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VOLUME 4
APPENDIX 3.5-O TO 3.6-C
ENVIRONMENTAL IMPACT REPORT
FOR THE
KENNECOTT FLAMBEAU PROJECT

Prepared for:

KENNECOTT MINERALS COMPANY

Prepared by:

FOTH & VAN DYKE and Associates Inc.
and Consultants
2737 S. Ridge Road
P. O. Box 19012
Green Bay, Wisconsin 54307-9012

APRIL 1989

Foth & Van Dyke
2737 S. Ridge Road
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Green Bay, Wisconsin 54307-9012
414/497-2500

APPENDIX 3.5-O

Bulk Chemical Analyses of Topsoil, Overburden, and Waste Rock Materials
Flambeau Project, Ladysmith, WI

1. Sample Preparation

   a. One subsample of each sample was oven dried prior to digestion.

   b. One subsample of each sample was digested in its natural moist condition in order to prevent any volatization of mercury.

   c. One subsample was used for moisture determination.

2. Digestion

   a. All samples were digested in a microwave apparatus using sulfuric and nitric acid.

   b. Digestions were observed to be complete.

3. Analyses

   a. All air dried samples were analyzed for:

Aluminum	Molybdenum
Arsenic	Nickel
Barium	Selenium
Beryllium	Silicon
Cadmium	Silver
Calcium	Sodium
Chromium	Sulfur
Cobalt	Thallium
Copper	Tin
Iron	Titanium
Lead	Uranium
Magnesium	Zinc
Manganese	

   b. All moist samples were analyzed for: Mercury

   c. Total Kjeldahl Nitrogen, percent moisture and phosphorus were also determined in the topsoil samples.

   d. Total Carbon and percent moisture were also determined in the till, sandstone, and saprolite samples.

   e. Two determinations of silicon were made of waste rock samples WR-3 and WR-5. Two determinations of calcium, magnesium, and potassium were made of sample WR-5. The average values of each determination were used in Table No. 3.5-9.

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	21
Telephone No.	(000) 000-0000	Result Sheet No.	37950.01

Sample I.D.	Till (E)	Till (W)	Till (C)	Sand (E)	Sand (W)
Date Collected	11-12/87	11-12/87	11-12/87	11-12/87	11-12/87
Date Received	5/13/88	5/13/88	5/13/88	5/13/88	5/13/88
Parameters, units	Results				
Al, ug/g	41,200	52,600	38,900	5440	6140
As, ug/g	4.8	5.0	5.1	1.6	0.7
Ba, ug/g	27	53	22	8	4
Be, ug/g	< 4	< 4	< 4	< 4	< 4
Cd, ug/g	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Cr, ug/g	11	9.1	9.6	1.6	2.3
Co, ug/g	8	9	6	< 2	< 2
Cu, ug/g	15	83	13	13	34
Fe, ug/g	7000	10,000	5700	1100	680
Pb, ug/g	2.3	2.3	3.5	1.3	0.4
Mn, ug/g	190	460	160	200	10
Hg, ug/g **	< 0.05	< 0.10	< 0.10	< 0.09	< 0.08
Mo, ug/g	130	160	180	< 110	< 110
Ni, ug/g	10	13	10	1.0	0.8
Se, ug/g	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15

comments: Results reported as ug/g dry weight unless otherwise noted.
** Reported as ug/g as received.

Signed: David Turriff Date: August 1, 1988

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Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	21
Telephone No.	(000) 000-0000	Result Sheet No.	37950.02

Sample I.D.	Sand (C)	Saprolite ML
Date Collected	11-12/87	11-12/87
Date Received	5/13/88	5/13/88
Parameters, units	Results	
Al, ug/g	7530	34,800
As, ug/g	0.2	1.9
Ba, ug/g	2.1	15
Be, ug/g	< 4	< 4
Cd, ug/g	< 0.5	< 0.5
Cr, ug/g	1.7	9.2
Co, ug/g	< 2	6
Cu, ug/g	3	160
Fe, ug/g	430	12,000
Pb, ug/g	0.6	29
Mn, ug/g	67	310
Hg, ug/g **	< 0.10	0.14
Mo, ug/g	< 110	137
Ni, ug/g	3.1	5.1
Se, ug/g	< 0.15	< 0.15

comments: Results reported as ug/g dry weight unless otherwise noted.
** ug/g as received.

Signed: David Turriff Date: August 1, 1988

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	37950.03

Sample I.D.	Till (E)	Till (W)	Till (C)	Sand (E)	Sand (W)
Date Collected	11-12/87	11-12/87	11-12/87	11-12/87	11-12/87
Date Received	5/13/88	5/13/88	5/13/88	5/13/88	5/13/88
Parameters, units	---------- Results ----------				
Ag, ug/g	< 0.02	0.05	< 0.02	0.04	0.02
Na, ug/g	14	9	6	6	6
Tl, ug/g	0.10	0.10	< 0.10	< 0.10	0.10
Ti, ug/g	2400	4100	1800	180	630
Sn, ug/g	1900	1600	620	570	710
U, ug/g	0.5	1.9	0.4	< 0.1	0.5
Zn, ug/g	22	21	18	10	3
Ca, ug/g	1700	2600	1800	560	110
Mg, ug/g	2000	3000	1400	77	190
K, ug/g	170	310	240	27	69
Si, ug/g	318,000	344,000	336,000	376,000	437,000
Sulfur, %	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

comments: Results reported as ug/g dry weight unless otherwise noted.

Signed: David Turriff Date: August 1, 1988

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	37950.04

Sample I.D.	Sand (C)	Saprolite ML
Date Collected	11-12/87	11-12/87
Date Received	5/13/88	5/13/88
Parameters, units	Results	
Ag, ug/g	0.03	0.47
Na, ug/g	7	6
Tl, ug/g	< 0.10	0.10
Ti, ug/g	430	1300
Sn, ug/g	960	560
U, ug/g	< 0.1	1.4
Zn, ug/g	3	110
Ca, ug/g	140	2100
Mg, ug/g	46	1000
K, ug/g	16	130
Si, ug/g	395,000	347,000
Sulfur, %	< 0.10	< 0.10

comments: Results reported as ug/g dry weight unless otherwise noted.

Signed: David Turriff Date: August 1, 1988

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	21
Telephone No.	(000) 000-0000	Result Sheet No.	38008.01

Sample I.D.	WR-1 D1	WR-2 D1	WR-3 D1	WR-4 D1	WR-5 D1
Date Collected	5/25/88	5/25/88	5/25/88	5/25/88	5/25/88
Date Received	5/25/88	5/25/88	5/25/88	5/25/88	5/25/88
Parameters, units	Results				
Al, ug/g	109,000	122,000	124,000	108,000	109,000
As, ug/g	14	16	38	47	21
Ba, ug/g	14	14	7	6	< 4
Be, ug/g	< 4	< 4	< 4	< 4	< 4
Cd, ug/g	0.7	0.7	< 0.5	< 0.5	< 0.5
Cr, ug/g	24	29	25	17	2.3
Co, ug/g	18	28	60	35	23
Cu, ug/g	540	2700	3900	5000	6400
Fe, ug/g	33,000	38,000	42,000	45,000	38,000
Pb, ug/g	9	16	60	24	7
Mn, ug/g	310	160	130	180	19
Hg, ug/g **	0.62	1.0	1.8	0.94	0.23
Mo, ug/g	270	< 110	< 110	< 110	330
Ni, ug/g	7.1	14	31	11	6.1

comments: Results reported as ug/g dry weight unless otherwise noted.
** Reported as ug/g as received.

Signed: David Turriff Date: August 1, 1988

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	21
Telephone No.	(000) 000-0000	Result Sheet No.	38008.02

Sample I.D.	WR-1 D1	WR-2 D1	WR-3 D1	WR-4 D1	WR-5 D1
Date Collected	5/25/88	5/25/88	5/25/88	5/25/88	5/25/88
Date Received	5/25/88	5/25/88	5/25/88	5/25/88	5/25/88
Parameters, units	Results				
Se, ug/g	< 3.0 *	< 3.0 *	< 3.0 *	< 3.0 *	< 3.0 *
Ag, ug/g	1.9	2.4	160	58	4.9
Na, ug/g	45	62	43	38	22
Tl, ug/g	0.20	0.25	0.60	0.55	< 0.1
Ti, ug/g	2600	3000	2900	2600	2000
Sn, ug/g	2600	< 300	680	< 300	460
U, ug/g	0.87	0.82	0.82	0.61	0.53
Zn, ug/g	1200	98	7900	830	41
Ca, ug/g	5200	1500	2300	1800	190
Mg, ug/g	9400	6400	7100	8900	340
K, ug/g	700	590	360	870	110
Si, ug/g	357,000	330,000	375,000	349,000	277,000
Sulfur, %	< 0.10	0.49	0.70	2.0	4.8

comments: Results reported as ug/g dry weight unless otherwise noted.
* High detection limit due to sample matrix problem.

Signed: David Turriff Date: August 1, 1988

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	38598.01

Sample I.D.	Till-E	Till-W	Till-C	ML	Sandstone E
Date Collected	8/5/88	8/5/88	8/5/88	8/5/88	8/5/88
Date Received	8/5/88	8/5/88	8/5/88	8/5/88	8/5/88
Parameters, units	Results				
Total Carbon, mg/kg*	510	590	630	280	190
Total Moisture, %	8.4	8.3	9.7	13	13

comments: * mg/kg dry weight.

Signed: David Turriff Date: September 21, 1988

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	38598.02

Sample I.D.	Sandstone C	Sandstone W	WR-3 D1	WR-5
Date Collected	8/5/88	8/5/88	8/5/88	8/5/88
Date Received	8/5/88	8/5/88	8/5/88	8/5/88
Parameters, units	---------- Results ----------			
Total Carbon, mg/kg*	200	1700		
Total Moisture, %	13	13		
Silicon, mg/kg *			296,400	260,700

comments: * mg/kg dry weight.

Signed: David Turriff Date: September 21, 19

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	38353.01

Sample I.D.	TS-E Chem A	TS-C Chem A	TS-W Chem A
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		
Moisture, %	14	23	23
TKN, ug/g	3.4	42	28
Sulfur, % *	0.20	0.21	0.21
Hg, ug/g *	< 0.10	< 0.10	< 0.10
Al, ug/g **	32,600	28,000	30,600
As, ug/g **	2.9	2.6	3.3
Ba, ug/g **	54	47	66
Be, ug/g **	< 3	< 4	< 3
Cd, ug/g **	< 0.5	< 0.5	< 0.5
Cr, ug/g **	7.5	6.0	9.5
Co, ug/g **	4.2	3.2	6.7
Cu, ug/g **	2.8	2.7	4.0
Fe, ug/g **	6000	4400	10,000
Pb, ug/g **	10	5.0	9.0
P, ug/g **	1000	660	780

Comments: * As received.
** Dry weight.

Signed: David Turriff Date: September 29, 1988

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

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	38353.02

Sample I.D.	TS-E Chem A	TS-C Chem A	TS-W Chem A
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		
Si, ug/g **	295,000	260,000	259,000
Mo, ug/g **	< 86	< 101	< 84
Mn, ug/g **	470	280	610
Ni, ug/g **	3.4	5.6	0.40
Se, ug/g **	< 0.15	< 0.15	< 0.15
Ag, ug/g **	0.03	0.04	0.05
Na, ug/g **	16	19	22
Tl, ug/g **	0.10	< 0.10	< 0.10
Ti, ug/g **	3110	3190	3100
Sn, ug/g **	< 200	< 233	< 200
U, ug/g **	0.35	0.18	0.26
Zn, ug/g **	17	19	18
Ca, ug/g **	800	1100	1200
Mg, ug/g **	780	620	840
K, ug/g **	110	180	260

comments: * As received.
** Dry weight.

Signed: David Turriff Date: September 29, 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	Sampled By	
Address		P.O. #	
		Job #	87K10
		Report to:	D. Turriff
Name of Rep.		Invoice #	1071
Telephone No.	(000) 000-0000	Result Sheet No.	38700.00

Sample I.D. WR-5 D1

Date Collected

Date Received

Parameters, units	Results
Ca, mg/kg	315
Mg, mg/kg	350
K, mg/kg	125

comments:

Signed: David Turriff Date: November 10, 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	Kennecott	Sampled By	J. Thresher
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1554
Telephone No.	(000) 000-0000	Result Sheet No.	39056.00

Sample I.D.	Type 1 Soil Comp.
Date Collected	01/03/89
Date Received	01/03/89

Parameters, units	Results
Mn, ug/g	120
Cr, ug/g	4.7
Cu, ug/g	2.2
Fe, ug/g	4100
T. Sulfur, %	0.29

Comments:

Signed: David Turriff Date: February 15, 1989

ORTEK
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Telephone: (414) 498-2222

LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	J. Thresher
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1270
Telephone No.	(000) 000-0000	Result Sheet No.	39020.00

Sample I.D.	WR-1A
Date Collected	11/10/88
Date Received	11/11/88

Parameters, units	Results
T. Sulfur, %	< 0.17

Comments:

Signed: David Turriff Date: January 10, 1989

APPENDIX 3.5-P

Acid Consumption, Production, and Neutralization Data and Methods Flambeau Project, Ladysmith, WI

TABLE NO. 1

Initial BC Research Acid Consumption Test Results
Equilibrated 10.0-g Sample in 100 mL DI Water

Sample	Natural pH	Volume (mL) of 0.1 N H_2SO_4 Required to Titrate to pH 3.50
WR-1	6.35	2.15
WR-1	6.60	2.15
WR-2	4.85	1.70
WR-2	4.95	1.70
WR-3	4.80	2.50
WR-3	4.70	2.50
WR-4	4.40	2.10
WR-4	4.45	2.10
WR-5	4.30	1.00
WR-5	4.30	0.95
WW-1	3.90	0.55
WW-1	3.90	0.55

TABLE NO. 2

Stepwise Acid Titration of Waste Rock Samples Following 1-Hour Equilibration in DI Water

Equilibrated 20.0-g Sample in 200 mL DI Water

Volume 0.1 N H_2SO_4 Added (mL)	Total Volume Acid Added (mL)	pH
	Sample WR-1	
0.0	0.0	7.93
1.0	1.0	6.28
1.0	2.0	5.72
1.0	3.0	5.45
1.0	4.0	4.99
1.0	5.0	4.80
1.0	6.0	4.69
1.0	7.0	4.58
1.0	8.0	4.47
1.0	9.0	4.37
1.0	10.0	4.30
1.0	11.0	4.34
1.0	12.0	4.25
1.0	13.0	4.20
1.0	14.0	4.13
1.0	15.0	4.12
1.0	16.0	4.10
1.0	17.0	4.07
1.0	18.0	4.05
1.0	19.0	4.02
1.0	20.0	4.02
1.0	21.0	4.00
1.0	22.0	3.97
1.0	23.0	3.94
1.0	24.0	3.93
1.0	25.0	3.85
1.0	26.0	3.66
1.0	27.0	3.64
1.0	28.0	3.50
1.0	29.0	3.52
1.0	30.0	3.49
1.0	31.0	3.35
1.0	32.0	3.20

TABLE NO. 2 (Cont.)

Volume 0.1 N H_2SO_4 Added (mL)	Total Volume Acid Added (mL)	pH
	Sample WR-1A	
0.0	0.0	7.64
1.0	1.0	6.25
1.0	2.0	5.39
1.0	3.0	4.81
1.0	4.0	4.47
1.0	5.0	4.22
1.0	6.0	3.97
1.0	7.0	3.70
1.0	8.0	3.47
1.0	9.0	3.35
1.0	10.0	3.15
1.0	11.0	3.08
1.0	12.0	2.90
1.0	13.0	2.74
1.0	14.0	2.64
1.0	15.0	2.56
	Sample WR-2	
0.0	0.0	5.68
1.0	1.0	4.82
1.0	2.0	4.27
1.0	3.0	3.89
1.0	4.0	3.70
1.0	5.0	3.45
1.0	6.0	3.28
	Sample WR-3	
0.0	0.0	5.45
1.0	1.0	4.92
1.0	2.0	4.65
1.0	3.0	4.44
1.0	4.0	4.25
1.0	5.0	4.05
1.0	6.0	3.93
1.0	7.0	3.87
1.0	8.0	3.65
1.0	9.0	3.59
1.0	10.0	3.55
1.0	11.0	3.31
1.0	12.0	3.77

TABLE NO. 2 (Cont.)

Volume 0.1 N H_2SO_4 Added (mL)	Total Volume Acid Added (mL)	pH
	Sample WR-4	
0.0	0.0	4.96
1.0	1.0	4.63
1.0	2.0	4.39
1.0	3.0	4.10
1.0	4.0	4.03
1.0	5.0	3.86
1.0	6.0	3.65
1.0	7.0	3.45
1.0	8.0	3.25
	Sample WR-5	
0.0	0.0	4.28
1.0	1.0	4.21
1.0	2.0	4.15
1.0	3.0	4.09
1.0	4.0	4.06
1.0	5.0	4.03
1.0	6.0	3.99
1.0	7.0	3.95
1.0	8.0	3.92
1.0	9.0	3.90
1.0	10.0	3.85
1.0	11.0	3.80
1.0	12.0	3.77
1.0	13.0	3.73
1.0	14.0	3.70
1.0	15.0	3.68
1.0	16.0	3.65
1.0	17.0	3.61
1.0	18.0	3.58
1.0	19.0	3.54
1.0	20.0	3.51
1.0	21.0	3.50
1.0	22.0	3.45
1.0	23.0	3.43
1.0	24.0	3.40
1.0	25.0	3.35

TABLE NO. 2 (Cont.)

Volume 0.1 N H_2SO_4 Added (mL)	Total Volume Acid Added (mL)	pH
	Sample WW-1	
0.0	0.0	3.55
0.5	0.5	3.51
0.5	1.0	3.48
0.5	1.5	3.46
0.5	2.0	3.43
0.5	2.5	3.40
0.5	3.0	3.37

METHODS USED IN PREPARATION OF TABLE NO. 3

Microbial Confirmation Test Data for Acid Production Potential of Samples WR-3, 4, and 5

1. Procedure followed was similar to that presented in "Waste Characterization Studies of Typical Waste Rocks from the Crandon Mineral Deposit", Project 1-45-513 prepared by the Division of Extractive Metallurgy, B.C. Research, Vancouver, B.C. dated July 1982, Appendix 6, pp. 2-3.

2. The quantity of sample used, also known as the feed, for each sample was:

Sample	Weight
WR-3	30 g.
WR-4	20 g.
WR-5	20 g.

TABLE NO. 3

Microbial Confirmation Test Data for Acid Production Potential of Samples WR-3, 4, and 5

Date	Sample	Weight of Sample plus Flask (gms)	pH	Additions
01/16/89	WR-3 A	219.15	2.50	None
	B	228.74	2.50	None
	WR-4 A	228.26	2.50	None
	B	228.89	2.50	None
	WR-5 A	222.11	2.50	None
	B	220.18	2.50	None
01/17/89	WR-3 A	218.70	3.75	0.45 g H_2O
	B	228.28	3.75	0.46 g H_2O
	WR-4 A	227.77	3.65	0.50 g H_2O
	B	228.37	3.70	0.52 g H_2O
	WR-5 A	221.64	2.70	0.47 g H_2O
	B	219.71	2.75	0.47 g H_2O
01/18/89	WR-3 A	217.60	3.95	1.55 g H_2O
	B	227.66	4.05	1.10 g H_2O
	WR-4 A	226.48	4.05	1.78 g H_2O
	B	228.20	4.05	1.69 g H_2O
	WR-5 A	220.82	2.85	1.29 g H_2O
	B	218.84	2.85	1.34 g H_2O

TABLE NO. 3 (Cont.)

Date	Sample	Weight of Sample plus Flask (gms)	pH	Additions
01/19/89	WR-3 A	218.05	3.75	1.00 g H_2O
	B	228.16	3.80	0.58 g H_2O
	WR-4 A	227.55	3.90	0.71 g H_2O
	B	228.26	3.85	0.63 g H_2O
	WR-5 A	220.93	2.85	1.18 g H_2O
	B	218.95	2.85	1.23 g H_2O
01/21/89	WR-3 A	217.44	3.65	1.71 g H_2O
	B	227.14	3.70	1.60 g H_2O
	WR-4 A	225.98	3.65	2.28 g H_2O
	B	226.88	3.60	2.01 g H_2O
	WR-5 A	219.69	2.60	2.42 g H_2O
	B	217.89	2.60	2.29 g H_2O
01/23/89	WR-3 A	219.82	3.85	?
	B	227.25	3.85	1.49 g H_2O
	WR-4 A	226.75	3.85	1.51 g H_2O
	B	227.25	3.80	1.64 g H_2O
	WR-5 A	220.66	2.75	1.45 g H_2O
	B	219.17	2.75	1.01 g H_2O

TABLE NO. 3 (Cont.)

Date	Sample	Weight of Sample plus Flask (gms)	pH	Additions
(Following measurements added 15 g of feed to WR-3A and B and 10 g of feed to WR-4 and 5, A and B.)				
		New Weights		
01/23/89	WR-3 A	234.43		
	B	243.74		
	WR-4 A	238.27		
	B	238.90		
	WR-5 A	232.11		
	B	230.17		
01/24/89	WR-3 A	233.78	4.25	0.65 g H_2O
	B	242.10	4.25	1.64 g H_2O
	WR-4 A	237.58	4.15	0.69 g H_2O
	B	238.27	4.05	0.63 g H_2O
	WR-5 A	231.46	3.15	0.65 g H_2O
	B	229.51	3.15	0.66 g H_2O
(Terminated testing WR-3 and WR-4 samples. An additional 10 g of feed was added to WR-5 A and B.)				
		New Weights		
01/24/89	WR-5 A	242.02		
	B	240.15		
01/25/89	WR-5 A	241.24	3.70	0.78 g H_2O
	B	239.34	3.70	0.81 g H_2O
01/27/89	WR-5 A	240.39	3.75	1.63 g H_2O
	B	238.64	3.75	1.51 g H_2O

METHODS USED IN THE PREPARATION OF TABLE NO. 4

Time-Dependent Buffering Capacity of Powdered Waste Rock Material When Titrated to pH 3.5

1. For each sample, WR-1 through 5, duplicate 10.0-g subsamples were suspended in 100 mL of DI water and stirred for 15 minutes. The pH recorded at this time is called the "natural pH".

2. Since all of the "natural pHs" recorded are greater than 3.50, the suspension is then titrated to pH 3.50 $\pm$ 0.02 with sulfuric acid while stirring. The volume of acid required for this titration is known as the "acid consumption" of the sample.

3. In order to evaluate any time-dependent acid buffering capacity of the samples, each sample titrated to pH 3.50 was stirred for additional successive periods of time. At the end of a preselected time interval, the pH was measured and additional sulfuric acid was used to retitrate the sample to pH 3.50. The intervals between measuring (and retitrating) were successively greater as the experiment proceeded. The final measurements and titrations were conducted more than 130 hours after the ground rock composite was added to the DI water.

4. The powdered rock composites were "aged" approximately 180 days prior to these analyses.

TABLE NO. 4

Time-Dependent Buffering Capacity of Powdered Waste Rock Material When Titrated to pH 3.5

Time (Hr)	Sample pH	H_2SO_4 Added		Resultant pH
		Volume (mL)	Normality	
		SAMPLE WR-1		
1/4	6.95	2.0	1	3.50
1/4	6.95	2.0	1	3.50
1/2	4.00	0.2	1	3.50
1	4.50	0.4	1	3.50
3-1/2	4.19	0.15	0.1	3.50
3-1/2	4.10	0.1	0.1	3.50
7-1/2	4.21	1.0	0.1	3.50
7-1/2	4.12	1.0	0.1	3.50
23	4.43	1.1	0.1	3.50
23	4.35	1.0	0.1	3.50
48	4.28	0.9	0.1	3.50
48	4.25	0.8	0.1	3.50
62	4.30	1.0	0.1	3.50
62	4.27	0.9	0.1	3.50
84	4.23	0.6	0.1	3.50
84	4.20	0.55	0.1	3.50
134	4.23	0.85	0.1	3.50
134	4.24	0.8	0.1	3.50

TABLE NO. 4 (Cont.)

Time (Hr)	Sample pH	H_2SO_4 Added Volume (mL)	H_2SO_4 Added Normality	Resultant pH
		SAMPLE WR-2		
1/4	5.40	0.4	1	3.50
1/4	5.40	0.2	1	3.50
1/2	3.80	0.1	1	3.50
1/2	3.80	0.1	1	3.50
2	3.63	0.3	0.1	3.50
2	3.10 (*)	---	---	3.10 (?)
4	3.79	0.4	0.1	3.50
4	3.79	0.35	0.1	3.50
20	4.03	0.7	0.1	3.50
20	4.03	0.55	0.1	3.50
48	3.94	0.5	0.1	3.50
48	3.94	0.5	0.1	3.50
62	4.00	0.65	0.1	3.50
62	4.00	0.6	0.1	3.50
84	3.89	0.4	0.1	3.50
84	3.90	0.4	0.1	3.50
134	3.95	0.55	0.1	3.50
134	4.00	0.5	0.1	3.50

* An excess of acid was unintentionally added to the sample, thus lowering the pH to 3.10. The amount of acid added was not recorded.

TABLE NO. 4 (Cont.)

Time (Hr)	Sample pH	H_2SO_4 Added Volume (mL)	H_2SO_4 Added Normality	Resultant pH
		SAMPLE WR-3		
1/4	5.10	0.45	1	3.50
1/4	5.20	0.45	1	3.50
1/3	3.99	1.5	0.1	3.50
1/3	4.08	1.3	0.1	3.50
1	4.00	1.3	0.1	3.50
1	3.80	1.0	0.1	3.50
4	4.20	1.5	0.1	3.50
4	4.20	1.5	0.1	3.50
20	4.40	1.5	0.1	3.50
20	4.40	1.5	0.1	3.50
45	4.35	1.2	0.1	3.50
45	4.33	1.15	0.1	3.50
62	4.35	1.25	0.1	3.50
62	4.35	1.3	0.1	3.50
84	4.21	0.9	0.1	3.50
84	4.25	0.9	0.1	3.50
134	4.28	1.2	0.1	3.50
134	4.33	1.2	0.1	3.50

TABLE NO. 4 (Cont.)

Time (Hr)	Sample pH	H_2SO_4 Added Volume (mL)	H_2SO_4 Added Normality	Resultant pH
		SAMPLE WR-4		
1/4	4.95	2.6	0.1	3.50
1/4	4.96	2.6	0.1	3.50
1/2	4.16	0.65	0.1	3.50
1/2	4.23	1.0	0.1	3.50
2	4.16	0.8	0.1	3.50
2	4.15	0.8	0.1	3.50
18	4.40	1.0	0.1	3.50
18	4.40	1.45	0.1	3.50
42	4.25	0.55	0.1	3.50
42	4.23	0.6	0.1	3.50
59	4.27	1.15	0.1	3.50
59	4.25	1.1	0.1	3.50
82	4.16	0.5	0.1	3.50
82	4.16	0.5	0.1	3.50
131	4.30	1.05	0.1	3.50
131	4.27	1.05	0.1	3.50

TABLE NO. 4 (Cont.)

Time (Hr)	Sample pH	H_2SO_4 Added Volume (mL)	H_2SO_4 Added Normality	Resultant pH
		SAMPLE WR-5		
1/4	4.40	0.6	0.1	3.50
1/4	4.40	0.6	0.1	3.50
3/4	3.62	0.2	0.1	3.50
3/4	3.62	0.2	0.1	3.50
2-1/2	3.64	0.5	0.1	3.18
2-1/2	3.64	0.25	0.1	3.50
19	4.00	0.4	0.1	3.50
19	4.19	0.4	0.1	3.50
46	3.90	0.3	0.1	3.50
46	3.95	0.25	0.1	3.50
61	3.95	0.5	0.1	3.50
61	4.00	0.35	0.1	3.50
84	3.73	0.15	0.1	3.50
84	3.87	0.20	0.1	3.50
133	3.91	0.25	0.1	3.50
133	4.00	0.35	0.1	3.50

METHODS USED IN THE PREPARATION OF TABLE NO. 5

Changes in "Natural" pH Versus Time for Waste Rock Samples Equilibrated in DI Water

1. Samples of waste rock were equilibrated in DI water (10:1, liquid:solid) within 1-3 hours, 3-10 days and approximately 300 days following the grinding of the rocks. At selected time intervals suspension pHs were recorded. The mean pH ($\bar{x}$ pH) and number of replicate samples (n) for the times of measurement of different "ages" of ground material are presented in this Appendix.

2. The 1-3 hour and 300-day "aged" material pH measurements had 20.0 g suspended in 200-mL DI water. The 3-10 day "aged" material pH measurements had 10.0 g suspended in 100-mL DI water.

3. The pH meter was calibrated using standard buffers of pH 4.1, 7.0, and 10.0 prior to the measurements.

TABLE NO. 5

Changes in "Natural" pH Versus Time for Waste Rock Samples Equilibrated in DI Water

	WR-1						WR-1A				WR-2						WR-3						WR-4					
	1-3 Hr		3-10 Day		300-Day		1-3 Hr		300-Day		1-3 Hr		3-10 Day		300-Day		1-3 Hr		3-10 Day		300-Day		1-3 Hr		3-10 Day		300-Day	
(Hr)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)
1/4	7.96	(1)	6.95	(2)	8.03	(2)	8.06	(2)			6.83	(1)	5.40	(2)			5.83	(2)	5.14	(4)			5.43	(2)	4.96	(2)		
1/2	7.93	(1)							7.67	(1)																		
1			7.98	(2)	7.94	(1)			7.66	(2)	6.67	(1)	5.68	(1)	5.92	(2)	5.87	(2)	5.45	(1)	5.74	(2)	5.38	(2)	4.96	(1)	5.22	(2)
2	8.08	(1)							7.68	(1)	6.94	(1)					5.86	(2)					5.40	(2)				
4	8.02	(1)							7.68	(1)	7.14	(1)					5.86	(2)										
8									7.30	(1)																		
16	8.08	(1)									7.18	(1)					5.81	(2)					5.37	(2)				

	WR-5						WW-1					
	1-3 Hr		3-10 Day		300-Day		1-3 Hr		3-10 Day		300-Day	
(Hr)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)	$\bar{x}$ pH	(n)
1/4	4.53	(1)	4.40	(2)	4.51	(1)	4.25	(1)			3.81	(1)
1/2					4.58	(1)	4.16	(1)			3.81	(1)
1	4.47	(1)	4.28	(1)	4.59	(3)	4.05	(1)	3.55	(1)	3.74	(1)
2	4.40	(1)			4.57	(1)	4.00	(1)			3.74	(1)
4	4.46	(1)										
8												
16	4.51	(1)					4.09	(1)				

METHODS USED IN THE PREPARATION OF TABLE NO. 6

Stepwise Base Titration of Waste Rock Samples Following 1-Hour Equilibration in DI Water

1. 20.0 g waste rock powder was equilibrated in 200 mL DI water for one hour prior to the titrations.

2. Titrant A contained 1.8146 g $Ca(OH)_2$/L and titrant B contained 1.8082 g $Ca(OH)_2$/L.

3. The pH meter was calibrated using standard buffers of pH 4.1, 7.0, and 10.0 prior to each titration.

4. Determinations were made using waste rock material which had aged approximately 300 days.

TABLE NO. 6

Stepwise Base Titration of Waste Rock Samples Following 1-Hour Equilibration in DI Water

Volume Titrant Added	Total Volume Titrant Added (mL)	pH	Volume Titrant Added	Total Volume Titrant Added (mL)	pH
	Titration A, WR-1			Titration B, WR-1	
0.0	0.0	8.03	0.0	0.0	7.94
	Titration A, WR-2			Titration B, WR-2	
0.0	0.0	5.90	0.0	0.0	5.93
1.0	1.0	6.50	1.0	1.0	6.35
1.0	2.0	7.20	1.0	2.0	6.81
1.0	3.0	7.99	1.0	3.0	7.29
1.0	4.0	8.32	1.0	4.0	7.87
			1.0	5.0	8.30
			1.0	6.0	8.65
			1.0	7.0	8.95
	Titration A, WR-3			Titration B, WR-3	
0.0	0.0	5.70	0.0	0.0	5.77
1.0	1.0	6.08	1.0	1.0	6.11
1.0	2.0	6.41	1.0	2.0	6.43
1.0	3.0	6.89	1.0	3.0	6.78
1.0	4.0	7.36	1.0	4.0	7.17
1.0	5.0	7.95	1.0	5.0	7.68
1.0	6.0	8.29	1.0	6.0	8.26
1.0	7.0	8.69	1.0	7.0	8.69
1.0	8.0	9.05	1.0	8.0	9.06

TABLE NO. 6 (Cont.)

Volume Titrant Added	Total Volume Titrant Added (mL)	pH	Volume Titrant Added	Total Volume Titrant Added (mL)	pH
	Titration A, WR-4			Titration B, WR-4	
0.0	0.0	5.23	0.0	0.0	5.22
1.0	1.0	5.59	1.0	1.0	5.54
1.0	2.0	5.81	1.0	2.0	5.74
1.0	3.0	6.00	1.0	3.0	5.93
1.0	4.0	6.21	1.0	4.0	6.11
1.0	5.0	6.46	1.0	5.0	6.33
1.0	6.0	6.82	1.0	6.0	6.63
1.0	7.0	7.25	1.0	7.0	7.10
1.0	8.0	7.69	1.0	8.0	7.70
1.0	9.0	8.21	1.0	9.0	8.47
1.0	10.0	8.64	1.0	10.0	9.04
1.0	11.0	8.97			
1.0	12.0	9.40			
	Titration A, WR-5			Titration B, WR-5	
0.0	0.0	4.58	0.0	0.0	4.64
1.0	1.0	5.06	1.0	1.0	5.05
1.0	2.0	5.28	1.0	2.0	5.24
1.0	3.0	5.45	1.0	3.0	5.48
1.0	4.0	5.58	1.0	4.0	5.58
1.0	5.0	5.70	1.0	5.0	5.69
1.0	6.0	5.84	1.0	6.0	5.80
1.0	7.0	5.94	1.0	7.0	5.94
1.0	8.0	6.16	1.0	8.0	6.05
1.0	9.0	6.40	1.0	9.0	6.26
1.0	10.0	6.64	1.0	10.0	6.45
1.0	11.0	7.05	1.0	11.0	6.68
1.0	12.0	7.84	1.0	12.0	7.17
1.0	13.0	8.78	1.0	13.0	8.15
			1.0	14.0	9.22

TABLE NO. 6 (Cont.)

Volume Titrant Added	Total Volume Titrant Added (mL)	pH	Volume Titrant Added	Total Volume Titrant Added (mL)	pH
	Titration A, WW-1			Titration B, WW-1	
0.0	0.0	3.68	0.0	0.0	3.73
2.0	2.0	4.27	2.0	2.0	4.30
2.0	4.0	4.48	2.0	4.0	4.50
2.0	6.0	4.58	2.0	6.0	4.58
2.0	8.0	4.66	2.0	8.0	4.65
2.0	10.0	4.77	2.0	10.0	4.75
2.0	12.0	4.86	2.0	12.0	4.83
2.0	14.0	4.95	2.0	14.0	4.97
2.0	16.0	5.00	2.0	16.0	5.05
2.0	18.0	5.05	2.0	18.0	5.08
2.0	20.0	5.11	2.0	20.0	5.15
2.0	22.0	5.19	2.0	22.0	5.14
2.0	24.0	5.19	2.0	24.0	5.22
2.0	26.0	5.24	2.0	26.0	5.30
2.0	28.0	5.28	2.0	28.0	5.40
2.0	30.0	5.34	2.0	30.0	5.45
2.0	32.0	5.43	2.0	32.0	5.50
2.0	34.0	5.51	2.0	34.0	5.55
2.0	36.0	5.62	2.0	36.0	5.55
2.0	38.0	5.68	2.0	38.0	5.54
2.0	40.0	5.81	2.0	40.0	5.61
2.0	42.0	5.86	2.0	42.0	5.69
2.0	44.0	6.14	2.0	44.0	5.77
2.0	46.0	6.22	2.0	46.0	5.90
2.0	48.0	6.54	2.0	48.0	6.09
2.0	50.0	6.87	2.0	50.0	6.31
2.0	52.0	7.20	2.0	52.0	6.57

TABLE NO. 6 (Cont.)

Volume Titrant Added	Total Volume Titrant Added (mL)	pH	Volume Titrant Added	Total Volume Titrant Added (mL)	pH
2.0	54.0	7.40	2.0	54.0	6.83
2.0	56.0	7.59	2.0	56.0	7.05
2.0	58.0	7.80	2.0	58.0	7.24
2.0	60.0	8.32	2.0	60.0	7.43
2.0	62.0	9.01	2.0	62.0	7.70
2.0	64.0	9.65	2.0	64.0	8.29
			2.0	66.0	9.05

Chemical Analyses of the Acid-Neutralized Waste Rock Samples

ORTEK
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Green Bay, WI 54307-2435
Telephone: (414) 498-2222

LABORATORY ANALYSIS RESULTS

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

Client	KENNECOTT	Sampled By	
Address		P.O. #	
		Job #	
		Report to:	
Name of Rep.		Invoice #	1460
Telephone No.	(000) 000-0000	Result Sheet No.	39180.01

Sample I.D.	KEN WR-3A	KEN WR-4A	KEN WR-5A	KEN WR-3B	KEN WR-4B
Date Collected	01/17/89	01/17/89	01/17/89	01/17/89	01/17/89
Date Received	01/18/89	01/18/89	01/18/89	01/18/89	01/18/89
Parameters, units	Results				
Iron, ug/l	160,000	85,000	31,000	160,000	97,000

Comments:

Signed: David Turriff Date: January 31, 1989

ORTEK
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Green Bay, WI 54307-2435
Telephone: (414) 498-2222

LABORATORY ANALYSIS RESULTS

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

Client	KENNECOTT	Sampled By	
Address		P.O. #	
		Job #	
		Report to:	
Name of Rep.		Invoice #	1460
Telephone No.	(000) 000-0000	Result Sheet No.	39180.02

Sample I.D.	KEN WR-5B
Date Collected	01/17/89
Date Received	01/18/89

Parameters, units	Results
Iron, ug/l	38,000

Comments:

Signed: David Turriff Date: January 31, 1989

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LABORATORY ANALYSIS RESULTS

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

Client	KENNECOTT	Sampled By	
Address		P.O. #	
		Job #	
		Report to:	
Name of Rep.		Invoice #	1461
Telephone No.	(000) 000-0000	Result Sheet No.	39181.01

Sample I.D.	KEN WR-3A	KEN WR-4A	KEN WR-5A	KEN WR-3B	KEN WR-4B
Date Collected	01/18/89	01/18/89	01/18/89	01/18/89	01/18/89
Date Received	01/20/89	01/20/89	01/20/89	01/20/89	01/20/89
Parameters, units	Results				
Iron, ug/l	130,000	66,000	24,000	130,000	81,000

Comments:

Signed: David Turnoff Date: January 31, 1989

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LABORATORY ANALYSIS RESULTS

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

Client	KENNECOTT	Sampled By	
Address		P.O. #	
		Job #	
		Report to:	
Name of Rep.		Invoice #	1461
Telephone No.	(000) 000-0000	Result Sheet No.	39181.02

Parameters, units	Sample I.D. KEN WR-5B
Date Collected	01/18/89
Date Received	01/20/89
Iron, ug/l	29,000

Comments:

Signed: David Turriff Date: January 31, 1989

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LABORATORY ANALYSIS RESULTS

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

Client	KENNECOTT	Sampled By	
Address		P.O. #	
		Job #	
		Report to:	
Name of Rep.		Invoice #	1462
Telephone No.	(000) 000-0000	Result Sheet No.	39182.01

Sample I.D.	KEN WR-3A	KEN WR-4A	KEN WR-5A	KEN WR-3B	KEN WR-4B
Date Collected	01/19/89	01/19/89	01/19/89	01/19/89	01/19/89
Date Received	01/20/89	01/20/89	01/20/89	01/20/89	01/20/89
Parameters, units	Results				
Iron, ug/l	140,000	75,000	26,000	130,000	76,000

Comments:

Signed: David Tusriff Date: January 31, 1989

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LABORATORY ANALYSIS RESULTS

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

Client	KENNECOTT	Sampled By	
Address		P.O. #	
		Job #	
		Report to:	
Name of Rep.		Invoice #	1462
Telephone No.	(000) 000-0000	Result Sheet No.	39182.02

Sample I.D.	KEN WR-5B
Date Collected	01/19/89
Date Received	01/20/89

Parameters, units	Results
Iron, ug/l	28,000

Comments:

Signed: David Turriff Date: January 31, 1989

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	J. Thresher
Address		P.O. #	
		Job #	87K10-02
		Report to:	B. Burton
Name of Rep.		Invoice #	1482
Telephone No.	(000) 000-0000	Result Sheet No.	39163.01

Sample I.D.	WR-1 Untreated	WR-2 Untreated	WR-3 Untreated	WR-4 Untreated	WR-5 Untreated
Date Collected	01/24/89	01/24/89	01/24/89	01/24/89	01/24/89
Date Received	01/25/89	01/25/89	01/25/89	01/25/89	01/25/89
Parameters, units	Results				
Sulfate, mg/l	60	86	170	180	180
Copper, ug/l	22	1700	6300	24,000	59,000
Iron, ug/l	2400	1200	190	450	11,000
Manganese, ug/l	< 11	250	370	420	510

Comments:

Signed: David Turriff Date: February 3, 1989

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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 J. Thresher
P.O. #
Job # 87K10-02
Report to: B. Burton
Invoice # 1482
Result Sheet No. 39163.02

Sample I.D.	WW-1 Untreated	WR-4 pH 6	WR-5 pH 6	WW-1 pH 6	WR-4 pH 7
Date Collected	01/24/89	01/24/89	01/24/89	01/24/89	01/24/89
Date Received	01/25/89	01/25/89	01/25/89	01/25/89	01/25/89
Parameters, units	Results				
Sulfate, mg/l	810	200	190	730	190
Copper, ug/l	180,000	7100	28,000	190,000	1200
Iron, ug/l	130,000	120	530	1500	400
Manganese, ug/l	570	370	470	360	330

Comments:

Signed: David Turriff Date: February 3, 1989

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	J. Thresher
Address		P.O. #	
		Job #	87K10-02
		Report to:	B. Burton
Name of Rep.		Invoice #	1482
Telephone No.	(000) 000-0000	Result Sheet No.	39163.03

Sample I.D.	WR-5 pH 7	WW-1 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

Comments:

Signed: David Turriff Date: February 3, 1989

APPENDIX 3.5-Q

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

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:

Cycle	Sample Collection Date(s)
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:

Cycle	Sample Collection Date
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):

Parameter	Units	MW-1005	MW-1005G	MW-1005P
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

Parameter	Units	MW-1005	MW-1005G	MW-1005P
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 (HNO_3) or base (KOH) were added to the solution to bring the pH to 6.50.

   a. Recipe for 50 L of synthetic groundwater:

Parameter	Ingredients
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 $MgCl_2 \cdot 6H_2O$
Na, HCO_3	2.2 g Na_2CO_3
Fe	170 mL of 1,000 ppm AA standard
Mn	15 mL of 1,000 ppm AA standard

Complete Chemical Analyses of Saturated Leached Materials

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	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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Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	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, 19

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	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	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	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	Sampled By	DJD
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1236
Telephone No.	(000) 000-0000	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	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	38613.00

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

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

Signed: David Turriff Date: September 27, 1988

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LABORATORY ANALYSIS RESULTS

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

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

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: October 6, 1988

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	DJD
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1236
Telephone No.	(000) 000-0000	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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Phone No.: (414)498-2222

LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	DJD
Address		P.O. #	
		Job #	87K10
		Report to:	D. Turriff
Name of Rep.		Invoice #	1115
Telephone No.	(000) 000-0000	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, 198

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LABORATORY ANALYSIS RESULTS

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

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

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

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

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

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

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

comments: Soil Leach Column Testing.
* No sample.

Signed: David Turriff Date: May 18, 1988

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

LABORATORY ANALYSIS RESULTS

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

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

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	6	11	3
Ba, ug/l	< 80	1100			
Be, ug/l	< 1	4			
Cd, ug/l	1.5	2.4			
Cr, ug/l	12	350		130	
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

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

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

Signed: David Turriff Date: May 18, 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:
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.: 37655.04

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
Engineers/Architects
2737 S. Ridge Road
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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.: 37655.05

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

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

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

FOTH AND VAN DYKE
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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.: 37655.07

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

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

LABORATORY ANALYSIS RESULTS

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

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

DATA NOT USED

DATA NOT USED

DATA NOT USED

DATA NOT USED

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** Sample analysis was cancelled.*** Insufficient sample for analysis. **** 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	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	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

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

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 ----------				
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

comments: * Specific Conductivity reported as micro-mhos./cm. at 25 degrees celsius. ** No sample. *** Holding time exceeded. **** 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	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	37655.12

Parameters, units	Results
Sample I.D.	WW-1 **
Date Collected	3/17/88
Date Received	3/17/88
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 degrees celsius. ** Sample analysis was cancelled.

Signed: David Turriff Date: May 18, 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	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	37695.01

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

comments:

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

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

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

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	216	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	49	40	40	59	< 0.3
Cr, ug/l	< 2	< 2	< 2	< 2	< 2
Co, ug/l	60	46	58	57	< 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

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

DATA NOT USED

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

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

comments: * High detection limits 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	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	37695.05

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

comments: * 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	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	37695.06

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

Fluoride not

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	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	37695.07

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				
Ag, ug/l	< 4	< 4	< 4	< 4	< 4
Na, ug/l	3400	3300	5400	2800	59,000
Tl, ug/l	< 2	< 2	3	< 2	< 2
Sn, ug/l	< 67	162	67	82	< 67
Ti, ug/l	91	591	445	190	345
Uranium, ug/l	2	2	9	1	**
Zn, ug/l	59	24	45	21	140
pH, std. units	7.15	5.85	6.30	5.30	2.95
Sulfate, mg/l	< 10	< 5	< 5	< 5	30
TDS, mg/l	79	110	150	42	480
Spec. Conductivity,*	26	22	29	20	852

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

Signed: David Turriff Date: May 20, 1988

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	3785.08

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				
Ag, ug/l	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Na, ug/l	< 500	< 500	< 500	< 500	< 500
Tl, ug/l	< 2	< 2	< 2	< 2	< 2
Sn, ug/l	127	< 67	< 67	< 67	77
Ti, ug/l	< 4	< 4	< 4	< 4	10
Uranium, ug/l **	---	---	---	---	---
Zn, ug/l	9900	9600	9900	9300	130
pH, std. units	3.85	3.90	3.95	3.95	7.40
Sulfate, mg/l	50	50	50	50	< 25 ***
TDS, mg/l	< 20	< 20	180	80	< 20
Spec. Conductivity,*	118	112	116	107	36

DATA NOT USED

DATA NOT USED

DATA NOT USED

DATA NOT USED

DATA NOT USED

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

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LABORATORY ANALYSIS RESULTS

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

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

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

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Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	37895.10

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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LABORATORY ANALYSIS RESULTS

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

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

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

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

Signed: David Turriff Date: June 3, 1988

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LABORATORY ANALYSIS RESULTS

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

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

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

Signed: David Turriff Date: June 3, 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	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	37741.03

Sample I.D.	Sand (E)	Sand (W)	WWI D1 A	WWI D1 B	WWI 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 **	17	< 11
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

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

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

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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. 37741.04

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	55	20	12	55	37
Mn, ug/l	< 11	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

DATA NOT USED

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

LABORATORY ANALYSIS RESULTS

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

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

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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Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS

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

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

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

Client	Kennecott	Sampled By	
Address		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

Sample I.D.	WR-1 D1	WR-2 D1	WR-3 D1	WR-4 D1	WR-5 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				
Al, ug/l	10,200	3280	2760	1830	361

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	Kennecott	Sampled By	
Address		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.	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	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

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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	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	38611.04

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

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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. 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

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

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
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

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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LABORATORY ANALYSIS RESULTS

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

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

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	***	< 1.0 **	DATA NOT USED	DATA NOT USED	DATA NOT USED
Sulfate, mg/l	< 250 **	< 250 **			
pH, std. units	8.64	8.56	8.24	8.98	8.14
Spec. Conductivity,*	***	***			

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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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	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 **	< 0.9 **	< 0.8 **	< 0.8 **	2.4
Sulfate, mg/l	< 21 **	< 22 **	< 20 **	< 20 **	< 50 **
pH, std. units	4.18	4.22	4.27	4.24	7.96
Spec. Conductivity,*	51	54	47	53	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

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	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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Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS

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

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

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 ----------				
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

comments:

Signed: David Turriff Date: December 17, 1988

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LABORATORY ANALYSIS RESULTS

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

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

Sample I.D.	WR-1 D1	WR-2 D1	WR-3 D1	WR-4 D1	WR-5 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				
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: * High detection limit due to lack of sample.

Signed: David Turriff Date: November 17, 1988

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LABORATORY ANALYSIS RESULTS

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

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

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
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

comments:

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LABORATORY ANALYSIS RESULTS

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

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

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	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: * High detection limit due to insufficient sample.

Signed: David Turriff Date: December 17, 1988

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LABORATORY ANALYSIS RESULTS

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

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

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	DJD
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	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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Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS

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

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

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Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	DJD
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	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	4.18	4.19
Spec. Conductivity,*	12	16	32	32	34
Mercury, ug/l	< 0.50	0.60	< 0.50	1.4	8.4
Sulfate, mg/l	< 10 **	< 10 **	< 10 **	< 10 **	< 10 **

DATA NOT USED

DATA NOT USED

DATA NOT USED

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

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

Sample I.D.	WR1-D1 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,*	32	2	33	27	27
Mercury, ug/l	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulfate, mg/l	< 10 **	< 10 **	< 10 **	< 10 **	< 10 **

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

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

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 Columns.

Signed: David Turriff Date: September 7, 1988

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LABORATORY ANALYSIS RESULTS

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

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

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

Signed: David Turriff Date: September 7, 1988

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LABORATORY ANALYSIS RESULTS

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

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

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

Signed: David Turriff Date: September 7, 1988

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LABORATORY ANALYSIS RESULTS

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

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

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 *

comments: 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

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

Sampled By DJD
P.O. #
Job # 87K10
Report to: B. Burton
Invoice # 1015
Result Sheet No. 38786.01

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

LABORATORY ANALYSIS RESULTS

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

Client Kennecott
Address

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

Sampled By DJD
P.O. #
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 Turriff Date: November 7, 1988

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Phone No.: (414)498-2222

LABORATORY ANALYSIS RESULTS

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

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

Sample I.D.	WR-1 D1	WR-2 D1	WR-3 D1	WR-4 D1	WR-5 D1
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 Turriff Date: November 7, 1988

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

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

comments: * 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

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P. O. Box 12435
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Phone No.: (414)498-2222

LABORATORY ANALYSIS RESULTS

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

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

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

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

LABORATORY ANALYSIS RESULTS

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

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

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

comments:

Signed: David Turriff Date: November 7, 198

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

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				
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: * 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, 198

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

Sample I.D.	WR-1 D1	WR-2 D1	WR-3 D1	WR-4 D1	WR-5 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

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

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. 38408.03

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

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

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
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

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

Signed: David Turriff Date: November 16, 198

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

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				
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: Soil Leach Columns.

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. 405051240

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

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	Sampled By	DJD
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1239
Telephone No.	(000) 000-0000	Result Sheet No.	38995.00

Sample I.D.	WR-1 D1	WR-2 D1	WR-3 D1	WR-4 D1	WR-5 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

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

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

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, 198

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

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	8/22/88	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

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

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

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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	Sampled By	DJD
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1237
Telephone No.	(000) 000-0000	Result Sheet No.	38892.01

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 Turriff Date: December 19, 1988

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	DJD
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1237
Telephone No.	(000) 000-0000	Result Sheet No.	38892.02

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 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 # 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 Turriff Date: December 19, 1988

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	DJD
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	
Telephone No.	(000) 000-0000	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 Turriff 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	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	38555.01

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				
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

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

LABORATORY ANALYSIS RESULTS

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

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

Sample I.D.	WR-1 D1	WR-2 D1	WR-3 D1	WR-4 D1	WR-5 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				
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

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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.: 38555.03

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

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Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS

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

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

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, 198

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	DJD
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1238
Telephone No.	(000) 000-0000	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 Turnoff Date: December 19, 1988

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	DJD
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1238
Telephone No.	(000) 000-0000	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	Sampled By	DJD
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1238
Telephone No.	(000) 000-0000	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 Turriff Date: December 19, 198

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LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	DJD
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1238
Telephone No.	(000) 000-0000	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 Turriff Date: December 19, 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. 405099530

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

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

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2496 West Mason Street
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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	Sampled By	DJD
Address		P.O. #	
		Job #	87K10
		Report to:	D. Turriff
Name of Rep.		Invoice #	1175
Telephone No.	(000) 000-0000	Result Sheet No.	38726.02

Sample I.D.	WR-1 D1	WR-2 D1	WR-3 D1	WR-4 D1	WR-5 D1
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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Phone No.: (414)498-2222

LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	DJD
Address		P.O. #	
		Job #	87K10
		Report to:	D. Turriff
Name of Rep.		Invoice #	1175
Telephone No.	(000) 000-0000	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
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	Sampled By	DJD
Address		P.O. #	
		Job #	87K10
		Report to:	D. Turriff
Name of Rep.		Invoice #	1175
Telephone No.	(000) 000-0000	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	Sampled By	DJD
Address		P.O. #	
		Job #	
		Report to:	D. Turriff
Name of Rep.		Invoice #	1175
Telephone No.	(000) 000-0000	Result Sheet No.	38726.05

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	

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

Signed: David Turriff Date: December 7, 1988

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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. 405099530

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

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

Material	Sample Weight (g)	Liquid Volume	Liquid:Solid
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

APPENDIX 3.5-R

Methods and Data for Miscellaneous Chemical and Mineralogical Studies Flambeau Project, Ladysmith, WI

Generation of Artificial Stormwater Runoff from Till and Saprolite Materials

1. Artificial stormwater runoff was generated from composited till samples and from the saprolite composite.

2. Till Stormwater Runoff

   a. A total of 24,192.4 grams of moist till samples (7,080.0 grams of the East till composite, 9,510.3 grams of the West till composite, and 7,602.1 grams of the Central till composite) were composited, divided in two and placed in 5-gallon leaching tanks.

   b. Each composite was leached with 6-1/2 liters of DI water for eight hours for three consecutive leachings.

   c. The generated leachates were composited and part of the leachate was equilibrated with soil sediment samples for the leachate sorption studies. The bulk of the leachate was used in the polymer testing for the stormwater runoff collection basins.

3. Saprolite Stormwater Runoff

   a. A total of 7,254.4 grams of moist saprolite composite was placed in a 5-gallon leaching tank.

   b. The sample was leached within 4-1/2 liters of DI water for eight hours for three consecutive leachings.

   c. The generated leachates were composited and used in the polymer testing for the stormwater runoff collection basins.

Overburden and Topsoil Equilibration Results

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	Sampled By	J. Thresher
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1413
Telephone No.	(000) 000-0000	Result Sheet No.	39046.01

Sample I.D.	Topsoil S. 100	Topsoil S. 50	Topsoil S. 25	Topsoil S. 10	Topsoil S. 0
Date Collected	12/28/88	12/28/88	12/28/88	12/28/88	12/28/88
Date Received	12/28/88	12/28/88	12/28/88	12/28/88	12/28/88
Parameters, units	Results				
Fe, ug/l	9500	8600	3800	3700	2700
Cr, ug/l	< 30	< 30	< 30	< 30	< 30
Cu, ug/l	31	20	< 10	< 10	< 10

Comments:

Signed: David Turriff Date: January 24, 1989

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	Sampled By	J. Thresher
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1413
Telephone No.	(000) 000-0000	Result Sheet No.	39046.02

Sample I.D.	Sandstone Sorpt. 100	Sandstone Sorpt. 50	Sandstone Sorpt. 25	Sandstone Sorpt. 10	Sandstone Sorpt 0
Date Collected	12/28/88	12/28/88	12/28/88	12/28/88	12/28/88
Date Received	12/28/88	12/28/88	12/28/88	12/28/88	12/28/88
Parameters, units	Results				
Fe, ug/l	18,000	11,000	7100	9600	9900
Cr, ug/l	46	< 30	< 30	< 30	< 30
Cu, ug/l	430	250	190	250	250

Comments:

Signed: David Turriff Date: January 24, 1989

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 J. Thresher
P.O. #
Job # 87K10
Report to: B. Burton
Invoice # 1413
Result Sheet No. 39046.03

Sample I.D.	Till Sorpt. 100	Till Sorpt. 50	Till Sorpt. 25	Till Sorpt. 10	Till Sorpt. 0
Date Collected	12/28/88	12/28/88	12/28/88	12/28/88	12/28/88
Date Received	12/28/88	12/28/88	12/28/88	12/28/88	12/28/88
Parameters, units	Results				
Fe, ug/l	3900	2400	2300	1700	1400
Cr, ug/l	< 30	< 30	< 30	< 30	< 30
Cu, ug/l	23	19	18	12	10

Comments:

Signed: David Turriff Date: January 24, 1989

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	Sampled By	J. Thresher
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1413
Telephone No.	(000) 000-0000	Result Sheet No.	39046.04

Sample I.D.	Saprolite Sorpt. 100	Saprolite Sorpt. 50	Saprolite Sorpt. 25	Saprolite Sorpt. 10	Saprolite Sorpt. 0
Date Collected	12/28/88	12/28/88	12/28/88	12/28/88	12/28/88
Date Received	12/28/88	12/28/88	12/28/88	12/28/88	12/28/88
Parameters, units	Results				
Fe, ug/l	12,000	9600	9100	6700	9100
Cr, ug/l	< 30	< 30	< 30	< 30	< 30
Cu, ug/l	35	25	17	24	47

Comments:

Signed: David Turriff Date: January 24, 1989

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	Sampled By	J. Thresher
Address		P.O. #	
		Job #	87K10
		Report to:	B. Burton
Name of Rep.		Invoice #	1413
Telephone No.	(000) 000-0000	Result Sheet No.	39046.05

Sample I.D.	Till Leachate
Date Collected	12/28/88
Date Received	12/28/88

Parameters, units	Results
Fe, ug/l	9400
Cr, ug/l	< 30
Cu, ug/l	50

Comments:

Signed: David Turriff Date: January 24, 1989

Results of the EP Toxicity Analyses for Waste Rock Samples WR-1 Through WR-5

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	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	38618.00

Sample I.D.	WR 1 D1 E.P.Tox.	WR 2 D1 E.P. Tox.	WR 3 D1 E.P. Tox.	WR 4 D1 E.P. Tox.	WR 5 D1 E.P. Tox..
Date Collected	9/22/88	9/22/88	9/22/88	9/22/88	9/22/88
Date Received	9/27/88	9/27/88	9/27/88	9/27/88	9/27/88
Parameters, units	Results				
Pb, ug/l	< 2	< 2	4	< 2	< 2
Ag, ug/l	< 50	< 50	< 50	< 50	< 50
Hg, ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Se, ug/l	< 30	< 30	< 30	< 30	< 30
As, ug/l	< 3	< 3	< 3	< 3	< 3
Ba, ug/l	< 80	< 80	< 80	< 80	< 80
Cd, ug/l	< 10	< 10	< 10	< 10	< 10
Cr, ug/l	< 30	< 30	< 30	< 30	< 30

comments:

Signed: David Turriff Date: October 28, 1988

Radiochemical Analyses of Selected Ore Samples
(Mill Bench Test Samples) Composites

Originally Submitted as NOI Data File KEN-55

Kennecott Minerals Company
A Subsidiary of Kennecott Corporation

Engineering Center
1515 Mineral Square
P O Box 11248
Salt Lake City, Utah 84147
801 534-8111

Kennecott

September 5, 1980

To: Dick Olson
Jim Wimmer

From: R. E. Buckley

Subject: Radioactivity of Flambeau Material

In 1978 all of the Flambeau deposit drill core were checked with a Model 111B scintillator for radiation. All readings were within the background count of 0.005 to 0.015 MR/HR.

It was decided that as a result of the intense interest in radioactive wastes in Wisconsin, that mill bench test samples should be checked for Gross Alpha, Gross Beta and Radium-226. The five samples selected are a composite of 14 drill holes which provide an excellent reproduction representation of the ore body.

The analysis shows that the material from the FMC deposit falls well below EPA standards. See attached laboratory report.

Federal Register 45FR27367 dated 4/22/80 under 40 CFR192 Environmental Protection Standards for Uranium Mill Tailings establishes radioactive waste as any solid waste containing an average of radium-226 concentration of five or more picocuries per gram. FMC highest reading was 0.64 $\pm$ 0.19 pci/g.

The drinking water standard applying to Gross Alpha and Beta is well above the FMC reading.

The proposed Wisconsin standards would have no effect on FMC.

R. E. Buckley

REB/se
Attachment
cc: C. D. Broadbent
Gordon Reinke
G. D. Schurtz

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ALBUQUERQUE LABORATORY

REPORT OF ANALYSIS

CUSTOMER: KENNECOTT RESEARCH CENTER
ATTENTION: Lynn A. Hutchinson
ADDRESS: 1515 Mineral Square
CITY: Salt Lake City, Utah 84147
S.O. NO.: 5200

TYPE OF ANALYSIS: DETERMINATION of GROSS ALPHA, GROSS BETA and RADIUM-226 in SOIL SAMPLES

CUSTOMER ORDER NUMBER: DCK 55762X4

SAMPLES RECEIVED: 6/31/80

Sample Identification	Total Weight (g)	pCi/g(dry) Alpha	Beta	Ra-226
Flambeau DDH Comp. Sample #13	104.5	<10	3.4 ± 1.3	0.30 ± 0.10
Flambeau DDH Comp. Sample #14	106.5	<10	12 ± 2	<0.10
Flambeau DDH Comp. Sample #16	105.0	<10	<2.0	0.64 ± 0.19
Flambeau DDH Comp. Sample #17	108.5	<10	11 ± 2	0.30 ± 0.10
Flambeau DDH Comp. Sample #18	107.0	<10	6.3 ± 1.4	0.47 ± 0.14

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☐ REPORTED VIA TELEPHONE
☐ REPORTED VIA TWX

eberline
P.O. BOX 1874 ALBUQUERQUE, NEW MEXICO 87110
PHONE 505-345-3461 TWX 910-989-0678

APPROVED BY: Michael A. Ortiz
MICHAEL A. ORTIZ, Manager

DATE: 8/25/80

TABLE II

IDENTIFICATION AND ANALYSES OF METALLURGICAL TEST SAMPLES

Sample	Hole Number	Sample Numbers Inclusive	Assay, Percent or Ounces Per Ton					
			Cu(T)	Cu(NS)	Fe	Pb	Zn	S
13	22-32	N282 - N290						
	22-63	N1199 - N1201						
	22-65	N1250 - N1262	0.91	0.088	7.82	0.026	0.022	7.56
14	22-84	02062 - 02068						
	22-67	N1526 - N1537	2.83	.016	14.6	.075	.40	15.1
15	22-41	N674 - N679	2.24	.004	11.8	.11	.46	12.8
16	22-68	N1450 - N1455						
	22-98	02493 - 02498						
	22-98	N2008 - N2012						
	22-27	N120 - N127	1.99	.112	24.5	.18	.34	27.6
17	22-76	N1792 - N1795						
	22-21	N014 - N017						
	22-92	02239 - 02247	2.86	.068	22.0	.060	.39	24.6
18	22-34	N297 - N312						
	22-34	N320 - N327	5.62	.41	19.6	.020	.017	23.1

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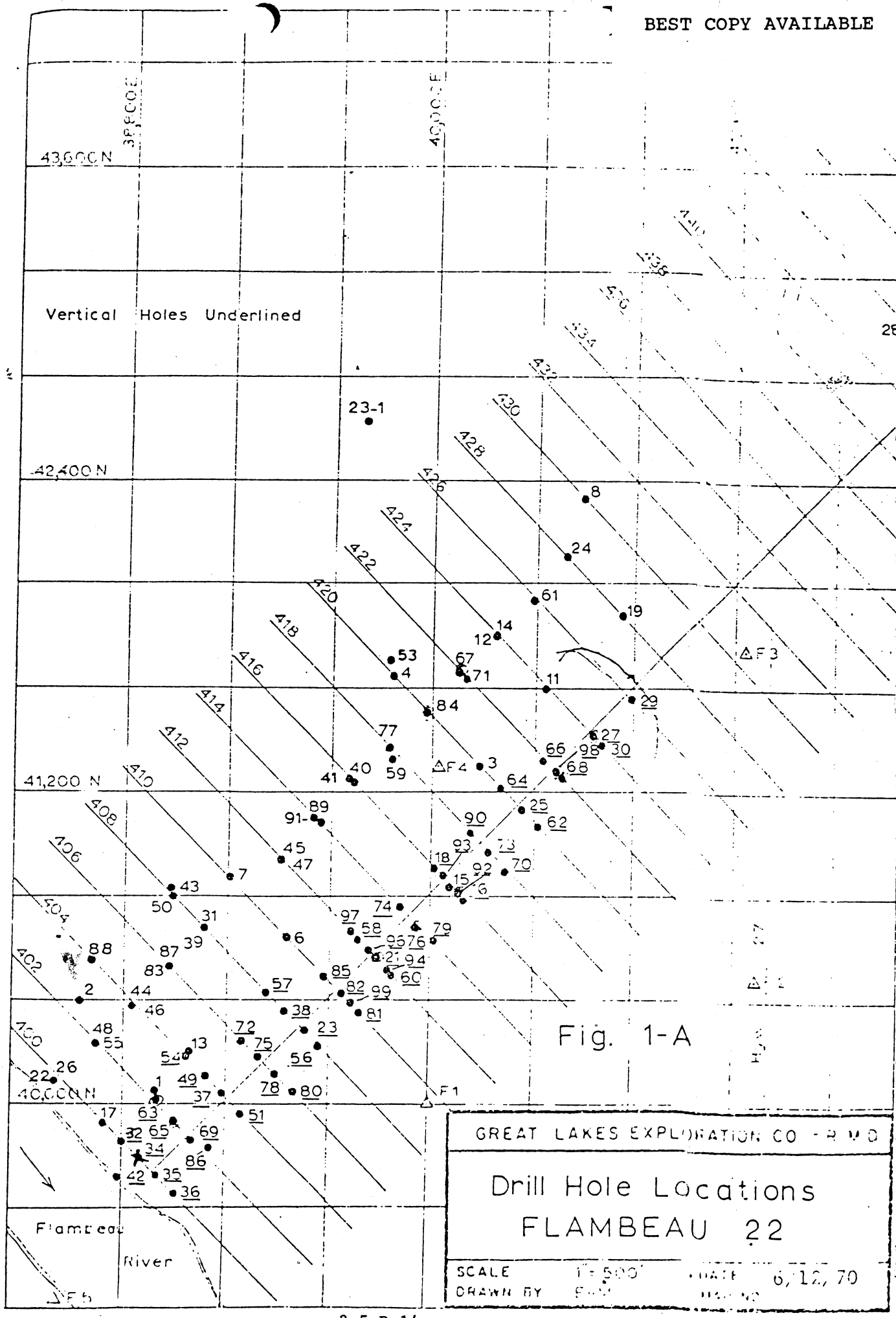

Fig. 1-A

GREAT LAKES EXPLORATION CO - R M O

Drill Hole Locations
FLAMBEAU 22

SCALE 1" = 500'
DRAWN BY F. [illegible]
DATE 6, 12, 70

Analytical Data on Black Material in the Sandstone Originally Submitted as NOI Data File KEN-47

Kennecott Exploration, Inc.
Exploration Services Department

Geochemical Research and Laboratory Division

June 14, 1974

Mr. K. Markart
Box 194
Ladysmith, Wisconsin 54848

Dear Mr. Markart:

In response to your request for identification of a black cementing mineral in DDH 22-130 at 39' and DDH 22-131 at 38.5', we made a heavy liquid concentrate of the black mineral in DDH 22-130 at 39' and obtained a powder diffraction pattern and optical emission spectrum of the concentrate.

The diffraction pattern shows some broad peaks which could not be indexed. The emission spectrum shows 10-30% Mn, 5-15% Cu, and above average amounts at V, Ti, Cu, Bi, Fe, Cr, Ag, and rare earth elements, especially Y.

We will retain the samples.

Very truly yours,

Steve Cone

SC/db
Attachment

cc: L. A. Clark

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2300 West 1700 South, Salt Lake City, Utah 84104 • Phone 801-486-6911 • TWX 910-925-5624

BEST COPY AVAILABLE

ATTN: Mr Steven Cone

BEST COPY AVAILABLE

REQUEST TO GEOLOGIC RESEARCH [illegible]
FOR
MINERALOGICAL-PETROGRAPHIC W

1. District/Project Ladysmith, Wisconsin Date: 6-4-74

Area Code Name: Flambeau Copper Code Number: [illegible]

State: Wisconsin County: Rusk

Budget Undertaking (if not Code Name): 003-00-0855

2. Nature of Investigation (porphyry copper, massive sulfide, etc.):
Cambrian Sandstone directly above gossan of Massive sulfide

Brief Geologic Setting:
€ Sandstone lies unconformably above sulfide ore body. It becomes more iron stained & gritty w/ depth. Also black unidentifiable mineral appears near base.

Identification of rock samples (field numbers, core intervals; copies of maps and logs):
Vertical DDH 22-130 - 39'
22-131 - 38.5'

3. Request for (specify--mineral identification, petrographic examination, alteration, etc):
Mineral Identification: black material that coats & cements quartz sandstone as spots in sample 22-131 or lens in 22-130.

4. Samples sent by: K. Markart On: June 4, 1974

from (address): Bear Creek Mining Comp.
Box 194
Ladysmith, Wisconsin 54848

Report sent to (same as above X):

Date needed (as convenient X): June 4, 1974

5. Justification: Determine whether

Copy to District/Project Manager By: [signature]
(Signature)

X-Ray Diffraction Data on the Saprolite Mineralogy

Originally Submitted as Part of NOI Data File KEN-51

Kennecott Exploration, Inc.
Exploration Services Department

Geochemical Research and Laboratory Division

October 30, 1975

NOV 3 1975

Mr. E. R. May
Flambeau Mining Company
Box 194
Ladysmith, Wisconsin 54848

Dear Ed:

This is to confirm mineralogy of your clay sample from mine section 10N 410 at 370 feet North and a depth of 40 feet. X-ray diffraction of the whole sample shows very strong chlorite and strong quartz with no other minerals. X-ray of the clay-size fraction shows very strong chlorite and a medium-to-weak mica pattern. The amount is insufficient to distinguish biotite from muscovite, but judging from the mineralogy of the Flambeau rocks it probably would be biotite. The X-ray diffraction pattern for vermiculite is rather similar in spacing to the chlorite pattern, but the relative peak intensities are very different. A small amount of vermiculite may be masked by the chlorite peaks, but the main contribution to the X-ray pattern must be chlorite because of the relative peak intensities which we observe. Our preparation of a clay slide indicates that much of the chlorite occurs in particles of less than 2 microns grain size which is the definition of clay-sized particles. However, the X-ray shows that there are no clay minerals other than those cited above.

Very sincerely,

Lloyd

Lloyd A. Clark

LAC/db
Enclosures

c.c. Phelps Helmbe w/enc 9-23-76

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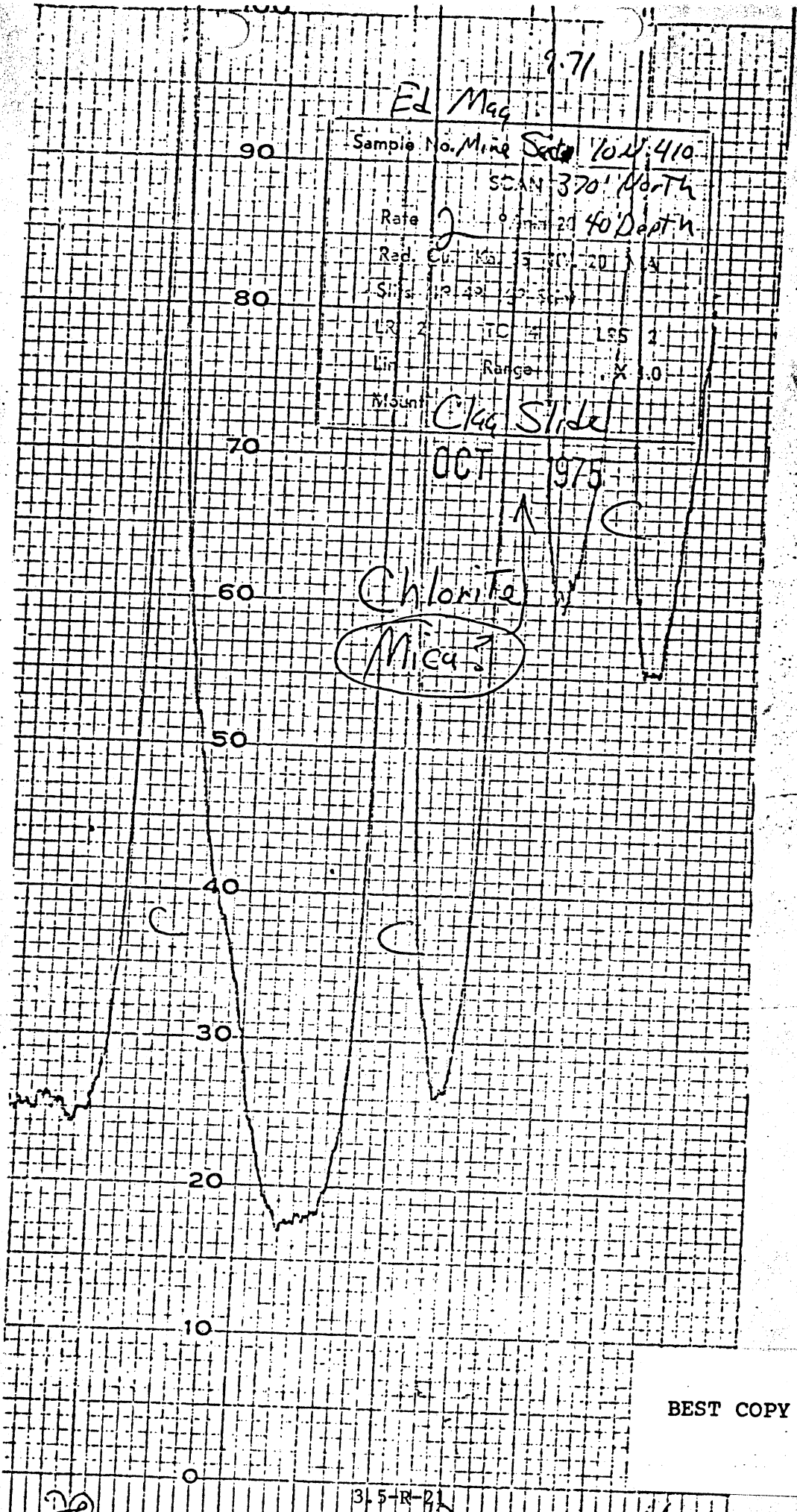
2300 West 1700 South, Salt Lake City, Utah 84104 • Phone 801 - 486-6911 • TWX 910 - 925-5624



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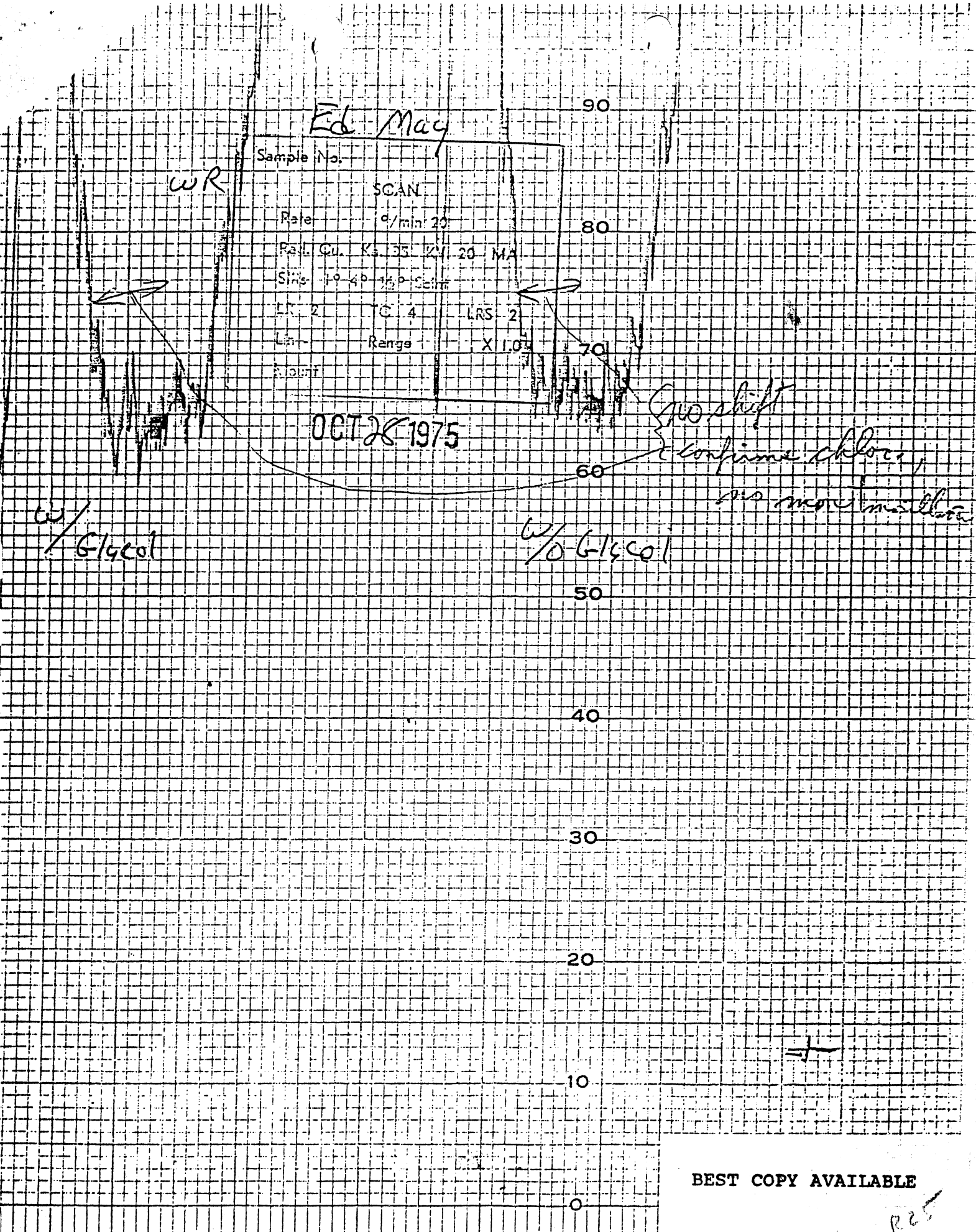

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R25

TABLE NO. 3.5-R-1

Calculation of Quantities of Metals Leached
from the Semi-Massive Waste Rock Sample, WW-1

Parameter	Concentration (ug/l)	Quantity (ug/g of Rock Sample)
As	100	0.036
Cu	94,000	34.2
Hg	0.73	2.7×10^{-4}
Se	6	2.2×10^{-3}
Ag	17	6.2×10^{-3}
Cd	94	0.034
Pb	280	0.10
Ni	82	0.030
Zn	24,000	8.74
Cr	14	5.1×10^{-3}

1. Concentration data from Kennecott PER, (Table No. 2-A3, Attachment B) Bench Test Study Report, March 1989.

2. Volume of leachate = 15 L and quantity of WW-1 composite = 41,264.5 gms (data from Kennecott EIR, Section 3.5.6, Waste Characterization).

3. Quantity (ug/g) = Concentration (ug/l) x 15 L divided by 41,264.5 gms.

4. Data was generated from one leaching cycle and represents one point in time.

TABLE NO. 3.5-R-2

Calculation of Quantities of Metals
in the Wastewater Treatment Facility
Lime Sludge

Parameter	Concentration (ug/l)	Quantity (ug/g)
As	950	159
Cu	980,000	163,000
Hg	8.9	1.5
Se	<30	<5
Ag	220	37
Cd	990	165
Pb	220	37
Ni	780	130
Zn	270,000	45,000
Cr	44	7.3
T Solids	0.6 (%)	---

1. Concentration data from Kennecott PER, (Table No. 2-A3, Attachment B). Bench Test Study Report, March 1989.

2. Volume of sludge = 250 ml or 1/4 L.

3. Quantity (ug/g) = Concentration (ug/l) x 0.25 L divided by [250 x 0.006].

KEIR

TABLE NO. 3.5-R-3

Calculation of Quantities of Metals Leached
From the Till Composite - Series 1

Parameter	Concentration (ug/l)	Quantity (ug/g of Till Sample)
As	11	5.9×10^{-3}
Cd	<3	$<1.6 \times 10^{-3}$
Cr	40	0.022
Cu	120	0.064
Pb	10	5.4×10^{-3}
Hg	<0.50	$<2.7 \times 10^{-4}$
Ni	<30	<0.016
Se	<3	$<1.6 \times 10^{-3}$
Ag	<0.4	$<2.1 \times 10^{-4}$
Zn	68	0.036
Fe	21 mg/l	0.011 mg/g

1. Concentration data from Kennecott PER, (Table No. 3-A1, Attachment B) Bench Test Study Report, March 1989.
2. Volume of leachate = 13 L and quantity of till composite = 24,192.4 gms.
3. Quantity (ug/g) = concentration (ug/l) x 13 L ÷ 24,192.4 gms.
4. Data was generated from one leaching cycle and represents one point in time.

TABLE NO. 3.5-R-4

Calculation of Quantities of Metals Leached
From the Till Composite - Series 2

Parameter	Concentration (ug/l)	Quantity (ug/g of Till Sample)
As	7	3.8×10^{-3}
Cd	<10	$<5.4 \times 10^{-3}$
Cr	24	0.013
Cu	87	0.047
Pb	6	3.2×10^{-3}
Hg	<0.50	$<2.7 \times 10^{-4}$
Ni	<30	<0.016
Se	<3	$<1.6 \times 10^{-3}$
Ag	<0.4	$<2.1 \times 10^{-4}$
Zn	45	0.024
Fe	13 mg/l	7.0×10^{-3} mg/g

1. Concentration data from Kennecott PER (Table No. 3-A2, Attachment B) Bench Test Study Report, March 1989.
2. Volume of leachate = 13 L and quantity of till composite = 24,192.4 gms.
3. Quantity (ug/g) = concentration (ug/l) x 13 L ÷ 24,192.4 gms.
4. Data was generated from one leaching cycle and represents one point in time.

TABLE NO. 3.5-R-5

Calculation of Quantities of Metals Leached
From the Till/Saprolite Composites

Parameter	Concentration (ug/l)	Quantity (ug/g of Till Sample)
As	10	5.6×10^{-3}
Cd	<10	$<5.6 \times 10^{-3}$
Cr	32	0.018
Cu	400	0.22
Pb	100	0.056
Hg	<0.50	$<2.8 \times 10^{-4}$
Ni	<30	<0.017
Se	<3	$<1.7 \times 10^{-3}$
Ag	1.1	6.1×10^{-4}
Zn	150	0.083
Fe	15 mg/l	8.4×10^{-3} mg/g

1. Concentration data from Kennecott PER (Table No. 3-A3, Attachment B) Bench Test Study Report, March 1989.
2. Volume of leachate = 13 L (till) + 4 1/2 L (saprolite). Quantity of material = 24,192.4 gms (till) + 7,255.4 gms (saprolite).
3. The two separately generated leachates (runoff) were combined 1:1.
4. Quantity (ug/g) = concentration (ug/l) x 17 1/2 L ÷ 31,447.8 gms.
5. Data was generated from one leaching cycle and represents one point in time.

APPENDIX 3.5-S

Total Sulfur Analyses
Flambeau Project, Ladysmith, WI

SAMPLE KEY:

22-6 90

22 = Flambeau Project

6 = Diamond Drill Hole Number 6

90 = Depth (ft) of Sample

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	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	37680.01

Sample I.D.	22-59 80	22-59 100	22-59 120	22-59 140	22-59 160
Date Collected	3/23/88	3/23/88	3/23/88	3/23/88	3/23/88
Date Received	3/24/88	3/24/88	3/24/88	3/24/88	3/24/88
Parameters, units	Results				
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

	22-59 180	22-59 200	22-59 220	22-59 240	22-59 260
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

	22-59 280	22-59 300	22-62 55	22-62 75	22-62 95
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

comments:

Signed: David Turriff Date: April 6, 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	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	37680.02

Sample I.D.	22-62 115	22-63 60	22-63 80	22-63 100	22-63 120
Date Collected	3/23/88	3/23/88	3/23/88	3/23/88	3/23/88
Date Received	3/24/88	3/24/88	3/24/88	3/24/88	3/24/88
Parameters, units	Results				
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

	22-79 70	22-79 90	22-79 110	22-79 130	22-79 150
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

	22-81 80	22-81 100	22-81 120	22-81 140	22-86 60
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

comments:

Signed: David Turriff Date: April 6, 1988

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Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	37680.03

Sample I.D.	22-86 80	22-86 100	22-86 120	22-86 140	22-86 160
Date Collected	3/23/88	3/23/88	3/23/88	3/23/88	3/23/88
Date Received	3/24/88	3/24/88	3/24/88	3/24/88	3/24/88
Parameters, units	Results				
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

	22-86 180	22-86 200	22-89 110	22-89 130	22-89 150
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

	22-89 170	22-89 190	22-3 90	22-3 110	22-6 70
Sulfur %	< 0.21	< 0.21	< 0.21	6.4	No Sample

comments:

Signed: David Turriff Date: April 6, 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	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	37680.04

Sample I.D.	22-6 90	22-6 110	22-6 130	22-6 150	22-6 170
Date Collected	3/23/88	3/23/88	3/23/88	3/23/88	3/23/88
Date Received	3/24/88	3/24/88	3/24/88	3/24/88	3/24/88
Parameters, units	Results				
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

	22-6 190	22-39 60	22-39 80	22-39 100	22-39 120
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

	22-39 140	22-39 160	22-39 180	22-39 200	22-54 65
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

comments:

Signed: David Turriff Date: April 6, 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. 37680.05

Sample I.D.	22-54 85	22-54 105	22-54 125	22-54 145	22-54 165
Date Collected	3/23/88	3/23/88	3/23/88	3/23/88	3/23/88
Date Received	3/24/88	3/24/88	3/24/88	3/24/88	3/24/88
Parameters, units	Results				
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

	22-54 185	22-54 205	22-55 60	22-55 80	22-55 100
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

	22-55 120	22-55 140	22-55 160	22-55 180	22-55 200
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

comments:

Signed: David Turriff Date: April 6, 1988

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Green Bay, Wisc. 54307-9012

LABORATORY ANALYSIS RESULTS

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

Client	Kennecott	Sampled By	
Address		Scope I.D.	87K10
		Billing Line No.	
		Liaison	D. Turriff
Name of Rep.		Supply Order No.	
Telephone No.	(000) 000-0000	Result Sheet No.	37680.06

Sample I.D.	22-55 220	22-55 240	22-56 50	22-56 70	22-56 90
Date Collected	3/23/88	3/23/88	3/23/88	3/23/88	3/23/88
Date Received	3/24/88	3/24/88	3/24/88	3/24/88	3/24/88
Parameters, units	Results				
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

	22-56 110	22-56 130	22-56 150	22-57 55	22-57 75
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21

	22-57 95	22-57 115	22-57 135	22-57 155
Sulfur %	< 0.21	< 0.21	< 0.21	< 0.21

comments:

Signed: David Turriff Date: April 6, 1988

```
***                                          *                                *
***                                          *  PROJECT RUN#    360.          *
*** MEDS-203V1 - REVISED ON 30-SEP-87         *  DATE STARTED    1/ 4/89       *
***              VERSION # 10.4 -   3        *  TIME STARTED   12:09:33       *
***                                          *  PROJECT ACCT   FLAMBEAU       *
***                                          *                                *

*** CURRENT  LOGIN  SESSION:    SRU =     74    TTY =  3HR 13MIN

-------------------------------------------------------------------------------

            MEDSYSTEM PROPRIETARY SOFTWARE FROM MINTEC INC.
            MEDSYSTEM IS  A   TRADE  MARK   OF  MINTEC INC.
                  COPYRIGHT 1974-1987 MINTEC INC
                    RELEASE #10.4,  20-JAN-83

-------------------------------------------------------------------------------

            DATA FILE FLAM10.DAT *   NO.   SIZE  UNTS  /UNT
            -------------------- *   ---   ----  ----  ----
            PROJECT CONTROL FILE *    10    510    51    10

-------------------------------------------------------------------------------

*** RUN  INPUT FILE = FLM203.A      PRINT OUTPUT FILE = RPT203.LA

    RUN LINE# 1--MEDS-203V1   10=FLAM10.DAT   11=FLAM11.DAT   12=FLAM12.MIN;
    RUN LINE# 2--MEDS-203V1    3=RPT203.LA    19=DHTABL.XRF

    RUN LINE# 3--FLAMBEAU DRILLHOLE INTERVAL DATA.

    RUN LINE# 4--USR = JES
    RUN LINE# 5--IOP1 = 1 0
    RUN LINE# 6--IOP3 = -1
    RUN LINE# 7--IOP6 = 1 /0=DONT PRINT COLLAR DATA
    RUN LINE# 8--GET11= FROM -TO- S
    RUN LINE# 9--ITM1 = S RANGE 0 999
    RUN LINE#10--COM  GET11= FROM -TO- CU ZN AU AG S ROCK LZONE VZONE
    RUN LINE#11--COM  CMD = USE XREF TABLE FOR LZONE
    RUN LINE#12--COM  ITM1 = LZONE RANGE 6 6
    RUN LINE#13--COM  ITM2 = S     RANGE 10 100
    RUN LINE#14--END
```

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

DATA FILE FLAM11.DAT *	NO.	SIZE	UNTS	/UNT	
DRILL HOLE DATA FILE *	11	638	70	9	DIRECT: FLAMBEAU

DATA FILE FLAM12.MIN *	NO.	SIZE	UNTS	/UNT	
COLLAR & SURVEY FILE *	12	638	49	13	DIRECT: FLAMBEAU

BEGIN SEARCH FOR ITEM RANGES FOR RUN.

CHECK # 1 ON S IN RANGE -0.005 999.005

M203V1 LISTS THE HOLE# FROM FILE FLAM12.MIN
"UNIT" IS THE DATA UNIT LOCATION IN FLAM11.DAT
OTHER ITEMS WERE SPECIFIED BY INPUT

NOTE: -1. REPRESENTS MISSING VALUES.
-2. MEANS NO VALUE WAS ENTERED.

COLLAR-COORD IS THE ACTUAL COLLAR COORDINATE;
DRIFT IS THE COORDINATE CHANGE PER UNIT LENGTH.

