

ORTEK
Oneida Environmental Technology Center
2496 West Mason Street
P. O. Box 12435
Green Bay, WI 54307-2435
Telephone: (414) 498-2222

LABORATORY ANALYSIS RESULTS
W.D.N.R. LAB CERT. NO. 405099530

Client Address: Kennecott
Name of Rep.:
Telephone No.: (000) 000-0000

Sampled By: J. Thresher
P.O. #:
Job # 87K10-02
Report to: B. Burton
Invoice # 1482
Result Sheet No. 39163.03

Sample I.D. WR-5 WW-1
pH 7 pH 7
Date Collected 01/24/89 01/24/89
Date Received 01/25/89 01/25/89

Parameters, units	Results
Sulfate, mg/l	380 750
Copper, ug/l	4800 1400
Iron, ug/l	570 1200
Manganese, ug/l	390 300

APPENDIX 3.5-Q

Complete Wet/Dry Leaching Test Analyses,
Notes, and Methods
Flambeau Project, Ladysmith, WI

Comments:

Signed: David Turiff Date: February 3, 1989

Complete Chemical Analyses of Wet-Dry
Leached Materials

1. ML, Sapro and Saprolite are interchangeably-used terms on the lab sheets.
2. TS is the abbreviation for topsoil.
3. "D1" is the designation for the powdered waste rock. For example, WR-1 are the rock chip leachate analyses and WR-1-DI are the rock powder leachate analyses for waste rock sample number 1.
4. All silver analyses shown on Lab Result Sheet No. 37695.07 (samples collected 3/22/88) should be less than 0.4 ug/l. The values shown on the sheet represent a typographic error.
5. The Sample I.D.s listed on Lab Result Sheet No. 38038.04 and 5 (samples collected 6/1/88) as WR-1 D1 A through D should be WW1 D1 A through D. The I.D.s shown represent a typographic error.
6. Dates of collection of samples from the wet-dry leaching of the till, sandstone, saprolite, and waste rock samples were:

<u>Cycle</u>	<u>Sample Collection Date(s)</u>
1	3/17/88
2	3/22/88
4	4/1/88
8	4/21/88
16	5/31/88 and 6/1/88

7. Dates of collection of sample from the wet-dry leaching of the topsoil samples were:

<u>Cycle</u>	<u>Sample Collection Date</u>
1	8/2/88
2	8/6/88
4	8/17/88
8	9/7/88
16	10/16/88

Determination of the Composition of the Synthetic Groundwater Used in the Saturated Leaching Tests

1. The three-well piezometer nest located at site MW-1005 is considered to be upgradient of the proposed open pit. The composition of groundwater in these wells is considered to be typical of the water that will flow into the pit, and react with the waste materials, when the pit is backfilled.
 - a. Well MW-1005 is screened in the till.
 - b. Well MW-1005G is screened in the sandstone and saprolite.
 - c. Well MW-1005P is screened in the bedrock.
2. A review of seven months of analytical data collected from these wells (October 1987 through April 1988) reveals that the only metals of significant concentration in the groundwater samples are calcium, magnesium, sodium, and iron. The major anions are chloride, sulfate, and bicarbonate.
 - a. The bicarbonate ion was not measured, but rather it was calculated from the pH, temperature, total dissolved solids, and alkalinity data using *Standard Methods for the Examination of Water and Wastewater (No. 406A nomographs)*. These calculations also revealed that small amounts of carbonate are present in the water and that there is no hydroxide or free carbon dioxide.
 - b. The comparison of the sums of the cations to the sums of the anions (both in meq/l) indicates that these four metals and three anions comprise chemically balanced waters.
 - c. Mean parameter concentrations in samples collected from MW-1005, 1005G, and 1005P (October 1987 through April 1988):

<u>Parameter</u>	<u>Units</u>	<u>MW-1005</u>	<u>MW-1005G</u>	<u>MW-1005P</u>
Calcium	mg/L	81.0 ± 9.0	40.3 ± 1.9	50.0 ± 3.5
Magnesium	mg/L	37.0 ± 0.7	14.4 ± 0.5	20.0 ± 1.2
Sodium	mg/L	16.0 ± 0.0	8.7 ± 2.3	18.7 ± 7.2
Iron	mg/L	8.8 ± 3.6	3.4 ± 0.6	0.27 ± 0.15
Manganese	mg/L	0.9 ± 0.3	0.27 ± 0.02	0.21 ± 0.05
Chloride	mg/L	218 ± 12	1.2 ± 0.6	3.0 ± 1.8
Sulfate	mg/L	16.6 ± 4.0	5.0 (est)	6.6 ± 2.5
Bicarbonate	mg/L	67.0 ± 7.6	169 ± 37	259 ± 23
pH	su	5.5 ± 0.2	6.4 ± 0.3	6.6 ± 0.3

3.5-Q-2

KEIR

<u>Parameter</u>	<u>Units</u>	<u>MW-1005</u>	<u>MW-1005G</u>	<u>MW-1005P</u>
Sum of the Cations	meq/l	8.26	3.76	4.97
Sum of the Anions	meq/l	7.59	2.91	4.47

3. The synthetic groundwater was made up by dissolving salts and diluting concentrated solutions with DI water. The initial pH was generally near 6.5. Small amounts of dilute acid (HNO₃) or base (KOH) were added to the solution to bring the pH to 6.50.

- a. Recipe for 50 L of synthetic groundwater:

<u>Parameter</u>	<u>Ingredients</u>
Ca, HCO ₃	5.00 g CaCO ₃ dissolved in 2% HCl
Mg, Cl, SO ₄	0.375 g MgSO ₄ plus 7.00 g MgCl ₂ · 6H ₂ O
Na, HCO ₃	2.2 g Na ₂ CO ₃
Fe	170 mL of 1,000 ppm AA standard
Mn	15 mL of 1,000 ppm AA standard

3.5-Q-3

KEIR

Complete Chemical Analyses of
Saturated Leached Materials

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LABORATORY ANALYSIS RESULTS
W.D.N.R. LAB CERT. NO. 405051240

Client Address: Kennecott
Name of Rep.:
Telephone No.: (000) 000-0000
Sampled By: Scope I.D. 87K10
Billing Line No.:
Liaison: D. Turriff
Supply Order No.:
Result Sheet No.: 38369.01

Sample I.D.	Top C	Top E	Top W
Date Collected	8/2/88	8/2/88	8/2/88
Date Received	8/2/88	8/2/88	8/2/88

Parameters, units ----- Results -----

Al, ug/l	36,800	18,600	3380
As, ug/l	13	4	< 3
Ba, ug/l	240	< 80	110
Be, ug/l	< 1.0	< 1.0	< 1.0
Cd, ug/l	0.4	0.4	0.3
Cr, ug/l	80	32	6
Co, ug/l	< 40	< 40	< 40
Cu, ug/l	23	14	10
Fe, ug/l	33,000	15,000	3100
Mn, ug/l	860	260	110
Hg, ug/l	< 0.5	< 0.5	< 1.0
Mo, ug/l	< 29	< 29	< 29
Ni, ug/l	< 30	< 30	< 30

comments: Soil Leach Column

Signed: David Turriff Date: September 27, 1988

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LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Sampled By: [blank]
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38369.02

Sample I.D.	Top C	Top E	Top W
Date Collected	8/2/88	8/2/88	8/2/88
Date Received	8/2/88	8/2/88	8/2/88
Parameters, units	Results		
Temperature, C	21.0	21.0	21.0
Pb, ug/l	17	11	3
Se, ug/l	< 3	< 3	< 3
Ag, ug/l	< 0.4	2.4	< 0.4
Na, ug/l	18,000	9900	6900
Tl, ug/l	< 2	< 2	< 2
Sn, ug/l	< 67	210	< 67
Ti, ug/l	2880	1530	272
U, ug/l	< 1	2	< 1
Zn, ug/l	87	39	31
F, mg/l	< 0.5 **	< 0.5 **	< 0.5 **
SO4, mg/l	< 100 **	< 50 **	< 50 **
TDS, mg/l	500	260	160
Spec. Conductivity,*	76	49	39
pH, std. units	6.70	6.67	6.35

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. Soil Leach Column samples.
 ** High detection limit due to sample turbidity.

Signed: David Turriff Date: September 27, 1988

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LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Sampled By: [blank]
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38393.01

Sample I.D.	TS-E	TS-C	TS-W
Date Collected	8/6/88	8/6/88	8/6/88
Date Received	8/8/88	8/8/88	8/8/88
Parameters, units	Results		
Al, ug/l	7770	653	498
As, ug/l	4	< 3	< 3
Ba, ug/l	110	< 80	490
Be, ug/l	< 1.0	< 1.0	< 1.0
Cd, ug/l	1.3	< 0.3	0.3
Cr, ug/l	13	2	< 2
Co, ug/l	< 40	< 40	< 40
Cu, ug/l	17	< 10	11
Fe, ug/l	8700	1100	820
Pb, ug/l	6	< 2	< 2
Mn, ug/l	210	54	60
Hg, ug/l	< 0.5	< 0.5	< 0.5
Mo, ug/l	< 29	< 29	< 29
Ni, ug/l	< 30	< 30	< 30

comments: Soil Leach Columns.

Signed: David Turriff Date: September 16, 1988

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LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: _____
 Name of Rep.: _____
 Telephone No.: (000) 000-0000

Sampled By: _____
 Scope I.D.: 87K10
 Billing Line No.: _____
 Liaison: D. Turriff
 Supply Order No.: _____
 Result Sheet No.: 38393.02

Sample I.D.	TS-E	TS-C	TS-W
Date Collected	8/6/88	8/6/88	8/6/88
Date Received	8/8/88	8/8/88	8/8/88
Parameters, units	Results		
Se, ug/l	< 3	< 3	< 3
Ag, ug/l	< 0.4	< 0.4	< 0.4
Na, ug/l	5700	3100	4500
Tl, ug/l	< 2	< 2	< 2
Ti, ug/l	686	57	24
Sn, ug/l	< 67	< 67	< 67
U, ug/l	< 1	< 1	< 1
Zn, ug/l	15	13	< 11
F, mg/l	< 0.5 **	0.1	< 0.1
SO4, mg/l	< 5	8	7
TDS, mg/l	130	56	50
Spec. Conductivity,*	36	27	31
pH, std. units	5.75	5.75	5.70

comments: Soil Leach Columns. * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to sample turbidity.

Signed: David Turriff Date: September 16, 1988

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LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405099530

Client: Kennecott
 Address: _____
 Name of Rep.: _____
 Telephone No.: (000) 000-0000

Sampled By: DJD
 P.O. #: _____
 Job #: 87K10
 Report to: B. Burton
 Invoice #: 1236
 Result Sheet No.: 38890.00

Sample I.D.	Topsoil E	Topsoil C	Topsoil W
Date Collected	8/17/88	8/17/88	8/17/88
Date Received	8/17/88	8/17/88	8/17/88
Parameters, units	Results		

Al, ug/l	528	121	321
Cr, ug/l	3	3	2
Fe, ug/l	640	150	460
Mn, ug/l	440	53	330
Ti, ug/l	98	66	81

Comments:

Signed: David Turriff Date: December 19, 1988

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LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client Kennecott
 Address
 Sampled By
 Scope I.D. 87K10
 Billing Line No.
 Liaison D. Turriff
 Supply Order No.
 Result Sheet No. 38613.00
 Name of Rep.
 Telephone No. (000) 000-0000

Client Kennecott
 Address
 Sampled By
 Scope I.D. 87K10
 Billing Line No.
 Liaison D. Turriff
 Supply Order No.
 Result Sheet No. 38528.00
 Name of Rep.
 Telephone No. (000) 000-0000

Sample I.D.	TS-E	TS-C	TS-W
Date Collected	8/17/88	8/17/88	8/17/88
Date Received	8/17/88	8/17/88	8/17/88
Parameters, units	Results		
F, mg/l	< 0.1	< 0.1	< 0.1
SO4, mg/l	6	< 5	5
Hg, ug/l	< 0.5	< 0.5	< 0.5
TDS, mg/l	40	26	56
Spec. Conductivity,*	28	28	35
pH, std. units	5.57	5.67	5.46
Temperature, C	19.0	19.0	19.0

Sample I.D.	TS-E	TS-C	TS-W
Date Collected	9/7/88	9/7/88	9/7/88
Date Received	9/7/88	9/7/88	9/7/88
Parameters, units	Results		
Fluoride, mg/l	< 0.1	0.13	< 0.1
Sulfate, mg/l	< 5	< 5	< 5
Mercury, ug/l	< 0.5	< 0.5	< 0.5
TDS, mg/l	< 20	35	24
Spec. Conductivity,*	36	64	43
pH, std. units	5.68	6.02	5.68
Temperature, C	18	18	18

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: September 27, 1988

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: October 6, 1988

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LABORATORY ANALYSIS RESULTS

W.D.N.R. LAB CERT. NO. 405099530

Client Address: Kennecott
Name of Rep.:
Telephone No.: (000) 000-0000

Sampled By: DJD
P.O. #:
Job # 87K10
Report to: B. Burton
Invoice # 1236
Result Sheet No. 38891.00

