

JUL 03 '90 08:26



NANISIVIK MINES LTD.

MINES LTD.

NANISIVIK, NORTHWEST TERRITORIES, CANADA X0A 0H0

Filed P.2
9/6/18 2/3

June 29, 1990

Mr. David Jessiman
Water Resources Officer
Northern Affairs Program
P.O. Box 100
Iqaluit, N.W.T.
X0A 0H0

Dear Mr. Jessiman

The purpose of this letter is to inform you of an unauthorized discharge that occurred on June 25 through to the morning of June 27 at the East Adit Treatment facility.

On the morning of June 25 the mill shifter on duty noticed that the catchment pond at the East Adit facility was overflowing through the overflow pipe. The mill shifter reported this to myself and I personally investigated the discharge and a sample was taken. Water quality of the overflow sample of June 25 was Pb 0.036 ppm, Zn 0.200 ppm and Cd 0.003 ppm.

This overflow occurred because of a faulty automatic valve and sonic level detector. This instrumentation problem was addressed immediately and pumping of the catchment pond to the treatment facility commenced on Tuesday, June 26.

The catchment pond was pumped out enough on the morning of June 27 so that the overflow had stopped. The East Adit Treatment facility is now running trouble free.

A complete summary of the water data for the East Adit Treatment facility is included for your information.

Sincerely,

spill line

JUL 03 '90 08:26

Jul 19, 90 14:50 No. 012 P. 07

Fixed
9/5/18 P.3

3/

EAST ADIT TREATMENT FACILITY SUMMARY 1990

155 - 12A

June	16	19	17	18	19	20	21	22
pH	6.49	6.36	6.58	6.67	6.48	6.14	6.44	6.53
temp (C)	0.3	0.3	0.7	5.7	6.9	1.7	3.3	3.9
Pb (ppm)	0.068	0.008	0.075	0.223	0.071	0.051	0.021	0.122
Zn (ppm)	3.935	4.602	4.742	3.038	2.871	2.946	3.654	3.246

155 - 12A

June	23	24	25	26	27
pH	6.72	6.62	6.73	6.68	7.99
temp (C)	5.8	5.7	5.8	5.8	7.3
Pb (ppm)	0.12	0.021	0.032	0.074	0.07
Zn (ppm)	2.055	0.828	0.614	0.765	0.82

155 - 12A

(ret pond)

June	23	26	27
pH	7.96	6.73	6.6
temp (C)		5.2	
Pb (ppm)	0.093	0.007	0.068
Zn (ppm)	0.080	<0.005	0.107

155 - 12L

(leak)

June	23	26	27
pH	8.29	6.55	6.08
temp (C)		5.4	6.0
Pb (ppm)	0.113	0.033	0.076
Zn (ppm)	0.152	0.091	0.088

Government of the Northwest Territories - GNWT
SPILL REPORT
(Oil, Gas or Other Materials, i.e. Hazardous Chemicals, etc.)

90-115

5/16
90/07/18

A	Report Date July 16, 1990	Date and Time of Spill or Leak Morning of June 23, 1990 through to morning of July 1, 1990.
B	Location and Map Coordinates (if known) and Direction of Flowing East Adit Retention pond dyke, -flowing north.	
C	Party Responsible Mineral Processing Department	
D	Product Spilled and Estimated Quantity (Provide Name, Volume/Weight, & Packaging) Undetermined volume of untreated run-off water that met licence guidelines.	
E	Cause of Spill Top section of dyke permeable.	
F	Is Spill Terminated or Containing Terminated on July 1, 1990.	
G	Extent of Contaminated Area No contamination occurred.	
H	Factors Affecting Spill or Recovery: Temperature, Wind, Rain, Ice, Terrain, Buildings, etc. No recovery necessary.	
I	Containment: Is it necessary? (Name, Dyke, or Other) No Containment No containment necessary.	
J	Action, if any, Taken or Proposed to Contain, Recover, Clean-up or Dispose Clay to be placed along dyke to prevent seepage from occurring again.	
K	Do You Require Assistance	If so, What Form
	No	
L	Hazard to Persons or Property or Environment: Fire, Drinking Water, Threat to Fish or Wildlife No	

M Comments and/or Recommendations
Water Resource Officer made aware of this discharge on June 26, 1990 followed by a formal letter and analysis. Because this leak was not high in metal content this discharge was dealt with as an uncontrolled rather than an authorized discharge or spill. Unable to measure flow because material discharged through rocky terrain.

Signature: N.H. Iqbal
ICM.



NANISIVIK
NANISIVIK, NORTHWEST TERRITORIES, CANADA X0A 0X0

-0157
FAXED 90-07/18
6/7 M.

