

APPENDIX 3

Garrow Lake Water Column

Minimum Ice Conditions

Monitoring Event Data

POLARIS MINE - GARROW LAKE SAMPLING - AUGUST 25, 2005

Garrow Lake Center - Station 262-3 DATA

Physical Tests	GLC-0m	GLC-1.5m	GLC-2m	GLC-3m	GLC-4m	GLC-5m	GLC-6m	GLC-7m	GLC-8m	GLC-9m	GLC-10m	GLC-11m	GLC-12m	GLC-13m
Conductivity (uS/cm)	7150	7100	7130	7390	12100	13000	13300	13400	13400	24700	67900	84600	85200	85300
Hardness	858	867	838	898	1470	1540	1580	1600	1700	2850	9300	11800	12300	12400
pH	8.04	8.06	8.08	7.72	8.18	8.22	8.22	8.22	8.22	8.02	7.81	7.84	7.84	7.83
Salinity o/oo	4.2	4.2	4.2	4.4	7.5	8.1	8.3	8.3	8.3	16.2	50.1	64.6	65.2	65.3
Total Suspended Solids	<3.0	3.0	<3.0	<3.0	3.0	7.7	5.0	4.3	5.0	7.0	34.3	44.3	37.0	61.0
Sulphide	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Alkalinity (CaCO3)	90.1	90.2	90.1	94.8	139	98.6	159	156	158	167	279	404	412	421
Total Metals														
Aluminum	<0.030	<0.030	<0.030	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.050	<0.10	<0.10	<0.10	<0.10
Arsenic	<0.00020	<0.00020	<0.00020	<0.00020	0.00034	<0.00020	<0.00020	0.00022	<0.00020	0.00119	<0.00020	0.00045	0.00030	0.00041
Cadmium	0.000311	0.000315	0.000324	0.000310	0.000553	0.000608	0.000599	0.000663	0.000630	0.00125	0.00248	0.000045	0.000041	0.000051
Calcium	80.0	81.0	77.3	84.0	136	141	146	147	157	225	622	778	808	810
Copper	0.000784	0.000756	0.000777	0.000737	0.00111	0.00120	0.00119	0.00125	0.00116	0.00153	0.00401	0.00138	0.000954	0.00109
Iron	<0.010	<0.010	0.012	<0.010	0.011	<0.010	<0.010	0.011	<0.010	<0.010	0.012	0.114	0.137	0.146
Lead	0.000349	0.000334	0.000355	0.000320	0.000311	0.000283	0.000226	0.000312	0.000189	0.000186	0.000382	0.000810	0.000872	0.00113
Magnesium	160	162	157	167	275	289	296	300	318	556	1880	2390	2490	2510
Mercury	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	0.0016	0.0014	0.0016	0.0016	0.0026	0.0028	0.0028	0.0027	0.0031	0.0069	<0.0050	0.0065	0.0068	0.0068
Nickel	0.00225	0.00228	0.00237	0.00235	0.00366	0.00406	0.00402	0.00421	0.00403	0.00526	0.00912	0.00945	0.00847	0.00860
Zinc	0.130	0.131	0.136	0.134	0.243	0.267	0.265	0.284	0.271	0.552	1.25	0.151	0.104	0.105

Footnotes:

Results are expressed as milligrams per litre except where noted.
 < = Less than the detection limit indicated.

