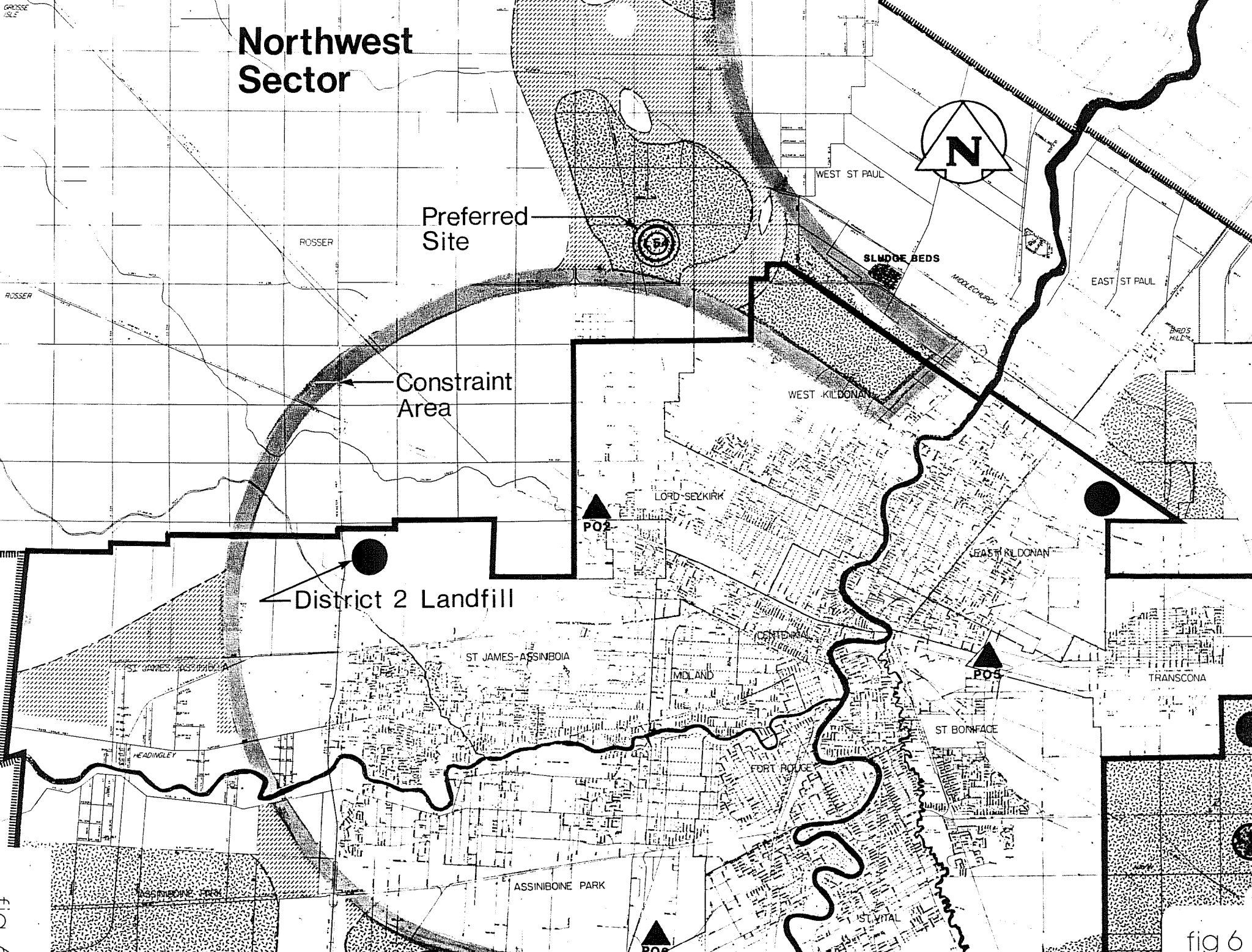
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Preferred Site
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PO2
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CENTENNIAL
TRANSCONA
ST BONIFACE
FORT ROUGE
HEADINGLEY
ASSINIBOINE PARK
ST VITAL

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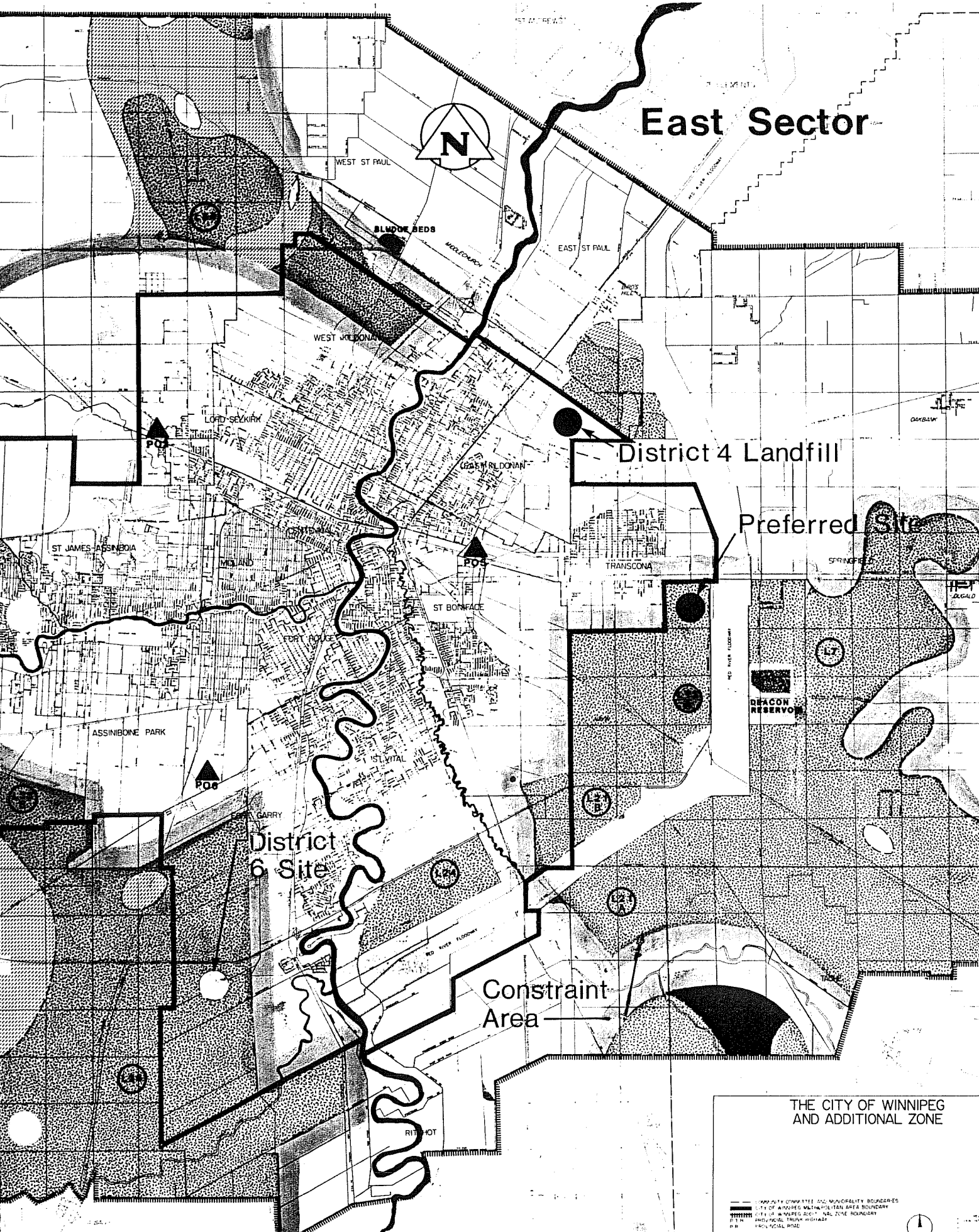
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FORT ROUGE
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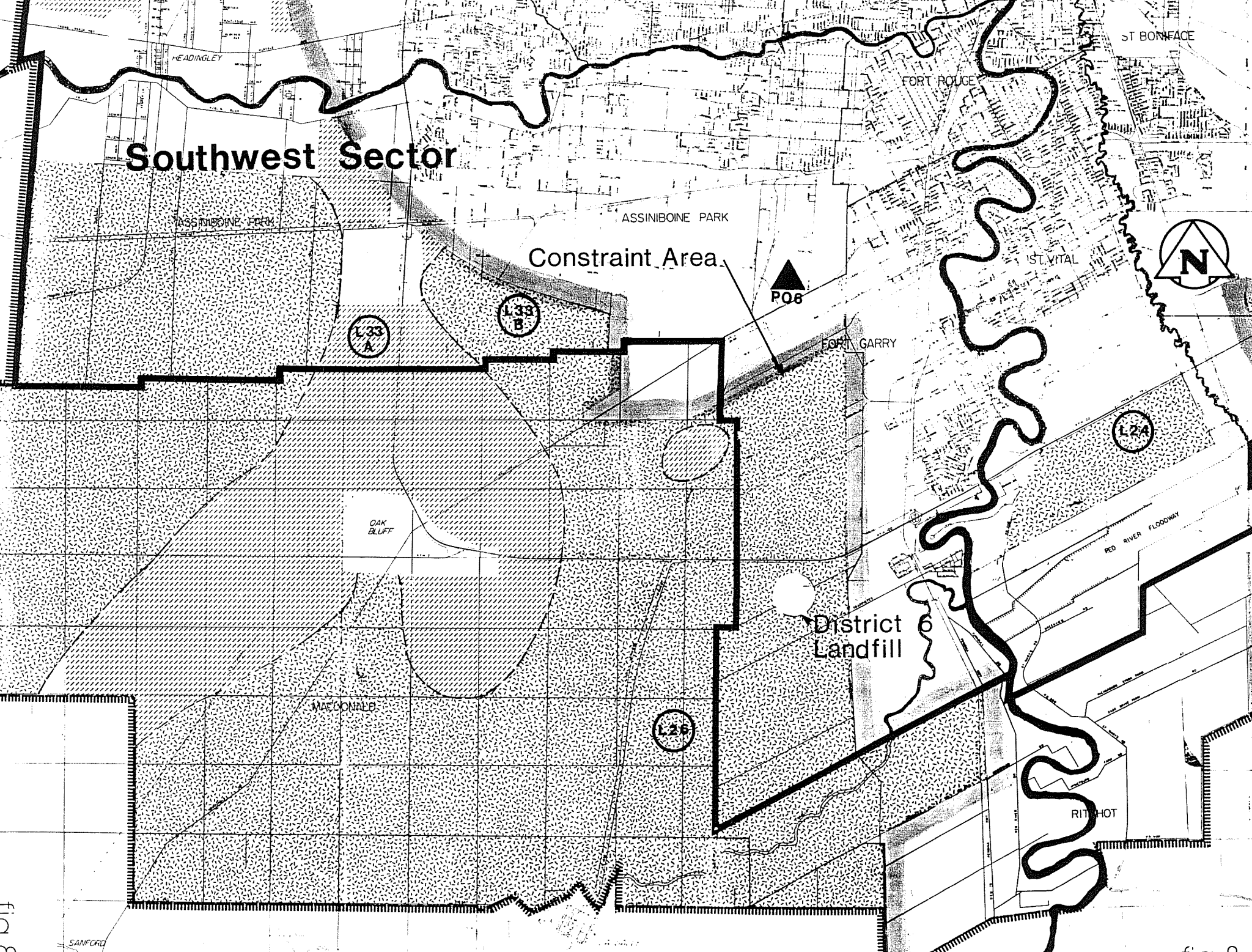
THE CITY OF WINNIPEG
AND ADDITIONAL ZONE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Constraint Area
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District 6
Landfill
HEADINGLEY
ASSINIBOINE PARK
ASSINIBOINE PARK
FORT ROUGE
ST BONIFACE
ST VITAL
FORT GARRY
OAK BLUFF
MACDONALD
RED RIVER FLOODWAY
RITCHOT
SANFORD
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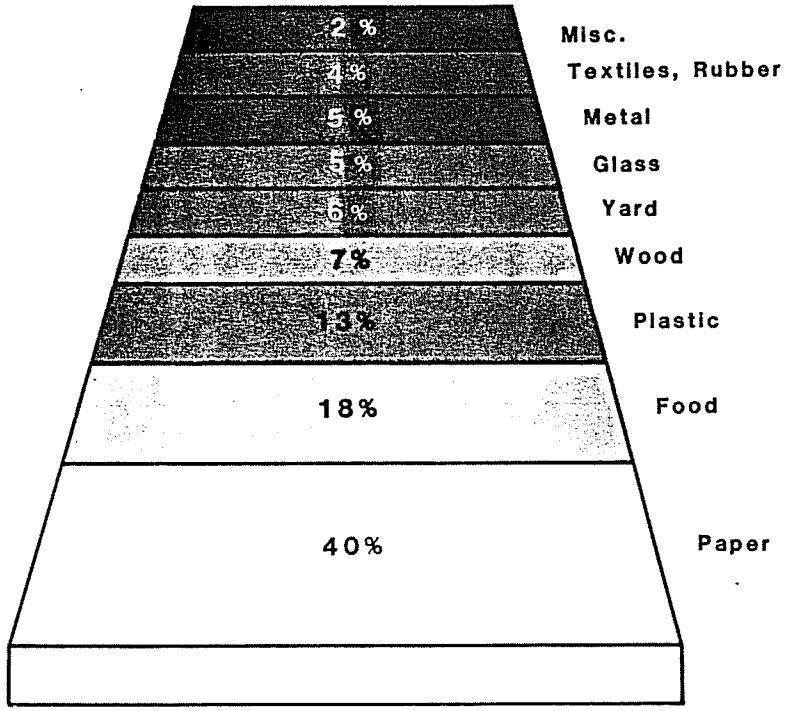
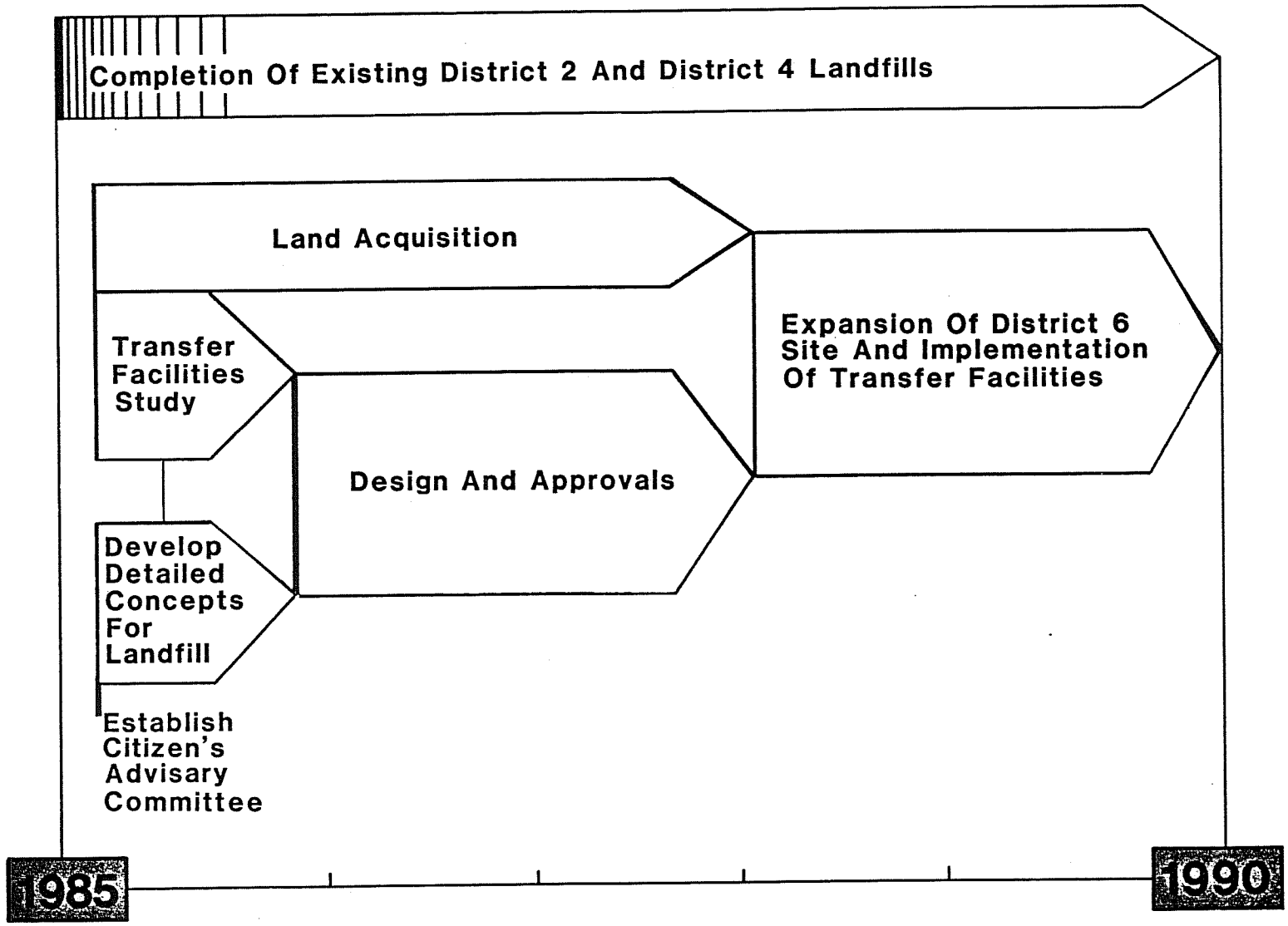
Composition Of Solid Waste



Implementation Plan



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APPENDIX E

CITY OF WINNIPEG PUBLIC PARTICIPATION REPORTS

- **CIWMP Phases 1-3**
- **Landfill EIA – Public Meeting**

APPENDIX E-1

Garbage and Recycling Master Plan – Phase 1 Public Participation Report

Winnipeg

Water and Waste Department

GARBAGE AND RECYCLING MASTER PLAN – PHASE 1 PUBLIC PARTICIPATION REPORT

March 2011

For more information on this report, please contact:
Tiffany Skomro
Public Consultation & Research Officer

BACKGROUND

City Council directed the City of Winnipeg to develop a Garbage and Recycling Master Plan before proposing any more changes to existing services. The vision and plan for the future of garbage and recycling services will be built through a six-month public participation process that is broken down into three phases:

Phase 1: Dialogue
The public process kicks off by talking about issues and looking at values, finding out how stakeholders would like to see our services in the future. A working vision will be created at the end of the phase.

Phase 2: Exploring
This phase starts exploring different service options and digs deeper into details. This phase will take the vision from Phase 1 and determine how we are going to get there.

Phase 3: Confirming
The final phase shares the Garbage and Recycling Master Plan and asks for final feedback.

Phase 1 of the process ran from November to December 2010.

EXPO

On November 13, 2010, the City of Winnipeg hosted the Speak Up on Garbage Expo to kick off the six-month public participation process for the Garbage and Recycling Master Plan.

At the Expo, participants had an opportunity to:
• share their vision on what the future of garbage and recycling services should look like in Winnipeg,
• hear comments and presentations from a panel with expertise in waste management,
• participate in round table discussions on the topics of their choice (e.g., curbside organics collection, recycling, garbage services, Brady Road Landfill).

The Expo was hosted by Richard Cloutier of the radio station CJOB.
The panellists were:

- Victoria Reinhardt, Ramsey County Commissioner, Minnesota
- Tom Ethans, Executive Director, Take Pride Winnipeg!
- Tom Keep, Environmental Initiative Manager, City of Brandon
- Dwight Mercer, Eco Research, Regina

There were 126 participants registered in advance, with 59 participating at Expo. An additional 43 participants registered on the day of Expo.

Details and transcripts of the day can be found at garbage.speakupwinnipeg.com/what-weve-heard/expo/

PROMOTION

To provide a more interactive experience for residents, a new website was launched on SpeakUpWinnipeg.com. The new website features blog posts, videos, reports, information on public events and the opportunity to share comments publicly.

There were several press releases and news stories about Expo that helped to raise public awareness. Other ways that stakeholders were made aware of the Master Plan and Expo, and were directed to the web site, included:

- Print advertisements that ran in:
    - Winnipeg Free Press – November 6, 8, and 9; and December 1,7, and 8
    - The Winnpeg Sun – November 8 and 9
    - La Liberte – Wednesday, November 10
- Facebook advertisements – November 29 – December 20
    - 1,000,468 impressions and 143 click throughs
- A banner at the top of Winnipeg.ca

FEEBDACK

Public feedback was collected through:

- Phone market research survey conducted by NRG Research Group
    - From November 23 - December 3
    - 1,664 respondents
- A web-based survey linked from our web site:
    - From November 25 - December 14
    - 300 respondents
- Posts on our website – 58 posts
- Emails from our web form – 24 emails
- Phone calls through 311 Contact Centre – 9 calls

SURVEY METHODOLOGY

While the feedback collected through the phone market research survey is scientifically valid, the results from our web-based survey is not scientific and only a summary of responses.

Responses from our web-based survey are based on self-selecting respondents who are more likely to respond because they would like to express an opinion on the topic at hand. While these opinions are valuable, they cannot be viewed as representative of all Winnipeggers.

For a more representative reflection of the opinions of Winnipeggers, the phone survey responses are emphasized below to stress the greater weight their results hold.

RESULTS HIGHLIGHTS

Note that unsure responses have been excluded from the charts.

Garbage

"In an average week, how many bags of garbage do you put out – where a bag would be about the size of a green "Glad" bag?"

	Phone survey	Web-based survey
One bag	**50%**	64%
Two bags	**25%**	24%
Three bags	**11%**	8%
Four bags	**4%**	2%
Five or more	**6%**	1%

"There are currently four different ways that the City picks up residential garbage from single family homes. Manual collection at the curb, back lane AutoBin, automated cart collection and roll-out carts in AutoBin areas. Do you think the City should continue with these separate systems or have one system for all single family homes?"

	Phone survey	Web-based survey
One system for all single family homes	**41%**	44%
Keep it as is	**42%**	16%

"There has been some suggestion to limit the amount of garbage a household may dispose of in a week. How strongly do you support a limit on the amount of garbage collected as part of your weekly garbage pick-up?"

	Phone survey	Web-based survey
Support (strongly + somewhat)	**49%**	76%
Oppose (strongly + somewhat)	**46%**	23%

"Are you aware that household hazardous waste can be taken to a collection depot for free disposal?"[*]

	Phone survey	Web-based survey
Aware	**72%**	67%
Not Aware	**27%**	30%

Recycling

"Does your household/apartment participate in the City's recycling program?"

	Phone survey	Web-based survey
Aware	**90%**	94%
Not Aware	**8%**	4%

"How many blue boxes does your household have?"[*]

	Phone survey	Web-based survey
One	**32%**	25%
Two	**41%**	38%
Three or more	**25%**	20%

"Where do you keep your blue box?"[**]

	Phone survey	Web-based survey
In my garage	**37%**	22%
Outside	**28%**	21%
In the basement	**12%**	8%
On my porch	**7%**	17%
In my shed	**1%**	2%

Organics

"What do you normally do with organic waste materials from your kitchen? By organic waste I'm referring to things like vegetable peels, coffee grinds, eggshells and the like."[**]

	Phone survey	Web-based survey
Place in regular garbage	**68%**	47%
Compost in yard/Neighbour's yard	**23%**	54%
Put in my garburator	**11%**	8%
Dig into garden	**6%**	12%

"Does your household have and use a composter?"

	Phone survey	Web-based survey
Yes	**22%**	60%
No	**77%**	40%

[*] *Asked only to respondents who use blue boxes to recycle.*
[**] *Does not include "Other" responses. Question allows for multiple responses.*

"Would you be interested in having a curbside organic waste collection program? Household organics include all types of food waste (plate scrapings, bread/pasta, fruit and vegetable scraps, coffee grounds, eggshells) and yard materials like leaves."

	Phone survey	Web-based survey
Interested (very + somewhat)	**63%**	84%
Not interested (very + somewhat)	**31%**	13%

"How frequent should organic waste be collected in such a program?"

	Phone survey	Web-based survey
Year-round	**41%**	73%
Spring, summer and fall only	**29%**	10%
Spring and fall only	**10%**	5%
Summer months only	**6%**	0%

Landfill Maintenance

"The City currently maintains a landfill site at Brady Road, which is at the south end of the city. How familiar are you with Brady Road landfill?"

	Phone survey	Web-based survey
Very familiar	**30%**	27%
Somewhat familiar	**36%**	43%
Not very familiar	**24%**	28%
Never heard of	**10%**	1%

"How often, if ever, do you go to Brady Road landfill?"

	Phone survey	Web-based survey
Never been to the landfill	**44%**	39%
Less than once a year	**35%**	40%
About several times a year	**18%**	18%
About once a month or more	**2%**	1%

"Landfills have a limited lifespan for which they can operate. Brady Road currently has about 100 years before the City needs a new landfill. How concerned are you about the lifespan of the City's landfill?"

	Phone survey	Web-based survey
Very concerned	**13%**	19%
Somewhat concerned	**29%**	36%
A little concerned	**22%**	23%
Not concerned at all	**33%**	16%

General Issues

"Last year the City started Giveaway Weekends which take place the weekend before May long weekend and after September long weekend. Residents place unwanted items on their curb, mark them as "free", and anyone is free to take them. They were then asked: Did you participate in a Giveaway Weekend, and if so, how?"

	Phone survey	Web-based survey
Did not participate	**66%**	43%
Put items out	**22%**	29%
Both	**8%**	20%
Picked up items	**3%**	7%

"Currently the majority of the City's garbage and recycling is collected manually. What you do think of switching to automated cart collection?"

	Phone survey	Web-based survey
Support (strongly + somewhat)	**46%**	51%
Oppose (strongly + somewhat)	**42%**	34%

ATTACHMENTS

For further detail, please refer to the specific reports, available online at garbage.speakupwinnipeg.com:

- NRG Phase 1 Phone Survey Report
- NRG Phase 1 Web-link Survey Report

APPENDIX E-2

Garbage and Recycling Master Plan – Phase 2 Public Participation Report

Winnipeg

Water and Waste Department

GARBAGE AND RECYCLING MASTER PLAN – PHASE 2 PUBLIC PARTICIPATION REPORT

May 2011

For more information on this survey, please contact:

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Public Consultation & Research Officer
112 – 1199 Pacific Ave
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Fax: 204.986.3745
E-mail: tskomro@winnipeg.ca

BACKGROUND

City Council directed the City of Winnipeg to develop a Garbage and Recycling Master Plan before proposing any more changes to existing services. The vision and plan for the future of garbage and recycling services will be built through a six-month public participation process that is broken down into three phases:

Phase 1: Dialogue
The public process kicks off by talking about issues and looking at values, finding out how stakeholders would like to see our services in the future. A working vision will be created at the end of the phase.

Phase 2: Exploring
This phase starts exploring different service options and digs deeper into details. This phase will take the vision from Phase 1 and determine how we are going to get there.

Phase 3: Confirming
The final phase shares the Garbage and Recycling Master Plan and asks for final feedback.

Phase 2 of the process ran from March to April 2011.

PUBLIC FEEDBACK

Public feedback was collected in multiple ways throughout Phase 2:

- Phone market research survey conducted by Leger Marketing
    - From March 26 - April 20
    - 1,560 respondents
- A web-based survey linked from our web site:
    - From March 29 - April 11
    - 346 respondents
- An omnibus phone survey – 467 respondents
- Posts on our website – 154 posts
- Phone calls through 311 Contact Centre – 6 calls
- Emails from our web form or direct to staff – 49 emails
- Feedback forms and dotmocracy sheets that were available at eleven open houses and Home Expressions
    - 8 letters were handed in at the Open Houses
- Four round tables that focused on specific challenges and opportunities

Date	Open House Location	Attendance	Dotmocracy (varied per sheet)	Feedback Forms
Mon, Mar 14	Canad Inns Garden City, 2100 McPhillips St	64	28-38	35
Tues, Mar 15	Dakota Collegiate, 661 Dakota St	22	4-10	9
Wed, Mar 16	Sturgeon Creek CC, 210 Rita St	22	8-15	8
Thurs, Mar 17	Cindy Klassen Rec Complex, 999 Sargent Ave	55	22-38	21
Sat, Mar 19	Park City West CC, 115 Sandford Fleming Rd.	5	3-4	2
Sat, Mar 19	Bronx Park CC, 720 Henderson Hwy	33	15-25	17
Mon, Mar 21	École Henri Bergeron, 363 Enfield Cres	19	6-13	8
Tues, Mar 22	St. John's Leisure Centre, 601 Aikins St	29	13-26	14
Wed, Mar 23	Crescentwood CC, 1170 Corydon Ave	47	32-44	30
Thurs, Mar 24	St. Norbert CC, 3450 Pembina Hwy	30	17-23	17
Wed, Mar 30	Millenium Library, 251 Donald St	31	15-22	7
March 30 - April 3	Home Expressions, 375 York Ave (Convention Centre)	950	33-185	8

Date	Round Table Focus	Round Table Location	Attendance
Wed, Mar 23	Environment	Millenium Library, 251 Donald St	10
Mon, Mar 28	West End	Cindy Klassen Rec Complex, 999 Sargent Ave	5
Tues, Mar 29	North End	St. John's Leisure Centre, 601 Aikins St	3
Wed, Mar 30	Accessibility	Millenium Library, 251 Donald St	10

The City of Winnipeg also spoke to different interest groups at several events:

- Water & Waste Department's Annual Customer Seminar – January 25
- Professional Property Managers' Association (PPMA) – February 16
- Green Action Centre and Green Action Committee of the Unitarian church "Less Waste – More Resources" forum – March 30

PROMOTION

Activity continued on the website that was launched in Phase 1: SpeakUpWinnipeg.com. There were many blog posts, videos and reports around the options that will keep more than 50% of garbage out of the landfill.

There were several press releases and news stories about the options that helped to raise public awareness around Phase 2. Other ways that stakeholders were made aware of the Master Plan, and were directed to the website, included:

- Print advertisements that ran in:
    - Winnipeg Free Press – March 5, 8 and 12
    - The Winnipeg Sun – March 6 and 20
    - La Liberte – March 9
    - Canstar Community Newspapers – March 9
- Facebook advertisements – March 4 – April 10
    - 2,927,558 impressions and 1,279 click throughs
- A banner at the top of Winnipeg.ca

METHODOLOGY

While the feedback collected through the market research phone and omnibus phone surveys are more scientifically valid, the results from our web-based survey and from the feedback forms and dotmocracy sheets received from open houses are not scientific.

Responses from the open houses and from our web-based survey are based on self-selecting respondents who are more likely to respond because they would like to express an opinion on the topic at hand. While these opinions are valuable, they cannot be viewed as representative of all Winnipeggers.

For a more representative reflection of the opinions of Winnipeggers, the market research and omnibus phone surveys are emphasized below to stress the greater weight their results hold.

RESULTS SUMMARY

Note that unsure responses have been excluded from the charts. Questions are not exact, as they varied per feedback method.

Results are for support (strongly support + support) of option.

Recycling and Recovery

"The City is considering two options to increase recycling. How much do you support…?"

	Phone survey	Omnibus	Web-based survey	Open House
Continuing with Blue Box	**74%**	**32%**	69%	51%
Automated cart collection	**54%**	**63%**	50%	86%
Weekly cart collection	**N/A**	**42%**	N/A	N/A
Bi-weekly cart collection	**N/A**	**21%**	N/A	N/A

"How much do you support…?"

	Phone survey	Web-based survey	Open House
Establishing community drop-off depots	**91%**	94%	85%

Organic and Yard Waste

"The City is considering two options to collect yard waste. How much do you support…?"

	Phone survey	Web-based survey	Open House
Bi-weekly collection (from April to November)	**73%**	69%	71%
4 collections (2 in spring, 2 in fall)	**73%**	51%	67%

"How much do you support…?"

	Phone survey	Web-based survey	Open House
Collection of kitchen waste organics	**63%**	68%	73%

Garbage Collection

"How much do you support…?"

	Phone survey	Web-based survey	Open House
Implementing automated cart collection for garbage	**52%**	68%	79%
Phasing out AutoBins	**64%**	79%	72%

Bulky Waste Collection

"The City is considering three options for collecting bulky waste. How much do you support…? "

	Phone survey	Web-based survey	Open House
City-wide user fee for service	**53%**	56%	62%
Tax-supported service with no direct charge	**58%**	46%	49%
City discontinuing bulky waste service	**29%**	19%	12%

Brady Landfill

"How much do you support…?"

	Phone survey	Web-based survey	Open House
More onsite diversion programs at Brady Landfill	**79%**	84%	88%

ATTACHMENTS

For further detail, please refer to the specific reports, available online at garbage.speakupwinnipeg.com:

- Leger Phase 2 Phone Survey Report
- Leger Phase 2 Web-link Survey Report
- Omnibus Garbage and Recycling Plan Report
- Open House Feedback Form and Dotmocracy Report
- Open Comment Feedback Summary Report

APPENDIX E-3

Garbage and Recycling Master Plan – Phase 2 – Open Comment Feedback Summary

Winnipeg

Water and Waste Department

GARBAGE AND RECYCLING MASTER PLAN – PHASE 2 OPEN COMMENT FEEDBACK SUMMARY

May 2011

For more information on this report, please contact:

Justin Lee
SpeakUp on Garbage
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Ph: 204.451.4509
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E-mail: JustinLee@winnipeg.ca

BACKGROUND

Throughout the Phase 2 public participation process we received various forms of open comments. The following report is a summary of the responses that were collected from March 4 – May 9, 2011.

FEEDBACK SOURCE

Comments were captured from:

- **garbage.SpeakUpWinnipeg.com** – Through the Garbage and Recycling Master Plan Blog
- The *Contact Us* form on **garbage.SpeakUpWinnipeg.com**
- **Social Media** which included Facebook pages for *SpeakUpWinnipeg.com* and *City of Winnipeg - Water and Waste*, *Twitter* and *YouTube*
- Online **Earned Media** articles. Comments from online media sources such as *winnipegfreepress.com* were captured
- **Open House Letters** which consisted of written feedback received during the public open houses
- **Calls to 311** which were captured and submitted by the call centre staff

Feedback Source	Count
SpeakUpWininipeg.com Comments	154
Contact Form / Email	49
Social Media Comment Threads	30
Comments on Earned Media	26
Open House Letters	8
Calls to 311	6
Total:	**273**

METHODOLOGY

All open comment feedback points were monitored daily and entered into a database where they were indexed according to several major themes. All feedback was then read and summarized to produce this report. This report attempts to capture and summarize the majority of feedback from Phase 2, but does not reflect every single comment received.

FEEDBACK SUMMARY

Significant Theme	Mentions
Garbage Collection	115
Recycling	109
Composting (Kitchen Organics)	41
Bulky/Abandoned waste	28
Education	21
Depots / Deposits System	18
Yard waste	17
Implementation	15
ICI / C&D	14
Reduce and Reuse	12
Financing	11
Governance / Regulation	10
Landfills (including Brady) / Waste to Energy	10
HHW/E-Waste	9
EPR	9
Multi-Family / Renters	8
Health & Safety	6

Garbage Collection

- Elicited the highest amount of feedback
- Some comments on co-collection and frequency of pick-up
- Concern about the high replacement cost of the carts and defining whose responsibility for replacement or repair
- Comments for AutoBins vs. carts:
    - Carts will be stolen/vandalized
    - AutoBins capture a lot of neighbourhood waste as well as abandoned/illegal
    - Local residential waste will pile up in back lanes
    - AutoBins are the source of many problems, just get rid of them
    - AutoBins are easier to use for groups such as seniors
- Comments about the Carts included:
    - Difficult for seniors and persons with disabilities
    - Cart is too large or unsuitable for yard, back lane or garage
    - Carts are ill-suited for winter
    - Want smaller cart options
    - Likes their Cart now that they have them
    - Special events such as Christmas or spring clean-up are not accommodated by the Carts

Recycling

- Generally high support for blue automated recycling carts
- General consensus that we need to recycle more and increase the variety of materials accepted
- Current system problems include:
    - Litter
    - Damage to Blue Boxes
- Need for ICI and MFD recycling
- Reasons for keeping Blue Boxes:
    - Carts too big and challenging for some user-groups
    - Boxes are more flexible
- Need for greater education and behaviour change to get recycling on board
- Discussions on carrot vs. stick:
    - Make recycling more convenient (e.g. carts)
    - Fine or refuse to pickup garbage from people who don't set out recycling
- Several questions about the effectiveness of our recycling programs (philosophically whether the energy inputs into recycling make sense)
- Desire for a deposit return system

Composting (Kitchen Organics)

- Support for a Source Separated Organics (SSO) program
- Composting is done in the backyard so SSO is unnecessary
- SSO is too smelly/will attract pests and will not do it
- Desire for SSO sooner than later

Yard Waste

- Strong support for bi-weekly pickup and depots
- Many feel 2 spring + 2 fall collections is not enough
- Some mentions for community-based composting

Bulky / Abandoned Waste

- AutoBins attract illegal dumping/vandalism – get rid of them
- Concern that removing AutoBins will not change anything or make things worse
- Complaints that there is a lot of abandoned waste in their neighbourhoods
- Some discussion about the responsibilities of landlords if their tenants are not responsible
- Support for the bulky waste service and find the charge reasonable
- Some calls for "free" bulky waste collection
    - Possibly means "free" collection for abandoned waste
- Many do NOT want the City to stop providing the service
    - Potential confusion with bulky vs. abandoned waste service
- Suggestions for fall and spring clean-up/bulky waste collection days

Plan Implementation

- Most common feedback was that carts were not suitable for seniors or persons with disabilities
- Winter was a concern with respects to snow banks, shovelling and snow clearing in back lanes
- The need for incentive and community-based education programs
- Negative feedback on the carts - feel the carts are too big and there is no room for them in their yards
- These options, especially organics, should be implemented as soon as possible

Depots / Deposit System

- Support for Depots is mostly positive
- The need to divert durable and bulky good, and yard waste
- Depots must be accessible (transportation-wise)
- Multiple comments supporting a container deposit system or asking why we don't have one

Education

- Should be advertising our programs and how to better use them
- Need for a communication/education plan as part of implementation
- Need for more education on doing the 'right' thing
- Changing behaviour is key, not just awareness

Governance / Regulation

- Need for stronger enforcement re: abandoned Waste
- Need for government to move quicker
- Penalties / fines for not diverting

Financing

- Keep costs low and reasonable
- Some support a modest tax increase
- Some feel this should be funded through existing taxes
- Both aversion and support for a user-pay system (e.g. bag-limit overages)

Reduce & Reuse

- Many comments relating to reducing or reusing are cognisant of the waste hierarchy (i.e. Reduce and Reuse over Recycling)
- Comments related to the reuse of durable goods and construction material
- Reuse as social enterprise

ICI / C&D

- Need for businesses to divert their waste
- Large waste producers (e.g. fast food restaurants) need to do more
- Need to divert/re-use construction material

HHW/E-Waste

- Need for convenient and accessible locations for drop off
- Current system is not convenient

Extended Producer Responsibility (EPR)

- Manufacturers need to produce more durable goods and less packaging
- Manufacturers should bear full life-cycle costs
- Retailers should also serve as receivers of goods

Multi-Family / Renters

- Need for diversion programs with Multi-Family
- Questions about implementation for rental properties and responsibilities of landlords vs. tenants

Landfills / Waste-to-Energy

- General support of reducing the amount disposed
- Need for diversion at tipping face
- Interest in Waste-to-Energy potential

Health & Safety

- Split views on whether AutoBins reduce or increase illegal dumping, arsons, bedbugs, etc.

APPENDIX E-4

Brady Road Landfill Licensing
Public Participation Report

Winnipeg

Water and Waste Department

BRADY ROAD LANDFILL LICENSING
PUBLIC PARTICIPATION REPORT

November 2011

For more information on this survey, please contact:

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TABLE OF CONTENTS

BACKGROUND

Overall Public Participation Strategy

Brady Road public consultations took part in two stages:

1. From November 2010 to September 2011 – over the course of the Garbage and Recycling Master Plan consultations
2. October to November 2011 – the final stage before the environment licence application

Public Participation – Garbage and Recycling Master Plan

City Council directed the City of Winnipeg to develop a Garbage and Recycling Master Plan before proposing any more changes to existing services. The City of Winnipeg also used this opportunity to integrate the process of obtaining a licence for Brady Road to provide a complete look at our systems.

The vision and plan for the future of garbage and recycling services will be built through a six-month public participation process that is broken down into three phases:

Phase 1: Dialogue
The public process kicks off by talking about issues and looking at values, finding out how stakeholders would like to see our services in the future. A working vision will be created at the end of the phase.

Phase 2: Exploring
This phase starts exploring different service options and digs deeper into details. This phase will take the vision from Phase 1 and determine how we are going to get there.

Phase 3: Confirming
The final phase shares the Garbage and Recycling Master Plan.

To provide a more interactive experience for residents, a new website was launched on SpeakUpWinnipeg.com. The new website features blog posts, videos, reports, information on public events and the opportunity to share comments publicly. A video tour of Brady Landfill was created and can be found online:
http://garbage.speakupwinnipeg.com/2010/11/brady-road-landfill/

CONCLUSIONS

Over four-in-ten stakeholders felt that they were not as informed about Brady Road Landfill as they would like to be. Based on feedback received and questions asked during the Public Meeting, it is recommended that further information about Brady Road Landfill be added to the website:

- Brady Road lifespan and timeline of plans
- Organics processing
- Information on how to deal with odour and litter complaints
- Treatment of leachate and handling of biosolids
- Methane capture use
- Expansion of waste reduction activities

There was also a strong response from stakeholders indicating that they wanted to be kept informed of progress on Brady Road Landfill plans. It is recommended that:

- A bi-annual update newsletter be sent to surrounding homes and interested stakeholders.
- Public meetings or open houses be held in the community at key milestones.
- Open houses be held at Brady Road Landfill to educate the public on its role in waste management and diversion, and to provide transparency for its operations.

While it was suggested that the City form a Stakeholder Advisory Committee, comprised of selected residents and interested stakeholders, who would provide input on the project while being a conduit to the community, past experience has shown that these committees work best when there are specific issues that need to be addressed. This would not be the best way to work with the community as a whole on future project plans.

The public meeting was very well attended; however, the meeting facility and structure could have been better set up to accommodate an unexpected larger number of participants. To ensure future public meetings run more smoothly, the City will consider pre-registration of participants, while still welcoming walk-ins.

In working with an independent moderator there was a difference in expectations of how the meeting would be conducted, which could have been avoided had there been clearer communication between the City and the moderator. In the future, the City will work more closely with any moderator to ensure that both parties' expectations are met and meetings are ran the best way possible.

STAGE 1: BRADY LANDFILL PHASE 1 FEEDBACK

On November 13, 2010, the City of Winnipeg hosted the Speak Up on Garbage Expo to kick off the six-month public participation process for the Garbage and Recycling Master Plan.

At the Expo, participants had an opportunity to:
• share their vision on what the future of garbage and recycling services should look like in Winnipeg,
• hear comments and presentations from a panel with expertise in waste management,
• participate in round table discussions on the topics of their choice (e.g., curbside organics collection, recycling, garbage services, Brady Road Landfill).

In addition feedback items were received through SpeakUpWinnipeg.com, social media initiatives and comments on earned media (e.g winnipegfreepress.com).

The strongest themes found in the feedback related to the need to reduce the amount of waste being disposed of at Brady Landfill through diversion programs. This included:

- Increased options for the separation of waste at the landfill for further diversion and material recovery.
    - This would include materials such as lumber, bulky waste, construction material, household hazardous and electronic waste at the Landfill
- Brady as “industrial park” with businesses that divert and recycle products on-site and then sell them
- A tipping fee structure that promotes greater diversion
- Exploring energy from waste options
- Stronger education about the Landfill

Phase 1 Surveys – Background & Methodology

Public feedback was collected through:

- Phone market research survey conducted by NRG Research Group
    - From November 23 - December 3, 2010
    - 1,664 respondents
- A web-based survey linked from our web site:
    - From November 25 - December 14, 2010
    - 300 respondents

Winnipeg residents were asked about their waste management habits, perceptions, service type and satisfaction. The sections of the survey related to Brady Road landfill are discussed in this report.

The confidence interval for the phone survey of over 1,600 respondents is +/-2.5 percent 19 times out of 20.

While the feedback collected through the phone market research survey is scientifically valid, <u>the results from our web-based survey is not scientific and only a summary of responses.</u>

Responses from our web-based survey are based on self-selecting respondents who are more likely to respond because they would like to express an opinion on the topic at hand. While these opinions are valuable, they cannot be viewed as representative of all Winnipeggers.

For a more representative reflection of the opinions of Winnipeggers, the phone survey responses are emphasized below to stress the greater weight their results hold.

Phase 1 Surveys – Brady Landfill

Near the start of the survey respondents were asked to rate the importance and satisfaction on a series of waste management activities: garbage collection, recycling collection, landfill maintenance, and composting program. Using a 10 point scale, the results for landfill maintenance are provided:

Landfill maintenance: Importance	**Phone survey**	Web-based survey
Top box (8-10 score)	**68%**	68%
Mid box (5-7 score)	**23%**	25%
Low box (1-4 score)	**4%**	5%

Landfill maintenance: Satisfaction	**Phone survey**	Web-based survey
Top box (8-10 score)	**27%**	9%
Mid box (5-7 score)	**41%**	38%
Low box (1-4 score)	**10%**	15%

The next question asked about the landfill was: *The City currently maintains a landfill site at Brady Road, which is at the south end of the city. How familiar are you with Brady Road landfill?* As the figure below shows, about two-thirds of respondents are at least somewhat familiar with the Brady landfill.

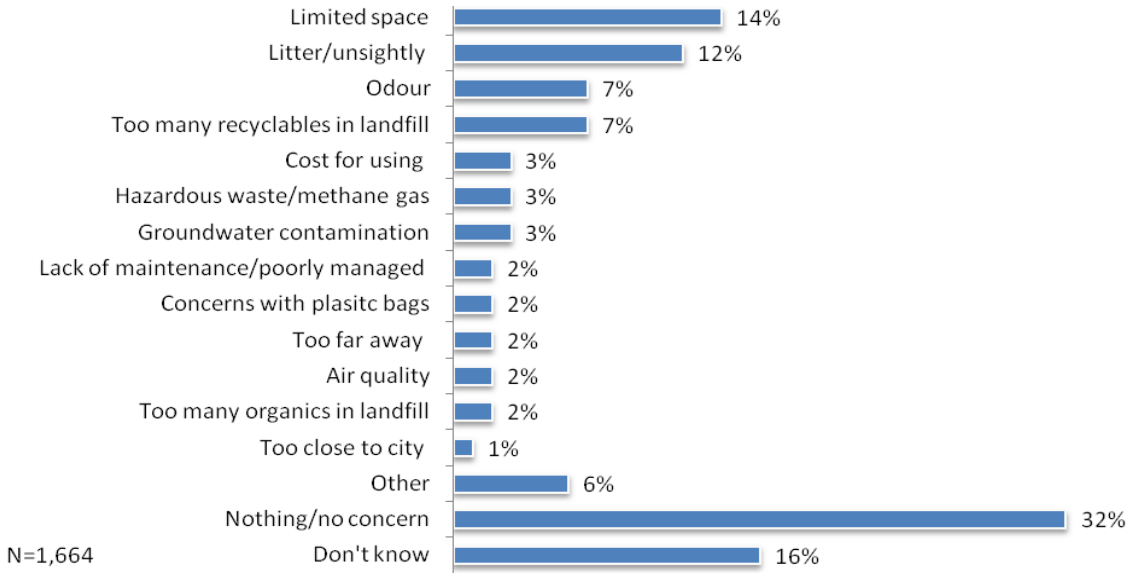
	Phone survey	Web-based survey
Very familiar	**30%**	27%
Somewhat familiar	**36%**	43%
Not very familiar	**24%**	28%
Never heard of	**10%**	1%

Respondents, who had any familiarity of Brady Landfill, were asked: *How often, if ever, do you go to Brady Road landfill?*

	Phone survey	Web-based survey
Never been to the landfill	**44%**	39%
Less than once a year	**35%**	40%
About several times a year	**18%**	18%
About once a month or more	**2%**	1%

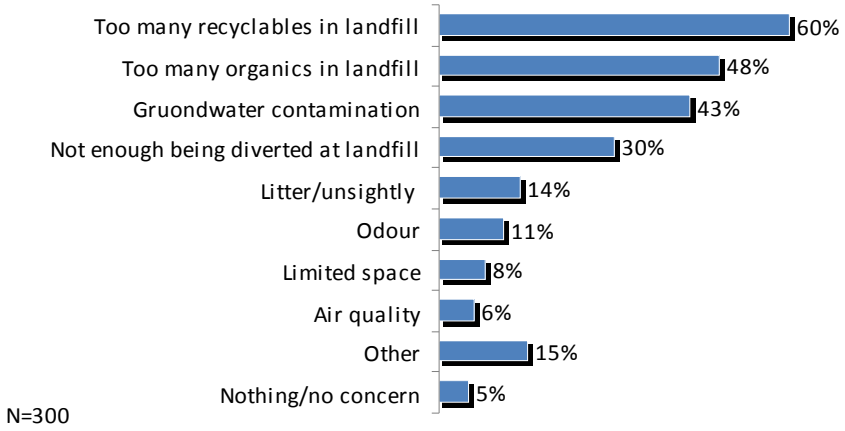
Respondents were asked: *What are your main concerns regarding Brady Road landfill?*

Brady Landfill Concerns – Phone survey Open-ended question



*Totals will exceed 100% due to multiple responses

Brady Landfill Concerns – Web-based survey Closed-ended question (up to three mentions)



*Totals will exceed 100% due to multiple responses

Respondents were provided the following background information pertaining to Brady Landfill: *Landfills have a limited lifespan for which they can operate. Brady Road currently has about 100 years before the City needs a new landfill.* They were then asked: *How concerned are you about the lifespan of the City's landfill?* Most respondents (55%) were not very concerned about Brady Road's lifespan.

	Phone survey	Web-based survey
Very concerned	**13%**	19%
Somewhat concerned	**29%**	36%
A little concerned	**22%**	23%
Not concerned at all	**33%**	16%

STAGE 1: BRADY LANDFILL PHASE 2 FEEDBACK

Phase 2 of the process ran from March to April 2011.

Public feedback was collected in multiple ways throughout Phase 2:

- Phone market research survey conducted by Leger Marketing
  - From March 26 - April 20, 2011
  - 1,560 respondents
- A web-based survey linked from our web site:
  - From March 29 - April 11, 2011
  - 346 respondents
- Posts on our website
- Phone calls through 311 Contact Centre
- Emails from our web form or direct to staff
- Feedback forms and dotmocracy sheets that were available at eleven open houses and Home Expressions

Date	Open House Location	Attendance	Dotmocracy (varied per sheet)	Feedback Forms
Mon, Mar 14	Canad Inns Garden City, 2100 McPhillips St	64	28-38	35
Tues, Mar 15	Dakota Collegiate, 661 Dakota St	22	4-10	9
Wed, Mar 16	Sturgeon Creek CC, 210 Rita St	22	8-15	8
Thurs, Mar 17	Cindy Klassen Rec Complex, 999 Sargent Ave	55	22-38	21
Sat, Mar 19	Park City West CC, 115 Sandford Fleming Rd.	5	3-4	2
Sat, Mar 19	Bronx Park CC, 720 Henderson Hwy	33	15-25	17
Mon, Mar 21	École Henri Bergeron, 363 Enfield Cres	19	6-13	8
Tues, Mar 22	St. John's Leisure Centre, 601 Aikins St	29	13-26	14
Wed, Mar 23	Crescentwood CC, 1170 Corydon Ave	47	32-44	30
Thurs, Mar 24	St. Norbert CC, 3450 Pembina Hwy	30	17-23	17
Wed, Mar 30	Millenium Library, 251 Donald St	31	15-22	7
March 30 - April 3	Home Expressions, 375 York Ave (Convention Centre)	950	33-185	8

Among the various free-form methods to comment, the summary of the feedback received on Brady Landfill included:

- General support of reducing the amount disposed
- Need for diversion at tipping face
- Interest in Waste-to-Energy potential

Phase 2 Surveys – Background & Methodology

Winnipeg residents were asked their opinion on the options being considered as part of the Garbage and Recycling Master Plan; as well as the usage, habits, perceptions and satisfaction of waste management services. The sections of the survey related to Brady Road landfill are discussed in this report.

The confidence interval for the phone survey of 1,560 respondents is +/-2.5 percent 19 times out of 20.

While the feedback collected through the market research phone survey is more scientifically valid, the results from our web-based survey and from the feedback forms and dotmocracy sheets received from open houses are not scientific.

Responses from the open houses and from our web-based survey are based on self-selecting respondents who are more likely to respond because they would like to express an opinion on the topic at hand. While these opinions are valuable, they cannot be viewed as representative of all Winnipeggers.

For a more representative reflection of the opinions of Winnipeggers, the market research phone survey is emphasized to stress the greater weight their results hold.

Phase 2 Surveys – Brady Landfill

Near the start of the survey respondents were asked to rate the importance and satisfaction on a series of waste management activities: garbage collection, recycling collection, landfill maintenance, and composting program. Using a 10 point scale, the results for landfill maintenance are provided:

Landfill maintenance: Importance	**Phone survey**	Web-based survey
Top box (8-10 score)	**67%**	71%
Mid box (5-7 score)	**30%**	22%
Low box (1-4 score)	**3%**	3%

Landfill maintenance: Satisfaction	**Phone survey**	Web-based survey
Top box (8-10 score)	**29%**	11%
Mid box (5-7 score)	**67%**	77%
Low box (1-4 score)	**4%**	9%

The next question asked about the landfill was: *The City currently maintains a landfill site at Brady Road, which is at the south end of the city. How familiar are you with Brady Road landfill?* As the figure below shows, about three-quarters of respondents are at least somewhat familiar with the Brady landfill.

	Phone survey	Web-based survey
Very familiar	**40%**	36%
Somewhat familiar	**32%**	38%
Not very familiar	**16%**	22%
Never heard of	**11%**	3%

Respondents, who had any familiarity of Brady Landfill, were asked: *How often, if ever, do you go to Brady Road landfill?*

	Phone survey	Web-based survey
Never been to the landfill	**43%**	39%
Less than once a year	**36%**	46%
About several times a year	**19%**	13%
About once a month or more	**2%**	2%

Respondents were asked: *How much do you support the following opportunities to be built at Brady Landfill?*

A composting facility that would produce material that could be sold, given to the public, or used on City property	**Phone survey**	Web-based survey
Strongly support	**61%**	65%
Somewhat support	**23%**	23%
Neutral	**8%**	10%
Somewhat oppose	**2%**	1%
Strongly oppose	**2%**	0%

An industrial "green" park for local industries that would remake the materials on site to reusable items for sale	**Phone survey**	Web-based survey
Strongly support	**53%**	54%
Somewhat support	**28%**	28%
Neutral	**10%**	15%
Somewhat oppose	**1%**	1%
Strongly oppose	**2%**	0%

Respondents were provided the following background information pertaining to potential changes at Brady Landfill: *The City is considering changing the focus of Brady Landfill to allow for more onsite diversion programs, which could include a depot for hazardous waste, electronic waste, construction materials, reusing materials and the like.* They were then asked: *How supportive are you of such changes?* Most respondents (80%) were supportive of such changes.

	Phone survey	Web-based survey
Strongly support	**53%**	54%
Somewhat support	**27%**	30%
Neutral	**9%**	12%
Somewhat oppose	**2%**	1%
Strongly oppose	**3%**	1%

At the Open Houses, respondents were also asked provide feedback on *how much they supported green opportunities at Brady Landfill.* Green opportunities summarized the following opportunities:

- Community depot for recycling and reusing material
- "Green Park" for local industries that would remake the materials on site into reusable items for sale
- Composting facility that would produce material that could be sold, given to the public, or used on City property

	Open House
Strongly support	78%
Somewhat support	10%
Neutral	7%
Somewhat oppose	1%
Strongly oppose	3%

N=221

STAGE 2 BRADY LANDFILL FEEDBACK

City staff were be available to share information and welcome feedback on the future of Brady Landfill and the environmental impact assessment at:

- A public meeting – October 27, 2011, 6:30pm-8:30pm, St Norbert Community Centre – 3450 Pembina Hwy
- The Green Lifestyle and Natural Living Show – October 22nd & 23rd, 2011, Winnipeg Convention Centre

Information about Brady Road was posted on the website:
http://garbage.speakupwinnipeg.com/2011/10/the-future-of-brady-road-landfill/

A press release and news stories helped to raise public awareness of the event. Other ways that stakeholders were made aware of the public meeting, and were directed to the website, included:

- Print advertisements that ran in:
    - Winnipeg Free Press – October 20 and 22
    - Canstar Community Newspaper (Sou'wester) – October 19
- Over 6,200 invitation letters were mailed to neighbouring residents
- Several invitations were e-mailed directly to stakeholder groups, including the RM of MacDonald
- Garbage and Recycling Master Plan eNewsletter was e-mailed to over 260 subscribers
- A button on the front of Winnipeg.ca linking to the project web page

Over 140 stakeholders attended the public meeting.
92 e-mails were collected during the consultation process. These emails will be used in future communications around Brady Road Landfill progress.

Public feedback was collected in multiple ways throughout stage 2:

- Feedback forms were available:
    - At the public meeting – 68 respondents
    - Online on our website – 19 respondents
- Posts on our website
- Phone calls through 311 Contact Centre
- Emails from our web form or direct to staff

Stage 2 Summary of Comments

Among the various free-form methods to comment, below is a summary of the feedback received along with responses (where applicable).

