

Yellowknife, Northwest Territories
Canada X1A 2M2
Telex 034-4-5514
Phone 403/873-6301



May 10, 1984

Mr. Bob Milburn, P. Eng.,
Sr. Planning Engineer,
Community Planning & Development Division,
Dept. of Local Government,
Government of the Northwest Territories,
YELLOWKNIFE, N.W.T.
X1A 2L9

Dear Bob:

Re: -Arsenic Levels in Local Lakes

Thanks for your letter of February 14th and for your reminder last week.

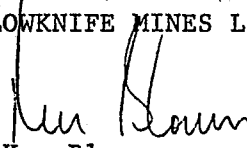
Bryan Cross has reviewed some of the more recent information on the subject and I am enclosing a memo of his which is to the point.

About the only thing to add is that emission levels at Giant have been reduced by a factor of 10 since 1977 by installation of an arsenic recovery baghouse system. At Con they have discontinued roasting entirely.

Hopefully, the attached information will be of some use to you.

Yours truly,

GIANT YELLOWKNIFE MINES LIMITED


Ken Blower
General Manager

KB:jh
Attachments

c.c. B. Cross
K. Morton

To K. Blower
Copies To K.S. Morton
From B.C. Cross
Subject Reply to Bob Milburn Re Arsenic in Drinking Water

Date May 9, 1984
Ref.

The report by Wagemann et al, 1978 from which a quote is taken as to the range of arsenic in Yellowknife area lakes being between 0.7 and 5.5 ppm is attached.

This quote is somewhat out of context with the values quoted being from Kam and Grace Lake. Kam is located adjacent to Con Mines tailings pond chain (Pud, Meg and Keg Lakes). From the Arsenic Task Force report also attached, see that Kam Lake was once under heavy influence from Con's stack.

Values of arsenic from waters from greater than a mile away from each of Giant and Con's stacks are in a much lower range than those originally quoted. See Table 17 attached.

The arsenic in the Yellowknife area lakes is primarily from airborne fall-out. I am also attaching a summary of Giant's emissions which have decreased substantially over the years.

BCC:jh
Attachments

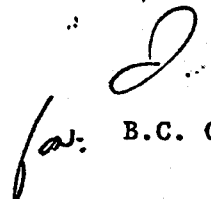
for:  B.C. Cross

TABLE 17

Arsenic Levels in Yellowknife Area Lakes

(arsenic concentration in ppm)

Lake/Location	Arsenic (soluble)	Remarks
"Lake 2; 1.9 miles S.W."	3.90	Data from O'Toole
"Lake 7; 0.3 miles S.W."	12.40	Reference 4
"Lake 9; 1.9 miles S.W."	0.19	Summer, 1970
"Lake 13; 1.8 miles N.W."	0.56	
"Lake ; 10 miles"	0.20	
"Lake ; 20 miles"	0.001	
Yellowknife Bay:		
near Latham Island	0.010	Data from Cominco Ltd.,
near Mosher Island	<0.005	survey (1970). Wadey, R.H.
near Detah village	<0.005	Supervisor, Waste Control,
3000 ft. from Kam Point	<0.005	Cominco, Trail, B.C.
Stock Lake	0.005	
Frame Lake	0.055	
Pud Lake (discharge)	0.030	
Kam Lake	3.0	
Yellowknife Bay:		
near Latham Island	0.020	Cominco, Ltd. survey
near Mosher Island	0.022	(1971)
near Detah Village	0.005	
3000 ft. from Kam Point	0.029	
Stock Lake	0.130	
Frame Lake	0.250	
Pud Lake (discharge)	5.600	
Kam Lake	2.800	
Kam Lake	1.0 - 5.0	Data from memo Brunskill
Grace Lake	0.001- 0.10	to Hamilton Feb. 6/75
Frame Lake	0.150- 0.180	"Arsenic in Yk. Waters"
Lakes 16 miles N.E.	n/d	(Tests carried out over
Lakes 12-15 miles N. & N.E.	0.0005 - 0.007	1972-1974()n/d=non detectable)

TABLE 17 (cont'd)