POLARIS MINE - GARROW LAKE SAMPLING - AUGUST 25, 2005

Garrow Lake Center - Station 262-3 DATA

Physical Tests	GLC-14m	GLC-15m	GLC-16m	GLC-17m	GLC-18m	GLC-19m	GLC-20m	GLC-22m	GLC-30m	GLC-40m	Travel Blank
Conductivity (uS/cm)	85500	85100	85300	85500	85100	85500	85700	85700	85600	86700	2.8
Hardness	13100	12300	12600	12500	12400	13300	13100	12900	14100	14400	<0.50
pH	7.82	7.83	7.82	7.82	7.83	7.83	7.81	7.83	7.82	7.78	5.53
Salinity o/oo	65.4	65.1	65.3	65.4	65.1	65.4	65.6	65.6	65.5	66.5	<1.0
Total Suspended Solids	27.7	31.7	62.3	69.7	47.7	49.0	60.3	45.7	41.7	50.3	<3.0
Sulphide	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.82	<0.020
Alkalinity (CaCO3)	420	431	419	428	432	433	431	430	420	406	<2.0
Total Metals											
Aluminum	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.0010
Arsenic	0.00048	0.00041	0.00035	<0.00020	0.00053	0.00046	0.00040	<0.00020	<0.00020	<0.00020	<0.00020
Cadmium	0.000022	0.000029	0.000031	0.000030	0.000033	0.000030	0.000033	0.000064	0.000069	0.000039	<0.000050
Calcium	861	803	823	816	815	868	851	835	912	915	<0.050
Copper	0.000644	0.000727	0.000645	0.000674	0.000682	0.000716	0.000755	0.000784	0.000652	0.000410	<0.00010
Iron	0.118	0.270	0.282	0.270	0.272	0.273	0.257	0.247	0.351	0.271	<0.010
Lead	0.000591	0.000816	0.000901	0.000861	0.000925	0.000919	0.000903	0.00413	0.00946	0.00523	<0.000050
Magnesium	2650	2490	2570	2550	2530	2700	2660	2620	2860	2930	<0.050
Mercury	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	0.0075	0.0074	0.0072	0.0072	0.0064	0.0071	0.0072	0.0062	<0.0050	<0.0050	<0.000050
Nickel	0.00829	0.00794	0.00762	0.00794	0.00785	0.00801	0.00730	0.00676	0.00423	0.00119	<0.00010
Zinc	0.0457	0.0565	0.0556	0.0409	0.0435	0.0425	0.0413	0.0468	0.0404	0.0235	<0.0010

Footnotes:

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< = Less than the detection limit indicated.

POLARIS MINE - GARROW LAKE SAMPLING - AUGUST 25, 2005

Garrow Lake South - Station 262-3a DATA															
Physical Tests	GLS-0m	GLS-1m	GLS-1.5m	GLS-2m	GLS-3m	GLS-4m	GLS-5m	GLS-6m	GLS-7m	GLS-8m	GLS-9m	GLS-10m	GLS-11m	GLS-12m	GLS-13m
Conductivity (uS/cm)	7080	7110	7100	7120	7170	11000	12800	13200	13400	13700	25100	65300	77100	77400	85200
Hardness	817	837	812	837	800	1320	1530	1640	1600	1730	3320	10100	12900	12300	12800
pH	8.03	8.10	8.10	8.10	8.10	8.23	8.14	8.15	8.14	8.14	7.85	7.71	7.74	7.76	7.78
Salinity o/oo	4.2	4.2	4.2	4.2	4.2	6.7	7.9	8.2	8.3	8.5	16.5	47.9	58.0	58.3	65.2
Total Suspended Solids	5.7	3.7	3.0	5.0	<3.0	4.3	3.7	7.7	<3.0	8.3	8.1	10.0	23.5	21.5	24.1
Sulphide	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Alkalinity (CaCO3)	78.8	90.1	90.8	89.6	91.0	133	150	155	155	159	168	267	371	410	409
Total Metals															
Aluminum	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	<0.00020	<0.00020	<0.00020	<0.00020	0.00023	0.00028	<0.00020	0.00020	0.00107	0.00098	<0.00020	0.00033	0.00047	<0.00020	0.00033
Cadmium	0.000269	0.000280	0.000263	0.000275	0.000290	0.000454	0.000553	0.000586	0.000619	0.000626	0.00136	0.00238	0.000058	0.000045	0.000055
Calcium	77.3	77.9	75.9	78.0	74.8	120	140	149	147	158	256	683	860	818	846
Copper	0.000861	0.000958	0.000819	0.000782	0.000788	0.000967	0.00113	0.00110	0.00119	0.00119	0.00175	0.00409	0.00167	0.00185	0.00180
Iron	0.023	0.025	0.021	0.022	0.014	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	0.012	0.075	0.117	0.142
Lead	0.000599	0.000456	0.000433	0.000435	0.000409	0.000311	0.000307	0.000281	0.000235	0.000204	0.000195	0.000430	0.000963	0.00107	0.00129
Magnesium	152	156	151	156	149	247	287	308	300	324	651	2050	2610	2500	2600
Mercury	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0028	0.0025	0.0027	<0.0050	0.0051	0.0075	0.0079	0.0068
Nickel	0.00234	0.00230	0.00213	0.00220	0.00234	0.00328	0.00396	0.00404	0.00405	0.00437	0.00577	0.00884	0.00930	0.00912	0.00854
Zinc	0.113	0.112	0.104	0.109	0.115	0.176	0.219	0.230	0.240	0.253	0.574	1.09	0.146	0.0944	0.0888

