

APPENDIX B

Norwest Labs Ltd.; Analysis QC Data



AUGUST 13, 2001 - 0925-01



**NORWEST
LABS**

Agri-Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Quality Control

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: D. Determan
Echo Bay Mines

Project

ID: Requisition No. L48906

Name: Lupin Operation

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 131712

Control Number:

Date Received: Aug 13, 2001

Date Reported: Aug 20, 2001

Report Number: 192369

Page:

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Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Kjeldahl Nitrogen	mg/L	0.0	0.000000	-0.000980	0.001300	✓
Phosphorus	mg/L	0.0	0.000000	-0.00260	0.00300	✓
Phosphate	mg/L	0.01	0.0000	-0.0500	0.0500	✓

Material Used: Edmonton Method Blank

Date Acquired: Aug 16, 2001

Acquired By: Matt Cummings

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Ammonium - N	mg/L	0.36		10.00	0.10	✓
Phosphate	mg/L	1.34	1.39	10.00	0.05	✓

Material Used: Edmonton Duplicate

Date Acquired: Aug 16, 2001

Acquired By: Matt Cummings

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Kjeldahl Nitrogen	mg/L	27.4	30.00	27.00	33.00	✓
Ammonium - N	mg/L	2.90	3.00	2.70	3.30	✓
Phosphorus	mg/L	3.76	4.00	3.60	4.40	✓
Phosphate	mg/L	3.92	4.00	3.60	4.40	✓

Material Used: Water High

Date Acquired: Aug 16, 2001

Acquired By: Matt Cummings

Kjeldahl Nitrogen	mg/L	5.48	5.00	4.50	5.50	✓
Ammonium - N	mg/L	0.85	0.800	0.720	0.880	✓
Phosphorus	mg/L	0.42	0.400	0.360	0.440	✓
Phosphate	mg/L	0.44	0.400	0.360	0.440	✓

Material Used: Water Low

Date Acquired: Aug 16, 2001

Acquired By: Matt Cummings



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Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	5	6	10.0	5.0	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Aug 14, 2001					
Acquired By:	Matt Cummings					



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Routine Water

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Nitrate - N	mg/L	0.0	0.0000	-0.0100	0.0100	✓
Nitrite - N	mg/L	0.0	0.0000	-0.0100	0.0100	✓

Material Used: Edmonton Method Blank

Date Acquired: Aug 14, 2001

Acquired By: Jesse Dang

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH		6.30	6.30	10.00	0.10	✓
Nitrate - N	mg/L	<0.004	0.0	10.000	0.010	✓
Nitrite - N	mg/L	<0.002	0.0	10.000	0.010	✓
Hydroxide	mg/L	<5	<5	10.0	4.0	✓
Carbonate	mg/L	8	11	10.0	4.0	✓
Bicarbonate	mg/L	<5	<5	10.0	4.0	✓
P-Alkalinity	mg/L	<5	<5	10.0	4.0	✓
T-Alkalinity	mg/L	6	9	10.0	4.0	✓

Material Used: Edmonton Duplicate

Date Acquired: Aug 14, 2001

Acquired By: Tina Knott



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Routine Water (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	0.1	0.1000	0.0800	0.1200	✓
Magnesium	mg/L	0.46	0.500	0.400	0.600	✓
Material Used:	1303 - Metals Low					
Date Acquired:	Aug 14, 2001					
Acquired By:	Jodi Johnston					
Calcium	mg/L	9.9	10.00	9.00	11.00	✓
Magnesium	mg/L	48.6	50.00	45.00	55.00	✓
Material Used:	1304 - Metals High					
Date Acquired:	Aug 14, 2001					
Acquired By:	Jodi Johnston					
pH		9.17	9.18	9.08	9.26	✓
Nitrate - N	mg/L	9.78	10.000	9.000	11.000	✓
Nitrite - N	mg/L	9.51	10.000	9.000	11.000	✓
P-Alkalinity	mg/L	483		472	554	✓
T-Alkalinity	mg/L	1010	1000	900	1100	✓
Material Used:	Water High					
Date Acquired:	Aug 14, 2001					
Acquired By:	Tina Knott					
pH		6.87	6.86	6.83	6.97	✓
Nitrate - N	mg/L	0.505	0.500	0.400	0.600	✓
Nitrite - N	mg/L	0.465	0.500	0.400	0.600	✓
P-Alkalinity	mg/L	56		40.8	73.6	✓
T-Alkalinity	mg/L	131	125	113	138	✓
Material Used:	Water Low					
Date Acquired:	Aug 14, 2001					
Acquired By:	Tina Knott					