DATE RECEIVED	COMMENT	RESPONSE
Oct 20/11	I am extremely pleased that a public meeting is being held to discuss the future of Brady Road Landfill. I understand the reasoning for the meeting to be held at the St. Norbert Community Centre due to it being nearby areas commonly 'affected' by the landfill, however I am wondering if these public meetings will be extended to other areas of the City of Winnipeg, such as the Northwest area, as travelling by bus (as vehicles are not always available to residents in this area) will also be offered. I would love to have a public meeting in the NW area of the City and even one in the NE area of the City available so that everyone is able to hear the presentation, learn about the facility and what is done with our waste and offer our comments.	Over the course of the Garbage and Recycling Master plan's public consultation, which was held from November 2010 to September 2011, we discussed the future of Brady. With feedback received we are now in the final stages of our environment licence application. There two public opportunities to learn more about the future of Brady Road landfill: * A public meeting - October 27, 2011, 6:30pm-8:30pm * The Green Lifestyle and Natural Living Show - October 22nd & 23rd, 2011 (please note, there is an admission fee) Otherwise, you can review the material that will be presented on our website: http://garbage.speakupwinnipeg.com/2011/10/the-future-of-brady-road-landfill/ On the website you can submit comments and provide any questions about the plan that you would like us to answer. As well, within the next week there will also be a short survey to solicit feedback. If you would still like to meet with someone to discuss the plans we could always have someone phone you or potentially set up a meeting.

Oct 20/11	Is it possible to get a copy of the EIA (Environmentl Impact Assessement) for review? Or is it posted to be viewed somewhere publicly?(I can't seem to find it with an Internet search or the city website) As much as I trust Stantec I would like to make my own conclusions concerning how they came up with their Key findings of the EIA performed on the Brady road Landfill site...	The full EIA will be available once the licensing proposal has been filed with the Province by year's end, at which time the Province will place it in the public registry for review and comments.
Oct 21/11	Just read the new proposed plans for Brady and they seem good. As I read the material removed from Brady, such as glass, metal, wood etc, I wondered how do you do that with the everyday garbage and not the construction material that must also be brought there? Should have a video showing the general public how it is done NOW. Also for the composting idea, suggest that as an incentive to our citizens who are not sure of this idea, give a citizen a bag of free compost every second year (takes a while to make and the demand might be higher than supply) so that they can actually see the real results of composting. To help facility this, have various locations in Wpg, to make it customer friendly and accessible. Can't use Brady as the location, as the only ones who would go there for this would be the local area. I live in the EK area, and I would rather donate my compost material to a non profit organisation or a community garden area etc.	The new plans at Brady initially involve dealing differently with small loads, which are mostly self-hauled by residents. These loads now are buried in a separate area in the landfill. Currently, the only materials that can be dropped off for recycling at Brady include metal appliances, bicycles or tires. The new plans call for all small self-hauled loads to be directed to a Community Resource Recovery Centre (CRRC) to be located near the Brady site entrance. At the CRRC, residents will be able to segregate a number of categories of materials (e.g. appliances, used construction materials, landscaping waste, household hazardous waste, electronic waste, tires, bicycles, etc.) into bins and/or piles, and these materials will then be recycled as much as possible. A separate area at Brady will be developed for diverting large commercial loads of materials that can be recycled such as construction waste (drywall, wood, shingles, concrete), tires, landscaping waste, soil and possibly cardboard. Your idea of offering compost to the public is a good one and is a practice which communities normally follow. There are four CRRC's planned for Winnipeg, one in each sector of the City (with the first one being at Brady) and these would be convenient locations to use for pickup of this material by residents. The idea of using videos to show the public how the systems operate is a good one and will be considered.

Oct 24/11	I believe that a Rec park is the best solution for Brady landfill and should include a ski and snowboard hill in the wintertime so that our children and adults have a place close to home to enjoy the outdoors.	No response required.
Oct 24/11	Count the aluminum cans! Environmental alright! What is this from Honest Vandal?	No response required.
Oct 24/11	I live in the new development of Bridgwater Forest and am appauled at the amount of waste from each home construction that goes to Brady Land Fill. There is tonnes of new lumber that is discarded because it is overage for the build or there are large pieces of lumber that could be used or resold ie. a 12ft 2X6 that has had 5 feet cut off of it and the remaining 7 feet discarded. there are hundreds of uses for such material. The builders are regulated by MRHC to have bins for each build however, there should be 3 bins. Recyclables (cardboard) wood (big and small could be recycled if large enough or shredded for use on pathways or landscaping or composting) and the third bin for garbage. Take a drive through any new area in the city and you will see waste that is deplorable. What about the amount of materials that are not contained by the bins and blown across the landscape, how is this not considered an environmental impact when you have pieces of plastic, tar paper, insulation, cardboard blowing across the area into fields, waterways, forest and property. After living at my property for a year I estimate that I collect 1-2 garbage bags of material off the boulevard and my yard on a weekly basis that has not been contained by the bins. Why is the excess lumber not collected and given to Habitat for Humanity to either resell (at their re-sell store) or used in the construction of homes. Take a drive through Sage Creek, South Pointe, Bridgwater Forest, Cantebury Park etc etc.....	No response required.

Oct 24/11	Why is it always the northend? As soon as there is a problem even down to garbage disposal there is comments about the northend. I haul garbage daily and i see bins and yards that are full all over the city.. Maybe the northend's garbage problem would be solved if the city would have more pick up days. But then again who am i to talk i'm just the owner of "First Nation Sensation Moving & Hauling". What do i know i live downtown! ;)	No response required.
Oct 25/11	Instead of big centralized trucks moving all that organic waste around it would be much more efficient to start composting programs in schools and community clubs, get people to compost in their backyards, put leaf mulch back into their flowerbeds. I shouldn't have to pay taxes to support a big heavy inefficient approach that involves huge trucks driving all over the city and wearing down the infrstructure. You can't be serious about community gardens at the landfill, it stinks, it's not easily accessible, who knows what's in the soil. This plan seems to take the current system and try to tweek it using buzz words and 90s approaches. Winnipeg would benefit much more from engaging and educating citizens directly about returning organics to the soil. I've managed to do so by having my neighbors give me their organic waste and wouldn't be surprised if I am net 50-75 bags per year more than our household throws out, all in one small backyard, no tax money or required.	Your suggestion of backyard and community-based composting would be an ideal solution for dealing with organics and we commend your personal efforts in this regard. However, we are not aware of any large cities with significant organics diversion that rely solely on this means of composting. We certainly would like to see this happen and will be continuing to promote composting at source, but believe that curbside collection and centralized composting will be required to achieve the magnitude of diversion targeted under our master plan. Furthermore, our public consultations over the past year indicate that there is public support for our approach. If community gardens were to be located at the Brady Landfill, they would be located on natural soils separate from the actual landfill operation. However, this is just an idea at this point and the purpose of floating this idea is to get feedback such as yours. We hope that this response answers your questions and thank you for your comments.

Oct 25/11	I live on Point West Drive very close to the Brady Landill and I have 2 comments. 1. The stench from it is disgusting. We moved here 9 years ago and then only a few days a year we could smell it, mostly in the spring but the last few years the stench has been happening for many many days a year all year round. This summer most evenings it was so disgusting we couldn't even sit outside. 2. Waverley from Bison Drive to the perimeter is getting so rough from all the large truck traffic and the amount of garbage left in the ditches has been disgusting. Wasn't the city to extend Kenaston to go directly to Brady Road ? I see the environment impact says the smell will be improved so I sure hope so as it has become much worse in the last couple of year.	Re: 1. Improved odour control is a key focus in the improvements at Brady. Currently we are carrying out a new method of covering the waste on a frequent basis that so far is proving to be effective in controlling odour. Furthermore, there are upcoming changes that will help to control odours, including the following: • Monitoring odours at the perimeter of the site on a regular basis, especially under adverse wind conditions to identify any significant odours and to allow for early action to mitigate the odours at the source • Moving towards one smaller operating area which will result in less exposed garbage • Moving the future operation further south • Installing a landfill gas collection and flaring system • Composting of some of the more odour producing organics such as kitchen waste organics and biosolids Re: 2. Work is underway to extend Kenaston south to a new intersection on the Perimeter Highway. As part of the 4-laning of Waverley Street, after traffic moves onto the new lanes the old Waverley pavement will be resurfaced between Bison and Sandusky. South of Sandusky, Waverley Street will be realigned to head west to connect with the new Kenaston extension. The section of Waverley between Kirkbridge and Point West will be converted to a residential collector street (part of Tim Sale Drive) and will be rehabilitated as the residential development proceeds. This section will be removed from the truck route network and the current access to the Perimeter highway will be closed. When this happens garbage truck traffic coming from the north will use Kenaston or the realigned 4-lane Waverley Street and will no longer travel next to the Richmond West neighbourhood.

Oct 25/11	I have lived in Richmond West for the past 15 years. When I moved here there was never a smell from the Brady Landfill. Over the past few years the smell has become increasingly noticeable and noxious. We are fortunate in that we live south EAST of the the dump, but we will not consider buying a house in Waverly West because of the landfill and the horrible odor that is regularly wafting over the neighborhoods directly south of the site. There have been days when we have a rare east wind and the smell has been absolutely disgusting and I have found myself quite upset by it. If the landfill must remain there, then better management of it is certainly required so that this problem is eliminated. This is air pollution. My brother lives in the country and has been very surprised that what has been rejected at country dump sites is accepted at Brady, particularly large dead animals. He has hauled dead horses there. I was surprised by that as well.	Improved odour control is a key focus in the improvements at Brady. Currently we are carrying out a new method of covering the waste on a frequent basis that so far is proving to be effective in controlling odour. Furthermore, there are upcoming changes that will help to control odours, including the following: • Monitoring odours at the perimeter of the site on a regular basis, especially under adverse wind conditions to identify any significant odours and to allow for early action to mitigate the odours at the source • Moving towards one smaller operating area which will result in less exposed garbage • Moving the future operation further south • Installing a landfill gas collection and flaring system • Composting of some of the more odour producing organics such as kitchen waste organics and biosolids Brady is in fact allowed to accept dead animals from most sources and the burial of these animals is carried out in a separate area. Odours from this operation are also expected to be reduced with the new cover practice mentioned earlier.
Oct 25/11	Wow, I can't believe nobody has commented. Well, a lot of the ideas are good though I don't know if the best place for a sports field is right beside the garbage pile. I figured somebody would say something about the $50 fee!	No response required.

Oct 26/11	This site is too close to residents and should be shut down and new facility should be located North of the city where development will not approach for 50 years.	When the Brady site opened in 1973, it was remote from residents. In 1985, when the decision was made for Brady to be the only City-operated active landfill, it was still relatively remote from residents. Since that time residential developments have continued to move closer to Brady. With the planned changes at Brady, the garbage burial operation will progressively move further from residential developments and with more waste diversion, smaller operating areas and improved operations will be implemented. These changes will minimize impacts from the operation on residents. Brady is located on an ideal site for an environmental and waste containment standpoint. The study leading up to the 1985 decision was only able to identify one potential site to the north within a reasonable haul distance. This site was not recommended since the soil and groundwater conditions required for a landfill were inferior to Brady and it was located outside of the City of Winnipeg proper.
Oct 27/11	I like the idea of a recreational area and wetlands. I can't imagine anyone paying $500000-1M for the new homes going up in Waverly West want to look out of their windows and have a dump for their view! Does anyone know when this project is to be completed? I live by the dump so I'm pretty excited to see the changes!	The present landfilling operation will only be visible to nearby residents for about another 5 years. Within this time, the operation will become more compact, berms (dykes) will be used to screen the operation, and landscaping of finished slopes will be underway. Also, operational improvements such as more frequent covering of waste and gull control will help to make the operation less obvious. There is sufficient capacity at Brady for at least 100 years. In spite of this, the objective is to continuously work towards reducing garbage burial requirements. Council’s recent approval of the garbage and recycling master plan is a commitment to this direction.

Oct 27/11	There is a meeting tonight in St Norbert re. the future of Brady. Will there be similar meetings in say Transcona, North Kildonan, West Kildonan, St. James etc. etc.?? If not why not??	Over the course of the Garbage and Recycling Master plan's public consultation, which was held from November 2010 to September 2011, we discussed the future of Brady. With feedback received we are now in the final stages of our environment licence application. There were two public opportunities to learn more about the future of Brady Road landfill: • A public meeting – October 27, 2011, 6:30pm-8:30pm • The Green Lifestyle and Natural Living Show – October 22nd & 23rd, 2011 Otherwise, you can review the material that will be presented on our website: http://garbage.speakupwinnipeg.com/2011/10/the-future-of-brady-road-landfill/ On the website you can submit comments and provide any questions about the plan that you would like us to answer. As well, there is a short survey to solicit feedback. If you would still like to meet with someone to discuss the plans we could always have someone phone you or potentially set up a meeting.

Oct 30/11	The Brady Road Landfill site is too close to the new Waverly West development, Richmond West and St. Norbert. This year the garbage smell travelled to these neighbourhoods on a regular basis. I am not sure what the independent consultants were measuring when they say "Instances of odour are short-lived and not routine". Maybe they only spent a couple days in the area but as a resident who lives in the surrounding neighbourhood the smell seemed to be a weekly problem. I think any garbage disposal site should be a lot further from residential neighbourhoods.	When the Brady site opened in 1973, it was remote from residents. In 1985, when the decision was made for Brady to be the only City-operated active landfill, it was still relatively remote from residents. Since that time residential developments have continued to move closer to Brady. With the planned changes at Brady, the garbage burial operation will progressively move further from residential developments and with more waste diversion, smaller operating areas and improved operations will be implemented. Improved odour control is a key focus in the improvements at Brady. Currently we are carrying out a new method of covering the waste on a frequent basis that so far is proving to be effective in controlling odour. There are also upcoming changes that will help to control odours, including: -Monitoring odours at the perimeter of the site on a regular basis, especially under adverse wind conditions to identify any significant odours and to allow for early action to mitigate the odours at the source -Moving towards one smaller operating area which will result in less exposed garbage -Moving the future operation further south -Installing a landfill gas collection and flaring system -Composting some of the more odour producing organics such as kitchen waste organics and biosolids under controlled conditions

Nov 3/11	WE WERE UNABLE TO ATTEND THE MEETING OCT 27 AT THE COMMUNITY CENTRE,DUE TO OUR KIDS GAMES BUT JUST WANT TO LET YOU KNOW WHATEVER YOU ARE DOING AT THE GARBAGE DUMP IS NOT WORKING,WE HAVE BEEN LIVING AT 220 LEMAIRE ST.FOR THE LAST 17 YEARS AND THE SMELL COMMING FROM THE LANDFILL HAS NEVER NEVER BEEN AS BAD AS IT IS RIGHT NOW AS SOME DAYS WE CAN'T EVEN OPEN OUR WINDOWS,WE NEVER SMELLED IT LIKE WE DO NOW. PLEASE DO SOMETHING ABOUT IT	One of the causes for increased odors since january of this year is our receipt of biosolids. Due to changes in provincial regulations biosolids can no longer be land applied as fertilizer. As a result we receive all of the biosolids generated at the treatment plants. We apply the biosolids in thin layers and cover them with the Municipal Solid Waste (MSW) that we receive. However, during certain times of the year the volume of MSW is not enough to cover all of the biosolids which leads to odors. Last week we were having to excavate some old waste to repair a slide along the north perimeter and any time we have to move old waste significant odors are released, this in conjunction with west winds resulted in strong odors for much of last week. That work is now complete. We are working on several fronts to reduce odors as we move forward. First, we have recently started applying straw at the end of each day to the active face and any exposed biosolids, which significantly reduces odors. Secondly, we will be extracting and flaring landfill gas. There will be no visible flame, but the system will place the landfill under negative pressure which will greatly assist in reducing odors. Lastly our active area of the landfill is steadily moving further west. Increased distance from St Norbert allows greater time for odors to dissipate. If you have future odor concerns please contact me directly.

Nov 3/11	I am a recent resident of the new Waverley West development and we paid a sizeable sum of money for our brand new home. I was assured time and time again by the Ladco Developers, as well as my builder, that living close to Brady Landfill would not be a problem when we built our home. I was told the landfill would be moving further south next year and that there were no reported odours from residents in the area. This summer we could smell landfill odour on a weekly basis and on occassion we had to move our activites inside because the smell became too strong. Our property taxes have recently been assessed at $6,000 per year, so I would hope that for all the property taxes we are paying the city will do whatever it takes to eliminate the odour, reduce methane gas emissions for our general health and the environment, and obstruct the view of the landfill. I love the area we live in due to it's proximity to our everyday activities and our new neighbours are wo nderful, the landfill is our only concern at this time. I am curious to know why the landfill smell is worst in the evening? Is a lot of garbage buried at this time?	With the planned changes at Brady, the garbage burial operation will progressively move further from residential developments and with more waste diversion, smaller operating areas and improved operations will be implemented. The present landfilling operation will only be visible to nearby residents for about another 5 years. Within this time the operation will become more compact, berms (dykes) will be used to screen the operation and landscaping of finished slopes will be underway. Also, operational improvements including more frequent covering of waste and gull control will help to make the operation less obvious. Improved odour control is a key focus in the improvements at Brady. Currently we are carrying out a new method of covering the waste on a frequent basis that so far is proving to be effective in controlling odour. Furthermore, there are upcoming changes that will help to control odours, including the following: -Monitoring odours at the perimeter of the site on a regular basis, especially under adverse wind conditions to identify any significant odours and to allow for early action to mitigate the odours at the source -Moving towards one smaller operating area which will result in less exposed garbage -Moving the future operation further south -Installing a landfill gas collection and flaring system -Composting under controlled conditions, some of the more odour producing organics such as kitchen waste organics and biosolids We are not exactly sure why the landfill odour would be worst in the evening. This is not because more garbage is being buried at this time, but may be related to cover operations being completed at the end of the work day and odours not being dissipated until the cover is completely in place. In any event the changes referred to earlier should improve this situation.

Nov 3/11	Brad Road is spewing garbage and litter thoughout the entire area. Plastic bags are blowing across farm fields for miles, and now can be seen as far away as Oak Bluff. The highway is lined with trash that falls off trucks enroute to the dump. The fences along the dump do nothing to stop light materials from being blown away. It is a disgusting eyesore, especially in this day and age. Obviously no realistic thought given to future planning of the city. The smell that will engulf the new residents of the developements moving closer, will cause an outrage amoung the new home buyers, who aren't made aware of the problem, as it certainly is not a selling feature. When the wind blows from the south, life in suburbia is going to be unbearable. Also, what about ground water issues from the dump... the La Salle and Red River are close by. What about the old dump sites east of Brady Road and along Cadboro Road, that have been and will be excavated to make room for the new developements. The Stench of the water coming out of the Cadboro Road site was unbelievable... what was in that water.. and what are the ramifications of possible contaminated ground water and sump pits and pumps spewing out the seepage into the yards and streets of the new area? What are the findings of any testing done before developement went ahead ?	When the Brady site opened in 1973, it was remote from residents. In 1985, when the decision was made to have only one landfill located at Brady, it was still relatively remote from residents. Since that time residential developments have continued to move closer to Brady. With the planned changes at Brady, the garbage burial operation will progressively move further from residential developments and with more waste diversion, smaller operating areas and improved operations will be implemented. Improved odour and litter control are key improvements being implemented at Brady. Regarding groundwater, the deep clay soils at this site provide effective containment of harmful substances. Regarding the former landfill on Cadboro Road that is being excavated, the consultant for the developer advises that: -The former landfill is currently being fully excavated and removed to Brady Road Landfill to rehabilitate the site to meet environmental quality guidelines and be dedicated as a green space. -Water currently being managed on-site is leachate, a liquid that is found within landfilled waste as a product of water mixing with decomposing waste. Environmental investigations of the site were undertaken prior to excavation and continue to-date. As part of those investigations, site water that does not meet regulated guidelines is sent to the North End Water Pollution Control Centre for treatment. -Removal of the landfill will be completed in 2012. As the site is located in thick clay and the waste source is being completely removed, the possibility of contaminants seeping out of the site is remote.

Stage 2 Public Meeting Questions and Answers

This is a summary of the questions raised at the public meeting, along with the responses provided. Note that the questions and answers are paraphrased and provide a representation of the dialogue that occurred at the public meeting.

ODOUR ISSUES

1. Odour is an issue and was really bad this year. What is being done to deal with this?

The odour this year is mainly related to the increased amount of biosolids received at Brady. At the beginning of September we started trying a new cover method, which so far is proving to be a good solution. We encourage feedback from residents through 311 on any odour issues.

2. How is composting going to be different from recent private composting operations, which have created significant odour problems? How can we guarantee that our composting operations will not produce the same odours?

Odour should not be an issue with a properly run composting operation. We intend to compost properly and according to the licence.

3. The McGillivray composting operation did not compost sewage sludge and still has bad odour problems. How can we be guaranteed that this won't happen once Brady starts composting? What can the public do if there are problems in the future?

Composting has been carried out at Brady for 21 years with no odour problems. Enhanced composting operations will be regulated, including odours. We will follow up and address all odour issues. We encourage feedback from residents through 311 on any odour issues.

4. Why was residential zoning allowed around Brady? How is zoning being handled with respect to odour?

Odour was not considered to be a limitation to residential development north of Brady based on experience with developments near facilities such as the North End sewage treatment facility. Also, there may be additional distance from the landfill because of planned business/commercial use immediately north of the Perimeter Highway.

BIOSOLIDS

5. Where are bio-waste and biosolids coming from? This is a major issue.

Biosolids come from the solids fraction of sewage treatment. This material was mostly applied to agricultural land prior to December 31, 2010. With new regulations, this practice is no longer an option. Planning is underway to develop and implement alternatives to

burying biosolids. One alternative is to compost a portion of the biosolids at Brady using techniques proven to be acceptable in other cities, such as in Edmonton.

6. Are biosolids from outside of Winnipeg being taken at Brady?

No.

LEACHATE

7. How is leachate treatment different from how sewage is treated?

While leachate is much more potent than sewage, the treatment methods are the same. Winnipeg's treatment practices rank amongst the best in Canada.

8. What are the alternatives for leachate treatment so that less has to be transported?

We continue to examine alternatives for leachate treatment, such as a dedicated treatment plant located at the landfill.

MANAGING GARBAGE

9. Brady is too far. In dirtiest parts of the city residents have no money or vehicles to bring waste to Brady, which results in illegal dumping. How is this going to be dealt with?

The Garbage and Recycling Master Plan recently approved by Council includes establishing up to four Community Resource Recovery Centres where residents could drop off material that could be processed and reused, resold or recycled (e.g., construction and demolition material, household items). This should help reduce illegal dumping.

10. Why can't all the waste streams be separated like in European systems? Why are we throwing everything away instead of diverting it?

European diversion systems have evolved over a long period of time as alternatives to landfilling because of lack of land for disposal. Winnipeg's new Garbage and Recycling Master Plan is a significant commitment to diverting more waste.

11. Is there an asbestos management plan? How is it being treated?

We have a management plan to deal with proper burial of asbestos at Brady.

COMPOSTING/ORGANICS

12. How are plastic bags handled in the yard waste composting operation? How are they currently being separated in our "Leaf it with us" program?

Currently the plastic bags are ground up with the leaves and yard waste and the material is composted to produce a low quality compost for landscaping use at the landfill.

13. When will plastic bags be banned for yard waste collection?

The new yard waste collection program will start in the fall of 2012 and will only collect material placed in compostable leaf and yard waste bags, or hard-walled containers (e.g., standard size garbage cans, blue boxes). Plastic bags will not be accepted as they are not biodegradable and would contaminate the finished compost.

14. Why will it take five years to get a kitchen waste collection program? How will the kitchen waste be collected?

Kitchen waste collection and composting is much more complex and costly than yard waste. Work will start on this program soon. However, it typically takes about five years to determine and implement the most effective and economical system. Kitchen waste is typically collected in small green roll out carts.

15. Is the City partnering with BFI (Prairie Green) on a business organics composting program?

No.

FLOODING

16. Can Brady filling be done to create flood protection tying into the perimeter system for St. Norbert?

No, because dikes containing garbage are not acceptable flood protection structures.

17. Are there any studies as to what happens if Brady is flooded?

Flooding at Brady would be an extreme event and we are addressing this in the Environmental Impact Assessment.

OTHER

18. What is the cost of the proposed changes at Brady?

We don’t know the exact cost yet since it is depends on the outcome of the licence application.

19. How high is the site going to be? What are the development stages? A plan is needed that can be followed and will you be coming back to the public for feedback?

The site will be 28 metres above prairie level (current maximum height). We will update the public and seek comment as we develop the site improvements.

20. Is there going to be a new entrance to Brady?

Changes to access locations on the Perimeter near Brady are under review by the Province and may include a different access route to Brady.

21. Is there a guarantee that the landfill gas system will be installed within six to eight months as promised? And will it remove most of the odour?

The installation should begin in the spring of 2012 and be operational in the fall. The landfill gas system will support other measures such as better cover, a smaller working area and less organics burial to control odours.

22. Have there been any studies into selling the land at Brady and using the money to relocate the site?

Relocating a landfill is a very resource intensive process. There would be no cost benefit in doing this since an alternate suitable site would not likely be found in Winnipeg.

23. What is the impact of Brady on property and land values?

The experience with the BFI Landfill in the R.M. of Rosser and with wind farms is that there is no measurable impact on land values near such facilities. Current housing prices in Waverley West also indicate there is no impact.

24. Why was there information in the media that Brady would be closing soon?

We have always been transparent about the long life of Brady Landfill and have not announced any intent to close Brady soon.

Stage 2 Public Meeting Feedback Form

1.0 BACKGROUND AND METHODOLOGY

A feedback form was administered at the public meeting held on October 27, 2011. In addition, the feedback form was also available to fill out online. The objective of the feedback form was to capture stakeholders' opinions of the future opportunities for Brady Road Landfill.

Feedback form responses received:

- At the public meeting (paper version) – 68 respondents
- Online on our website – 19 respondents

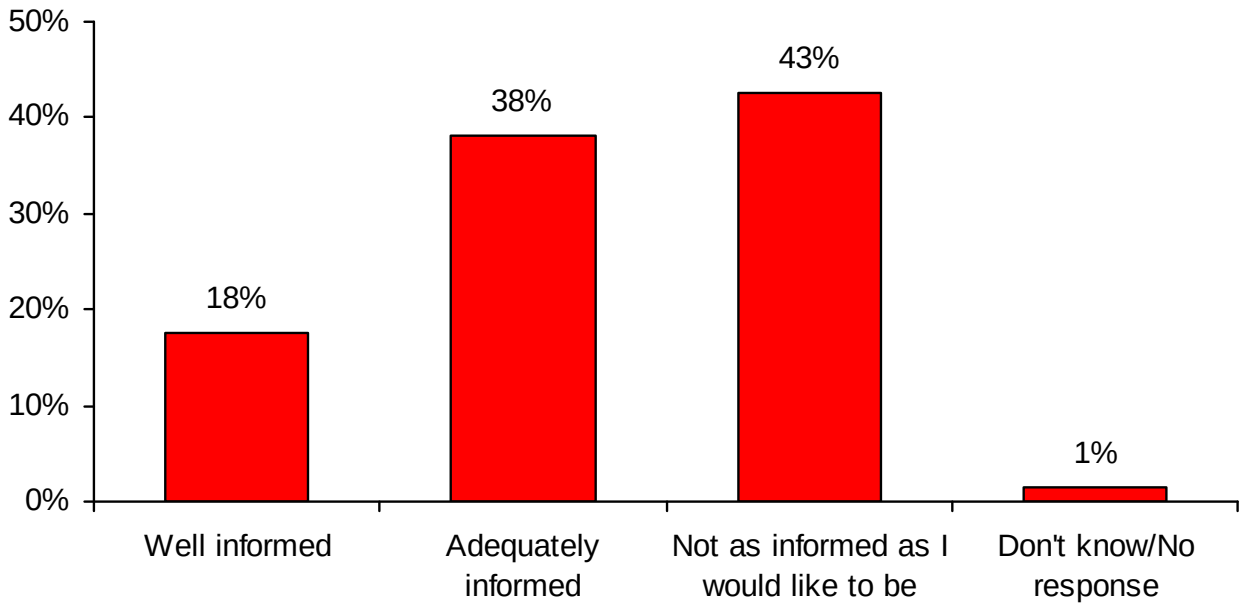
Since the respondents of the feedback form are self-selecting, the results of the survey are not scientific and only a summary of the responses received. This means that no estimates of sampling error can be calculated and, therefore, no margin of error is attributed to the results in the report.

2.0 RESEARCH RESULTS

2.1 Brady Road Landfill Information

Over four-in-ten respondents (43%) felt that they were not as informed about Brady as they would like to be. 38% felt they were adequately informed.

"How informed do you feel about Brady Road Landfill?" (n=68)[*]

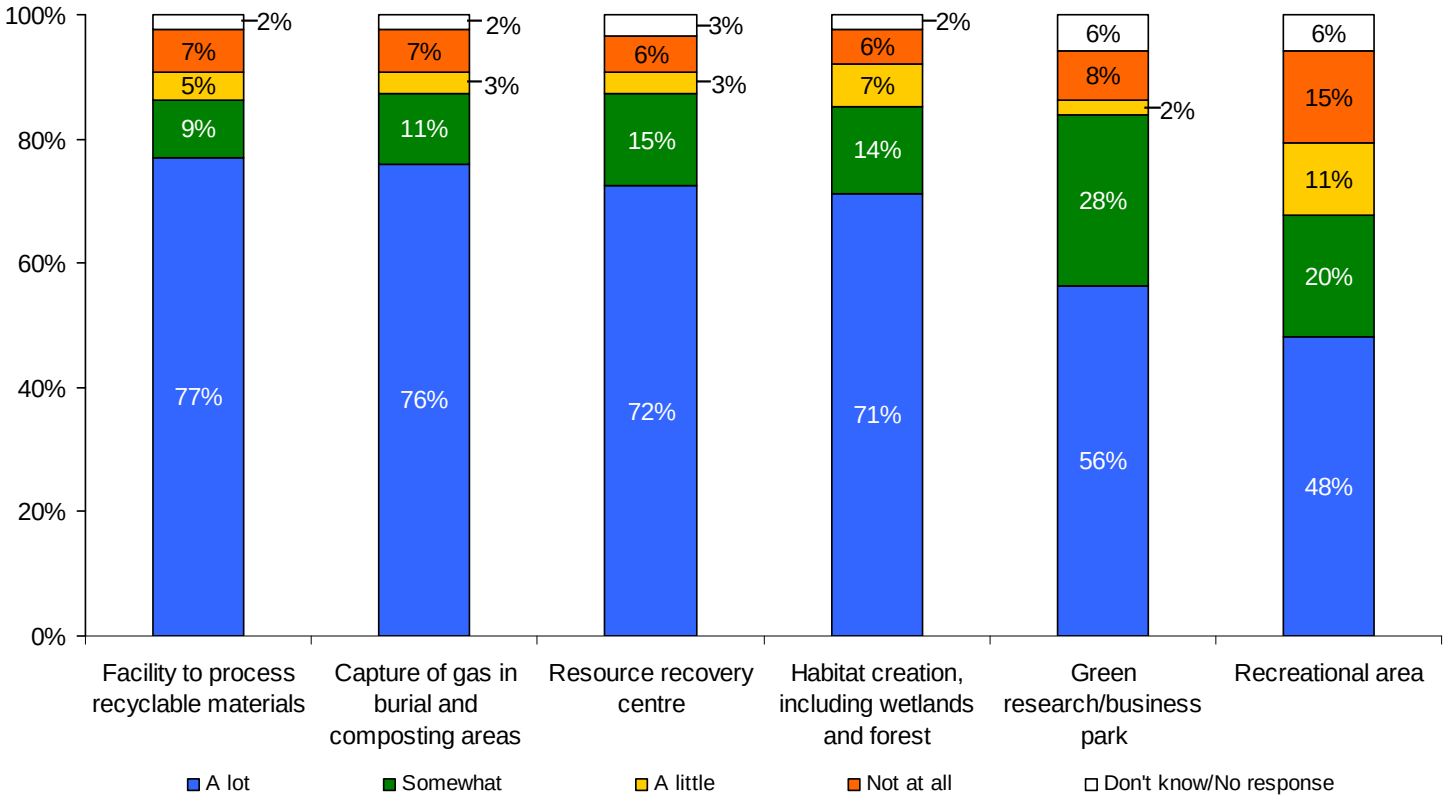


[*] n represents the number of responses received for that question. This question was only asked in the paper version of the Feedback Form.

2.2 Support for Opportunities at Brady Road Landfill

There was strong support for a “facility to process recyclable materials” (86%), “capture of gas in burial and composting areas” (87%), and a “resource recovery centre” (87%). A “recreational area” (68%) had the least amount of support.

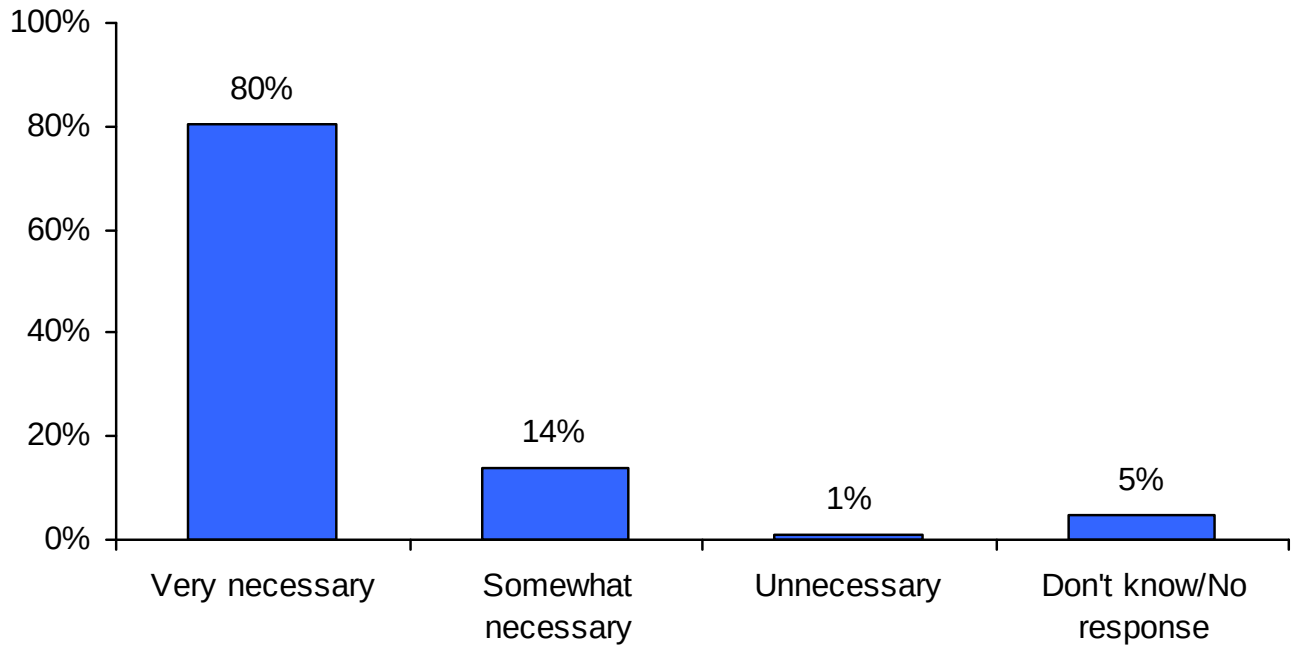
“How much do you support the opportunities we identified for Brady Road Landfill?” (n=87)



Extent of Proposed Changes

Four-fifths (80%) of respondents found that the opportunities presented were “very necessary”.

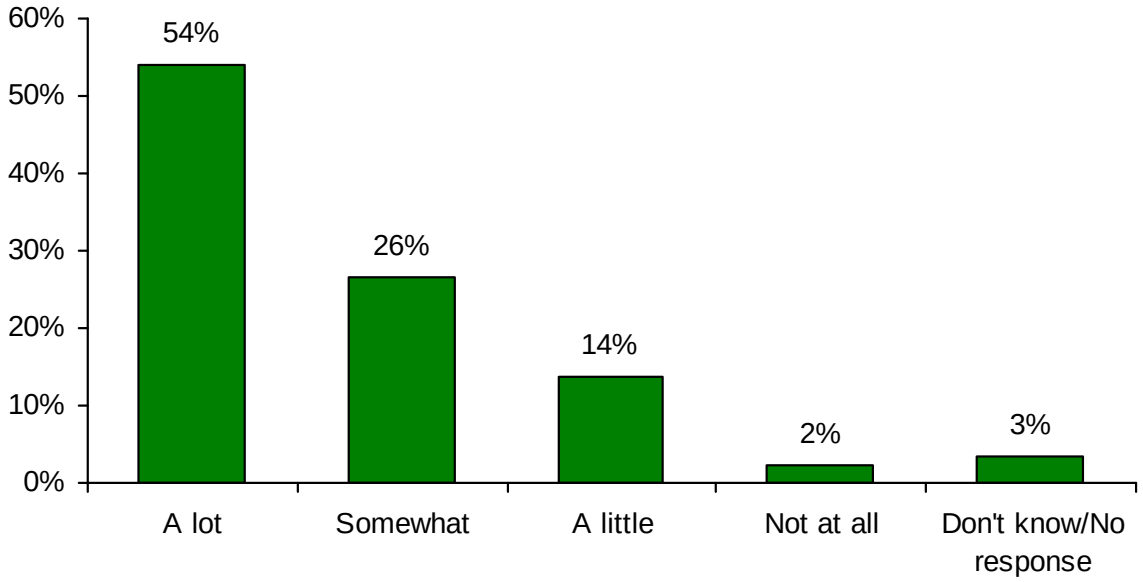
“These opportunities are designed to help protect our environment by reducing the amount of garbage that is landfilled and reusing / recycling as much of the material as possible. Do you feel that these opportunities are:” (n=87)



2.3 Impact of Proposed Changes

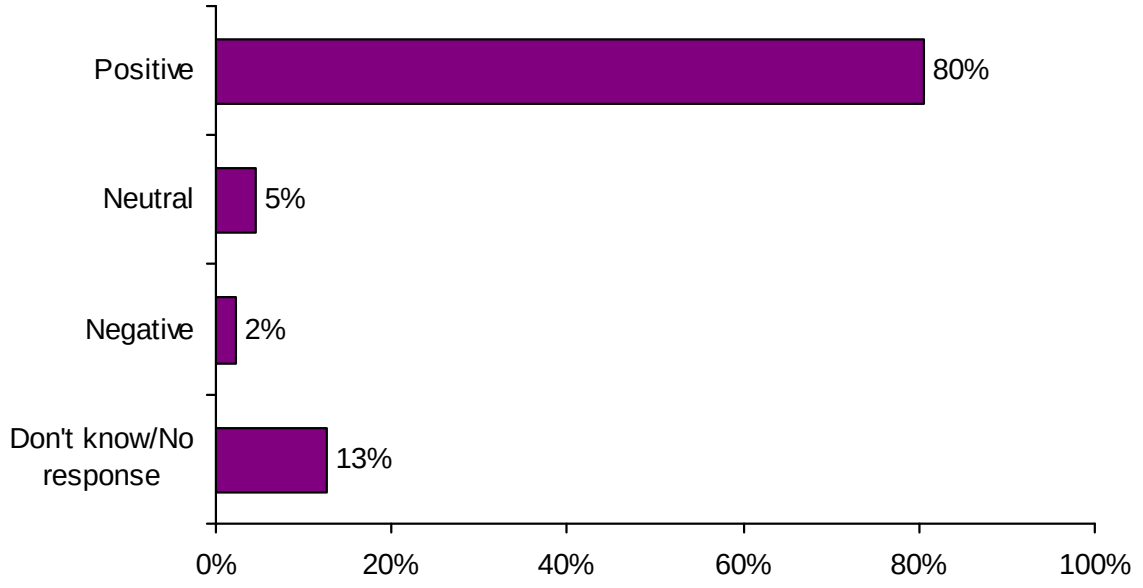
Over half (54%) of respondents expect the opportunities at Brady Road Landfill to affect them a lot.

"Do you expect these opportunities at Brady Road Landfill to affect you:" (n=87)



The majority (80%) of respondents felt that the overall effect of these opportunities would be positive.

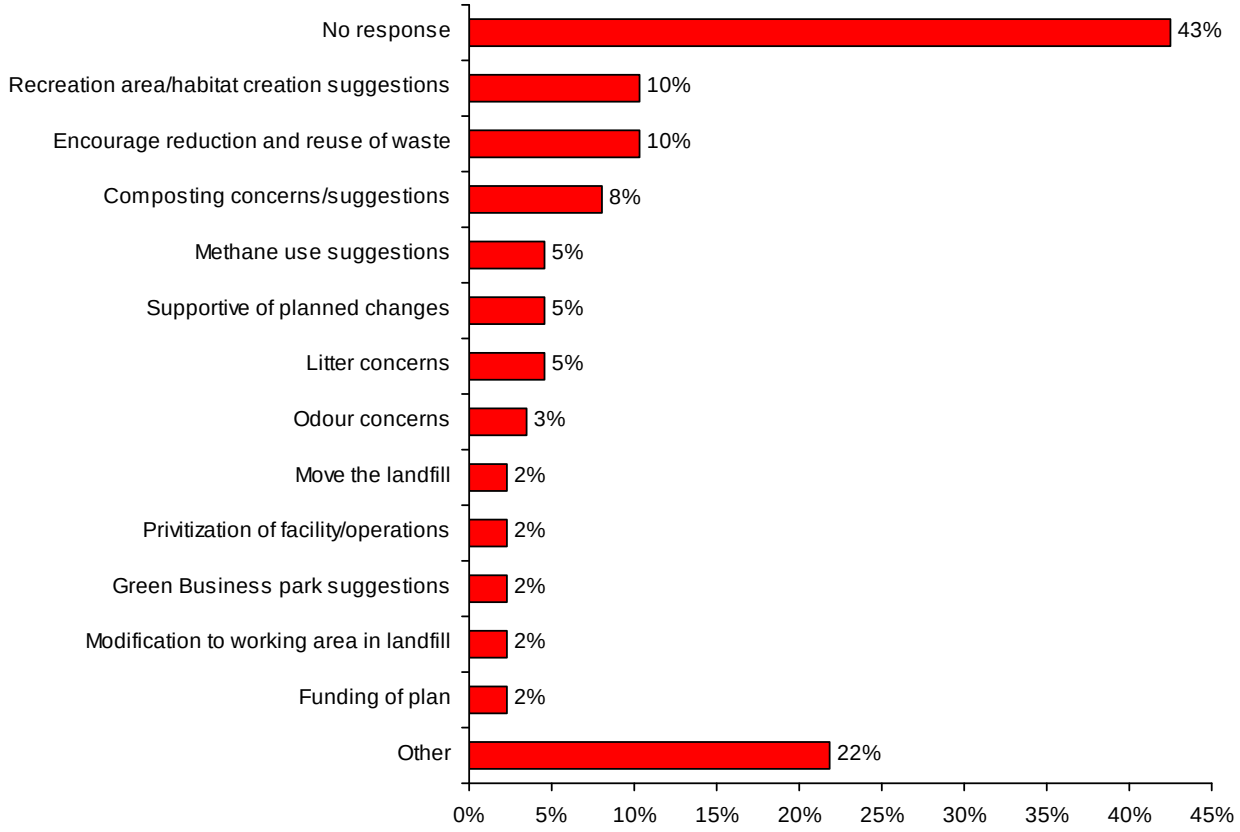
"Would the overall effect of these opportunities be:" (n=87)



2.4 Other Opportunities for Brady Road Landfill

Most respondents (43%) didn't provide additional suggestions of other opportunities that could improve Brady Road Landfill. Among those with comments, most (10%) had recreation area/habitat creation suggestions or (10%) wanted to encourage reduction and reuse of waste.

"Do you think there are other opportunities that could improve Brady Road Landfill and protect the environment?" (n=87)



*Totals will exceed 100% due to multiple responses

Some other responses included:

- "Please examine alternative leachate management options. The Winnipeg Wastewater Treatment facilities are designed to reduce nutrient loading only not metals, dioxins and furans, edcs, etc."

- "1) Regular surface water sampling in "wetland" 2) Plan to control windblown litter 3) Improve safety issues at Brady + Perimeter with MB Highways"

- "This intended process seems very slow. I would like to see factories built to incinerate and compost the waste matter. Recycling is the way to go - everyone should be more conscious of what goes into the garbage."

- “I like the idea of a Resource Recovery Centre but I don't believe you should be charge a fee to drop off these items since we are already going to be charge a $50 fee. To encourage more recycling, don't continue to charge fees for every time someone drops off recycling items.”

- “- Open a site further from the city
  - Complete sites started then close the landfill
  - No composting under any circumstances
  - There appears to be a disconnect at city planning developing residential next to a landfill”

- “- Mandatory satellite drop off sites in the 4 corners of WPG
  - This should be part of the Licensing Conditions issues by the Prov. of Manitoba to the City of Winnipeg”

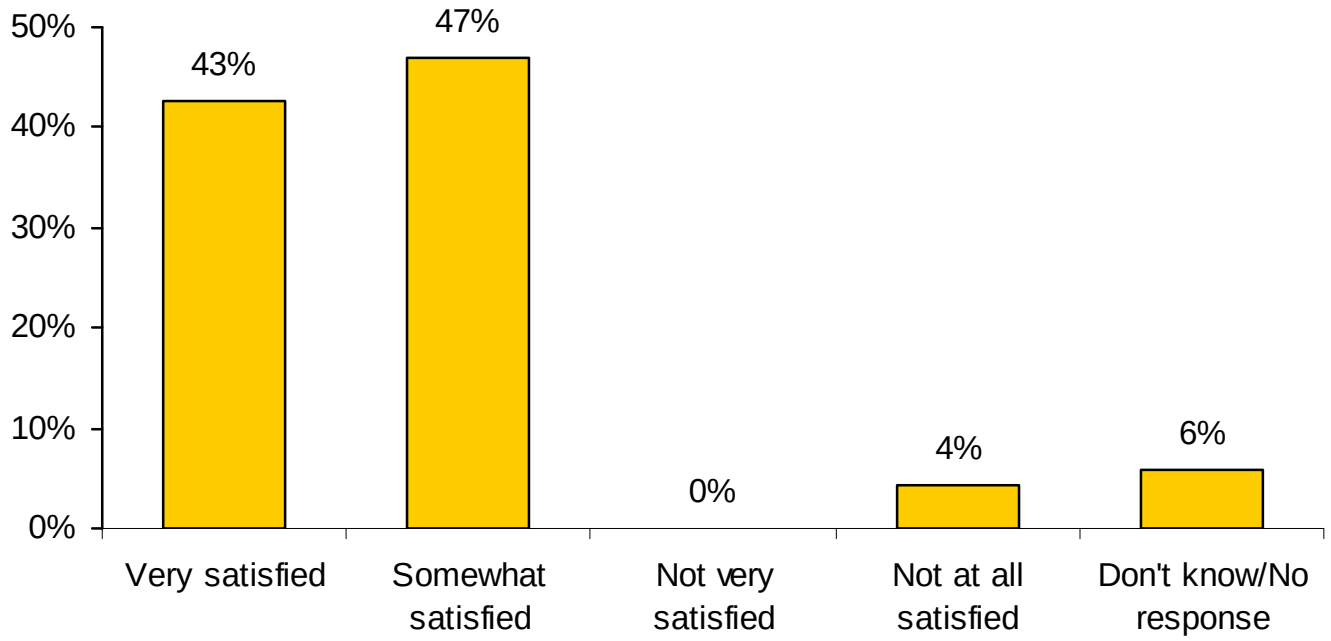
- “There are opportunities with the yard waste composting and the mix of plastic bags into the pile issue. Various areas are learning how to deal with this using a screener. The screener will take the plastic bags out. City of Brandon uses a screener to take out plastics and the landfill manager has said he would be willing to share the equipment if whoever needed it would cover the cost of transporting it. The City of Portage La Prairie just purchased a screener. Before the screener, it cost them thousands to rent the machine and they paid the person $12,000 each time they screened their yard waste to get rid of plastic bags. Now they purchased one and it is both cost effective and efficient. It pays back for itself after a couple of uses. And since the City plans on large scale composting in the future, this may be needed anyway. I believe steps should be taken to model what the City of Brandon is doing and apply that here and even send the landfill manager from Brandon to Winnipeg to discuss what he has learned throughout this process of converting behaviours, and this would help Winnipeg rather than reinvent the wheel.”

- “I think restrictions or by-laws could be imposed on businesses and commercial locations to dictate how they are to handle their garbage and recycling. This would force people to do it, and sadly that might be what it takes.”

2.5 Satisfaction with Public Meeting

The majority (90%) of respondents were satisfied with the public meeting.

"Overall, how satisfied are you with this public meeting?" (n=68)[†]

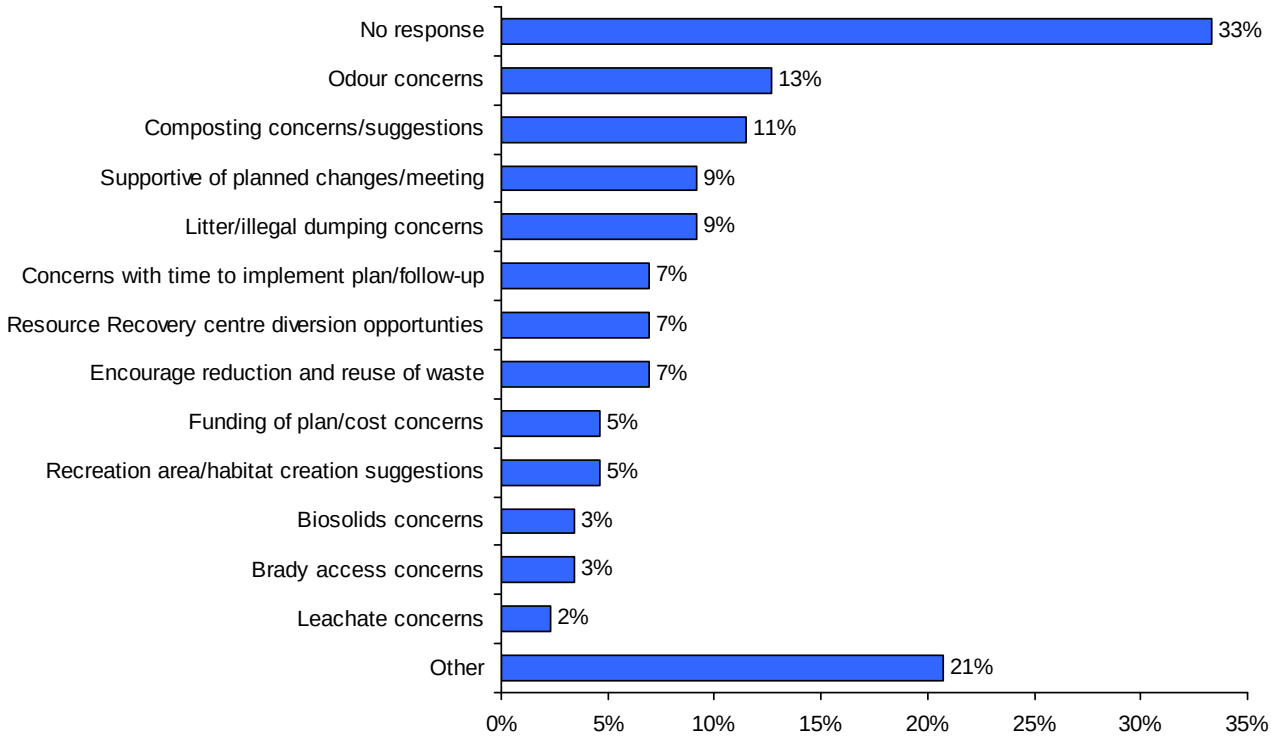


[†] This question was only asked in the paper version of the Feedback Form handed out at the Public Meeting.

2.6 Final Comments

Most respondents (33%) didn't provide additional comments. Among those with comments, most (13%) had odour concerns or (11%) composting concerns/suggestions.

"Please let us know any other comments or concerns you have about Brady Road Landfill:" (n=87)



*Totals will exceed 100% due to multiple responses

Some other responses included:

- "1)The access to Brady Road from the Perimeter going west is very dangerous (deadly). I would like to see alternative access. Overpass extra turning lane. 2)I would like to see some form of education or policing of private loads that are not properly secured. Waverly is strewn with refuse destined for the landfill."

- "A study that shows allergy or chemical sensitivity would be benificial to home owners planning to by in the St.Norbert area."

- "- No composting
  - More odor control
  - Rodent control (really bad in residential near landfill. Rodents live in our garages, etc.)
  - No biosolids (we smell this too)"

- “My major concern is odour and the sooner that is more under control the better. It should be better published that people should call 311 when odour occurs.”

- “Should have more data on 1) air pollution VOC, Hg, Pb, etc 2) Influence on surface water, Red River is nearby”

- “Have another forum and let everybody know what info was collected and what the powers to be have in mind to do with this knowledge.”

- “-Think about burning waste
  - Have the consumers be more aware of garbage ->The only things that help is getting on peoples money”

- “I would like to see wetlands developed towards the residential districts at Wavereley & the perimeter to allow ease of access for local residents. Which would also be visually appealing from the road. I would prefer if existing recycling facilities are utilized to process reclaimed materials. Thus reducing the need for new infrastructure and transforming Brady into an industrial zone. I would like to see an outline of potential cost recoverys from some of these reclaim material efforts. I would like to know what will be done if the finished compost material.”

- “Putting a dome over the site it would also stop paper from blowing around.”

APPENDIX A

FEEDBACK FORM

Winnipeg

Water and Waste Department

BRADY ROAD LANDFILL PUBLIC MEETING FEEDBACK FORM

1. How informed do you feel about Brady Road Landfill?

Well informed	Adequately informed	Not as informed as I would like to be
☐	☐	☐

2. How much do you support the opportunities we identified for Brady Road Landfill?

	Not at all	A little	Somewhat	A lot	Don't know
a) Resource recovery centre	☐	☐	☐	☐	☐
b) Green research/business park	☐	☐	☐	☐	☐
c) Facility to process recyclable materials	☐	☐	☐	☐	☐
d) Capture of gas in burial and composting areas	☐	☐	☐	☐	☐
e) Recreational area	☐	☐	☐	☐	☐
f) Habitat creation, including wetlands and forest	☐	☐	☐	☐	☐

3. These opportunities are designed to help protect our environment by reducing the amount of garbage that is landfilled and reusing / recycling as much of the material as possible. Do you feel that these opportunities are:

Very necessary	Somewhat necessary	Unnecessary	Don't know
☐	☐	☐	☐

please see over

4. a) Do you expect these opportunities at Brady Road Landfill to affect you:

A lot	Somewhat	A little	Not at all	Don't know
☐	☐	☐	☐	☐

b) Would the overall effect of these opportunities be:

Positive	Neutral	Negative	Don't know
☐	☐	☐	☐

5. Do you think there are other opportunities that could improve Brady Road Landfill and protect the environment?

_____

_____

_____

_____

6. Overall, how satisfied are you with this public meeting?

- ☐ Very satisfied
- ☐ Somewhat satisfied
- ☐ Not very satisfied
- ☐ Not at all satisfied

Please let us know any other comments or concerns you have about Brady Road Landfill:

_____

_____

_____

_____

_____

_____

Thank you for your feedback.

APPENDIX B

INVITATION LETTER

Water and Waste Department • Service des eaux des déchets

October 17, 2011

Invitation to Residents near Brady Road Landfill

We invite you to a public meeting on the future of Brady Road Landfill.

Date	Thursday, October 27, 2011
Time	6:30 - 8:30 pm
Presentation	7:00 pm
Location	St. Norbert Community Centre, 3450 Pembina Hwy

We have been operating Brady Landfill under a permit since 1973. Provincial regulations have changed and landfills in Manitoba are now required to be licensed. As part of the licensing process, we prepared an environmental impact assessment. We hired an independent consulting firm to perform this assessment.

At the meeting, we will:

- share the results of the environmental impact assessment,
- share opportunities for the future of Brady Road Landfill (e.g., resource recovery centre, green research/business park, recreational area, wetlands), and
- welcome your feedback.

If you can't attend the meeting, you can find information and share your comments with us:

- through our website at garbage.speakupwinnipeg.com
- by contacting our 311 Centre, open 24 hours every day, by phone at 311 or by email at 311@winnipeg.ca

Winnipeg

Water and Waste Department • Service des eaux des déchets

Le 17 octobre 2011

Invitation aux résidents et aux résidentes qui demeurent près de la décharge du chemin Brady

Nous vous invitons à une séance ouverte sur l'avenir de la décharge du chemin Brady.

Date	Le jeudi 27 octobre 2011
Heure	de 18 h 30 à 20 h 30
Présentation	19 heures
Lieu	Centre communautaire de Saint-Norbert, 3450, ch. Pembina

La décharge du chemin Brady fonctionne sous licence depuis 1973. Depuis, les règlements provinciaux ont changé et les décharges du Manitoba doivent faire l'objet d'un permis. Nous avons préparé une évaluation de l'impact environnemental qui fait partie du processus d'obtention de ce permis. Nous avons engagé une société extérieure d'experts-conseils pour faire cette évaluation.

Pendant la séance ouverte :

- nous présenterons les résultats de l'évaluation de l'impact environnemental;
- nous parlerons des possibilités qui existent par rapport à l'avenir de la décharge du chemin Brady (p. ex., centre de récupération des ressources, parcs verts de recherche et parcs commerciaux, zone de loisirs, marécages);
- vous pourrez nous faire part de vos réactions.

