UTAH POWER & LIGHT COMPANY
HYDROLOGIC MONITORING PROGRAM
ANNUAL REPORT FOR 1984

MARCH 1985

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DIVISION OF OIL
GAS & MINING

Submitted to: United States Department of the Interior
Office of Surface Mining
Minerals Management Service
Utah Division of Oil, Gas and Mining

Prepared and submitted for Utah Power & Light Company by:

Hydrologic Section of the Power Operation Department

and

Mining and Exploration Department

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INTRODUCTION

This 1984 Water Monitoring Report is hereby submitted in accordance with the U. S. Department of Interior, Office of Surface Mining requirements for hydrologic monitoring in areas of and adjacent to coal mining operations.

This report is the seventh annual hydrologic report submitted by Utah Power & Light Company since the report entitled "Monitoring of the Water Resources in the Mining Areas of East Mountain, Emery County, Utah" was submitted to the U. S. Geological Survey and the Utah Division of Oil, Gas and Mining in December 1977. This report addresses both flow observations as well as water quality characteristics of the water resources adjacent to Utah Power & Light Company (UP&L) mining areas in Emery County (see Figures 1a and 1b).

Information was compiled the past year from in-house as well as from state and federal agencies and private sources as follows:

U. S. Geological Survey
U. S. Forest Service
U. S. Department of Commerce, National Weather Service
Utah Division of Oil, Gas and Mining
Utah Division of Environmental Health
Huntington-Cleveland Irrigation Company
Emery Water Conservancy District
Cottonwood Creek Consolidated Irrigation Company

Information from outside agencies will continue to be utilized each year for as long as their data gathering programs continue. By using this outside information, a cooperative effort is realized and duplication of effort and expense is substantially reduced.

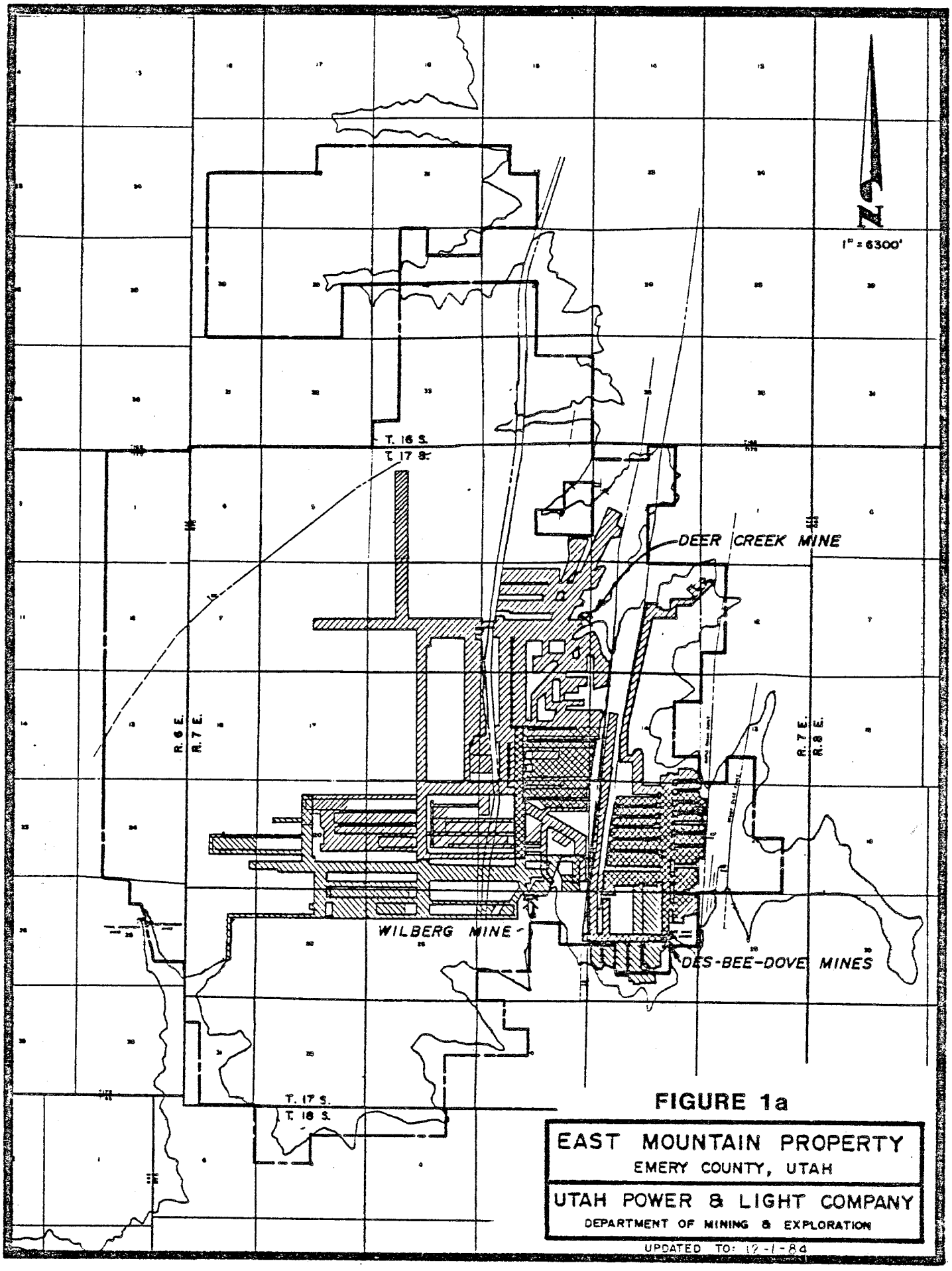

N
1" = 6300'
T. 16 S.
T. 17 S.
DEER CREEK MINE
R. 6 E.
R. 7 E.
R. 7 E.
R. 8 E.
WILBERG MINE
DES-BEE-DOVE MINES
T. 17 S.
T. 18 S.
EAST MOUNTAIN PROPERTY
EMERY COUNTY, UTAH
UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION
UPDATED TO: 12-1-84

FIGURE 1a

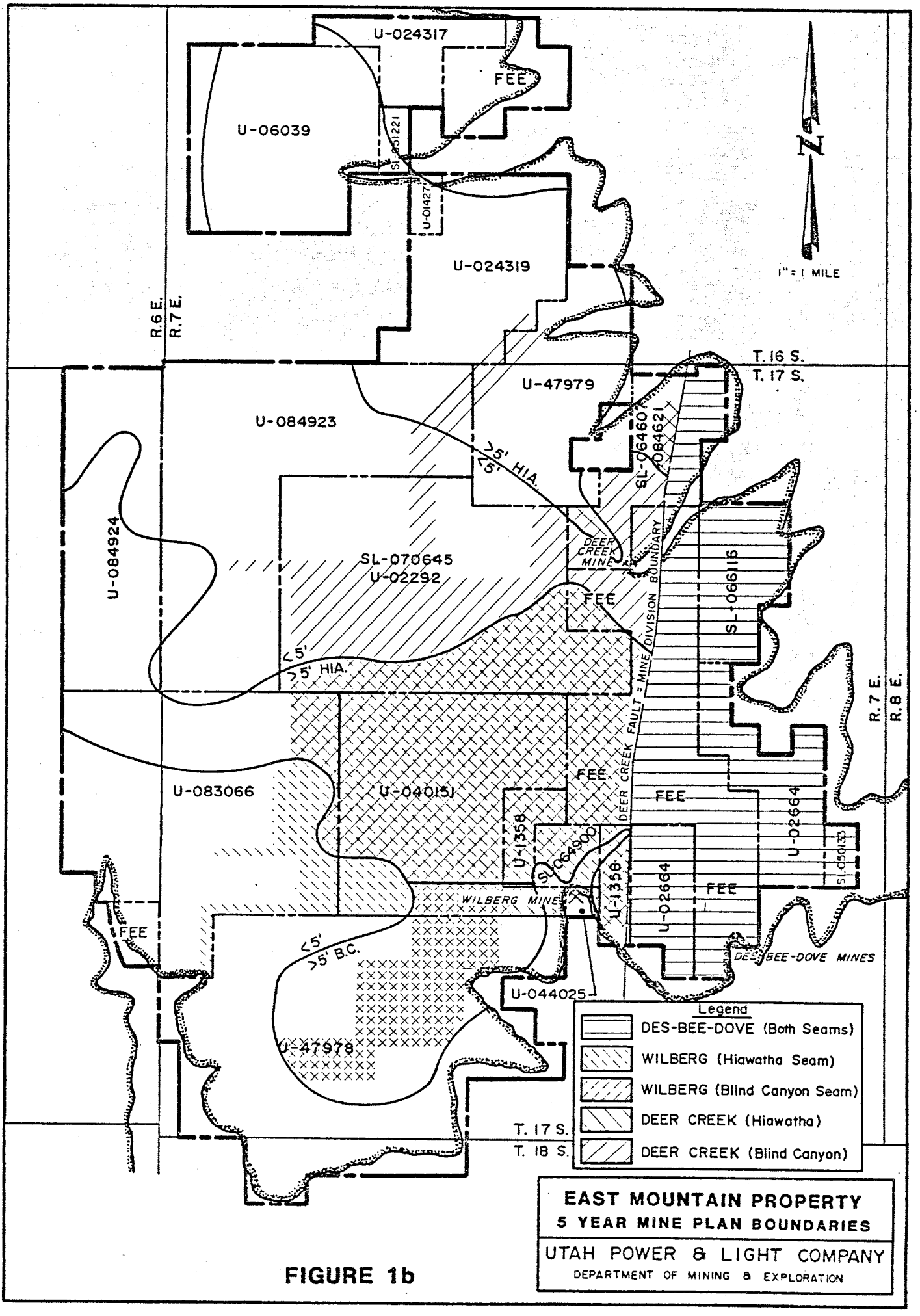

U-024317
FEE
U-06039
SL-051221
U-01427
U-024319
1" = 1 MILE
R.6 E.
R.7 E.
T. 16 S.
T. 17 S.
U-47979
U-084923
>5' HIA.
<5'
SL-064607
SL-064621
U-084924
SL-070645
U-02292
DEER CREEK MINE
DIVISION BOUNDARY
FEE
SL-066116
<5'
>5' HIA.
DEER CREEK FAULT = MINE
R.7 E.
R.8 E.
U-083066
U-040151
FEE
FEE
U-02664
U-1358
SL-064900
U-1358
U-02664
FEE
SL-050133
WILBERG MINE
FEE
<5'
>5' B.C.
DES-BEE-DOVE MINES
U-044025
U-47978
Legend
DES-BEE-DOVE (Both Seams)
WILBERG (Hiawatha Seam)
WILBERG (Blind Canyon Seam)
DEER CREEK (Hiawatha)
DEER CREEK (Blind Canyon)
T. 17 S.
T. 18 S.
EAST MOUNTAIN PROPERTY
5 YEAR MINE PLAN BOUNDARIES
UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION

FIGURE 1b

CLIMATIC OBSERVATIONS

In general, runoff and subsequent water supplies are a direct function of the climatic conditions in any given area. Furthermore, the significance of the weather affecting the flow characteristics of the East Mountain springs cannot be overemphasized.

Most of the water supply in the Western United States originates in the high mountain ranges as snowfall during winter periods. Snowmelt augmented by spring precipitation produces runoff which is utilized downstream. Fall precipitation influences soil moisture conditions prior to snowpack accumulation and has a bearing upon runoff the following year.

REGIONAL CLIMATOLOGY

The extremely wet weather conditions that occurred in 1982 and 1983 extended through the 1984 water year throughout most of the Western States. The 1982 weather pattern changed dramatically from the drought period of 1981. Winter snowfall and resulting spring runoff in 1982 was extremely heavy, especially in the Central Rocky Mountains.

During 1983 the wet weather conditions continued with heavy precipitation occurring in the late fall of 1982 and spring of 1983. The weather during April and May of 1983 was unusual because heavy snowfall and cold temperatures resulted in all-time record mountain snowpack conditions. In effect, the snowmelt period, which normally begins on about April 1 did not begin until May 20, thus reducing the runoff period by seven weeks. The resulting 1983 runoff was an all-time record for nearly all rivers in the western United States.

Extremely heavy precipitation and mountain snowfall in 1984 throughout most of the West again resulted in much higher than normal runoff

with many stream gauging stations recording greater runoff in 1984 than that which occurred in 1983.

LOCAL CLIMATOLOGY

1) Precipitation

Precipitation in Emery County during 1984 was similar to other intermountain areas. The mountains in the San Rafael Basin received extremely heavy snowfall during the 1983-84 winter. April 1, 1984 snow surveys indicated snow cover at 168% of normal. May 1 snow cover was 184% of normal. The resulting 1984 runoff was one of the highest in the past 60 years.

Precipitation amounts recorded at the Hunter Plant, Huntington Plant, Electric Lake and East Mountain for the 1984 water year (October 1983 to September 1984) will be presented since these sites include low elevation, intermediate elevation and two high elevation observation sites in the immediate vicinity of mining activities. The values are shown in Table 1 on the following page.

A comparison of precipitation for 1983 and 1984 merits consideration in this study. The intent is to develop a correlation between yearly precipitation and spring discharges on East Mountain. Table 2 is a comparison of the 1983-1984 precipitation levels recorded at the four locations.

Table 2: Comparison of 1983 and 1984 Precipitation (inches)

	1983		1984		1984 As
Station	Amount	% of Normal	Amount	% of Normal	% of 1983
Hunter Plant	9.21	132	10.55	152	115
Huntington Plant	7.78	104	9.60	128	123
Electric Lake	31.26	159	34.64	177	111
East Mountain	19.6	*	14.3	*	73
Average %		132		152	105

*Insufficient data to establish normal precipitation.

TABLE 1: PRECIPITATION IN EMERY COUNTY, UTAH (1984 Water Year)

Month	Hunter Plant (Elev. 5800') Precip. (in.)	Hunter Plant % Of Normal	Huntington Plant (Elev. 6500') Precip. (in.)	Huntington Plant % Of Normal	Electric Lake (Elev. 8350') Precip. (in.)	Electric Lake % Of Normal	East Mountain (Elev. 8985') Precip. (in.)	East Mountain % Of * Normal
1983								
Oct.	.53	68	.76	61	2.15	101	0.80	NA
Nov.	.66	129	.76	129	4.81	259	2.40	NA
Dec.	1.07	198	2.13	453	7.43	256	2.35	NA
1984								
Jan.	.03	7	.10	19	1.27	63	0.29	NA
Feb.	.39	85	.15	44	1.56	90	0.65	NA
Mar.	.34	81	1.18	190	2.77	145	1.38	NA
Apr.	.34	79	.72	131	3.23	192	0.52	NA
May	.10	17	.17	30	1.73	116	0.22	NA
June	1.09	237	104	254	3.41	421	1.18	NA
July	1.80	310	.74	78	2.55	218	1.88	NA
Aug.	1.89	187	1.39	204	2.26	266	2.10	NA
Sept.	2.35	294	.46	87	1.47	140	0.55	NA
TOTALS	10.55	152	9.68	128	34.64	177	14.32	NA
Mean Monthly	.88	--	.80	--	2.89	--	1.19	--

*Historical data not sufficient for the East Mountain weather station to make comparison.

Table 2 indicates that 1984 precipitation was higher than 1983 at all sites, except for the East Mountain Station. The 34.64 inches recorded at Electric Lake is the highest yearly total recorded since record keeping began in 1970. The overall precipitation at the four stations averaged 5% higher in 1984 than 1983 values.

Tables 3, 4 and 5 indicate monthly precipitation values at Hunter, Huntington, and Electric Lake from the beginning of operation at each site. These tables indicate monthly trends as well as the great fluctuation in yearly totals. Figure 2 shows monthly precipitation at the East Mountain site for the 1984 water year.

The correlation of precipitation levels with spring discharges will be discussed in the East Mountain Springs section of this report. 2) Temperatures

During the 1984 water year, temperatures within Emery County at the lower elevations were generally higher than normal while the higher elevations were generally cooler than normal. At the Hunter Plant station, November thru February, temperatures were below normal and the rest of the year were above normal. The Huntington Plant station was cooler than normal during the months of December, February, March, April and June while the rest of the year was above normal. The Electric Lake station was cooler than normal every month except for October, December, May and August resulting in a yearly average temperature 0.5° below normal (see Table 6).

TABLE 3: HUNTER PLANT PRECIPITATION-HISTORICAL
Elevation - 5,800 Feet

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	TOTAL
75-76	.13	.25	.19	.02	.40	.00	.89	.84	.03	.31	.08	.70	3.84
76-77	.00	.02	.00	.37	.07	.00	.03	1.28	.07	1.35	.41	.50	4.10
77-78	.01	.18	.00	1.28	1.05	1.74	.34	1.21	.00	.69	1.14	.14	7.78
78-79	.03	2.22	.22	1.43	.53	2.43	.24	.47	.00	.00	.79	.00	8.36
79-80	.00	.00	.41	1.70	1.70	.67	.75	1.11	.00	.02	.51	2.06	8.93
80-81	.66	.06	.02	.00	.07	1.48	.16	.45	.14	.20	.70	2.43	6.37
81-82	.58	.27	.45	.94	.45	.54	.00	.02	.00	.15	1.06	1.23	5.69
82-83	.20	1.25	.45	.54	.41	.84	.37	.51	.00	2.18	1.58	.88	9.21
83-84	.53	.66	1.07	.03	.35	.34	.34	.05	1.09	1.80	1.89	2.35	10.50
84-85	1.69	.06	1.24										

TABLE 4: HUNTINGTON PLANT PRECIPITATION
Elevation - 6,500 Feet

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	TOTAL
70-71	-	-	-	-	-	.08	.29	.16	.11	.57	.63	.43	2.27
71-72	2.26	.59	1.62	.04	.00	.32	.28	.16	.77	.40	.66	1.07	8.17
72-73	4.27	1.28	.34	.49	.80	2.42	.50	.17	.97	1.09	1.94	.12	14.39
73-74	.08	.02	.37	.20	.03	.01	.00	.00	.00	.09	.00	.07	.87
74-75	.68	1.19	.13	1.01	.30	.80	.03	.75	1.44	2.62	.31	.24	9.50
75-76	.23	.95	.03	.20	.23	.00	2.34	.86	.02	.73	.19	.85	6.63
76-77	.56	.00	.00	.35	.00	.00	.00	1.76	.00	2.08	.96	.70	6.41
77-78	.66	.12	.82	1.45	1.00	1.36	.94	.72	.12	.05	.72	.77	8.73
78-79	.02	2.65	.25	1.21	.52	2.50	.00	.84	.05	.09	3.32	.20	11.65
79-80	.17	.14	.15	2.88	3.63	.68	1.13	1.88	.65	.18	.38	2.22	14.09
80-81	1.20	.06	.00	.00	.00	.62	.08	1.75	.48	.00	.58	1.53	6.30
81-82	1.12	.25	1.30	1.63	.20	.73	.00	.17	.00	.08	.71	1.91	8.10
82-83	.20	.60	.67	.16	.65	1.87	.08	.40	.00	1.61	.39	1.15	7.78
83-84	.76	.76	2.13	.10	.15	1.18	.72	.17	1.04	.74	1.39	.46	9.60
84-85	2.07	.34	1.74										

TABLE 5: ELECTRIC LAKE PRECIPITATION
Elevation - 8,350 Feet

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	TOTAL
70-71	2.46	2.35	6.41	1.13	1.66	.36	1.05	.66	.47	.40	2.15	.78	19.88
71-72	3.49	1.69	4.07	3.35	.58	.70	1.02	.28	1.49	.70	.80	2.91	21.08
72-73	4.18	3.43	3.27	.97	2.09	2.74	3.67	1.42	.85	.82	1.23	1.15	25.82
73-74	.79	1.90	3.52	2.70	1.12	1.52	2.49	.20	.13	2.09	.06	.09	16.61
74-75	2.27	.62	1.73	2.10	2.37	3.42	1.23	3.21	1.08	1.93	.49	.25	20.70
75-76	1.31	2.57	.82	1.44	2.23	1.35	1.47	2.00	1.23	1.07	.54	1.19	17.22
76-77	1.00	.25	.14	.76	1.14	2.00	.05	3.00	.90	2.28	1.31	1.26	14.09
77-78	1.47	2.10	3.20	3.68	2.74	3.16	2.46	1.18	.30	.10	.24	.77	21.40
78-79	.40	3.18	2.66	2.90	2.18	2.53	.72	1.67	.19	.96	2.29	.32	20.00
79-80	1.55	2.23	.37	4.95	6.01	3.34	1.27	3.09	.12	.37	.38	1.80	25.48
10 Year	1.892	2.032	2.619	2.398	2.212	2.112	1.543	1.671	.666	1.072	.949	1.052	20.218
80-81	1.45	.98	.32	1.30	1.04	3.20	1.45	3.06	.39	1.61	2.73	1.44	18.97
81-82	4.18	1.44	4.79	5.26	1.66	5.06	1.11	1.40	.59	1.26	2.29	5.38	34.42
82-83	1.88	3.68	2.76	2.41	4.00	4.30	2.35	2.81	1.35	1.34	1.50	2.88	31.26
83-84	2.15	4.81	7.43	1.27	1.56	2.77	3.23	1.73	3.41	2.55	2.26	1.47	34.64
84-85	2.92	2.63	3.24										

NOTE: Climatic Station was moved from a point one mile above the dam site to a point 500 feet below dam site on November 15, 1973.

N October, November, and December 70-71 were e ated by correlation with Clear Creek Weather Station.

FIGURE 2

EAST MOUNTAIN

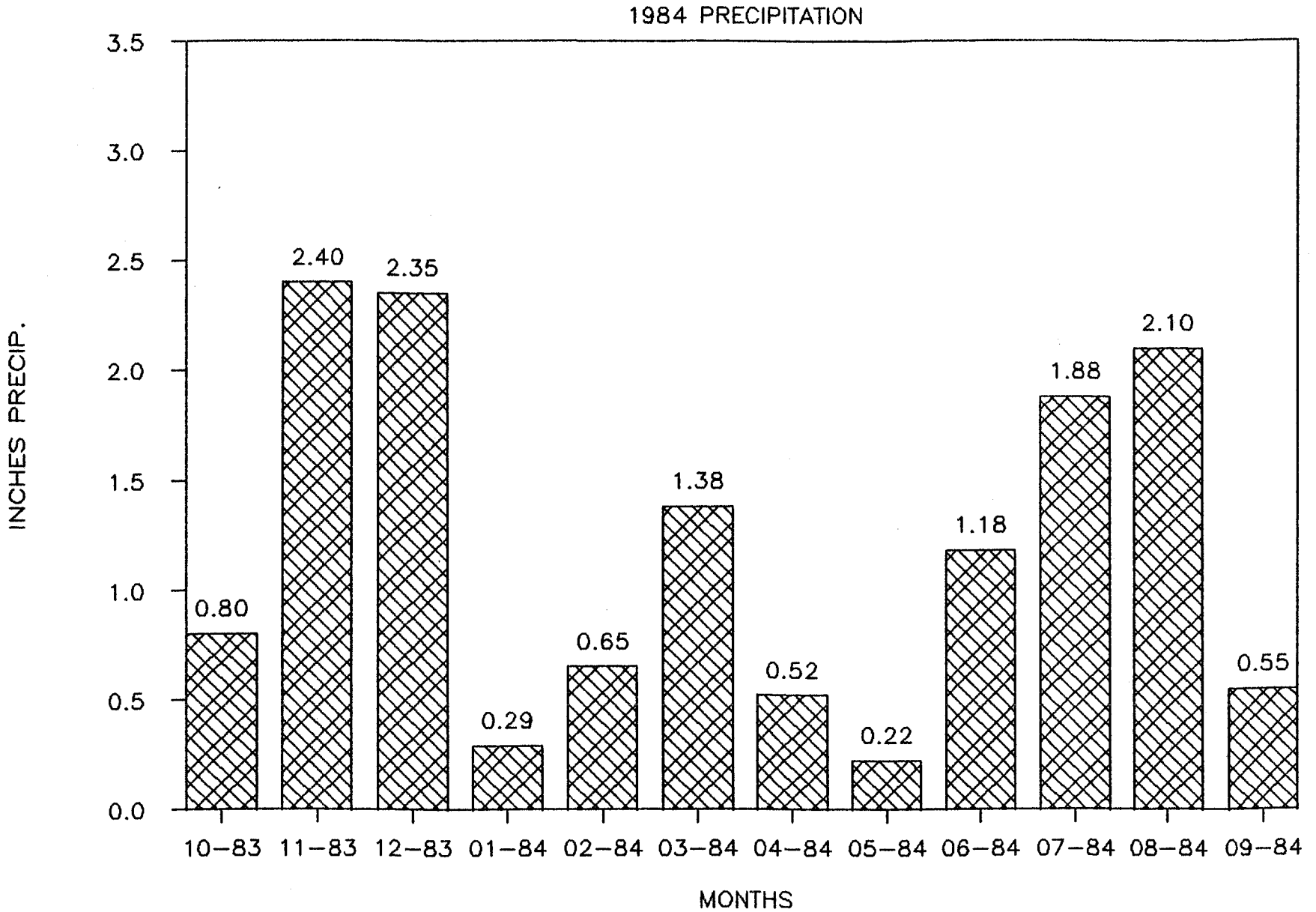


TABLE 6: TEMPERATURES IN EMERY COUNTY, UTAH (1984 WATER YEAR)

Month	Hunter Plant		Huntington Plant		Electric Lake	
	Average Temp. (°F)	Departure From Normal	Average Temp. (°F)	Departure From Normal	Average Temp. (°F)	Departure From Normal
1983						
Oct.	52.7	+4.3	54.9	+5.5	40.7	+3.2
Nov.	34.8	-0.4	38.2	+2.2	25.7	0.0
Dec.	23.5	-3.2	27.1	-0.3	16.7	+0.9
1984						
Jan.	16.5	-7.6	26.4	+2.8	10.8	-3.8
Feb.	21.1	-7.3	29.9	-0.3	13.9	-5.4
Mar.	37.2	+1.4	37.6	-0.1	19.8	-1.0
Apr.	46.1	+1.5	43.3	-1.8	24.2	-4.5
May	63.3	+11.2	58.9	+4.0	42.1	+3.1
June	65.3	+3.9	62.0	-3.8	47.0	-1.6
July	73.8	+5.4	74.4	+2.7	55.5	-0.2
Aug.	72.2	+5.8	70.2	+0.8	57.0	+3.1
Sept	64.9	+6.2	61.6	+1.2	47.2	-0.3
TOTALS	47.6	+1.8	48.7	+1.1	33.4	-0.5

A comparison of 1983 and 1984 temperatures for the three stations is addressed since temperatures also influence water supplies from year to year. Table 7 depicts the variation and 1983 to 1984.

TABLE 7: COMPARISON OF 1983 AND 1984 TEMPERATURES

Station	1983		1984		1984
	Average Temp. (°F)	Departure From Normal	Average Temp. (°F)	Departure From Normal	Departure From 1983
Hunter Plant	48.2	+2.4	47.6	+1.8	-0.6
Huntington Plant	49.0	+1.4	48.7	+1.1	-0.3
Electric Lake	30.8	-3.1	33.4	-0.5	+2.6
Average Departure From Normal		+0.2		+0.8	+.6

The monthly temperatures which were recorded at the East Mountain station in 1984 were generally higher than the four-year average. A comparison of temperatures recorded in 1981, 1982, 1983 and 1984 is shown in Figure 3.

DRAINAGE SYSTEMS

The surface drainage system on East Mountain is divided into two major drainages; the southwest portion forms part of the Cottonwood Creek drainage and the northeast portion of East Mountain contributes to the Huntington Creek drainage (see Map 1). These drainage boundaries, including minor subdivisions to Cottonwood and Huntington Creeks, are designated on the accompanying map. Both Huntington and Cottonwood Creeks flow out of the Wasatch Plateau in a southeasterly direction. The creeks merge with Ferron Creek to form the San Rafael River which is a tributary to the Green River.

