



**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

ATT-3

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

9818 International Airport
Edmonton, AB, Canada
T5J2T2

Attn: David Hohnstein

Sampled By: D. Hohnstein
Company: Echo Bay Mines Ltd.

Project
ID: Requisition No.L48906
Name: Lupin Operation
Location:
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 180005
Control Number:
Date Received: Jul 05, 2002
Date Reported: Jul 15, 2002
Report Number: 277210

Page: 13 of 22

Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Kjeldahl Nitrogen	mg/L	<0.05	0.000000	-0.000980	0.050000	✓
Phosphorus	mg/L	<0.05	0.000000	-0.00260	0.05000	✓
Phosphate	mg/L	<0.05	0.0000	-0.0500	0.0500	✓
Cyanide	mg/L	<0.001	0.000000	-0.00100	0.00100	✓
Material Used: Edmonton Method Blank						
Date Acquired: Jul 09, 2002						
Acquired By:						

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Kjeldahl Nitrogen	mg/L	690	630	10.00	0.30	✓
Ammonium - N	mg/L	5.54	5.54	10.00	0.10	✓
Material Used: Edmonton Duplicate						
Date Acquired: Jul 09, 2002						
Acquired By:						

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Kjeldahl Nitrogen	mg/L	29.6	30.00	27.70	32.50	✓
Ammonium - N	mg/L	3.00	3.00	2.70	3.30	✓
Phosphorus	mg/L	4.07	4.00	3.52	4.24	✓
Cyanide	mg/L	0.078	0.0750	0.0680	0.0870	✓
Material Used: Water High						
Date Acquired: Jul 09, 2002						
Acquired By:						

Kjeldahl Nitrogen	mg/L	4.98	5.00	4.40	5.40	✓
Ammonium - N	mg/L	0.78	0.800	0.720	0.880	✓
Phosphorus	mg/L	0.42	0.400	0.360	0.440	✓
Phosphate	mg/L	0.39	0.400	0.360	0.440	✓
Cyanide	mg/L	0.016	0.0150	0.0135	0.0165	✓
Material Used: Water Low						
Date Acquired: Jul 09, 2002						
Acquired By:						



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Page: 14 of 22

Aggregate Organic Constituents

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Oil and Grease	mg/L	<5	0.00	-5.00	5.00	✓
Material Used: Edmonton Method Blank						
Date Acquired: Jul 10, 2002						
Acquired By: Jodi Johnston						

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Oil and Grease	mg/L	40	40.0	39.3	41.7	✓
Material Used: 5050-Oil and Grease						
Date Acquired: Jul 10, 2002						
Acquired By: Jodi Johnston						

Biochemical Oxygen Demand	mg/L	179	200	166	211	✓
Material Used: Water High						
Date Acquired: Jul 08, 2002						
Acquired By: Tina Knott						

Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	6	6	10.0	5.0	✓
Material Used: Edmonton Duplicate						
Date Acquired: Jul 08, 2002						
Acquired By: Tina Knott						



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Page: 15 of 22

Routine Water

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Nitrate - N	mg/L	<0.004	0.0000	-0.0100	0.0100	✓
Nitrite - N	mg/L	<0.002	0.0000	-0.0100	0.0100	✓
Material Used: Edmonton Method Blank						
Date Acquired: Jul 07, 2002						
Acquired By: Matt Cummings						

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH		7.66	7.64	10.00	0.10	✓
Calcium	mg/L	330	329	10.0	0.6	✓
Magnesium	mg/L	98.9	98.3	10.00	0.15	✓
Nitrate - N	mg/L	<0.02	<0.02	10.000	0.010	✓
Nitrite - N	mg/L	<0.01	<0.01	10.000	0.010	✓
P-Alkalinity	mg/L	<5	<5	10.0	5.0	✓
T-Alkalinity	mg/L	842	842	10.0	5.0	✓
Material Used: Edmonton Duplicate						
Date Acquired: Jul 06, 2002						
Acquired By: Tina Knott						



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Sampled By: D. Hohnstein
Company: Echo Bay Mines Ltd.