Si vous ne pouvez pas assister à la séance ouverte, vous pouvez obtenir des renseignements et faire des commentaires :

- sur notre site Web à garbage.speakupwinnipeg.com;
- en communiquant avec le Centre 311 qui est ouvert 24 heures sur 24, sept jours par semaine, par téléphone au 311, ou par courrier électronique, à 311@winnipeg.ca.

APPENDIX C

PRESENTATION

The Future of Brady Road Landfill

October 27, 2011

Winnipeg

Agenda

- An overview of current operations at Brady Road Landfill
- Operating requirements
- Environmental impact assessment findings
- Future opportunities for Brady Road Landfill
- Question and answer period

Winnipeg

Brady Landfill Today

Darryl Drohomerski
Manager of Solid Waste Services

Winnipeg

Brady Landfill Today

- The City's sole landfill since 1998
- Entire site is about 790 hectares – larger than River Heights
  - about 1/8 of the site is used for garbage burial
- Supported by tipping fees

Winnipeg

Garbage

- Handles more than 400,000 tonnes of garbage each year – about 1/3 of this is organic waste
- Emits greenhouse gases equal to the annual emissions from about 70,000 passenger vehicles
- Produces up to six tanker trucks of leachate every day for treatment (the harmful liquid produced by moisture filtering down through garbage)

Winnipeg

Current Diversion Efforts at Brady

- More than 11,800 tonnes of material is kept out of the landfill and reused each year
  - more than 5,000 tonnes of glass used for road base
  - over 4,000 bicycles collected to date for refurbishing
  - more than 2,500 appliances per year recycled for the metal

Winnipeg

Current Diversion Efforts at Brady

- More than 500 tonnes of metal recycled

Winnipeg

Current Diversion Efforts at Brady

- More than 2,000 tonnes of wood waste turned into flooring and other products

Winnipeg

Current Diversion Efforts at Brady

- 4,200 tonnes of yard waste composted

Winnipeg

Current Diversion Efforts at Brady

- Over 100 tonnes of tires made into new products

Winnipeg

Operating Requirements

- Operating under a permit since 1973
- Provincial regulations have evolved and landfills in Manitoba are now required to be licensed
- Need to conduct an environmental impact assessment as part of the licensing process
- Stantec, an independent consulting firm, has conducted the assessment

Winnipeg

Environmental Impact Assessment
Brady Road Landfill

J. M. McKernan, M.E.S., M.Sc., P. Biol., Principal
Practice Leader, Environmental Services Manitoba
Stantec Consulting Ltd.

One Team. Infinite Solutions

Stantec

Key Technical Assessment Findings

- The landfill does not significantly impact the quality of groundwater beneath the landfill
  - the landfill is situated on a thick layer of clay separating it from the groundwater
  - the groundwater in this area is not used as a drinking water source because of its naturally occurring salt content
- Instances of odour are short-lived and not routine
  - improved operational practices and diversion opportunities will further reduce odours
- The landfill is not harmful to human health
  - medical data indicates no human health implications throughout the 40 years this landfill has been operating

Stantec

Implications of Findings

- The deep clay subsurface has significantly minimized harmful substances from reaching the groundwater
- Use of artificial liners under future garbage burial areas will create even more protection
- Retrofitting current burial areas for landfill gas recovery, and improved diversion and operations, will even further reduce the instances of odour

Stantec

Environmental Site Improvements

Improvement	Benefits
Install a landfill gas recovery system	Reduces odour, greenhouse gas emissions
Install a liner at the bottom of the burial areas	Further protects groundwater
Build an engineered wetland	Further protects surface water
Improve the cover and vegetation over completed burial areas	Greatly reduces the production of leachate and bird and animal nuisance

The Future of Brady Road Landfill

Darryl Drohomerski
Manager of Solid Waste Services

Winnipeg

The New and Improved Brady Landfill

- Rename the site to The Brady Road Resource Management Facility, to reflect:
  - 35 – 50% less garbage requiring burial by 2020 once the Garbage and Recycling Master Plan is in place
  - increased diversion opportunities

Winnipeg

New Diversion Opportunities

- Facility to process recyclable materials
- Composting facility that would produce material that could be sold, given to the public, or used on City property
- "Green Business Park" for local industries that would remake the materials on site into reusable items for sale
- Research and business development centre

Winnipeg

New Diversion Opportunities

Community Resource Recovery Centre

Drop-off area for material that could be processed and reused, resold or recycled (e.g., construction and demolition material, household items)

Winnipeg

Other Opportunities

Capture of gas in burial and composting areas will create potential for energy recovery

Winnipeg

Other Opportunities

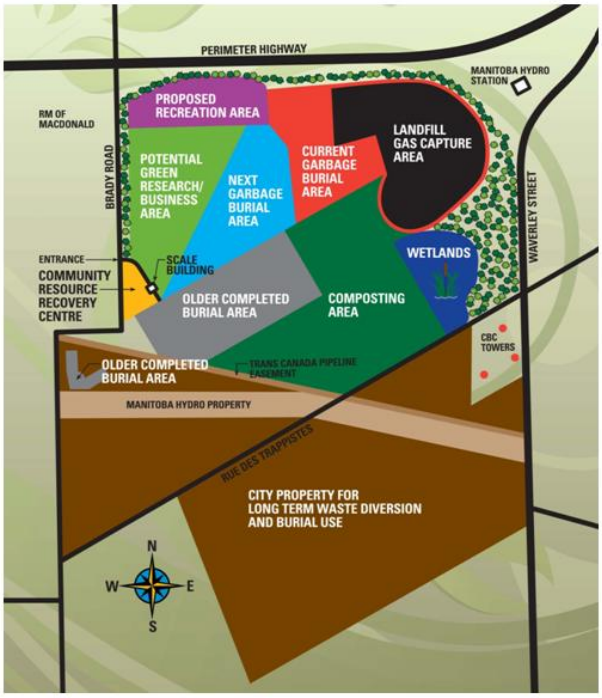
- Recreation area (e.g., park, sports field)
- Community gardens
- Habitat creation including wetlands and forest

Winnipeg

Brady Road Landfill Plan (1987)

Winnipeg

Brady Road Resource Recovery Facility



Winnipeg

Next Steps

- Incorporate your feedback into the Environment Impact Assessment
- Submit Environment Act Proposal to Province by end of 2011
- Report back to community on outcome of licence application (e.g., website, media release)
- Rezone the site to accommodate diverse uses
- Ongoing community conversation on details of future plans

Winnipeg

APPENDIX F

MODERATOR'S REPORT

Future Brady Road Landfill
Public Meeting

St Norbert Community Hall

November 4, 2011

Report to:

Stantec Consulting Ltd.

Respecting the
City of Winnipeg
Solid Waste Services Division

DFS CONSULTING

1. INTRODUCTION

On October 3, 2011, the City of Winnipeg approved a Comprehensive Integrated Waste Management Plan (the 'Master Plan') covering all aspects of waste collection and management in the City. The Plan outlines goals and performance targets for waste diversion from the waste stream delivered to the Brady Road landfill. Council's approval of the Plan has positive implications for the operations of the landfill. The City has also developed a new draft Operating Plan for the Brady landfill.

The landfill has operated under a permit issued by the province in 1973. Evolution of the provincial regulatory framework since then obligates the City to obtain an *Environment Act* license for the landfill. This requires an Environmental Impact Assessment (EIA) of the facility. Stantec Consulting Ltd. was retained to complete the assessment. The procedure for completing an Environmental Impact Assessment includes the requirement that the proponent engage in dialogue with parties at interest. The meeting held the evening of October 27, 2011, was part of that consultation requirement.

2. THE PUBLIC MEETING

The City and Stantec hosted the public meeting on the evening of October 27, 2011, in the community hall in St. Norbert. This public meeting followed a series of such meetings hosted by the City to obtain public input for creation of the new Master Plan.

The City presented information on the past and current character of the landfill. Stantec outlined findings about the type and significance of environmental effects evident after 43 years of landfill operation, and the effects expected from future landfill configuration and operations (i.e., the results of the EIA). The City concluded the formal presentation providing further detail about the implications of the new Master Plan and Operating Plan on the landfill's future layout and activities.

Those at interest filled the hall to capacity. It is estimated that more than 140 people attended, most of them living in proximity to the facility. When asked, the majority had visited the Brady site.

The audience was attentive to the presentations and participated in a Question and Answer period in a very orderly manner. Various television, radio and print media also attended.

3. SUMMARY OF MODERATOR'S OBSERVATIONS

A. Concerns were identified respecting unpleasant odours that nearby residents experienced in the warmer months that interfered with their enjoyment of the outdoors. Measures to address the problem, and an explanation of the causes, appeared to be understood and well received.

B. The need for convenient public drop-off and recycling centres across the City was noted to address the concern about illegal dumping. The audience appeared pleased that such facilities were part of the new Master Plan.

C. A question was asked concerning the treatment of the collected leachate. The option of on-site treatment to reduce or preclude haulage to the City's North End Treatment Plant was suggested. The discussion in reply appeared to be helpful to the questioner.

D. The operating cost of the planned changes was questioned. Several wanted to know how the site's planned improvements and enhanced operations were to be funded.

E. Questions were asked respecting the possible reduction of property values due to the operation of the site. Information provided to explain that impacts seemed to be reassuring.

F. The future size of the landfill, the possibility of "surplus lands" being sold, and the possible need for another landfill in future decades, was of interest. The direct answer indicating this would not happen was appreciated.

G. The City's ability to conduct larger-scale composting without unpleasant odours was challenged. The audience appeared to accept the City's assertion of two decades of nearly complaint-free composting at the landfill. The answer indicated the immediate response by the City to investigate any complaint received through its telephone "311" information number.

H. One individual offered the opinion that material from the site could be used for dyke construction to create further flood protection for the City of Winnipeg.

I. Impact of long-term operations on groundwater quality was of interest. The finding of acceptable concentrations of landfill leachate in groundwater was challenged by one person.

J. Interest was expressed in possible access road changes to the site.

K. The handling of dead animal waste was raised.

L. A concern respecting human health risk was identified. The response seemed to be accepted by the audience.

M. A concern about the City allowing continuing residential development in proximity to the landfill was noted.

N. Concern about the time needed to introduce kitchen-waste collection and composting was raised.

O. There was clear interest in the information on the recycling of wood into the building board and the description of providing bicycles to inner city children yielded a very positive reaction.
P. No concerns about landfill fires were expressed.

The audience questions were answered primarily by Darryl Drohomerski, Manager of Solid Waste Services for the City of Winnipeg, supported by the City's Dave Marsh, and Mike McKernan from Stantec. There was general acceptance of the responses offered. Challenge to the findings of the environmental assessment was modest. No fundamental criticism of either the Master Plan or the vision for the landfill was expressed.

There appeared to be a clear understanding that change was needed and the City must move forward in its Brady plans. An interest in positive change seemed widely present in the room. The change to the pick-up carts for waste and recycle recently agreed to by the City was well handled by Darryl Drohomerski and did not receive any challenge.

Of particular note was the observation that no one wanted the site moved elsewhere.

Management approaches elsewhere in Canada were identified by Darryl Drohomerski and Mike McKernan in illustrating how proposed changes at the landfill to reduce impacts would be consistent with Best Practice across the country.

4. COMMENTS

A. Those at interest filled the hall to capacity. The audience was attentive to the presentations and participated in a Question and Answer period in a very orderly manner.
B. The PowerPoint presentations were well received. However, the length of the hall meant those at the rear had some difficulty seeing the details on the screen.
C. Response to the feedback survey appeared to be strong.
D. The hall is comfortable and well maintained although lighting could have been better. Future meetings might consider an alternate venue with larger space, as the attendance exceeded the comfortable capacity of the community center.

E. Areas of concern respecting the hall and the setup:

- Independence of the consultants from the city should be more apparent. Attention needs to be paid to the table setup that separates the City from its consultant. The two parties were side by side in the meeting. Typically, they would sit on either side of a Moderator or facilitator. The tables for the City and Stantec were not set up in advance of people arriving. Having to create the place for City and consultant staff in front the gathering audience suggested insufficient planning for the meeting. The absence of a specific location for the Moderator again suggested insufficient thought about the layout of the room and the relationship among the presenters and the facilitator. Layout needs to be better considered ahead of such events.
- The expectation about audience size was quickly shown to be incorrect. However, City and consultant staff responded quickly to bring in and set up more chairs. Having this occur while the audience was arriving could again have suggested insufficient event planning.
- Sufficient microphones should be available and located that the City and the consultant each have a separate microphone. A third for the moderator is needed. At this event only one microphone was available for the event.
- A flip chart should be on hand for respondents to provide explanations graphically.
- A laser pointer should be available to the presenters.
- A lectern for the moderator would be helpful. In this case an empty cardboard box was used.
- An oversupply of handout documents should be considered. Expectations were for about 40+ attendees while at least three times that number attended. Document supplies (feedback surveys and PowerPoint copies) ran out early causing an obvious scramble to secure additional material.

5. CONCLUSION

The meeting was a success in conveying straightforward information to those in attendance. Questions were reasoned and the responses for the most drew little criticism. The success of the evening was most evident in the applause the concluded the evening.

An opportunity is present to capitalize on the obvious interest by ensuring those living in the area are kept well informed after the license is secured. A "Stakeholders Advisory Group" has been successful in maintaining local engagement and reasonable support of developments in other locations. This could be considered for the Brady facility. Based on lengthy experience of both the Moderator and Stantec, there is an expectation that regular group meetings will increase local comfort with the plan as it is implemented.

APPENDIX G

CITY OF WINNIPEG
DRAFT OPERATING PLAN

(Free-standing Report)

APPENDIX H

KEY RELEVANT DOCUMENTS

APPENDIX H – KEY RELEVANT DOCUMENTS

- Cherry, J.A., and J.E. Smith, 1990: Wood Preservative Migration through a Clayey Aquitard in Winnipeg: 1. Field Investigation. Waterloo Centre for Groundwater Research, University of Waterloo, April 16, 1990.

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- KGS Group, 1991. Detailed Site Evaluation – Four Mile Road Site – Volume 1 of 2, Report prepared for the Manitoba Hazardous Waste Management Corporation, July 1991.

- Pach, J.A. 1994. Hydraulic and solute transport characteristics of a fractured glacio-lacustrine clay, Winnipeg, Manitoba. M. Sc. Thesis, University of Waterloo.

- Remenda, V.H., J.A. Cherry, and T.W.D. Edwards, 1994: Isotopic composition of old ground water from Lake Agassiz: Implications for late Pleistocene climate, Science, vol. 266, pp. 1975 1978.

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- Sabourin, L., J.A. Cherry, and R.W. Gillham, 1990: Wood Preservative Migration through a Clayey Aquitard in Winnipeg: 2. Laboratory and Modelling Analyses. Report prepared by Waterloo Centre for Groundwater Research, University of Waterloo, April 1990.

- UMA Engineering Ltd., 1987: Brady Road Landfill Hydrogeologic Study. Report prepared for the City of Winnipeg, August 1987.

- UMA Engineering Ltd., 1992: R.M of Montcalm detailed site evaluation and additional groundwater chemistry and isotope studies. Report prepared for the Manitoba Hazardous Waste Management Corporation, January 1992.

APPENDIX I

GROUNDWATER AND LEACHATE QUALITY DATASETS AND STATISTICAL COMPARISONS OF MEDIAN VALUES FOR INDICATOR PARAMETERS

ATTACHMENT A

Analyses of Groundwater Samples from the Brady Landfill

ATTACHMENT A, TABLE 1
INORGANICS IN GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																	
		Alkalinity as Bicarbonate	Total Hardness	Hardness as Ca	Total Alkalinity	pH	Total Dissolved Solids	Total Organic Carbon	Total Solids	Turbidity	Specific Conductance at 25°C	Total Kjeldahl Nitrogen	Total Phosphorus	Nitrate + Nitrite Nitrogen	Total Ammonia	Sulfate	Chloride	Total Coliforms	E.coli
EQL		*1*	*1*	*1*	*1*	*0.01*	*1*	*1*	*1*	*0.1*	*1*	*1*	*0.3*	*0.01*	*0.05*	*9*	*9*	*3*	*3*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*units*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*µS/cm*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*MPN/100mL*	*MPN/100mL*
GWQ 25-4N34A	***14-Jul-09***	740	3400	2400	740	6.81	6140	15	6900	673	6410	5	0.7	0.19	0.258	3010	432	NS	NS
GWQ 25-4N34A	***22-Oct-09***	605	3400	1790	605	6.66	No Aliquot	14	NA	90	6220	2	<0.3	0.123	0.288	3060	333	NS	NS
GWQ 25-4N34B	***14-Jul-09***	692	2550	1300	692	7.09	4680	7	8760	544	4910	<2	0.8	0.566	0.144	1960	387	NS	NS
GWQ 25-4N34B	***22-Oct-09***	730	2790	1890	730	7.11	No Aliquot	9	NA	740	4830	3	1	0.9	0.08	1700	392	NS	NS
GWQ 4N34-B	***5-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1910	403	<3	<3
GWQ 25-4N34C	***14-Jul-09***	728	1400	1200	728	7.18	2320	7	7920	256	3010	<2	0.3	0.034	0.143	609	322	NS	NS
GWQ 25-4N34C	***22-Oct-09***	890	7650	960	890	7.1	No Aliquot	17	NA	106000	2960	17	145.4	0.013	0.177	640	289	NS	NS
GWQ 4N34-C	***5-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	774	367	<3	<3
GWQ 25-4N34D	***6-Jul-09***	735	3350	440	735	7.79	5650	9	6240	96.8	5970	2	<0.3	0.165	0.02	311	2810	NS	NS
GWQ 25-4N34D	***22-Oct-09***	800	3480	990	800	7.24	No Aliquot	12	NA	113	588	<2	<0.3	0.113	<0.003	2700	333	NS	NS
GWQ 4N34-D	***5-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4390	328	<3	<3
GWQ 25-6N57B	***8-Jul-09***	648	2720	900	648	7.06	3960	22	8490	1500	5620	6	1.7	0.045	0.767	2480	512	NS	NS
GWQ 25-6N57B	***21-Oct-09***	710	2750	2300	710	6.88	4930	14	6870	895	5590	4	0.6	0.021	0.69	2640	480	NS	NS
GWQ 25-6N57C	***8-Jul-09***	528	2580	680	528	7	5370	18	6710	493	5990	4	0.5	0.032	0.683	2260	738	NS	NS
GWQ 25-6N57C	***21-Oct-09***	550	2790	2070	550	6.93	5610	15	6270	232	5950	4	<0.3	0.014	0.741	2400	771	NS	NS
GWQ25-6N57-C	***6-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2110	732	--	--
GWQ 25-6N57D	***8-Jul-09***	456	2460	760	456	7.02	5310	13	6040	590	6340	5	0.8	0.062	0.943	1750	1210	NS	NS
GWQ 25-6N57D	***21-Oct-09***	470	2480	1880	470	6.94	4830	14	35800	556	6360	3	0.5	0.019	1.05	1820	1200	NS	NS
GWQ25-6N57-D	***6-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1680	1150	--	--
GWQ 25-6N57E	***8-Jul-09***	312	2040	480	312	7.26	5040	9	29000	12800	6590	7	5	0.192	0.907	1410	1480	NS	NS
GWQ 25-6N57E	***21-Oct-09***	2020	7080	1560	2020	7.34	4860	8	5940	15800	6770	NR	NR	0.013	1	1530	1540	NS	NS
GWQ25-6N57-E	***6-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1380	1470	--	--
GWQ 25-6N57F	***6-Jul-09***	310	1250	360	310	7.57	5380	2	6030	480	8210	4	<0.3	0.019	1.149	829	2500	NS	NS
GWQ25-6N57-F	***6-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	880	2420	--	--
GWQ 25-6N58A	***21-Oct-09***	610	2890	2570	610	6.98	5000	17	5690	294	5590	<2	0.3	0.021	0.069	2770	385	NS	NS
GWQ 25-6N58B	***21-Oct-09***	600	2850	2410	600	6.96	5310	18	6060	410	5890	3	0.4	0.021	0.4	2780	647	NS	NS
GWQ 25-6N58C	***21-Oct-09***	550	2570	2440	550	6.82	4940	15	5120	129	5920	4	<0.3	0.015	0.666	1870	787	NS	NS
GWQ 6N58 - C	***4-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**193**	**90.5**	--	--
GWQ 25-6N58D	***14-Jul-09***	440	2700	1800	440	6.92	4680	12	6210	547	6270	6	0.5	0.135	0.913	1220	1210	NS	NS
GWQ 25-6N58D	***21-Oct-09***	440	2400	2330	440	6.86	5190	12	5440	246	6250	4	<0.3	0.037	0.962	1510	1260	NS	NS
GWQ 6N58 - D	***4-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**137**	**123**	--	--
GWQ 25-6N58E	***14-Jul-09***	220	2200	1400	220	7.32	4530	8	15200	10700	6060	9	4.6	0.056	1.576	1090	1470	NS	NS
GWQ 25-6N58E	***21-Oct-09***	315	1860	1710	315	7.3	4330	9	4520	204	5810	4	<0.3	0.009	1.525	1260	1030	NS	NS
GWQ 6N58-E	***5-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1430	1100	<3	<3
GWQ 25-6N58F	***14-Jul-09***	**1260**	1950	900	1260	7.2	3350	11	39900	28400	5370	13	13.4	0.098	1.262	1260	884	NS	NS
GWQ 25-6N58F	***21-Oct-09***	**1460**	6010	3340	1460	7.23	3990	9	14300	6320	5430	7	3.5	0.025	1.323	1540	954	NS	NS
GWQ 6N58-F	***5-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1460	984	<3	<3
GWQ 25-6N59A	***14-Jul-09***	660	2350	1530	660	7.02	3240	12	4770	184	4860	<2	<0.3	0.334	0.053	2220	496	NS	NS
GWQ 25-6N59A	***21-Oct-09***	690	2130	834	690	7.08	3770	10	4320	270	4410	<2	<0.3	0.043	<0.003	2060	384	NS	NS
GWQ 25-6N59B	***14-Jul-09***	548	2750	2400	548	6.78	5070	13	5660	161	5790	4	<0.3	0.079	0.452	2170	680	NS	NS
GWQ 25-6N59B	***21-Oct-09***	620	2880	1560	620	6.83	4680	14	5690	242	5800	<2	<0.3	0.013	0.469	2320	589	NS	NS
GWQ 25-6N59C	***14-Jul-09***	476	2500	1650	476	6.78	4710	9	5150	112	5690	4	<0.3	0.052	1.23	1580	827	NS	NS
GWQ 25-6N59C	***21-Oct-09***	560	2330	1530	560	6.76	4650	11	5850	655	5720	4	<0.3	0.014	0.788	1760	754	NS	NS
GWQ 25-6N59D	***14-Jul-09***	624	900	400	624	7.69	876	4	1490	141	1560	<2	<0.3	0.067	0.06	67.9	117	NS	NS
GWQ 25-6N59D	***21-Oct-09***	710	913	328	710	7.62	1280	6	2560	605	1930	<2	0.4	0.017	0.016	190	201	NS	NS
GWQ 25-6N59E	***14-Jul-09***	260	1800	1500	260	7.28	4200	6	36200	11700	6560	15	10	0.129	1.208	840	1680	NS	NS
GWQ 25-6N59E	***21-Oct-09***	720	3460	1830	720	7.26	4700	4	11800	4040	7250	5	1.8	0.011	1.067	914	2000	NS	NS
GWQ 25-6N59F	***14-Jul-09***	316	2150	1400	316	7.02	3840	8	35400	20200	5740	19	9.7	0.129	1.077	1020	1390	NS	NS
GWQ 25-6N59F	***21-Oct-09***	**1110**	6340	1590	1110	7	3100	7	17600	7280	5820	8	3.3	0.008	1.08	1110	1390	NS	NS
GWQ 6N59-C	***5-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1990	971	--	--
GWQ 6N59-D	***5-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**161**	**182**	--	--
GWQ 6N59-E	***5-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1090	1340	<3	<3

ATTACHMENT A, TABLE 1
INORGANICS IN GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																	
		Alkalinity as Bicarbonate	Total Hardness	Hardness as Ca	Total Alkalinity	pH	Total Dissolved Solids	Total Organic Carbon	Total Solids	Turbidity	Specific Conductance at 25°C	Total Kjeldahl Nitrogen	Total Phosphorus	Nitrate + Nitrite Nitrogen	Total Ammonia	Sulfate	Chloride	Total Coliforms	E.coli
EQL		*1*	*1*	*1*	*1*	*0.01*	*1*	*1*	*1*	*0.1*	*1*	*1*	*0.3*	*0.01*	*0.05*	*9*	*9*	*3*	*3*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*units*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*µS/cm*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*MPN/100mL*	*MPN/100mL*
GWQ 6N59-F	***5-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	963	1650	<3	<3
GWQ 25-6N60A	***8-Jul-09***	688	1950	320	688	7.11	3610	10	4670	378	3910	<2	0.3	0.057	0.185	1750	187	NS	NS
GWQ 25-6N60A	***21-Oct-09***	680	2810	1420	680	6.97	3400	11	4610	262	3980	3	0.4	0.03	0.205	1550	173	NS	NS
GWQ 25-6N60B	***8-Jul-09***	560	2200	440	560	6.94	3530	10	4470	285	4380	<2	<0.3	0.039	0.429	1900	295	NS	NS
GWQ 25-6N60B	***21-Oct-09***	520	2270	1650	520	6.93	3620	12	4160	157	4320	<2	<0.3	0.02	0.504	1790	296	NS	NS
GWQ 25-6N60C	***8-Jul-09***	504	2250	620	504	6.68	4740	17	4270	63.8	4670	5	0.6	0.044	0.731	1850	486	NS	NS
GWQ 25-6N60C	***21-Oct-09***	540	2050	1960	540	6.83	3840	12	4090	775	4650	<2	<0.3	0.018	0.725	1670	389	NS	NS
GWQ 6N60-C	***6-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1800	476	--	--
GWQ 25-6N60D	***8-Jul-09***	544	2400	520	544	6.9	4280	7	4150	246	4500	<2	<0.3	0.025	0.672	1580	518	NS	NS
GWQ 25-6N60D	***21-Oct-09***	550	1850	1490	550	6.89	3440	9	3760	148	4390	3	<0.3	0.033	0.82	1410	444	NS	NS
GWQ 6N60-D	***6-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1440	532	--	--
GWQ 25-6N60E	***8-Jul-09***	160	1480	200	160	7.91	1940	9	26300	15900	5540	12	7.2	0.087	1.084	1070	1310	NS	NS
GWQ 25-6N60E	***21-Oct-09***	**1100**	4000	870	1100	7.79	3410	6	14800	7480	5650	6	2.7	0.017	0.71	1230	1240	NS	NS
GWQ 6N60-E	***6-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1160	1010	--	--
GWQ 5N62-C	***3-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**244**	**177**	1	0
GWQ 5N62-D	***3-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**285**	**183**	10	0
GWQ 5N62-E	***3-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**77.9**	**226**	<3	<3
GWQ 6N63-C	***3-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**308**	**112**	1	0
GWQ 6N63-D	***3-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**276**	**134**	>200	0
GWQ 6N63-E	***3-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**238**	**138**	2	0
GWQ 6N63-F	***3-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**129**	**156**	3	<3
GWQ25-6N67-D	***6-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2550	465	<3	<3
GWQ25-6N67-E	***6-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1910	632	<3	<3
GWQ25-6N67-F	***6-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1110	681	<3	<3
GWQ 25-W04	***29-Jun-09***	30	840	960	30	9.37	4520	47	4790	50.5	6780	15	<0.3	0.025	1.686	733	2310	0	0
GWQ 25-W04	***16-Oct-09***	NS	1850	NS	NS	7.61	4990	3	6970	820	8760	4	<0.3	0.022	1.219	532	1950	0	0
GWQ 25-W04	***3-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**57**	**201**	<3	<3
GWQ 25-W05	***29-Jun-09***	135	1300	760	135	7.54	3800	3	6230	86.5	8260	4	<0.3	0.008	1.131	440	2010	0	0
GWQ 25-W05	***15-Oct-09***	NS	1660	NS	NS	10.7	5990	3	6830	550	8160	4	<0.3	0.02	0.978	841	2360	0	0
GWQ 25-W05	***26-Oct-09***	570	392	207	570	7.52	508	9	536	2.38	918	<2	<0.3	<0.003	0.194	NA	NA	0	0
GWQ 25-W05	***5-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	918	2440	<3	<3
GWQ 25-W06	***6-Jul-09***	130	1350	320	130	7.63	5450	2	6710	25.4	10300	4	<0.3	0.01	1.559	865	2970	0	0
GWQ 25-W06	***20-Oct-09***	170	1520	975	170	7.37	3740	5	6420	18.9	10100	4	<0.3	0.018	1.423	1120	2670	0	0
GWQ 25-W06	***6-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	947	2850	<3	<3
GWQ 25-W07	***29-Jun-09***	110	1050	620	110	7.62	4400	2	4920	10.7	6730	4	<0.3	0.012	2.007	551	2030	1	0
GWQ 25-W07	***20-Oct-09***	145	1000	720	145	7.52	4100	4	4110	9.81	6700	4	<0.3	0.022	1.908	643	1610	0	0
GWQ 25-W07	***5-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	626	1860	<3	<3
GWQ 25-W08	***6-Jul-09***	135	1350	310	135	7.71	5770	2	5640	13.6	8660	4	<0.3	0.009	1.209	815	2370	0	0
GWQ 25-W08	***20-Oct-09***	160	1380	880	160	7.51	5310	5	5320	10.6	8430	4	<0.3	0.012	1.15	874	2190	0	0
GWQ 25-W08	***5-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	831	2370	<3	<3
GWQ 25-W09	***26-Jun-09***	150	1420	900	150	7.98	10800	2	6920	47.5	9430	4	<0.3	0.018	1.434	828	2800	0	0
GWQ 25-W09	***15-Oct-09***	NS	851	NS	NS	8.59	4160	14	4280	37.4	NR	6	<0.3	0.009	1.048	974	2910	0	0
GWQ 25-W09	***3-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**86.8**	**254**	0	0
GWQ 25-W10	***26-Jun-09***	130	1220	760	130	8.11	3900	2	6240	118	8560	4	<0.3	0.014	1.316	697	2570	0	0
GWQ 25-W10	***15-Oct-09***	NS	1490	NS	NS	7.44	4300	3	5460	117	8170	3	<0.3	0.012	0.976	863	2750	Overgrown	Overgrown
GWQ 25-W10	***3-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**78.2**	**237**	0	0
GWQ 25-W11	***26-Jun-09***	NR	940	930	NR	11.5	5210	6	5510	157	7730	4	<0.3	0.02	0.811	442	2300	0	0
GWQ 25-W11	***15-Oct-09***	NS	1430	NS	NS	7.49	5940	3	6100	46.5	9400	4	<0.3	0.012	1.281	608	2450	Overgrown	Overgrown
GWQ 25-W11	***3-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**64.7**	**222**	0	0
GWQ25-W12	***6-Aug-10***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	716	2050	<3	<3
GWQ25-W4	***2-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	604	2160	0	0
GWQ25-W5	***2-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	931	2470	0	0

ATTACHMENT A, TABLE 1
INORGANICS IN GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																	
		Alkalinity as Bicarbonate	Total Hardness	Hardness as Ca	Total Alkalinity	pH	Total Dissolved Solids	Total Organic Carbon	Total Solids	Turbidity	Specific Conductance at 25°C	Total Kjeldahl Nitrogen	Total Phosphorus	Nitrate + Nitrite Nitrogen	Total Ammonia	Sulfate	Chloride	Total Coliforms	E.coli
EQL		*1*	*1*	*1*	*1*	*0.01*	*1*	*1*	*1*	*0.1*	*1*	*1*	*0.3*	*0.01*	*0.05*	*9*	*9*	*3*	*3*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*units*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*µS/cm*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*MPN/100mL*	*MPN/100mL*
GWQ25-W9	***2-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	977	2850	0	0
GWQ25-6N63-E	***2-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1540	823	16	0
GWQ25-6N63-F	***2-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1270	1570	0	0
GWQ25-W10	***2-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	878	2660	0	0
GWQ25 - W-11	***6-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	719	2370	4	<3
GWQ25 - 5N62-E	***6-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	810	2360	<3	<3
GWQ25 - W8	***6-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	856	2480	<3	<3
GWQ25 - 4N34-C	***6-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	922	339	<3	<3
GWQ25 - 4N34-D	***6-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3300	404	<3	<3
GWQ25-W12	***8-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	856	2350	0	0
GWQ25-6N67-F	***8-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1160	717	>200	>200
GWQ25-W6	***8-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1000	3010	1	0
GWQ25-W7	***8-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	622	1840	0	0
GWQ25-100	***8-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	620	1830	0	0
GWQ25-5N62-D	***9-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3620	1600	4	0
GWQ25-6N58-D	***9-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1430	1310		
GWQ25-6N58-F	***9-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1420	925	0	0
GWQ25-6N59-D	***9-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	263	183	0	0
GWQ25-6N59-F	***9-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1040	1400	0	0
GWQ25-6N67-E	***9-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1720	635	5	2
GWQ25 - 6N67 - E	***10-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	>200	53
GWQ25 - 6N67 - F	***10-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	70	18
GWQ25 - W6	***10-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	0
GWQ25 - 6N63 - E	***10-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	0
GWQ25 - 5N62-D	***10-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0	0
GWQ25-6N57-D	***13-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1760	1200		
GWQ25-6N57-F	***13-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	978	2430		
GWQ25-6N60-D	***13-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1500	571		
GWQ25-6N60-E	***13-Jun-11***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1050	908		
MOE Standards [2]																			
Table 3		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.
1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

ATTACHMENT A, TABLE 2
METALS IN GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																		
		Aluminum (Al)-Dissolved	Antimony (Sb)-Dissolved	Arsenic (As)-Dissolved	Barium (Ba)-Dissolved	Beryllium (Be)-Dissolved	Bismuth (Bi)-Dissolved	Boron (B)-Dissolved	Cadmium (Cd)-Dissolved	Calcium (Ca)-Dissolved	Cesium (Cs)-Dissolved	Chromium (Cr)-Dissolved	Cobalt (Co)-Dissolved	Copper (Cu)-Dissolved	Iron (Fe)-Dissolved	Lead (Pb)-Dissolved	Lithium (Li)-Dissolved	Magnesium (Mg)-Dissolved	Manganese (Mn)-Dissolved	Mercury (Hg)-Dissolved
EQL		*0.002*	*0.001*	*0.0005*	*0.0003*	*0.001*	*0.0003*	*0.02*	*0.00001*	*0.05*	*0.0001*	*0.001*	*0.0002*	*0.0004*	*0.002*	*0.0001*		*0.01*	*0.0002*	*0.00005*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*		*mg/L*	*mg/L*	*mg/L*
GWQ 25-4N34A	***24-Nov-09***	0.006	0.0026	0.005	0.0138	<0.0010	<0.00030	0.141	0.000181	556	<0.00010	0.0137	0.0101	0.00387	0.261	0.0001	--	535	6.38	<0.000050
GWQ 25-4N34B	***24-Nov-09***	0.0075	<0.0010	0.004	0.0072	<0.0010	<0.00030	0.224	0.000482	509	<0.00010	0.0155	0.00064	0.0165	<0.0020	0.00014	--	347	0.141	<0.000050
GWQ 4N34-B	***5-Aug-10***	0.0452	<0.00020	0.006	0.00792	<0.00020	<0.00020	0.178	0.000083	487	<0.00010	<0.00020	0.00095	0.00336	0.032	<0.000090	0.557	320	0.141	<0.000050
GWQ 25-4N34C	***24-Nov-09***	0.0873	0.0028	0.006	0.0154	<0.0010	<0.00030	0.231	0.000156	319	<0.00010	0.0143	0.00277	0.0103	0.576	0.00019	--	231	0.765	<0.000050
GWQ 4N34-C	***5-Aug-10***	<0.0020	0.00021	0.004	0.0206	<0.00020	<0.00020	0.205	0.000122	236	<0.00010	<0.00020	0.00157	0.00341	0.221	<0.000090	0.45	187	0.458	<0.000050
GWQ 25-4N34D	***24-Nov-09***	0.008	0.0015	0.004	0.0143	<0.0010	<0.00030	0.198	0.000036	374	<0.00010	0.0147	0.00032	0.0184	0.237	0.00013	--	648	0.00487	<0.000050
GWQ 4N34-D	***5-Aug-10***	<0.0020	<0.00020	0.004	0.0171	<0.00020	<0.00020	0.156	0.000058	426	<0.00010	<0.00020	0.00064	0.00488	0.434	<0.000090	0.865	781	0.00528	<0.000050
GWQ 25-6N58A	***26-Nov-09***	0.0424	0.0023	0.005	0.0141	<0.0010	<0.00030	0.081	0.00487	553	<0.00010	0.0037	0.00631	0.013	<0.0020	0.00081	--	398	2.53	<0.000050
GWQ 25-6N58B	***26-Nov-09***	0.0032	0.0051	0.008	0.00964	<0.0010	<0.00030	0.087	0.00349	649	<0.00010	0.0032	0.0155	0.0403	<0.0020	0.00063	--	341	6.7	<0.000050
GWQ 25-6N58C	***26-Nov-09***	0.0028	0.0028	0.010	0.0106	<0.0010	<0.00030	0.154	0.00612	677	<0.00010	0.0035	0.0292	0.0318	<0.0020	0.00061	--	248	3.66	<0.000050
GWQ 6N58 - C	***4-Aug-10***	<0.0020	0.00137	0.007	0.00961	<0.00020	<0.00020	0.324	0.0021	697	<0.00010	<0.00020	0.0187	0.00881	<0.010	0.000103	0.667	255	3.16	<0.000050
GWQ 25-6N58D	***26-Nov-09***	0.0022	0.0035	0.014	0.0103	<0.0010	<0.00030	0.262	0.00588	662	<0.00010	0.0028	0.0158	0.0301	0.0162	0.00021	--	234	1.89	<0.000050
GWQ 6N58 - D	***4-Aug-10***	0.0024	0.00136	0.009	0.011	<0.00020	<0.00020	0.4	0.00379	638	<0.00010	<0.00020	0.0138	0.00558	<0.010	0.000096	0.488	246	1.86	<0.000050
GWQ 25-6N58E	***26-Nov-09***	0.0188	<0.0010	0.011	0.0123	<0.0010	<0.00030	0.293	0.000509	336	<0.00010	0.0019	0.00138	0.00174	0.777	0.00076	--	280	0.173	<0.000050
GWQ 6N58-E	***5-Aug-10***	<0.0020	<0.00020	0.012	0.0119	<0.00020	<0.00020	0.334	0.000063	329	<0.00010	<0.00020	0.00135	0.0009	1.34	<0.000090	0.342	287	0.144	<0.000050
GWQ 25-6N58F	***26-Nov-09***	0.004	0.0011	0.008	0.0109	<0.0010	<0.00030	0.264	0.000447	354	<0.00010	0.0018	0.00233	0.00152	0.131	0.00023	--	286	0.168	<0.000050
GWQ 6N58-F	***5-Aug-10***	<0.0020	<0.00020	0.013	0.0103	<0.00020	<0.00020	0.32	0.000051	349	<0.00010	<0.00020	0.00204	0.00113	0.687	<0.000090	0.391	293	0.151	<0.000050
GWQ 25-W04	***30-Nov-09***	0.0178	0.0019	0.009	0.0115	<0.0010	<0.00030	0.754	0.000113	153	<0.00010	<0.0010	0.00044	0.00164	1.57	0.00021	--	83.7	0.0327	<0.000050
GWQ W4	***4-Aug-10***	<0.0020	0.00025	0.007	0.00946	<0.00020	<0.00020	0.637	0.00004	185	<0.00010	0.00038	0.00094	0.00088	3.24	0.000093	0.212	93.2	0.0864	<0.000050
GWQ 25-6N59A	***26-Nov-09***	<0.0020	0.0029	0.006	0.0103	<0.0010	<0.00030	0.147	0.00351	508	<0.00010	0.0073	0.00625	0.0203	0.181	0.00012	--	372	3.24	<0.000050
GWQ 25-6N59B	***26-Nov-09***	0.0027	0.0061	0.009	0.00772	<0.0010	<0.00030	0.211	0.00971	714	<0.00010	0.0058	0.0224	0.018	<0.0020	0.0002	--	302	3.92	<0.000050
GWQ 25-6N59C	***26-Nov-09***	0.222	0.0021	0.010	0.0103	<0.0010	<0.00030	0.253	0.00621	705	<0.00010	0.0057	0.0236	0.0113	0.157	0.00196	--	226	2.77	<0.000050
GWQ 6N59-C	***5-Aug-10***	<0.0020	0.00075	0.012	0.0083	<0.00020	<0.00020	0.36	0.00287	652	<0.00010	<0.00020	0.0145	0.00445	<0.010	<0.000090	0.619	220	2.97	<0.000050
GWQ 25-6N59D	***26-Nov-09***	0.0089	0.0011	0.003	0.142	<0.0010	<0.00030	0.094	0.00102	85.1	<0.00010	0.011	0.00073	0.00495	0.125	0.00058	--	162	0.0641	<0.000050
GWQ 6N59-D	***5-Aug-10***	<0.0020	0.00026	0.003	0.11	<0.00020	<0.00020	0.108	0.000189	92.1	<0.00010	<0.00020	0.00051	0.00365	0.046	0.000166	0.208	151	0.0515	<0.000050
GWQ 25-6N59E	***26-Nov-09***	0.0216	<0.0010	0.020	0.0175	<0.0010	<0.00030	0.411	0.000488	416	<0.00010	0.0027	0.00223	0.00091	1.41	0.00027	--	185	0.252	<0.000050
GWQ 6N59-E	***5-Aug-10***	<0.0020	0.00045	0.015	0.0139	<0.00020	<0.00020	0.45	0.000222	522	<0.00010	<0.00020	0.00506	0.00262	<0.010	0.00013	0.425	191	1.53	<0.000050
GWQ 25-6N59F	***26-Nov-09***	0.0159	0.0011	0.014	0.0134	<0.0010	<0.00030	0.345	0.000275	511	<0.00010	0.0025	0.00573	0.00136	2.47	<0.00010	--	184	1.25	<0.000050
GWQ 6N59-F	***5-Aug-10***	<0.0020	0.00057	0.017	0.015	0.00021	<0.00020	0.429	0.000094	644	<0.00010	<0.00020	0.00205	0.00193	0.136	<0.000090	0.35	286	0.284	<0.000050
GWQ 25-6N60A	***26-Nov-09***	0.0045	0.0016	0.002	0.00928	<0.0010	<0.00030	0.125	0.00175	403	<0.00010	0.0031	0.00555	0.0153	0.115	0.0006	--	269	2.64	<0.000050
GWQ 25-6N60B	***26-Nov-09***	0.0085	0.0012	0.005	0.00748	<0.0010	<0.00030	0.211	0.00286	613	<0.00010	0.0025	0.0129	0.0152	0.578	0.0007	--	228	3.29	<0.000050
GWQ 25-6N60C	***26-Nov-09***	0.0142	0.0041	0.010	0.00886	<0.0010	<0.00030	0.269	0.0104	637	<0.00010	0.0031	0.00952	0.0174	2.06	0.00111	--	204	2.04	<0.000050
GWQ 6N60-C	***6-Aug-10***	<0.0020	<0.0010	0.017	0.00814	<0.0010	<0.00030	0.293	0.000074	582	<0.00010	<0.0010	0.0075	0.0012	4.39	<0.00010	--	201	2.11	<0.000050
GWQ 25-6N60D	***26-Nov-09***	0.0084	0.0013	0.007	0.00819	<0.0010	<0.00030	0.262	0.00155	513	<0.00010	0.002	0.00926	0.00177	0.226	0.00012	--	179	1.39	<0.000050
GWQ 6N60-D	***6-Aug-10***	<0.0020	0.0012	0.004	0.00841	<0.0010	<0.00030	0.282	0.00142	489	<0.00010	<0.0010	0.00484	0.00382	<0.0020	<0.00010	--	176	0.809	<0.000050
GWQ 25-6N60E	***26-Nov-09***	0.0928	0.0011	0.011	0.015	<0.0010	<0.00030	0.155	0.00651	147	<0.00010	0.0034	0.00135	0.051	0.187	0.00555	--	141	0.149	<0.000050
GWQ 6N60-E	***6-Aug-10***	<0.0020	<0.0010	0.007	0.0161	<0.0010	<0.00030	0.171	0.000286	141	<0.00010	<0.0010	0.00116	0.00084	<0.0020	0.00012	--	137	0.16	<0.000050
GWQ 25-W06	***26-Nov-09***	0.265	<0.0010	0.023	0.0123	<0.0010	<0.00030	1.05	0.000028	340	0.00011	0.0014	0.00077	0.00097	1.55	0.00035	--	151	0.035	<0.000050
GWQ W6	***6-Aug-10***	<0.0020	<0.0010	0.020	0.012	<0.0010	<0.00030	0.896	0.000028	324	<0.00010	<0.0010	0.00061	0.00044	1.16	0.00028	--	152	0.0324	<0.000050
GWQ 25-W07	***27-Nov-09***	0.0037	0.0044	0.010	0.00956	<0.0010	<0.00030	0.343	0.000029	238	<0.00010	<0.0010	0.00026	0.00503	0.613	<0.00010	--	104	0.00818	<0.000050
GWQ W7	***5-Aug-10***	<0.0020	<0.00020	0.020	0.0111	0.000	<0.00020	0.685	0.000013	232	<0.00010	0.0008	0.00035	0.00028	0.764	<0.000090	0.208	116	0.00844	<0.000050
GWQ 25-W08	***27-Nov-09***	<0.0020	<0.0010	0.014	0.00914	<0.0010	<0.00030	0.328	0	289	<0.00010	<0.0010	0.00067	0.00083	0.497	<0.00010	--	127	0.0229	<0.000050
GWQ W8	***5-Aug-10***	<0.0020	<0.00020	0.028	0.011	0.000	<0.00020	0.766	0.00001	296	<0.00010	0.0009	0.00103	0.00026	0.811	<0.000090	0.313	149	0.0278	<0.000050
GWQ 25-6N57B	***25-Nov-09***	<0.0020	0.0059	0.008	0.00859	<0.0010	<0.00030	0.195	0.00472	681	0.00011	0.0072	0.012	0.00652	0.28	0.00043	--	303	4.69	<0.000050
GWQ 25-6N57C	***25-Nov-09***	0.007	0.0027	0.009	0.00842	<0.0010	<0.00030	0.257	0.00266	752	<0.00010	0.0065	0.0158	0.0272	0.252	0.00031	--	255	2.64	<0.000050
GWQ25-6N57-C	***26-Aug-10***	<0.0020	0.00092	0.007	0.00853	<0.00020	<0.00020	0.267	0.0022	633	<0.00010	<0.00020	0.0157	0.00499	0.119	0.000112	0.569	238	2.64	<0.000050
GWQ 25-6N57D	***25-Nov-09***	0.0049	0.0042	0.013	0.0109	<0.0010	<0.00030	0.323	0.00321	677	<0.00010	0.0057	0.0177	0.00776	0.309	0.00064	--	222	1.97	<0.000050
GWQ25-6N57-D	***26-Aug-10***	<0.0020	0.00077	0.011	0.00944	<0.00020	<0.00020	0.345	0.00213	620	<0.00010	<0.00020	0.0135	0.0032	<0.010	0.00012	0.443	215	2.04	<0.000050
GWQ 25-6N57E	***25-Nov-09***	0.034	0.0037	0.012	0.0118	<0.0010	<0.00030	0.272	0.00514	460	<0.00010	0.004	0.00226	0.0047	0.142	0.00057	--	214	0.339	<0.000050
GWQ25-6N57-E	***26-Aug-10***	0.0029	0.00073	0.013	0.0124	<0.00020	<0.00020	0.321	0.0016	429	<0.00010	<0.00020	0.0027	0.00381	<0.010	0.000179	0.38	205	0.354	<0.000050
GWQ25-6N57-F	***26-Aug-10***	0.0073	0.00035	0.018	0.0158	<0.00020	<0.00020	0.774	0.00044	279	<0.00010	0.00021	0.001	0.00163	<0.010	<0.000090	0.312	137	0.058	<0.000050
GWQ 25-W10	***27-Nov-09***	0.0124	0.0025	0.013	0.0153	<0.0010	<0.00030	0.315	0.000186	288	<0.00010	<0.0010	0.00038	0.00314	0.387	0.00043	--	127	0.0107	<0.000050

ATTACHMENT A, TABLE 2
METALS IN GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																		
		Aluminum (Al)-Dissolved	Antimony (Sb)-Dissolved	Arsenic (As)-Dissolved	Barium (Ba)-Dissolved	Beryllium (Be)-Dissolved	Bismuth (Bi)-Dissolved	Boron (B)-Dissolved	Cadmium (Cd)-Dissolved	Calcium (Ca)-Dissolved	Cesium (Cs)-Dissolved	Chromium (Cr)-Dissolved	Cobalt (Co)-Dissolved	Copper (Cu)-Dissolved	Iron (Fe)-Dissolved	Lead (Pb)-Dissolved	Lithium (Li)-Dissolved	Magnesium (Mg)-Dissolved	Manganese (Mn)-Dissolved	Mercury (Hg)-Dissolved
GWQ W-10	*3-Aug-10*	0.0072	<0.0010	0.024	0.018	<0.0010	<0.00030	1	0.000273	284	0.0001	<0.0010	0.00042	0.0012	0.657	<0.00010	--	130	0.0143	<0.000050
GWQ 6N63-C	*3-Aug-10*	0.003	<0.0010	0.010	0.0149	<0.0010	<0.00030	0.199	0.000378	745	<0.00010	<0.0010	0.00437	0.00815	<0.0020	0.00013	--	487	5.94	<0.000050
GWQ 6N63-D	*3-Aug-10*	0.0023	<0.0010	0.012	0.0137	<0.0010	<0.00030	0.284	0.000418	776	<0.00010	<0.0010	0.00655	0.00557	<0.0020	<0.00010	--	333	2.75	<0.000050
GWQ 6N63-E	*3-Aug-10*	<0.0020	<0.0010	0.013	0.0151	<0.0010	<0.00030	0.32	0.000188	772	<0.00010	<0.0010	0.0057	0.00449	<0.0020	0.00016	--	318	1.74	<0.000050
GWQ 6N63-F	*3-Aug-10*	<0.0020	<0.0010	0.014	0.0213	<0.0010	<0.00030	0.464	0.000061	538	<0.00010	<0.0010	0.00367	0.00243	<0.0020	0.00013	--	289	0.718	<0.000050
GWQ 25-W09	*27-Nov-09*	<0.0020	0.0016	0.016	0.0102	<0.0010	<0.00030	0.353	0.000022	306	<0.00010	<0.0010	0.00082	0.00142	0.478	<0.00010	--	145	0.0169	<0.000050
GWQ W9	*3-Aug-10*	0.004	<0.0010	0.024	0.0118	<0.0010	<0.00030	1.01	0.000076	327	<0.00010	<0.0010	0.00087	0.0013	0.688	0.00022	--	173	0.0227	<0.000050
GWQ 5N62-C	*3-Aug-10*	<0.0020	<0.0010	0.020	0.0198	<0.0010	<0.00030	0.31	0.000506	890	<0.00010	<0.0010	0.00967	0.0179	<0.0020	0.00027	--	346	6.07	<0.000050
GWQ 5N62-D	*3-Aug-10*	<0.0020	<0.0010	0.020	0.0192	<0.0010	<0.00030	0.391	0.000329	728	<0.00010	<0.0010	0.00452	0.0061	<0.0020	0.00011	--	395	1.42	<0.000050
GWQ 5N62-E	*3-Aug-10*	<0.0020	<0.0010	0.020	0.0205	<0.0010	<0.00030	0.994	0.00002	349	<0.00010	<0.0010	0.00122	0.00139	0.612	<0.00010	--	158	0.154	<0.000050
GWQ 25-W11	*27-Nov-09*	<0.0020	0.0028	0.011	0.0571	<0.0010	<0.00030	0.226	0.000052	259	0.00014	<0.0010	<0.00020	0.00463	<0.0020	<0.00010	--	78.7	0.00105	<0.000050
GWQ W11	*3-Aug-10*	0.0093	<0.0010	0.018	0.0712	<0.0010	<0.00030	0.287	0.000054	340	0.00035	0.0102	0.00021	0.00089	0.235	<0.00010	--	37.1	0.00035	<0.000050
GWQ25-6N67-D	*26-Aug-10*	0.0026	0.00049	0.004	0.0128	<0.00020	<0.00020	0.42	0.000157	652	<0.00010	<0.00020	0.0065	0.00485	<0.010	<0.000090	0.78	257	3.01	<0.000050
GWQ25-6N67-E	*26-Aug-10*	0.0057	0.00044	0.004	0.0144	<0.00020	<0.00020	0.548	0.000161	564	<0.00010	<0.00020	0.00358	0.00283	<0.010	<0.000090	0.534	232	1.31	<0.000050
GWQ25-6N67-F	*26-Aug-10*	0.0176	0.00025	0.005	0.0224	<0.00020	<0.00020	0.596	0.000051	394	<0.00010	<0.00020	0.00301	0.00159	<0.010	<0.000090	0.368	228	0.26	<0.000050
GWQ25-W12	*26-Aug-10*	0.0033	0.00032	0.013	0.0122	0.0002	<0.00020	1.24	0.000061	284	<0.00010	<0.00020	0.0007	0.00069	<0.010	<0.000090	0.321	146	0.0198	<0.000050
GWQ 25-W05	*24-Nov-09*	0.0161	0.0023	0.017	0.0143	<0.0010	<0.00030	1.16	0.000019	243	<0.00010	<0.0010	0.00069	0.00248	0.823	<0.00010	--	149	0.0288	<0.000050
GWQ W5	*5-Aug-10*	<0.0020	<0.00020	0.027	0.013	0.000	<0.00020	0.775	0.000022	309	<0.00010	0.00096	0.00069	0.00054	0.458	<0.000090	0.318	160	0.0242	<0.000050
GWQ25-W4	*2-Jun-11*	0.0030	<0.00020	0.0113	0.0104	<0.00020	0.00023	0.549	0.000021	180	<0.00010	<0.0020	0.00031	0.00366	3.50	<0.000090	0.254	86.9	0.0531	<0.000050
GWQ25-W5	*2-Jun-11*	0.0026	<0.00020	0.0198	0.0144	<0.00020	<0.00020	0.812	<0.000010	293	<0.00010	<0.0020	0.00107	0.00489	0.85	<0.000090	0.332	148	0.0417	<0.000050
GWQ25-W9	*2-Jun-11*	0.0031	<0.00020	0.0253	0.0124	<0.00020	<0.00020	0.936	0.000026	314	<0.00010	<0.0020	0.00141	0.00507	1.05	<0.000090	0.414	144	0.0238	<0.000050
GWQ25-6N63-E	*2-Jun-11*	0.0043	<0.00020	0.00832	0.0162	<0.00020	<0.00020	0.266	0.000105	566	<0.00010	0.0052	0.00789	0.0104	<0.10	<0.000090	0.661	219	2.47	<0.000050
GWQ25-6N63-F	*2-Jun-11*	0.0091	<0.00020	0.0205	0.0141	<0.00020	<0.00020	0.425	0.000066	524	<0.00010	0.0040	0.00355	0.00571	2.39	<0.000090	0.460	279	0.340	<0.000050
GWQ25-W10	*2-Jun-11*	0.0038	0.00021	0.0212	0.0184	<0.00020	<0.00020	0.922	0.000034	286	0.00015	<0.0020	0.00077	0.00412	0.83	<0.000090	0.407	126	0.0168	<0.000050
GWQ 25-W11	*6-Jun-11*	0.0095	0.00041	0.0210	0.0324	<0.00020	<0.00020	0.574	0.000039	300	0.00012	<0.0020	0.00029	0.00035	0.14	<0.000090	0.237	174	0.0243	<0.000050
GWQ 25-5N62-E	*6-Jun-11*	<0.0020	<0.00020	0.0258	0.0142	<0.00020	<0.00020	0.701	0.000021	293	<0.00010	<0.0020	0.00077	0.00048	0.60	<0.000090	0.268	155	0.0800	<0.000050
GWQ 25-W8	*6-Jun-11*	<0.0020	<0.00020	0.0287	0.0134	<0.00020	<0.00020	0.722	0.000012	282	<0.00010	<0.0020	0.00085	0.00043	0.72	<0.000090	0.252	155	0.0292	<0.000050
GWQ 25-4N34-C	*6-Jun-11*	0.0879	<0.00020	0.00572	0.0231	<0.00020	<0.00020	0.183	0.000036	290	<0.00010	<0.0020	0.00332	0.00250	0.26	0.000736	0.445	298	0.907	<0.000050
GWQ 25-4N34-D	*6-Jun-11*	<0.0020	<0.00020	0.00483	0.0148	<0.00020	<0.00020	0.152	0.000043	373	<0.00010	<0.0020	0.00028	0.00371	<0.10	<0.000090	0.678	713	0.00966	<0.000050
GWQ25-W12	*8-Jun-11*	<0.0020	<0.00020	0.0146	0.0134	<0.00020	0.00031	0.957	0.000035	296	0.00012	0.0030	0.00074	0.00253	0.60	<0.000090	0.263	144	0.0500	<0.000050
GWQ25-6N67-F	*8-Jun-11*	0.0100	<0.00020	0.00867	0.0147	<0.00020	<0.00020	0.319	0.000042	404	<0.00010	0.0063	0.00265	0.00368	0.73	<0.000090	0.320	209	0.196	<0.000050
GWQ25-W6	*8-Jun-11*	0.0026	<0.00020	0.0187	0.0134	<0.00020	<0.00020	1.20	0.000044	314	<0.00010	0.0026	0.00060	0.00298	1.43	0.000163	0.394	142	0.0334	<0.000050
GWQ25-W7	*8-Jun-11*	0.0020	<0.00020	0.0104	0.0123	<0.00020	<0.00020	0.781	0.000013	230	0.00010	0.0022	<0.00020	0.00206	0.81	<0.000090	0.268	110	0.00945	<0.000050
GWQ25-100	*8-Jun-11*	<0.0020	<0.00020	0.0103	0.0122	<0.00020	<0.00020	0.676	0.000011	222	0.00010	0.0021	<0.00020	0.00172	0.80	<0.000090	0.278	107	0.00950	<0.000050
GWQ25-5N62-D	*9-Jun-11*	0.0026	0.00068	0.0289	0.0167	<0.00020	<0.00020	0.210	0.000528	770	<0.00010	0.0066	0.00551	0.0108	<0.10	<0.000090	1.09	469	1.63	<0.000050
GWQ25-6N58-D	*9-Jun-11*	0.0227	0.00122	0.0182	0.0115	<0.00020	<0.00020	0.293	0.000858	644	<0.00010	0.0044	0.00955	0.00611	1.37	0.000218	0.655	260	1.93	<0.000050
GWQ25-6N58-F	*9-Jun-11*	0.0063	<0.00020	0.0172	0.00975	<0.00020	<0.00020	0.252	0.000050	358	<0.00010	0.0052	0.00199	0.00445	1.02	<0.000090	0.578	298	0.141	<0.000050
GWQ25-6N59-D	*9-Jun-11*	0.0022	<0.00020	0.00295	0.145	<0.00020	<0.00020	0.096	0.000222	87.7	<0.00010	0.0108	<0.00020	0.00361	<0.10	<0.000090	0.389	228	0.00125	<0.000050
GWQ25-6N59-F	*9-Jun-11*	0.0196	0.00021	0.0137	0.0136	<0.00020	<0.00020	0.354	0.000305	517	<0.00010	0.0045	0.00521	0.00401	1.31	<0.000090	0.544	205	1.31	<0.000050
GWQ25-6N67-E	*9-Jun-11*	0.0114	<0.00020	0.00598	0.0117	<0.00020	<0.00020	0.312	0.000132	514	<0.00010	0.0042	0.00412	0.00682	<0.10	<0.000090	0.540	218	1.24	<0.000050
GWQ25-6N57-D	*13-Jun-11*	0.0115	<0.00020	0.0119	0.0174	<0.00020	0.00030	0.788	0.000196	297	<0.00010	<0.0020	0.00098	0.00384	<0.10	0.000094	0.340	155	0.0705	<0.000050
GWQ25-6N57-F	*13-Jun-11*	0.0122	<0.00020	0.0125	0.0177	<0.00020	<0.00020	0.808	0.000198	305	<0.00010	<0.0020	0.00105	0.00362	<0.10	<0.000090	0.345	157	0.0721	<0.000050
GWQ25-6N60-D	*13-Jun-11*	0.0027	0.00040	0.00742	0.00809	<0.00020	<0.00020	0.315	0.000839	507	<0.00010	<0.0020	0.00862	0.00551	0.67	0.000141	0.437	184	1.41	<0.000050
GWQ25-6N60-E	*13-Jun-11*	0.0124	0.00104	0.00776	0.0152	<0.00020	<0.00020	0.215	0.00348	106	<0.00010	<0.0020	0.00085	0.00614	<0.10	0.000239	0.180	104	0.0985	<0.000050
MOE Standards [2]																				
Table 3	--	--	--	16	0.480	23	0.053	--	50	0.011	--	--	0.2	0.1	0.023	--	0.032	--	--	--	0.00012