July 5, 1990

Mr. David Jessiman
Water Resources Officer
Northern Affairs Program
P.O. Box 100
Iqaluit, N.W.T.
X0A 0H0

Dear Mr. Jessiman

The purpose of this letter is to inform you of a leak that occurred at the East Adit retention pond dyke from June 23 through to the morning of July 1, 1990.

The leak commenced when the water level encroached upon a permeable section of the pond basin. The leak ceased as of July 1, 1990 once the water level returned to its norm.

In the fall, when the pond is low, it is planned to place a clay blanket along the west end of the dyke to prevent this leakage from occurring again.

Regular samples were taken in order to closely monitor the leak. The results of this water data are included for your information.

Sincerely,

John Goyman
Mill Superintendent

CANADA'S FIRST MINE NORTH OF THE ARCTIC CIRCLE

*Exhibit
900118*

2/10

NANISIVIK
MINES LIMITED

EAST ADIT RETENTION POND LEAK SUMMARY 1990

159-12*
(ret pond)

June	23	25	27	28	29	30
pH	7.98	8.73	9.60			10.24
temp		8.3				17.4
TSS	3.8	1.18	26.32			
Pb	0.093	0.007	0.059			0.070
Zn	0.080	<0.005	0.107			0.098

159-12L
(leak)

June	23	25	27	28	29	30
pH	8.29	8.55	9.08	8.33	8.13	9.01
temp		8.40	8.0	8.0	12.0	15.6
TSS	1.70	1.66	1.00	3.48		
Pb	0.113	0.033	0.078	0.051	0.082	0.082
Zn	0.152	0.091	0.088	0.092	0.136	0.308

260 00.

88.014

Government of the Northwest Territories
SPILL REPORT
(Oil, Gas or Other Materials, i.e. Hazardous Chemicals, etc.)

Jr 3/5

Phone
(403) 880-8130

A	Report Date 4:45 4/25/88	Date and Time of Spill Known 4/25/88 5:00pm est	
B	Location and Map Coordinates (if known) and Direction if Moving Tuanisink		
C	Party Responsible Nanisivik Mines		
D	Product Spilled and Estimated Quantities (Provide Metric Volume/Weight if Possible) Tailings & slurry sludge water > 10m3 (DIFFICULT TO ESTIMATE QUANTITY)		
E	Cause of Spill failure in drain valve		
F	Is Spill Terminated or Continuing Terminated		
G	Extent of Contaminated Area 1/4		
H	Factors Affecting Spill or Recovery - Temperature, Wind, Snow, Ice, Terrain, Buildings, etc. No		
I	Containment - Naturally, Booms, Dykes or Other, No Containment Snow dam		
J	Action, if any, Taken or Proposed to Contain, Recover, Clean-up or Dispose After equipment arrives to contain spill letting it freeze then clean up		
K	Do You Require Assistance No	If so, What Form	
L	Hazard to Persons or Property or Environment - Fire, Drinking Water, Threat to Fish or Wildlife Environment maybe now		
M	Comments and/or Recommendations Speaking to Water Inspector tomorrow I admit mistake LEAD: DIAND SIGNIFICANCE: MAJOR dump pond overflowed into W. Twin Creek. dammed W. Twin Creek; overflow water did not pass first snow dam. spill material will be allowed to freeze, ripped, and transported to open pit for disposal. T. SACKMANN 1100 26 Feb '88		
Reported by S. Boyman		Position, Employer, Location Mill Dept	
Reviewed by Boob		Position, Employer, Location	
		Telephone 819 436 7472	



GOVTNWT A FROB

CNCP SAFT
GTR628 FEB 22 1335 EST

WATER MM MB YK
001 011
TX 06315513 GOVTNWT A FROB
ATTN: MR. GARY BLACK
REGIONAL DIRECTOR



PLEASE C.C. TO: MR. R. WOOLEY
REGIONAL SUPERINTENDENT

FEBRUARY 22, 1985

THIS IS AN URGENT MESSAGE PLEASE DELIVER IMMEDIATELY
SPILL REPORT NUMBER 85-11

A. FEB 20/85

M. SOURCE AREA OF THE SPILL, A SECTION OF THE TAILINGS LINE
APPROX. 1/4 MILE ACROSS THE CREEK AND UPHILL FROM THE
MILL.

THE FROZEN TAILINGS WHICH HAD ESCAPED FROM THE LINE WERE
AS YET UNDISTURBED IN THIS AREA.

IT WAS THEN POSSIBLE TO SEE THE PATH TAKEN BY THE TAIL-
INGS DOWNHILL AND INTO TWIN LAKES CREEK. THE PATH TAKEN
BY THE TAILINGS PARALLELED THE TAILINGS LINE FOLLOWING A
SLIGHT INCLINE FOR ABOUT 75 YARDS AT THIS POINT THE
TAILINGS RAN UNDER THE TAILINGS LINE AT RIGHT ANGLES AND
DOWN A MUCH STEEPER INCLINE TERMINATED ON THE SURFACE OF
TWIN LAKES CREEK NEAR WHERE THE TAILINGS LINE CROSSES
THE CREEK.