Huntington Creek Drainage System

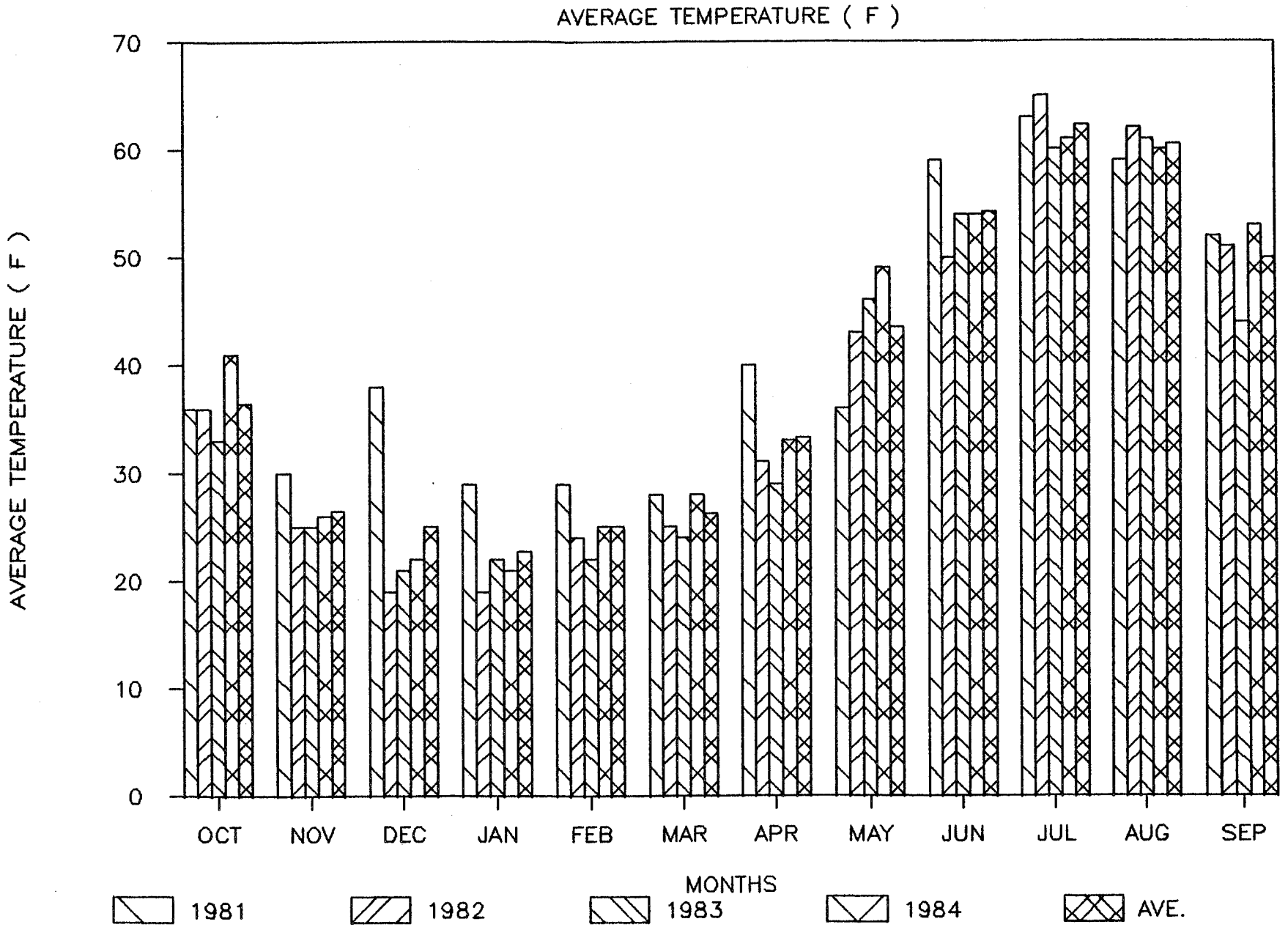
1) Huntington Creek

Flow data are recorded on a continuous basis by Utah Power & Light at two locations; one station is located near the UP&L Huntington Plant, the other is located about 22 miles upstream from the Huntington Plant. Flow records are maintained by Utah Power & Light Company in order to determine water entitlements and reservoir storage allocation for the various users on the river.

The following table (Table 8) shows a summary of actual Huntington Creek flows below Electric Lake, at Huntington Plant, and calculated natural flow at Huntington Plant. The calculated natural flow is determined by computing actual flow recorded at the plant, plant diversions, Electric Lake storage change and lake evaporation. The average daily discharges for the

FIGURE 3

EAST MOUNTAIN



1984 water year (October 1983 - September 1984) for Huntington Creek below Electric Lake and at the plant (Appendix A).

TABLE 8: HUNTINGTON CREEK WATER FLOWS (1984 WATER YEAR)

	Huntington Creek Below Electric Lake	Huntington Creek At Plant	Calc. Natural Flow At Plant
Total Yearly Flow (Ac. Ft.)	36,470	172,500	182,400
% Of Normal	*168	246	260
Mean Discharge In Cubic Feet Per Second (CFS)	50.2	238	
Maximum Discharge (CFS)	356	1520	
Date of Maximum Discharge	6/7/84	5/25/84	
Minimum Discharge In CFS	9.3	39.0	
Date Of Minimum Discharge	10/22/83	12/29/83	

* Due to upstream storage in Electric Lake.

During the 1984 spring runoff period (April thru July), approximately 8,200 acre feet of water was impounded behind Electric Lake Dam. During spring runoff the impoundment reached its highest level on June 18. Total storage on this date amounted to 31,632 acre feet which is 360 acre feet into surcharge (above spill level). Reservoir releases for the fishery and Huntington Plant needs during the summer period totaled 36,470 acre feet. The total flow of 172,500 acre feet recorded for Huntington Creek at the Huntington Plant represents the greatest volume of runoff ever recorded on Huntington Creek in the past 60 years on record.

A comparison of runoff values from 1983 and 1984 is presented in Table 9.

TABLE 9: COMPARISON OF 1983 AND 1984 RUNOFF VALUES

	1983		1984		
	Amount	% Of Normal	Amount	% Of Normal	1984 As A % Of 1983
Spring Runoff Stored In Electric Lake (Ac. Ft.)	7,781	77	8,200	81	105
Calculated Natural Flow At Plant (Ac. Ft.)	146,377	209	182,400	260	125

An examination of Table 2 indicates that precipitation recorded at Electric Lake and Huntington plant during 1984 averaged 117 percent of the 1983 values while natural flow runoff for 1984 was 125 percent of 1983 (Table 9). The comparison of precipitation and runoff appears to correlate very well.

The 1984 water quality information on Huntington Creek was compiled on a monthly basis for stations above and below the Huntington Plant while samples for Huntington Creek below Electric Lake and the Right Fork were taken quarterly. Utah Power & Light's Environmental Department conducted the sampling program and the analyses were performed by Standard Labs, Huntington, Utah, and Ford Lab of Salt Lake City. The location of water quality sampling stations on Huntington Creek that were considered for this report are listed as follows (refer to Map No. 1 in pocket):

1. Below Electric Lake
2. Above the Forks
3. Above the Power Plant Diversion
4. Below the Power Plant

Specific water quality constituents which were analyzed are shown in Table 10. Values are in milligrams per liter unless otherwise noted. Raw data can be found in Appendix A.

TABLE 10: HUNTINGTON CREEK WATER QUALITY (1984 WATER YEAR)

Parameter	Below Electric Lake			Right Fork Above Left Fork			Above Power Plant			Below Power Plant		
	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.
pH (N.U.)	7.6	8.0	7.2	7.8	8.1	7.5	8.0	8.2	7.7	8.0	8.1	7.9
Sulfate	—	—	—	—	—	—	35	67	19	59	90	43
Susp. Solids	2.5	7.0	0.5	24.5	130	1.0	14.7	36	1	15	36	1.0
Diss. Solids	195	520	80	237	520	120	236	288	197	297	340	273
Spec. Cond. (umhos)	—	—	—	—	—	—	399	455	320	—	—	—
Turbidity (FTU)	3.5	14	.9	9.9	42.0	0.9	—	—	—	—	—	—
Alkalinity ($CaCO_3$)	—	—	—	—	—	—	18.5	219	165	190	234	165
Hardness ($CaCo_3$)	-	-	-	-	-	-	219	235	200	255	241	230

The values at the station below Electric Lake do not express the actual natural drainage water quality characteristics above Electric Lake because of the lake effect but it appears that the surface flow in Huntington Canyon is of very high quality in the upper reaches with some natural degradation occurring as the flow proceeds to the canyon mouth.

The comparison of water quality characteristics with the Huntington drainage for 1983 and 1984 is presented in Table 11. This comparison merits consideration in order to evaluate the changes in water quality from year to year. Average values are presented in milligrams per liter unless otherwise noted.

TABLE 11: HUNTINGTON CREEK WATER QUALITY 1983-1984

Parameter	Below Electric Lake 1983	Below Electric Lake 1984	Right Fork Above Left Fork 1983	Right Fork Above Left Fork 1984	Above Power Plant 1983	Above Power Plant 1984	Below Power Plant 1983	Below Power Plant 1984
pH (N.U.)	7.5	7.6	8.0	7.8	7.9	8.0	8.0	8.0
Sulfate	-	-	-	-	72.0	35	82.0	59
T. Susp. Solids	7.1	2.5	14.2	24.5	79.0	14.7	35.0	15
T. Diss. Solids	161		214		263	236	339	297
Turbidity (FTU)	6.6	3.5	9.3	9.9	-	-	-	-
Alkalinity (TOT)	-	-	-	-	196	185	223	190
T. Hardness	-	-	-	-	209	219	270	255

2) Deer Creek

FLOW AND SAMPLING SCHEDULE

Locations: 1) Above the Mine

2) Below the Mine

(See Map No. 1 in pocket)

Flow: Information is collected during the first or second week of each month.

Water Quality Sampling: Water samples are collected and analyzed during the first or second week of each month throughout the duration of the runoff season. Normal runoff season will be considered from May through October. If runoff persists beyond the month of October, samples will be collected on a quarterly basis until the month of May of the following year.

Flow Information

As stated above, flow information is collected monthly throughout the year with the use of three parshall flumes (see Map No. 1 for flume locations). A hydrograph has been generated for each flume location (See Appendix B). The hydrograph for the flume location at the permit boundary documents the flow monthly after June, 1984, the date the flume was installed. During 1984 these hydrographs show a peak flow of 3000 GPM in July and a base flow of 56 GPM.

Quality Information

The results of the 1984 quality analysis are listed in Table 12 and 13. The minimum, maximum and mean values are given for each year in which data were collected along with the historical results. Values are in milligrams per liter unless otherwise noted. Complete raw data can be found in Appendix B. It is apparent from the tables that the quality of the Deer Creek runoff degradates slightly from the upper to the lower sampling point. The quality of the lower sampling point is possibly affected by the Mancos Shale which outcrops above the lower sampling location. An examination of Tables 12 and 13 indicate that the data for 1984 follows closely with the historical data, except for total suspended solids and iron, in which these parameters show a considerable decrease for both locations.

COTTONWOOD CREEK DRAINAGE SYSTEM

Utah Power & Light monitors two of the tributaries of the Cottonwood Creek Drainage system, Cottonwood Canyon Creek and Grimes Wash (see Map No. 1 in pocket).

TABLE 12: DEER CREEK SURFACE WATER QUALITY
ABOVE THE MINE

1984 Sample Dates	pH (Units)	Conductivity UM HOS/CM	TDS	TSS	Iron Total	Manganese
1-10	8.0	610	350	0.5	<0.05	<0.01
4-11	8.3	700	381	3.0	<0.05	<0.01
5-07	7.6	600	315	41.5	<0.05	<0.01
6-05	7.3	550	332	37.0	<0.05	<0.01
7-16	7.6	525	231	3.6	<0.05	<0.01
8-06	8.1	480	305	5.0	<0.05	<0.01
9-10	8.1	595	305	0.5	<0.05	<0.01
10-8	8.1	600	337	0.5	<0.05	<0.01
Min.	7.3	480	231	0.5	<0.05	<0.01
Max.	8.3	700	381	41.5	<0.05	<0.01
Mean	7.9	582.5	319.5	11.5	<0.05	<0.01
1983						
Min.	7.7	525	280	<0.5	0.03	<0.01
Max.	8.4	770	566	164.0	0.74	0.07
Mean	8.1	600.6	350.3	31.5	0.18	0.03
1982						
Min.	7.3	490	276	<0.5	0.15	0.06
Max.	8.2	640	359	92.0	0.87	0.18
Mean	7.9	526.7	298.8	27.8	0.60	0.13
1981						
Min.	8.3	600	332	<0.5	0.09	<0.01
Max.	8.3	700	482	3.5	0.20	0.02
Mean	8.3	633.3	384.7	1.7	0.13	0.01
1980						
Min.	7.9	570	337	0.5	0.07	0.01
Max.	8.0	820	533	3592	0.20	0.24
Mean	7.9	695	435	1796.3	0.13	0.13
Historical 1978 - 1983						
Min.	7.0	360	235	<0.5	0.03	<0.01
Max.	8.5	820	566	3592	40.1	0.24
Mean	8.0	575.5	337.5	270.1	2.1	0.07

TABLE 13: DEER CREEK SURFACE WATER QUALITY
BELOW THE MINE

1984 Sample Dates	pH (Units)	Conductivity UM HOS/CM	TDS	TSS	Iron Total	Manganese
1-10	8.0	1650	988	23.5	<0.05	<0.01
4-11	8.2	2150	1354	1.5	<0.05	<0.01
5-07	7.8	1310	756	36.5	<0.05	<0.01
6-05	7.8	620	387	32.5	<0.05	<0.01
7-16	7.8	700	320	0.5	<0.05	<0.01
8-06	8.4	800	458	141.0	0.18	<0.01
9-10	8.5	950	534	0.5	<0.05	<0.01
10-8	8.3	1200	728	2.0	<0.05	<0.01
Min.	7.8	620	320	0.5	<0.05	<0.01
Max.	8.5	2150	1354	141.0	0.18	<0.01
Mean	8.1	1172.5	690.6	29.8	0.07	<0.01
1983						
Min.	8.0	650	371	6.5	0.05	<0.01
Max.	8.6	1150	637	557.0	2.12	0.15
Mean	8.3	830.8	465.5	129.7	0.55	0.04
1982						
Min.	7.7	650	367	2.0	0.10	0.09
Max.	8.3	1380	868	183.0	1.80	0.23
Mean	8.0	951.7	550	46.1	1.01	0.17
1981						
Min.	8.2	1500	959	2.5	0.09	0.01
Max.	8.3	1650	1021	5.5	0.24	0.03
Mean	8.3	1575	990	4.0	0.17	0.02
1980						
Min.	7.9	790	452	9.5	0.16	0.01
Max.	8.0	870	567	396	0.30	0.27
Mean	8.0	830	510	203	0.21	0.14
Historical 1978 - 1983						
Min.	6.9	420	273	2.0	<0.05	<0.01
Max.	8.6	1650	1021	20540	170	0.27
Mean	8.0	925.3	541.2	1219.6	9.5	0.10

1) Cottonwood Canyon Creek

An extensive baseline study conducted on Cottonwood Canyon Creek to determine water characteristics prior to mining at the proposed Cottonwood Mine began in 1979. A property acquisition in 1981 has resulted in mine plan changes. Due to this change, the baseline study was terminated as of January 1, 1983. As agreed upon in both the Deer Creek Mine and Wilberg Mine permit applications, UP&L will continue to monitor the flow at the USGS flume location on a monthly basis. The hydrograph in appendix C illustrates the flow information collected during 1984. This shows a peak flow of 2800 GPM in June and July and a baseline flow of 780 GPM in February.

2) Grimes Wash

Flow and Sampling Schedule

Locations: 1) Right Fork

2) Left Fork

3) Below the Mine

(See Map No. 1 in pocket)

Flow: Information is collected during the first or second week of each month.

Water Quality Sampling: Water samples are collected and analyzed during the first or second week of each month throughout the duration of the runoff season. Normal runoff season will be considered from May through October. If runoff persists beyond the month of October, samples will be collected on a quarterly basis until the month of May of the following year.

Flow Information

As stated above, flow information is collected monthly throughout the year with the use of two parshall flumes (see Map No. 1 for flume locations). A hydrograph has been generated for each flume location (See Appendix C). The hydrographs show that during 1984 the Right Fork, Left Fork and Below the Mine locations reached a peak flow of 1000, 2000 and 3000 GPM respectively in May.

Quality Information

The results of the 1984 quality analysis are listed in Tables 14, 15 and 16. The minimum, maximum and mean values are given for each year in which data were collected along with the historical results. Values are in milligrams per liter unless otherwise noted. Complete raw data can be found in Appendix C.

Grimes Wash drainage quality is greatly affected by the influx of the Right Fork. The Right Fork originates in the North Horn Formation, (interbedded shales, siltstones and sandstones) which is abundant with calcareous material. As a result the Right Fork contributes a relatively high amount of suspended solids to the Grimes Wash drainage. The concentration of solids decreases at the sampling location below the mine as a result of the Left Fork and Wilberg Mine discharge influx. Another quality aspect which revealed a slight change was an increase in total dissolved solids (TDS) at the Below-The-Mine location. Two sources which possibly contributed to a slight increase in TDS are as follows:

1). Wilberg Mine Discharge - which, if the mine pumps are activated, contributes a majority of the flow during the non-peak runoff periods. The mean TDS level of the historical (1976-1983) and 1984 time

TABLE 14: GRIMES WASH SURFACE QUALITY
RIGHT FORK

1984 Sample Dates	pH (Units)	Conductivity UM HOS/CM	TDS	TSS	Iron Total	Manganese
1-09	8.0	680	350	25.0	0.25	<0.01
4-12	8.3	750	477	42.0	0.24	<0.01
5-07	8.0	600	323	1482.0	1.05	<0.01
6-06	7.9	600	360	48.5	0.14	<0.01
7-16	8.1	550	246	35.4	0.13	<0.01
8-06	8.7	470	294	13.0	0.15	0.02
9-10	8.4	510	279	7.0	<0.05	<0.01
10-8	8.3	590	332	9.0	0.09	<0.01
Min.	7.9	470	246	7.0	<0.05	<0.01
Max.	8.7	750	477	1482.0	1.05	0.02
Mean	8.2	593.8	332.6	207.7	0.26	0.01
1983						
Min.	8.1	525	386	10.5	0.08	<0.01
Max.	8.6	650	280	493	2.64	0.18
Mean	8.3	610.0	328.2	183.3	0.69	0.06
1982						
Min.	7.6	500	280	30.5	0.87	0.08
Max.	8.4	720	435	485	2.02	0.30
Mean	8.1	570	334	175.8	1.54	0.21
1981						
Min.	8.2	600	379	1.5	0.01	0.02
Max.	8.5	700	476	46.5	0.29	0.02
Mean	8.35	650	427	24.0	0.15	0.02
1980						
Min.	8.2	680	339	224.7	0.12	0.11
Max.	8.3	690	410	576	5.3	0.28
Mean	8.25	685	375	400.4	2.7	0.20
Historical 1979 - 1983						
Min.	7.6	500	280	1.5	0.01	<0.01
Max.	8.6	720	700	1860	7.20	0.30
Mean	8.2	609.4	383.5	285.6	1.64	0.13

TABLE 15: GRIMES WASH SURFACE QUALITY
LEFT FORK

1984 Sample Dates	pH (Units)	Conductivity UM HOS/CM	TDS	TSS	Iron Total	Manganese
1-09	7.9	600	301	<0.5	<0.05	<0.01
4-12	8.4	600	352	30.5	<0.05	<0.01
5-07	7.9	610	337	76.0	0.09	<0.01
6-06	7.9	675	396	18.5	0.06	<0.01
7-16	7.8	675	278	2.6	<0.05	<0.01
8-06	8.3	620	364	4.0	<0.05	<0.01
9-10	8.5	610	343	3.0	<0.05	<0.01
10-8	8.4	685	380	<0.5	<0.05	<0.01
Min.	7.8	600	278	<0.5	<0.05	<0.01
Max.	8.5	685	396	76.0	0.09	<0.01
Mean	8.1	639.3	343.9	17.0	0.06	<0.01
1983						
Min.	7.4	720	295	<0.5	0.04	<0.01
Max.	8.3	650	570	133.0	0.56	0.11
Mean	8.1	676.3	388.1	28.6	0.19	0.03
1982						
Min.	7.8	590	339	<0.5	0.20	0.09
Max.	8.2	790	448	23.5	0.36	0.15
Mean	8.05	645	373.5	6.3	0.28	0.12
1981						
Min.	8.7	610	379	<0.5	0.07	0.02
Max.	8.3	750	518	8.5	0.30	0.05
Mean	8.2	682.5	453	4.8	0.22	0.03
1979*						
Min.	8.7	-	327	28.2	0.81	-
Max.	8.7	-	327	28.2	0.81	-
Mean	8.7	-	327	28.2	0.81	-
Historical 1978 - 1983						
Min.	7.4	590	295	<0.5	0.04	<0.01
Max.	8.7	790	570	133	0.81	0.15
Mean	8.1	667.2	394.0	16.5	0.30	0.06

* Only one sample collected.

TABLE 16: GRIMES WASH SURFACE QUALITY BELOW THE MINE

1984 Sample Dates	pH (Units)	Conductivity UM HOS/CM	TDS	TSS	Iron Total	Manganese
1-09	7.9	1700	923	11.5	0.45	0.07
4-12	8.3	1000	690	25.0	0.10	0.01
5-07	7.8	990	587	107.0	0.32	<0.01
6-06	8.0	800	506	24.5	0.07	<0.01
7-16	7.7	1000	457	20.9	0.05	<0.01
8-06	8.3	1000	593	5.0	0.06	<0.01
9-10	8.3	1100	658	1.0	0.05	<0.01
10-8	8.1	1220	780	1.0	0.06	0.02
Min.	7.7	800	457	1.0	0.05	<0.01
Max.	8.3	1700	923	107.0	0.45	0.07
Mean	8.1	1101.3	649.3	24.5	0.15	0.02
1983						
Min.	7.7	700	427	<1.0	0.05	0.01
Max.	8.3	1000	643	244.0	1.25	0.06
Mean	8.13	851.9	521.9	57.4	0.28	0.03
1982						
Min.	7.9	780	435	3.0	0.26	0.09
Max.	8.2	1000	679	171.0	1.20	0.19
Mean	8.0	906.7	554.7	63.92	0.82	0.12
1981						
Min.	8.0	790	434	0.5	0.01	0.01
Max.	8.3	1100	715	19.5	0.06	0.03
Mean	8.15	970.0	609.8	6.34	0.03	0.02
1980						
Min.	8.1	710	363	234.7	0.13	0.09
Max.	8.2	780	448	738.5	4.2	0.30
Mean	8.15	745	405.5	486.6	2.17	0.20
Historical 1978 - 1983						
Min.	7.6	700	172	<0.5	0.01	0.01
Max.	8.5	1100	715	1180	18.9	0.30
Mean	8.1	881.3	507.7	113.1	1.40	0.07

periods are 543.3 mg/l and 676.5 mg/l respectively. A gradual increase in TDS levels for both the Wilberg Mine discharge and In-Mine sampling has been experienced. No explanation was found to account for this increase.

2). A small seep emanating from the Mancos Shale formation just upstream of the sampling location could have possibly contributed to the higher TDS levels experienced in 1984.

EAST MOUNTAIN SPRINGS

Flow and Sampling Schedule

Flow: All springs identified on East Mountain are measured during the month of July. At least one spring from each mode of occurrence (Table 17) is measured a second time during the month of October. In addition to this monitoring, a minimum of thirteen springs will be monitored to establish a discharge recession curve. In general, measurements will be made on a monthly basis during the months of July through September, if weather and reasonable access permits. But, when historical data indicate that a spring is short lived, all efforts will be made to measure discharge from that spring at least three times, equally spaced, within it's flow period.

Quality Samples: All springs located within the area covered by the five year mine plan are sampled for water quality characteristics during the month of July. A representative group of springs are sampled again in October to document quality variations.

Spring Identification

The 1984 water reconnaissance program identified six (6) new springs. A detailed geologic description of these springs is given in the Appendix D. Also, in table 17, these springs are identified with

TABLE 17: MODES OF OCCURRENCE EAST MOUNTAIN SPRINGS

Stratigraphic Location	Occurrences: Permeable fluvial channels that intersect the land surface	Flow along permeable strata underlain by impermeable mudstone which intersects the land surface	Contact of permeable beds and the Roans Canyon Fault zone	Mode of occurrence not identified
Base of Flagstaff Limestone		79-6, 79-7, 79-35	Sheba Springs 79 -1	
North Horn Formation	Teds Tub, Burnt Tree, 79-2, 79-3, 79-8, 79-9, 79-11, 79-12, 79-13, 79-14, 79-15, 79-16, 79-17, 79-21, 79-22, 79-26, 79-27, 79-28, 79-29, 79-34, 79-39, 80-42, 80-43, 80-46, 80-47, 80-48, *84-53, *84-56		Elk Springs, 79-10, 79-18, 79-19, 79-20, *84-54	
Base of North Horn Formation		79-23, 79-25, 79-32, 79-36, 79-37, 79-38, *84-55	79-30, 79-31	
Other Stratigraphic Horizons			80-49 (Price River) Bear Canyon Fault Zone *82-51 (Price River)	Flagstaff Limestone 79-4, 79-5, Pine Springs Price River Formation 79-24, 79-33, 79-40, 80-41, 80-44, 80-45, *82-52, *Jerk Water Blackhawk Formation 80-50, *84-57 (Permeable fluvial channel that intersects the land surface)

asterisks. The spring map, Map No. 2 found in the back cover pocket, was updated to include the 1984 observations.

Spring Flow

A drop in precipitation from 1983 to 1984 corresponded to lower spring flow measurements in 1984. Table 18 is a tabulation of the flow data collected during the 1984 monitoring season. To record the season variation, at least one spring from each mode of occurrence was monitored more than once. The seasonal variation is represented in Table 18 under the column heading "Seasonal Net Change". The percentage figures represent the amount of change either positive or negative. The average change reveals a 68.3 percent decrease from the July to the October measurements.

A four year comparison of spring discharge is shown in Table 19. This table includes a year by year comparison of springs identified from each mode of occurrence (Table 17). The springs utilized in this comparison are underlined in Table 17. The flow values for the individual springs represent the July measurements. October measurements were not utilized due to the winter weather conditions causing some springs to be inaccessible.

Table 19 has then been compared to local climatology to see how closely spring discharge rates follow local annual precipitation. Figure 4 reflects the direct correlation between spring discharge and precipitation. The annual precipitation is an average of the four weather stations reported in the Climatology section, i.e., Hunter Plant, Huntington Plant, Electric Lake and East Mountain. This comparison will be vital in determining mining effects on spring discharge versus general changes in annual precipitation.

