Barons Gas Station Remediation Project
Barons, AB

2010 Groundwater Sampling of 4 New Wells

PREPARED FOR:
Marie Elizabeth Read
P.O. Box 267
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PREPARED BY:
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Environmental
Structural
Civil
Industrial
Municipal

HASEGAWA ENGINEERING

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June 4, 2010

Job #: 07-186

Marie Elizabeth Read
P.O. Box 267
Irma, AB T0B 2H0

Dear Marie:

Re: Groundwater Sampling of 4 New Wells at the Gas Station in Barons, AB

As per your request, Hasegawa Engineering has installed 4 new groundwater wells at the gas station located in Barons, Alberta. One new well was installed south of the gas station where Main Street meets the subject property. The other two new wells where installed near the property line on the west side of the property. The fourth well was installed on the south side of Main street southwest of the property (refer to Figure 1 for well locations). Groundwater samples were taken from each well onsite (including the 4 new wells) at a later date and submitted for hydrocarbon analysis. The test results are enclosed in the following report.

We trust that the enclosed information meets your requirements. Please feel free to contact me at 403-328-2686 if you have any questions or comments regarding these results.

Sincerely,

PROFESSIONAL ENGINEER ALBERTA MARK A. HASEGAWA 19889

Mark Hasegawa P. Eng.
Hasegawa Engineering
Consulting Professional Engineers
MAH/cms

PERMIT TO PRACTICE
HASEGAWA ENGINEERING
Signature
Date July 7/10
PERMIT NUMBER: P 8170
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Project Background

The Barons former gas station site is located on Main Street in Barons, Alberta. Investigation activities were conducted and revealed that soil and groundwater at the site, was impacted by petroleum hydrocarbons. Free product was detected in MW-2 in the Dec. 2001 groundwater sampling event. MW-2 was destroyed during the soil remediation which took place in 2003, therefore no groundwater samples could be obtained from MW-2 in 2007. MW-2 was formerly located just north of the sidewalk approximately 8 meters northeast of MW-3. Free product was present in MW-3 in the 2007 and 2008, groundwater sampling event. MW-3 is located to the south of the fuel dispensers located at the gas station. Although previously 2 groundwater wells located south of Main Street showed no impact south of MW-3, those wells have been since been destroyed. Previous groundwater sampling events showed the groundwater flow direction to be to the south; therefore 3 new groundwater wells were installed south of the former gas station, in December of 2008, an additional well was installed south of Main Street in June of 2009 to further delineate off-site contamination plume. Groundwater sampling of all existing site wells was conducted in September of 2009, and showed the groundwater flow direction to be south and southwest. As a result it was proposed that additional wells be installed to the south and west of the former gas station (see figure 1 for new well locations). This property shall herein after be referred to as the "Subject Property".

1.2 Scope of Work

The specific activities included in this assessment included:

- Gauging of all wells to establish water table elevations, purging of each well to allow recharging of fresh groundwater, sampling of groundwater from each well
- Collecting a groundwater sample from each well
- Submission of 14 groundwater samples for analysis for BTEX, F1, F2, F3, and F4.
- Complete summary report, which includes results, maps, conclusions and recommendations for future work

1.3 Study Objectives

The primary objective of this project was to further delineate on, and offsite site contamination, if any which may need to be addressed.

2.0 METHODOLOGY

2.1 Groundwater Sampling and Gauging

Prior to sampling, all wells were gauged to determine the depth to water. Each well was developed and then purged of at least two well bore volumes or until the well went dry. Samples were then collected using a submersible pump and flexible hose to draw the groundwater to the surface. A new length of hose was used for each well and the pump was decontaminated before sampling subsequent wells. All samples were then preserved at 4 degrees C and sent to Sandberg Labs on May 18, 2010, for hydrocarbon analysis.