Footnotes:

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POLARIS MINE - GARROW LAKE SAMPLING - AUGUST 25, 2005

Garrow Lake South - Station 262-3a DATA							
Physical Tests	GLS-14m	GLS-15m	GLS-16m	GLS-17m	GLS-18m	GLS-19m	GLS-20m
Conductivity (uS/cm)	78000	77900	77700	77600	77600	77600	77500
Hardness	12600	13200	12400	12600	12600	12600	12500
pH	7.76	7.74	7.74	7.75	7.74	7.75	7.74
Salinity o/oo	58.8	58.7	58.5	58.4	58.4	58.4	58.4
Total Suspended Solids	13.5	24.8	14.1	16.1	7.5	11.5	16.1
Sulphide	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Alkalinity (CaCO3)	413	415	403	409	421	427	426
Total Metals							
Aluminum	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic	0.00060	0.00031	0.00044	0.00070	0.00033	0.00025	0.00036
Cadmium	0.000025	0.000034	0.000034	0.000036	0.000033	0.000032	0.000032
Calcium	833	871	823	834	832	833	826
Copper	0.00179	0.00106	0.00103	0.00101	0.000976	0.000984	0.000833
Iron	0.100	0.241	0.292	0.278	0.258	0.278	0.231
Lead	0.000805	0.00106	0.000972	0.000916	0.000870	0.000905	0.000801
Magnesium	2560	2670	2520	2560	2550	2560	2530
Mercury	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	0.0069	0.0073	0.0060	0.0070	0.0064	0.0071	0.0055
Nickel	0.00843	0.00717	0.00747	0.00706	0.00700	0.00711	0.00631
Zinc	0.0300	0.0370	0.0398	0.0383	0.0372	0.0417	0.0354

Footnotes:

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< = Less than the detection limit indicated.

POLARIS MINE - GARROW LAKE SAMPLING - AUGUST 25, 2005

Garrow Lake Center - Station 262-3 DETECTION LIMITS

Physical Tests	GLC-0m	GLC-1.5m	GLC-2m	GLC-3m	GLC-4m	GLC-5m	GLC-6m	GLC-7m	GLC-8m	GLC-9m	GLC-10m	GLC-11m	GLC-12m	GLC-13m
Conductivity (uS/cm)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Hardness	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	33	33	33	33	33
pH	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Salinity o/oo	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total Suspended Solids	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Sulphide	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Alkalinity (CaCO3)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Total Metals														
Aluminum	0.030	0.030	0.030	0.020	0.020	0.020	0.020	0.020	0.020	0.050	0.10	0.10	0.10	0.10
Arsenic	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020
Cadmium	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020
Calcium	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	5.0	5.0	5.0	5.0	5.0
Copper	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Iron	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Lead	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Magnesium	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	5.0	5.0	5.0	5.0	5.0
Mercury	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010
Molybdenum	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0050	0.0050	0.0050	0.0050	0.0050
Nickel	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Zinc	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050

Footnotes:

Results are expressed as milligrams per litre except where noted.

Results are expr

POLARIS MINE - GARROW LAKE SAMPLING - AUGUST 25, 2005

Garrow Lake Center - Station 262-3 DETECTION LIMITS

Physical Tests	GLC-14m	GLC-15m	GLC-16m	GLC-17m	GLC-18m	GLC-19m	GLC-20m	GLC-22m	GLC-30m	GLC-40m	Travel Blank
Conductivity (uS/cm)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Hardness	33	33	33	33	33	33	33	33	33	33	0.50
pH	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Salinity o/oo	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total Suspended Solids	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Sulphide	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.20	
Alkalinity (CaCO3)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Total Metals											
Aluminum	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.0010
Arsenic	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020
Cadmium	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000050
Calcium	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0.050
Copper	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.00010
Iron	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Lead	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Magnesium	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0.050
Mercury	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010
Molybdenum	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.000050
Nickel	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.00010
Zinc	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.0010

Footnotes: ressed as milligrams per litre except where noted.

