



**Stantec**

Stantec Consulting Ltd.  
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June 1, 2009  
File: 1102-17990

Northeast Capital Industrial Association  
#204, 9902 - 102 Street  
Fort Saskatchewan, AB  
T8L 2C3

**Attention: Mr. Laurie Danielson**

Dear Mr. Danielson:

**Reference: Spring, 2009 Groundwater Monitoring Field Program**

Stantec Consulting Ltd. is pleased to present the analytical results of the spring, 2009 field program as an ongoing part of the Regional Groundwater Quality Study of the Beverly Channel. The following sections detail our field program and the analytical results for the 13 NCIA groundwater monitoring wells (Figure 1).

## **FIELD PROGRAM**

Prior to starting the field program, landowners were contacted to make them aware of the work and request access, arrange permitting and discuss safety protocols. Stantec personnel attempted to begin the monitoring program on March 31, 2009, however due to snow depth were unable to access many of the wells.

Groundwater monitoring and sample collection was completed on April 21 and 22, 2009. Prior to sampling, water level measurements were obtained and all of the monitoring wells were purged to remove stagnant water. A minimum of 3 well volumes were purged from each monitoring well using a Rediflo stainless steel submersible pump. The Rediflo pump was subsequently used to obtain water samples for analysis. Field measurements of temperature, pH and electrical conductivity (EC) were taken at the time of sampling using handheld pH and EC meters. Both meters were calibrated daily, prior to sampling. A duplicate sample was taken from monitor MW-09 during the sampling event for quality control purposes. The duplicate sample was prepared by rinsing a clean 4 L plastic container with formation water, collecting the required sample volume, and splitting the sample into two aliquots.

All groundwater samples were submitted to Maxxam Analytics Inc. in Edmonton for analysis on the day of collection. Groundwater samples from the April, 2009 sampling event were analyzed for routine water quality parameters, major ions, dissolved organic carbon, hydrocarbon parameters and dissolved metals. At the time of collection, all of the sample bottles were labeled with the site number, date of collection, and the analyses required. Dissolved metals samples were filtered and preserved in the field. Sample bottles were placed into a cooler with ice packs and delivered to Maxxam Analytics Inc. in Edmonton at the end of each sampling day.

**Reference: Spring, 2009 Groundwater Monitoring Field Program**

Figure 2 presents a groundwater hydrograph for all 13 of the monitoring wells included in the network. Examination of the figure reveals that groundwater levels within the sands and gravels of the Beverly Channel have remained relatively stable for all monitoring wells over the time period between 2005 and 2009. A slight decline in water level elevations (approximately 1 m) was noted for monitoring wells MW-03, MW-05, and MW-13 during the November, 2005 monitoring event. Water levels averaged 0.1 m higher in April, 2009 compared to May, 2005.

Figure 1 presents the potentiometric surface for the sands and gravels of the Beverly Channel. Groundwater elevations are the highest in the southwest and decrease to the northeast. Generally, groundwater appears to flow from eastern areas of the Beverly Channel towards the North Saskatchewan River with an additional component of northwesterly flow along the Beverly Channel. Potentiometric gradients vary from a minimum gradient of 0.0005 m/m near MW-12 and MW-13 to a maximum gradient of 0.003 m/m on the north side of the City of Fort Saskatchewan.

**ANALYTICAL RESULTS**

Analytical results from the spring, 2009 groundwater monitoring program have been received from Maxxam Analytics Inc. Table 1 (attached) presents a summary of the analytical results for the 13 monitoring wells sampled during the spring, 2009 sampling event. The *Guidelines for Canadian Drinking Water Quality* (GCDWQ) (Health Canada, 2008) are included in the table for comparative purposes. Copies of the laboratory reports are also appended to this letter for your reference.

The reproducibility of the data was assessed by calculating the relative percent difference (RPD) between the sample and duplicate results. Duplicate results are considered acceptable when the RPD is below 20% or, when at least one of the duplicate results is less than or equal to five times the parameter detection limit, the absolute difference (AD) between the results is less than or equal to the detection limit. All of the duplicate results except copper and F2 fraction hydrocarbons met these criteria for this sampling event and were considered acceptable.

Based on the analytical results presented in Table 1, several exceedances of the GCDWQ were noted. Exceedances were similar to previous sampling events with total dissolved solids (TDS), iron and manganese concentrations above guideline levels in most of the monitoring wells. TDS, manganese and iron commonly exceed GCDWQ in this area, and concentrations above the guidelines are not unexpected. Further, the guideline criteria for these three parameters are based on aesthetic objectives at the point of consumption.

Sodium concentrations were above the GCDWQ at monitors MW-07 and MW-09, which had been observed during previous sampling events. The sulphate concentration at monitor MW-07 also remained above the 500 mg/L GCDWQ with a concentration of 1,200 mg/L. Sulphate concentration decreased below the GCDWQ in monitor MW-06, which had reported a concentration of 560 mg/L during the previous fall, 2007 monitoring event. The GCDWQ for sodium and sulphate are also aesthetic objectives.

Chloride concentrations remain elevated at MW-04 with a concentration of 150 mg/L in April, 2009. The historical average chloride concentration in all of the monitoring wells, excluding MW-04, is 11

**Reference: Spring, 2009 Groundwater Monitoring Field Program**

mg/L. Consideration should be given to an investigation to assess the nature and potential sources of elevated chloride concentrations in the vicinity of monitor MW-04.

All samples analyzed reported concentrations of dissolved metals lower than respective method detection limits or within the above noted guideline.

Petroleum hydrocarbon compounds were below guideline concentrations in all of the monitoring wells in the network. Monitoring well MW-09 reported F2 fraction hydrocarbons slightly above the detection limit with a reported concentration of 0.3 mg/L, however the duplicate sample result was below the detection limit (<0.1 mg/L). The detection is considered to be anomalous based on the duplicate result and because F2 fraction hydrocarbons have not been detected at this monitor or any other monitor in the network over the 6 sample historical record. Future sampling will confirm or refute this assumption. All other parameter concentrations were similar to previous sampling events.

**CLOSURE**

We trust that this summary of the fieldwork and analytical results meets your needs. If you have any questions or comments regarding this summary, please do not hesitate to contact us.

Best regards,

**STANTEC CONSULTING LTD.**



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Attachment    Figure 1: Potentiometric Contour Map  
                    Figure 2: Groundwater Hydrograph  
                    Table 1: April, 2009 Groundwater Analytical Results  
                    Laboratory Analytical Reports

Path: V:\1102\active\110217094\GIS\Final Report Figures\Test Hole and Monitoring Well Location.mxd



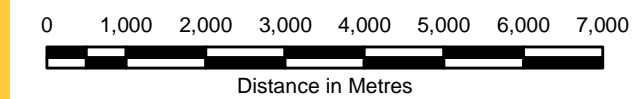
Stantec

**Legend**

-  NCIA Monitoring Well
-  Member Company Plant Site
-  Potentiometric Contour (April 2009)

Note:

Scale: 1:95,000



Projection: UTM Zone 12  
Datum: NAD83

Client / Project



SPRING 2009 GROUNDWATER MONITORING PROGRAM

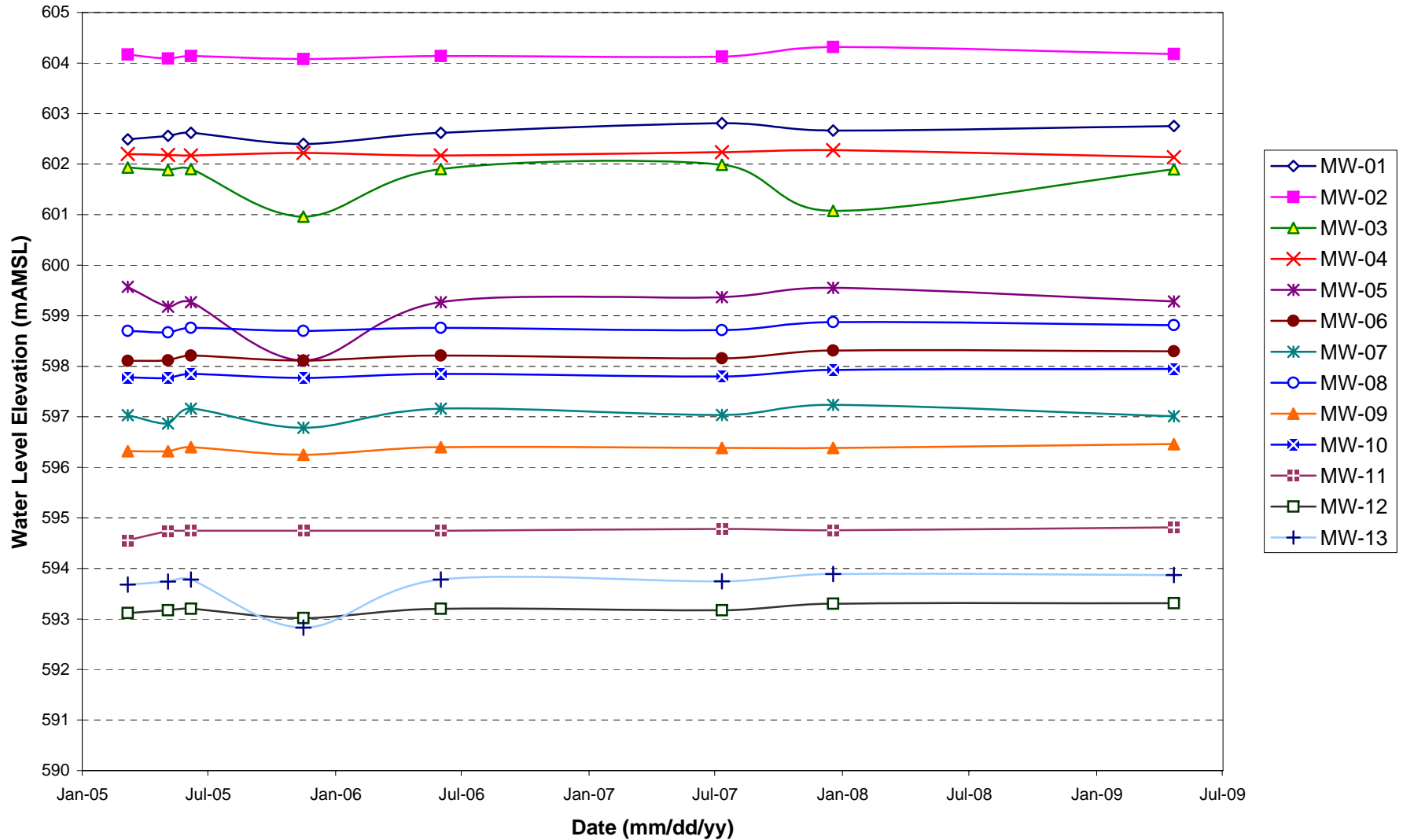
Figure No.