2.2 Assessment Criteria

Results obtained from Sandberg Labs for the submitted samples of soil and groundwater were evaluated to ensure validity by:

- Reviewing all data provided by the lab to ensure correct methodologies were utilized and laboratory errors had not occurred;
- Comparing concentrations of each indicator parameter to the corresponding Permissible Exposure Limits; and
- Determining whether any concentration that exceeds the exposure limits was not the result of unrelated events.

3.0 GROUNDWATER RESULTS

3.1 General

All groundwater samples submitted for laboratory analysis were tested for BTEX (Benzene, Toluene, Ethylbenzene, and Total Xylenes), F1, F2, F3, and F4.

Groundwater Potentiometric Surface

All of the existing groundwater wells at the subject property, with the exception of MW-10, were gauged at the site on May 17, 2010, to determine the potentiometric surface elevation. MW-10 was not able to be sampled due to the well being inaccessible inside the building located on the property. Groundwater potentiometric surface data is shown in Table 1 below as well as in Figure 1 in Appendix A. The resulting groundwater gradient is split and flows both north and southwest. Traditionally groundwater flow has been to the southwest.

Table 1: Groundwater Potentiometric Surface Data

MONITORING WELL	DTW (m)	TD (m)	CE (m)	GWE (m)
MW – 1	1.99	7.61	99.82	97.83
***MW – 3**	N/A	5.40	99.07	N/A
***MW – 4**	1.43	6.89	98.88	97.45
MW – 5	1.46	5.71	99.31	97.85
MW – 9	2.50	5.74	99.90	97.40
MW – 11	1.16	7.12	98.71	97.55
***MW – 13**	1.35	4.48	98.95	97.60
MW – 14	1.20	4.39	99.03	97.83
MW – 15	1.27	4.38	98.90	97.63
MW – 16	1.39	4.55	99.41	98.02
MW – 17	1.39	4.46	99.46	98.07
MW – 18	1.50	5.76	99.06	97.56
MW – 19	1.37	4.25	99.14	97.44
MW – 20	1.46	5.77	98.75	97.68

DTW - Depth To Water (measured from ground level)
TD - Total Depth (measured from ground level)
CE - Casing Elevation (all casings mounted at ground level)
GWE - Groundwater Elevation
* - Petroleum product present in well

3.2 Groundwater Analytical Results

The results of the sample analysis are included in Table 2 below.

Table 2: Groundwater Quality Data

SAMPLE LOCATION	UNITS	MW-1	MW-3	MW-4	MW-5	MW-9	MW-11	MW-13	AB ENV. GUIDELINES
Analyte									
Mono-Aromatic Hydrocarbons - Water									
Benzene	mg/L	<0.001	2.93	0.294	0.002	<0.001	<0.001	2920	0.005
Toluene	mg/L	<0.001	0.046	0.002	<0.001	<0.001	<0.001	50.2	0.024
Ethylbenzene	mg/L	<0.001	0.413	0.267	<0.001	<0.001	<0.001	218	0.0024
Total Xylenes(m,p,o)	mg/L	<0.001	4.69	0.345	0.010	<0.001	0.002	4610	0.3
Volatile Petroleum Hydrocarbons - Water									
F1 – BTEX	mg/L	<0.2	21.1	3.6	<0.2	<0.2	<0.2	36600	2.2
F1 C6 – C10	mg/L	<0.2	29.2	4.5	<0.2	<0.2	<0.2	44400	1.1
Extractable Petroleum Hydrocarbons – Water									
F2c C10 – C16	mg/L	0.2	N/A	N/A	0.9	<0.1	1.0	N/A	N/A
F3c C16 – 34	mg/L	0.3	N/A	N/A	0.8	<0.1	0.7	N/A	N/A
F3+ C34+	mg/L	<0.1	N/A	N/A	<0.1	<0.1	<0.1	N/A	N/A

- Exceeds Alberta Tier 1 Groundwater Remediation Guidelines

N/A - Not Available (no guidelines provided for these parameters)