Notes:
1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

TABLE 2 (cont'd)
METALS IN GROUNDWATER - NON-POTABLE GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																			
		Molybdenum (Mo)-Dissolved	Nickel (Ni)-Dissolved	Phosphorus (P)-Dissolved	Potassium (K)-Dissolved	Rubidium (Rb)-Dissolved	Selenium (Se)-Dissolved	Silicon (Si)-Dissolved	Silver (Ag)-Dissolved	Sodium (Na)-Dissolved	Strontium (Sr)-Dissolved	Tellurium (Te)-Dissolved	Thallium (Tl)-Dissolved	Thorium (Th)-Dissolved	Tin (Sn)-Dissolved	Titanium (Ti)-Dissolved	Tungsten (W)-Dissolved	Uranium (U)-Dissolved	Vanadium (V)-Dissolved	Zinc (Zn)-Dissolved	Zirconium (Zr)-Dissolved	Chromium, Hexavalent
EQL		*0.0001*	*0.0002*	*0.02*	*0.05*	*0.0002*	*0.001*	*0.2*	*0.0001*	*0.02*	*0.0001*	*0.0005*	*0.0001*		*0.0003*	*0.0005*	*0.0002*	*0.0001*	*0.001*	*0.005*	*0.0004*	
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	
GWQ 25-4N34A	***24-Nov-09***	0.00111	0.0302	<0.020	14.6	0.00325	0.0025	9.47	<0.00010	525	5.36	<0.00050	<0.00010	--	<0.00030	0.00611	<0.00020	0.0351	0.0122	0.0128	0.00059	
GWQ 25-4N34B	***24-Nov-09***	0.00313	0.0179	0.031	12	0.00092	0.0054	11.9	<0.00010	303	3.32	<0.00050	<0.00010	--	<0.00030	0.00629	<0.00020	0.193	0.0125	0.0065	0.00042	
GWQ 4N34-B	***5-Aug-10***	0.00279	0.0186	<0.10	8.97	0.00101	0.0051	11.3	<0.00010	281	3.12	<0.00020	<0.00010	<0.00010	<0.00020	0.0237	<0.0010	0.188	0.00596	0.0069	0.00048	<0.010
GWQ 25-4N34C	***24-Nov-09***	0.00275	0.0168	0.13	10	0.00148	0.0064	11.2	<0.00010	251	2.27	<0.00050	<0.00010	--	<0.00030	0.00778	<0.00020	0.138	0.0113	<0.0050	0.00052	
GWQ 4N34-C	***5-Aug-10***	0.00321	0.017	<0.10	7.64	0.00141	0.0042	9.31	<0.00010	212	1.79	<0.00020	<0.00010	<0.00010	0.0005	0.00831	<0.0010	0.128	0.0076	0.0089	<0.00040	<0.010
GWQ 25-4N34D	***24-Nov-09***	0.00765	0.0121	0.036	13.6	0.00055	0.0058	10.1	<0.00010	465	4.22	<0.00050	<0.00010	--	<0.00030	0.0101	<0.00020	0.21	0.0133	0.0093	0.00078	
GWQ 4N34-D	***5-Aug-10***	0.00819	0.0161	<0.10	13.1	0.00053	0.0101	9.05	<0.00010	508	4.46	<0.00020	<0.00010	<0.00010	<0.00020	0.046	<0.0010	0.258	0.00597	0.0095	0.00076	<0.010
GWQ 25-6N58A	***26-Nov-09***	0.00431	0.0423	<0.020	10.6	0.00117	0.0063	10.8	<0.00010	379	4.43	<0.00050	<0.00010	--	<0.00030	0.0155	<0.00020	0.326	0.0081	0.0365	0.0013	
GWQ 25-6N58B	***26-Nov-09***	0.00501	0.0494	0.029	11.7	0.00195	0.0032	11.9	<0.00010	478	4.6	<0.00050	<0.00010	--	<0.00030	0.00857	<0.00020	0.332	0.0056	0.0367	0.00125	
GWQ 25-6N58C	***26-Nov-09***	0.00771	0.0424	<0.020	11.2	0.00729	0.003	12	<0.00010	500	4.33	<0.00050	0.00094	--	<0.00030	0.00422	<0.00020	0.119	0.0051	0.179	0.00109	
GWQ 6N58 - C	***4-Aug-10***	0.00263	0.0153	<0.10	10.3	0.00607	<0.0010	5.86	<0.00010	504	4.42	<0.00020	0.00025	<0.00010	<0.00020	0.00313	<0.0010	0.0565	0.00324	0.0483	0.00052	<0.010
GWQ 25-6N58D	***26-Nov-09***	0.00137	0.0307	<0.020	11.1	0.00625	0.0035	10.9	<0.00010	515	4.04	<0.00050	0.00045	--	<0.00030	0.00515	<0.00020	0.0297	0.0032	0.0715	<0.00040	
GWQ 6N58 - D	***4-Aug-10***	0.00083	0.0145	<0.10	9.68	0.00629	<0.0010	6.22	<0.00010	521	4.12	<0.00020	0.00024	<0.00010	<0.00020	0.0041	<0.0010	0.0229	0.00227	0.0295	<0.00040	<0.010
GWQ 25-6N58E	***26-Nov-09***	0.00656	0.00943	<0.020	10.9	0.00415	0.0031	10.7	<0.00010	548	3.16	<0.00050	<0.00010	--	<0.00030	0.00597	<0.00020	0.0136	0.0026	0.009	<0.00040	
GWQ 6N58-E	***5-Aug-10***	0.00496	0.007	<0.10	10.9	0.00421	0.0039	11.3	<0.00010	581	3.07	<0.00020	<0.00010	<0.00010	<0.00020	0.0136	<0.0010	0.00836	0.0026	0.0065	<0.00040	<0.010
GWQ 25-6N58F	***26-Nov-09***	0.00729	0.0108	<0.020	10	0.00535	0.0028	10.1	<0.00010	550	3.2	<0.00050	<0.00010	--	<0.00030	0.00582	<0.00020	0.0387	0.0038	0.017	<0.00040	
GWQ 6N58-F	***5-Aug-10***	0.00539	0.00901	<0.10	9.71	0.00516	0.0036	11.4	<0.00010	591	3.16	<0.00020	<0.00010	<0.00010	<0.00020	0.0139	<0.0010	0.0218	0.0029	0.0119	<0.00040	<0.010
GWQ 25-W04	***30-Nov-09***	0.00671	0.00251	<0.020	24.4	0.0121	0.0064	2.38	<0.00010	-	2.29	<0.00050	<0.00010	--	<0.00030	0.00214	0.00298	<0.00010	<0.0010	0.0176	<0.00040	
GWQ W4	***4-Aug-10***	0.00578	<0.00020	<0.10	27.2	0.0129	<0.0010	1.98	<0.00010	1190	2.52	<0.00020	<0.00010	<0.00010	<0.00020	0.00033	0.0011	<0.00010	<0.00020	0.0025	<0.00040	<0.010
GWQ 25-6N59A	***26-Nov-09***	0.0021	0.0321	0.021	8.97	0.00116	0.0021	11.5	<0.00010	370	3.64	<0.00050	<0.00010	--	<0.00030	0.00639	<0.00020	0.21	0.0066	0.0153	0.00101	
GWQ 25-6N59B	***26-Nov-09***	0.00229	0.0417	<0.020	11.4	0.00584	0.0028	11.6	<0.00010	440	4.49	<0.00050	0.00032	--	<0.00030	0.00699	<0.00020	0.138	0.0065	0.0883	0.00076	
GWQ 25-6N59C	***26-Nov-09***	0.00439	0.0406	<0.020	11	0.00701	0.0032	12.2	<0.00010	451	4.4	<0.00050	0.0004	--	<0.00030	0.0138	<0.00020	0.0644	0.0067	0.0885	0.00158	
GWQ 6N59-C	***5-Aug-10***	0.00175	0.0323	<0.10	10.1	0.00608	0.0047	11.5	<0.00010	437	4.09	<0.00020	0.00016	<0.00010	<0.00020	0.019	<0.0010	0.0424	0.0064	0.0325	0.00042	<0.010
GWQ 25-6N59D	***26-Nov-09***	0.00444	0.00675	<0.020	1.46	0.00138	<0.0010	5.93	<0.00010	125	0.899	<0.00050	<0.00010	--	<0.00030	0.00153	<0.00020	0.0488	0.0108	<0.0050	0.00063	
GWQ 6N59-D	***5-Aug-10***	0.00387	0.00474	<0.10	1.93	0.00191	0.0014	6.63	<0.00010	124	1.01	<0.00020	<0.00010	<0.00010	<0.00020	0.00207	<0.0010	0.0379	0.00957	0.0057	0.00054	<0.010
GWQ 25-6N59E	***26-Nov-09***	0.00585	0.0147	<0.020	15.1	0.00602	0.0044	10.2	<0.00010	833	3.46	<0.00050	<0.00010	--	<0.00030	0.00521	0.00068	0.0221	0.0025	0.012	<0.00040	
GWQ 6N59-E	***5-Aug-10***	0.0017	0.0168	<0.10	10.4	0.00775	0.0059	9.83	<0.00010	541	3.27	<0.00020	<0.00010	<0.00010	<0.00020	0.0109	<0.0010	0.0114	0.00335	0.0122	<0.00040	<0.010
GWQ 25-6N59F	***26-Nov-09***	0.00332	0.0188	<0.020	10.1	0.00689	0.0038	10.5	<0.00010	541	3.36	<0.00050	<0.00010	--	<0.00030	0.00478	0.00027	0.0168	0.003	0.0119	<0.00040	
GWQ 6N59-F	***5-Aug-10***	0.00619	0.0126	<0.10	21.2	0.00593	0.0065	15.9	<0.00010	1050	4.87	<0.00020	<0.00010	<0.00010	<0.00020	0.00918	<0.0010	0.021	0.00301	0.0135	<0.00040	<0.010
GWQ 25-6N60A	***26-Nov-09***	0.00202	0.0335	<0.020	9.25	0.00081	0.0021	11.7	<0.00010	222	2.8	<0.00050	<0.00010	--	<0.00030	0.00547	<0.00020	0.202	0.0067	0.0178	0.00123	
GWQ 25-6N60B	***26-Nov-09***	0.00173	0.0314	<0.020	10.5	0.00403	0.0026	11.7	<0.00010	278	3.67	<0.00050	0.00014	--	<0.00030	0.00633	<0.00020	0.126	0.0058	0.0454	0.00089	
GWQ 25-6N60C	***26-Nov-09***	0.00274	0.0292	<0.020	11.3	0.00668	0.0026	11.5	<0.00010	338	3.78	<0.00050	<0.00010	--	<0.00030	0.00692	<0.00020	0.0384	0.0045	0.0519	0.00084	
GWQ 6N60-C	***6-Aug-10***	0.00254	0.0106	<0.020	9.14	0.00579	<0.0010	12.2	<0.00010	327	3.6	<0.00050	<0.00010	--	<0.00030	0.0117	<0.00020	0.0336	0.0062	0.0124	0.00055	<0.010
GWQ 25-6N60D	***26-Nov-09***	0.00414	0.0228	<0.020	8.96	0.0058	0.0026	12	<0.00010	343	3.2	<0.00050	0.00018	--	<0.00030	0.00559	<0.00020	0.046	0.0048	0.0344	0.0005	
GWQ 6N60-D	***6-Aug-10***	0.00338	0.0101	<0.020	8.11	0.00523	<0.0010	11.9	<0.00010	331	2.98	<0.00050	0.0002	--	<0.00030	0.0089	<0.00020	0.0427	0.0067	0.0362	<0.00040	<0.010
GWQ 25-6N60E	***26-Nov-09***	***0.0755***	0.0115	0.021	12.5	0.00248	0.004	8.55	<0.00010	914	1.84	<0.00050	<0.00010	--	<0.00030	0.00813	<0.00020	0.0137	0.0016	0.0203	<0.00040	
GWQ 6N60-E	***6-Aug-10***	0.065	0.00464	<0.020	13	0.00221	<0.0010	8.03	<0.00010	905	1.78	<0.00050	<0.00010	--	<0.00030	0.007	<0.00020	0.0149	0.0013	0.0074	<0.00040	<0.010
GWQ 25-W06	***26-Nov-09***	0.00461	0.00586	<0.020	44.6	0.024	0.007	5.32	<0.00010	1670	4.99	<0.00050	<0.00010	--	<0.00030	0.0123	<0.00020	0.00055	<0.0010	0.0061	0.00045	
GWQ W6	***6-Aug-10***	0.0041	<0.00020	<0.020	42.4	0.0222	<0.0010	4.94	<0.00010	1660	4.6	<0.00050	<0.00010	--	<0.00030	0.0064	<0.00020	0.00053	<0.0010	0.0062	<0.00040	<0.010
GWQ 25-W07	***27-Nov-09***	0.00304	0.00364	<0.020	27.5	0.0141	0.0023	3.39	<0.00010	955	2.58	<0.00050	<0.00010	--	<0.00030	0.00269	<0.00020	<0.00010	<0.0010	<0.0050	<0.00040	
GWQ W7	***5-Aug-10***	0.00365	0.00401	<0.10	29.9	0.0145	0.0074	5.12	<0.00010	1050	3.18	0.00028	<0.00010	<0.00010	<0.00020	0.00561	<0.0010	<0.00010	0.00063	0.0039	<0.00040	<0.010
GWQ 25-W08	***27-Nov-09***	0.00217	0.00405	<0.020	30.4	0.0122	<0.0010	2.98	<0.00010	1330	2.89	<0.00050	<0.00010	--	<0.00030	0.00241	<0.00020	0.00078	<0.0010	<0.0050	<0.00040	
GWQ W8	***5-Aug-10***	0.00305	0.00669	<0.10	34.6	0.0141	0.0097	5.3	<0.00010	1350	3.88	0.0004	<0.00010	<0.00010	<0.00020	0.00813	<0.0010	0.00089	0.0012	0.0039	<0.00040	<0.010
GWQ 25-6N57B	***25-Nov-09***	0.00296	0.0356	<0.020	10.7	0.00403	0.0031	11.9	<0.00010	476	4.34	<0.00050	0.00026	--	<0.00030	0.00563	0.00031	0.183	0.0073	0.0616	0.00103	
GWQ 25-6N57C	***25-Nov-09***	0.00187	0.0302	<0.020	11.3	0.00615	0.0029	11.1	<0.00010	525	4.56	<0.00050	0.00034	--	<0.00030	0.00551	<0.00020	0.0521	0.0061	0.0787	0.00074	
GWQ25-6N57-C	***26-Aug-10***	0.00105	0.0201	<0.10	10.9	0.00581	0.0025	9.4	<0.00010	475	4	<0.00020	0.00024	<0.00010	<0.00020	0.0163	<0.0010	0.0354	0.00323	0.0552	0.00047	<0.010
GWQ 25-6N57D	***25-Nov-09***	0.00201	0.0314	<0.020	11	0.00653	0.0034	11	<0.00010	617	4.23	<0.00050	0.00037	--	<0.00030	0.00478	<0.00020	0.0468	0.0051	0.0555	0.0005	
GWQ25-6N57-D	***26-Aug-10***	0.00118	0.0167	<0.10	11	0.0064	0.003	9.64	<0.00010	552	3.88	<0.00020	0.0002	<0.00010	<0.00020	0.0126	<0.0010	0.027	0.00258	0.0245	<0.00040	<0.010
GWQ 25-6N57E	***25-Nov-09***	0.00367	0.0131	0.022	12.9	0.00757	0.0044	8.98	<0.00010	906	3.49	<0.00050	<0.00010	--	<0.00030	0.00538	<0.00020	0.0429	0.0032	0.0086	<0.00040	
GWQ25-6N57-E	***26-Aug-10***	0.00321	0.02	<0.10	13.9	0.00813	0.0038	7.54	<0.00010	773	3.27	<0.00020	<0.00010	<0.00010	<0.00020	0.0109	<0.0010	0.0323	0.00183	0.0405	<0.00040	<0.010
GWQ25-6N57-F	***26-Aug-10***	0.00343	0.00435	<0.10	32.3	0.0145	0.0042	3.34	<0.00010	1300	3.65	0.00022	<0.00010	<0.00010	<0.00020	0.00713	<0.0010	0.00287	<0.00020	0.0131	<0.00040	<0.010
GWQ 25-W10	***27-Nov-09***	0.00284	0.00435	<0.020	35.6	0.0163	<0.0010	2.75	<0.00010	1470	3.33	<0.00050	<0.00010	--	<0.00030	0.00141	<0.00020	0.00097	<0.0010	<0.0050	<0.00040	

TABLE 2 (cont'd)
METALS IN GROUNDWATER - NON-POTABLE GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																				
		Molybdenum (Mo)-Dissolved	Nickel (Ni)-Dissolved	Phosphorus (P)-Dissolved	Potassium (K)-Dissolved	Rubidium (Rb)-Dissolved	Selenium (Se)-Dissolved	Silicon (Si)-Dissolved	Silver (Ag)-Dissolved	Sodium (Na)-Dissolved	Strontium (Sr)-Dissolved	Tellurium (Te)-Dissolved	Thallium (Tl)-Dissolved	Thorium (Th)-Dissolved	Tin (Sn)-Dissolved	Titanium (Ti)-Dissolved	Tungsten (W)-Dissolved	Uranium (U)-Dissolved	Vanadium (V)-Dissolved	Zinc (Zn)-Dissolved	Zirconium (Zr)-Dissolved	Chromium, Hexavalent
GWQ W-10	*3-Aug-10*	0.00438	0.00242	<0.020	35.2	0.0207	0.0117	4.18	<0.00010	1470	3.92	<0.00050	<0.00010	--	<0.00030	0.0082	0.00054	0.00119	0.0025	0.0077	<0.00040	<0.010
GWQ 6N63-C	*3-Aug-10*	0.00256	0.021	0.039	14.6	0.00358	0.033	12.1	<0.00010	998	5.48	<0.00050	<0.00010	--	0.0043	0.023	<0.00020	0.139	0.0147	0.0109	0.00182	<0.010
GWQ 6N63-D	*3-Aug-10*	0.00514	0.0118	0.038	12.4	0.00788	0.041	10.3	<0.00010	1100	5.46	<0.00050	<0.00010	--	0.00551	0.024	<0.00020	0.126	0.0133	0.0185	0.00159	<0.010
GWQ 6N63-E	*3-Aug-10*	0.00527	0.0102	<0.020	12	0.00816	0.0278	10.2	<0.00010	1130	5.28	<0.00050	<0.00010	--	0.0026	0.0259	<0.00020	0.133	0.012	0.0097	0.00123	<0.010
GWQ 6N63-F	*3-Aug-10*	0.00187	0.00631	<0.020	11.6	0.00642	0.0079	10.4	<0.00010	580	3.79	<0.00050	<0.00010	--	<0.00030	0.0132	<0.00020	0.0161	0.0082	0.0076	<0.00040	<0.010
GWQ 25-W09	*27-Nov-09*	0.00301	0.00429	<0.020	36.3	0.0154	<0.0010	3.4	<0.00010	1550	4.02	<0.00050	<0.00010	--	<0.00030	0.00058	<0.00020	0.00115	<0.0010	<0.0050	<0.00040	
GWQ W9	*3-Aug-10*	0.00409	<0.00020	<0.020	37.7	0.019	0.0094	5.32	<0.00010	1820	4.42	<0.00050	0.0001	--	<0.00030	0.00771	<0.00020	0.00098	0.0026	0.0057	<0.00040	<0.010
GWQ 5N62-C	*3-Aug-10*	0.00321	0.0232	0.028	13.8	0.00666	0.0133	10.9	<0.00010	899	6.11	<0.00050	<0.00010	--	0.00048	0.0246	<0.00020	0.11	0.0136	0.0211	0.00155	<0.010
GWQ 5N62-D	*3-Aug-10*	0.0196	0.0139	0.03	14.1	0.00937	0.0235	9.57	<0.00010	1300	6.59	<0.00050	<0.00010	--	<0.00030	0.0323	<0.00020	0.244	0.0104	0.0156	0.00093	<0.010
GWQ 5N62-E	*3-Aug-10*	0.0033	0.00474	<0.020	28.4	0.0112	0.0138	5.51	<0.00010	1280	3.66	<0.00050	<0.00010	--	<0.00030	0.00939	<0.00020	0.00723	0.0045	<0.0050	<0.00040	<0.010
GWQ 25-W11	*27-Nov-09*	0.00923	0.00347	<0.020	29.9	0.017	0.0014	3.13	<0.00010	1340	2.66	<0.00050	<0.00010	--	<0.00030	0.00193	0.00053	0.00033	<0.0010	<0.0050	<0.00040	
GWQ W11	*3-Aug-10*	0.0206	<0.00020	<0.020	34.6	0.0286	0.0125	2.31	<0.00010	1380	3.13	<0.00050	<0.00010	--	<0.00030	0.00651	0.00259	<0.00010	0.0012	<0.0050	<0.00040	<0.010
GWQ25-6N67-D	*26-Aug-10*	0.00274	0.0146	<0.10	12.7	0.00704	0.0203	10.3	<0.00010	553	4.01	<0.00020	<0.00010	<0.00010	<0.00020	0.0159	<0.0010	0.083	0.00621	0.012	0.0015	<0.010
GWQ25-6N67-E	*26-Aug-10*	0.00239	0.00926	<0.10	10.5	0.00646	0.0152	9.78	<0.00010	436	3.47	<0.00020	<0.00010	<0.00010	<0.00020	0.0126	<0.0010	0.0546	0.00469	0.0066	0.00085	<0.010
GWQ25-6N67-F	*26-Aug-10*	0.00129	0.00815	<0.10	10.6	0.00477	0.0018	10.9	<0.00010	310	2.76	<0.00020	<0.00010	<0.00010	<0.00020	0.0081	<0.0010	0.0231	0.00412	0.0061	<0.00040	<0.010
GWQ25-W12	*26-Aug-10*	0.00344	0.00338	<0.10	34.2	0.0167	0.0047	7.29	<0.00010	1370	3.87	<0.00020	<0.00010	<0.00010	<0.00020	0.00605	<0.0010	0.00141	<0.00020	0.0029	<0.00040	<0.010
GWQ 25-W05	*24-Nov-09*	0.00217	0.00521	<0.020	30.3	0.0126	0.0049	4.28	<0.00010	1100	3.34	<0.00050	<0.00010	--	<0.00030	0.00409	<0.00020	0.00042	<0.0010	0.0316	<0.00040	--
GWQ W5	*5-Aug-10*	0.00246	0.0064	<0.10	34.7	0.0152	0.0082	5.87	<0.00010	1310	4.06	0.00031	<0.00010	<0.00010	<0.00020	0.00751	<0.0010	0.00055	0.00086	0.0307	<0.00040	<0.010
GWQ25-W4	*2-Jun-11*	0.00436	<0.0010	<0.10	25.9	0.0142	0.0018	1.61	<0.00010	1100	2.69	<0.00020	<0.00010	<0.00010	<0.00020	0.00854	0.00211	<0.00010	<0.00020	0.0101	<0.00040	<0.010
GWQ25-W5	*2-Jun-11*	0.00263	0.0042	<0.10	30.8	0.0155	0.0018	5.24	<0.00010	1220	4.21	0.00027	<0.00010	<0.00010	<0.00020	0.0123	<0.00020	0.00066	0.00045	0.0645	<0.00040	<0.010
GWQ25-W9	*2-Jun-11*	0.00398	0.0048	<0.10	35.6	0.0198	0.0013	4.52	<0.00010	1480	4.50	0.00028	<0.00010	<0.00010	<0.00020	0.0141	<0.00020	0.00107	<0.00020	0.0090	<0.00040	<0.010
GWQ25-6N63-E	*2-Jun-11*	0.00099	0.0156	<0.10	10.7	0.00570	0.0015	7.33	<0.00010	570	3.80	<0.00020	<0.00010	<0.00010	0.00028	0.0237	<0.00020	0.0624	0.00728	0.0181	<0.00040	<0.010
GWQ25-6N63-F	*2-Jun-11*	0.00104	0.0113	<0.10	9.83	0.00551	0.0015	10.1	<0.00010	521	3.94	<0.00020	<0.00010	<0.00010	<0.00020	0.0188	<0.00020	0.0138	0.00532	0.0093	<0.00040	<0.010
GWQ25-W10	*2-Jun-11*	0.00416	0.0059	<0.10	35.6	0.0218	0.0020	3.97	<0.00010	1360	4.13	0.00031	<0.00010	<0.00010	<0.00020	0.0147	<0.00020	0.00108	0.00025	0.0069	<0.00040	<0.010
GWQ 25-W11	*6-Jun-11*	0.00836	<0.0010	<0.10	39.5	0.0161	0.0088	6.41	<0.00010	1390	3.47	0.00027	<0.00010	<0.00010	<0.00020	0.00428	0.00055	0.00041	<0.00020	0.0026	<0.00040	<0.010
GWQ 25-5N62-E	*6-Jun-11*	0.00279	<0.0010	<0.10	36.3	0.0112	0.0100	5.67	<0.00010	1360	3.40	0.00025	<0.00010	<0.00010	<0.00020	0.00554	<0.00020	0.00258	0.00127	0.0027	<0.00040	<0.010
GWQ 25-W8	*6-Jun-11*	0.00272	0.0015	<0.10	37.2	0.0134	0.0077	5.35	<0.00010	1380	3.49	0.00028	<0.00010	<0.00010	<0.00020	0.00543	<0.00020	0.00085	<0.00020	0.0025	<0.00040	<0.010
GWQ 25-4N34-C	*6-Jun-11*	0.00341	0.0110	<0.10	9.30	0.00171	0.0033	8.86	<0.00010	279	2.14	<0.00020	<0.00010	<0.00010	<0.00020	0.00989	0.00071	0.138	0.00566	0.0082	0.00058	<0.010
GWQ 25-4N34-D	*6-Jun-11*	0.00687	0.0043	<0.10	14.8	0.00042	0.0045	8.71	<0.00010	467	3.78	<0.00020	<0.00010	<0.00010	<0.00020	0.0189	<0.00020	0.210	0.00938	0.0065	0.00074	<0.010
GWQ25-W12	*8-Jun-11*	0.00320	<0.0010	<0.10	40.1	0.0171	0.0036	4.64	<0.00010	1310	4.01	0.00025	<0.00010	<0.00010	<0.00020	0.0113	0.00024	0.00177	<0.00020	0.0050	<0.00040	<0.010
GWQ25-6N67-F	*8-Jun-11*	0.00086	0.0032	<0.10	11.0	0.00433	0.0020	10.4	<0.00010	285	2.81	<0.00020	<0.00010	<0.00010	<0.00020	0.0162	<0.00020	0.0201	0.00355	0.0068	<0.00040	<0.010
GWQ25-W6	*8-Jun-11*	0.00423	<0.0010	<0.10	53.6	0.0257	0.0040	4.12	<0.00010	1590	4.56	0.00029	<0.00010	<0.00010	<0.00020	0.0127	<0.00020	0.00042	<0.00020	0.0101	<0.00040	<0.010
GWQ25-W7	*8-Jun-11*	0.00381	<0.0010	<0.10	34.4	0.0180	0.0027	4.39	<0.00010	995	3.10	<0.00020	<0.00010	<0.00010	<0.00020	0.00824	<0.00020	<0.00010	<0.00020	0.0071	<0.00040	<0.010
GWQ25-100	*8-Jun-11*	0.00378	<0.0010	<0.10	35.0	0.0179	0.0027	4.19	<0.00010	959	3.04	<0.00020	<0.00010	<0.00010	<0.00020	0.00809	<0.00020	<0.00010	<0.00020	0.0049	<0.00040	<0.010
GWQ25-5N62-D	*9-Jun-11*	0.00968	0.0071	<0.10	17.1	0.00860	0.0033	12.1	<0.00010	1280	6.59	0.00024	<0.00010	<0.00010	<0.00020	0.0445	<0.00020	0.212	0.00370	0.0213	0.00079	<0.010
GWQ25-6N58-D	*9-Jun-11*	0.00067	0.0091	<0.10	12.8	0.00657	0.0024	11.7	<0.00010	542	3.98	<0.00020	0.00016	<0.00010	<0.00020	0.0206	<0.00020	0.0189	0.00285	0.0166	0.00044	<0.010
GWQ25-6N58-F	*9-Jun-11*	0.00480	0.0070	<0.10	11.8	0.00571	0.0020	10.5	<0.00010	559	3.07	<0.00020	<0.00010	<0.00010	<0.00020	0.0207	<0.00020	0.0382	0.00281	0.0161	<0.00040	<0.010
GWQ25-6N59-D	*9-Jun-11*	0.00386	0.0029	<0.10	1.11	0.00120	0.0011	6.06	<0.00010	149	1.01	<0.00020	<0.00010	<0.00010	<0.00020	0.00481	<0.00020	0.0586	0.00719	0.0059	0.00104	<0.010
GWQ25-6N59-F	*9-Jun-11*	0.00267	0.0065	<0.10	12.0	0.00722	0.0026	10.9	<0.00010	584	3.22	<0.00020	<0.00010	<0.00010	<0.00020	0.0153	0.00022	0.0131	0.00233	0.0184	<0.00040	<0.010
GWQ25-6N67-E	*9-Jun-11*	0.00113	0.0062	<0.10	11.7	0.00610	0.0027	9.59	<0.00010	368	3.25	<0.00020	<0.00010	<0.00010	<0.00020	0.0252	<0.00020	0.0396	0.00277	0.0114	0.00064	<0.010
GWQ25-6N57-D	*13-Jun-11*	0.00387	0.0045	<0.10	34.2	0.0156	0.0046	5.33	<0.00010	1460	3.78	0.00020	<0.00010	<0.00010	<0.00020	0.0129	<0.00020	0.00367	<0.00020	0.0117	<0.00040	<0.010
GWQ25-6N57-F	*13-Jun-11*	0.00399	0.0052	<0.10	35.4	0.0159	0.0048	5.42	<0.00010	1470	3.94	0.00024	<0.00010	<0.00010	<0.00020	0.0133	<0.00020	0.00372	0.00061	0.0119	<0.00040	<0.010
GWQ25-6N60-D	*13-Jun-11*	0.00271	0.0131	<0.10	9.51	0.00527	0.0020	11.4	<0.00010	341	3.13	<0.00020	0.00013	<0.00010	<0.00020	0.0195	<0.00020	0.0351	0.00555	0.0203	<0.00040	<0.010
GWQ25-6N60-E	*13-Jun-11*	0.0705	0.0050	<0.10	10.6	0.00302	0.0022	9.31	<0.00010	853	1.32	<0.00020	<0.00010	<0.00010	<0.00020	0.0144	<0.00020	0.0327	0.00340	0.0082	<0.00040	<0.010
MOE Standards [2]																						
Table 3	--	7.3	1.6	--	--	--	0.05	--	0.0012	--	--	--	0.4	--	--	--	--	--	0.2	1.1	--	0.011

Notes:
1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

ATTACHMENT A, TABLE 3
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																				
		1,1,1,2-Tetrachloro-ethane	1,1,2,2-Tetrachloro-ethane	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	1,2-Dibromo-ethane	1,1-Dichloro-ethane	1,1-Dichloro-ethylene	1,2-Dichloro-benzene	1,2-Dichloro-ethane	1,2-Dichloro-propane	1,3-Dichloro-benzene	1,4-Dichloro-benzene	2-Hexanone	Acetone	Benzene	Bromodichloro-methane	Bromoform	Bromo-methane	Carbon Disulfide	Carbon tetrachloride	Chloro-benzene	Chloroethane
EQL		*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*20*	*20*	*0.5*	*0.5*	*0.5*	*1*	*0.5*	*0.5*	*0.5*	*1*
Units		*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*
GWQ 25-4N34A	***24-Nov-09***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ 25-4N34B	***24-Nov-09***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ 25-4N34C	***24-Nov-09***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ 25-6N57B	***25-Nov-09***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ 25-6N57C	***25-Nov-09***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ 25-6N57D	***25-Nov-09***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ 25-W09	***27-Nov-09***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ 25-W10	***27-Nov-09***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ 25-W11	***27-Nov-09***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-W4	***2-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-W5	***2-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-W9	***2-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-6N63-E	***2-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-6N63-F	***2-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-W10	***2-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ 25-W11	***6-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ 25-5N62-E	***6-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ 25-W8	***6-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ 25-4N34-C	***6-Jun-11***	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<200	<200	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<10
GWQ 25-4N34-D	***6-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-W12	***8-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-6N67-F	***8-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-W6	***8-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-W7	***8-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-100	***8-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-5N62-D	***9-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-6N58-D	***9-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-6N58-F	***9-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-6N59-D	***9-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-6N59-F	***9-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-6N67-E	***9-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-6N57-D	***13-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-6N57-F	***13-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-6N60-D	***13-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
GWQ25-6N60-E	***13-Jun-11***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0
MOE Standards [2]																							
Table 3		38(6.0)	(140)22	200	(50000)16000	50000	(50000) 9000	(4.1) 0.66	7600	(110)17	(58)9.3	7600	7600	-	3,300	23000	55000	(5200)840	(16) 3.7	-	(100)17	500	-

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in micrograms per litre (µg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
( ) - Criterion value in brackets applies to medium and fine textured soils.

ATTACHMENT A, TABLE 3 (cont'd)
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																							
		Chloroform	Chloro-methane	cis-1,2-Dichloro-ethylene	cis-1,3-Dichloropropene	Dibromochloro-methane	Dichlorodifluoro-methane	Dichloro-methane	Ethyl Benzene	m+p-Xylenes	Methyl Ethyl Ketone	Methyl Isobutyl Ketone	MTBE	o-Xylene	Styrene	Tetrachloro-ethylene	Toluene	trans-1,2-Dichloro-ethylene	trans-1,3-Dichloro-propene	Trichloro-ethylene	Trichlorofluoro-methane	Trihalo-methanes (total)	Vinyl chloride	Xylenes (Total)	1,2-Dichloroethane d4	Toluene-d8	4-Bromofluorobenzene
EQL		*0.5*	*1*	*0.5*	*0.5*	*0.5*	*1*	*0.5*	*0.5*	*1*	*20*	*20*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*1*	*2*	*0.5*	*1.5*	*1*	*1*	*1*
Units		*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*
GWQ 25-4N34A	***24-Nov-09***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	-	-	-
GWQ 25-4N34B	***24-Nov-09***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	-	-	-
GWQ 25-4N34C	***24-Nov-09***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	-	-	-
GWQ 25-6N57B	***25-Nov-09***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	-	-	-
GWQ 25-6N57C	***25-Nov-09***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	-	-	-
GWQ 25-6N57D	***25-Nov-09***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	-	-	-
GWQ 25-W09	***27-Nov-09***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	-	-	-
GWQ 25-W10	***27-Nov-09***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	1.60	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	-	-	-
GWQ 25-W11	***27-Nov-09***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	1.68	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	-	-	-
GWQ25-W4	***2-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	112	93	96
GWQ25-W5	***2-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	113	97	102
GWQ25-W9	***2-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	118	95	103
GWQ25-6N63-E	***2-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	116	95	105
GWQ25-6N63-F	***2-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	116	95	104
GWQ25-W10	***2-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	0.78	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	117	94	104
GWQ 25-W11	***6-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	107	94	105
GWQ 25-5N62-E	***6-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	102	97	102
GWQ 25-W8	***6-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	112	93	104
GWQ 25-4N34-C	***6-Jun-11***	<5.0	<10	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<200	<200	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<10	<5.0	<11	112	93	105
GWQ 25-4N34-D	***6-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	112	95	106
GWQ25-W12	***8-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	110	95	103
GWQ25-6N67-F	***8-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	106	93	102
GWQ25-W6	***8-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<1.0	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	108	93	104
GWQ25-W7	***8-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	106	96	105
GWQ25-100	***8-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	108	93	103
GWQ25-5N62-D	***9-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	102	93	105
GWQ25-6N58-D	***9-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	127	96	104
GWQ25-6N58-F	***9-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	121	92	102
GWQ25-6N59-D	***9-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	110	99	109
GWQ25-6N59-F	***9-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	111	94	100
GWQ25-6N67-E	***9-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	100	92	101
GWQ25-6N57-D	***13-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	102	100	102
GWQ25-6N57-F	***13-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	108	100	101
GWQ25-6N60-D	***13-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	114	100	104
GWQ25-6N60-E	***13-Jun-11***	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<1.0	<20	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5	112	100	102
MOE Standards [2]																											
Table 3		(2700)430	-	70	-	50000	-	-	(50000)28000	(35000)5600	50000	50000	50000	35000)5600	(5900)940	5	(37000)5900	-	-	50	-	-	(1.3) 0.5	(35000)5600	50000	37000	-

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in micrograms per litre (µg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use
Under Part XV.1 of the Environmental Protection Act (All Types of Property)
Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
( ) - Criterion value in brackets applies to medium and fine textured soils.

ATTACHMENT A, TABLE 4
POLYNUCLEAR AROMATIC HYDROCARBONS IN GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]									
		1-Methyl Naphthalene	2-Methyl Naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a)pyrene	Benzo(b) fluoranthene	Benzo(b&j) fluoranthene	Benzo(ghi) perylene
EQL		*0.00005*	*0.00005*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
GWQ 25-4N34	***24-Nov-09***	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000014	0.000014	0.000038
GWQ 25-6N57	***25-Nov-09***	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	0.000039	<0.000010	<0.000010	<0.000010	<0.000010
GWQ 25-W04	***30-Nov-09***	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
GWQ 25-W05	***24-Nov-09***	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
GWQ 25-W06	***26-Nov-09***	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
GWQ 25-W07	***27-Nov-09***	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
GWQ 25-W08	***27-Nov-09***	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
GWQ 25-W09	***27-Nov-09***	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
GWQ 25-W10	***27-Nov-09***	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
GWQ 25-W11	***27-Nov-09***	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
GWQ25-W4	***2-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-W5	***2-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-W9	***2-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-6N63-E	***2-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-6N63-F	***2-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	0.000013	<0.000020
GWQ25-W10	***2-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ 25-W11	***6-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ 25-5N62-E	***6-Jun-11***	0.000044	0.000082	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ 25-W8	***6-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ 25-4N34-C	***6-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	0.000019	0.0000076	-	0.000016	<0.000020
GWQ 25-4N34-D	***6-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	0.000016	<0.000020
GWQ25-W12	***8-Jun-11***	0.000027	0.000056	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-6N67-F	***8-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-W6	***8-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-W7	***8-Jun-11***	<0.000020	0.000023	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-100	***8-Jun-11***	<0.000020	0.000023	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-5N62-D	***9-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-6N58-D	***9-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	0.000012	<0.000020
GWQ25-6N58-F	***9-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-6N59-D	***9-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-6N59-F	***9-Jun-11***	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	-	<0.00050	<0.00050
GWQ25-6N67-E	***9-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-6N57-D	***13-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-6N57-F	***13-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-6N60-D	***13-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
GWQ25-6N60-E	***13-Jun-11***	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000010	<0.0000050	-	<0.000010	<0.000020
MOE Standards [2]											
Table 3		13	13	1.7	2.0	0.012	0.005	0.0019	0.007	0.007	0.0002

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use
Under Part XV.1 of the Environmental Protection Act (All Types of Property)
Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
( ) - Criterion value in brackets applies to medium and fine textured soils.

ATTACHMENT A, TABLE 4 (cont'd)
POLYNUCLEAR AROMATIC HYDROCARBONS IN GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]										
		Benzo(k) fluoranthene	Chrysene	Dibenzo(ah) anthracene	Fluoranthene	Fluorene	Indeno(1,2,3 cd) pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline	Acridine
EQL		*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00005*	*0.00005*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
GWQ 25-4N34	***24-Nov-09***	<0.000010	0.000019	<0.000010	0.000063	<0.000010	0.000048	0.000019	0.000014	0.000058	<0.000050	<0.000050
GWQ 25-6N57	***25-Nov-09***	<0.000010	0.000025	<0.000010	0.000142	<0.000010	<0.000010	0.000083	0.000074	0.000083	<0.000050	<0.000050
GWQ 25-W04	***30-Nov-09***	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000010	<0.000050	<0.000050
GWQ 25-W05	***24-Nov-09***	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050
GWQ 25-W06	***26-Nov-09***	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050
GWQ 25-W07	***27-Nov-09***	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000050	<0.000050
GWQ 25-W08	***27-Nov-09***	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000050	<0.000050
GWQ 25-W09	***27-Nov-09***	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050
GWQ 25-W10	***27-Nov-09***	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050
GWQ 25-W11	***27-Nov-09***	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000015	<0.000010	<0.000010	<0.000050	<0.000050
GWQ25-W4	***2-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-W5	***2-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-W9	***2-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-6N63-E	***2-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-6N63-F	***2-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	0.000056	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-W10	***2-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ 25-W11	***6-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ 25-5N62-E	***6-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	0.000109	<0.000050	0.000011	<0.000020	<0.000020
GWQ 25-W8	***6-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ 25-4N34-C	***6-Jun-11***	<0.000010	<0.000020	<0.0000050	0.000020	<0.000020	<0.000010	<0.000050	<0.000050	0.000014	<0.000020	<0.000020
GWQ 25-4N34-D	***6-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.00050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-W12	***8-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	0.000059	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-6N67-F	***8-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-W6	***8-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-W7	***8-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-100	***8-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-5N62-D	***9-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-6N58-D	***9-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-6N58-F	***9-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	0.000017	<0.000020	<0.000020
GWQ25-6N59-D	***9-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-6N59-F	***9-Jun-11***	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
GWQ25-6N67-E	***9-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-6N57-D	***13-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-6N57-F	***13-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-6N60-D	***13-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
GWQ25-6N60-E	***13-Jun-11***	<0.000010	<0.000020	<0.0000050	<0.000020	<0.000020	<0.000010	<0.000050	<0.000050	<0.000010	<0.000020	<0.000020
MOE Standards [2]												
Table 3		0.0004	0.003	0.00025	0.13	0.29	0.00027	5.9 (6.2)	0.063	0.04	-	-

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use
   Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
( ) - Criterion value in brackets applies to medium and fine textured soils.

ATTACHMENT A, TABLE 5
POLYCHLORINATED BIPHENYLS (PCBs) IN GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]									
		Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Total PCBs
EQL		*0.00005*	*0.00005*	*0.00005*	*0.00005*	*0.00005*	*0.00005*	*0.00005*	*0.00005*	*0.00005*	*0.00005*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
GWQ 25-W09	***27-Nov-09***	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
GWQ 25-W10	***27-Nov-09***	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
GWQ 25-W11	***27-Nov-09***	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
GWQ25-W4	***2-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-W5	***2-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-W9	***2-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-6N63-E	***2-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-6N63-F	***2-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-W10	***2-Jun-11***	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00060
GWQ 25-W11	***6-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ 25-5N62-E	***6-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ 25-W8	***6-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ 25-4N34-C	***6-Jun-11***	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0015
GWQ 25-4N34-D	***6-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-W12	***8-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-6N67-F	***8-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-W6	***8-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-W7	***8-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-100	***8-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-5N62-D	***9-Jun-11***	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00060
GWQ25-6N58-D	***9-Jun-11***	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00060
GWQ25-6N58-F	***9-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-6N59-D	***9-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-6N59-F	***9-Jun-11***	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00060
GWQ25-6N67-E	***9-Jun-11***	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00060
GWQ25-6N57-D	***13-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-6N57-F	***13-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-6N60-D	***13-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
GWQ25-6N60-E	***13-Jun-11***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00030
MOE Standards [2]											
Table 3		-	-	-	-	-	-	-	-	-	0.003

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

ATTACHMENT A, TABLE 6
PESTICIDES AND HERBICIDES IN GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																	
		Lindane	Heptachlor	Heptachlor epoxide	Oxychlordane	gamma-Chlordane	alpha-Chlordane	Aldrin	Dieldrin	p,p-DDE	p,p-DDD	p,p-DDT	o,p-DDT	Methoxychlor	Aldrin + Dieldrin	DDT + metabolites	Heptachlor + Heptachlor Epoxide	Chlordane (Total)	2,4,5-TP
EQL		*1*	*1*	*1*	*1*	*1*	*1*	*24*	*0.2*	*1*	*1*	*1*	*1*	*1*	*0.4*	*4*	*2*	*3*	*5*
Units		*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*
GWQ25-W4	***2-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	95
GWQ25-W5	***2-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	100
GWQ25-W9	***2-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	103
GWQ25-6N63-E	***2-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	79
GWQ25-6N63-F	***2-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	88
GWQ25-W10	***2-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	105
GWQ 25-W11	***6-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	100
GWQ 25-5N62-E	***6-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	99
GWQ 25-W8	***6-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	83
GWQ 25-4N34-C	***6-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	76
GWQ 25-4N34-D	***6-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	90
GWQ25-W12	***8-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	119
GWQ25-6N67-F	***8-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	109
GWQ25-W6	***8-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	114
GWQ25-W7	***8-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	119
GWQ25-100	***8-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	117
GWQ25-5N62-D	***9-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	104
GWQ25-6N58-D	***9-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	100
GWQ25-6N58-F	***9-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	94
GWQ25-6N59-D	***9-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	116
GWQ25-6N59-F	***9-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	56
GWQ25-6N67-E	***9-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	100
GWQ25-6N57-D	***13-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	95
GWQ25-6N57-F	***13-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	81
GWQ25-6N60-D	***13-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	74
GWQ25-6N60-E	***13-Jun-11***	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	67
MOE Standards [2]																			
Table 3		-	0.04	37	-	-	-	1.3	0.02	-	6	0.05	0.05	0.3	-	-	-	-	-

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

ATTACHMENT A, TABLE 7
DIOXINS AND FURANS IN GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]														
		2378 TeCDD	12378 PeCDD	123478 HxCDD	123678 HxCDD	123789 HxCDD	1234678 HpCDD	OCDD	Total TCDDs	Total PeCDD	Total HxCDD	Total HpCDD	Total PCDDs	2378 TeCDF	12378 PeCDF	23478 PeCDF
EQL		*1*	*1*	*1*	*2*	*1*	*1*	*4*	*1*	*1*	*2*	*1*	*4*	*1*	*0.7*	*0.6*
Units		*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*
W5	***8/5/2010 10:15:00 AM***	<0.60	<0.30	<0.20	<0.30	<0.30	1.06	4.06	<0.60	<0.30	<0.30	1.09	5.15	<0.40	<0.30	<0.20
W9	***8/3/2010 10:40:00 AM***	<1.0	<0.80	<0.60	8.71	8.76	8.71	19.2	<1.0	<0.80	20.7	9.06	48.9	<0.90	<0.40	4.75
W11	***8/3/2010 1:00:00 PM***	<0.70	<0.50	<0.30	<0.30	<0.30	<0.40	3.96	<0.70	<0.50	<0.30	<0.40	3.96	<0.60	<0.30	<0.30
SWQ25-W1	***8/26/2010 11:45:00 AM***	<0.50	<0.20	<0.20	<0.20	<0.20	<0.30	3.00 *	<0.50	<0.20	1.27	1.94	6.21	<0.30	<0.20	<0.20
MOE Standards [2]																
Table 3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sample No.	Date	Parameter [1]														
		123478 HxCDF	123678 HxCDF	123789 HxCDF	234678 HxCDF	1234678 HpCDF	1234789 HpCDF	OCDF	Total TCDF	Total PeCDF	Total HxCDF	Total HpCDF	Total PCDFs	Total TEQ (ND=0) (WHO Calc)	Total TEQ (ND=0.5DL) (WHO Calc)	Total TEQ (ND=DL) (WHO Calc)
EQL		*0.6*	*0.6*	*0.7*	*0.6*	*1*	*2*	*3*	*1*	*0.7*	*0.7*	*2*	*3*			
Units		*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*
W5	***8/5/2010 10:15:00 AM***	<0.20	<0.10	<0.20	<0.20	<0.30	<0.40	<0.50	<0.40	<0.30	<0.20	<0.40	<0.50	0.01	0.59	1.18
W9	***8/3/2010 10:40:00 AM***	6.12	7.27	7.22	10.6	9.24	8.3	15	<0.90	5.08	37.2	17.6	74.9	6.57	7.55	8.53
W11	***8/3/2010 1:00:00 PM***	<0.20	<0.10	<0.20	<0.20	<0.40	<0.50	<0.80	<0.60	<0.30	<0.20	<0.50	<0.80	0	0.77	1.53
SWQ25-W1	***8/26/2010 11:45:00 AM***	<0.10	<0.10	<0.20	<0.10	<0.40	<0.50	<0.40	<0.30	<0.20	<0.20	<0.50	<0.50	0	0.46	0.92
MOE Standards [2]																
Table 3		-	-	-	-	-	-	-	-	-	-	-	-	15	15	15

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 1997 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

ATTACHMENT A, TABLE 8
NONYLPHENOLS AND ETHOXYLATES IN GROUNDWATER
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]								
		Nonylphenols	Nonylphenol Monoethoxylates	Nonylphenol Diethoxylates	Nonylphenol Triethoxylates	t-Octylphenol	t-Octylphenol Monoethoxylate	t-Octylphenol Diethoxylate	t-Octylphenol Triethoxylate	TOTAL TEQ (CCME)
EQL		*0.15*	*0.5*	*1.2*	*2*	*0.02*	*0.1*	*0.2*	*0.5*	
Units		*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*
W5	**8/5/2010 10:15:00 AM**	1.58	<0.50	<1.2	<2.0	<0.020	<0.10	<0.20	<0.50	1.6
W9	**8/3/2010 10:40:00 AM**	<0.10	<0.50	<1.2	<2.0	<0.020	<0.10	<0.20	<0.50	0
W11	**8/3/2010 1:00:00 PM**	12.7	<0.50	<1.2	<2.0	<0.020	<0.10	<0.20	<0.50	13
W12	**8/26/2010 11:45:00 AM**	0.2	<0.50	<1.2	<2.0	<0.020	<0.10	<0.20	<0.50	0.2
MOE Standards [2]										
Table 3		-	-	-	-	-	-	-	-	-

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

ATTACHMENT B

Analyses of Leachate Samples from the Brady Landfill

ATTACHMENT B, TABLE 1
INORGANICS IN LEACHATE
BRADY ROAD LANDFILL

Sample Name	Sample Number	Date Sampled	Parameter											
			Alkalinity, HCO3 (mg/L CaCO3)	IcHardTot (mg/L CaCO3)	IcHardCa (mg/L CaCO3)	Alkalinity, Total (mg/L CaCO3)	pH (units)	TOC	Turbidity (ntu)	Conductivity (µS/cm)	nuTKN (mg/L N)	nuPtot (mg/L P)	IcTotAs	IcTotCa (mg/L)
LQ25-MH13	274135	19-Oct-10	640	711	372	640	6.71	11	33.6	1410	5	0.5	0.01	149
LQ25-MH24	274134	19-Oct-10	5880	2470	609	5880	7.43	335	34.4	13700	849	6	0.014	244
LQ25-MH27	274132	19-Oct-10	3920	2460	449	3920	6.99	202	304	10900	422	2.6	0.007	180
LQ25-MH3	274130	19-Oct-10	5680	3010	717	5680	7.18	677	594	15100	787	3.3	0.011	287
LQ25-MH31	274128	19-Oct-10	4960	2120	442	4960	7.23	326	35.2	13100	761	4.1	0.018	177
LQ25-MH33	274129	19-Oct-10	6400	2780	609	6400	7.13	438	38.4	16100	975	6.3	0.013	244
LQ25-MH34	274133	19-Oct-10	640	736	300	640	7.2	35	38.6	2390	31	0.4	0.006	120
LQ25-MH8	274131	19-Oct-10	4760	2000	517	4760	7.12	230	30.5	11400	698	4.2	0.014	207

Sample Name	Sample Number	Date Sampled	Parameter									
			IcTotCd	IcTotCr	IcTotCu	IcTotFe	IcTotK	IcTotMg	IcTotMn	IcTotNa	IcTotNi	IcTotPb	IcTotZn
LQ25-MH13	274135	19-Oct-10	<0.001	0.02	<0.001	2.82	7.9	82.4	1.75	47.2	0.007	<0.001	<0.003
LQ25-MH24	274134	19-Oct-10	<0.001	0.045	0.004	4.93	512	453	0.5	1200	0.161	0.005	<0.003
LQ25-MH27	274132	19-Oct-10	<0.001	0.018	<0.001	24.1	264	489	0.16	1030	0.078	0.02	<0.003
LQ25-MH3	274130	19-Oct-10	<0.001	0.152	<0.001	43.4	544	557	1.26	1430	0.213	0.012	<0.003
LQ25-MH31	274128	19-Oct-10	<0.001	0.036	0.145	5.7	459	407	0.192	1270	0.152	0.008	<0.003
LQ25-MH33	274129	19-Oct-10	<0.001	0.041	<0.001	5.91	699	526	0.252	1420	0.208	0.004	<0.003
LQ25-MH34	274133	19-Oct-10	<0.001	0.018	0.002	5.49	56.7	106	0.515	160	0.013	0.004	0.015
LQ25-MH8	274131	19-Oct-10	<0.001	0.05	<0.001	3.29	406	359	0.303	943	0.114	0.013	<0.003

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable

1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.

