2006 Annual Report – Guelph Wet-Dry Recycling Centre (MOE Site No. A170128)

Prepared for
City of Guelph

Submitted by
Gartner Lee Limited

March 2007

Gartner Lee

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Reference: **GLL 70-133**

Distribution:
6 City of Guelph
1 Gartner Lee Limited

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March 30, 2007

Mr. Dean Wyman
Manager
Solid Waste Services Division
City of Guelph Works Department
59 Carden Street
Guelph, ON N1H 3A1

Dear Mr. Wyman:

Re: GLL 70-133 – 2006 Annual Report, Guelph Wet-Dry Recycling Centre, Certificate of Approval (Waste Disposal Site) No. A170128

Enclosed, please find our final report for this project, addressing the requirements of the site's Certificate of Approval.

Please don't hesitate to call me should you have any questions about this report. Thank you for allowing Gartner Lee to be of continued service to the City of Guelph.

Yours very truly,
GARTNER LEE LIMITED

Stephen C. Hollingshead, M.Sc.(Eng.), P.Eng.
Senior Geological Engineer
Principal

PW:tmc
Attach.

Executive Summary

The following table presents a summary of the 2006 Annual Report for the City of Guelph Wet-Dry Recycling Centre. The Recycling Centre is operated under Ministry of Environment Provisional Certificate of Approval (Waste Disposal Site) No. A170128. Conditions 22, 27 and 30 of the Certificate of Approval (C of A) specify annual reporting requirements. These have been outlined in the left-hand column below, while the right hand column provides a reference to the section of this report where the reader will find further details.

A. Provisional C of A (Waste Disposal Site) No. A170128

Hazardous Houshold Waste (HHW) Transfer Station (Condition 22)

C of A Reporting Requirement	Report Reference and Summary
(k) The City shall annually review and update the existing waste screening measures for all incoming waste, to ensure only waste approved by this Certificate are received at this facility. *(l) The updated report on the waste screening measures shall be submitted to the District Manager on an annual basis.*	• The City (HHW) waste screening measures are discussed in Section 4.1. Only authorized HHW (as described in the C of A) is accepted from homeowners from the City of Guelph and County of Wellington. All materials must be clearly labeled or identified by the resident conducting the drop off prior to being packed and labeled by City staff. The City will reject materials that are not acceptable under the C of A.

Contingency Plans (Condition 27)

C of A Reporting Requirement	Report Reference and Summary
(i) Measures to be undertaken in the event of a spill.	• Section 6.4 summarizes the Spills Handling and Reporting procedure. The procedure defines spills: minor, major, moderate and hazardous materials. The Spills procedure then outlines how to clean up a minor spill and who must be notified in the case of moderate or major spills.
(ii) Fire protection systems, control and safety devices.	• Section 6.5 summarizes the Fire Safety Plan The Fire Safety Plan includes site mapping, floor plans for each of the on-site buildings (including locations of fire alarms and extinguishers), procedures to be followed in the event of a fire/emergency, staff responsibilities and contacts in the event of a fire/emergency, procedures for fire drills, prevention and monitoring equipment maintenance.

C of A Reporting Requirement	Report Reference and Summary
(iii) An emergency plan outlining the action to be undertaken in the event of a fire or other such emergency.	• Section 6.5 summarizes the Emergency Plan. The Emergency Plan includes many of the elements incorporated into the Fire Safety Plan plus emergency communications procedures, locations of emergency supplies, emergency equipment information and procedures related to specific emergency situations.
(iv) Measures to be undertaken in the event of a composter process upset and/or failure.	• The Organic Waste Processing Facility ceased service in May 2006. A comprehensive contingency plan will be developed in the event that the facility re-opens.
(v) Measures to be undertaken in the event of a power and/or equipment failure.	• Section 6.7 summarizes the procedures as related to power or equipment failure. If electricity is unavailable for more than a 24-hour period, the WRIC would be required to re-direct waste materials.
(vi) Measures to be undertaken in the event of a biological filter upset and/or failure.	• The Organic Waste Processing Facility ceased service in May 2006. A comprehensive contingency plan will be developed in the event that the facility re-opens.
(vii) Measures to be undertaken in the event odour problems develop at the Site.	• Section 6.8 summarizes the procedures as related to an odour problem. Odour complaints from the public are investigated through the WRIC Environmental Complaint Investigation Procedure in compliance with Condition 31 of the C of A. Control measures may include closing doors, cleaning up standing water and/or spills, other housekeeping measures, making changes to the processes or removal of the odour source to the landfill. If the odour persists, a portion of the operation or the entire site may be closed until the issue is resolved.
(viii) Measures to be undertaken in the event fog problems develop from the composter or the processed compost piles (curing piles).	• The Organic Waste Processing Facility ceased service in **May** 2006. A comprehensive contingency plan will be developed in the event that the facility re-opens.
(viii) Measures to be undertaken in the event hazard to aircraft problems develop or there is a net increase in birds at the Site.	• Section 6.9 summarizes the procedures as related to aircraft hazards. The most obvious aircraft hazard, as it relates to the operation of the **WRIC**, is the nuisance bird population. Daily bird monitoring occurs as part of the site inspections. Continual housekeeping measures, such as litter pick up around the site, at the yard waste pile and compost area, occur at the site to deter the attraction of birds and vermin. Should nuisance birds become an issue at the site, trained birds-of-prey or other mitigative measures will be considered. If necessary, the site operations may cease until the issue is resolved. Dust, steam, smoke or any airborne vapour may pose an aircraft hazard due to decreased visibility. Operations are conducted in a manner to minimize emissions.

C of A Reporting Requirement	Report Reference and Summary
(x) Measures to be undertaken in the event any unauthorized non-hazardous or hazardous waste appears at the Site.	• Section 6.10 summarizes the procedures undertaken regarding un-authorized waste. Non-**compliant** loads are rejected at the scale house prior to entering the site. If un-authorized, hazardous or inappropriate waste is inadvertently accepted, the material will be loaded back on the vehicle (if it has not left the site) or the material will be placed in the appropriate bin for removal by a licenced hauler to an appropriate disposal site. The waste will be transported off-site within a 24-hour period. If possible, the vehicle that brought the non-compliant load will be charged for the disposal fee.
(xi) Measures to be undertaken in the event of groundwater and/or surface water contamination.	• Section 6.11 summarizes the procedures to be undertaken in the event of ground or surface water contamination. Should water quality results suggest that there are impacts to the ground or surface water, the monitor locations/surface water stations will be re-sampled within a reasonable period of time to confirm results. As well, an inspection of the area immediately adjacent and upgradient of the impacted location should be inspected for possible contaminant sources. Equipment and floor drains may also be inspected to determine if repairs are required. These repairs will be completed immediately. Should the repairs be such that normal operation is not possible, this portion of the operation will be shut down until maintenance is complete. If the contamination is a result of failure in the infrastructure that cannot be repaired under normal maintenance procedures, a remedial plan will be developed to prevent further impacts.
(xii) Measures to be undertaken in the event of quality/fungal contamination.	• Section 6.12 discusses air quality or fungal contamination. The appropriate qualified professional will be contracted to investigate the cause and recommend remedial measures, as required. Remedial measures may include a change/alteration of operations or suspension of operations in the affected area(s).

Annual Report (Condition 30)

C of A Reporting Requirement	Report Reference and Summary
(a) A monthly summary of wastes and/or recyclable materials received at the site, including quantity, source, and Ontario Regulation 347 waste classes.	• Table 1 (Section 4.2) provides details on the incoming materials. 43,132 tonnes of material was received by the WRIC. Of the materials received, organic "wet" materials constituted 9,164 tonnes (21%), recyclables ("dry") materials constituted 32,902 tonnes (76%) and other materials made up the remaining 1,065 tonnes (3%). Materials were accepted from the City of Guelph and the County of Wellington. The Regulation 347 waste classes received at the site are **summarized** on Table 2 (Section 4.3).
(b) A monthly summary of wastes and/or recyclable materials processed at the site, including quantity, and Ontario Regulation 347 waste classes.	• Section 4.4 of the report provides details on the processed wastes. There were 43,448 tonnes of materials processed and transferred off the site. 260 tonnes of dry material remained in inventory at the end of 2006. More wet materials were processed and transferred from the site than was accepted at the site in 2006 due to the decommissioning of the compost facility. Materials that are accepted by the site are either processed (composted), diverted to be re-used or sent to the landfill for disposal.
(c) A monthly summary of wastes and/or recyclable materials transferred off site, including quantity, destination, and Ontario Regulation 347 waste classes.	• Table 3 (Section 4.3) provides details on the outgoing materials. Of the 29,535 tonnes of marketable material transferred off the site in 2006, 9,119 tonnes (31%) was wet materials, 19,351 tonnes (65%) was dry materials and 1,065 tonnes (4%) was recyclable materials. Table 4 (Section 4.3) provides a summary of the quantity of outgoing waste destined for the adjacent Solid Waste Transfer Station. During 2006, a total of 1,403 tonnes of wet residue and screened materials was sent to the Solid Waste Transfer Station for disposal. A total of 9,119 tonnes of wet materials was sold during 2006. Most of the compost is sold to topsoil blenders for use in landscape and plant nursery products. HHW materials were shipped by the haulers identified in Section 4.3 for disposal or re-use.

C of A Reporting Requirement	Report Reference and Summary
(d) A monthly summary description of the composting facility operations including: *i) A colloquial description of the temperature of the compost material(daily readings) and the curing piles (weekly readings). Temperature graphs are not to be included in the report, but are to be kept on file and provided to the Ministry upon request;* *ii) the quantity, by weight and volume of compost and residues produced and the quantity of compost and residues removed from the facility; and* *iii) a description of the compost distribution/markets*	• Section 4.5 discusses the composting facility operations. During 2006, the site produced and transferred 1,237 tonnes of finished compost and 1,363 tonnes of wet residue and screened compost residue (Tables 3 and 4). Most of the compost is sold to topsoil blenders for use in landscape and plant nursery products.
(e) An annual summary of the analytical results for the groundwater, surface water and leachate monitoring program including an interpretation of the results and any remedial/mitigative action undertaken.	• Section 5 discusses the results of the groundwater, surface water and leachate monitoring programs. There were no observable effects attributed to the WRIC on the groundwater quality beneath the site. Surface water at the site is impacted by runoff from the areas immediately surrounding the surface water stations.
(f) An annual summary of any deficiencies, items of non-compliance or process aberrations that occurred and remedial/mitigative action taken to correct them.	• Section 7 of the report discusses site compliance and non-compliance issues that were identified by the MOE in their Inspection report of the site. In 2006, the City of Guelph hired a new Director of Environmental Services and a new Manager of Solid Waste Resources. Both individuals stress compliance with all applicable legislation. To that effect, the Manager completed a reorganization of the Solid Waste Division. With the end product emphasizing compliance, the new Division structure has a Governance and Compliance section supervised by the Supervisor of Governance & Compliance. This new position and the seven (7) staff reporting to him are mandated to achieve compliance with applicable legislation, regulations, and Certificates of Approvals issued to the City of Guelph's Solid Waste Division.

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1. Introduction and Background

The City of Guelph operates the Wet/Dry Recycling Centre, now the Waste Resource Innovation Centre (WRIC) for the purposes of composting and multi-material recovery for the County of Wellington and the City of Guelph. The 10.85 ha site is located at 110 Dunlop Drive in the southeast part of Guelph. Figure 1 shows the location of the WRIC.

The City carries out a number of waste management operations at the WRIC. These operations include processing of recyclables from the City's "dry" waste stream, composting of the waste from the "wet" waste stream, transfer of non-compostable materials and non-recyclable waste residues to disposal off-site, a public waste drop-off area, and household hazardous waste depot. (Note that the City discontinued the composting operations during 2006.) The site is licensed to handle up to 200 tonnes of residual waste per day under Ministry of the Environment Provisional Certificate of Approval (C of A) #A170128.

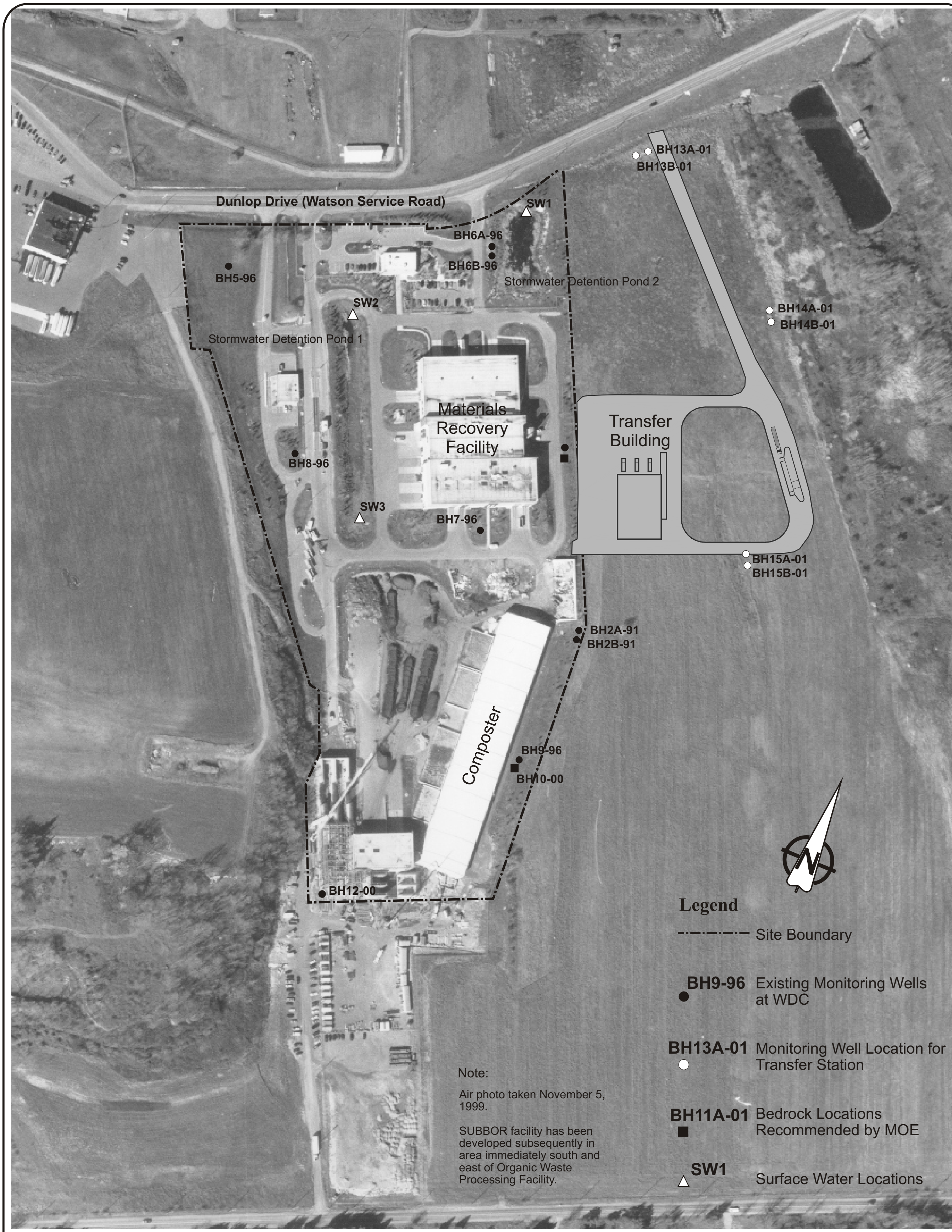
As part of the requirements to develop and design the WRIC, a hydrogeological assessment was conducted in 1991 (Jagger Hims Limited; Hydrogeological Assessment, Proposed Wet/Dry Facility, Guelph, Ontario; Report prepared for the City of Guelph, October 1991). Further groundwater sampling at the proposed site was completed in 1992, 1994 and 1995 prior to the construction of the site (Jagger Hims Limited; Groundwater Monitoring Program; Guelph Wet/Dry Recycling Facility; Draft Report completed for the City of Guelph, September 1995).

The main conclusions of these reports were:

a) groundwater flow in the shallow subsurface is towards the northeast to the Correctional Centre pond and Clythe Creek; and

b) background groundwater quality in the area is considered hard with calcium, magnesium, and alkalinity the dominant ions. The concentrations of the other major ions (i.e., sodium, potassium, sulphate and chloride) were found for the most part to be low. The exception to this was the 1995 sample collected from monitor 5-91, which exhibited higher than background concentrations of sodium and chloride. The source of the sodium and chloride was considered unknown at that time. The only other parameter of concern was nitrate. This was found at consistently elevated levels at monitors 1a-91, 1b-91, 2b, 91 and 3-91, from 1991 until these locations were destroyed due to construction activities.

In July 1997, the C of A was amended to allow the WRIC service area to be expanded.



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Scale 1 : 4,000

GROUNDWATER MONITOR LOCATION MAP

Annual Monitoring Program
Waste Resource Innovation Centre
City of Guelph

FIGURE
1

Project 70-133
(2007\133\04Planf01.cdr)

2. Annual Reporting Requirements

The Amended Provisional Certificate of Approval contains several conditions that have an annual reporting component. These Conditions, 22(l), 27 and 30, are addressed in this report. The details of the Conditions are reiterated below. Condition 22(k) and (l) of the C of A states:

- *(k)* *The City shall annually review and update the existing waste screening measures for all incoming waste, to ensure only waste approved by this Certificate are received at this facility.*
- *(l)* *The updated report on the waste screening measures shall be submitted to the District Manager on an annual basis.*

Condition 27 of the C of A states that "*The City shall annually review and update the existing Contingency Plan for the Site.*" Thirteen items are listed in Condition 27 as minimum reporting requirements for the annual report:

- *i)* *Measures to be undertaken in the event of a spill;*
- *ii)* *Fire protection systems, control and safety devices;*
- *iii)* *An emergency plan outlining the action to be undertaken in the event of a fire or other such emergency;*
- *iv)* *Measures to be undertaken in the event of a composter process upset and/or failure;*
- *v)* *Measures to be undertaken in the event of a power and/or equipment failure;*
- *vi)* *Measures to be undertaken in the event of a biological filter upset or failure;*
- *vii)* *Measures to be undertaken in the event odour problems develop at the Site;*
- *viii)* *Measures to be undertaken in the event fog problems develop from the composter or the processed compost piles (curing piles);*
- *ix)* *Measures to be undertaken in the event hazard to aircraft problems develop of there is a net increase in birds at the Site;*
- *x)* *Measures to be undertaken in the event any unauthorized non-hazardous or hazardous waste or unidentifiable waste appears at the Site;*
- *xi)* *Measures to be undertaken in the event of groundwater and/or surface water contamination; and*
- *xii)* *Measures to be undertaken in the event of quality/fungal contamination.*

Condition 30 of the C of A states that *"The City shall submit an annual report on the operation of the site for the previous calendar year to the District Manager by March 31st of each year."* Six items are listed in Condition 30 for the annual report:

a) a monthly summary of the wastes and/or recyclable materials received at the site, including quantity, source and Ontario Regulation 347 waste classes;

b) a monthly summary of the wastes and/or recyclable materials processed at the site, including quantity and Ontario Regulation 347 waste classes;

c) a monthly summary of the wastes and/or recyclable materials transferred off the site, including quantity, destination and Ontario Regulation 347 waste classes;

d) a monthly summary description of the composting facility operations including:

i) a colloquial description of the temperature of the compost material (daily readings) and the curing piles (weekly readings). Temperature graphs are not to be included in the report, but are to be kept on file and provided to the Ministry upon request;

ii) the quantity, by weight and volume of compost and residues produced and the quantity of compost and residues removed from the facility; and

iii) a description of the compost distribution/markets.

e) an annual summary of the analytical results for the groundwater, surface water and leachate monitoring program including an interpretation of the results and any remedial/mitigative action taken;

f) an annual summary of any deficiencies, items of non-compliance or process aberrations that occurred and remedial/mitigative action taken to correct them.

3. Monitoring Program

The objectives of the monitoring programs are outlined in the C of A in Conditions 23, 24 and 26 (formerly 18, 19 and 20 in the previous C of A). These conditions provide the objectives for leachate, groundwater and surface water monitoring that is to be undertaken at the WRIC. These are:

Condition 23 (Leachate)

The City shall annually review and update the existing leachate monitoring program, which characterizes the leachate. The updated report on the leachate monitoring program changes shall be submitted to the District Manager on an annual basis.

Leachate shall be sampled and analyzed at least four (4) times per year, and monitored for quality, in accordance with the approved leachate monitoring program.

As recommended in the 1998 annual monitoring report and accepted by the MOE, the sampling frequency of the leachate was reduced to (2) two times per year starting in 1999.

Due to the compost process, very little leachate is actually produced, which makes it problematic to sample. In the past, water collected on the compost pad along with any leachate produced during the composting process was sampled in the holding tank (beneath the pad). With the redesign of the storm water management system back to the original design, this water is now diverted from directly entering the sanitary sewer to the central clay-lined Detention Pond 1. Sampling of the water collected in this pond now serves the same purpose as the original sampling conducted in the holding tank where runoff from the pad was historically collected. A surface water station (SW 3) is located within forebay of Detention Pond 1, located at the southern end of the pond. Two samples were collected at SW3 during 2006. The analytical results are discussed in Section 5.4.

Condition 24 (Groundwater)

Groundwater shall be sampled on semi-annual basis (spring and fall). The analysis shall seek to identify chloride, nitrate and a suite of compounds characteristic of leachate generated at the site. Sampling frequency and parameters for analysis may be adjusted upon the approval of the District Manager, as groundwater and leachate monitoring information becomes available.

In 1999, the analytical parameters were adjusted upon approval from the MOE.

Groundwater monitoring was conducted at all locations in June and December 2006. The results of the groundwater monitoring are discussed in Section 5.6.

Condition 26 (Surface Water)

The City shall annually review and update the existing surface water sampling program, designed to detect and quantify any impacts originating from the site

A S*urface water sampling program shall be implemented to ensure early detection of contaminants in the event that such contaminants escape the site. Surface water shall be sampled monthly for the following conventional parameters: BOD, SS, ammonia, nitrogen, TKN, total phosphorus and phenolics (this group of parameters is called the Short List). For all other parameters surface water shall be sampled on a semi-annual basis (spring and fall). The analysis shall seek to identify chloride, nitrate and a suite of organic and inorganic compounds characteristic of leachate generated at the site. Sampling frequency and parameters for analysis may be adjusted upon the approval of the Director, as surface water and leachate monitoring information become available. Surface water shall be sampled at the discharge location of the final surface water detention pond.*

During 2006, monthly monitoring of surface water run-off into detention ponds 1 and 2 was completed. However, samples were only collected during March and May 2006 as no water remained in the detention ponds after rain events or they were dry by the end of each month. The results of the surface water monitoring are discussed in Section 5.5.

4. Wet-Dry Recycling Facility Summary

4.1 HHW Waste Screening Procedures and Acceptance Criteria

Condition 22(k) and (l) of the C of A requires a review and update of the waste screening measures, as discussed below. The information presented in this section was reported by the City of Guelph. Household hazardous waste materials can only be received at the City of Guelph Depot in accordance with the conditions specified on Certificate of Approval A170128.

1. No industrial, commercial or institutional hazardous waste shall be received at the facility. Waste materials originating from these sources are items that would not be readily available to the general public nor would be considered consumer commodity in nature.
    - Lab reagents from the local University
    - Large pesticide containers typically sold to farmers
    - Chemical agents in containers greater than 20L in capacity
2. The depot is restricted to accepting only spent consumer commodity goods that are widely available to the general public in quantities and concentrations typically found at conventional retail outlets.
    - Canadian Tire products
    - Home Depot products

3. The depot is restricted to accepting HHW waste from homeowners residing within the City of Guelph or County of Wellington. This information shall be documented on the waste tickets prior to acceptance of the HHW materials and must include all contact information necessary to validate residency status.

4. Any waste which may have questionable origins must be set aside, along with the corresponding waste ticket for further assessment by City of Guelph staff. Should these materials be deemed to be non acceptable as per the requirements of the certificate, the resident shall be contacted and advised of the pending return.

5. All waste received shall be clearly identified either by the labels of the original consumer packaging or if no labels are present, by the resident dropping the material off. Materials identified by the homeowner will be labeled by City of Guelph staff prior to acceptance and labpacking. The following are not acceptable under any circumstance:

   - Radioactive wastes
   - Explosives and ammunition
   - Pathological wastes (sharps excluded)
   - Unknown wastes
   - Polychlorinated biphenyls (PCBs)—see Item 8 below.
   - Asbestos wastes

6. All waste containers brought to the depot shall be sealed prior to acceptance and must be surrendered by the homeowner when dropping these materials off. The process of decanting in order to return the packaging to the resident is not permitted. Unacceptable activities include:

   - Decanting gasoline for the purpose of returning jerry cans to the homeowner
   - Decanting pesticides from small portable pumps

7. Waste received at the facility shall be limited to the waste types specified on Certificate of Approval A170128 and found in consumer commodity amounts:

145 – Paint and paint related materials	Latex, Alkyd, stains
148 – Miscellaneous inorganic chemicals	Acids, Basis, Oxidizers
212 – Glycol	Antifreeze (ethylene glycol)
213 – Petroleum distillates	Varsol and other hydrocarbon solvents
221 – Light fuels	Gasoline, Benzene, Octane, Diesel
242 – Halogenated pesticides	DDT and other chlorinated pesticides
252 – Oil	Oils and lubricants
263 – Miscellaneous organic chemicals	Acetone, MEK and other organics
269 – Non halogenated pesticides	Non chlorinated pesticides
312 – Pathological waste	Sharps only
331 – Compressed gases	Propane only

Note: Only propane in containers typically available to the public are acceptable; small 1 kg tanks up to barbeque size containers (20 kg)

8. Wastes containing PCB's or suspect PCB materials are not acceptable at the City of Guelph HHW depot; however, should such material be suspected or identified upon drop-off the following steps shall be taken:

   - The PCB or suspect PCB waste materials shall be set aside in a secure area, along with the ticket identifying the resident that brought these materials to the depot.
   - The material must be sampled and sent for analysis to an accredited lab to determine the PCB concentration.
   - Analytical results over 50 ppm confirm the waste to be PCB's
   - Upon confirmation of the presence of PCB waste, The City of Guelph shall obtain Directors Instructions from the Ministry of the Environment after which arrangements shall be made for removal and disposal.

9. The City of Guelph HHW depot reserves the right to reject any waste materials, which if received, could jeopardize the operational permits held by the site.

4.2 Summary of Wastes/Recyclables Recieved

The Table 1 is a summary of the incoming materials received at the WRIC during 2006.

As shown on Table 1, 43,132 tonnes of material were received by the WRIC. Of the materials received, "wet" materials such as organics and yard waste constituted 9,164 tonnes (21%). Of the "wet" materials, 3,548 tonnes (39%) was municipally collected organics from residential curbside collection and businesses within the City limits. Livestock bedding/manure and other organic waste from industry, commercial and institutional (ICI) sources totaled 817 tonnes (9%) during 2006. Source separated organics from other municipalities totaled 429 tonnes (5%). The remaining wet waste was made up of residential public drop off of organics (28 tonnes or 0.3%), yard waste (2,096 tonnes or 23%) and chipped wood (113 tonnes or 1%). Note that the WRIC stopped receiving compost material on May 19, 2006.

Recyclables ("dry") materials constituted 32,902 tonnes (76%) of the total materials received at the site. This included 10,105 tonnes (31%) municipally collected curbside recyclables, 387 tonnes (1%) resident drop off recyclables, 13,201 tonnes (40%) recyclables received from other municipalities and 9,209 tonnes (28%) ICI recyclables.

Additional "other" materials such as scrap metal, wood and tires constituted the remaining 1,065 tonnes (3%) of the total materials received at the site.

TABLE 1: WET-DRY INCOMING 2006
City of Guelph WRIC

MATERIAL TYPE	MATERIAL	JAN. (tonnes)	FEB. (tonnes)	MAR. (tonnes)	APR. (tonnes)	MAY (tonnes)	JUNE (tonnes)	JULY (tonnes)	AUG. (tonnes)	SEPT. (tonnes)	OCT. (tonnes)	NOV. (tonnes)	DEC. (tonnes)	TOTAL (tonnes)
WET	Municipally collected Organics	794	428	991	762	573								3,548
	Public drop-off Wet	8	3	7	4	5								28
	ICI Organics/Manure	122	56	229	234	176								817
	Other Municipal Organics	359	70											429
	Yard waste	70				193	370	321		279	356	60	447	2,096
	Municipal Leaf Collection											2,133		2,133
	Chipped wood	24	1	10	5	27	39			8				113
	TOTAL WET	**1,377**	**559**	**1,238**	**1,004**	**973**	**409**	**321**	**0**	**287**	**356**	**2,193**	**447**	**9,164**
DRY	Municipally-collected Recyclables	833	451	1,073	818	970	859	793	807	853	855	896	896	10,105
	Public drop-off Recyclables	25	16	37	24	33	35	36	35	40	36	32	39	387
	Other Municipal Recyclables	1,263	612	993	902	1,106	1,225	1,227	1,300	912	1,241	1,240	1,180	13,201
	ICI Recyclables	788	452	793	639	747	851	739	874	807	882	867	772	9,209
	TOTAL DRY	**2,908**	**1,531**	**2,895**	**2,383**	**2,855**	**2,970**	**2,795**	**3,016**	**2,611**	**3,014**	**3,035**	**2,888**	**32,902**
	TOTAL WET AND DRY	**4,285**	**2,090**	**4,133**	**3,387**	**3,829**	**3,379**	**3,116**	**3,016**	**2,898**	**3,370**	**5,228**	**3,335**	**42,066**
OTHER RECYCL-	Scrap Metal	30		43	22	89	45	25	52	18	34	18	40	415 **
	Tires	8	2		5	2	2	2	3	2			2	28 **
	Scrap wood	321		191	111									622 *
	TOTAL OTHER RECYCLABLE	**359**	**2**	**234**	**138**	**91**	**47**	**27**	**55**	**20**	**34**	**18**	**42**	**1,065**
GRAND TOTAL		**4,644**	**2,092**	**4,366**	**3,525**	**3,920**	**3,426**	**3,143**	**3,072**	**2,919**	**3,404**	**5,246**	**3,376**	**43,132**

* incoming quantities are based on tubground volumes

**incoming quantities are based on outgoing quantities

The on-site Household Hazardous Waste (HHW) depot serves residents of the City of Guelph and the County of Wellington. The depot accepted 12,115 drop offs of materials during 2006. A monthly summary of the 2006 drop off numbers are shown below.

Public	Drop Offs
January	551
February	200
March	862
April	1.185
May	1,508
June	1,527
July	1,100
August	1,298
September	1,153
October	1,003
November	1,029
December	699
Totals	**12,115**

Incoming HHW is either re-used in the City's Paint Plus Re-Use Program or sent to hazardous waste haulers for disposal or recycling. The Paint Plus Re-Use Program operates yearly between April 22 and October 31. The results of the Paint Plus Program for 2006 are tabulated below.

Dates	Paint Exchange 2006)							
	Paints (L)	Stains Varnish (L)	Aerosols #of Cans	Auto Products (L)	Cleaning Products (L)	Grouts Kgs	Adhesives Caulking	Public Pick-ups
April	1,108	78	157	25	38	22	34	73
May	2,437	46	387	49	55	102	68	245
June	2,177	28	432	41	29	58	46	220
July	2	27	400	41	29	10	51	194
August	1,884	48	438	49	30	84	52	235
September	1,586	58	384	30	49	52	48	171
October	1,660	34	308	29	26	23	32	154
TOTAL	**10,854**	**319**	**2,506**	**264**	**256**	**351**	**331**	**1,292**

Table 2 is a monthly summary of the amounts of HHW (separated by waste class) received at the site. A total of 139,703 L and 1,695 kg of household special wastes were received in 2006. All materials accepted at the HHW depot are either re-used, recycled or shipped off site for disposal.

4.3 Summary of Transferred Waste/Recyclables

Table 3 is a summary of the outgoing materials shipped off the WRIC site during 2006. Of the 29,535 tonnes of marketable material transferred off the site in 2006, 9,119 tonnes (31%) was wet materials such as compost and yard waste, 19,351 tonnes (65%) was dry materials such as cardboard, newsprint, cans and bottles and 1,065 tonnes (4%) was recyclable materials such as scrap metal and tires.

Table 4 provides a summary of the quantity of outgoing waste destined for the adjacent Solid Waste Transfer Station. During 2006, 1,348 tonnes (equivalent to 27% of the incoming wet materials) of residue was generated from the Organic Waste Processing facility. About 15 tonnes of material consisting of wood chips, plastic bags and other non-biodegradable materials were screened out of the finished compost. A total of 1,403 tonnes of wet residue and screened materials was sent to the Solid Waste Transfer Station for disposal.