**1**

Title

**Potentiometric Contour Map  
April, 2009**

Figure 2: Groundwater Hydrograph for NCIA Monitoring Wells







Your Project #: 110217990  
 Site: NCIA GW  
 Your C.O.C. #: 79913

**Attention: DYLAN KING**  
 STANTEC CONSULTING LTD  
 10160-112 STREET  
 EDMONTON, AB  
 CANADA T5K 2L6

**Report Date: 2009/04/28**

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: A918335**  
**Received: 2009/04/22, 10:10**

Sample Matrix: Water  
 # Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity (pp, total), CO <sub>3</sub> ,HCO <sub>3</sub> ,OH	6	N/A	2009/04/23	EENVSOP-00054	SM 2320-B
BTEX/F1 in Water by HS GC/MS	6	N/A	2009/04/24	EENVSOP-00004 EENVSOP-00002	EPA 8260C/CCME
Cadmium - low level CCME - Dissolved	6	N/A	2009/04/23	CAL SOP-00191	EPA SW-846 6020A
Chloride by Automated Colourimetry	6	N/A	2009/04/24	EENVSOP-00055	EPA 325.2
Hexavalent Chromium (6)	6	N/A	2009/04/27	CAL SOP-00056	SM 3500-Cr B
Carbon (DOC)	6	N/A	2009/04/27	EENVSOP-00060	MMCW 119
Conductivity	6	N/A	2009/04/23	EENVSOP-00054	SM 2510-B
Fluoride	6	N/A	2009/04/23	EENVSOP-00054	SM 4500-F C
CCME Hydrocarbons in Water (F2; C10-C16)	6	2009/04/23	2009/04/23	EENVSOP-00009 EENVSOP-00008	EPA 8015D/3510C
Hardness	3	N/A	2009/04/24	CAL WI-00053	AEMM, Method 423
Hardness	3	N/A	2009/04/28	CAL WI-00053	AEMM, Method 423
Mercury - Low Level (Dissolved) (6)	6	2009/04/24	2009/04/24	CAL SOP-00007	EPA 1631
Elements by ICP - Dissolved	6	N/A	2009/04/24	CAL SOP-00192	EPA SW846 6010B
Elements by ICPMS - Dissolved	6	N/A	2009/04/24	CAL SOP-00191	EPA SW-846 6020A
Ion Balance	3	N/A	2009/04/24	CAL WI-00053	SM 1030E
Ion Balance	3	N/A	2009/04/28	CAL WI-00053	SM 1030E
Sum of cations, anions	3	N/A	2009/04/24		
Sum of cations, anions	3	N/A	2009/04/28		
Ammonia-N (Total)	6	N/A	2009/04/23	EENVSOP-00058	EPA 350.1
Nitrate and Nitrite	6	N/A	2009/04/24		
Nitrate + Nitrite-N (calculated)	6	N/A	2009/04/24		
Nitrogen, (Nitrite, Nitrate) by IC	6	N/A	2009/04/23	CAL SOP-00060	SM 4110-B
pH (Alkalinity titrator)	6	N/A	2009/04/23	EENVSOP-00054	SM 4500-H+B
Phenols (4-AAP)	5	N/A	2009/04/24	EENVSOP-00061	EPA 420.2
Phenols (4-AAP)	1	N/A	2009/04/27	EENVSOP-00061	EPA 420.2
Orthophosphate by Konelab	6	N/A	2009/04/23	EENVSOP-00095	SM 4500 P-F
Sulphate by Automated Colourimetry	6	N/A	2009/04/24	EENVSOP-00057	EPA 375.4
Total Dissolved Solids (Calculated)	3	N/A	2009/04/24		SM 1030E
Total Dissolved Solids (Calculated)	3	N/A	2009/04/28		SM 1030E

(1) This test was performed by Maxxam Calgary



Your Project #: 110217990  
Site: NCIA GW  
Your C.O.C. #: 79913

**Attention: DYLAN KING**  
STANTEC CONSULTING LTD  
10160-112 STREET  
EDMONTON, AB  
CANADA T5K 2L6

**Report Date: 2009/04/28**

**CERTIFICATE OF ANALYSIS**

-2-

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

JEREMY WAKARUK, B.Sc., Senior Project Manager  
Email: jwakaruk@maxxamanalytics.com  
Phone# (780) 577-7105 Ext:7105

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2



**AT1 BTEX AND F1-F2 (WATER)**

Maxxam ID		O52584	O52641	O52642	O52643		
Sampling Date		2009/04/21	2009/04/21	2009/04/21	2009/04/21		
COC Number		79913	79913	79913	79913		
	<b>Units</b>	<b>MW01</b>	<b>MW02</b>	<b>MW03</b>	<b>MW04</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Hydrocarbons</b>							
F2 (C10-C16 Hydrocarbons)	mg/L	<0.1	<0.1	<0.1	<0.1	0.1	3075131
<b>Volatiles</b>							
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	0.4	3075729
Toluene	ug/L	<0.4	<0.4	<0.4	<0.4	0.4	3075729
Ethylbenzene	ug/L	<0.4	<0.4	<0.4	<0.4	0.4	3075729
o-Xylene	ug/L	<0.4	<0.4	<0.4	<0.4	0.4	3075729
m & p-Xylene	ug/L	<0.8	<0.8	<0.8	<0.8	0.8	3075729
Xylenes (Total)	ug/L	<0.8	<0.8	<0.8	<0.8	0.8	3075729
F1 (C6-C10) - BTEX	ug/L	<100	<100	<100	<100	100	3075729
(C6-C10)	ug/L	<100	<100	<100	<100	100	3075729
<b>Surrogate Recovery (%)</b>							
4-BROMOFLUOROBENZENE (sur.)	%	99	98	100	99	N/A	3075729
D4-1,2-DICHLOROETHANE (sur.)	%	109	119	110	104	N/A	3075729
D8-TOLUENE (sur.)	%	100	99	98	100	N/A	3075729
O-TERPHENYL (sur.)	%	101	102	101	105	N/A	3075131
N/A = Not Applicable RDL = Reportable Detection Limit							

**AT1 BTEX AND F1-F2 (WATER)**

Maxxam ID		O52644	O52645		
Sampling Date		2009/04/21	2009/04/21		
COC Number		79913	79913		
	<b>Units</b>	<b>MW05</b>	<b>MW08</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Hydrocarbons</b>					
F2 (C10-C16 Hydrocarbons)	mg/L	<0.1	<0.1	0.1	3075131
<b>Volatiles</b>					
Benzene	ug/L	<0.4	<0.4	0.4	3075729
Toluene	ug/L	<0.4	<0.4	0.4	3075729
Ethylbenzene	ug/L	<0.4	<0.4	0.4	3075729
o-Xylene	ug/L	<0.4	<0.4	0.4	3075729
m & p-Xylene	ug/L	<0.8	<0.8	0.8	3075729
Xylenes (Total)	ug/L	<0.8	<0.8	0.8	3075729
F1 (C6-C10) - BTEX	ug/L	<100	<100	100	3075729
(C6-C10)	ug/L	<100	<100	100	3075729
<b>Surrogate Recovery (%)</b>					
4-BROMOFLUOROBENZENE (sur.)	%	97	102	N/A	3075729
D4-1,2-DICHLOROETHANE (sur.)	%	110	109	N/A	3075729
D8-TOLUENE (sur.)	%	97	102	N/A	3075729
O-TERPHENYL (sur.)	%	101	100	N/A	3075131
N/A = Not Applicable RDL = Reportable Detection Limit					

### RCAP - PARTIAL ROUTINE (WATER)

Maxxam ID		O52584	O52641	O52642		
Sampling Date		2009/04/21	2009/04/21	2009/04/21		
COC Number		79913	79913	79913		
	<b>Units</b>	<b>MW01</b>	<b>MW02</b>	<b>MW03</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>						
Anion Sum	meq/L	8.4	15	10	N/A	3074742
Cation Sum	meq/L	7.8	14	9.6	N/A	3074742
Hardness (CaCO3)	mg/L	310	500	360	0.5	3074739
Ion Balance	N/A	0.93	0.89	0.95	0.01	3074740
Dissolved Nitrate (NO3)	mg/L	0.01	0.02	0.04	0.01	3074745
Nitrate plus Nitrite (N)	mg/L	0.003	0.005	0.009	0.003	3074746
Dissolved Nitrite (NO2)	mg/L	<0.01	<0.01	<0.01	0.01	3074745
Total Dissolved Solids	mg/L	410	810	520	10	3074970
<b>Misc. Inorganics</b>						
Conductivity	uS/cm	770	1400	950	1	3075373
pH	N/A	7.67	7.36	7.57	N/A	3075372
<b>Anions</b>						
Alkalinity (PP as CaCO3)	mg/L	<0.5	<0.5	<0.5	0.5	3075365
Alkalinity (Total as CaCO3)	mg/L	370	500	350	0.5	3075365
Bicarbonate (HCO3)	mg/L	450	610	430	0.5	3075365
Carbonate (CO3)	mg/L	<0.5	<0.5	<0.5	0.5	3075365
Hydroxide (OH)	mg/L	<0.5	<0.5	<0.5	0.5	3075365
Dissolved Sulphate (SO4)	mg/L	44	230	98	1	3078002
Dissolved Chloride (Cl)	mg/L	5	18	35	1	3078117
<b>Nutrients</b>						
Dissolved Nitrate (N)	mg/L	0.003	0.005	0.009	0.003	3075370
Dissolved Nitrite (N)	mg/L	<0.003	<0.003	<0.003	0.003	3075370
<b>Elements</b>						
Dissolved Calcium (Ca)	mg/L	84	130	92	0.3	3078332
Dissolved Iron (Fe)	mg/L	<0.06	1.5	<0.06	0.06	3078332
Dissolved Magnesium (Mg)	mg/L	24	44	32	0.2	3078332
Dissolved Manganese (Mn)	mg/L	0.66	0.53	0.24	0.004	3078332
Dissolved Potassium (K)	mg/L	2.4	4.4	2.8	0.3	3078332
Dissolved Sodium (Na)	mg/L	36	81	51	0.5	3078332

RDL = Reportable Detection Limit

**RCAP - PARTIAL ROUTINE (WATER)**

Maxxam ID		O52643	O52644	O52645		
Sampling Date		2009/04/21	2009/04/21	2009/04/21		
COC Number		79913	79913	79913		
	<b>Units</b>	<b>MW04</b>	<b>MW05</b>	<b>MW08</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>						
Anion Sum	meq/L	13	11	15	N/A	3074742
Cation Sum	meq/L	13	11	16	N/A	3074742
Hardness (CaCO3)	mg/L	500	430	530	0.5	3074739
Ion Balance	N/A	0.99	1.0	1.0	0.01	3074740
Dissolved Nitrate (NO3)	mg/L	1.8	0.03	0.03	0.01	3074745
Nitrate plus Nitrite (N)	mg/L	0.40	0.007	0.007	0.003	3074746
Dissolved Nitrite (NO2)	mg/L	<0.01	<0.01	<0.01	0.01	3074745
Total Dissolved Solids	mg/L	690	570	880	10	3074970
<b>Misc. Inorganics</b>						
Conductivity	uS/cm	1200	960	1400	1	3075373
pH	N/A	7.62	7.58	7.62	N/A	3075372
<b>Anions</b>						
Alkalinity (PP as CaCO3)	mg/L	<0.5	<0.5	<0.5	0.5	3075365
Alkalinity (Total as CaCO3)	mg/L	370	350	450	0.5	3075365
Bicarbonate (HCO3)	mg/L	450	420	560	0.5	3075365
Carbonate (CO3)	mg/L	<0.5	<0.5	<0.5	0.5	3075365
Hydroxide (OH)	mg/L	<0.5	<0.5	<0.5	0.5	3075365
Dissolved Sulphate (SO4)	mg/L	74	130	300	1	3078002
Dissolved Chloride (Cl)	mg/L	150	30	3	1	3078117
<b>Nutrients</b>						
Dissolved Nitrate (N)	mg/L	0.40	0.007	0.007	0.003	3075370
Dissolved Nitrite (N)	mg/L	<0.003	<0.003	<0.003	0.003	3075370
<b>Elements</b>						
Dissolved Calcium (Ca)	mg/L	140	120	150	0.3	3078415
Dissolved Iron (Fe)	mg/L	<0.06	<0.06	<0.06	0.06	3078415
Dissolved Magnesium (Mg)	mg/L	37	34	40	0.2	3078415
Dissolved Manganese (Mn)	mg/L	0.030	0.72	0.45	0.004	3078415
Dissolved Potassium (K)	mg/L	9.4	7.6	5.6	0.3	3078415
Dissolved Sodium (Na)	mg/L	63	43	110	0.5	3078415