An additional flow information study was initiated during the summer of 1984. The purpose of this program is to establish flow recession curves for the following springs: (1) Burnt Tree, (2) Elk Springs, (3) Sheba,

TABLE 18A: EAST MOUNTAIN SPRINGS DISCHARGE

Spring	Type of Measurement	Date Sampled	Flow (GPM)	Temp. F°	Date Sampled	Flow (GPM)	Temp. F°	Net Change
Sheba	2	7-13-84	19.7	41°	10-23-84	3.5	42°	-82
Elk Spring*	1	7-10-84	427.9	39°	10-23-84	112.2	39°	-74
Burnt Tree	2	7-05-84	26.6	42°	10-25-84	15.0	41°	-44
Jerk Water	2	7-17-84	2.8	41°	10-24-84	2.0	40°	-27
Pine Springs	2	7-13-84	4.4	44°	11-01-84	0.4	44°	-92
Pine Springs Trough	2	7-13-84	10.9	41°	11-01-84	dry		
Ted's Tub	3	7-17-84	48.0	43°	10-24-84	5.8	37°	-88
79-1	3	7-14-84	51.6	40°	10-24-84	13.0	40°	-75
79-2	2	7-05-84	9.7	42°	10-25-84	2.7	41°	-72
79-3	2	7-05-84	21.8	42°	10-25-84	0.3	41°	-99
79-4	2	7-13-84	4.0	40°				
79-5	2	7-13-84	6.7	60°				
79-6	2	7-13-84	1.3	42°				
79-7	2	7-13-84	2.0	41°				
79-8**	2	8-22-84	2.1	46°				
79-9**	2	8-22-84	3.0	40°	10-23-84	1.3	44°	-57
79-10**	2	8-22-84	20.0	41°	10-23-84	9.2	43°	-54
79-11	2	7-11-84	5.5	41°				
79-12***	2	7-17-84	5.5	81°				
79-13****	2	7-17-84	21.4	44°				
79-14	2	7-17-84	0.7	56°				
79-15	2	7-17-84	26.1	41°	10-24-84	5.4	41°	79
79-16	2	7-12-84	14.4	40°				
79-17	2	7-12-84	7.4	39°	10-24-84	Inaccessible		
79-18	2	7-12-84	25.5	40°	10-24-84	dry		
79-19	2	7-12-84	35.3	40°	10-24-84	13.3	41°	-62
79-20	2	7-12-84	4.0	42°	10-24-84	0.8	42°	-79
79-21	2	7-05-84	dry	—				
79-22	2	7-05-84	2.4	51°				
79-23	2	7-17-84	3.6	43°	10-24-84	damp, no flow		
79-24	2	Still flowing from 79-23						
79-25	2	7-12-84	9.5	43°				
79-26	2	7-12-84	20.0	48°	10-25-84	2.3	41°	-89
79-27	2	7-12-84	10.5	44°	10-25-84	2.3	41°	-78
79-28	2	7-11-84	11.2	41°	10-25-84	6.5	40°	-42
79-29	2	7-11-84	6.2	40°	10-25-84	4.2	39°	-32
79-30**	2	8-22-84	1.2	50°				
79-31**	2	8-22-84	0.9	48°				
79-32	2	7-12-84	3.1	52°	10-25-84	0.8	39°	-76
79-33	2	7-12-84	4.6	42°				
79-34	3	7-17-84	42.9	40°	10-25-84	4.2	40°	-90
79-35	2	7-17-84	10.2	40°	10-24-84	3.3	40°	-68
79-36****	2	7-17-84	18.2	40°				
79-37	2	7-17-84	0.5	59°				

TABLE 18B: EAST MOUNTAIN SPRINGS DISCHARGE (cont.)

Spring	Type of Measurement	Date Sampled	Flow (GPM)	Temp. F°	Date Sampled	Flow (GPM)	Seasonal Temp. F°	Net Change
79-38	2	7-17-84	9.2	41°				
79-39	2	7-18-84	1.5	61°				
79-40	2	7-18-84	8.3	40°				
80-41	2	7-05-84	15.0	—				
80-42	2	7-05-84	4.3	50°				
80-43	2	7-05-84	20.0	40°	10-25-84	dry		
80-44	2	7-05-84	13.1	—				
80-45	2	7-05-84	1.1	—				
80-46	2	7-05-84	28.3	—	10-25-84	8.2	40°	-71
80-47	2	7-05-84	15.0	—	10-25-84	10.0	40°	-33
80-48	2	7-12-84	18.8	40°				
80-49	3	7-12-84	42.9	41°	10-24-84	Inaccessible		
80-50	2	7-16-84	3.4	46°				
82-51	2	7-17-84	5.9	43°				
82-52	3	7-17-84	48.0	41°	10-24-84	12.0	40°	-75
84-53 +	2	7-11-84	26.1	44°				
84-54 +	2	7-13-84	12.0	38°				
84-55 +	2	7-18-84	24.5	39°				
84-56 +	2	7-18-84	6.3	41°				
84-57 +	2	5-07-84	10.9	42°				
84-57 +	2	8-06-84	0.7	49°				

Type of Measurement:
1 = Parshall Flume
2 = Pipe and 1-gallon bucket, stopwatch
3 = Pipe and 5-gallon bucket, stopwatch

+ New springs identified in 1984
* 6" x 15" flume installed 7/20/84 (measurement 0.64/458 GPM)
All previous measurements utilized a 90° V-notch weir
** Monitoring delayed - access blocked by mudslide.
*** No place for an accurate temperature measurement
**** Re-established to include surrounding seeps

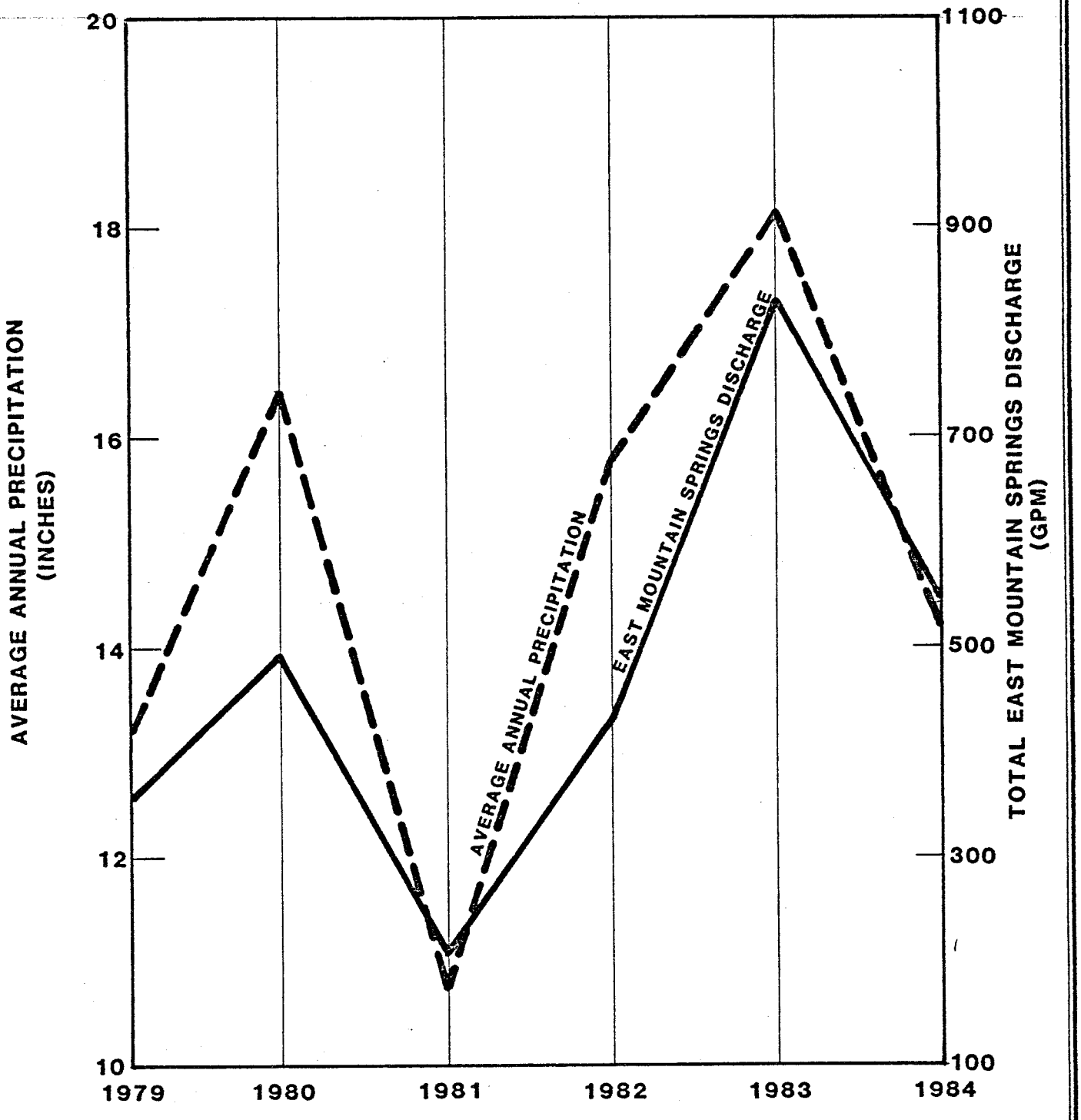
TABLE 19: YEARLY SPRING DISCHARGE VARIATIONS (GPM)

Spring	1979	1980	1981	1982	1983	1984
Sheba	12.0	13.0	10.7	15.0	22.9	19.7
Burnt Tree	12.0	26.0	9.2	12.0	30.5	26.6
Pine Springs	4.1	12.0	2.6	5.3	17.1	4.4
Pine Springs Trough	6.6	Dry	6.9	8.6	20.9	10.9
Ted's Tub	65.0	78.0	27.3	60.0	89.0	48.0
79-1	40.0	130.0	28.3	72.0	106.7	51.6
79-2	0.5	7.5	10.0	12.0	9.1	9.7
79-3	2.6	15.0	2.6	10.0	26.7	21.8
79-5	3.1	1.2	4.6	5.0	5.7	6.7
79-6	0.86	Damp	Dry	1.0	1.2	1.3
79-7	0.53	Damp	5.0	1.0	1.8	2.0
79-8	2.0	1.5	1.7	2.4	5.9	***2.1
79-11	6.0	5.0	0.5	2.0	8.3	5.5
79-15	2.0	5.0	7.2	27.5	42.9	26.1
79-17	0.5	0.5	0.2	4.6	5.0	7.4
79-18	4.0	17.0	16.0	20.0	25.0	25.5
79-19	3.0	Dry	3.5	46.0	41.1	35.3
79-20	-	1.0	Dry	4.3	4.3	4.0
79-21	-	Dry	Dry	Dry	Damp	dr
79-22	14.0	Dry	Dry	0.5	1.0	2.[illegible]
79-25	10.0	8.0	4.6	12.0	12.4	9.5
79-28	3.0	43.0	4.0	4.6	16.7	11.2
79-29	4.0	6.0	1.3	4.0	10.0	6.2
79-30	1.5	2.0	Damp	10.0	4.2	*** 1.2
79-31	0.6	0.5	0.4	1.0	1.0	*** 0.9
79-32	1.4	3.0	0.45	2.1	3.3	3.1
79-34	10.0	5.0	2.4	30.0	56.7	42.9
Sub-Total	271.69	381.40	152.45	377.20	569.4	386.0
80-41		14.0	0.4	1.0	10.9	15.0
80-42		5.7	Dry	Dry	27.3	4.3
80-43		10.0	Damp	10.0	24.0	20.0
80-44		20.0	39.6	12.0	24.0	13.1
80-45		12.0	Damp	4.0	12.0	1.1
80-46**	40.0	31.0	1.6	12.0	60.0	28.3
80-47**	20.0	12.0	4.6	12.0	20.0	15.0
80-48		5.0	1.8	1.33	26.7	18.8
80-49		4.0	1.3	15.0	60.0	42.9
TOTALS (Includes All Springs)	350*	495.10	201.75	444.53	834.3	544.5

* Estimated

** In 1979 these springs were monitored as 79-20 and 79-21.

*** Monitoring delayed - access blocked by mudslide, date of measurement - 8-22-84



EAST MOUNTAIN PROPERTY EMERY COUNTY, UTAH	
AVERAGE ANNUAL PRECIPITATION VS. TOTAL SPRING DISCHARGE	
UTAH POWER & LIGHT COMPANY Department of Mining & Exploration	
DATE: 26 NOV 1984	BY: A.W.BROW
SCALE: NONE	FIGURE 4

(4) 79-10, (5) 79-23, (6) 79-26, (7) 79-32, (8) 79-35, (9) 80-44, (10) 80-46, (11) 82-52, (12) North Spring and (13) South Spring. The flow information collected during 1984 is shown below, Table 20, corresponding spring recession curves are located in Appendix D.

TABLE 20: EAST MOUNTAIN REGRESSION STUDY (FLOW*/TEMP.)

Spring	July	August	September	October	November
Burnt Tree	26.6/42°	24.0/44°	18.8/44°	15.0/41°	Inaccessible
Elk Springs	458/39°	202/40°	152.6/40°	112.2/39°	due to snow
Sheba	19.7/41°	9.2/44°	4.75/44°	3.5/42°	"
79-10	**	20.0/41°	15.0/42°	9.2/43°	"
79-23	3.6/43°	2.0/50°	0.67/52°	damp/no flow	"
79-26	20.0/48°	5.8/45°	3.5/44°	2.3/41°	"
79-32	3.1/52°	2.1/50°	1.7/52°	0.75/39°	"
79-35	10.2/40°	6.7/41°	5.5/40°	3.3/40°	"
80-44	13.1/--	6.0/44°	4.4/41°	2.6/39°	"
80-46	28.3/--	15.0/42°	10.0/42°	8.2/40°	"
82-52	48.0/41°	22.0/40°	17.1/41°	12.0/40°	"
North Spring***					
South Spring***					

*All information reported in gallons per minute (GPM)
**Access blocked by mudslide
***To be sampled starting in 1985

QUALITY

To more closely identify springs which are related one with another, samples of their water were analyzed to determine the percentage of cations and anions in solution. These percentages have been graphically represented as cation-anion diagrams (see Appendix D). The purpose of the cation-anion diagrams is to identify groups of related springs by water chemistry. These diagrams clearly show the similarity of water quality of springs originating in the same geologic formation. To better visualize this concept, the cation/anion diagrams are presented by the geologic formation in which it originates.

The quality of the springs sampled in 1984 reveals only a slight variation from historical averages. The sulfate content which showed an unexplainable increase from 1981 through 1982, declined in 1983 and 1984 to levels similar to the 1979 and 1980 content. A summary of the water quality analysis for a representative group of East Mountain Springs is presented in Table 21. In this table the mean values for 1984 are compared to the historical results for each respective spring. The raw data regarding all springs sampled is contained in Appendix D.

MINE HYDROLOGY

SURFACE WATER SOURCES IN RELATION TO MINE WORKINGS

The relationship of the Deer Creek and Wilberg Mine workings with the overlying springs is shown in Figures 5 and 6. Beginning in 1979, UP&L has developed an ambitious spring monitoring program with emphasis to detect changes in the East Mountain hydrologic regime as a result of mining. With the data collected to date, there is no indication of any mine related effects on spring discharge rates. As expected, there is a direct relationship between annual precipitation and spring discharge rates as previously discussed on page 33 and shown in Figure 4.

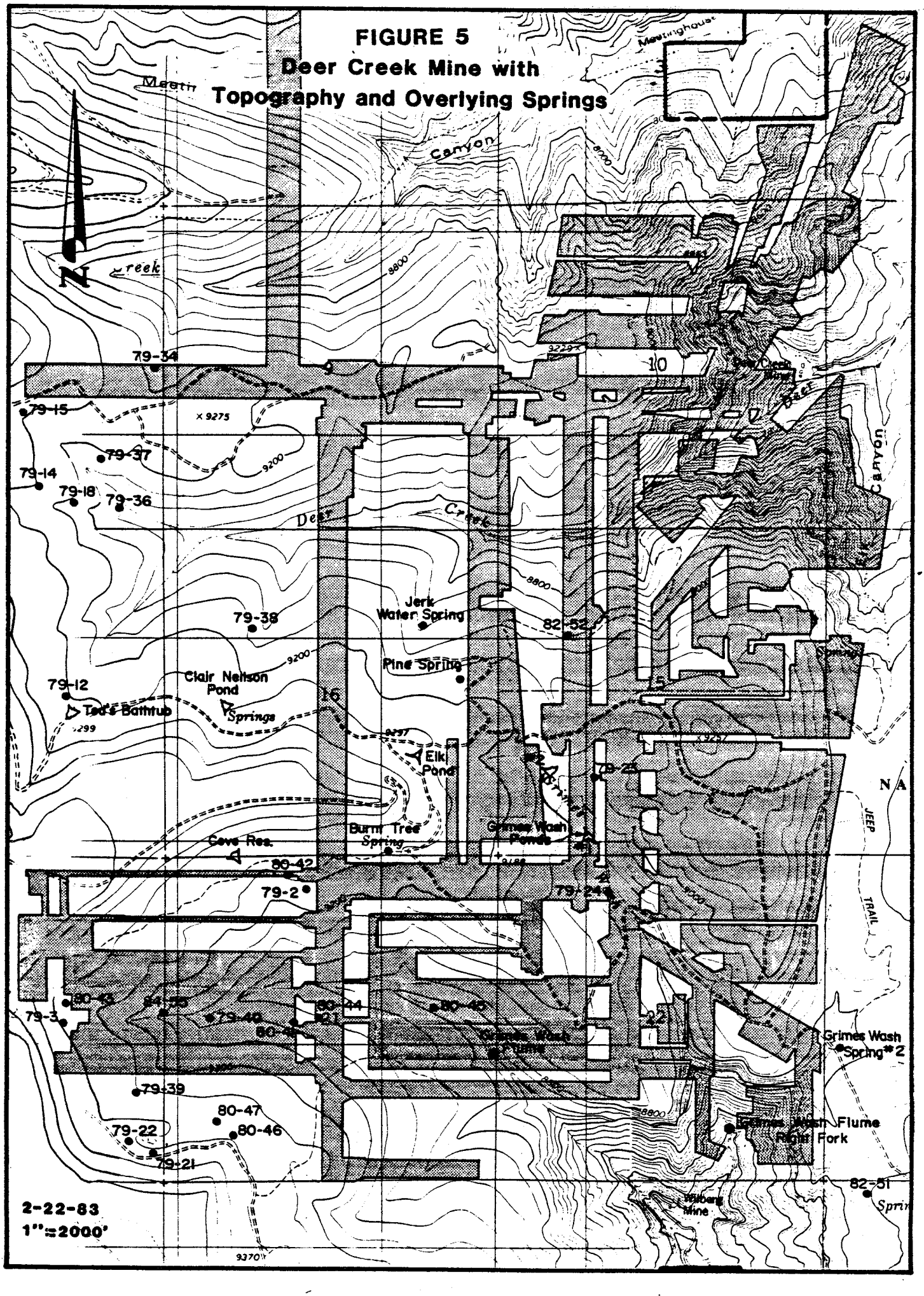
GROUNDWATER QUALITY AND COLLECTION PROCEDURES

In-mine quality and quantity measurement began by UP&L in 1977 and have continued through 1984. With the collection of numerous samples throughout the extent of the mine workings, the quality has remained relatively constant. Figure 7 depicts the consistency of the ground water quality by the use of cation and anion diagrams. It also reveals the similarity between Deer Creek Mine and Wilberg Mine.

TABLE 21: EAST MOUNTAIN SPRINGS WATER QUALITY (Historical to 1984)

Parameter	Burnt Tree		Ted's Tub		79-15		79-28		80-44		80-49	
	Historical	1984	Historical	1984	Historical	1984	Historical	1984	Historical	1984	Historical	1984
Elevation	9260		9290		9290		9290		8980		9025	
Geologic Formation	TKN		TKN		TKN		TKN		KPR		KPR	
PH	7.6	7.0	7.8	7.4	7.5	7.3	7.6	7.1	7.9	7.1	7.6	7.3
Alkalinity	279.4	265.0	267.8	276.0	292.1	269.0	264.5	259.0	382.3	394.0	339.5	333.0
TSS	1.5	2.5	9.4	10.0	4.2	2.0	49.9	0.5	34.5	27.0	24.1	0.5
TDS	289.7	281.5	296.2	286.0	314.9	288.0	422.9	359.5	515.8	559.0	359.3	344.0
Sulfate	43.6	9.0	48.7	8.0	160.0	6.5	156.4	68.0	168.7	85.0	88.1	33.0
Iron	0.37	0.05	0.16	0.05	0.14	0.05	0.52	0.05	0.18	0.05	0.21	0.05

FIGURE 5
Deer Creek Mine with Topography and Overlying Springs



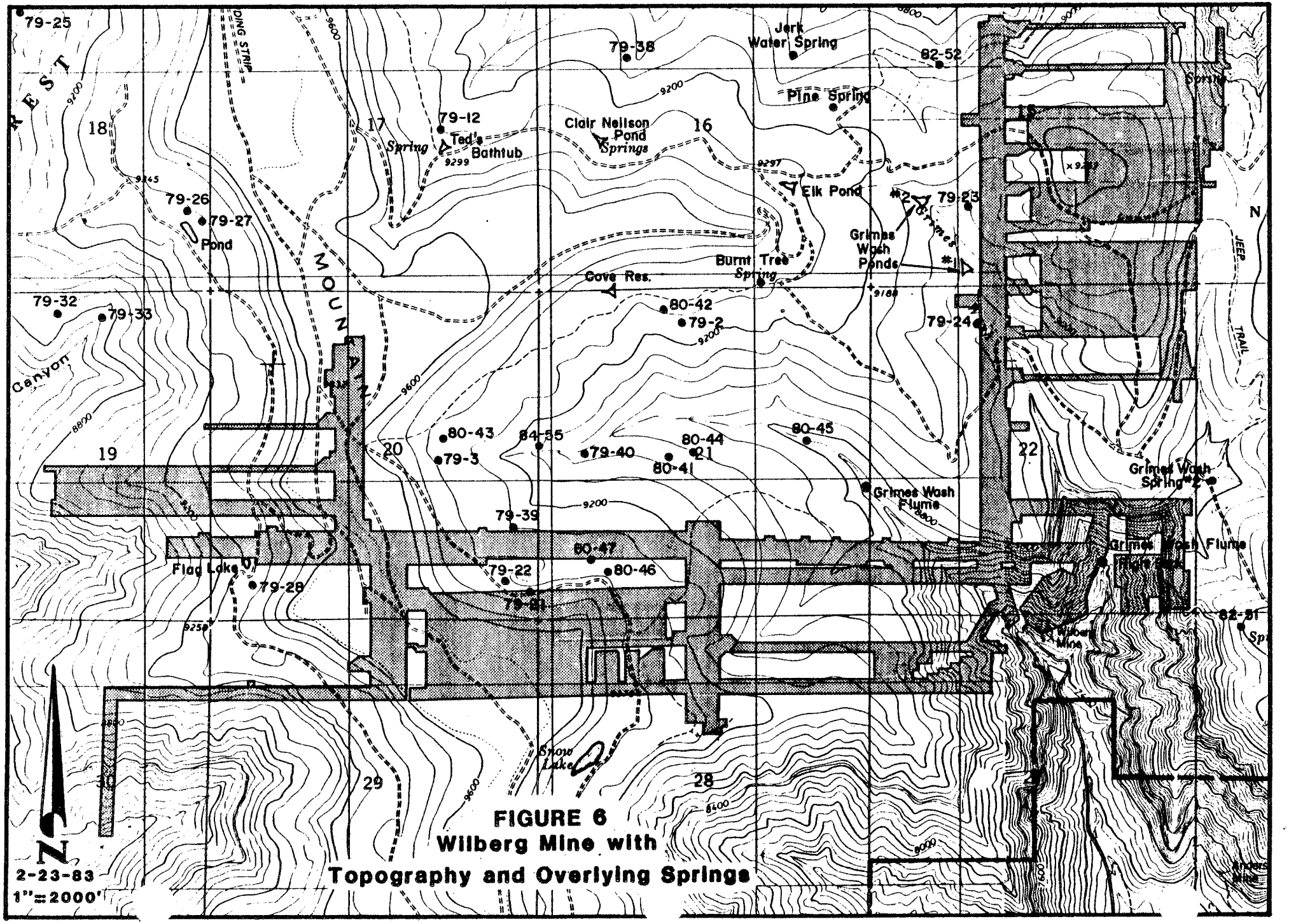


FIGURE 6
Wilberg Mine with
Topography and Overlying Springs

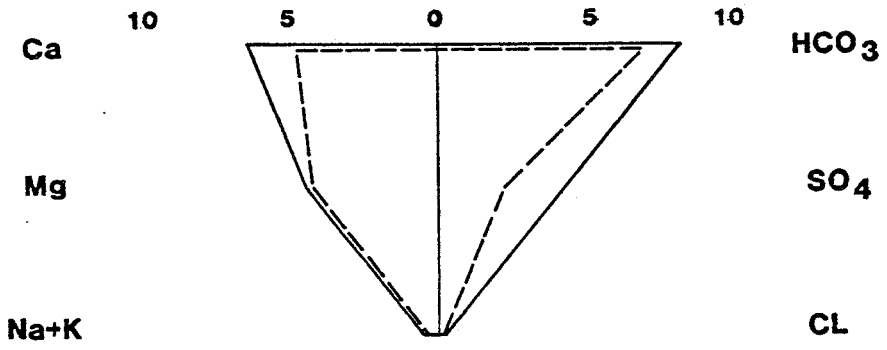
FIGURE 7

IN-MINE WATER QUALITY CATION-ANION DIAGRAMS

DEER CREEK IN-MINE

Historical ————

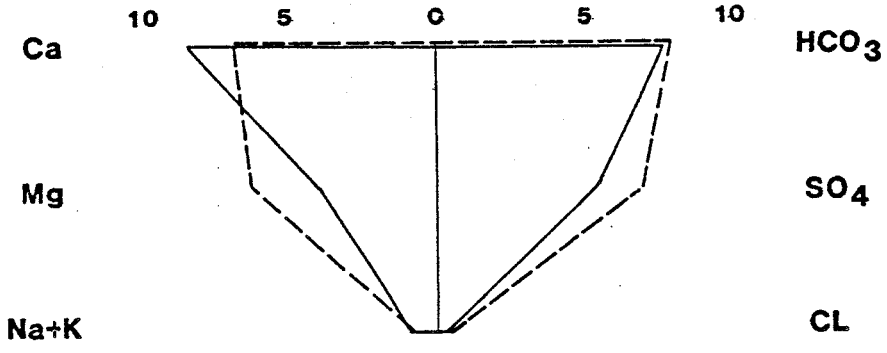
1984 – – – – –



WILBERG IN-MINE

Historical ————

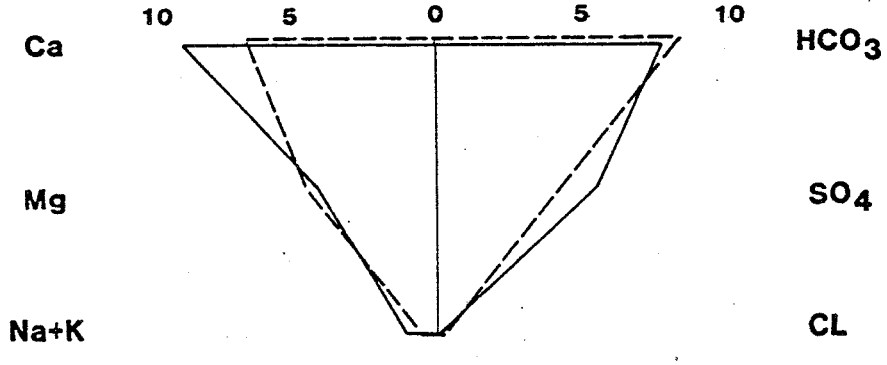
1984 – – – – –



WILBERG/DEER CREEK HISTORICAL

Wilberg ————

Deer Creek – – – – –



Collection procedures for ground water quality consist of two grab samples collected and analyzed per quarter at each of the mines which produce measureable quantities of water. Sampling according to this established plan began in the first quarter of 1982.

Long-term monitoring locations have been established at each of the mines which produce measureable quantities of water, i.e., Deer Creek and Wilberg Mines, see Map 3 and 4 in pocket. Four types of occurrences have been recognized to exist within the current mine workings, refer to Figure 8.
They include:

1. Structural rolls with overlying fluvial channels.
2. Pleasant Valley Fault System
3. Fractures and joints (lineaments)
4. Roof bolt and in-mine drill holes.

