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Data Supplement to: Biological Effects of mining Wastes in the Northwest Territories

by
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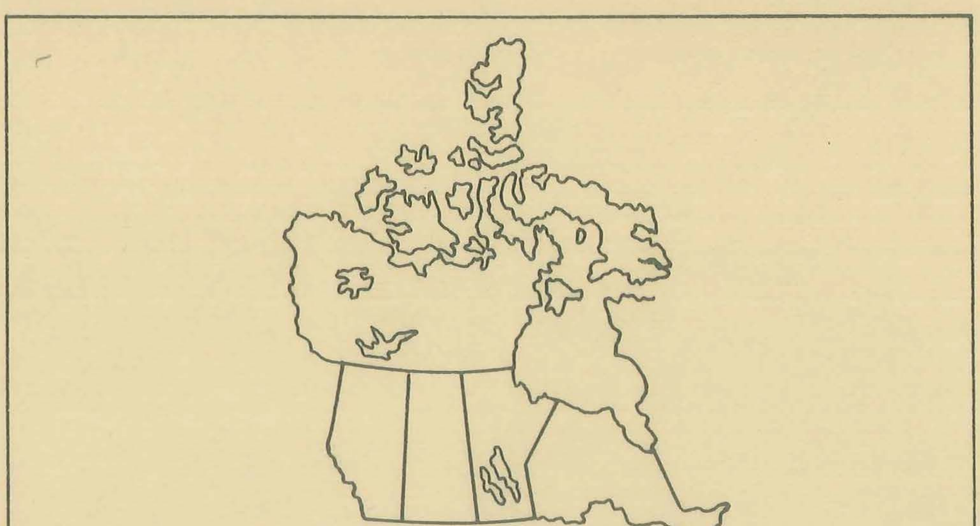

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INTRODUCTION

Studies to determine the effects of mine wastes on aquatic biota were carried out of four Northwest Territories mining operations during the summer of 1972 (Falk et al. 1973). Under investigation were the Giant and Con mines near Yellowknife and the Echo Bay and Terra mines on Great Bear Lake. At each study site assessments were made of: water quality of the mine wastes and in the receiving water bodies; effluent toxicity; metal contamination of sediments, invertebrates and fish; and benthos diversity in the receiving waters.

Considerable data were collected during this study which were either presented graphically or not included in a previous report (Falk et al. 1973). The data are summarized in this report to provide interested persons with the necessary background information to pursue specific areas of interest and to form a basis for further analyses or research.

MATERIALS AND METHODS

Sampling was carried out on the Giant, Con, Echo Bay and Terra mines on a rotational basis from May to September, 1972. Sampling periods for the Giant and Con mines were from May 23 to June 30, July 17 to August 11 and September 5 to 22. The Echo Bay and Terra sampling periods were from July 1 to 16 and August 11 to September 4. Sampling locations established during the mine studies are shown in figures 1, 2, 3, and 4.

WATER CHEMISTRY

Water samples were collected from selected locations along the effluent waters and in the receiving water bodies. Grab samples of the mine wastes were also taken. As soon after collection as possible (1 - 4 days) the samples were sent by air to be analyzed by the Water Quality Division, Environment Canada, Calgary. Analyses performed included a full range of water quality parameters, including heavy metals as shown in the following tables. The laboratory analytical methods are those outlined by Traversy (1971).

FISH CONTAMINATION

Fish samples were collected throughout the summer from each of the following areas:

Mouth of Baker Creek, Great Slave Lake
Back Bay, Great Slave Lake
Sub Islands, Great Slave Lake
Grace Lake
Kam Lake
Martin Lake
Ho-Hum Lake
Camsell River
LaBine Bay, Great Bear Lake

Sampling was by means of nylon gill net gangs, consisting of 25 yard sections of 1½, 2, 3, 4, 5, and 5½ inch meshes (stretched measure). Nets were checked periodically until the required number of 3-5 "pooled" samples had been obtained. Three fish of the same species and of similar length constituted a pooled sample. Captured fish were measured (fork length) and sexed. The liver and one skinned fillet (muscle) were taken from each fish in the pooled sample and frozen pending analysis. Each pooled sample was ground to homogenize the fish tissues. Lead, copper, cadmium, zinc and nickel were then analyzed by atomic absorption using a Perkin-Elmer Model 800 spectrophotometer. Analytical methods were derived from the Perkin-Elmer Analytical Handbook. Arsenic levels

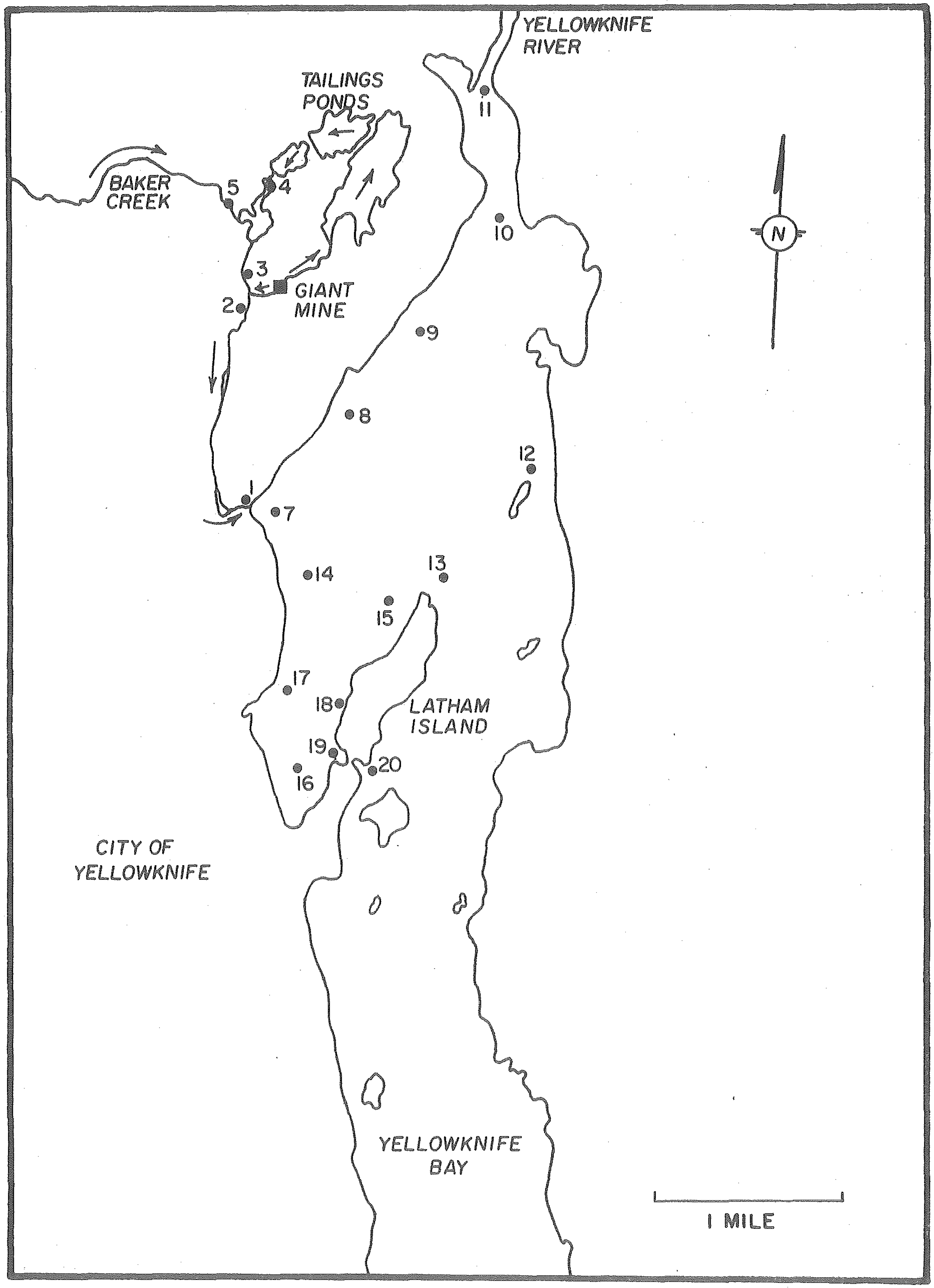

Figure 1. Locations of the Giant mining operation, tailings ponds, effluent routes and sampling stations established during 1972.

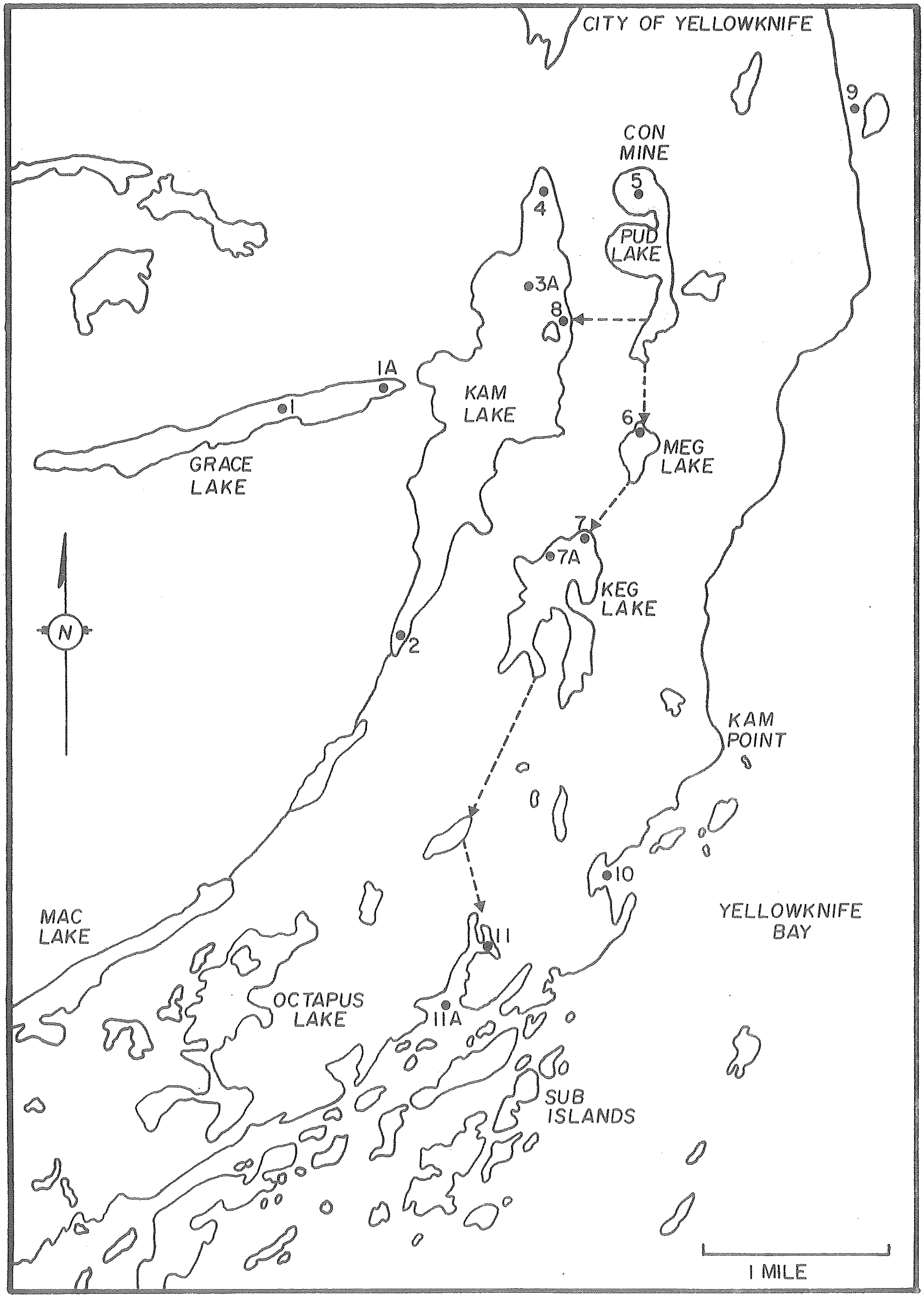

Figure 2. Locations of the Con mining operation, effluent routes and sampling stations established during 1972.

