	0.07	**6**	44
	8/23/2011		1.7			<1		<0.1	4	6.56	12	<0.05	3.1	36

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
13/6	6/1/2001		37			53	2.0				
	8/1/2001		162			25					
	5/7/2002		< 40			97	1.0	6.02		**5.8**	10
	8/6/2002		< 40			< 20	< 1	1.68		**6.1**	20
	5/21/2003		50			32	< 0.5			6.5	20
	8/6/2003		44			9	< 0.5			**6.0**	40
	5/26/2004		60			37				**5.3**	10
	8/24/2004		66			33				**5.7**	NA
	8/3/2005		50			17	< 3	1500		**3.6**	30
	9/1/2005		78			4				**6.4**	30
	5/16/2006		20			< 4	< 2	1700		**6.40**	
	8/29/2006					< 4	< 2			**5.83**	
	5/15/2007		17			< 4	< 2			**5.97**	
	8/14/2007		22			6	< 2	1300		**6.14**	31
	5/21/2008		21			31	< 2	1800		**6.13**	
	8/19/2008		20			< 4	< 2	1300		**6.26**	
	5/19/2009		20			55				6.82	24
	8/18/2009		20			41				7.33	34
	5/18/2010		26			22				6.56	39
	8/24/2010	Limited Sample	20			22				**6.1**	
	5/31/2011		28			26				**6.03**	31
	8/23/2011		30			8				**5.85**	34

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
13/14	6/1/2001			0.015	0.108	5.4				0.23			1.6	
	8/1/2001			< 0.001	0.028	5.9				0.04			1.4	
	5/7/2002			< 0.001	0.019	3.7				0.08			1.0	
	8/6/2002			0.001	0.039	4.2				**1.08**			1.6	
	5/21/2003			< 0.01	0.025	4.3				0.13			2.4	
	8/6/2003			< 0.01	0.023	3.9				0.09			1.1	
	5/26/2004			<0.01	0.017	3.2				0.16			1.1	
	8/24/2004			< 0.01	0.016	3.5				0.13			1.8	
	8/3/2005			< 0.01	0.013	2.9				0.08			1.0	
	9/1/2005			< 0.01	0.013	3.1				< 0.05			1.1	
	5/16/2006			< 0.02	< 0.02	3.1				0.04			1.0	
	8/29/2006			< 0.02	< 0.02	2.8				0.04			0.9	
	5/15/2007			0.08	0.550	1.9				**0.39**			0.7	
	8/14/2007			< 0.02	< 0.02	2.6				0.05			0.9	
	5/21/2008			< 0.02	< 0.02	2.5				0.04			0.8	
	8/19/2008			< 0.02	< 0.02	3.0				0.04			1.0	
	5/19/2009			<0.02	<0.02	3.1				0.07			1.1	
	8/18/2009			<0.02	<0.02	3.4				0.04			1.1	
	5/18/2010			<0.02	<0.02	2.8				0.06			1.0	
	8/24/2010			<0.02	<0.02	3.0				<0.02			1.1	
	5/31/2011			<0.02	<0.02	3.3				0.11			1.2	
	8/23/2011			<0.02	<0.02	3.1				0.04			1.1	

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
13/14	6/1/2001		2.5			1.1		< 0.10	2.9	6.94	21.0	< 0.10	4.3	54
	8/1/2001		1.9					< 0.10		7.07	28.0	< 0.10	4.9	62
	5/7/2002		1.4			1.9		0.10	3.4	**6.32**	13.0	0.01	**5.0**	40
	8/6/2002		2.4			< 0.5		< 0.03	3.2	**5.80**	10.0	0.02	**6.0**	31.9
	5/21/2003		1.9			36.0		< 0.2	4.5	**6.27**	8.0	0.03	**7.2**	36
	8/6/2003		1.5			< 0.5		< 0.2	8.4	**6.41**	11.0	< 0.03	**6.6**	57
	5/26/2004		1.9			< 0.5		0.20	4.5	**5.99**	11.0	0.09	**6.7**	35
	8/24/2004		1.9			< 0.5		< 0.2	4.2	**6.09**	9.0	< 0.03	**5.6**	33
	8/3/2005		1.7			2.0		< 0.2	< 1	6.84	11.3	< 0.05	**6.2**	38
	9/1/2005		1.9			< 1		< 0.2	9.0	6.52	13.6	< 0.05	**5.1**	36
	5/16/2006		1.8			1		< 0.1		6.60	12.0	< 0.05	**6.0**	37
	8/29/2006		1.7			6		< 0.1	4	6.60	11.0	0.08	**6.0**	32
	5/15/2007		7.2			7		< 0.1	5	**6.20**	8.0	< 0.05	**7.0**	33
	8/14/2007		1.9			2		< 0.1	6	**6.40**	11.0	< 0.05	**8.5**	37
	5/21/2008		1.6			< 0.5		< 0.1	5	**6.40**	7.0	< 0.05	**8.4**	31
	8/19/2008		2.2			2		< 0.1	7	6.90	11.0	< 0.05	**8.8**	40
	5/19/2009		1.9			<1		<0.1		**6.10**	12.0	<0.05	**8.3**	39
	8/18/2009		2			1		<0.1	5	**6.20**	13.0	<0.05	**9.3**	41
	5/18/2010		1.6			1		<0.1	6	6.50	8.0	<0.05	**6.7**	31
	8/24/2010		2			2		<0.02	6	**6.30**	11.0	<0.02	**6.5**	40
	5/31/2011		1.9			<1		<0.1	5	6.61	8.0	<0.05	**6.6**	36
	8/23/2011		1.8			2		<0.1	8	6.55	11.0	<0.05	**6.0**	38

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
13/14	6/1/2001		20			25				**6.1**	20
	8/1/2001		167			< 20				6.5	20
	5/7/2002		54			< 20	< 1	0.91		**5.9**	10
	8/6/2002		46			< 20	< 1	2.15		**6.1**	20
	5/21/2003		74			20	< 0.5			**6.7**	20
	8/6/2003		60			18	< 0.5			**5.8**	30
	5/26/2004		102			20				**5.4**	10
	8/24/2004		56			21				**5.4**	NA
	8/3/2005		72			40	< 3	270		**4.2**	70
	9/1/2005		104			27				**5.7**	30
	5/16/2006		23			24	< 2	64		6.50	
	8/29/2006		37			19	< 2			**5.72**	
	5/15/2007		36			29	< 2			**6.38**	
	8/14/2007		33			30	< 2			**6.27**	31
	5/21/2008		22			32	< 2	1300		**6.25**	
	8/19/2008		25			24	< 2	340		**5.59**	
	5/19/2009		26			34				6.82	38
	8/18/2009		27			37				7.20	52
	5/18/2010		20			13				6.58	40
	8/24/2010		26			27				**6.30**	
	5/31/2011		24			21				6.17	54
	8/23/2011		26			15				5.46	37

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
14/6	6/1/2001			0.033	0.192	5.2				0.26			1.2	
	8/1/2001			0.001	0.012	6.1				0.02			1.3	
	5/7/2002			< 0.001	0.014	6.1				0.05			1.5	
	8/6/2002			0.003	0.026	7.0				**0.58**			1.8	
	5/21/2003			< 0.01	0.013	6.0				0.01			1.5	
	8/6/2003			< 0.01	0.012	5.4				0.03			1.3	
	5/26/2004			<0.01	0.011	5.4				0.01			1.3	
	8/24/2004			< 0.01	0.016	5.7				0.13			1.4	
	8/3/2005			0.010	0.014	4.9				< 0.05			1.1	
	9/1/2005			0.039	0.008	9.8				< 0.05			2.6	
	5/16/2006			< 0.02	< 0.02	5.4				< 0.02			1.4	
	8/29/2006			< 0.02	< 0.02	5.8				< 0.05			1.6	
	5/15/2007			< 0.02	< 0.02	5.5				< 0.05			1.2	
	8/14/2007			< 0.02	< 0.02	5.4				< 0.05			1.4	
	5/21/2008			< 0.02	< 0.02	5.8				< 0.05			1.6	
	8/19/2008			< 0.02	< 0.02	5.5				< 0.05			1.3	
	5/19/2009			<0.02	<0.02	5.1				<0.02			1.3	
	8/18/2009			<0.02	<0.02	5.3				<0.02			1.2	
	5/18/2010			<0.02	<0.02	5.5				<0.02			1.3	
	8/24/2010			<0.02	<0.02	4.9				<0.02			1.1	
	5/31/2011			<0.02	<0.02	6.3				<0.05			1.4	
	8/23/2011			<0.02	<0.02	5.3				<0.03			1.2	

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
14/6	6/1/2001		4.5			0.5		< 0.10	5.5	6.92	19	< 0.10	3.2	60
	8/1/2001		2.7					0.30		6.72	19	< 0.10	3.8	52
	5/7/2002		3.0			4.5		0.30	5.3	7.05	21	0.02	3.0	59
	8/6/2002		3.8			0.5		0.30	4.0	**6.32**	20	0.03	2.7	54
	5/21/2003		3.0			< 0.5		< 0.2	5.1	6.70	22	< 0.03	3.5	59
	8/6/2003		3.1			< 0.5		< 0.2	4.2	**6.29**	20	< 0.03	2.8	57
	5/26/2004		2.9			<0.5		<0.2	4.9	**6.48**	19	<0.03	3.1	54
	8/24/2004		2.8			< 0.5		< 0.2	4.6	6.73	19	3.80	3.8	54
	8/3/2005		2.8			2.0		0.70	< 1	7.02	17.9	< 0.05	3.9	54
	9/1/2005		6.5			< 1		< 0.2	9.0	6.92	21.6	< 0.05	3.0	50
	5/16/2006		2.7			1		< 0.1	6.0	7.00	27	0.07	4.5	58
	8/29/2006		3			< 1		< 0.1	10.0	7.20	27	0.06	3.1	58
	5/15/2007		2.5			< 1		< 0.1	4.0	6.50	26	< 0.05	2.5	55
	8/14/2007		2.5			2		< 0.1	8.0	6.70	24	< 0.05	4.0	58
	5/21/2008		2.6			2		< 0.1	7.0	7.30	26	< 0.05	2.5	59
	8/19/2008		2.5			< 1		0.1	5.0	7.40	22	< 0.05	2.8	54
	5/19/2009		2.4			<1		0.1	4.0	6.30	22	<0.05	2.3	54
	8/18/2009		2.3			<1		0.1	6.0	6.20	17	<0.05	2.8	52
	5/18/2010		2.5			<1		< 0.1	4.0	6.80	20	<0.05	2.6	52
	8/24/2010		2.5			1		0.1	6.0	6.70	17	<0.05	3.0	52
	5/31/2011		2.5			<1		<0.1	5.0	6.71	20	<0.05	2.7	54
	8/23/2011		2.4			<1		<0.1	5.0	6.61	24	<0.05	3.1	63

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
14/6	6/1/2001		28			28				**6.0**	20
	8/1/2001		171			< 20				6.8	20
	5/7/2002		65			84	1.0	3.85		**6.2**	40
	8/6/2002		< 40			< 20	< 1	1.69		**6.1**	50
	5/21/2003		48			10	< 0.5			7.3	40
	8/6/2003		60			9	< 0.5			6.8	50
	5/26/2004		56			9				**5.9**	50
	8/24/2004		54			12				**5.9**	NA
	8/3/2005		67			< 4	< 3	410		**5.7**	50
	9/1/2005		170			8				7.1	40
	5/16/2006		41			< 4	< 2	5100		6.5	
	8/29/2006		42			< 4	< 2			**6.09**	
	5/15/2007		37			< 4	< 2			**6.21**	
	8/14/2007		40			< 4	< 2	13000		6.88	46
	5/21/2008		38			< 4	< 2	4800		6.9	
	8/19/2008		37			< 4	< 2	9200		**6.12**	
	5/19/2009		35			22				7.09	52
	8/18/2009		34			18				6.9	72
	5/18/2010		34			< 20				7.26	55
	8/24/2010		32			9				**10.85**	
	5/31/2011		32			6				**6.3**	76
	8/23/2011		38			<4				**6.11**	56

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
14/21	6/1/2001			0.042	0.22	18.8				0.21			4.8	
	8/1/2001			0.004	0.02	21.6				0.07			4.6	
	5/7/2002			< 0.001	0.02	19.9				0.08			3.9	
	8/6/2002			0.010	0.05	22.5				**0.90**			5.2	
	5/21/2003			0.010	0.04	18.7				0.04			3.8	
	8/6/2003			< 0.01	0.03	15.2				0.03			3.0	
	5/26/2004			<0.01	0.03	14.7				<0.01			3.2	
	8/24/2004			< 0.01	0.06	19.1				**0.30**			4.3	
	8/3/2005			0.012	0.03	13.0				< 0.05			2.8	
	9/1/2005			< 0.01	0.03	12.0				< 0.05			2.6	
	5/16/2006			0.02	0.03	16.1				< 0.02			3.4	
	8/29/2006			0.02	0.03	12.7				< 0.05			2.6	
	5/15/2007			< 0.02	0.03	12.7				< 0.05			2.6	
	8/14/2007			< 0.02	0.03	14.8				< 0.05			3.1	
	5/21/2008			< 0.02	0.03	12.9				< 0.05			2.6	
	8/19/2008			< 0.02	0.03	13.5				< 0.05			2.8	
	5/19/2009			<0.02	0.02	11.9				<0.02			2.5	
	8/18/2009			<0.02	0.02	12.7				<0.02			2.6	
	5/18/2010			<0.02	0.03	13.5				<0.02			2.8	
	8/24/2010			<0.02	0.02	11.8				<0.02			2.5	
	5/31/2011			<0.02	0.03	14.6				<0.02			2.8	
	8/23/2011			<0.02	0.02	11.8				<0.02			2.4	

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
14/21	6/1/2001		6.9			0.8		0.10	8.4	7.78	74	< 0.10	1.5	171
	8/1/2001		4.9					0.20		7.72	73	< 0.10	0.5	156
	5/7/2002		4.8			6.5		< 0.10	7.1	7.40	76	0.01	1.0	177
	8/6/2002		6.3			0.6		0.34	6.7	7.53	78	0.02	0.7	169
	5/21/2003		5.1			< 0.5		< 0.2	8.2	7.44	68	< 0.03	1.4	148
	8/6/2003		4.7			< 0.5		< 0.2	6.8	7.03	46	< 0.03	1.7	44
	5/26/2004		4.6			< 0.5		< 0.2	7.1	7.28	51	<0.03	1.7	122
	8/24/2004		5.0			< 0.5		< 0.2	7.8	7.47	64	0.03	1.5	141
	8/3/2005		4.7			2.0		1.30	9.0	7.63	46	< 0.05	1.7	105
	9/1/2005		4.7			< 1		< 0.2	6.0	7.53	46	< 0.05	1.6	96
	5/16/2006		4.6			1		< 0.1	10	7.6	64	< 0.05	1.5	133
	8/29/2006		4.1			1		< 0.1	10	7.5	51	0.06	2.1	104
	5/15/2007		4.2			1		< 0.1	8	6.9	49	< 0.05	1.8	111
	8/14/2007		4.1			1		< 0.1	10	7.3	55	< 0.05	1.6	123
	5/21/2008		3.9			2		< 0.1	11	7.7	49	< 0.05	2.0	111
	8/19/2008		4.1			1		< 0.1	8	7.7	50	< 0.05	1.4	111
	5/19/2009		3.9			1		<0.1	8	6.5	46	<0.05	1.4	105
	8/18/2009		3.9			1		0.1	7	6.7	50	<0.05	1.6	109
	5/18/2010		4.2			1		<0.1	9	7.6	50	<0.05	1.6	114
	8/24/2010		3.9			<1		<0.1	7	7.2	44	<0.05	1.9	103
	5/31/2011		3.8			<1		<0.1	7	7.33	46	<0.05	1.6	106
	8/23/2011		3.6			<1		<0.1	8	7.06	47	<0.05	1.8	103

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
14/21	6/1/2001		87			25				7.2	70
	8/1/2001		20			< 20				7.3	70
	5/7/2002		151			< 20	< 1	0.16		7.1	120
	8/6/2002		180			< 20	< 1	0.31		7.2	140
	5/21/2003		126			< 5	0.6			7.3	120
	8/6/2003		106			6	< 0.5			6.8	100
	5/26/2004		100			6				**5.8**	140
	8/24/2004		112			5				6.7	NA
	8/3/2005		110			13	< 2	460		**4.9**	100
	9/1/2005		142			< 4				**6.4**	80
	5/16/2006		81			5	< 2	48		7.2	
	8/29/2006		61			< 4	< 2			6.76	
	5/15/2007		54			< 4	< 2			6.7	
	8/14/2007		78			5	< 2	96		7.32	
	5/21/2008		76			8	< 2	410		7.39	
	8/19/2008		70			< 4	< 2	170		6.46	
	5/19/2009		65			<4				7.47	120
	8/18/2009		70			9				6.98	120
	5/18/2010		76			9				7.28	169
	8/24/2010		64			6				**10.8**	
	5/31/2011		60			9				6.62	106
	8/23/2011		54			<4				**6.14**	103

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15/5	6/1/2001			0.013	0.082	4.3				**0.37**			1.2	
	8/1/2001			< 0.001	0.010	4.9				0.07			0.9	
	5/7/2002			< 0.001	0.007	3.1				0.13			1.0	
	8/6/2002			0.003	0.023	4.3				**0.56**			1.1	
	5/21/2003			< 0.01	0.009	3.0				0.10			1.1	
	8/6/2003			< 0.01	0.016	3.7				0.08			1.9	
	5/26/2004			< 0.01	0.010	4.2				0.07			1.0	
	8/24/2004			0.010	0.009	4.3				0.10			1.4	
	8/3/2005			< 0.010	0.086	4.0				< 0.05			0.9	
	9/1/2005			< 0.01	0.009	4.1				< 0.05			0.9	
	5/16/2006			< 0.02	< 0.02	3.0				0.04			0.8	
	8/29/2006			< 0.02	< 0.02	3.9				0.02			0.9	
	5/15/2007			< 0.02	< 0.02	2.3				0.04			0.6	
	8/14/2007			< 0.02	< 0.02	3.8				< 0.05			0.9	
	5/21/2008			< 0.02	< 0.02	3.1				< 0.05			0.7	
	8/19/2008			< 0.02	< 0.02	3.9				< 0.05			0.9	
	5/19/2009			<0.02	<0.02	3.3				<0.02			0.9	
	8/18/2009			<0.02	<0.02	3.7				<0.02			0.8	
	5/18/2010			<0.02	<0.02	4.4				0.03			1.0	
	8/24/2010			<0.02	<0.02	3.8				<0.02			0.8	
	5/31/2011			<0.02	<0.02	4.0				0.05			0.9	
	8/23/2011			<0.02	<0.02	4.0				0.03			0.9	

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
15/5	6/1/2001		3.3			0.3		0.10	3.4	**6.10**	18	< 0.10	**7.7**	49
	8/1/2001		2.2					0.10		6.63	23	< 0.10	**7.1**	44
	5/7/2002		1.8			2.9		0.10	3.1	**6.49**	11	0.02	**5.0**	47
	8/6/2002		3.1			0.5		< 0.03	2.8	**6.27**	16	0.02	**5.5**	44
	5/21/2003		1.5			< 0.5		< 0.2	2.5	6.54	11	< 0.03	**7.0**	31
	8/6/2003		2.0			< 0.5		< 0.2	11.7	**6.30**	15	< 0.03	**9.4**	44
	5/26/2004		2.5			< 0.5		<0.2	3.3	**6.35**	15	< 0.03	**8.1**	43
	8/24/2004		2.5			< 0.5		< 0.2	3.0	6.57	14	0.05	**7.5**	45
	8/3/2005		2.5			< 1		< 0.2	< 1	6.86	14	< 0.05	**6.0**	40
	9/1/2005		3.9			< 1		< 0.2	7.0	6.78	13	< 0.05	**6.2**	42
	5/16/2006		1.7			1		< 0.1	4	6.6	10	0.06	**9.0**	33
	8/29/2006		2.2			1		< 0.1	5	6.8	17	0.07	**5.1**	39
	5/15/2007		1.5			1		< 0.1	4	**6.3**	12	< 0.05	**10.8**	28
	8/14/2007		2.1			< 1		0.1	3	6.6	15	< 0.05	**6.2**	41
	5/21/2008		1.8			< 1		< 0.1	4	6.7	11	< 0.05	**5.6**	33
	8/19/2008		2.2			< 1		< 0.1	5	7.2	13	< 0.05	**6.1**	40
	5/19/2009		1.8			<1		<0.1	3	**6.3**	12	<0.05	4.2	37
	8/18/2009		2			<1		<0.1	5	**6.3**	14	<0.05	**5.3**	39
	5/18/2010		2.6			1		<0.1	3	6.7	13	0.18	3.8	36
	8/24/2010		2.1			1		<0.1	4	**6.6**	13	<0.05	4.9	42
	5/31/2011		1.8			<1		<0.1	4	**6.57**	13	<0.05	4.6	39
	8/23/2011		1.9			<1		0.2	5	6.53	13	<0.05	4.8	42

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15/5	6/1/2001		20			22				**6.0**	20
	8/1/2001		154			22				**6.3**	20
	5/7/2002		< 40			173	< 1	3.46		**5.9**	40
	8/6/2002		74			< 20	< 1	0.29		**6.1**	30
	5/21/2003		48			20	< 0.5			7.1	20
	8/6/2003		102			28	< 0.5			**6.2**	30
	5/26/2004		66			23				6.9	10
	8/24/2004		24			20				**5.8**	NA
	8/3/2005		44			23	< 3	300		**3.0**	30
	9/1/2005		104			30				**5.6**	30
	5/16/2006		21			24	< 2	1600		**6.2**	
	8/29/2006		26			15	< 2			**5.8**	
	5/15/2007		20			25	< 2			6.6	
	8/14/2007		29			23	< 2	860		**6.11**	31
	5/21/2008		22			20	< 2	370		**6.06**	
	8/19/2008		26			6	< 2	360		**5.76**	
	5/19/2009		24			34				7.1	34
	8/18/2009		26			16				7.48	68
	5/18/2010		24			24				7.14	32
	8/24/2010		26			22				**10.88**	
	5/31/2011		24			20				**6.02**	37
	8/23/2011		38			14				**5.73**	44

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15/17	6/1/2001			0.108	0.223	10.1				0.11			4.1	
	8/1/2001			0.087	0.011	10.5				0.03			3.9	
	5/7/2002			0.107	0.011	11.5				0.03			4.7	
	8/6/2002			0.110	0.033	12.1				**1.45**			4.2	
	5/21/2003			0.090	0.017	11.4				0.03			3.9	
	8/6/2003			0.090	0.015	9.8				0.05			4.1	
	5/26/2004			0.090	0.010	10.0				< 0.01			3.9	
	8/24/2004			0.090	0.012	10.8				0.03			4.7	
	8/3/2005			0.096	0.013	10.0				< 0.05			4.0	
	9/1/2005			0.110	0.011	11.0				< 0.05			4.4	
	5/16/2006			0.07	< 0.02	9.6				< 0.02			3.9	
	8/29/2006			0.07	< 0.02	9.8				< 0.05			4.1	
	5/15/2007			0.08	< 0.02	9.9				< 0.05			4.0	
	8/14/2007		< 0.001	< 0.01	0.010	9.4	< 0.0001	< 0.005	0.004	< 0.05	< 0.0001	1.4	5.2	< 0.002
	5/21/2008			0.08	< 0.02	9.1				< 0.05			3.6	
	8/19/2008			0.09	< 0.02	9.8				< 0.05			4.0	
	5/19/2009			0.09	<0.02	10.0				<0.02			4.1	
	8/18/2009			0.09	<0.02	10.0				<0.02			4.0	
	5/18/2010			0.08	<0.02	9.8				<0.02			4.1	
	8/24/2010			0.08	<0.02	9.7				<0.02			4.2	
	5/31/2011			0.09	<0.02	10.6				<0.02			4.3	
	8/23/2011			0.08	<0.02	9.5				<0.02			3.8	

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
15/17	6/1/2001		4.4			2.4		0.10	14.1	8.13	114	< 0.10	1.3	268
	8/1/2001		41.3					0.50		7.92	119	< 0.10	1.0	253
	5/7/2002		46.6			58.2		0.60	10.3	8.15	118	0.01	< 1.0	260
	8/6/2002		45.2			<0.5		1.24	12.9	8.35	119	0.03	0.6	259
	5/21/2003		41.9			< 0.5		0.60	18.3	8.18	109	< 0.03	0.7	267
	8/6/2003		42.6			< 0.5		0.40	16.2	8.03	109	< 0.03	0.6	259
	5/26/2004		45.3			< 0.5		0.50	17.3	8.24	115	0.08	0.8	251
	8/24/2004		44.3			0.5		0.30	18.1	8.39	109	0.06	0.6	252
	8/3/2005		42.0			< 1		1.40	17.5	8.23	115	0.09	0.8	228
	9/1/2005		48.0			< 1		0.40	5.0	8.14	122	< 0.05	0.6	245
	5/16/2006		40.2			2		0.3	18	8.1	120	< 0.05	0.8	257
	8/29/2006		40.4			1		0.3	19	8.2	122	0.05	0.9	244
	5/15/2007		42.6			1		0.2	20	7.9	115	< 0.05	0.7	258
	8/14/2007		40.6	< 0.0005	< 0.005	1		0.2	21	8	112	< 0.05	0.9	243
	5/21/2008		36.2			< 1		0.2	17	8.2	110	< 0.05	0.9	241
	8/19/2008		39.2			< 1		0.2	17	8.3	110	< 0.05	0.6	246
	5/19/2009		39.6			<1		0.3	17	7.6	117	<0.05	0.6	252
	8/18/2009		39.8			<1		0.3	18	7.7	114	<0.05	0.8	248
	5/18/2010		41.5			<1		0.3	16	8.1	112	<0.05	0.7	254
	8/24/2010		39.5			1		0.2	17	8.1	109	<0.05	1.1	251
	5/31/2011		38.2			<1		0.4	17	8.07	111	<0.05	0.8	258
	8/23/2011		39.4			1		<0.1	20	**7.98**	112	<0.05	1.0	250

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15/17	6/1/2001		152			< 20				7.7	120
	8/1/2001		276			< 20				8.1	120
	5/7/2002		151			< 20	< 1	< 6.00		7.7	180
	8/6/2002		298			< 20	< 1	1.32		8.1	240
	5/21/2003		182			< 5	< 0.5			7.0	200
	8/6/2003		174			< 5	1.4			7.7	220
	5/26/2004		66			< 5				7.0	40
	8/24/2004		198			< 0.5				8.3	NA
	8/3/2005		336			11	< 2	1700		5.2	220
	9/1/2005		196			< 4				8.1	320
	5/16/2006		168			< 4	< 2	160		7.8	
	8/29/2006		165			< 4	< 2			**8.89**	
	5/15/2007		165			< 4	< 2			**5.97**	
	8/14/2007		156			< 4	< 2	20		7.86	235
	5/21/2008		152			7	< 2	10		7.94	
	8/19/2008		170			< 4	< 2	17		7.99	
	5/19/2009		160			<4				7.76	298
	8/18/2009		165			10				7.78	294
	5/18/2010		170			5				7.51	258
	8/24/2010		160			5				**11.6**	
	5/31/2011		158			9				7.34	252
	8/23/2011		154			4				**5.55**	257

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
16/15	6/1/2001			0.005	0.006	13.3				0.08		1.40	2.9	
	8/1/2001		< 0.001	< 0.001	0.005	13.4	< 0.001	< 0.001	< 0.001	0.04	< 0.001	1.40	2.5	< 0.001
	5/7/2002			< 0.001	0.006	14.7				0.05			3.2	
	8/6/2002		< 0.001	0.004	0.018	18.7	< 0.001	< 0.001	0.0070	**0.56**	< 0.001	1.40	3.8	0.015
	5/21/2003			0.010	0.070	17.0				0.03			2.9	
	8/6/2003		< 0.002	0.005	0.007	14.0	< 0.0001	< 0.005	< 0.0005	< 0.03	<0.0005	1.20	2.8	
	5/26/2004			< 0.01	0.006	14.9				< 0.01			3.0	
	8/24/2004			0.005	0.005	15.8	< 0.0001	< 0.005	0.0009	< 0.03	< 0.0001	1.20	2.7	< 0.005
	8/3/2005			< 0.010	0.054	14.0				< 0.05			2.8	
	9/1/2005		< 0.001	< 0.01	< 0.005	14.0	< 0.0001	< 0.005	0.0018	< 0.05	< 0.0001	1.10	2.8	< 0.002
	5/16/2006			< 0.02	< 0.02	14.3				< 0.02			2.7	
	8/29/2006			< 0.02	0.005	14.0	< 0.0001	< 0.005	< 0.0001	< 0.05	< 0.0001	1.10	2.9	
	5/15/2007			< 0.02	< 0.02	14.3				< 0.05			2.7	
	8/14/2007		< 0.001	< 0.02	0.00.5	16.0	< 0.0001	< 0.005	< 0.0001	< 0.05	< 0.0001	1.20	3.1	< 0.002
	5/21/2008			< 0.02	< 0.02	14.7				< 0.05			2.8	
	8/19/2008		< 0.001	< 0.02	0.005	14.0	< 0.0001	< 0.005	< 0.0001	< 0.05	< 0.0001	1.20	3.3	< 0.002
	5/19/2009			<0.02	<0.02	14.6				<0.02			2.8	
	8/18/2009	*No Recovery*												
	5/18/2010	*No Recovery*												
	8/24/2010	*No Recovery*												
	5/31/2011			<0.02	<0.02	17.5				<0.02			3.0	
	8/23/2011		<0.001	<0.02	0.050	15.0	<0.0001	<0.005	<0.0001	<0.1	<0.0001	1.10	2.9	<0.002

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
16/15	6/1/2001		3.0			1.30		< 0.10	4.6	7.88	50	< 0.10	1.6	110
	8/1/2001		4.4	< 0.001	< 0.001		< 0.10	< 0.10		8.02	53	< 0.10	2.1	106
	5/7/2002		2.8			3.80		0.7	2.6	8.05	51	0.01	2.0	108
	8/6/2002		5.3	< 0.001	0.018	7.50	< 0.05	0.0	2.1	8.34	105	0.03	1.4	108
	5/21/2003		3.1			< 0.5		< 0.2	3.3	8.33	52	< 0.03	1.7	111
	8/6/2003		3.3	< 0.0005	0.008	0.80	< 0.2	< 0.2	2.7	8.15	51	0.03	2.3	110
	5/26/2004		3.2			<0.5		<0.2	3.3	8.24	51	<0.03	2.6	109
	8/24/2004		3.1	0.0008	0.007	0.70	< 0.2	< 0.2	17.3	8.22	54	< 0.03	1.7	106
	8/3/2005		2.9			< 1		< 0.2	4.0	8.10	51.5	< 0.05	1.9	101
	9/1/2005		3.3	< 0.0005	< 0.005	< 1	< 0.2	< 0.3	8.0	8.13	55	< 0.05	1.9	104
	9/1/2005	*Duplicate*	4.8	< 0.0005	< 0.005	< 1	< 0.2	0.3	10.0	8.18	55	< 0.05	1.9	104
	5/16/2006		2.8			1		< 0.1	6.0	8.1	56	< 0.05	1.7	106
	8/29/2006		3.0	< 0.0005	< 0.005	2	< 0.01	< 0.1	3.0	8.2	58	0.05	2.1	105
	5/15/2007		3.0			< 1		< 0.1	3.0	7.7	56	< 0.05	1.8	114
	8/14/2007		3.2	< 0.0005	< 0.005	2	< 0.01	< 0.1	4.0	7.9	54	< 0.05	1.6	106
	5/21/2008		3.1			1		0.1	4.0	7.9	52	< 0.05	1.8	108
	8/19/2008		3.3	< 0.0005	< 0.005	< 1	< 0.01	0.2	4.0	8.1	52	< 0.05	1.5	109
	5/19/2009		2.8			<1		0.2	3.0	7.2	52	<0.05	1.5	113
	8/18/2009	*No Recovery*												
	5/18/2010	*No Recovery*												
	8/24/2010	*No Recovery*												
	5/31/2011		2.9			1		0.3	3.0	7.85	53	<0.05	1.8	118
	8/23/2011		2.9	<0.0005	<0.005	<1	<0.01	0.2	3.0	7.85	51	<0.05	1.4	110

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
16/15	6/1/2001		95			< 20	2				
	8/1/2001		203	0.15	0.01	< 20		< 1.00	< 0.001		
	5/7/2002		104			28	< 1	0.23		**8.6**	60
	8/6/2002		84	< 0.05		< 20	< 1	5.43	< 0.001	**8.9**	90
	5/21/2003		84			7	0.7			8.4	90
	8/6/2003		100	0.29	<0.05	6	1	1910	< 0.001	8.4	90
	5/26/2004		104			9					
	8/24/2004		90	0.11	< 0.05	7			< 0.001	NA	NA
	8/3/2005		152			20	< 3	850		5.8	80
	9/1/2005		170	0.20	1.88	< 4			0.002	5.1	100
	9/1/2005	*Duplicate*	154	0.30	6.70	14			0.001	5.1	100
	5/16/2006		70			< 4	< 2	2100		8.1	
	8/29/2006		82	0.2	6.30	6	< 2		< 0.001	**9.45**	
	5/15/2007		76			< 4	< 2			**9.32**	
	8/14/2007		88	< 1	0.85	< 4	< 2		< 0.001	**9.37**	
	5/21/2008		80			5	< 2	950		**9.48**	
	8/19/2008		70	0.4	0.29	< 4	< 2		< 0.001	**9.31**	
	5/19/2009		70			<4				**9.04**	130
	8/18/2009	*No Recovery*									
	5/18/2010	*No Recovery*									
	8/24/2010	*No Recovery*									
	5/31/2011		70			9				**6.98**	125
	8/23/2011		84	<1	0.49	<4			<0.001	**6.88**	122

