



Environmental Division

Certificate of Analysis

OZ MINERALS CANADA RESOURCES INC.

ATTN: ANDREW MITCHELL

200 - 1159 ALLOY DRIVE

THUNDER BAY ON P7B 6M8

Report Date: 23-OCT-09 11:21 (MT)

Version: FINAL

Lab Work Order #: L825404

Date Received: 01-OCT-09

Project P.O. #: 09-00623

Job Reference:

Legal Site Desc:

CofC Numbers: 08-012392, 08-012393

Other Information:

Comments:

Maureen Olinek
Senior Account Manager

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN AUTHORITY OF THE LABORATORY.
ALL SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU
REQUIRE ADDITIONAL SAMPLE STORAGE TIME.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L825404-1	LUP-10-09-22-09							
Sampled By: TC on 22-SEP-09 @ 17:15								
Matrix: WATER								
Total Metals - CCME								
Mercury (Hg) - Total								
Mercury (Hg)-Total		<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)								
Aluminum (Al)-Total		0.167		0.010	mg/L		02-OCT-09	R964196
Antimony (Sb)-Total		<0.00040		0.00040	mg/L		02-OCT-09	R964196
Arsenic (As)-Total		0.0110		0.00040	mg/L		02-OCT-09	R964196
Barium (Ba)-Total		0.0136		0.0030	mg/L		02-OCT-09	R964196
Beryllium (Be)-Total		<0.0010		0.0010	mg/L		02-OCT-09	R964196
Boron (B)-Total		0.080		0.050	mg/L		02-OCT-09	R964196
Cadmium (Cd)-Total		0.000290		0.000050	mg/L		02-OCT-09	R964196
Chromium (Cr)-Total		<0.0050		0.0050	mg/L		02-OCT-09	R964196
Cobalt (Co)-Total		0.0431		0.0020	mg/L		02-OCT-09	R964196
Copper (Cu)-Total		0.0027		0.0010	mg/L		02-OCT-09	R964196
Lead (Pb)-Total		<0.00010		0.00010	mg/L		02-OCT-09	R964196
Lithium (Li)-Total		0.027		0.010	mg/L		02-OCT-09	R964196
Molybdenum (Mo)-Total		<0.0050		0.0050	mg/L		02-OCT-09	R964196
Nickel (Ni)-Total		0.0854		0.0020	mg/L		02-OCT-09	R964196
Selenium (Se)-Total		<0.0020	DLM	0.0020	mg/L		02-OCT-09	R964196
Silver (Ag)-Total		<0.00010		0.00010	mg/L		02-OCT-09	R964196
Thallium (Tl)-Total		<0.00010		0.00010	mg/L		02-OCT-09	R964196
Tin (Sn)-Total		<0.050		0.050	mg/L		02-OCT-09	R964196
Titanium (Ti)-Total		<0.0010		0.0010	mg/L		02-OCT-09	R964196
Uranium (U)-Total		<0.00010		0.00010	mg/L		02-OCT-09	R964196
Vanadium (V)-Total		<0.0010		0.0010	mg/L		02-OCT-09	R964196
Zinc (Zn)-Total		0.277		0.0040	mg/L		02-OCT-09	R964196
Total Metals in Water by ICPOES (Low)								
Calcium (Ca)-Total		76.7		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total		0.214		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total		7.67		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total		0.945		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total		5.80		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total		73.7		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters								
Cyanide, Total		0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Total Suspended Solids		<3.0		3.0	mg/L		05-OCT-09	R970166
pH		6.54		0.10	pH		02-OCT-09	R964965
L825404-2	LUP-10-09-23-09							
Sampled By: TC on 23-SEP-09 @ 16:45								
Matrix: WATER								
Total Metals - CCME								
Mercury (Hg) - Total								
Mercury (Hg)-Total		<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)								
Aluminum (Al)-Total		0.041		0.010	mg/L		02-OCT-09	R964196
Antimony (Sb)-Total		<0.00040		0.00040	mg/L		02-OCT-09	R964196
Arsenic (As)-Total		0.0110		0.00040	mg/L		02-OCT-09	R964196
Barium (Ba)-Total		0.0137		0.0030	mg/L		02-OCT-09	R964196
Beryllium (Be)-Total		<0.0010		0.0010	mg/L		02-OCT-09	R964196
Boron (B)-Total		0.079		0.050	mg/L		02-OCT-09	R964196
Cadmium (Cd)-Total		0.000265		0.000050	mg/L		02-OCT-09	R964196
Chromium (Cr)-Total		<0.0050		0.0050	mg/L		02-OCT-09	R964196

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

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L825404-2 LUP-10-09-23-09 Sampled By: TC on 23-SEP-09 @ 16:45 Matrix: WATER							
Total Metals in Water by ICPMS (Low)							
Cobalt (Co)-Total	0.0429		0.0020	mg/L		02-OCT-09	R964196
Copper (Cu)-Total	0.0027		0.0010	mg/L		02-OCT-09	R964196
Lead (Pb)-Total	0.00068		0.00010	mg/L		02-OCT-09	R964196
Lithium (Li)-Total	0.027		0.010	mg/L		02-OCT-09	R964196
Molybdenum (Mo)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Nickel (Ni)-Total	0.0840		0.0020	mg/L		02-OCT-09	R964196
Selenium (Se)-Total	0.0021	DLM	0.0020	mg/L		02-OCT-09	R964196
Silver (Ag)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Thallium (Tl)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Tin (Sn)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Titanium (Ti)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Uranium (U)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Vanadium (V)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Zinc (Zn)-Total	0.276		0.0040	mg/L		02-OCT-09	R964196
Total Metals in Water by ICPOES (Low)							
Calcium (Ca)-Total	77.1		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total	0.244		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total	7.71		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total	0.938		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total	5.76		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total	74.6		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters							
Cyanide, Total	0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Total Suspended Solids	5.0		3.0	mg/L		05-OCT-09	R970166
pH	6.79		0.10	pH		02-OCT-09	R964965
L825404-3 LUP-10-09-24-09 Sampled By: TC on 24-SEP-09 @ 15:30 Matrix: WATER							
Total Metals - CCME							
Mercury (Hg) - Total							
Mercury (Hg)-Total	<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)							
Aluminum (Al)-Total	0.048		0.010	mg/L		02-OCT-09	R964196
Antimony (Sb)-Total	<0.00040		0.00040	mg/L		02-OCT-09	R964196
Arsenic (As)-Total	0.0107		0.00040	mg/L		02-OCT-09	R964196
Barium (Ba)-Total	0.0137		0.0030	mg/L		02-OCT-09	R964196
Beryllium (Be)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Boron (B)-Total	0.079		0.050	mg/L		02-OCT-09	R964196
Cadmium (Cd)-Total	0.000260		0.000050	mg/L		02-OCT-09	R964196
Chromium (Cr)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Cobalt (Co)-Total	0.0433		0.0020	mg/L		02-OCT-09	R964196
Copper (Cu)-Total	0.0028		0.0010	mg/L		02-OCT-09	R964196
Lead (Pb)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Lithium (Li)-Total	0.027		0.010	mg/L		02-OCT-09	R964196
Molybdenum (Mo)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Nickel (Ni)-Total	0.0851		0.0020	mg/L		02-OCT-09	R964196
Selenium (Se)-Total	0.0023	DLM	0.0020	mg/L		02-OCT-09	R964196
Silver (Ag)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Thallium (Tl)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Tin (Sn)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Titanium (Ti)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196

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

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L825404-3	LUP-10-09-24-09							
Sampled By: TC on 24-SEP-09 @ 15:30								
Matrix: WATER								
Total Metals in Water by ICPMS (Low)								
Uranium (U)-Total		<0.00010		0.00010	mg/L		02-OCT-09	R964196
Vanadium (V)-Total		<0.0010		0.0010	mg/L		02-OCT-09	R964196
Zinc (Zn)-Total		0.276		0.0040	mg/L		02-OCT-09	R964196
Total Metals in Water by ICPOES (Low)								
Calcium (Ca)-Total		77.9		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total		0.251		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total		8.09		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total		0.960		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total		5.90		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total		75.2		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters								
Cyanide, Total		0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Total Suspended Solids		5.0		3.0	mg/L		05-OCT-09	R970166
pH		6.72		0.10	pH		02-OCT-09	R964965
L825404-4	LUP-10-09-25-09							
Sampled By: TC on 25-SEP-09 @ 15:45								
Matrix: WATER								
Total Metals - CCME								
Mercury (Hg) - Total								
Mercury (Hg)-Total		<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)								
Aluminum (Al)-Total		0.047		0.010	mg/L		02-OCT-09	R964196
Antimony (Sb)-Total		<0.00040		0.00040	mg/L		02-OCT-09	R964196
Arsenic (As)-Total		0.0128		0.00040	mg/L		02-OCT-09	R964196
Barium (Ba)-Total		0.0137		0.0030	mg/L		02-OCT-09	R964196
Beryllium (Be)-Total		<0.0010		0.0010	mg/L		02-OCT-09	R964196
Boron (B)-Total		0.080		0.050	mg/L		02-OCT-09	R964196
Cadmium (Cd)-Total		0.000285		0.000050	mg/L		02-OCT-09	R964196
Chromium (Cr)-Total		<0.0050		0.0050	mg/L		02-OCT-09	R964196
Cobalt (Co)-Total		0.0426		0.0020	mg/L		02-OCT-09	R964196
Copper (Cu)-Total		0.0026		0.0010	mg/L		02-OCT-09	R964196
Lead (Pb)-Total		0.00015		0.00010	mg/L		02-OCT-09	R964196
Lithium (Li)-Total		0.028		0.010	mg/L		02-OCT-09	R964196
Molybdenum (Mo)-Total		<0.0050		0.0050	mg/L		02-OCT-09	R964196
Nickel (Ni)-Total		0.0830		0.0020	mg/L		02-OCT-09	R964196
Selenium (Se)-Total		0.0021	DLM	0.0020	mg/L		02-OCT-09	R964196
Silver (Ag)-Total		<0.00010		0.00010	mg/L		02-OCT-09	R964196
Thallium (Tl)-Total		<0.00010		0.00010	mg/L		02-OCT-09	R964196
Tin (Sn)-Total		<0.050		0.050	mg/L		02-OCT-09	R964196
Titanium (Ti)-Total		<0.0010		0.0010	mg/L		02-OCT-09	R964196
Uranium (U)-Total		<0.00010		0.00010	mg/L		02-OCT-09	R964196
Vanadium (V)-Total		<0.0010		0.0010	mg/L		02-OCT-09	R964196
Zinc (Zn)-Total		0.264		0.0040	mg/L		02-OCT-09	R964196
Total Metals in Water by ICPOES (Low)								
Calcium (Ca)-Total		80.5		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total		0.260		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total		7.98		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total		0.951		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total		6.23		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total		78.6		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters								

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ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L825404-4 LUP-10-09-25-09 Sampled By: TC on 25-SEP-09 @ 15:45 Matrix: WATER							
Cyanide, Total	0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Total Suspended Solids	5.0		3.0	mg/L		05-OCT-09	R970166
pH	6.74		0.10	pH		02-OCT-09	R964965
L825404-5 LUP-10-09-26-09 Sampled By: TC on 26-SEP-09 @ 16:00 Matrix: WATER							
Total Metals - CCME							
Mercury (Hg) - Total							
Mercury (Hg)-Total	<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)							
Aluminum (Al)-Total	0.041		0.010	mg/L		02-OCT-09	R964196
Antimony (Sb)-Total	<0.00040		0.00040	mg/L		02-OCT-09	R964196
Arsenic (As)-Total	0.0102		0.00040	mg/L		02-OCT-09	R964196
Barium (Ba)-Total	0.0136		0.0030	mg/L		02-OCT-09	R964196
Beryllium (Be)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Boron (B)-Total	0.080		0.050	mg/L		02-OCT-09	R964196
Cadmium (Cd)-Total	0.000260		0.000050	mg/L		02-OCT-09	R964196
Chromium (Cr)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Cobalt (Co)-Total	0.0420		0.0020	mg/L		02-OCT-09	R964196
Copper (Cu)-Total	0.0023		0.0010	mg/L		02-OCT-09	R964196
Lead (Pb)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Lithium (Li)-Total	0.028		0.010	mg/L		02-OCT-09	R964196
Molybdenum (Mo)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Nickel (Ni)-Total	0.0820		0.0020	mg/L		02-OCT-09	R964196
Selenium (Se)-Total	0.0023	DLM	0.0020	mg/L		02-OCT-09	R964196
Silver (Ag)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Thallium (Tl)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Tin (Sn)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Titanium (Ti)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Uranium (U)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Vanadium (V)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Zinc (Zn)-Total	0.259		0.0040	mg/L		02-OCT-09	R964196
Total Metals in Water by ICPOES (Low)							
Calcium (Ca)-Total	78.8		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total	0.187		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total	7.06		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total	0.952		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total	5.79		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total	67.2		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters							
Cyanide, Total	0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Total Suspended Solids	<3.0		3.0	mg/L		05-OCT-09	R970166
pH	6.74		0.10	pH		02-OCT-09	R964965
L825404-6 LUP-10-09-27-09 Sampled By: TC on 27-SEP-09 @ 15:15 Matrix: WATER							
Total Metals - CCME							
Mercury (Hg) - Total							
Mercury (Hg)-Total	<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)							
Aluminum (Al)-Total	0.037		0.010	mg/L		02-OCT-09	R964196

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

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L825404-6 LUP-10-09-27-09 Sampled By: TC on 27-SEP-09 @ 15:15 Matrix: WATER							
Total Metals in Water by ICPMS (Low)							
Antimony (Sb)-Total	<0.00040		0.00040	mg/L		02-OCT-09	R964196
Arsenic (As)-Total	0.00988		0.00040	mg/L		02-OCT-09	R964196
Barium (Ba)-Total	0.0137		0.0030	mg/L		02-OCT-09	R964196
Beryllium (Be)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Boron (B)-Total	0.080		0.050	mg/L		02-OCT-09	R964196
Cadmium (Cd)-Total	0.000255		0.000050	mg/L		02-OCT-09	R964196
Chromium (Cr)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Cobalt (Co)-Total	0.0432		0.0020	mg/L		02-OCT-09	R964196
Copper (Cu)-Total	0.0022		0.0010	mg/L		02-OCT-09	R964196
Lead (Pb)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Lithium (Li)-Total	0.028		0.010	mg/L		02-OCT-09	R964196
Molybdenum (Mo)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Nickel (Ni)-Total	0.0832		0.0020	mg/L		02-OCT-09	R964196
Selenium (Se)-Total	0.0021	DLM	0.0020	mg/L		02-OCT-09	R964196
Silver (Ag)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Thallium (Tl)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Tin (Sn)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Titanium (Ti)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Uranium (U)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Vanadium (V)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Zinc (Zn)-Total	0.263		0.0040	mg/L		02-OCT-09	R964196
Total Metals in Water by ICPOES (Low)							
Calcium (Ca)-Total	76.5		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total	0.178		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total	7.07		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total	0.955		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total	5.83		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total	67.3		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters							
Cyanide, Total	0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Total Suspended Solids	6.0		3.0	mg/L		05-OCT-09	R970166
pH	6.62		0.10	pH		02-OCT-09	R964965
L825404-7 LUP-10-09-27-09-D Sampled By: TC on 27-SEP-09 @ 15:15 Matrix: WATER							
Total Metals - CCME							
Mercury (Hg) - Total							
Mercury (Hg)-Total	<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)							
Aluminum (Al)-Total	0.036		0.010	mg/L		02-OCT-09	R964196
Antimony (Sb)-Total	<0.00040		0.00040	mg/L		02-OCT-09	R964196
Arsenic (As)-Total	0.00963		0.00040	mg/L		02-OCT-09	R964196
Barium (Ba)-Total	0.0137		0.0030	mg/L		02-OCT-09	R964196
Beryllium (Be)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Boron (B)-Total	0.079		0.050	mg/L		02-OCT-09	R964196
Cadmium (Cd)-Total	0.000280		0.000050	mg/L		02-OCT-09	R964196
Chromium (Cr)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Cobalt (Co)-Total	0.0426		0.0020	mg/L		02-OCT-09	R964196
Copper (Cu)-Total	0.0021		0.0010	mg/L		02-OCT-09	R964196
Lead (Pb)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Lithium (Li)-Total	0.028		0.010	mg/L		02-OCT-09	R964196

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

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L825404-7 LUP-10-09-27-09-D Sampled By: TC on 27-SEP-09 @ 15:15 Matrix: WATER							
Total Metals in Water by ICPMS (Low)							
Molybdenum (Mo)-Total	<0.0050	DLM	0.0050	mg/L		02-OCT-09	R964196
Nickel (Ni)-Total	0.0821		0.0020	mg/L		02-OCT-09	R964196
Selenium (Se)-Total	0.0023		0.0020	mg/L		02-OCT-09	R964196
Silver (Ag)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Thallium (Tl)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Tin (Sn)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Titanium (Ti)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Uranium (U)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Vanadium (V)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Zinc (Zn)-Total	0.263		0.0040	mg/L		02-OCT-09	R964196
Total Metals in Water by ICPOES (Low)							
Calcium (Ca)-Total	76.9		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total	0.198		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total	6.90		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total	0.943		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total	5.74		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total	66.7		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters							
Cyanide, Total	0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Total Suspended Solids	6.0		3.0	mg/L		05-OCT-09	R970166
pH	6.68		0.10	pH		02-OCT-09	R964965
L825404-8 LUP-20-09-28-09-W Sampled By: TC on 28-SEP-09 @ 14:15 Matrix: WATER							
Total Metals - CCME							
Mercury (Hg) - Total							
Mercury (Hg)-Total	<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)							
Aluminum (Al)-Total	0.066	DLM	0.010	mg/L		02-OCT-09	R964196
Antimony (Sb)-Total	<0.00040		0.00040	mg/L		02-OCT-09	R964196
Arsenic (As)-Total	0.00270		0.00040	mg/L		02-OCT-09	R964196
Barium (Ba)-Total	0.0152		0.0030	mg/L		02-OCT-09	R964196
Beryllium (Be)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Boron (B)-Total	0.060		0.050	mg/L		02-OCT-09	R964196
Cadmium (Cd)-Total	0.000205		0.000050	mg/L		02-OCT-09	R964196
Chromium (Cr)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Cobalt (Co)-Total	0.0279		0.0020	mg/L		02-OCT-09	R964196
Copper (Cu)-Total	0.0022		0.0010	mg/L		02-OCT-09	R964196
Lead (Pb)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Lithium (Li)-Total	0.022		0.010	mg/L		02-OCT-09	R964196
Molybdenum (Mo)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Nickel (Ni)-Total	0.0709		0.0020	mg/L		02-OCT-09	R964196
Selenium (Se)-Total	<0.0020		0.0020	mg/L		02-OCT-09	R964196
Silver (Ag)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Thallium (Tl)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Tin (Sn)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Titanium (Ti)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Uranium (U)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Vanadium (V)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Zinc (Zn)-Total	0.202		0.0040	mg/L		02-OCT-09	R964196
Total Metals in Water by ICPOES (Low)							

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

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L825404-8 LUP-20-09-28-09-W							
Sampled By: TC on 28-SEP-09 @ 14:15							
Matrix: WATER							
Total Metals in Water by ICPOES (Low)							
Calcium (Ca)-Total	60.6		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total	0.108		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total	6.09		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total	0.650		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total	4.53		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total	53.3		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	<5.0		5.0	mg/L		02-OCT-09	R964965
Ammonia-N	0.202		0.050	mg/L		02-OCT-09	R964618
Cyanide, Total	<0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Hardness (as CaCO3)	176			mg/L		03-OCT-09	
Total Suspended Solids	4.0		3.0	mg/L		05-OCT-09	R970166
pH	6.29		0.10	pH		02-OCT-09	R964965
L825404-9 LUP-21-09-28-09-W							
Sampled By: TC on 28-SEP-09 @ 14:30							
Matrix: WATER							
Total Metals - CCME							
Mercury (Hg) - Total							
Mercury (Hg)-Total	<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)							
Aluminum (Al)-Total	0.030		0.010	mg/L		02-OCT-09	R964196
Antimony (Sb)-Total	<0.00040		0.00040	mg/L		02-OCT-09	R964196
Arsenic (As)-Total	0.00044		0.00040	mg/L		02-OCT-09	R964196
Barium (Ba)-Total	<0.0030		0.0030	mg/L		02-OCT-09	R964196
Beryllium (Be)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Boron (B)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Cadmium (Cd)-Total	<0.000050		0.000050	mg/L		02-OCT-09	R964196
Chromium (Cr)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Cobalt (Co)-Total	<0.0020		0.0020	mg/L		02-OCT-09	R964196
Copper (Cu)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Lead (Pb)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Lithium (Li)-Total	<0.010		0.010	mg/L		02-OCT-09	R964196
Molybdenum (Mo)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Nickel (Ni)-Total	<0.0020		0.0020	mg/L		02-OCT-09	R964196
Selenium (Se)-Total	<0.00040		0.00040	mg/L		02-OCT-09	R964196
Silver (Ag)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Thallium (Tl)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Tin (Sn)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Titanium (Ti)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Uranium (U)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Vanadium (V)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Zinc (Zn)-Total	<0.0040		0.0040	mg/L		02-OCT-09	R964196
Total Metals in Water by ICPOES (Low)							
Calcium (Ca)-Total	1.00		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total	0.038		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total	0.50		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total	<0.0020		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total	0.35		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total	<1.0		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	<5.0		5.0	mg/L		02-OCT-09	R964965

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

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L825404-9 LUP-21-09-28-09-W Sampled By: TC on 28-SEP-09 @ 14:30 Matrix: WATER							
Ammonia-N	<0.050		0.050	mg/L	08-OCT-09	02-OCT-09	R964618
Cyanide, Total	<0.0020		0.0020	mg/L		08-OCT-09	R977914
Hardness (as CaCO3)	4.5			mg/L		03-OCT-09	
Total Suspended Solids	<3.0		3.0	mg/L		05-OCT-09	R970166
pH	6.49		0.10	pH		02-OCT-09	R964965
L825404-10 LUP-22-09-28-09-W Sampled By: TC on 28-SEP-09 @ 15:30 Matrix: WATER							
Total Metals - CCME							
Mercury (Hg) - Total							
Mercury (Hg)-Total	<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)							
Aluminum (Al)-Total	0.049		0.010	mg/L		02-OCT-09	R964196
Antimony (Sb)-Total	<0.00040		0.00040	mg/L		02-OCT-09	R964196
Arsenic (As)-Total	0.00130		0.00040	mg/L		02-OCT-09	R964196
Barium (Ba)-Total	0.0086		0.0030	mg/L		02-OCT-09	R964196
Beryllium (Be)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Boron (B)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Cadmium (Cd)-Total	0.000075		0.000050	mg/L		02-OCT-09	R964196
Chromium (Cr)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Cobalt (Co)-Total	0.0090		0.0020	mg/L		02-OCT-09	R964196
Copper (Cu)-Total	0.0015		0.0010	mg/L		02-OCT-09	R964196
Lead (Pb)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Lithium (Li)-Total	<0.010		0.010	mg/L		02-OCT-09	R964196
Molybdenum (Mo)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Nickel (Ni)-Total	0.0286		0.0020	mg/L		02-OCT-09	R964196
Selenium (Se)-Total	<0.0020	DLM	0.0020	mg/L		02-OCT-09	R964196
Silver (Ag)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Thallium (Tl)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Tin (Sn)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Titanium (Ti)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Uranium (U)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Vanadium (V)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Zinc (Zn)-Total	0.0821		0.0040	mg/L		02-OCT-09	R964196
Total Metals in Water by ICPOES (Low)							
Calcium (Ca)-Total	23.7		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total	0.061		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total	2.60		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total	0.213		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total	1.92		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total	20.7		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	<5.0		5.0	mg/L		02-OCT-09	R964965
Ammonia-N	0.073		0.050	mg/L		02-OCT-09	R964618
Cyanide, Total	<0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Hardness (as CaCO3)	70.0			mg/L		03-OCT-09	
Total Suspended Solids	<3.0		3.0	mg/L		05-OCT-09	R970166
pH	6.29		0.10	pH		02-OCT-09	R964965
L825404-11 LUP-24-09-28-09-W Sampled By: TC on 28-SEP-09 @ 15:35 Matrix: WATER							

