MONTHLY UPDATE REPORT - PRIMROSE SOUTH
09-21-067-04 W4M

DECEMBER 2, 2013

1 Introduction

The Canadian Natural Resources Limited Primrose South in situ oil sands project is located in the Cold Lake Air Weapons Range approximately 65 km north-northeast of Bonnyville, Alberta. Canadian Natural operations staff discovered a bitumen emulsion flow to surface (FTS) at 09-21-067-04 W4M on June 24, 2013. The FTS area is beneath an unnamed water body within the Canadian Natural Primrose South production area.

On September 24, 2013, Alberta Environment and Sustainable Resource Development (ESRD) issued an Environmental Protection Order (EPO-2013-33/NR), requesting the preparation of a Comprehensive Remedial Plan (CRP). This report summarizes the progress towards the realization of this plan and includes data collected and reported up to November 22, 2013. The information summarized in this report focuses on data collected since October 27, 2013.

2 Summary of Activities to Date

2.1 Individual Plan Submission

As required by the EPO, the CRP includes the development, submission and implementation of several specific plans. The status of these plans is indicated below:

Table 1: Components of the Comprehensive Remedial Plan

Plan Name	Due Date	Submission Date	Approval Date	Implementation Start Date	Completion Date	Section Discussed
Water Management Plan for Dewatering	September 26, 2013	September 26, 2013	September 27, 2013	September 27, 2013	October 22, 2013	2.2
Water Body Monitoring Plan	September 26, 2013	September 26, 2013	September 27, 2013	September 27, 2013	Ongoing	3.0
Erosion and Sedimentation Prevention Plan	September 26, 2013	September 26, 2013	September 27, 2013	September 27, 2013	October 22, 2013	3.2
Phase 2 Environmental Assessment Plan	October 15, 2013	October 3, 2013	October 17, 2013	Pending	Pending	3.3
Bitumen Emulsion Delineation and Containment Plan	October 6, 2013	October 3, 2013	October 17, 2013	October 18, 2013	Ongoing	3.4

Plan Name	Due Date	Submission Date	Approval Date	Implementation Start Date	Completion Date	Section Discussed
Amphibian Salvage Plan	September 26, 2013	September 25, 2013	September 27, 2013	September 27, 2013	October 22, 2013	Complete
Fish and Fish Habitat Assessment Plan	September 26, 2013	September 25, 2013	September 27, 2013	September 27, 2013	October 30, 2013	Complete
Wetlands Impact Assessment Plan	September 30, 2013	September 25, 2013	September 27, 2013	September 27, 2013	October 30, 2013	Complete
Water Body Restoration Plan	November 30, 2013	Pending	Pending	No later than April 1, 2014	Pending	N/A
Wildlife Management Plan	N/A	Revised Plan October 23, 2013	October 23, 2013	October 23, 2013	Pending	3.5
Waste Management Plan	N/A	Revised Plan October 24, 2013	October 24, 2013	October 24, 2013	Pending	3.6

2.2 Water Management for Dewatering

The water body was divided in four basins as indicated on Figure 1. Basins 1, 2 and 3 were dewatered while Basin 4 is being used for water storage. Three independent pumping systems were used to pump water out of Basins 1, 2 and 3. This configuration allowed Canadian Natural to adjust pumping rates in the various basins as laid out in the approved Water Management Plan for Dewatering (Figures 1 to 3).

Pumping started on September 27, 2013. The volume of water pumped from each basin is presented in Appendix A. On October 22, 2013, pumping was stopped. Pumping will be carried out intermittently and as needed, as water seeps into Basins 1, 2 and 3 from the surrounding area. All water that was intermittently pumped from the water body in November 2013 was stored in a tank and trucked offsite for disposal.

The dewatering activities took place in accordance to the conditions specified in the Water Management Plan for Dewatering and in the Erosion and Sedimentation Prevention Plan.

3 Water Body Monitoring

In accordance with the Water Body Monitoring Plan, an extensive water quality and water quantity monitoring program was implemented on September 27, 2013. This program was specific to the dewatering phase of the CRP and complemented the ongoing water quality and quantity monitoring implemented in June 2013.

3.1 Dewatering Water Quality

Water from Basin 4 that temporarily bypassed containment structures to the north of the water body and water that drained through muskeg to the southeast of the water body was monitored weekly, prior to freeze-up. Weekly water sampling from the culverts was suspended on November 12, 2013, when water in the culvert was frozen to bottom.

Water quality was within applicable guidelines at all sampling locations throughout the dewatering program. Sampling locations are shown on Figure 1 and water quality results are presented in Appendix B.

3.1.1 Dewatering Water Quantity

The amount of water pumped from Basins 1, 2 and 3 was recorded twice daily to document the progress of the dewatering operations and to make certain the pumped water is not affecting the natural hydrologic setting of the receiving areas in the fen south of Basin 1, the borrow pit and Basin 4. Monitoring locations are illustrated on Figure 2 and the amount and rate of water pumped are presented in Appendix A.

3.1.2 Surface Water Quality

Water quality samples were collected weekly until freeze-up from surface locations indicated on Figure 3. The samples were tested to insure water quality in the receiving environment was not affected by the dewatering operations. Water quality results are presented in Appendix C.

Water quality from Basins 1, 2, 3 and 4 of the water body and the downstream fen south of Basin 1 was within freshwater aquatic life guidelines. Hydrocarbons were not detected in any sample collected in the water body or the fen.

3.1.3 Shallow Groundwater

Shallow groundwater quality samples were collected weekly until freeze-up from shallow drive point piezometer locations, as denoted on Figure 4. Water quality results are presented in Appendix C.

Water quality from the shallow groundwater locations was within freshwater aquatic life guidelines. Hydrocarbons were not detected in any sample collected in the shallow groundwater locations.

3.2 Erosion and Sedimentation Prevention

The dewatering activities took place in accordance to the conditions specified in the Erosion and Sedimentation Prevention Plan. All erosion and sediment control structures, which were set up during the dewatering program, were removed once pumping was suspended on October 22, 2013. However, inundated structures such as the aquadams located in Basin 4 and at the south end of Basin 1 will be removed in spring 2014. There were no signs of erosion or sedimentation associated with the dewatering program.

Erosion and sediment control structures are currently not required as all remedial works are being completed within the dewatered water body. Any water that was intermittently released from the water body, after the dewatering phase was suspended on October 22, was stored in tanks and disposed offsite, therefore no erosion and sediment control structures were required.

3.3 Phase II Environmental Assessment

A plan for conducting a Phase II ESA at the site was approved on October 17, 2013 by ESRD. Assessment of soils and shallow groundwater will be carried out once the bottom sediments are completely frozen

to allow access, and once fissures (s) have been delineated and bitumen seepage contained. These activities are currently underway as part of the Bitumen Emulsion Delineation and Containment Plan.

3.4 Bitumen Emulsion Delineation and Containment

3.4.1 Identification and Characterization of Release Point for Bitumen FTS

From October 27 to November 22, the following activities were carried out as part of the plan to identify and characterize the bitumen emulsion release point:

- On November 6, a survey of surficial bitumen emulsion in the bed of the dewatered water body was completed. A bitumen delineation summary was submitted on November 15, 2013 as an extension to the existing EPO-approved Bitumen Emulsion Delineation and Containment Plan. The extension program outlined methods that can be used to remove the bitumen remaining on the surface of the sediments at the bottom of the water body after the dewatering. Canadian Natural is currently awaiting comments and/or approval from ESRD to proceed with the additional removal of bitumen within drained Basin 2 as per the bitumen delineation summary submitted.

- Figure 5 shows the extent of bitumen emulsion on the surface of Basins 1 and 2.

Preparation and excavation of bitumen emulsion impact in the area of the suspected fissure(s) began on November 14, 2013.

- Excavation was initiated on November 14, 2013 at the western shore of the water body, in the area of the suspected fissure(s). Excavation of impacted soil and sediment was ongoing as of November 22, 2013 and two fissures had been exposed in mineral soil (Figure 5). Excavated material was stockpiled in containment cells for temporary storage prior to trucking to landfill.

- Trees and brush within a right-of-way for the road off the southwest corner of the laydown area leading to Pad AC21 were cleared or felled. Fallen trees were transported to a storage area offsite. The new access road was then cleared with topsoil being left in placed based on frozen conditions and in order to minimize disturbance.

- A combination of Argos, snowmobiles and Sno-Cat® vehicles are being used around Basins 1, 2 and 3 of the water body to compact the snow cover to drive in frost deeper to allow access for larger equipment. Construction and levelling of the ice road across the water body was completed, and on November 21, 2013, a pickup truck was able to successfully travel across the water body on the ice road. Excavation around the suspected fissure occurring within Basin will commence as soon as access improves.

3.4.2 Preliminary Design of Containment Structure Measures to Contain Bitumen Emulsion Once Dewatering Complete

Due to frozen conditions, containment of bitumen emulsion is accomplished through management of impacted solids and a structure for temporary containment is not required. A plan for water

management is in preparation; recovered water is currently collected in depressions within the excavation, removed by vacuum truck, and disposed at the Tervita Lindbergh disposal facility.

3.4.3 Final Design for Permanent Containment of Bitumen Emulsion

A preliminary plan for construction of a containment structure is in preparation. The structure is to be located in Basin 1 to isolate the yet to be exposed fissure and to provide a temporary work space for completing temporary bitumen emulsion containment berms. To date, 2,956, 1 m^3 sand filled tote bags for construction of the containment structure around the final exposed fissure, have been filled and stored at a nearby staging area.

3.4.4 Schedule of Implementation

The schedule of implementation specified was provided in the approved plan; there have been no major deviations to date.

3.5 Wildlife Management

Wildlife management activities in the month of November included maintaining perimeter fencing, installing and maintaining and frequently relocating wildlife scare cannons, and conducting daily inspections. Large mammals are the main species of concern as most others are not found near the site due to winter conditions.

3.6 Waste Management

Waste generated as part of the remediation program includes oily vegetation, oily absorbents, fluids and impacted soil and sediment. All waste is collected in bags, bins, barrels or is trucked to lined containment cells for temporary storage. Waste is tested to insure that it meets landfill requirements and is safe to transport by truck. All waste is manifested for transportation and is disposed at certified waste management facilities. Soils near waste storage areas onsite are tested prior to collection and will be assessed following completion of the remediation program.

- A total of 200, 1 m^3 tote bags were filled with impacted vegetation and solidified bitumen emulsion. The bags will be transported to the lined Tervita bins located on Pad AC-21 (Figure 1) for offsite disposal as per the Waste Management Plan. Tervita bins containing the totes were transported to Tervita Edmonton on November 20, 21 and 22, 2013.

- Two lined containment cells were constructed on Pad AC21 between October 27 and November 22, 2013. Soil beneath the cells was sampled prior to installation. Trucks began hauling impacted material to Tervita Bonnyville on November 20, 2013. To date a total of 1,993.2 tonnes of soil containing bitumen emulsion has been taken to Tervita Bonnyville.

- Daily landfill composite samples and paint filter test samples were collected from soil being trucked to landfill. All paint filter tests passed criteria.

4 Conclusions

The implementation of the CRP started on September 27, 2013 upon approval by ESRD of specific components of the plan as indicated in Table 1.

The data collected as of November 22, 2013 indicate that the dewatering of the water body took place as planned with no adverse effects on the hydrology and water quality in the surrounding environment. The toluene levels measured in previous months in the shallow groundwater and water within the fen south of Basin 1 were not associated with dewatering activities and did not persist in November 2013.

A survey of surficial bitumen remaining on the water body substrate after dewatering was completed and a plan submitted for remediation. Preparation of containment cells and infrastructure associated with the remedial excavation were constructed. Excavation of impacted soil and sediment at the western shore of the water body was initiated on November 14, 2013 and is ongoing.

The work is progressing as planned and the objectives as required by the EPO are being achieved within the required time frame.

I:\CanadianNatural\8881\FiguresAndTables\SPL\2013\Report_MonthlySummary\November\Site_9_21\Public\Figure-1-Water_Discharge_Locations.mxd

Easting (m)

528500 529000 529500 530000 530500

Northing (m)

6076000 6075500 6075000 6074500 6074000 6073500 6073000

13-DW49

13-DW45

Basin 4

Basin 3

Basin 2

Basin 1

Former Borrow Pit

Downstream Fen

Pad AC21

10

N

- Basin Boundary
- Old Borrow Area
- Access
- Matted Area
- Watercourse
- Aqua Dam
- Aqua Dam (Completed on October 30)
- Road
- Cut Line
- Pipeline
- Discharge Outlet Monitoring Location (Discontinued on November 12)
- Production Well

1:11,000 m

110 0 110 220

NAD 1983 UTM Zone 12N

Reference: Data obtained from AltaLIS © Government of Alberta and GDM midstream and transportation infrastructure data and IHS well data provided by IHS © 2013 under under license. Imagery obtained from client (September 2013) used under license.

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Primrose 09-21-067-04 W4M

Water Discharge Locations as of November 22, 2013

Date:	Project:	Technical:	Reviewer:	Drawn:
27 Nov 2013	8881-523	S. Toner	H. de Pennart	R. Keller

Figure 1

Easting (m)

519500 520000 520500 521000 521500 522000 522500 523000 523500 524000 524500 525000 525500 526000 526500 527000 527500 528000 528500 529000 529500 530000 530500 531000

Northing (m)

6077500 6077000 6076500 6076000 6075500 6075000 6074500 6074000 6073500 6073000 6072500 6072000

N

13-SG5
13-SG1
13-SG8
13-SG11
13-SG12
Unnamed Water Body
13-SG14
Basin 3
13-SG7
13-SG6
Basin 2
Basin 1
13-SG13
13-SG4
13-SG3
Ken Baker Road
Wolf River
13-SG10
13-SG9
13-SG2

- Basin Boundary
- Water Body
- Watercourse
- Direction of Flow
- Staff Gauge Location (Discontinued on October 6)
- Staff Gauge Location (Discontinued on October 23)
- Staff Gauge Location (Discontinued on October 29)
- Staff Gauge Location (Discontinued on November 5)
- Staff Gauge Location (Discontinued on November 12)

1:30,000

300 0 300 600 m

NAD 1983 UTM Zone 12N

Reference: Data obtained from AltaLIS © Government of Alberta and GeoBase® used under license. Imagery obtained from client (September 2013) used under license.

I:\CanadianNatural\8881\FiguresAndTables\SPrt\2013\Report_Monthly\Summary\NovemberSite_9_21\Public\Figure-2-Staff_Gauge_and_Discharge_Monitoring_Locations.mxd

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Primrose 09-21-067-04 W4M

Staff Gauge and Discharge Monitoring Locations as of November 22, 2013

Date:	Project:	Technical:	Reviewer:	Drawn:
27 Nov 2013	8881-523	S. Toner	H. de Pennart	R. Keller

Figure 2

I:\CanadianNatural\8881\FiguresAndTables\SPL\2013\Report_MonthlySummary\November\Site_9_21\Public\Figure-3-Weekly_Surface_Water_Sample_Locations.mxd

Easting (m)

528500 529000 529500 530000 530500

Northing (m)

6076000 6075500 6075000 6074500 6074000 6073500 6073000

N

Basin 4
13-SW12
Basin 3
13-SW31
13-SW7
13-SW22
Basin 2
Basin 1
13-SW26
13-DP1
13-SW27
13-SW16
13-SW39

- Basin Boundary
- Old Borrow Area
- Access
- Matted Area
- Watercourse
- Aqua Dam
- Aqua Dam (Completed on October 30)
- Road
- Cut Line
- Pipeline
- Weekly Surface Water Monitoring Location (Discontinued on October 9)
- Weekly Surface Water Monitoring Location (Discontinued on October 29)
- Weekly Surface Water Monitoring Location (Discontinued on November 5)
- Weekly Surface Water Monitoring Location (Discontinued on November 12)
- Drivepoint Piezometer Sample Location (Discontinued on October 29)
- Production Well

1:11,000 m
110 0 110 220
NAD 1983 UTM Zone 12N

Reference: Data obtained from AltaLIS © Government of Alberta and GDM midstream and transportation infrastructure data and IHS well data provided by IHS © 2013 under under license. Imagery obtained from client (September 2013) used under license.

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Primrose 09-21-067-04 W4M

Weekly Surface Water Monitoring Locations as of November 22, 2013

Date:	Project:	Technical:	Reviewer:	Drawn:
27 Nov 2013	8881-523	S. Toner	H. de Pennart	R. Keller

Figure 3

I:\CanadianNatural\8881\FiguresAndTables\SPL\2013\Report_MonthlySummary\November\Site_9_21\Public\Figure-4-Weekly_Drivepoint_Piezometer_Sample_Locations.mxd

Easting (m)

528500 529000 529500 530000 530500

Northing (m)

6076000 6075500 6075000 6074500 6074000 6073500 6073000

N

13-DP4
13-DP3
13-DP2
13-DP5
13-DP7
13-DP6
13-DP1

Basin 4
Basin 3
Basin 2
Basin 1

10

- Basin Boundary
- Old Borrow Area
- Access
- Matted Area
- Watercourse
- Aqua Dam
- Aqua Dam (Completed on October 30)
- Road
- Cut Line
- Pipeline
- Drivepoint Piezometer Sample Location
- Drivepoint Piezometer Sample Location (Discontinued on October 29)
- Drivepoint Piezometer Sample Location (Discontinued on November 5)
- Production Well

