APPENDIX D

2003 3rd Quarter Nanisivik Mine Water Quality Data

NANISIVIK MINE
A division of CanZinco Ltd.
P.O. Box 225
Nanisivik, NU
X0A 0X0

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Nov. 12, 2003

Peter Blackall
Regional Director of Environmental Protection
Environment Canada
Prairie & Northern Region
Room 200, 4999 – 98 Avenue
Edmonton, AB
T6B 2X3
Attention: Peter Blackall

RE: 2003 3rd QUARTER SUBMISSION.

In accordance with the MMER please accept this report as Nanisivik Mine's 2003 3rd Quarter effluent monitoring submission.

During the period of July 8th to September 30th, effluent was released from the identified final deposition point 159-4. Monitoring of the effluent was conducted as per the guidelines set forth in the MMER. The following tables show the results of the testing conducted during the quarter.

If further information is required please do not hesitate to contact me.

Regards,

Murray Markle
Site Manager

Phone: 867-436-7376
email: mmarkle@nu.breakwater.ca

c.c. B. Heath
R. Carreau
File

Final Discharge Point 159-4 (Effluent from W T D A at Decant Structure)													
Date	Temp (°C)	pH	Cond (mS)	T.S.S. (mg/L)	Cd (mg/L)	Pb (mg/L)	As (mg/L)	Cu (mg/L)	Ni (mg/L)	Rad 226 (Bq/L)	Zn (mg/L)	NH3 (mg/L)	24 Hour Flow (m^3)
8-Jul	16.2	7.28	0.60	2.2	0.0001	0.003	0.000	0.005	<.005		<.005	0.48	833.8
9-Jul	15.4	7.28	0.67	1.6	<.0001	0.003	0.000	0.005	<.005		0.005	0.48	4777.9
10-Jul	15.0	7.23	0.7	0.8	0.0003	0.004					<.005	0.53	5270.4
11-Jul	15.8	7.52	0.78	1.4	0.0001	0.004					<.005	0.57	8907.8
12-Jul	14.1	6.60	0.84	2.0	0.0002	0.004					0.007	0.69	10372.3
13-Jul	14.9	6.29	0.85	2.8	0.0002	0.004	0.000	0.013	<.005	0.040	0.020	0.72	8532.0
14-Jul	14.4	6.33	0.91	1.2	0.0006	0.006	0.000	0.017	<.005	0.020	0.028	0.8	7490.9
15-Jul	12.80	7.05	0.92	1.2	0.0006	0.005	0.000	0.019	<.005	0.030	0.025	0.78	9923.0
16-Jul	12.8	7.66	0.95	0.8	0.0002	0.005	0.001	0.019	<.005	0.040	0.029	0.89	8134.6
17-Jul	12.2	7.55	1	0.4	0.0002	0.006	0.001	0.020	<.005	0.030	0.032	0.89	6553.4
18-Jul	11.5	7.06	1.11	2.4	0.0002	0.006	0.001	0.021	<.005	<0.01	0.031	1.05	7992.0
19-Jul	11.1	7.56	1.14	1.6	0.0002	0.007	0.001	0.022	<.005	0.050	0.037	1.08	7344.0
20-Jul	9.3	7.71	1.24	3.2	0.0002	0.008	0.001	0.019	<0.005	0.050	0.037	1.18	7318.1
21-Jul	8.8	7.84	1.37	1.6	0.0004	0.009	0.001	0.023	<0.005	0.090	0.045	1.35	6631.2
22-Jul	7.3	7.76	1.36	0.4	0.0004	0.008	0.001	0.022	<0.005	0.040	0.046	1.28	6099.8
23-Jul	8.1	7.86	1.52	0.8	0.0004	0.011	0.002	0.026	<0.005	0.060	0.064	1.35	5732.6
24-Jul	7.4	7.76	1.58	0.8	0.0003	0.009	0.002	0.028	<0.005	0.060	0.063	1.52	5313.6
25-Jul	7.2	7.76	1.69	2.0	0.0004	0.010	0.001	0.038	0.006	0.070	0.083	1.57	6177.6
26-Jul	8.3	7.69	1.59	2.8	0.0003	0.011	0.002	0.032	<0.005	0.080	0.079	1.69	4924.8
27-Jul	10.4	7.88	1.92	2.0	0.0003	0.012	0.002	0.042			0.094	1.78	5512.3
28-Jul	10.4	8.04	1.94	2.0	0.0002	0.012	0.002	0.042			0.092	1.64	5771.5
29-Jul	9.4	7.70	2.02	28.8	0.0004	0.027	0.003	0.042			0.118	1.69	5551.2
30-Jul	5.1	7.58	2.06	13.2	0.0004	0.015	0.002	0.036			0.097	1.81	5032.8
31-Jul	6.2	7.76	2.13	3.2	0.0003	0.012	0.002	0.031			0.094	1.83	4613.8
Average				3.3	0.0003	0.008	0.001	0.025	<0.005	0.047	0.054	1.15	