A total of 9,119 tonnes of wet materials consisting of finished, screened compost, shredded yard waste and organic materials requiring further processing was sold during 2006. Most of the compost is sold to topsoil blenders for use in landscape and plant nursery products. Shredded yard waste was transported to other sites for composting or provided free-of-charge to residents for outdoor use. The WRIC achieved a 85% rate of diversion[1] for the organic materials accepted at the site in 2006.

Of the 12,226 tonnes of dry wastes directed to the transfer station in 2006, 5,127 tonnes (42%) was dry residue from composting and 7,099 tonnes (58%) was contaminated glass. The City of Guelph Council has approved funds to reduce, recover and recycle these materials. During 2006, 19,351 tonnes of dry materials were sold to markets. The majority of the dry materials sold were paper products (15,390 tonnes, 80% of the marketable dry materials). The remaining 20% of the marketable dry materials were cans, bottles and plastics.

Scrap metal (415 tonnes), tires (28 tonnes) and scrap wood (622 tonnes) were transported off site for recycling.

The WRIC achieved a 63% rate of diversion for the dry materials accepted at the site in 2006. Based on the weighted average, the overall 2006 diversion from the landfill for the site was 68%.

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[1] *Diversion based on: Incoming material – Outgoing material x 100 = % Diversion Incoming material*

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TABLE 2: **MONTHLY SUMMARY OF HOUSEHOLD HAZARDOUS WASTE HANDLED**

City of Guelph WRIC

							2 0 0 6								
Waste Class	Hazardous Waste		**Jan.**	**Feb.**	**March**	**April**	**May**	**June**	**July**	**August**	**Sept.**	**Oct.**	**Nov.**	**Dec.**	**TOTALS**
145H,145L, 145B	**Paints**	Liters	4,000		8,000	4,600	9,200	8,800	4,800	9,600	4,400	8,400	10,000		**71,800**
		#of Boxes	10		20	10	23	22	12	24	11	21	25		**178**
213	**Flammables**	Liters	400		800	320	882	720	640	1,400	720	880	880		**7,642**
		#of Drums	4		10	4	13	10	8	14	9	11	11		**94**
331	**Aerosols**	Liters	600		100	40	126	60	80	240	20	80	80		**1,426**
		#of Drums	6		2	1	3	3	2	4	1	4	2		**28**
148A, 114C	**Acids**	Liters			80		80	60				80			**300**
		#of Drums			1		1	1				1			**4**
148A, 148B, 121C	**Base**	Liters	700		400	160	280	300	320	560	160	520	480		**3,880**
		#of Drums	7		5	2	4	5	4	6	2	6	6		**47**
242A, 269A	**Pesticides**	Liters	400		160	120	280	220	80	460	160	170	160		**2,210**
		#of Drums	4		2	2	4	3	1	5	2	3	2		**28**
148A, 135R	**Oxidizers**	Kgs.	100		80		182	273		280		180	360		**1,455**
		#of Drums	1		1		2	3		3		2	4		**16**
121C,148A	**HH Batteries**	# of			800	200	400	400	400	200	200	400	400		**3,400**
					4	1	2	2	2	1	1	2	2		**17**
263A	**Iscoyanates**	Kgs.			80							80			**160**
		#of Drums			1							1			**2**
261A	**Pharm.**	Kgs.									80				**80**
		#of Drums									1				**1**
112C	**AutoBatteries**	# of	43	21	50	74	88	60	66	60	44	30	79	45	**660**
252L, 252T	**Motor Oil**	Liters	1,660	1,705	1,825	5,185	3,860	7,196	3,259	6,095	2,430	4,530	3,410	3,325	**44,480**
212L	**Glycol**	Liters	680			540	885	540		630	630	880		540	**5,325**
252L,252T	**Oil Filters**	Liters					720			360					**1,080**
		Carts					2			1					**3**
331	**Propane Tks.**	# of			93	98	151	84		145	112	82	71		**836**
331	**Propanr Cyl.**	#of Drums							15				20		**35**
	Cooking Oil	liters		520		260		260					520		**1,560**
		#of Drums		3		2		2					3		**10**
312P	**Sharps**	#0f Boxes			10				11			11			**32**
	Bulk Flamms.	Liters													
		#of Drums													
	Bulk Paint	Liters													
		#of Drums													

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TABLE 3: OUTGOING MATERIAL 2006
City of Guelph WRIC

DESTINATION	MATERIAL	JAN. (tonnes)	FEB. (tonnes)	MAR. (tonnes)	APR. (tonnes)	MAY (tonnes)	JUNE (tonnes)	JULY (tonnes)	AUG. (tonnes)	SEPT. (tonnes)	OCT. (tonnes)	NOV. (tonnes)	DEC. (tonnes)	TOTAL (tonnes)
MARKET	Compost				34	256	247	392	280		16	11		1,237
	Compost to further processing	827	125	428	106	26	1,934							3,447
	Shredded yard waste	536			157	599		120		147	177	74	33	1,842
	Yard Waste to further procesing					62	160	140	98					460
	Leaves											2,133		2,133
	TOTAL WET	**1,362**	**125**	**428**	**297**	**942**	**2,341**	**653**	**378**	**147**	**193**	**2,218**	**33**	**9,119**
	Old Corrugated Cardboard	569	196	556	421	533	621	464	558	544	538	619	576	6,195
	Newsprint #8	418	148	463	289	423	435	381	355	378	397	433	404	4,523
	Newsprint #6	237	134	187	202	237	209	210	240	215	275	313	226	2,687
	Fine paper	173	66	201	150	144	157	169	167	196	217	185	159	1,985
	Steel cans	149	51	214	96	122	138	111	114	117	140	163	123	1,539
	Aluminum cans	17	38	52	46	47	46	45	55	31	48	32	30	489
	PET bottles	94	39	94	93	77	76	68	177	112	70	89	70	1,060
	HDPE #2	67	22	57	42	55	55	21	42	60	40	72	38	570
	Mixed plastics	18		19	18	18	17	33	18	20	19	19		200
	Mixed material	45									39	19		104
	Plastic Film													0
	TOTAL DRY	**1,787**	**693**	**1,844**	**1,357**	**1,657**	**1,754**	**1,503**	**1,728**	**1,674**	**1,782**	**1,944**	**1,626**	**19,351**
	TOTAL WET AND DRY	**3,150**	**819**	**2,272**	**1,655**	**2,600**	**4,096**	**2,155**	**2,106**	**1,821**	**1,975**	**4,163**	**1,659**	**28,469**
RECYCLE/	Scrap metal	30		43	22	89	45	25	52	18	34	18	40	415
	Tires	8	2		5	2	2	2	3	2			2	28
	Scrap wood (chipped)	321		191	111									622
	TOTAL OTHER	**359**	**2**	**234**	**138**	**91**	**47**	**27**	**55**	**20**	**34**	**18**	**42**	**1,065**
	GRAND TOTAL	**3,508**	**821**	**2,505**	**1,792**	**2,691**	**4,143**	**2,182**	**2,161**	**1,841**	**2,009**	**4,180**	**1,701**	**29,535**

TABLE4: QUANTITY OF OUTGOING WASTE 2006

DESTINATION	MATERIAL	JAN. (tonnes)	FEB. (tonnes)	MAR. (tonnes)	APR. (tonnes)	MAY (tonnes)	JUNE (tonnes)	JULY (tonnes)	AUG. (tonnes)	SEPT. (tonnes)	OCT. (tonnes)	NOV. (tonnes)	DEC. (tonnes)	TOTAL (tonnes)
TRANSFER STATION	Wet Residue	372	152	264	241	178			1	2		136	1	1,348
	Screened compost residue				15									15
	Contaminated compost													0
	Controlled compost													0
	Contractual residue backhaul	40												40
	TOTAL WET	**412**	**152**	**264**	**256**	**178**	**0**	**0**	**1**	**2**	**0**	**136**	**1**	**1,403**
	Dry Residue	496	214	469	392	463	442	442	473	407	532	503	296	5,127
	Contaminated Glass Residue	858	278	734	486	635	739	600	744	686	614	655	71	7,099
	Overflow Dry Waste													0
	TOTAL DRY	**1,354**	**492**	**1,202**	**878**	**1,098**	**1,180**	**1,042**	**1,217**	**1,093**	**1,146**	**1,158**	**367**	**12,226**
	TOTAL FOR DISPOSAL	**1,765**	**645**	**1,467**	**1,134**	**1,276**	**1,180**	**1,042**	**1,218**	**1,095**	**1,146**	**1,294**	**368**	**13,630**

QUANTITY OF INCOMING AND OUTGOING GENERAL WASTE 2006

DESTINATION	MATERIAL	JAN. (tonnes)	FEB. (tonnes)	MAR. (tonnes)	APR. (tonnes)	MAY (tonnes)	JUNE (tonnes)	JULY (tonnes)	AUG. (tonnes)	SEPT. (tonnes)	OCT. (tonnes)	NOV. (tonnes)	DEC. (tonnes)	TOTAL* (tonnes)
INCOMING	Public drop-off waste	412	222	506	662	1,002	788	813	825	659	666	606		**7,162**
OUTGOING	Public drop-off bin	412	222	506	662	1,002	788	813	825	659	666	606	0	7,162
	General wastes													0
	TOTAL OUTGOING	412	222	506	662	1,002	788	813	825	659	666	606	0	**7,162**

HHW materials were shipped by the haulers identified below for disposal or re-use.

Material	Destination, Major Buyers
Finished, Screened Compost	▪ Kuntz Excavating, Gillette Excavating, Communities in Bloom, IMS, Woodrill Farms
Shredded Yard Waste	▪ Gro-Bark Ltd.
OCC	▪ Strathcona, Atlantic Packaging, Norampac, Solvay
Newsprint	▪ Spruce Falls Inc., Cascades, Krueger, Bowater
Fine Paper	▪ Cascades
Steel Cans	▪ POSCOR Mill Services
Aluminum Cans	▪ Connecticut Metals
PET Bottles (#1)	▪ Plastrec, Camco, Image Recycling
HDPE (#2 plastics)	▪ Sol Plas, Entropex
Mixed Plastic (# 4,5, 7)	▪ Haycore
Scrap Metal / White Goods	▪ Mobile Iron & Scrap/Scone Scrap , Poscor
Tires	▪ Envirocan
Scrap Wood	▪ Gro-Bark Ltd.

Company	Material
Clean Harbours	▪ Paint, flammables, acids, bases, pesticides, oxidizers, household batteries, pharmaceuticals (solids), isocyanates
Safety Kleen Canada Inc.	▪ Motor oil, glycol (anti-freeze), oil filters
Interstate Batteries	▪ Auto batteries
Simcoe Energy	▪ Propane tanks
M. Christeans	▪ Propane cylinders
Rothsay	▪ Cooking oil
Stericycle Inc.	▪ Sharps (i.e. syringes)

Outgoing wet and dry materials were sold to the companies identified below for recycling and re-use.

4.4 Summary of Wastes/Recyclables Processed

Materials that are accepted by the site are either processed (composted), diverted to be re-used or sent to the waste transfer station for disposal. Tonnages of incoming and outgoing materials will not be equal as some mass is lost through evaporation and processing. Table 5 is reconciliation of the incoming and outgoing materials and materials processed from the site.

Table 5. Summary of Incoming, Outgoing and Processed Quantities

Compostable, Recyclable and Other Materials Processed in 2006	(tonnes)
▪ Quantity recieved (Table 1: Wet-Dry Incoming 2006)	43,132
▪ Quantity in inventory from prior year (2005)	283
▪ Quantity Processed and Transferred off-site (Table 3: Outgoing Material 2006, Table 4: Quantity of Outgoing Waste 2006)	283 + 29,535 + 13,630 = 43,448

Dry Inventory	(tonnes)
▪ Quantity received (Table 1)	32,902
▪ Quantity sold (Table 3)	19,351 + 1,065 = 20,416
▪ Quantity sent to landfill (Table 4)	12,226
▪ Dry Quantity in Inventory	260

Wet Inventory	(tonnes)
▪ Quantity received (Table 1)	9,164
▪ Quantity sold/transferred (Table 3)	9,119
▪ Quantity sent to landfill (Table 4)	1,403
▪ Wet Quantity in Inventory or Lost to Evaporation	- 1,358

The dry inventory remaining on the site consisted of recyclable materials ready for shipment to off-site markets. By the end of 2006, there was no wet inventory remaining at the site since the facility stopped accepting wet materials in May and transferred the remaining wet materials off site during the remainder of the year. In fact, more wet materials were processed and transferred from the site than was accepted at the site in 2006 due to the decommissioning of the compost facility and off loading of all remaining materials within the composter.

4.5 Composting Facility Operations

Organics were received at the organics processing facility. The Composting facility received and processed residential and ICI organics. Organics bags are loaded into a feed conveyor with a front end loader. The organic bags are mechanically opened with a screw-thread auger and the contents are screened. Oversize material and plastic are removed with the remaining organics continuing by conveyor. The organic waste processing facility incorporates a Longwood in-vessel channel composter and a curing area. The City's unit consists of eight channels (or bins). Each bin has twenty-four sprinkler nozzles, located approximately three meters apart to maintain proper moisture levels. The unit is fully enclosed with a turning machine to move material through the channels and provide aeration. All air within the composter is passed through biofilters prior to venting to the atmosphere. The biofilters are large banks of finished compost and wood chips through which the air from the composting facility is forced to flow through. The wood chips/compost and the microorganisms within the biofilters help to remove volatile organic compounds and reduce odours. By the time the organics reach the end of the bin, the primary composting process is largely complete. The compost is then transferred for curing in the Secondary composter, where the composting process is completed.

Temperature data were recorded daily for all active channels in 2006. To simplify temperature data collection, staff used the location of sprinkler nozzles as a guide in the bins. As mentioned above, in each bin, there are 24 sprinkler nozzles. Additional temperature locations are the charging area and the header of the bin, which are located before the first sprinkler nozzle. A temperature of 55^{o}C (referred to as "pathogen reduction" temperature) or greater was typically attained in each bin by water nozzle #3 (at the 17.0 meter mark) although, pathogen reduction temperatures were sometimes attained as early as the water nozzle #1 (at the 11.4 meter mark) or the header (at the 4.1 meter mark). Temperature data varies between the bins, as would be expected, but temperatures of 55^{o}C or greater were maintained for three days in all active channels. In January, February and sometimes in March, both the feedstock and the bulking agent are cold, therefore, were taking longer to reach pathogen reducing temperatures in the front part of the bins.

Wet waste reaches pathogen reduction temperatures easily by the time it reaches the last two-thirds of the bin. Any remaining decomposition that did not take place in the channels will occur as the material makes the transition to curing in the Secondary Composter, thereby finishing the composting process. During the summer months, the highest rate of composting occurs earlier in the Primary Composter due to the temperature and state of the incoming feedstock, so the occurrence of higher temperatures in the Secondary Composter is reduced.

Temperature graphs for composting operations are kept on file at the Wet-Dry Recycling Centre in accordance with Condition 30d)(i) and are not included as part of this report.

As previously discussed, the composting facility stopped receiving wet materials in May 2006. From June to August, the remaining compost was finished in the secondary storage area at the organic facility. Condition 17(a) of the C of A specifies that all composting activity at the site would cease by September 1, 2006. Composting activities can only be resumed with the Director's approval. During October and November, the remaining cured compost (27 tonnes) was transported to markets.

The quantity by weight of compost and residues produced and the quantity (weight) of compost and residues removed from the facility were previously discussed in Section 4.3. The volume of compost and residuals produced at the facility were not measured. Finished, screened compost is sold to Kuntz Excavating, Gillette Excavating, Communities in Bloom, IMS and Woodrill Farms. Most of the compost is sold to topsoil blenders for use in landscape and plant nursery products.

5. Summary of Analytical Results

5.1 Leachate Monitoring

Leachate monitoring is to be conducted on a semi-annual basis for the inorganic parameters and annually for the organic parameters. The analytical parameters to be sampled are listed below.

Monitoring Parameter List

Leachate Indicator		
Parameters	▪ Biological Oxygen Demand (BOD) ▪ Chemical Oxygen Demand (COD) ▪ Total Kjeldahl Nitrogen (TKN) ▪ Ammonia as Nitrogen (NH3-N) ▪ Total Phosphorus (Total P) ▪ Total Suspended Solids (TSS) for surface water and leachate ▪ Total Sulphate (SO4) ▪ Phenols	▪ Chloride (Cl) ▪ Sodium (Na) ▪ Calcium (Ca) ▪ Boron (B) ▪ Total Iron (Fe) ▪ Phosphorus (P) ▪ Zinc (Zn)
General Parameters	▪ pH ▪ Conductivity ▪ Alkalinity	▪ Magnesium (Mg) ▪ Potassium (K)
Organics	▪ EPA 624,625 (ATG 16+17+18 & ATG 19+20)	

The organic compound parameter list for the ATG MISA Groups are as follows:

Misa Group 16	**Misa Group 16 (Cont)**	**Misa Group 19**
1,1,2,2-Tetrachloroethane	Tetrachloroethylene	Acenaphthene
1,1,2-Trichloroethane	trans-1,2-Dichloroethylene	5-Nitroacenaphthene
1,1-Dichloroethane	Trans-1,3-Dichloropropylene	Acenaphthylene
1,1-Dichloroethylene	Trichloroethylene	Anthracene
1,2-Dichlorobenzene	Trichlorofluoromethane	Benzo(a)anthracene
1,2-Dichloroethane	Vinyl chloride	Benzo(a)Pyrene
1,2-Dichloropropane		Benzo(b)Fluoranthene
1,3-Dichlorobenzene		Benzo(g,h,i)perylene
1,4-Dichlorobenzene	**Misa Group 17**	Benzo(k)Fluoranthene
Bromodichloromethane	Benzene	Biphenyl
Bromoform	Ethylbenzene	Camphene
Bromomethane	Styrene	1-Chloronaphthalene
Carbon Tetrachloride	Toluene	2-Chloronaphthalene
Chlorobenzene	o-Xylene	Chrysene
Chloroform	m-Xylene and p-Xylene	Dibenzo(a,h)Anthracene
Chloromethane		Fluoranthene
Cis-1,3-Dichloropropylene		Fluorene
Dibromochloromethane	**Misa Group 18**	Indeno(1,2,3-cd)Pyrene
1,2-Dibromoethane	Acrolein	Indole
Methylene Chloride	Acrylonitrile	1-Methylnaphthalene
		2-Methylnaphthalene
Misa Group 19 (Cont)	**Misa Group 20**	
Naphthalene	2,3,4,5-Tetrachlorophenol	
Perylene	2,3,4,6-Tetrachlorophenol	
Phenanthrene	2,3,5,6-Tetrachlorophenol	
Pyrene	2,3,4-Trichlorophenol	
Benzyl Butyl Phthalate	2,3,5-Trichlorophenol	
bis(2-ethylhexyl)Phthalate	2,4,5-Trichlorophenol	
Di-N-butylPhthalate	2,4,6-Trichlorophenol	
Di-N-octylPhthalate	2,4-Dimethylphenol	
4-Bromophenyl phenyl Ether	2,4-Dinitrophenol	
4-Chlorophenyl Phenyl Ether	2,4-Dichlorophenol	
bis(2-chloroisopropyl)Ether	2,6-Dichlorophenol	
bis(2-Chloroethyl)Ether	4,6-Dinitro-o-Cresol	
Diphenyl ether	2-Chlorophenol	
2,4-Dinitrotoluene	4-Chloro-3-methylphenol	
2,6-Dinitrotoluene	4-Nitrophenol	
bis(2-chloroethoxy)Methane	m-,p-Cresol	
Diphenylamine	o-Cresol	
N-Nitrosodiphenylamine	Pentachlorophenol	
N-Nitrosodi-N-propylamine	Phenol	

As discussed earlier, sampling of the actual leachate can no longer be conducted due to the small amount generated. In previous years, the leachate that was sampled was a mixture of runoff water from the compost pad and leachate produced in the composting process collected in the holding tank beneath the pad, prior to discharge to the sanitary sewer. However, starting in 2003, the collection of compost runoff into the holding tank no longer occurred. Since 2003, run-off from the compost pad is now directed to the clay lined detention pond 1.

In 2006, March and May samples were collected from the pond at SW3. No other samples were collected in 2006 at SW3, due to dry conditions. The table below briefly outlines the conditions at detention pond 1 (SW3) during the 2006 monthly monitoring events

Month	Runoff From Pad	Conditions	Sampling Date
January	None	Dry	**No Sample**
February	None	Dry	**No Sample**
March	None	Some Flow	**March 9, 2006**
April	None	Dry	**No Sample**
May	None	Some Flow	**May 16, 2006**
June	None	Dry	**No Sample**
July	None	Dry	**No Sample**
August	None	Dry	**No Sample**
September	None	Dry	**No Sample**
October	None	Dry	**No Sample**
November	None	Dry	**No Sample**
December	None	Dry	**No Sample**

The 2006 samples showed similar characteristics as historic leachate quality, which were found to be variable due to rain events. Compared to background water quality, the 2006 water quality at SW3 showed elevated concentrations of conductivity, potassium, BOD, COD, TKN, ammonia, total phosphorus, chloride, sodium and iron as well as occasionally elevated phenol and zinc. The compost pad run-off that did occur, which drained directly to the sewer, was generally within the range to slightly lower than concentrations observed in 2003. The water quality from SW 3 collected in 2006 exhibited similar elevated concentrations as those collected historically from the holding tank (leachate).

The compost runoff was to be analyzed for organics once per year. During the June sampling event, SW3 was dry therefore no organic sample was collected. It was the City's intention to collect an organics samples during the next month when water was present however, SW3 was dry for the remainder of 2006. Therefore, no organic analysis from detention pond 1 was completed in 2006.

5.2 Surface Water Monitoring

Monitoring of surface water at the WRIC commenced in March 1996. As required in the C of A, this monitoring was to be to be on a monthly basis for a short parameter list and on a quarterly basis for the full leachate parameter list (updated in 1999). There are two surface water sampling stations at the site, designated as SW 1 located at the off-site discharge point in Stormwater Detention Area 2 (Figure 1) and SW 2 located in the Stormwater Detention Area 1. Any surface water discharge (SW 1) that does leave the site would be directed into a roadside ditch that ultimately flows into a stormwater catch basin.

There is no background surface water analysis (prior to site operations), so any impacts due to runoff from the WRIC would be difficult to determine at the discharge point SW 1, due to the potential for other sources of non-facility contamination. These sources include runoff from the surrounding agricultural lands and road systems.

During mid 1998, the surface water monitoring program was re-designed to better understand contributions from runoff directly related to the site and not stagnant pond conditions. Surface water sampling is still undertaken on a monthly basis, in accordance with the C of A. However, more detailed recordings on discharge and overall conditions (such as dry or stagnant water) are undertaken. As well, the monthly sampling is to be undertaken during runoff conditions (weather permitting), and if no event occurs are to be sampled at the end of the month regardless.

Below is a discussion of the surface water monitoring at station SW 1 and SW 2 during 2006. Samples were collected from Detention Pond 2 (SW1) and Detention Pond 1 (SW2) in March and May 2006. No other surface water samples were collected due to dry conditions. The table below briefly outlines the surface water monitoring events for the past year at these surface water stations.

Month	Discharge Events	Conditions	Sampling Date
January	No Discharge	Dry	**No Sample**
February	No Discharge	Dry	**No Sample**
March	No Discharge	Water present	**March 6, 2006**
April	No Discharge	Dry	**No Sample**
May	No Discharge	Water present	**May 16, 2006**
June	No Discharge	Dry	**No Sample**
July	No Discharge	Dry	**No Sample**
August	No Discharge	Dry	**No Sample**
September	No Discharge	Dry	**No Sample**
October	No Discharge	Dry	**No Sample**
November	No Discharge	Dry	**No Sample**
December	No Discharge	Dry	**No Sample**

Generally, surface water quality at SW 1 (Stormwater Detention Area 2) has been typified by slightly elevated concentrations for COD, TKN, total phosphorus, chloride and sodium compared to background groundwater quality. The 2006 SW 1 samples showed elevated TKN and occasionally elevated COD, potassium and iron. The 2006 results are within the range of historic concentrations, except for alkalinity, potassium, COD and calcium (lower) and ammonia and iron (higher). The Provincial Water Quality Objectives (PWQO) were exceeded during both 2006 sampling events for total phosphorus and iron and during the March sampling event for phenols and zinc.

The 2006 SW 2 (Stormwater Detention Area 1) samples showed elevated COD and occasionally elevated BOD, ammonia and iron concentrations compared to background. The 2006 samples showed lower concentrations of conductivity, alkalinity, magnesium potassium, sulphate, sodium, chloride and boron than historic. The remaining parameters were at the low end of the historic concentrations at this location. The March concentrations tended to be higher than the May concentrations, likely due to seasonal influences. Total phosphorus and iron exceeded the PWQO during both of the monitoring events. Zinc excceded the PWQO during the March 2006 sampling event. All surface water quality results are appended.

A review of the data collected to-date suggests COD, ammonia, TKN and total phosphorus appear to be more elevated during the drier periods, whereas, chloride and sodium appear higher in the spring period. As well, chloride and sodium can be elevated in the late fall period as observed in the past. These types of trends would be expected. Elevated chloride and sodium in the spring and periodically in the fall (should early snow fall occur) would be related to road salting of surrounding and on-site roads. The elevated COD, ammonia, TKN and total phosphorus during drier periods would be related to the stagnant condition of the water in the pond. However, total phosphorus and TKN have been elevated in 2002 and 2003 immediately after a rain event during non-stagnant conditions. That these parameters are elevated after rain events suggests that they are collected in the surface water runoff. As the surrounding land use, at that time, was agricultural, it is most likely the runoff from these areas is the cause and not from the WRIC. This is further supported by historical groundwater quality (prior to the construction of the facility), which has shown elevated concentrations of both of these parameters in the groundwater. These apparent trends will be further assessed as more seasonal data are collected each year under normal precipitation and/or rain event periods.

As per the requirements of the C of A, the surface water was to be analyzed for organics once in 2006. During the June sampling event, SW1 and SW2 were dry therefore no organic sample was collected. It was the City's intention to collect an organics sample during the next month when water was present however, SW1 and SW2 were dry for the remainder of 2006. Therefore, no organic analysis from detention ponds 1 or 2 was completed in 2006.

It is recommended that surface water monitoring continue to be conducted monthly until a suitable water quality database, has been achieved. Due to the lack of water since 2004, the surface water monitoring program is being re-assessed. As part of this evaluation, the reason why there continues to be a lack of surface water collected in the Detention Ponds is also being re-assessed to determine if this is an issue.

5.3 Groundwater Monitoring

Baseline groundwater monitoring was conducted from 1991 to 1995, prior to construction at the site (monitor locations 1a-91, 1b-91, 2a-91, 2b-91, 3-91 and 5-91). Monitoring of the groundwater at the WRIC Facility commenced in April 1996 at the remaining monitoring locations that were not destroyed during construction (Figure 1). In late 1996, replacements for the monitors that were destroyed were completed and added to the program. The present monitoring program, initiated in 1999 after MOE approval, is twice per year (June and December). This program was followed in 2006.

5.3.1 Groundwater Elevation and Flow Directions

Groundwater elevations were measured at 11 locations that included a total of 21 monitors. These monitors are outlined below with the geological unit they are measuring. Groundwater elevations are appended. Hydrographs for each location are also appended.

Monitor	Geological Unit	Groundwater Zone
2a-91	Sandy Silt Till	Not Used
2b-91	Sandy Outwash	Water Table
5-96	Dolostone Bedrock	Water Table/Bedrock
6a-96	Dolostone Bedrock	Bedrock
6b-96	Sandy Outwash	Water Table
7-96	Sandy Outwash	Water Table
8-96	Dolostone Bedrock	Water Table/Bedrock
9-96	Sandy Outwash	Water Table
10-00[1]	Dolostone Bedrock	Bedrock
11a-01[1]	Dolostone Bedrock	Bedrock
11b-00[1]	Gravelly Outwash	Water Table
12a-00	Dolostone Bedrock	Bedrock
12b-00	Gravelly Outwash	Water Table
13a-01*	Dolostone Bedrock	Bedrock
13b-01*	Gravelly Outwash	Water Table
14a-01*	Dolostone Bedrock	Bedrock
14b-01*	Gravelly Outwash	Water Table
15a-01*	Dolostone Bedrock	Bedrock
15b-01*	Gravelly Outwash	Water Table

Notes: (1) Locations recommended by MOE
** Locations on Transfer Station Property*

In general, the shallow groundwater flow is similar to previous years. Shallow groundwater flow beneath the majority of the site is still in northeasterly direction (Figure 2). To the west of the site, groundwater flows out of a bedrock high into the outwash beneath the site before being directed to the northeast. As well, flow is directed from the east into the site.

The bedrock groundwater flow pattern is similar to the overlying shallow groundwater system (Figure 3). Groundwater flow is still found to be west to east across the WRIC site, as observed in the past. With the addition of the monitors completed in 2001, the groundwater now appears to flow radially from the bedrock high to the west, therefore, showing some component of flow moving southeast. This similar flow pattern was once again confirmed in 2006. There is also some component of flow from the east back towards the WRIC and to the south. It is expected that these flows will ultimately become northerly as observed with the shallow groundwater system, and based on the assessment of the bedrock surface topography, which suggests that the bedrock is deepening to the north. This is important as earlier hydrogeological assessments suggest that the bedrock low observed in this area is a former paleo river valley (incised bedrock low) that trends to the north. Therefore, it would be expected that the groundwater flow would follow this feature. It is recommended that a monitoring nest (bedrock and overburden) be placed to the south and east of the facility (on City lands). The intent of this location is to confirm the geology and groundwater flow in this area to determine if the groundwater flow in the bedrock does ultimately move to the north.

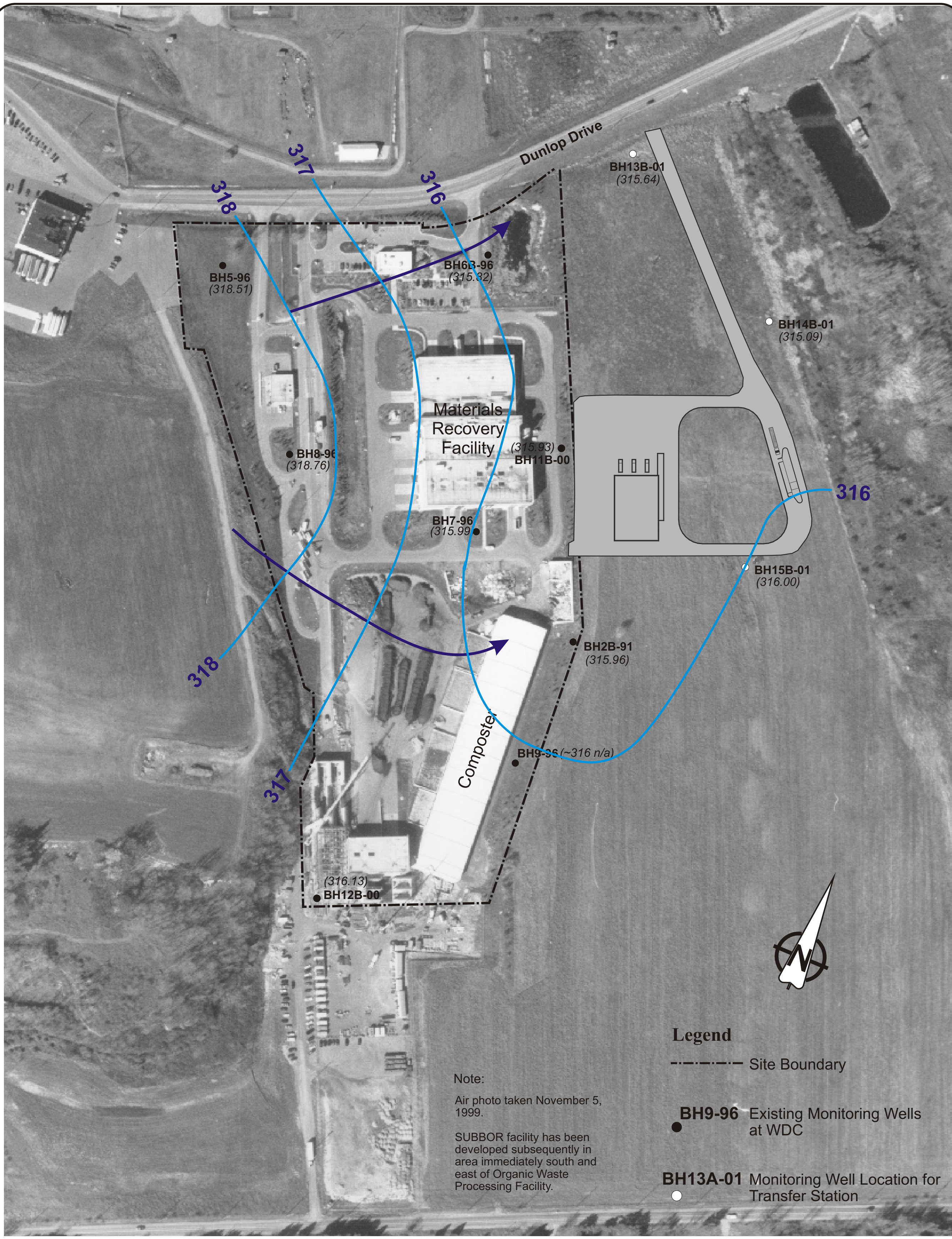
5.3.2 Groundwater Quality

Groundwater sampling was conducted in June and December 2006. Groundwater quality results are appended.