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ID: Requisition No. L48906

Name: Lupin Operation

Location:

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P.O.:

Acct. Code:

NWL Lot ID: 131712

Control Number:

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Metals Total

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	mg/L	0.001	0.00000	-0.00650	0.03290	✓
Antimony	mg/L	-0.002	0.00000	-0.00980	0.00910	✓
Arsenic	mg/L	0.0000	0.000000	-0.000200	0.000200	✓
Barium	mg/L	0.0002	0.000000	-0.000300	0.000600	✓
Beryllium	mg/L	0.0001	0.000000	-0.000600	0.000600	✓
Bismuth	mg/L	-0.001	0.0000	-0.0176	0.0174	✓
Boron	mg/L	-0.004	0.0000	-0.0272	0.0534	✓
Cadmium	mg/L	0.0002	0.000000	-0.000300	0.000600	✓
Calcium	mg/L	0.0	0.0000	-0.0312	0.0538	✓
Chromium	mg/L	0.0	0.00000	-0.00130	0.00180	✓
Cobalt	mg/L	-0.0003	0.00000	-0.00110	0.00110	✓
Copper	mg/L	0.000	0.00000	-0.00280	0.00390	✓
Iron	mg/L	0.007	0.0000	-0.0149	0.0290	✓
Lead	mg/L	0.002	0.00000	-0.00590	0.00780	✓
Lithium	mg/L	0.0	0.00000	-0.00210	0.00240	✓
Magnesium	mg/L	0.00	0.0000	-0.0305	0.0426	✓
Manganese	mg/L	0.0003	0.000000	-0.000700	0.001200	✓
Molybdenum	mg/L	0.000	0.00000	-0.00250	0.00280	✓
Nickel	mg/L	0.000	0.00000	-0.00400	0.00370	✓
Phosphorus	mg/L	0.00	0.0000	-0.0227	0.0253	✓
Potassium	mg/L	0.0	0.000	-0.102	0.150	✓
Selenium	mg/L	0.0	0.0000	-0.0284	0.0268	✓
Silicon	mg/L	0.007	0.0000	-0.0435	0.0933	✓
Silver	mg/L	-0.000	0.00000	-0.00200	0.00200	✓
Sodium	mg/L	-0.0	0.000	-0.194	0.318	✓
Strontium	mg/L	-0.0001	0.000000	-0.000100	0.000300	✓
Sulphur	mg/L	0.012	0.0000	-0.0333	0.0447	✓
Thallium	mg/L	0.0	0.0000	-0.0157	0.0175	✓
Tin	mg/L	-0.003	0.00000	-0.00730	0.00970	✓
Titanium	mg/L	-0.0004	0.00000	-0.00580	0.00570	✓
Vanadium	mg/L	-0.001	0.00000	-0.00450	0.00310	✓
Zinc	mg/L	0.0014	0.00000	-0.00530	0.01220	✓

Material Used: Edmonton Method Blank

Date Acquired: Aug 15, 2001

Acquired By: Jodi Johnston



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ID: Requisition No. L48906

Name: Lupin Operation

Location:

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Metals Total (Continued...)