Table 2: Continued

SAMPLE LOCATION	UNITS	MW-14	MW-15	MW-16	MW-17	MW-18	MW-19	MW-20	AB ENV. GUIDELINES
Analyte									
Mono-Aromatic Hydrocarbons - Water									
Benzene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Toluene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.024
Ethylbenzene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0024
Total Xylenes(m,p,o)	mg/L	0.001	<0.001	0.004	<0.001	<0.001	0.001	<0.001	0.3
Volatile Petroleum Hydrocarbons - Water									
F1 – BTEX	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	2.2
F1 C6 – C10	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	1.1
Extractable Petroleum Hydrocarbons – Water									
F2c C10 – C16	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
F3c C16 – 34	mg/L	<0.1	0.2	<0.1	<0.1	0.7	<0.1	<0.1	N/A
F3+ C34+	mg/L	<0.1	0.4	<0.1	<0.1	1.2	<0.1	<0.1	N/A

- Exceeds Alberta Tier 1 Groundwater Remediation Guidelines

N/A - Not Available (no guidelines provided for these parameters)

The water quality of all the samples taken is within Alberta Environment Guidelines with the exception of MW-3, MW-4, and MW-13. A sheen of petroleum product was visible when groundwater was obtained from these wells. A strong gasoline odor was present as well.

The complete groundwater analytical results from Sandberg labs are included in Appendix B.

