



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Analytical Report

Norwest Labs
9938-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-5522
Fax: (780) 438-0396

Bill to: Echo Bay Mines Ltd.
Report to: Echo Bay Mines Ltd.

9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein
Sampled By: M. Sawyer
Company: Echo Bay Mines

Project
ID:
Name: Lupin Operation
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: **187682**
Control Number:
Date Received: Aug 19, 2002
Date Reported: Sep 03, 2002
Report Number: 297802

Page: 5 of 16

NWL Number 187682-13
Sample Date
Sample Description 20167 Blank Aug 19
2002

Analyte		Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties						
Temperature of observed pH		°C	21.2			
Solids	Total Suspended	mg/L	<1			1
Routine Water						
pH			3.56			
Conductivity		uS/cm	1.1			1
Calcium	Dissolved	mg/L	<0.2			0.2
Magnesium	Dissolved	mg/L	<0.2			0.2
Hydroxide		mg/L	<5			5
Carbonate		mg/L	<6			6
Bicarbonate		mg/L	<5			5
P-Alkalinity	as CaCO3	mg/L	<5			5
T-Alkalinity	as CaCO3	mg/L	<5			5
Hardness	as CaCO3	mg/L	<1			

Approved by:  Anthony Neumann



Accredited by the Standards Council of Canada (SCC) and by the Canadian Association for Environmental Analytical Laboratories (CAEAL) for specific tests registered with the Council and the Association



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Quality Control

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Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Cyanide	mg/L	<0.001	0.00000	-0.00100	0.00100	✓
Material Used:	Edmonton Method Blank					
Date Acquired:	Aug 26, 2002					
Acquired By:						

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Ammonium - N	mg/L	0.28	0.27	10.00	0.10	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Aug 21, 2002					
Acquired By:						

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Ammonium - N	mg/L	2.82	3.00	2.70	3.30	✓
Cyanide	mg/L	0.077	0.0750	0.0680	0.0870	✓
Material Used:	Water High					
Date Acquired:	Aug 26, 2002					
Acquired By:	Tina Knott					
Ammonium - N	mg/L	0.86	0.800	0.720	0.880	✓
Cyanide	mg/L	0.017	0.0150	0.0135	0.0165	✓
Material Used:	Water Low					
Date Acquired:	Aug 26, 2002					
Acquired By:						



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Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	2	1	10.0	5.0	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Aug 20, 2002					
Acquired By:	Iona McCloughan					



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Routine Water

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH		8.44		10.00	0.10	✓
Conductivity	dS/m	1.01	1.02	10.000	0.002	✓
Calcium	mg/L	420	432	10.0	0.6	✓
Magnesium	mg/L	375	387	10.0	0.2	✓
P-Alkalinity	mg/L	<5	<5	10.0	5.0	✓
T-Alkalinity	mg/L	10	9	10.0	5.0	✓

Material Used: Edmonton Duplicate
Date Acquired: Aug 20, 2002
Acquired By:

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	9.5	10.00	9.00	11.00	✓
Magnesium	mg/L	49.0	50.0	45.0	55.0	✓
pH		9.24	9.18	8.73	9.67	✓
Conductivity	dS/m	2.83	2.765	2.680	2.840	✓
P-Alkalinity	mg/L	522		490	557	✓
T-Alkalinity	mg/L	1000	1000	972	1035	✓

Material Used: Metals High
Date Acquired: Aug 20, 2002
Acquired By: Jesse Dang

pH		6.91	6.86	6.82	6.91	✓
Conductivity	dS/m	0.076	0.0739	0.0740	0.0790	✓
P-Alkalinity	mg/L	66		46.8	71.0	✓
T-Alkalinity	mg/L	128	125	121	133	✓

Material Used: Water Low
Date Acquired: Aug 20, 2002
Acquired By:



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Metals Total

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	<0.2	0.0000	-0.0312	0.2000	✓
Iron	mg/L	<0.1	0.0000	-0.0149	0.0290	✓
Magnesium	mg/L	<0.2	0.0000	-0.0305	0.0500	✓
Manganese	mg/L	<0.005	0.000000	-0.000700	0.001200	✓
Potassium	mg/L	<0.4	0.000	-0.102	0.400	✓
Silicon	mg/L	<0.05	0.0000	-0.0435	0.0933	✓
Sodium	mg/L	<0.4	0.000	-0.194	0.400	✓
Sulphur	mg/L	<0.05	0.0000	-0.0333	0.0447	✓

Material Used: Edmonton Method Blank
Date Acquired: Aug 20, 2002
Acquired By: To Thong



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Metals Total (Continued...)

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
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Metals Total (Continued...)