Sample I.D.	Topsoil E	Topsoil C	Topsoil W
Date Collected	9/7/88	9/7/88	9/7/88
Date Received	9/7/88	9/7/88	9/7/88

Parameters, units ----- Results -----

Al, ug/l	260	137	149
Cr, ug/l	< 2	< 2	< 2
Fe, ug/l	820	1300	1300
Mn, ug/l	1500	1300	1200
Ti, ug/l	5	< 4	< 4

Comments:

Signed: David Turriff Date: December 19, 1988

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LABORATORY ANALYSIS RESULTS

W.D.N.R. LAB CERT. NO. 405099530

Client Address: Kennecott
Name of Rep.:
Telephone No.: (000) 000-0000

Sampled By: DJD
P.O. #:
Job # 87K10
Report to: D. Turriff
Invoice # 1115
Result Sheet No. 38705.01

Sample I.D.	TS-E	TS-C	TS-W
Date Collected	10/16/88	10/16/88	10/16/88
Date Received	10/17/88	10/17/88	10/17/88

Parameters, units ----- Results -----

Al, ug/l	80	30	117
As, ug/l	< 3	< 3	< 3
Ba, ug/l	< 80	< 80	< 80
Be, ug/l	< 1	< 1	< 1
Cd, ug/l	< 0.3	< 0.3	< 0.3
Cr, ug/l	< 2	< 2	< 2
Co, ug/l	< 40	< 40	< 40
Cu, ug/l	< 10	13	11
Fe, ug/l	3000	1800	6600
Pb, ug/l	< 2	< 2	< 2
Mn, ug/l	3100	1900	1900
Hg, ug/l	< 0.5	< 0.5	< 0.5
Mo, ug/l	< 29	< 29	< 29

comments:

Signed: David Turriff Date: November 23, 1988

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LABORATORY ANALYSIS RESULTS

W.D.N.R. LAB CERT. NO. 405099530

Client: Kennecott
 Address: [Redacted]
 Sampled By: DJD
 P.O. #: [Redacted]
 Job #: 87K10
 Report to: D. Turriff
 Invoice #: 1115
 Result Sheet No.: 38705.02
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	TS-E	TS-C	TS-W
Date Collected	10/16/88	10/16/88	10/16/88
Date Received	10/17/88	10/17/88	10/17/88
Parameters, units	Results		
Temperature, C	22.5	22.5	22.5
Ni, ug/l	< 30	< 30	< 30
Se, ug/l	< 3	< 3	< 3
Ag, ug/l	< 0.4	< 0.4	< 0.4
Na, ug/l	1600	1900	1600
Tl, ug/l	< 2	< 2	< 2
Ti, ug/l	< 4	< 4	< 4
Sn, ug/l	< 67	< 67	< 67
U, ug/l	2	6	4
Zn, ug/l	28	20	33
F, mg/l	0.11	0.11	0.19
SO4, mg/l	< 5	< 5	< 5
TDS, mg/l	72	84	110
Spec. Conductivity,*	55	79	61
pH, std. units	5.93	6.09	5.83

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: November 23, 1988

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LABORATORY ANALYSIS RESULTS

W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Sampled By: [Redacted]
 Scope I.D.: [Redacted]
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 37655.01
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Date Received	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Parameters, units	Results				
Al, ug/l	1740	1400	2080	12,800	30,500
As, ug/l	4	2	8	4	28
Ba, ug/l	< 80	89	< 80	< 80	< 80
Be, ug/l	2	3	4	8	16
Cd, ug/l	0.4	1.9	3.8	5.1	14
Cr, ug/l	< 2	< 2	< 2	5	10
Co, ug/l	390	148	1100	1100	1700
Cu, ug/l	660	29,000	240,000	280,000	620,000
Fe, ug/l	1800	950	5600	78,000	230,000
Pb, ug/l	< 2	< 2	5	< 2	< 2
Mn, ug/l	340	620	2200	1600	6100
Hg, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Mo, ug/l	< 29	< 29	< 29	< 29	< 29
Ni, ug/l	91	85	650	450	660
Se, ug/l	31	19	40	23	20

comments: Soil Leach Column Testing.

Signed: David Turriff Date: May 18, 1988

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LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 37655.02
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Client: Kennecott
 Address: [Redacted]
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 37655.03
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	Sapro ML	Till (C)	Till (E)	Till (W)	Sand (C)
Date Collected	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Date Received	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Parameters, units	Results				
Al, ug/l	7220	2060	2770	2360	10,200
As, ug/l	5	< 3	< 3	< 3	7
Ba, ug/l	82	< 80	< 80	82	97
Be, ug/l	< 1	< 1	< 1	< 1	1
Cd, ug/l	0.9	< 0.3	< 0.3	< 0.3	2.6
Cr, ug/l	4	2	2	< 2	36
Co, ug/l	< 40	< 40	< 40	< 40	< 40
Cu, ug/l	660	530	110	1000	110
Fe, ug/l	3000	990	1800	1100	13,000
Pb, ug/l	68	2	2	3	23
Mn, ug/l	570	23	110	110	720
Hg, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	*
Mo, ug/l	< 29	< 29	< 29	< 29	44
Ni, ug/l	< 30	< 30	< 30	< 30	38
Se, ug/l	5	< 3	< 3	< 3	13

Soil Leach Column Testing.
 * No sample.

Signed: David Turriff Date: May 18, 1988

Sample I.D.	Sand (E)	Sand (W)	Top (C) *	Top (E) *	Top (W) *
Date Collected	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Date Received	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Parameters, units	Results				
Al, ug/l	3050	13,400			
As, ug/l	6	19			
Ba, ug/l	< 80	1100			
Be, ug/l	< 1	4			
Cd, ug/l	1.5	2.4			
Cr, ug/l	12	350			
Co, ug/l	< 40	< 40			
Cu, ug/l	54	3800			
Fe, ug/l	4200	80,000			
Pb, ug/l	5	75	5	70	
Mn, ug/l	131	940	320	1700	190
Hg, ug/l	< 2.3 **	< 2.1 **			
Mo, ug/l	55	< 29			
Ni, ug/l	< 30	54			
Se, ug/l	14	10	5	12	4

Soil Leach Column Testing.
 * Sample analysis was cancelled.
 ** High detection limit due to lack of sample.

Signed: David Turriff Date: May 18, 1988

DATA NOT USED
 DATA NOT USED
 DATA NOT USED

FOTH AND VAN DYKE
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 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client Address: Kennecott
 Sampled By: Scope I.D. B7K10
 Billing Line No.
 Liaison: D. Turriff
 Supply Order No.
 Result Sheet No. 37655.04
 Name of Rep.
 Telephone No. (000) 000-0000

Sample I.D.	WW1 D1 A	WW1 D1 B	WW1 D1 C	WW1 D1 D	WR1 D1
Date Collected	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Date Received	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Parameters, units	Results				
Al, ug/l	14,000	11,400	11,200	12,000	166
As, ug/l	11	11	11	12	< 3
Ba, ug/l	< 80	< 80	< 80	< 80	< 80
Be, ug/l	1	< 1	1	1	< 1
Cd, ug/l	290	280	290	290	< 0.3
Cr, ug/l	2	< 2	< 2	< 2	< 2
Co, ug/l	1000	1000	1000	1000	< 40
Cu, ug/l	180,000	180,000	190,000	180,000	64
Fe, ug/l	110,000	110,000	110,000	100,000	280
Pb, ug/l	40	21	42	34	< 2
Mn, ug/l	510	510	570	500	19
Hg, ug/l	< 1.4 *	< 1.4 *	< 1.4 *	< 1.5 *	< 1.7 *
Mo, ug/l	< 29	< 29	< 29	< 29	< 29
Ni, ug/l	390	390	390	380	< 30
Se, ug/l	12	14	14	14	9

comments: Soil Leach Column Testing.
 * High detection limit due to lack of sample.

Signed: David Turriff Date: May 20, 1988

FOTH AND VAN DYKE
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 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client Address: Kennecott
 Sampled By: Scope I.D. B7K10
 Billing Line No.
 Liaison: D. Turriff
 Supply Order No.
 Result Sheet No. 37655.05
 Name of Rep.
 Telephone No. (000) 000-0000

Sample I.D.	WR2 D1	WR3 D1	WR4 D1	WR5 D1	Blank
Date Collected	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Date Received	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Parameters, units	Results				
Al, ug/l	136	209	181	1260	89
As, ug/l	< 3	3	< 3	< 3	< 3
Ba, ug/l	< 80	< 80	< 80	< 80	< 80
Be, ug/l	< 1	< 1	< 1	1	< 1
Cd, ug/l	0.9	1.4	2.0	3.0	< 0.3
Cr, ug/l	< 2	< 2	< 2	< 2	< 2
Co, ug/l	< 40	230	140	180	< 40
Cu, ug/l	1100	3300	21,000	65,000	23
Fe, ug/l	290	210	980	9600	< 55
Pb, ug/l	< 2	2	< 2	2	< 2
Mn, ug/l	370	512	470	540	< 11
Hg, ug/l	< 1.6 *	< 1.5 *	< 1.5 *	< 1.4 *	< 1.2 *
Mo, ug/l	< 29	< 29	< 29	< 29	< 29
Ni, ug/l	< 30	130	51	79	< 30
Se, ug/l	9	13	14	10	< 3

comments: Soil Leach Column Testing.
 * High detection limit due to lack of sample.

Signed: David Turriff Date: May 20, 1988

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 37655.06
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Date Received	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Parameters, units	Results				
Ag, ug/l	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Na, ug/l	11,000	9000	6800	6800	5200
Tl, ug/l	5	2	11	17	32
Sn, ug/l	< 67	< 67	151	135	< 67
Ti, ug/l	< 4	< 4	< 4	< 4	< 4
Uranium, ug/l	11	5	8	31	46
Zn, ug/l	730	2500	53,000	11,000	2100
Fluoride, mg/l	0.7	< 0.4	1.2	1.3	1.3
Sulfate, mg/l	400	240	930	1100	2100
TDS, mg/l	580	360	1600	180	3200
Spec. Conductivity,*	751	481	1548	1674	2751
pH, std. units	5.40	4.45	4.20	3.60	2.95

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: May 18, 1988

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LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 37655.07
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	ML	Till (C)	Till (E)	Till (W)	Sand (C)
Date Collected	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Date Received	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Parameters, units	Results				
Ag, ug/l	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Na, ug/l	9000	2500	7800	2900	75,000
Tl, ug/l	< 2	< 2	< 2	< 2	< 2
Sn, ug/l	< 67	< 67	< 67	< 67	96
Ti, ug/l	181	85	93	75	245
Uranium, ug/l	**	**	**	**	**
Zn, ug/l	240	28	46	14	140
Fluoride, mg/l	0.7	< 0.4	< 2 ***	< 4 ***	< 2 ***
Sulfate, mg/l	< 5	< 25 ***	< 25 ***	10	< 100 ***
TDS, mg/l	240	70	280	61	990
Spec. Conductivity,*	52	10	39	16	273
pH, std. units	7.65	7.15	7.20	6.95	7.75

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** Insufficient sample to perform analysis. *** High detection limit due to lack of sample.

Signed: David Turriff Date: May 20, 1988

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 37655.08

Sample I.D.	Sand (E)	Sand (W)	Top (C) **	Top (E) **	Top (W) **
Date Collected	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Date Received	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Parameters, units	Results				
Ag, ug/l	< 0.4	1.2	< 0.4	< 0.4	< 0.4
Na, ug/l	58,000	26,000			
Tl, ug/l	< 2	< 2	< 2	< 2	< 2
Sn, ug/l	< 67	< 67	< 67	< 67	< 67
Ti, ug/l	58	649			
Uranium, ug/l	***	***	***	***	***
Zn, ug/l	93	250	78	340	69
Fluoride, mg/l	0.8	< 2 ****			
Sulfate, mg/l	< 100 ****	< 50 ****			
TDS, mg/l	500	800	230	3600	370
Spec. Conductivity,*	321	75	53	27	116
pH, std. units	7.55	7.90	5.70	5.05	4.05

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degree celsius. ** Sample analysis was cancelled.*** Insufficient samp for analysis. **** High detection limit due to lack of sample.

Signed: David Turriff Date: May 20, 1988

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 37655.09

Sample I.D.	WW1 D1 A	WW1 D1 B	WW1 D1 C	WW1 D1 D	WR1 D1
Date Collected	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Date Received	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Parameters, units	Results				
Ag, ug/l	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Na, ug/l	1000	860	1200	9300	1300
Tl, ug/l	10	10	11	10	< 2
Sn, ug/l	< 67	< 67	< 67	< 67	93
Ti, ug/l	< 4	< 4	4	< 4	< 4
Uranium, ug/l	**	**	**	**	**
Zn, ug/l	68,000	67,000	71,000	69,000	27
Fluoride, mg/l	1.3	1.5	1.7	2.2 ***	3.3 ***
Sulfate, mg/l	740	680	690	720	50
TDS, mg/l	1200	1100	1200	1100	240
Spec. Conductivity,*	1077	1089	1138	1138	179
pH, std. units	3.75	3.75	3.75	3.75	7.30

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** No sample. *** Holding time exceeded.