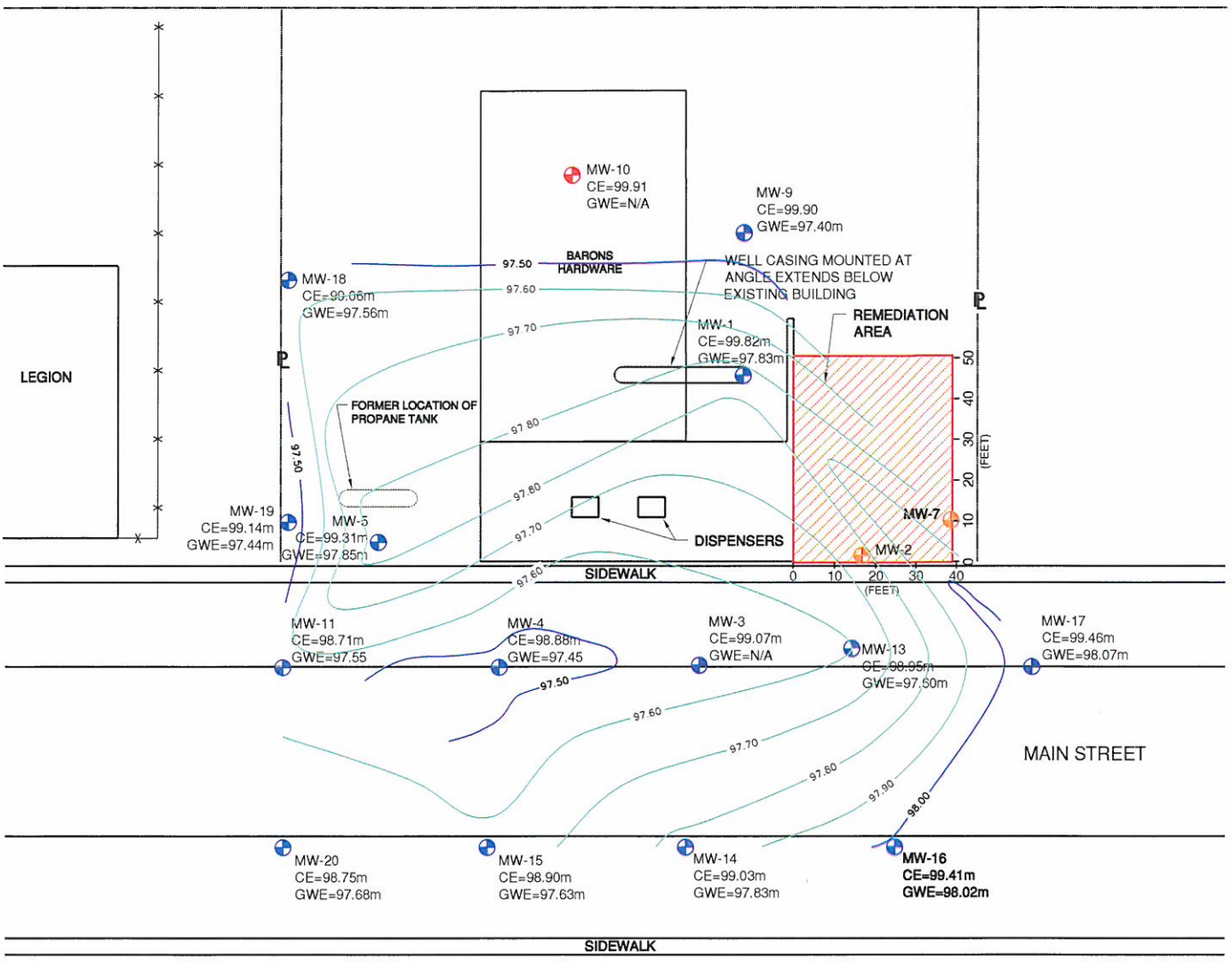
4.0 CONCLUSION

Four new groundwater wells were installed at locations south, southwest, and west of the subject property on April 13, 2010.

Groundwater gauging and sampling of the new wells occurred on May 17, 2010. The wells were gauged to determine groundwater depth and flow direction. One groundwater sample from each well was submitted for analysis. The results of the groundwater analysis show that all groundwater samples meet Alberta Environment guidelines with the exception of MW-3, MW-4, and MW-13. These results are consistent with the September, 2009, groundwater sampling event which showed levels for these wells exceeded Alberta Environment Guidelines for fine-grained soils.

APPENDIX A

Maps and Figures



LEGEND

- SOIL BORING
- MONITORING WELL
- WELLS NOT SAMPLED
- WELLS DESTROYED DURING SOIL REMEDIATION
- GROUNDWATER POTENTIOMETRIC SURFACE ELEVATION
- MW-3 MONITORING WELL I.D.
- CE=99.1m CASING ELEVATION
- GWE=97.56m GROUNDWATER ELEVATION

N

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DRAWN	SCALE	SHEET NO	PROJECT NO
MDO	1:500	FIGURE 1	07-186
CLIENT	PROJECT TITLE	DATE DRAWN	
MARIE READ	BARONS FORMER GAS STATION	JUNE 4, 2010	

APPENDIX B

Analytical Reports

Exova
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Analytical Report

Bill To:	Sandberg Laboratories Ltd.	Project:		Lot ID:	**742554**
Report To:	Sandberg Laboratories Ltd.	ID:		Control Number:	
	3510 - 6 Avenue N.	Name:		Date Received:	May 21, 2010
	Lethbridge, AB, Canada	Location:	3620-3633 and 3636	Date Reported:	Jun 23, 2010
	T1H 5C3	LSD:		Report Number:	1336239
Attn:	Philip Sandberg	P.O.:			
Sampled By:		Acct code:			
Company:					

	Reference Number	742554-1	742554-2	742554-3	
	Sample Date	May 17, 2010	May 17, 2010	May 17, 2010	
	Sample Time	NA	NA	NA	
	Sample Location	MW1	MW3	MW4	
	Sample Description	3620	3621	3622	
	Matrix	Water	Liquids	Liquids	
Analyte	**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Mono-Aromatic Hydrocarbons - Water					
Benzene	mg/L	<0.001	2.93	0.294	0.001
Toluene	mg/L	<0.001	0.046	0.002	0.001
Ethylbenzene	mg/L	<0.001	0.413	0.267	0.001
Total Xylenes (m,p,o)	mg/L	<0.001	4.69	0.345	0.001
Volatile Petroleum Hydrocarbons - Water					
F1 -BTEX	mg/L	<0.2	21.1	3.6	0.2
F1 C6-C10	mg/L	<0.2	29.2	4.5	0.2