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

ALS LABORATORY GROUP ANALYTICAL REPORT

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

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L825404-12 LUP-25-09-28-09-W							
Sampled By: TC on 28-SEP-09 @ 15:50							
Matrix: WATER							
Total Metals in Water by ICPMS (Low)							
Boron (B)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Cadmium (Cd)-Total	0.000300		0.000050	mg/L		02-OCT-09	R964196
Chromium (Cr)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Cobalt (Co)-Total	<0.0020		0.0020	mg/L		02-OCT-09	R964196
Copper (Cu)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Lead (Pb)-Total	0.00020		0.00010	mg/L		02-OCT-09	R964196
Lithium (Li)-Total	<0.010		0.010	mg/L		02-OCT-09	R964196
Molybdenum (Mo)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Nickel (Ni)-Total	0.0053		0.0020	mg/L		02-OCT-09	R964196
Selenium (Se)-Total	<0.00040		0.00040	mg/L		02-OCT-09	R964196
Silver (Ag)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Thallium (Tl)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Tin (Sn)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Titanium (Ti)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Uranium (U)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Vanadium (V)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Zinc (Zn)-Total	0.0160		0.0040	mg/L		02-OCT-09	R964196
Total Metals in Water by ICPOES (Low)							
Calcium (Ca)-Total	5.42		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total	0.014		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total	0.90		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total	0.0235		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total	0.70		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total	4.6		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	<5.0		5.0	mg/L		02-OCT-09	R964965
Ammonia-N	<0.050		0.050	mg/L		02-OCT-09	R964618
Cyanide, Total	<0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Hardness (as CaCO3)	17.2			mg/L		03-OCT-09	
Total Suspended Solids	<3.0		3.0	mg/L		05-OCT-09	R970166
pH	6.52		0.10	pH		02-OCT-09	R964965
L825404-13 LUP-25-09-28-09-WD							
Sampled By: TC on 28-SEP-09 @ 15:50							
Matrix: WATER							
Total Metals - CCME							
Mercury (Hg) - Total							
Mercury (Hg)-Total	<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)							
Aluminum (Al)-Total	0.019		0.010	mg/L		02-OCT-09	R964196
Antimony (Sb)-Total	<0.00040		0.00040	mg/L		02-OCT-09	R964196
Arsenic (As)-Total	0.00047		0.00040	mg/L		02-OCT-09	R964196
Barium (Ba)-Total	0.0041		0.0030	mg/L		02-OCT-09	R964196
Beryllium (Be)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Boron (B)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Cadmium (Cd)-Total	0.000460		0.000050	mg/L		02-OCT-09	R964196
Chromium (Cr)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Cobalt (Co)-Total	<0.0020		0.0020	mg/L		02-OCT-09	R964196
Copper (Cu)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Lead (Pb)-Total	0.00014		0.00010	mg/L		02-OCT-09	R964196
Lithium (Li)-Total	<0.010		0.010	mg/L		02-OCT-09	R964196
Molybdenum (Mo)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196

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

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Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L825404-13	LUP-25-09-28-09-WD							
Sampled By:	TC on 28-SEP-09 @ 15:50							
Matrix:	WATER							
Total Metals in Water by ICPMS (Low)								
Nickel (Ni)-Total	0.0047			0.0020	mg/L		02-OCT-09	R964196
Selenium (Se)-Total	<0.00040			0.00040	mg/L		02-OCT-09	R964196
Silver (Ag)-Total	<0.00010			0.00010	mg/L		02-OCT-09	R964196
Thallium (Tl)-Total	<0.00010			0.00010	mg/L		02-OCT-09	R964196
Tin (Sn)-Total	<0.050			0.050	mg/L		02-OCT-09	R964196
Titanium (Ti)-Total	<0.0010			0.0010	mg/L		02-OCT-09	R964196
Uranium (U)-Total	<0.00010			0.00010	mg/L		02-OCT-09	R964196
Vanadium (V)-Total	<0.0010			0.0010	mg/L		02-OCT-09	R964196
Zinc (Zn)-Total	0.0247			0.0040	mg/L		02-OCT-09	R964196
Total Metals in Water by ICPOES (Low)								
Calcium (Ca)-Total	4.80			0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total	0.013			0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total	0.83			0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total	0.0209			0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total	0.76			0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total	4.1			1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters								
Alkalinity, Total (as CaCO3)	<5.0			5.0	mg/L		02-OCT-09	R964965
Ammonia-N	<0.050			0.050	mg/L		02-OCT-09	R964618
Cyanide, Total	<0.0020			0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Hardness (as CaCO3)	15.4				mg/L		03-OCT-09	
Total Suspended Solids	<3.0			3.0	mg/L		05-OCT-09	R970166
pH	6.52			0.10	pH		02-OCT-09	R964965
L825404-14	LUP-10-09-28-09							
Sampled By:	TC on 28-SEP-09 @ 17:00							
Matrix:	WATER							
Total Metals - CCME								
Mercury (Hg) - Total								
Mercury (Hg)-Total	<0.00010			0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)								
Aluminum (Al)-Total	0.041			0.010	mg/L		02-OCT-09	R964196
Antimony (Sb)-Total	<0.00040			0.00040	mg/L		02-OCT-09	R964196
Arsenic (As)-Total	0.00956			0.00040	mg/L		02-OCT-09	R964196
Barium (Ba)-Total	0.0148			0.0030	mg/L		02-OCT-09	R964196
Beryllium (Be)-Total	<0.0010			0.0010	mg/L		02-OCT-09	R964196
Boron (B)-Total	0.077			0.050	mg/L		02-OCT-09	R964196
Cadmium (Cd)-Total	0.000570			0.000050	mg/L		02-OCT-09	R964196
Chromium (Cr)-Total	<0.0050			0.0050	mg/L		02-OCT-09	R964196
Cobalt (Co)-Total	0.0431			0.0020	mg/L		02-OCT-09	R964196
Copper (Cu)-Total	0.0022			0.0010	mg/L		02-OCT-09	R964196
Lead (Pb)-Total	<0.00010			0.00010	mg/L		02-OCT-09	R964196
Lithium (Li)-Total	0.027			0.010	mg/L		02-OCT-09	R964196
Molybdenum (Mo)-Total	<0.0050			0.0050	mg/L		02-OCT-09	R964196
Nickel (Ni)-Total	0.0842			0.0020	mg/L		02-OCT-09	R964196
Selenium (Se)-Total	<0.0020	DLM		0.0020	mg/L		02-OCT-09	R964196
Silver (Ag)-Total	<0.00010			0.00010	mg/L		02-OCT-09	R964196
Thallium (Tl)-Total	<0.00010			0.00010	mg/L		02-OCT-09	R964196
Tin (Sn)-Total	<0.050			0.050	mg/L		02-OCT-09	R964196
Titanium (Ti)-Total	<0.0010			0.0010	mg/L		02-OCT-09	R964196
Uranium (U)-Total	<0.00010			0.00010	mg/L		02-OCT-09	R964196
Vanadium (V)-Total	<0.0010			0.0010	mg/L		02-OCT-09	R964196

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

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L825404-14 LUP-10-09-28-09 Sampled By: TC on 28-SEP-09 @ 17:00 Matrix: WATER							
Total Metals in Water by ICPMS (Low)							
Zinc (Zn)-Total	0.265		0.0040	mg/L		02-OCT-09	R964196
Total Metals in Water by ICPOES (Low)							
Calcium (Ca)-Total	79.7		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total	0.193		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total	7.33		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total	0.971		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total	5.77		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total	69.0		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters							
Cyanide, Total	0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Total Suspended Solids	4.0		3.0	mg/L		05-OCT-09	R970166
pH	6.59		0.10	pH		02-OCT-09	R964965
L825404-15 LUP-FB-09-29-09 Sampled By: TC on 29-SEP-09 @ 06:30 Matrix: WATER							
Total Metals - CCME							
Mercury (Hg) - Total							
Mercury (Hg)-Total	<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)							
Aluminum (Al)-Total	<0.010		0.010	mg/L		02-OCT-09	R964196
Antimony (Sb)-Total	<0.00040		0.00040	mg/L		02-OCT-09	R964196
Arsenic (As)-Total	<0.00040		0.00040	mg/L		02-OCT-09	R964196
Barium (Ba)-Total	<0.0030		0.0030	mg/L		02-OCT-09	R964196
Beryllium (Be)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Boron (B)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Cadmium (Cd)-Total	<0.000050		0.000050	mg/L		02-OCT-09	R964196
Chromium (Cr)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Cobalt (Co)-Total	<0.0020		0.0020	mg/L		02-OCT-09	R964196
Copper (Cu)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Lead (Pb)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Lithium (Li)-Total	<0.010		0.010	mg/L		02-OCT-09	R964196
Molybdenum (Mo)-Total	<0.0050		0.0050	mg/L		02-OCT-09	R964196
Nickel (Ni)-Total	<0.0020		0.0020	mg/L		02-OCT-09	R964196
Selenium (Se)-Total	<0.00040		0.00040	mg/L		02-OCT-09	R964196
Silver (Ag)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Thallium (Tl)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Tin (Sn)-Total	<0.050		0.050	mg/L		02-OCT-09	R964196
Titanium (Ti)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Uranium (U)-Total	<0.00010		0.00010	mg/L		02-OCT-09	R964196
Vanadium (V)-Total	<0.0010		0.0010	mg/L		02-OCT-09	R964196
Zinc (Zn)-Total	<0.0040		0.0040	mg/L		02-OCT-09	R964196
Total Metals in Water by ICPOES (Low)							
Calcium (Ca)-Total	<0.50		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total	<0.010		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total	<0.10		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total	<0.0020		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total	<0.10		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total	<1.0		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	<5.0		5.0	mg/L		02-OCT-09	R964965
Ammonia-N	<0.050		0.050	mg/L		02-OCT-09	R964618

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

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L825404-15 LUP-FB-09-29-09 Sampled By: TC on 29-SEP-09 @ 06:30 Matrix: WATER							
Cyanide, Total	<0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Hardness (as CaCO3)	<1.3			mg/L		03-OCT-09	
Total Suspended Solids	<3.0		3.0	mg/L		05-OCT-09	R970166
pH	5.95		0.10	pH		02-OCT-09	R964965
L825404-16 LUP-14-09-29-09 Sampled By: TC on 29-SEP-09 @ 07:40 Matrix: WATER							
Total Metals - CCME							
Mercury (Hg) - Total							
Mercury (Hg)-Total	<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)							
Aluminum (Al)-Total	0.057		0.010	mg/L		05-OCT-09	R974305
Antimony (Sb)-Total	<0.00040		0.00040	mg/L		05-OCT-09	R974305
Arsenic (As)-Total	0.00667		0.00040	mg/L		05-OCT-09	R974305
Barium (Ba)-Total	0.0108		0.0030	mg/L		05-OCT-09	R974305
Beryllium (Be)-Total	<0.0010		0.0010	mg/L		05-OCT-09	R974305
Boron (B)-Total	<0.050		0.050	mg/L		05-OCT-09	R974305
Cadmium (Cd)-Total	<0.000050		0.000050	mg/L		05-OCT-09	R974305
Chromium (Cr)-Total	<0.0050		0.0050	mg/L		05-OCT-09	R974305
Cobalt (Co)-Total	<0.0020		0.0020	mg/L		05-OCT-09	R974305
Copper (Cu)-Total	0.0015		0.0010	mg/L		05-OCT-09	R974305
Lead (Pb)-Total	<0.00010		0.00010	mg/L		05-OCT-09	R974305
Lithium (Li)-Total	0.046		0.010	mg/L		05-OCT-09	R974305
Molybdenum (Mo)-Total	<0.0050		0.0050	mg/L		05-OCT-09	R974305
Nickel (Ni)-Total	0.0074		0.0020	mg/L		05-OCT-09	R974305
Selenium (Se)-Total	0.0026	DLM	0.0020	mg/L		05-OCT-09	R974305
Silver (Ag)-Total	<0.00010		0.00010	mg/L		05-OCT-09	R974305
Thallium (Tl)-Total	<0.00010		0.00010	mg/L		05-OCT-09	R974305
Tin (Sn)-Total	<0.050		0.050	mg/L		05-OCT-09	R974305
Titanium (Ti)-Total	0.0023		0.0010	mg/L		05-OCT-09	R974305
Uranium (U)-Total	<0.00010		0.00010	mg/L		05-OCT-09	R974305
Vanadium (V)-Total	<0.0010		0.0010	mg/L		05-OCT-09	R974305
Zinc (Zn)-Total	0.0045		0.0040	mg/L		05-OCT-09	R974305
Total Metals in Water by ICPOES (Low)							
Calcium (Ca)-Total	26.7		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total	0.230		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total	4.63		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total	0.0306		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total	2.94		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total	22.9		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	21.2		5.0	mg/L		02-OCT-09	R964965
Ammonia-N	<0.050		0.050	mg/L		02-OCT-09	R964618
Biochemical Oxygen Demand	4.8		2.0	mg/L		02-OCT-09	R976103
Cyanide, Total	<0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
MF - Fecal Coliforms	<1		1	CFU/100mL		02-OCT-09	R972265
Hardness (as CaCO3)	85.8			mg/L		03-OCT-09	
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		02-OCT-09	R964401
Phosphorus, Total	0.025		0.020	mg/L	02-OCT-09	02-OCT-09	R967891
Total Kjeldahl Nitrogen	0.48		0.20	mg/L	06-OCT-09	06-OCT-09	R974043
Total Suspended Solids	4.0		3.0	mg/L		05-OCT-09	R970166

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

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L825404-16	LUP-14-09-29-09							
Sampled By:	TC on 29-SEP-09 @ 07:40							
Matrix:	WATER							
pH		7.32		0.10	pH		02-OCT-09	R964965
NO2, NO3, & (NO2+NO3) in Water								
Nitrate as N by IC								
Nitrate (as N)		<0.050		0.050	mg/L		02-OCT-09	R966025
Nitrate+Nitrite								
Nitrate and Nitrite as N		<0.071		0.071	mg/L		05-OCT-09	
Nitrite as N by IC								
Nitrite (as N)		<0.050		0.050	mg/L		02-OCT-09	R966025
L825404-17	LUP-10-09-29-09							
Sampled By:	TC on 29-SEP-09 @ 16:00							
Matrix:	WATER							
Total Metals - CCME								
Mercury (Hg) - Total								
Mercury (Hg)-Total		<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)								
Aluminum (Al)-Total		0.045		0.010	mg/L		03-OCT-09	R964196
Antimony (Sb)-Total		<0.00040		0.00040	mg/L		03-OCT-09	R964196
Arsenic (As)-Total		0.00990		0.00040	mg/L		03-OCT-09	R964196
Barium (Ba)-Total		0.0133		0.0030	mg/L		03-OCT-09	R964196
Beryllium (Be)-Total		<0.0010		0.0010	mg/L		03-OCT-09	R964196
Boron (B)-Total		0.078		0.050	mg/L		03-OCT-09	R964196
Cadmium (Cd)-Total		0.000270		0.000050	mg/L		03-OCT-09	R964196
Chromium (Cr)-Total		<0.0050		0.0050	mg/L		03-OCT-09	R964196
Cobalt (Co)-Total		0.0430		0.0020	mg/L		03-OCT-09	R964196
Copper (Cu)-Total		0.0023		0.0010	mg/L		03-OCT-09	R964196
Lead (Pb)-Total		<0.00010		0.00010	mg/L		03-OCT-09	R964196
Lithium (Li)-Total		0.027		0.010	mg/L		03-OCT-09	R964196
Molybdenum (Mo)-Total		<0.0050		0.0050	mg/L		03-OCT-09	R964196
Nickel (Ni)-Total		0.0840		0.0020	mg/L		03-OCT-09	R964196
Selenium (Se)-Total		0.0022	DLM	0.0020	mg/L		03-OCT-09	R964196
Silver (Ag)-Total		<0.00010		0.00010	mg/L		03-OCT-09	R964196
Thallium (Tl)-Total		<0.00010		0.00010	mg/L		03-OCT-09	R964196
Tin (Sn)-Total		<0.050		0.050	mg/L		03-OCT-09	R964196
Titanium (Ti)-Total		<0.0010		0.0010	mg/L		03-OCT-09	R964196
Uranium (U)-Total		<0.00010		0.00010	mg/L		03-OCT-09	R964196
Vanadium (V)-Total		<0.0010		0.0010	mg/L		03-OCT-09	R964196
Zinc (Zn)-Total		0.264		0.0040	mg/L		03-OCT-09	R964196
Total Metals in Water by ICPOES (Low)								
Calcium (Ca)-Total		67.8		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total		0.173		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total		6.67		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total		0.825		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total		5.45		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total		64.3		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters								
Cyanide, Total		<0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Total Suspended Solids		4.0		3.0	mg/L		05-OCT-09	R970166
pH		6.64		0.10	pH		02-OCT-09	R964965
L825404-18	POND 2 TOXICITY							
Sampled By:	TC on 30-SEP-09 @ 11:40							
Matrix:	WATER							
Miscellaneous Parameters								

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

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L825404-18	POND 2 TOXICITY							
Sampled By:	TC on 30-SEP-09 @ 11:40							
Matrix:	WATER							
Daphnia Magna		See Attached					02-OCT-09	R1005703
Special Request		See Attached					02-OCT-09	R1005703
Special Request		See Attached					02-OCT-09	R1005703
Trout Bioassay		See Attached					02-OCT-09	R1005703
L825404-19	LUP-10-09-30-09-W							
Sampled By:	TC on 30-SEP-09 @ 12:10							
Matrix:	WATER							
Total Metals - CCME								
Mercury (Hg) - Total								
Mercury (Hg)-Total		<0.00010		0.00010	mg/L		06-OCT-09	R975631
Total Metals in Water by ICPMS (Low)								
Aluminum (Al)-Total		0.048		0.010	mg/L		03-OCT-09	R964196
Antimony (Sb)-Total		<0.00040		0.00040	mg/L		03-OCT-09	R964196
Arsenic (As)-Total		0.00992		0.00040	mg/L		03-OCT-09	R964196
Barium (Ba)-Total		0.0135		0.0030	mg/L		03-OCT-09	R964196
Beryllium (Be)-Total		<0.0010		0.0010	mg/L		03-OCT-09	R964196
Boron (B)-Total		0.078		0.050	mg/L		03-OCT-09	R964196
Cadmium (Cd)-Total		0.000255		0.000050	mg/L		03-OCT-09	R964196
Chromium (Cr)-Total		<0.0050		0.0050	mg/L		03-OCT-09	R964196
Cobalt (Co)-Total		0.0433		0.0020	mg/L		03-OCT-09	R964196
Copper (Cu)-Total		0.0024		0.0010	mg/L		03-OCT-09	R964196
Lead (Pb)-Total		<0.00010		0.00010	mg/L		03-OCT-09	R964196
Lithium (Li)-Total		0.027		0.010	mg/L		03-OCT-09	R964196
Molybdenum (Mo)-Total		<0.0050		0.0050	mg/L		03-OCT-09	R964196
Nickel (Ni)-Total		0.0840		0.0020	mg/L		03-OCT-09	R964196
Selenium (Se)-Total		<0.0020	DLM	0.0020	mg/L		03-OCT-09	R964196
Silver (Ag)-Total		<0.00010		0.00010	mg/L		03-OCT-09	R964196
Thallium (Tl)-Total		<0.00010		0.00010	mg/L		03-OCT-09	R964196
Tin (Sn)-Total		<0.050		0.050	mg/L		03-OCT-09	R964196
Titanium (Ti)-Total		<0.0010		0.0010	mg/L		03-OCT-09	R964196
Uranium (U)-Total		<0.00010		0.00010	mg/L		03-OCT-09	R964196
Vanadium (V)-Total		<0.0010		0.0010	mg/L		03-OCT-09	R964196
Zinc (Zn)-Total		0.265		0.0040	mg/L		03-OCT-09	R964196
Total Metals in Water by ICPOES (Low)								
Calcium (Ca)-Total		67.9		0.50	mg/L		02-OCT-09	R967646
Iron (Fe)-Total		0.198		0.010	mg/L		02-OCT-09	R967646
Magnesium (Mg)-Total		6.51		0.10	mg/L		02-OCT-09	R967646
Manganese (Mn)-Total		0.831		0.0020	mg/L		02-OCT-09	R967646
Potassium (K)-Total		5.33		0.10	mg/L		02-OCT-09	R967646
Sodium (Na)-Total		63.4		1.0	mg/L		02-OCT-09	R967646
Miscellaneous Parameters								
Alkalinity, Total (as CaCO3)		<5.0		5.0	mg/L		02-OCT-09	R964965
Ammonia-N		0.421		0.050	mg/L		02-OCT-09	R964618
Cyanide, Total		0.0020		0.0020	mg/L	08-OCT-09	08-OCT-09	R977914
Hardness (as CaCO3)		196			mg/L		03-OCT-09	
Total Suspended Solids		<3.0		3.0	mg/L		05-OCT-09	R970166
pH		6.70		0.10	pH		02-OCT-09	R964965

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
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Sample Parameter Qualifier Key:

Qualifier	Description
DLM	Detection Limit Adjustment For Sample Matrix Effects
E	Matrix Spike recovery outside ALS DQO due to analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TOT-ED	Water	Alkalinity, Total	APHA 2320 B-Auto-Pot. Titration
BOD-ED	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O2 electrode
CN-TOT-WT	Water	Cyanide, Total	APHA 4500CN C E-STRONG ACID DIST COLORIM
Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.			
ETL-HARDNESS-TOT-ED	Water	Hardness (from Total Ca and Mg)	APHA 2340 B-Calculation
FCC-MF-PB	Water	Fecal Coliform Count-MF	APHA 9222D MF
HG-T-CVAA-ED	Water	Mercury (Hg) - Total	EPA 245.7 / EPA 245.1
MET-T-L-ICP-ED	Water	Total Metals in Water by ICPOES (Low)	APHA 3120 B-ICP-OES
MET-T-L-MS-ED	Water	Total Metals in Water by ICPMS (Low)	SW 846 - 6020-ICPMS
N-TOTKJ-ED	Water	Total Kjeldahl Nitrogen	APHA 4500N-C -Dig.-Auto-Colorimetry
NH4-ED	Water	Ammonia-N	APHA4500NH3F Colorimetry
NO2+NO3-CALC-ED	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-ED	Water	Nitrite as N by IC	APHA 4110 B-ION CHROMATOGRAPHY
NO3-IC-ED	Water	Nitrate as N by IC	APHA 4110 B-ION CHROMATOGRAPHY
P-TOTAL-ED	Water	Phosphorus, Total	APHA 4500 P B,E-Auto-Colorimetry
PH-ED	Water	pH	APHA 4500 H-Electrode
PO4-ED	Water	Orthophosphate (PO4-P)	APHA 4500 P B,E-Auto-Colorimetry
SOLIDS-TOTSUS-ED	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
SPECIAL REQUEST-HQ	Misc.	Special Request HydroQual	SEE SUBLET LAB RESULTS

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

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
WT	ALS LABORATORY GROUP - WATERLOO, ONTARIO, CANADA
PB	PBR LABORATORIES
ED	ALS LABORATORY GROUP - EDMONTON, ALBERTA, CANADA
HQ	HydroQual Laboratories Ltd. - Calgary, Alberta, Canada

Chain of Custody Numbers:

08-012392	08-012393
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Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mk/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting 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.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group Quality Control Report