POLARIS MINE - GARROW LAKE SAMPLING - AUGUST 25, 2005

Garrow Lake South - Station 262-3a DETECTION LIMITS

Physical Tests	GLS-0m	GLS-1m	GLS-1.5m	GLS-2m	GLS-3m	GLS-4m	GLS-5m	GLS-6m	GLS-7m	GLS-8m	GLS-9m	GLS-10m	GLS-11m	GLS-12m	GLS-13m
Conductivity (uS/cm)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Hardness	17	17	17	17	17	17	17	17	17	17	33	33	33	33	33
pH	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Salinity (o/oo)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total Suspended Solids	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Sulphide	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Alkalinity (CaCO3)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Total Metals															
Aluminum	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.10	0.10	0.10	0.10	0.10
Arsenic	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020
Cadmium	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020
Calcium	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5.0	5.0	5.0	5.0	5.0
Copper	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Iron	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Lead	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Magnesium	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5.0	5.0	5.0	5.0	5.0
Mercury	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010
Molybdenum	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0050	0.0050	0.0050	0.0050	0.0050
Nickel	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Zinc	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050

Footnotes:

Results are expressed as milligrams per litre except where noted.

POLARIS MINE - GARROW LAKE SAMPLING - AUGUST 25, 2005

Garrow Lake South - Station 262-3a DETECTION LIMITS

Physical Tests	GLS-14m	GLS-15m	GLS-16m	GLS-17m	GLS-18m	GLS-19m	GLS-20m	Travel Blank
Conductivity (uS/cm)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Hardness	33	33	33	33	33	33	33	0.50
pH	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Salinity (o/oo)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total Suspended Solids	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Sulphide	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Alkalinity (CaCO3)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Total Metals								
Aluminum	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.0010
Arsenic	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020
Cadmium	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020	0.000020
Calcium	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0.050
Copper	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Iron	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Lead	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Magnesium	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0.050
Mercury	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010
Molybdenum	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.000050
Nickel	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050	0.000050
Zinc	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050

Footnotes:

Results are expressed as milligrams per litre except where noted.

POLARIS MINE - GARROW LAKE SAMPLING - AUGUST 25, 2005

	DUPLICATE DATA					DUPLICATE DETECTION LIMITS				
Physical Tests	GLS-6Am	GLS-20Am	GLC-9Am	GLC-20Am	GL-BLANK	GLS-6am	GLS-20Am	GLC-9Am	GLC-20Am	GL-BLANK
Conductivity (uS/cm)	13400	85700	22400	86000	-	2.0	2.0	2.0	2.0	-
Hardness	1750	12500	3260	12400	-	17	33	33	33	-
pH	8.25	7.84	8.10	7.84	-	0.010	0.010	0.010	0.010	-
Salinity o/oo	8.3	65.6	14.6	65.9	-	1.0	1.0	1.0	1.0	-
Total Suspended Solids	<3.0	52.3	3.7	42.3	-	3.0	3.0	3.0	3.0	-
Sulphide	<0.020	<0.020	<0.020	<0.020	-	0.020	0.020	0.020	0.020	-
Alkalinity (CaCO3)	158	426	159	426	-	2.0	2.0	2.0	2.0	-
Total Metals										
Aluminum	<0.050	<0.10	<0.10	<0.10	<0.0010	0.050	0.10	0.10	0.10	0.0010
Arsenic	0.00027	0.00052	<0.00020	0.00039	<0.00020	0.00020	0.00020	0.00020	0.00020	0.00020
Cadmium	0.000582	0.000029	0.00138	0.000029	<0.000050	0.000020	0.000020	0.000020	0.000020	0.000050
Calcium	157	805	248	799	<0.050	2.5	5.0	5.0	5.0	0.050
Copper	0.00126	0.000802	0.00167	0.000609	<0.00010	0.000050	0.000050	0.000050	0.000050	0.00010
Iron	0.013	0.228	<0.010	0.220	<0.010	0.010	0.010	0.010	0.010	0.010
Lead	0.000278	0.000800	0.000191	0.000775	0.000110	0.000050	0.000050	0.000050	0.000050	0.000050
Magnesium	330	2560	640	2530	0.051	2.5	5.0	5.0	5.0	0.050
Mercury	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	0.000010	0.000010	0.000010	0.000010
Molybdenum	0.0029	0.0066	<0.0050	0.0060	<0.000050	0.0025	0.0050	0.0050	0.0050	0.000050
Nickel	0.00439	0.00618	0.00610	0.00628	<0.00010	0.000050	0.000050	0.000050	0.000050	0.00010
Zinc	0.240	0.0361	0.588	0.0348	0.0014	0.00050	0.00050	0.00050	0.00050	0.0010