ATTACHMENT B, TABLE 2
METALS IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																			
		Aluminum (Al)-Dissolved	Cadmium (Cd)-Dissolved	Iron (Fe)-Dissolved	Mercury (Hg)-Dissolved	Arsenic (As)-Dissolved	Boron (B)-Dissolved	Barium (Ba)-Dissolved	Beryllium (Be)-Dissolved	Bismuth (Bi)-Dissolved	Calcium (Ca)-Dissolved	Cobalt (Co)-Dissolved	Chromium (Cr)-Dissolved	Cesium (Cs)-Dissolved	Copper (Cu)-Dissolved	Potassium (K)-Dissolved	Magnesium (Mg)-Dissolved	Manganese (Mn)-Dissolved	Molybdenum (Mo)-Dissolved	Sodium (Na)-Dissolved	Nickel (Ni)-Dissolved
EQL		*0.002*	*0.00001*	*0.002*	*0.00005*	*0.0005*	*0.02*	*0.0003*	*0.001*	*0.0003*	*0.05*	*0.0002*	*0.001*	*0.0001*	*0.0004*	*0.05*	*0.01*	*0.0002*	*0.0001*	*0.02*	*0.0002*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
LQ 25-MH3	***16-Apr-10***	0.0656	0.000019	13.6	**0.000169**	0.007	3.29	0.382	<0.0010	<0.00030	130	0.011	0.0321	0.00015	0.00299	131	210	0.348	0.00244	484	0.113
LQ 25-MH8	***16-Apr-10***	0.0949	0.000023	4.26	<0.000050	0.018	5.3	0.512	<0.0010	<0.00030	210	0.0268	0.089	0.00027	0.00197	436	389	0.336	0.0031	1010	0.132
LQ 25-MH13	***16-Apr-10***	0.0055	0.000012	7.99	<0.000040	0.006	0.145	0.134	<0.0010	<0.00030	97.3	0.0035	0.0079	<0.00010	0.00198	13.5	57.8	0.9	0.00032	40.1	0.00864
LQ 25-MH24	***16-Apr-10***	0.0902	0.00003	0.541	<0.000050	0.016	6.63	0.457	<0.0010	<0.00030	224	0.0253	0.0707	0.00032	0.00236	476	453	0.546	0.00321	1130	0.185
LQ 25-MH27	***16-Apr-10***	0.0335	0.000026	18.9	<0.000050	0.015	3.08	0.362	<0.0010	<0.00030	142	0.0209	0.0521	0.00012	0.0021	315	491	0.156	0.00466	1270	0.11
LQ 25-MH31	***16-Apr-10***	0.0408	0.000014	3.2	<0.000050	0.017	5.66	0.531	<0.0010	<0.00030	166	0.0278	0.106	0.00036	0.0027	426	470	0.191	0.00456	1250	0.118
LQ 25-MH33	***16-Apr-10***	0.0432	0.000013	4.48	<0.000050	0.019	6.42	0.586	<0.0010	<0.00030	208	0.0397	0.223	0.00032	0.00246	803	474	0.279	0.00529	1510	0.244
LQ 25-MH34	***16-Apr-10***	0.0099	<0.000010	2.88	<0.000050	0.003	0.248	0.105	<0.0010	<0.00030	116	0.0012	0.0051	<0.00010	0.00202	44.9	72.8	0.487	0.00029	73.2	0.00573
LQ25 - MH24	***20-Jul-11***	0.0680	0.000023	2.22	<0.000050	0.0309	11.0	0.350	0.00026	<0.00020	210	0.0216	0.212	0.00025	0.00147	566	478	0.279	0.00345	1370	0.137
LQ25 - MH13	***20-Jul-11***	0.0748	0.000015	4.91	0.000053	0.0134	4.48	0.515	<0.00020	<0.00020	319	0.00820	0.130	<0.00010	0.00193	264	506	1.03	0.00134	831	0.0976
LQ25-MH27	***19-Jul-11***	0.0254	<0.000010	7.07	<0.000050	0.0156	1.79	0.257	<0.00020	<0.00020	156	0.0154	0.238	<0.00010	0.00123	241	420	0.232	0.00295	948	0.0761
LQ25 - MH27	***19-Jul-11***	0.113	0.000219	31.7	<0.000050	0.00868	2.66	0.476	<0.00020	<0.00020	158	0.0171	0.0302	<0.00010	0.00309	241	408	0.219	0.00386	915	0.0726
LQ25 - MH8	***18-Jul-11***	0.961	0.000093	2.76	<0.000050	0.0420	12.1	0.648	0.00024	<0.00020	224	0.0269	0.0874	0.00012	0.0120	302	381	0.357	0.00105	1100	0.105
LQ25 - MH31	***18-Jul-11***	0.378	0.000082	5.98	<0.000050	0.0191	5.16	0.628	<0.00020	<0.00020	183	0.0319	0.0709	0.00040	0.00471	434	475	0.189	0.00689	1340	0.116
LQ25 - MH32	***18-Jul-11***	0.102	0.000155	8.26	0.000087	0.0110	3.02	0.317	<0.00020	<0.00020	133	0.0201	0.0316	0.00022	0.00315	371	293	0.170	0.00324	814	0.122
LQ25 - MH3	***18-Jul-11***	0.0931	0.000437	72.5	<0.000050	0.0110	5.41	0.290	<0.00020	<0.00020	271	0.0195	0.0682	0.00037	0.00586	450	436	1.65	0.00312	1190	0.167
LQ25 - MH34	***18-Jul-11***	0.244	0.000423	29.0	<0.000050	0.0198	2.55	2.90	<0.00020	<0.00020	226	0.0173	0.117	<0.00010	0.00521	297	629	0.364	0.00428	1730	0.0999
LQ25 - MH24	***20-Jul-11***	0.271	0.000205	2.71	<0.000050	0.0161	5.78	0.385	0.00050	<0.00020	170	0.0263	0.0531	0.00033	0.00387	447	374	0.290	0.00408	1120	0.166
LQ25 - MH13	***20-Jul-11***	1.10	0.000698	13.3	<0.000050	0.00946	2.70	0.565	<0.00020	<0.00020	304	0.00989	0.0281	<0.00010	0.00596	261	462	0.964	0.00192	804	0.103
LQ18 - MH10	***20-Jul-11***	0.112	0.000041	8.30	<0.000050	0.00808	3.41	0.373	<0.00020	<0.00020	192	0.00487	0.0274	<0.00010	0.00303	138	278	0.462	0.00152	513	0.0424
LQ18 - MH3	***20-Jul-11***	0.340	0.000448	35.0	0.000056	0.00649	11.5	0.446	0.00027	<0.00020	235	0.00739	0.212	<0.00010	0.00318	207	455	0.696	0.00234	861	0.113
LQ18 - MH6	***20-Jul-11***	0.165	0.000353	136	0.000058	0.00779	3.95	0.600	<0.00020	<0.00020	266	0.0127	0.0769	0.00012	0.00350	189	387	2.74	0.00192	985	0.124
LQ15 - MH1	***20-Jul-11***	0.0318	0.000422	0.54	0.000058	0.0108	58.2	0.0251	<0.00020	<0.00020	314	0.00281	0.0061	0.00056	0.343	447	533	0.315	0.0584	6350	0.0538
LQ25 - MH31	***18-Jul-11***	0.0408	<0.000010	3.50	<0.000050	0.0172	7.23	0.385	0.00021	<0.00020	173	0.0179	0.0925	0.00018	0.00091	415	525	0.127	0.00340	1480	0.0690
LQ25 - MH33	***18-Jul-11***	0.0282	<0.000010	3.35	<0.000050	0.0148	6.19	0.160	<0.00020	<0.00020	200	0.0197	0.0917	0.00017	0.00088	595	506	0.206	0.00301	1440	0.130
LQ25 - MH3	***18-Jul-11***	0.0675	<0.000010	59.2	<0.000050	0.0146	8.13	0.175	<0.00020	<0.00020	331	0.0180	0.254	0.00032	0.00152	522	603	1.94	0.00365	1560	0.165
LQ25 - MH8	***18-Jul-11***	0.221	<0.000010	0.73	<0.000050	0.0550	13.1	0.444	<0.00020	<0.00020	199	0.0171	0.175	<0.00010	0.00257	263	376	0.248	0.00268	1010	0.0656
LQ25 - MH34	***18-Jul-11***	0.0461	<0.000010	16.2	<0.000050	0.0176	2.43	2.32	<0.00020	<0.00020	193	0.0139	0.226	<0.00010	0.00189	258	577	0.371	0.00333	1590	0.0914
MOE Standards [2]																					
Table 3		-	0.011	-	0.00012	0.48	50	23	0.053	-	-	0.1	2	-	0.023	-	-	-	7.3	-	1.6

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in micrograms per litre (µg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
( ) - Criterion value in brackets applies to medium and fine textured soils.

ATTACHMENT B, TABLE 2 (cont'd)
METALS IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																		
		Phosphorus (P)-Dissolved	Lead (Pb)-Dissolved	Rubidium (Rb)-Dissolved	Antimony (Sb)-Dissolved	Selenium (Se)-Dissolved	Silicon (Si)-Dissolved	Tin (Sn)-Dissolved	Strontium (Sr)-Dissolved	Tellurium (Te)-Dissolved	Titanium (Ti)-Dissolved	Thallium (Tl)-Dissolved	Uranium (U)-Dissolved	Vanadium (V)-Dissolved	Tungsten (W)-Dissolved	Zinc (Zn)-Dissolved	Zirconium (Zr)-Dissolved	Silver (Ag)-Dissolved	Chromium, Hexavalent	Lithium (Li)-Dissolved	Thorium (Th)-Dissolved
EQL		*0.02*	*0.0001*	*0.0002*	*0.001*	*0.001*	*0.2*	*0.0003*	*0.0001*	*0.0005*	*0.0005*	*0.0001*	*0.0001*	*0.001*	*0.0002*	*0.005*	*0.0004*	*0.0001*	*0.01*	*0.1*	*<0.00010*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
LQ 25-MH3	***16-Apr-10***	0.688	0.00021	0.0392	0.0013	0.0059	9.1	0.00309	1.75	<0.00050	0.00927	<0.00010	0.00553	0.0073	0.00171	0.008	0.016	0.00011	-	-	-
LQ 25-MH8	***16-Apr-10***	4.35	0.00029	0.143	0.0029	0.0083	20.3	0.00884	4.22	<0.00050	0.0473	<0.00010	<0.00010	0.0154	0.00452	0.009	0.047	0.00032	<0.010	-	-
LQ 25-MH13	***16-Apr-10***	0.076	0.00015	0.00378	<0.0010	<0.0010	7.92	<0.00030	0.489	<0.00050	0.00162	<0.00010	0.00363	0.0026	<0.00020	0.007	0.001	<0.00010	<0.010	-	-
LQ 25-MH24	***16-Apr-10***	4.99	0.00027	0.163	0.0024	0.0117	22.8	0.00819	6.16	<0.00050	0.0269	<0.00010	0.00027	0.0122	0.00437	0.010	0.025	0.00016	<0.010	-	-
LQ 25-MH27	***16-Apr-10***	0.491	0.00096	0.0814	0.002	0.0197	17.4	0.0121	3.28	<0.00050	0.0105	<0.00010	0.00073	0.0055	0.00459	0.108	0.010	0.00012	<0.010	-	-
LQ 25-MH31	***16-Apr-10***	2.44	0.00128	0.137	0.0017	0.0137	22.4	0.0105	5.46	<0.00050	0.0252	<0.00010	0.00042	0.019	0.00508	0.014	0.021	<0.00010	<0.010	-	-
LQ 25-MH33	***16-Apr-10***	8.3	0.00038	0.214	0.002	0.0155	23	0.0208	5.22	<0.00050	0.0373	<0.00010	0.00014	0.0541	0.00727	0.011	0.046	0.0002	<0.010	-	-
LQ 25-MH34	***16-Apr-10***	<0.020	<0.00010	0.0389	<0.0010	0.0015	6.19	<0.00030	0.806	<0.00050	0.00083	<0.00010	0.00171	0.0013	<0.00020	0.008	0.001	<0.00010	<0.010	-	-
LQ25 - MH24	***20-Jul-11***	6.05	0.000454	0.130	0.00181	0.0056	31.2	0.00903	5.24	0.00020	0.0325	<0.00010	<0.00010	0.0537	0.00475	0.0105	0.0225	0.00014	-	0.206	<0.00010
LQ25 - MH13	***20-Jul-11***	2.74	0.000149	0.0698	0.00270	0.0052	20.3	0.00278	3.32	<0.00020	0.0253	<0.00010	0.00105	0.0365	0.00131	0.0061	0.0232	0.00015	-	0.373	<0.00010
LQ25-MH27	***19-Jul-11***	0.54	0.000092	0.0502	0.00126	0.0161	17.7	0.00336	2.84	<0.00020	0.00881	<0.00010	<0.00010	0.0580	0.00304	0.0051	0.00479	<0.00010	-	0.130	<0.00010
LQ25 - MH27	***19-Jul-11***	2.15	0.0221	0.0714	0.00334	0.0205	17.1	0.0180	3.88	<0.00020	0.0156	<0.00010	0.00012	0.00251	0.0023	0.0714	0.00642	<0.00010	-	0.174	<0.00010
LQ25 - MH8	***18-Jul-11***	1.87	0.00317	0.0731	0.00089	0.0310	34.4	0.00142	11.4	<0.00020	0.0685	<0.00010	0.00117	0.0219	<0.0010	0.100	0.0186	0.00013	-	0.271	<0.00010
LQ25 - MH31	***18-Jul-11***	3.41	0.00303	0.155	0.00169	0.0217	19.5	0.0126	5.41	0.00031	0.0578	<0.00010	0.00064	0.0138	0.0030	0.0312	0.0308	0.00038	-	0.353	<0.00010
LQ25 - MH32	***18-Jul-11***	3.66	0.00743	0.127	0.00135	0.0096	11.4	0.0153	2.87	<0.00020	0.0344	<0.00010	0.00018	0.00715	0.0021	0.0569	0.0263	0.00026	-	0.312	<0.00010
LQ25 - MH3	***18-Jul-11***	0.28	0.00271	0.168	0.00431	0.0125	17.3	0.00251	3.97	<0.00020	0.00258	<0.00010	0.00018	0.00458	<0.0010	0.343	0.00643	<0.00010	-	0.281	<0.00010
LQ25 - MH34	***18-Jul-11***	2.35	0.0507	0.0766	0.00381	0.0341	17.1	0.0260	5.27	0.00045	0.0376	<0.00010	<0.00010	0.00200	0.0026	0.120	0.00985	0.00017	-	0.296	<0.00010
LQ25 - MH24	***20-Jul-11***	5.11	0.00945	0.156	0.00339	0.0092	19.4	0.0184	5.14	0.00064	0.0415	<0.00010	0.00014	0.0104	0.0051	0.0759	0.0241	0.00023	-	0.243	<0.00010
LQ25 - MH13	***20-Jul-11***	1.88	0.0181	0.0743	0.00337	0.0060	20.6	0.00916	3.79	<0.00020	0.0301	<0.00010	0.00135	0.00944	0.0017	0.189	0.0230	0.00048	-	0.365	<0.00010
LQ18 - MH10	***20-Jul-11***	0.85	0.00269	0.0416	0.00125	0.0057	19.5	0.00278	4.46	<0.00020	0.0139	<0.00010	0.00098	0.00522	0.0011	0.0447	0.00736	0.00032	-	0.137	0.00011
LQ18 - MH3	***20-Jul-11***	1.02	0.0217	0.0584	0.00480	0.0162	18.0	0.0160	4.95	<0.00020	0.0149	<0.00010	<0.00010	<0.00020	0.0016	0.201	0.0116	0.00034	-	0.187	<0.00010
LQ18 - MH6	***20-Jul-11***	1.13	0.0259	0.0613	0.00366	0.0141	16.6	0.0222	3.87	<0.00020	0.0162	<0.00010	<0.00010	0.00319	0.0043	0.374	0.0106	0.00027	-	0.175	<0.00010
LQ15 - MH1	***20-Jul-11***	0.44	0.000850	0.249	0.0174	0.0868	5.22	0.00040	4.73	<0.00020	0.0457	<0.00010	0.0194	0.00228	0.0053	0.207	0.00244	0.00011	-	0.398	<0.00010
LQ25 - MH31	***18-Jul-11***	3.03	0.000294	0.0837	0.00104	0.0031	24.5	0.00623	5.02	<0.00020	0.0207	<0.00010	0.00031	0.0216	0.00314	0.0055	0.0156	<0.00010	-	0.146	<0.00010
LQ25 - MH33	***18-Jul-11***	2.07	0.000243	0.115	0.00117	0.0028	22.4	0.00951	4.64	<0.00020	0.0225	<0.00010	0.00012	0.0231	0.00346	0.0067	0.0261	0.00012	-	0.171	<0.00010
LQ25 - MH3	***18-Jul-11***	0.58	<0.000090	0.182	0.00412	0.0041	19.5	0.00609	5.20	<0.00020	0.0159	<0.00010	0.00031	0.0445	0.00369	0.0080	0.0224	0.00011	-	0.271	<0.00010
LQ25 - MH8	***18-Jul-11***	1.90	0.000424	0.0480	0.00171	0.0054	30.0	0.00164	10.1	<0.00020	0.0465	<0.00010	0.00068	0.0446	0.00348	0.0194	0.0188	<0.00010	-	0.178	<0.00010
LQ25 - MH34	***18-Jul-11***	0.83	0.000632	0.0694	0.00333	0.0094	16.6	0.0102	5.15	0.00024	0.0158	<0.00010	<0.00010	0.0397	0.00404	0.0072	0.0118	<0.00010	-	0.184	<0.00010
MOE Standards [2]																					
Table 3		-	0.032	-	16	0.05	-	-	-	-	-	0.4	-	0.2	-	1.1	-	0.0012	0.11	-	-

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in micrograms per litre (µg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
( ) - Criterion value in brackets applies to medium and fine textured soils.

ATTACHMENT B, TABLE 3
VOLATILE ORGANIC COMPOUNDS IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]													
		1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,2-Dibromoethane	1,1-Dichloroethane	1,1-Dichloroethylene	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2-Hexanone	Acetone
EQL		*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*20*	*20*
Units		*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*
LQ 25-MH3	*16-Apr-10*	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.72	<20	300
LQ 25-MH8	*16-Apr-10*	<0.50	<0.50	<0.50	<0.50	<0.50	1.65	<0.50	<0.50	0.55	<0.50	<0.50	4.74	<20	410
LQ 25-MH13	*16-Apr-10*	<0.50	<0.50	1.02	<0.50	<0.50	18.0	<0.50	<0.50	1.05	<0.50	<0.50	3.26	<20	510
LQ 25-MH24	*16-Apr-10*	<2.5	<2.5	<2.5	<2.5	<2.5	3.2	<2.5	<2.5	<2.5	<2.5	<2.5	7.5	<100	290
LQ 25-MH27	*16-Apr-10*	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	2.6	<100	<100
LQ 25-MH31	*16-Apr-10*	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	4.6	<100	<100
LQ 25-MH33	*16-Apr-10*	<2.5	<2.5	<2.5	<2.5	<2.5	8.5	<2.5	<2.5	<2.5	<2.5	<2.5	5.8	<100	<100
LQ 25-MH34	*16-Apr-10*	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20
LQ25 - MH31	*18-Jul-11*	<0.50	<0.50	<0.50	<0.50	<0.50	0.84	<0.50	<0.50	<0.50	<0.50	<0.50	4.03	<20	<20
LQ25 - MH32	*18-Jul-11*	<2.0	<2.0	<2.0	<2.0	<2.0	5.8	<2.0	<2.0	<2.0	<2.0	<2.0	6.2	<80	133
LQ25 - MH3	*18-Jul-11*	<20	<20	32	<20	<20	57	<20	<20	<20	<20	<20	<20	<800	5700
LQ25 - MH8	*18-Jul-11*	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	<20	37
LQ25 - MH34	*18-Jul-11*	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	4.6	<80	292
LQ25 - MH27	*19-Jul-11*	<0.50	<0.50	0.59	<0.50	<0.50	2.02	<0.50	0.76	<0.50	<0.50	<0.50	7.67	<20	<20
LQ25 - MH24	*20-Jul-11*	<0.50	<0.50	<1.0	<1.0	<0.50	1.7	<1.0	<1.0	<0.50	<0.50	<0.50	4.2	<20	98
LQ25 - MH13	*20-Jul-11*	<0.50	<0.50	<20	<0.50	<0.50	16.5	<0.50	<20	1.98	<0.50	<0.50	<20	<20	820
LQ18 - MH10	*20-Jul-11*	<0.50	<0.50	<0.50	<0.50	<0.50	1.41	<0.50	<0.50	<0.50	<0.50	<0.50	1.65	<20	<20
LQ18 - MH3	*20-Jul-11*	<0.50	<0.50	<0.50	<0.50	<0.50	0.70	<0.50	1.39	0.62	<0.50	<0.50	9.34	<20	3600
LQ18 - MH6	*20-Jul-11*	<0.50	<0.50	<0.50	<0.50	<0.50	3.98	<0.50	5.18	<0.50	<0.50	0.67	12.5	25	3900
LQ15 - MH1	*20-Jul-11*	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<20
MOE Standards [2]															
Table 3		38(6.0)	(140)22	200	(50000)16000	50000	(50000) 9000	(4.1) 0.66	7600	(110)17	(58)9.3	7600	7600	-	3,300

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in micrograms per litre (µg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
( ) - Criterion value in brackets applies to medium and fine textured soils.

ATTACHMENT B, TABLE 3 (cont'd)
VOLATILE ORGANIC COMPOUNDS IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]														
		Benzene	Bromodi-chloromethane	Bromoform	Bromomethane	Carbon Disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethylene	cis-1,3-Dichloropropene	Dibromo-chloromethane	Dichlorodi-fluoromethane	Dichloro-methane
EQL		*0.5*	*0.5*	*0.5*	*1*	*0.5*	*0.5*	*0.5*	*1*	*0.5*	*1*	*0.5*	*0.5*	*0.5*	*1*	*0.5*
Units		*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*
LQ 25-MH3	***16-Apr-10***	1.06	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50
LQ 25-MH8	***16-Apr-10***	0.55	<0.50	<0.50	<1.0	<0.50	<0.50	2.50	2.2	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	2.97
LQ 25-MH13	***16-Apr-10***	0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<1.0	4.51	<0.50	<0.50	<1.0	6.96
LQ 25-MH24	***16-Apr-10***	4.0	<2.5	<2.5	<5.0	4.9	<2.5	<2.5	<5.0	<2.5	<5.0	<2.5	<2.5	<2.5	<5.0	<2.5
LQ 25-MH27	***16-Apr-10***	10.0	<2.5	<2.5	<5.0	<2.5	<2.5	4.1	28.7	<2.5	<5.0	6.2	<2.5	<2.5	<5.0	<2.5
LQ 25-MH31	***16-Apr-10***	5.5	<2.5	<2.5	<5.0	<2.5	<2.5	7.4	<5.0	<2.5	<5.0	<2.5	<2.5	<2.5	<5.0	<2.5
LQ 25-MH33	***16-Apr-10***	6.6	<2.5	<2.5	<5.0	<2.5	<2.5	7.9	25.5	<2.5	<5.0	<2.5	<2.5	<2.5	<5.0	<2.5
LQ 25-MH34	***16-Apr-10***	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50
LQ25 - MH31	***18-Jul-11***	3.34	<0.50	<0.50	<1.0	<0.50	<0.50	4.93	2.7	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50
LQ25 - MH32	***18-Jul-11***	7.0	<2.0	<2.0	<4.0	<2.0	<2.0	7.1	12.6	<2.0	<4.0	<2.0	<2.0	<2.0	<4.0	<2.0
LQ25 - MH3	***18-Jul-11***	<20	<20	<20	<40	<20	<20	<20	167	<20	<40	<20	<20	<20	<40	216
LQ25 - MH8	***18-Jul-11***	1.07	<0.50	<0.50	<1.0	0.53	<0.50	<0.50	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50
LQ25 - MH34	***18-Jul-11***	10.7	<2.0	<2.0	<4.0	<2.0	<2.0	<2.0	<4.0	<2.0	<4.0	<2.0	<2.0	<2.0	<4.0	35.1
LQ25 - MH27	***19-Jul-11***		<0.50	<0.50	<0.50	<0.50	<0.50	8.03	25.3	<0.50	<1.0	4.91	<0.50	<0.50	<2.0	<0.50
LQ25 - MH24	***20-Jul-11***		<0.50	<0.50	<1.0	0.79	<0.50	1.03	<1.0	<0.50	<1.0	<1.0	<0.50	<0.50	<1.0	<0.50
LQ25 - MH13	***20-Jul-11***		<0.50	<0.50	<1.0	0.79	<0.50	1.72	19.1	<0.50	<1.0	6.35	<0.50	<0.50	<1.0	19.3
LQ18 - MH10	***20-Jul-11***		<0.50	<0.50	<1.0	1.34	<0.50	1.64	11.2	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50
LQ18 - MH3	***20-Jul-11***		<0.50	<0.50	<1.0	<0.50	<0.50	11.9	6.3	<0.50	<1.0	3.24	<0.50	<0.50	<1.0	6.89
LQ18 - MH6	***20-Jul-11***		<0.50	<0.50	<1.0	<0.50	<0.50	143	2.5	<0.50	2.3	78.7	<0.50	<0.50	<1.0	367
LQ15 - MH1	***20-Jul-11***		<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50
MOE Standards [2]																
Table 3		23000	55000	(5200)840	(16) 3.7	-	(100)17	500	-	(2700)430	-	70	-	50000	-	-

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in micrograms per litre (µg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use
   Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
( ) - Criterion value in brackets applies to medium and fine textured soils.

ATTACHMENT B, TABLE 3 (cont'd)
VOLATILE ORGANIC COMPOUNDS IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]															
		Ethyl Benzene	m+p-Xylenes	Methyl Ethyl Ketone	Methyl Isobutyl Ketone	MTBE	o-Xylene	Styrene	Tetrachloroethylene	Toluene	trans-1,2-Dichloroethylene	trans-1,3-Dichloropropene	Trichloroethylene	Trichlorofluoro-methane	Trihalo-methanes (total)	Vinyl chloride	Xylenes (Total)
EQL		*0.5*	*1*	*20*	*20*	*0.5*	*0.5*	*2.5*	*2.5*	*2.5*	*2.5*	*0.5*	*2.5*	*5*	*10*	*2.5*	*1.5*
Units		*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*
LQ 25-MH3	*16-Apr-10*	24.8	80.2	49	<20	<0.50	21.5	<0.50	<0.50	5.37	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	102
LQ 25-MH8	*16-Apr-10*	8.26	80.8	510	<20	1.01	15.2	<0.50	<0.50	1.07	<0.50	<0.50	0.50	<1.0	<2.0	<0.50	96.0
LQ 25-MH13	*16-Apr-10*	7.28	18.5	<20	<20	0.81	6.95	<0.50	3.95	14.5	<0.50	<0.50	9.26	<1.0	<2.0	2.02	25.5
LQ 25-MH24	*16-Apr-10*	91.7	234	530	<100	<2.5	102	<2.5	<2.5	31.0	<2.5	<2.5	<2.5	<5.0	<10	<2.5	336
LQ 25-MH27	*16-Apr-10*	129	399	<100	<100	<2.5	49.9	<2.5	<2.5	17.6	<2.5	<2.5	<2.5	<5.0	<10	2.8	449
LQ 25-MH31	*16-Apr-10*	41.1	117	<100	<100	<2.5	30.2	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<10	<2.5	147
LQ 25-MH33	*16-Apr-10*	116	223	<100	<100	<2.5	53.2	<2.5	<2.5	8.9	<2.5	<2.5	<2.5	<5.0	<10	<2.5	276
LQ 25-MH34	*16-Apr-10*	0.86	<1.0	<20	<20	<0.50	0.81	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	<1.5
LQ25 - MH31	*18-Jul-11*	17.3	53.0	<20	<20	0.52	15.8	<0.50	<0.50	1.06	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	68.8
LQ25 - MH32	*18-Jul-11*	139	259	133	<80	<2.0	67.9	<2.0	<2.0	24.3	<2.0	<2.0	<2.0	<4.0	<4.0	<2.0	327
LQ25 - MH3	*18-Jul-11*	115	512	4900	<800	<20	130	<20	<20	91	<20	<20	<20	<40	<40	<20	642
LQ25 - MH8	*18-Jul-11*	4.73	10.3	<20	<20	<0.50	3.29	<0.50	<0.50	7.92	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	13.6
LQ25 - MH34	*18-Jul-11*	123	250	293	<80	<2.0	45.6	<2.0	<2.0	58.9	<2.0	<2.0	<2.0	<4.0	<4.0	<2.0	296
LQ25 - MH27	*19-Jul-11*	-	-	<20	<20	0.61	-	<0.50	<0.50	-	<0.50	<0.50	<0.50	<1.0	<2.0	1.49	-
LQ25 - MH24	*20-Jul-11*	-	-	134	<20	1.67	-	<0.50	<1.0	-	<0.50	<0.50	<1.0	<1.0	<2.0	1.74	-
LQ25 - MH13	*20-Jul-11*	-	-	<800	102	3.09	-	<0.50	<20	-	<0.50	<0.50	3.56	<1.0	<2.0	4.10	-
LQ18 - MH10	*20-Jul-11*	-	-	<20	<20	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	-
LQ18 - MH3	*20-Jul-11*	-	-	2400	<1000	1.55	-	<0.50	<0.50	-	65.2	0.50	<0.50	<0.50	<1.0	<2.0	-
LQ18 - MH6	*20-Jul-11*	-	-	2100	<1000	0.99	-	<0.50	<0.50	-	0.91	<0.50	1.32	<1.0	<2.0	9.82	-
LQ15 - MH1	*20-Jul-11*	-	-	<20	<20	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	<0.50	<1.0	<2.0	<0.50	-
MOE Standards [2]																	
Table 3		(50000)28000	(35000)5600	50000	50000	50000	(35000)5600	(5900)940	5	(37000)5900	-	-	50	-	-	(1.3) 0.5	(35000)5600

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in micrograms per litre (µg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use
   Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
( ) - Criterion value in brackets applies to medium and fine textured soils.

ATTACHMENT B, TABLE 4
POLYNUCLEAR AROMATIC HYDROCARBONS IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]										
		1-Methyl Naphthalene	2-Methyl Naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(b&j)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene
EQL		*0.00005*	*0.00005*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
LQ 25-MH3	***16-Apr-10***	0.00081	0.00105	0.00119	<0.000050	0.000570	0.000234	<0.000050	0.000054	<0.000050	<0.000050	<0.000050
LQ 25-MH8	***16-Apr-10***	0.00131	0.00214	0.00234	<0.000010	0.000881	0.000322	0.000275	0.000235	0.000235	0.000064	0.000088
LQ 25-MH13	***16-Apr-10***	0.00106	<0.000050	0.00338	0.000026	0.000162	0.000231	0.000033	0.000035	0.000035	<0.000010	0.000017
LQ 25-MH24	***16-Apr-10***	0.00127	0.00170	0.000933	<0.000050	0.000720	0.000273	0.000061	0.000160	0.000150	<0.000050	0.000050
LQ 25-MH27	***16-Apr-10***	0.0196	0.0241	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
LQ 25-MH31	***16-Apr-10***	0.00101	0.00140	0.000984	<0.000010	0.000223	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
LQ 25-MH33	***16-Apr-10***	0.00177	0.00240	0.00156	<0.000010	0.000574	0.000032	0.000016	0.000025	0.000023	<0.000010	<0.000010
LQ 25-MH34	***16-Apr-10***	0.00218	<0.000050	0.00655	0.000093	0.00215	0.000450	0.000384	0.000413	0.000415	0.000244	0.000162
LQ25 - MH24	***20-Jul-11***	0.000459	0.000741	0.000382	<0.000020	0.000115	0.000019	0.0000142	no data	0.000019	<0.000020	<0.000010
LQ25 - MH13	***20-Jul-11***	0.00271	0.00565	0.00260	<0.000020	0.000417	0.000043	0.0000253	no data	0.000046	<0.000020	0.000015
LQ25 - MH31	***18-Jul-11***	0.00116	0.00169	0.00117	<0.000020	0.00040	0.000141	0.0000135	no data	0.000019	<0.000020	<0.000010
LQ25 - MH33	***18-Jul-11***	0.00286	0.00514	0.00244	0.000028	0.00063	0.000299	0.0000808	no data	0.000179	0.000039	0.000050
LQ25 - MH3	***18-Jul-11***	0.00225	0.00322	0.00110	<0.00020	0.00012	0.000030	0.0000120	no data	0.000018	<0.000020	<0.000010
LQ25 - MH8	***18-Jul-11***	0.000290	0.000443	0.000549	<0.000020	0.00036	0.000215	0.0000559	no data	0.000101	0.000028	0.000042
LQ25 - MH34	***18-Jul-11***	0.00142	0.00229	0.000737	0.000063	0.00055	0.000175	0.0000959	no data	0.000103	0.000027	0.000043
LQ25-MH27	***19-Jul-11***	0.00165	0.00263	0.000504	<0.000020	0.000084	0.000211	0.000274	no data	0.000446	0.000187	0.000166
MOE Standards [2]												
Table 3		13	13	1.7	2.0	0.012	0.005	0.0019	0.007	0.007	0.0002	0.0004

Sample No.	Date	Parameter [1]									
		Chrysene	Dibenzo(ah)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3 cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline	Acridine
EQL		*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00001*	*0.00005*	*0.00005*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
LQ 25-MH3	***16-Apr-10***	0.000118	<0.000050	0.000991	0.000613	<0.000050	0.00129	0.00222	0.000694	<0.00025	<0.00025
LQ 25-MH8	***16-Apr-10***	0.000207	<0.000010	0.00132	0.00191	0.000058	0.0105	0.00310	0.000997	<0.000050	<0.00020
LQ 25-MH13	***16-Apr-10***	0.000107	<0.000010	0.00159	0.00129	<0.000010	<0.000010	0.000020	0.00129	<0.000050	0.000094
LQ 25-MH24	***16-Apr-10***	0.000188	<0.000050	0.00155	0.00138	<0.000050	0.0123	0.00355	0.000864	<0.00025	0.00033
LQ 25-MH27	***16-Apr-10***	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.0188	<0.00010	<0.00010	<0.00050	<0.00050
LQ 25-MH31	***16-Apr-10***	0.000011	<0.000010	0.000135	0.000917	<0.000010	0.00926	0.000996	0.000093	<0.000050	<0.000050
LQ 25-MH33	***16-Apr-10***	0.000051	<0.000010	0.00103	0.00129	<0.000010	0.0121	0.00273	0.000614	<0.000050	0.000297
LQ 25-MH34	***16-Apr-10***	0.000392	0.000018	0.00273	0.00923	0.000367	0.000140	0.0105	0.00162	<0.000050	0.000095
LQ25 - MH24	***20-Jul-11***	<0.000020	<0.0000050	0.000304	0.000551	0.000011	0.00690	0.000847	0.000112	<0.000020	0.000620
LQ25 - MH13	***20-Jul-11***	0.000037	<0.0000050	0.000526	0.00243	0.000018	0.00854	0.00249	0.000265	0.000029	0.000126
LQ25 - MH31	***18-Jul-11***	0.000112	<0.0000050	0.000942	0.000826	<0.000010	0.00705	0.00200	0.000398	0.000049	0.000129
LQ25 - MH33	***18-Jul-11***	0.000220	0.0000116	0.00111	0.00151	0.000071	0.0149	0.00290	0.000998	<0.000020	0.00037
LQ25 - MH3	***18-Jul-11***	0.000034	<0.0000050	<0.00020	0.000706	<0.000010	0.00845	0.00080	0.000191	0.000171	<0.00020
LQ25 - MH8	***18-Jul-11***	0.000192	0.0000091	0.00118	0.000351	0.000043	0.00155	0.00157	0.000818	0.000317	0.000079
LQ25 - MH34	***18-Jul-11***	0.000169	0.0000074	0.000483	0.00136	0.000040	0.0150	0.00278	0.000368	0.000056	0.000111
LQ25-MH27	***19-Jul-11***	0.000206	0.0000474	0.000606	0.000760	0.000205	0.0127	0.00106	0.000435	0.000076	0.000085
MOE Standards [2]											
Table 3		0.003	0.00025	0.13	0.29	0.00027	5.9 (6.2)	0.063	0.04	-	-

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in micrograms per litre (µg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use
   Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
( ) - Criterion value in brackets applies to medium and fine textured soils.

ATTACHMENT B, TABLE 5
POLYCHLORINATED BIPHENYLS (PCBs) IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]									
		Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Total PCBs
EQL		*0.00005*	*0.00005*	*0.00005*	*0.00005*	*0.00005*	*0.00005*	*0.00005*	*0.00005*	*0.00005*	*0.00005*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
LQ 25-MH3	***16-Apr-10***	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
LQ 25-MH8	***16-Apr-10***	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
LQ 25-MH13	***16-Apr-10***	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
LQ 25-MH24	***16-Apr-10***	<0.00020	<0.00020	<0.00020	0.00031	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00031
LQ 25-MH27	***16-Apr-10***	<0.00020	<0.00020	<0.00020	0.00093	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00093
LQ 25-MH31	***16-Apr-10***	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
LQ 25-MH33	***16-Apr-10***	<0.00020	<0.00020	<0.00020	0.00048	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00048
LQ 25-MH34	***16-Apr-10***	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
LQ25 - MH31	***18-Jul-11***	<0.00020	<0.00020	<0.00020	0.00031	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00031
LQ25 - MH32	***18-Jul-11***	<0.00020	<0.00020	<0.00020	0.00365	<0.00020	0.00120	<0.00020	<0.00020	<0.00020	0.00365
LQ25 - MH3	***18-Jul-11***	<0.00020	<0.00020	<0.00020	0.00080	<0.00020	0.00029	<0.00020	<0.00020	<0.00020	0.00080
LQ25 - MH8	***18-Jul-11***	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
LQ25 - MH34	***18-Jul-11***	<0.00020	<0.00020	<0.00020	0.00083	<0.00020	0.00022	<0.00020	<0.00020	<0.00020	0.00083
LQ25 - MH27	***19-Jul-11***	<0.00020	<0.00020	<0.00020	0.00057	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00057
LQ25 - MH24	***20-Jul-11***	<0.00015	<0.00015	<0.00015	0.00055	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	0.00055
LQ25 - MH13	***20-Jul-11***	<0.00015	<0.00015	<0.00015	0.00034	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	0.00034
LQ18 - MH10	***20-Jul-11***	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015
LQ18 - MH6	***20-Jul-11***	<0.00030	<0.00030	<0.00030	0.00067	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00067
LQ15 - MH1	***20-Jul-11***	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
MOE Standards [2]											
Table 3		-	-	-	-	-	-	-	-	-	0.0002

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

ATTACHMENT B, TABLE 6
EPA 8270 BASE/NEUTRAL EXTRACTABLES IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]													
		1,2,4,5-Tetrachlorobenzene	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,2-Diphenylhydrazine	1,3,5-Trinitrobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,4-Naphthoquinone	1-Chloronaphthalene	1-Methylnaphthalene	1-Naphthylamine	2,4-Dinitrotoluene	2,6-Dinitrotoluene	2-Acetylaminofluorene	2-Chloronaphthalene
EQL		*0.001*	*0.001*	*0.001*	*0.02*	*0.01*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.02*	*0.001*	*0.001*	*0.01*	*0.001*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
LQ 25-MH3	***16-Apr-10***	<0.0010	<0.0010	<0.0010	<0.020	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013	<0.020	<0.0010	<0.0010	<0.010	<0.0010
LQ 25-MH8	***16-Apr-10***	<0.0010	<0.0010	<0.0010	<0.020	<0.010	<0.0010	0.0042	<0.0010	<0.0010	0.0019	<0.020	<0.0010	<0.0010	<0.010	<0.0010
LQ 25-MH13	***16-Apr-10***	<0.0010	<0.0010	<0.0010	<0.020	<0.010	<0.0010	0.0015	<0.0010	<0.0010	<0.0010	<0.020	<0.0010	<0.0010	<0.010	<0.0010
LQ 25-MH24	***16-Apr-10***	<0.0010	<0.0010	<0.0010	<0.020	<0.010	<0.0010	0.0046	<0.0010	<0.0010	0.0014	<0.020	<0.0010	<0.0010	<0.010	<0.0010
LQ 25-MH27	***16-Apr-10***	<0.010	<0.010	<0.010	<0.20	<0.10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.20	<0.010	<0.010	<1.0	<0.010
LQ 25-MH31	***16-Apr-10***	<0.0010	<0.0010	<0.0010	<0.020	<0.010	<0.0010	0.0038	<0.0010	<0.0010	0.0019	<0.020	<0.0010	<0.0010	<0.010	<0.0010
LQ 25-MH33	***16-Apr-10***	<0.0010	<0.0010	<0.0010	<0.020	<0.010	0.0018	0.0042	<0.0010	<0.0010	0.0028	<0.020	<0.0010	<0.0010	<0.010	<0.0010
LQ 25-MH34	***16-Apr-10***	<0.0010	<0.0010	<0.0010	<0.020	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	0.0033	<0.020	<0.0010	<0.0010	<0.010	<0.0010
MOE Standards [2]																
Table 3		-	0.5	7.6	-	-	7.6	7.6	-	-	13	-	2.3	-	-	-

Sample No.	Date	Parameter [1]													
		2-Methylnaphthalene	2-Naphthylamine	2-Nitroaniline	2-Picoline	3,3'-Dichlorobenzidine	3-Methylcholanthrene	3-Nitroaniline	4,4'-DDD	4,4'-DDE	4,4'-DDT	4-Aminobiphenyl	4-Bromophenyl-phenyl ether	4-Chloroaniline	4-Chlorophenyl-phenyl ether	4-Nitroaniline
EQL		*0.001*	*0.02*	*0.002*	*0.005*	*0.02*	*0.005*	*0.002*	*0.005*	*0.005*	*0.005*	*0.01*	*0.001*	*0.005*	*0.001*	*0.01*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
LQ 25-MH3	***16-Apr-10***	0.0024	<0.020	<0.0020	<0.0050	<0.020	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0010	<0.0050	<0.0010	<0.010
LQ 25-MH8	***16-Apr-10***	0.0031	<0.020	<0.0020	<0.0050	<0.020	<0.010	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0010	<0.050	<0.0010	<0.010
LQ 25-MH13	***16-Apr-10***	<0.0010	<0.020	<0.0020	<0.0050	<0.020	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0010	<0.0050	<0.0010	<0.010
LQ 25-MH24	***16-Apr-10***	0.0027	<0.020	<0.0020	<0.0050	<0.020	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0010	<0.050	<0.0010	<0.010
LQ 25-MH27	***16-Apr-10***	<0.010	<0.20	<0.020	<0.050	<2.0	<0.50	<0.020	<0.50	<0.50	<0.50	<0.10	<0.010	<0.050	<0.010	<0.10
LQ 25-MH31	***16-Apr-10***	0.0025	<0.020	<0.0020	<0.0050	<0.020	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0010	<0.050	<0.0010	<0.010
LQ 25-MH33	***16-Apr-10***	0.0058	<0.020	<0.0020	<0.0050	<0.020	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.0020	<0.0010	<0.0050	<0.0010	<0.010
LQ 25-MH34	***16-Apr-10***	0.0011	<0.020	<0.0020	<0.0050	<0.020	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0010	<0.0050	<0.0010	<0.010
MOE Standards [2]																
Table 3		13	-	-	-	1.6	-	-	0.006	0.02	0.00005	-	-	0.1	-	-

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use
   Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
( ) - Criterion value in brackets applies to medium and fine textured soils.

ATTACHMENT B, TABLE 6 (cont'd)
EPA 8270 BASE/NEUTRAL EXTRACTABLES IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																
		4-Nitroquinoline-1-oxide	5-Nitro-o-toluidine	7,12-Dimethylbenz-(a)anthracene	Acenaphthene	Acenaphthylene	Acetophenone	Aldrin	Alpha-BHC	alpha-Endosulfan	Aniline	Anthracene	Aramite	Benzidine	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b&j) fluoranthene	Benzo (ghi)perylene	Benzo(k) fluoranthene
EQL		*0.002*	*0.01*	*0.005*	*0.001*	*0.001*	*0.005*	*0.001*	*0.001*	*0.005*	*0.01*	*0.001*	*0.02*	*0.02*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
LQ 25-MH3	***16-Apr-10***	<0.0020	<0.010	<0.0050	0.0019	<0.0010	<0.0050	<0.0010	<0.0010	<0.0050	<0.010	<0.0010	<0.020	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
LQ 25-MH8	***16-Apr-10***	<0.0020	<0.010	<0.0050	0.0024	<0.0010	0.0019	<0.010	<0.0010	<0.0050	<0.010	0.0014	<0.020	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
LQ 25-MH13	***16-Apr-10***	<0.0020	<0.010	<0.0050	0.0029	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.010	<0.0010	<0.020	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
LQ 25-MH24	***16-Apr-10***	<0.0020	<0.010	<0.0050	0.0010	<0.0010	<0.010	<0.010	<0.0010	<0.0050	<0.10	<0.0010	<0.020	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
LQ 25-MH27	***16-Apr-10***	<0.020	<0.10	<0.50	<0.010	<0.010	<0.010	<0.010	<0.010	<0.50	<0.10	<0.010	<2.0	<0.20	<0.10	<0.10	<0.10	<0.10	<0.10
LQ 25-MH31	***16-Apr-10***	<0.0020	<0.010	<0.0050	0.0012	<0.0010	<0.010	<0.0010	<0.0010	<0.0050	<0.010	<0.0010	<0.020	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
LQ 25-MH33	***16-Apr-10***	<0.0020	<0.010	<0.0050	0.0019	<0.0010	<0.010	<0.0010	<0.0010	<0.0050	<0.010	<0.0010	<0.020	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
LQ 25-MH34	***16-Apr-10***	<0.0020	<0.10	<0.0050	0.0124	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.010	0.0074	<0.020	<0.020	0.0068	0.0059	0.0060	0.0042	0.0047
MOE Standards [2]																			
Table 3		-	-	-	1.7	2	-	(0.0013) 0.0002	-	-	-	0.012	-	-	0.005	0.0019	0.007	0.0002	0.0004

Sample No.	Date	Parameter [1]																	
		Benzyl alcohol	Beta-BHC	beta-Endosulfan	Bis(2-chloroethoxy) methane	Bis(2-chloroethyl) ether	Bis(2-chloroisopropyl) ether	Bis(2-ethylhexyl) phthalate	Butylbenzyl phthalate	Chloro-benzilate	Chrysene	Delta-BHC	Di-n-butyl phthalate	Di-n-octyl phthalate	Diallate	Dibenzo(a,h)anthracene	Dibenzofuran	Dieldrin	Diethyl phthalate
EQL		*0.01*	*0.001*	*0.005*	*0.001*	*0.001*	*0.001*	*0.003*	*0.001*	*0.01*	*0.001*	*0.001*	*0.001*	*0.001*	*0.002*	*0.001*	*0.001*	*0.005*	*0.001*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
LQ 25-MH3	***16-Apr-10***	<0.010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010	0.0014	<0.0050	0.0024
LQ 25-MH8	***16-Apr-10***	<0.010	<0.0010	<0.050	<0.0010	<0.0010	<0.010	0.0089	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010	0.0019	<0.050	0.0044
LQ 25-MH13	***16-Apr-10***	<0.010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010	0.0016	<0.0050	<0.0010
LQ 25-MH24	***16-Apr-10***	<0.010	<0.010	<0.050	<0.010	<0.0010	<0.010	0.0079	<0.010	<0.010	<0.0010	<0.0010	0.0011	<0.0010	<0.0020	<0.0010	0.0014	<0.050	0.0177
LQ 25-MH27	***16-Apr-10***	<0.10	<0.010	<0.50	<0.010	<0.010	<0.010	<0.30	<0.10	<0.10	<0.10	<0.010	<0.010	<0.10	<0.020	<0.10	<0.010	<0.50	<0.010
LQ 25-MH31	***16-Apr-10***	<0.010	<0.0010	<0.0050	<0.0010	<0.0010	<0.010	0.0032	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010	<0.0010	<0.050	0.0028
LQ 25-MH33	***16-Apr-10***	<0.010	<0.010	<0.050	<0.0010	<0.0010	<0.010	0.0037	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010	0.0015	<0.050	0.0096
LQ 25-MH34	***16-Apr-10***	<0.010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0030	<0.0010	<0.010	0.0076	<0.0010	<0.0010	<0.0010	<0.0020	0.0016	0.0161	<0.0050	<0.0010
MOE Standards [2]																			
Table 3		-	-	0.000056	-	(0.71) 0.11	(2.7) 0.43	0.03	-	-	0.003	-	-	-	-	0.00025	-	0.0002	0.03

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use
   Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
( ) - Criterion value in brackets applies to medium and fine textured soils.

ATTACHMENT B, TABLE 6 (cont'd)
EPA 8270 BASE/NEUTRAL EXTRACTABLES IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																			
		Dimethyl phthalate	Diphenylamine	Disulfoton	Endrin	Endrin aldehyde	Famphur	Fluoranthene	Fluorene	Gamma-BHC	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Hexachlorobutadiene	Hexachlorocyclopen-tadiene	Hexa-chloroethane	Hexachloro-propene	Indeno(1,2,3-cd)pyrene	Isodrin	Isophorone	Isosafrole	Kepone
EQL		*0.001*	*0.001*	*0.001*	*0.01*	*0.02*	*0.01*	*0.001*	*0.001*	*0.001*	*0.01*	*0.005*	*0.001*	*0.001*	*0.01*	*0.002*	*0.001*	*0.001*	*0.005*	*0.001*	*0.001*	*0.02*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
LQ 25-MH3	***16-Apr-10***	0.0021	<0.0010	<0.0010	<0.010	<0.020	<0.010	0.0014	0.0015	<0.0010	<0.010	<0.0050	<0.0010	<0.0010	<0.010	<0.0020	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.020
LQ 25-MH8	***16-Apr-10***	<0.0010	<0.0010	<0.0010	<0.10	<0.20	<0.010	0.0023	0.0023	<0.0010	<0.10	<0.0050	<0.0010	<0.0010	<0.010	<0.0020	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.020
LQ 25-MH13	***16-Apr-10***	<0.0010	<0.0010	<0.0010	<0.010	<0.020	<0.010	0.0022	<0.0010	<0.0010	<0.010	<0.0050	<0.0010	<0.0010	<0.010	<0.0020	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.020
LQ 25-MH24	***16-Apr-10***	<0.0010	<0.0010	<0.0010	<0.10	<0.20	<0.010	<0.0010	0.0015	<0.0010	<0.10	<0.0050	<0.0010	<0.0010	<0.010	<0.0020	<0.0010	<0.0010	<0.050	<0.0010	<0.0010	<0.020
LQ 25-MH27	***16-Apr-10***	<0.010	<0.010	<0.010	<1.0	<2.0	<1.0	<0.010	<0.010	<0.010	<0.10	<0.050	<0.010	<0.010	<0.10	<0.020	<0.010	<0.10	<0.050	<0.010	<0.010	<2.0
LQ 25-MH31	***16-Apr-10***	<0.0010	<0.0010	<0.0010	<0.10	<0.20	<0.010	<0.0010	0.0012	<0.0010	<0.10	<0.0050	<0.0010	<0.0010	<0.010	<0.0020	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.020
LQ 25-MH33	***16-Apr-10***	<0.0010	<0.0010	<0.0010	<0.10	<0.20	<0.010	0.0013	0.0014	<0.0010	<0.010	<0.0050	<0.0010	<0.0010	<0.010	<0.0020	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.020
LQ 25-MH34	***16-Apr-10***	<0.0010	<0.0010	<0.0010	<0.010	<0.020	<0.010	0.0203	0.0177	<0.0010	<0.010	<0.0050	<0.0010	<0.0010	<0.010	<0.0020	<0.0010	0.0049	<0.0050	<0.0010	<0.0010	<0.020
MOE Standards [2]																						
Table 3		0.03	-	-	0.00005	-	-	0.13	0.29	-	0.00004	(0.037) 0.006	0.0039 (0.00062)	0.0054 (0.00087)	-	0.078	-	0.00027	-	-	-	-

Sample No.	Date	Parameter [1]																			
		Metha-pyrilene	Metho-xychlor	Methyl parathion	N-Nitrosodi-n-butylamine	N-Nitrosodi-n-propylamine	N-Nitroso-diethylamine	N-Nitroso-dimethylamine	N-Nitroso-diphenylamine	N-Nitrosomethy-lethylamine	N-Nitroso-morpholine	N-Nitroso-piperidine	N-Nitroso-pyrrolidine	Naphth-alene	Nitro-benzene	O,O,O-Triethylphosphorothioate	Parathion	Pentachloro-benzene	Pentachloro-ethane	Pentachloronitro-benzene	Perylene	Phenacetin
EQL		*0.02*	*0.02*	*0.02*	*0.01*	*0.001*	*0.001*	*0.01*	*0.001*	*0.01*	*0.001*	*0.001*	*0.001*	*0.001*	*0.02*	*0.002*	*0.02*	*0.001*	*0.005*	*0.002*	*0.001*	*0.002*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
LQ 25-MH3	***16-Apr-10***	<0.020	<0.020	<0.020	<0.010	<0.0010	<0.0010	<0.010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	0.0022	<0.020	<0.0020	<0.020	<0.0010	<0.0050	<0.0020	<0.0010	<0.0020
LQ 25-MH8	***16-Apr-10***	<0.020	<0.020	<0.020	<0.010	<0.0010	<0.0010	<0.010	<0.0010	<0.010	<0.010	<0.0010	<0.0010	0.0120	<0.010	<0.0020	<0.020	<0.0010	<0.0050	<0.0020	<0.0010	<0.0020
LQ 25-MH13	***16-Apr-10***	<0.020	<0.020	<0.020	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.020	<0.0010	<0.0050	<0.0020	<0.0010	<0.0020
LQ 25-MH24	***16-Apr-10***	<0.20	<0.020	<0.020	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	0.0154	<0.010	<0.0020	<0.020	<0.0010	<0.0050	<0.0020	<0.0010	<0.0020
LQ 25-MH27	***16-Apr-10***	<0.20	<2.0	<0.20	<0.010	<0.010	<0.010	<0.10	<0.010	<0.10	<0.010	<0.010	<0.010	0.012	<0.010	<0.020	<0.20	<0.010	<0.050	<0.020	<0.10	<0.020
LQ 25-MH31	***16-Apr-10***	<0.020	<0.020	<0.020	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	0.0091	<0.010	<0.0020	<0.020	<0.0010	<0.0050	<0.0020	<0.0010	<0.0020
LQ 25-MH33	***16-Apr-10***	<0.020	<0.020	<0.020	<0.010	<0.0010	<0.0010	<0.010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	0.0179	<0.010	<0.0020	<0.020	<0.0010	<0.0050	<0.0020	<0.0010	<0.0020
LQ 25-MH34	***16-Apr-10***	<0.020	<0.020	<0.020	<0.0010	<0.0010	<0.0010	<0.010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	0.0047	<0.0010	<0.0020	<0.020	<0.0010	<0.0050	<0.0020	0.0018	<0.0020
MOE Standards [2]																						
Table 3		0.0003	50	-	-	-	-	-	-	-	-	-	-	(6.2) 5.9	-	-	-	-	-	-	-	-

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
( ) - Criterion value in brackets applies to medium and fine textured soils.

ATTACHMENT B, TABLE 6 (cont'd)
EPA 8270 BASE/NEUTRAL EXTRACTABLES IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]											
		Phenan-threne	Phorate	Pronamide	Pyrene	Pyridine	Safrole	Sulfotepp	Thionazin	a,a-Dimethylphenethylamine	m-Dinitro-benzene	o-Toluidine	p-(Dimethylamino) azobenzene
EQL		*0.001*	*0.01*	*0.001*	*0.001*	*0.01*	*0.002*	*0.01*	*0.02*	*0.02*	*0.002*	*0.005*	*0.005*
Units		*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
LQ 25-MH3	***16-Apr-10***	0.0032	<0.010	<0.0010	0.0013	<0.010	<0.0020	<0.010	<0.020	<0.020	<0.0020	<0.0050	<0.0050
LQ 25-MH8	***16-Apr-10***	0.0058	<0.010	<0.0010	0.0016	<0.010	<0.0020	<0.010	<0.020	<0.020	<0.0020	<0.0050	<0.0050
LQ 25-MH13	***16-Apr-10***	<0.0010	<0.010	<0.0010	0.0014	<0.010	<0.0020	<0.010	<0.020	<0.020	<0.0020	<0.0050	<0.0050
LQ 25-MH24	***16-Apr-10***	0.0033	<0.10	<0.0010	<0.0010	<0.010	<0.0020	<0.010	<0.020	<0.020	<0.0020	<0.0050	<0.050
LQ 25-MH27	***16-Apr-10***	<0.010	<0.10	<0.010	<0.010	<0.10	<0.020	<0.10	<0.20	<0.20	<0.020	<0.050	<0.50
LQ 25-MH31	***16-Apr-10***	0.0013	<0.010	<0.0010	<0.0010	<0.010	<0.0020	<0.010	<0.020	<0.020	<0.0020	<0.0050	<0.0050
LQ 25-MH33	***16-Apr-10***	0.0036	<0.010	<0.0010	<0.0010	<0.010	<0.0020	<0.010	<0.020	<0.020	<0.0020	<0.0050	<0.050
LQ 25-MH34	***16-Apr-10***	0.0233	<0.010	<0.0010	0.0162	<0.010	<0.0020	<0.010	<0.020	<0.020	<0.0020	<0.0050	<0.0050
MOE Standards [2]													
Table 3		0.063	-	-	0.04	-	-	-	-	-	-	-	-

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use
   Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition
( ) - Criterion value in brackets applies to medium and fine textured soils.