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	*QA/QC*	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
17/15	6/1/2001			0.035	0.240	25.4				0.30			6.5	
	8/1/2001			0.001	0.026	28.5				0.10			6.0	
	5/7/2002			< 0.001	0.031	25.8				0.07			6.6	
	8/6/2002			0.004	0.043	32.0				**0.43**			8.6	
	5/21/2003			< 0.01	0.034	27.9				< 0.01			6.4	
	8/6/2003			< 0.01	0.029	24.6				< 0.01			5.7	
	5/26/2004			< 0.01	0.032	26.1				< 0.01			5.9	
	8/24/2004			0.010	0.022	22.9				< 0.01			4.4	
	8/3/2005			< 0.010	0.037	28.0				< 0.05			6.5	
	9/1/2005			< 0.01	0.030	25.0				< 0.05			5.9	
	5/16/2006			< 0.02	0.030	24.2				< 0.02			5.4	
	8/29/2006			< 0.02	0.030	26.1				< 0.02			5.9	
	5/15/2007			< 0.02	0.030	22.6				< 0.02			4.9	
	8/14/2007			< 0.02	0.020	23.0				< 0.02			4.7	
	8/19/2008			< 0.02	0.030	25.8				< 0.02			5.8	
	5/19/2009			<0.02	0.030	24.7				<0.02			5.5	
	8/18/2009	*No Recovery*												
	8/24/2010	*No Recovery*												
	5/31/2011			<0.02	0.040	26.3				<0.02			5.8	
	8/23/2011			<0.02	0.030	24.5				<0.02			5.5	

Monitor	Date	*QA/QC*	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
17/15	6/1/2001		6.6			0.90		0.2	12.8	8.05	88	< 0.10	2.6	211
	8/1/2001		5.7					0.2		8.00	139	< 0.10	1.7	205
	5/7/2002		3.8			5.20		0.4	11.2	8.12	85	0.01	2.0	198
	8/6/2002		5.3			8.00		< 0.03	13.0	8.22	91	0.03	2.5	194
	5/21/2003		3.1			< 0.5		< 0.2	3.3	8.33	52	< 0.03	1.7	111
	8/6/2003		3.7			0.80		< 0.2	11.9	7.99	77	< 0.03	2.4	192
	5/26/2004		3.6			0.80		0.3	12.0	8.04	83	< 0.03	2.7	180
	8/24/2004		3.9			0.70		< 0.2	6.5	8.14	74	< 0.03	3.0	152
	8/3/2005		7.6			< 1		0.2	12.8	8.08	82	< 0.05	2.4	177
	9/1/2005		3.8			< 1		0.4	< 1	8.06	88	< 0.05	2.3	183
	5/16/2006		3.5			1		0.3	13.0	8	90	< 0.05	2.5	193
	8/29/2006		3.4			1		0.2	14.0	8.1	90	< 0.05	2.4	188
	5/15/2007		3.5			< 1		0.3	9.0	7.6	78	< 0.05	3.5	178
	8/14/2007		3.3			< 1		0.1	14.0	8	80	< 0.05	2.7	172
	8/19/2008		3.4			1		0.1	14.0	8.1	85	< 0.05	2.6	193
	5/19/2009		3.3			3		<0.1	12.0	7.1	76	<0.05	2.3	200
	8/18/2009	*No Recovery*												
	8/24/2010	*No Recovery*												
	5/31/2011		3.3			<1		0.1	11.0	7.98	83	<0.05	2.4	191
	8/23/2011		3.1			<1		0.1	11.0	7.76	83	<0.05	2.3	188

Monitor	Date	*QA/QC*	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
17/15	6/1/2001		106			61	3				
	8/1/2001		244			< 20					
	5/7/2002		135			< 20	< 1	0.16		8.2	120
	8/6/2002		130			< 20	< 1	0.31		7.7	160
	5/21/2003		132			8	< 0.5			8	150
	8/6/2003		122			8	< 0.5			7.8	160
	5/26/2004		140			9					
	8/24/2004		128			7				6.6	40
	8/3/2005		149			7	< 2	230		6.1	140
	9/1/2005		151			10				3.9	160
	5/16/2006		121			9	< 2	57		7.9	
	8/29/2006		111				< 2			**8.71**	
	5/15/2007		113			6	< 2			**8.9**	
	8/14/2007		115			12	< 2	110		**8.97**	128
	8/19/2008		130			< 4	< 2	77		**9.06**	
	5/19/2009		120			8				7.4	240
	8/18/2009	*No Recovery*									
	8/24/2010	*No Recovery*									
	5/31/2011		138			17				6.79	223
	8/23/2011		128			8				**6.44**	197

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	*QA/QC*	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
18/6	6/1/2001	*Dry*												
	8/1/2001	*Dry*												
	5/7/2002	*Dry*												
	8/6/2002	*Dry*												
	5/21/2003	*Dry*												
	8/6/2003	*Dry*												
	5/26/2004			0.030	<0.005	1.2				0.02			0.2	
	8/24/2004	*Dry*												
	8/3/2005	*Dry*												
	9/1/2005	*Dry*												
	5/16/2006	*Dry*												
	8/29/2006	*Dry*												
	5/15/2007	*Dry*												
	8/14/2007	*Dry*												
	5/21/2008	*Dry*												
	8/19/2008	*Dry*												
	5/19/2009			0.11	0.690	0.5				0.4			0.2	
	8/18/2009	*Dry*												
	8/24/2010	*Dry*												
	5/31/2011	*Dru*												
	8/23/2011	*Dry*												

Monitor	Date	*QA/QC*	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
18/6	6/1/2001	*Dry*												
	8/1/2001	*Dry*												
	5/7/2002	*Dry*												
	8/6/2002	*Dry*												
	5/21/2003	*Dry*												
	8/6/2003	*Dry*												
	5/26/2004		67.9			< 0.5		< 0.2	31.8	7.8	114	< 0.03	3.0	278
	8/24/2004	*Dry*												
	8/3/2005	*Dry*												
	9/1/2005	*Dry*												
	5/16/2006	*Dry*												
	8/29/2006	*Dry*												
	5/15/2007	*Dry*												
	8/14/2007	*Dry*												
	5/21/2008	*Dry*												
	8/19/2008	*Dry*												
	5/19/2009		43.7			2		0.7	9	7.1	84	<0.05	4.6	179
	8/18/2009	*Dry*												
	8/24/2010	*Dry*												
	5/31/2011	*Dru*												
	8/23/2011	*Dry*												

Monitor	Date	*QA/QC*	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
18/6	6/1/2001	*Dry*									
	8/1/2001	*Dry*									
	5/7/2002	*Dry*									
	8/6/2002	*Dry*									
	5/21/2003	*Dry*									
	8/6/2003	*Dry*									
	5/26/2004		272			13				6.8	210
	8/24/2004	*Dry*								NA	NA
	8/3/2005	*Dry*								NA	NA
	9/1/2005	*Dry*									
	5/16/2006	*Dry*									
	8/29/2006	*Dry*									
	5/15/2007	*Dry*									
	8/14/2007	*Dry*									
	5/21/2008	*Dry*									
	8/19/2008	*Dry*									
	5/19/2009		105			19				7.92	244
	8/18/2009	*Dry*									
	8/24/2010	*Dry*									
	5/31/2011	*Dru*									
	8/23/2011	*Dry*									

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
19/16	6/1/2001			0.006	0.019	36.0				0.24			9.4	
	8/1/2001			0.001	0.017	38.3				0.17			8.3	
	5/7/2002			< 0.001	0.016	41.5				0.09			10.5	
	8/6/2002			0.002	0.029	36.6				**0.36**			8.7	
	5/21/2003			< 0.01	0.015	38.8				< 0.01			8.9	
	8/6/2003			< 0.01	0.016	39.0				< 0.01			9.3	
	5/26/2004			< 0.01	0.016	40.5				< 0.01			9.6	
	8/24/2004			0.020	0.014	37.1				< 0.01			8.8	
	8/3/2005			< 0.010	0.016	39.0				**0.64**			9.0	
	9/1/2005			< 0.01	0.014	40.0				< 0.05			9.1	
	5/16/2006			< 0.02	< 0.02	36.5				< 0.02			8.2	
	8/29/2006			< 0.02	< 0.02	39.6				< 0.02			9.0	
	5/15/2007			< 0.02	< 0.02	41.1				< 0.02			9.1	
	8/14/2007			< 0.02	< 0.02	40.4				< 0.02			9.0	
	5/21/2008			< 0.02	< 0.02	40.7				< 0.02			9.0	
	8/19/2008			< 0.02	< 0.02	40.6				< 0.02			9.1	
	5/19/2009			<0.02	<0.02	38.5				<0.02			8.7	
	8/18/2009	No Recovery												
	5/18/2010			<0.02	<0.02	39.5				<0.02			8.7	
	8/24/2010			<0.02	<0.02	37.5				<0.02			8.8	
	5/31/2011			<0.02	<0.02	39.8				<0.02			9.0	
	8/23/2011			<0.02	<0.02	39.6				<0.02			8.9	

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
19/16	6/1/2001		4.4			2.4		0.50	6.8	8.09	134	< 0.10	1.9	272
	8/1/2001		6.8					0.20		7.96	81	< 0.10	2.0	272
	5/7/2002		4.2			6.4		< 0.10	4.9	8.20	138	0.02	2.0	274
	8/6/2002		5.3			< 0.5		0.44	5.7	8.13	145	0.03	2.1	275
	5/21/2003		4.4			0.7		< 0.2	7.1	8.10	138	< 0.03	2.3	276
	8/6/2003		4.5			1.0		< 0.2	7.0	7.96	136	< 0.03	1.8	270
	5/26/2004		4.6			1.0		< 0.2	7.1	8.20	138	< 0.03	2.0	258
	8/24/2004		4.3			1.4		0.10	6.8	8.19	130	< 0.03	2.2	248
	8/3/2005		8.2			1.0		1.30	8.0	8.23	137	< 0.05	2.1	252
	9/1/2005		4.8			< 1		< 0.2	7.0	8.09	142	< 0.05	2.0	252
	5/16/2006		4.1			2		< 0.1	6	8.20	143	< 0.05	2.1	270
	8/29/2006		4.4			2		< 0.1	6	8.10	150	< 0.05	2.1	267
	5/15/2007		4.6			1		0.2	7	8.10	150	< 0.05	2.5	298
	8/14/2007		4.2			< 1		0.1	8	8.10	149	< 0.05	1.9	271
	5/21/2008		4.5			1		< 0.1	6	8.20	142	< 0.05	2.0	278
	8/19/2008		4.3			1		< 0.1	6	8.30	159	< 0.05	1.8	287
	5/19/2009		4.2			2		0.1	6	7.80	141	<0.05	1.7	285
	8/18/2009	No Recovery												
	5/18/2010		4.3			2		0.1	5	8.20	137	<0.05	1.7	273
	8/24/2010		4.2			1		0.1	5	8.10	135	<0.05	1.8	275
	5/31/2011		4			1		0.1	4	8.11	138	<0.05	1.9	278
	8/23/2011		4.1			1		0.1	4	7.99	142	<0.05	1.6	279

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
19/16	6/1/2001		137			< 20				7.0	110
	8/1/2001		275			< 20				7.8	130
	5/7/2002		189			64	1	0.23		8.1	180
	8/6/2002		180			< 20	1	1.39		8.2	260
	5/21/2003		118			9	0.8			8.0	230
	8/6/2003		180			8	1			7.8	210
	5/26/2004		186			8				7.2	240
	8/24/2004		182			5				NA	NA
	8/3/2005		164			< 4	< 3	580		**6.4**	240
	9/1/2005		183			9				**5.0**	220
	5/16/2006		189			5	< 2	360		7.9	
	8/29/2006		165			< 4	< 2			**8.63**	
	5/15/2007		184			<4	<2			**8.74**	
	8/14/2007		175			< 4	< 2	700		8.48	
	5/21/2008		176			10	< 2	350		**8.66**	
	8/19/2008		200			< 4	< 2	760		**8.73**	
	5/19/2009		180			<4				7.86	334
	8/18/2009	No Recovery									
	5/18/2010		186			6				8.07	274
	8/24/2010		180			8				**11.42**	
	5/31/2011		172			7				6.83	302
	8/23/2011		190			<4				7.05	304

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
20/4	6/1/2001			0.088	0.383	31.4				**0.42**		3.00	11.0	
	8/1/2001		0.004	0.027	0.054	35.2	< 0.001	< 0.001	< 0.001	**3.63**	< 0.001	3.00	10.1	**0.420**
	8/6/2002		0.007	0.540	0.061	54.7	< 0.001	0.002	0.0250	**2.48**	< 0.001	3.42	18.2	**0.551**
	8/6/2003		0.004	0.034	0.075	31.1	< 0.0001	< 0.005	< 0.0005	<0.03	< 0.00005	3.20	9.2	
	5/26/2004			0.020	0.037	37.3				**0.49**			12.0	
	8/24/2004		0.004	0.032	0.058	37.4	< 0.0001	< 0.005	< 0.0005	**3.06**	< 0.0001	3.00	10.9	**0.484**
	8/3/2005			0.030	0.05	36.0				**2.90**			11.0	
	9/1/2005		0.0011	0.031	0.033	36.0	< 0.0001	< 0.005	0.0170	0.06	< 0.0001	3.10	11.0	**0.320**
	5/16/2006			0.020	0.08	34.6				< 0.02			10.6	
	8/29/2006		0.003	0.037	0.084	43.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	3.50	13.0	
	5/15/2007			0.040	0.07	39.0				**1.64**			11.4	
	8/14/2007			0.035	0.075	42.0	< 0.0001	< 0.005	0.001	< 0.05	< 0.0001	3.50	13.0	
	5/21/2008			0.040	0.08	37.8				0.11			11.0	
	8/19/2008		0.004	0.043	0.099	39.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	3.60	14.0	**0.480**
	5/19/2009			0.030	0.06	37.7				<0.02			11.3	
	8/18/2009		0.003	0.040	0.11	39.0	< 0.0001	< 0.005	0.001	<0.02		3.70	12.0	**0.420**
	5/18/2010			1.020	3.29	20.8				**0.47**			6.3	
	8/24/2010	*No Recovery*												
	5/31/2011	*not working*												
	8/23/2011	*not working*												

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
20/4	6/1/2001		10.6			2.9		< 0.10	3.4	8.00	154	0.70	3.5	310
	8/1/2001		6.2	< 0.001	0.0030		< 0.10	< 0.10		7.56	135	1.60	2.7	257
	8/6/2002		8.1	< 0.001	0.1370	11.6	< 0.05	< 0.03	0.3	7.72	178	1.96	3.1	323
	8/6/2003		5.2	< 0.0005	0.0060	1.4	< 0.2	< 0.2	8.6	7.37	121	2.17	4.7	238
	5/26/2004		6.7			< 0.5		<0.2	0.9	7.54	160	1.99	3.7	281
	8/24/2004			0.0008	0.0140	0.8	< 0.2	< 0.2	0.7	7.46	164	2.03	4.5	299
	8/3/2005		6.4			< 1		< 0.2	< 1	7.88	151	1.88	3.5	259
	9/1/2005		6.8	< 0.0005	< 0.005	< 1	< 0.3	< 0.2	< 1	7.88	177	2.30	4.0	293
	5/16/2006		6.3			2		< 0.1	< 1	8	185	2.05	3.9	323
	8/29/2006		7.2	< 0.0005	< 0.005	2	< 0.01	0.1	< 1	7.8	198	2.80	4.1	335
	5/15/2007		12.4			10		< 0.1	4	7.6	171	2.68	**17.0**	357
	8/14/2007		7.4	< 0.0005	< 0.005	2	< 0.01	< 0.1	<1	7.8	181	2.24	3.7	304
	5/21/2008		6.4			1		< 0.1	< 1	7.8	180	1.90	3.7	353
	8/19/2008		7.7	< 0.0005	< 0.005	1	< 0.01	< 0.1	< 1	8	180	2.20	**5.1**	337
	5/19/2009		6.5			1		<0.1	<1	7.5	158	3.50	3.7	321
	8/18/2009		7	< 0.0005	< 0.005	< 1	0.01	<0.1	<1	7.6	176	2.40	3.9	324
	5/18/2010		55.9			< 1		<0.1	<1			9.00		
	8/24/2010	*No Recovery*												
	5/31/2011	*not working*												
	8/23/2011	*not working*												

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
20/4	6/1/2001		186			< 20	3			7.3	140
	8/1/2001		288	2.00	0.45	25		< 1.00	< 0.001		
	8/6/2002		194	2.25		< 20	< 1	0.19		7.3	300
	8/6/2003		**1450**	2.04	< 0.05	16	8.7	1450		7.2	200
	5/26/2004		198			12				6.6	50
	8/24/2004		180	2.20	0.50	13			< 0.001	6.8	NA
	8/3/2005		380			110	8	790		2.3	240
	9/1/2005		360	12.40	2.31	450			0.004	1.0	280
	5/16/2006		204			37	< 2	380		7.3	
	8/29/2006		238	2.90	1.9	120	< 2		< 0.001	7.07	
	5/15/2007		228			150	15			7.68	
	8/14/2007		209	3.30	1.1	26	6		< 0.001	7.61	304
	5/21/2008		202			72	5	300		7.53	
	8/19/2008		220	3.70	0.78	8	10		< 0.001	7.8	
	5/19/2009		205			260				7.35	370
	8/18/2009		220	8.00	3.1	110				7.67	396
	5/18/2010					67000					
	8/24/2010	*No Recovery*									
	5/31/2011	*not working*									
	8/23/2011	*not working*									

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
21/7	6/1/2001			0.062	0.297	25.7				0.27		2.80	7.2	
	8/1/2001		< 0.001	0.014	0.029	27.5	< 0.001	< 0.001	< 0.001	**0.45**	< 0.001	2.80	5.9	**0.071**
	8/6/2002		0.002	0.023	0.054	35.8	< 0.001	0.003	0.0150	**1.88**	< 0.001	4.02	9.1	**0.103**
	5/21/2003			0.020	0.043	28.9				0.03			6.5	
	8/6/2003		< 0.002	0.019	0.042	29.4	< 0.0001	< 0.005	< 0.0005	< 0.03	< 0.00005	3.10	7.0	
	5/26/2004			0.020	0.032	26.0				0.04			6.1	
	8/24/2004		< 0.002	0.021	0.035	30.1	< 0.0001	< 0.005	< 0.0005	< 0.03	< 0.0001	2.90	6.5	**0.056**
	8/3/2005			0.022	0.034	27.0				< 0.05			6.0	
	9/1/2005		< 0.001	0.022	0.034	33.0	< 0.0001	< 0.005	0.0016	< 0.05	< 0.0001	3.50	7.4	**0.069**
	5/16/2006			< 0.02	0.03	26.3				< 0.02			5.6	
	8/29/2006		< 0.001	0.017	0.034	30.0	< 0.0001	< 0.005	< 0.001	< 0.05	< 0.0001	3.20	6.8	
	5/15/2007			< 0.02	0.04	28.0				< 0.02			6.0	
	14/08/2007		0.001	0.018	0.037	33.0	< 0.0001	< 0.005	< 0.001	< 0.02	< 0.0001	3.70	7.3	
	5/21/2008			< 0.02	0.03	26.8				< 0.02			5.6	
	8/19/2008		< 0.001	0.021	0.034	29.0	< 0.0001	< 0.005	< 0.001	< 0.02	< 0.0001	3.20	7.4	**0.055**
	5/19/2009			<0.02	0.03	26.4				<0.02			5.6	
	8/18/2009		< 0.001	0.019	0.039	30.0	< 0.0001	< 0.005	0.001	<0.02		3.20	6.8	0.046
	5/18/2010			< 0.02	0.05	28.6				<0.02			6.1	
	8/24/2010	No Recovery												
	5/31/2011			<0.02	0.04	29.2				<0.02			6.4	
	8/23/2011		<0.001	0.015	0.041	31.0	<0.0001	<0.005	<0.001	<0.1	<0.0001	3.30	7.2	0.042

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
21/7	6/1/2001		10.3			2.7		< 0.10	8.3	8.05	110	< 0.10	4.5	230
	8/1/2001		7.8	< 0.001	0.0050		< 0.10	< 0.10		7.89	100	< 0.10	2.2	210
	8/6/2002		7.7	0.0020	0.0290	< 0.5	< 0.05	< 0.03	3.4	8.12	118	0.08	1.6	220
	5/21/2003		6.5			28.9		< 0.2	7.6	7.90	106	< 0.03	2.3	227
	8/6/2003		7.2	< 0.0005	< 0.005	1.0	< 0.2	< 0.2	8.1	7.91	108	0.06	2.8	227
	5/26/2004		5.5			0.5		0.20	6.6	7.95	93	0.03	2.4	187
	8/24/2004		6.4	0.0006	0.0050	0.6	< 0.2	< 0.2	6.9	8.00	111	0.07	2.1	223
	8/3/2005		5.8			< 1		< 0.2	9.0	8.19	110	0.11	3.1	208
	9/1/2005		6.9	< 0.0005	0.0058	< 1	< 0.3	< 0.2	6.0	8.03	120	0.07	2.5	217
	5/16/2006		6.1			1		< 0.1	6.0	8.20	121	< 0.05	1.9	230
	8/29/2006		6.4	< 0.0005	< 0.005	6	< 0.01	< 0.1	7.0	8.10	123	0.09	2.4	223
	5/15/2007		6.3			1		< 0.1	7.0	8.00	113	< 0.05	2.4	229
	8/14/2007		7			2	< 0.01	< 0.1	7.0	8.00	118	0.08	2.4	217
	5/21/2008		5.8			4		< 0.1	6.0	8.00	113	< 0.05	1.9	228
	8/19/2008		6.8	< 0.0005	< 0.005	2	< 0.01	< 0.1	6.0	8.20	115	< 0.05	2.6	230
	5/19/2009		5.9			1		<0.1	5.0	7.10	83	0.06	2.3	206
	8/18/2009		6.2	< 0.0005	< 0.005	1	0.02	<0.1	7.0	7.80	119	0.14	2.7	230
	5/18/2010		6.1			2		<0.1	9.0	8.10	111	0.16	2.1	234
	8/24/2010	No Recovery												
	5/31/2011		5.8			1		<0.1	5.0	8.02	103	0.09	2.4	211
	8/23/2011		6.3	<0.0005	<0.005	2	<0.01	<0.1	7.0	8.02	114	<0.05	2.4	231

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
21/7	6/1/2001		149			< 20	< 1				
	8/1/2001		230	0.26	0.01	22		15.00	< 0.001		
	8/6/2002		180	< 0.05		56	1	6.52	< 0.001	8.3	180
	5/21/2003		192			9	< 0.5			7.9	170
	8/6/2003		160	0.19	< 0.05	11	< 0.5	8030		7.7	160
	5/26/2004		156			9				6.9	40
	8/24/2004		142	0.20	3.54	12			< 0.001	6.7	NA
	8/3/2005		350			64	< 3	410		3.9	170
	9/1/2005		220	0.80	7.50	36			< 0.001	6.1	200
	5/16/2006		154			< 4	< 2	8000		8.2	
	8/29/2006		147	0.300	2.5	6	< 2		< 0.001	8.23	
	5/15/2007		158			18	< 2			8.35	
	8/14/2007		151	0.700	4	17	< 2		< 0.001	8.11	221
	5/21/2008		148			7	< 2	4600		8.39	
	8/19/2008		160	1.400	1.3	13	< 2		< 0.001	8.39	
	5/19/2009		140			28				7.91	230
	8/18/2009		155	4.000	12	76				8.19	222
	5/18/2010		162			85					
	8/24/2010	No Recovery									
	5/31/2011		124			20				6.8	246
	8/23/2011		156	0.600	0.54	<4			<0.001	**6.25**	245

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
22/5	6/1/2001			0.018	0.278	31.0				**0.73**			8.1	
	8/1/2001			0.001	0.032	32.7				0.12			7.1	
	5/7/2002			< 0.001	0.038	35.1				0.10			8.4	
	8/6/2002			0.005	0.062	31.3				**1.73**			7.8	
	5/21/2003			< 0.01	0.03	31.4				0.01			7.3	
	8/6/2003			< 0.01	0.03	29.1				0.01			6.9	
	5/28/2004			< 0.01	0.03	30.5				< 0.01			7.4	
	8/24/2004			0.010	0.031	33.8				0.06			8.8	
	8/3/2005			< 0.010	0.027	34.0				< 0.05			7.6	
	9/1/2005			< 0.01	0.016	26.0				< 0.05			6.2	
	5/16/2006			< 0.02	0.04	30.7				< 0.02			7.1	
	8/29/2006			< 0.02	0.03	32.6				< 0.02			7.4	
	5/15/2007			< 0.02	0.04	30.2				< 0.02			6.8	
	8/14/2007			< 0.02	0.04	31.2				< 0.02			7.1	
	5/21/2008			< 0.02	0.04	31.7				< 0.02			7.0	
	8/19/2008			< 0.02	0.05	33.2				< 0.02			7.5	
	5/19/2009			<0.02	0.04	30.3				<0.02			7.0	
	8/18/2009			<0.02	0.04	33.9				<0.02			7.8	
	5/18/2010			<0.02	0.04	33.8				<0.02			8.0	
	8/24/2010			<0.02	0.02	30.6				<0.02			7.9	
	5/31/2011			<0.02	0.03	29.4				<0.02			6.9	
	8/23/2011			<0.02	0.03	30.0				<0.02			6.9	

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
22/5	6/1/2001		3.6			1.8		0.10	15.5	8.10	98	< 0.10	0.7	228
	8/1/2001		4.8					0.10		7.98	110	< 0.10	0.8	238
	5/7/2002		3.0			4.6		< 0.10	12.2	8.06	108	0.06	2.0	241
	8/6/2002		4.2			0.5		< 0.03	13.2	8.15	109	0.02	1.2	242
	5/21/2003		3.3			< 0.5		< 0.2	14.3	8.10	107	0.07	1.8	236
	8/6/2003		3.6			< 0.5		< 0.2	9.0	7.97	98	< 0.03	1.4	219
	5/26/2004		3.3			< 0.5		< 0.2	12.5	8.10	105	0.06	1.6	214
	8/24/2004		3.4			0.4		< 0.2	16.9	8.11	108	< 0.03	1.3	223
	8/3/2005		6.8			< 1		< 0.2	18.0	8.18	107	< 0.05	1.1	221
	9/1/2005		6.6			< 1		0.40	6.0	8.05	92	0.14	4.8	173
	5/16/2006		3.0			1		< 0.1	16.0	8.20	119	< 0.05	1.2	245
	8/29/2006		3.2			2		< 0.1	18.0	8.10	117	< 0.05	1.0	231
	5/15/2007		3.2			3		< 0.1	13.0	8.00	111	0.12	2.1	233
	8/14/2007		3.4			1		< 0.1	13	8.1	110	0.25	2.2	213
	5/21/2008		3.3			14		< 0.1	16	8.2	110	0.09	1.5	239
	8/19/2008		3.4			< 1		< 0.1	14	8.2	112	0.10	1.3	239
	5/19/2009		5			1		0.2	5	6.9	68	<0.05	3.7	142
	8/18/2009		3.6			1		< 0.1	14	7.4	121	0.22	1.9	239
	5/18/2010		3.6			3		< 0.1	11	8.2	117	0.06	1.6	247
	8/24/2010					2		< 0.2	14	8.1	115	<0.05	2.5	247
	5/31/2011		3.1			1		0.1	11	8.11	107	0.11	2.1	232
	8/23/2011		3.3			<1		0.1	11	7.95	105	0.12	2.0	230

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
22/5	6/1/2001		163			< 20	2			7.9	100
	8/1/2001		258			22				7.9	120
	5/7/2002		80			56	1	1.49		8.0	180
	8/6/2002		244			< 20	2	10.18		8.3	210
	5/21/2003		120			9	< 0.5			7.7	170
	8/6/2003		148			7	< 0.5			7.8	190
	5/26/2004		182			8				6.2	40
	8/24/2004		168			6				NA	NA
	8/3/2005		**580**			100	< 3	12000		3.1	180
	9/1/2005		**760**			710				7.5	160
	5/16/2006		150			180	< 2	3300		8	
	8/29/2006		161			10	< 2			**8.81**	
	5/15/2007		155			130	< 2			**8.89**	
	8/14/2007		164			200	< 2	12000		**9.02**	
	5/21/2008		157			60	< 2	29000		**9.25**	
	8/19/2008		160			64	< 2	21000		**9.26**	
	5/19/2009		95			15				8.33	284
	8/18/2009		155			150				8.41	234
	5/18/2010		174			18				7.86	327
	8/24/2010		154			247				8.19	
	5/31/2011		144			29				7.07	266
	8/23/2011		192			70				**6.4**	244

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
23/3	6/1/2001			0.040	0.254	19.7				0.26			5.1	
	8/1/2001			< 0.001	0.015	24.8				0.08			5.3	
	5/7/2002			< 0.001	0.017	21.1				0.10			5.6	
	8/6/2002			0.004	0.087	25.9				**3.06**			7.1	
	5/21/2003			< 0.01	0.019	27.1				0.04			6.0	
	8/6/2003			< 0.01	0.024	25.1				0.03			6.1	
	5/26/2004			< 0.01	0.016	23.7				0.07			6.0	
	8/24/2004			0.010	0.015	29.3				0.01			5.8	
	8/3/2005			< 0.01	0.013	26.0				< 0.05			5.9	
	9/1/2005			< 0.01	0.013	25.0				< 0.05			5.7	
	5/16/2006			< 0.02	< 0.02	23.7				< 0.02			5.4	
	8/29/2006			< 0.02	< 0.02	24.6				< 0.02			5.6	
	5/15/2007			< 0.02	< 0.02	24.7				< 0.02			5.8	
	8/14/2007			< 0.02	< 0.02	23.5				< 0.02			5.4	
	5/21/2008			< 0.02	< 0.02	22.8				< 0.02			5.1	
	8/19/2008			< 0.02	< 0.02	24.6				< 0.02			5.5	
	8/18/2009			< 0.02	< 0.02	24.3				< 0.02			5.4	
	5/18/2010			< 0.02	< 0.02	24.0				< 0.02			5.5	
	8/24/2010			< 0.02	< 0.02	22.0				< 0.02			5.4	
	5/31/2011			<0.02	<0.02	29.4				<0.02			6.3	
	8/23/2011			<0.02	<0.02	24.7				<0.02			5.5	

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
23/3	6/1/2001		5.3			2.3		< 0.10	7.5	8.00	76	< 0.10	1.9	168
	8/1/2001		4.6					0.40		7.92	90	< 0.10	4.3	176
	5/7/2002		2.8			3.7		< 0.10	4.5	7.80	74	0.05	1.0	153
	8/6/2002		5.1			< 0.5		0.45	5.7	7.87	90	0.03	1.1	183
	5/21/2003		3.6			< 0.5		0.20	8.0	7.93	84	0.09	4.3	186
	8/6/2003		3.5			< 0.5		< 0.2	11.9	7.74	83	0.05	2.5	189
	5/26/2004		2.9			0.5		< 0.2	7.0	7.98	88	0.09	4.6	171
	8/24/2004		3.9			0.7		0.20	7.4	8.00	93	0.08	2.7	173
	8/3/2005		7.4			< 1		0.70		8.05	75	0.08	3.2	147
	9/1/2005		6.0			< 1		< 0.2	5.0	8.05	91	0.11	5.0	172
	5/16/2006		3.4			2		0.1	9	8.1	93	< 0.05	2.1	180
	8/29/2006		3.5			2		0.1	10	8.10	95	< 0.05	1.9	179
	5/15/2007		3.6			1		< 0.01	7	7.70	93	0.22	**5.5**	194
	8/14/2007		3.4			10		< 0.1	< 1	8.30	199	0.11	3.7	339
	5/21/2008		3.2			5		0.1	8	8.10	85	0.26	3.0	178
	8/19/2008		3.5			1		0.1	8	8.20	88	0.1	3.1	185
	8/18/2009		3.4			< 1		0.2	7	7.60	89	0.15	1.8	179
	5/18/2010		3.5			2		0.1	8	8.10	85	0.5	1.3	184
	8/24/2010		3.3			1		0.2	8	8.10	86	0.3	2.1	186
	5/31/2011		3.5			1		0.1	9	8.06	87	0.43	1.4	189
	8/23/2011		3.4			2		0.1.	9	7.70	89	<0.05	1.5	189

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
23/3	6/1/2001		98			< 20	< 1			7.8	70
	8/1/2001		225			< 20				7.7	80
	5/7/2002		152			120	1	2.20		7.6	100
	8/6/2002		232			< 20	< 1	1.56		7.8	170
	5/21/2003		140			13	< 0.5			7.6	130
	8/6/2003		128			10	< 0.5			7.7	140
	5/26/2004		174			15				7.1	30
	8/24/2004		162			12				NA	NA
	8/3/2005		420			320	< 2	5600		7.0	130
	9/1/2005		390			880				8.1	370
	5/16/2006		126			190	< 2	7700		7.8	
	8/29/2006		113			120	< 2			8.36	
	5/15/2007		130			520	< 2			**8.55**	
	8/14/2007		120			89	< 2	36000		8.13	
	5/21/2008		124			250	< 2	6400		8.4	
	8/19/2008		130			170	< 2	4900		**8.8**	
	8/18/2009		117			360				**8.96**	156
	5/18/2010		122			1800				7.92	170
	8/24/2010		120			310				8.07	
	5/31/2011		118			740				7.01	209
	8/23/2011		136			25				**6.44**	204

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
24/5	6/1/2001			0.008	0.028	14.7				0.09			7.0	
	8/1/2001			0.003	0.031	19.2							7.3	
	5/7/2002			0.011	0.034	19.6				0.13			8.1	
	8/6/2002			0.008	0.067	22.8				**2.37**			10.9	
	5/21/2003			0.010	0.028	18.2				0.03			7.6	
	8/6/2003			< 0.01	0.028	17.2				0.02			7.1	
	5/26/2004			< 0.01	0.023	16.3				0.04			7.2	
	8/24/2004			< 0.01	0.026	18.5				**0.59**			7.9	
	8/3/2005			< 0.01	0.026	18.0				**0.44**			7.1	
	9/1/2005			< 0.01	0.021	16.0				< 0.05			6.7	
	5/16/2006			< 0.02	0.02	14.9				< 0.02			6.2	
	8/29/2006			< 0.02	0.03	17.7				< 0.02			6.7	
	5/15/2007			< 0.02	0.03	15.9				< 0.02			6.3	
	8/14/2007			< 0.02	0.03	17.3				< 0.02			6.6	
	5/21/2008			< 0.02	0.03	16.8				< 0.02			6.3	
	8/19/2008			< 0.02	0.03	17.0				< 0.02			6.7	
	5/19/2009			<0.02	0.02	13.2				<0.02			5.5	
	8/18/2009			<0.02	0.03	17.4				<0.02			6.5	
	5/18/2010			<0.02	0.03	16.1				<0.02			6.7	
	8/24/2010			<0.02	0.03	16.0				<0.02			6.6	
	5/31/2011			<0.02	0.03	15.7				0.03			6.4	
	8/23/2011			<0.02	0.02	16.0				<0.02			6.4	

