



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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

Project

ID:

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: **189958**

Control Number:

Date Received: Aug 30, 2002

Date Reported: Sep 05, 2002

Report Number: 297363

Page: 3 of 10

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:	Sep 04, 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:	Sep 03, 2002					
Acquired By:						

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Ammonium - N	mg/L	2.92	3.00	2.70	3.30	✓
Cyanide	mg/L	0.078	0.0750	0.0680	0.0870	✓
Material Used:	Water High					
Date Acquired:	Sep 04, 2002					
Acquired By:						

Ammonium - N	mg/L	0.82	0.800	0.720	0.880	✓
Cyanide	mg/L	0.015	0.0150	0.0135	0.0165	✓
Material Used:	Water Low					
Date Acquired:	Sep 04, 2002					
Acquired By:						



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Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	390	410	10.0	5.0	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Sep 03, 2002					
Acquired By:	Gordon Grensman					



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Routine Water

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH		8.04	8.04	10.00	0.10	✓
Conductivity	dS/m	0.755	0.759	10.000	0.002	✓
Calcium	mg/L	89.0	89.9	10.0	0.6	✓
Magnesium	mg/L	55.8	56.4	10.0	0.2	✓
P-Alkalinity	mg/L	<5	<5	10.0	5.0	✓
T-Alkalinity	mg/L	401	398	10.0	5.0	✓

Material Used: Edmonton Duplicate
Date Acquired: Sep 03, 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	49.9	50.0	45.0	55.0	✓
Material Used:	Metals High					
Date Acquired:	Sep 03, 2002					
Acquired By:	To Thong					
pH		9.22	9.18	8.73	9.67	✓
Conductivity	dS/m	2.80	2.765	2.680	2.840	✓
P-Alkalinity	mg/L	544		490	557	✓
T-Alkalinity	mg/L	1010	1000	972	1035	✓

Material Used: Water High
Date Acquired: Sep 03, 2002
Acquired By:

pH		6.89	6.86	6.82	6.91	✓
Conductivity	dS/m	0.076	0.0739	0.0740	0.0790	✓
P-Alkalinity	mg/L	67		46.8	71.0	✓
T-Alkalinity	mg/L	129	125	121	133	✓

Material Used: Water Low
Date Acquired: Sep 03, 2002
Acquired By:



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NWL Lot ID: 189958
Control Number:
Date Received: Aug 30, 2002
Date Reported: Sep 05, 2002
Report Number: 297363

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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: Sep 03, 2002
Acquired By: Jesse Dang



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NWL Lot ID: **189958**
Control Number:
Date Received: Aug 30, 2002
Date Reported: Sep 05, 2002
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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	0.9	1.000	0.900	1.100	✓
Iron	mg/L	0.5	0.500	0.478	0.552	✓
Magnesium	mg/L	4.9	5.00	4.48	5.19	✓
Manganese	mg/L	0.051	0.0500	0.0412	0.0539	✓
Potassium	mg/L	4.5	5.00	4.30	5.06	✓
Silicon	mg/L	1.70	2.00	1.70	2.16	✓
Sodium	mg/L	4.5	5.00	4.08	5.25	✓
Sulphur	mg/L	1.73	2.00	1.73	2.11	✓

Material Used: Edmonton Digestion Check
Date Acquired: Sep 03, 2002
Acquired By: Jesse Dang

Calcium	mq/L	9.5	10.00	9.00	11.00	✓
Iron	mq/L	5.0	5.00	4.50	5.50	✓
Magnesium	mq/L	49.5	50.0	45.0	55.0	✓
Manganese	mq/L	0.498	0.500	0.450	0.550	✓
Potassium	mq/L	46.8	50.0	45.0	55.0	✓
Silicon	mq/L	22.7	20.00	16.00	24.00	✓
Sodium	mq/L	47.0	50.0	45.0	55.0	✓
Sulphur	mq/L	19.6	20.00	18.00	22.00	✓

Material Used: Metals High
Date Acquired: Sep 03, 2002
Acquired By: Jesse Dang



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Acct. Code:

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NWL Lot ID: 189958
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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	219	200	180	220	✓
Antimony	ug/L	50.7	50.0	45.0	55.0	✓
Arsenic	ug/L	51.2	50.0	45.0	55.0	✓
Barium	ug/L	5	5.00	4.50	5.50	✓
Beryllium	ug/L	5.4	5.00	4.50	5.50	✓
Bismuth	ug/L	51.0	50.0	45.0	55.0	✓
Boron	ug/L	219	200	180	220	✓
Cadmium	ug/L	4.90	5.00	4.50	5.50	✓
Chromium	ug/L	9.7	10.00	9.00	11.00	✓
Cobalt	ug/L	10.4	10.00	9.00	11.00	✓
Copper	ug/L	11	10.00	9.00	11.00	✓
Lead	ug/L	20.4	20.0	18.0	22.0	✓
Lithium	ug/L	6	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	49.5	50.0	45.0	55.0	✓
Silver	ug/L	9.8	10.00	9.00	11.00	✓
Strontium	ug/L	5	5.00	4.50	5.50	✓
Thallium	ug/L	51.3	50.00	45.00	55.00	✓
Titanium	ug/L	5.1	5.00	4.50	5.50	✓
Uranium	ug/L	477	500.0	450.0	550.0	✓
Vanadium	ug/L	9.8	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: Sep 03, 2002
Acquired By: To Thong



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Sampled By: M. Sawyer
Company: Echo Bay Mines LTD.

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

NWL Lot ID: 189958
Control Number:
Date Received: Aug 30, 2002
Date Reported: Sep 05, 2002
Report Number: 297363

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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	21	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	0.6	0.500	0.450	0.550	✓
Bismuth	ug/L	5.1	5.00	4.50	5.50	✓
Boron	ug/L	22	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	1.1	1.000	0.900	1.100	✓
Copper	ug/L	<1	1.000	0.900	1.100	✓
Lead	ug/L	1.9	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	5.2	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	5.04	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: Sep 03, 2002
Acquired By: To Thong



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T5J2T2

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

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

NWL Lot ID: **190191**
Control Number:
Date Received: Sep 03, 2002
Date Reported: Sep 09, 2002
Report Number: 297824

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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:	Sep 05, 2002					
Acquired By:						

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Ammonium - N	mg/L	14.0	14.0	10.00	0.10	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Sep 04, 2002					
Acquired By:						

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Ammonium - N	mg/L	2.81	3.00	2.70	3.30	✓
Cyanide	mg/L	0.079	0.0750	0.0680	0.0870	✓
Material Used:	Water High					
Date Acquired:	Sep 05, 2002					
Acquired By:						

Ammonium - N	mg/L	0.88	0.800	0.720	0.880	✓
Cyanide	mg/L	0.016	0.0150	0.0135	0.0165	✓
Material Used:	Water Low					
Date Acquired:	Sep 05, 2002					
Acquired By:	Gordon Grensman					



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NWL Lot ID: 190191
Control Number:
Date Received: Sep 03, 2002
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Report Number: 297824

Page: 12 of 19

Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	47	46	10.0	5.0	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Sep 04, 2002					
Acquired By:	Hanmei Li					



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Routine Water

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH		7.13	7.03	10.00	0.10	✓
Calcium	mg/L	30.7	30.6	10.0	0.6	✓
Magnesium	mg/L	3.5	3.5	10.0	0.2	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Sep 04, 2002					
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Routine Water (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	9.9	10.00	9.00	11.00	✓
Magnesium	mg/L	50.2	50.0	45.0	55.0	✓
Material Used:	Metals High					
Date Acquired:	Sep 04, 2002					
Acquired By:	Jesse Dang					
Calcium	mg/L	<0.2	0.1000	0.0800	0.1200	✓
Magnesium	mg/L	0.5	0.500	0.400	0.600	✓
Material Used:	Metals Low					
Date Acquired:	Sep 04, 2002					
Acquired By:	Jesse Dang					
pH		9.26	9.18	8.73	9.67	✓
Conductivity	dS/m	2.75	2.765	2.680	2.840	✓
P-Alkalinity	mg/L	531		490	557	✓
T-Alkalinity	mg/L	1010	1000	972	1035	✓
Material Used:	Water High					
Date Acquired:	Sep 04, 2002					
Acquired By:	Tina Knott					
pH		6.92	6.86	6.82	6.91	✓
Conductivity	dS/m	0.077	0.0739	0.0740	0.0790	✓
P-Alkalinity	mg/L	59		46.8	71.0	✓
T-Alkalinity	mg/L	129	125	121	133	✓
Material Used:	Water Low					
Date Acquired:	Sep 04, 2002					
Acquired By:	Tina Knott					



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NWL Lot ID: 190191
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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: Sep 04, 2002
Acquired By: Jesse Dang