ATTACHMENT B, TABLE 7
PESTICIDES AND HERBICIDES IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																	
		Lindane	Heptachlor	Heptachlor epoxide	Oxychlordane	gamma-Chlordane	alpha-Chlordane	Aldrin	Dieldrin	p,p-DDE	p,p-DDD	p,p-DDT	o,p-DDT	Methoxychlor	Aldrin + Dieldrin	DDT + metabolites	Heptachlor + Heptachlor Epoxide	Chlordane (Total)	2,4,5-TP	MCPA
EQL		*1*	*1*	*1*	*1*	*1*	*1*	*24*	*0.2*	*1*	*1*	*1*	*1*	*1*	*0.4*	*4*	*2*	*3*	*5*	*5*
Units		*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*
LQ 25-MH3	***16-Apr-10***	<1.0	**<1.0**	<1.0	<1.0	<1.0	<1.0	<5.0	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	4.19	<4.0	<2.0	<3.0	<5.0	<5.0
LQ 25-MH8	***16-Apr-10***	<1.0	**<1.0**	<1.0	<1.0	<1.0	<1.0	<40.0	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	39.8	<4.0	<2.0	<3.0	<5.0	<5.0
LQ 25-MH13	***16-Apr-10***	<0.10	**<0.10**	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	<0.50	<0.50
LQ 25-MH24	***16-Apr-10***	<1.0	**<1.0**	<1.0	<1.0	<1.0	<1.0	<46.0	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	45.7	<4.0	<2.0	<3.0	<5.0	<5.0
LQ 25-MH27	***16-Apr-10***	<1.0	**<1.0**	<1.0	<1.0	<1.0	<1.0	<4.0	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	4.34	<4.0	<2.0	<3.0	<5.0	<5.0
LQ 25-MH31	***16-Apr-10***	<1.0	**<1.0**	<1.0	<1.0	<1.0	<1.0	<24.0	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	23.0	<4.0	<2.0	<3.0	<5.0	<5.0
LQ 25-MH33	***16-Apr-10***	<1.0	**<1.0**	<1.0	<1.0	<1.0	<1.0	<4.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	4.12	<4.0	<2.0	<3.0	<5.0	<5.0
LQ 25-MH34	***16-Apr-10***	<0.10	**<0.10**	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.10	<0.10	<0.10	<0.10	<0.10	<0.040	<0.40	<0.20	<0.30	<5.0	<5.0
LQ25 - MH34	***18-Jul-11***		**<0.10**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.40		<0.30	<5.0	<5.0
LQ25 - MH27	***19-Jul-11***		**<0.10**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.40		<0.30	<5.0	<5.0
LQ25 - MH24	***20-Jul-11***		**<0.10**	<0.10	<0.30	<0.10	<0.10	<1.30	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.30	<0.40		<0.30	<5.0	<5.0
LQ25 - MH13	***20-Jul-11***		**<0.10**	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.25	<0.40		<0.30	<5.0	<5.0
LQ18 - MH10	***20-Jul-11***		**<0.10**	<0.10	<0.10	<0.10	<0.10	<0.40	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.40	<0.40		<0.30	<5.0	<5.0
LQ18 - MH3	***20-Jul-11***		**<0.10**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.40		<0.30	<5.0	<5.0
LQ18 - MH6	***20-Jul-11***		**<0.10**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.40		<0.30	<5.0	<5.0
LQ15 - MH1	***20-Jul-11***		**<0.010**	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.040		<0.030	<5.0	<5.0
MOE Standards [2]																				
Table 3		-	0.04	37	-	-	-	1.3	0.02	-	6	0.05	0.05	0.3	-	-	-	-	-	-

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in micrograms per litre (µg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

ATTACHMENT B, TABLE 7 (cont'd)
PESTICIDES AND HERBICIDES IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]																		
		Mecoprop	2,4,5-T	2,4-D	Bromoxynil	Dicamba	Dinoseb	Picloram	Hexachlorobenzene	Mirex	o,p-DDE	op-DDD	alpha-BHC	beta-BHC	delta-BHC	alpha-Endosulfan	beta-Endosulfan	Endosulfan Sulfate	Endrin	Endrin Aldehyde	gamma-hexachlorocyclohexane
EQL		*5*	*5*	*5*	*5*	*5*	*5*	*5*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.12*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Units		*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*
LQ 25-MH3	***16-Apr-10***	25.1	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-
LQ 25-MH8	***16-Apr-10***	63.2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-
LQ 25-MH13	***16-Apr-10***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-	-	-	-	-	-
LQ 25-MH24	***16-Apr-10***	166	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-
LQ 25-MH27	***16-Apr-10***	40.6	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-
LQ 25-MH31	***16-Apr-10***	110	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-
LQ 25-MH33	***16-Apr-10***	93.5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-
LQ 25-MH34	***16-Apr-10***	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-
LQ25-MH34	***18-Jul-11***	73.7	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.10	<0.10	<0.10	<0.10	<0.10	<0.65	<0.12	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
LQ25-MH27	***19-Jul-11***	60.4	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
LQ25-MH24	***20-Jul-11***	238	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.10	<0.10	<0.10	<0.10	<0.10	<1.15	<0.20	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
LQ25-MH13	***20-Jul-11***	72.9	<5.0	<9.0	<5.0	<5.0	<5.0	<5.0	<0.10	<0.10	<0.10	<0.10	<0.10	<3.30	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
LQ18-MH10	***20-Jul-11***	54.1	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
LQ18-MH3	***20-Jul-11***	74.8	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.10	<0.10	<0.10	<0.10	<0.10	<0.85	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
LQ18-MH6	***20-Jul-11***	20.0	<5.0	<8.0	<5.0	<5.0	<5.0	<5.0	<0.10	<0.10	<0.10	<0.10	<0.10	<1.20	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
LQ15-MH1	***20-Jul-11***	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
MOE Standards [2]																					
Table 3		-	-	-	-	-	-	-	3.9	-	20	6	-	-	-	0.56	0.56	-	0.05	-	0.8

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in micrograms per litre (µg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

ATTACHMENT B, TABLE 8
DIOXINS AND FURANS IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]														
		2378 TeCDD	12378 PeCDD	123478 HxCDD	123678 HxCDD	123789 HxCDD	1234678 HpCDD	OCDD	Total TCDDs	Total PeCDD	Total HxCDD	Total HpCDD	Total PCDDs	2378 TeCDF	12378 PeCDF	23478 PeCDF
EQL		*1*	*1*	*1*	*2*	*1*	*1*	*4*	*1*	*1*	*2*	*1*	*4*	*1*	*0.7*	*0.6*
Units		*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*
LQ 25-MH3	***16-Apr-10***	<1.0	<1.0	<1.0	<2.0	<1.0	16.1	129	<1.0	<1.0	<2.0	17.0	146	<1.0	<0.70	<0.60
LQ 25-MH8	***16-Apr-10***	<2.0	<1.0	<1.0	<1.0	<1.0	57.1	419	<2.0	<1.0	<1.0	129	549	<1.0	<0.70	<0.60
LQ 25-MH13	***16-Apr-10***	<1.0	<0.70	<0.50	<0.70	<0.60	<0.70	<1.0	<1.0	<0.70	<0.70	<0.70	<1.0	<1.0	<0.50	<0.40
LQ 25-MH24	***16-Apr-10***	<0.80	<0.80	<1.0	<1.0	<1.0	68.9	773	<0.80	<0.80	10.0	148	931	<0.70	<0.40	<0.40
LQ 25-MH27	***16-Apr-10***	<3.0	<2.0	<3.0	<3.0	<3.0	153	1400	<3.0	<2.0	50.8	350	1800	<3.0	<1.0	<1.0
LQ 25-MH31	***16-Apr-10***	<2.0	<0.80	<0.50	<0.70	<0.60	33.9	285	<2.0	<0.80	<0.70	67.1	352	<1.0	<0.60	<0.50
LQ 25-MH33	***16-Apr-10***	<1.0	<0.70	<0.50	<0.60	<0.50	14.5	205	<1.0	<0.70	3.32	33.3	241	<1.0	<0.50	<0.40
LQ 25-MH34	***16-Apr-10***	<0.30	<0.20	<0.10	<0.20	<0.20	5.78	17.5	<0.30	<0.20	<0.20	10.0	27.5	<0.30	<0.10	<0.10
MOE Standards [2]																
Table 3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sample No.	Date	Parameter [1]														
		123478 HxCDF	123678 HxCDF	123789 HxCDF	234678 HxCDF	1234678 HpCDF	1234789 HpCDF	OCDF	Total TCDF	Total PeCDF	Total HxCDF	Total HpCDF	Total PCDFs	Total TEQ (ND=0) (WHO Calc)	Total TEQ (ND=0.5DL) (WHO Calc)	Total TEQ (ND=DL) (WHO Calc)
EQL		*0.6*	*0.6*	*0.7*	*0.6*	*1*	*2*	*3*	*1*	*0.7*	*0.7*	*2*	*3*			
Units		*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*	*pg/L*
LQ 25-MH3	***16-Apr-10***	<0.60	<0.60	<0.70	<0.60	<1.0	<2.0	<3.0	<1.0	<0.70	<0.70	<2.0	<3.0	0.2	1.69	3.18
LQ 25-MH8	***16-Apr-10***	<0.70	<0.70	<0.90	<0.80	10.7	<2.0	26.8	<1.0	<0.70	<0.90	14.1	40.9	0.81	2.78	4.74
LQ 25-MH13	***16-Apr-10***	<0.40	<0.40	<0.60	<0.40	<2.0	<2.0	<2.0	<1.0	<0.50	<0.60	<2.0	<2.0	0	1.17	2.34
LQ 25-MH24	***16-Apr-10***	<0.80	<0.80	<1.0	<0.80	11.4	<2.0	51.7	<0.70	<0.40	<1.0	47.1	98.8	1.05	2.28	3.51
LQ 25-MH27	***16-Apr-10***	<2.0	<2.0	<3.0	<2.0	27.4	<3.0	137	<3.0	<1.0	35.7	27.4	200	2.26	5.99	9.72
LQ 25-MH31	***16-Apr-10***	<0.30	<0.20	<0.30	<0.30	5.04	<0.60	21.2	<1.0	<0.60	3.01	12.4	36.7	0.48	2.16	3.84
LQ 25-MH33	***16-Apr-10***	2.51	2.10	<0.30	1.31	<0.70	<1.0	15.6	<1.0	<0.50	8.71	<1.0	24.3	0.8	1.87	2.95
LQ 25-MH34	***16-Apr-10***	<0.10	<0.10	<0.10	<0.10	<0.30	<0.40	<0.30	<0.30	<0.10	0.48	<0.40	0.48	0.06	0.39	0.72
MOE Standards [2]																
Table 3		-	-	-	-	-	-	-	-	-	-	-	-	15	15	15

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in picograms per litre (pg/L) unless indicated otherwise.
2. MOE 1997 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

ATTACHMENT B, TABLE 9
NONYLPHENOLS AND ETHOXYLATES IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]								
		Nonylphenols	Nonylphenol Monoethoxylates	Nonylphenol Diethoxylates	Nonylphenol Triethoxylates	t-Octylphenol	t-Octylphenol Monoethoxylate	t-Octylphenol Diethoxylate	t-Octylphenol Triethoxylate	TOTAL TEQ (CCME)
EQL		*0.15*	*0.5*	*1.2*	*2*	*0.02*	*0.1*	*0.2*	*0.5*	
Units		*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*	*µg/L*
LQ 25-MH3	***16-Apr-10***	2.26	0.96	1.3	<2.0	0.054	<0.10	<0.20	<0.50	3.4
LQ 25-MH8	***16-Apr-10***	22.0	6.64	13.2	4.6	0.774	<0.10	<0.20	<0.50	35.
LQ 25-MH13	***16-Apr-10***	1.51	0.65	<1.2	<2.0	<0.020	<0.10	<0.20	<0.50	1.8
LQ 25-MH24	***16-Apr-10***	13.6	6.30	23.4	3.4	0.455	<0.10	<0.20	<0.50	31.
LQ 25-MH27	***16-Apr-10***	0.99	<0.50	<1.2	<2.0	<0.020	<0.10	<0.20	<0.50	0.99
LQ 25-MH31	***16-Apr-10***	0.80	<0.50	<1.2	<2.0	<0.020	<0.10	<0.20	<0.50	0.80
LQ 25-MH33	***16-Apr-10***	0.31	<0.50	<1.2	<2.0	<0.020	<0.10	<0.20	<0.50	0.31
LQ 25-MH34	***16-Apr-10***	0.78	<0.50	<1.2	<2.0	<0.020	<0.10	<0.20	<0.50	0.78
MOE Standards [2]										
Table 3		-	-	-	-	-	-	-	-	-

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in micrograms per litre (µg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

ATTACHMENT B, TABLE 10
GROSS ALPHA, BETA RADIO CHEMISTRY IN LEACHATE
BRADY ROAD LANDFILL

Sample No.	Date	Parameter [1]	
		Gross alpha	Gross beta
EQL *Units*		*Bq/L*	*Bq/L*
LQ 25-MH3	***16-Apr-10***	<1.9	4.6
LQ 25-MH8	***16-Apr-10***	<4	14
LQ 25-MH13	***16-Apr-10***	<0.31	0.36
LQ 25-MH24	***16-Apr-10***	<0.04	0.15
LQ 25-MH27	***16-Apr-10***	<4.4	7.5
LQ 25-MH31	***16-Apr-10***	<4.4	15
LQ 25-MH33	***16-Apr-10***	<5	24
LQ 25-MH34	***16-Apr-10***	<0.65	1.6
MOE Standards [2]			
Table 3		-	-

Notes:
"-" = No Data
NS = No Sample because not enough sample
NA - Not Applicable
EQL = Estimated Quantitation Limit = Lowest level of the parameter that can be quantified with confidence.

1. All values are expressed in milligrams per litre (mg/L) unless indicated otherwise.
2. MOE 2004 - Ontario Ministry of Environment. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (All Types of Property)
   Table 3 - Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

ATTACHMENT C

Statistical Comparison of Median Values
for Indicator Parameters Showed Increase
in Concentration Downstream
of the Brady Landfill

Attachment C. Statistical comparison of median values for indicator parameters showed increase in concentration downstream of the Brady Landfill

InStat 3.0.intput*: Median concentrations of selected indicator parameters in the aquifer upstream and downstream of the landfill.

Potassium (K)-Dissolved		Barium (Ba)-Dissolved		Tungsten (W)-Dissolved		Aluminum (Al)-Dissolved		Cobalt (Co)-Dissolved		Total Alkalinity, as CaCO3	
Upstream Column A	Downstream Column B	Upstream Column A	Downstream Column B	Upstream Column A	Downstream Column B	Upstream Column A	Downstream Column B	Upstream Column A	Downstream Column B	Upstream Column A	Downstream Column B
24.4	35.6	0.0115	0.0153	0.00298	0.0001	0.0178	0.0124	0.00044	0.00038	30	150
27.2	35.2	0.00946	0.018	0.0011	0.00054	0.001	0.0072	0.00094	0.00042	130	130
44.6	29.9	0.0123	0.0571	0.0001	0.00053	0.265	0.001	0.00077	0.0001	170	135
42.4	34.6	0.012	0.0712	0.0001	0.00259	0.001	0.0093	0.00061	0.00021	110	570
27.5	36.3	0.00956	0.0102	0.0001	0.0001	0.0037	0.001	0.00026	0.00082	145	
29.9	37.7	0.0111	0.0118	0.0005	0.0001	0.001	0.004	0.00035	0.00087	135	
30.4	34.2	0.00914	0.0122	0.0001	0.0005	0.001	0.0033	0.00067	0.0007	160	
34.6	30.3	0.011	0.0143	0.0005	0.0001	0.001	0.0161	0.00103	0.00069		
	34.7		0.013		0.0005		0.001		0.00069		

*Motulsky H. 2003.The InStat guide to choosing and interpreting statistical tests. http://www.graphpad.com/Downloads/InStat3.pdf

InStat 3.0.output: Comparison of median concentrations obtained from the aquifer upstream and downstream of the landfill.

Barium

Mann-Whitney Test
Do the medians of Column A and Column B differ significantly?

The two-tailed P value is 0.0055, considered very significant.
The P value is exact.

Calculation details
Mann-Whitney U-statistic = 8.000
U' = 64.000
Sum of ranks in Column A = 44.000. Sum of ranks in Column B = 109.00.

Summary of Data

Parameter:	Column A	Column B
Mean:	0.01076	0.02479
# of points:	8	9
Std deviation:	0.001214	0.02270
Std error:	0.0004293	0.007567
Minimum:	0.009100	0.01020
Maximum:	0.01230	0.07120
Median:	0.01105	0.01430
Lower 95% CI:	0.009747	0.007338
Upper 95% CI:	0.01178	0.04224

* * *

Potassium

Unpaired t test with Welch correction
Do the means of Column A and Column B differ significantly?

P value
The two-tailed P value is 0.5630, considered not significant.
Welch correction applied. This test does not assume equal variances.
Welch's approximate t = 0.6033 with 8 degrees of freedom.

95% confidence interval
Mean difference = 1.653 (Mean of Column B minus mean of Column A)
The 95% confidence interval of the difference: -4.665 to 7.970

Assumption test: Are the data sampled from Gaussian distributions?
The t test assumes that the data are sampled from populations that follow Gaussian distributions. This assumption is tested using the method Kolmogorov and Smirnov:

Group	KS	P Value	Passed normality test?
Column A	0.2439	>0.10	Yes
Column B	0.2658	0.0663	Yes

Summary of Data

Parameter:	Column A	Column B
Mean:	32.625	34.278
# of points:	8	9
Std deviation:	7.354	2.590
Std error:	2.600	0.8634
Minimum:	24.400	29.900
Maximum:	44.600	37.700

Median:	30.150	34.700
Lower 95% CI:	26.476	32.287
Upper 95% CI:	38.774	36.269

* * *

Tungsten

Mann-Whitney Test

Do the medians of Column A and Column B differ significantly?

The two-tailed P value is 0.9585, considered not significant.
The P value is an estimate based on a normal approximation.
The 'exact' method would not be exact, due to tied ranks.
Calculation details
Mann-Whitney U-statistic = 35.000
U' = 37.000
Sum of ranks in Column A = 73.000. Sum of ranks in Column B = 80.000.

Summary of Data

Parameter:	Column A	Column B
Mean:	0.0006875	0.0005556
# of points:	8	9
Std deviation:	0.0009978	0.0007923
Std error:	0.0003528	0.0002641
Minimum:	1.000E-04	1.000E-04
Maximum:	0.003000	0.002600

Aluminum

Mann-Whitney Test

Do the medians of Column A and Column B differ significantly?

The two-tailed P value is 0.5422, considered not significant.
The P value is an estimate based on a normal approximation.
The 'exact' method would not be exact, due to tied ranks.

Calculation details
Mann-Whitney U-statistic = 29.500
U' = 42.500
Sum of ranks in Column A = 65.500. Sum of ranks in Column B = 87.500.

Summary of Data

Parameter:	Column A	Column B
Mean:	0.03644	0.006144
# of points:	8	9
Std deviation:	0.09253	0.005493
Std error:	0.03272	0.001831
Minimum:	0.001000	0.001000
Maximum:	0.2650	0.01610
Median:	0.001000	0.004000
Lower 95% CI:	-0.04094	0.001922
Upper 95% CI:	0.1138	0.01037

* * *

Unpaired t test
Do the means of Column A and Column B differ significantly?

P value
The two-tailed P value is 0.4715, considered not significant.

t = 0.7386 with 15 degrees of freedom.

95% confidence interval
Mean difference = -0.0001026 (Mean of Column B minus mean of Column A)
The 95% confidence interval of the difference: -0.0003988 to 0.0001936

Assumption test: Are the standard deviations equal?
The t test assumes that the columns come from populations with equal SDs.
The following calculations test that assumption.

F = 1.154
The P value is 0.8631.
This test suggests that the difference between the two SDs is
not significant.

Assumption test: Are the data sampled from Gaussian distributions?
The t test assumes that the data are sampled from populations that follow
Gaussian distributions. This assumption is tested using the method
Kolmogorov and Smirnov:

Group	KS	P Value	Passed normality test?
Column A	0.1345	>0.10	Yes
Column B	0.2603	0.0796	Yes

Co

Summary of Data

Parameter:	Column A	Column B
Mean:	0.0006338	0.0005311
# of points:	8	9
Std deviation:	0.0002749	0.0002953
Std error:	9.719E-05	9.844E-05
Minimum:	0.0002600	0.000
Maximum:	0.001030	0.0008700
Median:	0.0006400	0.0006900
Lower 95% CI:	0.0004039	0.0003041
Upper 95% CI:	0.0008636	0.0007581

* * *

Alkalinity

Mann-Whitney Test
Do the medians of Column A and Column B differ significantly?

The two-tailed P value is 0.5064, considered not significant.
The P value is an estimate based on a normal approximation.
The 'exact' method would not be exact, due to tied ranks.

Calculation details
Mann-Whitney U-statistic = 10.000
U' = 18.000
Sum of ranks in Column A = 38.000. Sum of ranks in Column B = 28.000.

Summary of Data

Parameter:	Column A	Column B
Mean:	125.71	246.25
# of points:	7	4
Std deviation:	46.586	216.00
Std error:	17.608	108.00
Minimum:	30.000	130.00
Maximum:	170.00	570.00

APPENDIX J

SPERLING HANSEN ASSOCIATES

MANAGING AUTOMOBILE SHREDDER RESIDUE AT BRADY LANDFILL REPORT

SPERLING
HANSEN
ASSOCIATES

• Landfill Engineering
• Solid Waste Planning
• Environmental Monitoring
• Landfill Fire Risk Control

May 26th, 2011 SHA Prj 10054

Stantec Consulting Ltd.
603 – 386 Broadway Avenue
Winnipeg, Manitoba
R3C 3R6

Attention. Mr. Michael McKernman, M.Sc., M.E.S., P.Biol.

Re: Managing Automobile Shredder Residue at Brady Landfill

Sperling Hansen Associates are pleased to submit a report that assesses the risk associated with receiving auto shredder residue (ASR) at Brady Road Landfill (Brady). The City of Winnipeg has historically accepted up to 120,000 tonnes of ASR per year at Brady while clean-up of old facilities was ongoing. At present, ASR is received at a rate of about 20,000 tonnes per year. The material is received at no charge and utilized as alternate daily cover (ADC) on current MSW landfill cells.

During a site audit in 2010 SHA flagged that use of ASR as an ADC is a high risk practice due to the risk of landfill fire. As part of a new Master Plan for Brady that is being developed by Stantec Consulting Ltd. (Stantec), SHA was asked to prepare a detailed risk assessment report exploring the use of ASR in municipal landfills and to recommend whether ASR should continue to be accepted at Brady, and if so, how risks could be mitigated.

Introduction

Automobile shredder residue (ASR) is also referred to as auto shredder residue, auto fluff, auto shredder fluff and shredder dust. ASR is produced when automobiles and other scrap materials including appliances are processed to recover scrap metal. Each year about twelve to fifteen million vehicles reach the end of their useful life and are scrapped to recover ferrous and non-ferrous metals. Automobiles are typically comprised of about 80% metals and 20% or more of plastics, glass, rubber and wood. The non-metallic content of automobiles ultimately ends up as ASR.

The 20% of vehicles that end up as ASR represent about 5 million tonnes of ASR waste. Virtually all of the ASR ends up being disposed in landfills each year in the US (EPA, 2011), in Europe (Santini et. al. 2010) and in Japan (Oshitani et. al.)

The scrapping of automobiles generally involves the stripping of any quality auto parts that have salvage value at auto dismantlers / recyclers. Fluids including motor oil, coolant and lubricants are then drained from the automobile and parts containing toxic substances (batteries, mercury switches, mercury headlights, etc.) are removed. This step is generally referred to as de-

pollution. The remaining hulk is then shipped to an auto shredder. At the shredder facility automobiles are shredded into small fragments in a hammer mill. These fragments are separated by a magnetic process into ferrous and non ferrous fractions. The non ferrous fraction is further separated by a gravitational floatation process into a heavy metallic fraction that typically contains ferrous and non-ferrous metal components and a light fraction that contains the non metallic automobile components including dash boards, seat cushions, carpeting, wiring, rubber hoses, etc.

Composition of ASR:

ASR is highly heterogeneous material, and the composition can be variable. According to Auto Recycling Switzerland (2011), ASR is comprised of plastics (60%), glass (15%), textiles, leather and wood (10%), paint dust, rust (10%) and residual metals (5%). Figure 1 provides a graphic typical overview of the composition of ASR.

Hook[1] characterizes ASR as 30% plastic polymers, 10% residual metals, 5% foam and 55% glass, wood, paper, sand, dirt, rocks and automotive fluids. Santini et al[2] characterizes ASR as 27% textiles, 23% plastics, 17% fines, 15% polyurethane foam (PUF), 9% rubber, 8% metals, and 1% cellulose. A detailed analysis reported by Nourreddine[3] suggests that the metal content of ASR is as high as 30%.

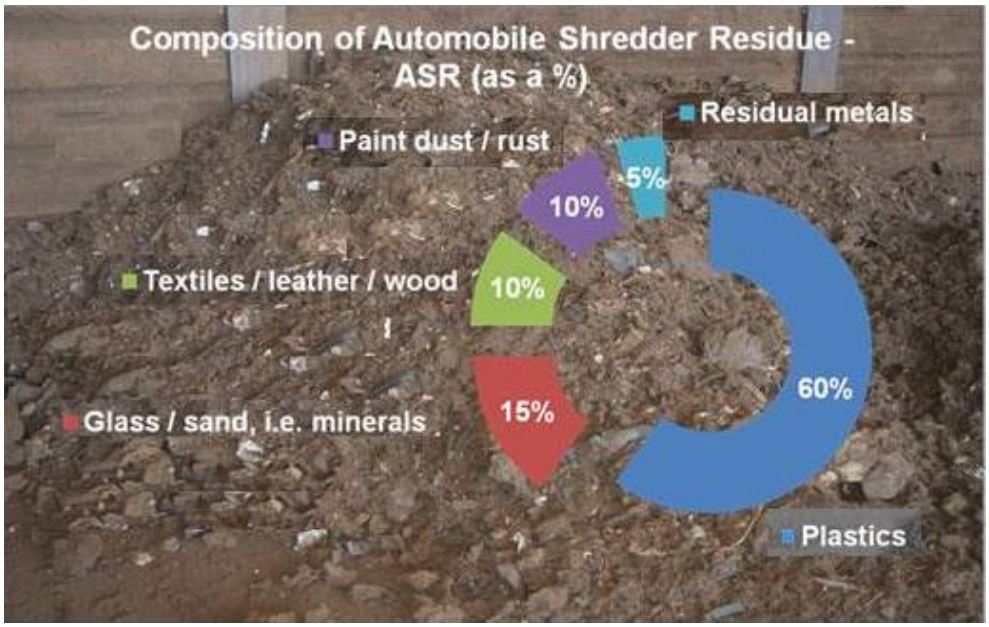

Figure 1. Typical ASR Composition (according to Foundation Auto Recycling – Switzerland, 2011)

[1] AmericanRecycler.com
[2] Waste Age, 2011
[3] Journal of Hazardous Materials, 2007

Plastics are the single largest component of ASR. The plastic content of ASR includes a broad range of plastic resins including Poly Propylene (PP), Poly Ethylene (PE), Acrylonitrile Butadiane Styrene (ABS), Ethylene Propylene Ethylidene Nobomene (EPDM), rubber, Polyethylene Terephthalate (PET), Poly Amide (PA), and Poly Vinyl Chloride (PVC). These plastics have a high energy content and are combustible.

Metals that are found in ASR include Chromium, Copper, Zinc, Nickel, Lead, Iron, Titanium and Mercury. Table 1 provides a relative percentage of these metals in typical ASR, according to Nourreddine (2007).

Table 1
Physical and chemical characteristics of fluff [12]

C (%)	49.5	P (%)	0.7	Fe (%)	25.7
H (%)	5.3	Cr (%)	0.08	Ti (%)	0.9
O (%)	6.9	Cu (%)	1.2	H_2O (%)	2.2
N (%)	4.5	Zn (%)	1.9	Ash (%)	36.2
Cl (%)	0.5	Ni (%)	0.07	Volatile matter (%)	54.18
S (%)	0.2	Pb (%)	0.2	Heating value (kJ/kg)	16720
F (%)	0.05	Si (%)	2.1	Density (kg/m^3)	359

Energy Content of ASR:

Energy is released during the thermal oxidation (combustion) of auto shredder residue. The majority of energy is released during combustion of the plastic and rubber content. Typical unprocessed ASR contains about 5,000 Btu/lb. Unprocessed ASR is considered a poor fuel for energy to waste applications because it contains contaminants including heavy metals, chlorine and PCB's. Also, the 20 to 50% of incombustible materials generate a high ash content. (Tai et al, 2006, Boughton, 2006). Therefore, producing fuel quality ASR would require significant processing to isolate the combustible materials with low ash content and to remove the contaminants such metals and PVC plastics.

The California Department of Toxic Substances Control has developed a multi-stage process for separating the waste to extract a fuel grade ASR with high energy content and low levels of contamination. Bougton, 2006 reports that the resulting ASR derived fuel has an energy content of 13,240 Btu/lb. However, only 30% of the original volume is separated into fuel (Boughton, 2006).

When observing SHA cover soil at EcoWaste Landfill in Vancouver Dr. Sperling noted that the light plastic fraction, particularly the seat cushion foams, tended to float on the surface while the fines that contain the heavier inert fraction, glass and metals were found at the bottom of the traffic layer. It is reasonable to expect that this gravity separation is going to occur whenever ASR is spread out with a dozer into a thin layer. As a result, the surficial material in an ASR application is expected to be comprised primarily of combustible plastics.

In the context of landfills in general and Brady in particular, the same contaminants that make ASR a poor fuel for waste to energy applications will result in air quality issues if ASR is combusted in an uncontrolled landfill fire. Due to elevated content of chlorine, cadmium and lead unprocessed ASR is considered too toxic to be used for refuse derived fuels (EC Directive 2000). When combusted in an uncontrolled combustion such as would occur in a landfill fire, the combustion would be expected to release toxic smoke containing metals, acid gases, dioxins and PCB's. This is explored in more detail in the following section.

To put the energy content in perspective, ASR is comprised of 50 to 60% plastics, with the balance being mostly inert material. Plastics have an energy content in the range of 10,000 to 13,000 Btu/lb. ASR has a typical energy content of 5,000 to 6,000 Btu/lb (Day, 1993). This is about the same energy content as typical MSW.. Experimental floatation processes have been developed in the U.S. and in Taiwan to increase the energy content of processed ASR to 10,000 to 10,500 Btu/lb. To put the energy content of ASR in perspective, gasoline contains about 15,000 Btu/lb.

The Flash Point of ASR, defined as the temperature at which the material would volatilize and combine with air to render a flammable mixture was not identified in the literature reviewed by SHA. Baumgartner and Associates (1992) report that ASR does not ignite below temperatures of 150ºF (65ºC). Horii et al (1998) report that exothermic decomposition of ASR starts to occur at temperatures of about 125ºC, and ignition occurs around 425ºC.

Additional information on the energy content of ASR is compiled in Appendix D.

Toxicity of Auto Shredder Residue:

Unprocessed auto shredder residue can contain metal and hydrocarbon contaminants that can render the ASR a hazardous waste. Mercury, lead, chromium, arsenic, cadmium and PCB's are of particular concern. De-pollution of vehicles is intended to minimize the concentrations of these pollutants in the ASR. Nevertheless, elevated concentrations of the above contaminants are typically found in ASR.

A report compiled by the Ecology Center (2003) presents the concentrations of toxic contaminants in ASR, as reported in four studies. "The most complete data are from a report by the German Umweltsbundesamt (Environmental Agency), which found high concentrations of a number of contaminants in ASR, including mercury and lead. The U.S. EPA conducted a pilot study of ASR, which also found high concentrations of PCBs, lead, and cadmium (U.S. EPA, 1991). The EPA study did not evaluate mercury. Based on its 1989 evaluation of analytical data of untreated ASR, the California Department of Health Services concluded that mercury is one of the metals of concern in ASR." Table 2 summarizes the results of the various studies, as compiled by the Ecology Center.[4]

[4] Ecology Center (2003), <http://www.mcats.org/holcim.htm>

SHA notes that through de-pollution efforts, ASR produced today typically has much lower levels of heavy metals than ASR produced in the 90's, as cited in some of the older studies.

Table 2: Toxic Contaminants found in Automotive Shredder Residue(ASR)

Contaminant	Concentration in mg/kg			
	German ASR (4)	U.S. ASR (5)	California ASR (6)	NorthStar Steel ASR (7)
Mercury	6-15	Not measured	0.7	0.33-3.2 Mean: 1.15
Lead	3,500-7,050	570-12,000 mean: 2,700	2330-4616	Not measured
Cadmium	60-100	14-200 mean: 47	46-54	Not measured
Chromium	370-770	Not measured	247-415	Not measured
Arsenic	57-63	Not measured	Not measured	Not measured
PVC/phthalates etc.	ca. 6%	Not measured	Not measured	Not measured
Other (e.g. PCB's)	Unknown	1.7-210 mean: 32	Not measured	Not measured

A determination of whether a waste material can be safely disposed in a municipal landfill is typically based on a leachability testing procedure. In the U.S. the Toxic Characteristic Leaching Procedure (TCLP) is used to make a determination. The TCLP focuses on 43 most common pollutants. Environmentalists challenge the validity of this test as hundreds of polluting substances can be found in ASR wastes (Blue Ridge Environmental Defence League). In Canada, tests are specified on a province by province basis.

In most instances, a review of ASR leachability test results published suggests that the material is typically being classified as non-hazardous based on leachability testing (Santini, 2011), Hyun (2007) Day et al (1993) and at present, disposal of ASR is permitted in many jurisdictions in Canada and the U.S. However, concern about leachability of metals remains in some jurisdictions. For example, as far back as 2001, ASR was considered a hazardous waste in California and was not authorized for disposal in municipal landfills. Disposal of ASR is currently authorized in municipal landfills in California, but only if the ASR is treated with an alkaline material that is intended to prevent metals leaching from the material. However, research by the California Department of Toxic Substances Control indicates that such treatment of ASR is not effective, that the material should be considered hazardous, and that ASR should be disposed of only in Class I (Hazardous Waste) landfills (California Integrated Waste Management Board, 2009).

A review of the Manitoba Dangerous Goods Handling and Transportation Act (C.C.S.M. c. D12) Classification Criteria for Products, Substances and Organisms Regulation establishes the following limits for metals commonly found in ASR based on the leachate extraction procedure described in Schedule B of the regulation.

Chromium 5.0 mg/L

Mercury	0.1 mg/L
Cadmium	0.5 mg/L
Lead	5.0 mg/L

The Special Waste (Shredder Residue) Regulation defines low concencentration shredder residue as a hazardous waste that can be accepted in Manitoba's Class 1 Landfills as long as

- Lead concentration in leachate is less than 15 mg/L of residue
- Cadmium concentration in leachate is less than 15 mg/L of residue
- and PCB concentration is less than 50 ppm by weight

Typical concentrations of contaminants in autofluff are reported by Santini et al (2011) based on Italian experience. Metals that are found at elevated concentrations include Cadmium (10 to 20 mg/Kg), Lead (442 to 600 mg/Kg) and Mercury (0.17 to 0.42 mg/Kg). Leachability testing reported by Santini on modern Italian ASR resulted in the following range of leachable toxic metal concentractions:

Chromium	<0.1 mg/L
Mercury	<0.0002 mg/L
Cadmium	0.006 to 0.009 mg/L
Lead	0.02 to 0.03 mg/L

Based on leachability testing, Santini (2011) concludes that the ASR materials tested contained heavy metal concentrations well below Italian hazardous waste limits and the ASR could be deposited in Italian MSW landfills. Similarly, a comparison of Santini's results to the Manitoba Hazardous Waste Criteria suggests that the four key heavy metals in ASR are also likely to be well below the Hazardous Waste threshold and can be accepted at Brady Landfill, provided that appropriate de-pollution steps are taken to remove toxic substances before shredding.

According to An EPA study of emissions (Ryan, 1993) laboratory testing of ASR combustion resulted in significant releases of metal aerosols of cadmium, copper, lead and zinc. Ash content, chlorine, cadmium and lead concentrations make unprocessed ASR unsuitable as a refuse derived fuel (Santini et al, 2011). As processing of these materials is complex and costly, landfill disposal remains the only commercially viable method of dealing with bulk of ASR.

Based on the information reviewed on this topic, landfilling of ASR appears to be the only practical method of disposal at this time. Active debate is ongoing whether ASR can be safely placed in municipal landfills or whether it should be limited to hazardous waste landfills. Active steps are being taken by the industry to make ASR less toxic and to construct vehicles in a way that will make it possible to recycle a higher fraction of each automobile.

Mercury is a contaminant of particular concern due to its serious toxic effects on humans and the environment. Mercury is found in light switches, ABS switches, ride control systems, air bag sensors, high intensity head lamps and other fluorescent lamps on vehicles made up to 2003.

Although automobile recyclers are required to strip out all possible parts containing these substances and label the hulks mercury free (MF) as part of the de-polluting procedures according to the Ecology Center (2001), very little known recovery of light switches actually occurs, and even less recovery of ABS switches is expected. Emissions released by shredders are estimated to represent 20% of total mercury emissions.

Rigorous requirements to remove mercury from automobiles by the automotive recyclers prior to shipment to the shredding facility, as specified by General Scrap suggest that in the context of ASR that is being delivered to Brady from this company, the mercury content is expected to occur at much lower levels.

In Ohio ASR is considered unsuitable for ADC due to concerns regarding fire hazards, wind driven scattering, dispersal outside the working face by landfill equipment, and the potential for contamination by asbestos, PCB's and mercury (from switches).

Chlorine is a contaminant of concern because release of chlorine during combustion of chlorinated plastics can lead to the formation of acidic fumes and dioxins. Chlorine is released during the combustions of chlorinated plastic resins such as poly vinyl chloride (PVC). Many case histories of serious health impacts, even death, associated with smoke inhalation are noted in literature on the web. A summary is provided by Greenpeace (http:/www.greenpeace.org/~toxics/wycd/cp-youcan6.html). This is a particular concern to fire fighters and landfill staff responding to fires involving PVC, as found in ASR residue and municipal solid waste.

Additional information on the toxicity of ASR is compiled in Appendix C.

Examples of ASR, Tire Fluff and Uncovered Bale Fill Fires:

Fires are common at automobile recycling facilities, shredding operations and landfills that accept ASR. Also, fires are relatively common at all MSW landfills. The National Fire Prevention Association reports that 8,400 landfill fires are reported each year in the United States. Statistics are not maintainted on the nature of the material on fire, or whether ASR was involved. It has been SHA's experience that major fires at MSW landfill facilities (other than demolition landfills) are most often experienced at landfills that lack inert intermediate cover, such that flammable plastics are exposed at surface. Typically, the fire incidents require the evacuation of a community surrounding the fire due to smoke impacts that are often considered toxic by the fire service. The following paragraphs provide typical excerpts from news stories of fire incidents. In several instances the cause of the fires was reported to be spontaneous combustion according to the fire service. Full excerpts and references are provided in Appendix A.

Case histories from auto recycling facilities where ASR stockpiles caught on fire illustrate that large piles of ASR at risk of fire, and in several cases the responding fire service concludes the

fires were likely intiated by spontaneous combustions. It can be concluded from these case histories that mono-filling of ASR at Brady Landfill would likely be a high risk activity.

Other case histories from typical MSW landfills that use ASR, tire fluff or bale fills without soil cover illustrate that fires in poorly covered MSW can spread quickly and typically generate a dense smoke. These case histories demonstrate that the surface area of the operational phase lacking intermediate soil cover should be maintained as small as practical.

Colchester Landfill, Truro Nova Scotia

On June 13th, 2002 a major landfill fire erupted at the Colchester Bale Fill. This facility bales MSW and covered the bales with tire fluff as as daily and intermediate cover. When a fire ignited in waste about 2 to 3 days old, the fire spread very quickly across the entire active cell. Photo 1 illustrates the synthetic daily cover material on fire and the dense smoke that was being emitted during combustion.

Photo 1. Landfill Fire at Colchester Bale Fill, Nova Scotia

Yellowknife Landfill Fire

Due to its location on the Canadian Shield where cover soils are lacking and subfreezing temperatures are experienced for much of the year, Yellowknife Landfill is operated as a bale fill with minimal soil cover. Photo 2 illustrates a typical active cell. When a fire erupted at the active face on September 5th,2009 it spread quickly over the top of the uncovered refuse and generated very heavy smoke that impacted the nearby airport. The fire was extinguished over a three day period by the Yellowknife Fire Dept. with support from aerial bombers. This case history demonstrates the importance of applying inert intermediate cover on all inactive landfill surfaces, and limiting MSW exposure to the active face only.

Photo 2. Uncovered Active Phase at Yellowknife Landfill

Photo 3. MSW on Fire at Yellowknife Landfill

Vasco Road Landfill Fire – Livermore, California

In April, 2004 officials report ed a fire smoldering in at Republic's Livermore Landfill on Vasco Road. Vasco Landfill is a municipal facility using ASR as daily and intermediate cover.

Jim Purchio, assistant chief for the Alameda County Fire Department, said firefighters are using four bulldozers to dump a foot of dirt onto the landfill, which is 20 to 50 feet deep, 500 feet long and about 50 feet wide and filled with ground-up plastic, rubber and foam, he said.

"That should reduce the smoke," Purchio said. Anyone concerned about smoke should keep windows and doors closed, Purchio said, but officials are not evacuating anyone as of yet.

The fire, which was reported at 6:50 a.m., has caused no damage or injuries, Purchio said. He did not know how the fire started, though he speculated that some of the materials in the dump may have combusted spontaneously.

Fully extinguishing the fire may take a few days, Purchio said.

Firefighters from the Livermore-Pleasanton Fire Department have joined Alameda County firefighters. There are nine engines and three water tenders on scene, he said.

H&H Dump, Gary and Hammond Indiana
On February 11th, 1993 as many as 6,000 people living in the vicinity of an Auto Fluff fire at H&H Dump were told to evacuate. The "auto fluff" caught fire and forced the evacuation of hundreds of area residents. The auto fluff-ground-up upholstery, padding and plastic from scrapped vehicles-caught fire Feb. 11, releasing toxic fumes across a portion of the Hammond area. Six school buildings were closed and hundreds of residents were evacuated. The cause of the fire has not been determined, according to Gary Fire Department spokesman Chuck Hughes. Officials blocked several roads. The fire was extinguished by suppressing the fire with dirt. (http:/www.greenpeace.org/~toxics/wycd/cp-youcan6.html)

Metals Recycling, Johnston, RI
On July 13, 2002 personnel from OC&I were contacted by the Johnston Fire Department concerning an auto fluff fire at Metals Recycling. Department of Environmental Management responded and met with the incident commander. There was heavy black smoke drifting into the neighborhood so it was decided at that time to evacuate some houses, conduct voluntary evacuation, and shelter in place. Buttonhole Golf Club was also shut down. The fire started in the auto fluff pile, which contained the nonmetallic residuals from hundreds of crushed cars. The fire occurred due to spontaneous combustion due to the heat of the fluff. The fluff is usually kept cool with sprinklers but, due to the dry weather, the company was unable to keep the piles wet. The four-alarm fire was pulled apart so that it could be extinguished. The runoff water was contained on the site. The EPA was contacted to complete air monitoring. The fire was put out by 7:30 PM. The EPA air monitoring results, which were completed by 8:30 PM, indicated that their readings were all negative for vinyl chloride, hydrogen sulfide and all air contaminates they sampled. The fire department was then informed that it was safe for the evacuated residents to return to their homes.

On Saturday, July 13, 2002, there was a four-alarm fire at the Metals Recycling, LLC plant in Johnston, RI (the ASR caught fire). Several different towns and cities had to be called in to help fight the fire, which took around 8 hours to contain and the smoke was seen as far away as Fall River, MA, 22 miles away. The area residents were evacuated from homes and businesses because of the "toxic" smoke and were not let back into them until later on that night, or were told to stay in their houses and not to go out.

Metals Recycling, Providence RI
On Sunday, February 20th, 2011 there was a fire at Metals Recycling in Providence, RI. The Fire Department fought a stubborn fire Sunday in piles of "auto fluff" at Metals Recycling, off Terminal Road on the city's waterfront, Battalion Chief Joseph R. Desmarais said. Auto fluff is shredded, non-metal material from junked cars.

Chief Desmarais said the company has piles of the material 60 to 100 feet high, and that cranes were needed to pull them apart so firefighters could put out the fire. He said the fire produced considerable smoke, but that the department monitored it and found it safe for the neighborhood. There were no injuries, although the frigid temperature caused the water the firefighters were using to freeze, he said. The fire was reported at 6 a.m.

LaJoie's Auto Wrecking, Norwalk, Conneticut
On August 25th, 2008 firefighters were called in at 2:15 for the fire at LaJoie's Auto Wrecking at 40 Meadow St. But fighting the fire became more time consuming once they discovered the fire hydrants weren't working. There were up to 28 firefighters involved in fighting the fire, he said.

The cause of the fire is unknown but Shay said items in a scrap metal pile such as foam from automobiles can often become overheated and ignite. The pile of scrap metal was about 20 to 25 feet high and about 100 feet in circumference, said Shay.

There was some visible flame when firefighters but the fire was concentrated deep in the center of the pile.

Photo 4. Typical Autofluff Fire at recycler
(source http://www.dem.ri.gov/programs/director/emerresp/pictures/chemical_fires)

Photo 5. Auto-Fluff emitting Toxic Smoke (Dept of Environmental Management – Rhode Island).

Spontaneous Combustion of Auto Shredder Residue:

The cause of fire incidents reported above and others is often difficult to determine. Spontaneous combustion has been suggested as a cause in several fires. Documentation provided by General Scrap cites a report published by W.Z. Baumgartner & Associates (1992) that suggests fires in ASR monofills are due to hot loads. They report:

"W.Z. Baumgartner & Associates has investigated several small fires at shredder residue monofils. In every case investigated, a common scenario existed. First, the mill was being operated such that the moisture content of the ASR was low. Second, the shredder residue was transported to the landfill soon after generation without any opportunity to cool. It was determined that a hot piece of metal in the shredder residue was trapped in the pile and insulated such that it could not readily cool. The heat trapped in the metal was sufficient to ignite some combustible component of shredder residue."

In SHA's opinion, the above conclusions are not supported by the evidence cited. Given that the small fires occurred would have heated up any metal present there is no way to determine whether the fires were triggered by hot metal or whether the fire heated up any metal found. Heat could have been initiated by careless smoking or by other low temperature exothermic reactions that are known to occur, such as chemical reactions or oxidation of certain metals. The suggestion that fire was in part caused by the material being dry is also misleading. In a landfill application such as Brady Road, there will be no opportunity to control moisture. On hot dry days the ASR will dry out and will be at risk of ignition.

The definitive research on spontaneous combustion of ASR was conducted Horri and Iida[5]. In their laboratory experiments they demonstrated that ASR will spontaneously combust at fairly low temperatures, temperatures that can develop due to aerobic decomposition of MSW for example (temperatures as high as 80 degrees C). They reported that ASR piled 3 m high can spontaneously combust at 70 to 80ºC, at 5 m self ignition temperature drops to 50 to 60ºC and at 8 m burial self ignition can occur at temperatures as low as 40 to 50ºC.

SHA is of the opinion that ASR is at risk of spontaneous combustion and the risk increases proportionately with depth of burial. The risk can be reduced by limiting oxygen entry to the material (to prevent oxidation) and by limiting the height of ASR stock piles on site to less than 5 m. Although ADC is placed in thin lifts, the subsequent burial by gargage could produce the same confining and insulating conditions.

ASR is placed in many landfills in North America as fill and as alternate daily cover. In Canada 1.2 million end of life vehicles are taken of the road each year and about 400,000 tonnes of ASR is generated from these vehicles and sent to landfill (Wordsworth, 2002). The frequency of ASR related fires appears to be low given the frequency of fires that are reported. In SHA's opinion this is because ASR in municipal landfills is buried quickly and availability of oxygen becomes quickly depleted, limiting the risk of spontaneous combustion.

However, when fires occur in ASR or similar materials such as tire fluff, the results can be significant. For example, as a result of several major landfill fires in Ohio, a state that has experienced 1,653 reported landfill fires over the last 10 years, ASR has been banned as ADC material.

Fire Propagation of Auto Shredder Residue:

There is little information provided on fire propagation in auto-fluff. The data compilation compiled by General Scrap (Lau, 2011) concludes that auto-fluff did not spread flame. This conclusion is based on testing conducted by W.Z. Baumgartner & Associates (1998) where ASR was placed on a wire mesh and flame was briefly applied at a distance of 7" below the mesh. It is SHA's opinion the test configuration does not realistically duplicate a landfill fire situation and that the conclusions of the study are not directly applicable to fire propagation in a landfill where the ASR is placed directly on top of waste that may combust for any number of reasons.

According to observations of an ASR fire by Todd Thalhammer, a senior engineer and emergency responder for the California Integrated Solid Waste Management Board, fire spreads quickly in ASR, especially when fanned by a strong wind (Thalhammer, personal communication, 2011). The plastics found in auto-fluff are flammable and burn intensely when ignited. Once exposed to heat from an active fire, the fire will spread quickly through ASR materials. It is SHA's opinion that the rate of fire spread in ASR will be more rapid than fire spreading over well compacted MSW because unlike ASR, MSW can be compacted and MSW typically has a moisture content of 25 to 30%, rendering the waste less combustible.

[5] JSAE Review, 1999

SHA conducted a burn test using ASR supplied by Ecowaste Industries, an industrial landfill in Richmond B.C. When placed on a small wood fire the ASR ignited within 15 seconds and initiated an intense fire within 60 seconds. The fire was observed to propagate laterally on top of the ASR material at a rate of about 30 cm per minute. The results of the testing are presented in a series of photographs below.

Photo 6. Small wood fire before ASR placed on it

Photo 7. ASR Placed on small wood fire (time = 0 seconds)

Photo 8. Combustion of ASR initiated (time = 15 seconds)

Photo 9. Fire in ASR Spreads (time = 30 seconds)

Photo 10. ASR fully involved in vigorous burn (t= 60 seconds)

This simple experiment clearly demonstrates that ASR ignites quickly, that it burns much more intensely than wood (which itself is considered a high energy fuel) and that it gives off thick black smoke (expected to be toxic). During combustion bright blue and green flames were noted, which suggested metal aeresols were being released.

In a second test, ASR about 15 cm thick was spread downwind of the active fire and the rate of fire spread was observed. It was noted that under very light wind conditions from the south, the flame front spread to the north at a rate of 30 cm per minute. The flame spread primarily through large chunks of seat cushion foam and then spread to the denser plastics.

Photo 11. Fresh ASR Residue placed beside fire

Photo 12. Flame front advancing 450 cm in 90 seconds

Suitability of ASR for Daily and Intermediate Cover

The functional objectives of daily cover at landfills are as follows:

- to isolate putrescible waste from vectors
- to prevent laying and emergence of flies
- to limit wind blown litter
- prevent scavenging of waste
- to control odours
- to prevent the spread of fire
- to encourage run-off and minimize leachate production

Historically, 150 mm or more of inert mineral soil has been used for daily cover. Inert soil meets all of the above objectives. With soil resources consuming valuable air space, landfill operators started using waste materials such as incinerator ash, tire chips, shredded wood waste and ASR as an alternative daily cover.

Use of ASR as ADC has been authorized in many U.S. states and is currently authorized in Manitoba. In a study conducted 15 years ago, the National Research Council note that ASR ADC provides other advantages including stable mat for vehicle traffic, minimization of erosion of soils, less dust and minimal consumption of air space.

On the other hand, the Ohio EPA is of the opinion that ASR is not suitable for ADC due to concerns regarding fire hazards, wind driven scrattering, dispersal outside the working face by equipment, potential contamination by asbestos, PCB's and mercury.

Based on a review of the information available in the literature, SHA is of the opinion that the ASR does not meet several key objectives of daily cover, including the prevention of fire, isolating putrescible waste from vectors and minimizing leachate production. As demonstrated above, under certain climatic conditions fire will spread quickly through ASR and smoke released from ASR will likely be toxic. These combined conditions could make a fire at the active face much more difficult to control than if an inert ADC was used.

Intermediate cover plays a key role in fire control, fire spread and landfill gas migration. Due to the flammable properties of ASR, this material should not be used for intermediate cover under any circumstances.

Recommended Method of Disposal for ASR

In SHA's opinion, ASR is not a suitable ADC material as it exposes the City of Winnipeg to an elevated risk of fire and significant air pollution impacts downwind should a fire ever break out at the active face, especially after hours.

To summarize and place the fire risk levels of different operating practices in context, SHA has prepared the following list of fire risk for the various possible surface treatments:

Highest Risk

Loose Flammable Recyclables (paper, cardboard, plastic)
Uncovered Tire Pile
Wood Waste / Yard and Garden Waste Stockpile
MSW Landfill Phase covered with ADC Intermediate Cover
Uncovered DLC Landfill
Uncovered MSW Monofil
Uncovered MSW Bale Fill
MSW Active Face Capped with ASR ADC
Uncovered compacted MSW cell
MSW Active Face Capped with Wood Waste / Soil Blend (1/3 wood)
MSW Active Face Capped with Tarpomatic ADC
MSW Active Face Capped with Revelstoke Iron Grizzly ADC
Landfill surface capped with 300 mm of Inert Soil Cover
Landfill Capped with Final Cover

Lowest Risk

In terms of material composition, based on the work by Santini (2011) as discussed above, ASR does not appear to be significantly more toxic than typical MSW, the energy content of the material is about the same or slightly lower than MSW, combustion and fire spread is more rapid than well compacted MSW based on SHA' experience and the risk of spontaneous combustion appears to be about the same as MSW (both are known to spontaneously combust in some circumstances). Based on these properties, we conclude that ASR can be handled using the same fire risk management strategies recommended for placement of MSW, i.e. placing the material in

encapsulated cells, properly compacting the material, covering the active face daily with a non-flammable daily cover such as the Tarpomatic Fire Resistant Tarping System or the fire proof Revelstoke Iron Grizzly steel plate systemand compartmentalization of the waste at least once every three weeks with a 300 mm thick intermediate cover of inert soil. When placing the ASR material in the landfill, it is recommended that the total thickness of ASR material in the cell not exceed 2,000 mm.

Based on the recorded fire risk at ASR monofils, as discussed in the Examples section of this report, and the evidence of spontaneous combustion potential in deep ASR monofils, SHA does not recommend separating the ASR into monofil cells.

Manitoba's Special Waste (Shredder Residue) Regulation permits Class 1 Municipal Landfills to utilize low concentration ASR as intermediate cover. Low concentration ASR is defined as ASR that leaches less than 15 mg/L lead, 15 mg/L and contains less 50 ppm by weight of PCB's. In SHA's professional opinion, due to the risks of fire spread, the use of ASR as intermediate cover would expose the City of Winnipeg and potentially the Province of Manitoba to a significant risk liability. Notwithstanding the regulations, the City of Winnipeg is advised to use only inert mineral soil as intermediate cover on all completed landfill surfaces.

Recommended Tipping Fee for Auto Shredder Residue

ASR has a reported density of 405 Kg/m^3 (Day et al) before compaction. On compression SHA expects that the foam component will collapse increasing density to between 0.6 and 0.8 tonnes per m^3, a very similar density to that of MSW.

As SHA recommends that ASR be handled in exactly the same manner as the rest of the MSW waste stream, it appears logical to charge the same tipping for ASR waste as is currently charged for other MSW waste, i.e. $43.50 per tonne.

Closure

We trust that this report provides you with a current review and interpretation of the risks associated with accepting auto shredder residue at your landfill facility. It is our hope that all of the issues are examined thoroughly and from an unbiased perspective. We thank you for the opportunity to provide comment and look forward to receiving your comments on this draft.

Yours truly,
SPERLING HANSEN ASSOCIATES

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. SPERLING

May 26th, 2011

Dr. Tony Sperling, P.Eng.
President

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APPENDIX K

STANTEC CONSULTING LTD.

SCREENING-LEVEL MODELLING FOR EMISSIONS AT BRADY ROAD LANDFILL UNDER NORMAL OPERATING CONDITIONS REPORT

Screening-Level Modelling for Emissions at Brady Road Landfill Under Normal Operating Conditions

Prepared for:

City of Winnipeg

Water and Waste Department
Solid Waste Services Division

October 2011

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1.0 Background

Stantec Consulting Ltd. (Stantec) was instructed by the City of Winnipeg in December 2010 to set out its approach to the design and execution of an Environmental Impact Assessment (EIA) for the Brady Road Landfill (the Project). It was the City of Winnipeg's desire that dialogue with Manitoba Conservation result in a mutual agreement on the scope and content of the EIA and the methods used in the Project assessment process. After initial discussion, Stantec prepared a briefing note in late January for the City of Winnipeg to share with Manitoba Conservation to document concerns about the Project dispersion modelling previously seen as possible and necessary (Stantec 2011).

The briefing note documented the technical and other challenges of attempting quantitative emissions estimation and dispersion modelling for upset conditions (e.g., major landfill fire) at the Brady Road Landfill. As an alternative, it proposed a movement towards increased investment in detailed standard operating procedures (SOPs) for fire prevention, etc., and Emergency Response Planning (ERPs) for risk management.

In response to this briefing note, Manitoba Conservation agreed in March 2011 that the proposed SOPs and ERPs were an adequate means of mitigating upset conditions at the Brady Road Landfill, and that dispersion modelling of upset conditions would not provide valid, defensible results for landfill fires owing to high uncertainty around substances emitted and their rates. Therefore dispersion modelling for upset conditions was deemed not necessary (Braun 2011). However, Manitoba Conservation requested that the EIA should include dispersion modelling for normal operating conditions at the Brady Road Landfill. The City instructed Stantec to undertake the specified monitoring in July 2011.

