0020

Ken Payne
Vice President & General Manager

AU/041/002
#6

Subsidiary of
Coastal States
Energy Company

Southern Utah Fuel Company
P.O. Box P
Salina, Utah 84654
(801) 529-7428
(801) 637-4880 (Mine)

RECEIVED
MAR 31 1988
DIVISION OF
OIL, GAS & MINING

March 29, 1988

Mr. Lowell P. Braxton, Administrator
Mineral Resource Development & Reclamation Program
Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, UT 84180-1203

Dear Mr. Braxton:

RE: ANNUAL REPORT FOR 1987 - SUFCO MINE

The attached annual reports are submitted in compliance with the requirements of UMC 784. These reports include all pertinent data obtained during 1987 except as noted below.

There were no Vegetation Data collected or Revegetation Success Monitoring accomplished during 1987.

The permanent program mining permit, issued on May 26, 1987, contained some special conditions which have been the subject of subsequent negotiations. On February 25, 1988, the applicant submitted correspondence summarizing the status. A Division response has not yet been received.

Sue: Do we and Sufco anything here? Please advise
Lund

Sincerely,
SOUTHERN UTAH FUEL COMPANY

Ken Payne
V. P. & General Manager

KWW:cfc

Attachments

xc: John M. Garr
Ken Payne
Keith Welch

[Revised January 1988]

COAL MINING AND RECLAMATION OPERATIONS FOR 1987
(Authority UMC 784)

(Must be submitted to the Division by March 31, 1988)

State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
3 Triad Center, Suite 350
355 West North Temple
Salt Lake City, UT 84180-1203
(801) 538-5340

Operator: Southern Utah Fuel Company

Mine Name: SUFCo Mine No. 1

Mailing Address: P.O. Box P, Salina, Utah 84654

Company Representative: Ken M. Payne

Permit Number: ACT/041/002

Date of Most Recent Permanent Program Permit: (Utah Mined Reclamation Act 9/14/77)

Quantity of Coal Mined (tonnage) 1987: 2,227,181

Attach Updated Mine Sequence Map.

All monitoring activities during the report period must be submitted with this report (including, but not limited to):

A. Summarized Water Monitoring Data

B. Precipitation or Other Climatological Data

C. Subsidence Monitoring Report

D. Vegetation Data (test plots) or Revegetation Success Monitoring (includes interim and final)

E. Permit Stipulation Status

jr
1426R/1

KWW 21-Mar-88

SUFCO CLIMATOLOGICAL SUMMARY — 1987

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL SUMMARY
TEMPERATURE -F													
-MAX	50	50	50	70	73	83	85	83	80	73	51	52	85
-MIN	-6	1	7	21	30	39	40	38	35	30	8	-11	-11
-AVE HIGH	30.1	34.3	37.1	55.4	59.6	73.8	74.3	72.4	70.2	60.0	38.6	29.3	52.9
-AVE LOW	11.9	15.8	19.7	31.5	38.5	47	49.8	48.1	41.4	36.7	23.2	11.6	31.3
PRECIPITATION													
-TOTAL	0.99	0.82	1.49	0.45	2.45	0.59	2.21	1.38	0.65	1.78	1.56	1.41	15.78
-NO DAYS .01 IN +	11	12	8	6	20	7	11	9	5	7	12	11	119
SNOW COVER													
-MAX DEPTH	5	6.25	13	4	TR	0	0	0	0	0	1	9	13

25-Mar-88 KWW

STATISTICAL SUMMARY OF WATER QUALITY ANALYSES FOR SITE - 001

	RANGE MIN	RANGE MAX	MEAN	STANDARD DEVIATION	NUMBER OF SAMPLES
PHYSICAL PARAMETERS					
AIR TEMPERATURE (C)	1	28	15.9	6.82	15
FLOW (CFS)	0.01	0.02	0.0	0.00	15
WATER TEMPERATURE (C)	5	14	6.8	2.11	15
SPEC. COND. (UMHOS/CM) FIELD	340	921	471.5	130.85	15
PH (SU) FIELD	6.8	8	7.4	0.31	15
TURBIDITY (NTU) FIELD	0.05	35.48	5.6	8.97	15
TOTAL SUSP. SOLIDS	ERR	ERR	ERR	ERR	0
TOTAL DISS. SOLIDS MEAS.	220	596	284.5	86.53	15
COMMON IONS					
CALCIUM (CA)	46	72	54.8	6.94	15
MAGNESIUM (MG)	9.6	64.3	22.1	12.44	15
SODIUM (NA)	9	80	20.5	19.04	15
POTASSIUM (K)	0.3	5.1	2.7	2.30	4
ACIDITY AS CACO3	0.01	44	10.6	10.71	15
ALKALINITY AS CACO3 (LAB)	166	260	197.1	26.38	15
BICARBONATE (HCO3) (LAB)	185.4	312	234.0	29.14	15
HARDNESS (CACO3) TOTAL	196	396	231.3	46.18	15
HYDROXIDE AS OH	0.01	0.01	0.0	0.00	15
CARBONATE AS CO3	0.01	0.01	0.0	0.00	13
SULFATE (SO4)	20	202	38.7	43.91	15
CHLORIDE (CL)	1	60.4	22.5	11.87	15
NUTRIENTS					
NITRATE (NO3-N)	0.02	0.99	0.4	0.23	15
TOTAL PHOSPHATE (PO4)	0.03	0.72	0.1	0.17	15
TRACE ELEMENTS					
BARIUM (BA) TOTAL	0.03	0.08	0.1	0.01	15
BORON (B) TOTAL	0.021	0.23	0.1	0.05	14
IRON (FE) TOTAL	0.01	1.13	0.1	0.27	15
IRON (FE) DISS	0.009	0.2	0.0	0.05	15
MANGANESE (MN) TOTAL	0.002	0.03	0.0	0.01	15
MANGANESE (MN) DISS	0.001	0.01	0.0	0.00	15

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED. FOR VALUES BELOW THE DETECTION LIMIT, THE DETECTION LIMIT WAS USED IN THE STATISTICAL ANALYSIS.

25-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCO - 001

SAMPLE DATE	06/21/83	08/16/83	10/12/83	06/21/84	08/09/84	10/11/84	06/13/85	08/14/85	10/22/85	06/04/86	08/13/86
LOCATION	EAST SPRING	EAST SPRING	EAST SPRING	EAST SPRING	EAST SPRING	EAST SPRING	EAST SPRING	EAST SPRING	EAST SPRING	EAST SPRING	EAST SPRING
LOCATION											
PHYSICAL PARAMETERS											
AIR TEMPERATURE (C)	21	16	9	19	28	7	21	23	1	14	18
FLOW (CFS)	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01
WATER TEMPERATURE (C)	6	14	9	7	7	6	6	6	6	5.5	6
SPEC. COND. (UMHOS/CM) FIELD	420	430	340	390	450	360	921	432	455	461	438
PH (SU) FIELD	7.3	7.1	7.1	7.2	7.25	7.35	6.8	7.5	7.45	7.55	7.5
TURBIDITY (NTU) FIELD	2.7	0.8	7	10.2	2.4	0.27	1.2	5	35.48	0.84	0.05
TOTAL SUSP. SOLIDS											
TOTAL DISS. SOLIDS MEAS.	238	260	220	250	290	286	596	280	266	242	220
COMMON IONS											
CALCIUM (CA)	50.4	49.6	48	64.4	60	46	49.6	51.2	60	49.6	57.6
MAGNESIUM (MG)	21.12	23.04	18.24	10.8	19.2	32.4	64.3	18.5	13.2	23	17.3
SODIUM (NA)	12	11.5	9	14	40	10.7	80	45	10.7	11.81	13.51
POTASSIUM (K)			0.3	0.5			5.1	4.9			
ACIDITY AS CACO3	3.5	13	14	44	15	14	7.6	18.9	13.7	<0.01	2.5
ALKALINITY AS CACO3 (LAB)	186	204	166	190	210	168	256	180	260	193	190
BICARBONATE (HCO3) (LAB)	227	249	202.5	231.8	256.2	205	312	219.6	268.4	235	231.8
HARDNESS (CACO3) TOTAL	214	220	196	206	230	250	396	205	205	220	216
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01
SULFATE (SO4)	28	32	28	25	26	27	202	27	20	29	22
CHLORIDE (CL)	28	22	14	18.4	18.2	16	60.4	21.6	19.9	23	20.1
NUTRIENTS											
NITRATE (NO3-N)	<0.02	0.38	0.39	0.19	0.43	0.99	0.09	0.41	0.44	0.39	0.38
TOTAL PHOSPHATE (PO4)	0.16	0.09	0.07	0.05	0.12	0.72	0.18	0.05	0.03	0.24	0.03
TRACE ELEMENTS											
BARIUM (BA) TOTAL	0.07	0.06	0.071	0.06	0.06	0.05	0.03	0.05	0.07	0.06	0.07
BORON (B) TOTAL	0.03	0.03	0.024	0.021	0.053	0.09		0.05	0.23	0.038	0.088
IRON (FE) TOTAL	0.01	0.01	0.01	0.04	0.16	0.2	1.13	0.06	0.28	0.02	0.11
IRON (FE) DISS	0.01	0.01	0.009	0.01	<0.01	0.02	<0.01	<0.01	0.2	<0.01	<0.01
MANGANESE (MN) TOTAL	0.003	0.002	0.015	0.02	<0.01	0.01	0.03	<0.02	0.02	<0.01	<0.01
MANGANESE (MN) DISS	0.002	0.001	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

25-Mar-88 KNW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 001

SAMPLE DATE	10/09/86	06/18/87	08/05/87	10/28/87
LOCATION	EAST SPRING	EAST SPRING	EAST SPRING	EAST SPRING
LOCATION				
PHYSICAL PARAMETERS				
AIR TEMPERATURE (C)	10	17	22	13
FLOW (CFS)	0.01	0.01	0.01	0.01
WATER TEMPERATURE (C)	6	6	6.5	5
SPEC. COND. (UMHOS/CM) FIELD	467	489	570	450
PH (SU) FIELD	8	7.6	7.8	7.9
TURBIDITY (NTU) FIELD	0.17	2.43	0.72	14.8
TOTAL SUSP. SOLIDS				
TOTAL DISS. SOLIDS MEAS.	268	270	302	280
COMMON IONS				
CALCIUM (CA)	52.8	72	51.9	59.6
MAGNESIUM (MG)	20.2	9.6	19.38	21.93
SODIUM (NA)	9.2	12.76	13.52	14.29
POTASSIUM (K)				
ACIDITY AS CACO3	2.5	4	6	<0.01
ALKALINITY AS CACO3 (LAB)	192	190	178	194
BICARBONATE (HCO3) (LAB)	185.4	233	217	236
HARDNESS (CACO3) TOTAL	216	220	236	240
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3		<0.01	<0.01	<0.01
SULFATE (SO4)	23	25	25	42
CHLORIDE (CL)	1	23	26.1	25.4
NUTRIENTS				
NITRATE (NO3-N)	0.41	0.52	0.46	0.74
TOTAL PHOSPHATE (PO4)	0.12	<0.04	<0.04	<0.04
TRACE ELEMENTS				
BARIUM (BA) TOTAL	0.07	0.06	0.06	0.08
BORON (B) TOTAL	0.05	0.09	0.13	0.06
IRON (FE) TOTAL	0.04	0.02	0.03	0.1
IRON (FE) DISS	<0.01	<0.01	<0.01	<0.01
MANGANESE (MN) TOTAL	<0.01	<0.01	<0.01	<0.01
MANGANESE (MN) DISS	<0.01	<0.01	<0.01	<0.01

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

25-Mar-88 KWW

STATISTICAL SUMMARY OF WATER QUALITY ANALYSES FOR SITE SUFCO - 006

	RANGE MIN	RANGE MAX	MEAN	STANDARD DEVIATION	NUMBER OF SAMPLES
PHYSICAL PARAMETERS					
AIR TEMPERATURE (C)	4	26	18.4	6.15	15
FLOW (CFS)	0.25	2.08	1.0	0.57	15
WATER TEMPERATURE (C)	1	18	11.9	5.23	15
SPEC. COND. (UMHOS/CM) FIELD	490	1300	720.9	167.87	15
PH (SU) FIELD	7.6	8.4	8.1	0.24	15
TURBIDITY (NTU) FIELD	20.97	640	94.1	156.33	14
TOTAL SUSP. SOLIDS	ERR	ERR	ERR	ERR	0
TOTAL DISS. SOLIDS MEAS.	316	850	458.7	118.17	15
COMMON IONS					
CALCIUM (CA)	50.4	91.6	64.7	11.08	15
MAGNESIUM (MG)	18.7	108	37.8	20.55	15
SODIUM (NA)	34.12	80	50.4	12.32	15
POTASSIUM (K)	3.5	3.8	3.6	0.12	4
ACIDITY AS CACO3	0.01	72	12.3	17.67	15
ALKALINITY AS CACO3 (LAB)	210	341	285.3	35.40	15
BICARBONATE (HCO3) (LAB)	256	416	337.4	52.68	15
HARDNESS (CACO3) TOTAL	246	610	319.7	84.55	15
HYDROXIDE AS OH	0.01	0.01	0.0	0.00	15
CARBONATE AS CO3	0.01	43.2	4.0	11.07	15
SULFATE (SO4)	62	405	100.8	81.83	15
CHLORIDE (CL)	3.9	36.4	21.9	10.54	15
NUTRIENTS					
NITRATE (NO3-N)	0.01	0.86	0.1	0.22	15
TOTAL PHOSPHATE (PO4)	0.02	1.12	0.2	0.30	15
TRACE ELEMENTS					
BARIUM (BA) TOTAL	0.09	0.57	0.2	0.11	15
BORON (B) TOTAL	0.06	0.8	0.2	0.18	14
IRON (FE) TOTAL	0.06	24.6	2.4	6.06	15
IRON (FE) DISS	0.01	0.23	0.0	0.06	15
MANGANESE (MN) TOTAL	0.03	0.73	0.1	0.17	15
MANGANESE (MN) DISS	0.01	0.09	0.0	0.02	14

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED. FOR VALUES BELOW THE DETECTION LIMIT, THE DETECTION LIMIT WAS USED IN THE STATISTICAL ANALYSIS.

25-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 006

SAMPLE DATE	06/21/83	08/16/83	10/12/83	06/21/84	08/09/84	10/11/84	06/13/85	08/14/85	10/22/85	06/03/86	08/13/86
LOCATION	S-FK OF N-FK	S-FK OF N-FK	S-FK OF N-FK	S-FK OF N-FK	S-FK OF N-FK	S-FK OF N-FK	S-FK OF N-FK	S-FK OF N-FK	S-FK OF N-FK	S-FK OF N-FK	S-FK OF N-FK
LOCATION	QUTCHPH CK	QUTCHPH CK	QUTCHPH CK	QUTCHPH CK	QUTCHPH CK	QUTCHPH CK	QUTCHPH CK	QUTCHPH CK	QUTCHPH CK	QUTCHPH CK	QUTCHPH CK
PHYSICAL PARAMETERS											
AIR TEMPERATURE (C)	19	16	16	16	26	10	21	24	4	25	25
FLOW (CFS)	2.08	1.39	0.58	1.57	1.27	0.8	1.57	0.64	0.49	1.84	0.58
WATER TEMPERATURE (C)	16	17	10	11	18	6	14	13	1	16	17
SPEC. COND. (UMHOS/CM) FIELD	710	680	750	760	1300	680	490	708	719	635	622
PH (SU) FIELD	8	7.6	7.8	7.7	7.8	8.1	8	8.4	8.2	8.35	8.4
TURBIDITY (NTU) FIELD	53	640	32	180	74	26		63.12	20.97	50	25.81
TOTAL SUSP. SOLIDS											
TOTAL DISS. SOLIDS MEAS.	424	432	490	490	850	520	316	460	484	366	340
COMMON IONS											
CALCIUM (CA)	60	56	68	91.6	64	64	58.8	60	77.6	50.4	54.4
MAGNESIUM (MG)	35.52	33.6	37.92	18.72	108	55.5	23.8	32.2	36.5	33.1	34.6
SODIUM (NA)	59	52.5	55	66	47.8	60.3	40	80	49.8	38.03	39.82
POTASSIUM (K)			3.5	3.6			3.8	3.5			
ACIDITY AS CACO3	<0.01	13	24	72	17	16	8.8	13.9	13.7	<0.01	1.2
ALKALINITY AS CACO3 (LAB)	328	308	320	341	315	320	210	286	270	259	250
BICARBONATE (HCO3) (LAB)	400.2	370.9	390.4	416	384.3	390.4	256	348.9	329.4	279	275.7
HARDNESS (CACO3) TOTAL	298	280	328	307	610	390	246	284	346	264	278
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	<0.01	2.4	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	14.4
SULFATE (SO4)	74	62	87	66	405	95	75	85	87	95	69
CHLORIDE (CL)	36	4	34	36.4	29.4	34	14.2	28	24.5	20.3	17.2
NUTRIENTS											
NITRATE (NO3-N)	<0.02	<0.01	0.06	0.01	0.02	0.09	0.42	0.03	0.05	0.06	0.03
TOTAL PHOSPHATE (PO4)	0.2	0.11	0.1	0.1	0.14	0.77	1.12	0.28	0.02	0.03	0.02
TRACE ELEMENTS											
BARIUM (BA) TOTAL	0.15	0.18	0.14	0.15	0.14	0.12	0.57	0.11	0.12	0.16	0.12
BORON (B) TOTAL	0.06	0.1	0.09	0.085	0.1	0.15		0.12	0.06	0.089	0.8
IRON (FE) TOTAL	0.81	5.4	0.25	0.07	1.3	0.06	24.6	0.06	0.56	0.62	0.57
IRON (FE) DISS	0.03	0.09	0.04	0.01	0.07	0.23	0.03	<0.01	<0.01	<0.01	<0.01
MANGANESE (MN) TOTAL	0.065	0.045	0.08	0.04	0.09	0.09	0.73	0.03	0.09	0.07	0.05
MANGANESE (MN) DISS	0.042	0.015	0.07	0.03		0.07	<0.01	<0.02	0.05	0.02	<0.01

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

25-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 006

SAMPLE DATE	10/09/86	06/18/87	08/05/87	10/28/87
LOCATION	S-FK OF N-FK	S-FK OF N-FK	S-FK OF N-FK	S-FK OF N-FK
LOCATION	QUTCHPH CK	QUTCHPH CK	QUTCHPH CK	QUTCHPH CK
PHYSICAL PARAMETERS				
AIR TEMPERATURE (C)	15	19	26	14
FLOW (CFS)	0.4	0.88	0.4	0.25
WATER TEMPERATURE (C)	6	10	18	5
SPEC. COND. (UMHOS/CM) FIELD	742	666	717	635
PH (SU) FIELD	8.2	8	8.2	8.2
TURBIDITY (NTU) FIELD	56.67	23	29.3	42.9
TOTAL SUSP. SOLIDS				
TOTAL DISS. SOLIDS MEAS.	446	406	438	418
COMMON IONS				
CALCIUM (CA)	64.8	84	54.8	62.63
MAGNESIUM (MG)	33.6	18.7	31.29	33.53
SODIUM (NA)	55.2	34.72	34.12	43.53
POTASSIUM (K)				
ACIDITY AS CACO3	2.5	<0.01	2	<0.01
ALKALINITY AS CACO3 (LAB)	282	258	247	286
BICARBONATE (HCO3) (LAB)	256.2	315	301	348
HARDNESS (CACO3) TOTAL	302	288	280	295
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	43.2	<0.01	<0.01	<0.01
SULFATE (SO4)	80	77	75	80
CHLORIDE (CL)	3.9	15	13.7	17.4
NUTRIENTS				
NITRATE (NO3-N)	0.03	0.08	0.09	0.86
TOTAL PHOSPHATE (PO4)	0.09	<0.04	<0.04	<0.04
TRACE ELEMENTS				
BARIUM (BA) TOTAL	0.14	0.1	0.09	0.09
BORON (B) TOTAL	0.1	0.11	0.16	0.09
IRON (FE) TOTAL	1.01	0.26	0.2	0.64
IRON (FE) DISS	0.02	<0.01	<0.01	<0.01
MANGANESE (MN) TOTAL	0.11	0.07	0.08	0.11
MANGANESE (MN) DISS	0.06	0.05	0.05	0.09

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

25-Mar-88 KWW

STATISTICAL SUMMARY OF WATER QUALITY ANALYSES FOR SITE SUFCO - 007

	RANGE MIN	RANGE MAX	MEAN	STANDARD DEVIATION	NUMBER OF SAMPLES
PHYSICAL PARAMETERS					
AIR TEMPERATURE (C)	0	28	16.3	6.22	15
FLOW (CFS)	0.21	12.86	2.6	3.53	15
WATER TEMPERATURE (C)	0.5	21	11.6	5.69	15
SPEC. COND. (UMHOS/CM) FIELD	390	1384	578.4	228.28	15
PH (SU) FIELD	7.6	8.4	8.1	0.23	15
TURBIDITY (NTU) FIELD	1.8	940	262.5	318.36	15
TOTAL SUSP. SOLIDS	ERR	ERR	ERR	ERR	0
TOTAL DISS. SOLIDS MEAS.	204	904	355.9	157.70	15
COMMON IONS					
CALCIUM (CA)	40.27	100	58.6	15.16	15
MAGNESIUM (MG)	2.4	188	34.2	42.27	15
SODIUM (NA)	12.5	60	32.8	12.05	15
POTASSIUM (K)	2	6.9	4.5	2.40	4
ACIDITY AS CACO3	0.01	52	12.2	14.20	15
ALKALINITY AS CACO3 (LAB)	166	404	246.5	54.12	15
BICARBONATE (HCO3) (LAB)	200	493	296.6	68.57	15
HARDNESS (CACO3) TOTAL	186	720	268.5	126.72	15
HYDROXIDE AS OH	0.01	0.01	0.0	0.00	15
CARBONATE AS CO3	0.01	12	1.0	3.10	14
SULFATE (SO4)	28	475	77.8	109.26	15
CHLORIDE (CL)	4.1	86	18.0	19.06	15
NUTRIENTS					
NITRATE (NO3-N)	0.01	2.03	0.3	0.56	15
TOTAL PHOSPHATE (PO4)	0.02	1.64	0.3	0.44	15
TRACE ELEMENTS					
BARIUM (BA) TOTAL	0.06	1.25	0.3	0.28	15
BORON (B) TOTAL	0.02	0.67	0.1	0.15	14
IRON (FE) TOTAL	0.04	29.6	4.5	7.64	15
IRON (FE) DISS	0.01	0.12	0.0	0.04	15
MANGANESE (MN) TOTAL	0.01	1.46	0.2	0.35	15
MANGANESE (MN) DISS	0.003	0.13	0.0	0.03	13

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED. FOR VALUES BELOW THE DETECTION LIMIT, THE DETECTION LIMIT WAS USED IN THE STATISTICAL ANALYSIS.