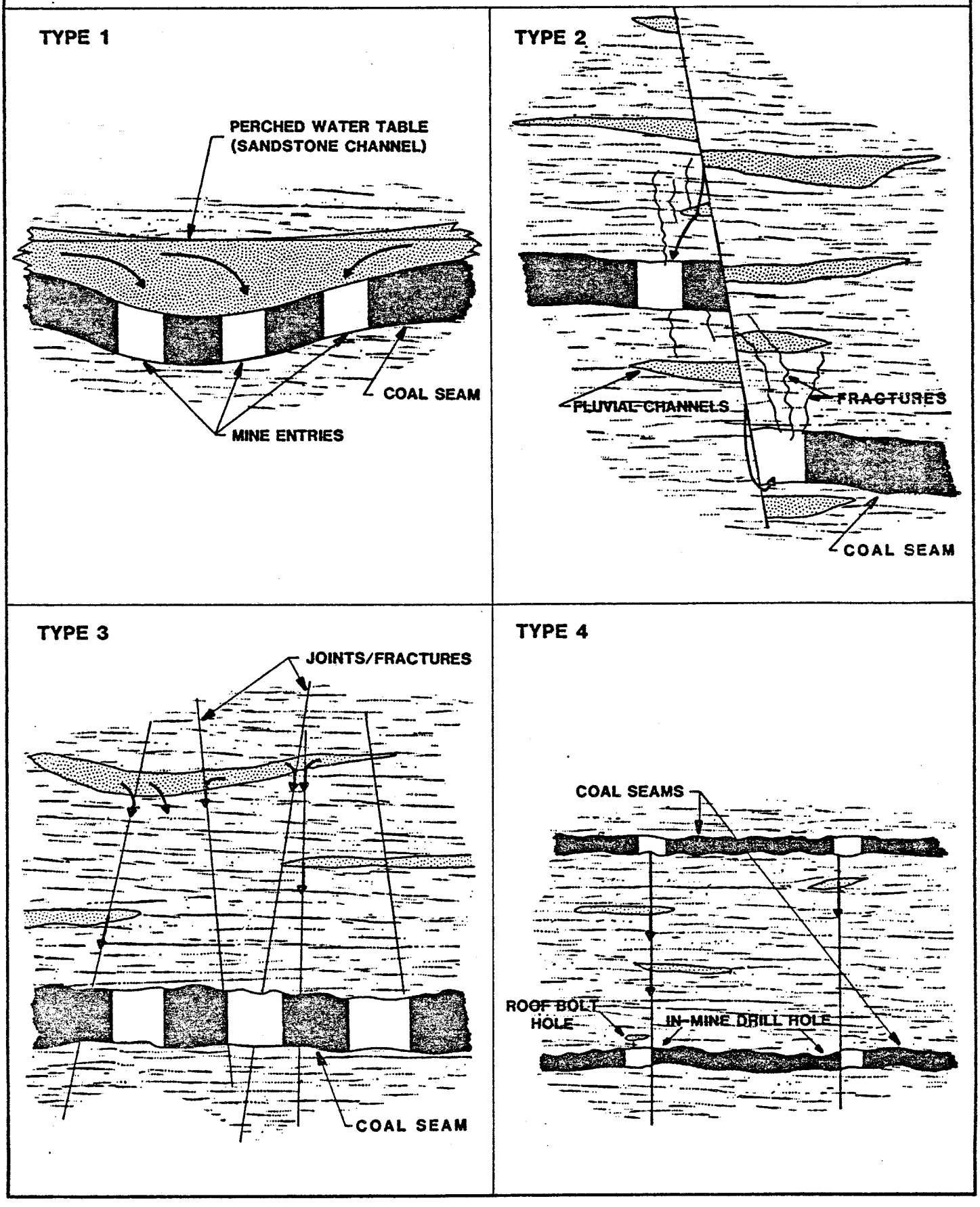
A collection device was installed at each long-term monitoring location. Flow and temperatures collected on a quarterly basis from the long-term sites in both mines were fairly consistent (See Appendix E & F). Three locations experienced variations in flow. The site and possible explanation are given as follows:

Mine	Location #	Site	Explanation
Deer Creek	2	3rd W xc-10, 2L	Extraction of 3rd Left Longwall.
Deer Creek	3	3rd W xc-33, 2L	Development of the 5th Left entries.
Wilberg	2	1st N xc-46, 3R	Extraction of 6th and 7th Right Longwalls.

Three long-term sites in the Deer Creek Mine were eliminated. The location and reason for termination of monitoring are as follows:

FIGURE 8

LONG TERM WATER SOURCES



1983 ID No.	Location Description	Reason for Termination
3	Main West xc-0 Track	This site is located in a main intake air entry near the portal facilities. Freezing prevented consistent, year-round, monitoring information.
6	Main West Rock Slope	Flow from this monitoring site ceased after three months.
7	Old Main West xc-6, 1R	A rock slope construction project prevented installation of permanent collection device. Also, similar freezing which was experienced with site No. 3 existed.

One new site was established in Deer Creek during 1984. The type of occurrence and site are indicated on Map No. 3 (in pocket) and described as the following:

New Site	Type
3rd N xc-41, 2R	4b: Exploration bore hole which intersected an overlying fluvial channel.

Additional long-term monitoring sites will be added when areas meeting our long-term criteria are opened by mining (i.e.: long-term accessability and water source is such that consistent sampling can be achieved).

MINE WATER

DES-BEE-DOVE MINE

The mine workings of the Des-Bee-Dove Mines have been generally dry since the inception of mining. One minor exception existed during 1984, Deseret Mine, 2nd North entry. As described in the 1982 annual report, the ground water occurrence in 2nd North was of an unusual nature. Fractures in the Starpoint floor began to produce water at an estimated rate of 10 GPM during mid-1982. As in the case of most multiple seam extraction mining of the upper seam (Little Dove Mine), precedes the mining of the lower seam

(Deseret Mine). During the Little Dove development, a sump was constructed at crosscut 38, for in-mine water storage. As the mine workings of the Deseret were developed below the area in which Little Dove sump is located, fractures in the Starpoint (Deseret floor) began to produce water. It is felt that water from the Little Dove sump was percolating along fractures associated with the Deer Creek Fault and enters the Deseret Mine through fractures in the Starpoint floor. During 1983 the flow decreased to a point where measureable quantities cease to exist.

The nature of the water occurrence made it impossible to collect accurate quality samples from a floor source. Therefore, samples were not collected during 1984.

WILBERG MINE

1. In-Mine Water Production. The best estimate of in-mine water production was arrived at by combining the following values:

Wilberg Mine Discharge	47.9 Million Gallons
Des-Bee-Dove Mine Transfer	10.7 Million Gallons
Estimated Evaporation*	19.0 Million Gallons
Domestic Usage	5.1 Million Gallons
Total Discharge	82.7 Million Gallons

* See 1981 Hydrologic Monitoring Report

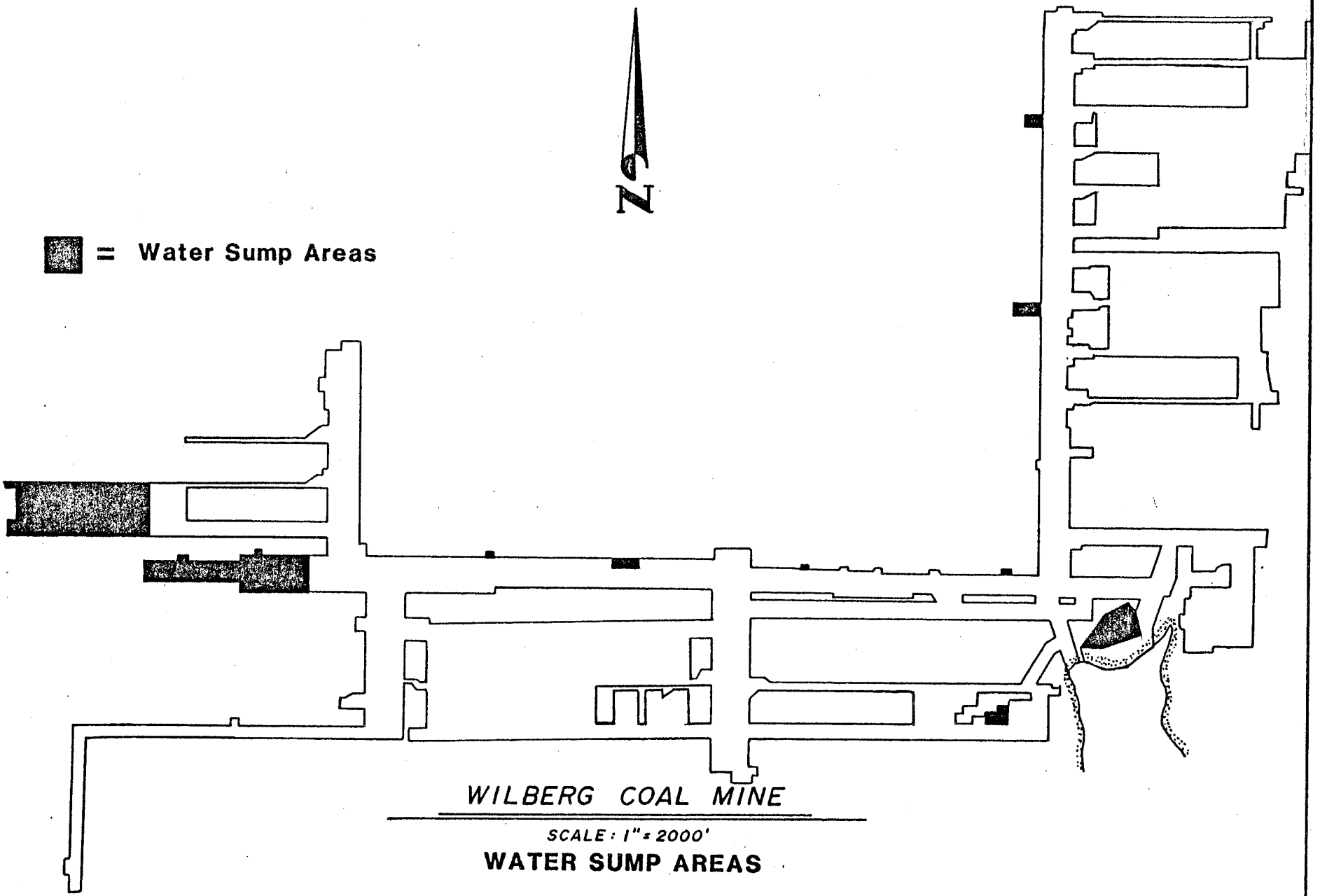
2. In-Mine Quality. A total of eight samples were collected in the Wilberg Mine in 1984. Table 22 lists the characteristics of the samples collected and compares the mean, minimum, and maximum results of 1984 to the

historical values. It is apparent from Table 22 that the average quality of the in-mine water has remained relatively constant. The consistency was also depicted in the stiff diagrams presented as Figure 7. A complete chemical analysis of samples can be found in Appendix E.

TABLE 22: WILBERG IN-MINE WATER QUALITY

Location		pH	Alka.	Ca	Cl	Cond.	Mg	K	Na	SO_4	TDS	TSS
1Nxc13,2L		7.1	415	153.6	13.7	1100	67.1	2.6	20.4	250	740	0.5
1Nxc46,3R		7.3	401	199.2	16.0	1425	91.7	3.3	27.4	460	1033	1.5
2Sxc11,2L		7.9	383	116	13.5	1400	104.0	5.6	23.6	380	973	0.5
MWxc109,1L		7.9	357	62.0	7.7	910	52.2	5.5	51.9	135	545	3.5
1Nxc46,3R		7.2	395	198	13.4	1575	87.8	4.0	23.0	460	1084	0.5
1Nxc13,2L		7.2	423	148	11.6	1225	67.3	3.2	16.6	240	762	0.5
3Nxc5,1L		7.7	312	12.0	13.2	1000	4.9	1.2	170.8	150	564	0.5
4Exc42,1L		7.0	525	224	18.5	2000	119.2	5.1	26.0	610	1534	1.0
	Min	7.0	312	12.0	7.7	910	4.9	1.2	16.6	135	545	0.[illegible]
1984	Max	7.9	525	224	18.5	2000	119.2	5.6	170.8	610	1534	3.[illegible]
	Mean	7.4	401.4	139.1	13.5	1329.4	74.3	3.8	45.0	335.6	904.4	1.1
Hist.	Min	6.6	169	11.2	0.89	620	5.4	1.0	17.0	78	419	0.1
(1977-	Max	8.2	566	356	21.9	2200	163	21.0	183.8	780	1610	70.1
1983)	Mean	7.38	387.3	166.0	10.0	1117.4	44.4	7.26	42.2	261.0	699.5	3.9

3. Discharge Quantity. Water produced in the Wilberg Mine is pumped to a primary sump location within the Wilberg workings by a complex pumping and piping system, Figure 9. The sump, which functions as a settling basin, effectively removes settleable solids from the water. A portion of this water is redistributed to various areas of the mine to be utilized in the mining operations. Water from this sump is also used to supply the water treatment plant at the Wilberg Mine and water to the Des-Bee-Dove mining complex. Excess water is discharged into the Left Fork of Grimes Wash after



WATER SUMP AREAS

FIGURE 9

Mine Workings Updated to: 12/1/84

passing through an oil skimmer in accordance with stipulations of the Wilberg Mine Discharge Permit UT-0022896.

The rate and frequency of discharge is dependent upon the water level in the sump. As the sump approaches its capacity, discharge is initiated until the water is drawn down to a reasonable level.

The total water that was discharged from the Wilberg Mine during 1984 amounted to 147 acre feet or 47.9 million gallons. The recorded flow of 147 acre feet during 1984 represents an 89% decrease compared with the 1983 discharge of 435 acre feet. Two main reasons for the large decrease in water discharged from the Wilberg Mine in 1984 were: 1) Main West and the 3rd North sump capacities were increased (see Figure 9) and 2) mining primarily in areas dominated by mudstone roof (non-water bearing strata). The average monthly discharges are shown in Figure 10. Also included is a graph displaying the discharge rates from January 1979 through December 1984, Figure 11. The rapid variations from month to month could possibly be the result of several factors which include: (1) increase in annual coal production, (2) increase in the labor force (higher culinary use), (3) improved pumping techniques or changes made to sump capacities, and (4) near portal ground water sources freezing during the winter months resulting in an overall decrease in discharge rates during this period. It is thought that the factor of greatest influence on ground water is the increase in the annual coal production especially in areas overlain by sandstone channels.

4. Discharge Quality. Monthly water quality samples were collected to insure that the water discharged was in compliance with the Wilberg Mine discharge permit. Table 23 compares the minimum, maximum and mean values from an historical standpoint to 1984. An examination of Table 23

FIGURE 10

WILBERG MINE DISCHARGE

1984

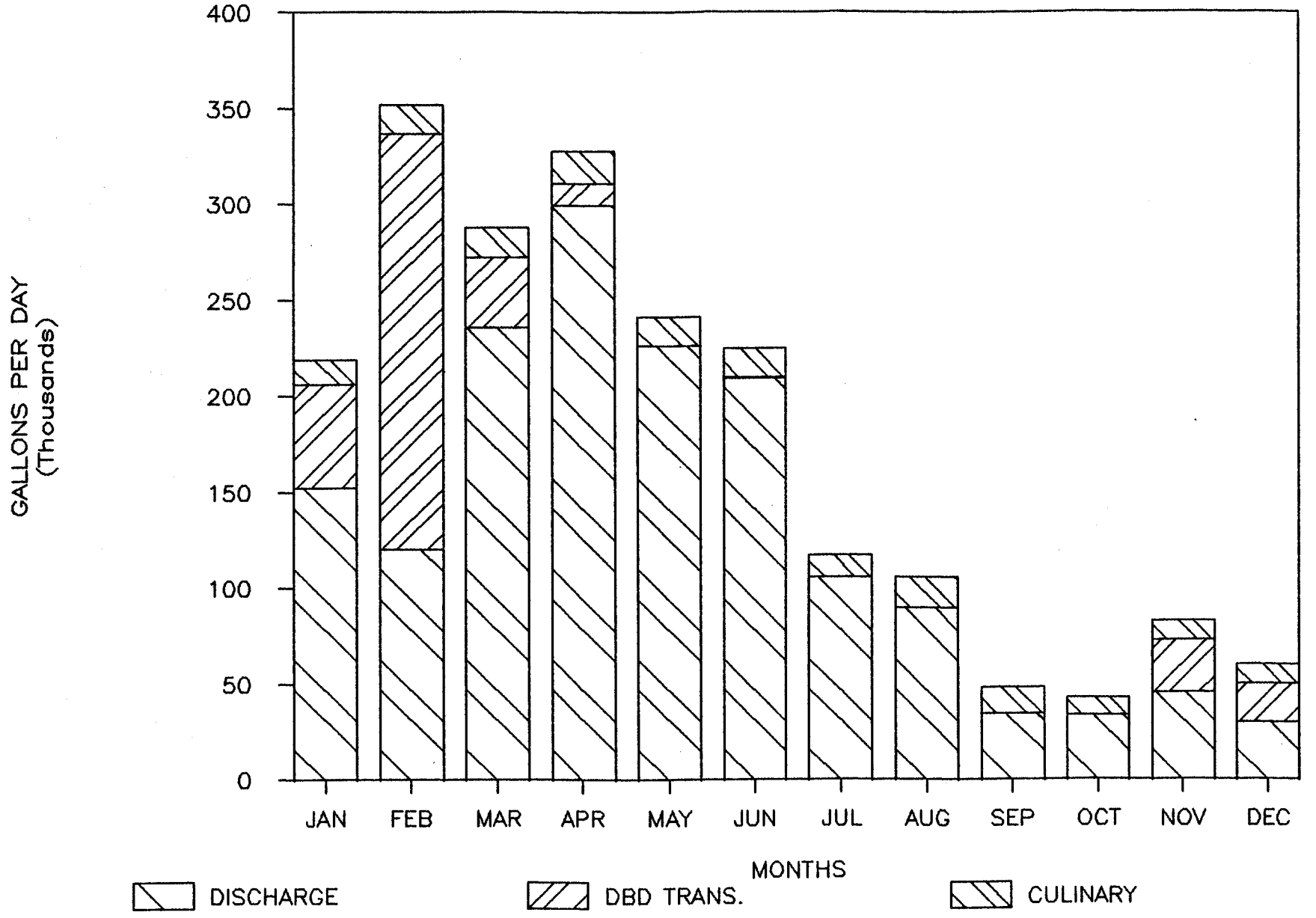
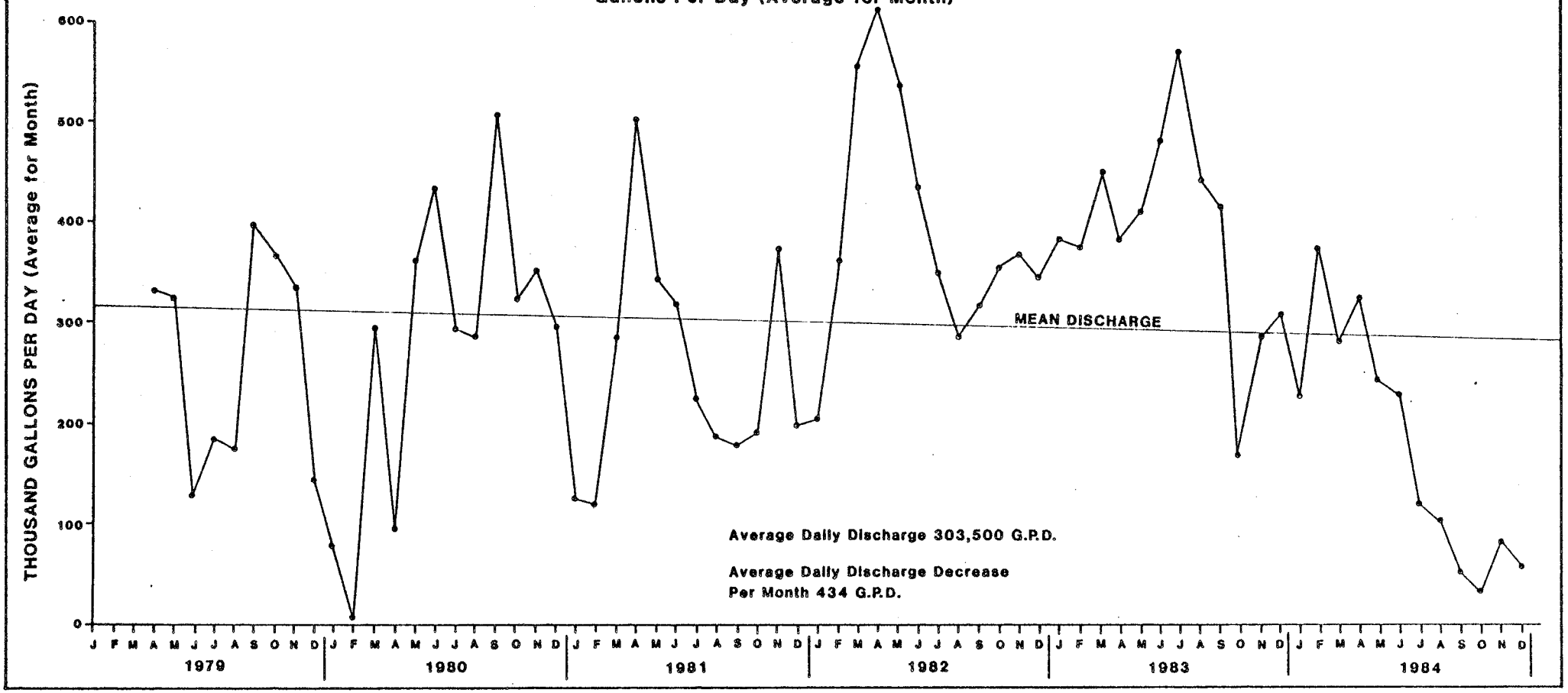


FIGURE 11

WILBERG MINE DISCHARGE 3-79 to 12-84
Gallons Per Day (Average for Month)



shows no significant change in quality between samples collected in 1984 to the historical results except for a slight increase in the sulfate content with a corresponding increase in the TDS level. Individual analysis can be found in Appendix G.

TABLE 23: WILBERG MINE - DISCHARGE WATER QUALITY

Parameters	1984			Historical - (1976-1983)		
	Minimum	Maximum	Mean	Minimum	Maximum	Mean
pH	7.2	8.0	7.7	6.9	8.2	7.6
Acidity	1.0	1.0	1.0	0.1	62.0	8.6
Alkalinity	242	289	265.3	216	364	273.9
BOD_5	1.0	13.0	4.1	0.3	11.0	2.1
Chloride	12.0	18.0	14.4	2.7	63.3	14.0
Coliforms:						
Fecal	2.0	2.0	2.0	2.0	30.0	4.3
Total	2.0	2.0	2.0	2.0	9300	480.3
Iron	0.05	0.83	0.11	0.01	3.0	0.32
Oil & Grease	0.5	1.5	0.60	0.2	23.8	2.5
Sulfate	230	310	282.0	29.2	340	191.7
TDS	645	699	676.5	424	705	543.3
TSS	0.5	7.5	2.5	0.5	222	9.4

DEER CREEK MINE

1. In-Mine Water Production. The best estimate of in-mine water production was arrived at by combining the following values:

Deer Creek Discharge	129.2 Million Gallons
Estimated Evaporation*	19.0 Million Gallons
Domestic Usage	7.4 Million Gallons
Total Discharge	155.6 Million Gallons

*See 1981 Hydrologic Monitoring Report

2. In-Mine Quality. A total of six samples were collected in the Deer Creek Mine in 1984. Normally two samples are collected quarterly, fourth quarter in-mine sampling was cancelled as a result of the Wilberg Mine fire. Only limited access was allowed in the Deer Creek Mine during the later part of December. Table 24 lists the characteristics of the samples collected and compares the mean, minimum, and maximum results of 1984 to the historical values. It is apparent from Table 24 that the average quality of the in-mine water has remained relatively constant. The consistency was also depicted in the stiff diagrams presented as Figure 7. The complete chemical analysis of samples collected in 1984 can be found in Appendix F.

TABLE 24: DEER CREEK IN-MINE WATER QUALITY

Location		pH	Alka.	Ca	Cl	Cond.	Mg	K	Na	SO_4	TDS	TSS
EM-3		7.3	395	113.6	10.3	1000	55.0	3.1	20.0	140.0	579	0.5
3Sxc33,1L		7.4	330	76.8	8.7	800	43.3	5.1	20.3	63.0	434	0.5
1Sxc40,1L		7.0	364	102.0	7.4	900	50.1	2.3	15.5	110.0	497	2.5
3SBxc21,1R		6.9	363	96.0	8.0	900	52.3	3.1	18.0	116.0	499	0.5
EM-3		7.0	380	114.0	10.1	995	52.2	3.1	15.0	135.0	560	0.5
3Nxc41,3R		7.2	293	66.0	4.0	690	35.0	2.3	14.0	42.0	340	0.5
	Min	6.9	293	66.0	4.0	690	35.0	2.3	14.0	42.0	340	0.5
1984	Max	7.4	395	114	10.3	1000	55.0	5.1	20.3	140	579	2.5
	Mean	7.1	354.2	94.7	8.1	880.8	48.0	3.2	17.1	101.0	484.8	0.8
Hist.	Min	6.8	214.7	60.8	4.3	470	4.4	2.2	10.2	40.0	263	0.1
(1977-	Max	7.9	554.4	245.0	13.2	1700	79.5	10.0	66.0	915.2	982	26.0
1983)	Mean	7.4	404.3	128.5	10.1	911.9	51.8	4.5	27.0	194.6	568.5	5.0

3. Discharge Quantity. Excess water not utilized in the mining operation or for domestic use was either pumped to storage areas or discharged from the mine. The location of the main sump areas within the mine

are shown in Figure 12. The largest volume of water is stored in the western part of Main West, an area that has not been actively mined for several years.

The water that is discharged from the mine flows through an oil skimmer and then a recording weir before being piped to UP&L's Huntington Power Plant. None of the discharge water leaving the mine enters any of the natural streams in the region, but instead is used in the cooling towers at the power plant.

The total water that was discharged from the Deer Creek Mine during 1984 amounted to 397 acre feet or 129.2 million gallons. The recorded flow of 397 acre feet during 1984 is slightly lower than the 1983 discharge of 480 acre feet. The average monthly discharges are shown in Figure 13. A graph displaying the historical discharge rates is included as Figure 14. The factors affecting the monthly variations depicted in Figure 14 are consistent with the interpretations made for the same phenomenon occurring with the Wilberg Mine discharge.

4. Discharge Quality. Monthly water quality samples were collected for 1984. Table 25 compares the minimum, maximum and mean values from an historical standpoint to 1984. An examination of Table 25 shows a slight change in chloride, sulfate, TDS and TSS between samples collected in 1984 to the historical results. Individual analysis can be found in Appendix H.