1:11,000 m
110 0 110 220
NAD 1983 UTM Zone 12N

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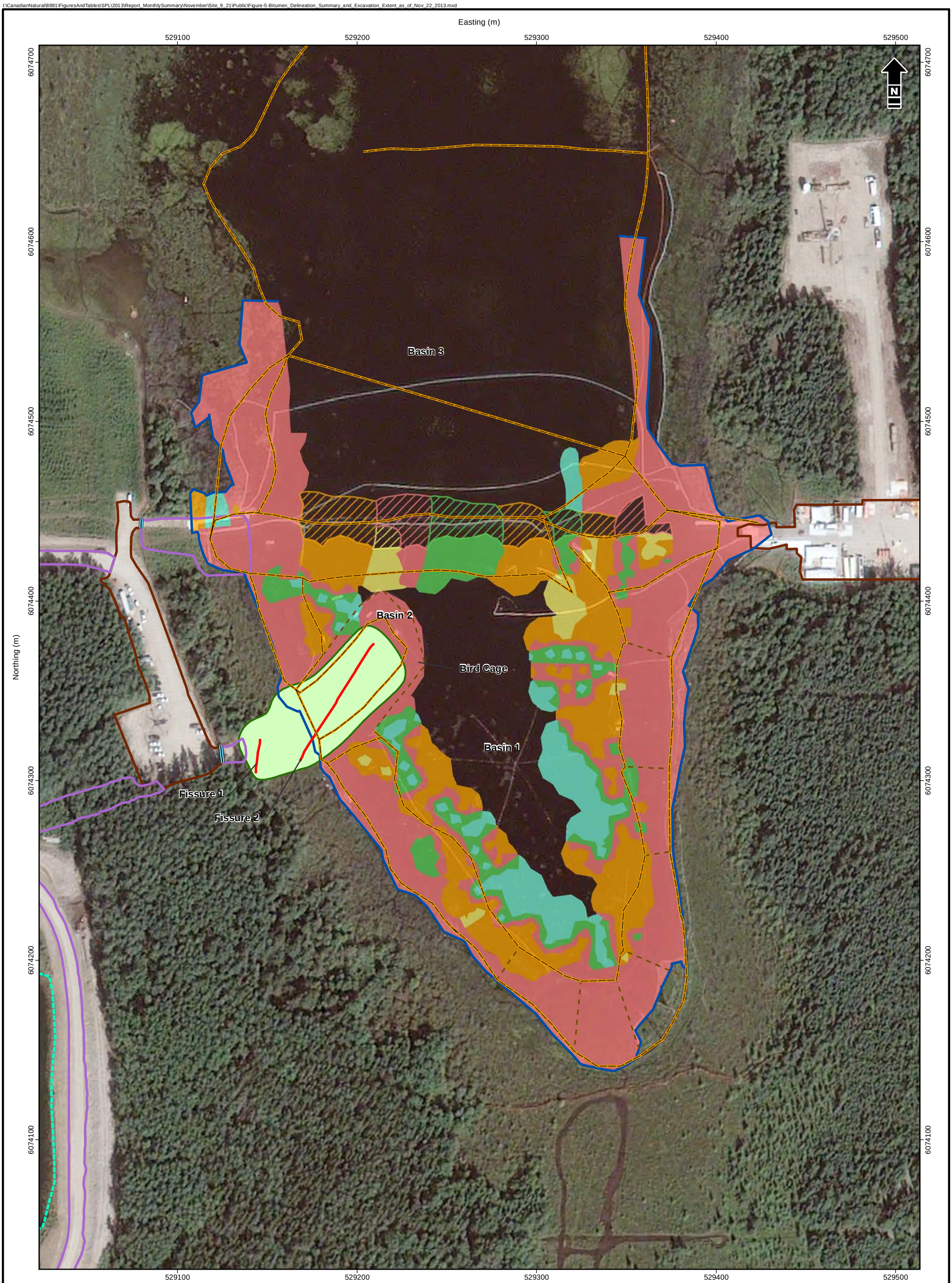
Weekly Drivepoint Piezometer Sample Locations as of November 22, 2013

Date:	Project:	Technical:	Reviewer:	Drawn:
27 Nov 2013	8881-523	S. Toner	H. de Pennart	R. Keller

Figure 4

I:\CanadianNatural\8881\FiguresAndTables\SPL\2013\Report_MonthlySummary\November\Site_9_21\Public\Figure-5-Bitumen_Delineation_Summary_and_Excavation_Extent_as_of_Nov_22_2013.mxd



Recommended Removal Option

Based on Field Delineation

- **1 - Manual Soil Removal and Full Vegetation Removal**
- **2 - Manual Soil Removal and Partial Vegetation Removal**
- **3 - Mechanical Soil Removal and Full Vegetation Removal**
- **4 - Mechanical Soil Removal and Partial Vegetation Removal**

Based on Manual Interpolation

- **1 - Manual Soil Removal and Full Vegetation Removal**
- **2 - Manual Soil Removal and Partial Vegetation Removal**
- **3 - Mechanical Soil Removal and Full Vegetation Removal**
- **4 - Mechanical Soil Removal and Partial Vegetation Removal**
- **5 - No Remediation Required**
- Excavation
- Old Borrow Area
- Access
- Rig Matting
- Boom
- Gate
- Exposed fissure
- Silt Fence
- Edge of Bitumen Emulsion Delineation

Excavation Area - 3914 m^2

Note: Removal Option Numbers (1 through 5) are described in Table 1 and presented in Appendix A.

1:2,000 m
20 0 20 40
NAD 1983 UTM Zone 12N

Reference: Imagery obtained from client dated September 2013.

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Primrose 09-21-067-04 W4M

Bitumen Delineation Summary and Excavation Extent as of Nov. 22, 2013

Date:	Project:	Technical:	Reviewer:	Drawn:
27 Nov 2013	8881-523	S. Levy	H. de Pennart	R. Keller

Figure 5

APPENDIX A

DEWATERING AND WATER LEVEL DATA

Figure A-1: Water Levels in the Wolf River and Burnt Lake Drainages

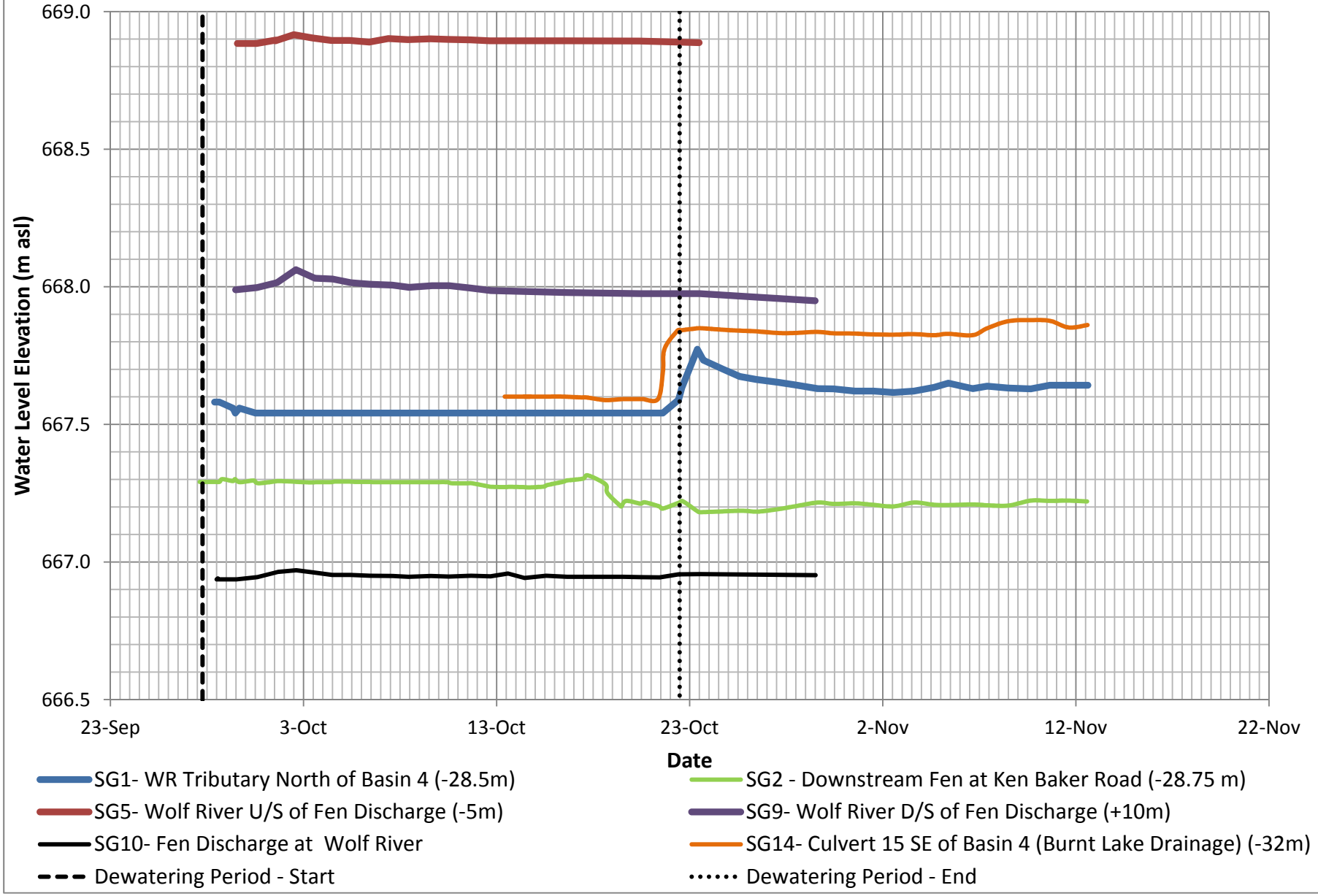

Table A-1: Daily Flow Volumes

CNRL Primrose 09-21 Water Body: Dewatering Phase

Date	Daily Total Discharge (m^3/day)	Cumulative Pumped (m^3)	Daily Total Discharge m^3/day	Cumulative Pumped (m^3)	Daily Total Discharge m^3/day	Cumulative Pumped (m^3)	Daily Volume from Water Body (m^3/day)	Cumulative Total from Water Body (m^3)
	Basin 1		Basin 2		Basin 3			
Design Rate:	**5,800**	-	**430**	-	**15,000**	-	**21,230**	
27-Sep-13	838	838	180	180	375	375	1,393	1,393
28-Sep-13	5,277	6,115	1,184	1,364	5,431	5,806	11,892	13,285
29-Sep-13	2,830	8,945	450	1,814	7,072	12,878	10,352	23,637
30-Sep-13	3,696	12,641	124	1,938	8,767	21,645	12,587	36,224
01-Oct-13	4,242	16,883	399	2,337	12,618	34,263	17,259	53,483
02-Oct-13	5,388	22,271	524	2,861	12,120	46,383	18,032	71,515
03-Oct-13	6,336	28,607	414	3,275	11,180	57,563	17,930	89,445
04-Oct-13	4,832	33,439	213	3,488	10,858	68,421	15,903	105,348
05-Oct-13	3,954	37,393	455	3,943	9,713	78,134	14,122	119,470
06-Oct-13	5,190	42,583	462	4,405	18,515	96,649	24,167	143,637
07-Oct-13	3,856	46,439	475	4,880	20,754	117,403	25,085	168,722
08-Oct-13	3,516	49,955	538	5,418	24,084	141,487	28,138	196,860
09-Oct-13	4,970	54,925	468	5,886	23,992	165,479	29,430	226,290
10-Oct-13	5,940	60,865	160	6,046	22,813	188,292	28,913	255,203
11-Oct-13	5,588	66,453	1,194	7,240	22,026	210,318	28,808	284,011
12-Oct-13	5,122	71,575	2,041	9,281	22,665	232,983	29,828	313,839
13-Oct-13	6,117	77,692	1,142	10,423	22,400	255,383	29,659	343,498
14-Oct-13	2,110	79,802	0	10,423	15,453	270,836	17,563	361,061
15-Oct-13	0	79,802	0	10,423	11,198	282,034	11,198	372,259
16-Oct-13	1,201	81,003	0	10,423	7,010	289,044	8,211	380,470
17-Oct-13	676	81,679	0	10,423	1,900	290,944	2,576	383,046
18-Oct-13	615	82,294	0	10,423	3,660	294,604	4,275	387,321
19-Oct-13	873	83,167	0	10,423	4,261	298,865	5,134	392,455
20-Oct-13	704	83,871	0	10,423	4,729	303,594	5,433	397,888
21-Oct-13	577	84,448	0	10,423	3,716	307,310	4,293	402,181
22-Oct-13	233	**84,681**	0	**10,423**	1,964	**309,274**	2,197	**404,378**