THE TOTAL LENGTH OF FROZEN TAILINGS WAS APPROX. 200 YARDS
VARYING FROM 6 FEET TO 20 FEET IN WIDTH. THE COMPANY
ESTIMATED 50 CUBIC METERS SPILLED.

AN INSPECTION OF THE DISPOSAL AREA WAS ALSO CONDUCTED,
THIS BEING THE WEST OPEN PIT ADJACENT 01 SOUTH PORTAL.
THIS SITE WAS CONSIDERED ACCEPTABLE.

THE COMPANY IS TRYING TO EFFECT A CLEAN UP AND PROSPECTS
ARE THEY WILL BE ABLE TO REMOVE THE MAJORITY OF THE TAIL-
INGS FROM THE AREA.

THIS WILL BE COMPLETED BY BUILDING A NEW ACCESS ROAD TO
THE UPPER PORTION OF THE SPILL AREA, RIPPING THE FROZEN
MATERIAL WITH A D8 CAT, HAULING CONTAMINATED SNOW AND TAIL-
INGS TO THE WEST OPEN PIT. SECTIONS OF FROZEN TAILINGS
MIGRATED DOWN THE HILL AND ONTO THE CREEK SURFACE.

IF THE CLEAN UP OF THE UPPER IS HANDLED WELL AND THE
MAJORITY OF THE TAILINGS SUCCESSFULLY REMOVED, CONTAMINAT-
ION OF TWIN LAKES CREEK DURING SPRING RUNOFF COULD BE MIN-
IMAL.

A VISIT OF NWT DISTRICT WATER RESOURCE OFFICER IS BEING
PLANNED FOR APRIL 85. THIS INSPECTION VISIT WOULD INCLUDE
BOTH THE SPILL SITE AND THE MINE OPERATION.

REPORTED BY G. J. M. A. THERIAULT, DISTRICT MANAGER, BAFFIN REGION.

REPORTED TO WATER RESOURCES DIVISION, NWT/INAC, PHONE
920-8130

GOVTNMT A FROB

CNCP SAFT

GVI491 JUL 25 1100 EST

WATER WM. WB YK

001 011

FM 06315513 GOVTNMT A FROB

ATTN: MR. GARY BLACK
REGIONAL DIRECTOR

PLEASE C.C. TO: MR. R. WOOLEY
REGIONAL SUPERINTENDENT

THIS IS AN URGENT MESSAGE PLEASE DELIVER IMMEDIATELY

JULY 25, 1985

SPILL REPORT NUMBER: 85-72

A JULY 25, 1985, 0845 JULY 25, 1985, 0810

B NANISIVIK, N.W.T.

C NANISIVIK MINES LIMITED

D TAILINGS, 10-15 TONS

E BREAK IN TAILINGS LINE

F TERMINATED

G MOST OF THE TAILINGS RAN INTO TWIN LAKES CREEK ABOUT 50 METRES AWAY

H ONLY TAILINGS ON LAND CAN BE CLEANED UP

I UNKNOWN

J CLEAN-UP COMMENCING IMMEDIATELY

K NO

L NO

N LEAK DETECTED ELECTRONICALLY IN THE MILL. MILL WAS SHUT DOWN
WITHIN 15 MINUTES. IT WILL REMAIN SHUT DOWN UNTIL LINE IS
REPAIRED. NWP INSPECTOR TRAVELLING TO SITE TODAY.

REPORTED BY: PETER BANNON, WATER RESOURCES OFFICER, DIAND, FROBISHER
BAY, PHONE: 819-979-6369

REPORTED TO: MONICA MICHEL, CLERK TYPIST, WATER RESOURCES, YK
PHONE: 403-920-8130

GOVTNMT A FROB



GOVTNWT A FROB

CNDP SHATT

000919Z AUG 01 1517 EST

WATER MN WB YK

001 012

TX 06315513 GOVTNWT A FROB

ATTN: MR. GARY BLACK

REGIONAL DIRECTOR

PLEASE C.C. TO: MR. R. WOOLEY

REGIONAL SUPERINTENDENT

AUGUST 1, 1985.