RDL = Reportable Detection Limit

**REGULATED METALS (CCME/AT1) - DISSOLVED**

Maxxam ID		O52584	O52641	O52642	O52643		
Sampling Date		2009/04/21	2009/04/21	2009/04/21	2009/04/21		
COC Number		79913	79913	79913	79913		
	<b>Units</b>	<b>MW01</b>	<b>MW02</b>	<b>MW03</b>	<b>MW04</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Low Level Elements</b>							
Dissolved Cadmium (Cd)	ug/L	<0.005	<0.005	<0.005	0.024	0.005	3077165
<b>Elements</b>							
Dissolved Aluminum (Al)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3077165
Dissolved Antimony (Sb)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	3077165
Dissolved Arsenic (As)	mg/L	0.0008	0.0038	0.0013	<0.0002	0.0002	3077165
Dissolved Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3077165
Dissolved Chromium (Cr)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3077165
Dissolved Cobalt (Co)	mg/L	0.0008	0.0017	0.0006	<0.0003	0.0003	3077165
Dissolved Copper (Cu)	mg/L	0.0005	0.0002	0.0007	0.0009	0.0002	3077165
Dissolved Lead (Pb)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	3077165
Dissolved Molybdenum (Mo)	mg/L	0.0004	0.0005	0.0007	0.0004	0.0002	3077165
Dissolved Nickel (Ni)	mg/L	0.0009	0.0019	0.0010	0.0021	0.0005	3077165
Dissolved Selenium (Se)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	3077165
Dissolved Silver (Ag)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	3077165
Dissolved Thallium (Tl)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	3077165
Dissolved Tin (Sn)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3077165
Dissolved Titanium (Ti)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3077165
Dissolved Uranium (U)	mg/L	0.0021	0.0014	0.0006	0.0029	0.0001	3077165
Dissolved Vanadium (V)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3077165
Dissolved Zinc (Zn)	mg/L	<0.003	<0.003	<0.003	<0.003	0.003	3077165

RDL = Reportable Detection Limit

**REGULATED METALS (CCME/AT1) - DISSOLVED**

Maxxam ID		O52644	O52645		
Sampling Date		2009/04/21	2009/04/21		
COC Number		79913	79913		
	<b>Units</b>	<b>MW05</b>	<b>MW08</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Low Level Elements</b>					
Dissolved Cadmium (Cd)	ug/L	<0.005	0.005	0.005	3079591
<b>Elements</b>					
Dissolved Aluminum (Al)	mg/L	<0.001	<0.001	0.001	3077165
Dissolved Antimony (Sb)	mg/L	<0.0002	<0.0002	0.0002	3077165
Dissolved Arsenic (As)	mg/L	0.0014	0.0062	0.0002	3077165
Dissolved Beryllium (Be)	mg/L	<0.001	<0.001	0.001	3077165
Dissolved Chromium (Cr)	mg/L	<0.001	<0.001	0.001	3077165
Dissolved Cobalt (Co)	mg/L	0.0007	<0.0003	0.0003	3077165
Dissolved Copper (Cu)	mg/L	0.0008	0.0016	0.0002	3077165
Dissolved Lead (Pb)	mg/L	<0.0002	<0.0002	0.0002	3077165
Dissolved Molybdenum (Mo)	mg/L	0.0006	0.0020	0.0002	3077165
Dissolved Nickel (Ni)	mg/L	0.0014	0.0017	0.0005	3077165
Dissolved Selenium (Se)	mg/L	<0.0002	<0.0002	0.0002	3077165
Dissolved Silver (Ag)	mg/L	<0.0001	<0.0001	0.0001	3077165
Dissolved Thallium (Tl)	mg/L	<0.0002	<0.0002	0.0002	3077165
Dissolved Tin (Sn)	mg/L	<0.001	<0.001	0.001	3077165
Dissolved Titanium (Ti)	mg/L	<0.001	<0.001	0.001	3077165
Dissolved Uranium (U)	mg/L	0.0007	0.0007	0.0001	3077165
Dissolved Vanadium (V)	mg/L	<0.001	<0.001	0.001	3077165
Dissolved Zinc (Zn)	mg/L	<0.003	<0.003	0.003	3077165
RDL = Reportable Detection Limit					

### RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		O52584	O52641		O52642		
Sampling Date		2009/04/21	2009/04/21		2009/04/21		
COC Number		79913	79913		79913		
	<b>Units</b>	<b>MW01</b>	<b>MW02</b>	<b>QC Batch</b>	<b>MW03</b>	<b>RDL</b>	<b>QC Batch</b>

<b>CONVENTIONALS</b>							
Total Ammonia (N)	mg/L	0.22	0.56	3075194	0.33	0.05	3075209
<b>Misc. Inorganics</b>							
Dissolved Hex. Chromium (Cr 6+)	mg/L	<0.001	<0.001	3081176	<0.001	0.001	3081176
Dissolved Organic Carbon (C)	mg/L	2.3	4.1	3082753	2.5	0.5	3082753
<b>Anions</b>							
Dissolved Fluoride (F)	mg/L	0.14	0.08	3075374	0.11	0.05	3075374
<b>Nutrients</b>							
Orthophosphate (P)	mg/L	0.003	<0.003	3076976	0.003	0.003	3076976
<b>Misc. Organics</b>							
Phenols	mg/L	0.003	0.002	3079102	0.003	0.002	3079102
RDL = Reportable Detection Limit							

Maxxam ID		O52643	O52644		O52645		
Sampling Date		2009/04/21	2009/04/21		2009/04/21		
COC Number		79913	79913		79913		
	<b>Units</b>	<b>MW04</b>	<b>MW05</b>	<b>QC Batch</b>	<b>MW08</b>	<b>RDL</b>	<b>QC Batch</b>

<b>CONVENTIONALS</b>							
Total Ammonia (N)	mg/L	<0.05	0.22	3075209	1.7	0.05	3075209
<b>Misc. Inorganics</b>							
Dissolved Hex. Chromium (Cr 6+)	mg/L	0.002	<0.001	3081176	<0.001	0.001	3081176
Dissolved Organic Carbon (C)	mg/L	2.8	2.5	3082753	5.3	0.5	3082753
<b>Anions</b>							
Dissolved Fluoride (F)	mg/L	0.14	0.12	3075374	0.11	0.05	3075374
<b>Nutrients</b>							
Orthophosphate (P)	mg/L	<0.003	<0.003	3076976	0.016	0.003	3076976
<b>Misc. Organics</b>							
Phenols	mg/L	<0.002	0.003	3079102	0.002	0.002	3082426
RDL = Reportable Detection Limit							

**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

Maxxam ID		O52584	O52641	O52642	O52643	O52644		
Sampling Date		2009/04/21	2009/04/21	2009/04/21	2009/04/21	2009/04/21		
COC Number		79913	79913	79913	79913	79913		
	<b>Units</b>	<b>MW01</b>	<b>MW02</b>	<b>MW03</b>	<b>MW04</b>	<b>MW05</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Low Level Elements</b>								
Dissolved Mercury (Hg)	ug/L	0.001	0.001	0.001	0.003	0.001	0.001	3078115

RDL = Reportable Detection Limit

Maxxam ID		O52645		
Sampling Date		2009/04/21		
COC Number		79913		
	<b>Units</b>	<b>MW08</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Low Level Elements</b>				
Dissolved Mercury (Hg)	ug/L	<0.001	0.001	3078115

RDL = Reportable Detection Limit



**General Comments**

**Results relate only to the items tested.**

Quality Assurance Report  
 Maxxam Job Number: EA918335

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits	
3075131 KO	MATRIX SPIKE [O52641-05]	O-TERPHENYL (sur.)	2009/04/23		102	%	70 - 130	
		F2 (C10-C16 Hydrocarbons)	2009/04/23		89	%	70 - 130	
	SPIKE	O-TERPHENYL (sur.)	2009/04/23		108	%	70 - 130	
		F2 (C10-C16 Hydrocarbons)	2009/04/23		99	%	80 - 120	
	BLANK	O-TERPHENYL (sur.)	2009/04/23		103	%	70 - 130	
		F2 (C10-C16 Hydrocarbons)	2009/04/23	<0.1		mg/L		
3075194 KB9	RPD [O52584-05]	F2 (C10-C16 Hydrocarbons)	2009/04/23	NC		%	40	
	MATRIX SPIKE	Total Ammonia (N)	2009/04/23		NC	%	80 - 120	
		SPIKE	Total Ammonia (N)	2009/04/23		98	%	80 - 120
	BLANK	Total Ammonia (N)	2009/04/23	<0.05		mg/L		
		RPD	Total Ammonia (N)	2009/04/23	15.4		%	20
	3075209 KB9	MATRIX SPIKE [O52642-04]	Total Ammonia (N)	2009/04/23		95	%	80 - 120
SPIKE			Total Ammonia (N)	2009/04/23		99	%	80 - 120
BLANK		Total Ammonia (N)	2009/04/23	<0.05		mg/L		
		RPD [O52642-04]	Total Ammonia (N)	2009/04/23	3.7		%	20
3075365 MG5		Calibration Check	Alkalinity (Total as CaCO3)	2009/04/23		98	%	80 - 120
			BLANK	Alkalinity (PP as CaCO3)	2009/04/23	<0.5		mg/L
	RPD [O52584-01]	Alkalinity (Total as CaCO3)	2009/04/23	<0.5		mg/L		
		Bicarbonate (HCO3)	2009/04/23	<0.5		mg/L		
		Carbonate (CO3)	2009/04/23	<0.5		mg/L		
		Hydroxide (OH)	2009/04/23	<0.5		mg/L		
		Alkalinity (PP as CaCO3)	2009/04/23	NC		%	20	
		Alkalinity (Total as CaCO3)	2009/04/23	0.4		%	20	
		Bicarbonate (HCO3)	2009/04/23	0.4		%	20	
		Carbonate (CO3)	2009/04/23	NC		%	20	
Hydroxide (OH)	2009/04/23	NC		%	20			
3075370 SY1	Calibration Check	Dissolved Nitrate (N)	2009/04/23		100	%	80 - 120	
		Dissolved Nitrite (N)	2009/04/23		99	%	80 - 120	
	MATRIX SPIKE	Dissolved Nitrate (N)	2009/04/23		N/C	%	80 - 120	
		Dissolved Nitrite (N)	2009/04/23		100	%	80 - 120	
	BLANK	Dissolved Nitrate (N)	2009/04/23	<0.003		mg/L		
		Dissolved Nitrite (N)	2009/04/23	<0.003		mg/L		
	RPD	Dissolved Nitrate (N)	2009/04/23	3.7		%	20	
		Dissolved Nitrite (N)	2009/04/23	1.4		%	20	
	3075372 MG5	Calibration Check	pH	2009/04/23		99	%	97 - 103
		RPD [O52584-01]	pH	2009/04/23	0.9		%	5
3075373 MG5	Calibration Check	Conductivity	2009/04/23		96	%	80 - 120	
	BLANK	Conductivity	2009/04/23	<1		uS/cm		
	RPD [O52584-01]	Conductivity	2009/04/23	1.0		%	20	
3075374 MG5	Calibration Check	Dissolved Fluoride (F)	2009/04/23		90	%	80 - 120	
	MATRIX SPIKE [O52584-01]	Dissolved Fluoride (F)	2009/04/23		82	%	80 - 120	
		BLANK	Dissolved Fluoride (F)	2009/04/23	<0.05		mg/L	
	RPD [O52584-01]	Dissolved Fluoride (F)	2009/04/23	NC		%	20	
3075729 CD1	MATRIX SPIKE [O52641-05]	4-BROMOFLUOROBENZENE (sur.)	2009/04/23		105	%	70 - 130	
		D4-1,2-DICHLOROETHANE (sur.)	2009/04/23		98	%	70 - 130	
		D8-TOLUENE (sur.)	2009/04/23		102	%	70 - 130	
		Benzene	2009/04/23		93	%	70 - 130	
		Toluene	2009/04/23		102	%	70 - 130	
		Ethylbenzene	2009/04/23		107	%	70 - 130	
		o-Xylene	2009/04/23		101	%	70 - 130	
		m & p-Xylene	2009/04/23		104	%	70 - 130	