APPENDIX B

WATER QUALITY DATA – PUMPED WATER

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW10	Pump from Basin 1	27-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	---
13-DW10	Pump from Basin 1	28-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	<2.0	---	0.66
13-DW10	Pump from Basin 1	28-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.32	<0.1	<0.2	<0.2	1.2	---	0.75
13-DW10	Pump from Basin 1	28-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.74
13-DW10	Pump from Basin 1	28-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.82
13-DW10	Pump from Basin 1	28-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.0	---	0.74
13-DW10 dup	Pump from Basin 1	28-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.97
13-DW10	Pump from Basin 1	28-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.95
13-DW10	Pump from Basin 1	28-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	4.7	1.3
13-DW10	Pump from Basin 1	28-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	1.1
13-DW10	Pump from Basin 1	28-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	3.3	1.3
13-DW10	Pump from Basin 1	28-Sep-13	23:00	---	---	---	---	---	---	---	---	---	---	---
13-DW10	Pump from Basin 1	29-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.11	<0.2	<0.2	<1	---	1
13-DW10	Pump from Basin 1	29-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.82
13-DW10	Pump from Basin 1	29-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW10	Pump from Basin 1	29-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.29	<0.2	<1	---	1.3
13-DW10	Pump from Basin 1	29-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.94
13-DW10	Pump from Basin 1	29-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW10	Pump from Basin 1	30-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.95
13-DW10	Pump from Basin 1	30-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.77
13-DW10	Pump from Basin 1	30-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.76
13-DW10	Pump from Basin 1	30-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.68
13-DW10 dup	Pump from Basin 1	30-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.65
13-DW10	Pump from Basin 1	30-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.66
13-DW10	Pump from Basin 1	30-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.64
13-DW10	Pump from Basin 1	30-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.68
13-DW10	Pump from Basin 1	01-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.65
13-DW10	Pump from Basin 1	01-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.69
13-DW10	Pump from Basin 1	01-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW10	Pump from Basin 1	01-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW10	Pump from Basin 1	01-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.57
13-DW10	Pump from Basin 1	01-Oct-13	15:00	0.00058	0.0022	0.00055	<0.004	0.11	<0.1	<0.2	<0.2	<1	2.7	0.55
13-DW10	Pump from Basin 1	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.1	<0.2	<0.2	<1	---	0.58
13-DW10	Pump from Basin 1	01-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW10	Pump from Basin 1	01-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	0.16	<0.1	<0.2	<0.2	<1	---	0.65
13-DW10	Pump from Basin 1	01-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.64
13-DW10	Pump from Basin 1	02-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.81
13-DW10	Pump from Basin 1	02-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.66
13-DW10	Pump from Basin 1	02-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.3
13-DW10	Pump from Basin 1	02-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW10	Pump from Basin 1	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.71
13-DW10	Pump from Basin 1	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.1	<0.2	<0.2	<1	---	0.59
13-DW10	Pump from Basin 1	02-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW10	Pump from Basin 1	02-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.55
13-DW10	Pump from Basin 1	02-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.55
13-DW10 dup	Pump from Basin 1	02-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	<0.1
13-DW10	Pump from Basin 1	02-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW10	Pump from Basin 1	02-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.55
13-DW10	Pump from Basin 1	02-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW10	Pump from Basin 1	03-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.55
13-DW10	Pump from Basin 1	03-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW10 dup	Pump from Basin 1	03-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW10	Pump from Basin 1	03-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW10	Pump from Basin 1	03-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.65
13-DW10	Pump from Basin 1	03-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	<1	---
13-DW10	Pump from Basin 1	03-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW10	Pump from Basin 1	03-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW10	Pump from Basin 1	03-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW10	Pump from Basin 1	03-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW10	Pump from Basin 1	03-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.57
13-DW10	Pump from Basin 1	03-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW10	Pump from Basin 1	03-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW10	Pump from Basin 1	04-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW10	Pump from Basin 1	04-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW10	Pump from Basin 1	04-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW10	Pump from Basin 1	04-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.66
13-DW10	Pump from Basin 1	04-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	0.1	<0.1	<0.2	<0.2	<1	---	0.80
13-DW10	Pump from Basin 1	04-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.78
13-DW10	Pump from Basin 1	04-Oct-13	11:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	2	2
13-DW10	Pump from Basin 1	04-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.58
13-DW10	Pump from Basin 1	04-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.94
13-DW10	Pump from Basin 1	04-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.84
13-DW10	Pump from Basin 1	04-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.74
13-DW10	Pump from Basin 1	04-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.78
13-DW10	Pump from Basin 1	04-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.71
13-DW10	Pump from Basin 1	04-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW10	Pump from Basin 1	05-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.79
13-DW10	Pump from Basin 1	05-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.85
13-DW10	Pump from Basin 1	05-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW10	Pump from Basin 1	05-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.73
13-DW10	Pump from Basin 1	05-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	2	1.9
13-DW10	Pump from Basin 1	05-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.8
13-DW10 dup	Pump from Basin 1	05-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.73
13-DW10	Pump from Basin 1	05-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	0.14	<0.1	0.28	<0.2	<1	---	0.58
13-DW10	Pump from Basin 1	05-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	0.56	<1	---	0.52
13-DW10	Pump from Basin 1	05-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.58
13-DW10	Pump from Basin 1	05-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	1.3	0.63
13-DW10	Pump from Basin 1	05-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.7
13-DW10	Pump from Basin 1	05-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW10	Pump from Basin 1	05-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW10	Pump from Basin 1	06-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW10	Pump from Basin 1	06-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW10	Pump from Basin 1	06-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.49
13-DW10	Pump from Basin 1	06-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.32	<0.2	<1	1.3	0.47
13-DW10	Pump from Basin 1	06-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.8	<2	0.9
13-DW10	Pump from Basin 1	06-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.32	<0.2	<1	---	0.51
13-DW10	Pump from Basin 1	06-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW10	Pump from Basin 1	06-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW10	Pump from Basin 1	06-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	<0.1
13-DW10	Pump from Basin 1	06-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.75
13-DW10	Pump from Basin 1	06-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	4	0.64
13-DW10	Pump from Basin 1	06-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.68
13-DW10	Pump from Basin 1	06-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.83
13-DW10	Pump from Basin 1	06-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW10	Pump from Basin 1	07-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.1	<0.2	<0.2	1.1	---	0.69
13-DW10 dup	Pump from Basin 1	07-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	0.22	<0.2	1.2	---	0.64
13-DW10	Pump from Basin 1	07-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.1	<0.2	<0.2	1.1	---	0.76
13-DW10	Pump from Basin 1	07-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.66
13-DW10	Pump from Basin 1	07-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	0.23	<0.2	<1	2	0.69
13-DW10	Pump from Basin 1	07-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.86
13-DW10	Pump from Basin 1	07-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	0.68
13-DW10	Pump from Basin 1	07-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.11	<0.2	<0.2	1.4	---	0.9
13-DW10	Pump from Basin 1	07-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.74
13-DW10	Pump from Basin 1	07-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.63
13-DW10	Pump from Basin 1	07-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.8	<2	0.8
13-DW10	Pump from Basin 1	08-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	1.3	0.83
13-DW10	Pump from Basin 1	08-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.8	<1	2.4
13-DW10	Pump from Basin 1	08-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	0.16	<0.1	<0.2	<0.2	1.1	---	0.81
13-DW10	Pump from Basin 1	08-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	<0.2	<0.2	1.2	---	0.81
13-DW10	Pump from Basin 1	09-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	0.81
13-DW10 dup	Pump from Basin 1	09-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.84
13-DW10	Pump from Basin 1	09-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.88
13-DW10	Pump from Basin 1	09-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	1.3
13-DW10	Pump from Basin 1	09-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	<1	0.55
13-DW10	Pump from Basin 1	09-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.8	<1	1.4
13-DW10	Pump from Basin 1	09-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	0.78
13-DW10	Pump from Basin 1	09-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.81
13-DW10	Pump from Basin 1	09-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	0.95
13-DW10	Pump from Basin 1	09-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW10	Pump from Basin 1	09-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	0.87
13-DW10	Pump from Basin 1	10-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.18	0.34	0.23	1.1	---	0.9
13-DW10	Pump from Basin 1	10-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.88
13-DW10	Pump from Basin 1	10-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW10	Pump from Basin 1	10-Oct-13	5:00	---	---	---	---	---	---	---	---	1.1	---	0.82
13-DW10	Pump from Basin 1	10-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.1	0.2	0.23	1	<1	0.85
13-DW10	Pump from Basin 1	10-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.8	<2	0.9
13-DW10	Pump from Basin 1	10-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.76
13-DW10	Pump from Basin 1	10-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	0.22	<0.2	<1	---	0.86
13-DW10	Pump from Basin 1	10-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	0.24	<0.2	1	---	0.78
13-DW10	Pump from Basin 1	10-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	<1	0.8
13-DW10	Pump from Basin 1	10-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.27	<0.2	1.2	---	0.72
13-DW10	Pump from Basin 1	10-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	1
13-DW10	Pump from Basin 1	10-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.77
13-DW10	Pump from Basin 1	10-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.68
13-DW10	Pump from Basin 1	11-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.77
13-DW10	Pump from Basin 1	11-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	0.2	<0.2	1.3	---	0.65
13-DW10	Pump from Basin 1	11-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	<0.2	<0.2	1.3	---	0.66
13-DW10	Pump from Basin 1	11-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.32	0.23	1.1	2	0.67
13-DW10	Pump from Basin 1	11-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.7	<1	1.3
13-DW10	Pump from Basin 1	11-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.2	0.38	0.26	1.3	---	0.67
13-DW10	Pump from Basin 1	11-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.21	<0.2	1.3	---	0.67
13-DW10 dup	Pump from Basin 1	11-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.2	<0.2	1.3	---	0.61
13-DW10	Pump from Basin 1	11-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	0.65	<0.1	<0.2	<0.2	<1	1.3	0.59
13-DW10	Pump from Basin 1	11-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	0.63	<0.1	<0.2	<0.2	1.2	---	0.63
13-DW10	Pump from Basin 1	11-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	0.47	<0.1	<0.2	<0.2	<1	---	0.82
13-DW10	Pump from Basin 1	11-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.61
13-DW10	Pump from Basin 1	11-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.7
13-DW10	Pump from Basin 1	12-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.62
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW10	Pump from Basin 1	12-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	0.23	<0.2	1	---	0.86
13-DW10 dup	Pump from Basin 1	12-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.19	0.35	0.21	<1	---	0.85
13-DW10	Pump from Basin 1	12-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	1.1	---	0.69
13-DW10	Pump from Basin 1	12-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.45	0.19	0.37	0.25	1.1	<1	1
13-DW10	Pump from Basin 1	12-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.9	<2	1.2
13-DW10	Pump from Basin 1	12-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.2	0.45	0.32	1.1	---	1
13-DW10	Pump from Basin 1	12-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.48	<0.2	<1	<1	0.7
13-DW10	Pump from Basin 1	12-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.92
13-DW10	Pump from Basin 1	12-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW10	Pump from Basin 1	12-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.72
13-DW10	Pump from Basin 1	13-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.58
13-DW10 dup	Pump from Basin 1	13-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.83
13-DW10	Pump from Basin 1	13-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW10	Pump from Basin 1	13-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW10	Pump from Basin 1	13-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.81
13-DW10	Pump from Basin 1	13-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.72
13-DW10	Pump from Basin 1	13-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW10	Pump from Basin 1	13-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.99
13-DW10	Pump from Basin 1	14-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.67
13-DW10A	Basin 1 Discharge into Storage Tank	25-Oct-13	14:51	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	0.39	<0.2	1.6	4	5.5
13-DW11	E Overland discharge from Basin 1	28-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	3.3	0.78
13-DW11	E Overland discharge from Basin 1	29-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.27	<0.2	<1	<1	0.65
13-DW11	E Overland discharge from Basin 1	30-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.69
13-DW11	E Overland discharge from Basin 1	30-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.65
13-DW11	E Overland discharge from Basin 1	01-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.49
13-DW11	E Overland discharge from Basin 1	01-Oct-13	15:00	0.00043	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.52
13-DW11	E Overland discharge from Basin 1	01-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW11	E Overland discharge from Basin 1	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.57
13-DW12	W Overland discharge from Basin 1	28-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	<1	0.87
13-DW12	W Overland discharge from Basin 1	29-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.63
13-DW12	W Overland discharge from Basin 1	30-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.7
13-DW12	W Overland discharge from Basin 1	30-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.62
13-DW12	W Overland discharge from Basin 1	01-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	0.51
13-DW12	W Overland discharge from Basin 1	01-Oct-13	15:00	0.00055	<0.002	0.00047	<0.004	<0.1	<0.1	<0.2	<0.2	<1	3.3	0.5
13-DW12	W Overland discharge from Basin 1	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.55
13-DW20	Pump from Basin 2	28-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.2	<0.2	<2.0	---	0.68
13-DW20	Pump from Basin 2	28-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	0.68
13-DW20	Pump from Basin 2	28-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.1	<0.2	<0.2	<2.0	---	0.63
13-DW20	Pump from Basin 2	28-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.4	---	0.61
13-DW20	Pump from Basin 2	28-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	0.1	<0.1	<0.2	<0.2	<1	2	0.63
13-DW20	Pump from Basin 2	28-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.67
13-DW20	Pump from Basin 2	28-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.11	<0.2	<0.2	1.1	---	0.63
13-DW20	Pump from Basin 2	28-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.64
13-DW20	Pump from Basin 2	28-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	2	0.66
13-DW20	Pump from Basin 2	28-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	3.3	0.71
13-DW20	Pump from Basin 2	28-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	1.3	0.57
13-DW20	Pump from Basin 2	28-Sep-13	23:00	---	---	---	---	---	---	---	---	---	---	---
13-DW20	Pump from Basin 2	29-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW20	Pump from Basin 2	29-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	0.35	<0.1	<0.2	<0.2	<1	---	0.74
13-DW20	Pump from Basin 2	29-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.73
13-DW20	Pump from Basin 2	29-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	0.22	<0.2	<1	---	0.67
13-DW20	Pump from Basin 2	29-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.76
13-DW20	Pump from Basin 2	30-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.88
13-DW20	Pump from Basin 2	30-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.61
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW20	Pump from Basin 2	30-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.58
13-DW20	Pump from Basin 2	01-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	0.53
13-DW20	Pump from Basin 2	01-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	1.1
13-DW20	Pump from Basin 2	01-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW20 dup	Pump from Basin 2	01-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	3.3	0.65
13-DW20	Pump from Basin 2	01-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.48	<0.1	<0.2	<0.2	1.1	---	0.58
13-DW20	Pump from Basin 2	01-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.70
13-DW20	Pump from Basin 2	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	4	0.64
13-DW20	Pump from Basin 2	01-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.92
13-DW20	Pump from Basin 2	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.65
13-DW20	Pump from Basin 2	01-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW20	Pump from Basin 2	01-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.61
13-DW20	Pump from Basin 2	02-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.76
13-DW20	Pump from Basin 2	02-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW20	Pump from Basin 2	02-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW20	Pump from Basin 2	02-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.76
13-DW20	Pump from Basin 2	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.68
13-DW20	Pump from Basin 2	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.64
13-DW20	Pump from Basin 2	02-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.1	<0.2	<0.2	<1	---	0.71
13-DW20	Pump from Basin 2	02-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.63
13-DW20	Pump from Basin 2	03-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	<0.2	0.4	<1	<1	0.58
13-DW20	Pump from Basin 2	03-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.6
13-DW20	Pump from Basin 2	04-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.4	47	12
13-DW20	Pump from Basin 2	05-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.27	<0.2	---	---	---
13-DW20	Pump from Basin 2	05-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.27	<0.2	1.2	2.7	1.9
13-DW20	Pump from Basin 2	06-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.21	<0.2	<1	2.7	0.85
13-DW20	Pump from Basin 2	07-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	1.3	0.83
13-DW20	Pump from Basin 2	08-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	<1	0.53
13-DW20	Pump from Basin 2	08-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.32	<0.2	1.1	<1	0.6
13-DW20	Pump from Basin 2	09-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	<1	0.64
13-DW20	Pump from Basin 2	09-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	<1	0.62
13-DW20	Pump from Basin 2	11-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	0.77
13-DW20	Pump from Basin 2	11-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	0.98	0.1	0.22	<0.2	1.3	---	2.9
13-DW20	Pump from Basin 2	11-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	2	0.77
13-DW20	Pump from Basin 2	11-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	0.98	0.1	0.22	<0.2	1.3	12	2.9
13-DW20	Pump from Basin 2	12-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	1	1.3	1.1
13-DW20	Pump from Basin 2	12-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.23	0.7	<0.2	1.2	6.7	6.8
13-DW20	Pump from Basin 2	13-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	1.6	5.2	2.1	<1	7.3	0.97
13-DW21	Basin 2 Discharge Line before Filtration	28-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	0.12	0.11	<0.2	<0.2	<1	<1	0.65
13-DW21	Basin 2 Discharge Line before Filtration	28-Sep-13	23:00	---	---	---	---	---	---	---	---	---	---	---
13-DW21	Basin 2 Discharge Line before Filtration	29-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.1	<0.2	<0.2	2.7	72	22
13-DW21	Basin 2 Discharge Line before Filtration	01-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW21	Basin 2 Discharge Line before Filtration	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.9	---	13
13-DW21	Basin 2 Discharge Line before Filtration	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.3
13-DW21	Basin 2 Discharge Line before Filtration	02-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.73
13-DW21	Basin 2 Discharge Line before Filtration	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW21	Basin 2 Discharge Line before Filtration	05-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW21	Basin 2 Discharge Line before Filtration	06-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.22	<0.2	<1	1.3	1.1
13-DW21	Basin 2 Discharge Line before Filtration	07-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.59
13-DW21	Basin 1 Discharge Line before Filtration	14-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.35	0.34	---	---	---
13-DW21	Basin 1 Discharge Line before Filtration	17-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	4	0.93
13-DW21	Basin 1 Discharge Line before Filtration	17-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	<1	0.97
13-DW21	Basin 1 Discharge Line before Filtration	18-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.5	<1	0.78
13-DW21	Basin 1 Discharge Line before Filtration	19-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.89	0.23	1.4	2	1.4
13-DW21	Basin 1 Discharge Line before Filtration	19-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.24	<0.2	1.5	11	5.4
13-DW21	Basin 1 Discharge Line before Filtration	20-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	---	---	---	---	---	---
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW21a	Basin 1 Discharge Line before Filtration	21-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	---	---	---	---	---	---
13-DW21a	Basin 1 Discharge Line before Filtration	21-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	19	5.3
13-DW22	Basin 2 Discharge Line after Filtration	28-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	0.19	0.13	<0.2	<0.2	<1	2	0.58
13-DW22	Basin 2 Discharge Line after Filtration	28-Sep-13	23:00	---	---	---	---	---	---	---	---	---	---	---
13-DW22	Basin 2 Discharge Line after Filtration	29-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	<1	0.66
13-DW22	Basin 2 Discharge Line after Filtration	01-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW22	Basin 2 Discharge Line after Filtration	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	3.8
13-DW22	Basin 2 Discharge Line after Filtration	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	2.3
13-DW22	Basin 2 Discharge Line after Filtration	02-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW22	Basin 2 Discharge Line after Filtration	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.76
13-DW22	Basin 2 Discharge Line after Filtration	14-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.25	<0.2	---	---	---
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.29	<0.2	9.4	---	2.7
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	2.7	---	1.10
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	0.65
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.17	<0.1	<0.2	<0.2	1.3	---	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.58
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	3.3	0.55
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.67
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.52
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.69
13-DW23	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.47
13-DW23 dup	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	0.14	<0.1	<0.2	<0.2	<1	---	0.47
13-DW23	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.48
13-DW23	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW23	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW23	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.49
13-DW23	Basin 2 Discharge Line after Carbon Treatment	30-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.84
13-DW23	Basin 2 Discharge Line after Carbon Treatment	30-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.63
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.84
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.84
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.83
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.1	<0.1	<0.2	<0.2	<1	---	0.93
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.95
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.97
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.98
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.77
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.93
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.7
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.98
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.82
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.84
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.82
13-DW23 dup	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.82
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.82
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.77
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	03-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.86
13-DW23	Basin 2 Discharge Line after Carbon Treatment	03-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	03-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.93
13-DW23	Basin 2 Discharge Line after Carbon Treatment	04-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.84
13-DW23	Basin 2 Discharge Line after Carbon Treatment	04-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.83
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.72
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	11:00	---	---	---	---	---	---	---	---	<1	1.3	2.2
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1.3
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.75
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.22	<0.2	<1	<1	0.88
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.9
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	2
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.91
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.77
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	<1	0.98
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	<1	0.89
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	1.6
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.77
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	1.3	1.1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.18	0.21	0.24	<1	<1	0.9
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	<0.2	<0.2	1.1	<1	0.81
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	<1	0.86
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.95
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	<1	0.82
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	<1	0.81
13-DW23	Basin 2 Discharge Line after Carbon Treatment	10-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1.7
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	0.22	<0.2	<1	<1	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.99
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.22	<0.2	1.1	---	0.72
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	1.3	<0.1	<0.2	<0.2	<1	---	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	0.22	<0.2	<1	---	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	2	0.99
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.22	<0.2	1.1	1.3	0.72
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	1.3	<0.1	<0.2	<0.2	<1	1.3	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.25	<0.2	1	<1	1
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	<1	0.93
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.33	0.25	1.3	1.3	6.9
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	0.27	<0.2	<1	<1	1.7
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.74
13-DW23	Basin 2 Discharge Line after Carbon Treatment	13-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1.3
13-DW23	Basin 2 Discharge Line after Carbon Treatment	13-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	3.3	0.77
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.98
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.74
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.86
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.17	<0.27	<0.36	<1	---	0.47
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.2	<0.26	<1	---	0.82
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.81
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.78
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.69
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.79
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.75
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	1.4
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	7:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.8	<1	2.5
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	16-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	2.9
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	16-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1.1
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	16-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	2
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	16-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.2
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	2
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	1.6
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	<1	1.1
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	<1	1
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	1.1
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.4	<1	0.84
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	1
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.4	---	1.5
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.5	<1	1.4
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.4	---	0.98
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	1.8
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.22	<0.2	1.3	<1	1.3
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.8
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.81
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.5	<1	3.1
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.5	---	1.2
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.4
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	1.5
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	2.0	1.5
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.3	---	1.3
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	0.22	1.0	2.0	8.0
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	<1	7.2
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.56	<0.2	1.3	---	2.6
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	2.8
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	1.6
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	4.4
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	4.0	2.4
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	1.9
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	4.7	1.1
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	0.18	<0.1	<0.2	<0.2	<1	---	1.6
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	22-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	2.4
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	22-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.25	<0.2	1.3	<1	2.1
13-DW25	E Overland Discharge from Basin 2	28-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	1.3	0.71
13-DW25	E Overland Discharge from Basin 2	28-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.49
13-DW25	E Overland Discharge from Basin 2	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	0.95
13-DW25 dup	E Overland Discharge from Basin 2	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	0.96
13-DW25	E Overland Discharge from Basin 2	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	1
13-DW25	E Overland Discharge from Basin 2	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.82
13-DW30	Pump from Basin 3 (North)	27-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	---
13-DW30	Pump from Basin 3 (North)	28-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	0.66
13-DW30 dup	Pump from Basin 3 (North)	28-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	0.66
13-DW30	Pump from Basin 3 (North)	28-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	0.67
13-DW30	Pump from Basin 3 (North)	28-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	---	0.66
13-DW30	Pump from Basin 3 (North)	28-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW30	Pump from Basin 3 (North)	28-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.7
13-DW30	Pump from Basin 3 (North)	28-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	0.13	<0.1	<0.2	<0.2	<1	---	0.67
13-DW30	Pump from Basin 3 (North)	28-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.83
13-DW30	Pump from Basin 3 (North)	28-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30	Pump from Basin 3 (North)	28-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.68
13-DW30	Pump from Basin 3 (North)	28-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	0.9
13-DW30	Pump from Basin 3 (North)	28-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.72
13-DW30	Pump from Basin 3 (North)	28-Sep-13	23:00	---	---	---	---	---	---	---	---	<1	---	1.00
13-DW30	Pump from Basin 3 (North)	29-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	0.13	<0.1	<0.2	<0.2	<1	---	0.99
13-DW30	Pump from Basin 3 (North)	29-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	<1	---	0.66
13-DW30	Pump from Basin 3 (North)	29-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.83
13-DW30	Pump from Basin 3 (North)	29-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.69
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[††] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW30	Pump from Basin 3 (North)	29-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.71
13-DW30 dup	Pump from Basin 3 (North)	29-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.78
13-DW30	Pump from Basin 3 (North)	29-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.78
13-DW30	Pump from Basin 3 (North)	29-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.66
13-DW30	Pump from Basin 3 (North)	29-Sep-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW30	Pump from Basin 3 (North)	29-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30	Pump from Basin 3 (North)	29-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.66
13-DW30	Pump from Basin 3 (North)	29-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.74
13-DW30	Pump from Basin 3 (North)	29-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.77
13-DW30	Pump from Basin 3 (North)	30-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.61
13-DW30	Pump from Basin 3 (North)	30-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	0.67
13-DW30	Pump from Basin 3 (North)	30-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1.50
13-DW30	Pump from Basin 3 (North)	30-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.69
13-DW30	Pump from Basin 3 (North)	30-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.40
13-DW30	Pump from Basin 3 (North)	30-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW30	Pump from Basin 3 (North)	30-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.71
13-DW30	Pump from Basin 3 (North)	30-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30	Pump from Basin 3 (North)	30-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.71
13-DW30	Pump from Basin 3 (North)	01-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.61
13-DW30	Pump from Basin 3 (North)	01-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW30	Pump from Basin 3 (North)	01-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30	Pump from Basin 3 (North)	01-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.64
13-DW30	Pump from Basin 3 (North)	01-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.6
13-DW30	Pump from Basin 3 (North)	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.55
13-DW30	Pump from Basin 3 (North)	01-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	4	1.4
13-DW30	Pump from Basin 3 (North)	01-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW30	Pump from Basin 3 (North)	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.6
13-DW30	Pump from Basin 3 (North)	01-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30	Pump from Basin 3 (North)	01-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW30	Pump from Basin 3 (North)	01-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.58
13-DW30	Pump from Basin 3 (North)	02-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	0.37	<0.1	<0.2	<0.2	<1	---	0.64
13-DW30	Pump from Basin 3 (North)	02-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30	Pump from Basin 3 (North)	02-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	0.13	<0.1	<0.2	<0.2	<1	---	0.55
13-DW30	Pump from Basin 3 (North)	02-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	0.26	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30	Pump from Basin 3 (North)	02-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.55
13-DW30	Pump from Basin 3 (North)	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30	Pump from Basin 3 (North)	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30	Pump from Basin 3 (North)	02-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.53
13-DW30	Pump from Basin 3 (North)	02-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30	Pump from Basin 3 (North)	02-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW30	Pump from Basin 3 (North)	02-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30	Pump from Basin 3 (North)	02-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW30	Pump from Basin 3 (North)	02-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30	Pump from Basin 3 (North)	03-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30	Pump from Basin 3 (North)	03-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30	Pump from Basin 3 (North)	03-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30	Pump from Basin 3 (North)	03-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.49
13-DW30	Pump from Basin 3 (North)	03-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30	Pump from Basin 3 (North)	03-Oct-13	9:00	---	---	---	---	---	---	---	---	<1	---	0.51
13-DW30	Pump from Basin 3 (North)	03-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW30 dup	Pump from Basin 3 (North)	03-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30	Pump from Basin 3 (North)	03-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30	Pump from Basin 3 (North)	03-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.82
13-DW30	Pump from Basin 3 (North)	03-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30	Pump from Basin 3 (North)	04-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30 dup	Pump from Basin 3 (North)	04-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.63
13-DW30	Pump from Basin 3 (North)	04-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.75
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[††] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW30	Pump from Basin 3 (North)	04-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW30	Pump from Basin 3 (North)	05-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30	Pump from Basin 3 (North)	06-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30a	Pump from Basin 3 (North)	29-Sep-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	0.89
13-DW30a	Pump from Basin 3 (North)	29-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	1.6
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.72
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.89
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	2.7
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.18	<0.1	<0.2	<0.2	<1	1.3	1.6
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.75
13-DW30a dup	Pump from Basin 3 (North)	30-Sep-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1.1
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.6
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.82
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.6
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.77
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.72
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.17	<0.1	<0.2	<0.2	<1	<1	1.2
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.76
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.52
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.71
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.7	1.3	0.58
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.63
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	<1	---	0.6
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.3
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.52
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	0.26	<0.2	<1	---	0.48
13-DW30a	Pump from Basin 3 (North)	05-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30a dup	Pump from Basin 3 (North)	05-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.77
13-DW30a	Pump from Basin 3 (North)	06-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30a	Pump from Basin 3 (North)	07-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30a	Pump from Basin 3 (North)	13-Oct-13	15:00	---	---	---	---	---	---	---	---	<1	---	0.76
13-DW30a	Pump from Basin 3 (North)	14-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.60
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.51
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.64
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.49
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.1	<0.2	<0.2	<1	---	0.47
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	17:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.5	<1	1.5
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.72
13-DW30c	Pump from Basin 3 (North)	04-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.65
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.52
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	<1	---	1.00
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.23	<0.2	<1	---	0.72
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW30c	Pump from Basin 3 (North)	05-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.26	<0.2	<1	---	0.52
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.48
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.64
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.46
13-DW30c dup	Pump from Basin 3 (North)	06-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.46
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.58
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.58
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.51
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	17:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	<2	1.00
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.52
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.49
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.48
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.49
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.11	<0.2	<0.2	<1	---	0.5
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.63
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.64
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.64
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	17:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	<2	0.7
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.78
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.49
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.47
13-DW30c dup	Pump from Basin 3 (North)	08-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.51
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.52
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.53
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	<1	0.59
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	0.15	<0.1	0.25	<0.2	1.1	---	0.5
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.46
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.45
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.22	0.33	0.25	<1	---	0.44
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	<1	0.59
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	17:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	<1	0.6
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	<0.2	0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	<0.2	0.2	<1	---	0.58
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[††] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.21	<0.2	<1	---	0.65
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	<0.2	0.2	<1	---	0.58
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.6
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.63
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.57
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW30c dup	Pump from Basin 3 (North)	09-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	<0.1
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.58
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	1.3	0.52
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	17:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.7	<1	0.8
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.50
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.64
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.18	0.32	0.21	<1	---	0.51
13-DW30c dup	Pump from Basin 3 (North)	10-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.28	<0.2	<1	---	0.51
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.94
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.47
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.46
13-DW30c dup	Pump from Basin 3 (North)	10-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.48
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.48
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.11	<0.2	<0.2	<1	---	0.54
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.45
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	15:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.5	<2	0.5
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.24	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.5
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.43
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.4
13-DW30c dup	Pump from Basin 3 (North)	11-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.45
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.64
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	0.24	<0.2	<1	1.3	0.44
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.4
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.4
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	0.68	<0.1	<0.2	<0.2	<1	1.3	0.39
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	15:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	0.3	<0.1	0.5	<1	0.8
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	0.13	<0.1	<0.2	<0.2	<1	---	0.43
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.1	<0.2	<0.2	<1	---	0.84
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.75
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.26	<0.2	<1	---	0.61
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.25	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	0.28	<1	---	0.71
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.25	<0.2	<1	---	0.6
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.46	<0.1	<0.2	<0.2	<1	<1	0.69
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.2	0.42	0.26	<1	---	0.55
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.6
13-DW30c dup	Pump from Basin 3 (North)	12-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.42
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	15:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.7	<1	0.9
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.74	0.33	<1	---	0.46
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[††] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.35
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.36
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.58
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.2	<0.2	<1	---	0.66
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.36
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.48
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.32
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<3.0	0.76
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	5:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.7	<1	1
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.17	<0.27	<0.36	<1	---	0.56
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	<0.2	<0.26	<1	---	0.46
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.48
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.38
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.42
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.41
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	6.7	2.5
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	0.55	<1	---	0.59
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.42
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.44
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	15:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	<1	1.1
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	17:00	---	---	---	---	---	---	---	---	<1	---	0.43
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.74
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.73
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW30c dup	Pump from Basin 3 (North)	15-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.45
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.19	0.37	0.22	<1	---	0.71
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.3	<0.2	<1	---	1.2
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.51
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.71
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	11:00	<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	15	0.8
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.55
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	1.1
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.71
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.75
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.2
13-DW30c dup	Pump from Basin 3 (North)	16-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.88
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.3
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.67
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.97
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.94
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.55
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.57
13-DW30c	Pump from Basin 3 (North)	17-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.84
13-DW30c dup	Pump from Basin 3 (North)	17-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	---	0.94
13-DW30c	Pump from Basin 3 (North)	17-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	---	0.68
13-DW30c	Pump from Basin 3 (North)	17-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30c	Pump from Basin 3 (North)	17-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	17-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	17-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.2
13-DW30c dup	Pump from Basin 3 (North)	18-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.66
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.79
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[††] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.54
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.76
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.78
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	0.27	<0.2	<1	4	1.2
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.6	---	1.1
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.7
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.66
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.57
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30c dup	Pump from Basin 3 (North)	19-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.66
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.0	1.3	0.64
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.83
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.70
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	2.7	0.50
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.93
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.50
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.51
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.59
13-DW30c dup	Pump from Basin 3 (North)	20-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.55
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.53
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	1.2
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.74
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.66
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.2
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.55
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	---	0.73
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.61
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.1
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	<1	---	0.66
13-DW30c dup	Pump from Basin 3 (North)	21-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.5
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	0.13	<0.1	<0.2	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.82
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.63
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.6
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	11:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	1.7
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	2
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	1
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	17:00	<0.0004	<0.002	<0.0004	<0.004	0.2	<0.1	<0.2	<0.2	<1	2	0.92
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	19:00	<0.0004	<0.002	<0.0004	<0.004	0.21	<0.1	<0.2	<0.2	<1	---	0.85
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	21:00	<0.0004	<0.002	<0.0004	<0.004	0.23	<0.1	<0.2	<0.2	<1	---	0.82
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	3.9
13-DW30c	Pump from Basin 3 (North)	22-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.1	<0.2	<0.2	<1	---	0.74
13-DW30c dup	Pump from Basin 3 (North)	22-Oct-13	1:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.62
13-DW30c	Pump from Basin 3 (North)	22-Oct-13	3:00	<0.0004	<0.002	<0.0004	<0.004	0.11	<0.1	<0.2	<0.2	<1	---	0.6
13-DW30c	Pump from Basin 3 (North)	22-Oct-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.69
13-DW30c	Pump from Basin 3 (North)	22-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	47	15
13-DW30c	Pump from Basin 3 (North)	22-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.67
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

