

NORTHWEST TERRITORIES WATER BOARD

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

BATHURST NORSEMINES

HACKETT RIVER

POTENTIAL MINE WATER QUALITY SURVEY NETWORK

REPORT SERIES, 1975

By: D. J. Sutherland

[illegible]

1975 Exploration Program

Cominco Limited returned to the Hackett River property in April and the first of seven diamond drill holes was started in early May. Two holes were drilled on the Jo Zone east-southeast of the camp and five holes on the A Zone to the north of Camp Lake.

Drilling on the A zone has confirmed the extent and grades of the mineralized zone discovered in previous years.

Water Management Section Involvement

Water Authorization N7A3-0303 covered water use for camp and diamond drilling purposes in 1975, and was issued for the period April 22 to August 31. D. Sutherland made an inspection on May 10, 1975. A. Rothwell visited the site on August 28, 1975.

The Water Quality Survey Network sampling program was again carried out by Cominco on the Hackett River and Mara River watersheds. Dave Carr collected the samples for analysis at the Yellowknife Water Laboratory.

The data from the 1975 sampling program is included in this brief report.

Discussion of 1975 Water Quality Survey Network Data

The entire network was sampled by Cominco in July and August of 1975. Camp Lake was sampled a third time, in August, by the Water Management Section.

Overall, levels of all parameters analyzed on the water bodies sampled are not significantly different from those recorded in 1974 samples. Zinc values are again highest in Cleaver Lake, Boot Lake and Camp Lake samples; copper values are also highest in Camp Lake.

The level of dissolved chloride is slightly elevated in Camp Lake in 1975 samples.

If activity continues on the Bathurst Norsemines property in 1976, sampling of the entire network should again be carried out.

WATER QUALITY SUMMARY - Cominco - Hackett River

All Units in mg/l unless otherwise stated

E=Extractable

D=Dissolved

L=less than

Sampling Station 1

65° 51' 06" N
108° 09' 24" W

Anchor Lake - from point on west shore
300 yards (270 m) from outflow

NAQUADAT NO:

	19/07/75	14/08/75
Date of Sampling	19/07/75	14/08/75
Temp. at Testing °C	24.6	23.2
Temp. at Sampling °C	13.0	13.0
pH at Sampling	--	--
pH at Testing	6.8	7.2
Turbidity (Turb. Units)	3.5	1.3
Colour (Rel. Units)	20.	10.
Sp. Cond. at testing (umho/cm)	25.8	24.0
Sp. Cond. at Sampling (umho/cm)	--	--
Alkalinity: Total, CaCO ₃	6.0	6.0
Hardness: Total, CaCO ₃	12.1	10.6
Calcium (Ca):D	3.3	3.8
Sodium (Na): D	0.5	0.5
Potassium (K):D	0.6	0.85
Chloride (Cl):D	0.4	0.4
Sulphate (SO ₄):D	5.3	6.2
Nitrogen: NO ₂ - NO ₃	L0.01	L0.01
Phosphorous (P): Total	.024	.006
Silica: Reactive SiO ₂	0.40	0.40
Iron (Fe):E	0.08	0.05
Manganese (Mn):E	L.01	L.01
Cadmium (Cd):E	L.01	L.001
Chromium (Cr):E	L.01	L.01
Cobalt (Co):E	L.01	L.001
Copper (Cu):E	L.001	.001
Zinc (Zn):E	.006	.013
Lead (Pb):E	L.005	L.005
Molybdenum (Mo):E	L.05	L.05
Nickel (Ni):E	L.005	L.005
Arsenic (As):D	--	L.01

WATER QUALITY SUMMARY - Cominco - Hackett River

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Sampling Station 2

65° 50' 06" N
108° 17' 28" W

Hackett River - 2 miles (3.2 km) above discharge from Cigar Lake

NAQUADAT NO:

	19/07/75	14/08/75
Date of Sampling	19/07/75	14/08/75
Temp. at Testing °C	24.8	23.5
Temp. at Sampling °C	11.0	13.0
pH at Sampling	--	--
pH at Testing	6.6	6.8
Turbidity (Turb. Units)	1.4	1.4
Colour (Rel. Units)	5.	20.
Sp. Cond. at testing (umho/cm)	9.9	10.5
Sp. Cond. at Sampling (umho/cm)	--	--
Alkalinity: Total, CaCO ₃	2.7	1.9
Hardness: Total, CaCO ₃	L5.0	L5.0
Calcium (Ca):D	L1.0	L1.0
Sodium (Na):D	0.5	0.50
Potassium (K):D	0.41	0.55
Chloride (Cl):D	0.3	0.35
Sulphate (SO ₄):D	2.0	4.0
Nitrogen: NO ₂ - NO ₃	.045	.270
Phosphorous (P): Total	L.005	.008
Silica: Reactive SiO ₂	0.70	1.05
Iron (Fe):E	.065	0.05
Manganese (Mn):E	L.01	L.01
Cadmium (Cd):E	L.001	L.001
Chromium (Cr):E	L.01	L.01
Cobalt (Co):E	L.01	L.001
Copper (Cu):E	L.001	L.001
Zinc (Zn):E	.003	.002
Lead (Pb):E	L.005	L.005
Molybdenum (Mo):E	L.05	L.05
Nickel (Ni):E	L.005	L.005
Arsenic (As):D	L.01	L.01

WATER QUALITY SUMMARY - Cominco - Hackett River

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Sampling Station 3

65° 53' 54" N
108° 20' 48" W

Camp Creek - 50 yards (45 m) from mouth

NAQUADAT NO:

	19/07/75	14/08/75
Date of Sampling	24.5	23.1
Temp. at Testing °C	12.0	11.0
Temp. at Sampling °C	--	--
pH at Sampling	6.8	8.4
pH at Testing	1.6	1.5
Turbidity (Turb. Units)	5.	5.
Colour (Rel. Units)	23.7	38.0
Sp. Cond. at testing (umho/cm)	--	--
Sp. Cond. at Sampling (umho/cm)		
Alkalinity: Total, CaCO ₃	3.0	7.6
Hardness: Total, CaCO ₃	14.3	16.0
Calcium (Ca):D	3.1	5.1
Sodium (Na): D	0.5	0.8
Potassium (K):D	0.5	0.5
Chloride (Cl):D	0.45	0.55
Sulphate (SO ₄):D	7.2	9.5
Nitrogen: NO ₂ - NO ₃	.058	0.05
Phosphorous (P): Total	L.005	0.01
Silica: Reactive SiO ₂	1.05	2.0
Iron (Fe):E	0.07	0.12
Manganese (Mn):E	L.01	L.01
Cadmium (Cd):E	L.01	L.001
Chromium (Cr):E	L.01	L.01
Cobalt (Co):E	L.01	.001
Copper (Cu):E	L.001	.001
Zinc (Zn):E	.007	.006
Lead (Pb):E	L.005	L.005
Molybdenum (Mo):E	L.05	L.05
Nickel (Ni):E	L.005	L.005
Arsenic (As):D	--	L.01

WATER QUALITY SUMMARY - Cominco - Hackett River

All Units in mg/l unless otherwise stated

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D=Dissolved

Sampling Station 4

65° 55' 34" N
108° 10' 00" W

Hackett River - 4 miles (6.4 km) below
Camp Creek discharge

NAQUADAT NO:

	19/07/75	14/08/75
Date of Sampling		
Temp. at Testing °C	24.6	22.9
Temp. at Sampling °C	12.0	17.0
pH at Sampling	--	--
pH at Testing	6.6	6.5
Turbidity (Turb. Units)	1.5	1.5
Colour (Rel. Units)	5.	10.
Sp. Cond. at testing (umho/cm)	8.1	6.5
Sp. Cond. at Sampling (umho/cm)	--	--
Alkalinity: Total, CaCO ₃	L1.0	L1.0
Hardness: Total, CaCO ₃	6.5	L5.0
Calcium (Ca):D	L0.5	L1.0
Sodium (Na): D	0.5	0.5
Potassium (K):D	0.4	0.4
Chloride (Cl):D	0.35	0.35
Sulphate (SO ₄):D	2.5	L1.0
Nitrogen: NO ₂ - NO ₃	.055	1.10
Phosphorous (P): Total	L.005	.008
Silica: Reactive SiO ₂	0.90	2.0
Iron (Fe):E	L.05	L.05
Manganese (Mn):E	L.01	L.01
Cadmium (Cd):E	L.01	L.001
Chromium (Cr):E	L.01	L.01
Cobalt (Co):E	L.01	L.001
Copper (Cu):E	L.001	.002
Zinc (Zn):E	L.001	.001
Lead (Pb):E	L.005	L.005
Molybdenum (Mo):E	L.05	L.05
Nickel (Ni):E	L.005	L.005
Arsenic (As):D	--	L.01

WATER QUALITY SUMMARY - Cominco - Hackett River

All Units in mg/l unless otherwise stated

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L=less than

Sampling Station 5

65° 59' 02" N
108° 28' 25" W

Mara River - 10 miles (16 km) below
Esker Lake

NAQUADAT NO:

	19/07/75	14/08/75
Date of Sampling		
Temp. at Testing °C	24.5	22.2
Temp. at Sampling °C	12.0	12.0
pH at Sampling	--	--
pH at Testing	6.8	6.7
Turbidity (Turb. Units)	1.0	1.2
Colour (Rel. Units)	5.	5.
Sp. Cond. at testing (umho/cm)	11.2	4.5
Sp. Cond. at Sampling (umho/cm)	--	--
Alkalinity: Total, CaCO ₃	2.2	L1.0
Hardness: Total, CaCO ₃	5.3	L5.0
Calcium (Ca):D	1.9	L1.0
Sodium (Na): D	0.5	0.25
Potassium (K):D	0.4	0.4
Chloride (Cl):D	0.3	0.3
Sulphate (SO ₄):D	L1.0	L1.0
Nitrogen: NO ₂ - NO ₃	.142	L0.01
Phosphorous (P): Total	L.005	.007
Silica: Reactive SiO ₂	0.20	0.15
Iron (Fe):E	L.05	L.05
Manganese (Mn):E	L.01	L.01
Cadmium (Cd):E	L.01	L.001
Chromium (Cr):E	L.01	L.01
Cobalt (Co):E	L.01	L.001
Copper (Cu):E	L.001	L.001
Zinc (Zn):E	.009	.003
Lead (Pb):E	L.005	L.005
Molybdenum (Mo):E	L.05	L.05
Nickel (Ni):E	L.005	L.005
Arsenic (As):D	--	L.01

WATER QUALITY SUMMARY - Cominco - Hackett River

All Units in mg/l unless otherwise stated

E=Extractable

D=Dissolved

L=less than

Sampling Station 6

Mara River - 300 yards (270 m) below
Esker Lake

65° 56' 27" N
108° 41' 18" W

NAQUADAT NO:

Date of Sampling	19/07/75	14/08/75
Temp. at Testing °C	24.5	22.1
Temp. at Sampling °C	13.0	12.0
pH at Sampling	--	--
pH at Testing	7.0	6.8
Turbidity (Turb. Units)	1.5	0.9
Colour (Rel. Units)	5.	5.
Sp. Cond. at testing (umho/cm)	8.0	3.5
Sp. Cond. at Sampling (umho/cm)	--	--

Alkalinity: Total, CaCO ₃	L1.0	L1.0
Hardness: Total, CaCO ₃	L0.5	L5.0

Calcium (Ca):D	L0.5	L1.0
Sodium (Na): D	0.3	0.5
Potassium (K):D	0.4	0.5

Chloride (Cl):D	0.30	0.30
Sulphate (SO ₄):D	1.1	3.0

Nitrogen: NO ₂ - NO ₃	0.01	L0.01
Phosphorous (P): Total	.005	.008

Silica: Reactive SiO ₂	0.10	0.15
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Iron (Fe):E	L.05	0.10
Manganese (Mn):E	L.01	L.01

Cadmium (Cd):E	L.01	L.001
Chromium (Cr):E	L.01	L.01
Cobalt (Co):E	L.01	L.001

Copper (Cu):E	L.001	.005
Zinc (Zn):E	.002	.004
Lead (Pb):E	L.005	L.005

Molybdenum (Mo):E	L.05	L.05
Nickel (Ni):E	L.005	L.005

Arsenic (As):D	--	L.01
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WATER QUALITY SUMMARY - Cominco - Hackett River

All Units in mg/l unless otherwise stated

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D=Dissolved

L=less than

Sampling Station 7

65° 54'03" N
108° 27'47" W

Boot Lake - midway on east
shore at narrowest part of lake

NAQUADAT NO:

	19/07/75	14/08/75
Date of Sampling		
Temp. at Testing °C	24.5	22.9
Temp. at Sampling °C	10.0	18.0
pH at Sampling	--	--
pH at Testing	6.6	6.7
Turbidity (Turb. Units)	1.6	1.8
Colour (Rel. Units)	5.	5.
Sp. Cond. at testing (umho/cm)	27.2	24.0
Sp. Cond. at Sampling (umho/cm)	--	--
Alkalinity: Total, CaCO ₃	1.33	L1.0
Hardness: Total, CaCO ₃	11.2	9.7
Calcium (Ca):D	3.2	3.5
Sodium (Na): D	0.5	0.25
Potassium (K):D	0.5	0.5
Chloride (Cl):D	2.85	3.0
Sulphate (SO ₄):D	7.2	6.9
Nitrogen: NO ₂ - NO ₃	L0.01	L0.01
Phosphorous (P): Total	.005	--
Silica: Reactive SiO ₂	0.90	0.90
Iron (Fe):E	L.05	0.08
Manganese (Mn):E	L.01	L.01
Cadmium (Cd):E	L.01	L.001
Chromium (Cr):E	L.01	L.01
Cobalt (Co):E	L.01	L.001
Copper (Cu):E	.009	.001
Zinc (Zn):E	.010	.011
Lead (Pb):E	L.005	L.005
Molybdenum (Mo):E	L.05	L.05
Nickel (Ni):E	L.005	L.005
Arsenic (As):D	--	L.01