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Contact: ANDREW MITCHELL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
ALK-TOT-ED		Water							
Batch	R964965								
WG1013226-4	LCS								
Alkalinity, Total (as CaCO3)			99		%		89-109	02-OCT-09	
WG1013226-1	MB								
Alkalinity, Total (as CaCO3)			<5.0		mg/L		5	02-OCT-09	
BOD-ED		Water							
Batch	R976103								
WG1013621-4	DUP	L825901-3							
Biochemical Oxygen Demand			2.8	2.8	J	mg/L	0.0	8	02-OCT-09
WG1013621-3	IRM	BOD_SEED							
Biochemical Oxygen Demand			0.65		mg/L		0.2-1.7	02-OCT-09	
WG1013621-2	LCS								
Biochemical Oxygen Demand			101		%		85-115	02-OCT-09	
WG1013621-1	MB								
Biochemical Oxygen Demand			<0.20		mg/L		0.2	02-OCT-09	
CN-TOT-WT		Water							
Batch	R977914								
WG1016644-2	CVS								
Cyanide, Total			100		%		85-115	08-OCT-09	
WG1016644-3	DUP	L825404-1							
Cyanide, Total			0.0020	0.0020	J	mg/L	0.0000	0.008	08-OCT-09
WG1016644-1	MB								
Cyanide, Total			<0.0020		mg/L		0.002	08-OCT-09	
HG-T-CVAA-ED		Water							
Batch	R975631								
WG1015377-12	DUP	L825901-1							
Mercury (Hg)-Total			<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-OCT-09
WG1015377-2	LCS								
Mercury (Hg)-Total			95		%		80-120	06-OCT-09	
WG1015377-3	LCSD	WG1015377-2							
Mercury (Hg)-Total			95	104		%	8.5	20	06-OCT-09
WG1015377-1	MB								
Mercury (Hg)-Total			<0.00010		mg/L		0.0001	06-OCT-09	
WG1015377-13	MS	L825901-1							
Mercury (Hg)-Total			96		%		70-130	06-OCT-09	
MET-T-L-ICP-ED		Water							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-L-ICP-ED		Water						
Batch	R967646							
WG1013370-3 DUP		L824714-1						
Calcium (Ca)-Total		48.5	46.7		mg/L	3.8	26	02-OCT-09
Iron (Fe)-Total		2.52	2.45		mg/L	2.8	26	02-OCT-09
Magnesium (Mg)-Total		19.3	18.6		mg/L	3.5	26	02-OCT-09
Manganese (Mn)-Total		0.573	0.555		mg/L	3.2	26	02-OCT-09
Potassium (K)-Total		2.44	2.43		mg/L	0.036	26	02-OCT-09
Sodium (Na)-Total		52.3	51.2		mg/L	2.0	26	02-OCT-09
WG1013394-2 DUP		L825404-19						
Calcium (Ca)-Total		67.9	67.7		mg/L	0.23	26	02-OCT-09
Iron (Fe)-Total		0.198	0.209		mg/L	5.3	26	02-OCT-09
Magnesium (Mg)-Total		6.51	6.66		mg/L	2.2	26	02-OCT-09
Manganese (Mn)-Total		0.831	0.815		mg/L	2.0	26	02-OCT-09
Potassium (K)-Total		5.33	5.28		mg/L	0.95	26	02-OCT-09
Sodium (Na)-Total		63.4	62.8		mg/L	1.0	26	02-OCT-09
WG1013370-2 LCS								
Calcium (Ca)-Total			91		%		63-138	02-OCT-09
Iron (Fe)-Total			92		%		63-138	02-OCT-09
Magnesium (Mg)-Total			90		%		63-138	02-OCT-09
Manganese (Mn)-Total			90		%		63-138	02-OCT-09
Potassium (K)-Total			85		%		63-138	02-OCT-09
Sodium (Na)-Total			89		%		63-138	02-OCT-09
WG1013370-1 MB								
Calcium (Ca)-Total			<0.50		mg/L		0.5	02-OCT-09
Magnesium (Mg)-Total			<0.10		mg/L		0.1	02-OCT-09
Manganese (Mn)-Total			<0.0020		mg/L		0.002	02-OCT-09
Potassium (K)-Total			<0.10		mg/L		0.1	02-OCT-09
Sodium (Na)-Total			<1.0		mg/L		1	02-OCT-09
Iron (Fe)-Total			0.012		mg/L		0.01	02-OCT-09
WG1013394-1 MB								
Calcium (Ca)-Total			<0.50		mg/L		0.5	02-OCT-09
Iron (Fe)-Total			<0.010		mg/L		0.01	02-OCT-09
Magnesium (Mg)-Total			<0.10		mg/L		0.1	02-OCT-09
Manganese (Mn)-Total			<0.0020		mg/L		0.002	02-OCT-09
Sodium (Na)-Total			<1.0		mg/L		1	02-OCT-09
Potassium (K)-Total			<0.1				0.1	

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-L-ICP-ED		Water						
Batch	R967646							
WG1013394-1 MB								
Potassium (K)-Total			<0.1		mg/L		0.1	02-OCT-09
WG1013370-4 MS		L824714-1						
Calcium (Ca)-Total			101		%		63-138	02-OCT-09
Iron (Fe)-Total			93		%		63-138	02-OCT-09
Magnesium (Mg)-Total			96		%		63-138	02-OCT-09
Manganese (Mn)-Total			94		%		63-138	02-OCT-09
Potassium (K)-Total			90		%		63-138	02-OCT-09
Sodium (Na)-Total			93		%		63-138	02-OCT-09
WG1013394-3 MS		L825404-19						
Calcium (Ca)-Total			94		%		63-138	02-OCT-09
Iron (Fe)-Total			94		%		63-138	02-OCT-09
Magnesium (Mg)-Total			95		%		63-138	02-OCT-09
Manganese (Mn)-Total			93		%		63-138	02-OCT-09
Potassium (K)-Total			92		%		63-138	02-OCT-09
Sodium (Na)-Total			101		%		63-138	02-OCT-09
MET-T-L-MS-ED		Water						
Batch	R964196							
WG1013394-2 DUP		L825404-19						
Aluminum (Al)-Total		0.048	0.047	J	mg/L	0.001	0.04	03-OCT-09
Antimony (Sb)-Total		<0.00040	<0.00040	RPD-NA	mg/L	N/A	10	03-OCT-09
Arsenic (As)-Total		0.00992	0.00992		mg/L	0.081	11	03-OCT-09
Barium (Ba)-Total		0.0135	0.0133		mg/L	1.4	10	03-OCT-09
Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	26	03-OCT-09
Boron (B)-Total		0.078	0.0776		mg/L	0.64	10	03-OCT-09
Cadmium (Cd)-Total		0.000255	0.000255	J	mg/L	0.000000	0.0002	03-OCT-09
Chromium (Cr)-Total		<0.0050	<0.00080	RPD-NA	mg/L	N/A	18	03-OCT-09
Cobalt (Co)-Total		0.0433	0.0430		mg/L	0.87	12	03-OCT-09
Copper (Cu)-Total		0.0024	0.0023	J	mg/L	0.0000	0.004	03-OCT-09
Lead (Pb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	12	03-OCT-09
Lithium (Li)-Total		0.027	0.0272	J	mg/L	0.0001	0.024	03-OCT-09
Molybdenum (Mo)-Total		<0.0050	0.00025	J	mg/L	0.00000	0.0004	03-OCT-09
Nickel (Ni)-Total		0.0840	0.0834		mg/L	0.68	10	03-OCT-09
Selenium (Se)-Total		<0.0020	0.00224	J	mg/L	0.00027	0.0016	03-OCT-09

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-L-MS-ED		Water						
Batch	R964196							
WG1013394-2 DUP		L825404-19						
Silver (Ag)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	33	03-OCT-09
Thallium (Tl)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	26	03-OCT-09
Tin (Sn)-Total		<0.050	<0.00040	RPD-NA	mg/L	N/A	25	03-OCT-09
Titanium (Ti)-Total		<0.0010	<0.00060	RPD-NA	mg/L	N/A	32	03-OCT-09
Uranium (U)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	10	03-OCT-09
Vanadium (V)-Total		<0.0010	<0.00050	RPD-NA	mg/L	N/A	24	03-OCT-09
Zinc (Zn)-Total		0.265	0.265		mg/L	0.062	40	03-OCT-09
WG1013394-1 MB								
Aluminum (Al)-Total			<0.010		mg/L		0.05	02-OCT-09
Antimony (Sb)-Total			<0.00040		mg/L		0.002	02-OCT-09
Arsenic (As)-Total			<0.00040		mg/L		0.002	02-OCT-09
Barium (Ba)-Total			<0.00020		mg/L		0.001	02-OCT-09
Beryllium (Be)-Total			<0.0010		mg/L		0.005	02-OCT-09
Boron (B)-Total			<0.0040		mg/L		0.02	02-OCT-09
Cadmium (Cd)-Total			<0.000050		mg/L		0.00025	02-OCT-09
Chromium (Cr)-Total			<0.00080		mg/L		0.004	02-OCT-09
Cobalt (Co)-Total			<0.00020		mg/L		0.001	02-OCT-09
Copper (Cu)-Total			<0.0010		mg/L		0.005	02-OCT-09
Lead (Pb)-Total			<0.00010		mg/L		0.0005	02-OCT-09
Lithium (Li)-Total			<0.0060		mg/L		0.006	02-OCT-09
Molybdenum (Mo)-Total			<0.00010		mg/L		0.0005	02-OCT-09
Nickel (Ni)-Total			<0.00020		mg/L		0.001	02-OCT-09
Selenium (Se)-Total			<0.00040		mg/L		0.002	02-OCT-09
Silver (Ag)-Total			<0.00010		mg/L		0.0005	02-OCT-09
Thallium (Tl)-Total			<0.00010		mg/L		0.0005	02-OCT-09
Tin (Sn)-Total			<0.00040		mg/L		0.002	02-OCT-09
Titanium (Ti)-Total			<0.00060		mg/L		0.003	02-OCT-09
Uranium (U)-Total			<0.00010		mg/L		0.0005	02-OCT-09
Vanadium (V)-Total			<0.00050		mg/L		0.0025	02-OCT-09
Zinc (Zn)-Total			<0.0040		mg/L		0.02	02-OCT-09
WG1013394-3 MS		L825404-19						
Aluminum (Al)-Total			107		%		71-127	03-OCT-09
Antimony (Sb)-Total			103		%		80-116	03-OCT-09

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-L-MS-ED		Water						
Batch	R964196							
WG1013394-3 MS		L825404-19						
Arsenic (As)-Total			101		%		78-117	03-OCT-09
Barium (Ba)-Total			94		%		78-121	03-OCT-09
Beryllium (Be)-Total			97		%		68-132	03-OCT-09
Boron (B)-Total			97		%		75-122	03-OCT-09
Cadmium (Cd)-Total			100		%		83-114	03-OCT-09
Chromium (Cr)-Total			98		%		83-113	03-OCT-09
Cobalt (Co)-Total			99		%		87-114	03-OCT-09
Copper (Cu)-Total			99		%		86-114	03-OCT-09
Lead (Pb)-Total			99		%		80-121	03-OCT-09
Lithium (Li)-Total			96		%		74-126	03-OCT-09
Molybdenum (Mo)-Total			102		%		79-117	03-OCT-09
Nickel (Ni)-Total			98		%		76-114	03-OCT-09
Selenium (Se)-Total			98		%		69-127	03-OCT-09
Silver (Ag)-Total			92		%		39-134	03-OCT-09
Thallium (Tl)-Total			101		%		80-123	03-OCT-09
Tin (Sn)-Total			102		%		81-120	03-OCT-09
Titanium (Ti)-Total			100		%		70-130	03-OCT-09
Uranium (U)-Total			102		%		81-123	03-OCT-09
Vanadium (V)-Total			99		%		80-115	03-OCT-09
Zinc (Zn)-Total			110		%		64-125	03-OCT-09
Batch	R974305							
WG1013370-3 DUP		L824714-1						
Aluminum (Al)-Total		<0.020	0.017	J	mg/L	0.002	0.04	05-OCT-09
Antimony (Sb)-Total		<0.00040	<0.00040	RPD-NA	mg/L	N/A	10	05-OCT-09
Arsenic (As)-Total		0.00198	0.00200	J	mg/L	0.00002	0.0016	05-OCT-09
Barium (Ba)-Total		0.0262	0.0261		mg/L	0.096	10	05-OCT-09
Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	26	05-OCT-09
Boron (B)-Total		0.067	0.0612		mg/L	9.0	10	05-OCT-09
Cadmium (Cd)-Total		<0.00020	<0.000050	RPD-NA	mg/L	N/A	31	05-OCT-09
Chromium (Cr)-Total		<0.00080	<0.00080	RPD-NA	mg/L	N/A	18	05-OCT-09
Cobalt (Co)-Total		0.00060	0.00063	J	mg/L	0.00003	0.0008	05-OCT-09
Copper (Cu)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	17	05-OCT-09
Lead (Pb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	12	05-OCT-09

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-L-MS-ED		Water						
Batch	R974305							
WG1013370-3 DUP		L824714-1						
Lithium (Li)-Total		0.0275	0.0266	J	mg/L	0.0009	0.024	05-OCT-09
Molybdenum (Mo)-Total		0.00015	0.00015	J	mg/L	0.00000	0.0004	05-OCT-09
Nickel (Ni)-Total		0.00330	0.00277		mg/L	7.3	10	05-OCT-09
Selenium (Se)-Total		0.00043	0.00046	J	mg/L	0.00003	0.0016	05-OCT-09
Silver (Ag)-Total		<0.00040	<0.00010	RPD-NA	mg/L	N/A	33	05-OCT-09
Thallium (Tl)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	26	05-OCT-09
Tin (Sn)-Total		<0.00040	<0.00040	RPD-NA	mg/L	N/A	25	05-OCT-09
Titanium (Ti)-Total		<0.0050	0.00280	J	mg/L	0.00008	0.0024	05-OCT-09
Uranium (U)-Total		0.00014	0.00014	J	mg/L	0.00000	0.0004	05-OCT-09
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	24	05-OCT-09
Zinc (Zn)-Total		<0.0040	<0.0040	RPD-NA	mg/L	N/A	40	05-OCT-09
WG1013370-2 LCS								
Zinc (Zn)-Total			93		%		80-120	05-OCT-09
Aluminum (Al)-Total			109		%		80-120	05-OCT-09
Antimony (Sb)-Total			110		%		80-120	05-OCT-09
Arsenic (As)-Total			101		%		80-120	05-OCT-09
Barium (Ba)-Total			101		%		80-120	05-OCT-09
Beryllium (Be)-Total			97		%		80-120	05-OCT-09
Boron (B)-Total			89		%		80-120	05-OCT-09
Cadmium (Cd)-Total			97		%		80-120	05-OCT-09
Chromium (Cr)-Total			99		%		80-120	05-OCT-09
Cobalt (Co)-Total			100		%		80-120	05-OCT-09
Copper (Cu)-Total			97		%		80-120	05-OCT-09
Lead (Pb)-Total			93		%		80-120	05-OCT-09
Lithium (Li)-Total			89		%		80-120	05-OCT-09
Molybdenum (Mo)-Total			106		%		80-120	05-OCT-09
Nickel (Ni)-Total			99		%		80-120	05-OCT-09
Selenium (Se)-Total			95		%		80-120	05-OCT-09
Silver (Ag)-Total			87		%		80-120	05-OCT-09
Thallium (Tl)-Total			97		%		80-120	05-OCT-09
Tin (Sn)-Total			107		%		80-120	05-OCT-09
Titanium (Ti)-Total			105		%		80-120	05-OCT-09
Uranium (U)-Total			94		%		80-120	05-OCT-09

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-L-MS-ED		Water						
Batch	R974305							
WG1013370-2 LCS								
Vanadium (V)-Total			100		%		80-120	05-OCT-09
WG1013370-1 MB								
Aluminum (Al)-Total			<0.010		mg/L		0.05	05-OCT-09
Antimony (Sb)-Total			<0.00040		mg/L		0.002	05-OCT-09
Arsenic (As)-Total			<0.00040		mg/L		0.002	05-OCT-09
Barium (Ba)-Total			<0.00020		mg/L		0.001	05-OCT-09
Beryllium (Be)-Total			<0.0010		mg/L		0.005	05-OCT-09
Boron (B)-Total			<0.0040		mg/L		0.02	05-OCT-09
Cadmium (Cd)-Total			<0.000050		mg/L		0.00025	05-OCT-09
Chromium (Cr)-Total			<0.00080		mg/L		0.004	05-OCT-09
Cobalt (Co)-Total			<0.00020		mg/L		0.001	05-OCT-09
Copper (Cu)-Total			<0.0010		mg/L		0.005	05-OCT-09
Lead (Pb)-Total			<0.00010		mg/L		0.0005	05-OCT-09
Lithium (Li)-Total			<0.0060		mg/L		0.006	05-OCT-09
Molybdenum (Mo)-Total			<0.00010		mg/L		0.0005	05-OCT-09
Nickel (Ni)-Total			<0.00020		mg/L		0.001	05-OCT-09
Selenium (Se)-Total			<0.00040		mg/L		0.002	05-OCT-09
Silver (Ag)-Total			<0.00010		mg/L		0.0005	05-OCT-09
Thallium (Tl)-Total			<0.00010		mg/L		0.0005	05-OCT-09
Tin (Sn)-Total			<0.00040		mg/L		0.002	05-OCT-09
Titanium (Ti)-Total			<0.00060		mg/L		0.003	05-OCT-09
Uranium (U)-Total			<0.00010		mg/L		0.0005	05-OCT-09
Vanadium (V)-Total			<0.00050		mg/L		0.0025	05-OCT-09
Zinc (Zn)-Total			<0.0040		mg/L		0.02	05-OCT-09
WG1013370-4 MS		L824714-1						
Aluminum (Al)-Total			101		%		71-127	05-OCT-09
Antimony (Sb)-Total			104		%		80-116	05-OCT-09
Arsenic (As)-Total			102		%		78-117	05-OCT-09
Barium (Ba)-Total			104		%		78-121	05-OCT-09
Beryllium (Be)-Total			87		%		68-132	05-OCT-09
Boron (B)-Total			85		%		75-122	05-OCT-09
Cadmium (Cd)-Total			99		%		83-114	05-OCT-09
Chromium (Cr)-Total			98		%		83-113	05-OCT-09

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-L-MS-ED		Water						
Batch	R974305							
WG1013370-4 MS		L824714-1						
Cobalt (Co)-Total			104		%		87-114	05-OCT-09
Copper (Cu)-Total			100		%		86-114	05-OCT-09
Lead (Pb)-Total			88		%		80-121	05-OCT-09
Lithium (Li)-Total			92		%		74-126	05-OCT-09
Molybdenum (Mo)-Total			106		%		79-117	05-OCT-09
Nickel (Ni)-Total			102		%		76-114	05-OCT-09
Selenium (Se)-Total			96		%		69-127	05-OCT-09
Silver (Ag)-Total			73		%		39-134	05-OCT-09
Thallium (Tl)-Total			91		%		80-123	05-OCT-09
Tin (Sn)-Total			103		%		81-120	05-OCT-09
Titanium (Ti)-Total			101		%		70-130	05-OCT-09
Uranium (U)-Total			100		%		81-123	05-OCT-09
Vanadium (V)-Total			101		%		80-115	05-OCT-09
Zinc (Zn)-Total			93		%		64-125	05-OCT-09
N-TOTKJ-ED		Water						
Batch	R974043							
WG1015011-5 DUP		L825578-1						
Total Kjeldahl Nitrogen		<0.20	<0.20	RPD-NA	mg/L	N/A	17	06-OCT-09
WG1015011-2 LCS								
Total Kjeldahl Nitrogen			90		%		81-114	06-OCT-09
WG1015011-3 LCS								
Total Kjeldahl Nitrogen			83		%		69-131	06-OCT-09
WG1015011-4 LCS								
Total Kjeldahl Nitrogen			90		%		83-118	06-OCT-09
WG1015011-1 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	06-OCT-09
WG1015011-6 MS		L825578-1						
Total Kjeldahl Nitrogen			92		%		61-140	06-OCT-09
NH4-ED		Water						
Batch	R964618							
WG1013202-4 DUP		L824968-21						
Ammonia-N		<0.050	<0.050	RPD-NA	mg/L	N/A	10	02-OCT-09
WG1013202-6 DUP		L825715-1						
Ammonia-N		1.39	1.40		mg/L	0.80	10	02-OCT-09
WG1013202-7 DUP		L825818-5						

ALS Laboratory Group Quality Control Report

Workorder: L825404

Report Date: 23-OCT-09

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH4-ED		Water						
Batch	R964618							
WG1013202-7	DUP	L825818-5						
Ammonia-N		<0.050	<0.050	RPD-NA	mg/L	N/A	10	02-OCT-09
WG1013202-2	LCS		100		%		91-112	02-OCT-09
Ammonia-N								
WG1013202-1	MB		<0.050		mg/L		0.05	02-OCT-09
Ammonia-N								
WG1013202-3	MS	L824733-2	94		%		75-122	02-OCT-09
Ammonia-N								
WG1013202-5	MS	L825071-2	95		%		75-122	02-OCT-09
Ammonia-N								
NO2-IC-ED		Water						
Batch	R966025							
WG1013769-5	DUP	L825837-1						
Nitrite (as N)		0.132	0.136	J	mg/L	0.004	0.2	02-OCT-09
WG1013769-2	LCS		94		%		85-115	02-OCT-09
Nitrite (as N)								
WG1013769-1	MB		<0.050		mg/L		0.05	02-OCT-09
Nitrite (as N)								
WG1013769-6	MS	L825837-1	104		%		75-125	02-OCT-09
Nitrite (as N)								
NO3-IC-ED		Water						
Batch	R966025							
WG1013769-5	DUP	L825837-1						
Nitrate (as N)		0.405	0.395	J	mg/L	0.010	0.2	02-OCT-09
WG1013769-2	LCS		104		%		85-115	02-OCT-09
Nitrate (as N)								
WG1013769-6	MS	L825837-1	112		%		75-125	02-OCT-09
Nitrate (as N)								
P-TOTAL-ED		Water						
Batch	R967891							
WG1013543-3	DUP	L825374-1						
Phosphorus, Total		<0.020	<0.020	RPD-NA	mg/L	N/A	9.5	02-OCT-09
WG1013543-2	LCS		102		%		86-112	02-OCT-09
Phosphorus, Total								
WG1013543-1	MB		<0.020		mg/L		0.02	02-OCT-09
Phosphorus, Total								
WG1013543-4	MS	L825374-1						

ALS Laboratory Group Quality Control Report

Workorder: L825404

Report Date: 23-OCT-09

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-TOTAL-ED	Water							
Batch R967891								
WG1013543-4 MS		L825374-1						
Phosphorus, Total			85		%		79-122	02-OCT-09
PH-ED	Water							
Batch R964965								
WG1013226-3 LCS								
pH			7.00		pH		6.9-7.1	02-OCT-09
PO4-ED	Water							
Batch R964401								
WG1013241-3 DUP		L824644-6						
Orthophosphate (PO4-P)		0.038	0.038	J	mg/L	0.001	0.04	02-OCT-09
WG1013241-2 LCS								
Orthophosphate (PO4-P)			100		%		80-120	02-OCT-09
WG1013241-1 MB								
Orthophosphate (PO4-P)			<0.010		mg/L		0.01	02-OCT-09
WG1013241-4 MS		L824644-6						
Orthophosphate (PO4-P)			97		%		70-130	02-OCT-09
SOLIDS-TOTSUS-ED	Water							
Batch R970166								
WG1014206-3 DUP		L824968-19						
Total Suspended Solids		12.0	15.0	J	mg/L	3.0	12	05-OCT-09
WG1014206-4 DUP		L825404-8						
Total Suspended Solids		4.0	<3.0	RPD-NA	mg/L	N/A	16	05-OCT-09
WG1014206-5 DUP		L825892-2						
Total Suspended Solids		<3.0	<3.0	RPD-NA	mg/L	N/A	16	05-OCT-09
WG1014206-6 DUP		L826113-5						
Total Suspended Solids		<3.0	6.0	RPD-NA	mg/L	N/A	16	05-OCT-09
WG1014206-2 LCS								
Total Suspended Solids			92		%		82-111	05-OCT-09
WG1014206-1 MB								
Total Suspended Solids			<3.0		mg/L		3	05-OCT-09

ALS Laboratory Group Quality Control Report

Workorder: L825404

Report Date: 23-OCT-09

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Legend:

Limit	99% Confidence Interval (Laboratory Control 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

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Result Summary

Client: ALS106
 Reference: 09-1808-01-AGD

Client: ALS Laboratory Group; operation Edmonton

Sample: L825404-18

Pond 2 Toxicity

Collection: collected on 2009/09/30 at not given by not given

Receipt: received on 2009/10/02 at 0929 by E.A. Benner

Containers: received 6 x 20L pails at 11 °C, in good condition with no seals and no initials

Description: type: water, collection method: not given

Test: started on 2009/10/02 ; ended on 2009/10/05

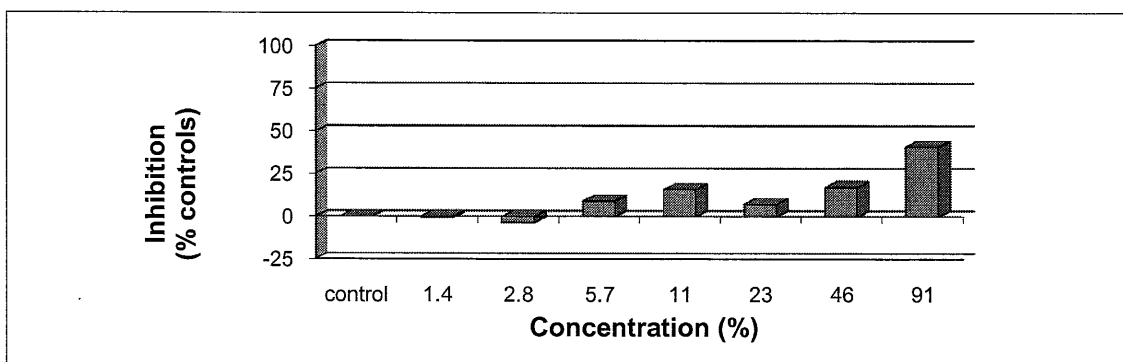
Contents

Result Summary.....	1
Test Conditions.....	2
Test Data.....	4
Comments/Statistics..	5
QA/QC.....	6

Result:

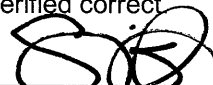
	Endpoint (72-hour)	Value	Confidence Limits (95%)			Method Calculated
			lower	upper		
Chronic:	IC25	57	45	70	%	Log-Gompertz
(growth)	IC50	>91	87	>91	%	Log-Gompertz

Notes: ICx, concentrations inhibiting growth by 'x' percent relative to controls; CV, coefficient of variation (%);
 SD, standard deviation



The test data and results are authorized and verified correct


 E. Blais, B.Sc., Technical Lead


 S. Krishnappa, B.Sc., Quality Coordinator

Our liability is limited to the cost of the test requested. The test results only relate to the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results.