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	72.9	73.2	10.0	0.6	✓
Iron	mg/L	0.4	0.4	10.0	0.0	✓
Magnesium	mg/L	7.2	7.2	10.0	0.2	✓
Manganese	mg/L	1.03	1.04	10.000	0.001	✓
Potassium	mg/L	6.8	6.8	10.0	1.2	✓
Silicon	mg/L	2.41	2.33	10.00	0.01	✓
Sodium	mg/L	83.5	84.4	10.0	1.2	✓
Sulphur	mg/L	110	112	10.00	0.03	✓
Aluminum	ug/L	37	36	10.0	11.0	✓
Antimony	ug/L	<0.2	<0.2	10.0	0.4	✓
Arsenic	ug/L	11.4	11.1	10.0	0.4	✓
Barium	ug/L	27	27	10.0	2.2	✓
Beryllium	ug/L	<0.1	<0.1	10.0	0.2	✓
Bismuth	ug/L	<0.5	<0.5	10.0	1.1	✓
Boron	ug/L	61	61	10.0	4.4	✓
Cadmium	ug/L	0.03	0.03	10.00	0.02	✓
Chromium	ug/L	<0.5	<0.5	10.0	1.1	✓
Cobalt	ug/L	2.5	2.5	10.0	0.2	✓
Copper	ug/L	3	2	10.0	2.2	✓
Lead	ug/L	0.3	0.3	10.0	0.2	✓
Lithium	ug/L	15	15	10.0	2.2	✓
Molybdenum	ug/L	<1	<1	10.0	2.2	✓
Nickel	ug/L	19.7	21.1	10.0	1.1	✓
Selenium	ug/L	<0.2	<0.2	10.0	0.4	✓
Silver	ug/L	<0.1	<0.1	10.0	0.2	✓
Strontium	ug/L	119	120	10.0	2.2	✓
Thallium	ug/L	<0.05	<0.05	10.00	0.11	✓
Titanium	ug/L	2.2	2.3	10.0	1.1	✓
Uranium	ug/L	<0.5	<0.5	10.0	1.1	✓
Vanadium	ug/L	<0.1	0.1	10.0	0.2	✓
Zinc	ug/L	13	11	10.0	2.2	✓
Zirconium	ug/L	<1	<1	10.0	2.2	✓



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Page: 12 of 16

Metals Total (Continued...)

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Material Used:	Edmonton Duplicate					
Date Acquired:	Aug 20, 2002					
Acquired By:	To Thong					



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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	1.0	1.000	0.900	1.100	✓
Iron	mg/L	0.5	0.500	0.478	0.552	✓
Magnesium	mg/L	5.0	5.00	4.48	5.19	✓
Manganese	mg/L	0.054	0.0500	0.0412	0.0539	✓
Potassium	mg/L	4.5	5.00	4.30	5.06	✓
Silicon	mg/L	2.12	2.00	1.70	2.16	✓
Sodium	mg/L	4.2	5.00	4.08	5.25	✓
Sulphur	mg/L	1.81	2.00	1.73	2.11	✓

Material Used: Edmonton Digestion Check
Date Acquired: Aug 20, 2002
Acquired By: To Thong

Calcium	mg/L	9.5	10.00	9.00	11.00	✓
Iron	mg/L	5.0	5.00	4.50	5.50	✓
Magnesium	mg/L	49.3	50.0	45.0	55.0	✓
Manganese	mg/L	0.506	0.500	0.450	0.550	✓
Potassium	mg/L	46.8	50.0	45.0	55.0	✓
Silicon	mg/L	22.9	20.00	16.00	24.00	✓
Sodium	mg/L	48.7	50.0	45.0	55.0	✓
Sulphur	mg/L	20.2	20.00	18.00	22.00	✓

Material Used: Metals High
Date Acquired: Aug 20, 2002
Acquired By: To Thong



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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	207	200	180	220	✓
Antimony	ug/L	50.0	50.0	45.0	55.0	✓
Arsenic	ug/L	50.6	50.0	45.0	55.0	✓
Barium	ug/L	5	5.00	4.50	5.50	✓
Beryllium	ug/L	5.1	5.00	4.50	5.50	✓
Bismuth	ug/L	49.9	50.0	45.0	55.0	✓
Boron	ug/L	213	200	180	220	✓
Cadmium	ug/L	4.89	5.00	4.50	5.50	✓
Chromium	ug/L	10.1	10.00	9.00	11.00	✓
Cobalt	ug/L	10.4	10.00	9.00	11.00	✓
Copper	ug/L	10	10.00	9.00	11.00	✓
Lead	ug/L	20.2	20.0	18.0	22.0	✓
Lithium	ug/L	5	5.00	4.50	5.50	✓
Molybdenum	ug/L	10	10.00	9.00	11.00	✓
Nickel	ug/L	10.1	10.00	9.00	11.00	✓
Selenium	ug/L	47.4	50.0	45.0	55.0	✓
Silver	ug/L	9.9	10.00	9.00	11.00	✓
Strontium	ug/L	6	5.00	4.50	5.50	✓
Thallium	ug/L	50.3	50.00	45.00	55.00	✓
Titanium	ug/L	5.2	5.00	4.50	5.50	✓
Uranium	ug/L	500	500.0	450.0	550.0	✓
Vanadium	ug/L	10.1	10.00	9.00	11.00	✓
Zinc	ug/L	10	10.00	9.00	11.00	✓
Zirconium	ug/L	11	10.00	9.00	11.00	✓