Total Effluent Deposited in July **154,812 m3**

Mass Loading (**July**)

TSS	466.85	Kg
Cadmium	0.05	Kg
Lead	1.23	Kg
Arsenic	0.17	Kg
Copper	3.68	Kg
Nickel	0.59	Kg
Radium 226	6.62	MBq
Zinc	9.82	Kg
NH_3	172.44	Kg

Note: One Half of the Lab Detection Limits were used for the calculations when the lab limit was above 1 tenth of the Method Detection Limits as set out in Column 4 of Schedule 3 (MMER)

Final Discharge Point 159-4 (Effluent from W T D A at Decant Structure)

Date	Temp (°C)	pH	Cond (mS)	T.S.S. (mg/L)	Cd (mg/L)	Pb (mg/L)	As (mg/L)	Cu (mg/L)	Ni (mg/L)	Rad 226 (Bq/L)	Zn (mg/L)	NH3 (mg/L)	24 Hour Flow (m^3)
1-Aug	4.6	7.77	2.10	0.8	0.0005	0.010	0.002	0.026			0.087	1.74	3693.6
2-Aug	5.5	7.80	2.27	3.2	0.0003	0.010	0.002	0.027	<0.005	0.060	0.091	1.88	3365.3
3-Aug	6.2	7.79	2.23	2.0	0.0006	0.009	0.001	0.026	0.006		0.111	1.8	1805.8
4-Aug	6.2	7.48	2.06	65.2	0.0006	0.014	0.002	0.025	0.007		0.113	1.7	5456.2
5-Aug	7.7	7.75	2.30	3.6	0.0009	0.010	0.001	0.037	0.007		0.136	1.92	6842.9
6-Aug	8.2	7.72	2.31	0.0	0.0022	0.012	0.001	0.045	0.007		0.230	2.14	7041.6
7-Aug	8.2	7.84	2.48	5.2	0.0008	0.015	0.001	0.051	0.008		0.163	2.11	7050.2
8-Aug	7.30	7.40	2.48	4.0	0.0007	0.015	0.001	0.052	0.008		0.197	2.18	6609.6
9-Aug	6.3	7.58	2.5	2.4	0.0006	0.014	0.001	0.053	0.008		0.219	2.13	8298.7
10-Aug	7.8	7.47	2.6	1.2	0.0008	0.016	0.001	0.058	0.007	0.080	0.155	2.46	6644.2
11-Aug	7.0	7.45	2.72	0.0	0.0005	0.016	0.001	0.059	0.007	0.100	0.167	2.32	6812.6
12-Aug	5.6	7.36	2.7	1.6	0.0005	0.018	0.001	0.061	0.007	0.120	0.165	2.7	7884.0