Test Conditions

Client: ALS106 Reference: 09-1808-01-AGD

Method: Biological Test Method: Growth Inhibition Test Using a Freshwater Alga
Pseudokirchneriella subcapitata (formerly *Selenastrum capricornutum*) .
Environment Canada, EPS 1/RM/25, 2nd Edition, March 2007

Test type: Algal Growth Inhibition Test (HQ 4.4.2.7)

Species: *Pseudokirchneriella subcapitata* (formerly *Selenastrum capricornutum* and *Raphidocelis subcapitata*)

Organism source: In-house culture (original source: UTCC 37; strain: LB37)

Culture age: The test was started with 7 day old, exponentially growing cells determined with an algal growth curve. This culture was initiated on 2009/08/14. Algal cultures are regrown every 2 months from slants made from a new culture purchased annually.

Culture observations: No unusual appearance or treatment of the algae was noted prior to or during the conduct of the test.

Sample initial chemistry: pH: 6.7; EC: 777 ($\mu\text{S}/\text{cm}$); DO: 9.5 (mg/L); temperature: 17 °C
hardness (mg CaCO_3/L): 232; colour: colourless; odour: odourless

Sample holding time: 2 days (must be ≤ 3 days)

Sample storage: $4 \pm 2^\circ\text{C}$ in darkness

Test concentrations: 7 effluent concentrations (1.4, 2.8, 5.7, 11, 23, 46 and 91% (v/v) plus a negative control)

Test vessel: The test was conducted in 96 well microplates. Three replicate plates were run (a, b and c).

Test replicates: Three replicate microplates were run. Per plate there were 5 replicate wells per concentration and 10 replicate wells per control.

Test volume: 220 μL final volume in each well with 200 μL of sample;
10 μL of enrichment medium and 10 μL of algal inoculum.

Inoculum: The initial cell density of the inoculum was 9910 (cells/mL), it was prepared less than ≤ 2 -3 hours before test initiation.

Control/dilution water: Made up with deionized City of Calgary water spiked with nutrients as per EPS 1/RM/25 (made by adding 1 mL of each of the 5 stock solutions to 10 mL of DRO).

Sample Filtration: 100 mL filtered through a 0.45 μm pore diameter membrane.

Sample treatment: Sample spiked with nutrients as per EPS 1/RM/25; no other chemicals added.

Measurements: Final cell densities were determined from the absorbance at 430 nm calibrated against cell counts. The conversion factor for absorbance to cells per millilitre was 17995 with a coefficient of variation of 35 %.

Aeration: Not required

pH Adjustment: Not required

Lighting: The plates were incubated under continuous light: 4240 lux
(cool white fluorescent bulbs) 59.36 $\mu\text{mol}/(\text{m}^2 \cdot \text{s})$

Test temperature: $24 \pm 2^\circ\text{C}$

Note: Outlined sections are protocol deviations explained on the comment page

Test Conditions

Client: ALS106
Reference: 09-1808-01-AGD

Endpoint: Growth, 72-h IC25 (with 95% confidence limits)
Test endpoint was bracketed by at least 1 test concentration
(except for <1.4% or >91 %)

No outliers were observed within the data set.

Test validity: Control growth was a 17 fold increase over the inoculum.
The cv of the standard control wells was 9 %.
(must be ≥ 16 fold increase with a cv of $\leq 20\%$)

Statistics: See Data Analysis section.
Mann-Kendall Trend analysis was not performed as control cv was $\leq 10\%$.

Reference toxicant: 72-h test with Zinc ($\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$) initiated January 29, 2009;
(must be within 14 days of the test initiation)
current results: (72-h IC25 and 95% confidence limits) = $1.36 (\text{na}-1.64) \log (\mu\text{g Zn}^{2+}/\text{L})$
The reference toxicant test was performed under the same conditions as those
used during this test.

Note: Outlined sections are protocol deviations explained on the comment page

Test Data

Client: ALS106
Reference: 09-1808-01-AGD

Test Log:

Date	Day	Technician	Time	Rotated	Temperature (°C)
2009/10/02	0	E. Blais	1040	no	3.75
2009/10/03	1	J. Amyotte	0915	yes	na
2009/10/04	2	N. Lavoie	0910	yes	na
2009/10/05	3	E. Blais	0945	no	3.75

Absorbance and Direct Cell Data:

Concentration (%)	Absorbance (430 nm)	Direct Cell Counts(/0.5 mL)
ctl	0.01	2300
11	0.01	1917
91	0.01	685

pH Measurements:

Concentration	Initial Value
control	6.5
91%	7.0

Concentration	Final Mean	% CV
control (well D6)	6.5	0
control (well D7)	6.5	0

Average Absorbance Control Data:

Column Well	2b	2c	2e	2f	2g
Absorbance (430 nm)	0.01	0.01	0.01	0.01	0.01
Column Well	11b	11c	11e	11f	11g
Absorbance (430 nm)	0.01	0.01	0.01	0.01	0.01

Standard Control Wells:

Average	172
SD	16
CV%	9

Test Results at 72 hours:

Concentration (%)	Cell Yield Densities (x10 ³ / mL)					Average	SD	CV	Percent Controls	Inhibition (%)	Stimulation (%)
	Well Replicate										
	a	b	c	d	e						
control	173	158	155	176	173	167	10	6	100	0	0
1.4	143	155	179	173	191	168	19	11	101	-1	1
2.8	167	185	167	173	173	173	7	4	104	-4	4
5.7	161	161	155	143	140	152	10	7	91	9	-9
11	143	143	125	143	149	140	9	6	84	16	-16
23	143	167	149	167	149	155	11	7	93	7	-7
46	137	131	125	149	149	138	11	8	83	17	-17
91	71	116	95	101	110	98	17	18	59	41	-41

Comments/Statistics

Client: ALS106 Reference: 09-1808-01-AGD

Test Result Comments:

None

Data Analysis:

Endpoints for growth were calculated using a non-linear regression model (3P Log-Gompertz) with CETIS v1.7.0 rev Q.

Protocol Deviations:

None

Test Method: 72 hours Algal Growth Inhibition Test (IC25, five or more treatments plus a control)
 HydroQual Test Method Manual, section: 4.4.2.7

Reference: Biological Test Method: Growth Inhibition Test Using the Freshwater Alga
Selenastrum capricornutum, 2007. Environment Canada, EPS 1/RM/25.

Test Organism:

test species: *Pseudokirchneriella subcapitata*
 culture: 20090811AG
 original source/strain: UTCC 37 / LB37
 culture vessels: 2L Erlenmeyer flask
 water source: deionized water
 growth medium: nutrient solution
 cultivation method: batch as per test conditions
 culture condition at start
 of test: normal
 culture age: 3-7 days
 growth phase: exponentially growing

Test Design:

test type: static
 toxicant: zinc
 test vessel: 96 well flat bottom microplate
 test volume (µL): 220
 no. of replicate plates: 3
 no. of replicate wells /
 treatment per plate
 (control, sample): 10, 5
 mean temperature (°C): 24 ± 2°C
 photoperiod: continuous light
 light level: 4200 lux ± 5%
 control/dilution water: deionized water and
 nutrients: prepared as per EPS1/RM/25

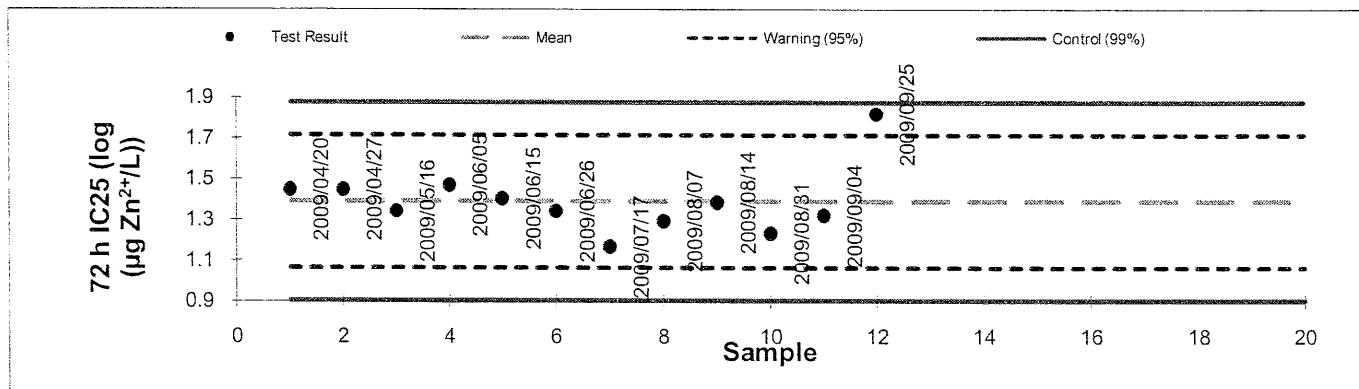
Current Test

toxicant Zinc ($\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$)
 started on 2009/09/22 ended on 2009/09/25
 Result (IC25 @ 72h) 1.82 log (µg Zn^{2+} /L); geometric mean
 Confidence Limits (95%) lower na upper 2.06

Historical Values

	mean	1.39	sd	0.16	cv(%):	12
	lower		upper			
warning limits (±2 sd)	1.07	1.71	(95% confidence limits)			
control limits (±3 sd)	0.90	1.88	(99% confidence limits)			

notes: sd, standard deviation; cv, coefficient of variance, na; could not be calculated



The result of the reference toxicant test initiated on 2009/09/22 was outside the warning limit. This is expected to happen 5% of the time. An investigation occurred and all testing and culturing procedures were carried out properly.

Quality Assurance Unit:

Authorized by S. Krishnappa, B.Sc., Quality Assurance Coordinator

The test data and results are verified correct.

Our liability is limited to the cost of the test requested on the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results in part or in whole.

Result Summary

 Client: ALS106
 Reference: 09-1808-01-CDD

Client: ALS Laboratory Group; operation Edmonton

Contents

 Result Summary.....1
 Test Conditions.....2
 Test Data.....4
 Comments/Statistics..8
 QA/QC.....9

Sample: L825404-18

Pond 2 Toxicity

Collection: collected on 2009/09/30 at not given by not given

Receipt: received on 2009/10/02 at 0929 by E.A. Benner

Containers: received 6 x 20L pails at 11 °C, in good condition with no seals and no initials

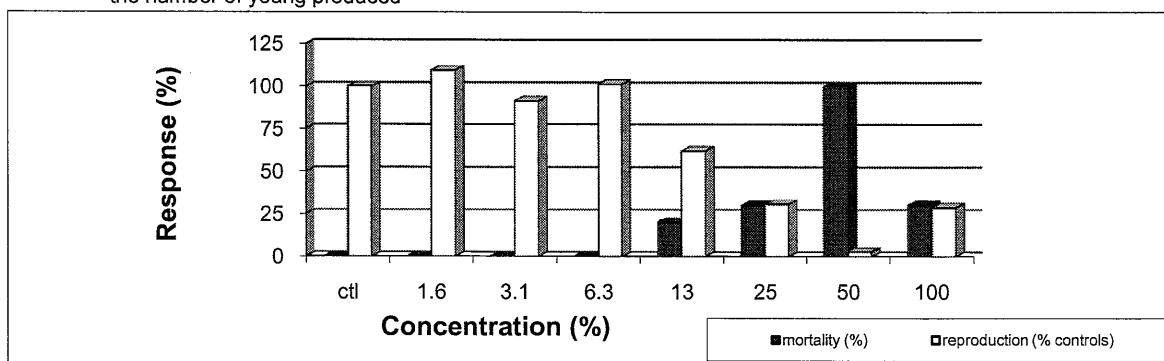
Description: type: water, collection method: not given

Test: started on 2009/10/02 ; ended on 2009/10/08

Result:

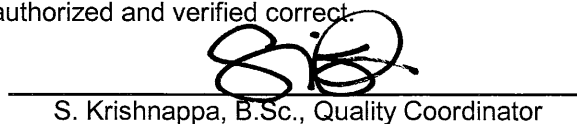
	Endpoint (6-day)	Value	Confidence Limits (95%)		Units	Method Calculated
			lower	upper		
Acute: (survival)	LC25	19	na	na	%	Log-Normal (Probit)
	LC50	51	na	na	%	Log-Normal (Probit)
Chronic: (fecundity)	IC25	9.0	7.2	13	%	Linear Interpolation
	IC50	16	11	20	%	Linear Interpolation

Notes: LCx & ICx, concentrations lethal or inhibitory to 'x' percent of the test population; fecundity, reproduction as the number of young produced



The test data and results are authorized and verified correct.


 E. Blais, B.Sc., Technical Lead


 S. Krishnappa, B.Sc., Quality Coordinator

Our liability is limited to the cost of the test requested. The test results only relate to the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results.

Test Conditions

Client: ALS106 Reference: 09-1808-01-CDD

Method: Biological Test method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia*, 2007. Environment Canada, EPS 1/RM/21.

Test type: *Ceriodaphnia* 6-day Survival and Reproduction Static Renewal Test (HQ 4.4.3.2)

Species: *Ceriodaphnia dubia*

Age: <24 hours old; all from same brood source within 12 hours of the same age.

Organism source: in-house cultures; cultures from a single brood organism to provide test organisms.

Culture health: Culture mortality was 10% (must be $\leq 20\%$).

7-d prior to test initiation: No ephippia were noted in the cultures at any time.

Average young produced per adult in the first three broods was 23 (must be ≥ 15)

Number of young produced by each brood organism in the last complete brood before use was 10 (must be ≥ 8).

Organism observations: No unusual behavior, appearance or treatment of test organisms was noted prior to or during the test. All first-generation mortality was recorded on the day it was observed.

Sample initial chemistry: pH: 6.7; EC: 777 ($\mu\text{S}/\text{cm}$); DO: 9.5 (mg/L); temperature: 17 °C
hardness (mg CaCO_3/L): 232; colour: colourless; odour: odourless

Sample holding time: 2 days (must be ≤ 3 days); The test was conducted with three subsamples, samples a, b, and c were for days 0 to 2, 3 to 5, and 6 to 8.

Sample storage: $4 \pm 2^\circ\text{C}$ in darkness

Test vessel: The tests were conducted in 30 mL plastic vessels (2 cm depth).

Test volume: 15 mL of solution (1 cm depth); replenished daily.

Control/dilution water: The control and dilution water was a mixture of moderately hard reconstituted water and Bow River Water (50:50). Chemicals added to dilution water:
0.96 g NaHCO_3 , 0.60 g CaSO_4 , 0.60 g MgSO_4 , 0.04 g KCl per 20L.

Test concentrations: 7 effluent concentrations (1.6, 3.1, 6.3, 13, 25, 50, 100% (v/v)
plus a negative control)

Test replicates: One neonate <24 hours old was loaded per test vessel;
10 replicates/concentration

Feeding: The test organisms were fed daily a mixture of fermented trout chow, yeast, alfalfa powder, and the green alga *Pseudokirchneriella subcapitata* (formerly *Selenastrum capricornutum* and *Raphidocelis subcapitata*).

Food expiration date: 2009/10/03; 2009/10/10

Measurements: pH, conductivity, dissolved oxygen and temperature were measured daily.

Sample pre-treatment: The sample was not aerated, filtered or pH adjusted prior or during testing.
The dissolved oxygen concentration (mg/L) was: 7.5
The sample pH was: 7.4

Lighting: Overhead full spectrum fluorescent lights; 100-600 lux at surface

Photoperiod: 16h light:8h dark

Test temperature: $25 \pm 1^\circ\text{C}$

Note: Outlined sections are protocol deviations explained on the comment page

Our liability is limited to the cost of the test requested. The test results only relate to the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results.

Test Conditions

Client: ALS106 Reference: 09-1808-01-CDD

Endpoints: Survival, 6-d LC50 (with 95% confidence limits)
Reproduction, 6-d IC25 (with 95% confidence limits)
Test endpoints were bracketed by at least 1 test concentration
(except for <1.6% or >100 %)
No outliers were observed within the data set.

Test completion: 70% of the control organisms had ≥ 3 broods on day 6 (must be $\geq 60\%$ within 8 days) Any neonates produced after third brood were not included in the mean young per adult calculation.

Test validity: The control had 100% survival (must $\geq 80\%$)
Number of young produced by each surviving control adult within the first three broods was 15 (must be ≥ 15).

Reference toxicant: 6-d test with NaCl initiated on September 21, 2009;
(must be within 14 days of test initiation)
current results: (6-d LC50 and 95% confidence limits) =
3.21 (3.05-3.39) log (mg/L NaCl)
current results: (6-d IC50 and 95% confidence limits) =
2.89 (2.78-2.95) log (mg/L NaCl)
The reference toxicant test was performed under the same conditions as those used during this test.

Note: Outlined sections are protocol deviations explained on the comment page

Test Data

Client: ALS106
Reference: 09-1808-01-CDD

Test Log:

Date	Day	Time	Technicians	Temperature (°C)	
				Control	Sample
2009/10/02	0	1040	H. Stewart	25	25
2009/10/03	1	1040	N. Lavoie	25	25
2009/10/04	2	0950	N. Lavoie	25	25
2009/10/05	3	1030	H. Stewart	25	25
2009/10/06	4	0920	E. Blais	25	25
2009/10/07	5	1005	H. Stewart	25	25
2009/10/08	6	0900	T. Kloschinsky	na	na

Chemistry Summary Tables:
New Solutions

Conc. %	ctl	1.6	3.1	6.3	13	25	50	100
---------	-----	-----	-----	-----	----	----	----	-----

Old Solutions

ctl	1.6	3.1	6.3	13	25	50	100
-----	-----	-----	-----	----	----	----	-----

Average Values

	7.7	7.8	7.8	7.9	7.8	7.8	7.7	7.5	7.9	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.6
pH	7.7	7.8	7.8	7.9	7.8	7.8	7.7	7.5	7.9	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.6
cond.	404	421	424	437	461	509	608	801	480	459	451	459	516	603	660	855	
DO	7.1	7.1	7.0	6.9	6.9	7.0	7.0	7.4	7.2	7.1	7.0	6.8	7.0	6.9	7.0	6.9	
temp.	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	

Coefficients of Variation (%)

	5	5	4	3	3	4	4	3	5	4	4	3	3	3	4	3	
pH	5	5	4	3	3	4	4	3	5	4	4	3	3	3	4	3	
cond.	3	3	2	1	1	1	1	2	4	4	3	3	5	6	3	2	
DO	5	6	4	4	4	5	4	4	7	6	6	7	6	7	6	7	
temp.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	

Test Data

Client: ALS106
Reference: 09-1808-01-CDD

Biology (number of young produced):

Day	1	2	3	4	5	6	7	8
	1	2	3	4	5	6	7	8

Replicate

Control

1	0	0	0	7	5	0		
2	0	0	0	5	6	3		
3	0	0	2	0	8	8		
4	0	0	0	7	7	3		
5	0	0	0	4	5	8		
6	0	0	4	0	3	9		
7	0	0	0	4	4	6		
8	0	0	0	8	7	0		
9	0	0	0	4	6	5		
10	0	0	0	4	0	8		

13%

0	0	0	5	0	0		
0	0	0	9	X	X		
0	0	2	4	X	X		
0	0	4	0	0	6		
0	0	0	4	0	4		
0	0	0	0	3	0		
0	0	4	0	4	7		
0	0	4	0	4	0		
0	0	3	0	3	8		
0	0	0	4	5	6		

1.6%

1	0	0	3	0	4	10		
2	0	0	5	0	2	8		
3	0	0	3	0	2	9		
4	0	0	0	6	8	7		
5	0	0	2	0	4	10		
6	0	0	0	3	6	7		
7	0	0	3	0	5	7		
8	0	0	0	8	8	6		
9	0	0	0	6	4	3		
10	0	0	0	8	7	0		

25%

0	0	0	4	4	2		
0	0	0	6	0	0		
0	0	0	4	X	X		
0	0	0	4	0	0		
0	0	0	0	0	0		
0	0	0	0	2	0		
0	0	0	0	2	6		
0	0	0	0	5	0		
0	0	0	4	0	X		
0	0	0	0	3	0		

3.1%

1	0	0	2	4	5	4		
2	0	0	5	0	2	0		
3	0	0	3	0	6	6		
4	0	0	2	0	0	10		
5	0	0	4	5	2	-		
6	0	0	2	0	4	8		
7	0	0	2	0	5	10		
8	0	0	0	6	7	8		
9	0	0	0	4	7	7		
10	0	0	0	0	7	0		

50%

0	0	0	X	X	X		
0	0	0	X	X	X		
0	0	X	X	X	X		
0	0	0	0	0	4		
0	0	X	X	X	X		
0	0	X	X	X	X		
0	0	0	0	X	X		
0	0	0	X	X	X		
0	0	0	X	X	X		
0	0	0	X	X	X		

Notes: #, young produced; 0, no young; X, dead; bold #, number of young the test organism had the day it died;
 —, young produced after third brood

Test Data

 Client: ALS106
 Reference: 09-1808-01-CDD

Biology (number of young produced):

Day	1	2	3	4	5	6	7	8
-----	---	---	---	---	---	---	---	---

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Replicate

6.3%

1	0	0	0	5	7	4		
2	0	0	3	0	4	8		
3	0	0	5	4	0	10		
4	0	0	3	0	8	7		
5	0	0	3	4	7	-		
6	0	0	3	0	5	5		
7	0	0	0	5	3	0		
8	0	0	2	0	8	10		
9	0	0	2	0	5	9		
10	0	0	0	6	7	0		

100%

0	0	0	0	0	0		
0	0	0	3	4	2		
0	0	0	3	3	8		
0	0	0	0	2	0		
0	0	0	X	X	X		
0	0	0	0	0	0		
0	0	0	4	2	0		
0	0	2	5	x	x		
0	0	0	X	X	X		
0	0	0	0	0	5		

Notes: #, young produced; 0, no young; X, dead; bold #, number of young the test organism had the day it died;
 —, young produced after third brood

Biology Summary Tables:

Conc. %	ctl	1.6	3.1	6.3	13	25	50	100
---------	-----	-----	-----	-----	----	----	----	-----

ctl	1.6	3.1	6.3	13	25	50	100
-----	-----	-----	-----	----	----	----	-----

Day

Number of Organism Alive

0	10	10	10	10	10	10	10	10
1	10	10	10	10	10	10	10	10
2	10	10	10	10	10	10	7	10
3	10	10	10	10	10	10	2	8
4	10	10	10	10	8	9	1	8
5	10	10	10	10	8	8	1	7
6	10	10	10	10	8	7	0	7
7								
8								

Day

Daily Young Production

0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	6	16	20	21	17	0	2
4	43	31	19	24	26	22	15
5	51	50	45	54	19	16	11
6	50	67	53	53	31	8	4
7							
8							

Percent Mortality (%)

mean	0	0	0	0	20	30	100	30
------	---	---	---	---	----	----	-----	----

Total	150	164	137	152	93	46	4	43
-------	-----	-----	-----	-----	----	----	---	----

Replicate

Total Young Produced by Each Adult

1	12	17	15	16	5	10	0	0
2	14	15	7	15	9	6	0	9
3	18	14	15	19	6	4	0	14
4	17	21	12	18	10	4	4	2
5	17	16	11	14	8	0	0	0
6	16	16	14	13	3	2	0	0
7	14	15	17	8	15	8	0	6
8	15	22	21	20	8	5	0	7
9	15	13	18	16	14	4	0	0
10	12	15	7	13	15	3	0	5

Young Per Adult (within first three broods)

mean	15	16	14	15	9	5	0	4
sd	2.05	2.91	4.55	3.49	4.22	2.88	1.26	4.79
cv(%)	13.7	17.8	33.2	23	45.4	62.5	316	111

Young Production as a Percent of Controls

100	109	91	101	62	31	3	29
-----	-----	----	-----	----	----	---	----

Our liability is limited to the cost of the test requested. The test results only relate to the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results.