WATER QUALITY SUMMARY - Cominco - Hacke River

All Units in mg/l unless otherwise stated

E=Extractable

D=Dissolved

L=less than

Sampling Station 8

65° 57' 58" N
108° 23' 20" W

Camp Lake - at centre

NAQUADAT NO:

Date of Sampling	19/07/75	14/08/75	28/08/75
Temp. at Testing °C	24.5	22.3	21.7
Temp. at Sampling °C	13.0	13.0	11.8
pH at Sampling	--	--	--
pH at Testing	6.4	6.7	6.8
Turbidity (Turb. Units)	1.6	0.9	0.3
Colour (Rel. Units)	5.	5.	5.
Sp. Cond. at testing (umho/cm)	25.9	24.5	30.2
Sp. Cond. at Sampling (umho/cm)	--	--	--
Alkalinity: Total, CaCO ₃	2.0	2.8	2.1
Hardness: Total, CaCO ₃	10.5	5.4	12.5
Calcium (Ca):D	3.7	L1.0	3.6
Sodium (Na): D	0.3	L1.0	0.5
Potassium (K):D	0.5	0.3	0.65
Chloride (Cl):D	1.55	1.5	1.98
Sulphate (SO ₄):D	8.2	6.3	6.4
Nitrogen: NO ₂ - NO ₃	L.01	0.02	0.05
Phosphorous (P): Total	L.005	.005	L.005
Silica: Reactive SiO ₂	1.2	1.1	1.2
Iron (Fe):E	L.05	L.05	L.05
Manganese (Mn):E	L.01	0.01	0.02
Cadmium (Cd):E	L.01	L.001	L.01
Chromium (Cr):E	L.01	L.01	L.01
Cobalt (Co):E	L.01	L.001	L.01
Copper (Cu):E	.011	0.01	0.02
Zinc (Zn):E	.068	0.05	.062
Lead (Pb):E	L.005	L.005	L.05
Molybdenum (Mo):E	L.05	L.05	L.05
Nickel (Ni):E	L.005	L.005	L.05
Arsenic (As):D	--	L.01	L.01

WATER QUALITY SUMMARY - COMINCO - HACKETT RIVER

All Units in mg/l unless otherwise stated

E=Extractable

D=Dissolved

L=less than

Sampling Station 9

65°58'18"N
Cleaver Lake - from S.E. Point 4½ miles 108°28'53"W
(7.2 km) from Camp Lake

NAQUADAT NO:

Date of Sampling	19/07/75	14/08/75
Temp. at Testing °C	24.6	22.7
Temp. at Sampling °C	12.0	15.0
pH at Sampling	-	-
pH at Testing	6.9	7.3
Turbidity (Turb. Units)	1.2	0.8
Colour (Rel. Units)	5.	5.
Sp. Conductance (umho/cm)	70.1	71.0

Alkalinity: Total, CaCO ₃	19.3	10.2
Hardness: Total, CaCO ₃	30.7	29.8

Calcium (Ca):D	9.9	9.1
Sodium (Na): D	0.5	0.25
Potassium (K):D	0.7	0.9

Chloride (Cl):D	0.80	0.85
Sulphate (SO ₄):D	19.0	22.6

Nitrogen: NO ₂ - NO ₃	0.01	0.06
Phosphorous (P): Total	L.005	.009

Silica: Reactive SiO ₂	1.95	1.67
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Iron (Fe):E	L.05	L.05
Manganese (Mn):E	L.01	L.01

Cadmium (Cd):E	L.01	.001
Chromium (Cr):E	L.01	L.01
Cobalt (Co):E	L.01	L.001

Copper (Cu):E	L.001	.005
Zinc (Zn):E	0.15	0.14
Lead (Pb):E	L.005	L.005

Molybdenum (Mo):E	L.05	L.05
Nickel (Ni):E	L.005	L.005

Arsenic (As):D	-	L.01
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