Material Used: Metals Low
Date Acquired: Aug 20, 2002
Acquired By: To Thong



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Company: Echo Bay Mines

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NWL Lot ID: **187682**
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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	20	20.0	18.0	22.0	✓
Antimony	ug/L	5.2	5.00	4.50	5.50	✓
Arsenic	ug/L	5.1	5.00	4.50	5.50	✓
Barium	ug/L	<1	0.500	0.450	0.550	✓
Beryllium	ug/L	0.5	0.500	0.450	0.550	✓
Bismuth	ug/L	5.1	5.00	4.50	5.50	✓
Boron	ug/L	21	20.0	18.0	22.0	✓
Cadmium	ug/L	0.48	0.500	0.450	0.550	✓
Chromium	ug/L	1.0	1.000	0.900	1.100	✓
Cobalt	ug/L	1.0	1.000	0.900	1.100	✓
Copper	ug/L	<1	1.000	0.900	1.100	✓
Lead	ug/L	2.0	2.00	1.80	2.20	✓
Lithium	ug/L	<1	0.500	0.450	0.550	✓
Molybdenum	ug/L	<1	1.000	0.900	1.100	✓
Nickel	ug/L	1.0	1.000	0.900	1.100	✓
Selenium	ug/L	4.8	5.00	4.50	5.50	✓
Silver	ug/L	1.0	1.000	0.900	1.100	✓
Strontium	ug/L	<1	0.500	0.450	0.550	✓
Thallium	ug/L	5.06	5.00	4.50	5.50	✓
Titanium	ug/L	0.5	0.500	0.450	0.550	✓
Uranium	ug/L	50.1	50.0	45.0	55.0	✓
Vanadium	ug/L	1.0	1.000	0.900	1.100	✓
Zinc	ug/L	1	1.000	0.900	1.100	✓
Zirconium	ug/L	1	1.000	0.900	1.100	✓

Material Used: Metals Trace
Date Acquired: Aug 20, 2002
Acquired By: To Thong


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 Attn: David Hohnstein
 Sampled By: M.SAWYER
 Company:

 Project
 ID:
 Name:
 Location:
 LSD:
 P.O.:
 Acct. Code:

 NWL Lot ID: **188383**
 Control Number:
 Date Received: Aug 22, 2002
 Date Reported: Sep 18, 2002
 Report Number: 303777

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Inorganic Nonmetallic Parameters

Blank	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Cyanide	mg/L	<0.001	0.00000	0.00100	0.00100	✓
Material Used:	Edmonton Method Blank					
Date Acquired:	Aug 26, 2002					
Acquired By:						

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Ammonium - N	mg/L	<0.05	<0.05	10.00	0.10	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Aug 23, 2002					
Acquired By:						

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Ammonium - N	mg/L	3.13	3.00	2.70	3.30	✓
Cyanide	mg/L	0.077	0.0750	0.0680	0.0870	✓
Material Used:	Water High					
Date Acquired:	Aug 26, 2002					
Acquired By:	Tina Knott					
Ammonium - N	mg/L	0.86	0.800	0.720	0.880	✓
Cyanide	mg/L	0.017	0.0150	0.0135	0.0165	✓
Material Used:	Water Low					
Date Acquired:	Aug 26, 2002					
Acquired By:						



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Attn: David Hohnstein

Sampled By: M.SAWYER
Company:

Project
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NWL Lot ID: 188383
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Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	34	29	10.0	5.0	/
Material Used:	Edmonton Duplicate					
Date Analyzed:	Aug 23, 2002					
Acquired By:	Tina Knott					



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LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

Norwest Labs
9036-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-8522
Fax: (780) 438-0396

Bill to: Echo Bay Mines Ltd.
Report to: Echo Bay Mines Ltd.

9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein

Sampled By: M.SAWYER
Company:

Project

ID:

Name:

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: **188383**

Control Number:

Date Received: Aug 22, 2002

Date Reported: Sep 18, 2002

Report Number: 303777

Page: 11 of 19

Routine Water

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH		7.10	7.09	10.00	0.10	✓
Conductivity	dS/m	1.85	1.86	10.000	0.002	✓
Calcium	mg/L	76.4	76.4	10.0	0.6	✓
Magnesium	mg/L	7.7	7.7	10.0	0.2	✓
P-Alkalinity	mcq/L	<5	<5	10.0	5.0	✓
T-Alkalinity	mcq/L	449	449	10.0	5.0	✓

Material Used: Edmonton Duplicate

Date Acquired: Aug 23, 2002

Acquired By:

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	9.6	10.00	9.00	11.00	✓
Magnesium	mg/L	49.5	50.0	45.0	55.0	✓

Material Used: Metals High

Date Acquired: Aug 23, 2002

Acquired By: Jesse Dang

pH		9.28	9.18	8.73	9.67	✓
Conductivity	dS/m	2.02	2.765	2.680	2.840	✓
P-Alkalinity	mg/L	524		490	557	✓
T-Alkalinity	mg/L	989	1000	972	1035	✓

Material Used: Water High

Date Acquired: Aug 23, 2002

Acquired By: Tina Knott

pH		6.91	6.86	6.82	6.91	✓
Conductivity	dS/m	0.077	0.0739	0.0740	0.0790	✓
P-Alkalinity	mcq/L	64		46.8	71.0	✓
T-Alkalinity	mcq/L	128	125	121	133	✓

Material Used: Water Low

Date Acquired: Aug 23, 2002

Acquired By: Tina Knott


**NORWEST
LABS**

 Agri-Food & Environmental Group
 Calgary Edmonton Winnipeg Laboratory Bureau

Quality Control

 Norwest Labs
 9938-67 Avenue
 Edmonton, AB. T6E 0P5
 Phone: (780) 438-5522
 Fax: (780) 438-0396

 Bill to: Echo Bay Mines Ltd.
 Report to: Echo Bay Mines Ltd.