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-001	IS REF#	1			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		38928.99	40052.35	1102.00	S 45.00 E	-45.00
DRIFT		0.50000	-0.50000	-0.70711	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-001	5	129.0	134.0	6.06
22-001	6	134.0	139.0	4.75
22-001	7	139.0	144.0	5.56
22-001	8	144.0	149.0	4.96
22-001	9	149.0	154.0	3.94
22-001	10	154.0	159.0	3.08
22-001	11	159.0	164.0	5.33
22-001	12	164.0	169.0	6.44
22-001	13	169.0	174.0	5.54
22-001	14	174.0	179.0	9.00
22-001	15	179.0	184.0	7.77
22-001	16	184.0	185.6	5.27
22-001	17	185.6	187.0	11.33
22-001	18	187.0	187.2	11.33
22-001	19	187.2	193.0	22.40
22-001	20	193.0	193.7	3.74
22-001	21	193.7	196.6	16.67
22-001	22	196.6	199.0	47.34
22-001	23	199.0	205.0	45.72
22-001	24	205.0	210.5	45.29
22-001	25	210.5	215.0	46.65
22-001	26	215.0	218.0	40.87
22-001	27	218.0	224.2	44.44
22-001	28	224.2	233.0	50.35
22-001	29	233.0	238.2	18.87
22-001	30	238.2	241.7	24.68
22-001	31	241.7	242.5	18.16
22-001	32	242.5	245.0	28.27
22-001	33	245.0	250.0	16.69
22-001	34	250.0	255.0	14.89
22-001	35	255.0	260.0	19.23
22-001	36	260.0	265.0	18.60
22-001	37	265.0	270.0	20.28
22-001	38	270.0	275.0	13.12
22-001	39	275.0	280.0	10.10
22-001	40	280.0	283.2	37.98
22-001	41	283.2	285.3	7.42
22-001	42	285.3	287.5	40.75
22-001	43	287.5	292.0	43.50
22-001	44	292.0	296.5	47.55
22-001	45	296.5	303.0	9.71
22-001	46	303.0	308.0	3.91
22-001	47	308.0	313.0	3.10

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-001	48	313.0	318.0	7.83
22-001	49	318.0	323.0	3.97
22-001	50	323.0	328.0	3.34
22-001	51	328.0	333.0	3.65
22-001	52	333.0	337.0	3.25
22-001	53	337.0	338.0	3.25
22-001	54	338.0	343.0	2.25
22-001	55	343.0	348.0	1.30
22-001	56	348.0	353.0	2.15
22-001	57	353.0	358.0	1.10
22-001	58	358.0	363.0	4.39
22-001	59	363.0	368.0	5.04
22-001	60	368.0	373.0	0.43
22-001	61	373.0	378.0	0.09
22-001	62	378.0	383.0	0.07
22-001	63	383.0	388.0	1.51
22-001	64	388.0	393.0	2.57
22-001	65	393.0	398.0	3.63
22-001	66	398.0	403.0	0.62
22-001	67	403.0	408.0	0.07
22-001	68	408.0	413.0	0.06
22-001	69	413.0	418.0	0.06
22-001	70	418.0	423.0	0.04
22-001	71	423.0	428.0	0.16
22-001	72	428.0	433.0	0.10
22-001	73	433.0	438.0	0.06
22-001	74	438.0	443.0	0.06
22-001	75	443.0	451.0	1.15

22-002 IS REF# 2

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38634.47	40394.52	1100.30	S 45.00 E	-46.50
DRIFT	0.48674	-0.48674	-0.72537	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-002	78	93.0	94.0	0.00
22-002	81	233.0	238.0	0.33
22-002	82	238.0	243.0	0.12
22-002	83	243.0	245.4	0.05
22-002	85	245.6	251.0	3.09
22-002	86	251.0	254.4	0.21
22-002	88	298.0	300.0	0.03
22-002	89	300.0	319.0	0.03
22-002	91	337.0	357.0	0.02
22-002	92	357.0	357.5	0.00

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-002	94	400.0	412.0	0.24
22-002	96	417.2	421.7	0.15
22-002	98	463.0	483.0	0.00
22-002	100	500.0	520.0	2.58
22-002	101	520.0	533.0	1.84
22-002	102	533.0	536.7	3.75
22-002	104	539.3	540.5	3.82
22-002	105	540.5	546.8	4.26
22-002	107	553.0	573.0	1.78
22-002	108	573.0	583.0	3.96
22-002	109	583.0	593.0	7.35
22-002	110	593.0	603.0	2.36
22-002	111	603.0	613.0	2.09
22-002	112	613.0	623.0	4.28
22-002	113	623.0	628.0	9.52
22-002	114	628.0	633.0	8.57
22-002	115	633.0	639.9	11.07
22-002	116	639.9	645.0	48.91
22-002	117	645.0	650.0	49.30
22-002	118	650.0	655.0	47.87
22-002	119	655.0	660.0	46.44
22-002	120	660.0	665.0	29.76
22-002	121	665.0	670.0	31.11
22-002	122	670.0	675.0	22.53
22-002	123	675.0	680.0	16.56
22-002	124	680.0	685.0	17.32
22-002	125	685.0	690.0	13.99
22-002	126	690.0	695.0	10.88
22-002	127	695.0	700.0	13.66
22-002	128	700.0	705.0	7.63
22-002	129	705.0	710.0	9.28
22-002	130	710.0	715.0	11.25
22-002	131	715.0	720.0	10.50
22-002	132	720.0	725.0	12.77
22-002	133	725.0	730.0	11.92
22-002	134	730.0	734.7	4.27
22-002	135	734.7	737.7	44.06
22-002	136	737.7	743.9	27.09
22-002	137	743.9	749.5	41.45
22-002	138	749.5	754.5	15.14
22-002	139	754.5	759.5	7.28
22-002	140	759.5	764.5	2.30
22-002	141	764.5	769.5	2.93
22-002	142	769.5	774.5	4.94
22-002	144	775.0	785.0	3.94
22-002	145	785.0	805.0	3.00
22-002	147	830.0	850.0	0.34

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-003	IS REF# 3			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	40195.91	41295.52	1140.60	S 45.00 E	-50.00
DRIFT	0.45452	-0.45452	-0.76604	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-003	151	90.0	92.0	0.10
22-003	153	100.0	122.0	6.40
22-003	154	122.0	132.0	11.77
22-003	156	176.3	187.8	9.28
22-003	158	237.7	247.7	10.22
22-003	159	247.7	256.7	10.68
22-003	160	256.7	265.9	14.05
22-003	161	265.9	273.8	24.74
22-003	162	273.8	279.0	42.98
22-003	163	279.0	283.0	41.45
22-003	164	283.0	286.5	24.64
22-003	165	286.5	295.5	32.54
22-003	166	295.5	300.0	26.46
22-003	167	300.0	302.6	26.46
22-003	168	302.6	309.0	29.58
22-003	169	309.0	317.0	32.37
22-003	170	317.0	323.0	30.50
22-003	171	323.0	326.0	15.98
22-003	172	326.0	337.0	21.29

22-004	IS REF# 4			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39877.00	41673.96	1139.10	S 45.00 E	-70.00
DRIFT	0.24184	-0.24184	-0.93969	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-004	179	738.0	746.0	14.77
22-004	181	752.0	760.0	10.67
22-004	183	894.0	899.0	15.02
22-004	184	899.0	900.0	9.33
22-004	185	900.0	904.0	9.33
22-004	186	904.0	909.0	14.74
22-004	187	909.0	914.0	8.56
22-004	188	914.0	919.0	15.72
22-004	189	919.0	924.0	11.51
22-004	190	924.0	929.0	15.09
22-004	191	929.0	934.0	14.17
22-004	192	934.0	939.0	14.98
22-004	193	939.0	944.0	10.17
22-004	194	944.0	949.0	12.15
22-004	195	949.0	954.0	9.14

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-004	196	954.0	959.0	10.08
22-004	197	959.0	964.0	9.41
22-004	198	964.0	969.0	9.65
22-004	199	969.0	974.0	14.14
22-004	200	974.0	979.0	10.51
22-004	201	979.0	984.0	10.31
22-004	202	984.0	989.0	9.20
22-004	203	989.0	994.0	7.25
22-004	205	1010.0	1015.0	7.79
22-004	207	1039.0	1044.0	9.12

22-005 IS REF# 5

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38176.56	39668.61	1101.40	S 45.00 E	-55.00
DRIFT	0.40558	-0.40558	-0.81915	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-005	213	416.7	417.6	16.53
22-005	215	422.0	427.0	3.38
22-005	216	427.0	432.0	2.89
22-005	217	432.0	437.0	2.95
22-005	218	437.0	442.0	4.76
22-005	219	442.0	447.0	6.37
22-005	220	447.0	452.0	5.33
22-005	221	452.0	457.0	6.24
22-005	222	457.0	462.0	9.20
22-005	223	462.0	467.0	6.82
22-005	224	467.0	472.0	13.05
22-005	225	472.0	477.0	11.86
22-005	226	477.0	482.0	13.94
22-005	227	482.0	487.0	5.88
22-005	228	487.0	492.0	8.11
22-005	229	492.0	497.0	10.65
22-005	230	497.0	500.0	6.91
22-005	231	500.0	502.0	6.91
22-005	232	502.0	507.0	8.75
22-005	233	507.0	512.0	8.50
22-005	234	512.0	517.0	11.03
22-005	235	517.0	522.0	6.21
22-005	236	522.0	527.0	8.72
22-005	237	527.0	532.0	7.24
22-005	238	532.0	537.0	7.22
22-005	239	537.0	542.0	7.09
22-005	240	542.0	546.0	5.15
22-005	241	546.0	551.0	9.08

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-005	242	551.0	556.0	8.20
22-005	243	556.0	563.0	6.39
22-005	244	563.0	573.0	9.43
22-005	245	573.0	576.7	10.90
22-005	247	628.0	633.0	9.12
22-005	249	662.0	667.0	3.70

22-006 IS REF# 6

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39415.13	40628.29	1120.00	S 45.00 E	-55.00
DRIFT	0.40558	-0.40558	-0.81915	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-006	257	160.0	209.2	0.10
22-006	258	209.2	219.0	0.11
22-006	259	219.0	229.0	1.69
22-006	260	229.0	239.0	4.64
22-006	263	302.0	312.0	13.30
22-006	264	312.0	323.0	7.14
22-006	266	344.0	353.0	10.69
22-006	267	353.0	361.0	10.91
22-006	268	361.0	364.9	25.32
22-006	269	364.9	371.0	29.75
22-006	270	371.0	375.0	42.37
22-006	271	375.0	380.0	44.16
22-006	272	380.0	385.0	47.10
22-006	273	385.0	390.0	47.59
22-006	274	390.0	395.0	45.16
22-006	275	395.0	400.0	44.98
22-006	276	400.0	405.0	28.71
22-006	277	405.0	407.0	15.28
22-006	278	407.0	413.0	16.84
22-006	279	413.0	419.5	10.06
22-006	282	440.4	449.9	18.34
22-006	283	449.9	459.3	5.21

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-007	IS REF#	7			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		39206.24	40832.08	1122.00	S 45.00 E	-70.00
DRIFT		0.24184	-0.24184	-0.93969	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-007	293	169.0	179.0	0.19
22-007	294	179.0	189.0	0.12
22-007	299	690.5	696.5	7.64
22-007	300	696.5	700.0	6.08
22-007	301	700.0	701.5	6.08
22-007	302	701.5	706.5	15.69
22-007	303	706.5	711.5	12.38
22-007	304	711.5	716.5	13.00
22-007	305	716.5	721.5	11.44
22-007	306	721.5	726.5	10.79
22-007	307	726.5	731.5	9.50
22-007	308	731.5	735.8	5.18
22-007	309	735.8	741.0	24.84
22-007	310	741.0	746.0	12.48
22-007	311	746.0	751.0	26.20
22-007	312	751.0	756.0	33.69
22-007	313	756.0	761.0	41.77
22-007	314	761.0	766.0	15.27
22-007	315	766.0	771.0	7.42
22-007	316	771.0	776.0	14.99
22-007	317	776.0	781.0	9.89
22-007	318	781.0	786.0	9.08
22-007	319	786.0	796.0	10.36
22-007	320	796.0	806.0	8.31
22-007	321	806.0	816.0	7.77
22-007	322	816.0	826.0	8.35
22-007	324	870.1	875.0	4.16
22-007	325	875.0	883.8	14.78

22-008	IS REF#	8			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		40578.25	42325.56	1136.70	S 45.00 E	-65.00
DRIFT		0.29884	-0.29884	-0.90631	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-008	333	651.3	656.3	6.42
22-008	334	656.3	661.3	5.83
22-008	335	661.3	666.3	7.48
22-008	336	666.3	671.3	7.72
22-008	337	671.3	676.3	7.34
22-008	338	676.3	681.3	7.56

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-008	339	681.3	686.3	8.36
22-008	340	686.3	691.3	4.04
22-008	341	691.3	696.3	7.77
22-008	342	696.3	700.0	6.37
22-008	343	700.0	701.3	6.37
22-008	344	701.3	706.3	9.12
22-008	345	706.3	711.3	7.31
22-008	346	711.3	713.0	19.18
22-008	347	713.0	718.0	6.58
22-008	348	718.0	723.0	8.74
22-008	349	723.0	728.0	9.97
22-008	350	728.0	733.0	5.96
22-008	351	733.0	738.0	7.02
22-008	352	738.0	743.0	7.70
22-008	353	743.0	748.0	9.57
22-008	354	748.0	753.0	11.11
22-008	355	753.0	758.0	1.71
22-008	356	758.0	763.0	0.26
22-008	357	763.0	768.0	3.19
22-008	358	768.0	773.0	0.31
22-008	359	773.0	778.0	6.02
22-008	360	778.0	783.0	3.56
22-008	361	783.0	788.0	0.32
22-008	362	788.0	793.0	5.86
22-008	363	793.0	798.0	6.17
22-008	364	798.0	803.0	5.01
22-008	365	803.0	808.0	3.68
22-008	366	808.0	813.0	5.31
22-008	367	813.0	818.0	6.51
22-008	368	818.0	823.0	3.76
22-008	369	823.0	828.0	13.35
22-008	370	828.0	833.0	9.26
22-008	371	833.0	838.0	10.00
22-008	372	838.0	844.1	9.71
22-008	373	844.1	849.1	3.98
22-008	374	849.1	854.1	5.21
22-008	375	854.1	859.4	4.40
22-008	376	859.4	864.4	4.19
22-008	377	864.4	869.4	5.40
22-008	378	869.4	874.4	3.17
22-008	379	874.4	879.4	4.60
22-008	380	879.4	882.6	3.47
22-008	381	882.6	885.0	29.73
22-008	382	885.0	890.0	0.54
22-008	383	890.0	895.0	1.88
22-008	384	895.0	900.0	2.04
22-008	385	900.0	905.0	3.98

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-008	386	905.0	910.0	6.35
22-008	387	910.0	915.0	6.07
22-008	388	915.0	920.0	5.60
22-008	389	920.0	925.0	4.43
22-008	390	925.0	930.0	3.59
22-008	391	930.0	935.0	2.22
22-008	392	935.0	940.0	2.12
22-008	393	940.0	945.0	3.16
22-008	394	945.0	951.1	4.16
22-008	395	951.1	953.4	15.72
22-008	396	953.4	955.0	7.70
22-008	397	955.0	961.0	3.16

22-009 IS REF# 9

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	37909.48	39937.95	1110.70	S 45.00 E	-75.00
DRIFT	0.18301	-0.18301	-0.96593	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-009	406	898.5	900.0	4.50
22-009	407	900.0	907.7	4.50
22-009	409	909.4	919.0	4.55
22-009	410	919.0	929.0	1.69
22-009	411	929.0	933.6	1.68
22-009	412	933.6	943.6	6.74
22-009	413	943.6	953.3	2.98
22-009	414	953.3	962.8	2.87
22-009	415	962.8	967.0	3.65
22-009	416	967.0	973.6	6.40
22-009	417	973.6	982.3	3.84
22-009	418	982.3	991.0	3.49
22-009	419	991.0	996.8	6.07
22-009	420	996.8	1005.0	6.49
22-009	421	1005.0	1015.0	7.42
22-009	422	1015.0	1026.4	4.47
22-009	423	1026.4	1036.4	8.68
22-009	424	1036.4	1046.4	5.57
22-009	425	1046.4	1056.4	5.82
22-009	426	1056.4	1066.4	6.94
22-009	427	1066.4	1073.0	7.1

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-010 IS REF# 10	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	37257.53	38896.38	1121.10	S 45.00 E	-60.00
DRIFT	0.35355	-0.35355	-0.86603	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-010	434	646.9	647.7	36.50
22-010	437	718.2	723.2	8.75
22-010	438	723.2	733.2	6.21
22-010	439	733.2	743.2	5.44
22-010	440	743.2	753.2	7.15
22-010	441	753.2	758.2	7.95
22-010	442	758.2	768.2	8.06
22-010	443	768.2	778.2	7.90
22-010	444	778.2	783.2	9.34
22-010	445	783.2	785.5	11.95

22-011 IS REF# 11	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40446.73	41604.74	1140.90	S 45.00 E	-45.00
DRIFT	0.50000	-0.50000	-0.70711	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-011	452	111.9	117.7	7.53
22-011	453	117.7	120.2	0.42
22-011	454	120.2	126.7	7.39
22-011	455	126.7	128.7	0.14
22-011	456	128.7	133.0	3.02
22-011	457	133.0	141.0	7.04
22-011	458	141.0	149.0	8.97
22-011	459	149.0	157.0	10.09
22-011	460	157.0	165.0	7.34
22-011	461	165.0	172.0	7.03
22-011	462	172.0	179.0	5.12
22-011	463	179.0	186.0	4.21
22-011	464	186.0	193.0	5.64
22-011	465	193.0	200.0	7.52
22-011	466	200.0	207.0	13.72
22-011	467	207.0	214.0	10.00
22-011	468	214.0	221.0	4.18
22-011	469	221.0	228.0	4.01
22-011	470	228.0	235.0	8.86
22-011	471	235.0	242.0	2.11
22-011	472	242.0	249.0	4.21
22-011	473	249.0	256.0	5.30
22-011	474	256.0	265.0	12.68
22-011	475	265.0	268.0	7.70

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-011	477	269.0	272.3	2.82
22-011	478	272.3	278.3	4.23
22-011	479	278.3	282.0	5.20
22-011	480	282.0	284.3	8.47
22-011	481	284.3	291.3	6.37
22-011	482	291.3	298.0	7.81
22-011	483	298.0	300.0	2.17
22-011	484	300.0	303.0	2.17
22-011	485	303.0	308.6	13.88
22-011	486	308.6	319.0	36.33
22-011	487	319.0	325.4	34.39
22-011	488	325.4	328.0	13.57
22-011	489	328.0	333.0	12.06
22-011	490	333.0	335.0	36.04
22-011	491	335.0	344.0	42.81
22-011	492	344.0	347.0	35.42
22-011	493	347.0	350.2	35.53
22-011	494	350.2	355.2	14.10
22-011	495	355.2	362.0	39.37
22-011	496	362.0	363.1	13.23

22-012 IS REF# 12

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40247.39	41805.48	1137.40	S 45.00 E	-52.00
DRIFT	0.43534	-0.43534	-0.78801	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-012	505	604.0	613.0	48.20
22-012	506	613.0	623.0	49.93
22-012	507	623.0	630.0	24.76
22-012	508	630.0	643.0	27.25
22-012	509	643.0	653.0	50.51
22-012	510	653.0	665.5	32.92
22-012	511	665.5	667.0	14.28
22-012	512	667.0	674.0	26.57
22-012	513	674.0	678.7	9.69
22-012	514	678.7	689.0	5.88
22-012	515	689.0	690.0	7.43
22-012	516	690.0	693.0	7.43
22-012	517	693.0	694.5	18.90

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-013 IS REF# 13				BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39056.97	40203.82	1112.70	S 45.00 E	-50.00
DRIFT	0.45452	-0.45452	-0.76604	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-013	525	150.0	155.0	6.70
22-013	526	155.0	160.0	7.53
22-013	527	160.0	165.0	6.13
22-013	528	165.0	170.0	5.57
22-013	529	170.0	175.0	7.12
22-013	530	175.0	180.0	4.70
22-013	531	180.0	183.5	7.76
22-013	532	183.5	187.0	1.76
22-013	533	187.0	192.0	4.69
22-013	534	192.0	195.0	4.23
22-013	535	195.0	200.0	3.60
22-013	536	200.0	205.0	7.07
22-013	537	205.0	210.0	6.49
22-013	538	210.0	215.0	4.70
22-013	539	215.0	220.0	4.32
22-013	540	220.0	225.0	3.31
22-013	541	225.0	230.0	15.80
22-013	542	230.0	232.0	14.95
22-013	543	232.0	237.0	46.37
22-013	544	237.0	242.0	49.32
22-013	545	242.0	247.0	39.79
22-013	546	247.0	252.0	46.47
22-013	547	252.0	258.6	48.46
22-013	548	258.6	260.8	42.59
22-013	549	260.8	265.8	46.95
22-013	550	265.8	270.8	48.39
22-013	551	270.8	275.8	50.70
22-013	552	275.8	280.8	49.83
22-013	553	280.8	285.8	49.06
22-013	554	285.8	290.8	44.90
22-013	555	290.8	294.0	46.49
22-013	556	294.0	297.4	31.47
22-013	557	297.4	300.0	13.69
22-013	558	300.0	302.5	13.69
22-013	559	302.5	307.4	11.07
22-013	560	307.4	310.3	12.95
22-013	561	310.3	312.3	41.69
22-013	562	312.3	316.7	1.95
22-013	563	316.7	318.4	42.92
22-013	564	318.4	323.4	7.53
22-013	565	323.4	328.4	5.30

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-014	IS REF#	14			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		40247.39	41805.48	1137.40	S 45.00 E	-74.00
DRIFT		0.19490	-0.19490	-0.96126	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-014	577	791.2	801.0	13.78
22-014	578	801.0	806.0	18.79
22-014	579	806.0	811.0	13.62
22-014	580	811.0	816.0	15.63
22-014	581	816.0	820.7	12.31
22-014	582	820.7	827.0	14.26
22-014	583	827.0	833.0	10.96
22-014	584	833.0	838.2	5.53
22-014	585	838.2	847.3	7.95
22-014	586	847.3	853.3	10.14

22-015	IS REF#	15			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		40078.68	40835.62	1136.30	S 45.00 E	-86.00
DRIFT		0.04932	-0.04932	-0.99756	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-015	593	60.0	66.0	8.78
22-015	594	66.0	70.0	11.05
22-015	595	70.0	72.0	11.05
22-015	596	72.0	77.5	10.80
22-015	597	77.5	83.0	10.39
22-015	598	83.0	87.0	12.22
22-015	599	87.0	92.5	11.40
22-015	600	92.5	97.0	15.62
22-015	601	97.0	102.0	24.73
22-015	602	102.0	108.0	37.78
22-015	603	108.0	110.0	3.65
22-015	604	110.0	115.0	43.64
22-015	605	115.0	121.0	25.52
22-015	606	121.0	127.0	32.72
22-015	607	127.0	135.0	19.96
22-015	608	135.0	140.0	10.40
22-015	609	140.0	143.0	19.13
22-015	610	143.0	149.0	19.01
22-015	611	149.0	155.0	16.20
22-015	612	155.0	162.0	16.70
22-015	613	162.0	170.0	17.23
22-015	614	170.0	175.0	13.74
22-015	615	175.0	182.0	13.28
22-015	616	182.0	189.0	10.29

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-015	617	189.0	196.0	10.64
22-015	618	196.0	202.0	10.44
22-015	619	202.0	209.0	10.72
22-015	620	209.0	214.0	14.49
22-015	621	214.0	218.0	10.84
22-015	622	218.0	223.0	29.76
22-015	623	223.0	229.0	18.43
22-015	624	229.0	235.0	23.99
22-015	625	235.0	242.0	13.41
22-015	626	242.0	247.5	10.85
22-015	627	247.5	255.0	6.93
22-015	628	255.0	258.0	3.60
22-015	629	258.0	267.0	10.01
22-015	630	267.0	274.0	6.80
22-015	631	274.0	277.0	13.11
22-015	632	277.0	284.0	9.56
22-015	633	284.0	288.0	9.67
22-015	634	288.0	291.0	9.67
22-015	635	291.0	299.0	12.36
22-015	636	299.0	307.5	9.21
22-015	637	307.5	314.5	11.30

22-016 IS REF# 16

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40130.79	40789.44	1135.20	S 45.00 E	-87.00
DRIFT	0.03701	-0.03701	-0.99863	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-016	642	56.0	59.0	0.15
22-016	643	59.0	61.5	14.97
22-016	644	61.5	70.0	1.96
22-016	645	70.0	75.0	8.45
22-016	646	75.0	80.0	5.87
22-016	647	80.0	83.0	3.26
22-016	648	83.0	90.0	0.91
22-016	649	90.0	95.0	0.75
22-016	650	95.0	100.0	1.53
22-016	651	100.0	105.0	4.13
22-016	652	105.0	110.0	2.65
22-016	653	110.0	115.0	3.24
22-016	654	115.0	122.7	4.27
22-016	655	122.7	130.0	2.16
22-016	656	130.0	140.0	2.59
22-016	657	140.0	150.0	1.49
22-016	658	150.0	160.0	3.96

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-016	659	160.0	170.0	3.97
22-016	660	170.0	180.0	2.61
22-016	661	180.0	190.0	2.24
22-016	662	190.0	200.0	0.62
22-016	663	200.0	205.0	0.98

22-017 IS REF# 17	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38728.59	39928.61	1099.00	S 45.00 E	-37.00
DRIFT	0.56472	-0.56472	-0.60182	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-017	667	123.0	128.5	0.27
22-017	668	128.5	131.0	0.98
22-017	669	131.0	138.0	0.29
22-017	670	138.0	145.3	1.01
22-017	671	145.3	146.9	0.33
22-017	672	146.9	152.3	2.45
22-017	673	152.3	156.8	1.31
22-017	674	156.8	162.1	1.37
22-017	675	162.1	169.0	1.78
22-017	676	169.0	177.0	1.91
22-017	677	177.0	183.0	3.59
22-017	678	183.0	191.0	2.82
22-017	679	191.0	198.5	1.25
22-017	680	198.5	204.5	3.00
22-017	681	204.5	210.5	4.28
22-017	682	210.5	214.0	2.47
22-017	683	214.0	219.0	10.07
22-017	684	219.0	224.0	15.21
22-017	685	224.0	229.0	18.92
22-017	686	229.0	234.0	21.43
22-017	687	234.0	239.0	15.83
22-017	688	239.0	244.0	14.35
22-017	689	244.0	249.0	13.45
22-017	690	249.0	254.0	24.78
22-017	691	254.0	259.0	25.73
22-017	692	259.0	264.0	21.49
22-017	693	264.0	269.0	22.01
22-017	694	269.0	274.0	16.89
22-017	695	274.0	279.0	17.30
22-017	696	279.0	284.0	22.04
22-017	697	284.0	289.0	19.37
22-017	698	289.0	294.0	18.26
22-017	699	294.0	299.0	14.36

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-017	700	299.0	300.0	16.05
22-017	701	300.0	304.0	16.05
22-017	702	304.0	309.0	15.08
22-017	703	309.0	314.0	15.33
22-017	704	314.0	319.0	11.08
22-017	705	319.0	326.2	9.14
22-017	706	326.2	332.0	6.90
22-017	707	332.0	339.0	0.97
22-017	708	339.0	348.0	36.67
22-017	709	348.0	355.0	12.50

22-018 IS REF# 18

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40010.44	40909.65	1138.60	S 45.00 E	-89.00
DRIFT	0.01234	-0.01234	-0.99985	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-018	715	58.0	65.0	0.25
22-018	716	65.0	66.0	5.19
22-018	717	66.0	75.0	5.19
22-018	718	75.0	85.0	8.45
22-018	719	85.0	95.0	12.85
22-018	720	95.0	105.0	6.88
22-018	721	105.0	115.0	6.41
22-018	722	115.0	125.0	9.62
22-018	723	125.0	135.0	5.52
22-018	724	135.0	145.0	6.64
22-018	725	145.0	153.0	5.31
22-018	726	153.0	160.0	2.96
22-018	727	160.0	165.0	4.92
22-018	728	165.0	170.0	5.39
22-018	729	170.0	175.0	4.92
22-018	730	175.0	179.0	3.95
22-018	731	179.0	185.0	4.65
22-018	732	185.0	195.0	6.36
22-018	733	195.0	205.0	8.72
22-018	734	205.0	215.0	9.66
22-018	735	215.0	225.0	9.32
22-018	736	225.0	235.0	14.18
22-018	737	235.0	245.0	8.50
22-018	738	245.0	255.0	5.03
22-018	739	255.0	265.0	5.43
22-018	740	265.0	274.5	11.03
22-018	741	274.5	280.0	13.60
22-018	742	280.0	285.0	14.30

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-018	743	285.0	290.0	13.62
22-018	744	290.0	295.0	10.45
22-018	745	295.0	300.0	13 13
22-018	746	300.0	305.0	13.61
22-018	747	305.0	310.0	10.76
22-018	748	310.0	315.0	9.88
22-018	749	315.0	320.0	9.65
22-018	750	320.0	325.0	11.80
22-018	751	325.0	330.0	10.59
22-018	752	330.0	335.0	12.27
22-018	753	335.0	341.1	14.58
22-018	754	341.1	344.3	41.73
22-018	755	344.3	350.3	42.37
22-018	756	350.3	355.3	48.45
22-018	757	355.3	360.0	40.44
22-018	758	360.0	365.0	41.71
22-018	759	365.0	370.0	42.83
22-018	760	370.0	376.0	35.23
22-018	761	376.0	384.9	16.72
22-018	762	384.9	390.0	18.44
22-018	763	390.0	395.0	10.81
22-018	764	395.0	400.0	8.69
22-018	765	400.0	405.0	9.19
22-018	766	405.0	410.0	11.61
22-018	767	410.0	415.0	10.34
22-018	768	415.0	422.2	13.67
22-018	769	422.2	428.0	18.55
22-018	770	428.0	435.0	12.84
22-018	771	435.0	443.9	10.76
22-018	772	443.9	450.0	7.18
22-018	773	450.0	460.0	10.35
22-018	774	460.0	468.0	12.37
22-018	775	468.0	470.0	12.37
22-018	776	470.0	480.0	11.48
22-018	777	480.0	490.0	5.03
22-018	778	490.0	501.0	8.08
22-018	779	501.0	503.3	17.49
22-018	780	503.3	510.0	9.26
22-018	781	510.0	518.0	9.96

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-019 IS REF# 19	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40710.19	41906.23	1138.00	S 45.00 E	-47.50
DRIFT	0.47771	-0.47771	-0.73728	135.00	

HOLE#	UNIT	FROM	-TO-	S

22-020 IS REF# 20	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	35286.75	36668.36	1107.80	S 45.00 E	-45.00
DRIFT	0.50000	-0.50000	-0.70711	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-020	793	475.0	481.0	17.71
22-020	794	481.0	482.0	30.35
22-020	795	482.0	490.0	2.95
22-020	796	490.0	495.0	3.59
22-020	797	495.0	500.0	8.32
22-020	798	500.0	505.0	9.31
22-020	799	505.0	510.0	10.43
22-020	800	510.0	515.0	10.82
22-020	801	515.0	520.0	5.31
22-020	802	520.0	525.0	9.26
22-020	803	525.0	530.0	11.13
22-020	804	530.0	535.0	10.22
22-020	805	535.0	540.0	5.64
22-020	806	540.0	545.0	7.15
22-020	807	545.0	550.0	9.40
22-020	808	550.0	555.0	5.94
22-020	809	555.0	558.0	12.22

22-021 IS REF# 21	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39799.86	40554.40	1137.30	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-021	814	55.0	58.8	3.08
22-021	815	58.8	63.0	30.54
22-021	816	63.0	68.5	32.54
22-021	817	68.5	73.7	6.03
22-021	818	73.7	78.7	5.63
22-021	819	78.7	85.0	4.63
22-021	820	85.0	90.0	14.62
22-021	821	90.0	94.8	35.05

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-021	822	94.8	101.8	44.41
22-021	823	101.8	104.0	47.00
22-021	824	104.0	110.0	38.33
22-021	825	110.0	113.0	16.60
22-021	826	113.0	117.8	8.90
22-021	827	117.8	122.5	13.04
22-021	828	122.5	128.5	11.85
22-021	829	128.5	131.5	32.27
22-021	830	131.5	137.5	20.92
22-021	831	137.5	143.0	40.08
22-021	832	143.0	150.0	23.32
22-021	833	150.0	157.7	42.22
22-021	834	157.7	166.7	15.34
22-021	835	166.7	175.0	8.97
22-021	836	175.0	185.0	12.27
22-021	837	185.0	195.0	13.56
22-021	838	195.0	205.0	16.53
22-021	839	205.0	215.0	7.60
22-021	840	215.0	225.0	6.57
22-021	841	225.0	231.5	3.27
22-021	842	231.5	236.3	20.83
22-021	845	335.0	338.7	22.32
22-021	846	338.7	343.6	17.04
22-021	847	343.6	347.0	16.28
22-021	848	347.0	349.7	4.80
22-021	849	349.7	354.0	17.71
22-021	850	354.0	360.0	29.46

22-022 IS REF#	22 EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38542.84	40106.16	1092.30	S 45.00 E	-50.00
DRIFT	0.45452	-0.45452	-0.76604	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-022	860	503.0	507.5	15.69
22-022	861	507.5	513.3	15.06
22-022	862	513.3	517.8	13.74
22-022	863	517.8	526.5	13.94
22-022	864	526.5	530.3	15.36
22-022	865	530.3	535.0	14.07
22-022	866	535.0	541.2	14.04
22-022	867	541.2	545.0	14.52
22-022	868	545.0	550.0	16.14
22-022	869	550.0	555.0	15.25
22-022	870	555.0	560.5	15.62

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-022	871	560.5	565.0	13.99
22-022	872	565.0	570.0	12.90
22-022	873	570.0	575.0	14.73
22-022	874	575.0	580.0	13.23
22-022	875	580.0	585.0	12.59
22-022	876	585.0	590.0	7.44
22-022	877	590.0	595.0	10.72
22-022	878	595.0	596.8	11.40
22-022	879	596.8	601.0	9.22
22-022	880	601.0	605.0	3.87
22-022	882	609.0	611.6	0.77
22-022	883	611.6	614.7	43.28
22-022	884	614.7	621.8	1.87
22-022	885	621.8	626.5	33.59
22-022	886	626.5	629.7	2.79
22-022	887	629.7	635.0	13.16
22-022	888	635.0	640.0	14.47
22-022	889	640.0	645.0	8.75
22-022	890	645.0	652.0	8.78

22-023 IS REF# 23

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39502.24	40286.62	1117.50	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-023	896	34.0	36.0	4.18
22-023	897	36.0	40.0	40.64
22-023	898	40.0	44.2	38.45
22-023	899	44.2	50.5	34.45
22-023	900	50.5	53.5	28.33
22-023	901	53.5	55.0	43.77
22-023	902	55.0	60.0	43.35
22-023	903	60.0	65.0	40.99
22-023	904	65.0	70.0	28.81
22-023	905	70.0	74.5	38.22
22-023	906	74.5	82.5	20.78
22-023	907	82.5	87.7	9.31
22-023	908	87.7	90.0	0.41
22-023	909	90.0	94.0	7.44
22-023	910	96.0	99.5	8.56
22-023	911	99.5	104.0	9.34
22-023	912	104.0	109.0	3.03
22-023	913	109.0	112.0	4.05
22-023	914	112.0	113.8	8.63

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-023	915	113.8	120.2	7.09
22-023	916	120.2	129.5	13.80
22-023	917	129.5	133.5	12.09
22-023	918	133.5	137.5	34.67
22-023	919	137.5	146.0	15.21

22-024 IS REF# 24

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40529.17	42085.43	1136.30	S 45.00 E	-50.00
DRIFT	0.45452	-0.45452	-0.76604	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-024	926	570.0	575.0	4.09
22-024	927	575.0	580.0	6.65
22-024	928	580.0	585.0	8.44
22-024	929	585.0	590.0	5.48
22-024	930	590.0	595.0	10.44
22-024	931	595.0	600.0	5.89
22-024	933	624.2	625.2	8.20
22-024	935	651.5	656.5	4.50
22-024	937	675.0	678.0	9.70
22-024	938	678.0	685.0	3.85
22-024	939	685.0	690.0	0.93
22-024	940	690.0	695.0	7.82
22-024	941	695.0	699.0	7.01
22-024	942	699.0	700.0	13.89
22-024	943	700.0	705.0	13.89
22-024	944	705.0	710.0	4.32
22-024	947	737.0	743.0	6.81
22-024	948	743.0	748.5	7.97

22-025 IS REF# 25

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40351.90	41131.61	1138.30	S 45.00 E	-88.00
DRIFT	0.02468	-0.02468	-0.99939	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-025	953	59.0	65.5	16.73
22-025	954	65.5	70.0	21.38
22-025	955	70.0	75.0	14.92
22-025	956	75.0	80.0	22.82
22-025	957	80.0	87.2	21.71
22-025	958	87.2	91.0	37.68

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-025	959	91.0	93.2	47.43
22-025	960	93.2	97.0	50.20
22-025	961	97.0	102.6	49.07
22-025	962	102.6	104.5	36.90
22-025	963	104.5	106.0	40.90
22-025	964	106.0	111.0	25.97
22-025	965	111.0	117.5	42.78
22-025	966	117.5	120.0	14.71
22-025	967	120.0	125.0	31.98
22-025	968	125.0	127.0	25.66
22-025	969	127.0	131.0	29.46
22-025	970	131.0	135.0	27.59
22-025	971	135.0	140.0	22.26
22-025	972	140.0	145.0	20.14
22-025	973	145.0	150.0	25.43
22-025	974	150.0	155.0	26.82
22-025	975	155.0	158.5	33.15
22-025	976	158.5	165.0	20.67
22-025	977	165.0	170.0	25.71
22-025	978	170.0	175.0	13.13
22-025	979	175.0	180.0	19.54
22-025	980	180.0	185.0	24.37
22-025	981	185.0	187.5	9.39
22-025	982	187.5	194.0	33.83
22-025	983	194.0	197.0	19.18
22-025	984	197.0	199.0	32.01
22-025	985	199.0	204.5	17.98
22-025	986	204.5	211.0	12.35
22-025	987	211.0	217.0	18.65
22-025	988	217.0	220.5	24.01
22-025	989	220.5	225.0	23.44
22-025	990	225.0	230.0	30.57
22-025	991	230.0	235.0	32.56
22-025	992	235.0	240.0	40.01
22-025	993	240.0	245.0	18.26
22-025	994	245.0	250.0	16.68
22-025	995	250.0	255.0	28.38

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-026 IS REF# 26	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38542.84	40106.16	1092.30	S 45.00 E	-75.00
DRIFT	0.18301	-0.18301	-0.96593	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-026	1005	675.7	680.0	16.40
22-026	1006	680.0	683.5	19.93
22-026	1007	683.5	687.0	16.78
22-026	1008	687.0	689.0	18.87
22-026	1009	689.0	693.0	16.88
22-026	1010	693.0	696.5	11.77
22-026	1011	696.5	700.0	13.68
22-026	1012	700.0	700.5	13.68
22-026	1013	700.5	705.0	17.63
22-026	1014	705.0	710.0	13.41
22-026	1015	710.0	715.0	11.09
22-026	1016	715.0	720.0	18.81
22-026	1017	720.0	725.0	16.11
22-026	1018	725.0	730.0	14.84
22-026	1019	730.0	735.0	16.46
22-026	1020	735.0	740.0	15.20
22-026	1021	740.0	745.0	8.71
22-026	1022	745.0	750.0	16.48
22-026	1023	750.0	755.0	14.74
22-026	1024	755.0	760.0	11.06
22-026	1025	760.0	765.0	15.61
22-026	1026	765.0	770.0	9.76
22-026	1027	770.0	775.0	7.30
22-026	1028	775.0	780.0	4.69
22-026	1029	780.0	785.0	8.90
22-026	1030	785.0	790.0	10.74
22-026	1031	790.0	795.0	6.16
22-026	1032	795.0	799.7	8.66
22-026	1033	799.7	801.7	11.50
22-026	1034	801.7	805.0	8.21
22-026	1035	805.0	810.0	9.60
22-026	1036	810.0	816.0	6.26
22-026	1038	834.3	839.3	10.56
22-026	1039	839.3	842.0	11.44
22-026	1040	842.0	843.5	21.25
22-026	1041	843.5	850.0	5.13
22-026	1042	850.0	855.0	3.60
22-026	1043	855.0	860.0	0.27
22-026	1044	860.0	865.0	4.02
22-026	1045	865.0	870.0	1.58
22-026	1046	870.0	877.0	5.74
22-026	1047	877.0	879.3	38.09
22-026	1048	879.3	884.0	4.30

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-026	1049	884.0	890.0	0.24
22-026	1050	890.0	894.0	4.31
22-026	1051	894.0	898.0	13.68
22-026	1052	898.0	919.0	0.00

22-027 IS REF# 27

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40633.68	41415.66	1139.30	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-027	1057	70.0	74.5	6.78
22-027	1058	74.5	81.5	3.83
22-027	1059	81.5	85.0	3.36
22-027	1060	85.0	90.0	1.95
22-027	1061	90.0	95.0	2.55
22-027	1062	95.0	100.0	2.76
22-027	1063	100.0	105.0	1.94
22-027	1064	105.0	110.0	2.86
22-027	1065	110.0	115.0	2.74
22-027	1066	115.0	120.0	19.53
22-027	1067	120.0	125.0	14.14
22-027	1068	125.0	130.0	15.76
22-027	1069	130.0	135.0	10.57
22-027	1070	135.0	140.0	19.30
22-027	1071	140.0	145.0	25.31
22-027	1072	145.0	150.0	5.89
22-027	1073	150.0	156.0	19.83
22-027	1074	156.0	164.5	26.41
22-027	1075	164.5	174.0	20.76
22-027	1076	174.0	178.0	30.25
22-027	1077	178.0	185.0	25.12
22-027	1078	185.0	186.0	35.82
22-027	1079	186.0	190.0	29.40
22-027	1080	190.0	195.0	37.79
22-027	1081	195.0	201.0	31.13
22-027	1082	201.0	206.0	40.87
22-027	1083	206.0	208.0	26.80
22-027	1084	208.0	212.0	35.12
22-027	1085	212.0	220.0	17.25
22-027	1086	220.0	225.0	7.16
22-027	1087	225.0	230.0	10.06
22-027	1088	230.0	235.0	16.60
22-027	1089	235.0	240.0	35.01
22-027	1090	240.0	245.0	39.92

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-027	1091	245.0	250.0	40.25
22-027	1092	250.0	255.0	38.72
22-027	1093	255.0	259.0	38.26
22-027	1094	259.0	265.0	10.23
22-027	1095	265.0	275.0	8.70
22-027	1096	275.0	278.0	3.12
22-027	1097	278.0	285.0	4.27
22-027	1099	325.0	330.0	0.69
22-027	1100	330.0	332.0	1.54
22-027	1101	332.0	334.0	2.32
22-027	1102	334.0	335.0	1.81

22-028 IS REF# 28

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	42000.30	43199.61	1144.00	S 45.00 E	-44.50
DRIFT	0.50434	-0.50434	-0.70091	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-028	1106	453.0	456.0	4.46
22-028	1107	456.0	458.8	4.44
22-028	1108	458.8	461.0	21.15
22-028	1109	461.0	463.5	5.40
22-028	1110	463.5	467.5	3.83
22-028	1111	467.5	468.5	30.03
22-028	1112	468.5	471.5	19.94
22-028	1113	471.5	475.0	6.15
22-028	1114	475.0	478.0	8.24
22-028	1117	517.8	520.3	16.84
22-028	1118	520.3	525.0	5.27
22-028	1120	535.0	542.0	4.96
22-028	1121	542.0	546.0	15.79
22-028	1122	546.0	550.0	5.42
22-028	1124	591.0	596.5	14.04
22-028	1125	596.5	597.5	28.15
22-028	1126	597.5	601.5	7.18
22-028	1128	640.0	645.0	6.82
22-028	1129	645.0	650.0	8.46

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-029	IS REF# 29			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	40785.14	41548.03	1138.90	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-029	1136	189.5	193.0	8.81
22-029	1139	223.5	229.8	11.99

22-030	IS REF# 30			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	40667.13	41378.82	1138.10	S 45.00 E	-89.00
DRIFT	0.01234	-0.01234	-0.99985	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-030	1144	69.0	72.0	8.72
22-030	1145	72.0	75.0	8.72
22-030	1146	75.0	80.0	17.88
22-030	1149	147.5	149.5	6.62
22-030	1150	149.5	155.0	0.20
22-030	1151	155.0	160.0	0.12
22-030	1152	160.0	165.0	0.20
22-030	1153	165.0	170.5	0.95
22-030	1154	170.5	176.0	0.11

22-031	IS REF# 31			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39122.31	40667.25	1120.80	S 45.00 E	-83.00
DRIFT	0.08617	-0.08617	-0.99255	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-031	1161	615.0	620.0	7.82
22-031	1162	620.0	625.0	8.11
22-031	1163	625.0	630.0	3.39
22-031	1164	630.0	635.0	5.11
22-031	1165	635.0	640.0	1.43
22-031	1166	640.0	646.0	8.07
22-031	1167	646.0	650.0	2.21
22-031	1168	650.0	655.0	2.12
22-031	1169	655.0	660.0	3.98
22-031	1170	660.0	665.0	8.46
22-031	1171	665.0	670.0	4.36
22-031	1172	670.0	675.0	6.44
22-031	1173	675.0	680.0	7.23
22-031	1174	680.0	685.0	6.33

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-031	1175	685.0	690.0	5.52
22-031	1176	690.0	695.0	1.76
22-031	1177	695.0	700.0	5.41
22-031	1178	700.0	705.0	7.90
22-031	1179	705.0	710.0	6.33
22-031	1180	710.0	715.0	3.25
22-031	1181	715.0	720.0	2.71
22-031	1182	720.0	725.0	8.28
22-031	1183	725.0	730.0	4.85
22-031	1184	730.0	734.0	37.58
22-031	1185	734.0	738.0	35.72
22-031	1186	738.0	742.0	46.67
22-031	1187	742.0	745.0	47.65
22-031	1188	745.0	748.0	48.51
22-031	1189	748.0	750.0	49.53
22-031	1190	750.0	753.0	49.12
22-031	1191	753.0	759.0	46.49
22-031	1192	759.0	764.0	42.37
22-031	1193	764.0	768.0	42.93
22-031	1194	768.0	773.0	45.67
22-031	1195	773.0	778.0	48.68
22-031	1196	778.0	783.0	26.23
22-031	1197	783.0	787.0	20.62
22-031	1198	787.0	791.0	44.26
22-031	1199	791.0	795.0	45.18
22-031	1200	795.0	797.0	42.39
22-031	1201	797.0	800.0	43.36
22-031	1202	800.0	803.0	35.85
22-031	1203	803.0	806.0	26.88
22-031	1204	806.0	809.0	15.61
22-031	1205	809.0	814.0	10.22
22-031	1206	814.0	819.0	7.39
22-031	1207	819.0	824.0	7.46
22-031	1208	824.0	827.0	6.47
22-031	1209	827.0	830.0	6.04
22-031	1210	830.0	835.0	5.99
22-031	1211	835.0	840.0	6.95
22-031	1212	840.0	845.0	7.31
22-031	1213	845.0	850.0	8.06

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-032	IS REF#	32			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		38804.40	39853.94	1099.10	S 45.00 E	-86.00
DRIFT		0.04932	-0.04932	-0.99756	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-032	1218	88.5	92.0	1.03
22-032	1219	92.0	96.0	0.65
22-032	1220	96.0	100.0	0.67
22-032	1221	100.0	105.0	2.16
22-032	1222	105.0	110.0	1.83
22-032	1223	110.0	115.0	1.94
22-032	1224	115.0	120.0	7.04
22-032	1225	120.0	125.0	1.57
22-032	1226	125.0	130.0	1.92
22-032	1227	130.0	135.0	1.56
22-032	1228	135.0	140.0	1.07
22-032	1229	140.0	145.0	0.92
22-032	1230	145.0	147.0	0.28
22-032	1231	147.0	151.0	0.10

22-033	IS REF#	33			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		4000.24	499.56	0.00	S 45.00 E	-60.00
DRIFT		0.35355	-0.35355	-0.86603	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-033	1233	170.5	171.8	3.50

22-034	IS REF#	34			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		38873.76	39782.45	1099.00	S 45.00 E	-86.00
DRIFT		0.04932	-0.04932	-0.99756	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-034	1239	24.0	26.0	0.09
22-034	1240	26.0	28.0	0.11
22-034	1241	28.0	30.0	0.11
22-034	1242	30.0	33.0	0.22
22-034	1243	33.0	35.0	0.13
22-034	1244	35.0	37.0	0.38
22-034	1245	37.0	39.0	5.99
22-034	1246	39.0	43.0	14.84
22-034	1247	43.0	44.0	17.66
22-034	1248	44.0	45.0	37.95

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-034	1249	45.0	46.0	23.93
22-034	1250	46.0	47.0	32.06
22-034	1251	47.0	50.6	17.00
22-034	1252	50.6	55.0	27.68
22-034	1253	55.0	60.0	17.35
22-034	1254	60.0	65.0	18.05
22-034	1255	65.0	70.0	15.07
22-034	1256	70.0	75.0	11.94
22-034	1257	75.0	80.0	19.81
22-034	1258	80.0	87.5	17.43
22-034	1259	87.5	92.5	21.19
22-034	1260	92.5	96.5	17.89
22-034	1261	96.5	97.5	39.41
22-034	1262	97.5	104.0	15.94
22-034	1263	104.0	106.5	17.04
22-034	1264	106.5	111.5	29.82
22-034	1265	111.5	116.5	23.53
22-034	1266	116.5	122.0	25.42
22-034	1267	122.0	127.0	25.01
22-034	1268	127.0	132.0	19.20
22-034	1269	132.0	136.0	18.23
22-034	1270	136.0	140.0	16.40
22-034	1271	140.0	145.0	18.07
22-034	1272	145.0	150.0	16.95
22-034	1273	150.0	155.0	24.76
22-034	1274	155.0	160.0	25.35
22-034	1275	160.0	165.0	17.94
22-034	1276	165.0	170.0	25.04
22-034	1277	170.0	175.0	14.41
22-034	1278	175.0	180.0	20.01
22-034	1279	180.0	185.0	18.17
22-034	1280	185.0	190.0	17.27
22-034	1281	190.0	195.0	22.86
22-034	1282	195.0	200.0	20.42
22-034	1283	200.0	205.0	8.61
22-034	1284	205.0	210.0	18.02
22-034	1285	210.0	215.0	17.44
22-034	1286	215.0	220.0	19.86
22-034	1287	220.0	225.0	17.17
22-034	1288	225.0	230.0	20.11
22-034	1289	230.0	235.0	23.64
22-034	1290	235.0	240.0	19.44
22-034	1291	240.0	245.0	20.87
22-034	1292	245.0	250.0	15.60
22-034	1293	250.0	255.0	18.90
22-034	1294	255.0	260.0	14.53
22-034	1295	260.0	265.0	17.53

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-034	1296	265.0	270.0	30.63
22-034	1297	270.0	275.0	15.46
22-034	1298	275.0	280.0	11.91
22-034	1299	280.0	285.0	11.51
22-034	1300	285.0	290.0	10.23
22-034	1301	290.0	295.0	5.09
22-034	1302	295.0	301.0	9.66
22-034	1303	301.0	305.0	45.98

22-035 IS REF# 35

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38944.97	39712.52	1098.30	S 45.00 E	-88.00
DRIFT	0.02468	-0.02468	-0.99939	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-035	1306	12.0	14.0	0.17
22-035	1307	14.0	15.0	0.14
22-035	1308	15.0	16.0	0.14
22-035	1309	16.0	18.0	0.30
22-035	1310	18.0	20.0	4.54
22-035	1311	20.0	22.0	9.81
22-035	1312	22.0	24.0	33.19
22-035	1313	24.0	26.0	17.05
22-035	1314	26.0	28.0	17.71
22-035	1315	28.0	30.0	19.75
22-035	1316	30.0	32.0	21.80
22-035	1317	32.0	34.0	19.15
22-035	1318	34.0	36.0	23.09
22-035	1319	36.0	38.0	17.13
22-035	1321	39.0	45.0	7.83
22-035	1322	45.0	50.0	8.45
22-035	1323	50.0	55.0	8.89
22-035	1324	55.0	60.0	11.43
22-035	1325	60.0	65.0	8.98
22-035	1326	65.0	70.0	7.46
22-035	1327	70.0	75.0	7.25
22-035	1328	75.0	78.0	4.15
22-035	1329	78.0	82.0	31.87
22-035	1330	82.0	86.0	35.63
22-035	1331	86.0	96.0	9.69
22-035	1332	96.0	99.0	9.34
22-035	1333	99.0	102.0	21.15
22-035	1334	102.0	108.0	32.28
22-035	1335	108.0	110.5	21.74
22-035	1336	110.5	115.0	8.34

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-035	1337	115.0	120.0	10.17
22-035	1338	120.0	125.0	6.59
22-035	1339	125.0	130.0	3.87
22-035	1340	130.0	135.0	6.95
22-035	1341	135.0	140.0	9.93
22-035	1342	140.0	145.0	8.96
22-035	1343	145.0	150.0	8.57
22-035	1344	150.0	155.0	9.24
22-035	1345	155.0	160.0	5.55
22-035	1346	160.0	165.0	3.19
22-035	1347	165.0	170.0	4.24
22-035	1348	170.0	174.0	4.28
22-035	1349	174.0	176.0	2.39
22-035	1350	176.0	181.0	0.22

22-036	IS REF#	36			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		39014.34	39641.45	1096.70	0.00 E	-90.00
DRIFT		0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S

22-037	IS REF#	37			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		39185.81	40037.79	1111.30	S 45.00 E	-88.50
DRIFT		0.01851	-0.01851	-0.99966	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-037	1359	31.0	33.0	0.47
22-037	1360	33.0	34.0	1.72
22-037	1361	34.0	37.0	42.14
22-037	1362	37.0	41.0	43.52
22-037	1363	41.0	44.0	44.97
22-037	1364	44.0	48.0	31.96
22-037	1365	48.0	54.0	38.00
22-037	1366	54.0	56.4	46.07
22-037	1367	56.4	58.4	38.97
22-037	1368	58.4	62.4	44.38
22-037	1369	62.4	66.0	43.62
22-037	1370	66.0	71.0	42.34
22-037	1371	71.0	76.0	35.95
22-037	1372	76.0	81.0	34.56
22-037	1373	81.0	84.0	34.44

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-037	1374	84.0	88.0	44.79
22-037	1375	88.0	92.0	45.93
22-037	1376	92.0	97.0	45.95
22-037	1377	97.0	102.0	41.80
22-037	1378	102.0	107.0	44.60
22-037	1379	107.0	112.0	45.06
22-037	1380	112.0	116.0	44.04
22-037	1381	116.0	120.0	44.74
22-037	1382	120.0	124.0	37.59
22-037	1383	124.0	130.0	40.03
22-037	1384	130.0	136.2	44.90
22-037	1385	136.2	138.2	17.66
22-037	1386	138.2	146.0	48.02
22-037	1387	146.0	150.5	20.73
22-037	1388	150.5	154.5	22.28
22-037	1389	154.5	160.0	13.63
22-037	1390	160.0	165.0	19.56
22-037	1391	165.0	170.0	11.94
22-037	1392	170.0	175.0	19.09
22-037	1393	175.0	180.0	14.05
22-037	1394	180.0	185.0	14.95
22-037	1395	185.0	190.0	9.29
22-037	1396	190.0	195.0	6.08
22-037	1397	195.0	200.0	4.29
22-037	1398	200.0	205.0	4.56
22-037	1399	205.0	210.0	8.24
22-037	1400	210.0	215.0	6.22
22-037	1401	215.0	220.0	5.33
22-037	1402	220.0	225.0	15.10
22-037	1403	225.0	230.0	8.55
22-037	1404	230.0	235.0	8.61
22-037	1405	235.0	238.5	8.36
22-037	1406	238.5	242.5	13.00
22-037	1407	242.5	247.5	46.14
22-037	1408	247.5	251.7	37.73
22-037	1409	251.7	255.0	17.56
22-037	1410	255.0	260.0	14.91
22-037	1411	260.0	265.0	9.98
22-037	1412	265.0	270.0	9.78
22-037	1413	270.0	275.0	3.64
22-037	1414	275.0	280.0	4.74
22-037	1415	280.0	285.0	3.09

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-038 IS REF# 38	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39431.95	40358.04	1114.20	S 45.00 E	-87.00
DRIFT	0.03701	-0.03701	-0.99863	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-038	1421	58.2	62.8	0.62
22-038	1422	62.8	73.0	7.12
22-038	1423	73.0	83.0	7.02
22-038	1424	83.0	93.0	7.05
22-038	1425	93.0	103.0	8.96
22-038	1426	103.0	113.0	8.61
22-038	1427	113.0	124.0	3.20
22-038	1428	124.0	129.0	6.86
22-038	1429	129.0	135.5	9.32
22-038	1430	135.5	140.0	9.38
22-038	1431	140.0	149.0	10.30
22-038	1432	149.0	156.0	47.92
22-038	1433	156.0	160.0	48.67
22-038	1434	160.0	165.0	49.46
22-038	1435	165.0	170.0	49.31
22-038	1436	170.0	176.5	42.16
22-038	1437	176.5	184.0	49.64
22-038	1438	184.0	186.2	48.46
22-038	1439	186.2	194.0	46.57
22-038	1440	194.0	199.0	49.78
22-038	1441	199.0	204.0	49.36
22-038	1442	204.0	212.0	48.73
22-038	1443	212.0	216.0	49.69
22-038	1444	216.0	221.0	48.75
22-038	1445	221.0	226.0	49.57
22-038	1446	226.0	231.0	50.31
22-038	1447	231.0	236.0	51.20
22-038	1448	236.0	238.5	51.58
22-038	1449	238.5	243.0	50.62
22-038	1450	243.0	245.5	51.30
22-038	1451	245.5	249.0	50.19
22-038	1452	249.0	255.0	50.56
22-038	1453	255.0	261.0	50.46
22-038	1454	261.0	266.0	49.24
22-038	1455	266.0	271.0	49.01
22-038	1456	271.0	275.0	49.22
22-038	1457	275.0	280.0	49.15
22-038	1458	280.0	286.0	49.49
22-038	1459	286.0	296.0	49.61
22-038	1460	296.0	300.0	49.61
22-038	1461	300.0	300.3	49.61
22-038	1462	300.3	307.6	50.62
22-038	1463	307.6	313.0	47.79

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT --- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-038	1464	313.0	315.0	45.51
22-038	1465	315.0	318.0	44.05
22-038	1466	318.0	320.0	33.45
22-038	1467	320.0	324.0	35.89
22-038	1468	324.0	330.0	46.27
22-038	1469	330.0	333.0	36.80
22-038	1470	333.0	334.5	29.59
22-038	1471	334.5	336.5	28.88
22-038	1472	336.5	341.5	28.97
22-038	1473	341.5	347.5	15.17
22-038	1474	347.5	356.0	7.57
22-038	1475	356.0	366.0	12.27
22-038	1476	366.0	374.0	11.20
22-038	1477	374.0	384.0	10.25
22-038	1478	384.0	390.0	9.27
22-038	1479	390.0	400.0	16.79

22-039 IS REF# 39

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39122.31	40667.25	1120.80	S 45.00 E	-48.50
DRIFT	0.46854	-0.46854	-0.74896	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-039	1484	60.0	207.0	0.10
22-039	1489	510.0	515.0	1.88
22-039	1490	515.0	520.0	2.88
22-039	1491	520.0	525.0	2.82
22-039	1492	525.0	530.0	4.60
22-039	1493	530.0	535.0	11.39
22-039	1494	535.0	540.0	10.85
22-039	1495	540.0	544.0	5.93
22-039	1496	544.0	549.0	21.19
22-039	1497	549.0	551.0	41.25
22-039	1498	551.0	553.6	47.95
22-039	1499	553.6	556.0	47.46
22-039	1500	556.0	560.0	47.62
22-039	1501	560.0	565.0	47.87
22-039	1502	565.0	570.0	47.65
22-039	1503	570.0	574.0	47.84
22-039	1504	574.0	577.0	45.45
22-039	1505	577.0	581.0	24.15
22-039	1506	581.0	584.0	39.17
22-039	1507	584.0	589.0	41.55
22-039	1508	589.0	595.0	16.24
22-039	1509	595.0	600.0	12.04

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-039	1510	600.0	609.0	17.64
22-039	1511	609.0	612.0	20.71

22-040 IS REF# 40

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39702.35	41246.16	1132.50	S 45.00 E	-52.00
DRIFT	0.43534	-0.43534	-0.78801	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-040	1523	435.0	440.0	17.67
22-040	1524	440.0	445.0	11.20
22-040	1525	445.0	446.0	19.29
22-040	1526	446.0	450.0	19.29
22-040	1527	450.0	455.0	10.56
22-040	1528	455.0	462.0	2.21
22-040	1531	573.0	574.6	7.09
22-040	1533	637.5	641.5	15.42
22-040	1534	641.5	645.0	41.36
22-040	1535	645.0	647.6	37.14
22-040	1536	647.6	648.8	15.59
22-040	1537	648.8	654.8	30.03
22-040	1538	654.8	660.2	9.67
22-040	1539	660.2	665.0	10.06
22-040	1540	665.0	670.8	13.60
22-040	1541	670.8	675.0	12.20
22-040	1542	675.0	680.0	12.34
22-040	1543	680.0	685.0	11.69
22-040	1544	685.0	690.0	10.88
22-040	1545	690.0	695.0	12.88
22-040	1546	695.0	700.0	16.46
22-040	1547	700.0	705.0	14.60
22-040	1548	705.0	710.0	12.97
22-040	1549	710.0	715.0	14.66
22-040	1550	715.0	720.0	13.11
22-040	1551	720.0	725.0	11.69
22-040	1552	725.0	730.0	11.50
22-040	1553	730.0	734.0	10.45
22-040	1554	734.0	737.0	7.76

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-041	IS REF#	41			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		37683.96	41263.98	1132.10	S 45.00 E	-68.00
DRIFT		0.26489	-0.26489	-0.92718	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-041	1566	562.0	565.0	14.21
22-041	1567	565.0	566.0	14.21
22-041	1568	566.0	570.0	42.93
22-041	1569	570.0	572.6	17.82
22-041	1570	572.6	575.8	5.32
22-041	1571	575.8	581.0	4.30
22-041	1572	581.0	584.0	5.01
22-041	1576	751.0	755.0	21.21
22-041	1577	755.0	759.0	18.74
22-041	1578	759.0	762.3	26.99
22-041	1579	762.3	765.6	16.04
22-041	1580	765.6	769.6	11.46
22-041	1581	769.6	775.0	9.67
22-041	1582	775.0	778.0	12.22
22-041	1583	778.0	785.0	11.76
22-041	1584	785.0	790.6	13.09
22-041	1585	790.6	795.0	11.46
22-041	1586	795.0	800.0	12.68
22-041	1587	800.0	804.0	9.39
22-041	1588	804.0	806.0	25.07
22-041	1589	806.0	811.4	14.30
22-041	1590	811.4	815.0	11.87
22-041	1591	815.0	819.1	11.29
22-041	1592	819.1	825.0	10.96
22-041	1593	825.0	830.3	7.84
22-041	1594	830.3	835.0	17.16
22-041	1595	835.0	840.5	11.72
22-041	1596	840.5	845.0	15.08
22-041	1597	845.0	849.1	10.37
22-041	1598	849.1	855.0	10.21
22-041	1599	855.0	860.0	8.03
22-041	1600	860.0	861.0	8.03

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-042 IS REF# 42	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38794.29	39711.74	1087.60	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-042	1603	35.0	38.0	19.95
22-042	1604	38.0	43.0	8.36
22-042	1605	43.0	48.2	22.54
22-042	1606	48.2	49.2	17.50
22-042	1607	49.2	54.0	10.00
22-042	1608	54.0	58.0	10.22
22-042	1609	58.0	60.9	10.44
22-042	1610	60.9	65.0	9.27
22-042	1611	65.0	68.0	12.01
22-042	1612	68.0	72.0	23.91
22-042	1613	72.0	77.0	11.26
22-042	1614	77.0	82.0	9.64
22-042	1615	82.0	85.0	22.01
22-042	1616	85.0	90.0	14.04
22-042	1617	90.0	95.0	24.79
22-042	1618	95.0	98.0	12.16
22-042	1619	98.0	104.0	16.99
22-042	1620	104.0	112.0	10.20
22-042	1621	112.0	122.0	14.69
22-042	1622	122.0	132.0	13.14
22-042	1623	132.0	141.0	12.88
22-042	1626	282.5	289.0	14.32
22-042	1627	289.0	293.0	18.00
22-042	1628	293.0	297.0	14.16
22-042	1629	297.0	300.0	9.55
22-042	1631	315.0	318.0	10.18

22-043 IS REF# 43	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38980.75	40839.93	1108.70 S	45.00 E	-89.00
DRIFT	0.01234	-0.01234	-0.99985	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-043	1638	1030.0	1034.3	6.96
22-043	1639	1034.3	1038.3	20.67
22-043	1640	1038.3	1042.0	44.05
22-043	1641	1042.0	1046.2	46.82
22-043	1642	1046.2	1050.6	49.13
22-043	1643	1050.6	1052.3	37.70
22-043	1644	1052.3	1054.0	42.65
22-043	1645	1054.0	1058.2	35.21

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-043	1646	1058.2	1061.7	16.69
22-043	1647	1061.7	1063.3	39.97
22-043	1648	1063.3	1068.3	18.23
22-043	1649	1068.3	1074.0	17.78
22-043	1650	1074.0	1077.3	38.06
22-043	1651	1077.3	1080.3	12.76
22-043	1652	1080.3	1084.6	11.66
22-043	1653	1084.6	1088.6	9.81
22-043	1654	1088.6	1093.0	8.35
22-043	1655	1093.0	1097.9	14.95
22-043	1656	1097.9	1100.0	11.63
22-043	1657	1100.0	1102.9	11.63
22-043	1658	1102.9	1109.9	14.66
22-043	1659	1109.9	1114.9	21.50
22-043	1660	1114.9	1119.9	15.43
22-043	1661	1119.9	1124.0	24.10
22-043	1662	1124.0	1129.4	19.24
22-043	1663	1129.4	1134.0	15.70
22-043	1664	1134.0	1139.0	8.44
22-043	1665	1139.0	1143.0	13.63
22-043	1666	1143.0	1146.1	6.35
22-043	1668	1171.0	1176.0	8.58
22-043	1669	1176.0	1181.0	10.23

22-044 IS REF# 44

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38828.50	40379.39	1103.00	S 45.00 E	-47.00
DRIFT	0.48225	-0.48225	-0.73135	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-044	1682	505.6	509.9	12.51
22-044	1683	509.9	511.0	47.72
22-044	1684	511.0	515.0	47.18
22-044	1685	515.0	519.0	48.48
22-044	1686	519.0	524.0	47.23
22-044	1687	524.0	528.1	48.48
22-044	1688	528.1	532.7	47.14
22-044	1689	532.7	537.1	48.41
22-044	1690	537.1	540.4	39.10
22-044	1691	540.4	544.0	50.67
22-044	1692	544.0	549.0	22.04
22-044	1693	549.0	554.0	33.30
22-044	1694	554.0	557.6	43.67
22-044	1695	557.6	561.1	28.40
22-044	1696	561.1	565.0	20.10

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-044	1697	565.0	570.0	27.89
22-044	1698	570.0	575.0	9.21
22-044	1699	575.0	580.4	8.26
22-044	1700	580.4	585.4	9.06
22-044	1701	585.4	589.4	8.01
22-044	1702	589.4	593.5	7.72
22-044	1704	623.6	626.3	38.14
22-044	1706	633.0	634.0	27.81

22-045 IS REF# 45

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39405.58	40947.41	1124.00	S 45.00 E	-50.00
DRIFT	0.45452	-0.45452	-0.76604	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-045	1720	581.0	585.0	11.87
22-045	1721	585.0	591.0	12.21
22-045	1722	591.0	596.0	9.34
22-045	1723	596.0	600.0	11.30
22-045	1724	600.0	605.0	13.18
22-045	1725	605.0	610.0	26.08
22-045	1726	610.0	615.0	43.89
22-045	1727	615.0	620.0	47.63
22-045	1728	620.0	625.6	40.23
22-045	1729	625.6	631.6	9.84
22-045	1730	631.6	633.0	26.86
22-045	1731	633.0	638.0	19.80
22-045	1732	638.0	639.6	32.68
22-045	1733	639.6	643.6	34.61
22-045	1735	674.0	681.0	10.80
22-045	1736	681.0	685.0	10.49
22-045	1737	685.0	691.0	12.30
22-045	1739	698.5	699.5	13.52
22-045	1740	699.5	702.8	15.44

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-046 IS REF# 46				BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	38828.50	40379.39	1103.00	S 45.00 E	-68.00
DRIFT	0.26489	-0.26489	-0.92718	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-046	1753	582.0	585.0	1.92
22-046	1754	585.0	590.0	4.05
22-046	1755	590.0	595.0	6.73
22-046	1756	595.0	601.0	15.02
22-046	1757	601.0	606.0	8.99
22-046	1758	606.0	611.0	6.79
22-046	1759	611.0	615.0	8.90
22-046	1760	615.0	617.0	11.26
22-046	1761	617.0	620.0	33.90
22-046	1762	620.0	622.5	24.78
22-046	1763	622.5	627.0	47.43
22-046	1764	627.0	630.0	48.73
22-046	1765	630.0	632.0	47.00
22-046	1766	632.0	635.0	34.85
22-046	1767	635.0	638.0	44.42
22-046	1768	638.0	641.0	33.18
22-046	1769	641.0	645.0	18.20
22-046	1770	645.0	649.0	10.14
22-046	1771	649.0	653.0	21.90
22-046	1772	653.0	657.0	9.07
22-046	1773	657.0	661.0	13.14
22-046	1774	661.0	664.0	16.14
22-046	1775	664.0	668.0	16.62
22-046	1776	668.0	673.0	14.71
22-046	1777	673.0	678.0	14.79
22-046	1778	678.0	681.0	17.05
22-046	1779	681.0	684.6	14.11
22-046	1780	684.6	689.5	22.22
22-046	1781	689.5	695.0	12.06
22-046	1782	695.0	700.0	8.31
22-046	1783	700.0	704.2	15.66
22-046	1784	704.2	711.0	11.35
22-046	1785	711.0	715.0	11.03
22-046	1786	715.0	720.5	13.34
22-046	1787	720.5	725.0	12.39
22-046	1788	725.0	729.0	10.74
22-046	1789	729.0	732.0	10.65
22-046	1790	732.0	734.0	24.02
22-046	1791	734.0	738.3	9.09
22-046	1792	738.3	742.3	9.34
22-046	1793	742.3	747.5	11.94
22-046	1794	747.5	752.5	13.03
22-046	1796	764.6	768.3	18.50

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-046	1797	768.3	770.4	43.15
22-046	1798	770.4	773.0	36.46
22-046	1799	773.0	774.5	43.97
22-046	1800	774.5	776.3	37.02
22-046	1801	776.3	779.0	26.65

22-047 IS REF# 47

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39404.09	40948.61	1124.00	S 45.00 E	-66.00
DRIFT	0.28761	-0.28761	-0.91355	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-047	1817	675.0	680.0	11.03
22-047	1818	680.0	685.0	12.74
22-047	1819	685.0	688.5	11.34
22-047	1820	688.5	692.5	21.61
22-047	1821	692.5	695.0	26.64
22-047	1822	695.0	699.9	27.05
22-047	1823	699.9	700.0	43.69
22-047	1824	700.0	703.6	43.69
22-047	1825	703.6	705.0	47.34
22-047	1826	705.0	709.0	47.63
22-047	1827	709.0	713.0	47.76
22-047	1828	713.0	717.0	47.54
22-047	1829	717.0	720.0	44.97
22-047	1830	720.0	724.0	43.28
22-047	1831	724.0	727.6	39.53
22-047	1832	727.6	730.0	42.08
22-047	1833	730.0	732.6	26.13
22-047	1834	732.6	735.0	42.91
22-047	1835	735.0	738.6	38.74
22-047	1836	738.6	742.0	11.63
22-047	1838	763.0	768.0	10.84
22-047	1839	768.0	773.6	12.07
22-047	1840	773.6	776.0	10.66

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-048	IS REF# 48			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	38693.38	40214.42	1100.80	S 45.00 E	-72.00
DRIFT	0.21851	-0.21851	-0.95106	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-048	1853	629.0	634.0	8.27
22-048	1854	634.0	638.0	44.78
22-048	1855	638.0	642.0	45.94
22-048	1856	642.0	645.0	30.09
22-048	1857	645.0	650.6	29.77
22-048	1858	650.6	655.0	25.97
22-048	1859	655.0	660.0	29.36
22-048	1860	660.0	665.0	24.78
22-048	1861	665.0	670.0	26.78
22-048	1862	670.0	675.0	25.19
22-048	1863	675.0	680.6	28.62
22-048	1864	680.6	685.0	22.34
22-048	1865	685.0	689.0	19.45
22-048	1866	689.0	692.4	21.90
22-048	1867	692.4	697.0	11.24
22-048	1868	697.0	700.0	15.28
22-048	1869	700.0	702.0	15.28
22-048	1870	702.0	707.0	11.72
22-048	1871	707.0	710.0	12.20
22-048	1872	710.0	715.0	9.68
22-048	1873	715.0	720.0	11.70
22-048	1874	720.0	725.0	10.87
22-048	1875	725.0	730.0	7.70
22-048	1876	730.0	735.0	7.07
22-048	1877	735.0	740.0	5.58
22-048	1878	740.0	745.0	12.53
22-048	1879	745.0	750.0	7.16
22-048	1880	750.0	754.0	12.24
22-048	1881	754.0	758.0	12.56
22-048	1882	758.0	762.0	9.63
22-048	1883	762.0	768.0	46.74
22-048	1884	768.0	772.0	44.69
22-048	1885	772.0	774.2	14.36
22-048	1886	774.2	784.4	6.15
22-048	1887	784.4	786.7	13.05
22-048	1888	786.7	789.3	20.95
22-048	1889	789.3	794.0	27.92
22-048	1890	794.0	798.0	42.26
22-048	1891	798.0	802.5	32.80
22-048	1892	802.5	804.0	27.29
22-048	1893	804.0	806.5	18.66
22-048	1894	806.5	811.5	5.48
22-048	1896	826.0	827.0	8.12

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-048	1898	831.0	835.0	8.98
22-048	1899	835.0	839.6	11.79

22-049 IS REF# 49

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39112.55	40108.78	1108.40	S 45.00 E	-84.00
DRIFT	0.07391	-0.07391	-0.99452	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-049	1908	65.0	72.0	4.90
22-049	1909	72.0	81.0	4.89
22-049	1910	81.0	92.0	7.81
22-049	1911	92.0	98.0	9.88
22-049	1912	98.0	107.0	3.44
22-049	1913	107.0	116.0	3.93
22-049	1914	116.0	118.0	3.68
22-049	1915	118.0	120.0	11.27
22-049	1916	120.0	124.0	3.48
22-049	1917	124.0	129.0	6.10
22-049	1918	129.0	134.0	3.33
22-049	1919	134.0	137.5	3.96
22-049	1920	137.5	145.0	2.24
22-049	1921	145.0	150.0	3.38
22-049	1922	150.0	155.0	4.71
22-049	1923	155.0	160.0	2.90
22-049	1924	160.0	163.5	2.19
22-049	1925	163.5	167.0	3.39
22-049	1926	167.0	172.0	3.62
22-049	1927	172.0	174.8	5.58
22-049	1928	174.8	180.0	2.57
22-049	1929	180.0	185.0	2.09
22-049	1930	185.0	190.0	2.35
22-049	1931	190.0	195.0	1.61
22-049	1932	195.0	200.0	4.29
22-049	1933	200.0	205.0	9.02
22-049	1934	205.0	210.0	6.25
22-049	1935	210.0	215.0	12.61
22-049	1936	215.0	220.0	5.87
22-049	1937	220.0	225.0	17.01
22-049	1938	225.0	230.0	5.10
22-049	1939	230.0	235.0	3.32
22-049	1940	235.0	240.0	5.31
22-049	1941	240.0	245.0	25.94
22-049	1942	245.0	250.0	49.31
22-049	1943	250.0	255.0	49.56

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-049	1944	255.0	260.0	48.38
22-049	1945	260.0	265.0	46.15
22-049	1946	265.0	271.0	47.60
22-049	1947	271.0	275.7	48.29
22-049	1948	275.7	280.0	47.45
22-049	1949	280.0	285.0	47.42
22-049	1950	285.0	290.0	48.07
22-049	1951	290.0	295.0	40.09
22-049	1952	295.0	300.0	47.06
22-049	1953	300.0	305.0	46.99
22-049	1954	305.0	311.0	48.18
22-049	1955	311.0	314.4	49.41
22-049	1956	314.4	320.0	48.74
22-049	1957	320.0	324.0	50.31
22-049	1958	324.0	327.0	49.33
22-049	1959	327.0	330.0	49.08
22-049	1960	330.0	332.0	50.28
22-049	1961	332.0	336.0	36.39
22-049	1962	336.0	341.0	47.17
22-049	1963	341.0	345.0	49.56
22-049	1964	345.0	350.0	47.96
22-049	1965	350.0	355.0	49.18
22-049	1966	355.0	360.0	46.79
22-049	1967	360.0	365.0	43.29
22-049	1968	365.0	370.0	43.64
22-049	1969	370.0	375.0	35.96
22-049	1970	375.0	380.0	20.50
22-049	1971	380.0	385.0	15.33
22-049	1972	385.0	390.0	4.16
22-049	1973	390.0	395.6	6.68
22-049	1974	395.6	400.0	8.42
22-049	1975	400.0	405.0	3.35
22-049	1976	405.0	410.0	4.78
22-049	1977	410.0	414.0	3.86

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-050 IS REF# 50	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38967.38	40797.43	1109.30	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S

22-051 IS REF# 51	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39255.74	39965.31	1114.20	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-051	1982	70.0	75.0	0.14
22-051	1983	75.0	80.0	0.13
22-051	1984	80.0	85.0	0.09
22-051	1985	85.0	90.3	0.14
22-051	1986	90.3	95.0	0.17
22-051	1987	95.0	100.0	0.11
22-051	1988	100.0	105.0	0.11
22-051	1989	105.0	110.0	0.08
22-051	1990	110.0	113.0	0.08
22-051	1991	113.0	120.0	0.13
22-051	1992	120.0	125.0	0.59
22-051	1993	125.0	130.6	2.72
22-051	1994	130.6	135.0	0.96
22-051	1995	135.0	139.4	1.67

22-053 IS REF# 52	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39834.86	41707.62	1144.80	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-053	2001	270.8	273.3	0.25
22-053	2005	588.0	590.0	1.80
22-053	2009	1051.0	1053.3	11.87
22-053	2010	1053.3	1056.3	4.35
22-053	2012	1062.0	1063.0	2.87
22-053	2013	1063.0	1076.5	1.60
22-053	2016	1236.0	1241.0	8.68
22-053	2017	1241.0	1245.0	7.75
22-053	2018	1245.0	1250.0	5.83
22-053	2019	1250.0	1255.0	4.47
22-053	2020	1255.0	1260.0	11.40

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-053	2021	1260.0	1265.0	7.40
22-053	2022	1265.0	1270.0	7.45
22-053	2023	1270.0	1275.0	10.21
22-053	2024	1275.0	1280.0	12.47
22-053	2025	1280.0	1285.0	11.37
22-053	2026	1285.0	1290.0	11.49
22-053	2027	1290.0	1295.0	8.27
22-053	2028	1295.0	1300.0	8.76
22-053	2029	1300.0	1305.0	10.92
22-053	2030	1305.0	1310.0	11.51
22-053	2031	1310.0	1315.0	9.76
22-053	2032	1315.0	1320.0	9.31
22-053	2033	1320.0	1325.0	11.01
22-053	2034	1325.0	1330.0	10.59
22-053	2035	1330.0	1335.0	8.54
22-053	2036	1335.0	1340.0	12.16
22-053	2037	1340.0	1345.0	13.11
22-053	2038	1345.0	1350.0	10.72
22-053	2039	1350.0	1355.0	6.41

22-054 IS REF# 53

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39051.11	40171.93	1112.00	S 45.00 E	-84.00
DRIFT	0.07391	-0.07391	-0.99452	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-054	2050	62.0	72.0	0.10
22-054	2062	182.0	192.0	0.10
22-054	2064	202.0	212.0	0.10

22-055 IS REF# 54

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38693.38	40241.44	1100.80	S 45.00 E	-50.00
DRIFT	0.45452	-0.45452	-0.76604	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-055	2071	58.0	175.0	0.10
22-055	2072	175.0	255.0	0.10
22-055	2076	480.0	485.0	1.67
22-055	2077	485.0	491.0	5.25
22-055	2078	491.0	495.0	47.73
22-055	2079	495.0	500.0	47.99
22-055	2080	500.0	502.5	47.13

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-055	2081	502.5	507.0	36.99
22-055	2082	507.0	509.0	38.68
22-055	2083	509.0	513.5	40.67
22-055	2084	513.5	518.0	47.11
22-055	2085	518.0	522.0	49.68
22-055	2086	522.0	526.0	49.82
22-055	2087	526.0	529.4	48.61
22-055	2088	529.4	530.9	36.88
22-055	2089	530.9	535.6	38.60
22-055	2090	535.6	540.6	32.67
22-055	2091	540.6	543.6	24.18
22-055	2092	543.6	544.0	28.52
22-055	2093	544.0	549.0	16.11
22-055	2094	549.0	555.0	13.49
22-055	2095	555.0	558.5	13.97
22-055	2096	558.5	561.0	17.65
22-055	2097	561.0	565.0	14.64
22-055	2098	565.0	570.0	9.79
22-055	2099	570.0	575.0	5.96
22-055	2100	575.0	580.0	9.95
22-055	2101	580.0	585.0	11.54
22-055	2102	585.0	590.0	9.34
22-055	2103	590.0	595.0	10.46
22-055	2104	595.0	600.0	9.60
22-055	2105	600.0	604.5	3.46
22-055	2106	604.5	606.0	12.55
22-055	2107	606.0	611.0	45.34
22-055	2108	611.0	613.0	41.96
22-055	2109	613.0	617.0	39.22
22-055	2110	617.0	621.6	24.63
22-055	2111	621.6	623.3	5.59
22-055	2112	623.3	630.5	0.77
22-055	2113	630.5	634.0	2.19

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-056 IS REF# 55	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39571.89	40214.99	1120.70	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-056	2127	100.0	110.0	0.10
22-056	2128	110.0	120.0	0.10
22-056	2129	120.0	130.0	0.10
22-056	2130	130.0	140.0	0.10
22-056	2131	140.0	150.0	0.10
22-056	2132	150.0	160.0	0.10

22-057 IS REF# 56	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39360.46	40429.10	1114.30	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-057	2138	52.0	72.0	0.10
22-057	2139	72.0	90.0	0.10
22-057	2140	90.0	115.0	0.10
22-057	2141	115.0	134.0	0.10
22-057	2142	134.0	153.0	0.10
22-057	2143	153.0	174.0	0.10

22-058 IS REF# 57	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39728.30	40624.12	1138.60	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-058	2148	59.0	61.0	1.40
22-058	2149	61.0	63.5	15.83
22-058	2150	63.5	67.5	2.81
22-058	2151	67.5	72.0	2.01
22-058	2152	72.0	76.0	4.89
22-058	2153	76.0	80.0	6.70
22-058	2154	80.0	84.0	8.54
22-058	2155	84.0	87.5	7.90
22-058	2156	87.5	94.0	6.31
22-058	2157	94.0	99.0	5.30
22-058	2158	99.0	100.0	5.07
22-058	2159	100.0	105.0	5.07
22-058	2160	105.0	109.0	6.90

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-058	2161	109.0	113.0	6.30
22-058	2162	113.0	120.0	4.14
22-058	2163	120.0	130.0	8.68
22-058	2164	130.0	134.0	15.45
22-058	2165	134.0	139.3	26.98
22-058	2166	139.3	143.0	3.41
22-058	2167	143.0	147.0	11.03
22-058	2168	147.0	152.0	9.31
22-058	2169	152.0	157.0	9.79
22-058	2170	157.0	163.0	10.91
22-058	2171	163.0	170.0	8.39
22-058	2172	170.0	176.0	5.66
22-058	2173	176.0	179.0	5.81
22-058	2174	179.0	187.0	9.15
22-058	2175	187.0	207.0	4.33
22-058	2176	207.0	220.0	6.46
22-058	2177	220.0	235.0	9.24
22-058	2178	235.0	245.0	2.65
22-058	2179	245.0	248.3	3.43
22-058	2180	248.3	253.0	6.77
22-058	2181	253.0	272.0	9.26
22-058	2182	272.0	289.0	11.02
22-058	2183	289.0	300.0	15.22
22-058	2184	300.0	310.0	15.22
22-058	2185	310.0	330.0	9.19
22-058	2186	330.0	343.4	18.53
22-058	2187	343.4	345.5	32.33
22-058	2188	345.5	350.0	23.57
22-058	2189	350.0	356.0	24.51
22-058	2190	356.0	359.5	30.29
22-058	2191	359.5	362.0	38.09
22-058	2192	362.0	365.0	48.35
22-058	2193	365.0	367.0	48.96
22-058	2194	367.0	372.0	45.53
22-058	2195	372.0	375.0	47.41
22-058	2196	375.0	380.0	46.52
22-058	2197	380.0	383.0	47.67
22-058	2198	383.0	385.3	38.47
22-058	2199	385.3	389.0	38.04
22-058	2200	389.0	391.3	37.49
22-058	2201	391.3	395.0	37.47
22-058	2202	395.0	397.9	33.62
22-058	2203	397.9	401.0	35.87
22-058	2204	401.0	403.7	37.89
22-058	2205	403.7	405.0	15.72
22-058	2206	405.0	409.0	41.41
22-058	2207	409.0	412.0	39.98

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-058	2208	412.0	415.0	39.43
22-058	2209	415.0	418.0	29.15
22-058	2210	418.0	423.8	11.93
22-058	2211	423.8	425.0	35.20
22-058	2212	425.0	430.0	36.37
22-058	2213	430.0	433.6	36.36
22-058	2214	433.6	436.6	22.12
22-058	2215	436.6	442.0	39.23
22-058	2216	442.0	445.0	37.67
22-058	2217	445.0	449.0	40.24
22-058	2218	449.0	452.6	19.26
22-058	2219	452.6	455.0	24.64
22-058	2220	455.0	464.0	8.11
22-058	2221	464.0	469.0	6.34

22-059 IS REF# 58

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39825.67	41325.36	1137.60	S 45.00 E	-50.00
DRIFT	0.45452	-0.45452	-0.76604	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-059	2230	100.0	185.0	0.10
22-059	2231	185.0	220.0	0.10
22-059	2232	220.0	230.0	0.10
22-059	2233	230.0	275.0	0.10
22-059	2234	275.0	300.0	0.10
22-059	2239	580.0	585.0	8.75
22-059	2240	585.0	590.0	10.95
22-059	2241	590.0	595.0	12.14
22-059	2242	595.0	600.0	12.64
22-059	2243	600.0	605.0	12.92
22-059	2244	605.0	610.0	8.34
22-059	2245	610.0	615.0	8.47
22-059	2246	615.0	620.5	7.69
22-059	2247	620.5	622.0	16.17
22-059	2248	622.0	624.0	40.29
22-059	2249	624.0	628.0	17.59
22-059	2250	628.0	632.0	11.04
22-059	2251	632.0	637.0	30.15
22-059	2252	637.0	639.0	26.38
22-059	2253	639.0	642.0	17.72
22-059	2254	642.0	646.0	14.79
22-059	2255	646.0	650.0	14.79
22-059	2256	650.0	654.0	17.54
22-059	2257	654.0	659.0	13.37

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-059	2258	659.0	663.0	12.04
22-059	2259	663.0	667.5	15.48
22-059	2260	667.5	672.0	9.53
22-059	2261	672.0	677.0	10.90
22-059	2262	677.0	681.0	9.62
22-059	2263	681.0	685.0	9.76
22-059	2264	685.0	690.0	10.08
22-059	2265	690.0	693.0	9.94
22-059	2266	693.0	695.0	9.94
22-059	2267	695.0	698.4	11.27
22-059	2268	698.4	702.5	4.07

22-060 IS REF# 59

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39867.25	40481.78	1131.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-060	2282	896.0	900.0	1.26
22-060	2283	900.0	905.0	3.81
22-060	2284	905.0	906.2	6.32

22-061 IS REF# 60

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40398.64	41934.81	1138.00	S 45.00 E	-70.00
DRIFT	0.24184	-0.24184	-0.93969	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-061	2291	515.6	519.0	9.98
22-061	2293	635.0	640.0	6.94
22-061	2294	640.0	645.0	6.82
22-061	2295	645.0	650.0	3.99
22-061	2296	650.0	655.0	3.31
22-061	2297	655.0	660.0	4.73
22-061	2298	660.0	665.0	6.25
22-061	2301	729.0	734.0	4.14
22-061	2302	734.0	741.0	3.51
22-061	2303	741.0	745.0	4.05
22-061	2304	745.0	750.0	5.71
22-061	2305	750.0	755.0	4.62
22-061	2306	755.0	761.0	3.20
22-061	2307	761.0	765.0	3.04
22-061	2308	765.0	770.0	2.14

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-061	2309	770.0	774.0	4.80
22-061	2311	779.0	802.4	8.22
22-061	2312	802.4	806.0	9.49
22-061	2313	806.0	809.5	6.18
22-061	2314	809.5	812.0	7.52
22-061	2315	812.0	813.0	5.31
22-061	2316	813.0	817.0	6.30

22-062 IS REF# 61

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40422.89	41062.74	1136.30	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-062	2321	52.0	60.0	0.10
22-062	2323	70.0	80.0	0.10
22-062	2325	90.0	100.0	0.10

22-063 IS REF# 62

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38943.48	40022.59	1099.80	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-063	2332	59.0	70.0	0.00
22-063	2333	70.0	80.0	0.00
22-063	2334	80.0	90.0	0.00
22-063	2335	90.0	100.0	0.00
22-063	2336	100.0	110.0	0.00
22-063	2337	110.0	120.0	0.00
22-063	2338	120.0	130.0	0.00
22-063	2339	130.0	135.0	0.55
22-063	2340	135.0	140.0	3.11
22-063	2341	140.0	145.0	1.56
22-063	2342	145.0	150.0	1.83
22-063	2343	150.0	155.0	0.69
22-063	2344	155.0	160.0	0.60
22-063	2345	160.0	165.0	1.14
22-063	2346	165.0	170.0	2.84
22-063	2347	170.0	175.0	2.15
22-063	2348	175.0	180.0	4.35
22-063	2349	180.0	185.0	3.34
22-063	2350	185.0	190.0	4.03

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-063	2351	190.0	195.0	3.34
22-063	2352	195.0	200.0	1.19
22-063	2353	200.0	205.0	10.21
22-063	2354	205.0	210.0	6.60
22-063	2355	210.0	216.4	2.22
22-063	2356	216.4	221.0	1.74
22-063	2357	221.0	225.0	1.83
22-063	2358	225.0	230.0	1.55
22-063	2359	230.0	235.0	4.06
22-063	2360	235.0	240.0	4.93
22-063	2361	240.0	245.0	3.38
22-063	2362	245.0	252.0	4.64
22-063	2363	252.0	255.0	5.31
22-063	2364	255.0	260.0	3.19
22-063	2365	260.0	265.0	1.45
22-063	2366	265.0	270.0	2.90
22-063	2367	270.0	275.0	2.22
22-063	2368	275.0	285.0	3.86
22-063	2369	285.0	295.0	3.28
22-063	2370	295.0	305.0	1.55
22-063	2371	305.0	315.0	3.09
22-063	2372	315.0	335.0	2.61
22-063	2373	335.0	341.7	3.19
22-063	2374	341.7	346.0	33.63
22-063	2375	346.0	355.0	50.44
22-063	2376	355.0	359.0	51.50
22-063	2377	359.0	363.0	48.12
22-063	2378	363.0	368.0	45.90
22-063	2379	368.0	370.0	36.14
22-063	2380	370.0	375.0	51.31
22-063	2381	375.0	380.6	51.02
22-063	2382	380.6	385.0	51.98
22-063	2383	385.0	390.0	47.54
22-063	2384	390.0	395.0	50.25
22-063	2385	395.0	400.0	48.80
22-063	2386	400.0	405.0	48.99
22-063	2387	405.0	410.5	48.12
22-063	2388	410.5	415.0	49.96
22-063	2389	415.0	421.0	42.23
22-063	2390	421.0	425.0	46.28
22-063	2391	425.0	430.0	35.43
22-063	2392	430.0	435.0	34.50
22-063	2393	435.0	437.0	27.05
22-063	2394	437.0	438.6	44.74
22-063	2395	438.6	445.0	26.67
22-063	2396	445.0	451.0	23.09
22-063	2397	451.0	455.0	9.86

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-063	2398	455.0	461.8	12.37
22-063	2399	461.8	465.0	12.75
22-063	2400	465.0	470.0	8.41
22-063	2401	470.0	475.0	13.72
22-063	2402	475.0	480.0	21.26
22-063	2403	480.0	485.0	18.94
22-063	2404	485.0	490.0	11.59
22-063	2405	490.0	495.0	11.01
22-063	2406	495.0	500.0	9.66
22-063	2407	500.0	505.0	9.47
22-063	2408	505.0	510.0	6.76

22-064 IS REF# 63

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40278.43	41205.08	1141.20	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-064	2412	59.0	65.0	0.09
22-064	2413	65.0	75.0	7.41
22-064	2414	75.0	80.0	8.44
22-064	2415	80.0	85.0	9.66
22-064	2416	85.0	90.0	6.94
22-064	2417	90.0	95.0	14.44
22-064	2418	95.0	100.0	4.36
22-064	2419	100.0	105.0	9.80
22-064	2420	105.0	110.0	9.70
22-064	2421	110.0	115.0	7.92
22-064	2422	115.0	120.0	3.47
22-064	2423	120.0	125.0	4.64
22-064	2424	125.0	130.0	6.98
22-064	2425	130.0	135.0	5.67
22-064	2426	135.0	140.0	6.52
22-064	2427	140.0	145.0	6.09
22-064	2428	145.0	150.0	5.25
22-064	2429	150.0	155.0	9.28
22-064	2430	155.0	160.0	7.45
22-064	2431	160.0	165.0	8.30
22-064	2432	165.0	170.0	6.94
22-064	2433	170.0	175.0	11.53
22-064	2434	175.0	180.0	6.09
22-064	2435	180.0	185.0	4.55
22-064	2436	185.0	190.0	3.89
22-064	2437	190.0	195.0	3.52
22-064	2438	195.0	200.0	6.33

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-064	2439	200.0	204.0	6.89

22-065 IS REF# 64	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39006.56	39943.95	1104.50	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-065	2443	48.0	50.0	8.22
22-065	2444	50.0	55.0	6.59
22-065	2445	55.0	60.0	4.54
22-065	2446	60.0	65.0	8.63
22-065	2447	65.0	69.5	5.09
22-065	2448	69.5	75.0	7.45
22-065	2449	75.0	80.0	8.43
22-065	2450	80.0	85.0	9.74
22-065	2451	85.0	90.0	9.78
22-065	2452	90.0	95.0	5.91
22-065	2453	95.0	100.0	12.87
22-065	2454	100.0	105.0	11.82
22-065	2455	105.0	109.0	16.73
22-065	2456	109.0	112.7	45.86
22-065	2457	112.7	115.0	42.99
22-065	2458	115.0	120.0	41.56
22-065	2459	120.0	125.0	44.90
22-065	2460	125.0	130.0	49.68
22-065	2461	130.0	135.0	49.77
22-065	2462	135.0	138.0	48.34
22-065	2463	138.0	142.0	45.47
22-065	2464	142.0	146.4	48.44
22-065	2465	146.4	150.4	48.24
22-065	2466	150.4	154.0	47.79
22-065	2467	154.0	158.0	47.77
22-065	2468	158.0	163.0	48.72
22-065	2469	163.0	168.0	48.63
22-065	2470	168.0	172.0	47.77
22-065	2471	172.0	177.0	46.62
22-065	2472	177.0	185.0	49.59
22-065	2473	185.0	191.0	45.98
22-065	2474	191.0	194.0	41.04
22-065	2475	194.0	196.5	32.68
22-065	2476	196.5	204.5	35.05
22-065	2477	204.5	211.0	47.31
22-065	2478	211.0	215.0	47.69
22-065	2479	215.0	220.0	45.60

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-065	2480	220.0	225.0	44.65
22-065	2481	225.0	229.0	43.41
22-065	2482	229.0	235.0	43.98
22-065	2483	235.0	240.0	40.28
22-065	2484	240.0	245.0	34.77
22-065	2485	245.0	250.0	27.17
22-065	2486	250.0	255.4	15.58
22-065	2487	255.4	260.0	18.63
22-065	2488	260.0	265.0	20.71
22-065	2489	265.0	270.0	16.27
22-065	2490	270.0	275.0	11.74
22-065	2491	275.0	281.0	19.66
22-065	2492	281.0	285.0	18.81
22-065	2493	285.0	290.0	15.93
22-065	2494	290.0	295.0	5.23
22-065	2495	295.0	300.0	13.56
22-065	2496	300.0	305.0	5.23
22-065	2497	305.0	307.5	9.02

22-066 IS REF# 65

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40440.71	41321.12	1141.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-066	2501	60.0	69.0	7.37
22-066	2502	69.0	78.0	8.65
22-066	2503	78.0	86.0	10.81
22-066	2504	86.0	95.0	7.25
22-066	2505	95.0	99.0	6.88
22-066	2506	99.0	100.0	4.23
22-066	2507	100.0	108.0	4.23
22-066	2508	108.0	115.0	3.05
22-066	2509	115.0	120.0	5.13
22-066	2510	120.0	130.0	3.54
22-066	2511	130.0	135.0	5.74
22-066	2512	135.0	140.0	6.49
22-066	2513	140.0	145.0	8.25
22-066	2514	145.0	150.0	5.90
22-066	2515	150.0	155.0	5.64
22-066	2516	155.0	160.0	4.42
22-066	2517	160.0	165.0	7.45
22-066	2518	165.0	170.0	5.31
22-066	2519	170.0	175.0	8.55
22-066	2520	175.0	180.0	4.32

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-066	2521	180.0	185.0	4.43
22-066	2522	185.0	190.0	4.91
22-066	2523	190.0	195.0	11.78
22-066	2524	195.0	200.0	8.26
22-066	2525	200.0	205.0	6.24
22-066	2526	205.0	210.0	6.39
22-066	2527	210.0	215.0	23.05
22-066	2528	215.0	220.0	22.22
22-066	2529	220.0	225.0	20.63
22-066	2530	225.0	230.0	17.79
22-066	2531	230.0	234.0	44.89
22-066	2532	234.0	237.0	49.84
22-066	2533	237.0	240.0	49.72
22-066	2534	240.0	245.0	51.90
22-066	2535	245.0	250.0	49.04
22-066	2536	250.0	255.0	49.32
22-066	2537	255.0	260.0	53.12
22-066	2538	260.0	262.0	16.81
22-066	2539	262.0	265.0	44.64
22-066	2540	265.0	270.0	26.36
22-066	2541	270.0	275.0	26.19
22-066	2542	275.0	280.5	21.39
22-066	2543	280.5	285.0	19.90
22-066	2544	285.0	290.0	12.43
22-066	2545	290.0	295.0	12.46
22-066	2546	295.0	300.0	13.92
22-066	2547	300.0	305.0	36.72
22-066	2548	305.0	313.0	13.73
22-066	2549	313.0	315.0	31.11
22-066	2550	315.0	325.0	27.85
22-066	2551	325.0	330.0	43.48
22-066	2552	330.0	335.0	28.85
22-066	2553	335.0	336.0	50.25
22-066	2554	336.0	339.0	48.99
22-066	2555	339.0	344.0	45.90
22-066	2556	344.0	353.0	44.83
22-066	2557	353.0	355.0	43.58
22-066	2558	355.0	357.0	38.36
22-066	2559	357.0	359.0	43.48
22-066	2560	359.0	361.0	46.77
22-066	2561	361.0	365.0	14.88
22-066	2562	365.0	370.0	26.19
22-066	2563	370.0	375.0	28.02
22-066	2564	375.0	380.0	18.45
22-066	2565	380.0	385.0	25.80
22-066	2566	385.0	389.0	26.76
22-066	2567	389.0	394.0	18.36

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-066	2568	394.0	398.0	37.10
22-066	2569	398.0	402.0	37.49
22-066	2570	402.0	404.0	25.99
22-066	2571	404.0	407.0	22.90
22-066	2572	407.0	412.0	12.95
22-066	2573	412.0	417.0	9.86
22-066	2574	417.0	422.0	11.59
22-066	2575	422.0	427.0	6.86
22-066	2576	427.0	432.0	7.15
22-066	2577	432.0	437.0	13.24

22-067 IS REF# 66

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40111.27	41659.47	1144.30	S 45.00 E	-70.00
DRIFT	0.24184	-0.24184	-0.93969	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-067	2582	695.0	700.0	8.64
22-067	2583	700.0	704.0	14.80
22-067	2584	704.0	709.0	11.09
22-067	2585	709.0	713.7	25.27
22-067	2586	713.7	717.0	14.12
22-067	2587	717.0	722.0	17.61
22-067	2588	722.0	726.0	20.53
22-067	2589	726.0	732.0	17.12
22-067	2590	732.0	735.6	13.24
22-067	2591	735.6	740.0	21.27
22-067	2592	740.0	745.0	13.66
22-067	2593	745.0	750.0	12.23
22-067	2594	750.0	755.0	12.36
22-067	2595	755.0	759.3	3.67
22-067	2596	759.3	763.0	11.26
22-067	2597	763.0	768.0	7.11
22-067	2598	768.0	773.0	6.97
22-067	2599	773.0	777.0	9.97
22-067	2600	777.0	784.0	1.74
22-067	2601	784.0	789.0	1.51
22-067	2602	789.0	794.0	0.83
22-067	2603	794.0	804.0	4.01
22-067	2604	804.0	811.0	5.28
22-067	2605	811.0	815.0	4.06
22-067	2606	815.0	818.0	4.71
22-067	2607	818.0	823.0	3.32
22-067	2608	823.0	828.0	2.22
22-067	2609	828.0	833.0	2.17

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-068 IS REF# 67	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40518.63	41256.63	1139.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-068	2614	70.0	75.0	14.78
22-068	2615	75.0	80.0	9.37
22-068	2616	80.0	82.0	11.11
22-068	2617	82.0	87.0	6.67
22-068	2618	87.0	90.0	25.90
22-068	2619	90.0	91.5	25.90
22-068	2620	91.5	92.9	28.79
22-068	2621	92.9	95.0	7.92
22-068	2622	95.0	96.7	10.82
22-068	2623	96.7	100.0	1.55
22-068	2624	100.0	104.0	2.90
22-068	2625	104.0	108.0	4.44
22-068	2626	108.0	112.0	3.57
22-068	2627	112.0	117.0	2.61
22-068	2628	117.0	121.0	0.96
22-068	2629	121.0	125.0	1.09
22-068	2630	125.0	130.0	1.06
22-068	2631	130.0	135.0	0.45
22-068	2632	135.0	140.0	1.26
22-068	2633	140.0	145.0	3.09
22-068	2634	145.0	149.0	2.32
22-068	2635	149.0	154.0	2.90
22-068	2636	154.0	162.0	2.32
22-068	2637	162.0	170.0	0.73
22-068	2638	170.0	175.0	0.64
22-068	2639	175.0	180.0	1.09
22-068	2640	180.0	185.0	0.18
22-068	2641	185.0	189.0	0.20

22-069 IS REF# 68	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39074.09	39864.83	1110.30	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-069	2645	32.0	34.0	0.10
22-069	2646	34.0	36.0	0.14
22-069	2647	36.0	37.0	0.14
22-069	2648	37.0	40.2	2.12
22-069	2649	40.2	42.3	6.65
22-069	2650	42.3	46.0	2.63

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-069	2651	46.0	50.0	2.31
22-069	2652	50.0	55.0	0.83
22-069	2653	55.0	60.0	45.31
22-069	2654	60.0	65.0	41.36
22-069	2655	65.0	70.0	40.54
22-069	2656	70.0	75.0	43.29
22-069	2657	75.0	80.0	28.11
22-069	2658	80.0	85.0	18.92
22-069	2659	85.0	90.0	19.56
22-069	2660	90.0	92.5	38.55
22-069	2661	92.5	95.0	16.98
22-069	2662	95.0	100.0	16.66
22-069	2663	100.0	105.0	4.12
22-069	2664	105.0	110.0	19.11
22-069	2665	110.0	115.0	5.93
22-069	2666	115.0	120.0	2.08
22-069	2667	120.0	125.0	0.90
22-069	2668	125.0	130.0	3.72
22-069	2669	130.0	135.0	0.72
22-069	2670	135.0	140.0	5.58
22-069	2671	140.0	145.0	6.33
22-069	2672	145.0	150.0	0.92
22-069	2673	150.0	155.0	4.89
22-069	2674	155.0	160.0	3.74
22-069	2675	160.0	167.5	3.32
22-069	2676	167.5	170.0	1.98
22-069	2677	170.0	175.0	2.58
22-069	2678	175.0	180.0	2.63
22-069	2679	180.0	185.0	3.05
22-069	2680	185.0	190.0	0.46
22-069	2681	190.0	195.0	1.57
22-069	2682	195.0	200.0	0.23
22-069	2683	200.0	205.0	0.19
22-069	2684	205.0	210.0	0.65
22-069	2685	210.0	215.0	4.11
22-069	2686	215.0	220.0	3.97
22-069	2687	220.0	225.0	0.10
22-069	2688	225.0	230.0	3.23
22-069	2689	230.0	235.0	3.23
22-069	2690	235.0	240.0	1.98
22-069	2691	240.0	245.0	2.08
22-069	2692	245.0	250.0	2.68

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-070	IS REF#	69			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		40297.24	40894.80	1139.00	0.00 E	-90.00
DRIFT		0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-070	2696	59.0	65.0	0.11
22-070	2697	65.0	80.0	0.11
22-070	2698	80.0	100.0	0.15
22-070	2699	100.0	120.0	0.11
22-070	2700	120.0	140.0	0.06
22-070	2701	140.0	160.0	0.46
22-070	2702	160.0	190.0	2.36

22-071	IS REF#	70			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		40126.75	41642.29	1143.30	S 45.00 E	-70.00
DRIFT		0.24184	-0.24184	-0.93969	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-071	2707	537.0	542.0	6.50
22-071	2708	542.0	546.0	5.30
22-071	2709	546.0	551.0	10.20
22-071	2710	551.0	555.5	17.11
22-071	2711	555.5	560.0	28.41
22-071	2712	560.0	565.0	20.88
22-071	2713	565.0	570.0	43.42
22-071	2714	570.0	575.0	45.12
22-071	2715	575.0	580.0	45.52
22-071	2716	580.0	585.0	37.89
22-071	2717	585.0	589.0	33.52
22-071	2718	589.0	594.4	18.54
22-071	2719	594.4	599.0	18.51
22-071	2720	599.0	604.0	23.83
22-071	2721	604.0	609.0	26.01
22-071	2722	609.0	613.0	28.11
22-071	2723	613.0	618.0	25.21
22-071	2724	618.0	623.0	24.34
22-071	2725	623.0	628.0	14.81
22-071	2726	628.0	633.0	9.06
22-071	2727	633.0	637.0	16.61
22-071	2728	637.0	642.0	11.71
22-071	2729	642.0	647.0	4.10
22-071	2730	647.0	650.0	2.85
22-071	2731	650.0	651.5	2.85

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-072	IS REF# 71			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39249.52	40244.62	1111.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-072	2736	54.0	64.0	0.19
22-072	2737	64.0	74.0	0.15
22-072	2738	74.0	84.0	0.07
22-072	2739	84.0	94.0	0.17
22-072	2740	94.0	108.0	0.37
22-072	2741	108.0	110.0	8.45
22-072	2742	110.0	115.0	8.45
22-072	2743	115.0	120.0	11.71
22-072	2744	120.0	130.0	10.80
22-072	2745	130.0	140.0	6.93
22-072	2746	140.0	150.0	8.76
22-072	2747	150.0	160.0	7.13
22-072	2748	160.0	170.0	1.93
22-072	2749	170.0	180.0	5.91
22-072	2750	180.0	190.0	6.72
22-072	2751	190.0	200.0	4.38
22-072	2752	200.0	210.0	3.05
22-072	2753	210.0	220.0	2.14
22-072	2754	220.0	230.0	5.70
22-072	2755	230.0	240.0	3.67
22-072	2756	240.0	250.0	6.21
22-072	2757	250.0	260.0	3.56
22-072	2758	260.0	270.0	2.55
22-072	2759	270.0	280.0	3.36
22-072	2760	280.0	290.0	2.95
22-072	2761	290.0	300.0	2.85
22-072	2762	300.0	305.0	6.31
22-072	2763	305.0	309.2	8.35
22-072	2764	309.2	313.0	4.58
22-072	2765	313.0	318.0	14.97
22-072	2766	318.0	325.0	36.97
22-072	2767	325.0	329.0	51.44
22-072	2768	329.0	333.0	45.84
22-072	2769	333.0	338.0	50.01
22-072	2770	338.0	343.0	45.22
22-072	2771	343.0	346.0	29.03
22-072	2772	346.0	349.0	46.14
22-072	2773	349.0	353.0	41.15
22-072	2774	353.0	355.0	51.95
22-072	2775	355.0	359.0	50.82
22-072	2776	359.0	362.0	44.51
22-072	2777	362.0	365.0	43.32
22-072	2778	365.0	370.0	43.60

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT --- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-072	2779	370.0	375.0	42.92
22-072	2780	375.0	380.0	34.12
22-072	2781	380.0	385.0	35.22
22-072	2782	385.0	390.0	37.18
22-072	2783	390.0	395.0	42.52
22-072	2784	395.0	400.0	14.46
22-072	2785	400.0	405.0	11.00
22-072	2786	405.0	410.0	6.93
22-072	2787	410.0	415.0	12.41
22-072	2788	415.0	420.0	5.40
22-072	2789	420.0	425.0	11.80
22-072	2790	425.0	430.0	5.81
22-072	2791	430.0	435.0	6.90
22-072	2792	435.0	439.0	8.15
22-072	2793	439.0	445.0	7.00
22-072	2794	445.0	449.0	8.66
22-072	2795	449.0	455.0	6.20

22-073 IS REF# 72

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40230.06	40967.63	1137.20	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-073	2801	59.0	64.0	10.69
22-073	2802	64.0	67.0	24.07
22-073	2803	67.0	72.5	17.41
22-073	2804	72.5	77.0	43.73
22-073	2805	77.0	82.4	46.95
22-073	2806	82.4	87.0	48.84
22-073	2807	87.0	92.0	46.84
22-073	2808	92.0	97.0	46.75
22-073	2809	97.0	102.6	32.23
22-073	2810	102.6	110.0	50.73
22-073	2811	110.0	114.5	17.11
22-073	2812	114.5	119.0	27.85
22-073	2813	119.0	124.0	31.05
22-073	2814	124.0	128.4	26.46
22-073	2815	128.4	133.0	28.65
22-073	2816	133.0	139.0	36.73
22-073	2817	139.0	142.0	25.89
22-073	2818	142.0	147.0	33.05
22-073	2819	147.0	156.0	16.81
22-073	2820	156.0	162.0	14.32
22-073	2821	162.0	167.3	8.98

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-073	2822	167.3	172.0	26.98
22-073	2823	172.0	175.0	26.61
22-073	2824	175.0	180.0	38.87
22-073	2825	180.0	185.0	26.86
22-073	2826	185.0	189.0	35.11
22-073	2827	189.0	194.0	28.47
22-073	2828	194.0	199.0	19.92
22-073	2829	199.0	204.0	23.81
22-073	2830	204.0	209.0	5.87
22-073	2831	209.0	214.0	3.01
22-073	2833	215.0	223.0	6.35
22-073	2834	223.0	228.0	17.78
22-073	2835	228.0	232.0	23.13
22-073	2836	232.0	237.0	21.43
22-073	2837	237.0	242.0	16.88
22-073	2838	242.0	246.0	8.55
22-073	2839	246.0	251.0	9.81
22-073	2840	251.0	255.0	5.25
22-073	2841	255.0	260.0	8.16
22-073	2842	260.0	263.0	8.55
22-073	2843	263.0	265.0	8.55
22-073	2844	265.0	268.5	8.55
22-073	2845	268.5	273.0	7.00
22-073	2846	273.0	278.0	8.07
22-073	2847	278.0	282.0	6.61
22-073	2848	282.0	287.0	9.52
22-073	2849	287.0	292.0	9.62
22-073	2850	292.0	296.0	1.04
22-073	2851	296.0	299.0	12.34
22-073	2852	299.0	305.0	7.00
22-073	2853	305.0	310.0	2.53
22-073	2854	310.0	314.0	1.85
22-073	2855	314.0	319.0	1.94
22-073	2856	319.0	325.4	1.46

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-074	IS REF#	73			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		39873.96	40762.15	1142.20	0.00 E	-90.00
DRIFT		0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-074	2862	69.0	76.0	6.51
22-074	2863	76.0	82.0	8.75
22-074	2864	82.0	92.0	3.11
22-074	2865	92.0	100.0	6.12
22-074	2866	100.0	102.0	6.12
22-074	2867	102.0	106.0	4.47
22-074	2868	106.0	110.0	4.47
22-074	2869	110.0	115.0	6.70
22-074	2870	115.0	120.0	4.66
22-074	2871	120.0	125.0	2.91
22-074	2872	125.0	130.0	2.23
22-074	2873	130.0	135.0	3.01
22-074	2874	135.0	140.0	3.89
22-074	2875	140.0	145.0	3.59
22-074	2876	145.0	150.0	1.75
22-074	2877	150.0	155.0	1.65
22-074	2878	155.0	160.0	3.50
22-074	2879	160.0	165.0	4.47
22-074	2880	165.0	170.0	3.21
22-074	2881	170.0	175.0	7.48
22-074	2882	175.0	180.0	12.83
22-074	2883	180.0	185.0	8.16
22-074	2884	185.0	190.0	3.69
22-074	2885	190.0	195.0	5.05
22-074	2886	195.0	200.0	6.02
22-074	2887	200.0	205.0	5.44
22-074	2888	205.0	210.0	5.64
22-074	2889	210.0	215.0	10.40
22-074	2890	215.0	220.0	14.09
22-074	2891	220.0	225.0	6.41
22-074	2892	225.0	230.0	8.16
22-074	2893	230.0	235.0	6.22
22-074	2894	235.0	240.0	6.90
22-074	2895	240.0	245.0	14.28
22-074	2896	245.0	250.0	6.41

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-075 IS REF# 74				BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39323.77	40177.16	1116.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-075	2899	40.0	43.0	0.17
22-075	2900	43.0	47.0	0.63
22-075	2901	47.0	50.0	5.37
22-075	2902	50.0	54.0	34.12
22-075	2903	54.0	63.0	38.69
22-075	2904	63.0	71.0	33.22
22-075	2905	71.0	76.0	45.06
22-075	2906	76.0	81.0	47.55
22-075	2907	81.0	85.0	40.78
22-075	2908	85.0	90.0	47.55
22-075	2909	90.0	94.0	47.94
22-075	2910	94.0	99.0	46.45
22-075	2911	99.0	100.0	46.95
22-075	2912	100.0	103.0	46.95
22-075	2913	103.0	108.0	41.48
22-075	2914	108.0	112.0	41.38
22-075	2915	112.0	118.0	40.28
22-075	2916	118.0	121.0	39.03
22-075	2917	121.0	125.0	43.26
22-075	2918	125.0	130.0	44.04
22-075	2919	130.0	134.0	43.45
22-075	2920	134.0	139.0	37.55
22-075	2921	139.0	143.0	40.50
22-075	2922	143.0	148.0	35.98
22-075	2923	148.0	152.0	42.47
22-075	2924	152.0	157.0	14.94
22-075	2925	157.0	163.0	24.58
22-075	2926	163.0	168.0	20.45
22-075	2927	168.0	173.0	27.82
22-075	2928	173.0	177.0	36.57
22-075	2929	177.0	181.0	43.06
22-075	2930	181.0	185.0	35.10
22-075	2931	185.0	190.0	19.37
22-075	2932	190.0	195.0	25.96
22-075	2933	195.0	201.0	21.19
22-075	2934	201.0	210.0	4.97
22-075	2935	210.0	218.0	3.48
22-075	2936	218.0	222.0	9.05
22-075	2937	222.0	226.0	12.43
22-075	2938	226.0	231.0	14.72
22-075	2939	231.0	235.0	5.57
22-075	2940	235.0	240.0	13.92
22-075	2941	240.0	245.0	4.57

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-075	2942	245.0	250.0	7.36
22-075	2943	250.0	255.0	9.35
22-075	2944	255.0	260.0	5.17
22-075	2945	260.0	265.0	6.37
22-075	2946	265.0	270.0	6.96
22-075	2947	270.0	275.0	7.46

22-076 IS REF# 75

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39944.89	40679.20	1136.60	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-076	2951	49.0	56.0	2.09
22-076	2952	56.0	60.0	20.79
22-076	2953	60.0	65.0	27.65
22-076	2954	65.0	70.0	39.09
22-076	2955	70.0	75.0	36.21
22-076	2956	75.0	80.0	30.22
22-076	2957	80.0	85.0	32.13
22-076	2958	85.0	90.0	33.53
22-076	2959	90.0	95.0	35.21
22-076	2960	95.0	100.0	24.38
22-076	2961	100.0	105.0	20.60
22-076	2962	105.0	110.0	11.50
22-076	2963	110.0	115.0	4.94
22-076	2964	115.0	120.0	15.10
22-076	2965	120.0	125.0	6.21
22-076	2966	125.0	130.0	5.22
22-076	2967	130.0	135.0	6.82
22-076	2968	135.0	140.0	9.04
22-076	2969	140.0	145.0	8.99
22-076	2970	145.0	150.0	11.90
22-076	2971	150.0	155.0	8.66
22-076	2972	155.0	160.0	8.89
22-076	2973	160.0	166.0	9.32
22-076	2974	166.0	171.0	8.99
22-076	2975	171.0	176.0	8.75
22-076	2976	176.0	181.0	9.27
22-076	2977	181.0	186.0	6.87
22-076	2978	186.0	191.0	9.55
22-076	2979	191.0	196.0	18.45
22-076	2980	196.0	209.0	15.90
22-076	2981	209.0	217.0	11.58
22-076	2982	217.0	221.5	10.30

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-076	2983	221.5	228.5	4.05
22-076	2984	228.5	232.0	6.02
22-076	2985	232.0	237.0	10.92
22-076	2986	237.0	241.5	6.35
22-076	2987	241.5	245.0	10.94
22-076	2988	245.0	251.0	44.25
22-076	2989	251.0	257.0	47.54
22-076	2990	257.0	261.0	39.13
22-076	2991	261.0	266.0	42.51
22-076	2992	266.0	271.0	28.50
22-076	2993	271.0	275.0	5.18
22-076	2994	275.0	280.0	3.90
22-076	2995	280.0	285.0	28.02
22-076	2996	285.0	290.0	18.97
22-076	2997	290.0	295.0	21.28
22-076	2998	295.0	300.0	38.44
22-076	2999	300.0	305.0	31.68
22-076	3000	305.0	310.0	13.07
22-076	3001	310.0	315.0	20.58
22-076	3002	315.0	320.0	26.82
22-076	3003	320.0	325.0	27.82
22-076	3004	325.0	330.0	9.81
22-076	3005	330.0	335.0	14.55

22-077 IS REF# 76

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39835.99	41370.89	1140.20	S 45.00 E	-78.00
DRIFT	0.14702	-0.14702	-0.97815	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-077	3012	733.0	738.0	11.66
22-077	3013	738.0	743.0	15.06
22-077	3014	743.0	748.0	12.73
22-077	3015	748.0	753.0	9.33
22-077	3016	753.0	758.0	12.34
22-077	3017	758.0	763.0	10.11
22-077	3018	763.0	765.0	23.32
22-077	3019	765.0	770.0	12.05
22-077	3020	770.0	773.0	34.79
22-077	3021	773.0	777.0	12.92
22-077	3022	777.0	781.0	14.67
22-077	3023	781.0	786.0	13.31
22-077	3024	786.0	791.0	9.13
22-077	3025	791.0	795.0	10.30
22-077	3026	795.0	800.0	12.63