Test Data

 Client: ALS106
 Reference: 09-1808-01-CDD

Chemistry:
New Solutions

Conc. %	ctl	1.6	3.1	6.3	13	25	50	100
---------	-----	-----	-----	-----	----	----	----	-----

Day

pH (units)

0	8.1	8.0	7.9	7.9	7.9	7.8	7.7	7.4
1	7.9	8.0	8.0	8.0	8.0	7.9	7.8	7.5
2	7.9	7.9	7.9	7.9	7.8	7.8	7.7	7.4
3	7.2	7.2	7.3	7.4	7.4	7.2	7.1	7.4
4	8.1	8.2	8.2	8.2	8.2	8.2	8.1	7.9
5	7.2	7.5	7.7	7.7	7.7	7.7	7.6	7.3
6								
7								
8								

Conductivity (µS/cm)

0	418	416	425	436	460	511	610	790
1	391	412	416	429	450	499	590	780
2	396	413	421	435	461	513	611	801
3	413	447	428	441	466	514	611	816
4	404	424	433	446	467	509	615	808
5	399	413	418	433	459	506	608	810
6								
7								
8								

Dissolved Oxygen (mg/L)

0	6.7	6.5	6.6	6.6	6.6	6.7	6.9	7.5
1	6.9	6.7	6.7	6.6	6.6	6.5	6.6	6.8
2	7.8	7.7	7.4	7.4	7.4	7.4	7.4	7.7
3	7.1	7.3	7.1	7.0	6.9	7.4	7.2	7.5
4	7.2	7.1	7.1	7.1	7.0	7.0	7.0	7.5
5	7.1	7.1	7.0	6.9	6.8	7.0	6.8	7.2
6								
7								
8								

Temperature (°C)

0	25	25	25	25	25	25	25	25
1	25	25	25	25	25	25	25	25
2	25	25	25	25	25	25	25	25
3	25	25	25	25	25	25	25	25
4	24	24	24	24	24	24	24	24
5	24	24	24	24	24	24	24	24
6								
7								
8								

Old Solutions

ctl	1.6	3.1	6.3	13	25	50	100
-----	-----	-----	-----	----	----	----	-----

pH (units)

8.1	8.2	8.2	8.2	8.1	8.1	8.1	7.7
8.0	8.0	8.0	8.0	8.0	8.0	7.9	7.6
7.3	7.6	7.6	7.6	7.6	7.6	7.4	7.3
8.4	8.5	8.5	8.4	8.4	8.4	8.3	8.0
7.4	7.8	7.9	8.0	8.0	8.0	8.3	7.6
8.0	8.1	8.0	8.0	7.9	7.9	7.9	7.6

Conductivity (µS/cm)

444	423	424	436	475	539	623	815
486	463	461	472	513	614	658	851
490	470	458	463	535	648	686	867
483	476	456	465	520	634	660	867
496	461	452	461	513	584	658	866
480	461	456	459	541	598	672	865

Dissolved Oxygen (mg/L)

6.4	6.3	6.3	6.5	6.3	6.2	6.2	6.1
7.4	7.2	7.3	6.2	7.2	7.2	7.2	7.1
7.7	7.5	7.5	7.5	7.6	7.6	7.5	7.4
7.0	7.0	7.0	7.0	7.0	7.1	7.0	7.1
7.2	7.1	6.9	6.8	7.0	6.7	7.1	7.2
7.6	7.5	7.2	6.9	6.7	6.7	6.7	6.5

Temperature (°C)

25	25	25	25	25	25	25	25
25	25	25	25	25	25	25	25
25	25	25	25	25	25	25	25
24	24	24	24	24	24	24	24
24	24	24	24	24	24	24	24
25	25	25	25	25	25	25	25

Comments/Statistics

Client: ALS106

Reference: 09-1808-01-CDD

Test Result Comments:

Due to the the abnormal dose response in the 50% test concentration, we recommend that this sample be re-submitted for analysis to determine if this dose response will be repeated.

Data Analysis:

Endpoints for mortality were calculated using a linear regression model (Log-Normal Probit) with CETIS v. 1.7.0 rev Q.

Regression analysis was attempted on the data, but the assumptions of normality and equal variance were not met. Therefore, endpoints for reproduction were calculated using a Linear Interpolation model using CETIS v. 1.7.0 rev Q.

Protocol Deviations:

None

Quality Assurance Information

Culture history for adults used in the test for reference 09-1808:

Number of young produced per brood adult:

(Note: The third brood per adult may be on the day the test is set)

row/replicate	E7	A7	A9	B7	C7	C10	D6	E10	E9		
---------------	----	----	----	----	----	-----	----	-----	----	--	--

number of young											
number of adults											

	E7	A7	A9	B7	C7	C10	D6	E10	E9		
number of young											
number of adults											

	E7	A7	A9	B7	C7	C10	D6	E10	E9		
number of young											
number of adults											

	E7	A7	A9	B7	C7	C10	D6	E10	E9		
number of young											
number of adults											

	E7	A7	A9	B7	C7	C10	D6	E10	E9		
number of young	5	4	3	7	5	2	5	8	6		
number of adults	1	1	1	1	1	1	1	1	1		

	E7	A7	A9	B7	C7	C10	D6	E10	E9		
number of young	8	6	5	9	8	9	8	8	9		
number of adults	1	1	1	1	1	1	1	1	1		

DAY USED		E7	A7	A9	B7	C7	C10	D6	E10	E9		
2009/10/02	number of young	11	8	8	10	9	10	8	11	13		
	number of adults	1	1	1	1	1	1	1	1	1		

		E7	A7	A9	B7	C7	C10	D6	E10	E9		
totals	number of young	24	18	16	26	22	21	21	27	28		
(# of young in first 3 broods)	number of adults											

Number of young produced per organism in the last brood before use 10

Mean number of surviving young per adult over the first three broods 23

Culture mortality over the last seven days 0

Test Method: *Ceriodaphnia* Survival and Reproduction Test (6 treatments plus a control)
HydroQual Test Method Manual, section: 4.4.3.2

Reference: Biological Test Method: Test of Reproduction and Survival Using the
Cladoceran *Ceriodaphnia dubia*, 2007. Environment Canada, EPS 1/RM/21

Test Organism:

test species: *Ceriodaphnia dubia*
culture source: in-house
original culture source: Environment Canada
ephippia in stock culture: none
food type: YAT:Algae
frequency of feeding: daily
age of test organisms: <24 hours
culture mortality 7 days prior: 12
culture fecundity 7 days prior
within the first three broods: 17
young produced in previous brood: 9
culture condition prior to test initiation: normal
culture water: 50:50 water

Test Design:

test type: static renewal
toxicant: sodium chloride (NaCl)
test vessel: 30 mL plastic cup
test volume (mL): 15
replicates per treatment: 10
organisms per replicate: 1
feeding: daily
temperature (°C): 24-26
photoperiod: 16 hours light: 8 hours dark
light level (surface): 100-600 lux
hardness adjustment: no

*Note: there are 2 subcultures within this culture source, separated by one week in age. The test is set with organisms from one subculture.
The number of young a culture has is monitored daily. If young are not used that day, they are discarded, therefore organisms in tests are <24h.

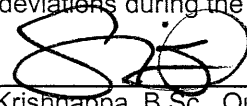
Control/Dilution Water:

source: equal volumes of Bow River water and
moderately hard reconstituted water (50:50 water)
pH (units): 8.0
conductance (uS/cm): 372
dissolved oxygen (mg/L): 7.7
NH₄⁺ (mg/L): <0.1
hardness (mg CaCO₃/L): 111
alkalinity (mg CaCO₃/L): 101
total residual chlorine (mg/L): <0.01

Note: moderately hard reconstituted water prepared as per EPS 1/RM/21

Comments: There were no protocol deviations during the conduct of this test.

Quality Assurance Unit:


Authorized by S. Krishnappa, B.Sc., Quality Assurance Coordinator
The test data and results are verified correct.

Mortality

Current Test

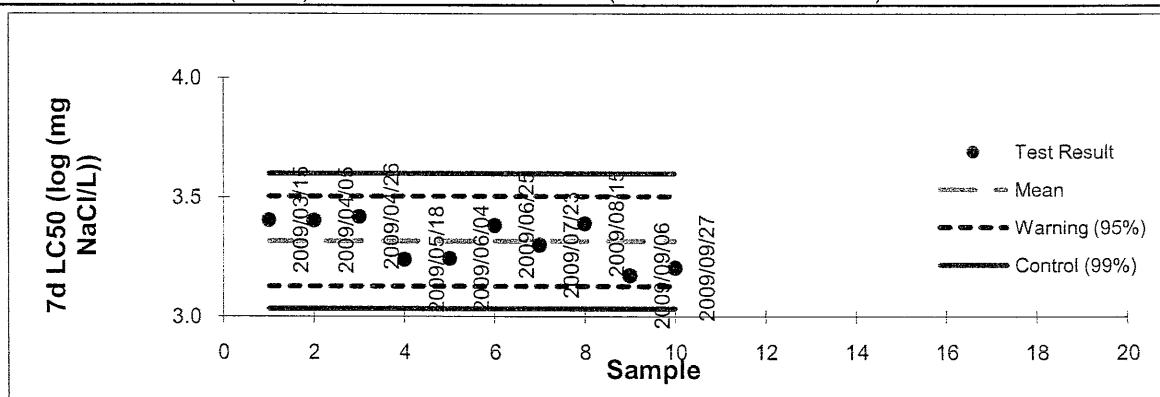
toxicant Sodium chloride (NaCl)

started on 2009/09/21 ended on 2009/09/27

Result (6d LC50):	3.21	log (mg NaCl/L); geometric mean
Confidence Limits (95%)	lower 3.05 upper 3.39	

Historical Values

mean	3.32	sd	0.09	cv(%):	3
	lower	upper			
warning limits (± 2 sd)	3.13	3.51	(95% confidence limits)		
control limits (± 3 sd)	3.03	3.60	(99% confidence limits)		



Reproduction

Current Test

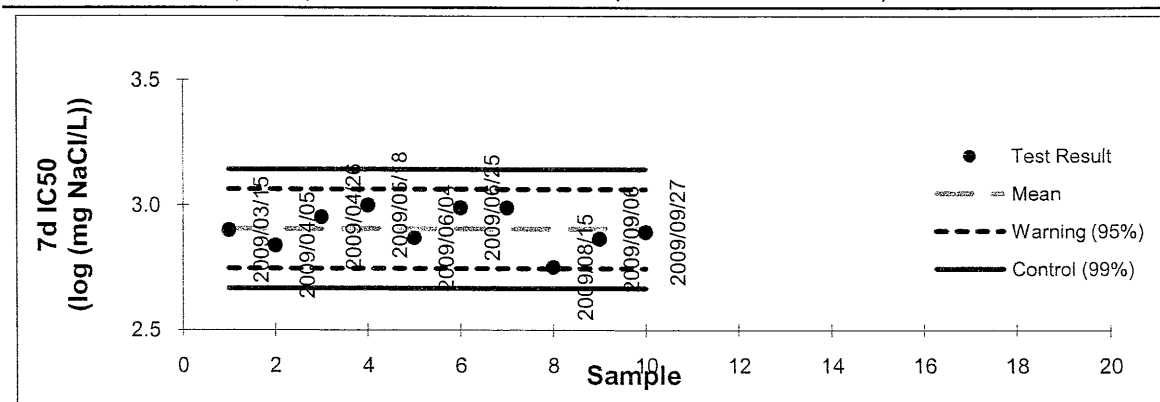
toxicant Sodium chloride (NaCl)

started on 2009/09/21 ended on 2009/09/27

Result (6d IC50):	2.89	log (mg NaCl/L); geometric mean
Confidence Limits (95%)	lower 2.78 upper 2.95	

Historical Values

mean	2.90	sd	0.08	cv(%):	3
	lower	upper			
warning limits (± 2 sd)	2.75	3.06	(95% confidence limits)		
control limits (± 3 sd)	2.67	3.14	(99% confidence limits)		



Notes: sd, standard deviation; cv, coefficient of variance; NA, could not be calculated

Our liability is limited to the cost of the test requested on the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results in part or in whole.

Culture history for adults used in the test for reference QA219:

(Note: The third brood per adult may be on the day the test is set)

Culture mortality over the last seven days	12
--	----

Result Summary

Client: ALS106
 Reference: 09-1808-01-FMD

Client: ALS Laboratory Group; operation Edmonton

Sample: L825404-18

Pond 2 Toxicity

Collection: collected on 2009/09/30 at not given by not given

Receipt: received on 2009/10/02 at 0929 by E.A. Benner

Containers: received 6 x 20L pails at 11 °C, in good condition with no seals and no initials

Description: type: water, collection method: not given

Contents

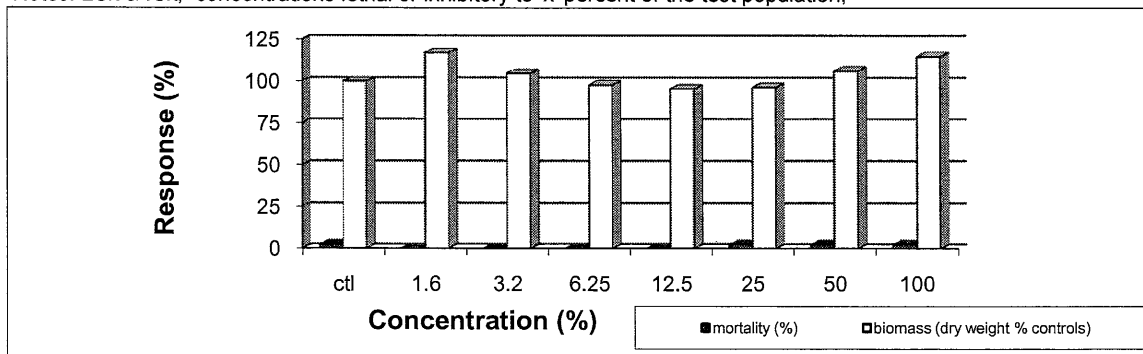
Result Summary.....1
 Test Conditions.....2
 Test Data.....4
 Comments/Statistics..7
 QA/QC.....8

Test: started on 2009/10/02 ; ended on 2009/10/09

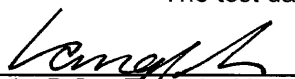
Result:

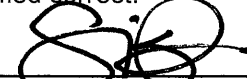
	Endpoint (7-day)	Value	Confidence Limits (95%) lower upper	Units	Method Calculated
Acute:	LC25	>100		%	could not be calculated
(survival)	LC50	>100		%	could not be calculated
Chronic:	IC25	>100		%	could not be calculated
(growth)	IC50	>100		%	could not be calculated

Notes: LCx & ICx, concentrations lethal or inhibitory to 'x' percent of the test population;



The test data and results are authorized and verified correct.


 E. Blais, B.Sc., Technical Lead


 S. Krishnappa, B.Sc., Quality Coordinator

Test Conditions

Client: ALS106 Reference: 09-1808-01-FMD

Method: Biological Test Method: Test of Larval Growth and Survival Using Fathead minnows, 1992. Environment Canada, EPS 1/RM/22. (amended September 2008)

Test type: Fathead Minnow 7-d Survival and Growth Static Renewal Test (HQ 4.4.4.6)

Species: *Pimephales promelas*

Age: ≤ 24 hour post hatch

Organism source: Aquatox Inc., Hot Springs, Arkansas (Batch 20091002FM)

Culture conditions: temperature, 25 °C; dissolved oxygen, 95-100 % saturation

Shipped: 2009/10/01

Breeding Stock Mortality: < 1 % during the week prior to test initiation

Organisms upon receipt: mortality, < 1 %; temperature, 24 °C; dissolved oxygen, 10.1 mg/L
No acclimation was necessary. Test organisms maintained at 25 ± 1 °C until loaded
The EC guidance document on the importation of test organisms (1999) has been followed. Test organisms were received in good condition, with inflated swim bladders and normal feeding behaviour.

Organism observation: No unusual behaviour or appearance or treatment of test organisms was noted prior to shipping, upon arrival, preceding or during the test. Normal feeding behaviour was noted during the test.

Sample initial chemistry: pH: 6.7; EC: 777 (µS/cm); DO: 9.5 (mg/L); temperature: 17 °C
hardness (mg CaCO₃/L): 232; colour: colourless; odour: odourless

Sample holding time: 2 days (must be ≤ 3 days); The test was conducted with three subsamples; samples a, b, and c were for days 0 to 2, 3 to 5, and 6 to 8.

Sample storage: 4 ± 2 °C in darkness

Test vessel: Tests were conducted in 500 mL plastic vessels

Test volume: 250 mL of solution (depth of 6.5 cm), replenished daily

Control/dilution water: The control and dilution water was dechlorinated City of Calgary water acclimated to the test conditions; no chemicals were added to the dilution/control water

Test concentrations: 7 effluent concentrations (1.6, 3.2, 6.3, 13, 25, 50, 100% (v/v) plus a negative control)

Test replicates: Ten fish ≤ 24 hours old were loaded per test vessel; 4 replicates/conc.

Feeding: The test organisms were fed twice daily newly-hatched brine shrimp nauplii
The fish are not fed during the final 12 hours of the test

Measurements: pH, conductivity, dissolved oxygen and temperature were measured daily

Sample pre-treatment: The sample was not aerated, filtered or pH adjusted prior or during testing
The dissolved oxygen concentration (mg/L) was: 7.9
The sample pH was: 7.6

Lighting: Overhead full spectrum fluorescent lights; ≤ 500 lux at surface

Photoperiod: 16h light:8h dark

Test temperature: 25 ± 1 °C

Note: Outlined sections are protocol deviations explained on the comment page

Client: ALS106 Reference: 09-1808-01-FMD

Test Conditions

Endpoint: Survival, 7-d LC50 (with 95% confidence limits)
Biomass, 7-d IC25 (with 95% confidence limits)
Test endpoints were bracketed by at least 1 test concentration
(except for <1.6% or >100 %)
No outliers were observed within the data set

Test validity: Control had 97% survival (must $\geq$ 80%)
Control had 0% abnormal behaviour (must < 20%), e.g. atypical swimming, loss of equilibrium

The average dry weight of the control fish was 0.53 (must $\geq$ 0.25 mg)

Reference toxicant: 7-d test with NaCl initiated October 2, 2009;
current results: (7-d LC50 and 95% confidence limits) = 3.10 (3.01-3.20) log (mg/L NaCl)
current results: (7-d IC25 and 95% confidence limits) = 2.68 (2.10-2.83) log (mg/L NaCl)
The reference toxicant test was performed under the same conditions as those used during this test.

Note: Outlined sections are protocol deviations explained on the comment page

Test Data

Client: ALS106
Reference: 09-1808-01-FMD

Test Log:

Date	Day	Time	Technicians	Temperature Before Use(°C)	
				Control	Sample
2009/10/02	0	1530	E. Blais/L. Henson	25	25
2009/10/03	1	1010	S. Ehman	25	25
2009/10/04	2	1015	S. Ehman	25	25
2009/10/05	3	1140	E. Blais	25	25
2009/10/06	4	1210	E. Blais	25	25
2009/10/07	5	1435	E. Blais	25	25
2009/10/08	6	1520	E. Blais	25	25
2009/10/09	7	1100	T. Kloschinsky	na	na

Daily Swimming Behavior:

Day	ctl	1.6	3.2	6.3	12.5	25	50	100
0	normal	normal	normal	normal	normal	normal	normal	normal
1	normal	normal	normal	normal	normal	normal	normal	normal
2	normal	normal	normal	normal	normal	normal	normal	normal
3	normal	normal	normal	normal	normal	normal	normal	normal
4	normal	normal	normal	normal	normal	normal	normal	normal
5	normal	normal	normal	normal	normal	normal	normal	normal
6	normal	normal	normal	normal	normal	normal	normal	normal
7	normal	normal	normal	normal	normal	normal	normal	normal

Chemistry Summary Tables:

New Solutions									Old Solutions							
Conc. (%)	ctl	1.6	3.2	6.25	12.5	25	50	100	ctl	1.6	3.2	6.25	12.5	25	50	100

Average Values

pH	8.1	8.1	8.1	8.1	8.1	8.1	8.0	7.8	7.9	7.8	7.7	7.8	7.7	7.7	7.6	7.4
cond.	357	364	366	375	405	461	575	789	357	366	373	395	415	469	591	803
DO	7.3	7.3	7.2	7.1	7.1	7.1	7.2	7.5	7.0	6.6	6.3	6.2	6.2	6.2	6.2	6.2
temp	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25

Coefficients of Variation (%)

pH	2	2	2	2	2	2	2	2	2	2	2	3	2	2	3	3
cond.	6	5	3	3	3	3	4	2	6	5	4	4	3	2	2	2
DO	7	7	6	6	6	6	6	6	6	6	7	7	6	7	9	9
temp	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2

Test Data

Client: ALS106
Reference: 09-1808-01-FMD

Biology (number alive):

Conc. (%)	ctl	1.6	3.2	6.25	12.5	25	50	100	ctl	1.6	3.2	6.25	12.5	25	50	100
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Replicate	Day 1								Day 5							
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
a	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9
b	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	10
c	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
d	10	10	10	10	10	10	10	10	9	10	10	10	10	10	10	10

Replicate	Day 2								Day 6							
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
a	10	10	10	10	10	10	10	9	10	10	10	10	10	10	9	9
b	10	10	10	10	10	9	10	10	10	10	10	10	9	10	10	10
c	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
d	10	10	10	10	10	10	10	10	9	10	10	10	10	10	10	10

Replicate	Day 3								Day 7							
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
a	10	10	10	10	10	10	10	9	10	10	10	10	10	10	9	9
b	10	10	10	10	10	9	10	10	10	10	10	10	9	10	10	10
c	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
d	10	10	10	10	10	10	10	10	9	10	10	10	10	10	10	10

Replicate	Day 4								Unpreserved Dry Weights (mg)							
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
a	10	10	10	10	10	10	10	9	5.18	6.09	5.03	5.97	5.58	5.70	5.31	6.06
b	10	10	10	10	10	9	10	10	5.56	6.51	5.70	5.24	5.06	4.90	5.26	5.85
c	10	10	10	10	10	10	10	10	5.09	5.81	5.42	4.67	4.85	4.84	5.70	6.36
d	9	10	10	10	10	10	10	10	5.23	6.24	5.91	4.71	4.62	4.86	6.11	5.91

Biology Summary Tables:

	Mortality (%)								Biomass Data (mg per fish)							
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
a	0	0	0	0	0	0	10	10	0.52	0.61	0.50	0.60	0.56	0.57	0.53	0.61
b	0	0	0	0	0	10	0	0	0.56	0.65	0.57	0.52	0.51	0.49	0.53	0.58
c	0	0	0	0	0	0	0	0	0.51	0.58	0.54	0.47	0.48	0.48	0.57	0.64
d	10	0	0	0	0	0	0	0	0.52	0.62	0.59	0.47	0.46	0.49	0.61	0.59

	mean	sd	cv(%)	a	b	c	d	a	b	c	d	a	b	c	d
a	3	5	200	0	0	0	0	3	5	200	200	0.53	0.62	0.55	0.51
b	0	0	na	0	0	0	0	5	5	200	200	0.50	0.51	0.50	0.51
c	0	0	na	0	0	0	0	5	5	200	200	0.48	0.48	0.48	0.48
d	0	0	na	0	0	0	0	5	5	200	200	0.46	0.46	0.46	0.46

Average Dry Weight of Surviving Control Fish:	0.53
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Biomass as a Percent of Controls

100	117	105	98	95	96	106	115
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Test Data

Client: ALS106
Reference: 09-1808-01-FMD

Chemistry:

New Solutions									Old Solutions							
Conc. (%)	ctl	1.6	3	6.25	12.5	25	50	100	ctl	1.6	3	6.25	12.5	25	50	100

Day	pH (units)								pH (units)							
	7.8	8.0	8.1	8.1	8.0	8.0	7.9	7.6								
0	7.8	8.0	8.1	8.1	8.0	8.0	7.9	7.6								
1	8.3	8.4	8.4	8.3	8.3	8.3	8.2	7.9	8.0	8.0	7.9	7.9	7.9	7.8	7.7	7.5
2	8.1	8.2	8.2	8.2	8.2	8.2	8.1	7.9	7.9	7.9	7.7	7.7	7.7	7.7	7.7	7.5
3	7.9	7.9	7.9	7.9	7.8	7.8	7.8	7.6	7.6	7.5	7.4	7.4	7.4	7.4	7.2	7.1
4	8.1	8.1	8.1	8.1	8.1	8.1	8.0	7.8	8.0	7.8	7.7	7.8	7.7	7.6	7.6	7.4
5	8.0	7.9	8.0	8.1	8.1	8.2	8.1	8.0	8.0	8.0	7.9	8.0	8.0	7.9	7.8	7.7
6	8.2	8.2	8.2	8.2	8.2	8.2	8.1	8.0	8.0	7.9	7.9	7.9	7.8	7.8	7.7	7.6
7									7.8	7.8	7.7	7.7	7.7	7.7	7.6	7.3
8																
Day	Conductivity (µS/cm)								Conductivity (µS/cm)							
	327	345	356	358	402	472	590	803								
0	327	345	356	358	402	472	590	803								
1	354	356	363	378	409	470	597	800	346	353	360	393	407	473	595	804
2	391	355	353	361	385	433	541	773	314	337	348	371	397	451	574	779
3	355	369	378	392	420	472	587	797	359	382	385	405	420	473	608	814
4	376	403	375	376	401	453	554	767	360	360	365	378	405	458	579	772
5	351	363	368	381	409	464	578	787	374	378	382	412	427	481	594	821
6	348	359	368	382	411	465	581	793	374	378	385	407	425	480	594	822
7									373	376	385	402	427	464	594	810
8																
Day	Dissolved Oxygen (mg/L)								Dissolved Oxygen (mg/L)							
	7.0	7.0	7.0	7.1	7.1	7.1	7.2	7.9								
0	7.0	7.0	7.0	7.1	7.1	7.1	7.2	7.9								
1	6.6	6.4	6.4	6.3	6.3	6.3	6.4	6.7	6.2	5.9	5.7	5.7	5.9	5.7	5.7	5.7
2	8.2	7.9	7.6	7.6	7.5	7.5	7.6	7.8	7.7	7.1	6.7	6.3	6.3	6.5	6.8	6.8
3	7.6	7.6	7.5	7.6	7.5	7.5	7.6	8.0	7.0	6.6	6.3	6.1	6.2	6.2	6.0	5.8
4	6.9	6.9	6.9	7.0	7.0	7.0	7.1	7.3	7.3	6.4	6.1	5.9	5.9	5.7	5.6	5.7
5	7.4	7.5	7.3	7.2	7.2	7.2	7.1	7.2	6.9	6.5	6.2	6.1	6.1	6.0	5.8	5.9
6	7.7	7.6	7.4	7.2	7.2	7.2	7.2	7.7	7.0	6.6	6.2	6.1	6.2	6.1	6.1	6.1
7									7.1	7.1	7.0	7.0	7.0	7.0	7.1	7.1
8																
Day	Temperature (°C)								Temperature (°C)							
	25	25	25	25	25	25	25	25								
0	25	25	25	25	25	25	25	25								
1	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
2	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
3	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
4	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
5	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
6	25	25	25	25	25	25	25	25	24	24	24	24	24	24	24	24
7									25	25	25	25	25	25	25	25
8																

Our liability is limited to the cost of the test requested. The test results only relate to the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results.