 9818 International Airport
 Edmonton, AB, Canada
 T5J2T2

 Attn: David Hohnstein
 Sampled By: M.SAWYER
 Company:

 Project
 ID:
 Name:
 Location:
 LSD:
 P.O.:
 Acct. Code:

 NWL Lot ID: 188383
 Control Number:
 Date Received: Aug 22, 2002
 Date Reported: Sep 18, 2002
 Report Number: 303777

Page: 12 of 19

Metals Total

Blank	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	<0.2	0.0000	0.0312	0.2000	✓
Iron	mg/L	<0.1	0.0000	-0.0149	0.0290	✓
Magnesium	mg/L	<0.2	0.0000	-0.0305	0.0500	✓
Manganese	mg/L	<0.005	0.000000	-0.000700	0.001200	✓
Potassium	mg/L	<0.4	0.000	-0.102	0.400	✓
Silicon	mg/L	<0.05	0.0000	-0.0435	0.0933	✓
Sodium	mg/L	<0.4	0.000	-0.194	0.400	✓
Sulphur	mg/L	<0.05	0.0000	-0.0333	0.0447	✓

 Material Used: Edmonton Method Blank
 Date Acquired: Aug 23, 2002
 Acquired By:

**NORWEST
LABS**Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge SurreyBill to: Echo Bay Mines Ltd.
Report to: Echo Bay Mines Ltd.9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein

Sampled By: M.SAWYER
Company:**Quality Control**Norwest Labs
2538-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-5522
Fax: (780) 438-0398Project
ID:
Name:
Location:
LSD:
P.O.:
Acct. Code:NWL Lot ID: 188383
Control Number:
Date Received: Aug 22, 2002
Date Reported: Sep 18, 2002
Report Number: 303771

Page: 13 of 19

Metals Total (Continued...)

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
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**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

Norwest Labs
9938-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-6622
Fax: (780) 438-0398

Bill to: Echo Bay Mines Ltd.
Report to: Echo Bay Mines Ltd.

9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein

Sampled By: M.SAWYER
Company:

Project

ID:

Name:

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 188383

Control Number:

Date Received: Aug 22, 2002

Date Reported: Sep 18, 2002

Report Number: 303777

Page: 14 of 19

Metals Total (Continued...)

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	23.2	23.4	10.0	0.6	✓
Iron	mg/L	0.3	0.3	10.0	0.0	✓
Magnesium	mg/L	2.6	2.8	10.0	0.2	✓
Manganese	mg/L	0.096	0.096	10.000	0.001	✓
Potassium	mg/L	2.1	2.1	10.0	1.2	✓
Silicon	mg/L	1.00	0.92	10.00	0.01	✓
Sodium	mg/L	25.2	25.4	10.0	1.2	✓
Sulphur	mg/L	30.3	30.9	10.00	0.03	✓
Aluminum	ug/L	14	14	10.0	11.0	✓
Antimony	ug/L	<0.2	<0.2	10.0	0.4	✓
Arsenic	ug/L	5.5	5.5	10.0	0.4	✓
Barium	ug/L	10	10	10.0	2.2	✓
Beryllium	ug/L	<0.1	<0.1	10.0	0.2	✓
Bismuth	ug/L	<0.5	<0.5	10.0	1.1	✓
Boron	ug/L	35	35	10.0	4.4	✓
Cadmium	ug/L	<0.01	<0.01	10.00	0.02	✓
Chromium	ug/L	<0.5	<0.5	10.0	1.1	✓
Cobalt	ug/L	<0.1	<0.1	10.0	0.2	✓
Copper	ug/L	3	4	10.0	2.2	✓
Lead	ug/L	<0.1	0.1	10.0	0.2	✓
Lithium	ug/L	<1	<1	10.0	2.2	✓
Molybdenum	ug/L	<1	<1	10.0	2.2	✓
Nickel	ug/L	<0.5	<0.5	10.0	1.1	✓
Selenium	ug/L	<0.2	<0.2	10.0	0.4	✓
Silver	ug/L	<0.1	<0.1	10.0	0.2	✓
Strontium	ug/L	117	112	10.0	2.2	✓
Thallium	ug/L	<0.05	<0.05	10.00	0.11	✓
Titanium	ug/L	0.8	0.7	10.0	1.1	✓
Uranium	ug/L	<0.5	<0.5	10.0	1.1	✓
Vanadium	ug/L	0.1	0.1	10.0	0.2	✓
Zinc	ug/L	2	2	10.0	2.2	✓
Zirconium	ug/L	<1	<1	10.0	2.2	✓



**NORWEST
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AgriFood & Environmental Group
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Quality Control

Norwest Labs
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Edmonton, AB. T6E 0P5
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Fax: (780) 438-4396

Bill to: Echo Bay Mines Ltd.
Report to: Echo Bay Mines Ltd.