Lake/Location	Arsenic (soluble)	Remarks
Long Lake	3.0 - 8.0	G. Brunskill; preliminary findings, 1975
Long Lake - beach	0.135	Feb. 25/75; G. Brunskill
Long Lake - center	0.105	"
Stock Lake	0.112	"
Range Lake	1.296	Feb. 26/75; G. Brunskill
Fault Lake	0.270	"
Rat Lake	0.471	"
Kam Lake	2.850	"
Frame Lake	0.562	Feb. 7/75; G. Brunskill
Grace Lake	0.026	"
Yellowknife Bay:		
near Latham Island	0.01	Cominco, Ltd. survey (1975)
near Mosher Island	0.01	Brown, R.L., Supervisor,
near Detah Village	0.01	Waste Control, Cominco,
3000 ft. from Kam Point	0.01	Trail, B.C.
Arden Bay	0.01	
Stock Lake	0.06	
Frame Lake	0.21	
Kam Lake	2.55	
Long Lake	0.09	
Kam Lake:		
North basin	2.04	Data collected May 25/76
Central	1.08	by Dr. J. Moore, EPS,
South basin	2.06	Yellowknife. Internal correspondence.

Notes: (1) Dr. G. Brunskill's analyses (acid digestion method) carried out at the Freshwater Institute, Winnipeg, Manitoba.

(2) Dr. J. Moore's analyses carried out at the E.P.S. laboratory, Edmonton, Alberta.

TABLE 17 (cont'd)

Lake/Location	Arsenic (soluble)	Remarks
Yellowknife Bay:		
near Latham Island	0.04	Cominco Ltd Survey (1976)
near Mosher Island	0.04	(Reference 15)
near Detah Village	0.01	
near Kam Point	0.005	
Arden Bay	0.01	
Long Lake	0.14	
Stock Lake	0.15	
Frame Lake	0.33	
Kam Lake	1.70	

Notes: (cont'd)

- (3) Cominco analyses carried out at Trail, B.C.
(arsine generation method)