This report outlines the assessment approach and assumptions, and presents the results of the screening-level dispersion modelling based on Manitoba Conservations request to predict the effects on air quality of normal emissions from the Brady Landfill.

2.0 Site Description

The Brady Road Landfill site is located just south of the Perimeter Highway and west of Waverley Street, as shown in Figure 2-1. The Brady Road landfill is a 790-ha (100 ha currently being used for waste disposal) Class I facility that opened in 1973 and currently holds approximately 8.5 million metric tonnes of waste. The site has capacity for at least 100 more years, assuming no change in the current disposal rate of 400,000 tonnes per year (City of Winnipeg 2011).

2.1 TOPOGRAPHY

The overall topography within a 10-km radius illustrates relatively flat surface elevations. According to United States Environmental Protection Agency (U.S. EPA 1995), no complex terrain, elevated simple terrain, building downwash, or fumigation calculations can be made for area sources in SCREEN3 Model. Since Brady Road Landfill emissions are characterized as area-source emissions, the modelling was conducting using the “simple terrain” option. Figure 2-2 illustrates the overall view of the study area.

2.2 SOURCE PARAMETERS

The total active area of waste disposal is approximately 1,760,000 m^2 and the estimated 2004 landfill gas (LFG) generation rate for the site is 2,394 scfm (KGS GROUP and CH2MHILL, 2005). The landfill gas is stated to be 55.86% methane and 43.50% carbon dioxide by volume. The remainder (<1%) is comprised of nitrogen (0.49%), carbon monoxide (0.01%), reduced sulphur compounds (0.007%), other hydrocarbon species, and trace compounds (KGS GROUP and CH2MHILL 2005).

Detailed lab analyses from the KGS GROUP and CH2MHILL (2005) report used for emissions quantification are included as Appendix A in this report. For the substances of ethane, butane, propane, pentane and hexane which were not included in the KGS GROUP and CH2MHILL 2005 lab report, U.S. EPA AP-42 (U.S. EPA 1998) emission-concentration data for landfill gas were used.

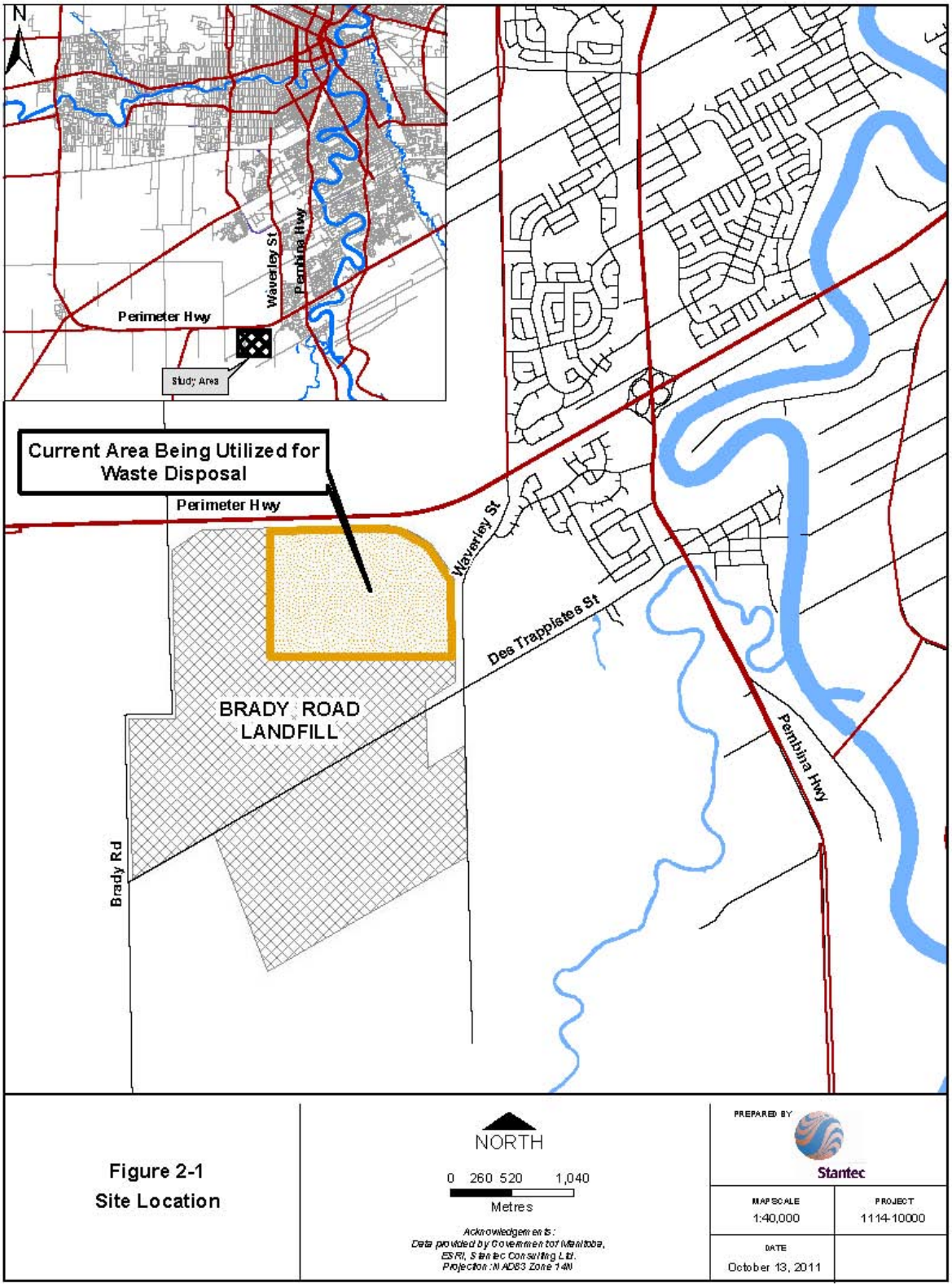

Figure 2-1
Site Location

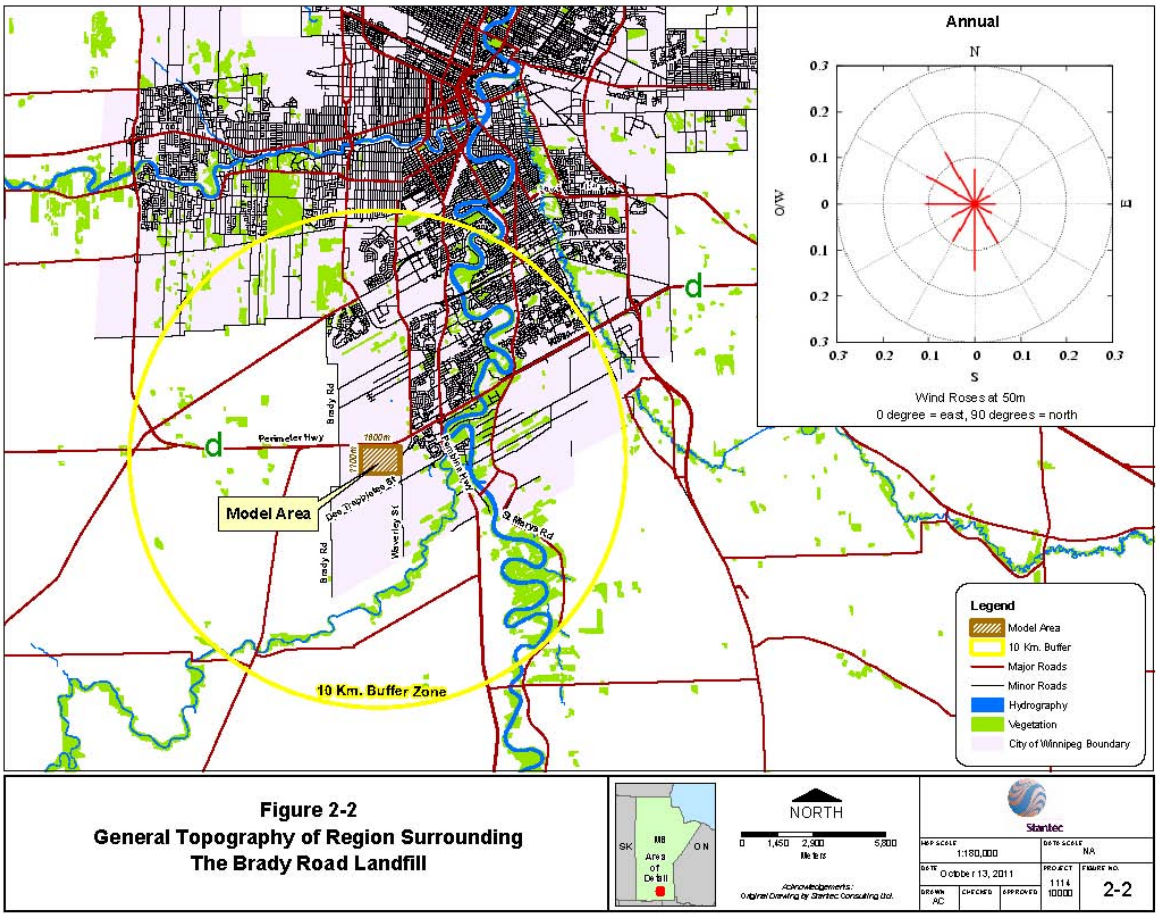

Figure 2-2
General Topography of Region Surrounding The Brady Road Landfill

Table 2-1 shows the area-source inputs used for Brady Road Landfill SCREEN3 modelling and Table 2-2 presents the emission-rate calculation of various sources from Brady Road Landfill. U.S. EPA standard temperature and pressure (STP) conditions (U.S EPA 1999) were used for emission rate unit conversion.

It should be understood that the range of parameters listed in Tables 2-1 and 2-2 do not likely contain all of the malodorous gases that can be released during landfilling operations, and therefore the modeled cannot be understood as creating representations of all possible malodorous operating conditions. This modeling cannot, for instance, cover the entire range of gas emissions (or emission rates) involved in the recent acceptance and placement of biosolids delivered from the North End Water Pollution Control Centre.

Table 2-1: SCREEN3 Area Source Modeling Inputs

Total emission rate of LFG	2,394 (SCFM)
Source release height	3 (m)
Length of larger side of the rectangular area	1,600 (m)
Length of smaller side of the rectangular area	1,100 (m)
Receptor height above ground	0 (m)
Urban/rural option	U=urban

Table 2-2: Brady Road Landfill Area Source Emission Rate Calculations

Chemical	MW [(a)]	Concentration [(b)] (ppmv)	Emission Rate (m^3/min)	Emission Rate[(c)] (g/s)	Emission Rate (g/s/m^2)
CH_4	16.04	558600	38	414	2.35E-04
CO_2	44.00	435000	30	885	5.03E-04
N_2	28.01	4900	0.33	6.34	3.60E-06
H_2S	34.08	59.8	4.06E-03	0.09	5.35E-08
Dimethyl sulphide	62.13	4.05	2.75E-04	0.01	6.61E-09
Methyl mercaptan	48.10	4.05	2.75E-04	0.01	5.12E-09
CO	28.01	100	0.01	0.13	7.36E-08
Benzene	78.11	0.51	3.46E-05	1.84E-03	1.05E-09
Butane	58.12	5.03	3.41E-04	0.01	7.68E-09
Ethane	30.06	889	0.06	1.24	7.02E-07
Hexane	86.17	6.57	4.46E-04	0.03	1.49E-08
Pentane	72.14	3.29	2.23E-04	0.01	6.23E-09
Propane	44.09	11.1	7.53E-04	0.02	1.29E-08

Table 2-2: Brady Road Landfill Area Source Emission Rate Calculations					
Chemical	**MW [a]**	**Concentration [b] (ppmv)**	**Emission Rate (m^3/min)**	**Emission Rate[c] (g/s)**	**Emission Rate (g/s/m^2)**
chloroethane	64.51	1.37	9.29E-05	4.08E-03	2.32E-09
1,1-Dichloroethane	98.95	2.51	1.70E-04	0.01	6.52E-09
1,1-Dichloroethene	96.94	0.05	3.39E-06	2.24E-04	1.27E-10
1,2-Dichloroethene (cis)	96.94	2.28	1.55E-04	0.01	5.80E-09
1,2-Dichloroethene (trans)	96.94	0.04	2.71E-06	1.79E-04	1.02E-10
Ethylbenzene	106.16	3.2	2.17E-04	0.02	8.92E-09
Methylene chloride	84.93	21.47	1.46E-03	0.08	4.79E-08
Styrene	104.14	0.53	3.60E-05	2.55E-03	1.45E-09
Tetrachloroethane	167.84	0.82	5.56E-05	0.01	3.61E-09
Toluene	92.13	33.65	2.28E-03	0.14	8.14E-08
1,1,1-Tricholoroethane	133.40	1.21	8.21E-05	0.01	4.24E-09
Tricholoroethane	133.40	0.91	6.17E-05	0.01	3.19E-09
Vinyl Chloride	62.49	3.73	2.53E-04	0.01	6.12E-09
Total Xylenes	106.16	11.81	8.01E-04	0.06	3.29E-08

Notes:
[a] Molecular weights were obtained from National Institute of Standards and Technology (NIST) (NIST 2011).
[b] All the concentration data was obtained from KGS Group and CH2MHILL report (KGS Group and CH2MHILL 2005) except for butane, ethane, hexane, pentane, and propane data which was obtained from U.S. EPA AP-42 (U.S. EPA 1998).
[c] U.S. EPA standard temperature and pressure (STP) conditions (25°C and 101.325 kPa) were used for emission rate unit conversion (U.S. EPA 1999).

3.0 Assessment Approach

3.1 ASSESSMENT THRESHOLDS

This assessment compares the predicted ground-level concentrations of 27 substances emitted from the Brady Landfill under normal operating conditions using the US EPS SCREEN3 dispersion model with relevant guidelines for acceptable air quality. To assess if these predicted concentrations are above regulatory objectives for ambient air quality, the Manitoba Ambient Air Quality Criteria or MAAQC (Manitoba Conservation 2005) were used. While ambient air quality objectives exist in Manitoba for a number of chemicals, including hydrogen sulphide, there are no Manitoba Conservation objectives for VOC species.

For emissions where no existing acceptable objectives exist, those from other jurisdictions were employed, specifically, the Ontario Ambient Air Quality Criteria or OAAQC (Ontario MOE 2008), and the Alberta Ambient Air Quality Objectives or AAAQO (AENV 2011).

3.2 SCREEN3 MODELLING APPROACH

The U.S. EPA SCREEN3 dispersion model is a conservative screening tool widely employed in assessing maximum “point of impingement” (POI) concentrations (U.S. EPA 1995). SCREEN3 model can be used in Tier 1 screening-level analysis as it includes all potential worst- case meteorological conditions (Ontario MOE, 2009). There is no need for additional modeling if a Tier 1 conservative modelling assessment demonstrates compliance with MOE POI Limits (Ontario MOE, 2009).

The SCREEN3 model was used to calculate maximum predicted 1-hour average concentrations at a range of distances. The area-source option was used in the dispersion modelling. It is based on a numerical integration approach which allows for the area source to be approximated by a rectangular area. The model was deployed using ‘urban setting’, and ‘flat terrain’. SCREEN3 uses combinations of wind speed and atmospheric stability class (a 54-case matrix) as an internal screening meteorological data set (U.S. EPA 1995). Table 3-1 shows the SCREEN3 meteorological matrix.

Table 3-1: SCREEN3 Meteorological Matrix (U.S. EPA, 1995)													
Pasquill-Gifford Stability Class	**10-m Wind Speed (m/s)**												
	1.0	**1.5**	**2.0**	**2.5**	**3.0**	**3.5**	**4.0**	**4.5**	**5.0**	**8.0**	**10.0**	**15.0**	**20.0**
A	✓	✓	✓	✓	✓								
B	✓	✓	✓	✓	✓	✓	✓	✓	✓				
C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
E	✓	✓	✓	✓	✓	✓	✓	✓	✓				
F	✓	✓	✓	✓	✓	✓	✓						

The SCREEN3 model predicts concentrations for 1-hour averaging intervals. Many of Ontario's air-quality guidelines are expressed in terms of limits based upon a 10-minute or 24-hour averaging period. Maximum predicted 1-hour average concentration values were multiplied by a peak-to-mean ratio factor in order to convert a predicted concentration value based on a 60-minute (1-hour) averaging period to predicted concentrations based upon the shorter 10-minute (or longer 24-hour) objective averaging periods specified by Ontario MOE.

This conversion factor is obtained from the following equation provided by the Ontario Ministry of Environment (MOE) for the purpose of converting average periods (Ontario MOE 2009):

$$C_o = C_1 \text{ X } F \qquad \text{Eq. 1.0}$$

Where:

C_o= the concentration at the averaging period t_o

C_1= the concentration at the averaging period t_1

F= factor to convert for the averaging period t_1 to the averaging period t_o which equals $(t_1/t_o)^n$

and where, n= 0.28, the MOE has historically recommended a value of 0.28 for the exponent n, as representative of average conditions across a range of atmospheric stabilities.

4.0 SCREEN3 Modelling Results

The results of the SCREEN3 modelling are shown in Table 4-1. Table 4-2 provides a summary of the predicted concentrations comparing to the corresponding guidelines and criteria. Detailed model output files for each emission species are included in Appendix B.

This dispersion assessment shows that the maximum predicted concentrations of all species modelled for which there are regulatory objective are less than those objectives. Hydrogen sulphide and other reduced sulphur compounds are of interest owing to their 'rotten eggs' odour. Because the predicted concentrations of these substances are below the objectives for all averaging intervals, these odours are unlikely to be a concern.

The highest predicted concentrations are for methane, carbon dioxide, and nitrogen: three species which are relatively inert and of little concern in the ambient air from a human health or odour-nuisance perspective. Other substances such as ethylbenzene, styrene, and toluene are substances of concern from the perspective of epidemiology, but are present in very low concentrations, well below the regulatory objectives.

The maximum predicted concentrations occur relatively close to the landfill (~970 m away), meaning their concentrations at more distant receptors are much reduced from the maximum worst-case predicted values presented.

Table 4-1: SCREEN3 Modelling Results for Normal Operating Conditions at Brady Road Landfill		
Substance	**Predicted Maximum 1-hour Concentration ($\mu g/m^3$)**	**Predicted Maximum 1-hour Concentration (ppm)**
CH_4	11,960	18.23
CO_2	25,550	14.19
N_2	183	0.16
H_2S	2.72	1.95E-03
Dimethyl sulphide	0.34	1.32E-04
Methyl mercaptan	0.26	1.32E-04
CO	3.74	3.26E-03
Benzene	0.05	1.66E-05
Butane	0.39	1.64E-04
Ethane	35.7	0.03
Hexane	0.76	2.14E-04
Pentane	0.32	1.07E-04
Propane	0.65	3.62E-04
Chloroethane	0.12	4.47E-05
1,1-Dichloroethane	0.33	8.19E-05
1,1-Dichloroethene	0.01	1.63E-06
1,2-Dichloroethene (cis)	0.30	7.44E-05
1,2-Dichloroethene (trans)	0.01	1.31E-06
Ethylbenzene	0.45	1.04E-04
Methylene chloride	2.43	7.00E-04
Styrene	0.07	1.73E-05
Tetrachloroethane	0.18	2.68E-05
Toluene	4.14	1.10E-03
1,1,1-Tricholoroethane	0.22	3.95E-05
Tricholoroethane	0.16	2.97E-05
Vinyl chloride	0.31	1.22E-04
Total Xylenes	1.67	3.85E-04

Table 4-2: Summary of Compliance for Modeled Emissions Air-Quality Criteria or Guideline

Substance	Manitoba Guideline Exists (Y/N)?	Manitoba 1-hour Average Guideline	Manitoba 24-hour Average Guideline	Ontario 10-minute Average	Ontario 24-hour Average	Alberta AAQO 1-hour Average
CH_4	N					
CO_2	N					
N_2	N					
H_2S	Y	✓	✓	✓	✓	✓
Dimethyl sulphide	N			✓		
Methyl mercaptan	N					
CO	N			✓		✓
Benzene	N					✓
Butane	N					
Ethane	N					
Hexane	N				✓	✓
Pentane	N					
Propane	N					
Chloroethane	N				✓	
1,1-Dichloroethane	N				✓	
1,1-Dichloroethene	N					
1,2-Dichloroethene (cis)	N				✓	
1,2-Dichloroethene (trans)	N				✓	
Ethylbenzene	N			✓		✓
Methylene chloride	N				✓	
Styrene	Y	✓	✓		✓	✓
Tetrachloroethane	N					
Toluene	N				✓	✓
1,1,1-Tricholoroethane	N					
Tricholoroethane	N					
Vinyl chloride	N				✓	✓
Total Xylenes	N			✓		✓

= Not Applicable ✓ = Compliance E = Exceedance

5.0 Summary

Stantec completed a screening level air-quality dispersion modelling assessment to determine the maximum predicted ground-level concentrations under normal operating conditions at Brady Road Landfill. This assessment was based on data available from the KGS GROUP and CH2MHILL (2005) reports, and U.S. EPA AP-42 (U.S. EPA 1998), and was performed with the U.S. EPA SCREEN3 dispersion model. The emissions data are considered representative of conditions pre-dating the recent move to bury dewatered biosolids at the landfill until better long-term solutions are implemented. The predicted ground-level concentrations of the substances modelled (including the malodorous hydrogen sulfide) are all below the applicable MAAQC, OAAQC, and AAAQO.

From this perspective it can be concluded that the effect of the landfill gas on ambient air quality is acceptable and creates no significant impact.

6.0 Closure

This report was prepared on behalf of City of Winnipeg, MB. The report may not be relied upon by any other person or entity without the express written consent of Stantec Consulting Ltd. and City of Winnipeg, MB.

Any use which a third party makes of this report, or any reliance on decisions made based on it, is the responsibility of such third parties. Stantec Consulting Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The information and conclusions contained in this report are based upon work undertaken by trained professional and technical staff in accordance with accepted scientific practices current at the time the work was performed. The conclusions and recommendations presented represent the best judgment of Stantec Consulting Ltd. based on the data obtained from the work and on the site conditions encountered at the time the work was performed at the specific sampling, testing, and/or observation locations.

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7.2 PERSONAL COMMUNICATION

Braun, T. 2011. Regarding Brady Landfill. E-mail correspondence with Tony Kuluk, P.Eng. (City of Winnipeg) dated March 3, 2011, and forwarded to Stantec on July 28, 2011. Environment Assessment and Licensing Branch, Manitoba Conservation. Winnipeg, MB:

Appendix A
Detailed Lab Report Analysis from the KGS GROUP and CH2MHILL 2005 Report

NORWEST LABS

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Sampled by:

Project ID: 04-107-10,02
Name: Brady Landfill Gas Study
Location: Brady Landfill Wpg, MB
LSD:
P.O.:

NWL Lot ID: 343549
Control Number:
Date Received: Nov 1, 2004
Date Reported: Nov 8, 2004
Report Number: 621338

NWL Number: 343549-1
Sample Date: Analysis Date: Nov 5, 2004
Sample Description: 11:30 Biogas S1 (white)
1-Nov

Analyte	ppmv	mg/M³	Detection Limit mg/M³
EPA 624 Compounds - Air - Tedlar Bag			
Benzene	0.51	1.4	0.1
Bromodichloromethane	<0.02	<0.1	0.1
Bromoform	<0.01	<0.1	0.1
Bromomethane	<0.30	<1.0	1.0
Carbon Tetrachloride	<0.02	<0.1	0.1
Chlorobenzene	<0.02	<0.1	0.1
Chloroethane	1.37	3.2	1.0
2-Chloroethyl vinyl ether	<0.03	<0.1	0.1
Chloroform	<0.02	<0.1	0.1
Chloromethane	<0.40	<1.0	1.0
Dibromochloromethane	<0.01	<0.1	0.1
1,2-Dichlorobenzene	<0.02	<0.1	0.1
1,3-Dichlorobenzene	<0.02	<0.1	0.1
1,4-Dichlorobenzene	<0.02	<0.1	0.1
1,1-Dichloroethane	2.51	9.1	0.1
1,2-Dichloroethane	<0.03	<0.1	0.1
1,1-Dichloroethene	0.05	0.2	0.1
1,2-Dichloroethene(cis)	2.28	8.1	0.1
1,2-Dichloroethene(trans)	0.04	0.2	0.1
1,2-Dichloropropane	<0.02	<0.1	0.1
1,3-Dichloropropene(cis)	<0.02	<0.1	0.1
1,3-Dichloropropene(trans)	<0.02	<0.1	0.1
Ethylbenzene	3.20	12.4	0.1
Methylene Chloride	21.47	66.6	1.0
Styrene	0.53	2.0	0.1
1,1,2,2-Tetrachloroethane	<0.02	<0.1	0.1
Tetrachloroethene	0.82	4.9	0.1
Toluene	33.65	113.2	0.1
1,1,1-Trichloroethane	1.21	5.9	0.1
1,1,2-Trichloroethane	<0.02	<0.1	0.1
Trichloroethene	0.91	4.4	0.1
Trichlorofluoromethane	0.85	3.2	0.1
Vinyl Chloride	3.73	8.5	1.0
Total Xylenes	11.81	45.7	0.1

Appendix B
Detailed Model Output Files for Each Emission Species

Methane 10/06/11
11:49:39

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.239333E-03
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.1096E+05	5	1.0	1.0	10000.0	3.00	29.
600.	0.1093E+05	5	1.0	1.0	10000.0	3.00	30.
700.	0.1120E+05	5	1.0	1.0	10000.0	3.00	29.
800.	0.1145E+05	5	1.0	1.0	10000.0	3.00	29.
900.	0.1177E+05	5	1.0	1.0	10000.0	3.00	27.
1000.	0.1134E+05	5	1.0	1.0	10000.0	3.00	34.
1100.	8702.	5	1.0	1.0	10000.0	3.00	34.
1200.	7421.	5	1.0	1.0	10000.0	3.00	34.
1300.	6628.	5	1.0	1.0	10000.0	3.00	33.
1400.	6051.	5	1.0	1.0	10000.0	3.00	33.
1500.	5606.	5	1.0	1.0	10000.0	3.00	32.
1600.	5245.	5	1.0	1.0	10000.0	3.00	32.
1700.	4943.	5	1.0	1.0	10000.0	3.00	31.
1800.	4686.	5	1.0	1.0	10000.0	3.00	31.
1900.	4462.	5	1.0	1.0	10000.0	3.00	30.
2000.	4264.	5	1.0	1.0	10000.0	3.00	30.
2100.	4089.	5	1.0	1.0	10000.0	3.00	29.
2200.	3931.	5	1.0	1.0	10000.0	3.00	29.
2300.	3787.	5	1.0	1.0	10000.0	3.00	28.

2400.	3656.	5	1.0	1.0	10000.0	3.00	27.
2500.	3537.	5	1.0	1.0	10000.0	3.00	27.
2600.	3426.	5	1.0	1.0	10000.0	3.00	27.
2700.	3324.	5	1.0	1.0	10000.0	3.00	26.
2800.	3228.	5	1.0	1.0	10000.0	3.00	24.
2900.	3140.	5	1.0	1.0	10000.0	3.00	24.
3000.	3057.	5	1.0	1.0	10000.0	3.00	24.
3500.	2707.	5	1.0	1.0	10000.0	3.00	18.
4000.	2431.	5	1.0	1.0	10000.0	3.00	2.
4500.	2225.	5	1.0	1.0	10000.0	3.00	2.
5000.	2051.	5	1.0	1.0	10000.0	3.00	0.
5500.	1900.	5	1.0	1.0	10000.0	3.00	0.
6000.	1768.	5	1.0	1.0	10000.0	3.00	1.
6500.	1653.	5	1.0	1.0	10000.0	3.00	1.
7000.	1551.	5	1.0	1.0	10000.0	3.00	0.
7500.	1460.	5	1.0	1.0	10000.0	3.00	0.
8000.	1379.	5	1.0	1.0	10000.0	3.00	1.
8500.	1306.	5	1.0	1.0	10000.0	3.00	0.
9000.	1240.	5	1.0	1.0	10000.0	3.00	1.
9500.	1181.	5	1.0	1.0	10000.0	3.00	0.
10000.	1126.	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	0.1196E+05	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.1196E+05	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

Carbon Dioxide 10/06/11
09:31:51

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.511287E-03
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.2341E+05	5	1.0	1.0	10000.0	3.00	29.
600.	0.2335E+05	5	1.0	1.0	10000.0	3.00	30.
700.	0.2392E+05	5	1.0	1.0	10000.0	3.00	29.
800.	0.2446E+05	5	1.0	1.0	10000.0	3.00	29.
900.	0.2514E+05	5	1.0	1.0	10000.0	3.00	27.
1000.	0.2422E+05	5	1.0	1.0	10000.0	3.00	34.
1100.	0.1859E+05	5	1.0	1.0	10000.0	3.00	34.
1200.	0.1585E+05	5	1.0	1.0	10000.0	3.00	34.
1300.	0.1416E+05	5	1.0	1.0	10000.0	3.00	33.
1400.	0.1293E+05	5	1.0	1.0	10000.0	3.00	33.
1500.	0.1198E+05	5	1.0	1.0	10000.0	3.00	32.
1600.	0.1120E+05	5	1.0	1.0	10000.0	3.00	32.
1700.	0.1056E+05	5	1.0	1.0	10000.0	3.00	31.
1800.	0.1001E+05	5	1.0	1.0	10000.0	3.00	31.
1900.	9532.	5	1.0	1.0	10000.0	3.00	30.
2000.	9110.	5	1.0	1.0	10000.0	3.00	30.
2100.	8735.	5	1.0	1.0	10000.0	3.00	29.
2200.	8397.	5	1.0	1.0	10000.0	3.00	29.
2300.	8091.	5	1.0	1.0	10000.0	3.00	28.

2400.	7811.	5	1.0	1.0	10000.0	3.00	27.
2500.	7556.	5	1.0	1.0	10000.0	3.00	27.
2600.	7320.	5	1.0	1.0	10000.0	3.00	27.
2700.	7102.	5	1.0	1.0	10000.0	3.00	26.
2800.	6895.	5	1.0	1.0	10000.0	3.00	24.
2900.	6708.	5	1.0	1.0	10000.0	3.00	24.
3000.	6531.	5	1.0	1.0	10000.0	3.00	24.
3500.	5784.	5	1.0	1.0	10000.0	3.00	18.
4000.	5193.	5	1.0	1.0	10000.0	3.00	2.
4500.	4754.	5	1.0	1.0	10000.0	3.00	2.
5000.	4381.	5	1.0	1.0	10000.0	3.00	0.
5500.	4058.	5	1.0	1.0	10000.0	3.00	0.
6000.	3777.	5	1.0	1.0	10000.0	3.00	1.
6500.	3531.	5	1.0	1.0	10000.0	3.00	1.
7000.	3313.	5	1.0	1.0	10000.0	3.00	0.
7500.	3120.	5	1.0	1.0	10000.0	3.00	0.
8000.	2946.	5	1.0	1.0	10000.0	3.00	1.
8500.	2791.	5	1.0	1.0	10000.0	3.00	0.
9000.	2650.	5	1.0	1.0	10000.0	3.00	1.
9500.	2522.	5	1.0	1.0	10000.0	3.00	0.
10000.	2406.	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	0.2555E+05	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.2555E+05	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

Nitrogen 10/06/11
09:33:32

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.366598E-05
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	167.8	5	1.0	1.0	10000.0	3.00	29.
600.	167.5	5	1.0	1.0	10000.0	3.00	30.
700.	171.5	5	1.0	1.0	10000.0	3.00	29.
800.	175.4	5	1.0	1.0	10000.0	3.00	29.
900.	180.2	5	1.0	1.0	10000.0	3.00	27.
1000.	173.7	5	1.0	1.0	10000.0	3.00	34.
1100.	133.3	5	1.0	1.0	10000.0	3.00	34.
1200.	113.7	5	1.0	1.0	10000.0	3.00	34.
1300.	101.5	5	1.0	1.0	10000.0	3.00	33.
1400.	92.69	5	1.0	1.0	10000.0	3.00	33.
1500.	85.87	5	1.0	1.0	10000.0	3.00	32.
1600.	80.34	5	1.0	1.0	10000.0	3.00	32.
1700.	75.72	5	1.0	1.0	10000.0	3.00	31.
1800.	71.77	5	1.0	1.0	10000.0	3.00	31.
1900.	68.34	5	1.0	1.0	10000.0	3.00	30.
2000.	65.32	5	1.0	1.0	10000.0	3.00	30.
2100.	62.63	5	1.0	1.0	10000.0	3.00	29.
2200.	60.21	5	1.0	1.0	10000.0	3.00	29.
2300.	58.01	5	1.0	1.0	10000.0	3.00	28.

2400.	56.00	5	1.0	1.0	10000.0	3.00	27.
2500.	54.18	5	1.0	1.0	10000.0	3.00	27.
2600.	52.48	5	1.0	1.0	10000.0	3.00	27.
2700.	50.92	5	1.0	1.0	10000.0	3.00	26.
2800.	49.44	5	1.0	1.0	10000.0	3.00	24.
2900.	48.10	5	1.0	1.0	10000.0	3.00	24.
3000.	46.83	5	1.0	1.0	10000.0	3.00	24.
3500.	41.47	5	1.0	1.0	10000.0	3.00	18.
4000.	37.23	5	1.0	1.0	10000.0	3.00	2.
4500.	34.09	5	1.0	1.0	10000.0	3.00	2.
5000.	31.41	5	1.0	1.0	10000.0	3.00	0.
5500.	29.10	5	1.0	1.0	10000.0	3.00	0.
6000.	27.08	5	1.0	1.0	10000.0	3.00	1.
6500.	25.32	5	1.0	1.0	10000.0	3.00	1.
7000.	23.76	5	1.0	1.0	10000.0	3.00	0.
7500.	22.37	5	1.0	1.0	10000.0	3.00	0.
8000.	21.13	5	1.0	1.0	10000.0	3.00	1.
8500.	20.01	5	1.0	1.0	10000.0	3.00	0.
9000.	19.00	5	1.0	1.0	10000.0	3.00	1.
9500.	18.09	5	1.0	1.0	10000.0	3.00	0.
10000.	17.25	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	183.2	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	183.2	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

Hydrogen Sulphide 10/06/11
09:35:16

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

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SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.544305E-07
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	2.492	5	1.0	1.0	10000.0	3.00	29.
600.	2.486	5	1.0	1.0	10000.0	3.00	30.
700.	2.546	5	1.0	1.0	10000.0	3.00	29.
800.	2.604	5	1.0	1.0	10000.0	3.00	29.
900.	2.676	5	1.0	1.0	10000.0	3.00	27.
1000.	2.579	5	1.0	1.0	10000.0	3.00	34.
1100.	1.979	5	1.0	1.0	10000.0	3.00	34.
1200.	1.688	5	1.0	1.0	10000.0	3.00	34.
1300.	1.507	5	1.0	1.0	10000.0	3.00	33.
1400.	1.376	5	1.0	1.0	10000.0	3.00	33.
1500.	1.275	5	1.0	1.0	10000.0	3.00	32.
1600.	1.193	5	1.0	1.0	10000.0	3.00	32.
1700.	1.124	5	1.0	1.0	10000.0	3.00	31.
1800.	1.066	5	1.0	1.0	10000.0	3.00	31.
1900.	1.015	5	1.0	1.0	10000.0	3.00	30.
2000.	0.9698	5	1.0	1.0	10000.0	3.00	30.
2100.	0.9299	5	1.0	1.0	10000.0	3.00	29.
2200.	0.8939	5	1.0	1.0	10000.0	3.00	29.
2300.	0.8613	5	1.0	1.0	10000.0	3.00	28.

2400.	0.8315	5	1.0	1.0	10000.0	3.00	27.
2500.	0.8044	5	1.0	1.0	10000.0	3.00	27.
2600.	0.7792	5	1.0	1.0	10000.0	3.00	27.
2700.	0.7560	5	1.0	1.0	10000.0	3.00	26.
2800.	0.7341	5	1.0	1.0	10000.0	3.00	24.
2900.	0.7141	5	1.0	1.0	10000.0	3.00	24.
3000.	0.6953	5	1.0	1.0	10000.0	3.00	24.
3500.	0.6157	5	1.0	1.0	10000.0	3.00	18.
4000.	0.5528	5	1.0	1.0	10000.0	3.00	2.
4500.	0.5061	5	1.0	1.0	10000.0	3.00	2.
5000.	0.4663	5	1.0	1.0	10000.0	3.00	0.
5500.	0.4320	5	1.0	1.0	10000.0	3.00	0.
6000.	0.4021	5	1.0	1.0	10000.0	3.00	1.
6500.	0.3759	5	1.0	1.0	10000.0	3.00	1.
7000.	0.3527	5	1.0	1.0	10000.0	3.00	0.
7500.	0.3321	5	1.0	1.0	10000.0	3.00	0.
8000.	0.3137	5	1.0	1.0	10000.0	3.00	1.
8500.	0.2971	5	1.0	1.0	10000.0	3.00	0.
9000.	0.2821	5	1.0	1.0	10000.0	3.00	1.
9500.	0.2685	5	1.0	1.0	10000.0	3.00	0.
10000.	0.2561	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	2.720	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	2.720	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

Dimethyl Sulphide 10/06/11
09:39:42

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.672068E-08
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.3077	5	1.0	1.0	10000.0	3.00	29.
600.	0.3070	5	1.0	1.0	10000.0	3.00	30.
700.	0.3144	5	1.0	1.0	10000.0	3.00	29.
800.	0.3215	5	1.0	1.0	10000.0	3.00	29.
900.	0.3304	5	1.0	1.0	10000.0	3.00	27.
1000.	0.3184	5	1.0	1.0	10000.0	3.00	34.
1100.	0.2444	5	1.0	1.0	10000.0	3.00	34.
1200.	0.2084	5	1.0	1.0	10000.0	3.00	34.
1300.	0.1861	5	1.0	1.0	10000.0	3.00	33.
1400.	0.1699	5	1.0	1.0	10000.0	3.00	33.
1500.	0.1574	5	1.0	1.0	10000.0	3.00	32.
1600.	0.1473	5	1.0	1.0	10000.0	3.00	32.
1700.	0.1388	5	1.0	1.0	10000.0	3.00	31.
1800.	0.1316	5	1.0	1.0	10000.0	3.00	31.
1900.	0.1253	5	1.0	1.0	10000.0	3.00	30.
2000.	0.1197	5	1.0	1.0	10000.0	3.00	30.
2100.	0.1148	5	1.0	1.0	10000.0	3.00	29.
2200.	0.1104	5	1.0	1.0	10000.0	3.00	29.
2300.	0.1064	5	1.0	1.0	10000.0	3.00	28.

2400.	0.1027	5	1.0	1.0	10000.0	3.00	27.
2500.	0.9932E-01	5	1.0	1.0	10000.0	3.00	27.
2600.	0.9621E-01	5	1.0	1.0	10000.0	3.00	27.
2700.	0.9335E-01	5	1.0	1.0	10000.0	3.00	26.
2800.	0.9064E-01	5	1.0	1.0	10000.0	3.00	24.
2900.	0.8818E-01	5	1.0	1.0	10000.0	3.00	24.
3000.	0.8585E-01	5	1.0	1.0	10000.0	3.00	24.
3500.	0.7603E-01	5	1.0	1.0	10000.0	3.00	18.
4000.	0.6826E-01	5	1.0	1.0	10000.0	3.00	2.
4500.	0.6249E-01	5	1.0	1.0	10000.0	3.00	2.
5000.	0.5758E-01	5	1.0	1.0	10000.0	3.00	0.
5500.	0.5334E-01	5	1.0	1.0	10000.0	3.00	0.
6000.	0.4965E-01	5	1.0	1.0	10000.0	3.00	1.
6500.	0.4641E-01	5	1.0	1.0	10000.0	3.00	1.
7000.	0.4355E-01	5	1.0	1.0	10000.0	3.00	0.
7500.	0.4101E-01	5	1.0	1.0	10000.0	3.00	0.
8000.	0.3873E-01	5	1.0	1.0	10000.0	3.00	1.
8500.	0.3668E-01	5	1.0	1.0	10000.0	3.00	0.
9000.	0.3483E-01	5	1.0	1.0	10000.0	3.00	1.
9500.	0.3316E-01	5	1.0	1.0	10000.0	3.00	0.
10000.	0.3162E-01	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	0.3358	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.3358	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

Methyl Mercaptan 10/06/11
13:21:34

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.520346E-08
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.2382	5	1.0	1.0	10000.0	3.00	29.
600.	0.2377	5	1.0	1.0	10000.0	3.00	30.
700.	0.2434	5	1.0	1.0	10000.0	3.00	29.
800.	0.2489	5	1.0	1.0	10000.0	3.00	29.
900.	0.2558	5	1.0	1.0	10000.0	3.00	27.
1000.	0.2465	5	1.0	1.0	10000.0	3.00	34.
1100.	0.1892	5	1.0	1.0	10000.0	3.00	34.
1200.	0.1613	5	1.0	1.0	10000.0	3.00	34.
1300.	0.1441	5	1.0	1.0	10000.0	3.00	33.
1400.	0.1316	5	1.0	1.0	10000.0	3.00	33.
1500.	0.1219	5	1.0	1.0	10000.0	3.00	32.
1600.	0.1140	5	1.0	1.0	10000.0	3.00	32.
1700.	0.1075	5	1.0	1.0	10000.0	3.00	31.
1800.	0.1019	5	1.0	1.0	10000.0	3.00	31.
1900.	0.9700E-01	5	1.0	1.0	10000.0	3.00	30.
2000.	0.9271E-01	5	1.0	1.0	10000.0	3.00	30.
2100.	0.8889E-01	5	1.0	1.0	10000.0	3.00	29.
2200.	0.8546E-01	5	1.0	1.0	10000.0	3.00	29.
2300.	0.8234E-01	5	1.0	1.0	10000.0	3.00	28.

2400.	0.7949E-01	5	1.0	1.0	10000.0	3.00	27.
2500.	0.7690E-01	5	1.0	1.0	10000.0	3.00	27.
2600.	0.7449E-01	5	1.0	1.0	10000.0	3.00	27.
2700.	0.7228E-01	5	1.0	1.0	10000.0	3.00	26.
2800.	0.7018E-01	5	1.0	1.0	10000.0	3.00	24.
2900.	0.6827E-01	5	1.0	1.0	10000.0	3.00	24.
3000.	0.6647E-01	5	1.0	1.0	10000.0	3.00	24.
3500.	0.5886E-01	5	1.0	1.0	10000.0	3.00	18.
4000.	0.5285E-01	5	1.0	1.0	10000.0	3.00	2.
4500.	0.4838E-01	5	1.0	1.0	10000.0	3.00	2.
5000.	0.4458E-01	5	1.0	1.0	10000.0	3.00	0.
5500.	0.4130E-01	5	1.0	1.0	10000.0	3.00	0.
6000.	0.3844E-01	5	1.0	1.0	10000.0	3.00	1.
6500.	0.3594E-01	5	1.0	1.0	10000.0	3.00	1.
7000.	0.3372E-01	5	1.0	1.0	10000.0	3.00	0.
7500.	0.3175E-01	5	1.0	1.0	10000.0	3.00	0.
8000.	0.2999E-01	5	1.0	1.0	10000.0	3.00	1.
8500.	0.2840E-01	5	1.0	1.0	10000.0	3.00	0.
9000.	0.2697E-01	5	1.0	1.0	10000.0	3.00	1.
9500.	0.2567E-01	5	1.0	1.0	10000.0	3.00	0.
10000.	0.2449E-01	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	0.2600	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.2600	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

CO 10/06/11
09:41:13

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

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SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.748072E-07
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	3.425	5	1.0	1.0	10000.0	3.00	29.
600.	3.417	5	1.0	1.0	10000.0	3.00	30.
700.	3.499	5	1.0	1.0	10000.0	3.00	29.
800.	3.578	5	1.0	1.0	10000.0	3.00	29.
900.	3.678	5	1.0	1.0	10000.0	3.00	27.
1000.	3.544	5	1.0	1.0	10000.0	3.00	34.
1100.	2.720	5	1.0	1.0	10000.0	3.00	34.
1200.	2.320	5	1.0	1.0	10000.0	3.00	34.
1300.	2.072	5	1.0	1.0	10000.0	3.00	33.
1400.	1.891	5	1.0	1.0	10000.0	3.00	33.
1500.	1.752	5	1.0	1.0	10000.0	3.00	32.
1600.	1.639	5	1.0	1.0	10000.0	3.00	32.
1700.	1.545	5	1.0	1.0	10000.0	3.00	31.
1800.	1.465	5	1.0	1.0	10000.0	3.00	31.
1900.	1.395	5	1.0	1.0	10000.0	3.00	30.
2000.	1.333	5	1.0	1.0	10000.0	3.00	30.
2100.	1.278	5	1.0	1.0	10000.0	3.00	29.
2200.	1.229	5	1.0	1.0	10000.0	3.00	29.
2300.	1.184	5	1.0	1.0	10000.0	3.00	28.

2400.	1.143	5	1.0	1.0	10000.0	3.00	27.
2500.	1.106	5	1.0	1.0	10000.0	3.00	27.
2600.	1.071	5	1.0	1.0	10000.0	3.00	27.
2700.	1.039	5	1.0	1.0	10000.0	3.00	26.
2800.	1.009	5	1.0	1.0	10000.0	3.00	24.
2900.	0.9815	5	1.0	1.0	10000.0	3.00	24.
3000.	0.9556	5	1.0	1.0	10000.0	3.00	24.
3500.	0.8462	5	1.0	1.0	10000.0	3.00	18.
4000.	0.7598	5	1.0	1.0	10000.0	3.00	2.
4500.	0.6956	5	1.0	1.0	10000.0	3.00	2.
5000.	0.6409	5	1.0	1.0	10000.0	3.00	0.
5500.	0.5937	5	1.0	1.0	10000.0	3.00	0.
6000.	0.5527	5	1.0	1.0	10000.0	3.00	1.
6500.	0.5166	5	1.0	1.0	10000.0	3.00	1.
7000.	0.4848	5	1.0	1.0	10000.0	3.00	0.
7500.	0.4564	5	1.0	1.0	10000.0	3.00	0.
8000.	0.4311	5	1.0	1.0	10000.0	3.00	1.
8500.	0.4083	5	1.0	1.0	10000.0	3.00	0.
9000.	0.3877	5	1.0	1.0	10000.0	3.00	1.
9500.	0.3690	5	1.0	1.0	10000.0	3.00	0.
10000.	0.3520	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	3.738	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	3.738	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

Benzene 10/06/11
09:42:28

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

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SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.106394E-08
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.4871E-01	5	1.0	1.0	10000.0	3.00	29.
600.	0.4860E-01	5	1.0	1.0	10000.0	3.00	30.
700.	0.4977E-01	5	1.0	1.0	10000.0	3.00	29.
800.	0.5089E-01	5	1.0	1.0	10000.0	3.00	29.
900.	0.5231E-01	5	1.0	1.0	10000.0	3.00	27.
1000.	0.5041E-01	5	1.0	1.0	10000.0	3.00	34.
1100.	0.3869E-01	5	1.0	1.0	10000.0	3.00	34.
1200.	0.3299E-01	5	1.0	1.0	10000.0	3.00	34.
1300.	0.2946E-01	5	1.0	1.0	10000.0	3.00	33.
1400.	0.2690E-01	5	1.0	1.0	10000.0	3.00	33.
1500.	0.2492E-01	5	1.0	1.0	10000.0	3.00	32.
1600.	0.2332E-01	5	1.0	1.0	10000.0	3.00	32.
1700.	0.2198E-01	5	1.0	1.0	10000.0	3.00	31.
1800.	0.2083E-01	5	1.0	1.0	10000.0	3.00	31.
1900.	0.1983E-01	5	1.0	1.0	10000.0	3.00	30.
2000.	0.1896E-01	5	1.0	1.0	10000.0	3.00	30.
2100.	0.1818E-01	5	1.0	1.0	10000.0	3.00	29.
2200.	0.1747E-01	5	1.0	1.0	10000.0	3.00	29.
2300.	0.1684E-01	5	1.0	1.0	10000.0	3.00	28.

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 2400.  0.1625E-01   5    1.0    1.0 10000.0    3.00     27.
 2500.  0.1572E-01   5    1.0    1.0 10000.0    3.00     27.
 2600.  0.1523E-01   5    1.0    1.0 10000.0    3.00     27.
 2700.  0.1478E-01   5    1.0    1.0 10000.0    3.00     26.
 2800.  0.1435E-01   5    1.0    1.0 10000.0    3.00     24.
 2900.  0.1396E-01   5    1.0    1.0 10000.0    3.00     24.
 3000.  0.1359E-01   5    1.0    1.0 10000.0    3.00     24.
 3500.  0.1204E-01   5    1.0    1.0 10000.0    3.00     18.
 4000.  0.1081E-01   5    1.0    1.0 10000.0    3.00      2.
 4500.  0.9893E-02   5    1.0    1.0 10000.0    3.00      2.
 5000.  0.9116E-02   5    1.0    1.0 10000.0    3.00      0.
 5500.  0.8444E-02   5    1.0    1.0 10000.0    3.00      0.
 6000.  0.7860E-02   5    1.0    1.0 10000.0    3.00      1.
 6500.  0.7348E-02   5    1.0    1.0 10000.0    3.00      1.
 7000.  0.6894E-02   5    1.0    1.0 10000.0    3.00      0.
 7500.  0.6492E-02   5    1.0    1.0 10000.0    3.00      0.
 8000.  0.6131E-02   5    1.0    1.0 10000.0    3.00      1.
 8500.  0.5807E-02   5    1.0    1.0 10000.0    3.00      0.
 9000.  0.5514E-02   5    1.0    1.0 10000.0    3.00      1.
 9500.  0.5249E-02   5    1.0    1.0 10000.0    3.00      0.
10000.  0.5006E-02   5    1.0    1.0 10000.0    3.00      1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND   500. M:
  970.  0.5316E-01   5    1.0    1.0 10000.0    3.00     34.

    ****************************************
    *** SUMMARY OF SCREEN MODEL RESULTS ***
    ****************************************

 CALCULATION       MAX CONC    DIST TO   TERRAIN
  PROCEDURE       (UG/M**3)    MAX (M)    HT (M)
-------------   -----------  -------  -------
SIMPLE TERRAIN    0.5316E-01      970.       0.


**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**************************************************
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Butane 10/06/11
13:24:25

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

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SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.780798E-08
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.3575	5	1.0	1.0	10000.0	3.00	29.
600.	0.3566	5	1.0	1.0	10000.0	3.00	30.
700.	0.3653	5	1.0	1.0	10000.0	3.00	29.
800.	0.3735	5	1.0	1.0	10000.0	3.00	29.
900.	0.3839	5	1.0	1.0	10000.0	3.00	27.
1000.	0.3699	5	1.0	1.0	10000.0	3.00	34.
1100.	0.2839	5	1.0	1.0	10000.0	3.00	34.
1200.	0.2421	5	1.0	1.0	10000.0	3.00	34.
1300.	0.2162	5	1.0	1.0	10000.0	3.00	33.
1400.	0.1974	5	1.0	1.0	10000.0	3.00	33.
1500.	0.1829	5	1.0	1.0	10000.0	3.00	32.
1600.	0.1711	5	1.0	1.0	10000.0	3.00	32.
1700.	0.1613	5	1.0	1.0	10000.0	3.00	31.
1800.	0.1529	5	1.0	1.0	10000.0	3.00	31.
1900.	0.1456	5	1.0	1.0	10000.0	3.00	30.
2000.	0.1391	5	1.0	1.0	10000.0	3.00	30.
2100.	0.1334	5	1.0	1.0	10000.0	3.00	29.
2200.	0.1282	5	1.0	1.0	10000.0	3.00	29.
2300.	0.1236	5	1.0	1.0	10000.0	3.00	28.

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 2400.  0.1193       5    1.0    1.0 10000.0    3.00     27.
 2500.  0.1154       5    1.0    1.0 10000.0    3.00     27.
 2600.  0.1118       5    1.0    1.0 10000.0    3.00     27.
 2700.  0.1085       5    1.0    1.0 10000.0    3.00     26.
 2800.  0.1053       5    1.0    1.0 10000.0    3.00     24.
 2900.  0.1024       5    1.0    1.0 10000.0    3.00     24.
 3000.  0.9974E-01   5    1.0    1.0 10000.0    3.00     24.
 3500.  0.8833E-01   5    1.0    1.0 10000.0    3.00     18.
 4000.  0.7930E-01   5    1.0    1.0 10000.0    3.00      2.
 4500.  0.7260E-01   5    1.0    1.0 10000.0    3.00      2.
 5000.  0.6690E-01   5    1.0    1.0 10000.0    3.00      0.
 5500.  0.6197E-01   5    1.0    1.0 10000.0    3.00      0.
 6000.  0.5769E-01   5    1.0    1.0 10000.0    3.00      1.
 6500.  0.5392E-01   5    1.0    1.0 10000.0    3.00      1.
 7000.  0.5060E-01   5    1.0    1.0 10000.0    3.00      0.
 7500.  0.4764E-01   5    1.0    1.0 10000.0    3.00      0.
 8000.  0.4499E-01   5    1.0    1.0 10000.0    3.00      1.
 8500.  0.4262E-01   5    1.0    1.0 10000.0    3.00      0.
 9000.  0.4047E-01   5    1.0    1.0 10000.0    3.00      1.
 9500.  0.3852E-01   5    1.0    1.0 10000.0    3.00      0.
10000.  0.3674E-01   5    1.0    1.0 10000.0    3.00      1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND   500. M:
  970.  0.3901       5    1.0    1.0 10000.0    3.00     34.

    ****************************************
    *** SUMMARY OF SCREEN MODEL RESULTS ***
    ****************************************

 CALCULATION       MAX CONC    DIST TO   TERRAIN
  PROCEDURE       (UG/M**3)    MAX (M)    HT (M)
-------------   -----------  -------  -------
SIMPLE TERRAIN     0.3901        970.       0.


**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**************************************************
```

Ethane 10/06/11
13:35:28

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.713920E-06
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	32.69	5	1.0	1.0	10000.0	3.00	29.
600.	32.61	5	1.0	1.0	10000.0	3.00	30.
700.	33.40	5	1.0	1.0	10000.0	3.00	29.
800.	34.15	5	1.0	1.0	10000.0	3.00	29.
900.	35.10	5	1.0	1.0	10000.0	3.00	27.
1000.	33.82	5	1.0	1.0	10000.0	3.00	34.
1100.	25.96	5	1.0	1.0	10000.0	3.00	34.
1200.	22.14	5	1.0	1.0	10000.0	3.00	34.
1300.	19.77	5	1.0	1.0	10000.0	3.00	33.
1400.	18.05	5	1.0	1.0	10000.0	3.00	33.
1500.	16.72	5	1.0	1.0	10000.0	3.00	32.
1600.	15.64	5	1.0	1.0	10000.0	3.00	32.
1700.	14.75	5	1.0	1.0	10000.0	3.00	31.
1800.	13.98	5	1.0	1.0	10000.0	3.00	31.
1900.	13.31	5	1.0	1.0	10000.0	3.00	30.
2000.	12.72	5	1.0	1.0	10000.0	3.00	30.
2100.	12.20	5	1.0	1.0	10000.0	3.00	29.
2200.	11.72	5	1.0	1.0	10000.0	3.00	29.
2300.	11.30	5	1.0	1.0	10000.0	3.00	28.

2400.	10.91	5	1.0	1.0	10000.0	3.00	27.
2500.	10.55	5	1.0	1.0	10000.0	3.00	27.
2600.	10.22	5	1.0	1.0	10000.0	3.00	27.
2700.	9.916	5	1.0	1.0	10000.0	3.00	26.
2800.	9.628	5	1.0	1.0	10000.0	3.00	24.
2900.	9.367	5	1.0	1.0	10000.0	3.00	24.
3000.	9.120	5	1.0	1.0	10000.0	3.00	24.
3500.	8.076	5	1.0	1.0	10000.0	3.00	18.
4000.	7.251	5	1.0	1.0	10000.0	3.00	2.
4500.	6.638	5	1.0	1.0	10000.0	3.00	2.
5000.	6.117	5	1.0	1.0	10000.0	3.00	0.
5500.	5.666	5	1.0	1.0	10000.0	3.00	0.
6000.	5.274	5	1.0	1.0	10000.0	3.00	1.
6500.	4.930	5	1.0	1.0	10000.0	3.00	1.
7000.	4.626	5	1.0	1.0	10000.0	3.00	0.
7500.	4.356	5	1.0	1.0	10000.0	3.00	0.
8000.	4.114	5	1.0	1.0	10000.0	3.00	1.
8500.	3.897	5	1.0	1.0	10000.0	3.00	0.
9000.	3.700	5	1.0	1.0	10000.0	3.00	1.
9500.	3.522	5	1.0	1.0	10000.0	3.00	0.
10000.	3.359	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	35.67	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	35.67	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

Hexane 10/06/11
09:44:04

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.151209E-07
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.6923	5	1.0	1.0	10000.0	3.00	29.
600.	0.6907	5	1.0	1.0	10000.0	3.00	30.
700.	0.7074	5	1.0	1.0	10000.0	3.00	29.
800.	0.7233	5	1.0	1.0	10000.0	3.00	29.
900.	0.7434	5	1.0	1.0	10000.0	3.00	27.
1000.	0.7164	5	1.0	1.0	10000.0	3.00	34.
1100.	0.5498	5	1.0	1.0	10000.0	3.00	34.
1200.	0.4688	5	1.0	1.0	10000.0	3.00	34.
1300.	0.4188	5	1.0	1.0	10000.0	3.00	33.
1400.	0.3823	5	1.0	1.0	10000.0	3.00	33.
1500.	0.3542	5	1.0	1.0	10000.0	3.00	32.
1600.	0.3314	5	1.0	1.0	10000.0	3.00	32.
1700.	0.3123	5	1.0	1.0	10000.0	3.00	31.
1800.	0.2960	5	1.0	1.0	10000.0	3.00	31.
1900.	0.2819	5	1.0	1.0	10000.0	3.00	30.
2000.	0.2694	5	1.0	1.0	10000.0	3.00	30.
2100.	0.2583	5	1.0	1.0	10000.0	3.00	29.
2200.	0.2483	5	1.0	1.0	10000.0	3.00	29.
2300.	0.2393	5	1.0	1.0	10000.0	3.00	28.