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
24/5	6/1/2001		5.9			2.1		< 0.10	2.7	7.86	79	< 0.10	3.4	166
	8/1/2001		8.4					< 0.10				< 0.10	4.3	
	5/7/2002		6.2			8.4		< 0.10	4.4	7.85	93	0.10	**21.0**	194
	8/6/2002		8.7			< 0.5		< 0.03	3.2	7.32	91	0.06	4.1	183
	5/21/2003		5.8			< 0.5		< 0.2	5.3	7.38	95	< 0.03	4.5	177
	8/6/2003		6.0			< 0.5		< 0.2	4.9	7.21	85	< 0.03	3.9	175
	5/26/2004		5.8			0.5		< 0.2	4.6	7.22	83	< 0.03	4.4	167
	8/24/2004		6.5			0.9		< 0.2	5.4	7.27	80	0.03	3.2	170
	8/3/2005		6.3			< 1		< 0.2	5.0	7.85	88	< 0.05	4.4	148
	9/1/2005		7.1			< 1		< 0.2	8.0	7.64	90	< 0.05	4.2	164
	5/16/2006		5.5			2		< 0.01	7	7.7	88	< 0.05	4.4	169
	8/29/2006		6			2		< 0.01	6	7.60	89	< 0.05	4.1	167
	5/15/2007		5.7			1		< 0.01	6	7.40	81	< 0.05	5.0	168
	8/14/2007		5.7			1		< 0.01	8	7.60	83	< 0.05	4.3	163
	5/21/2008		5.7			3		< 0.01	7	7.80	81	< 0.05	3.7	163
	8/19/2008		5.9			1		< 0.01	6	7.80	81	< 0.05	4.6	166
	5/19/2009		5			1		0.2	5	6.90	68	<0.05	3.7	142
	8/18/2009		5.9			< 1		0.3	6	7.00	84	<0.05	4.6	169
	5/18/2010		5.8			1		< 0.01	5	7.60	78	0.07	4.0	164
	8/24/2010		5.9			<1		0.4	5	7.50	78	<0.05	4.4	106
	5/31/2011		5.3			1		<0.1	7	7.44	73	<0.05	0.5	156
	8/23/2011		5.7			<1		<0.1	5	7.25	78	<0.05	4.1	166

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
24/5	6/1/2001		122			31	< 1			7.4	60
	8/1/2001					25				7.7	80
	5/7/2002		440			28	4	0.39		7.0	120
	8/6/2002		196			< 20	1	4.08		7.3	160
	5/21/2003		140			15	< 0.5			7.6	130
	8/6/2003		146			14	< 0.5			7.3	130
	5/26/2004		198			14				6.7	130
	8/24/2004		110			13				NA	NA
	8/3/2005		460			7	< 2	2100		5.0	140
	9/1/2005		154			9				7.4	170
	5/16/2006		117			< 4	< 2	190		7.4	
	8/29/2006		106			< 4	< 2			6.88	
	5/15/2007		100			< 4	< 2			7.95	
	8/14/2007		131			6	< 2	860		7.72	
	5/21/2008		102			10	< 2	670		8.22	
	8/19/2008		110			20	< 2	1500		8.16	
	5/19/2009		95			15				7.67	162
	8/18/2009		110			29				8.36	158
	5/18/2010		112			17				7.45	103
	8/24/2010		106			15				**11.08**	
	5/31/2011		102			9				6.9	196
	8/23/2011		138			5				**6.45**	172

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

Ground Water Monitoring Data

Monitor	Date	QA/QC	As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn
	ODWQS -		0.025	5	1		0.005	0.05	1	0.3	0.001			0.05
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KGS-2	6/1/2001			0.000	0.022	26.6				0.18			7.2	
	8/1/2001			0.008	0.021	34.0				0.08			8.3	
	5/7/2002			0.012	0.041	29.8				0.27			6.7	
	8/6/2002			0.008	0.053	31.1				**2.04**			8.0	
	5/21/2003			0.020	0.019	29.8				< 0.01			6.9	
	8/6/2003			< 0.01	0.024	29.7				0.02			6.8	
	5/26/2004			< 0.01	0.026	31.4				< 0.01			7.4	
	8/24/2004			0.010	0.025	32.9				0.02			6.9	
	8/3/2005			< 0.01	0.021	30.0				< 0.05			6.7	
	9/1/2005			< 0.01	0.026	31.0				< 0.05			6.9	
	5/16/2006			< 0.02	0.03	32.3				< 0.02			7.1	
	8/29/2006			< 0.02	0.03	29.4				< 0.02			6.4	
	5/15/2007			< 0.02	0.04	38.8				< 0.02			7.8	
	8/14/2007	*under water*												
	5/21/2008	*no access*												
	8/19/2008	*no access*												
	5/19/2009	*no access*												
	8/18/2009			< 0.02	0.04	47.2				< 0.02			10.1	
	5/18/2010			< 0.02	0.03	39.0				< 0.02			8.5	
	8/24/2010			< 0.02	0.04	35.3				< 0.02			8.2	
	5/31/2011			<0.02	0.05	45.4				<0.05			8.8	
	8/23/2011			<0.02	0.04	41.0				<0.03			8.2	

Monitor	Date	QA/QC	Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Th Cond
	ODWQS -		200	0.01	5	250		10	500	6.5 - 8.5			5.0	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L
KGS-2	6/1/2001		5.2			2.4		< 0.10	15.9	8.10	95	< 0.10	3.0	222
	8/1/2001		5.5					< 0.10		8.07	104	< 0.10	1.4	227
	5/7/2002		12.8			17.1		< 0.10	10.9	8.16	99	0.14	2.0	226
	8/6/2002		6.6			0.6		< 0.03	10.3	8.08	104	0.13	3.8	232
	5/21/2003		3.6			< 0.5		< 0.2	1.7	8.17	97	0.05	1.7	216
	8/6/2003		4.3			< 0.5		< 0.2	17.8	8.00	94	< 0.03	1.7	224
	5/26/2004		3.9			0.9		< 0.2	18.2	8.29	92	0.06	1.7	213
	8/24/2004		4.1			0.7		< 0.2	17.3	8.17	94	0.08	1.1	211
	8/3/2005		4.4			< 1		< 0.2	17.8	8.10	93	< 0.05	2.0	196
	9/1/2005		6.3			< 1		0.50	4.0	8.10	101	0.07	1.9	211
	5/16/2006		3.6			3		< 0.01	25.0	8.10	102	0.11	3.9	249
	8/29/2006		3.9			2		< 0.01	20.0	8.10	105	0.06	1.9	220
	5/15/2007		6.9			14		< 0.01	18.0	7.50	126	0.21	**10.8**	318
	8/14/2007	*under water*												
	5/21/2008	*no access*												
	8/19/2008	*no access*												
	5/19/2009	*no access*												
	8/18/2009		4.5			12		< 0.01	70.0	7.30	87	0.05	2.3	346
	5/18/2010		3.8			9		< 0.01	52.0	8.00	82	0.14	1.7	303
	8/24/2010		9.6			7		< 0.01	40.0	8.00	85	< 0.05	2.2	291
	5/31/2011		3.9			5			34.0	7.97	108	0.12	2.0	306
	8/23/2011		4.2			9		<0.01	43.0	7.92	93	<0.05	2.2	288

Monitor	Date	QA/QC	Th TDS	TKN	Total P	COD	BOD	TSS	Phenols	Field pH	Field Cond
	ODWQS -		500							6.5 - 8.5	
	Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
KGS-2	6/1/2001		151			28					
	8/1/2001		173			28					
	5/7/2002		160			61	2	8.01		8.1	150
	8/6/2002		192			< 20	3	3.29		8.3	210
	5/21/2003		100			12	< 0.5			7.8	170
	8/6/2003		148			12	< 0.5			7.8	180
	5/26/2004		156			14				7.2	40
	8/24/2004		168			7				NA	NA
	8/3/2005		140			38	< 2	9200		6.7	180
	9/1/2005		450			49				3.9	190
	5/16/2006		150			30	< 2	5600		8.1	
	8/29/2006		162			8	< 2			8.38	
	5/15/2007		207			37	6			7.87	
	8/14/2007	*under water*									
	5/21/2008	*no access*									
	8/19/2008	*no access*									
	5/19/2009	*no access*									
	8/18/2009		230			20				8.33	344
	5/18/2010		204			10				7.79	404
	8/24/2010		184			16				8	
	5/31/2011		192			15				6.99	364
	8/23/2011		20			<4				**6.32**	301

Notes: **Bold** denotes exceedance of ODWQS (2006) criteria

NA - Not Analyzed

APPENDIX D

Summary of Detected Volatile Organic Compounds

Summary Table of Detected Volatile Organic Compounds

Monitor	Date	Toluene (mg/L) *0.024 (ODWQS, 2006)*	1,4 dichloro-benzene (mg/L) *0.001 (ODWQS, 2006)*
4/18	August, 2001	-	0.001
1/17	August, 2002	0.001	-
2/9	August, 2002	0.0006	-
3/8	August, 2002	0.0026	-
4/6	August, 2002	0.0013	-
4/18	August, 2002	0.003	-
5/17	August, 2002	0.0005	-
6/5	August, 2002	0.0021	-
20/4	August, 2004	0.0002	-
4/6-II	August, 2008	0.0004	-
SW-2	August, 2010	0.001	-

All results for all other required sampling parameters were below laboratory detection limits.

In 2006, VOC samples were collected at monitors: 1/17, 2/9, 2/13, 3/8, 4/6, 4/18, 6/14, 7/4,16/15, 20/4, 21/7 and SW-2

In 2007, VOC samples were collected at monitors: 2/9, 2/13, 3/8, 4/6, 4/18, 5/17, 6/5, 6/5 II, 6/14, 7/4,16/15, 20/4, 21/7 and SW-2

In 2008, VOC samples were collected at monitors: 2/9, 2/13, 3/8, 4/6, 4/6-II, 4/18, 5/17, 6/5, 6/14, 7/4, 16/15, 20/4, 21/7 and SW-2

In 2009, VOC samples were collected at monitors: 1/17, 2/9, 2/13, 3/8, 5/17, 6/5, 6/14, 7/4, 20/4, 21/7 and SW-2

In 2010, VOC samples were collected at monitors: 2/9, 2/13, 3/8, 5/17, 6/5, 6/14, 7/4 and SW-2

APPENDIX E

Summary of Surface Water Quality Data

Station: SW-1

Parameter -		As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn	TDS	TKN	Total P	COD	BOD	TSS
PWQO -		0.1	0.2			0.0001	0.1	0.005	0.3	0.0002						0.03			
Trigger -	QA/QC														20	0.07			
Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
6/12/1996			< 0.020	0.014	5.92	< 0.0002	< 0.020	< 0.001	**1.28**	**0.300**	0.8	2.0	0.211	35	1.34	< 0.04	125	< 2.0	
10/8/1996			< 0.010	0.013	6.60	< 0.003	< 0.005	< 0.003	**1.57**	< 0.100	0.8	2.2	0.120	35	1.30	< 0.04	124	2.0	
10/25/1996			< 0.010	0.013	6.40	< 0.003	< 0.005	< 0.003	**1.79**	< 0.100	1.3	2.1	0.134	43	1.35	< 0.04	108	< 2.0	
5/24/2001		< 0.001	0.003	0.008		< 0.001	< 0.001	0.001	**0.43**	< 0.001				108	0.71	0.010			< 3
7/23/2001									**0.83**						1.99		106	< 1.0	< 3
8/10/2001															1.15		145		
8/31/2001									**1.07**						1.40	< 0.005			
9/28/2001									**0.87**						1.17	< 0.005	167	2.0	< 3
11/2/2001		< 0.001	< 0.001	0.009		< 0.001	< 0.001	< 0.001	**0.66**	< 0.001				127	1.07	< 0.005	92	1.6	100
5/13/2002									**0.51**						0.95	< 0.010	56	1.0	5
7/3/2002									**0.93**						1.11	< 0.020	56	2.0	3
8/6/2002		0.002	0.018	0.021		< 0.001	0.002	0.005	**4.57**	< 0.001				212	3.89		111	4.0	13
9/4/2002									**18.23**						3.27	**0.415**	81	3.0	78
10/6/2002		< 0.001	0.022	0.027		< 0.001	0.001	0.002	**1.83**	< 0.001				207	1.45	**0.128**	62	1.0	31
4/8/2003									**6.04**						1.33	**0.118**	66	10.8	56
5/21/2003		<0.002	0.013	0.014		<0.0001	< 0.005	0.001	**0.55**	< 0.00005				120	1.04	0.019	84	0.8	4
6/10/2003									**0.70**						0.88	0.011	70	1.0	3
7/17/2003									**1.20**						1.29	**0.035**	95	1.6	10
8/6/2003		< 0.002	0.017	0.015		< 0.0001	< 0.005	**1.130**	**1.13**	< 0.0005				154	0.85	0.013	84	< 0.5	3
9/25/2003									**1.03**						2.10	0.029	148	1.5	3
10/28/2003		< 0.002	0.024	0.024		< 0.0001	< 0.005	0.005	**0.54**	< 0.00005				294	1.26	0.015	95	0.8	2
5/26/2004									**0.50**						2.16	**0.053**	82	1.0	5
8/19/2004		< 0.002	0.057	0.021	27.40	< 0.0001	< 0.005	0.001	**0.54**	< 0.0001	22.5	6.5	0.015	276	1.10	**0.160**	129	0.9	2
10/14/2004		< 0.002	0.062	0.028		< 0.0001	< 0.005	< 0.005	0.27					362	1.19	0.017	99	1.0	2
8/3/2005		0.002	0.065	0.029	25.00	< 0.0001	< 0.005	0.004	**3.20**		12	5.3	0.081		2.40	**0.228**	120	< 2	110
9/2/2005		0.0012	0.058	0.03		< 0.0001	< 0.005	0.0015	**11**	< 0.0001				304	1.70	**0.114**	81	5.0	26
10/21/2005		< 0.001	0.090	0.034		< 0.0001	< 0.005	< 0.001	**2.30**	< 0.0001				258	1.30	**0.055**	89	< 2	14
5/16/2006									**0.35**					98	1.40	0.009	78	< 2	< 1
8/29/2006		< 0.001	0.060	0.039		< 0.0001	< 0.005	0.002	**17**	< 0.0001				216	1.90	0.130	96	10.0	75
5/31/2011		< 0.2	0.040	0.040		< 0.005	< 0.01	< 0.02	**8.2**	< 0.0001				213	1.40	**0.061**	54	5.0	9
5/15/2007									**0.43**					183	2.00	**0.043**	92	<2	<1
8/15/2007		<0.2	0.170	0.070		<0.005	<0.01	<0.02	**4.7**	<0.0001				418	3.00	**0.320**	150	5.0	7
10/18/2007		<0.2	0.080	0.050		<0.005	<0.01	<0.02	**1.7**	<0.0001				246	3.00	**0.120**	140	3.0	5
5/21/2008									**0.67**						1.30	**0.052**	87	< 2	< 1
8/20/2008		<0.2	**0.230**	0.050		<0.005	<0.01	<0.02	**1.8**	<0.0001				270	3.30	**0.530**	280	6.0	14
10/24/2008		<0.2	0.130	0.030		<0.005	<0.01	<0.02	**1.5**	<0.0001				420	2.50	**0.210**	120	3.0	6
5/19/2009									0.29						1.30	**0.096**	81	2.0	< 1
8/18/2009		<0.2	0.120	0.050		<0.005	<0.01	<0.02	**1.6**	<0.0001				266	2.40	**0.740**	200	5.0	10
10/22/2009		<0.2	0.160	0.040		<0.005	<0.01	<0.02	**1.2**	<0.0001				335	1.90	**0.130**	100	< 2	5
5/18/2010									**0.32**						1.90	**0.092**	100	5.0	3
8/25/2010	*no sample*																		
10/21/2010		<0.2	0.130	0.040		<0.005	<0.01	<0.02	**0.38**	<0.0001				506	1.50	**0.210**	90	<2	1
5/31/2011									**0.39**						1.50	**0.210**	89	<2	4
8/24/2011		<0.2	**0.330**	0.040		<0.005	<0.01	<0.02	**0.51**	<0.0001				470	2.00	**0.400**	110	<2	3
10/25/2011		<0.2	0.130	0.030		<0.005	<0.01	<0.02	**0.88**	<0.0001				344	2.00	**0.200**	110	<2	2

Parameter -		Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Cond.	Phenols	DO	Field pH	Field T	Field Cond
PWQO -			0.003	0.02					6.5 - 8.5	*	**			0.001				
Trigger -		101.2			118.4					401.6	5 (unionized)							
Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
6/12/1996		2.0	< 0.001	0.006	2.32	< 0.03	< 0.05	< 2.0	**5.70**	19	< 0.05	42.8	50	**5.000**				
10/8/1996		2.3	< 0.002	0.005	2.00	< 0.03	< 0.05	< 2.0	**5.70**	10	0.08	54.2	48	< 0.001				
10/25/1996		2.3	< 0.002	< 0.005	3.00	< 0.03	< 0.05	< 2.0	**5.90**	15	0.33	41.6	51	< 0.001				
5/24/2001			< 0.001	0.005	2.90	< 0.10	0.10	2.3	**6.40**	13	< 0.01		36		7	5.3	7.5	20
7/23/2001					3.50	< 0.10	0.10	3.9	**6.17**	10	< 0.01		37	< 0.001				
8/10/2001					1.70	< 0.10	0.10	0.6			< 0.01			**0.016**	11	5.4	12.5	
8/31/2001					6.20	< 0.10	0.30	2.3	6.62	14	< 0.01		45	**0.046**	36	5.2	16.5	30
9/28/2001					2.10	< 0.10	< 0.10	0.5	**6.30**	11	< 0.01		39	< 0.001				
11/2/2001			< 0.001	0.015	3.20	< 0.10	0.40	3.1	**5.86**	9	< 0.01		50	< 0.001			2.0	
5/13/2002					3.70	< 0.10	< 0.10	14.1	**6.05**	6	0.03		74.8	**0.003**	9	5.7	1.5	30
7/3/2002					1.30	< 0.01	< 0.01	23.1	**6.14**	10	0.04		102.5	< 0.001	16	5.8	17.5	90
8/6/2002			0.001	**0.279**	5.00	< 0.05	< 0.03	7.0	7.16	50	0.18		109	**0.002**	26	6.2	20.0	110
9/4/2002					5.30	< 0.05	< 0.03	2.6	6.99	39	0.74		107	< 0.001	20	6.8	15.0	90
10/6/2002			< 0.001	**0.032**	3.00	< 0.50	< 1.00	45.0	6.59	10	0.08		186	**0.013**	20	6.8	3.5	90
5/31/2011					22.40	< 0.2	< 0.2	100.0	6.56	27	0.44		152	**0.004**	10	6.1	1.0	100
5/21/2003			< 0.0005	0.008	4.50	< 0.2	< 0.2	39.0	**5.85**	7	0.18		142	< 0.001	15	6.6	4.0	110
6/10/2003					6.20	< 0.2	< 0.2	53.8	**5.95**	7	< 0.03		170	< 0.001	9	5.6	7.0	170
7/17/2003					5.30	< 0.2	< 0.2	44.0	**5.87**	11	0.05		149	< 0.001	8	5.9	19.5	130
8/6/2003			< 0.0005	0.006	3.60	< 0.2	< 0.2	39.3	**6.07**	11	0.06		145	< 0.001	15	5.7	18.5	110
9/25/2003					15.60	< 0.2	< 0.2	114.0	6.58	25	0.61		374	< 0.001	10	5.6	8.0	340
10/28/2003			< 0.0005	< 0.005	15.60	< 0.2	0.20	95.3	6.64	8	0.36		337	< 0.001		5.8	2.0	280
5/26/2004					8.50	< 0.2	< 0.2	40.4	7.08	44	1.29		218	< 0.001	6	6.2	5.0	230
8/19/2004			< 0.0005	**0.056**	8.80	< 0.2	< 0.2	45.2	7.65	62	NA		246	0.001	6		10.0	
10/14/2004			< 0.0005	< 0.005	10.2	< 0.2	< 0.2	48.1	7.63	136	0.03		420	< 0.001	5	6.8	5.0	440
8/3/2005			0.0022	**0.036**	5	< 0.3	< 0.2	11.1	7.58	75	0.09		175	**0.002**	10	4.5	17.8	170
9/2/2005			< 0.0005	**0.072**	17	< 0.3	1.600	10.4	7.49	133	0.26		294	< 0.001	19	6.0	13.7	270
10/21/2005			< 0.0005	**0.092**	10	< 0.01	< 0.1	11.0	7.78	115	0.08		230	< 0.001	13	3.7	8.5	20
5/16/2006					8	< 0.01	< 0.1	14.0	7.7	85	< 0.05		221	< 0.001	10	7.3	17.2	
8/29/2006			< 0.0005	0.100	21	< 0.01	< 0.1	1.0	7.1	117	0.14		291	0.001	11	6.71	17.4	
10/17/2006			< 0.02	**0.250**	30	< 0.01	< 0.1	30.0	7.6	113	0.46		353	0.001	6	6.24	8.9	
5/15/2007					14	0.020	0.700	105.0	7.4	66	0.05		417	<0.001	12	6.93	14.8	
8/15/2007			<0.05	**0.200**	21	<0.01	<0.1	33.0	8	306	0.58		624	0.005	8	7.6	16.7	687
10/18/2007			<0.05	0.010	14	<0.01	<0.1	33.0	7.9	181	0.09		458	0.004	6	7.21	11	
5/21/2008					10	<0.01	< 0.1	52.0	7.8	121	< 0.05		370	0.001	10	7.5	10.9	
8/20/2008			<0.05	<0.005	<1	<0.01	< 0.1	23.0	8	181	0.23		402	<0.001	6	7.37	20.4	
10/24/2008			<0.05	<0.005	17	<0.01	< 0.1	< 2	8.2	280	0.05		656	<0.001	9	7.06	8.4	309
5/19/2009					12	<0.01	< 0.1	48.0	7	99	< 0.05		322	<0.001	9	7.35	n/a	326
8/18/2009			<0.05	0.020	<1	<0.01	< 0.1	< 2	7.4	188	0.17		438	**0.005**	4	7.52	16.9	480
10/22/2009			<0.05	**0.030**	20	<0.01	< 0.1	74.0	7.5	147	0.09		514	<0.001	10	7.74	7.4	498
5/18/2010					19	<0.01	<0.1	35.0	8.1	159	0.16		455	<0.001	8	7.72	20.2	430
8/25/2010	*no sample*														7	6.64	16	692
10/21/2010			<0.05	<0.01	28	<0.01	<0.1	85.0	8.01	254	<0.05		779	<0.001	9	7.94	5.1	784
5/31/2011					19	<0.01	<0.1	54.0	7.88	182	<0.05		552	<0.001	4	7.42	11.8	490
8/24/2011			<0.05	<0.01	27	<0.01	<0.1	27.0	8.02	262	<0.05		691	<0.001	6	8.14	18.1	699
10/25/2011			<0.0001	<0.01	24	<0.01	<0.1	13.0	7.71	185	0.22		502	0.007	4	7	4.9	509

Notes: **Bold** denotes exceedance of PWQO (1994) criteria

NA - Not Analyzed

* should not be decreased by more than 25% of the natural concentration

** PWQO values are for unionized ammonia, which is usually less than 1% of the total value

Station: SW-2

Parameter -		As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn	TDS	TKN	Total P	COD	BOD	TSS
PWQO -		0.1	0.2			0.0001	0.1	0.005	0.3	0.0002						0.03			
Trigger -																			
Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
10/25/1996			< 0.010	0.008	4.60	< 0.003	< 0.005	< 0.003	**0.49**	< 0.100	2.6	1.9	<0.005	31	1.02	**0.040**	55	< 2.0	
5/24/2001		< 0.001	0.003	0.011		< 0.001	< 0.001	0.001	**0.37**	< 0.001				91	0.64	0.010			< 3
7/23/2001									**0.65**						1.20		106	< 1.0	< 3
8/10/2001															1.06		131		
8/31/2001									**2.00**						1.21	**0.037**			
9/28/2001									**0.88**						0.92	< 0.005	89	1.0	< 3
11/2/2001		< 0.001	< 0.001	0.010		< 0.001	< 0.001	< 0.001	**0.51**	< 0.001				109	1.05	< 0.005	61	1.6	41
5/13/2002									**0.37**						0.72	< 0.010	28	2.0	< 3
7/3/2002									**1.88**						1.43	0.024	56	2.0	10
8/6/2002		0.001	0.010	0.013		< 0.001	< 0.001	0.003	**0.79**	< 0.001				126	1.42		50	2.0	13
9/4/2002									**1.20**						1.05	**0.212**	< 20	1.0	8
10/6/2002		< 0.001	0.003	0.013		< 0.001	< 0.001	< 0.001	**0.56**	< 0.001				64	1.05	**0.092**	32	1.0	47
4/8/2003									**1.50**						0.87	**0.057**	47	5.6	6
5/21/2003		<0.002	0.007	0.011		<0.0001	< 0.005	0.001	**0.36**	< 0.00005				66	0.85	**0.025**	63	0.8	5
6/10/2003									**0.48**						0.84	**0.019**	70	1.0	10
7/17/2003									**1.02**						1.40	**0.044**	93	1.0	9
8/6/2003		< 0.002	0.008	0.014		< 0.0001	< 0.005	**0.940**	**0.94**	< 0.0005				94	1.02	**0.033**	78	< 0.5	2
9/25/2003									**0.67**						1.04	**0.019**	110	1.2	2
10/28/2003		< 0.002	0.008	0.020		< 0.0001	< 0.005	0.001	**0.54**	< 0.00005				170	0.77	**0.010**	90	0.8	1
5/26/2004									**0.29**						0.66	**0.036**	64	0.7	4
8/19/2004		< 0.002	0.010	0.014	8.60	< 0.0001	< 0.005	0.002	**0.95**	< 0.0001	5.9	3.4	0.042	138	0.98	0.024	105	0.9	1
10/14/2004		< 0.002	0.009	0.017		< 0.0001	< 0.005	< 0.0005	**0.5**					156	1.02	0.013	113	1.3	1
8/3/2005		0.001	0.016	0.020	16	< 0.0001	< 0.005	0.003	**1.1**		5.1	4.8	0.120		1.10	**0.033**	77	< 2	3
9/2/2005		< 0.001	0.019	0.019		< 0.0001	< 0.005	0.001	**0.94**	0.0001				194	1.10	**0.035**	64	< 2	8
10/21/2005		< 0.001	0.019	0.017		< 0.0001	< 0.005	0.001	**0.71**	< 0.0001				198	0.90	0.024	73	< 2	8
5/16/2006									0.25					50	1.50	0.006	61	< 2	1
8/29/2006		0.001	0.018	0.020		< 0.0001	0.012	0.001	**1.7**	< 0.0001				105	1.50	**0.081**	60	< 2	< 1
10/17/2006		< 0.2	< 0.02	< 0.02		< 0.005	< 0.1	< 0.02	0.19	< 0.0001				113	0.60	0.009	33	< 2	< 1
5/31/2011									0.29					69	1.50	**0.017**	72	<2	<1
8/15/2007		<0.2	0.05	0.03		<0.005	<0.01	<0.02	**1.6**	<0.0001				146	1.70	**0.050**	110	<2	3.0
10/18/2007		<0.2	0.05	0.02		<0.005	<0.01	<0.02	**0.37**	<0.0001				124	1.20	0.021	78	<2	<1
5/21/2008									**0.41**						1.00	0.010	63	<2	<10
8/20/2008		<0.2	0.05	0.05		<0.005	<0.01	<0.02	**4.2**	<0.0001				150	2.10	**0.076**	110	<2	40
10/24/2008		<0.2	0.04	<0.02		<0.005	<0.01	<0.02	**0.33**	0.0003				325	1.60	**0.190**	83	<2	<1
5/19/2009									**0.17**						0.80	0.020	71	<2	<1
8/18/2009		<0.2	0.05	0.03		<0.005	<0.01	<0.02	**2.1**	<0.0001				155	1.70	**0.044**	120	<2	2
10/22/2009		<0.2	0.03	<0.02		<0.005	<0.01	<0.02	**0.36**	<0.0001				140	1.10	0.014	72	<2	1
5/18/2010									**0.58**						1.40	0.019	75	<2	4
8/25/2010		<0.2	0.04	0.03		<0.005	<0.01	<0.02	**1.8**	<0.0001				200	1.70	**0.073**	97	<2	2
10/21/2010		<0.2	0.03	0.03		<0.005	<0.01	<0.02	**0.36**	<0.0001				192	0.70	0.016	64	<2	<1
5/31/2011									**0.51**						1.30	**0.050**	72	<2	3
8/24/2011		<0.2	0.05	0.03		<0.005	<0.01	<0.02	**0.97**	<0.0001				228	1.30	**0.090**	91	<2	228
8/24/2011	*Duplicate*	<0.2	0.05	0.03		<0.005	<0.01	<0.02	**0.98**	<0.0001				198	1.50	**0.099**	110	<2	198
10/25/2011		<0.2	0.03	0.02		<0.005	<0.01	<0.02	**0.4**	<0.0001				224	7.30	**0.042**	68	<2	2

Parameter -		Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Cond.	Phenols	DO	Field pH	Field T	Field Cond
PWQO -		50	0.003	0.02	50				6.5 - 8.5	*	**			0.001				
Trigger -										50	02 unionized							
Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
10/25/1996		1.8	0.002	< 0.005	2.00	< 0.03	< 0.05	< 2.0	**6.30**	15	< 0.05	21.9	45	< 0.001				
5/24/2001			< 0.001	0.004	2.60	< 0.10	< 0.10	1.1	6.88	11	< 0.01		41		7	5.9	9.0	30
7/23/2001					2.60	< 0.10	< 0.10	7.4	**6.41**	15	< 0.01		44	**0.002**				
8/10/2001					3.30	< 0.10	< 0.10	0.4			< 0.01			**0.017**	8	6.0	15.0	
8/31/2001					3.20	< 0.10	< 0.10	0.4	7.21	31	< 0.01		71	**0.040**	13	6.1	17.5	60
9/28/2001					4.30	< 0.10	< 0.10	0.5	6.92	23	< 0.01		63	< 0.001				
11/2/2001			< 0.001	< 0.001	3.80	< 0.10	0.10	2.3	6.56	14	< 0.01		54	< 0.001			2.0	
5/13/2002					6.90	< 0.10	0.50	10.1	6.76	13	0.02		64.9	< 0.001	9	6.0	4.0	30
7/3/2002					2.49	0.01	<0.01	2.8	6.92	30	0.04		78.2	< 0.001	15	6.5	19.0	70
8/6/2002			< 0.001	0.011	4.00	< 0.05	< 0.03	< 0.2	7.30	14	0.17		74.8	< 0.001	11	6.6	21.0	70
9/4/2002					2.60	< 0.05	< 0.03	8.3	7.09	23	0.04		76	< 0.001	10	7.0	14.0	60
10/6/2002			< 0.001	0.003	3.00	< 0.50	< 1.00	3.0	7.16	15	0.06		67	**0.008**	10	7.0	1.0	60
4/8/2003					6.90	< 0.2	< 0.2	2.3	6.70	30	0.18		6.9	**0.002**	13	6.2	0.0	30
5/21/2003			< 0.0005	< 0.005	4.00	< 0.2	< 0.2	8.5	7.11	13	0.06		85	< 0.001	16	6.2	3.0	50
6/10/2003					4.40	< 0.2	< 0.2	12.1	6.67	19	0.03		88	< 0.001	15	6.1	10.0	70
5/31/2011					5.30	< 0.2	< 0.2	4.2	6.71	28	0.05		87	< 0.001	8	6.5	18.5	70
8/6/2003			< 0.0005	< 0.005	4.10	< 0.2	< 0.2	1.1	6.88	31	0.06		90	< 0.001	8	6.6	20.0	70
9/25/2003					6.20	< 0.2	< 0.2	31.4	6.53	15	0.03		141	< 0.001	14	5.6	8.5	110
10/28/2003			< 0.0005	< 0.005	8.40	< 0.2	< 0.2	38.7	6.62	12	< 0.03		168	< 0.001	19	6.1	2.0	160
5/26/2004					4.90	< 0.2	<0.2	20.9	6.81	18	0.04		113	<0.001	8	5.8	8.0	120
8/19/2004		4.9	< 0.0005	< 0.005	5.00	< 0.2	< 0.2	6.8	7.24	30	NA		96	0.001	6		11.5	
10/14/2004			< 0.0005	< 0.005	6.10	< 0.2	< 0.2	13.6	7.15	38	< 0.03		146	<0.001	7	6.4	6.0	140
8/3/2005			0.0003	< 0.005	6.00	< 0.3	< 0.2	3.0	7.55	54	< 0.05		126	**0.002**	9	5.2	22.1	110
9/2/2005			< 0.0005	< 0.005	7.00	< 0.3	< 0.2	15.3	7.56	50	< 0.05		116	< 0.001	13	6.0	14.2	110
10/21/2005			< 0.0005	< 0.005	7.00	< 0.01	< 0.1	< 1	7.57	44	< 0.05		102	< 0.001	11	3.9	7.1	10
5/16/2006					7	< 0.01	< 0.1	2.0	7.4	37	< 0.05		109	< 0.001	9	6.2	16.4	
8/29/2006			< 0.0005	0.008	7	< 0.01	< 0.1	2.0	7.5	55	0.09		134	< 0.001	6	6.9	18.3	
10/17/2006			< 0.05	0.020	14	< 0.01	< 0.1	5.0	7.8	48	< 0.05		154	< 0.001	12	7.42	7.5	
5/15/2007					7	<0.01	<0.1	30.0	7	26	<0.05		152	**0.004**	13	6.77	12.1	
8/15/2007			<0.05	<0.01	6	<0.01	<0.1	<1	7.9	88	0.11		201	**0.002**	7	7.55	16.7	212
10/18/2007			<0.05	<0.01	9	<0.01	<0.1	28.0	7.7	49	<0.05		187	<0.001	5	7.04	11.4	
5/21/2008					6	<0.01	<0.1	19.0	7.4	43	<0.05		150	<0.001	7	7.53	8	
8/20/2008			<0.05	<0.01	11	<0.01	<0.1	<1	8	98	<0.05		223	<0.001	6	7.45	22.9	
10/24/2008			<0.05	<0.01	10	<0.01	<0.1	1.0	8.2	195	<0.05		516	<0.001	11	7.56	7.3	166
5/19/2009					6	<0.01	<0.1	<1	6.9	47	<0.05		161	<0.001	8	7.37	n/a	242
8/18/2009			<0.05	<0.01	<1	<0.01	<0.1	<1	7.4	102	<0.05		232	<0.001	9	7.74	18.1	244
10/22/2009			<0.05	<0.01	10	<0.01	<0.1	<1	7.4	84	<0.05		213	<0.001	11	7.74	4	196
5/18/2010					8	<0.01	<0.1	<1	7.4	67	0.05		177	<0.001	8	7.63	17	171
8/25/2010			<0.05	<0.01	14	<0.01	<0.1	<1	7.7	123	<0.05		301	<0.001	5	7.30	18.6	
10/21/2010			<0.05	<0.01	14	<0.01	<0.1	<1	7.55	109	<0.05		587	<0.001	7	8.17	6.7	
5/31/2011					6	<0.01	<0.1	<1	7.59	74	<0.05		199	<0.001	7	7.18	11.4	199
8/24/2011			<0.05	<0.01	13	<0.01	<0.1	<1	7.63	122	<0.05		292	<0.001	6	8.19	18.1	306
8/24/2011	*Duplicate*		<0.05	<0.01	13	<0.01	<0.1	<1	7.57	117	0.08		298	**0.002**	6	8.19	18.1	306
10/25/2011			<0.05	<0.01	15	<0.01	<0.1	<1	7.93	111	<0.05		292	**0.003**	10	7.66	4.3	337