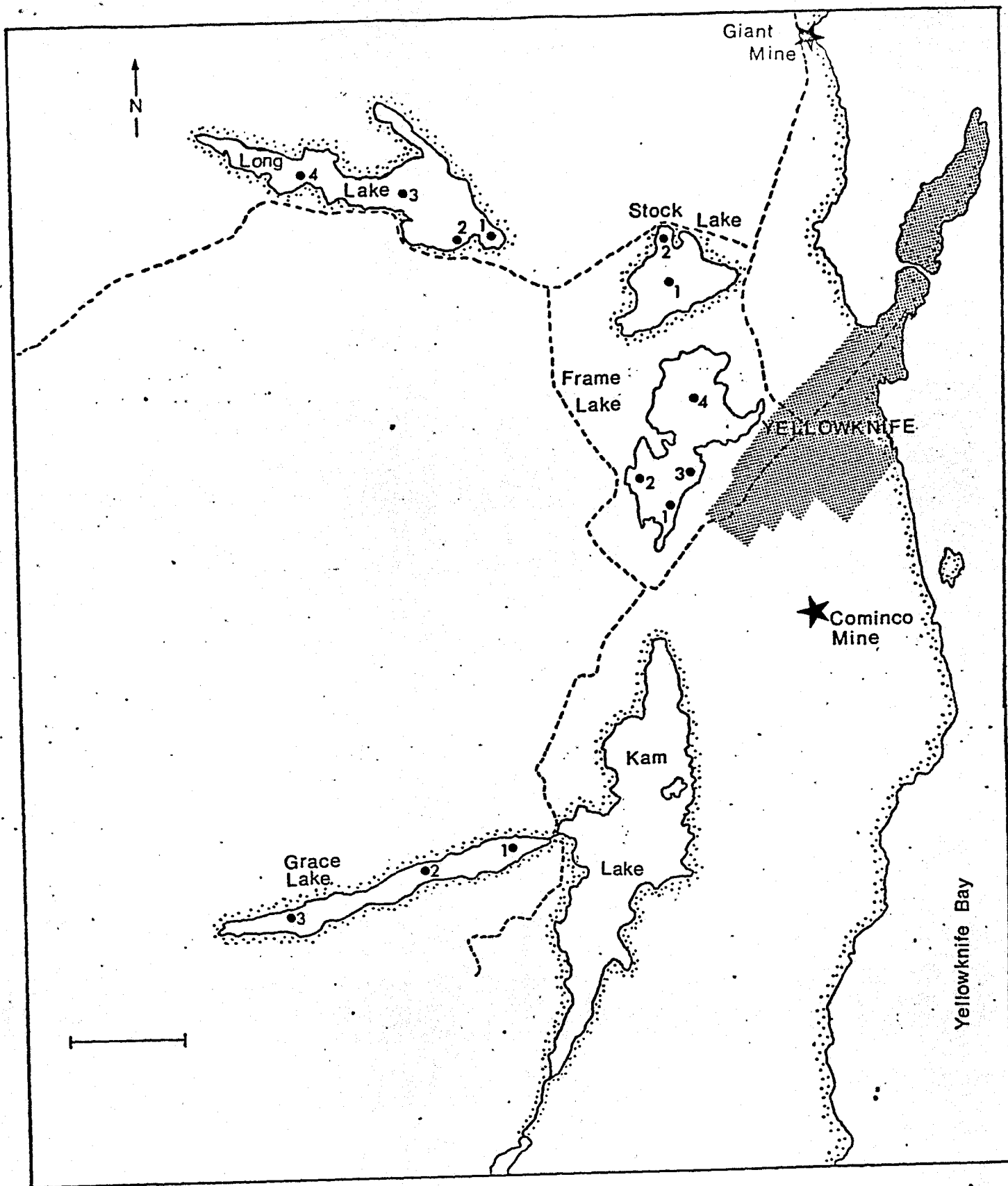


TABLE 2

Average Ore Processed and Arsenic
Released to AtmosphereGiant Yellowknife Mine,
Yellowknife, N.W.T.

(In pounds of arsenic per day)

Year	Ore Processed (tons/day)	Arsenic to Underground Storage (lbs/day)	Arsenic to Tailings Pond (lbs/day)	Arsenic Removed by Hot Cottrell (lbs/day)	Arsenic to Stack (lbs/day)	Baghouse Efficiency (%)
1948	250					
1949	232					
1950	346					
1951	416					2053
1952	850					3941
1953	673					7094
1954	756				11,980	
1955	788				6392	
1956	813				5998	
1957	848				6544	
1958	782				3330	
1959	989				115	
1960	991				165	
1961	1003				330	
1962	1029				330	

TABLE 2 (cont'd)

Year	Ore Processed (tons/day)	Arsenic to Underground Storage (lbs/day)	Arsenic to Tailings Pond (lbs/day)	Arsenic Removed by Hot Cottrell (lbs/day)	Arsenic to Stack (lbs/day)	Baghouse Efficiency (%)
1963	1063				330	
1964	1094		416		692	
1965	1082		509		372	
1966	1053	31,329	449	1014	537	98.3
1967	876	27,169	262	1168	287	99.0
1968	1024	30,941	54	576	502	98.8
1969	1095	30,552	56	551	661	97.7
1970	1164	28,793	76	588	485	98.3
1971	1106	26,393	91	701	1933	93.2
1972	1096	24,847	101	773	875	96.6
1973	1067	23,784	95	726	549	97.7
1974	899	19,643	99	728	485	97.6
1975	1074	19,338	106	858	479	97.6

(Data supplied by Giant Yellowknife Mine)



YELLOWKNIFE MINES LIMITED

YELLOWKNIFE, N.W.T.
X1A 2M2

TELEPHONE 403-873-6301

TELEX:

PURCHASING 034-45503

OTHER DEPT. 034-45514

URGENT!



SOON AS POSSIBLE



NO REPLY NECES'Y



DATE

Sept. 15/83

FROM

Bryan Cross

DEPT.

