Appendix D
Water Quality Results

ENVIRO-TEST ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Extracted	Analyzed	By	Batch
L308748-1 PUMPING WELL - UMA								
Sample Date: 23-AUG-05 14:00								
Matrix: WATER								
ROU4W Extractable								
Hardness (as CaCO3)	153		0.2	mg/L		29-AUG-05		
TDS (Calculated)	177		5	mg/L		29-AUG-05		
pH								
PH	7.85		0.01	pH units		24-AUG-05	DXN	R317305
Turbidity								
Turbidity	23		0.05	NTU		24-AUG-05	DXN	R317309
Sulphate Soluble								
Sulphate (SO4) - Soluble	11		9	mg/L		24-AUG-05	CLM	R317413
Nitrate + Nitrite Soluble								
Nitrate+Nitrite-N	<0.01	RAMB	0.01	mg/L		24-AUG-05	CLM	R317413
Metal scan								
Silver (Ag)-Extractable	<0.0005		0.0005	mg/L		26-AUG-05	DAG	R318567
Aluminum (Al)-Extractable	0.05		0.02	mg/L		26-AUG-05	DAG	R318567
Arsenic (As)-Extractable	<0.0005		0.0005	mg/L		26-AUG-05	DAG	R318567
Boron (B)-Extractable	0.04		0.02	mg/L		26-AUG-05	DAG	R318567
Barium (Ba)-Extractable	0.0596		0.0003	mg/L		26-AUG-05	DAG	R318567
Beryllium (Be)-Extractable	<0.001		0.001	mg/L		26-AUG-05	DAG	R318567
Bismuth (Bi)-Extractable	<0.0003		0.0003	mg/L		26-AUG-05	DAG	R318567
Calcium (Ca)-Extractable	40.2		0.05	mg/L		26-AUG-05	DAG	R318567
Cadmium (Cd)-Extractable	<0.0002		0.0002	mg/L		26-AUG-05	DAG	R318567
Cobalt (Co)-Extractable	<0.0002		0.0002	mg/L		26-AUG-05	DAG	R318567
Chromium (Cr)-Extractable	0.002		0.001	mg/L		26-AUG-05	DAG	R318567
Cesium (Cs)-Extractable	<0.0001		0.0001	mg/L		26-AUG-05	DAG	R318567
Copper (Cu)-Extractable	0.0014		0.0004	mg/L		26-AUG-05	DAG	R318567
Iron (Fe)-Extractable	0.36		0.01	mg/L		26-AUG-05	DAG	R318567
Potassium (K)-Extractable	1.25		0.05	mg/L		26-AUG-05	DAG	R318567
Lithium (Li)-Extractable	<0.005		0.005	mg/L		26-AUG-05	DAG	R318567
Magnesium (Mg)-Extractable	12.7		0.01	mg/L		26-AUG-05	DAG	R318567
Manganese (Mn)-Extractable	0.0437		0.0002	mg/L		26-AUG-05	DAG	R318567
Molybdenum (Mo)-Extractable	0.0007		0.0001	mg/L		26-AUG-05	DAG	R318567
Sodium (Na)-Extractable	3.58		0.02	mg/L		26-AUG-05	DAG	R318567
Nickel (Ni)-Extractable	<0.0002		0.0002	mg/L		26-AUG-05	DAG	R318567
Phosphorus (P)-Extractable	0.03		0.02	mg/L		26-AUG-05	DAG	R318567
Lead (Pb)-Extractable	0.0005		0.0001	mg/L		26-AUG-05	DAG	R318567
Rubidium (Rb)-Extractable	0.0008		0.0002	mg/L		26-AUG-05	DAG	R318567
Antimony (Sb)-Extractable	<0.001		0.001	mg/L		26-AUG-05	DAG	R318567
Selenium (Se)-Extractable	<0.001		0.001	mg/L		26-AUG-05	DAG	R318567
Silicon (Si)-Extractable	7.4		0.2	mg/L		26-AUG-05	DAG	R318567
Tin (Sn)-Extractable	<0.0003		0.0003	mg/L		26-AUG-05	DAG	R318567
Strontium (Sr)-Extractable	0.0610		0.0001	mg/L		26-AUG-05	DAG	R318567
Tellurium (Te)-Extractable	<0.0005		0.0005	mg/L		26-AUG-05	DAG	R318567
Titanium (Ti)-Extractable	0.0009		0.0005	mg/L		26-AUG-05	DAG	R318567
Thallium (Tl)-Extractable	<0.0001		0.0001	mg/L		26-AUG-05	DAG	R318567
Uranium (U)-Extractable	<0.0001		0.0001	mg/L		26-AUG-05	DAG	R318567
Vanadium (V)-Extractable	0.002		0.001	mg/L		26-AUG-05	DAG	R318567
Tungsten (W)-Extractable	0.0003		0.0002	mg/L		26-AUG-05	DAG	R318567
Zinc (Zn)-Extractable	<0.005		0.005	mg/L		26-AUG-05	DAG	R318567
Zirconium (Zr)-Extractable	<0.0004		0.0004	mg/L		26-AUG-05	DAG	R318567
Fluoride Soluble								
Fluoride (F) - Soluble	0.1		0.1	mg/L		24-AUG-05	CLM	R317413

ENVIRO-TEST ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Extracted	Analyzed	By	Batch
L308748-1 PUMPING WELL - UMA								
Sample Date: 23-AUG-05 14:00								
Matrix: WATER								
ROU4W Extractable								
Conductivity								
Conductivity	335		0.4	umhos/cm		24-AUG-05	DXN	R317305
Chloride Soluble								
Chloride (Cl) - Soluble	<9		9	mg/L		24-AUG-05	CLM	R317413
Alkalinity								
Alkalinity, Total (as CaCO3)	180		1	mg/L		24-AUG-05	DXN	R317305
Bicarbonate (HCO3)	220		2	mg/L		24-AUG-05	DXN	R317305
Carbonate (CO3)	<0.6		0.6	mg/L		24-AUG-05	DXN	R317305
Hydroxide (OH)	<0.4		0.4	mg/L		24-AUG-05	DXN	R317305

Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
RAMB	Result Adjusted For Method Blank

Methods Listed (if applicable):

ETL Test Code	Matrix	Test Description	Preparation Method Reference(Based On)	Analytical Method Reference(Based On)
ALK-TOT-WP	Water	Alkalinity		APHA 4500B, 2510B, 2320B, 1998
		Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. It is determined by titration with a standard solution of strong mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.		
CL-SOL-WP	Water	Chloride Soluble		APHA4500;1998/LACHAT;MAR 1997
		Chloride - Colourimetric using Mercuric Thiocyanate		
EC-WP	Water	Conductivity		APHA 4500B, 2510B, 2320B, 1998
		Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.		
ETL-HARDNESS-EXT-WP	Water	Hardness Calculated		Calculated
F-SOL-WP	Water	Fluoride Soluble		APHA4500;1998/LACHAT;MAR 1997
		Fluoride - Ion selective electrode		
IONBALANCE-OP05-WP	Water			APHA 1030E
MET-SCAN-EXT-LOW-WP	Water	Metal scan		EPA 200.8 Rev 5.4 May 1994
N2N3-SOL-WP	Water	Nitrate + Nitrite Soluble		APHA4500;1998/LACHAT;MAR 1997
PH-WP	Water	pH		APHA 4500B, 2510B, 2320B, 1998
		pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.		
SO4-SOL-WP	Water	Sulphate Soluble		APHA4500;1998/LACHAT;MAR 1997
		Sulphate - Turbidimetric		
TURBIDITY-WP	Water	Turbidity		APHA, 1998, 2130B
		A strong light beam is sent through a transparent tube containing the sample. Light that is reflected at 90 degrees to the axis by suspended particles is detected by the photocell. The electrical response is proportional to the sample turbidity.		

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.