Quality Assurance Report (Continued)

Maxxam Job Number: EA918335

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits		
3075729 CD1	MATRIX SPIKE [O52641-05] SPIKE	(C6-C10)	2009/04/23		83	%	70 - 130		
		4-BROMOFLUOROBENZENE (sur.)	2009/04/23		101	%	70 - 130		
		D4-1,2-DICHLOROETHANE (sur.)	2009/04/23		98	%	70 - 130		
		D8-TOLUENE (sur.)	2009/04/23		101	%	70 - 130		
		Benzene	2009/04/23		99	%	70 - 130		
		Toluene	2009/04/23		107	%	70 - 130		
		Ethylbenzene	2009/04/23		112	%	70 - 130		
		o-Xylene	2009/04/23		110	%	70 - 130		
		m & p-Xylene	2009/04/23		111	%	70 - 130		
		(C6-C10)	2009/04/23		108	%	80 - 120		
		BLANK	4-BROMOFLUOROBENZENE (sur.)	2009/04/23		96	%	70 - 130	
			D4-1,2-DICHLOROETHANE (sur.)	2009/04/23		102	%	70 - 130	
			D8-TOLUENE (sur.)	2009/04/23		103	%	70 - 130	
			Benzene	2009/04/23	<0.4			ug/L	
			Toluene	2009/04/23	<0.4			ug/L	
	Ethylbenzene		2009/04/23	<0.4			ug/L		
	o-Xylene		2009/04/23	<0.4			ug/L		
	m & p-Xylene		2009/04/23	<0.8			ug/L		
	Xylenes (Total)		2009/04/23	<0.8			ug/L		
	F1 (C6-C10) - BTEX		2009/04/23	<100			ug/L		
	(C6-C10)		2009/04/23	<100			ug/L		
	RPD [O52584-05]		Benzene	2009/04/24	NC			%	40
			Toluene	2009/04/24	NC			%	40
			Ethylbenzene	2009/04/24	NC			%	40
			o-Xylene	2009/04/24	NC			%	40
		m & p-Xylene	2009/04/24	NC			%	40	
		Xylenes (Total)	2009/04/24	NC			%	40	
		F1 (C6-C10) - BTEX	2009/04/24	NC			%	40	
		(C6-C10)	2009/04/24	NC			%	40	
3076976 KB9	MATRIX SPIKE	Orthophosphate (P)	2009/04/23		109	%	80 - 120		
	SPIKE	Orthophosphate (P)	2009/04/23		98	%	90 - 110		
	BLANK	Orthophosphate (P)	2009/04/23	<0.003		mg/L			
	RPD	Orthophosphate (P)	2009/04/23	6.1		%	20		
3077165 EO1	Calibration Check	Dissolved Aluminum (Al)	2009/04/24		105	%	80 - 120		
		Dissolved Antimony (Sb)	2009/04/24		108	%	80 - 120		
		Dissolved Arsenic (As)	2009/04/24		99	%	80 - 120		
		Dissolved Beryllium (Be)	2009/04/24		108	%	80 - 120		
		Dissolved Chromium (Cr)	2009/04/24		92	%	80 - 120		
		Dissolved Cobalt (Co)	2009/04/24		97	%	80 - 120		
		Dissolved Copper (Cu)	2009/04/24		93	%	80 - 120		
		Dissolved Lead (Pb)	2009/04/24		101	%	80 - 120		
		Dissolved Molybdenum (Mo)	2009/04/24		99	%	80 - 120		
		Dissolved Nickel (Ni)	2009/04/24		94	%	80 - 120		
		Dissolved Selenium (Se)	2009/04/24		100	%	80 - 120		
		Dissolved Silver (Ag)	2009/04/24		84	%	80 - 120		
		Dissolved Thallium (Tl)	2009/04/24		103	%	80 - 120		
		Dissolved Tin (Sn)	2009/04/24		107	%	80 - 120		
		Dissolved Titanium (Ti)	2009/04/24		96	%	80 - 120		
		Dissolved Uranium (U)	2009/04/24		103	%	80 - 120		
		Dissolved Vanadium (V)	2009/04/24		95	%	80 - 120		
		Dissolved Zinc (Zn)	2009/04/24		101	%	80 - 120		
		MATRIX SPIKE	Dissolved Aluminum (Al)	2009/04/24		96	%	80 - 120	
			Dissolved Antimony (Sb)	2009/04/24		113	%	80 - 120	
			Dissolved Arsenic (As)	2009/04/24		96	%	80 - 120	

Quality Assurance Report (Continued)

Maxxam Job Number: EA918335

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits		
3077165 EO1	MATRIX SPIKE	Dissolved Beryllium (Be)	2009/04/24		104	%	80 - 120		
		Dissolved Chromium (Cr)	2009/04/24		91	%	80 - 120		
		Dissolved Cobalt (Co)	2009/04/24		84	%	80 - 120		
		Dissolved Copper (Cu)	2009/04/24		84	%	80 - 120		
		Dissolved Lead (Pb)	2009/04/24		97	%	80 - 120		
		Dissolved Molybdenum (Mo)	2009/04/24		104	%	80 - 120		
		Dissolved Nickel (Ni)	2009/04/24		83	%	80 - 120		
		Dissolved Selenium (Se)	2009/04/24		97	%	80 - 120		
		Dissolved Silver (Ag)	2009/04/24		86	%	80 - 120		
		Dissolved Thallium (Tl)	2009/04/24		98	%	80 - 120		
		Dissolved Tin (Sn)	2009/04/24		109	%	80 - 120		
		Dissolved Titanium (Ti)	2009/04/24		97	%	80 - 120		
		Dissolved Uranium (U)	2009/04/24		102	%	80 - 120		
		Dissolved Vanadium (V)	2009/04/24		96	%	80 - 120		
		Dissolved Zinc (Zn)	2009/04/24		85	%	80 - 120		
		BLANK	Dissolved Aluminum (Al)	2009/04/23	<0.001			mg/L	
			Dissolved Antimony (Sb)	2009/04/23	<0.0002			mg/L	
			Dissolved Arsenic (As)	2009/04/23	<0.0002			mg/L	
			Dissolved Beryllium (Be)	2009/04/23	<0.001			mg/L	
			Dissolved Chromium (Cr)	2009/04/23	<0.001			mg/L	
Dissolved Cobalt (Co)	2009/04/23		<0.0003			mg/L			
Dissolved Copper (Cu)	2009/04/23		<0.0002			mg/L			
Dissolved Lead (Pb)	2009/04/23		<0.0002			mg/L			
Dissolved Molybdenum (Mo)	2009/04/23		<0.0002			mg/L			
Dissolved Nickel (Ni)	2009/04/23		<0.0005			mg/L			
Dissolved Selenium (Se)	2009/04/23		<0.0002			mg/L			
Dissolved Silver (Ag)	2009/04/23		<0.0001			mg/L			
Dissolved Thallium (Tl)	2009/04/23		<0.0002			mg/L			
Dissolved Tin (Sn)	2009/04/23		<0.001			mg/L			
Dissolved Titanium (Ti)	2009/04/23		<0.001			mg/L			
Dissolved Uranium (U)	2009/04/23		<0.0001			mg/L			
Dissolved Vanadium (V)	2009/04/23		<0.001			mg/L			
Dissolved Zinc (Zn)	2009/04/23		<0.003			mg/L			
RPD	Dissolved Aluminum (Al)		2009/04/23	NC			%	20	
	Dissolved Antimony (Sb)		2009/04/23	NC			%	20	
	Dissolved Arsenic (As)	2009/04/23	0.9			%	20		
	Dissolved Beryllium (Be)	2009/04/23	NC			%	20		
	Dissolved Chromium (Cr)	2009/04/23	NC			%	20		
	Dissolved Cobalt (Co)	2009/04/23	0.3			%	20		
	Dissolved Copper (Cu)	2009/04/23	2.0			%	20		
	Dissolved Lead (Pb)	2009/04/23	NC			%	20		
	Dissolved Molybdenum (Mo)	2009/04/23	NC			%	20		
	Dissolved Nickel (Ni)	2009/04/23	0.4			%	20		
	Dissolved Selenium (Se)	2009/04/23	NC			%	20		
	Dissolved Silver (Ag)	2009/04/23	NC			%	20		
	Dissolved Thallium (Tl)	2009/04/23	NC			%	20		
	Dissolved Tin (Sn)	2009/04/23	NC			%	20		
	Dissolved Titanium (Ti)	2009/04/23	NC			%	20		
	Dissolved Uranium (U)	2009/04/23	NC			%	20		
	Dissolved Vanadium (V)	2009/04/23	NC			%	20		
	Dissolved Zinc (Zn)	2009/04/23	NC			%	20		
	3078002 BP5	MATRIX SPIKE	Dissolved Sulphate (SO4)	2009/04/24		NC	%	80 - 120	
		SPIKE	Dissolved Sulphate (SO4)	2009/04/24		98	%	80 - 120	
BLANK		Dissolved Sulphate (SO4)	2009/04/24	<1		mg/L			
RPD		Dissolved Sulphate (SO4)	2009/04/24	2.7		%	20		

Quality Assurance Report (Continued)