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Silver	mg/L	12.5	13.4	10.000	0.003	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Aug 15, 2001					
Acquired By:	Jodi Johnston					



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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	mg/L	0.171	0.200	0.160	0.240	✓
Antimony	mg/L	0.048	0.0500	0.0400	0.0600	✓
Arsenic	mg/L	0.0021	0.00200	0.00160	0.00240	✓
Barium	mg/L	0.0046	0.00500	0.00400	0.00600	✓
Beryllium	mg/L	0.0042	0.00500	0.00400	0.00600	✓
Bismuth	mg/L	0.043	0.0500	0.0400	0.0600	✓
Boron	mg/L	0.172	0.200	0.160	0.240	✓
Cadmium	mg/L	0.0047	0.00500	0.00400	0.00600	✓
Calcium	mg/L	0.1	0.1000	0.0800	0.1200	✓
Chromium	mg/L	0.0102	0.01000	0.00800	0.01200	✓
Cobalt	mg/L	0.0093	0.01000	0.00800	0.01200	✓
Copper	mg/L	0.009	0.01000	0.00800	0.01200	✓
Iron	mg/L	0.048	0.0500	0.0400	0.0600	✓
Lead	mg/L	0.018	0.0200	0.0160	0.0240	✓
Lithium	mg/L	0.005	0.00500	0.00400	0.00600	✓
Magnesium	mg/L	0.52	0.500	0.400	0.600	✓
Manganese	mg/L	0.0048	0.00500	0.00400	0.00600	✓
Molybdenum	mg/L	0.010	0.01000	0.00800	0.01200	✓
Nickel	mg/L	0.010	0.01000	0.00800	0.01200	✓
Phosphorus	mg/L	0.46	0.500	0.400	0.600	✓
Potassium	mg/L	0.5	0.500	0.400	0.600	✓
Selenium	mg/L	0.048	0.0500	0.0400	0.0600	✓
Silicon	mg/L	0.197	0.200	0.160	0.240	✓
Silver	mg/L	0.008	0.01000	0.00800	0.01200	✓
Sodium	mg/L	0.5	0.500	0.400	0.600	✓
Strontium	mg/L	0.0043	0.00500	0.00400	0.00600	✓
Sulphur	mg/L	0.180	0.200	0.160	0.240	✓
Thallium	mg/L	0.046	0.0500	0.0400	0.0600	✓
Tin	mg/L	0.045	0.0500	0.0400	0.0600	✓
Titanium	mg/L	0.0043	0.00500	0.00400	0.00600	✓
Vanadium	mg/L	0.009	0.01000	0.00800	0.01200	✓
Zinc	mg/L	0.0093	0.01000	0.00800	0.01200	✓

Material Used: 1303 - Metals Low

Date Acquired: Aug 15, 2001

Acquired By: Jodi Johnston



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Location:

LSD:

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Acct. Code:

NWL Lot ID: 131712

Control Number:

Date Received: Aug 13, 2001

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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	mg/L	20.2	20.000	18.000	22.000	✓
Antimony	mg/L	5.41	5.000	4.500	5.500	✓
Arsenic	mg/L	0.0200	0.0200	0.0180	0.0220	✓
Barium	mg/L	0.512	0.5000	0.4500	0.5500	✓
Beryllium	mg/L	0.505	0.5000	0.4500	0.5500	✓
Bismuth	mg/L	5.07	5.000	4.500	5.500	✓
Boron	mg/L	20.4	20.000	18.000	22.000	✓
Cadmium	mg/L	0.503	0.5000	0.4500	0.5500	✓
Calcium	mg/L	9.4	10.00	9.00	11.00	✓
Chromium	mg/L	1.05	1.0000	0.9000	1.1000	✓
Cobalt	mg/L	1.01	1.0000	0.9000	1.1000	✓
Copper	mg/L	1.02	1.000	0.900	1.100	✓
Iron	mg/L	5.16	5.000	4.500	5.500	✓
Lead	mg/L	2.02	2.000	1.800	2.200	✓
Lithium	mg/L	0.542	0.500	0.450	0.550	✓
Magnesium	mg/L	51.2	50.00	45.00	55.00	✓
Manganese	mg/L	0.505	0.5000	0.4500	0.5500	✓
Molybdenum	mg/L	1.07	1.000	0.900	1.100	✓
Nickel	mg/L	1.05	1.000	0.900	1.100	✓
Phosphorus	mg/L	50.6	50.00	45.00	55.00	✓
Potassium	mg/L	50.3	50.0	45.0	55.0	✓
Selenium	mg/L	5.06	5.000	4.500	5.500	✓
Silicon	mg/L	22.0	20.000	16.000	24.000	✓
Silver	mg/L	1.03	1.000	0.900	1.100	✓
Sodium	mg/L	49.4	50.0	45.0	55.0	✓
Strontium	mg/L	0.472	0.5000	0.4000	0.6000	✓
Sulphur	mg/L	20.5	20.000	18.000	22.000	✓
Thallium	mg/L	5.49	5.000	4.500	5.500	✓
Tin	mg/L	5.50	5.000	4.500	5.500	✓
Titanium	mg/L	0.545	0.5000	0.4500	0.5500	✓
Vanadium	mg/L	0.973	1.000	0.900	1.100	✓
Zinc	mg/L	1.00	1.0000	0.9000	1.1000	✓