Footnotes:

Results are expressed as milligrams per litre except where noted.

< = Less than the detection limit indicated.

POLARIS MINE - GARROW LAKE SAMPLING - AUGUST 25, 2005

REPLICATE QA/QC

Physical Tests	GLC-20Am	GLC-20Am	RPD %
Conductivity (uS/cm)	86000	85700	0.349
Hardness	12400	13200	6.25
pH	7.84	7.85	0.127
Salinity o/oo	65.9	65.9	0
Total Suspended Solids	42.3	47.7	12
Sulphide	<0.020	<0.020	0
Alkalinity (CaCO3)	426	421	1.18
Total Metals			
Aluminum	<0.10	<0.10	0
Arsenic	0.00039	0.00044	12
Cadmium	0.000029	0.000034	15.9
Calcium	799	838	4.76
Copper	0.000609	0.000654	7.13
Iron	0.220	0.236	7.02
Lead	0.000775	0.000820	5.64
Magnesium	2530	2690	6.13
Mercury	<0.000010	<0.000010	0
Molybdenum	0.0060	0.0070	15.4
Nickel	0.00628	0.00705	11.6
Zinc	0.0348	0.0386	10.4

Footnotes:

Results are expressed as milligrams per litre except where noted.

< = Less than the detection limit indicated.

GARROW LAKE MONITORING HYDROLAB DATA - AUGUST 25, 2005

Depth (m)	TEMPERATURE (0C)		CONDUCTIVITY (mS/cm)		pH		DO (mg/l)	
	Centre 262-3	South 262-3a	Centre 262-3	South 262-3a	Centre 262-3	South 262-3a	Centre 262-3	South 262-3a
0	3.63	3.55	5.45	5.41	9.13	8.29	13.54	13.39
1	3.62	3.55	5.45	5.43	9.13	8.31	13.32	13.35
1.5	3.60	3.50	5.46	5.43	9.13	8.33	13.24	13.30
2	3.57	3.52	5.47	5.43	9.13	8.34	13.21	13.28
3	3.53	3.43	5.46	4.59	9.13	8.35	13.20	15.32
4	4.13	4.43	8.36	9.37	8.90	8.18	17.38	17.65
5	4.75	4.73	9.83	9.96	8.93	8.20	18.03	18.56
6	4.78	4.71	10.10	10.16	8.90	8.24	18.44	18.63
7	4.68	4.68	10.23	10.34	8.92	8.25	18.56	18.14
8	5.05	5.08	11.37	11.62	8.81	8.19	14.10	14.78
9	6.48	6.42	33.80	33.10	8.11	7.55	1.11	2.75
9.5	7.25	7.00	51.00	44.70	7.89	7.36	0.85	1.13
10	7.86	7.92	58.90	60.50	7.87	7.35	0.57	1.57
10.5	8.19	8.19	62.20	63.10	7.91	7.53	0.84	1.78
11	8.24	8.25	63.00	63.40	7.94	7.65	1.02	1.50
12	8.22	8.25	63.80	63.90	7.96	7.74	0.17	0.28
13	8.07	8.07	64.20	64.20	7.96	7.79	0.14	0.18
14	7.92	7.94	64.30	64.30	7.97	7.81	0.14	0.17
15	7.83	7.86	64.30	64.30	7.98	7.82	0.13	0.16
16	7.76	7.78	64.30	64.20	7.99	7.90	0.12	0.15
17	7.73	7.74	64.40	64.20	8.00	7.91	0.13	0.14
18	7.70	7.71	64.40	64.30	8.00	7.92	0.13	0.12
19	7.68	7.70	64.40	64.30	8.00	7.93	0.13	0.12
20	7.68	7.68	64.40	64.30	8.01	7.94	0.13	0.13
21	7.66	7.66	64.40	64.30	8.01	7.94	0.12	0.13
22	7.66	7.66	64.30	64.30	8.01	7.94	0.12	0.12
23	7.68		64.30		8.01		0.12	
24	7.66		64.30		8.01		0.12	
25	7.68		64.30		8.01		0.12	
26	7.66		64.40		8.01		0.12	
27	7.66		64.40		8.01		0.12	
28	7.66		64.40		8.01		0.13	
29	7.71		64.50		8.00		0.11	
30	7.73		64.50		7.99		0.12	
31	7.76		64.60		7.97		0.11	
32	7.77		64.70		7.97		0.12	
33	7.82		64.80		7.95		0.11	
34	7.87		64.90		7.94		0.12	
35	7.92		65.00		7.93		0.13	
36	8.00		65.10		7.91		0.12	
37	8.15		65.10		7.89		0.13	
38	8.22		65.30		7.87		0.14	
39	8.27		65.40		7.86		0.13	
40	8.30		65.50		7.85		0.14	