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-077	3027	800.0	805.0	14.09
22-077	3028	805.0	810.0	11.66
22-077	3029	810.0	815.0	14.19
22-077	3030	815.0	820.0	13.41
22-077	3031	820.0	825.0	11.85
22-077	3033	830.0	834.0	10.30
22-077	3034	834.0	837.0	5.64
22-077	3037	884.0	887.0	10.88

22-078 IS REF# 77

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39398.36	40113.88	1121.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-078	3042	58.0	65.0	1.41
22-078	3043	65.0	70.0	7.25
22-078	3044	70.0	75.0	7.06
22-078	3045	75.0	80.0	6.54
22-078	3046	80.0	85.0	6.78
22-078	3047	85.0	90.0	8.14
22-078	3048	90.0	95.0	8.33
22-078	3049	95.0	100.0	3.90
22-078	3050	100.0	105.0	1.88
22-078	3051	105.0	110.0	7.53
22-078	3052	110.0	115.0	4.23
22-078	3053	115.0	120.0	6.73
22-078	3054	120.0	125.0	6.11
22-078	3055	125.0	130.0	2.73
22-078	3056	130.0	135.0	1.65
22-078	3057	135.0	140.0	2.07
22-078	3058	140.0	145.0	1.79
22-078	3059	145.0	150.0	5.27
22-078	3060	150.0	155.0	3.20
22-078	3061	155.0	160.0	7.71
22-078	3062	160.0	165.0	4.61
22-078	3063	165.0	170.0	5.03
22-078	3064	170.0	175.0	3.34
22-078	3065	175.0	180.0	5.03
22-078	3066	180.0	185.0	0.52
22-078	3067	185.0	190.0	0.61

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-079	IS REF#	78			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		40019.77	40624.26	1132.80	0.00 E	-90.00
DRIFT		0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-079	3073	52.0	80.0	0.10
22-079	3074	80.0	100.0	0.10
22-079	3075	100.0	150.0	0.10

22-080	IS REF#	79			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		39465.26	40031.57	1127.00	0.00 E	-90.00
DRIFT		0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S

22-081	IS REF#	80			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		39722.64	40349.05	1122.50	0.00 E	-90.00
DRIFT		0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-081	3097	80.0	90.0	0.10
22-081	3098	90.0	100.0	0.10
22-081	3099	100.0	110.0	0.10
22-081	3100	110.0	120.0	0.10
22-081	3101	120.0	130.0	0.10
22-081	3102	130.0	140.0	0.10

22-082	IS REF#	81			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		39651.93	40419.77	1121.10	0.00 E	-90.00
DRIFT		0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-082	3118	44.0	49.0	34.79
22-082	3119	49.0	54.0	35.56
22-082	3120	54.0	59.0	37.80
22-082	3121	59.0	64.0	39.84
22-082	3122	64.0	69.0	47.32
22-082	3123	69.0	74.0	41.11
22-082	3124	74.0	79.0	41.11

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-082	3125	79.0	84.0	33.92
22-082	3126	84.0	89.0	40.33
22-082	3127	89.0	95.0	37.31
22-082	3128	95.0	99.0	4.37
22-082	3129	99.0	100.0	1.55
22-082	3130	100.0	104.0	1.55
22-082	3131	104.0	109.0	11.27
22-082	3132	109.0	113.0	7.19
22-082	3133	113.0	119.0	34.98
22-082	3134	119.0	124.0	47.52
22-082	3135	124.0	129.0	44.89
22-082	3136	129.0	134.0	27.69
22-082	3137	134.0	139.0	34.40
22-082	3138	139.0	144.0	37.41
22-082	3139	144.0	149.0	39.16
22-082	3140	149.0	154.0	30.03
22-082	3141	154.0	159.0	24.48
22-082	3142	159.0	165.0	40.81
22-082	3143	165.0	169.0	36.44
22-082	3144	169.0	174.0	43.54
22-082	3145	174.0	176.0	27.60
22-082	3146	176.0	181.0	33.72
22-082	3147	181.0	191.0	37.99
22-082	3148	191.0	193.0	21.37
22-082	3149	193.0	197.0	21.86
22-082	3150	197.0	202.0	17.68
22-082	3151	202.0	207.0	19.79
22-082	3152	207.0	212.0	30.31
22-082	3153	212.0	217.0	9.48
22-082	3154	217.0	222.0	8.66
22-082	3155	222.0	227.0	14.33
22-082	3156	227.0	235.0	4.34

22-083 IS REF# 82

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38979.33	40526.12	1112.40	S 45.00 E	-70.00
DRIFT	0.24184	-0.24184	-0.93969	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-083	3166	321.0	325.0	0.24
22-083	3167	325.0	335.0	0.19
22-083	3173	580.0	585.0	3.38
22-083	3174	585.0	590.0	4.77
22-083	3175	590.0	595.0	2.88
22-083	3176	595.0	600.0	5.97

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-083	3177	600.0	605.0	5.17
22-083	3178	605.0	610.0	6.37
22-083	3179	610.0	615.0	9.45
22-083	3180	615.0	620.0	41.28
22-083	3181	620.0	625.0	49.73
22-083	3182	625.0	630.0	46.75
22-083	3183	630.0	635.0	48.34
22-083	3184	635.0	640.0	45.36
22-083	3185	640.0	645.0	45.26
22-083	3186	645.0	650.0	36.01
22-083	3187	650.0	655.0	16.11
22-083	3188	655.0	660.0	47.05
22-083	3189	660.0	665.0	22.08
22-083	3190	665.0	670.0	32.13
22-083	3191	670.0	675.0	44.36
22-083	3192	675.0	680.0	38.29
22-083	3193	680.0	685.0	11.44
22-083	3194	685.0	690.0	16.91
22-083	3195	690.0	695.0	5.86
22-083	3196	695.0	700.0	5.37
22-083	3197	700.0	705.0	4.87
22-083	3198	705.0	710.0	7.16
22-083	3199	710.0	715.0	7.16
22-083	3200	715.0	720.0	0.34
22-083	3201	720.0	725.0	11.94
22-083	3202	725.0	730.0	8.06
22-083	3203	730.0	735.0	5.27
22-083	3204	735.0	740.0	5.87
22-083	3205	740.0	750.0	3.08
22-083	3206	750.0	760.0	8.85
22-083	3207	760.0	770.0	4.08
22-083	3208	770.0	776.0	2.19
22-083	3209	776.0	780.0	2.19
22-083	3210	780.0	789.6	4.38

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA:

22-084	IS REF#	83			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		39965.82	41518.40	1142.70	S 45.00 E	-55.00
DRIFT		0.40558	-0.40558	-0.81915	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-084	3229	663.0	668.0	8.55
22-084	3230	668.0	673.0	6.17
22-084	3231	673.0	677.0	18.10
22-084	3232	677.0	682.0	17.90
22-084	3233	682.0	687.0	13.92
22-084	3234	687.0	692.0	15.32
22-084	3235	692.0	697.0	15.32
22-084	3236	697.0	699.5	27.75
22-084	3237	699.5	700.0	11.04
22-084	3238	700.0	703.5	11.04
22-084	3239	703.5	707.6	16.61
22-084	3240	707.6	712.0	10.05
22-084	3241	712.0	717.4	17.31
22-084	3242	717.4	722.0	9.95
22-084	3243	722.0	727.0	10.94
22-084	3244	727.0	736.0	8.65
22-084	3245	736.0	740.0	13.23

22-085	IS REF#	84			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		39579.95	40490.20	1129.00	0.00 E	-90.00
DRIFT		0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-085	3252	51.0	56.0	0.91
22-085	3253	56.0	60.0	1.38
22-085	3254	60.0	65.0	2.50
22-085	3255	65.0	70.0	5.86
22-085	3256	70.0	75.0	2.78
22-085	3257	75.0	80.0	3.69
22-085	3258	80.0	85.0	3.74
22-085	3259	85.0	90.0	2.86
22-085	3260	90.0	95.0	8.40
22-085	3261	95.0	100.0	10.89
22-085	3262	100.0	105.0	12.86
22-085	3263	105.0	110.0	7.66
22-085	3264	110.0	115.0	3.84
22-085	3265	115.0	124.0	7.25
22-085	3266	124.0	129.0	7.68
22-085	3267	129.0	134.0	8.17
22-085	3268	134.0	139.0	8.11

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-085	3269	139.0	144.0	2.31
22-085	3270	144.0	149.0	1.52
22-085	3271	149.0	154.0	3.31
22-085	3272	154.0	159.0	3.69
22-085	3273	159.0	164.0	11.18
22-085	3274	164.0	169.0	7.11
22-085	3275	169.0	174.0	7.92
22-085	3276	174.0	179.0	7.11
22-085	3277	179.0	184.0	4.94
22-085	3278	184.0	189.0	2.77
22-085	3279	189.0	194.0	5.38
22-085	3280	194.0	199.0	8.40
22-085	3281	199.0	204.0	6.00
22-085	3282	204.0	209.0	6.41
22-085	3283	209.0	215.0	4.99
22-085	3284	215.0	220.0	4.48
22-085	3285	220.0	225.0	2.59
22-085	3286	225.0	230.0	1.48
22-085	3287	230.0	235.0	2.06
22-085	3288	235.0	240.0	3.65
22-085	3289	240.0	245.0	8.16
22-085	3290	245.0	250.0	5.72
22-085	3291	250.0	255.0	4.56
22-085	3292	255.0	260.0	8.08
22-085	3293	260.0	265.0	12.96
22-085	3294	265.0	270.0	9.83
22-085	3295	270.0	275.0	17.33
22-085	3296	275.0	280.0	13.34
22-085	3297	280.0	285.0	8.98
22-085	3298	285.0	290.0	9.78
22-085	3299	290.0	295.0	12.72
22-085	3300	295.0	300.0	8.68
22-085	3301	300.0	305.0	10.80
22-085	3302	305.0	310.0	11.77
22-085	3303	310.0	315.0	9.94
22-085	3304	315.0	320.0	8.31
22-085	3305	320.0	325.0	6.67
22-085	3306	325.0	330.0	12.00
22-085	3307	330.0	335.0	28.34
22-085	3308	335.0	340.0	34.49
22-085	3309	340.0	345.0	29.30
22-085	3310	345.0	350.0	17.00
22-085	3311	350.0	355.0	33.34
22-085	3312	355.0	360.0	50.54
22-085	3313	360.0	365.0	42.56
22-085	3314	365.0	370.0	30.74
22-085	3315	370.0	375.0	37.09

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-085	3316	375.0	380.0	49.00
22-085	3317	380.0	385.0	36.12
22-085	3318	385.0	390.0	35.26
22-085	3319	390.0	395.0	22.58

22-086 IS REF# 85

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39142.25	39830.89	1114.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-086	3323	59.0	69.0	0.10
22-086	3334	170.0	180.0	0.10
22-086	3335	180.0	190.0	0.10
22-086	3336	190.0	200.0	0.10
22-086	3337	200.0	210.0	0.10

22-087 IS REF# 86

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38981.45	40524.00	1112.40	S 45.00 E	-50.00
DRIFT	0.45452	-0.45452	-0.76604	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-087	3357	469.0	479.0	7.01
22-087	3358	479.0	489.0	5.62
22-087	3359	489.0	494.0	4.85
22-087	3360	494.0	499.0	5.57
22-087	3361	499.0	500.0	1.30
22-087	3362	500.0	503.6	1.30
22-087	3363	503.6	505.4	41.58
22-087	3364	505.4	508.0	45.76
22-087	3365	508.0	513.0	50.33
22-087	3366	513.0	517.4	48.54
22-087	3367	517.4	523.0	45.85
22-087	3368	523.0	527.0	48.04
22-087	3369	527.0	534.0	48.74
22-087	3370	534.0	537.0	11.94
22-087	3371	537.0	541.0	37.00
22-087	3372	541.0	546.0	38.69
22-087	3373	546.0	551.0	45.76
22-087	3374	551.0	556.0	43.77
22-087	3375	556.0	561.0	51.42
22-087	3376	561.0	566.0	45.76

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-087	3377	566.0	571.0	36.50
22-087	3378	571.0	575.0	23.08
22-087	3379	575.0	578.0	43.47
22-087	3380	578.0	583.0	20.79
22-087	3381	583.0	588.0	7.16
22-087	3382	588.0	593.0	8.85
22-087	3383	593.0	598.0	12.73
22-087	3384	598.0	603.0	8.65
22-087	3385	603.0	608.0	8.65
22-087	3386	608.0	612.0	6.82

22-088 IS REF# 87

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38676.13	40549.31	1102.90	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-088	3390	395.0	400.0	2.45
22-088	3393	482.0	487.0	3.13
22-088	3398	1145.5	1155.5	1.72
22-088	3399	1155.5	1165.0	2.35
22-088	3400	1165.0	1167.0	7.77
22-088	3401	1167.0	1172.0	4.59
22-088	3402	1172.0	1176.0	7.25
22-088	3403	1176.0	1182.0	11.74
22-088	3404	1182.0	1186.0	11.16
22-088	3405	1186.0	1191.0	14.76
22-088	3406	1191.0	1196.0	12.83
22-088	3407	1196.0	1201.0	17.37
22-088	3408	1201.0	1206.0	17.50
22-088	3409	1206.0	1211.0	17.50
22-088	3410	1211.0	1216.0	21.14
22-088	3411	1216.0	1221.0	20.15
22-088	3412	1221.0	1226.0	19.56
22-088	3413	1226.0	1231.0	16.61
22-088	3414	1231.0	1235.0	21.04
22-088	3415	1235.0	1240.0	19.46
22-088	3416	1240.0	1246.0	17.41
22-088	3417	1246.0	1251.0	16.22
22-088	3418	1251.0	1256.0	17.01
22-088	3419	1256.0	1260.5	20.94
22-088	3420	1260.5	1265.0	16.91
22-088	3421	1265.0	1270.0	12.19
22-088	3422	1270.0	1275.0	13.47
22-088	3423	1275.0	1280.0	17.30

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-088	3424	1280.0	1285.0	14.60
22-088	3425	1285.0	1290.0	11.00
22-088	3426	1290.0	1295.0	8.32
22-088	3427	1295.0	1300.0	7.95
22-088	3428	1300.0	1305.0	5.45
22-088	3429	1305.0	1310.0	6.93
22-088	3430	1310.0	1314.0	5.82
22-088	3431	1314.0	1318.5	8.59
22-088	3432	1318.5	1321.5	3.05
22-088	3433	1321.5	1328.0	5.36
22-088	3434	1328.0	1334.0	5.45
22-088	3435	1334.0	1340.0	3.97
22-088	3436	1340.0	1345.0	5.73
22-088	3437	1345.0	1355.0	5.82

22-089 IS REF# BB

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39551.10	41083.03	1123.40	S 45.00 E	-50.00
DRIFT	0.45452	-0.45452	-0.76604	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-089	3444	100.0	115.0	0.10
22-089	3445	115.0	155.0	0.10
22-089	3446	155.0	205.0	0.10
22-089	3455	578.0	583.0	9.23
22-089	3456	583.0	588.0	15.23
22-089	3457	588.0	593.0	14.56
22-089	3458	593.0	598.0	14.66
22-089	3459	598.0	603.0	20.03
22-089	3460	603.0	608.0	31.07
22-089	3461	608.0	613.0	46.14
22-089	3462	613.0	618.0	47.67
22-089	3463	618.0	623.0	38.81
22-089	3464	623.0	628.0	47.77
22-089	3465	628.0	633.5	45.82
22-089	3466	633.5	638.0	14.87
22-089	3467	638.0	643.5	9.91
22-089	3468	643.5	648.5	15.91
22-089	3469	648.5	653.0	20.24
22-089	3470	653.0	658.0	19.82
22-089	3471	658.0	662.0	24.87
22-089	3472	662.0	668.0	21.39
22-089	3473	668 0	670.0	17.11
22-089	3474	670.0	671.6	7.04
22-089	3475	671.6	673.6	22.22

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-089	3476	673.6	676.0	7.67
22-089	3477	676.0	681.0	13.25
22-089	3478	681.0	683.0	12.05
22-089	3480	685.5	686.5	7.72
22-089	3481	686.5	687.5	7.82

22-090 IS REF# 89

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40160.20	41056.02	1135.80	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-090	3488	72.0	80.0	0.13
22-090	3489	80.0	85.0	0.11
22-090	3490	85.0	95.0	0.42
22-090	3491	95.0	100.0	3.53
22-090	3492	100.0	105.0	5.29
22-090	3493	105.0	110.0	7.44
22-090	3494	110.0	115.0	3.82
22-090	3495	115.0	120.0	3.92
22-090	3496	120.0	125.0	5.63
22-090	3497	125.0	130.0	4.41
22-090	3498	130.0	135.0	6.61
22-090	3499	135.0	140.0	8.37
22-090	3500	140.0	145.0	9.94
22-090	3501	145.0	150.0	6.76
22-090	3502	150.0	155.0	4.06
22-090	3503	155.0	160.0	5.78
22-090	3504	160.0	165.0	3.82
22-090	3505	165.0	170.0	6.17
22-090	3506	170.0	175.0	5.29
22-090	3507	175.0	180.0	8.47
22-090	3508	180.0	185.0	5.24
22-090	3509	185.0	190.0	4.26
22-090	3510	190.0	195.0	3.97
22-090	3511	195.0	205.0	4.95
22-090	3512	205.0	215.0	4.75
22-090	3513	215.0	225.0	8.16
22-090	3514	225.0	235.0	4.32
22-090	3515	235.0	245.0	4.87
22-090	3516	245.0	255.0	8.75
22-090	3517	255.0	265.0	4.16
22-090	3518	265.0	275.0	10.54
22-090	3519	275.0	285.0	15.02
22-090	3520	285.0	295.0	14.92

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT --- SURVEY DATA FROM FLAM12.MTN

HOLE#	UNIT	FROM	-TO-	S
22-090	3521	295.0	300.0	14.72
22-090	3522	300.0	303.0	14.72
22-090	3523	303.0	313.0	11.54
22-090	3524	313.0	323.0	13.43
22-090	3525	323.0	332.0	12.53
22-090	3526	332.0	338.0	19.50
22-090	3527	338.0	348.0	10.05
22-090	3528	348.0	358.0	5.67
22-090	3529	358.0	368.0	6.48
22-090	3530	368.0	373.0	9.98
22-090	3531	373.0	380.0	10.73
22-090	3532	380.0	385.0	30.46
22-090	3533	385.0	390.0	15.90
22-090	3534	390.0	395.0	25.73
22-090	3535	395.0	402.0	21.26
22-090	3536	402.0	407.0	13.44
22-090	3537	407.0	413.0	27.85
22-090	3538	413.0	418.0	32.14
22-090	3539	418.0	423.0	25.31
22-090	3540	423.0	429.0	19.85
22-090	3541	429.0	435.0	19.44
22-090	3542	435.0	440.0	18.90
22-090	3543	440.0	445.0	15.49
22-090	3544	445.0	450.0	21.11
22-090	3545	450.0	455.0	18.43
22-090	3546	455.0	459.0	19.64
22-090	3547	459.0	464.5	14.12
22-090	3548	464.5	469.0	13.23
22-090	3549	469.0	475.0	19.79
22-090	3550	475.0	481.5	13.03
22-090	3551	481.5	487.5	10.54
22-090	3552	487.5	491.0	20.39
22-090	3553	491.0	497.0	10.74
22-090	3554	497.0	503.0	9.85
22-090	3555	503.0	507.0	14.52
22-090	3556	507.0	515.0	10.34
22-090	3557	515.0	520.0	12.63
22-090	3558	520.0	527.2	9.55
22-090	3559	527.2	537.2	3.58

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-091 IS REF# 90				BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39547.21	41086.21	1123.90	S 45.00 E	-70 00
DRIFT	0.24184	-0.24184	-0.93969	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-091	3567	729.0	734.0	7.45
22-091	3568	734.0	738.0	6.91
22-091	3569	738.0	743.0	10.27
22-091	3570	743.0	748.0	11.64
22-091	3571	748.0	753.0	11.09
22-091	3572	753.0	758.0	9.82
22-091	3573	758.0	763.0	8.82
22-091	3574	763.0	768.0	10.36
22-091	3575	768.0	773.0	11.09
22-091	3576	773.0	778.0	17.73
22-091	3577	778.0	783.0	18.18
22-091	3578	783.0	787.0	26.55
22-091	3579	787.0	792.0	16.82
22-091	3580	792.0	797.0	12.09
22-091	3581	797.0	801.0	6.45
22-091	3582	801.0	805.0	14.40
22-091	3583	805.0	810.0	7.73
22-091	3584	810.0	815.0	4.64
22-091	3585	815.0	820.0	6.67
22-091	3586	820.0	825.0	8.12
22-091	3587	825.0	829.0	10.50
22-091	3588	829.0	835.0	15.70
22-091	3589	835.0	840.0	8.00
22-091	3590	840.0	845.0	7.45
22-091	3591	845.0	850.0	9.15
22-091	3592	850.0	855.0	11.55
22-091	3593	855.0	860.0	9.25
22-091	3594	860.0	865.0	13.00
22-091	3595	865.0	870.0	11.40

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-092	IS REF# 91			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	40100.17	40819.35	1136.30	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-092	3601	55.0	57.5	27.00
22-092	3602	57.5	62.5	13.74
22-092	3603	62.5	67.0	15.62
22-092	3604	67.0	72.0	11.77
22-092	3605	72.0	75.0	25.81
22-092	3606	75.0	82.0	39.75
22-092	3607	82.0	87.0	43.31
22-092	3608	87.0	92.0	42.72
22-092	3609	92.0	98.0	26.30
22-092	3610	98.0	100.0	23.34
22-092	3611	100.0	102.0	23.34
22-092	3612	102.0	107.0	25.12
22-092	3613	107.0	112.0	29.86
22-092	3614	112.0	117.0	16.02
22-092	3615	117.0	122.0	18.10
22-092	3616	122.0	126.5	15.43
22-092	3617	126.5	132.0	9.49
22-092	3618	132.0	137.0	23.34
22-092	3619	137.0	142.0	19.38
22-092	3620	142.0	147.0	15.72
22-092	3621	147.0	152.0	16.41
22-092	3622	152.0	157.0	10.58
22-092	3623	157.0	162.0	20.07
22-092	3624	162.0	170.0	9.89
22-092	3625	170.0	175.0	24.92
22-092	3626	175.0	180.0	33.72
22-092	3627	180.0	184.0	41.93
22-092	3628	184.0	190.0	30.85
22-092	3629	190.0	195.0	26.11
22-092	3630	195.0	204.0	22.45
22-092	3631	204.0	209.0	11.96
22-092	3632	209.0	214.0	2.77
22-092	3633	214.0	220 0	4.15
22-092	3634	220.0	225.0	5.04

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-093 IS REF# 92	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40043.81	40876.41	1139.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-093	3637	53.0	59.0	0.50
22-093	3638	59.0	64.0	0.02
22-093	3639	64.0	70.0	0.95
22-093	3640	70.0	76.0	3.35
22-093	3641	76.0	85.0	6.65
22-093	3642	85.0	90.0	9.90
22-093	3643	90.0	95.0	8.10
22-093	3644	95.0	100.0	7.25
22-093	3645	100.0	105.0	4.90
22-093	3646	105.0	110.0	5.65
22-093	3647	110.0	115.0	4.05
22-093	3648	115.0	120.0	5.65
22-093	3649	120.0	125.0	6.15
22-093	3650	125.0	130.0	6.10
22-093	3651	130.0	135.0	5.15
22-093	3652	135.0	140.0	4.25
22-093	3653	140.0	145.0	10.50
22-093	3654	145.0	150.0	11.30
22-093	3655	150.0	155.0	8.55
22-093	3656	155.0	161.0	7.41
22-093	3657	161.0	165.0	11.46
22-093	3658	165.0	170.0	9.12
22-093	3659	170.0	175.0	7.66
22-093	3660	175.0	180.0	10.00
22-093	3661	180.0	185.0	7.27
22-093	3662	185.0	190.0	8.88
22-093	3663	190.0	195.0	8.85
22-093	3664	195.0	200.0	8.40
22-093	3665	200.0	205.0	15.51
22-093	3666	205.0	210.0	11.20

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-094	IS REF# 93			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39834.44	40519.26	1133.30	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-094	3670	46.0	55.0	16.90
22-094	3671	55.0	62.0	16.90
22-094	3672	62.0	72.0	2.65
22-094	3673	72.0	78.0	4.20
22-094	3674	78.0	83.0	1.00
22-094	3675	83.0	92.0	0.25
22-094	3676	92.0	100.0	0.40
22-094	3677	100.0	110.0	0.55
22-094	3678	110.0	115.0	2.15
22-094	3679	115.0	120.0	0.65
22-094	3680	120.0	130.0	0.60
22-094	3681	130.0	140.0	1.15
22-094	3682	140.0	145.0	0.50
22-094	3683	145.0	150.0	0.55
22-094	3684	150.0	157.0	0.40
22-094	3685	157.0	168.0	1.30
22-094	3686	168.0	174.0	0.65
22-094	3687	174.0	182.0	0.40
22-094	3688	182.0	187.0	0.40
22-094	3689	187.0	196.0	1.60
22-094	3690	196.0	205.0	0.50
22-094	3691	205.0	215.0	0.50

22-095	IS REF# 94			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	35750.33	37322.71	1123.20	S 45.00 E	-80.00
DRIFT	0.12279	-0.12279	-0.98481	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-095	3697	854.0	859.0	7.24
22-095	3698	859.0	863.0	6.86
22-095	3699	863.0	868.0	6.17
22-095	3700	868.0	873.0	4.03
22-095	3701	873.0	878.0	3.56
22-095	3702	878.0	883.0	3.51
22-095	3703	883.0	887.0	6.38
22-095	3704	887.0	892.0	8.53
22-095	3705	892.0	897.0	4.20
22-095	3706	897.0	900.0	8.44
22-095	3707	900.0	902.0	8.44
22-095	3708	902.0	906.0	5.00

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-095	3709	906.0	911.0	8.31
22-095	3710	911.0	916.0	1.97
22-095	3711	916.0	920.0	6.21
22-095	3712	920.0	925.0	17.36

22-096 IS REF# 95

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39761.11	40592.44	1139.80	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-096	3717	50.0	57.0	0.20
22-096	3718	57.0	60.0	6.65
22-096	3719	60.0	65.0	10.00
22-096	3720	65.0	69.0	9.00
22-096	3721	69.0	75.0	10.55
22-096	3722	75.0	80.0	7.35
22-096	3723	80.0	85.0	10.40
22-096	3724	85.0	90.0	7.90
22-096	3725	90.0	95.0	7.60
22-096	3726	95.0	100.0	6.25
22-096	3727	100.0	105.0	10.05
22-096	3728	105.0	110.0	6.35
22-096	3729	110.0	115.0	11.20
22-096	3730	115.0	120.0	12.30
22-096	3731	120.0	125.0	9.30
22-096	3732	125.0	130.0	11.45
22-096	3733	130.0	136.0	10.55
22-096	3734	136.0	140.0	9.50
22-096	3735	140.0	145.0	10.70
22-096	3736	145.0	150.0	18.60
22-096	3737	150.0	155.0	24.75
22-096	3738	155.0	160.0	31.95
22-096	3739	160.0	165.0	34.13
22-096	3740	165.0	168.0	26.97
22-096	3741	168.0	175.0	50.73
22-096	3742	175.0	180.0	53.51
22-096	3743	180.0	185.0	53.89
22-096	3744	185.0	190.0	49.34
22-096	3745	190.0	200.0	43.80
22-096	3746	200.0	205.0	42.43
22-096	3747	205.0	210.0	48.16
22-096	3748	210.0	215.0	43.69
22-096	3749	215.0	220.0	43.98
22-096	3750	220.0	225.0	41.38

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-096	3751	225.0	228.0	44.31
22-096	3752	228.0	232.0	43.06
22-096	3753	232.0	237.0	48.91
22-096	3754	237.0	242.0	51.99
22-096	3755	242.0	244.0	44.31
22-096	3756	244.0	249.0	13.02
22-096	3757	249.0	255.0	14.98
22-096	3758	255.0	260.0	16.70
22-096	3759	260.0	265.0	14.02
22-096	3760	265.0	270.0	9.56
22-096	3761	270.0	275.0	18.73
22-096	3762	275.0	280.0	14.07
22-096	3763	280.0	285.0	13.27
22-096	3764	285.0	290.0	8.51
22-096	3765	290.0	295.0	18.19
22-096	3766	295.0	300.0	15.33
22-096	3767	300.0	305.0	13.59
22-096	3768	305.0	310.0	13.02
22-096	3769	310.0	315.0	14.34
22-096	3770	315.0	320.0	44.85
22-096	3771	320.0	325.0	11.88
22-096	3772	325.0	330.0	12.18
22-096	3773	330.0	333.0	18.09
22-096	3774	333.0	339.0	11.66
22-096	3775	339.0	342.0	15.30
22-096	3776	342.0	345.0	16.17
22-096	3777	345.0	350.0	9.63
22-096	3778	350.0	355.0	10.40
22-096	3779	355.0	360.0	8.45

22-097 IS REF# 96

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39693.58	40659.12	1137.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-097	3783	50.0	60.0	0.07
22-097	3784	60.0	65.0	0.07
22-097	3785	65.0	70.0	0.02
22-097	3786	70.0	75.0	0.07
22-097	3787	75.0	80.0	0.02
22-097	3788	80.0	86.0	0.07
22-097	3789	86.0	95.0	0.04
22-097	3790	95.0	100.0	3.24
22-097	3791	100.0	105.0	5.09

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT --- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-097	3792	105.0	110.0	10.51
22-097	3793	110.0	115.0	5.54
22-097	3794	115.0	120.0	12.68
22-097	3795	120.0	125.0	6.00
22-097	3796	125.0	140.0	6.40
22-097	3797	140.0	145.0	8.51
22-097	3798	145.0	150.0	5.43
22-097	3799	150.0	155.0	5.14
22-097	3800	155.0	160.0	8.51
22-097	3801	160.0	165.0	2.80
22-097	3802	165.0	170.0	4.57
22-097	3803	170.0	172.0	4.68
22-097	3804	172.0	175.0	4.68
22-097	3805	175.0	180.0	4.17
22-097	3806	180.0	185.0	3.48
22-097	3807	185.0	190.0	1.26
22-097	3808	190.0	195.0	2.06
22-097	3809	195.0	200.0	2.11
22-097	3810	200.0	205.0	4.11
22-097	3811	205.0	210.0	7.60

22-098 IS REF# 97

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40487.74	41283.71	1137.50	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-098	3815	50.0	55.0	0.28
22-098	3816	55.0	60.0	1.46
22-098	3817	60.0	65.0	1.27
22-098	3818	65.0	70.0	3.72
22-098	3819	70.0	80.0	2.68
22-098	3820	80.0	84.0	29.66
22-098	3821	84.0	87.0	19.22
22-098	3822	87.0	91.0	39.27
22-098	3823	91.0	95.0	46.20
22-098	3824	95.0	99.0	42.78
22-098	3825	99.0	100.0	49.90
22-098	3826	100.0	104.0	49.90
22-098	3827	104.0	108.0	49.90
22-098	3828	108.0	112.0	46.39
22-098	3829	112.0	114.0	45.55
22-098	3830	114.0	117.0	45.74
22-098	3831	117.0	122.0	30.30
22-098	3832	122.0	125.0	8.31

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-098	3833	125.0	129.0	34.01
22-098	3834	129.0	132.0	34.01
22-098	3835	132.0	135.0	40.07
22-098	3836	135.0	138.0	44.96
22-098	3837	138.0	143.0	44.47
22-098	3838	143.0	147.0	32.16
22-098	3839	147.0	149.0	36.56
22-098	3840	149.0	155.0	32.07
22-098	3841	155.0	160.0	38.00
22-098	3842	160.0	170.0	34.69
22-098	3843	170.0	175.0	35.67
22-098	3844	175.0	180.0	44.70
22-098	3845	180.0	185.0	44.20
22-098	3846	185.0	187.5	41.34
22-098	3847	187.5	191.5	46.25
22-098	3848	191.5	194.0	39.82
22-098	3849	194.0	200.0	26.17
22-098	3850	200.0	205.0	20.13
22-098	3851	205.0	210.0	9.56
22-098	3852	210.0	215.0	23.95
22-098	3853	215.0	222.0	35.03
22-098	3854	222.0	225.0	11.17
22-098	3855	225.0	230.0	17.41
22-098	3856	230.0	235.0	24.56
22-098	3857	235.0	239.0	14.39
22-098	3858	239.0	243.0	7.25
22-098	3859	243.0	249.0	2.82
22-098	3860	249.0	254.0	5.01
22-098	3861	254.0	260.0	2.76
22-098	3862	260.0	270.0	2.82
22-098	3863	270.0	280.0	5.48
22-098	3864	280.0	290.0	9.23
22-098	3865	290.0	300.0	12.89
22-098	3866	300.0	310.0	4.59
22-098	3867	310.0	320.0	6.89

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-099	IS REF#	98			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		39688.07	40382.21	1121.80	0.00 E	-90 00
DRIFT		0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-099	3871	38.0	45.0	0.10
22-099	3872	45.0	50.0	0.10
22-099	3873	50.0	55.0	0.05
22-099	3874	55.0	60.0	1.87
22-099	3875	60.0	65.0	1.73
22-099	3876	65.0	70.0	1.58
22-099	3877	70.0	76.0	2.64
22-099	3878	76.0	82.0	1.30
22-099	3879	82.0	88.0	1.68
22-099	3880	88.0	95.0	1.15
22-099	3881	95.0	105.0	1.06
22-099	3882	105.0	115.0	0.67
22-099	3883	115.0	125.0	0.48
22-099	3884	125.0	130.0	0.91

22-100	IS REF#	99			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		39461.44	40326.15	1115.10	0.00 E	-90.00
DRIFT		0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-100	3889	40.0	42.0	6.65
22-100	3890	42.0	45.0	11.63
22-100	3891	45.0	50.0	0.88
22-100	3892	50.0	55.0	2.72
22-100	3893	55.0	60.0	1.89
22-100	3894	60.0	65.0	2.95
22-100	3895	65.0	70.0	5.35
22-100	3896	70.0	75.0	3.69
22-100	3897	75.0	80.0	7.98
22-100	3898	80.0	85.0	13.24
22-100	3899	85.0	90.0	5.21
22-100	3900	90.0	95.0	2.63
22-100	3901	95.0	100.0	4.15
22-100	3902	100.0	105.0	6.23
22-100	3903	105.0	107.0	15.39
22-100	3904	107.0	110.0	48.92
22-100	3905	110.0	115.0	45.69
22-100	3906	115.0	120.0	49.97
22-100	3907	120.0	125.0	49.68
22-100	3908	125.0	130.0	49.30

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H DATA FROM FLAY11.DAT -- SURVEY DATA FROM FLAY12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-100	3909	130.0	136.0	51.39
22-100	3910	136.0	143.3	49.30
22-100	3911	143.3	147.0	52.06
22-100	3912	147.0	152.0	52.91
22-100	3913	152.0	157.0	50.54
22-100	3914	157.0	162.0	51.68
22-100	3915	162.0	165.0	50.92
22-100	3916	165.0	168.0	41.80
22-100	3917	168.0	172.0	33.15
22-100	3918	172.0	176.0	47.50
22-100	3919	176.0	180.0	50.82
22-100	3920	180.0	185.0	52.53
22-100	3921	185.0	190.0	51.49
22-100	3922	190.0	194.0	50.16
22-100	3923	194.0	198.0	50.54
22-100	3924	198.0	203.0	50.44
22-100	3925	203.0	208.0	51.01
22-100	3926	208.0	213.0	49.78
22-100	3927	213.0	217.0	50.16
22-100	3928	217.0	222.0	50.73
22-100	3929	222.0	227.0	50.06
22-100	3930	227.0	232.0	44.46
22-100	3931	232.0	236.0	35.24
22-100	3932	236.0	242.0	49.30
22-100	3933	242.0	248.0	19.58
22-100	3934	248.0	252.0	28.47
22-100	3935	252.0	257.0	29.62
22-100	3936	257.0	261.5	27.61
22-100	3937	261.5	268.0	17.58
22-100	3938	268.0	272.0	32.19
22-100	3939	272.0	274.0	24.17
22-100	3940	274.0	279.0	12.61
22-100	3941	279.0	280.0	13.95

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-101	IS REF#	100			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		39544.45	40536.96	1126.70	0.00 E	-90.00
DRIFT		0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-101	3946	58.0	65.0	0.05
22-101	3947	65.0	75.0	0.04
22-101	3948	75.0	85.0	0.03
22-101	3949	85.0	95.0	0.03
22-101	3950	95.0	100.0	0.03
22-101	3951	100.0	105.0	0.03
22-101	3952	105.0	115.0	0.03
22-101	3953	115.0	125.0	0.02
22-101	3954	125.0	135.0	0.02
22-101	3955	135.0	145.0	0.03
22-101	3956	145.0	148.0	0.02
22-101	3957	148.0	155.0	6.98
22-101	3958	155.0	165.0	6.04
22-101	3959	165.0	175.0	3.17
22-101	3960	175.0	185.0	2.18
22-101	3961	185.0	195.0	4.11
22-101	3962	195.0	200.0	3.34
22-101	3963	200.0	210.0	6.04

22-102	IS REF#	101			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		38277.95	39282.39	1109.50 S	45.00 E	-45.00
DRIFT		0.50000	-0.50000	-0.70711	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-102	3966	140.0	145.0	2.55
22-102	3967	145.0	150.0	1.70
22-102	3968	150.0	154.0	3.70
22-102	3969	154.0	158.0	6.52
22-102	3970	158.0	164.0	9.61
22-102	3971	164.0	168.0	11.23
22-102	3972	168.0	173.0	4.61
22-102	3973	173.0	178.0	9.18
22-102	3974	178.0	181.0	3.55
22-102	3975	181.0	187.0	6.96
22-102	3976	187.0	192.0	6.21
22-102	3977	192.0	197.0	5.67
22-102	3978	197.0	201.0	8.03
22-102	3979	201.0	205.0	6.64

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA

22-103	IS REF# 102			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39534.27	40251.90	1120.10	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-103	3983	24.0	32.0	0.20
22-103	3984	32.0	34.0	6.73
22-103	3985	34.0	41.0	6.73
22-103	3986	41.0	45.0	3.08
22-103	3987	45.0	50.0	3.03
22-103	3988	50.0	60.0	2.74
22-103	3989	60.0	70.0	0.90
22-103	3990	70.0	80.0	0.11
22-103	3991	80.0	90.0	0.09
22-103	3992	90.0	100.0	0.18
22-103	3993	100.0	110.0	0.13
22-103	3994	110.0	120.0	0.09
22-103	3995	120.0	130.0	2.72
22-103	3996	130.0	140.0	0.16
22-103	3997	140.0	147.0	0.20
22-103	3998	147.0	151.0	0.94
22-103	3999	151.0	156.0	2.81
22-103	4000	156.0	161.0	1.39

22-104	IS REF# 103			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	37673.24	39298.51	1128.90	S 45.00 E	-80.00
DRIFT	0.12279	-0.12279	-0.98481	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-104	4006	873.0	878.0	6.28
22-104	4007	878.0	883.0	7.89
22-104	4008	883.0	888.0	4.38
22-104	4009	888.0	893.0	5.67
22-104	4010	893.0	898.0	3.85
22-104	4011	898.0	903.0	3.34
22-104	4012	903.0	907.0	5.87
22-104	4013	907.0	912.0	8.71
22-104	4014	912.0	917.0	5.16
22-104	4015	917.0	922.0	2.53
22-104	4016	922.0	926.0	4.09
22-104	4017	926.0	931.0	4.76
22-104	4018	931.0	936.0	8.71
22-104	4019	936.0	941.0	6.68
22-104	4020	941.0	946.0	7.09
22-104	4021	946.0	951.0	7.09

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D H DATA FROM FLAM1L.DAT --- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-104	4022	951.0	955.0	5.47
22-104	4023	955.0	960.0	5.06
22-104	4024	960.0	965.0	5.37
22-104	4025	965.0	970.0	7.29
22-104	4026	970.0	975.0	9.52
22-104	4027	975.0	980.0	7.80
22-104	4028	980.0	985.0	5.67
22-104	4029	985.0	990.0	8.91
22-104	4030	990.0	995.0	3.75

22-105 IS REF# 104

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39292.23	40206.71	1113.30	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-105	4034	40.0	42.0	0.65
22-105	4035	42.0	45.0	0.65
22-105	4036	45.0	50.0	3.58
22-105	4037	50.0	55.0	2.14
22-105	4038	55.0	60.0	2.45
22-105	4039	60.0	65.0	2.23
22-105	4040	65.0	70.0	1.44
22-105	4041	70.0	75.0	3.36
22-105	4042	75.0	80.0	4.25
22-105	4043	80.0	85.0	3.40
22-105	4044	85.0	90.0	6.71
22-105	4045	90.0	95.0	4.74
22-105	4046	95.0	100.0	3.50
22-105	4047	100.0	105.0	1.89
22-105	4048	105.0	110.0	2.10
22-105	4049	110.0	115.0	5.13
22-105	4050	115.0	120.0	4.94
22-105	4051	120.0	125.0	6.63
22-105	4052	125.0	130.0	6.75
22-105	4053	130.0	135.0	5.86
22-105	4054	135.0	140.0	4.50
22-105	4055	140.0	145.0	9.19
22-105	4056	145.0	150.0	38.73
22-105	4057	150.0	155.0	41.58
22-105	4058	155.0	160.0	44.23
22-105	4059	160.0	165.0	44.33
22-105	4060	165.0	170.0	47.19
22-105	4061	170.0	175.0	49.05
22-105	4062	175.0	180.0	40.79

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-105	4063	180.0	184.5	24.67
22-105	4064	184.5	190.0	49.16
22-105	4065	190.0	195.0	40.90
22-105	4066	195.0	198.0	39.71
22-105	4067	198.0	203.0	41.31
22-105	4068	203.0	205.0	41.51
22-105	4069	205.0	209.0	43.44
22-105	4070	209.0	212.5	53.97
22-105	4071	212.5	214.0	43.94
22-105	4072	214.0	218.0	50.52
22-105	4073	218.0	225.0	44.16
22-105	4074	225.0	230.0	40.50
22-105	4075	230.0	235.0	39.49
22-105	4076	235.0	240.0	47.79
22-105	4077	240.0	245.0	26.73
22-105	4078	245.0	250.0	34.73
22-105	4079	250.0	255.0	24.20
22-105	4080	255.0	260.0	30.88
22-105	4081	260.0	265.0	30.98
22-105	4082	265.0	270.0	41.31

22-106 IS REF# 105

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39371.64	40133.82	1119.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-106	4086	48.0	55.0	0.06
22-106	4088	65.0	67.5	5.41
22-106	4089	67.5	70.0	10.52
22-106	4090	70.0	72.0	26.73
22-106	4091	72.0	75.0	26.73
22-106	4092	75.0	80.0	38.88
22-106	4093	80.0	85.0	28.05
22-106	4094	85.0	90.0	16.87
22-106	4095	90.0	97.0	6.89
22-106	4096	97.0	100.0	6.74
22-106	4097	100.0	105.0	10.82
22-106	4098	105.0	110.0	4.90
22-106	4099	110.0	115.0	4.14
22-106	4100	115.0	120.0	2.57
22-106	4101	120.0	125.0	1.79
22-106	4102	125.0	130.0	2.40
22-106	4103	130.0	135.0	2.14
22-106	4104	135.0	140.0	3.84

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-106	4105	140.0	145.0	3.93
22-106	4106	145.0	150.0	3.46
22-106	4107	150.0	155.0	3.06
22-106	4108	155.0	160.0	5.18
22-106	4109	160.0	165.0	4.49
22-106	4110	165.0	170.0	5.57
22-106	4111	170.0	175.0	3.07
22-106	4112	175.0	180.0	2.69
22-106	4113	180.0	185.0	2.98
22-106	4114	185.0	190.0	0.23
22-106	4115	190.0	195.0	0.11
22-106	4116	195.0	200.0	0.07
22-106	4117	200.0	205.0	0.13
22-106	4118	205.0	210.0	0.15
22-106	4119	210.0	220.0	0.11
22-106	4120	220.0	230.0	0.07
22-106	4121	230.0	238.0	2.38
22-106	4122	238.0	250.0	3.74
22-106	4123	250.0	260.0	7.16
22-106	4124	260.0	270.0	5.20
22-106	4125	270.0	284.0	0.28

22-107 IS REF# 106

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40522.24	41389.63	1138.90	S 45.00 E	-45.00
DRIFT	0.50000	-0.50000	-0.70711	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-107	4131	107.0	109.0	0.06
22-107	4132	109.0	112.0	14.58
22-107	4133	112.0	114.0	37.36
22-107	4134	114.0	118.0	25.21
22-107	4135	118.0	123.0	9.30
22-107	4136	123.0	128.0	3.20
22-107	4137	128.0	133.0	25.72
22-107	4138	133.0	137.0	5.95
22-107	4139	137.0	142.0	3.50
22-107	4140	142.0	146.0	21.26

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-108	IS REF# 107			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	42241.43	42910.98	1144.00	S 45.00 E	-45.00
DRIFT	0.50000	-0.50000	-0.70711	135.00	

HOLE#	UNIT	FROM	-TO-	S

22-109	IS REF# 108			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	41950.88	42664.41	1144.90	S 45.00 E	-45.00
DRIFT	0.50000	-0.50000	-0.70711	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-109	4149	144.0	157.0	14.42

22-110	IS REF# 109			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	40063.33	41982.76	1141.80	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-110	4159	1246.0	1256.0	5.91
22-110	4160	1256.0	1262.0	4.07
22-110	4161	1262.0	1266.0	6.01
22-110	4162	1266.0	1271.0	4.38
22-110	4163	1271.0	1275.0	5.19
22-110	4164	1275.0	1280.0	10.13
22-110	4165	1280.0	1285.0	25.46
22-110	4166	1285.0	1290.0	23.89
22-110	4167	1290.0	1295.0	9.78
22-110	4168	1295.0	1300.0	12.29
22-110	4169	1300.0	1305.0	8.86
22-110	4170	1305.0	1310.0	9.83
22-110	4171	1310.0	1316.0	10.39
22-110	4172	1316.0	1322.0	12.09
22-110	4173	1322.0	1326.0	5.70
22-110	4174	1326.0	1330.0	15.52
22-110	4175	1330.0	1334.0	5.70
22-110	4176	1334.0	1340.0	10.03
22-110	4177	1340.0	1345.0	5.60
22-110	4178	1345.0	1354.0	5.73
22-110	4179	1354.0	1356.5	10.08
22-110	4180	1356.5	1360.0	10.13
22-110	4181	1360.0	1364.0	8.96
22-110	4182	1364.0	1370.0	4.91

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAMIL.DAT -- SURVEY DATA FROM FLAMID.MIN

HOLE#	UNIT	FROM	-TO-	S
22-110	4183	1370.0	1375.0	5.40
22-110	4184	1375.0	1380.0	6.29
22-110	4185	1380.0	1390.0	3.46
22-110	4186	1390.0	1400.0	5.50

22-111 IS REF# 110

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	45287.29	44271.52	1150.70	S 45.00 E	-55.00
DRIFT	0.40558	-0.40558	-0.81915	135.00	

HOLE#	UNIT	FROM	-TO-	S

22-112 IS REF# 111

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38052.11	38949.91	1119.80	S 45.00 E	-45.00
DRIFT	0.50000	-0.50000	-0.70711	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-112	4194	91.0	100.0	0.04
22-112	4195	100.0	101.0	0.04
22-112	4197	170.0	180.0	4.91
22-112	4198	180.0	190.0	5.16
22-112	4199	190.0	203.0	6.27
22-112	4200	203.0	212.0	6.51
22-112	4201	212.0	222.0	5.50
22-112	4202	222.0	231.0	10.04

22-113 IS REF# 112

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	37860.20	38699.30	1130.20	S 45.00 E	-45.00
DRIFT	0.50000	-0.50000	-0.70711	135.00	

HOLE#	UNIT	FROM	-TO-	S

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-114	IS REF# 113			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	36589.88	38094.05	1125.30	S 45.00 E	-90.00
DRIFT	0.12279	-0.12279	-0.98481	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-114	4211	642.0	644.0	8.51
22-114	4212	644.0	647.0	6.78
22-114	4215	883.0	888.0	3.24
22-114	4216	888.0	889.0	2.02
22-114	4217	889.0	894.0	3.95
22-114	4218	894.0	898.0	5.06
22-114	4219	898.0	900.0	4.76
22-114	4220	900.0	903.0	4.76
22-114	4221	903.0	906.0	5.06

22-115	IS REF# 114			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	40130.57	40229.78	1145.00	S 45.00 E	-50.00
DRIFT	0.45452	-0.45452	-0.76604	135.00	

HOLE#	UNIT	FROM	-TO-	S

22-116	IS REF# 115			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	40490.35	39883.85	1147.60	S 45.00 E	-50.00
DRIFT	0.45452	-0.45452	-0.76604	135.00	

HOLE#	UNIT	FROM	-TO-	S

22-117	IS REF# 116			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	40838.17	39520.75	1143.70	S 45.00 E	-50.00
DRIFT	0.45452	-0.45452	-0.76604	135.00	

HOLE#	UNIT	FROM	-TO-	S

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-118	IS REF# 117			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39110.43	39971.18	1110.30	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-118	4239	22.9	25.0	0.15
22-118	4240	25.0	28.4	0.23
22-118	4241	28.4	29.0	0.07
22-118	4242	29.0	34.1	26.60
22-118	4243	34.1	39.0	43.18
22-118	4244	39.0	45.0	43.03
22-118	4245	45.0	50.0	44.49
22-118	4246	50.0	55.0	37.47
22-118	4247	55.0	60.0	44.79
22-118	4248	60.0	65.0	46.81
22-118	4249	65.0	70.0	43.24
22-118	4250	70.0	75.0	42.76
22-118	4251	75.0	80.0	42.68
22-118	4252	80.0	85.4	47.98
22-118	4253	85.4	90.4	48.39
22-118	4254	90.4	95.4	49.56

22-119	IS REF# 118			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39258.29	40104.47	1112.80	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-119	4256	17.4	23.0	0.29
22-119	4257	23.0	24.0	3.22
22-119	4258	24.0	30.3	0.16
22-119	4259	30.3	33.9	1.02
22-119	4260	33.9	36.0	30.09
22-119	4261	36.0	40.0	41.00
22-119	4262	40.0	45.0	43.36
22-119	4263	45.0	50.0	40.26
22-119	4264	50.0	55.0	38.83
22-119	4265	55.0	58.4	43.17
22-119	4266	58.4	61.6	36.76
22-119	4267	61.6	66.0	38.20
22-119	4268	66.0	71.0	37.37
22-119	4269	71.0	75.0	41.93
22-119	4270	75.0	80.0	47.70
22-119	4271	80.0	85.0	47.15
22-119	4272	85.0	90.0	47.57
22-119	4273	90.0	95.0	38.54

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-119	4274	95.0	98.5	45.34

22-120 IS REF# 119

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39220.46	40143.15	1111.90	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-120	4276	17.4	21.0	0.16
22-120	4277	21.0	25.5	0.06
22-120	4278	25.5	30.0	0.06
22-120	4279	30.0	34.0	0.08
22-120	4280	34.0	39.0	0.10
22-120	4281	39.0	44.0	2.30
22-120	4282	44.0	49.0	1.39
22-120	4283	49.0	54.0	2.17
22-120	4284	54.0	57.0	5.67
22-120	4285	57.0	61.0	4.06
22-120	4286	61.0	65.0	5.33
22-120	4287	65.0	70.0	5.75
22-120	4288	70.0	75.0	4.83
22-120	4289	75.0	80.0	4.22
22-120	4290	80.0	85.0	6.39
22-120	4291	85.0	90.0	3.21
22-120	4292	90.0	95.0	3.38
22-120	4293	95.0	98.2	3.15

22-121 IS REF# 120

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39444.82	40204.03	1118.70	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-121	4295	21.0	23.0	0.25
22-121	4296	23.0	36.0	0.12
22-121	4297	36.0	41.0	0.12
22-121	4298	41.0	45.0	0.11
22-121	4299	45.0	48.0	0.10
22-121	4300	48.0	54.0	0.10
22-121	4301	54.0	57.8	0.11
22-121	4302	57.8	63.0	0.10
22-121	4303	63.0	66.0	4.97
22-121	4304	66.0	70.7	23.03

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-121	4305	70.7	76.0	21.74
22-121	4306	76.0	82.0	13.78
22-121	4307	82.0	87.0	27.23
22-121	4308	87.0	91.0	4.34
22-121	4309	91.0	96.0	21.79
22-121	4310	96.0	100.0	6.92
22-121	4311	100.0	104.1	4.42

22-122 IS REF# 121

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39411.88	40235.43	1117.30	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-122	4314	21.0	25.0	0.16
22-122	4315	25.0	32.5	0.16
22-122	4316	32.5	40.0	0.11
22-122	4317	40.0	47.0	0.11
22-122	4318	47.0	59.0	0.07
22-122	4319	59.0	60.5	0.10
22-122	4320	60.5	63.2	18.48
22-122	4321	63.2	66.0	39.95
22-122	4322	66.0	71.0	38.88
22-122	4323	71.0	74.0	40.85
22-122	4324	74.0	80.0	44.41
22-122	4325	80.0	83.0	44.64
22-122	4326	83.0	86.0	45.27
22-122	4327	86.0	89.4	47.51
22-122	4328	89.4	93.0	48.02
22-122	4329	93.0	96.1	48.45
22-122	4330	96.1	99.4	46.90
22-122	4331	99.4	102.9	47.73

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-123	IS REF# 122			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39376.09	40270.50	1114.90	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-123	4335	30.0	34.9	0.05
22-123	4336	34.9	39.3	0.06
22-123	4337	39.3	40.6	0.04
22-123	4338	40.6	42.0	0.03
22-123	4339	42.0	45.8	0.32
22-123	4340	45.8	51.0	0.37
22-123	4341	51.0	55.0	0.41
22-123	4342	55.0	60.0	0.55
22-123	4343	60.0	65.1	2.50
22-123	4344	65.1	66.0	4.45
22-123	4345	66.0	70.0	2.09
22-123	4346	70.0	75.0	2.85
22-123	4347	75.0	81.0	2.03
22-123	4348	81.0	85.0	2.79
22-123	4349	85.0	90.0	7.97
22-123	4350	90.0	95.0	4.52
22-123	4351	95.0	100.0	1.53

22-124	IS REF# 123			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39571.39	40362.00	1117.30	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-124	4354	17.0	20.0	0.05
22-124	4355	20.0	23.0	0.05
22-124	4356	23.0	26.1	0.05
22-124	4357	26.1	30.0	0.05
22-124	4358	30.0	34.6	0.05
22-124	4359	34.6	39.1	0.06
22-124	4360	39.1	44.1	0.03
22-124	4361	44.1	47.4	0.03
22-124	4362	47.4	52.4	0.05
22-124	4363	52.4	57.0	0.11
22-124	4364	57.0	62.0	0.07
22-124	4365	62.0	65.0	0.03

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-125	IS REF# 124			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39529.18	40413.69	1118.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-125	4368	20.9	24.8	0.10
22-125	4369	24.8	30.0	0.04
22-125	4370	30.0	35.5	0.04
22-125	4371	35.5	40.0	0.05
22-125	4372	40.0	45.0	0.04
22-125	4373	45.0	50.0	1.49
22-125	4374	50.0	55.0	3.67
22-125	4375	55.0	60.0	4.50
22-125	4376	60.0	65.0	4.69
22-125	4377	65.0	70.0	5.58
22-125	4378	70.0	75.0	5.22
22-125	4379	75.0	80.0	7.29
22-125	4380	80.0	85.0	7.07
22-125	4381	85.0	90.0	6.62
22-125	4382	90.0	95.0	8.74
22-125	4383	95.0	100.0	6.61
22-125	4384	100.0	102.2	17.12

22-126	IS REF# 125			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39615.16	40456.54	1124.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-126	4387	23.0	24.0	0.18
22-126	4388	24.0	25.0	0.08
22-126	4389	25.0	28.0	0.08
22-126	4390	28.0	32.0	0.06
22-126	4391	32.0	35.5	0.37
22-126	4392	35.5	40.0	5.20
22-126	4393	40.0	45.0	2.98
22-126	4394	45.0	50.0	5.73
22-126	4395	50.0	55.0	5.83
22-126	4396	55.0	60.0	4.00
22-126	4397	60.0	65.0	3.41
22-126	4398	65.0	70.0	3.12
22-126	4399	70.0	75.0	6.57
22-126	4400	75.0	80.5	5.80
22-126	4401	80.5	85.0	7.18
22-126	4402	85.0	90.0	11.51
22-126	4403	90.0	95.0	11.13

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-126	4404	95.0	100.0	9.82
22-126	4405	100.0	105.0	9.07
22-126	4406	105.0	108.2	8.81

22-127 IS REF# 126

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39732.54	40484.82	1133.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-127	4410	39.0	45.0	0.07
22-127	4411	45.0	50.5	0.07
22-127	4412	50.5	55.5	45.75
22-127	4413	55.5	60.5	46.21
22-127	4414	60.5	65.0	39.10
22-127	4415	65.0	71.0	43.67
22-127	4416	71.0	76.0	43.45
22-127	4417	76.0	81.7	30.88
22-127	4418	81.7	85.8	9.02
22-127	4419	85.8	89.9	9.29
22-127	4420	89.9	95.0	12.96
22-127	4421	95.0	100.0	12.80
22-127	4422	100.0	105.0	36.69
22-127	4423	105.0	110.0	32.10
22-127	4424	110.0	116.5	28.47

22-128 IS REF# 127

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39693.30	40519.68	1136.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-128	4428	36.0	41.0	0.13
22-128	4429	41.0	46.0	0.05
22-128	4430	46.0	51.0	0.05
22-128	4431	51.0	56.1	0 04
22-128	4432	56.1	61.1	2.39
22-128	4433	61.1	66.1	1.75
22-128	4434	66.1	71.0	1.77
22-128	4435	71.0	75.0	8.52
22-128	4436	75.0	80.0	10.28
22-128	4437	80.0	85.0	11.82
22-128	4438	85.0	90.0	9.73

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-128	4439	90.0	95.0	12.45
22-128	4440	95.0	100.0	14.98
22-128	4441	100.0	105.2	19.70
22-128	4442	105.2	110.2	17.26
22-128	4443	110.2	115.2	9.23
22-128	4444	115.2	118.3	6.90

22-129 IS REF# 128

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39658.37	40555.04	1136.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-129	4447	41.1	44.5	0.12
22-129	4448	44.5	49.5	0.07
22-129	4449	49.5	54.5	0.11
22-129	4450	54.5	59.5	0.04
22-129	4451	59.5	64.5	0.06
22-129	4452	64.5	70.0	0.62
22-129	4453	70.0	75.0	7.29
22-129	4454	75.0	80.0	5.73
22-129	4455	80.0	85.0	7.21
22-129	4456	85.0	90.0	6.83
22-129	4457	90.0	95.0	8.56
22-129	4458	95.0	100.0	8.68
22-129	4459	100.0	105.0	14.40
22-129	4460	105.0	110.0	7.67
22-129	4461	110.0	115.0	6.76
22-129	4462	115.0	119.7	6.13

22-130 IS REF# 129

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39835.21	40660.32	1140.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-130	4465	42.2	47.2	0.14
22-130	4466	47.2	52.3	0.11
22-130	4467	52.3	54.5	7.42
22-130	4468	54.5	60.0	11.76
22-130	4469	60.0	65.0	7.83
22-130	4470	65.0	70.0	9.51
22-130	4471	70.0	75.0	10.91

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-130	4472	75.0	80.0	10.36
22-130	4473	80.0	85.0	12.07
22-130	4474	85.0	90.0	7.57
22-130	4475	90.0	95.0	9.70
22-130	4476	95.0	100.0	14.84
22-130	4477	100.0	105.0	15.39
22-130	4478	105.0	110.0	16.07
22-130	4479	110.0	115.0	13.65
22-130	4480	115.0	120.0	12.67
22-130	4481	120.0	123.0	19.89

22-131 IS REF# 130

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39803.75	40694.48	1142.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-131	4484	41.0	46.0	0.26
22-131	4485	46.0	52.0	0.20
22-131	4486	52.0	57.5	0.17
22-131	4487	57.5	60.0	0.51
22-131	4488	60.0	62.5	0.51
22-131	4489	62.5	67.5	0.75
22-131	4490	67.5	72.5	0.37
22-131	4491	72.5	78.0	4.37
22-131	4492	78.0	83.0	8.03
22-131	4493	83.0	88.0	3.92
22-131	4494	88.0	93.0	4.23
22-131	4495	93.0	98.0	4.46
22-131	4496	98.0	103.0	2.47
22-131	4497	103.0	108.0	5.51
22-131	4498	108.0	113.0	3.72
22-131	4499	113.0	118.0	8.06
22-131	4500	118.0	123.0	4.03
22-131	4501	123.0	126.1	5.81

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-132 IS REF# 131	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39428.84	40220.43	1117.30	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-132	4504	19.0	25.5	0.26
22-132	4505	25.5	31.2	0.22
22-132	4506	31.2	33.2	0 26
22-132	4507	33.2	37.1	0.16
22-132	4508	37.1	39.2	10.66
22-132	4509	39.2	44.2	44.96
22-132	4510	44.2	49.0	48.23
22-132	4511	49.0	54.0	47.48
22-132	4512	54.0	60.0	44.35

22-133 IS REF# 132	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39589.29	40344.39	1120.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-133	4515	17.5	23.5	1.10
22-133	4516	23.5	28.5	0.44
22-133	4517	28.5	32.4	0.80
22-133	4518	32.4	37.0	0.45
22-133	4519	37.0	38.5	0.38
22-133	4520	38.5	41.5	13.02
22-133	4521	41.5	44.2	40.26

22-134 IS REF# 133	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39791.38	40564.73	1139.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-134	4524	32.5	34.0	0.05
22-134	4525	34.0	42.5	0.11
22-134	4526	42.5	50.0	0.08
22-134	4527	50.0	56.3	0.05
22-134	4528	56.3	58.4	0.16
22-134	4529	58.4	60.0	41.66
22-134	4530	60.0	65.0	44.38
22-134	4531	65.0	70.0	44.05
22-134	4532	70.0	75.0	45.04

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-134	4533	75.0	80.0	37.18
22-134	4534	80.0	85.0	32.15
22-134	4535	85.0	90.6	38.03

22-135 IS REF# 134

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39877.29	40629.14	1137.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-135	4538	39.5	48.7	0.04
22-135	4539	48.7	50.9	0.04
22-135	4540	50.9	53.0	0.05
22-135	4541	53.0	55.5	10.31
22-135	4542	55.5	60.5	28.61
22-135	4543	60.5	65.5	17.92
22-135	4544	65.5	70.5	18.08
22-135	4545	70.5	75.5	23.94
22-135	4546	75.5	80.5	16.76
22-135	4547	80.5	85.5	15.20
22-135	4548	85.5	90.5	7.50
22-135	4549	90.5	95.5	5.14
22-135	4550	95.5	100.5	6.32
22-135	4551	100.5	105.5	18.74
22-135	4552	105.5	110.5	10.36
22-135	4553	110.5	115.5	18.19
22-135	4554	115.5	120.5	26.30
22-135	4555	120.5	124.0	19.73

22-136 IS REF# 135

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39666.43	40405.98	1121.70	S 45.00 E	-60.00
DRIFT	0.35355	-0.35355	-0.86603	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-136	4559	31.0	40.0	0.02
22-136	4560	40.0	43.0	0.02
22-136	4561	43.0	52.0	0.02
22-136	4562	52.0	66.0	0.11
22-136	4564	67.0	69.0	0.60
22-136	4565	69.0	79.0	2.12
22-136	4567	80.0	90.0	2.59
22-136	4569	91.0	101.0	0.76

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT --- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-136	4571	102.0	112.0	2.15
22-136	4572	112.0	122.0	0.03
22-136	4574	123.0	136.0	0.02
22-136	4575	136.0	147.0	0.15
22-136	4576	147.0	151.0	0.02
22-136	4577	151.0	162.0	0.03
22-136	4578	162.0	172.0	1.16
22-136	4580	173.0	183.0	1.70
22-136	4581	183.0	193.0	0.37
22-136	4582	193.0	204.0	0.04
22-136	4584	205.0	215.0	0.63
22-136	4586	216.0	221.0	0.02
22-136	4587	221.0	222.0	3.24
22-136	4588	222.0	231.0	3.24
22-136	4589	231.0	242.0	3.40
22-136	4590	242.0	250.0	0.46

22-137 IS REF# 136

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38751.57	40029.52	1101.40	S 45.00 E	-60.00
DRIFT	0.35355	-0.35355	-0.86603	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-137	4594	37.0	47.0	0.02
22-137	4596	48.0	58.0	0.03
22-137	4598	59.0	69.0	0.02
22-137	4600	70.0	80.0	0.03
22-137	4601	80.0	90.0	0.02
22-137	4602	90.0	100.0	0.03
22-137	4604	101.0	111.0	0.03
22-137	4606	112.0	122.0	0.02
22-137	4607	122.0	132.0	0.04
22-137	4609	133.0	143.0	0.03
22-137	4611	144.0	154.0	0.06
22-137	4613	155.0	164.0	0.04

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22137A IS REF# 137	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38723.93	40034.39	1101.10	S 45.00 E	-60.00
DRIFT	0.35355	-0.35355	-0.86603	135.00	

HOLE#	UNIT	FROM	-TO-	S
22137A	4617	90.0	100.5	0.02
22137A	4618	100.5	109.0	0.00
22137A	4619	109.0	118.0	0.03
22137A	4620	118.0	127.5	0.03
22137A	4621	127.5	135.7	0.02
22137A	4622	135.7	144.0	0.03
22137A	4623	144.0	154.0	0.02
22137A	4624	154.0	163.0	0.02
22137A	4625	163.0	171.5	0.02
22137A	4626	171.5	175.0	0.02
22137A	4627	175.0	180.0	0.02
22137A	4628	180.0	188.5	0.02
22137A	4629	188.5	197.5	0.02
22137A	4630	197.5	205.5	0.02
22137A	4631	205.5	214.5	0.02
22137A	4632	214.5	215.0	0.02
22137A	4633	215.0	223.0	0.02
22137A	4634	223.0	230.0	0.02

22-138 IS REF# 138	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38976.22	39823.54	1103.10	S 45.00 E	-60.00
DRIFT	0.35355	-0.35355	-0.86603	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-138	4640	27.3	30.3	5.39
22-138	4641	30.3	34.0	8.72
22-138	4642	34.0	38.0	14.60
22-138	4643	38.0	43.0	13.68
22-138	4644	43.0	45.0	8.83
22-138	4645	45.0	48.0	13.93
22-138	4646	48.0	56.2	8.83
22-138	4647	56.2	59.8	14.00
22-138	4649	60.0	70.0	8.57
22-138	4651	71.0	76.0	6.79
22-138	4652	76.0	78.0	4.53
22-138	4653	78.0	87.0	8.34
22-138	4654	87.0	91.5	5.06
22-138	4655	91.5	95.0	13.93
22-138	4656	95.0	99.0	13.85
22-138	4657	99.0	103.0	13.76

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT --- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-138	4658	103.0	108.0	13.59
22-138	4659	108.0	110.6	14.24
22-138	4660	110.6	111.0	9.63
22-138	4661	111.0	115.0	1.36
22-138	4662	115.0	121.5	4.50
22-138	4663	121.5	135.0	0.92
22-138	4664	135.0	146.0	1.55
22-138	4666	147.0	160.0	2.58
22-138	4667	160.0	164.0	3.34
22-138	4669	165.0	176.0	0.02
22-138	4670	176.0	186.0	0.06
22-138	4672	187.0	190.0	0.02
22-138	4674	191.0	194.0	0.02
22-138	4675	194.0	204.0	0.05
22-138	4677	205.0	214.0	0.02
22-138	4679	215.0	222.0	0.02
22-138	4680	222.0	225.0	0.02
22-138	4682	226.0	236.0	0.02
22-138	4683	236.0	246.0	0.02
22-138	4685	247.0	255.0	0.02

22-139 IS REF# 139

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	38911.80	39980.30	1101.20 S	0.00 W	-60.00
DRIFT	0.00000	-0.50000	-0.86603	180.00	

HOLE#	UNIT	FROM	-TO-	S
22-139	4689	39.0	52.0	0.02
22-139	4690	52.0	58.0	0.02
22-139	4691	58.0	61.0	0.09
22-139	4692	61.0	70.0	0.02
22-139	4693	70.0	79.0	0.24
22-139	4694	79.0	80.0	2.42
22-139	4695	80.0	93.0	2.42
22-139	4696	93.0	101.0	4.49
22-139	4697	101.0	109.0	4.23
22-139	4698	109.0	111.0	3.96
22-139	4699	111.0	118.0	3.96
22-139	4700	118.0	122.0	6.39
22-139	4701	122.0	123.8	5.54
22-139	4702	123.8	123.9	5.54
22-139	4703	123.9	125.0	5.54
22-139	4704	125.0	126.0	5.54
22-139	4705	126.0	132.0	5.54
22-139	4706	132.0	135.0	1.52

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAN11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-139	4707	135.0	138.6	1.52
22-139	4708	138.6	140.0	1.52
22-139	4709	140.0	145.0	1.52
22-139	4710	145.0	158.0	1.14
22-139	4711	158.0	165.0	1.45
22-139	4712	165.0	173.0	1.71
22-139	4713	173.0	174.0	6.76
22-139	4714	174.0	175.0	6.76
22-139	4715	175.0	178.0	6.76
22-139	4716	178.0	182.0	6.76
22-139	4717	182.0	187.0	3.23
22-139	4719	187.9	194.0	5.71
22-139	4720	194.0	197.5	5.71
22-139	4721	197.5	200.0	6.27
22-139	4722	200.0	205.0	14.30
22-139	4723	205.0	208.9	13.61
22-139	4724	208.9	212.6	13.22
22-139	4725	212.6	217.0	14.25
22-139	4726	217.0	220.0	14.00
22-139	4727	220.0	226.0	13.94
22-139	4728	226.0	230.0	13.40
22-139	4729	230.0	235.0	14.50
22-139	4730	235.0	240.0	13.85

22-140 IS REF# 140

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39086.60	40418.00	1117.30	S 45.00 E	-60.00
DRIFT	0.35355	-0.35355	-0.86603	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-140	4734	90.0	100.0	0.02
22-140	4735	100.0	110.0	0.02
22-140	4736	110.0	118.0	0.02
22-140	4737	118.0	127.0	0.02
22-140	4738	127.0	137.0	0.02
22-140	4739	137.0	147.0	0.02
22-140	4740	147.0	157.0	0.02
22-140	4741	157.0	167.0	0.02
22-140	4742	167.0	177.0	0.02
22-140	4743	177.0	180.0	0.02
22-140	4744	180.0	186.0	0.02
22-140	4745	186.0	194.3	0.02
22-140	4746	194.3	203.9	0.02
22-140	4747	203.9	211.5	0.02
22-140	4748	211.5	220.0	0.02

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-140	4749	220.0	227.0	0.02
22-140	4751	227.7	235.0	0.02
22-140	4752	235.0	236.0	0.02
22-140	4753	236.0	244.0	0.02
22-140	4754	244.0	252.0	0.02
22-140	4755	252.0	259.7	0.02
22-140	4756	259.7	267.2	0.44
22-140	4757	267.2	275.0	0.02

22-141 IS REF# 141

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40267.54	41360.93	1140.80	S 45.00 E	-60.00
DRIFT	0.35355	-0.35355	-0.86603	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-141	4761	90.0	93.5	7.17
22-141	4762	93.5	95.0	7.17
22-141	4763	95.0	100.0	7.17
22-141	4764	100.0	101.7	9.97
22-141	4765	101.7	112.0	9.97
22-141	4766	112.0	120.7	4.74
22-141	4767	120.7	121.2	5.98
22-141	4768	121.2	125.0	5.98
22-141	4769	125.0	129.1	5.98
22-141	4770	129.1	138.4	4.95
22-141	4771	138.4	146.8	3.75
22-141	4772	146.8	155.7	8.57
22-141	4773	155.7	164.7	5.71
22-141	4774	164.7	173.0	7.70
22-141	4775	173.0	178.0	6.51
22-141	4776	178.0	181.9	6.51
22-141	4777	181.9	191.5	10.74
22-141	4778	191.5	200.0	5.13
22-141	4779	200.0	205.0	3.21
22-141	4780	205.0	208.0	3.21
22-141	4781	208.0	216.5	4.40
22-141	4782	216.5	226.5	5.60
22-141	4783	226.5	234.5	2.25
22-141	4784	234.5	242.0	1.99
22-141	4785	242.0	246.0	5.50
22-141	4786	246.0	251.1	5.50
22-141	4787	251.1	255.0	4.47
22-141	4788	255.0	260.0	4.47
22-141	4789	260.0	260.3	4.47
22-141	4790	260.3	265.0	4.29

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-141	4791	265.0	270.0	4.29
22-141	4792	270.0	280.0	7.14
22-141	4793	280.0	290.0	5.14
22-141	4794	290.0	295.0	8.35
22-141	4795	295.0	298.0	8.35
22-141	4796	298.0	298.5	8.35
22-141	4797	298.5	302.0	18.66
22-141	4798	302.0	303.0	18.66
22-141	4800	307.5	310.0	14.29
22-141	4801	310.0	315.0	14.29
22-141	4802	315.0	316.0	14.29
22-141	4803	316.0	320.0	20.66
22-141	4804	320.0	325.0	38.72
22-141	4805	325.0	331.0	38.72
22-141	4806	331.0	332.0	38.72
22-141	4807	332.0	337.0	0.09
22-141	4808	337.0	342.0	0.09
22-141	4810	346.0	350.0	0.09
22-141	4811	350.0	355.0	0.09
22-141	4812	355.0	360.0	0.09
22-141	4813	360.0	365.0	0.09
22-141	4814	365.0	370.0	0.09
22-141	4815	370.0	372.0	0.09
22-141	4816	372.0	377.0	0.09
22-141	4817	377.0	381.0	0.09
22-141	4818	381.0	383.0	0.09
22-141	4820	384.5	390.0	0.09

22-142 IS REF# 142

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40476.56	41289.93	1139.80	S 45.00 E	-55.00
DRIFT	0.40558	-0.40558	-0.81915	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-142	4824	58.0	63.5	0.02
22-142	4826	74.0	79.0	0.02
22-142	4827	79.0	84.0	0.02
22-142	4828	84.0	89.0	0.02
22-142	4829	89.0	94.2	6.43
22-142	4831	94.3	103.0	15.39
22-142	4832	103.0	109.3	0.56
22-142	4833	109.3	121.6	2.04
22-142	4834	121.6	130.0	0.02
22-142	4835	130.0	133.6	0.02
22-142	4836	133.6	136.0	0.02

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-142	4837	136.0	145.7	0.02
22-142	4838	145.7	153.6	0.02
22-142	4839	153.6	162.6	0.02
22-142	4840	162.6	170.0	0.03
22-142	4841	170.0	171.5	0.03
22-142	4842	171.5	180.0	0.02
22-142	4843	180.0	189.0	0.02
22-142	4844	189.0	197.0	0.02
22-142	4845	197.0	206.0	0.02
22-142	4846	206.0	215.0	0.02
22-142	4847	215.0	220.0	0.42
22-142	4848	220.0	223.7	0.42
22-142	4849	223.7	232.6	3.00
22-142	4850	232.6	240.5	5.07
22-142	4851	240.5	249.5	6.25
22-142	4852	249.5	257.0	5.23
22-142	4853	257.0	265.7	2.56
22-142	4854	265.7	270.0	0.02
22-142	4855	270.0	273.5	0.02
22-142	4857	274.0	282.8	0.02
22-142	4858	282.8	290.0	0.73

22-143 IS REF# 143

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40367.24	41261.79	1141.30	S 45.00 E	-60.00
DRIFT	0.35355	-0.35355	-0.86603	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-143	4862	69.0	80.0	1.87
22-143	4863	80.0	89.0	1.68
22-143	4864	89.0	90.0	9.15
22-143	4865	90.0	95.0	9.15
22-143	4868	95.0	98.9	10.87
22-143	4869	98.9	103.0	25.12
22-143	4870	103.0	107.0	7.53
22-143	4871	107.0	112.0	20.40
22-143	4872	112.0	116.0	24.64
22-143	4873	116.0	121.0	21.98
22-143	4874	121.0	125.0	32.96
22-143	4875	125.0	127.0	32.96
22-143	4876	127.0	133.0	39.73
22-143	4877	133.0	135.0	44.28
22-143	4878	135.0	138.0	10.50
22-143	4879	138.0	143.5	32.32
22-143	4880	143.5	148.0	23.45

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-143	4881	148.0	153.0	38.14
22-143	4882	153.0	157.0	34.47
22-143	4883	157.0	161.0	32.50
22-143	4884	161.0	165.0	36.36
22-143	4885	165.0	170.0	29.44
22-143	4886	170.0	175.0	30.96
22-143	4887	175.0	182.2	18.95
22-143	4888	182.2	190.3	16.72
22-143	4889	190.3	199.4	12.64
22-143	4890	199.4	208.0	7.29
22-143	4891	208.0	210.0	0.63

		EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
22-144	IS REF# 144			1139.80	S 45.00 E	-60.00
COLLAR-COORD		40231.55	41110.26	-0.86603	135.00	
DRIFT		0.35355	-0.35355			

HOLE#	UNIT	FROM	-TO-	S
22-144	4895	62.0	76.0	3.68
22-144	4896	76.0	85.0	3.29
22-144	4897	85.0	96.0	3.77
22-144	4898	96.0	104.7	4.86
22-144	4899	104.7	113.5	5.80
22-144	4900	113.5	122.4	8.98
22-144	4901	122.4	131.0	12.29
22-144	4902	131.0	135.0	12.97
22-144	4903	135.0	140.4	8.35
22-144	4904	140.4	144.0	4.50
22-144	4905	144.0	146.0	29.33
22-144	4906	146.0	151.0	42.21
22-144	4907	151.0	156.0	36.76
22-144	4908	156.0	161.0	42.14
22-144	4909	161.0	165.0	42.39
22-144	4910	165.0	168.0	32.55
22-144	4911	168.0	173.0	14.69
22-144	4912	173.0	175.0	21.31
22-144	4913	175.0	180.0	29.17
22-144	4914	180.0	185.0	25.28
22-144	4915	185.0	189.5	16.70
22-144	4916	189.5	195.0	12.42
22-144	4917	195.0	200.0	3.93

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA

22-145	IS REF# 145			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	40126.05	40936.88	1138.30	S 45.00 E	-60.00
DRIFT	0.35355	-0.35355	-0.86603	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-145	4921	62.0	68.0	0.02
22-145	4922	68.0	76.5	5.67
22-145	4923	76.5	88.5	5.77
22-145	4924	88.5	95.0	9.15
22-145	4925	95.0	100.0	8.73
22-145	4926	100.0	105.0	19.17
22-145	4927	105.0	110.0	28.29
22-145	4928	110.0	115.0	40.06
22-145	4929	115.0	118.0	38.58
22-145	4930	118.0	123.0	14.85
22-145	4931	123.0	128.0	28.78
22-145	4932	128.0	133.0	28.94
22-145	4933	133.0	138.0	30.18
22-145	4934	138.0	140.0	36.64
22-145	4935	140.0	142.3	34.75
22-145	4936	142.3	145.0	20.26
22-145	4937	145.0	150.0	28.47
22-145	4938	150.0	155.0	25.60
22-145	4939	155.0	160.0	26.12
22-145	4940	160.0	165.0	22.66
22-145	4941	165.0	170.0	22.94
22-145	4942	170.0	175.0	16.58
22-145	4943	175.0	180.0	8.18

22-146	IS REF# 146			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	40001.45	40775.51	1137.80	S 45.00 E	-60.00
DRIFT	0.35355	-0.35355	-0.86603	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-146	4947	65.0	71.0	26.28
22-146	4948	71.0	75.0	21.50
22-146	4949	75.0	80.0	26.76
22-146	4950	80.0	86.0	33.23
22-146	4951	86.0	90.0	6.16
22-146	4952	90.0	95.0	8.63
22-146	4953	95.0	100.0	8.91
22-146	4954	100.0	105.0	11.04
22-146	4955	105.0	110.0	10.82
22-146	4956	110.0	114.0	10.68
22-146	4957	114.0	118.0	11.53

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-146	4958	116.0	120.0	34.55
22-146	4959	120.0	125.0	35.37
22-146	4960	125.0	130.0	35.02
22-146	4961	130.0	132.5	29.68
22-146	4962	132.5	135.0	29.68
22-146	4964	137.0	141.0	31.21
22-146	4965	141.0	145.0	22.75
22-146	4966	145.0	150.0	22.77
22-146	4967	150.0	155.0	7.08
22-146	4968	155.0	160.0	7.90
22-146	4969	160.0	165.0	0.95

22-147 IS REF# 147

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40052.44	40722.13	1135.60	S 45.00 E	-60.00
DRIFT	0.35355	-0.35355	-0.86603	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-147	4973	72.0	82.0	0.02
22-147	4974	82.0	92.0	0.02
22-147	4975	92.0	100.0	0.27
22-147	4977	100.5	105.0	0.02
22-147	4978	105.0	110.0	0.04
22-147	4979	110.0	114.0	0.03
22-147	4980	114.0	120.0	0.02

22-148 IS REF# 148

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40522.45	41387.30	1140.40	S 45.00 E	-60.00
DRIFT	0.35355	-0.35355	-0.86603	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-148	4984	70.0	83.0	3.06
22-148	4985	83.0	95.0	2.90
22-148	4986	95.0	100.0	9.35
22-148	4987	100.0	105.0	25.69
22-148	4988	105.0	110.0	7.03
22-148	4989	110.0	115.0	40.52
22-148	4990	115.0	120.0	28.72
22-148	4991	120.0	125.0	30.81
22-148	4992	125.0	130.0	38.52
22-148	4993	130.0	135.0	16.92
22-148	4994	135.0	140.0	28.38

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT --- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-148	4995	140.0	145.0	24.42
22-148	4996	145.0	147.0	20.66
22-148	4997	147.0	152.0	3.17
22-148	4998	152.0	156.0	5.14
22-148	4999	156.0	161.0	20.00
22-148	5000	161.0	165.0	9.61
22-148	5001	165.0	166.0	9.61
22-148	5002	166.0	174.0	10.83
22-148	5003	174.0	184.0	4.34
22-148	5004	184.0	190.0	3.31

22-149 IS REF# 149

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40611.05	41434.32	1139.80	S 45.00 E	-60.00
DRIFT	0.35355	-0.35355	-0.86603	135.00	

HOLE#	UNIT	FROM	-TO-	S
22-149	5008	83.0	85.0	2.09
22-149	5009	85.0	88.0	2.09
22-149	5010	88.0	94.8	20.16
22-149	5011	94.8	99.8	31.15
22-149	5012	99.8	105.2	22.56
22-149	5013	105.2	110.0	21.12
22-149	5014	110.0	114.0	23.87
22-149	5015	114.0	120.0	7.85
22-149	5016	120.0	125.0	10.48
22-149	5017	125.0	136.5	5.22
22-149	5018	136.5	146.0	3.56
22-149	5019	146.0	150.0	17.40

22-150 IS REF# 150

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40569.90	41337.73	1139.70	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-150	5023	56.0	60.0	0.02
22-150	5024	60.0	62.0	0.02
22-150	5025	62.0	65.0	2.09
22-150	5026	65.0	68.5	1.76
22-150	5027	68.5	70.0	5.97
22-150	5028	70.0	75.0	3.84
22-150	5029	75.0	80.0	0.02

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT --- SURVEY DATA FROM FLAM12 MIN

HOLE#	UNIT	FROM	-TO-	S
22-150	5030	80.0	82.0	0.02
22-150	5031	82.0	87.0	6.29
22-150	5032	87.0	91.5	22.11
22-150	5034	95.0	100.0	32.95
22-150	5035	100.0	105.0	26.62
22-150	5036	105.0	110.0	36.75
22-150	5037	110.0	115.0	33.32
22-150	5038	115.0	120.0	22.91
22-150	5039	120.0	125.0	16.89
22-150	5040	125.0	130.0	7.13

22-151 IS REF# 151

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40656.88	41389.77	1140.20	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-151	5044	53.0	55.0	0.56
22-151	5045	55.0	57.0	33.79
22-151	5046	57.0	60.0	30.19
22-151	5047	60.0	65.0	13.45
22-151	5048	65.0	70.0	11.59
22-151	5049	70.0	75.0	7.51
22-151	5050	75.0	80.0	6.33

22-152 IS REF# 152

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40428.48	41195.75	1138.90	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-152	5053	60.0	64.0	0.06
22-152	5054	64.0	70.0	0.07
22-152	5055	70.0	75.0	0.02
22-152	5056	75.0	76.5	0.02
22-152	5057	76.5	80.0	0.02
22-152	5058	80.0	85.0	0.02
22-152	5059	85.0	90.0	0.02
22-152	5060	90.0	91.0	0.02
22-152	5061	91.0	93.0	16.55
22-152	5062	93.0	94.5	33.70
22-152	5063	94.5	100.4	36.66
22-152	5064	100.4	105.0	26.52

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

D.H. DATA FROM FLAM11.DAT -- SURVEY DATA FROM FLAM12.MIN

HOLE#	UNIT	FROM	-TO-	S
22-152	5065	105.0	110.0	17.92
22-152	5066	110.0	115.0	13.26
22-152	5067	115.0	120.0	22.45
22-152	5068	120.0	125.0	34.92
22-152	5069	125.0	130.0	27.14
22-152	5070	130.0	135.0	22.90
22-152	5071	135.0	140.0	30.90
22-152	5072	140.0	145.0	30.67
22-152	5073	145.0	150.0	30.03
22-152	5074	150.0	155.0	36.07
22-152	5075	155.0	160.0	32.62
22-152	5076	160.0	165.0	26.31
22-152	5077	165.0	170.0	12.31
22-152	5078	170.0	172.0	16.56
22-152	5079	172.0	177.0	31.03
22-152	5080	177.0	180.0	11.24
22-152	5081	180.0	185.0	8.90
22-152	5082	185.0	190.0	10.09

22-153 IS REF# 153

	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40361.59	41124.19	1139.60	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-153	5086	57.0	60.0	17.22
22-153	5087	60.0	65.0	19.80
22-153	5088	65.0	70.0	31.30
22-153	5089	70.0	75.0	32.10
22-153	5090	75.0	80.0	32.00
22-153	5091	80.0	84.5	32.60
22-153	5092	84.5	90.0	30.40
22-153	5093	90.0	92.0	24.22
22-153	5094	92.0	97.0	32.90
22-153	5095	97.0	100.0	33.50
22-153	5096	100.0	105.0	32.50
22-153	5097	105.0	110.0	17.57
22-153	5098	110.0	115.0	26.30
22-153	5099	115.0	120.0	31.40

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-154	IS REF#	154			
	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40304.24	41041.39	1137.40	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-154	5103	41.0	45.0	0.02
22-154	5104	45.0	50.0	0.02
22-154	5105	50.0	55.0	0.02
22-154	5106	55.0	59.0	11.79
22-154	5107	59.0	65.0	32.50
22-154	5109	70.0	75.0	31.00
22-154	5110	75.0	80.0	32.90
22-154	5112	85.0	86.5	32.45
22-154	5113	86.5	90.0	7.57
22-154	5114	90.0	95.0	14.59
22-154	5115	95.0	100.0	13.42

22-155	IS REF#	155			
	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40351.97	41103.40	1139.50	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-155	5119	52.0	57.0	0.04
22-155	5121	60.0	65.0	33.80
22-155	5122	65.0	70.0	16.28

22-156	IS REF#	156			
	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	40239.40	40964.24	1139.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-156	5126	64.0	67.0	10.55
22-156	5127	67.0	72.0	32.90
22-156	5128	72.0	77.0	32.80
22-156	5129	77.0	80.0	31.20
22-156	5130	80.0	85.0	30.10
22-156	5131	85.0	90.0	31.80
22-156	5132	90.0	95.0	32.50
22-156	5133	95.0	100.0	30.00

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-157	IS REF#	157			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		40093.31	40826.35	1138.10	0.00 E	-90.00
DRIFT		0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-157	5137	54.0	55.6	7.23
22-157	5138	55.6	57.7	0.26
22-157	5139	57.7	60.0	1.95
22-157	5140	60.0	65.0	7.84
22-157	5141	65.0	70.0	15.41
22-157	5142	70.0	74.6	28.10
22-157	5143	74.6	80.2	18.86
22-157	5144	80.2	84.0	27.00
22-157	5145	84.0	89.0	28.45
22-157	5146	89.0	94.0	29.70

22-158	IS REF#	158			BEARING/	
		EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD		40023.02	40748.57	1136.70	0.00 E	-90.00
DRIFT		0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-158	5150	53.0	53.6	4.07
22-158	5151	53.6	59.0	21.47
22-158	5152	59.0	61.0	24.39
22-158	5153	61.0	64.0	15.15
22-158	5154	64.0	66.0	19.23
22-158	5155	66.0	67.0	1.37
22-158	5156	67.0	68.0	13.72
22-158	5157	68.0	69.0	12.98
22-158	5158	69.0	74.0	25.80
22-158	5159	74.0	80.0	31.40

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-159	IS REF# 159			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	40057.82	40713.07	1135.60	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-159	5163	45.0	48.0	0.27
22-159	5164	48.0	49.0	0.02
22-159	5166	62.0	65.0	3.86
22-159	5167	65.0	70.0	3.15
22-159	5168	70.0	75.0	0.98
22-159	5169	75.0	80.0	10.16

22-160	IS REF# 160			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39952.73	40689.32	1137.40	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-160	5173	56.0	60.0	4.41
22-160	5174	60.0	65.0	24.41
22-160	5175	65.0	70.0	29.15
22-160	5176	70.0	75.0	28.10
22-160	5177	75.0	80.0	32.30
22-160	5178	80.0	85.0	31.45
22-160	5179	85.0	90.0	23.37
22-160	5180	90.0	94.0	11.34
22-160	5181	94.0	96.0	34.00
22-160	5182	96.0	100.0	10.07
22-160	5183	100.0	105.0	5.00
22-160	5184	105.0	110.0	5.25

22-161	IS REF# 161			BEARING/	
	EASTING	NORTHING	ELEVATION	AZIMUTH	DIP
COLLAR-COORD	39590.70	40336.75	1120.00	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-161	5188	40.0	41.2	4.64
22-161	5189	41.2	45.0	31.34
22-161	5190	45.0	50.0	33.10
22-161	5191	50.0	53.0	34.80
22-161	5192	53.0	57.0	30.20
22-161	5193	57.0	60.0	31.20

FLAMBEAU PROJECT

FLAMBEAU DRILLHOLE INTERVAL DATA.

22-162 IS REF# 162	EASTING	NORTHING	ELEVATION	BEARING/ AZIMUTH	DIP
COLLAR-COORD	39442.07	40209.47	1120.20	0.00 E	-90.00
DRIFT	0.00000	0.00000	-1.00000	0.00	

HOLE#	UNIT	FROM	-TO-	S
22-162	5197	30.0	35.0	0.02
22-162	5198	35.0	39.7	0.02
22-162	5199	39.7	43.0	0.03
22-162	5200	43.0	44.0	0.34

FLAMBEAU PROJECT

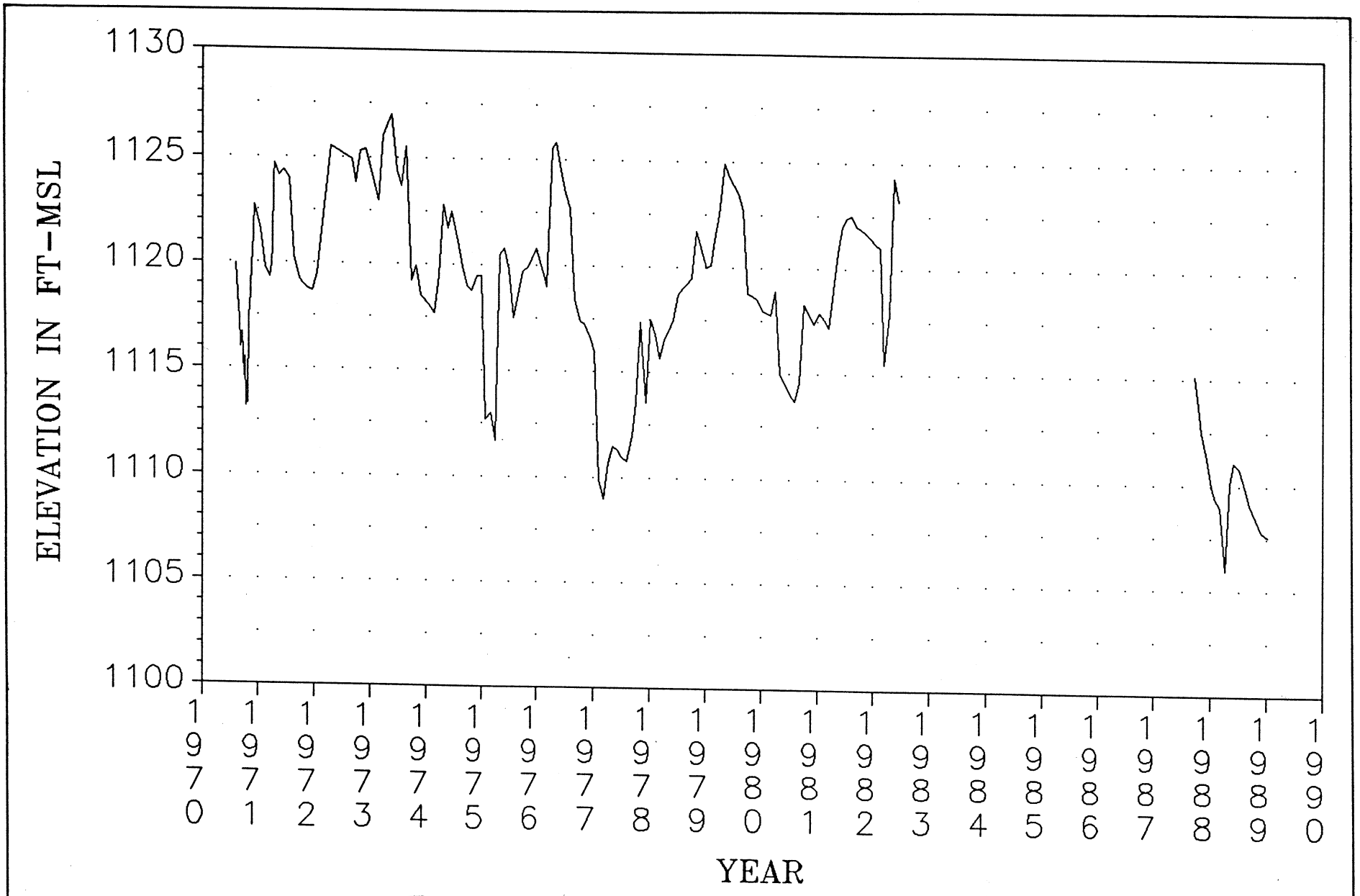
FLAMBEAU DRILLHOLE INTERVAL DATA.