Comments/Statistics

Client: ALS106
Reference: 09-1808-01-FMD

Test Result Comments:

None

Data Analysis:

Endpoints for mortality could not be calculated. No effect occurred.

Endpoints for biomass could not be calculated. No effect occurred.

Protocol Deviations:

None

Test Method: 7 days Fathead minnow Survival and Growth Test (five treatments plus a control)
HydroQual Test Method Manual, section: 4.4.4.6

Reference: Biological Test Method: Test of Larval Growth and Survival Using Fathead minnows, 1992. Environment Canada, EPS 1/RM/22. (amended September 2008)

Test Organism:

test species: *Pimephales promelas*
culture source: Aquatox Inc.
(Arkansas, USA)
temp of breeding aquaria: 23 - 26 °C
food type: frozen brine shrimp
frequency of feeding: daily
breeding colony mortality: <1% (last 7 days)
age of test organisms: <24 hours
condition prior to test initiation: normal
batch number: 20091002FM

Test Design:

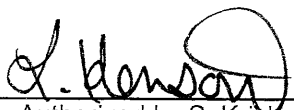
test type: static renewal
toxicant: sodium chloride
test vessel: polypropylene
cups, 11x9 cm
volume of test vessel: 450
test volume (ml): 250
depth of test solution: >3 cm
replicates per treatment: 4 replicates
organisms per replicate: 10
feeding: twice daily
temperature (°C): 24-26
photoperiod: 16 hours light: 8 hours dark
light level (surface): 100-500 lux

Control/Dilution Water:

source: dechlorinated City of Calgary tap water
no chemicals were added to the dilution water
pH (units): 7.2
conductance (µS/cm): 397
dissolved oxygen (mg/L): 7.0
NH₄⁺ (mg/L): <0.1
hardness (mg CaCO₃/L): 174
alkalinity (mg CaCO₃/L): 164
total residual chlorine (mg/L): <0.01

Comments: None.

Quality Assurance Unit:



Authorized by S. Krishnappa, B.Sc., Quality Assurance Coordinator
The test data and results are verified correct.

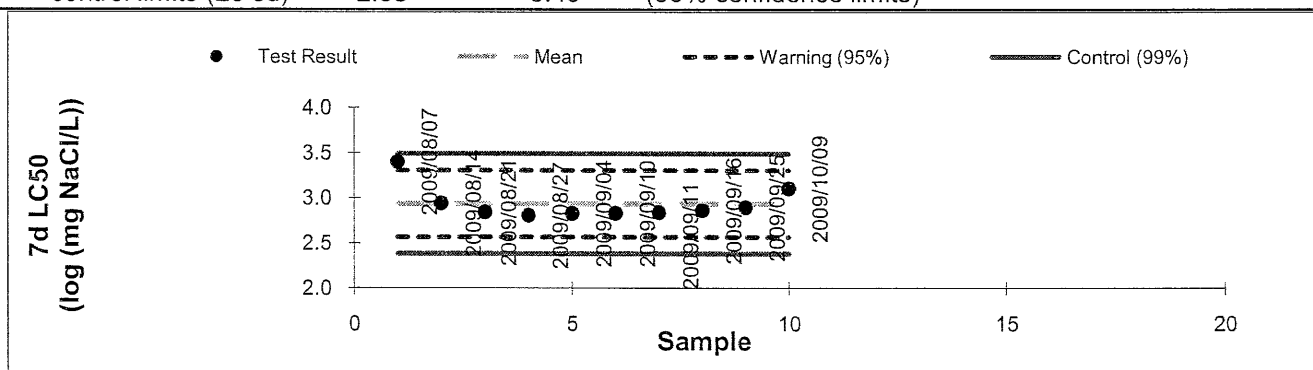
Mortality

Current Test

toxicant Sodium Chloride (NaCl)
 started on 2009/10/02 ended on 2009/10/09
 Result (7 d LC50): 3.10 log (mg NaCl/L); geometric mean
 Confidence Limits (95%) lower 3.01 upper 3.20

Historical Values

mean 2.94 sd 0.18 cv(%): 6
 lower upper
 warning limits (± 2 sd) 2.57 3.30 (95% confidence limits)
 control limits (± 3 sd) 2.38 3.49 (99% confidence limits)

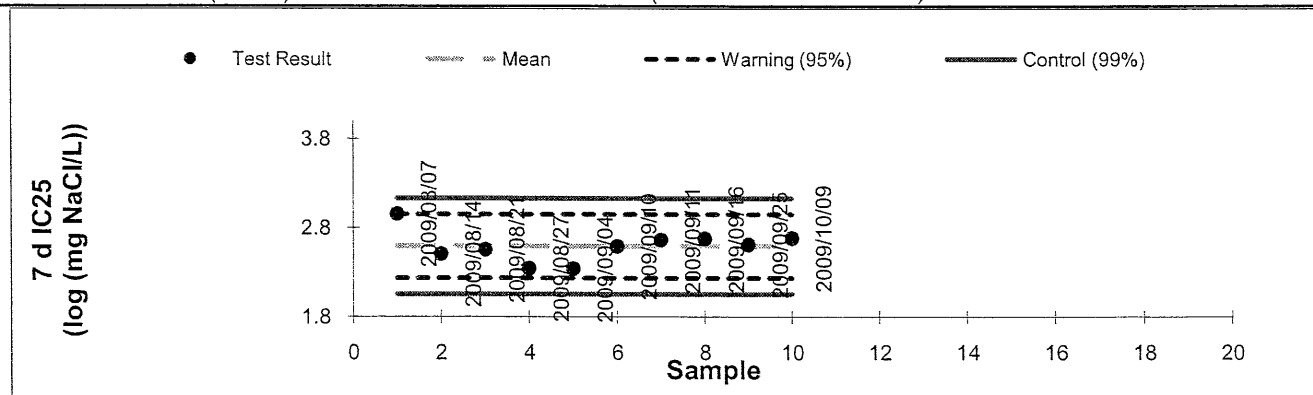


Biomass

started on 2009/10/02 ended on 2009/10/09
 Result (7 d IC25): 2.68 log (mg NaCl/L); geometric mean
 Confidence Limits (95%) lower 2.10 upper 2.83

Historical Values

mean 2.59 sd 0.18 cv(%): 7
 lower upper
 warning limits (± 2 sd) 2.24 2.95 (95% confidence limits)
 control limits (± 3 sd) 2.06 3.13 (99% confidence limits)



notes: sd, standard deviation; cv, coefficient of variance; N/A, could not be calculated

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Result Summary

Client: ALS106
Reference: 09-1808-01-LMD

Client: ALS Laboratory Group; operation Edmonton

Sample: L825404-18

Pond 2 Toxicity

Collection: collected on 2009/09/30 at not given by not given

Receipt: received on 2009/10/02 at 0929 by E.A. Benner

Containers: received 6 x 20L pails at 11 °C, in good condition with no seals and no initials

Description: type: water, collection method: not given

Contents

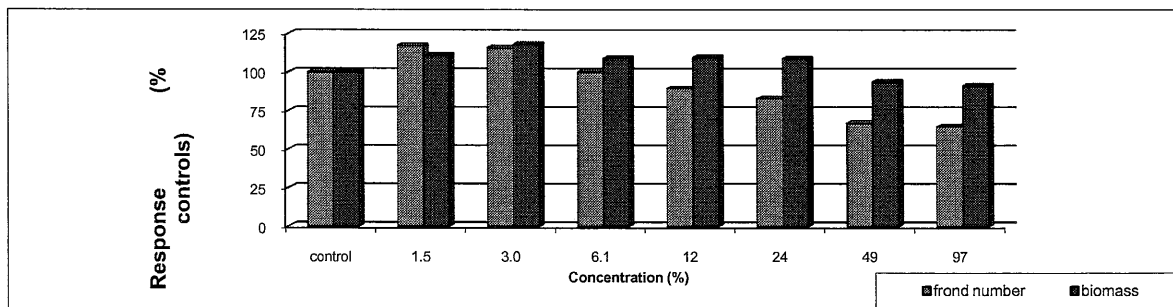
Result Summary.....1
Test Conditions.....2
Test Data.....4
Comments/Statistics..6
QA/QC.....7

Test: started on 2009/10/02 ; ended on 2009/10/09

Result:

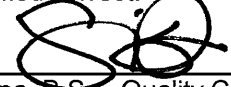
	Endpoint (7-day)	Value	Confidence Limits (95%)		Units	Method Calculated
			lower	upper		
Chronic:	IC25	41	30	46	%	Linear Interpolation
(frond number)	IC50	>97	na	na	%	Linear Interpolation
Chronic:	IC25	>97			%	could not be calculated
(biomass)	IC50	>97			%	could not be calculated

Notes: ICx, concentrations lethal or inhibitory to 'x' percent of the test population;



The test data and results are authorized and verified correct.


E. Blais, B.Sc., Technical Lead


S. Krishnappa, B.Sc., Quality Coordinator

Test Conditions

Client: ALS106 Reference: 09-1808-01-LMD

Method: Biological Test Method: Test for Measuring the Inhibition of Growth Using the Freshwater Macrophyte, *Lemna minor*. Environment Canada, EPS 1/RM/37 2nd Edition, January 2007

Test type: *Lemna* 7-d Inhibition of Growth Static Test (HQ 4.4.2.3)

Species: *Lemna minor*

Organism source: in-house culture, ≥ 3 weeks in age (original source: UTCC 492, clone 7730)

Culture health: The fronds were acclimated in test media for 24 hours prior to test initiation. The test culture was axenic prior to testing.

There was an 11 fold increase in frond number of culture over last 7 days.

Test loaded with 3 frond daughter plants, all with light green fronds and short roots.

Culture age: The test was started with 8 day old fronds.

Culture media: modified Hoagland's E+ medium

Organism observation: No unusual behaviour, appearance or treatment of test organisms was noted prior to or during the test.

Sample initial chemistry: pH: 6.7; EC: 777 ($\mu\text{S}/\text{cm}$); DO: 9.5 (mg/L); temperature: 17 °C
hardness (mg CaCO_3/L): 232; colour: colourless; odour: odourless

Sample holding time: 2 days (must be ≤ 3 days); The test was conducted with three subsamples, samples a, b, and c were for days 0 to 2, 3 to 4, and 5 to 7.

Sample storage: $4 \pm 2^\circ\text{C}$ in darkness

Test vessel: The test was a static test conducted in 200 mL polyethylene plastic containers with clear lids.

Test volume: The test volume was 150 mL, depth of ≥ 4 cm

Test concentrations: 7 effluent concentrations (1.5, 3.0, 6.1, 12.1, 24, 49, 97% (v/v) plus a negative control)

Test replicates: There were four replicates per treatment with two 3 frond daughter plants per replicate; replicates are rotated daily.

Control/dilution water: Test media (modified APHA medium) made up with deionized City of Calgary water water spiked with nutrients as per Environment Canada EPS 1/RM/37, 2007. made by adding 60 mL of each of the three stock solutions to 5.82 L of DRO. The media aerated for 2 hours and was pH adjusted to 8.3 ± 0.1 with 6N HCl or NaOH. The test media was not filtered.

Elutriate preparation: 2009/10/02

Sample pre-treatment: 1455 mL of sample spiked with 15 mL of each of the three APHA stock solutions, no other chemicals added. The sample was not pH adjusted or filtered prior to testing.

Aeration: The sample was pre-aerated for 20 minutes at a rate of 100 bubbles/minute with oil free filtered compressed air from a 1 mL glass pipette attached to an air pump.

Note: Outlined sections are protocol deviations explained on the comment page

Test Conditions

Client: ALS106
Reference: 09-1808-01-LMD

Lighting: The cups were incubated under continuous full-spectrum light. The light levels were measured at the sample surface, at three locations on the testing bench, during testing:

left:	4100	lux	≈	66	μmol/m ² •S
centre:	4670	lux	≈	75	μmol/m ² •S
right:	4000	lux	≈	64	μmol/m ² •S

Measurements:

pH, conductivity, dissolved oxygen and temperature at test initiation and termination; temperature in the control, low, middle and high concentrations are recorded daily.

Test temperature: 25 ± 2°C

Endpoint: Growth (based on increase in frond number), 7-d IC25 (with 95% confidence limits)
Growth (based on dry weight), 7-d IC25 (with 95% confidence limits)
Test endpoints were bracketed by at least 1 test concentration.
(except for <1.6% or >97 %)

No outliers were observed within the data set

Test validity: The mean number of fronds in the controls have increased 8 times (must be ≥ 8 time increase). The average number attained at test termination was 49 (must be ≥48 fronds per test vessel).

Reference toxicant: 7-d test with Potassium Chloride (KCl) initiated January 25, 2008;
current results:
(Frond Number; 7-d IC25 and 95% confidence limits) = 3.18 (3.09-3.25) log(mg KCl/L)
current results:
(Biomass; 7-d IC25 and 95% confidence limits) = 3.93 (3.65-4.10) log (mg KCl/L)
The reference toxicant test was performed under the same conditions as those used during this test .

Note: Outlined sections are protocol deviations explained on the comment page

Test Data

 Client: ALS106
 Reference: 09-1808-01-LMD

Test Log:

Date	Day	Time	Technicians	Rotate	Temperature (°C)			
					Control	3.0%	24%	97%
2009/10/02	0	1130	T. Kloschinsky	no	24	24	25	24
2009/10/03	1	0915	J. Amyotte	yes	23	23	24.5	25
2009/10/04	2	0910	N. Lavoie	yes	23	25	26	25
2009/10/05	3	0900	H. Stewart	yes	23	24	25	23
2009/10/06	4	0830	H. Stewart	yes	23	22	23	24
2009/10/07	5	0800	H. Stewart	yes	26	25	27	26
2009/10/08	6	0820	H. Stewart	yes	26	26	26	25
2009/10/09	7	1030	T. Kloschinsky	no	25	25	25	25

Chemistry:

Conc.(%)	control	1.5	3.0	6.1	12	24	49	97	
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Day 0

pH	8.3	8.3	8.3	8.3	8.2	8.2	8.1	8.0	
cond.	841	850	858	877	920	998	1164	1472	
DO	7.0	7.1	7.0	7.0	7.0	7.0	7.0	7.0	
temp.	24	24	24	24	24	24	24	24	

Day 7

pH	8.3	8.4	8.5	8.5	8.6	8.6	8.6	8.5	
cond.	1307	1690	1521	1459	1534	1672	2240	2350	
DO	8.2	7.9	8.2	8.2	8.3	8.4	8.7	9.2	
temp.	24	24	24	24	24	24	24	24	

Notes: pH, units; cond., conductivity (µS/cm); DO, dissolved oxygen (mg/L); temp., temperature (°C)

FronD Appearance:

Concentration (%)	Day 0	Day 7
control	green, short roots, healthy	green, long roots, healthy
1.5	green, short roots, healthy	light green, long roots, healthy
3.0	green, short roots, healthy	green, long roots, some chl, some yel
6.1	green, short roots, healthy	green, long roots, some chl, some yel
12.1	green, short roots, healthy	green, long roots, some chl, some yel
24	green, short roots, healthy	green, long roots, some chl, some yel
49	green, short roots, healthy	green, long roots, some chl, some yel, Asf
97	green, short roots, healthy	green, long roots, some chl, some yel, Asf

 Notes: chl, chlorotic; nec, necrotic; asf, abnormally sized fronds; gib, gibbosity; cd, colony destroyed; rd, roots destroyed;
 lb, loss of bouyancy

Test Data

 Client: ALS106
 Reference: 09-1808-01-LMD

Fronnd number:

Conc.(%)	control	1.5	3.0	6.1	12.1	24	49	97
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Replicate

Day 0

a	6	6	6	6	6	6	6	6
b	6	6	6	6	6	6	6	6
c	6	6	6	6	6	6	6	6
d	6	6	6	6	6	6	6	6

Day 7

a	51	51	53	51	35	40	34	26
b	53	65	53	36	39	44	32	37
c	48	69	66	60	49	41	36	38
d	42	38	49	47	53	40	36	33

Increase in Fronnd Number:

Conc.(%)	control	1.5	3.0	6.1	12.1	24	49	97
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Replicate

a	45	45	47	45	29	34	28	20
b	47	59	47	30	33	38	26	31
c	42	63	60	54	43	35	30	32
d	36	32	43	41	47	34	30	27

average

sd	43	50	49	43	38	35	29	28
cv	5	14	7	10	8	2	2	5
%ctls	11	28	15	23	22	5	7	20
% stim	100	117	116	100	89	83	67	65
	0	17	16	0	-11	-17	-33	-35

Total Dry Weights (mg):

Conc.(%)	control	1.5	3.0	6.1	12.1	24	49	97
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Replicate

Day 7

a	4.2	4.2	4.8	4.6	3.5	4.2	3.6	3.0
b	3.5	4.2	3.9	3.2	4.0	3.9	3.0	3.6
c	3.5	4.9	4.9	4.6	4.4	4.0	3.2	3.7
d	3.6	3.1	3.8	3.8	4.3	3.9	3.9	3.2

Day 7

average

sd	3.7	4.1	4.4	4.0	4.1	4.0	3.5	3.4
cv	0.3	0.7	0.6	0.7	0.4	0.2	0.4	0.3
%ctls	9	18	13	17	9	4	12	10
% stim	100	111	118	109	110	109	94	91
	0	11	18	9	10	9	-6	-9

Notes: cv, coefficient of variation; %ctls, percent of controls; sd, standard deviation, % stim, percent stimulation

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Comments/Statistics

Client: ALS106 Reference: 09-1808-01-LMD

Test Result Comments:

None

Data Analysis:

Regression analysis was attempted on the data, but the assumptions of normality and equal variance were not met. Therefore, endpoints for frond number were calculated using a Linear Interpolation model using CETIS v. 1.7.0 rev Q. During statistical analysis the 1.5, 3.0, 6.1, 12 and 24% concentrations were assigned the control values.

Endpoints for biomass could not be calculated. No inhibitory effect occurred.

Protocol Deviations:

None

Test Method: 7 days *Lemna minor* Survival and Growth Test (five treatments plus a control)
HydroQual Test Method Manual, section: 4.4.2.3

Reference: Biological Test Method: Test for Measuring the Inhibition of Growth Using the
Freshwater Macrophyte, *Lemna minor*, 2007. Environment Canada, EPS 1/RM/37.

Test Organism:

test species: *Lemna minor*
culture source: in-house
original culture source: UTCC - 492 (clone 7730)
culture vessels: 250 mL Erlenmeyer flask
water source: deionized water
growth medium: Hoagland's E+ medium
cultivation method: as per test conditions
temp of breeding aquaria: $25 \pm 2^{\circ}\text{C}$
organism age: 7-10 days old acclimated to
test media for 18 to 24 hours
mean increase in frond #: 35
fold increase: 35

Test Design:

test type: static
toxicant: potassium chloride
water source: deionized reverse osmosis
water with nutrients
as per EPS 1/RM/37
test vessel: 200mL polyethylene cups
test volume (mL): 150
test cover: clear plastic lids
replicates per treatment: 4
organisms per replicate: two 3 frond plants
temperature ($^{\circ}\text{C}$): $25 \pm 2^{\circ}\text{C}$
photoperiod: 24 hours light
light level (surface): 4, 500 $\pm$ 300 lux
light source: cool white fluorescent
hardness adjustment: no

Control/Dilution Water:

water source: City of Calgary tap water; deionized reverse osmosis water
and nutrients as per EPS 1/RM/37

Comments: None.

Quality Assurance Unit:



Authorized by S. Krishnappa, B.Sc., Quality Assurance Coordinator
The test data and results are verified correct.

Frond Number

Current Test

toxicant Potassium Chloride (KCl)

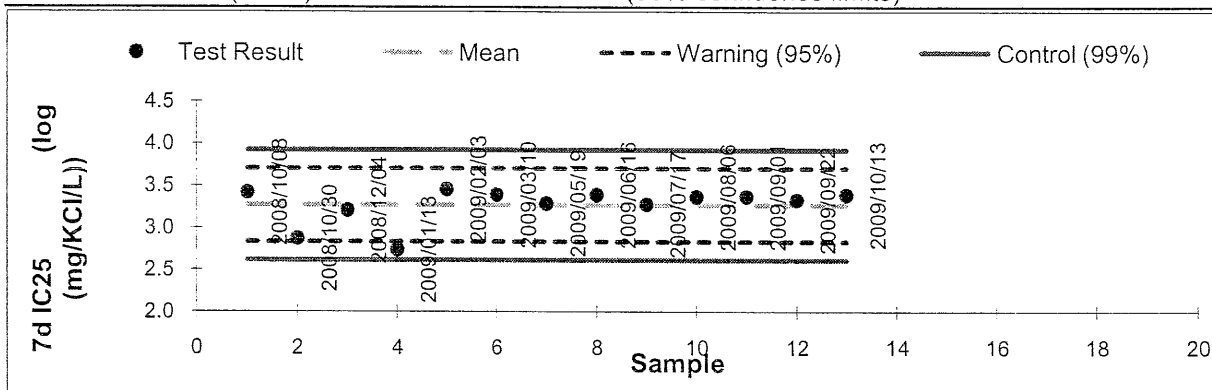
started on 2009/10/06 ended on 2009/10/13

Result (7 d IC25): 3.39 log (mg KCl/L); geometric mean

Confidence Limits (95%) lower 3.30 upper 3.46

Historical Values

mean	3.27	sd	0.22	cv(%):	7
	lower	upper			
warning limits (± 2 sd)	2.83	3.71	(95% confidence limits)		
control limits (± 3 sd)	2.62	3.92	(99% confidence limits)		



Biomass

Current Test

toxicant Potassium Chloride (KCl)

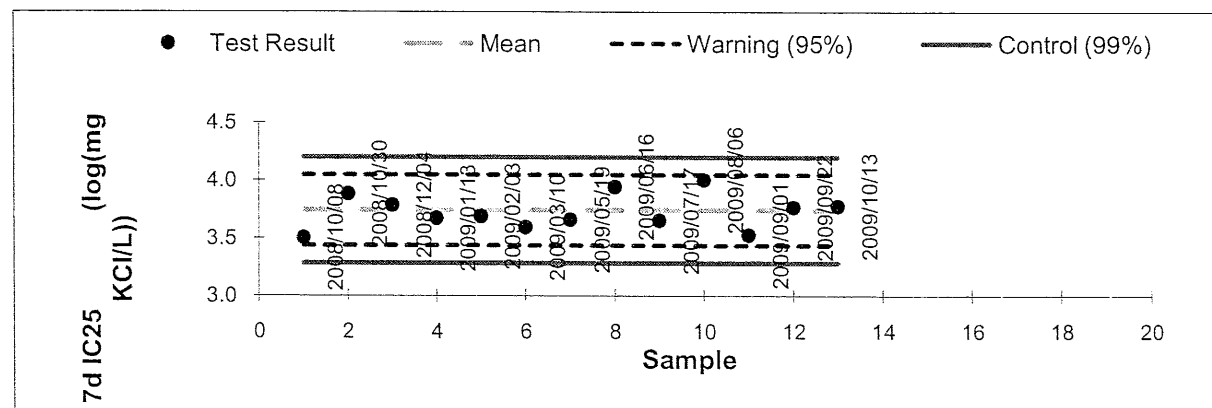
started on 2009/10/06 ended on 2009/10/13

Result (7 d IC25): 3.78 log (mg KCl/L); geometric mean

Confidence Limits (95%) lower 3.54 upper 3.93

Historical Values

mean	3.74	sd	0.15	cv(%):	4
	lower	upper			
warning limits (± 2 sd)	3.44	4.05	(95% confidence limits)		
control limits (± 3 sd)	3.28	4.20	(99% confidence limits)		



notes: sd, standard deviation; cv, coefficient of variance; NA, could not be calculated

Our liability is limited to the cost of the test requested on the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results in part or in whole.