Notes:

Bold denotes exceedance of PWQO (1994) criteria

NA - Not Analyzed

* should not be decreased by more than 25% of the natural concentration

** PWQO values are for unionized ammonia, which is usually less than 1% of the total value

Station: SW-3

Parameter -		As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn	TDS	TKN	Total P	COD	BOD	TSS
PWQO -		0.1	0.2			0.0001	0.1	0.005	0.3	0.0002						0.03			
Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
5/24/2001		< 0.001	0.004	0.017		< 0.001	0.002	0.002	**0.71**	< 0.001				90	0.93	0.02			< 3
7/23/2001									**1.08**						0.77		81	2.0	< 3
8/10/2001															0.65		106		
8/31/2001									**3.68**						2.09	**0.08**			
9/28/2001									**1.13**						0.71	0.02	64	1.0	< 3
11/2/2001		< 0.001	< 0.001	0.016		**0.003**	0.002	< 0.001	**0.70**	< 0.001				72	1.05	< 0.005	39	1.6	60
5/13/2002									**0.76**						1.00	< 0.010	56	1.0	7
7/3/2002									**3.49**						1.94	0.03	84	3.0	18
8/6/2002	*no sample*																		
9/4/2002									0.29						1.49	**0.15**	< 20	3.0	46
10/6/2002		< 0.001	0.006	0.020		< 0.001	0.001	0.003	**0.46**	< 0.001				42	1.74	**0.10**	54	2.0	35
4/8/2003									**1.96**						2.58	**0.40**	60	12.4	18
5/21/2003		< 0.002	0.008	0.016		<0.0001	< 0.005	**0.011**	**0.54**	< 0.00005				78	1.34	**0.04**	82	1.6	11
6/10/2003									**0.52**						1.13	**0.10**	70	1.0	2
7/17/2003									**3.52**						2.05	**0.14**	129	3.1	60
8/6/2003		< 0.002	0.017	0.030		< 0.0001	< 0.005	**2.630**	**2.63**	< 0.0005				84	2.19	**0.31**	76	2.5	49
9/25/2003									**1.26**						2.10	**0.04**	98	0.8	5
10/28/2003		< 0.002	< 0.005	0.028		< 0.0001	< 0.005	0.005	**2.46**	< 0.00005				118	0.72	**0.06**	86	0.8	4
5/26/2004									**1.49**						0.59	**0.05**	62	1.0	34
8/19/2004		< 0.002	< 0.002	0.065	5.90	< 0.0001		**0.011**	**7.64**	< 0.0001	2	3.5	0.115	170	0.70	**0.17**	115	0.9	32
10/14/2004	*Dry*																		
8/3/2005		0.0012	< 0.01	0.016	11	< 0.0001	< 0.005	0.0025	**1.1**		5.1	4.8	0.12		1.4	**0.14**	86	< 2	21
9/2/2005		< 0.0001	0.011	0.017		< 0.0001	< 0.005	0.002	**1.9**	< 0.0001				92	1.9	**0.18**	73	9	10
10/21/2005		< 0.001	0.017	0.016		< 0.0001	< 0.005	< 0.001	**0.55**	< 0.0001				126	1.1	**0.02**	76	2	14
5/16/2006									**12**					22	1.6	**0.14**	91	< 2	110
5/15/2007									**0.72**					32	3	**0.06**	85	<2	8
8/15/2007		<0.2	<0.02	0.04		<0.005	<0.01	<0.02	**12**	<0.0001				62	18	**2.10**	320	4.0	1100
10/18/2007		<0.2	<0.02	0.03		<0.005	<0.01	<0.02	0.13	<0.0001				47	2.1	**0.08**	82	<2	1
5/21/2008									**1.7**						1	**0.05**	66	<2	<1
8/20/2008		<0.2	0.02	0.44		<0.005	0.05	**0.06**	**7.7**	<0.0001				110	40	**3.00**	1000	12	6400
5/31/2011		<0.2	<0.02	<0.03		<0.005	<0.01	<0.02	**1.1**	<0.0001				35	1.8	**0.05**	100	<2	<1
5/19/2009									**0.76**						1.1	0.03	78	3	4
8/18/2009		<0.2	<0.02	0.03		<0.005	<0.01	<0.02	**1.5**	<0.0001				60	1.5	**0.07**	91	2	16
10/22/2009		<0.2	<0.02	<0.03		<0.005	<0.01	<0.02	**2.1**	<0.0001				35	1.3	**0.06**	76	<2	3
5/18/2010									**5.7**						4.3	**0.67**	190	2	95
8/25/2010		<0.2	<0.02	<0.02		<0.005	<0.01	<0.02	**9.1**	<0.0001				46	1.7	**0.097**	110	3	21
10/21/2010		<0.2	<0.02	<0.02		<0.005	<0.01	<0.02	**1.5**	<0.0001				36	1.0	**0.035**	60	<2	43
5/31/2011									**2.1**						2.6	**0.190**	110	<2	5
8/24/2011		<0.2	<0.02	0.03		<0.005	<0.01	<0.02	**12**	<0.0001				80	3.0	**0.360**	120	7	25
10/25/2011		<0.2	<0.02	<0.02		<0.005	<0.01	<0.02	**0.86**	<0.0001				58	1.3	**0.058**	52	<2	15

Parameter -		Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Cond.	Phenols	DO	Field pH	Field T	Field Cond
PWQO -			0.003	0.02					6.5 - 8.5	*	**			0.001				
Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
5/24/2001			< 0.001	0.004	1.20	< 0.10	0.10	2.0	6.86	13	< 0.01		35		13	6.0	13.0	20
7/23/2001					9.90	< 0.10	< 0.10	6.5	6.64	21	< 0.01		53	< 0.001				
8/10/2001					1.10	< 0.10	0.10	0.9			< 0.01			**0.015**	5	6.1	15.0	
8/31/2001						< 0.10	< 0.10	0.3	7.58	60	0.30		110	**0.035**	8	5.9	17.5	60
9/28/2001					1.90	< 0.10	< 0.10	1.8	7.15	41	< 0.01		86	< 0.001				
11/2/2001			**0.004**	**0.027**	2.20	< 0.10	0.60	3.7	**6.39**	15	< 0.01		49	< 0.001			2.0	
5/13/2002					0.40	< 0.10	0.40	2.8	6.92	15	0.02		43.8	< 0.001	10	5.9	5.0	10
7/3/2002					0.20	0.3	< 0.01	18.2	7.34	63	0.10		125.1	< 0.001	16	6.6	18.5	120
8/6/2002	*no sample*																	
9/4/2002					2.30	< 0.05	0.03	33.5	7.04	14	0.04		124	< 0.001	10	6.7	15.0	110
10/6/2002			< 0.001	0.012	< 2.00	< 0.50	18.00	14.0	**4.45**	< 1	0.05		111	**0.004**	10	6.7	1.0	110
4/8/2003					1.90	< 0.2	< 0.2	6.5*	**6.46**	28	0.10		1.9	**0.001**	7	6.0	0.0	40
5/21/2003			< 0.0005	0.011	< 0.5	< 0.2	< 0.2	7.3	6.62	12	0.07		55	< 0.001	12	6.0	5.0	40
6/10/2003					< 0.5	< 0.2	< 0.2	3.7	6.59	22	< 0.03		61	< 0.001	14	5.8	10.0	40
7/17/2003					< 0.5	< 0.2	< 0.2	0.7	**6.35**	31	0.05		71	< 0.001	11	6.4	14.5	50
8/6/2003			0.0022	0.012	< 0.5	< 0.2	< 0.2	5.3	**6.39**	29	0.08		78	< 0.001	9	6.0	17.0	50
9/25/2003					< 0.5	< 0.2	< 0.2	4.1	**6.15**	9	< 0.03		37	< 0.001	15	5.2	7.5	30
10/28/2003			0.001	0.011	< 0.5	< 0.2	< 0.2	2.8	6.59	17	< 0.03		48	< 0.001	23	6.0	1.0	30
5/26/2004					<0.5	< 0.2	< 0.2	2.8	**6.18**	7	0.03		27	<0.001	11	5.5	4.5	30
8/19/2004		1.8	0.0026	**0.047**	5.00	< 0.2	< 0.2	1.5	6.65	13	NA		31	**0.001**	5		10.0	
10/14/2004	*Dry*																	
8/3/2005		2.4	0.0007	**0.022**	2	< 0.3	< 0.2	4	7.1	40.6	< 0.05		85.6	**0.002**	6	4.4	19.4	90
9/2/2005			< 0.0005	0.0067	2	< 0.3	< 0.2	15.6	6.95	36.1	< 0.05		91.5	< 0.001	10	5.2	13.1	70
10/21/2005			< 0.0005	0.005	7	< 0.01	< 0.1	< 1	7.45	43	0.05		103	< 0.001	12	4	7.3	10
5/16/2006					2	< 0.01	< 0.1		7.1	25	< 0.05		55	< 0.001	12	6.6	17.5	
5/31/2011					1	<0.01	<0.1	18	**6.4**	9	<0.05		85	<0.001	13	6.25	9.3	
8/15/2007			<0.05	0.02	<10	<0.01	<0.1	< 1	7.2	43	0.27		90	**0.003**	6	6.79	14.7	65
10/18/2007			<0.05	0.01	2	0.01	<0.1	13	7	17	<0.05		75	<0.001	5	6.12	11	
5/21/2008					1	<0.01	<0.1	1	6.7	9	<0.05		38	<0.001	16	6.64	5.5	
8/20/2008			<0.05	**0.19**	<1	0.01	<0.1	< 1	7.3	83	0.41		166	**0.008**	8	6.46	21.7	
10/24/2008			<0.05	<0.02	<1	<0.01	<0.1	< 1	6.9	17	<0.05		57	<0.001	9	6.76	6.7	50
5/19/2009					<1	<0.01	<0.1	< 1	6.6	9	<0.05		39	<0.001	10	6.91	n/a	58
8/18/2009			<0.05	<0.02	<1	<0.01	<0.1	< 1	6.7	43	<0.05		89	<0.001	5	7.08	16.6	76
10/22/2009			<0.05	<0.02	<1	<0.01	<0.1	< 1	6.5	23	<0.05		54	<0.001	7	7.68	3.2	48
5/18/2010					1	<0.01	<0.1	30	6	6	0.07		43	<0.001	10	7.25	16.3	41
8/25/2010			<0.05	<0.01	2	<0.01	<0.1	<1	6.7	34	<0.05		75	**0.004**	13	6.30	16.5	
10/21/2010			<0.05	<0.01	1	<0.01	<0.1	<1	6.79	28	<0.05		59	<0.001	7	8.48	6.8	80
5/31/2011					1	<0.01	<0.1	<1	6.48	9	0.08		35	<0.001	6	6.87	13	34
8/24/2011			<0.05	<0.01	2	<0.01	<0.1	9	6.61	40	0.05		104	**0.019**	3	7.43	17.9	100
10/25/2011			<0.05	<0.01	<1	<0.01	<0.1	18	6.8	15	<0.05		84	**0.002**	10	6.94	2.8	97

Notes: **Bold** denotes exceedance of PWQO (1994) criteria

NA - Not Analyzed

* should not be decreased by more than 25% of the natural concentration

** PWQO values are for unionized ammonia, which is usually less than 1% of the total value

Station: SW-4

Parameter -		As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn	TDS	TKN	Total P	COD	BOD	TSS
PWQO -		0.1	0.2			0.0001	0.1	0.005	0.3	0.0002						0.03			
Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
5/24/2001		< 0.001	0.003	0.010		< 0.001	0.001	< 0.001	0.08	< 0.001				24	0.27	0.007			< 3
7/23/2001									< 0.001						0.16		< 20	2.0	< 3
8/10/2001															0.21		25		
8/31/2001									0.06						0.34	< 0.005			
9/28/2001									<0.001						0.25	< 0.005	< 20	1.0	< 3
11/2/2001		< 0.001	< 0.001	0.009		< 0.001	< 0.001	< 0.001	**0.34**	< 0.001				32	0.41	< 0.005	< 20	2.2	53
5/13/2002									0.05						0.23	< 0.010	< 20	2.0	15
7/3/2002									0.06						0.44	< 0.020	< 20	1.0	6
8/6/2002		< 0.001	0.005	0.007		< 0.001	< 0.001	**0.006**	0.04	< 0.001				< 40	0.19		< 20	< 1.0	12
9/4/2002									0.12						0.29	**0.035**	< 20	1.0	10
10/6/2002		< 0.001	0.003	0.005		< 0.001	< 0.001	< 0.001	0.05	< 0.001				< 20	0.32	0.025	< 20	2.0	45
4/8/2003	*Dry*																		
5/21/2003		< 0.002	0.006	0.006		<0.0001	< 0.005	0.001	< 0.03	< 0.00005				20	0.33	0.012	17	2.6	1
6/10/2003									0.05						0.26	**0.082**	11	0.6	3
7/17/2003									< 0.03						0.31	0.006	15	< 0.5	3
8/6/2003		< 0.002	0.008	0.006		< 0.0001	< 0.005	**0.040**	0.04	< 0.0005				28	0.25	0.009	10	< 0.5	2
9/25/2003									0.06						0.27	0.015	17	1.0	5
10/28/2003		< 0.002	0.006	0.006		< 0.0001	< 0.005	**0.006**	0.07	< 0.00005				30	0.25	0.007	14	0.9	< 1
5/26/2004									0.04						0.18	0.009	12	0.8	4
8/19/2004		< 0.002	< 0.005	0.008	5.80	< 0.0001	< 0.005	0.001	**0.31**	<0.0001	0.8	1.3	0.010	32	0.28	**0.072**	24	0.9	6
10/14/2004		< 0.002	< 0.005	0.007		< 0.0001	< 0.005	0.0006	< 0.03					34	0.22	0.009	14	1.0	6
8/3/2005		< 0.001	< 0.010	0.0059	4.1	< 0.0001	< 0.005	**0.0053**	< 0.050		0.82	1.2	0.0085		0.40	0.025	12	< 2	1
9/2/2005		< 0.001	< 0.010	0.006		< 0.0001	< 0.005	< 0.0011	< 0.050	< 0.0001				64	0.40	0.009	8	< 2	4
10/21/2005		< 0.001	< 0.010	0.006		< 0.0001	< 0.005	< 0.001	0.058	< 0.0001				40	0.30	0.006	12	< 2	4
5/16/2006									0.091					73	0.50	0.007	11	< 2	3
8/29/2006		< 0.001	< 0.010	0.005		< 0.0001	< 0.005	< 0.001	< 0.050	< 0.0001				21	0.40	0.011	10	< 2	1
10/17/2006		< 0.2	< 0.02	< 0.02		< 0.005	< 0.01	< 0.02	0.06	< 0.0001				29	0.30	0.011	11	< 2	1
5/15/2007									<0.05					17	0.50	0.012	10	<2	<1
8/15/2007		<0.02	<0.02	<0.02		<0.005	<0.01	<0.02	0.17	<0.0001				24	0.40	0.009	12	<2	<1
10/18/2007		<0.2	<0.02	<0.02		<0.005	<0.01	<0.02	0.13	<0.0001				40	0.50	0.015	13	<2	3
5/31/2011									< 0.05						0.40	0.006	16	<2	<1
8/20/2008		<0.02	<0.02	<0.02		<0.005	<0.01	<0.02	<0.05	<0.0001				28	0.40	0.015	9	<2	<1
10/24/2008		<0.02	<0.02	<0.02		<0.005	<0.01	<0.02	0.03	<0.0001				26	0.30	0.030	10	<2	1
5/19/2009									**0.34**						0.70	**0.044**	21	<2	10
8/18/2009		<0.02	<0.02	<0.02		<0.005	<0.01	<0.02	<0.05	<0.0001				26	0.40	0.008	12	<2	<1
10/22/2009		<0.02	<0.02	<0.02		<0.005	<0.01	<0.02	0.05	<0.0001				25	0.30	0.003	12	<2	6
5/18/2010									0.03						0.40	<0.002	13	<2	2
8/25/2010		<0.2	<0.02	<0.02		<0.005	<0.01	<0.02	0.04	<0.0001				24	0.40	0.004	13	<2	2
10/21/2010		<0.2	<0.02	<0.02		<0.005	<0.01	<0.02	0.05	<0.0001				22	0.40	0.005	<4	<2	3
5/31/2011									0.03						0.40	0.008	15	<2	2
8/24/2011		<0.2	<0.02	<0.02		<0.005	<0.01	<0.02	0.12	<0.0001				30	0.50	0.015	24	<2	12
10/25/2011		<0.2	<0.02	<0.02		<0.005	<0.01	<0.02	0.03	<0.0001				24	0.30	0.003	13	<2	<1

Parameter -		Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Cond.	Phenols	DO	Field pH	Field T	Field Cond
PWQO -			0.003	0.02					6.5 - 8.5	*	**			0.001				
Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
5/24/2001			< 0.001	0.001	1.40	< 0.10	0.10	2.5	7.33	13	< 0.01		37		11	6.6	10.0	30
7/23/2001					1.70	< 0.10	0.10	2.9	6.66	15	< 0.01		36	**0.006**				
8/10/2001					1.10	< 0.10	0.10	2.8			< 0.01			< 0.001	7	7.5	16.5	
8/31/2001						< 0.10	< 0.10	2.5	7.40	15	< 0.01		37		13	7.7	21.9	30
9/28/2001					3.80	< 0.10	0.30	2.4	7.18	15	< 0.01		38	< 0.001				
11/2/2001			< 0.001	< 0.001	2.00	< 0.10	0.10	3.2	6.88	14	< 0.01		38	< 0.001			4.0	
8/24/2011																		
10/25/2011																		
5/13/2002					1.70	< 0.10	< 0.10	3.4	6.95	14	0.01		38.1	< 0.001	17	7.0	6.0	10
7/3/2002					0.31	< 0.01	< 0.01	2.6	7.14	14	0.04		36.8	< 0.001	19	7.3	20.5	30
8/6/2002			< 0.001	**0.033**	12.40	< 0.05	< 0.03	2.4	7.20	15	0.03		37.5	< 0.001	9	7.2	20.0	40
9/4/2002					0.50	< 0.05	< 0.03	2.9	7.10	15	< 0.01		37	< 0.001	11	7.0	17.0	30
10/6/2002			< 0.001	0.002	< 2.00	< 0.50	<1.00	3.0	7.63	13	0.04		37	< 0.002	11	7.0	5.0	30
4/8/2003	*Dry*																	
5/21/2003			< 0.0005	< 0.005	0.70	< 0.2	< 0.2	3.4	7.32	15	< 0.3		41	< 0.001	13	7.4	5.0	40
6/10/2003					0.80	< 0.2	< 0.2	4.8	7.02	15	< 0.03		39	< 0.001	10	6.3	11.5	30
7/17/2003					0.60	< 0.2	< 0.2	3.1	7.22	15	< 0.03		41	< 0.001	10	6.7	18.0	30
8/6/2003			< 0.0005	< 0.005	< 0.5	< 0.2	< 0.2	3.1	7.18	15	< 0.03		41	< 0.001	17	7.3	17.0	30
9/25/2003					0.70	< 0.2	< 0.2	4.3	7.05	15	< 0.03		40	< 0.001	19	5.6	13.0	20
10/28/2003			< 0.0005	< 0.005	< 0.5	< 0.2	< 0.2	4.4	7.35	15	< 0.03		39	< 0.001	16	6.3	5.0	30
5/26/2004					<0.5	< 0.2	<0.2	3.1	7.25	20	< 0.03		37	< 0.001	6	5.7	11.0	40
8/19/2004		1.2	< 0.0005	**0.021**	< 0.5	< 0.2	< 0.2	3.1	7.26	16	NA		36	< 0.001	8		17.0	
10/14/2004			< 0.0005	< 0.005	0.7	< 0.2	< 0.2	2.9	7.18	14	< 0.03		39	< 0.001	9	6.6	10.0	30
5/31/2011		1.100	< 0.0002	< 0.005	< 1	< 0.3	< 0.2	10.0	7.44	13	< 0.05		35	< 0.001	9	7.2	23.7	30
9/2/2005			< 0.0005	< 0.005	2	< 0.3	1.700	10.8	7.41	13	< 0.05		36	< 0.001	16	4.9	23.7	20
10/21/2005			< 0.0005	< 0.005	< 1	< 0.01	< 0.1	3.0	7.36	14	< 0.05		34	< 0.001	12	4.1	7.8	20
5/16/2006					1	< 0.01	< 0.1	< 1	7.1	14	< 0.05		38	< 0.001	19	7.9	14.3	
8/29/2006			< 0.0005	< 0.005	1	< 0.01	< 0.1	3.0	7.4	14	< 0.05		39	< 0.001	11	7.76	19.5	
10/17/2006			< 0.05	< 0.01	1	< 0.01	< 0.1	3.0	7.4	15	< 0.05		40	< 0.001	16	7.96	8.2	
5/15/2007					<1	<0.01	<0.1	3.0	6.8	17	<0.05		41	<0.001	6	7.55	16	
8/15/2007			<0.05	<0.01	<1	<0.01	<0.1	3.0	7.3	13	<0.05		36	<0.001	13	8.32	17.8	44
10/18/2007			<0.05	<0.01	2	<0.01	<0.1	4.0	7	13	<0.05		41	<0.001	9	7.7	10.2	
5/21/2008					<1	<0.01	<0.1	6.0	7	9	0.07		39	<0.001	13	7.43	12.6	
8/20/2008			<0.0005	<0.01	2	<0.01	<0.1	3.0	7.4	13	<0.05		41	<0.001	12	7.82	22.3	
10/24/2008			<0.0005		1	<0.01	<0.1	4.0	6.8	13	<0.05		40	<0.001	13	7.95	10.3	30
5/19/2009					6	<0.01	<0.1	5.0	**6.3**	10	<0.05		60	<0.001	11	8.84	n/a	54
8/18/2009			<0.0005	<0.01	1	<0.01	<0.1	3.0	**6.4**	15	<0.05		36	<0.001	9	7.91	20.8	38
10/22/2009			<0.0005	<0.01	<1	<0.01	<0.1	6.0	8.1	15	<0.05		46	<0.001	12	8.92	3.6	42
5/18/2010					<1	<0.01	<0.1	5.0	7.1	10	<0.05		36	<0.001	14	8.37	16.2	32
8/25/2010			<0.05	<0.01	<1	<0.01	<0.1	3.0	7.1	12	<0.05		37	<0.001	8	7.97	16.8	
10/21/2010			<0.05	<0.01	<1	<0.01	<0.1	3.0	7.09	13	<0.05		37	<0.001	11	8.55	8.3	65
5/31/2011					<1	0.050	<0.1	3.0	7.09	11	<0.05		37	<0.001	10	7.60	13.7	30
8/24/2011			<0.05	<0.01	3	<0.01	<0.1	3.0	7.59	12	<0.05		35	<0.001	9	8.23	21	36
10/25/2011			<0.05	<0.01	<1	<0.01	<0.1	3.0	7.37	13	<0.05		38	**0.003**	10	7.32	6.9	90

Notes: **Bold** denotes exceedance of PWQO (1994) criteria

NA - Not Analyzed

* should not be decreased by more than 25% of the natural concentration

** PWQO values are for unionized ammonia, which is usually less than 1% of the total value

Station: SW-5

Parameter -		As	B	Ba	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn	TDS	TKN	Total P	COD	BOD	TSS
PWQO -		0.1	0.2			0.0001	0.1	0.005	0.3	0.0002						0.03			
Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
5/24/2001		< 0.001	0.004	0.009		< 0.001	< 0.001	< 0.001	0.16	< 0.001				29	0.40	0.011			< 3
7/23/2001									0.07						0.21		31	< 1.0	< 3
8/10/2001															0.41		42		
8/31/2001									0.06						0.24	< 0.005			
9/28/2001									0.06						0.34	< 0.005	25	1.0	< 3
11/2/2001		< 0.001	< 0.001	0.007		< 0.001	< 0.001	< 0.001	0.18	< 0.001				45	0.39	< 0.005	20	1.5	59
5/13/2002									0.17						0.37	< 0.010	42	2.0	21
7/3/2002									0.17						0.37	< 0.020	20	1.0	< 0.01
8/6/2002		< 0.001	0.002	0.006		< 0.001	< 0.001	0.005	0.13	< 0.001				44	0.61		20	1.0	4
9/4/2002									0.13						0.46	**0.051**	20	< 1.0	6
10/6/2002		< 0.001	0.003	0.008		< 0.001	< 0.001	< 0.001	0.16	< 0.001				< 20	0.38	**0.039**	20	1.0	31
4/8/2003	*Dry*																		
5/21/2003		< 0.002	0.005	0.006		<0.0001	< 0.005	0.001	0.17	< 0.00005				34	0.56	0.019	25	2.0	3
6/10/2003									0.10						0.43	0.010	23	0.9	3
7/17/2003									0.18						0.52	0.016	28	< 0.5	5
8/6/2003		< 0.002	0.008	0.008		< 0.0001	< 0.005	**0.290**	0.29	< 0.0005				36	0.47	0.013	24	1.0	1
9/25/2003									0.22						0.43	0.015	35	0.8	3
10/28/2003		< 0.002	0.005	0.007		< 0.0001	< 0.005	0.001	0.20	< 0.00005				48	0.36	0.017	25	0.9	1
8/19/2004		< 0.002	< 0.005	0.006	4.50	< 0.0001	< 0.005	0.001	0.17	< 0.0001				42	0.36	0.011	28	0.6	2
9/1/2005		< 0.001	< 0.010	0.008		< 0.0001	< 0.005	**0.024**	0.30	< 0.0001				58	0.40	0.019	22	< 2	6
8/29/2006		< 0.001	< 0.010	0.006		< 0.0001	0.006	0.002	0.071	< 0.0001				19	0.50	0.009	17	< 2	1
8/15/2007									0.17					37	0.60	0.016	28	< 2	< 1
5/21/2008	*Dry*																		
8/20/2008		< 0.001	< 0.01	< 0.001		< 0.0001	< 0.005	< 0.001	0.09	< 0.0001				27	0.60	0.009	24	< 2	1
5/19/2009	*Dry*																		
8/18/2009		< 0.001	< 0.01	< 0.001		< 0.0001	< 0.005	< 0.001	0.17	< 0.0001				25	0.60	0.012	17	< 2	2
10/22/2009	*Dry*																		
5/18/2010	*Dry*																		
8/25/2010	*Dry*																		
10/21/2010	*Dry*																		
5/31/2011	*Dry*																		
8/24/2011		<0.2	<0.02	<0.02		<0.005	<0.01	<0.02	0.27	<0.0001				26	0.50	<0.1	32	<2	<1
10/25/2011	*Dry*																		

Parameter -		Na	Pb	Zn	Cl-	NO2-N	NO3-N	SO4	pH	alk42	NH3-N	DOC	Cond.	Phenols	DO	Field pH	Field T	Field Cond
PWQO -			0.003	0.02					6.5 - 8.5	*	**			0.001				
Units -		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	n/a	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
5/24/2001			< 0.001	< 0.001	3.30	< 0.10	0.20	2.8	7.10	11	< 0.01		36		20	6.5	15.0	20
7/23/2001					3.10	< 0.10	0.10	2.3	6.59	10	< 0.01		33	< 0.001				
8/10/2001					2.60	< 0.10	0.10	2.1			< 0.01			< 0.001	9	6.7	19.0	
8/31/2001						< 0.10	< 0.10		7.09	11	< 0.01		36		26	6.7	23.0	30
9/28/2001					2.90	< 0.10	< 0.10	1.4	6.88	8	< 0.01		36	< 0.001				
11/2/2001			< 0.001	0.006	2.90	< 0.10	< 0.10	1.8	6.90	11	< 0.01		38	< 0.001			3.0	
5/13/2002					3.60	< 0.10	< 0.10	1.9	6.69	10	0.01		35.6	< 0.001	14	6.6	5.5	10
7/3/2002					2.48	< 0.01	< 0.01	2.1	6.85	9	0.03		34.5	< 0.001	9	7.1	20.5	30
8/6/2002			< 0.001	0.013	3.10	< 0.05	< 0.03	2.0	7.13	10	0.04		36.7	< 0.001	11	7.3	25.0	30
9/4/2002					3.10	< 0.05	< 0.03	2.0	7.00	9	< 0.01		37	< 0.001	9	7.4	18.0	30
10/6/2002			< 0.001	**0.188**	3.00	< 0.50	1.00	< 2.0	6.82	10	0.05		38	**0.002**	9	7.4	5.0	30
4/8/2003	*Dry*																	
5/21/2003			< 0.0005	< 0.005	2.60	< 0.2	< 0.2	1.8	7.08	10	0.05		38	< 0.001	16	6.6	9.5	20
6/10/2003					3.10	< 0.2	< 0.2	3.2	6.92	10			38	< 0.001	14	6.4	14.5	30
7/17/2003					3.30	< 0.2	< 0.2	2.4	7.02	11	< 0.03		41	< 0.001	9	6.9	21.0	30
8/24/2011																		
10/25/2011																		
8/6/2003			< 0.0005	0.014	2.60	< 0.2	< 0.2	2.1	6.86	11	< 0.03		43	< 0.001		6.4	19.0	30
9/25/2003					3.00	< 0.2	< 0.2	3.6	6.78	10	< 0.03		40	< 0.001	12	5.9	10.5	40
10/28/2003			< 0.0005	< 0.005	2.80	< 0.2	< 0.2	2.5	7.41	10	0.06		44	< 0.001	19	6.2	4.0	30
8/19/2004		2.9	< 0.0005	**0.021**	2.80	< 0.2	< 0.2	2.2	7.14	12	NA		41	< 0.001				
9/1/2005			< 0.0005	0.0066	4.00	< 0.3	1.60	10.4	6.97	8	< 0.05		37.6	< 0.001	13	5.1	21.7	30
8/29/2006			< 0.0005	0.013	5.00	< 0.01	< 0.1	1.0	7.8	14	< 0.05		44	< 0.001	13	7.2	22.5	
8/15/2007			< 0.0005	< 0.01	< 1	< 0.01	0.200	2.0	7	8	0.05		41	< 0.001	9	7.3	20.6	36
5/21/2008	*Dry*																	
8/20/2008			< 0.0005	< 0.01	5.00	< 0.01	< 0.1	2.0	7.2	8	< 0.05			< 0.001	10	7.18	26.8	
5/19/2009	*Dry*																	
8/18/2009			< 0.0005	< 0.01	5.00	< 0.01	< 0.1	< 2.0	7	9	< 0.05		40	< 0.001	8	8.75	19.8	40
10/22/2009	*Dry*																	
5/18/2010	*Dry*																	
8/25/2010	*Dry*																	
10/21/2010	*Dry*																	
5/31/2011	*Dry*																	
8/24/2011			<0.05	<0.01	4.00	<0.01	<0.1	<1	6.98	10	<0.05		41	<0.001	9	7.42	23.2	48
10/25/2011	*Dry*																	