13-Aug	2.5	7.40	2.79	29.2	0.0006	0.022	0.002	0.063	0.008	0.130	0.189	2.7	7236.0
14-Aug	3.0	7.30	2.92	9.2	0.0006	0.015	0.002	0.065	0.007	0.100	0.171	2.89	7564.3
15-Aug	2.9	7.21	2.98	5.2	0.0006	0.016	0.002	0.067	0.008	0.140	0.188	2.83	7443.4
16-Aug	2.3	7.58	2.9	4.8	0.0005	0.016	0.002	0.067	0.008	0.070	0.184	2.86	6769.4
17-Aug	3.1	7.78	2.96	0.4	0.0005	0.015	0.002	0.073			0.195	2.83	6566.4
18-Aug	3.6	7.32	3.09	8.0	0.0006	0.017	0.002	0.072			0.182	2.89	4600.8
19-Aug	3.0	7.58	2.56	0.4	0.0005	0.017	0.002	0.073			0.184	2.83	3801.6
20-Aug	2.1	7.78	2.9	1.2	0.0005	0.018	0.002	0.077			0.189	2.94	4384.8
21-Aug	3.6	7.30	3.14	2.8	0.0006	0.021	0.002	0.077			0.179	3.1	3931.2
22-Aug	2.5	7.16	2.98	0.8	0.0006	0.019	0.002	0.079			0.180	3.05	4272.5
23-Aug	3.5	7.20	3.09	1.6	0.0006	0.019	0.002	0.079	0.010	0.090	0.181	3.13	4462.6
24-Aug	4.9	7.38	3.24	0.8	0.0007	0.020	0.002	0.083			0.230	2.89	4929.1
25-Aug	4.9	7.30	3	0.0	0.0007	0.020	0.002	0.080			0.220	2.82	4181.8
26-Aug	4.9	7.28	3.14	0.4	0.0007	0.019	0.002	0.082			0.220	3.01	2885.8
27-Aug	10.4	7.59	2.48	0.4	0.0007	0.018	0.002	0.079			0.220	2.92	2903.0
28-Aug	7.2	7.80	2.5	1.6	0.0007	0.019	0.002	0.082			0.230	2.94	2579.0
29-Aug	6.3	7.77	2.97	0.4	0.0006	0.019	0.002	0.084			0.210	2.94	2021.8
30-Aug	6.6	7.33	2.82	0.4	0.0007	0.021	0.002	0.077	0.011	0.110	0.220	2.92	1417.0
31-Aug	9.7	7.90	3.09	0.0	0.0007	0.019	0.002	0.077			0.230	2.94	1201.0
Average				5.1	0.0007	0.016	0.002	0.063	0.008	0.100	0.182	2.59	