Project
ID: Requisition No.L48906
Name: Lupin Operation
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LSD:
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Acct. Code:

NWL Lot ID: 180005
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Page: 16 of 22

Routine Water (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	10.3	10.00	9.00	11.00	✓
Magnesium	mg/L	50.7	50.00	45.00	55.00	✓
Material Used:	Metals High					
Date Acquired:	Jul 08, 2002					
Acquired By:	Jesse Dang					
Calcium	mg/L	<0.2	0.1000	0.0800	0.1200	✓
Magnesium	mg/L	0.59	0.500	0.400	0.600	✓
Material Used:	Metals Low					
Date Acquired:	Jul 08, 2002					
Acquired By:	Jesse Dang					
pH		9.11	9.18	8.73	9.67	✓
Nitrate - N	mg/L	10.1	10.000	9.700	10.700	✓
Nitrite - N	mg/L	9.91	10.000	9.400	10.600	✓
P-Alkalinity	mg/L	541		490	557	✓
T-Alkalinity	mg/L	1030	1000	972	1035	✓
Material Used:	Water High					
Date Acquired:	Jul 08, 2002					
Acquired By:	Tina Knott					
pH		6.82	6.86	6.82	6.91	✓
Nitrate - N	mg/L	0.505	0.500	0.439	0.555	✓
Nitrite - N	mg/L	0.504	0.500	0.439	0.522	✓
P-Alkalinity	mg/L	68		46.8	71.0	✓
T-Alkalinity	mg/L	116	125	121	133	✓
Material Used:	Water Low					
Date Acquired:	Jul 08, 2002					
Acquired By:	Tina Knott					



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Attn: David Hohnstein

Sampled By: D. Hohnstein

Company: Echo Bay Mines Ltd.

Project

ID: Requisition No.L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 180005

Control Number:

Date Received: Jul 05, 2002

Date Reported: Jul 15, 2002

Report Number: 277210

Page: 17 of 22

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	<0.003	0.0000	-0.0149	0.0290	✓
Magnesium	mg/L	<0.05	0.0000	-0.0305	0.0500	✓
Manganese	mg/L	0.0010	0.000000	-0.000700	0.001200	✓
Potassium	mg/L	<0.4	0.000	-0.102	0.400	✓
Silicon	mg/L	<0.004	0.0000	-0.0435	0.0933	✓
Sodium	mg/L	<0.4	0.000	-0.194	0.400	✓
Sulphur	mg/L	<0.008	0.0000	-0.0333	0.0447	✓

Material Used: Edmonton Method Blank

Date Acquired: Jul 05, 2002

Acquired By:

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	mg/L	11.3	11.3	10.0	0.6	✓
Iron	mg/L	1.91	1.75	10.000	0.009	✓
Magnesium	mg/L	3.28	3.49	10.00	0.18	✓
Manganese	mg/L	0.0525	0.0535	10.0000	0.0006	✓
Potassium	mg/L	7.0	6.7	10.0	1.2	✓
Silicon	mg/L	11.5	12.3	10.000	0.012	✓
Sodium	mg/L	2260	2200	10.0	1.2	✓
Sulphur	mg/L	1.68	1.56	10.000	0.027	✓

Material Used: Edmonton Duplicate

Date Acquired: Jul 05, 2002

Acquired By: Jesse Dang



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Sampled By: D. Hohnstein
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NWL Lot ID: 180005
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Page: 18 of 22