Chain of Custody numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
WP	Enviro-Test Laboratories - Winnipeg, Manitoba, Canada		

Samples Requiring Regular Turnaround

Sample #	Client sample ID	Sample #	Client sample ID
L308748-1	PUMPING WELL - UMA		

Reference Information

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in enviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds. The reported surrogate recovery value provides a measure of method efficiency. The Laboratory warning units are determined under column heading D.L.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
< - Less than
D.L. - Detection Limit
N/A - Result not available. Refer to qualifier code and definition for explanation

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
UNLESS OTHERWISE STATED, SAMPLES ARE NOT CORRECTED FOR CLIENT FIELD BLANKS.
Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

Enviro-Test Laboratories has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, Enviro-Test Laboratories assumes no liability for the use or interpretation of the results.

ETL Enviro-Test LABORATORIES

KC S. Wiecek
F415-001-00 (4.4

ANALYTICAL REPORT

UMA ENGINEERING
ATTN: S WIECEK
1479 BUFFALO PLACE
WINNIPEG MB R3T 1L7

DATE: 10-NOV-05

Lab Work Order #: L337647 **Sampled By:** SJW **Date Received:** 04-NOV-05
Project P.O. #:
Project Reference: F415-001-00

Comments: The portion of the sample for metals analysis was preserved by the client prior to submission.

APPROVED BY: Paul Nicolas

PAUL NICOLAS
Project Manager

ENVIRO-TEST ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Extracted	Analyzed	By	Batch
L337647-1 PW-1								
Sample Date: 03-NOV-05 14:00								
Matrix: WATER								
BTEX,TVH and TEH								
Tot. Extr. Hydrocarbons (C11-C30)								
TEH (C11-C30)	<0.1		0.1	mg/L	08-NOV-05	09-NOV-05	HDT	R344530
TVH (C5-C10)								
Total Volatiles	<0.1		0.1	mg/L		08-NOV-05	TJJ	R344763
BTEX								
Benzene	<0.0005		0.0005	mg/L		08-NOV-05	TJJ	R344763
Toluene	<0.0005		0.0005	mg/L		08-NOV-05	TJJ	R344763
Ethylbenzene	<0.0005		0.0005	mg/L		08-NOV-05	TJJ	R344763
m+p-Xylenes	<0.0005		0.0005	mg/L		08-NOV-05	TJJ	R344763
o-Xylene	<0.0005		0.0005	mg/L		08-NOV-05	TJJ	R344763
Xylenes	<0.0005		0.0005	mg/L		08-NOV-05	TJJ	R344763
Calcium (Ca)-Dissolved	43.9		0.05	mg/L	04-NOV-05	05-NOV-05	DAG	R343445
Heterotrophic Plate Count	<10		10	CFU/mL	04-NOV-05	07-NOV-05	ABG	R343657
Langelier Index (4 C)	0.22					07-NOV-05		
Langelier Index (60 C)	0.99					07-NOV-05		
Sulphide	0.008		0.003	mg/L		09-NOV-05	SHC	R344730
Sulphide (as H2S)	0.009		0.003	mg/L		09-NOV-05		
TC and EC by MPN								
Total Coliform								
Total Coliform	3		3	MPN/100mL		09-NOV-05	MJS	R344524
Escherichia Coli								
Escherichia Coli	<3		3	MPN/100mL		08-NOV-05	MJS	R344524
WDG Background								
Sulphate Dissolved								
Sulphate (SO4) - Dissolved	<9		9	mg/L	04-NOV-05	04-NOV-05	CLM	R343618
Nitrate + Nitrite Dissolved								
Nitrate+Nitrite-N - Dissolved	0.02	RAMB	0.01	mg/L	04-NOV-05	04-NOV-05	CLM	R343618
Chloride Dissolved								
Chloride (Cl) - Dissolved	<9		9	mg/L	04-NOV-05	04-NOV-05	CLM	R343618
Ammonia Dissolved								
Ammonia (NH3) - Dissolved	0.07		0.01	mg/L	04-NOV-05	04-NOV-05	CLM	R343618
Phosphorus, Total								
Total Phosphorous	0.036		0.001	mg/L		07-NOV-05	LJH	R343791
Chromium (Cr)-Total								
Chromium (Cr)-Total	0.001		0.001	mg/L	04-NOV-05	05-NOV-05	DAG	R343445
Arsenic (As)-Total								
Arsenic (As)-Total	<0.0005		0.0005	mg/L	04-NOV-05	05-NOV-05	DAG	R343445
pH								
PH	7.98		0.01	pH units		04-NOV-05	DXN	R343599
Turbidity								
Turbidity	2.4		0.05	NTU		04-NOV-05	DXN	R343598
Total Suspended Solids								
Total Suspended Solids	<5		5	mg/L		07-NOV-05	LVP	R344261
Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen	<0.2		0.2	mg/L	04-NOV-05	09-NOV-05	LDE	R344742
Total Dissolved Solids								
Total Dissolved Solids	190		5	mg/L		07-NOV-05	LVP	R344261
Prep for metals, total								
Metal scan								
Silver (Ag)-Extractable	<0.0005		0.0005	mg/L		05-NOV-05	DAG	R343445

ENVIRO-TEST ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Extracted	Analyzed	By	Batch
L337647-1 PW-1								
Sample Date: 03-NOV-05 14:00								
Matrix: WATER								
WDG Background								
Metal scan								
Aluminum (Al)-Extractable	<0.02		0.02	mg/L		05-NOV-05	DAG	R343445
Arsenic (As)-Extractable	<0.0005		0.0005	mg/L		05-NOV-05	DAG	R343445
Boron (B)-Extractable	<0.02		0.02	mg/L		05-NOV-05	DAG	R343445
Barium (Ba)-Extractable	0.0673		0.0003	mg/L		05-NOV-05	DAG	R343445
Beryllium (Be)-Extractable	<0.001		0.001	mg/L		05-NOV-05	DAG	R343445
Bismuth (Bi)-Extractable	<0.0003		0.0003	mg/L		05-NOV-05	DAG	R343445
Calcium (Ca)-Extractable	41.9		0.05	mg/L		05-NOV-05	DAG	R343445
Cadmium (Cd)-Extractable	<0.0002		0.0002	mg/L		05-NOV-05	DAG	R343445
Cobalt (Co)-Extractable	<0.0002		0.0002	mg/L		05-NOV-05	DAG	R343445
Chromium (Cr)-Extractable	<0.001		0.001	mg/L		05-NOV-05	DAG	R343445
Cesium (Cs)-Extractable	<0.0001		0.0001	mg/L		05-NOV-05	DAG	R343445
Copper (Cu)-Extractable	<0.0004		0.0004	mg/L		05-NOV-05	DAG	R343445
Iron (Fe)-Extractable	0.35		0.01	mg/L		05-NOV-05	DAG	R343445
Potassium (K)-Extractable	1.50		0.05	mg/L		05-NOV-05	DAG	R343445
Lithium (Li)-Extractable	<0.005		0.005	mg/L		05-NOV-05	DAG	R343445
Magnesium (Mg)-Extractable	13.0		0.01	mg/L		05-NOV-05	DAG	R343445
Manganese (Mn)-Extractable	0.0450		0.0002	mg/L		05-NOV-05	DAG	R343445
Molybdenum (Mo)-Extractable	0.0007		0.0001	mg/L		05-NOV-05	DAG	R343445
Sodium (Na)-Extractable	2.57		0.02	mg/L		05-NOV-05	DAG	R343445
Nickel (Ni)-Extractable	0.0017		0.0002	mg/L		05-NOV-05	DAG	R343445
Phosphorus (P)-Extractable	0.03		0.02	mg/L		05-NOV-05	DAG	R343445
Lead (Pb)-Extractable	<0.0001		0.0001	mg/L		05-NOV-05	DAG	R343445
Rubidium (Rb)-Extractable	0.0007		0.0002	mg/L		05-NOV-05	DAG	R343445
Antimony (Sb)-Extractable	<0.001		0.001	mg/L		05-NOV-05	DAG	R343445
Selenium (Se)-Extractable	<0.001		0.001	mg/L		05-NOV-05	DAG	R343445
Silicon (Si)-Extractable	6.6		0.2	mg/L		05-NOV-05	DAG	R343445
Tin (Sn)-Extractable	<0.0003		0.0003	mg/L		05-NOV-05	DAG	R343445
Strontium (Sr)-Extractable	0.0595		0.0001	mg/L		05-NOV-05	DAG	R343445
Tellurium (Te)-Extractable	<0.0005		0.0005	mg/L		05-NOV-05	DAG	R343445
Titanium (Ti)-Extractable	<0.0005		0.0005	mg/L		05-NOV-05	DAG	R343445
Thallium (Tl)-Extractable	<0.0001		0.0001	mg/L		05-NOV-05	DAG	R343445
Uranium (U)-Extractable	<0.0001		0.0001	mg/L		05-NOV-05	DAG	R343445
Vanadium (V)-Extractable	<0.001		0.001	mg/L		05-NOV-05	DAG	R343445
Tungsten (W)-Extractable	<0.0002		0.0002	mg/L		05-NOV-05	DAG	R343445
Zinc (Zn)-Extractable	<0.005		0.005	mg/L		05-NOV-05	DAG	R343445
Zirconium (Zr)-Extractable	<0.0004		0.0004	mg/L		05-NOV-05	DAG	R343445
Hardness Calculated								
Hardness (as CaCO3)	163		0.2	mg/L		07-NOV-05		
Cyanide, Free								
Cyanide, Free	<0.01		0.01	mg/L		07-NOV-05	MB	R343922
Conductivity								
Conductivity	325		0.4	umhos/cm		04-NOV-05	DXN	R343599
Chemical Oxygen Demand								
Chemical Oxygen Demand	<8		8	mg/L		08-NOV-05	SXG	R344384
Alkalinity								
Alkalinity, Total (as CaCO3)	173		1	mg/L		04-NOV-05	DXN	R343599
Bicarbonate (HCO3)	211		2	mg/L		04-NOV-05	DXN	R343599
Carbonate (CO3)	<0.6		0.6	mg/L		04-NOV-05	DXN	R343599
Hydroxide (OH)	<0.4		0.4	mg/L		04-NOV-05	DXN	R343599