Total Effluent Deposited in August **154,656 m3**

Mass Loading (**August**)

TSS	466.85	Kg	Arsenic	0.24	Kg	Radium 226	15.46	MBq
Cadmium	0.10	Kg	Copper	9.37	Kg	Zinc	26.78	Kg
Lead	2.46	Kg	Nickel	1.39	Kg	NH_3	394.82	Kg

Final Discharge Point 159-4 (Effluent from W T D A at Decant Structure)

Date	Temp (°C)	pH	Cond (mS)	T.S.S. (mg/L)	Cd (mg/L)	Pb (mg/L)	As (mg/L)	Cu (mg/L)	Ni (mg/L)	Rad 226 (Bq/L)	Zn (mg/L)	NH3 (mg/L)	24 Hour Flow (m^3)
1-Sep	6.7	7.70	2.80	1.2	0.0006	0.018	0.002	0.077			0.210	2.97	1183.7
2-Sep	4.3	7.46	2.7	6.0	0.0006	0.022	0.002	0.073			0.230	2.97	2060.6
3-Sep	3.7	7.60	2.71	1.6	0.0007	0.018	0.002	0.073			0.210	2.94	2553.1
4-Sep	3.5	7.35	2.74	0.8	0.0006	0.019	0.002	0.077			0.200	2.92	2065
5-Sep	6.6	7.72	2.78	1.2	0.0006	0.020	0.002	0.075			0.220	3.06	1512
6-Sep	3.7	7.19	2.8	2.0	0.0006	0.017	0.002	0.079			0.210	2.85	1568.2
7-Sep	4.0	7.22	2.78	0.0	0.0006	0.017	0.002	0.077			0.200	2.9	1702.1
8-Sep	3.10	6.93	2.81	0.2	0.0006	0.016	0.002	0.073			0.200	2.92	1339.2
9-Sep	3.0	6.85	2.82	0.8	0.0006	0.017	0.002	0.078			0.220	2.99	1019.5
10-Sep	3.6	7.24	2.65	6.4	0.0007	0.021	0.002	0.069	0.009	0.090	0.210	2.83	1088.6
11-Sep	3.1	7.22	2.73	1.8	0.0004	0.022	0.002	0.061			0.220	2.78	1520.6
12-Sep	3.9	6.85	2.8	1.8	0.0004	0.012	0.002	0.060			0.210	2.78	2039
13-Sep	3.2	7.25	2.82	1.4	0.0004	0.012	0.002	0.061			0.210	2.81	2531.5
14-Sep	2.0	7.02	2.8	10.4	0.0004	0.019	0.002	0.065			0.220	2.84	3417.1
15-Sep	3.0	6.87	3	4.8	0.0005	0.015	0.002	0.087			0.230	2.87	3283.2
16-Sep	1.6	7.19	2.79	3.4	0.0006	0.014	0.002	0.079			0.240	2.96	2384.6
17-Sep	1.7	7.17	2.86	1.2	0.0005	0.014	0.002	0.074	0.013	0.100	0.230	3.04	2514.2
18-Sep	1.7	6.75	2.95	1.8	0.0007	0.017	0.002	0.080			0.260	3.05	2056.3
19-Sep	1.9	7.07	3	3.2	0.0007	0.017	0.003	0.083			0.260	3.07	972
20-Sep	2.5	6.86	3.3	2.4	0.0006	0.017	0.003	0.081			0.340	3.12	1741
21-Sep	2.9	6.68	3.11	0.4	0.0006	0.017	0.003	0.084			0.260	3.21	1339.2
22-Sep	1.5	7.00	3.14	3.4	0.0008	0.017	0.003	0.087			0.280	3.3	1365.1
23-Sep	1.1	7.02	3.31	3.2	0.0007	0.017	0.003	0.087			0.280	3.37	1010.9
24-Sep	0.8	7.00	3.17	3.0	0.0008	0.024	0.003	0.105	0.016	0.080	0.320	3.46	6428.2
25-Sep	1.7	6.69	3.19	3.0	0.0006	0.027	0.002	0.109			0.330	3.53	7128
26-Sep	1.1	7.12	3.14	1.6	0.0007	0.026	0.003	0.114			0.340	3.58	2432.2
27-Sep	0.3	6.73	3.1	2.2	0.0016	0.026	0.002	0.122			0.370	3.58	1965.6
28-Sep	0.7	6.72	3.31	1.8	0.0036	0.026	0.003	0.122			0.350	3.6	1408.3
29-Sep	0.7	6.72	3.31	1.8	0.0009	0.024	0.003	0.117			0.350	3.64	1183.7
30-Sep	2.3	6.41	3.43	1.8	0.001	0.023	0.003	0.111			0.340	3.73	846.72
Average				2.5	0.0008	0.019	0.002	0.085	0.013	0.090	0.258	3.12	

Total Effluent Deposited in September **63,660 m3**

Mass Loading (**September**)

TSS	179.37	Kg	Arsenic	0.15	Kg	Radium 226	6.48	MBq
Cadmium	0.05	Kg	Copper	5.54	Kg	Zinc	16.90	Kg
Lead	1.26	Kg	Nickel	1.09	Kg	NH_3	200.66	Kg