FIGURE 12

DEER CREEK COAL MINE WATER SUMP AREAS

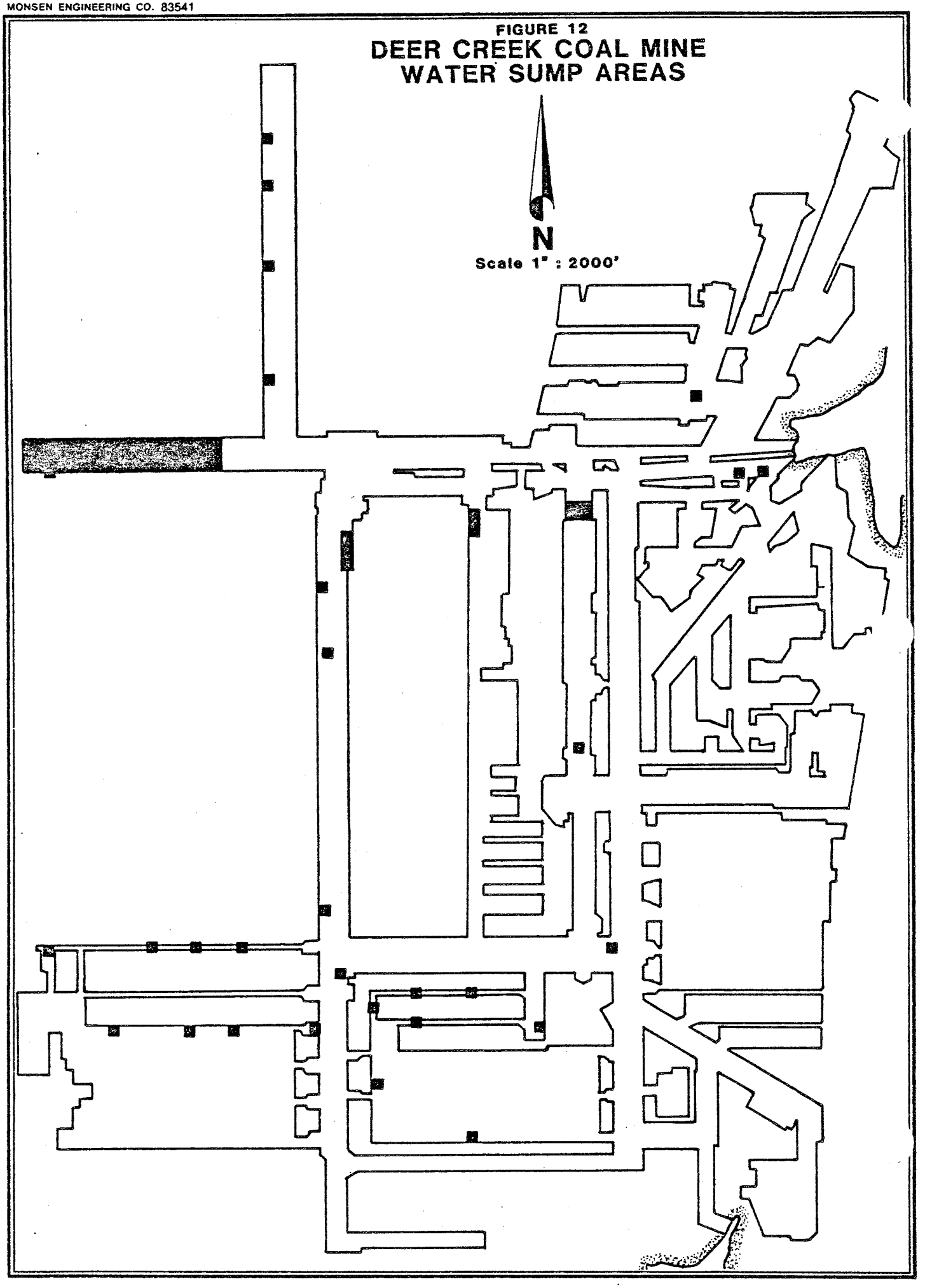
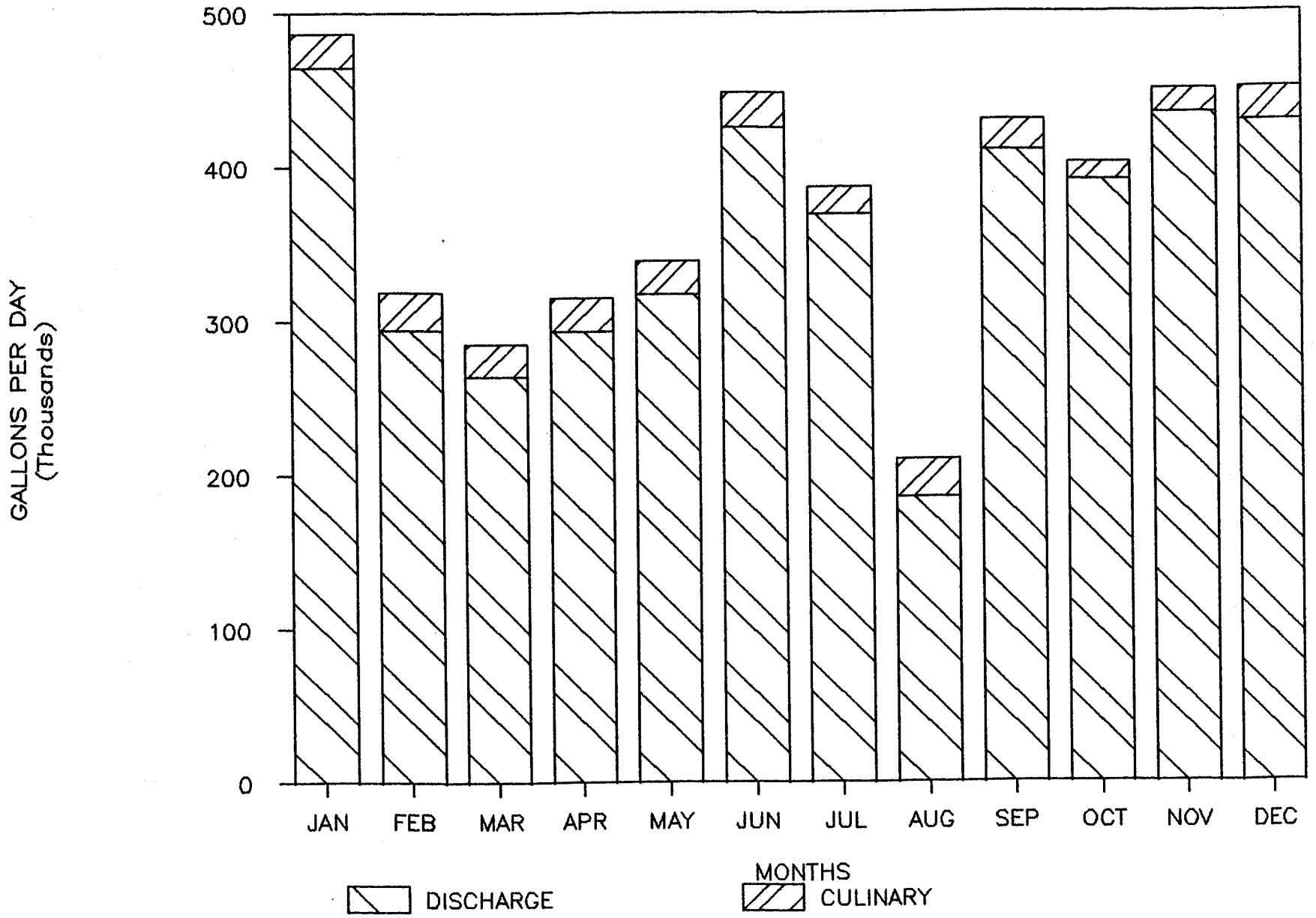


FIGURE 13

DEER CREEK MINE DISCHARGE

1984



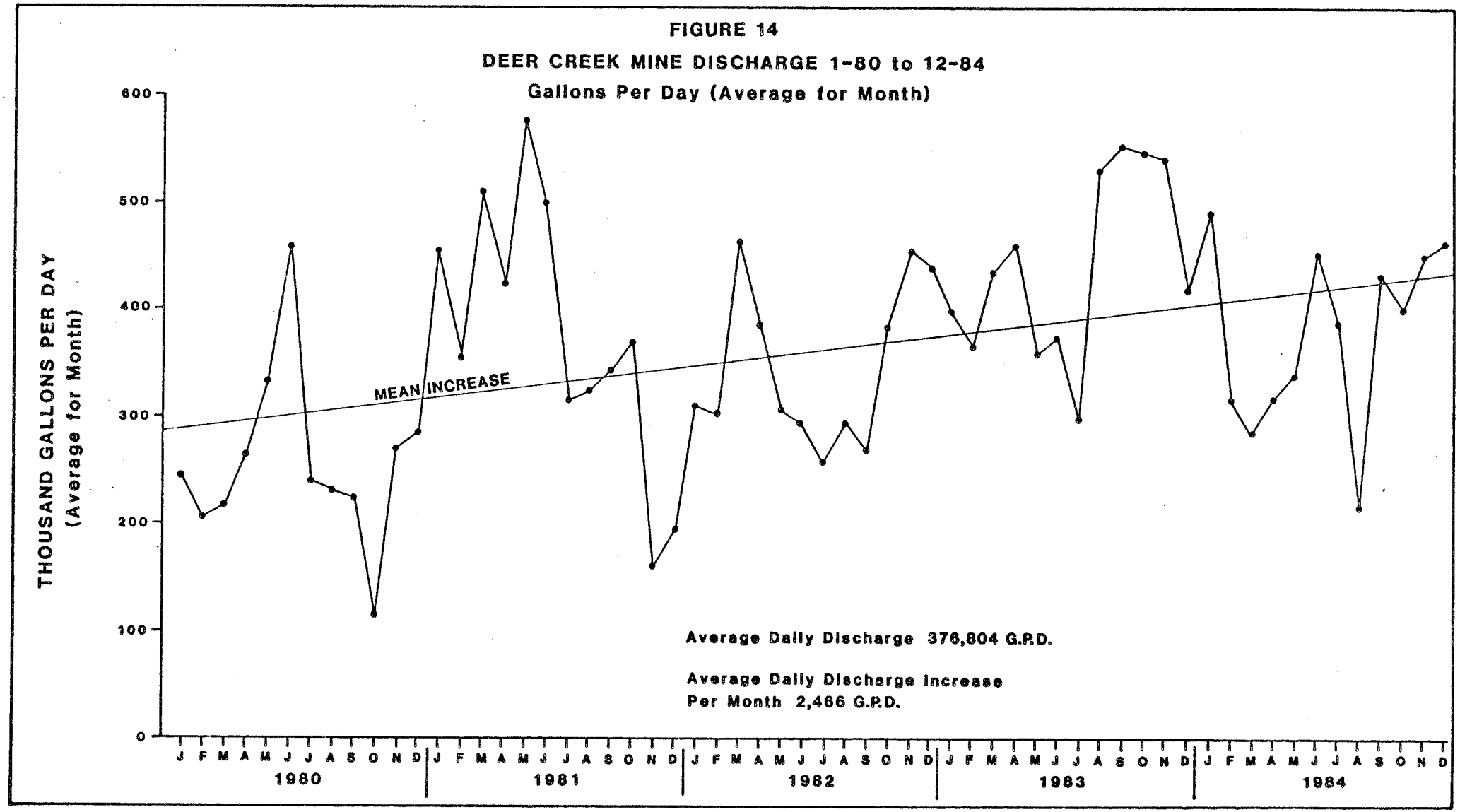


FIGURE 14
DEER CREEK MINE DISCHARGE 1-80 to 12-84
Gallons Per Day (Average for Month)
THOUSAND GALLONS PER DAY
(Average for Month)
600
500
400
300
200
100
0
MEAN INCREASE
Average Daily Discharge 376,804 G.P.D.
Average Daily Discharge Increase
Per Month 2,466 G.P.D.
J F M A M J J A S O N D
1980
1981
1982
1983
1984

TABLE 25: DEER CREEK MINE - DISCHARGE* WATER QUALITY

Parameters	1984 Minimum	1984 Maximum	1984 Mean	Historical - (1976-1983) Minimum	Historical - (1976-1983) Maximum	Historical - (1976-1983) Mean
pH	7.3	7.9	7.6	6.8	8.1	7.5
Acidity	1.0	1.0	1.0	0.7	52.0	9.9
Alkalinity	258	323	288.1	207	414	300.3
Chloride	9.2	1460	202.1	2.4	2700	76.8
Conductivity	910	4900	1571.8	480	10,000	1225.7
Iron	0.06	0.7	0.34	0.03	7.53	0.64
Oil & Grease	0.5	19.9	3.2	0.01	8.4	1.50
Sulfate	115	320	240.0	29.8	497.0	199.6
TDS	453	2919	951.3	320	5100	709.8
TSS	2.0	187	51.4	0.5	272	23.3

* Used only in the power plant cooling system.

PIEZOMETRIC GRADIENT INFORMATION

Surface

Two surface exploration drill holes which were developed into permanent water monitoring stations in 1978 continued to be monitored on a monthly basis, as access permits (See Map No. 1).

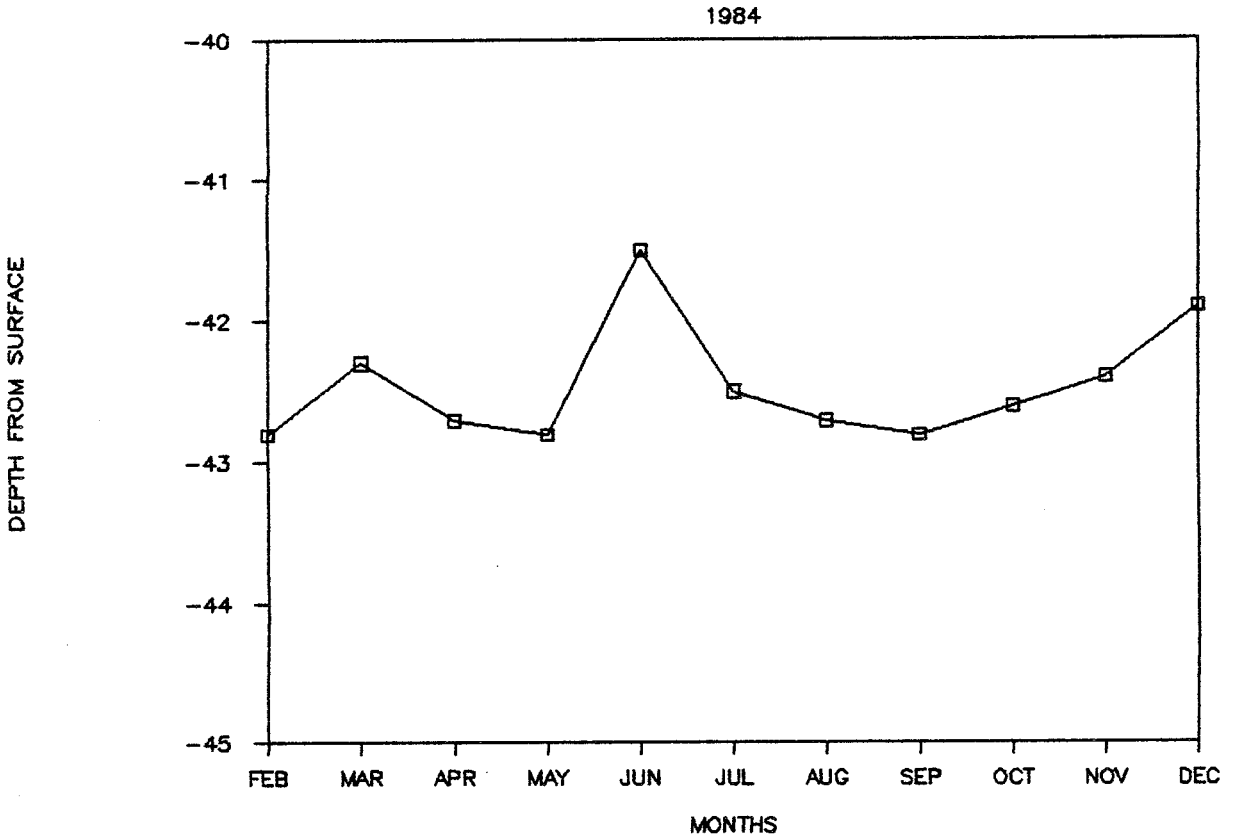
Drill hole EM-31 in Cottonwood Creek Canyon was monitored monthly except for the month of January (See Map No. 2 in pocket). The water level in the hole was at it's highest, -41.5 feet, during the month of June, and at it's lowest point, -42.8 feet, in February, May and September. Drill hole EM-47 in Rilda Canyon was accessible only during the months of June through November. During this time frame, the water was at its highest, -191.4 feet, in July and lowest, -197.4 feet, in November. Hydrographs of data collected are shown in Figure 15.

In-Mine

Water level elevations from the seven in-mine drill holes completed in the Deer Creek Mine are monitored quarterly (refer to figure 16). The drill holes depth and method of casing the holes are shown in Figure 17.

FIGURE 15

PIEZOMETRIC MONITORING WELL EM-31



PIEZOMETRIC MONITORING WELL EM-47

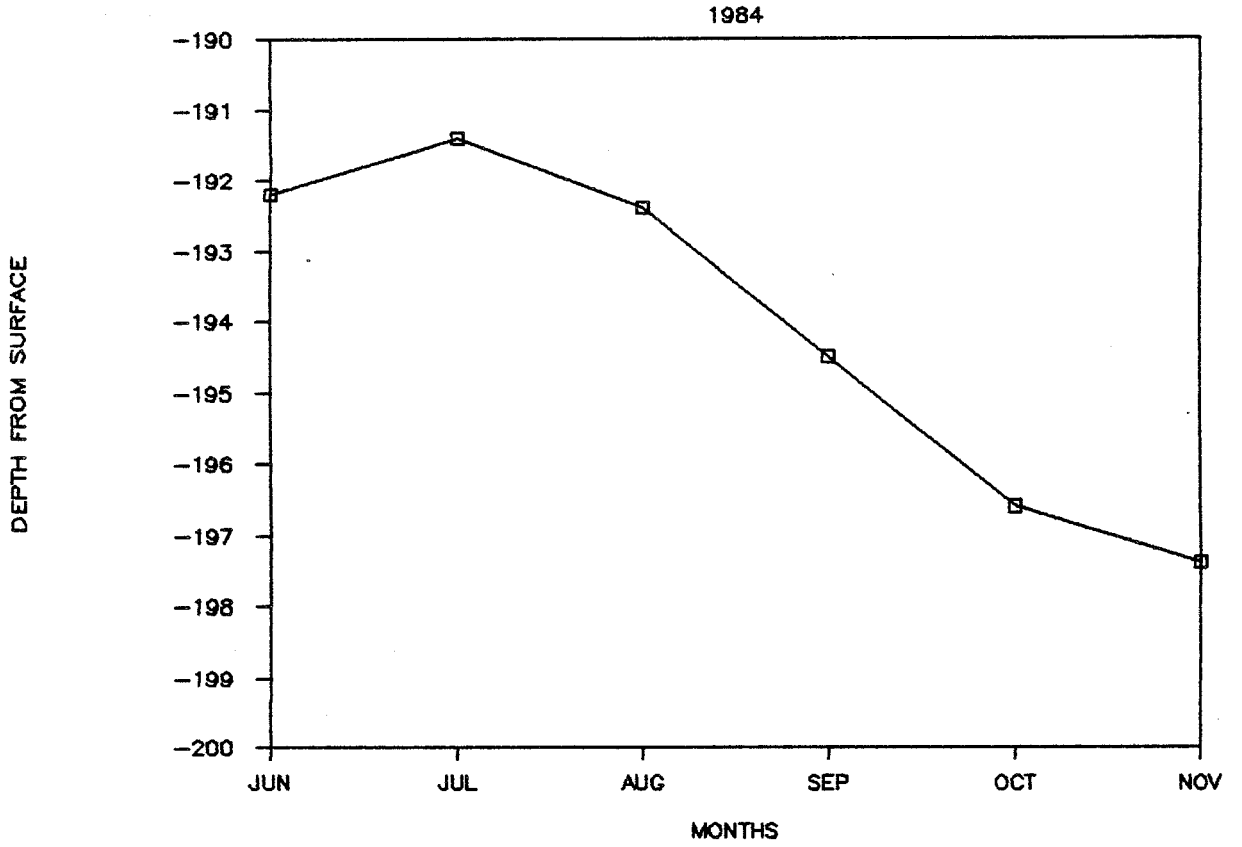
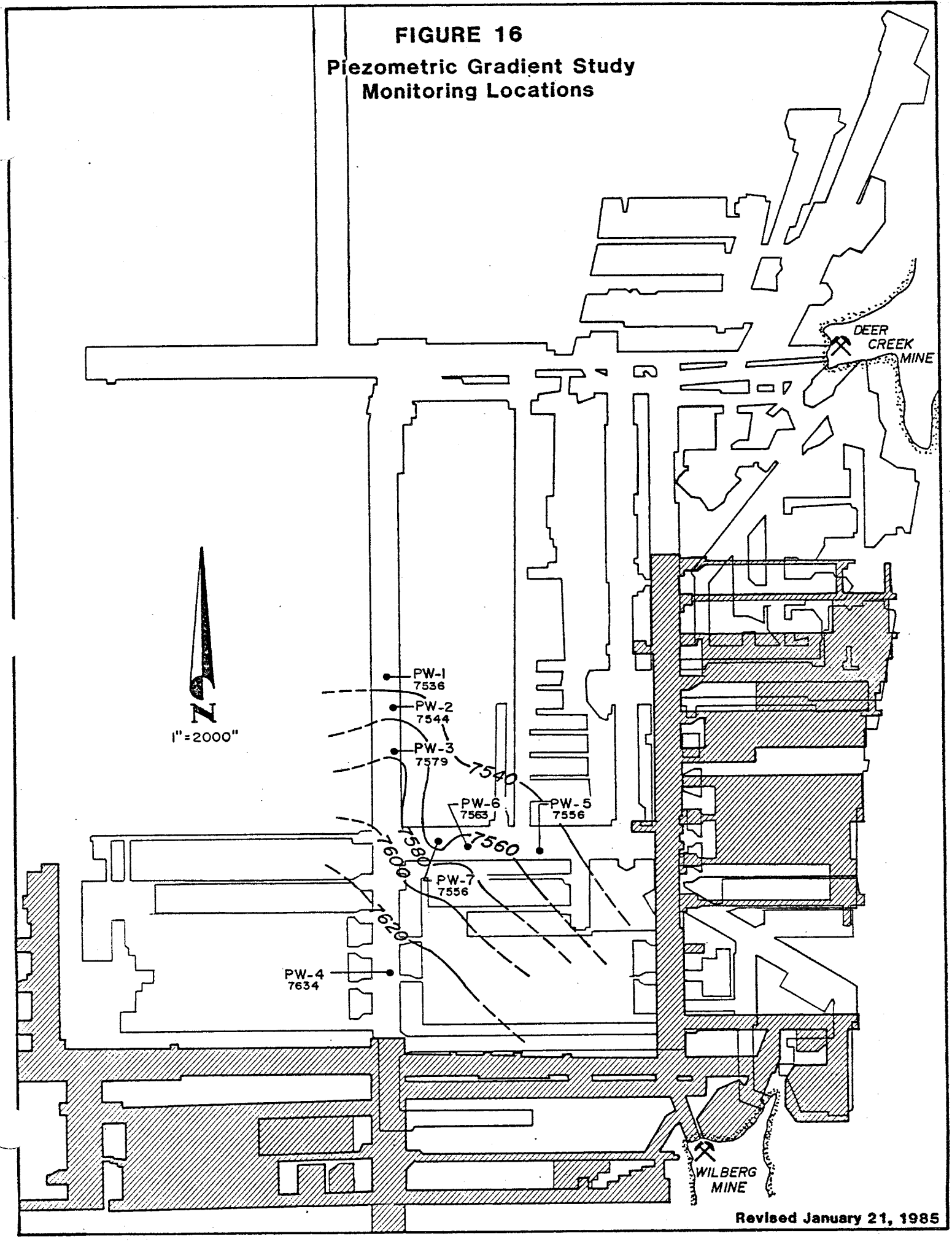


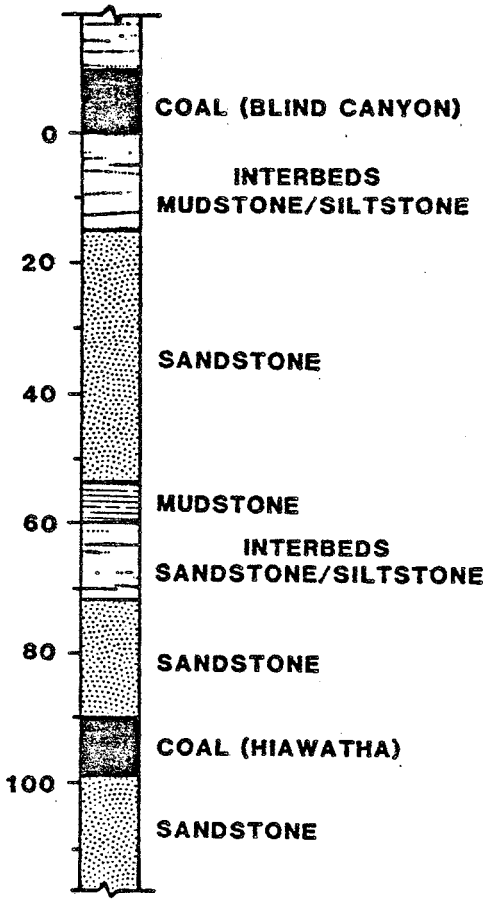
FIGURE 16

Piezometric Gradient Study Monitoring Locations

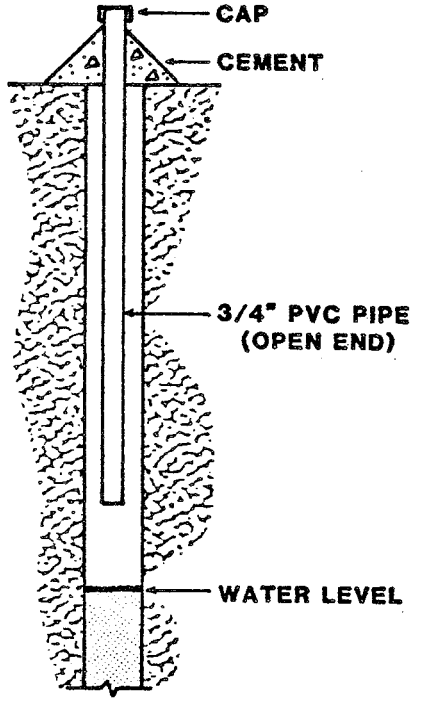


Revised January 21, 1985

DRILL HOLE #	COLLAR ELEVATION	DEPTH (FT.)	CASING DEPTH (FT.)	LOCATION OF HOLE BOTTOM	WATER DEPTH (FT.) Initial 1983	WATER DEPTH (FT.) 1984	WATER ELEVATION Initial 1983	WATER ELEVATION 1984
PW-1	7576.0	103.5	20	11.2' Below Top of Star Point	39.9	39.9	7536	7536
PW-2	7582.5	111.5	20	18.8' " "	37.2	38.5	7545	7544
PW-3	7590	94.6	30	10.8' " "	11.0	10.8	7579	7579
PW-4	7638	110.0	80	22.0' " "	16.8	3.9	7621	7634
PW-5	7605.0	98.4	20	21.0' " "	47.9	48.6	7557	7556
PW-6	7603.0	130.5	20	20.0' " "	40.1	39.8	7562	7563
PW-7	7602.8	103.6	20	17.0' " "	49.0	48.0	7553	7555
PW-7A	7602.8	75.0	20	12.0' Above Top of Star Point	49.0	47.0	7553	7556



TYPICAL GEOLOGIC SECTION



CASING DETAIL

Revised January 15, 1985

DEER CREEK COAL MINE
Emery County, Utah

PIEZOMETRIC DRILL HOLE STUDY

UTAH POWER & LIGHT COMPANY
Department of Mining & Exploration

DATE: JAN. 15, 1985	BY: LINDA J GUM
SCALE: NONE	FIGURE 17

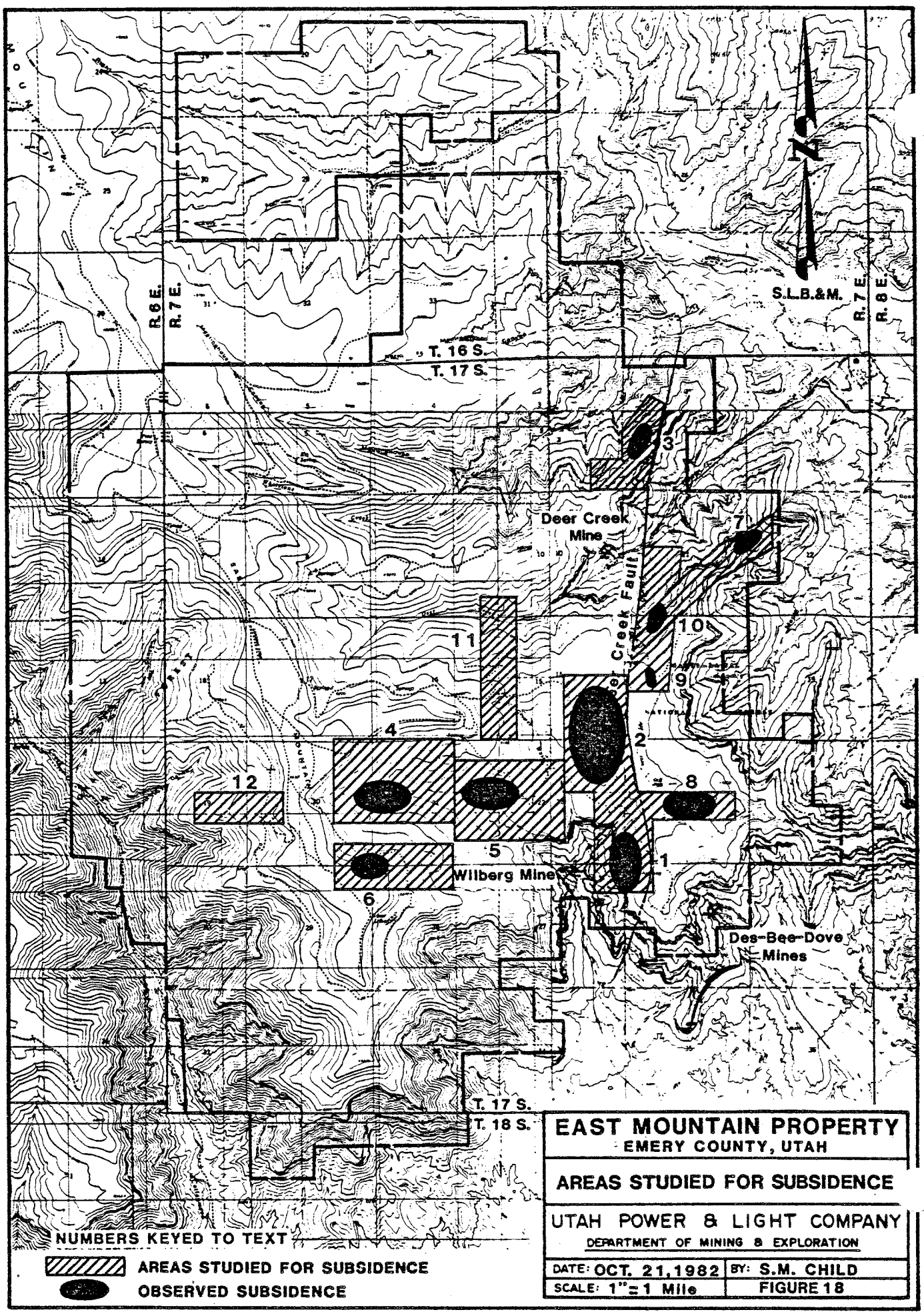
The purpose of this program is to attempt to establish a piezometric gradient map for the area on the west side of the Pleasant Valley Fault system. The preliminary data indicates a piezometric gradient trend in a north-northeast direction (see Figure 16). Depending upon access and feasibility, additional drill hole monitoring sites could be established during 1985-1986 to substantiate the preliminary data. An interesting parallel is that gradient corresponds to the topography slope which is common.