ENVIRO-TEST ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier	D.L.	Units	Extracted	Analyzed	By	Batch
Refer to Referenced Information for Qualifiers (if any) and Methodology.								

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
RAMB	Result Adjusted For Method Blank

Methods Listed (if applicable):

ETL Test Code	Matrix	Test Description	Preparation Method Reference(Based On)	Analytical Method Reference(Based On)
ALK-TOT-WP	Water	Alkalinity		APHA 4500B, 2510B, 2320B, 1998

Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. It is determined by titration with a standard solution of strong mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

AS-TOT-LOW-WP	Water	Arsenic (As)-Total		EPA 200.8 Rev 5.4 May 1994
BTX-WP	Water	BTEX		EPA SW846,5030,8015

Volatile organic compounds are extracted (purged) by bubbling nitrogen through a water sample. The purged sample components are trapped in a tube containing a sorbent material. When purging is complete, the tube is heated and back flushed with helium to desorb the trapped compounds onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the method analytes which are then detected with a photoionization detector (PID) followed by a flame ionization detector (FID).

CA-DIS-LOW-WP	Water	Calcium (Ca)-Dissolved		EPA 200.8 Rev 5.4 May 1994
CL-DIS-WP	Water	Chloride Dissolved		APHA4500;1998/LACHAT;MAR 1997

Chloride - Colourimetric using Mercuric Thiocyanate

CN-FREE-WP	Water	Cyanide, Free		APHA 4500CN C E-Strong acid Dist Colorim
COD-WP	Water	Chemical Oxygen Demand		APHA 5220 D

The Chemical Oxygen Demand (COD) test is used to estimate the amount of organic matter in the water. The sample is added to HACH brand COD tubes, which contain a premixed volume of reagents. The sample is then heated for two hours on the COD reactor with a strong oxidizing agent, potassium dichromate. The COD reagents also contain silver and mercury ions. Silver is used as a catalyst and mercury is used to complex chloride interference. Oxidizable organic compounds react, reducing the dichromate ion to green chromic ion.

For the 10 - 150 mg/L range the remaining Cr6+ is measured colormetrically and a decrease in absorbance at 420 nm is proportional to the COD. For the 100 - 1500 mg/L range the amount of Cr3+ produced is measured colormetrically and an increase in absorbance at 620 nm is proportional to the COD. Samples with concentrations > 1500 mg/L can be diluted into either linear range.

CR-TOT-LOW-WP	Water	Chromium (Cr)-Total		EPA 200.8 Rev 5.4 May 1994
EC-MPN-WP	Water	Escherichia Coli		APHA 9221A-C

The Most Probable Number (MPN) method is based on the Multiple Tube Fermentation technique. The results of examination of replicate tubes and dilutions of a sample are reported after confirmations specific to total coliform, fecal coliform and E. coli are performed. Results are reported in MPN/100 mL for water
and MPN/gram for food and solid samples.

EC-WP	Water	Conductivity		APHA 4500B, 2510B, 2320B, 1998

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

ETL-HARDNESS-EXT-WP	Water	Hardness Calculated		Calculated
ETL-LANGELIER-4-WP	Water	Langelier Index 4C		Calculated
ETL-LANGELIER-60-WP	Water	Langelier Index 60C		Calculated
HPC-PP-WP	Water	Heterotrophic Plate Count		APHA 9215B, 1998

This is a procedure for estimating the number of live heterotrophic bacteria in water and measuring changes during water treatment and distribution or i swimming pools. In the pour plate method, samples are diluted and plated on to media. After incubation, the colonies are counted and reported as CFU/mL.

MET-SCAN-EXT-LOW-WP	Water	Metal scan		EPA 200.8 Rev 5.4 May 1994
N-TOTKJ-WP	Water	Total Kjeldahl Nitrogen		Quickchem method 10-107-06-2-E Lachat

Samples are digested with a sulphuric acid solution, cooled, diluted with water, and analyzed for ammonia. Total Kjeldahl nitrogen is the sum of free-ammonia and organic nitrogen compounds which are converted to ammonium sulphate through this digestion process. Analysis is performed by Flow Injection
Analysis (FIA). The pH of the digested sample is raised to a known, basic pH by neutralization with a concentrated buffer solution. This neutralization converts the ammonium cation to ammonia. The ammonia produced is heated with saliclyate and hypochlorite to produce blue colour which is proportional to the ammonia concentration.

Reference Information

Ammonia - Colourimeric using Salicylate-nitroprusside and hypochlorite, in an alkaline phosphate buffer.

P-TOTAL-WP Water Phosphorus, Total APHA, 1998

Samples are digested using a sulphuric acid-persulphate mixture to convert organic phosphorous to orthophosphate. The samples are analyzed by either the Flow Injection Analysis (FIA) or the Segmented Flow Analysis (SFA) method. The absorbance measured by the instrument is proportional the concentration of orthophosphate in the sample, and is reported as phosphorous. Samples are analyzed for total or total dissolved phosphorous depending on the sample pretreatment.

PH-WP Water pH APHA 4500B, 2510B, 2320B, 1998

pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

SO4-DIS-WP Water Sulphate Dissolved APHA4500;1998/LACHAT;MAR 1997

Sulphate - Turbidimetric

SOLIDS-TDS-WP Water Total Dissolved Solids APHA 2540

The residue remaining in a prepared casserole after passing the sample through a 1.2 um Whatman GF/C glass microfibre filter and drying at 180 degrees C. Samples may be dried at 105 degrees C if the client specifically requests this drying temperature.

SOLIDS-TOTSUS-WP Water Total Suspended Solids APHA 2540

The residue retained by a prepared 1.5 um Whatman 934-AH glass microfibre filter dried at 105 degrees C.