APPENDIX B1.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample time	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[TT] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DW31	NW Overland Discharge from Basin 2	28-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	0.16	<0.1	<0.2	<0.2	<2.0	2	0.71
13-DW31	NW Overland Discharge from Basin 2	28-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.66
13-DW31	NW Overland Discharge from Basin 2	29-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.64
13-DW31	NW Overland Discharge from Basin 2	29-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.62
13-DW31	NW Overland Discharge from Basin 2	30-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.18	<0.1	<0.2	<0.2	<1	<1	0.57
13-DW31	NW Overland Discharge from Basin 2	01-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.25	<0.1	<0.2	<0.2	<1	6	0.51
13-DW31	NW Overland Discharge from Basin 2	01-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.51
13-DW31	NW Overland Discharge from Basin 2	02-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.6
13-DW31	NW Overland Discharge from Basin 2	02-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.53
13-DW31	NW Overland Discharge from Basin 2	03-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.54
13-DW31	NW Overland Discharge from Basin 2	07-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	---	0.56
13-DW32	NE Overland Discharge from Basin 2	28-Sep-13	5:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	2	0.74
13-DW32	NE Overland Discharge from Basin 2	28-Sep-13	17:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2.7	0.63
13-DW32	NE Overland Discharge from Basin 2	29-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.64
13-DW32	NE Overland Discharge from Basin 2	29-Sep-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.58
13-DW32	NE Overland Discharge from Basin 2	29-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	0.89
13-DW32	NE Overland Discharge from Basin 2	30-Sep-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.58
13-DW32	NE Overland Discharge from Basin 2	30-Sep-13	23:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-DW32	NE Overland Discharge from Basin 2	01-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	0.15	<0.1	<0.2	<0.2	<1	<1	0.53
13-DW32	NE Overland Discharge from Basin 2	01-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	<1	0.52
13-DW32	NE Overland Discharge from Basin 2	02-Oct-13	7:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	2	0.54
13-DW32	NE Overland Discharge from Basin 2	02-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	0.17	<0.1	<0.2	<0.2	<1	<1	0.52
13-DW33	Outflow of North Aquadam	14-Oct-13	13:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	18	4.5
13-DW33	Outflow of North Aquadam	15-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	1.3	1.1
13-DW33	Outflow of North Aquadam	16-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	15	4.5
13-DW33a	Outflow of North Aquadam	17-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	400	45
13-DW33a	Outflow of North Aquadam	17-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	4.7	1.7
13-DW33a	Outflow of North Aquadam	18-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	37	8.9
13-DW33a	Outflow of North Aquadam	18-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.4	44	13
13-DW33a	Outflow of North Aquadam	19-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	19	4.2
13-DW33a	Outflow of North Aquadam	19-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.2	93	48
13-DW33a	Outflow of North Aquadam	20-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	6.7	5
13-DW33a	Outflow of North Aquadam	20-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	13	4.6
13-DW33a	Outflow of North Aquadam	21-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1	23	18
13-DW33a	Outflow of North Aquadam	21-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1	35	16
13-DW33a	Outflow of North Aquadam	22-Oct-13	9:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.1	17	1.9
13-DW33a	Outflow of North Aquadam	22-Oct-13	15:00	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	1.4	19	4
13-DW33a	Outflow of North Aquadam	23-Oct-13	1:00	<0.0004	0.00043	<0.0004	<0.00080	<0.1	<0.1	<0.2	<0.2	1.8	5.3	2.6
13-DW33a	Outflow of North Aquadam	23-Oct-13	3:00	<0.0004	<0.0004	<0.0004	<0.00080	<0.1	<0.1	<0.2	<0.2	<1	36	15
13-DW45	Culvert 15 along E-W Road (@ SG-14)	22-Oct-13	---	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	2.6	3.3	6
13-DW45	Culvert 15 along E-W Road (@ SG-14)	23-Oct-13	---	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	---	---	---	2.2	2	4.3
13-DW45	Culvert 15 along E-W Road (@ SG-14)	29-Oct-13	---	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.5	3.3	2.5
13-DW45	Culvert 15 along E-W Road (@ SG-14)	05-Nov-13	---	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	1.2	---	---
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	22-Oct-13	---	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	3.1	10	7.5
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	23-Oct-13	---	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	---	---	---	3	2	4.4
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	29-Oct-13	---	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	1.6
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	05-Nov-13	---	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
Minimal Detection Limit				**0.0004**	**0.002**	**0.0004**	**0.004**	**0.1**	**0.1**	**0.2**	**0.2**	**2**	**1**	**1**
AENV Tier 1 Wildlife Water*				**0.076**	**4.25**	**2.77**	**0.18**	**46.4**	**42.6**	**69**	**36.4**	**NS**	**NS**	**NS**

Notes:

--- - not analyzed

NS - guideline not specified

* - Alberta Tier 1 Soils and Groundwater Remediation Guidelines - Surface Water Guidelines (AENV, 2010)

Italics - indicates values do not meet applicable guidelines

APPENDIX B2.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW10	Pump from Basin 1	28-Sep-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	30-Sep-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	30-Sep-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10 dup	Pump from Basin 1	30-Sep-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	01-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	01-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.011	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	02-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	03-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	03-Oct-13	7:00	<0.2	<0.2	<0.2	<0.009	<0.02	<0.2	<0.2	<0.09	<0.01	<0.2	<0.09	0.03	<0.2	<0.09	<0.2	<0.2	0.02	<0.5
13-DW10	Pump from Basin 1	03-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	04-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	04-Oct-13	11:00	<0.2	<0.2	<0.2	0.01	<0.02	<0.2	<0.2	<0.09	<0.01	<0.2	<0.09	0.02	<0.2	<0.09	<0.2	<0.2	0.02	<0.5
13-DW10	Pump from Basin 1	04-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	05-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	05-Oct-13	7:00	<0.2	<0.2	<0.2	<0.009	<0.02	<0.2	<0.2	<0.09	<0.01	<0.2	<0.09	0.03	<0.2	<0.09	<0.2	<0.2	0.02	<0.5
13-DW10	Pump from Basin 1	05-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	06-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	06-Oct-13	7:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW10	Pump from Basin 1	06-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	07-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	08-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	08-Oct-13	7:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW10	Pump from Basin 1	09-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	10-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	10-Oct-13	7:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW10	Pump from Basin 1	10-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	11-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	11-Oct-13	7:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW10	Pump from Basin 1	11-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	12-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	12-Oct-13	7:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW10	Pump from Basin 1	12-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	13-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	13-Oct-13	21:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Pump from Basin 1	14-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10A	Basin 1 Discharge into Storage Tank	25-Oct-13	14:51	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	0.034	<0.0075	0.011	<0.050	<0.0085	<0.10	<0.050	***0.037***	<0.20
13-DW11	E Overland discharge from Basin 1	28-Sep-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW11	E Overland discharge from Basin 1	30-Sep-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW11	E Overland discharge from Basin 1	30-Sep-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW11	E Overland discharge from Basin 1	01-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW11	E Overland discharge from Basin 1	01-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.017	<0.050	<0.0085	0.24	<0.050	<0.020	<0.20
13-DW11	E Overland discharge from Basin 1	02-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW12	W Overland discharge from Basin 1	28-Sep-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW12	W Overland discharge from Basin 1	30-Sep-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW12	W Overland discharge from Basin 1	30-Sep-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW12	W Overland discharge from Basin 1	01-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.013	<0.050	<0.0085	0.33	<0.050	<0.020	<0.20
13-DW12	W Overland discharge from Basin 1	01-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.013	<0.050	<0.0085	0.23	<0.050	<0.020	<0.20
13-DW12	W Overland discharge from Basin 1	02-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX B2.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW20	Pump from Basin 2	28-Sep-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.011	0.13	<0.0085	0.26	0.094	<0.020	<0.20
13-DW20	Pump from Basin 2	30-Sep-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.11	<0.0085	0.22	0.1	<0.020	<0.20
13-DW20	Pump from Basin 2	01-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.12	<0.0085	0.23	0.12	<0.020	<0.20
13-DW20	Pump from Basin 2	01-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.11	<0.0085	0.2	0.11	<0.020	<0.20
13-DW20	Pump from Basin 2	02-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.12	<0.0085	0.22	0.12	<0.020	<0.20
13-DW20	Pump from Basin 2	03-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.1	<0.0085	0.17	0.097	<0.020	<0.20
13-DW20	Pump from Basin 2	03-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.012	0.11	<0.0085	0.19	0.11	<0.020	<0.20
13-DW20	Pump from Basin 2	04-Oct-13	19:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.078	<0.0085	0.24	0.069	<0.020	<0.20
13-DW20	Pump from Basin 2	05-Oct-13	21:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.23	<0.050	***0.059***	<0.20
13-DW20	Pump from Basin 2	06-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.078	<0.0085	0.15	0.075	<0.020	<0.20
13-DW20	Pump from Basin 2	07-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.095	<0.0085	0.18	0.11	<0.020	<0.20
13-DW20	Pump from Basin 2	08-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.072	<0.0085	0.11	0.087	<0.020	<0.20
13-DW20	Pump from Basin 2	08-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.07	<0.0085	<0.10	0.068	<0.020	<0.20
13-DW20	Pump from Basin 2	09-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.076	<0.0085	0.14	0.081	<0.020	<0.20
13-DW20	Pump from Basin 2	09-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.069	<0.0085	0.13	0.074	<0.020	<0.20
13-DW20	Pump from Basin 2	11-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.088	<0.0085	0.15	0.083	<0.020	<0.20
13-DW20	Pump from Basin 2	11-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.066	<0.0085	0.13	0.067	<0.020	<0.20
13-DW20	Pump from Basin 2	12-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW20	Pump from Basin 2	12-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.063	<0.0085	0.11	0.095	<0.020	<0.20
13-DW20	Pump from Basin 2	13-Oct-13	5:00	0.15	<0.10	<0.20	***0.026***	0.0098	<0.0085	<0.0085	<0.0085	0.0095	0.033	<0.0075	0.026	0.2	<0.0085	0.25	***0.42***	***0.051***	<0.20
13-DW21	Basin 2 Discharge Line before Filtration	28-Sep-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.12	<0.0085	0.26	0.089	<0.020	<0.20
13-DW21	Basin 2 Discharge Line before Filtration	05-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.083	<0.0085	0.16	0.072	<0.020	<0.20
13-DW21	Basin 2 Discharge Line before Filtration	06-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.086	<0.0085	0.16	0.083	<0.020	<0.20
13-DW21	Basin 2 Discharge Line before Filtration	07-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.092	<0.0085	0.18	0.08	<0.020	<0.20
13-DW21	Basin 1 Discharge Line before Filtration	17-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW21	Basin 1 Discharge Line before Filtration	17-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW21	Basin 1 Discharge Line before Filtration	18-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW21	Basin 1 Discharge Line before Filtration	19-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	0.029	<0.0075	<0.010	0.088	<0.0085	0.11	0.22	***0.035***	<0.20
13-DW21	Basin 1 Discharge Line before Filtration	19-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	0.094	<0.020	<0.20
13-DW21a	Basin 1 Discharge Line before Filtration	21-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.013	<0.050	<0.0085	<0.10	0.11	<0.020	<0.20
13-DW22	Basin 2 Discharge Line after Filtration	28-Sep-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	0.11	<0.0085	0.23	0.079	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	28-Sep-13	11:00	<0.10	<0.10	<0.21	<0.010	<0.0089	<0.0089	<0.0089	<0.0089	<0.0078	<0.0089	<0.0078	<0.010	<0.052	<0.0089	<0.10	<0.052	<0.021	<0.21
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	01-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	03-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	03-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	03-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	04-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	04-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	04-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	5:00	<0.10	<0.10	<0.028	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	05-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX B2.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW23	Basin 2 Discharge Line after Carbon Treatment	06-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	5:00	<0.10	<0.10	<0.21	<0.010	<0.0089	<0.0089	<0.0089	<0.0089	<0.0078	<0.0089	<0.0078	<0.010	<0.052	<0.0089	<0.10	<0.052	<0.021	<0.21
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	07-Oct-13	23:00	<0.11	<0.11	<0.21	<0.011	<0.0091	<0.0091	<0.0091	<0.0091	<0.0080	<0.0091	<0.0080	<0.011	<0.053	<0.0091	<0.11	<0.053	<0.021	<0.21
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	08-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	09-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	10-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	11-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	12-Oct-13	23:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	13-Oct-13	1:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23	Basin 2 Discharge Line after Carbon Treatment	13-Oct-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	7:00	<0.1	<0.1	<0.1	<0.005	<0.01	0.2	0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	16-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	22-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW25	E Overland Discharge from Basin 2	28-Sep-13	3:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW25	E Overland Discharge from Basin 2	28-Sep-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW25	E Overland Discharge from Basin 2	01-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW25 dup	E Overland Discharge from Basin 2	01-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW25	E Overland Discharge from Basin 2	02-Oct-13	11:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW25	E Overland Discharge from Basin 2	02-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX B2.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW30	Pump from Basin 3 (North)	28-Sep-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30	Pump from Basin 3 (North)	30-Sep-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30	Pump from Basin 3 (North)	01-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30	Pump from Basin 3 (North)	01-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30	Pump from Basin 3 (North)	02-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30	Pump from Basin 3 (North)	02-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30	Pump from Basin 3 (North)	03-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30a	Pump from Basin 3 (North)	01-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30a	Pump from Basin 3 (North)	02-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30a	Pump from Basin 3 (North)	03-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Pump from Basin 3 (North)	04-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Pump from Basin 3 (North)	04-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Pump from Basin 3 (North)	04-Oct-13	17:00	<0.2	<0.2	<0.2	<0.009	<0.02	<0.2	<0.2	<0.09	<0.01	<0.2	<0.09	<0.02	<0.2	<0.09	<0.2	<0.2	<0.02	<0.5
13-DW30C	Pump from Basin 3 (North)	05-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Pump from Basin 3 (North)	06-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Pump from Basin 3 (North)	06-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Pump from Basin 3 (North)	06-Oct-13	17:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	07-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	17:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	17:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	15:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	15:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	15:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	13-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	14-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	11:00	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	0.0086	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX B2.