25-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCO - 007

SAMPLE DATE	06/21/83	08/16/83	10/12/83	06/21/84	08/09/84	10/11/84	06/13/85	08/14/85	10/22/85	06/02/86	08/13/86
LOCATION	UPPER N-FK	UPPER N-FK	UPPER N-FK	UPPER N-FK	UPPER N-FK	UPPER N-FK	UPPER N-FK	UPPER N-FK	UPPER N-FK	UPPER N-FK	UPPER N-FK
LOCATION	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK
PHYSICAL PARAMETERS											
AIR TEMPERATURE (C)	19	16	12	18	28	9	21	16	0	20	18
FLOW (CFS)	12.86	1.15	0.6	5.86	0.8	1.53	4.94	0.64	0.21	7.55	0.55
WATER TEMPERATURE (C)	14	15	12	7	21	5	10	13	0.5	14	17
SPEC. COND. (UMHOS/CM) FIELD	390	540	580	450	580	500	1384	508	677	428	474
PH (SU) FIELD	8.4	8	7.6	7.85	7.7	8	7.8	8.2	8.05	8.4	8.2
TURBIDITY (NTU) FIELD	100	940	550	880	200	80	22	76.32	77.42	690	38.71
TOTAL SUSP. SOLIDS											
TOTAL DISS. SOLIDS MEAS.	204	320	377	295	375	380	904	322	388	258	228
COMMON IONS											
CALCIUM (CA)	53.6	48	56	80	44	60	100	44.8	60	58.4	42.4
MAGNESIUM (MG)	13.92	28.8	29.28	2.4	36	44.4	188	23	27.4	16.8	22.6
SODIUM (NA)	12.5	37.5	41	24	36.3	35.6	41	60	42.4	16.39	31.37
POTASSIUM (K)			2.1	2			6.9	6.8			
ACIDITY AS CACO3	<0.01	5	28	52	17	19	22	13.1	21	<0.01	1.2
ALKALINITY AS CACO3 (LAB)	220	244	278	232	260	270	404	238	290	182	212
BICARBONATE (HCO3) (LAB)	258.6	292.8	339.2	283	317.2	329.4	493	290.4	353.8	200	258.6
HARDNESS (CACO3) TOTAL	192	240	262	210	260	335	720	208	264	216	200
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	<0.01	2.4	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01
SULFATE (SO4)	28	40	48	28	39	46	475	36	47	88	31
CHLORIDE (CL)	12	16	20	6.4	16.8	17	86	19.7	22.8	4.1	13.9
NUTRIENTS											
NITRATE (NO3-N)	<0.02	0.08	0.02	0.06	0.08	1.39	2.03	0.09	<0.01	0.15	0.05
TOTAL PHOSPHATE (PO4)	0.92	0.03	0.05	0.06	0.18	0.49	0.18	0.09	0.03	1.64	0.02
TRACE ELEMENTS											
BARIUM (BA) TOTAL	0.35	0.71	0.32	0.33	0.23	0.21	0.06	0.17	0.22	1.25	0.22
BORON (B) TOTAL	0.02	0.1	0.095	0.09	0.151	0.08		0.06	0.14	0.161	0.67
IRON (FE) TOTAL	10.3	12.9	3.39	0.06	3.04	2.06	0.66	0.31	1.84	29.6	0.38
IRON (FE) DISS	0.08	0.11	0.12	0.01	<0.01	0.03	0.04	<0.01	0.03	<0.01	<0.01
MANGANESE (MN) TOTAL	0.285	0.012	0.21	0.01	0.07	0.07	0.14	<0.02	0.1	1.46	<0.01
MANGANESE (MN) DISS	0.003	0.01		0.01		0.03	0.13	<0.02	0.03	<0.01	<0.01

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

25-Mar-88 KNW

SUMMARY OF WATER QUALITY
ANALYSES SUFCO - 007

SAMPLE DATE	10/09/86	06/18/87	08/05/87	10/27/87
LOCATION	UPPER N-FK	UPPER N-FK	UPPER N-FK	UPPER N-FK
LOCATION	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK
PHYSICAL PARAMETERS				
AIR TEMPERATURE (C)	15	16	23	13
FLOW (CFS)	0.39	1.71	0.27	0.22
WATER TEMPERATURE (C)	15	8	19	3
SPEC. COND. (UMHOS/CM) FIELD	618	432	535	580
PH (SU) FIELD	8.2	8.2	8.2	8
TURBIDITY (NTU) FIELD	51.67	209	19.9	1.8
TOTAL SUSP. SOLIDS				
TOTAL DISS. SOLIDS MEAS.	370	268	274	376
COMMON IONS				
CALCIUM (CA)	59.2	65.6	40.27	67.25
MAGNESIUM (MG)	24	10	19.61	26.95
SODIUM (NA)	39.5	16.44	23.15	34.41
POTASSIUM (K)				
ACIDITY AS CACO3	1.2	2	2	<0.01
ALKALINITY AS CACO3 (LAB)	248	196	166	258
BICARBONATE (HCO3) (LAB)	278.2	239	202	314
HARDNESS (CACO3) TOTAL	248	206	186	280
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	12	<0.01	<0.01	<0.01
SULFATE (SO4)	124	33	29	75
CHLORIDE (CL)	4.4	5.7	10.4	14.5
NUTRIENTS				
NITRATE (NO3-N)	0.1	0.21	0.14	0.34
TOTAL PHOSPHATE (PO4)	0.09	<0.04	<0.04	<0.04
TRACE ELEMENTS				
BARIUM (BA) TOTAL	0.22	0.21	0.16	0.2
BORON (B) TOTAL	0.12	0.09	0.13	0.07
IRON (FE) TOTAL	0.52	2.31	0.04	0.51
IRON (FE) DISS	<0.01	<0.01	<0.01	<0.01
MANGANESE (MN) TOTAL	0.04	0.08	<0.01	0.03
MANGANESE (MN) DISS	<0.01	<0.01	<0.01	<0.01

ALALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

28-Mar-88 KWW

STATISTICAL SUMMARY OF WATER QUALITY ANALYSES FOR SITE -021

	RANGE MIN	RANGE MAX	MEAN	STANDARD DEVIATION	NUMBER OF SAMPLES
PHYSICAL PARAMETERS					
AIR TEMPERATURE (C)	12	15	13.5	1.50	2
FLOW (CFS)	2.05	2.05	2.1	0.00	1
WATER TEMPERATURE (C)	10	12	10.6	0.73	7
SPEC. COND. (UMHOS/CM) FIELD	540	1080	842.8	132.19	15
PH (SU) FIELD	7.1	8.1	7.5	0.26	15
TURBIDITY (NTU) FIELD	0.02	8.7	1.4	2.06	15
TOTAL SUSP. SOLIDS	1	7	3.0	1.95	11
TOTAL DISS. SOLIDS MEAS.	350	712	555.9	95.81	15
COMMON IONS					
CALCIUM (CA)	56.8	120	89.1	16.76	14
MAGNESIUM (MG)	36.4	60	44.1	5.75	15
SODIUM (NA)	26	148.4	47.3	28.40	15
POTASSIUM (K)	2.6	5.5	4.0	1.21	5
ACIDITY AS CACO3	0.01	44	14.3	12.94	15
ALKALINITY AS CACO3 (LAB)	240	310	257.9	16.09	15
BICARBONATE (HCO3) (LAB)	292.8	378.2	316.8	21.65	15
HARDNESS (CACO3) TOTAL	305	452	405.1	37.77	15
HYDROXIDE AS OH	0.01	0.01	0.0	0.00	15
CARBONATE AS CO3	0.01	0.01	0.0	0.00	14
SULFATE (SO4)	40	279	203.9	60.05	15
CHLORIDE (CL)	10.9	40	17.8	7.99	14
NUTRIENTS					
NITRATE (NO3-N)	0.01	1.16	0.2	0.36	15
TOTAL PHOSPHATE (PO4)	0.01	0.66	0.2	0.22	15
TRACE ELEMENTS					
BARIUM (BA) TOTAL	0.04	0.079	0.1	0.01	15
BORON (B) TOTAL	0.02	1.33	0.4	0.31	15
IRON (FE) TOTAL	0.01	0.62	0.1	0.15	15
IRON (FE) DISS	0.01	0.1	0.0	0.03	15
MANGANESE (MN) TOTAL	0.01	0.08	0.0	0.02	15
MANGANESE (MN) DISS	0.01	0.02	0.0	0.00	15

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED. FOR VALUES BELOW THE DETECTION LIMIT, THE DETECTION LIMIT WAS USED IN THE STATISTICAL ANALYSIS.

28-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 021

SAMPLE DATE	06/22/83	08/31/83	10/12/83	06/20/84	08/08/84	10/10/84	06/13/85	08/14/85	10/22/85	06/05/86	08/12/86
LOCATION	MINE	MINE	MINE	MINE	MINE	MINE	MINE	MINE	MINE	MINE	MINE
LOCATION	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
PHYSICAL PARAMETERS											
AIR TEMPERATURE (C)			12							15	
FLOW (CFS)											
WATER TEMPERATURE (C)	10	10	10	11	10					11	
SPEC. COND. (UMHOS/CM) FIELD	710	750	910	890	650	540	910	880	792	860	846
PH (SU) FIELD	7.3	7.1	7.2	7.3	7.4	7.9	7.35	7.25	7.4	7.6	7.4
TURBIDITY (NTU) FIELD	8.7	0.6	0.95	1	2.6	2.5	0.93	0.5	0.19	0.48	1.05
TOTAL SUSP. SOLIDS					4	2	2	4	3	6	2
TOTAL DISS. SOLIDS MEAS.	448	469	599	570	420	350	592	576	570	570	546
COMMON IONS											
CALCIUM (CA)	70.4	79.2	92	89.6	96	59	102.4	94.4	104		56.8
MAGNESIUM (MG)	42.72	40.8	47.52	51.84	42	38	42	41.8	44.2	38.9	60
SODIUM (NA)	33.5	26	40	33.9	34.1	30.4	56	60	35	148.4	37.74
POTASSIUM (K)		3.6	2.9	2.6			5.5	5.3			
ACIDITY AS CACO3	5.5	40	22	44	9	12	14.5	17.5	22.9	2.4	2.5
ALKALINITY AS CACO3 (LAB)	266	262	250	264	310	250	254	258	260	257	262
BICARBONATE (HCO3) (LAB)	324.5	319.6	305	322.1	378.2	305	305	314.8	317.2	350	319.6
HARDNESS (CACO3) TOTAL	354	368	428	420	415	305	430	410	444	384	392
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01
SULFATE (SO4)	132	128	240	218	237	40	223	199	205	246	212
CHLORIDE (CL)	24	26	14	13	11	26	14	15.6	10.9		16
NUTRIENTS											
NITRATE (NO3-N)	<0.02	<0.02	0.04	<0.01	0.1	1.16	0.01	0.05	0.14	1.04	<0.01
TOTAL PHOSPHATE (PO4)	0.54	0.41	0.35	0.5	0.1	0.15	0.02	0.02	<0.01	0.01	0.05
TRACE ELEMENTS											
BARIUM (BA) TOTAL	0.06	0.06	0.079	0.07	0.05	0.05	0.04	0.04	0.06	0.05	0.05
BORON (B) TOTAL	0.45	0.04	0.05	0.065	0.552	0.39	0.02	0.36	0.35	0.513	1.33
IRON (FE) TOTAL	0.03	0.03	0.11	0.18	0.12	0.18	0.02	<0.01	0.05	0.62	0.1
IRON (FE) DISS	0.03	0.03	0.02	0.05	0.1	0.01	<0.01	<0.01	0.09	<0.01	<0.01
MANGANESE (MN) TOTAL	0.014	0.01	0.01	0.01	0.01	0.01	<0.01	<0.01	0.02	0.05	0.08
MANGANESE (MN) DISS	0.014	0.01	0.01	0.01	<0.01	0.01	<0.01	<0.01	0.02	<0.01	0.02

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

28-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 021

SAMPLE DATE	10/10/86	06/18/87	08/11/87	10/28/87
LOCATION	MINE	MINE	MINE	MINE
LOCATION	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
PHYSICAL PARAMETERS				
AIR TEMPERATURE (C)				
FLOW (CFS)	2.05			
WATER TEMPERATURE (C)	12			
SPEC. COND. (UMHOS/CM) FIELD	907	1080	1005	912
PH (SU) FIELD	7.6	7.6	7.5	8.1
TURBIDITY (NTU) FIELD	0.02	0.91	0.74	0.5
TOTAL SUSP. SOLIDS	7	<1.00	1	1
TOTAL DISS. SOLIDS MEAS.	572	702	712	642
COMMON IONS				
CALCIUM (CA)	93.6	120	94	96.29
MAGNESIUM (MG)	41.8	36.4	47.15	46.49
SODIUM (NA)	41.2	44.36	44.96	43.98
POTASSIUM (K)				
ACIDITY AS CACO3	10	<0.01	12	<0.01
ALKALINITY AS CACO3 (LAB)	240	240	253	243
BICARBONATE (HCO3) (LAB)	292.8	293	309	296
HARDNESS (CACO3) TOTAL	408	452	432	434
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	<0.01	<0.01	<0.01	<0.01
SULFATE (SO4)	187	279	258	255
CHLORIDE (CL)	40	12.8	12.7	12.9
NUTRIENTS				
NITRATE (NO3-N)	0.14	0.1	0.24	0.38
TOTAL PHOSPHATE (PO4)	0.66	<0.04	<0.04	<0.04
TRACE ELEMENTS				
BARIUM (BA) TOTAL	0.06	0.05	0.04	0.04
BORON (B) TOTAL	0.44	0.58	0.51	0.49
IRON (FE) TOTAL	<0.01	0.03	<0.01	0.02
IRON (FE) DISS	<0.01	<0.01	<0.01	<0.01
MANGANESE (MN) TOTAL	<0.01	<0.02	<0.01	<0.01
MANGANESE (MN) DISS	<0.01	<0.01	<0.01	<0.01

ALALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

25-Mar-89 KNW

STATISTICAL SUMMARY OF WATER QUALITY ANALYSES FOR SITE SUFCO - 022

	RANGE MIN	RANGE MAX	MEAN	STANDARD DEVIATION	NUMBER OF SAMPLES
PHYSICAL PARAMETERS					
AIR TEMPERATURE (C)	ERR	ERR	ERR	ERR	0
FLOW (CFS)	0	0	0.0	0.00	15
WATER TEMPERATURE (C)	ERR	ERR	ERR	ERR	0
SPEC. COND. (UMHOS/CM) FIELD	ERR	ERR	ERR	ERR	0
PH (SU) FIELD	ERR	ERR	ERR	ERR	0
TURBIDITY (NTU) FIELD	ERR	ERR	ERR	ERR	0
TOTAL SUSP. SOLIDS	ERR	ERR	ERR	ERR	0
TOTAL DISS. SOLIDS MEAS.	ERR	ERR	ERR	ERR	0
COMMON IONS					
CALCIUM (CA)	ERR	ERR	ERR	ERR	0
MAGNESIUM (MG)	ERR	ERR	ERR	ERR	0
SODIUM (NA)	ERR	ERR	ERR	ERR	0
POTASSIUM (K)	ERR	ERR	ERR	ERR	0
ACIDITY AS CACO3	ERR	ERR	ERR	ERR	0
ALKALINITY AS CACO3 (LAB)	ERR	ERR	ERR	ERR	0
BICARBONATE (HCO3) (LAB)	ERR	ERR	ERR	ERR	0
HARDNESS (CACO3) TOTAL	ERR	ERR	ERR	ERR	0
HYDROXIDE AS OH	ERR	ERR	ERR	ERR	0
CARBONATE AS CO3	ERR	ERR	ERR	ERR	0
SULFATE (SO4)	ERR	ERR	ERR	ERR	0
CHLORIDE (CL)	ERR	ERR	ERR	ERR	0
NUTRIENTS					
NITRATE (NO3-N)	ERR	ERR	ERR	ERR	0
TOTAL PHOSPHATE (PO4)	ERR	ERR	ERR	ERR	0
TRACE ELEMENTS					
BARIUM (BA) TOTAL	ERR	ERR	ERR	ERR	0
BORON (B) TOTAL	ERR	ERR	ERR	ERR	0
IRON (FE) TOTAL	ERR	ERR	ERR	ERR	0
IRON (FE) DISS	ERR	ERR	ERR	ERR	0
MANGANESE (MN) TOTAL	ERR	ERR	ERR	ERR	0
MANGANESE (MN) DISS	ERR	ERR	ERR	ERR	0

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED. FOR VALUES BELOW THE DETECTION LIMIT, THE DETECTION LIMIT WAS USED IN THE STATISTICAL ANALYSIS.

25-Mar-88 KNW

SUMMARY OF WATER QUALITY
ANALYSES SUFCO - 022

SAMPLE DATE	06/21/83	08/16/83	10/12/83	06/21/84	08/09/84	10/10/84	06/12/85	08/14/85	10/22/85	06/05/86	08/13/86
LOCATION	MUD SPR CYN	MUD SPR CYN	MUD SPR CYN	MUD SPR CYN	MUD SPR CYN	MUD SPR CYN	MUD SPR CYN	MUD SPR CYN	MUD SPR CYN	MUD SPR CYN	MUD SPR CYN
LOCATION	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE
PHYSICAL PARAMETERS											
AIR TEMPERATURE (C)											
FLOW (CFS)	0	0	0	0	0	0	0	0	0	0	0
WATER TEMPERATURE (C)											
SPEC. COND. (UMHOS/CM) FIELD											
PH (SU) FIELD											
TURBIDITY (NTU) FIELD											
TOTAL SUSP. SOLIDS											
TOTAL DISS. SOLIDS MEAS.											
COMMON IONS											
CALCIUM (CA)											
MAGNESIUM (MG)											
SODIUM (NA)											
POTASSIUM (K)											
ACIDITY AS CACO3											
ALKALINITY AS CACO3 (LAB)											
BICARBONATE (HCO3) (LAB)											
HARDNESS (CACO3) TOTAL											
HYDROXIDE AS OH											
CARBONATE AS CO3											
SULFATE (SO4)											
CHLORIDE (CL)											
NUTRIENTS											
NITRATE (NO3-N)											
TOTAL PHOSPHATE (PO4)											
TRACE ELEMENTS											
BARIUM (BA) TOTAL											
BORON (B) TOTAL											
IRON (FE) TOTAL											
IRON (FE) DISS											
MANGANESE (MN) TOTAL											
MANGANESE (MN) DISS											

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

25-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 022

SAMPLE DATE	10/09/86	06/18/87	08/05/87	10/27/87
LOCATION	MUD SPR CYN	MUD SPR CYN	MUD SPR CYN	MUD SPR CYN
LOCATION	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE
PHYSICAL PARAMETERS				
AIR TEMPERATURE (C)				
FLOW (CFS)	0	0	0	0
WATER TEMPERATURE (C)				
SPEC. COND. (UMHOS/CM) FIELD				
PH (SU) FIELD				
TURBIDITY (NTU) FIELD				
TOTAL SUSP. SOLIDS				
TOTAL DISS. SOLIDS MEAS.				
COMMON IONS				
CALCIUM (CA)				
MAGNESIUM (MG)				
SODIUM (NA)				
POTASSIUM (K)				
ACIDITY AS CACO3				
ALKALINITY AS CACO3 (LAB)				
BICARBONATE (HCO3) (LAB)				
HARDNESS (CACO3) TOTAL				
HYDROXIDE AS OH				
CARBONATE AS CO3				
SULFATE (SO4)				
CHLORIDE (CL)				
NUTRIENTS				
NITRATE (NO3-N)				
TOTAL PHOSPHATE (PO4)				
TRACE ELEMENTS				
BARIUM (BA) TOTAL				
BORON (B) TOTAL				
IRON (FE) TOTAL				
IRON (FE) DISS				
MANGANESE (MN) TOTAL				
MANGANESE (MN) DISS				

ALALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

25-Mar-88 KWW

STATISTICAL SUMMARY OF WATER QUALITY ANALYSES FOR SITE SUFCO - 030

	RANGE MIN	RANGE MAX	MEAN	STANDARD DEVIATION	NUMBER OF SAMPLES
PHYSICAL PARAMETERS					
AIR TEMPERATURE (C)	ERR	ERR	ERR	ERR	0
FLOW (CFS)	0	0	0.0	0.00	15
WATER TEMPERATURE (C)	ERR	ERR	ERR	ERR	0
SPEC. COND. (UMHOS/CM) FIELD	ERR	ERR	ERR	ERR	0
PH (SU) FIELD	ERR	ERR	ERR	ERR	0
TURBIDITY (NTU) FIELD	ERR	ERR	ERR	ERR	0
TOTAL SUSP. SOLIDS	ERR	ERR	ERR	ERR	0
TOTAL DISS. SOLIDS MEAS.	ERR	ERR	ERR	ERR	0
COMMON IONS					
CALCIUM (CA)	ERR	ERR	ERR	ERR	0
MAGNESIUM (MG)	ERR	ERR	ERR	ERR	0
SODIUM (NA)	ERR	ERR	ERR	ERR	0
POTASSIUM (K)	ERR	ERR	ERR	ERR	0
ACIDITY AS CACO3	ERR	ERR	ERR	ERR	0
ALKALINITY AS CACO3 (LAB)	ERR	ERR	ERR	ERR	0
BICARBONATE (HCO3) (LAB)	ERR	ERR	ERR	ERR	0
HARDNESS (CACO3) TOTAL	ERR	ERR	ERR	ERR	0
HYDROXIDE AS OH	ERR	ERR	ERR	ERR	0
CARBONATE AS CO3	ERR	ERR	ERR	ERR	0
SULFATE (SO4)	ERR	ERR	ERR	ERR	0
CHLORIDE (CL)	ERR	ERR	ERR	ERR	0
NUTRIENTS					
NITRATE (NO3-N)	ERR	ERR	ERR	ERR	0
TOTAL PHOSPHATE (PO4)	ERR	ERR	ERR	ERR	0
TRACE ELEMENTS					
BARIUM (BA) TOTAL	ERR	ERR	ERR	ERR	0
BORON (B) TOTAL	ERR	ERR	ERR	ERR	0
IRON (FE) TOTAL	ERR	ERR	ERR	ERR	0
IRON (FE) DISS	ERR	ERR	ERR	ERR	0
MANGANESE (MN) TOTAL	ERR	ERR	ERR	ERR	0
MANGANESE (MN) DISS	ERR	ERR	ERR	ERR	0

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED. FOR VALUES BELOW THE DETECTION LIMIT, THE DETECTION LIMIT WAS USED IN THE STATISTICAL ANALYSIS.

25-Mar-88 KNW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 030

SAMPLE DATE	06/21/83	08/16/83	10/12/83	06/21/84	08/09/84	10/10/84	06/12/85	08/14/85	10/22/85	06/05/86	08/13/86
LOCATION	EAST SPR CYN	EAST SPR CYN	EAST SPR CYN	EAST SPR CYN	EAST SPR CYN	EAST SPR CYN	EAST SPR CYN	EAST SPR CYN	EAST SPR CYN	EAST SPR CYN	EAST SPR CYN
LOCATION	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE
PHYSICAL PARAMETERS											
AIR TEMPERATURE (C)											
FLOW (CFS)	0	0	0	0	0	0	0	0	0	0	0
WATER TEMPERATURE (C)											
SPEC. COND. (UMHOS/CM) FIELD											
PH (SU) FIELD											
TURBIDITY (NTU) FIELD											
TOTAL SUSP. SOLIDS											
TOTAL DISS. SOLIDS MEAS.											
COMMON IONS											
CALCIUM (CA)											
MAGNESIUM (MG)											
SODIUM (NA)											
POTASSIUM (K)											
ACIDITY AS CACO3											
ALKALINITY AS CACO3 (LAB)											
BICARBONATE (HCO3) (LAB)											
HARDNESS (CACO3) TOTAL											
HYDROXIDE AS OH											
CARBONATE AS CO3											
SULFATE (SO4)											
CHLORIDE (CL)											
NUTRIENTS											
NITRATE (NO3-N)											
TOTAL PHOSPHATE (PO4)											
TRACE ELEMENTS											
BARIUM (BA) TOTAL											
BORON (B) TOTAL											
IRON (FE) TOTAL											
IRON (FE) DISS											
MANGANESE (MN) TOTAL											
MANGANESE (MN) DISS											

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

25-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 030

SAMPLE DATE	10/09/86	06/18/87	08/05/87	10/27/87
LOCATION	EAST SPR CYN	EAST SPR CYN	EAST SPR CYN	EAST SPR CYN
LOCATION	ABOVE MINE	ABOVE MINE	ABOVE MINE	ABOVE MINE
PHYSICAL PARAMETERS				
AIR TEMPERATURE (C)				
FLOW (CFS)	0	0	0	0
WATER TEMPERATURE (C)				
SPEC. COND. (UMHOS/CM) FIELD				
PH (SU) FIELD				
TURBIDITY (NTU) FIELD				
TOTAL SUSP. SOLIDS				
TOTAL DISS. SOLIDS MEAS.				
COMMON IONS				
CALCIUM (CA)				
MAGNESIUM (MG)				
SODIUM (NA)				
POTASSIUM (K)				
ACIDITY AS CACO3				
ALKALINITY AS CACO3 (LAB)				
BICARBONATE (HCO3) (LAB)				
HARDNESS (CACO3) TOTAL				
HYDROXIDE AS OH				
CARBONATE AS CO3				
SULFATE (SO4)				
CHLORIDE (CL)				
NUTRIENTS				
NITRATE (NO3-N)				
TOTAL PHOSPHATE (PO4)				
TRACE ELEMENTS				
BARIUM (BA) TOTAL				
BORON (B) TOTAL				
IRON (FE) TOTAL				
IRON (FE) DISS				
MANGANESE (MN) TOTAL				
MANGANESE (MN) DISS				

ALALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

25-Mar-88 KWW

STATISTICAL SUMMARY OF WATER QUALITY ANALYSES FOR SITE SUFCO - 041

	RANGE MIN	RANGE MAX	MEAN	STANDARD DEVIATION	NUMBER OF SAMPLES
PHYSICAL PARAMETERS					
AIR TEMPERATURE (C)	7	30	19.1	6.88	20
FLOW (CFS)	0.77	6.93	2.7	1.92	20
WATER TEMPERATURE (C)	6	25	15.7	5.81	20
SPEC. COND. (UMHOS/CM) FIELD	670	1544	1031.2	186.33	20
PH (SU) FIELD	7.4	8.45	8.1	0.31	20
TURBIDITY (NTU) FIELD	0.39	677.42	180.2	178.76	20
TOTAL SUSP. SOLIDS	392	1480	715.7	372.05	6
TOTAL DISS. SOLIDS MEAS.	434	896	680.1	116.58	20
COMMON IONS					
CALCIUM (CA)	42.4	94	65.4	16.07	15
MAGNESIUM (MG)	10	76.8	55.5	15.26	15
SODIUM (NA)	55	135	92.5	23.35	15
POTASSIUM (K)	3	5.2	3.9	0.94	3
ACIDITY AS CACO3	0.01	72	13.5	17.96	15
ALKALINITY AS CACO3 (LAB)	260	345	292.9	23.48	15
BICARBONATE (HCO3) (LAB)	253.8	420.9	339.6	44.31	15
HARDNESS (CACO3) TOTAL	360	500	401.6	36.50	15
HYDROXIDE AS OH	0.01	0.01	0.0	0.00	15
CARBONATE AS CO3	0.01	36	4.2	9.77	15
SULFATE (SO4)	81	332	230.5	67.60	15
CHLORIDE (CL)	17.4	74	52.6	13.64	15
NUTRIENTS					
NITRATE (NO3-N)	0.01	0.89	0.3	0.23	15
TOTAL PHOSPHATE (PO4)	0.01	0.69	0.2	0.22	15
TRACE ELEMENTS					
BARIUM (BA) TOTAL	0.02	1.02	0.1	0.25	15
BORON (B) TOTAL	0.18	0.85	0.3	0.17	14
IRON (FE) TOTAL	0.05	15.9	5.2	5.15	15
IRON (FE) DISS	0.01	0.07	0.0	0.02	15
MANGANESE (MN) TOTAL	0.005	0.26	0.1	0.08	15
MANGANESE (MN) DISS	0.002	0.21	0.0	0.05	14

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED. FOR VALUES BELOW THE DETECTION LIMIT, THE DETECTION LIMIT WAS USED IN THE STATISTICAL ANALYSIS.