```
 2400.  0.2310       5    1.0    1.0 10000.0    3.00     27.
 2500.  0.2235       5    1.0    1.0 10000.0    3.00     27.
 2600.  0.2165       5    1.0    1.0 10000.0    3.00     27.
 2700.  0.2100       5    1.0    1.0 10000.0    3.00     26.
 2800.  0.2039       5    1.0    1.0 10000.0    3.00     24.
 2900.  0.1984       5    1.0    1.0 10000.0    3.00     24.
 3000.  0.1932       5    1.0    1.0 10000.0    3.00     24.
 3500.  0.1711       5    1.0    1.0 10000.0    3.00     18.
 4000.  0.1536       5    1.0    1.0 10000.0    3.00      2.
 4500.  0.1406       5    1.0    1.0 10000.0    3.00      2.
 5000.  0.1296       5    1.0    1.0 10000.0    3.00      0.
 5500.  0.1200       5    1.0    1.0 10000.0    3.00      0.
 6000.  0.1117       5    1.0    1.0 10000.0    3.00      1.
 6500.  0.1044       5    1.0    1.0 10000.0    3.00      1.
 7000.  0.9799E-01   5    1.0    1.0 10000.0    3.00      0.
 7500.  0.9226E-01   5    1.0    1.0 10000.0    3.00      0.
 8000.  0.8714E-01   5    1.0    1.0 10000.0    3.00      1.
 8500.  0.8253E-01   5    1.0    1.0 10000.0    3.00      0.
 9000.  0.7837E-01   5    1.0    1.0 10000.0    3.00      1.
 9500.  0.7460E-01   5    1.0    1.0 10000.0    3.00      0.
10000.  0.7115E-01   5    1.0    1.0 10000.0    3.00      1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND   500. M:
  970.  0.7556       5    1.0    1.0 10000.0    3.00     34.

    ****************************************
    *** SUMMARY OF SCREEN MODEL RESULTS ***
    ****************************************

 CALCULATION       MAX CONC    DIST TO   TERRAIN
  PROCEDURE       (UG/M**3)    MAX (M)    HT (M)
-------------   -----------  -------  -------
SIMPLE TERRAIN     0.7556         970.       0.


**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**************************************************
```

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.633948E-08
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.2903	5	1.0	1.0	10000.0	3.00	29.
600.	0.2896	5	1.0	1.0	10000.0	3.00	30.
700.	0.2966	5	1.0	1.0	10000.0	3.00	29.
800.	0.3033	5	1.0	1.0	10000.0	3.00	29.
900.	0.3117	5	1.0	1.0	10000.0	3.00	27.
1000.	0.3004	5	1.0	1.0	10000.0	3.00	34.
1100.	0.2305	5	1.0	1.0	10000.0	3.00	34.
1200.	0.1966	5	1.0	1.0	10000.0	3.00	34.
1300.	0.1756	5	1.0	1.0	10000.0	3.00	33.
1400.	0.1603	5	1.0	1.0	10000.0	3.00	33.
1500.	0.1485	5	1.0	1.0	10000.0	3.00	32.
1600.	0.1389	5	1.0	1.0	10000.0	3.00	32.
1700.	0.1309	5	1.0	1.0	10000.0	3.00	31.
1800.	0.1241	5	1.0	1.0	10000.0	3.00	31.
1900.	0.1182	5	1.0	1.0	10000.0	3.00	30.
2000.	0.1130	5	1.0	1.0	10000.0	3.00	30.
2100.	0.1083	5	1.0	1.0	10000.0	3.00	29.
2200.	0.1041	5	1.0	1.0	10000.0	3.00	29.
2300.	0.1003	5	1.0	1.0	10000.0	3.00	28.

2400.	0.9685E-01	5	1.0	1.0	10000.0	3.00	27.
2500.	0.9369E-01	5	1.0	1.0	10000.0	3.00	27.
2600.	0.9076E-01	5	1.0	1.0	10000.0	3.00	27.
2700.	0.8806E-01	5	1.0	1.0	10000.0	3.00	26.
2800.	0.8550E-01	5	1.0	1.0	10000.0	3.00	24.
2900.	0.8318E-01	5	1.0	1.0	10000.0	3.00	24.
3000.	0.8098E-01	5	1.0	1.0	10000.0	3.00	24.
3500.	0.7171E-01	5	1.0	1.0	10000.0	3.00	18.
4000.	0.6439E-01	5	1.0	1.0	10000.0	3.00	2.
4500.	0.5895E-01	5	1.0	1.0	10000.0	3.00	2.
5000.	0.5431E-01	5	1.0	1.0	10000.0	3.00	0.
5500.	0.5032E-01	5	1.0	1.0	10000.0	3.00	0.
6000.	0.4684E-01	5	1.0	1.0	10000.0	3.00	1.
6500.	0.4378E-01	5	1.0	1.0	10000.0	3.00	1.
7000.	0.4108E-01	5	1.0	1.0	10000.0	3.00	0.
7500.	0.3868E-01	5	1.0	1.0	10000.0	3.00	0.
8000.	0.3653E-01	5	1.0	1.0	10000.0	3.00	1.
8500.	0.3460E-01	5	1.0	1.0	10000.0	3.00	0.
9000.	0.3286E-01	5	1.0	1.0	10000.0	3.00	1.
9500.	0.3127E-01	5	1.0	1.0	10000.0	3.00	0.
10000.	0.2983E-01	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	0.3168	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.3168	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.130721E-07
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.5985	5	1.0	1.0	10000.0	3.00	29.
600.	0.5971	5	1.0	1.0	10000.0	3.00	30.
700.	0.6115	5	1.0	1.0	10000.0	3.00	29.
800.	0.6253	5	1.0	1.0	10000.0	3.00	29.
900.	0.6427	5	1.0	1.0	10000.0	3.00	27.
1000.	0.6193	5	1.0	1.0	10000.0	3.00	34.
1100.	0.4753	5	1.0	1.0	10000.0	3.00	34.
1200.	0.4053	5	1.0	1.0	10000.0	3.00	34.
1300.	0.3620	5	1.0	1.0	10000.0	3.00	33.
1400.	0.3305	5	1.0	1.0	10000.0	3.00	33.
1500.	0.3062	5	1.0	1.0	10000.0	3.00	32.
1600.	0.2865	5	1.0	1.0	10000.0	3.00	32.
1700.	0.2700	5	1.0	1.0	10000.0	3.00	31.
1800.	0.2559	5	1.0	1.0	10000.0	3.00	31.
1900.	0.2437	5	1.0	1.0	10000.0	3.00	30.
2000.	0.2329	5	1.0	1.0	10000.0	3.00	30.
2100.	0.2233	5	1.0	1.0	10000.0	3.00	29.
2200.	0.2147	5	1.0	1.0	10000.0	3.00	29.
2300.	0.2069	5	1.0	1.0	10000.0	3.00	28.

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 2400.  0.1997       5    1.0    1.0 10000.0    3.00     27.
 2500.  0.1932       5    1.0    1.0 10000.0    3.00     27.
 2600.  0.1871       5    1.0    1.0 10000.0    3.00     27.
 2700.  0.1816       5    1.0    1.0 10000.0    3.00     26.
 2800.  0.1763       5    1.0    1.0 10000.0    3.00     24.
 2900.  0.1715       5    1.0    1.0 10000.0    3.00     24.
 3000.  0.1670       5    1.0    1.0 10000.0    3.00     24.
 3500.  0.1479       5    1.0    1.0 10000.0    3.00     18.
 4000.  0.1328       5    1.0    1.0 10000.0    3.00      2.
 4500.  0.1215       5    1.0    1.0 10000.0    3.00      2.
 5000.  0.1120       5    1.0    1.0 10000.0    3.00      0.
 5500.  0.1038       5    1.0    1.0 10000.0    3.00      0.
 6000.  0.9658E-01   5    1.0    1.0 10000.0    3.00      1.
 6500.  0.9028E-01   5    1.0    1.0 10000.0    3.00      1.
 7000.  0.8471E-01   5    1.0    1.0 10000.0    3.00      0.
 7500.  0.7976E-01   5    1.0    1.0 10000.0    3.00      0.
 8000.  0.7533E-01   5    1.0    1.0 10000.0    3.00      1.
 8500.  0.7135E-01   5    1.0    1.0 10000.0    3.00      0.
 9000.  0.6775E-01   5    1.0    1.0 10000.0    3.00      1.
 9500.  0.6449E-01   5    1.0    1.0 10000.0    3.00      0.
10000.  0.6151E-01   5    1.0    1.0 10000.0    3.00      1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND   500. M:
  970.  0.6532       5    1.0    1.0 10000.0    3.00     34.

    ****************************************
    *** SUMMARY OF SCREEN MODEL RESULTS ***
    ****************************************

 CALCULATION       MAX CONC    DIST TO   TERRAIN
  PROCEDURE       (UG/M**3)    MAX (M)    HT (M)
-------------   -----------  -------  -------
SIMPLE TERRAIN     0.6532         970.       0.


**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**************************************************
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Chloroethane 10/06/11
10:06:46

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.236050E-08
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.1081	5	1.0	1.0	10000.0	3.00	29.
600.	0.1078	5	1.0	1.0	10000.0	3.00	30.
700.	0.1104	5	1.0	1.0	10000.0	3.00	29.
800.	0.1129	5	1.0	1.0	10000.0	3.00	29.
900.	0.1161	5	1.0	1.0	10000.0	3.00	27.
1000.	0.1118	5	1.0	1.0	10000.0	3.00	34.
1100.	0.8583E-01	5	1.0	1.0	10000.0	3.00	34.
1200.	0.7319E-01	5	1.0	1.0	10000.0	3.00	34.
1300.	0.6537E-01	5	1.0	1.0	10000.0	3.00	33.
1400.	0.5968E-01	5	1.0	1.0	10000.0	3.00	33.
1500.	0.5529E-01	5	1.0	1.0	10000.0	3.00	32.
1600.	0.5173E-01	5	1.0	1.0	10000.0	3.00	32.
1700.	0.4876E-01	5	1.0	1.0	10000.0	3.00	31.
1800.	0.4622E-01	5	1.0	1.0	10000.0	3.00	31.
1900.	0.4401E-01	5	1.0	1.0	10000.0	3.00	30.
2000.	0.4206E-01	5	1.0	1.0	10000.0	3.00	30.
2100.	0.4033E-01	5	1.0	1.0	10000.0	3.00	29.
2200.	0.3877E-01	5	1.0	1.0	10000.0	3.00	29.
2300.	0.3735E-01	5	1.0	1.0	10000.0	3.00	28.

```
 2400.  0.3606E-01   5    1.0    1.0 10000.0    3.00     27.
 2500.  0.3488E-01   5    1.0    1.0 10000.0    3.00     27.
 2600.  0.3379E-01   5    1.0    1.0 10000.0    3.00     27.
 2700.  0.3279E-01   5    1.0    1.0 10000.0    3.00     26.
 2800.  0.3183E-01   5    1.0    1.0 10000.0    3.00     24.
 2900.  0.3097E-01   5    1.0    1.0 10000.0    3.00     24.
 3000.  0.3015E-01   5    1.0    1.0 10000.0    3.00     24.
 3500.  0.2670E-01   5    1.0    1.0 10000.0    3.00     18.
 4000.  0.2397E-01   5    1.0    1.0 10000.0    3.00      2.
 4500.  0.2195E-01   5    1.0    1.0 10000.0    3.00      2.
 5000.  0.2022E-01   5    1.0    1.0 10000.0    3.00      0.
 5500.  0.1874E-01   5    1.0    1.0 10000.0    3.00      0.
 6000.  0.1744E-01   5    1.0    1.0 10000.0    3.00      1.
 6500.  0.1630E-01   5    1.0    1.0 10000.0    3.00      1.
 7000.  0.1530E-01   5    1.0    1.0 10000.0    3.00      0.
 7500.  0.1440E-01   5    1.0    1.0 10000.0    3.00      0.
 8000.  0.1360E-01   5    1.0    1.0 10000.0    3.00      1.
 8500.  0.1288E-01   5    1.0    1.0 10000.0    3.00      0.
 9000.  0.1223E-01   5    1.0    1.0 10000.0    3.00      1.
 9500.  0.1165E-01   5    1.0    1.0 10000.0    3.00      0.
10000.  0.1111E-01   5    1.0    1.0 10000.0    3.00      1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND   500. M:
  970.  0.1179       5    1.0    1.0 10000.0    3.00     34.

    ****************************************
    *** SUMMARY OF SCREEN MODEL RESULTS ***
    ****************************************

 CALCULATION       MAX CONC    DIST TO   TERRAIN
  PROCEDURE       (UG/M**3)    MAX (M)    HT (M)
-------------   -----------  -------  -------
SIMPLE TERRAIN     0.1179        970.       0.


**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**************************************************
```

Dichloroethane 10/06/11
10:09:18

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.663373E-08
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.3037	5	1.0	1.0	10000.0	3.00	29.
600.	0.3030	5	1.0	1.0	10000.0	3.00	30.
700.	0.3103	5	1.0	1.0	10000.0	3.00	29.
800.	0.3173	5	1.0	1.0	10000.0	3.00	29.
900.	0.3261	5	1.0	1.0	10000.0	3.00	27.
1000.	0.3143	5	1.0	1.0	10000.0	3.00	34.
1100.	0.2412	5	1.0	1.0	10000.0	3.00	34.
1200.	0.2057	5	1.0	1.0	10000.0	3.00	34.
1300.	0.1837	5	1.0	1.0	10000.0	3.00	33.
1400.	0.1677	5	1.0	1.0	10000.0	3.00	33.
1500.	0.1554	5	1.0	1.0	10000.0	3.00	32.
1600.	0.1454	5	1.0	1.0	10000.0	3.00	32.
1700.	0.1370	5	1.0	1.0	10000.0	3.00	31.
1800.	0.1299	5	1.0	1.0	10000.0	3.00	31.
1900.	0.1237	5	1.0	1.0	10000.0	3.00	30.
2000.	0.1182	5	1.0	1.0	10000.0	3.00	30.
2100.	0.1133	5	1.0	1.0	10000.0	3.00	29.
2200.	0.1089	5	1.0	1.0	10000.0	3.00	29.
2300.	0.1050	5	1.0	1.0	10000.0	3.00	28.

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  2400.  0.1013       5     1.0    1.0 10000.0    3.00     27.
  2500.  0.9803E-01    5     1.0    1.0 10000.0    3.00     27.
  2600.  0.9497E-01    5     1.0    1.0 10000.0    3.00     27.
  2700.  0.9214E-01    5     1.0    1.0 10000.0    3.00     26.
  2800.  0.8946E-01    5     1.0    1.0 10000.0    3.00     24.
  2900.  0.8704E-01    5     1.0    1.0 10000.0    3.00     24.
  3000.  0.8474E-01    5     1.0    1.0 10000.0    3.00     24.
  3500.  0.7504E-01    5     1.0    1.0 10000.0    3.00     18.
  4000.  0.6738E-01    5     1.0    1.0 10000.0    3.00      2.
  4500.  0.6168E-01    5     1.0    1.0 10000.0    3.00      2.
  5000.  0.5684E-01    5     1.0    1.0 10000.0    3.00      0.
  5500.  0.5265E-01    5     1.0    1.0 10000.0    3.00      0.
  6000.  0.4901E-01    5     1.0    1.0 10000.0    3.00      1.
  6500.  0.4581E-01    5     1.0    1.0 10000.0    3.00      1.
  7000.  0.4299E-01    5     1.0    1.0 10000.0    3.00      0.
  7500.  0.4048E-01    5     1.0    1.0 10000.0    3.00      0.
  8000.  0.3823E-01    5     1.0    1.0 10000.0    3.00      1.
  8500.  0.3621E-01    5     1.0    1.0 10000.0    3.00      0.
  9000.  0.3438E-01    5     1.0    1.0 10000.0    3.00      1.
  9500.  0.3273E-01    5     1.0    1.0 10000.0    3.00      0.
 10000.  0.3122E-01    5     1.0    1.0 10000.0    3.00      1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND   500. M:
   970.  0.3315       5     1.0    1.0 10000.0    3.00     34.

    ****************************************
    *** SUMMARY OF SCREEN MODEL RESULTS ***
    ****************************************

 CALCULATION       MAX CONC    DIST TO   TERRAIN
  PROCEDURE       (UG/M**3)    MAX (M)    HT (M)
-------------   -----------  -------  -------
SIMPLE TERRAIN     0.3315         970.       0.


**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**************************************************
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*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.129454E-09
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.5927E-02	5	1.0	1.0	10000.0	3.00	29.
600.	0.5913E-02	5	1.0	1.0	10000.0	3.00	30.
700.	0.6056E-02	5	1.0	1.0	10000.0	3.00	29.
800.	0.6192E-02	5	1.0	1.0	10000.0	3.00	29.
900.	0.6364E-02	5	1.0	1.0	10000.0	3.00	27.
1000.	0.6133E-02	5	1.0	1.0	10000.0	3.00	34.
1100.	0.4707E-02	5	1.0	1.0	10000.0	3.00	34.
1200.	0.4014E-02	5	1.0	1.0	10000.0	3.00	34.
1300.	0.3585E-02	5	1.0	1.0	10000.0	3.00	33.
1400.	0.3273E-02	5	1.0	1.0	10000.0	3.00	33.
1500.	0.3032E-02	5	1.0	1.0	10000.0	3.00	32.
1600.	0.2837E-02	5	1.0	1.0	10000.0	3.00	32.
1700.	0.2674E-02	5	1.0	1.0	10000.0	3.00	31.
1800.	0.2535E-02	5	1.0	1.0	10000.0	3.00	31.
1900.	0.2413E-02	5	1.0	1.0	10000.0	3.00	30.
2000.	0.2307E-02	5	1.0	1.0	10000.0	3.00	30.
2100.	0.2212E-02	5	1.0	1.0	10000.0	3.00	29.
2200.	0.2126E-02	5	1.0	1.0	10000.0	3.00	29.
2300.	0.2049E-02	5	1.0	1.0	10000.0	3.00	28.

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 2400.  0.1978E-02   5    1.0    1.0 10000.0    3.00     27.
 2500.  0.1913E-02   5    1.0    1.0 10000.0    3.00     27.
 2600.  0.1853E-02   5    1.0    1.0 10000.0    3.00     27.
 2700.  0.1798E-02   5    1.0    1.0 10000.0    3.00     26.
 2800.  0.1746E-02   5    1.0    1.0 10000.0    3.00     24.
 2900.  0.1698E-02   5    1.0    1.0 10000.0    3.00     24.
 3000.  0.1654E-02   5    1.0    1.0 10000.0    3.00     24.
 3500.  0.1464E-02   5    1.0    1.0 10000.0    3.00     18.
 4000.  0.1315E-02   5    1.0    1.0 10000.0    3.00      2.
 4500.  0.1204E-02   5    1.0    1.0 10000.0    3.00      2.
 5000.  0.1109E-02   5    1.0    1.0 10000.0    3.00      0.
 5500.  0.1027E-02   5    1.0    1.0 10000.0    3.00      0.
 6000.  0.9564E-03   5    1.0    1.0 10000.0    3.00      1.
 6500.  0.8940E-03   5    1.0    1.0 10000.0    3.00      1.
 7000.  0.8389E-03   5    1.0    1.0 10000.0    3.00      0.
 7500.  0.7899E-03   5    1.0    1.0 10000.0    3.00      0.
 8000.  0.7460E-03   5    1.0    1.0 10000.0    3.00      1.
 8500.  0.7066E-03   5    1.0    1.0 10000.0    3.00      0.
 9000.  0.6709E-03   5    1.0    1.0 10000.0    3.00      1.
 9500.  0.6386E-03   5    1.0    1.0 10000.0    3.00      0.
10000.  0.6092E-03   5    1.0    1.0 10000.0    3.00      1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND   500. M:
  970.  0.6468E-02   5    1.0    1.0 10000.0    3.00     34.

    ****************************************
    *** SUMMARY OF SCREEN MODEL RESULTS ***
    ****************************************

 CALCULATION       MAX CONC    DIST TO   TERRAIN
  PROCEDURE       (UG/M**3)    MAX (M)    HT (M)
-------------   -----------  -------  -------
SIMPLE TERRAIN    0.6468E-02      970.       0.


**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**************************************************
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*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.590310E-08
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.2703	5	1.0	1.0	10000.0	3.00	29.
600.	0.2696	5	1.0	1.0	10000.0	3.00	30.
700.	0.2761	5	1.0	1.0	10000.0	3.00	29.
800.	0.2824	5	1.0	1.0	10000.0	3.00	29.
900.	0.2902	5	1.0	1.0	10000.0	3.00	27.
1000.	0.2797	5	1.0	1.0	10000.0	3.00	34.
1100.	0.2146	5	1.0	1.0	10000.0	3.00	34.
1200.	0.1830	5	1.0	1.0	10000.0	3.00	34.
1300.	0.1635	5	1.0	1.0	10000.0	3.00	33.
1400.	0.1492	5	1.0	1.0	10000.0	3.00	33.
1500.	0.1383	5	1.0	1.0	10000.0	3.00	32.
1600.	0.1294	5	1.0	1.0	10000.0	3.00	32.
1700.	0.1219	5	1.0	1.0	10000.0	3.00	31.
1800.	0.1156	5	1.0	1.0	10000.0	3.00	31.
1900.	0.1100	5	1.0	1.0	10000.0	3.00	30.
2000.	0.1052	5	1.0	1.0	10000.0	3.00	30.
2100.	0.1008	5	1.0	1.0	10000.0	3.00	29.
2200.	0.9695E-01	5	1.0	1.0	10000.0	3.00	29.
2300.	0.9341E-01	5	1.0	1.0	10000.0	3.00	28.

2400.	0.9018E-01	5	1.0	1.0	10000.0	3.00	27.
2500.	0.8724E-01	5	1.0	1.0	10000.0	3.00	27.
2600.	0.8451E-01	5	1.0	1.0	10000.0	3.00	27.
2700.	0.8199E-01	5	1.0	1.0	10000.0	3.00	26.
2800.	0.7961E-01	5	1.0	1.0	10000.0	3.00	24.
2900.	0.7745E-01	5	1.0	1.0	10000.0	3.00	24.
3000.	0.7541E-01	5	1.0	1.0	10000.0	3.00	24.
3500.	0.6678E-01	5	1.0	1.0	10000.0	3.00	18.
4000.	0.5995E-01	5	1.0	1.0	10000.0	3.00	2.
4500.	0.5489E-01	5	1.0	1.0	10000.0	3.00	2.
5000.	0.5058E-01	5	1.0	1.0	10000.0	3.00	0.
5500.	0.4685E-01	5	1.0	1.0	10000.0	3.00	0.
6000.	0.4361E-01	5	1.0	1.0	10000.0	3.00	1.
6500.	0.4077E-01	5	1.0	1.0	10000.0	3.00	1.
7000.	0.3825E-01	5	1.0	1.0	10000.0	3.00	0.
7500.	0.3602E-01	5	1.0	1.0	10000.0	3.00	0.
8000.	0.3402E-01	5	1.0	1.0	10000.0	3.00	1.
8500.	0.3222E-01	5	1.0	1.0	10000.0	3.00	0.
9000.	0.3059E-01	5	1.0	1.0	10000.0	3.00	1.
9500.	0.2912E-01	5	1.0	1.0	10000.0	3.00	0.
10000.	0.2778E-01	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	0.2950	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.2950	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.103563E-09
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.4742E-02	5	1.0	1.0	10000.0	3.00	29.
600.	0.4730E-02	5	1.0	1.0	10000.0	3.00	30.
700.	0.4845E-02	5	1.0	1.0	10000.0	3.00	29.
800.	0.4954E-02	5	1.0	1.0	10000.0	3.00	29.
900.	0.5092E-02	5	1.0	1.0	10000.0	3.00	27.
1000.	0.4907E-02	5	1.0	1.0	10000.0	3.00	34.
1100.	0.3766E-02	5	1.0	1.0	10000.0	3.00	34.
1200.	0.3211E-02	5	1.0	1.0	10000.0	3.00	34.
1300.	0.2868E-02	5	1.0	1.0	10000.0	3.00	33.
1400.	0.2618E-02	5	1.0	1.0	10000.0	3.00	33.
1500.	0.2426E-02	5	1.0	1.0	10000.0	3.00	32.
1600.	0.2269E-02	5	1.0	1.0	10000.0	3.00	32.
1700.	0.2139E-02	5	1.0	1.0	10000.0	3.00	31.
1800.	0.2028E-02	5	1.0	1.0	10000.0	3.00	31.
1900.	0.1931E-02	5	1.0	1.0	10000.0	3.00	30.
2000.	0.1845E-02	5	1.0	1.0	10000.0	3.00	30.
2100.	0.1769E-02	5	1.0	1.0	10000.0	3.00	29.
2200.	0.1701E-02	5	1.0	1.0	10000.0	3.00	29.
2300.	0.1639E-02	5	1.0	1.0	10000.0	3.00	28.

2400.	0.1582E-02	5	1.0	1.0	10000.0	3.00	27.
2500.	0.1530E-02	5	1.0	1.0	10000.0	3.00	27.
2600.	0.1483E-02	5	1.0	1.0	10000.0	3.00	27.
2700.	0.1438E-02	5	1.0	1.0	10000.0	3.00	26.
2800.	0.1397E-02	5	1.0	1.0	10000.0	3.00	24.
2900.	0.1359E-02	5	1.0	1.0	10000.0	3.00	24.
3000.	0.1323E-02	5	1.0	1.0	10000.0	3.00	24.
3500.	0.1172E-02	5	1.0	1.0	10000.0	3.00	18.
4000.	0.1052E-02	5	1.0	1.0	10000.0	3.00	2.
4500.	0.9630E-03	5	1.0	1.0	10000.0	3.00	2.
5000.	0.8873E-03	5	1.0	1.0	10000.0	3.00	0.
5500.	0.8220E-03	5	1.0	1.0	10000.0	3.00	0.
6000.	0.7651E-03	5	1.0	1.0	10000.0	3.00	1.
6500.	0.7152E-03	5	1.0	1.0	10000.0	3.00	1.
7000.	0.6711E-03	5	1.0	1.0	10000.0	3.00	0.
7500.	0.6319E-03	5	1.0	1.0	10000.0	3.00	0.
8000.	0.5968E-03	5	1.0	1.0	10000.0	3.00	1.
8500.	0.5653E-03	5	1.0	1.0	10000.0	3.00	0.
9000.	0.5367E-03	5	1.0	1.0	10000.0	3.00	1.
9500.	0.5109E-03	5	1.0	1.0	10000.0	3.00	0.
10000.	0.4873E-03	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	0.5175E-02	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.5175E-02	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

ethyle benzene 10/06/11
09:47:36

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.907319E-08
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.4154	5	1.0	1.0	10000.0	3.00	29.
600.	0.4144	5	1.0	1.0	10000.0	3.00	30.
700.	0.4244	5	1.0	1.0	10000.0	3.00	29.
800.	0.4340	5	1.0	1.0	10000.0	3.00	29.
900.	0.4461	5	1.0	1.0	10000.0	3.00	27.
1000.	0.4299	5	1.0	1.0	10000.0	3.00	34.
1100.	0.3299	5	1.0	1.0	10000.0	3.00	34.
1200.	0.2813	5	1.0	1.0	10000.0	3.00	34.
1300.	0.2513	5	1.0	1.0	10000.0	3.00	33.
1400.	0.2294	5	1.0	1.0	10000.0	3.00	33.
1500.	0.2125	5	1.0	1.0	10000.0	3.00	32.
1600.	0.1988	5	1.0	1.0	10000.0	3.00	32.
1700.	0.1874	5	1.0	1.0	10000.0	3.00	31.
1800.	0.1776	5	1.0	1.0	10000.0	3.00	31.
1900.	0.1691	5	1.0	1.0	10000.0	3.00	30.
2000.	0.1617	5	1.0	1.0	10000.0	3.00	30.
2100.	0.1550	5	1.0	1.0	10000.0	3.00	29.
2200.	0.1490	5	1.0	1.0	10000.0	3.00	29.
2300.	0.1436	5	1.0	1.0	10000.0	3.00	28.

```
 2400.  0.1386       5    1.0    1.0 10000.0    3.00     27.
 2500.  0.1341       5    1.0    1.0 10000.0    3.00     27.
 2600.  0.1299       5    1.0    1.0 10000.0    3.00     27.
 2700.  0.1260       5    1.0    1.0 10000.0    3.00     26.
 2800.  0.1224       5    1.0    1.0 10000.0    3.00     24.
 2900.  0.1190       5    1.0    1.0 10000.0    3.00     24.
 3000.  0.1159       5    1.0    1.0 10000.0    3.00     24.
 3500.  0.1026       5    1.0    1.0 10000.0    3.00     18.
 4000.  0.9215E-01   5    1.0    1.0 10000.0    3.00      2.
 4500.  0.8437E-01   5    1.0    1.0 10000.0    3.00      2.
 5000.  0.7774E-01   5    1.0    1.0 10000.0    3.00      0.
 5500.  0.7201E-01   5    1.0    1.0 10000.0    3.00      0.
 6000.  0.6703E-01   5    1.0    1.0 10000.0    3.00      1.
 6500.  0.6266E-01   5    1.0    1.0 10000.0    3.00      1.
 7000.  0.5880E-01   5    1.0    1.0 10000.0    3.00      0.
 7500.  0.5536E-01   5    1.0    1.0 10000.0    3.00      0.
 8000.  0.5228E-01   5    1.0    1.0 10000.0    3.00      1.
 8500.  0.4952E-01   5    1.0    1.0 10000.0    3.00      0.
 9000.  0.4702E-01   5    1.0    1.0 10000.0    3.00      1.
 9500.  0.4476E-01   5    1.0    1.0 10000.0    3.00      0.
10000.  0.4269E-01   5    1.0    1.0 10000.0    3.00      1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND   500. M:
  970.  0.4534       5    1.0    1.0 10000.0    3.00     34.

    ****************************************
    *** SUMMARY OF SCREEN MODEL RESULTS ***
    ****************************************

 CALCULATION       MAX CONC    DIST TO   TERRAIN
  PROCEDURE       (UG/M**3)    MAX (M)    HT (M)
-------------   -----------  -------  -------
SIMPLE TERRAIN     0.4534         970.       0.


**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**************************************************
```

Methylene chloride 10/06/11
13:39:07

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.487009E-07
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	2.230	5	1.0	1.0	10000.0	3.00	29.
600.	2.225	5	1.0	1.0	10000.0	3.00	30.
700.	2.278	5	1.0	1.0	10000.0	3.00	29.
800.	2.330	5	1.0	1.0	10000.0	3.00	29.
900.	2.394	5	1.0	1.0	10000.0	3.00	27.
1000.	2.307	5	1.0	1.0	10000.0	3.00	34.
1100.	1.771	5	1.0	1.0	10000.0	3.00	34.
1200.	1.510	5	1.0	1.0	10000.0	3.00	34.
1300.	1.349	5	1.0	1.0	10000.0	3.00	33.
1400.	1.231	5	1.0	1.0	10000.0	3.00	33.
1500.	1.141	5	1.0	1.0	10000.0	3.00	32.
1600.	1.067	5	1.0	1.0	10000.0	3.00	32.
1700.	1.006	5	1.0	1.0	10000.0	3.00	31.
1800.	0.9535	5	1.0	1.0	10000.0	3.00	31.
1900.	0.9079	5	1.0	1.0	10000.0	3.00	30.
2000.	0.8677	5	1.0	1.0	10000.0	3.00	30.
2100.	0.8320	5	1.0	1.0	10000.0	3.00	29.
2200.	0.7998	5	1.0	1.0	10000.0	3.00	29.
2300.	0.7707	5	1.0	1.0	10000.0	3.00	28.

2400.	0.7440	5	1.0	1.0	10000.0	3.00	27.
2500.	0.7197	5	1.0	1.0	10000.0	3.00	27.
2600.	0.6972	5	1.0	1.0	10000.0	3.00	27.
2700.	0.6765	5	1.0	1.0	10000.0	3.00	26.
2800.	0.6568	5	1.0	1.0	10000.0	3.00	24.
2900.	0.6390	5	1.0	1.0	10000.0	3.00	24.
3000.	0.6221	5	1.0	1.0	10000.0	3.00	24.
3500.	0.5509	5	1.0	1.0	10000.0	3.00	18.
4000.	0.4946	5	1.0	1.0	10000.0	3.00	2.
4500.	0.4528	5	1.0	1.0	10000.0	3.00	2.
5000.	0.4173	5	1.0	1.0	10000.0	3.00	0.
5500.	0.3865	5	1.0	1.0	10000.0	3.00	0.
6000.	0.3598	5	1.0	1.0	10000.0	3.00	1.
6500.	0.3363	5	1.0	1.0	10000.0	3.00	1.
7000.	0.3156	5	1.0	1.0	10000.0	3.00	0.
7500.	0.2971	5	1.0	1.0	10000.0	3.00	0.
8000.	0.2806	5	1.0	1.0	10000.0	3.00	1.
8500.	0.2658	5	1.0	1.0	10000.0	3.00	0.
9000.	0.2524	5	1.0	1.0	10000.0	3.00	1.
9500.	0.2403	5	1.0	1.0	10000.0	3.00	0.
10000.	0.2292	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	2.433	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	2.433	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

Styrene 10/06/11
10:02:35

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.147421E-08
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.6750E-01	5	1.0	1.0	10000.0	3.00	29.
600.	0.6734E-01	5	1.0	1.0	10000.0	3.00	30.
700.	0.6896E-01	5	1.0	1.0	10000.0	3.00	29.
800.	0.7052E-01	5	1.0	1.0	10000.0	3.00	29.
900.	0.7248E-01	5	1.0	1.0	10000.0	3.00	27.
1000.	0.6985E-01	5	1.0	1.0	10000.0	3.00	34.
1100.	0.5360E-01	5	1.0	1.0	10000.0	3.00	34.
1200.	0.4571E-01	5	1.0	1.0	10000.0	3.00	34.
1300.	0.4083E-01	5	1.0	1.0	10000.0	3.00	33.
1400.	0.3727E-01	5	1.0	1.0	10000.0	3.00	33.
1500.	0.3453E-01	5	1.0	1.0	10000.0	3.00	32.
1600.	0.3231E-01	5	1.0	1.0	10000.0	3.00	32.
1700.	0.3045E-01	5	1.0	1.0	10000.0	3.00	31.
1800.	0.2886E-01	5	1.0	1.0	10000.0	3.00	31.
1900.	0.2748E-01	5	1.0	1.0	10000.0	3.00	30.
2000.	0.2627E-01	5	1.0	1.0	10000.0	3.00	30.
2100.	0.2518E-01	5	1.0	1.0	10000.0	3.00	29.
2200.	0.2421E-01	5	1.0	1.0	10000.0	3.00	29.
2300.	0.2333E-01	5	1.0	1.0	10000.0	3.00	28.

2400.	0.2252E-01	5	1.0	1.0	10000.0	3.00	27.
2500.	0.2179E-01	5	1.0	1.0	10000.0	3.00	27.
2600.	0.2111E-01	5	1.0	1.0	10000.0	3.00	27.
2700.	0.2048E-01	5	1.0	1.0	10000.0	3.00	26.
2800.	0.1988E-01	5	1.0	1.0	10000.0	3.00	24.
2900.	0.1934E-01	5	1.0	1.0	10000.0	3.00	24.
3000.	0.1883E-01	5	1.0	1.0	10000.0	3.00	24.
3500.	0.1668E-01	5	1.0	1.0	10000.0	3.00	18.
4000.	0.1497E-01	5	1.0	1.0	10000.0	3.00	2.
4500.	0.1371E-01	5	1.0	1.0	10000.0	3.00	2.
5000.	0.1263E-01	5	1.0	1.0	10000.0	3.00	0.
5500.	0.1170E-01	5	1.0	1.0	10000.0	3.00	0.
6000.	0.1089E-01	5	1.0	1.0	10000.0	3.00	1.
6500.	0.1018E-01	5	1.0	1.0	10000.0	3.00	1.
7000.	0.9553E-02	5	1.0	1.0	10000.0	3.00	0.
7500.	0.8995E-02	5	1.0	1.0	10000.0	3.00	0.
8000.	0.8495E-02	5	1.0	1.0	10000.0	3.00	1.
8500.	0.8047E-02	5	1.0	1.0	10000.0	3.00	0.
9000.	0.7640E-02	5	1.0	1.0	10000.0	3.00	1.
9500.	0.7273E-02	5	1.0	1.0	10000.0	3.00	0.
10000.	0.6937E-02	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	0.7366E-01	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.7366E-01	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.367588E-08
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.1683	5	1.0	1.0	10000.0	3.00	29.
600.	0.1679	5	1.0	1.0	10000.0	3.00	30.
700.	0.1720	5	1.0	1.0	10000.0	3.00	29.
800.	0.1758	5	1.0	1.0	10000.0	3.00	29.
900.	0.1807	5	1.0	1.0	10000.0	3.00	27.
1000.	0.1742	5	1.0	1.0	10000.0	3.00	34.
1100.	0.1337	5	1.0	1.0	10000.0	3.00	34.
1200.	0.1140	5	1.0	1.0	10000.0	3.00	34.
1300.	0.1018	5	1.0	1.0	10000.0	3.00	33.
1400.	0.9294E-01	5	1.0	1.0	10000.0	3.00	33.
1500.	0.8610E-01	5	1.0	1.0	10000.0	3.00	32.
1600.	0.8055E-01	5	1.0	1.0	10000.0	3.00	32.
1700.	0.7592E-01	5	1.0	1.0	10000.0	3.00	31.
1800.	0.7197E-01	5	1.0	1.0	10000.0	3.00	31.
1900.	0.6853E-01	5	1.0	1.0	10000.0	3.00	30.
2000.	0.6550E-01	5	1.0	1.0	10000.0	3.00	30.
2100.	0.6280E-01	5	1.0	1.0	10000.0	3.00	29.
2200.	0.6037E-01	5	1.0	1.0	10000.0	3.00	29.
2300.	0.5817E-01	5	1.0	1.0	10000.0	3.00	28.

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 2400.  0.5616E-01   5    1.0    1.0 10000.0    3.00     27.
 2500.  0.5432E-01   5    1.0    1.0 10000.0    3.00     27.
 2600.  0.5262E-01   5    1.0    1.0 10000.0    3.00     27.
 2700.  0.5106E-01   5    1.0    1.0 10000.0    3.00     26.
 2800.  0.4957E-01   5    1.0    1.0 10000.0    3.00     24.
 2900.  0.4823E-01   5    1.0    1.0 10000.0    3.00     24.
 3000.  0.4696E-01   5    1.0    1.0 10000.0    3.00     24.
 3500.  0.4158E-01   5    1.0    1.0 10000.0    3.00     18.
 4000.  0.3733E-01   5    1.0    1.0 10000.0    3.00      2.
 4500.  0.3418E-01   5    1.0    1.0 10000.0    3.00      2.
 5000.  0.3149E-01   5    1.0    1.0 10000.0    3.00      0.
 5500.  0.2918E-01   5    1.0    1.0 10000.0    3.00      0.
 6000.  0.2716E-01   5    1.0    1.0 10000.0    3.00      1.
 6500.  0.2539E-01   5    1.0    1.0 10000.0    3.00      1.
 7000.  0.2382E-01   5    1.0    1.0 10000.0    3.00      0.
 7500.  0.2243E-01   5    1.0    1.0 10000.0    3.00      0.
 8000.  0.2118E-01   5    1.0    1.0 10000.0    3.00      1.
 8500.  0.2006E-01   5    1.0    1.0 10000.0    3.00      0.
 9000.  0.1905E-01   5    1.0    1.0 10000.0    3.00      1.
 9500.  0.1813E-01   5    1.0    1.0 10000.0    3.00      0.
10000.  0.1730E-01   5    1.0    1.0 10000.0    3.00      1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND   500. M:
  970.  0.1837       5    1.0    1.0 10000.0    3.00     34.

    ****************************************
    *** SUMMARY OF SCREEN MODEL RESULTS ***
    ****************************************

 CALCULATION       MAX CONC    DIST TO   TERRAIN
  PROCEDURE       (UG/M**3)    MAX (M)    HT (M)
-------------   -----------  -------  -------
SIMPLE TERRAIN     0.1837        970.       0.


**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**************************************************
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*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

C:\Documents and Settings\kmahmood\My Documents\brl.scr

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.828046E-07
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	3.791	5	1.0	1.0	10000.0	3.00	29.
600.	3.782	5	1.0	1.0	10000.0	3.00	30.
700.	3.874	5	1.0	1.0	10000.0	3.00	29.
800.	3.961	5	1.0	1.0	10000.0	3.00	29.
900.	4.071	5	1.0	1.0	10000.0	3.00	27.
1000.	3.923	5	1.0	1.0	10000.0	3.00	34.
1100.	3.011	5	1.0	1.0	10000.0	3.00	34.
1200.	2.567	5	1.0	1.0	10000.0	3.00	34.
1300.	2.293	5	1.0	1.0	10000.0	3.00	33.
1400.	2.094	5	1.0	1.0	10000.0	3.00	33.
1500.	1.940	5	1.0	1.0	10000.0	3.00	32.
1600.	1.815	5	1.0	1.0	10000.0	3.00	32.
1700.	1.710	5	1.0	1.0	10000.0	3.00	31.
1800.	1.621	5	1.0	1.0	10000.0	3.00	31.
1900.	1.544	5	1.0	1.0	10000.0	3.00	30.
2000.	1.475	5	1.0	1.0	10000.0	3.00	30.
2100.	1.415	5	1.0	1.0	10000.0	3.00	29.
2200.	1.360	5	1.0	1.0	10000.0	3.00	29.
2300.	1.310	5	1.0	1.0	10000.0	3.00	28.

2400.	1.265	5	1.0	1.0	10000.0	3.00	27.
2500.	1.224	5	1.0	1.0	10000.0	3.00	27.
2600.	1.185	5	1.0	1.0	10000.0	3.00	27.
2700.	1.150	5	1.0	1.0	10000.0	3.00	26.
2800.	1.117	5	1.0	1.0	10000.0	3.00	24.
2900.	1.086	5	1.0	1.0	10000.0	3.00	24.
3000.	1.058	5	1.0	1.0	10000.0	3.00	24.
3500.	0.9367	5	1.0	1.0	10000.0	3.00	18.
4000.	0.8410	5	1.0	1.0	10000.0	3.00	2.
4500.	0.7700	5	1.0	1.0	10000.0	3.00	2.
5000.	0.7094	5	1.0	1.0	10000.0	3.00	0.
5500.	0.6572	5	1.0	1.0	10000.0	3.00	0.
6000.	0.6118	5	1.0	1.0	10000.0	3.00	1.
6500.	0.5719	5	1.0	1.0	10000.0	3.00	1.
7000.	0.5366	5	1.0	1.0	10000.0	3.00	0.
7500.	0.5052	5	1.0	1.0	10000.0	3.00	0.
8000.	0.4772	5	1.0	1.0	10000.0	3.00	1.
8500.	0.4520	5	1.0	1.0	10000.0	3.00	0.
9000.	0.4292	5	1.0	1.0	10000.0	3.00	1.
9500.	0.4085	5	1.0	1.0	10000.0	3.00	0.
10000.	0.3896	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	4.138	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	4.138	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

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SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.431105E-08
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.1974	5	1.0	1.0	10000.0	3.00	29.
600.	0.1969	5	1.0	1.0	10000.0	3.00	30.
700.	0.2017	5	1.0	1.0	10000.0	3.00	29.
800.	0.2062	5	1.0	1.0	10000.0	3.00	29.
900.	0.2119	5	1.0	1.0	10000.0	3.00	27.
1000.	0.2043	5	1.0	1.0	10000.0	3.00	34.
1100.	0.1568	5	1.0	1.0	10000.0	3.00	34.
1200.	0.1337	5	1.0	1.0	10000.0	3.00	34.
1300.	0.1194	5	1.0	1.0	10000.0	3.00	33.
1400.	0.1090	5	1.0	1.0	10000.0	3.00	33.
1500.	0.1010	5	1.0	1.0	10000.0	3.00	32.
1600.	0.9447E-01	5	1.0	1.0	10000.0	3.00	32.
1700.	0.8904E-01	5	1.0	1.0	10000.0	3.00	31.
1800.	0.8440E-01	5	1.0	1.0	10000.0	3.00	31.
1900.	0.8037E-01	5	1.0	1.0	10000.0	3.00	30.
2000.	0.7681E-01	5	1.0	1.0	10000.0	3.00	30.
2100.	0.7365E-01	5	1.0	1.0	10000.0	3.00	29.
2200.	0.7080E-01	5	1.0	1.0	10000.0	3.00	29.
2300.	0.6822E-01	5	1.0	1.0	10000.0	3.00	28.

2400.	0.6586E-01	5	1.0	1.0	10000.0	3.00	27.
2500.	0.6371E-01	5	1.0	1.0	10000.0	3.00	27.
2600.	0.6172E-01	5	1.0	1.0	10000.0	3.00	27.
2700.	0.5988E-01	5	1.0	1.0	10000.0	3.00	26.
2800.	0.5814E-01	5	1.0	1.0	10000.0	3.00	24.
2900.	0.5656E-01	5	1.0	1.0	10000.0	3.00	24.
3000.	0.5507E-01	5	1.0	1.0	10000.0	3.00	24.
3500.	0.4877E-01	5	1.0	1.0	10000.0	3.00	18.
4000.	0.4378E-01	5	1.0	1.0	10000.0	3.00	2.
4500.	0.4009E-01	5	1.0	1.0	10000.0	3.00	2.
5000.	0.3694E-01	5	1.0	1.0	10000.0	3.00	0.
5500.	0.3422E-01	5	1.0	1.0	10000.0	3.00	0.
6000.	0.3185E-01	5	1.0	1.0	10000.0	3.00	1.
6500.	0.2977E-01	5	1.0	1.0	10000.0	3.00	1.
7000.	0.2794E-01	5	1.0	1.0	10000.0	3.00	0.
7500.	0.2630E-01	5	1.0	1.0	10000.0	3.00	0.
8000.	0.2484E-01	5	1.0	1.0	10000.0	3.00	1.
8500.	0.2353E-01	5	1.0	1.0	10000.0	3.00	0.
9000.	0.2234E-01	5	1.0	1.0	10000.0	3.00	1.
9500.	0.2127E-01	5	1.0	1.0	10000.0	3.00	0.
10000.	0.2029E-01	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	0.2154	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.2154	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

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SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.324219E-08
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.1484	5	1.0	1.0	10000.0	3.00	29.
600.	0.1481	5	1.0	1.0	10000.0	3.00	30.
700.	0.1517	5	1.0	1.0	10000.0	3.00	29.
800.	0.1551	5	1.0	1.0	10000.0	3.00	29.
900.	0.1594	5	1.0	1.0	10000.0	3.00	27.
1000.	0.1536	5	1.0	1.0	10000.0	3.00	34.
1100.	0.1179	5	1.0	1.0	10000.0	3.00	34.
1200.	0.1005	5	1.0	1.0	10000.0	3.00	34.
1300.	0.8979E-01	5	1.0	1.0	10000.0	3.00	33.
1400.	0.8197E-01	5	1.0	1.0	10000.0	3.00	33.
1500.	0.7594E-01	5	1.0	1.0	10000.0	3.00	32.
1600.	0.7105E-01	5	1.0	1.0	10000.0	3.00	32.
1700.	0.6697E-01	5	1.0	1.0	10000.0	3.00	31.
1800.	0.6348E-01	5	1.0	1.0	10000.0	3.00	31.
1900.	0.6044E-01	5	1.0	1.0	10000.0	3.00	30.
2000.	0.5777E-01	5	1.0	1.0	10000.0	3.00	30.
2100.	0.5539E-01	5	1.0	1.0	10000.0	3.00	29.
2200.	0.5325E-01	5	1.0	1.0	10000.0	3.00	29.
2300.	0.5131E-01	5	1.0	1.0	10000.0	3.00	28.

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 2400.  0.4953E-01   5    1.0    1.0 10000.0    3.00     27.
 2500.  0.4791E-01   5    1.0    1.0 10000.0    3.00     27.
 2600.  0.4642E-01   5    1.0    1.0 10000.0    3.00     27.
 2700.  0.4503E-01   5    1.0    1.0 10000.0    3.00     26.
 2800.  0.4373E-01   5    1.0    1.0 10000.0    3.00     24.
 2900.  0.4254E-01   5    1.0    1.0 10000.0    3.00     24.
 3000.  0.4142E-01   5    1.0    1.0 10000.0    3.00     24.
 3500.  0.3668E-01   5    1.0    1.0 10000.0    3.00     18.
 4000.  0.3293E-01   5    1.0    1.0 10000.0    3.00      2.
 4500.  0.3015E-01   5    1.0    1.0 10000.0    3.00      2.
 5000.  0.2778E-01   5    1.0    1.0 10000.0    3.00      0.
 5500.  0.2573E-01   5    1.0    1.0 10000.0    3.00      0.
 6000.  0.2395E-01   5    1.0    1.0 10000.0    3.00      1.
 6500.  0.2239E-01   5    1.0    1.0 10000.0    3.00      1.
 7000.  0.2101E-01   5    1.0    1.0 10000.0    3.00      0.
 7500.  0.1978E-01   5    1.0    1.0 10000.0    3.00      0.
 8000.  0.1868E-01   5    1.0    1.0 10000.0    3.00      1.
 8500.  0.1770E-01   5    1.0    1.0 10000.0    3.00      0.
 9000.  0.1680E-01   5    1.0    1.0 10000.0    3.00      1.
 9500.  0.1599E-01   5    1.0    1.0 10000.0    3.00      0.
10000.  0.1526E-01   5    1.0    1.0 10000.0    3.00      1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND   500. M:
  970.  0.1620       5    1.0    1.0 10000.0    3.00     34.

    ****************************************
    *** SUMMARY OF SCREEN MODEL RESULTS ***
    ****************************************

 CALCULATION       MAX CONC    DIST TO   TERRAIN
  PROCEDURE       (UG/M**3)    MAX (M)    HT (M)
-------------   -----------  -------  -------
SIMPLE TERRAIN     0.1620         970.       0.


**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**************************************************
```

vinyl chloride 10/06/11
09:52:12

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

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SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.622592E-08
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	0.2851	5	1.0	1.0	10000.0	3.00	29.
600.	0.2844	5	1.0	1.0	10000.0	3.00	30.
700.	0.2912	5	1.0	1.0	10000.0	3.00	29.
800.	0.2978	5	1.0	1.0	10000.0	3.00	29.
900.	0.3061	5	1.0	1.0	10000.0	3.00	27.
1000.	0.2950	5	1.0	1.0	10000.0	3.00	34.
1100.	0.2264	5	1.0	1.0	10000.0	3.00	34.
1200.	0.1930	5	1.0	1.0	10000.0	3.00	34.
1300.	0.1724	5	1.0	1.0	10000.0	3.00	33.
1400.	0.1574	5	1.0	1.0	10000.0	3.00	33.
1500.	0.1458	5	1.0	1.0	10000.0	3.00	32.
1600.	0.1364	5	1.0	1.0	10000.0	3.00	32.
1700.	0.1286	5	1.0	1.0	10000.0	3.00	31.
1800.	0.1219	5	1.0	1.0	10000.0	3.00	31.
1900.	0.1161	5	1.0	1.0	10000.0	3.00	30.
2000.	0.1109	5	1.0	1.0	10000.0	3.00	30.
2100.	0.1064	5	1.0	1.0	10000.0	3.00	29.
2200.	0.1022	5	1.0	1.0	10000.0	3.00	29.
2300.	0.9852E-01	5	1.0	1.0	10000.0	3.00	28.

2400.	0.9511E-01	5	1.0	1.0	10000.0	3.00	27.
2500.	0.9201E-01	5	1.0	1.0	10000.0	3.00	27.
2600.	0.8913E-01	5	1.0	1.0	10000.0	3.00	27.
2700.	0.8648E-01	5	1.0	1.0	10000.0	3.00	26.
2800.	0.8396E-01	5	1.0	1.0	10000.0	3.00	24.
2900.	0.8169E-01	5	1.0	1.0	10000.0	3.00	24.
3000.	0.7953E-01	5	1.0	1.0	10000.0	3.00	24.
3500.	0.7043E-01	5	1.0	1.0	10000.0	3.00	18.
4000.	0.6323E-01	5	1.0	1.0	10000.0	3.00	2.
4500.	0.5789E-01	5	1.0	1.0	10000.0	3.00	2.
5000.	0.5334E-01	5	1.0	1.0	10000.0	3.00	0.
5500.	0.4942E-01	5	1.0	1.0	10000.0	3.00	0.
6000.	0.4600E-01	5	1.0	1.0	10000.0	3.00	1.
6500.	0.4300E-01	5	1.0	1.0	10000.0	3.00	1.
7000.	0.4034E-01	5	1.0	1.0	10000.0	3.00	0.
7500.	0.3799E-01	5	1.0	1.0	10000.0	3.00	0.
8000.	0.3588E-01	5	1.0	1.0	10000.0	3.00	1.
8500.	0.3398E-01	5	1.0	1.0	10000.0	3.00	0.
9000.	0.3227E-01	5	1.0	1.0	10000.0	3.00	1.
9500.	0.3071E-01	5	1.0	1.0	10000.0	3.00	0.
10000.	0.2930E-01	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	0.3111	5	1.0	1.0	10000.0	3.00	34.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.3111	970.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

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09:58:14

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

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SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.334857E-07
SOURCE HEIGHT (M) = 3.0000
LENGTH OF LARGER SIDE (M) = 1600.0000
LENGTH OF SMALLER SIDE (M) = 1100.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
500.	1.533	5	1.0	1.0	10000.0	3.00	29.
600.	1.530	5	1.0	1.0	10000.0	3.00	30.
700.	1.566	5	1.0	1.0	10000.0	3.00	29.
800.	1.602	5	1.0	1.0	10000.0	3.00	29.
900.	1.646	5	1.0	1.0	10000.0	3.00	27.
1000.	1.587	5	1.0	1.0	10000.0	3.00	34.
1100.	1.218	5	1.0	1.0	10000.0	3.00	34.
1200.	1.038	5	1.0	1.0	10000.0	3.00	34.
1300.	0.9274	5	1.0	1.0	10000.0	3.00	33.
1400.	0.8466	5	1.0	1.0	10000.0	3.00	33.
1500.	0.7844	5	1.0	1.0	10000.0	3.00	32.
1600.	0.7338	5	1.0	1.0	10000.0	3.00	32.
1700.	0.6916	5	1.0	1.0	10000.0	3.00	31.
1800.	0.6556	5	1.0	1.0	10000.0	3.00	31.
1900.	0.6243	5	1.0	1.0	10000.0	3.00	30.
2000.	0.5966	5	1.0	1.0	10000.0	3.00	30.
2100.	0.5721	5	1.0	1.0	10000.0	3.00	29.
2200.	0.5499	5	1.0	1.0	10000.0	3.00	29.
2300.	0.5299	5	1.0	1.0	10000.0	3.00	28.

2400.	0.5116	5	1.0	1.0	10000.0	3.00	27.
2500.	0.4949	5	1.0	1.0	10000.0	3.00	27.
2600.	0.4794	5	1.0	1.0	10000.0	3.00	27.
2700.	0.4651	5	1.0	1.0	10000.0	3.00	26.
2800.	0.4516	5	1.0	1.0	10000.0	3.00	24.
2900.	0.4393	5	1.0	1.0	10000.0	3.00	24.
3000.	0.4278	5	1.0	1.0	10000.0	3.00	24.
3500.	0.3788	5	1.0	1.0	10000.0	3.00	18.
4000.	0.3401	5	1.0	1.0	10000.0	3.00	2.
4500.	0.3114	5	1.0	1.0	10000.0	3.00	2.
5000.	0.2869	5	1.0	1.0	10000.0	3.00	0.
5500.	0.2658	5	1.0	1.0	10000.0	3.00	0.
6000.	0.2474	5	1.0	1.0	10000.0	3.00	1.
6500.	0.2313	5	1.0	1.0	10000.0	3.00	1.
7000.	0.2170	5	1.0	1.0	10000.0	3.00	0.
7500.	0.2043	5	1.0	1.0	10000.0	3.00	0.
8000.	0.1930	5	1.0	1.0	10000.0	3.00	1.
8500.	0.1828	5	1.0	1.0	10000.0	3.00	0.
9000.	0.1735	5	1.0	1.0	10000.0	3.00	1.
9500.	0.1652	5	1.0	1.0	10000.0	3.00	0.
10000.	0.1576	5	1.0	1.0	10000.0	3.00	1.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 500. M:

970.	1.673	5	1.0	1.0	10000.0	3.00	34.

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*** SUMMARY OF SCREEN MODEL RESULTS ***
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CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1.673	970.	0.

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** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
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