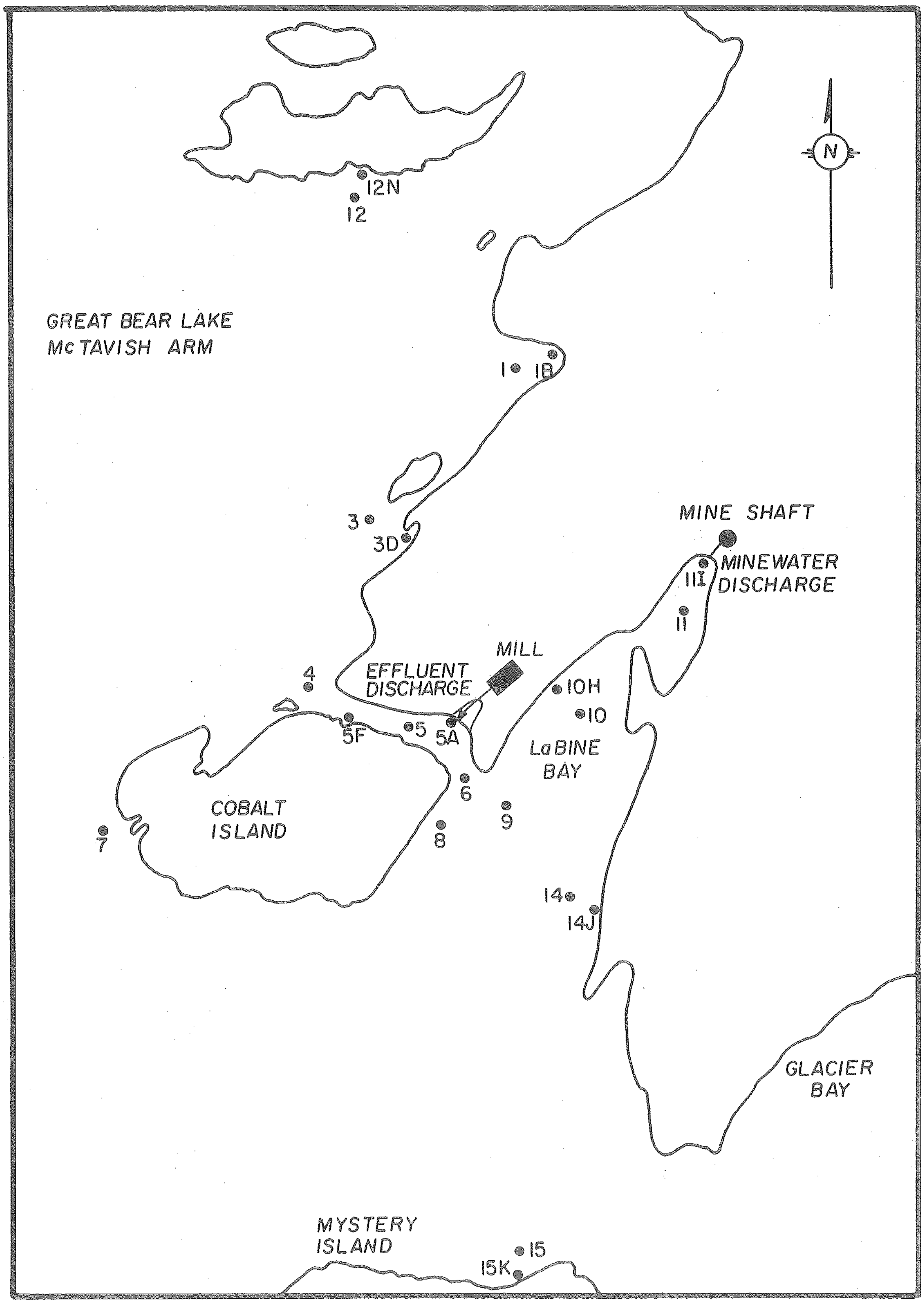

Figure 3. Locations of the Echo Bay mining operation discharge points and sampling stations established during 1972.

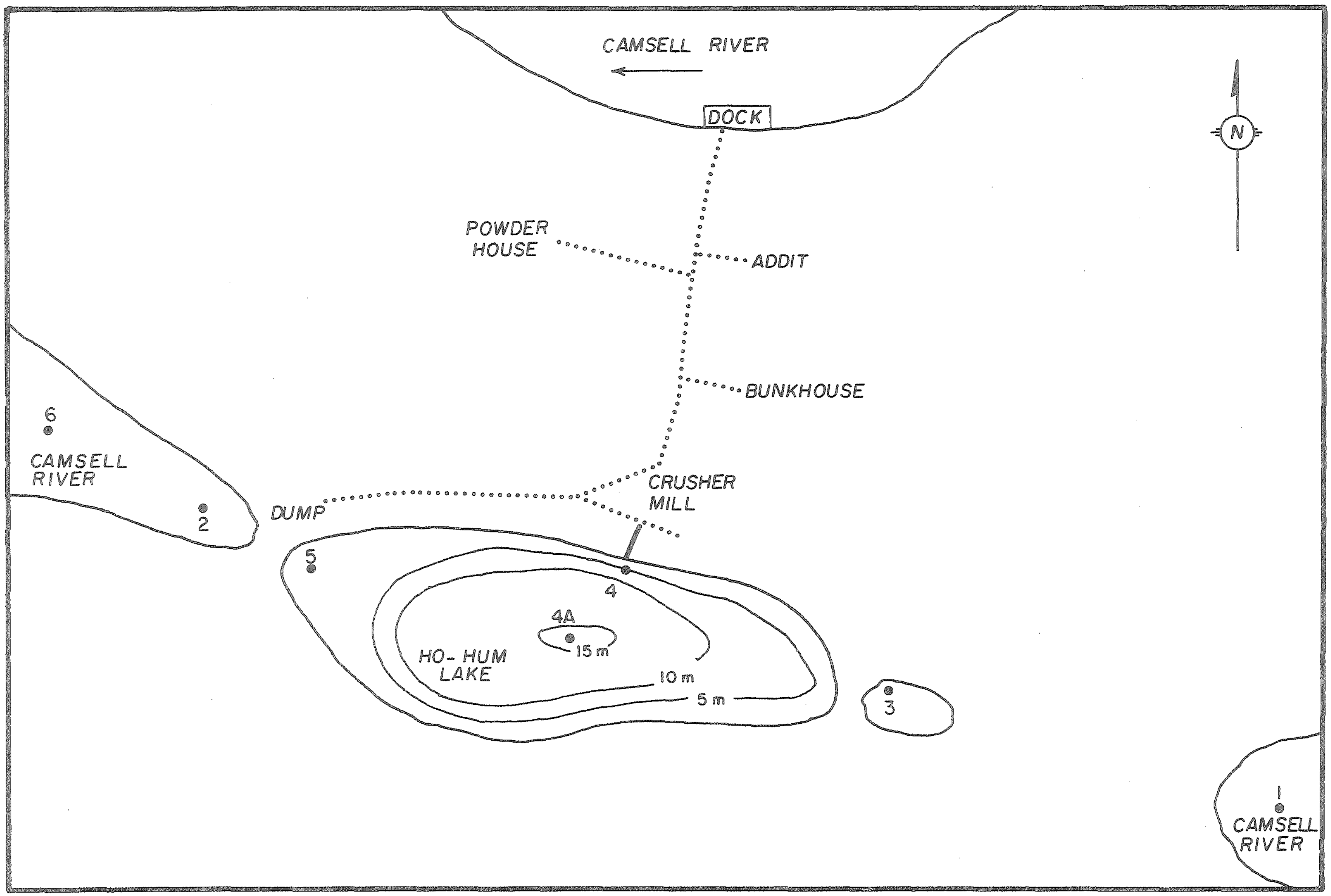

Figure 4. Locations of the Terra mining operation and sampling stations established during 1972.

were determined by ultraviolet visible spectrophotometry (A.O.A.C. approved). Selenium analyses involved fluorometric measurement of the selenium 2, 3 - diaminophthalene complex.

SEDIMENT CONTAMINATION

Sediment samples were taken using a 6-inch Eckman dredge from stations established at the four mining operations. Portions of the samples were placed in labelled plastic bags, frozen and submitted to the Winnipeg Inspection Laboratory for metal analyses. Two methods were used: 1) leaching with 1N ammonium acetate at a pH of 7.0 and 2) digestion with Aqua Regia at 40°C. Results from the leaching method represent the level of exchangeable cations present in the sediment. Those from the digestion method represent the level of the element in mineral form and the exchangeable elements absorbed on particulate matter. They do not include the concentration of the elements contained in any silicate minerals.

The wet sample was allowed to air dry and ground with a mortar and pestle. Analyses were done on a portion of the sediment passing through a standard No. 10 sieve. The ammonium acetate was added to a weighed portion of the dried sediment, shaken and allowed to stand overnight. The sample was then filtered through a No. 42 Watman filter. Analyses by atomic absorption were done on the filtrate after being brought up to a known volume within ammonium acetate. Aqua Regia was added to a weighed portion of the dried sediment, shaken and allowed to stand overnight in a water bath at 40°C. The sample was then filtered and analysed as described above.

Sediment samples were also forwarded to Bondar-Clegg and Co. Ltd, Ottawa for similar analyses. Their method of preparation involved the digestion of the dried, weighed sediment in a 3:1 HNO_3 -HCl acid mixture for 2.5 hours at 90°C. The solution was then diluted to volume, mixed well, allowed to settle and then analysed for Cu, Zn, Pb and Ni by atomic absorption. Arsenic was determined colormetrically following a HNO_3 -$HClO_4$ acid digestion using silver diethiocarbonate as the complexing agent. A complimentary metal analysis check from selected stations in Yellowknife Bay was conducted by the Water Quality Division, Environment Canada, Calgary.

BENTHOS

Benthic samples were collected each sampling period from stations established along the effluent routes and in the receiving water bodies at the four mining operations. Replicate samples were obtained from each station using an Eckman dredge (6 inch).

Grid sampling was also necessary at Echo Bay Stations 1B, 3D, 5F, 10H, 11I, 13N, 14J and 15E where the bottom consisted of rocks or large boulders. This method involved washing all rocks over 1 inch in diameter in two 0.25 m^2 areas into a bucket. Individual grab or grid samples were washed on location in a metal sieve (40 meshes/inch) transferred to labelled plastic bags and preserved in 70 percent ethyl alcohol and rose bengal (100 mg/l). Rose bengal is a vital stain which facilitates effortless sorting, since the organisms are dyed and easily recognized (Lackey and May 1971). Samples were then returned to the laboratory, washed a second time in a 300-micron sieve and sorted in a white enamelled tray. Visible organisms were separated into taxonomic groups, counted and stored in 70 percent alcohol.

Identification to genus followed, with the exception of nematodes and oligochaets which were left at the "class" level. Chironomidae were mounted and then identified according to the provisional key by Hamilton and Saether, Freshwater Institute, Winnipeg. The Chironomid sub-family Orthocladinae were not identified to genus due to difficulties in discerning characteristic features. However, similar Orthocladinae were attributed numerical values to differentiate the genera. Authorities at the Entomological Research Institute, Ottawa and the Freshwater Institute, Winnipeg, assisted in verifying difficult genera.

SAMPLING STATION DESCRIPTIONS

From each station established at the four mining operations a bottom sample was retained for substrate composition analysis. This consisted of washing the sediment sample through a series of four Endecott sieves (50, 100, 200, 320 meshes per inch). The wet fractions were then air dried, weighed to the nearest 0.1 gram and expressed as a percentage of the total weight. Fractions were then arbitrarily categorized as silt, clay, sand, stones, rocks, vegetation and organic material. These results together with the depth and location of each station are given in the following data summary.

DATA SUMMARIES

WATER CHEMISTRY

Table 1. Summary of water quality parameters determined from samples collected along the Giant Mine effluent route during 1972.