Material Used: 1304 - Metals High

Date Acquired: Aug 15, 2001

Acquired By: Jodi Johnston



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Method of Analysis:

Test	Reference	Method	Date of Analysis	Location	Analyst
(Ortho)Phosphate in Water	APHA	Automated Ascorbic Acid Reduction Method, 4500-P F	Aug 16, 2001	Norwest Edmonton	Matt Cummings
Alkalinity, pH, and EC in water	APHA	Electrometric Method, 4500-H+ B	Aug 14, 2001	Norwest Edmonton	Matt Cummings
		Laboratory & Field Methods, 2550 B	Aug 14, 2001	Norwest Edmonton	Matt Cummings
		Titration Method, 2320 B	Aug 14, 2001	Norwest Edmonton	Matt Cummings
Ammonium in Water	APHA	Automated Phenate Method, 4500-NH3 G	Aug 14, 2001	Norwest Edmonton	Gordon Grensman
Anions (Routine) by Ion Chromatography	APHA	Single-Column Ion Chromatography with Electronic Suppression, 4110 C	Aug 15, 2001	Norwest Edmonton	Jesse Dang
BOD in water	APHA	5 Day, 5210 B	Aug 20, 2001	Norwest Edmonton	Matt Cummings
Fecal Coliforms - MF	APHA	Fecal Coliform Membrane Filter Procedure, 9222 D	Aug 17, 2001	Norwest Calgary	Jennette Gorday
Kjeldahl Nitrogen & Phosphorus (Total) in Water	APHA	Automated Ascorbic Acid Reduction Method, 4500-P F	Aug 17, 2001	Norwest Edmonton	Matt Cummings
		Total Kjeldahl Nitrogen in Soil/Plant, 13-107-6-2-D	Aug 17, 2001	Norwest Edmonton	Matt Cummings
Metals Hydride (Total) in water	APHA	Continuous Hydride Generation / Atomic Absorption Spectromet, 3114 C	Aug 16, 2001	Norwest Edmonton	To Thong
Metals Trace (Dissolved) in water	APHA	Inductively Coupled Plasma (ICP) Method, 3120 B	Aug 15, 2001	Norwest Edmonton	Jodi Johnston
Metals Trace (Total) in water	APHA	Inductively Coupled Plasma (ICP) Method, 3120 B	Aug 16, 2001	Norwest Edmonton	Jodi Johnston
Solids Suspended (Total, Fixed and Volatile)	APHA	TSS Dried at 103-105 C, 2540 D	Aug 14, 2001	Norwest Edmonton	Tina Knott
Total Coliforms - MF	APHA	Standard Total Coliform Membrane Filter Procedure, 9222 B	Aug 17, 2001	Norwest Calgary	Jennette Gorday



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Name: Lupin Operation

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LSD:

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References:

APHA
QuikChem Method

Standard Methods for the Examination of Water and Wastewater
Lachat Instruments

Comments:

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Sampled By: D. Determan
Echo Bay Mines Ltd.