APPENDIX 4

Monitoring of Other Site Surface Waters



CHEMICAL ANALYSIS REPORT

Date: August 29, 2005

ALS File No. W2679

Report On: Polaris Weekly MMER
Water Analysis

Report To: **Azimuth Consulting Group Inc.**
218 - 2902 West Broadway
Vancouver, BC
V6K 2G8

Attention: **Ms. Cheryl Mackintosh**

Received: August 9, 2005

ALS ENVIRONMENTAL

per:

Leanne Harris, B.Sc. - Project Chemist
Heather A. Ross-Easton, B.Sc. - Project Chemist

File No. W2679

REMARKS



Radium 226 was subcontracted to SRC.

File No. W2679

RESULTS OF ANALYSIS - Seawater



Sample ID	G-Creek	LRD-SW	F-Lake
Sample Date	05-07-30	05-07-28	05-07-28
Sample Time	08:30	15:00	22:00
ALS ID	1	2	3

Physical Tests

pH	7.70	7.91	-
Salinity o/oo	1.5	-	-
Total Suspended Solids	<3.0	<3.0	4.2

Cyanides

Total Cyanide CN	<0.0050	-	-
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Total Metals

Aluminum T-Al	<0.20	-	-
Arsenic T-As	0.00021	-	-
Cadmium T-Cd	0.000098	-	-
Copper T-Cu	0.000496	-	-
Iron T-Fe	0.014	-	-
Lead T-Pb	0.000202	0.00103	-
Mercury T-Hg	<0.000050	-	-
Molybdenum T-Mo	<0.0050	-	-
Nickel T-Ni	0.00141	-	-
Zinc T-Zn	0.0405	0.0657	-

Radiological Parameters

Radium-226	<0.0050	-	-
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Remarks regarding the analyses appear at the beginning of this report.
 Results are expressed as milligrams per litre except where noted.
 < = Less than the detection limit indicated.

Appendix 1 - METHODOLOGY



Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

pH in Water

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

Recommended Holding Time:

Sample: 2 hours

Reference: APHA

For more detail see ALS Environmental "Collection & Sampling Guide"

Conventional Parameters in Water

These analyses are carried out in accordance with procedures described in "Methods for Chemical Analysis of Water and Wastes" (USEPA), "Manual for the Chemical Analysis of Water, Wastewaters, Sediments and Biological Tissues" (BCMOE), and/or "Standard Methods for the Examination of Water and Wastewater" (APHA). Further details are available on request.

Solids in Water

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) and total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius, TSS is determined by drying the filter at 104 degrees celsius. Total solids are determined by evaporating a sample to dryness at 104 degrees celsius. Fixed and volatile solids are determined by igniting a dried sample residue at 550 degrees celsius.