Effluent Characterization and Water Quality Monitoring Parameters

Date	Location	Aluminum	Cadmium	Iron	Mercury	Molybdenum	Ammonia	Nitrate	Alkalinity	Total Hardness	Dissolved Oxygen
12-Jul	159-4	0.02	0.0002	0.22	<.0001	0.011	0.69	1.16	22	363	
9-Aug	159-4	0.03	0.0006	0.10	<.0001	0.045	2.13	0.03		1210	
9-Aug	159-4A	0.30	0.0003	0.32	<.0001	0.009	0.51	0.30		317	9.05
9-Aug	159-4B	0.16	0.0002	0.11	<.0001	<.005	<.02	0.16		55	9.32
10-Sep	159-4	0.12	0.0007	0.40	<.0001	0.045	2.83	6.55	46	1580	
10-Sep	159-4A	0.38	0.0003	0.52	<.0001	0.016	1.16	2.45	32	727	9.81
10-Sep	159-4B	0.11	0.0001	0.12	<.0001	<.005	<.02	0.11	30	38	9.06

Date	Location	Temperature	pH	Conductivity
12-Jul	159-4	14.1	6.6	0.84
9-Aug	159-4	6.3	7.58	2.50
9-Aug	159-4A	5.9	7.6	0.77
9-Aug	159-4B	4.8	7.95	0.10
10-Sep	159-4	3.6	7.24	2.65
10-Sep	159-4A	4.1	7.3	1.26
10-Sep	159-4B	4.1	6.9	0.09

159-4A is located approximately 50 metres downstream from the decant structure at station 159-4
159-4B is located approximately 50 metres upstream from the decant structure at station 159-4

All Samples collected during the Quarter were Grab samples except for 159-4A (Aug 9 and Sept 10), which were composite samples.

No water was pumped from East Twin Lake for industrial purposes during the third quarter.

Toxicity Test Report – *Rainbow Trout*

Tests conducted by Stantec Consulting Ltd.
11B Nicholas Beaver Road RR3
Guelph, Ontario N1H 6H9
519-763-4412

Sample Identification:

Company:	Nanisivik Mine	Time Collected:	13:00
Location:	Nanisivik, NU	Date Collected:	2003-08-09
Substance:	159-4 August 8, 2003	Date Received:	2003-08-13
Sampling Method:	Grab	Date Tested:	2003-08-13
Sampled By:	M. Markle	Temp. on arrival:	22.0°
Sample Description:	Clear, Colourless, odourless.		
Test Method:	Acute Lethality of Liquid Effluents to Fish EPS 1/RM/13, Environment Canada, 1990 (including December, 2000 amendments).		

Test Results:

0% mortality at 100% effluent concentration
The results reported relate only to the sample tested.

Phenol Reference Toxicant Data

Trout Batch #:	T03-07		
Date Tested (y/m/d):	2003-08-06	Historical Mean LC50:	10.1mg/L
LC50 (95% confidence limits):	11.2 mg/L (10.0 – 12.5)	Warning Limits (±2SD):	7.9 – 12.8 mg/L
Statistical Method:	Non-linear Interpolation	Technician(s) Performing Test:	R. Colgan/T. Boudreau

Test Fish

Control Fish Sample Size:	10	Cumulative prev. 7D stock tank mortality:	0%
Mean fish Weight (g) (± 2SD):	0.77± 0.28)	Mean Fish Fork Length (mm) (± 2 SD)	42.6 (± 5.1)
Range of Weights (g):	0.58 – 1.01	Range of Fork Lengths (mm):	39 – 48
Fish Loading Rate (g/L):	0.38		

Test Conditions

Sample Treatement:	None	Volume Tested (L) :	20
pH Adjustment:	None	# Replicates:	1
Test Aeration	Yes	# Animals Per Replicate:	10
Aeration Rate 9mL/min/L	6.5 ± 1	Total # Animals Per Test Level	10
Trout Batch #	T03-07		

Noted Deviation(s): A power failure occurred, which resulted in loss of lighting for this test for approximately 5 hours on 2003-08-14

Rainbow Trout Toxicity Test Report

	Temp	pH	D.O.	O2 Sat.	Cond.	Total Pre-Aeration
	(°C)		(mg/L)	(%)*	(umhos)	Time(h) @ 6.5 mL/min/L
Initial Water Chemistry	16.0	7.7	9.5	-	2301	
Chemistry after 30 min air:	16.0	7.7	9.4	98	2303	0:30