Maxxam Job Number: EA918335

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits		
3078115 VGG	MATRIX SPIKE	Dissolved Mercury (Hg)	2009/04/24		100	%	80 - 120		
	SPIKE	Dissolved Mercury (Hg)	2009/04/24		103	%	80 - 120		
	BLANK	Dissolved Mercury (Hg)	2009/04/24	<0.001		ug/L			
	RPD	Dissolved Mercury (Hg)	2009/04/24	NC		%	20		
3078117 BP5	MATRIX SPIKE	Dissolved Chloride (Cl)	2009/04/24		NC	%	80 - 120		
	SPIKE	Dissolved Chloride (Cl)	2009/04/24		109	%	80 - 120		
	BLANK	Dissolved Chloride (Cl)	2009/04/24	<1		mg/L			
	RPD	Dissolved Chloride (Cl)	2009/04/24	7.5		%	20		
3078332 RI3	Calibration Check	Dissolved Calcium (Ca)	2009/04/24		99	%	80 - 120		
		Dissolved Iron (Fe)	2009/04/24		95	%	80 - 120		
		Dissolved Magnesium (Mg)	2009/04/24		103	%	80 - 120		
		Dissolved Manganese (Mn)	2009/04/24		99	%	80 - 120		
		Dissolved Potassium (K)	2009/04/24		102	%	80 - 120		
		Dissolved Sodium (Na)	2009/04/24		104	%	80 - 120		
		MATRIX SPIKE	Dissolved Calcium (Ca)	2009/04/24		NC	%	80 - 120	
			Dissolved Iron (Fe)	2009/04/24		NC	%	80 - 120	
			Dissolved Magnesium (Mg)	2009/04/24		84	%	80 - 120	
			Dissolved Manganese (Mn)	2009/04/24		85	%	80 - 120	
	Dissolved Potassium (K)		2009/04/24		92	%	80 - 120		
	Dissolved Sodium (Na)		2009/04/24		NC	%	80 - 120		
	BLANK	Dissolved Calcium (Ca)	2009/04/24	<0.3			mg/L		
		Dissolved Iron (Fe)	2009/04/24	<0.06			mg/L		
		Dissolved Magnesium (Mg)	2009/04/24	<0.2			mg/L		
		Dissolved Manganese (Mn)	2009/04/24	<0.004			mg/L		
		Dissolved Potassium (K)	2009/04/24	<0.3			mg/L		
		Dissolved Sodium (Na)	2009/04/24	<0.5			mg/L		
		RPD	Dissolved Calcium (Ca)	2009/04/24	0.6			%	20
			Dissolved Iron (Fe)	2009/04/24	0.03			%	20
Dissolved Magnesium (Mg)			2009/04/24	0.2			%	20	
Dissolved Manganese (Mn)			2009/04/24	0.3			%	20	
Dissolved Potassium (K)	2009/04/24		0.1			%	20		
Dissolved Sodium (Na)	2009/04/24		0.2			%	20		
3078415 SG8	Calibration Check	Dissolved Calcium (Ca)	2009/04/24		102	%	80 - 120		
		Dissolved Iron (Fe)	2009/04/24		93	%	80 - 120		
		Dissolved Magnesium (Mg)	2009/04/24		102	%	80 - 120		
		Dissolved Manganese (Mn)	2009/04/24		100	%	80 - 120		
		Dissolved Potassium (K)	2009/04/24		100	%	80 - 120		
		Dissolved Sodium (Na)	2009/04/24		100	%	80 - 120		
		MATRIX SPIKE	Dissolved Calcium (Ca)	2009/04/24		NC	%	80 - 120	
			Dissolved Iron (Fe)	2009/04/24		NC	%	80 - 120	
			Dissolved Magnesium (Mg)	2009/04/24		NC	%	80 - 120	
			Dissolved Manganese (Mn)	2009/04/24		NC	%	80 - 120	
	Dissolved Potassium (K)		2009/04/24		103	%	80 - 120		
	Dissolved Sodium (Na)		2009/04/24		NC	%	80 - 120		
	BLANK	Dissolved Calcium (Ca)	2009/04/24	<0.3			mg/L		
		Dissolved Iron (Fe)	2009/04/24	<0.06			mg/L		
		Dissolved Magnesium (Mg)	2009/04/24	<0.2			mg/L		
		Dissolved Manganese (Mn)	2009/04/24	<0.004			mg/L		
		Dissolved Potassium (K)	2009/04/24	<0.3			mg/L		
		Dissolved Sodium (Na)	2009/04/24	<0.5			mg/L		
		RPD	Dissolved Calcium (Ca)	2009/04/24	0.2			%	20
			Dissolved Iron (Fe)	2009/04/24	0.02			%	20
Dissolved Magnesium (Mg)			2009/04/24	0.08			%	20	
Dissolved Manganese (Mn)			2009/04/24	0.4			%	20	
Dissolved Potassium (K)	2009/04/24		0.04			%	20		

Quality Assurance Report (Continued)

Maxxam Job Number: EA918335

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3078415 SG8	RPD	Dissolved Sodium (Na)	2009/04/24	0.08		%	20
3079102 YY	MATRIX SPIKE	Phenols	2009/04/24		111	%	80 - 120
	SPIKE	Phenols	2009/04/24		103	%	80 - 120
	BLANK	Phenols	2009/04/24	<0.002		mg/L	
	RPD	Phenols	2009/04/24	NC		%	20
3079591 EO1	Calibration Check	Dissolved Cadmium (Cd)	2009/04/23		110	%	80 - 120
	MATRIX SPIKE	Dissolved Cadmium (Cd)	2009/04/23		109	%	80 - 120
	BLANK	Dissolved Cadmium (Cd)	2009/04/23	<0.005		ug/L	
	RPD	Dissolved Cadmium (Cd)	2009/04/23	NC		%	20
3081176 ZD	MATRIX SPIKE	Dissolved Hex. Chromium (Cr 6+)	2009/04/27		97	%	80 - 120
	SPIKE	Dissolved Hex. Chromium (Cr 6+)	2009/04/27		97	%	80 - 120
	BLANK	Dissolved Hex. Chromium (Cr 6+)	2009/04/27	<0.001		mg/L	
	RPD	Dissolved Hex. Chromium (Cr 6+)	2009/04/27	NC		%	20
3082426 YY	MATRIX SPIKE	Phenols	2009/04/27		111	%	80 - 120
	SPIKE	Phenols	2009/04/27		108	%	80 - 120
	BLANK	Phenols	2009/04/27	<0.002		mg/L	
	RPD	Phenols	2009/04/27	NC		%	20
3082753 YY	MATRIX SPIKE	Dissolved Organic Carbon (C)	2009/04/27		NC	%	80 - 120
	SPIKE	Dissolved Organic Carbon (C)	2009/04/27		98	%	80 - 120
	BLANK	Dissolved Organic Carbon (C)	2009/04/27	<0.5		mg/L	
	RPD	Dissolved Organic Carbon (C)	2009/04/27	12.1		%	20

NC = Non-calculable  
 RPD = Relative Percent Difference

**Validation Signature Page**

**Maxxam Job #: A918335**

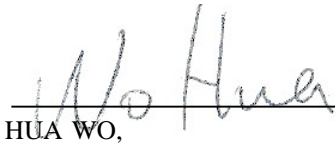
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The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



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DINA TLEUGABULOVA, Ph.D., Project Manager



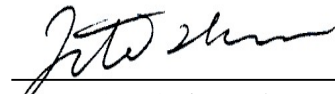
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HUA WO,



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LISA CUMMINGS, Extractables Supervisor



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LILI ZHOU, Senior analyst, Inorganic department.

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.



Your P.O. #: 110217990  
 Your Project #: 110217990 (NCIA)  
 Your C.O.C. #: 79726

**Attention: DYLAN KING**  
 STANTEC CONSULTING LTD  
 10160-112 STREET  
 EDMONTON, AB  
 CANADA T5K 2L6

**Report Date: 2009/04/28**

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: A918428**  
**Received: 2009/04/22, 17:40**

Sample Matrix: Water  
 # Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity (pp, total), CO <sub>3</sub> ,HCO <sub>3</sub> ,OH	8	N/A	2009/04/23	EENVSOP-00054	SM 2320-B
BTEX/F1 in Water by HS GC/MS	8	N/A	2009/04/24	EENVSOP-00004 EENVSOP-00002	EPA 8260C/CCME
Cadmium - low level CCME - Dissolved	8	N/A	2009/04/24	CAL SOP-00191	EPA SW-846 6020A
Chloride by Automated Colourimetry	8	N/A	2009/04/24	EENVSOP-00055	EPA 325.2
Hexavalent Chromium (6)	8	N/A	2009/04/27	CAL SOP-00056	SM 3500-Cr B
Carbon (DOC)	8	N/A	2009/04/28	EENVSOP-00060	MMCW 119
Conductivity	8	N/A	2009/04/23	EENVSOP-00054	SM 2510-B
Fluoride	8	N/A	2009/04/23	EENVSOP-00054	SM 4500-F C
CCME Hydrocarbons in Water (F2; C10-C16)	8	2009/04/24	2009/04/24	EENVSOP-00009 EENVSOP-00008	EPA 8015D/3510C
Hardness	8	N/A	2009/04/28	CAL WI-00053	AEMM, Method 423
Mercury - Low Level (Dissolved) (6)	8	2009/04/24	2009/04/24	CAL SOP-00007	EPA 1631
Elements by ICP - Dissolved	8	N/A	2009/04/24	CAL SOP-00192	EPA SW846 6010B
Elements by ICPMS - Dissolved	8	N/A	2009/04/24	CAL SOP-00191	EPA SW-846 6020A
Ion Balance	8	N/A	2009/04/28	CAL WI-00053	SM 1030E
Sum of cations, anions	8	N/A	2009/04/28		
Ammonia-N (Total)	8	N/A	2009/04/27	EENVSOP-00058	EPA 350.1
Nitrate and Nitrite	8	N/A	2009/04/24		
Nitrate + Nitrite-N (calculated)	8	N/A	2009/04/24		
Nitrogen, (Nitrite, Nitrate) by IC	8	N/A	2009/04/23	CAL SOP-00060	SM 4110-B
pH (Alkalinity titrator)	8	N/A	2009/04/23	EENVSOP-00054	SM 4500-H+B
Phenols (4-AAP)	8	N/A	2009/04/27	EENVSOP-00061	EPA 420.2
Orthophosphate by Konelab	8	N/A	2009/04/23	EENVSOP-00095	SM 4500 P-F
Sulphate by Automated Colourimetry	8	N/A	2009/04/24	EENVSOP-00057	EPA 375.4
Total Dissolved Solids (Calculated)	8	N/A	2009/04/28		SM 1030E

(1) This test was performed by Maxxam Calgary





Your P.O. #: 110217990  
Your Project #: 110217990 (NCIA)  
Your C.O.C. #: 79726

**Attention: DYLAN KING**  
STANTEC CONSULTING LTD  
10160-112 STREET  
EDMONTON, AB  
CANADA T5K 2L6

**Report Date: 2009/04/28**

**CERTIFICATE OF ANALYSIS**

-2-

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

JEREMY WAKARUK, B.Sc., Senior Project Manager  
Email: jwakaruk@maxxamanalytics.com  
Phone# (780) 577-7105 Ext:7105

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

**AT1 BTEX AND F1-F2 (WATER)**

Maxxam ID		O52914	O52916	O52918	O52921		
Sampling Date		2009/04/22	2009/04/22	2009/04/22	2009/04/22		
COC Number		79726	79726	79726	79726		
	<b>Units</b>	<b>MW07</b>	<b>MW06</b>	<b>MW09</b>	<b>MW10</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Hydrocarbons</b>							
F2 (C10-C16 Hydrocarbons)	mg/L	<0.1	<0.1	0.3	<0.1	0.1	3078108
<b>Volatiles</b>							
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	0.4	3075729
Toluene	ug/L	<0.4	<0.4	<0.4	<0.4	0.4	3075729
Ethylbenzene	ug/L	<0.4	<0.4	<0.4	<0.4	0.4	3075729
o-Xylene	ug/L	<0.4	<0.4	<0.4	<0.4	0.4	3075729
m & p-Xylene	ug/L	<0.8	<0.8	<0.8	<0.8	0.8	3075729
Xylenes (Total)	ug/L	<0.8	<0.8	<0.8	<0.8	0.8	3075729
F1 (C6-C10) - BTEX	ug/L	<100	<100	<100	<100	100	3075729
(C6-C10)	ug/L	<100	<100	<100	<100	100	3075729
<b>Surrogate Recovery (%)</b>							
4-BROMOFLUOROBENZENE (sur.)	%	104	100	95	100	N/A	3075729
D4-1,2-DICHLOROETHANE (sur.)	%	109	102	108	116	N/A	3075729
D8-TOLUENE (sur.)	%	96	103	100	95	N/A	3075729
O-TERPHENYL (sur.)	%	95	94	94	93	N/A	3078108

N/A = Not Applicable  
RDL = Reportable Detection Limit

**AT1 BTEX AND F1-F2 (WATER)**

Maxxam ID		O52922	O52923	O52939		
Sampling Date		2009/04/22	2009/04/22	2009/04/22		
COC Number		79726	79726	79726		
	<b>Units</b>	<b>MW11</b>	<b>MW12</b>	<b>MW13</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Hydrocarbons</b>						
F2 (C10-C16 Hydrocarbons)	mg/L	<0.1	<0.1	<0.1	0.1	3078108
<b>Volatiles</b>						
Benzene	ug/L	<0.4	<0.4	<0.4	0.4	3075729
Toluene	ug/L	<0.4	<0.4	<0.4	0.4	3075729
Ethylbenzene	ug/L	<0.4	<0.4	<0.4	0.4	3075729
o-Xylene	ug/L	<0.4	<0.4	<0.4	0.4	3075729
m & p-Xylene	ug/L	<0.8	<0.8	<0.8	0.8	3075729
Xylenes (Total)	ug/L	<0.8	<0.8	<0.8	0.8	3075729
F1 (C6-C10) - BTEX	ug/L	<100	<100	<100	100	3075729
(C6-C10)	ug/L	<100	<100	<100	100	3075729
<b>Surrogate Recovery (%)</b>						
4-BROMOFLUOROBENZENE (sur.)	%	102	96	93	N/A	3075729
D4-1,2-DICHLOROETHANE (sur.)	%	100	96	105	N/A	3075729
D8-TOLUENE (sur.)	%	100	103	99	N/A	3075729
O-TERPHENYL (sur.)	%	90	90	96	N/A	3078108
N/A = Not Applicable RDL = Reportable Detection Limit						