Result Summary

 Client: ALS106
 Reference: 09-1808-01-TRD

Client: ALS Laboratory Group; operation Edmonton

Sample: L825404-18

Pond 2 Toxicity

Collection: collected on 2009/09/30 at not given by not given

Receipt: received on 2009/10/02 at 0929 by E.A. Benner

Containers: received 6 x 20L pails at 11 °C, in good condition with no seals and no initials

Description: type: water, collection method: not given

Contents

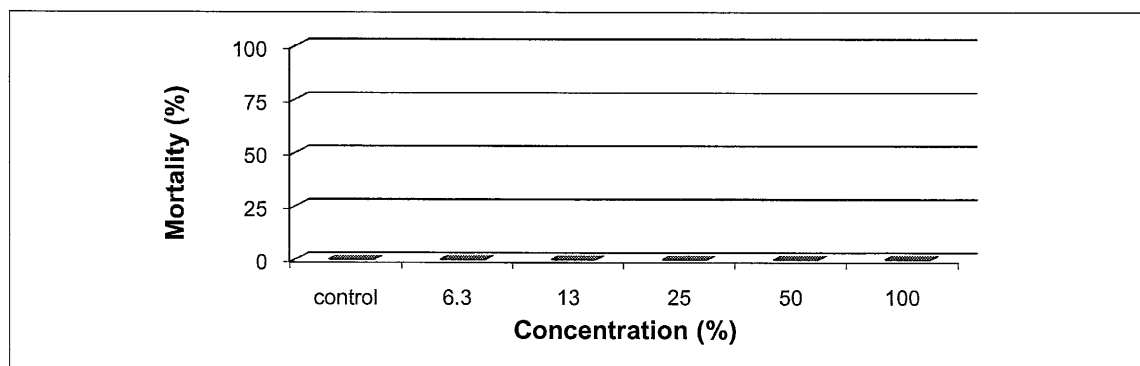
 Result Summary.....1
 Test Conditions.....2
 Test Data.....3
 Comments/Statistics..5
 QA/QC.....6

Test: started on 2009/10/02 ; ended on 2009/10/06

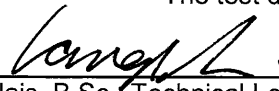
Result:

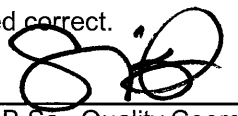
	Endpoint (96-hour)	Value (%)	Confidence Limits (95%)		Method Calculated
			lower	upper	
Acute:	LC50	>100			could not be calculated
(mortality)	LC25	>100			could not be calculated

Notes: LC25 & LC50, concentrations lethal to 25% and 50% of the test population



The test data and results are authorized and verified correct.


 E. Blais, B.Sc., Technical Lead


 S. Krishnappa, B.Sc., Quality Coordinator

Test Conditions

Client: ALS106 Reference: 09-1808-01-TRD

Method: Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout, 2000. Environment Canada, EPS 1/RM/13. Second Edition (amended May 2007).

Test type: Trout 96-h Static Acute Test (HQ 4.4.4.1)

Species: *Oncorhynchus mykiss*

Organism source: Sun Valley Trout Farms (Batch 20090813TR)

Acclimation: 50 days (must be ≥ 2 weeks)

Stock mortality: 0.91% (seven days preceeding testing)

Sample initial chemistry: pH: 6.7; EC: 777 ($\mu\text{S}/\text{cm}$); DO: 9.5 (mg/L); temperature: 17 °C
hardness (mg CaCO_3/L): 232; colour: colourless; odour: odourless

Sample holding time: 2 days (must be ≤ 5 days)

Sample storage: $4 \pm 2^\circ\text{C}$ in darkness

Test vessel: The test was conducted in 22 L plastic pails with polyethylene liners

Test volume: 20 Litres (depth of solution in each test vessel $\geq 15\text{cm}$)

Sample pre-treatment: All test solutions and controls were pre-aerated for 30 minutes at $6.5 \pm 1 \text{ mL}/\text{min}/\text{L}$
Dissolved oxygen in 100 % sample was 9 mg/L after pre-aeration
The sample was not filtered or pH adjusted prior to or during testing

Loading density: 0.281 g/Litre (must be $\leq 0.5 \text{ g}/\text{Litre}$)

Control/dilution water: Dechlorinated City of Calgary water acclimated to test conditions

Test concentrations: 5 effluent concentrations (6.3, 12.5, 25, 50, 100% (v/v) plus a negative control)

Test replicates: One replicate per treatment; 10 fish per replicate

Feeding: Fish are not fed 24 hours before test initiation and no feeding during test

Measurements: pH, conductivity, dissolved oxygen and temperature measured daily

Aeration: All treatments aerated at $6.5 \pm 1 \text{ mL}/\text{min}/\text{L}$ by oil-free compressed air
passed through airline tubes connected to disposable air stones

Lighting: Overhead full spectrum fluorescent lights; 100-500 lux at surface

Photoperiod: 16h light:8h dark

Test temperature: $15 \pm 1^\circ\text{C}$

Endpoint: Mortality, 96-h LC50 (with 95% confidence limits)

Test validity: The control had 100% survival (must $\geq 90\%$)

Reference toxicant: 96-h test with Phenol ($\text{C}_6\text{H}_5\text{OH}$) initiated October 1, 2009; current results
(96-h LC50 and 95% confidence limits) = 0.89 (0.76-0.97) log (mg/L Phenol)

Note: Outlined sections are protocol deviations explained on the comment page; v/v, volume per volume

Test Data

Client: ALS106
Reference: 09-1808-01-TRD

Test Log:

Date	Day	Time	Technician	Comment/Observation
2009/10/02	0	1430	H. Stewart/T. Kloschinsky	test fish loaded at 1430 h
2009/10/03	1	0940	S. Ehman/N. Lavoie	all test fish appear normal
2009/10/04	2	0940	S. Ehman/N. Lavoie	all test fish appear normal
2009/10/05	3	1100	E. Blais/T. Kloschinsky	all test fish appear normal
2009/10/06	4	1000	H. Stewart/T. Kloschinsky	all test fish appear normal

Chemistry:

Conc. (%)	control	6.3	13	25	50	100		
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Day

pH (units)

0	8.1	8.1	8.1	8.0	8.0	7.2		
1	8.2	8.1	8.1	8.0	7.9	7.2		
2	8.0	8.0	8.0	7.8	7.7	7.5		
3	8.3	8.3	8.3	8.2	8.1	7.8		
4	8.5	8.5	8.5	8.4	8.3	8.0		

Conductivity (µS/cm)

0	423	448	478	529	631	844		
1	395	418	447	500	600	807		
2	402	421	450	505	604	809		
3	395	420	450	505	506	811		
4	433	454	488	540	650	858		

Dissolved Oxygen (mg/L)

0	8.4	8.5	8.5	8.6	8.6	9.0		
1	7.7	7.8	7.8	7.8	7.8	7.8		
2	8.9	8.9	9.0	9.1	9.0	9.1		
3	8.7	8.9	8.9	9.0	9.3	9.3		
4	8.8	8.8	8.9	8.9	8.9	8.8		

Temperature (°C)

0	15	15	14	14	14	14		
1	14	14	14	14	14	14		
2	14	14	14	14	14	14		
3	14	14	14	14	14	14		
4	14	14	14	14	14	14		

Our liability is limited to the cost of the test requested. The test results only relate to the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results.

Test Data

Client: ALS106
Reference: 09-1808-01-TRD

Number Alive:

Conc. (%)	control	6.3	13	25	50	100		
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Day

0	10	10	10	10	10	10		
1	10	10	10	10	10	10		
2	10	10	10	10	10	10		
3	10	10	10	10	10	10		
4	10	10	10	10	10	10		

Mortality (%)

4	0	0	0	0	0	0		
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Biology Summary Tables:

Control Fish	Length (cm)	Wet Weight(g)
1	3.9	0.6
2	3.4	0.4
3	3.9	0.6
4	4.1	0.8
5	3.5	0.4
6	3.3	0.4
7	3.6	0.6
8	3.9	0.6
9	3.6	0.6
10	3.3	0.5

Conc. (%)	Group Wet Weight (g)
control	5.6
6.3	5.6
13	5.8
25	5.9
50	6.4
100	6.0

average	3.7	0.6
sd	0.3	0.1
cv(%)	7.8	24.6

Notes: nd, not done; na, not applicable;
 sd, standard deviation; cv(%), coefficient
 of variation

Comments/Statistics

Client: ALS106 Reference: 09-1808-01-TRD

Test Result Comments:

None

Data Analysis:

Endpoints for mortality could not be calculated. No effect occurred.

Protocol Deviations:

None

Test Method: Trout 96h Static Acute Test. (LC50, five or more treatments plus a control)
 HydroQual Test Method Manual, section: 4.4.4.1

Reference: Biological Test Method: Reference Method for Determining Acute Lethality of
 Effluents to Rainbow Trout, 1990. Environment Canada, EPS 1/RM/13.
 including May 1996 and December 2000 amendments.

Test Organism:

test species: *Oncorhynchus mykiss*
 culture source: Sun Valley Trout Parks
 temperature (°C): 15 ± 1
 dissolved oxygen: saturated
 stock mortality (last 7d): 0.87%
 batch number: 20090813TR

Test Design:

vol. of test vessel (L): 22
 test volume depth: >15 cm
 replicates per treatment: 1
 fingerlings per replicate: 10
 loading (g fish/L): <0.5
 temperature (°C): 15 ± 1
 photoperiod: 16h light: 8h dark
 light level (water surface): 100-500 lux
 control/dilution water: dechlorinated tap water

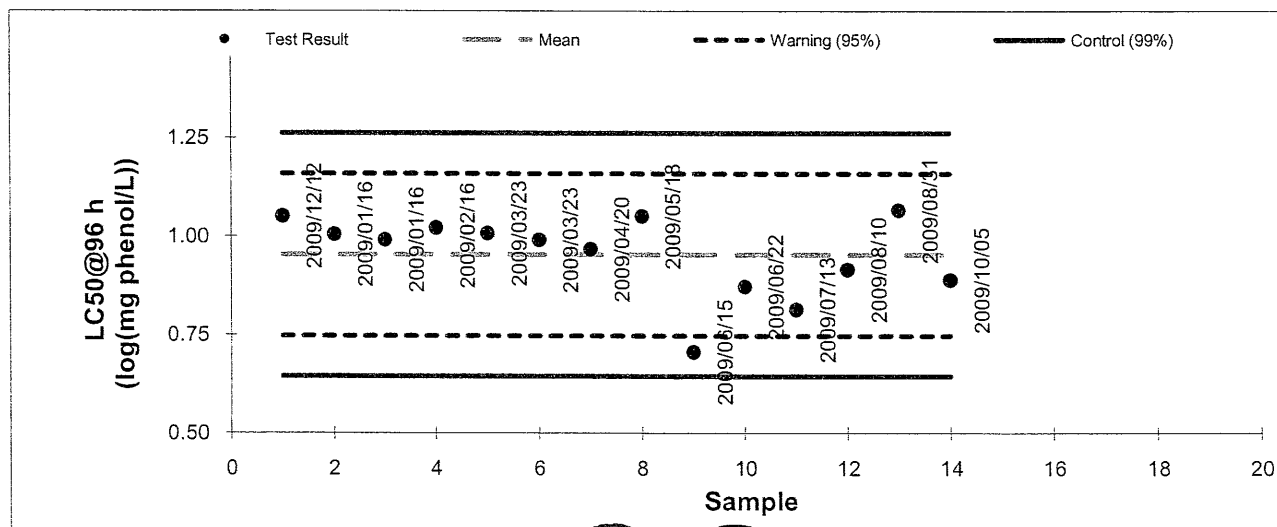
Current Test

toxicant phenol (C ₆ H ₅ OH)		started on 2009/10/01		ended on 2009/10/05	
Result (LC50 @ 96h)	0.89	log (mg phenol/L); geometric mean			
Confidence Limits (95%)	lower	0.76	upper	0.97	

Historical Values

mean	0.95	sd	0.10	cv(%):	11
	lower	upper			
warning limits (±2 sd)	0.75	1.16	(95% confidence limits)		
control limits (±3 sd)	0.64	1.26	(99% confidence limits)		

notes: sd, standard deviation; cv, coefficient of variance



Quality Assurance Unit:

Authorized by S. Krishnappa, B.Sc., Quality Assurance Coordinator
 The test data and results are verified correct.

Our liability is limited to the cost of the test requested on the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results in part or in whole.

Result Summary

 Client: ALS106
 Reference: 09-1808-01-TRD

Client: ALS Laboratory Group; operation Edmonton

Sample: L825404-18

Pond 2 Toxicity

Collection: collected on 2009/09/30 at not given by not given

Receipt: received on 2009/10/02 at 0929 by E.A. Benner

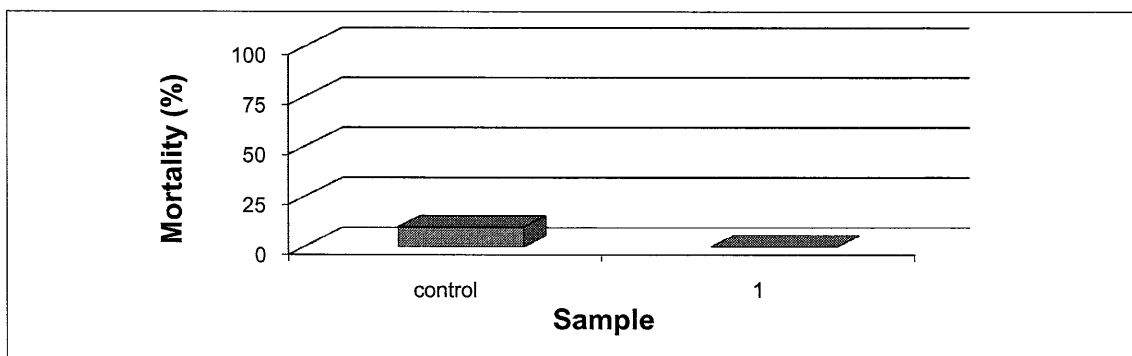
 Containers: received 6 x 20L pails at 11 °C, in good condition with
 no seals and no initials

Description: type: water, collection method: not given

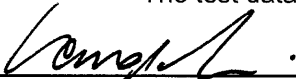
Test: started on 2009/10/02 ; ended on 2009/10/06

Result:

Sample	Client Code	Mortality (%)	Comment
control	lab control	10	
1	L825404-18	0	not toxic as tested



The test data and results are authorized and verified correct.


 E. Blais, B.Sc., Technical Lead


 S. Krishnappa, B.Sc., Quality Coordinator

Test Conditions

Client: ALS106 Reference: 09-1808-01-TRD

Method: Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout, 2000. Environment Canada, EPS 1/RM/13. Second Edition (amended 2007).

Test type: Trout 96-h Static Acute Test (HQ 4.4.4.1)

Species: *Oncorhynchus mykiss*

Organism source: Sun Valley Trout Farms (Batch 20090813TR)

Acclimation: 50 days (must be ≥ 2 weeks)

Stock mortality: 0.91% (seven days preceeding testing)

Sample initial chemistry: pH: 6.7; EC: 777 ($\mu\text{S}/\text{cm}$); DO: 9.5 (mg/L); temperature: 17 °C
hardness (mg CaCO_3/L): 232; colour: colourless; odour: odourless

Sample holding time: 2 days (must be ≤ 5 days)

Sample storage: $4 \pm 2^\circ\text{C}$ in darkness

Test vessel: The test was conducted in 22 L plastic pails with polyethylene liners

Test volume: 16 Litres (depth of solution in each test vessel $\geq 15\text{cm}$)

Sample pre-treatment: All test solutions and controls were pre-aerated for 30 minutes at $6.5 \pm 1 \text{ mL}/\text{min}/\text{L}$
Dissolved oxygen in full strength sample was 9.1 mg/L after pre-aeration
The sample was not filtered or pH adjusted prior to or during testing

Loading density: 0.315 g/Litre (must be $\leq 0.5 \text{ g}/\text{Litre}$)

Control water: Dechlorinated City of Calgary water acclimated to test conditions

Test concentrations: Undiluted sample plus a negative control

Test replicates: One replicate per treatment; 10 fish per replicate

Feeding: Fish are not fed 24 hours before test initiation and no feeding during test

Measurements: pH, conductivity, dissolved oxygen and temperature measured daily

Aeration: All treatments aerated at $6.5 \pm 1 \text{ mL}/\text{min}/\text{L}$ by oil-free compressed air
passed through airline tubes connected to disposable air stones

Lighting: Overhead full spectrum fluorescent lights; 100-500 lux at surface

Photoperiod: 16h light:8h dark

Test temperature: $15 \pm 1^\circ\text{C}$

Endpoint: Mortality, % mortality at 96-h

Test validity: The control had 90% survival (must $\geq 90\%$)

Reference toxicant: 96-h test with Phenol ($\text{C}_6\text{H}_5\text{OH}$) initiated October 1, 2009; current results
(96-h LC_{50} and 95% confidence limits) = 0.89 (0.76-0.97) log (mg/L Phenol)

Note: Outlined sections are protocol deviations explained on the comment page; v/v, volume per volume

Test Data

Client: ALS106
Reference: 09-1808-01-TRD

Test Log:

Date	Day	Time	Technician	Comment/Observation
2009/10/02	0	1430	H. Stewart/T. Kloschinsky	test fish loaded at 1430 h
2009/10/03	1	0930	S. Ehman/N. Lavoie	all test fish appear normal
2009/10/04	2	0940	S. Ehman/J. Amyotte	all test fish appear normal
2009/10/05	3	1100	E. Blais/T. Kloschinsky	all test fish appear normal
2009/10/06	4	1000	H. Stewart/T. Kloschinsky	all test fish appear normal

Chemistry:

Sample	control	1						
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Day

pH (units)

0	7.7	6.9						
1	8.0	7.0						
2	7.9	7.6						
3	8.2	8.0						
4	8.5	7.6						

Conductivity (µS/cm)

0	420	843						
1	387	802						
2	386	794						
3	385	786						
4	427	851						

Dissolved Oxygen (mg/L)

0	8.3	9.1						
1	7.6	7.6						
2	8.8	9.1						
3	9.2	9.0						
4	8.7	8.7						

Temperature (°C)

0	14	14						
1	14	15						
2	14	14						
3	14	14						
4	14	15						

Test Data

Client: ALS106
Reference: 09-1808-01-TRD

Number Alive:

Sample	control	1						
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Day

0	10	10						
1	10	10						
2	10	10						
3	10	10						
4	9	10						

Mortality (%)

4	10	0						
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Biology Summary Tables:

Control Fish	Length (cm)	Wet Weight(g)
1	3.6	0.5
2	3.6	0.5
3	3.9	0.6
4	3.6	0.5
5	4.0	0.6
6	3.4	0.4
7	3.4	0.4
8	3.4	0.5
9	3.5	0.5
10	3.7	0.6

Sample	Group Wet Weight (g)
control	5.0
1	5.3

average	3.6	0.5
sd	0.2	0.1
cv(%)	5.8	13.1

Notes: nd, not done; na, not applicable;
 sd, standard deviation; cv(%), coefficient
 of variation

Comments/Statistics

Client: ALS106 Reference: 09-1808-01-TRD

Test Result Comments:

None

Data Analysis:

None

Protocol Deviations:

None

Test Method: Trout 96h Static Acute Test. (LC50, five or more treatments plus a control)
 HydroQual Test Method Manual, section: 4.4.4.1

Reference: Biological Test Method: Reference Method for Determining Acute Lethality of
 Effluents to Rainbow Trout, 1990. Environment Canada, EPS 1/RM/13.
 including May 1996 and December 2000 amendments.

Test Organism:

test species: *Oncorhynchus mykiss*
 culture source: Sun Valley Trout Parks
 temperature (°C): 15 ± 1
 dissolved oxygen: saturated
 stock mortality (last 7d): 0.87%
 batch number: 20090813TR

Test Design:

vol. of test vessel (L): 22
 test volume depth: >15 cm
 replicates per treatment: 1
 fingerlings per replicate: 10
 loading (g fish/L): <0.5
 temperature (°C): 15 ± 1
 photoperiod: 16h light: 8h dark
 light level (water surface): 100-500 lux
 control/dilution water: dechlorinated tap water

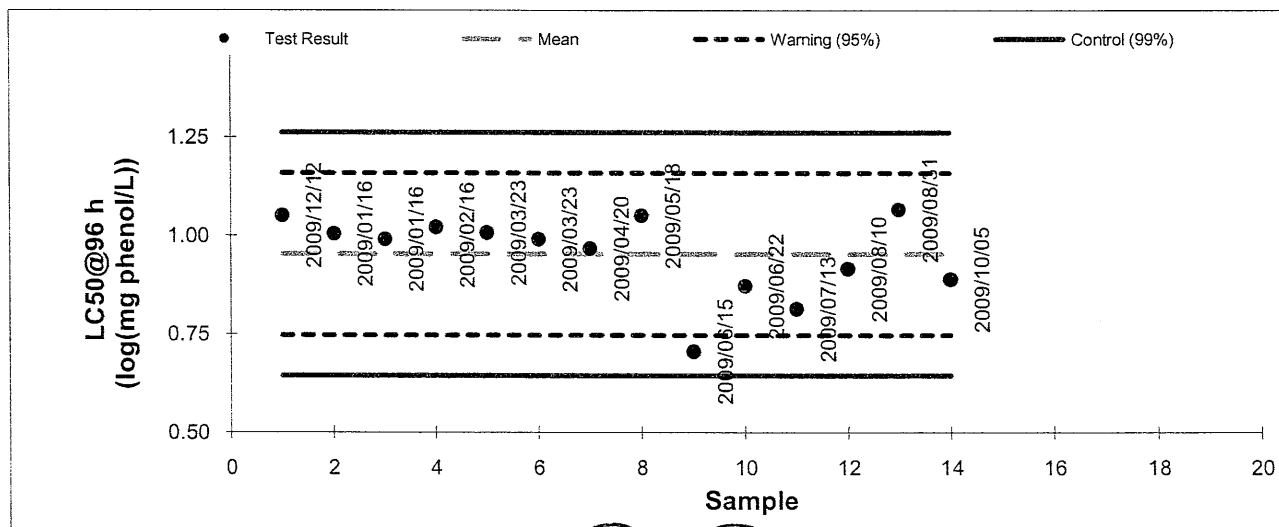
Current Test

toxicant phenol (C₆H₅OH)
 started on 2009/10/01 ended on 2009/10/05
 Result (LC50 @ 96h) 0.89 log (mg phenol/L); geometric mean
 Confidence Limits (95%) lower 0.76 upper 0.97

Historical Values

	mean	sd	cv(%)
	0.95	0.10	11
warning limits (±2 sd)	0.75	1.16	(95% confidence limits)
control limits (±3 sd)	0.64	1.26	(99% confidence limits)

notes: sd, standard deviation; cv, coefficient of variance



Quality Assurance Unit:

Authorized by S. Krishnappa, B.Sc., Quality Assurance Coordinator
 The test data and results are verified correct.

Our liability is limited to the cost of the test requested on the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results in part or in whole.

Result Summary

 Client: ALS106
 Reference: 09-1808-01-DAD

Client: ALS Laboratory Group; operation Edmonton

Sample: L825404-18

Pond 2 Toxicity

Collection: collected on 2009/09/30 at not given by not given

Receipt: received on 2009/10/02 at 0929 by E.A. Benner

Containers: received 6 x 20L pails at 11 °C, in good condition with no seals and no initials

Description: type: water, collection method: not given

Contents

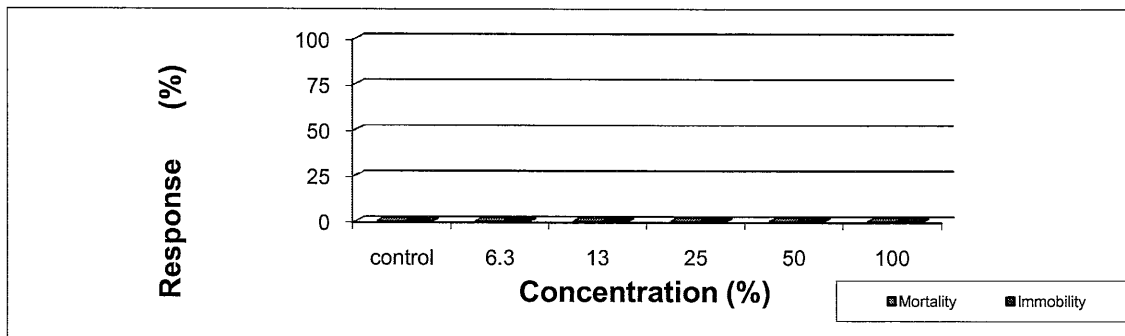
 Result Summary.....1
 Test Conditions.....2
 Test Data.....4
 Comments/Statistics..5
 QA/QC.....6

Test: started on 2009/10/02 ; ended on 2009/10/04

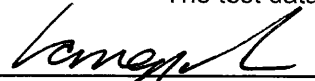
Result:

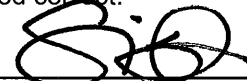
	Endpoint (48-hour)	Value (%)	Confidence Limits (95%) lower upper	Method Calculated
Acute: (mortality)	LC50	>100		could not be calculated
	LC25	>100		could not be calculated
Acute: (immobility)	EC50	>100		could not be calculated
	EC25	>100		could not be calculated

Notes: LC25 & LC50, concentrations lethal to 25% and 50% of the test population



The test data and results are authorized and verified correct.