To understand the groundwater quality in the area and beneath the site, the differences in the water quality within the two main geological units beneath and surrounding the site must be examined. These are the sandy outwash and the bedrock below the site along with an associated bedrock high to the west of the site. In general, there are three types of groundwater quality that have been identified within these units, based on the shallow groundwater flow regime. These are background outwash, bedrock and bedrock influenced outwash water quality.

Background Outwash Water Quality

Background outwash groundwater quality has historically been measured at monitors 2b-91 and 9-96 on the eastern extent of the property, and at locations 14 and 15 on the adjacent eastern property. Groundwater flow is directed towards the site from these areas. Note that monitor 2b-91 was not sampled during 2006 due to insufficient volume of water in June and December.



Gartner Lee

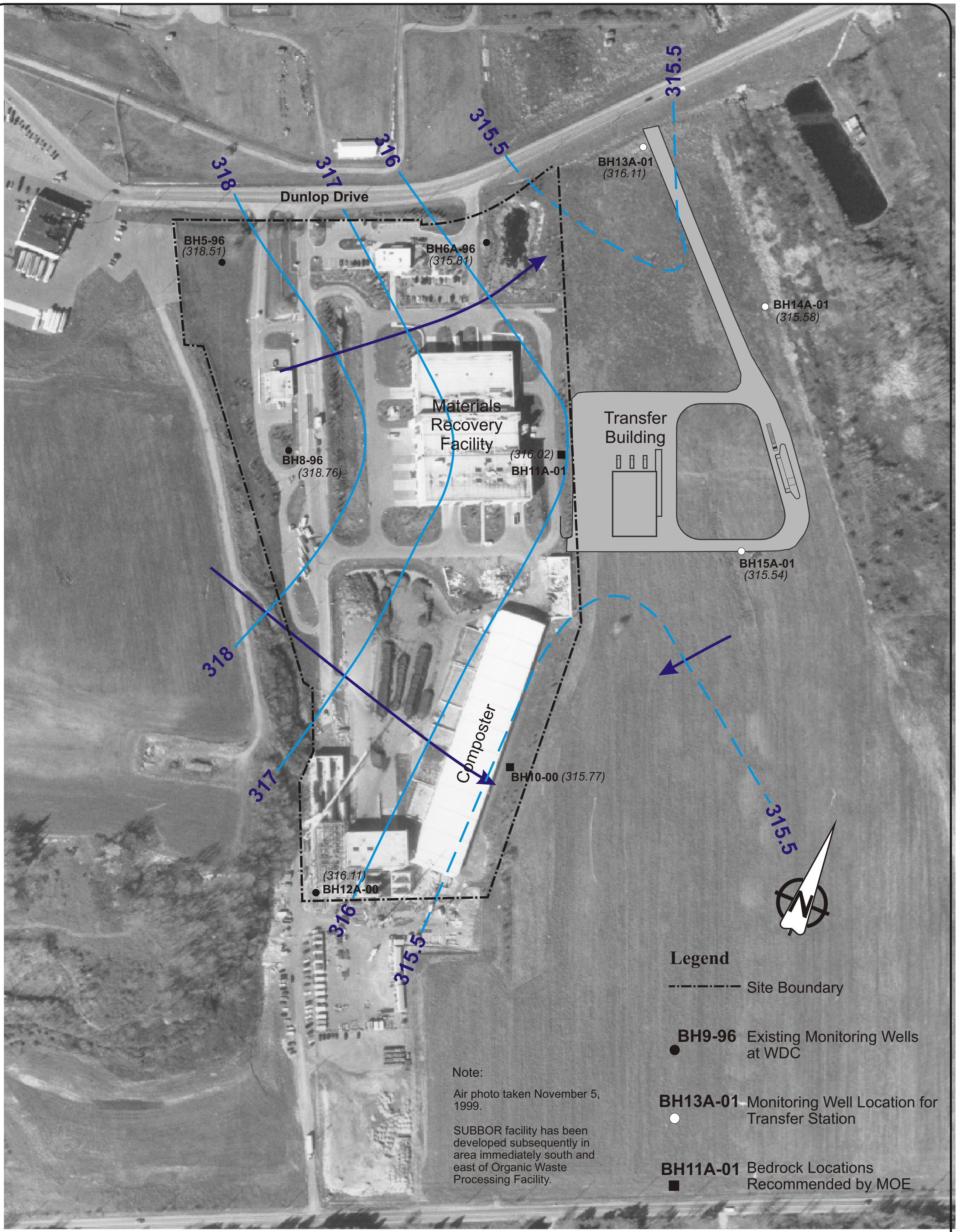
Scale 1 : 4,000

SHALLOW GROUNDWATER FLOW (June , 2006)

Annual Monitoring Program
Waste Resource Innovation Centre
City of Guelph

FIGURE
2

Project 70-133
(2007\Final\Images\Shallow-F.cdr)



Gartner Lee

Scale 1 : 4,000

BEDROCK GROUNDWATER FLOW (June, 2006)

Annual Monitoring Program
Waste Resource Innovation Centre
City of Guelph

FIGURE

3

Project 70-133
(2007\final\images\bedrock-f.cdr)

Groundwater quality at these locations is typified by lower concentrations of the major ions (Alk, Cl, Na, Ca, Mg and K). The average of these parameters during 2006, along with historical ranges for each location, are provided below. The average 2006 alkalinity, sodium and chloride concentrations at monitor 9-96 and alkalinity and sodium at monitor 14b-01 are slightly higher than the historic maximum concentrations for these monitors. Other indicator parameter concentrations for these two monitors are generally within their historic ranges though they tend to be at the high end of the range. The higher concentrations for these parameters were also noted in our 2005 report.

Parameter concentrations at monitor 15b-01 are within historic ranges for the parameters presented on the table below. Compared to 2005, the 2006 average chloride concentration is significantly lower (6 mg/L compared to 33 mg/L in 2005) and the 2006 average sodium concentration is about double the 2005 average concentration. This monitor has continued to show a general increasing trend in alkalinity, calcium, magnesium and sodium in recent years. This monitor is upgradient and east of the WRIC and east of the transfer station and is considered to be a background location. The cause of this change in water quality is unknown. Further evaluation of the water quality at this monitor should be conducted as more data become available. As well, an inspection of the area, especially upgradient of this location, should be conducted to determine if there have been changes in the area outside of the transfer station.

Monitor		Alkalinity (ppm)	Chloride (ppm)	Sodium (ppm)	Calcium (ppm)	Magnesium (ppm)	Potassium (ppm)
2b-91	*Historical Range*	166 - 256	4.8 – 17	1.8 – 4	52.2 - 90	21.8 – 31.2	0.69 - 1
9-96	*Historical Range*	171 - 251	6.34 –33.5	1.48 - 20.2	68.6 - 93.2	14.7 - 29	0.3 - 1.3
	2006 Average	291	34	27	86	22	1.2
14b-01	*Historical Range*	267 - 364	22.3 - 143	7.7 – 49	95.4 - 140	26.2 - 38	1 – 2.3
	2006 Average	400	111	63.5	125	36.5	2
15b-01	*Historical Range*	200 - 533	5.2 – 56	2 – 10.7	73.4 - 190	18.7 - 53	1 - 2
	2006 Average	476	6	14	135	34	1

Note: Historical Ranges include all data up to and including 2005.

At monitor 9-96, chloride and sodium exhibited an increasing trend throughout 2002 into 2003. Sodium has continued to show an increasing trend though chloride concentrations have remained elevated though quite variable. No sample was collected from this monitor in June 2006 due to the presence of a hornets nest in the monitor casing. However, the December 2006 concentrations remain at elevated concentrations. This monitor is located in the southeast corner of the site along the access road that leads to the back door of the compost building. The most plausible source of the increased sodium and chloride is road salt. During the building of the SUBBOR plant in 1999, an operational change occurred in that the back door to the composter was moved to face east. The eastern access road was also terminated at this point. It would be expected that with the higher truck activity in this area, since 2000, that there is now a greater potential for road salt effects either from on site-activities or brought in via the trucks.

Background Bedrock Water Quality

Background bedrock groundwater quality is measured at locations 5-96 (northwest) and 8-96 (west) on the bedrock high along the western portion of the site from where groundwater flows into the site. As well groundwater quality in the bedrock below the site was measured at location 6a-96. Background bedrock groundwater quality is typically hard with more elevated concentrations of the major ions, most noticeably alkalinity and calcium. These types of concentrations are associated with dolostone, which is made up of calcium and magnesium carbonate. The average concentrations of these parameters observed in 2006, along with the historical ranges, at these locations are provided below. Also, provided in this table are 2006 averages from the more recent bedrock WRIC site monitors (10-00, 11a-00 and 12a-00) along with the bedrock monitors (13a-01, 14a-01 and 15a-01) installed on the Solid Waste Transfer Station property in late 2001. Monitoring location 12 is discussed separately.

Monitor		Alkalinity (ppm)	Chloride (ppm)	Sodium (ppm)	Calcium (ppm)	Magnesium (ppm)	Potassium (ppm)
5-96	*Historical Range***	278 - 380	112 - 474	71.9 - 263	83.7 - 134	24.2 – 38.4	3.9 - 6
	2006 Average.	322	689*	490*	96.5	25	5.3
8-96	*Historical Range*	264 - 356	37.2 - 332	17.6 – 171	92 - 123	32.1 - 43.4	1.73 – 3.1
	2006 Average	320.5	114	64.5	93	33.5	2.6
6a-96	*Historical Range*	235 - 420	158 – 345	70 - 176	94.6 - 158	28.3 - 40	2 – 16.4
	2006 Average	268.5	219*	135*	135	38.5	3
10-00	*Historical Range*	236 - 267	20 – 44.9	9.2 - 12	83.5 - 95.1	27.7 - 31.5	1 - 2
	2006 Average	255.5	18.5	8.9	85.5	29	1.1
11a-00	*Historical Range*	231 - 263	4 - 7.1	5.1 - 25.9	62 - 83.2	23.6 - 26	1 - 3
	2006 Average	251	9	5.3	71	25.5	1.9
13a-01	*Historical Range*	248 - 272	83.9 – 101	38 - 44	97.7 - 112	33.9 - 38.8	2 – 2.9
	2006 Average	267	105.5	41.5	97	34	2.4
14a-01	*Historical Range*	215 - 263	4.8 – 26.6	9.1 - 27.4	63.5 - 84	22.4 - 29	1 - 2
	2006 Average	253	14	15	75.5	27	1.1
15a-01	*Historical Range*	245 - 263	47 – 62.4	7.7 – 16	100 - 129	32.5 - 37	1 – 2
	2006 Average	270	57	16	96	34	1.1

*Notes: * Road salt impact*
Historical Ranges include all data up to and including 2005.
***Historical Ranges only include data from 1997 up to 2003 due to continued increasing chloride and sodium*

As shown on the table above, the average 2006 concentrations generally fall within the historical ranges, with the following exceptions. The 2006 average chloride and sodium concentrations at monitor 5-96 are significantly higher than the historic maximums for these parameters. The chloride concentration has shown a significant increase in recent years from less than 300 mg/L pre-2003 to about 900 mg/L during the dry sampling event. It should be noted the elevated 2006 chloride and sodium concentration at location 5-96 could be attributed to road salting of the surrounding area. The effects are found to be seasonal with the dry weather (June) sampling period showing higher sodium and chloride concentrations as compared to the wet weather (December) sampling period. As well, there have been historical road salt effects observed at location 6a-96 and 8-96. The 2006 average sodium concentration at monitor 10-00 and calcium at monitor 13a-01 are slightly lower than the historic minimums. The 2006 average chloride concentrations at monitors 11a-00 and 13a-01 and alkalinity at monitor 15a-01 are slightly higher than the historic maximums. Monitor 15a-01 has shown an increasing sodium trend over time though the 2006 average sodium concentration of 16 mg/L still remains quite low. The minor concentration differences at monitors 10-00, 11a-00, 13a-01 and 15a-01 are attributed to natural variability and are not interpreted to be a result of impacts from the site.

When the water quality from the most recent monitors located along the eastern boundary of the WRIC (10-00, 11a-00) and in the Transfer Station property (13a-01, 14a-01, 15a-01) are compared to the historical monitors to the west, there is a difference in bedrock water quality observed. With the exception of alkalinity, the concentrations of the major ions are generally lower indicating a less mineralized water. This difference in water quality is attributed to the bedrock units they are completed in. As stated earlier, there is a bedrock high to the west of the site. This high is dominated by the dolostone units of the Guelph Formation. The bedrock topography dips steeply to the east, across the WRIC site, towards a deeply incised bedrock valley low. This valley cuts into the underlying Amabel Formation. The recent monitors are installed in this formation or at the contact of this formation at the eastern boundary of the WRIC facility. Overall, water quality from this lower formation is found to be less mineralized, which is confirmed by sampling at the recent monitors.

Bedrock/Outwash Water Quality

The last type of water quality measured beneath the site is the bedrock-impacted groundwater. This is observed in the outwash at monitors 6b-96 (northeast corner) and 7-96 (central) as well as at the historical monitor 3-97 (southwest corner), which was destroyed during the construction of the SUBBOR pilot facility and replaced with monitor 12b-00. These locations are along the flow path that trends from the southwest to the northeast and receives groundwater inputs from the topographic high to the east and the bedrock high to the west. This water quality is typified by concentrations of the major ions that are elevated above the background outwash but for the most part lower than the bedrock concentrations. This is anticipated as the more ionized water from the bedrock to the west would mix with the less ionized waters coming from the overburden high to the east. It should be noted that monitor 6b-96 had, on occasion, higher concentrations of chloride and sodium than observed in the bedrock at monitor 5-96. These concentrations always show a seasonal trend, usually highest in the early spring, suggesting they are attributed to road salting of the surrounding area. Below is a table comparing the historic and average concentrations of the above monitors to background monitors 5-96 (bedrock) and 9-96 (outwash). As well, historical ranges for 6b-96 and 7-96 have also been provided for long-term comparisons. Monitor 12b-00 has not been included as it has exhibited impacts since 2002, as discussed separately below.

Monitor		Alkalinity (ppm)	Chloride (ppm)	Sodium (ppm)	Calcium (ppm)	Magnesium (ppm)	Potassium (ppm)
Background Groundwater							
5-96 (Bedrock)	Historical Range	278 – 380	112 - 474*	71.9 - 263*	83.7 - 134	24.2 – 38.4	3.9 - 6
	2006 Average	321.5	689	490	96.5	25	5.25
9-96 (Outwash)	Historical Range	171 - 251	6.34 – 33.5	1.48 – 20.2	68.6 – 93.2	14.7 - 29	0.3 – 1.3
	2006 Average	291	34	27	86	22	1.20
Impacted Groundwater							
6b-96 (Outwash)	Historical Range	246 – 410	90.3 - 815*	53.1 - 467*	85.9 - 217	20.5 - 45	5.36 - 18
	2006 Average	377	255	215	119.5	29.5	9.8
7-96 (Outwash)	Historical Range	224 – 378	54.3 – 397	28.7 - 212	95.1 - 226	29.6 - 52.7	9.06 - 27
	2006 Average	310.5	168	110	170	42	16.5

*Note: * Road salt impact.*
Historical Ranges includes all data up to 2005.

The 2006 average concentrations for the two downgradient outwash monitors fall within the historical ranges for each monitor. In 2002 and 2003 potassium concentrations increased in monitor 7-96 and have remained at these higher concentrations throughout 2004. A slight decreasing trend has been observed since 2005 and continuing into 2006. This increased concentration could still be natural as the actual concentrations observed are below the maximum historical concentrations observed at location 3-97 (29.4 mg/L). Monitor 6b-96, also discussed in previous reports, had similar elevated potassium. The potassium concentrations at both downgradient monitors remain elevated compared to background. However, it has been concluded that these elevated potassium concentrations are naturally occurring. This was based on the fact that the historical location 1b-91 (which was destroyed during construction activities and replace by location 6b-96) also had similar to higher concentrations before the WRIC was built. In recent years, alkalinity has shown an increasing trend though it still remains within historic ranges.

As observed since 1999, monitor 7-96 has exhibited higher than normal chloride and sodium concentrations (road salt effects). The 2006 sodium and chloride concentrations at monitor 7-96 are within the range of historic concentrations. The possible reason for the increase in 1999 was the change in the shallow groundwater flow. In June 1999, the water levels suggested that groundwater flow was being directed to the south. This was attributed to the construction of the SUBBOR pilot facility. As this was the case, the higher road salt effects observed at monitor 6b-96 could be drawn towards monitor 7-96 (normally upgradient). By December 1999, the measured groundwater levels indicated that flow was once again to the northeast. However, in 2000 the chloride and sodium concentrations still remained elevated with the highest observed in June 2000. The higher concentrations still observed in 2000 may be related to residual effects from when the groundwater flow had been reversed during the construction of the SUBBOR pilot facility (i.e., higher road salt impacted water is still being drawn back now that groundwater flow has reversed to normal). Once again, these chloride and sodium concentrations remained elevated in 2001, albeit at slightly lower concentrations than observed in 2000. Since 2001, concentrations have remained at these higher seasonal values. However, the 2006 sodium and chloride concentrations have shown a notable decrease compared to previous years with the average sodium concentration at 110 mg/L and the average chloride concentration at 168 mg/L. These concentrations, though still elevated, are approaching pre-1999 concentrations.

With the longer term database it has become apparent that a seasonal trend is being observed (higher in the late spring and lower in the late fall). It is now expected that the concentrations observed are a combination of the possible residual road salt effects discussed above along with contributions from existing road salt runoff at the WRIC.

Since 2000, monitor 7-96 has shown an increasing trend in the TKN concentration, possibly due to impacts from the composting operations. In June 2002, a slight increase in ammonia and COD was also observed at monitor 7-96. Discussions with WRIC staff indicated that it was possible that some runoff from the compost pad could have occurred during the spring thaw. Starting in the late fall of 2001 the containment curb around the pad was being reconstructed to better control collected runoff. However, due to winter condition it was not fully completed until the late spring of 2002. It was concluded, at the time, that the slight increase would come back down with the completion of the berm and the once the changes to the storm water system were initiated. Since 2002, ammonia has sporadically shown elevated concentrations, though not to the degree of the 2002 concentrations. In 2006, COD concentrations have returned to pre-2002 concentrations though TKN has remained slightly elevated. It should be noted that although the TKN concentrations are slightly elevated over the background range for this location, similar to higher concentrations have been or are being observed at background locations.

Monitor Location 12

The water quality collected initially at monitor 12a-00, in 2001, was found to be similar to 5-96 and 8-96, although it had lower chloride and sodium with slightly higher potassium concentrations. At location 12, an increase in COD, ammonia, TKN, chloride and sodium was observed in 2002. This location is situated at the southwest corner of the WRIC facility, which was in the area of the now former Pilot SUBBOR plant (Figure 1). Based on shallow groundwater flow, it is also upgradient of any WRIC operations. Table 5 is a summary of the concentrations of the elevated parameters. What was apparent is that the shallow outwash monitor 12b-00 first showed an increase in concentrations in June 2002. By December

2002, they had decreased significantly. Conversely, the concentrations in the bedrock monitor 12a-00 become elevated in December 2002, although at lower concentrations. The only difference was that chloride and sodium were significantly higher than the June or December concentration observed in the shallow monitor. The cause of this increase was considered unknown but it appeared to have come from a surface source possibly located to the west or southwest of this location, which may have occurred during the winter or spring of 2002. The data collected to-date suggests that impacts at location 12 were caused by one time impact, such as a spill.

COD continued to increase at 12b-00, along with a significant increase in BOD and iron into 2003. Maximum indicator parameter concentrations were observed in 2002 and 2003, as shown on the table below. Assessment of this water quality, at that time, indicated a shift towards a compost leachate signature similar to that observed from leachate produced at the WRIC. However, as stated earlier, this location is upgradient of any WRIC operations (i.e., the composter is downgradient to the east and the compost pad is downgradient to the north of this location). General decreasing trends have been observed since the initial impacts. The 2006 results at monitor 12b-00 now reflect pre-2002 conditions, showing no impacts.

By 2003, all concentrations decreased back to 2001 concentrations in the bedrock monitor (12a-00). Review of the data collected to-date indicated that there are no longer any apparent impacts in the deeper bedrock monitor 12a-00.

Groundwater Organics Results

As per the requirements of the C of A, the groundwater was analyzed for organics once in June (dry event). A concentration of 35 ug/L of bis(2-ethylhexyl) phthalate was detected at monitor 14b-01. Bis (2-ethylhexyl) phthalate has not previously been detected at this monitor though it has historically been detected at both upgradient and downgradient monitors in 1997 and 1998. The bis(2-ethylhexyl) phthalate detection is considered to be either a sampling or laboratory artifact. As this may be a sampling artifact, it is recommended that a traveling blank and field blank be collected during future organic sampling events. No other VOC's were detected at any of the monitors in 2006.

Between 2001 and 2005, low concentrations of 1,1,1-trichloroethane were detected at 9-96. The reason for these low levels is unknown as 1,1,1-trichloroethane has not been observed in historical leachate samples or in the sample collected at SW 3 (compost run-off) in 2003. No organic samples were collected from monitor 9-96 in 2006 due to the presence of a hornets nest in the monitor casing at the time of the June sampling event. The 2007 sampling results will be assessed to determine whether these low levels persist. Based on this analysis, there are no compost leachate impacts from the site on groundwater for organic parameters.

General Discussion

Overall, the groundwater chemistry during 2006 was similar to previous years. As observed in the past, zinc concentrations continue to be naturally elevated at 5-96.

Road salt impacts continue to increase at 5-96, with a significant increase noted in 2006. This location is upgradient west of the site on the bedrock high. These increasing road salt impacts may be related to increased traffic as this area becomes more developed.

TKN concentrations, which were elevated at background locations 5, 8 and 14 as well as locations 6, 9, 13 and 15 in August 2005, have generally returned to historic concentrations in 2006. The cause is not known, however, it is not considered related to any site activities as it was also noted at the background locations, which are upgradient of the site.

Monitor 15b-01 has exhibited a general increasing trend in alkalinity, calcium, magnesium and sodium. This monitor is upgradient and east of the WRIC, as well as east of the transfer station, and is considered to a background location. The cause of this change in water quality is unknown. Further evaluation of the water quality at this monitor should be conducted as more data become available. As well, an inspection of the area, especially upgradient of the location, should be conducted to determine if there have been changes in the area outside of the transfer station site.

In conclusion, there were no observable effects attributed to the WRIC on the groundwater quality beneath the site. No effects were observed at the boundary of the site. Road salt effects continue to be observed at location 5-96, 8-96 (upgradient of site), 7-96 and 9-96 (on-site) and are related to off-site as well as potential on-site activities. Minor impacts previously observed at monitor 12b-00, located at the southwest corner of the site, have been attenuated such that parameter concentrations at this location are now similar to pre-2002. This location is considered to be upgradient of any WRIC operations. The cause of the initial impact continues to be unknown but it appears to have come from a surface source possibly from the west or southwest of the site. Organic sampling showed that all parameters analyzed were found below their method detection limits with the exception of a detection of bis(2-ethylhexyl) phthalate at monitor 14b-01, considered a sampling artifact. As recommended in the previous reports, now that a six year database has been attained, organic sampling can be removed from the groundwater monitoring program for all historical locations, with the exception of 9-96. As well, it is recommended that a travel blank and field blank be taken during future organic sampling events to assess potential sampling artifacts.

6. Contingency Plans

The City has detailed contingency plans in place for the site prepared by the Environmental Services Department, Solid Waste Resources. The 2006 Contingency Plan documents (WRIC Contingency Programs, WRIC Business Continuity Plan, WRIC Emergency Plan, WRIC Fire Safety Plan) were reviewed by Gartner Lee and the pertinent items identified by the C of A are summarized below.

6.1 Spills

The WRIC has a Spills Handling and Reporting procedure in place. This procedure applies to all areas, employees and contractors at the WRIC. The procedure defines spills: minor, major, moderate and hazardous materials. The Spills procedure then outlines how to clean up a minor spill and who must be notified in the case of moderate or major spills.

In the event of a minor spill, the plan indicates that appropriate personal protective equipment should be worn and absorbents used to soak up the spill. Absorbed material should be transported to the WRIC transfer station for disposal.

The plan also covers procedures to follow in the event of a moderater or major spill. The City of Guelph Operations Department, the Environmental Protection Officer at the Wastewater Treatment Plant and the MOE Spills Action Centre must be notified, also in the event of a major spill, the Fire Department, Police, Operations Department, or City of Guelph Emergency Operations Control Group may need to be notified. The plan indicates that all necessary steps should be taken to eliminate possible ignition sources and prevent the spill from leaving the area or entering a watercourse. The plan notes that an Employee Incident Report must be completed once the clean up is underway. Finally, the plan provides sources of additional information and applicable legislation and references.

6.2 Fire or Similar Emergency

The WRIC has comprehensive plans in place in case of fire or similar emergency documented in the WRIC Fire Safety Plan and the WRIC Emergency Plan. The Fire Safety Plan includes site mapping, floor plans for each of the on-site buildings (including locations of fire alarms and extinguishers), procedures to be followed in the event of a fire/emergency, staff responsibilities and contacts in the event of a fire/emergency, procedures for fire drills, prevention and monitoring equipment maintenance.

The Emergency Plan includes many of the elements incorporated into the Fire Safety Plan plus emergency communications procedures, locations of emergency supplies, emergency equipment information and procedures related to specific emergency situations. The original Fire Safety Plan was reviewed and approved by the City Fire Department. The plan was updated in 2006.

6.3 Composting Facilities

The Organic Waste Processing Facility is currently not in service. A comprehensive contingency plan will be developed in the event that the facility re-opens.

6.4 Power or Equipment Failure

Procedures related to power failure are discussed in the WRIC Emergency Plan. In the event of a minor power outage, a portable generator is available at the closed Eastview Landfill site. There is currently no contract for a company to supply the WRIC with a generator in the event of a major power outage. However, arrangements are in place for an outside power generation unit for the WRIC Administration Building if it is being used as an Operations Control Centre. If electricity is unavailable for more than a 24-hour period, the WRIC would be required to re-direct waste materials. Emergency procedures have also been assessed for on-site facilities should the power failure be accompanied by flood or freezing conditions.

Procedures as a result of loss of on-site facilities are addressed in the WRIC Business Continuity Plan. Recommended procedures associated with the loss of each of the facilities is documented. Ultimately, management will assess the course of action to restore the facilities and re-gain normal operations.

6.5 Odour

Daily odour monitoring is conducted by qualified WRIC staff. Odour complaints from the public are investigated through the WRIC Environmental Complaint Investigation Procedure in compliance with Condition 31 of the C of A. Control measures may include closing doors, cleaning up standing water and/or spills, other housekeeping measures, making changes to the processes or removal of the odour source to the landfill. If the odour persists, a portion of the operation or the entire site may be closed until the issue is resolved.

6.6 Aircraft Hazards

The Guelph Air Park is located within three km of the site. The most obvious aircraft hazard, as it relates to the operation of the WRIC, is the nuisance bird population. Daily bird monitoring occurs as part of the site inspections. Continual housekeeping measures, such as litter pick up around the site, at the yard waste pile and compost area, occur at the site to deter the attraction of birds and vermin. Should nuisance birds become an issue at the site, trained birds-of-prey or other mitigative measures will be considered. If necessary, the site operations may cease until the issue is resolved.

Dust, steam, smoke or any airborne vapour may pose an aircraft hazard due to decreased visibility. Operations are conducted in a manner to minimize emissions.

6.7 Un-Authorized Waste

Non-compliant loads are rejected at the scale house prior to entering the site. If un-authorized, hazardous or inappropriate waste is inadvertently accepted, the material will be loaded back on the vehicle (if it has not left the site) or the material will be placed in the appropriate bin for removal by a licenced hauler to an appropriate disposal site. The waste will be transported off-site within a 24-hour period. If possible, the vehicle that brought the non-compliant load will be charged for the disposal fee.

6.8 Groundwater/Surface Water Contamination

The site and operational procedures are designed such that there will be minimal impacts on the environment. In the event of a surface water impact, the on-site SWM detention ponds have valves that can stop off site flow. A Spills Contingency Plan (discussed in Section 6.1) is in place to handle spills. Dry and wet waste recieved and handled at the site are conducted in indoor covered areas with impermeable floor surfaces and materials stored outside are covered such that impacted runoff is not generated.

Nevertheless, should water quality results suggest that there are impacts to the ground or surface water, the monitor locations/surface water stations will be re-sampled within a reasonable period of time to confirm results. As well, the area immediately adjacent and upgradient of the impacted location should be inspected for possible contaminant sources. Equipment and floor drains may also be inspected to determine if repairs are required. These repairs will be completed immediately. Should the repairs be such that normal operation is not possible, this portion of the operation will be shut down until maintenance is complete. If the contamination is a result of failure in the infrastructure that cannot be repaired under normal maintenance procedures, a remedial plan will be developed to prevent further impacts.

6.9 Quality/Fungal Contamination

If issues arise regarding air quality or fungal contamination, the appropriate qualified professional will be contracted to investigate the cause and recommend remedial measures. Remedial measures may include a change/alteration of operations or suspension of operations in the affected area(s).

All staff receive and are trained on the procedures contained within the WRIC Emergency Plan and WRIC Fire Safety Plan. The WRIC Business Continuity Plan is for use only by City Management staff due to personal information within the document. Contingency Plans are available at the WRIC for review by the Ministry.

7. Overall Compliance With the Conditions of the Certificate of Approval

The WRIC Facility continues to strive to comply with the requirements of Conditions 27 and 30 of the C of A. This section is based on the information provided to Gartner Lee Limited by the City. The waste screening measures that the City implements to ensure compliance of incoming waste is discussed in Section 4.1, as per Condition 22(k) and (l). Monthly summaries of the wastes and/or recyclables and information on the composting facility have been provided in Sections 4.2 to 4.5 of this report, as stipulated sub-sections a), b) c) and d) of Condition 30. Section 5 discusses the results of the annual ground water, surface water and leachate monitoring program as per Condition 30(e) of the C of A. Section 6 provides a review and summary of the updated Contingency Plans for the site, specified in Condition 27 of the C of A.

In 2005/2006, Mr. Cameron Hall (MOE Inspector) conducted an inspection of this facility with respect to the Terms and Conditions of Provisional Certificate of Approval number A170128. The results of the review by the MOE were presented in their Inspection Report. The deficiencies noted by the MOE, followed by the City's response are documented below.

All alleged deficiencies listed by Mr. Cameron Hall in his report related to the organic composting operations no longer apply as the facility ceased composting in June 2006.

1. *Section 18(1) of Regulation 347 requires generators of subject waste to submit a Generator Registration Report to the Director on or before February 15th in each year.*

   All generator registration reports for 2002, 2003, 2004, 2005, and 2006 have been submitted to the Director.

2. *The inspection found 20 missing copy 3 of manifests and 2 missing copy 2's.*

   All missing manifests have been located and copies are on file.

3. *The depositing and storage of leaf waste not in accordance with the approval. The storage of the leaf waste or mixed yard, wood and brush waste in large piles results in partial composting of this waste. Composting of mixed yard, wood and brush outdoors is not permitted.*

   All yard waste was removed after the MOE inspection report. On September 29, 2006 the site received an amended Certificate of Approval to permit the off-loading of yard waste. The site is complying with this new Condition.

Other Matters

An application for an amendment to our C of A was submitted to allow acceptance of pharmaceuticals (waste class 261) and car batteries (waste class 112) and the City is awaiting approval.

In 2006, the City of Guelph hired a new Director of Environmental Services and a new Manager of Solid Waste Resources. Both individuals stress compliance with all applicable legislation. To that effect, the Manager completed a reorganization of the Solid Waste Division.