**AT1 BTEX AND F1-F2 (WATER)**

Maxxam ID		O52940		
Sampling Date		2009/04/22		
COC Number		79726		
	<b>Units</b>	<b>MW14</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Hydrocarbons</b>				
F2 (C10-C16 Hydrocarbons)	mg/L	<0.1	0.1	3078108
<b>Volatiles</b>				
Benzene	ug/L	<0.4	0.4	3076622
Toluene	ug/L	<0.4	0.4	3076622
Ethylbenzene	ug/L	<0.4	0.4	3076622
o-Xylene	ug/L	<0.4	0.4	3076622
m & p-Xylene	ug/L	<0.8	0.8	3076622
Xylenes (Total)	ug/L	<0.8	0.8	3076622
F1 (C6-C10) - BTEX	ug/L	<100	100	3076622
(C6-C10)	ug/L	<100	100	3076622
<b>Surrogate Recovery (%)</b>				
4-BROMOFLUOROBENZENE (sur.)	%	94	N/A	3076622
D4-1,2-DICHLOROETHANE (sur.)	%	104	N/A	3076622
D8-TOLUENE (sur.)	%	97	N/A	3076622
O-TERPHENYL (sur.)	%	89	N/A	3078108
N/A = Not Applicable RDL = Reportable Detection Limit				

**RCAP - PARTIAL ROUTINE (WATER)**

Maxxam ID		O52914	O52916	O52918	O52921		
Sampling Date		2009/04/22	2009/04/22	2009/04/22	2009/04/22		
COC Number		79726	79726	79726	79726		
	<b>Units</b>	<b>MW07</b>	<b>MW06</b>	<b>MW09</b>	<b>MW10</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>							
Anion Sum	meq/L	38	19	17	14	N/A	3077261
Cation Sum	meq/L	40	21	18	15	N/A	3077261
Hardness (CaCO3)	mg/L	1300	710	350	490	0.5	3077258
Ion Balance	N/A	1.1	1.1	1.0	1.1	0.01	3077259
Dissolved Nitrate (NO3)	mg/L	0.02	0.02	0.02	0.02	0.01	3077263
Nitrate plus Nitrite (N)	mg/L	0.004	0.004	0.005	0.005	0.003	3077264
Dissolved Nitrite (NO2)	mg/L	<0.01	<0.01	<0.01	<0.01	0.01	3077263
Total Dissolved Solids	mg/L	2400	1100	1000	800	10	3077267
<b>Misc. Inorganics</b>							
Conductivity	uS/cm	3000	1700	1500	1300	1	3075373
pH	N/A	7.19	7.47	7.73	7.51	N/A	3075372
<b>Anions</b>							
Alkalinity (PP as CaCO3)	mg/L	<0.5	<0.5	<0.5	<0.5	0.5	3075365
Alkalinity (Total as CaCO3)	mg/L	600	490	520	510	0.5	3075365
Bicarbonate (HCO3)	mg/L	730	590	630	620	0.5	3075365
Carbonate (CO3)	mg/L	<0.5	<0.5	<0.5	<0.5	0.5	3075365
Hydroxide (OH)	mg/L	<0.5	<0.5	<0.5	<0.5	0.5	3075365
Dissolved Sulphate (SO4)	mg/L	1200 (1)	420	330	190	1	3078010
Dissolved Chloride (Cl)	mg/L	18	6	6	2	1	3078120
<b>Nutrients</b>							
Dissolved Nitrate (N)	mg/L	0.004	0.004	0.005	0.005	0.003	3076555
Dissolved Nitrite (N)	mg/L	<0.003	<0.003	<0.003	<0.003	0.003	3076555
<b>Elements</b>							
Dissolved Calcium (Ca)	mg/L	330 (1)	180	97	140	0.3	3078415
Dissolved Iron (Fe)	mg/L	14 (1)	5.7	1.9	5.9	0.06	3078415
Dissolved Magnesium (Mg)	mg/L	110 (1)	62	27	36	0.2	3078415
Dissolved Manganese (Mn)	mg/L	2.3 (1)	1.7	0.86	0.71	0.004	3078415
Dissolved Potassium (K)	mg/L	6.6	5.5	4.1	5.6	0.3	3078415
Dissolved Sodium (Na)	mg/L	320 (1)	150	240	120	0.5	3078415

RDL = Reportable Detection Limit

( 1 ) Matrix spike non calculable due to high concentration of original analyte.

**RCAP - PARTIAL ROUTINE (WATER)**

Maxxam ID		O52922	O52923	O52939	O52940		
Sampling Date		2009/04/22	2009/04/22	2009/04/22	2009/04/22		
COC Number		79726	79726	79726	79726		
	<b>Units</b>	<b>MW11</b>	<b>MW12</b>	<b>MW13</b>	<b>MW14</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>							
Anion Sum	meq/L	14	12	8.9	17	N/A	3077261
Cation Sum	meq/L	16	12	9.1	18	N/A	3077261
Hardness (CaCO3)	mg/L	560	360	200	350	0.5	3077258
Ion Balance	N/A	1.1	1.1	1.0	1.0	0.01	3077259
Dissolved Nitrate (NO3)	mg/L	0.01	0.02	0.02	0.02	0.01	3077263
Nitrate plus Nitrite (N)	mg/L	0.003	0.005	0.005	0.004	0.003	3077264
Dissolved Nitrite (NO2)	mg/L	<0.01	<0.01	<0.01	<0.01	0.01	3077263
Total Dissolved Solids	mg/L	800	610	460	1000	10	3077267
<b>Misc. Inorganics</b>							
Conductivity	uS/cm	1300	1000	770	1500	1	3075373
pH	N/A	7.51	7.66	7.81	7.78	N/A	3075372
<b>Anions</b>							
Alkalinity (PP as CaCO3)	mg/L	<0.5	<0.5	<0.5	<0.5	0.5	3075365
Alkalinity (Total as CaCO3)	mg/L	530	540	430	520	0.5	3075365
Bicarbonate (HCO3)	mg/L	640	650	520	630	0.5	3075365
Carbonate (CO3)	mg/L	<0.5	<0.5	<0.5	<0.5	0.5	3075365
Hydroxide (OH)	mg/L	<0.5	<0.5	<0.5	<0.5	0.5	3075365
Dissolved Sulphate (SO4)	mg/L	170	32	9	330	1	3078010
Dissolved Chloride (Cl)	mg/L	10	8	3	6	1	3078120
<b>Nutrients</b>							
Dissolved Nitrate (N)	mg/L	0.003	0.005	0.005	0.004	0.003	3076555
Dissolved Nitrite (N)	mg/L	<0.003	<0.003	<0.003	<0.003	0.003	3076555
<b>Elements</b>							
Dissolved Calcium (Ca)	mg/L	150	98	54	96	0.3	3078415
Dissolved Iron (Fe)	mg/L	7.0	4.1	1.3	1.9	0.06	3078415
Dissolved Magnesium (Mg)	mg/L	45	29	17	27	0.2	3078415
Dissolved Manganese (Mn)	mg/L	0.67	0.45	0.26	0.85	0.004	3078415
Dissolved Potassium (K)	mg/L	4.9	4.9	3.9	4.1	0.3	3078415
Dissolved Sodium (Na)	mg/L	91	110	110	240	0.5	3078415

RDL = Reportable Detection Limit

**REGULATED METALS (CCME/AT1) - DISSOLVED**

Maxxam ID		O52914	O52916	O52918	O52921		
Sampling Date		2009/04/22	2009/04/22	2009/04/22	2009/04/22		
COC Number		79726	79726	79726	79726		
	<b>Units</b>	<b>MW07</b>	<b>MW06</b>	<b>MW09</b>	<b>MW10</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Low Level Elements</b>							
Dissolved Cadmium (Cd)	ug/L	0.016	0.009	0.008	0.007	0.005	3078098
<b>Elements</b>							
Dissolved Aluminum (Al)	mg/L	<0.001	<0.001	0.10	<0.001	0.001	3078092
Dissolved Antimony (Sb)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	3078092
Dissolved Arsenic (As)	mg/L	0.0021	0.0050	0.0023	0.0044	0.0002	3078092
Dissolved Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3078092
Dissolved Chromium (Cr)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3078092
Dissolved Cobalt (Co)	mg/L	0.0013	0.0004	0.0008	<0.0003	0.0003	3078092
Dissolved Copper (Cu)	mg/L	0.0007	<0.0002	0.0003	0.0006	0.0002	3078092
Dissolved Lead (Pb)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	3078092
Dissolved Molybdenum (Mo)	mg/L	0.0004	0.0010	0.0016	0.0009	0.0002	3078092
Dissolved Nickel (Ni)	mg/L	0.0024	0.0015	0.0017	0.0010	0.0005	3078092
Dissolved Selenium (Se)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	3078092
Dissolved Silver (Ag)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	3078092
Dissolved Thallium (Tl)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	3078092
Dissolved Tin (Sn)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3078092
Dissolved Titanium (Ti)	mg/L	<0.001	<0.001	0.005	<0.001	0.001	3078092
Dissolved Uranium (U)	mg/L	0.0016	0.0017	0.0012	0.0011	0.0001	3078092
Dissolved Vanadium (V)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3078092
Dissolved Zinc (Zn)	mg/L	<0.003	<0.003	<0.003	<0.003	0.003	3078092
RDL = Reportable Detection Limit							

**REGULATED METALS (CCME/AT1) - DISSOLVED**

Maxxam ID		O52922	O52923	O52939	O52940		
Sampling Date		2009/04/22	2009/04/22	2009/04/22	2009/04/22		
COC Number		79726	79726	79726	79726		
	<b>Units</b>	<b>MW11</b>	<b>MW12</b>	<b>MW13</b>	<b>MW14</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Low Level Elements</b>							
Dissolved Cadmium (Cd)	ug/L	0.009	0.006	0.005	0.011	0.005	3078098
<b>Elements</b>							
Dissolved Aluminum (Al)	mg/L	<0.001	<0.001	<0.001	0.11	0.001	3078092
Dissolved Antimony (Sb)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	3078092
Dissolved Arsenic (As)	mg/L	0.0024	0.0026	0.0015	0.0023	0.0002	3078092
Dissolved Beryllium (Be)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3078092
Dissolved Chromium (Cr)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3078092
Dissolved Cobalt (Co)	mg/L	0.0004	0.0006	0.0007	0.0008	0.0003	3078092
Dissolved Copper (Cu)	mg/L	0.0007	0.0008	0.0003	0.0011	0.0002	3078092
Dissolved Lead (Pb)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	3078092
Dissolved Molybdenum (Mo)	mg/L	0.0007	0.0012	0.0022	0.0017	0.0002	3078092
Dissolved Nickel (Ni)	mg/L	0.0008	0.0012	0.0012	0.0016	0.0005	3078092
Dissolved Selenium (Se)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	3078092
Dissolved Silver (Ag)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	3078092
Dissolved Thallium (Tl)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	3078092
Dissolved Tin (Sn)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3078092
Dissolved Titanium (Ti)	mg/L	<0.001	<0.001	<0.001	0.004	0.001	3078092
Dissolved Uranium (U)	mg/L	0.0010	0.0008	0.0007	0.0012	0.0001	3078092
Dissolved Vanadium (V)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3078092
Dissolved Zinc (Zn)	mg/L	<0.003	<0.003	<0.003	<0.003	0.003	3078092