WATER QUALITY RESULTS - PUMPED WATER

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Pump from Basin 3 (North)	22-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW31	NW Overland Discharge from Basin 2	28-Sep-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW31	NW Overland Discharge from Basin 2	30-Sep-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW31	NW Overland Discharge from Basin 2	01-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW31	NW Overland Discharge from Basin 2	01-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW31	NW Overland Discharge from Basin 2	02-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW31	NW Overland Discharge from Basin 2	02-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW32	NE Overland Discharge from Basin 2	28-Sep-13	5:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW32	NE Overland Discharge from Basin 2	30-Sep-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW32	NE Overland Discharge from Basin 2	01-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW32	NE Overland Discharge from Basin 2	01-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW32	NE Overland Discharge from Basin 2	02-Oct-13	7:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW32	NE Overland Discharge from Basin 2	02-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33	Outflow of North Aquadam	14-Oct-13	13:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33	Outflow of North Aquadam	15-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33	Outflow of North Aquadam	16-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	17-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	17-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33	Outflow of North Aquadam	18-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33	Outflow of North Aquadam	18-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	19-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	19-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	20-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	20-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	21-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	21-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	22-Oct-13	9:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	22-Oct-13	15:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	23-Oct-13	1:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW33a	Outflow of North Aquadam	23-Oct-13	3:00	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW45	Culvert 15 along E-W Road (@ SG-14)	22-Oct-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW45	Culvert 15 along E-W Road (@ SG-14)	23-Oct-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW45	Culvert 15 along E-W Road (@ SG-14)	29-Oct-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW45	Culvert 15 along E-W Road (@ SG-14)	05-Nov-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	22-Oct-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	23-Oct-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	29-Oct-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW49	E Ladder Road Culvert N of Basin 4 (@ SG-1)	05-Nov-13	---	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Minimal Detection Limit				**0.1**	**0.1**	**0.2**	**0.01**	**0.0085**	**0.0085**	**0.0085**	**0.0085**	**0.0075**	**0.0085**	**0.0075**	**0.01**	**0.05**	**0.0085**	**0.1**	**0.05**	**0.02**	**0.2**
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

Notes:

--- - not analyzed

NS - not specified

* - Alberta Environment Surface Water Quality Guidelines for use in Alberta (AENV, 1999)

Italics - indicates values do not meet applicable guidelines

APPENDIX B3.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW10	Pump from Basin 1	28-Sep-13	13:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1	---	0.74
13-DW10 dup	Pump from Basin 1	28-Sep-13	13:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.1	---	0.97
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.1	---	0.23
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	27
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30	Pump from Basin 3 (North)	28-Sep-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<2.0	---	0.66
13-DW30 dup	Pump from Basin 3 (North)	28-Sep-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<2.0	---	0.66
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	2	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	10	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	0
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW23	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.47
13-DW23 dup	Basin 2 Discharge Line after Carbon Treatment	29-Sep-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	0.14	<0.10	<0.20	<0.20	<1.0	---	0.47
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30	Pump from Basin 3 (North)	29-Sep-13	9:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.71
13-DW30 dup	Pump from Basin 3 (North)	29-Sep-13	9:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1	---	0.78
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.07
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	9
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW10	Pump from Basin 1	30-Sep-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	2	0.68
13-DW10 dup	Pump from Basin 1	30-Sep-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.65
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.03
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	5
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30a	Pump from Basin 3 (North)	30-Sep-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.75
13-DW30a dup	Pump from Basin 3 (North)	30-Sep-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<100	<0.10	<0.20	<0.20	---	---	---
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	---	---	---
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	---	---	---
13-DW20	Pump from Basin 2	01-Oct-13	5:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.61
13-DW20 dup	Pump from Basin 2	01-Oct-13	5:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1	3.3	0.65
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.04
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	6
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW25	E Overland Discharge from Basin 2	01-Oct-13	11:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.95
13-DW25 dup	E Overland Discharge from Basin 2	01-Oct-13	11:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.96
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	0	0.01
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	1
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX B3.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW10	Pump from Basin 1	02-Oct-13	17:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DW10 dup	Pump from Basin 1	02-Oct-13	17:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	---	---	---
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	---	---	---
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	---	---	---
13-DW23	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	9:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.82
13-DW23 dup	Basin 2 Discharge Line after Carbon Treatment	02-Oct-13	9:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.82
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	0
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW10	Pump from Basin 1	03-Oct-13	3:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.5
13-DW10 dup	Pump from Basin 1	03-Oct-13	3:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	---	---	---
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	---	---	---
13-DW30	Pump from Basin 3 (North)	03-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.5
13-DW30 dup	Pump from Basin 3 (North)	03-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	---	---	---
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	---	---	---
13-DW30	Pump from Basin 3 (North)	04-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.54
13-DW30 dup	Pump from Basin 3 (North)	04-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.63
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.09
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	15
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30A	Pump from Basin 3 (North)	05-Oct-13	5:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.54
13-DW30A dup	Pump from Basin 3 (North)	05-Oct-13	5:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.77
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.23
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	35
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW10	Pump from Basin 1	05-Oct-13	9:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.8
13-DW10 dup	Pump from Basin 1	05-Oct-13	9:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.73
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.07
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	9
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	06-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.46
13-DW30c dup	Pump from Basin 3 (North)	06-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.46
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good

APPENDIX B3.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW10	Pump from Basin 1	07-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.1	<0.20	<0.20	1.1	---	0.69
13-DW10 dup	Pump from Basin 1	07-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	0.22	<0.20	1.2	---	0.64
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	0.02	---	---	0.1	---	0.05
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	8
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	08-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.47
13-DW30c dup	Pump from Basin 3 (North)	08-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.1	---	0.51
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.04
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW10	Pump from Basin 1	09-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.3	---	0.81
13-DW10 dup	Pump from Basin 1	09-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.1	---	0.84
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.2	---	0.03
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	4
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	09-Oct-13	13:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.57
13-DW30c dup	Pump from Basin 3 (North)	09-Oct-13	13:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.18	0.32	0.21	<1.0	---	0.51
13-DW30c dup	Pump from Basin 3 (North)	10-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.28	<0.20	<1.0	---	0.51
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	0.03	0.04	---	---	---	0
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	0
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	10-Oct-13	9:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.46
13-DW30c dup	Pump from Basin 3 (North)	10-Oct-13	9:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.48
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.02
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW10	Pump from Basin 1	11-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.21	<0.20	1.3	---	0.67
13-DW10 dup	Pump from Basin 1	11-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.2	<0.20	1.3	---	0.61
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	0.01	---	0	---	0.06
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	9
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good

APPENDIX B3.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Pump from Basin 3 (North)	11-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.4
13-DW30c dup	Pump from Basin 3 (North)	11-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.45
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.05
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW10	Pump from Basin 1	12-Oct-13	3:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	0.23	<0.20	1	---	0.86
13-DW10 dup	Pump from Basin 1	12-Oct-13	3:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.19	0.35	0.21	<1.0	---	0.85
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	0.05	0.12	---	---	---	0.01
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	1
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	12-Oct-13	13:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.6
13-DW30c dup	Pump from Basin 3 (North)	12-Oct-13	13:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.54
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.06
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	11
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW10	Pump from Basin 1	13-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.58
13-DW10 dup	Pump from Basin 1	13-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.83
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.25
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	35
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.69
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	14-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.79
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.1
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	14
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	15-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.67
13-DW30c dup	Pump from Basin 3 (North)	15-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.45
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.22
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	16-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	1.2
13-DW30c dup	Pump from Basin 3 (North)	16-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	1
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.2
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	18
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good

APPENDIX B3.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Pump from Basin 3 (North)	17-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.2	---	0.84
13-DW30c dup	Pump from Basin 3 (North)	17-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.2	---	0.94
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0	---	0.1
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	11
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.3	<1.0	1.1
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.2	<1.0	1
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.1	---	0.1
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	10
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Pump from Basin 3 (North)	18-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	1.2
13-DW30c dup	Pump from Basin 3 (North)	18-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	1
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.2
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	18
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.22	<0.20	1.3	<1.0	1.3
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	18-Oct-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.2	---	0.8
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.1	---	0.5
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	48
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	***Poor***
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	13:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	1.4
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	19-Oct-13	13:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.3	---	1.5
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.1
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	7
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW30c	Pump from Basin 3 (North)	19-Oct-13	3:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.53
13-DW30c dup	Pump from Basin 3 (North)	19-Oct-13	3:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.66
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.13
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	22
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	0.22	1.0	2.0	8.0
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.1	<1.0	7.2
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.1	---	0.8
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	11
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX B3.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Pump from Basin 3 (North)	20-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.59
13-DW30c dup	Pump from Basin 3 (North)	20-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.53
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.06
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	11
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	4.4
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	21-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	4	2.4
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	2
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	59
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	***Poor***
13-DW30c	Pump from Basin 3 (North)	21-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	0.11	<0.10	<0.20	<0.20	<1.0	---	0.66
13-DW30c dup	Pump from Basin 3 (North)	21-Oct-13	1:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	1.5
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.84
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	78
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	***Poor***
13-DW30c	Pump from Basin 3 (North)	22-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	0.12	<0.10	<0.20	<0.20	<1.0	---	0.74
13-DW30c dup	Pump from Basin 3 (North)	22-Oct-13	1:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.62
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.12
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	18
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good

Notes:

--- - not applicable

* - non-detectable concentrations are assessed at 95% of the detection limit

** - the reliable (reporting) detection limit (RDL) or practical detection limit (PDL) is defined as 5 times the DL

Good - evaluation indicates acceptable reproducibility

Poor - evaluation indicates poor reproducibility

APPENDIX B4.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Date	Sample Time		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW10	Pump from Basin 1	30-Sep-13	15:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10 dup	Pump from Basin 1	30-Sep-13	15:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW25	E Overland Discharge from Basin 2	01-Oct-13	11:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW25 dup	E Overland Discharge from Basin 2	01-Oct-13	11:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	11:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	13-Oct-13	11:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	17-Oct-13	11:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW23a	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a dup	Basin 1 Discharge Line after Carbon Treatment	20-Oct-13	9:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

Notes:

--- - not applicable

* - non-detectable concentrations are assessed at 95% of the detection limit

** - the reliable (reporting) detection limit (RDL) or practical detection limit (PDL) is defined as 5 times the DL

Good - evaluation indicates acceptable reproducibility

Poor - evaluation indicates poor reproducibility

APPENDIX B5.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS Maxxam vs Exova

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW10	Maxxam	Pump from Basin 1	03-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.65
13-DW10	Exova	Pump from Basin 1	03-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	<1	---
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	---
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	---
13-DW10	Maxxam	Pump from Basin 1	04-Oct-13	11:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.78
13-DW10	Exova	Pump from Basin 1	04-Oct-13	11:00		<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	2	2
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	---	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	1.22
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	88
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	***Poor***
13-DW10	Maxxam	Pump from Basin 1	05-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.73
13-DW10	Exova	Pump from Basin 1	05-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.6	2	1.9
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	1.17
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	89
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-DW10	Maxxam	Pump from Basin 1	06-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.32	<0.20	<1.0	1.3	0.47
13-DW10	Exova	Pump from Basin 1	06-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.8	<2	0.9
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.43
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	08-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.3	1.3	0.83
13-DW10	Exova	Pump from Basin 1	08-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.8	<1	2.4
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	0.5	---	1.57
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	97
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-DW10	Maxxam	Pump from Basin 1	09-Oct-13	7:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.3	<1.0	0.55
13-DW10	Exova	Pump from Basin 1	09-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.8	<1	1.4
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	0.5	---	0.85
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	87
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-DW30c	Maxxam	Pump from Basin 3 (North)	04-Oct-13	17:00		<0.0004	<0.002	<0.0004	<0.004	0.12	<0.10	<0.20	<0.20	<1.0	---	0.47
13-DW30c	Exova	Pump from Basin 3 (North)	04-Oct-13	17:00		<0.001	<0.001	<0.001	<0.001	<0.2	<0.2	<0.1	<0.1	0.5	<1	1.5
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	---	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	1.03
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	***Poor***
13-DW30c	Maxxam	Pump from Basin 3 (North)	06-Oct-13	17:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.51
13-DW30c	Exova	Pump from Basin 3 (North)	06-Oct-13	17:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.6	<2	1
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.49
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	65
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***

APPENDIX B5.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS Maxxam vs Exova

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW30c	Maxxam	Pump from Basin 3 (North)	07-Oct-13	17:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.64
13-DW30c	Exova	Pump from Basin 3 (North)	07-Oct-13	17:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.6	<2	0.70
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.06
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	9
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	08-Oct-13	17:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.0	<1.0	0.59
13-DW30c	Exova	Pump from Basin 3 (North)	08-Oct-13	17:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.6	<1	0.6
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	0.4	---	0.01
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	2
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	09-Oct-13	17:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.1	1.3	0.52
13-DW30c	Exova	Pump from Basin 3 (North)	09-Oct-13	17:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.7	<1	0.8
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	0.4	---	0.28
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	42
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-DW10	Maxxam	Pump from Basin 1	10-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.1	0.2	0.23	1.0	<1.0	0.85
13-DW10	Exova	Pump from Basin 1	10-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.8	<2	0.9
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	0.2	---	0.05
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	6
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	10-Oct-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	0.45
13-DW30c	Exova	Pump from Basin 3 (North)	10-Oct-13	15:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.5	<2	0.5
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.05
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	11-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.32	0.23	1.1	2	0.67
13-DW10	Exova	Pump from Basin 1	11-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.7	<1	1.3
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	0.4	---	0.63
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	64
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-DW30c	Maxxam	Pump from Basin 3 (North)	11-Oct-13	15:00		<0.0004	<0.002	<0.0004	<0.004	0.68	<0.10	<0.20	<0.20	<1.0	1.3	0.39
13-DW30c	Exova	Pump from Basin 3 (North)	11-Oct-13	15:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	0.3	<0.1	0.5	<1	0.8
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.41
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX B5.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS Maxxam vs Exova

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Date	Sample Time		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DW10	Maxxam	Pump from Basin 1	12-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	0.45	0.19	0.37	0.25	1.1	<1.0	1
13-DW10	Exova	Pump from Basin 1	12-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.9	<2	1.2
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	0.2	---	0.2
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	18
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	12-Oct-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.42
13-DW30c	Exova	Pump from Basin 3 (North)	12-Oct-13	15:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.7	<1	0.9
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.48
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	13-Oct-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<3.0	0.76
13-DW30c	Exova	Pump from Basin 3 (North)	13-Oct-13	5:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.7	<1	1
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.24
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	27
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW23a	Maxxam	---	14-Oct-13	7:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	1.4
13-DW23a	Exova	---	14-Oct-13	7:00		<0.001	<0.001	<0.001	<0.001	<0.2	<0.20	<0.10	<0.10	0.8	<1	2.5
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	1.1
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	56
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-DW30c	Maxxam	Pump from Basin 3 (North)	14-Oct-13	15:00		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.44
13-DW30c	Exova	Pump from Basin 3 (North)	14-Oct-13	15:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.6	<1	1.1
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.66
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	15-Oct-13	11:00		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	0.71
13-DW30c	Exova	Pump from Basin 3 (North)	15-Oct-13	11:00		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.6	15	0.8
					Detection Limit (DL)	0.0004	0.001	0.0004	0.001	0.1	0.1	0.1	0.1	0.4	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.005	0.002	0.005	0.5	0.5	0.5	0.5	2	---	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	0.09
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	12
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good

APPENDIX B6.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS Maxxam vs Exova

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Date	Sample Time		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW10	Maxxam	Pump from Basin 1	03-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Exova	Pump from Basin 1	03-Oct-13	7:00		<0.2	<0.2	<0.2	<0.009	<0.02	<0.2	<0.2	<0.09	<0.01	<0.2	<0.09	0.03	<0.2	<0.09	<0.2	<0.2	0.02	<0.5
					Detection Limit (DL)	0.1	0.1	0.2	0.009	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.045	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	05-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Exova	Pump from Basin 1	05-Oct-13	7:00		<0.2	<0.2	<0.2	<0.009	<0.02	<0.2	<0.2	<0.09	<0.01	<0.2	<0.09	0.03	<0.2	<0.09	<0.2	<0.2	0.02	<0.5
					Detection Limit (DL)	0.1	0.1	0.2	0.009	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.045	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	06-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Exova	Pump from Basin 1	06-Oct-13	7:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	08-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.01	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Exova	Pump from Basin 1	08-Oct-13	7:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30C	Maxxam	Pump from Basin 3 (North)	04-Oct-13	17:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Exova	Pump from Basin 3 (North)	04-Oct-13	17:00		<0.2	<0.2	<0.2	<0.009	<0.02	<0.2	<0.2	<0.09	<0.01	<0.2	<0.09	<0.02	<0.2	<0.09	<0.2	<0.2	<0.02	<0.5
					Detection Limit (DL)	0.1	0.1	0.2	0.009	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.045	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX B6.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS Maxxam vs Exova

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Date	Sample Time		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW30C	Maxxam	Pump from Basin 3 (North)	06-Oct-13	17:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30C	Exova	Pump from Basin 3 (North)	06-Oct-13	17:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	08-Oct-13	17:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Exova	Pump from Basin 3 (North)	08-Oct-13	17:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	10-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Exova	Pump from Basin 1	10-Oct-13	7:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	10-Oct-13	15:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Exova	Pump from Basin 3 (North)	10-Oct-13	15:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	11-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Exova	Pump from Basin 1	11-Oct-13	7:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW30c	Maxxam	Pump from Basin 3 (North)	11-Oct-13	15:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Exova	Pump from Basin 3 (North)	11-Oct-13	15:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW10	Maxxam	Pump from Basin 1	12-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW10	Exova	Pump from Basin 1	12-Oct-13	7:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
					Detection Limit (DL)	0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
					Reliable Detection Limit (RDL)**	0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
					Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX B6.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS Maxxam vs Exova