EFFECTS OF MINING AND SUBSIDENCE ON HYDROLOGY

Since the development of the UP&L mining complex on East Mountain, coal in several areas of the property have been extracted causing the partial collapse of the immediate overburden strata. The areas where the partial collapse of roof strata occurs is in areas of retreat mining in room and pillar sections and in areas of longwall mining. The areas of East Mountain where partial roof collapse has occurred and which were inspected for subsidence are shown in Figure 18.

Ten areas of subsidence have been observed on East Mountain (see Figure 18). Many springs are located within, or adjacent to, these areas of subsidence. One area in particular, the 1st through 5th Right area of the Deer Creek Mine, is overlain by five springs and the left fork of Grimes Wash. A comparison of the discharge of these springs closely follows the change in precipitation measured on East Mountain (see Figure 19). The hydrology of this area is unaffected by the five feet of subsidence which has occurred. All other areas show no hydrologic changes attributable to subsidence.

The springs and surface waters above all areas of mine workings are being monitored closely to measure the effects of mining. No mining related changes to the springs or surface waters have been identified in the data



EAST MOUNTAIN PROPERTY
EMERY COUNTY, UTAH

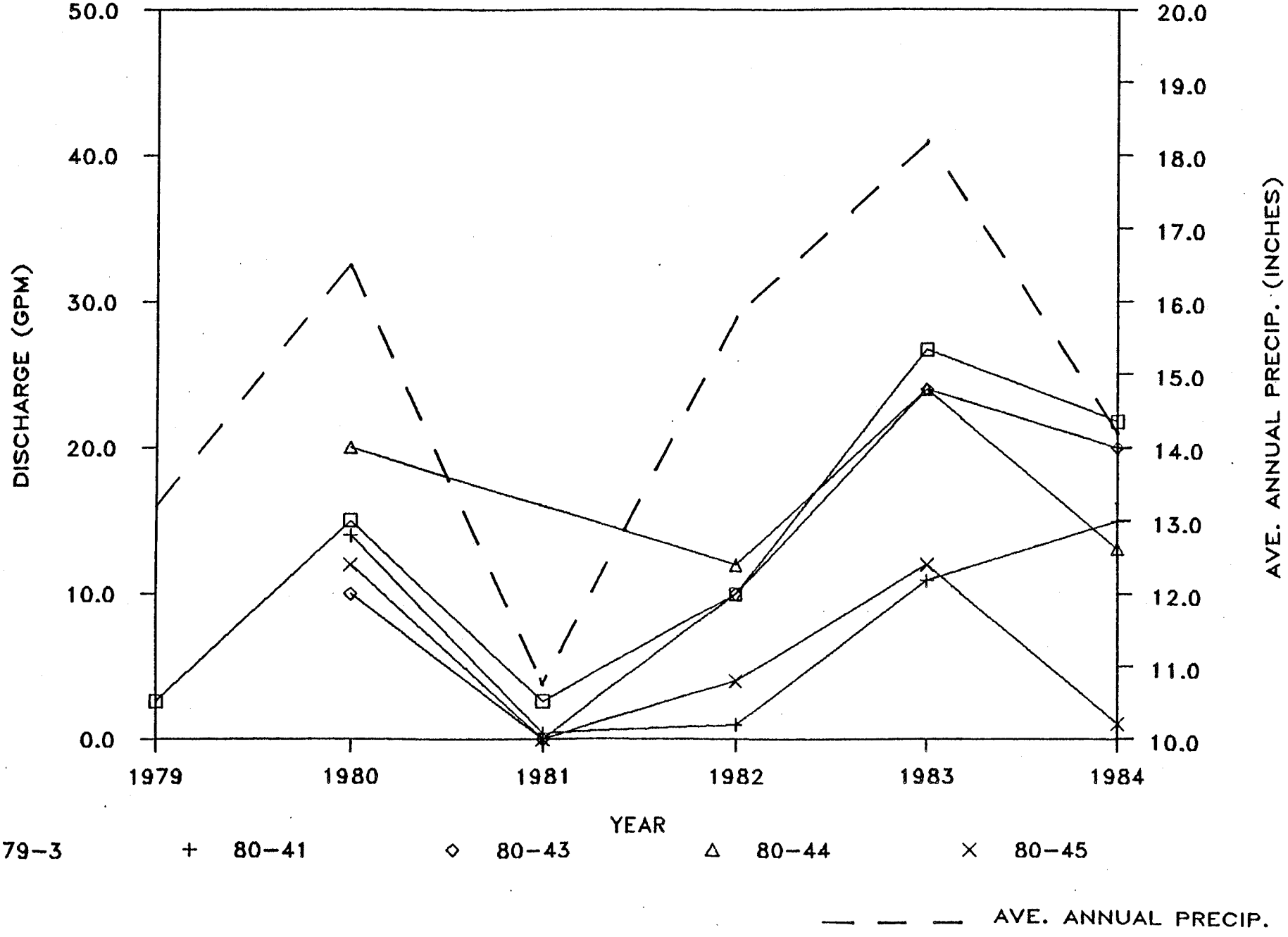
AREAS STUDIED FOR SUBSIDENCE

UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION

DATE: OCT. 21, 1982	BY: S.M. CHILD
SCALE: 1" = 1 Mile	FIGURE 18

FIGURE 19
EAST MTN SPRINGS

OVER DC 1-5L & DC 1-5R



collected. The water flowing into the mine workings, although temporarily diverted or detained, has not had an impact on the surface waters of East Mountain or the surrounding area.

Summary

Utah Power & Light Company has been conducting a water monitoring program in the area of their underground coal mines in Emery County, Utah in accordance with federal and state regulations since 1977. This report summarizes data collected in the seventh year of this ongoing monitoring program.

The wet climate trend experienced in 1982 and 1983 continued well into 1984 throughout the intermountain west. Precipitation on East Mountain began to decline to near normal in the latter part of 1984 resulting in slightly above normal precipitation. The ground remained saturated however, and the lower drainages of Huntington and Straight Canyon creeks received record breaking runoff in 1984. The decrease in precipitation in 1984 as compared with 1983 reduced the discharge of springs on East Mountain.

Eleven springs were monitored several times in 1984 to establish a discharge recession curve. This monitoring established the baseline flows in 1984 and will be continued in future years.

Both the Deer Creek Mine and the Wilberg Mine produced less water in 1984 than in 1983. In the past the trend has been an increase in mine water discharge with time. This change in trend is probably due to the fact that the mining done in both mines is primarily in areas of dry mudstone roof and the water bearing sandstone channels exposed in the past are slowly being dewatered. No significant change in the quality of the water produced in the mines has been detected.

The water level in several monitoring wells completed in the Deer Creek Mine in 1983 has stabilized revealing a piezometric trend of the strata above the Hiawatha seam. This shows very slow flow in a northeast direction into the Deer Creek drainage.

The data collected in 1984 has documented the hydrologic conditions present and the effects mining has on the hydrology of East Mountain. This program will continue in future years to document what effect, if any, mining has on the hydrology.

APPENDIX A

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-2
LOCATION DESCRIPTION : N. FORK HUNTINGTON CREEK ABOVE CONFLUENCE
SAMPLE DATE: 01/17/84
ANALYZING LAB: STANDARD LAB. HUNTINGTON UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-2.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		8.0000	
TOTAL DISSOLVED SOLIDS	mg/l		274.0000	
TURBIDITY	NTUs		3.1000	
NITRATE, NO3 as N	mg/l		0.1100	
NITRITE, NO2 as N	mg/l	<	0.0100	
TOTAL PHOSPHATE,PO4-P	mg/l	<	0.0100	
ORTHO PHOSPHATE,PO4-P	mg/l	<	0.0100	
TOT. COLIFORM	M.P.#/100ml	<	2.0000	
FEC. COLIFORM	M.P.#/100ml	<	2.0000	
SUSPENDED SOLIDS	mg/l		3.0000	
FECAL STREP	M.P.#/100ml	<	2.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-2
LOCATION DESCRIPTION : N. FORK OF HNTNGTN CREEK ABOVE CONFLUENCE
SAMPLE DATE: 03/30/84
(SAMPLES ANALYZED BY STANDARD LABORATORIES, HUNTINGTON, UTAH)

PARAMETER	UNITS		VALUE
TOTAL DISSOLVED SOLIDS	mg/l		200.0000
TURBIDITY	NTUs		2.5000
NITRATE, NO3 as N	mg/l		0.1400
NITRITE, NO2 as N	mg/l		0.0100
TOTAL PHOSPHORUS	mg/l		0.0500
ORTHO PHOSPHORUS	mg/l		0.0400
TOT. COLIFORM	M.P.#/100ml		7.0000
FEC. COLIFORM	M.P.#/100ml	<	2.0000
SUSPENDED SOLIDS	mg/l		1.0000
FECAL STREP	M.P.#/100ml	<	2.0000

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-2
LOCATION DESCRIPTION : N. FORK OF HNTNGTN CREEK ABOVE CONFLUENCE
SAMPLE DATE: 04/18/84
(SAMPLES ANALYZED BY STANDARD LABORATORIES, HUNTINGTON, UTAH)

PARAMETER	UNITS		VALUE
TOTAL DISSOLVED SOLIDS	mg/l		200.0000
TURBIDITY	NTUs		42.0000
NITRATE, NO3 as N	mg/l		0.0800
NITRITE, NO2 as N	mg/l		0.0100
TOTAL PHOSPHORUS	mg/l		0.0500
TOT. COLIFORM	M.P.#/100ml	<	2.0000
FEC. COLIFORM	M.P.#/100ml	<	2.0000
SUSPENDED SOLIDS	mg/l		130.0000
FECAL STREP	M.P.#/100ml	<	2.0000

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-2
LOCATION DESCRIPTION : N. FORK OF HNTNGTN CREEK ABOVE CONFLUENCE
SAMPLE DATE: 05/22/84
(SAMPLES ANALYZED BY STANDARD LABORATORIES, HUNTINGTON, UTAH)

PARAMETER	UNITS		VALUE
TOTAL DISSOLVED SOLIDS	mg/l		120.0000
NITRATE, NO3 as N	mg/l		1.3800
NITRITE, NO2 as N	mg/l		0.0300
TOTAL PHOSPHORUS	mg/l		0.0500
BORON, B (dissolved)	mg/l		0.1000
TOT. COLIFORM	M.P.#/100ml		7.0000
FEC. COLIFORM	M.P.#/100ml		5.0000
KJELDAHL NITROGEN	mg/l		0.1600
SUSPENDED SOLIDS	mg/l		7.0000
FECAL STREP	M.P.#/100ml	<	2.0000

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-2
LOCATION DESCRIPTION : N. FORK OF HNTNGTN CREEK ABOVE CONFLUENCE
SAMPLE DATE: 06/29/84
(SAMPLES ANALYZED BY STANDARD LABORATORIES, HUNTINGTON, UTAH)

PARAMETER	UNITS		VALUE
TURBIDITY	NTUs		0.9100
AMMONIA, NH3 as N	mg/l		0.1600
NITRATE, NO3 as N	mg/l		0.5700
NITRITE, NO2 as N	mg/l		0.0100
TOTAL PHOSPHORUS	mg/l		0.0500
TOT. COLIFORM	M.P.#/100ml		49.0000
FEC. COLIFORM	M.P.#/100ml		5.0000
KJELDAHL NITROGEN	mg/l		0.2000
SUSPENDED SOLIDS	mg/l		2.0000
FECAL STREP	M.P.#/100ml	<	2.0000

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-2
LOCATION DESCRIPTION : N. FORK HUNTINGTON CREEK ABOVE CONFLUENCE
SAMPLE DATE: 07/26/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-2.WAT

PARAMETER	UNITS		VALUE	CODE
TOTAL DISSOLVED SOLIDS	mg/l		180.0000	
TURBIDITY	NTUs		30.0000	
NITRATE, NO3 as N	mg/l		0.4000	
NITRITE, NO2 as N	mg/l		0.0300	
TOTAL PHOSPHATE,PO4-P	mg/l		0.0400	
TOT. COLIFORM	M.P.#/100ml		49.0000	
FEC. COLIFORM	M.P.#/100ml		5.0000	
KJELDAHL NITROGEN	mg/l		0.2500	
SUSPENDED SOLIDS	mg/l		3.0000	
FECAL STREP	M.P.#/100ml	<	2.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-2
LOCATION DESCRIPTION : N. FORK HUNTINGTON CREEK ABOVE CONFLUENCE
SAMPLE DATE: 08/21/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-2.WAT

PARAMETER	UNITS		VALUE	CODE
CONDUCTIVITY	umhos/cm		370.0000	
TOTAL DISSOLVED SOLIDS	mg/l		165.0000	
TURBIDITY	NTUs		7.6000	
NITRATE, NO3 as N	mg/l		0.5400	
NITRITE, NO2 as N	mg/l		0.0400	
TOTAL PHOSPHATE,PO4-P	mg/l		0.1000	T
TOT. COLIFORM	M.P.#/100ml		79.0000	
FEC. COLIFORM	M.P.#/100ml		23.0000	
KJELDAHL NITROGEN	mg/l		0.1600	
SUSPENDED SOLIDS	mg/l		16.0000	
FECAL STREP	M.P.#/100ml	<	2.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-2
LOCATION DESCRIPTION : N. FORK HUNTINGTON CREEK ABOVE CONFLUENCE
SAMPLE DATE: 09/06/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-2.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		7.6500	
CONDUCTIVITY	umhos/cm		370.0000	
TOTAL DISSOLVED SOLIDS	mg/l		240.0000	
TURBIDITY	NTUs		3.5000	
NITRATE, NO3 as N	mg/l		0.1000	
NITRITE, NO2 as N	mg/l	<	0.0100	
TOTAL PHOSPHATE,PO4-P	mg/l		0.0600	
TOT. COLIFORM	M.P.#/100ml		130.0000	
FEC. COLIFORM	M.P.#/100ml		4.0000	
KJELDAHL NITROGEN	mg/l		0.1700	
SUSPENDED SOLIDS	mg/l		3.0000	
FECAL STREP	M.P.#/100ml	<	2.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-2
LOCATION DESCRIPTION : N. FORK HUNTINGTON CREEK ABOVE CONFLUENCE
SAMPLE DATE: 10/25/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-2.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		8.1500	
CONDUCTIVITY	umhos/cm		400.0000	
TOTAL DISSOLVED SOLIDS	mg/l		260.0000	
TURBIDITY	NTUs		1.2000	
AMMONIA, NH3 as N	mg/l	<	0.0100	
NITRATE, NO3 as N	mg/l		0.3600	
NITRITE, NO2 as N	mg/l		0.0600	
ORTHO PHOSPHATE,PO4-P	mg/l		0.1400	
TOT. COLIFORM	M.P.#/100ml		79.0000	
FEC. COLIFORM	M.P.#/100ml	<	2.0000	
KJELDAHL NITROGEN	mg/l		0.0500	
SUSPENDED SOLIDS	mg/l		3.0000	
FECAL STREP	M.P.#/100ml	<	2.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-2
LOCATION DESCRIPTION : N. FORK HUNTINGTON CREEK ABOVE CONFLUENCE
SAMPLE DATE: 11/29/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-2.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		7.7000	
CONDUCTIVITY	umhos/cm		340.0000	
TOTAL DISSOLVED SOLIDS	mg/l		520.0000	
TURBIDITY	NTUs		2.1500	
AMMONIA, NH3 as N	mg/l	<	0.0100	T U
NITRATE, NO3 as N	mg/l		0.3300	T U
NITRITE, NO2 as N	mg/l		0.0700	T U
TOTAL PHOSPHATE,PO4-P	mg/l		0.2200	T U
TOT. COLIFORM	M.P.#/100ml		46.0000	
FEC. COLIFORM	M.P.#/100ml	<	2.0000	
KJELDAHL NITROGEN	mg/l	<	0.1000	T U
SUSPENDED SOLIDS	mg/l		90.0000	
FECAL STREP	M.P.#/100ml	<	2.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-2
LOCATION DESCRIPTION : N. FORK HUNTINGTON CREEK ABOVE CONFLUENCE
SAMPLE DATE: 12/19/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-2.WAT

PARAMETER	UNITS	VALUE	CODE
pH	units	7.5000	
CONDUCTIVITY	umhos/cm	355.0000	
TOTAL DISSOLVED SOLIDS	mg/l	220.0000	
TURBIDITY	NTUs	6.4000	
AMMONIA, NH3 as N	mg/l	0.1000	
NITRATE, NO3 as N	mg/l	0.4400	
NITRITE, NO2 as N	mg/l	< 0.0100	
TOTAL PHOSPHATE,PO4-P	mg/l	0.1800	
TOT. COLIFORM	M.P.#/100ml	70.0000	
FEC. COLIFORM	M.P.#/100ml	< 2.0000	
KJELDAHL NITROGEN	mg/l	0.1500	
SUSPENDED SOLIDS	mg/l	12.0000	
FECAL STREP	M.P.#/100ml	< 2.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-3
LOCATION DESCRIPTION : HUNTINGTON CREEK JUST BELOW ELECT. LAKE DAM
SAMPLE DATE: 01/17/84
ANALYZING LAB: STANDARD LAB. HUNTINGTON UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-3.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		7.8500	
TOTAL DISSOLVED SOLIDS	mg/l		188.0000	
TURBIDITY	NTUs		2.5000	
NITRATE, NO3 as N	mg/l		0.0600	
NITRITE, NO2 as N	mg/l	<	0.0100	
TOTAL PHOSPHATE,PO4-P	mg/l		0.0200	
ORTHO PHOSPHATE,PO4-P	mg/l	<	0.0100	
TOT. COLIFORM	M.P.#/100ml	<	2.0000	
FEC. COLIFORM	M.P.#/100ml	<	2.0000	
SUSPENDED SOLIDS	mg/l	<	0.5000	
FECAL STREP	M.P.#/100ml	<	2.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-3
LOCATION DESCRIPTION : HNTNGTN CREEK JUST BELOW ELECT. LAKE DAM
SAMPLE DATE: 03/30/84
(SAMPLES ANALYZED BY STANDARD LABORATORIES, HUNTINGTON, UTAH)

PARAMETER	UNITS		VALUE
TOTAL DISSOLVED SOLIDS	mg/l		190.0000
TURBIDITY	NTUs		0.9000
NITRATE, NO3 as N	mg/l		0.1900
NITRITE, NO2 as N	mg/l		0.0100
TOTAL PHOSPHORUS	mg/l		0.0100
ORTHO PHOSPHORUS	mg/l		0.0300
TOT. COLIFORM	M.P.#/100ml		5.0000
FEC. COLIFORM	M.P.#/100ml	<	2.0000
SUSPENDED SOLIDS	mg/l		1.0000
FECAL STREP	M.P.#/100ml	<	2.0000

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-3
LOCATION DESCRIPTION : HNTNGTN CREEK JUST BELOW ELECT. LAKE DAM
SAMPLE DATE: 04/18/84
(SAMPLES ANALYZED BY STANDARD LABORATORIES, HUNTINGTON, UTAH)

PARAMETER	UNITS		VALUE
TOTAL DISSOLVED SOLIDS	mg/l		180.0000
TURBIDITY	NTUs		14.0000
NITRATE, NO3 as N	mg/l		0.1100
NITRITE, NO2 as N	mg/l		0.0100
TOTAL PHOSPHORUS	mg/l		0.0100
TOT. COLIFORM	M.P.#/100ml	<	2.0000
FEC. COLIFORM	M.P.#/100ml	<	2.0000
SUSPENDED SOLIDS	mg/l		7.0000
FECAL STREP	M.P.#/100ml	<	2.0000

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-3
LOCATION DESCRIPTION : HNTNGTN CREEK JUST BELOW ELECT. LAKE DAM
SAMPLE DATE: 05/22/84
(SAMPLES ANALYZED BY STANDARD LABORATORIES, HUNTINGTON, UTAH)

PARAMETER	UNITS		VALUE
TOTAL DISSOLVED SOLIDS	mg/l		80.0000
NITRATE, NO3 as N	mg/l		1.0000
NITRITE, NO2 as N	mg/l		0.0300
TOTAL PHOSPHORUS	mg/l		0.0200
BORON, B (dissolved)	mg/l		0.0300
TOT. COLIFORM	M.P.#/100ml		5.0000
FEC. COLIFORM	M.P.#/100ml	<	2.0000
KJELDAHL NITROGEN	mg/l		0.0500
SUSPENDED SOLIDS	mg/l		2.0000
FECAL STREP	M.P.#/100ml	<	2.0000

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-3
LOCATION DESCRIPTION : HNTNGTN CREEK JUST BELOW ELECT. LAKE DAM
SAMPLE DATE: 06/29/84
(SAMPLES ANALYZED BY STANDARD LABORATORIES, HUNTINGTON, UTAH)

PARAMETER	UNITS		VALUE
TURBIDITY	NTUs		1.0000
AMMONIA, NH3 as N	mg/l		0.0100
NITRATE, NO3 as N	mg/l		0.5400
NITRITE, NO2 as N	mg/l		0.0100
TOTAL PHOSPHORUS	mg/l		0.0500
TOT. COLIFORM	M.P.#/100ml		5.0000
FEC. COLIFORM	M.P.#/100ml	<	2.0000
KJELDAHL NITROGEN	mg/l		0.0500
SUSPENDED SOLIDS	mg/l		1.0000
FECAL STREP	M.P.#/100ml	<	2.0000

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-3
LOCATION DESCRIPTION : HUNTINGTON CREEK JUST BELOW ELECT. LAKE DAM
SAMPLE DATE: 07/26/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-3.WAT

PARAMETER	UNITS		VALUE	CODE
TOTAL DISSOLVED SOLIDS	mg/l		120.0000	
TURBIDITY	NTUs		4.5000	
NITRATE, NO3 as N	mg/l		0.6600	
NITRITE, NO2 as N	mg/l		0.0300	
TOTAL PHOSPHATE,PO4-P	mg/l		0.0300	
TOT. COLIFORM	M.P.#/100ml		79.0000	
FEC. COLIFORM	M.P.#/100ml		23.0000	
KJELDAHL NITROGEN	mg/l		0.1000	
SUSPENDED SOLIDS	mg/l		1.0000	
FECAL STREP	M.P.#/100ml	<	2.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-3
LOCATION DESCRIPTION : HUNTINGTON CREEK JUST BELOW ELECT. LAKE DAM
SAMPLE DATE: 08/21/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-3.WAT

PARAMETER	UNITS		VALUE	CODE
CONDUCTIVITY	umhos/cm		270.0000	
TOTAL DISSOLVED SOLIDS	mg/l		140.0000	
TURBIDITY	NTUs		4.0000	
NITRATE, NO3 as N	mg/l		0.5100	
NITRITE, NO2 as N	mg/l		0.0400	
TOTAL PHOSPHATE,PO4-P	mg/l		0.1100	T
TOT. COLIFORM	M.P.#/100ml		49.0000	
FEC. COLIFORM	M.P.#/100ml		49.0000	
KJELDAHL NITROGEN	mg/l		0.1000	
SUSPENDED SOLIDS	mg/l		7.0000	
FECAL STREP	M.P.#/100ml	<	2.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-3
LOCATION DESCRIPTION : HUNTINGTON CREEK JUST BELOW ELECT. LAKE DAM
SAMPLE DATE: 09/06/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-3.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		7.6000	
CONDUCTIVITY	umhos/cm		370.0000	
TOTAL DISSOLVED SOLIDS	mg/l		240.0000	
TURBIDITY	NTUs		3.2000	
NITRATE, NO3 as N	mg/l		0.1200	
NITRITE, NO2 as N	mg/l	<	0.0100	
TOTAL PHOSPHATE,PO4-P	mg/l		0.0200	
TOT. COLIFORM	M.P.#/100ml		17.0000	
FEC. COLIFORM	M.P.#/100ml		2.0000	
KJELDAHL NITROGEN	mg/l		0.1000	
SUSPENDED SOLIDS	mg/l		3.0000	
FECAL STREP	M.P.#/100ml	<	2.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-3
LOCATION DESCRIPTION : HUNTINGTON CREEK JUST BELOW ELECT. LAKE DAM
SAMPLE DATE: 10/25/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-3.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		7.9500	
CONDUCTIVITY	umhos/cm		315.0000	
TOTAL DISSOLVED SOLIDS	mg/l		112.0000	
TURBIDITY	NTUs		1.2500	
AMMONIA, NH3 as N	mg/l	<	0.0100	
NITRATE, NO3 as N	mg/l		0.4200	
NITRITE, NO2 as N	mg/l		0.0600	
TOTAL PHOSPHATE,PO4-P	mg/l		0.1600	
TOT. COLIFORM	M.P.#/100ml		13.0000	
FEC. COLIFORM	M.P.#/100ml		2.0000	
KJELDAHL NITROGEN	mg/l		0.0500	
SUSPENDED SOLIDS	mg/l		3.0000	
FECAL STREP	M.P.#/100ml	<	2.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-3
LOCATION DESCRIPTION : HUNTINGTON CREEK JUST BELOW ELECT. LAKE DAM
SAMPLE DATE: 11/29/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-3.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		7.3000	
CONDUCTIVITY	umhos/cm		250.0000	
TOTAL DISSOLVED SOLIDS	mg/l		520.0000	T U
TURBIDITY	NTUs		1.8500	
AMMONIA, NH3 as N	mg/l	<	0.0100	T U
NITRATE, NO3 as N	mg/l		0.5200	T U
NITRITE, NO2 as N	mg/l		0.0200	T U
TOTAL PHOSPHATE,PO4-P	mg/l		0.2600	T U
TOT. COLIFORM	M.P.#/100ml		23.0000	
FEC. COLIFORM	M.P.#/100ml	<	2.0000	
KJELDAHL NITROGEN	mg/l	<	0.1000	T U
SUSPENDED SOLIDS	mg/l		2.0000	T U
FECAL STREP	M.P.#/100ml	<	2.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-3
LOCATION DESCRIPTION : HUNTINGTON CREEK JUST BELOW ELECT. LAKE DAM
SAMPLE DATE: 12/19/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-3.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		7.1500	
CONDUCTIVITY	umhos/cm		275.0000	
TOTAL DISSOLVED SOLIDS	mg/l		180.0000	
TURBIDITY	NTUs		5.6000	
AMMONIA, NH3 as N	mg/l		0.5000	
NITRATE, NO3 as N	mg/l		0.4100	
NITRITE, NO2 as N	mg/l		0.0700	
TOTAL PHOSPHATE,PO4-P	mg/l		0.1400	
TOT. COLIFORM	M.P.#/100ml		5.0000	
FEC. COLIFORM	M.P.#/100ml	<	2.0000	
KJELDAHL NITROGEN	mg/l		0.7500	
SUSPENDED SOLIDS	mg/l		0.1000	
FECAL STREP	M.P.#/100ml	<	2.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : H-1
LOCATION DESCRIPTION : HUNTINGTON CREEK ABOVE PLANT
SAMPLE DATE: 01/17/84
ANALYZING LAB: STANDARD LAB HUNTINGTON; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : H-1.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		8.1500	
CONDUCTIVITY	umhos/cm		440.0000	
ALKALINITY, AS CaCO3	mg/l		173.0000	
BICARBONATE, AS HCO3	mg/l		211.0000	
CALCIUM, Ca	mg/l		55.2000	
CHLORIDE, Cl	mg/l		4.6000	
HARDNESS, as CaCO3	mg/l		216.0000	
MAGNESIUM, Mg	mg/l		19.0000	
POTASSIUM, K	mg/l		1.3000	
SODIUM, Na	mg/l		4.7000	
SULFATE, SO4	mg/l		19.0000	
TOTAL DISSOLVED SOLIDS	mg/l		197.0000	
NITRATE, NO3 as N	mg/l		0.3000	
TOTAL PHOSPHATE,PO4-P	mg/l	<	0.0100	
ORTHO PHOSPHATE,PO4-P	mg/l	<	0.0100	
ARSENIC, As	mg/l	<	0.0010	
BERYLLIUM, Be	mg/l	<	0.0050	
BORON, B	mg/l		0.2100	
CADMIUM, Cd	mg/l	<	0.0050	
CHROMIUM, Cr	mg/l	<	0.0500	
COPPER, Cu	mg/l	<	0.0200	
IRON, Fe	mg/l		0.1400	
LEAD, Pb	mg/l	<	0.0500	
MANGANESE, Mn	mg/l		0.0200	
MERCURY, Hg	mg/l	<	0.2000	
MOLEBDENUM, Mo	mg/l	<	0.1000	
NICKEL, Ni	mg/l	<	0.0400	
SELENIUM, Se	mg/l		0.0010	
ZINC, Zn	mg/l	<	0.0050	
OIL & GREASE	mg/l	<	0.5000	
SUSPENDED SOLIDS	mg/l		12.5000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : H-1
LOCATION DESCRIPTION : HUNTINGTON CREEK ABOVE PLANT
SAMPLE DATE: 06/28/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : H-1.WAT