9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein
Sampled By: M.SAWYER
Company:

Project
ID:
Name:
Location:
LGD:
P.O.:
Acct. Code:

NWL Lot ID: 188383
Control Number:
Date Received: Aug 22, 2002
Date Reported: Sep 18, 2002
Report Number: 303777

Page: 15 of 19

Metals Total (Continued...)

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Material Used:	Edmonton Duplicate					
Date Acquired:	Aug 23, 2002					
Acquired By:	To Thong					



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

Norwest Labs
9938-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-8523
Fax: (780) 438-0396

Bill to: Echo Bay Mines Ltd.
Report to: Echo Bay Mines Ltd.

9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein
Sampled By: M.SAWYER
Company:

Project
ID:
Name:
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 188383
Control Number:
Date Received: Aug 22, 2002
Date Reported: Sep 18, 2002
Report Number: 303777

Page: 16 of 19

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	0.9	1.000	0.000	1.100	✓
Iron	mg/L	0.6	0.500	0.478	0.552	✓
Magnesium	mg/L	5.0	5.00	4.48	5.19	✓
Manganese	mg/L	0.055	0.0500	0.0412	0.0539	✓
Potassium	mg/L	4.5	5.00	4.30	5.06	✓
Silicon	mg/L	1.80	2.00	1.70	2.16	✓
Sodium	mg/L	5.1	5.00	4.08	5.25	✓
Sulphur	mg/L	1.98	2.00	1.73	2.11	✓
Material Used:	Edmonton Digestion Check					
Date Acquired:	Aug 23, 2002					
Acquired By:						
Calcium	mg/L	9.2	10.00	9.00	11.00	✓
Iron	mg/L	4.9	5.00	4.50	5.50	✓
Magnesium	mg/L	49.7	50.0	45.0	55.0	✓
Manganese	mg/L	0.496	0.500	0.450	0.550	✓
Potassium	mg/L	50.7	50.0	45.0	55.0	✓
Silicon	mg/L	19.8	20.00	16.00	24.00	✓
Sodium	mg/L	51.2	50.0	45.0	55.0	✓
Sulphur	mg/L	19.6	20.00	18.00	22.00	✓
Material Used:	Metals High					
Date Acquired:	Aug 23, 2002					
Acquired By:						


**NORWEST
LABS**

 Agri-Food & Environmental Group
 Calgary Edmonton Winnipeg Lethbridge Surrey

 Bill to: Echo Bay Mines Ltd.
 Report to: Echo Bay Mines Ltd.

 9818 International Airport
 Edmonton, AB, Canada
 T5J2T2

Attn: David Hohnstein

Sampled By: M.SAWYER

Company:

Quality Control

 Project
 ID:
 Name:
 Location:
 LSD:
 P.O.:
 Acct. Code:

 Norwest Labs
 9238-67 Avenue
 Edmonton, AB. T6E 0P5
 Phone: (780) 438-8522
 Fax: (780) 438-0396

 NWL Lot ID: 188383
 Control Number:
 Date Received: Aug 22, 2002
 Date Reported: Sep 18, 2002
 Report Number: 303771

Page: 17 of 19

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	209	200	180	220	✓
Antimony	ug/L	50.0	50.0	45.0	55.0	✓
Arsenic	ug/L	52.1	50.0	45.0	55.0	✓
Barium	ug/L	5	5.00	4.50	5.50	✓
Beryllium	ug/L	5.0	5.00	4.50	5.50	✓
Bismuth	ug/L	51.0	50.0	45.0	55.0	✓
Boron	ug/L	211	200	180	220	✓
Cadmium	ug/L	4.89	5.00	4.50	5.50	✓
Chromium	ug/L	10.2	10.00	9.00	11.00	✓
Cobalt	ug/L	10.4	10.00	9.00	11.00	✓
Copper	ug/L	10	10.00	9.00	11.00	✓
Lead	ug/L	20.6	20.0	18.0	22.0	✓
Lithium	ug/L	5	5.00	4.50	5.50	✓
Molybdenum	ug/L	10	10.00	9.00	11.00	✓
Nickel	ug/L	10.1	10.00	9.00	11.00	✓
Selenium	ug/L	50.2	50.0	45.0	55.0	✓
Silver	ug/L	9.9	10.00	9.00	11.00	✓
Strontium	ug/L	5	5.00	4.50	5.50	✓
Thallium	ug/L	51.1	50.00	45.00	55.00	✓
Titanium	ug/L	5.2	5.00	4.50	5.50	✓
Uranium	ug/L	452	500.0	450.0	550.0	✓
Vanadium	ug/L	10.0	10.00	9.00	11.00	✓
Zinc	ug/L	11	10.00	9.00	11.00	✓
Zirconium	ug/L	11	10.00	9.00	11.00	✓

 Material Used: Metals Low
 Date Acquired: Aug 23, 2002
 Acquired By: To Thong



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

Norwest Labs
9588-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-5522
Fax: (780) 438-0396

Bill to: Echo Bay Mines Ltd.
Report to: Echo Bay Mines Ltd.