Signed: David Turriff Date: May 20, 1988

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client Kennecott
 Address
 Sampled By
 Scope I.D. 87K10
 Billing Line No.
 Liaison D. Turriff
 Name of Rep.
 Telephone No. (000) 000-0000
 Supply Order No.
 Result Sheet No. 37655.10

Client Kennecott
 Address
 Sampled By
 Scope I.D. 87K10
 Billing Line No.
 Liaison D. Turriff
 Name of Rep.
 Telephone No. (000) 000-0000
 Supply Order No.
 Result Sheet No. 37655.12

Sample I.D.	WR2 D1	WR3 D1	WR4 D1	WR5 D1	Blank
Date Collected	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88
Date Received	3/17/88	3/17/88	3/17/88	3/17/88	3/17/88

Sample I.D.	WW-1 **
Date Collected	3/17/88
Date Received	3/17/88

Parameters, units	Results				
Ag, ug/l	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Na, ug/l	2000	1200	1200	800	< 500
Tl, ug/l	< 2	< 2	3	2	< 2
Sn, ug/l	80	< 67	< 67	< 67	80
Ti, ug/l	< 4	< 4	< 4	< 4	< 4
Uranium, ug/l	**	**	**	**	**
Zn, ug/l	850	5600	1900	330	< 11
Fluoride, mg/l	**	**	1.3 ***	**	1.2 ***
Sulfate, mg/l	70	150	180	170	< 25 ****
TDS, mg/l	220	290	310	340	80
Spec. Conductivity,*	187	308	353	365	8
pH, std. units	5.65	5.75	5.15	4.35	4.05

Parameters, units	Results
Ag, ug/l	
Na, ug/l	
Tl, ug/l	
Sn, ug/l	
Ti, ug/l	
Uranium, ug/l	
Zn, ug/l	
Fluoride, mg/l	
Sulfate, mg/l	
TDS, mg/l	14,000
Spec. Conductivity,*	8159
pH, std. units	2.55

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degree celsius. ** No sample. *** Holding time exceeded. **** High detection limit due to lack of sample.

Signed: David Turriff Date: May 20, 1988

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** Sample analysis was cancelled.

Signed: David Turriff Date: May 18, 1988

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 37695.01
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	3/22/88	3/22/88	3/22/88	3/22/88	3/22/88
Date Received	3/22/88	3/22/88	3/22/88	3/22/88	3/22/88
Parameters, units	Results				
Al, ug/l	89	2360	1530	16,400	22,900
As, ug/l	3	4	< 3	10	16
Ba, ug/l	< 80	93	< 80	< 80	< 80
Be, ug/l	< 1	4	3	11	15
Cd, ug/l	< 0.3	1.6	4.3	5.1	11
Cr, ug/l	< 2	3	< 2	8	7
Co, ug/l	100	230	1200	1200	1400
Cu, ug/l	200	34,000	180,000	210,000	470,000
Fe, ug/l	95	2600	7600	71,000	150,000
Pb, ug/l	< 2	< 2	4	2	< 2
Mn, ug/l	110	840	2100	1900	4500
Hg, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Mo, ug/l	< 29	< 29	< 29	< 29	42
Ni, ug/l	< 30	110	680	480	560
Se, ug/l	23	17	60	22	19

Signed: David Turriff Date: May 20, 1988

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 Engineers/Architects
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 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 37695.02
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	ML	Till (C)	Till (E)	Till (W)	Sand (C)
Date Collected	3/22/88	3/22/88	3/22/88	3/22/88	3/22/88
Date Received	3/22/88	3/22/88	3/22/88	3/22/88	3/22/88
Parameters, units	Results				
Al, ug/l	4280	9250	8010	3640	10,400
As, ug/l	< 3	5	7	3	23
Ba, ug/l	< 80	< 80	< 80	< 80	< 80
Be, ug/l	< 1	< 1	< 1	< 1	< 1
Cd, ug/l	< 0.3	< 0.3	< 0.3	< 0.3	0.6
Cr, ug/l	5	8	10	3	66
Co, ug/l	< 40	< 40	< 40	< 40	< 40
Cu, ug/l	76	25	38	46	160
Fe, ug/l	1300	7200	10,000	3200	26,000
Pb, ug/l	11	3	4	2	26
Mn, ug/l	38	92	130	92	340
Hg, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0*
Mo, ug/l	< 29	< 29	< 29	< 29	32
Ni, ug/l	< 30	< 30	< 30	< 30	< 30
Se, ug/l	5	5	7	< 3	31

* High detection limit due to lack of sample.

Signed: David Turriff Date: May 20, 1988

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 Engineers/Architects
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 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 37695.03
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	WW1 D1 A	WW1 D1 B	WW1 D1 C	WW1 D1 D	WR1 D1
Date Collected	3/22/88	3/22/88	3/22/88	3/22/88	3/22/88
Date Received	3/22/88	3/22/88	3/22/88	3/22/88	3/22/88
Parameters, units	Results				
Al, ug/l	238	238	159	238	646
As, ug/l	< 3	< 3	< 3	< 3	4
Ba, ug/l	< 80	< 80	< 80	< 80	< 80
Be, ug/l	< 1	< 1	< 1	< 1	< 1
Cd, ug/l	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Cr, ug/l	< 2	< 2	< 2	< 2	< 2
Co, ug/l	< 40	< 40	< 40	< 40	< 40
Cu, ug/l	20,000	17,000	19,000	16,000	250
Fe, ug/l	590	810	530	1000	2600
Pb, ug/l	12	17	14	18	2
Mn, ug/l	36	41	16	34	< 11
Hg, ug/l	< 1.3 *	< 0.85 *	< 0.67 *	< 0.94 *	< 0.85 *
Mo, ug/l	30	29	< 29	< 29	< 29
Ni, ug/l	< 30	< 30	< 30	< 30	< 30
Se, ug/l	4	4	3	4	4

* High detection limit due to lack of sample.

Signed: David Turriff Date: May 20, 1988

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 Engineers/Architects
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 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 37695.04
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	WR2 D1	WR3 D1	WR4 D1	WR5 D1	Blank
Date Collected	3/22/88	3/22/88	3/22/88	3/22/88	3/22/88
Date Received	3/22/88	3/22/88	3/22/88	3/22/88	3/22/88
Parameters, units	Results				
Al, ug/l	122	189	81	83	21
As, ug/l	< 3	< 3	< 3	< 3	< 3
Ba, ug/l	< 80	< 80	< 80	< 80	< 80
Be, ug/l	< 1	< 1	< 1	< 1	< 1
Cd, ug/l	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Cr, ug/l	11	< 2	< 2	< 2	< 2
Co, ug/l	< 40	< 40	< 40	< 40	< 40
Cu, ug/l	92	82	380	7500	< 10
Fe, ug/l	160	220	< 55	62	< 55
Pb, ug/l	< 2	< 2	< 2	< 2	< 2
Mn, ug/l	54	84	190	57	< 11
Hg, ug/l*	< 0.86	< 1.3	1.1	< 0.66	< 0.72
Mo, ug/l	< 29	< 29	< 29	< 29	< 29
Ni, ug/l	< 30	< 30	< 30	< 30	< 30
Se, ug/l	3	4	5	< 3	< 3

* High detection limits due to lack of sample.

Signed: David Turriff Date: May 20, 1988

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 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client Address Kennecott

Sampled By Scope I.D. 87K10
 Billing Line No.
 Liaison D. Turriff
 Supply Order No.
 Result Sheet No. 37695.05

Name of Rep. Telephone No. (000) 000-0000

Sample I.D. Sand (E) Sand (W)

Date Collected 3/22/88 3/22/88
 Date Received 3/22/88 3/22/88

Parameters, units ----- Results -----

Al, ug/l	2280	5960
As, ug/l	13	32
Ba, ug/l	< 80	380
Be, ug/l	< 1	< 1
Cd, ug/l	0.3	< 0.3
Cr, ug/l	13	120
Co, ug/l	< 40	< 80
Cu, ug/l	60	860
Fe, ug/l	3500	22,000
Pb, ug/l	6	17
Mn, ug/l	48	180
Hg, ug/l	< 3.1*	< 3.3*
Mo, ug/l	36	< 29
Ni, ug/l	< 30	< 30
Se, ug/l	12	8

* High detection limits due to lack of sample.

Signed: David Turriff Date: May 20, 1988

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 Engineers/Architects
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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client Address Kennecott

Sampled By Scope I.D. 87K10
 Billing Line No.
 Liaison D. Turriff
 Supply Order No.
 Result Sheet No. 37695.06

Name of Rep. Telephone No. (000) 000-0000

Sample I.D. WR-1 WR-2 WR-3 WR-4 WR-5

Date Collected 3/22/88 3/22/88 3/22/88 3/22/88 3/22/88
 Date Received 3/22/88 3/22/88 3/22/88 3/22/88 3/22/88

Parameters, units ----- Results -----

Ag, ug/l	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Na, ug/l	3800	6400	4400	3200	3100
Tl, ug/l	2	3	10	14	21
Sn, ug/l	< 67	< 67	69	< 67	< 67
Ti, ug/l	< 4	< 4	< 4	< 4	< 4
Uranium, ug/l	4	7	8	33	45
Zn, ug/l	220	4300	56,000	13,000	2000
pH, std. units	5.80	4.10	4.25	3.55	3.15
Sulfate, mg/l	150	270	790	940	1500
TDS, mg/l	200	390	1200	1500	2300
Spec. Conductivity,*	339	541	1256	1518	2129

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: May 20, 1988

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 Engineers/Architects
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 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client Kennebecott
 Address
 Sampled By
 Scope I.D. 87K10
 Billing Line No.
 Liaison D. Turriff
 Supply Order No.
 Result Sheet No. 37695.09
 Name of Rep.
 Telephone No. (000) 000-0000

Sample I.D.	WR2 D1	WR3 D1	WR4 D1	WR5 D1	Blank
Date Collected	3/22/88	3/22/88	3/22/88	3/22/88	3/22/88
Date Received	3/22/88	3/22/88	3/22/88	3/22/88	3/22/88
Parameters, units	Results				
Ag, ug/l	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Na, ug/l	570	< 500	< 500	< 500	< 500
Tl, ug/l	< 2	< 2	< 2	< 2	< 2
Sn, ug/l	86	< 67	< 67	115	69
Ti, ug/l	< 4	4	< 4	< 4	< 4
Uranium, ug/l **	---	---	---	---	---
Zn, ug/l	140	200	250	49	19
pH, std. units	5.45	6.50	5.75	4.70	3.65
Sulfate, mg/l	< 25 ***	< 25 ***	< 50 ***	< 25 ***	< 25 ***
TDS, mg/l	< 20	< 20	130	< 20	< 20
Spec. Conductivity,*	32	68	101	51	5

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** No sample. *** High detection limit due to lack of sample.

Signed: David Turriff Date: May 20, 1988

FOTH AND VAN DYKE
 Engineers/Architects
 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client Kennebecott
 Address
 Sampled By
 Scope I.D. 87K10
 Billing Line No.
 Liaison D. Turriff
 Supply Order No.
 Result Sheet No. 37695.10
 Name of Rep.
 Telephone No. (000) 000-0000

Sample I.D.	Sand (E)	Sand (W)
Date Collected	3/22/88	3/22/88
Date Received	3/22/88	3/22/88
Parameters, units	Results	
Ag, ug/l	< 0.4	< 0.4
Na, ug/l	45,000	21,000
Tl, ug/l	< 2	< 2
Sn, ug/l	< 67	< 67
Ti, ug/l	35	280
Uranium, ug/l	***	***
Zn, ug/l	78	69
pH, std. units	6.70	7.50
Sulfate, mg/l	20	< 100 **
TDS, mg/l	250	1400
Spec. Conductivity,*	271	214

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to lack of sample. *** Insufficient sample for analysis.