25-Mar-88 KNW

SUMMARY OF WATER QUALITY
ANALYSES SUFCO - 041

SAMPLE DATE	04/20/83	05/05/83	05/17/83	06/07/83	06/20/83	07/14/83	08/16/83	10/12/83	06/20/84	08/10/84	10/10/84
LOCATION	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK
LOCATION	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK
PHYSICAL PARAMETERS											
AIR TEMPERATURE (C)	15	16	10	17	27	30	20	7	24	18	22
FLOW (CFS)	0.87	4.47	6.93	5.9	3.95	3.33	1.96	1.7	6.4	2.46	3.56
WATER TEMPERATURE (C)	11	10	13	11	22	19	16	6	17	12	13
SPEC. COND. (UMHOS/CM) FIELD	1544	820	730	946	880	1030	1040	1020	990	880	1100
PH (SU) FIELD	7.6	8.4	8.1	8.3	8	8.3	8	7.8	7.5	7.7	7.95
TURBIDITY (NTU) FIELD	100	100	100	100	100	100	480	330	140	66	200
TOTAL SUSP. SOLIDS	392	1480	866	545		533		478			
TOTAL DISS. SOLIDS MEAS.	896	506	572	578	578	666	700	766	630	570	790
COMMON IONS											
CALCIUM (CA)					56		52	67.2	94	94	72
MAGNESIUM (MG)					59.52		64.32	60.48	50.88	73.2	76.8
SODIUM (NA)					61.5		87	85	59.7	78	108
POTASSIUM (K)								3.5	3		
ACIDITY AS CACO3					<0.01		8	22	72	19	18
ALKALINITY AS CACO3 (LAB)					290		296	280	306	345	290
BICARBONATE (HCO3) (LAB)					348.9		356.2	341.6	373.3	420.9	253.8
HARDNESS (CACO3) TOTAL					388		398	420	427	465	500
HYDROXIDE AS OH					<0.01		<0.01	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3					<0.01		2.4	<0.01	<0.01	<0.01	<0.01
SULFATE (SO4)					190		224	267	174	110	276
CHLORIDE (CL)					48		48	40	60.7	74	65
NUTRIENTS											
NITRATE (NO3-N)					<0.02		0.14	<0.01	0.21	0.04	0.3
TOTAL PHOSPHATE (PO4)					0.5		0.05	0.06	0.42	0.14	0.15
TRACE ELEMENTS											
BARIUM (BA) TOTAL					0.05		0.04	0.068	0.05	0.04	0.06
BORON (B) TOTAL					0.2		0.18	0.19	0.195	0.196	0.3
IRON (FE) TOTAL					4.6		9.1	4.99	0.06	0.91	15.9
IRON (FE) DISS					0.07		0.02	0.05	0.02	0.06	0.06
MANGANESE (MN) TOTAL					0.085		0.005	0.13	0.01	0.02	0.2
MANGANESE (MN) DISS					0.005		0.002	0.01		0.03	0.03

ALALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

25-Mar-88 KNW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 041

SAMPLE DATE	06/12/85	08/13/85	10/08/85	06/04/86	08/12/86	10/08/86	06/16/87	08/05/87	10/14/87
LOCATION	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK
LOCATION	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK	ABOVE N-FK
PHYSICAL PARAMETERS									
AIR TEMPERATURE (C)	23	29	7	28	21	18	20	21	8
FLOW (CFS)	3.13	1.03	1.48	1.98	0.93	0.97	1.03	0.77	0.78
WATER TEMPERATURE (C)	24	25	6	22	20	17	24	17	9
SPEC. COND. (UMHOS/CM) FIELD	670	1058	1150	999	1184	1190	1043	1170	1180
PH (SU) FIELD	7.4	8.45	8.15	8.4	8.4	8.2	8.2	8.2	8.2
TURBIDITY (NTU) FIELD	0.39	86.84	110	87.93	677.42	533.33	227	54.9	10.5
TOTAL SUSP. SOLIDS									
TOTAL DISS. SOLIDS MEAS.	434	728	870	618	782	756	682	712	768
COMMON IONS									
CALCIUM (CA)	89.2	42.4	73.2	47.2	56	66.4	58.4	48.22	64.45
MAGNESIUM (MG)	40.6	66.2	48.24	61.9	62.9	51.4	10	53.39	52.69
SODIUM (NA)	55	135	82	82.66	105.72	111.6	95.9	115.08	126
POTASSIUM (K)		5.2							
ACIDITY AS CACO3	21.4	8.2	24	<0.01	<1.00	2.5	6	<0.01	<0.01
ALKALINITY AS CACO3 (LAB)	326	260	283	271	266	306	266	288	321
BICARBONATE (HCO3) (LAB)	398	307.4	345	296	285.5	300.1	324	351	392
HARDNESS (CACO3) TOTAL	392	382	384	376	402	380	370	360	380
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	<0.01	4.8	<0.01	<0.01	19.2	36	<0.01	<0.01	<0.01
SULFATE (SO4)	81	294	261	225	315	226	332	222	260
CHLORIDE (CL)	17.4	67.9	50	57.2	57.3	39	48.3	50.1	66
NUTRIENTS									
NITRATE (NO3-N)	0.89	0.18	0.22	0.07	0.55	0.39	0.09	0.47	0.2
TOTAL PHOSPHATE (PO4)	0.08	<0.01	0.53	0.06	0.69	0.47	<0.04	0.05	0.33
TRACE ELEMENTS									
BARIUM (BA) TOTAL	0.09	0.02	0.32	0.04	0.08	0.06	0.03	0.02	1.02
BORON (B) TOTAL		0.21	0.32	0.203	0.85	0.22	0.24	0.39	0.28
IRON (FE) TOTAL	0.06	0.05	8.36	0.97	14.7	9.88	3.15	0.21	4.49
IRON (FE) DISS	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MANGANESE (MN) TOTAL	0.21	<0.02	0.15	0.02	0.26	0.19	0.08	<0.01	0.08
MANGANESE (MN) DISS	0.21	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

ALALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

STATISTICAL SUMMARY OF WATER QUALITY ANALYSES FOR SITE SUFCO - 042

	RANGE MIN	RANGE MAX	MEAN	STANDARD DEVIATION	NUMBER OF SAMPLES
PHYSICAL PARAMETERS					
AIR TEMPERATURE (C)	7	30	19.7	7.16	20
FLOW (CFS)	1.54	20.88	6.4	5.61	20
WATER TEMPERATURE (C)	4	22	12.9	5.10	20
SPEC. COND. (UMHOS/CM) FIELD	500	1340	735.6	198.20	20
PH (SU) FIELD	7.5	8.4	8.1	0.29	20
TURBIDITY (NTU) FIELD	0.65	1155	201.5	306.24	20
TOTAL SUSP. SOLIDS	150	3083	1173.8	933.59	6
TOTAL DISS. SOLIDS MEAS.	328	868	490.2	129.45	20
COMMON IONS					
CALCIUM (CA)	43.2	132	69.4	22.17	15
MAGNESIUM (MG)	17.28	75.4	37.2	13.80	15
SODIUM (NA)	25.35	86	46.9	15.96	15
POTASSIUM (K)	1.8	8.8	5.1	3.01	4
ACIDITY AS CACO3	0.01	57	11.1	14.66	15
ALKALINITY AS CACO3 (LAB)	160	346	221.8	42.21	15
BICARBONATE (HCO3) (LAB)	195.2	442	264.6	60.39	15
HARDNESS (CACO3) TOTAL	244	644	328.6	94.83	15
HYDROXIDE AS OH	0.01	24	2.8	6.96	14
CARBONATE AS CO3	0.01	0.01	0.0	0.00	15
SULFATE (SO4)	3	317	164.9	86.41	15
CHLORIDE (CL)	11.8	96.5	25.5	19.89	15
NUTRIENTS					
NITRATE (NO3-N)	0.01	2.85	0.3	0.69	15
TOTAL PHOSPHATE (PO4)	0.01	1.05	0.3	0.33	15
TRACE ELEMENTS					
BARIUM (BA) TOTAL	0.06	0.53	0.2	0.15	15
BORON (B) TOTAL	0.1	1.04	0.3	0.23	14
IRON (FE) TOTAL	0.03	48.3	5.2	11.92	15
IRON (FE) DISS	0.01	0.2	0.0	0.05	15
MANGANESE (MN) TOTAL	0.004	0.64	0.1	0.20	15
MANGANESE (MN) DISS	0.003	0.04	0.0	0.01	14

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED. FOR VALUES BELOW THE DETECTION LIMIT, THE DETECTION LIMIT WAS USED IN THE STATISTICAL ANALYSIS.

25-Mar-88 KNW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 042

SAMPLE DATE	04/20/83	05/05/83	05/17/83	06/07/83	06/20/83	07/14/83	08/16/83	10/12/83	06/20/84	08/10/84	10/10/84
LOCATION	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH
LOCATION	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL
PHYSICAL PARAMETERS											
AIR TEMPERATURE (C)	18	17	10	16	27	30	20	7	23	18	22
FLOW (CFS)	3.33	16.26	10.05	20.88	17.21	8.16	3.63	2.7	8.18	3	2.82
WATER TEMPERATURE (C)	9	5.5	12	6	15	12	15	4	13	12	13
SPEC. COND. (UMHOS/CM) FIELD	931	512	640	599	500	656	660	800	590	570	675
PH (SU) FIELD	8.4	7.6	8.4	8.4	8.2	8.3	8	7.8	7.6	7.7	8
TURBIDITY (NTU) FIELD	100	100	100	100	100	100	940	100	560	90	99.9
TOTAL SUSP. SOLIDS	858	1398	966	588		3083		150			
TOTAL DISS. SOLIDS MEAS.	454	332	412	378	342	426	422	540	375	570	520
COMMON IONS											
CALCIUM (CA)					56		43.2	64	71.6	56	70
MAGNESIUM (MG)					27.84		40.32	46.56	17.28	42	46.8
SODIUM (NA)					26.5		45.5	50	34.1	43.6	54.1
POTASSIUM (K)								2.5	1.8		
ACIDITY AS CACO3					<0.01		6	16	57	17.5	8
ALKALINITY AS CACO3 (LAB)					232		230	230	160	270	220
BICARBONATE (HCO3) (LAB)					270.8		280.6	280.6	195.2	329.4	268.4
HARDNESS (CACO3) TOTAL					256		276	354	251	315	370
HYDROXIDE AS OH					<0.01		<0.01	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3					<0.01		<0.01	<0.01	<0.01	<0.01	<0.01
SULFATE (SO4)					62		<3.00	194	133	40	190
CHLORIDE (CL)					14		24	20	14.9	22	25
NUTRIENTS											
NITRATE (NO3-N)					<0.02		<0.01	<0.01	0.08	0.22	2.85
TOTAL PHOSPHATE (PO4)					0.94		0.04	0.04	0.68	0.18	0.2
TRACE ELEMENTS											
BARIUM (BA) TOTAL					0.22		0.23	0.116	0.21	0.12	0.09
BORON (B) TOTAL					0.1		0.19	0.195	0.1	0.183	0.2
IRON (FE) TOTAL					4		8.1	0.51	0.08	1.58	0.56
IRON (FE) DISS					0.05		0.03	0.036	0.02	0.06	0.2
MANGANESE (MN) TOTAL					0.135		0.004	0.03	<0.01	0.04	0.04
MANGANESE (MN) DISS					0.005		0.003	0.01	<0.01		0.04

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

25-Mar-88 KNW

SUMMARY OF WATER QUALITY
ANALYSES SUFCO - 042

SAMPLE DATE	06/12/85	08/13/85	10/08/85	06/04/86	08/12/86	10/08/86	06/16/87	08/05/87	10/14/87
LOCATION	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH	N-FK QTCHPH
LOCATION	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL	ABOVE CONFL
PHYSICAL PARAMETERS									
AIR TEMPERATURE (C)	28	29	7	28	21	18	26	21	8
FLOW (CFS)	9.06	2.16	2.56	6.82	1.54	2.3	3.72	1.56	1.96
WATER TEMPERATURE (C)	20	22	6	17	19	15.5	20	14	8.5
SPEC. COND. (UMHOS/CM) FIELD	1340	674	832	524	900	797	653	858	1000
PH (SU) FIELD	7.5	8.35	7.95	8.4	8.3	8.1	8	8	8.2
TURBIDITY (NTU) FIELD	0.65	32.9	34	1155	29.03	31.67	205	2.3	150
TOTAL SUSP. SOLIDS									
TOTAL DISS. SOLIDS MEAS.	868	440	630	328	580	518	444	564	660
COMMON IONS									
CALCIUM (CA)	132	48	101.2	60.8	49.6	64	78.4	60.52	85.2
MAGNESIUM (MG)	75.4	36.96	22.8	22.1	35.5	37.9	22.5	41.77	42
SODIUM (NA)	86	59	38	25.35	38.48	46.2	36.04	46.03	74.4
POTASSIUM (K)	8.8	7.3							
ACIDITY AS CACO3	21.4	10.7	24	<0.01	2.5	1.2	2	0.2	<0.01
ALKALINITY AS CACO3 (LAB)	346	188	239	200	184	208	193	199	228
BICARBONATE (HCO3) (LAB)	442	229.4	292	220	195.2	205	239	243	278
HARDNESS (CACO3) TOTAL	644	274	347	244	272	318	290	330	388
HYDROXIDE AS OH	<0.01	<0.01	<0.01		14.4	24	<0.01	<0.01	<0.01
CARBONATE AS CO3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SULFATE (SO4)	269	155	199	97	317	199	136	194	285
CHLORIDE (CL)	96.5	22.2	26	11.8	35.2	20.3	12.4	15.4	22.4
NUTRIENTS									
NITRATE (NO3-N)	0.3	0.05	0.48	0.1	0.1	0.05	0.19	0.12	0.08
TOTAL PHOSPHATE (PO4)	0.08	<0.01	0.05	0.1	0.02	0.13	<0.04	0.19	1.05
TRACE ELEMENTS									
BARIUM (BA) TOTAL	0.06	0.06	0.3	0.53	0.08	0.09	0.11	0.06	0.52
BORON (B) TOTAL		0.28	0.3	0.153	1.04	0.24	0.23	0.54	0.39
IRON (FE) TOTAL	0.09	0.07	0.7	10.8	0.85	0.24	2.76	0.03	48.3
IRON (FE) DISS	0.04	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MANGANESE (MN) TOTAL	<0.01	<0.02	0.03	0.64	0.04	<0.01	0.1	<0.01	0.61
MANGANESE (MN) DISS	0.03	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

23-Mar-88 KWW

STATISTICAL SUMMARY OF WATER QUALITY ANALYSES FOR SITE SUFCD - 046

	RANGE MIN	RANGE MAX	MEAN	STANDARD DEVIATION	NUMBER OF SAMPLES
PHYSICAL PARAMETERS					
AIR TEMPERATURE (C)	3	28	18.7	6.95	15
FLOW (CFS)	0.02	0.52	0.2	0.16	15
WATER TEMPERATURE (C)	6	21	14.8	4.21	15
SPEC. COND. (UMHOS/CM) FIELD	480	1400	1131.1	219.21	15
PH (SU) FIELD	7.55	8.2	7.9	0.21	15
TURBIDITY (NTU) FIELD	0.11	70	22.3	16.11	15
TOTAL SUSP. SOLIDS	ERR	ERR	ERR	ERR	0
TOTAL DISS. SOLIDS MEAS.	306	916	742.1	147.28	14
COMMON IONS					
CALCIUM (CA)	50	116	89.4	16.99	15
MAGNESIUM (MG)	27.1	132	88.9	25.40	15
SODIUM (NA)	27	110	43.9	18.99	15
POTASSIUM (K)	3.3	5.6	4.2	0.88	4
ACIDITY AS CACO3	0.01	74	17.5	19.61	15
ALKALINITY AS CACO3 (LAB)	238	435	374.7	45.39	15
BICARBONATE (HCO3) (LAB)	290	560.7	452.8	60.51	15
HARDNESS (CACO3) TOTAL	294	715	594.9	111.72	15
HYDROXIDE AS OH	0.01	0.01	0.0	0.00	15
CARBONATE AS CO3	0.01	38.4	2.8	9.89	14
SULFATE (SO4)	65	290	192.3	60.09	15
CHLORIDE (CL)	10.6	110	70.4	29.05	15
NUTRIENTS					
NITRATE (NO3-N)	0.01	1.88	1.0	0.65	15
TOTAL PHOSPHATE (PO4)	0.01	0.8	0.1	0.20	15
TRACE ELEMENTS					
BARIUM (BA) TOTAL	0.05	0.24	0.1	0.05	15
BORON (B) TOTAL	0.135	0.82	0.2	0.17	14
IRON (FE) TOTAL	0.01	0.85	0.4	0.21	15
IRON (FE) DISS	0.01	0.2	0.0	0.05	15
MANGANESE (MN) TOTAL	0.015	0.14	0.1	0.04	15
MANGANESE (MN) DISS	0.01	0.13	0.1	0.05	14

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED. FOR VALUES BELOW THE DETECTION LIMIT. THE DETECTION LIMIT WAS USED IN THE STATISTICAL ANALYSIS.

28-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 046

SAMPLE DATE	06/22/83	08/16/83	10/12/83	06/20/84	08/09/84	10/11/84	06/12/85	08/14/85	10/09/85	06/04/86	08/13/86
LOCATION	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK
LOCATION	ABOVE PMPHSE	ABOVE PMPHSE	ABOVE PMPHSE	ABOVE PMPHSE	ABOVE PMPHSE	ABOVE PMPHSE	ABOVE PMPHSE	ABOVE PMPHSE	ABOVE PMPHSE	ABOVE PMPHSE	ABOVE PMPHSE
PHYSICAL PARAMETERS											
AIR TEMPERATURE (C)	25	22	12	23	28	11	23	15	3	21	20
FLOW (CFS)	0.04	0.06	0.08	0.52	0.48	0.33	0.28	0.22	0.39	0.18	0.11
WATER TEMPERATURE (C)	21	19	11	17	18	9	18	13	6	16	14
SPEC. COND. (UMHOS/CM) FIELD	880	980	1200	1150	1100	1200	480	1400	1345	1326	1238
PH (SU) FIELD	7.9	7.8	7.6	7.55	7.6	7.65	7.75	8.1	7.6	8.1	8
TURBIDITY (NTU) FIELD	42	15	15	20	70	35	0.11	22.37	16	14.83	6.13
TOTAL SUSP. SOLIDS											
TOTAL DISS. SOLIDS MEAS.	591	688	810		725	860	306	916	798	886	804
COMMON IONS											
CALCIUM (CA)	76	72	93.6	111.2	50	100	72.4	92.8	114.43	87.2	84.8
MAGNESIUM (MG)	63.36	73.44	103.68	77.76	132	111.6	27.1	111.4	102.34	107.5	107
SODIUM (NA)	32.5	37	38	49.9	47.8	52	27	110	34	42.11	38.06
POTASSIUM (K)			5.6	4.2			3.6	3.3			
ACIDITY AS CACO3	<0.01	12	32	74	20	15	10.7	30.3	44	2.4	2.5
ALKALINITY AS CACO3 (LAB)	332	352	394	388	435	390	238	418	409	384	392
BICARBONATE (HCO3) (LAB)	390.4	429.4	480.7	473.4	560.7	475.8	290	510	499	468	478.2
HARDNESS (CACO3) TOTAL	454	486	666	602	675	715	294	696	712	666	658
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01
SULFATE (SO4)	159	136	209	158	99	220	65	259	229	290	230
CHLORIDE (CL)	32	50	100	109	108	110	10.6	96.7	78	64.2	70.3
NUTRIENTS											
NITRATE (NO3-N)	<0.02	<0.01	0.61	1.58	1.73	0.66	0.18	1.83	1.61	1.88	1.46
TOTAL PHOSPHATE (PO4)	0.28	0.02	0.05	0.22	0.11	0.8	0.02	<0.01	<0.01	<0.01	0.02
TRACE ELEMENTS											
BARIUM (BA) TOTAL	0.07	0.06	0.072	0.06	0.08	0.07	0.07	0.05	0.24	0.07	0.05
BORON (B) TOTAL	0.14	0.14	0.135	0.185	0.2	0.17		0.16	0.24	0.268	0.82
IRON (FE) TOTAL	0.64	0.33	0.16	0.1	0.85	0.45	0.04	<0.01	0.4	0.46	0.43
IRON (FE) DISS	0.02	0.01	0.058	0.02	0.02	0.2	0.02	<0.01	0.04	<0.01	<0.01
MANGANESE (MN) TOTAL	0.06	0.015	0.1	0.06	0.13	0.13	0.02	0.12	0.13	0.14	0.11
MANGANESE (MN) DISS	0.01	0.01	0.1	0.03		0.04	<0.01	0.13	0.13	0.1	<0.01

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

28-Mar-88 KNW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 046

SAMPLE DATE	10/08/86	06/16/87	08/05/87	10/13/87
LOCATION	QTCHPH CK	QTCHPH CK	QTCHPH CK	QTCHPH CK
LOCATION	ABOVE PMPHSE	ABOVE PMPHSE	ABOVE PMPHSE	ABOVE PMPHSE
PHYSICAL PARAMETERS				
AIR TEMPERATURE (C)	13	28	24	13
FLOW (CFS)	0.12	0.08	0.02	0.41
WATER TEMPERATURE (C)	10	19	18	13
SPEC. COND. (UMHOS/CM) FIELD	1276	1140	1202	1050
PH (SU) FIELD	8	8	8	8.2
TURBIDITY (NTU) FIELD	23.33	24	17.4	13.5
TOTAL SUSP. SOLIDS				
TOTAL DISS. SOLIDS MEAS.	824	722	772	687
COMMON IONS				
CALCIUM (CA)	92	116	85.86	92.68
MAGNESIUM (MG)	96	65.2	80.4	74.54
SODIUM (NA)	37.5	31.8	34.14	46.8
POTASSIUM (K)				
ACIDITY AS CACO3	6.3	8	6	<0.01
ALKALINITY AS CACO3 (LAB)	396	355	345	392
BICARBONATE (HCO3) (LAB)	405	433	421	478
HARDNESS (CACO3) TOTAL	630	562	566	541
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	38.4	<0.01	<0.01	<0.01
SULFATE (SO4)	264	210	187	170
CHLORIDE (CL)	69.6	46.1	51.6	60
NUTRIENTS				
NITRATE (NO3-N)	1.23	0.63	0.63	0.57
TOTAL PHOSPHATE (PO4)	0.04	<0.04	<0.04	0.31
TRACE ELEMENTS				
BARIUM (BA) TOTAL	0.07	0.05	0.05	0.06
BORON (B) TOTAL	0.17	0.22	0.29	0.17
IRON (FE) TOTAL	0.43	0.36	0.3	0.38
IRON (FE) DISS	<0.01	<0.01	<0.01	<0.01
MANGANESE (MN) TOTAL	0.12	0.1	0.12	0.13
MANGANESE (MN) DISS	0.08	0.11	0.11	0.08

ALALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

28-Mar-88 KWW

STATISTICAL SUMMARY OF WATER QUALITY ANALYSES FOR SITE - 047

	RANGE MIN	RANGE MAX	MEAN	STANDARD DEVIATION	NUMBER OF SAMPLES
PHYSICAL PARAMETERS					
AIR TEMPERATURE (C)	3	27	19.4	7.23	15
FLOW (CFS)	0.04	0.13	0.1	0.03	13
WATER TEMPERATURE (C)	25	30	27.6	1.37	14
SPEC. COND. (UMHOS/CM) FIELD	350	853	734.2	115.49	15
PH (SU) FIELD	6.65	8	7.4	0.30	15
TURBIDITY (NTU) FIELD	0.17	9	1.9	2.59	15
TOTAL SUSP. SOLIDS	ERR	ERR	ERR	ERR	0
TOTAL DISS. SOLIDS MEAS.	224	560	464.7	77.36	15
COMMON IONS					
CALCIUM (CA)	53.6	120.4	89.3	15.44	15
MAGNESIUM (MG)	17.8	51.6	36.2	9.16	15
SODIUM (NA)	14	120	34.5	28.89	15
POTASSIUM (K)	2.5	4	3.3	0.55	4
ACIDITY AS CACO3	0.01	63	20.0	18.43	15
ALKALINITY AS CACO3 (LAB)	179	380	324.1	45.21	15
BICARBONATE (HCO3) (LAB)	218	463.6	390.2	54.98	15
HARDNESS (CACO3) TOTAL	208	425	376.7	48.37	15
HYDROXIDE AS OH	0.01	0.01	0.0	0.00	15
CARBONATE AS CO3	0.01	24	1.7	6.18	14
SULFATE (SO4)	22	177	84.9	34.82	15
CHLORIDE (CL)	14	26.6	18.1	3.24	15
NUTRIENTS					
NITRATE (NO3-N)	0.01	1.52	0.2	0.37	15
TOTAL PHOSPHATE (PO4)	0.01	0.25	0.1	0.08	15
TRACE ELEMENTS					
BARIUM (BA) TOTAL	0.06	0.26	0.1	0.04	15
BORON (B) TOTAL	0.014	60.08	4.5	15.42	14
IRON (FE) TOTAL	0.01	0.46	0.1	0.11	15
IRON (FE) DISS	0.01	0.098	0.0	0.02	15
MANGANESE (MN) TOTAL	0.01	0.11	0.1	0.03	15
MANGANESE (MN) DISS	0.01	0.1	0.0	0.03	14

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED. FOR VALUES BELOW THE DETECTION LIMIT, THE DETECTION LIMIT WAS USED IN THE STATISTICAL ANALYSIS.