 E. Blais, B.Sc., Technical Lead


 S. Krishnappa, B.Sc., Quality Coordinator

Our liability is limited to the cost of the test requested. The test results only relate to the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results.

Test Conditions

Client: ALS106 Reference: 09-1808-01-DAD

Method: Biological Test method: Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna*, 2000. Environ. Can., EPS 1/RM/14. Second Edition.

Test type: *Daphnia* 48-h Static Acute Test (HQ 4.4.3.1)

Species: *Daphnia magna*

Age: < 24 hours old

Organism source: in-house culture

Stock mortality: 0%

Culture brood data: 8 days to first brood
26 neonates per average brood

Sample initial chemistry: pH: 6.7; EC: 777 ($\mu\text{S}/\text{cm}$); DO: 9.5 (mg/L); temperature: 17 °C
hardness (mg CaCO_3/L): 232; colour: colourless; odour: odourless

Sample holding time: 2 days (must be ≤ 5 days)

Sample storage: $4 \pm 2^\circ\text{C}$ in darkness

Test vessel: 385 mL plastic vessels

Test volume: 150 mL

Sample pre-treatment: The sample was not filtered or pH adjusted prior to or during testing
The sample was pre-aerated for 0 minutes (rate of $37.5 \pm 12.5 \text{ mL}/\text{min} \cdot \text{L}^{-1}$)
The hardness of the sample was not adjusted (mg CaCO_3/L) prior to or during testing

Loading density: One daphnid/15 mL (must ≤ 1 organism/15 mL)

Control/dilution water: Dechlorinated City of Calgary water acclimated to test conditions
The hardness of the control/dilution water was 165 mg CaCO_3/L

Test concentrations: 5 effluent concentrations (6.3, 12.5, 25, 50, 100% (v/v) plus a negative control)

Test replicates: One replicate per treatment, 10 daphnids per replicate

Feeding: None

Aeration: None

Measurements: pH, conductivity, dissolved oxygen and temperature at test initiation and termination

Lighting: Cool white fluorescent lights; 400-800 lux at surface

Photoperiod: 16h light:8h dark

Test temperature: $20 \pm 2^\circ\text{C}$

Note: Outlined sections are protocol deviations explained on the comment page

Test Conditions

Client: ALS106 Reference: 09-1808-01-DAD

Endpoint: Mortality, 48-h LC50 (95% confidence limits)
Immobility, 48-h EC50 (95% confidence limits)
Test validity: The control had 100% survival (must $\geq 90\%$)
Control had 0 percent (%) abnormal behaviour (must $\leq 10\%$, immobility)

Reference toxicant: 48-h test with NaCl initiated October 6, 2009; current results
(48-h LC50 and 95% confidence limits) = 0.73 (0.69-0.76) log (g/L NaCl)

Note: Outlined sections are protocol deviations explained on the comment page

Test Data

Client: ALS106
Reference: 09-1808-01-DAD

Test Log:

Date	Day	Time	Technician	Comment/Observation
2009/10/02	0	1215	T. Kloschinsky	test <i>Daphnia</i> appear normal
2009/10/03	1	0900	S. Ehman	test <i>Daphnia</i> appear normal
2009/10/04	2	0920	S. Ehman	test <i>Daphnia</i> appear normal

Chemistry:

Conc. (%)	control	6.3	13	25	50	100		
-----------	---------	-----	----	----	----	-----	--	--

Day

pH (units)

0	7.9	8.0	8.1	8.0	8.0	7.8		
2	7.8	7.9	7.9	7.9	7.7	7.5		

Conductivity (µS/cm)

0	359	377	403	452	558	761		
2	373	399	438	484	592	836		

Dissolved Oxygen (mg/L)

0	7.4	7.4	7.4	7.5	7.5	7.7		
2	8.2	8.1	8.1	8.0	8.0	8.0		

Temperature (°C)

0	20	20	20	20	20	19		
2	20	20	20	19	20	20		

Biology:

Conc. (%)	control	6.3	13	25	50	100		
-----------	---------	-----	----	----	----	-----	--	--

Day

Number Alive and Behavior (behavior is in brackets)

1	10	10	10	10	10	10		
2	10	10	10	10	10	10		

Notes: F, floating; I, immobile; B, stuck on bubble; D, caught in debris; nd, not done; na, not applicable;

Mortality (%)

2	0	0	0	0	0	0		
---	---	---	---	---	---	---	--	--

Immobility (%)

2	0	0	0	0	0	0		
---	---	---	---	---	---	---	--	--

Comments/Statistics

Client: ALS106 Reference: 09-1808-01-DAD

Test Result Comments:

None

Data Analysis:

Endpoints for mortality could not be calculated. No effect occurred.

Endpoints for immobility could not be calculated. No effect occurred.

Protocol Deviations:

None

Quality Assurance Information

Test Method: *Daphnia* Static Acute Test (LC50, five or more treatments plus a control)
 HydroQual Test Method Manual, section: 4.4.3.1

Reference: Biological Test Method: Reference Method for Determining the Acute Lethality of Effluents to *Daphnia magna*, 1990. Environment Canada, EPS 1/RM/14. including May 1996 and December 2000 amendments.

Test Organism:

test species: *Daphnia magna*
 culture source: in-house
 original culture source: Environment Canada
 days to first brood: 8
 mean brood size: 26
 ephippia in stock culture: no
 age of test organisms: <24 hours old
 culture mortality (%): 0%

Test Design:

vol. of test vessel (mL): 500
 toxicant: sodium chloride
 test volume (mL): 150
 replicates per treatment: 1
 neonates per replicate: 10
 volume per neonate (mL): 15
 samples pre-aerated: no
 hardness adjustment: no
 temperature (°C): 20
 photoperiod: 16h light:8h dark
 light level (water surface): 400-800 lux
 control/dilution water: dechlorinated tap water

Current Test

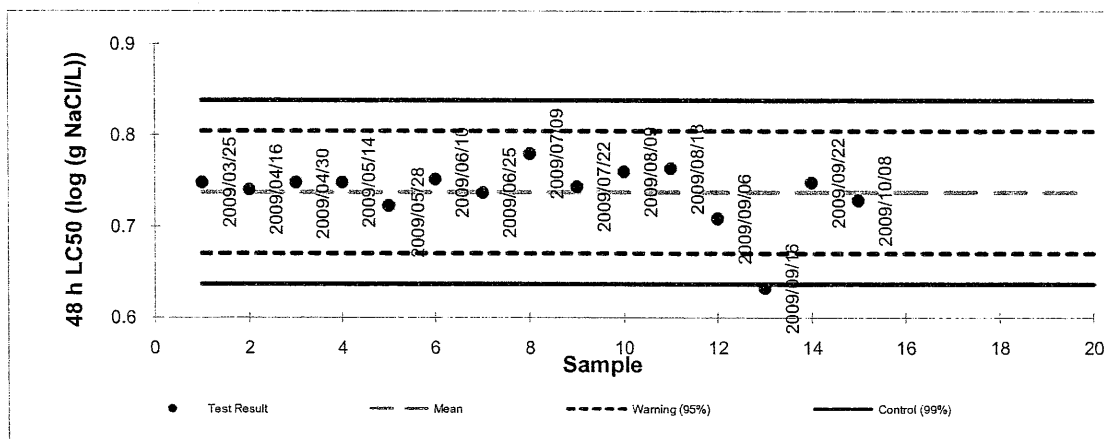
toxicant Sodium Chloride (NaCl)
 started on 2009/10/06 ended on 2009/10/08
 Result (LC50 @ 48h) 0.73 log (g NaCl/L); geometric mean
 Confidence Limits (95%) lower 0.69 upper 0.76

Historical Values

	mean	sd	cv(%)
	0.74	0.03	5
warning limits (± 2 sd)	0.67	0.80	(95% confidence limits)
control limits (± 3 sd)	0.64	0.84	(99% confidence limits)

notes: sd, standard deviation; cv, coefficient of variance

Comments: None.



Quality Assurance Unit:

Authorized by S. Krishnappa, B.Sc., Quality Assurance Coordinator
 The test data and results are verified correct.

Our liability is limited to the cost of the test requested on the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results in part or in whole.

HydroQual Laboratories Ltd., #4, 6125 12th Street SE, Calgary, Alberta, Canada T2H 2K1
 tel (403) 253-7121 fax (403) 252-9363 www.hydroqual.ca

DA Ref. Tox.v 3.0

Result Summary

 Client: ALS106
 Reference: 09-1808-01-DAD

Client: ALS Laboratory Group; operation Edmonton

Sample: L825404-18

Pond 2 Toxicity

Collection: collected on 2009/09/30 at not given by not given

Receipt: received on 2009/10/02 at 0929 by E.A. Benner

Containers: received 6 x 20L pails at 11 °C, in good condition with no seals and no initials

Description: type: water, collection method: not given

Contents

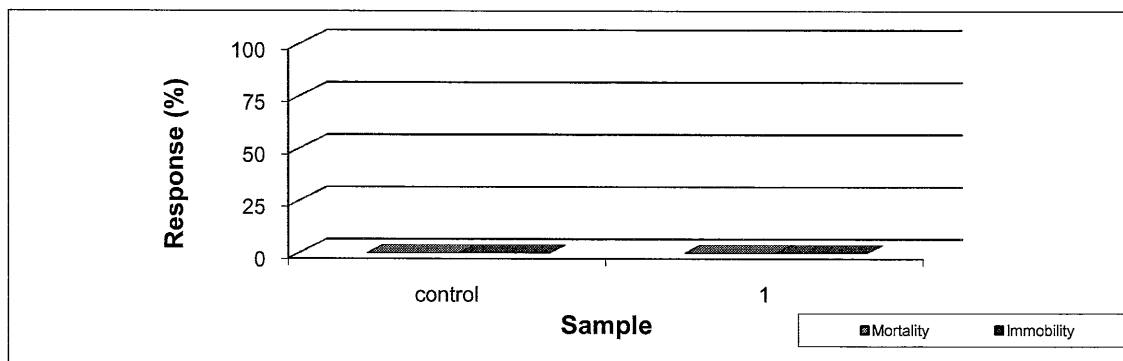
 Result Summary.....1
 Test Conditions.....2
 Test Data.....4
 Comments/Statistics..5
 QA/QC.....6

Test: started on 2009/10/02 ; ended on 2009/10/04

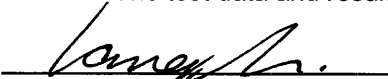
Result:

Sample	Client Code	Average Mortality (%)	Average Immobility (%)	Comment
control	lab control	0	0	
1	L825404-18	0	0	not toxic as tested

Notes: sd, sample standard deviation; cv, coefficient of variation; nd, not done; na, not applicable;



The test data and results are authorized and verified correct.


 E. Blais, B.Sc., Technical Lead


 S. Krishnappa, B.Sc., Quality Coordinator

Our liability is limited to the cost of the test requested. The test results only relate to the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results.

Test Conditions

Client: ALS106 Reference: 09-1808-01-DAD

Method: Biological Test method: Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna*, 2000. Environ. Can., EPS 1/RM/14. Second Edition.

Test type: *Daphnia* 48-h Static Acute Test (HQ 4.4.3.1)

Species: *Daphnia magna*

Age: < 24 hours old

Organism source: in-house culture

Stock mortality: 0%

Culture brood data: 8 days to first brood
26 neonates per average brood

Sample initial chemistry: pH: 6.7; EC: 777 ($\mu\text{S}/\text{cm}$); DO: 9.5 (mg/L); temperature: 17 °C
hardness (mg CaCO_3/L): 232; colour: colourless; odour: odourless

Sample holding time: 2 days (must be ≤ 5 days)

Sample storage: $4 \pm 2^\circ\text{C}$ in darkness

Test vessel: 385 mL plastic vessels

Test volume: 150 mL

Sample pre-treatment: The sample was not filtered or pH adjusted prior to or during testing
The sample was pre-aerated for 0 minutes (rate of $37.5 \pm 12.5 \text{ mL}/\text{min} \cdot \text{L}^{-1}$)
The hardness of the sample was not adjusted (mg CaCO_3/L) prior to or during testing

Loading density: One daphnid/15 mL (must ≤ 1 organism/15 mL)

Control water: Dechlorinated City of Calgary water acclimated to test conditions
The hardness of the control/dilution water was 165 mg CaCO_3/L

Test concentrations: Undiluted sample plus a negative control

Test replicates: Three replicates per treatment, 10 daphnids per replicate

Feeding: None

Aeration: None

Measurements: pH, conductivity, dissolved oxygen and temperature at test initiation and termination

Lighting: Cool white fluorescent lights; 400-800 lux at surface

Photoperiod: 16h light:8h dark

Test temperature: $20 \pm 2^\circ\text{C}$

Note: Outlined sections are protocol deviations explained on the comment page

Test Conditions

Client: ALS106 Reference: 09-1808-01-DAD

Endpoint: Mortality, % mortality at 48-h
Immobility, % immobility at 48-h

Test validity: The control had 100% survival (must $\geq 90\%$)
Control had 0% abnormal behaviour (must $\leq 10\%$), e.g. immobility

Reference toxicant: 48-h test with NaCl initiated October 6, 2009; current results
(48-h LC50 and 95% confidence limits) = 0.73 (0.69-0.76) log (g/L NaCl)

Note: Outlined sections are protocol deviations explained on the comment page

Test Data

 Client: ALS106
 Reference: 09-1808-01-DAD

Test Log:

Date	Day	Time	Technician	Comment/Observation
2009/10/02	0	1215	T. Kloschinsky	test <i>Daphnia</i> appear normal
2009/10/03	1	0900	S. Ehman	test <i>Daphnia</i> appear normal
2009/10/04	2	0915	S. Ehman	test <i>Daphnia</i> appear normal

Chemistry:

Sample	control			1		
replicate	a	b	c	a	b	c

Day	pH (units)					
0	7.8	8.1	8.1	7.9	7.7	7.6
2	7.9	7.9	7.9	7.6	7.3	7.1

	Conductivity ($\mu\text{S}/\text{cm}$)					
0	347	347	349	748	778	786
2	389	375	377	794	834	829

	Dissolved Oxygen (mg/L)					
0	7.8	7.6	7.5	7.9	8.3	8.7
2	8.4	8.2	8.1	8.1	8.0	8.1

	Temperature ($^{\circ}\text{C}$)					
0	20	20	20	20	20	20
2	19	20	20	20	20	20

Biology:

Sample	control			1		
replicate	a	b	c	a	b	c

Day	Number Alive and Behavior (behavior is in brackets)					
1	10	10	10	10 (1F)	10	10 (1F)
2	10	10	10	10	10	10

Notes: F, floating; I, immobile; B, stuck on bubble; D, caught in debris

	Mortality (%)					
2	0	0	0	0	0	0

	Immobility (%)					
2	0	0	0	0	0	0

Our liability is limited to the cost of the test requested. The test results only relate to the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results.

Comments/Statistics

Client: ALS106 Reference: 09-1808-01-DAD

Test Result Comments:

None

Data Analysis:

None

Protocol Deviations:

None

Quality Assurance Information

Test Method: *Daphnia* Static Acute Test (LC50, five or more treatments plus a control)
 HydroQual Test Method Manual, section: 4.4.3.1

Reference: Biological Test Method: Reference Method for Determining the Acute Lethality of Effluents to *Daphnia magna*, 1990. Environment Canada, EPS 1/RM/14. including May 1996 and December 2000 amendments.

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 toxicant: sodium chloride
 test volume (mL): 150
 replicates per treatment: 1
 neonates per replicate: 10
 volume per neonate (mL): 15
 samples preacrated: no
 hardness adjustment: no
 temperature (°C): 20
 photoperiod: 16h light:8h dark
 light level (water surface): 400-800 lux
 control/dilution water: dechlorinated tap water

Current Test

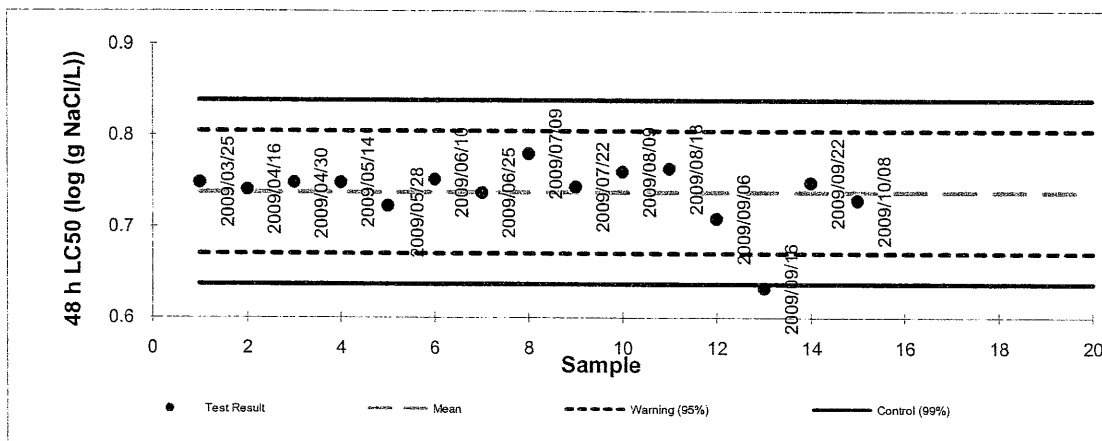
toxicant Sodium Chloride (NaCl)
 started on 2009/10/06 ended on 2009/10/08
 Result (LC50 @ 48h) 0.73 log (g NaCl/L); geometric mean
 Confidence Limits (95%) lower 0.69 upper 0.76

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control limits (± 3 sd)	0.64	0.84	(99% confidence limits)

notes: sd, standard deviation; cv, coefficient of variance

Comments: None.



Quality Assurance Unit:

Authorized by S. Krishnappa, B.Sc., Quality Assurance Coordinator
 The test data and results are verified correct.

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 tel (403) 253-7121 fax (403) 252-9363 www.hydroqual.ca

DA Ref. Tox.v 3.0



ALS 091005-15 (09-CWW)

CONFIDENTIAL ANALYSIS REPORT

REPORT #: 091005-15

WO #: 09-CWW

PO #: L825404

CLIENT: ALS Laboratory Group - Edmonton
9936-67 Avenue
Edmonton, AB
T6E 0P5

ATTENTION: ALSED Reporting
Tel: (780) 413-5227
Fax: (780) 437-2311

SAMPLE DESCRIPTION: Water Sample

DATE AND TIME OF SAMPLE COLLECTION: September 29, 2009

DATE AND TIME OF SAMPLE RECEIPT: October 02, 2009/08:30

SAMPLE TEMPERATURE WHEN RECEIVED: 8.2° Celsius

TEST PERFORMED: Fecal Coliform by MF

TEST START DATE: October 02, 2009

DATE COMPLETED: October 03, 2009

Certificate of Analysis

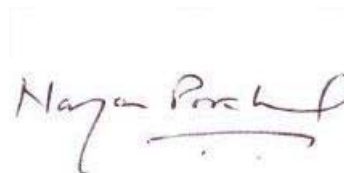
PBR ID	Sample #	Client ID	Lot #	Test	Protocol	Result	Units	Comments
09-CWW-1	L825404-16	LUP-14-09-29-09		Fecal Coliform by MF	APHA-9222D	<1	CFU/100ml	1

Comments

1 CFU = Colony Forming Unit.
<1 = No counts were detected based on the volume/dilution analyzed.



Debangshu Bhaumick, Ph.D. (Analyst)
Date: Oct 06 2009



Approved By: Narayan Pokharel, Ph.D.
Date: Oct 06 2009



Report to: MMG Act # 16023	Report Format / Distribution	Service Requested: (rush - subject to availability)
Company:	Standard: _____ Other: _____	☒ Regular (Default)
Contact: Andrew Mitchell	Select: PDF ☒ Excel ☐ Digital ☐	☐ Priority (2-3 Business Days) - 50% Surcharge
Address:	Email 1: Andrew Mitchell	☐ Emergency (1 Business Day) - 100% Surcharge
	Email 2:	☐ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	Fax:	Analysis Request
Invoice To: Same as Report ? Yes / No ?	Client / Project Information:	(Indicate Filtered or Preserved, F/P)
Company:	Job #:	
Contact:	PO / AFE:	
Address:	Legal Site Description:	
Phone:	Quote #:	

Lab Work Order # (lab use only)		ALS M. OLINEK Contact:	Sampler: T.C.		Sample Type	Number of Containers					
			Date	Time		PH, TSS	Metals	CN	Nutrients	Hardness	
Sample #	Sample Identification (This description will appear on the report)										
	LUP-10-09-22-09 (Q21386)	Sept 22/09	1715 hrs	Water	X	X	X				3
	LUP-10-09-23-09 (Q21386)	Sept 23/09	1645hrs	"	X	X	X				3
	LUP-10-09-24-09 (Q21386)	Sept 24/09	1530hrs	"	X	X	X				3
	LUP-10-09-25-09 (Q21386)	Sept 25/09	1545hrs	"	X	X	X				3
	LUP-10-09-26-09 (Q21386)	Sept 26/09	1600 hrs	"	X	X	X				3
	LUP-10-09-27-09 (Q21386)	Sept 27/09	1515 hrs	"	X	X	X				3
	LUP-10-09-27-09-D (Q21386)	Sept 27/09	1515 hrs	"	X	X	X				3
	LUP-20-09-28-09-W (Q21390)	Sept 28/09	1415hrs	"	X	X	X	X	X	X	4
	LUP-21-09-28-09-W (Q21391)	"	1430hrs	"	X	X	X	X	X	X	4
	LUP-22-09-28-09-W (Q21395)	"	1530hrs	"	X	X	X	X	X	X	4
	LUP-24-09-28-09-W (Q21396)	"	1535hrs	"	X	X	X	X	X	X	4
	LUP-25-09-28-09-W (Q21397)	"	1550hrs	"	X	X	X	X	X	X	4

Special Instructions / Regulation / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)		SHIPMENT VERIFICATION (lab use only)	
Released by:	Date & Time: 09-30-09	Received by: R241	Date: 01-01-09	Temperature: 3-9	Verified by:
REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION		WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY		Date & Time:	Observations: Yes / No ? If Yes attach SIF



Report to: MMG Act # 16023

Company: Andrew Mitchell

Contact: Andrew Mitchell

Address: Andrew Mitchell

Phone: Fax:

Service Requested: (rush - subject to availability)

☒ Regular (Default)

☐ Priority (2-3 Business Days) - 50% Surcharge

☐ Emergency (1 Business Day) - 100% Surcharge

☐ For Emergency < 1 Day, ASAP or Weekend - Contact ALS

Analysis Request

(Indicate Filtered or Preserved, F/P)

Client / Project Information:

Job #: PO / AFE: Legal Site Description: Quote #:

ALS M. OLINER

Sampler: TC

Sample Identification

(This description will appear on the report)

Sample #	Lab Work Order # (lab use only)	Date	Time	Sample Type	PH, TSS	Metals	CN	NH4, TE, TP	Alkalinity	BOD5	NO2, NO3	Bacterial / Coliform	Toxicity	Number of Containers
	LUP-25-09-28-09-WD (Q21397)	Sept 28/09	1550hrs	Water	X	X	X	X	X	X				4
	LUP-10-09-28-09 (Q21386)	"	1700hrs	"	X	X	X	X	X	X				3
	LUP-FB-09-29-09 (Q21390)	Sept 29/09	0630hrs	"	X	X	X	X	X	X				4
	LUP-14-09-29-09 (Q21389)	"	0740hrs	"	X	X	X	X	X	X				8
	LUP-10-09-29-09 (Q21386)	"	1600hrs	"	X	X	X	X	X	X				3
	Pond 2 Toxicity (Q21401)	Sept 30/09	1140hrs	"									X	6
	LUP-10-09-30-09-W	"	1210hrs	"	X	X	X	X	X	X				4

Special Instructions / Regulations / Hazardous Details

3 coolers + 6 pails

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)

Date & Time: 09-30-09

Received by: [Signature]

SHIPMENT RECEPTION (lab use only)

Date: Time: Temperature: Verified by: Date & Time: Observations: Yes / No ? If Yes attach SIF

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front