RDL = Reportable Detection Limit



**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		O52914	O52916	O52918	O52921		
Sampling Date		2009/04/22	2009/04/22	2009/04/22	2009/04/22		
COC Number		79726	79726	79726	79726		
	<b>Units</b>	<b>MW07</b>	<b>MW06</b>	<b>MW09</b>	<b>MW10</b>	<b>RDL</b>	<b>QC Batch</b>

<b>CONVENTIONALS</b>							
Total Ammonia (N)	mg/L	2.5	1.7	1.9	1.8	0.05	3081011
<b>Misc. Inorganics</b>							
Dissolved Hex. Chromium (Cr 6+)	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	3081176
Dissolved Organic Carbon (C)	mg/L	6.6	5.1	5.5	4.7	0.5	3085746
<b>Anions</b>							
Dissolved Fluoride (F)	mg/L	0.08	0.14	0.22	0.14	0.05	3075374
<b>Nutrients</b>							
Orthophosphate (P)	mg/L	0.008	0.028	0.028	0.003	0.003	3076976
<b>Misc. Organics</b>							
Phenols	mg/L	0.003	0.003	0.003	0.002	0.002	3082426
RDL = Reportable Detection Limit							

Maxxam ID		O52922	O52923	O52939	O52940		
Sampling Date		2009/04/22	2009/04/22	2009/04/22	2009/04/22		
COC Number		79726	79726	79726	79726		
	<b>Units</b>	<b>MW11</b>	<b>MW12</b>	<b>MW13</b>	<b>MW14</b>	<b>RDL</b>	<b>QC Batch</b>

<b>CONVENTIONALS</b>							
Total Ammonia (N)	mg/L	1.5	1.3	1.3	2.0	0.05	3081011
<b>Misc. Inorganics</b>							
Dissolved Hex. Chromium (Cr 6+)	mg/L	<0.001	<0.001	0.001	0.002	0.001	3081176
Dissolved Organic Carbon (C)	mg/L	5.5	6.4	4.5	5.0	0.5	3085746
<b>Anions</b>							
Dissolved Fluoride (F)	mg/L	0.11	0.09	0.15	0.22	0.05	3075374
<b>Nutrients</b>							
Orthophosphate (P)	mg/L	0.022	0.013	0.014	0.030	0.003	3076976
<b>Misc. Organics</b>							
Phenols	mg/L	0.004	0.003	0.003	<0.002	0.002	3082426
RDL = Reportable Detection Limit							

**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

Maxxam ID		O52914	O52916	O52918	O52921	O52922		
Sampling Date		2009/04/22	2009/04/22	2009/04/22	2009/04/22	2009/04/22		
COC Number		79726	79726	79726	79726	79726		
	<b>Units</b>	<b>MW07</b>	<b>MW06</b>	<b>MW09</b>	<b>MW10</b>	<b>MW11</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Low Level Elements</b>								
Dissolved Mercury (Hg)	ug/L	<0.001	<0.001	<0.001	<0.001	0.001	0.001	3078116

RDL = Reportable Detection Limit

Maxxam ID		O52923	O52939	O52940		
Sampling Date		2009/04/22	2009/04/22	2009/04/22		
COC Number		79726	79726	79726		
	<b>Units</b>	<b>MW12</b>	<b>MW13</b>	<b>MW14</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Low Level Elements</b>						
Dissolved Mercury (Hg)	ug/L	0.001	<0.001	<0.001	0.001	3078116

RDL = Reportable Detection Limit

**General Comments**

Sample O52916-01: Cation anion balance investigated, data quality confirmed

**Results relate only to the items tested.**

Quality Assurance Report  
 Maxxam Job Number: EA918428

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3075365 MG5	Calibration Check	Alkalinity (Total as CaCO3)	2009/04/23		98	%	80 - 120
	BLANK	Alkalinity (PP as CaCO3)	2009/04/23	<0.5		mg/L	
		Alkalinity (Total as CaCO3)	2009/04/23	<0.5		mg/L	
		Bicarbonate (HCO3)	2009/04/23	<0.5		mg/L	
		Carbonate (CO3)	2009/04/23	<0.5		mg/L	
		Hydroxide (OH)	2009/04/23	<0.5		mg/L	
	RPD	Alkalinity (PP as CaCO3)	2009/04/23	NC		%	20
		Alkalinity (Total as CaCO3)	2009/04/23	NC		%	20
		Bicarbonate (HCO3)	2009/04/23	NC		%	20
		Carbonate (CO3)	2009/04/23	NC		%	20
		Hydroxide (OH)	2009/04/23	NC		%	20
3075372 MG5	Calibration Check	pH	2009/04/23		99	%	97 - 103
	RPD	pH	2009/04/23	0.9		%	5
3075373 MG5	Calibration Check	Conductivity	2009/04/23		96	%	80 - 120
	BLANK	Conductivity	2009/04/23	<1		uS/cm	
	RPD	Conductivity	2009/04/23	0		%	20
3075374 MG5	Calibration Check	Dissolved Fluoride (F)	2009/04/23		90	%	80 - 120
	MATRIX SPIKE	Dissolved Fluoride (F)	2009/04/23		82	%	80 - 120
	BLANK	Dissolved Fluoride (F)	2009/04/23	<0.05		mg/L	
	RPD	Dissolved Fluoride (F)	2009/04/23	NC		%	20
3075729 CD1	MATRIX SPIKE	4-BROMOFLUOROBENZENE (sur.)	2009/04/23		105	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2009/04/23		98	%	70 - 130
		D8-TOLUENE (sur.)	2009/04/23		102	%	70 - 130
		Benzene	2009/04/23		93	%	70 - 130
		Toluene	2009/04/23		102	%	70 - 130
		Ethylbenzene	2009/04/23		107	%	70 - 130
		o-Xylene	2009/04/23		101	%	70 - 130
		m & p-Xylene	2009/04/23		104	%	70 - 130
		(C6-C10)	2009/04/23		83	%	70 - 130
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2009/04/23		101	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2009/04/23		98	%	70 - 130
		D8-TOLUENE (sur.)	2009/04/23		101	%	70 - 130
		Benzene	2009/04/23		99	%	70 - 130
		Toluene	2009/04/23		107	%	70 - 130
		Ethylbenzene	2009/04/23		112	%	70 - 130
		o-Xylene	2009/04/23		110	%	70 - 130
		m & p-Xylene	2009/04/23		111	%	70 - 130
		(C6-C10)	2009/04/23		108	%	80 - 120
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2009/04/23		96	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2009/04/23		102	%	70 - 130
		D8-TOLUENE (sur.)	2009/04/23		103	%	70 - 130
		Benzene	2009/04/23	<0.4		ug/L	
		Toluene	2009/04/23	<0.4		ug/L	
		Ethylbenzene	2009/04/23	<0.4		ug/L	
		o-Xylene	2009/04/23	<0.4		ug/L	
		m & p-Xylene	2009/04/23	<0.8		ug/L	
		Xylenes (Total)	2009/04/23	<0.8		ug/L	
		F1 (C6-C10) - BTEX	2009/04/23	<100		ug/L	
		(C6-C10)	2009/04/23	<100		ug/L	
	RPD	Benzene	2009/04/24	NC		%	40
		Toluene	2009/04/24	NC		%	40
		Ethylbenzene	2009/04/24	NC		%	40
		o-Xylene	2009/04/24	NC		%	40
		m & p-Xylene	2009/04/24	NC		%	40
		Xylenes (Total)	2009/04/24	NC		%	40

Quality Assurance Report (Continued)

Maxxam Job Number: EA918428

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3075729 CD1	RPD	F1 (C6-C10) - BTEX (C6-C10)	2009/04/24	NC		%	40
3076555 JQ	Calibration Check	Dissolved Nitrate (N)	2009/04/23		100	%	80 - 120
		Dissolved Nitrite (N)	2009/04/23		99	%	80 - 120
	MATRIX SPIKE	Dissolved Nitrate (N)	2009/04/24		104	%	80 - 120
		Dissolved Nitrite (N)	2009/04/24		102	%	80 - 120
	BLANK	Dissolved Nitrate (N)	2009/04/23	<0.003		mg/L	
		Dissolved Nitrite (N)	2009/04/23	<0.003		mg/L	
	RPD	Dissolved Nitrate (N)	2009/04/23	NC		%	20
		Dissolved Nitrite (N)	2009/04/23	NC		%	20
3076622 CD1	MATRIX SPIKE	4-BROMOFLUOROBENZENE (sur.)	2009/04/24		97	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2009/04/24		101	%	70 - 130
		D8-TOLUENE (sur.)	2009/04/24		106	%	70 - 130
		Benzene	2009/04/24		94	%	70 - 130
		Toluene	2009/04/24		105	%	70 - 130
		Ethylbenzene	2009/04/24		107	%	70 - 130
		o-Xylene	2009/04/24		104	%	70 - 130
		m & p-Xylene (C6-C10)	2009/04/24		106	%	70 - 130
	SPIKE	4-BROMOFLUOROBENZENE (sur.)	2009/04/24		102	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2009/04/24		97	%	70 - 130
		D8-TOLUENE (sur.)	2009/04/24		101	%	70 - 130
		Benzene	2009/04/24		95	%	70 - 130
		Toluene	2009/04/24		104	%	70 - 130
		Ethylbenzene	2009/04/24		108	%	70 - 130
		o-Xylene	2009/04/24		104	%	70 - 130
		m & p-Xylene (C6-C10)	2009/04/24		108	%	70 - 130
	BLANK	4-BROMOFLUOROBENZENE (sur.)	2009/04/24		103	%	80 - 120
		D4-1,2-DICHLOROETHANE (sur.)	2009/04/24		100	%	70 - 130
		D8-TOLUENE (sur.)	2009/04/24		106	%	70 - 130
		Benzene	2009/04/24		97	%	70 - 130
		Toluene	2009/04/24	<0.4		ug/L	
		Ethylbenzene	2009/04/24	<0.4		ug/L	
		o-Xylene	2009/04/24	<0.4		ug/L	
		m & p-Xylene	2009/04/24	<0.8		ug/L	
		Xylenes (Total)	2009/04/24	<0.8		ug/L	
		F1 (C6-C10) - BTEX (C6-C10)	2009/04/24	<100		ug/L	
	RPD	Benzene	2009/04/24	<100		ug/L	
		Toluene	2009/04/24	NC		%	40
		Ethylbenzene	2009/04/24	NC		%	40
		o-Xylene	2009/04/24	NC		%	40
		m & p-Xylene	2009/04/24	NC		%	40
		Xylenes (Total)	2009/04/24	NC		%	40
		F1 (C6-C10) - BTEX (C6-C10)	2009/04/24	NC		%	40
			2009/04/24	NC		%	40
3076976 KB9	MATRIX SPIKE	Orthophosphate (P)	2009/04/23		109	%	80 - 120
	SPIKE	Orthophosphate (P)	2009/04/23		98	%	90 - 110
	BLANK	Orthophosphate (P)	2009/04/23	<0.003		mg/L	
	RPD	Orthophosphate (P)	2009/04/23	6.1		%	20
3078010 BP5	MATRIX SPIKE	Dissolved Sulphate (SO4) [O52914-01]	2009/04/24		NC	%	80 - 120
	SPIKE	Dissolved Sulphate (SO4)	2009/04/24		84	%	80 - 120
	BLANK	Dissolved Sulphate (SO4)	2009/04/24	<1		mg/L	