Bold denotes exceedance of PWQO (1994) criteria

NA - Not Analyzed

* should not be decreased by more than 25% of the natural concentration

** PWQO values are for unionized ammonia, which is usually less than 1% of the total value

APPENDIX F

Sediment Sampling Data

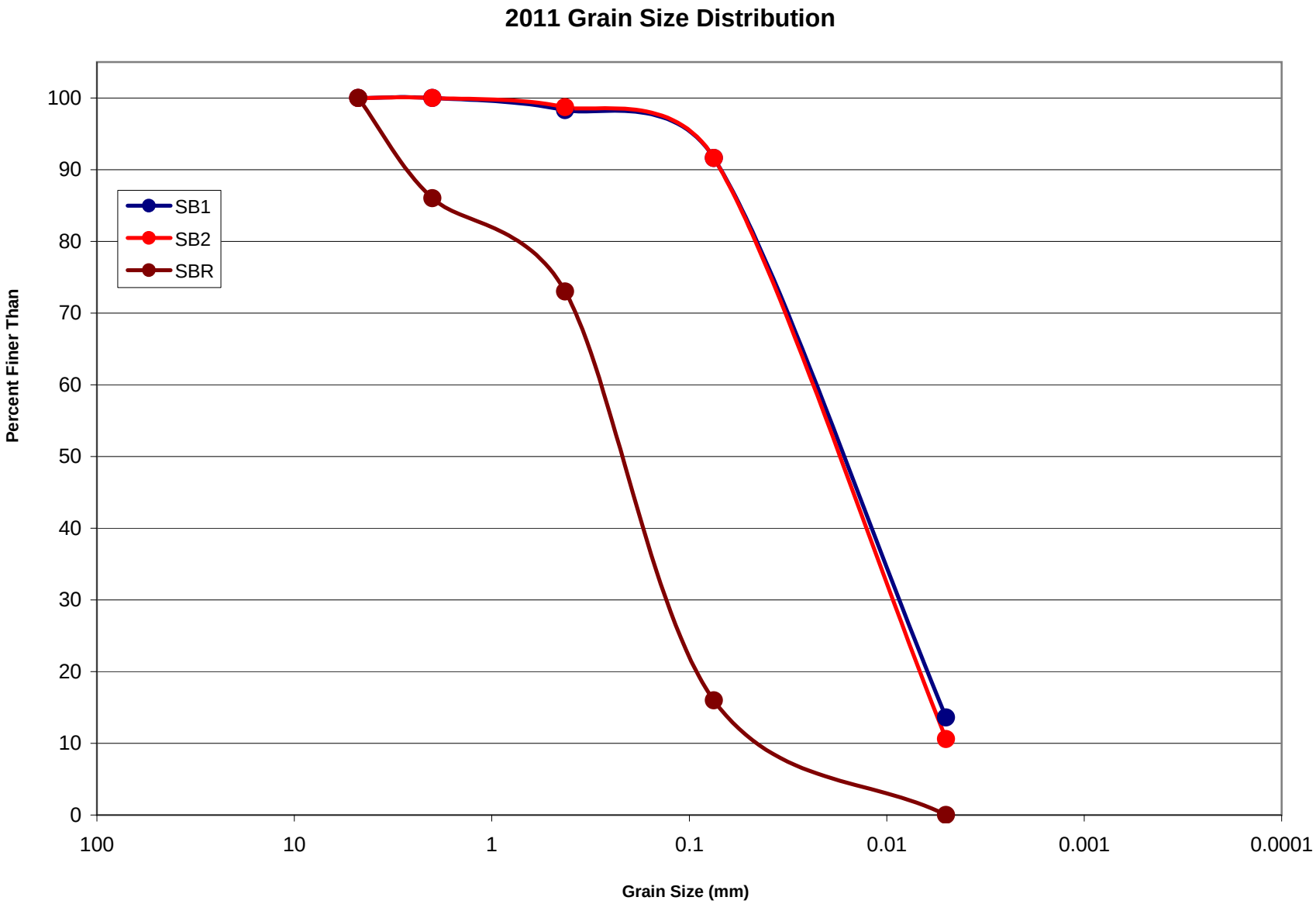

2011 Grain Size Distribution
Percent Finer Than
100
90
80
70
60
50
40
30
20
10
0
SB1
SB2
SBR
100
10
1
0.1
0.01
0.001
0.0001
Grain Size (mm)

Table 7: Sediment Sampling Analysis

Parameter	Laboratory Detection Limit	Lowest Effect Level	Severe Effect Level	Units	Measured Concentration SB-1 9/24/2001	8/30/2003	8/23/2004	9/2/2005	8/30/2006	8/15/2007	8/20/2008	8/18/2009	8/22/2010	8/25/2011
Aluminum	20			ug/g	573	1710	3930	7500	800	970	1300	640	590	530
Ammonia	40	100		ug/g	1	**196**	**280**	69.9	< 25	25	< 25	< 25	<25	<25
Arsenic	0.2	6	33	ug/g	1.9	0.7	1.0	NA	< 1	<1	<1	< 1	<1	<1
Cadmium	0.5	0.6	10	ug/g	< 0.04	< 0.5	< 0.5	< 0.3	< 0.3	<0.3	<0.3	< 0.3	<0.3	<0.3
Chromium	1	26	110	ug/g	1.15	4	9	21	2.5	3.3	3.5	1.3	1.3	1.2
Cobalt	2	50		ug/g	< 0.04	< 2	3	5.4	0.9	0.6	1.1	< 0.5	<0.5	<0.5
Copper	1	16	110	ug/g	< 0.04	2	7	**30**	2.6	2.2	2.5	1.8	0.7	0.8
Iron	50	2%	4%	%	0.07	0.26	0.47	1.10	0.15	0.16	0.2	0.11	0.8	0.065
Lead	5	31	250	ug/g	0.93	5	11	12	2	2	3	2	2	2
Manganese	1	460	1100	ug/g	6.75	59	62	110	17	13	21	13	10	10
Mercury	0.01	0.2	2	ug/g	< 0.04	<0.01	0.02	< 0.05	< 0.05	<0.05	<0.05	< 0.05	<0.05	<0.05
Nickel	2	16	75	ug/g	1.07	3	8	**22**	1.7	1.3	2.7	1.1	0.9	0.7
Oil & Grease	100	0.15%	-	%	< 0.006	< 0.010	0.010	**0.400**	0.006	0.014	0.047	0.04	**0.46**	<0.01
Phosphorous	20	600	2000	ug/g	186	956	882	920	530	NA	NA	300	540	1000
Total Kjeldahl Nitrogen	60	550	4800	ug/g	127	**1450**	**2180**	**6330**	510	**724**	**553**	343	163	131
Total Organic Carbon	0.05	1%	10%	%	0.32	0.76	**2.39**	**7.8**	0.64	0.53	**1.3**	0.51	0.002	0.14
Zinc	5	120	820	ug/g	< 0.04	9	18	57	6	4	8	4	<3	<3

Bold Denotes Exceedance in Lowest Effect Level

Underline Denotes Exceedance in Severe Effect Level

NA - Not Analyzed

Table 7: Sediment Sampling Analysis

Parameter	Laboratory Detection Limit	Lowest Effect Level	Severe Effect Level	Units	Measured Concentration SB-2 9/24/2001	8/30/2003	8/23/2004	9/2/2005	8/30/2006	8/15/2007	8/20/2008	8/18/2009	8/25/2011
Aluminum	20			ug/g	1424	14500	9930	4100	6800	3400	3100	4200	2400
Ammonia	40	100		ug/g	7.3	**1590**	**887**	1.09	< 25	<30	<25	< 25	<25
Arsenic	0.2	6	33	ug/g	1.4	3.8	1.5	NA	1	<1	<1	< 1	1
Cadmium	0.5	0.6	10	ug/g	< 0.04	0.5	< 0.5	< 0.3	< 0.3	<0.3	<0.3	< 0.3	<0.3
Chromium	1	26	110	ug/g	2.53	26	18	8.4	15	8.7	8.8	11	7.9
Cobalt	2	50		ug/g	< 0.04	13	5	4.3	5.9	3.4	2.8	3.7	2
Copper	1	16	110	ug/g	< 0.04	16	14	12	9	13	5.4	11	7
Iron	50	2%	4%	%	0.27	**2.89**	1.24	0.85	1.3	0.57	0.6	0.79	0.65
Lead	5	31	250	ug/g	0.93	12	11	5.1	5	3	3	4	3
Manganese	1	460	1100	ug/g	6.75	**2920**	235	310	210	89	61	88	72
Mercury	0.01	0.2	2	ug/g	< 0.04	0.1	0.09	< 0.05	< 0.05	<0.05	<0.05	< 0.05	<0.05
Nickel	2	16	75	ug/g	2.18	**21**	14	6.9	11	6	5.3	7.8	4.5
Oil & Grease	100	0.15%	-	%	0.020	**0.336**	**0.273**	**0.200**	0.003	0.028	<0.01	0.02	<0.01
Phosphorous	20	600	2000	ug/g	228	998	583	440	570	NA	NA	300	290
Total Kjeldahl Nitrogen	60	550	4800	ug/g	**686**	**8900**	**7700**	**1180**	120	142	149	87	65
Total Organic Carbon	0.05	1%	10%	%	0.91	**9.94**	**17**	**4.1**	0.19	0.78	0.84	0.03	0.24
Zinc	5	120	820	ug/g	10.8	88	45	27	47	17	15	22	12

Bold Denotes Exceedance in Lowest Effect Level

Underline Denotes Exceedance in Severe Effect Level

NA - Not Analyzed

Table 7: Sediment Sampling Analysis

Parameter	Laboratory Detection Limit	Lowest Effect Level	Severe Effect Level	Units	Measured Concentration SB-R 9/24/2001	8/30/2003	8/23/2004	9/2/2005	8/30/2006	8/15/2007	8/20/2008	8/18/2009	8/25/2010	8/25/2011
Aluminum	20			ug/g	939	1460	829	1000	710	660	760	580	860	960
Ammonia	40	100		ug/g	2.2	**322**	98	1.99	< 25	<30	<25	< 25	<25	<25
Arsenic	0.2	6	33	ug/g	2.92	0.4	< 0.2	NA	< 1	<1	<1	< 1	<1	<1
Cadmium	0.5	0.6	10	ug/g	< 0.04	<0.5	< 0.5	< 0.3	< 0.3	<0.3	<0.3	< 0.3	<0.3	<0.3
Chromium	1	26	110	ug/g	3.02	4	3	3	2	1.6	2	1.5	2.8	2.7
Cobalt	2	50		ug/g	0.86	<2	<2	0.9	0.6	<0.5	0.6	< 0.5	0.6	0.7
Copper	1	16	110	ug/g	< 0.04	3	1	4.8	2.1	1.3	1	6	1.2	1.3
Iron	50	2%	4%	%	0.20	0.25	0.14	0.19	0.12	0.1	0.16	0.12	1.6	0.2
Lead	5	31	250	ug/g	2.49	6	6	5	4	3	4	2	3	3
Manganese	1	460	1100	ug/g	< 0.04	65	27	23	12	13	34	12	19	22
Mercury	0.01	0.2	2	ug/g	< 0.04	< 0.01	**6**	< 0.05	< 0.05	<0.05	<0.05	< 0.05	<0.05	<0.05
Nickel	2	16	75	ug/g	2.3	4	< 2	3.3	1.7	1.2	1.6	1.3	2.3	2.2
Oil & Grease	100	0.15%	-	%	0.048	0.014	< 0.010	0.052	0.0025	0.024	<0.01	0.04	**0.2**	<0.01
Phosphorous	20	600	2000	ug/g	359	575	385	370	410	NA	NA	170	520	570
Total Kjeldahl Nitrogen	60	550	4800	ug/g	454	**1960**	336	**666**	348	120	**732**	163	402	191
Total Organic Carbon	0.05	1%	10%	%	**3.05**	**2.28**	0.67	**1.8**	0.61	0.48	0.71	0.33	0.005	0.46
Zinc	5	120	820	ug/g	7.43	15	6	12	8	5	5	9	8	7

Bold Denotes Exceedance in Lowest Effect Level

Underline Denotes Exceedance in Severe Effect Level

NA - Not Analyzed

APPENDIX G

Borehole Logs

Project: Kenora WMMP No.: 015926

Date Drilled: 96/2/12 - 96/2/14 Driller: Paddock Drilling

Borehole Location: See Figure S2-3-1

Drilling Supervised by: S. Bricks

Drilling Method: Hollow Stem Augers to 5.9 m; HQ Coring to 16.9 m

Piezometer Details

Type of Pipe: 51 mm Dia. Sch. 40 Threaded PVC

Type of Screen: 51 mm Dia. Sch. 40 Threaded PVC, #10 Slot

Borehole No.: BH-1/17

Piezometers: MW-1/17

SS Split Spoon Sample; RX Rock Core; WA Wash Sample; GR Grab Sample; AU Auger Sample; Piezometer Screen; CN Continuous Sample; Water Level Elev. m (with date); SH Shelby Tube Sample

Scale (ft.) (m)	Elev. (m GSD) / Depth (m)	Geological Log — Description	Strat. Plot	Monitor Details	Sample No.	Sample Plot	Sample Type	Vapour Conc.
		Ground Surface Elevation: 350.57 m						
5 / 1		GRAVELLY SILTY SAND - grey-rust mottled, becoming grey below 2.3 m - with cobbles and some boulders - locally TILL-LIKE - wet below 0.8 m - generally compact; locally dilatant, becoming more dense with depth			1		SS	14
					2		SS	7
10 / 3					3		SS	41/23cm
				Holeplug and Cave	4		SS	55/15cm
15 / 5					5		SS	67
					6		SS	102
					7		SS	100/25cm
20 / 6		- auger refusal at 5.9 m; changed to HQ coring			1		RX	
25 / 8					2		RX	
30 / 9					3		RX	
35 / 11					4		RX	
40 / 12		- becomes very sandy, less till-like below 12.2 m			5		RX	
45 / 14					6		RX	
50 / 15				Cave	7		RX	
	16							

Borehole Record

S. Bricks — Prepared by

H. Jackson — Checked by

Fenco MacLaren

97/2/19

Project Kenora WMMP No.: 015926

Borehole No. BH-1/17

Continuation Sheet

Sheet 2 of 2

Scale (ft.)	(m)	Elev. (m GSD) / Depth (m)	Geological Log — Description	Strat. Plot	Monitor Details	Sample No.	Plot	Sample Type	Vapour Conc.
55	17	333.7 / 16.9	End of Borehole @ 16.9 m						
60	18								
	19								
65	20								
	21								
70	22								
75	23								
	24								
80	25								
85	26								
	27								
90	28								
95	29								
	30								
100	31								
105	32								
	33								
110	34								

Borehole Record

Fenco MacLaren

97/2/19

Project: Kenora WMMP No.: 015926

Date Drilled: 96/2/14 - 96/2/15 Driller: Paddock Drilling

Borehole Location: See Figure S2-3-1

Drilling Supervised by: S. Bricks

Drilling Method: Solid Stem Augers to 13.8 m; HQ Coring to 21.6 m

Piezometer Details

Type of Pipe: 51 mm Dia. Sch. 40 Threaded PVC

Type of Screen: 51 mm Dia. Sch. 40 Threaded PVC, #10 Slot

Borehole No.: BH-8/22

Piezometers: MW-8/22

Sheet 1 of 2

SS Split Spoon Sample
WA Wash Sample
AU Auger Sample
CN Continuous Sample
SH Shelby Tube Sample
RX Rock Core
GR Grab Sample
Piezometer Screen
Water Level Elev. m (with date)

Scale (ft.) (m)	Elev. (m GSD) / Depth (m)	Geological Log — Description	Strat. Plot	Monitor Details	Sample No.	Plot	Sample Type	Vapour Conc.
		Ground Surface Elevation: 358.96 m						
5 / 1		SAND to SILTY SAND TILL - some gravel to gravelly - brown, becoming grey below 1.2 m - compact to very compact - damp to moist, wet below 10.7 m - with numerous thin (<3 cm) sand lenses throughout			1		SS	78
					2		SS	54
					3		SS	70
10 / 3					4		SS	90/23cm
				Holeplug	5		SS	60/15cm
15 / 5					6		SS	80
					7		SS	57
20 / 6					8		SS	110/25cm
					9		SS	75
25 / 8					10		SS	50/15cm
					11		SS	70/15cm
30 / 9					12		SS	100/8cm
					13		SS	135/23cm
35 / 11					14		SS	105/18cm
40 / 12					15		SS	110/23cm
					1		RX	
45 / 14		- possible thick sand and gravel lens at approximately 13.7 m - soils too loose to continue with solid stem augers below 13.8 m; continued with HQ coring		Cave				
50 / 15								
	16							

Borehole Record

S. Bricks — Prepared by

H. Jackson — Checked by

Fenco MacLaren

97/2/19

Project: Kenora WMMP   No.: 015926

Borehole No. BH-8/22

Continuation Sheet

Scale (ft.)	Scale (m)	Elev. (m GSD) / Depth (m)	Geological Log — Description	Strat. Plot	Monitor Details	Sample No.	Plot	Sample Type	Vapour Conc.
55	17								
60	18								
	19				Cave				
65	20								
70	21								
		337.3 / 21.6	End of Borehole @ 21.6 m						
	22								
75	23								
80	24								
	25								
85	26								
90	27								
	28								
95	29								
100	30								
	31								
105	32								
110	33								
	34								

Borehole Record

Fenco MacLaren

97/2/19

Project: Kenora WMMP No.: 015926

Date Drilled: 96/1/30 - 96/1/30 Driller: Paddock Drilling

Borehole Location: See Figure S2-3-1

Drilling Supervised by: S. Bricks

Drilling Method: Hollow Stem Augers to 9.6 m

Piezometer Details

Type of Pipe: 51 mm Dia. Sch. 40 Threaded PVC

Type of Screen: 51 mm Dia. Sch. 40 Threaded PVC, #10 Slot

Borehole No.: BH-2/10

Piezometers: MW-2/9

Sheet 1 of 1

SS Split Spoon Sample
WA Wash Sample
AU Auger Sample
CN Continuous Sample
SH Shelby Tube Sample
RX Rock Core
GR Grab Sample
Piezometer Screen
Water Level Elev. m (with date)

Scale (ft.)	(m)	Elev. (m GSD) / Depth (m)	Geological Log — Description	Strat. Plot	Monitor Details	Sample No.	Sample Type	Vapour Conc.
			Ground Surface Elevation: 350.33 m					
			PEAT/ORGANICS - frozen to 0.6 m, wet below - dark brown to black			1	GRAB	
		347.2 3.1	CLAYEY SILT - bluish grey - very soft - increasing silt content with depth, becoming SILT, SOME CLAY below 5.5 m - wet		Holeplug	2 3 4 5 6	SS SS SS SS SS	1 push push push 2
		344.0 6.3	SAND - trace to some silt - grey - generally fine to medium, locally medium to coarse - wet			7 8 9	SS SS SS	3 6 2
		341.7 8.6	SILT-SAND TILL - grey - gravelly		Cave			
		340.7 9.6	- compact; wet End of Borehole @ 9.6 m			10	SS	24

Borehole Record

S. Bricks — Prepared by

H. Jackson — Checked by

Fenco MacLaren

97/2/19

Project: Kenora WMMP No.: 015926

Date Drilled: 96/1/27 - 96/1/27 Driller: Paddock Drilling

Borehole Location: See Figure S2-3-1

Drilling Supervised by: S. Bricks

Drilling Method: Solid Stem Augers to 10.7 m

Piezometer Details

Type of Pipe: 51 mm Dia. Sch. 40 Threaded PVC

Type of Screen: 51 mm Dia. Threaded PVC, #10 Slot with Geosock

Borehole No.: BH-3/11

Piezometers: MW-3/8

Sheet 1 of 1

SS Split Spoon Sample
WA Wash Sample
AU Auger Sample
CN Continuous Sample
SH Shelby Tube Sample
RX Rock Core
GR Grab Sample
Piezometer Screen
Water Level Elev. m (with date)

Scale (ft.) (m)	Elev. (m GSD) / Depth (m)	Geological Log — Description	Strat. Plot	Monitor Details	Sample No.	Sample Plot	Sample Type	Vapour Conc.
		Ground Surface Elevation: 350.63 m						
	350.2 / 0.5	PEAT/ORGANICS - black						
5 / 1		SAND TILL - some silt to silty, some gravel to gravelly - brown, becoming grey below 1.5 m - evidence of roots to 2.7 m - wet - generally compact		Holeplug	1		SS	11
					2		SS	15
10 / 3					3		SS	14
					4		SS	19
15 / 5				Cave	5		SS	9
					6		SS	18
20 / 6					7		SS	30
				Geosock on Screen	8		SS	20
25 / 8					9		SS	47
		- augering continued to 10.7 m, however, due to bouldery conditions and flowing sands, samples were not recovered below 8 m.						
30 / 9				Cave				
35 / 11	340.0 / 10.7	End of Borehole @ 10.7 m						
40 / 12								
45 / 14								
50 / 15								
	16							

Borehole Record

S. Bricks
Prepared by

H. Jackson
Checked by

Fenco MacLaren

97/2/19

Project: Kenora WMMP No.: 015926

Date Drilled: 96/2/9 - 96/2/9 Driller: Paddock Drilling

Borehole Location: See Figure S2-3-1

Drilling Supervised by: S. Bricks

Drilling Method: Hollow Stem Augers to 5.8 m; HQ Coring to 18.3 m

Piezometer Details

Type of Pipe: 51 mm Dia. Sch. 40 Threaded PVC

Type of Screen: 51 mm Dia. Sch. 40 Threaded PVC, #10 Slot

Borehole No.: BH-4/18

Piezometers: MW-4/18

Sheet 1 of 2

SS Split Spoon Sample
WA Wash Sample
AU Auger Sample
CN Continuous Sample
SH Shelby Tube Sample
RX Rock Core
GR Grab Sample
Piezometer Screen
Water Level Elev. m (with date)

Scale (ft.)	(m)	Elev. (m GSD) / Depth (m)	Geological Log — Description	Strat. Plot	Monitor Details	Sample No.	Sample Plot	Sample Type	Vapour Conc.
			Ground Surface Elevation: 350.56 m						
			See Borehole Log BH-4/6 for Descriptions to 5.8 m		Holeplug				
		344.8 / 5.8	SAND to SILTY SAND TILL - with cobbles, some boulders - grey to greenish grey		Cave	1		RX	
						2		RX	
						3		RX	
						4		RX	
						5		RX	
						6		RX	

Borehole Record

S. Bricks — Prepared by

H. Jackson — Checked by

Fenco MacLaren

97/2/19

Project: Kenora WMMP No.: 015926

Date Drilled: 96/1/23 - 96/1/25 Driller: Paddock Drilling

Borehole Location: See Figure S2-3-1

Drilling Supervised by: S. Bricks

Drilling Method: Solid Stem Augers to 6.6 m; HQ Coring to 17.5 m

Piezometer Details

Type of Pipe: 51 mm Dia. Sch. 40 Threaded PVC

Type of Screen: 51 mm Dia. Sch. 40 Threaded PVC, #10 Slot

Borehole No.: BH-5/17

Piezometers: MW-5/17

SS Split Spoon Sample
WA Wash Sample
AU Auger Sample
CN Continuous Sample
SH Shelby Tube Sample
RX Rock Core
GR Grab Sample
Piezometer Screen
Water Level Elev. m (with date)

Scale (ft.) (m)	Elev. (m GSD) Depth (m)	Geological Log Description	Strat. Plot	Monitor Details	Sample No.	Sample Type	Vapour Conc.
		Ground Surface Elevation: 369.35 m					
5 1		SAND TILL - some silt to silty - with gravel and cobbles - grey-brown - dry to damp - loose to crumbly texture		Holeplug	1	GRAB	
					2	SS	32
10 3					3	SS	17/15cm
					4	SS	31
15 5					5	SS	25
					6	SS	21
20 6					7	SS	4/10cm
				Silica Sand	8	SS	5/13cm
25 7		- auger refusal at 6.6 m; continued with HQ coring			1	RX	
					2	RX	
30 9					3	RX	
35 10					4	RX	
40 12					5	RX	
45 13				Cave	6	RX	
50 15					7	RX	
	16						

Borehole Record

S. Bricks
Prepared by

H. Jackson
Checked by

Fenco MacLaren

97/2/19

Project: Kenora WMMP No.: 015926

Date Drilled: 96/1/25 - 96/1/25 Driller: Paddock Drilling

Borehole Location: See Figure S2-3-1

Drilling Supervised by: S. Bricks

Drilling Method: Solid Stem Augers to 5.8 m

Piezometer Details

Type of Pipe: 51 mm Dia. Sch. 40 Threaded PVC

Type of Screen: 51 mm Dia. Threaded PVC, #10 Slot with Geosock

Borehole No.: BH-6/6

Piezometers: MW-6/5

SS Split Spoon Sample
WA Wash Sample
AU Auger Sample
CN Continuous Sample
SH Shelby Tube Sample
RX Rock Core
GR Grab Sample
Piezometer Screen
Water Level Elev. m (with date)

Scale (ft.) (m)	Elev. (m GSD) / Depth (m)	Geological Log — Description	Strat. Plot	Monitor Details	Sample No.	Piez	Sample Type	Vapour Conc.
		Ground Surface Elevation: 350.34 m						
5 1		SILTY SAND TILL (weathered) - sand is fine to medium grained - locally with thin sand or silt laminae - grey to brown, with rust discolouration to 1.5 m - root traces noted to 1.9 m - wet - loose to compact		Holeplug	1		SS	11
					2		SS	14
10 3					3		SS	24
	347.3 3.1							
		SILTY SAND TILL - with some thin sand laminae - some gravel to gravelly - grey - wet		Cave	4		SS	34
15 5				Geosock on Screen	5		SS	38/23cm
	344.6 5.8				6		SS	105
20 6		End of Borehole @ 5.8 m						
25 8								
30 9								
35 11								
40 12								
45 14								
50 15								
		16						

Borehole Record

S. Bricks
Prepared by

H. Jackson
Checked by

Fenco MacLaren

97/2/19

Project: Kenora WMMP No.: 015926

Date Drilled: 96/1/26 - 96/1/26 Driller: Paddock Drilling

Borehole Location: See Figure S2-3-1

Drilling Supervised by: S. Bricks

Drilling Method: Solid Stem Augers to 4.4 m

Piezometer Details

Type of Pipe: 51 mm Dia. Sch. 40 Threaded PVC

Type of Screen: 51 mm Dia. Threaded PVC, #10 Slot with Geosock

Borehole No.: BH-7/4

Piezometers: MW-7/4

SS Split Spoon Sample
WA Wash Sample
AU Auger Sample
CN Continuous Sample
SH Shelby Tube Sample
RX Rock Core
GR Grab Sample
Piezometer Screen
Water Level Elev. m (with date)

Scale (ft.) (m)	Elev. (m GSD) / Depth (m)	Geological Log — Description	Strat. Plot	Monitor Details	Sample No.	Sample Plot	Sample Type	Vapour Conc.
		Ground Surface Elevation: 349.47 m						
	349.0 / 0.5	PEAT/ORGANICS - black			1		GRAB	
		CLAYEY SILT - with organics - soft - wet						
	347.8 / 1.7	SILTY SAND and GRAVEL (TILL-LIKE) - grey-brown - loose to compact - wet		Holeplug	2		SS	20
					3		SS	20
				Cave	4		SS	17
				Geosock on Screen	5		SS	13/23cm
	345.1 / 4.4	End of Borehole @ 4.4 m						

Borehole Record

S. Bricks — Prepared by

H. Jackson — Checked by

Fenco MacLaren

97/2/19

Project: Kenora WMMP No.: 015926

Date Drilled: 96/2/16 - 96/2/16 Driller: Paddock Drilling

Borehole Location: See Figure S2-3-1

Drilling Supervised by: S. Bricks

Drilling Method: Hollow Stem Augers to 5.2 m; HQ Coring to 16.6 m

Piezometer Details

Type of Pipe: 51 mm Dia. Sch. 40 Threaded PVC

Type of Screen: 51 mm Dia. Sch. 40 Threaded PVC, #10 Slot

Borehole No.: BH-10/17

Piezometers: MW-10/17

SS Split Spoon Sample
RX Rock Core
WA Wash Sample
GR Grab Sample
AU Auger Sample
Piezometer Screen
CN Continuous Sample
Water Level Elev. m (with date)
SH Shelby Tube Sample

Scale (ft.) (m)	Elev. (m GSD) / Depth (m)	Geological Log — Description	Strat. Plot	Monitor Details	Sample No.	Sample Type	Vapour Conc.
		Ground Surface Elevation: 361.83 m					
		SILTY SAND to SANDY SILT TILL - some gravel to gravelly, some cobbles and boulders - brown to grey - compact to dense - damp to moist			1	SS	47
					2	SS	42
					3	SS	85
					4	SS	80/23cm
					5	SS	90/23cm
					6	SS	80/15cm
		- auger refusal at 5.2 m; continued with HQ coring			1	RX	
					2	RX	
				Holeplug and Cave			
					3	RX	
					4	RX	
					5	RX	
				Cave	6	RX	

Borehole Record

S. Bricks — Prepared by

H. Jackson — Checked by

Fenco MacLaren

97/2/19

Project: Kenora WMMP No.: 015926 Test Pit No.: TP-1

Date Excavated: 95/9/14 Excavator: C.J. Edwards and Son

Test Pit Location: Approx. 50 m West of KGS Well MW-1

Excavation Supervised by: S. Bricks

Excavation Machinery: CAT 225D

Scale (ft.)	Scale (m)	Elev. (m GSD) / Depth (m)	Geological Log — Description	Strat. Plot	Fracture Details	Sample No.	Sample Plot	Sample Details
			Approx. Ground Surface Elevation: 351.0m					
		350.6 / 0.5	ORGANICS - roots, some peat, tree fragments					
	1		SILT-CLAY - mottled green, rust, brown, becoming greyer with depth - trace to some sand, increasing with depth - trace large gravel and cobbles - root traces noted to bottom of unit - damp to moist; soft			1		
5	2							
		348.4 / 2.6	SANDY GRAVELLY SILT TILL - grey - locally trace silt (sand till) - 30 cm dia. sandy pipe with groundwater discharge noted at 3.7 m - abundant boulders - moist to wet; compact to very compact			2		
10	3							
	4							
15	5							
	6	344.9 / 6.1	End of Test Pit at 6.1 m					
20								
	7							

Test Pit Record

S. Bricks — Prepared by

H. Jackson — Checked by

Fenco MacLaren

Project: Kenora WMMP No.: 015926 Test Pit No.: TP-3

Date Excavated: 95/9/15 Excavator: C.J. Edwards and Son

Test Pit Location: Approx. 50 m North of Jones Rd., Along Old Fill Access Road

Excavation Supervised by: S. Bricks

Excavation Machinery: CAT 225D

Scale (ft.) (m)	Elev. (m GSD) / Depth (m)	Geological Log — Description	Strat. Plot	Fracture Details	Sample No.	Plot	Sample Details
		Approx. Ground Surface Elevation: 361.5m					
	361.2 / 0.3	SANDY SILT - rusty brown; some gravel, cobbles; dry-damp; massive			1		
5 — 1		SILT-SAND TILL - grey, with brownish tinge in upper 1.5 m - some gravel, cobbles and boulders - 0.9 m thick sand lense (approx. 2 m wide) at top of unit in NE corner of pit, underlain by 30 cm of brown, layered clay - roots extend to approx. 1.5 m - potential vertical fractures noted in portions of the pit (slight discolourations, also found at some matrix-boulder interfaces) - damp to moist - compact to very compact			2		
10 — 3					3		
15 — 5							
20 — 6							
— 7	354.5 / 7.0	End of Test Pit at 7.0 m					

Test Pit Record

S. Bricks — Prepared by

H. Jackson — Checked by

Fenco MacLaren

Project: Kenora WMMP No.: 015926 Test Pit No.: TP-5

Date Excavated: 95/9/14 Excavator: C.J. Edwards and Son

Test Pit Location: Approx. 300 m East of TP100-2, 10 m into Bog

Excavation Supervised by: S. Bricks

Excavation Machinery: CAT 225D

Scale (ft.)	Scale (m)	Elev. (m GSD) / Depth (m)	Geological Log — Description	Strat. Plot	Fracture Details	Sample No.	Sample Plot	Sample Details
			Approx. Ground Surface Elevation: 349.5m					
			ORGANICS - wood, leaves, peat - dark brown - appears to be grossly layered			1		
	1	348.3 1.2						
		348.0 1.5	SILTY SAND and GRAVEL - grey; wet			2		
5			SILT-CLAY - grey - wet - very soft; runny in places - root traces to approximately 3 m					
	2							
10	3					3		
	4							
15		344.9 4.6	End of Test Pit at 4.6 m - Rapid Caving					
	5							
	6							
20								
	7							

Test Pit Record

S. Bricks — Prepared by

H. Jackson — Checked by

Fenco MacLaren

KGS GROUP

SUMMARY LOG

HOLE NO. MW-1

SHEET 1 of 1

CLIENT: ONTARIO MINISTRY OF NATURAL RESOURCES

PROJECT: PIEZOMETER INSTALLATION

SITE: JONES ROAD WASTE DISPOSAL SITE

LOCATION: See site plan

DRILLING METHOD: 127 mm Solid Stem Auger

JOB NO. 92-096-01

GROUND ELEV.

WATER ELEV

DATE DRILLED 92/10/20

ELEV. (m)	DEPTH (m)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	PIEZ. LOG	DEPTH (m)	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE RECOVERY
	0		~2.5 cm of Peat SILTY SAND - Brown, fine grained, poorly graded, wet.					
	1		SILTY CLAY - Light brown to light tan, trace sand, intermediate to high plasticity, firm, moist.					
	2		SILTY SAND - Light brown to greenish grey, trace clay, fine grained, poorly graded, water bearing.				1	
			TILL - Medium grey, silty, sandy, gravelly, dense, moist.				2	
	3		REFUSAL at 2.6 m					
	4							
	5							
	6							
	7							
	8							

P.L. MC L.L.