9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein

Sampled By: M.SAWYER
Company:

Project
ID:
Name:
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 188383
Control Number:
Date Received: Aug 22, 2002
Date Reported: Sep 18, 2002
Report Number: 303777

Page: 18 of 19

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	20	20.0	18.0	22.0	✓
Antimony	ug/L	5.0	5.00	4.50	5.50	✓
Arsenic	ug/L	5.2	5.00	4.50	5.50	✓
Barium	ug/L	<1	0.500	0.450	0.550	✓
Beryllium	ug/L	0.5	0.500	0.450	0.550	✓
Bismuth	ug/L	5.0	5.00	4.50	5.50	✓
Boron	ug/L	20	20.0	18.0	22.0	✓
Cadmium	ug/L	0.48	0.500	0.450	0.550	✓
Chromium	ug/L	1.0	1.000	0.900	1.100	✓
Cobalt	ug/L	1.0	1.000	0.900	1.100	✓
Copper	ug/L	1	1.000	0.900	1.100	✓
Lead	ug/L	2.0	2.00	1.80	2.20	✓
Lithium	ug/L	<1	0.500	0.450	0.550	✓
Molybdenum	ug/L	1	1.000	0.900	1.100	✓
Nickel	ug/L	1.1	1.000	0.900	1.100	✓
Selenium	ug/L	5.1	5.00	4.50	5.50	✓
Silver	ug/L	1.0	1.000	0.900	1.100	✓
Strontium	ug/L	<1	0.500	0.450	0.550	✓
Thallium	ug/L	5.02	5.00	4.50	5.50	✓
Titanium	ug/L	0.5	0.500	0.450	0.550	✓
Uranium	ug/L	49.7	50.0	45.0	55.0	✓
Vanadium	ug/L	1.1	1.000	0.900	1.100	✓
Zinc	ug/L	1	1.000	0.900	1.100	✓
Zirconium	ug/L	<1	1.000	0.900	1.100	✓

Material Used: Metals Trace
Date Acquired: Aug 23, 2002
Acquired By: To Thong



**NORWEST
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Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

Norwest Labs
9938-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-5522
Fax: (780) 438-0396

Bill to: Echo Bay Mines Ltd.
Report to: Echo Bay Mines Ltd.

9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein
Sampled By: M. Sawyer
Company: Echo bay Mines

Project
ID:
Name: Lupin Reference
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 188928
Control Number:
Date Received: Aug 26, 2002
Date Reported: Aug 30, 2002
Report Number: 295336

Page: 6 of 14

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Cyanide	mg/L	<0.001	0.00000	-0.00100	0.00100	✓

Material Used: Edmonton Method Blank
Date Acquired: Aug 28, 2002
Acquired By:

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Ammonium - N	mg/L	66.6	67.0	10.00	0.10	✓

Material Used: Edmonton Duplicate
Date Acquired: Aug 27, 2002
Acquired By:

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Ammonium - N	mg/L	3.16	3.00	2.70	3.30	✓
Cyanide	mg/L	0.075	0.0750	0.0680	0.0870	✓

Material Used: Water High
Date Acquired: Aug 28, 2002
Acquired By:

Ammonium - N	mg/L	0.86	0.800	0.720	0.880	✓
Cyanide	mg/L	0.017	0.0150	0.0135	0.0165	✓

Material Used: Water Low
Date Acquired: Aug 28, 2002
Acquired By:



**NORWEST
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Quality Control

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Fax: (780) 438-0396

Bill to: Echo Bay Mines Ltd.
Report to: Echo Bay Mines Ltd.

9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein
Sampled By: M. Sawyer
Company: Echo bay Mines

Project
ID:
Name: Lupin Reference
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: **188928**
Control Number:
Date Received: Aug 26, 2002
Date Reported: Aug 30, 2002
Report Number: 295336

Page: 7 of 14

Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	3	3	10.0	5.0	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Aug 27, 2002					
Acquired By:	Stacey Mebs					



**NORWEST
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Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

Norwest Labs
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Phone: (780) 438-5522
Fax: (780) 438-0396

Bill to: Echo Bay Mines Ltd.
Report to: Echo Bay Mines Ltd.