PARAMETER	UNITS		VALUE	CODE
CONDUCTIVITY	umhos/cm		320.0000	
ALKALINITY, AS CaCO3	mg/l		183.0000	
BICARBONATE, AS HCO3	mg/l		223.2600	
CALCIUM, Ca	mg/l		40.0000	
CHLORIDE, Cl	mg/l		1.8000	
FLOURIDE, Fl	mg/l		0.3800	
HARDNESS, as CaCO3	mg/l		200.0000	
MAGNESIUM, Mg	mg/l		24.0000	
POTASSIUM, K	mg/l		0.6000	
SODIUM, Na	mg/l		5.0000	
SULFATE, SO4	mg/l		27.0000	
TOTAL DISSOLVED SOLIDS	mg/l		210.0000	
AMMONIA, NH3 as N	mg/l		0.2500	
NITRATE, NO3 as N	mg/l		0.1800	
TOTAL PHOSPHATE,PO4-P	mg/l	<	0.0200	
ORTHO PHOSPHATE,PO4-P	mg/l		0.0400	
ALUMINUM, Al	mg/l		0.0040	
ARSENIC, As	mg/l	<	0.0010	
BORON, B	mg/l		0.3800	
CADMIUM, Cd	mg/l	<	0.0010	
CHROMIUM, Cr	mg/l	<	0.0010	
COPPER, Cu	mg/l	<	0.0100	
IRON, Fe	mg/l		0.1300	
LEAD, Pb	mg/l	<	0.0010	
MANGANESE, Mn	mg/l		0.0100	
MERCURY, Hg	mg/l	<	0.0002	
NICKEL, Ni	mg/l		0.0400	
SELENIUM, Se	mg/l	<	0.0010	
ZINC, Zn	mg/l		0.0360	
OIL & GREASE	mg/l	<	0.1000	
PHENOL	ppm	<	0.0010	
SUSPENDED SOLIDS	mg/l		1.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : H-1
LOCATION DESCRIPTION : HUNTINGTON CREEK ABOVE PLANT
SAMPLE DATE: 09/04/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : H-1.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		8.1000	
CONDUCTIVITY	umhos/cm		380.0000	
ALKALINITY, AS CaCO3	mg/l		165.0000	
BICARBONATE, AS HCO3	mg/l		189.0000	
CALCIUM, Ca	mg/l		58.0000	
CARBONATE, CO3	mg/l		6.0000	
CHLORIDE, Cl	mg/l		2.0000	
FLOURIDE, Fl	mg/l		0.1600	
HARDNESS, as CaCO3	mg/l		235.0000	
MAGNESIUM, Mg	mg/l		21.6000	
POTASSIUM, K	mg/l		0.8000	
SODIUM, Na	mg/l		3.0000	
SULFATE, SO4	mg/l		67.0000	
TOTAL DISSOLVED SOLIDS	mg/l		248.0000	
AMMONIA, NH3 as N	mg/l	<	0.0100	
NITRATE, NO3 as N	mg/l		0.1500	
NITRITE, NO2 as N	mg/l		0.0100	
TOTAL PHOSPHATE,PO4-P	mg/l		0.0500	
ORTHO PHOSPHATE,PO4-P	mg/l	<	0.0200	
ALUMINUM, Al	mg/l	<	0.0010	D F
ARSENIC, As	mg/l	<	0.0010	D F
BARIUM, Ba	mg/l		0.0500	D F
BORON, B	mg/l		0.0510	D F
CADMIUM, Cd	mg/l	<	0.0010	D F
CHROMIUM, Cr	mg/l	<	0.0010	
COBALT, Co	mg/l	<	0.0100	D F
COPPER, Cu	mg/l		0.0040	D F
IRON, Fe	mg/l		0.0400	D F
LEAD, Pb	mg/l	<	0.0200	D F
MANGANESE, Mn	mg/l		0.0100	D F
MERCURY, Hg	mg/l	<	0.0002	
NICKEL, Ni	mg/l	<	0.0100	D F
SILVER, Ag	mg/l	<	0.0010	D F
ZINC, Zn	mg/l		0.0060	
CYANIDE, Cn	mg/l		0.0130	
OIL & GREASE	mg/l	<	0.1000	
PHENOL	ppm	<	0.0010	
SUSPENDED SOLIDS	mg/l		11.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : H-1
LOCATION DESCRIPTION : HUNTINGTON CREEK ABOVE PLANT
SAMPLE DATE: 12/18/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : H-1.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		7.6500	
CONDUCTIVITY	umhos/cm		455.0000	
ALKALINITY, AS CaCO3	mg/l		219.0000	
BICARBONATE, AS HCO3	mg/l		267.2000	
CALCIUM, Ca	mg/l		58.0000	
CARBONATE, CO3	mg/l	<	0.0100	
CHLORIDE, Cl	mg/l		20.0000	
FLOURIDE, Fl	mg/l		1.3000	
HARDNESS, as CaCO3	mg/l		225.0000	
MAGNESIUM, Mg	mg/l		19.2000	
POTASSIUM, K	mg/l		1.2200	
SODIUM, Na	mg/l		24.4000	
SULFATE, SO4	mg/l		26.0000	
TOTAL DISSOLVED SOLIDS	mg/l		288.0000	
AMMONIA, NH3 as N	mg/l	<	0.0100	
NITRATE, NO3 as N	mg/l		0.3700	
NITRITE, NO2 as N	mg/l		0.2200	
TOTAL PHOSPHATE,PO4-P	mg/l		0.1200	
ORTHO PHOSPHATE,PO4-P	mg/l	<	0.0100	
ALUMINUM, Al	mg/l		0.0050	D
ARSENIC, As	mg/l	<	0.0010	D
BARIUM, Ba	mg/l		0.0700	D
BORON, B	mg/l		0.0220	D
CADMIUM, Cd	mg/l	<	0.0010	D
CHROMIUM, Cr	mg/l	<	0.0010	
COBALT, Co	mg/l	<	0.0100	D
COPPER, Cu	mg/l	<	0.0010	D
IRON, Fe	mg/l		0.0100	D
LEAD, Pb	mg/l		0.0030	D
MANGANESE, Mn	mg/l		0.0100	D
MERCURY, Hg	mg/l	<	0.0002	
NICKEL, Ni	mg/l	<	0.0200	D
SILVER, Ag	mg/l	<	0.0010	D
ZINC, Zn	mg/l		0.0200	D
CYANIDE, Cn	mg/l	<	0.0010	
OIL & GREASE	mg/l		0.8000	
PHENOL	ppm	<	0.0010	
SUSPENDED SOLIDS	mg/l		36.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-9
LOCATION DESCRIPTION : HUNTINGTON CREEK ABOVE FISH CREEK
SAMPLE DATE: 01/17/84
ANALYZING LAB: STANDARD LAB. HUNTINGTON UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-9.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		7.9500	
CONDUCTIVITY	umhos/cm		510.0000	
ALKALINITY, AS CaCO3	mg/l		182.0000	
BICARBONATE, AS HCO3	mg/l		222.0000	
CALCIUM, Ca	mg/l		60.8000	
CHLORIDE, Cl	mg/l		8.9000	
HARDNESS, as CaCO3	mg/l		250.0000	
MAGNESIUM, Mg	mg/l		23.8000	
POTASSIUM, K	mg/l		1.4000	
SODIUM, Na	mg/l		8.8000	
SULFATE, SO4	mg/l		43.0000	
TOTAL DISSOLVED SOLIDS	mg/l		273.0000	
NITRATE, NO3 as N	mg/l		0.2800	
TOTAL PHOSPHATE,PO4-P	mg/l	<	0.0100	
ORTHO PHOSPHATE,PO4-P	mg/l	<	0.0100	
ARSENIC, As	mg/l	<	0.0010	
BERYLLIUM, Be	mg/l	<	0.0050	
BORON, B	mg/l		0.2100	
CADMIUM, Cd	mg/l	<	0.0050	
CHROMIUM, Cr	mg/l	<	0.0500	
COPPER, Cu	mg/l	<	0.0200	
IRON, Fe	mg/l		0.1200	
LEAD, Pb	mg/l	<	0.0500	
MANGANESE, Mn	mg/l		0.0400	
MERCURY, Hg	mg/l	<	0.2000	
MOLEBDENUM, Mo	mg/l	<	0.1000	
NICKEL, Ni	mg/l	<	0.0400	
SELENIUM, Se	mg/l		0.0020	
ZINC, Zn	mg/l	<	0.0050	
OIL & GREASE	mg/l	<	0.5000	
SUSPENDED SOLIDS	mg/l		11.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-9
LOCATION DESCRIPTION : HUNTINGTON CREEK ABOVE FISH CREEK
SAMPLE DATE: 06/28/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-9.WAT

PARAMETER	UNITS		VALUE	CODE
CONDUCTIVITY	umhos/cm		360.0000	
ALKALINITY, AS CaCO3	mg/l		180.0000	
BICARBONATE, AS HCO3	mg/l		219.6000	
CALCIUM, Ca	mg/l		48.0000	
CHLORIDE, Cl	mg/l		0.5000	
FLOURIDE, Fl	mg/l		0.3600	
HARDNESS, as CaCO3	mg/l		230.0000	
MAGNESIUM, Mg	mg/l		26.4000	
POTASSIUM, K	mg/l		0.6000	
SODIUM, Na	mg/l		5.4000	
SULFATE, SO4	mg/l		53.0000	
TOTAL DISSOLVED SOLIDS	mg/l		285.0000	
AMMONIA, NH3 as N	mg/l		0.0900	
NITRATE, NO3 as N	mg/l		0.0100	
TOTAL PHOSPHATE,PO4-P	mg/l	<	0.0200	T
ORTHO PHOSPHATE,PO4-P	mg/l	<	0.0200	
ALUMINUM, Al	mg/l		0.0060	
ARSENIC, As	mg/l	<	0.0010	
BORON, B	mg/l		0.4100	
CADMIUM, Cd	mg/l	<	0.0010	
CHROMIUM, Cr	mg/l	<	0.0010	
COPPER, Cu	mg/l		0.0100	
IRON, Fe	mg/l		0.1100	
LEAD, Pb	mg/l	<	0.0010	
MANGANESE, Mn	mg/l		0.0100	
MERCURY, Hg	mg/l	<	0.0002	
NICKEL, Ni	mg/l		0.0200	
SELENIUM, Se	mg/l	<	0.0010	
ZINC, Zn	mg/l		0.0360	
OIL & GREASE	mg/l	<	0.1000	
PHENOL	ppm	<	0.0010	
SUSPENDED SOLIDS	mg/l		1.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-9
LOCATION DESCRIPTION : HUNTINGTON CREEK ABOVE FISH CREEK
SAMPLE DATE: 09/04/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-9.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		8.0500	
CONDUCTIVITY	umhos/cm		450.0000	
ALKALINITY, AS CaCO3	mg/l		165.0000	
BICARBONATE, AS HCO3	mg/l		201.0000	
CALCIUM, Ca	mg/l		53.2000	
CARBONATE, CO3	mg/l	<	0.0100	
CHLORIDE, Cl	mg/l		4.0000	
FLOURIDE, Fl	mg/l		0.1200	
HARDNESS, as CaCO3	mg/l		230.0000	
MAGNESIUM, Mg	mg/l		22.8000	
POTASSIUM, K	mg/l		0.8000	
SODIUM, Na	mg/l		19.3000	
SULFATE, SO4	mg/l		90.0000	
TOTAL DISSOLVED SOLIDS	mg/l		290.0000	
AMMONIA, NH3 as N	mg/l	<	0.0100	
NITRATE, NO3 as N	mg/l		0.1600	
NITRITE, NO2 as N	mg/l		0.0200	
TOTAL PHOSPHATE,PO4-P	mg/l		0.0200	
ORTHO PHOSPHATE,PO4-P	mg/l		4.0000	
ALUMINUM, Al	mg/l		0.1000	D F
ARSENIC, As	mg/l	<	0.0010	D F
BARIUM, Ba	mg/l		0.0800	D F
BORON, B	mg/l		0.0550	D F
CADMIUM, Cd	mg/l	<	0.0010	D F
CHROMIUM, Cr	mg/l	<	0.0010	
COBALT, Co	mg/l	<	0.0100	D F
COPPER, Cu	mg/l		0.0040	D F
IRON, Fe	mg/l		0.0700	D F
LEAD, Pb	mg/l		0.0200	D F
MANGANESE, Mn	mg/l		0.0100	D F
MERCURY, Hg	mg/l	<	0.0002	
NICKEL, Ni	mg/l	<	0.0100	D F
SILVER, Ag	mg/l	<	0.0010	D F
ZINC, Zn	mg/l		0.0160	
CYANIDE, Cn	mg/l	<	0.0010	
OIL & GREASE	mg/l	<	0.1000	
PHENOL	ppm	<	0.0010	
SUSPENDED SOLIDS	mg/l		11.0000	

UTAH POWER & LIGHT COMPANY
WATER QUALITY DATA
ANALYSIS SUMMARY

SAMPLE LOCATION : UPL-9
LOCATION DESCRIPTION : HUNTINGTON CREEK ABOVE FISH CREEK
SAMPLE DATE: 12/18/84
ANALYZING LAB: FORD LABORATORY S.L.C.; UTAH
DATA FILE FROM WHICH THIS REPORT GENERATED : UPL-9.WAT

PARAMETER	UNITS		VALUE	CODE
pH	units		8.0000	
CONDUCTIVITY	umhos/cm		550.0000	
ALKALINITY, AS CaCO3	mg/l		234.0000	
BICARBONATE, AS HCO3	mg/l		285.5000	
CALCIUM, Ca	mg/l		64.0000	
CARBONATE, CO3	mg/l	<	0.0100	
CHLORIDE, Cl	mg/l		30.0000	
FLOURIDE, Fl	mg/l		0.3500	
HARDNESS, as CaCO3	mg/l		255.0000	
MAGNESIUM, Mg	mg/l		22.8000	
POTASSIUM, K	mg/l		0.9800	
SODIUM, Na	mg/l		31.0000	
SULFATE, SO4	mg/l		49.0000	
TOTAL DISSOLVED SOLIDS	mg/l		340.0000	
AMMONIA, NH3 as N	mg/l	<	0.0100	
NITRATE, NO3 as N	mg/l		0.4300	
NITRITE, NO2 as N	mg/l		0.0200	
TOTAL PHOSPHATE,PO4-P	mg/l		0.0700	
ORTHO PHOSPHATE,PO4-P	mg/l		0.2600	
ALUMINUM, Al	mg/l	<	0.0050	D
ARSENIC, As	mg/l	<	0.0010	D
BARIUM, Ba	mg/l		0.0600	D
BORON, B	mg/l		0.1550	D
CADMIUM, Cd	mg/l	<	0.0010	D
CHROMIUM, Cr	mg/l	<	0.0010	
COBALT, Co	mg/l	<	0.0100	D
COPPER, Cu	mg/l	<	0.0010	D
IRON, Fe	mg/l		0.0200	D
LEAD, Pb	mg/l		0.0050	D
MANGANESE, Mn	mg/l		0.0100	D
MERCURY, Hg	mg/l	<	0.0002	
NICKEL, Ni	mg/l	<	0.0200	D
SILVER, Ag	mg/l	<	0.0010	D
ZINC, Zn	mg/l		0.0190	D
CYANIDE, Cn	mg/l	<	0.0010	
OIL & GREASE	mg/l		0.4000	
PHENOL	ppm	<	0.0010	
SUSPENDED SOLIDS	mg/l		36.0000	

ENG0006A

UTAH POWER & LIGHT COMPANY
RESERVOIR RECORDS

STATION ELECTRIC LAKE
DATE OCT83-SEPT84

DAILY GAGE HEIGHT (FEET)
MONTHS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DAY
1	267.35	266.71	265.59	265.02	261.99	258.70	255.20	249.08	274.40	275.44	275.02	274.30	1
2	267.29	266.58	265.57	265.00	261.88	258.58	255.00	248.75	274.95	275.40	275.00	274.17	2
3	267.27	266.45	265.55	264.98	261.77	258.47	254.80	248.29	275.26	275.36	274.92	274.06	3
4	267.17	266.35	265.54	264.96	261.66	258.36	254.60	247.90	275.32	275.32	274.90	273.94	4
5	267.08	266.30	265.52	264.94	261.55	258.24	254.40	247.52	275.36	275.30	274.87	273.88	5
6	266.98	266.25	265.50	264.92	261.44	258.13	254.20	247.04	275.71	275.27	274.86	273.87	6
7	266.88	266.24	265.48	264.90	261.33	258.02	254.00	246.74	275.69	275.24	274.83	273.78	7
8	266.84	266.23	265.46	264.88	261.22	257.90	253.80	246.38	275.56	275.23	274.80	273.66	8
9	266.84	266.17	265.44	264.86	261.10	257.79	253.60	246.17	275.40	275.21	274.76	273.56	9
10	266.85	266.12	265.42	264.83	260.99	257.68	253.40	246.15	275.28	275.19	274.71	273.45	10
11	266.85	266.10	265.40	264.70	260.88	257.56	253.20	246.50	275.18	275.16	274.70	273.42	11
12	266.83	266.06	265.38	264.57	260.77	257.45	253.00	247.36	275.09	275.15	274.67	273.34	12
13	266.84	266.07	265.36	264.44	260.65	257.34	252.80	248.59	275.05	275.15	274.64	273.24	13
14	266.88	266.03	265.34	264.31	260.54	257.22	252.60	250.07	275.04	275.16	274.63	273.13	14
15	266.88	265.96	265.32	264.18	260.43	257.11	252.40	251.72	275.33	275.15	274.62	273.06	15
16	266.88	265.91	265.30	264.05	260.32	257.00	252.20	253.16	275.67	275.12	274.60	272.95	16
17	266.88	265.94	265.29	263.92	260.21	256.88	252.00	254.28	275.76	275.10	274.56	272.85	17
18	266.89	265.90	265.28	263.79	260.10	256.77	251.80	255.36	275.77	275.07	274.53	272.75	18
19	266.89	265.86	265.26	263.66	259.98	256.66	251.60	256.62	275.77	275.06	274.65	272.66	19
20	266.88	265.95	265.24	263.53	259.86	256.54	251.40	258.12	275.75	275.04	274.65	272.65	20
21	266.86	265.94	265.22	263.39	259.75	256.43	251.20	260.15	275.71	275.03	274.62	272.54	21
22	266.85	265.90	265.20	263.25	259.64	256.32	251.00	262.12	275.67	275.10	274.58	272.43	22
23	266.85	265.84	265.19	263.11	259.52	256.20	250.80	264.00	275.63	275.13	274.55	272.35	23
24	266.83	265.79	265.18	262.97	259.40	256.09	250.60	265.97	275.60	275.11	274.54	272.23	24
25	266.81	265.81	265.16	262.83	259.28	255.98	250.40	267.66	275.57	275.10	274.60	272.14	25
26	266.80	265.76	265.14	262.69	259.16	255.86	250.20	269.03	275.55	275.09	274.60	272.04	26
27	266.79	265.71	265.12	262.55	259.04	255.75	250.00	270.19	275.49	275.08	274.59	271.94	27
28	266.77	265.66	265.10	262.41	258.92	255.64	249.80	271.07	275.49	275.06	274.58	271.83	28
29	266.75	265.65	265.08	262.27	258.81	255.53	249.60	271.90	275.45	275.09	274.52	271.72	29
30	266.75	265.61	265.06	262.18	0.00	255.42	249.40	272.69	275.47	275.11	274.41	271.68	30
31	266.76	0.00	265.04	262.10	0.00	255.31	0.00	273.55	0.00	275.07	274.37	0.00	31

MAXIMUM GAGE HEIGHT 275.77 JUN 18 MINIMUM GAGE HEIGHT 246.15 MAY 10

NOTE: ADD 8300 FEET TO GAGE HEIGHT TO OBTAIN ELEVATION

ENG0006A

UTAH POWER & LIGHT COMPANY
RESERVOIR RECORDS

STATION ELECTRIC LAKE
DATE OCT83-SEPT84

DAILY CONTENTS (ACRE FEET)
MONTHS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DAY
1	27827.00	27556.00	27088.00	26852.00	25629.00	24352.00	23048.00	20894.00	30980.00	31474.00	31274.00	30933.00	1
2	27801.00	27501.00	27080.00	26844.00	25585.00	24306.00	22975.00	20782.00	31240.00	31455.00	31264.00	30872.00	2
3	27793.00	27447.00	27071.00	26836.00	25542.00	24264.00	22902.00	20628.00	31388.00	31436.00	31226.00	30820.00	3
4	27750.00	27405.00	27067.00	26828.00	25498.00	24223.00	22829.00	20498.00	31417.00	31417.00	31217.00	30764.00	4
5	27712.00	27384.00	27059.00	26819.00	25455.00	24177.00	22757.00	20372.00	31436.00	31407.00	31202.00	30736.00	5
6	27670.00	27363.00	27051.00	26811.00	25412.00	24135.00	22685.00	20214.00	31603.00	31393.00	31198.00	30731.00	6
7	27628.00	27359.00	27042.00	26803.00	25368.00	24094.00	22613.00	20116.00	31594.00	31379.00	31183.00	30689.00	7
8	27611.00	27355.00	27034.00	26795.00	25325.00	24049.00	22541.00	19998.00	31532.00	31374.00	31169.00	30633.00	8
9	27611.00	27329.00	27026.00	26786.00	25278.00	24007.00	22469.00	19930.00	31455.00	31364.00	31150.00	30586.00	9
10	27615.00	27309.00	27017.00	26774.00	25235.00	23966.00	22398.00	19924.00	31398.00	31355.00	31126.00	30535.00	10
11	27615.00	27300.00	27009.00	26721.00	25192.00	23921.00	22326.00	20037.00	31350.00	31340.00	31122.00	30521.00	11
12	27607.00	27284.00	27001.00	26668.00	25149.00	23880.00	22255.00	20319.00	31307.00	31336.00	31107.00	30484.00	12
13	27611.00	27288.00	26993.00	26614.00	25102.00	23838.00	22184.00	20729.00	31288.00	31336.00	31093.00	30438.00	13
14	27628.00	27271.00	26984.00	26561.00	25059.00	23794.00	22113.00	21231.00	31283.00	31340.00	31089.00	30387.00	14
15	27628.00	27242.00	26976.00	26508.00	25017.00	23752.00	22042.00	21803.00	31421.00	31336.00	31084.00	30355.00	15
16	27628.00	27221.00	26968.00	26455.00	24974.00	23711.00	21972.00	22312.00	31584.00	31321.00	31074.00	30304.00	16
17	27628.00	27233.00	26964.00	26403.00	24931.00	23667.00	21902.00	22714.00	31627.00	31312.00	31055.00	30258.00	17
18	27632.00	27217.00	26960.00	26350.00	24889.00	23626.00	21831.00	23106.00	31632.00	31297.00	31041.00	30212.00	18
19	27632.00	27200.00	26951.00	26297.00	24842.00	23585.00	21761.00	23570.00	31632.00	31293.00	31098.00	30171.00	19
20	27628.00	27238.00	26943.00	26245.00	24796.00	23540.00	21692.00	24132.00	31623.00	31283.00	31098.00	30166.00	20
21	27619.00	27233.00	26935.00	26188.00	24754.00	23500.00	21622.00	24908.00	31603.00	31278.00	31084.00	30116.00	21
22	27615.00	27217.00	26926.00	26132.00	24711.00	23459.00	21552.00	25680.00	31584.00	31312.00	31065.00	30065.00	22
23	27615.00	27192.00	26922.00	26075.00	24665.00	23415.00	21483.00	26435.00	31565.00	31326.00	31051.00	30029.00	23
24	27607.00	27171.00	26918.00	26019.00	24619.00	23374.00	21414.00	27246.00	31551.00	31317.00	31046.00	29974.00	24
25	27598.00	27179.00	26910.00	25963.00	24573.00	23333.00	21345.00	27959.00	31536.00	31312.00	31074.00	29933.00	25
26	27594.00	27159.00	26902.00	25907.00	24527.00	23289.00	21276.00	28549.00	31527.00	31307.00	31074.00	29887.00	26
27	27590.00	27138.00	26893.00	25851.00	24481.00	23249.00	21207.00	29058.00	31498.00	31302.00	31070.00	29842.00	27
28	27581.00	27117.00	26885.00	25795.00	24435.00	23208.00	21139.00	29450.00	31498.00	31293.00	31065.00	29792.00	28
29	27573.00	27113.00	26877.00	25740.00	24393.00	23168.00	21070.00	29824.00	31479.00	31307.00	31037.00	29742.00	29
30	27573.00	27096.00	26869.00	25704.00	0.00	23128.00	21002.00	30184.00	31488.00	31317.00	30985.00	29724.00	30
31	27577.00	0.00	26861.00	25672.00	0.00	23088.00	0.00	30582.00	0.00	31297.00	30966.00	0.00	31
MONTHLY CHANGE	-254.	-481.	-235.	-1189.	-1279.	-1305.	-2086.	9580.	906.	-191.	-331.	-1242.	