Recommended Holding Time:

Sample: 7 days

Reference: APHA

For more detail see ALS Environmental "Collection & Sampling Guide"

Cyanide Species in Water

This analysis is carried out using procedures adapted from APHA Method 4500-CN "Cyanide". Total or strong acid dissociable (SAD) cyanide and weak acid dissociable (WAD) cyanide are determined by sample distillation and analysis using the chloramine-T colourimetric method. Cyanate is determined by the cyanate hydrolysis method using an ammonia selective electrode. Thiocyanate is determined by the ferric nitrate colourimetric method.

Recommended Holding Time:

Appendix 1 - METHODOLOGY - Continued



Sample: 14 days

Reference: APHA

For more detail see ALS Environmental "Collection & Sampling Guide"

Metals in Seawater

This analysis is carried out using procedures adapted from "Recommended Guidelines for Measuring Metals in Puget Sound Marine Water, Sediment, and Tissue Samples" prepared for the United States Environmental Protection Agency and the Puget Sound Water Quality Authority, 1995. The procedures may involve preliminary sample treatment by acid digestion or filtration (EPA Method 3005A). Instrumental analysis of the seawater is by atomic absorption/emission spectrophotometry (EPA Method 7000 series), inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B), and/or inductively coupled plasma - mass spectrometry (EPA Method 6020).

Recommended Holding Time:

Sample: 6 months

Reference: Puget

For more detail see ALS Environmental "Collection & Sampling Guide"

Trace Metals in Seawater by SPR-IDA Chelation

This analysis is carried out using procedures adapted from "Recommended Guidelines for Measuring Metals in Puget Sound Marine Water, Sediment, and Tissue Samples" prepared for the United States Environmental Protection Agency and the Puget Sound Water Quality Authority, 1995, and with procedures adapted from Cetac Technologies Incorporated. A suspended particulate resin (SPR), consisting of immobilized iminodiacetate (IDA) on a divinylbenzene polymer, is used to chelate and preconcentrate metals in seawater. Instrumental analysis is by inductively coupled plasma mass spectrometry (ICPMS) and/or routine atomic absorption spectrophotometry techniques (EPA 7000 series).

Recommended Holding Time:

Sample/Extract: 6 months

Reference: Puget

For more detail see ALS Environmental "Collection & Sampling Guide"

Mercury in Seawater

This analysis is carried out using procedures adapted from "Recommended Guidelines for Measuring Metals in Puget Sound Marine Water, Sediment, and Tissue Samples" prepared for the United States Environmental Protection Agency and the Puget Sound Water Quality Authority, 1995. The procedure involves a cold-oxidation of the acidified seawater sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

Recommended Holding Time:

File No. W2679

Appendix 1 - METHODOLOGY - Continued



Sample: 28 days

Reference: Puget

For more detail see ALS Environmental "Collection & Sampling Guide"

Results contained within this report relate only to the samples as submitted.

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End of Report



CHEMICAL ANALYSIS REPORT

Date: September 29, 2004

ALS File No. U8363

Report On: Polaris/ TC-03-03
Water Analysis

Report To: **Azimuth Consulting Group Inc.**
218 - 2902 West Broadway
Vancouver, BC
V6K 2G8

Attention: **Mr. Randy Baker**

Received: September 20, 2004

ALS ENVIRONMENTAL

per:

Leanne Harris, B.Sc. - Project Chemist
Andre Langlais, M.Sc. - Project Chemist

File No. U8363

RESULTS OF ANALYSIS - Water



Sample ID	F-FRUST-
	TSS-
	12200
Sample Date	04-09-03
Sample Time	17:00
ALS ID	1

Physical Tests

Total Suspended Solids	3.3
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Results are expressed as milligrams per litre except where noted.

Appendix 1 - METHODOLOGY



Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

Solids in Water

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) and total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius, TSS is determined by drying the filter at 104 degrees celsius. Total solids are determined by evaporating a sample to dryness at 104 degrees celsius. Fixed and volatile solids are determined by igniting a dried sample residue at 550 degrees celsius.

Recommended Holding Time:

Sample: 7 days

Reference: APHA

For more detail see ALS Environmental "Collection & Sampling Guide"

Results contained within this report relate only to the samples as submitted.

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End of Report