Signed: David Turriff Date: May 20, 1988

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

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 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client Address: Kennecott
 Sampled By: Scope I.D. 87K10
 Billing Line No.:
 Liaison: D. Turriff
 Supply Order No.:
 Result Sheet No.: 37741.01
 Name of Rep.:
 Telephone No.: (000) 000-0000

Client Address: Kennecott
 Sampled By: Scope I.D. 87K10
 Billing Line No.:
 Liaison: D. Turriff
 Supply Order No.:
 Result Sheet No.: 37741.02
 Name of Rep.:
 Telephone No.: (000) 000-0000

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	4/1/88	4/1/88	4/1/88	4/1/88	4/1/88
Date Received	4/6/88	4/6/88	4/6/88	4/6/88	4/6/88
Parameters, units	Results				
Cu, ug/l	22	9100	56,000	100,000	200,000
Fe, ug/l	65	880	1400	4000	57,000
Pb, ug/l	< 2	< 2	2	< 2	< 2
Mn, ug/l	54	460	1000	1400	1800
Hg, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Zn, ug/l	42	1900	28,000	10,000	850
Sulfate, mg/l	100	150	380	670	700
Spec. Conductivity,*	254	328	688	1070	1092
pH, std. units	6.92	4.44	4.67	3.60	3.17

Sample I.D.	ML	Till (C)	Till (E)	Till (W)	Sand (C)
Date Collected	4/1/88	4/1/88	4/1/88	4/1/88	4/1/88
Date Received	4/6/88	4/6/88	4/6/88	4/6/88	4/6/88
Parameters, units	Results				
Cu, ug/l	190	45	39	130	48
Fe, ug/l	6000	19,000	35,000	13,000	8770
Pb, ug/l	18	6	5	5	8
Mn, ug/l	100	200	150	320	220
Hg, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 2.5 **
Zn, ug/l	99	44	31	27	25
Sulfate, mg/l	18	< 10 **	< 10 **	13	< 20 **
Spec. Conductivity,*	98	32	66	39	180
pH, std. units	8.56	6.89	7.25	7.24	8.12

comments: Soil Leach Column Testing. * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: June 3, 1988

comments: Soil Leach Column Testing. * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to lack of sample.

Signed: David Turriff Date: June 3, 1988

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

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 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client Address: Kennecott
 Sampled By: Scope I.D. 87K10
 Billing Line No.
 Liaison: D. Turriff
 Supply Order No.
 Result Sheet No. 37741.03
 Name of Rep.
 Telephone No. (000) 000-0000

Client Address: Kennecott
 Sampled By: Scope I.D. 87K10
 Billing Line No.
 Liaison: D. Turriff
 Supply Order No.
 Result Sheet No. 37741.04
 Name of Rep.
 Telephone No. (000) 000-0000

Sample I.D.	Sand (E)	Sand (W)	WW1 D1 A	WW1 D1 B	WW1 D1 C
Date Collected	4/1/88	4/1/88	4/1/88	4/1/88	4/1/88
Date Received	4/6/88	4/6/88	4/6/88	4/6/88	4/6/88
Parameters, units	Results				
Cu, ug/l	27	390	5100	5300	5700
Fe, ug/l	2200	890	1700	2900	1500
Pb, ug/l	2	< 30 **	93	190	82
Mn, ug/l	40	< 150 **	< 15 **		
Hg, ug/l	2.1	< 25 **	< 1.0 **	< 1.0 **	1.0 **
Zn, ug/l	48	13	4500	4900	5000
Sulfate, mg/l	10	< 50 **	21	22	21
Spec. Conductivity,*	73	***	43	56	53
pH, std. units	7.71	8.03	4.26	4.28	4.27

comments: Soil Leach Column Testing. * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. *** Insufficient sample for analysis. ** High detection limit due to lack of sample.

Signed: David Turriff Date: June 3, 1988

Sample I.D.	WW1 D1 D	WR1 D1	WR2 D1	WR3 D1	WR4 D1
Date Collected	4/1/88	4/1/88	4/1/88	4/1/88	4/1/88
Date Received	4/6/88	4/6/88	4/6/88	4/6/88	4/6/88
Parameters, units	Results				
Cu, ug/l	4700	84	120	150	160
Fe, ug/l	1800	14,000	3200	2600	820
Pb, ug/l		20	12	55	37
Mn, ug/l	<	23	29	19	64
Hg, ug/l	1.0 **	< 1.0 **	< 1.0 **	< 1.0 **	< 1.0 **
Zn, ug/l	6200	270	150	310	60
Sulfate, mg/l	20	< 20 **	< 50 **	12	16
Spec. Conductivity,*	52	36	19	28	42
pH, std. units	4.34	7.97	6.42	7.31	6.67

comments: Soil Leach Column Testing. * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to lack of sample.

Signed: David Turriff Date: June 3, 1988

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Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
Address: _____
Sampled By: _____
Scope I.D.: 87K10
Billing Line No.: _____
Liaison: D. Turriff
Supply Order No.: _____
Result Sheet No.: 37741.05
Name of Rep.: _____
Telephone No.: (000) 000-0000

Sample I.D.	WR5 D1	Blank
Date Collected	4/1/88	4/1/88
Date Received	4/6/88	4/6/88
Parameters, units	----- Results -----	
Cu, ug/l	3600	32
Fe, ug/l	210	< 55
Pb, ug/l	4	2
Mn, ug/l	15	< 11
Hg, ug/l	< 1.0 **	< 1.0 **
Zn, ug/l	23	38
Sulfate, mg/l	13	< 10 **
Spec. Conductivity,*	25	3
pH, std. units	5.37	5.18

comments: Soil Leach Column Testing. * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to lack of sample.

Signed: David Turriff Date: June 3, 1988

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Engineers/Architects
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Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
Address: _____
Sampled By: _____
Scope I.D.: 87K10
Billing Line No.: _____
Liaison: D. Turriff
Supply Order No.: _____
Result Sheet No.: 38611.01
Name of Rep.: _____
Telephone No.: (000) 000-0000

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	4/1/88	4/1/88	4/1/88	4/1/88	4/1/88
Date Received	4/6/88	4/6/88	4/6/88	4/6/88	4/6/88
Parameters, units	----- Results -----				
Al, ug/l	181	693	321	8430	8550
Co, ug/l	< 40	99	610	720	580
Ni, ug/l	--	< 30	340	270	260
Na, ug/l	4500	5500	3200	3800	2600

comments:

Signed: David Turriff Date: November 9, 1988

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LABORATORY ANALYSIS RESULTS
W.D.N.R. LAB CERT. NO. 405051240

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Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
W.D.N.R. LAB CERT. NO. 405051240

Client Kennecott
Address
Sampled By
Scope I.D. 87K10
Billing Line No.
Liaison D. Turriff
Name of Rep.
Supply Order No.
Telephone No. (000) 000-0000
Result Sheet No. 38611.02

Client Kennecott
Address
Sampled By
Scope I.D. 87K10
Billing Line No.
Liaison D. Turriff
Name of Rep.
Supply Order No.
Telephone No. (000) 000-0000
Result Sheet No. 38611.03

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	4/1/88	4/1/88	4/1/88	4/1/88	4/1/88
Date Received	4/6/88	4/6/88	4/6/88	4/6/88	4/6/88

Sample I.D.	ML	Till-E	Till-C	Till-W	Sandstone E
Date Collected	4/1/88	4/1/88	4/1/88	4/1/88	4/1/88
Date Received	4/6/88	4/6/88	4/6/88	4/6/88	4/6/88

Parameters, units ----- Results -----

Al, ug/l	10,200	3280	2760	1830	361
----------	--------	------	------	------	-----

Parameters, units ----- Results -----

Al, ug/l	13,200	21,800	29,700	20,700	3780
As, ug/l					< 3
Cr, ug/l	16	31	43	18	13
Ti, ug/l	320	1300	1910	1100	108
Se, ug/l					< 3
Na, ug/l					15,000

comments:

Signed: David Turriff Date: November 9, 1988

comments:

Signed: David Turriff Date: November 9, 1988

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P.O. Box 19012
Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
W.D.N.R. LAB CERT. NO. 405051240

Client Address: Kennecott
Name of Rep.:
Telephone No.: (000) 000-0000

Sampled By:
Scope I.D.: 87K10
Billing Line No.:
Liaison: D. Turriff
Supply Order No.:
Result Sheet No.: 38611.04

Sample I.D.	Sandstone C	Sandstone W
Date Collected	4/1/88	4/1/88
Date Received	4/6/88	4/6/88

Parameters, units ----- Results -----

Al, ug/l	3610	683
As, ug/l	< 3	< 3
Cr, ug/l	28	7
Ti, ug/l	137	39
Se, ug/l	< 12 *	< 4 *
Na, ug/l	10,000	4200

comments: * High detection limits due to dilution factors.

Signed: David Turriff Date: November 9, 1988

3.5-Q-44

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2737 S. Ridge Road
P.O. Box 19012
Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
W.D.N.R. LAB CERT. NO. 405051240

Client Address: Kennecott
Name of Rep.:
Telephone No.: (000) 000-0000

Sampled By:
Scope I.D.: 87K10
Billing Line No.:
Liaison: D. Turriff
Supply Order No.:
Result Sheet No.: 37859.01

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	4/21/88	4/21/88	4/21/88	4/21/88	4/21/88
Date Received	4/28/88	4/28/88	4/28/88	4/28/88	4/28/88

Parameters, units ----- Results -----

Hg, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Sulfate, mg/l	11	20	74	62	60
pH, std. units	7.20	5.40	5.45	4.33	3.93
Spec. Conductivity,*	48	54	192	170	178

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: June 3, 1988

3.5-Q-45

FOTH AND VAN DYKE
 Engineers/Architects
 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

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 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client Address: Kennecott
 Sampled By: Scope I.D. 87K10
 Billing Line No.
 Liaison: D. Turriff
 Supply Order No.
 Result Sheet No. 37859.02
 Name of Rep.
 Telephone No. (000) 000-0000

Client Address: Kennecott
 Sampled By: Scope I.D. 87K10
 Billing Line No.
 Liaison: D. Turriff
 Supply Order No.
 Result Sheet No. 37859.03
 Name of Rep.
 Telephone No. (000) 000-0000

Sample I.D.	(Sapro) ML	Till (c)	Till (E)	Till (W)	Sand (C)
Date Collected	4/21/88	4/21/88	4/21/88	4/21/88	4/21/88
Date Received	4/28/88	4/28/88	4/28/88	4/28/88	4/28/88

Sample I.D.	Sand (E)	Sand (W)	Top (C)	Top (E)	Top (W)
Date Collected	4/21/88	4/21/88	4/21/88	4/21/88	4/21/88
Date Received	4/28/88	4/28/88	4/28/88	4/28/88	4/28/88

Parameters, units	Results				
Hg, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 1.8 **
Sulfate, mg/l	8	< 5	< 5	< 10	< 25 **
pH, std. units	8.88	7.52	7.93	8.07	7.88
Spec. Conductivity,*	29	15	19	31	79

Parameters, units	Results				
Hg, ug/l	***	< 1.0 **			
Sulfate, mg/l	< 250 **	< 250 **			
pH, std. units	8.64	8.56	8.24	9.8	14
Spec. Conductivity,*	***	***			

DATA NOT USED
 DATA NOT USED
 DATA NOT USED

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to lack of sample.

Signed: David Turriff Date: June 3, 1988

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to lack of sample. *** Lack of sample.

Signed: David Turriff Date: June 3, 1988

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 Engineers/Architects
 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 37859.04

Sample I.D.	WW1 D1 A	WW1 D1 B	WW1 D1 C	WW1 D1 D	WRI D1
Date Collected	4/21/88	4/21/88	4/21/88	4/21/88	4/21/88
Date Received	4/28/88	4/28/88	4/28/88	4/28/88	4/28/88
Parameters, units	Results				
Hg, ug/l	< 0.8 **	< 0.8 **	< 0.8 **	< 0.8 **	2.4
Sulfate, mg/l	< 21 **	< 22 **	< 20 **	< 16 **	< 50 **
pH, std. units	4.18	4.32	4.27	4.24	7.96
Spec. Conductivity,*	91	54	41	24	28

DATA NOT USED
 DATA NOT USED
 DATA NOT USED
 DATA NOT USED

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to lack of sample.

Signed: David Turriff Date: June 3, 1988

FOTH AND VAN DYKE
 Engineers/Architects
 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 37859.05

Sample I.D.	WR2 D1	WR3 D1	WR4 D1	WR5 D1	Blank
Date Collected	4/21/88	4/21/88	4/21/88	4/21/88	4/21/88
Date Received	4/28/88	4/28/88	4/28/88	4/28/88	4/28/88
Parameters, units	Results				
Hg, ug/l	0.6	< 0.5	< 0.5	< 0.5	< 0.5
Sulfate, mg/l	< 20 **	< 20 **	< 20 **	< 20 **	< 20 **
pH, std. units	6.17	7.40	6.78	5.19	5.47
Spec. Conductivity,*	16	23	31	23	3

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to lack of sample.