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	T1H 5C3	LSD:		Report Number:	1336239
Attn:	Philip Sandberg	P.O.:			
Sampled By:		Acct code:			
Company:					

	Reference Number	742554-1	742554-4	742554-5	
	Sample Date	May 17, 2010	May 17, 2010	May 17, 2010	
	Sample Time	NA	NA	NA	
	Sample Location	MW1	MW5	MW9	
	Sample Description	3620	3623	3624	
	Matrix	Water	Water	Water	
Analyte	**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Water					
F2 C10-C16	mg/L	0.2	0.9	<0.1	0.1
F3 C16-C34	mg/L	0.3	0.8	<0.1	0.1
F3+ C34+	mg/L	<0.1	<0.1	<0.1	0.1

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Lethbridge, AB, Canada
T1H 5C3
Attn: Philip Sandberg
Sampled By:
Company:

Project:
ID:
Name:
Location: 3620-3633 and 3636
LSD:
P.O.:
Acct code:

Lot ID: **742554**
Control Number:
Date Received: May 21, 2010
Date Reported: Jun 23, 2010
Report Number: 1336239

	Reference Number	742554-2	742554-3	742554-6	
	Sample Date	May 17, 2010	May 17, 2010	May 17, 2010	
	Sample Time	NA	NA	NA	
	Sample Location	MW3	MW4	MW13	
	Sample Description	3621	3622	3625	
	Matrix	Liquids	Liquids	Liquids	
Analyte	**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Non-Halogenated Aromatics - Product					
Benzene	mass fraction	<0.00001	<0.00001	0.00352	0.00001
Toluene	mass fraction	<0.00001	<0.00001	0.00007	0.00001
Ethylbenzene	mass fraction	<0.00001	<0.00001	0.00054	0.00001
Total Xylenes (m,p,o)	mass fraction	<0.00001	<0.00001	0.0110	0.00001
Hydrocarbon Analysis (C60) - Product					
C11	mass fraction	0.1090	0.1300	0.1040	0.0001
C12	mass fraction	0.1090	0.1160	0.1070	0.0001
C13	mass fraction	0.1430	0.1420	0.1410	0.0001
C14	mass fraction	0.1570	0.1450	0.1600	0.0001
C15	mass fraction	0.1140	0.1030	0.1150	0.0001
C16	mass fraction	0.1050	0.0953	0.1060	0.0001
C17	mass fraction	0.0808	0.0740	0.0810	0.0001
C18	mass fraction	0.0559	0.0540	0.0556	0.0001
C19	mass fraction	0.0403	0.0408	0.0399	0.0001
C20	mass fraction	0.0292	0.0313	0.0294	0.0001
C21	mass fraction	0.0208	0.0247	0.0210	0.0001
C22	mass fraction	0.0159	0.0160	0.0145	0.0001
C23	mass fraction	0.0090	0.0092	0.0091	0.0001
C24	mass fraction	0.0055	0.0073	0.0064	0.0001
C25	mass fraction	0.0029	0.0035	0.0029	0.0001
C26	mass fraction	0.0018	0.0016	0.0016	0.0001
C27	mass fraction	0.0005	0.0017	0.0010	0.0001
C28	mass fraction	0.0002	0.0013	0.0010	0.0001
C29	mass fraction	0.0001	0.0007	0.0004	0.0001
C30	mass fraction	<0.0001	0.0004	0.0004	0.0001
C31	mass fraction	<0.0001	0.0001	0.0001	0.0001
C32	mass fraction	<0.0001	0.0003	0.0003	0.0001
C33	mass fraction	<0.0001	<0.0001	0.0004	0.0001
C34	mass fraction	<0.0001	0.0002	0.0003	0.0001
C35	mass fraction	<0.0001	0.0001	<0.0001	0.0001
C36	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C37	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C38	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C39	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C40	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C41	mass fraction	<0.0001	<0.0001	<0.0001	0.0001