Project

ID: Requisition No.L48906

Name: Lupin Operations

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 127453

Control Number:

Date Received: Jul 17, 2001

Date Reported: Jul 24, 2001

Report Number: 186814

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Inorganic Nonmetallic Parameters

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Kjeldahl Nitrogen	mg/L	0.0	0.000000	-0.000980	0.001300	✓
Phosphorus	mg/L	0.0	0.000000	-0.00260	0.00300	✓
Phosphate	mg/L	0.0	0.00000	-0.0500	0.0500	✓
Material Used:	Edmonton Method Blank					
Date Acquired:	Jul 19, 2001					
Acquired By:	Darren Crichton					

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Ammonium - N	mg/L	0.51	0.50	10.00	0.10	✓
Phosphorus	mg/L	<0.05	0.03	10.00	0.05	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Jul 18, 2001					
Acquired By:	Darren Crichton					

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Kjeldahl Nitrogen	mg/L	31.0	30.00	27.00	33.00	✓
Ammonium - N	mg/L	2.71	3.00	2.70	3.30	✓
Phosphorus	mg/L	3.89	4.00	3.60	4.40	✓
Phosphate	mg/L	3.61	4.00	3.60	4.40	✓
Material Used:	Water High					
Date Acquired:	Jul 19, 2001					
Acquired By:	Darren Crichton					

Kjeldahl Nitrogen	mg/L	4.85	5.00	4.50	5.50	✓
Ammonium - N	mg/L	0.75	0.800	0.720	0.880	✓
Phosphorus	mg/L	0.38	0.400	0.360	0.440	✓
Phosphate	mg/L	0.44	0.400	0.360	0.440	✓
Material Used:	Water Low					
Date Acquired:	Jul 19, 2001					
Acquired By:	Darren Crichton					



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Phone: (780) 438-5522
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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. Determan
Echo Bay Mines Ltd.

Project

ID: Requisition No.L48906

Name: Lupin Operations

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 127453

Control Number:

Date Received: Jul 17, 2001

Date Reported: Jul 24, 2001

Report Number: 186814

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Aggregate Organic Constituents

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Biochemical Oxygen Demand	mg/L	190	200	166	211	✓
Material Used:	Water High					
Date Acquired:	Jul 19, 2001					
Acquired By:	Matt Cummings					

Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Solids	mg/L	3		10.0	5.0	✓
Material Used:	Edmonton Duplicate					
Date Acquired:	Jul 18, 2001					
Acquired By:						



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Routine Water

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Nitrate - N	mg/L	0.0	0.0000	-0.0100	0.0100	✓
Nitrite - N	mg/L	0.0	0.0000	-0.0100	0.0100	✓

Material Used: Edmonton Method Blank

Date Acquired: Jul 17, 2001

Acquired By: Jesse Dang

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH		6.25	6.19	10.00	0.10	✓
Nitrate - N	mg/L	2.13		10.000	0.010	✓
Nitrite - N	mg/L	<0.002		10.000	0.010	✓
Hydroxide	mg/L	<5	<5	10.0	4.0	✓
Carbonate	mg/L	<6	<6	10.0	4.0	✓
Bicarbonate	mg/L	<5	<5	10.0	4.0	✓
P-Alkalinity	mg/L	<5	<5	10.0	4.0	✓
T-Alkalinity	mg/L	<5	<5	10.0	4.0	✓

Material Used: Edmonton Duplicate

Date Acquired: Jul 17, 2001

Acquired By: Trisha Perverseff



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Attn: David Hohnstein

Sampled By: D. Determan
Echo Bay Mines Ltd.

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

NWL Lot ID: 127453
Control Number:
Date Received: Jul 17, 2001
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Routine Water (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Calcium	mc/L	0.1	0.1000	0.0800	0.1200	✓
Magnesium	mc/L	0.48	0.500	0.400	0.600	✓
Material Used: 1303 - Metals Low						
Date Acquired: Jul 17, 2001						
Acquired By: Jodi Johnston						
Calcium	mc/L	9.7	10.00	9.00	11.00	✓
Magnesium	mc/L	52.4	50.00	45.00	55.00	✓
Material Used: 1304 - Metals High						
Date Acquired: Jul 17, 2001						
Acquired By:						
pH		9.17	9.18	9.08	9.26	✓
Nitrate - N	mg/L		10.000	9.000	11.000	✓
Nitrite - N	mg/L		10.000	9.000	11.000	✓
P-Alkalinity	mg/L	535		472	554	✓
T-Alkalinity	mg/L	1010	1000	900	1100	✓
Material Used: Water High						
Date Acquired: Jul 17, 2001						
Acquired By: Trisha Perverseff						
pH		6.87	6.86	6.83	6.97	✓
Nitrate - N	mg/L		0.500	0.400	0.600	✓
Nitrite - N	mg/L		0.500	0.400	0.600	✓
P-Alkalinity	mg/L	62		40.8	73.6	✓
T-Alkalinity	mg/L	127	125	113	138	✓
Material Used: Water Low						
Date Acquired: Jul 17, 2001						
Acquired By: Trisha Perverseff						