THIS IS AN URGENT MESSAGE PLEASE DELIVER IMMEDIATELY

FOLLOW UP TO SPILL REPORT 85-72

NAR INSPECTOR TRAVELLED TO NANISIVIK JULY 25/85. INSPECTION OF SPILL SITE OCCURRED ON JULY 25 AND JULY 26 AND DISCUSSIONS HELD WITH COMPANY OFFICIALS ON JULY 26. TAILINGS AND WATER SAMPLES COLLECTED AT AND AROUND SPILL SITE. TAILINGS SOLIDS VISIBLE IN-STREAM BED IN LOCATIONS OBSERVED BETWEEN AND INCLUDING SPILL SITE AND MOUTH OF TWIN LAKES CREEK. NO CLEAN-UP OF REMAINING TAILINGS ON GROUND SURFACE HAD COMMENCED AS OF 1700 JULY 26. MINE MANAGER WAS INFORMED THAT THIS WAS UNACCEPTABLE AND CLEAN-UP SHOULD OCCUR IMMEDIATELY. HE WAS ALSO INFORMED THAT IF CLEAN-UP WAS NOT COMPLETED BY THE NEXT INSPECTION (WEEK MF JULY 30-AUG 5) INAC MAY CONTRACT CLEAN-UP SERVICES THEMSELVES. STATEMENTS FROM MINE MANAGER AND CONCENTRATOR SUPERINTENDENT WERE TAKEN.

HIGH AMBIENT TEMPERATURES (APPROX. 18 DEGREES CELSIUS) CAUSED PIPE-LINE TO EXPAND AND PART AT COUPLING PIPELINE PACKAGE ALSO FELL OFF BLOCKINGS.

REPORTED BY: PETER BANNON, WATER RESOURCES, DIAND, FROBISHER BAY
PHONE: 819-920-6369

REPORTED TO: MAXINE VICK, CR TYPIST, WATER RESOURCES, DIAND, YK
PHONE: 403-920-8130

04
GOVTNWT A FROB



GOVTNWT A FROB

CNCP SART

075869 AUG 02 1537 EST

WATER WIND YK

001 012

TX 06315513 GOVTNWT A FROB

ATTN: MR. GARY BLACK

REGIONAL DIRECTOR

PLEASE C.C. TO: MR. R. WOOLEY

REGIONAL SUPERINTENDENT

THIS IS AN URGENT MESSAGE

PLEASE DELIVER IMMEDIATELY

AUGUST 2, 1985

FOLLOWUP TO SPILL NO. 85-72

NANISIVIK MINES PHONED THE BAFFIN DISTRICT DIAND OFFICE
AUGUST 2, 1985 TO REPORT THAT CLEAN-UP WAS COMPLETED
AND THAT THEY HAD CAPPED THE AREA WITH CRUSHED SHALE.

REPORTED BY: BRUCE LAROSE NANISIVIK MINES
REPORTED TO: PETER BANNON BAFFIN DISTRICT DIAND

04
GOVTNWT A FROB

13-408-012



GOUTNWT A FROB

CNCP SAFT
GTC824 AUG 09 1729 EST

WATER WM WB YK

001 012

TX 06315513 GOUTNWT A FROB

ATTN: MR. GARY BLACK

REGIONAL DIRECTOR

PLEASE C.C. TO: MR. R. WOOLEY

REGIONAL SUPERINTENDENT

AUGUST 9, 1985

THIS IS AN URGENT MESSAGE PLEASE DELIVER IMMEDIATELY

FOLLOW UP - SPILL REPORT NO. 85-72

NANISIVIK MINES LTD.

SPILL SITE WAS INSPECTED ON AUG. 5 AND 6. CLEAN-UP WAS STILL UNDERWAY AND THE INSPECTOR IDENTIFIED AREAS THAT REQUIRED FURTHER CLEAN-UP.

ANALYTICAL RESULTS FOR WATER SAMPLES COLLECTED ABOVE AND BELOW WATER SAMPLES INDICATE NO DETECTABLE EFFECTS FROM THE SPILL SO THE RECAPPING OF THE FOOTPATH ADJACENT TO THE PIPELINE BREAK WITH CRUSHED SHALE IS TO COMMENCE CLEAN-UP HAS BEEN COMPLETED.

REBLOCKING OF THE PIPELINE FROM THE SPILL SITE UP TO THE POINT WHERE THE POTABLE WATER IS SPLIT AND METERED HAS BEEN COMPLETED. A PROGRAM TO CHECK/REPLACE SEVERAL COUPLINGS PER MONTH HAS BEEN INITIATED. BERMING OF THE PIPELINE AROUND THE LOW POINT IN THE LINE IS ALSO UNDERWAY. IT IS IN THIS LOW AREA WHERE THE MOST PRESSURE IS EXERTED ON THE PIPELINES AND WHERE THE LAST TWO BREAKS HAVE OCCURRED.

A WRITTEN LETTER/REPORT WAS REQUESTED FROM NML DESCRIBING THE MAINTENANCE AND PREVENTATIVE WORK.