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Sampled By:		Acct code:			
Company:					

	Reference Number	742554-2	742554-3	742554-6	
	Sample Date	May 17, 2010	May 17, 2010	May 17, 2010	
	Sample Time	NA	NA	NA	
	Sample Location	MW3	MW4	MW13	
	Sample Description	3621	3622	3625	
	Matrix	Liquids	Liquids	Liquids	
Analyte	**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Hydrocarbon Analysis (C60) - Product - Continued					
C42	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C43	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C44	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C45	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C46	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C47	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C48	mass fraction	<0.0001	<0.0001	0.0001	0.0001
C49	mass fraction	<0.0001	<0.0001	0.0001	0.0001
C50	mass fraction	<0.0001	<0.0001	0.0001	0.0001
C51	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C52	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C53	mass fraction	<0.0001	<0.0001	0.0001	0.0001
C54	mass fraction	<0.0001	<0.0001	0.0001	0.0001
C55	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C56	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C57	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C58	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C59	mass fraction	<0.0001	<0.0001	<0.0001	0.0001
C60+	mass fraction	<0.0001	0.0004	<0.0001	0.0001
Total	mass fraction	0.9999	0.9989	0.9988	

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Attn:	Philip Sandberg	P.O.:			
Sampled By:		Acct code:			
Company:					

	Reference Number	742554-4	742554-5	742554-6	
	Sample Date	May 17, 2010	May 17, 2010	May 17, 2010	
	Sample Time	NA	NA	NA	
	Sample Location	MW5	MW9	MW13	
	Sample Description	3623	3624	3625	
	Matrix	Water	Water	Liquids	
Analyte	**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Mono-Aromatic Hydrocarbons - Water					
Benzene	mg/L	0.002	<0.001	2920	0.001
Toluene	mg/L	<0.001	<0.001	50.2	0.001
Ethylbenzene	mg/L	<0.001	<0.001	218	0.001
Total Xylenes (m,p,o)	mg/L	0.010	<0.001	4610	0.001
Volatile Petroleum Hydrocarbons - Water					
F1 -BTEX	mg/L	<0.2	<0.2	36600	0.2
F1 C6-C10	mg/L	<0.2	<0.2	44400	0.2

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Attn:	Philip Sandberg	P.O.:			
Sampled By:		Acct code:			
Company:					

	Reference Number	742554-7	742554-8	742554-9	
	Sample Date	May 17, 2010	May 17, 2010	May 17, 2010	
	Sample Time	NA	NA	NA	
	Sample Location	MW14	MW15	MW16	
	Sample Description	3626	3627	3628	
	Matrix	Water	Water	Water	
Analyte	**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Mono-Aromatic Hydrocarbons - Water					
Benzene	mg/L	<0.001	<0.001	<0.001	0.001
Toluene	mg/L	<0.001	<0.001	<0.001	0.001
Ethylbenzene	mg/L	<0.001	<0.001	<0.001	0.001
Total Xylenes (m,p,o)	mg/L	0.001	<0.001	0.004	0.001
Volatile Petroleum Hydrocarbons - Water					
F1 -BTEX	mg/L	<0.2	<0.2	<0.2	0.2
F1 C6-C10	mg/L	<0.2	<0.2	<0.2	0.2
Extractable Petroleum Hydrocarbons - Water					
F2 C10-C16	mg/L	<0.1	<0.1	<0.1	0.1
F3 C16-C34	mg/L	<0.1	0.2	<0.1	0.1
F3+ C34+	mg/L	<0.1	0.4	<0.1	0.1

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Analytical Report

Bill To:	Sandberg Laboratories Ltd.	Project:		Lot ID:	742554
Report To:	Sandberg Laboratories Ltd.	ID:		Control Number:	
	3510 - 6 Avenue N.	Name:		Date Received:	May 21, 2010
	Lethbridge, AB, Canada	Location:	3620-3633 and 3636	Date Reported:	Jun 23, 2010
	T1H 5C3	LSD:		Report Number:	1336239
Attn:	Philip Sandberg	P.O.:			
Sampled By:		Acct code:			
Company:					