Signed: David Turriff Date: June 3, 1988

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 Engineers/Architects
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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

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 Engineers/Architects
 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client Address: Kennecott
 Sampled By: Scope I.D. 87K10
 Billing Line No.
 Liaison: D. Turriff
 Supply Order No.
 Result Sheet No. 38612.01
 Name of Rep.
 Telephone No. (000) 000-0000

Client Address: Kennecott
 Sampled By: Scope I.D. 87K10
 Billing Line No.
 Liaison: D. Turriff
 Supply Order No.
 Result Sheet No. 38612.02
 Name of Rep.
 Telephone No. (000) 000-0000

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	4/21/88	4/21/88	4/21/88	4/21/88	4/21/88
Date Received	4/28/88	4/28/88	4/28/88	4/28/88	4/28/88

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	4/21/88	4/21/88	4/21/88	4/21/88	4/21/88
Date Received	4/28/88	4/28/88	4/28/88	4/28/88	4/28/88

Parameters, units	Results				
Al, ug/l	41	31	44	473	353
Co, ug/l	< 40	< 40	110	80	55
Cu, ug/l	< 10	670	7300	10,000	24,000
Fe, ug/l	< 55	< 55	120	3700	4200
Mn, ug/l	< 11	61	300	180	210
Ni, ug/l	--	< 30	67	110	48
Na, ug/l	1100	1200	1200	1000	680
Zn, ug/l	13	200	7700	1300	130

Parameters, units	Results				
Al, ug/l	14,000	9400	9000	1000	546
Zn, ug/l	380	380	1000	290	150
Cu, ug/l	140	270	500	290	3800
Fe, ug/l	14,000	5600	5600	1300	380
Mn, ug/l	< 55 *	40	< 28 *	< 110 *	< 22
Pb, ug/l	20	12	750	< 20 *	4

comments:

comments: * High detection limit due to lack of sample.

Signed: David Turriff Date: November 17, 1988

Signed: David Turriff Date: November 17, 1988

FJTH AND VAN DYKE
 Engineers/Architects
 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

FJTH AND VAN DYKE
 Engineers/Architects
 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Sampled By: [blank]
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38612.03

Client: Kennecott
 Address: [blank]
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Sampled By: [blank]
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38612.04

Sample I.D.	ML	Till E	Till C	Till W	Sandstone E
Date Collected	4/21/88	4/21/88	4/21/88	4/21/88	4/21/88
Date Received	4/28/88	4/28/88	4/28/88	4/28/88	4/28/88

Sample I.D.	Sandstone C	Sandstone W
Date Collected	4/21/88	4/21/88
Date Received	4/28/88	4/28/88

Parameters, units	Results				
Al, ug/l	2480	10,900	12,000	40,800	100
As, ug/l					< 3
Cr, ug/l	< 3	< 3	< 3	38	No sample
Cu, ug/l	27	20	31	270	No sample
Fe, ug/l	930	7400	7000	28,000	No sample
Pb, ug/l	9				< 2
Mn, ug/l	19	71	76	550	No sample
Na, ug/l					10,000
Se, ug/l					< 3
Ti, ug/l	52	667	775	2200	< 4
Zn, ug/l	19				No sample

Parameters, units	Results	
Al, ug/l	786	127
As, ug/l	< 3	< 3
Cr, ug/l	< 3	< 6 *
Cu, ug/l	24	22
Fe, ug/l	310	< 110
Pb, ug/l	< 2	< 2
Mn, ug/l	13	< 22 *
Na, ug/l	12,000	8600
Se, ug/l	< 3	< 6
Ti, ug/l	15	< 4
Zn, ug/l	51	< 11

comments:

comments: * High detection limit due to insufficient sample.

Signed: David Turriff Date: November 17, 1988

Signed: David Turriff Date: November 17, 1988

FOTH AND VAN DYKE
 Engineers/Architects
 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Sampled By: DJD
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38038.01

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	6/1/88	6/1/88	6/1/88	6/1/88	6/1/88
Date Received	6/1/88	6/1/88	6/1/88	6/1/88	6/1/88
Parameters, units	Results				
pH, std. units	7.46	5.94	5.87	5.15	4.10
Spec. Conductivity,*	54	23	73	19	65
Mercury, ug/l	1.0	< 0.50	< 0.50	< 0.50	< 0.50
Sulfate, mg/l	5	7	26	7	22

comments: Soil Leach Column.
 * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: June 30, 1988

FOTH AND VAN DYKE
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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Sampled By: DJD
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38038.02

Sample I.D.	ML (Sapro)	Till (C)	Till (E)	Till (W)	Sand (C)
Date Collected	6/1/88	6/1/88	6/1/88	6/1/88	6/1/88
Date Received	6/1/88	6/1/88	6/1/88	6/1/88	6/1/88
Parameters, units	Results				
pH, std. units	8.76	8.04	7.63	8.04	7.30
Spec. Conductivity,*	33	13	16	10	33
Mercury, ug/l	< 0.50	< 0.50	< 0.50	0.66	2.7
Sulfate, mg/l	7	< 10 **	< 25 **	< 25 **	< 10 **

comments: Soil Leach Column.
 * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to lack of sample.

Signed: David Turriff Date: June 30, 1988

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LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Sampled By: DJD
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38038.03

Sample I.D.	Sand (E)	Sand (W)	WR1 D1	WR2 D1	WR3 D1
Date Collected	6/1/88	6/1/88	6/1/88	6/1/88	6/1/88
Date Received	6/1/88	6/1/88	6/1/88	6/1/88	6/1/88
Parameters, units	Results				
pH, std. units	8.16	7.90	8.00	6.11	7.11
Spec. Conductivity,*	--	125	19	10	14
Mercury, ug/l	42	1.4	5.8	< 0.50	< 0.50
Sulfate, mg/l	< 25 **	< 10 **	< 10 **	< 10 **	< 10 **

comments: Soil Leach Column.
 * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to lack of sample.

Signed: David Turriff Date: June 30, 1988

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LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Sampled By: DJD
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38038.04

Sample I.D.	WR4 D1	WR5 D1	WR1 D1 A	WR1 D1 B	WR1 D1 C
Date Collected	6/1/88	6/1/88	6/1/88	6/1/88	6/1/88
Date Received	6/1/88	6/1/88	6/1/88	6/1/88	6/1/88
Parameters, units	Results				
pH, std. units	6.73	5.13	4.22	18	4.19
Spec. Conductivity,*	12	16	32	34	34
Mercury, ug/l	< 0.50	0.60	< 0.50	4	8.4
Sulfate, mg/l	< 10 **	< 10 **	< **	< **	< **

comments: Soil Leach Column.
 * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to lack of sample.

Signed: David Turriff Date: June 30, 1988

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Sampled By: DJD
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Supply Order No.: [blank]
 Result Sheet No.: 38038.05

Client: Kennecott
 Address: [blank]
 Sampled By: [blank]
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Supply Order No.: [blank]
 Result Sheet No.: 38423.01

Sample I.D.	WR-1 D	Blank	Top (C)	Top (E)	Top (W)
Date Collected	6/1/88	6/1/88	6/1/88	6/1/88	6/1/88
Date Received	6/1/88	6/1/88	6/1/88	6/1/88	6/1/88
Parameters, units	Results				
pH, std. units	4.24	5.27	6.36	6.20	6.68
Spec. Conductivity,*	2			27	
Mercury, ug/l	< 0.50	< 0.50			
Sulfate, mg/l	< **	< 10 **			

DATA NOT USED

DATA NOT USED

DATA NOT USED

DATA NOT USED

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	5/31/88	5/31/88	5/31/88	5/31/88	5/31/88
Date Received	8/16/88	8/16/88	8/16/88	8/16/88	8/16/88
Parameters, units	Results				
Ti, ug/l	< 4	< 4	< 4	< 4	< 4
Al, ug/l	52	31	18	46	41
Co, ug/l	< 40	< 40	40	< 40	< 40
Ni, ug/l	< 30	< 30	< 30	< 30	< 30
Na, ug/l	980	< 500	< 500	< 500	< 500
Cd, ug/l	< 0.3	< 0.3	0.6	< 0.3	0.9
Se, ug/l	< 3	< 3	< 3	< 3	< 3
U, ug/l					
As, ug/l	< 3	< 3	< 3	< 3	< 3
Ba, ug/l	< 80	< 80	< 80	< 80	< 80
Be, ug/l	< 1	< 1	< 1	< 1	< 1
Mo, ug/l	< 29	< 29	< 29	< 29	< 29
Ag, ug/l	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Tl, ug/l	< 2	< 2	< 2	< 2	< 2
Sn, ug/l	< 67	< 67	< 67	< 67	< 67

comments: Soil Leach Column.
 * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to lack of sample.

comments: Soil Leach Columns.

Signed: David Turriff Date: June 30, 1988

Signed: David Turriff Date: September 7, 1988

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 Engineers/Architects
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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Sampled By: [blank]
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38423.02

Sample I.D.	Sapro ML	Till-W	Till-C	Till-E	Sandstone C
Date Collected	5/31/88	5/31/88	5/31/88	5/31/88	5/31/88
Date Received	8/16/88	8/16/88	8/16/88	8/16/88	8/16/88
Parameters, units	Results				
Ti, ug/l	< 4	903	242	606	< 8 *
Al, ug/l	441	13,600	4680	12,500	710
Co, ug/l	< 40	< 40	< 40	< 40	< 40
Ni, ug/l	< 30	< 30	< 30	< 30	< 30
Na, ug/l	5400	< 500	3500	2400	2600
Cd, ug/l	< 0.3	< 0.3	< 0.3	0.5	0.3
Se, ug/l	< 3	< 3	< 3	< 3	< 3
U, ug/l					
As, ug/l	< 3	8	< 3	4	< 3
Ba, ug/l	< 80	< 80	< 80	< 80	< 80
Be, ug/l	< 1	< 1	< 1	< 1	< 2 *
Mo, ug/l	< 29	< 29	< 29	< 29	< 58 *
Ag, ug/l	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Tl, ug/l	< 2	< 2	< 2	2	< 2
Sn, ug/l	< 67	< 67	< 67	< 67	< 134 *

Soil Leach Columns.
 * High detection limit due to lack of sample.

Signed: David Turriff Date: September 7, 1988

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Sampled By: [blank]
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38423.03

Sample I.D.	Sandstone E	Sandstone W	WR-1 D1	WR-2 D1	WR-3 D1
Date Collected	5/31/88	5/31/88	5/31/88	5/31/88	5/31/88
Date Received	8/16/88	8/16/88	8/16/88	8/16/88	8/16/88
Parameters, units	Results				
Ti, ug/l	< 80 *	< 8 *	12	< 8 *	< 8 *
Al, ug/l	1000	488	2110	280	700
Co, ug/l	140	< 40	< 40	< 40	< 40
Ni, ug/l	< 30	< 30	< 30	< 30	< 30
Na, ug/l	4500	12,000	< 500	< 500	< 500
Cd, ug/l	< 0.3	0.4	0.6	0.6	< 0.3
Se, ug/l	< 3	< 3	< 3	< 3	< 3
U, ug/l					
As, ug/l	< 60 *	< 3	< 3	< 3	< 3
Ba, ug/l	< 1600 *	< 160 *	< 160 *	< 80	< 80
Be, ug/l	< 20 *	< 2 *	< 2 *	< 2 *	< 2 *
Mo, ug/l	< 580 *	< 58 *	< 58 *	< 58 *	< 58 *
Ag, ug/l	< 8 *	< 0.4	< 0.4	< 0.4	< 0.4
Tl, ug/l	< 40 *	< 2	< 2	< 2	< 2
Sn, ug/l	< 1340 *	< 134 *	< 134 *	< 134 *	< 134 *

Soil Leach Columns.
 * High detection limit due to lack of sample.

Signed: David Turriff Date: September 7, 1988

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 Engineers/Architects
 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Sampled By: [blank]
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38423.04
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000

Sample I.D.	WR-4 D1	WR-5 D1	Column Blank
Date Collected	5/31/88	5/31/88	5/31/88
Date Received	8/16/88	8/16/88	8/16/88
Parameters, units	Results		
Ti, ug/l	< 8 *	< 8 *	< 8 *
Al, ug/l	570	100	116
Co, ug/l	< 40	< 40	< 40
Ni, ug/l	< 30	< 30	< 30
Na, ug/l	< 500	< 500	< 500
Cd, ug/l	< 0.3	0.5	0.3
Se, ug/l	< 3	< 3	< 3
U, ug/l			
As, ug/l	< 3	< 3	< 3
Ba, ug/l	< 80	< 80	< 80
Be, ug/l	< 2 *	< 2 *	< 2 *
Mo, ug/l	< 58 *	< 58 *	< 58 *
Ag, ug/l	< 0.4	< 0.4	< 0.4
Tl, ug/l	< 2	< 2	< 2
Sn, ug/l	< 134 *	< 134 *	< 134 *

Soil Leach Columns.
 * High detection limit due to lack of sample.