Parameter	Mill Effluent	Mill Effluent	Minewater	Minewater	Thickener Overflow	Minewater	Tailings Discharge	Station				
								GM6	GM4A	GM4	GM4	GM4
Sampling date	30-5-72	7-8-72	30-4-72	7-8-72	7-8-72	14-9-72	14-9-72	30-4-72	30-4-72	30-5-72	14-6-72	7-8-72
Turbidity JTU	>1000	>1000	>1000	30	125	2.9	10	>1000	15	10	3	4
pH	9.4	8.8	6.7	7.6	7.3	7.5	8.4	8.3	10.1	8.3	9.0	8.4
Cl ppm	89.8	83.1	2.5	900	1.9	5.3	25.2	58.8	72	28.8	17.9	42.8
Cu	17.0	19.0	0.004	0.2	0.003	0.013	8.3	27.76	11.44	9.0	10.1	14.40
Fe	0.31	0.08	1.1	0.24	0.13	0.15	-	0.43	0.28	-	0.01	0.06
Pb	<0.005	<0.006	<0.008	0.008	0.025	<0.006	<0.006	0.008	0.008	<0.005	0.006	<0.006
Mn	0.005	0.016	1.44	0.135	0.51	<0.008	0.019	0.013	<0.004	0.010	0.015	0.015
K	25.0	26.0	5.7	13.8	1.6	0.9	18.2	20.2	20.0	12.7	14.6	25.0
Ca	146	273	234	166	45.6	17.3	116	91.7	134	92.1	91.4	166
SO_4	403.6	710	749	319	106	13.8	290	276	290	212	226	396
Na	63.8	70	5	300	2.2	4.5	50	61.8	55.0	35	37	67
Zn	2.2	0.685	2.2	0.17	0.035	0.004	0.069	1.5	2.5	0.75	-	0.089
As	11.0	200.0	176	3.5	18.0	0.08	15.0	30.4	14.4	11.8	10.0	24.0
N-Kjeldahl	14.75	0.61	-	6.4	0.57	0.34	12.24	-	-	8.92	9.54	-
N-NO_2 + NO_3	0.50	3.2	0.06	9.0	0.39	0.05	0.10	2.2	3.3	0.02	-	3.4
P-Total	-	-	-	-	9.2	-	-	-	-	-	-	4.0
P-Ortho	-	-	-	-	-	0.043	6.2	-	-	-	-	-
P-Inorganic	-	-	-	-	-	0.024	3.2	-	-	-	-	-
C-Inorganic	500	190	116	10	6	8	13	270	8	7	8	8
C-Organic	700	155	40	10	15	7	25	7	33	24	22	24
Alkalinity $CaCO_3$	198	117	2.5	118	68.3	44.9	94.7	66.9	158	108	81.3	131
Hardness $CaCO_3$	390	813	810	1125	160	57.7	301	290	359	254	248	437
SiO_2 - React	8.3	8.8	4.7	7.5	1.4	1.6	5.2	4.0	7.3	5.0	2.9	7.1
Conductance umho/cm	1344	1785	1405	3776	324	146	862	976	1068	652	683	1145

Table 2. Summary of water quality parameters determined for samples collected along the Giant Mine effluent route during 1972.

	Station											
Parameter	GM5	GM5	GM5	GM3	GM3	GM2	GM2	GM1	GM1	GM1	GM1	GM1
Sampling date	14-6-72	9-8-72	14-9-72	30-4-72	14-6-72	14-6-72	30-4-72	30-4-72	30-5-72	14-6-72	7-8-72	14-9-72
Turbidity JTU	1.6	1.5	4.3	10	2.4	6.0	90	30	17	6.5	18	22
pH	7.5	7.7	7.6	9.3	7.8	7.7	9.0	9.1	8.0	7.4	7.8	7.8
Cl ppm	3.3	3.8	4.4	25.8	7.0	23.7	23	180	240	25.5	-	231
Cu	0.003	0.002	0.003	6.13	2.65	2.10	9.05	9.90	3.1	2.4	1.1	0.73
Fe	0.04	0.06	-	<0.01	0.03	0.02	0.06	0.12	-	0.03	0.36	0.04
Pb	<0.003	<0.006	<0.006	<0.008	<0.003	0.003	0.008	0.009	<0.005	0.007	<0.006	<0.006
Mn	<0.005	<0.005	<0.008	0.089	0.030	0.35	0.127	0.027	0.070	0.035	0.064	0.078
K	1.0	0.7	1.3	12.8	4.9	5.1	17.0	17.5	5.7	5.2	9.3	11.3
Ca	3.1	13.9	15.5	80.6	41.2	39.9	163	159	4.4	45.2	96.1	142
SO_4	9.1	9.2	13.6	169	68.5	72.4	324	274	91.8	72.2	142.0	208
Na	2.3	3.0	3.2	33.4	11.7	17.9	100	89	19.1	16.7	-	102
Zn	0.008	0.015	<0.001	1.1	-	0.031	2.1	1.9	0.092	0.056	0.034	0.057
As	0.096	0.092	0.019	5.6	0.043	3.8	23.2	12.6	3.75	2.90	-	5.8
N-Kjeldahl	0.72	0.84	7.35	-	3.51	3.70	-	-	4.07	3.74	5.63	0.72
N-NO_2 + NO_3	0.03	0.09	0.08	1.6	0.4	-	4.1	4.2	-	4.8	3.1	4.4
P-Total	-	0.050	-	-	-	-	-	-	-	-	-	-
P-Ortho	-	0.022	0.036	-	-	-	-	-	-	-	-	2.8
P-Inorganic	-	0.023	-	-	-	-	-	-	-	-	-	1.8
C-Inorganic	6	6	7	21	7	6	29	18	8	7	6	13
C-Organic	14	14	15	23	17	16	29	24	19	17	13	20
Alkalinity $CaCO_3$	31.2	37.1	41.8	113	53.6	45.3	104	103	58.4	42	68.7	91.5
Hardness $CaCO_3$	41.2	50.5	50.8	242	112	118	497	427	153	124	298	412
SiO_2 - React	0.1	0.5	0.3	4.2	0.9	11	6.2	6.2	2.1	1.1	3.8	5.0
Conductance umho/cm	99.1	112	137	599	294	379	1433	1259	395	382	857	1489

Table 3. Summary of water quality parameters determined from samples collected in Yellowknife Bay. June 14, 1972.

Parameter	Station										
	GM7	GM8	GM10	GM11	GM12	GM13	GM14	GM15	GM16	GM17	GM18
Turbidity JTU	14.0	3.0	3.8	3.0	4.0	4.5	16.0	5.0	19	9.4	-
pH	7.3	6.9	7.3	7.3	7.9	7.5	7.4	7.4	7.4	7.4	7.5
Cl ppm	3.6	1.7	1.1	1.2	3.9	3.5	3.4	3.5	3.4	3.3	3.4
Cu	0.063	0.008	<0.01	0.011	0.029	0.036	0.040	0.034	0.041	0.047	0.040
Fe	0.07	0.01	0.04	<0.01	<0.01	<0.01	0.02	0.01	0.01	0.01	<0.01
Pb	0.008	0.017	0.009	0.016	0.005	0.013	0.008	0.008	0.018	0.013	<0.011
Mn	0.015	<0.005	0.005	<0.005	0.010	0.010	0.015	0.010	0.015	0.015	0.018
K	14.6	0.8	0.7	0.8	0.9	0.9	1.0	0.9	1.0	1.0	1.0
Ca	29.8	6.5	4.6	5.0	12.5	10.8	9.6	10.8	9.4	9.0	9.8
SO_4	10.3	5.3	3.8	3.4	10.7	10.3	9.4	9.7	9.7	8.8	9.4
Na	3.2	1.8	1.5	1.4	3.4	3.0	2.8	3.0	3.0	2.9	2.8
Zn	-	<0.008	0.008	<0.001	0.003	0.001	<0.001	0.001	0.002	0.001	<0.001
As	<0.001	0.020	0.004	0.019	0.069	0.083	0.012	0.086	0.12	0.12	0.14
N-Kjeldahl	0.61	0.39	0.41	0.51	0.51	0.43	0.49	0.43	0.98	0.56	0.56
N-NO_2 + NO_3	13.0	0.05	0.02	0.01	0.10	0.09	0.09	0.09	0.12	0.10	0.07
P-Total	-	-	0.010	-	-	-	-	-	-	-	-
P-Ortho	-	-	<0.003	-	-	-	-	-	-	-	-
P-Inorganic	-	-	<0.003	-	-	-	-	-	-	-	-
C-Inorganic	4	3	2	4	5	5	4	4	3	-	4
C-Organic	7	6	5	4	6	5	4	6	6	-	5
Alkalinity $CaCO_3$	21.9	14.8	12.6	13.2	30.4	25.5	21.2	26.2	21.8	20.9	20.8
Hardness $CaCO_3$	31.2	20.0	16.1	16.0	39.1	34.0	28.6	34.0	29.4	28.5	29.2
SiO_2 - React	0.5	0.3	0.2	0.3	0.8	0.6	0.5	0.7	0.5	0.5	0.5
Conductance umho/cm	81.0	56.4	44.2	44.4	99.3	88.4	78.6	88.4	79/5	77.3	79.1

Table 4. Summary of water quality parameters determined for samples collected along the Con Mine effluent route.

Parameter	Con Effluent	Station CM3	CM4	CM4	CM5	CM5	CM5	CM7	CM7	CM7
Sampling date	7-8-72	23-5-72	23-5-72	27-6-72	23-5-72	7-8-72	14-9-72	27-6-72	7-8-72	14-9-72
Turbidity JTU	>1000	150	7.5	7.0	93	3.0	5.3	4.6	2.5	2.7
pH	7.4	7.2	7.2	7.0	7.2	7.7	7.2	7.3	7.2	7.3
Cl ppm	3135	858	870	1750	882	1704	1870	1240	1886	1310
Cu	0.2	0.93	1.80	0.021	1.03	0.65	0.14	0.059	0.30	0.006
Fe	1.40	0.04	0.01	0.01	0.03	0.10	0.16	0.02	0.88	0.24
Pb	<0.006	0.002	<0.002	<0.004	0.003	<0.006	<0.006	<0.004	0.007	0.031
Mn	0.060	0.14	0.16	0.21	0.12	0.045	0.18	0.085	0.127	0.36
K	10.8	6.40	2.4	11.9	-	11.7	23.2	9.2	12.6	12.3
Ca	1125	332	380	622	381	635	720	476	691	483
SO_4	279	174	342	283	181	263	689	241	314	282
Na	800	234	264	478	254	456	580	360	388	366
Zn	0.013	0.001	0.021	0.011	0.001	0.025	0.038	0.011	0.054	0.007
As	6.8	1.08	0.48	2.8	1.10	2.3	0.10	3.7	2.4	2.4
N-Kjeldahl	1.34	4.6	2.66	5.28	5.01	9.17	1.17	0.89	5.26	0.81
N-NO_2 + NO_3	12.5	3.7	4.0	5.0	4.1	6.3	6.4	2.8	8.5	0.10
P-Ortho	-	-	-	-	-	-	0.070	-	-	0.61
P-Inorganic	-	-	-	-	-	-	0.065	-	-	0.34
C-Inorganic	165	-	-	8	-	7	10	6	6	10
C-Organic	9	-	-	10	-	7	9	10	7	9
Alkalinity $CaCO_3$	47.6	36.8	70.4	42.4	39.0	72.2	66.3	41.4	48.1	77.3
Hardness $CaCO_3$	3065	908	1102	1751	989	1884	2251	1347	1972	1372
SiO_2 - React	7.0	2.9	9.5	3.4	3.2	4.5	1.6	4.7	4.8	9.3
Conductance umho/cm	9878	3262	2680	5663	3103	5973	6620	4629	6458	4523

Table 5. Summary of water quality parameters determined for samples collected during the Con Mine study.