SULPHIDE-ED Water Sulphide APHA 4500 -S E-Auto-Colorimetry

SULPHIDE>H2S-ED Water Sulphide as Hydrogen Sulphide Calculation from Sulphide

TC-MPN-WP Water Total Coliform APHA 9221A-C

The Most Probable Number (MPN) method is based on the Multiple Tube Fermentation technique. The results of examination of replicate tubes and dilutions of a sample are reported after confirmations specific to total coliform, fecal coliform and E. coli are performed. Results are reported in MPN/100 mL for water
and MPN/gram for food and solid samples.

TEH-WP Water Tot. Extr. Hydrocarbons (C11-C30) EPA SW846,8000A

This is the semi-quantitative determination of total extractable hydrocarbons (TEH) C11-C30 in water, soil and sediment samples. A water sample volume of 240 mLs in a 250 mL glass amber bottle is shaken with 2-4 mL hexane for one hour on a wrist action shaker, then sonicated for 5 minutes. soil/sediment sample of 25 grams is weighed out with sodium sulphate and extracted with 10 mLs hexane/acetone for one hour on a wrist action shal then sonicated for 5 minutes. After extraction, the solvent layer is drawn off and analysed against a calibrated diesel standard on a gas chromatogra equipped with a flame ionization detector. All results are reported on a dry weight basis. By special request, the result can be calculated on C10-C2 meet specific regulations.

TURBIDITY-WP Water Turbidity APHA, 1998, 2130B

A strong light beam is sent through a transparent tube containing the sample. Light that is reflected at 90 degrees to the axis by suspended particles detected by the photocell. The electrical response is proportional to the sample turbidity.

TVH-WP Water TVH (C5-C10) EPA SW846,5030,8015

Volatile organic compounds are extracted (purged) by bubbling nitrogen through a water sample. The purged sample components are trapped in a tu containing a sorbent material. When purging is complete, the tube is heated and back flushed with helium to desorb the trapped compounds onto a chromatographic column. The gas chromatograph is temperature programmed to separate the method analytes which are then detected with a photoionization detector (PID) followed by a flame ionization detector (FID).

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.

Chain of Custody numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
ED	Enviro-Test Laboratories - Edmonton, Alberta, Canada	WP	Enviro-Test Laboratories - Winnipeg, Manitoba, Canada

Reference Information

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in enviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds. The reported surrogate recovery value provides a measure of method efficiency. The Laboratory warning units are determined under column heading D.L.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
< - Less than
D.L. - Detection Limit
N/A - Result not available. Refer to qualifier code and definition for explanation

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
UNLESS OTHERWISE STATED, SAMPLES ARE NOT CORRECTED FOR CLIENT FIELD BLANKS.
Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

Enviro-Test Laboratories has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, Enviro-Test Laboratories assumes no liability for the use or interpretation of the results.

ETL Enviro-Test LABORATORIES

Enviro-Test Quality Control Report

Workorder: L337647

Client: UMA ENGINEERING
1479 BUFFALO PLACE
WINNIPEG MB R3T 1L7

Contact: S WIECEK

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TOT-WP	**Water**							
Batch R343599								
WG374938-5 CVS								
Alkalinity, Total (as CaCO3)			100		%		93-107	04-NOV-05
WG374938-6 DUP		**L337647-1**						
Alkalinity, Total (as CaCO3)		173	171		mg/L	1.6	3.8	04-NOV-05
Bicarbonate (HCO3)		211	208		mg/L	1.6	20	04-NOV-05
Carbonate (CO3)		<0.6	<0.6	RPD-NA	mg/L	N/A	20	04-NOV-05
Hydroxide (OH)		<0.4	<0.4	RPD-NA	mg/L	N/A	20	04-NOV-05
WG374938-9 DUP		**L337680-4**						
Alkalinity, Total (as CaCO3)		514	513		mg/L	0.29	3.8	04-NOV-05
Bicarbonate (HCO3)		627	625		mg/L	0.29	20	04-NOV-05
Carbonate (CO3)		<0.6	<0.6	RPD-NA	mg/L	N/A	20	04-NOV-05
Hydroxide (OH)		<0.4	<0.4	RPD-NA	mg/L	N/A	20	04-NOV-05
AS-TOT-LOW-WP	**Water**							
Batch R343445								
WG374758-4 CCV								
Arsenic (As)-Total			100		%		93-107	04-NOV-05
WG374758-2 CVS								
Arsenic (As)-Total			98		%		75-125	04-NOV-05
WG374758-3 CVS								
Arsenic (As)-Total			97		%		75-125	04-NOV-05
WG374434-4 DUP		**WG374434-3**						
Arsenic (As)-Total		0.0037	0.0039	J	mg/L	0.0002	0.0015	05-NOV-05
WG374434-2 LCS								
Arsenic (As)-Total			96		%		80-120	05-NOV-05
WG374434-1 MB								
Arsenic (As)-Total			<0.0005		mg/L		0.0025	05-NOV-05
BTX-WP	**Water**							
Batch R344763								
WG376384-1 CCV								
Benzene			89		%		87-113	08-NOV-05
Ethylbenzene			97		%		87-113	08-NOV-05
m+p-Xylenes			96		%		87-113	08-NOV-05
o-Xylene			97		%		87-113	08-NOV-05
Toluene			99		%		87-113	08-NOV-05
Xylenes			97		%		70-130	08-NOV-05
WG376384-2 CCV								

Enviro-Test Quality Control Report

Workorder: L337647

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-WP	**Water**							
Batch R344763								
WG376384-2 CCV								
Benzene			89		%		87-113	08-NOV-05
Ethylbenzene			99		%		87-113	08-NOV-05
m+p-Xylenes			98		%		87-113	08-NOV-05
o-Xylene			100		%		87-113	08-NOV-05
Toluene			103		%		87-113	08-NOV-05
Xylenes			99		%		70-130	08-NOV-05
WG376384-3 CVS								
Benzene			98		%		87-113	08-NOV-05
Ethylbenzene			91		%		87-113	08-NOV-05
m+p-Xylenes			112		%		87-113	08-NOV-05
o-Xylene			93		%		87-113	08-NOV-05
Toluene			95		%		87-113	08-NOV-05
Xylenes			102		%		70-130	08-NOV-05
WG376350-1 MB								
Benzene			<0.0005		mg/L		0.0005	08-NOV-05
Ethylbenzene			<0.0005		mg/L		0.0005	08-NOV-05
m+p-Xylenes			<0.0005		mg/L		0.0005	08-NOV-05
o-Xylene			<0.0005		mg/L		0.0005	08-NOV-05
Toluene			<0.0005		mg/L		0.0005	08-NOV-05
Xylenes			<0.0005		mg/L		0.0005	08-NOV-05
CA-DIS-LOW-WP	**Water**							
Batch R343445								
WG374758-4 CCV								
Calcium (Ca)-Dissolved			98		%		93-107	04-NOV-05
WG374758-2 CVS								
Calcium (Ca)-Dissolved			98		%		75-125	04-NOV-05
WG374758-3 CVS								
Calcium (Ca)-Dissolved			98		%		75-125	04-NOV-05
WG374326-3 DUP		**WG374326-2**						
Calcium (Ca)-Dissolved		677	627		mg/L	7.7	15	05-NOV-05
WG374326-1 MB								
Calcium (Ca)-Dissolved			<0.05		mg/L		0.05	05-NOV-05
CL-DIS-WP	**Water**							
Batch R343618								
WG374955-3 CCV								
Chloride (Cl) - Dissolved			99		%		93-107	04-NOV-05
WG374955-2 CVS								
Chloride (Cl) - Dissolved			103		%		93-107	04-NOV-05
WG374231-1 MB								