DATA FILE	NO.	#IN	#OUT	FUNC
FLAM10.DAT--	10	4	1	0
FLAM11.DAT--	11	75	0	0
FLAM12.MIN--	12	14	0	0

*** CURRENT LOGIN SESSION: SRU = 126 TTY = 3HR 16MIN

APPENDIX 3.6-A

Hydrographs of 1970s Wells



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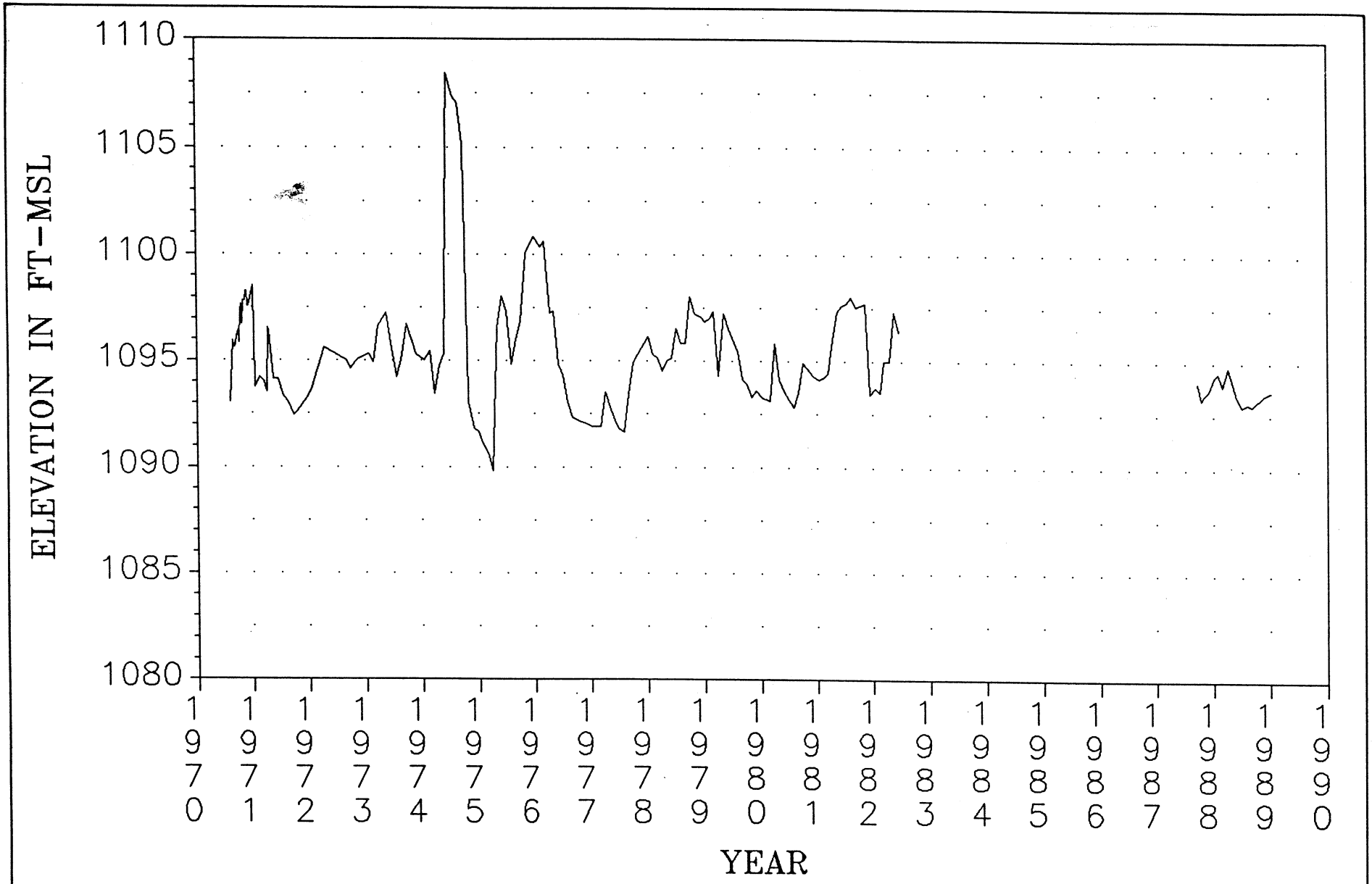
GREEN BAY, WISCONSIN

KENNECOTT MINERALS COMPANY
FLAMBEAU PROJECT
LADYSMITH, WISCONSIN

No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY RDM	3/89
			CHECKED BY BNP	3/89
			APPROVED BY	
			CAD No.	SCALE

GROUNDWATER ELEVATION
OW - 7

Job No | Dwg No | REV



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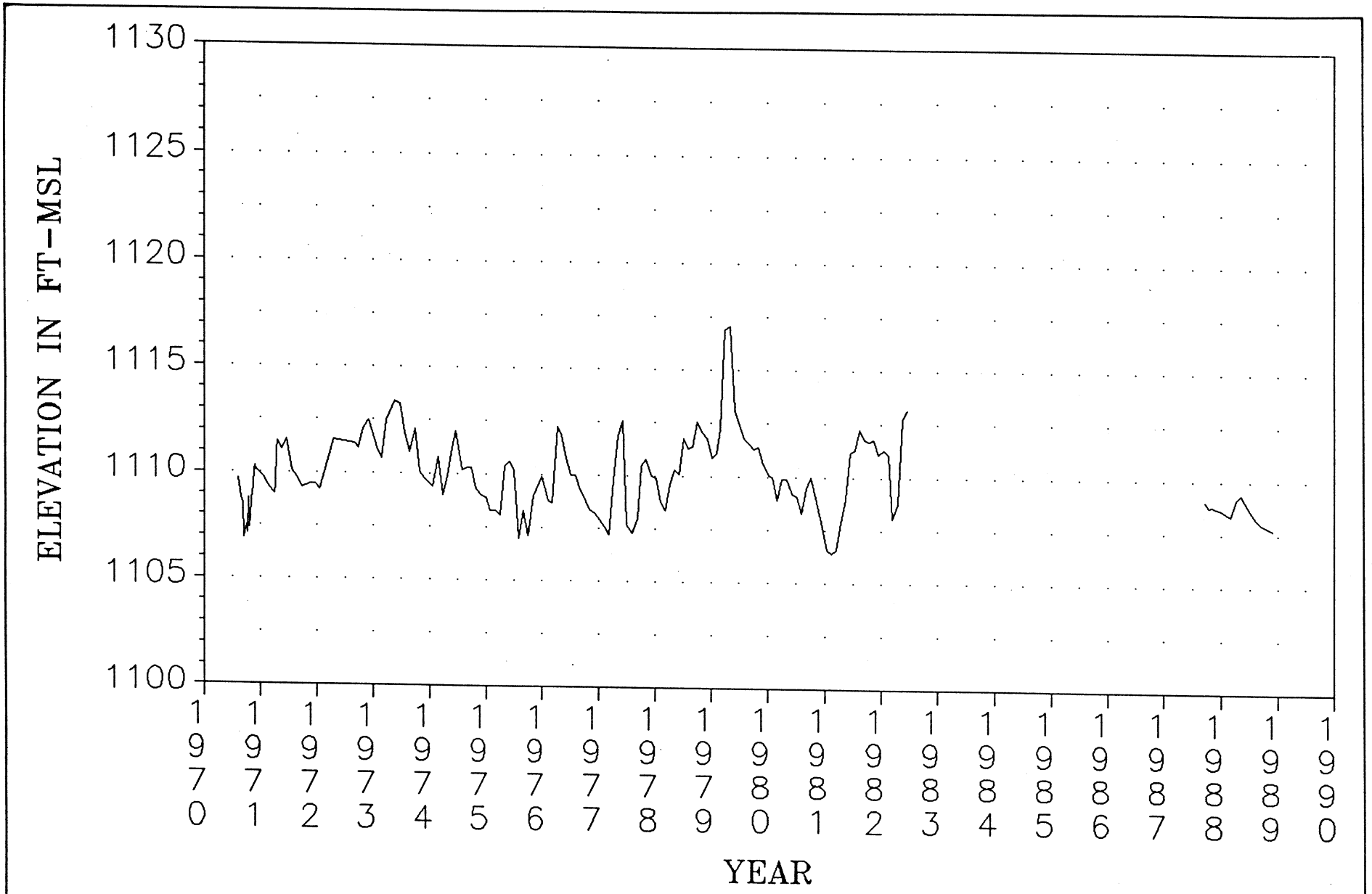
LADYSMITH, WISCONSIN

No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY RDM	3/89
			CHECKED BY BNP	3/89
			APPROVED BY	
			CAD No.	SCALE

GROUNDWATER ELEVATION
OW - 10

Job No	Dwg No	REV



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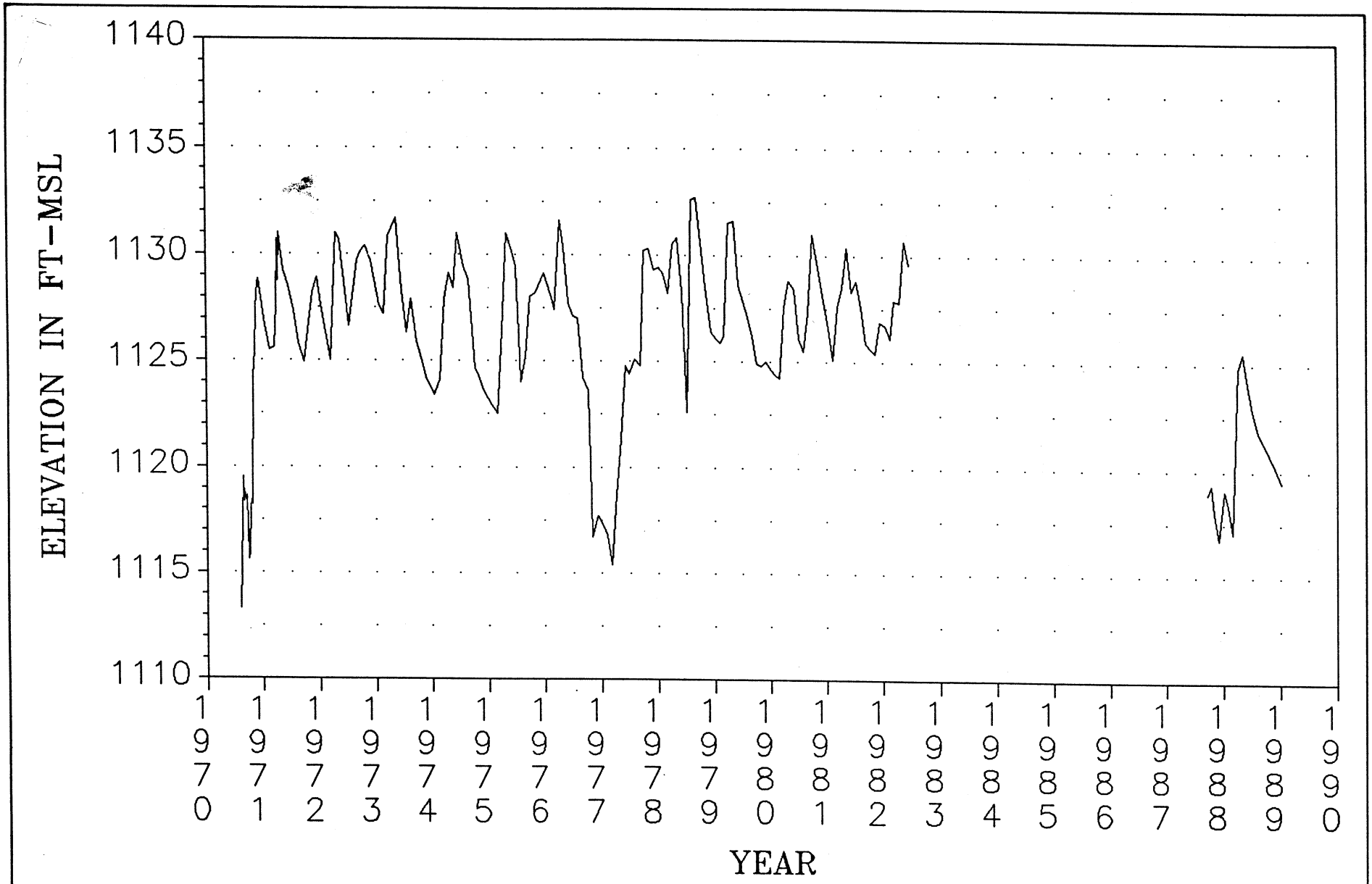
LADYSMITH, WISCONSIN

No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY RDM	3/89
			CHECKED BY BAP	3/89
			APPROVED BY	
			CAD No.	SCALE

GROUNDWATER ELEVATION
OW - 12

Job No	Dwg No	REV



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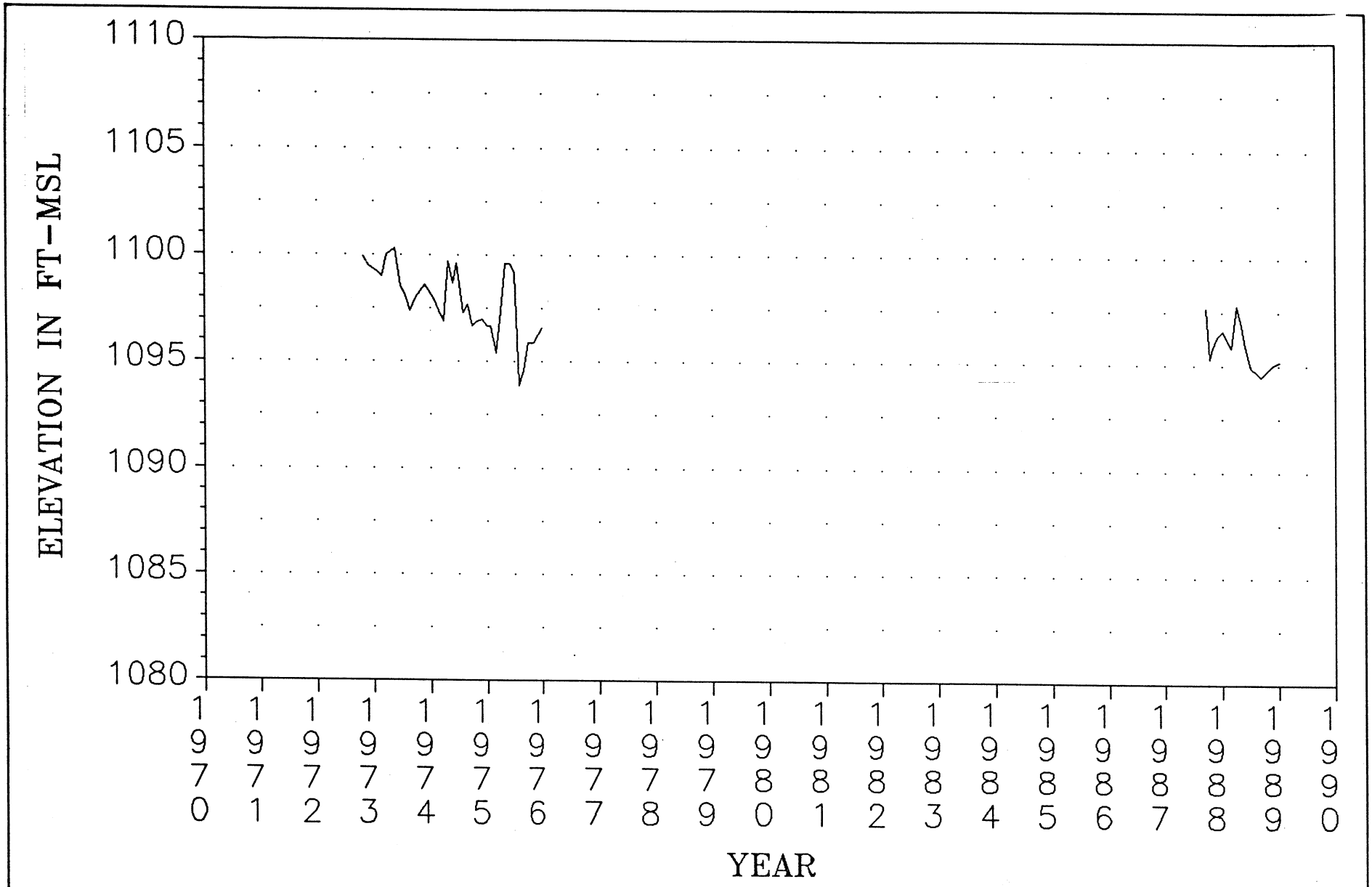
LADYSMITH, WISCONSIN

No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY RDM	3/89
			CHECKED BY BNP	3/89
			APPROVED BY	
			CAD No.	SCALE

GROUNDWATER ELEVATION
O.W - 14

Job No	Dwg No	REV



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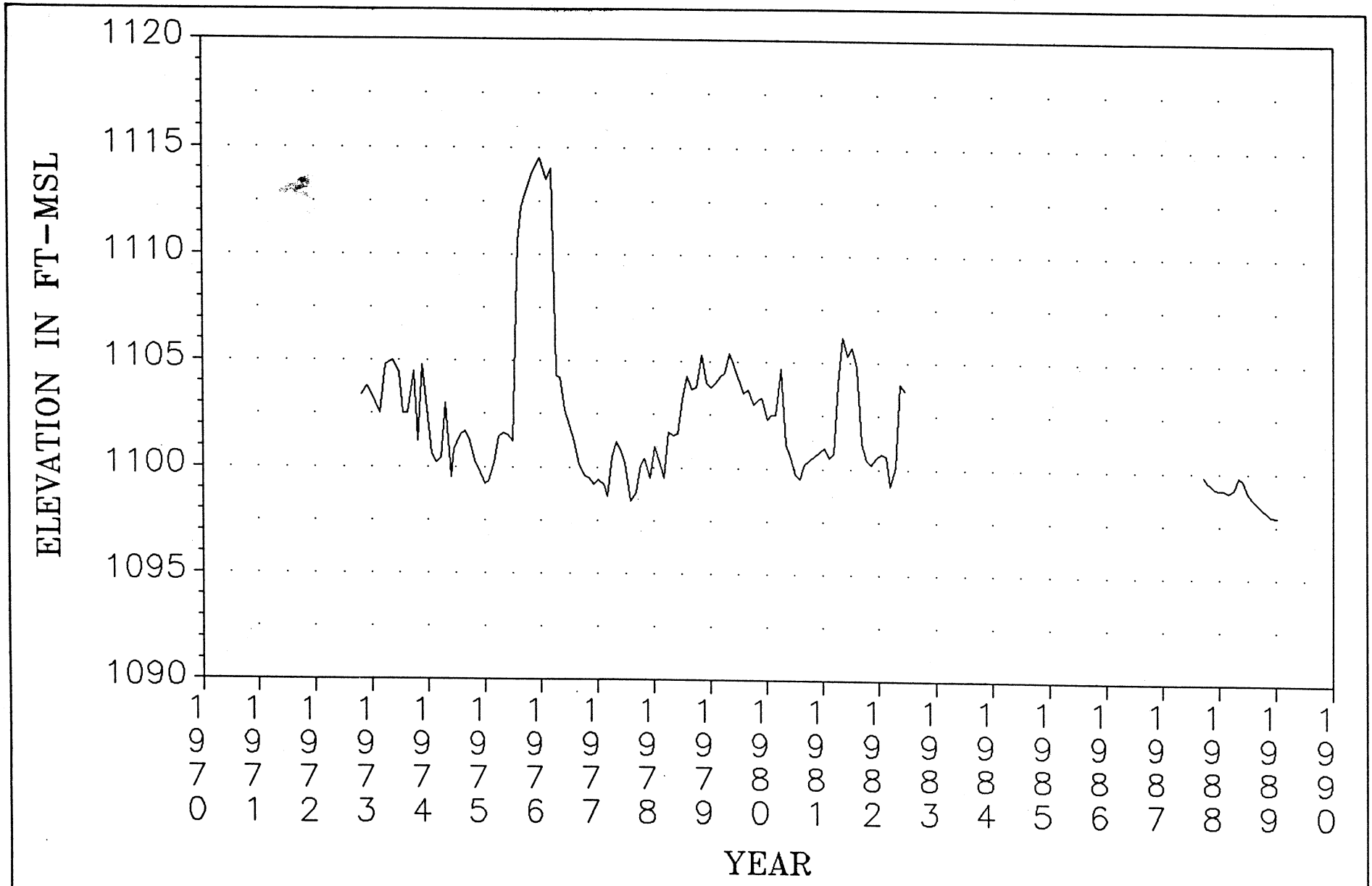
GROUNDWATER ELEVATION
OW - 31

No	REVISIONS	NOTES	APPROVAL	DATE
1			DESIGNED BY	
2			DRAWN BY ROM	3/89
3			CHECKED BY BAP	3/89
4			APPROVED BY	
5			CAD No.	SCALE

Job No | Dwg No | REV



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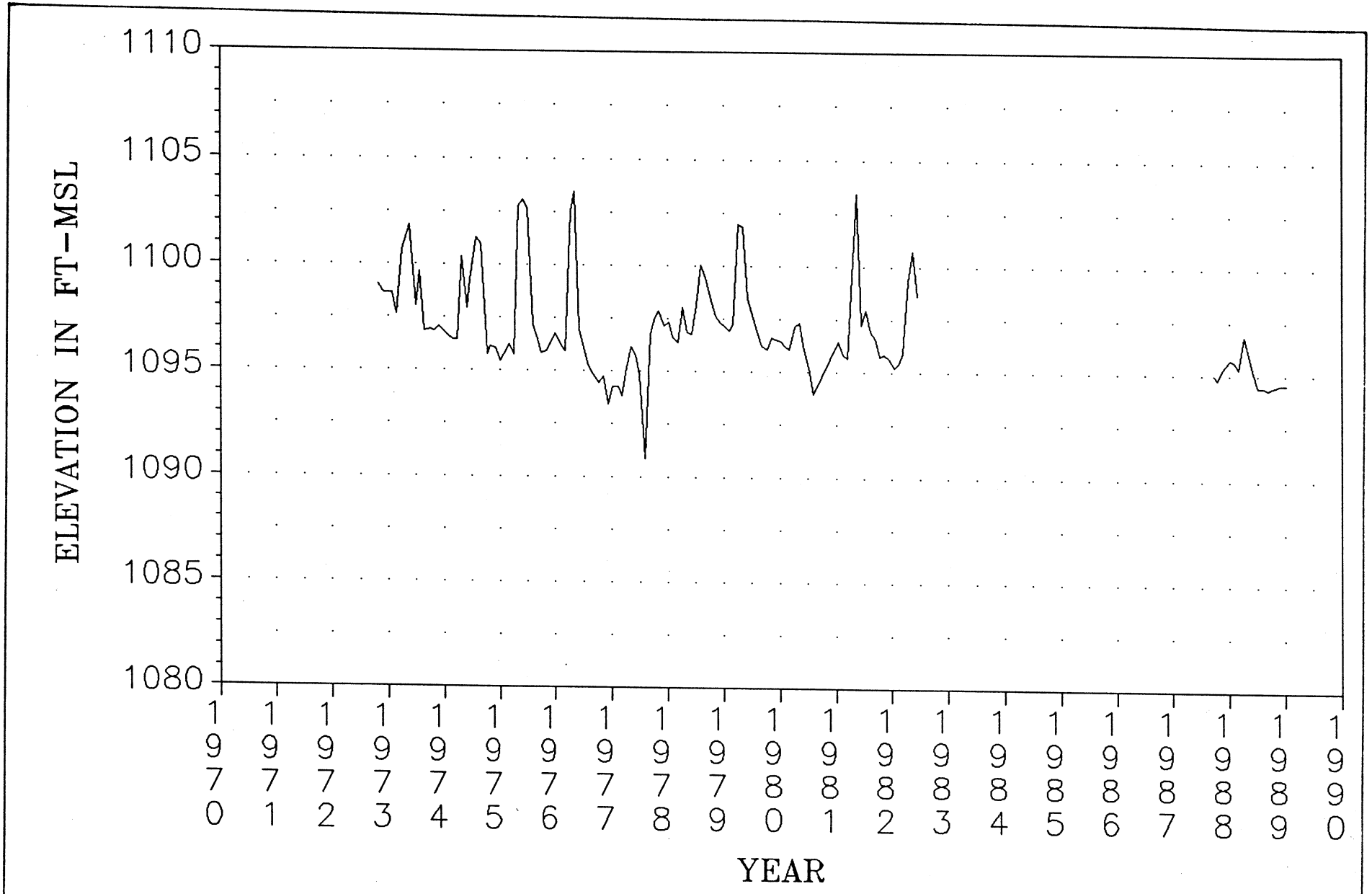
No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY RDM	3/89
			CHECKED BY BNP	3/89
			APPROVED BY	
			CAD No. / SCALE	
				GROUNDWATER ELEVATION OW - 39
			Job No / Dwg No	REV



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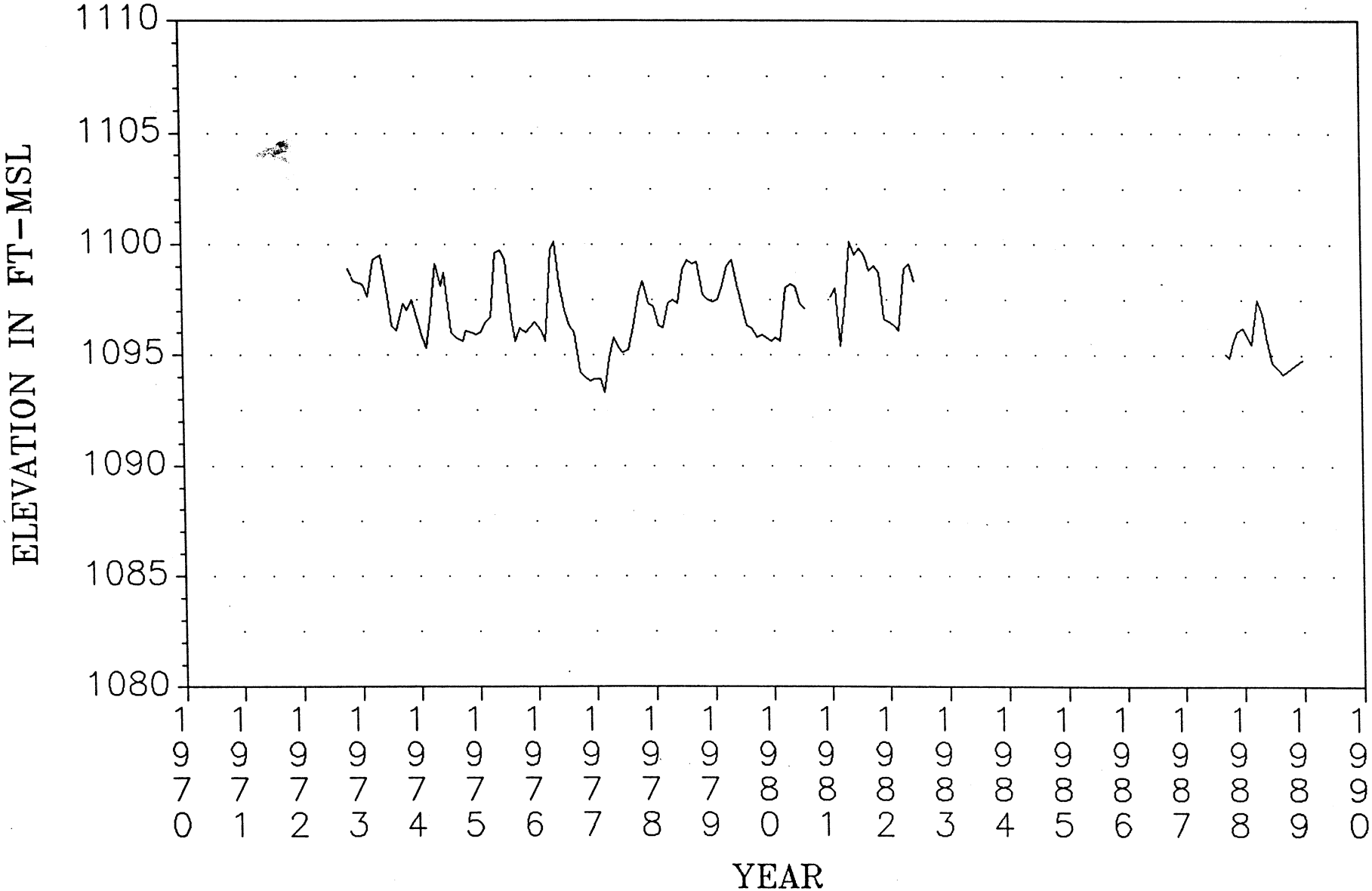
KENNECOTT MINERALS COMPANY
FLAMBEAU PROJECT
LADYSMITH, WISCONSIN

GROUNDWATER ELEVATION
OW - 40

No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY RDM	3/89
			CHECKED BY BJP	3/89
			APPROVED BY	
			CAD No.	SCALE

Job No | Dwg No | REV



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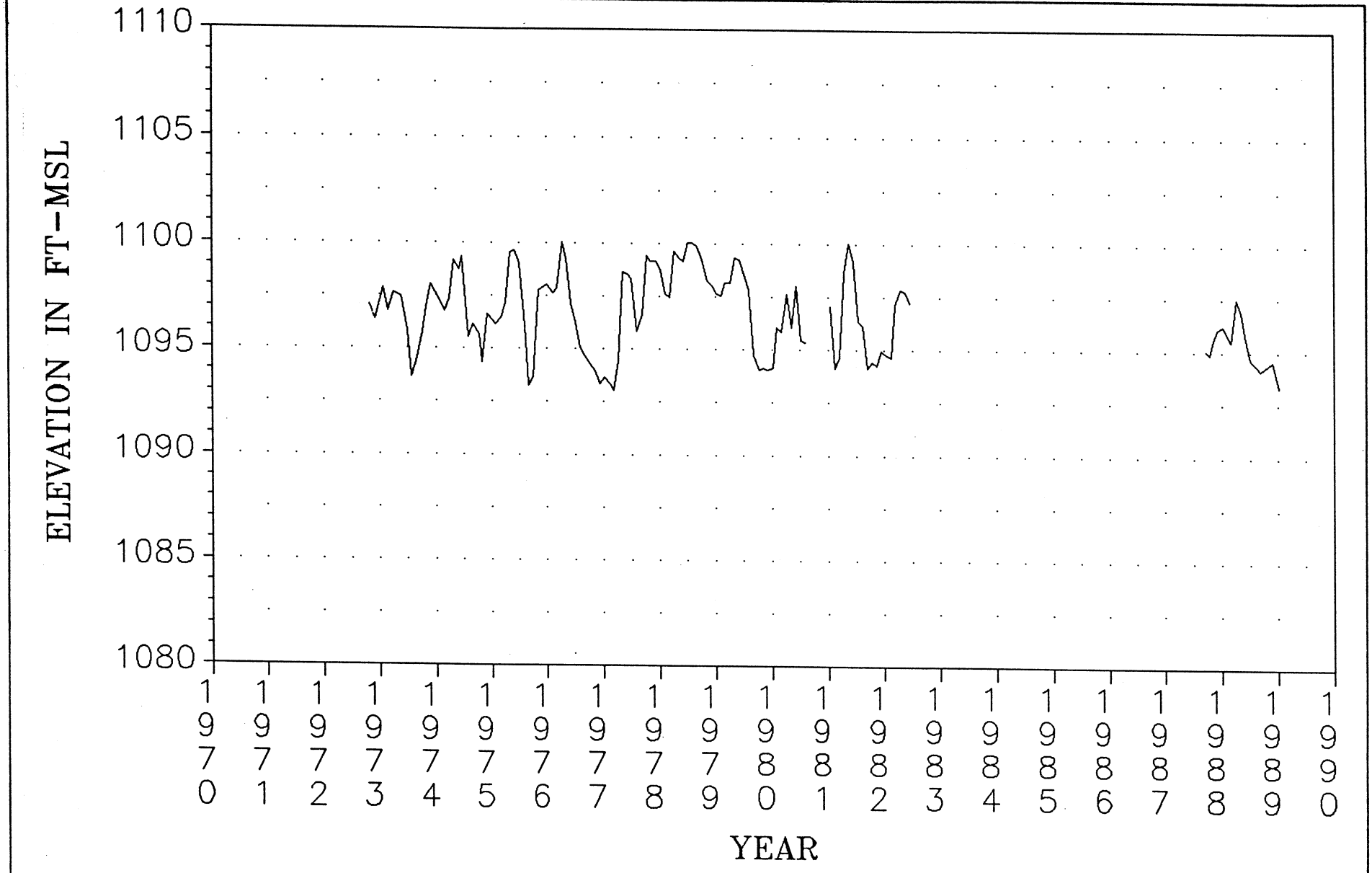
KENNECOTT MINERALS COMPANY
FLAMBEAU PROJECT
LADYSMITH, WISCONSIN

No	REVISIONS	NOTES	APPROVAL		DATE
			DESIGNED BY		
			DRAWN BY	RDM	3/89
			CHECKED BY	BNP	3/89
			APPROVED BY		
			CAD No.	SCALE	

GROUNDWATER ELEVATION
OW - 41

Job No	Dwg No	REV



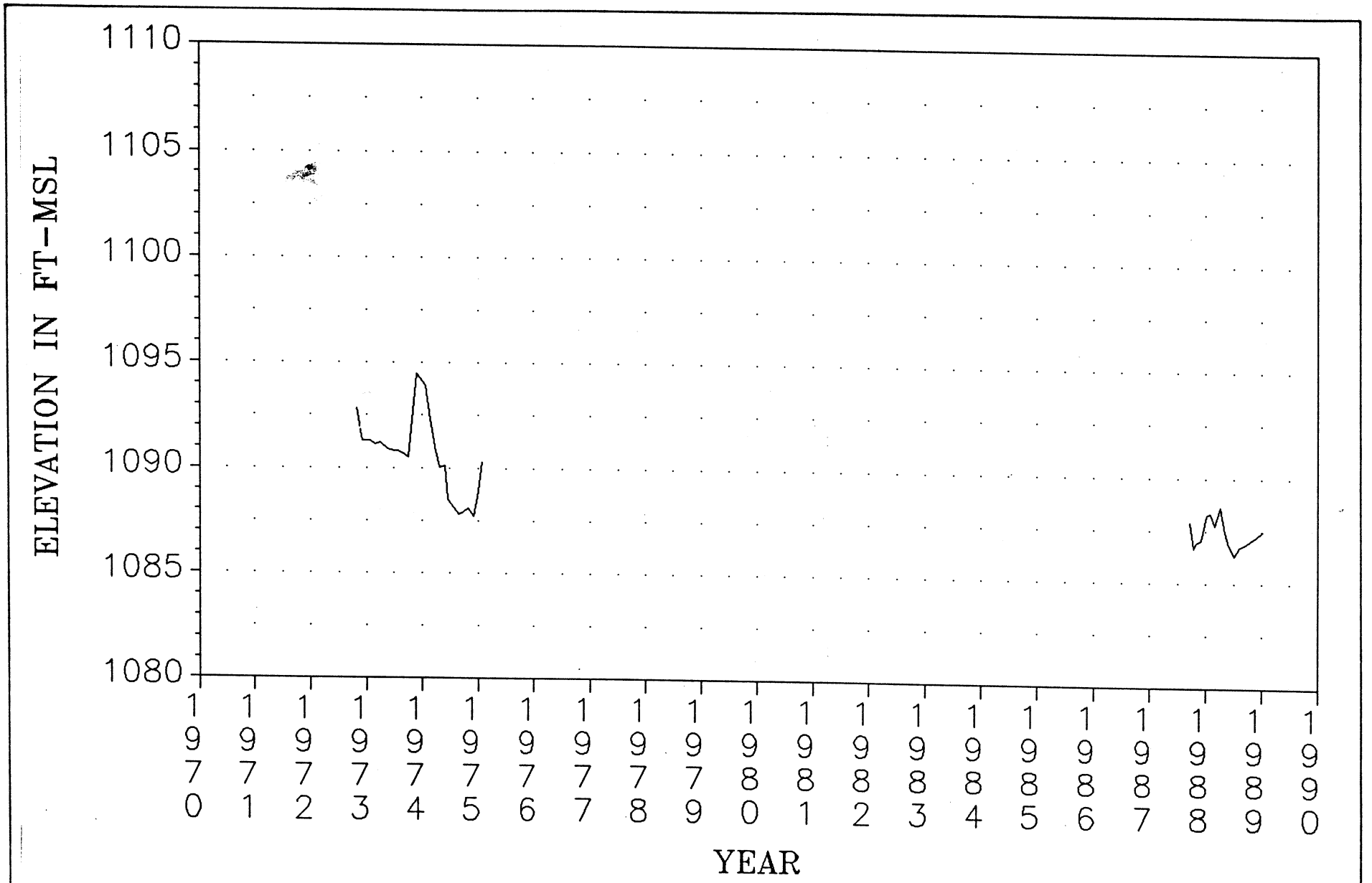
FOTH & VAN DYKE
GEOSCIENCES & ENVIRONMENTAL MANAGEMENT DIVISION
GREEN BAY, WISCONSIN

KENNECOTT MINERALS COMPANY
FLAMBEAU PROJECT
LADYSMITH, WISCONSIN

GROUNDWATER ELEVATION
OW - 42

No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY RDM	3/89
			CHECKED BY BAP	3/89
			APPROVED BY	
			CAD No.	SCALE

Job No | Dwg No | REV



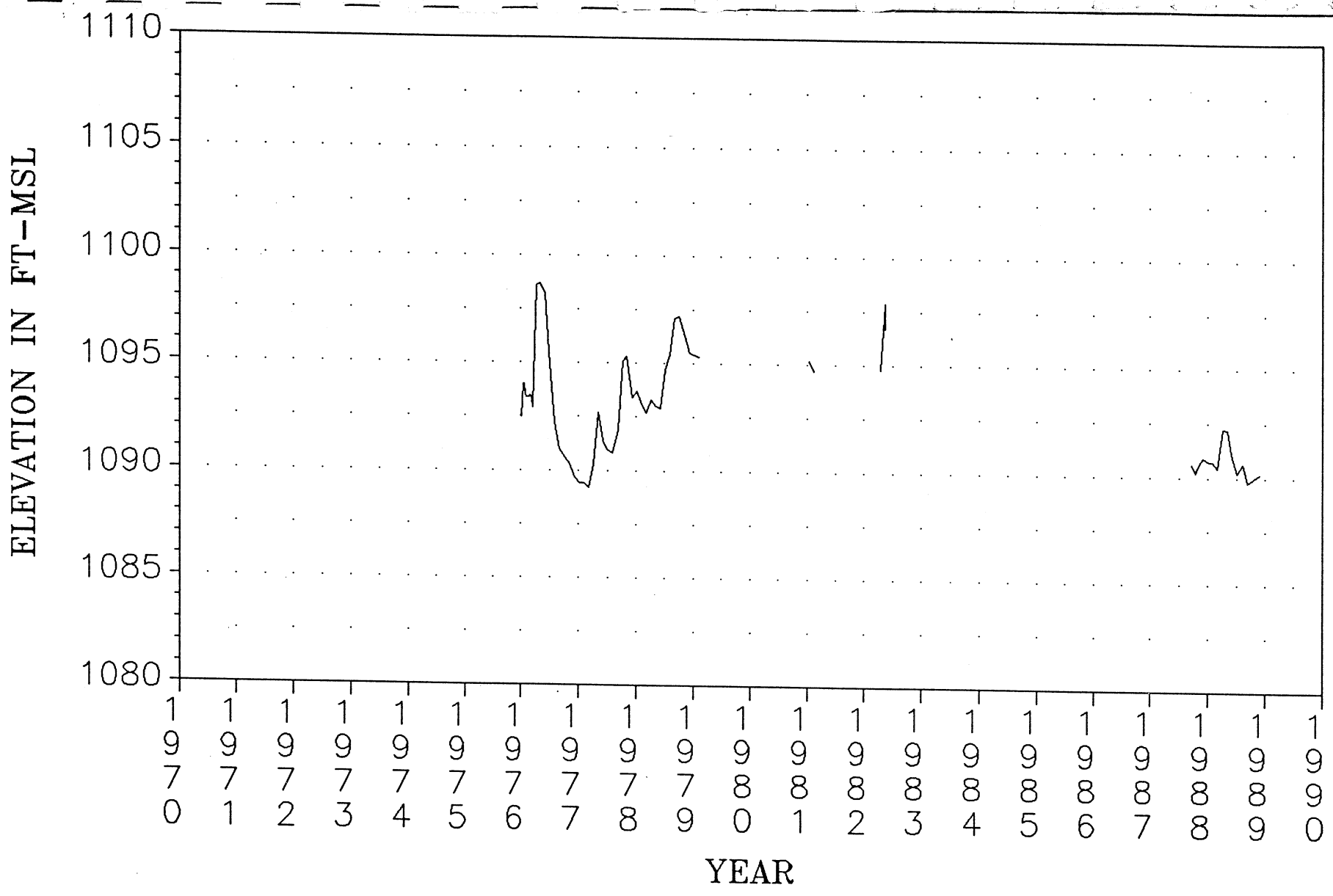
FOTH & VAN DYKE
GEOSCIENCES & ENVIRONMENTAL MANAGEMENT DIVISION
GREEN BAY, WISCONSIN

KENNECOTT MINERALS COMPANY
FLAMBEAU PROJECT
LADYSMITH, WISCONSIN

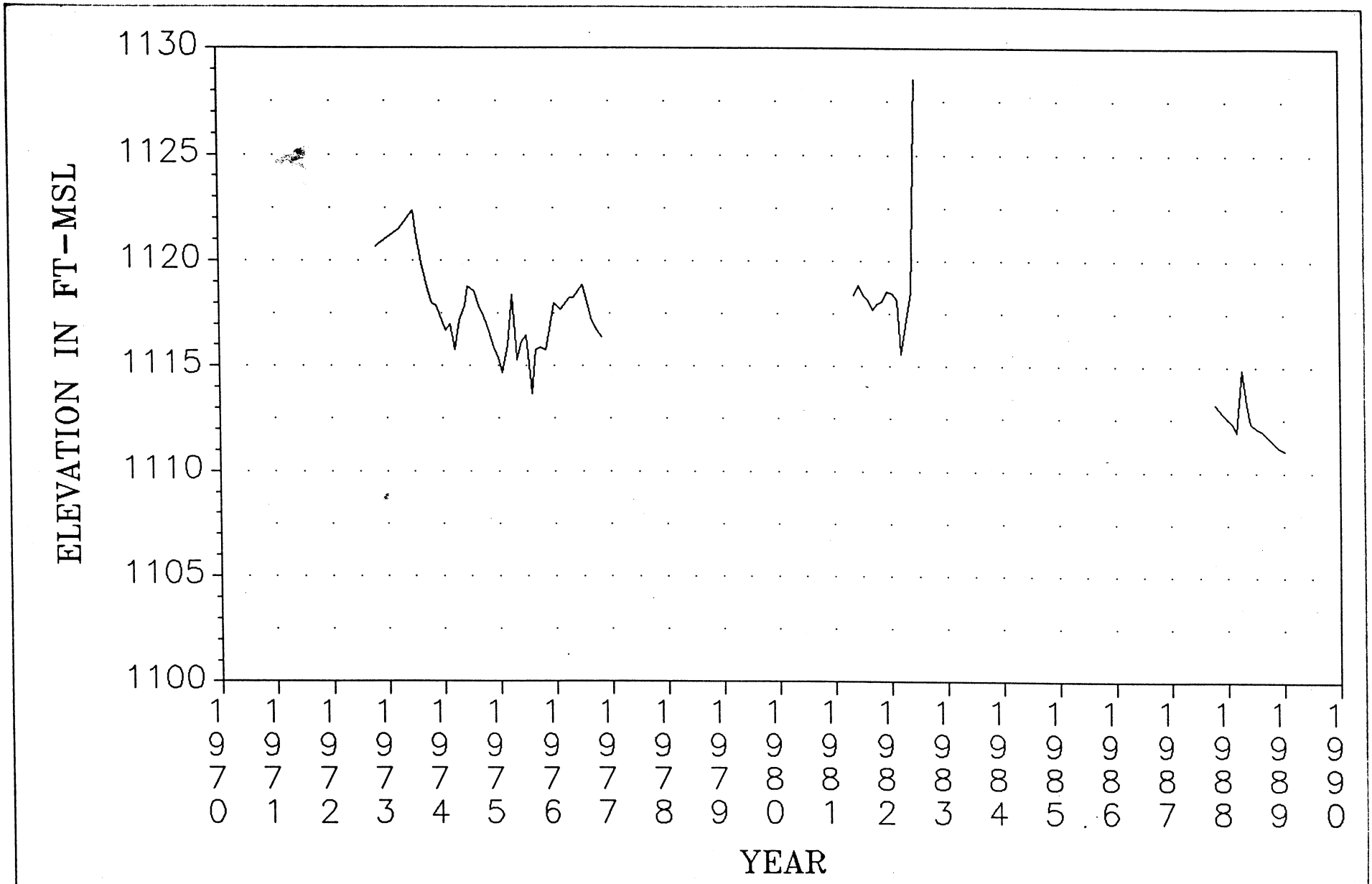
GROUNDWATER ELEVATION
OW - 43

No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY RDM	3/89
			CHECKED BY BJP	3/89
			APPROVED BY	
			CAD No. SCALE	

Job No | Dwg No | REV



FOTH & VAN DYKE GEOSCIENCES & ENVIRONMENTAL MANAGEMENT DIVISION GREEN BAY, WISCONSIN				KENNECOTT MINERALS COMPANY FLAMBEAU PROJECT LADYSMITH, WISCONSIN
No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY BDM	3/89
			CHECKED BY BNP	3/89
			APPROVED BY	
			CAD No. / SCALE	
				GROUNDWATER ELEVATION OW - 45
			Job No / Dwg No	REV



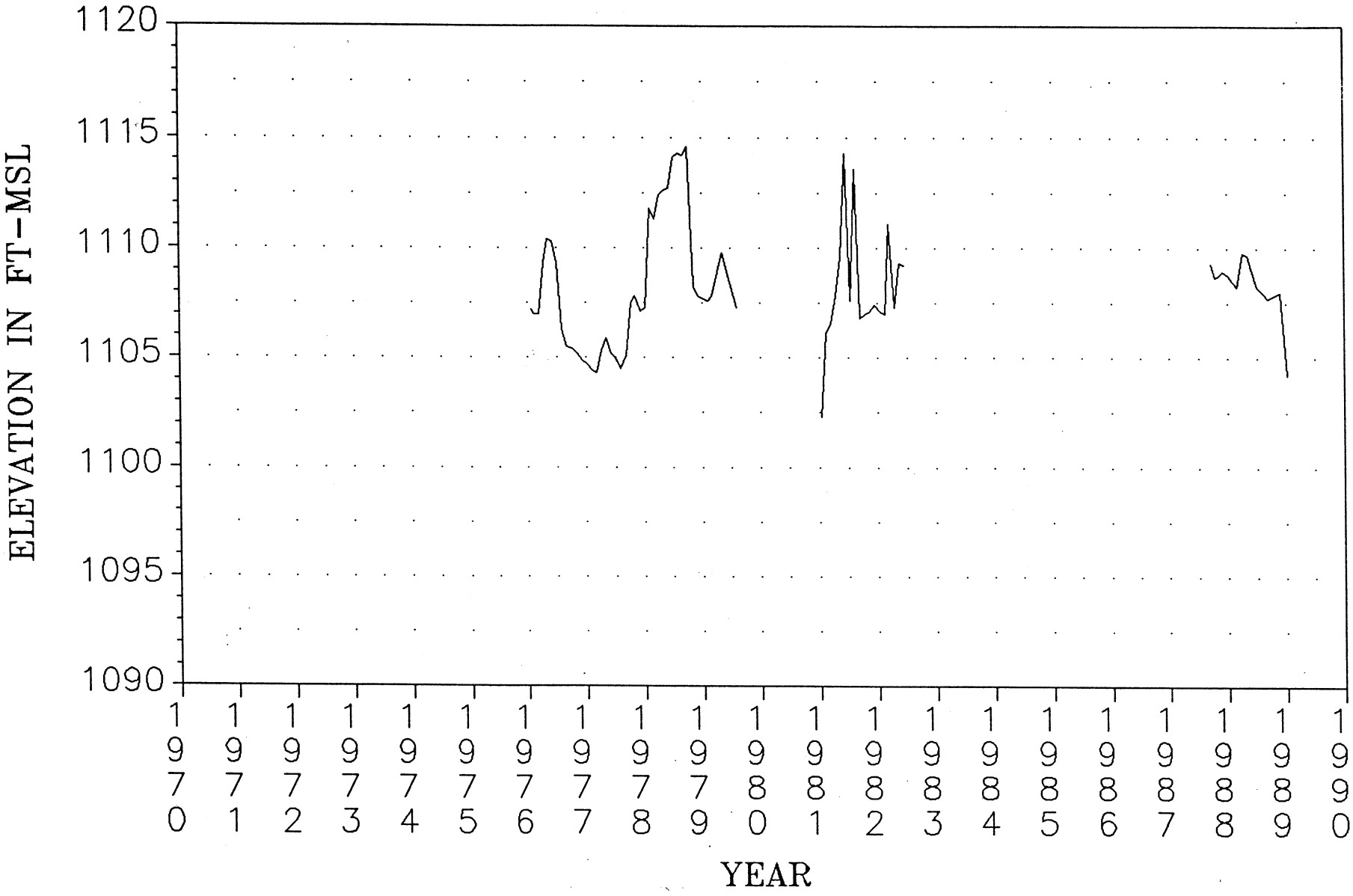
FOTH & VAN DYKE
GEOSCIENCES & ENVIRONMENTAL MANAGEMENT DIVISION
GREEN BAY, WISCONSIN

KENNECOTT MINERALS COMPANY
FLAMBEAU PROJECT
LADYSMITH, WISCONSIN

GROUNDWATER ELEVATION
. ST - 2

No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY RDm	3/89
			CHECKED BY BJP	3/89
			APPROVED BY	
			Cad No. SCALE	

Job No | Dwg No | REV



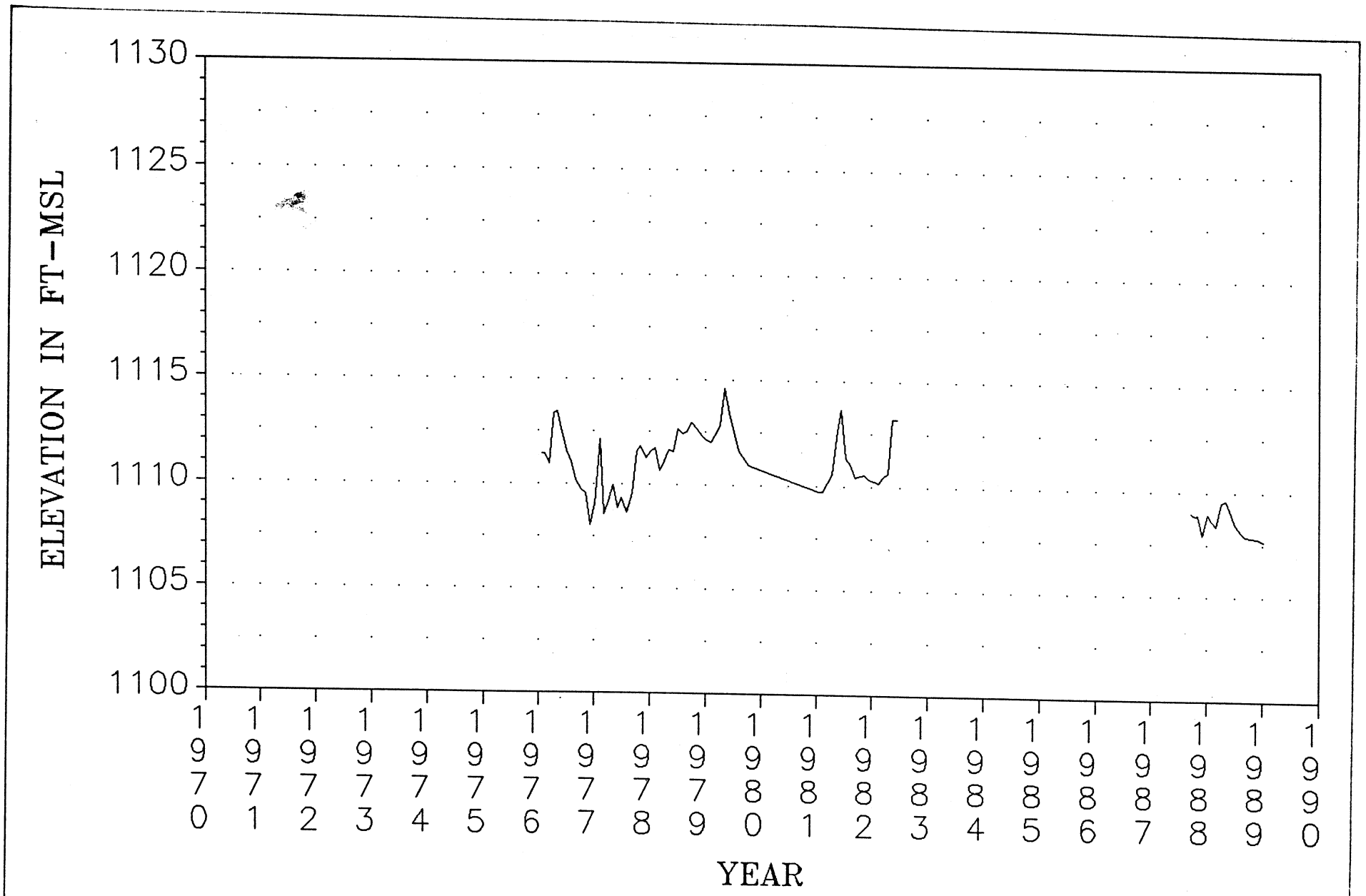
FOTH & VAN DYKE
GEOSCIENCES & ENVIRONMENTAL MANAGEMENT DIVISION
GREEN BAY, WISCONSIN

KENNECOTT MINERALS COMPANY
FLAMBEAU PROJECT
LADYSMITH, WISCONSIN

GROUNDWATER ELEVATION
ST - 19A

No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY RDM	3/89
			CHECKED BY BNP	3/89
			APPROVED BY	
			CAD No.	SCALE

Job No | Dwg No | REV



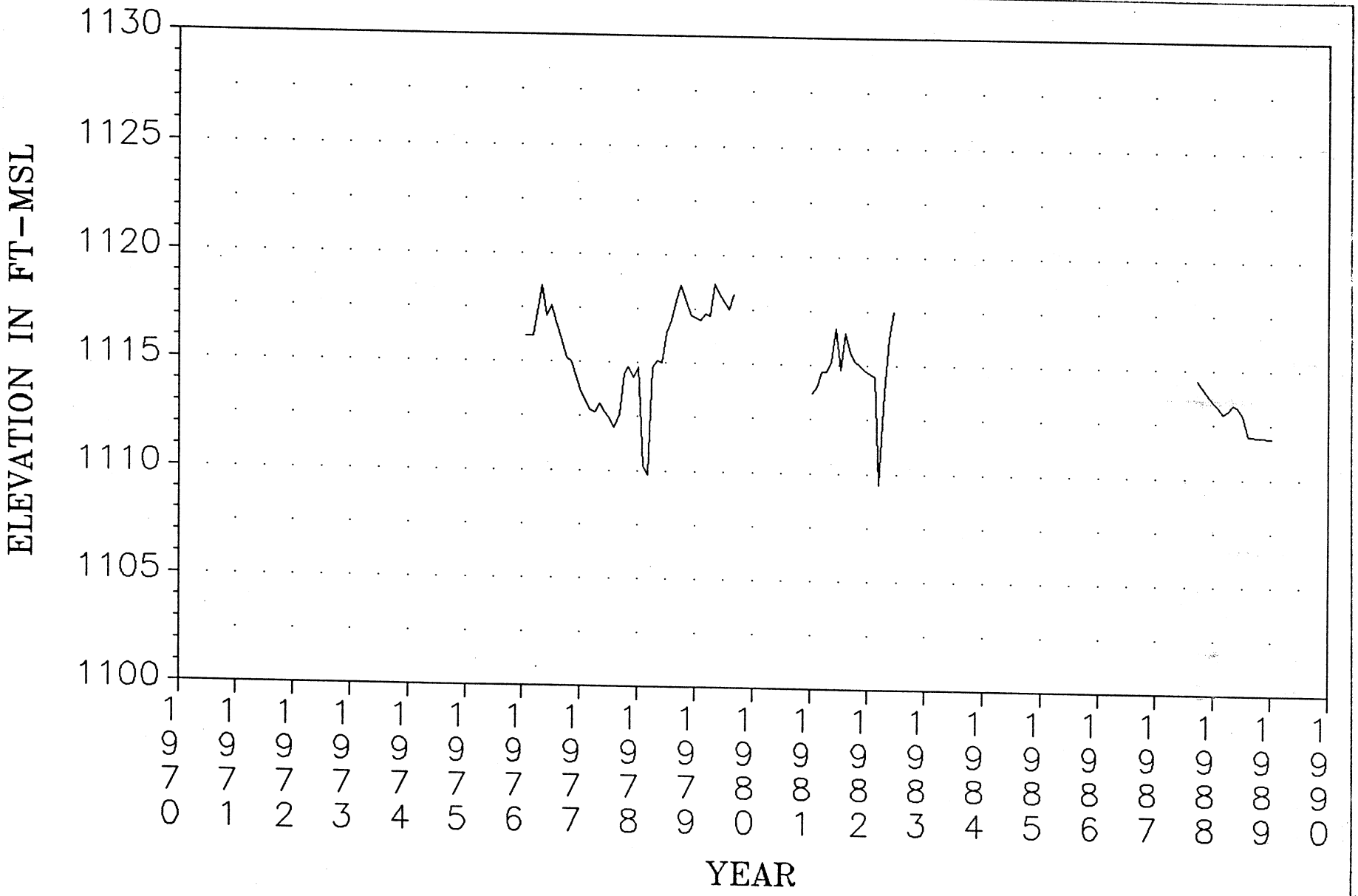
FOTH & VAN DYKE
GEOSCIENCES & ENVIRONMENTAL MANAGEMENT DIVISION
GREEN BAY, WISCONSIN

KENNECOTT MINERALS COMPANY
FLAMBEAU PROJECT
LADYSMITH, WISCONSIN

GROUNDWATER ELEVATION
ST - 20A

No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY RDM	3/89
			CHECKED BY BNF	3/89
			APPROVED BY	
			CAD No. / SCALE	

Job No | Dwg No | REV



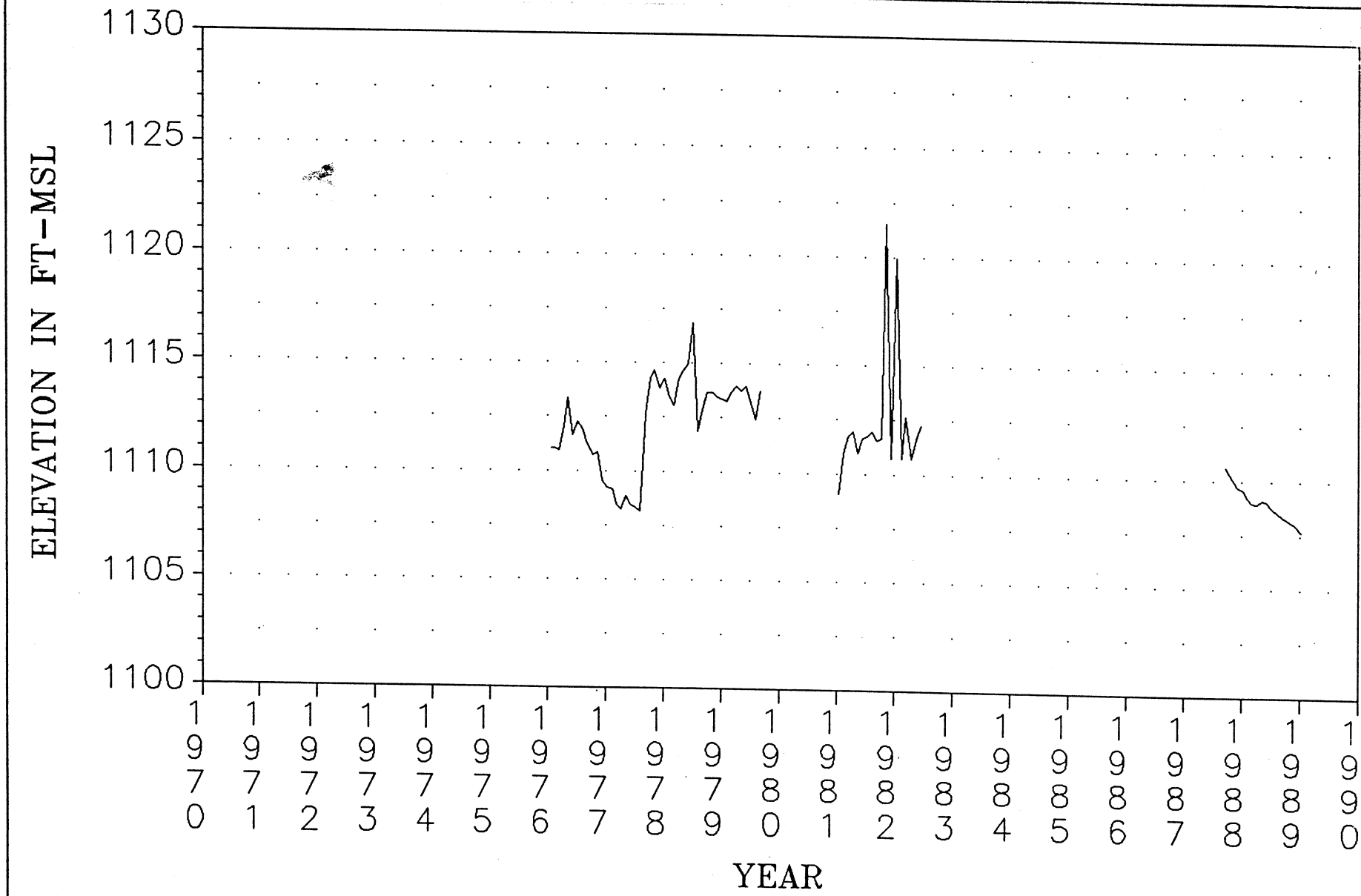
FOTH & VAN DYKE
GEOSCIENCES & ENVIRONMENTAL MANAGEMENT DIVISION
GREEN BAY, WISCONSIN

KENNECOTT MINERALS COMPANY
FLAMBEAU PROJECT
LADYSMITH, WISCONSIN

GROUNDWATER ELEVATION
ST - 24

No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY RDM	3/89
			CHECKED BY BAP	3/89
			APPROVED BY	
			CAD No.	SCALE

Job No | Dwg No | REV



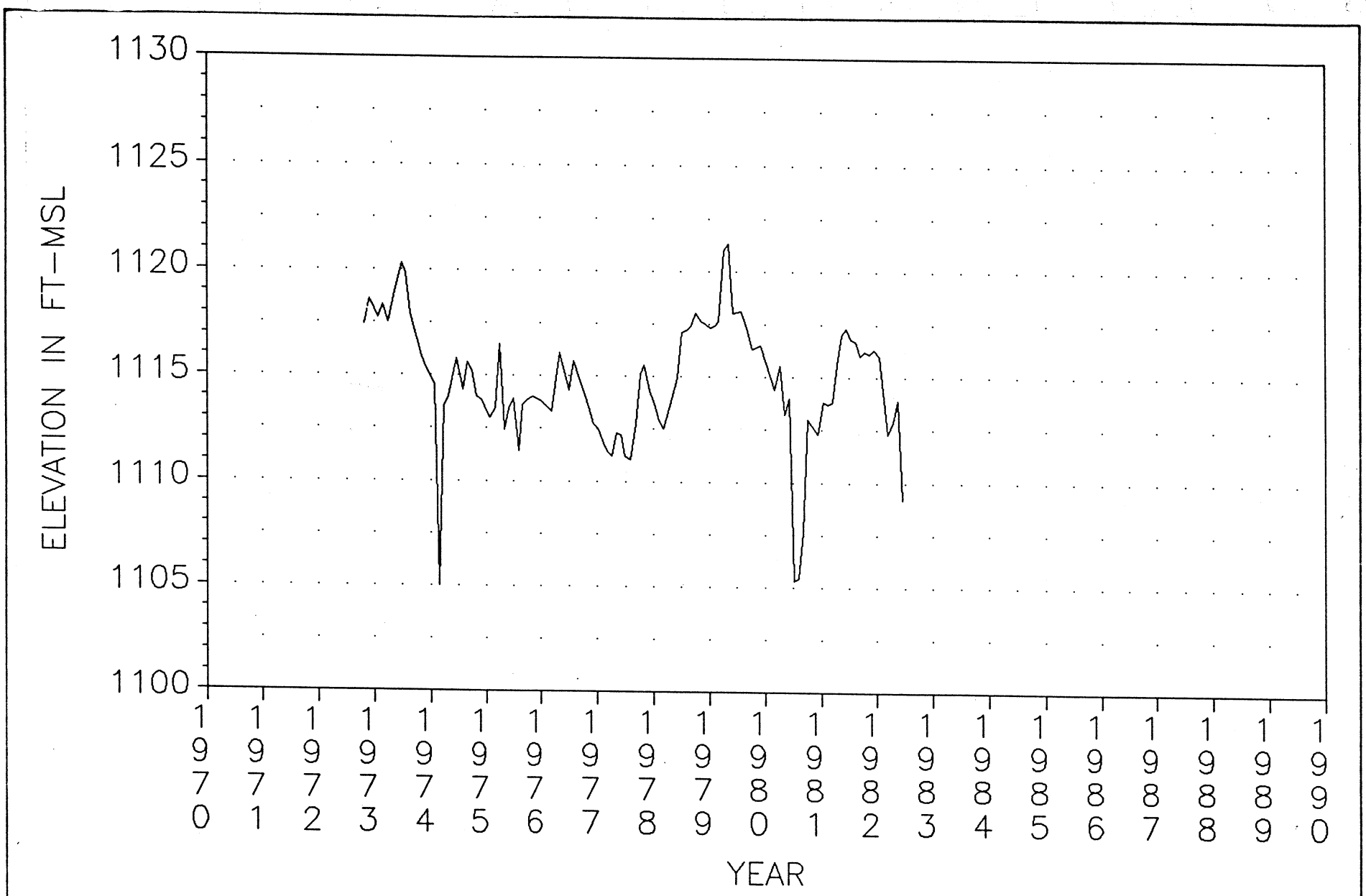
FOTH & VAN DYKE
GEOSCIENCES & ENVIRONMENTAL MANAGEMENT DIVISION
GREEN BAY, WISCONSIN

KENNECOTT MINERALS COMPANY
FLAMBEAU PROJECT
LADYSMITH, WISCONSIN

GROUNDWATER ELEVATION
ST - 26

No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY RDM	3/89
			CHECKED BY BNP	3/89
			APPROVED BY	
			CAD No.	SCALE

Job No | Dwg No | REV



FOTH & VAN DYKE GEOSCIENCES & ENVIRONMENTAL MANAGEMENT DIVISION GREEN BAY, WISCONSIN				KENNECOTT MINERALS COMPANY FLAMBEAU PROJECT LADYSMITH, WISCONSIN
No	REVISIONS	NOTES	APPROVAL	DATE
			DESIGNED BY	
			DRAWN BY RDM	3/89
			CHECKED BY BNP	3/89
			APPROVED BY	
			CAD No. / SCALE	
				GROUNDWATER ELEVATION DIAMOND. DRILL HOLE
				Job No / Dwg No / REV

APPENDIX 3.6-B

Field Log Sheets

FOTH & VAN DYKE GROUNDWATER MONITORING FIELD FORM

Scope I.D.: 87K10 Site Name: KENNECOTT Personnel: M.J.H.

OCTOBER 87

<<========== Purging Phase ==========>>

WELL I.D.	DATE	TIME	DEPTH TO SWL (ft)	TOTAL DEPTH (ft)	LENGTH WATER COL(ft)	REQ GALS to PURGE 4 VOLS*	AMOUNT PURGED (gal)	DEPTH TO SWL AFTR PURG(ft)
1000	10/16/87		14.66	21.25	7	4.6	4.6	15.00
1000P	10/16/87		14.55	56.55	42	27.4	7	DRY
1001	10/16/87		28.73	34.75	6	3.9	3.9	29.00
1001G	10/16/87		29.72	53.50	24	15.6	15.6	30.00
1001F	10/16/87		29.07	96.05	67	43.7	11	DRY
1002	10/17/87		14.20	18.10	4	2.6	1	DRY
1002G	10/17/87		14.36	53.70	40	26.0	26	14.50
1003	10/17/87		34.58	42.00	8	5.2	5.2	35.00
1003F	10/17/87		34.62	88.95	54	35.2	9	DRY
1004	10/17/87		17.63	23.65	6	3.9	3.9	18.00
1004S	10/17/87		17.36	37.90	20	13.0	13	18.00
1004P	10/17/87		20.13	88.80	68	44.3	11	DRY
1005	10/17/87		6.44	20.00	14	9.1	9.1	6.50
1005G	10/17/87		6.46	52.20	46	30.0	30	6.50
1005P	10/17/87		5.96	93.60	88	57.4	57.4	50.00

<<========== Sampling Phase ==========>>

DATE	TIME	pH	SPEC COND	TEMP (C)	COLOR BEFORE FILT	COLOR AFTER FILT	ODOR	TURB BEFORE FILT	TURB AFTER FILT	# OF FLTRS	VOL FLTRD (ml)
10/16		6.14	107	9	LT. BR.	CLEAR	NO	HIGH	NO	4	3500
10/16		6.30	268	8	LT. BR.	CLEAR	NO	V. HIGH	NO	14	3500
10/16		6.22	127	9	LT. BR.	CLEAR	NO	V. HIGH	NO	8	3500
10/16		6.06	165	8	LT. BR.	CLEAR	NO	HIGH	NO	3	3500
10/16		6.38	269	8	LT. BR.	CLEAR	NO	V. HIGH	NO	5	3500
10/17		6.20	316	12	LT. BR.	CLEAR	NO	HIGH	NO	3	3500
10/17		6.16	297	9	LT. BR.	CLEAR	NO	HIGH	NO	2	3500
10/17		6.25	149	9	LT. BR.	CLEAR	NO	HIGH	NO	7	3500
10/17		6.50	343	8	LT. BR.	CLEAR	NO	HIGH	NO	5	3500
10/17		5.89	125	9	LT. BR.	CLEAR	NO	V. HIGH	NO	10	3500
10/17		5.96	179	8	LT. BR.	CLEAR	NO	MOD.	NO	2	3500
10/17		6.64	312	8	LT. BR.	CLEAR	NO	MOD.	NO	7	3500
10/17		5.50	844	11	LT. BR.	CLEAR	NO	V. HIGH	NO	8	3500
10/17		6.22	314	9	LT. BR.	CLEAR	SLIGHT	MOD.	NO	2	3500
10/17		6.46	441	8	LT. BR.	CLEAR	NO	MOD.	NO	9	3500

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Temp/Weather:

60° / CLOUDY

Other Remarks:

* SPLIT SAMPLES WITH DNR
JIM HANSEN

* Casing I.D. (inches) <=> Gallons per Foot to Get 4 Well Volumes

1" <=> 0.163 gal 1.25" <=> 0.255 gal 1.5" <=> 0.367 gal

2" <=> 0.652 gal 3" <=> 1.469 gal 4" <=> 2.610 gal

Equipment Used:

- PVC BAILER
DOUBLE RINSED
BETWEEN WELLS

FVD D.I. WATER

Lakewood LCD pH/Cond. Meter #22990
Geotech 2.5 Liter Filter Tank
Well Wizard Water Level Indicator

FOTH & VAN DYKE GROUNDWATER MONITORING FIELD FORM

Scope I.D.: 87K10 Site Name: KENNECOTT Personnel: MJH

NOVEMBER 87

<<========== Purging Phase ==========>>

WELL I.D.	DATE	TIME	DEPTH TO SWL (ft)	TOTAL DEPTH (ft)	LENGTH WATER COL(ft)	REQ GALS to PURGE 4 VOLS*	AMOUNT PURGED (gal)	DEPTH TO SWL AFTR PURG(ft)
1000	11/5/87		13.82	21.25	7.4	4.8	5	
1000P	11/5/87		14.09	56.65	42.6	27.8	7	DRY
1001	11/5/87		28.81	34.75	5.9	3.8	4	
1001G	11/5/87		29.68	53.50	23.8	15.5	16	
1001P	11/5/87		29.15	96.05	66.9	43.6	11	DRY
1002	11/6/87		13.98	18.10	4.1	2.7	1	DRY
1002G	11/6/87		14.15	53.70	39.6	25.8	26	
1003	11/5/87		34.71	42.00	7.3	4.8	5	
1003P	11/5/87		34.70	88.95	54.3	35.4	9	DRY
1004	11/5/87		17.54	23.65	6.1	4.0	4	
1004S	11/5/87		17.28	37.90	20.6	13.4	14	
1004P	11/5/87		19.84	88.80	69.0	45.0	11	DRY
1005	11/5/87		5.22	20.00	14.8	9.6	10	
1005G	11/5/87		5.85	52.20	46.4	30.2	36	
1005P	11/5/87		5.66	93.60	87.9	57.3	57	

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<<========== Sampling Phase ==========>>

DATE	TIME	pH	SPEC COND	TEMP (C)	COLOR BEFORE FILT	COLOR AFTER FILT	ODOR	TURB BEFORE FILT	TURB AFTER FILT	# OF FLTRS	VOL FLTRD (ml)
11/5		5.78	129	8	LT. BR.	CLEAR	NO	HIGH	No	4	3500
11/5		6.05	238	8	LT. BR.	CLEAR	NO	HIGH	No	12	3500
11/5		6.16	172	8	LT. BR.	CLEAR	NO	MOD	No	6	3500
11/5		5.97	168	8	LT. BR.	CLEAR	NO	HIGH	No	3	3500
11/5		6.21	232	8	FIZZ LT. BR.	CLEAR	NO	MOD	No	5	3500
11/6		6.40	292	8	LT. BR.	CLEAR	NO	HIGH	No	3	3500
11/6		6.32	252	8	LT. BR.	CLEAR	NO	HIGH	No	2	3500
11/5		6.00	131	8	LT BR.	CLEAR	NO	HIGH	No	5	3500
11/5		6.26	341	8	FIZZ CLOUDY	CLEAR	NO	SLIGHT	No	5	3500
11/5		5.74	125	8	LT. BR.	CLEAR	NO	V. HIGH	No	8	3500
11/5		6.06	149	8	LT. BR.	CLEAR	NO	MOD	No	2	3500
11/5		6.47	345	8	LT. BR.	CLEAR	NO	MOD	No	6	3500
11/5		5.60	816	8	LT. BR.	CLEAR	NO	V. HIGH	No	6	3500
11/5		6.35	330	8	V. LT. BR.	CLEAR	NO	MOD	No	2	3500
11/5		6.38	449	8	V. LT. BR.	CLEAR	NO	MOD	No	7	3500

Temp/Weather: 50° / RAIN

Other Remarks: * SPLIT SAMPLES WITH DNR

* Casing I.D. (inches) <=> Gallons per Foot to Get 4 Well Volumes

1" <=> 0.163 gal 1.25" <=> 0.255 gal 1.5" <=> 0.367 gal

(2" <=> 0.652 gal) 3" <=> 1.469 gal 4" <=> 2.610 gal

Equipment Used:

DEDICATED PVC BAILERS FOR PURGING AND SAMPLING

EVO DI WATER

Lakewood LCD pH/Cond. Meter #22990

Geotech 2.5 Liter Filter Tank

Well Wizard Water Level Indicator

3.6-B-2

FOTH & VAN DYKE GROUNDWATER MONITORING FIELD FORM

Scope I.D.: 87K10 Site Name: KENNECOTT Personnel: MJH

DECEMBER 87

<<========== Purging Phase ==========>>

WELL I.D.	DATE	TIME	DEPTH TO SWL (ft)	TOTAL DEPTH (ft)	LENGTH WATER COL(ft)	REQ GALS to PURGE 4 VOLS*	AMOUNT PURGED (gal)	DEPTH TO SWL AFTR PURG(ft)
1000	12/1/87		13.45	21.25	7.8	5.1	5	
1000P	12/1/87		13.60	56.65	43.1	28	7	DRY
1001	12/2/87		29.17	34.75	5.6	3.7	4	
1001G	12/2/87		30.04	53.56	23.5	15.3	15	
1001F	12/2/87		29.42	96.05	66.6	43.4	11	DRY
1002	12/1/87		14.05	18.10	4.1	2.7	1	DRY
1002G	12/1/87		14.10	53.70	39.6	25.8	26	
1003	12/1/87		34.88	42.00	7.1	4.6	5	
1003F	12/1/87		34.38	88.95	54.6	35.6	9	DRY
1004	12/1/87		17.32	23.65	6.3	4.1	4	
1004S	12/1/87		17.06	37.90	20.8	13.6	14	
1004P	12/1/87		19.66	88.80	69.14	45.1	11	DRY
1005	12/2/87		4.75	20.00	15.3	10.0	10	
1005G	12/2/87		5.44	52.20	46.8	30.5	31	
1005P	12/2/87		5.26	93.60	88.3	57.6	58	

<<========== Sampling Phase ==========>>

DATE	TIME	pH	SPEC COND	TEMP (C)	COLOR BEFORE FILT	COLOR AFTER FILT	ODOR	TURB BEFORE FILT	TURB AFTER FILT	# OF FLTRS	VOL FLTRD (ml)
12/1		5.70	117	8	LT.BR	CLEAR	NO	HIGH	No	4	3500
12/1		6.05	245	8	LT.BR	CLEAR	NO	HIGH	No	12	3500
12/2		6.45	132	8	LT.BR	CLEAR	NO	HIGH	No	6	3500
12/2		6.01	159	8	LT.BR	CLEAR	NO	MOD.	No	3	3500
12/1		6.25	238	8	√ LT.BR F.22	CLEAR	No	MOD	No	5	3500
12/1		6.00	238	10	LT.BR.	CLEAR	No	MOD.	No	3	3500
12/1		5.88	256	9	√ LT.BR	CLEAR	No	MOD.	No	2	3500
12/1		5.85	119	8	LT.BR	CLEAR	No	HIGH	No	5	3500
12/1		6.15	348	8	√ LT.BR F.22	CLEAR	No	MOD.	No	5	3500
12/1		5.70	109	8	LT.BR.	CLEAR	No	V.HIGH	No	8	3500
12/1		5.78	151	8	√ LT.BR	CLEAR	No	SLIGHT	No	2	3500
12/1		6.23	313	8	LT.BR.	CLEAR	No	HIGH	No	6	3500
12/2		5.79	822	8	LT.BR.	CLEAR	No	V.HIGH	No	6	3500
12/2		6.15	321	8	√ LT.BR	CLEAR	No	MOD.	No	2	3500
12/2		6.22	460	8	√ LT.BR	CLEAR	No	HIGH	No	7	3500

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Temp/Weather: 25° / LT. SNOW

Other Remarks:

* Casing I.D. (inches) <=> Gallons per Foot to Get 4 Well Volumes

1" <=> 0.163 gal 1.25" <=> 0.255 gal 1.5" <=> 0.367 gal

2" <=> 0.652 gal 3" <=> 1.469 gal 4" <=> 2.610 gal

Equipment Used:

DEDICATED PVC BAILERS

EVD D.I. WATER

Lakewood LCD pH/Cond. Meter A22948

Geotech 2.5 Liter Filter Tank

Well Wizard Water Level Indicator

FOTH & VAN DYKE GROUNDWATER MONITORING FIELD FORM

Scope I.D.: 87K10 JANUARY 88 Site Name: KENNECOTT Personnel: MJP

<<========== Purging Phase ==========>>

WELL I.D.	DATE	TIME	DEPTH TO SWL (ft)	TOTAL DEPTH (ft)	LENGTH WATER COL(ft)	REQ GALS to PURGE 4 VOLS*	AMOUNT PURGED (gal)	DEPTH TO SWL AFTR PURG(ft)
1000	1/7/88		12.30	21.25	9.0	5.9	6	
1000P	1/7/88		12.32	56.65	44.3	28.9	7	DRY
1001	1/7/88		29.84	34.75	4.9	3.2	4	
1001G	1/7/88		30.62	53.50	22.9	14.9	15	
1001F	1/7/88		30.08	96.05	66.0	43.0	11	DRY
1002	1/6/88		13.79	18.10	4.3	2.8	1	DRY
1002G	1/6/88		13.82	53.70	39.9	26.0	26	
* 1003	1/6/88		35.04	42.00	7.0	4.6	5	
* 1003F	1/6/88		35.05	88.95	53.9	35.1	9	DRY
* 1004	1/6/88		17.49	23.65	6.2	4.0	4	
* 1004S	1/6/88		17.22	37.90	20.7	13.5	14	
* 1004P	1/6/88		19.81	88.80	69.0	45.0	11	DRY
* 1005	1/6/88		5.79	20.00	14.2	9.3	10	
* 1005G	1/6/88		6.01	52.20	46.2	30.1	30	
* 1005P	1/6/88		5.71	93.60	87.9	57.3	57	

<<========== Sampling Phase ==========>>

DATE	TIME	pH	SPEC COND	TEMP (C)	COLOR BEFORE FILT	COLOR AFTER FILT	ODOR	TURB BEFORE FILT	TURB AFTER FILT	# OF FLTRS	VOL FLTRD (ml)
		5.86	98	6	LT. BR.	CLEAR	NO	HIGH	NO	4	3500
		5.96	235	7	V. LT. BR	CLEAR	NO	MOD	NO	12	3500
		6.26	149	6	LT. BR	CLEAR	NO	HIGH	NO	6	3500
		6.24	173	6	V. LT. BR	CLEAR	NO	MOD	NO	3	3500
		6.65	266	6	FIZZ CLOUDY	CLEAR	NO	SLIGHT	NO	5	3500
		6.27	233	7	LT. BR.	CLEAR	NO	MOD	NO	3	3500
		5.95	261	6	V. LT. BR.	CLEAR	NO	SLIGHT	NO	2	3500
		6.24	138	7	LT. BR.	CLEAR	NO	V. HIGH	NO	5	3500
		6.64	339	6	FIZZ CLOUDY	CLEAR	NO	V. SLIGHT	NO	5	3500
		6.00	107	7	LT. BR.	CLEAR	NO	V. HIGH	NO	8	3500
		6.10	165	6	LT. BR.	CLEAR	NO	MOD	NO	2	3500
		6.65	303	7	V. LT. BR	CLEAR	NO	SLIGHT	NO	6	3500
		5.60	787	6	LT. BR.	CLEAR	NO	HIGH	NO	6	3500
		6.72	313	6	V. LT. BR	CLEAR	NO	MOD	NO	2	3500
		6.89	412	7	V. LT. BR	CLEAR	NO	SLIGHT	NO	7	3500

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Temp/Weather: -15°/CLEAR-WINDY

Other Remarks: * DNR SPLIT SAMPLES

* Casing I.D. (inches) <=> Gallons per Foot to Get 4 Well Volumes

1" <=> 0.163 gal 1.25" <=> 0.255 gal 1.5" <=> 0.367 gal

2" <=> 0.652 gal 3" <=> 1.469 gal 4" <=> 2.610 gal

Equipment Used: DEDICATED PVC BAILERS FUD D.I. WATER

Lakewood LCD pH/Cond. Meter #22993

Geotech 2.5 Liter Filter Tank

Well Wizard Water Level Indicator

FOTH & VAN DYKE GROUNDWATER MONITORING FIELD FORM

Scope I.D.: 87K10 Site Name: KENNECOTT Personnel: MJH

FEBRUARY 88

<<========== Purging Phase ==========>>

WELL I.D.	DATE	TIME	DEPTH TO SWL (ft)	TOTAL DEPTH (ft)	LENGTH WATER COL(ft)	REQ GALS to PURGE & VOLS*	AMOUNT PURGED (gal)	DEPTH TO SWL AFTR PURG(ft)
1000	2/2/88	11:10	12.02	21.25	9.23	6.0	6	
1000P	2/2/88	11:30	12.74	56.65	43.91	28.6	7	DRY
1001	2/2/88	12:15	30.10	34.75	4.65	3.0	3	
1001G	2/2/88	12:25	30.91	53.50	22.59	14.7	15	
1001F	2/2/88	12:45	30.41	96.05	65.64	42.80	11	DRY
1002	2/3/88	1:36	13.53	18.10	4.57	2.99	1	DRY
1002G	2/3/88	1:45	13.55	53.70	40.15	26.18	26	
1003	2/2/88	8:05	35.25	42.00	6.75	4.4	5	
1003F	2/2/88	8:15	35.24	89.95	53.71	35.0	9	DRY
1004	2/3/88	11:10	17.77	23.65	5.88	3.8	4	
1004S	2/3/88	11:25	17.48	37.90	20.42	13.3	13.5	
1004P	2/3/88	11:45	20.08	88.80	68.72	44.8	12	DRY
1005	2/3/88	12:00	6.81	20.00	13.19	8.6	9	
1005G	2/3/88	12:25	6.81	52.20	45.39	29.6	30	
1005P	2/3/88	12:40	6.53	93.60	87.07	56.8	57	

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<<========== Sampling Phase ==========>>

DATE	TIME	pH	SPEC COND	TEMP (C)	COLOR BEFORE FILT	COLOR AFTER FILT	ODOR	TURB BEFORE FILT	TURB AFTER FILT	# OF FLTRS	VOL FLTRD (ml)
2/3	8:15	5.50	93	5	LT BR.	CLEAR	NO	HIGH	NO	5	3500
2/3	8:25	6.10	247	7	CLOUDY	CLEAR	NO	SLIGHT	NO	7	3500
2/3	9:40	6.13	143	7	LT BR	CLEAR	NO	HIGH	NO	10	3500
2/3	9:50	6.06	169	7	V.LT BR	CLEAR	NO	MOD.	NO	4	3500
2/3	10:05	6.31	257	7	FIZZ CLOUDY	CLEAR	NO	SLIGHT	NO	2	3500
2/3	1:30	6.21	226	7	LT.BR	CLEAR	NO	MOD.	NO	3	3500
2/3	1:50	5.97	261	7	V.LT.BR	CLEAR	NO	SLIGHT	NO	3	3500
2/3	12:40	6.00	127	7	LT. BR	CLEAR	NO	HIGH	NO	5	3500
2/3	12:50	6.45	366	7	FIZZ CLOUDY	CLEAR	NO	SLIGHT	NO	2	3500
2/3	12:10	5.80	130	7	LT BR	CLEAR	NO	V.HIGH	NO	6	3500
2/3	12:20	5.58	148	7	V.LT BR	CLEAR	NO	MOD.	NO	3	3500
2/3	12:30	6.60	348	7	V.LT BR	CLEAR	NO	SLHT.	NO	2	3500
2/3	1:10	5.51	867	7	LT. BR	CLEAR	NO	V. HIGH	NO	5	3500
2/3	1:20	6.44	360	7	V.LT BR	CLEAR	SLIGHT	MOD.	NO	3	3500
2/3	1:30	6.53	466	7	V.LT BR	CLEAR	NO	MOD.	NO	5	3500

Temp/Weather: 5°/CLEAR

Other Remarks: FB-1 TAKEN @ 1:45 BETWEEN 1004P AND 1005G

* Casing I.D. (inches) <=> Gallons per Foot to Get 4 Well Volumes

1" <=> 0.163 gal 1.25" <=> 0.255 gal 1.5" <=> 0.367 gal

2" <=> 0.652 gal 3" <=> 1.469 gal 4" <=> 2.610 gal

Equipment Used:

DEDICATED PVC BAILERS

FVD D.I WATER

Lakewood LCD pH/Cond. Meter

Geotech 2.5 Liter Filter Tank

Well Wizard Water Level Indicator

FOTH & VAN DYKE GROUNDWATER MONITORING FIELD FORM

Scope I.D.: 87K10 Site Name: KENNECOTT Personnel: MJH

MARCH

<<========== Purging Phase ==========>>

WELL I.D.	DATE	TIME	DEPTH TO SWL (ft)	TOTAL DEPTH (ft)	LENGTH WATER COL(ft)	REQ GALS to PURGE 4 VOLS*	AMOUNT PURGED (gal)	DEPTH TO SWL AFTR PURG(ft)
1000	3/2/88	12:15	12.86	21.25				12.95
1000P	3/1/88	2:45	12.82	56.65				DRY
1001	3/2/88	2:00	30.35	54.75				30.40
1001G	3/2/88	2:15	31.15	53.50				3[illegible]
1001F	3/1/88	3:30	30.56	96.05				DRY
1002	3/2/88	8:00	13.71	18.10				
1002G	3/2/88	8:15	13.76	53.70				
1003	3/2/88	[illegible]	35.56	42.00	6.44			46.0
1003F	3/1/88	1:30	35.42	88.95				DRY
1004	3/2/88	9:30	17.90	23.65				
1004S	3/2/88	9:50	17.69	37.75				
1004P	3/1/88	1:30	20.38	88.80				DRY
1005	3/2/88	8:20	7.13	20.00				
1005G	3/2/88	8:35	7.20	52.20				
1005P	3/2/88	9:00	6.81	93.60				

<<========== Sampling Phase ==========>>

DATE	TIME	pH	SPEC COND	TEMP (C)	COLOR BEFORE FILT	COLOR AFTER FILT	ODOR	TURB BEFORE FILT	TURB AFTER FILT	# OF FLTRS	VOL FLTRD (ml)
3/2/88	12:50	5.54	105	6	LT.BR	CLEAR	NO	V.HIGH	NO	5	3500
3/2/88	1:15	5.82	225	7	CLOUDY	CLEAR	NO	MOD	NO	7	3500
3/2/88	2:30	6.08	135	7	LT.BR	CLEAR	NO	V.HIGH	NO	10	3500
3/2/88	3:00	5.78	162	7	LT.BR	CLEAR	NO	MOD	NO	4	3500
3/2/88	3:20	6.43	250	7	CLOUDY	CLEAR	NO	SLIGHT	NO	2	3500
3/2/88	8:30	6.37	194	7	LT.BR	CLEAR	NO	HIGH	NO	4	3500
3/2/88	8:45	6.06	242	7	V.LT.BR	CLEAR	NO	MOD	NO	2	3500
3/2/88	10:15	6.00	138	7	LT.BR	CLEAR	NO	HIGH	NO	6	3500
3/2/88	1825	6.50	386	4	CLOUDY	CLEAR	NO	MOD	NO	4	3500
3/2/88	10:00	5.74	125	7	LT.BR	CLEAR	NO	V.HIGH	NO	6	3500
3/2/88	10:15	5.79	148	7	LT.BR	CLEAR	NO	HIGH	NO	3	3500
3/2/88	10:30	6.81	335	7	V.LT.BR	CLEAR	NO	MOD	NO	2	3500
3/2/88	9:00	5.25	980	5	LT.BR	CLEAR	NO	V.HIGH	NO	6	3500
3/2/88	9:10	6.25	348	5	V.LT.BR	CLEAR	NO	MOD	NO	4	3500
3/2/88	9:20	6.47	464	6	V.LT.BR	CLEAR	NO	MOD	NO	4	3500

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Temp/Weather: 32° PARTLY CLOUDY

Other Remarks:

SOIL POINT BENT FROM ICE HEAVING

ICE PRESENT AT TOP OF MW-1000

* Casing I.D. (inches) <=> Gallons per Foot to Get 4 Well Volumes

1" <=> 0.163 gal 1.25" <=> 0.255 gal 1.5" <=> 0.367 gal

2" <=> 0.652 gal 3" <=> 1.469 gal 4" <=> 2.610 gal

Equipment Used:

PVC DEDICATED BAILERS

Lakewood LCD pH/Cond. Meter #25479

Geotech 2.5 Liter Filter Tank

Well Wizard Water Level Indicator

FOTH & VAN DYKE GROUNDWATER MONITORING FIELD FORM

Scope I.D.: 87K10 Site Name: KENNECOTT Personnel: M J H.

<<========== Purging Phase ==========>>

	WELL I.D.	DATE	TIME	DEPTH TO SWL (ft)	TOTAL DEPTH (ft)	LENGTH WATER COL(ft)	REQ GALS to PURGE 4 VOLS*	AMOUNT PURGED (gal)	DEPTH TO SWL AFTR PURG(ft)
	1000			10.86	21.25				
	1000P			11.07	56.65				DRY
	1001			30.49	34.75				
	1001G			31.10	53.50				
	1001F			30.52	91.05				DRY
*	1002	4/7/88	10:25	13.12	19.10				
*	1002G	4/7/88	10:36	13.17	53.70				
*	1003	4/7/88	10:10	35.21	42.00				
*	1003F	4/7/88	10:30	35.25	88.95				DRY
	1004			16.51	23.65				
	1004S			16.21	37.70				
	1004P			19.05	58.80				DRY
D.O.= 0.5 *	1005			5.01	20.00				
D.O.= 0.8 *	1005G			5.68	52.20				
D.O.= 0.2 *	1005P			5.60	93.60				
D.O.= .07	1006S			17.66	37.9				
D.O.= .02	1006G			15.89	54.6				DRY
	1006			DRY	12.10				

<<========== Sampling Phase ==========>>

DATE	TIME	pH	SPEC COND	TEMP (C)	COLOR BEFORE FILT	COLOR AFTER FILT	ODOR	TURB BEFORE FILT	TURB AFTER FILT	# OF FLTRS	VOL FLTRD (ml)
4/7/88	7:00	6.31	84	10	LT.BR	CLEAR	NO	HIGH	NO	3	3500
4/7/88	7:25	6.41	199	11	CLOUDY	CLEAR	NO	SLIGHT	NO	2	3500
4/7/88	7:50	6.48	120	11	LT.BR.	CLEAR	NO	HIGH	NO	7	3500
4/7/88	8:15	6.54	145	10	LT.BR.	CLEAR	NO	HIGH	NO	3	3500
4/7/88	8:45	6.90	229	10	CLOUDY	CLEAR	NO	MOD.	NO	2	3500
4/7/88	10:35	6.68	180	9°C	LT.BR.	CLEAR	NO	SLIGHT	NO	2	3500
4/7/88	10:50	6.38	268	9°C	LT.BR.	CLEAR	NO	SLIGHT	NO	2	3500
4/7/88	11:35	6.39	137	10°	LT.BR.	CLEAR	NO	V.HIGH	NO	7	3500
4/7/88	11:45	6.87	365	10°	CLOUDY	CLEAR	NO	FIZZ SLIGHT	NO	2	3500
4/7/88	9:05	6.15	105	10	LT.BR	CLEAR	NO	HIGH	NO	2	3500
4/7/88	9:15	6.77	124	10	CLOUDY	CLEAR	NO	HIGH	NO	2	3500
4/7/88	10:10	7.38	315	9	CLOUDY	CLEAR	NO	CLOUDY	NO	2	3500
4/7/88	12:05	5.91	868	9°C	LT.BR	CLEAR	NO	V.HIGH	NO	7	3500
4/7/88	12:25	6.90	344	9°C	CLOUDY	CLEAR	SLIGHT	SLIGHT	NO	3	3500
4/7/88	1:00	7.14	428	9°C	CLOUDY	CLEAR	SLIGHT	SLIGHT	NO	3	3500
4/7/88	2:13	6.92	284	9°C	LT.BR.	CLEAR	NO	MOD.	NO	3	3500
4/7/88	2:30	7.64	300	9°C	LT.BR.	CLEAR	NO	HIGH	NO	3	3500

Temp/Weather: CLEAR 65

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Other Remarks: FB-1 TAKEN after 1002 @ 11:20

* Casing I.D. (inches) <=> Gallons per Foot to Get 4 Well Volumes

1" <=> 0.163 gal 1.25" <=> 0.255 gal 1.5" <=> 0.367 gal

2" <=> 0.652 gal 3" <=> 1.469 gal 4" <=> 2.610 gal

Equipment Used:

DEDICATED BAILERS

Lakewood LCD pH/Cond. Meter

Geotech 2.5 Liter Filter Tank

Well Wizard Water Level Indicator

3.6-B-7

FOTH & VAN DYKE GROUNDWATER MONITORING FIELD FORM

Scope I.D.: 87K10 Site Name: KENNECOTT Personnel: M.J.H.

<<========== Purging Phase ==========>>

WELL I.D.	DATE	TIME	DEPTH TO SWL (ft)	TOTAL DEPTH (ft)	LENGTH WATER COL(ft)	REQ GALS to PURGE 4 VOLS*	AMOUNT PURGED (gal)	DEPTH TO SWL AFTR PURG(ft)
1000	5/4/88	9:30	12.36	21.25				
1000P	5/4/88	8:30	13.82	56.65				DRY
1001	5/4/88	8:40	30.57	34.75				
1001G	5/4/88	8:45	31.13	53.50				
1001P	5/3/88	3:30	30.66	96.05				DRY
1002	5/3/88	4:55	13.45	18.10				
1002G	5/3/88	5:15	13.38	53.70				
1003	5/3/88	3:00	34.85	42.00				
1003P	5/3/88	1:30	34.85	88.95				DRY
1004	5/3/88	11:55	16.57	23.65				
1004S	5/3/88	11:35	16.31	37.70				
1004P	5/3/88	2:30	19.00	98.80				DRY
1005	5/3/88	4:10	4.69	20.00				
1005G	5/3/88	3:50	5.26	52.20				
1005P	5/3/88	2:50	5.08	93.60				

<<========== Sampling Phase ==========>>

DATE	TIME	pH	SPEC COND	TEMP (C)	COLOR BEFORE FILT	COLOR AFTER FILT	ODOR	TURB BEFORE FILT	TURB AFTER FILT	# OF FLTRS	VOL FLTRD (ml)
5/4/88	10:10	6.55	88	9°	LT. BR	CLEAR	NO	MOD	NO		3100
5/4/88	10:20	6.52	251	9°C	LT. BR.	CLEAR	NO	HIGH	NO		3600
5/4/88	8:50	6.56	128	9°C	LT. BR.	CLEAR	NO	V. HIGH	NO		3000
5/4/88	8:30	6.68	155	9°C	V. LT. BR	CLEAR	NO	MOD.	NO		3100
5/4/88	8:10	6.81	245	9°C	V. LT. BR	CLEAR	NO	SLIGHT	NO		3200
5/4/88	5:10	7.01	152	9°C	V. LT. BR	CLEAR	NO	MOD	NO		3016
5/4/88	5:40	6.59	241	9°C	V. LT. BR	CLEAR	NO	MOD.	NO		3000
5/4/88	3:10	6.52	122	9°C	LT. BR.	CLEAR	NO	HIGH	NO		3060
5/4/88	2:50	6.94	369	9°	FAIRLY CLOUDY	CLEAR	NO	SLIGHT	NO		3000
5/4/88	12:10	6.33	128	9°C	LT. BR.	CLEAR	NO	V. HIGH	NO		3000
5/4/88	12:20	6.35	144	9°C	V. LT. BR	CLEAR	NO	MOD	NO		3001
5/4/88	11:25	7.10	354	9°C	LT. BR	CLEAR	NO	MOD	NO		3000
5/4/88	4:20	5.96	954	9°C	LT. BR	CLEAR	NO	HIGH	NO		3000
5/4/88	4:30	7.05	371	9°C	FAIRLY LT. YELL.	V. LT. YELL.	SLIGHT	MOD	NO		3100
5/4/88	4:10	7.07	452	9°C	CLOUDY	V. LT. BR	SLIGHT	MOD	NO		3000

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Temp/Weather: CLEAR 75°

Other Remarks: DNR ARRIVED @ 9:30

* Casing I.D. (inches) <=> Gallons per Foot to Get 4 Well Volumes

1" <=> 0.163 gal 1.25" <=> 0.255 gal 1.5" <=> 0.367 gal

2" <=> 0.652 gal 3" <=> 1.469 gal 4" <=> 2.610 gal

Equipment Used:

-VD D.I. WATER

-DEDICATED BAILERS

Lakewood LCD pH/Cond. Meter #22996

Geotech 2.5 Liter Filter Tank

Well Wizard Water Level Indicator

3.6-B-8

FOTH & VAN DYKE GROUNDWATER MONITORING FIELD FORM

Scope I.D.: 87K10 Site Name: KENNECOTT Personnel: M.J.H.

<<========== Purging Phase ==========>>

WELL I.D.	DATE	TIME	DEPTH TO SWL (ft)	TOTAL DEPTH (ft)	LENGTH WATER COL(ft)	REQ GALS to PURGE 4 VOLS*	AMOUNT PURGED (gal)	DEPTH TO SWL AFTR PURG(ft)
1000	6/2/88		13.41	21.25				
1000P	6/1/88	13.64	[illegible]	56.65				DRY
1001	6/2/88		30.70	34.75				
1001G	6/2/88		31.33	53.50				
1001F	6/1/88		30.85	[illegible]				DRY
1002	6/1/88		13.81	18.10				
1002G	6/1/88		13.97	53.75				
1003	6/2/88		34.93	42.00				
1003F	6/1/88		34.97	88.95				DRY
1004	6/2/88		17.18	23.65				
1004S	6/2/88		16.92	37.90				
1004P	6/1/88		19.60	88.80				DRY
1005	6/2/88		5.46	20.00				
1005G	6/2/88		5.73	52.20				
1005P	6/2/88		5.44	93.60				
1006S	6/2/88		17.36	54.00				
1006G	6/2/88		15.74	34.90				DRY

<<========== Sampling Phase ==========>>

DATE	TIME	pH	SPEC COND	TEMP (C)	COLOR BEFORE FILT	COLOR AFTER FILT	ODOR	TURB BEFORE FILT	TURB AFTER FILT	# OF FLTRS	VOL FLTRD (ml)
6/2/88	10:20	6.60	84	9°C	LT. BR.		NO	HIGH			2500
6/2/88	10:10	6.59	223	9°C	CLOUDY		NO	SLIGHT			2500
6/2/88	9:35	6.81	121	9°C	LT. BR.		NO	V. HIGH			2500
6/2/88	9:40	6.78	162	9°C	LT. Br.		NO	High			2500
6/2/88	9:30	7.03	263	9°C	CLOUDY		NO	SLIGHT			2500
6/2/88	1:20p	6.76	144	9°C	LT. Br.		NO	Slight			
6/2/88	1:05p	6.61	253	9°C	LT. Yellow		NO	Slight			
6/2/88	10:55	6.73	109	9°	LT. BR.		NO	V. HIGH			
6/2/88	10:45	6.87	396	9°	CLOUDY		NO	SLIGHT			
6/2/88	10:50	6.33	133	9°C	LT. BR.		NO	HIGH			2500
6/2/88	10:35	6.47	150	9°C	V. LT. BR.		NO	SLIGHT			2500
[illegible]	10:25	7.32	334	9°C	CLOUDY		NO	SLIGHT			2500
6/2/88	8:35	6.05	924	9°C	LT. BR.		NO	V. HIGH		2	2500
6/2/88	8:50	7.04	362	9°C	V. LT. YEL.		NO	V. SLIGHT		2	
6/2/88	9:00	7.01	473	9°C	V. LT. BR.		NO	V. SLIGHT		1	2500
6/2/88	8:20	7.01	2.89	9°C	LT. BR.		NO	SLIGHT		2	2500
6/2/88	8:00	7.06	300	9°C	LT. BR.		NO	MOD		1	2500

Temp/Weather: Partly Cloudy 75'

Other Remarks:

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* Casing I.D. (inches) <=> Gallons per Foot to Get 4 Well Volumes

1" <=> 0.163 gal 1.25" <=> 0.255 gal 1.5" <=> 0.367 gal

2" <=> 0.652 gal 3" <=> 1.469 gal 4" <=> 2.610 gal

Equipment Used:

EVO DI. WATER

PIC DEDICATED BAILER

Lakewood LCD pH/Cond. Meter 22990

Geotech 2.5 Liter Filter Tank

Well Wizard Water Level Indicator

FOTH & VAN DYKE GROUNDWATER MONITORING FIELD FORM

Scope I.D.: _____ Site Name: KENNECOTT Personnel: M.V.H. C.S.W.

<<========== Purging Phase ==========>>

WELL I.D.	DATE	TIME	DEPTH TO SWL (ft)	TOTAL DEPTH (ft)	LENGTH WATER COL(ft)	REQ GALS to PURGE 4 VOLS*	AMOUNT PURGED (gal)	DEPTH TO SWL AFTR PURG(ft)
1002			14.45					DRY
1002G			14.51					
1000			14.55					
1000P			14.01					DRY
1001			30.95					DRY
1001G			31.58					
1001P			31.02					DRY
1003			35.27					DRY
1003P			35.29					DRY
1004			17.94					
1004S			17.72					
1004P			20.46					1
1005P			6.33					DRY
1005G			6.76					
1005			6.84					

<<========== Sampling Phase ==========>>

DATE	TIME	PH	SPEC (COND)	TEMP (C)	COLOR BEFORE FILT	COLOR AFTER FILT	ODOR	TURB BEFORE FILT	TURB AFTER FILT	# OF FLTRS	VOL FLTRD (ml)
7/6/88	9:00	6.50	140	9°	LT. BR		NO	MED			
7/6/88	9:10	6.40	236	9°	V. LT BR		NO	MOD.			
7/6/88	10:50	6.84	88	9°	LT. BR.		NO	HIGH			
7/6/88	10:40	6.34	209	9°C	CLOUDY		NO	MOD			
7/6/88	15:05	6.57	113	9°	LT. BR		NO	HIGH			
7/6/88	9:50	6.61	162	9°C	LT BR.		NO	MOD			
7/6/88	9:25	6.80	235	9°	CLOUDY		SLIGHT	SLIGHT			
7/6/88	11:50	6.21	111	9°	LT. BR		NO	HIGH			
7/6/88	1:15	7.05	338	9°C	CLOUDY		NO	MOD			
7/6/88	11:40	6.23	110	9°	LT. BR		NO	HIGH			
7/6/88	11:30	6.39	146	9°	LT BR.		NO	MOD			
7/6/88	11:15	7.22	367	9°	CLOUDY		NO	SLIGHT			
7/6/88	8:30	5.80	876	9°C	LT. BR.		NO	HIGH			
7/6/88	8:10	6.80	355	9°C	CLOUDY		SLIGHT	SLIGHT			
7/6/88	8:40	7.01	461	9°C	FEW CLOUDS		SLIGHT	SLIGHT			

Temp/Weather: 95 PARTLY CLOUDY

Other Remarks:

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Casing I.D. (inches) <=> Gallons per Foot to Get 4 Well Volumes

1" <=> 0.163 gal 1.25" <=> 0.255 gal 1.5" <=> 0.367 gal

2" <=> 0.652 gal 3" <=> 1.469 gal 4" <=> 2.610 gal

Equipment Used:

DED. PVC BAILERS

TEFLON

Lakewood LCD pH/Cond. Meter 22907

Geotech 2.5 Liter Filter Tank

Well Wizard Water Level Indicator

3.6-B-10

FOTH & VAN DYKE GROUNDWATER MONITORING FIELD FORM

Scope I.D.: 87K10 Site Name: KENNECOTT Personnel: M.J.H.

<<========== Purging Phase ==========>>

WELL I.D.	DATE	TIME	DEPTH TO SWL (ft)	TOTAL DEPTH (ft)	LENGTH WATER COL(ft)	REQ GALS to PURGE 4 VOLS*	AMOUNT PURGED (gal)	DEPTH TO SWL AFTR PURG(ft)
1000			13.92	21.25				
1000P			13.74	56.65				
1001			31.32	54.75				
1001G			31.75	53.50				
1001F			31.22	96.05				
1002			13.95	18.10				
1002G			14.07	53.70				
1003			35.57	42.00				
1003F			35.58	88.95				
1004			18.27	23.65				
1004S			17.98	37.90				
1004P			20.82	88.80				
1005			7.04	20.00				
1005G			7.18	52.20				
1005P			6.86	93.60				
1006S			18.22					
1006G			16.64					
1006			DRY					

<<========== Sampling Phase ==========>>

DATE	TIME	pH	SPEC COND	TEMP (C)	COLOR BEFORE FILT	COLOR AFTER FILT	ODOR	TURB BEFORE FILT	TURB AFTER FILT	# OF FLTRS	VOL FLTRD (ml)
8/9/88	12:20 A	6.01	84	12	lt. brown		none	high			
8/10/88	11:50 A	6.02	194	12	clear		no	slight			
8/9/88	11:20 A	6.19	111	12	lt. brown		no	High			
8/9/88	10:30 A	6.05	161	12	lt. brown		NO	MOD			
8/10/88	10:50 A	6.46	212	12	clear		no	slight			
8/16/88	9:00A	6.19	137	12	LT. BR.		NO	MOD			
8/16/88	9:15A	6.14	241	12	LT. BR		NO	MOD			
8/10/88	1:00P	6.18	116	10°	LT brown		no	high			
8/10/88	1:30P	7.14	327	10°	clear		no	slight			
8/9/88	2:00 P	6.20	106	9	lt. brown		none	high			
8/10/88	2:30 P	6.22	117	10	v. light brown		none	slight			
8/9/88	3:00P	6.78	315	10	light brown		none	high			
8/9/88	4:00 P	6.10	825	9	lt brown		none	high			
8/10/88	4:45P	7.01	333	10	lt. gray		none	slight			
8/10/88	6:00P	6.99	423	9	cloudy		none	slight			
8/10/88	9:35	6.54	252	4	lt. brown		NO	MOD			
8/10/88	9:50	6.67	282		lt. brown		NO	MOD			

Temp/Weather:

Other Remarks:

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* Casing I.D. (inches) <=> Gallons per Foot to Get 4 Well Volumes

1" <=> 0.163 gal 1.25" <=> 0.255 gal 1.5" <=> 0.367 gal

2" <=> 0.652 gal 3" <=> 1.469 gal 4" <=> 2.610 gal

Equipment Used:

22990

Lakewood LCD pH/Cond. Meter
Geotech 2.5 Liter Filter Tank
Well Wizard Water Level Indicator

3.6-B-11

FOTH & VAN DYKE GROUNDWATER MONITORING FIELD FORM

Scope I.D.: 87K10 Site Name: KENNECOTT Personnel: M. J. H.

<<========== Purging Phase ==========>>

WELL I.D.	DATE	TIME	DEPTH TO SWL (ft)	TOTAL DEPTH (ft)	LENGTH WATER COL(ft)	REQ GALS to PURGE 4 VOLS*	AMOUNT PURGED (gal)	DEPTH TO SWL AFTR PURG(ft)
1000	9/8/88		13.96	21.25	7.29	4.7	6	
1000P	9/8/88		13.04	56.65	43.61	28.4	30	
1001	9/8/88		32.38	34.75	2.19	1.4	3	
1001G	9/8/88		31.86	53.50	21.64	14.1	16	
1001F	9/8/88		31.35	96.05	64.70	42.2	45	
1002	9/8/88		14.90	18.10	3.70	2.4	4	
1002G	9/8/88		19.51	53.70	39.19	25.5	27	
1003	9/8/88		35.67	42.00	6.33	4.1	6	
1003F	9/8/88		35.72	88.95	53.23	34.7	36	
1004	9/8/88		18.50	23.65	5.15	3.4	6	
1004S	9/8/88		18.28	37.90	19.62	12.8	15	
1004P	9/8/88		21.08	88.80	67.72	44.2	46	
1005	9/8/88		7.40	20.00	12.60	8.2	10	
1005G	9/8/88		7.51	52.20	44.69	29.1	32	
1005P	9/8/88		7.16	93.60	86.44	56.4	60	

<<========== Sampling Phase ==========>>

DATE	TIME	pH	SPEC COND	TEMP (C)	COLOR BEFORE FILT	COLOR AFTER FILT	ODOR	TURB BEFORE FILT	TURB AFTER FILT	# OF FLTRS	VOL FLTRD (ml)
9/8/88	4:00	5.72	103	9	LT BR	clear	NO	High	NO	3	2500
9/8/88	4:20	6.27	207	9	Cloudy	clear	NO	MOD	NO	2	2500
9/8/88	8:45	6.33	143	9	LT BR	clear	NO	High	NO	7	2500
9/8/88	8:30	6.37	199	8	LT BR	clear	NO	MOD	NO	2	2500
9/8/88	8:15	6.67	244	8	Cloudy	clear	NO	Slight	NO	3	2500
9/8/88	2:20	6.26	166	11	LT BR	clear	NO	MOD	NO	4	2500
9/8/88	2:30	6.21	233	10	V LT BR	clear	NO	Slight	NO	2	2500
9/8/88	3:00	6.11	116	9	LT BR	clear	NO	High	NO	5	2500
9/8/88	3:20	7.00	363	9	Cloudy	clear	Slight	MOD	NO	2	2500
9/8/88	10:00	5.87	138	8	LT BR	clear	NO	High	NO	5	2500
9/8/88	10:10	6.05	159	8	V LT BR	clear	NO	MOD	NO	3	2500
9/8/88	11:07	6.90	360	8	Cloudy	clear	NO	MOD	NO	3	2500
9/8/88	12:15	5.58	842	10	LT BR	clear	NO	HIGH	NO	5	2500
9/8/88	12:05	6.66	411	10	V LT BR	V LT YELLOW	Slight	MOD	NO	4	2500
9/8/88	11:55	6.99	498	9	Cloudy	V LT YELLOW	MOD	High	NO	2	2500

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Temp/Weather:

CLOUDY 70°

Other Remarks: MW-1005P MILKY LIKE BENTONITE
BAILERS AND ROPE IN G AND P WELLS
TURNING BLACK
BAILER AND ROPE IN 1005 TURNING ORANGE

* Casing I.D. (inches) <=> Gallons per Foot to Get 4 Well Volumes

1" <=> 0.163 gal 1.25" <=> 0.255 gal 1.5" <=> 0.367 gal

(2") <=> 0.652 gal 3" <=> 1.469 gal 4" <=> 2.610 gal

Equipment Used:

Lakewood LCD pH/Cond. Meter 22990
Geotech 2.5 Liter Filter Tank
Well Wizard Water Level Indicator

3.6-B-12

APPENDIX 3.6-C

Permeability Appendix - Bail/Packer/Pump Tests

Subappendix

- Estimate of pit inflow

- Single well aquifer response tests

  - Methods
  - Results - till
  - Results - glacial fluvial
  - Results - sandstone
  - Results - Precambrian

- Pump tests

  - TW-K1
  - TW-K2
  - TW-K3
  - TW-K4
  - TW-K5R
  - TW-K17B

- Packer tests in Precambrian angle borings

Single Well Aquifer Response Tests

Methods

PIEZOMETER
BAIL TEST METHODOLOGY

Each bail test was conducted by initially putting a pressure transducer, with LCD readout in feet, into a well at a depth below the static water level. After recording the resultant (usually greater than 10.0 feet) initial starting water level (H), a six foot long bailer was lowered into the well and then removed in order to lower the water level in the well. This minimum water level reading (H_o) was recorded. At the instant this minimum was reached (a few seconds to allow for water level stabilization), a stop watch was started and increasing water level measurements (h) with time (t) were recorded.

Also noted for the purposes of data evaluation were the well casing diameter (r), the sand pack radius (R), and the sand pack length (L).

The analytical methodology used to evaluate these data is based upon theory presented by Freeze and Cherry*. The formula for hydraulic conductivity (K) is:

$$K = \frac{r^2 \ln(L/R)}{2LT_o}$$

The key variable in this equation is T_o, the basic time lag. T_o is derived by plotting the natural logarithm of the residual head ratio (RHR - the ratio of [H-h], the difference between the increasing water level and the starting water level, to [$H-H_o$], the difference between the minimum drop in water level and the starting water level), against the time (t) at which the head measurement (h) was taken. On semi-log paper these points plot as a straight line. The slope of this line is used to determine the time (t) at which ln(RHR) is -1. This time value is T_o, which is then used in the above equation to calculate the value of hydraulic conductivity for the test.

This procedure was used in all wells where the static groundwater elevation was above the top elevation of the sand pack.

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*Freeze, R. A., and J. A. Cherry. 1979. Groundwater. Prentice-Hall, Inc., Englewood Cliffs, New Jersey, pp. 340-341.

AQUIFER RESPONSE TEST METHODOLOGY
FOR WATER TABLE WELLS AND PIEZOMETERS
IN UNCONFINED AQUIFERS

Each test was conducted by initially measuring the static groundwater elevation and the total well depth. If a pressure transducer is used for water level measurements, the probe is lowered below the water level and the initial starting water level is recorded. The well is then bailed to lower the the water level to some minimum depth. The minimum water level reading is then recorded. At the instant this minimum is reached, a stop watch is started and increasing water level measurements (y) with time (t) are recorded.

Also noted for the purposes of data evaluation were the well casing diameter (r_c), the borehole radius (r_w), the well screen length (L), the aquifer saturated thickness (D), and the well aquifer penetration (H).