Cu TORVANE (kPa) ◇

% - kPa

20 40 60 80

SAMPLE TYPE ⊠ SPLIT SPOON ▤ SHELBY ▮ SPLIT BARREL SAMPLER ◪ AUGER GRAB

CONTRACTOR

INSPECTOR

KGS GROUP

SUMMARY LOG

HOLE NO. **MW-3** — SHEET 1 of 1

CLIENT	ONTARIO MINISTRY OF NATURAL RESOURCES	JOB NO.	92-096-01
PROJECT	PIEZOMETER INSTALLATION	GROUND ELEV.	
SITE	JONES ROAD WASTE DISPOSAL SITE	WATER ELEV	
LOCATION	See site plan	DATE DRILLED	92/10/20
DRILLING METHOD	127 mm Solid Stem Auger		

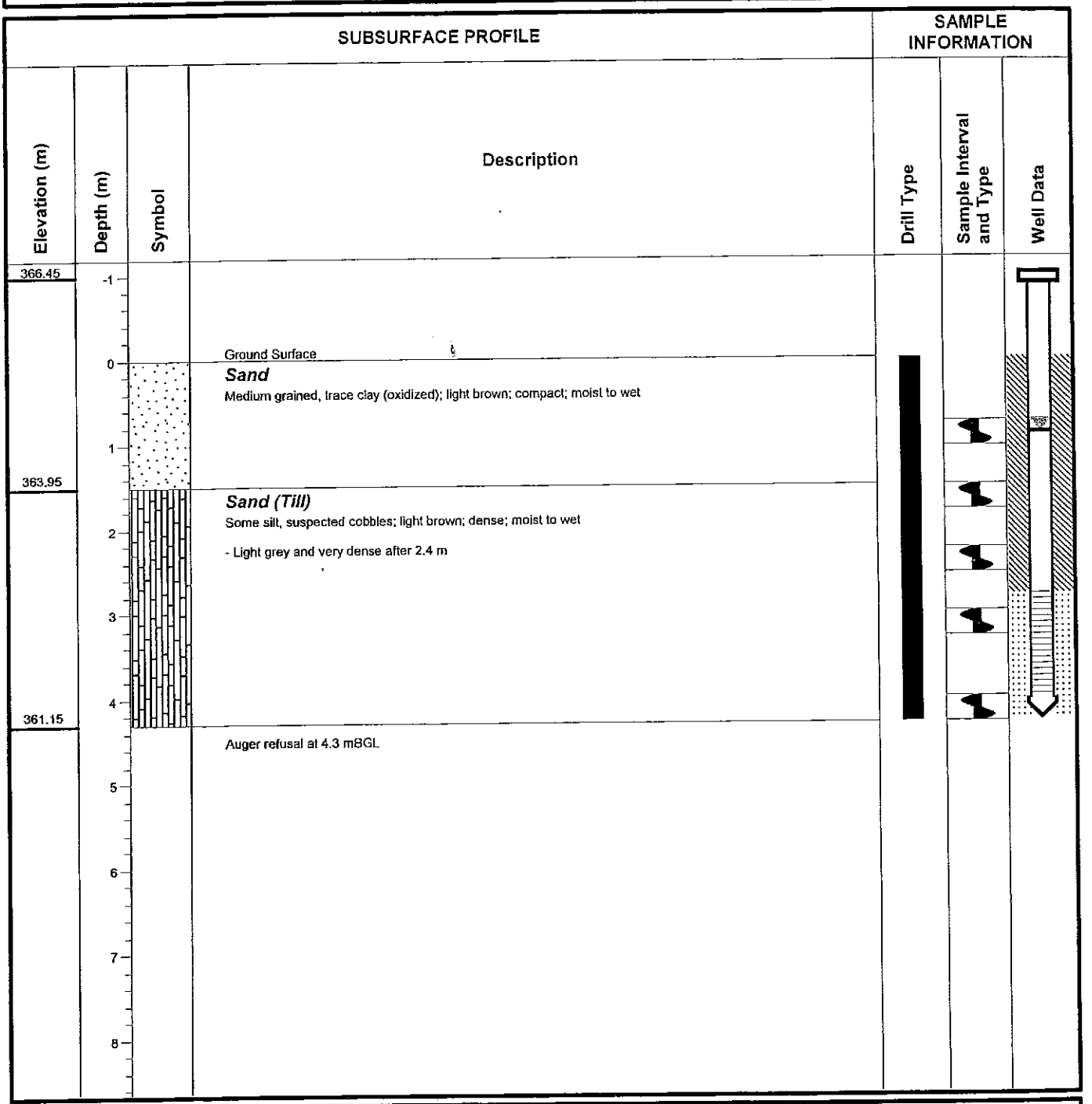
ELEV. (m)	DEPTH (m)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	PIEZ. LOG	DEPTH (m)	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE RECOVERY	P.L. — MC — L.L.; Cu TORVANE (kPa) ◇; % - kPa: 20 40 60 80
	0		**PEAT** - Brown to black, root fibers.						
			SILTY SAND - Light tan to brown, silt zones, gravelly, wet, water bearing.						
	1		-grey Sand seam at 1.2 m			AUGER GRAB	1		
	2		**TILL** - Medium grey, sandy, gravelly. -very hard drilling						
	3					AUGER GRAB	2		
	4					AUGER GRAB	3		
			REFUSAL at 4.27 m						
	5								
	6								
	7								
	8								

SAMPLE TYPE: SPLIT SPOON — SHELBY — SPLIT BARREL SAMPLER — AUGER GRAB

CONTRACTOR: PADDOCK DRILLING LTD — INSPECTOR: J. [illegible] — APPROVED: MH — DATE: 92/12/16

WARDROP | Engineering Inc. BOREHOLE LOG: MW-11/4

Logged By: D.M.S.
Client: City of Kenora
Project: Jones Road Waste Disposal Grounds
Drawn By: D.M.S.
Project No.: 002363-01-00
Date Drilled: July 14, 2000
Checked By: J.D.N.
Borehole Location: SW of Waste Disposal Area



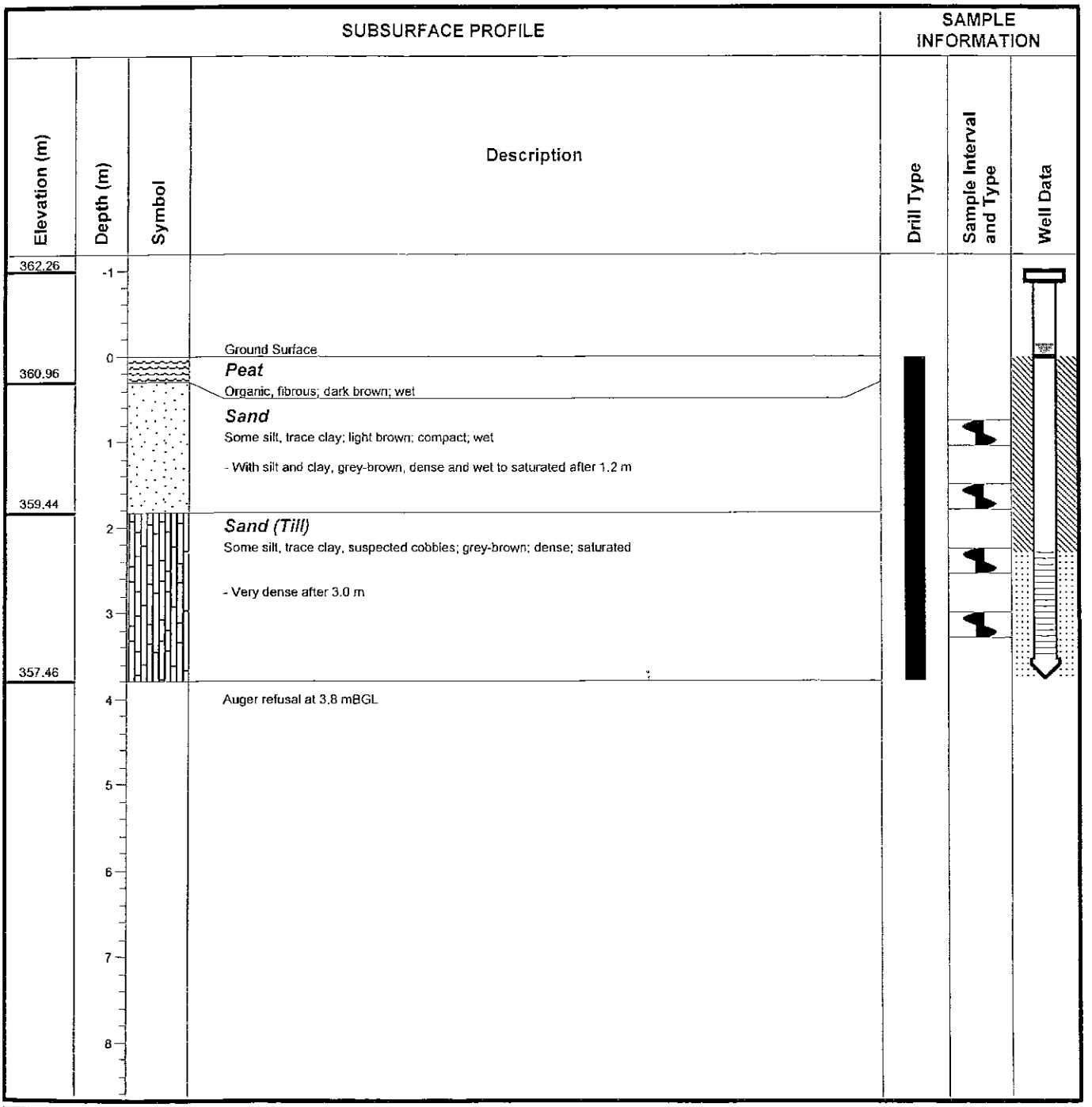
Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 366.45 m
Water Table Elevation: 364.49 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

WARDROP | Engineering Inc. BOREHOLE LOG: MW-12/4

Logged By: D.M.S.
Drawn By: D.M.S.
Checked By: J.D.N.

Client: City of Kenora
Project No.: 002363-01-00
Borehole Location: SW of Waste Disposal Area

Project: Jones Road Waste Disposal Grounds
Date Drilled: July 14, 2000

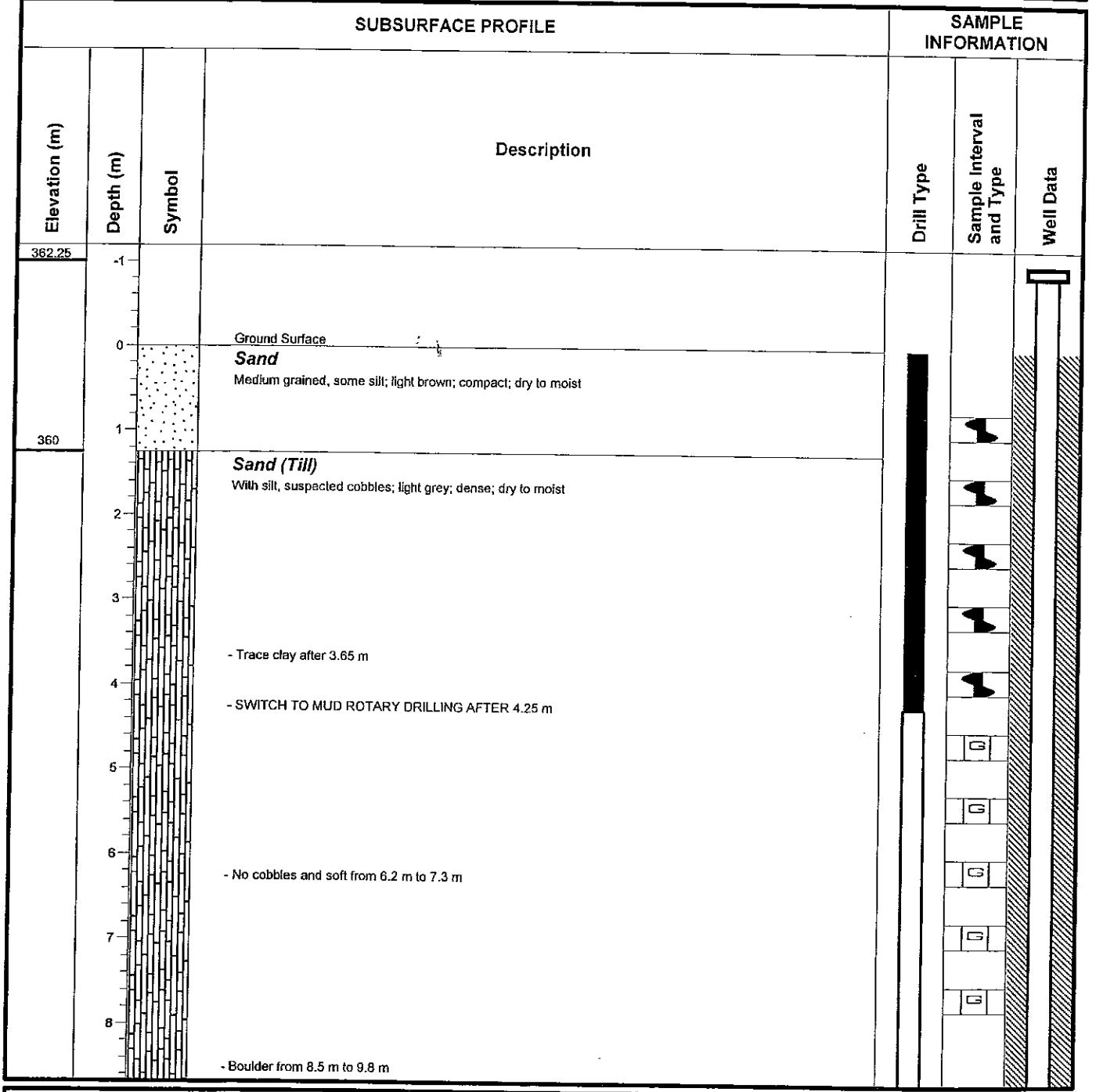


Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 362.26 m

Water Table Elevation: 361.45 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

WARDROP | Engineering Inc. BOREHOLE LOG: MW-16/15

Logged By: D.M.S.
Drawn By: D.M.S.
Checked By: J.D.N.
Client: City of Kenora
Project No.: 002363-01-00
Borehole Location: SE of Waste Disposal Area
Project: Jones Road Waste Disposal Grounds
Date Drilled: July 14, 2000



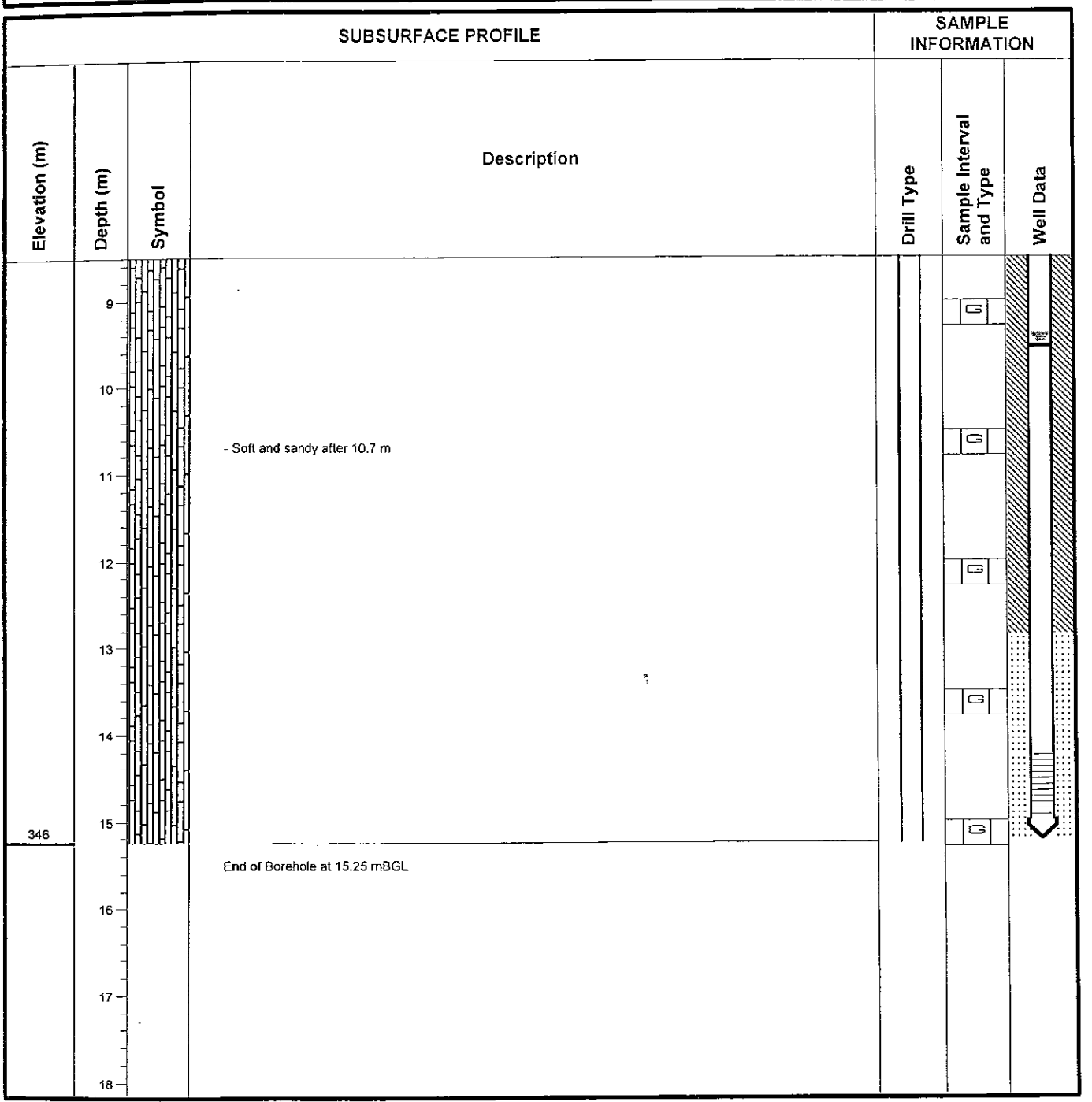
Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 362.25 m
Water Table Elevation: 351.85 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

WARDROP | Engineering Inc. BOREHOLE LOG: MW-16/15

Logged By: D.M.S.
Drawn By: D.M.S.
Checked By: J.D.N.

Client: City of Kenora
Project No.: 002363-01-00
Borehole Location: SE of Waste Disposal Area

Project: Jones Road Waste Disposal Grounds
Date Drilled: July 14, 2000



Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 362.25 m

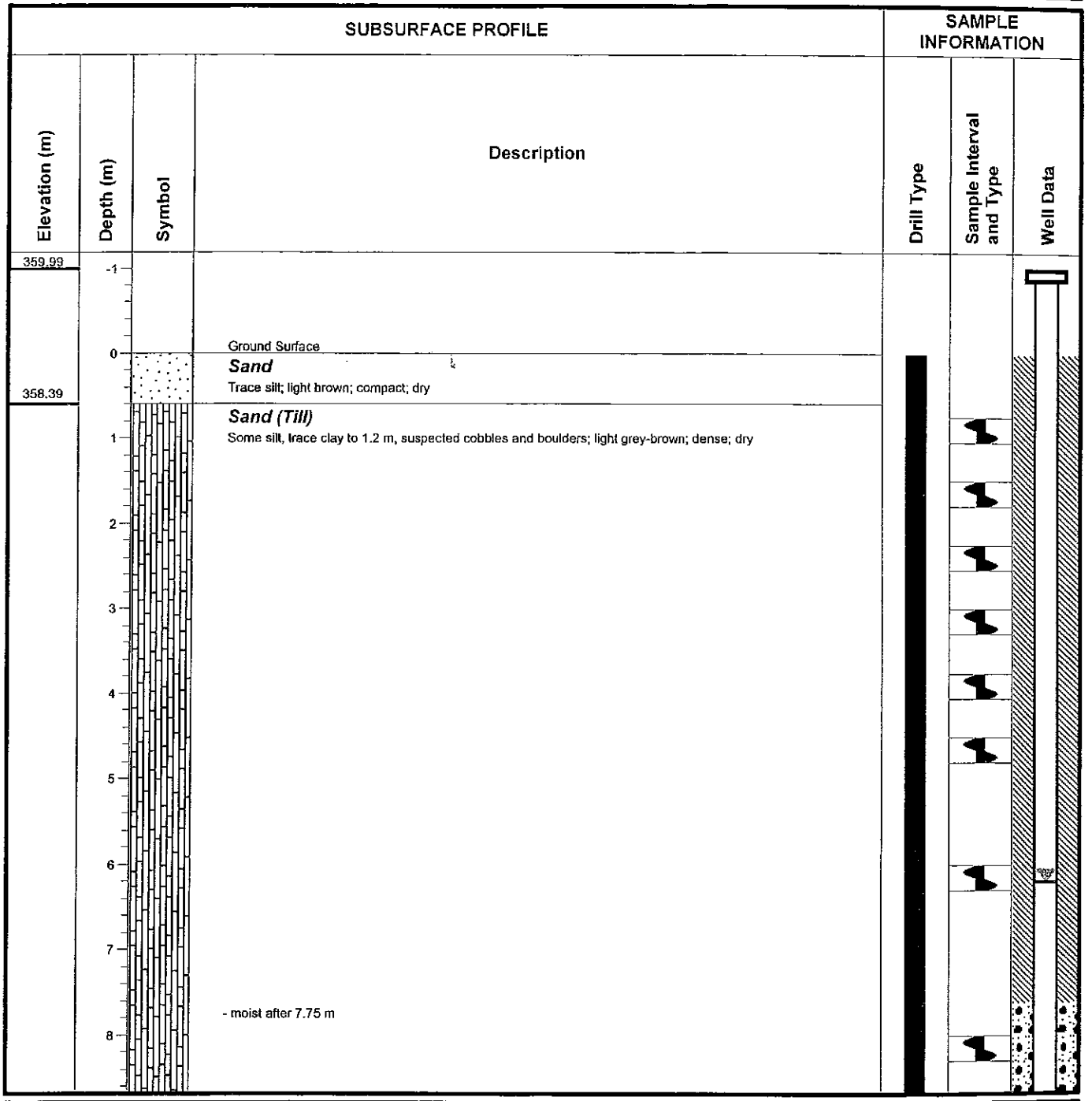
Water Table Elevation: 351.85 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

WARDROP | Engineering Inc. BOREHOLE LOG: MW-17/15

Logged By: D.M.S.
Drawn By: D.M.S.
Checked By: J.D.N.

Client: City of Kenora
Project No.: 002363-01-00
Borehole Location: East Side of Waste Disposal Area

Project: Jones Road Waste Disposal Grounds
Date Drilled: July 13, 2000



Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 359.99 m

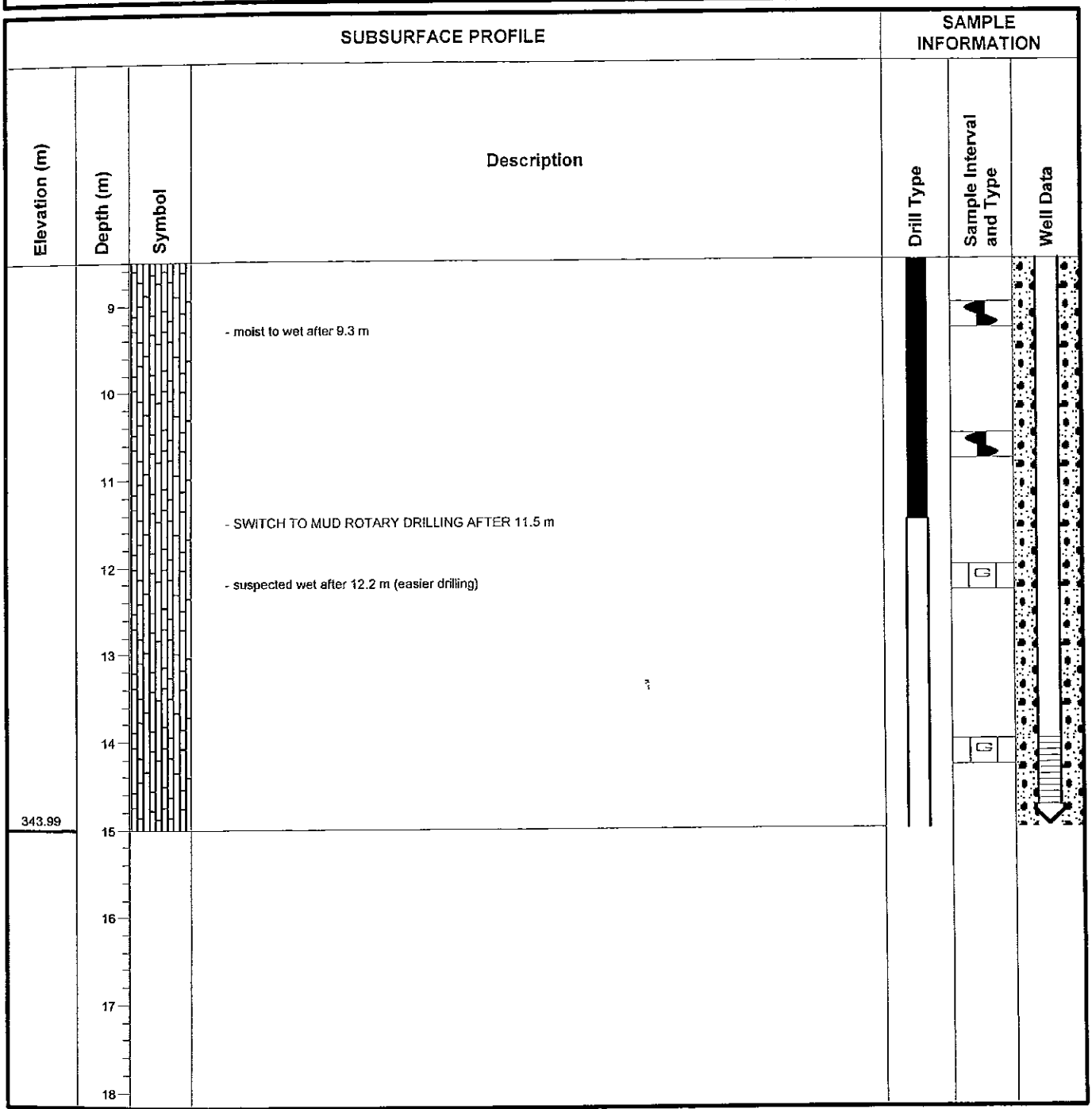
Water Table Elevation: 352.88 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

WARDROP | Engineering Inc. BOREHOLE LOG: MW-17/15

Logged By: D.M.S.
Drawn By: D.M.S.
Checked By: J.D.N.

Client: City of Kenora
Project No.: 002363-01-00
Borehole Location: East Side of Waste Disposal Area

Project: Jones Road Waste Disposal Grounds
Date Drilled: July 13, 2000

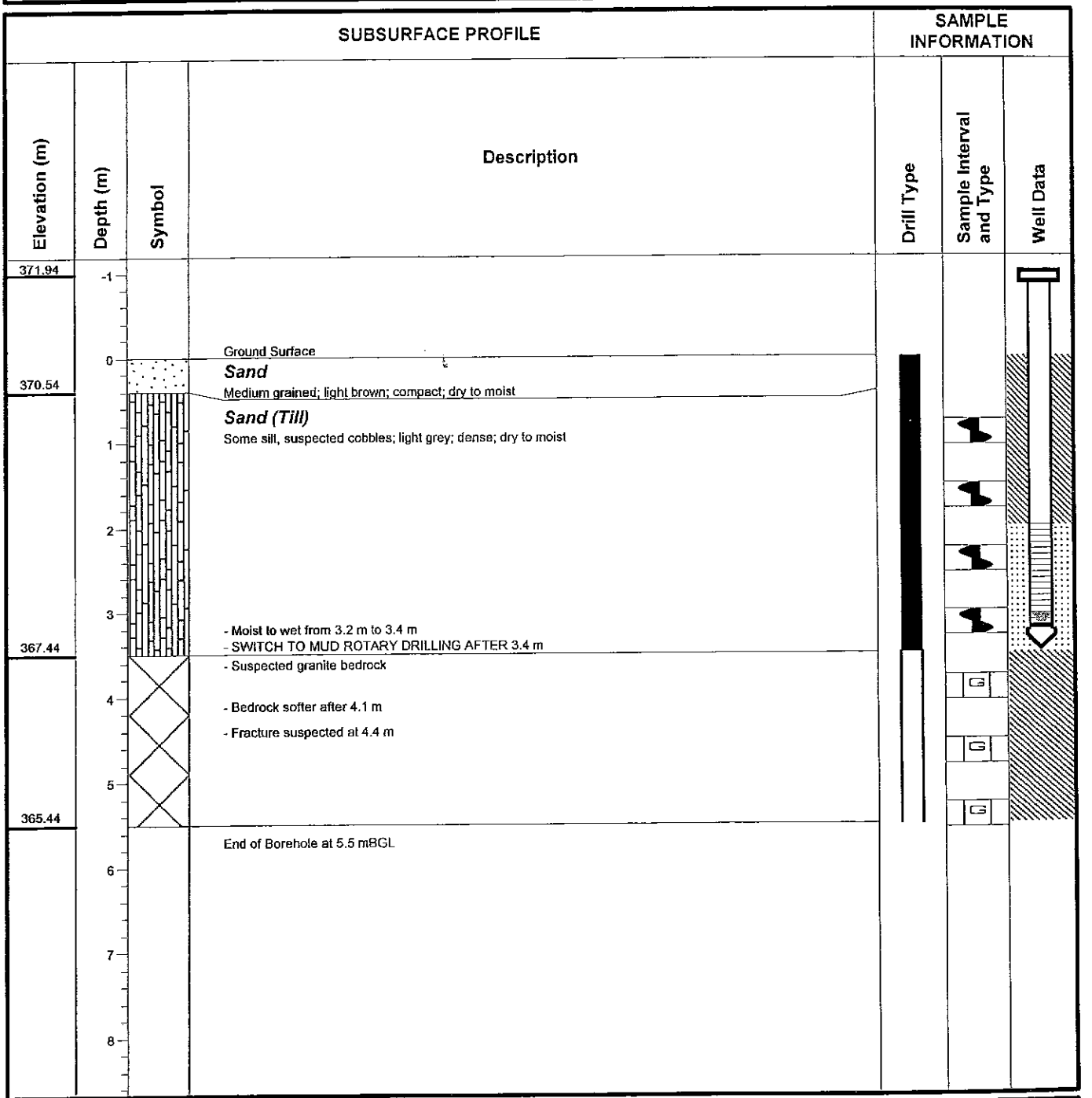


Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 359.99 m

Water Table Elevation: 352.88 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

WARDROP | Engineering Inc. BOREHOLE LOG: MW-18/6

Logged By: D.M.S.
Drawn By: D.M.S.
Checked By: J.D.N.
Client: City of Kenora
Project No.: 002363-01-00
Borehole Location: South of Waste Disposal Area
Project: Jones Road Waste Disposal Grounds
Date Drilled: July 14, 2000



Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 371.94 m
Water Table Elevation: 367.49 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

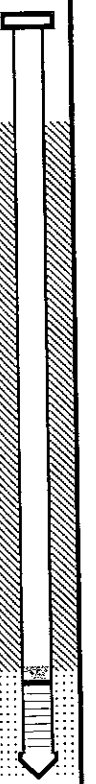
WARDROP | Engineering Inc. BOREHOLE LOG: MW-19/6

Logged By: D.M.S.
Drawn By: D.M.S.
Checked By: J.D.N.
Client: City of Kenora
Project No.: 002363-01-00
Borehole Location: SE Side of Waste Disposal Area
Project: Jones Road Waste Disposal Grounds
Date Drilled: July 13, 2000

Elevation (m)	Depth (m)	Symbol	Description
364.15	0		Ground Surface
			Sand Medium grained, with silt; light brown; compact; dry to moist
361.05	2		***Sand (Till)*** With silt; light grey; dense; dry to moist
	3		- Suspected cobbles, and very dense after 3.0 m
	5		- Compact and moist after 5.5 m
357.05	6		End of Borehole at 6.1 mBGL

SUBSURFACE PROFILE

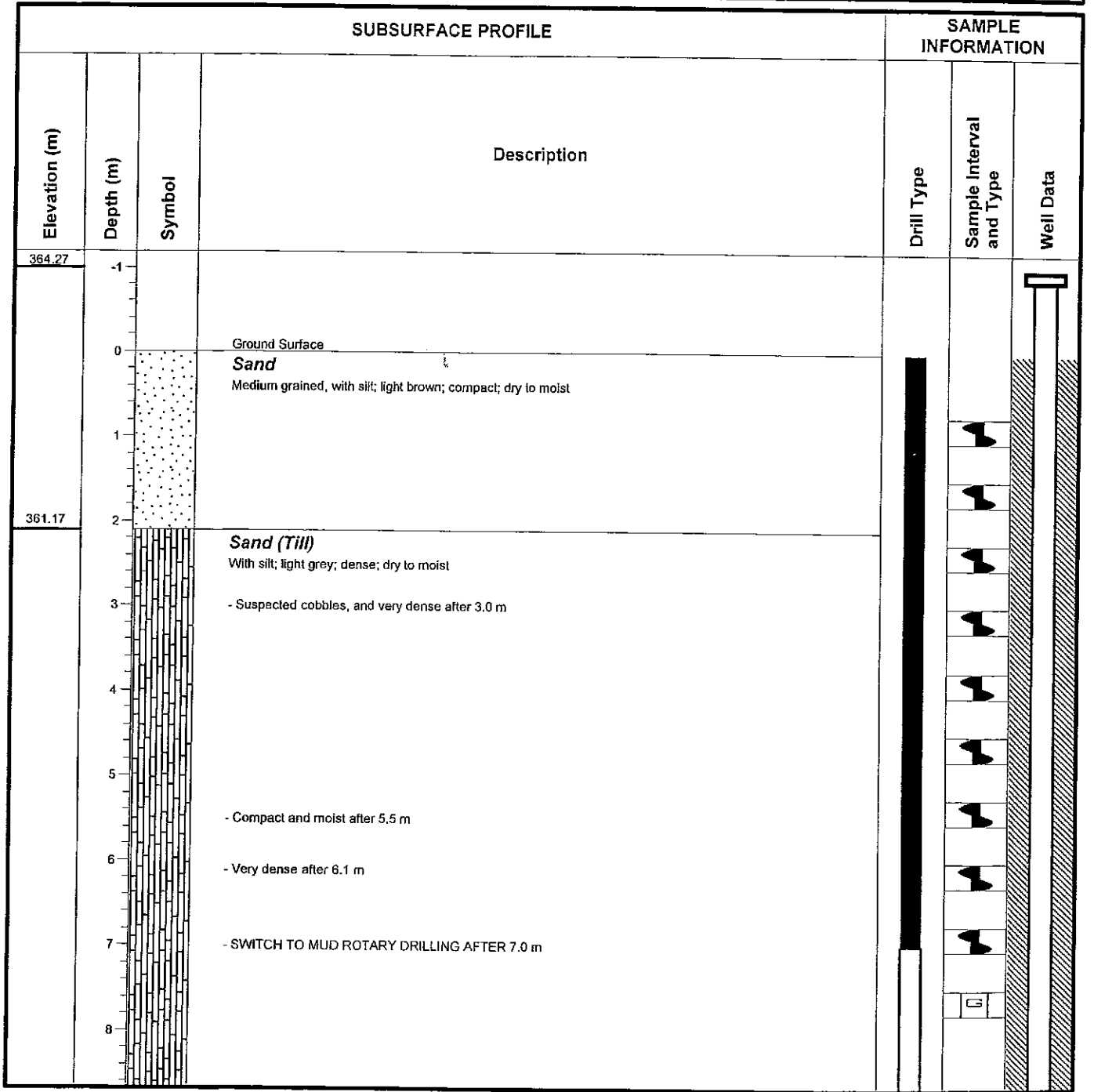
SAMPLE INFORMATION: Drill Type; Sample Interval and Type; Well Data



Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 364.15 m
Water Table Elevation: 357.63 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

WARDROP | Engineering Inc. BOREHOLE LOG: MW-19/16

Logged By: D.M.S.
Client: City of Kenora
Project: Jones Road Waste Disposal Grounds
Drawn By: D.M.S.
Project No.: 002363-01-00
Date Drilled: July 13, 2000
Checked By: J.D.N.
Borehole Location: SE Side of Waste Disposal Area



Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 364.27 m
Water Table Elevation: 352.82 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

WARDROP | Engineering Inc. BOREHOLE LOG: MW-19/16

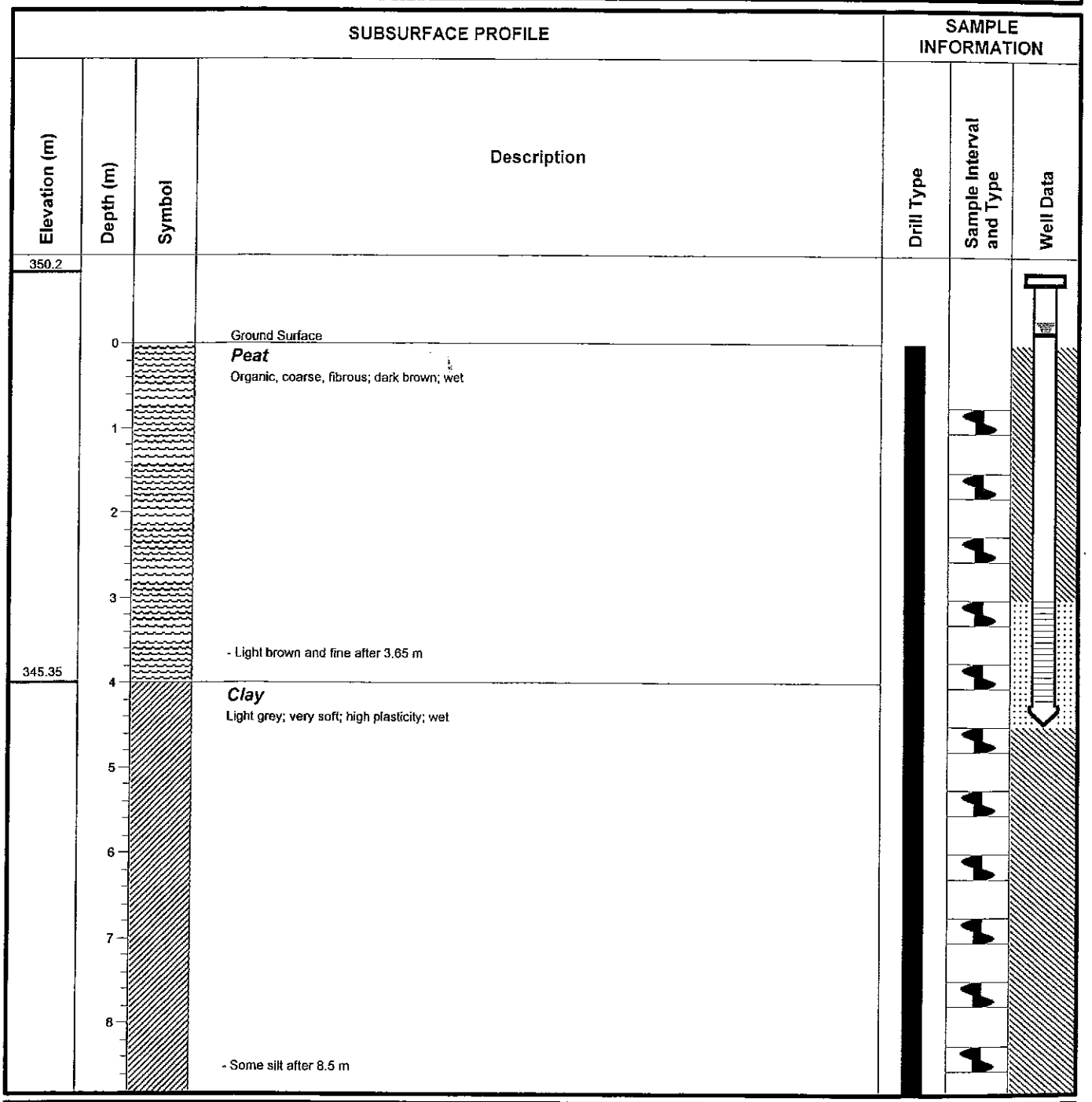
Logged By: D.M.S.
Drawn By: D.M.S.
Checked By: J.D.N.
Client: City of Kenora
Project No.: 002363-01-00
Borehole Location: SE Side of Waste Disposal Area
Project: Jones Road Waste Disposal Grounds
Date Drilled: July 13, 2000

SUBSURFACE PROFILE				SAMPLE INFORMATION		
Elevation (m)	Depth (m)	Symbol	Description	Drill Type	Sample Interval and Type	Well Data
	9		***Sand (Till)*** Wilh silt; light grey; dense; dry to moist		G	
	10		- Soft from 10.0 m to 11.5 m		G	
	11					
	12				G	
	13					
	14		- Red granite boulder from 14.3 m to 14.9 m		G	
	15				G	
347.42	16		End of Borehole at 15.85 mBGL			
	17					
	18					

Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 364.27 m
Water Table Elevation: 352.82 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

WARDROP | Engineering Inc. BOREHOLE LOG: MW-20/4

Logged By: D.M.S.
Client: City of Kenora
Project: Jones Road Waste Disposal Grounds
Drawn By: D.M.S.
Project No.: 002363-01-00
Date Drilled: July 12, 2000
Checked By: J.D.N.
Borehole Location: NE of Waste Disposal Area



Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 350.20 m

Water Table Elevation: 349.50 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

WARDROP | Engineering Inc. BOREHOLE LOG: MW-20/4

Logged By: D.M.S.
Drawn By: D.M.S.
Checked By: J.D.N.

Client: City of Kenora
Project No.: 002363-01-00
Borehole Location: NE of Waste Disposal Area

Project: Jones Road Waste Disposal Grounds
Date Drilled: July 12, 2000

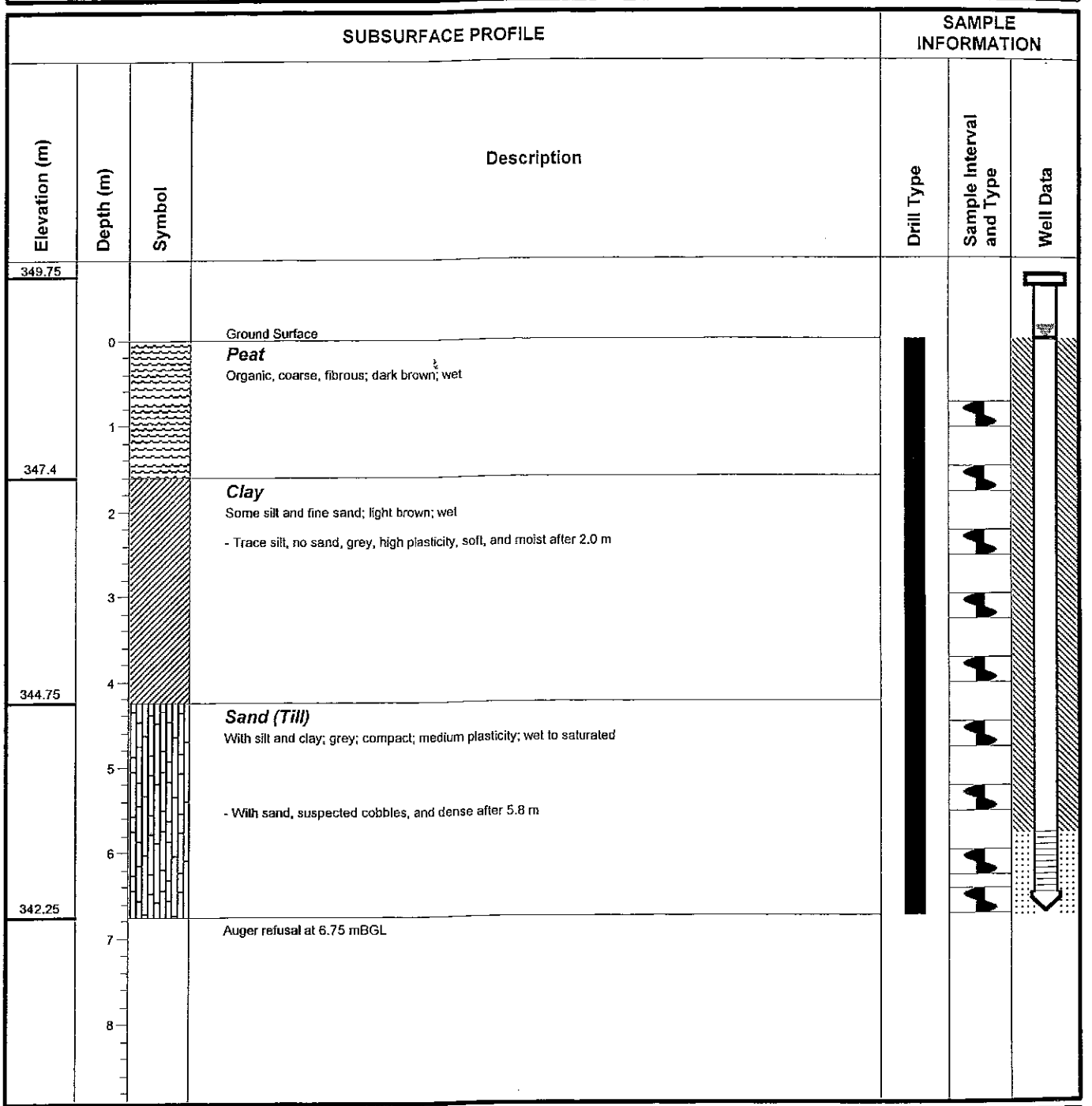
SUBSURFACE PROFILE				SAMPLE INFORMATION		
Elevation (m)	Depth (m)	Symbol	Description	Drill Type	Sample Interval and Type	Well Data
	9		- Some sand after 8.9 m			
339.6	10		***Sand (Till)*** Medium grained, some silt, trace clay, suspected cobbles; grey; dense; moist to wet			
338.65	11		Auger refusal at 10.66 mBGL			
	12					
	13					
	14					
	15					
	16					
	17					
	18					

Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 350.20 m

Water Table Elevation: 349.50 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

WARDROP | Engineering Inc. BOREHOLE LOG: MW-21/7

Logged By: D.M.S.
Client: City of Kenora
Project: Jones Road Waste Disposal Grounds
Drawn By: D.M.S.
Project No.: 002363-01-00
Date Drilled: July 12, 2000
Checked By: J.D.N.
Borehole Location: NE of Waste Disposal Area



Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 349.75 m
Water Table Elevation: 349.11 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

WARDROP | Engineering Inc. BOREHOLE LOG: MW-22/5

Logged By: D.M.S.
Drawn By: D.M.S.
Checked By: J.D.N.

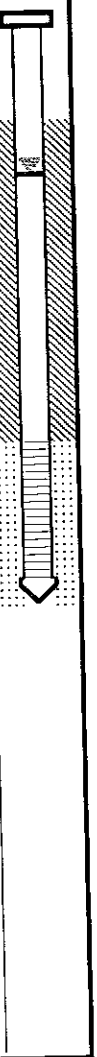
Client: City of Kenora
Project No.: 002363-01-00
Borehole Location: SE Side of Waste Disposal Area

Project: Jones Road Waste Disposal Grounds
Date Drilled: July 11, 2000

Elevation (m)	Depth (m)	Symbol	Description
351.14	0		Ground Surface
			Peat Organic, fibrous; dark brown; wet
348.04	2		***Sand*** Some silt, trace clay; light grey; compact; moist
347.39	3		***Clay*** Some silt; light grey; soft; high plasticity - trace silt after 3.35 m
345.64	4.5		End of Borehole at 4.5 mBGL

SUBSURFACE PROFILE | SAMPLE INFORMATION

Drill Type | Sample Interval and Type | Well Data

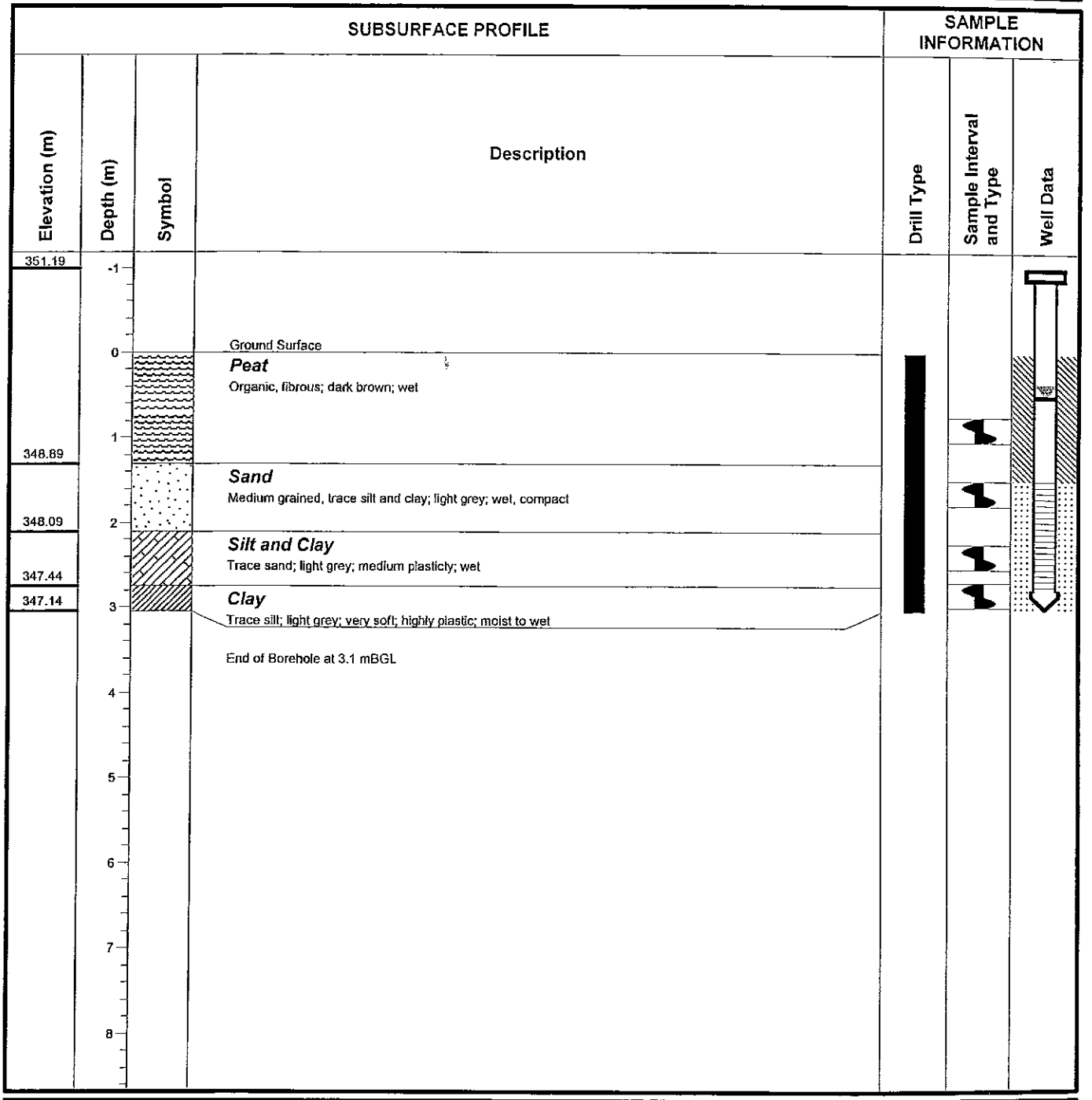


Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 351.14 m

Water Table Elevation: 349.67 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

WARDROP | Engineering Inc. BOREHOLE LOG: MW-23/3

Logged By: D.M.S.
Client: City of Kenora
Project: Jones Road Waste Disposal Grounds
Drawn By: D.M.S.
Project No.: 002363-01-00
Date Drilled: July 12, 2000
Checked By: J.D.N.
Borehole Location: SE Side of Waste Disposal Area



Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 351.19 m
Water Table Elevation: 349.70 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

WARDROP | Engineering Inc. BOREHOLE LOG: MW-24/5

Logged By: D.M.S.
Drawn By: D.M.S.
Checked By: J.D.N.

Client: City of Kenora
Project No.: 002363-01-00
Borehole Location: SE Side of Waste Disposal Area

Project: Jones Road Waste Disposal Grounds
Date Drilled: July 12, 2000

SUBSURFACE PROFILE				SAMPLE INFORMATION		
Elevation (m)	Depth (m)	Symbol	Description	Drill Type	Sample Interval and Type	Well Data
352.01	0		Ground Surface			
350.86	1		***Peat*** Organic, fibrous; dark brown; wet			
349.81	2		***Silt*** Some fine grained sand; light brown; wet			
347.51	3		***Clay*** Some silt; light brown; stiff; low to medium plasticity - Trace silt, very stiff, medium plasticity, and moist after 1.65 m - Increased silt content after 2.6 m			
346.26	4		***Sand (Till)*** Medium grained, with silt, suspected cobbles; grey; dense; moist to wet			
	5		Auger refusal at 4.75 mBGL			
	6					
	7					
	8					

Drilling Contractor: Maple Leaf Enterprises Ltd.
Drill Rig: Deep Rock 150 Track Mounted
Datum: Geodetic
Well Casing Elevation: 352.01 m

Water Table Elevation: 351.24 m
Date Measured: August 21, 2000
Well Materials: 50 mm PVC

APPENDIX H

Ground Water Elevation Data

Historical Water Level Monitoring Data

Monitor	Target Zone	Surface Elevation (masl)	Trigger Elevation (masl)	Background	Ground Water Elevations							
				Fenco (10/96)	1-May-02	1-Jun-02	1-Jul-02	1-Aug-02	1-Sep-02	1-Oct-02	1-May-03	1-May-04
1/17	Till	351.44		350.87	350.66			350.23			350.74	350.74
2/9	**Till**	**351.07**		**350.08**	**350.32**	**350.26**	**350.17**	**350.16**	**350.32**	**349.62**	349.62	**350.62**
2/13	Bedrock	350.85		350.06	350.10			349.93			**350.18**	350.35
3/8	**Till**	**351.51**		**350.44**	**349.86**	**350.17**	**350.06**	**350.06**	**350.36**	**350.30**	350.34	**350.51**
4/6	Till	351.48		350.36	350.13			349.93			**349.79**	350.18
4/18	Till	351.39		350.59	349.99			350.13			349.64	350.49
5/17	**Till / Bedrock**	**370.13**	**361.75**	**355.57**	**353.08**	**352.82**	**352.63**	**N/A**	**352.43**	**352.58**	353.59	**353.83**
6/5	Till	351.09		349.90	349.77			349.55			**349.71**	349.97
6/14	Till	350.79		349.94	349.66			349.57			349.88	NA
7/4	Till	350.34		349.48	349.36			349.14			349.43	349.52
8/22	Till	360.07		349.80	349.26			349.11			349.61	349.85
9/6	Bedrock	354.03		350.03	347.23			348.75			349.75	350.21
10/17	Till	362.81		348.26	345.11			347.06			348.09	347.81
11/4	**Till**	**366.45**	**366.45**		**361.36**	**361.34**	**361.41**	**N/A**	**361.34**	**362.11**	361.95	**363.85**
12/4	Till	362.26			359.48			359.16			**359.08**	361.36
13/6	**Till**	**355.02**			**348.62**	**348.90**	**348.90**	**348.81**	**349.09**	**349.58**		**350.37**
13/14	**??**	**354.72**			**349.27**	**350.00**	**349.15**	**348.72**	**349.62**	**349.87**		**351.22**
14/6	**Till**	**348.91**			**346.07**	**346.50**	**346.48**	**346.33**	**346.91**	**347.66**		**348.19**
14/21	**??**	**348.68**			**345.18**	**345.50**	**345.45**	**345.30**	**345.92**	**346.53**		**347.18**
15/5	**Till**	**352.17**			**350.50**	**349.80**	**350.37**	**350.38**	**349.80**	**350.88**		**351.42**
15/17	**??**	**352.08**			**350.58**	**350.60**	**350.47**	**350.47**	**350.85**	**350.83**		**351.99**
16/15	**??**	**362.25**	**362.25**		**350.37**	**350.07**	**349.95**	**349.94**	**Dry**	**350.27**	**350.51**	**350.55**
17/15	??	359.99			350.37			350.14			**350.72**	350.99
18/6	**Till**	**371.94**	**371.94**		**367.50**	**367.52**	**371.94**	**N/A**	**Dry**	**367.51**	367.66	**368.44**
19/6	**Till**	**364.15**	**364.15**		**357.60**	**357.54**	**364.15**	**N/A**	**Dry**	**Dry**	**357.54**	**357.45**
19/16	**??**	**364.27**	**364.27**		**350.59**	**350.46**	**350.30**	**350.27**	**350.57**	**350.52**	**351.07**	**350.90**
20/4	Peat	350.20			349.35			349.20			**349.27**	349.35
21/7	Peat	349.75			348.71			348.72			348.92	348.95
22/5	Till	351.14			350.28			350.04			350.39	350.34
23/3	Peat	351.19			350.33			350.12			350.46	350.39
24/5	Till	352.01			350.56			350.80			350.89	351.01
KGS-2	??	351.38		350.37	349.93			349.66			350.08	350.08

Note: **bold** denotes required monitoring location

?? denotes unknown target zone

Historical Water Level Monitoring Data

Monitor	Target Zone	Surface Elevation (masl)	Trigger Elevation (masl)	Ground Water Elevations								
				1-Aug-04	1-Aug-05	1-Sep-05	1-Oct-05	1-May-06	1-Aug-06	1-May-07	1-Aug-07	1-May-08
1/17	Till	351.44		NA	NA	NA	NA	350.66	350.04	350.38	351.44	349.37
2/9	**Till**	**351.07**		**350.36**	**350.23**	**350.32**	**349.62**	**349.95**	**349.77**	**349.82**	**349.85**	349.88
2/13	Bedrock	350.85		350.15	350.13	350.13	350.14	350.10	349.93	350.06	350.02	350.14
3/8	**Till**	**351.51**		**350.21**	**350.19**	**350.13**	**350.16**	**350.17**	**349.80**	**350.12**	**350.26**	350.28
4/6	Till	351.48		350.08	350.06	350.00	350.39	350.05	349.73	350.13	350.16	350.29
4/18	Till	351.39		350.41	350.31	350.34	350.08	350.35	349.99	Blocked	350.41	350.56
5/17	**Till / Bedrock**	**370.13**	**361.75**	**357.10**	**357.77**	**357.18**	**356.10**	**dry**	**dry**	**Dry**	**354.91**	353.54
6/5	Till	351.09		349.87	349.79	349.75	349.79	349.73	349.02	349.65	349.75	349.81
6/14	Till	350.79		349.89	349.83	349.83	349.79	349.72	349.13	349.62	349.78	349.82
7/4	Till	350.34		349.30	349.22	349.18	349.18	349.21	348.69	349.15	349.15	349.28
8/22	Till	360.07		350.47	351.11	351.01	350.61	349.67	349.31	348.75	349.74	349.66
9/6	Bedrock	354.03		350.13	350.30	349.95	349.64	349.63	348.87	Dry	349.56	350.53
10/17	Till	362.81		349.21	351.08	350.37	349.01	347.88	347.43	Dry	347.69	347.59
11/4	**Till**	**366.45**	**366.45**	**363.19**	**363.41**	**363.01**	**362.05**	**dry**	**dry**	**Dry**	**362.75**	362.26
12/4	Till	362.26		360.06	360.04	359.60	359.48	360.01	358.90	358.99	360.03	360.44
13/6	**Till**	**355.02**		**350.26**	**350.22**	**349.90**	**349.52**	**349.41**	**348.67**	**348.56**	**350.50**	349.50
13/14	**??**	**354.72**		**350.63**	**350.78**	**350.27**	**350.22**	**350.07**	**348.39**	**349.09**	**350.35**	349.69
14/6	**Till**	**348.91**		**347.92**	**347.81**	**347.57**	**347.41**	**347.31**	**346.32**	**345.05**	**347.32**	346.86
14/21	**??**	**348.68**		**346.91**	**346.72**	**346.32**	**346.37**	**346.33**	**345.33**	**344.20**	**346.30**	345.91
15/5	**Till**	**352.17**		**350.73**	**350.69**	**350.51**	**350.52**	**350.57**	**350.12**	**349.45**	**350.87**	350.77
15/17	**??**	**352.08**		**350.80**	**358.59**	**358.57**	**359.53**	**350.66**	**350.26**	**350.56**	**350.82**	350.78
16/15	**??**	**362.25**	**362.25**	**351.04**	**352.05**	**352.13**	**351.56**	**350.50**	**350.19**	**349.60**	**350.63**	350.44
17/15	??	359.99		351.79	352.47	352.09	351.53	350.58	350.23	349.72	351.40	350.55
18/6	**Till**	**371.94**	**371.94**	**dry**	**dry**	**dry**	**dry**	**dry**	**dry**	**Dry**	**Dry**	Dry
19/6	**Till**	**364.15**	**364.15**	**dry**	**dry**	**353.02**	**dry**	**dry**	**dry**	**Dry**	**Dry**	Dry
19/16	**??**	**364.27**	**364.27**	**352.37**	**353.15**	**353.02**	**352.47**	**350.92**	**350.55**	**349.86**	**351.33**	350.86
20/4	Peat	350.20		349.25	349.16	349.25	349.24	349.30	348.84	349.28	349.25	349.39
21/7	Peat	349.75		348.91	348.80	348.75	348.85	348.91	348.27	348.78	348.75	348.95
22/5	Till	351.14		350.24	350.38	350.28	350.24	350.14	349.82	350.05	350.25	350.30
23/3	Peat	351.19		351.00	350.27	350.25	350.30	350.22	349.85	350.17	350.32	350.39
24/5	Till	352.01		350.91	350.79	350.79	351.01	350.79	350.53	350.52	350.75	350.83
KGS-2	??	351.38		350.08	350.20	350.20	349.34	349.98	349.79	349.84	no access	348.87

Note: **bold** denotes required monitoring location

?? denotes unknown target zone

Historical Water Level Monitoring Data

Monitor	Target Zone	Surface Elevation (masl)	Trigger Elevation (masl)	Ground Water Elevations							Maximum (masl)	Minimum (masl)
				1-Aug-08	1-May-09	1-Aug-09	10-May-10	10-Aug-10	9-Jun-11	23-Aug-11		
1/17	Till	351.44		no access	no access	349.99	349.47	350.00	349.50	351.44	351.44	349.37
2/9	**Till**	**351.07**		349.79	349.86	349.84	349.74	349.74	349.72	349.67	350.62	349.62
2/13	Bedrock	350.85		350.07	350.12	350.15	350.08	350.18	350.16	350.07	350.35	349.93
3/8	**Till**	**351.51**		350.11	350.38	350.31	350.22	350.26	350.25	350.13	350.51	349.80
4/6	Till	351.48		350.23	350.85	350.58	350.52	350.54	350.52	N/A	350.85	349.73
4/18	Till	351.39		350.45	350.76	no access	350.57	350.46	350.53	N/A	350.76	349.64
5/17	**Till / Bedrock**	**370.13**	**361.75**	354.88	353.28	356.27	353.65	356.05	353.58	354.68	357.77	352.43
6/5	Till	351.09		349.55	349.87	349.84	349.74	349.84	349.80	349.48	349.97	349.02
6/14	Till	350.79		349.59	349.85	349.94	349.79	349.94	349.84	349.67	349.94	349.13
7/4	Till	350.34		349.08	349.32	349.24	349.23	349.19	349.19	349.05	349.52	348.69
8/22	Till	360.07		350.07	349.80	350.74	349.79	350.90	349.97	350.17	351.11	348.75
9/6	Bedrock	354.03		350.00	351.19	350.80	350.75	350.63	350.97	350.12	351.19	347.23
10/17	Till	362.81		348.31	347.63	348.94	347.95	350.31	347.95	348.51	351.08	345.11
11/4	**Till**	**366.45**	**366.45**	362.82	362.61	363.45	362.22	363.57	362.53	362.58	363.85	361.34
12/4	Till	362.26		359.77	360.98	360.79	360.36	360.26	360.41	359.19	361.36	358.90
13/6	**Till**	**355.02**		350.10	349.77	350.62	349.48	350.57	349.63	349.62	350.62	348.56
13/14	**??**	**354.72**		350.16	350.02	350.77	350.22	350.76	350.26	349.63	351.22	348.39
14/6	**Till**	**348.91**		347.27	347.50	348.08	347.41	347.91	347.61	346.98	348.19	345.05
14/21	**??**	**348.68**		346.26	346.55	347.03	346.43	347.86	347.56	346.00	347.86	344.20
15/5	**Till**	**352.17**		350.58	351.07	350.97	350.71	350.88	350.73	350.56	351.42	349.45
15/17	**??**	**352.08**		350.67	350.95	350.92	350.73	350.90	350.75	350.66	359.53	350.26
16/15	**??**	**362.25**	**362.25**	350.91	350.46	351.41	350.62	356.58	350.70	350.93	356.58	349.60
17/15	??	359.99		350.99	350.62	351.64	350.59	351.84	350.83	351.05	352.47	349.72
18/6	**Till**	**371.94**	**371.94**	Dry	368.18	Dry	dry	367.94	dry	dry	371.94	367.50
19/6	**Till**	**364.15**	**364.15**	Dry	Dry	Dry	dry	357.56	dry	dry	364.15	353.02
19/16	**??**	**364.27**	**364.27**	351.41	350.87	352.11	351.08	352.31	351.14	351.54	353.15	349.86
20/4	Peat	350.20		349.26	349.38	349.35	349.19	349.12	N/A	N/A	349.39	348.84
21/7	Peat	349.75		348.70	349.02	348.92	348.95	dry	348.92	dry	349.02	348.27
22/5	Till	351.14		350.28	350.50	350.64	350.49	350.51	350.28	350.31	350.64	349.82
23/3	Peat	351.19		350.32	350.44	350.63	349.79	350.48	350.57	350.50	351.00	349.79
24/5	Till	352.01		350.89	341.74	351.04	350.61	351.01	351.01	350.79	351.04	341.74
KGS-2	??	351.38		no access	351.38	no access	348.45	349.08	349.97	348.95	351.38	348.45

Note: **bold** denotes required monitoring location

?? denotes unknown target zone

Historical Water Level Monitoring Data

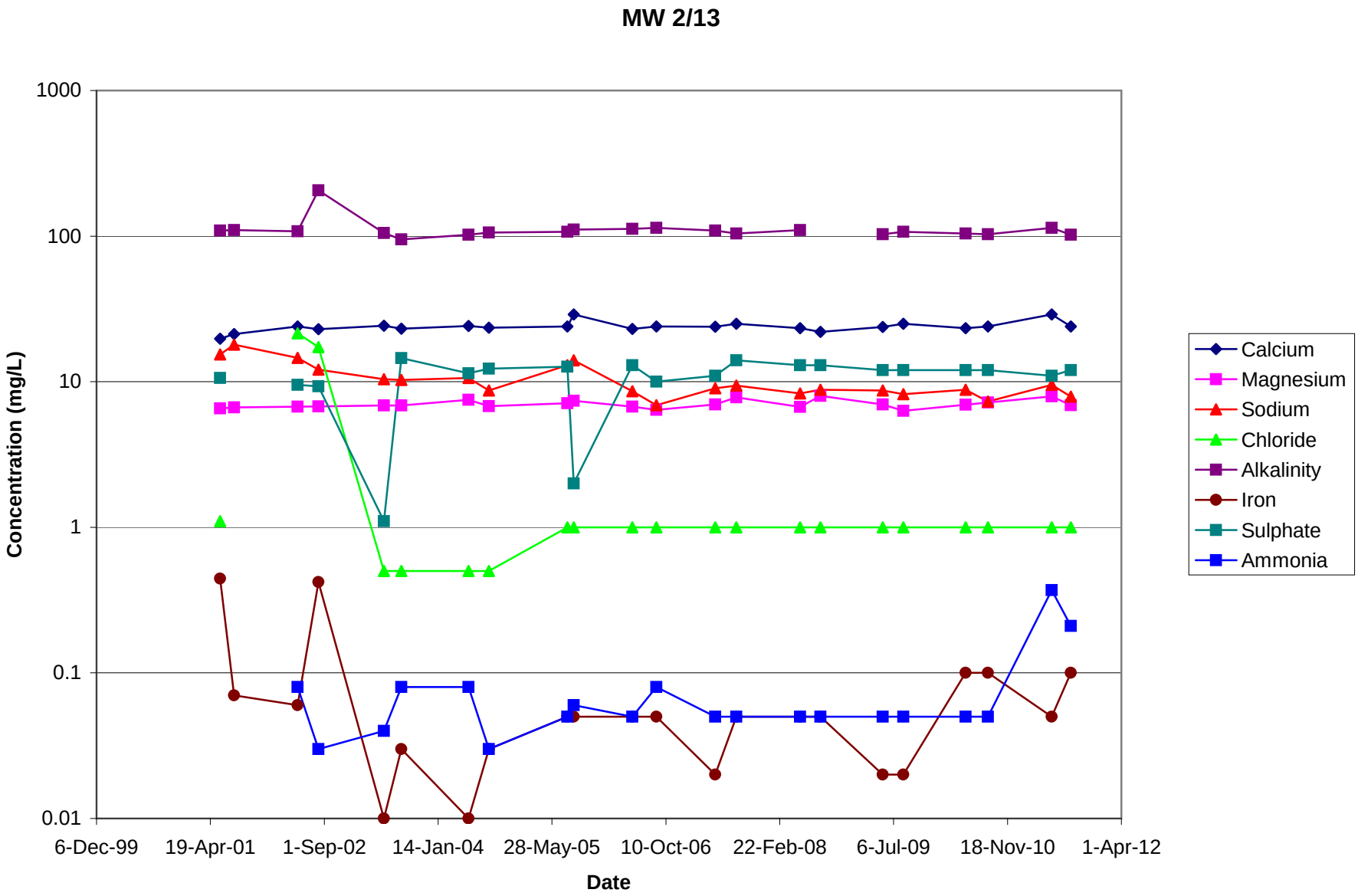
Monitor	Target Zone	Surface Elevation (masl)	Trigger Elevation (masl)	Fluctuation (m)
1/17	Till	351.44		**2.07**
2/9	**Till**	**351.07**		**1.00**
2/13	Bedrock	350.85		**0.42**
3/8	**Till**	**351.51**		**0.71**
4/6	Till	351.48		**1.12**
4/18	Till	351.39		**1.12**
5/17	**Till / Bedrock**	**370.13**	**361.75**	**5.34**
6/5	Till	351.09		**0.95**
6/14	Till	350.79		**0.81**
7/4	Till	350.34		**0.83**
8/22	Till	360.07		**2.36**
9/6	Bedrock	354.03		**3.96**
10/17	Till	362.81		**5.97**
11/4	**Till**	**366.45**	**366.45**	**2.51**
12/4	Till	362.26		**2.46**
13/6	**Till**	**355.02**		**2.06**
13/14	**??**	**354.72**		**2.83**
14/6	**Till**	**348.91**		**3.14**
14/21	**??**	**348.68**		**3.66**
15/5	**Till**	**352.17**		**1.97**
15/17	**??**	**352.08**		**9.27**
16/15	**??**	**362.25**	**362.25**	**6.98**
17/15	??	359.99		**2.75**
18/6	**Till**	**371.94**	**371.94**	**4.44**
19/6	**Till**	**364.15**	**364.15**	**11.13**
19/16	**??**	**364.27**	**364.27**	**3.29**
20/4	Peat	350.20		**0.55**
21/7	Peat	349.75		**0.75**
22/5	Till	351.14		**0.82**
23/3	Peat	351.19		**1.21**
24/5	Till	352.01		**9.30**
KGS-2	??	351.38		**2.93**