Signed: David Turriff Date: September 7, 1988

Oneida Research & Technology Center
 2496 West Mason Street
 P. O. Box 12435
 Green Bay, WI 54307-2435
 Phone No.: (414)498-2222

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Sampled By: DJD
 P.O. #: [blank]
 Job #: 87K10
 Report to: B. Burton
 Invoice #: 1015
 Result Sheet No.: 38786.01
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	8/6/88	8/6/88	8/6/88	8/6/88	8/6/88
Date Received	8/8/88	8/8/88	8/8/88	8/8/88	8/8/88
Parameters, units	Results				
SO4, mg/l	48	49	120	170	190
F, mg/l	0.6	0.3	0.3	0.2	0.4
Hg, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TDS, mg/l	360	280	370	410	480
Alkalinity, mg/l	78	< 10	< 10	< 10	< 10
Chloride, mg/l	38	40	39	41	40
Cu, ug/l	17	230	7200	16,000	53,000
Fe, ug/l	81	< 55	69	1200	3100
Pb, ug/l	< 2	< 2	< 2	< 2	< 2
Mn, ug/l	32	270	650	450	1100
Zn, ug/l	35	180	12,000	2300	370
Al, ug/l	73	48	41	272	1000
pH, std. units	8.00	6.71	5.95	5.41	3.80
Spec. Conductivity,*	469	373	511	569	604
Temperature, C	18.0	18.0	18.0	18.0	18.0

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: November 7, 1988

Oneida Research & Technology Center
 2496 West Mason Street
 P. O. Box 12435
 Green Bay, WI 54307-2435
 Phone No.: (414)498-2222

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennebecott
 Address: [Blank]
 Name of Rep.: [Blank]
 Telephone No.: (000) 000-0000
 Sampled By: DJD
 P.O. #: [Blank]
 Job #: 87K10
 Report to: B. Burton
 Invoice #: 1015
 Result Sheet No.: 38786.02

Sample I.D.	Till-E	Till-C	Till-W	Sapro ML	Sandstone E
Date Collected	8/6/88	8/6/88	8/6/88	8/6/88	8/6/88
Date Received	8/8/88	8/8/88	8/8/88	8/8/88	8/8/88
Parameters, units	Results				
SO4, mg/l	9	< 5	10	30	17
F, mg/l	0.8	0.4	0.6	1.6	< 0.2 **
Hg, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TDS, mg/l	350	330	260	300	410
Alkalinity, mg/l	50	37	32	80	16
Chloride, mg/l	36	32	32	30	49
Cu, ug/l	< 10	27	27	35	22
Fe, ug/l	650	3300	710	180	1900
Pb, ug/l	< 2	2	< 2	< 2	2
Mn, ug/l	< 11	47	23	55	180
Zn, ug/l	13	20	15	15	32
Al, ug/l	845	5040	963	321	1370
pH, std. units	8.00	7.76	7.81	8.65	8.07
Spec. Conductivity,*	325	279	275	383	347
Temperature, C	18.0	18.0	18.0	18.0	18.0

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to sample turbidity.

Signed: David Turiff Date: November 7, 1988

Oneida Research & Technology Center
 2496 West Mason Street
 P. O. Box 12435
 Green Bay, WI 54307-2435
 Phone No.: (414)498-2222

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennebecott
 Address: [Blank]
 Name of Rep.: [Blank]
 Telephone No.: (000) 000-0000
 Sampled By: DJD
 P.O. #: [Blank]
 Job #: 87K10
 Report to: B. Burton
 Invoice #: 1015
 Result Sheet No.: 38786.03

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	8/6/88	8/6/88	8/6/88	8/6/88	8/6/88
Date Received	8/8/88	8/8/88	8/8/88	8/8/88	8/8/88
Parameters, units	Results				
SO4, mg/l	15	50	39	48	66
Hg, ug/l	< 0.75 **	< 0.69 **	< 0.77 **	< 0.77 **	< 1.0 **
Al, ug/l	742	392	627	443	489
Cu, ug/l	22	270	41	50	5500
Fe, ug/l	1200	500	750	310	100
Pb, ug/l	4	< 4 **	9	7	< 2
Mn, ug/l	34	320	28	130	110
Zn, ug/l	62	750	110	27	120
pH, s.u.	8.67	7.00	7.65	7.48	5.58
Spec. Conductivity,*	293	291	310	313	307
Temperature, C	18.5	18.5	18.5	18.5	18.5

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to lack of sample.

Signed: David Turiff Date: November 7, 1988

Oneida Research & Technology Center
 2496 West Mason Street
 P. O. Box 12435
 Green Bay, WI 54307-2435
 Phone No.: (414)498-2222

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Blank]
 Sampled By: DJD
 P.O. #: [Blank]
 Job #: 87K10
 Report to: B. Burton
 Invoice #: 1015
 Result Sheet No.: 38786.04
 Name of Rep.: [Blank]
 Telephone No.: (000) 000-0000

Sample I.D.	Sandstone C	Sandstone W	Blank X	Blank
Date Collected	8/6/88	8/6/88	8/6/88	8/6/88
Date Received	8/8/88	8/8/88	8/8/88	8/8/88
Parameters, units	Results			
SO4, mg/l	10	< 5	13	21
F, mg/l	< 0.1	< 0.5 **		
Hg, ug/l	< 0.5	< 0.5		
TDS, mg/l	350	470	330	420
pH, std. units	7.74	8.25	8.03	9.32
Spec. Conductivity,*	354	355	420	275
Temperature, C	18.5	18.5	18.0	18.0
Alkalinity, mg/l	18	14	21	172
Chloride, mg/l	49	48	62	58
Ca, ug/l			22,000	19,000
Mg, ug/l			20,000	11,000
Fe, ug/l	400	5300	2500	990
Mn, ug/l	41	92	270	80
Na, ug/l	20,000	23,000	20,000	14,000

* Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to sample turbidity.

Signed: David Turriff Date: November 8, 1988

Oneida Research & Technology Center
 2496 West Mason Street
 P. O. Box 12435
 Green Bay, WI 54307-2435
 Phone No.: (414)498-2222

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Blank]
 Sampled By: DJD
 P.O. #: [Blank]
 Job #: 87K10
 Report to: B. Burton
 Invoice #: 1015
 Result Sheet No.: 38786.05
 Name of Rep.: [Blank]
 Telephone No.: (000) 000-0000

Sample I.D.	Till-E	Till-C	Till-W	Sapro ML	Sandstone E
Date Collected	8/6/88	8/6/88	8/6/88	8/6/88	8/6/88
Date Received	8/8/88	8/8/88	8/8/88	8/8/88	8/6/88

Parameters, units	Results				
Cr, ug/l	5	9	4		7
Na, ug/l	36,000	27,000	36,000	44,000	20,000
Ti, ug/l	34	326	38	357	63

comments:

Signed: David Turriff Date: November 7, 1988

Oneida Research & Technology Center
 2496 West Mason Street
 P. O. Box 12435
 Green Bay, WI 54307-2435
 Phone No.: (414)498-2222

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

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 Engineers/Architects
 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Sampled By: DJD
 P.O. #: [blank]
 Job #: 87K10
 Report to: B. Burton
 Invoice #: 1015
 Result Sheet No.: 38786.06

Client: Kennecott
 Address: [blank]
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Sampled By: [blank]
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38408.01

Sample I.D.	Sandstone C	Sandstone W
Date Collected	8/6/88	8/6/88
Date Received	8/8/88	8/8/88

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	8/11/88	8/11/88	8/11/88	8/11/88	8/11/88
Date Received	8/12/88	8/12/88	8/12/88	8/12/88	8/12/88

Parameters, units	Results	
Al, ug/l	617	4540
Cr, ug/l	5	42
Cu, ug/l	< 10	210
Pb, ug/l	< 2	8
Ti, ug/l	5	344
Zn, ug/l	16	33

Parameters, units	Results				
Zn, ug/l	< 11	190	12,000	1900	400
Sulfate, mg/l	55	65	190	190	200
Fluoride, mg/l	0.59	0.20	0.20	0.19	0.27
Mercury, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TDS, mg/l	370	320	460	500	470
Alkalinity, mg/l	82	< 10	< 10	< 10	< 10
Chloride, mg/l	40	40	41	41	39
pH, std. units	7.65	6.41	5.80	4.63	3.58
Spec. Conductivity, *	497	384	540	598	655
Temperature, C	18.5	18.5	18.5	18.5	18.5
Al, ug/l	35	31	46	335	954
Cu, ug/l	18	250	6800	14,000	63,000
Fe, ug/l	< 55	55	64	1100	14,000
Pb, ug/l	< 2	< 2	< 2	< 2	< 4 **
Mn, ug/l	34	250	690	460	1100

comments:

comments:

* Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. Soil Leach Columns.

** High detection limit due to sample volume.

Signed: David Turriff Date: November 7, 1988

Signed: David Turriff Date: November 9, 1988

FOTH AND VAN DYKE
 Engineers/Architects
 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405031240

Client: Kennecott
 Address: [blank]
 Sampled By: [blank]
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38408.02
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
	D1	D1	D1	D1	D1
Date Collected	8/11/88	8/11/88	8/11/88	8/11/88	8/11/88
Date Received	8/12/88	8/12/88	8/12/88	8/12/88	8/12/88
Parameters, units	Results				
Sulfate, mg/l	20	24	50	17	21
Mercury, ug/l	< 1.3 **	< 1.0 **	< 1.0 **	< 1.0 **	< 0.73 **
pH, std. units	7.78	7.27	7.75	7.31	7.15
Spec. Conductivity,*	445	432	425	448	435
Temperature, C	18.5	18.5	18.5	18.5	18.5
Cu, ug/l	< 20 **	40	60	42	No sample
Fe, ug/l	1200	840	680	210	No sample
Pb, ug/l	< 4 **	6	16	< 4 **	No sample
Mn, ug/l	< 4 **	6	16	< 4 **	No sample
Zn, ug/l	74	60	136	< 11 **	No sample

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. Soil Leach Columns.
 ** High detection limit due to sample volume.

Signed: David Turriff Date: November 9, 1988

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 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Sampled By: [blank]
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38408.03
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000

Sample I.D.	Till-E	Till-C	Till-W	Sapro ML	Sandstone E
Date Collected	8/11/88	8/11/88	8/11/88	8/11/88	8/11/88
Date Received	8/12/88	8/12/88	8/12/88	8/12/88	8/12/88
Parameters, units	Results				
Zn, ug/l	< 11	15	< 11	< 11	49
Sulfate, mg/l	9	12	98	36	9
Fluoride, mg/l	0.71	0.42	0.41	1.9	< 0.2
Mercury, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TDS, mg/l	330	240	240	330	430
Alkalinity, mg/l	50	37	18	85	23
Chloride, mg/l	41	37	37	25	56
pH, std. units	7.63	7.37	7.38	8.40	8.44
Spec. Conductivity,*	356	313	285	410	414
Temperature, C	18.5	18.5	18.5	18.5	18.5
Al, ug/l	459	1030	472	756	2990
Cu, ug/l	10	13	17	31	48
Fe, ug/l	420	860	400	300	5100
Pb, ug/l	< 2	< 2	< 2	3	5
Mn, ug/l	< 11	19	22	39	460

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. Soil Leach Columns.

Signed: David Turriff Date: November 10, 1988

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 Engineers/Architects
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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [blank]
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Sampled By: [blank]
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38408.04

Client: Kennecott
 Address: [blank]
 Name of Rep.: [blank]
 Telephone No.: (000) 000-0000
 Sampled By: [blank]
 Scope I.D.: 87K10
 Billing Line No.: [blank]
 Liaison: D. Turriff
 Supply Order No.: [blank]
 Result Sheet No.: 38408.05

Sample I.D.	Sandstone C	Sandstone W	Blank
Date Collected	8/11/88	8/11/88	8/11/88
Date Received	8/12/88	8/12/88	8/12/88

Sample I.D.	Till E	Till C	Till W	Sandstone E	Sandstone C
Date Collected	8/11/88	8/11/88	8/11/88	8/11/88	8/11/88
Date Received	8/12/88	8/12/88	8/12/88	8/12/88	8/12/88

Parameters, units ----- Results -----

Parameters, units ----- Results -----

Sulfate, mg/l	15	9	18
Fluoride, mg/l	< 0.1	< 0.5 **	--
Mercury, ug/l	< 0.5	< 0.5	--
TDS, mg/l	370	460	320
pH, std. units	7.90	8.56	9.21
Spec. Conductivity,*	415	416	415
Temperature, C	18.5	18.5	18.5
Alkalinity, mg/l	23	18	23
Chloride, mg/l	56	61	61
Calcium, ug/l			20,000
Magnesium, ug/l			19,000
Iron, ug/l	550	7500	700
Manganese, ug/l	39	92	46
Sodium, ug/l	22,000	24,000	22,000

Cr, ug/l	< 3	< 3	< 3	< 3	< 3
Na, ug/l	40,000	27,000	34,000	22,000	20,000
Ti, ug/l	6	51	16	177	44
Al, ug/l				2990	1220
Cu, ug/l				48	13
Pb, ug/l					< 2
Zn, ug/l				49	11

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. Soil Leach Columns. ** High detection limit due to sample turbidity.

comments: Soil Leach Columns.