Enviro-Test Quality Control Report

Workorder: L337647

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-DIS-WP	**Water**							
Batch R343618								
WG374231-1 MB								
Chloride (Cl) - Dissolved			<9		mg/L		9	04-NOV-05
CN-FREE-WP	**Water**							
Batch R343922								
WG375333-2 CCV								
Cyanide, Free			97		%		87-113	07-NOV-05
WG375333-1 CVS								
Cyanide, Free			98		%		87-113	07-NOV-05
WG375333-4 MB								
Cyanide, Free			<0.01		mg/L		0.01	07-NOV-05
WG375333-3 MS		L338027-1						
Cyanide, Free			101		%		80-121	07-NOV-05
COD-WP	**Water**							
Batch R344384								
WG375927-3 CCV								
Chemical Oxygen Demand			97		%		93-107	08-NOV-05
WG375927-2 CVS								
Chemical Oxygen Demand			95		%		93-107	08-NOV-05
WG375927-4 DUP		L336770-1						
Chemical Oxygen Demand		12	10	J	mg/L	2	25	08-NOV-05
WG375927-1 MB								
Chemical Oxygen Demand			<8		mg/L		8	08-NOV-05
CR-TOT-LOW-WP	**Water**							
Batch R343445								
WG374758-4 CCV								
Chromium (Cr)-Total			99		%		93-107	04-NOV-05
WG374758-2 CVS								
Chromium (Cr)-Total			98		%		75-125	04-NOV-05
WG374758-3 CVS								
Chromium (Cr)-Total			99		%		75-125	04-NOV-05
WG374434-4 DUP		WG374434-3						
Chromium (Cr)-Total		0.003	0.003	J	mg/L	0.000	0.0031	05-NOV-05
WG374434-2 LCS								
Chromium (Cr)-Total			99		%		80-120	05-NOV-05
WG374434-1 MB								
Chromium (Cr)-Total			<0.001		mg/L		0.005	05-NOV-05
EC-WP	**Water**							
Batch R343599								
WG374938-2 CCV								
Conductivity			101		%		97-103	04-NOV-05
WG374938-1 CVS								

Enviro-Test Quality Control Report

Workorder: L337647

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WP	**Water**							
Batch R343599								
WG374938-1 CVS								
Conductivity			100		%		93-107	04-NOV-05
WG374938-6 DUP		**L337647-1**						
Conductivity		325	324		umhos/cm	0.24	3.8	04-NOV-05
WG374938-7 DUP		**L337681-1**						
Conductivity		3980	3980		umhos/cm	0.19	3.8	04-NOV-05
WG374938-8 DUP		**L337852-1**						
Conductivity		1230	1230		umhos/cm	0.041	3.8	04-NOV-05
MET-SCAN-EXT-LOW-WP	**Water**							
Batch R343445								
WG374758-4 CCV								
Aluminum (Al)-Extractable			100		%		93-107	04-NOV-05
Antimony (Sb)-Extractable			97		%		93-107	04-NOV-05
Arsenic (As)-Extractable			100		%		93-107	04-NOV-05
Barium (Ba)-Extractable			96		%		93-107	04-NOV-05
Beryllium (Be)-Extractable			96		%		93-107	04-NOV-05
Bismuth (Bi)-Extractable			97		%		93-107	04-NOV-05
Boron (B)-Extractable			98		%		93-107	04-NOV-05
Cadmium (Cd)-Extractable			97		%		93-107	04-NOV-05
Calcium (Ca)-Extractable			98		%		93-107	04-NOV-05
Cesium (Cs)-Extractable			101		%		93-107	04-NOV-05
Chromium (Cr)-Extractable			99		%		93-107	04-NOV-05
Cobalt (Co)-Extractable			100		%		93-107	04-NOV-05
Copper (Cu)-Extractable			99		%		93-107	04-NOV-05
Iron (Fe)-Extractable			99		%		93-107	04-NOV-05
Lead (Pb)-Extractable			96		%		93-107	04-NOV-05
Lithium (Li)-Extractable			96		%		93-107	04-NOV-05
Magnesium (Mg)-Extractable			101		%		93-107	04-NOV-05
Manganese (Mn)-Extractable			98		%		93-107	04-NOV-05
Molybdenum (Mo)-Extractable			97		%		93-107	04-NOV-05
Nickel (Ni)-Extractable			100		%		93-107	04-NOV-05
Phosphorus (P)-Extractable			98		%		93-107	04-NOV-05
Potassium (K)-Extractable			98		%		93-107	04-NOV-05
Rubidium (Rb)-Extractable			96		%		93-107	04-NOV-05
Selenium (Se)-Extractable			101		%		93-107	04-NOV-05
Silicon (Si)-Extractable			100		%		93-107	04-NOV-05
Silver (Ag)-Extractable			97		%		93-107	04-NOV-05
Sodium (Na)-Extractable			101		%		93-107	04-NOV-05
Strontium (Sr)-Extractable			96		%		93-107	04-NOV-05

Enviro-Test Quality Control Report

Workorder: L337647

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-SCAN-EXT-LOW-WP	Water							
Batch R343445								
WG374758-4 CCV								
Tellurium (Te)-Extractable			97		%		93-107	04-NOV-05
Thallium (Tl)-Extractable			96		%		93-107	04-NOV-05
Tin (Sn)-Extractable			98		%		93-107	04-NOV-05
Titanium (Ti)-Extractable			100		%		93-107	04-NOV-05
Tungsten (W)-Extractable			97		%		93-107	04-NOV-05
Uranium (U)-Extractable			93	H	%		93-107	04-NOV-05
Vanadium (V)-Extractable			98		%		93-107	04-NOV-05
Zinc (Zn)-Extractable			99		%		93-107	04-NOV-05
Zirconium (Zr)-Extractable			97		%		93-107	04-NOV-05
WG374758-2 CVS								
Aluminum (Al)-Extractable			98		%		93-107	04-NOV-05
Antimony (Sb)-Extractable			97		%		93-107	04-NOV-05
Arsenic (As)-Extractable			98		%		93-107	04-NOV-05
Barium (Ba)-Extractable			95		%		93-107	04-NOV-05
Beryllium (Be)-Extractable			95		%		93-107	04-NOV-05
Bismuth (Bi)-Extractable			97		%		93-107	04-NOV-05
Boron (B)-Extractable			101		%		93-107	04-NOV-05
Cadmium (Cd)-Extractable			96		%		93-107	04-NOV-05
Calcium (Ca)-Extractable			98		%		93-107	04-NOV-05
Cesium (Cs)-Extractable			101		%		93-107	04-NOV-05
Chromium (Cr)-Extractable			98		%		93-107	04-NOV-05
Cobalt (Co)-Extractable			97		%		93-107	04-NOV-05
Copper (Cu)-Extractable			96		%		93-107	04-NOV-05
Iron (Fe)-Extractable			96		%		93-107	04-NOV-05
Lead (Pb)-Extractable			96		%		93-107	04-NOV-05
Lithium (Li)-Extractable			96		%		93-107	04-NOV-05
Magnesium (Mg)-Extractable			96		%		93-107	04-NOV-05
Manganese (Mn)-Extractable			96		%		93-107	04-NOV-05
Molybdenum (Mo)-Extractable			97		%		93-107	04-NOV-05
Nickel (Ni)-Extractable			97		%		93-107	04-NOV-05
Phosphorus (P)-Extractable			95		%		93-107	04-NOV-05
Potassium (K)-Extractable			96		%		93-107	04-NOV-05
Rubidium (Rb)-Extractable			96		%		93-107	04-NOV-05
Selenium (Se)-Extractable			98		%		93-107	04-NOV-05
Silicon (Si)-Extractable			95		%		75-125	04-NOV-05
Silver (Ag)-Extractable			97		%		75-125	04-NOV-05
Sodium (Na)-Extractable			98		%		93-107	04-NOV-05