Parameter	Station								
	CM1	CM1	CM1	CM4	CM4	CM9	CM10	CM11	CM11
Sampling date	23-5-72	9-8-72	14-9-72	9-8-72	14-9-72	28-6-72	28-6-72	28-6-72	14-9-72
Turbidity JTU	1.1	2.0	2.6	2.0	2.3	2.0	1.5	1.0	4.4
pH	7.1	7.7	7.9	7.4	7.5	7.8	8.2	7.2	7.6
Cl ppm	5.5	7.4	7.9	588	6100	5.0	6.4	870	223
Cu	<0.001	<0.001	0.035	0.048	0.026	0.016	0.009	0.002	0.012
Fe	0.01	<0.05	-	0.12	0.07	0.02	0.03	0.16	0.07
Pb	0.002	0.006	<0.006	<0.006	<0.006	<0.004	<0.004	<0.004	0.006
Mn	<0.008	<0.005	0.006	0.07	0.134	<0.010	<0.010	0.025	<0.008
K	1.6	1.6	1.8	7.6	8.1	1.1	1.1	8.2	2.4
Ca	14.7	16.8	17.8	240	363	20.0	24.2	317	98.4
SO_4	16.0	19.6	19.6	209	216	14.0	18.5	204	51.3
Na	4.0	4.3	4.4	198	186	49	6.4	245	65.4
Zn	<0.001	0.006	0.006	0.007	0.004	<0.01	<0.01	0.02	0.038
As	0.024	0.032	0.05	2.9	4.0	0.53	0.011	0.007	<0.004
N-Kjeldahl	0.66	0.87	0.77	1.41	1.24	0.36	0.23	0.59	0.68
N-NO_2 + NO_3	0.07	0.01	<0.01	0.23	0.28	0.02	<0.01	<0.01	0.50
P-Total	0.048	0.025	-	-	-	0.026	0.012	-	-
P-Ortho	0.015	0.010	-	0.45	1.5	0.026	0.006	<0.003	-
P-Inorganic	0.020	0.010	0.02	0.61	1.0	0.026	0.008	0.005	0.005
C-Inorganic	-	6	7	7	11	8	10	8	11
C-Organic	-	13	14	13	16	6	8	13	11
Alkalinity $CaCO_3$	312	39.5	41.0	79.8	76.7	482	65.3	48.9	70.4
Hardness $CaCO_3$	49.0	64.9	62.7	728	728	62.5	81.0	953	303
SiO_2 - React	1.2	0.3	0.6	4.0	4.3	1.8	2.4	3.4	2.9
Conductance umho/cm	132	169	153	2564	2575	477	186	3260	1013

Table 6. Summary of water quality parameters determined for samples collected during the Echo Bay Mine study.

Parameter	Mill Effluent	Mill Effluent	Minewater	Minewater	Station EB5	Station EB11	Station EB13	Station EB4	Station EB11
Sampling date	14-7-72	21-8-72	14-7-72	21-8-72	14-7-72	14-7-72	21-8-72	21-8-72	21-8-72
Turbidity JTU	5000	8840	65.0	59	0.3	0.7	1.3	1.8	1.2
pH	8.2	7.6	8.3	9.4	8.0	7.9	8.0	8.0	8.1
Cl ppm	22.6	27.0	5.1	5.0	4.6	4.4	4.5	4.6	4.6
Cu	0.002	0.001	0.052	0.001	0.001	<0.001	<0.001	<0.001	<0.001
Fe	0.02	0.27	0.03	0.11	0.06	<0.01	0.28	0.05	0.21
Pb	<0.004	0.007	<0.004	0.006	<0.004	<0.004	<0.004	<0.004	<0.004
Mn	0.190	0.062	<0.01	<0.01	<0.001	<0.001	<0.001	<0.010	<0.010
K	18.0	19.5	9.5	8.1	0.8	0.9	0.7	0.8	0.8
Ca	25.3	26.5	24.1	11.6	18.7	18.4	17.6	16.4	18.4
SO_4	39.9	61.3	81.3	72.6	15.3	17.2	13.4	14.2	14.1
Na	15.8	16.7	25.0	38.0	3.7	4.0	3.4	3.6	3.7
Zn	0.002	0.004	0.12	0.004	0.004	0.002	0.003	0.003	<0.001
As	1.0	4.4	0.8	1.0	<0.004	0.018	0.04	0.02	0.02
N-Kjeldahl	-	0.82	0.97	0.97	0.16	0.21	0.31	0.38	0.87
N-NO_2 + NO_3	0.57	0.49	2.7	1.3	0.14	0.07	0.19	0.16	0.20
P-Total	-	75.0	-	0.18	0.003	0.012	0.005	0.006	0.006
P-Ortho	-	-	-	-	<0.003	<0.003	-	<0.003	0.005
P-Inorganic	-	-	-	-	<0.003	-	0.003	0.003	0.005
C-Inorganic	255	1080	11	6	11	12	6	9	8
C-Organic	105	520	7	9	3	2	5	7	7
Alkalinity $CaCO_3$	85.9	29.0	39.2	48.8	55.0	52.0	54.0	54.1	54.7
Hardness $CaCO_3$	108	76.5	78.3	50.3	68.4	67.2	68.4	70.3	69.3
SiO_2 - React	6.1	-	10.5	12.6	1.7	1.1	2.3	2.3	2.3
Conductance umho/cm	350	329	337	320	153	157	153	153	156

Table 7. Summary of water quality parameters determined for samples collected during the Terra Mine study.

Parameter	Mill Effluent	Mill Effluent	Minewater	Station TM1	Station TM1	Station TM2	Station TM4	Station TM5
Sampling date	4-7-72	21-8-72	4-7-72	5-7-72	21-8-72	4-7-72	21-8-72	5-7-72
Turbidity JTU	>7000	6050	140	2.1	0.8	3.4	4.5	4.8
pH	7.9	8.9	8.0	7.8	7.6	8.0	7.9	-
Cl ppm	12.4	10.5	276.0	1.7	1.9	6.9	12.4	2.0
Cu	0.004	0.001	0.003	0.002	0.008	0.006	0.002	<0.001
Fe	-	0.29	0.01	<0.004	0.13	0.39	0.37	0.01
Pb	<0.004	0.007	<0.004	<0.004	<0.004	<0.009	<0.004	<0.004
Mn	<0.010	<0.01	0.25	0.015	<0.010	0.010	<0.010	<0.010
K	22.5	24.0	11.6	0.8	1.0	1.3	7.8	6.9
Ca	12.8	17.6	104	16.2	14.4	20	28.7	-
SO_4	20.0	37.3	177	9.4	7.9	25.3	29.4	31.2
Na	9.5	10.0	158	1.7	1.5	6.5	10.5	9.6
Zn	0.01	0.006	0.01	<0.01	0.009	0.01	0.007	<0.01
As	11.0	6.0	4.9	0.056	0.011	0.053	4.2	0.40
N-Kjeldahl	-	1.16	4.10	0.36	0.34	1.66	0.62	0.43
$N\text{-}NO_2 + NO_3$	-	0.86	10.8	0.01	0.03	0.04	0.88	0.15
P-Total	30	24	1.8	0.016	0.007	0.052	0.33	-
P-Ortho	-	-	-	0.011	0.003	0.021	-	-
P-Inorganic	-	-	-	0.012	0.003	0.025	-	-
C-Inorganic	90	190	18	7	7	8	12	11
C-Organic	100	140	19	8	7	37	7	10
Alkalinity $CaCO_3$	41.0	30.8	98.2	47.4	41.4	33.5	71.3	-
Hardness $CaCO_3$	37.2	40.8	321	52.7	50.1	56.0	100	-
SiO_2 - React	7.2	9.4	7.6	0.9	1.2	5.5	3.0	1.7
Conductance umho/cm	206	236	1461	108	108	162	286	271

FISH CONTAMINATION

Table 8. Summary of metal analyses (ppm wet weight) carried out on fish collected off the mouth of Baker Creek, 1972.

Fish sample	Fork length (mm)	Sex	Tissue	Metal Pb	Cu	Zn	Cd	As	Ni
L.N. Sucker	346	-	Liver	0.20	4.5	28.2	0.07	-	0.16
	354	F	Muscle	0.10	0.05	5.6	Tr	0.26	Tr
	340	M							
L.N. Sucker	300	M	Liver	2.3	0.07	26.7	0.06	-	0.67
	327	-	Muscle	0.04	0.05	25.3	Tr	0.21	0.05
	310	F							
L.N. Sucker	316	F	Liver	1.2	7.7	29.3	0.16	-	0.42
	315	F	Muscle	0.10	0.10	28.1	0.01	0.32	0.05
	325	M							
L.N. Sucker	351	M	Liver	0.19	3.3	39.7	0.11	-	0.19
	357	F	Muscle	0.09	0.07	18.5	0.01	0.32	0.04
	335	M							
			X Liver =	0.97	3.89	31.0	0.10	-	0.36
			X Muscle =	0.08	0.07	19.4	<0.01	0.28	0.04

Table 8. (cont'd)

Fish sample	Fork length (mm)	Sex	Tissue	Metal Pb	Cu	Zn	Cd	As	Ni
Whitefish	331	F	Liver	0.09	14.2	52.7	0.21	0.87	0.18
	408	M	Muscle	0.10	0.03	9.5	0.02	0.22	0.05
	424	F							
N. Pike	408	M	Muscle	0.10	0.05	18.4	0.01	0.33	0.03
	405	F							
	511	F							
N. Pike	581	F	Liver	0.10	56.3	70.2	0.05	0.02	0.03
	506	F	Muscle	0.10	0.05	13.8	0.01	0.33	0.05
	538	F							
N. Pike	555	M	Liver	0.08	35.2	62.2	0.08	0.60	0.02
	500	M	Muscle	0.04	0.03	12.1	0.01	0.22	Tr
	558	M							
N. Pike	610	F	Liver	0.05	1.6	49.2	2.1	0.87	0.11
	558	F	Muscle	0.02	0.1	14.8	0.01	0.37	0.03
	546	M							
			X Liver =	0.08	31.0	60.5	0.70	0.70	0.06
			X Muscle =	0.07	0.06	14.8	0.01	0.31	0.03

Table 9. Summary of metal analyses (ppm wet weight) carried out on fish collected from Back Bay Station GM18, 1972.

Fish sample	Fork length (mm)	Sex	Tissue	Pb	Cu	Zn	Cd	As	Ni	Hg	Se
				Metal							
Whitefish	410	F	Liver	1.2	19.9	65.4	0.29	<0.2	8.6	-	-
	445	F	Muscle	0.38	0.25	13.5	0.12	-	2.9	-	-
	368	M									
Whitefish	345	M	Liver	0.62	5.2	70.2	1.4	<0.2	6.0	-	-
	350	F	Muscle	0.38	0.25	11.5	0.02	<0.2	2.8	-	-
	473	F									
			X Liver =	0.91	13.0	67.8	0.84	<0.2	7.3	-	-
			X Muscle =	0.38	0.25	12.5	0.07	<0.2	2.8		
N. Pike	680	F	Liver	0.57	14.9	61.5	0.10	0.73	3.7	-	-
	562	M	Muscle	0.46	0.20	19.1	0.01	-	2.9	-	-
	555	M									

Table 10. Summary of metal analyses (ppm wet weight) carried out on fish collected from Martin Lake (source of Baker Creek), 1972

Fish sample	Fork length (mm)	Sex	Tissue	Pb	Cu	Zn	Cd	As	Ni	Hg	Se
N. Pike	390	M	Liver	0.24	5.0	36.0	Tr	<0.28	0.10	0.33	-
	390	M	Muscle	0.15	0.10	6.0	Tr	0.85	-	0.37	0.12
	438	M									

Table 11. Summary of metal analyses (ppm wet weight) carried out on fish collected from Grace Lake, 1972.