With the end product emphasizing compliance, the new Division structure has a Governance and Compliance section supervised by the Supervisor of Governance & Compliance. This new position and the seven (7) staff reporting to him are mandated to achieve compliance with applicable legislation, regulations, and Certificates of Approvals issued to the City of Guelph's Solid Waste Division. The Supervisor of Governance & Compliance is a former Ministry of Environment Supervisor of Investigations, Prosecutor, and Investigator.

8. Conclusions

The following conclusions are provided based on the findings of the 2006 program:

a) The site received 43,132 tonnes of material during 2006. Of the materials received, organic "wet" materials constituted 9,164 tonnes (21%), recyclables ("dry") materials constituted 32,902 tonnes (76%) and other materials made up the remaining 1,065 tonnes (3%).

b) There were 43,448 tonnes of materials processed and transferred off the site to markets or for disposal. 260 tonnes of dry material remained in inventory at the end of 2006. More wet materials were processed and transferred from the site than was accepted at the site in 2006 due to the decommissioning of the compost facility.

c) The site produced and transferred 1,237 tonnes of finished compost and 1,363 tonnes of wet residue and screened compost residue. The composting facility ceased accepting wet materials in May 2006.

d) Monitoring results from SW3 (representative of leachate) showed elevated concentrations of conductivity, potassium, BOD, COD, TKN, ammonia, total phosphorus, chloride, sodium, iron, phenol and zinc compared to background groundwater.

e) Surface water stations monitoring at SW 1 and 2 shows that there are elevated concentrations of TKN, COD, potassium and iron at SW 1 (Stormwater Detention Area 2) and elevated COD, BOD, ammonia and iron concentrations at SW 2 (Stormwater Detention Area 1) compared to background.

f) Groundwater monitoring results indicate road salt effects at some up-gradient and on-site groundwater monitoring locations (5-96, 8-96 and 7-96). These are related to off-site and potential on-site activities. There were no apparent compost leachate impacts observed in the groundwater at the site boundary.

g) Minor impacts previously observed between 2002 and 2005 in the shallow monitor at location 12 are no longer apparent. The 2006 groundwater quality at both monitors at location 12 was similar to pre-2002 quality. This location is upgradient of any WRIC operations (i.e., the composter is downgradient to the east and the compost pad is downgradient to the north of this location), where any leachate would be produced and therefore, did not appear to be the cause. The cause of the initial impact continues to be unknown.

h) The 2006 Contingency Plans for the site were reviewed and updated by the City as needed.

i) No remedial or mitigative actions were required at the WRIC Facility in 2006 based on finding from the monitoring program.

9. Recommendations

The following recommendations are provided for consideration:

a) Groundwater, surface water and leachate sampling should be conducted in 2007 as originally outlined in the 1997 annual report and revised in 1999. This includes twice yearly sampling of the groundwater and leachate (where applicable). As well, monitoring for organic compounds should be completed on an annual basis during the summer sampling event. Surface water monitoring should still be taken on a monthly basis, in accordance with the C of A, at SW 1 and SW 2. Surface water samples should also be collected from the portion of Detention Pond 1 that is to receive storm water runoff from the compost pad, designated SW 3. Detailed recordings of discharge and overall conditions (such as dry or stagnant water) should be documented during each surface water event. As well, the monthly sampling is to be undertaken during runoff conditions (weather permitting), and if no runoff event occurs are to be sampled at the end of the month regardless (unless dry). Monitoring for organic compounds at the surface water locations should be completed on an annual basis and should coincide with a summer sampling event. All samples should be analyzed for the parameters listed in the table on the below.

Monitoring Parameter List

Leachate Indicator		
Parameters	▪ Biological Oxygen Demand (BOD) ▪ Chemical Oxygen Demand (COD) ▪ Total Kjeldahl Nitrogen (TKN) ▪ Ammonia as Nitrogen (NH3-N) ▪ Total Phosphorus (Total P) ▪ Total Suspended Solids (TSS) for surface water and leachate. ▪ Total Sulphate (SO_4) ▪ Phenols	▪ Chloride (Cl) ▪ Sodium (Na) ▪ Calcium (Ca) ▪ Boron (B) ▪ Total Iron (Fe) ▪ Phosphorus (P) ▪ Zinc (Zn)
General Parameters	▪ pH ▪ Conductivity ▪ Alkalinity	▪ Magnesium (Mg) ▪ Potassium (K)
Organics	▪ EPA 624,625 (ATG 16+17+18 & ATG 19+20)	

b) Based on organic analytical results collected to date from the groundwater and leachate, consideration should be given to removing the organic analysis from the groundwater sampling program as a six-year database has now been collected. Travel blanks and field blanks should also be added to any organic monitoring event to aid in determining potential sampling artifacts.

c) An inspection of the area around location 15, especially upgradient of the location, should be conducted to determine if there have been changes in the area outside of the transfer station site.

d) A monitoring nest (bedrock and overburden) should be placed to the south and east of the facility (on City lands). The intent of this location is to confirm the geology and groundwater flow in this area to determine if the groundwater flow in the bedrock does ultimately move to the north.

e) Should composting operations resume at the site, all equipment should be lubricated and carefully inspected to ensure that it is in proper working order. A comprehensive contingency plan should be developed prior to re-activation of the Organic Waste Processing Facilities.

Report Prepared By:

Patty Wong, B.Sc., P.Geo.
Senior Geologist

Original
Signed &
Stamped

Report Reviewed By:

Terry La Chapelle, B.Sc., P.Geo.
Senior Geologist

Appendices

Appendix A

Groundwater Elevations and Hydrographs

Routine Groundwater Elevations at the Waste Resources Innovation Centre

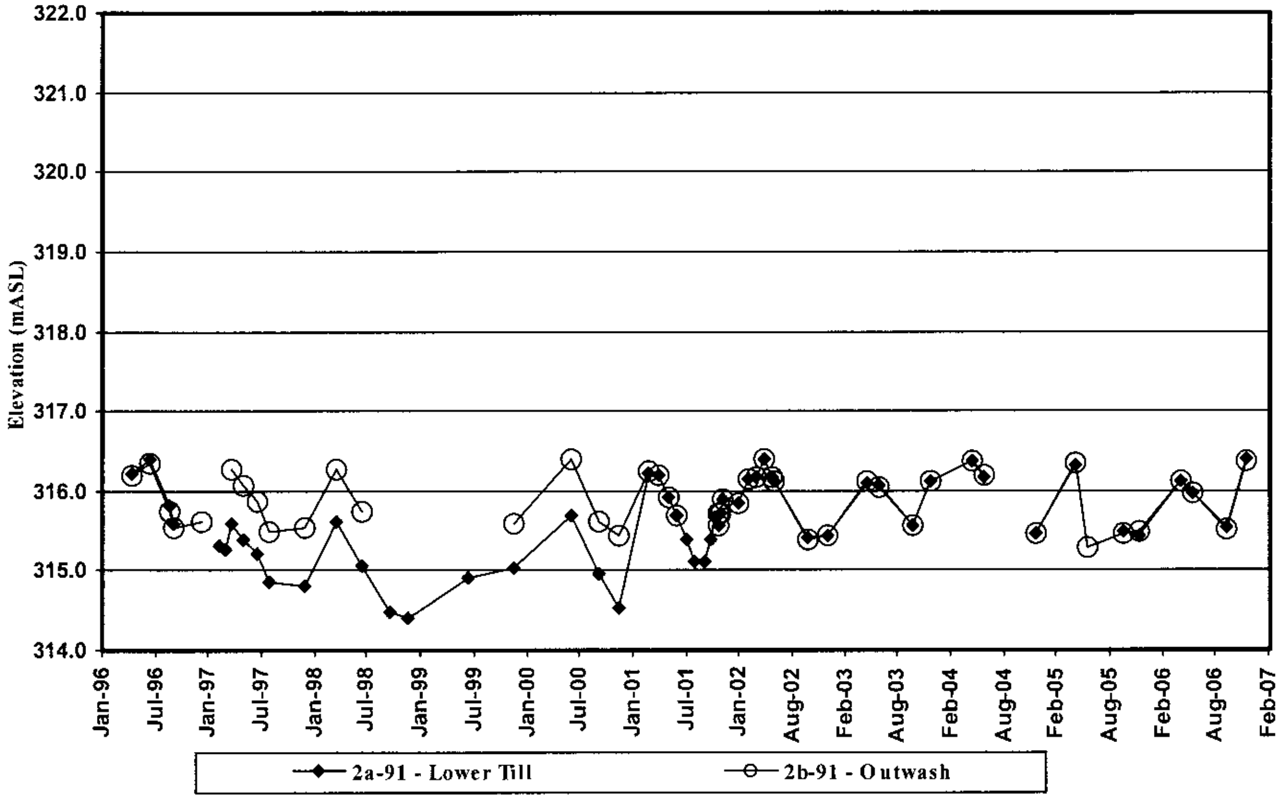
Date	2a-91	2b-91	5-96	6a-96	6b-96	7-96	8-96	9-96	10-00	11a-00	11b-00	12a-00	12b-00	13a-01	13b-01	14a-01	14b-01	15a-01	15b-01
4-Apr-91	316.00	316.02																	
14-Apr-91	315.88	315.89																	
12-May-91	315.67	315.59																	
17-May-91	315.60	315.58																	
17-May-94	316.32	316.34																	
5-May-95	315.96	316.00																	
13-Apr-96	316.22	316.20																	
13-Jun-96	316.41	316.34																	
21-Aug-96	315.81	315.75																	
9-Sep-96	315.59	315.55																	
11-Dec-96		315.62																	
20-Dec-96			319.53	315.70	315.67	315.70	318.72	315.20											
11-Feb-97	315.31		319.48	315.77	315.78	315.92	318.95	315.96											
3-Mar-97	315.26		320.34	316.37	316.38	316.57	319.37	316.62											
27-Mar-97	315.58	316.27	320.68	316.13	316.13	316.24	319.42	316.24											
6-May-97	315.38	316.08	319.39	315.86	315.86	316.02	318.72	316.04											
23-Jun-97	315.20	315.87	318.47	315.69	315.70	315.81	318.40	315.83											
8-Aug-97	314.86	315.50	317.62	315.39	315.41	315.49	317.85	315.45											
9-Dec-97	314.82	315.55	318.32	315.41	315.41	315.44	317.81	315.52											
31-Mar-98	315.62	316.28	319.90	316.08	316.15	316.22	318.94	316.26											
24-Jun-98	315.07	315.74	318.67	315.60	315.61	315.68	318.26	315.61											
29-Sep-98	314.47	Dry	317.34	315.03	315.08	315.15	317.59	315.11											
3-Dec-98	314.40	Dry	318.24	315.03	315.04	315.02	317.57	315.03											
29-Jun-99	314.91	Dry	320.03	315.51	315.55	315.54	318.33	315.46											
9-Dec-99	315.04	315.60	318.99	315.62	315.63	315.67	318.07	315.68											
21-Jun-00	315.69	316.40	320.17	316.21	316.21	316.34	318.89	316.36											
28-Sep-00	314.95	315.62	318.08	315.51	315.51	315.56	318.16	315.59											
6-Dec-00	314.52	315.43	318.29	315.32	315.32	315.34	317.98	315.35											
22-Mar-01	316.23	316.25	320.11	316.19	316.20	316.23	318.97	316.23	316.09		316.23	316.30	316.30						
26-Apr-01	316.19	316.19	318.53	316.02	316.04	316.17	318.59	316.20	316.07		316.15	316.26	316.26						
28-May-01	315.91	315.91	319.57	315.80	315.83	315.90	318.57	315.92	315.83	316.06	315.90	316.03	316.07						
27-Jun-01	315.68	315.68	318.01	315.56	315.58	315.66	318.04	315.69	315.56	315.85	315.65	315.82	315.88						

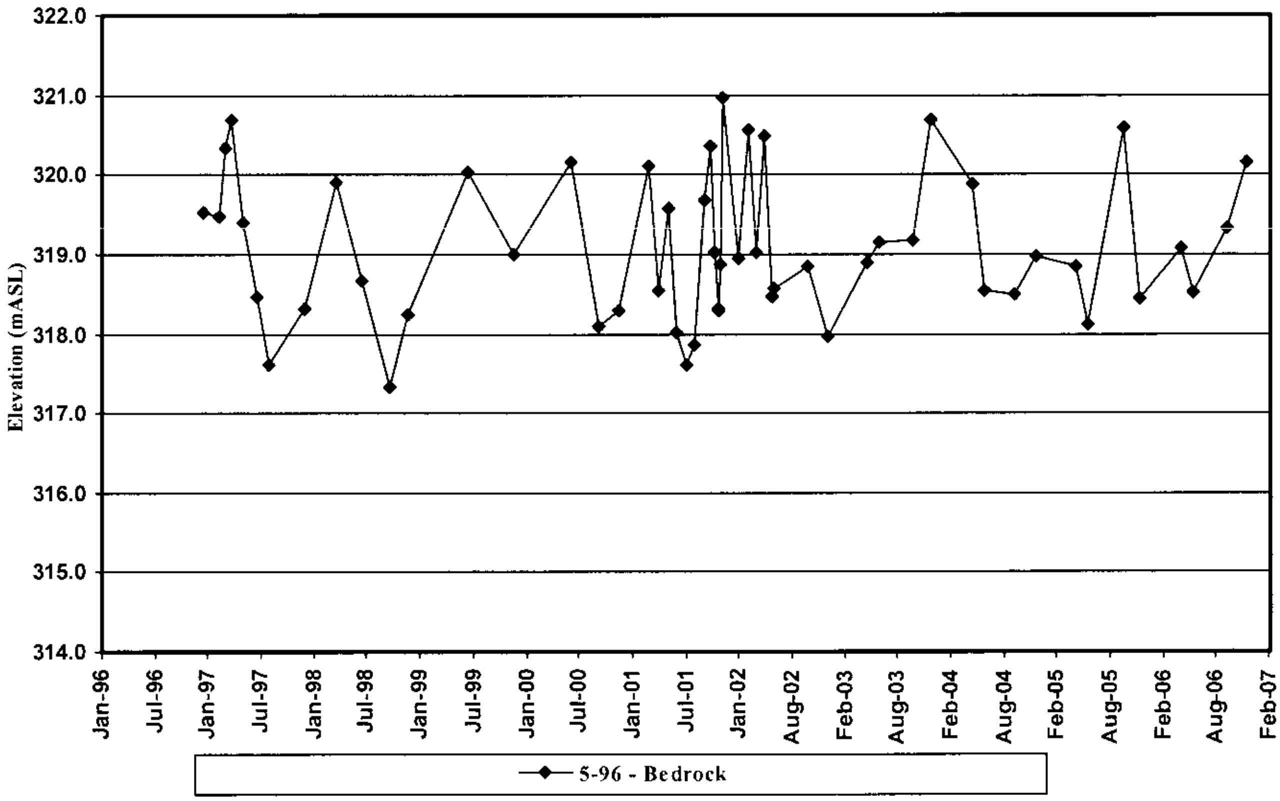
Routine Groundwater Elevations at the Waste Resources Innovation Centre

Date	2a-91	2b-91	5-96	6a-96	6b-96	7-96	8-96	9-96	10-00	11a-00	11b-00	12a-00	12b-00	13a-01	13b-01	14a-01	14b-01	15a-01	15b-01
31-Jul-01	315.39	NR	317.62	315.32	315.34	315.38	317.80	315.39	315.14	315.34	315.38	315.53	315.58						
30-Aug-01	315.11	NR	317.87	315.09	315.10	315.10	317.76	315.11	314.87	315.11	315.11	315.26	315.31						
28-Sep-01	315.11	NR	319.68	315.14	315.16	315.11	318.26	315.09	314.85	315.08	315.13	315.35	315.48						
19-Oct-01	315.40	NR	320.35	315.45	315.46	315.40	318.54	315.38	315.35	315.50	315.43	315.61	315.71						
8-Nov-01	315.66	NR	319.03	315.62	315.63	315.65	318.17	315.66	315.61	315.85	315.66			315.74	315.64	315.74	315.71	315.70	315.95
16-Nov-01	315.56	315.71	318.31	315.63	315.65	315.55	317.90	315.71	315.59	315.82	315.69	315.78	315.80	315.89	315.76	315.86	315.83	315.84	316.06
21-Nov-01	315.57	315.56	318.30	315.61	315.48	315.68	317.99	315.56	315.45	315.66	315.68	315.79	315.80	315.89	315.75	315.88	315.82	315.84	316.02
27-Nov-01	315.71	315.71	318.88	315.63	315.65	315.70	318.14	315.72	315.61	315.84	315.70	315.67	315.70	315.92	315.79	315.76	315.72	315.72	315.86
4-Dec-01	315.90	315.89	320.97	315.92	315.93	315.90	318.78	315.89	315.85	316.00	315.92	316.00	316.02	316.17	316.00	316.03	316.14	316.11	316.30
28-Jan-02	315.85	315.84	318.94	315.77	315.79	315.83	318.63	315.85	315.72	315.98	315.83	315.97	316.00	316.07	315.93	316.04	315.99	316.02	316.10
28-Feb-02	316.14	316.14	320.56	316.08	316.09	316.12	319.09	316.15	316.04	316.27	316.13	316.14	316.11	316.22	315.92	316.21	316.13	316.32	316.47
28-Mar-02	316.16	316.16	319.02	316.00	316.02	316.14	318.76	316.17	315.99	316.19	316.12	316.25	316.26	316.27	315.97	316.27	316.05	316.23	316.34
10-Apr-02														316.27	316.00	316.26	316.05	316.24	316.31
29-Apr-02	316.40	316.41	320.48	316.08	316.11	316.39	319.05	316.41	316.24	316.43	316.37	316.39	316.43	316.36	315.96	316.37	316.04	316.33	316.35
28-May-02	316.18	316.18	318.46	316.03	316.05	316.16	318.70	316.20	316.05	316.07	316.33	316.25	316.25	316.35	315.96	316.35	316.03	316.30	316.34
4-Jun-02	316.11	316.12	318.57	315.98	315.99	316.10	318.69	316.13	315.95	316.19	316.09	316.20	316.21	316.28	315.93	316.26	315.99	316.24	316.27
30-Sep-02	315.41	315.40	318.85	315.36	315.38	315.40	318.10	315.41	315.30	315.64	315.40	315.56	315.64	315.75	315.70	315.74	315.81	315.69	315.75
3-Dec-02	315.44	315.43	317.96	315.37	315.39	315.41	317.84	315.44	315.34	315.67	315.43	315.54	315.59	315.76	315.75	315.76	315.87	315.71	315.86
25-Apr-03	316.10	316.11	318.90	315.92	315.94	316.09	318.49	316.13	315.85	316.04	316.07	316.20	316.21	316.03	N/A	316.05	315.39	316.01	316.31
2-Jun-03	316.06	316.05	319.15	315.92	315.94	316.05	318.57	316.08	315.86	316.18	316.03	316.14	316.15	316.23	316.01	316.24	316.11	316.19	316.35
30-Sep-03	315.57	315.57	319.18	315.52	315.53	315.56	318.20	315.56	315.38	315.74	315.57	N/A	N/A	315.85	315.85	315.84	315.97	315.80	315.99
1-Dec-03	316.12	316.11	320.70	316.09	316.11	316.11	318.67	316.11	315.93	316.15	316.12	N/A	N/A	316.34	316.16	316.33	316.25	316.29	316.56
27-Apr-04	316.38	316.38	319.88	316.20	316.23	316.42	319.10	316.39	316.14	316.45	316.34	N/A	N/A	316.52	316.19	316.51	316.27	316.48	316.56
8-Jun-04	316.16	316.20	318.53	316.00	316.02	316.20	318.88	316.20	315.93	316.32	316.15	316.28	316.27	316.33	316.08	316.34	316.18	316.33	316.43
14-Sep-04	N/A	N/A	318.50	315.49	315.51	315.66	318.19	315.57	315.42	315.85	315.63	315.67	315.72	315.88	315.82	315.89	315.94	315.83	316.13
30-Nov-04	315.46	315.47	318.97	315.42	315.44	315.50	318.14	315.47	315.29	315.61	315.46	315.63	315.74	315.72	315.54	315.70	315.52	315.67	315.74
18-Apr-05	316.33	316.35	318.85	316.14	316.16	316.36	318.83	316.37	316.08	316.32	316.29	316.44	316.44	316.40	315.85	316.38	315.82	316.36	316.34
1-Jun-05	N/A	315.28	318.11	315.34	315.35	315.44	318.08	315.43	315.26	315.57	315.39	315.56	315.63	315.67	315.44	315.66	315.44	315.62	315.59
30-Sep-05	315.48	315.47	320.58	315.48	315.51	315.52	318.45	315.46	315.36	315.66	315.50	315.69	315.83	315.77	315.63	315.74	315.62	315.70	315.66
28-Nov-05	315.44	315.48	318.45	315.42	315.44	315.52	317.88	315.49	315.34	315.72	315.49	315.65	315.73	315.77	315.54	315.74	315.54	315.72	315.66
20-Apr-06	316.12	316.12	319.06	315.96	315.98	316.14	318.87	316.13	315.93	316.23	316.08	316.23	316.24	316.27	315.77	316.26	315.75	316.23	316.17
1-Jun-06	315.98	315.96	318.51	315.81	315.82	315.99	318.76	N/A	315.77	316.02	315.93	316.11	316.13	316.11	315.64	315.58	315.09	315.54	316.00

Routine Groundwater Elevations at the Waste Resources Innovation Centre

Date	2a-91	2b-91	5-96	6a-96	6b-96	7-96	8-96	9-96	10-00	11a-00	11b-00	12a-00	12b-00	13a-01	13b-01	14a-01	14b-01	15a-01	15b-01
27-Sep-06	315.53	315.52	319.32	315.47	315.49	315.55	318.35	315.53	315.41	315.72	315.51	315.68	315.78	315.83	315.58	315.94	315.48	315.77	315.72
4-Dec-06	316.39	316.38	320.16	316.35	316.37	316.43	318.84	316.40	316.20	316.20	316.38	316.52	316.49	316.58	316.06	316.55	316.01	316.54	316.48





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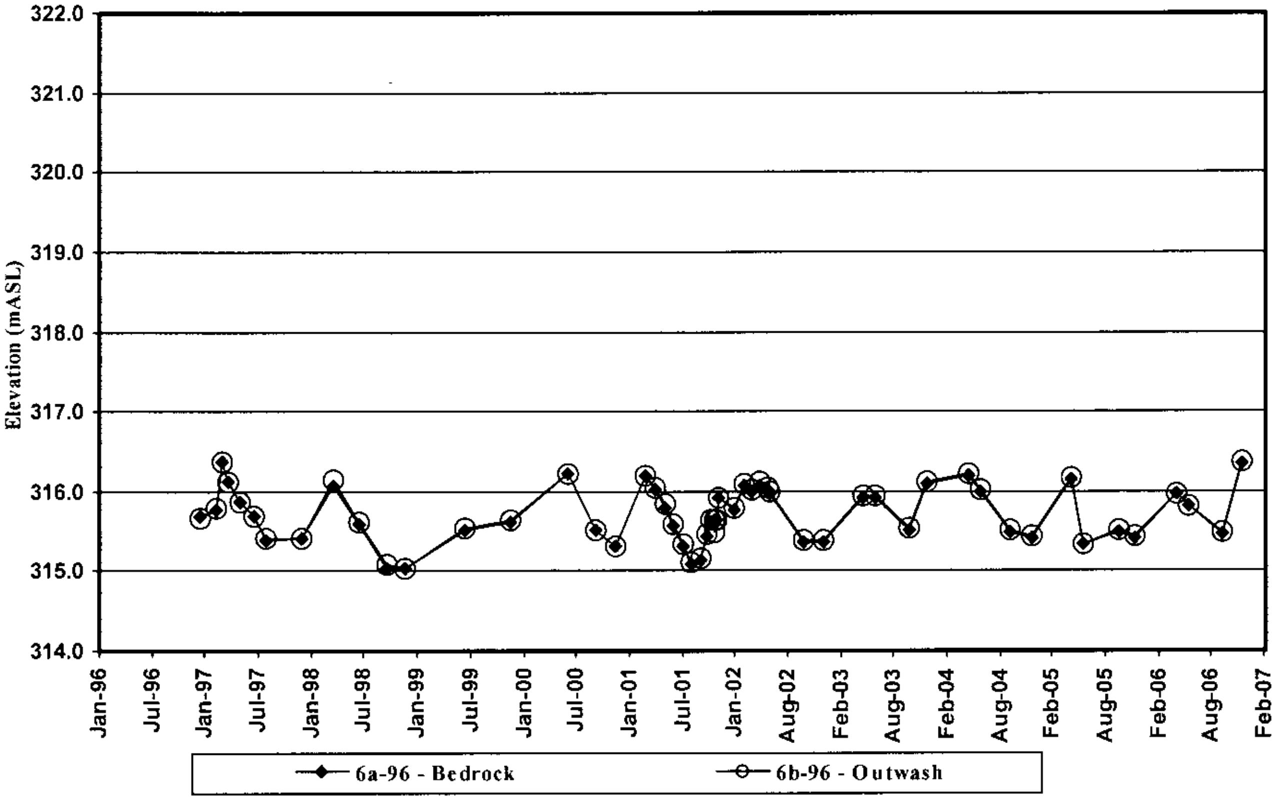
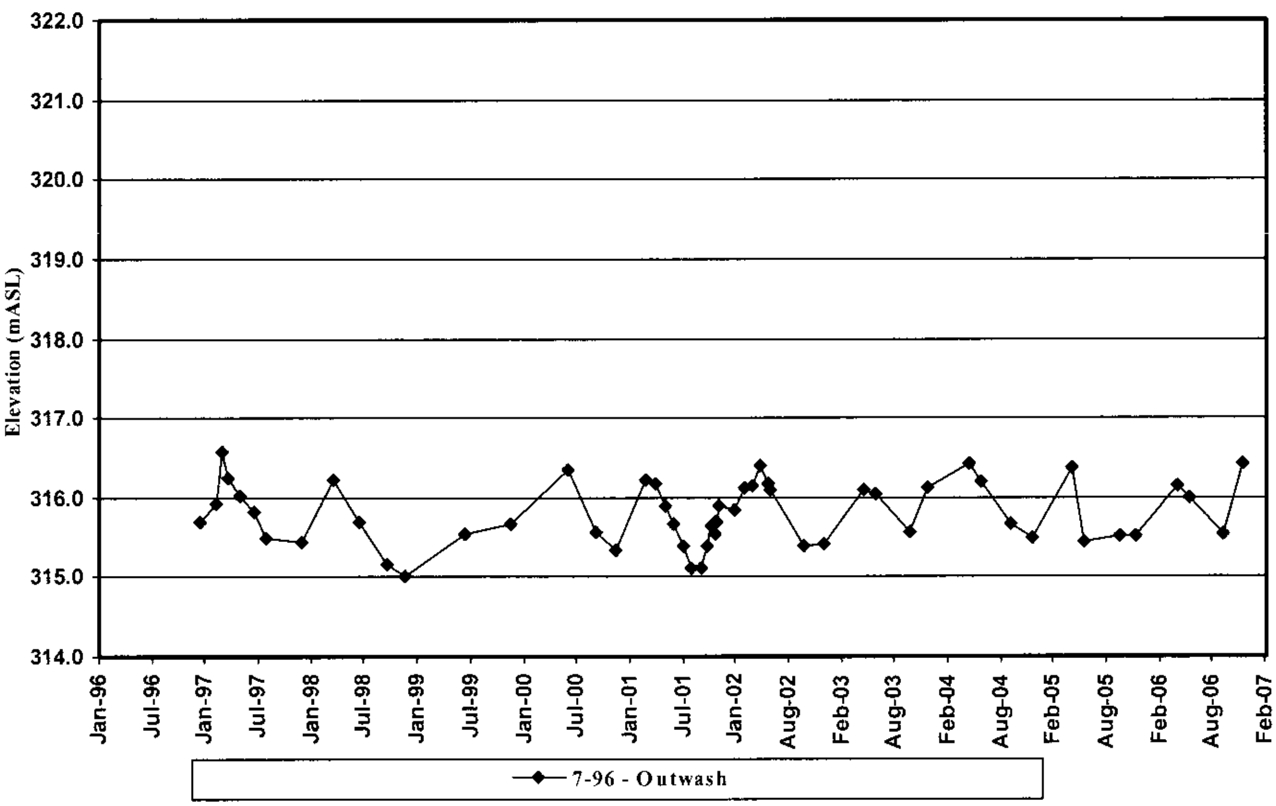
Hydrographs

FIGURE A - 1

70-133
9 Rpt Hydrographs





Gartner Lee

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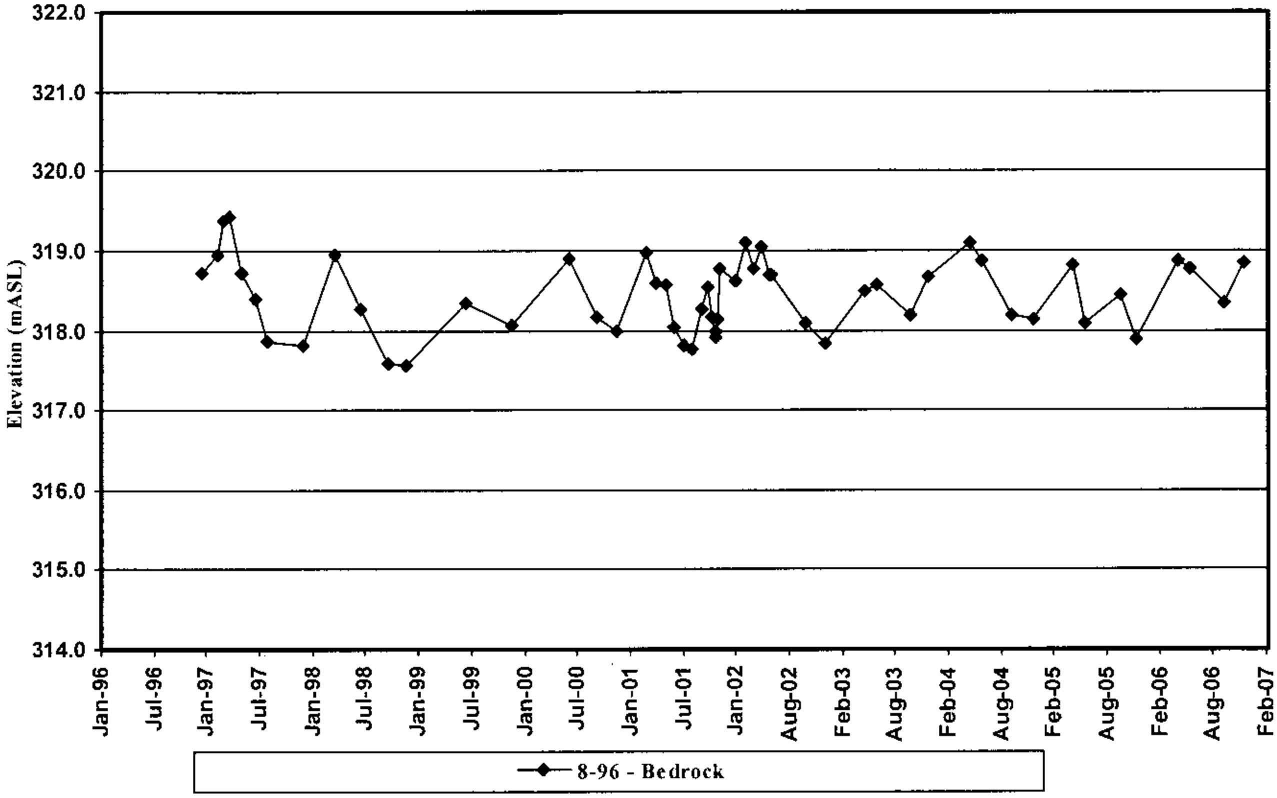
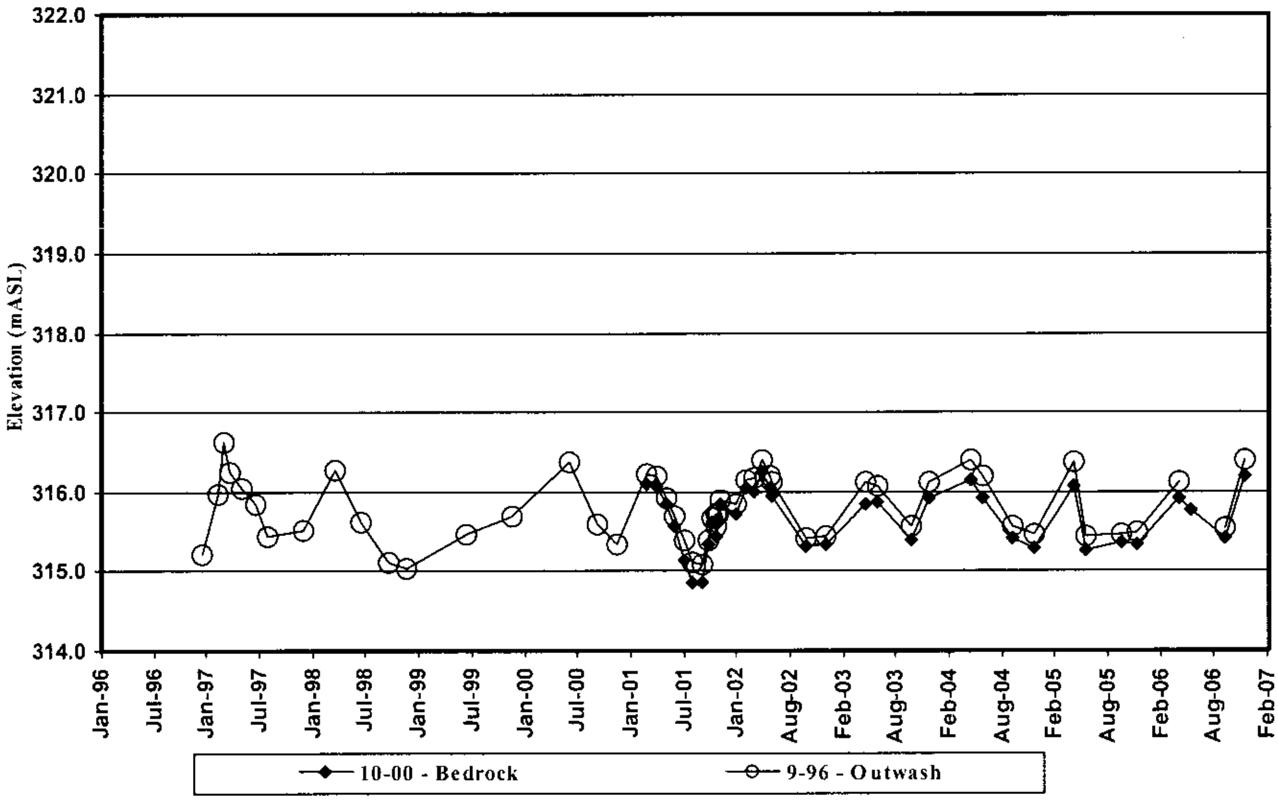
Hydrographs