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ID: Requisition No.L48906

Name: Lupin Operations

Location:

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P.O.:

Acct. Code:

NWL Lot ID: 127453

Control Number:

Date Received: Jul 17, 2001

Date Reported: Jul 24, 2001

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Metals Total

Blanks	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	mg/L	0.002	0.00000	-0.00650	0.03290	✓
Antimony	mg/L	-0.002	0.00000	-0.00980	0.00910	✓
Arsenic	mg/L	0.0	0.000000	-0.000200	0.000200	✓
Barium	mg/L	0.0006	0.000000	-0.000300	0.000600	✓
Beryllium	mg/L	0.0	0.000000	-0.000600	0.000600	✓
Bismuth	mg/L	-0.001	0.0000	-0.0176	0.0174	✓
Boron	mg/L	0.018	0.0000	-0.0272	0.0534	✓
Cadmium	mg/L	0.0	0.000000	-0.000300	0.000600	✓
Calcium	mg/L	0.0	0.0000	-0.0312	0.0538	✓
Chromium	mg/L	-0.0002	0.00000	-0.00130	0.00180	✓
Cobalt	mg/L	0.0002	0.00000	-0.00110	0.00110	✓
Copper	mg/L	-0.000	0.00000	-0.00280	0.00390	✓
Iron	mg/L	0.001	0.0000	-0.0149	0.0290	✓
Lead	mg/L	0.000	0.00000	-0.00590	0.00780	✓
Lithium	mg/L	0.0	0.00000	-0.00210	0.00240	✓
Magnesium	mg/L	-0.00	0.0000	-0.0305	0.0426	✓
Manganese	mg/L	-0.0001	0.000000	-0.000700	0.001200	✓
Molybdenum	mg/L	0.000	0.00000	-0.00250	0.00280	✓
Nickel	mg/L	0.000	0.00000	-0.00400	0.00370	✓
Phosphorus	mg/L	0.01	0.0000	-0.0227	0.0253	✓
Potassium	mg/L	0.1	0.000	-0.102	0.150	✓
Selenium	mg/L	-0.003	0.0000	-0.0284	0.0268	✓
Silicon	mg/L	0.001	0.0000	-0.0435	0.0933	✓
Silver	mg/L	-0.000	0.00000	-0.00200	0.00200	✓
Sodium	mg/L	0.0	0.000	-0.194	0.318	✓
Strontium	mg/L	0.0	0.000000	-0.000100	0.000300	✓
Sulphur	mg/L	-0.007	0.0000	-0.0333	0.0447	✓
Thallium	mg/L	0.002	0.0000	-0.0157	0.0175	✓
Tin	mg/L	-0.001	0.00000	-0.00730	0.00970	✓
Titanium	mg/L	0.0020	0.00000	-0.00580	0.00570	✓
Vanadium	mg/L	0.001	0.00000	-0.00450	0.00310	✓
Zinc	mg/L	-0.0028	0.00000	-0.00530	0.01220	✓

Material Used: Edmonton Method Blank

Date Acquired: Jul 17, 2001

Acquired By: To Thong



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Attn: David Hohnstein

Sampled By: D. Determan
Echo Bay Mines Ltd.