Quality Assurance Report (Continued)  
 Maxxam Job Number: EA918428

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3078010 BP5	RPD [O52914-01]	Dissolved Sulphate (SO4)	2009/04/24	2.2		%	20
3078092 AS7	Calibration Check	Dissolved Aluminum (Al)	2009/04/24		98	%	80 - 120
		Dissolved Antimony (Sb)	2009/04/24		95	%	80 - 120
		Dissolved Arsenic (As)	2009/04/24		92	%	80 - 120
		Dissolved Beryllium (Be)	2009/04/24		87	%	80 - 120
		Dissolved Chromium (Cr)	2009/04/24		87	%	80 - 120
		Dissolved Cobalt (Co)	2009/04/24		89	%	80 - 120
		Dissolved Copper (Cu)	2009/04/24		86	%	80 - 120
		Dissolved Lead (Pb)	2009/04/24		91	%	80 - 120
		Dissolved Molybdenum (Mo)	2009/04/24		95	%	80 - 120
		Dissolved Nickel (Ni)	2009/04/24		87	%	80 - 120
		Dissolved Selenium (Se)	2009/04/24		96	%	80 - 120
		Dissolved Silver (Ag)	2009/04/24		87	%	80 - 120
		Dissolved Thallium (Tl)	2009/04/24		93	%	80 - 120
		Dissolved Tin (Sn)	2009/04/24		95	%	80 - 120
		Dissolved Titanium (Ti)	2009/04/24		91	%	80 - 120
		Dissolved Uranium (U)	2009/04/24		94	%	80 - 120
		Dissolved Vanadium (V)	2009/04/24		93	%	80 - 120
		Dissolved Zinc (Zn)	2009/04/24		91	%	80 - 120
	MATRIX SPIKE [O52914-02]	Dissolved Aluminum (Al)	2009/04/24		95	%	80 - 120
		Dissolved Antimony (Sb)	2009/04/24		104	%	80 - 120
		Dissolved Arsenic (As)	2009/04/24		92	%	80 - 120
		Dissolved Beryllium (Be)	2009/04/24		84	%	80 - 120
		Dissolved Chromium (Cr)	2009/04/24		84	%	80 - 120
		Dissolved Cobalt (Co)	2009/04/24		86	%	80 - 120
		Dissolved Copper (Cu)	2009/04/24		100	%	80 - 120
		Dissolved Lead (Pb)	2009/04/24		86	%	80 - 120
		Dissolved Molybdenum (Mo)	2009/04/24		100	%	80 - 120
		Dissolved Nickel (Ni)	2009/04/24		82	%	80 - 120
		Dissolved Selenium (Se)	2009/04/24		93	%	80 - 120
		Dissolved Silver (Ag)	2009/04/24		84	%	80 - 120
		Dissolved Thallium (Tl)	2009/04/24		88	%	80 - 120
		Dissolved Tin (Sn)	2009/04/24		98	%	80 - 120
		Dissolved Titanium (Ti)	2009/04/24		92	%	80 - 120
		Dissolved Uranium (U)	2009/04/24		92	%	80 - 120
		Dissolved Vanadium (V)	2009/04/24		93	%	80 - 120
		Dissolved Zinc (Zn)	2009/04/24		86	%	80 - 120
	BLANK	Dissolved Aluminum (Al)	2009/04/24	<0.001		mg/L	
		Dissolved Antimony (Sb)	2009/04/24	<0.0002		mg/L	
		Dissolved Arsenic (As)	2009/04/24	<0.0002		mg/L	
		Dissolved Beryllium (Be)	2009/04/24	<0.001		mg/L	
		Dissolved Chromium (Cr)	2009/04/24	<0.001		mg/L	
		Dissolved Cobalt (Co)	2009/04/24	<0.0003		mg/L	
		Dissolved Copper (Cu)	2009/04/24	<0.0002		mg/L	
		Dissolved Lead (Pb)	2009/04/24	<0.0002		mg/L	
		Dissolved Molybdenum (Mo)	2009/04/24	<0.0002		mg/L	
		Dissolved Nickel (Ni)	2009/04/24	<0.0005		mg/L	
		Dissolved Selenium (Se)	2009/04/24	<0.0002		mg/L	
		Dissolved Silver (Ag)	2009/04/24	<0.0001		mg/L	
		Dissolved Thallium (Tl)	2009/04/24	<0.0002		mg/L	
		Dissolved Tin (Sn)	2009/04/24	<0.001		mg/L	
		Dissolved Titanium (Ti)	2009/04/24	<0.001		mg/L	
		Dissolved Uranium (U)	2009/04/24	<0.0001		mg/L	
		Dissolved Vanadium (V)	2009/04/24	<0.001		mg/L	

Quality Assurance Report (Continued)

Maxxam Job Number: EA918428

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3078092 AS7	BLANK	Dissolved Zinc (Zn)	2009/04/24	<0.003		mg/L	
	RPD [O52914-02]	Dissolved Aluminum (Al)	2009/04/24	NC		%	20
		Dissolved Antimony (Sb)	2009/04/24	NC		%	20
		Dissolved Arsenic (As)	2009/04/24	0.2		%	20
		Dissolved Beryllium (Be)	2009/04/24	NC		%	20
		Dissolved Chromium (Cr)	2009/04/24	NC		%	20
		Dissolved Cobalt (Co)	2009/04/24	NC		%	20
		Dissolved Copper (Cu)	2009/04/24	NC		%	20
		Dissolved Lead (Pb)	2009/04/24	NC		%	20
		Dissolved Molybdenum (Mo)	2009/04/24	NC		%	20
		Dissolved Nickel (Ni)	2009/04/24	NC		%	20
		Dissolved Selenium (Se)	2009/04/24	NC		%	20
		Dissolved Silver (Ag)	2009/04/24	NC		%	20
		Dissolved Thallium (Tl)	2009/04/24	NC		%	20
		Dissolved Tin (Sn)	2009/04/24	NC		%	20
		Dissolved Titanium (Ti)	2009/04/24	NC		%	20
		Dissolved Uranium (U)	2009/04/24	0.5		%	20
		Dissolved Vanadium (V)	2009/04/24	NC		%	20
		Dissolved Zinc (Zn)	2009/04/24	NC		%	20
3078098 AS7	Calibration Check	Dissolved Cadmium (Cd)	2009/04/24		98	%	80 - 120
	MATRIX SPIKE [O52914-02]	Dissolved Cadmium (Cd)	2009/04/24		97	%	80 - 120
	BLANK	Dissolved Cadmium (Cd)	2009/04/24	<0.005		ug/L	
	RPD [O52914-02]	Dissolved Cadmium (Cd)	2009/04/24	NC		%	20
3078108 KW2	MATRIX SPIKE [O52916-05]	O-TERPHENYL (sur.)	2009/04/24		86	%	70 - 130
		F2 (C10-C16 Hydrocarbons)	2009/04/24		99	%	70 - 130
	SPIKE	O-TERPHENYL (sur.)	2009/04/24		91	%	70 - 130
		F2 (C10-C16 Hydrocarbons)	2009/04/24		104	%	80 - 120
	BLANK	O-TERPHENYL (sur.)	2009/04/24		94	%	70 - 130
		F2 (C10-C16 Hydrocarbons)	2009/04/24				
	RPD [O52914-05]	F2 (C10-C16 Hydrocarbons)	2009/04/24	<0.1		mg/L	
3078116 VGG	MATRIX SPIKE [O52914-03]	Dissolved Mercury (Hg)	2009/04/24		98	%	80 - 120
	SPIKE	Dissolved Mercury (Hg)	2009/04/24		105	%	80 - 120
	BLANK	Dissolved Mercury (Hg)	2009/04/24	<0.001		ug/L	
	RPD [O52914-03]	Dissolved Mercury (Hg)	2009/04/24	NC		%	20
3078120 BP5	MATRIX SPIKE [O52914-01]	Dissolved Chloride (Cl)	2009/04/24		NC	%	80 - 120
	SPIKE	Dissolved Chloride (Cl)	2009/04/24		105	%	80 - 120
	BLANK	Dissolved Chloride (Cl)	2009/04/24		1, RDL=1	mg/L	
	RPD [O52914-01]	Dissolved Chloride (Cl)	2009/04/24	2.5		%	20
3078415 SG8	Calibration Check	Dissolved Calcium (Ca)	2009/04/24		102	%	80 - 120
		Dissolved Iron (Fe)	2009/04/24		93	%	80 - 120
		Dissolved Magnesium (Mg)	2009/04/24		102	%	80 - 120
		Dissolved Manganese (Mn)	2009/04/24		100	%	80 - 120
		Dissolved Potassium (K)	2009/04/24		100	%	80 - 120
		Dissolved Sodium (Na)	2009/04/24		100	%	80 - 120
	MATRIX SPIKE [O52914-02]	Dissolved Calcium (Ca)	2009/04/24		NC	%	80 - 120
		Dissolved Iron (Fe)	2009/04/24		NC	%	80 - 120
		Dissolved Magnesium (Mg)	2009/04/24		NC	%	80 - 120
		Dissolved Manganese (Mn)	2009/04/24		NC	%	80 - 120
		Dissolved Potassium (K)	2009/04/24		103	%	80 - 120
		Dissolved Sodium (Na)	2009/04/24		NC	%	80 - 120

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Maxxam Job Number: EA918428

QA/QC Batch	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3078415 SG8	BLANK	Dissolved Calcium (Ca)	2009/04/24	<0.3		mg/L	
		Dissolved Iron (Fe)	2009/04/24	<0.06		mg/L	
		Dissolved Magnesium (Mg)	2009/04/24	<0.2		mg/L	
		Dissolved Manganese (Mn)	2009/04/24	<0.004		mg/L	
		Dissolved Potassium (K)	2009/04/24	<0.3		mg/L	
	RPD [O52914-02]	Dissolved Sodium (Na)	2009/04/24	<0.5		mg/L	
		Dissolved Calcium (Ca)	2009/04/24	0.2		%	20
		Dissolved Iron (Fe)	2009/04/24	0.02		%	20
		Dissolved Magnesium (Mg)	2009/04/24	0.08		%	20
		Dissolved Manganese (Mn)	2009/04/24	0.4		%	20
		Dissolved Potassium (K)	2009/04/24	0.04		%	20
		Dissolved Sodium (Na)	2009/04/24	0.08		%	20
		3081011 AL2	MATRIX SPIKE	Total Ammonia (N)	2009/04/27		NC
SPIKE	Total Ammonia (N)		2009/04/27		100	%	80 - 120
BLANK	Total Ammonia (N)		2009/04/27	<0.05		mg/L	
RPD	Total Ammonia (N)		2009/04/27	0.2		%	20
3081176 ZD	MATRIX SPIKE	Dissolved Hex. Chromium (Cr 6+)	2009/04/27		97	%	80 - 120
	SPIKE	Dissolved Hex. Chromium (Cr 6+)	2009/04/27		97	%	80 - 120
	BLANK	Dissolved Hex. Chromium (Cr 6+)	2009/04/27	<0.001		mg/L	
	RPD	Dissolved Hex. Chromium (Cr 6+)	2009/04/27	NC		%	20
3082426 YY	MATRIX SPIKE	Phenols	2009/04/27		111	%	80 - 120
	SPIKE	Phenols	2009/04/27		108	%	80 - 120
	BLANK	Phenols	2009/04/27	<0.002		mg/L	
	RPD	Phenols	2009/04/27	NC		%	20
3085746 YY	MATRIX SPIKE	Dissolved Organic Carbon (C)	2009/04/28		NC	%	80 - 120
	SPIKE	Dissolved Organic Carbon (C)	2009/04/28		102	%	80 - 120
	BLANK	Dissolved Organic Carbon (C)	2009/04/28	<0.5		mg/L	
	RPD	Dissolved Organic Carbon (C)	2009/04/28	2.1		%	20

NC = Non-calculable  
 RPD = Relative Percent Difference





**Validation Signature Page**


**Maxxam Job #: A918428**


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The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

  
\_\_\_\_\_  
DIANE ZACHARKIW, Scientific Specialist

  
\_\_\_\_\_  
HUA WO,

  
\_\_\_\_\_  
LISA CUMMINGS, Extractables Supervisor

  
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LILI ZHOU, Senior analyst, Inorganic department.

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.