The analytical methodology used to evaluate these data is based upon theory presented by Bouwer and Rice*. The formula for hydraulic conductivity (K) is:

$$K = r_c^2 \frac{\ln(R_e/r_w)}{2Lt} \ln \frac{[y(0)]}{[y(t)]}$$

The term "$\ln(R_e/r_w)$" is calculated empirically based on well construction and aquifer penetration. Please consult the reference for further detail concerning the calculation.

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*Bouwer, Herman and R.C. Rice. 1976. "A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells", Water Resources Research, Vol. 12, No. 3.

Single Well Aquifer Response Tests

Results - Till

Aquifer Response Tests
MW-1000

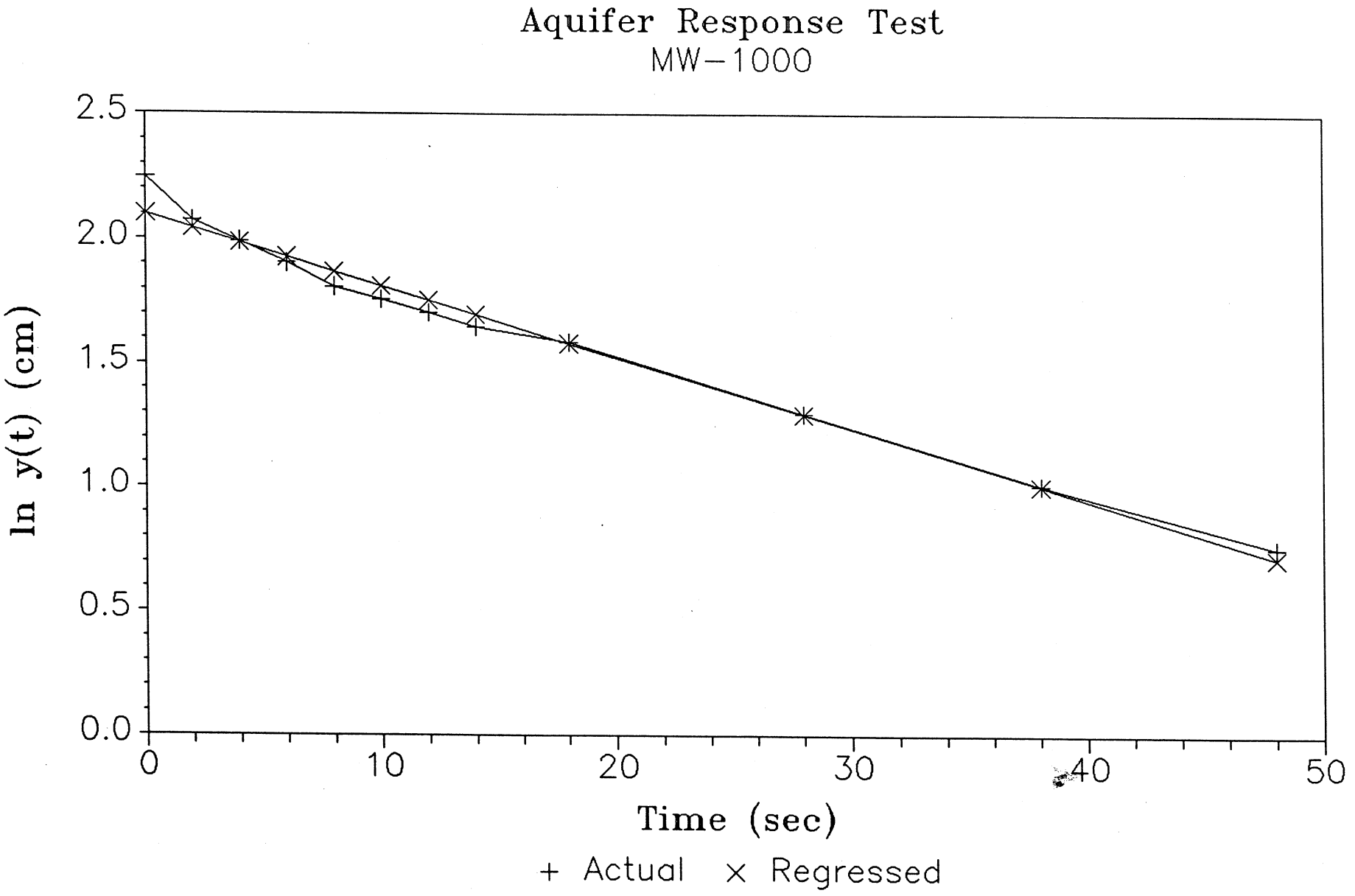
$$K = \frac{rc^2 \ln(Re/rw) \ln \frac{[y(0)]}{[y(t)]}}{2Lt}$$

rc = casing radius = 2.54 cm
rw = borehole radius = 7.62 cm
L = screen length = 304.80 cm
D = aquifer thickness= 9,144.00 cm
H = well penetration = 270.05 cm
t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 2.3E-03 cm/s

DATA

Time (sec)	Drawdown y(t) (cm)
0.00	9.45
2.00	7.92
4.00	7.32
6.00	6.71
8.00	6.10
10.00	5.79
12.00	5.49
14.00	5.18
18.00	4.88
28.00	3.66
38.00	2.74
48.00	2.13
38.00	2.74
48.00	2.13



Bouwer and Rice Method

Aquifer Response Tests
MW-1001

$$K = \frac{rc^2 \ln(Re/rw) \ln \frac{[y(0)]}{[y(t)]}}{2Lt}$$

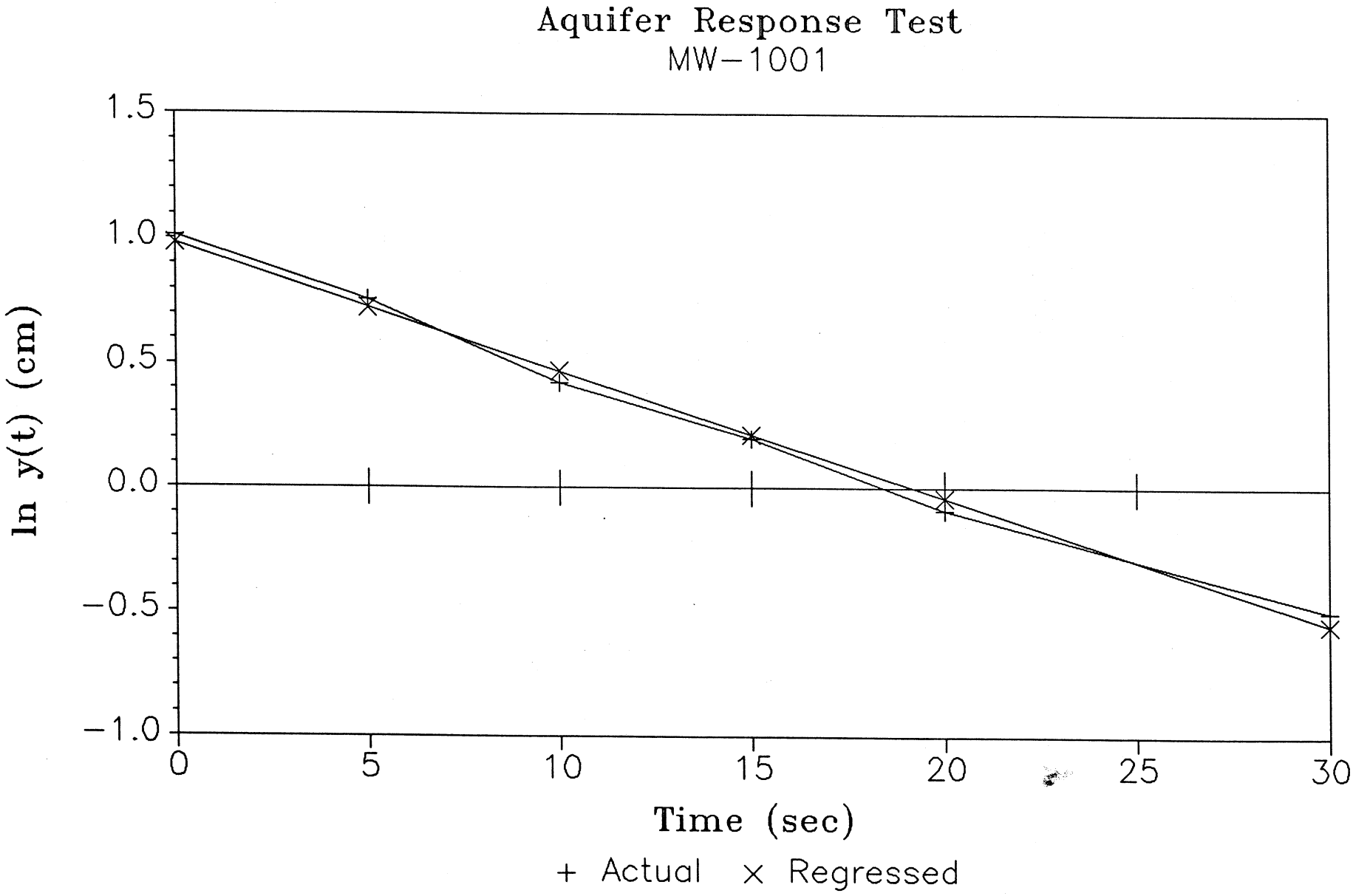
rc = casing radius =	2.54	cm
rw = borehole radius =	10.16	cm
L = screen length =	304.80	cm
D = aquifer thickness=	609.60	cm
H = well penetration =	151.49	cm

t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 5.5E-03 cm/s

DATA

Time (sec)	Drawdown y(t) (cm)
0.00	2.74
5.00	2.13
10.00	1.52
15.00	1.22
20.00	0.91
30.00	0.61
10.00	1.52
15.00	1.22
20.00	0.91
30.00	0.61

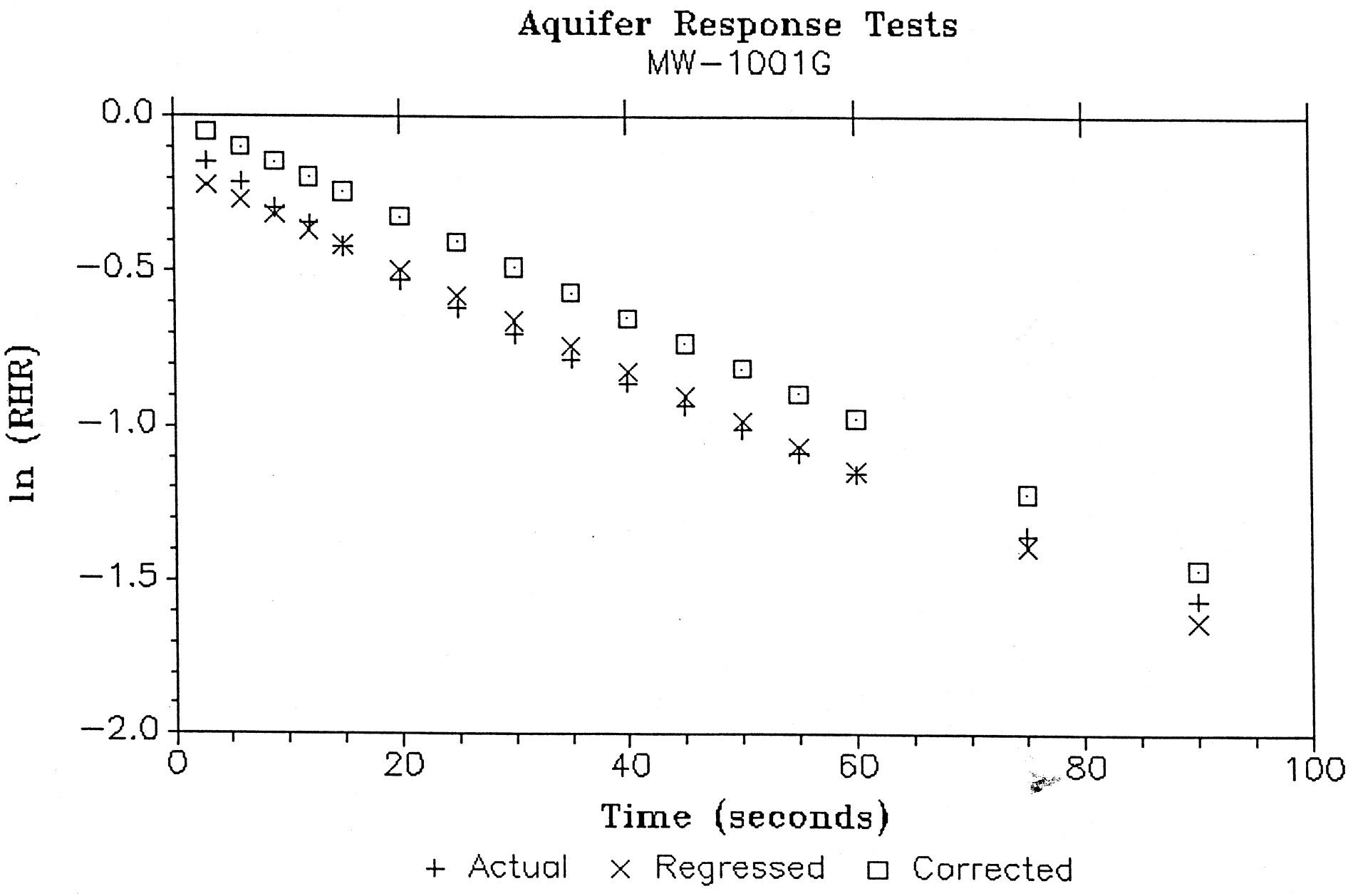


Bouwer and Rice Method

Aquifer Response Tests
MW-1001G

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius =		2.54	cm
L = screen sand pack length	=	320.04	cm
R = borehole radius	=	10.16	cm
H_o = initial head difference	=	3.32	feet
T_o = time lag =		61.37	seconds
K = hydraulic conductivity	=	5.7E-04	cm/second



Results of Bail Test

Aquifer Response Tests
MW-1005

$$K = \frac{rc^2 \ln(Re/rw) \ln \frac{[y(0)]}{[y(t)]}}{2Lt}$$

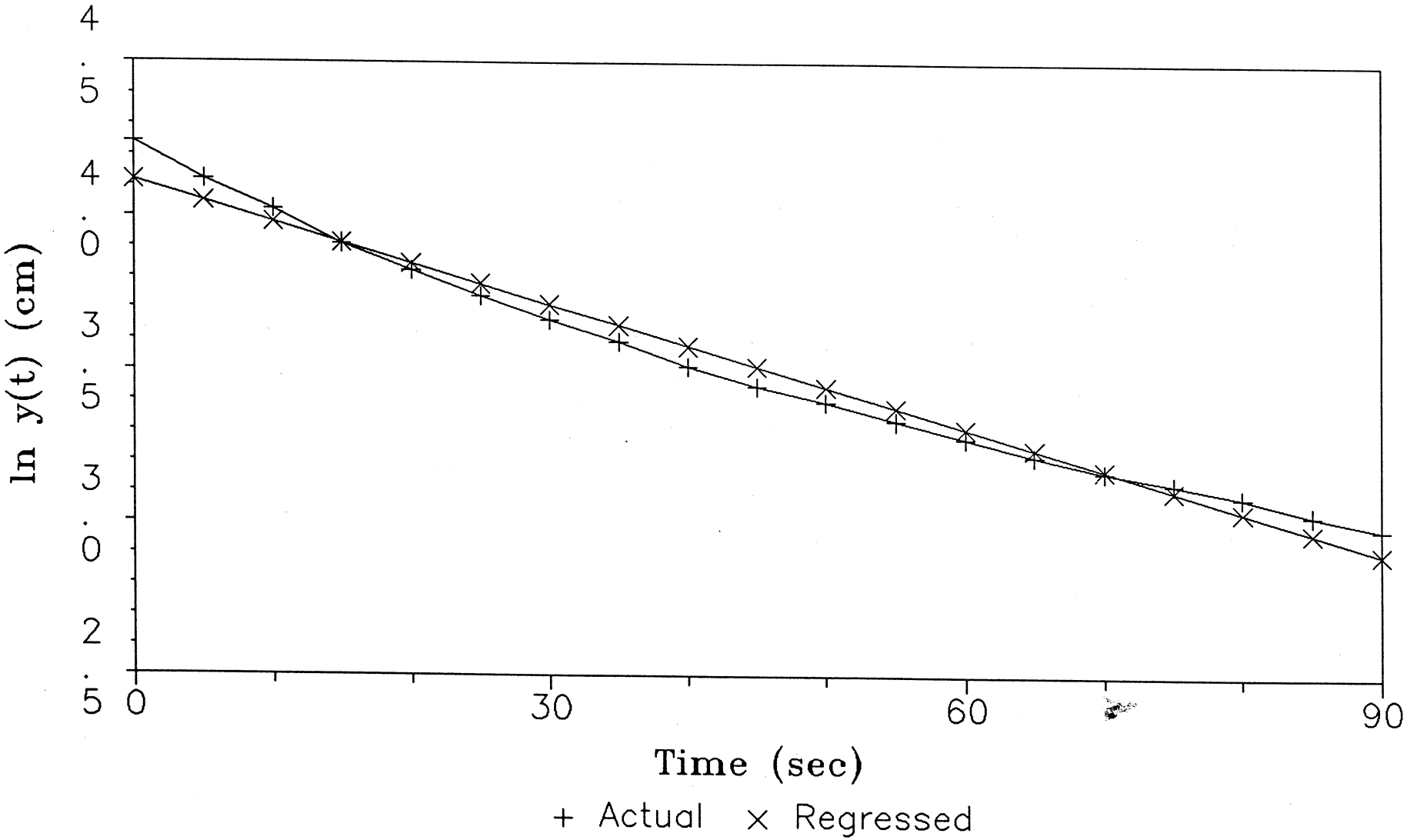
rc = casing radius = 2.54 cm
rw = borehole radius = 10.16 cm
L = screen length = 304.80 cm
D = aquifer thickness= 1,341.12 cm
H = well penetration = 411.78 cm
t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 3.3E-04 cm/s

DATA

Time (sec)	Drawdown y(t) (cm)
0.00	69.49
5.00	61.57
10.00	55.78
15.00	49.99
20.00	45.72
25.00	42.06
30.00	39.01
35.00	36.27
40.00	33.53
45.00	31.39
50.00	29.87
55.00	28.04
60.00	26.52
65.00	24.99
70.00	23.77
75.00	22.86
80.00	21.95
85.00	20.73
90.00	19.81

Aquifer Response Test
MW-1005

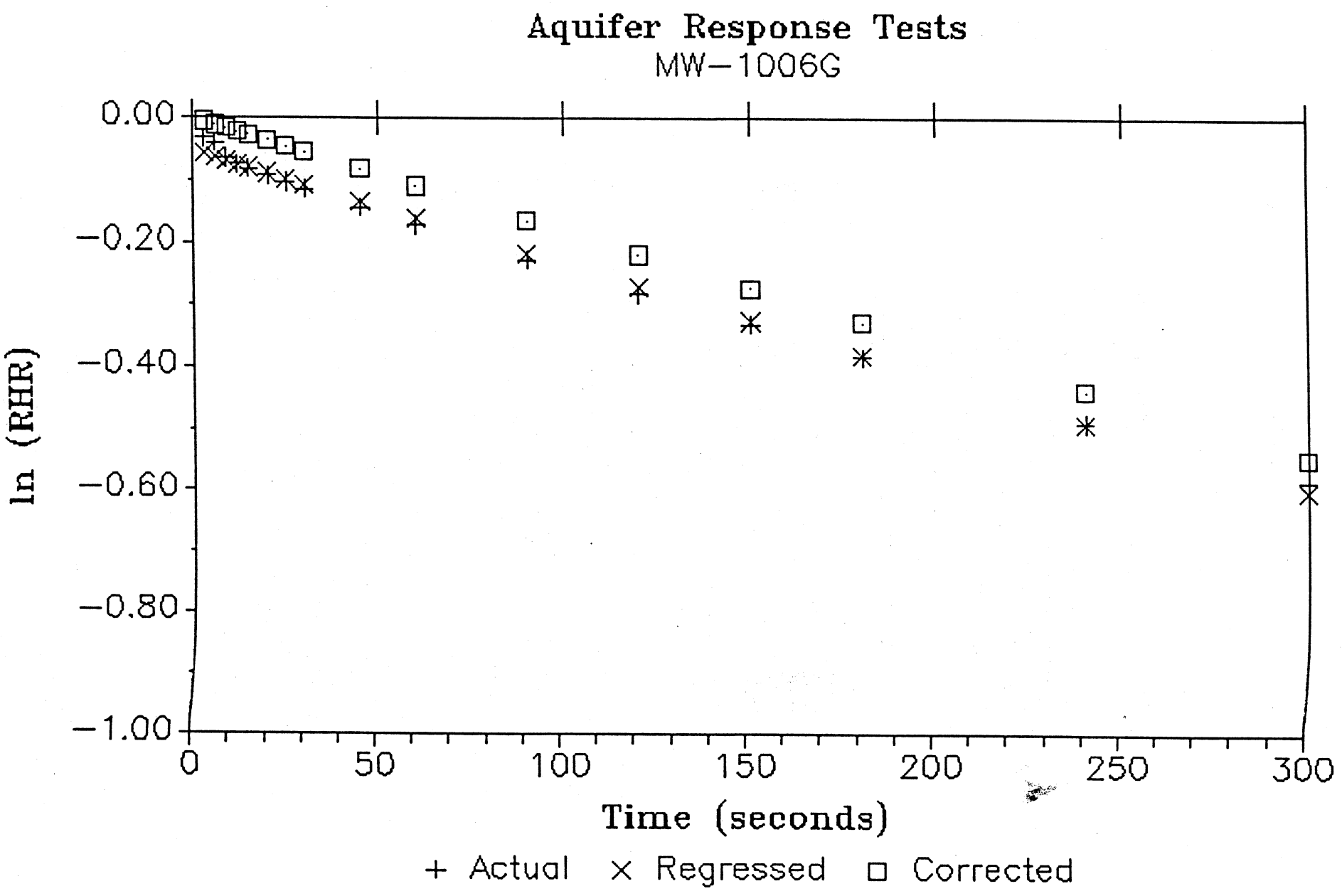


Bouwer and Rice Method

Aquifer Response Tests
MW-1006G

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius	=	2.54	cm
L = screen sand pack length	=	213.36	cm
R = borehole radius	=	10.16	cm
H_o = initial head difference	=	3.05	feet
T_o = time lag	=	545.21	seconds
K = hydraulic conductivity	=	8.4E-05	cm/second



Results of Boil Test

Aquifer Response Tests
PZ-1008

$$K = \frac{rc^2 \ln(Re/rw)}{2Lt} \ln \frac{[y(0)]}{[y(t)]}$$

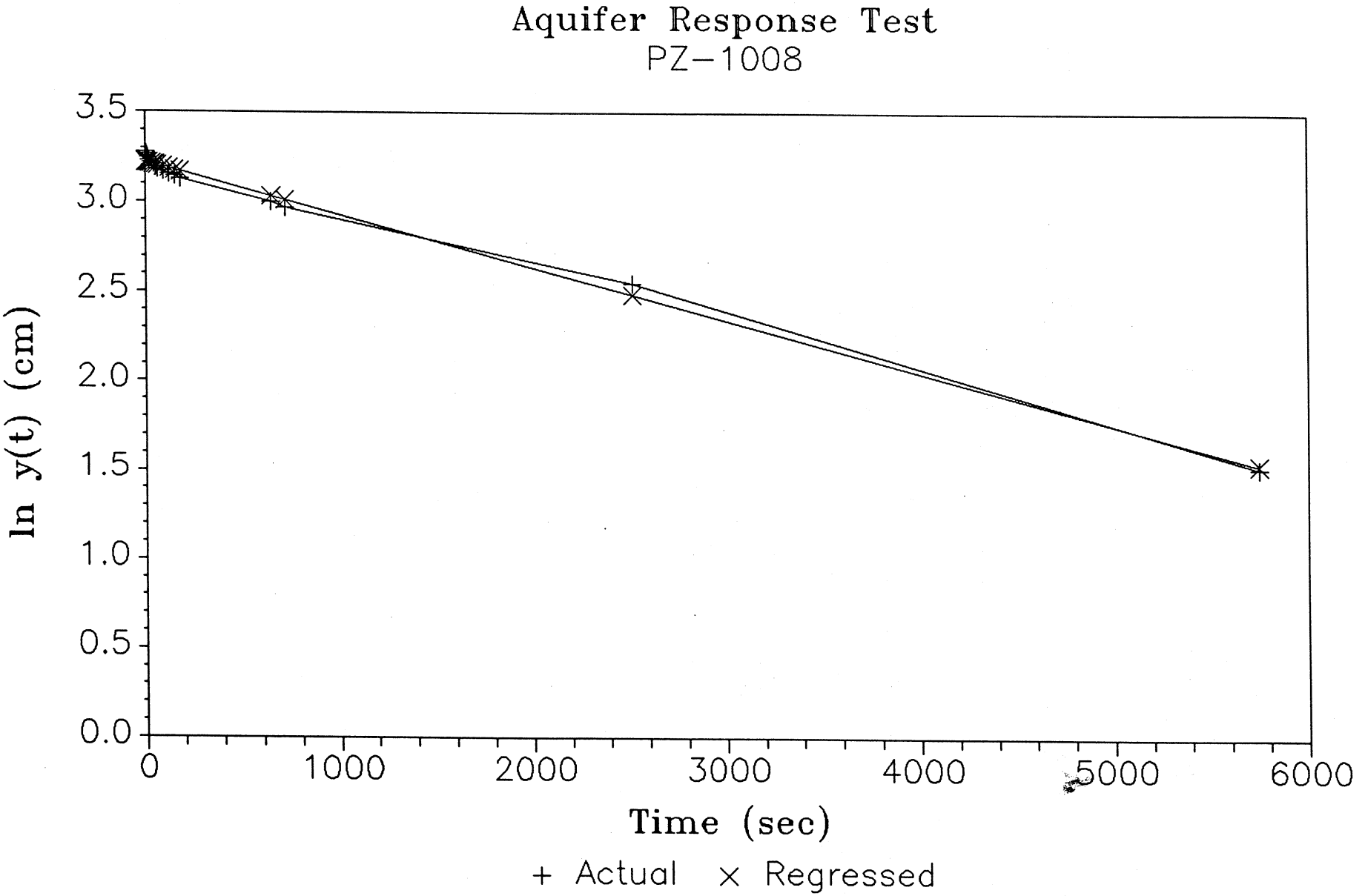
rc = casing radius =	2.54	cm
rw = borehole radius =	10.16	cm
L = screen length =	304.80	cm
D = aquifer thickness=	1,345.69	cm
H = well penetration =	0.00	cm

t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 3.4E-05 cm/s

DATA

Time (sec)	Drawdown (cm)
0.00	26.52
5.00	26.21
8.00	25.91
15.00	25.60
18.00	25.30
30.00	24.99
40.00	24.69
50.00	24.38
60.00	24.08
90.00	23.77
120.00	23.47
150.00	23.16
180.00	22.86
647.00	20.12
720.00	19.51
2,515.00	12.80
5,745.00	4.57



Bouwer and Rice Method

Aquifer Response Tests
PZ-1008G

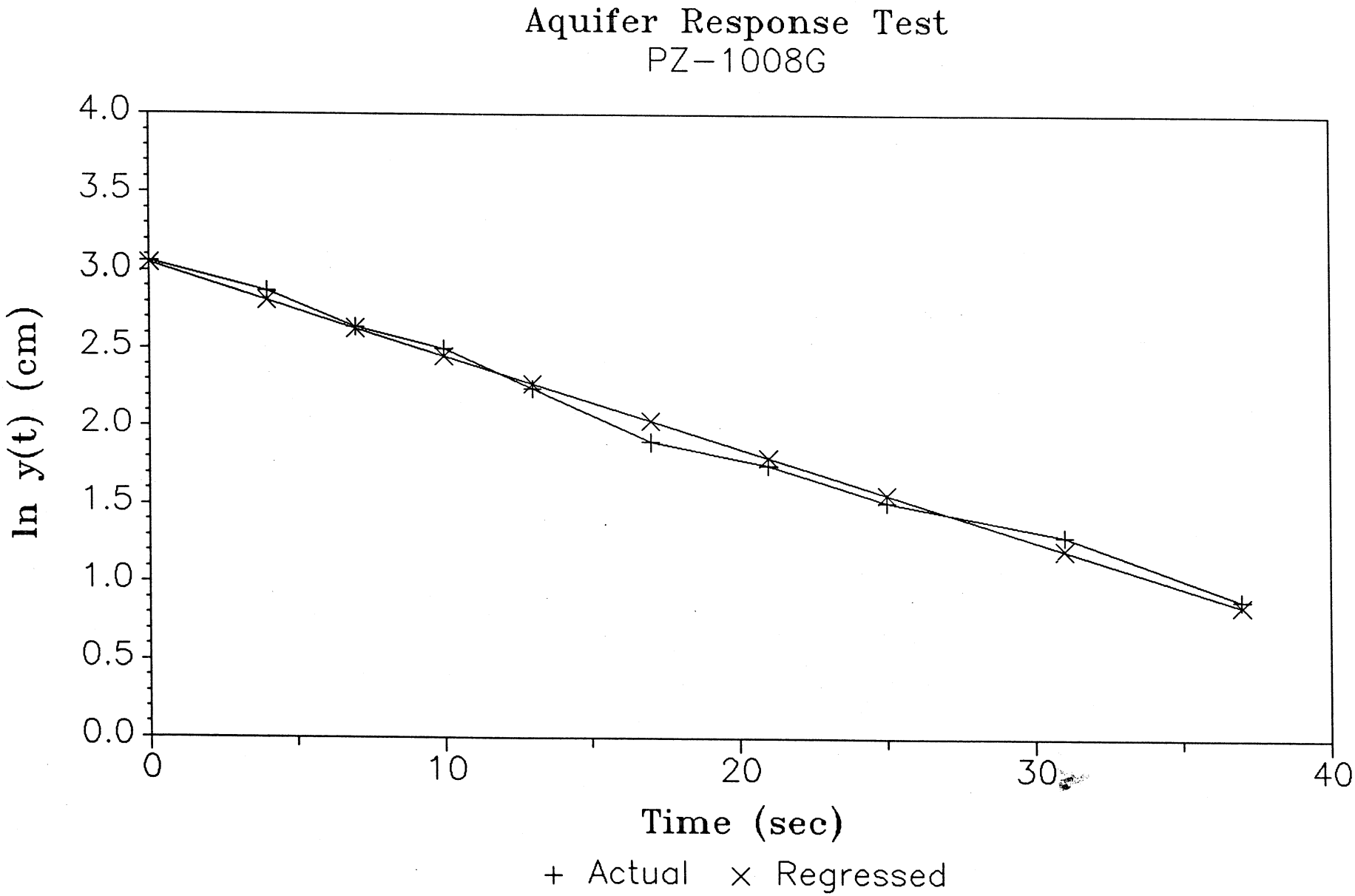
$$K = \frac{rc^2 \ln(Re/rw) \ln \frac{[y(0)]}{[y(t)]}}{2Lt}$$

rc = casing radius = 2.54 cm
rw = borehole radius = 10.16 cm
L = screen length = 152.40 cm
D = aquifer thickness= 1,345.69 cm
H = well penetration = 1,342.03 cm
t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 3.9E-03 cm/s

DATA

Time (sec)	Drawdown (cm)
0.00	21.34
4.00	17.68
7.00	14.02
10.00	12.19
13.00	9.45
17.00	6.71
21.00	5.79
25.00	4.57
31.00	3.66
37.00	2.44
21.00	5.79
25.00	4.57
31.00	3.66
37.00	2.44



Bouwer and Rice Method

Aquifer Response Tests
PZ-1009

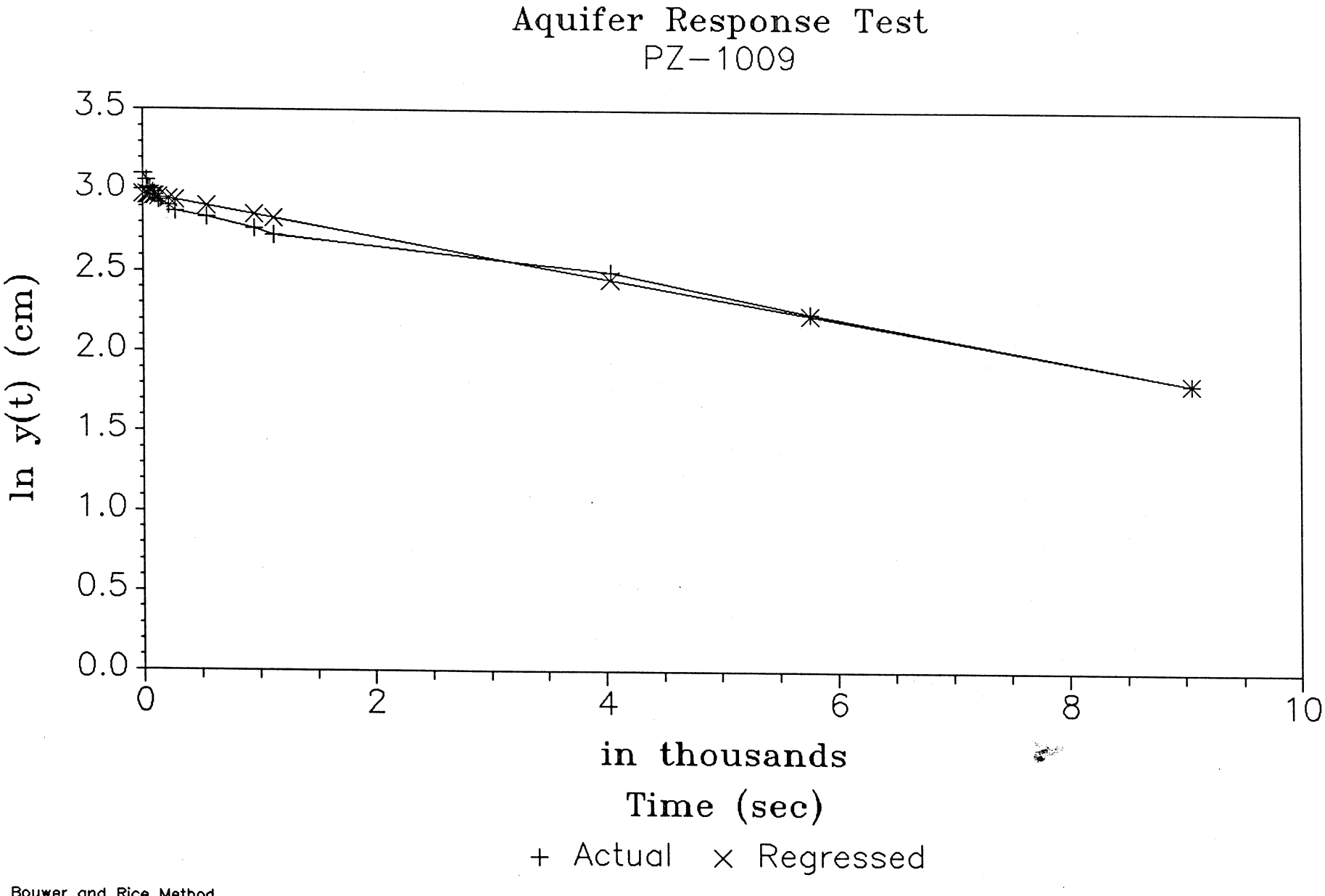
$$K = \frac{rc^2 \ln(Re/rw) \ln \frac{[y(0)]}{[y(t)]}}{2Lt}$$

rc = casing radius = 2.54 cm
rw = borehole radius = 10.16 cm
L = screen length = 304.80 cm
D = aquifer thickness= 1,143.00 cm
H = well penetration = 180.75 cm
t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 1.4E-05 cm/s

DATA

Time (sec)	Drawdown y(t) (cm)
0.00	22.25
30.00	21.34
47.00	20.42
62.00	20.12
82.00	19.81
100.00	19.51
130.00	18.90
220.00	18.29
280.00	17.68
547.00	17.07
957.00	15.85
1,130.00	15.24
4,041.00	12.19
5,771.00	9.45
9,056.00	6.10



Bouwer and Rice Method

Aquifer Response Tests
PZ-1009G

$$K = \frac{rc^2 \ln(Re/rw) \ln \frac{[y(0)]}{[y(t)]}}{2Lt}$$

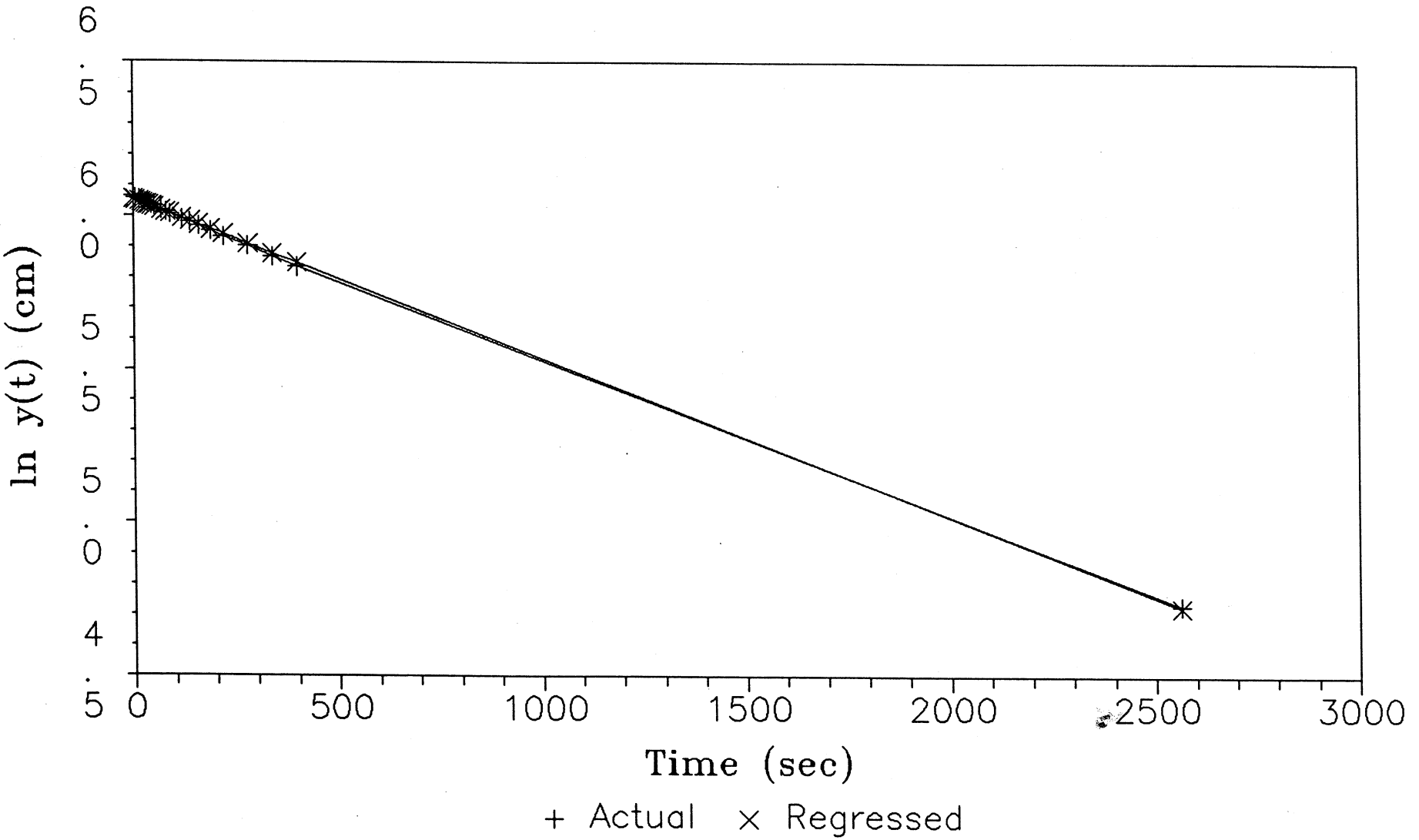
rc = casing radius = 2.54 cm
rw = borehole radius = 10.16 cm
L = screen length = 152.40 cm
D = aquifer thickness= 1,143.00 cm
H = well penetration = 1,134.16 cm
t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 3.4E-05 cm/s

DATA

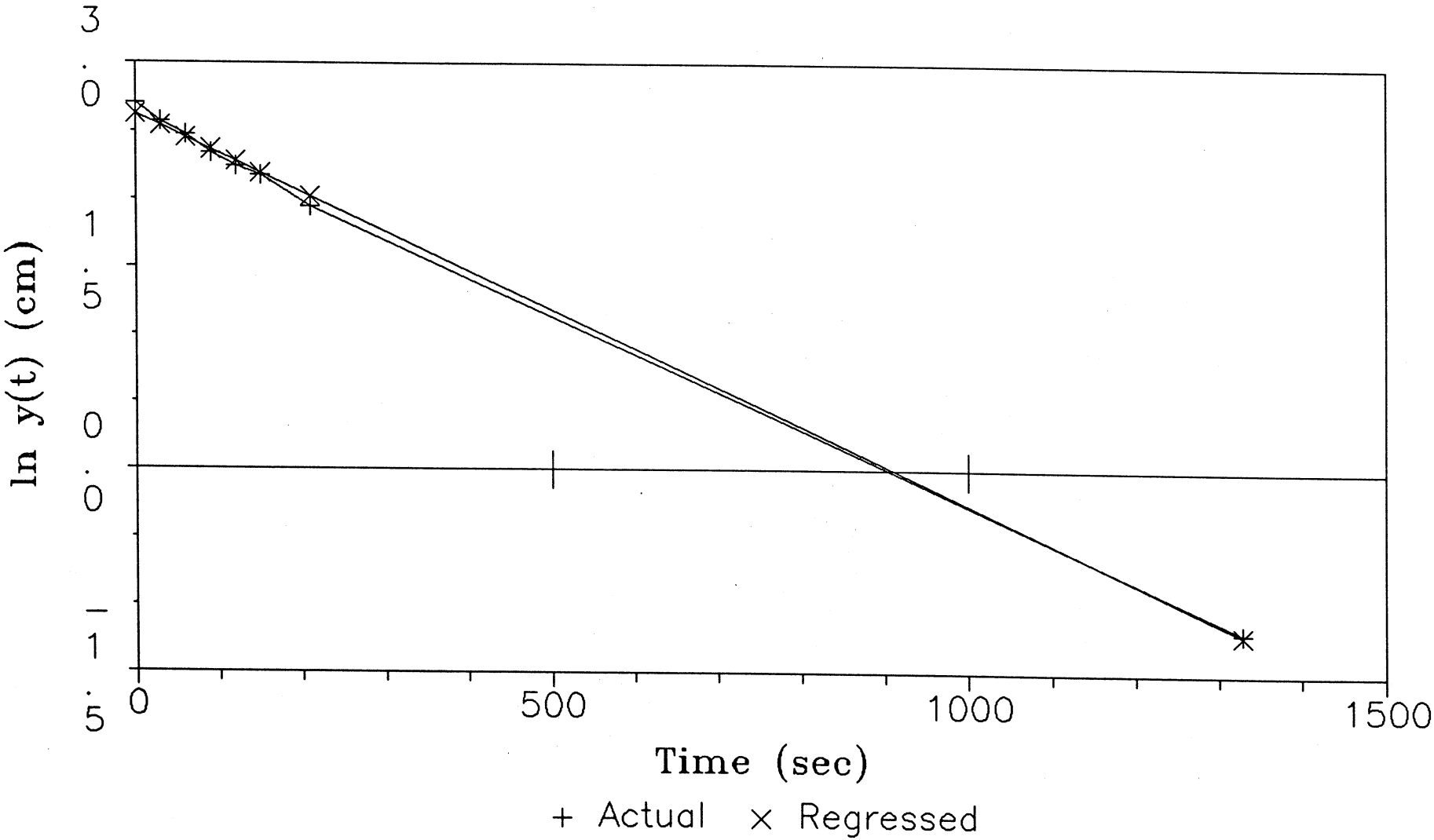
Time (sec)	Drawdown y(t) (cm)
0.00	430.07
5.00	427.94
13.00	425.50
18.00	424.28
24.00	423.06
29.00	421.84
34.00	420.62
39.00	419.40
44.00	418.19
50.00	416.36
68.00	411.18
78.00	408.74
88.00	406.60
118.00	399.59
138.00	395.33
158.00	390.45
188.00	384.35
218.00	377.34
278.00	366.06
338.00	353.57
398.00	341.99
2,563.00	113.39

Aquifer Response Test
PZ-1009G



Bouwer and Rice Method

Aquifer Response Test
PZ-SP6



Bouwer and Rice Method

Aquifer Response Tests
PZ-SP6

$$K = \frac{rc^2 \ln(Re/rw) \ln \frac{[y(0)]}{[y(t)]}}{2Lt}$$

rc = casing radius = 2.54 cm
rw = borehole radius = 10.16 cm
L = screen length = 304.80 cm
D = aquifer thickness= 1,310.64 cm
H = well penetration = 214.58 cm
t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 3.3E-04 cm/s

DATA

Time (sec)	Drawdown y(t) (cm)
0.00	14.94
30.00	13.11
60.00	11.89
90.00	10.36
120.00	9.45
150.00	8.84
210.00	7.01
1,328.00	0.30

Aquifer Response Tests
PZ-SP8

$$K = \frac{rc^2 \ln(Re/rw) \ln \frac{[y(0)]}{[y(t)]}}{2Lt}$$

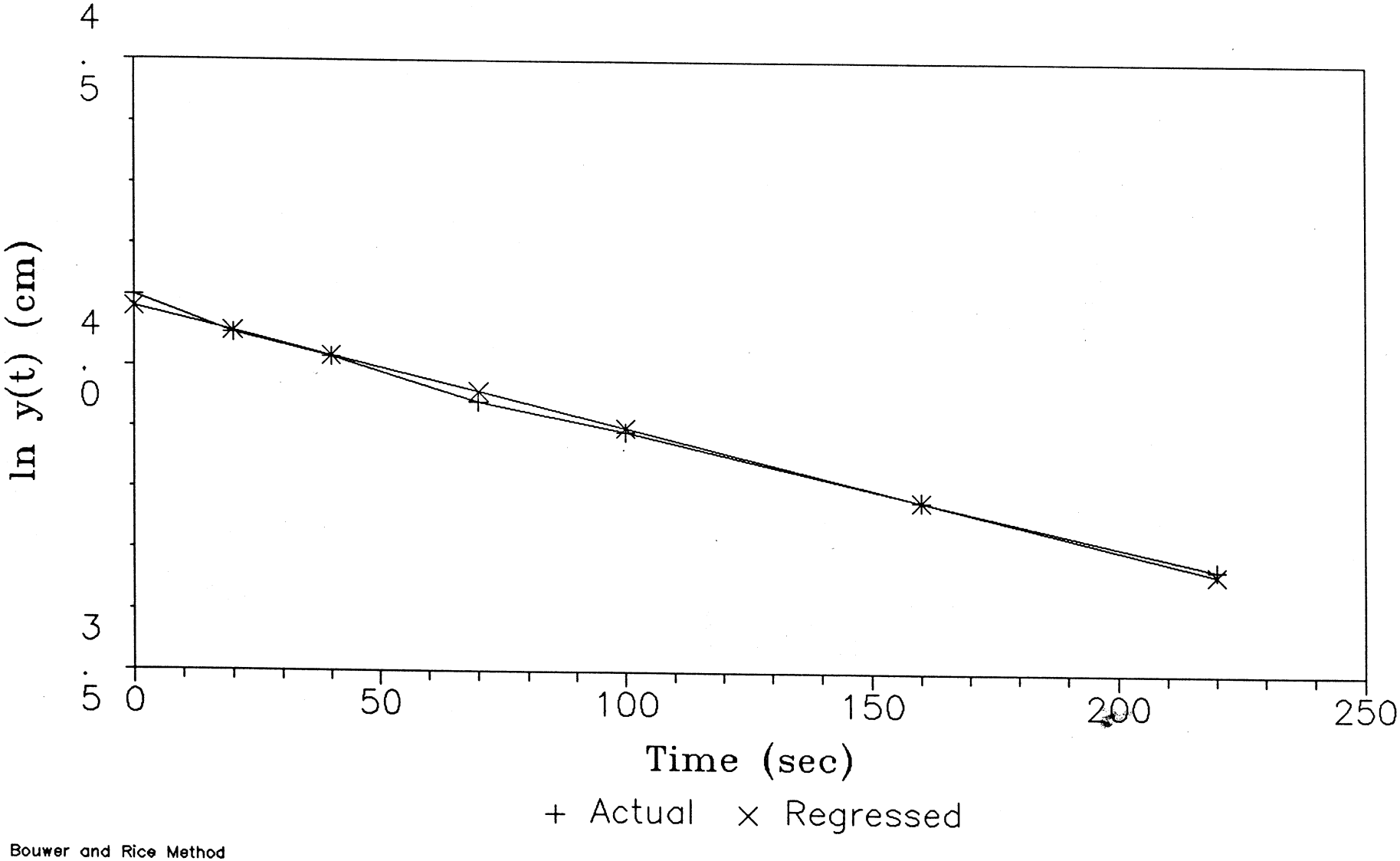
rc = casing radius = 2.54 cm
rw = borehole radius = 10.16 cm
L = screen length = 304.80 cm
D = aquifer thickness= 1,219.20 cm
H = well penetration = 372.47 cm
t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 4.7E-05 cm/s

DATA

Time (sec)	Drawdown y(t) (cm)
0.00	61.26
20.00	57.61
40.00	55.47
70.00	51.51
100.00	49.07
160.00	43.89
220.00	39.32

Aquifer Response Test
PZ-SP8



Bouwer and Rice Method

Single Well Aquifer Response Tests

Results - Glacial Fluvial

Aquifer Response Tests
MW-1002

$$K = \frac{rc^2 \ln(Re/rw)}{2Lt} \ln \frac{[y(0)]}{[y(t)]}$$

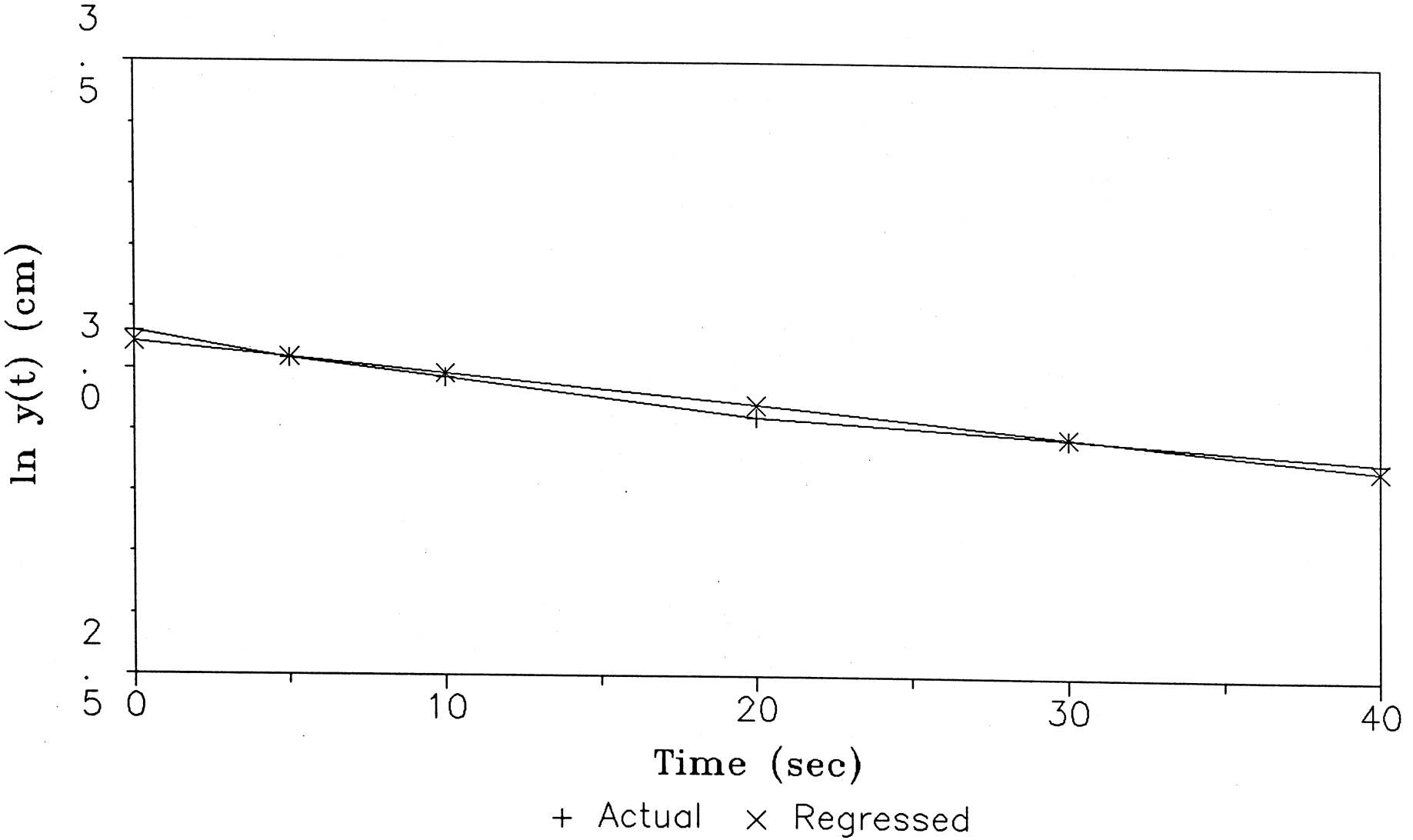
rc = casing radius = 2.54 cm
rw = borehole radius = 8.89 cm
L = screen length = 304.80 cm
D = aquifer thickness= 1,981.20 cm
H = well penetration = 127.10 cm
t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 4.3E-04 cm/s

DATA

Time (sec)	Drawdown y(t) (cm)
0.00	21.34
5.00	20.42
10.00	19.81
20.00	18.59
30.00	17.98
40.00	17.37

Aquifer Response Test
MW-1002

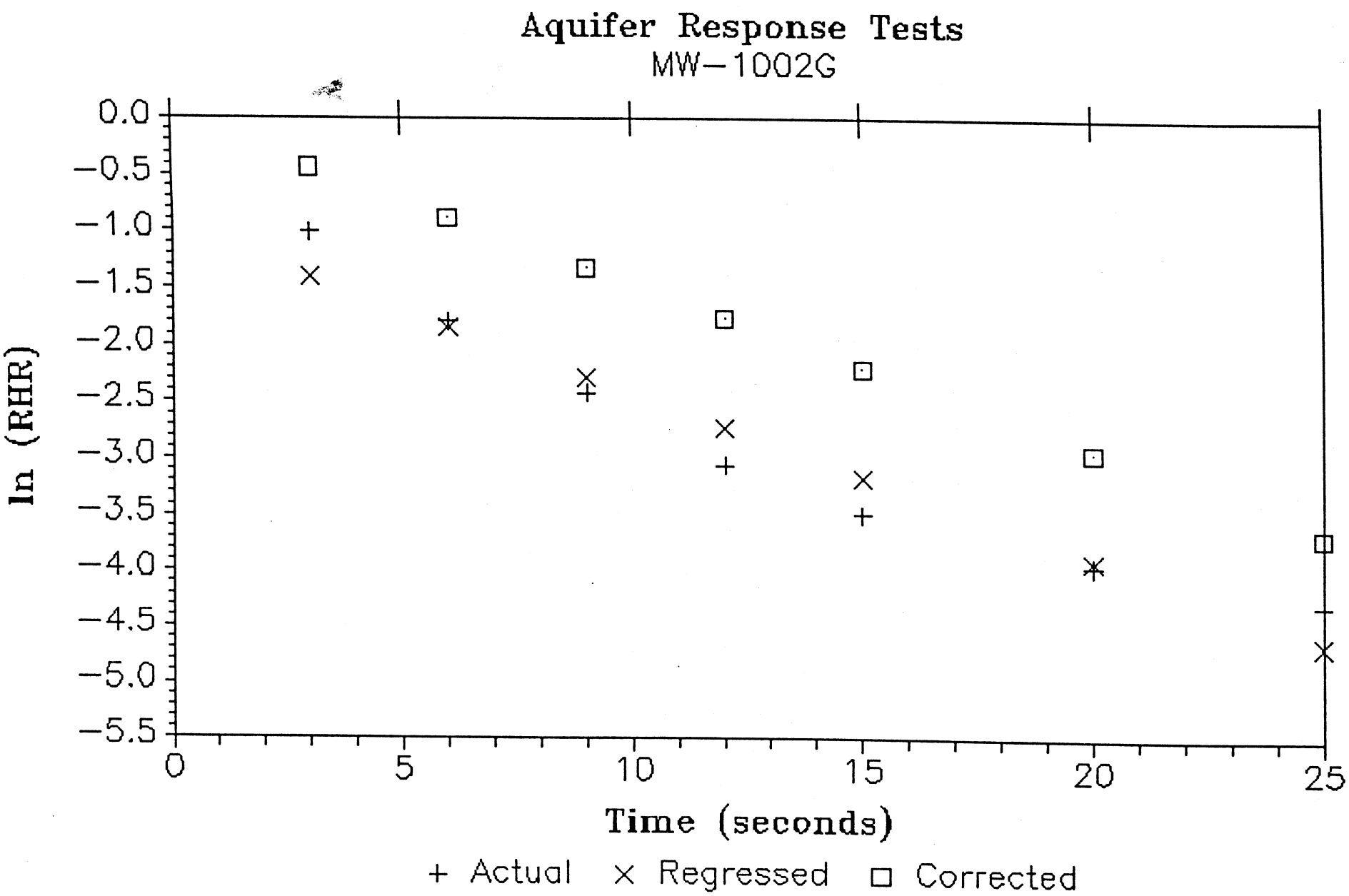


Bouwer and Rice Method

Aquifer Response Tests
MW-1002G

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius =		2.54	cm
L = screen sand pack length	=	228.60	cm
R = borehole radius	=	7.62	cm
H_o = initial head difference	=	3.62	feet
T_o = time lag =		6.76	seconds
K = hydraulic conductivity	=	7.1E-03	cm/second



Results of Bail Test

Aquifer Response Tests
MW-1004

$$K = \frac{rc^2 \ln(Re/rw) \ln \frac{[y(0)]}{[y(t)]}}{2Lt}$$

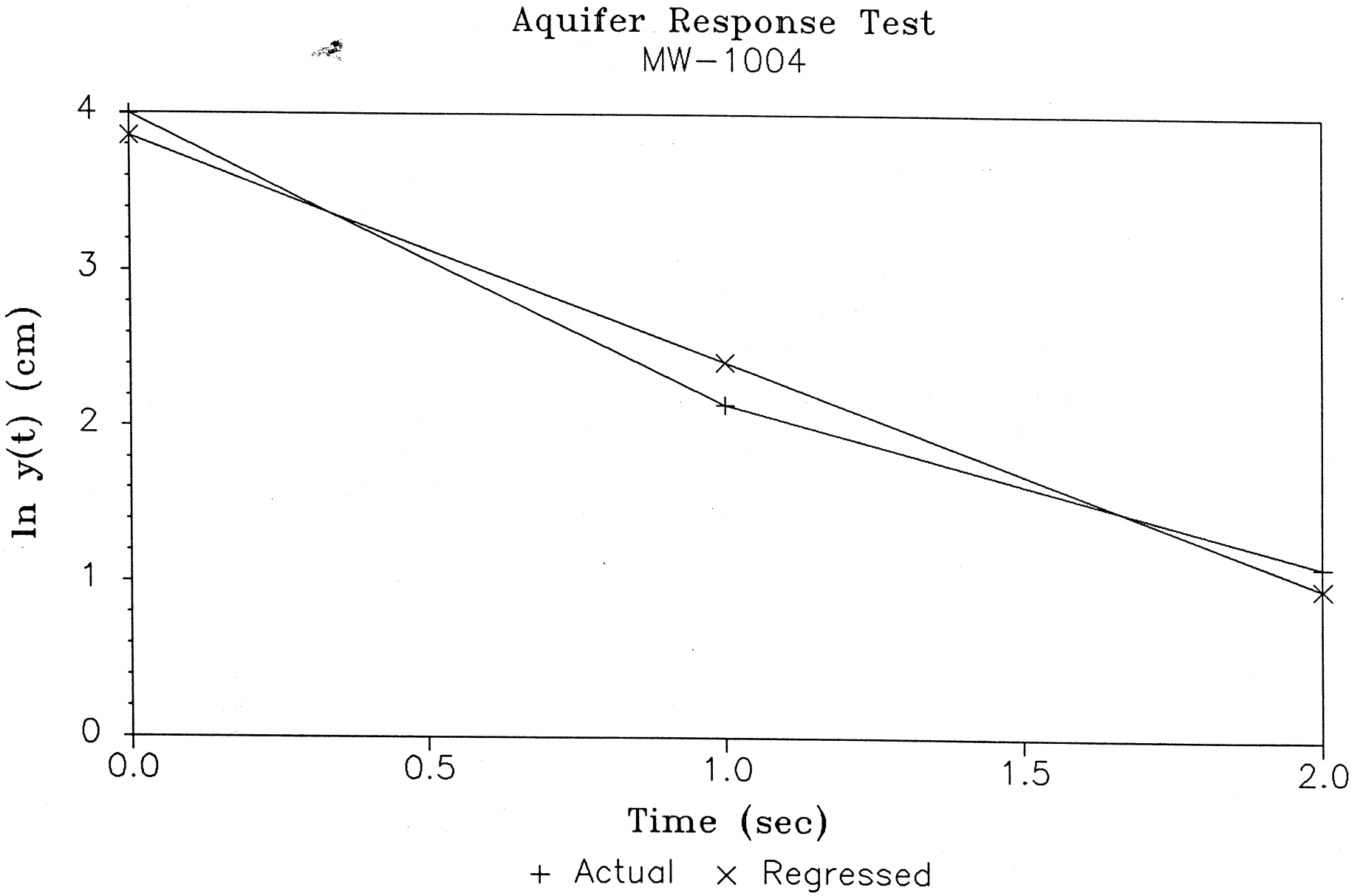
rc = casing radius =	2.54	cm
rw = borehole radius =	10.16	cm
L = screen length =	304.80	cm
D = aquifer thickness=	548.64	cm
H = well penetration =	189.89	cm

t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 1.7E-01 cm/s

DATA

Time (sec)	Drawdown y(t) (cm)
0.00	54.25
1.00	8.53
2.00	3.05

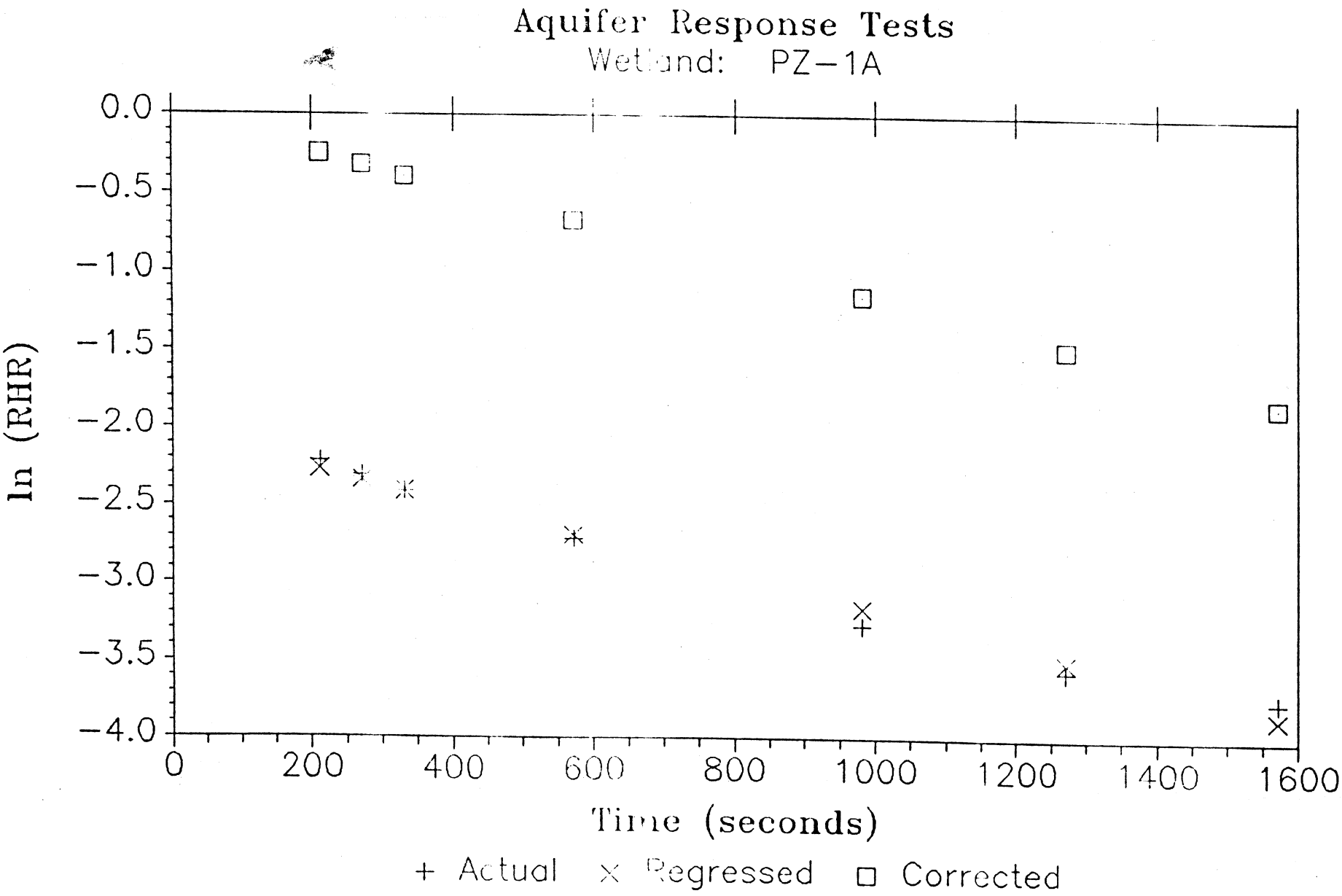


Bouwer and Rice Method

Aquifer Response Tests
Wetland: PZ-1A

$$\text{Equation: } K = \frac{r^2 \ln(L/R)}{2 L T_o}$$

r = well radius =		2.54	cm
L = screen sand pack length	=	73.15	cm
R = borehole radius	=	10.16	cm
H_o = initial head difference	=	2.11	feet
T_o = time lag =		852.43	seconds
---> K = hydraulic conductivity	=	1.0E-04	cm/second

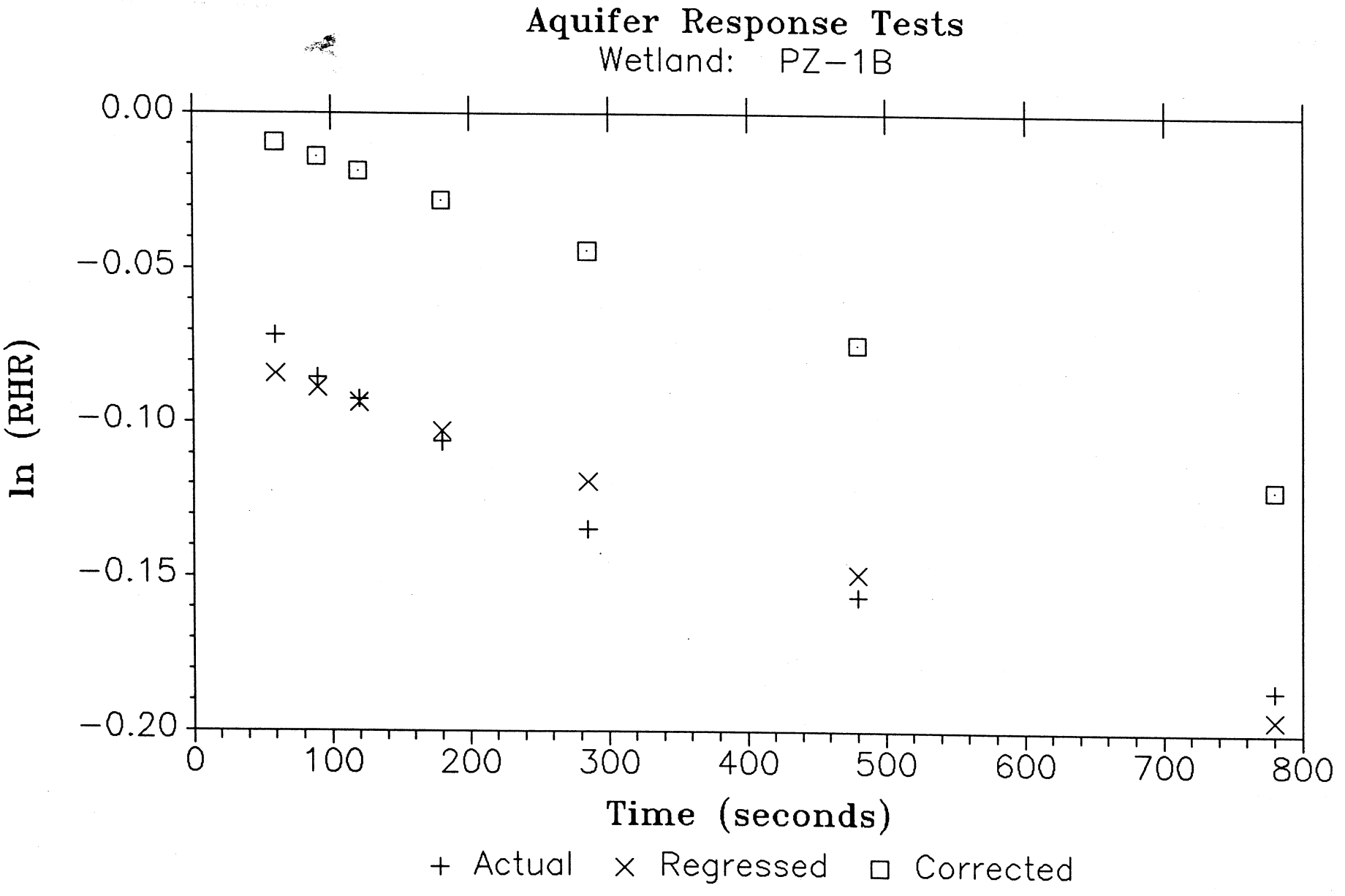


Results of Bail Test

Aquifer Response Tests
Wetland: PZ-1B

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius =		2.54	cm
L = screen sand pack length	=	60.96	cm
R = borehole radius	=	10.16	cm
H_o = initial head difference	=	1.59	feet
T_o = time lag =		6420.70	seconds
---> K = hydraulic conductivity	=	1.5E-05	cm/second



Results of Bail Test

Single Well Aquifer Response Tests

Results - Sandstone

Aquifer Response Tests
MW-1003

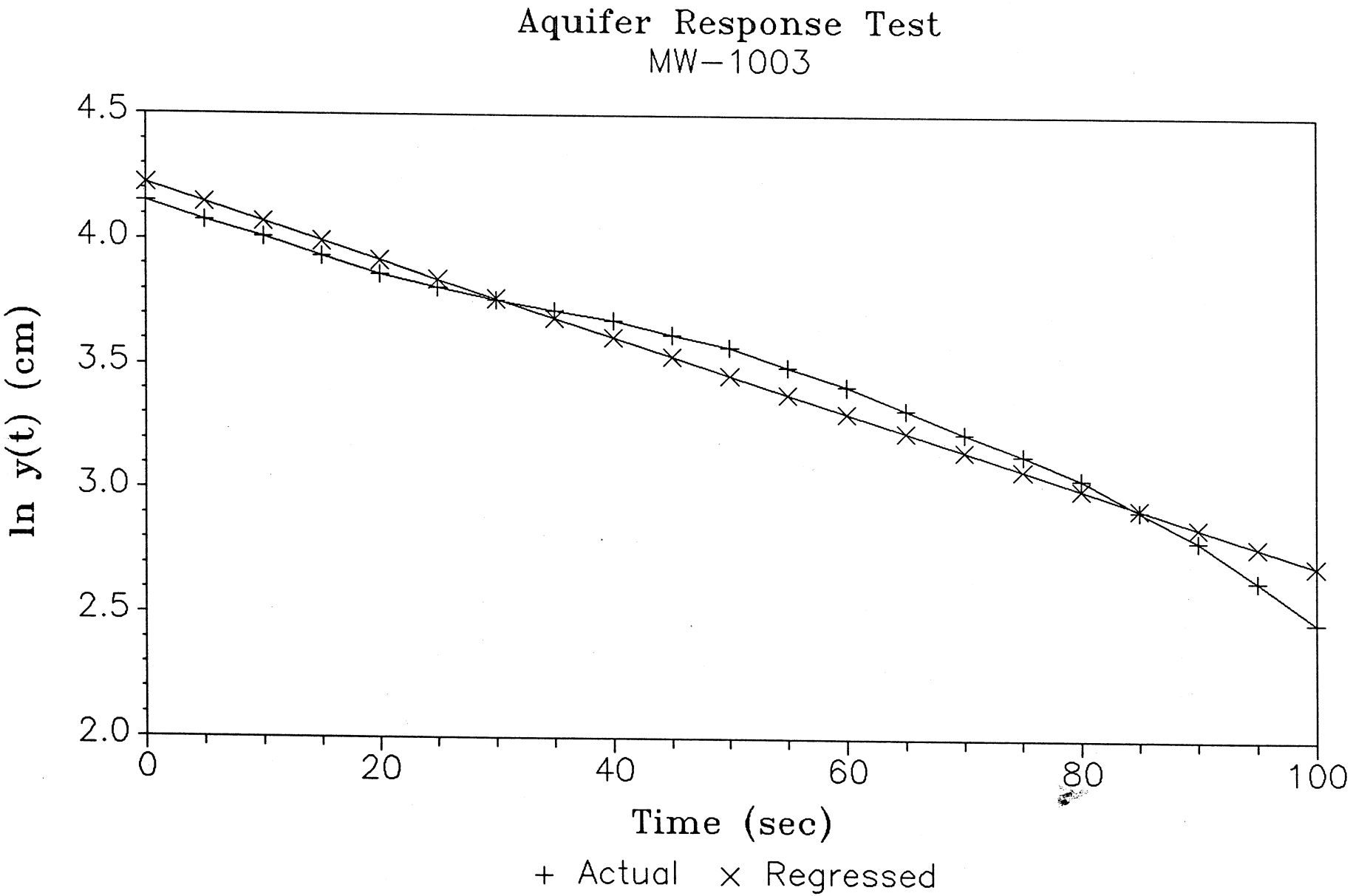
$$K = \frac{rc^2 \ln(Re/rw) \ln \frac{[y(0)]}{[y(t)]}}{2Lt}$$

rc = casing radius = 2.54 cm
rw = borehole radius = 10.16 cm
L = screen length = 304.80 cm
D = aquifer thickness= 701.04 cm
H = well penetration = 217.93 cm
t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 1.8E-03 cm/s

DATA

Time (sec)	Drawdown y(t) (cm)
0.00	63.40
5.00	58.83
10.00	55.17
15.00	51.21
20.00	47.55
25.00	45.11
30.00	42.98
35.00	41.15
40.00	39.62
45.00	37.49
50.00	35.66
55.00	32.92
60.00	30.48
65.00	27.74
70.00	25.30
75.00	23.16
80.00	21.03
85.00	18.59
90.00	16.46
95.00	14.02
100.00	11.89

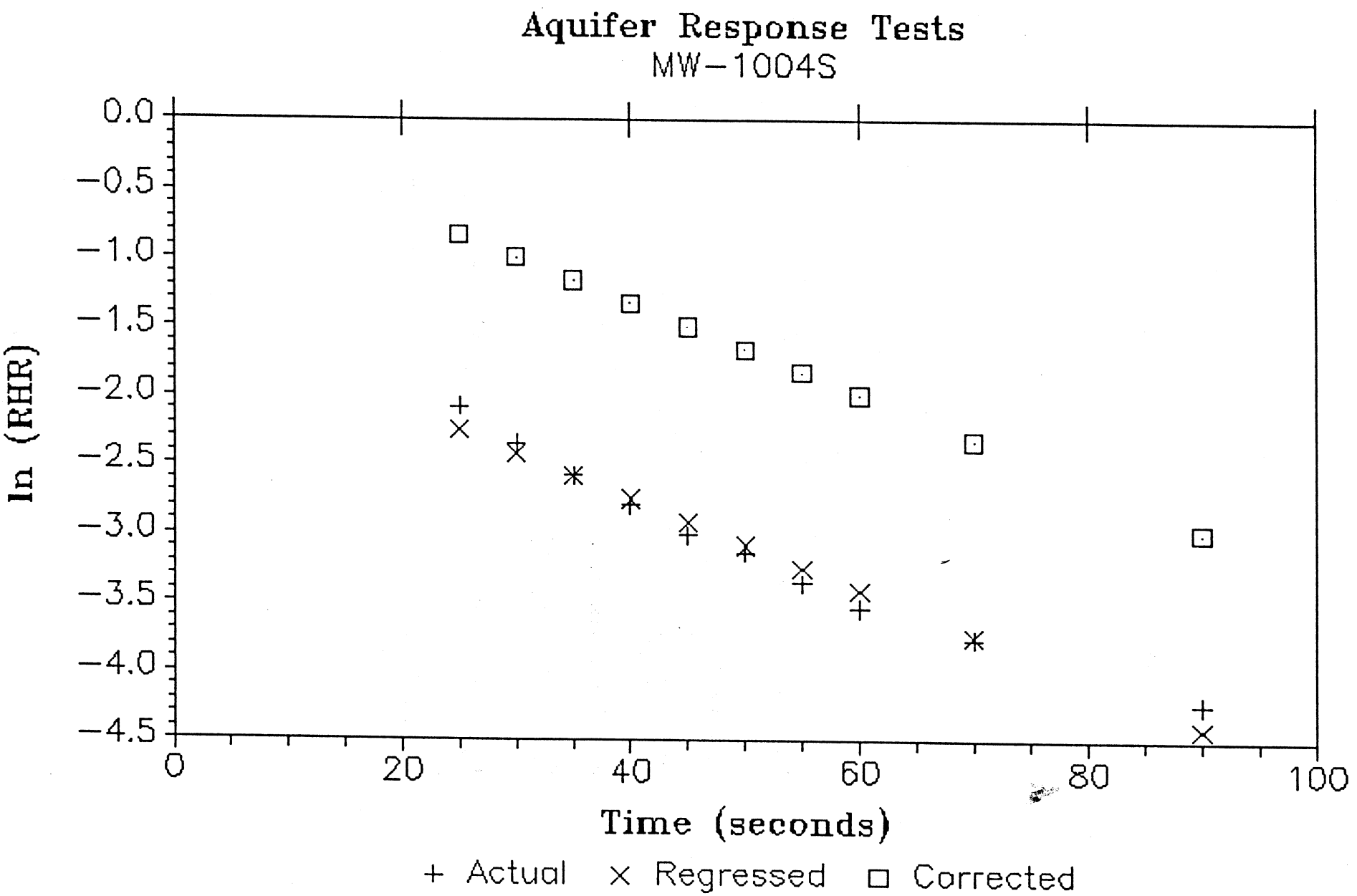


Bouwer and Rice Method

Aquifer Response Tests
MW-1004S

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius =		2.54	cm
L = screen sand pack length	=	295.66	cm
R = borehole radius	=	7.62	cm
H_o = initial head difference	=	3.43	feet
T_o = time lag =		29.99	seconds
K = hydraulic conductivity	=	1.3E-03	cm/second

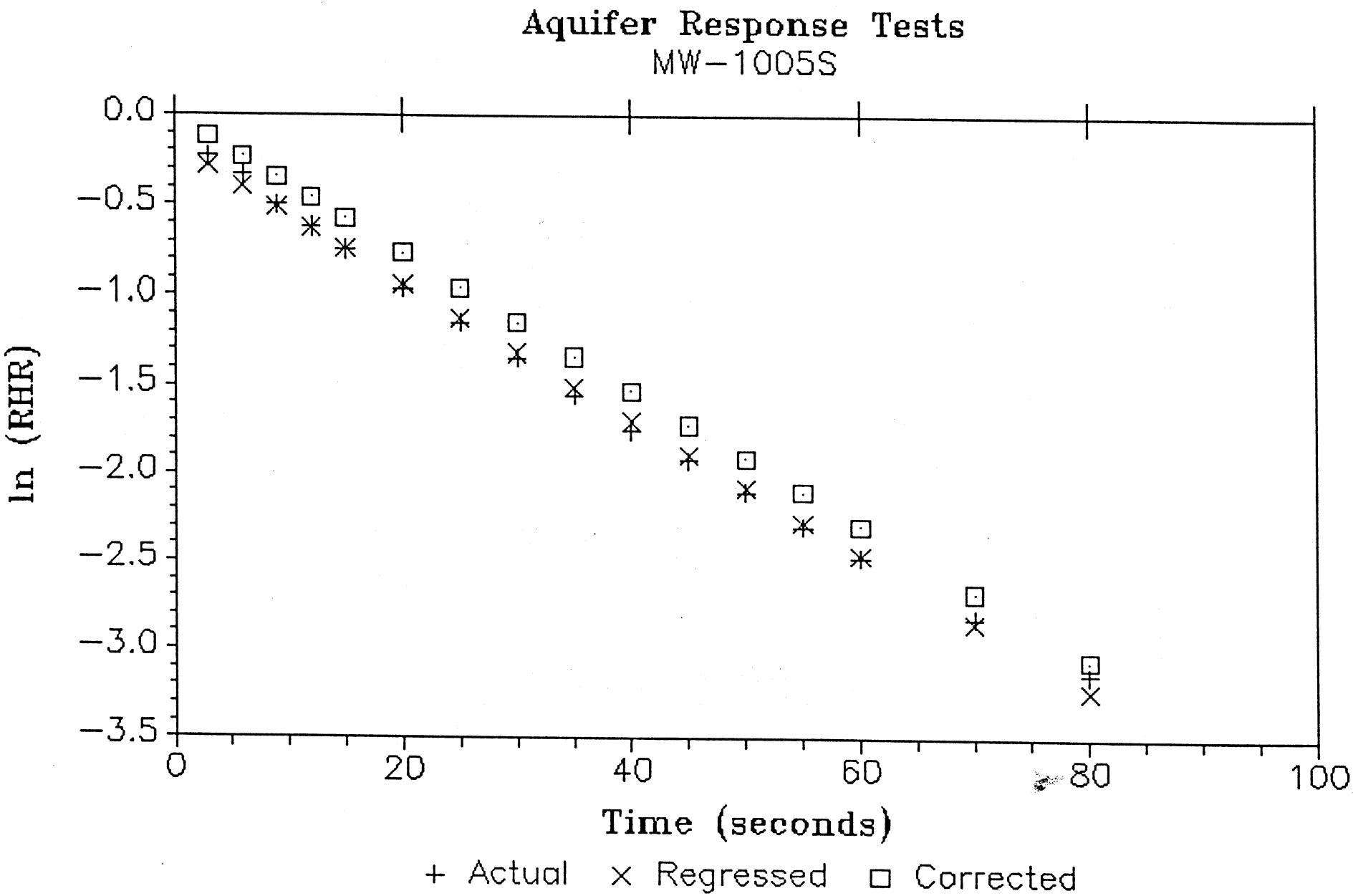


Results of Boil Test

Aquifer Response Tests
MW-1005S

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius	=	2.54	cm
L = screen sand pack length	=	243.84	cm
R = borehole radius	=	10.16	cm
H_o = initial head difference	=	3.69	feet
T_o = time lag	=	26.00	seconds
K = hydraulic conductivity	=	1.6E-03	cm/second

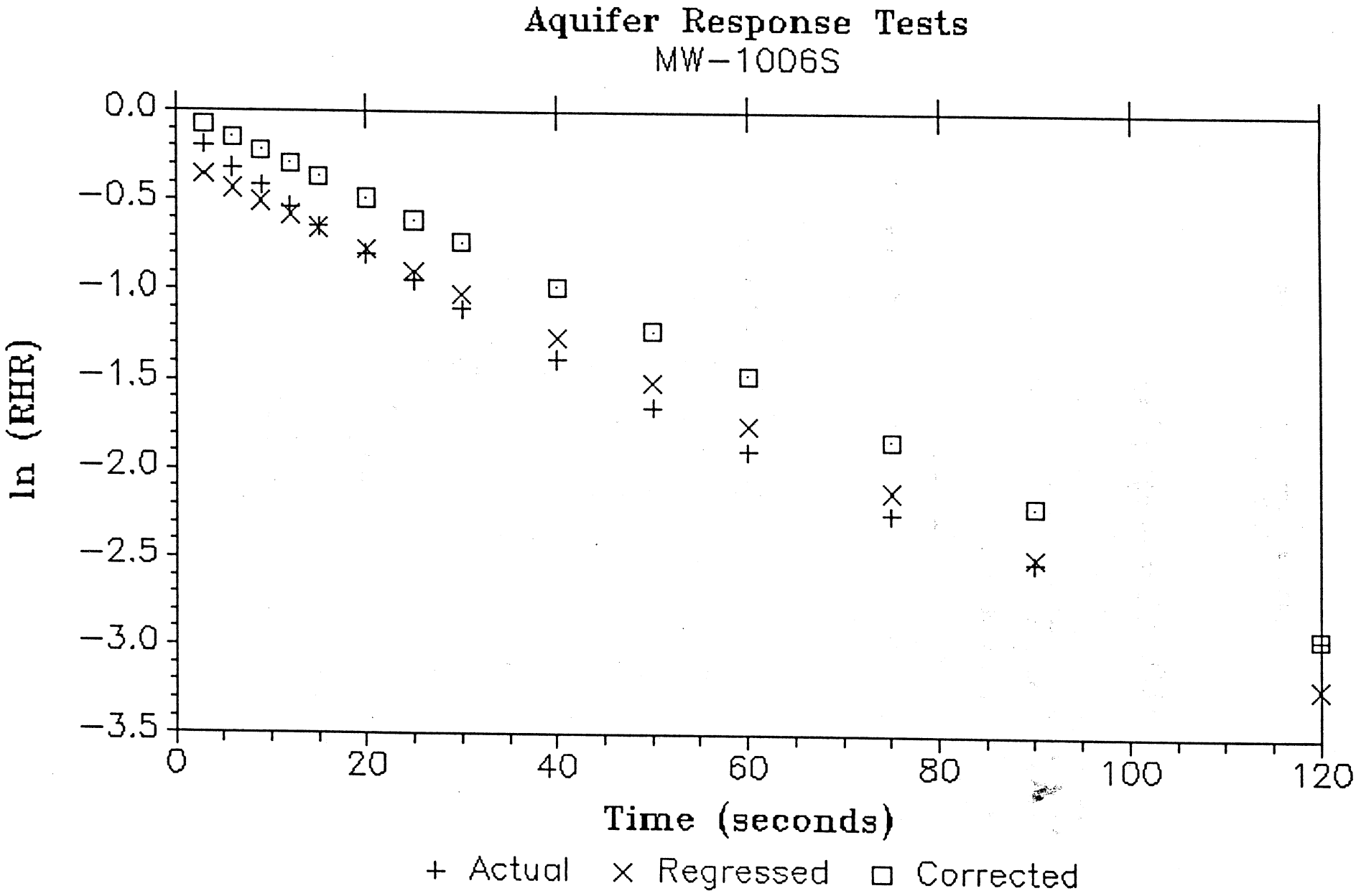


Results of Boil Test

Aquifer Response Tests
MW-1006S

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius	=	2.54	cm
L = screen sand pack length	=	274.32	cm
R = borehole radius	=	10.16	cm
H_o = initial head difference	=	3.58	feet
T_o = time lag	=	40.74	seconds
K = hydraulic conductivity	=	9.5E-04	cm/second



Results of Boil Test

Aquifer Response Tests
PZ-1007S

$$K = \frac{rc^2 \ln(Re/rw) \ln \frac{[y(0)]}{[y(t)]}}{2Lt}$$

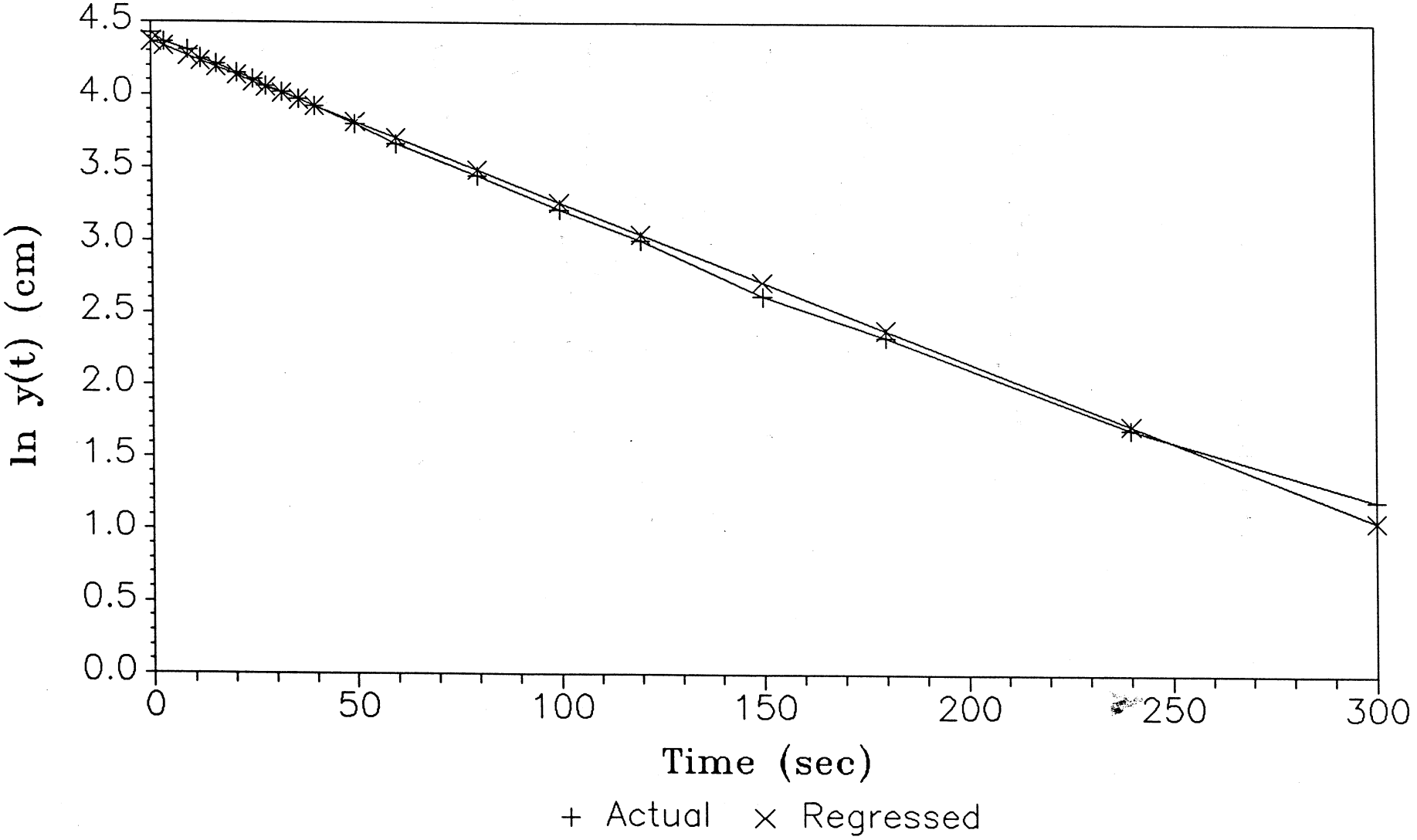
rc = casing radius = 2.54 cm
rw = borehole radius = 10.16 cm
L = screen length = 152.40 cm
D = aquifer thickness= 701.04 cm
H = well penetration = 256.95 cm
t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 4.3E-04 cm/s

DATA

Time (sec)	Drawdown y(t) (cm)
0.00	83.21
3.00	78.64
9.00	74.37
12.00	70.10
16.00	67.67
21.00	63.40
25.00	60.96
28.00	58.22
32.00	55.78
36.00	53.04
40.00	50.60
50.00	44.81
60.00	39.01
80.00	31.39
100.00	24.99
120.00	20.12
150.00	13.72
180.00	10.36
240.00	5.49
300.00	3.35

Aquifer Response Test
PZ-1007S

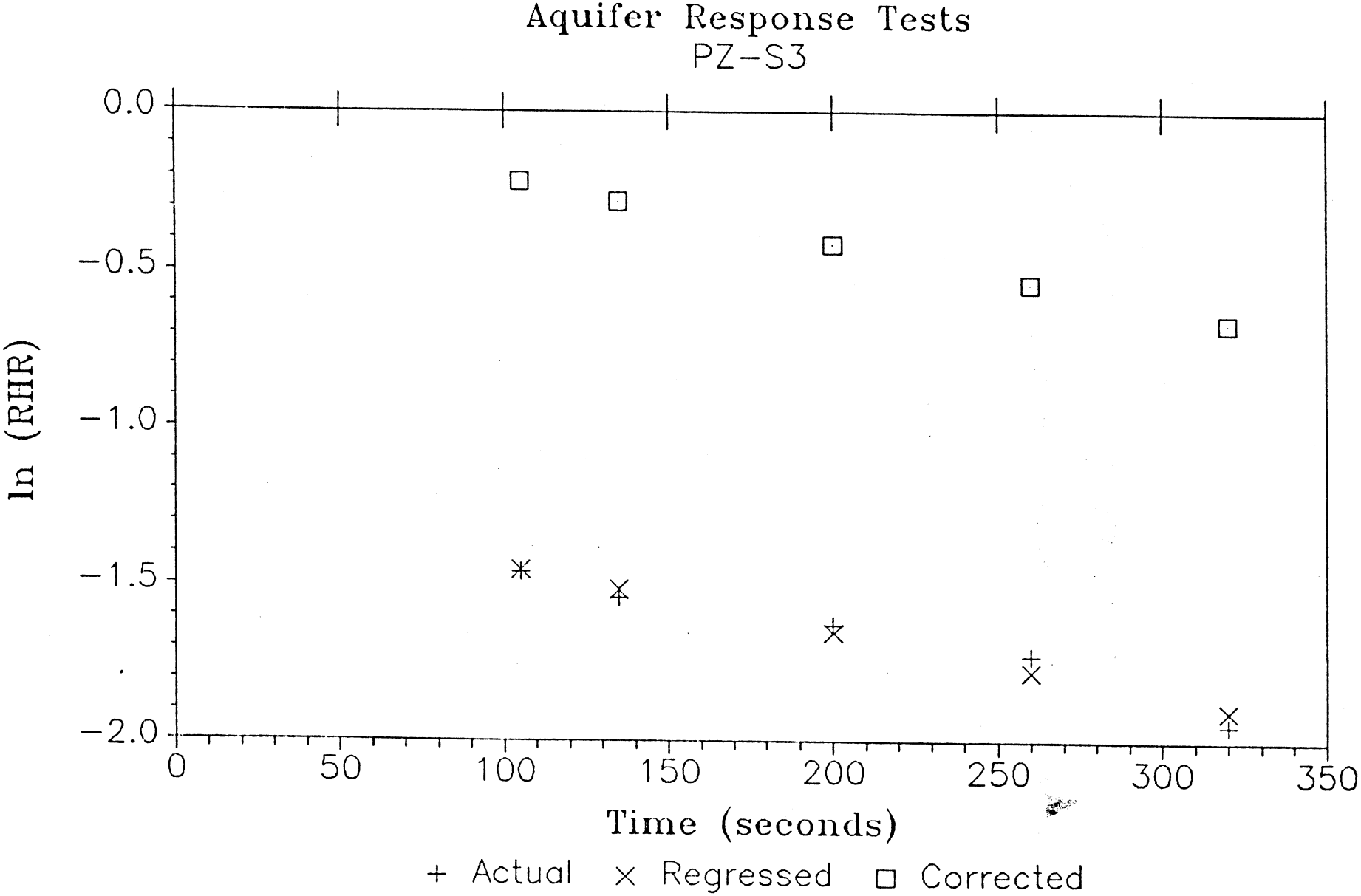


Bouwer and Rice Method

Aquifer Response Tests
PZ-S3

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius =		2.54	cm
L = screen sand pack length	=	228.60	cm
R = borehole radius	=	7.62	cm
H_o = initial head difference	=	0.56	feet
T_o = time lag =		478.11	seconds
---> K = hydraulic conductivity	=	1.0E-04	cm/second



Results of Bail Test

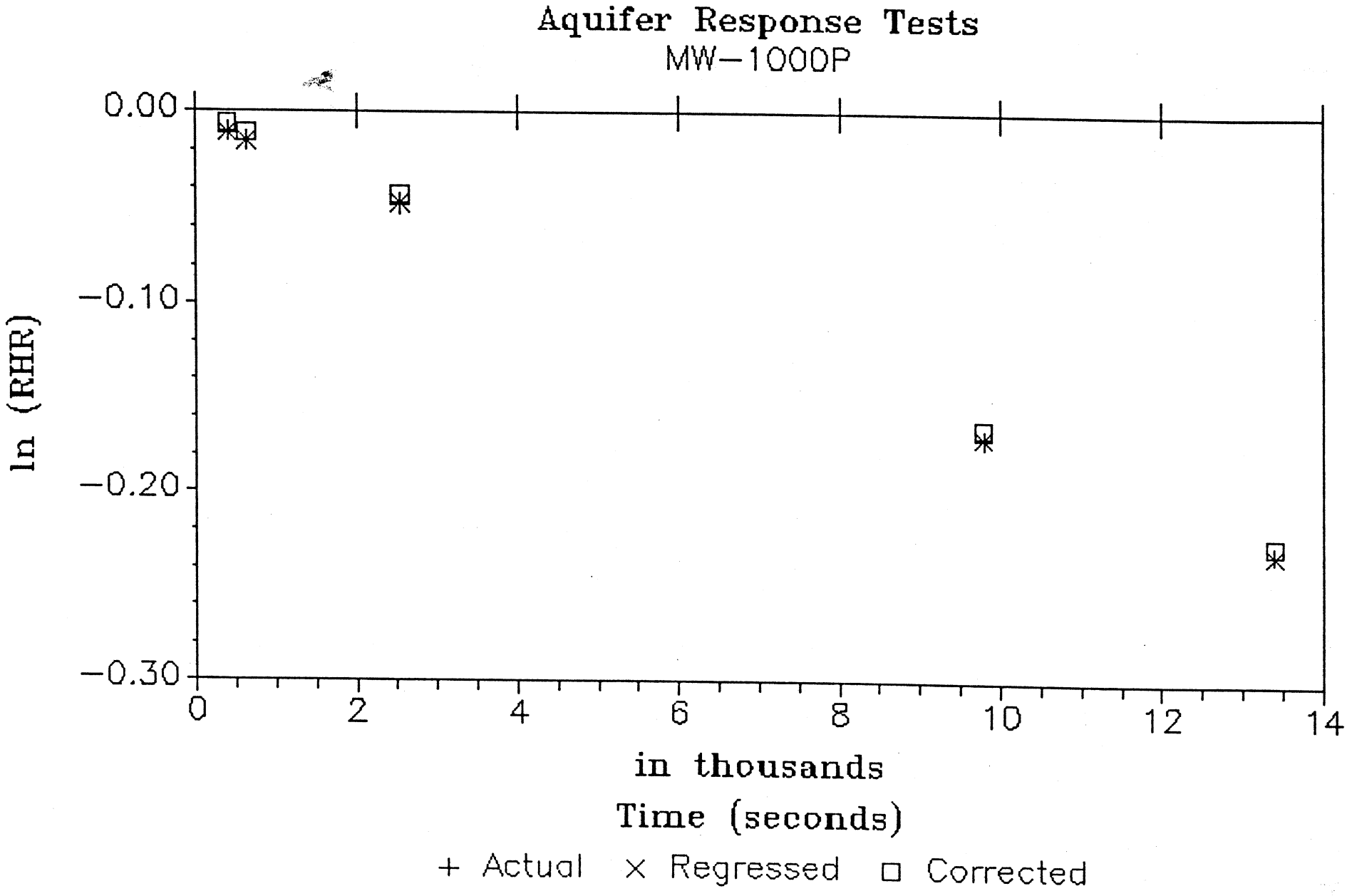
Single Well Aquifer Response Tests

Results - Precambrian

Aquifer Response Tests
MW-1000P

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius =		2.54	cm
L = screen sand pack length	=	213.36	cm
R = borehole radius	=	6.35	cm
H_o = initial head difference	=	31.40	feet
T_o = time lag =		58827.73	seconds
K = hydraulic conductivity	=	9.0E-07	cm/second

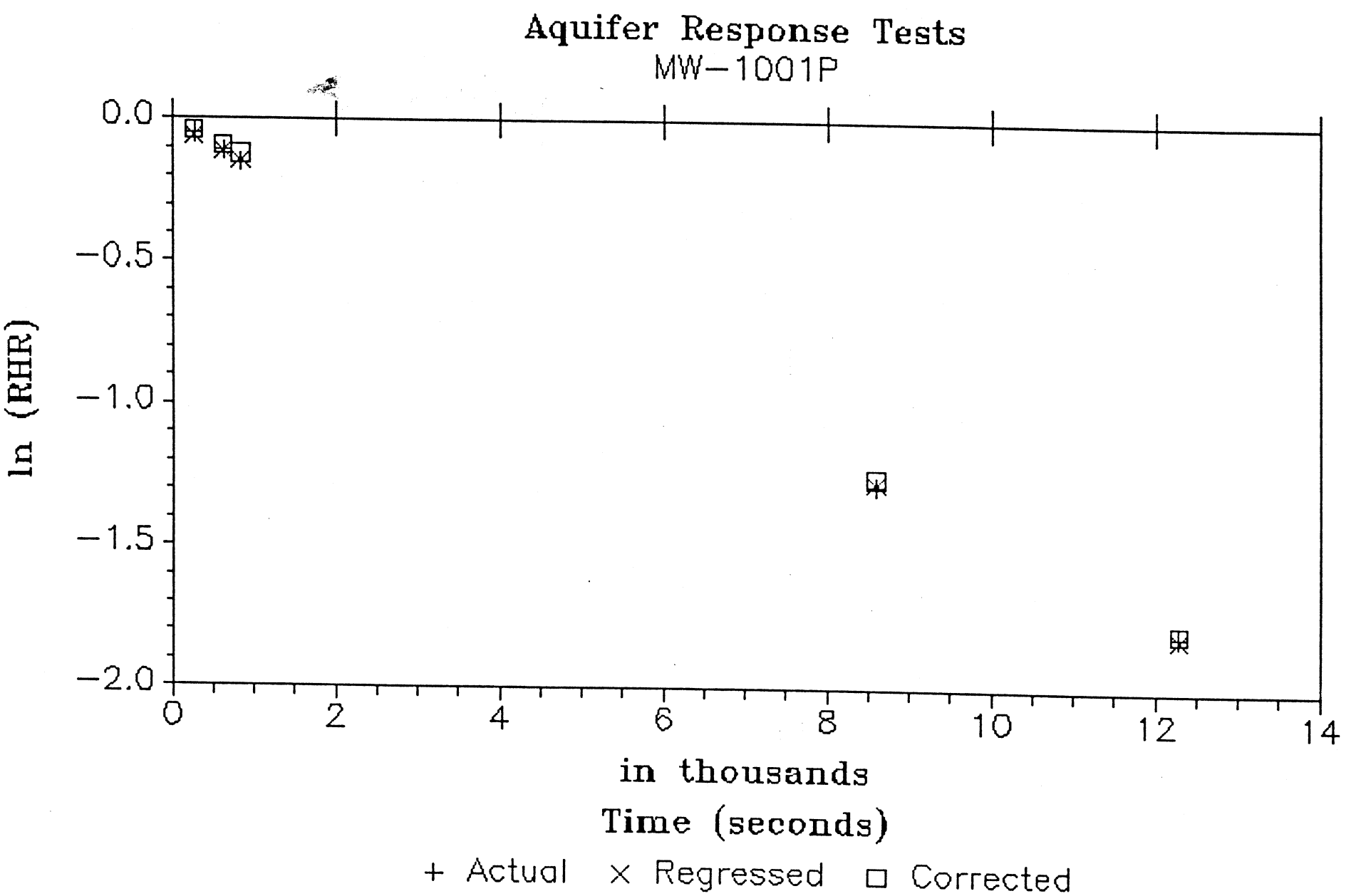


Results of Boil Test

Aquifer Response Tests
MW-1001P

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius =		2.54	cm
L = screen sand pack length	=	228.60	cm
R = borehole radius	=	6.35	cm
H_o = initial head difference	=	15.98	feet
T_o = time lag =		6840.69	seconds
K = hydraulic conductivity	=	7.4E-06	cm/second