28-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCO - 047

SAMPLE DATE	10/09/86	06/16/87	08/05/87	10/13/87
LOCATION	PUMPHSE	PUMPHSE	PUMPHSE	PUMPHSE
LOCATION	EFFLNT	EFFLNT	EFFLNT	EFFLNT
PHYSICAL PARAMETERS				
AIR TEMPERATURE (C)	18	27	24	9
FLOW (CFS)	0.06	0.04	0.06	0.06
WATER TEMPERATURE (C)	28.5	28	29	30
SPEC. COND. (UMHOS/CM) FIELD	760	792	853	750
PH (SU) FIELD	8	7.6	7.6	7.8
TURBIDITY (NTU) FIELD	0.17	0.61	0.61	1.2
TOTAL SUSP. SOLIDS				
TOTAL DISS. SOLIDS MEAS.	462	456	504	400
COMMON IONS				
CALCIUM (CA)	91.2	114.4	80.5	84.71
MAGNESIUM (MG)	36.5	23	38.53	37.69
SODIUM (NA)	18.4	19.74	20.42	32
POTASSIUM (K)				
ACIDITY AS CACO3	3.7	12	8	<0.01
ALKALINITY AS CACO3 (LAB)	324	317	298	325
BICARBONATE (HCO3) (LAB)	364.5	387	364	369
HARDNESS (CACO3) TOTAL	380	382	404	368
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	24	<0.01	<0.01	<0.01
SULFATE (SO4)	86	79	74	87
CHLORIDE (CL)	17.1	15.4	15.4	18.8
NUTRIENTS				
NITRATE (NO3-N)	0.04	0.42	0.12	0.19
TOTAL PHOSPHATE (PO4)	0.08	<0.04	<0.04	0.25
TRACE ELEMENTS			6	
BARIUM (BA) TOTAL	0.1	0.09	0.08	0.11
BORON (B) TOTAL	0.13	0.014	0.22	0.11
IRON (FE) TOTAL	0.04	0.06	0.04	0.2
IRON (FE) DISS	<0.01	<0.01	<0.01	<0.01
MANGANESE (MN) TOTAL	0.08	0.08	0.09	0.08
MANGANESE (MN) DISS	0.05	0.09	0.09	0.06

ALALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

28-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCO - 047

SAMPLE DATE	06/22/83	08/16/83	10/12/83	06/20/84	08/09/84	10/11/84	06/13/85	08/14/85	10/09/85	06/04/86	08/13/86
LOCATION	PUMPHSE	PUMPHSE	PUMPHSE	PUMPHSE	PUMPHSE	PUMPHSE	PUMPHSE	PUMPHSE	PUMPHSE	PUMPHSE	PUMPHSE
LOCATION	EFFLNT	EFFLNT	EFFLNT	EFFLNT	EFFLNT	EFFLNT	EFFLNT	EFFLNT	EFFLNT	EFFLNT	EFFLNT
PHYSICAL PARAMETERS											
AIR TEMPERATURE (C)	25	26	16	27	27	11	21	14	3	24	19
FLOW (CFS)	0.05	0.05	0.05	0.07	0.05	0.12		0.06	0.07	0.13	
WATER TEMPERATURE (C)	25	28	27	27	28	25	27	29	27	28	
SPEC. COND. (UMHOS/CM) FIELD	740	740	650	700	840	700	350	830	778	779	751
PH (SU) FIELD	7.4	7.6	7.3	7.25	7.3	7.2	7.4	7.2	6.65	7.4	7.5
TURBIDITY (NTU) FIELD	9	0.4	0.8	1	2.4	7	0.34	0.45	4	0.97	0.21
TOTAL SUSP. SOLIDS											
TOTAL DISS. SOLIDS MEAS.	490	480	440	460	545	560	224	530	524	466	430
COMMON IONS											
CALCIUM (CA)	80	80.8	81.6	120.4	84	94	53.6	87.2	107.4	91.2	88.8
MAGNESIUM (MG)	46.56	38.4	40.8	22.32	51.6	45.6	17.8	37.9	27.98	38.4	39.4
SODIUM (NA)	22	21	14	22.2	76	68	25	120	16	21.57	21.19
POTASSIUM (K)			2.5	3.1			3.5	4			
ACIDITY AS CACO3	8	13	28	63	35.5	19	10.1	54.9	33	4.8	7.4
ALKALINITY AS CACO3 (LAB)	364	338	310	344	380	380	179	322	322	339	320
BICARBONATE (HCO3) (LAB)	422.1	412.4	378.2	419.7	463.6	463.6	218	392.8	394	414	390.4
HARDNESS (CACO3) TOTAL	394	362	374	394	425	425	208	376	385	388	386
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01
SULFATE (SO4)	92	144	76	71	47	90	22	82	69	78	177
CHLORIDE (CL)	22	20	14	15.1	14.9	16	20.5	17.8	20	17.9	26.6
NUTRIENTS											
NITRATE (NO3-N)	<0.02	<0.01	<0.02	0.15	0.17	1.52	0.37	0.02	0.22	<0.01	0.02
TOTAL PHOSPHATE (PO4)	0.2	0.03	0.1	0.17	0.07	0.24	0.01	<0.01	<0.01	0.01	<0.01
TRACE ELEMENTS											
BARIUM (BA) TOTAL	0.09	0.09	0.105	0.08	0.09	0.07	0.06	0.08	0.26	0.11	0.09
BORON (B) TOTAL	0.08	0.08	60.08	0.095	0.156	0.17		0.11	0.26	0.084	1.03
IRON (FE) TOTAL	0.01	0.03	0.11	0.07	0.15	0.11	0.02	0.04	0.12	0.46	0.09
IRON (FE) DISS	0.01	0.03	0.098	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MANGANESE (MN) TOTAL	0.015	0.03	0.03	0.03	0.04	0.06	<0.01	0.06	0.07	0.11	0.11
MANGANESE (MN) DISS	0.015	0.02	0.04	0.01		0.06	<0.01	0.05	0.05	0.1	0.02

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

28-Mar-88 KNW

STATISTICAL SUMMARY OF WATER QUALITY ANALYSES FOR SITE - 047A

	RANGE MIN	RANGE MAX	MEAN	STANDARD DEVIATION	NUMBER OF SAMPLES
PHYSICAL PARAMETERS					
AIR TEMPERATURE (C)	1	32	18.5	8.01	20
FLOW (CFS)	0.09	1	0.3	0.27	20
WATER TEMPERATURE (C)	6	16	13.2	2.29	20
SPEC. COND. (UMHOS/CM) FIELD	600	1870	1153.8	234.65	20
PH (SU) FIELD	6.7	8.65	7.7	0.41	20
TURBIDITY (NTU) FIELD	0.16	100	13.2	22.59	20
TOTAL SUSP. SOLIDS	7	248	74.5	80.74	6
TOTAL DISS. SOLIDS MEAS.	394	1200	744.6	149.04	20
COMMON IONS					
CALCIUM (CA)	44.8	152.8	109.6	28.00	15
MAGNESIUM (MG)	35	119.5	63.2	18.14	15
SODIUM (NA)	32.39	285	67.7	61.93	15
POTASSIUM (K)	2	4.1	3.0	0.78	5
ACIDITY AS CACO3	0.01	50	17.3	13.73	15
ALKALINITY AS CACO3 (LAB)	275	690	360.5	92.84	15
BICARBONATE (HCO3) (LAB)	336	841.8	436.6	114.09	15
HARDNESS (CACO3) TOTAL	279	655	532.3	89.70	15
HYDROXIDE AS OH	0.01	0.01	0.0	0.00	15
CARBONATE AS CO3	0.01	24	1.7	6.18	14
SULFATE (SO4)	76	272	184.2	54.01	15
CHLORIDE (CL)	26.4	90	66.6	17.74	15
NUTRIENTS					
NITRATE (NO3-N)	0.02	4	0.7	0.97	15
TOTAL PHOSPHATE (PO4)	0.01	0.3	0.1	0.09	15
TRACE ELEMENTS					
BARIUM (BA) TOTAL	0.04	0.29	0.1	0.06	15
BORON (B) TOTAL	0.11	0.9	0.2	0.19	14
IRON (FE) TOTAL	0.04	6.54	0.6	1.59	15
IRON (FE) DISS	0.01	0.11	0.0	0.03	15
MANGANESE (MN) TOTAL	0.01	0.17	0.0	0.04	14
MANGANESE (MN) DISS	0.01	0.0723	0.0	0.02	14

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED. FOR VALUES BELOW THE DETECTION LIMIT, THE DETECTION LIMIT WAS USED IN THE STATISTICAL ANALYSIS.

28-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 047A

SAMPLE DATE	04/19/83	05/05/83	05/17/83	06/07/83	06/20/83	07/14/83	08/16/83	10/12/83	06/20/84	08/09/84	10/11/84
LOCATION	E SPR CYN	E SPR CYN	E SPR CYN	E SPR CYN	E SPR CYN	E SPR CYN	E SPR CYN	E SPR CYN	E SPR CYN	E SPR CYN	E SPR CYN
LOCATION	ABV Q CK	ABV Q CK	ABV Q CK	ABV Q CK	ABV Q CK	ABV Q CK	ABV Q CK	ABV Q CK	ABV Q CK	ABV Q CK	ABV Q CK
PHYSICAL PARAMETERS											
AIR TEMPERATURE (C)	14	16	11	22	26	32	26	11	27	27	11
FLOW (CFS)	0.12	0.15	0.84	0.79	0.53	1	0.12	0.11	0.09	0.14	0.16
WATER TEMPERATURE (C)	12	12	6	12	15	16	14	12	15	14	12
SPEC. COND. (UMHOS/CM) FIELD	1396	1230	1305	841	960	1120	1120	1030	1200	1090	1870
PH (SU) FIELD	6.7	7.4	7.7	8.3	7.7	8.2	7.8	7.6	7.4	7.4	7.2
TURBIDITY (NTU) FIELD	28	11	100	18	16	0.5	2.4	1	10	2.8	0.16
TOTAL SUSP. SOLIDS	7	61	248	24		74		33			
TOTAL DISS. SOLIDS MEAS.	796	738	846	522	660	636	804	670	770	720	1200
COMMON IONS											
CALCIUM (CA)					96.8		100	103.2	132.8	130	130
MAGNESIUM (MG)					47.04		60	58.08	53.52	73.2	79.2
SODIUM (NA)					56		57	55	54.1	47.8	285
POTASSIUM (K)								3.1	2.2		
ACIDITY AS CACO3					4		19	26	50	26	15
ALKALINITY AS CACO3 (LAB)					334		336	330	357	410	690
BICARBONATE (HCO3) (LAB)					407.5		409.9	402.6	435.5	500.2	841.8
HARDNESS (CACO3) TOTAL					438		480	500	555	630	655
HYDROXIDE AS OH					<0.01		<0.01	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3					<0.01		<0.01	<0.01	<0.01	<0.01	<0.01
SULFATE (SO4)					127		156	193	190	89	190
CHLORIDE (CL)					40		90	60	80.4	85.4	87
NUTRIENTS											
NITRATE (NO3-N)					<0.02		0.15	0.15	<0.84	0.04	1.09
TOTAL PHOSPHATE (PO4)					0.3		0.14	0.16	0.21	0.07	0.06
TRACE ELEMENTS											
BARIUM (BA) TOTAL					0.08		0.075	0.076	0.09	0.07	0.06
BORON (B) TOTAL					0.2		0.18	0.167	0.15	0.239	0.25
IRON (FE) TOTAL					0.29		0.09	0.13	0.1	0.3	0.23
IRON (FE) DISS					0.02		0.08	0.04	0.07	0.07	0.11
MANGANESE (MN) TOTAL					0.077		0.033	0.03	0.1		0.04
MANGANESE (MN) DISS					0.0723		0.025	0.02	0.04		0.04

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

28-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 047A

SAMPLE DATE	06/12/85	08/14/85	10/09/85	06/04/86	08/13/86	10/09/86	06/16/87	08/05/87	10/13/87
LOCATION	E SPR CYN	E SPR CYN	E SPR CYN	E SPR CYN	E SPR CYN	E SPR CYN	E SPR CYN	E SPR CYN	E SPR CYN
LOCATION	ABV Q CK	ABV Q CK	ABV Q CK	ABV Q CK	ABV Q CK	ABV Q CK	ABV Q CK	ABV Q CK	ABV Q CK
PHYSICAL PARAMETERS									
AIR TEMPERATURE (C)	23	14	1	21	19	9	27	24	9
FLOW (CFS)	0.12	0.1	0.15	0.14	0.13	0.29	0.11	0.11	0.16
WATER TEMPERATURE (C)	14	13	10	14	14	12	16	16	14
SPEC. COND. (UMHOS/CM) FIELD	600	1300	1200	1212	1105	1146	1101	1150	1100
PH (SU) FIELD	8.05	7.65	8.65	7.6	7.7	8	7.6	7.6	8
TURBIDITY (NTU) FIELD	42.4	0.79	6	1.32	1.29	2	15.62	2.5	2.6
TOTAL SUSP. SOLIDS									
TOTAL DISS. SOLIDS MEAS.	394	850	826	796	740	752	712	740	720
COMMON IONS									
CALCIUM (CA)	53.2	44.8	152.8	123.2	119.2	114.4	132	102.8	108.1
MAGNESIUM (MG)	35	119.5	57.98	66.2	65.8	61.4	50.8	58.5	61.33
SODIUM (NA)	63	125	36	41.3	37.82	36	32.39	38.34	50.4
POTASSIUM (K)	4.1	3.4	2						
ACIDITY AS CACO3	8.8	36.9	31	4.8	5	5	14	14	<0.01
ALKALINITY AS CACO3 (LAB)	275	332	324	360	350	354	321	294	340
BICARBONATE (HCO3) (LAB)	336	405	395	439	427	383.1	392	359	415
HARDNESS (CACO3) TOTAL	279	610	623	484	572	542	542	550	524
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	<0.01	<0.01	<0.01		<0.01	24	<0.01	<0.01	<0.01
SULFATE (SO4)	76	271	272	220	198	219	181	171	210
CHLORIDE (CL)	26.4	89.5	68	66.3	65.1	66.5	53	55.1	66
NUTRIENTS									
NITRATE (NO3-N)	0.08	1.23	0.3	0.26	0.92	0.19	0.24	4	0.43
TOTAL PHOSPHATE (PO4)	0.06	<0.01	<0.01	<0.01	0.03	0.04	<0.04	<0.04	0.26
TRACE ELEMENTS									
BARIUM (BA) TOTAL	0.11	0.05	0.29	0.06	0.06	0.06	0.04	0.05	0.1
BORON (B) TOTAL		0.16	0.29	0.158	0.9	0.11	0.17	0.28	0.13
IRON (FE) TOTAL	0.24	0.08	0.11	0.06	0.22	0.18	0.32	0.04	6.54
IRON (FE) DISS	0.03	0.04	0.05	0.04	<0.01	0.08	<0.01	<0.01	<0.01
MANGANESE (MN) TOTAL	0.06	0.03	0.03	0.02	0.04	0.03	<0.01	0.02	0.17
MANGANESE (MN) DISS	0.03	0.03	0.02	<0.01	<0.01	<0.01	<0.01	0.02	0.02

ALALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

28-Mar-88 KWW

STATISTICAL SUMMARY OF WATER QUALITY ANALYSES FOR SITE - 057A

	RANGE MIN	RANGE MAX	MEAN	STANDARD DEVIATION	NUMBER OF SAMPLES
PHYSICAL PARAMETERS					
AIR TEMPERATURE (C)	13	20	16.5	3.50	2
FLOW (CFS)	ERR	ERR	ERR	ERR	0
WATER TEMPERATURE (C)	5	21	13.0	8.00	2
SPEC. COND. (UMHOS/CM) FIELD	580	667	623.5	43.50	2
PH (SU) FIELD	7.6	7.95	7.8	0.17	2
TURBIDITY (NTU) FIELD	2.6	20.3	11.5	8.85	2
TOTAL SUSP. SOLIDS	ERR	ERR	ERR	ERR	0
TOTAL DISS. SOLIDS MEAS.	376	408	392.0	16.00	2
COMMON IONS					
CALCIUM (CA)	97.03	105.37	101.2	4.17	2
MAGNESIUM (MG)	16.46	16.86	16.7	0.20	2
SODIUM (NA)	9.15	9.38	9.3	0.11	2
POTASSIUM (K)	ERR	ERR	ERR	ERR	0
ACIDITY AS CACO3	0.01	1	0.5	0.50	2
ALKALINITY AS CACO3 (LAB)	277	285	281.0	4.00	2
BICARBONATE (HCO3) (LAB)	338	348	343.0	5.00	2
HARDNESS (CACO3) TOTAL	310	333	321.5	11.50	2
HYDROXIDE AS OH	0.01	0.01	0.0	0.00	2
CARBONATE AS CO3	0.01	0.01	0.0	0.00	2
SULFATE (SO4)	11	49	30.0	19.00	2
CHLORIDE (CL)	19	20.7	19.9	0.85	2
NUTRIENTS					
NITRATE (NO3-N)	0.06	0.25	0.2	0.10	2
TOTAL PHOSPHATE (PO4)	0.04	0.11	0.1	0.04	2
TRACE ELEMENTS					
BARIUM (BA) TOTAL	0.14	0.17	0.2	0.01	2
BORON (B) TOTAL	0.05	0.11	0.1	0.03	2
IRON (FE) TOTAL	0.23	0.32	0.3	0.04	2
IRON (FE) DISS	0.01	0.02	0.0	0.00	2
MANGANESE (MN) TOTAL	0.09	0.12	0.1	0.02	2
MANGANESE (MN) DISS	0.04	10.11	5.7	4.21	3

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED. FOR VALUES BELOW THE DETECTION LIMIT, THE DETECTION LIMIT WAS USED IN THE STATISTICAL ANALYSIS.

28-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCO - 057A

SAMPLE DATE	08/12/87	10/28/87
LOCATION	SPR HEAD OF	SPR HEAD OF
LOCATION	DNCN DRW	DNCN DRW
PHYSICAL PARAMETERS		
AIR TEMPERATURE (C)	20	13
FLOW (CFS)		
WATER TEMPERATURE (C)	21	5
SPEC. COND. (UMHOS/CM) FIELD	667	580
PH (SU) FIELD	7.6	7.95
TURBIDITY (NTU) FIELD	20.3	2.6
TOTAL SUSP. SOLIDS		
TOTAL DISS. SOLIDS MEAS.	408	376
COMMON IONS		
CALCIUM (CA)	97.03	105.37
MAGNESIUM (MG)	16.46	16.86
SODIUM (NA)	9.15	9.38
POTASSIUM (K)		
ACIDITY AS CACO3	1	<0.01
ALKALINITY AS CACO3 (LAB)	285	277
BICARBONATE (HCO3) (LAB)	348	338
HARDNESS (CACO3) TOTAL	310	333
HYDROXIDE AS OH	<0.01	<0.01
CARBONATE AS CO3	<0.01	<0.01
SULFATE (SO4)	11	49
CHLORIDE (CL)	19	20.7
NUTRIENTS		
NITRATE (NO3-N)	0.06	0.25
TOTAL PHOSPHATE (PO4)	0.11	<0.04
TRACE ELEMENTS		
BARIUM (BA) TOTAL	0.14	0.17
BORON (B) TOTAL	0.11	0.05
IRON (FE) TOTAL	0.32	0.23
IRON (FE) DISS	<0.01	0.02
MANGANESE (MN) TOTAL	0.12	0.09
MANGANESE (MN) DISS	10.11	0.04

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWIS

28-Mar-88 KWW

STATISTICAL SUMMARY OF WATER QUALITY ANALYSES FOR SITE - 062

	RANGE MIN	RANGE MAX	MEAN	STANDARD DEVIATION	NUMBER OF SAMPLES
PHYSICAL PARAMETERS					
AIR TEMPERATURE (C)	10	11	10.5	0.50	2
FLOW (CFS)	0.0008	0.0008	0.0	ERR	1
WATER TEMPERATURE (C)	9	11	10.1	0.61	6
SPEC. COND. (UMHOS/CM) FIELD	350	940	578.1	124.37	15
PH (SU) FIELD	7.3	8.2	7.6	0.25	15
TURBIDITY (NTU) FIELD	0.01	2.8	0.8	0.85	14
TOTAL SUSP. SOLIDS	ERR	ERR	ERR	ERR	0
TOTAL DISS. SOLIDS MEAS.	222	610	361.0	77.79	15
COMMON IONS					
CALCIUM (CA)	51.6	116	77.5	14.39	15
MAGNESIUM (MG)	12	38.4	27.1	7.06	15
SODIUM (NA)	3.5	69	14.4	17.21	15
POTASSIUM (K)	2	4.1	2.8	0.71	5
ACIDITY AS CACO3	0.01	54	14.8	13.59	15
ALKALINITY AS CACO3 (LAB)	192	340	254.2	30.04	15
BICARBONATE (HCO3) (LAB)	234	414.8	310.0	36.68	15
HARDNESS (CACO3) TOTAL	192	355	305.2	39.71	15
HYDROXIDE AS OH	0.01	0.01	0.0	0.00	15
CARBONATE AS CO3	0.01	0.01	0.0	0.00	14
SULFATE (SO4)	22	93	60.7	16.72	15
CHLORIDE (CL)	6	16.3	9.6	2.75	15
NUTRIENTS					
NITRATE (NO3-N)	0.02	1.45	0.2	0.35	15
TOTAL PHOSPHATE (PO4)	0.01	1.65	0.2	0.40	15
TRACE ELEMENTS					
BARIUM (BA) TOTAL	0.036	0.39	0.1	0.08	15
BORON (B) TOTAL	0.03	0.82	0.1	0.20	14
IRON (FE) TOTAL	0.01	1.54	0.2	0.45	15
IRON (FE) DISS	0.009	0.03	0.0	0.01	15
MANGANESE (MN) TOTAL	0.01	0.57	0.1	0.14	15
MANGANESE (MN) DISS	0.01	0.05	0.0	0.02	14

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED. FOR VALUES BELOW THE DETECTION LIMIT, THE DETECTION LIMIT WAS USED IN THE STATISTICAL ANALYSIS.