	Reference Number	742554-10	742554-11	742554-12	
	Sample Date	May 17, 2010	May 17, 2010	May 17, 2010	
	Sample Time	NA	NA	NA	
	Sample Location	MW17	MW18	MW19	
	Sample Description	3629	3630	3631	
	Matrix	Water	Water	Water	
Analyte	**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Mono-Aromatic Hydrocarbons - Water					
Benzene	mg/L	<0.001	<0.001	<0.001	0.001
Toluene	mg/L	<0.001	<0.001	<0.001	0.001
Ethylbenzene	mg/L	<0.001	<0.001	<0.001	0.001
Total Xylenes (m,p,o)	mg/L	<0.001	<0.001	<0.001	0.001
Volatile Petroleum Hydrocarbons - Water					
F1 -BTEX	mg/L	<0.2	<0.2	<0.2	0.2
F1 C6-C10	mg/L	<0.2	<0.2	<0.2	0.2
Extractable Petroleum Hydrocarbons - Water					
F2 C10-C16	mg/L	<0.1	<0.1	<0.1	0.1
F3 C16-C34	mg/L	<0.1	<0.1	<0.1	0.1
F3+ C34+	mg/L	<0.1	<0.1	<0.1	0.1

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Attn:	Philip Sandberg	P.O.:			
Sampled By:		Acct code:			
Company:					

Reference Number		742554-13	742554-14		
Sample Date		May 17, 2010	May 17, 2010		
Sample Time		NA	NA		
Sample Location		MW20	MW11		
Sample Description		3632	3636		
Matrix		Water	Water		
Analyte	**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Mono-Aromatic Hydrocarbons - Water					
Benzene	mg/L	<0.001	<0.001		0.001
Toluene	mg/L	<0.001	<0.001		0.001
Ethylbenzene	mg/L	<0.001	<0.001		0.001
Total Xylenes (m,p,o)	mg/L	<0.001	0.002		0.001
Volatile Petroleum Hydrocarbons - Water					
F1 -BTEX	mg/L	<0.2	<0.2		0.2
F1 C6-C10	mg/L	<0.2	<0.2		0.2
Extractable Petroleum Hydrocarbons - Water					
F2 C10-C16	mg/L	<0.1	1.0		0.1
F3 C16-C34	mg/L	<0.1	0.7		0.1
F3+ C34+	mg/L	<0.1	<0.1		0.1

Approved by:

Michael Yohemas, BSc
Laboratory Operations Manager

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Methodology and Notes

Bill To:	Sandberg Laboratories Ltd.	Project:		Lot ID:	742554
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Sampled By:		Acct code:			
Company:					

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
BTEX - Product	US EPA	*	US EPA method, 8020/8015	23-Jun-10	Exova Calgary
BTEX-CCME - Water	US EPA	*	US EPA method, 8260B/5030B	21-May-10	Exova Calgary
TE60 - Product	ASTM		Boiling Range Distribution of Petroleum Fractions by GC, D 2887-84	26-May-10	Exova Calgary
TEH-CCME - Water	MMCA	*	Petroleum Hydrocarbons in water, A108.0	21-May-10	Exova Calgary

** Reference Method Modified*

References

Alta. Env. Method	Alberta Environment Method
ASTM	Annual Book of ASTM Standards
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Report was re-issued to include repeated BTEX analysis on samples 2, 3, and 6 as requested by Justin of Sandberg Labs on June 22, 2010. Report 1336239 is an addendum to report 1328174.
- Sample 742554-2 and 3: the repeated result for BTXO analysis did not differ significantly from the original; it is within expected precision of the test. Whereas Toluene in the retest 742554-6 did differ from the orignal due to data entry error .