REPORTED BY: PETER BANNON, WATER RESOURCES, DIAND, FROBISHER BAY
PHONE: 819-920-6369

REPORTED TO: MAXINE VICK, CR TYPIST, WATER RESOURCES, DIAND, YK
PHONE: 403-920-8130

04
GOUTNWT A FROB

GVT NWT FROB

CNCP SAFT

BTB723 JAN 09 1251 EST

POSS DUPE MSG

WATER WM WB YK

001 012

TX 06315513 GVT NWT FROB

ATTN MR B WOOLEY

REGIONAL SUPERINTENDENT



THIS IS AN URGENT MESSAGE PLEASE DELIVER IMMEDIATELY

JANUARY 9, 1984

FOLLOW-UP TO SPILL REPORTS 83-74 AND 83-77. TAILINGS SPILLS AT NANISIVIK MINES LIMITED ON SEPTEMBER 29 AND OCTOBER 29, 1983.



CLEAN-UP OF THESE SPILLS WAS REQUESTED BY NORTHERN AFFAIRS PROGRAM AND ACCORDING TO COMPANY OFFICIALS WAS COMPLETED ON OCTOBER 7 AND NOVEMBER 2, 1983. ON DECEMBER 13, 1983 AN INSPECTION OF THE SPILL AREA WAS CONDUCTED BY A NORTHERN AFFAIRS BAFFIN DISTRICT INSPECTOR. AN INSPECTION REPORT SUMMARIZING OBSERVATIONS AT THE SITE IS EXPECTED TO BE AVAILABLE SOON.

INFORMATION PROVIDED BY D. STENDAHL, NORTHERN AFFAIRS PROGRAM, YELLOWKNIFE, 920-8130.

BT

GVT NWT FROB

Appendix D

**Complete listing of soil samples collected during the 2002 Phase 2
and 2003 Phase 3 Environmental Site Assessments**



Soil Samples Collected During the 2002 Phase 2 ESA, Nanisivik mine (that have not been analysed)

small samples in BBY	
TP02-	SS02-
57-3	002-1
58-1	002-2
58-2	003-2
59-1	021
59-2	022
60-1	023
60-2	
61-1	
61-2	
62-1	
62-2	
63-1	
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86-1	
86-2	
87-1	
87-2	
87-3	
88-1	
90-1	
90-2	

small samples in BBY	
TP02-	SS02-
91-1	
91-2	
92-1	
93-1	
93-2	
94-1	
95-1	
96-1	
98-1	
99-1	
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129-1	
129-2	
130-1	
130-2	
131A-1	

Samples that have been collected and are in storage

Location	Sampling date	program ID	test pit ID	sample ID
C Shop	17-Aug-03	TP03	367	1
C Shop	17-Aug-03	TP03	367	2
C Shop	17-Aug-03	TP03	367	4
C Shop	17-Aug-03	TP03	368	1
C Shop	17-Aug-03	TP03	368	2
C Shop	17-Aug-03	TP03	369	1
C Shop	17-Aug-03	TP03	369	3
C Shop	17-Aug-03	TP03	370	1
C Shop	17-Aug-03	TP03	370	2
Dock	9-Aug-03	TP03	302	1
Dock	9-Aug-03	TP03	302	2
Dock	9-Aug-03	TP03	302	3
Dock	9-Aug-03	TP03	303	1
Dock	9-Aug-03	TP03	303	2
Dock	9-Aug-03	TP03	303	3
Dock	9-Aug-03	TP03	304	2
Dock	9-Aug-03	TP03	304	3
Dock	9-Aug-03	TP03	305	1
Dock	9-Aug-03	TP03	305	2
Dock	9-Aug-03	TP03	306	1
Dock	9-Aug-03	TP03	306	2
Dock	9-Aug-03	TP03	306	3
Dock	9-Aug-03	TP03	307	1
Dock	9-Aug-03	TP03	307	2
Dock	9-Aug-03	TP03	308	3
Dock	9-Aug-03	TP03	308	4
Dock	9-Aug-03	TP03	309	2
Dock	9-Aug-03	TP03	309	3
Dock	9-Aug-03	TP03	310	2
Dock	9-Aug-03	TP03	310	3
Dock	9-Aug-03	TP03	311	2
Dock	9-Aug-03	TP03	311	3
Dock	9-Aug-03	TP03	311	4
Dock	11-Aug-03	TP03	312	3
Dock	11-Aug-03	TP03	312	4
Dock	11-Aug-03	TP03	313	2
Dock	11-Aug-03	TP03	313	3
Dock	11-Aug-03	TP03	313	4
Dock	11-Aug-03	TP03	314	2
Dock	11-Aug-03	TP03	314	3
Dock	11-Aug-03	TP03	314	4
Dock	11-Aug-03	TP03	315	2
Dock	11-Aug-03	TP03	315	3
Dock	11-Aug-03	TP03	315	4
Dock	11-Aug-03	TP03	316	2
Dock	11-Aug-03	TP03	316	3
Dock	11-Aug-03	TP03	316	4
Dock	11-Aug-03	TP03	317	2
Dock	11-Aug-03	TP03	317	3
Dock	11-Aug-03	TP03	317	4
K-base	12-Aug-03	TP03	338	1
K-base	12-Aug-03	TP03	338	2
K-base	13-Aug-03	TP03	339	1
K-base	13-Aug-03	TP03	339	2
K-base	13-Aug-03	TP03	339	3
K-base	13-Aug-03	TP03	340	1
K-base	13-Aug-03	TP03	340	2
K-base	13-Aug-03	TP03	341	1
K-base	13-Aug-03	TP03	341	2
K-base	13-Aug-03	TP03	342	2
K-base	13-Aug-03	TP03	342	3
K-base	13-Aug-03	TP03	343	1
K-base	13-Aug-03	TP03	343	2
K-base	13-Aug-03	TP03	344	1
K-base	13-Aug-03	TP03	344	2
Landfill	18-Aug-03	TP03	387	1
Landfill	18-Aug-03	TP03	388	2