Enviro-Test Quality Control Report

Workorder: L337647

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-SCAN-EXT-LOW-WP	Water							
Batch R343445								
WG374758-2 CVS								
Strontium (Sr)-Extractable			96		%		93-107	04-NOV-05
Tellurium (Te)-Extractable			96		%		93-107	04-NOV-05
Thallium (Tl)-Extractable			97		%		93-107	04-NOV-05
Tin (Sn)-Extractable			98		%		93-107	04-NOV-05
Titanium (Ti)-Extractable			94		%		93-107	04-NOV-05
Tungsten (W)-Extractable			95		%		93-107	04-NOV-05
Uranium (U)-Extractable			93	H	%		93-107	04-NOV-05
Vanadium (V)-Extractable			96		%		93-107	04-NOV-05
Zinc (Zn)-Extractable			99		%		93-107	04-NOV-05
Zirconium (Zr)-Extractable			95		%		93-107	04-NOV-05
WG374758-3 CVS								
Aluminum (Al)-Extractable			91	H	%		93-107	04-NOV-05
Antimony (Sb)-Extractable			96		%		93-107	04-NOV-05
Arsenic (As)-Extractable			97		%		93-107	04-NOV-05
Barium (Ba)-Extractable			96		%		93-107	04-NOV-05
Beryllium (Be)-Extractable			99		%		93-107	04-NOV-05
Bismuth (Bi)-Extractable			94		%		93-107	04-NOV-05
Boron (B)-Extractable			99		%		93-107	04-NOV-05
Cadmium (Cd)-Extractable			97		%		93-107	04-NOV-05
Calcium (Ca)-Extractable			98		%		93-107	04-NOV-05
Cesium (Cs)-Extractable			96		%		93-107	04-NOV-05
Chromium (Cr)-Extractable			99		%		93-107	04-NOV-05
Cobalt (Co)-Extractable			95		%		93-107	04-NOV-05
Copper (Cu)-Extractable			95		%		93-107	04-NOV-05
Iron (Fe)-Extractable			96		%		93-107	04-NOV-05
Lead (Pb)-Extractable			94		%		93-107	04-NOV-05
Lithium (Li)-Extractable			98		%		93-107	04-NOV-05
Magnesium (Mg)-Extractable			97		%		93-107	04-NOV-05
Manganese (Mn)-Extractable			94		%		93-107	04-NOV-05
Molybdenum (Mo)-Extractable			99		%		93-107	04-NOV-05
Nickel (Ni)-Extractable			95		%		93-107	04-NOV-05
Phosphorus (P)-Extractable			97		%		93-107	04-NOV-05
Potassium (K)-Extractable			98		%		93-107	04-NOV-05
Rubidium (Rb)-Extractable			96		%		93-107	04-NOV-05
Selenium (Se)-Extractable			98		%		93-107	04-NOV-05
Silicon (Si)-Extractable			100		%		75-125	04-NOV-05
Silver (Ag)-Extractable			98		%		75-125	04-NOV-05

Enviro-Test Quality Control Report

Workorder: L337647

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-SCAN-EXT-LOW-WP	**Water**							
Batch R343445								
WG374758-3 CVS								
Sodium (Na)-Extractable			101		%		93-107	04-NOV-05
Strontium (Sr)-Extractable			98		%		93-107	04-NOV-05
Tellurium (Te)-Extractable			95		%		93-107	04-NOV-05
Thallium (Tl)-Extractable			93	H	%		93-107	04-NOV-05
Tin (Sn)-Extractable			99		%		93-107	04-NOV-05
Titanium (Ti)-Extractable			97		%		93-107	04-NOV-05
Tungsten (W)-Extractable			97		%		93-107	04-NOV-05
Uranium (U)-Extractable			96		%		93-107	04-NOV-05
Vanadium (V)-Extractable			98		%		93-107	04-NOV-05
Zinc (Zn)-Extractable			97		%		93-107	04-NOV-05
Zirconium (Zr)-Extractable			98		%		93-107	04-NOV-05
WG374758-6 DUP		**WG374758-5**						
Aluminum (Al)-Extractable		0.02	0.02	J	mg/L	0.00	0.061	04-NOV-05
Antimony (Sb)-Extractable		<0.001	<0.001	RPD-NA	mg/L	N/A	15	04-NOV-05
Arsenic (As)-Extractable		0.0031	0.0032	J	mg/L	0.0001	0.0015	04-NOV-05
Barium (Ba)-Extractable		0.0107	0.0106		mg/L	1.3	15	04-NOV-05
Beryllium (Be)-Extractable		<0.001	<0.001	RPD-NA	mg/L	N/A	15	04-NOV-05
Bismuth (Bi)-Extractable		<0.0003	<0.0003	RPD-NA	mg/L	N/A	15	04-NOV-05
Boron (B)-Extractable		0.22	0.23		mg/L	3.8	15	04-NOV-05
Cadmium (Cd)-Extractable		<0.0002	<0.0002	RPD-NA	mg/L	N/A	15	04-NOV-05
Calcium (Ca)-Extractable		198	202		mg/L	2.0	15	04-NOV-05
Cesium (Cs)-Extractable		<0.0001	<0.0001	RPD-NA	mg/L	N/A	15	04-NOV-05
Chromium (Cr)-Extractable		0.001	0.001	J	mg/L	0.000	0.0031	04-NOV-05
Cobalt (Co)-Extractable		0.0014	0.0014	J	mg/L	0.0000	0.00061	04-NOV-05
Copper (Cu)-Extractable		0.0068	0.0074		mg/L	8.9	15	04-NOV-05
Iron (Fe)-Extractable		0.94	0.99		mg/L	4.9	15	04-NOV-05
Lead (Pb)-Extractable		0.0012	0.0012		mg/L	3.9	15	04-NOV-05
Lithium (Li)-Extractable		0.225	0.225		mg/L	0.025	15	04-NOV-05
Magnesium (Mg)-Extractable		147	151		mg/L	2.5	15	04-NOV-05
Manganese (Mn)-Extractable		0.0376	0.0386		mg/L	2.5	15	04-NOV-05
Molybdenum (Mo)-Extractable		0.0003	0.0003	J	mg/L	0.0000	0.00031	04-NOV-05
Nickel (Ni)-Extractable		0.0059	0.0070	H	mg/L	18	15	04-NOV-05
Phosphorus (P)-Extractable		<0.02	<0.02	RPD-NA	mg/L	N/A	15	04-NOV-05
Potassium (K)-Extractable		9.06	9.30		mg/L	2.6	15	04-NOV-05
Rubidium (Rb)-Extractable		0.0039	0.0040		mg/L	2.5	15	04-NOV-05
Selenium (Se)-Extractable		<0.001	<0.001	RPD-NA	mg/L	N/A	15	04-NOV-05
Silicon (Si)-Extractable		6.5	6.6		mg/L	2.6	15	04-NOV-05