9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein
Sampled By: M. Sawyer
Company: Echo bay Mines

Project
ID:
Name: Lupin Reference
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 188928
Control Number:
Date Received: Aug 26, 2002
Date Reported: Aug 30, 2002
Report Number: 295336

Page: 8 of 14

Routine Water

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH		8.84	8.85	10.00	0.10	✓
Calcium	mg/L	78.2	78.1	10.0	0.6	✓
Magnesium	mg/L	7.6	7.7	10.0	0.2	✓
Material Used: Edmonton Duplicate						
Date Acquired: Aug 26, 2002						
Acquired By: Jesse Dang						

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	9.4	10.00	9.00	11.00	✓
Magnesium	mg/L	48.8	50.0	45.0	55.0	✓
Material Used: Metals High						
Date Acquired: Aug 26, 2002						
Acquired By: Jesse Dang						

pH		9.04	9.18	8.73	9.67	✓
Conductivity	dS/m	2.75	2.765	2.680	2.840	✓
P-Alkalinity	mg/L	503		490	557	✓
T-Alkalinity	mg/L	1020	1000	972	1035	✓
Material Used: Water High						
Date Acquired: Aug 27, 2002						
Acquired By:						

pH		6.83	6.86	6.82	6.91	✓
Conductivity	dS/m	0.074	0.0739	0.0740	0.0790	✓
P-Alkalinity	mg/L	56		46.8	71.0	✓
T-Alkalinity	mg/L	127	125	121	133	✓
Material Used: Water Low						
Date Acquired: Aug 27, 2002						
Acquired By:						



**NORWEST
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Calgary Edmonton Winnipeg Lethbridge Surrey

Bill to: Echo Bay Mines Ltd.
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9818 International Airport
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T5J2T2

Attn: David Hohnstein
Sampled By: M. Sawyer
Company: Echo bay Mines

Quality Control

Project
ID:
Name: Lupin Reference
Location:
LSD:
P.O.:
Acct. Code:

Norwest Labs
9938-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-5522
Fax: (780) 438-0396

NWL Lot ID: 188928
Control Number:
Date Received: Aug 26, 2002
Date Reported: Aug 30, 2002
Report Number: 295336

Page: 9 of 14

Metals Total

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	<0.2	0.0000	-0.0312	0.2000	✓
Iron	mg/L	<0.1	0.0000	-0.0149	0.0290	✓
Magnesium	mg/L	<0.2	0.0000	-0.0305	0.0500	✓
Manganese	mg/L	<0.005	0.000000	-0.000700	0.001200	✓
Potassium	mg/L	<0.4	0.000	-0.102	0.400	✓
Silicon	mg/L	<0.05	0.0000	-0.0435	0.0933	✓
Sodium	mg/L	<0.4	0.000	-0.194	0.400	✓
Sulphur	mg/L	<0.05	0.0000	-0.0333	0.0447	✓

Material Used: Edmonton Method Blank
Date Acquired: Aug 27, 2002
Acquired By:



**NORWEST
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Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

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Report to: Echo Bay Mines Ltd.

9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein
Sampled By: M. Sawyer
Company: Echo bay Mines

Quality Control

Project
ID:
Name: Lupin Reference
Location:
LSD:
P.O.:
Acct. Code:

Norwest Labs
9938-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-5522
Fax: (780) 438-0396

NWL Lot ID: **188928**
Control Number:
Date Received: Aug 26, 2002
Date Reported: Aug 30, 2002
Report Number: 295336

Page: 10 of 14

Metals Total (Continued...)

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	ug/L	20	22	10.0	11.0	✓
Antimony	ug/L	<0.2	<0.2	10.0	0.4	✓
Arsenic	ug/L	1.9	1.9	10.0	0.4	✓
Barium	ug/L	14	16	10.0	2.2	✓
Beryllium	ug/L	<0.1	<0.1	10.0	0.2	✓
Bismuth	ug/L	<0.5	<0.5	10.0	1.1	✓
Boron	ug/L	77	77	10.0	4.4	✓
Cadmium	ug/L	<0.01	0.04	10.00	0.02	✓
Chromium	ug/L	<0.5	<0.5	10.0	1.1	✓
Cobalt	ug/L	0.1	0.1	10.0	0.2	✓
Copper	ug/L	1	2	10.0	2.2	✓
Lead	ug/L	<0.1	0.1	10.0	0.2	✓
Lithium	ug/L	<1	<1	10.0	2.2	✓
Molybdenum	ug/L	2	1	10.0	2.2	✓
Nickel	ug/L	<0.5	<0.5	10.0	1.1	✓
Selenium	ug/L	0.3	<0.2	10.0	0.4	✓
Silver	ug/L	<0.1	<0.1	10.0	0.2	✓
Strontium	ug/L	134	135	10.0	2.2	✓
Thallium	ug/L	<0.05	<0.05	10.00	0.11	✓
Titanium	ug/L	1.0	1.1	10.0	1.1	✓
Uranium	ug/L	<0.5	<0.5	10.0	1.1	✓
Vanadium	ug/L	0.3	0.3	10.0	0.2	✓
Zinc	ug/L	21	21	10.0	2.2	✓
Zirconium	ug/L	<1	<1	10.0	2.2	✓

Material Used: Edmonton Duplicate
Date Acquired: Aug 27, 2002
Acquired By: To Thong



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Bill to: Echo Bay Mines Ltd.
Report to: Echo Bay Mines Ltd.