0 Hours

Date & Time	2003-09-13 13:50						
Technician	RC/TG						
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**	**02 Sat. (%)***
100	0	0	7.7	9.4	2303	16.0	98
Control	0	0	8.4	9.7	550	16.0	101

24 Hours

Date & Time	2003-08-14 13:50					
Technician	RF/TG					
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**
100	0	0	-	-	-	16.0
Control	0	0	-	-	-	16.0

48 Hours

Date & Time	2003-08-15 13:50					
Technician	TG					
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**
100	0	0	-	-	-	16.0
Control	0	0	-	-	-	16.0

72 Hours

Date & Time	2003-08-16 13:50					
Technician	DR					
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**
100	0	0	-	-	-	16.0
Control	0	0	-	-	-	16.0

96 Hours

Date & Time	2003-08-17 13:50					
Technician	DR					
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**
100	0	0	8.5	8.0	2295	16.0
Control	0	0	8.2	8.4	545	16.0

Notes: # of control organisms showing stress: 0 Trout Batch # T03-07

Toxicity Test Report – *Daphnia Magna*

Tests conducted by Stantec Consulting Ltd.
11B Nicholas Beaver Road RR3
Guelph, Ontario N1H 6H9
519-763-4412

Sample Identification:

Company:	Nanisivik Mine	Time Collected:	13:00
Location:	Nanisivik, NU	Date Collected:	2003-08-09
Substance:	159-4 August 8, 2003	Date Received:	2003-08-13
Sampling Method:	Grab	Date Tested:	2003-08-13
Sampled By:	M. Markle	Temp. on arrival:	22.0°
Sample Description:	Clear, Colourless, odourless.		
Test Method:	*Daphnia magna* Acute Lethality Toxicity Test Protocol EPS 1/RM/14, Environment Canada, 1990 (including December, 2000 amendments).		

Test Results:

83.3% mortality at 100% effluent concentration
The results reported relate only to the sample tested.

Sodium Chloride Reference Toxicant Data

Daphnia Batch #:	Dm03-15		
Date Tested (y/m/d):	2003-08-05	Historical Mean LC50:	6.0 mg/L
LC50 (95% confidence limits):	5.9 mg/L (5.2 – 7.2)	Warning Limits (±2SD):	5.5 – 6.4 mg/L
Statistical Method:	Non-linear Interpolation	Technician(s) Performing Test:	J. Picket/J. Lauinger

Daphnia magna Culture Health Data

Time to First brood (days):	7.4	Average # Young Per Brood:	0	48.3
Culture Mortality (prev. 7d)(%)	6.3			

Test Conditions

Sample Treatement:	None	# Replicates:	3
pH Adjustment:	None	# Animals Per Replicate:	10
Test Aeration	None	Total # Animals Per Test Level	30
Daphnia Batch #	Dm03-15	Daphnia Loading Rate:	15.0 mL/organism

Noted Deviation(s): A power failure occurred, which resulted in loss of lighting for this test for approximately 5 hours on 2003-08-14

Daphnia magna Toxicity Test Report

	Temp	pH	D.O.	O_2 Sat.	Cond.	Hardness	Hardness	Total Pre-Aeration
	(°C)		(mg/L)	(%)*	(umhos)	Mg/L as $CaCO_3$	Adjustment	Time (h) @ 30 mL/min/L
Initial Water Chemistry	19.5	7.6	9.3	104	2341	>1000	None	0:30

0 Hours

Date & Time	2003-08-13 13:50							
Technician	JP							
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**	**02 Sat. (%)***	**Hardness**
100A	0	0	7.6	9.0	2341	19.5	102	>1000
100B	0	0	7.6	9.0	2341	19.5		
100C	0	0	7.6	9.0	2341	19.5		
Control A	0	0	8.5	8.8	399	20.0		
Control B	0	0	8.5	8.8	399	20.0		
Control C	0	0	8.5	8.8	399	20.0	101	200