Fish sample	Fork length (mm)	Sex	Tissue	Metal								
				Pb	Cu	Zn	Cd	As	Hg	Cr	Ni	Se
N. Pike	685	F	Liver	0.10	4.1	19.0	-	0.94	0.42	0.25	0.08	-
	730	F	Muscle	0.20	0.19	10.0	-	2.11	0.87	0.35	-	0.15
	780	M										
N. Pike	605	F	Liver	0.12	3.6	61.0	-	0.96	0.13	0.25	-	-
	602	M	Muscle	0.15	0.10	10.0	-	1.69	0.32	0.32	-	0.09
	654	F										
N. Pike	566	F	Liver	0.10	3.1	53.0	0.1	1.13	0.20	0.24	-	-
	568	M	Muscle	0.14	0.23	10.0	-	1.55	0.45	0.33	-	0.19
	586	F										
N. Pike	513	M	Liver	0.21	4.4	31.0	-	0.78	0.10	0.43	-	-
	486	M	Muscle	0.19	0.28	13.0	-	1.41	0.20	0.33	-	0.25
	490	M										
			X Liver =	0.13	3.8	41.0	0.01	0.96	0.22	0.29	0.08	-
			X Muscle =	0.17	0.20	11.0	-	1.69	0.38	0.34	-	0.17
Walleye	381	F	Liver	2.1	18.6	107.3	0.28	-	-	-	13.7	-
	308	F	Muscle	0.20	0.30	6.8	0.01	-	-	-	0.04	-
	308	M										
Walleye	320	M	Liver	8.7	31.1	176.0	0.08	2.5	-	-	-	-
	212	M	Muscle	0.20	0.28	7.2	Tr	<0.2	-	-	-	-
	218	M										
Walleye	258	M	Liver	1.5	26.2	81.5	0.04	0.95	-	-	-	-
	485	M	Muscle	0.15	Tr	6.6	Tr	<0.2	-	-	-	-
	415	M										
Walleye	380	M	Liver	0.98	38.0	59.5	0.26	1.4	-	-	-	-
	215	M	Muscle	0.33	0.35	7.8	0.02	0.48	-	-	-	-
	421	M										
			X Liver =	3.2	28.5	106.1	0.17	1.62	-	-	13.7	-
			X Muscle =	0.22	0.23	7.1	0.01	0.29	-	-	0.74	-

Table 11. (cont'd)

Fish sample	Fork length (mm)	Sex	Tissue	Metal								
				Pb	Cu	Zn	Cd	As	Hg	Cr	Ni	Se
Whitefish	418	M	Liver	0.64	9.0	53.2	0.04	<.2	-	-	-	-
	318	M	Muscle	0.26	0.30	9.2	0.02	-	-	-	0.72	-
	510	F										
Whitefish	482	M	Liver	0.62	11.7	45.7	0.02	0.34	-	-	-	-
	470	F	Muscle	0.28	0.35	11.2	0.01	0.36	-	-	-	-
	440	F										
Whitefish	455	F	Liver	0.93	18.7	52.4	0.05	0.92	-	-	6.4	-
	408	M	Muscle	0.26	0.30	6.8	0.01	<0.2	-	-	-	-
	375	M										
Whitefish	472	F	Liver	0.96	1.5	58.1	0.15	0.66	-	-	7.2	-
	467	M	Muscle	0.26	0.35	16.3	Tr	<0.2	-	-	0.74	-
	450	M										
			X Liver =	0.78	10.2	52.4	0.07	0.53	-	-	6.8	-
			X Muscle =	0.27	0.32	10.9	0.01	0.28	-	-	0.72	-

Table 12. Summary of metal analyses (ppm wet weight) carried out on fish collected from Kam Lake, 1972.

Fish sample	Fork length (mm)	Sex	Tissue	Metal							
				Pb	Cu	Zn	Cd	As	Ni	Hg	Cr
Whitefish	371	M	Liver	0.30	0.58	40.0	0.03	-	-	-	-
	412	F	Muscle	0.23	0.30	10.6	Tr	0.34	-	-	-
	420	F									
Whitefish	356	M	Liver	0.68	20.8	61.8	0.05	0.30	5.0	-	-
	417	M	Muscle	0.23	0.35	6.5	Tr	-	-	-	-
	218	I									
Whitefish	548	F	Liver	0.85	26.4	55.1	0.06	1.15	5.9	-	-
	420	F	Muscle	0.23	0.15	6.6	Tr	0.34	-	-	-
	425	M									
Whitefish	217	M	Liver	0.97	8.1	46.1	0.08	-	2.7	-	-
	272	F	Muscle	0.23	0.35	7.5	Tr	0.25	-	-	-
	350	F									
Whitefish	418	M	Liver	0.54	16.3	44.6	0.04	0.96	3.5	-	-
	459	F	Muscle	0.15	Tr	7.1	Tr	<0.2	-	-	-
	409	M									
			X Liver =	0.67	14.5	49.5	0.05	0.80	4.2	-	-
			X Muscle =	0.22	0.23	7.7	Tr	0.28	-	-	-
N. Pike	468	M	Liver	1.8	37.2	93.6	0.09	3.3	13.0	-	-
	458	M	Muscle	0.18	0.20	6.1	Tr	3.8	-	-	-
	455	M									
N. Pike	360	M	Liver	1.5	25.9	46.8	Tr	1.7	-	-	-
	448	M	Muscle	0.20	0.25	9.2	Tr	2.2	-	-	-
	389	F									
N. Pike	460	M	Liver	1.3	29.9	59.3	0.29	1.7	9.6	-	-
	450	M	Muscle	0.14	0.10	7.0	0.01	4.4	-	0.03	0.28
	440	M									
N. Pike	368	M	Liver	1.1	15.6	46.8	0.05	-	4.5	-	-
	330	M	Muscle	0.18	0.23	7.1	Tr	2.5	-	-	-
	318	M									
N. Pike	345	M	Liver	-	-	-	-	-	-	-	-
	350	M	Muscle	0.20	0.25	9.1	Tr	-	-	-	-
	396	M									
			X Liver =	1.41	27.1	61.6	0.11	2.23	9.0	-	-
			X Muscle =	0.18	0.21	7.7	0.01	3.22	-	0.03	0.28

Table 13. Summary of metal analyses (ppm wet weight) carried out on fish collected in the the Sub Island region of Yellowknife Bay (Station CM 11-A), 1972.

Fish sample	Fork length (mm)	Sex	Tissue	Metal					
				Pb	Cu	Zn	Cd	As	Ni
N. Pike	570	M	Liver	0.92	6.8	110.3	1.64	0.54	-
	550	M	Muscle	0.28	0.23	9.4	0.07	0.30	-
	468	M							
N. Pike	440	M	Liver	0.88	2.9	90.1	0.03	<0.2	-
	420	M	Muscle	0.26	0.20	29.2	0.04	<0.2	0.82
	458	F							
N. Pike	650	F	Liver	0.28	9.2	54.7	0.10	0.32	-
	618	F	Muscle	0.26	0.28	7.3	Tr	0.51	0.87
	652	M							
N. Pike	700	F	Liver	0.25	6.0	41.4	0.11	-	-
	775	F	Muscle	0.23	0.25	6.9	0.03	<0.2	-
	850	F							
N. Pike	455	M	Liver	0.36	0.36	60.2	0.11	<0.2	3.2
	535	M	Muscle	0.26	0.10	7.1	Tr	0.32	-
	585	F							
			X Liver =	0.54	5.7	71.3	0.40	0.32	3.2
			X Muscle =	0.26	0.21	11.9	0.03	0.31	0.85
Whitefish	397	M	Liver	0.51	8.4	63.2	0.36	0.32	3.6
	430	M	Muscle	0.26	0.30	6.2	Tr	-	-
	440	M							
Whitefish	396	M	Liver	0.98	5.2	57.3	0.04	<0.2	-
	390	M	Muscle	0.28	0.28	6.6	Tr	-	-
	346	F							
Whitefish	446	M	Liver	0.64	3.8	45.2	0.25	<0.2	-
	468	F	Muscle	0.18	Tr	7.2	Tr	<0.2	-
	405	M							
			X Liver =	0.71	5.8	55.2	0.22	0.24	3.6
			X Muscle =	0.24	0.19	6.7	Tr	<0.2	-

Table 14. Summary of metal analyses (ppm wet weight) carried out on fish collected from Labine Bay, 1972

Fish sample	Fork length (mm)	Sex	Tissue	Metal						
				Pb	Cu	Zn	Cd	As	Ni	Se
L. Trout	346	F	Liver	0.87	9.8	21.1	0.12	-	0.19	-
	390	M	Muscle	0.30	0.95	13.9	0.07	-	0.16	-
	360	F								
L. Trout	404	F	Muscle	0.45	0.20	15.5	-	-	0.08	-
	400	F								
	336	I								
L. Trout	494	F	Muscle	0.32	0.95	12.8	-	-	-	-
	435	M								
	460	F								
L. Trout	580	F	Muscle	0.23	0.50	20.2	-	-	0.32	-
	513	F								
	510	M								
L. Trout	460	M	Liver	0.17	12.6	42.7	0.21	-	0.22	-
	410	F	Muscle	0.23	0.35	16.0	Tr	-	-	-
	625	M								
			X Liver =	0.52	11.2	31.9	0.16	-	0.21	-
			X Muscle =	0.31	0.59	15.7	0.05	-	0.19	-

Table 14. (cont'd)

Fish sample	Fork length (mm)	Sex	Tissue	Metal						
				Pb	Cu	Zn	Cd	As	Ni	Se
L. Cisco	340	F	Liver	0.60	1.9	89.9	0.16	-	0.19	-
	330	M	Muscle	0.23	0.25	8.0	0.09	0.28	Tr	0.22
	330	F								
L. Cisco	332	F	Liver	0.94	4.4	153.1	0.14	-	0.25	-
	361	F	Muscle	0.20	0.37	8.5	0.05	0.18	Tr	0.23
	321	M								
L. Cisco	305	M	Liver	0.68	1.9	220.6	0.11	-	0.37	-
	311	F	Muscle	0.15	0.40	10.5	0.03	-	Tr	-
	297	M								
L. Cisco	381	M	Liver	0.47	6.4	72.9	0.18	-	0.16	-
	375	F	Muscle	0.20	0.45	8.8	0.02	-	0.21	-
	380	F								
L. Cisco	340	M	Liver	0.63	4.5	118.2	0.12	-	0.34	-
	315	M	Muscle	0.15	0.40	7.9	Tr	-	-	-
	302	F								
L. Cisco	327	F	Liver	0.50	4.9	204.9	0.09	-	0.27	-
	282	F	Muscle	0.18	0.30	12.6	0.09	-	-	-
	315	F								
			X Liver =	0.64	4.0	143.3	0.13	-	0.27	-
			X Muscle =	0.18	0.38	8.2	0.05	0.23	0.07	0.23

Table 15. Summary of metal analyses carried out on fish collected off the Echo Bay Mine, 1971.

Fish sample	Length (mm)	Tissue	Metal level (ppm) Zn	Cu	Pb
Lake cisco	341	Muscle	8.25	0.42	0.16
	409	Muscle	8.50	0.27	0.20
	375	Muscle	5.50	0.27	0.26
	440	Muscle	8.29	0.05	0.18
	574	Muscle	4.85	0.20	0.08
	329	Muscle	6.81	0.26	0.13
	299	Muscle	9.61	0.18	0.08
	525	Muscle	10.50	0.10	0.11
	305	Muscle	10.31	0.31	0.28
	pooled	Liver	977	1.06	0.36
	pooled	Liver	370	2.50	1.55
Lake trout	440	Muscle	4.41	0.17	0.11
	574	Muscle	5.00	0.17	0.11
	390	Muscle	3.40	0.15	0.11
	507	Muscle	4.30	0.23	0.14
	314	Muscle	7.85	0.18	0.60
	pooled	Liver	37.2	1.76	0.24

Table 16. Summary of metal analyses (ppm wet weight) carried out on fish collected from Ho-Hum Lake, 1972.