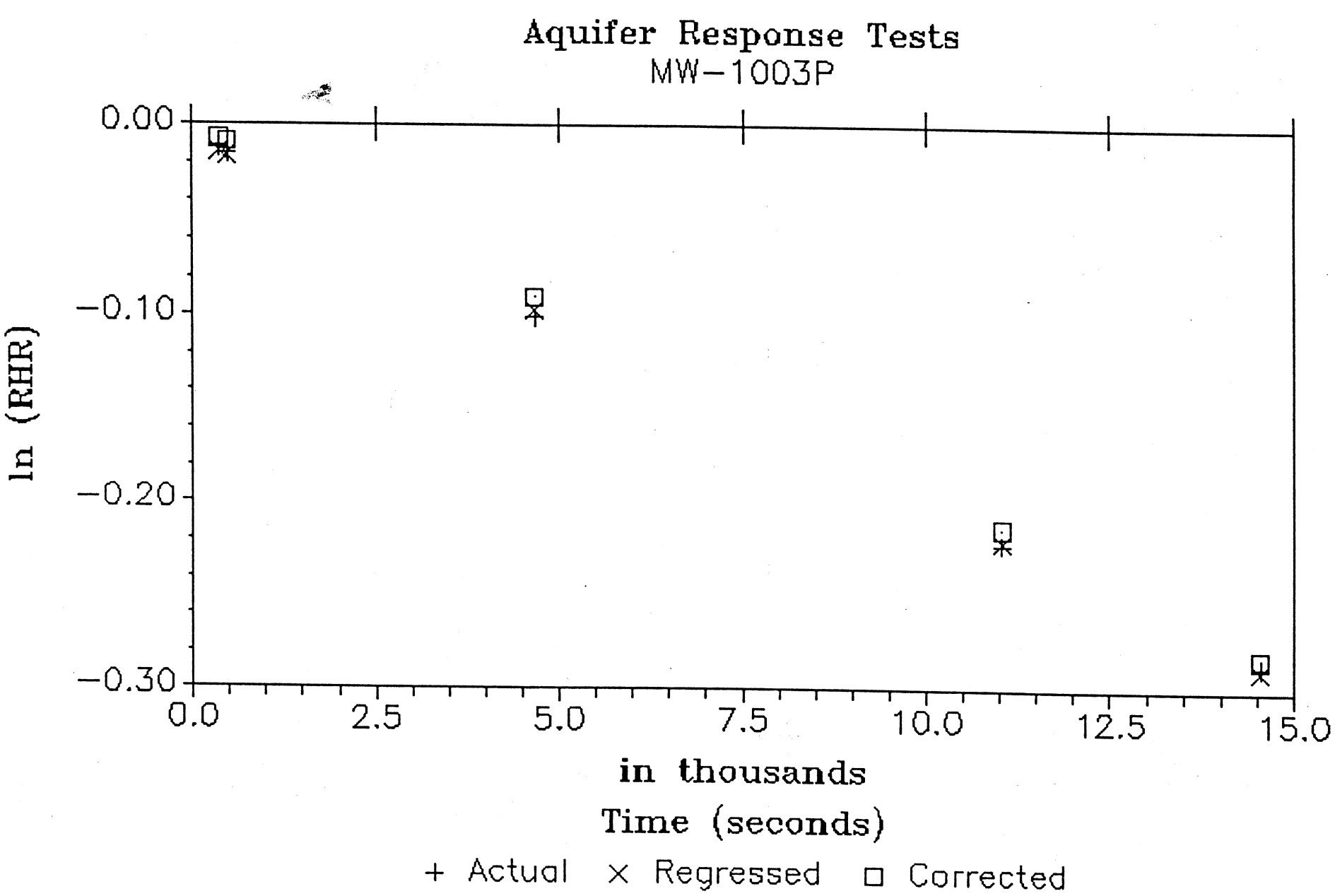


Results of Bail Test

Aquifer Response Tests
MW-1003P

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius	=	2.54	cm
L = screen sand pack length	=	228.60	cm
R = borehole radius	=	6.35	cm
H_o = initial head difference	=	19.01	feet
T_o = time lag	=	51356.33	seconds
K = hydraulic conductivity	=	9.8E-07	cm/second

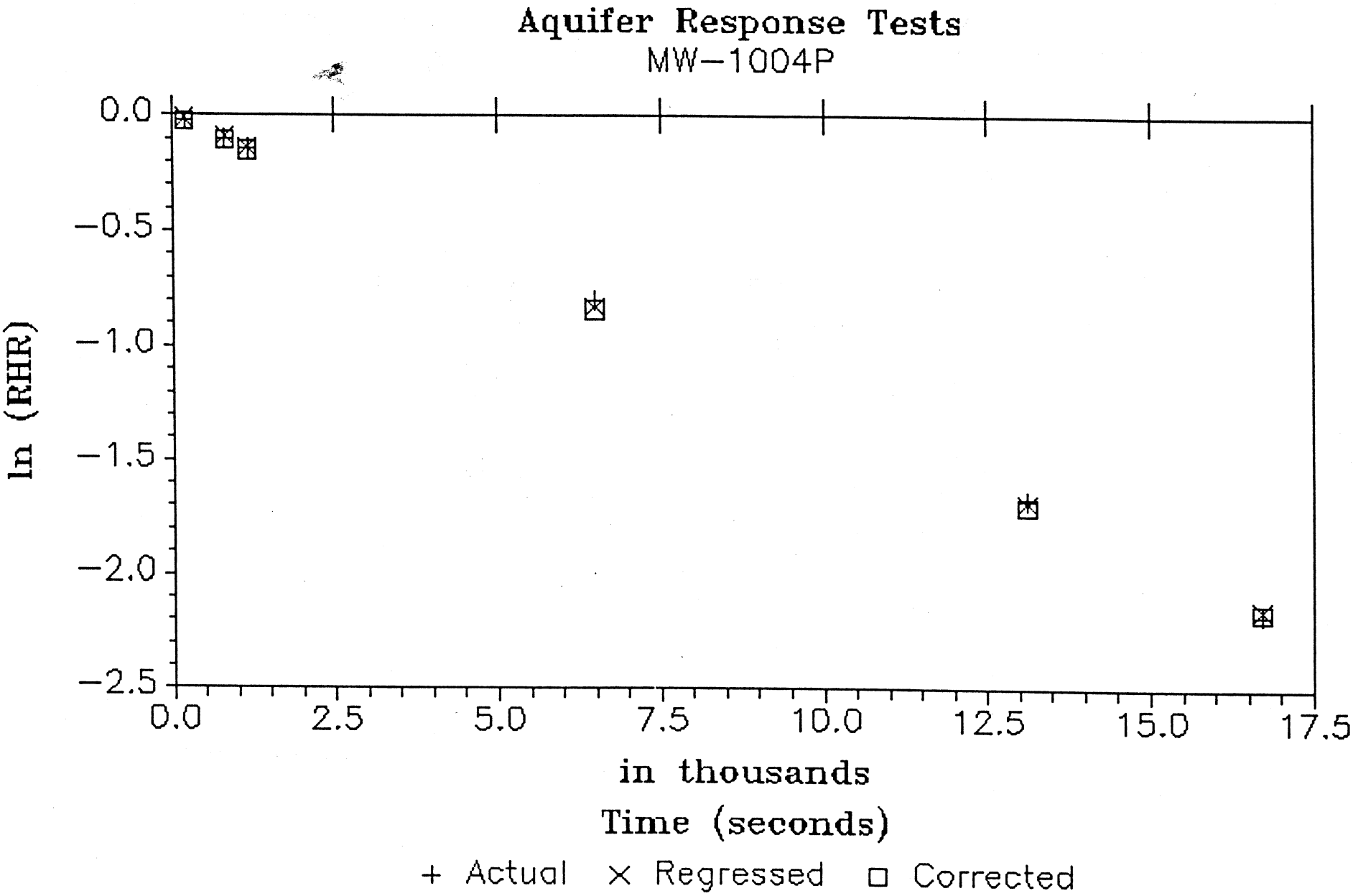


Results of Boil Test

Aquifer Response Tests
MW-1004P

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius	=	2.54	cm
L = screen sand pack length	=	259.08	cm
R = borehole radius	=	6.35	cm
H_o = initial head difference	=	30.10	feet
T_o = time lag	=	7678.26	seconds
K = hydraulic conductivity	=	6.0E-06	cm/second

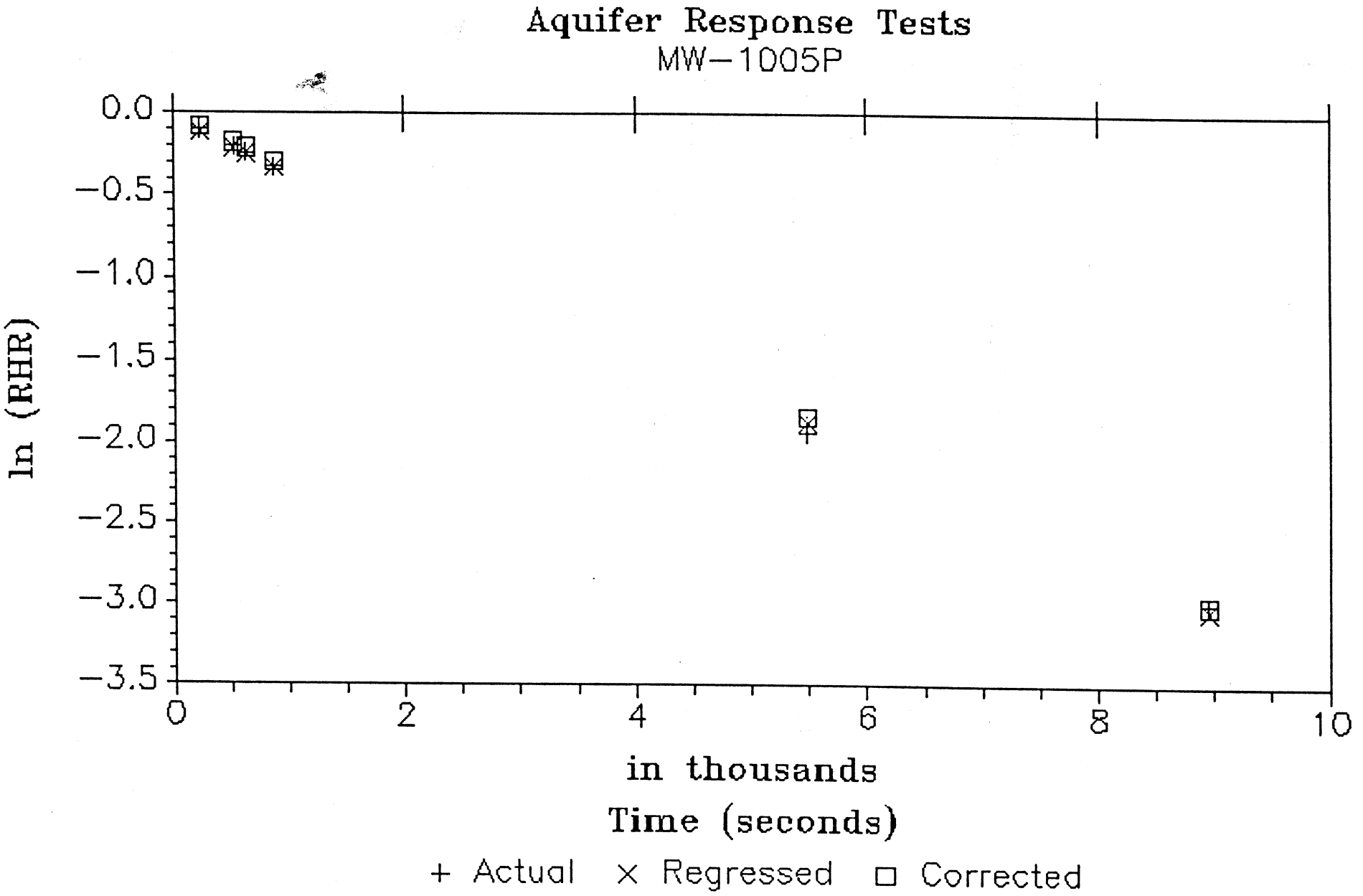


Results of Boil Test

Aquifer Response Tests
MW-1005P

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius	=	2.54	cm
L = screen sand pack length	=	228.60	cm
R = borehole radius	=	6.35	cm
H_o = initial head difference	=	29.48	feet
T_o = time lag	=	2970.02	seconds
K = hydraulic conductivity	=	1.7E-05	cm/second

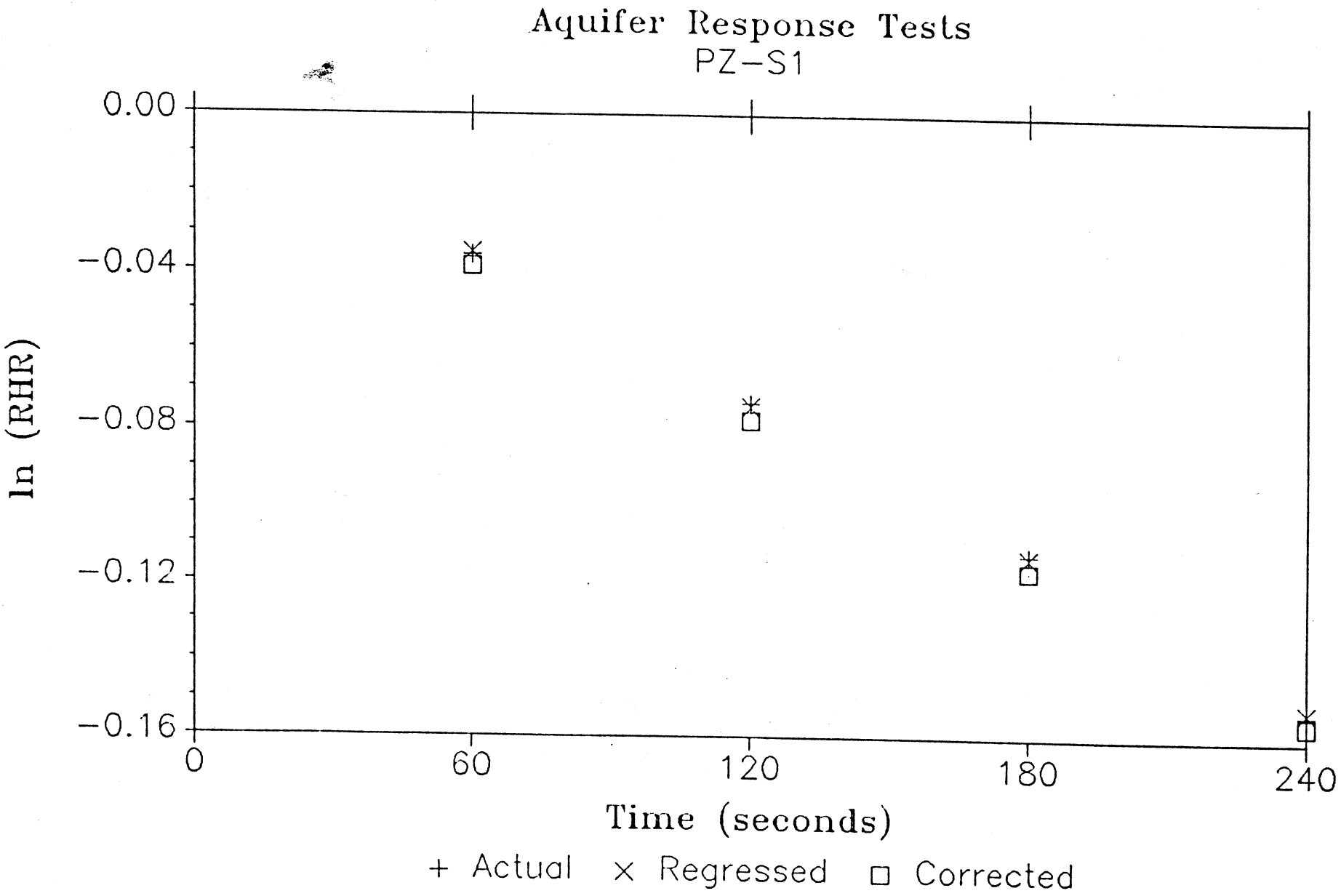


Results of Bail Test

Aquifer Response Tests
PZ-S1

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius =		2.54	cm
L = screen sand pack length	=	213.36	cm
R = borehole radius	=	8.26	cm
H_o = initial head difference	=	28.25	feet
T_o = time lag =		1534.54	seconds
---> K = hydraulic conductivity	=	3.2E-05	cm/second

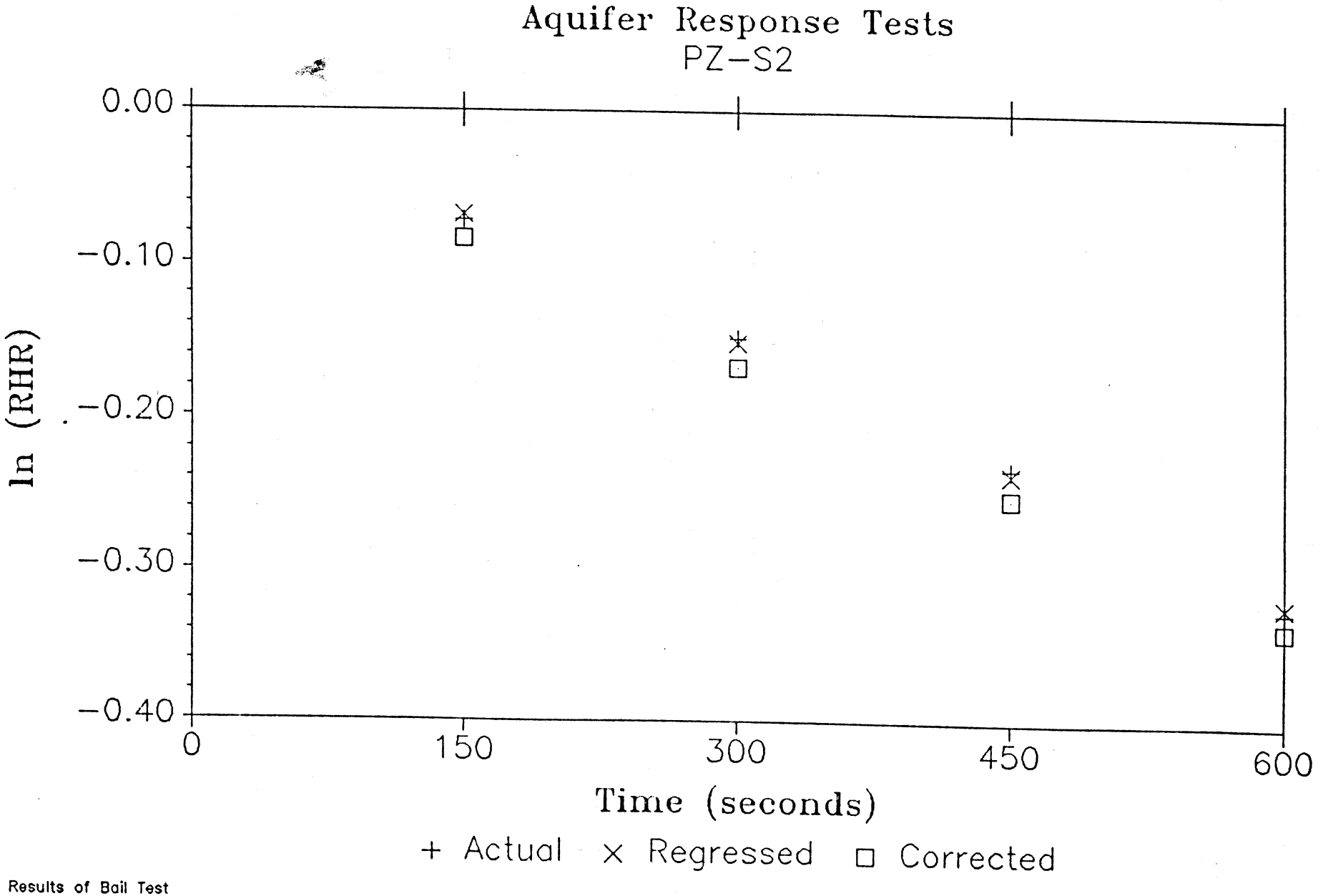


Results of Bail Test

Aquifer Response Tests
PZ-S2

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius =		2.54	cm
L = screen sand pack length	=	213.36	cm
R = borehole radius	=	8.26	cm
H_o = initial head difference	=	14.48	feet
T_o = time lag =		1778.13	seconds
---> K = hydraulic conductivity	=	2.8E-05	cm/second



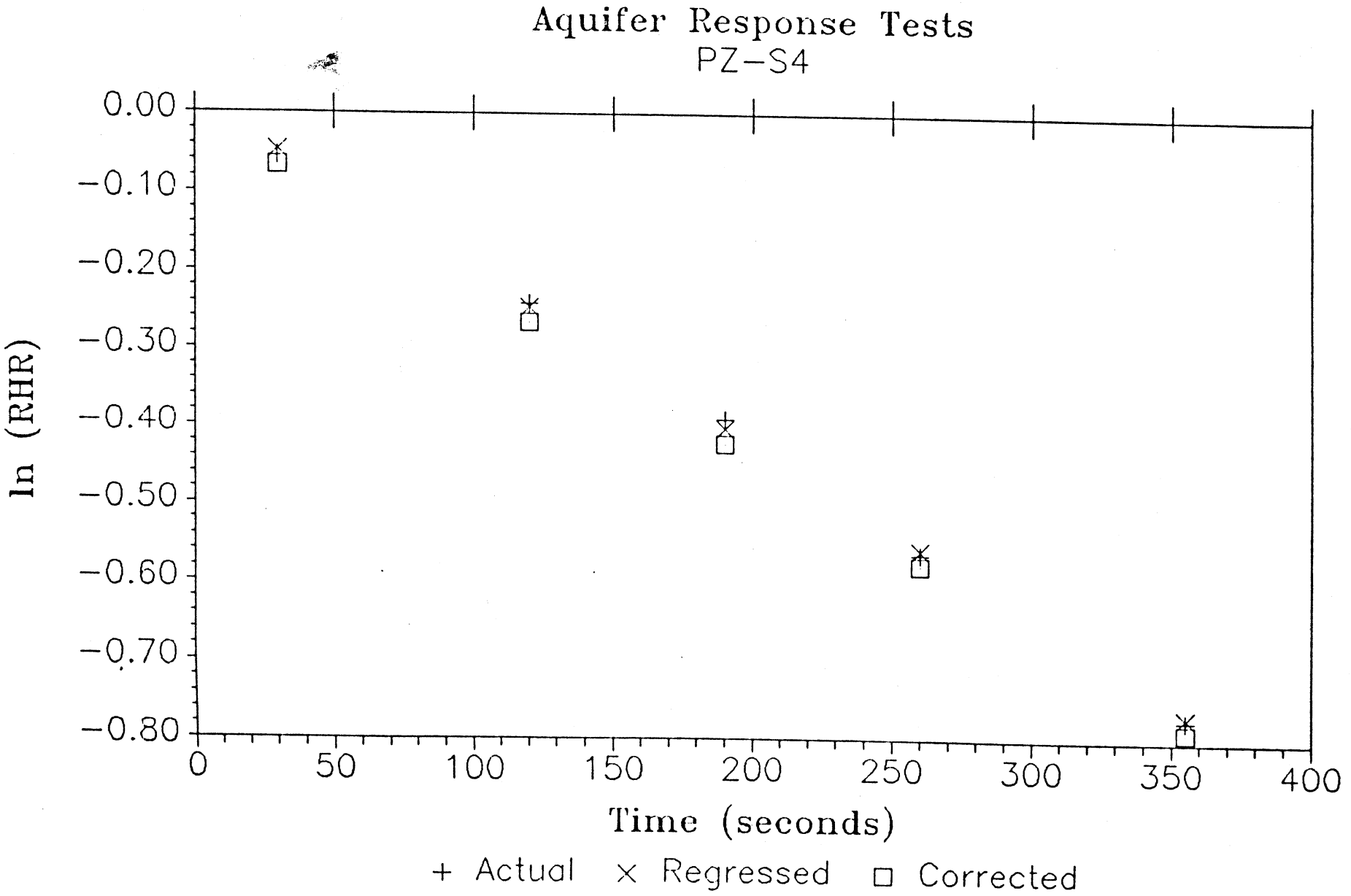
3.6-C-66

Results of Bail Test

Aquifer Response Tests
PZ-S4

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius =		2.54	cm
L = screen sand pack length	=	213.36	cm
R = borehole radius	=	6.35	cm
H_o = initial head difference	=	18.60	feet
T_o = time lag =		448.46	seconds
---> K = hydraulic conductivity	=	1.2E-04	cm/second

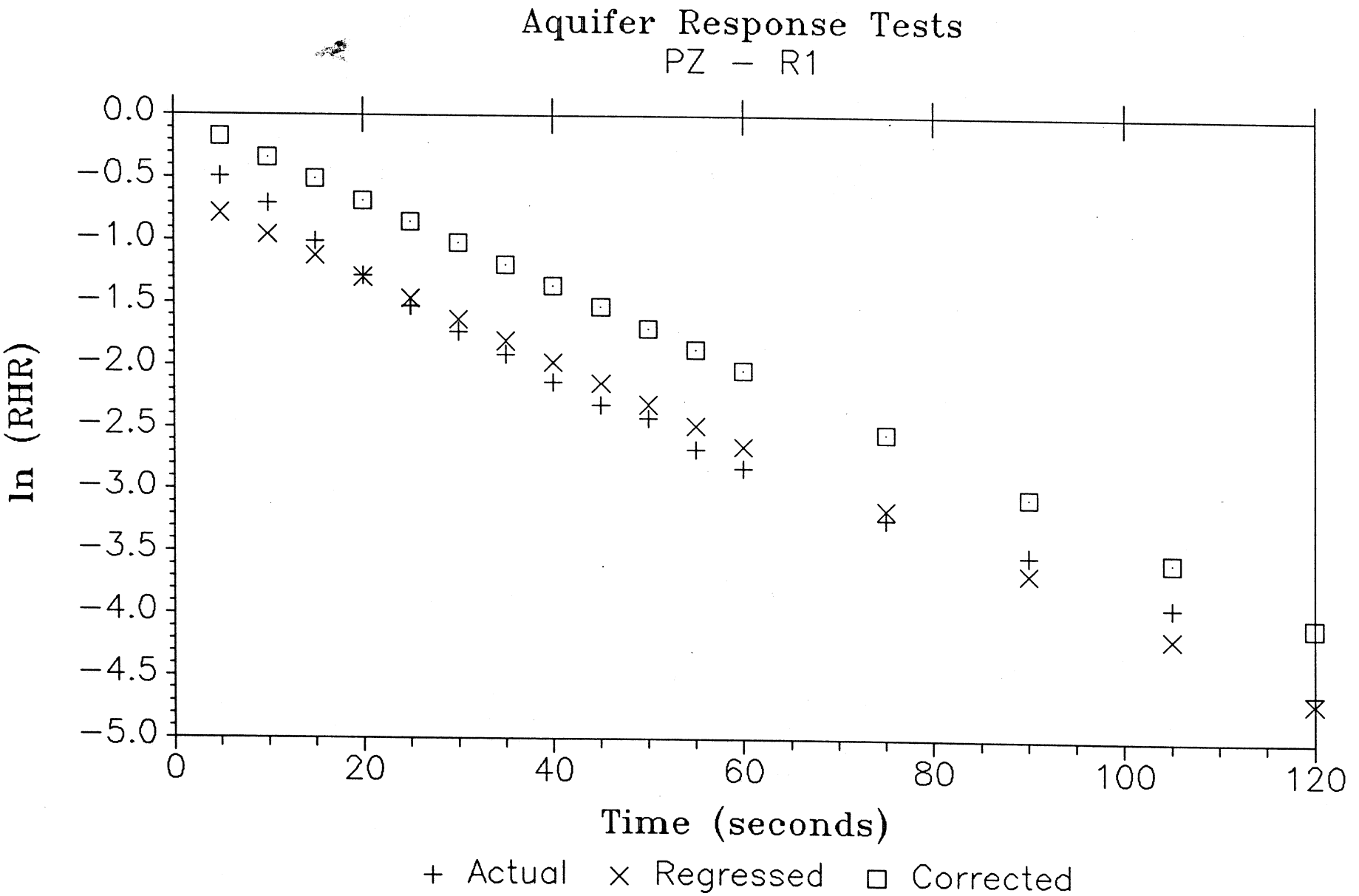


Results of Bail Test

Aquifer Response Tests
PZ - R1

$$\text{Equation: } K = \frac{r^2 \ln(L/R)}{2 L T_o}$$

r = well radius	=	1.59	cm
L = screen sand pack length	=	1371.60	cm
R = borehole radius	=	5.08	cm
H_o = initial head difference	=	1.01	feet
T_o = time lag	=	29.32	seconds
K = hydraulic conductivity	=	1.8E-04	cm/second

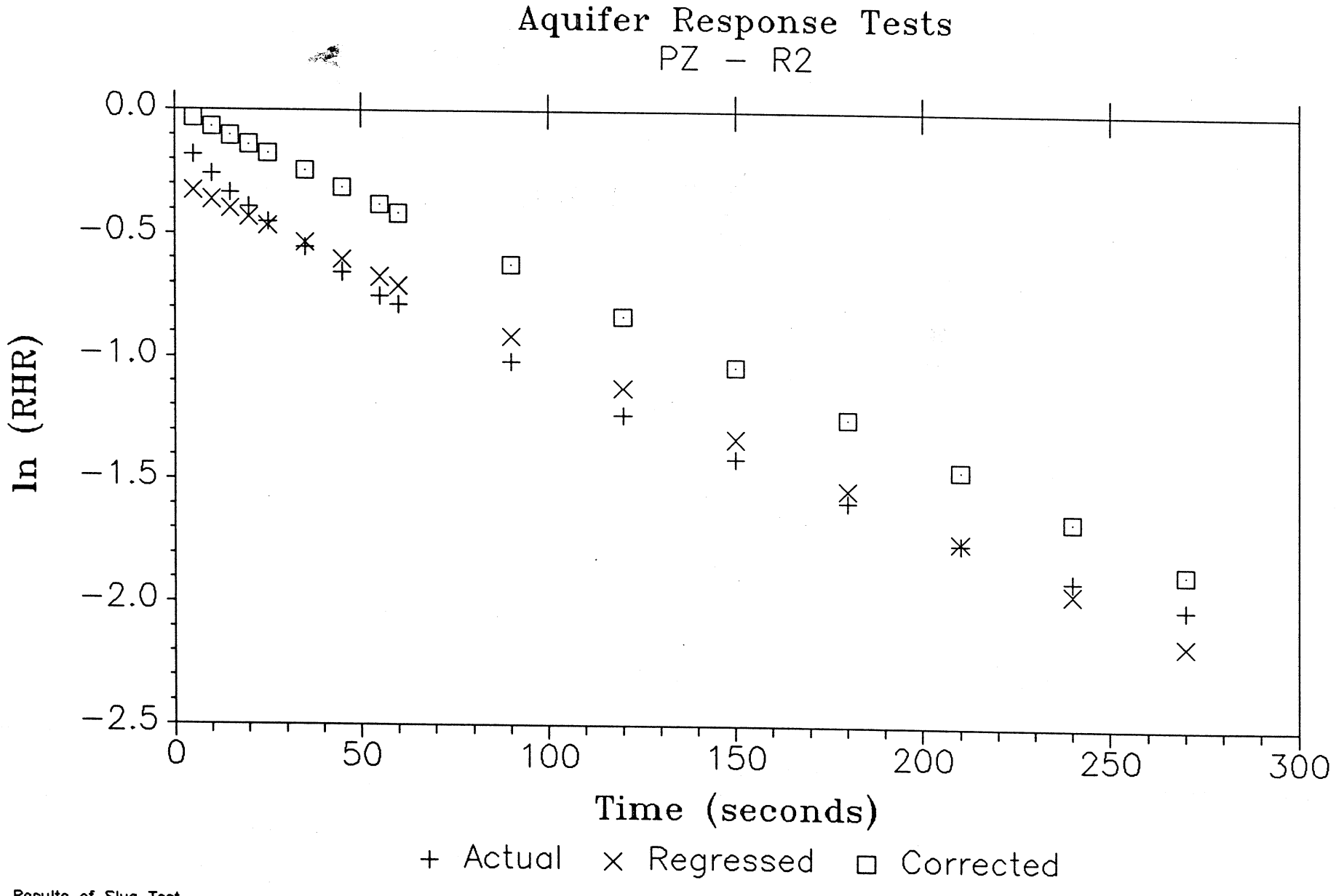


Results of Bail Test

Aquifer Response Tests
PZ - R2

$$\text{Equation: } K = \frac{r^2 \ln(L/R)}{2 L T_o}$$

r = well radius	=	1.59	cm
L = screen sand pack length	=	3352.80	cm
R = borehole radius	=	5.08	cm
H_o = initial head difference	=	1.27	feet
T_o = time lag	=	143.81	seconds
K = hydraulic conductivity	=	1.7E-05	cm/second



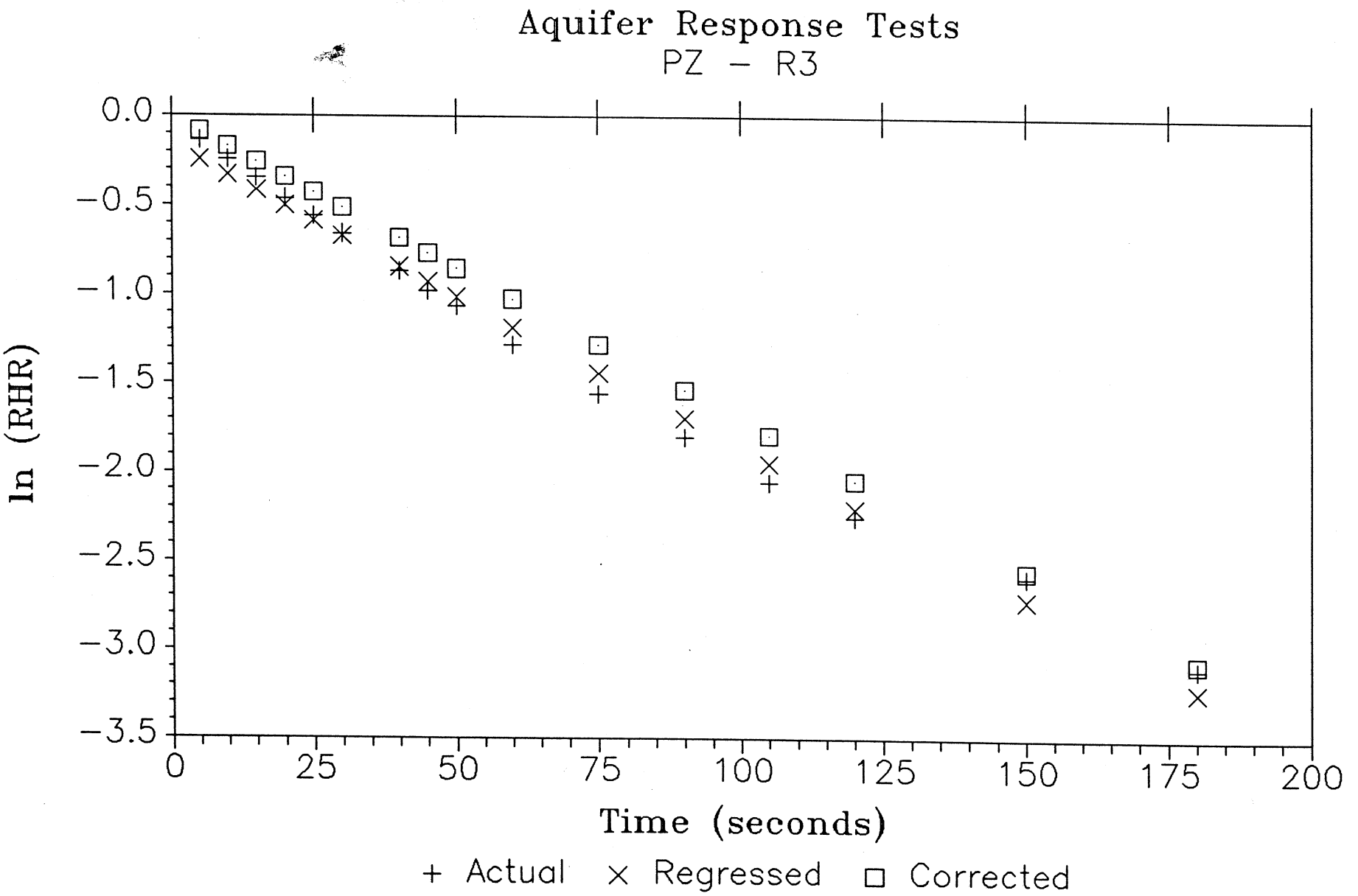
3.6-C-72

Results of Slug Test

Aquifer Response Tests
PZ - R3

$$\text{Equation: } K = \frac{r^2 \ln(L/R)}{2 L T_o}$$

r = well radius	=	1.59	cm
L = screen sand pack length	=	1767.84	cm
R = borehole radius	=	5.08	cm
H_o = initial head difference	=	1.33	feet
T_o = time lag	=	58.33	seconds
K = hydraulic conductivity	=	7.2E-05	cm/second

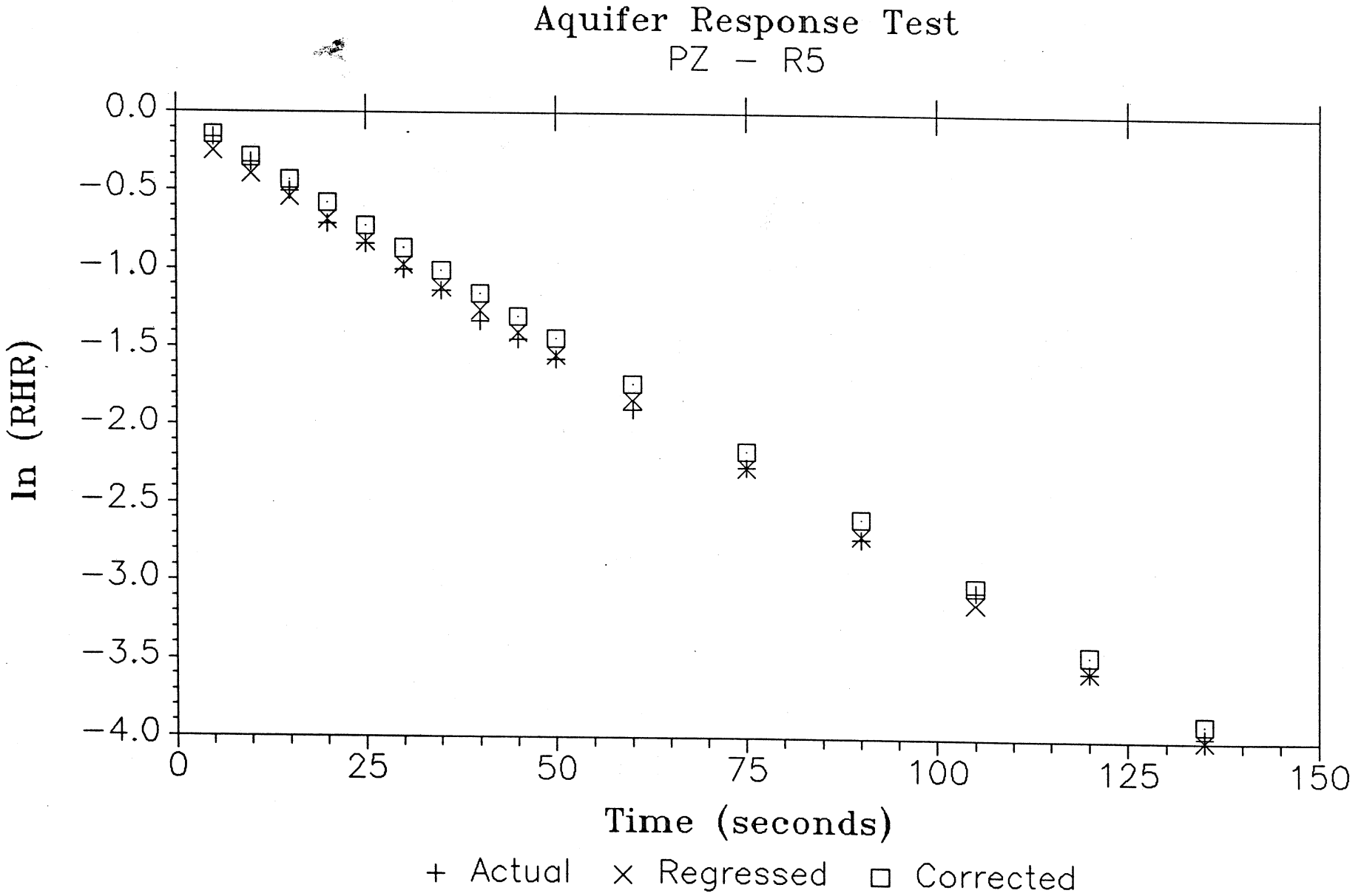


Results of Bail Test

Aquifer Response Tests
PZ - R5

$$\text{Equation: } K = \frac{r^2 \ln(L/R)}{2 L T_o}$$

r = well radius	=	1.59	cm
L = screen sand pack length	=	1676.40	cm
R = borehole radius	=	5.08	cm
H_o = initial head difference	=	1.06	feet
T_o = time lag	=	34.51	seconds
K = hydraulic conductivity	=	1.3E-04	cm/second

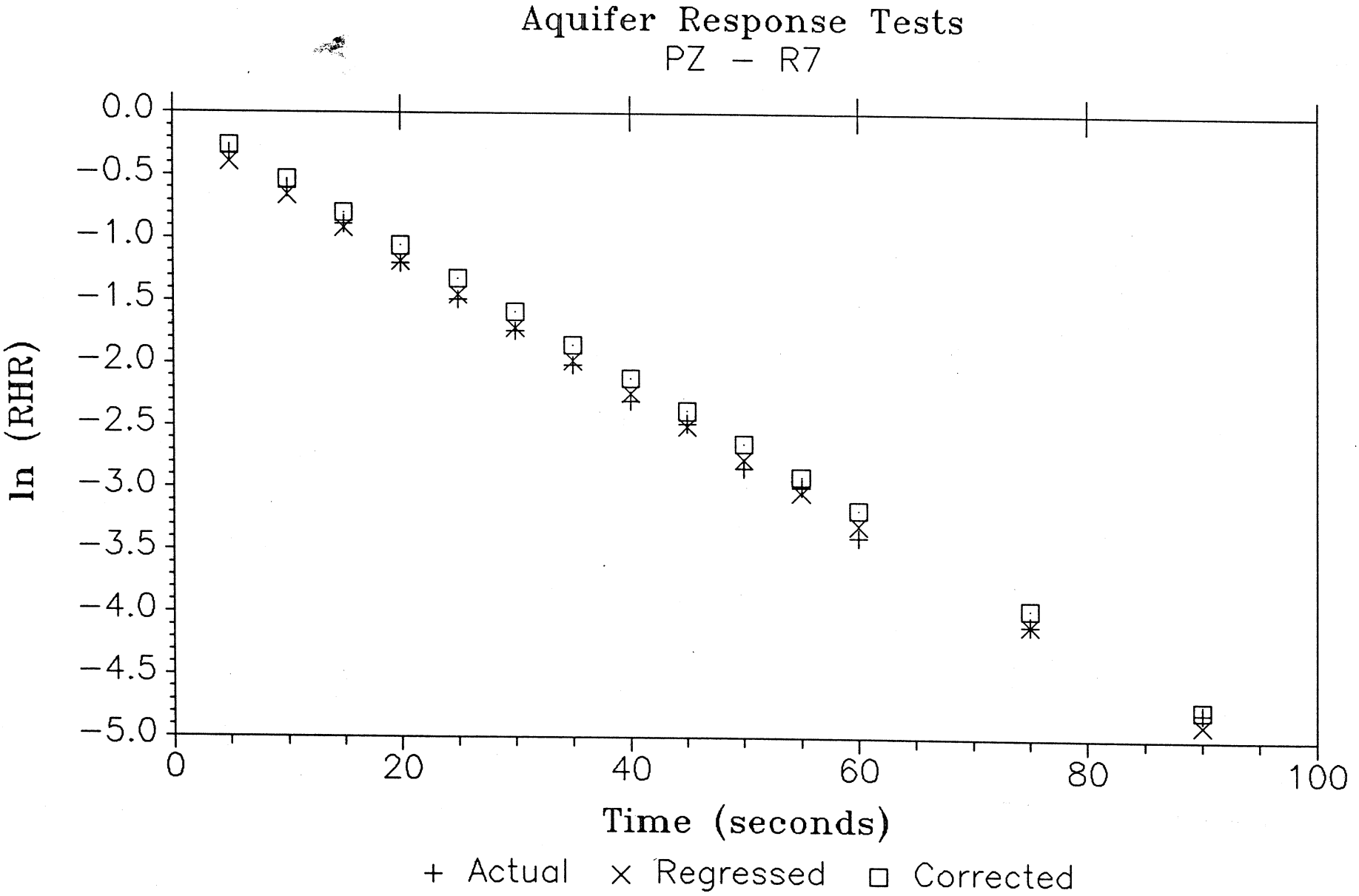

Aquifer Response Test
PZ – R5
0.0
−0.5
−1.0
−1.5
−2.0
−2.5
−3.0
−3.5
−4.0
ln (RHR)
0
25
50
75
100
125
150
Time (seconds)
+ Actual × Regressed □ Corrected

3.6-C-76

Aquifer Response Tests
PZ - R7

$$\text{Equation: } K = \frac{r^2 \ln(L/R)}{2 L T_o}$$

r = well radius	=	1.59	cm
L = screen sand pack length	=	1981.20	cm
R = borehole radius	=	5.08	cm
H_o = initial head difference	=	1.19	feet
T_o = time lag	=	18.82	seconds
K = hydraulic conductivity	=	2.0E-04	cm/second



Results of Bail Test

Aquifer Response Tests
PZ-K2P

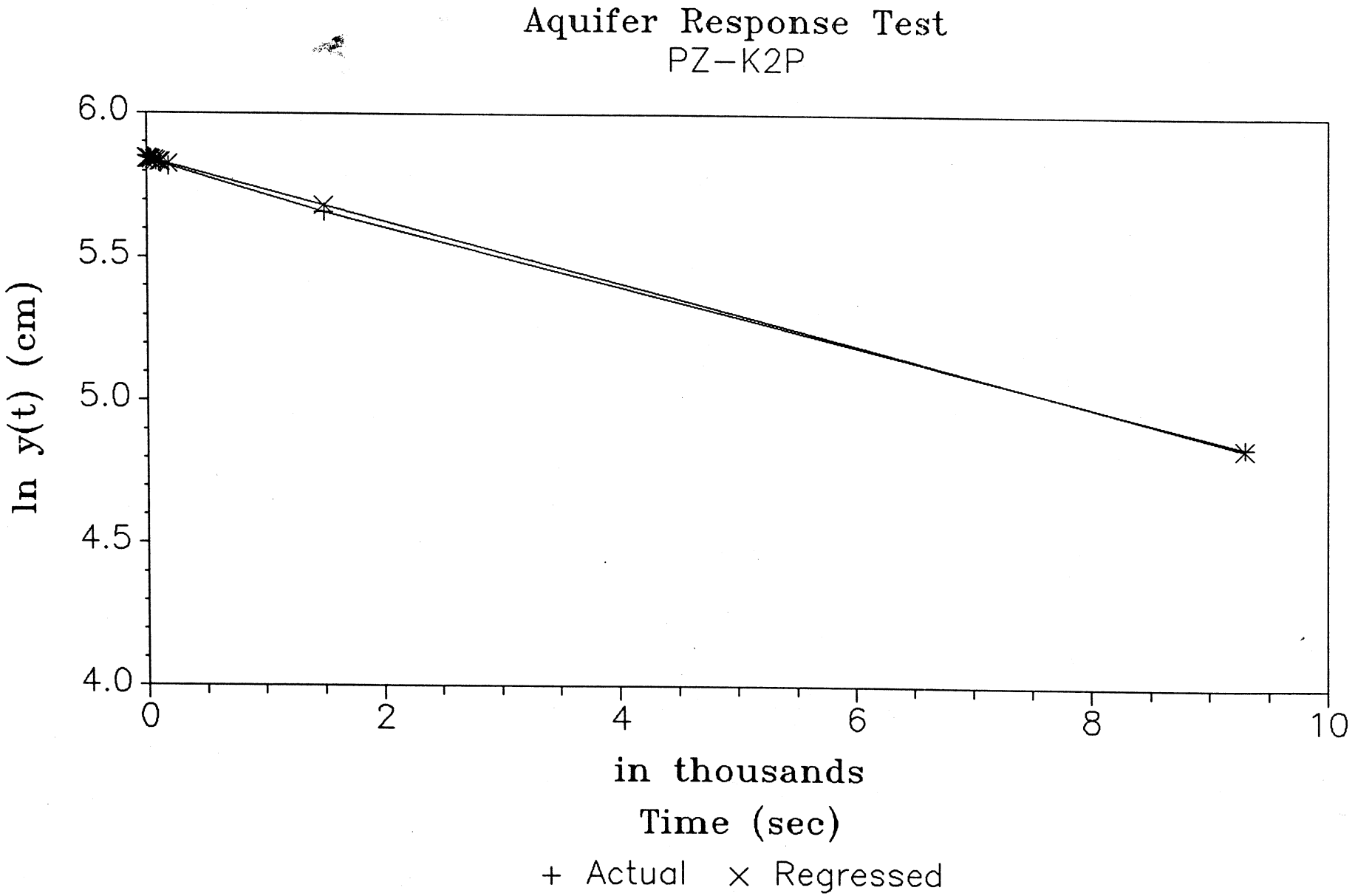
$$K = \frac{rc^2 \ln(Re/rw) \ln \frac{[y(0)]}{[y(t)]}}{2Lt}$$

rc = casing radius = 2.54 cm
rw = borehole radius = 10.16 cm
L = screen length = 152.40 cm
D = aquifer thickness= 9,144.00 cm
H = well penetration = 3,087.32 cm
t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 5.2E-06 cm/s

DATA

Time (sec)	Drawdown y(t) (cm)
0.00	347.47
4.00	346.86
9.00	346.25
14.00	345.95
18.00	345.64
21.00	345.34
26.00	345.03
40.00	344.12
60.00	342.60
80.00	341.38
100.00	339.85
120.00	338.63
180.00	335.89
1,500.00	286.82
9,300.00	127.41

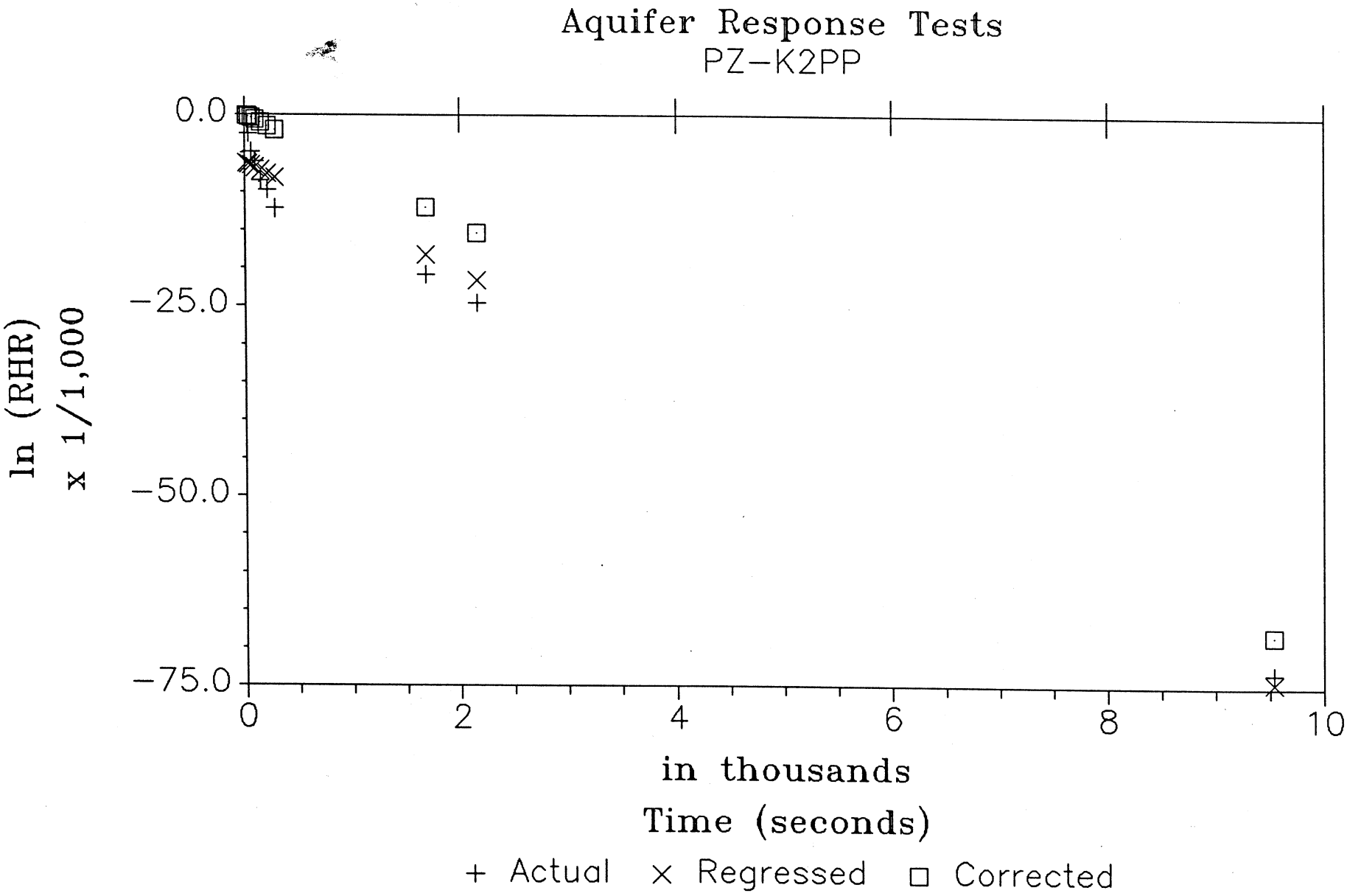


Bouwer and Rice Method

Aquifer Response Tests
PZ-K2PP

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius	=	2.54	cm
L = screen sand pack length	=	274.32	cm
R = borehole radius	=	10.16	cm
H_o = initial head difference	=	8.23	feet
T_o = time lag	=	139154.47	seconds
K = hydraulic conductivity	=	2.8E-07	cm/second



3.6-C-82

Results of Bail Test

Aquifer Response Tests
PZ-K4P

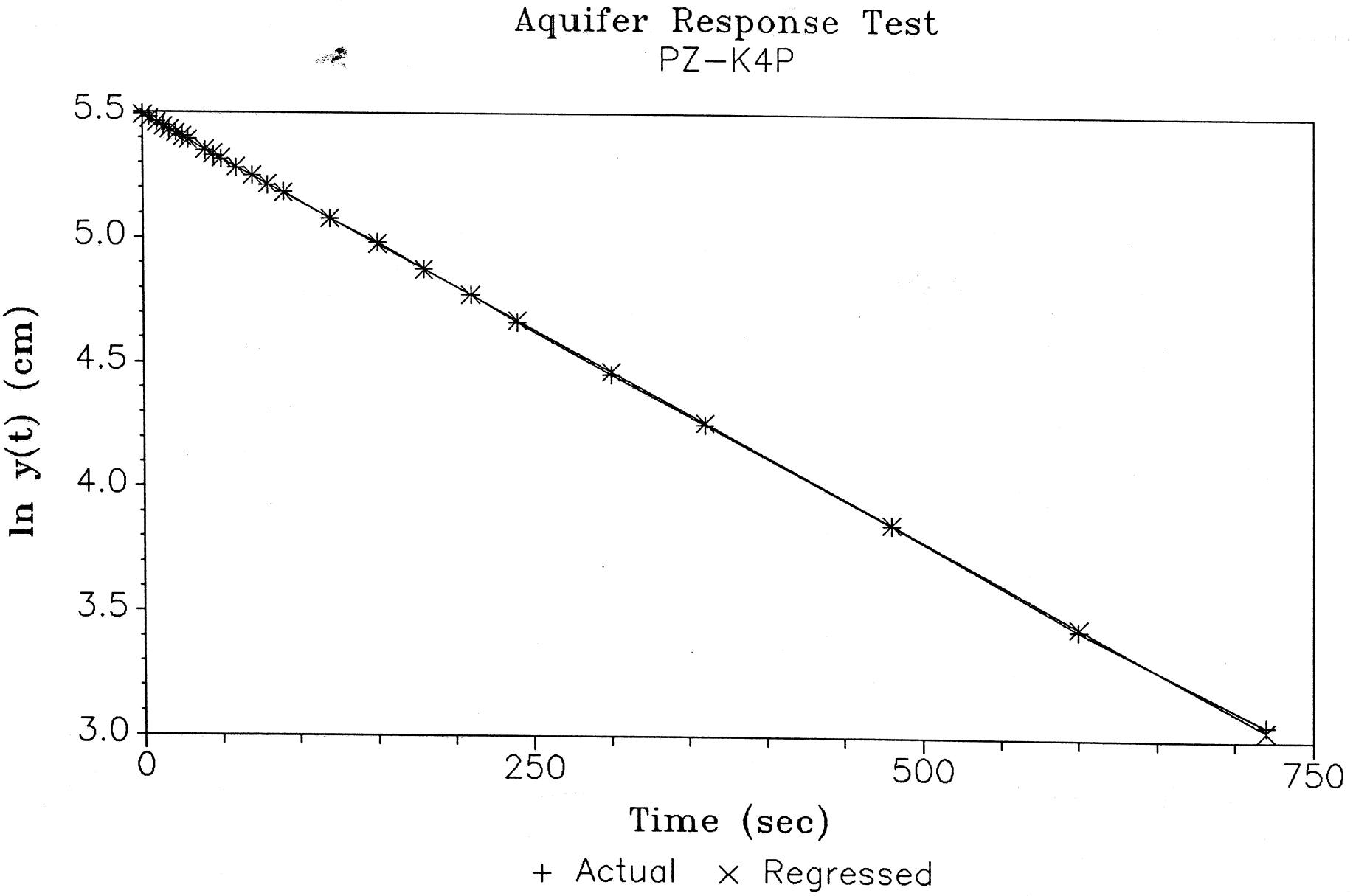
$$K = \frac{rc^2 \ln(Re/rw) \ln [y(0)]}{2Lt} \quad [y(t)]$$

rc = casing radius = 2.54 cm
rw = borehole radius = 10.16 cm
L = screen length = 152.40 cm
D = aquifer thickness= 9,144.00 cm
H = well penetration = 2,137.87 cm
t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 1.6E-04 cm/s

DATA

Time (sec)	Drawdown y(t) (cm)
0.00	242.62
4.00	240.49
9.00	235.92
13.00	231.95
17.00	228.90
21.00	225.86
25.00	222.81
29.00	219.76
40.00	210.62
45.00	206.65
50.00	203.00
60.00	196.60
70.00	190.80
80.00	183.49
90.00	178.61
120.00	160.63
150.00	146.00
180.00	131.37
210.00	118.57
240.00	106.38
300.00	86.26
360.00	70.41
480.00	47.24
600.00	31.09
720.00	21.34



Bouwer and Rice Method

Aquifer Response Tests
PZ-K4PP

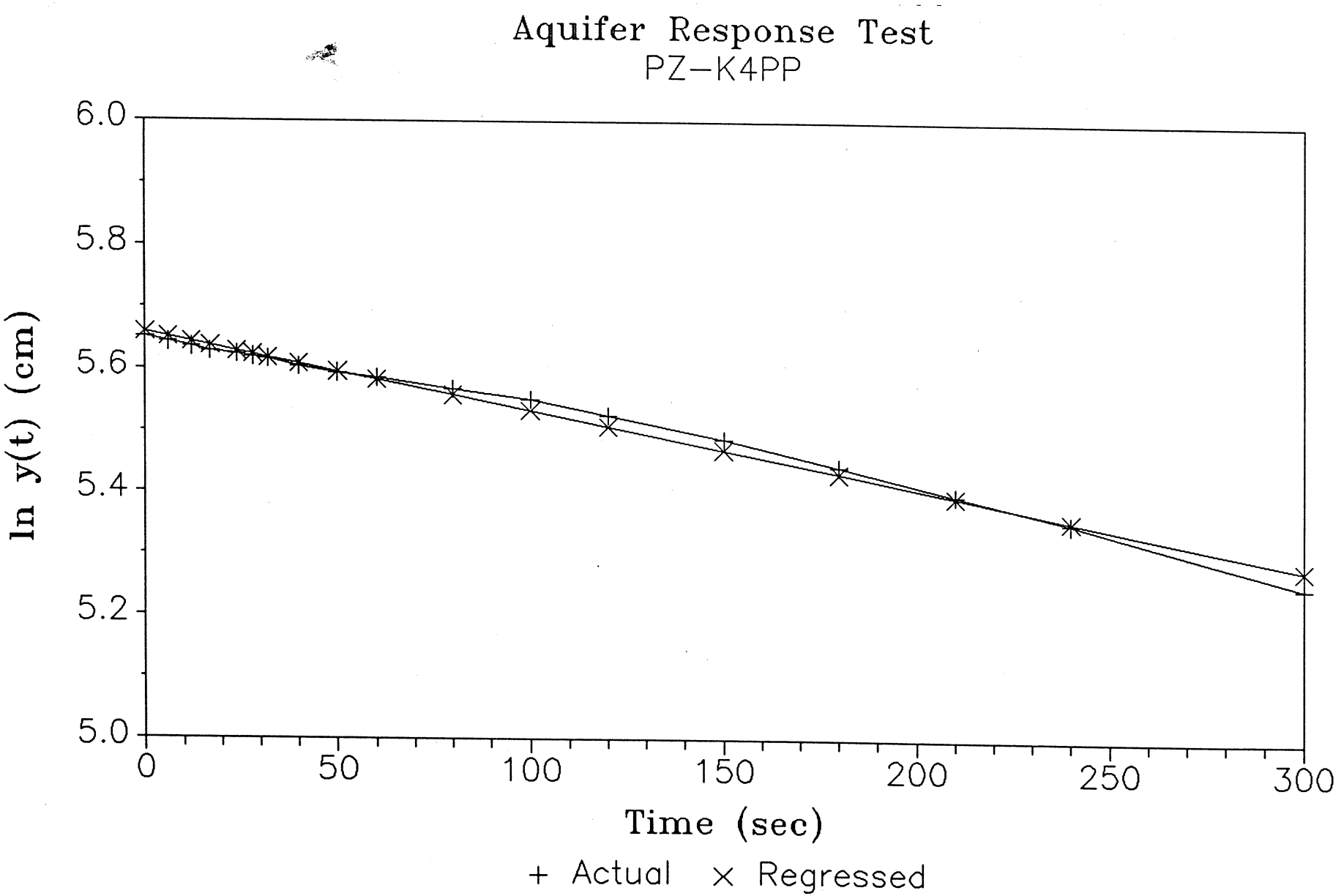
$$K = \frac{rc^2 \ln(Re/rw)}{2Lt} \ln \frac{[y(0)]}{[y(t)]}$$

rc = casing radius = 2.54 cm
rw = borehole radius = 10.16 cm
L = screen length = 152.40 cm
D = aquifer thickness= 9,144.00 cm
H = well penetration = 4,063.90 cm
t = time
y(t) = drawdown @ time t

K = hydraulic conductivity = 6.2E-05 cm/s

DATA

Time (sec)	Drawdown y(t) (cm)
0.00	284.38
6.00	282.24
12.00	280.11
17.00	278.28
24.00	276.76
28.00	275.84
32.00	274.93
40.00	271.58
50.00	268.83
60.00	266.70
80.00	261.82
100.00	257.56
120.00	250.85
150.00	241.71
180.00	231.04
210.00	220.98
240.00	211.23
300.00	190.80



Bouwer and Rice Method

Pump Tests

Pump Tests

TW-K1

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Engineers/Architects

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414/497-2500

CLIENT KENNECOTT DATE 3/14/84

PROJECT BAIL TESTS TW-K1 BY MJC

PROJECT NO. 87K10 PAGE NO.

CALCULATED VALUES OF K

K VALUE CM/S	OBTAINED FROM
9.79×10^{-7}	BAIL TEST #1 (HVORSLEV)
2.31×10^{-6}	BAIL TEST #2 (HVORSLEV)

AVERAGE 1.5×10^{-6} cm/s

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CLIENT KENNECOTT DATE 3/9/88

PROJECT BAL BAY #1 / TWK-1 BY MJC

PROJECT NO. 87110 PAGE NO.

DTW STATIC 23.85 H = 200' DATUM = 223.85

H_o = 223.85 - 175.0 = 48.85 $H - H_o$ = 151.15

TIME	DTW	h	H - h	$H-h/H-H_o$
0 MIN	175.00	48.85	151.15	1
4.5	174.72	49.13	150.87	.998
6	174.58	49.27	150.73	.997
7	174.47	49.38	150.62	.996
9	174.09	49.76	150.24	.994
12	173.77	50.08	149.92	.992
16	173.40	50.45	149.55	.989
18	173.15	50.70	149.30	.988
21	172.84	51.01	148.99	.986
24	172.56	51.29	148.71	.984
27	172.35	51.50	148.50	.982
30	172.14	51.71	148.29	.981
33	171.98	51.87	148.13	.980
36	171.75	52.10	147.90	.978
39	171.67	52.18	147.82	.978
43	171.32	52.53	147.47	.976
47	171.15	52.70	147.30	.975
103	168.10	55.75	144.25	.954
1595	40.10	183.75	16.25	.108

$$K = \frac{r^2 \ln(L/R)}{2 L T_o}$$

r = 7.62 cm

L = 153 FEET (4663 cm)

R = .25 FEET

T_o = 40800

$$K = \frac{(7.62)^2 \ln(153/.25)}{2(4663)\,40800} = 9.79 \times 10^{-7}$$

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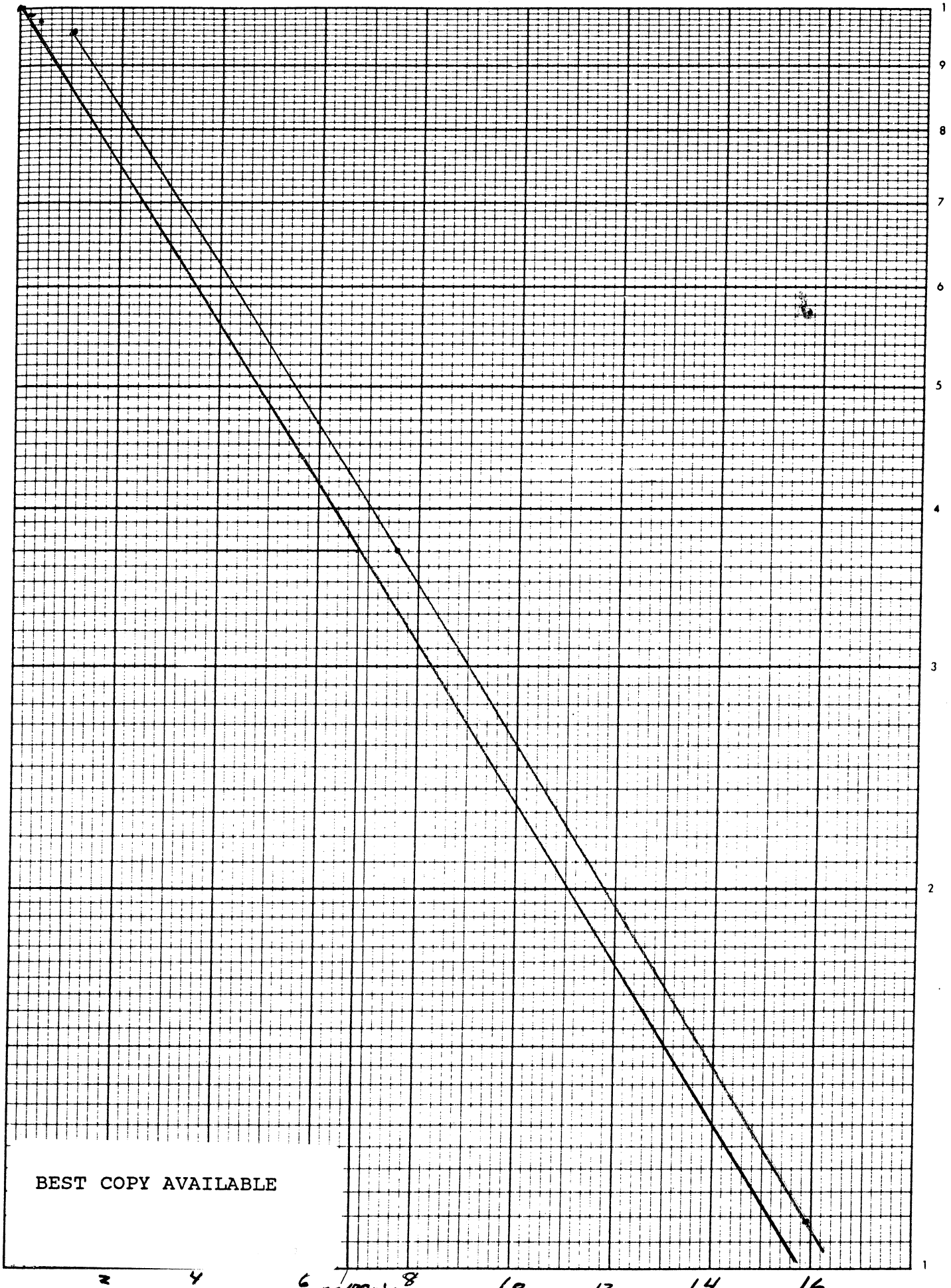

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CLIENT KENNECOTT DATE 3/10/88

PROJECT BAIL TEST #2 TW K-1 BY MJC

PROJECT NO. 87K10 PAGE NO.

DTW STATIC (FROM 3/9/88 = 23.85'

H = 100 FEET

DATUM = 123.85 FEET

H_o = 123.85 - 97.01 = 26.84

$H - H_o$ = 73.16

TIME (HOURS)	DTW	h (23.85 - DTW)	H - h	H - h / H - H_o
0	97.01	26.84	73.16	1
3.8	77.48	46.37	53.63	.733
12.8	44.70	79.15	20.85	.285
14.4	39.93	83.92	16.08	.220
16	35.32	88.53	11.47	.157
17.6	31.53	92.32	7.68	.105
19	28.62	95.23	4.77	.065
20.2	26.56	97.29	2.71	.037

T_o = 17280

$$K = \frac{r^2 \ln(L/R)}{2L\,T_o}$$

r = 7.62cm

L = 153 ft (4663cm)

R = .25 ft

T_o = 17280 sec

$$K = \frac{(7.62)^2 \ln(153/.25)}{2(4663)\,17280} = 2.31 \times 10^{-6}$$

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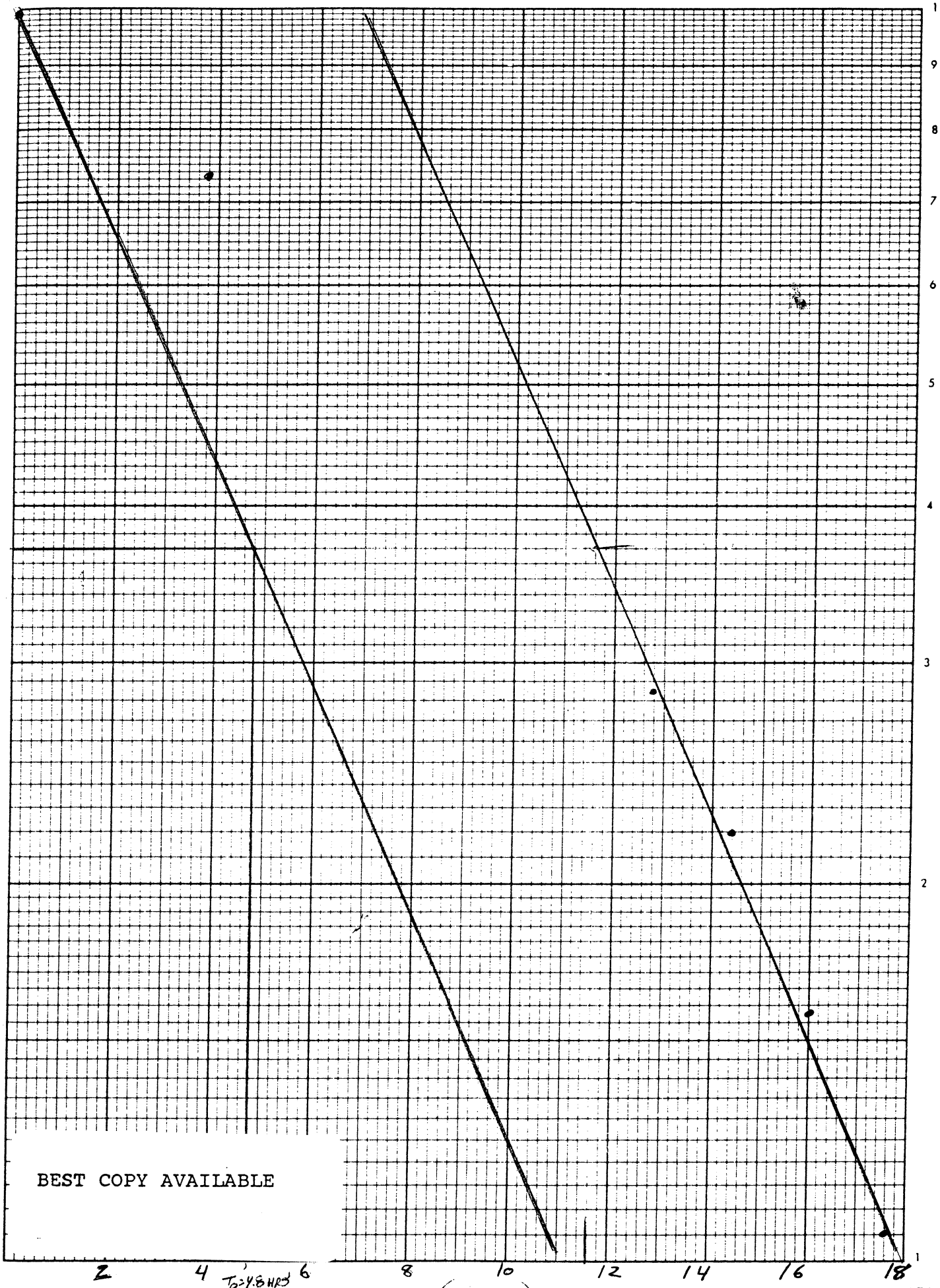

H-h
1-16

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Pump Tests

TW-K2

Fugro & Van Dyke

Client: KENNECOTT Scope I.D.:
Project: TW-K2 PUMP TEST Page:
Prepared by: Date:
Checked by: Date:

MW-1000:

DRAWDOWN

6.7×10^{-4} cm/s
1.9×10^{-4} cm/s

AVE 3.6×10^{-4} cm/s

RECOVERY

7.8×10^{-4} cm/s
3.1×10^{-4} cm/s

AVE 4.9×10^{-4} cm/s

MW-1000P:

DRAWDOWN

1.5×10^{-3} cm/s
4.3×10^{-4} cm/s

AVE 8.0×10^{-4} cm/s

RECOVERY 4.6×10^{-4} cm/s

OW-40:

DRAWDOWN

7.9×10^{-4} cm/s
2.8×10^{-3} cm/s

AVE 1.5×10^{-3} cm/s

RECOVERY

8.8×10^{-4} cm/s
6.1×10^{-3} cm/s

AVE 2.3×10^{-3} cm/s

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Foth & Van Dyke

Client: KENNECOTT Scope I.D.:
Project: PUMP TESTING - TW-K2 Page:
Prepared by: FJD Date: 3/23/89
Checked by: Date:

SUMMARY OF PERMEABILITY RESULTS

TW-K2:

DRAWDOWN
8.0×10^{-5} cm/s
4.6×10^{-5} cm/s

AVERAGE 6.1×10^{-5} cm/s

RECOVERY
8.2×10^{-5} cm/s
3.4×10^{-5} cm/s
2.1×10^{-5} cm/s
9.9×10^{-5} cm/s
1.1×10^{-4} cm/s

AVERAGE 5.8×10^{-5} cm/s

OBSERVATION WELLS

PZ-R2:

DRAWDOWN
1.2×10^{-4} cm/s
4.9×10^{-5} cm/s

AVERAGE 7.7×10^{-5} cm/s

RECOVERY
8.5×10^{-5} cm/s
2.5×10^{-4} cm/s

AVERAGE 1.4×10^{-4} cm/s

PZ-S2:

DRAWDOWN
3.6×10^{-4} cm/s
2.0×10^{-4} cm/s
3.8×10^{-5} cm/s

1.4×10^{-4} cm/s

RECOVERY
3.8×10^{-5} cm/s
4.6×10^{-4} cm/s

AVERAGE 1.3×10^{-4} cm/s

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CLIENT KENNECOTT DATE 3/14/88

PROJECT PUMP TEST #: TW-K2 BY MJC

PROJECT NO. 87K10 PAGE NO. 1 OF 2

CALCULATION OF K USING JACOB STRAIGHT LINE METHOD

$T = \frac{CQ}{\Delta h}$ where C = 264 & T = US GAL/DAY/FT

Δh = OVER ONE log cycle

$\Delta h = 11.3$ $Q = 13.3$ gpm

$T = \frac{(264)(13.3)}{11.3} = 310.72$

$T = Kb = 310.72$ US GAL/DAY/FT

$\frac{1 \text{ GAL}}{\text{DAY FT}} \times \frac{0.134 \text{ FT}^3}{\text{US GAL}} \times \frac{30.48 \text{ CM}}{\text{FT}} \times \frac{30.48 \text{ CM}}{\text{FT}} \times \frac{1 \text{ DAY}}{24 \text{ HR}} \times \frac{1 \text{ HR}}{3600 \text{ S}} = \frac{\text{CM}^2}{\text{S}}$

$310.72 \times 1.44 \times 10^{-3} = 4.47 \times 10^{-1} \text{ CM}^2/\text{S} = T$

ASSUME b = BOTTOM OF HOLE - STATIC WL =

197 - 13.38 = 183.62 FEET

$183.62 \text{ FEET} \times \frac{30.48 \text{ CM}}{\text{FT}} = 5597 \text{ CM}$

$T/b = K$

$4.47 \times 10^{-1} / 5597 = \boxed{7.98 \times 10^{-5}}$

USING STATIC* WL WITH A CONSTANT Q S = 17.00 FEET

(*APPROXIMATION SINCE S WAS NOT ACTUALLY CONSTANT)

$K = \frac{2000 Q}{Sb} (4.7 \times 10^{-5})$

$K = \frac{2000(13.3)}{17(183.62)} (4.7 \times 10^{-5}) = \boxed{4.00 \times 10^{-4}}$

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CLIENT Kennecott DATE 3/10/88

PROJECT Pump Test #1 TW-K-2 BY MJC

PROJECT NO. 87K10 PAGE NO. 2 of 2

Pump Test #1 TW K-2 Q = 49/18s = 13.3gpm

Static WL = 13.38 Start Time 8:50 AM

Time(s)	Press TR Reading	s	Time(s)	Press. TR Reading	s
0	19.74	0	10800	2.77	16.97
60	17.18	2.56	11700	2.72	17.02
90	15.60	4.14			
120	14.92	4.82			
150	14.71	5.03			
180	14.47	5.27			
210	14.18	5.56			
240	13.49	6.25			
300	12.02	7.72			
360	10.98	8.76			
420	10.22	9.52			
480	9.60	10.14			
540	9.32	10.42			
600	9.08	10.66			
720	7.90	11.84			
1020	6.69	13.05			
1200	6.02	13.72			
1680	5.21	14.53			
2100	4.68	15.06			
2400	4.38	15.36			
3000	3.88	15.86			
3300	3.71	16.03			
3900	3.46	16.28			
4500	3.31	16.43			
4800	3.24	16.50			
5100	3.19	16.55			
5400	3.15	16.59			
6300	3.09	16.65			
7200	2.97	16.77			
9000	2.88	16.86			

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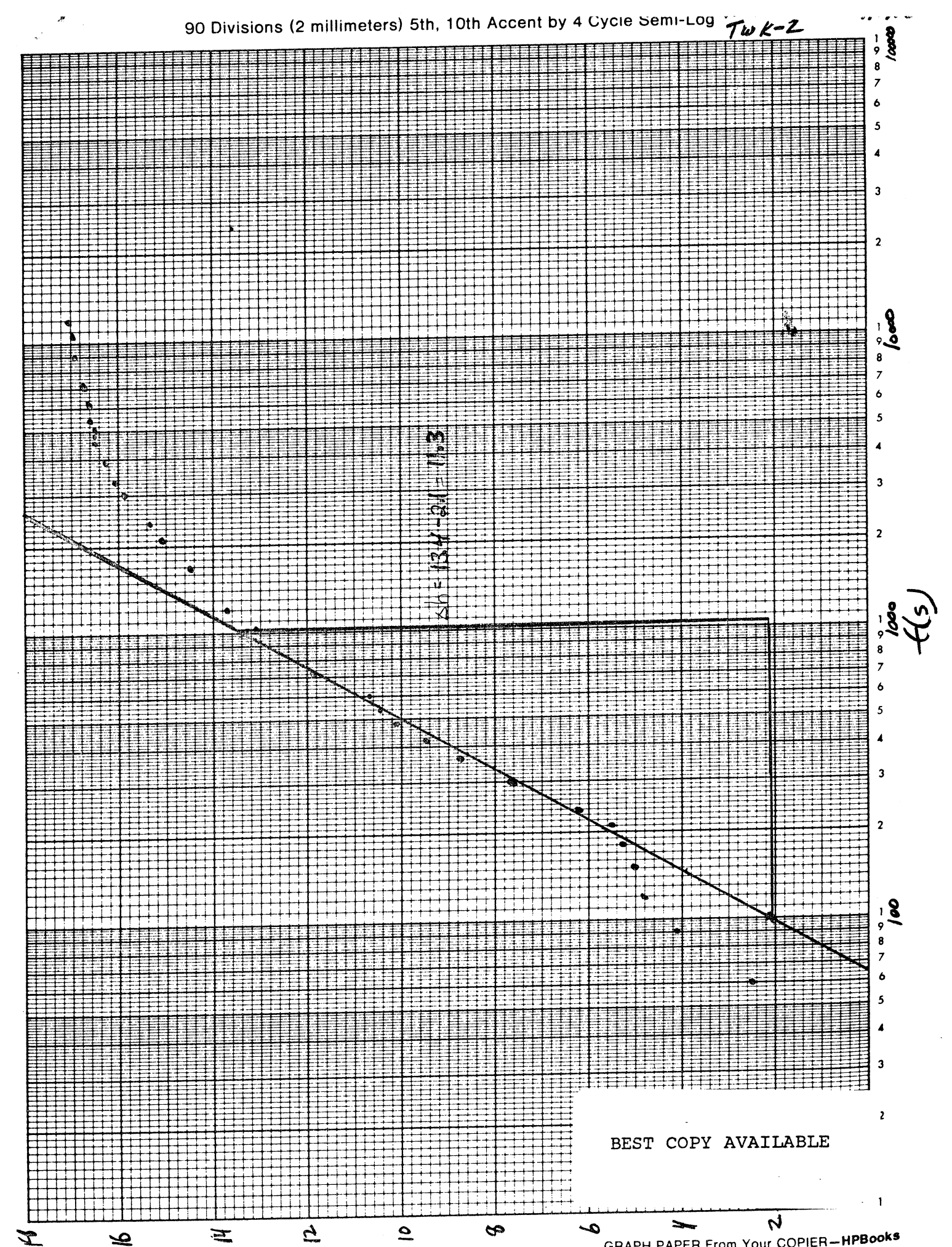

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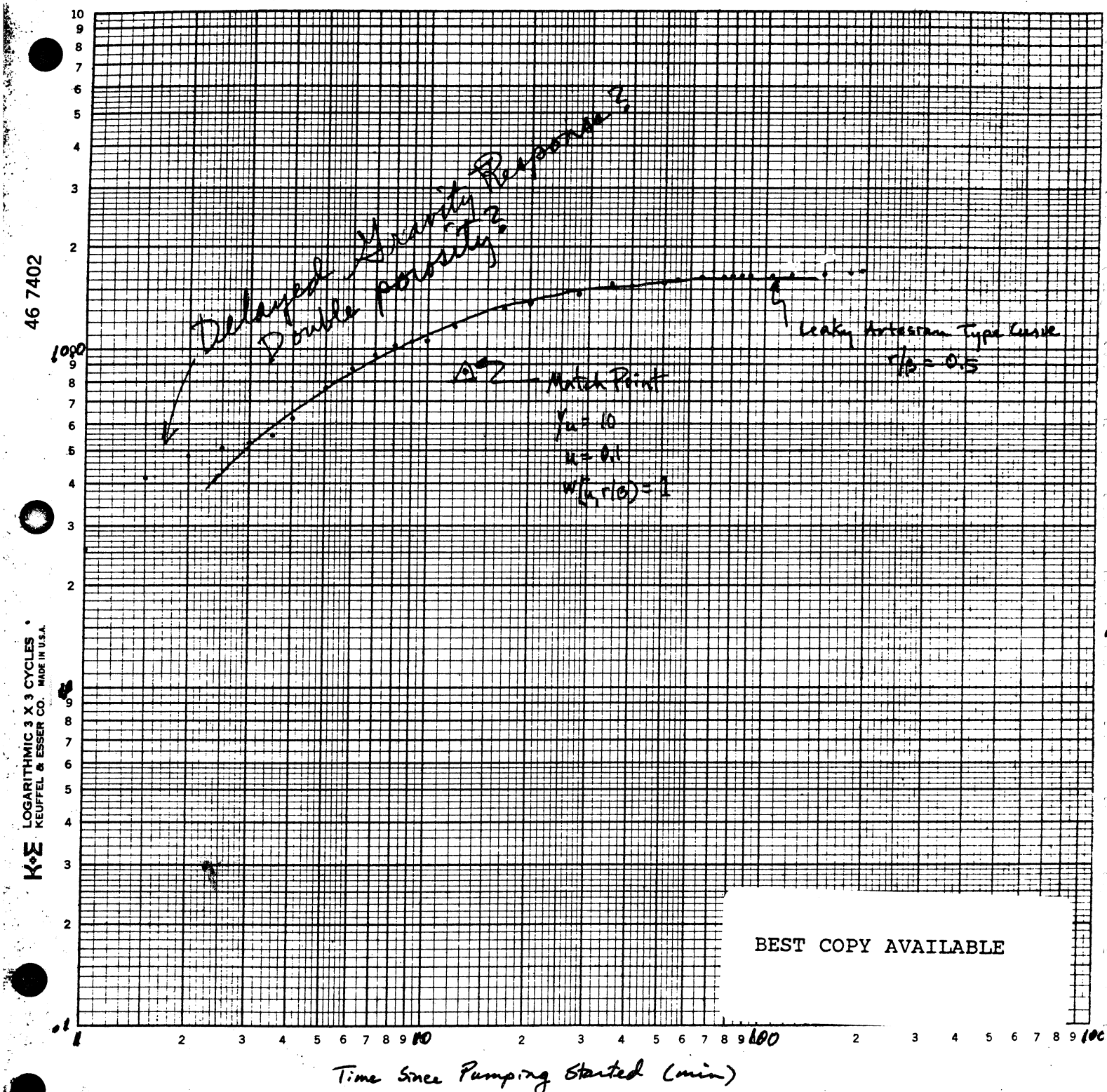
Drawdown During Pumping

Q = 13.3 gpm



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$$T = \frac{114.6\, Q\, W(u, r/B)}{s} = \frac{114.6\,(13.3)}{8.5} = 180 \text{ gpd/ft}$$

$K_h = 180/185 = 1.0 \text{ gpd/ft}^2 = 4.6 \times 10^{-5} \text{ cm/sec}$

Sheet 1 of 2

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CLIENT KENNECOTT DATE 3/15/88

PROJECT Pump Test Recovery #1 TW-K2 BY MIC

PROJECT NO. 87K10 PAGE NO. 1 of 3

CALCULATION OF K USING HOORSLEV (FREEZE & CHERRY, P 340

$$K = \frac{r^2 \ln(L/R)}{2 L T_o}$$

r = 7.62 cm
L = 197 - 15 = 182 FT (5547 cm)
R = 0.25 FT

SEE GRAPH OF H-h/H-Ho VS t - 3 LINES (A, B & C)

USING LINE A - T_o = 420 s

$$K = \frac{(7.62)^2 \ln(182/0.25)}{(2)(5547)(420)} = 8.21 \times 10^{-5} \text{ cm/s}$$

USING LINE B T_o = 1020 s

$$K = \frac{(7.62)^2 \ln(182/0.25)}{(2)(5547)(1020)} = 3.38 \times 10^{-5} \text{ cm/s}$$

USING LINE C T_o =

$$K = \frac{(7.62)^2 \ln(182/0.25)}{2(5547)(1620)} = 2.13 \times 10^{-5} \text{ cm/s}$$

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CLIENT KENNECOTT DATE 3/10/88

PROJECT PUMP TEST RECOVERY # 1 TWK-2 BY MJC

PROJECT NO. 87K10 PAGE NO. 2 of 3

PUMP TEST # 1 TW K-2 RECOVERY

STATIC W.L = 13.38

PUMP STOPPED @ 12:05 PM

H = 100 FEET

Ho = 113.38 - 30.40 = 82.98

@ t = 0 WL = 30.40 FEET

DATUM = 113.38

H - Ho = 17.02

Time since Pump was stopped (minutes)		Δh	DTW (30.40 - Δh)	h (113.38 - DTW)	H-h	H-h/H-Ho
0	0	0	30.40	82.98	17.02	1
.5	30	2.03	28.37	85.01	14.99	0.881
1	60	3.58	26.82	86.56	13.44	0.790
1.5	90	4.70	25.70	87.68	12.32	0.724
2	120	5.59	24.81	88.57	11.43	0.672
2.5	150	6.34	24.06	89.32	10.68	0.627
3	180	6.98	23.42	89.96	10.04	0.590
3.5	210	7.52	22.88	90.50	9.50	0.558
4	240	8.01	22.39	90.99	9.01	0.529
4.5	270	8.43	21.97	91.41	8.59	0.505
5	300	8.84	21.56	91.82	8.18	0.481
6	360	9.52	20.88	92.50	7.50	0.441
7	420	10.09	20.31	93.07	6.93	0.407
8	480	10.58	19.82	93.56	6.44	0.378
9	540	11.01	19.39	93.99	6.01	0.353
10	600	11.39	19.01	94.37	5.63	0.331
11	660	11.72	18.68	94.70	5.30	0.311
12	720	12.02	18.38	95.00	5.00	0.294
13	780	12.30	18.10	95.28	4.72	0.277
14	840	12.53	17.87	95.51	4.49	0.264
15	900	12.75	17.65	95.73	4.27	0.251
16	960	12.95	17.45	95.93	4.07	0.239
17	1020	13.14	17.26	96.12	3.88	0.228
18	1080	13.31	17.09	96.29	3.71	0.218
19	1140	13.46	16.94	96.44	3.56	0.209

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CLIENT Kennecott TWK-2 DATE 3/10/88

PROJECT Pump Test #1 Recovery BY MJC

PROJECT NO. 87610 PAGE NO. 3 of 3

Time Since Pump was Stopped minutes		s-1	P1W	h (113.38 - DTW)	H - h	H-h / H-Ho
20	1200	13.60	16.80	96.58	3.42	0.201
21	1260	13.74	16.66	96.72	3.28	0.193
22	1320	13.87	16.53	96.85	3.15	0.185
23	1380	13.99	16.42	96.96	3.04	0.179
24	1440	14.09	16.31	97.07	2.93	0.172
25	1500	14.20	16.20	97.18	2.82	0.166
26	1560	14.30	16.10	97.28	2.72	0.160
27	1620	14.41	15.99	97.39	2.61	0.153
28	1680	14.47	15.93	97.45	2.55	0.150
29	1740	14.55	15.85	97.53	2.47	0.145
30	1800	14.63	15.77	97.61	2.39	0.140
35	2100	14.95	15.45	97.93	2.07	0.122
40	2400	15.23	15.17	98.21	1.79	0.105
45	2700	15.45	14.95	98.43	1.57	0.092
50	3000	15.61	14.79	98.59	1.41	0.083
55	3300	15.74	14.66	98.72	1.28	0.075
60	3600	15.86	14.54	98.84	1.16	0.068
65	3900	15.96	14.44	98.94	1.06	0.062
70	4200	16.04	14.36	99.02	0.98	0.058
75	4500	16.11	14.29	99.09	0.91	0.053
80	4800	16.18	14.22	99.16	0.84	0.049
90	5400	16.33	14.07	99.31	0.69	0.041
115	6900	16.46	13.94	99.44	0.56	0.033
130	7800	16.53	13.85	99.53	0.47	0.028

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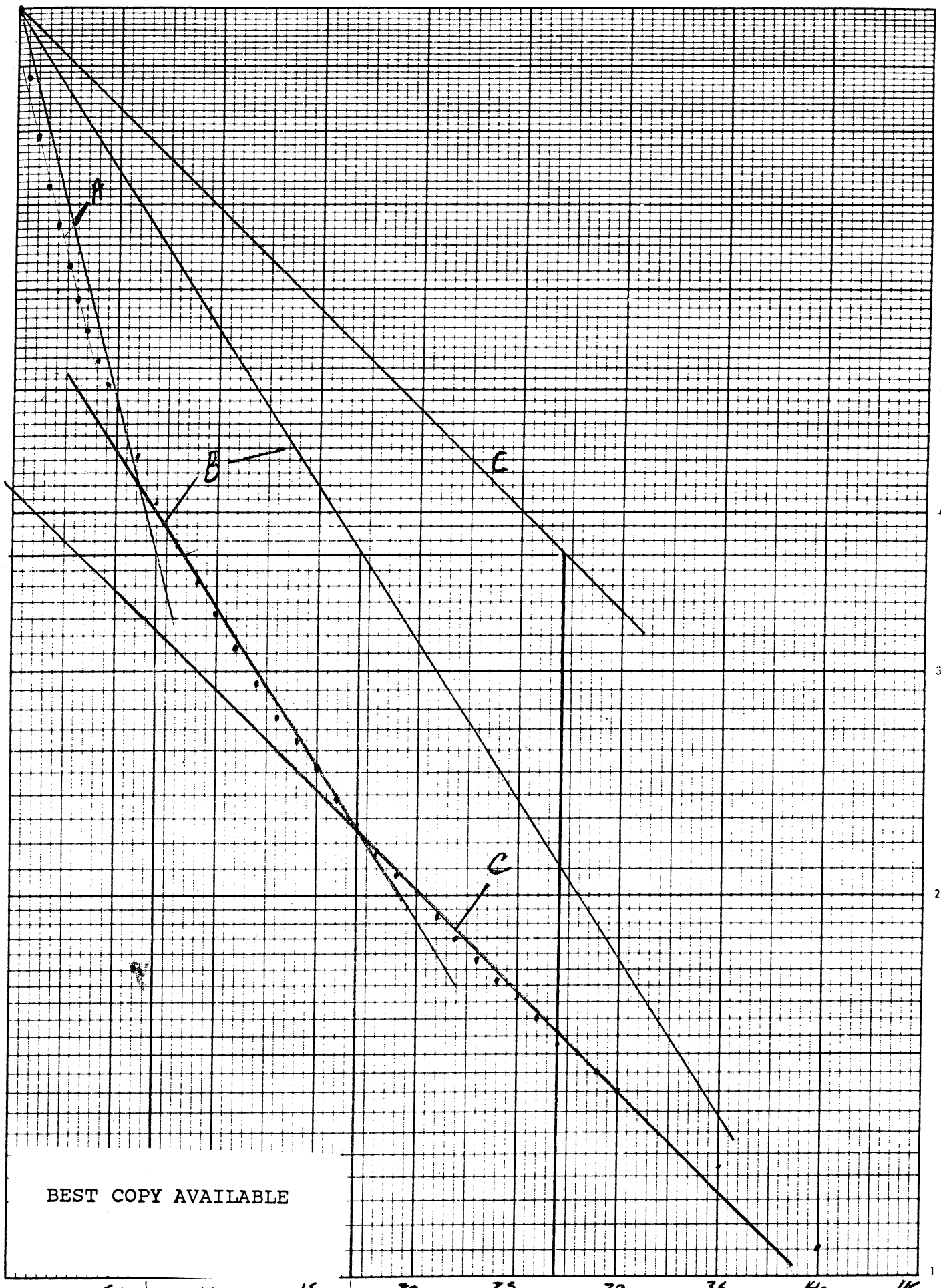

H-1
H-H6

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CLIENT Kennecott DATE 3/15/88

PROJECT Bail Test #1 Tw-K2 BY MJC

PROJECT NO. 87K10 PAGE NO. 1 of 2

CALCULATION OF K USING HVORSLEV (FREEZE & CHERRY, P314)

$$K = \frac{r^2 \ln(L/R)}{2 L T_0}$$

$r = 7.62$ cm

$L = 197 - 15 = 182$ FT (5547 cm)

$R = 0.25$ FT

T_0 350 sec

$$K = \frac{(7.62)^2 \ln(182/.25)}{2(5547)(350)} = 9.86 \times 10^{-5} \text{ cm/s}$$

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CLIENT KENNECOTT DATE 3/9/88

PROJECT BAIL TEST #1 TWIN-Z BY MJC

PROJECT NO. 87L10 PAGE NO. 2 of 2

STATIC WL = 13.4 FEET

H = 100'

DATUM = 113.4

H_o = 113.4 - 26.4 = 87

H - H_o = 13'

TIME (S)	DTW	h	H - h	H-h/H-H_o
0	26.40	87.00	13.00	1
59	21.60	91.80	8.20	0.631
81	20.27	93.13	6.87	0.528
137	19.08	94.32	5.68	0.437
167	18.43	94.97	5.03	0.387
205	17.80	95.60	4.40	0.338
235	17.45	95.95	4.05	0.312
270	17.03	96.37	3.63	0.279
305	16.70	96.70	3.30	0.254
345	16.38	97.02	2.98	0.229
405	16.02	97.58	2.62	0.202
465	15.72	97.68	2.32	0.178
525	15.59	97.81	2.19	0.168

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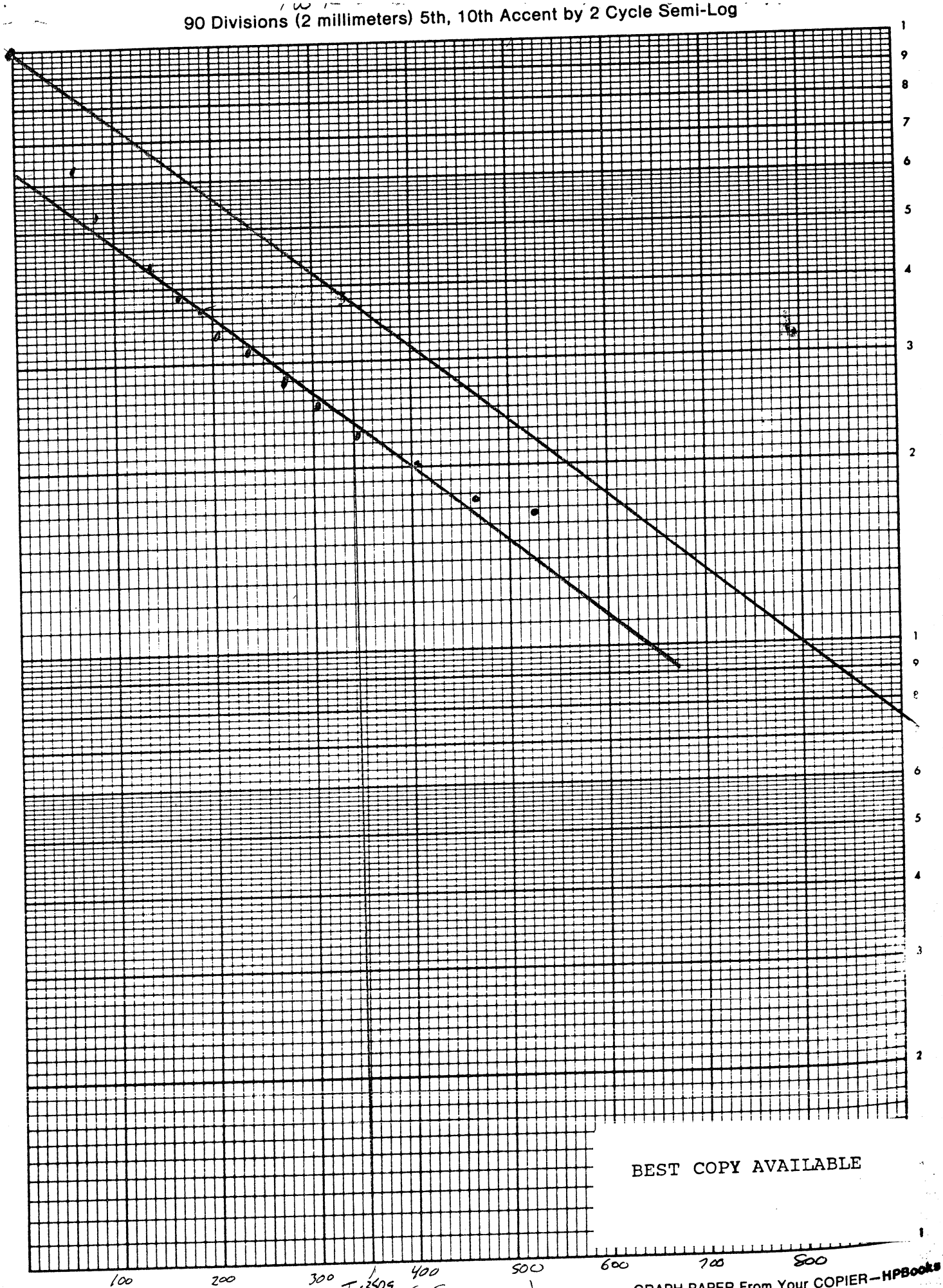
90 Divisions (2 millimeters) 5th, 10th Accent by 2 Cycle Semi-Log



H-h / H0

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CLIENT Kennecott DATE 3/10/88

PROJECT Pump Test #1 TWK-2 BY MSC

PROJECT NO. 87K10 PAGE NO.

DRAWDOWN AND RECOVERY DATA FOR PUMP TEST #1 OBS. WELLS

START TEST 8:50 STOP PUMP 12:05 - 3/10/88

DRAWDOWN - ALL TIMES ARE PRESENTED AS TIME SINCE PUMP WAS STARTED

MW 1000		MW 1000P		ST 29A		40		39		PZ-SZ		RZ	
TIME(S)	DTW	TIME(S)	DTW	TIME(S)	DTW	TIME(S)	DTW	TIME(S)	DTW	TIME(S)	DTW	TIME(S)	DTW
0	13.84	0	13.78	0	-	0	13.95	0	21.25	0	14.81	0	17.21
660	13.88	780	13.83	480	-	1080	14.02	1380	21.45	1320	15.34	840	17.36
1860	14.03	1920	13.86	1680	-	2160	14.40	2760	21.27	1560	15.54	960	17.40
2280	14.15	2340	13.87	5460	-	3660	14.50	4140	21.23	2580	15.97	1920	18.14
3360	14.38	3480	13.98	7660	-	4380	14.75	6060	21.25	2880	16.16	3540	19.35
5520	14.54	5580	14.10	WELL IS DRY		5820	14.83	9300	21.43	3960	16.43	4260	19.84
7320	14.59	7500	14.18			7980	14.94	11340	21.39	5940	16.67	5700	20.70
10920	14.70	10980	14.38			11100	15.00			8160	16.88	7800	21.67
										11220	17.03	10980	22.76
		10 MIN AFTER PUMP WAS STOPPED DTW WAS 14.75 (t = 12300)											

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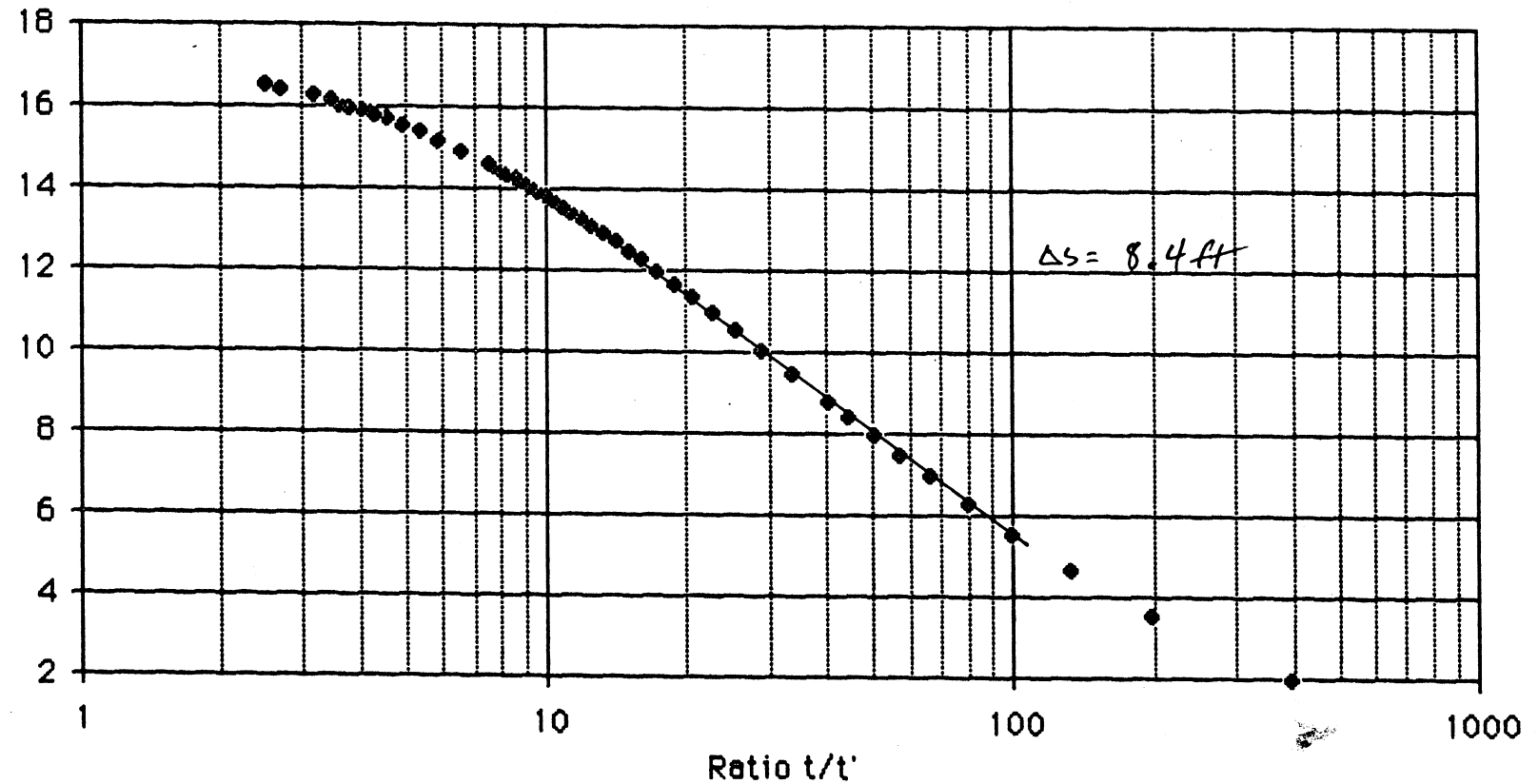
RECOVERY - ALL TIMES ARE PRESENTED AS TIME SINCE PUMP WAS STOPPED

0	14.75	0	14.75	WELL IS DRY	0	15.00	0	21.39	0	17.03		
540	14.75	300	14.50		240	15.00	3780	21.38	180	17.00	0	23.01
1140	14.75	1140	14.50		900	14.90	11460	21.38	600	16.95	960	22.98
1500	14.65	1560	14.50		1380	14.79	20280	21.39	1260	16.65	1440	22.77
1920	14.60	1920	14.50		1740	14.68	66840	21.39	1680	16.42	1860	22.56
2400	14.50	2460	14.50		2280	14.55			2160	16.20	2340	22.26
2880	14.42	2880	14.50		2760	14.47			2640	16.00	2820	22.01
3240	14.35	3240	14.50		3060	14.41			3000	15.88	3180	21.82
4200	14.22	4260	14.50		4020	14.31			3900	15.65	4140	21.35
5460	14.13	5460	14.50		5100	—			4920	15.45	6280	21.00
6840	14.02	6900	14.45		6480	14.15			6240	15.40	6720	20.80
11160	13.91	11100	14.40		11280	14.06			11340	15.15	10980	19.40
20040	13.86	20040	14.40		19740	14.01			20160	15.07	19860	18.43
66060	13.66	66120	14.00		66600	13.95			66420	14.95	65880	17.26

TW-K2
Recovery from pumping at 13.3 gpm for 195 minutes



Sheet 2 of 2

$T = \frac{264 \cdot 13.3}{8.4} = 420$ gpd/ft

$K_h = 420/185 = 2.3$ gpd/ft $= 1.1 \times 10^{-4}$ cm/sec

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CLIENT KENNECOTT DATE 3/10/88

PROJECT PUMP TEST TW-K2 BY MJS

PROJECT NO. 87K10 PAGE NO.