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	260	264	10.0	0.6	✓
Iron	mg/L	21.3	21.3	10.0	0.0	✓
Magnesium	mg/L	50.8	51.9	10.0	0.2	✓
Manganese	mg/L	2.21	2.15	10.000	0.001	✓
Potassium	mg/L	4.0	3.9	10.0	1.2	✓
Silicon	mg/L	27.7	27.4	10.00	0.01	✓
Sodium	mg/L	40.0	39.9	10.0	1.2	✓
Sulphur	mg/L	6.52	6.56	10.00	0.03	✓
Arsenic	ug/L	19.1	19.0	10.0	0.4	✓
Copper	ug/L	8	6	10.0	2.2	✓
Zinc	ug/L	187	182	10.0	2.2	✓

Material Used: Edmonton Duplicate
Date Acquired: Sep 04, 2002
Acquired By: To Thong



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Company: Echo Bay Mines

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Report Number: 297824

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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	0.9	1.000	0.900	1.100	✓
Iron	mg/L	0.5	0.500	0.478	0.552	✓
Magnesium	mg/L	4.9	5.00	4.48	5.19	✓
Manganese	mg/L	0.052	0.0500	0.0412	0.0539	✓
Potassium	mg/L	4.5	5.00	4.30	5.06	✓
Silicon	mg/L	1.96	2.00	1.70	2.16	✓
Sodium	mg/L	4.9	5.00	4.08	5.25	✓
Sulphur	mg/L	1.74	2.00	1.73	2.11	✓

Material Used: Edmonton Digestion Check
Date Acquired: Sep 04, 2002
Acquired By: Jesse Dang

Calcium	mg/L	9.4	10.00	9.00	11.00	✓
Iron	mg/L	5.0	5.00	4.50	5.50	✓
Magnesium	mg/L	49.1	50.0	45.0	55.0	✓
Manganese	mg/L	0.503	0.500	0.450	0.550	✓
Potassium	mg/L	46.0	50.0	45.0	55.0	✓
Silicon	mg/L	23.0	20.00	16.00	24.00	✓
Sodium	mg/L	47.7	50.0	45.0	55.0	✓
Sulphur	mg/L	19.9	20.00	18.00	22.00	✓

Material Used: Metals High
Date Acquired: Sep 04, 2002
Acquired By: Jesse Dang



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

Norwest Labs
9938-67 Avenue
Edmonton, AB. T6E 0P5
Phone: (780) 438-5522
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: Lupin Reference
Name:
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 190191
Control Number:
Date Received: Sep 03, 2002
Date Reported: Sep 09, 2002
Report Number: 297824

Page: 17 of 19

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	207	200	180	220	✓
Antimony	ug/L	50.3	50.0	45.0	55.0	✓
Arsenic	ug/L	51.8	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	52.2	50.0	45.0	55.0	✓
Boron	ug/L	201	200	180	220	✓
Cadmium	ug/L	4.90	5.00	4.50	5.50	✓
Chromium	ug/L	9.8	10.00	9.00	11.00	✓
Cobalt	ug/L	10.5	10.00	9.00	11.00	✓
Copper	ug/L	11	10.00	9.00	11.00	✓
Lead	ug/L	20.9	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	9.8	10.00	9.00	11.00	✓
Selenium	ug/L	50.4	50.0	45.0	55.0	✓
Silver	ug/L	10.0	10.00	9.00	11.00	✓
Strontium	ug/L	5	5.00	4.50	5.50	✓
Thallium	ug/L	52.1	50.00	45.00	55.00	✓
Titanium	ug/L	5.1	5.00	4.50	5.50	✓
Uranium	ug/L	495	500.0	450.0	550.0	✓
Vanadium	ug/L	9.9	10.00	9.00	11.00	✓
Zinc	ug/L	11	10.00	9.00	11.00	✓
Zirconium	ug/L	10	10.00	9.00	11.00	✓

Material Used: Metals Low
Date Acquired: Sep 04, 2002
Acquired By: To Thong



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Quality Control

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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

Project

ID: Lupin Reference

Name:

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 190191

Control Number:

Date Received: Sep 03, 2002

Date Reported: Sep 09, 2002

Report Number: 297824

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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	ug/L	22	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	5.1	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	5.2	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	5.11	5.00	4.50	5.50	✓
Titanium	ug/L	0.5	0.500	0.450	0.550	✓
Uranium	ug/L	50.6	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: Sep 04, 2002

Acquired By: To Thong