FIGURE A - 2

70-133
9 Rpt Hydrographs





Gartner Lee

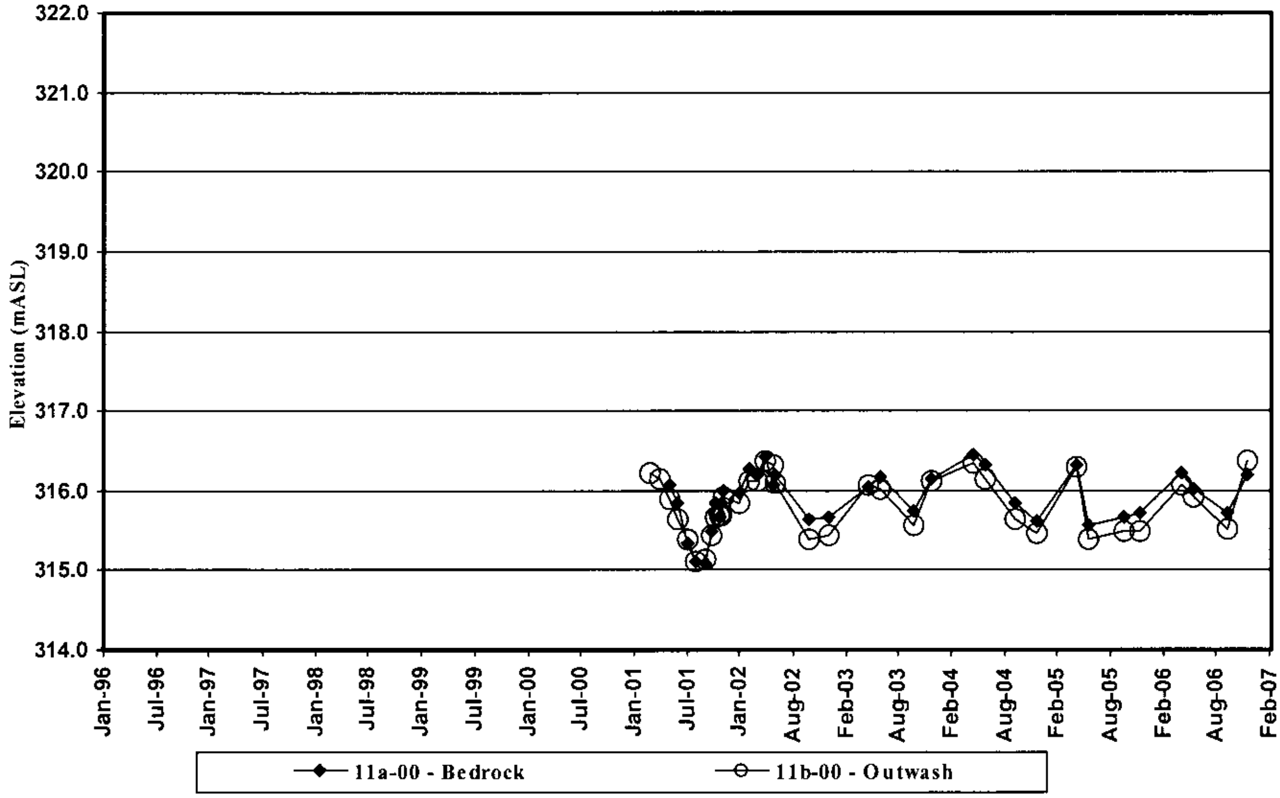
Waste Resource Innovation Centre

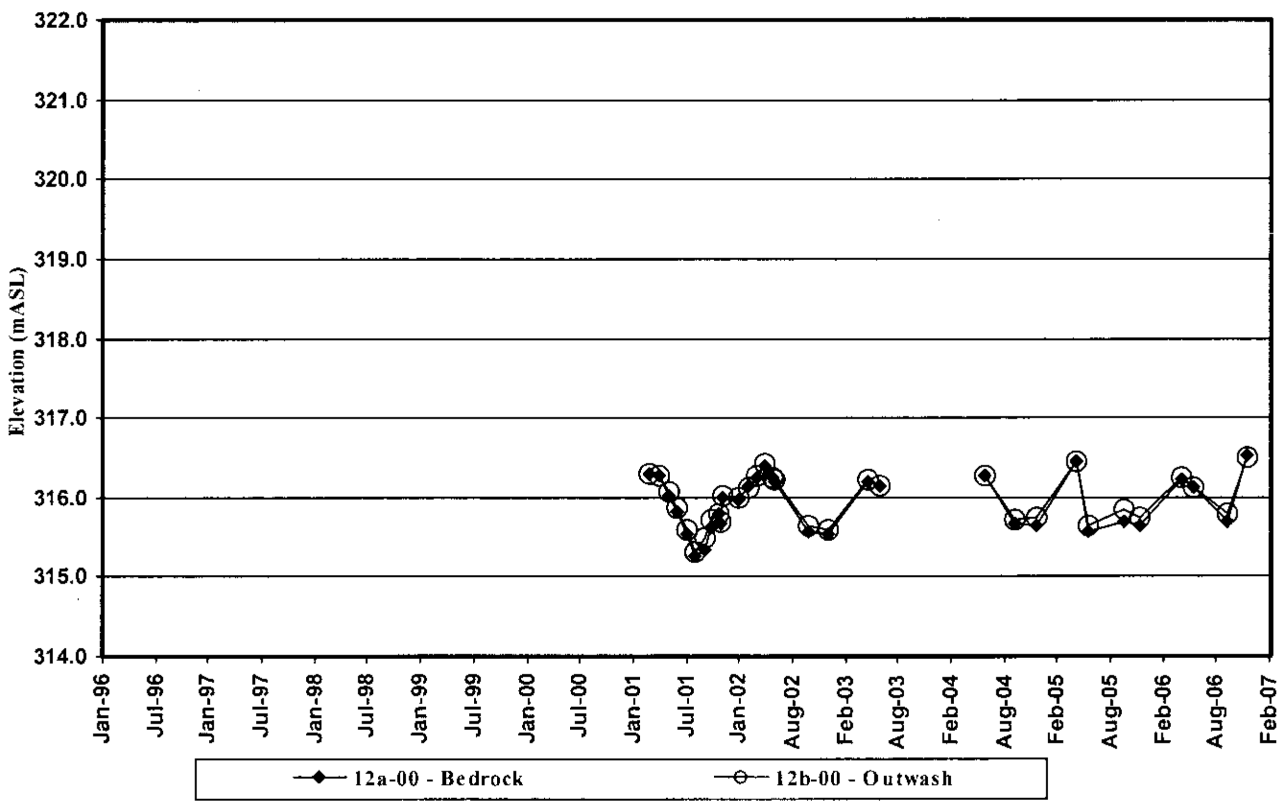
Hydrographs

FIGURE A - 3

70-133

9 Rpt Hydrographs





Gartner Lee

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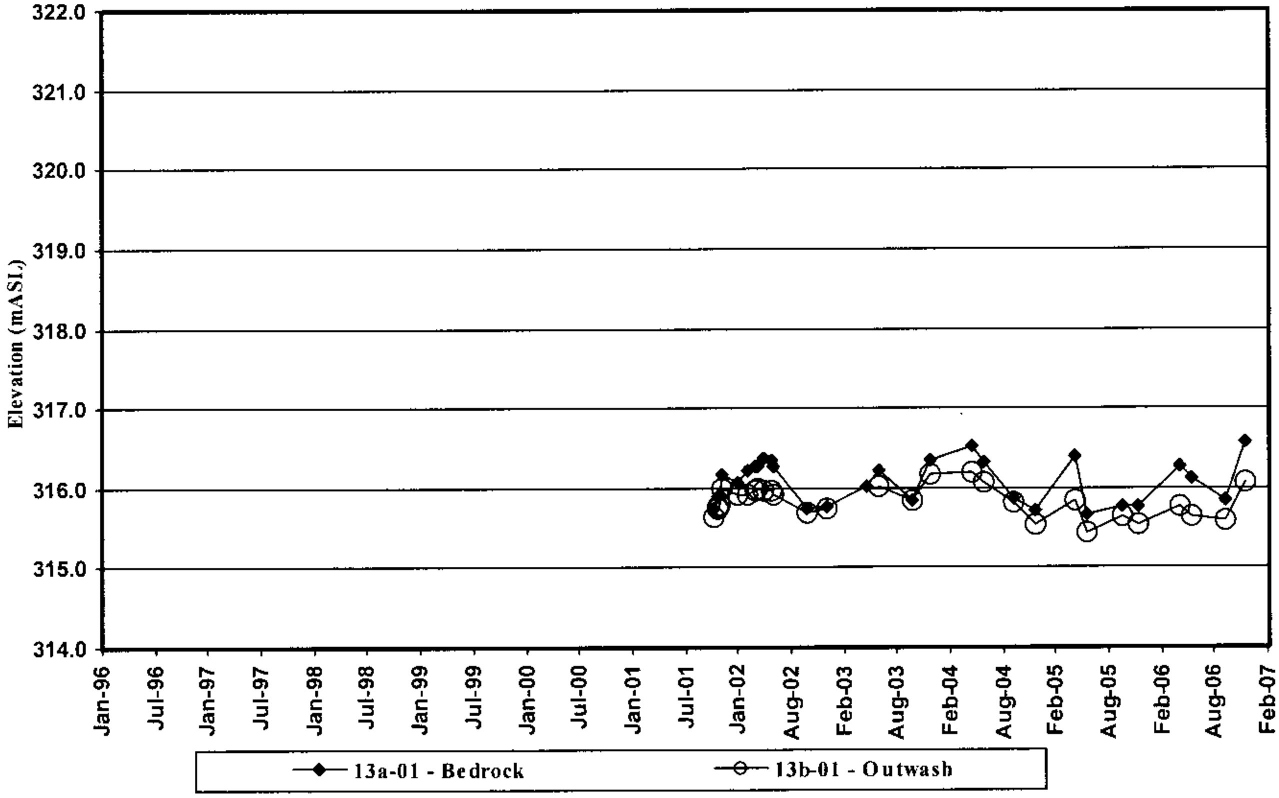
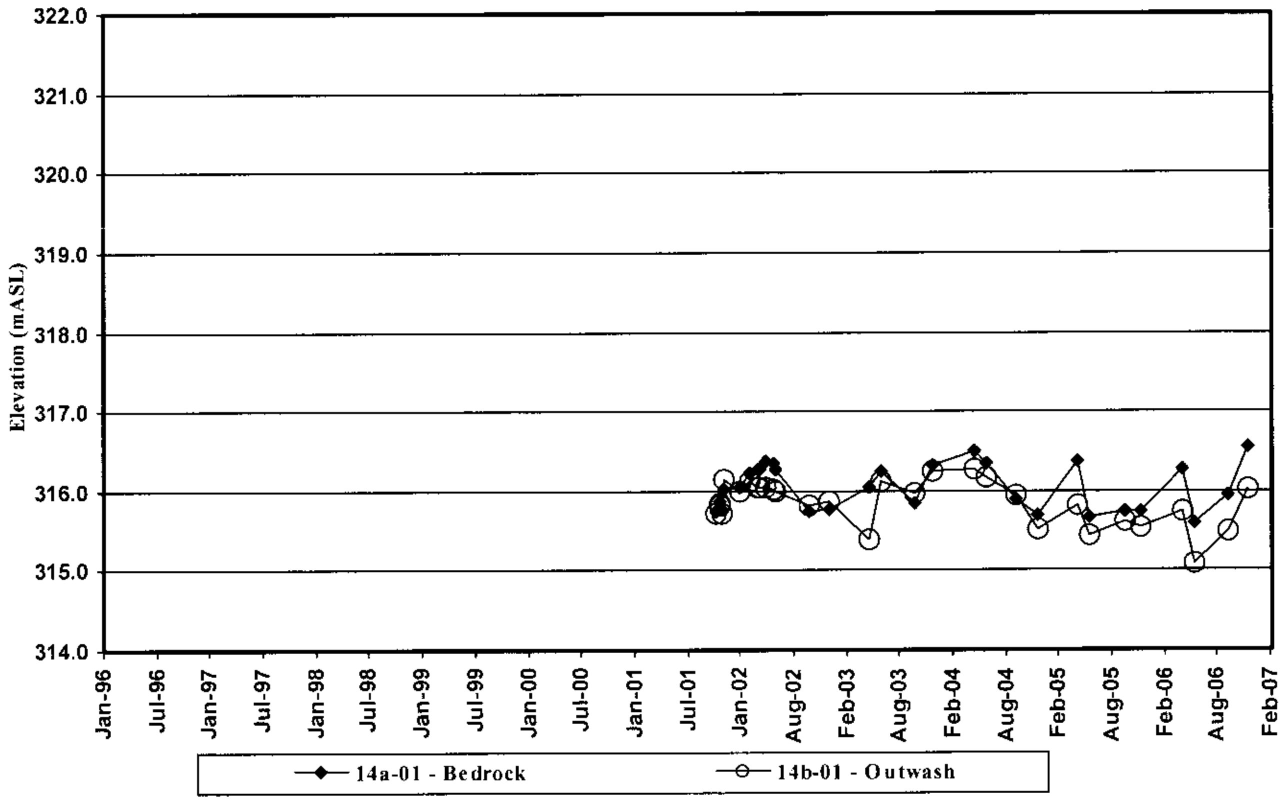
Hydrographs

FIGURE
A - 4

70-133
9 Rpt Hydrographs





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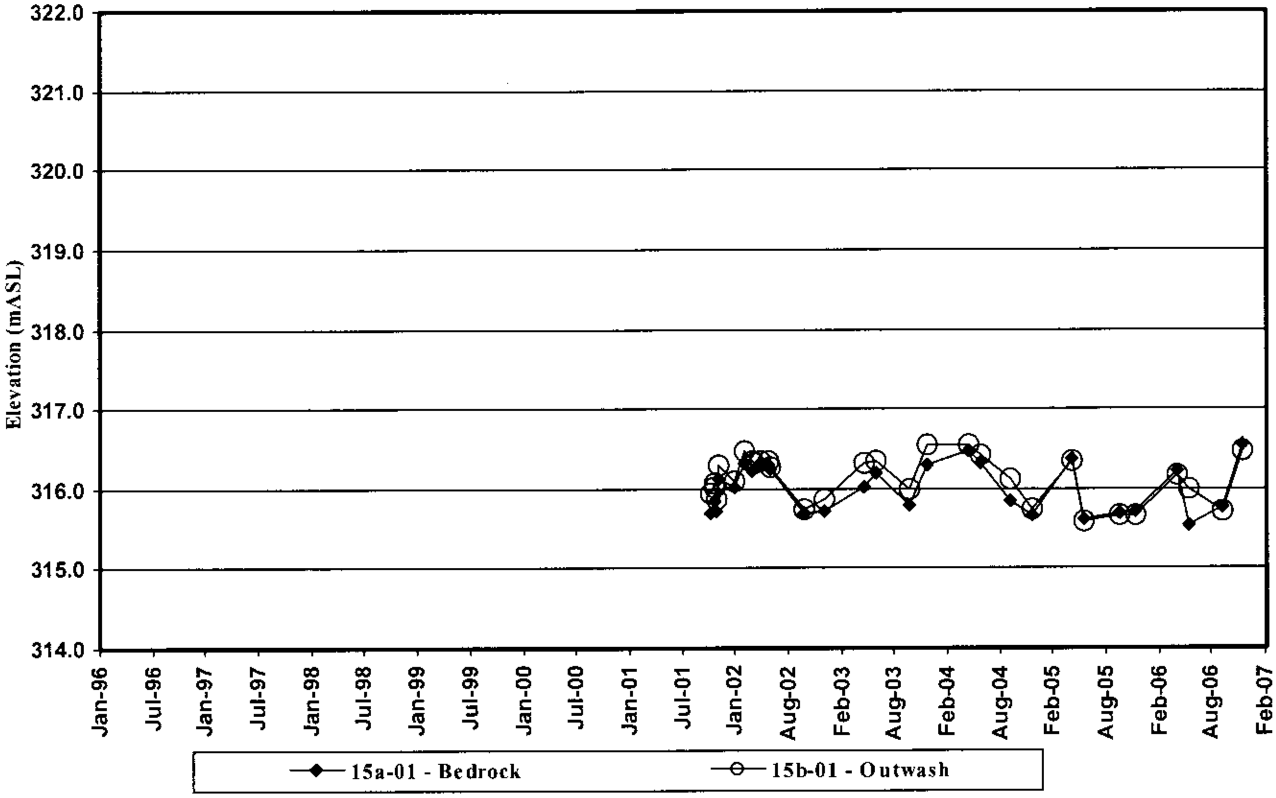
Hydrographs

FIGURE
A - 5

70-133
9 Rpt Hydrographs



Gartner Lee

Waste Resource Innovation Centre

Hydrographs

FIGURE
A - 6

70-133
9 Rpt Hydrographs

Appendix B

Groundwater Chemistry – Routine and Organics

Routine Groundwater Quality - General Analysis -Waste Resource Innovation Centre

Monitor	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor	07-Nov-91	EPL	7.2	609	297	32	8.1							25.6		10.5	2.9	96.7	< 0.005	0.03	< 0.09	< 0.005
1a-91	04-Mar-92	EPL	7.09	647	300	31.8	7.9							26.2		9.23	3.14	94.7	0.03	0.03	1.13	0.02
Lower Till	07-Mar-92	EPL	7.63	721	234	35.5	8.1							27.3		14.1	2.72	89.1	< 0.005	< 0.01	< 0.06	< 0.005
	17-May-94	EPL	7.76	703	242	31.6	5.5					< 0.05		28.7		12.6	2.41	97.6	0.10	0.02	< 0.06	0.02
	05-May-95	MDS	7.6	689	250	32.5	5.2					< 0.05		31.7		17.3	2.67	102	0.01	0.02	< 0.06	< 0.005
Monitor	07-Nov-91	EPL	7.3	753	280	40	15							37.4		23.9	3.5	111	0.07	0.05	< 0.09	< 0.005
1b-91	04-Mar-92	EPL	7.31	733	227	34.9	13.6							34.1		10.5	2.95	97.2	0.27	0.05	0.7	0.02
Outwash	07-Mar-92	EPL	7.64	740	224	34.1	14.6							33.6		20.7	3.01	97.8	0.02	0.04	< 0.06	0.01
	17-Mar-94	EPL	7.74	521	225	23	11.4					< 0.05		15.6		5.45	2.01	67.7	0.06	0.03	< 0.06	0.009
	05-May-95	MDS	7.85	398	138	16.4	7.4					< 0.05		19.7		26.9	10.9	46.1	0.03	0.03	< 0.06	< 0.005
Monitor	07-Nov-91	EPL	7.78	434	215	28	2.8							17.1		24.5	32	35	0.11	0.06	< 0.09	< 0.005
2a-91	04-Mar-92	EPL	7.61	494	229	28.7	3.6							20		21.3	34.7	36.9	0.31	0.07	1.14	0.009
Lower Till	07-Mar-92	EPL	7.88	479	209	28.3	1.4							16.2		15.2	30.6	36.6	0.02	0.06	< 0.06	< 0.005
	17-May-94	EPL	7.99	462	236	24.3	0.9					< 0.05		10.5		10.5	39.6	30.4	0.20	0.07	< 0.06	< 0.005
	05-May-95	MDS	8.02	437	210	20.9	1					< 0.05		11.7		8.92	45.5	28	0.05	0.07	< 0.06	< 0.005
	13-Apr-96	ENT	8.31	424	220	29	1.82				0.45			19.8	< 0.5	8.1	30	49.3	0.23	0.09		0.01
	13-Jun-96	ENT	8.27	331	234	26.5	2.61				0.159			18.9	< 0.5	7.5	32	43.3	< 0.01	0.11		< 0.01
	21-Aug-96	ENT	7.7	454	237	26.9	2.1				0.22			19.9	1	7.5	33.3	43.9	< 0.01	0.11		< 0.01
	18-Sep-96	ENT	8.11	363	226	31.4	1.9				0.03			18	< 0.5	6.4	31.4	41.1	< 0.01	0.15		< 0.01
	11-Feb-97	WBL	7.9			23.8	1.7	< 0.34	8	0.17	0.021	< 0.011	< 2	48.4	< 0.72	119	27.1	45.6	0.8	0.06	0.05	0.03
	26-Mar-97	WBL	8.18	514	235	27.7	2.29	< 0.34	17	0.16	0.089	< 0.011	< 2	25.2	< 0.72	5.8	26.2	51	0.67	0.07	< 0.03	0.02
	25-Jun-97	WBL	8.24	471	226	21.8	1.43	1.89	< 7	0.33	0.26	< 0.011	3	18.8	< 0.72	5.33	24	36.5	0.07	0.07	< 0.03	0.02
	01-Oct-97	WBL	8.1	441	227	22.6	1.63	0.66	14	0.33	0.176	< 0.011	4	16.3	< 0.72	5.13	26.9	38.6	0.48	0.06	< 0.03	0.02
	11-Dec-97	WBL	8.12	450	225	22.2	1.92	< 0.34	33	0.34	0.108	< 0.011	< 2	16.7	< 0.72	4.97	29.5	38.6	1.28	0.06	< 0.03	0.04
	31-Mar-98	WBL	8.05	455	227	21.3	1.77	1.03			0.212		< 2	16.3	< 0.72	6.47	24.2	44.8	1.14	0.06	< 0.01	0.02
	24-Jun-98	WBL	8.06	463	230	21.2	1.39	0.9			0.177		8	17	< 0.72	4.92	26.7	42	0.18	0.10	< 0.006	0.01
	02-Oct-98	CAN	8	500	240	25	< 1	2	< 5	0.17	< 0.1	0.08	4	19	< 1	4.8	31	41	0.6	0.05		0.02
	03-Dec-98	CAN	7.9	490	240	23	< 1	< 2	< 5	0.2	< 0.1	0.12	4	17	< 2	4.9	30	36	< 0.05	0.05		< 0.01
	29-Jun-99	Barr	8.45	440	220	24.2	2	1.5	9	0.33	0.24	0.025	1790	15.8		5.9	28.7	38	0.39	0.05	< 0.1	0.02
	09-Dec-99	Barr	8.04	454	221	23.2	1.4	0.7	14	0.46	0.23	0.009	2760	15	< 1	< 5	32.3	34.5	0.02	0.07	< 0.1	< 0.005
	21-Jun-00	Philip	7.88	441	231	21.6	1.2	1	< 5	0.46	0.31	0.005	198	15.3	< 1	5.1	25.6	35.8	< 0.03	0.04	< 0.05	< 0.005
	07-Dec-00	Philip	8.15	388	236	22.6	1.1	1.1	10	0.47	0.25	0.011	3870	17.8	< 1	5.2	27.8	35.7	0.21	0.09		0.11
	27-Jun-01	Philip	7.9	456	236	23	1	1.9	< 5	0.34	0.22	0.018	538	22.4	< 1	4.8	29.4	38.2	0.06	0.13	< 0.1	0.14
	03-Dec-01	Philip	8.19	457	241	20.3	1.6	1	< 5	0.23	0.07	0.028	19	18.1	< 1	4.2	30.4	33.3	0.03	0.07	< 0.1	0.04
	04-Jun-02	Philip	8.44	443	266	23.4	1	0.6	8	0.66	0.13	0.016		15.2	< 1	3.6	25.7	39.6	< 0.01	0.06	< 0.1	0.007
	03-Dec-02	Philip	8.27	466	230	24.4	2	< 0.5	17	0.94	0.07	0.01		14.7	< 1	3.3	27.1	42.3	0.01	0.05	< 0.1	< 0.005
	02-Jun-03	Philip	8.14	460	220	23.7	1	< 0.5	9	0.67	0.17	< 0.001	< 1	15.7	20	4.6	25.8	40.4	< 0.01	0.06		< 0.005
	01-Dec-03	Philip	8.21	415	225	24.5	1.1	1	6	0.25	< 0.03	0.015		20.1	< 1	4.4	24.6	40.8	0.03	0.06	< 0.1	< 0.005
	09-Jun-04	Philip	8.11	459	234	22	< 1	0.7	6	0.36	0.07	0.01		20.9	1	5.2	36.8	36.6	< 0.01	0.06		0.03
	30-Nov-04	Philip	8.04	452	241	23.5	1	< 0.5	5	0.23	0.03	0.005		15.5	< 1	4.3	27.5	38.4	< 0.01	0.05		< 0.005
	03-Aug-05	N/A																				
	28-Nov-05	Maxx	8.24	433	233	25		< 2	14	0.8	0.14	< 0.02		15	< 1	4	32	4	< 0.05	0.06	< 0.05	0.005
	01-Jun-06	MAX	8.2	510	254	27	1.4	< 2	6	0.8	0.24	< 0.02		15	< 1	7	28	48	< 0.02	0.06	< 0.05	< 0.005
	04-Dec-06	MAX	8.2	511	256	26	1.3	< 2	< 4	0.5	0.23	< 0.02		18	< 1	6	30	43	< 0.02	0.06	< 0.05	< 0.005

Routine Groundwater Quality - General Analysis -Waste Resource Innovation Centre

Monitor	Date	Lab	pH	Conductivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor 2b-91 Outwash	07-Mar-92	EPL	8	499	154	26.3	0.4							28.1		18.1	3.56	63.8	< 0.005	< 0.01	< 0.06	< 0.005
	17-May-94	EPL	7.9	587	208	31.4	2					< 0.05		34		8.69	9.44	63.9	0.05	0.01	< 0.06	< 0.005
	05-May-95	MDS	7.95	530	179	28.3	0.6					< 0.05		25.5		8.59	3.69	68.9	0.02	< 0.01	< 0.06	< 0.005
	13-Apr-96	ENT	7.91	425	169	26.8	0.908				0.01			30.3	< 0.5	11.6	4.1	67.9	< 0.01	0.42		< 0.01
	13-Jun-96	ENT	8.34	337	177	25.1	0.8				0.016			28.2	0.1	7.5	3.9	60.3	< 0.01	0.05		< 0.01
	21-Aug-96	ENT	8.16	373	167	22.8	1.14				0.06			26.2	1	6.7	3.63	59.6	< 0.01	0.05		< 0.01
	18-Sep-96	ENT	7.93	377	216	22.9	0.9				< 0.01			26	< 0.5	6.5	2.9	60.2	< 0.01	0.07		< 0.01
	11-Dec-96	ENT	8.19	459	208	21.1	1.1				0.04			26.7	< 0.5	7.2	4.6	51	< 0.01	0.02		0.01
	27-Mar-97	WBL	8.14	543	180	26.8	0.69	< 0.34	18	0.24	< 0.01	0.014	2	25.8	< 0.72	10.5	2.4	71.9	0.09	0.03	< 0.03	0.01
	31-Mar-98	WBL	7.92	556	183	25.8	0.78	1.03			< 0.019		< 2	23.2	1.34	16.2	3.88	74.8	0.11	< 0.02	0.02	0.01
	24-Jun-98	Dry																				
	02-Oct-98	Dry																				
	03-Dec-98	Dry																				
	09-Dec-99	Barr	7.77	463	166	23.9	< 1	0.9	14	0.4	0.43	0.005	987	27	< 1	17	3.6	53.2	< 0.01	< 0.01	< 0.1	0.02
	21-Jun-00	Philip	7.89	401	184	24.5	0.7	< 0.5	< 5	0.23	< 0.03	< 0.002	321	25.5	< 1	8.1	4	58.2	< 0.03	< 0.005	< 0.05	< 0.005
	07-Dec-00	INS																				
	27-Jun-01	INV																				
	03-Dec-01	INV																				
	04-Jun-02	Philip	8.22	362	176	21.8	< 1	1.1	15	1.01	< 0.03	0.006		19.1	< 1	5.5	1.8	52.2	< 0.01	0.01	< 0.1	0.02
	03-Dec-02	INS																				
	02-Jun-03	Philip	8	444	182	23.1	< 1	1.4	14	0.74	< 0.03	< 0.001	1	15	6	4.8	2.2	54.4	< 0.01	< 0.01		0.02
	01-Dec-03	Philip	8.16	501	190	25	< 1	< 0.5	10	0.51	< 0.03	0.004		23	< 1	8.4	2.9	61.4	< 0.01	0.01	< 0.1	0.008
	08-Jun-04	Philip	7.83	550	256	31.2	< 1	< 0.5	7	0.49	< 0.03	0.002		21.3	< 1	8.4	2.1	90	0.04	0.01		0.18
	30-Nov-04	INS																				
	03-Aug-05	INS																				
	28-Nov-05	INS																				
	01-Jun-06	INS																				
	04-Dec-06	INS																				
Monitor 3-91 Bedrock	07-Nov-91	EPL	7.2	711	278	42	1							31.7		22.6	3.2	104	0.12	0.02	< 0.09	0.3
	04-Mar-92	EPL	7.49	740	308	39.9	2							33.4		15.7	3.37	96.9	0.44	0.02	0.68	0.22
	17-May-94	EPL	7.92	802	327	40.2	2.7					< 0.05		34.2		32.1	13.2	98.5	0.01	0.02	< 0.06	0.3
	05-May-95	MDS	7.47	687	300	37.2	< 0.4					< 0.05		32.5		20.8	7.75	96.5	0.02	0.01	< 0.06	0.43
	21-Aug-96	ENT	7.75	950	363	45.2	13.4				1.09			39	1.5	8	44.1	116	< 0.01	0.12		0.46
	18-Sep-96	ENT	7.53	720	323	39.9	7.1				0.45			30.8	< 0.5	40.1	18.1	105	0.03	0.11		0.28
	11-Dec-96	ENT	8.09	918	363	32.9	1.86				0.08			35.9	< 0.5	49	17.4	85.6	< 0.01	0.06		0.74
Monitor 3-97 Outwash	11-Dec-97	WBL				464	29.4		79	2.08	0.037	2.07			< 0.72		98.5	905	54.9	0.05	3.3	6.86
	31-Mar-98	WBL	7.72	1270	343	30.5	6.52	1.15			< 0.019		< 2	58.6	< 0.72	165	99.3	126	0.12	0.04	0.07	0.05
	24-Jun-98	WBL	7.56	939	364	27	4.98	1.17			< 0.019		2	27.8	< 0.72	71.6	44.9	112	0.48	0.07	< 0.006	0.13
	02-Oct-98	Dry																				
	03-Dec-98	Dry																				
Monitor 5-91 edrock/Outwa	07-Nov-91	EPL	7.54	589	290	35	1.8							54.2		15.8	12	88	< 0.005	0.02	< 0.09	0.05
	07-Mar-92	EPL	7.51	658	282	34.7	1.1							41.4		12.3	14.8	85.3	< 0.005	0.01	< 0.06	0.29
	17-May-94	EPL	7.64	547	282	31.9	1					< 0.05		15.6		8.68	4.67	68.5	0.08	0.01	< 0.06	0.92
	05-May-95	MDS	7.37	1210	234	60.2	< 0.4					< 0.05		53		210	51.1	136	< 0.005	0.02	< 0.06	0.23