Fish sample	Fork length (mm)	Sex	Tissue	Metal Pb	Cu	Zn	Cd	As	Ni	Se
Whitefish	425	F	Liver	1.4	17.1	60.0	0.29	-	0.95	-
	459	M	Muscle	0.2	0.20	4.9	Tr	-	0.33	-
	482	M								
Whitefish	338	M	Liver	4.0	27.4	52.0	0.32	0.48	0.72	-
	416	F	Muscle	0.2	0.25	7.2	Tr	-	-	-
	437	M								
Whitefish	450	F	Liver	3.1	24.2	54.5	0.58	-	0.84	-
	425	F								
	395	M								
Whitefish	440	-	Liver	1.4	16.1	56.2	0.46	-	1.23	-
	450	M	Muscle	0.2	0.70	9.4	Tr	-	0.67	-
	422	M								
			X Liver =	2.5	21.2	55.6	0.41	0.48	0.93	-
			X Muscle =	0.2	0.38	7.2	Tr	-	0.50	-
N. Pike	405	M	Liver	1.1	70.9	128.5	-	-	Tr	-
	460	F	Muscle	0.2	0.75	12.1	-	0.34	Tr	0.16
	282	I								
N. Pike	530	F	Liver	0.91	26.9	112.3	0.04	-	0.49	-
	280	M	Muscle	0.60	4.8	9.9	Tr	-	-	-
	333	M								
			X Liver =	1.0	48.9	120.4	0.02	-	0.25	-
			X Muscle =	0.4	2.8	10.2	Tr	0.34	Tr	0.16

Table 17. Summary of metal analyses (ppm wet weight) carried out on fish collected from the Camsell River, 1972.

Fish sample	Fork length (mm)	Sex	Tissue	Metal: Pb	Cu	Zn	Cd	As	Cr	Ni	Se
Whitefish	345	M	Liver	Tr	1.9	127.4	Tr	-	Tr	Tr	-
	368	F	Muscle	Tr	Tr	15.1	0.08	Tr	Tr	Tr	-
	392	I									
Whitefish	490	M	Liver	Tr	0.58	36.3	0.06	Tr	Tr	Tr	-
	610	F	Muscle	Tr	0.10	16.6	Tr	Tr	Tr	Tr	-
	491	F									
Whitefish	503	F	Liver	Tr	1.2	44.8	0.06	-	-	-	-
	504	F	Muscle	Tr	0.10	24.3	Tr	-	-	-	-
	430	F									
Whitefish	430	M	Liver	0.07	0.90	40.4	0.10	-	-	-	-
	477	M	Muscle	Tr	0.20	6.7	Tr	-	-	-	-
	451	F									
			X Liver =	0.02	1.2	62.2	0.05	Tr	Tr	Tr	-
			X Muscle =	Tr	0.10	15.7	0.02	Tr	Tr	Tr	-
L. Trout	700	F	Liver	Tr	1.8	53.4	0.02	Tr	Tr	0.06	-
	728	F	Muscle	Tr	0.2	7.6	Tr	Tr	Tr	0.11	-
	732	F									
L. Trout	626	F	Liver	Tr	2.7	53.4	0.03	-	-	0.13	-
	677	M	Muscle	Tr	0.1	23.6	Tr	-	-	0.11	-
	770	M									
L. Trout	605	F	Liver	0.12	2.9	50.1	0.03	-	-	Tr	-
	560	F	Muscle	0.10	0.35	12.4	Tr	-	-	-	-
	500	F									
			X Liver =	0.04	2.5	52.3	0.03	Tr	Tr	0.06	-
			X Muscle =	0.03	0.22	14.5	Tr	Tr	Tr	0.11	-

Table 17. (cont'd)

Fish sample	Fork length (mm)	Sex	Tissue	Pb	Cu	Zn	Cd	As	Cr	Ni	Se
N. Pike	600	F	Liver	0.21	4.8	102.4	0.04	Tr	Tr	0.38	-
	580	M	Muscle	Tr	0.20	9.4	Tr	Tr	Tr	0.56	-
	558	F									
N. Pike	508	M	Liver	Tr	3.4	106.4	0.03	-	-	0.12	-
	610	M	Muscle	Tr	0.35	9.9	Tr	Tr	Tr	0.55	-
	515	M									
N. Pike	566	F	Liver	Tr	19.3	277.2	Tr	Tr	Tr	0.56	-
	510	M	Muscle	Tr	0.30	9.9	Tr	-	-	1.22	-
	488	F									
			X Liver =	0.07	9.2	162.3	0.02	Tr	Tr	0.35	-
			X Muscle =	Tr	0.28	9.7	Tr	Tr	Tr	0.78	
A. Grayling	385	F	Liver	Tr	0.17	81.4	0.05	-	-	Tr	-
	395	F	Muscle	0.15	0.15	21.8	Tr	0.38	-	Tr	0.22
	388	F									

SEDIMENT CONTAMINATION

Table 18. Summary of metal analyses carried out on sediment samples collected along the Giant Mine effluent route and in Yellowknife Bay, 1972.

			Metal level (ppm)								
Station	Laboratory	Method	Pb	Cu	Zn	Cd	As	Hg	Cr	Ni	Se
1	Winnipeg	Leeching	16	125	50	0.26	34.5	Tr	<0.25	4.4	Tr
	Winnipeg	Digestion	940	948	925	5.8	8500	0.22	21.0	81.0	Tr
	Calgary	Digestion	813	974	1550	-	10030	-	-	-	-
	Ottawa	Digestion	1050	830	1250	-	12300	-	-	120	-
2	Winnipeg	Leeching	24	0.21	0.17	0.13	20	Tr	<0.25	1.3	Tr
	Winnipeg	Digestion	860	134	380	5.3	6450	0.26	12.0	64	Tr
	Calgary	Digestion	1290	211	1160	-	6800	-	-	-	-
3	Winnipeg	Leeching	83	143	403	2.0	60	Tr	<0.25	19	0.14
	Winnipeg	Digestion	220	2500	6000	48	6500	0.20	19	244	Tr
	Calgary	Digestion	1100	236	1060	-	6200	-	-	-	-
4	Winnipeg	Leeching	19	17	32	0.49	30	Tr	<0.25	0.63	0.11
	Winnipeg	Digestion	580	70	330	3.4	-	0.16	20	40	Tr
	Calgary	Digestion	10	82	140	-	210	-	-	-	-
	Ottawa	Digestion	600	79	810	-	3700	-	-	64	-
7	Winnipeg	Leeching	-	43	21	0.9	3.0	Tr	<0.25	2.5	Tr
	Winnipeg	Digestion	1.22	306	233	1.15	10600	0.18	19	31	-
	Calgary	Digestion	387	344	684	-	402	-	-	-	-
	Ottawa	Digestion	760	520	1750	-	12800	-	-	88	-
8	Winnipeg	Leeching	6.3	8.0	20	0.32	3.25	Tr	<0.25	2.5	0.06
	Winnipeg	Digestion	98	106	158	0.90	-	0.12	21	30	-
	Calgary	Digestion	78	119	192	-	72.5	-	-	-	-

Table 18. (cont'd)

Station	Laboratory	Method	Metal Level (ppm)								
			Pb	Cu	Zn	Cd	As	Hg	Cr	Ni	Se
9	Winnipeg	Leeching	1.3	6.9	15	0.17	0.50	Tr	<0.25	1.9	Tr
	Winnipeg	Digestion	66	111	149	1.1	430	-	18	26.0	-
	Calgary	Digestion	<10	50	47	-	80	-	-	-	-
10	Winnipeg	Leeching	1.3	2.0	3.0	Tr	0.50	Tr	<0.25	Tr	Tr
	Winnipeg	Digestion	20	36	50	0.5	55.5	0.06	14	18.0	-
	Calgary	Digestion	69	77	181	-	827	-	-	-	-
11	Winnipeg	Leeching	Tr	2.4	5.0	Tr	<0.30	Tr	<0.25	Tr	<0.02
	Winnipeg	Digestion	-	33	53	0.4	-	0.04	17	15	-
	Calgary	Digestion	20	70	98	-	119	-	-	-	-
12	Winnipeg	Leeching	Tr	1.0	4.0	0.09	1.3	Tr	<0.25	1.3	Tr
	Winnipeg	Digestion	16	36	65	0.8	54	0.06	15	32	-
	Calgary	Digestion	10	47	92	-	22	-	-	-	-
13	Winnipeg	Leeching	Tr	1.4	1.0	Tr	<0.30	Tr	<0.25	Tr	Tr
	Winnipeg	Digestion	8.1	25	41	0.5	24	0.04	20	28	-
	Calgary	Digestion	42	124	160	-	372	-	-	-	-
14	Winnipeg	Leeching	Tr	7.6	10	0.13	2.0	Tr	<0.25	Tr	Tr
	Winnipeg	Digestion	40	85	100	0.6	334	0.06	15	26	-
	Calgary	Digestion	52	128	203	-	576	-	-	-	-
15	Winnipeg	Leeching	Tr	22	12	0.17	0.63	Tr	0.63	0.03	Tr
	Winnipeg	Digestion	82	223	191	1.1	770	0.12	17	30	-
16	Winnipeg	Leeching	2.7	4.1	5.0	0.17	Tr	Tr	<0.25	3.8	<0.03
	Winnipeg	Digestion	20	85	81	0.80	120	0.06	16	34	Tr
	Calgary	Digestion	10	67	99	-	62	-	-	-	-
17	Winnipeg	Leeching	Tr	1.9	6.0	0.15	0.80	Tr	<0.25	0.97	Tr
	Winnipeg	Digestion	22.5	56	70	0.75	114	0.06	16.5	24	-
	Calgary	Digestion	47	179	214	-	616	-	-	-	-

Table 18 (cont'd)

Station	Laboratory	Method	Metal Level (ppm)								
			Pb	Cu	Zn	Cd	As	Hg	Cr	Ni	Se
18	Winnipeg	Leeching	Tr	3.3	6.0	0.08	<0.30	Tr	<0.25	2.2	0.28
	Winnipeg	Digestion	18.2	62	81	0.70	130	0.06	19.5	31	-
	Calgary	Digestion	23	107	152	-	121	-	-	-	-
19	Calgary	Digestion	61	112	128	-	161	-	-	-	-
20	Calgary	Digestion	14	114	89	-	90	-	-	-	-

Table 19. Summary of metal analyses carried out on sediment samples collected during the Con Mine Study, 1972.

Station	Laboratory	Method	Metal level (ppm)							
			Cu	Pb	Zn	Ni	As	Cd	Hg	Cr
1	Ottawa	Digestion	6	4	29	10	105	-	-	-
	Winnipeg	Leeching	0.35	-	4	-	<0.30	-	-	<0.25
	Winnipeg	Digestion	25	6.8	67	22	33.6	0.6	0.08	15
2	Ottawa	Digestion	710	22	148	90	1700	-	-	-
	Winnipeg	Leeching	0.35	-	1.0	-	5	-	-	<0.25
	Winnipeg	Digestion	29	2.5	18	13	124	0.1	0.02	5
3	Winnipeg	Leeching	2.8	1.3	2	0.63	16.75	-	-	<0.25
	Winnipeg	Digestion	118	-	64	37.0	640	0.6	0.08	21
3A	Ottawa	Digestion	1340	22	103	136	3500	-	-	-
	Winnipeg	Leeching	76	-	15	28	31.25	-	-	<0.25
	Winnipeg	Digestion	2200	54	160	81	16700	1.5	0.6	18
5	Ottawa	Digestion	73	275	790	54	2500	-	-	-
7A	Ottawa	Digestion	750	230	400	77	3300	-	-	-
9	Ottawa	Digestion	37	20	63	24	68	-	-	-
10	Ottawa	Digestion	35	13	68	27	60	-	-	-
11	Ottawa	Digestion	59	20	130	43	114	-	-	-

Table 20. Summary of metal analyses carried out on sediment samples collected during the Echo Bay Mine study, 1971 and 1972.

Station	Laboratory	Year	Metal level (ppm)					
			Cu	Pb	Zn	Ni	Cd	As
Mill effluent	Ottawa	1972	620	2800	480	1340	780	2700
8	Ottawa	1972	11800	580	330	190	700	4700
4	Ottawa	1972	1650	1800	630	1050	450	3100
	Winnipeg	1971	5750	312	700	-	-	-
6	Ottawa	1972	8600	770	295	300	970	3100
	Winnipeg	1971	890	243	925	-	-	-
9	Ottawa	1972	9100	600	300	385	1530	3200
15	Ottawa	1972	84	36	143	26	27	16

Table 21. Summary of metal analyses carried out by Bondar-Clegg, Ottawa, on sediment samples collected during the Terra Mine study, 1972.