24 Hours

Date & Time	2003-08-14 13:50							
Technician	JP							
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**		
100A	0	4	-	-	-	21.0		
100B	0	4	-	-	-	21.0		
100C	0	6	-	-	-	21.0		
Control A	0	0	-	-	-	21.0		
Control B	0	0	-	-	-	21.0		
Control C	0	0	-	-	-	21.0		

48Hours

Date & Time	2003-08-15 13:50							
Technician	DH/JL							
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**		
100A	8	2	7.7	7.7	2344	21.0		
100B	10	0	7.6	7.7	2321	21.0		
100C	7	3	7.6	7.9	2300	21.0		
Control A	0	0	8.5	8.6	401	21.0		
Control B	0	0	8.5	8.6	401	21.0		
Control C	0	0	8.5	8.6	398	21.0		

Notes: # of control organisms showing stress: 0 *Daphnia* Batch # Dm03-15
Number immobile does not include number of mortalities.

Toxicity Test Report – *Rainbow Trout*

Tests conducted by Stantec Consulting Ltd.
11B Nicholas Beaver Road RR3
Guelph, Ontario N1H 6H9
519-763-4412

Sample Identification:

Company:	Nanisivik Mine	Time Collected:	13:00
Location:	Nanisivik, NU	Date Collected:	2003-09-13
Substance:	159-4	Date Received:	2003-09-16
Sampling Method:	Grab	Date Tested:	2003-09-16
Sampled By:	M. Markle	Temp. on arrival:	18.0°
Sample Description:	Clear, Colourless, odourless.		
Test Method:	Acute Lethality of Liquid Effluents to Fish EPS 1/RM/13, Environment Canada, 1990 (including December, 2000 amendments).		

Test Results:

0% mortality at 100% effluent concentration
The results reported relate only to the sample tested.

Phenol Reference Toxicant Data

Trout Batch #:	T03-09		
Date Tested (y/m/d):	2003-09-06	Historical Mean LC50:	10.1mg/L
LC50 (95% confidence limits):	11.2 mg/L (10.0 – 12.5)	Warning Limits (±2SD):	8.0 – 12.8 mg/L
Statistical Method:	Non-linear Interpolation	Technician(s) Performing Test:	T. Boudreau

Test Fish

Control Fish Sample Size:	10	Cumulative prev. 7D stock tank mortality:	0.2%
Mean fish Weight (g) (± 2SD):	0.49 ± 0.29)	Mean Fish Fork Length (mm) (± 2 SD)	37.7 (± 6.9)
Range of Weights (g):	0.26 – 0.75	Range of Fork Lengths (mm):	32 – 42
Fish Loading Rate (g/L):	0.24		

Test Conditions

Sample Treatement:	None	Volume Tested (L) :	20
pH Adjustment:	None	# Replicates:	1
Test Aeration	Yes	# Animals Per Replicate:	10
Trout Batch #	T03-09	Total # Animals Per Test Level	10

Rainbow Trout Toxicity Test Report

	Temp	pH	D.O.	O2 Sat.	Cond.	Total Pre-Aeration	
	(°C)		(mg/L)	(%)*	(umhos)	Time(h) @ 6.5 mL/min/L	
Initial Water Chemistry	14.5	7.6	9.7	-	2741		
Chemistry after 30 min air:	15.0	7.7	9.6	100	2742	0:30	
0 Hours							
Date & Time	2003-09-16 12:30						
Technician	TB						
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**	**02 Sat. (%)***
100	0	0	7.7	9.6	2742	15	100
Control	0	0	8.4	9.2	534	16	97
24 Hours							
Date & Time	2003-09-17 12:30						
Technician	TB						
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**	
100	0	0	-	-	-	16.0	
Control	0	0	-	-	-	16.0	
48 Hours							
Date & Time	2003-09-18 12:30						
Technician	TB						
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**	
100	0	0	-	-	-	15.5	
Control	0	0	-	-	-	15.5	
72 Hours							
Date & Time	2003-09-19 12:30						
Technician	JP						
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**	
100	0	0	-	-	-	15.5	
Control	0	0	-	-	-	15.5	
96 Hours							
Date & Time	2003-09-20 12:30						
Technician	JL						
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**	
100	0	0	7.3	8.4	2712	15.0	
Control	0	0	8.3	9.6	486	15.0	