Routine Groundwater Quality - General Analysis -Waste Resource Innovation Centre

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor	11-Feb-97	WBL	7.32			34.8	4.83	< 0.34	< 7	0.24	0.021	0.012	< 4	32.7	< 0.72	6.53	54.6	125	0.01	0.04	< 0.03	1.07
5-96	27-Mar-97	WBL	7.45	1390	312	35	5.16	< 0.34		0.19	0.051	< 0.011	2	39.5	< 0.72	219	88.8	130	0.01	0.03	< 0.03	1.92
Bedrock	25-Jun-97	WBL	7.58	1460	326	33.5	5.1	< 0.34	< 7	0.35	0.044	< 0.011	< 2	41.6	< 0.72	251	100	104	0.02	0.03	< 0.03	1.62
	01-Oct-97	WBL	7.26	1290	345	37.1	5.57	< 0.34	13	0.29	< 0.01	< 0.011	< 2	43.4	< 0.72	190	102	116	0.02	0.03	< 0.03	1.78
	11-Dec-97	WBL	7.34	1240	358	35.9	5.85	< 0.34	25	0.24	0.018	< 0.011	< 2	43.3	< 0.72	173	96.3	115	0.02	0.02	< 0.03	1.7
	31-Mar-98	WBL	7.18	1180	352	30.6	5.14	< 0.34			0.058		< 2	41.5	< 0.72	142	75.3	128	0.02	0.03	< 0.01	1.52
	24-Jun-98	WBL	7.38	1240	346	31.4	5.27	1.32			0.062		3	38.6	< 0.72	172	84.2	107	0.03	0.05	< 0.006	2.1
	02-Oct-98	CAN	7.3	1300	370	32	5.3	3	6	0.25	< 0.1	0.03	3	42	< 1	160	91	100	< 0.05	< 0.05		1.9
	03-Dec-98	CAN	7.3	1200	380	30	5.6	< 2	< 5	0.13	< 0.1	0.11	2	39	< 2	130	88	94	< 0.05	< 0.05		1.5
	29-Jun-99	Barr	8.01	1216	333	34.4	6	1.3	10	0.23	0.06	0.004	55	41.7		236	105	105	< 0.01	< 0.01	< 0.1	2.12
	09-Dec-99	Barr	7.32	1136	355	30.2	4.8	0.6	14	0.42	0.32	0.058	24	33	< 1	124	100	90.5	< 0.01	0.02	< 0.1	1.61
	21-Jun-00	Philip	7.27	1056	330	29.2	5	0.6	10	0.46	< 0.03	< 0.002	29	35.8	< 1	165	95.3	100	< 0.03	0.009	< 0.05	1.42
	07-Dec-00	Philip	7.52	910	360	27.2	4.5	0.7	11	0.45	0.04	< 0.002	9	31.5	< 1	112	71.9	83.9	< 0.03	0.02		1.66
	27-Jun-01	Philip	7.55	1376	321	33.2	5	0.8	< 5	0.22	< 0.03	0.01	27	38	< 1	275	137	111	< 0.01	0.06	< 0.1	1.81
	03-Dec-01	Philip	7.68	1054	343	27.4	3.9	1	6	0.32	< 0.03	0.003	< 1	33	< 1	136	93.2	89.9	< 0.01	0.05	< 0.1	1.88
	04-Jun-02	Philip	8.38	1360	290	31.1	5	0.9	9	0.39	< 0.03	0.005		32.6	< 1	290	139	106	< 0.01	0.02	< 0.1	1.92
	03-Dec-02	Philip	7.9	1116	316	25.9	5	< 0.5	10	0.37	< 0.03	0.013		30.4	< 1	177	118	86.1	< 0.01	0.02	< 0.1	1.56
	02-Jun-03	Philip	7.52	2132	278	38.4	6	< 0.5	10	0.39	0.03	< 0.001	1	43.2	6	474	263	134	< 0.01	0.02		2.35
	01-Dec-03	Philip	7.89	1345	299	24.2	4.3	0.9	10	0.36	< 0.03	< 0.002		35.8	< 1	284	178	83.7	< 0.01	0.02	< 0.1	1.65
	08-Jun-04	Philip	7.46	2148	275	33.2	4.6	< 0.5	13	0.48	< 0.03	0.006		47.8	< 1	631	295	130	0.06	0.02		2.43
	30-Nov-04	Philip	7.69	1707	321	20.8	4	< 0.5	19	0.64	0.04	0.003		41.3	< 1	425	272	79	< 0.01	0.02		1.44
	03-Aug-05	Maxx	7.97	3500	283	40	7.7	< 2	27	1.2	< 0.05	< 0.02		47	< 1	952	710	160	< 0.5	< 0.1	< 0.5	2.9
	28-Nov-05	Maxx	8.1	2780	333	25		< 2	17	0.5	< 0.05	< 0.02		49	< 1	661	53	97	< 0.05	0.02	< 0.05	1.6
	01-Jun-06	MAX	8	3480	302	31	5.9	< 2	15	0.6	0.07	< 0.02		41	< 1	908	590	120	< 0.02	0.02	< 0.05	2.1
	04-Dec-06	MAX	7.9	2190	341	19	4.6	< 2	6	0.3	0.09	< 0.02		41	< 1	470	390	73	< 0.02	0.02	< 0.05	1.4

Routine Groundwater Quality - General Analysis -Waste Resource Innovation Centre

Monitor
6a-96
Bedrock

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
11-Feb-97	WBL	7.55			26.4	3.58	0.87	17	0.25	< 0.01	< 0.011	< 2	32.4	< 0.72	16.3	68.8	111	0.04	0.04	< 0.03	0.04
26-Mar-97	WBL	7.76	1430	237	35.4	4.36	< 0.34		< 0.07	< 0.01	< 0.011	< 2	32.7	< 0.72	312	83.9	130	0.03	0.02	< 0.03	0.05
25-Jun-97	WBL	7.76	1640	238	30	4.74	0.36	< 7	< 0.07	< 0.01	< 0.011	< 2	33.4	< 0.72	312	136	104	0.03	0.03	< 0.03	0.05
01-Oct-97	WBL	7.26	1690	420	37.1	16.4	1.44	10	0.23	< 0.01	< 0.011	3	43.1	< 0.72	216	134	158	0.02	0.06	0.04	0.15
11-Dec-97	WBL	7.63	1700	261	33	5.53	< 0.34	15	0.22	< 0.01	< 0.011	< 2	38.3	< 0.72	333	176	116	0.02	0.02	< 0.03	0.03
31-Mar-98	WBL	7.56	1290	246	29.1	4.87	< 0.34			< 0.019		< 2	32.9	< 0.72	199	70	133	0.02	0.02	< 0.01	0.03
24-Jun-98	WBL	7.61	1480	239	31.5	4.76	0.66			< 0.019		2	31	< 0.72	270	122	121	0.04	0.02	< 0.006	0.05
02-Oct-98	CAN	7.6	1500	260	33	4.8	2	8	0.24	< 0.1	0.02	2	33	< 1	250	130	110	< 0.05	< 0.05		0.04
03-Dec-98	CAN	7.5	1600	250	33	5	< 2	< 5	0.11	< 0.1	0.12	< 1	30	< 2	280	120	110	< 0.05	< 0.05		0.07
29-Jun-99	Barr	8.19	1210	252	33.5	5	0.9	10	0.24	0.03	0.003	23	32.3		261	111	112	< 0.01	< 0.01	< 0.1	0.04
09-Dec-99	Barr	7.61	1344	260	31.1	4.3	0.7	11	0.14	0.02	0.006	79	30	< 1	208	129	101	< 0.01	0.02	< 0.1	0.07
21-Jun-00	Philip	7.52	1157	292	32	4	1.2	8	0.36	< 0.03	< 0.002	67	33.7	< 1	202	99.8	114	< 0.03	< 0.005	< 0.05	0.04
07-Dec-00	Philip	7.74	1116	288	28.3	3.5	0.5	9	0.35	< 0.03	< 0.002	75	32.4	< 1	194	97.3	94.6	< 0.03	0.01		0.03
27-Jun-01	Philip	7.73	1165	290	31.1	3	1.7	5	0.13	< 0.03	0.004	32	40	< 1	192	96	110	< 0.01	0.06	< 0.1	0.25
03-Dec-01	Philip	7.91	1232	286	30.7	2.7	< 0.5	< 5	0.12	< 0.03	0.005	1	36.4	< 1	206	104	106	< 0.01	0.05	< 0.1	0.1
04-Jun-02	Philip	8.14	1051	278	30	3	0.7	6	0.44	< 0.03	0.005		33.8	< 1	158	78.9	107	< 0.01	0.02	< 0.1	0.03
03-Dec-02	Philip	7.85	1143	271	29.3	4	< 0.5	8	0.41	< 0.03	0.012		33.9	< 1	179	99.2	106	< 0.01	0.01	< 0.1	0.04
02-Jun-03	Philip	7.58	1191	277	32.1	3	< 0.5	7	0.4	< 0.03	< 0.001	< 1	46.8	6	171	83.1	116	< 0.01	0.01		0.04
01-Dec-03	Philip	8.09	1098	277	31.1	2	0.8	10	0.29	< 0.03	0.004		39	< 1	167	79.4	111	< 0.01	0.02	< 0.1	0.04
09-Jun-04	Philip	7.77	1029	248	28.3	2.9	< 0.5	< 5	0.18	< 0.03	0.004		34.8	< 1	164	74.5	125	0.08	0.01		0.40
30-Nov-04	Philip	7.78	1463	253	37	3	< 0.5	8	0.24	0.05	0.004		38.3	< 1	345	115	137	< 0.01	0.02		0.03
03-Aug-05	Maxx	8.02	1350	235	38	2.8	< 2	5	0.3	< 0.05	< 0.02		34	< 1	233	130	130	< 0.05	0.01	0.07	0.03
28-Nov-05	Maxx	8.08	1510	252	40		< 2	8	0.9	< 0.05	< 0.02		42	< 1	256	140	140	< 0.05	0.02	< 0.05	0.04
01-Jun-06	MAX	8.1	1510	264	35	2.7	< 2	7	0.3	< 0.05	0.04		39	1	228	130	120	< 0.02	0.02	< 0.05	0.04
04-Dec-06	MAX	7.9	1620	273	42	3.2	< 2	6	< 0.1	0.09	0.02		56	< 1	210	140	150	< 0.02	0.02	< 0.05	0.04

Routine Groundwater Quality - General Analysis -Waste Resource Innovation Centre

Monitor
6b-96
Outwash

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
11-Feb-97	WBL	7.39			42.2	15.3	0.42	22	0.18	0.055	< 0.011	< 4	44.3	< 0.72	621	322	167	0.04	0.05	< 0.03	0.07
26-Mar-97	WBL	7.73	3260	260	35.2	16.3	< 0.34		0.09	< 0.01	< 0.011	2	44.1	< 0.72	815	467	146	0.07	0.06	< 0.03	0.10
25-Jun-97	WBL	7.58	2210	323	34.8	15	0.51	< 7	< 0.07	< 0.01	< 0.011	< 2	45	< 0.72	440	198	125	0.03	0.05	< 0.03	0.14
01-Oct-97	WBL	7.65	1740	246	36.2	5.36	4.19	56	< 0.07	< 0.01	< 0.011	< 2	35.8	< 0.72	341	164	128	0.02	0.02	0.04	0.04
11-Dec-97	WBL	7.33	1200	333	30.6	13.1	0.75	17	0.17	< 0.01	< 0.011	< 2	39.7	< 0.72	128	80.5	120	0.15	0.05	< 0.03	0.09
31-Mar-98	WBL	7.43	2770	270	28.8	12.6	< 0.34			< 0.019		< 2	50.9	< 0.72	649	289	168	0.11	0.03	< 0.01	0.08
24-Jun-98	WBL	7.34	1860	308	35.5	15.4	0.48			0.047		2	43	< 0.72	279	159	163	0.02	0.08	< 0.006	0.15
02-Oct-98	CAN	7.3	1500	410	45	15	< 2	< 5	0.34	< 0.1	< 0.02	2	40	< 1	150	92	160	< 0.05	0.05		0.14
03-Dec-98	CAN	7.3	1300	390	35	12	< 2	< 5	< 0.1	< 0.1	0.11	4	35	< 2	120	75	120	< 0.05	< 0.05		0.1
29-Jun-99	Barr	8.01	1550	327	34.3	11	1.9	11	0.29	< 0.02	0.003	726	44.4		338	189	125	0.01	0.03	< 0.1	0.1
09-Dec-99	Barr	7.32	1378	332	32.1	10.5	0.6	17	0.54	0.05	0.002	96	38	< 1	155	122	121	< 0.01	0.04	< 0.1	0.11
21-Jun-00	Philip	7.36	1639	306	31	18	< 0.5	13	3.16	2.84	< 0.002	44	48.8	< 1	313	182	130	< 0.03	0.03	< 0.05	0.1
07-Dec-00	Philip	7.48	1137	352	32.9	10.2	2.5	11	0.44	0.09	< 0.002	388	43.7	< 1	163	78.3	113	< 0.03	0.04		0.10
27-Jun-01	Philip	7.59	1580	339	30.2	10	1.9	< 5	0.28	< 0.03	0.005	54	43	< 1	265	188	114	< 0.01	0.07	< 0.1	0.26
03-Dec-01	Philip	7.79	1531	379	28.6	8.9	< 0.5	11	0.42	< 0.03	0.008	< 1	56.7	< 1	252	161	116	< 0.01	0.06	< 0.1	0.14
04-Jun-02	Philip	8.2	1769	317	32.7	10	0.6	12	0.59	< 0.03	0.015		46.1	< 1	390	223	129	0.01	0.04	< 0.1	0.18
03-Dec-02	Philip	7.85	974	310	25.8	9	< 0.5	14	0.77	< 0.03	0.009		34.7	< 1	97	77.2	95	< 0.01	0.03	< 0.1	0.06
02-Jun-03	Philip	7.69	1538	270	25.8	7	0.7	10	0.37	0.1	< 0.001	1	41.9	11	350	225	101	< 0.01	0.03		0.07
01-Dec-03	Philip	7.96	1407	309	22.5	6.9	0.8	5	0.42	< 0.03	0.004		38.6	< 1	278	179	107	0.03	0.03	< 0.1	0.24
09-Jun-04	Philip	7.54	1871	314	40.4	10.2	< 0.5	8	0.3	< 0.03	0.003		65.2	< 1	412	214	217	0.21	0.04		1.31
30-Nov-04	Philip	7.76	791	290	20.5	6	< 0.5	13	0.6	< 0.03	0.004		23.4	< 1	90.3	53.1	85.9	< 0.01	0.02		0.05
03-Aug-05	Maxx	7.86	1920	347	39	13	< 2	13	0.7	< 0.05	< 0.02		49	< 1	297	210	160	< 0.05	0.05	< 0.05	0.11
28-Nov-05	Maxx	8.19	1190	348	26		< 2	11	0.2	< 0.05	< 0.02		35	< 1	120	110	110	< 0.05	0.04	< 0.05	0.07
01-Jun-06	MAX	8	2060	342	35	11	< 2	8	0.5	< 0.05	0.08		44	< 1	340	250	140	< 0.02	0.05	< 0.05	0.09
04-Dec-06	MAX	8.1	1420	412	24	8.6	< 2	7	0.6	0.09	< 0.02		44	< 1	170	180	99	< 0.02	0.04	< 0.05	0.07

Routine Groundwater Quality - General Analysis -Waste Resource Innovation Centre

Monitor	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor	11-Feb-97	WBL	7.7			26.2	12.6	< 0.34	24	< 0.07	< 0.01	< 0.011	< 4	35.2	2.48	132	63.5	90.1	0.05	0.05	< 0.03	0.05
7-96	26-Mar-97	WBL	7.7	1180	256	32.5	14	< 0.34		< 0.07	< 0.01	< 0.011	3	35.5	< 0.72	131	80.6	104	0.07	0.07	< 0.03	0.08
Outwash	25-Jun-97	WBL	7.8	992	250	29.6	9.65	0.69	< 7	0.08	< 0.01	< 0.011	2	35.2	< 0.72	66.4	33.7	95.1	0.03	0.04	< 0.03	0.11
	01-Oct-97	WBL	7.57	902	251	33.2	10.2	1.44	< 7	0.1	< 0.01	< 0.011	< 2	35.7	< 0.72	54.3	28.7	110	0.04	0.06	< 0.03	0.08
	11-Dec-97	WBL	7.52	906	248	31.8	10.1	< 0.34	< 7	0.25	< 0.01	< 0.011	< 2	36.3	< 0.72	62.1	30	105	0.17	0.06	< 0.03	0.08
	31-Mar-98	WBL	7.55	1120	224	32.4	9.06	< 0.34			< 0.019		< 2	43	< 0.72	92.4	36.8	127	0.09	0.04	< 0.01	0.09
	24-Jun-98	WBL	7.77	1200	226	34.9	9.49	0.78			< 0.019		< 2	41.3	< 0.72	89.8	38.8	141	0.06	0.06	< 0.006	0.12
	02-Oct-98	CAN	7.4	1100	280	38	11	3	10	0.27	< 0.1	< 0.02	< 1	46	< 1	74	35	130	< 0.05	< 0.05		0.12
	03-Dec-98	CAN	7.5	1200	310	39	11	< 2	< 5	0.36	< 0.1	0.1	2	41	< 2	72	32	130	< 0.05	< 0.05		0.13
	29-Jun-99	Barr	8.15	1325	248	41	12	2.2	10	0.21	< 0.02	0.003	157	58.4		282	110	132	< 0.01	0.03	< 0.1	0.12
	09-Dec-99	Barr	7.39	1478	293	45.4	14.1	0.8	13	0.2	< 0.02	< 0.002	258	41	< 1	231	91.1	135	< 0.01	0.05	0.1	0.15
	21-Jun-00	Philip	7.44	1775	255	48.8	13.9	0.6	12	0.54	< 0.03	< 0.002	160	80.9	< 1	397	172	157	< 0.03	0.04	< 0.05	0.14
	07-Dec-00	Philip	7.5	1430	321	41	13.2	16	12	0.3	0.05	< 0.002	122	75.8	< 1	227	118	135	< 0.03	0.10		0.3
	27-Jun-01	Philip	7.72	1768	293	44.4	13	1.7	6	0.34	< 0.03	0.006	163	105	< 1	307	176	144	< 0.01	0.09	< 0.1	0.25
	03-Dec-01	Philip	7.73	1259	365	36.2	11.8	< 0.5	7	0.41	< 0.03	0.004	< 1	48.7	< 1	162	87.8	124	< 0.01	0.05	< 0.1	0.15
	04-Jun-02	Philip	8.04	1863	328	46.1	20	< 0.5	11	0.77	0.42	0.006		110	< 1	378	201	146	< 0.01	0.07	< 0.1	0.18
	03-Dec-02	Philip	7.92	1681	350	44.9	27	< 0.5	16	1.03	1.11	0.012		70.9	< 1	244	145	152	< 0.01	0.07	< 0.1	0.17
	02-Jun-03	Philip	7.52	2122	298	52.7	23	< 0.5	11	0.99	0.41	0.002	2	131	12	380	212	167	< 0.01	0.06		0.2
	01-Dec-03	Philip	8	1206	303	36.9	16.3	1.3	12	0.41	< 0.03	0.003		61.1	< 1	178	86.6	118	< 0.01	0.05	< 0.1	0.15
	08-Jun-04	Philip	7.48	1995	336	51.6	22	0.8	13	0.57	< 0.03	0.002		129	< 1	370	196	226	0.19	0.07		0.86
	30-Nov-04	Philip	7.71	1705	368	40.5	20	< 0.5	15	0.75	0.12	0.003		107	< 1	296	158	150	< 0.01	0.07		0.20
	03-Aug-05	Maxx	7.95	1800	325	51	19	< 2	22	1.5	0.12	< 0.02		86	< 1	190	140	180	< 0.05	0.09	0.07	0.23
	28-Nov-05	Maxx	8.07	2140	378	52		< 2	10	1	< 0.05	< 0.02		112	< 1	258	180	200	< 0.05	0.09	< 0.05	0.27
	01-Jun-06	MAX	8	1910	306	44	16	< 2	12	0.7	< 0.05	0.04		113	< 1	186	120	170	< 0.02	0.1	< 0.05	0.24
	04-Dec-06	MAX	7.9	1610	315	40	17	< 2	7	0.7	0.09	< 0.02		83	1	150	100	170	< 0.02	0.09	< 0.05	0.22

Routine Groundwater Quality - General Analysis -Waste Resource Innovation Centre

Monitor

8-96

Bedrock

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
11-Feb-97	WBL	7.78			39.9	2.08	< 0.34	28	0.21	< 0.01	0.034	< 2	73.5	< 0.72	33	19.3	94.9	0.05	0.05	< 0.03	0.02
27-Mar-97	WBL	7.77	864	302	36.9	1.73	< 0.34	46	0.3	< 0.01	< 0.011	3	53.9	< 0.72	49.8	18.8	107	0.01	0.03	< 0.03	0.67
25-Jun-97	WBL	7.84	882	308	33.6	1.77	< 0.34	< 7	< 0.07	0.018	< 0.011	2	60.8	< 0.72	40.9	17.6	92	0.02	0.05	< 0.03	0.54
01-Oct-97	WBL	7.45	838	321	37.1	1.9	0.51	51	0.2	< 0.01	< 0.011	< 2	66.2	< 0.72	37.2	19.3	111	0.02	0.02	< 0.03	0.50
11-Dec-97	WBL	7.61	880	297	37.7	1.99	< 0.34	< 7	0.34	< 0.01	< 0.011	< 2	75.2	< 0.72	55.4	21	105	0.06	0.03	< 0.03	0.69
31-Mar-98	WBL	7.41	997	288	33.4	2.05	1.72			< 0.019		< 2	65.6	< 0.72	102	32.9	116	0.01	0.02	< 0.01	0.54
24-Jun-98	WBL	7.5	890	309	32.1	1.78	0.75			< 0.019		< 2	59.6	< 0.72	58.4	30.1	107	0.06	< 0.02	< 0.006	0.63
02-Oct-98	CAN	7.4	890	320	38	2.2	< 2	< 5	0.3	< 0.1	< 0.02	< 1	73	< 1	57	31	110	< 0.05	< 0.05		0.84
03-Dec-98	CAN	7.4	910	310	36	2.2	< 2	< 5	0.48	< 0.1	0.12	2	72	< 2	60	28	99	< 0.05	< 0.05		0.83
29-Jun-99	Barr	8.23	976	282	40.1	3	1.7	12	0.19	< 0.02	0.003	390	68.2		146	67.7	109	< 0.01	< 0.01	< 0.1	0.75
09-Dec-99	Barr	7.46	1358	287	43.4	2.8	0.9	9	0.49	0.03	0.004	103	64	< 1	207	103	114	< 0.01	0.01	< 0.1	0.9
21-Jun-00	Philip	7.43	1212	264	38.9	2.4	< 0.5	6	0.25	< 0.03	< 0.002	90	64.4	< 1	233	107	111	< 0.03	< 0.005	< 0.05	0.89
07-Dec-00	Philip	7.6	942	320	34.6	2	1.3	13	0.25	0.04	< 0.002	131	63.7	< 1	125	59.2	94.6	< 0.03	0.06		1.01
27-Jun-01	Philip	7.76	1019	317	36.3	2	1.6	< 5	0.27	0.03	0.037	< 1	63	< 1	139	76.1	105	0.02	0.05	< 0.1	1.11
03-Dec-01	Philip	7.66	1329	356	36	2.3	1.1	< 5	0.2	< 0.03	0.005	< 1	50	< 1	225	93.9	103	< 0.01	0.05	< 0.1	1.02
04-Jun-02	Philip	8.43	1024	302	35.1	3	< 0.5	12	0.75	< 0.03	0.008		56.5	< 1	138	74.1	102	< 0.01	0.01	< 0.1	0.87
03-Dec-02	Philip	7.97	1002	309	35.8	3	< 0.5	6	0.31	< 0.03	0.004		59.4	< 1	118	65.5	101	< 0.01	0.01	< 0.1	0.87
02-Jun-03	Philip	7.47	1622	276	39.9	3	< 0.5	7	0.41	< 0.03	< 0.001	1	55.1	9	332	171	116	< 0.01	0.01		1.08
01-Dec-03	Philip	7.85	1262	285	35.6	3.1	1	9	0.4	< 0.03	0.003		53.8	< 1	254	124	104	< 0.01	0.02	< 0.1	1.05
08-Jun-04	Philip	7.6	1036	292	35.3	1.8	< 0.5	6	0.2	< 0.03	0.003		58.4	< 1	159	80.6	123	0.11	0.01		1.43
30-Nov-04	Philip	7.8	981	309	33.4	3	< 0.5	17	0.7	< 0.03	0.006		58.4	< 1	121	66.2	96.3	< 0.01	< 0.01		0.92
03-Aug-05	Maxx	8.15	888	298	36	2.5	< 2	22	1.2	< 0.05	< 0.02		47	< 1	98	71	92	< 0.05	0.02	0.07	0.7
28-Nov-05	Maxx	8.05	997	320	37		< 2	6	0.6	< 0.05	< 0.02		54	< 1	99	66	110	< 0.05	0.02	< 0.05	1
01-Jun-06	MAX	8.1	1040	314	32	2.3	< 2	11	0.5	< 0.05	< 0.02		50	< 1	129	67	87	< 0.02	0.01	< 0.05	0.94
04-Dec-06	MAX	8.1	976	327	35	2.8	< 2	< 4	0.4	< 0.05	< 0.02		50	< 1	99	62	99	< 0.02	0.01	< 0.05	1.1

Routine Groundwater Quality - General Analysis -Waste Resource Innovation Centre

Monitor	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor 9-96 Outwash	11-Feb-97	WBL	7.81			16.4	0.99	0.69	7	0.19	< 0.01	< 0.011	< 4	17.6	2.23	7.17	4.37	61.6	0.12	0.02	< 0.03	0.008
	26-Mar-97	WBL	8.04	474	186	18.7	0.86	< 0.34	14	0.24	< 0.01	< 0.011	4	23.4	< 0.72	6.34	7.96	68.6	0.07	0.04	< 0.03	0.03
	25-Jun-97	WBL	8.01	582	205	20.7	0.95	< 0.34	< 7	< 0.07	< 0.01	< 0.011	< 2	26.7	< 0.72	6.93	7.38	71	0.03	0.03	< 0.03	0.02
	01-Oct-97	WBL	7.92	490	179	21.7	0.84	1.2	13	0.1	< 0.01	< 0.011	< 2	22.4	< 0.72	9.82	1.68	74.5	0.03	0.02	0.03	0.008
	11-Dec-97	WBL	7.85	488	171	21.8	0.67	< 0.34	< 7	0.22	< 0.01	< 0.011	< 2	20.4	< 0.72	13.6	1.48	70.3	0.03	< 0.02	0.04	0.005
	31-Mar-98	WBL	8.38	557	195	25.9	0.7	< 0.34			0.019		< 2	26.7	< 0.72	13.1	2.2	71.7	0.01	0.03	< 0.01	0.005
	24-Jun-98	WBL	7.79	536	193	21.6	0.78	1.38			< 0.019		3	26	< 0.72	12.5	2.83	76.2	0.03	0.05	< 0.006	0.007
	02-Oct-98	CAN	7.7	610	210	29	< 1	< 2	< 5	0.4	< 0.1	< 0.02	30	29	< 1	19	2	85	< 0.05	< 0.05		< 0.01
	03-Dec-98	CAN	7.6	590	230	24	< 1	< 2	< 5	0.31	< 0.1	0.17	2	23	< 2	11	2.5	79	< 0.05	< 0.05		0.01
	29-Jun-99	Barr	8.31	528	220	19.6	1	1.2	10	0.21	< 0.02	0.004	206	24.6		23.3	8.2	79.7	< 0.01	0.01	< 0.1	< 0.005
	09-Dec-99	Barr	7.65	649	251	20.2	< 1	< 0.5	6	0.16	0.06	0.004	238	17	< 1	31	14.6	93.2	0.01	0.03	< 0.1	0.02
	21-Jun-00	Philip	7.71	414	234	14.7	0.8	< 0.5	5	0.28	< 0.03	< 0.002	81	12.2	< 1	12	8.9	77.4	< 0.03	0.01	< 0.05	< 0.005
	07-Dec-00	Philip	7.91	408	249	15	0.3	1.1	5	0.13	0.04	< 0.002	72	13.7	< 1	13.5	8.7	69.3	< 0.03	0.06		0.17
	27-Jun-01	Philip	7.9	570	248	18.3	< 1	1.7	< 5	0.14	< 0.03	0.004	67	25	< 1	20	14.2	86	< 0.01	0.06	< 0.1	0.21
	03-Dec-01	Philip	7.93	482	223	15.3	1.3	0.9	< 5	0.39	< 0.03	0.008	< 1	10.8	< 1	15.7	20.2	72	0.03	0.03	< 0.1	0.18
	04-Jun-02	Philip	8.08	517	236	16.1	1	< 0.5	5	0.43	< 0.03	0.005		17.1	< 1	21.7	16.7	79.2	0.01	0.05	< 0.1	< 0.005
	03-Dec-02	Philip	8.08	595	232	20.8	1	< 0.5	5	0.3	< 0.03	0.012		15.8	< 1	33.5	10.9	84.5	< 0.01	0.03	< 0.1	0.01
	02-Jun-03	Philip	7.76	666	229	20.6	< 1	< 0.5	7	0.45	0.03	< 0.001	1	11	4	64.1	20.7	90.2	< 0.01	0.04		0.01
	01-Dec-03	Philip	8.03	701	236	21.6	< 1	< 0.5	12	0.5	< 0.03	< 0.002		13.4	< 1	83.7	29.2	87	< 0.01	0.03	< 0.1	0.02
	08-Jun-04	Philip	7.81	591	235	20.1	< 1	0.6	6	0.28	< 0.03	0.002		28.8	< 1	39.7	18.4	89.5	< 0.01	0.05		0.07
	30-Nov-04	Philip	7.78	671	274	19.9	1	< 0.5	9	0.34	< 0.03	0.003		27.8	< 1	41.2	28.6	87.9	< 0.01	0.02		< 0.005
	03-Aug-05	Maxx	8.08	584	259	22	1	< 2	13	0.8	< 0.05	< 0.02		24	< 1	9	11	87	< 0.05	0.03	0.07	< 0.005
	28-Nov-05	Maxx	8.17	714	295	18		< 2	10	0.6	< 0.05	< 0.02		21	< 1	38	34	100	< 0.05	0.04	< 0.05	0.006
	01-Jun-06	N/A																				
	04-Dec-06	MAX	8.1	686	291	22	1.2	< 2	< 4	0.3	0.07	< 0.02		20	< 1	34	27	86	< 0.02	0.04	< 0.05	0.005
Monitor 10-00 Bedrock	27-Jun-01	Philip	7.84	662	259	31.5	< 1	< 0.5	< 5	0.14	0.07	0.009	159	103	< 1	22	9.9	93.7	0.02	0.02	< 0.1	0.02
	03-Dec-01	Philip	8.01	666	267	30.7	< 1	0.8	< 5	0.19	0.04	0.01	< 1	85.8	< 1	25.8	12	95.1	0.04	0.02	< 0.1	0.06
	04-Jun-02	Philip	8.23	595	239	28.2	2	< 0.5	< 5	0.19	0.04	0.013		76	< 1	21.5	9.2	84.4	0.02	0.02	< 0.1	< 0.005
	03-Dec-02	Philip	8	660	255	29.5	1	< 0.5	7	0.42	0.06	0.013		76.8	< 1	26.9	11.3	87.7	0.03	0.01	< 0.1	< 0.005
	02-Jun-03	Philip	7.78	659	242	29.1	< 1	< 0.5	< 5	0.17	0.05	< 0.001	1	25.2	11	44.9	10	87	0.03	0.01		< 0.005
	01-Dec-03	Philip	8.09	626	236	28.2	1.1	0.8	< 5	0.21	< 0.03	0.009		78.5	< 1	27.6	10.2	85.2	0.04	0.02	< 0.1	0.02
	09-Jun-04	Philip	7.78	600	238	28.2	< 1	< 0.5	< 5	0.13	0.08	0.005		82.4	< 1	27.8	9.7	91	0.07	0.02		0.13
	30-Nov-04	Philip	7.89	626	245	27.7	2	< 0.5	< 5	0.13	0.03	0.005		77.7	< 1	28.1	10.4	83.5	0.04	0.02		< 0.005
	03-Aug-05	Maxx	8.18	599	240	31	1.2	< 2	< 4	0.3	< 0.05	< 0.02		67	< 1	20	10	86	< 0.05	0.01	< 0.05	< 0.005
	28-Nov-05	Maxx	8.07	616	251	31		< 2	5	0.2	< 0.05	< 0.02		71	< 1	23	10	90	< 0.05	0.02	< 0.05	< 0.005
	01-Jun-06	MAX	8.1	646	254	30	1.1	< 2	< 4	1	0.09	< 0.02		77	< 1	20	9.1	88	0.03	0.01	< 0.05	< 0.005
	04-Dec-06	MAX	8.2	651	257	28	1	< 2	4	0.3	0.11	< 0.02		82	< 1	17	8.6	83	0.02	0.01	< 0.05	< 0.005