DRAWDOWN VS TIME FOR R-2

TIME (min)	s (APPARENT)	s APPARENT (S.IN 60°)
0	0	0
42 (2520)	0.15	0.13
44 (2640)	0.19	0.16
60 (3600)	0.93	.81
87 (5220)	2.14	1.85
99 (5940)	2.63	2.28
123 (7380)	3.49	3.02
158 (9480)	4.46	3.86
211 (12660)	5.55	4.81

Δs over one log cycle = 7.60 FEET

USING JACOB STRAIGHT LINE METHOD

$T = \frac{CQ}{\Delta h}$ where C = 264 & T = US GAL/DAY/FT

$T = \frac{(264)(13.3)}{7.60} = 462$

$T = Kb = 462$

$b = 183.62\ FT \times \frac{30.48\ CM}{FT} = 5597$

$462 \times 1.44 \times 10^{-3} = 6.65 \times 10^{-1}\ cm^2/s = T$

$6.65 \times 10^{-1} / 5597 = \boxed{1.18 \times 10^{-4}\ cm/s}$

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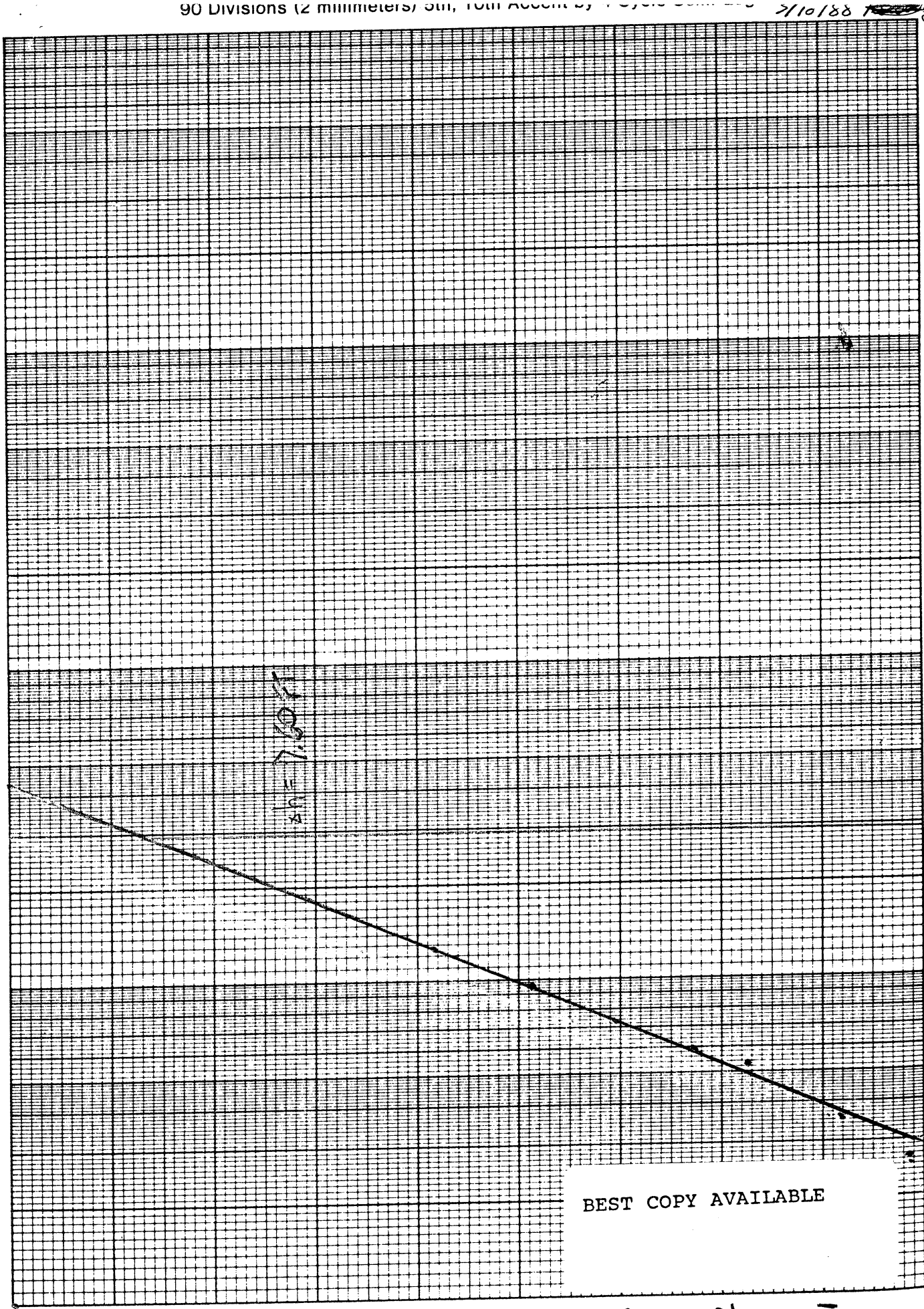
3/10/88

R-2



GRAPH PAPER From Your COPIER—HPBooks

rz - K2

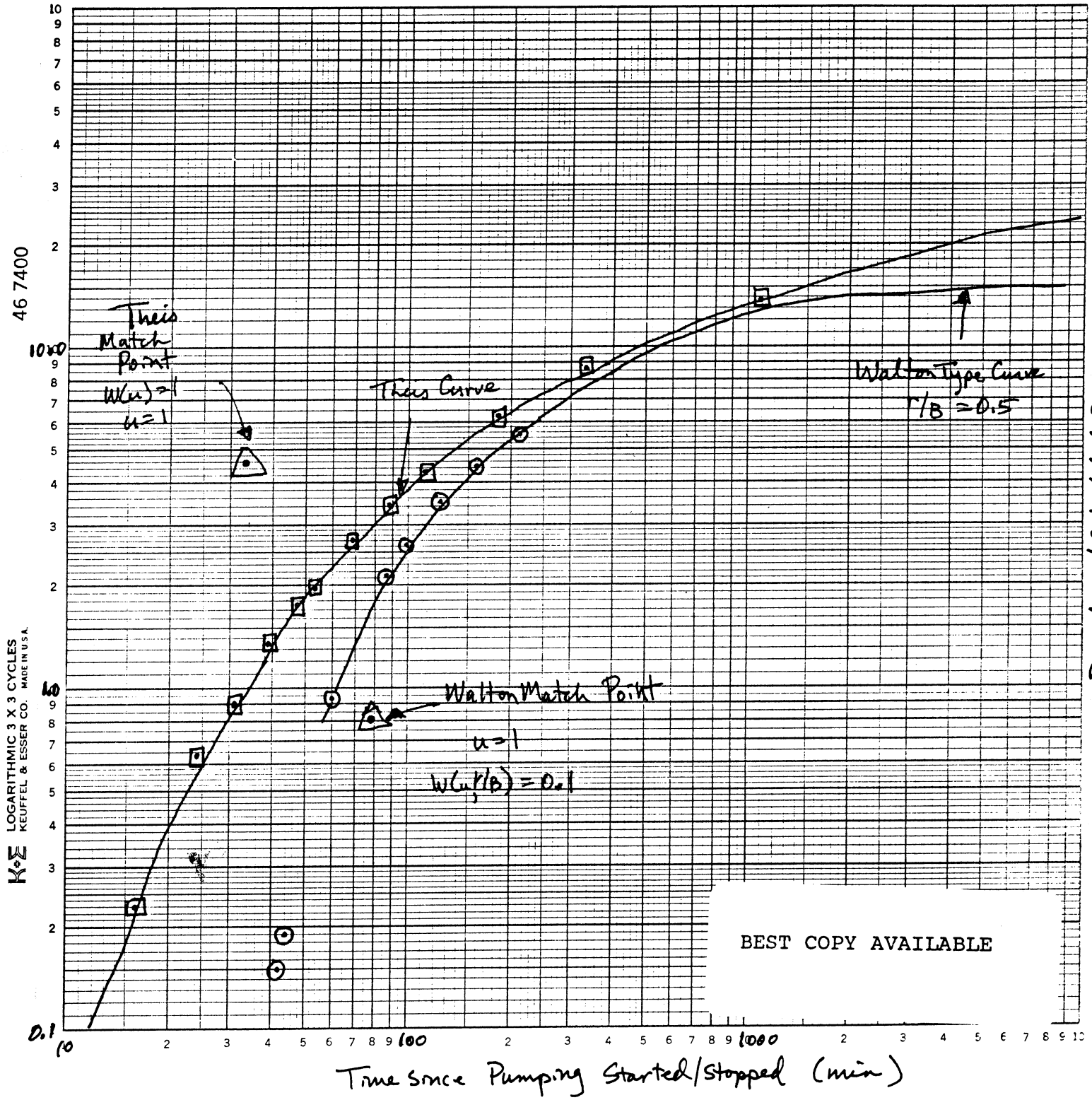
Drawdown & Recovery from TW-K2 Pumping

Q = 13.3 gpm

r = 50 feet

① Drawdown

⊡ Recovery



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Kennecott

BY: SDR DATE: 9/1/88	PROJECT TITLE:	PROJECT NO.:
DEPARTMENT:	Type Curve Analysis of PZ-RZ from TW-K2 Pumping Test	CHARGE NO.:
		SHEET 2 OF 3

Distance from TW-K2 = 50 feet

Drawdown

source: Walton, W.C., 1960, Leaky Artesian Aquifer Conditions, Illinois State Water Survey Report of Invest. 39

$T = 114.6 (Q W(u, r/B)/s)$
$= 114.6 (13.3 \times 0.1/0.8) = 190$ gpd/ft

$K_h = 190$ gpd/ft / 185 ft = 1.0 gpd/ft^2 = 4.9×10^{-5} cm/sec

P' = vert. perm of confining bed = $Tm(r/B)^2/r^2$
$= ((190 \times 15 \times (0.5)^2)/50^2 = 0.3$ gpd/ft = 1.3×10^{-5} cm/sec

$S = Tut/1.87 r^2 =$
$= (190 \cdot 1 \cdot 78/1440)/(1.87 \cdot 50^2) = 0.002 = 0.2\%$

Recovery

Source: Theis, C.V., 1935

$T = 114.6 (Q W(u)/s)$
$= 114.6 (13.3 \cdot 1/4.6) = 330$ gpd/ft

$K_h = 330/185 = 1.8$ gpd/ft^2 = 8.5×10^{-5}

$S = Tut/1.87 r^2$
$= (330 \cdot 1 \cdot {}^{23}/1440)/(1.87 \cdot 50^2) = 0.002 = 0.2\%$

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PZ-R2

TIME (seconds)	TIME SINCE PUMP STARTED (minutes)	TIME SINCE PUMP STOPPED (seconds)	TIME SINCE PUMP STOPPED (minutes)	DEPTH TO WATER (feet)	DRAWDOWN (feet)	RESIDUAL DRAWDOWN (feet)	PROJECTED DRAWDOWN* (feet)	CALCULATED RECOVERY (feet)
0	0			17.21				
840	14			17.36	0.15			
960	16			17.40	0.19			
1920	32			18.14	0.93			
3540	59			19.35	2.14			
4260	71			19.84	2.63			
5700	95			20.70	3.49			
7800	130			21.67	4.46			
10980	183			22.76	5.55			
		0		23.01				
12660	211	960	16	22.98		5.77	6.00	0.23
13140	219	1440	24	22.77		5.56	6.20	0.64
13560	226	1860	31	22.56		5.35	6.25	0.90
14040	234	2340	39	22.26		5.05	6.40	1.35
14520	242	2820	47	22.01		4.80	6.55	1.75
14880	248	3180	53	21.82		4.61	6.60	1.99
15840	264	4140	69	21.35		4.14	6.95	2.81
16980	283	5280	88	21.00		3.79	7.20	3.41
18420	307	6720	112	20.50		3.29	7.60	4.31
22680	378	10980	183	19.40		2.19	8.50	6.31
31560	526	19860	331	18.43		1.22	9.90	8.68
77580	293	65880	1098	17.26		0.05	14.00	13.95

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* From Theis type Curve

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CLIENT KENNECOTT DATE 3/16/88

PROJECT PUMP TEST TW-K2 BY MJC

PROJECT NO. 87K10 PAGE NO. 1

DRAWDOWN VS TIME FOR PZ-S2

Sec	Time	s
	0	0
(4020)	67	0.53
(4260)	71	0.73
(5280)	88	1.16
(5580)	93	1.35
(6660)	111	1.62
(8640)	144	1.86
(10860)	181	2.07
(13920)	232	2.22

Δh over one log cycle = 2.5 FEET

USING JACOB STRAIGHT LINE METHOD

$T = \frac{CQ}{\Delta h}$ where C = 264 @ T = US GAL/DAY/FT

$T = \frac{(264)(13.3)}{2.5} = 1404$

$T = kb = 1404$

$b = 183.62$ FT [illegible] $= 5597$

$1404 \times (1.44 \times 10^{-3}) = 2.02 = T$

$2.02 / 5597 = \boxed{3.6 \times 10^{-4}\ cm/s}$

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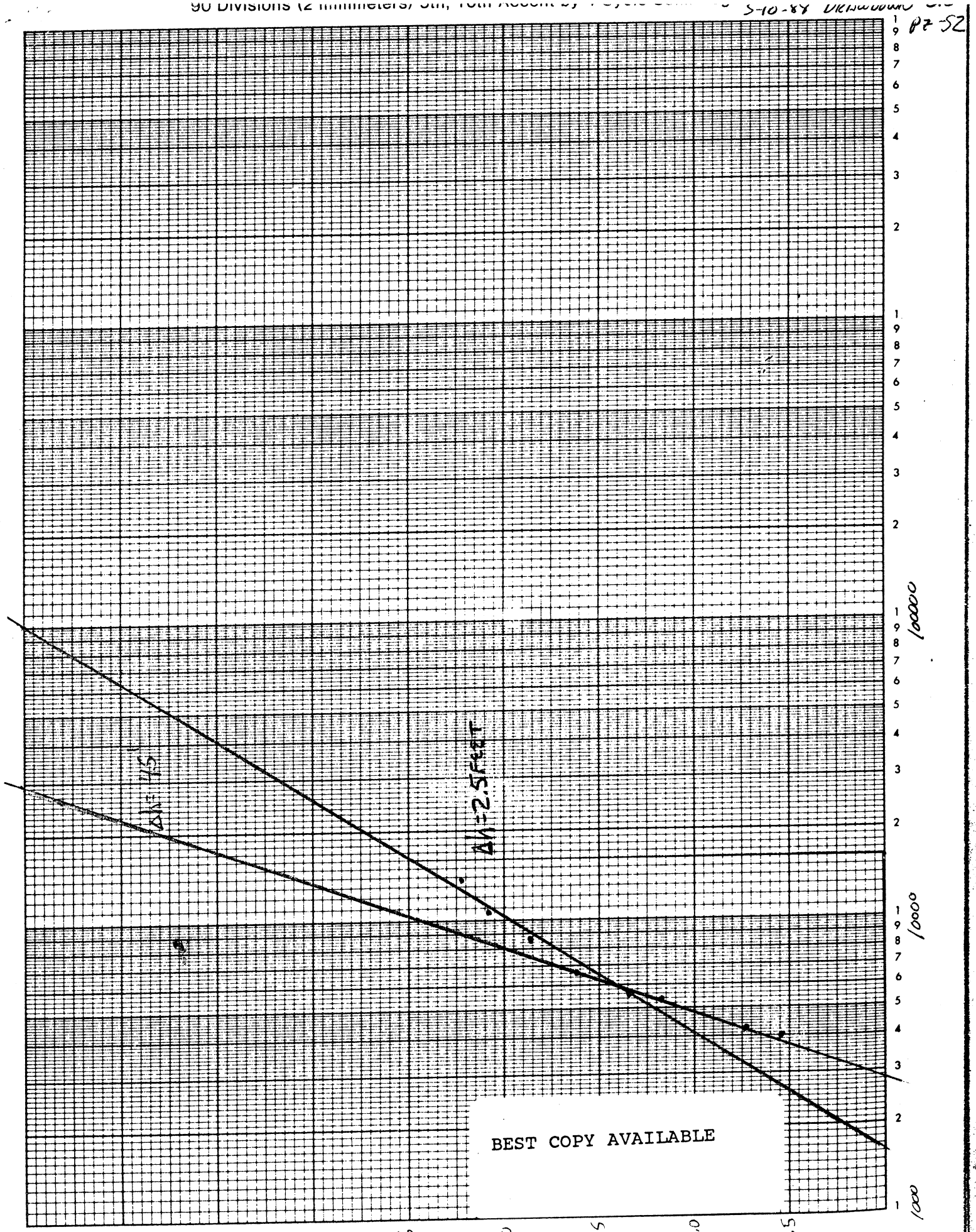
USING $\Delta h = 4.5$ FEET; $T = 1.12\ cm^2/s$ $1.12 / 5597 = \boxed{2.00 \times 10^{-4}}$



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PZ-S2

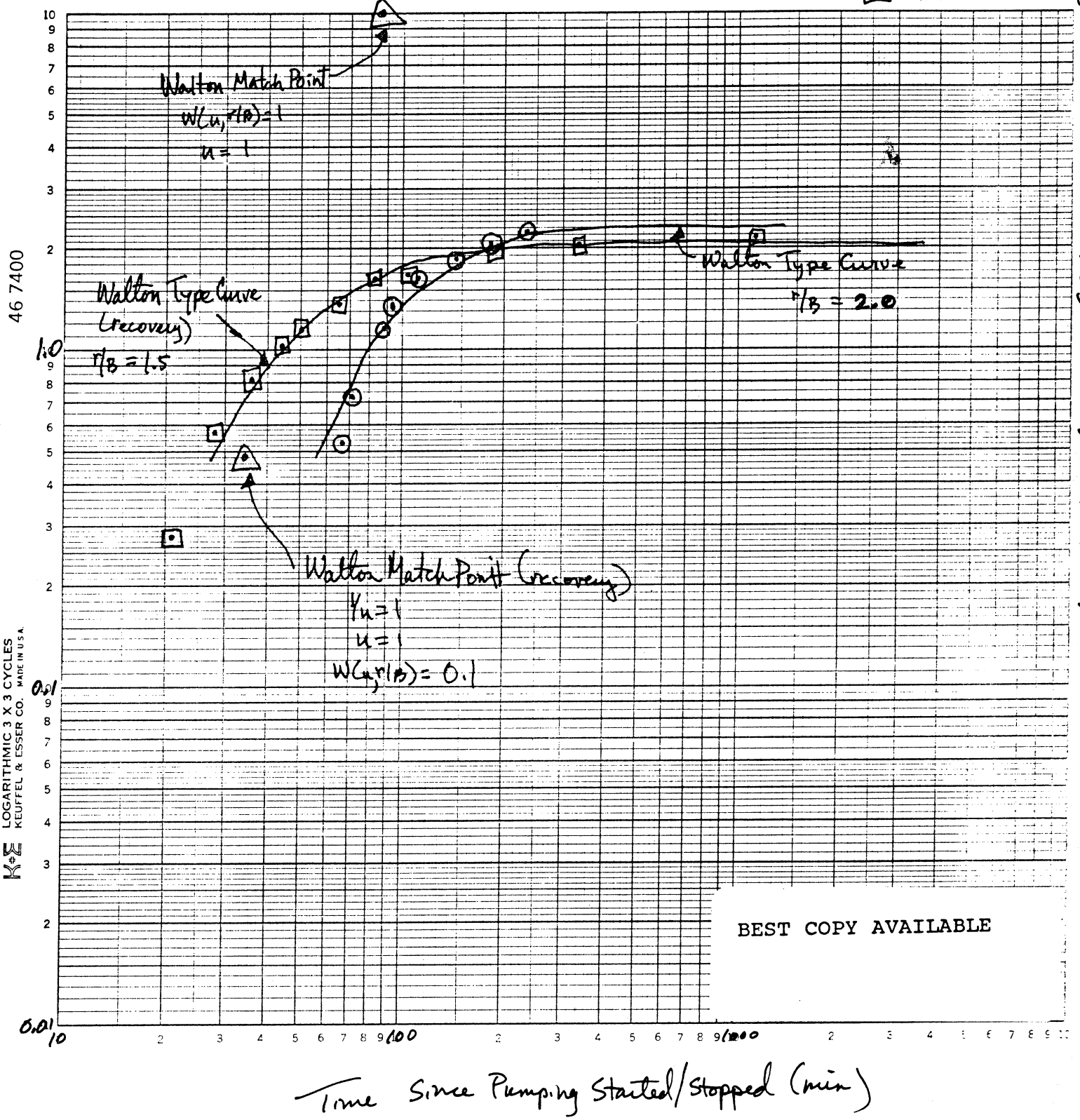
Drawdown & Recovery From TW-K2 Pumping

Q = 13.3 gpm

r = 95 ft

⊙ Drawdown

⊡ Calculated Recovery



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Time Since Pumping Started/Stopped (min)

Kennecott

BY: SDR DATE: 9/1/88	PROJECT TITLE: Flambeau	PROJECT NO.:
DEPARTMENT:	Type Curve Analysis of PZ-S2 from TW-K2 Pump Test	CHARGE NO.:
		SHEET 2 OF 3

Drawdown

Source: Walton, W.C., 1960, Leaky Artesian Aquifer Conditions, Illinois State Water Survey Report of Invest. 39

$T = 114.6\ (Q\ W(u, r/B)/s) =$

$= 114.6\ (13.3 \cdot 1/10) = 150$ gpd/ft

$S = Tut/1.87\ r^2$

$= (150 \cdot 1 \cdot .85/1440)/1.87\ (95^2) = 0.0005 = 0.05\%$

$P' = Tm\ (r/B)^2/r^2$

$= 150\ (15)(2^2)/95^2 = 1.0$ gpd/ft^2 $= 4.7 \times 10^{-5}$ cm/sec

Recovery

Source: as above

$T = 114.6\ (13.3 \cdot 0.1/0.48) = 320$ gpd/ft

$S = (320 \cdot 1.34/1440)/(1.87 \cdot 95^2) = 0.0004 = 0.04\%$

$P' = 320(15)(1.5^2)/95^2 = 1.2$ gpd/ft^2 $= 5.6 \times 10^{-5}$ cm/sec

$K_h = (320/185)/21200 = 3.8 \times 10^{-5}$ cm/sec

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Kennecott

BY: SDR DATE: 9/1/88	PROJECT TITLE: Flambeau	PROJECT NO.:
DEPARTMENT:	Recovery data from PZ-52 TW-K2 pump test	CHARGE NO.:
		SHEET 2 OF 3

Time since Pump Stopped (min)	Depth to Water (feet)	Residual Drawdown* (feet)	Projected Drawdown (feet)	Calculated Recovery (feet)
0	17.03	2.22	2.05	-0.17
3	17.00	2.19	2.07	-0.12
10	16.95	2.14	2.10	-0.04
21	16.85	1.84	2.12	0.28
28	16.42	1.61	2.18	0.57
36	16.20	1.39	2.20	0.81
44	16.00	1.19	2.21	1.02
50	15.88	1.07	2.22	1.15
65	15.65	0.84	2.22	1.38
82	15.45	0.64	2.25	1.61
104	15.40	0.59	2.27	1.68
189	15.15	0.34	2.30	1.96
336	15.07	0.26	2.30	2.04
1107	14.95	0.14	2.30	2.16

* Original SWL = 14.81 feet

- Walton Type Curve r/p = 2.0

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CLIENT Kennecott DATE 3/16/88

PROJECT PUMP TEST TW-K2 BY MJC

PROJECT NO. 87K10 PAGE NO. _____

PUMP TEST ON 3/10/88 TW K-2

Recovery FOR PZ-S2

(sec)	Time	Recovery (Δh)
	0	0
(180)	3	0.03
(600)	10	0.08
(1260)	21	0.38
(1680)	28	0.61
(2160)	36	0.83
(2640)	44	1.03
(3000)	50	1.15
(3900)	65	1.38
(4920)	82	1.58
(6240)	104	1.63
(11340)	189	1.88
(20160)	336	1.96

Δh = 1.95

K = 4.63×10^{-4}

Recovery FOR R-2

(sec)	Time	Apparent Recovery (Δh)	Apparent Δh X (SIN 68°)
	0	0	0
	7	—	0
	16	.03	.025
	24	.24	.21
	31	0.45	.39
	39	0.75	.65
	47	1.00	.87
	53	1.19	1.03
	[illegible]	1.66	1.44
	[illegible]	2.01	1.74
	112	2.51	2.17
	163	3.61	3.13
	331	4.58	3.97

Δh = 3.65

K = 2.47×10^{-4}

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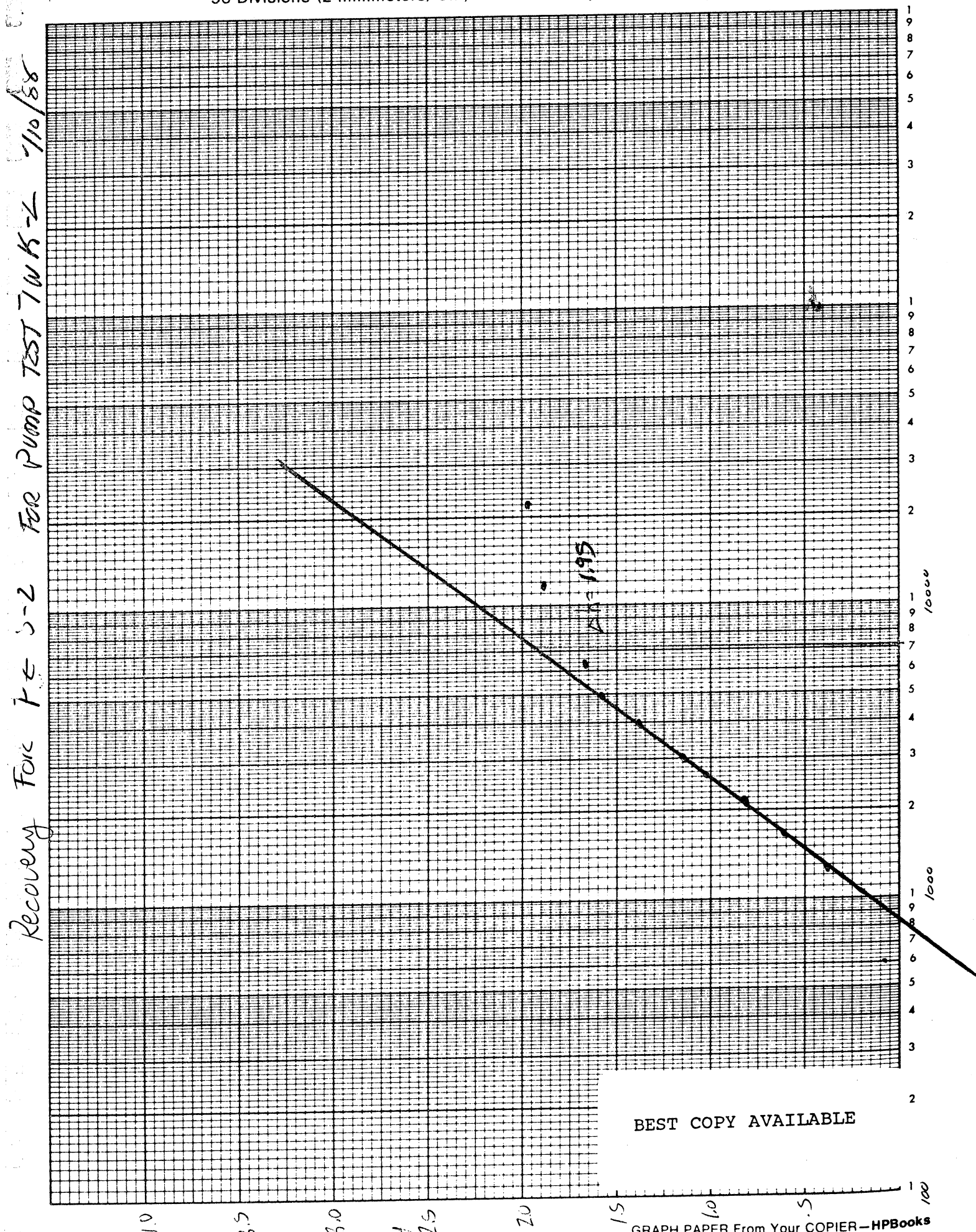

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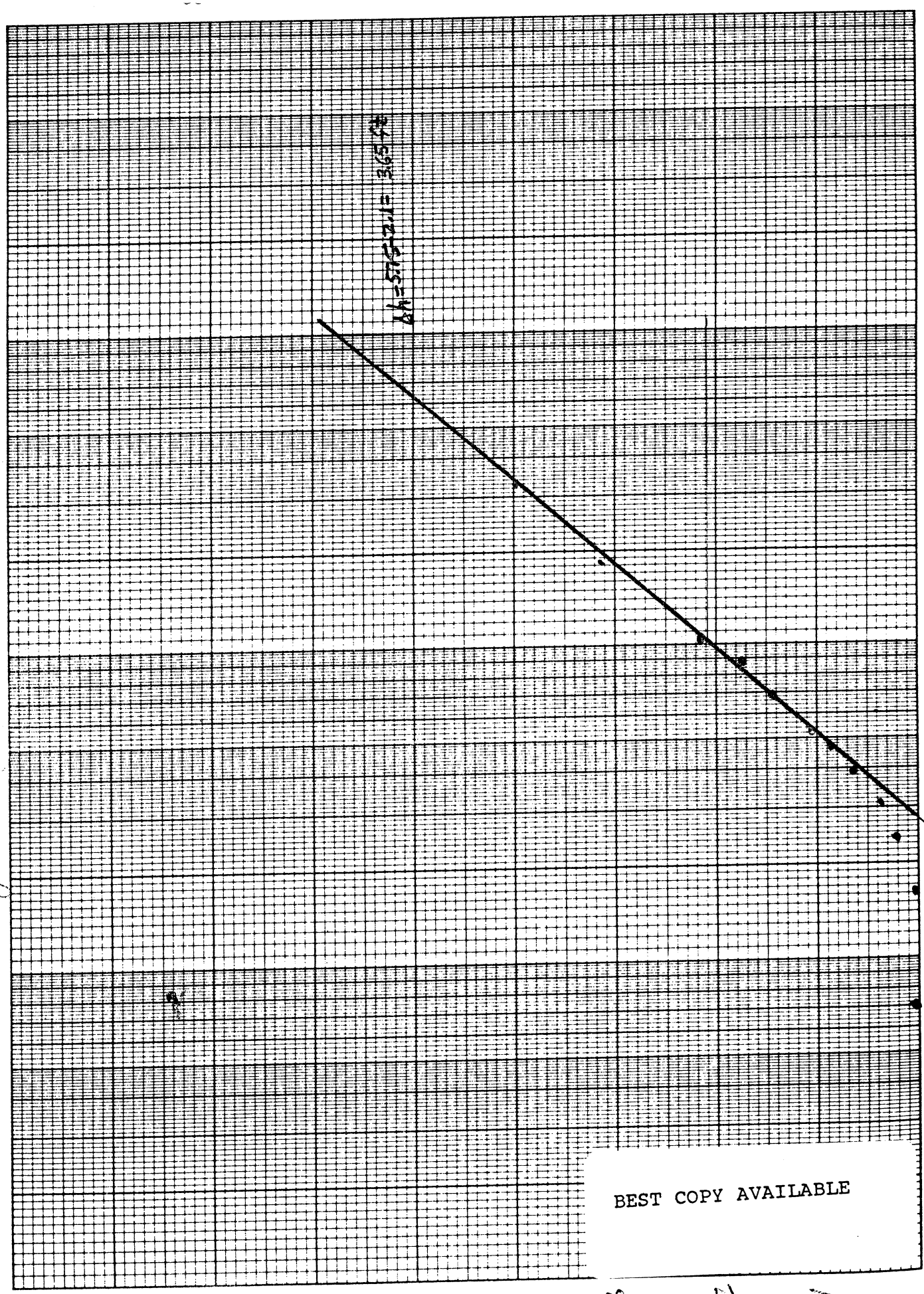

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CLIENT KENNECOTT DATE 3/25/88

PROJECT PUMP TEST #1 TWK-2 BY MSC

PROJECT NO. 87K10 PAGE NO.

MW 1000, 1000P, (40)

CALCULATION OF K USING JACOB STRAIGHT MINE METHOD

$T' = \frac{CQ}{\Delta h}$ $C = 264$ $Q = 13.3$ GPM $b = 184$ FEET (5608 cm) $(T') \times (1.44 \times 10^{-3}) = T$ in cm^2/s

$T / b = K$ in cm/s

$K =$

MW 1000 DRAWDOWN $\Delta h = 1.34$ FT over one log cycle

RECOVERY $\Delta h = 1.15$ FT " " " "

$K = \frac{(264)(13.3)}{1.34} \cdot 1.44 \times 10^{-3} \div 5608$ 6.73×10^{-4} cm/s (DRAWDOWN)

$K = \frac{(264)(13.3)}{1.15} \cdot 1.44 \times 10^{-3} \div 5608$ 7.84×10^{-4} cm/s (RECOVERY)

MW 1000P DRAWDOWN $\Delta h = 0.60$ FT over one log cycle

RECOVERY $\Delta h =$ FT " "

$K = \frac{(264)(13.3)}{0.60} \cdot 1.44 \times 10^{-3} \div 5608$ 1.50×10^{-3} cm/s (DRAWDOWN)

$K =$? - SEE GRAPH

40 DRAWDOWN $\Delta h = 1.14$ FT over one log cycle

DRAWDOWN $\Delta h = 1.03$ FT over one log cycle

$K = \frac{(264)(13.3)}{1.14} \cdot 1.44 \times 10^{-3} \div 5608$ 7.91×10^{-4} cm/s (DRAWDOWN)

$K = \frac{(264)(13.3)}{1.03} \cdot 1.44 \times 10^{-3} \div 5608$ 8.75×10^{-4} cm/s (RECOVERY)

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CLIENT KSDNR-DOT (3-10-88) DATE 3/04/88

PROJECT PUMP TEST #1 TWIN-Z BY MJC

PROJECT NO. 87K10 PAGE NO. _____

DRAWDOWN & RECOVERY DATA FOR MW 1000, MW 1000P, 40

	MW 1000		MW 1000P		40	
	t (s)	DRAWDOWN (s)	t (s)	DRAWDOWN (s)	t (s)	DRAWDOWN (s)
	0	0	0	0.0	0	0
11	660	0	780	0.05	1080	0.07
31	1660	-0.15	1920	0.06	2160	0.45
38	2280	-0.27	2340	0.07	3660	0.55
5,	3360	-0.50	3480	0.20	4380	0.80
92	5520	-0.66	5580	0.32	5820	0.88
122	7320	-0.71	7500	0.40	7980	0.99
182	10920	-0.82	10980	0.60	11100	1.05

	MW 1000		MW 1000P		40	
	t (s)	recovery (ft)	t (s)	recovery (ft)	t (s)	recovery (ft)
	0	0	0	0	0	0
	540	0	300	.25	240	0
	1140	0	1140	.25	900	0.1
	1500	+ 0.10	1560	.25	1380	0.21
	1920	+ 0.15	1920	.25	1740	0.32
	2400	+ 0.25	2460	.25	2280	0.45
	2880	+ 0.33	2880	.25	2760	0.53
	3240	+ 0.40	3240	.25	3060	0.59
	4200	+ 0.53	4260	.25	4020	0.69
	5460	+ 0.62	5460	.25	5100	—
	6840	+ 0.73	6900	.30	6480	0.85
	11160	+ 0.84	11100	.35	11280	0.94
	20040	+ 0.87	20040	.35	19740	0.99
	66060		66060	.75	66060	1.05

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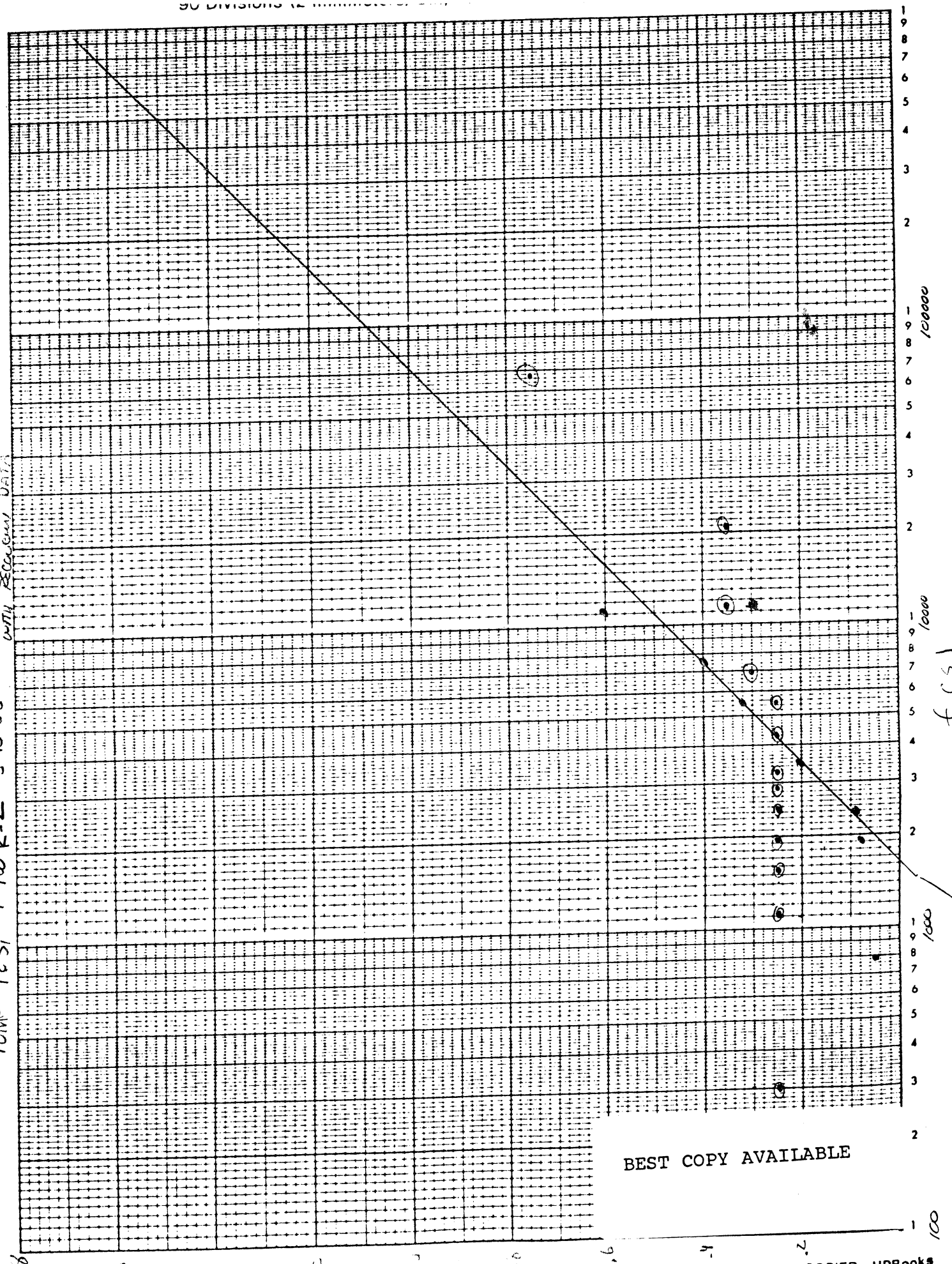

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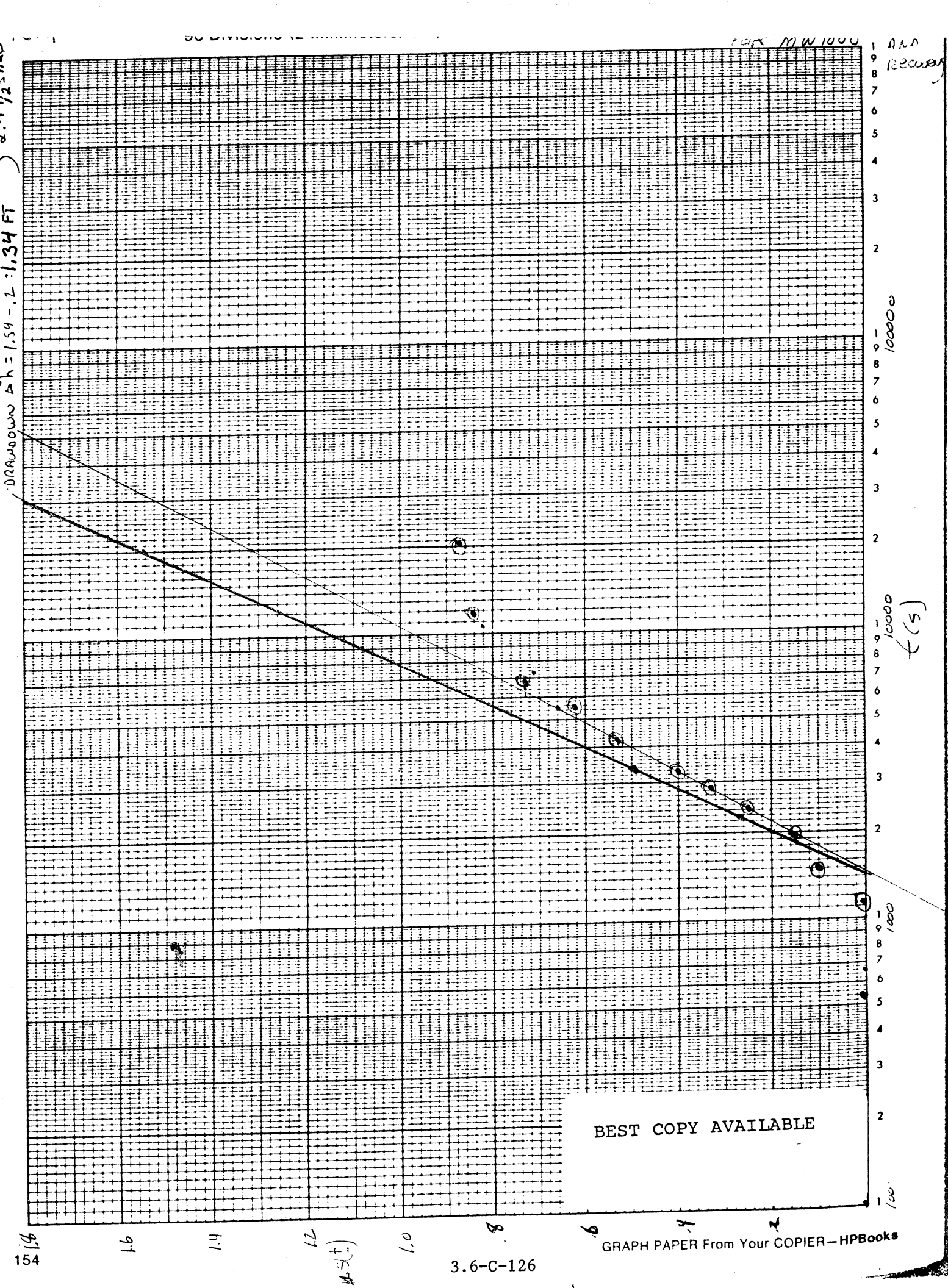

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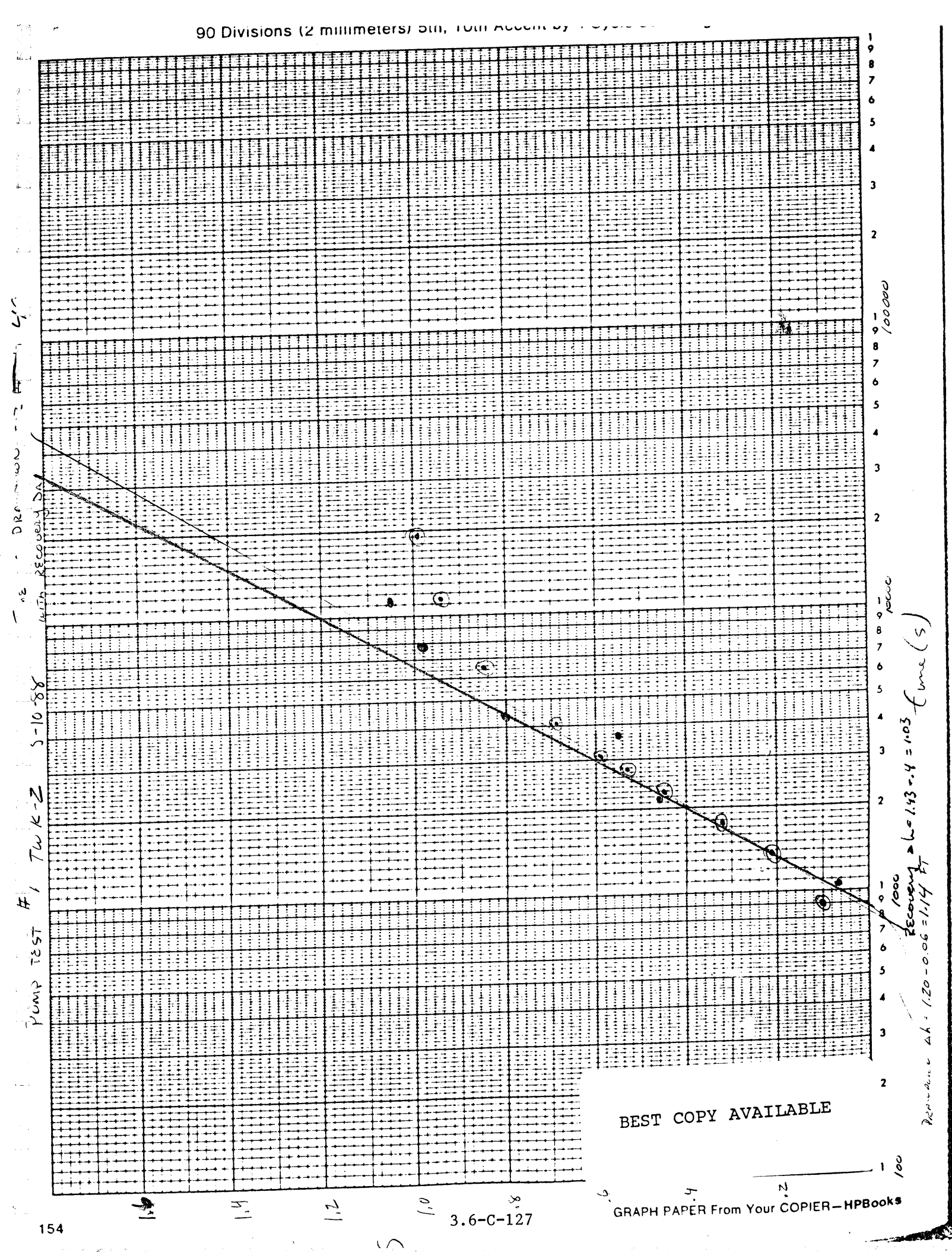

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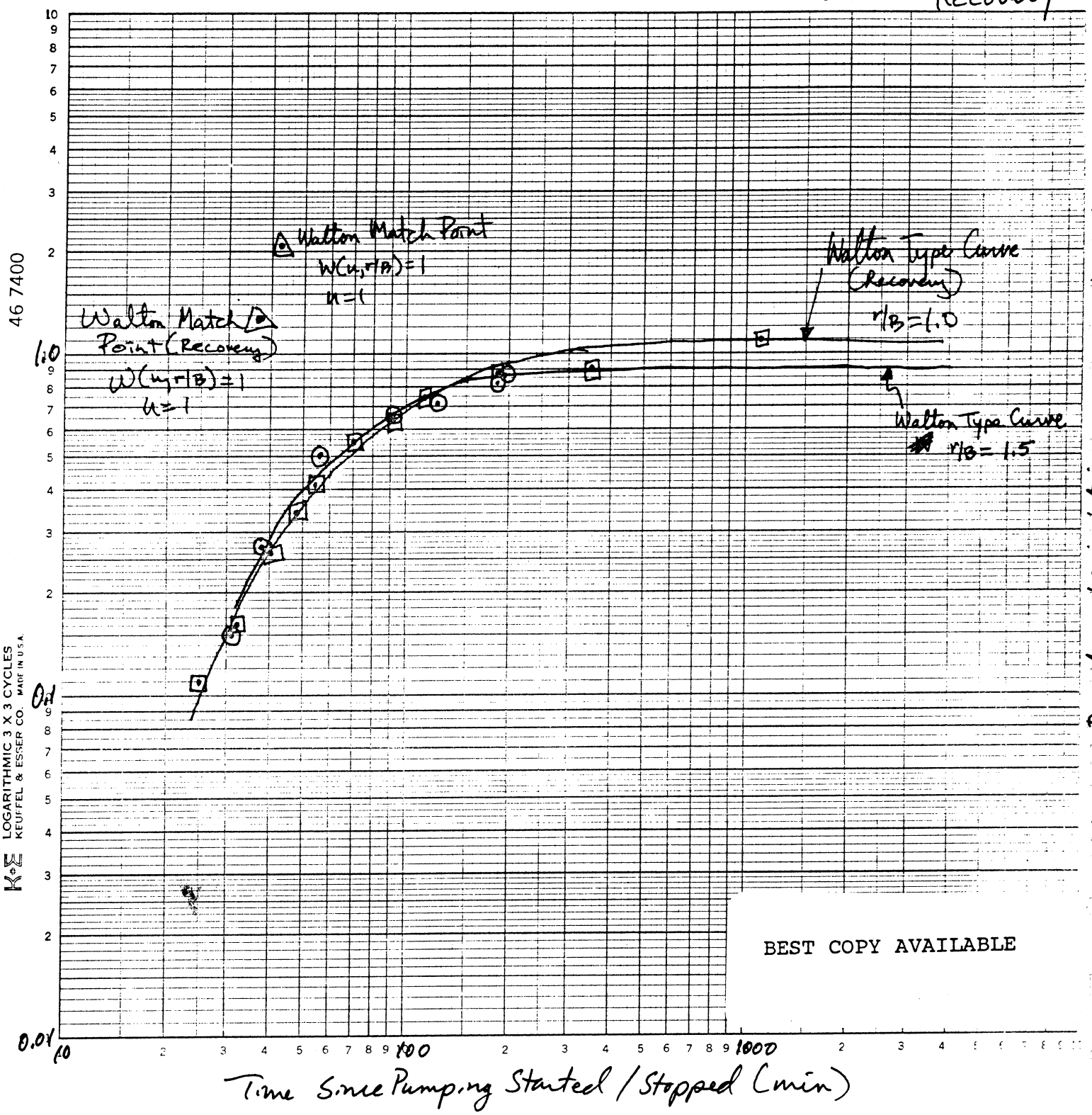
Drawdown & Recovery from TW-K2 Pumping

Q = 13.3 gpm

r = 56 feet

⊙ Drawdown

⊡ Calculated Recovery



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Sheet 1 of 3

Kennecott

BY: SDR DATE: 9/1/88	PROJECT TITLE: Flambeau	PROJECT NO.:
DEPARTMENT:	Type Curve Analysis of MW-1000 during TW-1R2 Pump Test	CHARGE NO.:
		SHEET 2 OF 3

Drawdown

Source: Walton

$T = 114.6 (Q\,W(u, r/B)/s)$

$= 114.6 (13.3 \cdot 1/2.1) = 730$ gpd/ft

$K = (730/185)/21{,}200 = 1.9 \times 10^{-4}$

$P' = Tm (r/B)^2/r^2 = (730 \cdot 8 \cdot (1.5^2))/56^2 = 4.19$ gpd/ft^2 $= 2.0 \times 10^{-4}$ cm/sec

$S = Tut/1.87 r^2$

$= (730 \cdot 1.42/1440)/1.87 \cdot 56^2 = 0.0036 = 0.4\%$

Recovery

Source: As above

$T = 114.6 (13.3/1.3) = 1200$ gpd/ft

$K_h = (1200/185)/21{,}200 = 3.1 \times 10^{-4}$ cm/sec

$P' = (1200)(8)(1^2)/56^2 = 3.1$ gpd/ft^2 $= 1.4 \times 10^{-4}$ cm/sec

$S = (1200 \cdot 1.37/1440)/1.87 \cdot 56^2 = 0.005 = 0.5\%$

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Kennecott

BY: SDR DATE: 9/1/88	PROJECT TITLE: Flambeau	PROJECT NO.:
DEPARTMENT:	MW-1000 data from pump test of TW-K2	CHARGE NO.:
		SHEET 3 OF 3

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Time Since Pumping Started (min)	Time Since Pumping Stopped (min)	Depth to Water (ft)	Drawdown (ft)	Residual Drawdown (ft)	Predicted Drawdown (ft)	Calculated Recovery (ft)
0		13.88	0			
11		13.88	0			
31		14.03	0.15			
38		14.15	0.27			
56		14.38	0.50			
92		14.54	0.66			
122		14.59	0.71			
182		14.70	0.82			
195		14.75	0.87			
204	9	14.75		0.87	0.87	0
214	19	14.75		0.87	0.87	0
220	25	14.65		0.77	0.88	0.11
227	32	14.60		0.72	0.88	0.16
235	40	14.50		0.62	0.88	0.26
243	48	14.42		0.54	0.88	0.34
249	54	14.35		0.47	0.88	0.41
265	70	14.22		0.34	0.89	0.55
286	91	14.13		0.25	0.89	0.64
309	114	14.02		0.14	0.89	0.75
381	186	13.91		0.03	0.89	0.86
529	334	13.88		0	0.90	0.90
1296	1101	13.68		-0.20	0.90	1.10

Kennecott

BY: SDR DATE: 9/1/88	PROJECT TITLE: Flambeau	PROJECT NO.:
DEPARTMENT:	Type Curve Analysis of MW-1000P from TW-K2 pumping test	CHARGE NO.:
		SHEET 2 OF 3

Distance from TW-K2 = 56 feet
Pumping rate = 13.3 gpm

Drawdown:

Source: Anisotropic Unconfined Aquifers Considering Delayed Gravity Response, Shlomo P. Neuman, April 1975, Water Resources Research, Vol. 11, No. 2

$T = 114.6 (Q s_D / s)$
$= 114.6 ((13.3 \cdot 1)/0.9) = 1700$ gpd/ft = transmissivity

$S = 0.1337 (Tt/r^2 t_1)$
$= 0.1337 ((1700 \cdot 340/1440)/(56^2 \cdot 1)) = 0.017 = 1.7\%$ = storage coefficient

$K_H = T/b$
$= 1700/185$ feet $= 9.2$ gpd/ft^2 $= 4.3 \times 10^{-4}$ cm/sec = horizontal permeability

$K_D = \beta b^2/r^2$
$= (6 \cdot 185^2)/56^2 = 65.5$ = degree of anisotropy

$K_z = K_D K_H$
$= 65.5 \cdot (4.3 \times 10^{-4}) = 2.8 \times 10^{-2}$ cm/sec = vertical permeability

Recovery

Source: The relationship between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater Storage, Theis, C.V., 1935, Eos. Trans. AGU, 16, 519

$T = 114.6 (Q W(u)/s)$
$= 114.6 ((13.3 \cdot 1)/0.85) = 1800$ gpd/ft

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$K_h = 1800/185 = 4.6 \times 10^{-4}$ cm/sec

$S = Tut/1.87 r^2$
$= (1800 \cdot 1 \cdot 87/1440)/(1.87 \cdot 56^2) = 0.019 = 1.9\%$

MW-1000P

TIME (seconds)	TIME SINCE PUMP STARTED (minutes)	TIME SINCE PUMP STOPPED (seconds)	TIME SINCE PUMP STOPPED (minutes)	DEPTH TO WATER (feet)	DRAWDOWN (feet)	RESIDUAL DRAWDOWN (feet)	PROJECTED DRAWDOWN* (feet)	CALCULATED RECOVERY (feet)
0	0			13.78				
780	13			13.83	0.05			
1920	32			13.86	0.08			
2340	39			13.87	0.09			
3480	58			13.98	0.20			
5580	93			14.10	0.32			
7500	125			14.18	0.40			
10980	183			14.38	0.60			
11700	195	0	0	14.75		0.97	0.63	-0.35
12300	200	300	5	14.50		0.72	0.65	-0.07
12840	214	1140	19	14.50		0.72	0.70	-0.02
13260	221	1560	26	14.50		0.72	0.72	0.00
13620	227	1920	32	14.50		0.72	0.73	0.01
14160	236	2460	41	14.50		0.72	0.77	0.05
14580	243	2880	48	14.50		0.72	0.79	0.07
14940	249	3240	54	14.50		0.72	0.80	0.08
15960	266	4260	71	14.50		0.72	0.85	0.13
17160	286	5460	91	14.50		0.72	0.90	0.18
18600	310	6900	115	14.45		0.67	0.94	0.27
22800	380	11100	185	14.40		0.62	1.09	0.47
31740	529	20040	334	14.40		0.62	1.31	0.69
77820	1297	66120	1102	14.00		0.22	2.05	1.83

* from Neuman Type Curve $\beta = 6.0$

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Sheet 3 of 3

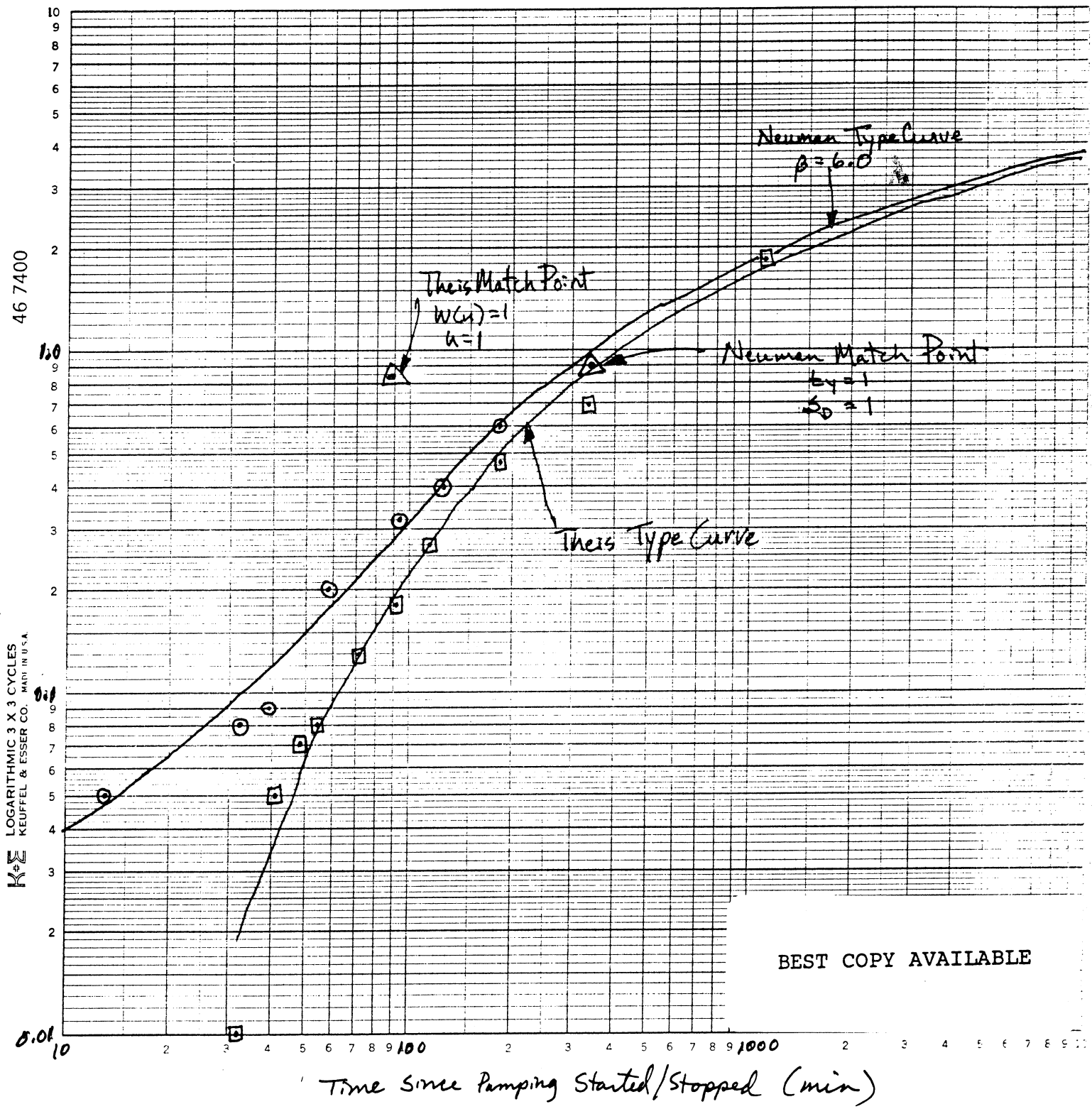
Drawdown & Recovery from TW-K2 Pumping

Q = 13.3 gpm

r = 56 feet

⊙ Drawdown

⊡ Recovery



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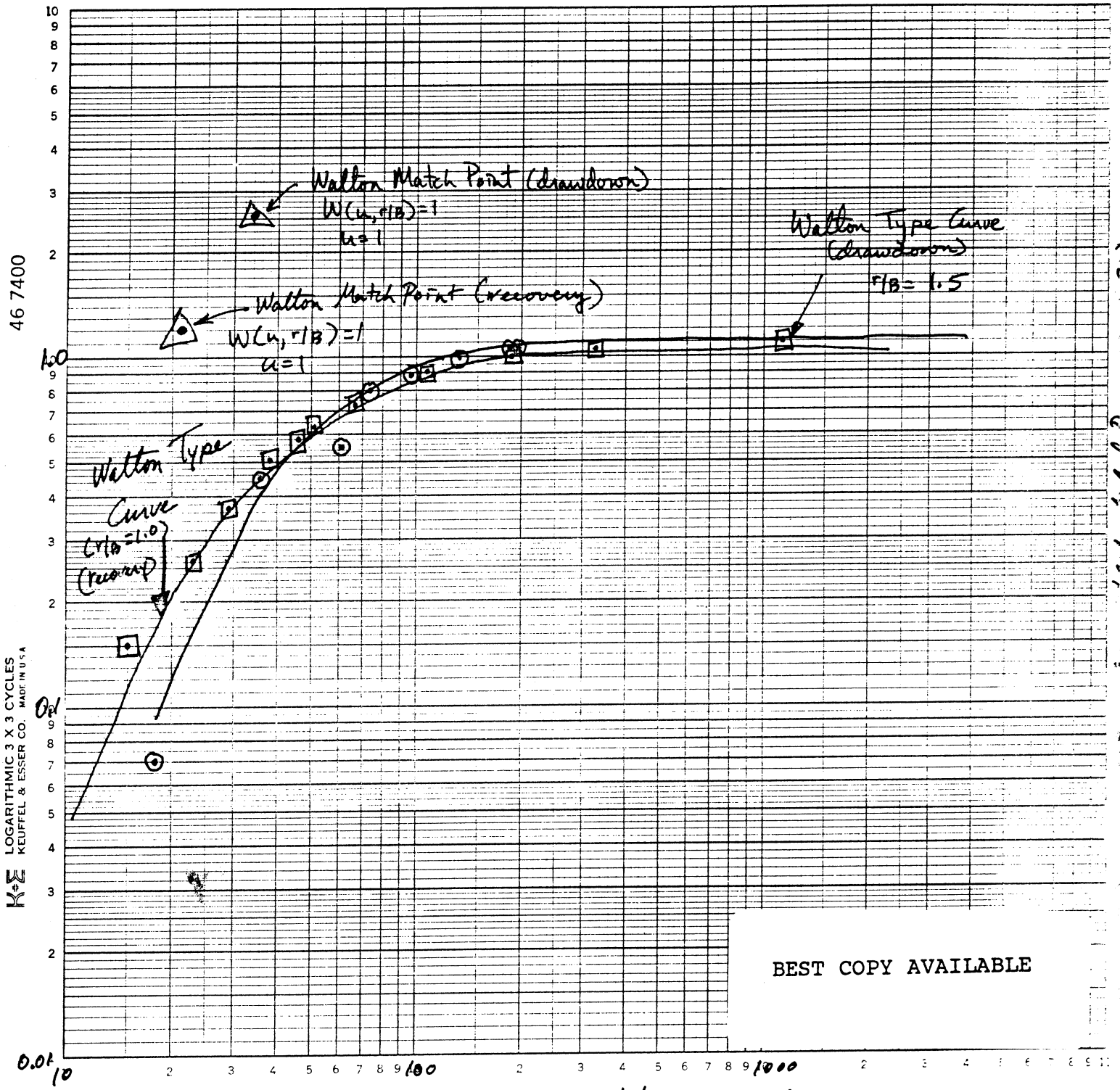
MW-40

Drawdown & Recovery from Pumping of TW-K2

Q = 13.3 gpm

r = 185 ft



Kennecott

BY: SDR DATE: 9/1/88	PROJECT TITLE: Flambeau	PROJECT NO.:
DEPARTMENT:	Type Curve Analysis of MW-4D during pumping of TW-K2	CHARGE NO.:
		SHEET 2 OF 3

Drawdown

Source: Walton

$T = 114.6 (13.3/2.6) = 600$ gpd/ft

$P' = (600 (15)(1.5^2))/185^2 = 0.6$ gpd/ft^2 $= 2.8 \times 10^{-5}$ cm/sec

$S = (600 \cdot 1.34/1440)/1.87 (185^2) = 0.0002 = 0.02\%$

Recovery

Source: Walton

$T = 114.6 (13.3/1.2) = 1300$ gpd/ft

$P' = (1300 \cdot 15 \cdot 1^2)/185^2 = 0.6$ gpd/ft^2 $= 2.7 \times 10^{-5}$ cm/sec

$S = (1300 \cdot 1.22/1440)/(1.87 \cdot 185^2) = 0.0003 = 0.03\%$

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Kennecott

BY: SDR DATE: 9/1/88	PROJECT TITLE: Flambeau	PROJECT NO.:
DEPARTMENT:	Data from MW-40 during pumping of TW-K2	CHARGE NO.:
		SHEET 3 OF 3

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Time Since Pumping Started (min)	Time Since Pumping Stopped (min)	Depth to Water (ft)	Drawdown (ft)	Residual Drawdown (ft)	Predicted Drawdown (ft)	Calculated Recovery (ft)
0		13.95	0			
18		14.02	0.07			
36		14.40	6.45			
61		14.50	0.55			
73		14.75	0.80			
97		14.82	0.88			
133		14.94	0.99			
185		15.00	1.05			
195		15.00	1.05			
199	4	15.00		1.05	1.09	0.04
210	15	14.90		0.95	1.10	0.15
218	23	14.77		0.84	1.10	0.26
224	29	14.68		0.73	1.10	0.37
233	38	14.55		0.60	1.10	0.50
241	46	14.47		0.52	1.10	0.58
246	51	14.41		0.46	1.10	0.64
262	67	14.31		0.36	1.10	0.74
303	108	14.15		0.20	1.10	0.90
383	188	14.06		0.11	1.10	0.99
524	329	14.01		0.06	1.10	1.04
1305	1110	13.95		0.00	1.10	1.10

Kennecott

BY: SDR DATE: 9/1/88	PROJECT TITLE: Flambeau	PROJECT NO.:
DEPARTMENT:	MW-39 during TW-K2 pumping @ 280 ft.	CHARGE NO.:
		SHEET 1 OF 2

Time Since Pumping Started (min)	Time Since Pumping Stopped (min)	Depth to Water (ft)	Drawdown (ft)	Residual Drawdown (ft)	
0		21.25	0		
23		21.45	0.20		
46		21.27	0.02		
69		21.23	-0.02		
101		21.25	0		
155		21.43	0.18		
189		21.39	0.14		
195		21.39	0.14		
258	63	21.38		0.13	
386	191	21.38		0.13	
533	338	21.39		0.14	
1309	1114	21.39		0.14	

Conclude: Not affected by pumping

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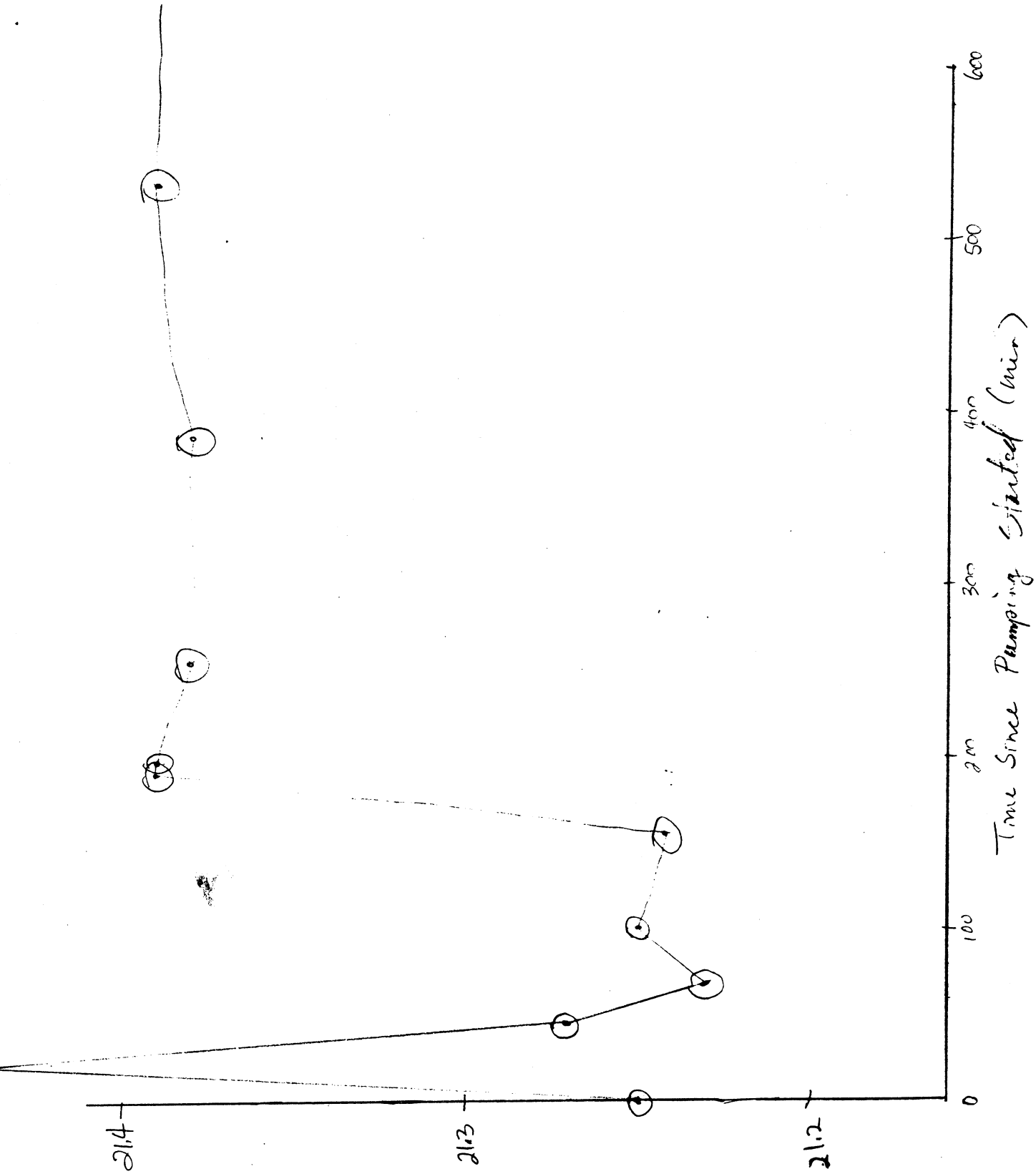
Kennecott

BY: SDR DATE: 9/1/88	PROJECT TITLE: Flambeau	PROJECT NO.:
DEPARTMENT:	MW-39 during pumping of TW-K2	CHARGE NO.:
		SHEET 2 OF 2



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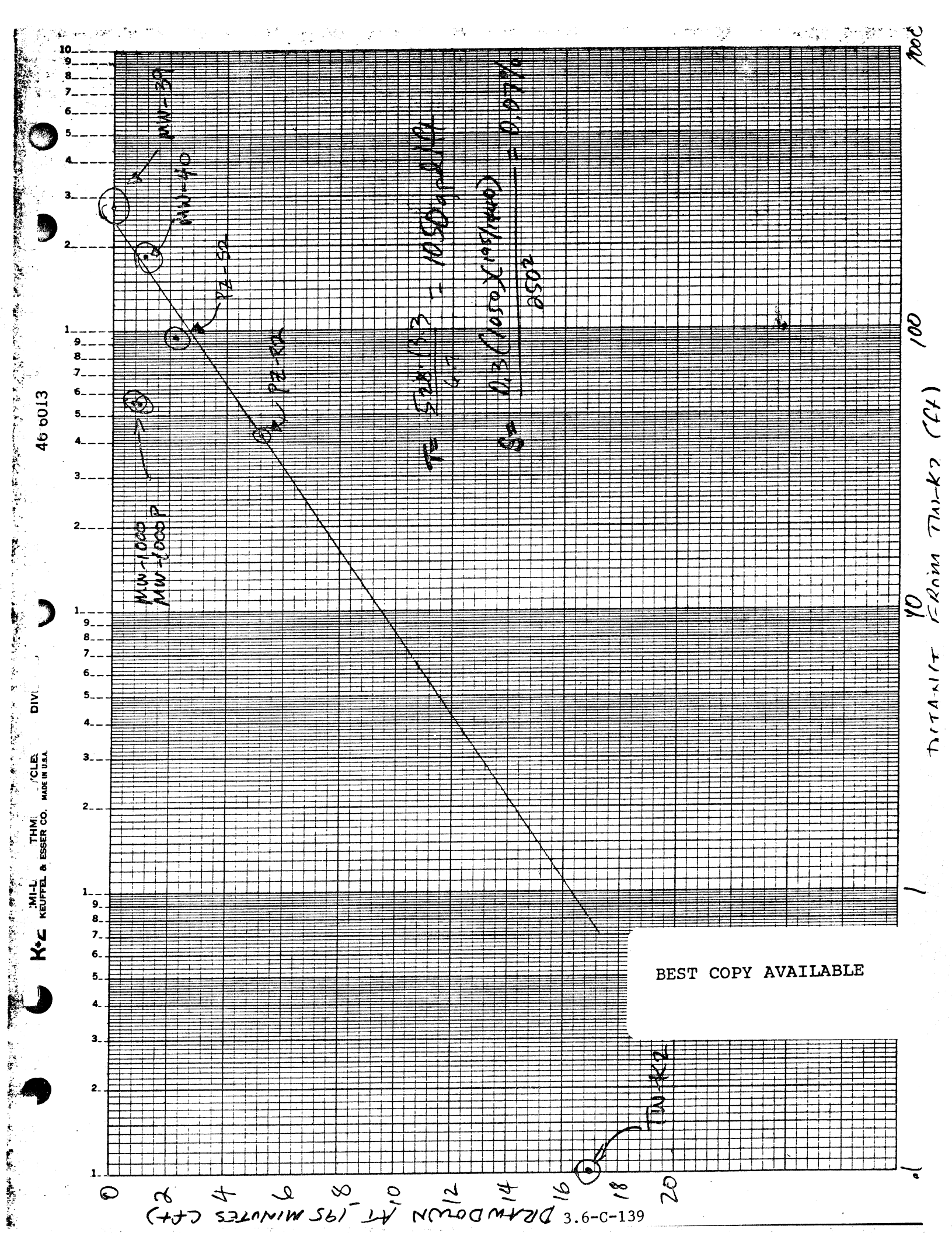
MW-20
MW-40
PZ-52
PZ-51
MW-1000
MW-1000P
T = 528.43 - 1050 log r
S = 0.0702
DRAWDOWN AT 195 MINUTES (ft)
DISTANCE FROM TANK 2 (ft)
TW-42
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KE KEUFFEL & ESSER CO. MADE IN U.S.A.
46 6013

Pump Tests

TW-K3

Foth & Van Dyke
Engineers/Architects

2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500

CLIENT KENNECOTT DATE 3/14/88

PROJECT BAIL TESTS TW-K3 BY MJC

PROJECT NO. 87K10 PAGE NO.

CALCULATED VALUES OF K

K VALUES (cm/s)	OBTAINED FROM:
1.25×10^{-5}	BAIL TEST #1 (HVORSLEV)
1.73×10^{-5}	BAIL TEST #2 (HVORSLEV)
AVE 1.5×10^{-5} cm/s	

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Foth & Van Dyke
Engineers/Architects

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Green Bay, WI 54307-9012
414/497-2500

CLIENT KENNECOTT DATE 3/9/88

PROJECT BAIL TEST #1 TWK-3 BY MJC

PROJECT NO. 87K10 PAGE NO.

STATIC WL = 14.0 FEET

H=100'
PATUM = 114 FEET
H_o = 114 - 90.0 = 24
H - H_o = 76

TIME (MINUTES)	DTW	h (114 - DTW)	H - h	H - h / H - H_o
0	90.00	24.00	76.00	1
7	86.64	27.36	72.64	.956
10	86.39	27.61	72.39	.953
15	82.40	31.60	68.40	.900
17	81.08	32.92	67.08	.883
19	79.87	34.13	65.87	.867
21	78.50	35.50	64.50	.849
23	78.26	35.74	64.26	.846
25	77.98	36.02	63.98	.842
27	75.88	38.12	61.88	.814
29	74.41	39.59	60.41	.795
31	71.80	42.20	57.80	.761
33	70.53	43.47	56.53	.744
35	69.50	44.50	55.50	.730
37	67.96	46.04	53.96	.710
39	66.85	47.15	52.85	.695
385	15.17	98.83	1.17	.015

T_o = 5400 S

$$K = \frac{r^2 \ln(L/R)}{2L T_o}$$

r = 7.62 cm
L 82 FT (2499 cm)
R = .25 FEET

$$K = \frac{(7.62)^2 \ln(82/.25)}{2(2499)5400} = 1.25 \times 10^{-5} \text{ cm/s}$$

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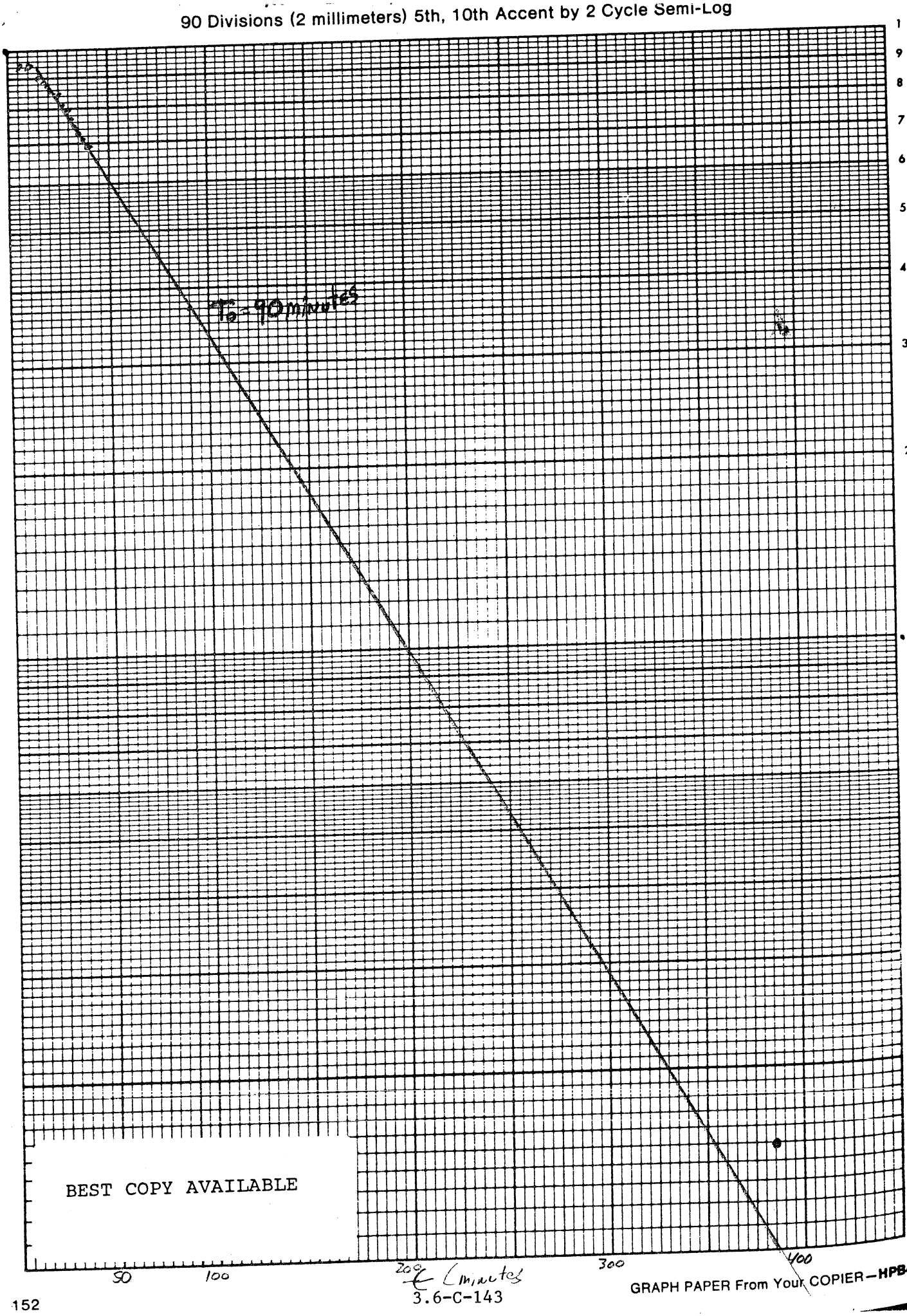

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CLIENT Kennecott DATE 3/10/88

PROJECT Bail Test #2 TW-K-3 BY MJC

PROJECT NO. 87K10 PAGE NO. 1 of 2

STATIC W.L = 16.15 (PROTECTIVE CASING WAS WELDED ON SINCE BAIL TEST #1)

H = 100'

DATUM = 116.15 FEET

H_o = 116.15 - 53.18 = 62.97

H - H_o = 37.03

	TIME (MINUTES)		DTW	h (116.15 - DTW)	H - h	H - h / H - H_o
	0	0	53.18	62.97	37.03	1
	2	120	51.95	64.20	35.80	.967
	5	300	50.52	65.63	34.37	.928
	9	540	48.45	67.70	32.30	.872
	14	840	46.20	69.95	30.05	.812
	22	1320	42.96	73.19	26.81	.724
	25	1500	42.08	74.07	25.93	.700
	29	1740	40.98	75.17	24.83	.671
	36	2160	38.13	78.02	21.98	.594
	40	2400	36.71	79.44	20.56	.555
	47	2820	34.38	81.77	18.23	.492
	56	3360	31.82	84.33	15.67	.423
	67	4020	29.21	86.94	13.06	.353
	75	4500	27.60	88.55	11.45	.309
*	81	4860	26.50	89.65	10.35	.280
	89	5340	25.22	90.93	9.07	.245
	98	5880	23.98	92.17	7.83	.211
	104	6240	23.28	92.87	7.13	.193
	112	6720	22.40	93.75	6.25	.169
	128	7680	20.95	95.20	4.80	.130
	145	8700	19.80	96.35	3.65	.099
	182	10920	18.15	98.00	2.00	.054
*	197	11820	17.70	98.45	1.55	.042
*	232	13920	16.98	99.17	0.83	.022
	284	17040	16.38	99.77	0.23	.006
	324	19440	16.15	100.00	0.00	0

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CLIENT KENNECOTT DATE 3/11/88

PROJECT BAIL TEST #2 TWK-3 BY MJC

PROJECT NO. 87K10 PAGE NO. 2 of 2

CALCULATION OF K

T_o = 3900 s

r = 7.62 cm

L = 82 FEET (2499 cm)

R = .25 FEET

$$K = \frac{r^2 \ln(L/R)}{2LT_o}$$

$$K = \frac{(7.62)^2 \ln(82/.25)}{2(2499)3900} = 1.73 \times 10^{-5} \text{ cm/s}$$

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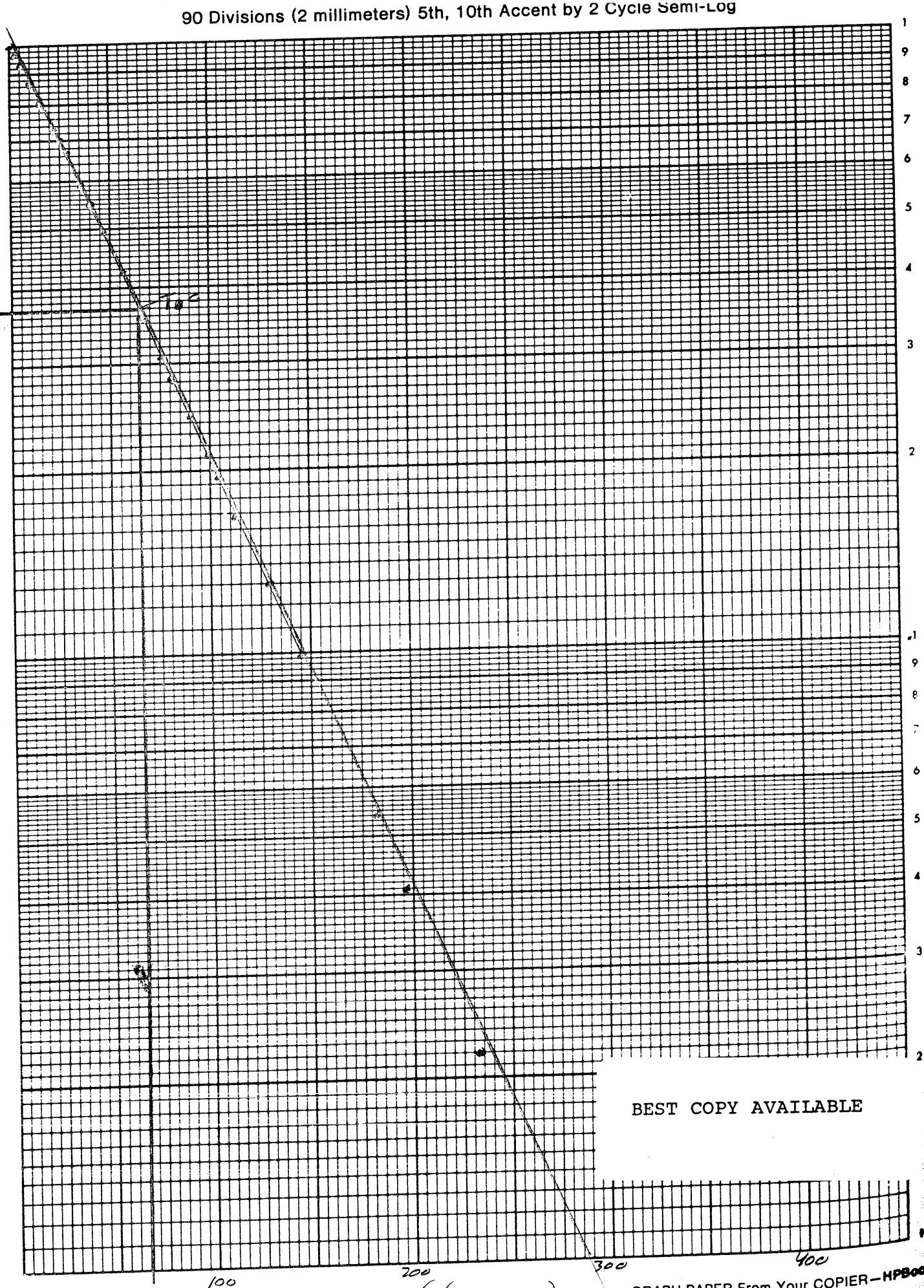

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Foth & Van Dyke

Client: KENNECOTT Scope I.D.:
Project: PUMP TEST TW-K3 Page:
Prepared by: FJD Date: 3/23/89
Checked by: Date:

SUMMARY OF PERMEABILITY RESULTS

TW-K3:	DRAWDOWN	4.1×10^{-6} cm/s
	RECOVERY	1.8×10^{-6} cm/s
PZ-R5:	DRAWDOWN	1.3×10^{-4} cm/s
	RECOVERY	1.1×10^{-4} cm/s

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Foth & Van Dyke

Client: KENNECOTT Scope I.D.:
Project: TW-K3R PUMP TEST #1 Page:
Prepared by: WJC Date: 3/25/88
Checked by: Date:

TEST #1 3/24/88 TW-K3R

DRAWDOWN

TIME (sec)	s (ft)
40	3.82
108	5.77
162	7.47
198	7.47
258	10.97
288	11.57
324	12.02
348	12.82
402	14.27
462	15.67
522	17.02
762	21.47
1002	24.87
1302	31.27
1482	34.97
1602	36.35
1962	38.67
2562	41.72
3162	47.92
3762	50.93
4362	52.94
4962	47.59
5562	56.82
6222	60.02
6822	62.37
7422	63.92
8022	71.89
8802	80.49
9462	85.99
10122	89.97
10722	93.17
11322	109.77
11622	113.17
11922	114.17
12522	124.87
13122	131.62
13422	142.97

$T = \frac{CQ}{\Delta h}$ $\Delta h = 42$ ft

$Q = 2$ gpm

$b = 145' = 442.0$ cm

$T = \frac{264(2)}{42} = 12.6 \frac{gpd}{ft}$

$12.6 \times (1.44 \times 10^{-3}) = 1.8 \times 10^{-2}$ cm²/s

$T = Kb$

$K = T/b = 1.8 \times 10^{-2} / 4420$

$K = 4.1 \times 10^{-6}$ cm/s

(LINE B)

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Foth & Van Dyke

Client: KENNECOTT Scope I.D.:
Project: TW-K3R PUMP TEST #1 Page:
Prepared by: MJC Date: 3/25/88
Checked by: Date:

TEST #1 3/24/88 TW-K3R

RECOVERY

TIME (sec)	s (ft)
50	1.7
75	3.7
90	5.4
105	6.8
125	8.3
155	9.6
170	10.9
195	11.9
210	12.5
240	14
270	15.5
300	16.9
480	24.9
540	27.4
600	30
660	32.3
720	34.5
1080	47.8
1320	55.7
1620	64.3
1920	71.25
2220	75.5
2940	88.15
3540	98.33
4140	105.38
4740	110.39
5340	114.1
7020	120.01
8880	122.85
13740	125.5

LINE D

$T = \frac{CQ}{\Delta h}$ $C = 264$

$Q = 2$ gpm

$\Delta h = 96$ ft

$T = \frac{264(2)}{96} = 5.5$ gpd/ft

$= 7.9 \times 10^{-3}$ cm²/s

$T = Kb$ $b = 4420$ cm

$K = 7.9 \times 10^{-3} / 4420$

$= 1.8 \times 10^{-6}$ cm/s

(LINE D)

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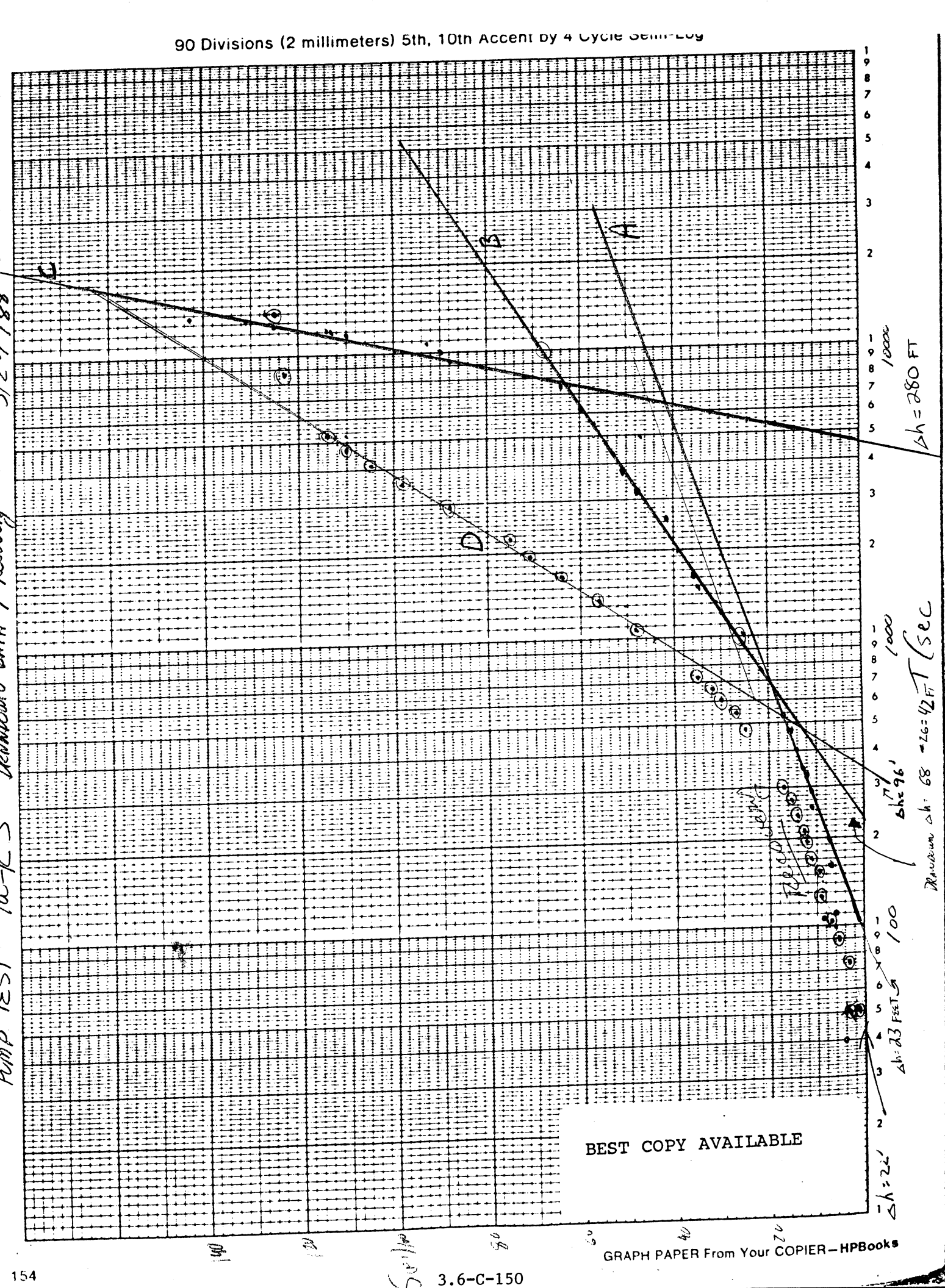
90 Divisions (2 millimeters) 5th, 10th Accent by 4 Cycle Semi-Log
Pump Test No-1 Jennings Earth Fissure
3/24/88
Δh = 280 FT
Δh = 96'
Δh = 68 - 26 = 42 FT
Δh = 23 FEET
Δh = 24'
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414/497-2500

CLIENT Kennecott DATE 3/25/88 (3/24/88)

PROJECT Pump Test #1 TW-K3R BY MSC

PROJECT NO. 87K10 PAGE NO.