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	1.1	1.000	0.900	1.100	✓
Iron	mg/L	<0.003	0.500	0.478	0.552	✓
Magnesium	mg/L	5.04	5.00	4.48	5.19	✓
Manganese	mg/L	0.0496	0.0500	0.0412	0.0539	✓
Potassium	mg/L	4.8	5.00	4.30	5.06	✓
Silicon	mg/L	1.97	2.000	1.700	2.160	✓
Sodium	mg/L	5.0	5.00	4.08	5.25	✓
Sulphur	mg/L	2.09	2.000	1.730	2.110	✓

Material Used: Edmonton Digestion Check
Date Acquired: Jul 05, 2002
Acquired By: Jesse Dang

Calcium	mg/L	9.3	10.00	9.00	11.00	✓
Iron	mg/L	4.90	5.000	4.500	5.500	✓
Magnesium	mg/L	46.9	50.00	45.00	55.00	✓
Manganese	mg/L	0.495	0.5000	0.4500	0.5500	✓
Potassium	mg/L	46.9	50.0	45.0	55.0	✓
Silicon	mg/L	21.8	20.000	16.000	24.000	✓
Sodium	mg/L	48.8	50.0	45.0	55.0	✓
Sulphur	mg/L	20.0	20.000	18.000	22.000	✓

Material Used: Metals High
Date Acquired: Jul 05, 2002
Acquired By: Jesse Dang



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Page: 19 of 22

Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	<0.2	0.1000	0.0800	0.1200	✓
Iron	mg/L	0.048	0.0500	0.0400	0.0600	✓
Magnesium	mg/L	0.48	0.500	0.400	0.600	✓
Manganese	mg/L	0.0054	0.00500	0.00400	0.00600	✓
Potassium	mg/L	0.5	0.500	0.400	0.600	✓
Silicon	mg/L	0.228	0.200	0.160	0.240	✓
Sodium	mg/L	0.5	0.500	0.400	0.600	✓
Sulphur	mg/L	0.190	0.200	0.160	0.240	✓
Aluminum	ug/L	207	200	180	220	✓
Antimony	ug/L	48.4	50.0	45.0	55.0	✓
Arsenic	ug/L	49.1	50.0	45.0	55.0	✓
Barium	ug/L	5	5.00	4.50	5.50	✓
Beryllium	ug/L	5.5	5.00	4.50	5.50	✓
Bismuth	ug/L	49.6	50.0	45.0	55.0	✓
Boron	ug/L	208	200	180	220	✓
Cadmium	ug/L	4.70	5.00	4.50	5.50	✓
Chromium	ug/L	9.8	10.00	9.00	11.00	✓
Cobalt	ug/L	9.6	10.00	9.00	11.00	✓
Copper	ug/L	10	10.00	9.00	11.00	✓
Lead	ug/L	19.7	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	9.9	10.00	9.00	11.00	✓
Selenium	ug/L	49.1	50.0	45.0	55.0	✓
Silver	ug/L	10.7	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	5.1	5.00	4.50	5.50	✓
Uranium	ug/L	514	500.0	450.0	550.0	✓
Vanadium	ug/L	9.5	10.00	9.00	11.00	✓
Zinc	ug/L	10	10.00	9.00	11.00	✓
Zirconium	ug/L	9	10.00	9.00	11.00	✓

Material Used: Metals Low
Date Acquired: Jul 05, 2002
Acquired By: Darren Crichton



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Page: 20 of 22

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	4.7	5.00	4.50	5.50	✓
Arsenic	ug/L	4.8	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	4.8	5.00	4.50	5.50	✓
Boron	ug/L	22	20.0	18.0	22.0	✓
Cadmium	ug/L	0.46	0.500	0.450	0.550	✓
Chromium	ug/L	1.0	1.000	0.900	1.100	✓
Cobalt	ug/L	0.9	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	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	4.91	5.00	4.50	5.50	✓
Titanium	ug/L	0.5	0.500	0.450	0.550	✓
Uranium	ug/L	50.9	50.0	45.0	55.0	✓
Vanadium	ug/L	0.9	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: Jul 05, 2002
Acquired By: Darren Crichton