28-Mar-88 KWW

SUMMARY OF WATER QUALITY
ANALYSES SUFCD - 062

SAMPLE DATE	06/22/83	08/31/83	10/12/83	06/20/84	08/08/84	10/10/84	06/13/85	08/14/85	10/22/85	06/05/86	08/12/86
LOCATION	UG N.MN	UG N.MN	UG N.MN	UG N.MN	UG N.MN	UG N.MN	UG N.MN	UG N.MN	UG N.MN	UG N.MN	UG N.MN
LOCATION	#6 ENTRY	#6 ENTRY	#6 ENTRY	#6 ENTRY	#6 ENTRY	#6 ENTRY	#6 ENTRY	#6 ENTRY	#6 ENTRY	#6 ENTRY	#6 ENTRY
PHYSICAL PARAMETERS											
AIR TEMPERATURE (C)			11							10	
FLOW (CFS)										0.0008	
WATER TEMPERATURE (C)	10	10	9							10	
SPEC. COND. (UMHOS/CM) FIELD	525	520	480	500	940	495	350	582	637	626	606
PH (SU) FIELD	7.3	7.3	7.5	7.3	7.4	7.3	8.2	7.85	7.75	7.75	7.8
TURBIDITY (NTU) FIELD	2.8	1	0.5	1	2.6	0.17		0.25	0.16	0.32	<0.01
TOTAL SUSP. SOLIDS											
TOTAL DISS. SOLIDS MEAS.	309	336	312	330	610	350	222	379	374	388	378
COMMON IONS											
CALCIUM (CA)	68.8	68.8	71.2	77.2	116	74	51.6	77.6	88.4	80	84
MAGNESIUM (MG)	25.92	27.36	26.88	27.36	12	38.4	15.1	28.8	32.2	33.1	32.2
SODIUM (NA)	7	12	3.5	7.2	69	7.5	24	40	6.3	7.37	8.3
POTASSIUM (K)		4.1	2	2.4			2.8	2.9			
ACIDITY AS CACO3	5	18	31	54	22	15	6.9	18	23.8	4.8	5
ALKALINITY AS CACO3 (LAB)	272	250	230	261	340	250	192	248	268	267	266
BICARBONATE (HCO3) (LAB)	331.8	305	280.6	318.4	414.8	305	234	302.6	327	326	324.5
HARDNESS (CACO3) TOTAL	280	286	290	307	340	345	192	314	355	338	334
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01
SULFATE (SO4)	56	54	55	46	52	52	22	78	80	79	68
CHLORIDE (CL)	14	10	6	8	8.3	9	6.9	9.8	8.8	13.5	7.1
NUTRIENTS											
NITRATE (NO3-N)	<0.02	<0.02	<0.02	0.03	0.05	1.45	0.26	0.02	0.02	0.04	0.03
TOTAL PHOSPHATE (PO4)	0.2	0.19	0.02	0.05	0.07	0.34	1.65	<0.01	<0.01	0.02	0.03
TRACE ELEMENTS											
BARIUM (BA) TOTAL	0.07	0.036	0.088	0.09	0.08	0.06	0.39	0.06	0.05	0.07	0.07
BORON (B) TOTAL	0.03	0.032	0.11	0.1	0.081	0.1		0.04	0.046	0.04	0.82
IRON (FE) TOTAL	0.026	0.01	0.01	0.04	1.54	0.12	1.14	0.09	0.09	<0.01	0.02
IRON (FE) DISS	0.011	0.01	0.009	<0.01	0.01	<0.01	0.03	<0.01	0.02	<0.01	<0.01
MANGANESE (MN) TOTAL	0.015	0.05	0.04	0.06	0.12	0.03	0.57	<0.01	0.02	<0.01	<0.01
MANGANESE (MN) DISS	0.01	0.05	0.05	0.05		<0.01	<0.01	0.02	<0.01	<0.01	<0.01

ALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

28-Mar-88 KWW

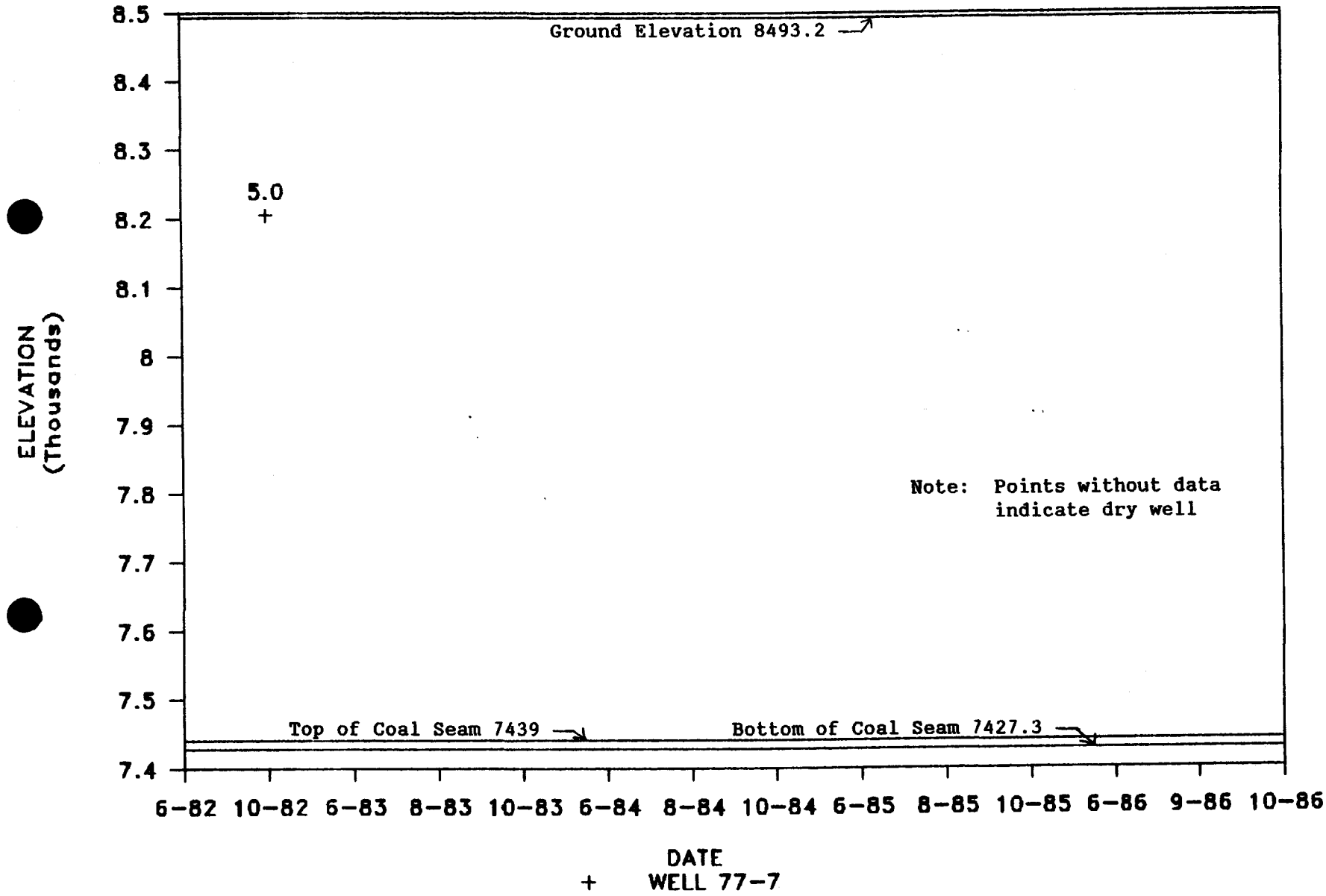
SUMMARY OF WATER QUALITY
ANALYSES SUFCO - 062

SAMPLE DATE	10/10/86	06/18/87	08/05/87	10/28/87
LOCATION	UG N.MN	UG N.MN	UG N.MN	UG N.MN
LOCATION	#6 ENTRY	#6 ENTRY	#6 ENTRY	#6 ENTRY
PHYSICAL PARAMETERS				
AIR TEMPERATURE (C)				
FLOW (CFS)				
WATER TEMPERATURE (C)	10.5			11
SPEC. COND. (UMHOS/CM) FIELD	581	588	691	550
PH (SU) FIELD	7.6	7.6	7.6	7.8
TURBIDITY (NTU) FIELD	0.02	1.18	0.71	0.5
TOTAL SUSP. SOLIDS				
TOTAL DISS. SOLIDS MEAS.	338	358	382	349
COMMON IONS				
CALCIUM (CA)	68	96	74.68	65.65
MAGNESIUM (MG)	31.7	16.8	26.18	32.32
SODIUM (NA)	5.7	6.44	6.66	5.26
POTASSIUM (K)				
ACIDITY AS CACO3	3.8	6	8	<0.01
ALKALINITY AS CACO3 (LAB)	234	239	242	254
BICARBONATE (HCO3) (LAB)	285.5	292	295	308
HARDNESS (CACO3) TOTAL	302	310	324	261
HYDROXIDE AS OH	<0.01	<0.01	<0.01	<0.01
CARBONATE AS CO3	<0.01	<0.01	<0.01	<0.01
SULFATE (SO4)	66	59	51	93
CHLORIDE (CL)	16.3	8.6	9.1	8.6
NUTRIENTS				
NITRATE (NO3-N)	0.09	0.08	0.29	0.3
TOTAL PHOSPHATE (PO4)	0.11	<0.04	<0.04	<0.04
TRACE ELEMENTS				
BARIUM (BA) TOTAL	0.07	0.06	0.06	0.06
BORON (B) TOTAL	0.05	0.087	0.11	0.04
IRON (FE) TOTAL	<0.01	0.1	<0.01	0.02
IRON (FE) DISS	<0.01	<0.01	<0.01	<0.01
MANGANESE (MN) TOTAL	<0.01	<0.01	<0.01	<0.01
MANGANESE (MN) DISS	<0.01	<0.01	<0.01	<0.01

ALALL QUANTITIES IN MILLIGRAMS PER LITER UNLESS OTHERWISE NOTED.