Signed: David Turriff Date: November 10, 1988

Signed: David Turriff Date: November 9, 1988

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Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
W.D.N.R. LAB CERT. NO. 405051240

Client Kennecott
Address
Name of Rep.
Telephone No. (000) 000-0000

Sampled By
Scope I.D. 87K10
Billing Line No.
Liaison D. Turriff
Supply Order No.
Result Sheet No. 38408.06

Sample I.D. Sandstone
W
Date Collected 8/11/88
Date Received 8/12/88

Parameters, units ----- Results -----

Cr, ug/l 59
Na, ug/l 22,000
Ti, ug/l 756
Al, ug/l 7290
Cu, ug/l 290
Pb, ug/l 8
Zn, ug/l 38

comments:

Signed: David Turriff Date: November 9, 1988

3.5-Q-74

ORTEK
Oneida Environmental Technology Center
2496 West Mason Street
P. O. Box 12435
Green Bay, WI 54307-2435
Telephone: (414) 498-2222

LABORATORY ANALYSIS RESULTS
W.D.N.R. LAB CERT. NO. 405099530

Client Kennecott
Address
Name of Rep.
Telephone No. (000) 000-0000

Sampled By DJD
P.O. #
Job # 87K10
Report to: B. Burton
Invoice # 1239
Result Sheet No. 38995.00

Sample I.D. WR-1 WR-2 WR-3 WR-4 WR-5
D1 D1 D1 D1 D1
Date Collected 8/11/88 8/11/88 8/11/88 8/11/88 8/11/88
Date Received 8/12/88 8/12/88 8/12/88 8/12/88 8/12/88

Parameters, units ----- Results -----

Al, ug/l 904 476 262 146 No sample

Comments:

Signed: David Turriff Date: December 19, 1988

3.5-Q-75

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client Kennecott
 Address
 Sampled By D. DeCarlo
 Scope I.D. 87K10
 Billing Line No.
 Liaison D. Turriff
 Supply Order No.
 Result Sheet No. 38447.01
 Name of Rep.
 Telephone No. (000) 000-0000

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	8/21/88	8/21/88	8/21/88	8/21/88	8/21/88
Date Received	8/22/88	8/22/88	8/22/88	8/22/88	8/22/88
Parameters, units	Results				
Sulfate, mg/l	60	70	150	180	210
Fluoride, mg/l	0.6	0.2	0.2	0.2	0.3
Alkalinity, mg/l	87	< 10	< 10	< 10	< 10
Chloride, mg/l	45	45	47	46	46
Mercury, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TDS, mg/l	320	270	380	440	520
pH, std. units	7.85	6.46	5.65	4.28	3.56
Spec. Conductivity,*	531	414	571	651	680
Temperature, C	17.5	17.0	17.0	17.0	17.5

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: October 24, 1988

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client Kennecott
 Address
 Sampled By D. DeCarlo
 Scope I.D. 87K10
 Billing Line No.
 Liaison D. Turriff
 Supply Order No.
 Result Sheet No. 38447.02
 Name of Rep.
 Telephone No. (000) 000-0000

Sample I.D.	WR-1 D1	WR-2 D1	WR-3 D1	WR-4 D1	WR-5 D1
Date Collected	8/21/88	8/21/88	8/21/88	8/21/88	8/21/88
Date Received	8/22/88	8/22/88	8/22/88	8/22/88	8/22/88
Parameters, units	Results				
Sulfate, mg/l	14	38	15	35	23
pH, std. units	8.07	7.98	8.25	8.15	8.40
Spec. Conductivity,*	439	459	420	441	488
Temperature, C	18.0	18.0	18.0	18.0	18.0
Mercury, ug/l **	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** High detection limit due to insufficient sample.

Signed: David Turriff Date: October 25, 1988

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 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Sampled By: D. DeCarlo
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 38447.03
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	Till-E	Till-C	Till-W	Saprolite ML	Sandstone E
Date Collected	8/21/88	8/21/88	8/21/88	8/21/88	8/21/88
Date Received	8/22/88	8/22/88	8/22/88	8/22/88	8/22/88
Parameters, units	Results				
Sulfate, mg/l	7	6	9	39	17
Fluoride, mg/l	0.8	0.3	0.4	1.8	< 0.1
Alkalinity, mg/l	57	28	18	89	29
Chloride, mg/l	50	47	46	38	65
Mercury, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TDS, mg/l	330	230	250	300	300
pH, std. units	7.78	7.20	7.31	8.42	8.87
Spec. Conductivity,*	399	317	302	434	428
Temperature, C	17.5	18.0	18.0	17.5	17.5

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: October 24, 1988

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 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Sampled By: D. DeCarlo
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 38447.04
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	Sandstone C	Sandstone W	Blank
Date Collected	8/21/88	8/21/88	8/21/88
Date Received	8/22/88	8/22/88	8/22/88
Parameters, units	Results		
Temperature	17.5	17.5	18.0
Sulfate, mg/l	7	11	37
Fluoride, mg/l	< 0.1	< 0.1	
Alkalinity, mg/l	37	28	< 10
Chloride, mg/l	63	37	65
Mercury, ug/l	< 0.5	< 0.5	
TDS, mg/l	280	280	280
pH, std. units	8.61	8.92	9.15
Spec. Conductivity,*	428	426	413
Ca, ug/l			10,000
Mg, ug/l			10,000
Fe, ug/l			94
Mn, ug/l			< 11
Na, ug/l			11,000

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: October 24, 1988

ORTEK
 Oneida Environmental Technology Center
 2496 West Mason Street
 P. O. Box 12435
 Green Bay, WI 54307-2435
 Telephone: (414) 498-2222

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405099530

Client Address Kennecott

Sampled By DJD
 P.O. #
 Job # 87K10
 Report to: B. Burton
 Invoice # 1237
 Result Sheet No. 38892.01

Name of Rep. Telephone No. (000) 000-0000

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	8/21/88	8/21/88	8/21/88	8/21/88	8/21/88
Date Received	8/21/88	8/21/88	8/21/88	8/21/88	8/21/88

Parameters, units	Results				
Al, ug/l	73	40	118	831	751
Cu, ug/l	< 10	230	7200	22,000	76,000
Fe, ug/l				490	11,000
Mn, ug/l		290	780	570	1400
Zn, ug/l		190		3000	450

Comments:

Signed: David Turiff Date: December 19, 1988

ORTEK
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 2496 West Mason Street
 P. O. Box 12435
 Green Bay, WI 54307-2435
 Telephone: (414) 498-2222

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405099530

Client Address Kennecott

Sampled By DJD
 P.O. #
 Job # 87K10
 Report to: B. Burton
 Invoice # 1237
 Result Sheet No. 38892.02

Name of Rep. Telephone No. (000) 000-0000

Sample I.D.	WR-1 D1	WR-2 D1	WR-3 D1	WR-4 D1	WR-5 D1
Date Collected	8/21/88	8/21/88	8/21/88	8/21/88	8/21/88
Date Received	8/21/88	8/21/88	8/21/88	8/21/88	8/21/88

Parameters, units	Results				
Al, ug/l	85	192	78	71	106
Cu, ug/l		< 20 *	< 20 *	36	36
Fe, ug/l	840	340	140	170	< 110 *
Mn, ug/l					< 22 *
Zn, ug/l	22	26	32	30	< 22 *
Pb, ug/l		< 2	< 2		

Comments: * High detection limit due to lack of sample.

Signed: David Turiff Date: December 19, 1988

ORTEK
Oneida Environmental Technology Center
2496 West Mason Street
P. O. Box 12435
Green Bay, WI 54307-2435
Telephone: (414) 498-2222

LABORATORY ANALYSIS RESULTS
W.D.N.R. LAB CERT. NO. 405099530

Client Kennecott
Address
Name of Rep.
Telephone No. (000) 000-0000

Sampled By DJD
P.O. #
Job # 87K10
Report to: B. Burton
Invoice # 1237
Result Sheet No. 38892.03

Sample I.D.	Till-E	Till-C	Till-W	Saprolite ML	Sandstone E
Date Collected	8/21/88	8/21/88	8/21/88	8/21/88	8/21/88
Date Received	8/21/88	8/21/88	8/21/88	8/21/88	8/21/88

Parameters, units	Results				
Al, ug/l	203	299	379	68	338
Cu, ug/l	< 10	< 10	20	14	< 10
Fe, ug/l		240		< 55	550
Mn, ug/l				42	43
Ti, ug/l		< 4		< 4	13

Comments:

Signed: David Turiff Date: December 19, 1988

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2496 West Mason Street
P. O. Box 12435
Green Bay, WI 54307-2435
Telephone: (414) 498-2222

LABORATORY ANALYSIS RESULTS
W.D.N.R. LAB CERT. NO. 405099530

Client Kennecott
Address
Name of Rep.
Telephone No. (000) 000-0000

Sampled By DJD
P.O. #
Job # 87K10
Report to: B. Burton
Invoice #
Result Sheet No. 38892.04

Sample I.D.	Sandstone C	Sandstone W
Date Collected	8/21/88	8/21/88
Date Received	8/21/88	8/21/88

Parameters, units	Results	
Al, ug/l	240	811
Cu, ug/l	< 10	35
Fe, ug/l	130	720
Mn, ug/l	< 11	22
Ti, ug/l	< 4	61
Cr, ug/l		4

Comments:

Signed: David Turiff Date: December 19, 1988

FOTH AND VAN DYKE
 Engineers/Architects
 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 38555.01
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	9/10/88	9/10/88	9/10/88	9/10/88	9/10/88
Date Received	9/12/88	9/12/88	9/12/88	9/12/88	9/12/88
Parameters, units	Results				
Sulfate, mg/l	75	76	190	220	220
Fluoride, mg/l	0.6	0.3	0.4	0.3	0.2
Mercury, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TDS, ug/l	360	250	410	480	500
Alkalinity, mg/l	130	< 10	< 10	< 10	< 10
Chloride, mg/l	47	48	47	48	47
pH, std. units	7.80	6.34	5.84	4.28	3.36
Spec. Conductivity,*	592	450	604	708	755
Temperature, C	18.0	18.0	18.0	18.0	18.0

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: October 28, 1988

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 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 38555.02
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	9/10/88	9/10/88	9/10/88	9/10/88	9/10/88
Date Received	9/12/88	9/12/88	9/12/88	9/12/88	9/12/88
Parameters, units	Results				
Sulfate, mg/l	16	21	17	21	24
Fluoride, mg/l	--	--	--	--	--
Mercury, ug/l	< 1.0	< 1.0	< 1.0	1.8	< 1.0
TDS, ug/l	--	--	--	--	--
Alkalinity, mg/l	--	--	--	--	--
Chloride, mg/l	--	--	--	--	--
pH, std. units	8.60	8.30	8.35	8.40	8.63
Spec. Conductivity,*	483	460	443	454	483
Temperature, C	18.5	18.5	18.5	18.5	18.5

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: October 28, 1988

FOTH AND VAN DYKE
 Engineers/Architects
 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 38555.03
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	Till E	Till W	Till C	Sarpolite	Sandstone E
Date Collected	9/10/88	9/10/88	9/10/88	9/10/88	9/10/88
Date Received	9/12/88	9/12/88	9/12/88	9/12/88	9/12/88
Parameters, units	Results				
Sulfate, mg/l	8	9	6	42	13
Fluoride, mg/l	1.2	0.4	0.3	1.8	< 0.1
Mercury, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TDS, ug/l	320	240	220	300	290
Alkalinity, mg/l	90	21	33	140	57
Chloride, mg/l	56	50	52	41	65
pH, std. units	8.20	7.35	7.42	8.59	8.69
Spec. Conductivity,*	453	327	346	474	441
Temperature, C	18.0	18.0	18.0	18.0	18.0

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: October 28, 1988

FOTH AND VAN DYKE
 Engineers/Architects
 2737 S. Ridge Road
 P.O. Box 19012
 Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405051240

Client: Kennecott
 Address: [Redacted]
 Sampled By: [Redacted]
 Scope I.D.: 87K10
 Billing Line No.: [Redacted]
 Liaison: D. Turriff
 Supply Order No.: [Redacted]
 Result Sheet No.: 38555.04
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	Sandstone W	Sandstone C	Blank
Date Collected	9/10/88	9/10/88	9/10/88
Date Received	9/12/88	9/12/88	9/12/88

Parameters, units	Results		
Sulfate, mg/l	13	13	15
Fluoride, mg/l	< 0.1	< 0.1	--
Mercury, ug/l	< 0.5	< 0.5	--
TDS, ug/l	300	270	200
Alkalinity, mg/l	36	36	30
Chloride, mg/l	68	64	66
pH, std. units	8.90	8.65	9.26
Spec. Conductivity,*	444	441	437
Temperature, C	18.0	18.0	18.5
Calcium, ug/l			19,000
Magnesium, ug/l			22,000
Iron, ug/l			300
Manganese, ug/l			19
Sodium, ug/l			22,000

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: October 28, 1988

ORTEK
 Oneida Environmental Technology Center
 2496 West Mason Street
 P. O. Box 12435
 Green Bay, WI 54307-2435
 Telephone: (414) 498-2222

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405099530

Client: Kennecott
 Address: [Redacted]
 Sampled By: DJD
 P.O. #: [Redacted]
 Job #: 87K10
 Report to: B. Burton
 Invoice #: 1238
 Result Sheet No.: 38893.01

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	9/10/88	9/10/88	9/10/88	9/10/88	9/10/88
Date Received	9/12/88	9/12/88	9/12/88	9/12/88	9/12/88

Parameters, units	Results				
Al, ug/l	74	31	24	290	820
Cu, ug/l	24	340	6900	25,000	93,000
Fe, ug/l				500	310
Mn, ug/l		340	900	630	1700
Zn, ug/l		210		3300	530