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Date	Sample Time		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DW30c	Maxxam	Pump from Basin 3 (North)	12-Oct-13	15:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW30c	Exova	Pump from Basin 3 (North)	12-Oct-13	15:00		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
Detection Limit (DL)						0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**						0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*						---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*						---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation						Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DW23a	Maxxam	Basin 2 Discharge Line after Carbon Treatment	14-Oct-13	7:00		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DW23a	Exova	Basin 2 Discharge Line after Carbon Treatment	14-Oct-13	7:00		<0.1	<0.1	<0.1	<0.005	<0.01	0.20	0.10	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
Detection Limit (DL)						0.1	0.1	0.2	0.005	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**						0.5	0.5	1	0.025	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*						---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*						---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation						Good	Good	Good	Good	Good	***Poor***	***Poor***	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

Notes:

--- - not applicable

* - non-detectable concentrations are assessed at 95% of the detection limit

** - the reliable (reporting) detection limit (RDL) or practical detection limit (PDL) is defined as 5 times the DL

Good - evaluation indicates acceptable reproducibility

Poor - evaluation indicates poor reproducibility

APPENDIX B7.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
Trip Blank	28-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	1.3	<0.10
Trip Blank	28-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Trip Blank	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Trip Blank	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
Trip Blank	30-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Trip Blank	30-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	---	<0.10
Trip Blank	01-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Trip Blank	02-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	03-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	04-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	04-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	05-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	05-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	06-Oct-13	---	---	---	---	---	---	---	---	<1.0	<1.0	<0.10
Trip Blank	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
Trip Blank	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	<0.10
Trip Blank	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.14	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	09-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	09-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.17	0.32	0.21	<1.0	<1.0	<0.10
Trip Blank	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.13	<0.10	<0.20	<0.20	<1.0	<3.0	<0.10
Trip Blank	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	<0.10
Trip Blank	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	0.16	0.34	<0.20	<1.0	<1.0	<0.10
Trip Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	<0.10
Trip Blank	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	17-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	17-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.18	<0.10	<0.20	<0.20	<1.0	1.3	0.11
Trip Blank	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	6	<0.10
Trip Blank	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Detection Limit (DL)		**0.0004**	**0.002**	**0.0004**	**0.004**	**0.1**	**0.1**	**0.2**	**0.2**	**1**	**1**	**0.1**

APPENDIX B7.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
Field Blank	28-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<2.0	<1.0	<0.10
Field Blank	28-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Field Blank	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	1.3	<0.10
Field Blank	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Field Blank	30-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	0.34
Field Blank	30-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Field Blank	01-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	<1.0	<0.10
Field Blank	01-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	<1.0	---	<0.10
Field Blank	02-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	02-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	2	<0.10
Field Blank	03-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	03-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
Field Blank	03-Oct-13	---	---	---	---	---	---	---	---	<1.0	---	0.24
Field Blank	04-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	04-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.15
Field Blank	05-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	05-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	<0.10
Field Blank	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.14
Field Blank	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.20	0.2	<1.0	<1.0	<0.10
Field Blank	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.17	0.20	0.22	<1.0	<1.0	<0.10
Field Blank	09-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	<0.10
Field Blank	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.11	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.17	<0.10	<0.20	<0.20	<1.0	<1.0	0.12
Field Blank	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.17	<0.10	<0.20	<0.20	<1.0	<1.0	0.12
Field Blank	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	<0.10
Field Blank	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	17-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	17-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.12	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Spike	03-Oct-13	0.053	0.053	0.048	0.15	<0.1	---	---	---	---	---	---
Spike	04-Oct-13	0.053	0.050	0.047	0.15	<0.1	---	---	---	---	---	---
Spike	04-Oct-13	0.043	0.043	0.041	0.13	<0.1	<0.71	<1.4	<1.4	---	---	---
Spike	05-Oct-13	0.051	0.052	0.047	0.16	<0.1	---	---	---	---	---	---
Spike	07-Oct-13	0.043	0.045	0.041	0.14	<0.1	---	---	---	---	---	---
Spike	10-Oct-13	0.036	0.041	0.038	0.13	<0.1	0.78	1.4	0.35	---	---	---
Spike	11-Oct-13	0.039	0.041	0.039	0.13	0.65	1	1.9	0.57	---	---	---
Spike	11-Oct-13	0.039	0.037	0.036	0.108	<0.20	<0.20	<0.1	<0.1	---	---	---
Spike	16-Oct-13	0.048	0.051	0.047	0.16	<0.1	0.61	1	<0.20	---	---	---
Spike	16-Oct-13	0.042	0.041	0.04	0.13	<0.1	0.72	1.3	0.26	---	---	---
Spike	16-Oct-13	0.046	0.044	0.042	0.122	<0.20	<0.20	0.8	<0.1	---	---	---
Detection Limit (DL)		**0.0004**	**0.002**	**0.0004**	**0.004**	**0.1**	**0.1**	**0.2**	**0.2**	**1**	**1**	**0.1**

Notes:

--- - not analyzed

APPENDIX B8.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
Trip Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.01	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.012	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)		0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2

APPENDIX B8.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
Field Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0097	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)		0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2

Notes:

--- - not analyzed

APPENDIX C

WATER QUALITY DATA – WATER BODY AND WATERCOURSES

APPENDIX C1.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[††] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	24-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.1	<0.2	<0.2	---	---	---
13-SW16	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.0	---	---
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.1	---	---
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.7	---	---
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.9	89	32
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.6	17	14
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.3	3.3	7.5
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	6.3	6.7	9.4
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	6.3	6.7	11
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.1	21	12
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.2	3.3	7.4
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6	6	5
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6	<1.0	5.4
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	5.9	3.3	5.7
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	5.8	3.3	6.6
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.1	4.7	8.5
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.1	6.7	8.3
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.6	21	10
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.46	<0.20	6.7	53	21
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.9	5.3	9
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.5	16	1.5
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.8	66	16
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	0.22	6.8	33	20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.8	1.3	9.8
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.17	0.33	<0.20	6.8	2	10
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.7	2.7	11
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.57	0.2	0.41	0.24	6.9	11	9.9
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.57	0.2	0.41	0.24	6.9	11	9.9
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6	1.3	7.9
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.12	0.55	<0.26	6.6	3.3	8.7
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.4	9.3	11
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.3	4.7	12
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.8	5.3	3.7
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	4.3	6.7	5.1
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	17-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.7	1.3	1.1
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	4.3	1.3	2.2
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	4.6	3.3	2.3
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.6	3.3	3.4
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	3.6	2.7	1.4
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	4.3	17	6.2
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	4.1	3.3	2.6
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	4	2.7	1.4
13-SW26	Downstream Fen Upstream of Pad 21	10	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	---	---	---	---	---	---
13-SW26	Downstream Fen Upstream of Pad 21	---	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	8.5	210	54
13-SW26	Downstream Fen Upstream of Pad 21	---	01-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	3.4	290	100
13-SW26	Downstream Fen Upstream of Pad 21	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.9	47	9.4
13-SW26	Downstream Fen Upstream of Pad 21	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.4	6.7	2.7
13-SW26	Downstream Fen Upstream of Pad 21	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.3	4.7	2.8
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3	15	11
13-SW26	Downstream Fen Upstream of Pad 21	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	4.1	6.7	3.1
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.9	4.7	2.3
13-SW26	Downstream Fen Upstream of Pad 21	---	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.2	<0.20	1.7	15	6.5
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.5	4	1.2
13-SW26	Downstream Fen Upstream of Pad 21	---	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	2	0.95
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	2	1.9
13-SW26	Downstream Fen Upstream of Pad 21	---	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	11	4.7
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	<0.20	<0.20	1.6	3.3	1.5
AENV Freshwater Aquatic Life*				**0.370**	**0.002**	**0.09**	**0.2**	**NS**	**NS**	**NS**	**NS**	**120**	**NS**	**NS**

APPENDIX C1.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[††] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-SW26	Downstream Fen Upstream of Pad 21	---	09-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.5	8.7	2.6
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	09-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.7	8.7	3
13-SW26	Downstream Fen Upstream of Pad 21	---	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.2	7.3	2.8
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.7	36	19
13-SW26	Downstream Fen Upstream of Pad 21	---	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.24	<0.20	1.5	6	1
13-SW26	Downstream Fen Upstream of Pad 21	---	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.2	<1.0	0.7
13-SW26	Downstream Fen Upstream of Pad 21	---	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.17	0.27	0.38	1.3	49	14
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.17	<0.27	<0.38	1.1	51	17
13-SW26	Downstream Fen Upstream of Pad 21	---	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1	10	2.9
13-SW26	Downstream Fen Upstream of Pad 21	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.7	6.7	7.7
13-SW26	Downstream Fen Upstream of Pad 21	---	16-Oct-13	<0.00040	***0.0022***	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	4	1.6
13-SW26	Downstream Fen Upstream of Pad 21	---	17-Oct-13	<0.00040	***0.0045***	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2	3.3	1.8
13-SW26	Downstream Fen Upstream of Pad 21	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.3	8	2.8
13-SW26	Downstream Fen Upstream of Pad 21	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.0	21	4.5
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.4	25	14
13-SW26	Downstream Fen Upstream of Pad 21	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.8	6	2.9
13-SW26	Downstream Fen Upstream of Pad 21	---	21-Oct-13	<0.0004	***0.0052***	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	3	220	30
13-SW26	Downstream Fen Upstream of Pad 21	---	22-Oct-13	<0.0004	***0.0029***	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.1	33	7
13-SW26	Downstream Fen Upstream of Pad 21	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	3.1	29	4.1
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	3.1	4.7	1.4
13-SW7	Basin 1	50	25-Sep-13	0.00041	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW7	Basin 1	110	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW7 dup	Basin 1	110	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW7	Basin 1	---	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.1	---	---
13-SW7	Basin 1	---	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	0.14	<0.20	<0.20	1.2	---	---
13-SW7 dup	Basin 1	---	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.8	---	---
13-SW7	Basin 1	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW7	Basin 1	---	30-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.6	4	2.2
13-SW7	Basin 1	---	30-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
13-SW7	Basin 1	---	01-Oct-13	0.0022	***0.0079***	0.0021	0.012	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.5
13-SW7	Basin 1	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	0.97
13-SW7	Basin 1	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.69
13-SW7	Basin 1	---	04-Oct-13	0.00043	0.0011	<0.0004	0.0015	<0.1	<0.10	<0.20	<0.20	<1.0	2	0.66
13-SW7	Basin 1	---	05-Oct-13	<0.0004	0.00096	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.66
13-SW7	Basin 1	50	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1	2	0.64
13-SW7	Basin 1	50	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.4	1.3	0.77
13-SW7	Basin 1	50	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.4	6	0.74
13-SW7 dup	Basin 1	---	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.20	<0.20	6.7	7.3	9.7
13-SW22	Basin 1	50	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW22	Basin 1	100	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	0.23	<0.20	<1.0	---	---
13-SW22	Basin 1	---	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW22	Basin 1	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW22	Basin 1	---	30-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	1.3
13-SW22	Basin 1	---	01-Oct-13	<0.0004	<0.002	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	0.51
13-SW22	Basin 1	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.61
13-SW22	Basin 1	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2	1.5
13-SW22	Basin 1	---	04-Oct-13	<0.0004	0.00049	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.49
13-SW22	Basin 1	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.59
13-SW22	Basin 1	50	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.65
13-SW22	Basin 1	50	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.5	3.3	0.88
13-SW22	Basin 1	50	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	2	1.7
13-SW23	Basin 1	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	0.14	<0.10	<0.20	<0.20	<1.0	---	0.47
AENV Freshwater Aquatic Life*				**0.370**	**0.002**	**0.09**	**0.2**	**NS**	**NS**	**NS**	**NS**	**120**	**NS**	**NS**

APPENDIX C1.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 ††C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-SW31	Basin 3	50	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW31	Basin 3	130	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW31	Basin 3	---	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW31	Basin 3	---	28-Sep-13	0.0005	***0.0021***	0.00042	0.0026	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW31	Basin 3	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW31	Basin 3	---	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	1.6
13-SW31	Basin 3	---	01-Oct-13	<0.00040	0.00045	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.7
13-SW31 dup	Basin 3	---	01-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	5.3	1.7
13-SW31	Basin 3	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	6	0.51
13-SW31	Basin 3	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.6
13-SW31	Basin 3	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.48
13-SW31	Basin 3	---	05-Oct-13	<0.0004	0.0012	<0.0004	0.00095	<0.1	<0.10	<0.20	<0.20	<1.0	7.3	1.2
13-SW31	Basin 3	50	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	7.3	1.2
13-SW31	Basin 3	50	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
13-SW31	Basin 3	50	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	2	0.43
13-SW12	Basin 4	surface	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	2	---
13-SW12	Basin 4	depth	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW12	Basin 4	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW12	Basin 4	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW12	Basin 4	---	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	0.99
13-SW12	Basin 4	---	01-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	20	7.8
13-SW12	Basin 4	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	22	0.63
13-SW12	Basin 4	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	0.5
13-SW12	Basin 4	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2	0.76
13-SW12	Basin 4	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.64
13-SW12	Basin 4	50	06-Oct-13	<0.0004	<0.002	0.00055	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	15	2.1
13-SW12	Basin 4	50	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.1	13	1.3
13-SW12	Basin 4	50	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.14	<0.20	<0.20	1.1	<1.0	0.67
13-SW12	Basin 4	---	09-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.0	<1.0	0.43
13-SW12	Basin 4	---	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.56
13-SW12	Basin 4	---	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.2	0.42	0.24	<1.0	2.7	0.5
13-SW12	Basin 4	---	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.16	0.28	<0.20	<1.0	<1.0	0.53
13-SW12	Basin 4	---	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.11	0.55	0.2	<1.0	<1.0	0.58
13-SW12	Basin 4	---	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	4.0	0.64
13-SW12	Basin 4	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	0.66
13-SW12	Basin 4	---	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.57
13-SW12	Basin 4	---	17-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	3.3	0.73
13-SW12	Basin 4	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	2.0	1.2
13-SW12	Basin 4	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.77
13-SW12	Basin 4	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.54
13-SW12	Basin 4	---	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.88
13-SW12	Basin 4	---	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	1.1
13-SW12	Basin 4	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	1.1	11	2.8
13-SW42	Discharge Fen Upstream of Wolf River		29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.9	---	---
13-SW42	Discharge Fen Upstream of Wolf River	---	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.7	8	17
13-SW42	Discharge Fen Upstream of Wolf River	---	01-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.2	17	50
13-SW42	Discharge Fen Upstream of Wolf River	---	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.3	2	11
13-SW42	Discharge Fen Upstream of Wolf River	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.1	4	11
13-SW42	Discharge Fen Upstream of Wolf River	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.9	6	14
13-SW42	Discharge Fen Upstream of Wolf River	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.9	6.7	15
13-SW42	Discharge Fen Upstream of Wolf River	---	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.2	6	13
13-SW42	Discharge Fen Upstream of Wolf River	---	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.2	4	10
13-SW42	Discharge Fen Upstream of Wolf River	---	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.1	5.3	18
13-SW42	Discharge Fen Upstream of Wolf River	---	09-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.9	2	10
AENV Freshwater Aquatic Life*				**0.370**	**0.002**	**0.09**	**0.2**	**NS**	**NS**	**NS**	**NS**	**120**	**NS**	**NS**

APPENDIX C1.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[††] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-SW42	Discharge Fen Upstream of Wolf River	---	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	31	45
13-SW42	Discharge Fen Upstream of Wolf River	---	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.26	<0.10	0.28	<0.20	2.1	210	56
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.31	<0.10	0.2	<0.20	1.9	190	130
13-SW42	Discharge Fen Upstream of Wolf River	---	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.2	22	32
13-SW42	Discharge Fen Upstream of Wolf River	---	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.1	33	31
13-SW42	Discharge Fen Upstream of Wolf River	---	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.6	3.3	11
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.31	<0.20	1.7	6	14
13-SW42	Discharge Fen Upstream of Wolf River	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.7	4	14
13-SW42	Discharge Fen Upstream of Wolf River	---	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.3	14	21
13-SW42	Discharge Fen Upstream of Wolf River	---	16-Oct-13	<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	1.8	21	39.8
13-SW42	Discharge Fen Upstream of Wolf River	---	17-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2	9.3	24
13-SW42	Discharge Fen Upstream of Wolf River	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.1	23	28
13-SW42	Discharge Fen Upstream of Wolf River	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.9	10	21
13-SW42	Discharge Fen Upstream of Wolf River	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	0.12	0.62	<0.20	1.7	3.3	11
13-SW42	Discharge Fen Upstream of Wolf River	---	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.7	47	46
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	16	23
13-SW42	Discharge Fen Upstream of Wolf River	---	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.3	4.7	13
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.4	4.7	12
13-SW42	Discharge Fen Upstream of Wolf River	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.1	3.3	9.8
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.1	10	20
13-SW42	Discharge Fen Upstream of Wolf River	---	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2	10	25
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2	19	32
13-SW43	Wolf River Downstream	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	1.5
13-SW43	Wolf River Downstream	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	4.7	2
13-SW43	Wolf River Downstream	---	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	11	2.2
13-SW43	Wolf River Downstream	---	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.6	4	1.8
13-SW43	Wolf River Downstream	---	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	1.5
13-SW43	Wolf River Downstream	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	4.7	1.7
13-SW44	Wolf River Upstream	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	4	1.2
13-SW44	Wolf River Upstream	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2	1
13-SW44	Wolf River Upstream	---	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.1	<1.0	1.2
13-SW44	Wolf River Upstream	---	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.6	1.3	1
13-SW44	Wolf River Upstream	---	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.1	<1.0	1
13-SW44	Wolf River Upstream	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	1.3
13-SW27	Downstream Fen Downstream of Pad 21	---	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.27	<0.20	2.9	7.3	8.6
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.5	5.3	8.9
13-SW27	Downstream Fen Downstream of Pad 21	---	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.17	<0.27	<0.38	2	37	11
13-SW27	Downstream Fen Downstream of Pad 21	---	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.18	0.35	0.22	1.7	8.7	8.1
13-SW27	Downstream Fen Downstream of Pad 21	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.1	66	12
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.4	4.7	1.8
13-SW27	Downstream Fen Downstream of Pad 21	---	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.1	10	7.3
13-SW27	Downstream Fen Downstream of Pad 21	---	17-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.3	77	23
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	17-Oct-13	<0.00040	***0.0047***	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.7	25	7.3
13-SW27	Downstream Fen Downstream of Pad 21	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.3	6	7.4
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.5	11	8.3
13-SW27	Downstream Fen Downstream of Pad 21	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.6	6.7	8.2
13-SW27	Downstream Fen Downstream of Pad 21	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.6	12	9.1
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.1	6	7.6
13-SW27	Downstream Fen Downstream of Pad 21	---	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.7	67	19
13-SW27	Downstream Fen Downstream of Pad 21	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.7	37	8.3
13-SW27	Downstream Fen Downstream of Pad 21	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.6	4	7.7
AENV Freshwater Aquatic Life*				**0.370**	**0.002**	**0.09**	**0.2**	**NS**	**NS**	**NS**	**NS**	**120**	**NS**	**NS**