Station	Metal level (ppm)				
	Cu	Pb	Zn	Ni	As
1	59	27	159	53	8
2	89	24	136	51	90
4	1200	182	195	930	5000
6	60	30	158	54	22

BENTHOS

Table 22. List of benthic genera for Giant Mine stations, 1972.

Taxanomic Group	Genera	STATION 7	8	9	10	11	12	13	14	15	16	17	18	19	20
Copepoda	Cyclops sp.	2	0	5	1	9	8	6	0	0	23	5	4	3	1
	Macrocyclops	0	0	0	0	0	0	0	0	0	10	0	0	0	0
	Diaptomus	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Cladocera	Eurycerus	1	0	4	81	3	0	0	0	0	4	5	2	0	0
	Unident	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Diaphanosoma	0	0	0	15	0	0	0	0	0	0	0	0	0	0
	Daphnia	0	0	0	1	0	0	0	0	0	1	0	0	0	0
Hydracarina	Hygrobates	1	2	8	3	1	2	6	9	1	0	2	14	0	4
	Tiphys	0	0	1	0	0	1	0	0	0	29	0	0	10	0
	Arrhenurus	0	0	1	0	0	0	0	0	0	0	0	0	0	5
	Axonopsis	0	0	0	0	2	0	0	0	0	4	0	0	0	0
	Liberta	0	0	0	0	0	0	0	0	3	0	0	0	1	0
Amphipoda	Pontoporeia	1	3	20	1	0	807	88	0	17	1	54	37	6	54
Pelecypoda	Psidium	5	38	65	32	38	37	27	4	37	11	43	53	111	110
	Sphaerium	0	4	5	0	0	0	0	0	1	0	3	0	0	0
Gastropoda	Gyralus	0	3	1	9	0	8	0	0	0	0	0	0	0	0
	Valvata	0	7	80	38	12	35	10	9	39	0	5	24	88	70
	Physa	0	0	0	1	0	0	0	0	0	4	0	0	0	0
	Lymnaea	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Ephemeroptera	--	1	0	0	0	1	0	1	0	0	0	0	0	0	0
Hirudinae	Helobdella	0	0	1	0	0	0	0	0	0	4	0	0	0	0
	Placobdella	0	0	1	0	2	0	0	0	0	1	0	0	0	0
	Erpobdella	0	0	0	0	0	0	0	1	0	0	2	0	1	0
	Nephelopsis	0	0	0	0	0	0	0	0	0	1	0	0	1	0
Trichoptera	Banksiola	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	Oecetis	0	0	0	11	0	1	3	0	0	0	0	0	0	0
	Psycomidea	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	Ptilostomis	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	Leptocella	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	Parvanea	0	0	0	0	0	0	0	0	0	1	0	0	0	0

Table 22. (cont'd)

Taxonomic Group	Genera	STATION													
		7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ceratopogonia	Palpomyia-bezzia	0	0	4	0	32	5	0	0	8	3	0	2	11	4
	Dasyhelea	0	0	0	14	1	0	0	0	0	1	0	0	0	0
Tipulidae	Hemerodromia	0	0	0	1	2	6	0	1	7	0	12	9	0	1
Hemiptera (Corixidae)	--	0	0	0	1	0	0	2	0	0	0	1	0	0	0
Odonata	--	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Chironomidae	Ablablesmia	1	0	6	1	0	0	0	0	0	0	0	0	3	0
	Procladius	0	21	27	1	2	29	0	31	1	9	4	18	30	29
	Thien gr.	0	2	3	0	0	10	17	1	7	1	2	0	0	0
	Pagastiella	0	1	2	0	2	1	1	1	0	0	0	0	0	0
	Cryptochironomus	0	0	4	17	2	7	6	0	5	21	0	1	15	4
	Xenochironomus	0	0	1	1	0	0	0	0	0	0	0	0	0	0
	Polypedilum	0	0	4	3	0	5	1	0	0	20	0	0	8	0
	Paralauterbornellia	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	Glypotendipes	0	0	1	1	0	0	0	0	0	0	0	0	0	0
	Cryptotendipes	0	0	0	1	0	2	0	0	0	0	0	0	10	13
	Paracladopelnia	0	0	0	1	0	0	0	0	0	0	1	0	0	0
	Parachironomus	0	0	0	2	0	1	1	0	0	5	0	0	0	0
	Chironomus	0	0	0	2	1	0	0	0	0	80	0	0	108	0
	Dicrotendipes	0	0	2	29	3	15	9	3	7	13	5	0	1	0
	Enfeldia	0	0	0	2	0	0	0	0	0	0	0	0	0	0
	Stictochironomus	0	0	0	2	2	0	0	0	0	0	0	0	0	0
	Endochironomus	0	0	0	1	0	1	0	0	0	13	0	0	1	0
	Tanytarsus	0	0	10	2	69	5	0	0	0	4	0	5	3	10
	Micropsectra	0	0	0	0	13	2	0	0	0	0	0	1	0	0
	Cladotanytarsus	0	0	2	0	0	0	0	0	0	0	0	0	0	0
	Tribelos	0	0	2	11	0	0	0	0	0	0	0	0	1	0
	Paratendipes	0	0	0	0	4	0	0	0	0	0	0	0	4	0
	Microtendipes	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Demicryptochironomus	0	0	0	0	0	0	1	0	0	0	0	0	0	0

Table 22. (cont'd)

Taxonomic Group	Genera	STATION 7	8	9	10	11	12	13	14	15	16	17	18	19	20
	<u>Diamesa</u>	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	<u>Syndiamesa</u>	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<u>Cryptocladopelnia</u>	0	0	0	0	0	0	0	0	0	1	0	13	3	1
	Orthocladinae #1	0	6	10	30	2	2	4	1	1	17	0	0	4	0
	Orthocladinae #2	0	1	7	16	2	27	13	2	5	5	4	17	8	0
	Orthocladinae #3	0	0	2	1	0	0	0	0	0	0	0	0	0	0
	Orthocladinae #4	0	0	4	1	0	2	0	0	0	0	1	1	0	0
	Orthocladinae #5	0	0	2	0	0	0	0	0	0	0	0	0	0	0
	Orthocladinae #6	0	0	0	0	0	0	0	0	1	3	0	1	0	0
	Orthocladinae #7	0	0	3	0	0	1	0	0	0	0	0	0	0	0
	Orthocladinae #8	0	0	0	0	0	0	1	0	0	0	2	0	0	0
	Orthocladinae #10	0	0	2	0	0	0	0	0	0	0	0	0	0	0
Oligochaeta	--	6	94	172	8	187	61	41	53	10	203	66	28	1000	564
Nematoda	--	1	5	25	73	41	24	45	3	25	32	11	4	20	8
No. of individuals		19	188	489	415	444	1106	286	120	175	526	229	234	1433	878
No. of representative genera		9	14	36	36	25	28	23	14	17	31	20	18	25	15

Table 23. List of benthic genera for Con Mine stations, 1972.

Taxonomic Group	Genera	1	1A	2	3	3A	4	7A	9	10	11	11A
		STATION										
Amphipoda	Pontoporeia	24	0	0	0	0	0	0	699	219	0	0
	Hyalella	0	0	0	0	0	0	0	0	103	24	132
	Gammarus	0	0	0	0	0	0	0	0	7	0	15
Gastropoda	Valvata	4	0	0	0	0	0	0	118	97	2	5
	Lymnaea	0	0	0	7	0	0	21	1	19	2	0
	Physa	0	0	0	0	0	0	12	0	0	2	1
	Gyralus	0	0	0	0	0	0	0	0	9	9	1
	Helicodiscus	0	0	0	0	0	0	0	0	0	0	1
Pelecypoda	Psidium	328	1	0	0	0	0	0	95	82	1	24
	Sphaerium	0	0	0	0	0	0	0	3	27	0	16
Ephemeroptera	Caenis	4	0	0	0	0	0	0	1	0	0	0
Trichoptera	Malanna	3	0	0	0	0	0	0	0	0	0	0
	Banksiola	0	0	0	0	0	0	1	0	0	0	0
	Leptocerus	0	0	0	0	0	0	0	0	0	1	1
	Oeceis	0	0	0	0	0	0	0	0	0	0	4
Cladocera	Daphnia	0	0	16	7	54	61	0	0	0	0	0
	Simocephalus	0	0	0	0	0	0	3	0	0	0	0
	Diaphanosoma	0	0	0	0	0	0	0	0	0	0	1
Copepoda	Cyclops sp.	0	0	1	0	6	2	0	0	0	0	8
Hemiptera (Corixidae)	--	0	0	1	4	0	2	0	0	0	0	0
Ostracoda	--	0	0	0	36	0	2	0	0	0	0	1
Hydracarina	Piona	0	0	0	1	0	0	0	0	0	0	0
	Hygrobates	0	0	0	0	0	0	0	12	2	0	0
	Frontpoda	0	0	0	0	0	0	0	2	0	0	0
	Pitractides	0	0	0	0	0	0	0	0	1	0	0
Odonata	Anisoptera	0	0	0	0	0	0	1	0	0	0	0
	Zygoptera	0	0	0	0	0	0	0	0	0	0	0
Tipulidae	Hesperogonia	0	0	0	0	0	0	0	8	4	0	0
Ceratopogonia	Palpomyia-bezzia	0	0	0	0	0	0	0	1	5	1	8
	Dasyhelea	0	0	0	0	0	0	0	0	1	3	0

Table 23. (cont'd)

Taxanomic Group	Genera	STATION 1	1A	2	3	3A	4	7A	9	10	11	11A
Hirudinae	Erpobdella	0	0	0	0	0	0	0	0	0	2	0
	Helobdella	0	0	0	0	0	0	0	0	0	0	2
	Glossiphonia	0	0	0	0	0	0	0	0	0	0	3
Oligochaeta	--	60	2	0	1	0	0	0	0	0	0	20
Nematoda	--	5	0	0	0	1	0	0	18	58	2	50
Chironomidae	Tantarsus	309	2	0	0	0	0	0	0	0	15	15
	Procladius	39	0	2	14	1	0	34	1	4	76	18
	Chironomus	101	2	0	0	0	1	2	0	0	4	1
	Tribelos	45	0	0	0	0	0	0	0	0	2	3
	Polypedilum	6	0	0	0	0	0	0	0	0	9	14
	Stictochironomus	1	2	0	0	0	0	0	0	1	0	0
	Endochironomus	2	0	0	0	0	0	0	0	0	0	16
	Enfeldia	2	0	0	0	0	0	0	0	0	0	0
	Cryptochironomus	0	0	0	0	0	0	0	8	2	1	14
	Pagastiella	0	6	0	0	0	0	0	0	0	0	0
	Micropsectra	0	1	0	0	0	0	0	0	0	0	0
	Dicroptendipes	0	0	5	8	1	8	26	0	6	9	6
	Ablablesmia	0	0	0	0	0	1	1	2	0	10	7
	Parachironomus	0	0	0	0	0	0	3	1	0	0	1
	Paracladopelnia	0	0	0	0	0	0	0	2	0	0	0
	Zavrelia	0	0	0	0	0	0	0	2	2	0	2
	Diamesa	0	0	0	0	0	0	0	1	2	0	0
	Cryptotendipes	1	0	0	0	0	0	0	3	0	1	0
	Syndiamesa	0	0	0	0	0	0	0	1	0	0	0
	Xenochironomus	0	0	0	0	0	0	0	0	1	0	0
	Demicryptochironomus	0	0	0	0	0	0	0	0	3	0	0
	Thien gr.	0	0	0	0	0	0	0	0	0	1	0
	Cryptocladopelnia	0	0	0	0	0	0	0	0	0	0	0
	Orthocladinae #1	0	0	1	0	1	0	1	0	19	1	36
	Orthocladinae #2	0	0	0	0	0	1	0	11	18	1	40
	Orthocladinae #3	0	0	0	0	0	0	0	0	0	0	2

Table 23. (cont'd)

Taxonomic Group	Genera	STATION 1	1A	2	3	3A	4	7A	9	10	11	11A
	Orthocladinae #5	0	0	0	0	0	0	0	0	1	0	0
	Orthocladinae #6	1	0	0	4	1	1	2	0	0	1	1
	Orthocladinae #7	0	0	0	0	0	0	0	0	0	0	1
No. of individuals		935	16	26	82	65	78	107	990	693	180	470
No. of representative genera		17	7	6	9	7	7	12	21	25	24	34

Table 24. List of benthic genera for Terra Mine stations, 1972.