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Monitor	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor	27-Jun-01	Philip	8.13	528	263	25.3	2	2.9	< 5	0.28	0.13	0.03	45	46.8	< 1	7.1	25.9	68.7	0.34	0.1	< 0.1	0.14
11a-00	03-Dec-01	Philip	7.99	512	262	24.9	2	1.2	< 5	0.32	0.12	0.007	< 1	34.9	< 1	5.1	12	83.2	0.04	0.04	< 0.1	0.25
Bedrock	04-Jun-02	Philip	8.13	454	241	23.7	2	0.9	< 5	0.41	0.13	0.01		26.7	< 1	5	6	64.4	0.04	0.03	< 0.1	< 0.005
	03-Dec-02	Philip	8.12	500	253	24.3	3	< 0.5	< 5	0.33	0.12	0.009		25.9	< 1	4	6.1	67	< 0.01	0.03	< 0.1	0.01
	02-Jun-03	Philip	7.71	515	231	24.7	2	< 0.5	< 5	0.38	0.11	< 0.001	1	31.8	9	6.3	5.8	67.5	< 0.01	0.03		< 0.005
	01-Dec-03	Philip	8.02	507	233	23.6	1.6	1	9	0.52	< 0.03	0.004		35.9	< 1	7	5.6	64.8	0.02	0.04	< 0.1	< 0.005
	08-Jun-04	Philip	7.81	478	236	24.2	1	< 0.5	6	0.26	0.1	0.003		33.4	< 1	6.9	5.4	80.3	0.05	0.03		0.19
	30-Nov-04	Philip	7.96	494	241	23.8	1	< 0.5	10	0.53	0.13	0.007		29.4	< 1	6.7	5.1	66	< 0.01	0.02		< 0.005
	03-Aug-05	Maxx	8.13	471	238	25	1.9	< 2	8	0.6	0.06	< 0.02		20	< 1	5	5.5	62	0.07	0.04	0.08	< 0.005
	28-Nov-05	Maxx	8.2	470	248	26		< 2	10	0.4	0.14	< 0.02		26	< 1	7	5.2	70	< 0.05	0.04	< 0.05	< 0.005
	01-Jun-06	MAX	8.1	520	250	26	2	< 2	< 4	0.4	0.16	< 0.02		25	< 1	8	5.2	72	< 0.02	0.03	< 0.05	< 0.005
	04-Dec-06	MAX	8.1	532	252	25	1.8	< 2	< 4	0.3	0.12	< 0.02		38	< 1	10	5.3	70	< 0.02	0.04	< 0.05	< 0.005
Monitor	27-Jun-01	Philip	7.99	798	264	25.6	2	7.2	5	0.22	< 0.03	0.017	2400	55	< 1	54	54.1	83.1	0.03	0.07	< 0.1	0.11
11b-00	03-Dec-01	Philip	7.98	1081	266	28.4	2.2	1.4	6	0.28	< 0.03	0.023	13	50.4	< 1	155	92.8	100	< 0.01	0.04	< 0.1	0.01
Outwash	04-Jun-02	Philip	8.02	751	252	24.7	1	0.9	6	0.39	< 0.03	0.005		35	< 1	69.3	40.3	91.4	< 0.01	0.09	< 0.1	0.02
	03-Dec-02	Philip	8	813	250	28.2	2	< 0.5	6	0.37	< 0.03	0.022		42.2	< 1	68.9	26.8	103	< 0.01	0.15	< 0.1	0.06
	02-Jun-03	Philip	7.72	873	226	28.1	2	0.6	5	0.37	0.04	< 0.001	< 1	48.5	7	70.6	37.2	101	< 0.01	0.41		0.03
	01-Dec-03	Philip	8.1	629	185	13.1	1.1	< 0.5	12	0.51	< 0.03	0.005		43	< 1	58.8	58.9	51.6	0.02	0.58	< 0.1	0.01
	08-Jun-04	Philip	7.9	887	192	18.3	< 1	0.7	23	0.97	0.03	0.007		37.7	< 1	165	93.4	79.2	0.02	1.09		0.13
	30-Nov-04	Philip	8	781	212	15.1	1	< 0.5	7	0.26	< 0.03	0.002		29.4	< 1	118	83.2	60.6	< 0.01	0.57		0.01
	03-Aug-05	Maxx	8.04	919	235	21	1.6	< 2	8	0.8	< 0.05	< 0.02		37	< 1	139	88	84	< 0.05	1.2	< 0.05	0.03
	28-Nov-05	Maxx	8.12	1210	235	21		< 2	< 4	0.7	< 0.05	< 0.02		37	< 1	192	150	91	< 0.05	0.6	< 0.05	0.02
	01-Jun-06	MAX	8.1	961	268	18	1.4	< 2	8	0.6	< 0.05	0.05		40	< 1	129	120	69	< 0.02	0.8	< 0.05	0.02
	04-Dec-06	MAX	8.2	899	279	14	1.2	< 2	< 4	0.5	< 0.05	< 0.02		48	< 1	92	110	53	< 0.02	1.9	< 0.05	0.01
Monitor	27-Jun-01	Philip	7.5	888	390	43.6	14	1.2	7	0.92	0.45	0.006	178	96.2	< 1	82.8	22.6	109	< 0.01	0.07	< 0.1	1.44
12a-00	03-Dec-01	Philip	7.77	920	389	44.7	10.1	1.2	16	0.75	0.19	0.008	< 1	50.6	< 1	24.7	19.7	110	< 0.01	0.06	< 0.1	1.17
Bedrock	04-Jun-02	Philip	8.33	889	346	40.5	15	0.6	10	1.34	0.64	0.007		44.5	< 1	44.3	20.6	123	0.04	0.02	< 0.1	1.51
	03-Dec-02	Philip	7.78	4365	372	41.2	15	< 0.5	24	4.22	4.23	0.012		55.7	< 1	1200	763	109	< 0.1	< 0.1	< 1	0.96
	02-Jun-03	Philip	7.37	915	350	40.4	18	< 0.5	11	1.04	0.41	0.002	2	46.3	10	55.5	36.2	103	< 0.01	0.02		1.17
	01-Dec-03	No Ac																				
	08-Jun-04	Philip	7.53	845	319	37	13.9	< 0.5	10	0.89	0.47	0.009		45.5	< 1	45.3	23	106	< 0.01	0.02		1.15
	30-Nov-04	Philip	7.57	823	321	37.7	13	< 0.5	13	0.67	0.13	0.002		50.5	< 1	38.5	16.4	98.4	< 0.01	0.02		1
	03-Aug-05	Maxx	7.93	891	370	44	16	< 2	9	0.6	0.17	< 0.02		40	< 1	42	27	110	< 0.05	0.03	0.08	1.1
	28-Nov-05	Maxx	7.88	791	331	40		< 2	54	2.5	0.16	< 0.02		54	< 1	30	20	100	< 0.05	0.02	< 0.05	0.97
	01-Jun-06	MAX	7.9	858	338	39	16	< 2	13	1.2	0.24	< 0.02		40	< 1	34	25	110	< 0.02	0.02	< 0.05	1.1
	04-Dec-06	MAX	7.8	1020	423	41	22	< 2	8	1.2	0.56	< 0.02		49	< 1	41	34	110	< 0.02	0.02	< 0.05	1.2
Monitor	27-Jun-01	Philip	7.77	760	354	27.2	4	0.9	11	0.45	0.13	0.026	1730	48.9	< 1	40	25.2	106	0.62	0.1	< 0.1	0.37
12b-00	03-Dec-01	Philip	7.83	435	204	12.8	3.5	1.2	12	0.26	< 0.03	0.042	35	21.3	< 1	11.7	12.3	54.8	0.02	0.07	< 0.1	0.21
Outwash	04-Jun-02	Philip	8.51	1144	353	25.6	11	2.9	48	10.8	9.3	0.053		30.1	< 1	169	94.7	97	0.01	0.09	< 0.1	0.35
	03-Dec-02	Philip	7.76	1187	420	37.2	5	1.2	32	1.41	0.71	0.239		35.4	< 1	135	112	110	16.7	0.05	0.3	0.006
	02-Jun-03	Philip	7.38	1108	398	33.7	3	92	88	1.33	0.57	0.004	97	4.5	157	117	66	118	22.7	0.11		0.02
	01-Dec-03	No Ac																				
	08-Jun-04	Philip	7.56	710	339	24.9	4.1	2.1	29	1.94	1.46	0.151		20.1	< 1	51	33.8	118	11	0.09		0.34
	30-Nov-04	Philip	7.62	687	341	24.4	4	< 0.5	24	1.03	0.43	0.046		32.3	< 1	22.7	16.4	96.7	3.25	0.08		0.08
	03-Aug-05	Maxx	7.78	610	306	21	4.2	< 3	27	2.4	1.07	0.1		20	1	14	16	90	7.1	0.09	0.17	0.03
	28-Nov-05	Maxx	7.93	647	345	26		< 2	14	1	0.35	< 0.02		28	< 1	13	13	100	2.1	0.07	< 0.05	0.32
	01-Jun-06	MAX	8.1	584	292	19	2.5	< 2	8	1	0.49	0.02		24	< 1	10	12	72	1.7	0.05	0.05	0.15
	04-Dec-06	MAX	7.9	648	328	22	3.2	< 2	5	0.8	0.43	< 0.02		26	< 1	11	14	92	0.78	0.07	< 0.05	0.21

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Monitor	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor	03-Dec-01	Philip	7.95	913	272	38.8	2.9	0.8	< 5	0.21	0.09	0.008	2	105	< 1	83.9	39.9	106	0.77	0.04	< 0.1	0.11
13a-01	04-Jun-02	Philip	8.08	851	259	35	2	< 0.5	< 5	0.24	0.1	0.005		107	< 1	85.5	38	97.7	0.96	0.04	< 0.1	< 0.005
Bedrock	03-Dec-02	Philip	7.99	902	262	35.6	2	< 0.5	< 5	0.24	0.1	0.008		104	< 1	85.3	40.3	99.8	0.81	0.03	< 0.1	< 0.005
	02-Jun-03	Philip	7.77	921	248	35.2	2	< 0.5	< 5	0.23	0.11	< 0.001	2	111	9	88.5	41	100	0.45	0.03		0.02
	01-Dec-03	Philip	8.15	853	250	34.5	2.3	< 0.5	6	0.25	< 0.03	0.004		110	< 1	97.1	39	109	0.74	0.05	< 0.1	0.19
	09-Jun-04	Philip	7.81	854	254	34.3	2.1	< 0.5	< 5	0.19	0.14	0.007		119	< 1	97.1	39.7	112	0.64	0.04		0.12
	30-Nov-04	Philip	7.96	897	254	33.9	2	< 0.5	6	0.25	0.1	0.006		115	< 1	101	40.8	98.8	0.65	0.04		< 0.005
	03-Aug-05	Maxx	8.02	889	252	36	2.5	< 2	4	0.5	0.19	< 0.02		107	< 1	93	44	100	0.58	0.04	< 0.05	< 0.005
	28-Nov-05	Maxx	8	884	263	37		< 2	< 4	0.2	0.12	< 0.02		101	< 1	87	44	110	0.59	0.04	< 0.05	< 0.005
	01-Jun-06	MAX	8.1	929	266	33	2.2	< 2	5	0.5	0.17	< 0.02		106	< 1	111	40	94	0.43	0.05	< 0.05	< 0.005
	04-Dec-06	MAX	8	967	268	35	2.5	< 2	< 4	0.3	0.18	< 0.02		111	< 1	100	43	100	0.5	0.04	< 0.05	< 0.005
Monitor	03-Dec-01	Philip	7.93	655	296	29.7	2.2	1.4	< 5	0.23	< 0.03	0.223	338	50.4	< 1	14.9	4.8	84.7	0.01	0.02	< 0.1	0.02
13b-01	04-Jun-02	Philip	8.17	576	299	30.4	2	0.7	11	0.75	< 0.03	0.006		38	< 1	7	5	88	< 0.01	0.08	< 0.1	0.08
Outwash	03-Dec-02	Philip	7.93	683	300	31.6	2	< 0.5	< 5	0.18	< 0.03	0.213		50.4	< 1	17.4	7.2	92.8	0.01	0.01	< 0.1	0.02
	02-Jun-03	Philip	7.65	699	287	33.6	1	0.7	9	0.56	< 0.03	< 0.001	< 1	53.8	12	23.3	4.9	97.2	< 0.01	0.01		0.04
	01-Dec-03	Philip	7.8	665	375	35.8	1.4	0.8	5	0.2	< 0.03	0.036		29.4	< 1	11.9	7.5	103	0.05	0.1	< 0.1	0.06
	09-Jun-04	Philip	7.72	610	291	30.4	< 1	< 0.5	7	0.48	< 0.03	0.004		44.8	< 1	16.7	5.7	105	0.05	0.02		0.25
	30-Nov-04	Philip	7.71	810	369	35.4	2	< 0.5	20	0.91	< 0.03	0.002		29.8	< 1	51.8	19.9	110	< 0.01	0.04		0.06
	03-Aug-05	Maxx	7.98	800	345	38	2	< 2	19	1.1	< 0.05	< 0.02		25	< 1	55	12	110	0.15	0.01	< 0.05	0.06
	28-Nov-05	Maxx	8.06	846	506	45		< 2	7	0.5	< 0.05	< 0.02		17	< 1	11	14	140	< 0.05	0.06	< 0.05	0.09
	01-Jun-06	MAX	8	1090	403	41	1.7	< 2	12	0.7	< 0.05	< 0.02		21	< 1	132	30	120	< 0.02	0.02	< 0.05	0.07
	04-Dec-06	MAX	7.9	1070	471	41	2	< 2	< 4	0.4	0.08	< 0.02		26	< 1	65	32	140	< 0.02	0.04	< 0.05	0.09
Monitor	04-Dec-01	Philip	7.95	674	263	27.9	< 1	2	10	0.23	< 0.03	0.011	19	64.8	< 1	26.6	27.4	84	0.25	0.04	< 0.1	0.13
14a-01	04-Jun-02	Philip	8.44	556	240	22.4	2	1.4	8	0.5	< 0.03	0.006		56.1	< 1	10.7	24.9	63.5	< 0.01	0.04	< 0.1	0.007
Bedrock	03-Dec-02	Philip	8.01	519	240	23.7	< 1	< 0.5	< 5	0.25	< 0.03	0.006		38.8	< 1	4.8	11.5	65.3	< 0.01	0.01	< 0.1	0.007
	02-Jun-03	Philip	7.82	489	215	23.3	1	1.1	15	0.13	0.03	< 0.001	2	49.7	29	7	20	64.6	0.13	0.02		0.006
	01-Dec-03	Philip	8.18	542	232	23.7	< 1	0.7	7	0.24	< 0.03	0.003		53.1	< 1	12	18.2	72.9	0.05	0.03	< 0.1	0.08
	09-Jun-04	Philip	8.04	527	234	25.7	< 1	< 0.5	19	0.86	0.03	0.004		61.2	< 1	14.2	19.6	69.3	0.01	0.02		< 0.005
	30-Nov-04	Philip	7.92	527	236	24.4	1	< 0.5	< 5	0.06	< 0.03	< 0.002		48.6	< 1	12.8	9.1	68.1	0.03	< 0.01		< 0.005
	03-Aug-05	Maxx	8.22	533	234	26	1.1	< 2	15	1.1	< 0.05	< 0.02		51	< 1	11	19	67	< 0.05	0.03	0.07	< 0.005
	28-Nov-05	Maxx	8.18	529	242	29		< 2	9	0.4	< 0.05	< 0.02		42	< 1	15	14	78	0.16	0.02	< 0.05	< 0.005
	01-Jun-06	MAX	8.2	605	253	28	1.1	< 2	9	0.4	< 0.05	< 0.02		52	< 1	15	16	77	0.14	0.02	< 0.05	< 0.005
	04-Dec-06	MAX	8.2	597	253	26	1	< 2	< 4	0.2	0.08	< 0.02		61	< 1	13	14	74	0.11	0.02	< 0.05	< 0.005
Monitor	04-Dec-01	Philip	7.94	716	336	30.3	< 1	1.3	12	0.3	< 0.03	0.009	6	62.9	< 1	22.3	8.2	114	0.15	0.05	< 0.1	0.27
14b-01	04-Jun-02	Philip	8.41	776	279	30.2	2	1	21	0.34	0.06	1.11		89.4	< 1	58.4	20.9	100	< 0.01	0.02	< 0.1	0.2
Outwash	03-Dec-02	Philip	8.07	680	277	29.7	2	0.7	12	0.68	< 0.03	0.005		58.1	< 1	24.1	7.7	95.4	0.01	< 0.01	< 0.1	0.08
	02-Jun-03	Philip	7.59	845	270	26.2	2	0.8	18	0.62	0.04	< 0.001	2	33.7	13	85.8	32.7	104	0.37	0.02		0.12
	01-Dec-03	Philip	7.84	895	342	30.1	< 1	< 0.5	27	0.9	0.22	0.005		29.6	< 1	101	40.4	112	0.73	0.02	< 0.1	0.25
	09-Jun-04	Philip	7.55	771	327	27.9	1.2	< 0.5	20	0.7	0.14	0.002		39.2	2	70.6	33.8	129	0.8	0.01		0.51
	30-Nov-04	Philip	7.65	878	364	31.3	< 1	< 0.5	34	1.37	0.15	0.004		30.6	< 1	91.4	34.2	123	1.22	0.02		0.37
	03-Aug-05	Maxx	7.93	818	267	29	2.3	< 2	20	1.3	0.06	< 0.02		83	< 1	73	31	110	0.91	0.01	0.06	0.11
	28-Nov-05	Maxx	8.09	1070	305	38		6	12	0.6	0.09	< 0.02		77	< 1	143	49	140	1.3	0.02	< 0.05	0.12
	01-Jun-06	MAX	8	1100	361	36	2	< 2	11	0.5	0.06	0.03		59	< 1	129	60	120	0.29	0.02	< 0.05	0.26
	04-Dec-06	MAX	8	1120	438	37	2	< 2	9	0.9	0.09	< 0.02		64	< 1	92	67	130	0.15	0.03	< 0.05	0.33

Routine Groundwater Quality - General Analysis -Waste Resource Innovation Centre

Monitor	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
Monitor	04-Dec-01	Philip	7.95	754	259	35.1	< 1	0.6	< 5	0.16	< 0.03	0.006	< 1	92.4	< 1	48.3	7.7	104	0.27	< 0.01	< 0.1	< 0.005
15a-01	04-Jun-02	Philip	8.13	718	254	34.9	1	< 0.5	< 5	0.15	< 0.03	0.086		94.1	< 1	52.8	8.3	103	0.4	< 0.01	< 0.1	< 0.005
Bedrock	03-Dec-02	Philip	8.06	794	260	35.7	2	< 0.5	8	0.49	0.03	0.011		92.3	< 1	57.6	10.6	106	0.47	< 0.01	< 0.1	< 0.005
	02-Jun-03	Philip	7.87	789	246	36	1	< 0.5	6	0.15	< 0.03	< 0.001	2	99	15	56.2	12.2	107	0.5	< 0.01		< 0.005
	01-Dec-03	Philip	8.17	754	245	32.5	< 1	< 0.5	7	0.19	< 0.03	0.007		101	< 1	60.7	11.5	103	0.5	< 0.01	< 0.1	0.07
	09-Jun-04	Philip	7.85	734	258	34.9	< 1	< 0.5	6	0.16	< 0.03	0.004		105	< 1	62.4	13	129	0.55	0.01		0.34
	30-Nov-04	Philip	7.97	754	257	33.7	1	< 0.5	< 5	0.16	< 0.03	0.005		105	< 1	61.5	13.7	101	0.52	< 0.01		< 0.005
	03-Aug-05	Maxx	8.14	737	254	35	1.1	< 2	5	0.4	< 0.05	< 0.02		91	< 1	49	15	100	0.55	< 0.01	< 0.05	< 0.005
	28-Nov-05	Maxx	8.22	736	262	37		< 2	6	0.4	< 0.05	< 0.02		88	< 1	47	16	110	0.58	< 0.01	< 0.05	< 0.005
	01-Jun-06	MAX	8.1	790	268	33	1	< 2	10	0.4	< 0.05	< 0.02		74	1	59	15	92	0.46	0.01	< 0.05	< 0.005
	04-Dec-06	MAX	8	811	271	35	1.1	< 2	< 4	0.3	0.18	< 0.02		79	< 1	55	17	100	0.55	0.01	< 0.05	< 0.005
Monitor	04-Dec-01	Philip	8.16	646	252	27	< 1	4.4	13	0.27	< 0.03	0.014	14	26.2	< 1	24.4	6.2	77.7	< 0.01	0.08	< 0.1	0.14
15b-01	04-Jun-02	Philip	8.1	475	215	21.1	1	0.9	11	0.79	< 0.03	0.008		13.8	< 1	6.9	2	73.4	< 0.01	< 0.01	< 0.1	0.007
Outwash	03-Dec-02	Philip	7.95	723	200	29.4	2	0.9	12	0.75	< 0.03	0.012		14.3	< 1	9.1	2	103	< 0.01	0.01	< 0.1	0.009
	02-Jun-03	Philip	7.95	534	214	22.4	< 1	1.4	12	0.66	< 0.03	0.002	3	37.1	10	5.2	5	77.2	< 0.01	0.01		0.009
	01-Dec-03	Philip	8.08	661	291	27.5	1.1	< 0.5	25	0.74	< 0.03	0.003		40.5	< 1	7.9	10.7	95	< 0.01	0.04	< 0.1	0.01
	09-Jun-04	Philip	7.94	478	204	18.7	< 1	< 0.5	11	0.45	< 0.03	0.002		24.2	< 1	24.8	4	74	0.01	< 0.01		0.05
	30-Nov-04	Philip	7.99	558	240	21.8	< 1	< 0.5	12	0.58	< 0.03	0.002		22.4	< 1	27.9	3.3	83	< 0.01	0.01		0.008
	03-Aug-05	Maxx	8.06	668	335	30	0.98	< 2	18	1.4	< 0.05	< 0.02		16	< 1	10	4.6	120	0.1	< 0.01	< 0.05	0.03
	28-Nov-05	Maxx	7.97	1150	533	53		< 2	9	0.8	< 0.05	< 0.02		26	< 1	56	10	190	< 0.05	0.04	< 0.05	0.05
	01-Jun-06	MAX	8	853	462	32	0.97	< 2	11	0.7	< 0.05	0.02		15	< 1	8	12	120	< 0.02	0.03	< 0.05	0.03
	04-Dec-06	MAX	7.8	949	490	36	1.2	< 2	7	0.4	< 0.05	< 0.02		24	< 1	4	16	150	0.29	0.05	< 0.05	0.03

Routine Leachate Quality - General Analysis -Waste Resource Innovation Centre

SW 3

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	S04 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
31-Jan-02	Dry																				
28-Feb-02	Dry																				
29-Mar-02	Dry																				
30-Apr-02	Dry																				
31-May-02	Dry																				
28-Jun-02	Dry																				
31-Jul-02	Dry																				
30-Aug-02	Dry																				
27-Sep-02	Dry																				
31-Oct-02	Dry																				
29-Nov-02	Dry																				
20-Dec-02	Dry																				
31-Jan-03	Froze																				
28-Feb-03	Froze																				
29-Mar-03	Froze																				
30-Apr-03	Dry																				
31-May-03	Dry																				
05-Jun-03	Philip	6.75	1129	184	10.8	102	172	102	31	5.65	4.3	84	72	6	140						
31-Jul-03	Dry																				
30-Aug-03	Dry																				
27-Sep-03	Dry																				
31-Oct-03	Dry																				
29-Nov-03	Dry																				
01-Dec-03	Philip	5.8	6243	459	73	179	1420	4900	65.8	9	23.4	639	65.8	1180	1880	979	218	8.7	0.14	21.1	0.47
31-Jan-06	Dry																				
28-Feb-06	Dry																				
09-Mar-06	MAX	7.6	2620	248	21	150	130	1200	120	23.1	12	230	< 50	51	628	390	87	11	0.09	10	0.67
30-Apr-06	Dry																				
16-May-06	MAX	7.8	3960	322	35	390	20	1000	53	3.3	2.5	60	61	6	862	550	110	3.2	0.13		0.21
30-Jun-06	Dry																				
31-Jul-06	Dry																				
31-Aug-06	Dry																				
13-Sep-06	N/A																				
31-Oct-06	Dry																				
30-Nov-06	Dry																				
31-Dec-06	Dry																				

Routine Leachate Quality - General Analysis -Waste Resource Innovation Centre

	Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	S04 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
CL-1	29-May-96	ENT	7.64			106.6	1130	4444	9828	650	369	17.28	255	398.1	144	1804	1160	339	6.21	0.84	8.8	1.04
	04-Sep-96	ENT	6.36			31.1	219	976	2027	38.6	18.5	9.56	198	145	56	418	212	118	2.8	2.41	6.55	1.69
	16-Oct-96	ENT	7.59			27.7	166	148	542	55.7	13.5	2.45	32	85.3	2	248	124	83.9	1.43	0.19	1.57	0.28
	20-Nov-96	ENT	7.13			50.1	5.69	720	1626	1.46	46.7	10.4	107	95.7	3050	824	265	168	2.48	0.23	5.55	0.2
	11-Dec-96	ENT	7.45			49.4	218	240	584	52.6	22	7.01	27	106	13	3978	2200	158	2.05	0.16	4.49	0.25
	27-Mar-97	WBL	7.91	7690	609	107	263	143	1320	248	228	3.72	108	112	13.3	441	367	667	1.54	0.26	3.16	0.38
	06-May-97	WBL	8.44	3580	1050	43.3	344	969	2110	173	105	6.36	750	50.3	304	441	262	136	5.99	0.28	5.6	0.48
	27-Jun-97	WBL	7.15	5590	1440	64.1	653	1890	3500	165	127	18.9	410	5.2	614	586	266	194	5.17	0.45	15.2	0.48
	11-Sep-97	WBL	8.25	6640	1870	97.1	925	541	1100	201	124	15.4	220	51.9	179	913	615	147	39.9	1.32	39.5	6.84
	01-Oct-97	WBL	8.12	17900	4190	214	1820	2090	7190	560	467	14.7	90	114	1240	2860	1800	370	8.68	1.81	29.6	2.44
	09-Dec-97	WBL	7.68	15200	2830	258	1380	570	4450	686	374	13.6	1740	188	745	2070	1360	865	1.44	0.97	12.8	0.45
	01-Apr-98	WBL	8.18	5910	1230	79.6	472	193			134		180	217	183	797	501	183	1.72	0.34	13.7	0.33
	24-Jun-98	WBL	7.54	3780	1490	70.4	316	771			61.6		388	125	81.1	331	216	326	8.25	0.27	7.39	2.53
	02-Oct-98	CAN	7.7	2000	420	38	160	52	370	38	6.5	3.4	40	130	9	210	130	110	2.8	0.18		0.43
	03-Dec-98	CAN	7.6	1800	490	37	110	64	520	45	6.8	3.4	210	97	35	170	110	98	1.5	0.14		0.36
	14-Dec-99	Barr	7.02	7051	2300	85.1	514	2870	5002	339	286	10.4	282	77.8	1130	734	571	181	0.37	0.52	7.4	0.04
	21-Jun-00	Philip	7.72	16840	1030	322	627	42.3	1393	918	930	6.7	489	363	< 1	1100	623	1270	4.57	0.76	6.8	1.01
	07-Dec-00	Philip	7.71	32400	5430	264	2210	5320	1E+04	672	627	11.2	785	42	2020	8770	6740	240	12.2	1.67		1.94
	27-Jun-01	Philip	8.07	28200	5370	213	3200	311	4719	2100	1490	12	2870	390	< 30	3580	2970	138	24.5	2.64	19	3.31
	04-Dec-01	Philip	7.67	1931	297	35.4	96.1	7.3	524	82	66.9	3.5	262	72	7	119	74.1	133	6.29	0.08	3.5	1.3
	05-Jun-02	Philip	7.93	365	99	9.01	12	134	121	8.11	0.75	1.4	311	21.8	3	37.4	26.1	36.3	2.98	0.02	1.7	0.37

ORGANIC ANALYSIS - ATG MISA Groups 16, 17 and 18 - Waste Resource Innovation Centre - 2006

2a-91 01-Jun-06	2a-91 01-Jun-06	5-96 01-Jun-06	6a-96 01-Jun-06	6b-96 01-Jun-06
MISA Group 16				
1,1,1,2-Tetrachloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,1-Trichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2-Trichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dibromoethane:*	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichloropropane:	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
Bromodichloromethane:	< 0.1	< 0.1	< 0.1	< 0.1
Bromoform:	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane:	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride:	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Chloroform:	< 0.1	< 0.1	< 0.1	0.2
Chloromethane:				
Cis-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
trans-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane:				
Vinyl chloride:	< 0.2	< 0.2	< 0.2	< 0.2
MISA Group 17				
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Styrene:	< 0.1	< 0.1	< 0.1	< 0.1
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
MISA Group 18				
Acrolein:	< 10	< 10	< 10	< 10
Acrylonitrile:	< 5	< 5	< 5	< 5

ORGANIC ANALYSIS - ATG MISA Groups 16, 17 and 18 - Waste Resource Innovation Centre - 2006

2a-91 01-Jun-06	7-96 01-Jun-06	8-96 01-Jun-06	10-00 01-Jun-06	11a-00 01-Jun-06
MISA Group 16				
1,1,1,2-Tetrachloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,1-Trichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2-Trichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dibromoethane:*	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichloropropane:	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
Bromodichloromethane:	< 0.1	< 0.1	< 0.1	< 0.1
Bromoform:	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane:	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride:	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Chloroform:	< 0.1	< 0.1	< 0.1	< 0.1
Chloromethane:				
Cis-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
trans-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane:				
Vinyl chloride:	< 0.2	< 0.2	< 0.2	< 0.2
MISA Group 17				
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Styrene:	< 0.1	< 0.1	< 0.1	< 0.1
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
MISA Group 18				
Acrolein:	< 10	< 10	< 10	< 10
Acrylonitrile:	< 5	< 5	< 5	< 5

ORGANIC ANALYSIS - ATG MISA Groups 16, 17 and 18 - Waste Resource Innovation Centre - 2006

2a-91 01-Jun-06	11b-00 01-Jun-06	12a-00 01-Jun-06	12b-00 01-Jun-06	13a-01 01-Jun-06
MISA Group 16				
1,1,1,2-Tetrachloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,1-Trichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2-Trichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dibromoethane:*	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichloropropane:	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
Bromodichloromethane:	< 0.1	< 0.1	< 0.1	< 0.1
Bromoform:	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane:	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride:	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Chloroform:	0.1	< 0.1	< 0.1	< 0.1
Chloromethane:				
Cis-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
trans-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane:				
Vinyl chloride:	< 0.2	< 0.2	< 0.2	< 0.2
MISA Group 17				
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Styrene:	< 0.1	< 0.1	< 0.1	< 0.1
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
MISA Group 18				
Acrolein:	< 10	< 10	< 10	< 10
Acrylonitrile:	< 5	< 5	< 5	< 5

ORGANIC ANALYSIS - ATG MISA Groups 16, 17 and 18 - Waste Resource Innovation Centre - 2006