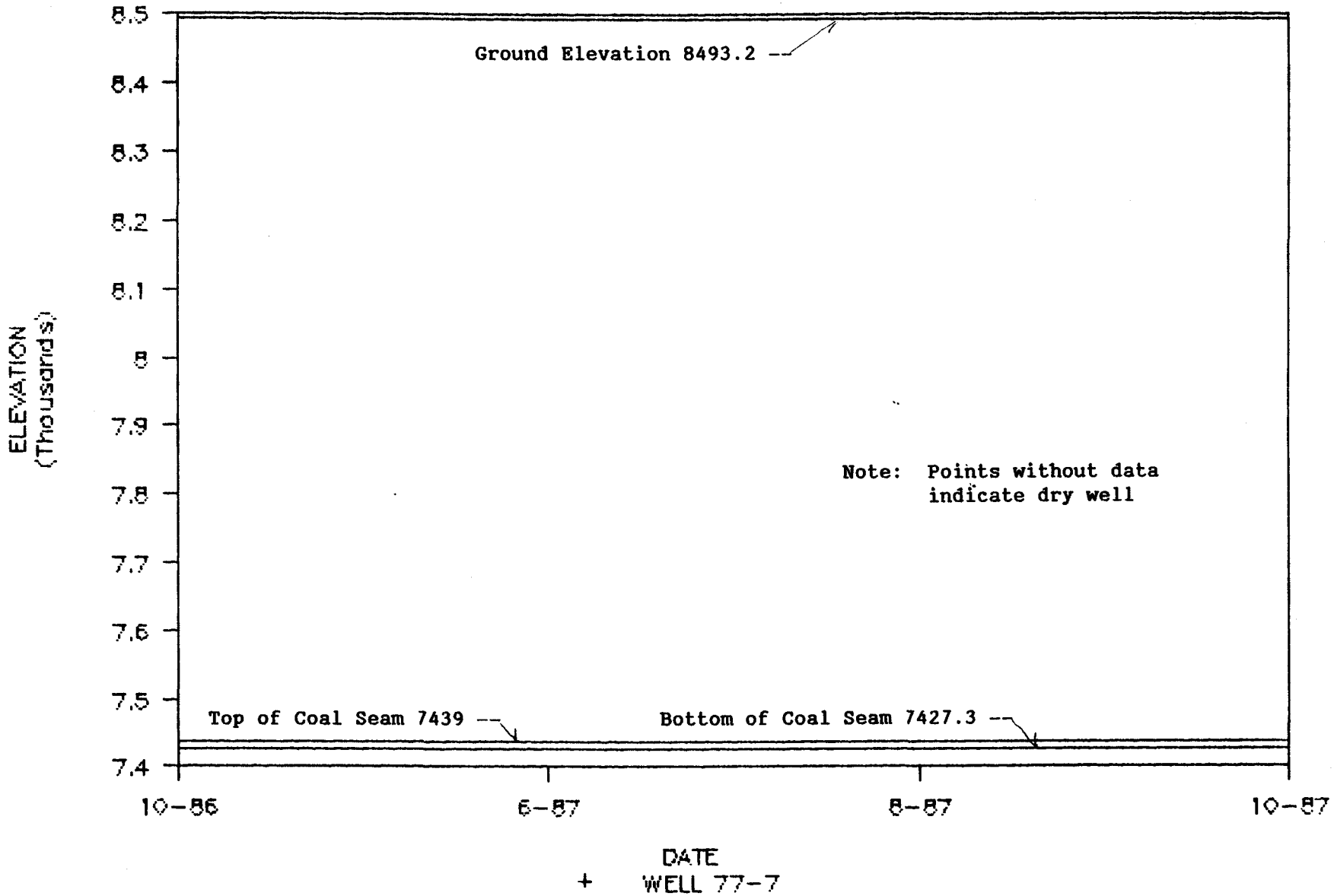
WATER WELL LEVEL 1982 - 1986

Well 77-7



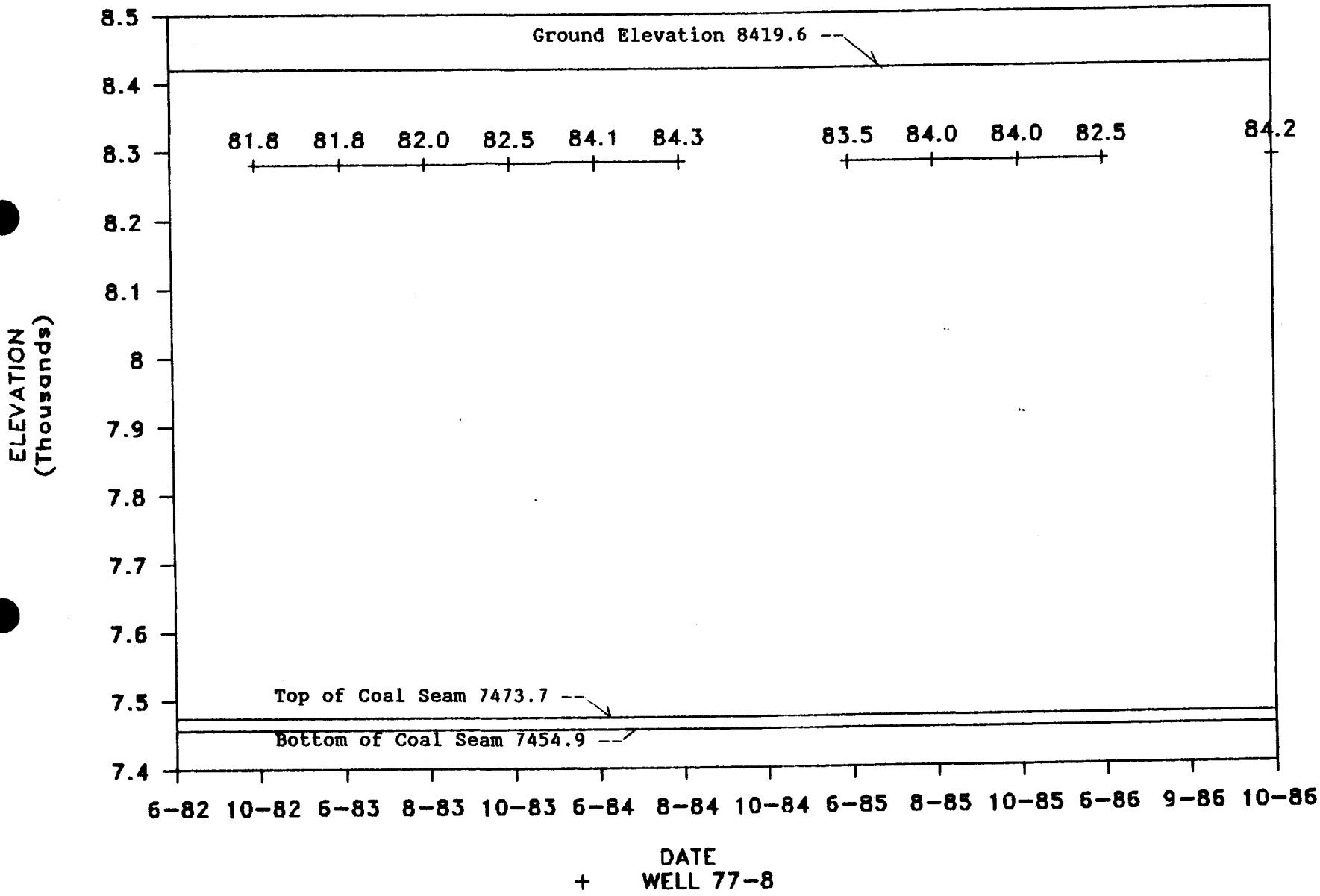
WATER WELL LEVEL 1987 —

Well 77-7



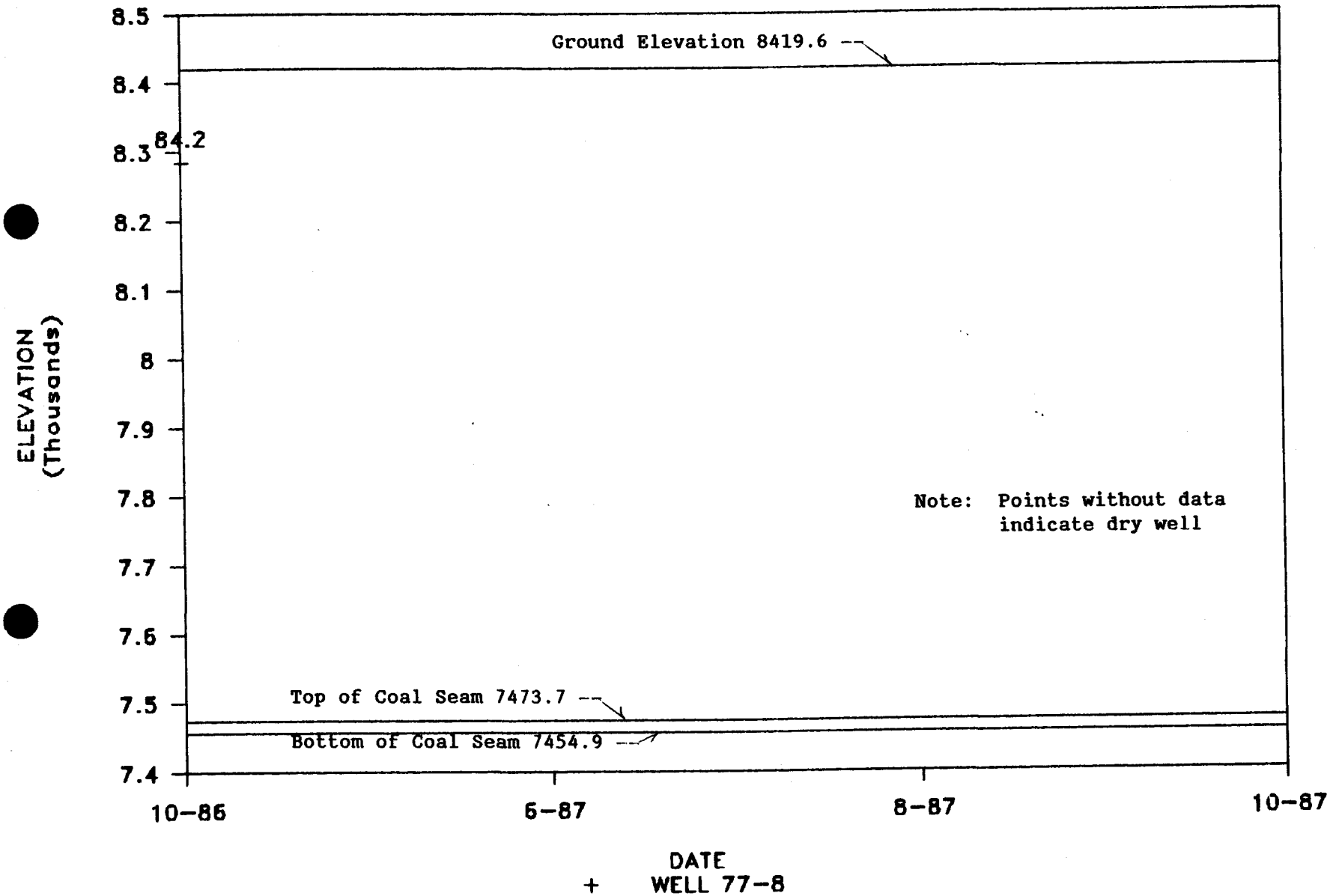
WATER WELL LEVEL 1982 - 1986

Well 77-8

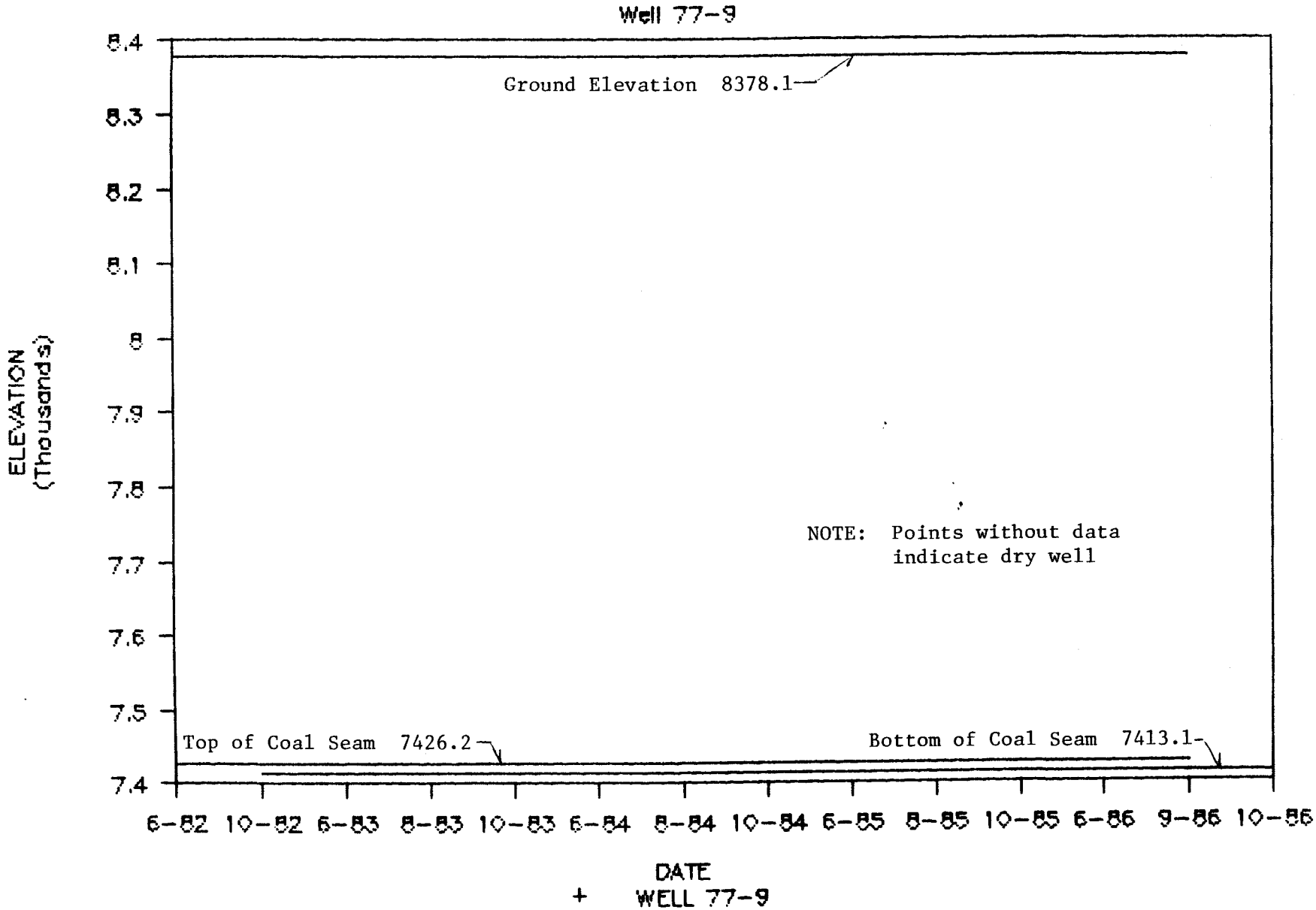


WATER WELL LEVEL 1987 -

Well 77-8

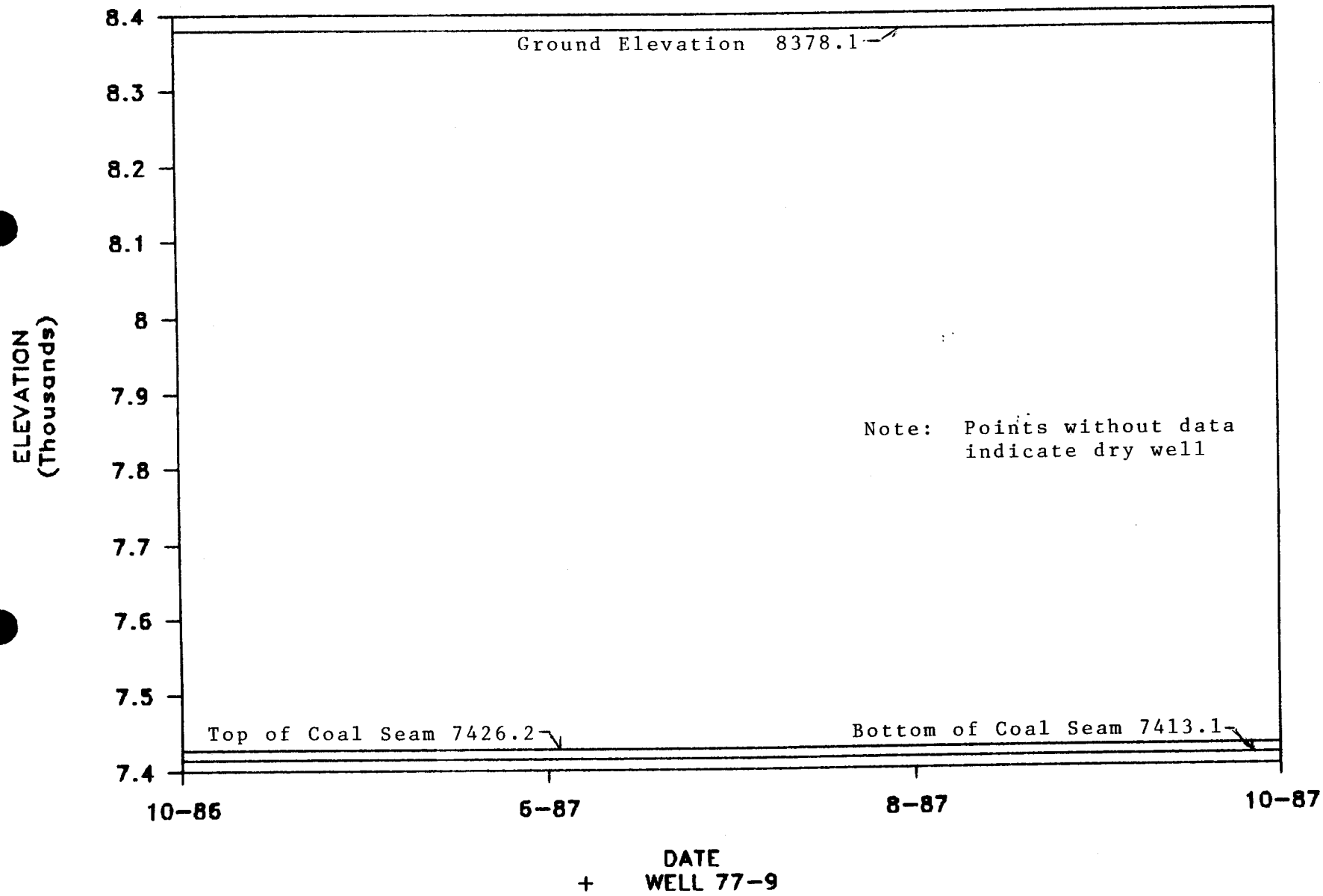


WATER WELL LEVEL 1982 — 1986



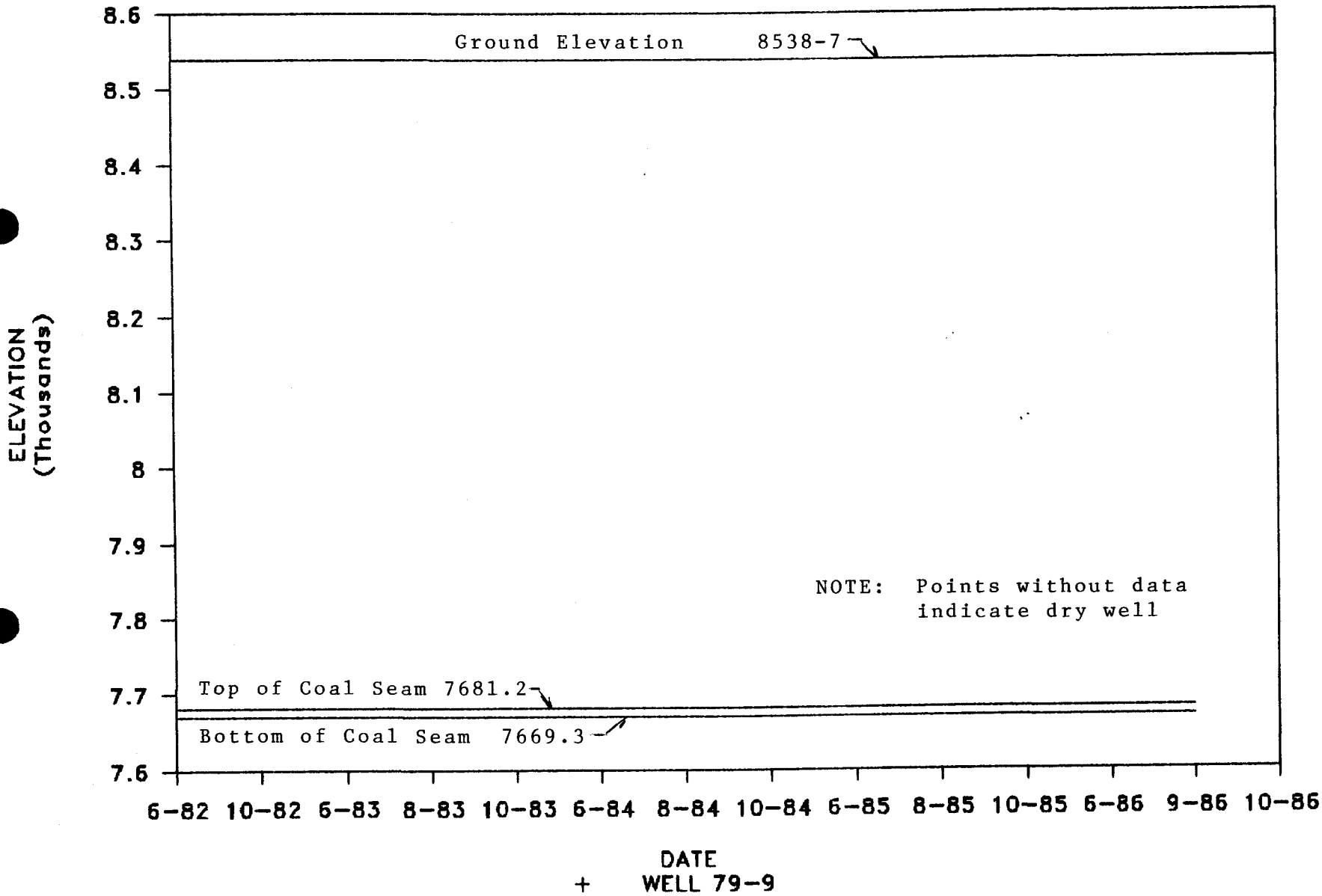
WATER WELL LEVEL 1987 -

Well 77-9



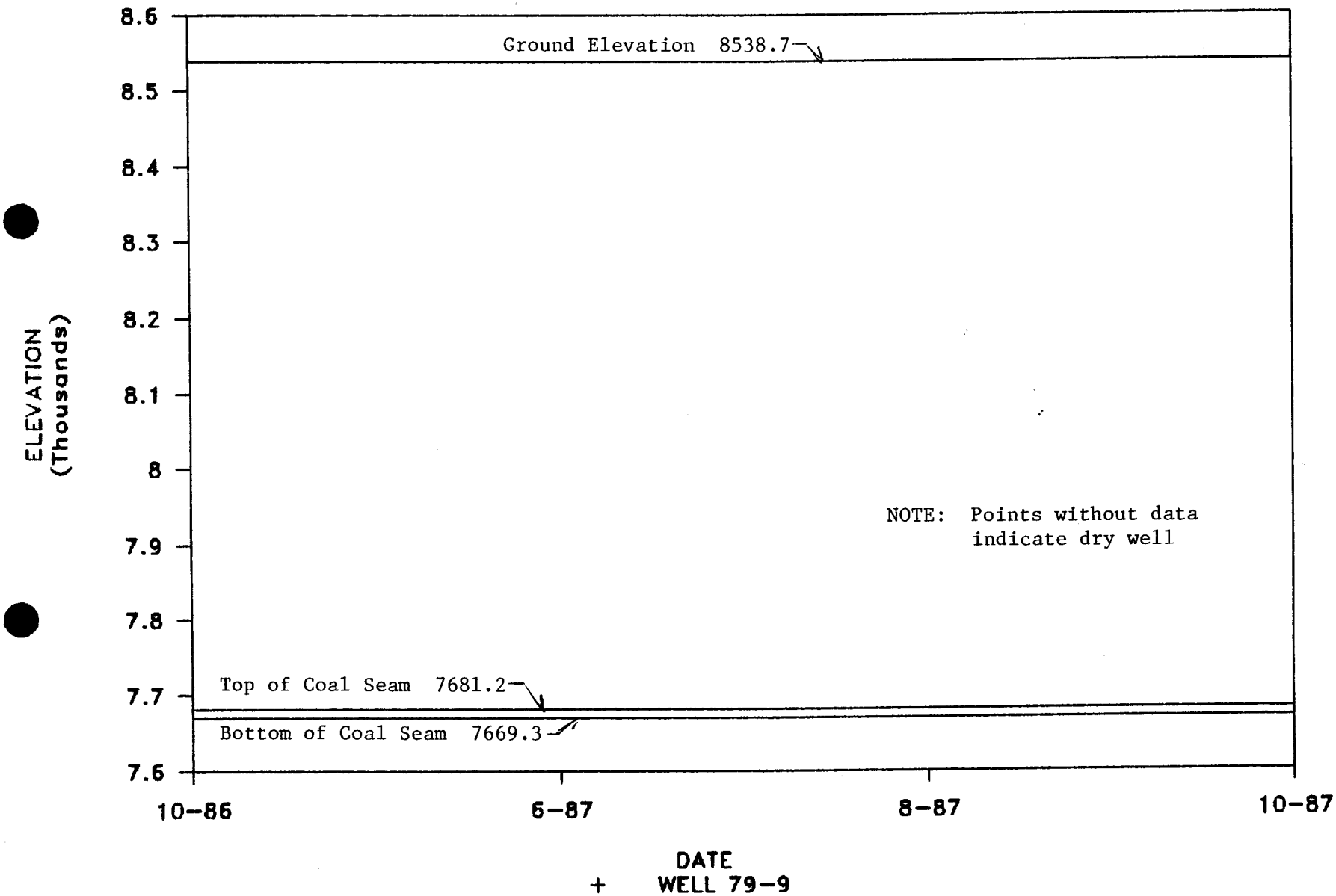
WATER WELL LEVEL 1982 - 1986

Well 79-9



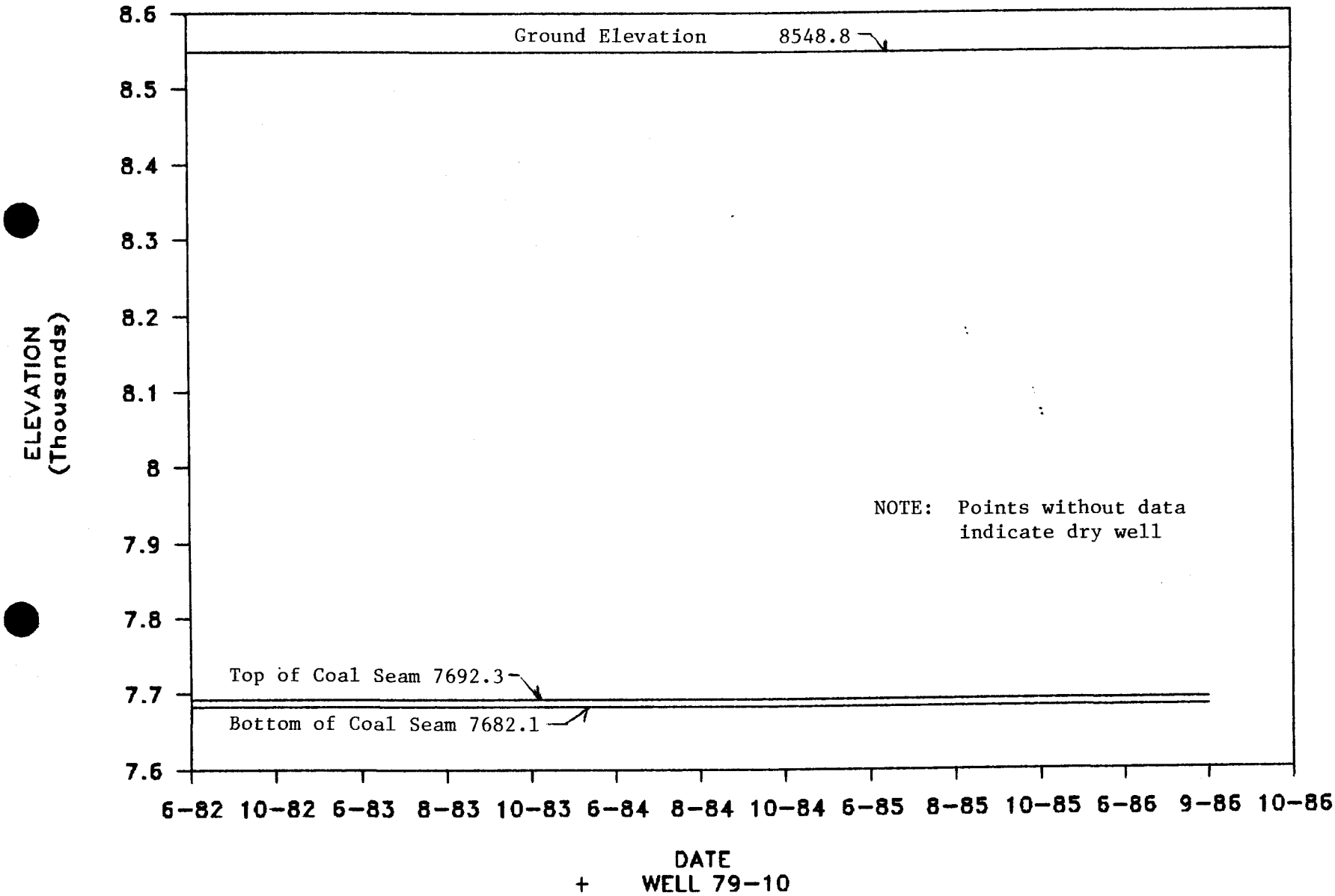
WATER WELL LEVEL 1987-

Well 79-9



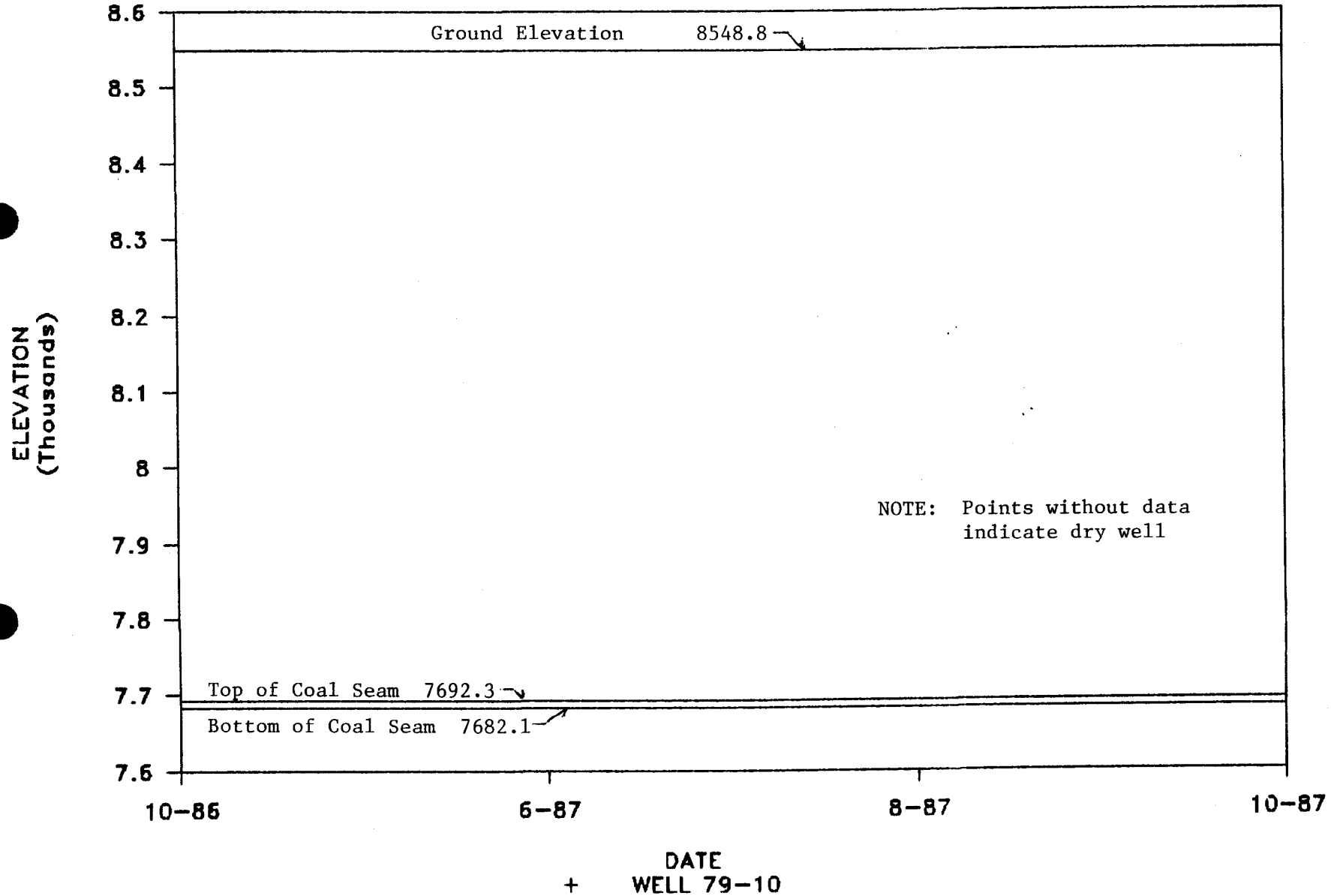