APPENDIX C1.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1[††] C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-SW39	Downstream Fen West of Ken Baker Road	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	18	6	4.2
13-SW39	Downstream Fen West of Ken Baker Road	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	18	2	1.6
13-SW39	Downstream Fen West of Ken Baker Road	---	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	18	71	27
13-SW39	Downstream Fen West of Ken Baker Road	---	17-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.3	290	56
13-SW39	Downstream Fen West of Ken Baker Road	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	7.2	51	12
13-SW39	Downstream Fen West of Ken Baker Road	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	7.1	300	48
13-SW39	Downstream Fen West of Ken Baker Road	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	4.6	1.3	3
13-SW39	Downstream Fen West of Ken Baker Road	---	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	4.7	78	18
13-SW39	Downstream Fen West of Ken Baker Road	---	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	4.9	49	9.6
13-SW39	Downstream Fen West of Ken Baker Road	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	5.5	4.7	3.2
13-SW39	Downstream Fen West of Ken Baker Road	---	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	4.2	1.3	2
13-SW39	Downstream Fen West of Ken Baker Road	---	05-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.9	---	---
13-SW46	NE Control Lake	---	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	9.3	---
13-SW47	Borrow Pit	---	25-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	---
13-DP1	Drive point southwest of Pad 21		28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.71	<1.4	<1.4	4.2	550	250
13-DP1	Drive point southwest of Pad 21	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP1	Drive point southwest of Pad 21	175	30-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	---	---	---	---	---	---
13-DP1	Drive point southwest of Pad 21	---	01-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP1	Drive point southwest of Pad 21	126	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.5	1200	190
13-DP1	Drive point southwest of Pad 21	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP1	Drive point southwest of Pad 21	---	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.71	<1.4	<1.4	4.9	540	780
13-DP1	Drive point southwest of Pad 21	138	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP1	Drive point southwest of Pad 21	150	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.10	<0.10	<0.20	<0.20	---	---	---
13-DP1	Drive point southwest of Pad 21	158	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP1	Drive point southwest of Pad 21	164	08-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP1	Drive point southwest of Pad 21	---	09-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	---	---	---	---	---	---
13-DP1	Drive point southwest of Pad 21	---	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	---	---	---	---	---	---
13-DP1	Drive point southwest of Pad 21	---	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	4.1	650	240
13-DP1	Drive point southwest of Pad 21	---	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	3.3	350	290
13-DP1	Drive point southwest of Pad 21	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.6	770	390
13-DP1	Drive point southwest of Pad 21	---	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.3	430	570
13-DP1	Drive point southwest of Pad 21	---	17-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.7	1500	1200
13-DP1	Drive point southwest of Pad 21	---	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.8	350	130
13-DP1	Drive point southwest of Pad 21	---	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.8	290	400
13-DP1	Drive point southwest of Pad 21	---	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	3	780	590
13-DP1	Drive point southwest of Pad 21	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.7	870	250
13-DP1	Drive point southwest of Pad 21	---	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	3.6	730	430
13-DP2	Drive point SW of Basin 4		28-Sep-13	<0.0004	0.0015	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	5.7	4600	<0.10
13-DP2	Drive point SW of Basin 4		29-Sep-13	<0.0004	0.00057	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.4	---	<0.10
13-DP2	Drive point SW of Basin 4	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	4.2	3000	<0.10
13-DP2	Drive point SW of Basin 4	191	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	---	---	---	---	---	---
13-DP2	Drive point SW of Basin 4	---	01-Oct-13	<0.0004	0.0007	<0.0004	<0.0008	<0.1	<0.77	<1.6	<1.6	3.6	---	---
13-DP2	Drive point SW of Basin 4	205	02-Oct-13	<0.0004	<0.64	<0.0004	<0.0008	<0.1	---	---	---	---	---	---
13-DP2	Drive point SW of Basin 4	134	08-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.4	170	160
13-DP2	Drive point SW of Basin 4	---	15-Oct-13	<0.0004	<0.0020	<0.0004	<0.0040	<0.1	<0.10	0.26	<0.20	1.3	97	27
13-DP2	Drive point SW of Basin 4	Exova	15-Oct-13	<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	0.9	120	49.7
13-DP2	Drive point SW of Basin 4	---	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	3.5	890	810
13-DP2	Drive point SW of Basin 4	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.7	75	35
13-DP2 dup	Drive point SW of Basin 4	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.5	74	30
AENV Freshwater Aquatic Life*				**0.370**	**0.002**	**0.09**	**0.2**	**NS**	**NS**	**NS**	**NS**	**120**	**NS**	**NS**

APPENDIX C1.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 ††C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DP3	Drive point S of Basin 3 near E Ladder Road		28-Sep-13	<0.0004	***0.0033***	<0.0004	<0.0008	<0.1	<0.10	0.25	<0.20	2.7	---	<0.10
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2	---	<0.10
13-DP3	Drive point S of Basin 3 near E Ladder Road	87	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.2	2000	970
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	30-Sep-13	<0.0004	0.0010	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.9	700	63
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	01-Oct-13	<0.0004	0.00089	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.2	560	280
13-DP3	Drive point S of Basin 3 near E Ladder Road	96	02-Oct-13	<0.0004	0.00057	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.2	590	61
13-DP3	Drive point S of Basin 3 near E Ladder Road	115	08-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.9	380	180
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	15-Oct-13	<0.0004	<0.0020	<0.0004	<0.0040	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	---	---	---	---	---	---
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	28-Sep-13	<0.0004	0.0014	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.4	---	<0.10
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	28-Sep-13	<0.0004	0.0011	<0.0004	<0.0008	<0.1	<0.10	0.24	<0.20	3	---	<0.10
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.9	740	270
13-DP4	Drive point N of Basin 3 near E Ladder Road	75	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.2	400	140
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13	<0.0004	0.0014	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	490	300
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13	<0.0004	0.0016	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.1	450	270
13-DP4	Drive point N of Basin 3 near E Ladder Road	82	02-Oct-13	<0.0004	0.0014	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1400	69
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	02-Oct-13	---	---	---	---	---	---	---	---	1.5	3300	250
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	0.79
13-DP4	Drive point N of Basin 3 near E Ladder Road	117	08-Oct-13	<0.0004	0.0012	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.8	160	190
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	15-Oct-13	<0.0004	<0.002	<0.0004	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	800	550
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.8	220	44
13-DP4	Drive point N of Basin 3 near E Ladder Road	140	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	63	26
13-DP4	Drive point N of Basin 3 near E Ladder Road	1315	05-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	12-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	19-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	---	---	---	---	---	---
13-DP5	Drive point W side of Basin 3	---	28-Sep-13	<0.0004	***0.16***	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.7	51000	<0.10
13-DP5	Drive point W side of Basin 3	---	29-Sep-13	<0.0004	***0.220***	0.0006	<0.004	<0.1	<0.10	<0.20	<0.20	5.5	1400	620
13-DP5	Drive point W side of Basin 3	85	30-Sep-13	<0.00040	***0.150***	0.0005	<0.0040	<0.1	<0.10	<0.20	<0.20	4.5	830	360
13-DP5	Drive point W side of Basin 3	---	01-Oct-13	<0.0004	***0.100***	0.00045	<0.0008	<0.1	<0.10	<0.20	<0.20	4.8	840	550
13-DP5	Drive point W side of Basin 3	91	02-Oct-13	<0.0004	***0.025***	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	4.5	410	490
13-DP5	Drive point W side of Basin 3	110	08-Oct-13	<0.0004	***0.003***	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP5	Drive point W side of Basin 3	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	---	---	---
13-DP5	Drive point W side of Basin 3	---	22-Oct-13	<0.0004	0.00065	<0.0004	<0.0008	<0.1	---	---	---	---	---	---
13-DP6	Drive point S side of Basin 3	---	28-Sep-13	<0.0004	***0.08***	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	16	1000	2700
13-DP6	Drive point S side of Basin 3	---	29-Sep-13	<0.0004	***0.0026***	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.8	130	63
13-DP6	Drive point S side of Basin 3	78	30-Sep-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.5	200	64
13-DP6	Drive point S side of Basin 3	---	01-Oct-13	<0.0004	0.0013	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.8	100	37
13-DP6	Drive point S side of Basin 3	105	02-Oct-13	<0.0004	0.0018	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2	67	16
13-DP6	Drive point S side of Basin 3	98	08-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.7	52	59
13-DP6	Drive point S side of Basin 3	---	15-Oct-13	<0.00040	<0.0020	<0.0004	<0.0040	<0.1	<0.10	<0.20	<0.20	2	240	120
13-DP6	Drive point S side of Basin 3	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.6	29	15
13-DP6	Drive point S side of Basin 3	108	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.3	78	32
AENV Freshwater Aquatic Life*				**0.370**	**0.002**	**0.09**	**0.2**	**NS**	**NS**	**NS**	**NS**	**120**	**NS**	**NS**

APPENDIX C1.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 $^{\dagger\dagger}C_6$-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Chloride mg/L	TSS mg/L	Turbidity NTU
13-DP7	Drive point E side of Basin 3	---	28-Sep-13	<0.0004	***0.018***	<0.0004	<0.0008	<0.1	0.14	<0.20	<0.20	5.1	---	<0.10
13-DP7	Drive point E side of Basin 3	---	29-Sep-13	<0.0004	***0.010***	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	4.3	1000	990
13-DP7	Drive point E side of Basin 3	101	30-Sep-13	<0.00040	***0.008***	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.3	340	230
13-DP7	Drive point E side of Basin 3	---	01-Oct-13	<0.0004	***0.010***	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.3	950	510
13-DP7	Drive point E side of Basin 3	104	02-Oct-13	<0.0004	0.002	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.6	770	260
13-DP7	Drive point E side of Basin 3	120	08-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	4.2	---	460
13-DP7	Drive point E side of Basin 3	---	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.4	40	59
13-DP7	Drive point E side of Basin 3	---	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	---	---	---	---	---	---
13-DP7	Drive point E side of Basin 3	225	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.11	<0.23	<0.23	---	---	---
Minimal Detection Limit				**0.0004**	**0.002**	**0.0004**	**0.004**	**0.1**	**0.1**	**0.2**	**0.2**	**1**	**1**	**0.1**
AENV Freshwater Aquatic Life*				**0.370**	**0.002**	**0.09**	**0.2**	**NS**	**NS**	**NS**	**NS**	**120**	**NS**	**NS**

Notes:

--- - not analyzed

NS - guideline not specified

* - Alberta Environment Surface Water Quality Guidelines for use in Alberta (AENV, 1999)

Italics - indicates values do not meet applicable guidelines

APPENDIX C2.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW16	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX C2.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW26	Downstream Fen Upstream of Pad 21	---	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26	Downstream Fen Upstream of Pad 21	---	23-Oct-13	<0.12	<0.12	<0.24	<0.012	<0.010	<0.010	<0.010	<0.010	<0.0089	<0.010	<0.0089	<0.012	<0.060	<0.010	<0.12	<0.060	<0.024	<0.24
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	50	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.13	<0.050	<0.020	<0.20
13-SW7	Basin 1	110	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	110	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	---	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	0.015	<0.0085	<0.0085	<0.030	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.26	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.32	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	0.019	<0.0075	<0.010	<0.050	<0.0085	<0.10	0.054	<0.020	<0.20
13-SW7	Basin 1	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.18	<0.050	<0.020	<0.20
13-SW7	Basin 1	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.011	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	50	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	50	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7	Basin 1	50	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	50	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	50	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	100	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX C2.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW22	Basin 1		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-SW22	Basin 1	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.12	<0.050	<0.020	<0.20
13-SW22	Basin 1	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	50	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	50	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW22	Basin 1	50	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	50	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	130	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	50	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	50	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW31	Basin 3	50	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.011	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	surface	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	depth	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	50	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	50	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	50	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX C2.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW12	Basin 4	---	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW12	Basin 4	---	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.011	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	16-Oct-13	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-SW42	Discharge Fen Upstream of Wolf River	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Discharge Fen Upstream of Wolf River	---	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW43	Wolf River Downstream	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW43	Wolf River Downstream	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW43	Wolf River Downstream	---	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW43	Wolf River Downstream	---	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW43	Wolf River Downstream	---	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW43	Wolf River Downstream	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX C2.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW44	Wolf River Upstream	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW44	Wolf River Upstream	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW44	Wolf River Upstream	---	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW44	Wolf River Upstream	---	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW44	Wolf River Upstream	---	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW44	Wolf River Upstream	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21		22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27	Downstream Fen Downstream of Pad 21	---	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	03-Oct-13	<0.21	<0.21	<0.42	<0.021	<0.018	<0.018	<0.018	<0.018	<0.016	<0.018	<0.016	<0.021	<0.10	<0.018	<0.21	<0.10	<0.042	<0.42
13-SW39	Downstream Fen West of Ken Baker Road	---	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW39	Downstream Fen West of Ken Baker Road	---	05-Nov-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.012	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	126	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.17	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.18	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	04-Oct-13	<0.32	<0.32	<0.64	<0.032	<0.027	<0.027	<0.027	<0.027	<0.024	<0.027	<0.024	<0.032	<0.16	<0.027	<0.32	<0.16	<0.064	<0.64
13-DP1	Drive point southwest of Pad 21	138	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.14	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	19-Oct-13	<0.13	<0.13	<0.25	<0.013	<0.011	<0.011	<0.011	<0.011	<0.0094	<0.011	<0.0094	<0.013	<0.063	<0.011	<0.13	<0.063	<0.025	<0.25
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX C2.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DP1	Drive point southwest of Pad 21	---	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.01	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP1	Drive point southwest of Pad 21	---	23-Oct-13	<0.15	<0.15	<0.29	<0.015	<0.013	<0.013	<0.013	<0.013	<0.011	<0.013	<0.011	<0.015	<0.074	<0.013	<0.15	<0.074	<0.029	<0.29
13-DP2	Drive point SW of Basin 4		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP2	Drive point SW of Basin 4		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP2	Drive point SW of Basin 4		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP2	Drive point SW of Basin 4	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP2	Drive point SW of Basin 4	---	15-Oct-13	<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
13-DP2	Drive point SW of Basin 4	---	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP2	Drive point SW of Basin 4	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP2 dup	Drive point SW of Basin 4	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP3	Drive point S of Basin 3 near E Ladder Road		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.013	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP3	Drive point S of Basin 3 near E Ladder Road		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP3 dup	Drive point S of Basin 3 near E Ladder Road	86.5	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.13	<0.050	<0.020	<0.20
13-DP3	Drive point S of Basin 3 near E Ladder Road	95.5	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.12	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.014	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.021	<0.050	<0.0085	0.15	0.067	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.12	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	75	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.13	<0.050	<0.020	<0.20
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	82	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.10	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.12	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	140	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	1315	05-Nov-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	12-Nov-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP5	Drive point W side of Basin 3		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	***0.025***	<0.050	<0.0085	0.12	<0.050	<0.020	<0.20
13-DP5	Drive point W side of Basin 3		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.012	<0.050	<0.0085	0.2	<0.050	<0.020	<0.20
13-DP5	Drive point W side of Basin 3	85	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.2	<0.050	<0.020	<0.20
13-DP5	Drive point W side of Basin 3	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.2	<0.050	<0.020	<0.20
13-DP5	Drive point W side of Basin 3	91	02-Oct-13	<0.11	<0.11	<0.22	<0.011	<0.0094	<0.0094	<0.0094	<0.0094	<0.0083	<0.0094	<0.0083	<0.011	<0.056	<0.0094	0.15	<0.056	<0.022	<0.22
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

APPENDIX C2.

WATER QUALITY RESULTS - WATER BODIES AND WATERCOURSES

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-DP6	Drive point S side of Basin 3		28-Sep-13	<0.20	<0.20	<0.40	<0.020	<0.017	<0.017	<0.017	<0.017	<0.015	<0.017	<0.015	***0.031***	<0.10	<0.017	<0.20	<0.10	<0.040	<0.59
13-DP6	Drive point S side of Basin 3		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.1	<0.050	<0.020	<0.20
13-DP6	Drive point S side of Basin 3	78	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP6	Drive point S side of Basin 3	---	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-DP6	Drive point S side of Basin 3	105	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-DP6	Drive point S side of Basin 3	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.13	<0.050	<0.020	<0.20
13-DP6	Drive point S side of Basin 3	---	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP6	Drive point S side of Basin 3	108	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP7	Drive point E side of Basin 3		28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.014	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP7	Drive point E side of Basin 3		29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.12	<0.050	<0.020	<0.20
13-DP7	Drive point E side of Basin 3	101	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-DP7	Drive point E side of Basin 3	---	01-Oct-13	<0.11	<0.11	<0.22	<0.011	<0.0093	<0.0093	<0.0093	<0.0093	<0.0082	<0.0093	<0.0082	<0.011	<0.055	<0.0093	0.13	<0.055	<0.022	<0.22
13-DP7	Drive point E side of Basin 3	104	02-Oct-13	<0.12	<0.12	<0.23	<0.012	<0.0099	<0.0099	<0.0099	<0.0099	<0.0087	<0.0099	<0.0087	<0.012	<0.058	<0.0099	0.13	<0.058	<0.023	<0.23
13-DP7	Drive point E side of Basin 3	---	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Minimal Detection Limit				**0.1**	**0.1**	**0.2**	**0.01**	**0.0085**	**0.0085**	**0.0085**	**0.0085**	**0.0075**	**0.0085**	**0.0075**	**0.01**	**0.05**	**0.0085**	**0.1**	**0.05**	**0.02**	**0.2**
AENV Freshwater Aquatic Life*				**5.8^**	**NS**	**4.4^**	**0.012^**	**0.018^**	**NS**	**NS**	**NS**	**0.015^**	**NS**	**NS**	**0.015^**	**3^**	**NS**	**1.1^**	**0.4^**	**0.025^**	**3.4^**

Notes:

--- - not analyzed

NS - not specified

* - Alberta Environment Surface Water Quality Guidelines for use in Alberta (AENV, 1999)

Italics - indicates values do not meet applicable guidelines

APPENDIX C3.