R-5

Drawdown Time (min)	s	s
0		0
15	900	.05
25	1500	.14
32	1920	.19
42	2520	.25
52	3120	.37
62	3720	.45
72	4320	.48
87	5220	.67
103	6180	.79
121	7260 (7920)	.91
132	~~8040~~	1.05
145	8700	~~1.05~~
170	10200	1.10
185	11100	1.12
206	12360	1.25

$\Delta h = 1.35$ FT $Q = 2$ gpm

$T = \frac{CQ}{\Delta h} = \frac{(264)(2)}{1.35} = 391.1$ gal/day/ft

$391.1 \times 1.44 \times 10^{-3} = 0.56$ cm²/s = T

$T = Kb$ $b = 145'$ (4420 ")

$K = T/b = 0.56/4420$

$= 1.30 \times 10^{-4}$ cm/s

Recovery Time (min) (s)	s
0	0
16 (960)	.1
48 (2880)	.14
63 (3780)	0.24
78 (4680)	.38
106 (6360)	.46
137 (8220)	.74
213 (12780)	1.11

$\Delta h = 1.56$ ft $Q = 2$ gpm

$T = \frac{CQ}{\Delta h} = \frac{(264)(2)}{1.56} = 338.5$ gal/day/ft

$338.5 \times 1.44 \times 10^{-3}) = .49$ cm²/s = T

$T = Kb$ $b = 145 (4420')$

$K = T/b = 0.49/4420$

$= 1.1 \times 10^{-4}$ cm/s

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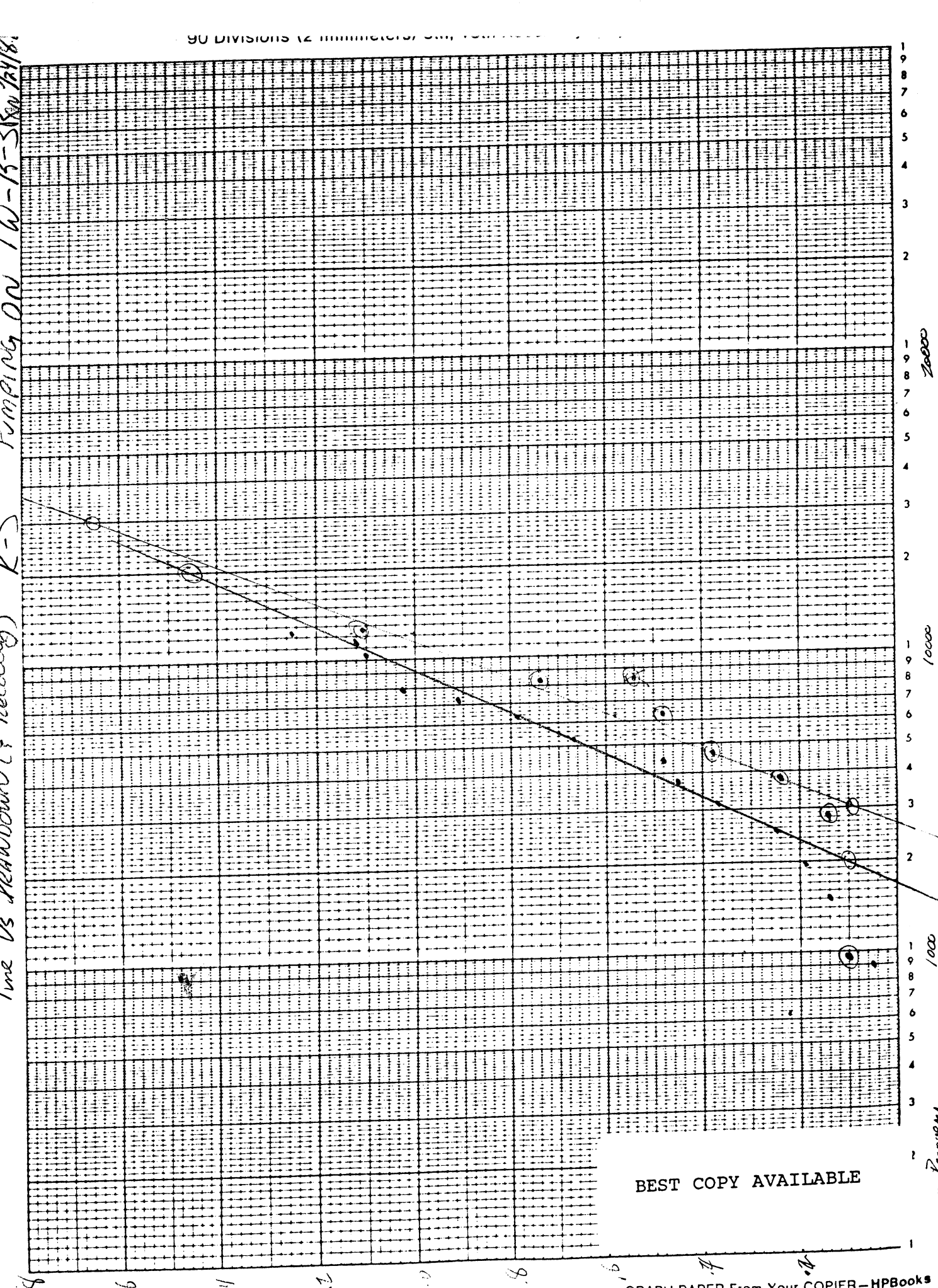
Time VS Drawdown (T Recovery) K-5 Pumping OW 14-15-35Ka 24/8
90 DIVISIONS (2 millimeters) ...
1 9 8 7 6 5 4 3 2
1 9 8 7 6 5 4 3 2
10000
1 9 8 7 6 5 4 3 2
1000
1 9 8 7 6 5 4 3 2
1
1,6
1,4
1,2
1,0
,8
,6
,4
,2
Drawdown Δh = 1.45 - 0.10 = 1.35 FT
Recovery
Δh = 1.45 - .09 = 1.36 FT
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Pump Tests

TW-K4

Foth & Van Dyke

Client: KENNECOTT Scope I.D.:
Project: PUMP TEST TW-K5 Page:
Prepared by: Date:
Checked by: Date:

SUMMARY OF PERMEABILITY RESULTS

TW-K4:

DRAWDOWN		1.7×10^{-5} cm/s
		1.4×10^{-5} cm/s
	AVE	1.5×10^{-5} cm/s
RECOVERY		4.1×10^{-5} cm/s
		5.6×10^{-5} cm/s
	AVE	4.8×10^{-5} cm/s

OBSERVATION WELL

PZ-S4:

DRAWDOWN	6.0×10^{-4} cm/s
RECOVERY	5.6×10^{-4} cm/s

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414/497-2500

CLIENT KCM Scott DATE 3/8/88

PROJECT Pump Test TW-K4 BY MJC

PROJECT NO. 87610 PAGE NO. 4

PUMP TEST # 1 TW K-4

CALCULATION OF K USING JACOB STRAIGHT LINE METHOD

$T = \frac{CQ}{\Delta h}$ where C = 264 & T = US GAL/DAY/ft
Δh = over one log cycle

$T = \frac{264\ (5\ gpm)}{31} = 42.58$

T = Kb = 42.58 US GAL/DAY/ft

$\frac{1\ US\ GAL}{DAY\ ft} \times \frac{0.134\ ft^3}{US\ GAL} \times \frac{30.48\ cm}{ft} \times \frac{30.48\ cm}{ft} \times \frac{1\ DAY}{24\ hr} \times \frac{1\ hr}{3600\ s} = \frac{cm}{s}$

$42.58 \times 1.44 \times 10^{-3} = 6.13 \times 10^{-2} \frac{cm^2}{s} = T$

ASSUME b 120 $\times \frac{30.48\ cm}{ft}$ 3658 cm

T/b = K

$6.13 \times 10^{-2} \frac{cm^2}{s} / 3658\ cm = 1.67 \times 10^{-5}$ cm/s

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CLIENT KENNECOTT DATE 3/8/88

PROJECT PUMP TESTS BY MTC

PROJECT NO. 8710 PAGE NO. 1

PUMP TEST #1

START TIME - 1408

DATUM - TOC

TW K-4

STATIC W L - 25.05 FT

PRESSURE TRANSDUCER READING = 19.68

Pump Rate	TIME (S)	PRESSURE TR. RDG	W.L. INDICATOR	Δh	TIME	PRESSURE TR RDG	WL INDICATOR	Δh	PUMP RATE
	0	19.68	25.05		615	1.84		17.84	5gpm
	5	19.02		0.66	630	1.45		18.23	
	10	18.83		0.85	645	1.05		18.63	
	20	18.52		1.16	660	0.68		19.00	
4gpm	30	17.59		2.09	705		45.13	20.08	
	40	16.93		2.75	750		46.00	20.95	
	50	16.52		3.16	795		47.10	22.05	
	60	16.18		3.50	885		48.18	23.13	4gpm
	90	15.73		3.95	975		49.10	24.05	
	120	15.24		4.44	1035		50.40	25.35	6gpm
	150	14.36		5.32	1080		51.18	26.13	
	180	13.78		5.90	1320		54.20	29.15	
	210	12.73		6.95	1385		54.56	29.51	
	240	12.11		7.57	1560		56.95	31.90	5gpm
	270	11.68		8.00	1620		57.30	32.25	
3gpm	300	11.09		8.59	1680		58.50	33.45	
	330	9.79		9.89	1800		60.02	34.97	5gpm
5gpm	360	8.40		11.28	1860		61.15	36.10	6gpm
	390	7.10		12.58	1920		61.90	36.85	
	405	6.56		13.12	1980		62.85	37.80	5gpm
	420	6.08		13.60	2040		63.80	38.75	6gpm
	435	5.62		14.06	2100		64.90	39.85	
5gpm	450	5.22		14.46	2100		67.21	42.16	5gpm
	465	4.88		14.80	2700		68.40	43.35	6gpm
	480	4.60		15.08	3000		71.15	46.10	6gpm
	495	4.33		15.35	3300		72.45	47.40	5gpm
	510	4.06		15.62	3600		74.10	49.05	5gpm
	525	3.69		15.99	5400		81.65	56.60	5gpm
	540	3.40		16.28	9000		100.28	75.23	5gpm
	555	3.09		16.59					
	570	2.74		16.94					

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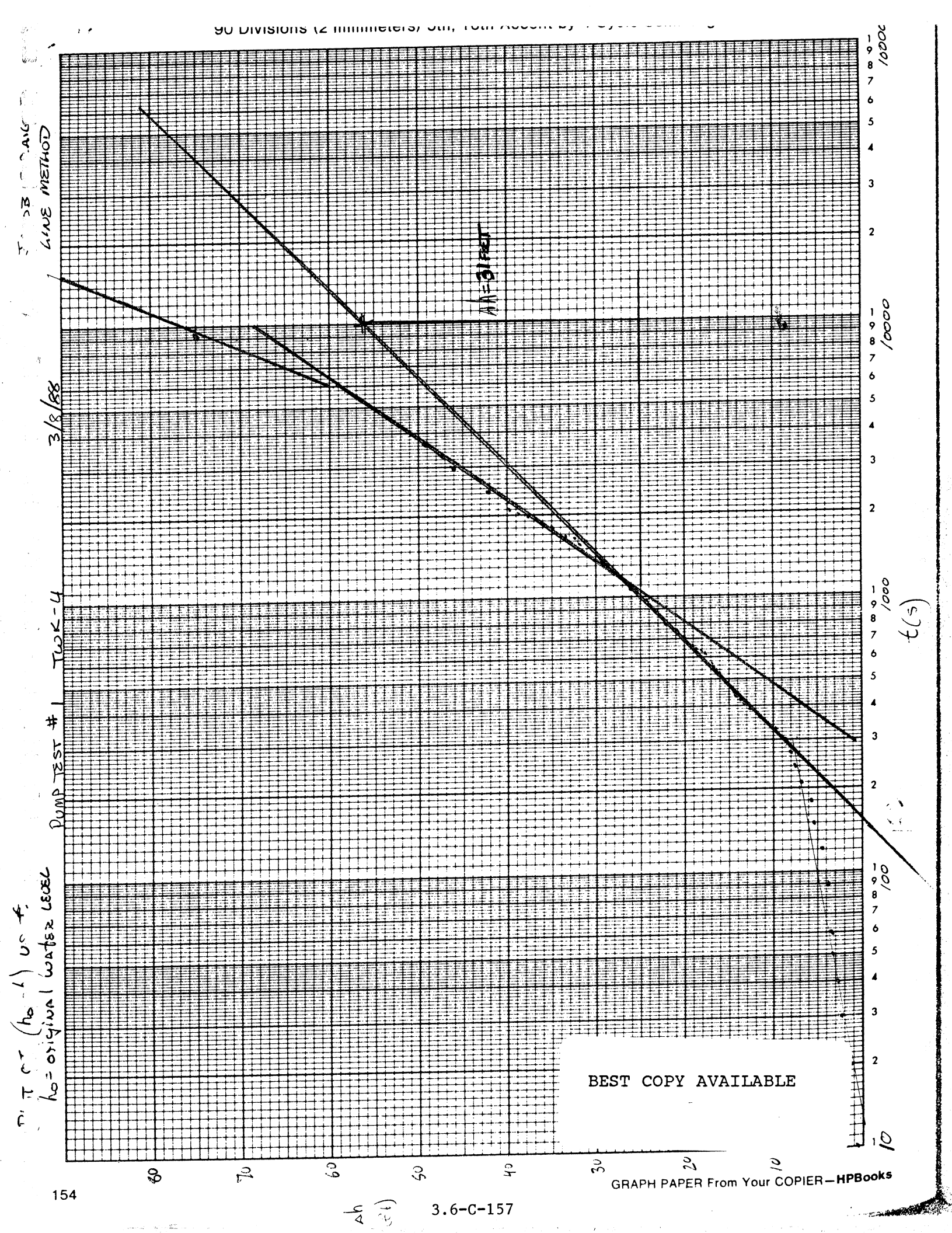
90 Divisions (2 millimeters) 5th, 10th Accent by
LINE METHOD
3/8/88
TUCK-4
PUMP TEST #1
Δh=31 FEET
t(s)
10000
1000
100
10
80
70
60
50
40
30
20
10
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PROJECT PUMP TEST - TWK-4 BY MSC

PROJECT NO. _____ PAGE NO. _____

PUMP TEST #1 TWK-4 RECOVERY

CALCULATION OF K USING HVORSLEV (FREEZE & CHERRY, P340)

$$K = \frac{r^2 \ln(L/R)}{2 L T_o}$$

$r = 7.62$ cm

$L = 165 - 52 = 113$ FEET (3444 cm)

$R = .25$ FEET

$T_o = 1250$ (FROM PLOT OF $H-h/H-H_o$ VS t)

$$K = \frac{(7.62)^2 \ln(113/.25)}{2(3444)\,1250} = 4.12 \times 10^{-5} \text{ cm/s}$$

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CLIENT [illegible] DATE 3/8/88

PROJECT [illegible] BY MJC

PROJECT NO. 87K10 PAGE NO. 1

PUMP TEST #1 RECOVERY TW1K-4

STATIC W.L 25.05

TIME PUMP WAS SHUT OFF - 5PM

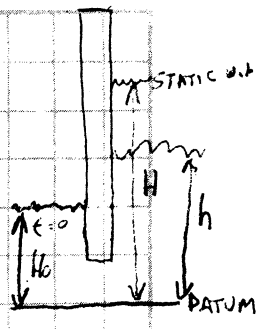
$H = 100$

$H_o = 125.05 - 102.9 = 22.15$

@ $t = 0$ W.L = 102.9

DATUM : 25.05 + 100 = 125.05

$H - H_o = 77.85$



TIME SINCE PUMP WAS STOPPED (S)	PRESSURE TR. READING	DTW	h (125.05 - DTW)	H-h	H-h/H-Ho
0	1.00	102.9	22.15	77.85	1
30s	2.00	101.7	23.35	76.85	.987
60s	4.90	99.0	26.05	73.95	.949
90	6.48	96.42	28.63	71.37	.917
120	7.70	96.20	28.85	71.15	.914
150	8.88	95.02	30.03	69.97	.899
180	10.06	93.84	31.21	68.79	.883
210	11.26	92.64	32.41	67.59	.868
330	15.22	88.68	36.37	63.63	.817
360	16.90	87.50	37.55	62.45	.802
390	17.49	86.41	38.64	61.36	.788
420	18.59	85.31	39.74	60.26	.774
450	19.62	84.28	40.77	59.23	.761
480		82.20	42.85	57.15	.734
540		81.75	43.30	56.70	.728
600		81.32	43.73	56.27	.723
660		81.04	44.01	55.99	.719
720		80.70	44.35	55.65	.715
780		80.10	44.95	55.05	.707
900		78.40	46.65	53.35	.685
960		76.80	48.25	51.45	.661
1020		-	-	-	-
1080		73.30	51.75	48.25	.620
1140		71.70	53.35	46.65	.599
1200		63.80	61.25	38.75	.498
1500		56.60	68.45	31.55	.405
1800		50.60	74.45	25.55	.328

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PROJECT PUMP TEST BY MJC

PROJECT NO. 8710 PAGE NO. 2

PUMP TEST # 1 RECOVERY TWK-4

TIME SINCE PUMP WAS STOPPED	PRESSURE TR READING	DTW	h (125.05 - DTW)	4-K	H-H/H-Ho
2100		43.95	81.10	18.9	.243
2460		40.50	84.55	15.45	.198
2700		36.98	88.07	11.93	.153
3000		34.30	90.75	9.25	.119
3600		32.20	92.85	7.15	.092
3900		30.60	94.45	5.55	.071
4200		29.40	95.65	4.35	.056
4500		28.50	96.55	3.45	.044
4900		27.80	97.25	2.75	.035

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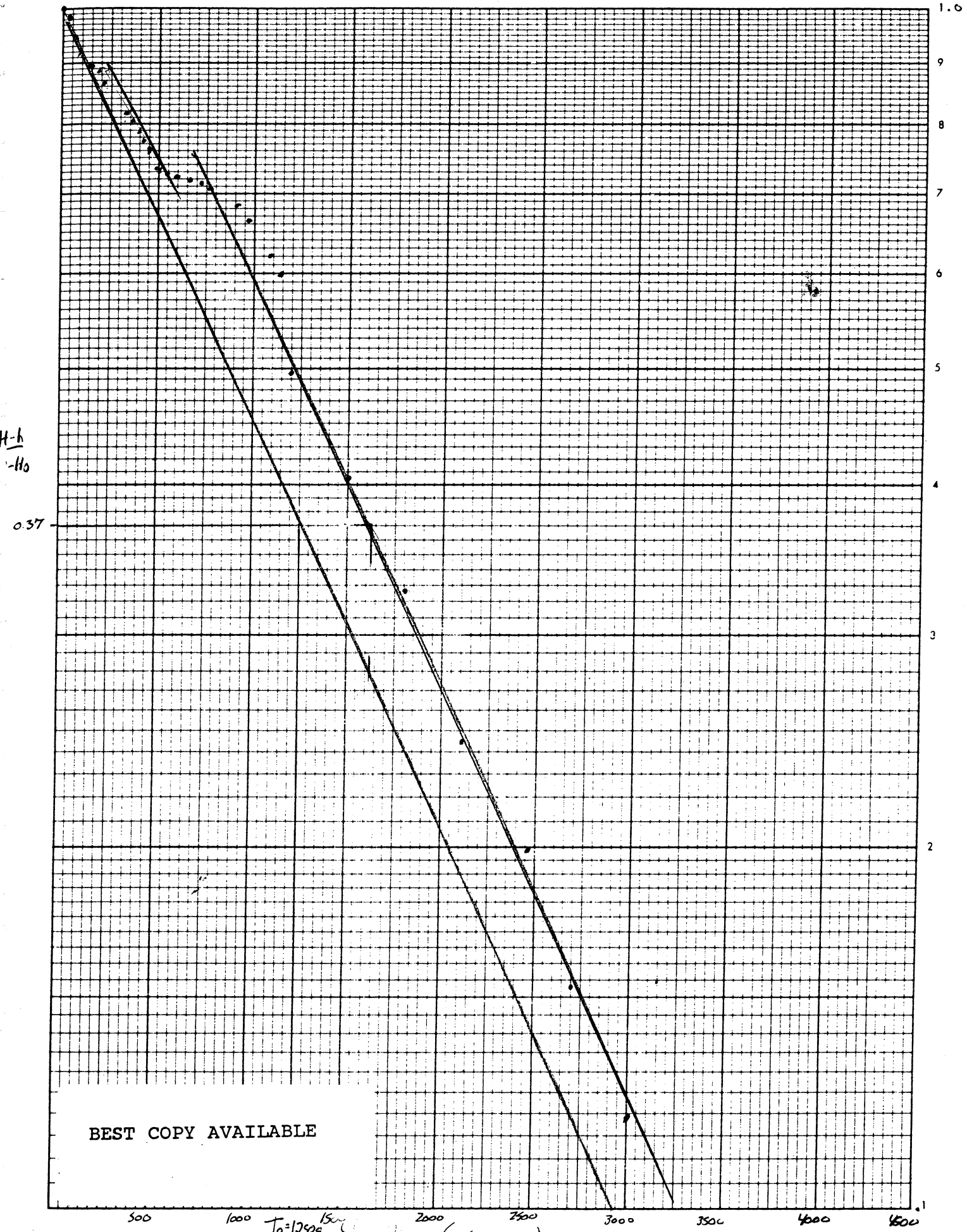

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PROJECT Pump Test #2 Twin-4 BY MJC

PROJECT NO. 87K10 PAGE NO.

CALCULATION OF K

JACOB STRAIGHT LINE METHOD -

$T = \frac{264\,Q}{\Delta h}$ where C 264 & T = US GAL/DAY/FT

Δh = drop per log cycle

$T = \frac{264\,(5.3)}{40} = 34.98$

T. K b = 34.98

1 GAL/DAY FT × 2.011 E-3 USGMD × 30.48 CM/FT × 30.48 CM × 1 DAY/24 HR × 1 HR/3600 S

$34.98 \times 1.44 \times 10^{-3} = 5.04 \times 10^{-2}\ cm^2/s = T$

Assume b 120' × 30.48 CM/FT = 3657.6 cm

$T/b = K$

$5.04 \times 10^{-2} / 3658 = \boxed{1.38 \times 10^{-5}}$

USING STATIC W.L WITH A CONSTANT PUMP RATE

$K = \frac{2000\,Q\,(4.7 \times 10^{-5})}{s\,b}$

$K = \frac{2000\,(4.8)\,(4.7 \times 10^{-5})}{(120)(43.00)} = \boxed{8.74 \times 10^{-5}}$

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CLIENT Kenn DATE 3/9/88

PROJECT _____ BY MSC

PROJECT NO. _____ PAGE NO. 1

PUMP TEST #2 — TWK-4

START TIME - 0910 — WL STATIC - 24.95

PRESSURE TRANS READING 19.70

TIME	TIME (s)	PRESSURE TR READ.	WL & READING	Δh	TIME	TIME (s)	PRESSURE TR READ.	WL & READING	Δh	GPM
0		19.70		0	20			62.91	37.96	
30		17.91		1.79	24			63.44	38.49	
60		17.00		2.70	30			64.08	39.13	
90		—		—	35			66.45	41.50	4g/45s
120		11.23		8.47	40			68.21	43.26	
180		10.13		9.57	45			68.21	43.26	
210		—		—	50			—	—	
240		7.57		10.13	55			67.95	43.00	4g/52s
270		8.85		10.85	60			67.85	42.90	
300s		8.38		11.32	65			—		
6 m		6.75		12.95	70			—		4g/56s
7.5		4.70		15.00	75			67.03	43.08	4g/55s
8		4.00		15.70	100			68.70	43.75	4g/55s
9		2.58		17.12	110					
10		1.21		18.47						
11			45.05	20.10						
12			46.68	21.73						
13			48.20	23.25						
14			—	—						
15			—	—						
16			51.55	26.90						
17			52.87	27.92						
18			—							
19			54.45	29.50						
20			55.30	30.35						
21			—	—						
22			—	—						
23			58.26	33.31						
24			59.30	34.35						
25			60.30	35.35						
26			61.28	36.33						
27			—	—						

4g = x 240 = 50 x 4.8 gpm

50s 60 240 = 45 x 5.3 gpm

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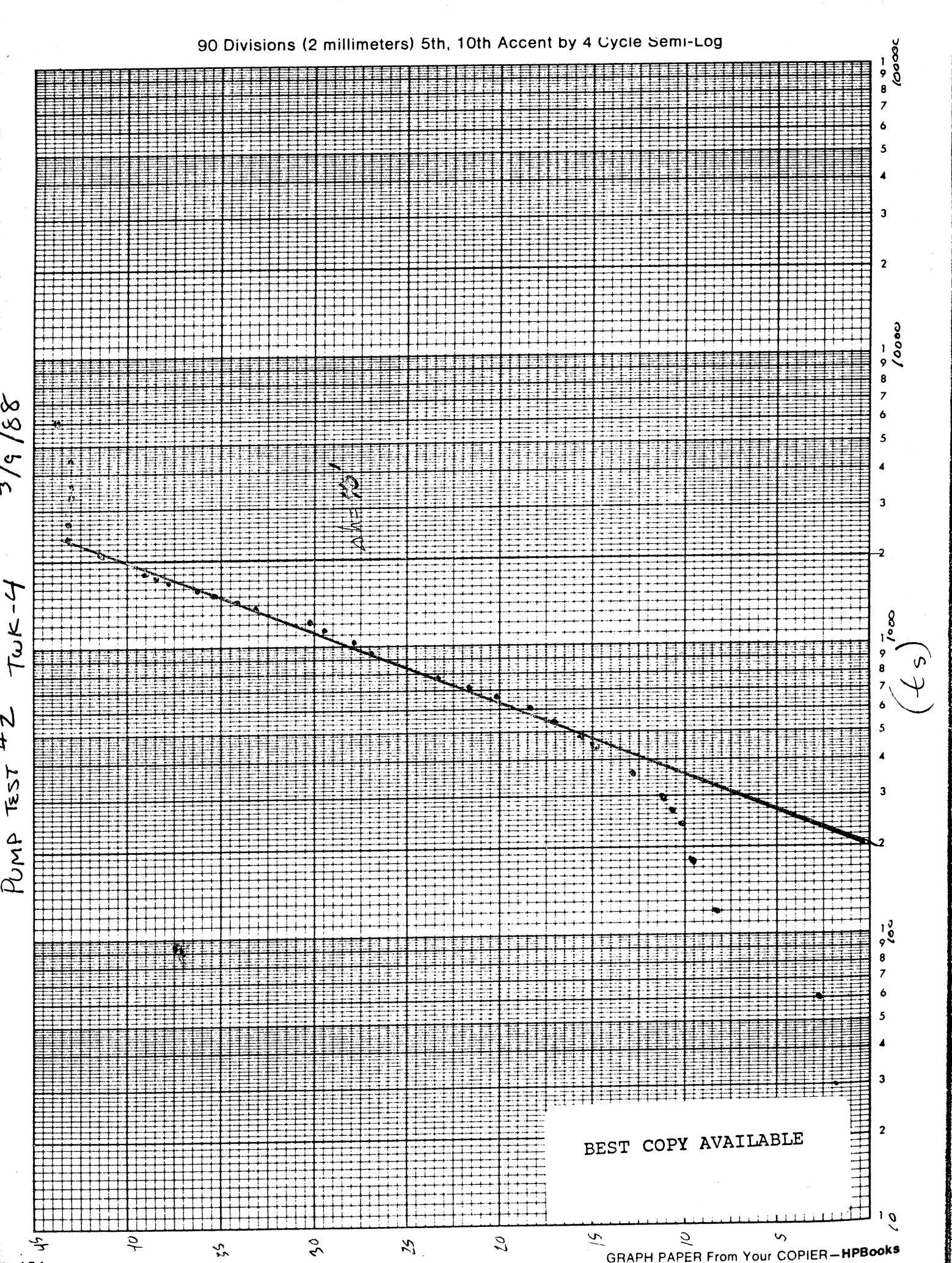
90 Divisions (2 millimeters) 5th, 10th Accent by 4 Cycle Semi-Log
PUMP TEST #2 TWK-4 3/9/88
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PROJECT Pump Test Recovery BY MJC

PROJECT NO. 87610 PAGE NO.

PUMP TEST #2 TWK-4 Recovery

CALCULATION OF K USING Hvorslev
(Freeze & Cherry, P 340)

$$K = \frac{r^2 \ln(L/R)}{2 L T_0}$$

$r = 7.62\,cm$
$L = 165 - 52 = 113$ FEET $(3444\,cm)$
$R = .25$ FEET
$T_0 = .918$ SEC (FROM PLOT OF $H-h/H-H_0$ VS t)

$$K = \frac{(7.62)^2 \ln(113/.25)}{2(3444)(918)} \quad 5.61 \times 10^{-5}\ cm/s$$

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TWK-4

PROJECT PUMP TEST RECOVERY #2 BY MSC

PROJECT NO. 87K10 PAGE NO.

@ t_0, WL (DTW) = 68.40

STATIC WL = 24.95 H = 100 DATUM = 124.95 H_0 = 124.95 - 68.40 = (56.55) $H-H_0$ = 43.45

	TIME SINCE PUMP WAS STOPPED	PR TRAN READING	DTW	h (124.95 - DTW)	H-h	H-h / H-Ho
11:00 AM	0 S	1.69	68.40	56.55	43.45	1
	30	2.94	67.15	57.80	42.20	.971
	60	4.43	65.66	59.29	40.71	.937
	90	5.57	64.52	60.43	39.57	.911
	120	6.45	63.64	61.31	38.69	.890
	180	8.37	61.72	63.23	36.77	.846
	210	9.24	60.85	64.10	35.90	.826
	240	10.04	60.05	64.90	35.10	.808
	270	10.96	59.13	65.82	34.18	.787
	300 S	11.82	58.27	66.68	33.32	.767
	7 MIN	15.04	55.05	69.90	30.10	.693
	8	16.22	53.87	71.08	28.92	.666
	9	17.80	52.29	72.66	27.34	.629
	10	19.32	50.77	74.18	25.82	.594
	12		47.50	77.45	22.55	.519
	14		44.90	80.05	19.95	.459
	16		42.52	82.43	17.57	.404
	18		40.40	84.55	15.45	.356
	20		38.30	86.65	13.35	.307
	22		36.96	88.05	11.95	.275
	24		35.52	89.43	10.57	.243
	26		34.30	90.65	9.35	.215
	28		33.15	91.80	8.20	.189
	30		32.20	92.75	7.25	.167
	35		30.33	94.62	5.38	.124
	45		28.05	96.90	3.10	.071
	50		27.45	97.50	2.50	.058
	55		27.00	97.95	2.05	.047
	60		26.70	98.25	1.75	.040
	75		26.3	98.62	1.18	.027
	90		25.85	99.10	0.90	.021

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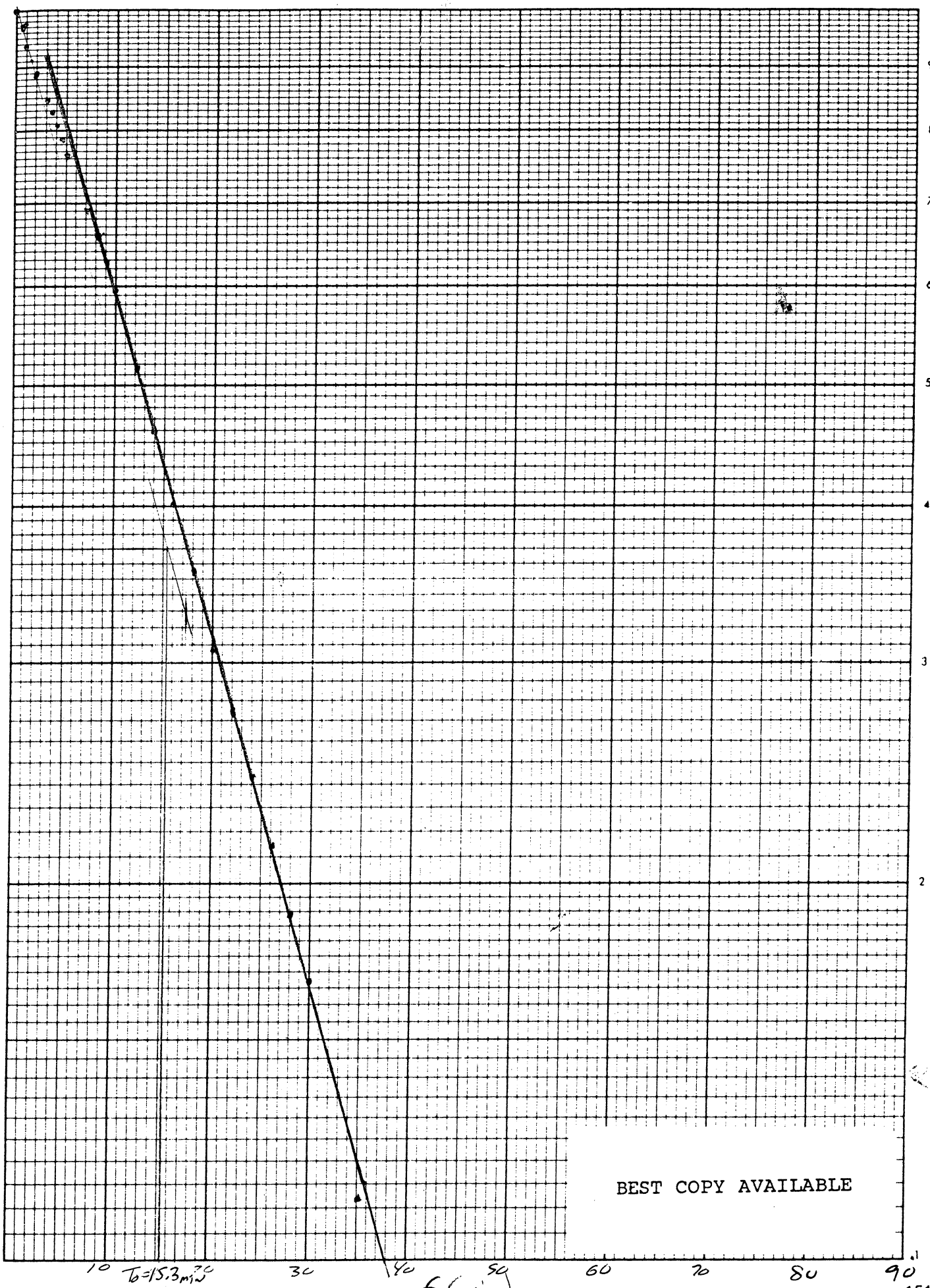
90 Divisions (2 millimeters) 5th, 10th Accent by 1 Cycle Semi-Log



H-h / H-Ho

T6=15.3 min

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PROJECT PUMP TEST BY MJC

PROJECT NO. 87K10 PAGE NO. 3

PUMP TEST #1 TAC -4

BACKGROUND	DTW	DATUM	TIME
PZ-S4	27.80	WELL CSG	1310
ST 23	30.37	WELL CSG	1320
ST22A	DRY	TOC	1330
ST 23A	DRY	TOC	1321
K-S	30.79	TOC	1335

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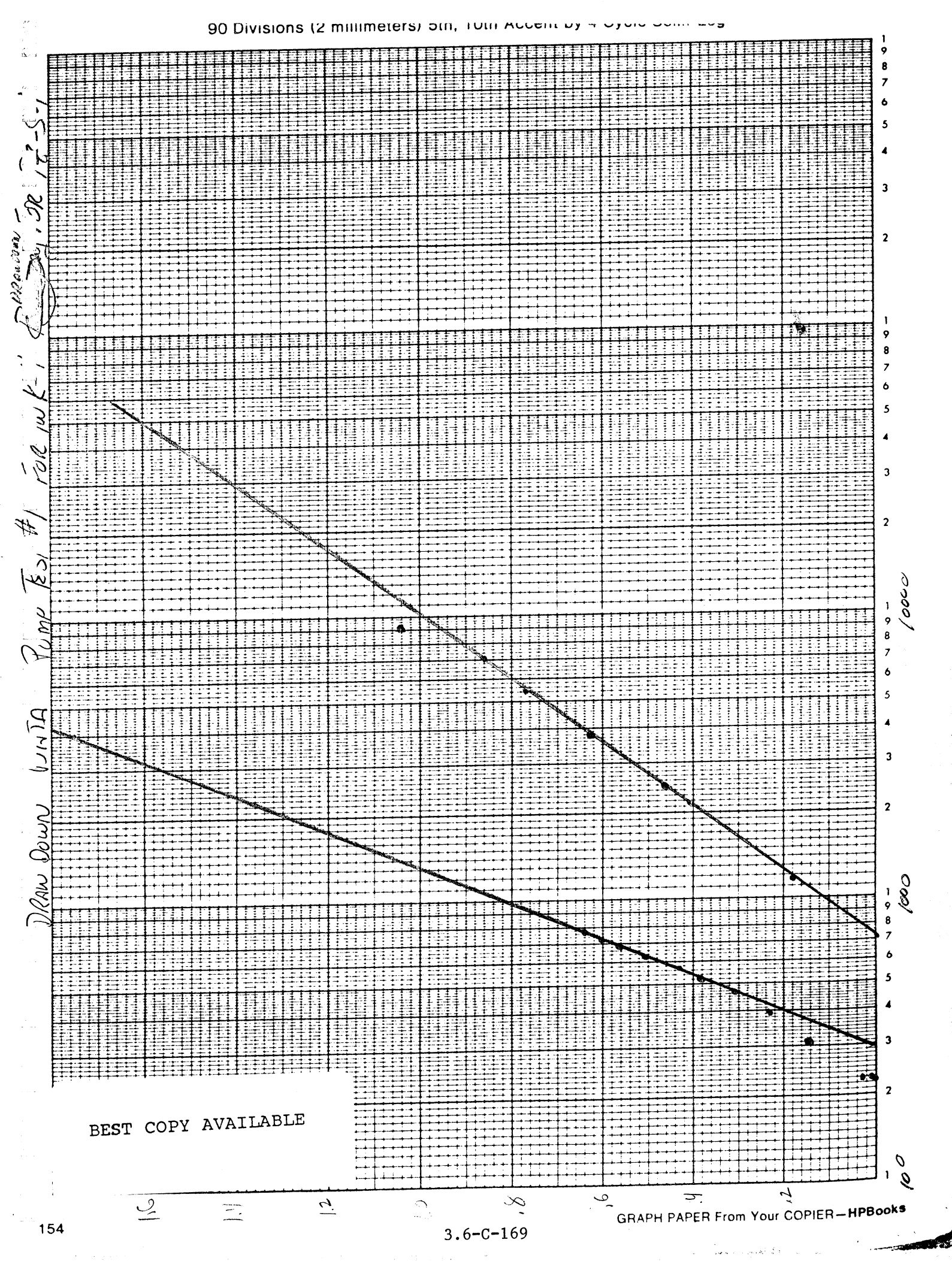
PUMP TEST DATA

WELL	TIME SINCE PUMP STARTED		DTW	Δh
ST 23	48 min		30.37	0.00
ST 23	150 min		30.39	-0.02
PZ-S4	19.5 min	1170	27.98	-0.18
PZ-S4	36 min	2160	28.21	-0.41
PZ-S4	41 min	2460	28.26	-0.46
PZ-S4	62 min	3720	28.43	-0.63
PZ-S4	90 min	5400	28.57	-0.77
PZ-S4	150 min	9000	28.89	-1.04

RECOVERY DATA

WELL	TIME SINCE PUMP STOPPED	DTW	Δh
PZ-S4	0	28.89	0.00
"	4	28.89	0.00
"	23	28.86	+0.03
"	32	28.74	+0.15
"	39	28.66	+0.23
"	47	28.58	~~+0.08~~ .31
"	52	28.50	~~+0.08~~ .39
"	57	28.46	~~+0.04~~ .43
"	63	28.38	+0.08 .51
"	68	28.33	+0.05 .56
"	72	28.29	+0.04 0.60
"	77	28.25	+0.04 0.64



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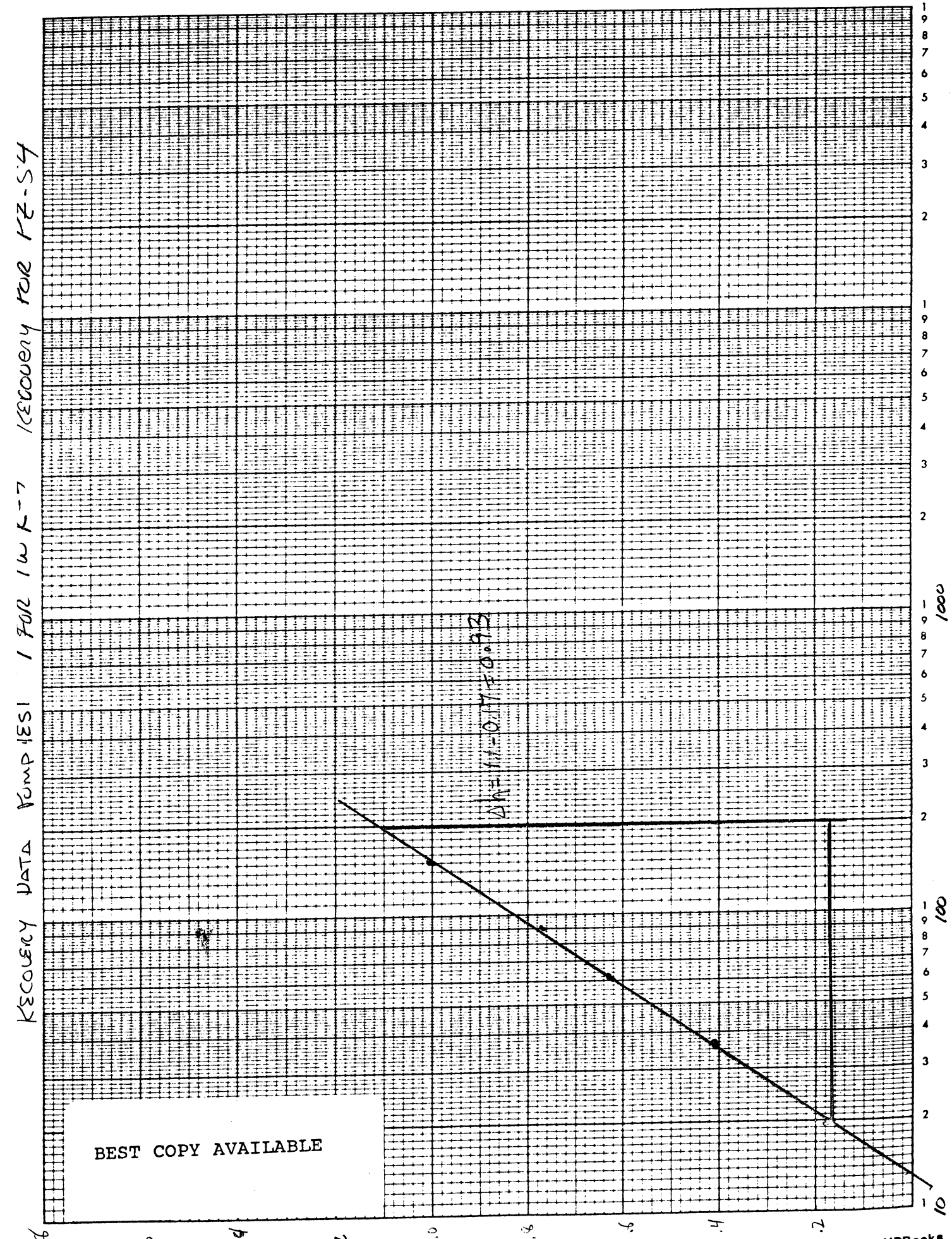

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PROJECT Pump Test #2 Twk-4 BY MSC

PROJECT NO. 87610 PAGE NO.

Pump Test #2 Observation wells

Pz-54

Time	DTW
0	28.15
1/4 min	28.25
21	28.41
27	28.47
31	28.56
36	28.63
41	28.69
47	28.73
57	28.82
105	29.00

ST-23

Time	DTW
0	30.35
65 min	30.35
105 min	30.35

Recovery

Pz-54

Time Since Pump was Stopped	DTW
0	29.00
6 min	29.00
8	29.00
13	29.00
17	28.96
19	28.95
23	28.91
25	28.90
27	28.86
29	28.82
32	28.79
34	28.78
42	28.63
47	28.63
53	28.57
57	28.54
67	28.49
77	28.45
88	28.42

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PROJECT PUMP TEST #2 TWK-4 BY MJC

PROJECT NO. 87610 PAGE NO.

DRAWDOWN VS TIME FOR PZ S-4

(Sec)	Time	S
	0	0
(840)	14	0.1
(1260)	21	0.26
(1620)	27	0.32
(1860)	31	0.41
(2160)	36	0.48
(2460)	41	0.54
(2820)	47	0.58
(3420)	57	0.67
(6300)	105	0.85

Δh over one log cycle = 0.92 FEET

USING JACOB STRAIGHT LINE METHOD

$T = \frac{C Q}{\Delta h}$ where C = 264 @ T US GAL/DAY/FT

$T = \frac{264 (5.3)}{0.92} = 1521$

T Kb = 7.2

$b = 120' \times 30.48 \frac{cm}{FT} = 3658$

1521 $\times 1.44 \times 10^{-3} = 2.19 \ cm^2/s$ T

$2.19 / 3658 = 5.99 \times 10^{-4}$ cm/s

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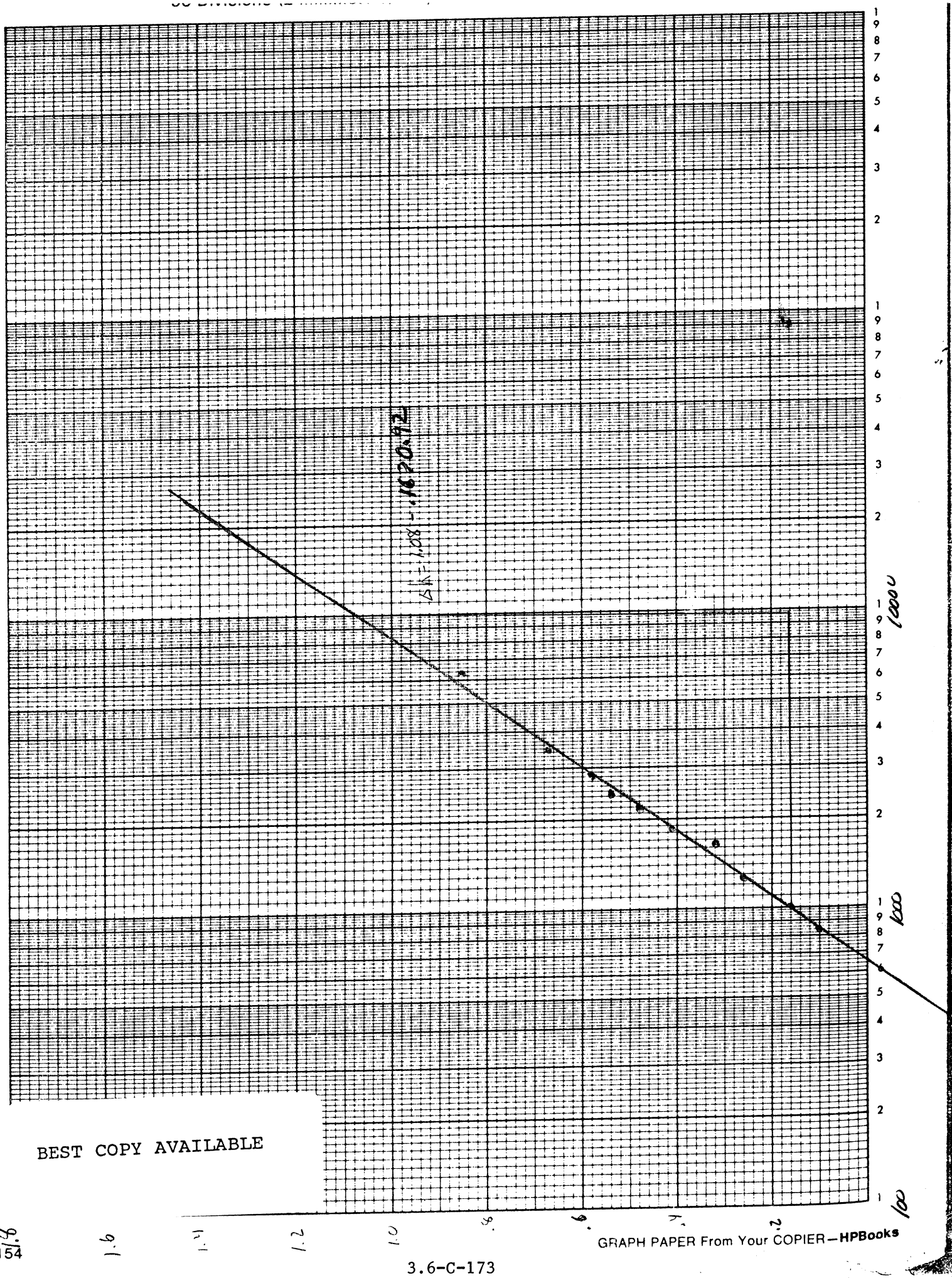

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PROJECT PUMP TEST #2 TWK-4 BY MJC

PROJECT NO. 87410 PAGE NO.

RECOVERY DATA FOR OBSERVATION WELL TW-54

TIME (MINUTES)	Δh (FT)
0	0
6	0
8	0
13	0
17	0.04
19	0.05
23	0.09
25	0.10
27	0.14
29	0.18
32	0.21
34	0.22
42	0.37
47	0.37
53	0.43
57	0.46
67	0.51
77	0.55
88	0.58

USING JACOB - STRAIGHT LINE

Q = 5.3 GPM

C = 264

Δh = 0.98' over one log cycle

$$T = \frac{CQ}{\Delta h} = \frac{(264)(5.3)}{0.98} = 1428 \text{ GAL/DAY/FT}$$

T = kb

$1428 \times 1.44 \times 10^{-3} = 2.06 \text{ CM}^2/\text{S} = T$

b = 120' (3658 cm)

$2.06 / 3658 = 5.63 \times 10^{-5} \text{ cm/s}$

$K = 5.63 \times 10^{-4} \text{ cm/s}$

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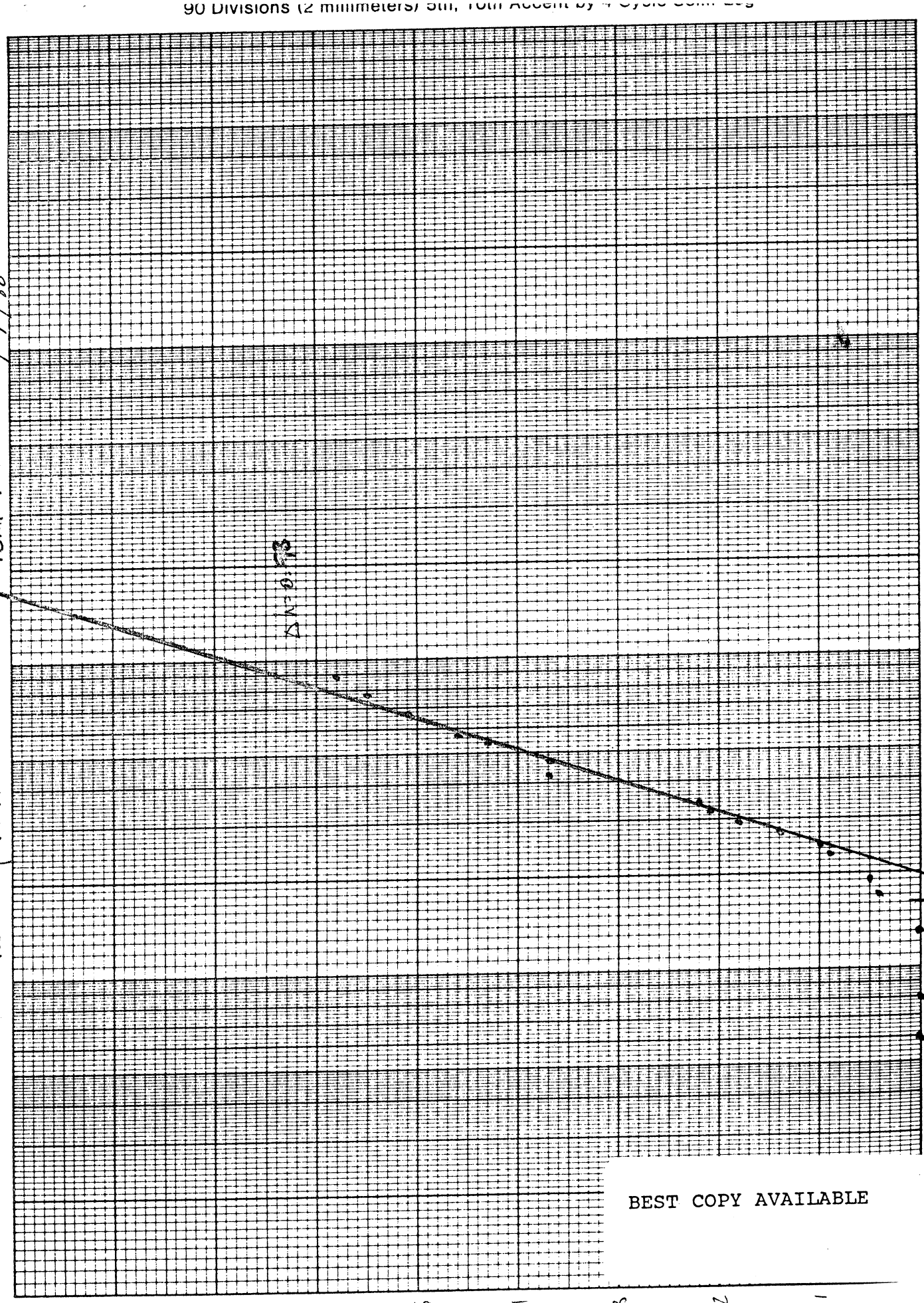

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GRAPH PAPER From Your COPIER—HPBooks

Pump Tests

- TW-K5R

Foth & Van Dyke

Client: KENNECOTT Scope I.D.:
Project: Ruth Tech Tech 5R Page:
Prepared by: M. C Date: 3/28/88
Checked by: Date:

DRAWDOWN

TIME (sec)	s (ft)
0	
385	4.24
415	5.56
445	6.13
475	6.73
505	[illegible]
550	7.66
610	8.65
670	9.47
730	10.21
790	10.96
850	11.67
1150	15.51
1480	17.16
1750	[illegible]
2050	24.92
2350	27.25
2650	29.15
2950	28.83
3250	29.16
3550	29.42
3850	27.33
4150	27.65
4450	30.28
4750	30.56
5110	31.57
5470	33.12
5950	34.95
6430	35.43
6910	35.95
7390	36.33
7870	36.69
8350	37.03
8950	37.53
9550	38.10
10150	38.55

$T = \frac{CQ}{\Delta h}$ $Q = 1$ gpm

$\Delta h = 29.5$ ft

$T = \frac{264(1)}{29.5} = 8.9$ gpd/ft

$b = 100$ ft $= 3048$ cm

$K = \frac{8.9(1.44 \times 10^{-3})}{3048} = 4.2 \times 10^{-6}$ cm/s

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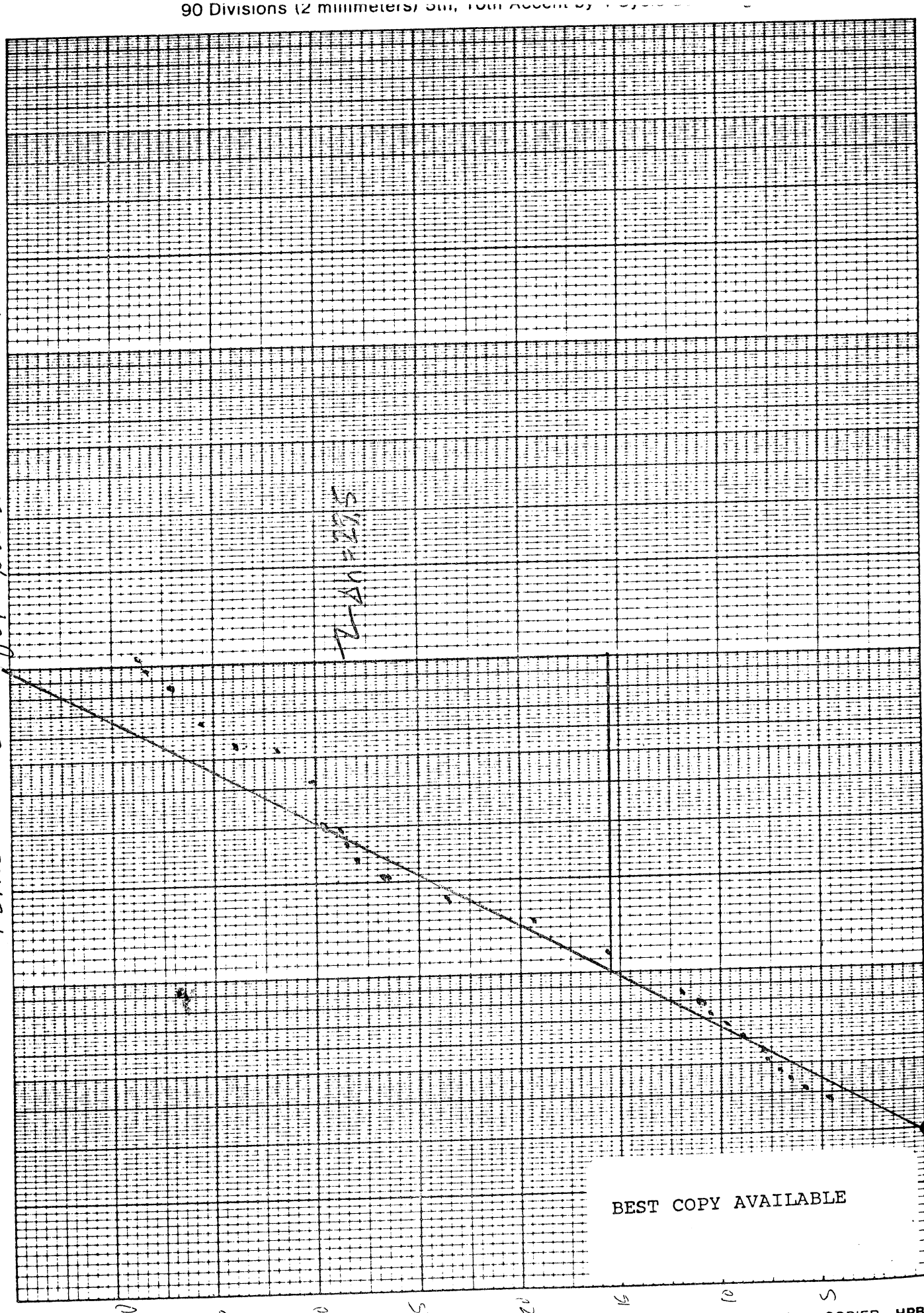

GRAPH PAPER From Your COPIER—HPBooks

Pump Tests

TW-K17B

Foth & Van Dyke

Client: KENNECOTT Scope I.D.:
Project: PUMP TEST TW-K17B Page:
Prepared by: FJD Date: 10/4/88
Checked by: Date:

PUMPING TW-K17B

1) EQUILIBRIUM EQUATION:

UNCONFINED $K = \frac{7 \times 10^{-2} Q}{s b}$

K = PERMEABILITY cm/s

Q = PUMP RATE gpm = 18 gpm

s = DRAWDOWN ft = 22.99 - 16.35 = 6.64

b = AQUIFER THICKNESS ft = 32 ft

$K = \frac{7 \times 10^{-2} (18)}{6.64 (32)} = \underline{5.9 \times 10^{-3} \text{ cm/s}}$

2) DRAWDOWN IN TW-K7:

TIME (min)	Δs (ft)
7	1.71
8.2	1.90
9	2.00
10	2.07
11	2.16
17.5	2.50
19.5	2.57
29	2.80
38	2.93
43	2.96
49	2.99
54	3.01
59	3.04

USING ISOAQX

ASSUMING - WATER TABLE
- THEIS

K = 15.33 ft/DAY

= 5.4×10^{-3} cm/s

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Foth & Van Dyke	Client:_____ Scope I.D.:_____ Project:_____ Page:_____ Prepared by:_____ Date:_____ Checked by:_____ Date:_____

3) Recovery of TW-K17B:

Hvorslev Method $K = 1.8 \times 10^{-4}$ cm/s

4) Recovery of TW-K7:

Time (min)		Δs (ft)
66.7	(2.7)	2.05
67.7	(3.7)	1.85
68.7	(4.7)	1.65
74.2	(10.2)	1.10
79	(15)	0.88
84.5	(20.5)	0.70

Pump OFF @ 64 min

$$T = \frac{264\,Q}{\Delta s} = \frac{264\,(18)}{1.62} = 2933 \text{ gpd/ft}$$

$$K = T/b = \frac{2933 \text{ GAL}}{\text{DAY} \cdot \text{ft}} \times \frac{1}{32 \text{ ft}} \times \frac{1 \text{ ft}^3}{7.48 \text{ gal}} \times \frac{1 \text{ day}}{24 \text{ hr}} \times \frac{1 \text{ hr}}{3600 \text{ s}} \times \frac{30.48 \text{ cm}}{\text{ft}}$$

$K = 4.3 \times 10^{-3}$ cm/s

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Foth & Van Dyke

Client: _____ Scope I.D.: _____
Project: _____ Page: _____
Prepared by: _____ Date: _____
Checked by: _____ Date: _____

5) Recovery of TW-K17B - Residual Drawdown Curve

	Time (min)		Δs (ft)
	0.12		2.75
	0.50		3.70
	0.83		4.15
	1.25		4.37
	1.67		4.55
	2.50		4.82
	3.50		5.06
	4.50		5.22
	5.50		5.36
	13.00		5.95
	14		6.03
	16		6.14
	21		6.28
	24		6.35
	31		6.45
	36		6.54
	41		6.58
Pump Off @ 64 min	47		6.59
	52		6.64
	57		6.64
	62		6.64
	64.17	(0.17)	3.00
	64.50	(0.50)	2.50
	64.67	(0.67)	2.25
	64.83	(0.83)	2.15
	65.08	(1.08)	2.15
	65.58	(1.58)	2.10
	69.75	(5.75)	1.45
	70.75	(6.75)	1.35

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$$T = \frac{264Q}{\Delta s} = \frac{264\,(18)}{0.98} = 4849 \text{ gpd/ft}$$

$$K = \frac{T}{b} = 4849 \frac{\text{gal}}{\text{day-ft}} \times \frac{1}{12 \text{ ft}} \times \frac{1 \text{ ft}^3}{7.48 \text{ gal}} \times \frac{30.48 \text{ cm}}{1 \text{ ft}} \times \frac{1 \text{ day}}{86400 \text{ sec}}$$

$$K = 7.1 \times 10^{-3} \text{ cm/s}$$

Foth & Van Dyke	Client: _____ Scope I.D.: _____ Project: _____ Page: _____ Prepared by: _____ Date: _____ Checked by: _____ Date: _____

6) BAIL TEST OF TW-K8 (HVORSLEV METHOD)

$K = 1.2 \times 10^{-5}$ cm/s

* THIS IS K FOR PERCHED AQUIFER SINCE WELL IS SCREENED IN ROCK

SUMMARY

BASED ON METHODS 1, 2, 4, & 5, PERMEABILITY OF RIVER PILLAR SAND & GRAVEL VARIES FROM:

4.3×10^{-3} TO 7.1×10^{-3} cm/s

METHOD (3) (HVORSLEV) IS NOT VALID FOR PUMP TEST

METHOD (6) RESULT IS FOR PERCHED AQUIFER

SUPPORTING DATA IS ATTACHED

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Field Data
&
Supporting Calculations

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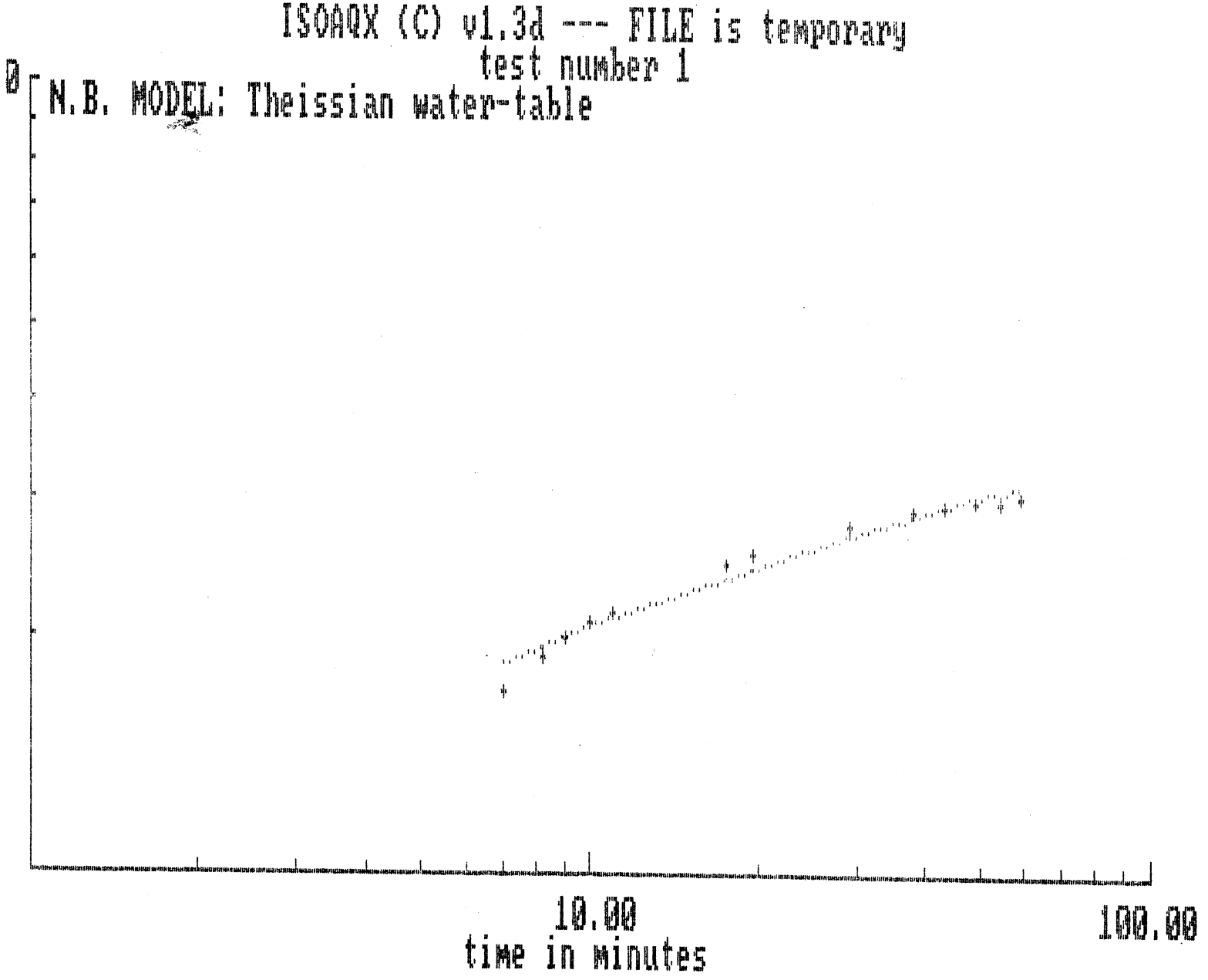
ISOAQX (C) v1.3d --- FILE is temporary

test # comb: 1

unbiased THEISSIAN WATER-TABLE MODEL:

full analysis:	all active data points used	
using closure error setting	=	1.00E-03
root mean squared error (ft)	=	7.14E-02
hydraulic conductivity (ft/day)	=	15.33
specific yield (unconfined)	=	3.46E-05



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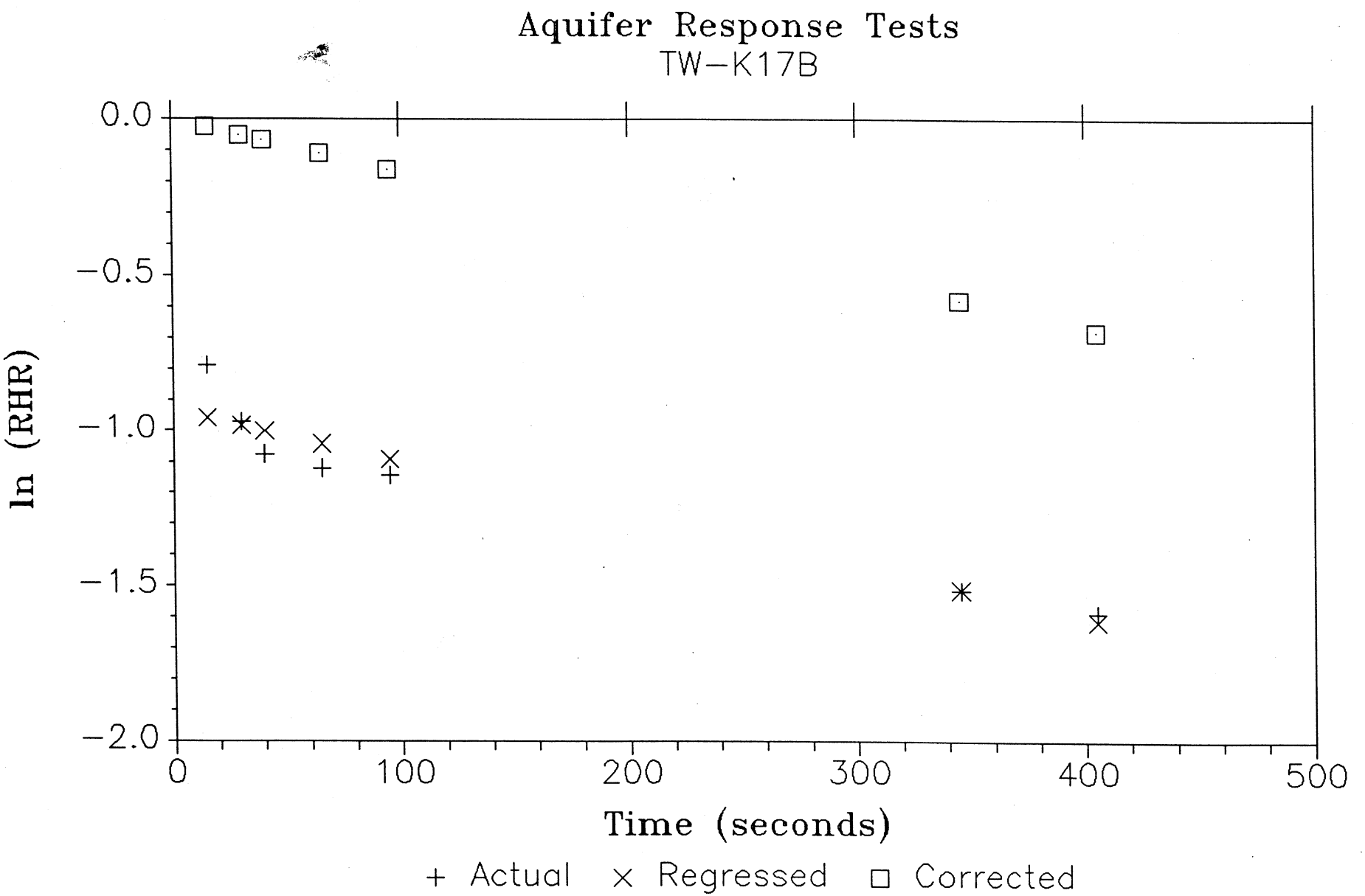
Aquifer Response Tests
TW-K17B

Equation: $K = \frac{r^2 \ln(L/R)}{2 L T_o}$

r = well radius	=	5.08	cm
L = screen sand pack length	=	457.20	cm
R = borehole radius	=	11.43	cm
H_o = initial head difference	=	6.60	feet
T_o = time lag	=	591.19	seconds
K = hydraulic conductivity	=	1.8E-04	cm/second

Recovery after pump test



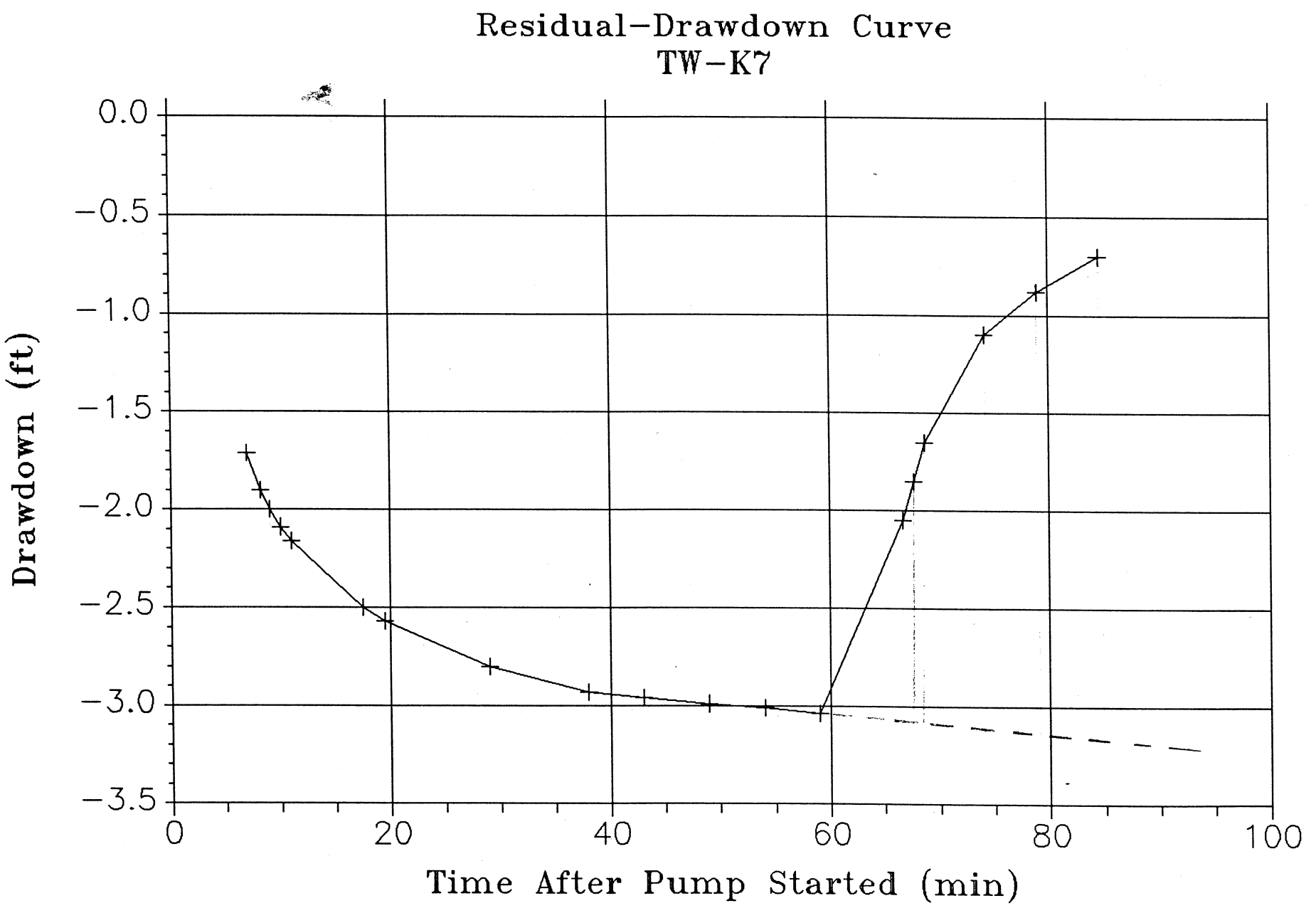
Result of Pump Test

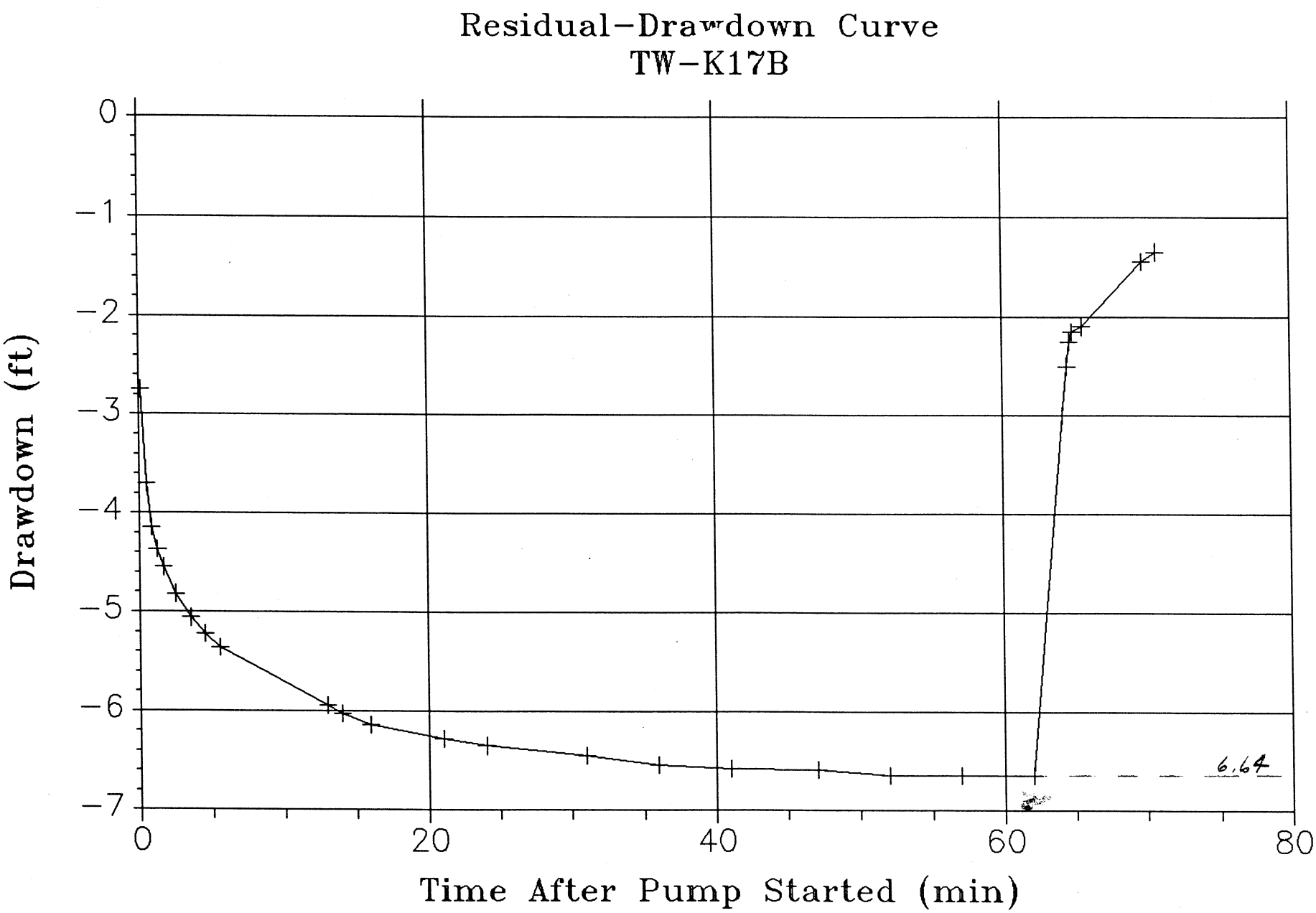
Data for TW-K7

Time Since Pump Started (min)	Time Since Pump Stopped (mim)	Time Ratio	Residual Drawdown	Drawdown From Pump Curve	Calculated Recovery
7.00			-1.71	-1.71	0.00
8.20			-1.90	-1.90	0.00
9.00			-2.00	-2.00	0.00
10.00			-2.09	-2.09	0.00
11.00			-2.16	-2.16	0.00
17.50			-2.50	-2.50	0.00
19.50			-2.57	-2.57	0.00
29.00			-2.80	-2.80	0.00
38.00			-2.93	-2.93	0.00
43.00			-2.96	-2.96	0.00
49.00			-2.99	-2.99	0.00
54.00			-3.01	-3.01	0.00
59.00			-3.04	-3.04	0.00
66.70	2.70	24.70	-2.05	-3.09	-1.04
67.70	3.70	18.30	-1.85	-3.12	-1.27
68.70	4.70	14.62	-1.65	-3.13	-1.48
74.20	10.20	7.27	-1.10	-3.15	-2.05
79.00	15.00	5.27	-0.88	-3.17	-2.29
84.50	20.50	4.12	-0.70	-3.19	-2.49

Data for TW-K17B

Time Since Pump Started (min)	Time Since Pump Stopped (mim)	Time Ratio	Residual Drawdown	Drawdown From Pump Curve	Calculated Recovery
0.12			-2.75	-2.75	
0.50			-3.70	-3.70	
0.83			-4.15	-4.15	
1.25			-4.37	-4.37	
1.67			-4.55	-4.55	
2.50			-4.82	-4.82	
3.50			-5.06	-5.06	
4.50			-5.22	-5.22	
5.50			-5.36	-5.36	
13.00			-5.95	-5.95	
14.00			-6.03	-6.03	
16.00			-6.14	-6.14	
21.00			-6.28	-6.28	
24.00			-6.35	-6.35	
31.00			-6.45	-6.45	
36.00			-6.54	-6.54	
41.00			-6.58	-6.58	
47.00			-6.59	-6.59	
52.00			-6.64	-6.64	
57.00			-6.64	-6.64	
62.00			-6.64	-6.64	
64.17	0.17	377.47	-3.00	-6.64	-3.64
64.50	0.50	129.00	-2.50	-6.64	-4.14
64.67	0.67	96.52	-2.25	-6.64	-4.39
64.83	0.83	78.11	-2.15	-6.64	-4.49
65.58	1.58	41.51	-2.10	-6.64	-4.54
69.75	5.75	12.13	-1.45	-6.64	-5.19
70.75	6.75	10.48	-1.35	-6.64	-5.29


Residual-Drawdown Curve
TW-K7
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
Drawdown (ft)
0
20
40
60
80
100
Time After Pump Started (min)


Residual-Drawdown Curve
TW-K17B
Drawdown (ft)
0
-1
-2
-3
-4
-5
-6
-7
0
20
40
60
80
Time After Pump Started (min)
6.64

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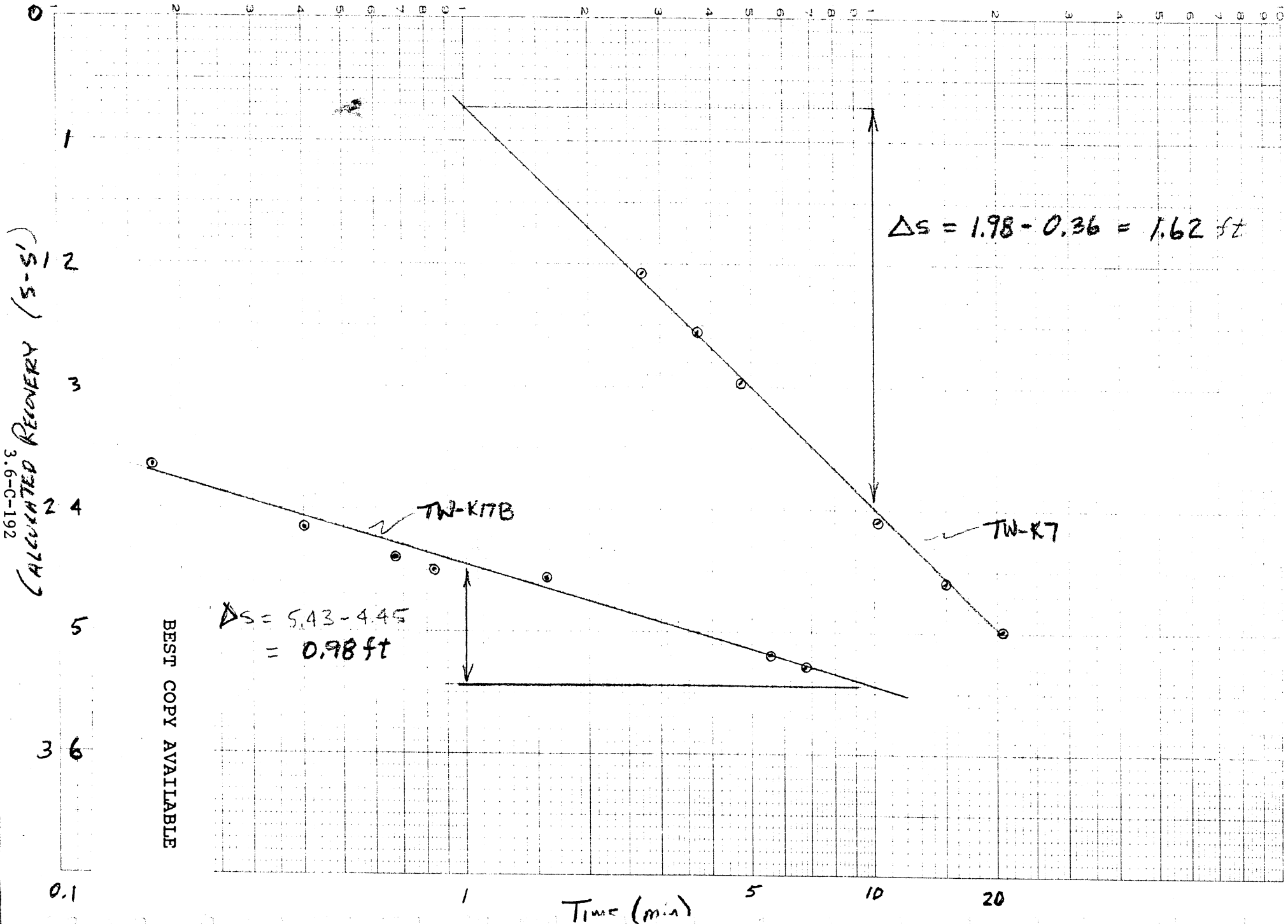

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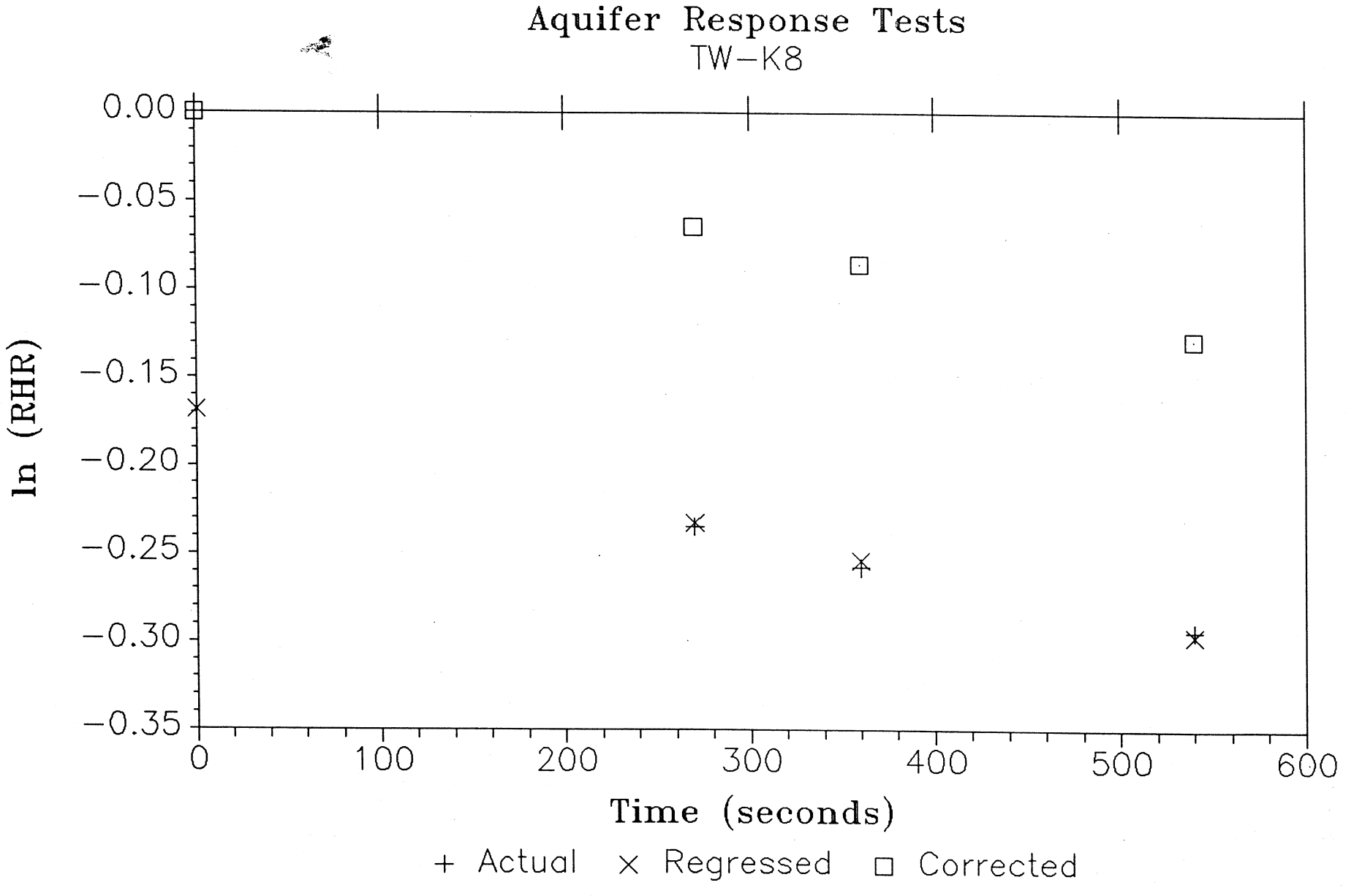
Aquifer Response Tests
TW-K8

Equation: $K = \frac{r^2 \ln(R/r)}{2 L T_o}$

r = well radius	=	2.54	cm
L = screen sand pack length	=	213.36	cm
R = borehole radius	=	7.62	cm
H_o = initial head difference	=	11.00	feet
T_o = time lag	=	4188.03	seconds
K = hydraulic conductivity	=	1.2E-05	cm/second

Recovery after Development



Result of Bail Test

Packer Tests in Precambrian Angle Borings

The following pages contain the data and results of packer tests conducted on drill holes; 136, 137, 137A, 138, 139, 140, 141 and 142. Also included is a page showing conversion of units of permeability (K) into cm/sec, a sample calculation, and a copy of the program used in the calculation of K. (Program was written for the HP-41 CV.)

Three tests were conducted at each test zone (L). The first and third tests were conducted at ½ design pressure (H). Due to the accuracy of the pressure gage used, the actual pressures were rounded to allow a gage reading.

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K = hydraulic conductivity (cm/s)

$$K = \frac{Q}{2\pi LH} \ln \frac{L}{r}$$

r = radius of hole = hole size / 2

$Q = R_F - R_I / T$ = (gpm)

Conversion showing final units only:

$$Q = \text{gal./min} \times \frac{ft^3}{7.48052\ \text{gal.}} \times \frac{\text{min}}{60\ \text{sec}} = ft^3/\text{sec}$$

$$H = \text{psi} \times 2.307\ ft/\text{psi} = ft$$

$$r = \text{in.} \times ft/12\ \text{in.} = ft$$

$$K = \frac{ft^3/\text{sec}}{2\pi\ (ft)(ft)} \ln\left(\frac{ft}{ft}\right) = ft/\text{sec}$$

$$K = ft/\text{sec} \times \frac{12\ \text{in}}{ft} \times 2.540\ \text{cm/in.} = \text{cm/sec}$$

216

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Data taken from Hole # 138 (R2)
at interval 171' – 176'

$L = 5$ ft

$H = 160$ psi

flow = 7429.5 – 7426.1 = 3.4 gal

$T = 10$ min.

$\therefore \quad Q = 3.4 \text{ gal}/10 \text{ min} = \underline{0.34 \text{ gpm}}$

$$Q = 0.34 \text{ gpm} \times \frac{\text{ft}^3}{7.48 \text{ gal}} \times \frac{\text{min.}}{60 \text{ sec}} = 7.58 \times 10^{-4} \text{ ft}^3/\text{sec.}$$

$$H = 160 \text{ psi} \times 2.31 \text{ ft/psi} = 369.60 \text{ ft}$$

$$K = \frac{Q}{2\pi L H} \ln\left(\frac{L}{r}\right)$$

r = hole diameter/2

r = 3.78/2

r = 1.89 in.

r = 1.89 in × ft/12 in

r = 0.16 ft.

$$K = \frac{7.58 \times 10^{-4} \text{ ft}^3/\text{sec}}{2(3.14)\,5 \text{ ft}\,(369.60 \text{ ft})} \ln\left(\frac{5 \text{ ft}}{0.16 \text{ ft}}\right)$$

$K = 2.25 \times 10^{-7}$ ft/sec

$K = 2.25 \times 10^{-7}$ ft/sec × 12 in/ft × 2.54 cm/in.

$\underline{K = 6.85 \times 10^{-6} \text{ cm/sec}}$

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Packer Program for HP-41 by Ray Stokes

```
001  LBL  Packer
002  CLST
003  L= ?
004  prompt
005   STO 06
006   H = ?
007   prompt
008   2.307
009   *
010  STO 05
011  CLST
012   RI = ?
013  prompt
014  RF = ?
015  prompt
016  -
017  CHS
018  T=?
019  prompt
020  %
021  STO 04
022  Q=
023  ARCL x
024  AVIEW
025  STOP
026  CLST
027  RCL 04
028  7.48052
029  %
030  60
031  %
032  STO 03
033  CLST
034  Hole size?
035  prompt
036  2
037  %
038  12
039  %
040  STO 02
041  CLST
042  RCL 03
043  2
044  %
045  π
046  %
047  RCL 06
048  %
049  RCL 05
050  %
051  STO 01
052  CLST
053  RCL 06
054  RCL 02
055  %
056  ln
057  STO 00
058  CLST
059  RCL 01
060  RCL 00
061  *
062  12
063  *
064  2.540
065  *
066  K=
067  ARCL x
068  AVIEW
069  END
```

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
17 Dec. 1987	17:45	123-128	5	60	7351.4	7354.7	10	530-510-490 *	TEST 1 @ ½ DESIGN PRESSURE
↓	18:00	↓	↓	120	7359.5	7374.35	10	520	TEST 2 @ DESIGN PRESSURE
↓	18:20	↓	↓	60	7375.2	7380.9	10	520	TEST 3 @ ½ DESIGN PRESSURE

* Notice changes in packer pressure, however, no leaks appeared in the system. Problem was remedied.

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0.33	1.78×10^{-5}	4.01×10^{-5}	3.08×10^{-5}	2.96×10^{-5}
TEST 2	1.49				
TEST 3	0.57				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Andalusite-Biotite-Quartz-Chlorite Schist

Packer Test
Flambeau Project

Drill Hole: 136-R5 Hole Size: HQ3 (3.782")

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
17 Dec. 1987	14:00	233-238	5	110	7357.35	7357.35	5	480	TEST 1 @ ½ DESIGN PRESSURE
↓	14:18	↓	↓	210	7359.75	7359.75	10	480	TEST 2 @ DESIGN PRESSURE
↓	14:30	↓	↓	110	7352.05	7352.05	10	480	TEST 3 @ ½ DESIGN PRESSURE

3.6-C-201

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0	0	0	0	0
TEST 2	0				
TEST 3	0				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Andalusite-Biotite-Quartz-Chlorite Schist

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Packer Test
Flambeau Project

Drill Hole: 136-R5 Hole Size: HQ3 (3.782")

PACKER TEST / DRILL HOLE: 136-R5

DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSUPE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Single Packer
15 Nov. 1987	14:00	233-240	7	110	6540.05	6542.9	10	320	TEST 1 @ ½ DESIGN PRESSURE
↓		↓	↓	210	Equipment Failure, Unable to complete test.				TEST 2 @ DESIGN PRESSURE
↓		↓	↓	110					TEST 3 @ ½ DESIGN PRESSURE

3.6-C-202

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0.29	6.58×10^{-6}	—	—	6.58×10^{-6}
TEST 2	—				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.D. & P.S.

Rock Type: Andalusite-Biotite-Quartz-Chlorite Schist

Packer Test
Flambeau Project

Drill Hole: 136-R5 Hole Size: HQ3 (3.782")

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Single Packer
10 Nov. 1987	10:30	136-143	7	70	6548.2	6548.2	10	350	TEST 1 @ ½ DESIGN PRESSURE
	11:00			130	6548.65	6548.65	10	350	TEST 2 @ DESIGN PRESSURE
	11:30			70	6548.15	6548.15	10	350	TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0	0	0	0	0
TEST 2	0				
TEST 3	0				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Biotite-Quartz-Chlorite Schist

Packer Test
Flambeau Project

Drill Hole: 137-R1 Hole Size: HQ3 (3.782")

Flambeau Packer Test Drill Hole: 137-R1

3.6-C-203

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
21 Dec. 1987	1:14	119–124	5	60	7662.6	7663.4	10	490	TEST 1 @ ½ DESIGN PRESSURE
	1:26			120	7665.0	7666.4	10	480	TEST 2 @ DESIGN PRESSURE
	1:39			60	Leak in system. Unable to complete test.				TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0.08	4.32×10^{-6}	3.78×10^{-6}	—	4.05×10^{-6}
TEST 2	0.14				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Biotite - Chlorite Schist

Packer Test
Flambeau Project

Drill Hole: 137A-R1A Hole Size: HQ3 (3.782")

3.6-C-204

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PACKER TEST DRILL HOLE: 137A-R1A

DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
20 Dec. 1987	23:27	158-163	5	80	7641.1	7641.1	10	470	TEST 1 @ ½ DESIGN PRESSURE
	23:38			150	Leak in system. Unable to complete test.				TEST 2 @ DESIGN PRESSURE
				80					TEST 3 @ ½ DESIGN PRESSURE

3.6-C-205

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0	0	—	—	0
TEST 2	—				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Biotite-Chlorite Schist (with lithic fragments of quartz or quartz-sericite/kaolinite)

Packer Test
Flambeau Project

Drill Hole: 137A-R1A Hole Size: HQ3 (3.782")

DRILL HOLE: 137A-R1A

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
20 Dec. 1987	20:13	168-173	5	90	7634.3	7634.3	10	480	TEST 1 @ ½ DESIGN PRESSURE
	20:24			170	Leak in system. Unable to complete test.				TEST 2 @ DESIGN PRESSURE
				90					TEST 3 @ ½ DESIGN PRESSURE

3.6-C-206

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0	0	—	—	0
TEST 2	—				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Biotite-Chlorite Schist (with lithic fragments of quartz or quartz-sericite/kaolinite)

Packer Test
Flambeau Project

Drill Hole: 137A-R/A Hole Size: HQ3 (3.782")

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
20 Dec. 1987	16:35	213 - 218	5	100	Leak in system. Unable to complete test.				TEST 1 @ ½ DESIGN PRESSURE
↓		↓	↓	200					TEST 2 @ DESIGN PRESSURE
↓		↓	↓	100					TEST 3 @ ½ DESIGN PRESSURE

3.6-C-207

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	—	—	—	—	—
TEST 2	—				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Biotite - Chlorite Schist.

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Packer Test
Flambeau Project

Drill Hole: 137A-R1A Hole Size: HQ3 (3.782")

DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
20 Dec. 1987	17:00	208-213	5	100	Leak in system. Unable to complete test.				TEST 1 @ ½ DESIGN PRESSURE
↓		↓	↓	190					TEST 2 @ DESIGN PRESSURE
↓		↓	↓	100					TEST 3 @ ½ DESIGN PRESSURE

3.6-C-208

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	—	—	—	—	—
TEST 2	—				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Biotite-Chlorite Schist

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Packer Test
Flambeau Project

Drill Hole: 137A-RIA Hole Size: HQ3 (3.782")

FLAMBEAU PACKER TEST DRILL HOLE: 137A-RIA

DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
20 Dec. 1987	17:45	218-223	5	100	Leak in system. Unable to complete test.				TEST 1 @ ½ DESIGN PRESSURE
↓		↓	↓	200					TEST 2 @ DESIGN PRESSURE
↓		↓	↓	100					TEST 3 @ ½ DESIGN PRESSURE

3.6-C-209

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	—	—	—	—	—
TEST 2	—				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Biotite-Chlorite Schist

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Packer Test
Flambeau Project

Drill Hole: 137A-P/F Hole Size: HQ3 (3.782")

DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Single Packer
20 Dec. 1987	18:23	223-230	7	110	7590.4	7617.35	10	370	TEST 1 @ ½ DESIGN PRESSURE
↓		↓	↓	210	Leak in system. Unable to complete test.				TEST 2 @ DESIGN PRESSURE
↓		↓	↓	110					TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	2.70	6.22×10^{-5}	—	—	6.22×10^{-5}
TEST 2	—				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Biotite-Chlorite Schist and Biotite-Sericite-Quartz-Chlorite Schist.

Packer Test
Flambeau Project

Drill Hole: 137A-R1A Hole Size: HQ3 (3.782")

3.6-C-210

PACKER TEST Drill Hole: 137A-R1A

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Single Packer
18 Nov. 1987	12:00	46-73	27	50	6589.6	6600.9	5	400	TEST 1 @ ½ DESIGN PRESSURE
	12:30			70	6611.5	6630.5	5	400	TEST 2 @ DESIGN PRESSURE
	13:00			50	6630.6	6642.8	5	400	TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	2.26	4.03×10^{-5}	4.85×10^{-5}	4.36×10^{-5}	4.41×10^{-5}
TEST 2	3.80				
TEST 3	2.44				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Sericite-Quartz Schist

Packer Test
Flambeau Project

Drill Hole: 138-R2 Hole Size: HQ3 (3.782")

3.6-C-211

Packer Test Drill Hole: 138-R2

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
18 Dec. 1987	6:07	131 - 136	5	60	7456.0	7457.6	10	470	TEST 1 @ ½ DESIGN PRESSURE
	6:19			120	7459.9	7465.3	10	470	TEST 2 @ DESIGN PRESSURE
	6:30			60	7464.4	7465.6	10	470	TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0.16	8.64×10^{-6}	1.46×10^{-5}	6.48×10^{-6}	9.91×10^{-6}
TEST 2	0.54				
TEST 3	0.12				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Quartz-Sericite Schist

Packer Test
Flambeau Project

Drill Hole: 138-R2 Hole Size: HQ3 (3.782")

Flambeau Packer Test Drill Hole: 138-R2

3.6-C-212

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
18 Dec. 1987	3:24	171-176	5	80	7422.2	7423.9	10	480	TEST 1 @ ½ DESIGN PRESSURE
	3:36			160	7426.1	7429.5	10	480	TEST 2 @ DESIGN PRESSURE
	3:48			80	7428.6	7429.7	10	470	TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0.17	6.88×10^{-6}	6.88×10^{-6}	4.45×10^{-6}	6.07×10^{-6}
TEST 2	0.34				
TEST 3	0.11				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Chlorite Schist

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Packer Test
Flambeau Project

Drill Hole: 138-R2 Hole Size: HQ3 (3.782")

3.6-C0213

Flambeau Packer Test Drill Hole: 138-R2

DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Single Packer
19 Nov. 1987	22:30	223-234	11	110	6647.8	6649.7	10	365	TEST 1 @ ½ DESIGN PRESSURE
	23:00			210	6651.5	6665.7	10	375	TEST 2 @ DESIGN PRESSURE
	23:30			110	6664.85	6665.2	10	365	TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0.19	3.12×10^{-6}	1.22×10^{-5}	5.75×10^{-7}	5.30×10^{-6}
TEST 2	1.42				
TEST 3	0.04				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Quartz-Augen Schist

Packer Test
Flambeau Project

Drill Hole: 138-R2 Hole Size: HQ3 (3.782")

3.6-C-214

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
18 Dec. 1987	2:03	231-236	5	110	7400.7	7403.0	10	490	TEST 1 @ ½ DESIGN PRESSURE
	2:18			210	7405.9	7410.3	10	480	TEST 2 @ DESIGN PRESSURE
	2:29			110	7410.3	7411.8	10	470	TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0.23	6.77×10^{-6}	6.79×10^{-6}	4.42×10^{-6}	5.99×10^{-6}
TEST 2	0.49				
TEST 3	0.15				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Quartz-Augen Schist

Packer Test
Flambeau Project

Drill Hole: 138-R2 Hole Size: HQ3 (3.782")

Flambeau | Packer Test | Drill Hole: 138-R2

3.6-C-215

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
18 Dec. 1987	12:40	93-98	5	50	7522.1	7523.6	10	390	TEST 1 @ ½ DESIGN PRESSURE
〃	13:00	〃	〃	90	7525.4	7527.5	10	390	TEST 2 @ DESIGN PRESSURE
〃	13:25	〃	〃	50	7528.6	7528.8	10	390	TEST 3 @ ½ DESIGN PRESSURE

3.6-C-216

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0.15	9.72×10^{-6}	7.56×10^{-6}	1.30×10^{-6}	6.19×10^{-6}
TEST 2	0.21				
TEST 3	0.02				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Quartz-Sericite Schist

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Packer Test
Flambeau Project

Drill Hole: 139-R3 Hole Size: HQ3 (3.782")

Flambeau | Packer Test | Drill Hole: 139-R3

DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
18 Dec. 1987	11:30	121–126	5	60	7469.0	7475.65	10	380	TEST 1 @ ½ DESIGN PRESSURE
	11:50			120	7481.2	7499.1	10	380	TEST 2 @ DESIGN PRESSURE
	12:05			60	7501.1	7509.9	10	380	TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0.67	3.59×10^{-5}	4.83×10^{-5}	4.75×10^{-5}	4.39×10^{-5}
TEST 2	1.79				
TEST 3	0.88				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Sericite-Quartz Schist

Packer Test
Flambeau Project

Drill Hole: 139-R3 Hole Size: HQ3 (3.782")

Flambeau | Packer Test | Drill Hole: 139-R3

3.6-C-217

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Single Packer
23 Nov. 1987	8:30	223 - 236	13	100	6671.85	6674.0	7	360	TEST 1 @ ½ DESIGN PRESSURE
	9:00			200	6682.9	6692.6	10	360	TEST 2 @ DESIGN PRESSURE
	9:30			100	6692.8	6695.6	10	360	TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0.31	4.88×10^{-6}	7.71×10^{-6}	4.45×10^{-6}	5.68×10^{-6}
TEST 2	0.97				
TEST 3	0.28				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Semimassive Primary Ore

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Packer Test
Flambeau Project

Drill Hole: 139-R3 Hole Size: HQ3 (3.782")

Flambeau | Packer Test | Drill Hole: 139-R3

3.6-C-218

DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Single Packer
2 Dec 1987	17:00	113 - 138	25 *	70	Leak in system. Unable to complete test.				TEST 1 @ ½ DESIGN PRESSURE
				130					TEST 2 @ DESIGN PRESSURE
				70					TEST 3 @ ½ DESIGN PRESSURE

* L was increased to 25' in hopes of sealing off the leak.

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	—	—	—	—	—
TEST 2	—				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Quartz - Sericite - Chlorite Schist

Packer Test
Flambeau Project

Drill Hole: 140 - R4 Hole Size: HQ3 (3.782")

3.6-C-219

Flambeau | Packer Test | Drill Hole: 140 - R4

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
23 Dec. 1987	4:10	153-158	5	80	Leak in system. Unable	to complete test.			TEST 1 @ ½ DESIGN PRESSURE
↓		↓	↓	150					TEST 2 @ DESIGN PRESSURE
↓		↓	↓	80					TEST 3 @ ½ DESIGN PRESSURE

3.6-C-220

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	—	—	—	—	—
TEST 2	—				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Quartz-Augen Schist

Packer Test
Flambeau Project

Drill Hole: 140-R4 Hole Size: HQ3 (3.782")

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Flambeau Packer Test Drill Hole: 140-R4

DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
23 Dec. 1987	3:34	163-168	5	80	Leak in system. Unable to complete test.				TEST 1 @ ½ DESIGN PRESSURE
↓		↓	↓	160					TEST 2 @ DESIGN PRESSURE
↓		✓	↓	80					TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	—	—	—	—	—
TEST 2	—				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Quartz-Augen Schist

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Packer Test
Flambeau Project

Drill Hole: 140-R4 Hole Size: HQ3 (3.782")

3.6-C-221

Flambeau | Packer Test | Drill Hole: 140-R4

DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
23 Dec. 1987	3:04	173-178	5	90	Leak in system. Unable to complete test.				TEST 1 @ ½ DESIGN PRESSURE
				170					TEST 2 @ DESIGN PRESSURE
				90					TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	—	—	—	—	—
TEST 2	—				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Quartz-Augen Schist

Packer Test
Flambeau Project

Drill Hole: 140-R4 Hole Size: HQ3 (3.782")

Flambeau | Packer Test | Drill Hole: 140-R4

3.6-C-222

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
23 Dec. 1987	2:31	223 – 238	5	110	Leak in system. Unable to complete test.				TEST 1 @ ½ DESIGN PRESSURE
↓		↓	↓	220					TEST 2 @ DESIGN PRESSURE
↓		↓	↓	110					TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	—	—	—	—	—
TEST 2	—				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.O. & P.G.

Rock Type: Biotite – Quartz – Chlorite Schist

Packer Test
Flambeau Project

Drill Hole: 140-R4 Hole Size: HQ3 (3.782")

Flambeau | Packer Test | Drill Hole: 140-R4

3.6-C-223

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Double Packer
23 Dec. 1987	1:40	233-238	5	110	7659.7	7669.0	10	480	TEST 1 @ ½ DESIGN PRESSURE
↓		↓	↓	220	Leak in system. Unable to complete test.				TEST 2 @ DESIGN PRESSURE
↓		↓	↓	110					TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0.43	1.27×10^{-5}	—	—	1.27×10^{-5}
TEST 2	—				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Biotite-Quartz-Chlorite Schist

Packer Test
Flambeau Project

Drill Hole: 140-R4 Hole Size: HQ3 (3.782")

Flambeau | Packer Test | Drill Hole: 140-R4

3.6-C-224

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Single Packer
7 Jan. 1988	17:43	263-275	12	130	Leak in system. Unable to complete test.				TEST 1 @ ½ DESIGN PRESSURE
				250					TEST 2 @ DESIGN PRESSURE
				130					TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	—	—	—	—	—
TEST 2	—				
TEST 3	—				

3.6-C-225

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Biotite-Chlorite Schist

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Packer Test
Flambeau Project

Drill Hole: 140-R4 Hole Size: HQ3 (3.782")

Flambeau | Packer Test | Drill Hole: 140-R4

DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Single Packer
5 Dec. 1987	21:30	243-252	9	120	6762.8	6763.7	10	365	TEST 1 @ ½ DESIGN PRESSURE
	22:00			230	6844.1	6845.1	10	470	TEST 2 @ DESIGN PRESSURE
	22:30			120	6845.1	6845.6	10	475	TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0.09	1.58×10^{-6}	9.15×10^{-7}	8.77×10^{-7}	1.12×10^{-6}
TEST 2	0.10				
TEST 3	0.05				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Biotite-Chlorite-Quartz-Sericite Schist

Packer Test
Flambeau Project

Drill Hole: 141-P6 Hole Size: HQ3 (3.782")

Flambeau | Packer Test | Drill Hole: 141-P6

3.6-C-226

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Single Packer
6 Dec. 1987	5:30	383-390	7	170	6864.9	6867.9	10	455	TEST 1 @ ½ DESIGN PRESSURE
↓		↓	↓	340	Leak in system. Unable to complete test.				TEST 2 @ DESIGN PRESSURE
↓		↓	↓	170					TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0.30	4.48×10^{-6}	—	—	4.48×10^{-6}
TEST 2	—				
TEST 3	—				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Sericite-Quartz Schist

Flambeau | Packer Test | Drill Hole: 141-R6

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Packer Test
Flambeau Project

Drill Hole: 141-R6 Hole Size: HQ3 (3.782")

DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Single Packer
9 Dec. 1987	19:15	100-119	19	60	7000.0	7033.9	5	390	TEST 1 @ ½ DESIGN PRESSURE
〃	19:30	〃	〃	110	7075.1	7152.2	5	390	TEST 2 @ DESIGN PRESSURE
〃	19:45	〃	〃	60	7158.0	7216.7	5	390	TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	6.78	1.34×10^{-4}	1.66×10^{-4}	1.52×10^{-4}	1.51×10^{-4}
TEST 2	15.42				
TEST 3	7.74				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Quartz-Sericite Schist

Packer Test
Flambeau Project

Drill Hole: 142-R7 Hole Size: HQ3 (3.782")

Flambeau | Packer Test | Drill Hole: 142-R7

3.6-C-228

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DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Single Packer
15 Dec. 1987	18:00	182-199	17	90	7245.8	7259.9	10	380	TEST 1 @ ½ DESIGN PRESSURE
〃	18:18	〃	〃	180	7273.8	7300.5	10	380	TEST 2 @ DESIGN PRESSURE
〃	18:30	〃	〃	90	7305.0	7321.7	10	380	TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	1.41	2.02×10^{-5}	1.91×10^{-5}	2.39×10^{-5}	2.11×10^{-5}
TEST 2	2.67				
TEST 3	1.67				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Quartz-Chlorite and Amphibole-Chlorite Schists

Packer Test
Flambeau Project

Drill Hole: 142-R7 Hole Size: HQ3 (3.782")

Flambeau | Packer Test | Drill Hole: 142-R7

3.6-C-229

BEST COPY AVAILABLE

DATE	TIME TEST WAS CONDUCTED	TARGET INTERVAL (ft.)	TEST ZONE LENGTH L (ft.)	ROD PRESSURE H (psi)	INITIAL METER READING R_I (gal.)	FINAL METER READING R_F (gal.)	DURATION OF TEST T (min.)	PACKER HELIUM PRESSURE (psi)	Single Packer
16 Dec. 1987	13:18	253-260	7	120	7333.5	7336.3	10	460	TEST 1 @ ½ DESIGN PRESSURE
↓	13:30	↓	↓	230	7337.8	7343.95	10	460	TEST 2 @ DESIGN PRESSURE
↓	13:42	↓	↓	120	7343.5	7345.6	10	460	TEST 3 @ ½ DESIGN PRESSURE

	Q (gpm)	K_1 (cm/s)	K_2 (cm/s)	K_3 (cm/s)	$K_{ave.}$ (cm/s)
TEST 1	0.28	5.92×10^{-6}	6.79×10^{-6}	4.44×10^{-6}	5.72×10^{-6}
TEST 2	0.62				
TEST 3	0.21				

TESTS CONDUCTED BY: R.S. & J.D. & P.G.

Rock Type: Biotite-Chlorite Phyllite with Amphibole-Chlorite Schist

Packer Test
Flambeau Project

Drill Hole: 142-R7 Hole Size: HQ3 (3.782")

Flambeau | Packer Test | Drill Hole: 142-R7

3.6-C-230

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