Note: **bold** denotes required monitoring location

?? denotes unknown target zone

APPENDIX I

Chemistry Over Time Graphs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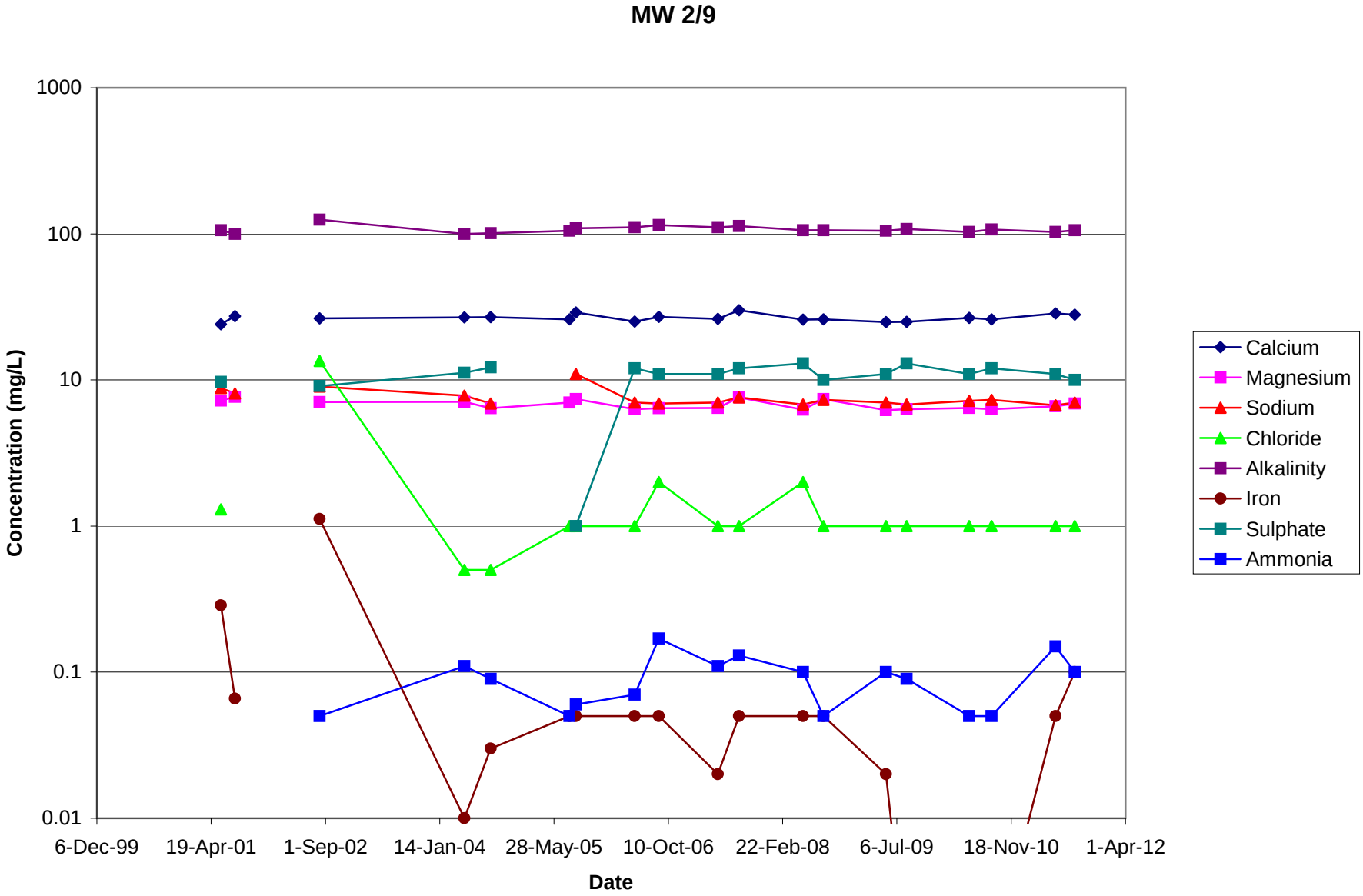
1-Sep-02
14-Jan-04
28-May-05
10-Oct-06
22-Feb-08
6-Jul-09
18-Nov-10
1-Apr-12
Date
Calcium
Magnesium
Sodium
Chloride
Alkalinity
Iron
Sulphate
Ammonia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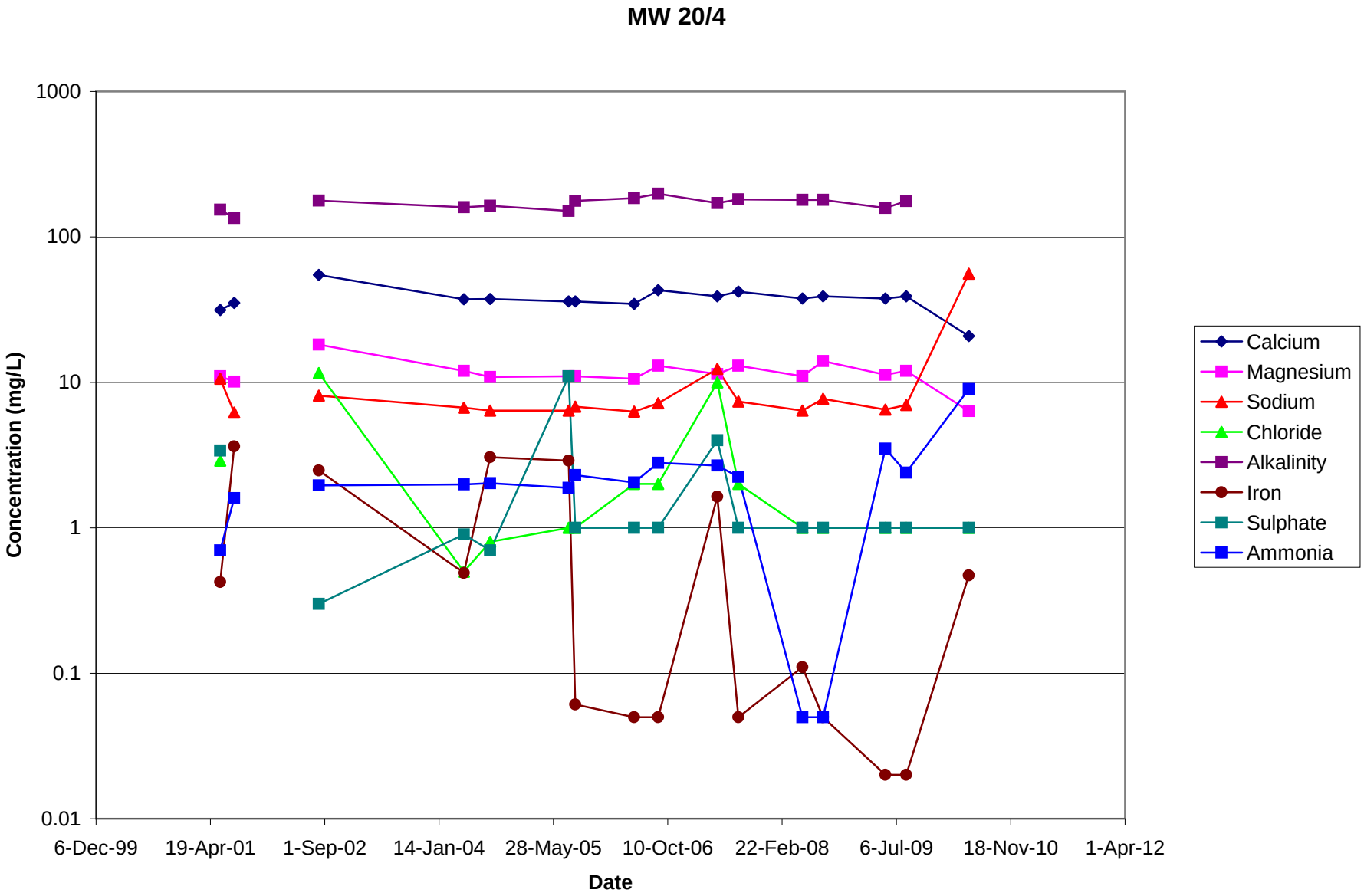
28-May-05
10-Oct-06
22-Feb-08
6-Jul-09
18-Nov-10
1-Apr-12
Date
Calcium
Magnesium
Sodium
Chloride
Alkalinity
Iron
Sulphate
Ammonia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Concentration (mg/L)
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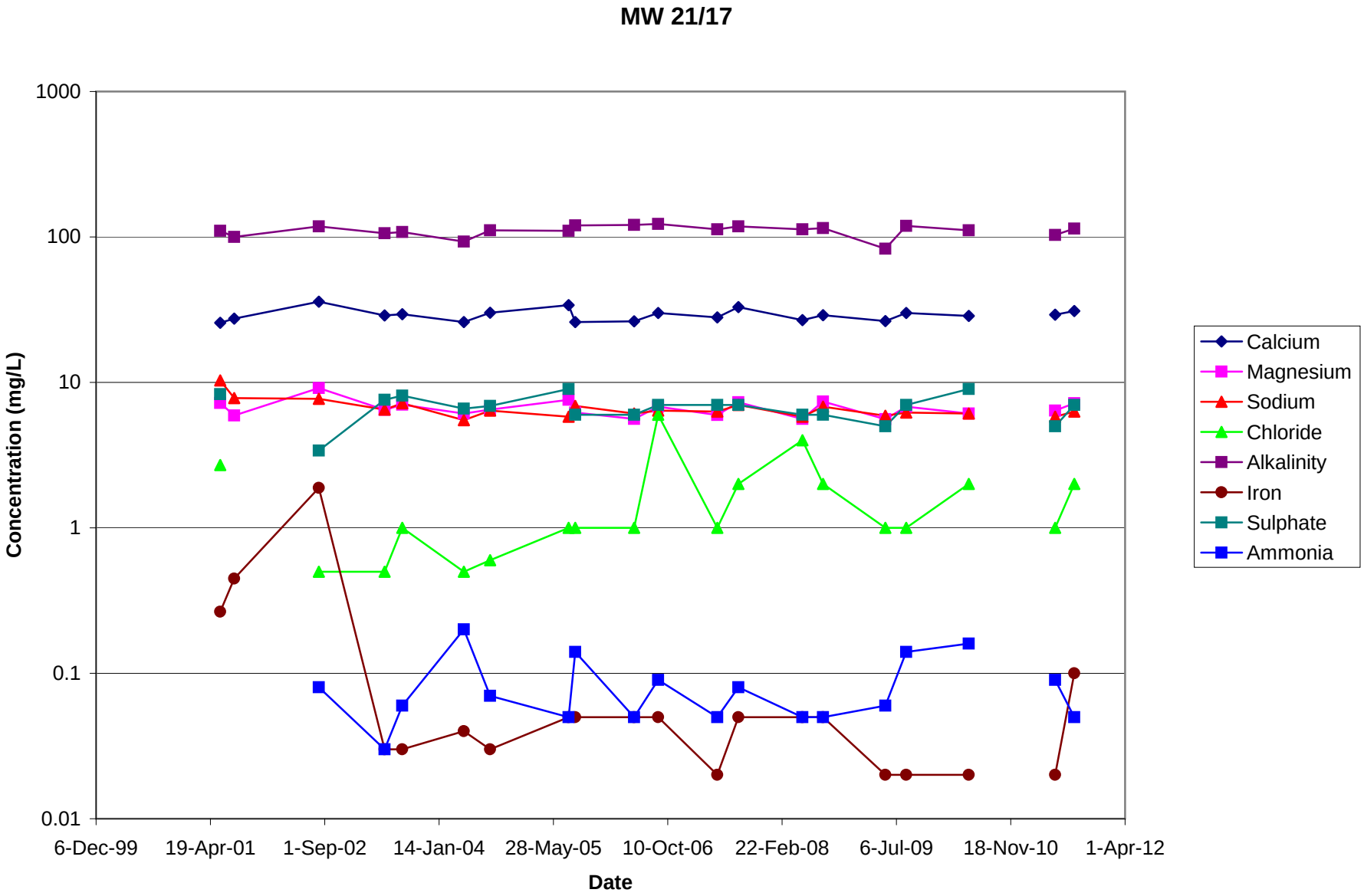
19-Apr-01
1-Sep-02
14-Jan-04
28-May-05
10-Oct-06
22-Feb-08
6-Jul-09
18-Nov-10
1-Apr-12
Date
Calcium
Magnesium
Sodium
Chloride
Alkalinity
Iron
Sulphate
Ammonia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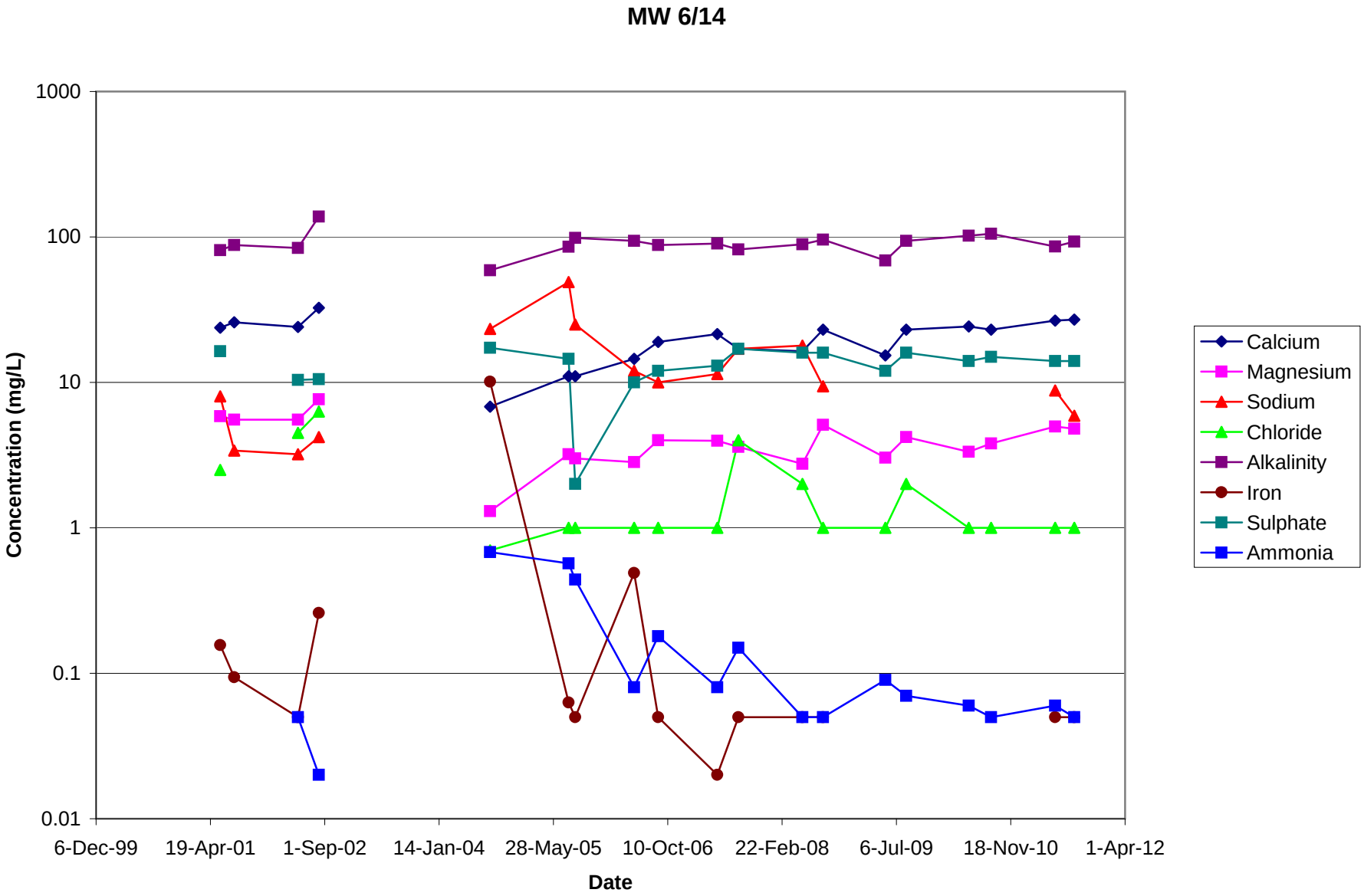
1-Sep-02
14-Jan-04
28-May-05
10-Oct-06
22-Feb-08
6-Jul-09
18-Nov-10
1-Apr-12
Date
Calcium
Magnesium
Sodium
Chloride
Alkalinity
Iron
Sulphate
Ammonia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1-Sep-02
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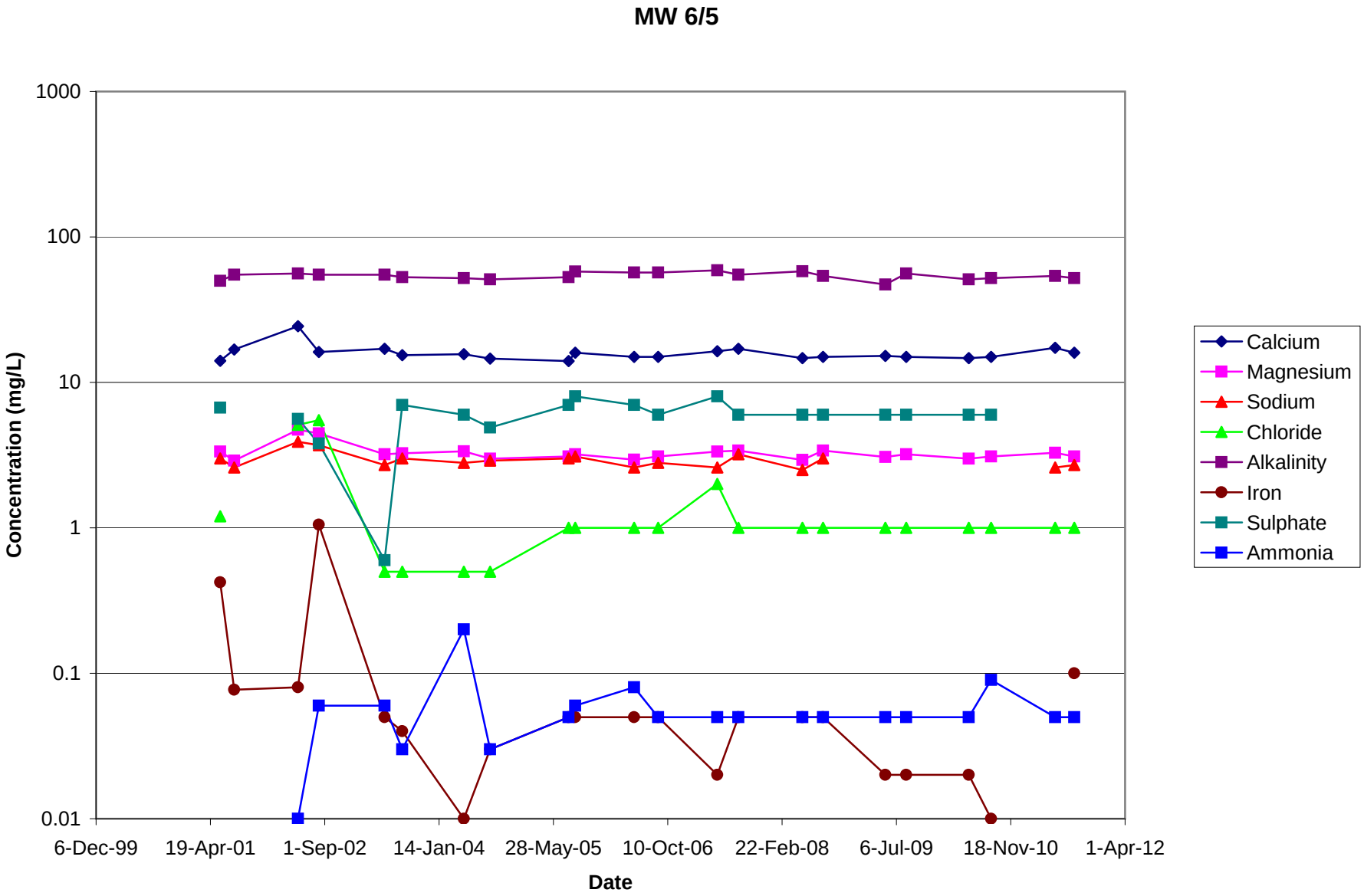
28-May-05
10-Oct-06
22-Feb-08
6-Jul-09
18-Nov-10
1-Apr-12
Date
Calcium
Magnesium
Sodium
Chloride
Alkalinity
Iron
Sulphate
Ammonia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1-Sep-02
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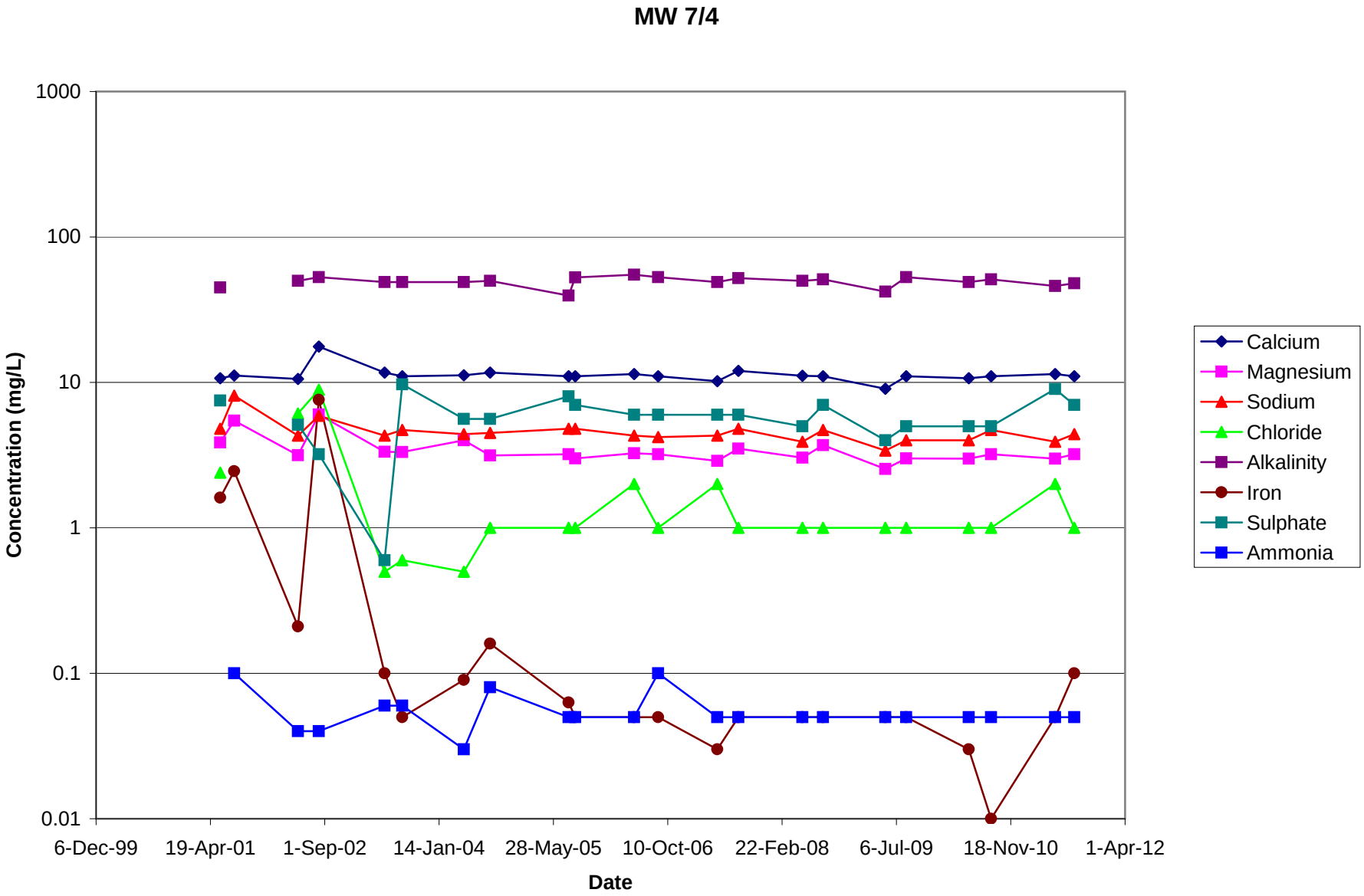
28-May-05
10-Oct-06
22-Feb-08
6-Jul-09
18-Nov-10
1-Apr-12
Date
Calcium
Magnesium
Sodium
Chloride
Alkalinity
Iron
Sulphate
Ammonia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0.1
0.01
Concentration (mg/L)
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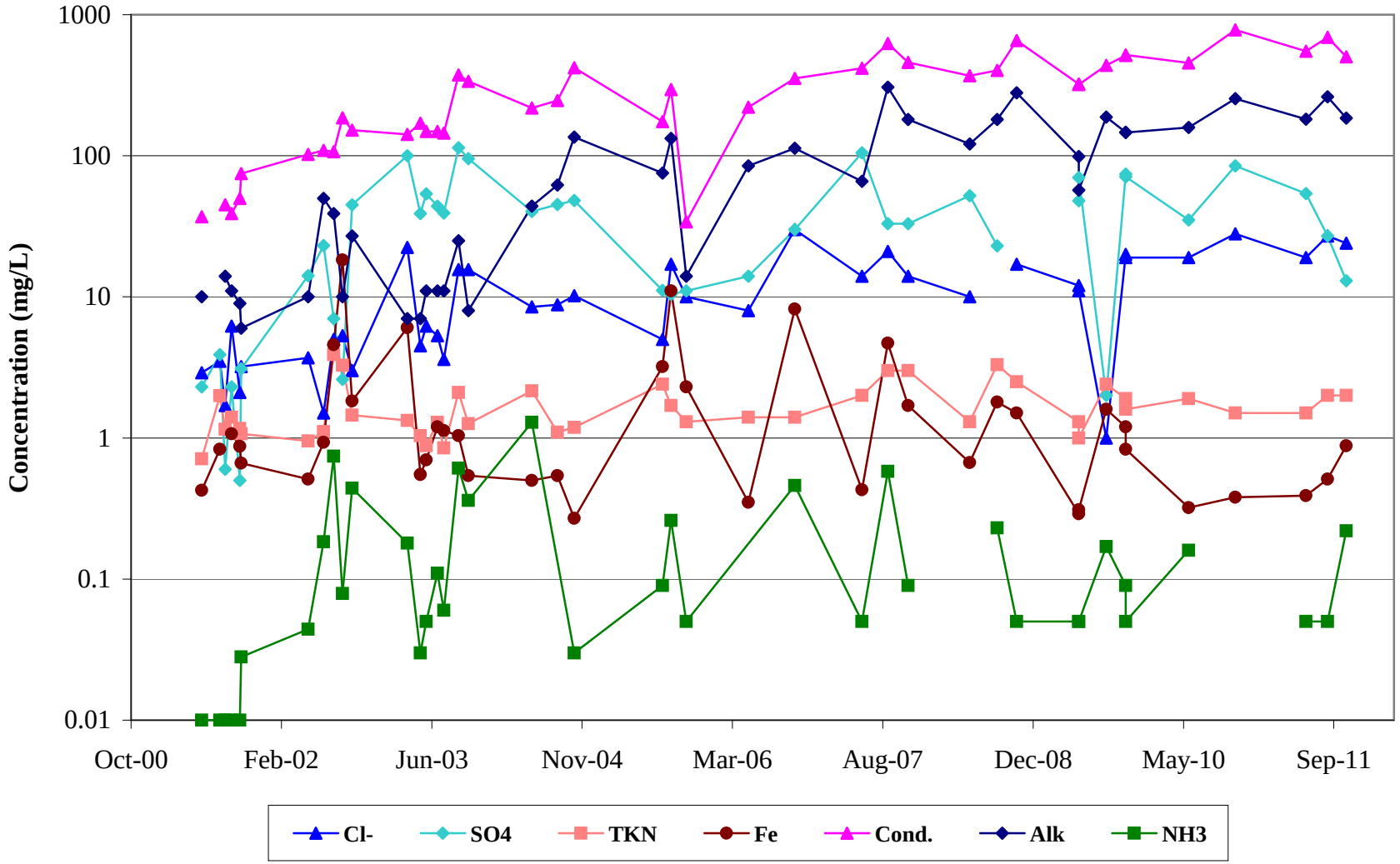
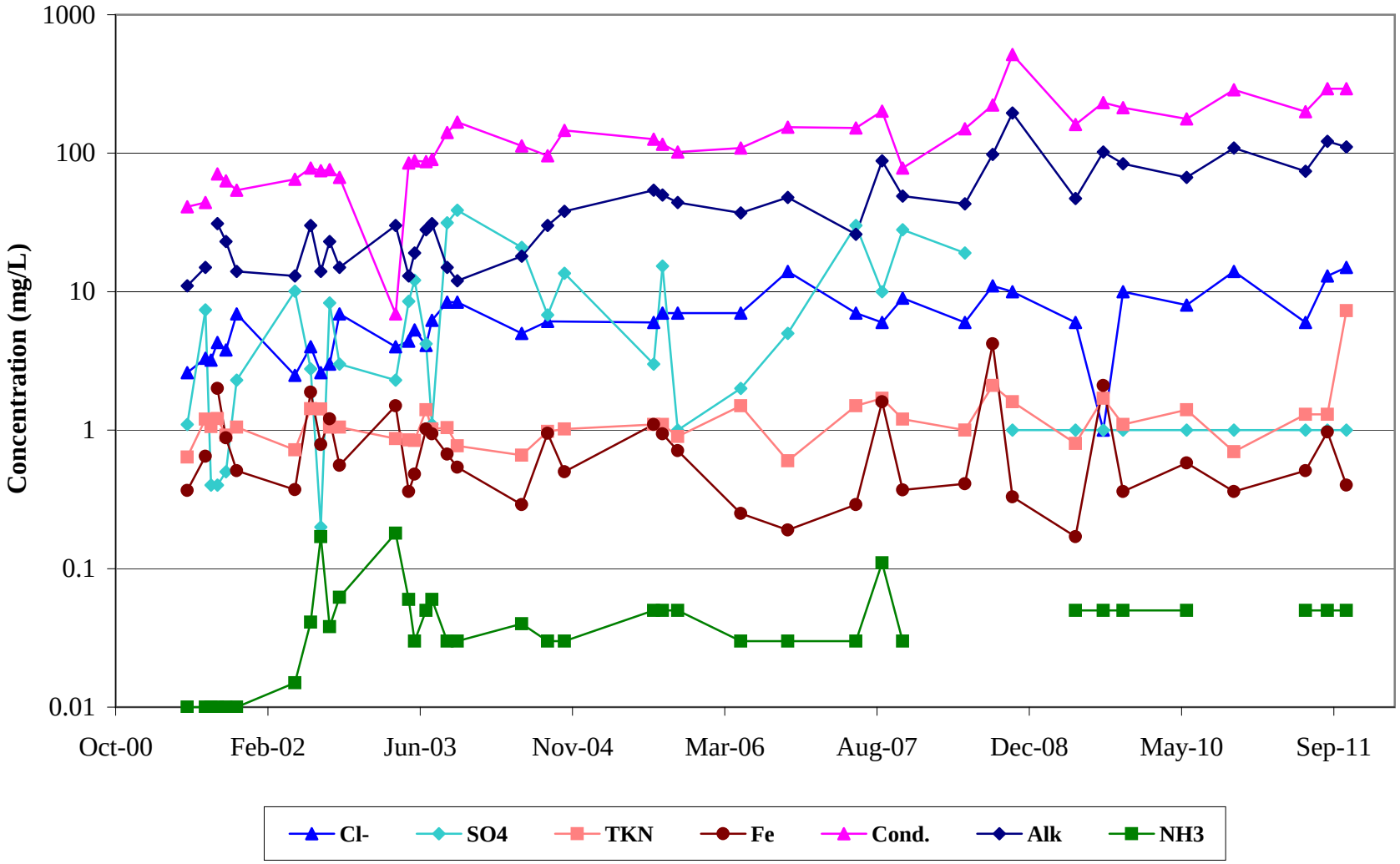
19-Apr-01
1-Sep-02
14-Jan-04
28-May-05
10-Oct-06
22-Feb-08
6-Jul-09
18-Nov-10
1-Apr-12
Date
Calcium
Magnesium
Sodium
Chloride
Alkalinity
Iron
Sulphate
Ammonia

Chemistry Over Time At SW-1



Chemistry Over Time At SW-2



Chemistry Over Time At SW-3