2a-91 01-Jun-06	13b-01 01-Jun-06	14a-01 01-Jun-06	14b-01 01-Jun-06	15a-01 01-Jun-06
MISA Group 16				
1,1,1,2-Tetrachloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,1-Trichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2-Trichloroethane:	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dibromoethane:*	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane:	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dichloropropane:	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene:	< 0.2	< 0.2	< 0.2	< 0.2
Bromodichloromethane:	< 0.1	< 0.1	< 0.1	< 0.1
Bromoform:	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane:	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride:	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Chloroform:	< 0.1	< 0.1	< 0.1	< 0.1
Chloromethane:				
Cis-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Cis-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane:	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride:	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
trans-1,2-Dichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trans-1,3-Dichloropropylene:	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethylene:	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane:				
Vinyl chloride:	< 0.2	< 0.2	< 0.2	< 0.2
MISA Group 17				
Benzene:	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene:	< 0.1	< 0.1	< 0.1	< 0.1
Styrene:	< 0.1	< 0.1	< 0.1	< 0.1
Toluene:	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
m-Xylene and p-Xylene:	< 0.1	< 0.1	< 0.1	< 0.1
MISA Group 18				
Acrolein:	< 10	< 10	< 10	< 10
Acrylonitrile:	< 5	< 5	< 5	< 5

ORGANIC ANALYSIS - ATG MISA Groups 16, 17 and 18 - Waste Resource Innovation Centre - 2006

2a-91 01-Jun-06	15b-01 01-Jun-06	
MISA Group 16		
1,1,1,2-Tetrachloroethane:	<	0.1
1,1,1-Trichloroethane:	<	0.1
1,1,2,2-Tetrachloroethane:	<	0.1
1,1,2-Trichloroethane:	<	0.2
1,1-Dichloroethane:	<	0.1
1,1-Dichloroethylene:	<	0.1
1,2-Dichlorobenzene:	<	0.2
1,2-Dibromoethane:*	<	0.2
1,2-Dichloroethane:	<	0.1
1,2-Dichloropropane:	<	0.1
1,3-Dichlorobenzene:	<	0.2
1,4-Dichlorobenzene:	<	0.2
Bromodichloromethane:	<	0.1
Bromoform:	<	0.2
Bromomethane:	<	0.5
Carbon Tetrachloride:	<	0.1
Chlorobenzene:	<	0.1
Chloroform:	<	0.1
Chloromethane:		
Cis-1,2-Dichloroethylene:	<	0.1
Cis-1,3-Dichloropropylene:	<	0.2
Dibromochloromethane:	<	0.2
Methylene Chloride:	<	0.5
Tetrachloroethylene:	<	0.1
trans-1,2-Dichloroethylene:	<	0.1
Trans-1,3-Dichloropropylene:	<	0.2
Trichloroethylene:	<	0.1
Trichlorofluoromethane:		
Vinyl chloride:	<	0.2
MISA Group 17		
Benzene:	<	0.1
Ethylbenzene:	<	0.1
Styrene:	<	0.1
Toluene:	<	0.2
o-Xylene:	<	0.1
m-Xylene and p-Xylene:	<	0.1
MISA Group 18		
Acrolein:	<	10
Acrylonitrile:	<	5

ORGANIC ANALYSIS (ATG MISA Groups 19 and 20) - Waste Resource Innovation Centre -2006

Parameter	2a-91 01-Jun-06	5-96 01-Jun-06	6a-96 01-Jun-06	6b-96 01-Jun-06
MISA Group 19				
Acenaphthene:	< 0.2	< 0.2	< 0.2	< 0.2
5-Nitroacenaphthene:	< 1	< 1	< 1	< 1
Acenaphthylene:	< 0.2	< 0.2	< 0.2	< 0.2
Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(b)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(g,h,i)perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Biphenyl:	< 0.5	< 0.5	< 0.5	< 0.5
Camphene:	< 1	< 1	< 1	< 1
1-Chloronaphthalene:	< 1	< 1	< 1	< 1
2-Chloronaphthalene:	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene:	< 0.2	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Indole:	< 1	< 1	< 1	< 1
1-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate:	< 2	< 2	< 2	< 2
Di-N-butylPhthalate:	< 2	< 2	< 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8	< 0.8	< 0.8
4-Bromophenyl phenyl Ether:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Ether:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methane:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenylamine:				
N-Nitrosodiphenylamine:	< 1	< 1	< 1	< 1
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
MISA Group 20				
2,3,4,5-Tetrachlorophenol:				
2,3,4,6-Tetrachlorophenol:				
2,3,5,6-Tetrachlorophenol:				
2,3,4-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,6-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dinitrophenol:	< 2	< 2	< 2	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
4,6-Dinitro-o-Cresol:	< 2	< 2	< 2	< 2
2-Chlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol:	< 1	< 1	< 1	< 1
o-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol:	< 1	< 1	< 1	< 1
Phenol:	< 0.5	< 0.5	< 0.5	< 0.5

ORGANIC ANALYSIS (ATG MISA Groups 19 and 20) - Waste Resource Innovation Centre -2006

Parameter	7-96 01-Jun-06	8-96 01-Jun-06	10-00 01-Jun-06	11a-00 01-Jun-06
MISA Group 19				
Acenaphthene:	< 0.2		< 0.2	< 0.2
5-Nitroacenaphthene:	< 1		< 1	< 1
Acenaphthylene:	< 0.2		< 0.2	< 0.2
Anthracene:	< 0.2		< 0.2	< 0.2
Benzo(a)anthracene:	< 0.2		< 0.2	< 0.2
Benzo(a)Pyrene:	< 0.2		< 0.2	< 0.2
Benzo(b)Fluoranthene:	< 0.2		< 0.2	< 0.2
Benzo(g,h,i)perylene:	< 0.2		< 0.2	< 0.2
Benzo(k)Fluoranthene:	< 0.2		< 0.2	< 0.2
Biphenyl:	< 0.5		< 0.5	< 0.5
Camphene:	< 1		< 1	< 1
1-Chloronaphthalene:	< 1		< 1	< 1
2-Chloronaphthalene:	< 0.5		< 0.5	< 0.5
Chrysene:	< 0.2		< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2		< 0.2	< 0.2
Fluoranthene:	< 0.2		< 0.2	< 0.2
Fluorene:	< 0.2		< 0.2	< 0.2
Indeno(1,2,3-cd)Pyrene:	< 0.2		< 0.2	< 0.2
Indole:	< 1		< 1	< 1
1-Methylnaphthalene:	< 0.2		< 0.2	< 0.2
2-Methylnaphthalene:	< 0.2		< 0.2	< 0.2
Naphthalene:	< 0.2		< 0.2	< 0.2
Perylene:	< 0.2		< 0.2	< 0.2
Phenanthrene:	< 0.2		< 0.2	< 0.2
Pyrene:	< 0.2		< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5		< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate:	< 2		< 2	< 2
Di-N-butylPhthalate:	< 2		< 2	< 2
Di-N-octylPhthalate:	< 0.8		< 0.8	< 0.8
4-Bromophenyl phenyl Ether:	< 0.3		< 0.3	< 0.3
4-Chlorophenyl Phenyl Ether:	< 0.5		< 0.5	< 0.5
bis(2-chloroisopropyl)Ether:	< 0.5		< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5		< 0.5	< 0.5
Diphenyl ether:	< 0.3		< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5		< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5		< 0.5	< 0.5
bis(2-chloroethoxy)Methane:	< 0.5		< 0.5	< 0.5
Diphenylamine:				
N-Nitrosodiphenylamine:	< 1		< 1	< 1
N-Nitrosodi-N-propylamine:	< 0.5		< 0.5	< 0.5
MISA Group 20				
2,3,4,5-Tetrachlorophenol:				
2,3,4,6-Tetrachlorophenol:				
2,3,5,6-Tetrachlorophenol:				
2,3,4-Trichlorophenol:	< 0.5		< 0.5	< 0.5
2,3,5-Trichlorophenol:	< 0.5		< 0.5	< 0.5
2,4,5-Trichlorophenol:	< 0.5		< 0.5	< 0.5
2,4,6-Trichlorophenol:	< 0.5		< 0.5	< 0.5
2,4-Dinitrophenol:	< 2		< 2	< 2
2,4-Dimethylphenol:	< 0.5		< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3		< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5		< 0.5	< 0.5
4,6-Dinitro-o-Cresol:	< 2		< 2	< 2
2-Chlorophenol:	< 0.3		< 0.3	< 0.3
4-Chloro-3-methylphenol:	< 0.5		< 0.5	< 0.5
4-Nitrophenol:	< 1		< 1	< 1
o-Cresol:	< 0.5		< 0.5	< 0.5
m-,p-Cresol:	< 0.5		< 0.5	< 0.5
Pentachlorophenol:	< 1		< 1	< 1
Phenol:	< 0.5		< 0.5	< 0.5

ORGANIC ANALYSIS (ATG MISA Groups 19 and 20) - Waste Resource Innovation Centre -2006

Parameter	11b-00 01-Jun-06	12a-00 01-Jun-06	12b-00 01-Jun-06	13a-01 01-Jun-06
MISA Group 19				
Acenaphthene:	< 0.2	< 0.2	< 0.2	< 0.2
5-Nitroacenaphthene:	< 1	< 1	< 1	< 1
Acenaphthylene:	< 0.2	< 0.2	< 0.2	< 0.2
Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(b)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(g,h,i)perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Biphenyl:	< 0.5	< 0.5	< 0.5	< 0.5
Camphene:	< 1	< 1	< 1	< 1
1-Chloronaphthalene:	< 1	< 1	< 1	< 1
2-Chloronaphthalene:	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene:	< 0.2	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Indole:	< 1	< 1	< 1	< 1
1-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate:	< 2	< 2	< 2	< 2
Di-N-butylPhthalate:	< 2	< 2	< 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8	< 0.8	< 0.8
4-Bromophenyl phenyl Ether:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Ether:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methane:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenylamine:				
N-Nitrosodiphenylamine:	< 1	< 1	< 1	< 1
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
MISA Group 20				
2,3,4,5-Tetrachlorophenol:				
2,3,4,6-Tetrachlorophenol:				
2,3,5,6-Tetrachlorophenol:				
2,3,4-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,6-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dinitrophenol:	< 2	< 2	< 2	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
4,6-Dinitro-o-Cresol:	< 2	< 2	< 2	< 2
2-Chlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol:	< 1	< 1	< 1	< 1
o-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol:	< 1	< 1	< 1	< 1
Phenol:	< 0.5	< 0.5	< 0.5	< 0.5

ORGANIC ANALYSIS (ATG MISA Groups 19 and 20) - Waste Resource Innovation Centre -2006

Parameter	13b-01 01-Jun-06	14a-01 01-Jun-06	14b-01 01-Jun-06	15a-01 01-Jun-06
MISA Group 19				
Acenaphthene:	< 0.2	< 0.2	< 0.2	< 0.2
5-Nitroacenaphthene:	< 1	< 1	< 1	< 1
Acenaphthylene:	< 0.2	< 0.2	< 0.2	< 0.2
Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(a)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(b)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(g,h,i)perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Biphenyl:	< 0.5	< 0.5	< 0.5	< 0.5
Camphene:	< 1	< 1	< 1	< 1
1-Chloronaphthalene:	< 1	< 1	< 1	< 1
2-Chloronaphthalene:	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene:	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluoranthene:	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene:	< 0.2	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Indole:	< 1	< 1	< 1	< 1
1-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene:	< 0.2	< 0.2	< 0.2	< 0.2
Perylene:	< 0.2	< 0.2	< 0.2	< 0.2
Phenanthrene:	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene:	< 0.2	< 0.2	< 0.2	< 0.2
Benzyl Butyl Phthalate:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-ethylhexyl)Phthalate:	< 2	< 2	35	< 2
Di-N-butylPhthalate:	< 2	< 2	< 2	< 2
Di-N-octylPhthalate:	< 0.8	< 0.8	< 0.8	< 0.8
4-Bromophenyl phenyl Ether:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chlorophenyl Phenyl Ether:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroisopropyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenyl ether:	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
2,6-Dinitrotoluene:	< 0.5	< 0.5	< 0.5	< 0.5
bis(2-chloroethoxy)Methane:	< 0.5	< 0.5	< 0.5	< 0.5
Diphenylamine:				
N-Nitrosodiphenylamine:	< 1	< 1	< 1	< 1
N-Nitrosodi-N-propylamine:	< 0.5	< 0.5	< 0.5	< 0.5
MISA Group 20				
2,3,4,5-Tetrachlorophenol:				
2,3,4,6-Tetrachlorophenol:				
2,3,5,6-Tetrachlorophenol:				
2,3,4-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,3,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,5-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4,6-Trichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dinitrophenol:	< 2	< 2	< 2	< 2
2,4-Dimethylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
2,4-Dichlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
2,6-Dichlorophenol:	< 0.5	< 0.5	< 0.5	< 0.5
4,6-Dinitro-o-Cresol:	< 2	< 2	< 2	< 2
2-Chlorophenol:	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloro-3-methylphenol:	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol:	< 1	< 1	< 1	< 1
o-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
m-,p-Cresol:	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol:	< 1	< 1	< 1	< 1
Phenol:	< 0.5	< 0.5	< 0.5	< 0.5

ORGANIC ANALYSIS (ATG MISA Groups 19 and 20) - Waste Resource Innovation Centre -2006

Parameter	15b-01 01-Jun-06
MISA Group 19	
Acenaphthene:	< 0.2
5-Nitroacenaphthene:	< 1
Acenaphthylene:	< 0.2
Anthracene:	< 0.2
Benzo(a)anthracene:	< 0.2
Benzo(a)Pyrene:	< 0.2
Benzo(b)Fluoranthene:	< 0.2
Benzo(g,h,i)perylene:	< 0.2
Benzo(k)Fluoranthene:	< 0.2
Biphenyl:	< 0.5
Camphene:	< 1
1-Chloronaphthalene:	< 1
2-Chloronaphthalene:	< 0.5
Chrysene:	< 0.2
Dibenzo(a,h)Anthracene:	< 0.2
Fluoranthene:	< 0.2
Fluorene:	< 0.2
Indeno(1,2,3-cd)Pyrene:	< 0.2
Indole:	< 1
1-Methylnaphthalene:	< 0.2
2-Methylnaphthalene:	< 0.2
Naphthalene:	< 0.2
Perylene:	< 0.2
Phenanthrene:	< 0.2
Pyrene:	< 0.2
Benzyl Butyl Phthalate:	< 0.5
bis(2-ethylhexyl)Phthalate:	< 2
Di-N-butylPhthalate:	< 2
Di-N-octylPhthalate:	< 0.8
4-Bromophenyl phenyl Ether:	< 0.3
4-Chlorophenyl Phenyl Ether:	< 0.5
bis(2-chloroisopropyl)Ether:	< 0.5
bis(2-Chloroethyl)Ether:	< 0.5
Diphenyl ether:	< 0.3
2,4-Dinitrotoluene:	< 0.5
2,6-Dinitrotoluene:	< 0.5
bis(2-chloroethoxy)Methane:	< 0.5
Diphenylamine:	
N-Nitrosodiphenylamine:	< 1
N-Nitrosodi-N-propylamine:	< 0.5
MISA Group 20	
2,3,4,5-Tetrachlorophenol:	
2,3,4,6-Tetrachlorophenol:	
2,3,5,6-Tetrachlorophenol:	
2,3,4-Trichlorophenol:	< 0.5
2,3,5-Trichlorophenol:	< 0.5
2,4,5-Trichlorophenol:	< 0.5
2,4,6-Trichlorophenol:	< 0.5
2,4-Dinitrophenol:	< 2
2,4-Dimethylphenol:	< 0.5
2,4-Dichlorophenol:	< 0.3
2,6-Dichlorophenol:	< 0.5
4,6-Dinitro-o-Cresol:	< 2
2-Chlorophenol:	< 0.3
4-Chloro-3-methylphenol:	< 0.5
4-Nitrophenol:	< 1
o-Cresol:	< 0.5
m-,p-Cresol:	< 0.5
Pentachlorophenol:	< 1
Phenol:	< 0.5

Appendix C

Surface Water Chemistry – Routine

Routine Surface Water Quality - General Analysis -Waste Resource Innovation Centre

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
SW 1		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
13-Apr-96	ENT	7.6	310	60						392		123		< 0.5	59.4				0.02		
29-May-96	ENT	7.8			4.74	5.32	< 10	22	1	0.04	0.22	21	14.1	7	42.2	29.8	32.4	0.51	0.06	0.2	0.08
03-Jul-96	ENT						13		2.4	0.19	0.08	73		1							
22-Aug-96	ENT	7.82			0.46	13.1	< 10	< 10	0.56	0.27	0.23	10	7.4	< 0.5	19.7	20.5	38.6	0.25	0.3	0.18	< 0.0004
18-Sep-96	ENT						< 10		2	0.13	0.07	6		< 0.5							
16-Oct-96	ENT						< 10		2	0.13	0.01	1		< 1							
20-Nov-96	ENT						< 10		3	0.08	0.15	7		15							
11-Dec-96	ENT	7.94			6.84	9.6	< 10	93	1.34	0.08	0.18	4	12.6	1	272	155	41.7	0.59	0.02	0.15	0.02
08-Apr-97	WBL	8.64	2840	118	8.09	18.3	9.24	170	2.73	< 0.01	0.206	19	18	< 0.72	732	434	49.7	1.05	< 0.02	< 0.03	0.03
06-May-97	WBL	8.29	1450	81	4.47	9.81	5.7	134	1.37	0.07	0.174	39	13.2	1.15	423	236	27.3	1.73	0.02	0.16	0.07
26-Jun-97	WBL	9.23	826	111	3.86	11.1	4.11	57	1.35	< 0.01	0.124	5	14.3	< 0.72	164	114	26.3	0.74	0.06	0.13	0.02
31-Jul-97	WBL	9.53	1460	123	4.79	13.1	2.82	88	3.51	0.12	0.234	4	15	0.99	394	245	24.2	0.87	0.05	0.23	0.02
11-Sep-97	WBL	8.73	527	94.1	4.47	12.3	2.17	71	1.48	0.02	0.072	< 6	14.7	< 0.72	89.6	76	25.4	0.56	0.1	0.1	0.02
26-Nov-97	WBL	7.6	960				3.12		1.72	0.08	0.139	542		< 0.72							
09-Dec-97	WBL	7.79	970	132	7.02	12.5	1.94	59	1.6	0.01	0.095	3	13.9	< 0.72	198	140	45.7	0.38	0.02	0.08	0.01
08-Jan-98	WBL	7.65	545				6.3		1	0.2	0.31	357		7							
28-Feb-98	Froze																				
31-Mar-98	WBL	8.32	1480	121	3.48	6.75	2.53		1.52	0.02	0.107	5	12.7	< 0.72	443	250	35.5	0.54	0.05	0.11	0.007
30-Apr-98	Dry																				
12-May-98	WBL	7.55	1420				8.52		4.02	0.8	0.3	840		0.72							
24-Jun-98	WBL	9.52	597	112	4.14	9.73	5.58		2.73	0.06	0.245	< 2	10.9	< 0.72	109	72.8	27.7	0.64	0.06	0.25	0.02
31-Jul-98	Dry																				
31-Aug-98	Dry																				
30-Sep-98	Dry																				
31-Oct-98	Dry																				
30-Nov-98	Dry																				
31-Dec-98	Dry																				
31-Jan-99	Froze																				
28-Feb-99	Froze																				
31-Mar-99	Barr	8.01	1624	142	7.49	13	6.7	68	3.6	0.37	0.27	21	33	< 2	441	298	52.7	0.5	0.05	0.4	0.03
30-Apr-99	Dry																				
31-May-99	Dry																				
29-Jun-99	Barr	7.91	307	77	2.9	9	6.4	51	1.72	0.84	0.057	12	15		41.9	34.3	20.6	0.12		0.4	0.02
31-Jul-99	Dry																				
31-Aug-99	Dry																				
30-Sep-99	Dry																				
31-Oct-99	Dry																				
30-Nov-99	Dry																				
14-Dec-99	Barr	8.01	716	168	16.7	18	19.4	49	2.77	1.05	0.11	40	46.9	< 1	57.4	42.5	65.5	0.01	0.04	0.2	0.02
30-Jan-00	Froze																				
28-Feb-00	Froze																				
31-Mar-00	Philip	7.37	2380	123	10.2	15	9.1	87	3.31	0.07	0.224	17	21	< 1	634	370	59.7	0.62	0.03		0.03
27-Apr-00	Philip	7.13	2595	140	29.8	43	16.5	117	115	104	0.423	23	35.8	1	123	85.7	146	0.36	0.06	0.5	0.04
23-May-00	Philip	7.46	1930	142	25.9	53	3.2	137	66.3	68.2	0.47	13	35.3	< 1	96.5	70.2	120	0.42	0.09	0.6	0.07
30-Jun-00	Philip	7.33	88	241	3.7	10	27	60	1.92	0.19	0.286	5	6.6	< 1	23.6	19	24.9	0.36		0.4	0.03

Routine Surface Water Quality - General Analysis -Waste Resource Innovation Centre

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
SW 1		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
30-Jul-00	Dry																				
29-Aug-00	Dry																				
28-Sep-00	Philip	7.81	374	97	4.32	12.4	12.8	57	2.5	0.08	0.194	128	15.5	< 1	51.8	40.1	30.5	0.16	0.03	0.23	0.04
30-Oct-00	Dry																				
28-Nov-00	Philip	7.63	778	90	7.41	16.8	6	57	2.54	0.08	0.5	29	24.4	< 1	193	109	73.7	0.96	0.02	0.7	0.11
07-Dec-00	Froze																				
31-Jan-01	Froze																				
28-Feb-01	Froze																				
31-Mar-01	Froze																				
24-Apr-01	Philip	7.9	747	175	6.13	11	2.2	65	3.16	0.17	0.12	6	9.8	2	140	122	34.4	0.83		0.4	0.02
28-May-01	Philip	7.29	333	119	3.93	9	8.3	77	2.4	0.11	0.288	10	13.2	< 1	39.4	46	49.4	0.58	0.03	0.4	0.05
30-Jun-01	Dry																				
25-Jul-01	Philip	7.3	322	105	4.82	15	8.1	143	5.3	0.3	0.765	21	21.7	< 1	30.3	29.7	56.9	0.96	0.06	1	0.10
31-Aug-01	Dry																				
27-Sep-01	Philip	7.5	383	128	5.48	15	3	57	1.64	0.07	0.318	2	19	< 1	33.8	31.7	30.5	0.09	0.03	0.3	0.02
18-Oct-01	Philip	7.84	304	125	4.94	9	3.4	50	2.94	< 0.03	0.294	7	4.3	< 1	19.3	24.8	31.7	0.91	0.04	0.4	0.04
30-Nov-01	Philip	7.48	104	39	1.72	4	1.3	24	0.87	0.03	0.3	11	1.5	< 1	4.5	6.8	9.38	0.54	< 0.01	0.2	0.03
04-Dec-01	Philip	7.57	153	61	3.04	6.3	3.1	26	0.68	< 0.03	0.128	1	2.7	< 1	6.5	8.8	19.2	0.31	0.01	0.4	0.04
31-Jan-02	Froze																				
28-Feb-02	Froze																				
29-Mar-02	Froze																				
29-Apr-02	Philip	7.52	398	77	2.9	5	5.6	58	1.88	0.06	0.456	11	7.3	< 1	69.3	57.4	30.8	0.57	0.02	0.5	0.36
31-May-02	Dry																				
05-Jun-02	Philip	7.8	228	55	2.46	4	5.2	75	2.19	0.14	0.438	16	5.6	< 1	28.9	26.4	18.1	0.87	0.02	0.6	0.1
31-Jul-02	Dry																				
30-Aug-02	Dry																				
27-Sep-02	Dry																				
31-Oct-02	Dry																				
29-Nov-02	Dry																				
20-Dec-02	Dry																				
31-Jan-03	Froze																				
28-Feb-03	Froze																				
29-Mar-03	Froze																				
30-Apr-03	Dry																				
31-May-03	Dry																				
05-Jun-03	Philip	6.99	240	68	2.89	4	6.1	51	6	0.16	0.934	118	6.1	< 1	26.1						
31-Jul-03	N/A																				
30-Aug-03	N/A																				
27-Sep-03	Dry																				
31-Oct-03	Dry																				
29-Nov-03	Dry																				
01-Dec-03	Philip	7.21	256	52	3.16	4	4.2	24	0.63	< 0.03	0.146	12	6	< 1	49.7	28.9	18.8	0.54	< 0.01	0.3	0.07
31-Jan-06	Dry																				
28-Feb-06	Dry																				
09-Mar-06	MAX	7.5	245	25	2.2	2	4	22	1.3	0.29	0.17	24	5	2	53	37	8.9	1.8	< 0.02	0.2	0.09

Routine Surface Water Quality - General Analysis -Waste Resource Innovation Centre

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
SW 1		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
30-Apr-06	Dry																				
16-May-06	MAX	7.6	346	126	4.8	7.6	3	43	1.6	0.16	0.21	3	4	< 1	36	43	31	0.43	0.02		0.02
30-Jun-06	Dry																				
31-Jul-06	Dry																				
31-Aug-06	Dry																				
13-Sep-06	N/A																				
31-Oct-06	Dry																				
30-Nov-06	Dry																				
31-Dec-06	Dry																				

Routine Surface Water Quality - General Analysis -Waste Resource Innovation Centre

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
SW 2		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
08-Apr-97	WBL	7.68	2050	120	7.79	35.1	17.3	380	4.91	0.33	0.495	37	20.8	< 0.72	497	293	42.6	2.14	< 0.02	0.58	0.05
06-May-97	WBL	7.98	1600	102	4.5	19.2	13	160	2.59	0.07	0.256	41	18.7	0.83	448	251	29.4	2.18	0.03	0.29	0.07
26-Jun-97	WBL	8.15	796	110	3.12	13.2	4.89	63	3.04	1.16	0.433	7	13.3	1.92	167	119	23.3	5.88	0.18	1.59	0.06
31-Jul-97	WBL	8.56	1020	137	3.74	15.7	14.9	145	5.36	0.08	0.88	54	33.3	1.05	196	154	26.2	2.97	0.06	0.88	0.03
11-Sep-97	WBL	7.43	376	83.4	2.98	13.2	2.83	54	1.85	0.38	0.342	9	26.6	< 0.72	42.5	46	22.8	2.45	0.27	0.49	0.26
26-Nov-97	WBL	7.73	340				3.15		1.12	< 0.01	0.08	220		< 0.72							
09-Dec-97	WBL	7.68	570	85	4.15	7.14	2.78	33	1.16	0.10	0.033	11	39.6	< 0.72	94.7	58	32.8	0.72	0.02	0.06	0.02
08-Jan-98	WBL	7.81	537				4.62		0.8	0.1	0.17	319		2							
28-Feb-98	Dry																				
31-Mar-98	WBL	7.84	1530	87.5	2.67	5.65	15.4		1	0.03	0.118	33	23.2	< 0.72	430	274	31.1	0.81	0.05	0.12	0.03
30-Apr-98	Dry																				
12-May-98	WBL	7.74	1120				5.55		2.32	1.22	0.13	654		0.72							
24-Jun-98	WBL	7.51	450	94.7	3.33	7.83	21.1		2.79	0.03	0.259	30	40.5	< 0.72	52.2	43.4	39.4	1.65	0.06	0.26	0.04
31-Jul-98	Dry																				
31-Aug-98	Dry																				
30-Sep-98	Dry																				
31-Oct-98	Dry																				
30-Nov-98	Dry																				
31-Dec-98	Dry																				
31-Jan-99	Froze																				
28-Feb-99	Froze																				
31-Mar-99	Dry																				
30-Apr-99	Dry																				
31-May-99	Dry																				
29-Jun-99	Dry																				
31-Jul-99	Dry																				
31-Aug-99	Dry																				
30-Sep-99	Dry																				
31-Oct-99	Dry																				
30-Nov-99	Dry																				
14-Dec-99	Dry																				
30-Jan-00	Froze																				
28-Feb-00	Froze																				
31-Mar-00	Dry																				
27-Apr-00	Dry																				
23-May-00	Dry																				
30-Jun-00	Dry																				
30-Jul-00	Dry																				
29-Aug-00	Dry																				
28-Sep-00	Dry																				
30-Oct-00	Dry																				
28-Nov-00	Dry																				
07-Dec-00	Froze																				
31-Jan-02	Dry																				
28-Feb-02	Dry																				

Routine Surface Water Quality - General Analysis -Waste Resource Innovation Centre

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
SW 2		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
29-Mar-02	Dry																				
30-Apr-02	Standi																				
31-May-02	Dry																				
28-Jun-02	Standi																				
31-Jul-02	Dry																				
30-Aug-02	Dry																				
27-Sep-02	Dry																				
31-Oct-02	Dry																				
29-Nov-02	Dry																				
20-Dec-02	Dry																				
31-Jan-03	Froze																				
28-Feb-03	Froze																				
29-Mar-03	Froze																				
30-Apr-03	Dry																				
31-May-03	Dry																				
05-Jun-03	Dry																				
31-Jul-03	N/A																				
30-Aug-03	N/A																				
27-Sep-03	Dry																				
31-Oct-03	Dry																				
29-Nov-03	Dry																				
20-Dec-03	Dry																				
31-Jan-06	Dry																				
28-Feb-06	Dry																				
09-Mar-06	MAX	7.5	278	29	2.1	1	8	42	1.1	0.23	0.19	38	6	< 1	60	40	9.7	1.6	< 0.02	0.2	0.08
30-Apr-06	Dry																				
16-May-06	MAX	7.4	117	45	1.8	1.4	< 2	44	0.6	0.09	0.08	4	2	< 1	9	12	12	0.4	< 0.01		0.02
30-Jun-06	Dry																				
31-Jul-06	Dry																				
31-Aug-06	Dry																				
13-Sep-06	N/A																				
31-Oct-06	Dry																				
30-Nov-06	Dry																				
31-Dec-06	Dry																				

Routine Surface Water Quality - General Analysis -Waste Resource Innovation Centre

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
EPTS-01		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
09-Jun-04	N/A																				
09-Jun-04	N/A					<								<							
09-Jun-04	Philip	8	583	236	20.8	< 1	1.3	7	0.27	0.07	0.003		19.4	< 1	52.3	24.9	93.5	0.09	0.02		0.43
09-Jun-04	Philip	8	583	236	20.8	1	1.3	7	0.27	0.07	0.003		19.4	1	52.3	24.9	93.5	0.09	0.02		0.43
30-Nov-04	Philip	8.11	665	244	22.4	2	< 0.5	8	0.18	< 0.03	0.003		21.3	< 1	60.3	23.6	83.4	< 0.01	0.01		0.08
03-Aug-05	N/A																				
28-Nov-05	Maxx	8.18	620	231	24		< 2	< 4	0.4	0.1	< 0.02		18	< 1	51	26	84	< 0.05	0.02	< 0.05	0.08
01-Jun-06	N/A																				
04-Dec-06	MAX																				

Routine Surface Water Quality - General Analysis -Waste Resource Innovation Centre

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
TP1		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
31-Jan-06	Dry																				
28-Feb-06	Dry																				
09-Mar-06	MAX	7.4	1440	49	2.7	6	17	61	2.7	0.72	0.32	40	44	3	359	240	40	1.2	< 0.02	0.3	0.12
30-Apr-06	Dry																				
16-May-06	MAX	7.9	200	83	2	0.75	< 2	24	0.8	< 0.05	0.15	4	6	< 1	9	18	27	0.06	0.02		0.15
30-Jun-06	Dry																				
31-Jul-06	Dry																				
31-Aug-06	Dry																				
13-Sep-06	MAX	7.7	159	58	2.6	3	3	21	0.9	0.08	0.26	1	9	< 1	6	5.7	20	0.07	0.03		0.06
31-Oct-06	Dry																				
30-Nov-06	Dry																				
31-Dec-06	Dry																				

Routine Surface Water Quality - General Analysis -Waste Resource Innovation Centre

Date	Lab	pH	Cond-uctivity	Alk mg/L	Mg mg/L	K mg/L	BOD mg/L	COD mg/L	TKN mg/L	NH3-N mg/L	Total-P mg/L	TSS mg/L	SO4 mg/L	Phenol ug/L	Cl mg/L	Na mg/L	Ca mg/L	Fe mg/L	B mg/L	P mg/L	Zn mg/L
TP1-Out		6.5 - 8.5									0.03			1.0				0.30	0.20		0.02
31-Jan-06	Dry																				
28-Feb-06	Dry																				
09-Mar-06	MAX	7.6	1390	69	3.9	6	10	52	2.4	0.66	0.29	25	27	1	332	220	37	0.92	< 0.02	0.4	0.07
30-Apr-06	Dry																				
16-May-06	MAX	7.8	222	85	3.4	2.7	< 2	31	1.2	0.07	0.13	3	6	< 1	15	23	23	0.47	0.02		0.02
30-Jun-06	Dry																				
31-Jul-06	Dry																				
31-Aug-06	Dry																				
13-Sep-06	MAX	7.6	135	50	2.2	3.8	4	17	0.9	0.06	0.28	1	8	< 1	5	5.4	16	< 0.05	0.03		0.02
31-Oct-06	Dry																				
30-Nov-06	Dry																				
31-Dec-06	Dry																				