Location	Sampling date	program ID	test pit ID	sample ID
Mill	11-Aug-03	TP03	324	2
Mill	11-Aug-03	TP03	324	3
Mill	11-Aug-03	TP03	325	2
Mill	11-Aug-03	TP03	327	3
Mill	11-Aug-03	TP03	328	1
Mill	12-Aug-03	TP03	329	3
Mill	12-Aug-03	TP03	330	3
Mill	12-Aug-03	TP03	332	1
Mill	12-Aug-03	TP03	332	2
Mill	12-Aug-03	TP03	332	3
Mill	12-Aug-03	TP03	334	2
Mill	12-Aug-03	TP03	334	3
Road	11-Aug-03	TP03	318	1
Road	11-Aug-03	TP03	318	2
Road	11-Aug-03	TP03	319	2
Road	11-Aug-03	TP03	319	3
Road	11-Aug-03	TP03	320	1
Road	11-Aug-03	TP03	320	2
Road	11-Aug-03	TP03	321	2
Road	11-Aug-03	TP03	322	1
Road	11-Aug-03	TP03	322	2
Road	11-Aug-03	TP03	322	3
Road	11-Aug-03	TP03	323	2
Road	12-Aug-03	TP03	335	2
Road	12-Aug-03	TP03	335	3
Road	12-Aug-03	TP03	336	2
Road	12-Aug-03	TP03	337	2
Road	13-Aug-03	TP03	345	2
Road	13-Aug-03	TP03	345	3
Road	14-Aug-03	TP03	346	2
Road	14-Aug-03	TP03	346	3
Road	14-Aug-03	TP03	347	2
Road	14-Aug-03	TP03	347	3
Road	14-Aug-03	TP03	348	2
Road	14-Aug-03	TP03	348	3
Road	14-Aug-03	TP03	349	1
Road	14-Aug-03	TP03	349	2
Road	14-Aug-03	TP03	350	1
Road	14-Aug-03	TP03	350	2
Road	14-Aug-03	TP03	351	2
Road	14-Aug-03	TP03	352	2
Road	14-Aug-03	TP03	353	1
Road	14-Aug-03	TP03	353	2
Road	15-Aug-03	TP03	354	1
Road	15-Aug-03	TP03	354	2
Road	15-Aug-03	TP03	355	1
Road	15-Aug-03	TP03	355	2
Road	15-Aug-03	TP03	356	1
Road	15-Aug-03	TP03	356	2
Road	15-Aug-03	TP03	357	2
Road	15-Aug-03	TP03	357	3
Road	15-Aug-03	TP03	358	2
Road	15-Aug-03	TP03	358	3
Road	15-Aug-03	TP03	359	2
Road	15-Aug-03	TP03	360	2
Road	15-Aug-03	TP03	360	3
Road	16-Aug-03	TP03	361	1
Road	16-Aug-03	TP03	361	2
Road	16-Aug-03	TP03	361	3
Road	16-Aug-03	TP03	362	2
STOL	17-Aug-03	TP03	371	2
STOL	17-Aug-03	TP03	372	3
STOL	17-Aug-03	TP03	373	1
STOL	17-Aug-03	TP03	373	3
STOL	17-Aug-03	TP03	374	1
STOL	18-Aug-03	TP03	377	2
STOL	18-Aug-03	TP03	379	2
WTDA	16-Aug-03	TP03	363	2
WTDA	16-Aug-03	TP03	365	2
WTDA	16-Aug-03	TP03	366	2