9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein
Sampled By: M. Sawyer
Company: Echo bay Mines

Quality Control

Project
ID:
Name: Lupin Reference
Location:
LSD:
P.O.:
Acct. Code:

Norwest Labs
9938-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-5522
Fax: (780) 438-0396

NWL Lot ID: 188928
Control Number:
Date Received: Aug 26, 2002
Date Reported: Aug 30, 2002
Report Number: 295336

Page: 11 of 14

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	9.3	10.00	9.00	11.00	✓
Iron	mg/L	5.0	5.00	4.50	5.50	✓
Magnesium	mg/L	51.1	50.0	45.0	55.0	✓
Manganese	mg/L	0.507	0.500	0.450	0.550	✓
Potassium	mg/L	50.3	50.0	45.0	55.0	✓
Silicon	mg/L	20.5	20.00	16.00	24.00	✓
Sodium	mg/L	51.0	50.0	45.0	55.0	✓
Sulphur	mg/L	20.7	20.00	18.00	22.00	✓

Material Used: Metals High
Date Acquired: Aug 27, 2002
Acquired By:



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9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein
Sampled By: M. Sawyer
Company: Echo bay Mines

Quality Control

Project
ID:
Name: Lupin Reference
Location:
LSD:
P.O.:
Acct. Code:

Norwest Labs
9938-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-5522
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NWL Lot ID: 188928
Control Number:
Date Received: Aug 26, 2002
Date Reported: Aug 30, 2002
Report Number: 295336

Page: 12 of 14

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	208	200	180	220	✓
Antimony	ug/L	48.0	50.0	45.0	55.0	✓
Arsenic	ug/L	50.9	50.0	45.0	55.0	✓
Barium	ug/L	5	5.00	4.50	5.50	✓
Beryllium	ug/L	5.2	5.00	4.50	5.50	✓
Bismuth	ug/L	50.4	50.0	45.0	55.0	✓
Boron	ug/L	213	200	180	220	✓
Cadmium	ug/L	4.82	5.00	4.50	5.50	✓
Chromium	ug/L	9.9	10.00	9.00	11.00	✓
Cobalt	ug/L	9.9	10.00	9.00	11.00	✓
Copper	ug/L	10	10.00	9.00	11.00	✓
Lead	ug/L	20.1	20.0	18.0	22.0	✓
Lithium	ug/L	5	5.00	4.50	5.50	✓
Molybdenum	ug/L	10	10.00	9.00	11.00	✓
Nickel	ug/L	9.7	10.00	9.00	11.00	✓
Selenium	ug/L	49.0	50.0	45.0	55.0	✓
Silver	ug/L	9.5	10.00	9.00	11.00	✓
Strontium	ug/L	5	5.00	4.50	5.50	✓
Thallium	ug/L	49.6	50.00	45.00	55.00	✓
Titanium	ug/L	5.2	5.00	4.50	5.50	✓
Uranium	ug/L	488	500.0	450.0	550.0	✓
Vanadium	ug/L	9.7	10.00	9.00	11.00	✓
Zinc	ug/L	10	10.00	9.00	11.00	✓
Zirconium	ug/L	10	10.00	9.00	11.00	✓

Material Used: Metals Low
Date Acquired: Aug 27, 2002
Acquired By: To Thong



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Report to: Echo Bay Mines Ltd.

9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein
Sampled By: M. Sawyer
Company: Echo bay Mines

Quality Control

Project
ID:
Name: Lupin Reference
Location:
LSD:
P.O.:
Acct. Code:

Norwest Labs
9938-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-5522
Fax: (780) 438-0396

NWL Lot ID: 188928
Control Number:
Date Received: Aug 26, 2002
Date Reported: Aug 30, 2002
Report Number: 295336

Page: 13 of 14

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	19	20.0	18.0	22.0	✓
Antimony	ug/L	5.0	5.00	4.50	5.50	✓
Arsenic	ug/L	5.1	5.00	4.50	5.50	✓
Barium	ug/L	<1	0.500	0.450	0.550	✓
Beryllium	ug/L	0.5	0.500	0.450	0.550	✓
Bismuth	ug/L	4.9	5.00	4.50	5.50	✓
Boron	ug/L	20	20.0	18.0	22.0	✓
Cadmium	ug/L	0.49	0.500	0.450	0.550	✓
Chromium	ug/L	1.0	1.000	0.900	1.100	✓
Cobalt	ug/L	1.0	1.000	0.900	1.100	✓
Copper	ug/L	1	1.000	0.900	1.100	✓
Lead	ug/L	2.0	2.00	1.80	2.20	✓
Lithium	ug/L	<1	0.500	0.450	0.550	✓
Molybdenum	ug/L	<1	1.000	0.900	1.100	✓
Nickel	ug/L	1.0	1.000	0.900	1.100	✓
Selenium	ug/L	4.9	5.00	4.50	5.50	✓
Silver	ug/L	1.0	1.000	0.900	1.100	✓
Strontium	ug/L	<1	0.500	0.450	0.550	✓
Thallium	ug/L	4.96	5.00	4.50	5.50	✓
Titanium	ug/L	0.5	0.500	0.450	0.550	✓
Uranium	ug/L	49.8	50.0	45.0	55.0	✓
Vanadium	ug/L	1.0	1.000	0.900	1.100	✓
Zinc	ug/L	1	1.000	0.900	1.100	✓
Zirconium	ug/L	1	1.000	0.900	1.100	✓

Material Used: Metals Trace
Date Acquired: Aug 27, 2002
Acquired By: To Thong