		STATION					
Taxanomic Group	Genera	1	2	3	4	5	6
Copepoda	Eucyclops sp.	20	0	0	0	0	0
	Limnocalanus	0	6	0	0	0	0
	Cyclops sp.	0	5	5	0	1	6
	Macrocyclops	0	0	4	0	0	0
	Heterocope	0	0	3	0	0	0
Amphipoda	Gammarus	38	0	0	0	0	0
	Hyalella	80	0	192	0	0	8
	Pontoporeia	32	34	0	0	0	12
Ostracoda	--	0	1	0	0	0	0
Gastropoda	Valvata	8	4	0	0	12	16
	Gyralus	1	0	2	0	0	6
	Lymnaea	0	0	2	0	0	0
	Physa	0	0	4	0	0	12
Pelecypoda	Sphaerium	8	10	2	0	3	0
	Psidium	6	5	29	0	183	44
Ceratopogonia	Palpomyia-bezzia	4	0	10	0	3	2
	Dasyhelea	7	0	8	0	0	0
Hirudinae	Erpobdella	0	2	1	0	0	0
	Helobdella	0	0	1	0	0	0
	Phacobdella	0	0	1	0	2	0
	Glossiphonia	0	0	1	0	0	0
Cladocera	Sinocephalus	0	0	126	0	0	0
	Latona	0	0	0	0	0	8
Helodidae	Cyphon	0	0	18	0	0	0
Ephemeroptera	unident.	0	0	1	0	0	4
	Ephemerella	0	0	44	0	0	0
Odonata	Cordulia	0	0	6	0	0	0
	Ischnura	0	0	0	0	2	0
Trichoptera	Leptocella	0	0	1	0	2	2
Hemiptera (Corixidae)	--	0	0	2	0	0	0

Table 24. (cont'd)

Taxonomic Group	Genera	STATION 1	2	3	4	5	6
Dytiscidae	Agabus	0	0	0	0	0	2
Oligochaeta	Fragments	8	30	63	0	204	10
Nematoda	--	3	2	6	0	36	40
Chironomidae	Procladius	5	18	14	1	10	6
	Ablablesmia	2	0	52	0	4	0
	Thien gr.	0	0	1	0	0	0
	Polypedilum	1	0	18	0	1	2
	Endochironomus	5	0	12	0	0	2
	Tribelos	2	0	25	0	0	0
	Stictochironomus	4	0	1	0	0	0
	Tantarsus	1	0	5	0	0	0
	Dicrotendipes	1	0	29	0	0	0
	Pagastiella	1	0	0	0	5	0
	Chironomus	0	3	0	0	0	0
	Paratendipes	0	1	0	0	0	0
	Micropsectra	0	0	2	0	0	0
	Glypotendipes	0	0	2	0	0	0
	Cryptochironomus	0	0	6	0	0	18
	Zavrelia	0	0	2	0	0	0
	Demicryptochironomus	0	0	1	0	0	0
	Orthocladinae #1	0	0	9	0	0	18
	Orthocladinae #2	3	1	24	0	7	4
	Orthocladinae #4	5	0	0	0	11	0
	Orthocladinae #6	1	0	0	2	33	32
	Orthocladinae #7	1	0	0	0	0	0
	Orthocladinae #9	0	0	0	0	1	0
	Orthocladinae #10	3	2	0	0	0	0
No. of individuals		248	124	735	3	520	254
No. of representative genera		25	15	40	2	18	21

Table 25. Oligochaeta identifications with their authorities as identified by Dr. G. Cook (Natural Museum of Natural Sciences, Ottawa).

Mine	Station	Family	Genus	Species	Authority	
Giant	8	Tubificidae	Rhycodrilus	sodalis	Ersen	1879
Giant	9	Tubificidae	Rhycodrilus	sodalis	Ersen	1879
Giant	11	Tubificidae	Rhycodrilus	sodalis	Ersen	1879
Giant	16	Tubificidae	Rhycodrilus	sodalis	Ersen	1879
Giant	19	Tubificidae	Rhycodrilus	sodalis	Ersen	1879
Giant	20	Tubificidae	Rhycodrilus	sodalis	Ersen	1879
Con	11A	Lumbriculidae	Lumbriculus	variegatus	Muller	1774
Echo	10	Tubificidae	Rhycodrilus	sodalis	Ersen	1879
Echo		Enchytraeida	Not identified			
Terra	5	Enchytraeidae	Not identified			
Terra	5	Tubificidae	Limnodrilus	hoffmeisteri	Claparede	1862

SAMPLING STATION DESCRIPTIONS

Table 26. Description of the Giant Mine sampling stations, Summer 1972.

Station no.	Description	Depth (m)	Substrate composition
1	Mouth of Baker Creek	0.5	35% silt-clay aggregate, 31% brown clay, 28% silt, 6% fine sand
2	Baker Creek, downstream from minewater inflow	0.7	100% grey clay
3	Baker Creek, upstream from minewater inflow	1.0	100% red clay
4	Baker Creek, at culvert from 3rd tailings area	1.2	100% grey-brown clay
5	Baker Creek, above any effluent contamination	0.5	50% sand, 50% rocks
7	Yellowknife Bay, 50 M from mouth of Baker Creek	10	100% brown clay
8	Yellowknife Bay, 250 M from Baker Lagoon	9	90% brown silt, 10% clay aggregate
9	Yellowknife Bay, 750 M N.E. of Baker Lagoon	4	-
10	Yellowknife Bay, 1250 M N.E. of Baker Lagoon	1.5	58% decaying vegetation, 25% silt, 10% sand, 7% clay modules
11	Yellowknife Bay, 1750 M N.E. of Baker Lagoon	2	67% silt-clay aggregate, 28% brown-clay, 5% vegetative
12	Yellowknife Bay, 1500 M E. of Baker Lagoon	9	59% grey-clay aggregate, 24% small stone and clay lumps, 13% grey silt, 4% fine sand
13	Yellowknife Bay, 1000 M S.E. of Baker Lagoon	14	40% stones (½"-1"), 30% silt, 14% sand, 16% fine sand
14	Yellowknife Bay, 500 M S. of Baker Lagoon	12	44% coarse sand, 39% sand, 17% fine sand.
15	Yellowknife Bay, 1000 M S. of Baker Lagoon	10	-

Station no.	Description	Depth (m)	Substrate composition
16	Yellowknife Bay, 2000 M S.W. of Baker Lagoon	4.5	30% sand-clay-organic aggregate, 60% silt, 10% vegetative
17	Yellowknife Bay, 1500 M S.E. of Baker Lagoon	10	25% sand-clay, 50% silt, 10% vegetative, 15% fine sand
18	Yellowknife Bay, 1300 M S.E. of Baker Lagoon	9	-
19	Yellowknife Bay, 20 M N. of bridge to old town	5.5	-
20	Yellowknife Bay, 10 M S. of bridge to old town	8.0	100 silt

Table 27. Description of the Con Mine sampling stations, Summer 1972.

Station no.	Description	Depth (m)	Substrate composition
1	Middle of Grace Lake (FRB)	18	93% silt-organic aggregate, 7% brown fine silt
1A	East end of Grace Lake	8	55% rocks (>1"), 30% coarse sand, 15% fine sand
2	South end of Kam Lake	6	100% clay-organic aggregate
3	Kam Lake - mouth of creek from Pud into Kam Lake	2.5	100% fine grey clay
3A	Middle of Kam Lake (FRB)	14	83% silt-clay, 100% decaying vegetation, 7% silt
4	North end of Kam Lake	4	93% dark grey silt, 7% fine silt
5	Pud Lake	2	100% grey clay
6	Meg Lake	0.5	62% organic, 32% decaying vegetation, 6% silt
7	Keg Lake - north end	1	100% dead and decaying vegetation
7A	Keg Lake - south end	1	60% decaying vegetation
9	Yellowknife Bay, at Mosher Island	6	45% coarse sand, 23% stones, 20% silt-clay aggregate, 12% fine sand
10	Yellowknife Bay - Sub Islands Region	2	80% sand, 18% gravel and vegetation, 2% silt
11	Yellowknife Bay - Sub Islands Region	1.5	73% brown silt, 14% fine silt, 13% decaying vegetation
11A	Yellowknife Bay - Sub Islands Region	2	95% clay-silt aggregate, 5% living vegetation and organic matter

Table 28. Description of Echo Bay Mine sampling stations, Summer 1972.

Station no.	Description	Depth (m)	Substrate composition
1	Great Bear Lake, 1000 M N. of Cobalt Island Channel	12	Large rocks and boulders
1B	Shore Station at Sta. 1	0.5	Average rock size <3"
3	Great Bear Lake, 500 M N. of Cobalt Island Channel	8	100% sand
3D	Shore Sta. at Station 3	0.5	Rock size <2"
4	Great Bear Lake, middle of N.W. end of Cobalt Island Channel	12	40% wood chips, 75% silt-clay aggregate, 21% silt
5	Middle of Cobalt Island Channel	13	90% fine clay, 10% silt
5F	Shore Sta. at Station 5	0.5	Rock size <2"
5A	Cobalt Island Channel, 10 M from effluent discharge	5	100% fine sand
6	Great Bear Lake - middle of S.E. end of Cobalt Island Channel	10	50% grey-silt-clay, 50% sand
7	Outside Cobalt Island, 60 M offshore	18	Large boulders and rocks
8	South side Cobalt Island, 30 M offshore	19	39% grey silt-clay aggregate, 29% silt-sand, 25% silt, 7% wood fibre and chips
9	Great Bear Lake, outside entrance to Labine Bay	57	100% silt-sand aggregate
10	Great Bear Lake at the entrance to Labine Bay	7	Mainly large rocks with scattered ooze deposits
10H	Shore Sta. at Station 10	0.5	Rocks >3"

Station no.	Description	Depth (m)	Substrate composition
11	Middle of Labine Bay	6	71% silt-organic substrate, 29% silt
11I	Shore Sta. at Station 11	0.5	Average rock >4" diameter
12	Great Bear Lake, south side of Island which is approximately 1500 M N.W. of Cobalt Island	18	Rock 6" - 12" diameter
12N	Shore Sta. at Station 2	0.5	Average rock >3" diameter
14	Great Bear Lake, 1000 M S. of south end of Cobalt Island	14	Rock >15" diameter
14J	Shore Sta. at Station 15	0.5	Average rock >3" diameter
15	Great Bear Lake, 3000 M S. of Cobalt Island	14	97% sand, 3% gravel
15K	Shore Sta. at Station 15	0.5	Rock >5" diameter

Table 29. Description of Terra Mine sampling stations, Summer 1972.

Station no.	Description	Depth (m)	Substrate composition
1	Camsell River, above minesite	7	79% silt-clay aggregate, 21% silt
2	Camsell River, 50 M below Ho-Hum Lake	1.5	79% silt-clay aggregate, 15% clay, 6% vegetation
3	Small lake above Ho-Hum Lake	1.0	100% dead and decaying vegetation
4	Ho-Hum Lake at effluent outlet	8	77% fine sand, 23% silt-clay
4A	Middle of Ho-Hum Lake	16	100% fine grey clay
5	End of Ho-Hum Lake below minesite and effluent outlet	3	64% grey clay, 31% silt-clay aggregate, 5% live and dead vegetation
6	Camsell River, 500 M below Ho-Hum Lake	14	96% clay particles, 2% silt, 2% sand

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