Soil Samples Collected During the 2003 Phase 3 ESA, Nanisivik mine

Samples that have been sent to the lab

area	date sampled	program ID	test pit ID	sample ID
C Shop	17-Aug-03	TP03	364	3
C Shop	17-Aug-03	TP03	367	3
C Shop	17-Aug-03	TP03	368	3
C Shop	17-Aug-03	TP03	369	2
C Shop	17-Aug-03	TP03	370	3
Dock	9-Aug-03	TP03	301	1
Dock	9-Aug-03	TP03	301	2
Dock	9-Aug-03	TP03	301	3
Dock	9-Aug-03	TP03	302	4
Dock	9-Aug-03	TP03	303	4
Dock	9-Aug-03	TP03	304	1
Dock	9-Aug-03	TP03	304	4
Dock	9-Aug-03	TP03	305	3
Dock	9-Aug-03	TP03	305	4
Dock	9-Aug-03	TP03	306	4
Dock	9-Aug-03	TP03	307	3
Dock	9-Aug-03	TP03	307	4
Dock	9-Aug-03	TP03	308	1
Dock	9-Aug-03	TP03	308	2
Dock	9-Aug-03	TP03	309	1
Dock	9-Aug-03	TP03	309	4
Dock	9-Aug-03	TP03	310	1
Dock	9-Aug-03	TP03	310	4
Dock	9-Aug-03	TP03	311	1
Dock	11-Aug-03	TP03	312	2
Dock	11-Aug-03	TP03	312	1
Dock	11-Aug-03	TP03	313	1
Dock	11-Aug-03	TP03	314	1
Dock	11-Aug-03	TP03	315	1
Dock	11-Aug-03	TP03	316	1
Dock	11-Aug-03	TP03	317	1
K-base	12-Aug-03	TP03	338	3
K-base	13-Aug-03	TP03	339	4
K-base	13-Aug-03	TP03	339	5
K-base	13-Aug-03	TP03	340	3
K-base	13-Aug-03	TP03	340	4
K-base	13-Aug-03	TP03	340	5
K-base	13-Aug-03	TP03	341	3
K-base	13-Aug-03	TP03	341	4
K-base	13-Aug-03	TP03	342	1
K-base	13-Aug-03	TP03	342	4
K-base	13-Aug-03	TP03	343	3
K-base	13-Aug-03	TP03	344	3
K-base	13-Aug-03	TP03	344	4
Landfill	18-Aug-03	TP03	385	1
Landfill	18-Aug-03	TP03	385	2
Landfill	18-Aug-03	TP03	386	1
Landfill	18-Aug-03	TP03	386	2
Landfill	18-Aug-03	TP03	387	2
Landfill	18-Aug-03	TP03	388	1
LFC	18-Aug-03	TP03	380	1
LFC	18-Aug-03	TP03	381	1
LFC	18-Aug-03	TP03	382	1
LFC	18-Aug-03	TP03	383	1
LFC	18-Aug-03	TP03	384	1

area	date sampled	program ID	test pit ID	sample ID
Mill	11-Aug-03	TP03	324	1
Mill	11-Aug-03	TP03	325	1
Mill	11-Aug-03	TP03	325	3
Mill	11-Aug-03	TP03	326	2
Mill	11-Aug-03	TP03	326	1
Mill	11-Aug-03	TP03	327	2
Mill	11-Aug-03	TP03	327	1
Mill	11-Aug-03	TP03	328	2
Mill	11-Aug-03	TP03	328	3
Mill	12-Aug-03	TP03	329	1
Mill	12-Aug-03	TP03	329	2
Mill	12-Aug-03	TP03	330	1
Mill	12-Aug-03	TP03	330	2
Mill	12-Aug-03	TP03	330	4
Mill	12-Aug-03	TP03	331	2
Mill	12-Aug-03	TP03	331	3
Mill	12-Aug-03	TP03	331	4
Mill	12-Aug-03	TP03	331	1
Mill	12-Aug-03	TP03	332	4
Mill	12-Aug-03	TP03	333	1
Mill	12-Aug-03	TP03	333	2
Mill	12-Aug-03	TP03	333	3
Mill	12-Aug-03	TP03	334	4
Mill	12-Aug-03	TP03	334	1
Road	11-Aug-03	TP03	319	1
Road	11-Aug-03	TP03	321	1
Road	11-Aug-03	TP03	323	1
Road	12-Aug-03	TP03	335	1
Road	12-Aug-03	TP03	336	1
Road	12-Aug-03	TP03	337	1
Road	13-Aug-03	TP03	345	1
Road	14-Aug-03	TP03	346	1
Road	14-Aug-03	TP03	347	1
Road	14-Aug-03	TP03	348	1
Road	14-Aug-03	TP03	351	1
Road	14-Aug-03	TP03	352	1
Road	15-Aug-03	TP03	357	1
Road	15-Aug-03	TP03	358	1
Road	15-Aug-03	TP03	359	1
Road	15-Aug-03	TP03	360	1
Road	16-Aug-03	TP03	362	1
Road	19-Aug-03	TP03	391	1
Road	19-Aug-03	TP03	392	1
Road	19-Aug-03	TP03	392	2
Road	19-Aug-03	TP03	393	1
Road	19-Aug-03	TP03	393	2
STOL	17-Aug-03	TP03	371	1
STOL	17-Aug-03	TP03	371	3
STOL	17-Aug-03	TP03	372	2
STOL	17-Aug-03	TP03	373	2
STOL	17-Aug-03	TP03	374	2
STOL	17-Aug-03	TP03	374	3
STOL	17-Aug-03	TP03	375	1
STOL	17-Aug-03	TP03	375	2
STOL	17-Aug-03	TP03	375	3
STOL	18-Aug-03	TP03	376	2
STOL	18-Aug-03	TP03	376	1
STOL	18-Aug-03	TP03	377	1
STOL	18-Aug-03	TP03	378	1
STOL	18-Aug-03	TP03	378	2
STOL	18-Aug-03	TP03	379	1
STOL	18-Aug-03	TP03	389	1
STOL	18-Aug-03	TP03	390	1
WTDA	16-Aug-03	TP03	363	1
WTDA	16-Aug-03	TP03	364	1
WTDA	16-Aug-03	TP03	365	1
WTDA	16-Aug-03	TP03	366	1