Enviro-Test Quality Control Report

Workorder: L337647

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-SCAN-EXT-LOW-WP	Water							
Batch R343445								
WG374758-6 DUP		WG374758-5						
Silver (Ag)-Extractable		<0.0005	<0.0005	RPD-NA	mg/L	N/A	15	04-NOV-05
Sodium (Na)-Extractable		209	219		mg/L	4.5	15	04-NOV-05
Strontium (Sr)-Extractable		1.27	1.27		mg/L	0.39	15	04-NOV-05
Tellurium (Te)-Extractable		<0.0005	<0.0005	RPD-NA	mg/L	N/A	15	04-NOV-05
Thallium (Tl)-Extractable		0.0004	0.0005	J	mg/L	0.0001	0.00031	04-NOV-05
Tin (Sn)-Extractable		<0.0003	<0.0003	RPD-NA	mg/L	N/A	15	04-NOV-05
Titanium (Ti)-Extractable		0.0060	0.0069		mg/L	14	15	04-NOV-05
Tungsten (W)-Extractable		<0.0002	<0.0002	RPD-NA	mg/L	N/A	15	04-NOV-05
Uranium (U)-Extractable		0.0078	0.0077		mg/L	1.0	15	04-NOV-05
Vanadium (V)-Extractable		0.003	0.003	J	mg/L	0.000	0.0031	04-NOV-05
Zinc (Zn)-Extractable		0.031	0.031	J	mg/L	0.000	0.015	04-NOV-05
Zirconium (Zr)-Extractable		<0.0004	<0.0004	RPD-NA	mg/L	N/A	15	04-NOV-05
WG374758-1 MB								
Aluminum (Al)-Extractable			<0.02		mg/L		0.02	04-NOV-05
Antimony (Sb)-Extractable			<0.001		mg/L		0.001	04-NOV-05
Arsenic (As)-Extractable			<0.0005		mg/L		0.0005	04-NOV-05
Barium (Ba)-Extractable			<0.0003		mg/L		0.0003	04-NOV-05
Beryllium (Be)-Extractable			<0.001		mg/L		0.001	04-NOV-05
Bismuth (Bi)-Extractable			<0.0003		mg/L		0.0003	04-NOV-05
Boron (B)-Extractable			<0.02		mg/L		0.02	04-NOV-05
Cadmium (Cd)-Extractable			<0.0002		mg/L		0.0002	04-NOV-05
Calcium (Ca)-Extractable			<0.05		mg/L		0.05	04-NOV-05
Cesium (Cs)-Extractable			<0.0001		mg/L		0.0001	04-NOV-05
Chromium (Cr)-Extractable			<0.001		mg/L		0.001	04-NOV-05
Cobalt (Co)-Extractable			<0.0002		mg/L		0.0002	04-NOV-05
Copper (Cu)-Extractable			<0.0004		mg/L		0.0004	04-NOV-05
Iron (Fe)-Extractable			<0.01		mg/L		0.01	04-NOV-05
Lead (Pb)-Extractable			<0.0001		mg/L		0.0001	04-NOV-05
Lithium (Li)-Extractable			<0.005		mg/L		0.005	04-NOV-05
Magnesium (Mg)-Extractable			<0.01		mg/L		0.01	04-NOV-05
Manganese (Mn)-Extractable			<0.0002		mg/L		0.0002	04-NOV-05
Molybdenum (Mo)-Extractable			<0.0001		mg/L		0.0001	04-NOV-05
Nickel (Ni)-Extractable			<0.0002		mg/L		0.0002	04-NOV-05
Phosphorus (P)-Extractable			<0.02		mg/L		0.02	04-NOV-05
Potassium (K)-Extractable			<0.05		mg/L		0.05	04-NOV-05
Rubidium (Rb)-Extractable			<0.0002		mg/L		0.0002	04-NOV-05
Selenium (Se)-Extractable			<0.001		mg/L		0.001	04-NOV-05

Enviro-Test Quality Control Report

Workorder: L337647

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-SCAN-EXT-LOW-WP	**Water**							
Batch R343445								
WG374758-1 MB								
Silicon (Si)-Extractable			<0.2		mg/L		0.2	04-NOV-05
Silver (Ag)-Extractable			<0.0005		mg/L		0.0005	04-NOV-05
Sodium (Na)-Extractable			<0.02		mg/L		0.02	04-NOV-05
Strontium (Sr)-Extractable			<0.0001		mg/L		0.0001	04-NOV-05
Tellurium (Te)-Extractable			<0.0005		mg/L		0.0005	04-NOV-05
Thallium (Tl)-Extractable			<0.0001		mg/L		0.0001	04-NOV-05
Tin (Sn)-Extractable			<0.0003		mg/L		0.0003	04-NOV-05
Titanium (Ti)-Extractable			<0.0005		mg/L		0.0005	04-NOV-05
Tungsten (W)-Extractable			<0.0002		mg/L		0.0002	04-NOV-05
Uranium (U)-Extractable			<0.0001		mg/L		0.0001	04-NOV-05
Vanadium (V)-Extractable			<0.001		mg/L		0.001	04-NOV-05
Zinc (Zn)-Extractable			<0.005		mg/L		0.005	04-NOV-05
Zirconium (Zr)-Extractable			<0.0004		mg/L		0.0004	04-NOV-05
N-TOTKJ-WP	**Water**							
Batch R344742								
WG376370-2 CCV								
Total Kjeldahl Nitrogen			101		%		93-107	09-NOV-05
WG376370-1 CVS								
Total Kjeldahl Nitrogen			100		%		93-107	09-NOV-05
WG375875-2 LCS								
Total Kjeldahl Nitrogen			108		%		79-115	09-NOV-05
WG375875-1 MB								
Total Kjeldahl Nitrogen			<0.2		mg/L		0.2	09-NOV-05
WG375875-3 MS		L337767-31						
Total Kjeldahl Nitrogen			112	E	%		79-115	09-NOV-05
N2N3-DIS-WP	**Water**							
Batch R343618								
WG374955-3 CCV								
Nitrate+Nitrite-N - Dissolved			100		%		93-107	04-NOV-05
WG374955-2 CVS								
Nitrate+Nitrite-N - Dissolved			107	H	%		93-107	04-NOV-05
WG374231-1 MB								
Nitrate+Nitrite-N - Dissolved			0.03		mg/L		0.05	04-NOV-05
NH3-DIS-WP	**Water**							
Batch R343618								
WG374955-3 CCV								
Ammonia (NH3) - Dissolved			99		%		93-107	04-NOV-05
WG374955-2 CVS								
Ammonia (NH3) - Dissolved			101		%		93-107	04-NOV-05

Enviro-Test Quality Control Report

Workorder: L337647

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-DIS-WP	Water							
Batch R343618								
WG374231-1 MB								
Ammonia (NH3) - Dissolved			<0.01		mg/L		0.01	04-NOV-05
P-TOTAL-WP	Water							
Batch R343791								
WG374916-1 CCV								
Total Phosphorous			101		%		93-107	07-NOV-05
WG374916-2 CCV								
Total Phosphorous			100		%		93-107	07-NOV-05
WG374528-2 CVS								
Total Phosphorous			102		%		93-107	07-NOV-05
WG374528-3 CVS								
Total Phosphorous			95		%		93-107	07-NOV-05
WG374528-4 DUP		L337647-1						
Total Phosphorous		0.036	0.038		mg/L	5.7	17	07-NOV-05
WG374528-5 DUP		L337680-2						
Total Phosphorous		1.12	1.21		mg/L	7.2	17	07-NOV-05
WG374528-6 DUP		L337681-1						
Total Phosphorous		0.009	0.009	J	mg/L	0.000	0.0031	07-NOV-05
WG374528-1 MB								
Total Phosphorous			<0.005		mg/L		0.025	07-NOV-05
WG374528-7 MS		L337064-2						
Total Phosphorous			95	E	%		84-114	07-NOV-05
PH-WP	Water							
Batch R343599								
WG374938-4 CCV								
PH			100		%		93-107	04-NOV-05
WG374938-3 CVS								
PH			101		%		97-103	04-NOV-05
WG374938-6 DUP		L337647-1						
PH		7.98	7.98		pH units	0.078	3.8	04-NOV-05
WG374938-7 DUP		L337681-1						
PH		6.58	6.57		pH units	0.13	3.8	04-NOV-05
WG374938-8 DUP		L337852-1						
PH		7.67	7.68		pH units	0.076	3.8	04-NOV-05
O4-DIS-WP	Water							
Batch R343618								
WG374955-3 CCV								
Sulphate (SO4) - Dissolved			100		%		93-107	04-NOV-05
WG374955-2 CVS								
Sulphate (SO4) - Dissolved			101		%		93-107	04-NOV-05
WG374231-1 MB								