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

NWL Lot ID: 127453
Control Number:
Date Received: Jul 17, 2001
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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	mg/L	0.185	0.200	0.160	0.240	✓
Antimony	mg/L	0.048	0.0500	0.0400	0.0600	✓
Arsenic	mg/L	0.0022	0.00200	0.00160	0.00240	✓
Barium	mg/L	0.0049	0.00500	0.00400	0.00600	✓
Beryllium	mg/L	0.0045	0.00500	0.00400	0.00600	✓
Bismuth	mg/L	0.045	0.0500	0.0400	0.0600	✓
Boron	mg/L	0.182	0.200	0.160	0.240	✓
Cadmium	mg/L	0.0049	0.00500	0.00400	0.00600	✓
Calcium	mg/L	0.1	0.1000	0.0800	0.1200	✓
Chromium	mg/L	0.0101	0.01000	0.00800	0.01200	✓
Cobalt	mg/L	0.0099	0.01000	0.00800	0.01200	✓
Copper	mg/L	0.011	0.01000	0.00800	0.01200	✓
Iron	mg/L	0.052	0.0500	0.0400	0.0600	✓
Lead	mg/L	0.019	0.0200	0.0160	0.0240	✓
Lithium	mg/L	0.004	0.00500	0.00400	0.00600	✓
Magnesium	mg/L	0.48	0.500	0.400	0.600	✓
Manganese	mg/L	0.0049	0.00500	0.00400	0.00600	✓
Molybdenum	mg/L	0.010	0.01000	0.00800	0.01200	✓
Nickel	mg/L	0.011	0.01000	0.00800	0.01200	✓
Phosphorus	mg/L	0.51	0.500	0.400	0.600	✓
Potassium	mg/L	0.5	0.500	0.400	0.600	✓
Selenium	mg/L	0.055	0.0500	0.0400	0.0600	✓
Silicon	mg/L	0.191	0.200	0.160	0.240	✓
Silver	mg/L	0.010	0.01000	0.00800	0.01200	✓
Sodium	mg/L	0.5	0.500	0.400	0.600	✓
Strontium	mg/L	0.0047	0.00500	0.00400	0.00600	✓
Sulphur	mg/L	0.174	0.200	0.160	0.240	✓
Thallium	mg/L	0.048	0.0500	0.0400	0.0600	✓
Tin	mg/L	0.048	0.0500	0.0400	0.0600	✓
Titanium	mg/L	0.0047	0.00500	0.00400	0.00600	✓
Vanadium	mg/L	0.009	0.01000	0.00800	0.01200	✓
Zinc	mg/L	0.0090	0.01000	0.00800	0.01200	✓

Material Used: 1303 - Metals Low
Date Acquired: Jul 17, 2001
Acquired By: To Thong



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Attn: David Hohnstein

Sampled By: D. Determan
Echo Bay Mines Ltd.

Project

ID: Requisition No.L48906

Name: Lupin Operations

Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 127453

Control Number:

Date Received: Jul 17, 2001

Date Reported: Jul 24, 2001

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Metals Total (Continued...)

Control Sample	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
Aluminum	mg/L	20.6	20.000	18.000	22.000	✓
Antimony	mg/L	5.03	5.000	4.500	5.500	✓
Arsenic	mg/L	0.0206	0.0200	0.0180	0.0220	✓
Barium	mg/L	0.495	0.5000	0.4500	0.5500	✓
Beryllium	mg/L	0.496	0.5000	0.4500	0.5500	✓
Bismuth	mg/L	4.91	5.000	4.500	5.500	✓
Boron	mg/L	20.0	20.000	18.000	22.000	✓
Cadmium	mg/L	0.500	0.5000	0.4500	0.5500	✓
Calcium	mg/L	9.7	10.00	9.00	11.00	✓
Chromium	mg/L	1.03	1.0000	0.9000	1.1000	✓
Cobalt	mg/L	1.00	1.0000	0.9000	1.1000	✓
Copper	mg/L	1.03	1.000	0.900	1.100	✓
Iron	mg/L	5.20	5.000	4.500	5.500	✓
Lead	mg/L	1.97	2.000	1.800	2.200	✓
Lithium	mg/L	0.533	0.500	0.450	0.550	✓
Magnesium	mg/L	51.7	50.00	45.00	55.00	✓
Manganese	mg/L	0.504	0.5000	0.4500	0.5500	✓
Molybdenum	mg/L	1.00	1.000	0.900	1.100	✓
Nickel	mg/L	1.03	1.000	0.900	1.100	✓
Phosphorus	mg/L	50.0	50.00	45.00	55.00	✓
Potassium	mg/L	49.5	50.0	45.0	55.0	✓
Selenium	mg/L	5.07	5.000	4.500	5.500	✓
Silicon	mg/L	20.7	20.000	16.000	24.000	✓
Silver	mg/L	1.03	1.000	0.900	1.100	✓
Sodium	mg/L	48.9	50.0	45.0	55.0	✓
Strontium	mg/L	0.480	0.5000	0.4000	0.6000	✓
Sulphur	mg/L	20.3	20.000	18.000	22.000	✓
Thallium	mg/L	4.93	5.000	4.500	5.500	✓
Tin	mg/L	5.00	5.000	4.500	5.500	✓
Titanium	mg/L	0.527	0.5000	0.4500	0.5500	✓
Vanadium	mg/L	0.950	1.000	0.900	1.100	✓
Zinc	mg/L	0.992	1.0000	0.9000	1.1000	✓