Appendix E

**Letter from Douglas Dumka, P.Geo. to Robert R. Carreau,
Breakwater Resources Ltd., June 20, 2003**

and

Complete Data Listing for the 1985 Soil Geochemistry Survey



June 20, 2003

Robert R. Carreau, CCEP
Corporate Manager
Environmental Affairs
Breakwater Resources Ltd.
95 Wellington Street West
Suite 2000
Toronto, Ontario
M5J 2N7

Sir,

In response to your query for information regarding the soil geochemistry survey conducted in 1985 over the Nanisivik property, specifically the data contained on the two 1:20,000 scale maps examined on June 18th, I have the following comments.

The geochemical data shown on those maps was collected as part of a property wide geological mapping exercise undertaken as a small segment of a larger PHD thesis project by Dr. Michael Neumann for the University of Heidelberg under both the supervision of Ron Sutherland and myself. The samples were taken roughly every 300 to 500 metres across the property by Dr. Neumann himself. As there is limited to no soil profile developed at Nanisivik no attempt was made to take material from a particular part of the hole. Essentially a 10 to 15 cm hole was dug using a hand spade or trowel and approximately 100 grams of material was put into a standard kraft paper geochem sample bag. Locations were determined using detailed airphotos and orthophotos purchased for this exercise. Details such as location, rock type in the area, amounts of organics if applicable etc were recorded as was standard practice with all the more detailed soil geochem programs conducted on the property.

The samples were sent to the Nanisivik assay laboratory for preparation and analysis using industry recognized protocols and techniques. Industry accepted internal quality control and assurance procedures such as the insertion of blanks and standards were also followed.

It should be noted that at Nanisivik, soil geochemistry was a good tool for finding sub-cropping sulphides containing lead and zinc. In areas such as Ocean View and K-Baseline where the sulphides outcrop naturally, values as high as 1 to 2% zinc occur in the soils at surface as they have since the last ice age. In almost all cases the higher lead and zinc values noted on the map are correlateable to known zones which gives one confidence that no significant problems occurred with the assaying of the samples from that program.

As limited exploitation was taking place outside of the main mine at this time, I am firmly of the belief that these assays represent real background values for the Nanisivik property. Of course in areas such as the tailings pond and road to the dock some minor contamination had taken place at that time.

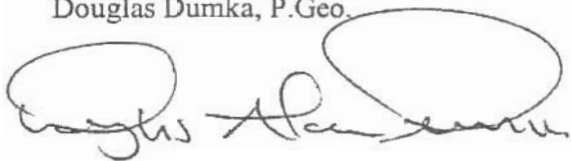
In fact a more detailed examination of the results of the survey for the area near the road to the dock and concentrate load out facility, was undertaken to determine if the large low intensity zinc anomalies noted on either side of the road were real. As the lead and zinc sulphides are almost always associated with massive pyrite at Nanisivik, geophysical surveys especially electromagnetic surveys such as TURAM and VLF-EM were used to screen for conductors. Subsequent geophysical surveys in this area failed to find any significant conductors.

Therefore the conclusion that was reached was that the geochemical anomalies were due to dusting losses from the concentrate trucks traveling from the concentrate load out in the mill to the concentrate storage at the dock.

I hope this answers your questions.

Sincerely,

Douglas Dumka, P. Geo.

A handwritten signature in dark ink, appearing to read 'Douglas Dumka', with a large, stylized loop at the end.