SEND TO

K.S. Morton

SUBJECT

Stack Arsenic 2865

Emission Summary

MESSAGE

DateTotal Arsenic mg/scm

Mar. 16/81

6.152

May 28/81

6.699

June 24/81

4.383

July 14/81

5.509

July 31/81

5.804

Aug. 7/81

18.381

Aug. 20/81

18.890

REPLY

Aug. 21/81

9.263

Aug. 25/81

14.110

Dec. 15/82

10.174

July 21/83

8.62

Also attached is a summary for 1975-1979.

There were no stack tests in 1980.

4500E

← SPEEDIMEMO →

REPLY FROM

REPLY DATE

MOORE SPEEDILY - 3 - MOORE CLEANPRINT PATENTED 1963-1968

LIFT THIS SHEET TO REMOVE
(RETAIN FOR YOUR FOLLOW-UP)COPY
TO

GIANT YELLOWKNIFE MINES LIMITED

Stack Emission Test Summary

Date	Baghouse Conditions	Vapour As - mg/scm	Particulate As - mg/scm	Total As mg/scm	Total As lb/day	Isokinetic %	Baghouse As Removal Efficiency
25/07/79	30% Shaking	3.21	29.07	32.28	95.12	91.43	99.46
23/05/79	25% "	4.30	0.45	4.75	15.20	90.24	99.93
15/02/79	0% "	3.16	0.35	3.51	11.74	86.7	99.94
26/01/79	0% "	1.86	0.24	2.10	6.00	94.38	99.97
25/10/78	50% "	5.96	15.28	21.24	77.07	96.19	99.67
19/10/78	No "	3.37	21.17	24.54	74.31	94.27	99.67
18/10/78	5% "	3.45	23.32	26.77	98.40	93.83	99.40
16/10/78	30% "	3.35	14.17	17.52	53.39	100.60	99.76
06/07/78	25% "	3.24	16.79	20.03	67.59	88.82	99.68
04/07/78	50% "	4.67	19.86	24.53	74.60	96.10	99.64
26/06/78	70% "	7.70	16.16	23.86	78.25	89.23	99.66
22/06/78	40% "	3.07	16.92	19.99	63.80	89.05	99.73
19/06/78	No "	4.14	12.45	16.59	52.89	91.05	99.77
15/06/78	50% "	6.42	38.24	44.66	131.24	86.13	99.37
09/05/78	100% "	3.48	9.73	13.21	31.14	93.93	99.85
05/05/78	No "	3.47	2.48	5.95	13.96	95.11	99.93
03/05/78	No "	10.86	5.66	16.52	46.38	92.67	99.79
28/04/78	46% "	3.54	2.22	5.76	14.88	82.90	99.92
26/04/78	No "	2.19	2.83	5.02	11.57	103.70	99.94
19/04/78	48% "	3.89	8.47	12.36	28.53	108.34	99.78
28/10/77	100% "	6.57	6.08	12.65	30.31	93.37	99.86
** 18/10/77	No "	13.18	1.45	14.63	36.26	99.31	99.83
06/10/77		11.78	29.24	41.02	105.84	105.09	99.41
22/09/77		3.12	15.00	18.12	64.80	89.59	99.71
* 09/09/77		-	-	53.54	88.32	124.0	99.62
24/08/77		-	-	214.87	680.0	-	96.61
21/07/77		-	-	247.37	760.46	-	96.13
20/06/77		-	-	193.13	621.0	-	96.81
23/09/76		-	-	206.14	698.0	-	96.94
02/09/76		-	-	152.84	482.0	-	98.09
16/07/76		-	-	88.80	266.3	-	98.71
18/06/76		-	-	117.01	343.8	-	98.41
10/05/76		-	-	119.21	390.4	-	98.18
18/09/75		-	-	139.00	436.49	-	97.98
29/08/75		-	-	193.80	604.95	-	96.94
08/08/75		-	-	203.81	664.03	-	96.27
24/06/75		-	-	194.52	673.70	-	96.81
10/06/75		-	-	124.27	428.70	-	97.88
26/05/75		-	-	78.40	273.01	-	98.31
02/05/75		-	-	77.64	273.06	-	98.66

* Initiated use of Nutech Isokinetic stack sampling equipment - previous testing done with Joy apparatus.