WATER WELL LEVEL 1982 - 1986

Well 79-10



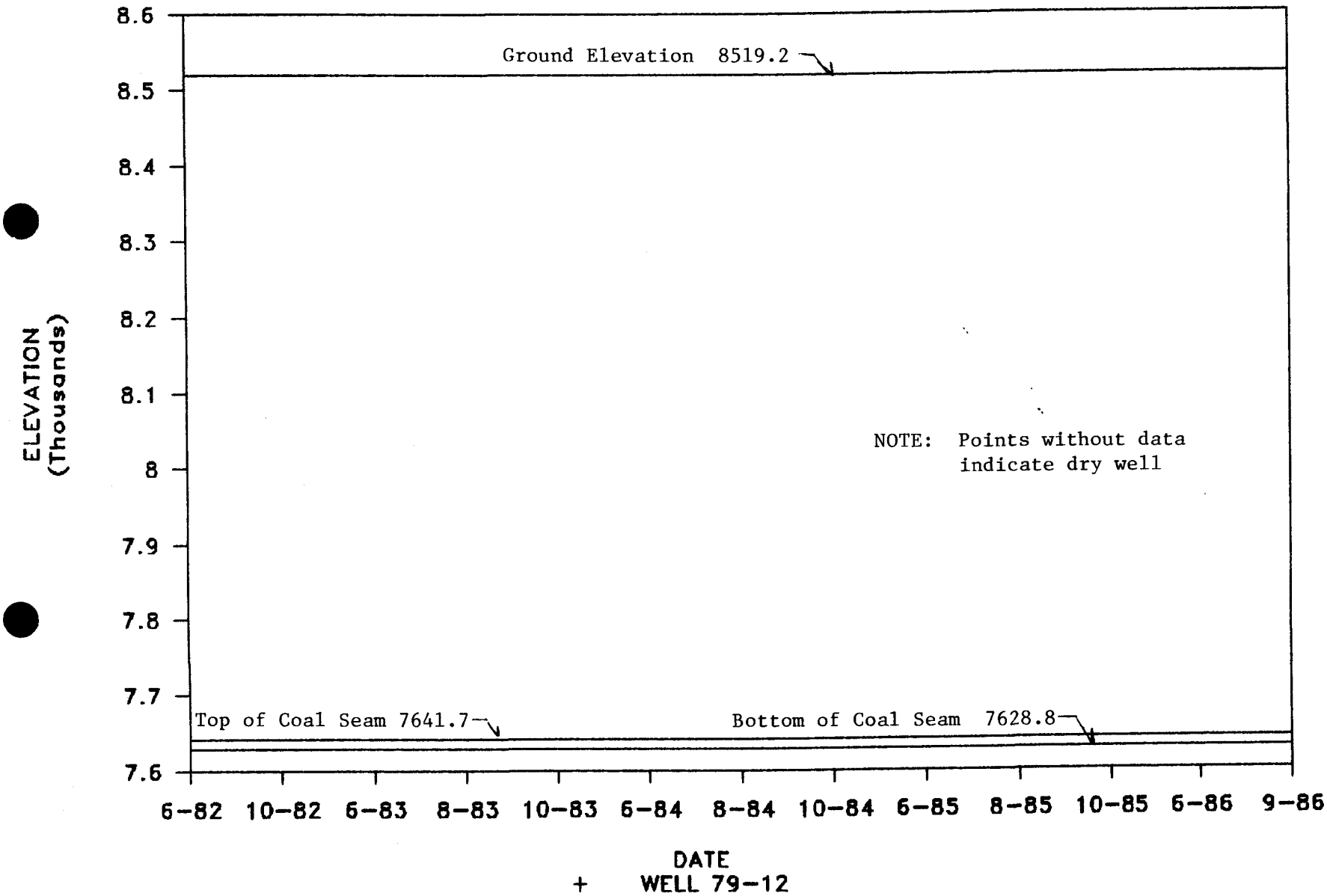
WATER WELL LEVEL 1987-

Well 79-10



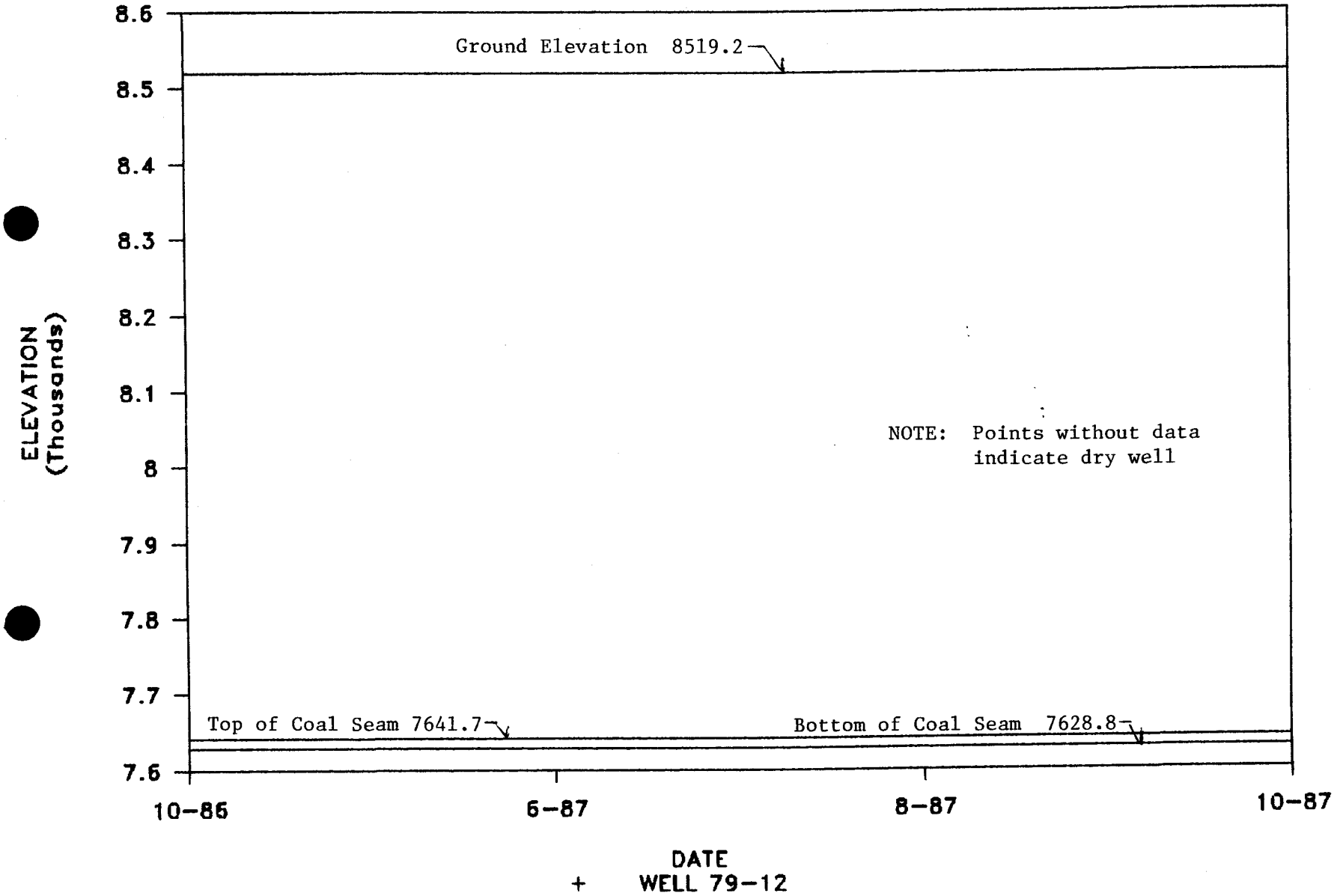
WATER WELL LEVEL 1982 - 1986

Well 79-12



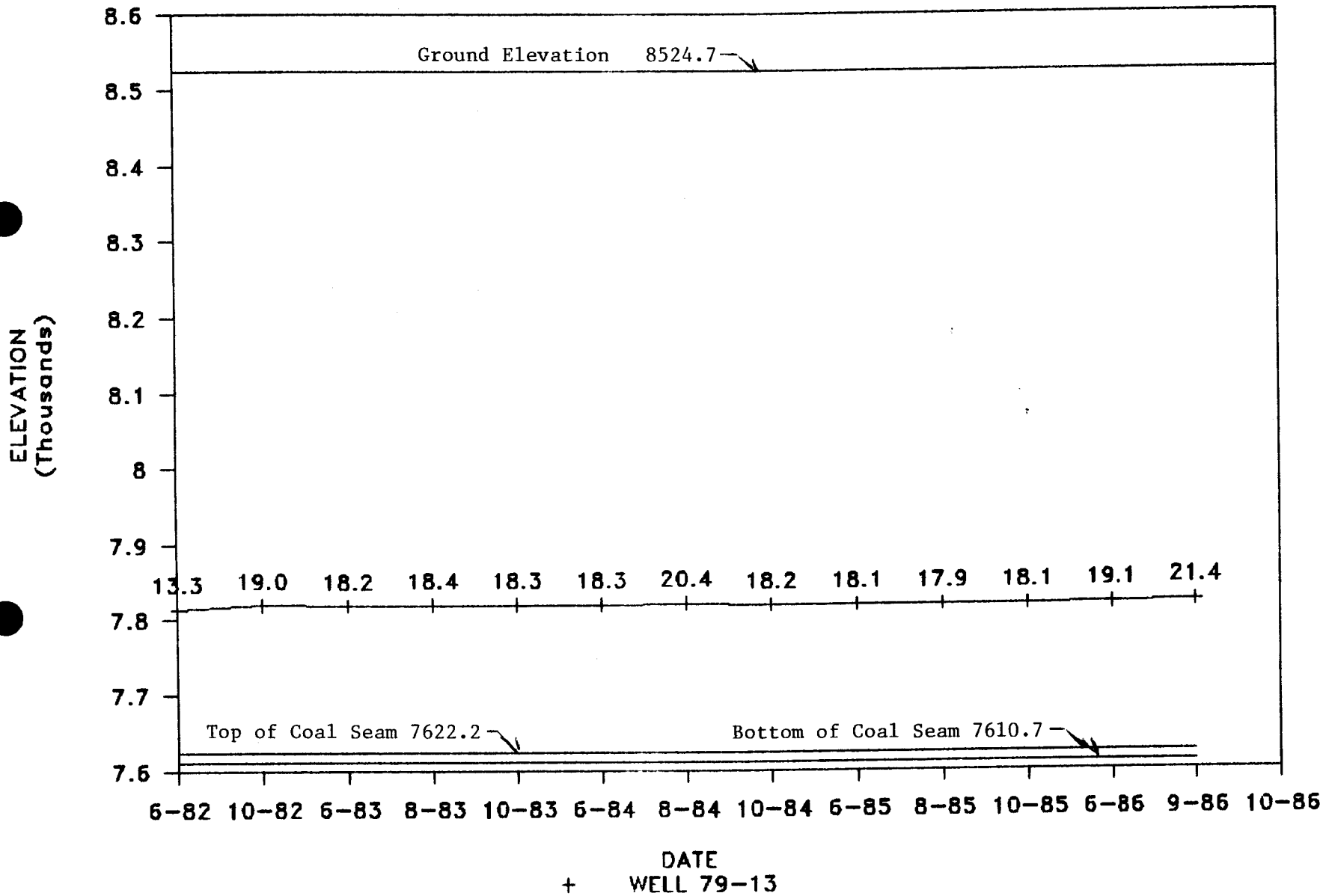
WATER WELL LEVEL 1987-

Well 79-12



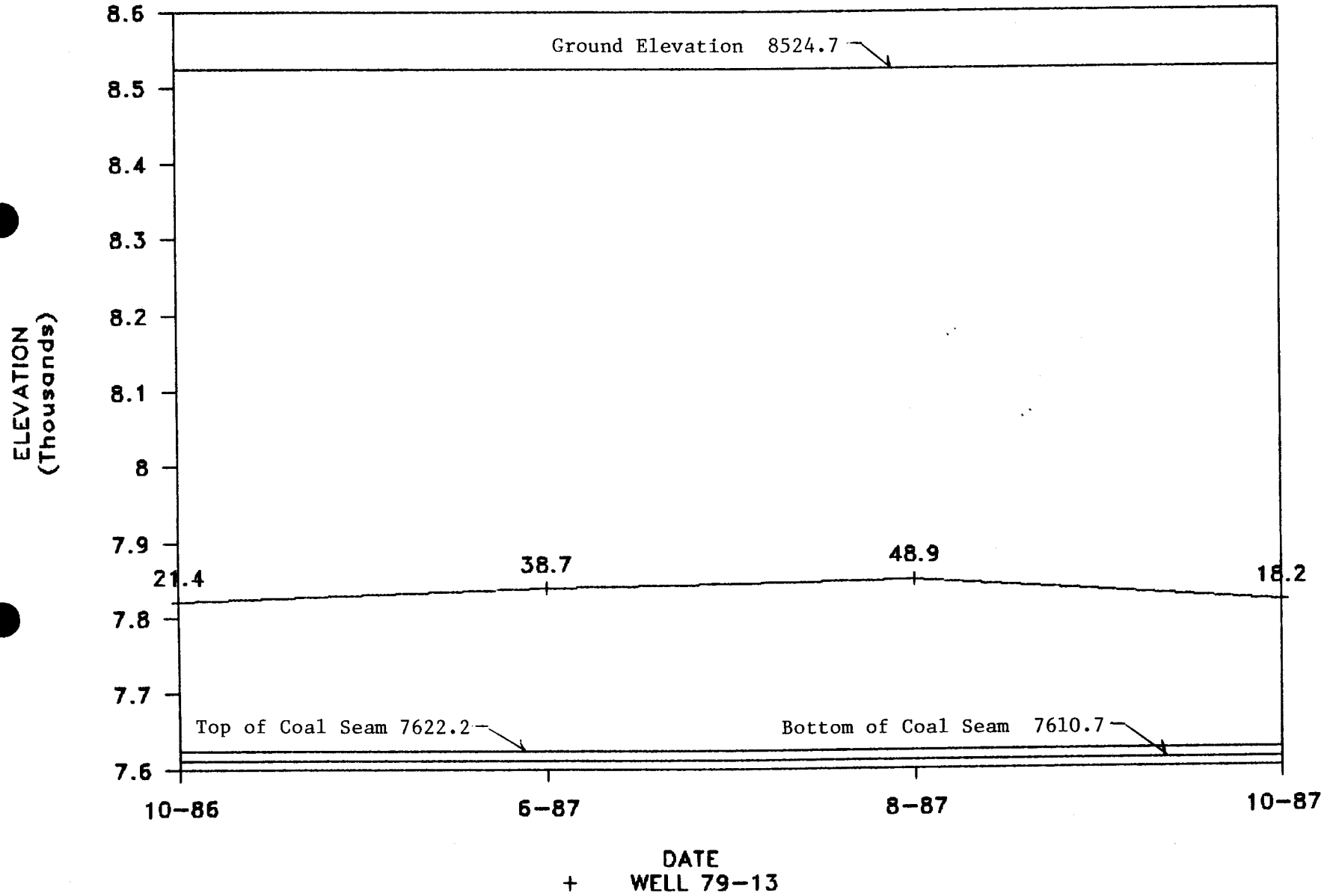
WATER WELL LEVEL 1982 - 1986

Well 79-13

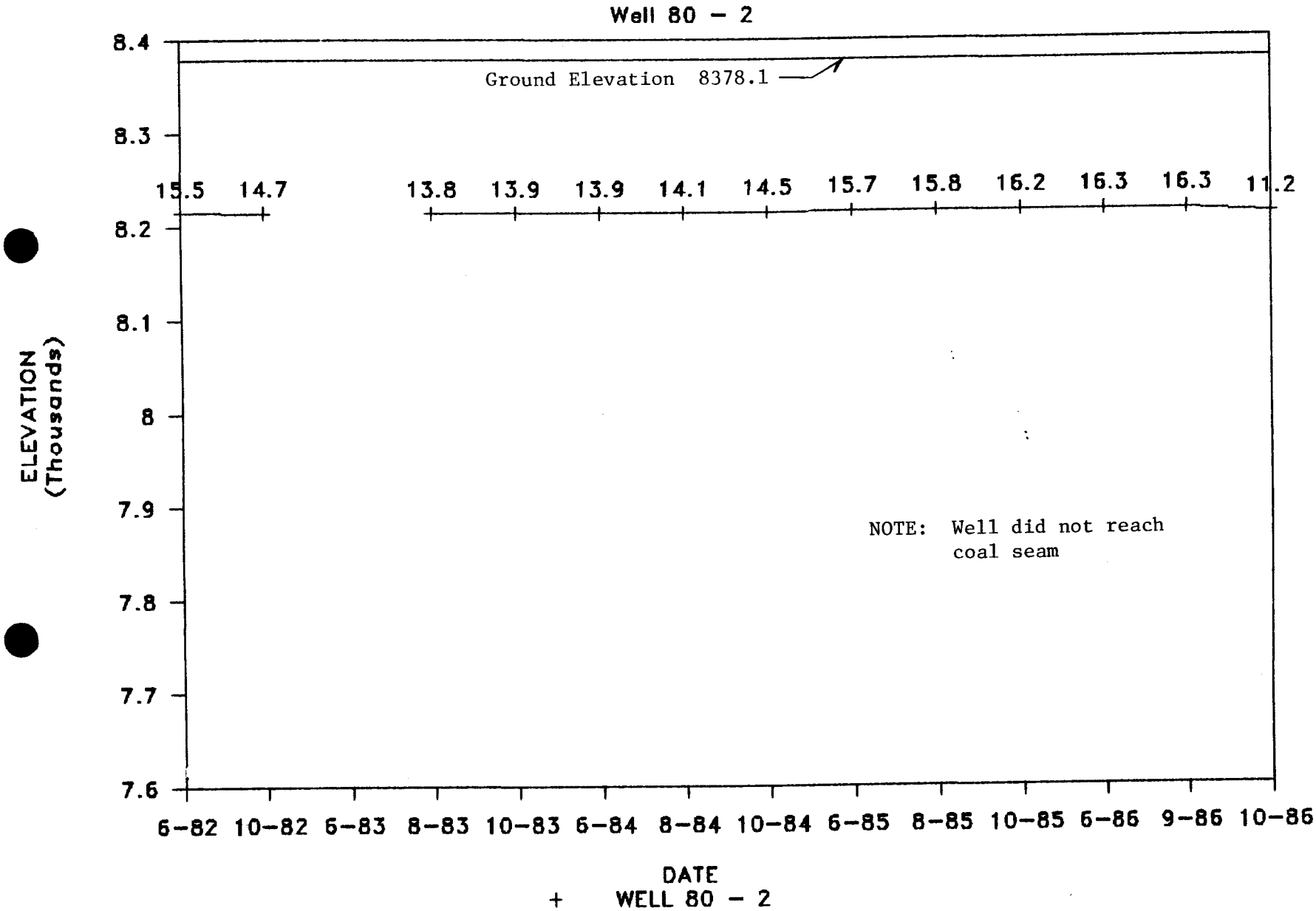


WATER WELL LEVEL 1987-

Well 79-13

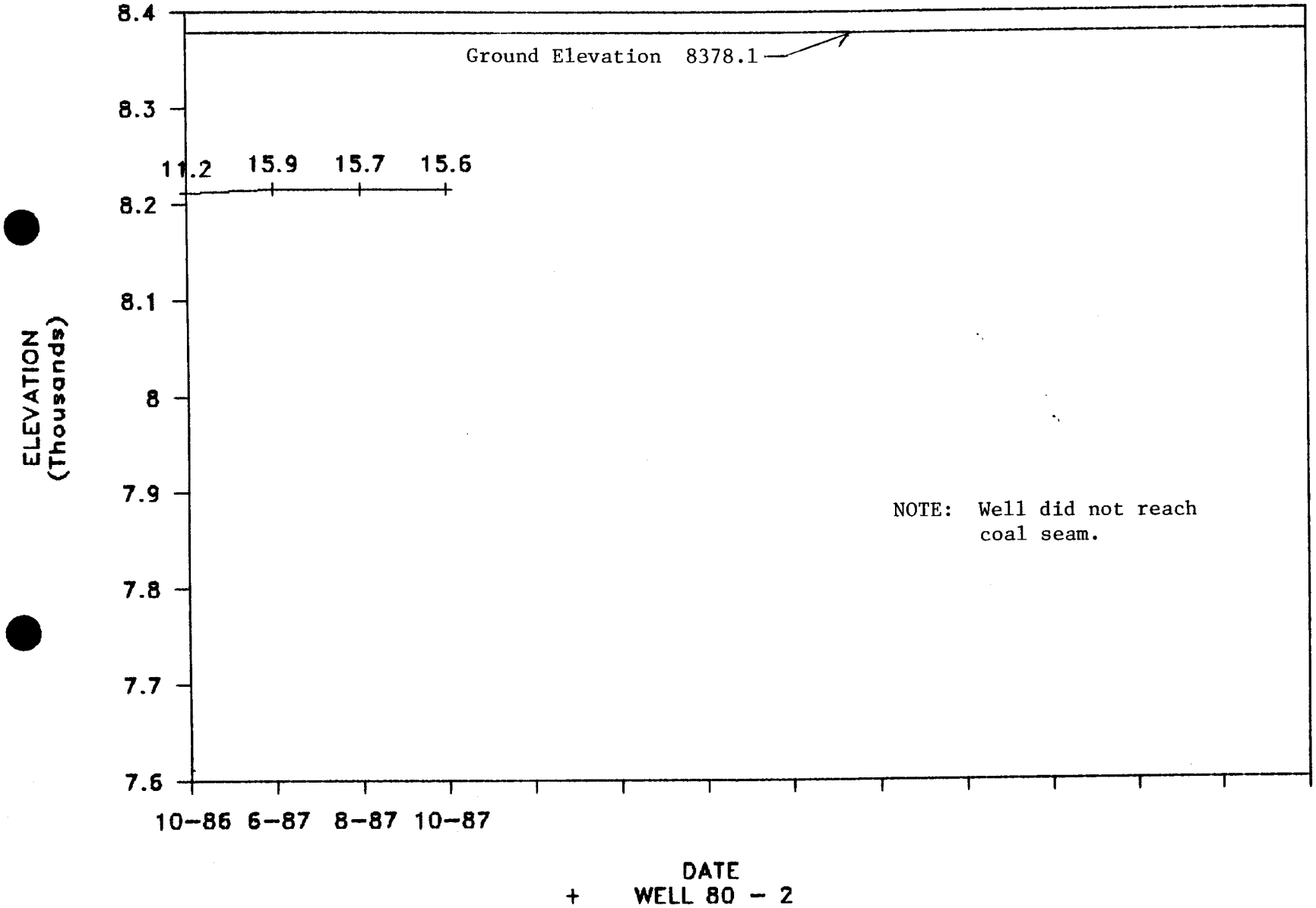


WATER WELL LEVEL 1982 - 1986

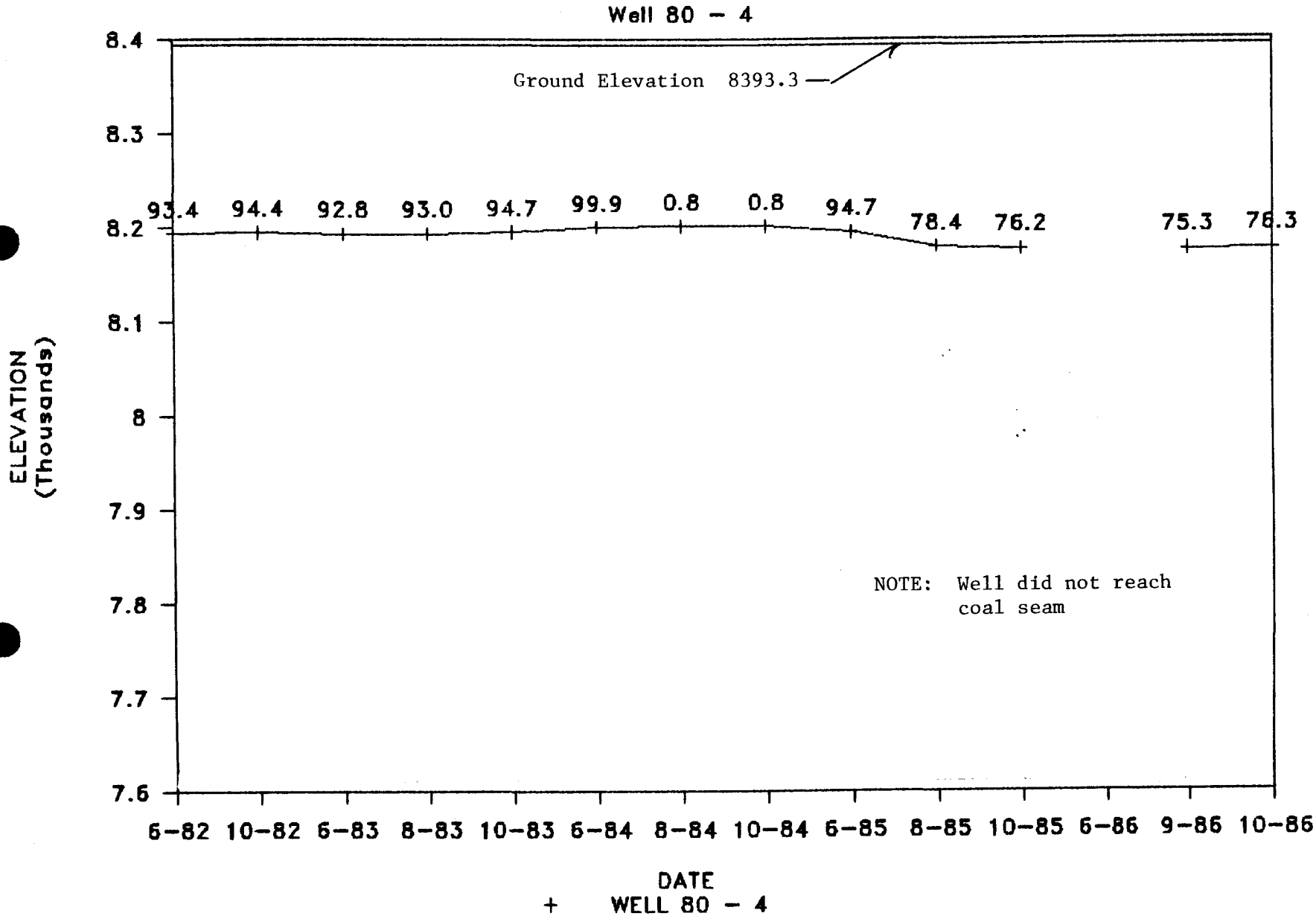


WATER WELL LEVEL 1987 -

Well 80 - 2

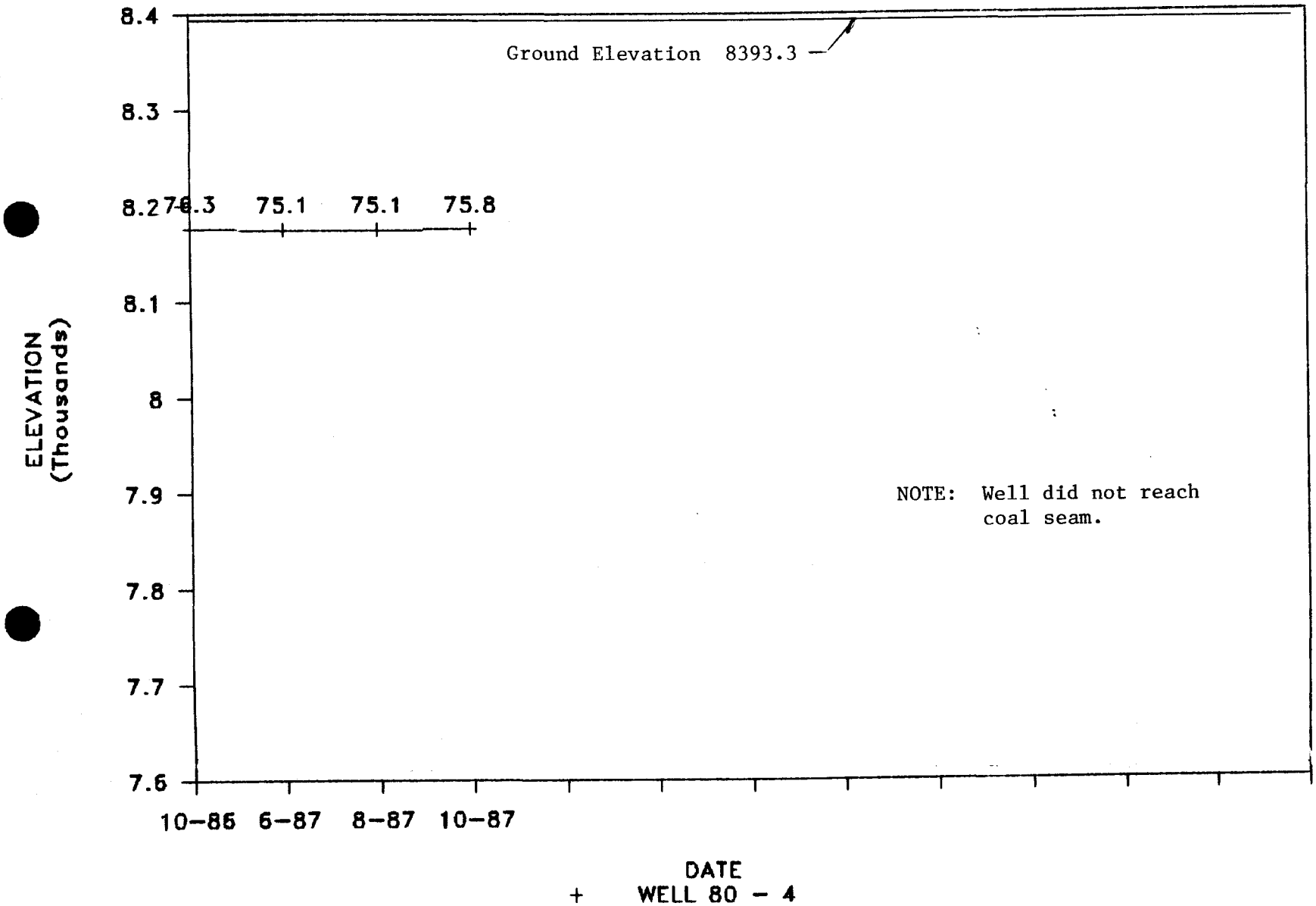


WATER WELL LEVEL 1982 - 1986