Enviro-Test Quality Control Report

Workorder: L337647

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-DIS-WP	**Water**							
Batch R343618								
WG374231-1 MB								
Sulphate (SO4) - Dissolved			<9		mg/L		9	04-NOV-05
SOLIDS-TDS-WP	**Water**							
Batch R344261								
WG375047-3 CVS								
Total Dissolved Solids			100		%		96-104	07-NOV-05
WG375047-4 CVS								
Total Dissolved Solids			101		%		96-104	07-NOV-05
WG375047-6 DUP		**L338024-1**						
Total Dissolved Solids		1500	1500		mg/L	0.81	7.7	07-NOV-05
WG375047-1 MB								
Total Dissolved Solids			<5		mg/L		5	07-NOV-05
WG375047-2 MB								
Total Dissolved Solids			<5		mg/L		5	07-NOV-05
SOLIDS-TOTSUS-WP	**Water**							
Batch R344261								
WG375047-3 CVS								
Total Suspended Solids			102		%		86-108	07-NOV-05
WG375047-4 CVS								
Total Suspended Solids			100		%		86-108	07-NOV-05
WG375047-5 DUP		**L337755-1**						
Total Suspended Solids		71	73		mg/L	2.8	15	07-NOV-05
WG375047-6 DUP		**L338024-1**						
Total Suspended Solids		420	420		mg/L	0.95	15	07-NOV-05
WG375047-1 MB								
Total Suspended Solids			<5		mg/L		5	07-NOV-05
WG375047-2 MB								
Total Suspended Solids			<5		mg/L		5	07-NOV-05
SULPHIDE-ED	**Water**							
Batch R344730								
WG376226-4 DUP		**L336966-3**						
Sulphide		0.023	0.026	J	mg/L	0.003	0.0092	09-NOV-05
WG376226-6 DUP		**L338767-4**						
Sulphide		<0.003	<0.003	RPD-NA	mg/L	N/A	12	09-NOV-05
WG376226-2 LCS								
Sulphide			86		%		54-107	09-NOV-05
WG376226-3 LCS								
Sulphide			108		%		71-112	09-NOV-05
WG376226-1 MB								
Sulphide			<0.003		mg/L		0.003	09-NOV-05
WG376226-5 MS		**L338127-1**						

Enviro-Test Quality Control Report

Workorder: L337647

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SULPHIDE-ED	Water							
Batch R344730								
WG376226-5 MS		L338127-1						
Sulphide			110		%		51-133	09-NOV-05
TEH-WP	Water							
Batch R344530								
WG376129-2 CCV								
TEH (C11-C30)			103		%		70-130	09-NOV-05
WG376129-1 CVS								
TEH (C11-C30)			97		%		87-129	09-NOV-05
WG375661-2 LCS								
TEH (C11-C30)			135	H	%		73-131	09-NOV-05
WG375661-1 MB								
TEH (C11-C30)			<0.1		mg/L		0.1	09-NOV-05
TURBIDITY-WP	Water							
Batch R343598								
WG374937-2 CCV								
Turbidity			101		%		97-103	04-NOV-05
WG374937-1 CVS								
Turbidity			101		%		93-107	04-NOV-05
WG374937-4 DUP		L337363-1						
Turbidity		0.95	0.95		NTU	0.0	15	04-NOV-05
WG374937-3 MB								
Turbidity			<0.05		NTU		0.05	04-NOV-05
TVH-WP	Water							
Batch R344763								
WG376384-1 CCV								
Total Volatiles			97		%		87-113	08-NOV-05
WG376384-2 CCV								
Total Volatiles			102		%		87-113	08-NOV-05
WG376384-3 CVS								
Total Volatiles			97		%		87-113	08-NOV-05
WG376350-3 DUP		L338009-4						
Total Volatiles		<0.1	<0.1	RPD-NA	mg/L	N/A	12	08-NOV-05
WG376350-1 MB								
Total Volatiles			<0.1		mg/L		0.1	08-NOV-05
WG376350-2 MS		L338009-5						
Total Volatiles			90		%		80-120	08-NOV-05

ENVIRO-TEST QC REPORT

Workorder # L337647

Legend:

Limit	95% Confidence Interval (Laboratory Warning Limits)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Qualifier:

RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
A	Method blank exceeds acceptance limit. Blank correction not applied, unless the qualifier "RAMB" (result adjusted for method blank) appears in the Analytical Report.
B	Method blank result exceeds acceptance limit, however, it is less than 5% of sample concentration. Blank correction not applied.
E	Matrix spike recovery may fall outside the acceptance limits due to high sample background.
F	Silver recovery low, likely due to elevated chloride levels in sample.
G	Outlier - No assignable cause for nonconformity has been determined.
H	Result falls within the 99% Confidence Interval (Laboratory Control Limits)
J	Duplicate results and limit(s) are expressed in terms of absolute difference.
K	The sample referenced above is of a non-standard matrix type; standard QC acceptance criteria may not be achievable.

ETL Enviro·Test MTC

Manitoba Technology Centre Ltd.

W172

CHAIN OF CUSTODY
ANALYTICAL REQUEST FORM

745 Logan Avenue, Winnipeg, Manitoba R3E 3L5
9936 - 67th Avenue, Edmonton, Alberta T6E 3L5
Edmonton Toll Free Line
1313 - 44 Avenue N.E., Calgary, Alberta T2E 6L5
General Purpose Bldg., 124 Veterinary Road, Saskatoon, Sask. S7N 5E3
1081 Barton Street, Thunder Bay, Ontario P7B 5N3

Telephone: (204) 945-3705 Fax: (204) 945-0763
Telephone: (780) 413-5227 Fax: (780) 437-2311
Telephone: 1-800-668-9878 Fax: 1-800-286-7319
Telephone: (403) 291-9897 Fax: (403) 291-0298
Telephone: (306) 668-8370 Fax: (306) 668-8383
Telephone: (807) 623-6463 Fax: (807) 623-7598

DATE SUBMITTED: Nov. 7, 2005 DATE REQUIRED: ____

SERVICE REQUESTED:
☒ REGULAR ☐ PRIORITY (50% SURCHARGE) ☐ EMERGENCY (100% SURCHARGE)

PRICING (CHECK ONE):
AS PER QUOTE #: ____ ☐
AS PER LIST PRICE: ☐

ANALYSIS REQUESTED:
- WDF - Background 82
- BTEX, TVH, TEH
- Total + F. coli by MPN
- HPC
- Sulphide - H2S - ED
- Langelier Saturation
- ETL: Langelier - CN
- + pH · TALK

SAMPLE RECEIVED (Y OR N)
SAMPLE BROKEN (Y OR N)

L337647

SAMPLE ID	SAMPLED BY	DATE / TIME SAMPLED	SAMPLE TYPE	LAB SAMPLE NO.
PW-1	SJW	08/11/05, 2:00PM	Water	1

PRESERVED / FILTERED

NOTES & CONDITIONS:
1. Quote number must be provided to ensure proper pricing.
2. All hazardous samples submitted must be labeled to comply with WHMIS regulations. This must include the nature of the hazard, as well as a contact name and phone number that the lab can contact for further information.
3. ETL's liability limited to cost of analysis.

NOTE: Failure to properly complete all portions of this form may delay analysis.

***NOTE:* Shaded areas MUST be completed in full by client for sample processing to occur.**

CLIENT: UMA Engineering Ltd
CONTACT: S. Wiecek
REPORT ADDRESS: 1479 Buffalo Place, Wpg, MB
BILLING ADDRESS: Same

NO. SAMPLES SUBMITTED: 1
NO. BOTTLES/SAMPLES: 12
PHONE: 284-0580
FAX: 475-3646
E-MAIL: YES ☒ NO ☐
E-MAIL ADDRESS: steve.wiecek@uma.aecom.com
P.O. NO.: ____
JOB NO.: F415-001-00

RELINQUISHED BY:	DATE / TIME	RECEIVED BY:	DATE / TIME
[signature]	DATE Nov. 4/05 TIME 8:30 Am	ETL LAB:	DATE TIME
RELINQUISHED BY:	DATE TIME	RECEIVED BY: [initials] ETL LAB:	DATE Nov 4 TIME 10:15

SAMPLE CONDITION UPON RECEIPT: ☐ ACCEPTABLE ☐ NON ACCEPTABLE

FROZEN: ____ COLD: ____ AMBIENT: ____

OTHER (BREAKAGE, LEAKAGE, ETC.): ____

[signature]

WHITE - File Copy
GREEN - Final Report
PINK - Invoicing
BLUE - Client Support
YELLOW - Customer