Notes: # of control organisms showing stress: 0 Trout Batch # T03-09

Toxicity Test Report – *Daphnia Magna*

Tests conducted by Stantec Consulting Ltd.
11B Nicholas Beaver Road RR3
Guelph, Ontario N1H 6H9
519-763-4412

Sample Identification:

Company:	Nanisivik Mine	Time Collected:	13:00
Location:	Nanisivik, NU	Date Collected:	2003-09-13
Substance:	159-4	Date Received:	2003-09-16
Sampling Method:	Grab	Date Tested:	2003-09-16
Sampled By:	M. Markle	Temp. on arrival:	18.0°
Sample Description:	Clear, Colourless, odourless.		
Test Method:	*Daphnia magna* Acute Lethality Toxicity Test Protocol EPS 1/RM/14, Environment Canada, 1990 (including December, 2000 amendments).		

Test Results:

100% mortality at 100% effluent concentration
The results reported relate only to the sample tested.

Sodium Chloride Reference Toxicant Data

Daphnia Batch #:	Dm03-18		
Date Tested (y/m/d):	2003-09-15	Historical Mean LC50:	5.9 mg/L
LC50 (95% confidence limits):	6.1 mg/L (5.2 – 7.2)	Warning Limits (±2SD):	5.5 – 6.4 mg/L
Statistical Method:	Non-linear Interpolation	Technician(s) Performing Test:	J. Picket

Daphnia magna Culture Health Data

Time to First brood (days):	7.4	Average # Young Per Brood:	0	40.6
Culture Mortality (prev. 7d)(%)	0.6			

Test Conditions

Sample Treatement:	None	# Replicates:	3
pH Adjustment:	None	# Animals Per Replicate:	10
Test Aeration	None	Total # Animals Per Test Level	10
Daphnia Batch #	Dm03-18	Daphnia Loading Rate:	15.0 mL/organism

Daphnia magna Toxicity Test Report

	Temp	pH	D.O.	O_2 Sat.	Cond.	Hardness	Hardness	Total Pre-Aeration
	(°C)		(mg/L)	(%)*	(umhos)	Mg/L as $CaCO_3$	Adjustment	Time (h) @ 30 mL/min/L
Initial Water Chemistry	20.5	7.7	9.7	112	2732	>1000	None	0:30

0 Hours

Date & Time	2003-09-16 11:10							
Technician	JP							
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**	**02 Sat. (%)***	**Hardness**
100A	0	0	7.7	9.1	2729	20.5	105	>1000
100B	0	0	7.7	9.1	2729	20.5		
100C	0	0	7.7	9.1	2729	20.5		
Control A	0	0	8.5	8.9	394	19.5		
Control B	0	0	8.5	8.9	394	19.5		
Control C	0	0	8.5	8.9	394	19.5	101	200

24 Hours

Date & Time	2003-09-17 11:10							
Technician	JP							
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**		
100A	0	8	-	-	-	21.0		
100B	0	10	-	-	-	21.0		
100C	0	8	-	-	-	21.0		
Control A	0	0	-	-	-	21.0		
Control B	0	0	-	-	-	21.0		
Control C	0	0	-	-	-	21.0		

48Hours

Date & Time	2003-09-18 11:10							
Technician	JP							
Test Conc. (%)	**Mortality**	**Immobility**	**pH**	**D.O.**	**Cond.**	**Temp.**		
100A	10	0	7.8	8.4	2741	21.0		
100B	10	0	7.9	8.5	2753	21.0		
100C	10	0	7.8	8.4	2716	21.0		
Control A	0	0	8.6	8.6	403	21.0		
Control B	0	0	8.6	8.7	398	21.0		
Control C	0	0	8.5	8.6	398	21.0		

Notes: # of control organisms showing stress: 0 *Daphnia* Batch # Dm03-18

Number immobile does not include number of mortalities.