SURFACE WATER QUALITY RESULTS - TOTAL METALS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample Date	Hg mg/L
13-SW12	Basin 4	surface	25-Sep-13	0.00000072
13-SW46	NE Control Lake	---	25-Sep-13	0.0000010
13-SW47	Borrow Pit	---	25-Sep-13	0.00000045
Minimal Detection Limit				-
AENV Freshwater Aquatic Life*				**0.000013[f]/ 0.000005[g]**

Notes:

--- - not analyzed

[f] - acute aquatic life guideline from Alberta Environment Surface Water Quality Guidelines for Use in

[g] - chronic aquatic life guideline from Alberta Environment Surface Water Quality Guidelines for Use i

* - Alberta Environment Surface Water Quality Guidelines for Use in Alberta (AENV, 1999)

Italics - indicates values do not meet applicable guidelines

APPENDIX C4.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-SW7	Basin 1	110	25-Sep-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
13-SW7 dup	Basin 1	110	25-Sep-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	---	---
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	---
13-SW16	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.0	---	---
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.1	---	---
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	---	---
				Absolute Difference*	---	---	---	---	---	---	---	---	0.1	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	2	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	---
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	28-Sep-13		<0.0004	0.0014	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.4	---	<0.10
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	28-Sep-13		<0.0004	0.0011	<0.0004	<0.0008	<0.1	<0.10	0.24	<0.20	3.0	---	<0.10
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	---	0.5
				Absolute Difference*	---	0.0003	---	---	---	---	---	---	0.4	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	Good
13-SW7	Basin 1	---	28-Sep-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	0.14	<0.20	<0.20	1.2	---	---
13-SW7 dup	Basin 1	---	28-Sep-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.8	---	---
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	---	---
				Absolute Difference*	---	---	---	---	---	---	---	---	1.6	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	---
13-SW12	Basin 4	---	29-Sep-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1	---	---
13-SW12 dup	Basin 4	---	29-Sep-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1	---	---
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	---	---
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	---	---
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.6	17	14
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.3	3.3	7.5
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.3	13.7	6.5
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	5	---	60
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	6.3	6.7	9.4
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	5.3	1.7
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	1.4	7.7
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	23	139
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***

APPENDIX C4.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13		<0.0004	0.0014	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	490	300
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13		<0.0004	0.0016	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.1	450	270
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	0.0002	---	---	---	---	---	---	---	40	30
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	9	11
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	6.3	6.7	9.4
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	6.3	6.7	11
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0	0	1.6
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	0	0	16
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW31	Basin 3	---	01-Oct-13		<0.00040	0.00045	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.7
13-SW31 dup	Basin 3	---	01-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	5.3	1.7
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	1
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	83
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-DP4	Drive point N of Basin 3 near E Ladder Road	82	02-Oct-13		<0.0004	0.0014	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1400	69
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	02-Oct-13		---	---	---	---	---	---	---	---	1.5	3300	250
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	---	---	---	---	---	---	---	---	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	---	1900	181
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	81	113
				Duplicate Sample Results Evaluation	---	---	---	---	---	---	---	---	Good	***Poor***	***Poor***
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6	6	5
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6	<1.0	5.4
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0	---	0.4
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	0	---	8
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	5.9	3.3	5.7
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	5.8	3.3	6.6
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.1	0	0.9
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	2	---	15
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	04-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	2.3	4.7	2.8
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	04-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3	15	11
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.7	10.3	8.2
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	119
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***

APPENDIX C4.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.1	4.7	8.5
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	6.1	6.7	8.3
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0	2	0.2
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	0	---	2
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	05-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	4.1	6.7	3.1
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	05-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	3.9	4.7	2.3
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.2	2	0.8
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	30
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.10	<0.10	<0.20	<0.20	6.6	21	10
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.10	<0.10	0.46	<0.20	6.7	53	21
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.1	32	11
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	2	86	71
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW26	Downstream Fen Upstream of Pad 21	---	06-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.10	<0.10	0.2	<0.20	1.7	15	6.5
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	06-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.10	<0.10	<0.20	<0.20	1.5	4	1.2
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.2	11	5.3
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	138
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW26	Downstream Fen Upstream of Pad 21	---	07-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	2	0.95
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	07-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	2	1.9
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0	0	0.95
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	67
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.9	5.3	9
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.5	16	1.5
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.4	10.7	7.5
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	6	100	143
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW26	Downstream Fen Upstream of Pad 21	---	08-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.8	11	4.7
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	08-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.12	<0.20	<0.20	1.6	3.3	1.5
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.2	7.7	3.2
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	103
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***

APPENDIX C4.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-SW7	Basin 1	50	08-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.4	6	0.74
13-SW7 dup	Basin 1	---	08-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.20	<0.20	6.7	7.3	9.7
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	5.3	1.3	8.96
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	20	172
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	0.22	6.8	33	20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	6.8	1.3	9.8
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0	31.7	10.2
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	0	---	68
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW26	Downstream Fen Upstream of Pad 21	---	09-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.5	8.7	2.6
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	09-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.7	8.7	3
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.2	0	0.4
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	0	14
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.17	0.33	<0.20	6.8	2	10
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	6.7	2.7	11
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.1	0.7	1
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	1	---	10
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	10-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.2	7.3	2.8
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	10-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.7	36	19
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.5	28.7	16.2
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	133	149
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW42	Discharge Fen Upstream of Wolf River	---	11-Oct-13		<0.0004	<0.002	<0.0004	<0.004	0.26	<0.10	0.28	<0.20	2.1	210	56
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	11-Oct-13		<0.0004	<0.002	<0.0004	<0.004	0.31	<0.10	0.2	<0.20	1.9	190	130
				Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	0.05	---	0.08	---	0.2	20	74
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	10	80
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-SW27	Downstream Fen Downstream of Pad 21	---	12-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	0.27	<0.20	2.9	7.3	8.6
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	12-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.5	5.3	8.9
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.4	2	0.3
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	32	3
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX C4.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-SW26	Downstream Fen Upstream of Pad 21	---	13-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.17	0.27	0.38	1.3	49	14
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	13-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.17	<0.27	<0.38	1.1	51	17
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.2	2	3
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	4	19
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW42	Discharge Fen Upstream of Wolf River	---	14-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	1.6	3.3	11
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	14-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	0.15	0.31	<0.20	1.7	6	14
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.1	2.7	3
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	24
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW27	Downstream Fen Downstream of Pad 21	---	15-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.1	66	12
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	15-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.4	4.7	1.8
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.3	61.3	10.2
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	148
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.8	5.3	3.7
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	4.3	6.7	5.1
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.5	1.4	1.4
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	23	32
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW27	Downstream Fen Downstream of Pad 21	---	17-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	2.3	77	23
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	17-Oct-13		<0.00040	0.0047	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.7	25	7.3
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.6	52	15.7
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	102	104
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW27	Downstream Fen Downstream of Pad 21	---	18-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.3	6	7.4
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	18-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.5	11	8.3
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.2	5	0.9
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	59	11
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	19-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.0	21	4.5
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	19-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	3.4	25	14
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.4	4	9.5
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	17	103
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***

APPENDIX C4.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-SW27	Downstream Fen Downstream of Pad 21	---	20-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	---	---	---
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	20-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	---	---	---
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	---	---	---
				Absolute Difference*	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	---	---	---
13-SW42	Discharge Fen Upstream of Wolf River	---	21-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.3	4.7	13
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	21-Oct-13		<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	2.4	4.7	12
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.1	0	1
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	8
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DP2	Drive point SW of Basin 4	---	22-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.7	75	35
13-DP2 dup	Drive point SW of Basin 4	---	22-Oct-13		<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	1.5	74	30
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0.2	1	5
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	1	15
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	23-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	3.1	29	4.1
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	23-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	3.1	4.7	1.4
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0	24.3	2.7
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	98
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	***Poor***
13-SW42	Discharge Fen Upstream of Wolf River	---	23-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.1	3.3	9.8
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	23-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2.1	10	20
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0	6.7	10.2
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	68
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***
13-SW42	Discharge Fen Upstream of Wolf River	---	29-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2	10	25
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	29-Oct-13		<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	2	19	32
				Detection Limit (DL)	0.0004	0.002	0.0004	0.004	0.1	0.1	0.2	0.2	1	1	0.1
				Reliable Detection Limit (RDL)**	0.002	0.01	0.002	0.02	0.5	0.5	1	1	5	5	0.5
				Absolute Difference*	---	---	---	---	---	---	---	---	0	9	7
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	62	25
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***	Good

Notes:

--- - not applicable

* - non-detectable concentrations are assessed at 95% of the detection limit

** - the reliable (reporting) detection limit (RDL) or practical detection limit (PDL) is defined as 5 times the DL

Good - evaluation indicates acceptable reproducibility

Poor - evaluation indicates poor reproducibility

APPENDIX C5.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW7	Basin 1	110	25-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	110	25-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	20	25-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW7	Basin 1	---	28-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	---	28-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	30-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW7	Basin 1	---	30-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.26	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	---	30-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DP3	Drive point S of Basin 3 near E Ladder Road	---	30-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP3 dup	Drive point S of Basin 3 near E Ladder Road	86.5	30-Sep-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX C5.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample		Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benz[a]anthracene	Benzo[b+j]fluoranthene	Benzo[k]fluoranthene	Benzo[g,h,i]perylene	Benzo[a]pyrene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline
		cm	Date		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
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	01-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.13	<0.050	<0.020	<0.20
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	---	01-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	0.02	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	02-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	02-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DP4	Drive point N of Basin 3 near E Ladder Road	---	02-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.11	<0.050	<0.020	<0.20
13-DP4 dup	Drive point N of Basin 3 near E Ladder Road	82	02-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	0.1	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	0.01	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	03-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	04-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX C5.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample		Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benz[a]anthracene	Benzo[b+j]fluoranthene	Benzo[k]fluoranthene	Benzo[g,h,i]perylene	Benzo[a]pyrene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline
		cm	Date		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
13-SW26	Downstream Fen Upstream of Pad 21	---	04-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	04-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	05-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	05-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	05-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	06-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	06-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	06-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	07-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)					0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**					0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*					---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation					Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX C5.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW26	Downstream Fen Upstream of Pad 21	---	07-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	07-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	08-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	08-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW7	Basin 1	50	08-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW7 dup	Basin 1	50	08-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	09-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	10-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	10-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	10-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX C5.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample		Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benz[a]anthracene	Benzo[b+j]fluoranthene	Benzo[k]fluoranthene	Benzo[g,h,i]perylene	Benzo[a]pyrene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline
		cm	Date		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
13-SW42	Discharge Fen Upstream of Wolf River	---	11-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	11-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW27	Downstream Fen Downstream of Pad 21	---	12-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	12-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	13-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	13-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW42	Downstream Fen Downstream of Pad 21	---	14-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Downstream Fen Downstream of Pad 21	---	14-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW27	Downstream Fen Downstream of Pad 21	---	15-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	15-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW16	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW16 dup	Downstream Fen Upstream of Ken Baker Road	---	16-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX C5.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth	Sample		Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benz[a]anthracene	Benzo[b+j]fluoranthene	Benzo[k]fluoranthene	Benzo[g,h,i]perylene	Benzo[a]pyrene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline
		cm	Date		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
13-SW27	Downstream Fen Downstream of Pad 21	---	17-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	17-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)¥	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW27	Downstream Fen Downstream of Pad 21	---	18-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	18-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)¥	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	19-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	19-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)¥	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW27	Downstream Fen Downstream of Pad 21	---	20-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW27 dup	Downstream Fen Downstream of Pad 21	---	20-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)¥	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW42	Discharge Fen Upstream of Wolf River	---	21-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	21-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)¥	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-DP2	Drive point SW of Basin 4	---	22-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-DP2 dup	Drive point SW of Basin 4	---	22-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)¥	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

APPENDIX C5.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Location	Sample Depth cm	Sample Date		Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
13-SW42	Discharge Fen Upstream of Wolf River	---	22-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	22-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW26	Downstream Fen Upstream of Pad 21	---	23-Oct-13		<0.12	<0.12	<0.24	<0.012	<0.010	<0.010	<0.010	<0.010	<0.0089	<0.010	<0.0089	<0.012	<0.060	<0.010	<0.12	<0.060	<0.024	<0.24
13-SW26 dup	Downstream Fen Upstream of Pad 21	---	23-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW42	Discharge Fen Upstream of Wolf River	---	23-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	23-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
13-SW42	Discharge Fen Upstream of Wolf River	---	29-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42 dup	Discharge Fen Upstream of Wolf River	---	29-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
				Detection Limit (DL)	0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
				Reliable Detection Limit (RDL)**	0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
				Absolute Difference*	---	---	---	---	---		---	---	---	---	---	---	---	---	---	---	---	---
				Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

Notes:

--- - not applicable

* - non-detectable concentrations are assessed at 95% of the detection limit

** - the reliable (reporting) detection limit (RDL) or practical detection limit (PDL) is defined as 5 times the DL

Good - evaluation indicates acceptable reproducibility

Poor - evaluation indicates poor reproducibility

APPENDIX C6.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Depth cm	Sample Date		Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
13-SW42	Maxxam	Discharge Fen Upstream of Wolf River	---	16-Oct-13		<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	1.3	14	21
13-SW42	Exova	Discharge Fen Upstream of Wolf River	---	16-Oct-13		<0.001	<0.001	<0.001	<0.001	<0.20	<0.20	<0.1	<0.1	1.8	21	39.8
					Detection Limit (DL)	0.0004	0.0004	0.0004	0.0008	0.1	0.1	0.2	0.2	1	1	0.1
					Reliable Detection Limit (RDL)**	0.002	0.002	0.002	0.004	0.5	0.5	1	1	5	5	0.5
					Absolute Difference*	---	---	---	---	---	---	---	---	0.5	7	18.8
					Absolute Relative Percent Difference (RPD)*	---	---	---	---	---	---	---	---	---	40	62
					Duplicate Sample Results Evaluation	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	***Poor***

Notes:

--- - not applicable

* - non-detectable concentrations are assessed at 95% of the detection limit

** - the reliable (reporting) detection limit (RDL) or practical detection limit (PDL) is defined as 5 times the DL

Good - evaluation indicates acceptable reproducibility

Poor - evaluation indicates poor reproducibility

APPENDIX C7.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Lab	Sample Location	Sample Depth	Sample		Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benz[a]anthracene	Benzo[b+j]fluoranthene	Benzo[k]fluoranthene	Benzo[g,h,i]perylene	Benzo[a]pyrene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline
			cm	Date		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
13-SW42	Maxxam	Discharge Fen Upstream of Wolf River	---	16-Oct-13		<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
13-SW42	Exova	Discharge Fen Upstream of Wolf River	---	16-Oct-13		<0.1	<0.1	<0.1	<0.005	<0.01	<0.1	<0.1	<0.05	<0.008	<0.1	<0.05	<0.01	<0.1	<0.05	<0.1	<0.1	<0.01	<0.3
Detection Limit (DL)						0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2
Reliable Detection Limit (RDL)**						0.5	0.5	1	0.05	0.0425	0.0425	0.0425	0.0425	0.0375	0.0425	0.0375	0.05	0.25	0.0425	0.5	0.25	0.1	1
Absolute Difference*						---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Absolute Relative Percent Difference (RPD)*						---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Duplicate Sample Results Evaluation						Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

Notes:

--- - not applicable

* - non-detectable concentrations are assessed at 95% of the detection limit

** - the reliable (reporting) detection limit (RDL) or practical detection limit (PDL) is defined as 5 times the DL

Good - evaluation indicates acceptable reproducibility

Poor - evaluation indicates poor reproducibility

APPENDIX C8.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
Field Blank	25-Sep-13	<0.004	<0.002	<0.004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
Field Blank	25-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	---
Field Blank	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.29
Field Blank	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
Field Blank	29-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.24
Field Blank	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	---	---	---
Field Blank	30-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	0.46
Field Blank	30-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	3.3	1.5
Field Blank	30-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	01-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	01-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.20	<0.20	<1.0	1.3	0.12
Field Blank	01-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20			
Field Blank	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	<0.10
Field Blank	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	<0.10
Field Blank	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.13
Field Blank	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.32
Field Blank	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.14	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	09-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	09-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.14
Field Blank	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.19	0.4	<0.20	<1.0	<3.0	0.13
Field Blank	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.17	0.35	<0.20	<1.0	<1.0	<0.10
Field Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.27
Field Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	0.46	<0.20	<1.0	1.3	<0.10
Field Blank	17-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.13
Field Blank	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	2.7	<0.10
Field Blank	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Field Blank	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	5.3	<0.10
Field Blank	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	2	<0.10
Trip Blank	25-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	---
Trip Blank	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	28-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
Trip Blank	29-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank dup	29-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	---	---
Trip Blank	29-Sep-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	---
Trip Blank	30-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.24
Trip Blank	30-Sep-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.12
Trip Blank	01-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	02-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.18
Detection Limit (DL)		**0.0004**	**0.0004**	**0.0004**	**0.0008**	**0.1**	**0.1**	**0.2**	**0.2**	**1**	**1**	**0.1**

APPENDIX C8.

WATER QUALITY CONTROL SAMPLE RESULTS - DISSOLVED HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	F1 C_6-C_{10} mg/L	F2 $C_{>10}$-C_{16} mg/L	F3 $C_{>16}$-C_{34} mg/L	F4 $C_{>34}$-C_{50} mg/L	Cl mg/L	TSS mg/L	Turbidity NTU
Trip Blank	03-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	---
Trip Blank	04-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	05-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	06-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	0.12
Trip Blank	07-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	08-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	3	<1.0	<0.10
Trip Blank	09-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	10-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.13	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	11-Oct-13	<0.0004	<0.002	<0.0004	<0.004	0.48	<0.10	<0.20	<0.20	<1.0	<1.0	0.14
Trip Blank	12-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	<0.10
Trip Blank	13-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	14-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	0.18	0.4	0.22	<1.0	<1.0	<0.10
Trip Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<3.0	<0.10
Trip Blank	15-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	4	0.1
Trip Blank	16-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	2	<0.10
Trip Blank	17-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	18-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	19-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	1.3	<0.10
Trip Blank	20-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	21-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	22-Oct-13	<0.00040	<0.0020	<0.00040	<0.0040	<0.1	<0.10	<0.20	<0.20	---	---	---
Trip Blank	22-Oct-13	---	---	---	---	---	---	---	---	<1.0	<1.0	<0.10
Trip Blank	22-Oct-13	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.10	<0.20	<0.20	<1.0	4.7	<0.10
Trip Blank	22-Oct-13	<0.0004	<0.002	<0.0004	<0.004	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	23-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Trip Blank	29-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.1	<0.10	<0.20	<0.20	<1.0	<1.0	<0.10
Detection Limit (DL)		**0.0004**	**0.0004**	**0.0004**	**0.0008**	**0.1**	**0.1**	**0.2**	**0.2**	**1**	**1**	**0.1**

Notes:

--- - not analyzed

APPENDIX C9.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
Field Blank	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank2	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Field Blank	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)		0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2

APPENDIX C9.

WATER QUALITY CONTROL SAMPLE RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS

Canadian Natural Resources Limited

09-21-064-04 W4M

Sample Point	Sample Date	Acenaphthene µg/L	Acenaphthylene µg/L	Acridine µg/L	Anthracene µg/L	Benz[a]anthracene µg/L	Benzo[b+j]fluoranthene µg/L	Benzo[k]fluoranthene µg/L	Benzo[g,h,i]perylene µg/L	Benzo[a]pyrene µg/L	Chrysene µg/L	Dibenz[a,h]anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno[1,2,3-cd]pyrene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L	Quinoline µg/L
Trip Blank	25-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	0.01	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	28-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank dup	29-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	30-Sep-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	01-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	02-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	03-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	04-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	05-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	06-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	07-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	08-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	09-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	10-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	11-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	12-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	13-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	14-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	15-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	16-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	17-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	18-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	19-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	20-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	21-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	22-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	23-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Trip Blank	29-Oct-13	<0.10	<0.10	<0.20	<0.010	<0.0085	<0.0085	<0.0085	<0.0085	<0.0075	<0.0085	<0.0075	<0.010	<0.050	<0.0085	<0.10	<0.050	<0.020	<0.20
Detection Limit (DL)		0.1	0.1	0.2	0.01	0.0085	0.0085	0.0085	0.0085	0.0075	0.0085	0.0075	0.01	0.05	0.0085	0.1	0.05	0.02	0.2

Notes:

--- - not analyzed