Material Used: 1304 - Metals High

Date Acquired: Jul 17, 2001

Acquired By: To Thong



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Method of Analysis:

Test	Reference	Method	Date of Analysis	Location	Analyst
(Ortho)Phosphate in Water	APHA	Automated Ascorbic Acid Reduction Method, 4500-P F	Jul 19, 2001	Norwest Edmonton	Matt Cummings
Alkalinity, pH, and EC in water	APHA	Electrometric Method, 4500-H+ B	Jul 17, 2001	Norwest Edmonton	Trisha Perverseff
		Laboratory & Field Methods, 2550 B	Jul 17, 2001	Norwest Edmonton	Trisha Perverseff
		Titration Method, 2320 B	Jul 17, 2001	Norwest Edmonton	Trisha Perverseff
Ammonium in Water	APHA	Automated Phenate Method, 4500-NH3 G	Jul 17, 2001	Norwest Edmonton	Gordon Grensmann
Anions (Routine) by Ion Chromatography	APHA	Single-Column Ion Chromatography with Electronic Suppression, 4110 C	Jul 18, 2001	Norwest Edmonton	Jesse Dang
BCD in water	APHA	5 Day, 5210 B	Jul 23, 2001	Norwest Edmonton	Matt Cummings
Fecal Coliforms - MF	APHA	Fecal Coliform Membrane Filter Procedure, 9222 D	Jul 24, 2001	Norwest Calgary	Melissa Stewart
Kjeldahl Nitrogen & Phosphorus (Total) in Water	APHA	Automated Ascorbic Acid Reduction Method, 4500-P F	Jul 18, 2001	Norwest Edmonton	Matt Cummings
		Total Kjeldahl Nitrogen in Soil/Plant, 13-107-6-2-D	Jul 18, 2001	Norwest Edmonton	Matt Cummings
Metals Hydride (Total) in water	APHA	Continuous Hydride Generation / Atomic Absorption Spectromet, 3114 C	Jul 19, 2001	Norwest Edmonton	Stef Pavlyshyn
Metals Trace (Dissolved) in water	APHA	Inductively Coupled Plasma (ICP) Method, 3120 B	Jul 18, 2001	Norwest Edmonton	Jodi Johnston
Metals Trace (Total) in water	APHA	Inductively Coupled Plasma (ICP) Method, 3120 B	Jul 18, 2001	Norwest Edmonton	To Thong
Solids Suspended (Total, Fixed and Volatile)	APHA	TSS Dried at 103-105 C, 2540 D	Jul 19, 2001	Norwest Edmonton	Trisha Perverseff
Total Coliforms - MF	APHA	Standard Total Coliform Membrane Filter Procedure, 9222 B	Jul 24, 2001	Norwest Calgary	Melissa Stewart



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Location:

LSD:

P.O.:

Acct. Code:

NWL Lot ID: 127453

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References:

APHA
QuikChem Method

Standard Methods for the Examination of Water and Wastewater
Lachat Instruments

Comments:

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