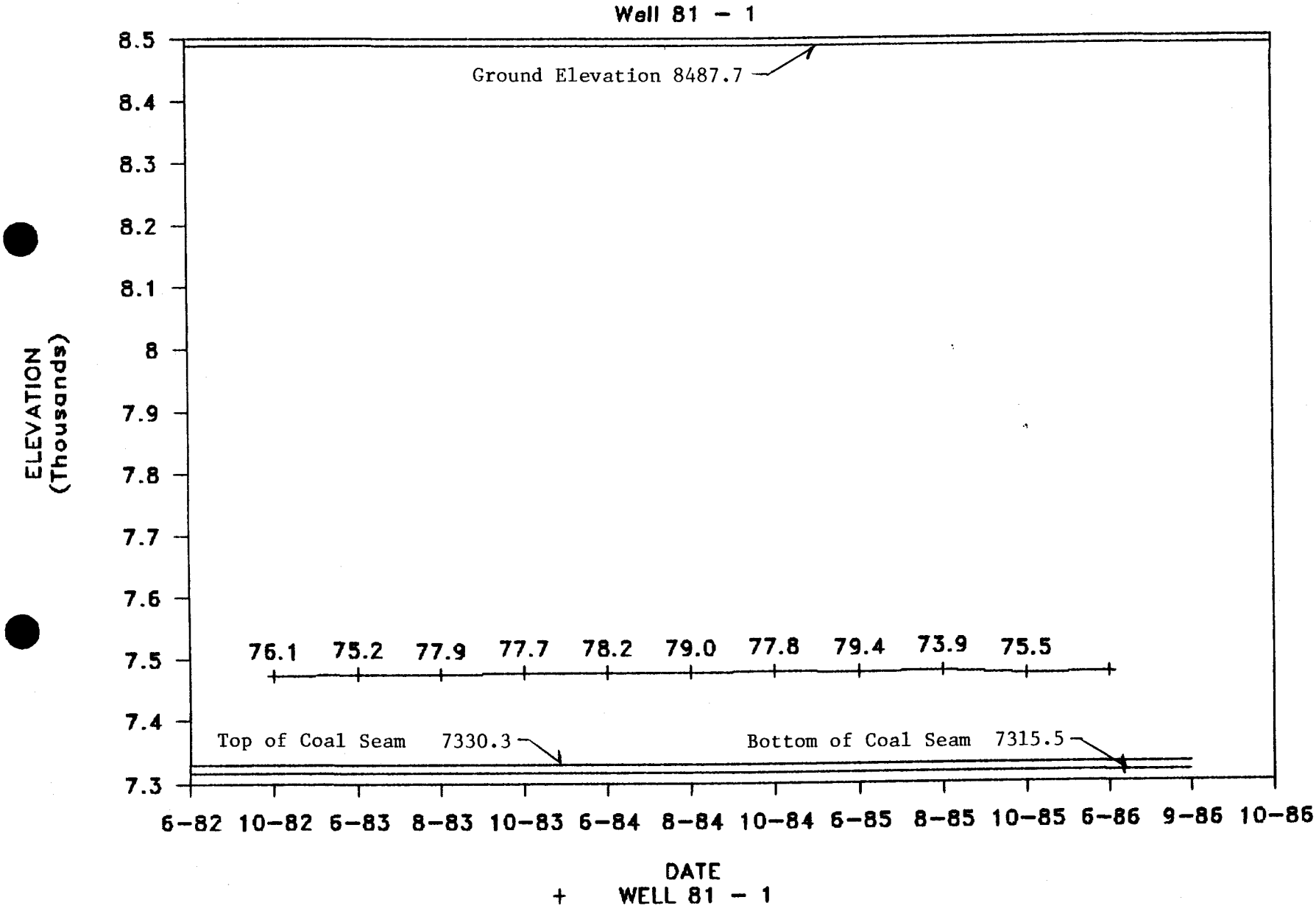


WATER WELL LEVEL 1987 -

Well 80 - 4

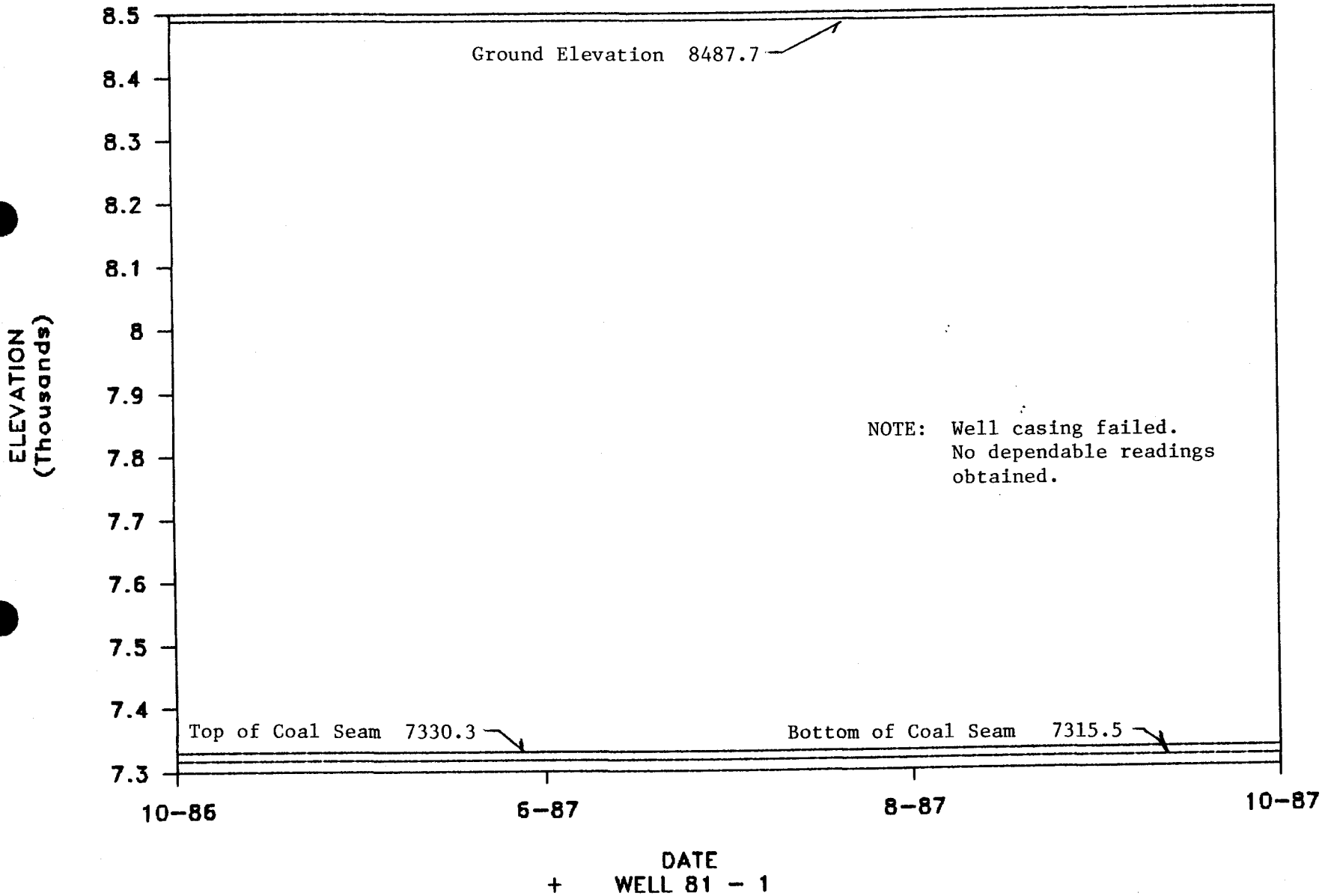


WATER WELL LEVEL 1982 - 1986

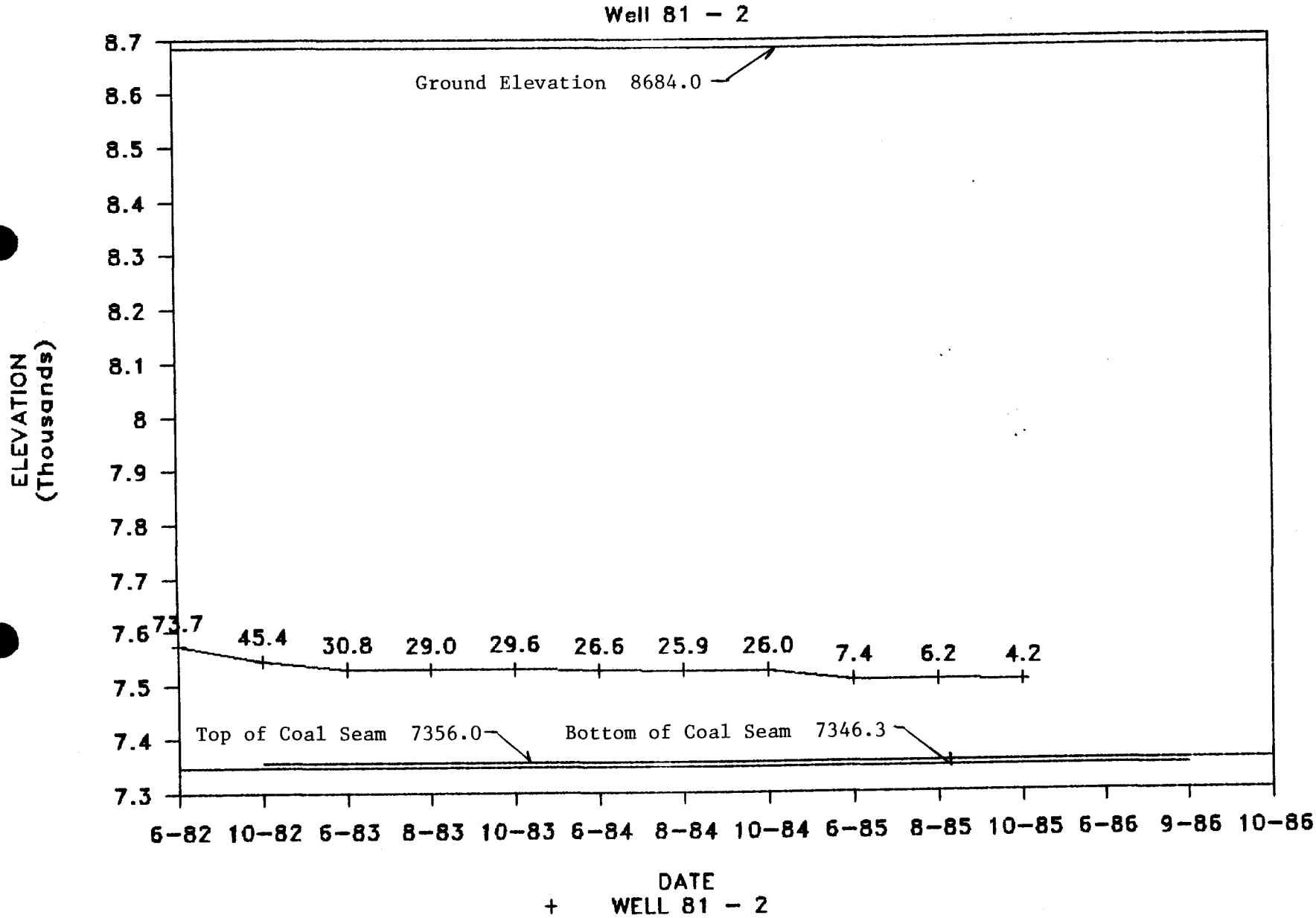


WATER WELL LEVEL 1987 -

Well 81 - 1

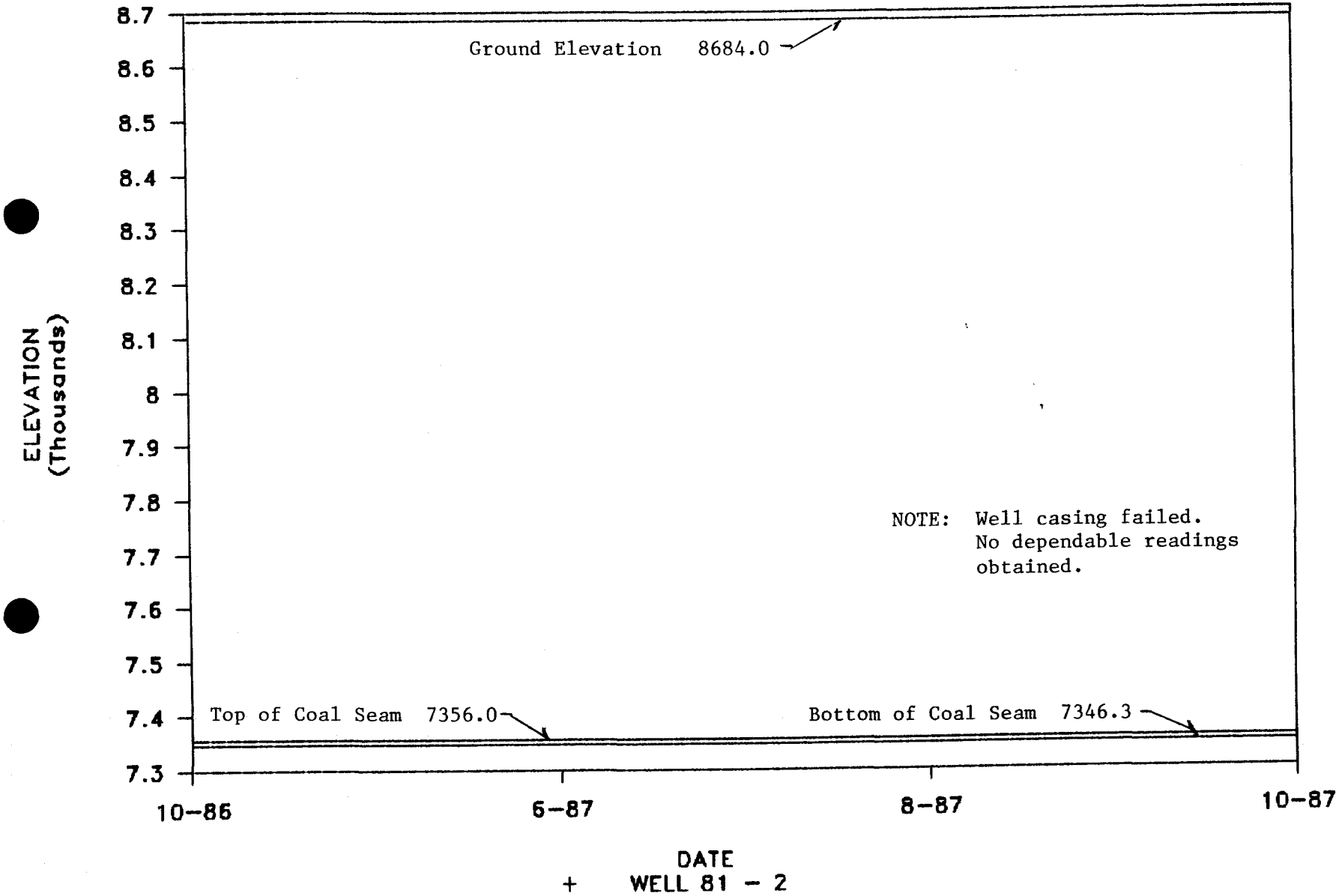


WATER WELL LEVEL 1982 - 1986



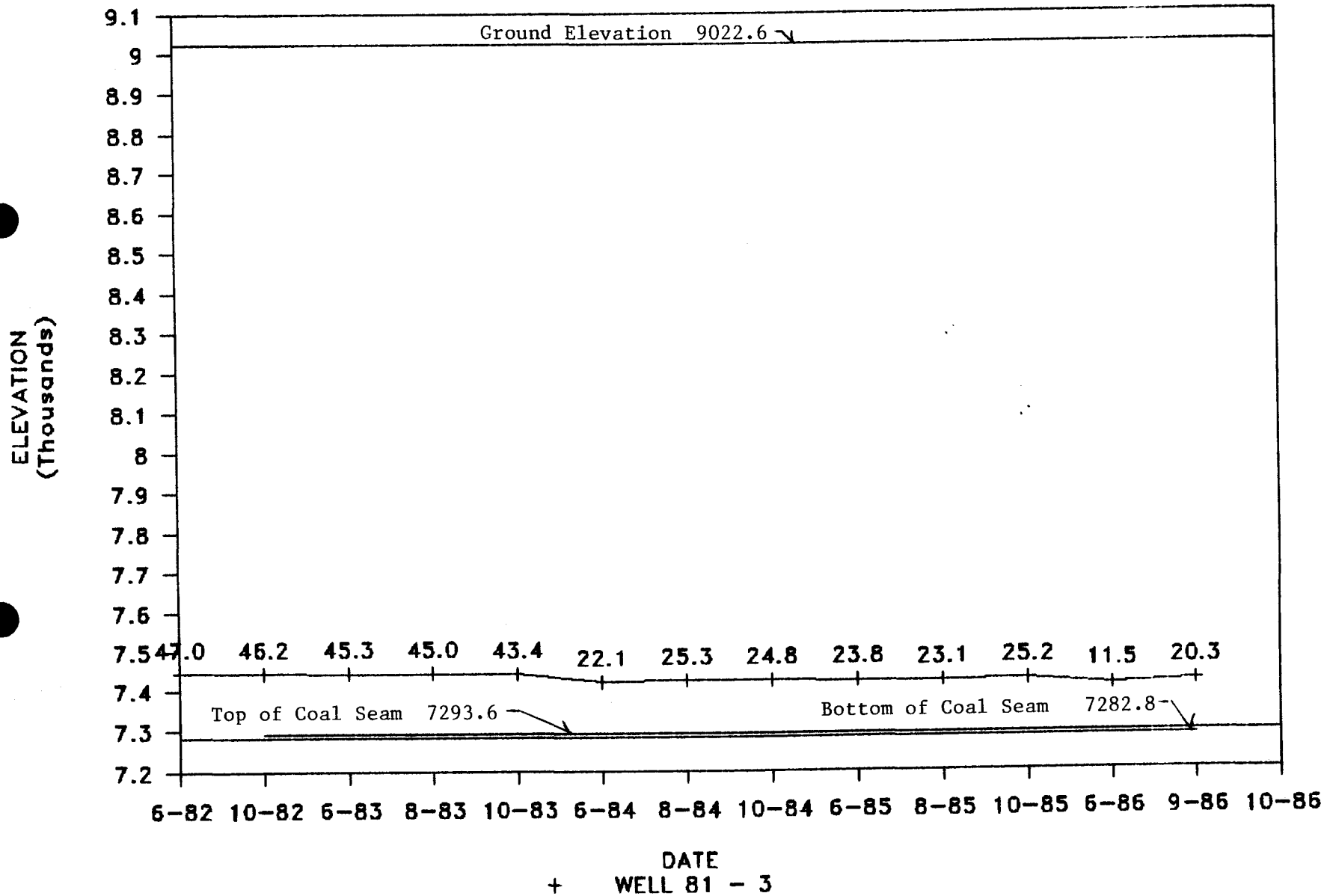
WATER WELL LEVEL 1987 -

Well 81 - 2



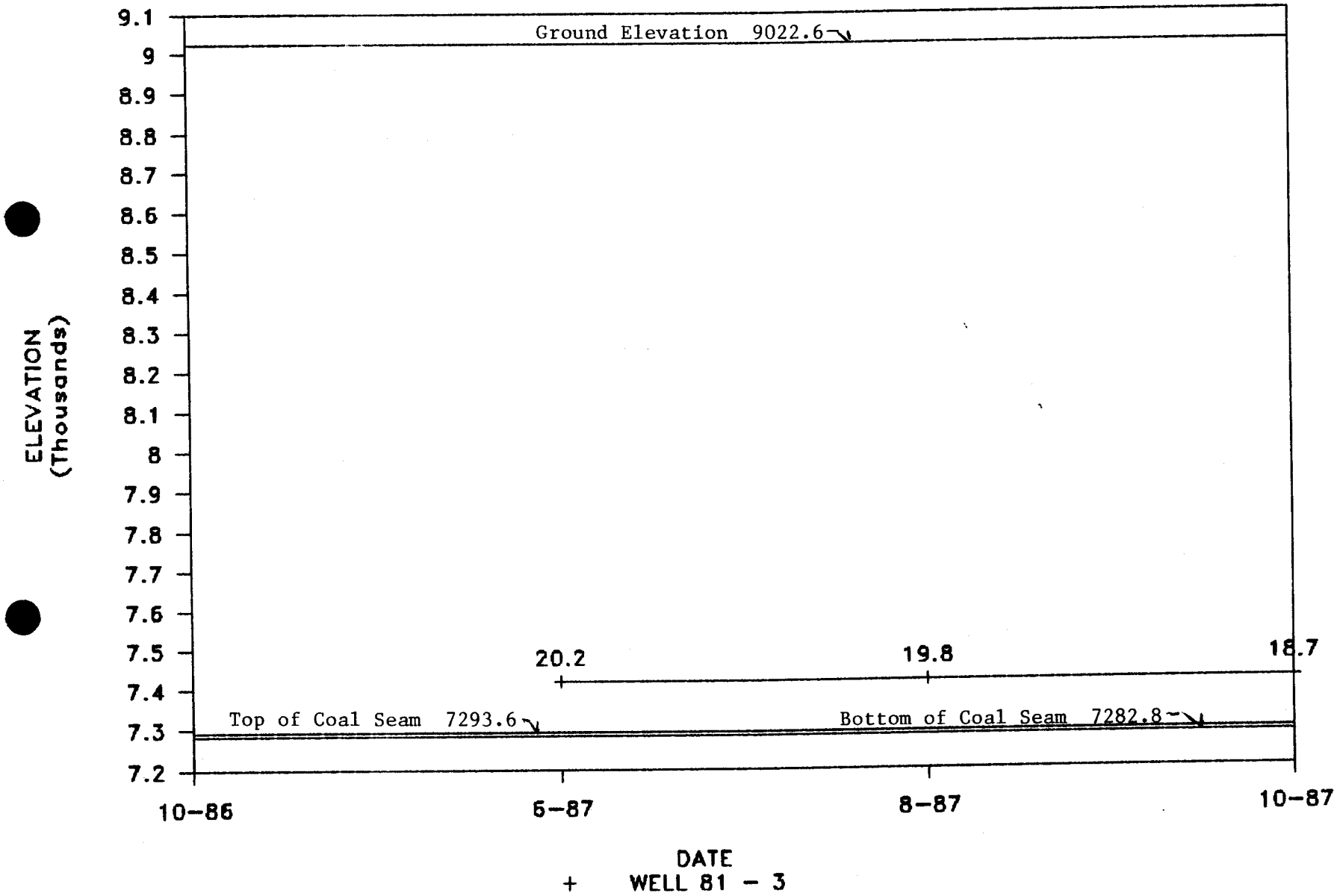
WATER WELL LEVEL 1982 - 1986

Well 81 - 3



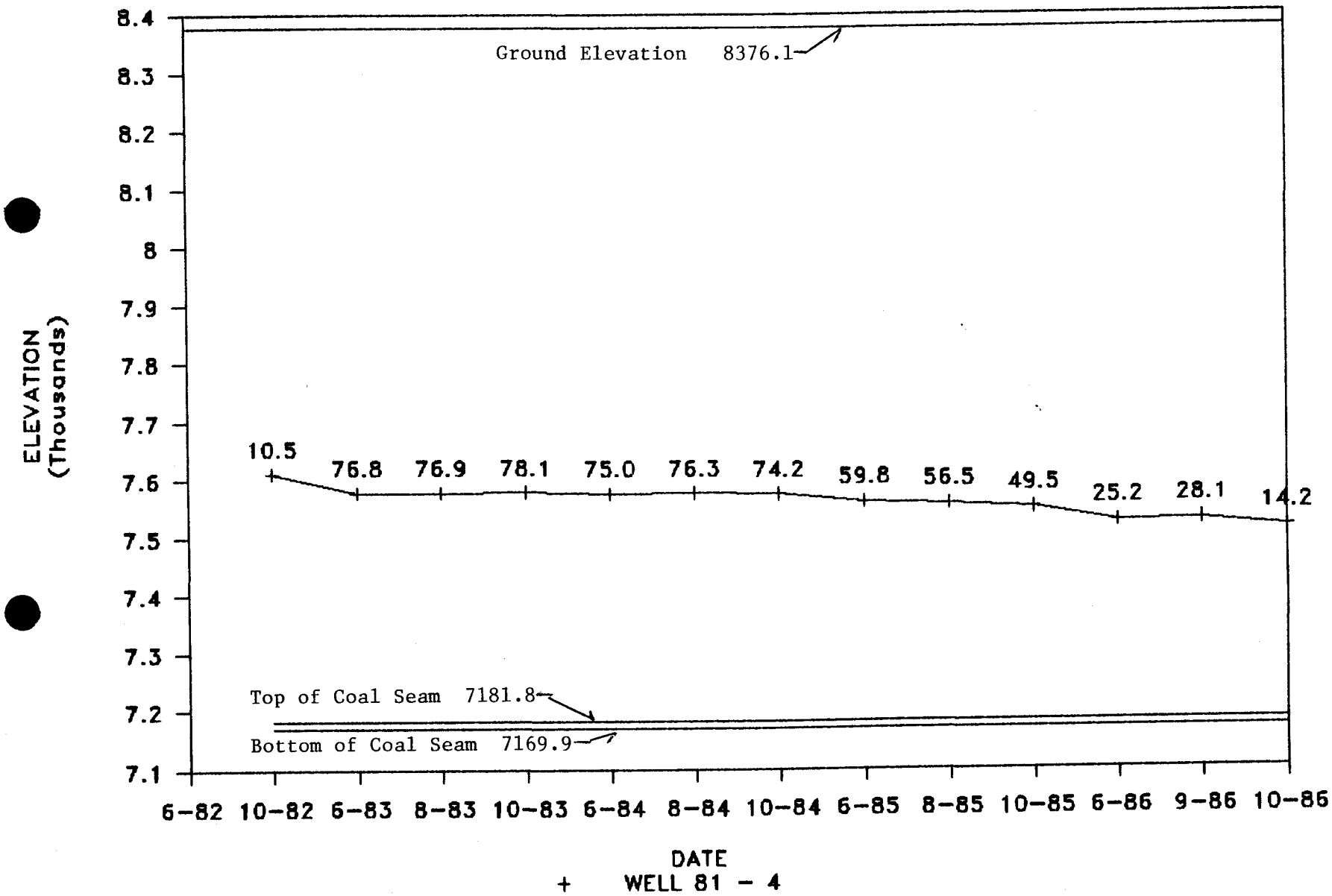
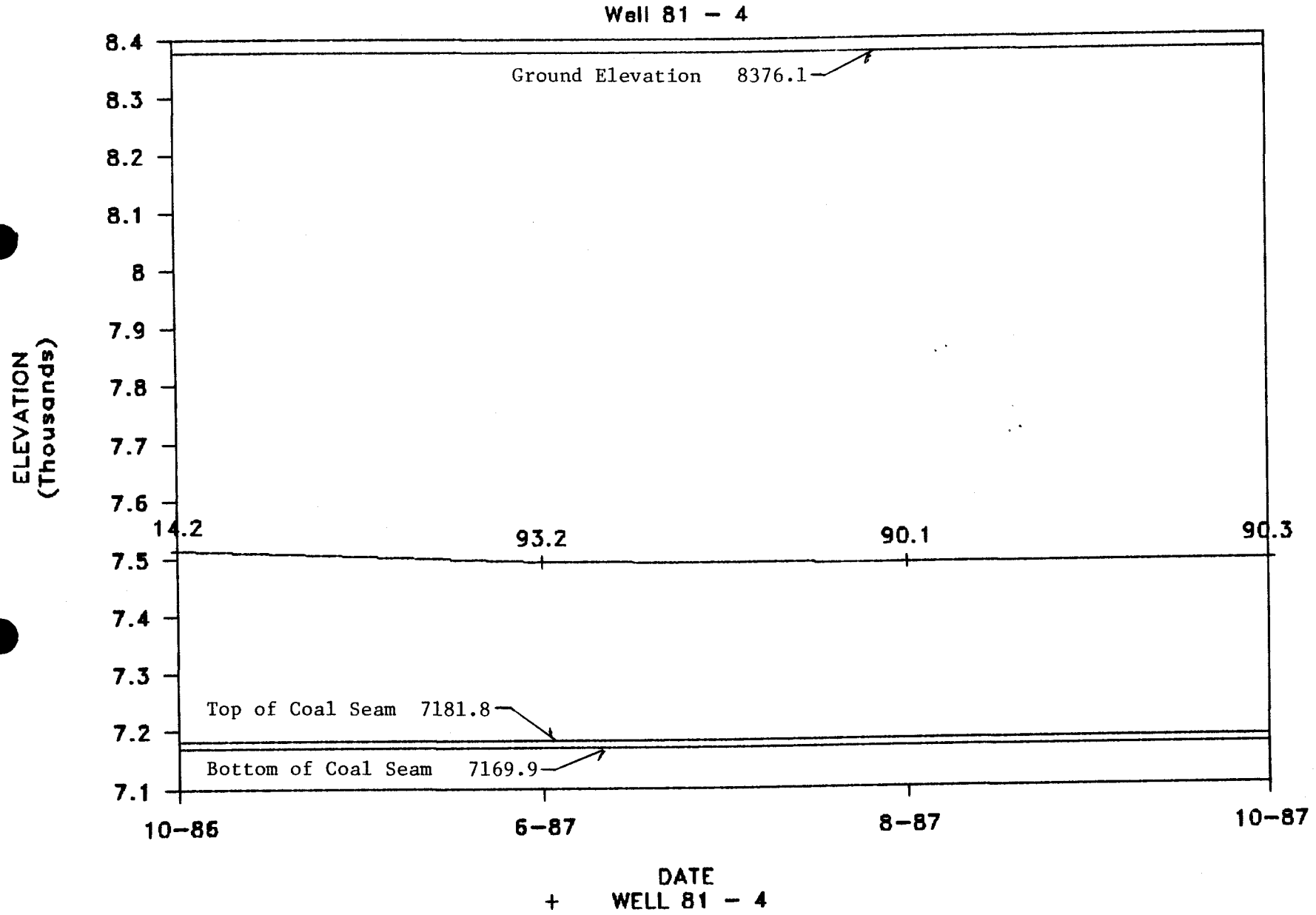
WATER WELL LEVEL 1987 -

Well 81 - 3



WATER WELL LEVEL 1982 - 1986

Well 81 - 4



WATER WELL LEVEL 1987 -