Comments:

Signed: David Turriff Date: December 19, 1988

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LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405099530

Client: Kennecott
 Address: [Redacted]
 Sampled By: DJD
 P.O. #: [Redacted]
 Job #: 87K10
 Report to: B. Burton
 Invoice #: 1238
 Result Sheet No.: 38893.02

Sample I.D.	Till-E	Till-W	Till-C	Saprolite ML	Sandstone E
Date Collected	9/10/88	9/10/88	9/10/88	9/10/88	9/10/88
Date Received	9/12/88	9/12/88	9/12/88	9/12/88	9/12/88

Parameters, units	Results				
Al, ug/l	1360	211	108	83	324
Cu, ug/l	13	21	< 10	24	10
Fe, ug/l			110	75	600
Mn, ug/l				37	46
Ti, ug/l			< 4	< 4	< 4

Comments:

Signed: David Turriff Date: December 19, 1988

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LABORATORY ANALYSIS RESULTS
W.D.N.R. LAB CERT. NO. 405099530

Client Kennecott
Address
Name of Rep.
Telephone No. (000) 000-0000

Sampled By DJD
P.O. #
Job # 87K10
Report to: B. Burton
Invoice # 1238
Result Sheet No. 38893.03

Sample I.D.	Sandstone W	Sandstone C	WR-1 D1	WR-2 D1	WR-3 D1
Date Collected	9/10/88	9/10/88	9/10/88	9/10/88	9/10/88
Date Received	9/12/88	9/12/88	9/12/88	9/12/88	9/12/88

Parameters, units	Results				
Al, ug/l	1190	165	46	87	62
Cu, ug/l	45	< 10		< 20 *	< 20 *
Fe, ug/l	1200	200	160	160	150
Mn, ug/l	23	< 11			
Zn, ug/l			< 22 *	< 22 *	30
Pb, ug/l				< 2	< 2
Ti, ug/l	102	< 4			
Cr, ug/l	6				

Comments: * High detection limit due to lack of sample.

Signed: David Turiff Date: December 19, 1988

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LABORATORY ANALYSIS RESULTS
W.D.N.R. LAB CERT. NO. 405099530

Client Kennecott
Address
Name of Rep.
Telephone No. (000) 000-0000

Sampled By DJD
P.O. #
Job # 87K10
Report to: B. Burton
Invoice # 1238
Result Sheet No. 38893.04

Sample I.D.	WR-4 D1	WR-5 D1
Date Collected	9/10/88	9/10/88
Date Received	9/12/88	9/12/88

Parameters, units	Results	
Al, ug/l	124	38
Cu, ug/l	38	20
Fe, ug/l	240	< 110 *
Mn, ug/l		< 22 *
Zn, ug/l	< 22 *	< 22 *

Comments: * High detection limit due to lack of sample.

Signed: David Turiff Date: December 19, 1988

Oneida Research & Technology Center
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LABORATORY ANALYSIS RESULTS

W.D.N.R. LAB CERT. NO. 405099530

Oneida Research & Technology Center
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 Green Bay, WI 54307-2435
 Phone No.: (414)498-2222

LABORATORY ANALYSIS RESULTS

W.D.N.R. LAB CERT. NO. 405099530

Client: Kennecott
 Address: [Redacted]
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000
 Sampled By: DJD
 P.O. #: [Redacted]
 Job #: 87K10
 Report to: D. Turriff
 Invoice #: 1175
 Result Sheet No.: 38726.01

Client: Kennecott
 Address: [Redacted]
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000
 Sampled By: DJD
 P.O. #: [Redacted]
 Job #: 87K10
 Report to: D. Turriff
 Invoice #: 1175
 Result Sheet No.: 38726.02

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	10/20/88	10/20/88	10/20/88	10/20/88	10/20/88
Date Received	10/21/88	10/21/88	10/21/88	10/21/88	10/21/88
Parameters, units	Results				
Temperature, C	21.0	21.0	21.0	21.0	21.0
Al, ug/l	130	92	69	330	2000
Cu, ug/l	38	460	5000	30,000	165,000
Fe, ug/l	< 55	< 55	< 55	< 55	440
Pb, ug/l	< 2	< 2	< 2	< 2	< 2
Mn, ug/l	34	440	1100	880	3000
Zn, ug/l	< 11	220	11,000	4200	830
Sulfate, mg/l	92	110	210	280	400
Fluoride, mg/l	0.81	0.23	0.21	0.28	0.36
Hg, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TDS, mg/l	440	350	580	510	780
Alkalinity, mg/l	130	< 10	< 10	< 10	< 10
Chloride, mg/l	48	50	49	49	48
pH, std. units	8.11	6.36	6.04	4.35	3.29
Spec. Conductivity,*	655	513	688	841	1070

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: December 7, 1988

Sample I.D.	WR-1	WR-2	WR-3	WR-4	WR-5
Date Collected	10/20/88	10/20/88	10/20/88	10/20/88	10/20/88
Date Received	10/21/88	10/21/88	10/21/88	10/21/88	10/21/88
Parameters, units	Results				
Al, ug/l	80	110	69	120	59
Cu, ug/l	15	31	34	82	31
Fe, ug/l	< 110 **	< 110 **	< 110 **	< 110 **	< 110 **
Pb, ug/l	< 4 **	< 4 **	< 4 **	< 4 **	< 4 **
Mn, ug/l	< 22 **	< 22 **	< 22 **	< 22 **	< 22 **
Zn, ug/l	< 22 **	< 22 **	26	54	< 22 **
Sulfate, mg/l	140	< 100 **	< 50 **	< 60 **	43
Hg, ug/l	< 0.5	< 0.5	< 0.5	0.8	< 0.6 **
pH, std. units	8.65	8.55	8.63	8.62	8.93
Spec. Conductivity,*	580	439	415	424	580
Temperature, C	20.0	19.5	20.0	20.0	20.0

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.
 ** High detection limit due to lack of sample.

Signed: David Turriff Date: December 7, 1988

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LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405099530

Client: Kennecott
 Address:
 Name of Rep.:
 Telephone No.: (000) 000-0000

Sampled By: DJD
 P.O. #:
 Job # 87K10
 Report to: D. Turriff
 Invoice # 1175
 Result Sheet No. 38726.03

Sample I.D.	ML	Till-E	Till-C	Till-W	Sandstone E
Date Collected	10/20/88	10/20/88	10/20/88	10/20/88	10/20/88
Date Received	10/21/88	10/21/88	10/21/88	10/21/88	10/21/88
Parameters, units	Results				
Cr, ug/l	< 3	< 3	< 3	< 3	< 3
Al, ug/l	93	190	580	340	510
Cu, ug/l	31	17	22	50	9
Fe, ug/l	< 55	110	410	170	1100
Pb, ug/l	< 2	< 2	< 2	< 2	< 2
Mn, ug/l	< 11	< 11	< 11	35	89
Na, ug/l		50,000	38,000	37,000	20,000
Ti, ug/l		4	32	< 4	27
Zn, ug/l	< 11	< 11	< 11	14	21
Sulfate, mg/l	42	10	10	13	11
Fluoride, mg/l	2.7	1.4	0.58	0.61	< 0.1
Hg, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TDS, mg/l	230	320	220	230	290
Alkalinity, mg/l	170	87	29	36	29
Chloride, mg/l	43	58	56	52	56

comments:

Signed: David Turriff Date: December 7, 1988

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 Green Bay, WI 54307-2435
 Phone No.: (414)498-2222

LABORATORY ANALYSIS RESULTS
 W.D.N.R. LAB CERT. NO. 405099530

Client: Kennecott
 Address:
 Name of Rep.:
 Telephone No.: (000) 000-0000

Sampled By: DJD
 P.O. #:
 Job # 87K10
 Report to: D. Turriff
 Invoice # 1175
 Result Sheet No. 38726.04

Sample I.D.	ML	Till-E	Till-C	Till-W	Sandstone E
Date Collected	10/20/88	10/20/88	10/20/88	10/20/88	10/20/88
Date Received	10/21/88	10/21/88	10/21/88	10/21/88	10/21/88
Parameters, units	Results				
pH, std. units	8.69	8.07	8.05	7.60	8.93
Spec. Conductivity,*	535	489	358	344	413
Temperature, C	21.0	21.0	21.0	21.0	21.0

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: December 7, 1988

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 Green Bay, WI 54307-2435
 Phone No.: (414)498-2222

LABORATORY ANALYSIS RESULTS

W.D.N.R. LAB CERT. NO. 405099530

Client: Kennecott
 Address: [Redacted]
 Sampled By: DJD
 P.O. #: [Redacted]
 Job #: [Redacted]
 Report to: D. Turriff
 Invoice #: 1175
 Result Sheet No.: 38726.05
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	Sandstone C	Sandstone W	Blank
Date Collected	10/20/88	10/20/88	10/20/88
Date Received	10/21/88	10/21/88	10/21/88
Parameters, units	Results		
Al, ug/l	420	430	
Cr, ug/l	< 3	< 3	
Cu, ug/l	21	40	
Fe, ug/l	300	530	< 55
Pb, ug/l	< 2	< 2	
Mn, ug/l	23	< 11	< 11
Zn, ug/l	< 11	11	< 22 *
Ti, ug/l	5	9	
Na, ug/l	21,000	22,000	21,000
Sulfate, mg/l	10	11	28
Hg, ug/l	< 0.5	< 0.5	
Alkalinity, mg/l	29	27	< 10
Chloride, mg/l	55	59	56
TDS, mg/l	270	280	220
Fluoride	< 0.1	< 0.1	

Fluoride comments: * High detection limit due to lack of sample.

Signed: David Turriff Date: December 7, 1988

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 Green Bay, WI 54307-2435
 Phone No.: (414)498-2222

LABORATORY ANALYSIS RESULTS

W.D.N.R. LAB CERT. NO. 405099530

Client: Kennecott
 Address: [Redacted]
 Sampled By: DJD
 P.O. #: [Redacted]
 Job #: [Redacted]
 Report to: D. Turriff
 Invoice #: 1175
 Result Sheet No.: 38726.06
 Name of Rep.: [Redacted]
 Telephone No.: (000) 000-0000

Sample I.D.	Sandstone C	Sandstone W	Blank
Date Collected	10/20/88	10/20/88	10/20/88
Date Received	10/21/88	10/21/88	10/21/88
Parameters, units	Results		
pH, std. units	8.87	9.15	9.48
Spec. Conductivity,*	413	442	413
Temperature, C	21.0	21.0	20.0
Ca, ug/l			22,000
Mg, ug/l			17,000

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius.

Signed: David Turriff Date: December 7, 1988

METHODS USED IN THE PREPARATION OF TABLE NO. 1

Sample Weights, Liquid Volumes, and Liquid:Solid Ratios
for Materials Used in the Leaching Studies

1. All materials were weighed in their natural state. Therefore, all of the topsoil, till, sandstone, and saprolite weights are wet weights.
 - a. The calculations of the quantity of material leached from each sample were made on a dry weight basis.
 - b. The waste rock materials were considered to be dry.
2. Only wet-dry leachings were performed on the topsoil composites.
3. The remainder of the samples were leached under both wet-dry and saturated conditions. With the exception of the sandstone composites, the other samples were left undisturbed during the two leachings and during the transition between leaching modes.
 - a. In order to increase the volume of leachate collected from the sandstone composites, these samples were transferred from the wet-dry columns to 3.8 liter tanks. The transfers were quantitative, but the samples were not reweighed. Therefore, the weights for the saturated leachings are in parentheses.

TABLE NO. 1

Sample Weights, Liquid Volumes and Liquid:Solid Ratios
for Materials Used in the Leaching Studies

<u>Material</u>	<u>Sample Weight (g)</u>	<u>Liquid Volume</u>	<u>Liquid:Solid</u>
Topsoil			
West	18,758.1	8-1/2 L	0.45:1
Central	21,700.2	6-1/2 L	0.30:1
East	21,076.0	7 L	0.33:1
Till			
West	14,144.3	6-1/2 L	0.46:1
Central	12,009.2	6-1/2 L	0.54:1
East	10,878.5	5 L	0.46:1
Sandstone (Wet/Dry)			
West	1,594.9	300 mL	0.19:1
Central	3,182.7	200 mL	0.06:1
East	4,164.1	150 mL	0.04:1
Sandstone (Saturated)			
West	1,594.9	1 L	0.63:1
Central	3,182.7	1 L	0.31:1
East	4,164.1	1 L	0.24:1
Saprolite	19,638.1	8 L	0.41:1
Waste Rock			
WR-1 Chips	25,730.9	13-1/2 L	0.52:1
WR-2 Chips	23,707.9	12-1/2 L	0.53:1
WR-3 Chips	22,095.1	12-1/2 L	0.57:1
WR-4 Chips	33,731.1	16-1/2 L	0.49:1
WR-5 Chips	38,174.4	14-1/2 L	0.38:1
Powder (All)	20.0	200 mL	10:1