OCT83-SEPT84 TOTAL CHANGE 1893. MAX CONTENTS 31632. AC FT JUN 18 MIN CONTENTS 19924. AC FT MAY 10

TOTAL CHANGE MAX CONTENTS MIN CONTENTS

REMARKS:

ENG0006A

UTAH POWER & LIGHT COMPANY
STREAM DISCHARGE RECORDS

STATION HUNTINGTON CREEK BELOW ELECTRIC LAKE
DATE OCT83-SEPT84

DAILY DISCHARGE (CFS)
MONTHS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DAY
1	31.00	18.00	14.00	14.00	31.00	31.00	34.00	100.00	194.00	78.00	24.00	33.00	1
2	31.00	36.00	14.00	14.00	31.00	31.00	34.00	99.00	194.00	72.00	21.00	33.00	2
3	31.00	36.00	14.00	14.00	31.00	31.00	34.00	99.00	218.00	66.00	19.00	33.00	3
4	31.00	24.00	14.00	14.00	31.00	31.00	34.00	98.00	251.00	62.00	19.00	34.00	4
5	31.00	14.00	14.00	14.00	31.00	31.00	34.00	97.00	265.00	57.00	19.00	24.00	5
6	31.00	14.00	14.00	14.00	31.00	31.00	34.00	96.00	300.00	54.00	18.00	17.00	6
7	30.00	14.00	14.00	14.00	31.00	32.00	34.00	96.00	356.00	51.00	18.00	17.00	7
8	17.00	14.00	14.00	15.00	31.00	32.00	34.00	96.00	329.00	48.00	18.00	17.00	8
9	9.60	14.00	14.00	15.00	31.00	32.00	34.00	96.00	284.00	46.00	18.00	17.00	9
10	9.60	14.00	14.00	21.00	31.00	32.00	34.00	96.00	256.00	44.00	19.00	17.00	10
11	9.60	14.00	14.00	29.00	31.00	32.00	34.00	97.00	230.00	43.00	19.00	17.00	11
12	9.60	14.00	14.00	30.00	31.00	32.00	33.00	98.00	211.00	41.00	19.00	17.00	12
13	9.60	14.00	14.00	30.00	31.00	32.00	46.00	98.00	204.00	39.00	19.00	17.00	13
14	9.60	14.00	14.00	30.00	31.00	32.00	58.00	99.00	203.00	39.00	19.00	17.00	14
15	9.60	14.00	14.00	30.00	31.00	33.00	59.00	149.00	111.00	39.00	19.00	18.00	15
16	9.60	14.00	14.00	30.00	31.00	33.00	59.00	185.00	103.00	38.00	19.00	18.00	16
17	9.70	14.00	14.00	30.00	31.00	33.00	58.00	185.00	147.00	36.00	19.00	18.00	17
18	9.70	14.00	14.00	30.00	31.00	33.00	59.00	185.00	160.00	33.00	20.00	18.00	18
19	9.70	14.00	14.00	30.00	31.00	33.00	59.00	187.00	162.00	32.00	20.00	18.00	19
20	9.50	14.00	14.00	30.00	31.00	33.00	83.00	188.00	155.00	30.00	20.00	18.00	20
21	9.30	14.00	14.00	30.00	31.00	33.00	102.00	189.00	143.00	29.00	20.00	18.00	21
22	9.30	14.00	14.00	30.00	31.00	33.00	102.00	191.00	131.00	30.00	20.00	18.00	22
23	9.60	14.00	14.00	30.00	31.00	34.00	102.00	192.00	120.00	33.00	20.00	18.00	23
24	9.80	14.00	14.00	30.00	31.00	34.00	102.00	193.00	112.00	34.00	11.00	19.00	24
25	9.80	14.00	14.00	30.00	31.00	34.00	101.00	193.00	106.00	32.00	13.00	19.00	25
26	9.70	14.00	14.00	30.00	31.00	34.00	101.00	193.00	102.00	28.00	13.00	19.00	26
27	9.30	14.00	14.00	30.00	31.00	34.00	101.00	194.00	96.00	28.00	10.00	19.00	27
28	9.30	14.00	14.00	31.00	31.00	34.00	101.00	194.00	89.00	27.00	12.00	19.00	28
29	9.30	14.00	14.00	31.00	31.00	35.00	100.00	194.00	81.00	26.00	23.00	19.00	29
30	9.30	14.00	14.00	31.00	0.00	35.00	100.00	195.00	78.00	29.00	33.00	19.00	30
31	9.40	0.00	14.00	31.00	0.00	34.00	0.00	195.00	0.00	28.00	33.00	0.00	31
MONTHLY													
TOT	452.50	478.00	434.00	782.00	899.00	1014.00	1900.00	4567.00	5391.00	1272.00	594.00	605.00	
MEA	14.60	15.90	14.00	25.20	31.00	32.70	63.30	147.00	180.00	41.00	19.20	20.20	
MAX	31.00	36.00	14.00	31.00	31.00	35.00	102.00	195.00	356.00	78.00	33.00	34.00	
MIN	9.30	14.00	14.00	14.00	31.00	31.00	33.00	96.00	78.00	26.00	10.00	17.00	
ACR FT	898.00	948.00	861.00	1550.00	1780.00	2010.00	3770.00	9060.00	10690.00	2520.00	1180.00	1200.00	

OCT83-SEPT84 TOTAL 18388.50 MEAN 50.20 MAX 356.00 MIN 9.30 TOT ACR FT 36470.00

TOTAL MEAN MAX MIN TOT ACR FT

MAX UNIT DISCHARGE 363.00 CFS (3.60 FT) DATE JUN 7 MIN UNIT DISCHARGE 2.00 CFS DATE AUG 27

REMARKS:

Unpublished records
Subject to revision

EMS0006A

UTAH POWER & LIGHT COMPANY
STREAM DISCHARGE RECORDS

STATION HUNTINGTON CREEK AT PLANT
DATE OCT83-SEPT84

DAILY DISCHARGE (CFS)
MONTHS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DAY
1	142.00	69.00	67.00	43.00	62.00	55.00	73.00	203.00	1240.00	605.00	191.00	171.00	1
2	117.00	75.00	56.00	40.00	61.00	56.00	82.00	200.00	1150.00	557.00	182.00	167.00	2
3	120.00	76.00	56.00	48.00	60.00	55.00	80.00	192.00	1080.00	510.00	172.00	161.00	3
4	113.00	75.00	51.00	61.00	61.00	55.00	82.00	188.00	1030.00	461.00	167.00	160.00	4
5	112.00	70.00	49.00	54.00	60.00	60.00	86.00	207.00	999.00	411.00	167.00	160.00	5
6	111.00	70.00	60.00	48.00	60.00	66.00	82.00	210.00	1010.00	371.00	165.00	147.00	6
7	112.00	70.00	71.00	47.00	62.00	67.00	81.00	212.00	1160.00	348.00	152.00	158.00	7
8	105.00	70.00	45.00	47.00	60.00	67.00	82.00	243.00	1030.00	332.00	141.00	202.00	8
9	84.00	70.00	48.00	46.00	61.00	67.00	82.00	279.00	874.00	319.00	142.00	203.00	9
10	83.00	70.00	49.00	43.00	59.00	60.00	82.00	349.00	797.00	299.00	146.00	203.00	10
11	82.00	71.00	50.00	62.00	57.00	60.00	82.00	446.00	758.00	263.00	159.00	212.00	11
12	80.00	71.00	58.00	58.00	55.00	60.00	83.00	620.00	711.00	244.00	167.00	216.00	12
13	80.00	71.00	57.00	54.00	61.00	60.00	85.00	792.00	698.00	233.00	160.00	214.00	13
14	86.00	72.00	53.00	65.00	62.00	63.00	102.00	851.00	756.00	224.00	163.00	212.00	14
15	84.00	72.00	51.00	59.00	57.00	68.00	113.00	1050.00	760.00	222.00	180.00	212.00	15
16	78.00	73.00	49.00	49.00	64.00	71.00	128.00	1120.00	687.00	226.00	180.00	211.00	16
17	76.00	73.00	53.00	59.00	63.00	67.00	148.00	1030.00	735.00	218.00	168.00	210.00	17
18	76.00	73.00	50.00	44.00	61.00	64.00	192.00	1070.00	800.00	245.00	172.00	201.00	18
19	74.00	74.00	55.00	44.00	61.00	63.00	192.00	1180.00	811.00	237.00	187.00	181.00	19
20	73.00	74.00	46.00	50.00	64.00	66.00	192.00	1260.00	776.00	236.00	193.00	156.00	20
21	72.00	74.00	43.00	44.00	63.00	68.00	208.00	1360.00	747.00	228.00	206.00	178.00	21
22	71.00	75.00	42.00	64.00	64.00	67.00	208.00	1360.00	739.00	233.00	185.00	152.00	22
23	71.00	75.00	48.00	65.00	58.00	65.00	218.00	1330.00	732.00	232.00	186.00	145.00	23
24	71.00	75.00	48.00	65.00	61.00	68.00	245.00	1480.00	717.00	234.00	180.00	144.00	24
25	70.00	74.00	51.00	65.00	63.00	71.00	252.00	1520.00	686.00	253.00	225.00	145.00	25
26	70.00	73.00	57.00	61.00	61.00	71.00	233.00	1420.00	672.00	230.00	175.00	144.00	26
27	70.00	73.00	56.00	57.00	58.00	71.00	219.00	1340.00	652.00	219.00	167.00	144.00	27
28	69.00	74.00	45.00	61.00	58.00	71.00	206.00	1250.00	642.00	207.00	157.00	144.00	28
29	69.00	75.00	39.00	60.00	58.00	70.00	193.00	1210.00	621.00	211.00	157.00	144.00	29
30	68.00	75.00	56.00	56.00	0.00	72.00	184.00	1230.00	613.00	248.00	182.00	144.00	30
31	69.00	0.00	58.00	56.00	0.00	70.00	0.00	1240.00	0.00	211.00	175.00	0.00	31
MONTHLY													
TOT	2658.00	2182.00	1617.00	1675.00	1755.00	2014.00	4295.00	26442.00	24683.00	9067.00	5349.00	5241.00	
MEA	85.70	72.70	52.20	54.00	60.50	65.00	143.00	853.00	823.00	292.00	173.00	175.00	
MAX	142.00	76.00	71.00	65.00	64.00	72.00	252.00	1520.00	1240.00	605.00	225.00	216.00	
MIN	68.00	69.00	39.00	40.00	55.00	55.00	73.00	188.00	613.00	207.00	141.00	144.00	
ACR FT	5270.00	4330.00	3210.00	3320.00	3480.00	3990.00	8520.00	52450.00	48960.00	17980.00	10610.00	10400.00	

OCT83-SEPT84 TOTAL 86978.00 MEAN 238.00 MAX 1520.00 MIN 39.00 TOT ACR FT 172500.00

TOTAL MEAN MAX MIN TOT ACR FT

MAX UNIT DISCHARGE 1680.00 CFS (4.96 FT) DATE MAY 24 MIN UNIT DISCHARGE 34.00 CFS DATE JAN 10

REMARKS:

APPENDIX B

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

). Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 4971

Date Rec'd 1-10-84

Date Sampled 1-10-84

Time Sampled _____

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Runoff
Above the Mine
Temp 32°
65.2 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	610	umhos/cm	1/11
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
trogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.0	Units	1/11
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	350	mg/l	1/12
Solids, Total Suspended	0.5	mg/l	1/12
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	1/11
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	1/11
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 1/13/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 4972
Date Rec'd 1-10-84
Date Sampled 1-10-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Runoff
Below the Mine
Temp. 32°
87.9 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1650	umhos/cm	1/11
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.0	Units	1/11
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	988	mg/l	1/12
Solids, Total Suspended	23.5	mg/l	1/12
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	1/11
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	1/11
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 1/13/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5286
Date Rec'd 4-11-84
Date Sampled 4-11-84
Time Sampled 1435

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Above the Mine
Temp. 32°
Flow 12.6 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	700	umhos/cm	4/12
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.3	Units	4/12
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	381	mg/l	4/13
Solids, Total Suspended	3.0	mg/l	4/13
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	4/12
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	4/12
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 4-16-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5287
Date Rec'd 4-11-84
Date Sampled 4-11-84
Time Sampled 1410

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Below the Mine
51° Temp.
Flow 8.9 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	2150	umhos/cm	4/12
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.2	Units	4/12
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	1354	mg/l	4/13
Solids, Total Suspended	1.5	mg/l	4/13
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	4/12
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	4/12
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 4-16-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

). Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5404
Date Rec'd 5-7-84
Date Sampled 5-7-84
Time Sampled 1050

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Runoff
Above the Mine
Temp 32°
.8'/315.1 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	600	umhos/cm	5/8
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.6	Units	5/8
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	315	mg/l	5/9
Solids, Total Suspended	41.5	mg/l	5/9
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	5/8
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	5/8
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 5-9-84

Analyst: David A Janway

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5405

Date Rec'd 5-7-84

Date Sampled 5-7-84

Time Sampled 1030

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Runoff
Below the Mine
Temp 39°

.7'/256.3 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1310	umhos/cm	5/8
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.75	Units	5/8
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	756	mg/l	5/9
Solids, Total Suspended	36.5	mg/l	5/9
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	5/8
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	5/8
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janusy

Respectfully submitted [signature] 5-9-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5526
Date Rec'd 6-6-84
Date Sampled 6-5-84
Time Sampled 1135

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Runoff
Above the Mine
Temp. 44°
1500 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	550	umhos/cm	6/7
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.3	Units	6/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	332	mg/l	6/7
Solids, Total Suspended	37.0	mg/l	6/7
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	6/6
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	6/7
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Jamison

Respectfully submitted [signature] 6/11/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5527
Date Rec'd 6-6-84
Date Sampled 6-5-84
Time Sampled 1120

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek
At Permit Boundry
Temp. 42°
1500 EST

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	590	umhos/cm	6/7
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.6	Units	6/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	345	mg/l	6/7
Solids, Total Suspended	56.0	mg/l	6/7
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	6/6
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	6/7
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 6/11/84

Analyst: David A Janney

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5528
Date Rec'd 6-6-84
Date Sampled 6-5-84
Time Sampled 1105

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Runoff
Below the Mine
Temp. 40°
1500 GPM Est

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	620	umhos/cm	6/7
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
rogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.8	Units	6/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	387	mg/l	6/7
Solids, Total Suspended	32.5	mg/l	6/7
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	6/6
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	6/7
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 6/11/84

Analyst: David A Janney

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5754
Date Rec'd 7-16-84
Date Sampled 7-16-84
Time Sampled 1235

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Runoff
Above the Mine
Temp 56°
Flow 590 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	525	umhos/cm	7/17
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.6	Units	7/17
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	231	mg/l	7/20
Solids, Total Suspended	3.6	mg/l	7/20
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	7/18
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	7/18
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Jensen

Respectfully submitted David A Jensen
07/23/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5755
Date Rec'd 7-16-84
Date Sampled 7-16-84
Time Sampled 1220

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Runoff
Below the Mine
Temp 68°
Flow 590 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	700	umhos/cm	7/17
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.8	Units	7/17
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	320	mg/l	7/20
Solids, Total Suspended	< 0.5	mg/l	7/20
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	7/18
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	7/18
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janney

Respectfully submitted David A Janney
07/23/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5852
Date Rec'd 8-7-84
Date Sampled 8-6-84
Time Sampled 1500

Client: Utah Power & Light co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Runoff
Above the Mine
Temp. 56°
Flow 0.81/321.4 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	480	umhos/cm	8/7
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.1	Units	8/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	305	mg/l	8/7
Solids, Total Suspended	5.0	mg/l	8/7
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	8/7
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	8/7
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A. Jones

Respectfully submitted [signature] 8-8-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5853
Date Rec'd 8-7-84
Date Sampled 8-6-84
Time Sampled 1420

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Runoff
Below the Mine
Temp. 68°
flow 0.92/391.2 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	800	umhos/cm	8/7
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
rogen, Ammonia		mg/l	
trogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.4	Units	8/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	458	mg/l	8/7
Solids, Total Suspended	141.0	mg/l	8/7
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.18	mg/l	8/7
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	8/7
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 8-8-84

Analyst: David A. Ponsry

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6029
Date Rec'd 9-10-84
Date Sampled 9-10-84
Time Sampled 1536

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Runoff
Above the Mine
Temp. 51°
Flow .45/129.7 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	595	umhos/cm	9/11
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.1	Units	9/11
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	305	mg/l	9/13
Solids, Total Suspended	< 0.5	mg/l	9/13
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	9/12
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	9/12
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Vanay

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6030

Date Rec'd 9-10-84

Date Sampled 9-10-84

Time Sampled 1445

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Runoff
Below the Mine
Temp. 69°
Flow .5/152.2 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	950	umhos/cm	9/11
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
·ogen, Ammonia		mg/l	
ıitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.45	Units	9/11
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	534	mg/l	9/13
Solids, Total Suspended	< 0.5	mg/l	9/13
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	9/12
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	9/12
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted

Analyst: David A. Ramsey

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6194
Date Rec'd 10-8-84
Date Sampled 10-8-84
Time Sampled 1429

Client: Utah Power & Light Co.
P. O. Box 1005
Field Office
Huntington, Utah 84528

Sample ID: Deer Creek Runoff
Above the Mine
Temp. 39°
flow 0.44/125.2 GPM

Acidity		mg/l $CaCO_3$	Aluminum		mg/l
Alkalinity, Total		mg/l $CaCO_3$	Arsenic		mg/l
Alkalinity, Bicarbonate		mg/l $CaCO_3$	Barium		mg/l
Alkalinity, Carbonate		mg/l $CaCO_3$	Beryllium		mg/l
Chloride		mg/l	Boron		mg/l
Coliform, Fecal		MPN/100 ml	Cadmium		mg/l
Coliform, Total		MPN/100 ml	Calcium		mg/l
Conductivity	600	umhos/cm 10/9	Chromium		mg/l
Fluoride		mg/l	Copper		mg/l
Hardness, Total		mg/l $CaCO_3$	Iron	< 0.05	mg/l 10/1
Nitrogen, Ammonia		mg/l	Lead		mg/
Nitrogen, Nitrate		mg/l	Magnesium		mg/l
Nitrogen, Nitrite		mg/l	Manganese	< 0.01	mg/l 10/1
Oil & Grease		mg/l	Mercury		ug/l
pH	8.1	Units 10/9	Nickel		mg/l
Phosphorus, Ortho		mg/l	Potassium		mg/l
Phosphorus, Total		mg/l	Selenium		mg/l
Solids, Total Dissolved	337	mg/l 10/10	Silica		mg/l
Solids, Total Suspended	< 0.5	mg/l 10/10	Sodium		mg/l
Sulfate		mg/l	Vanadium		mg/l
Sulfide		mg/l	Zinc		mg/l
Turbidity		NTU			

Respectfully submitted 10/12/84

Analyst: David A. Jones

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
). Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6195
Date Rec'd 10-8-84
Date Sampled 10-8-84
Time Sampled 1455

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Runoff
Below the Mine
Temp. 55°
Flow 176.4 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1200	umhos/cm	10/9
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.3	Units	10/9
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	728	mg/l	10/10
Solids, Total Suspended	2.0	mg/l	10/10
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

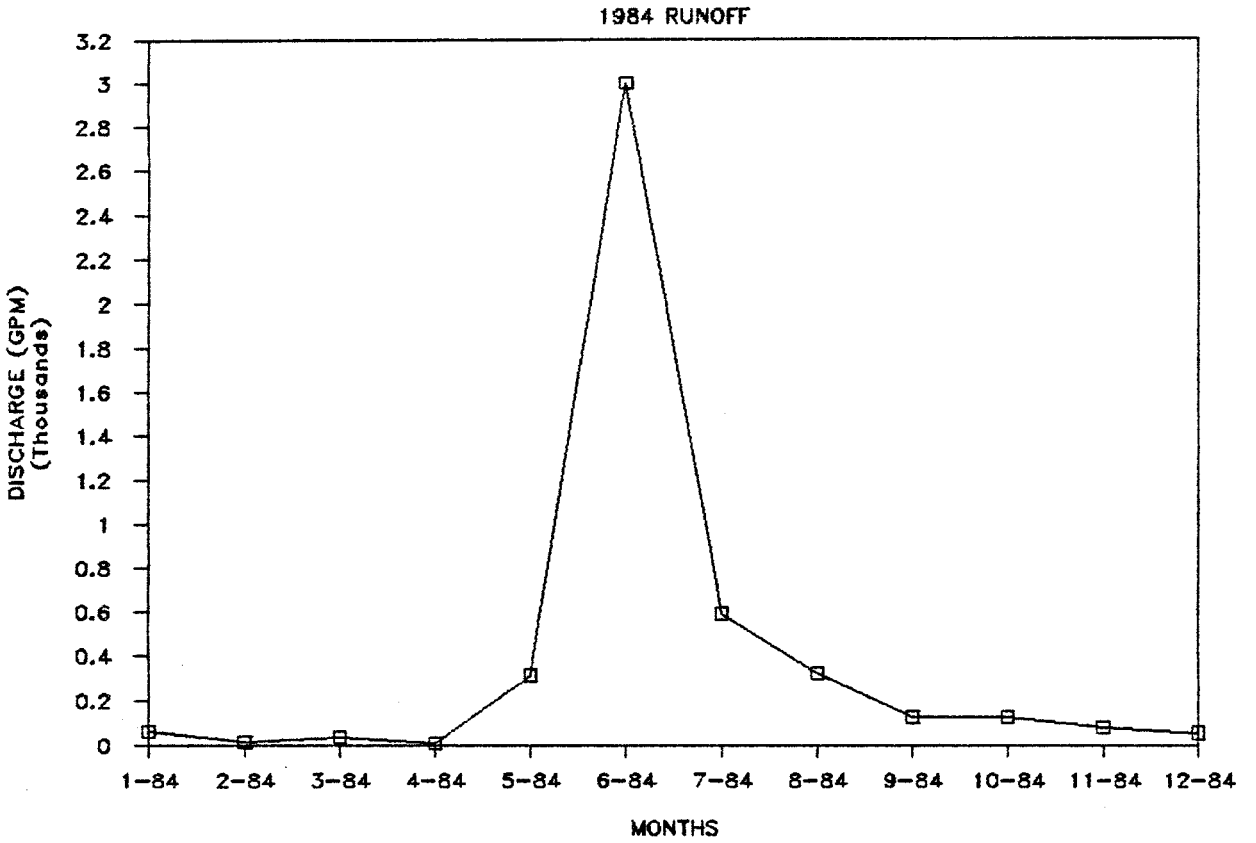
Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	10/1
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	10/11
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 10/12/84

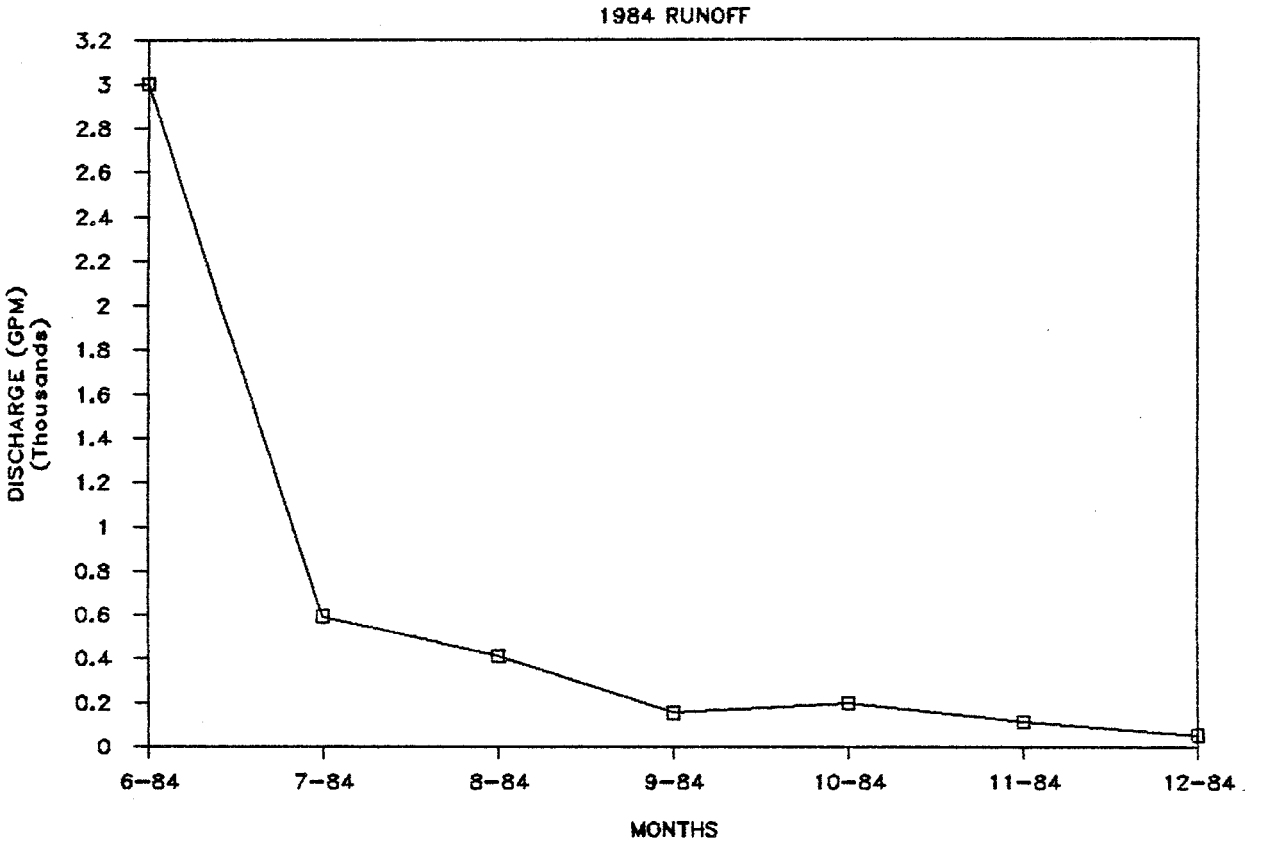
Analyst: [signature]

Certified Environmental Laboratory

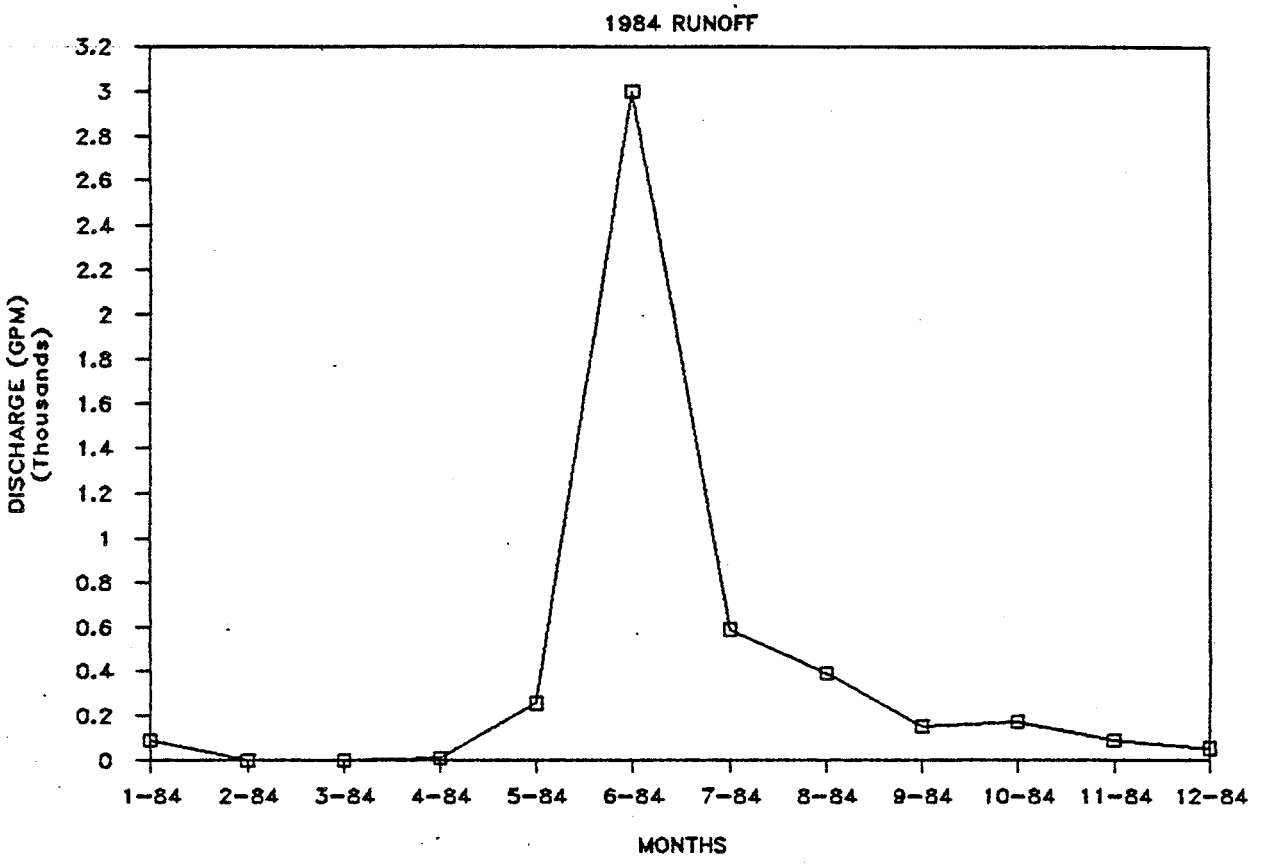
DEER CREEK ABOVE MINE



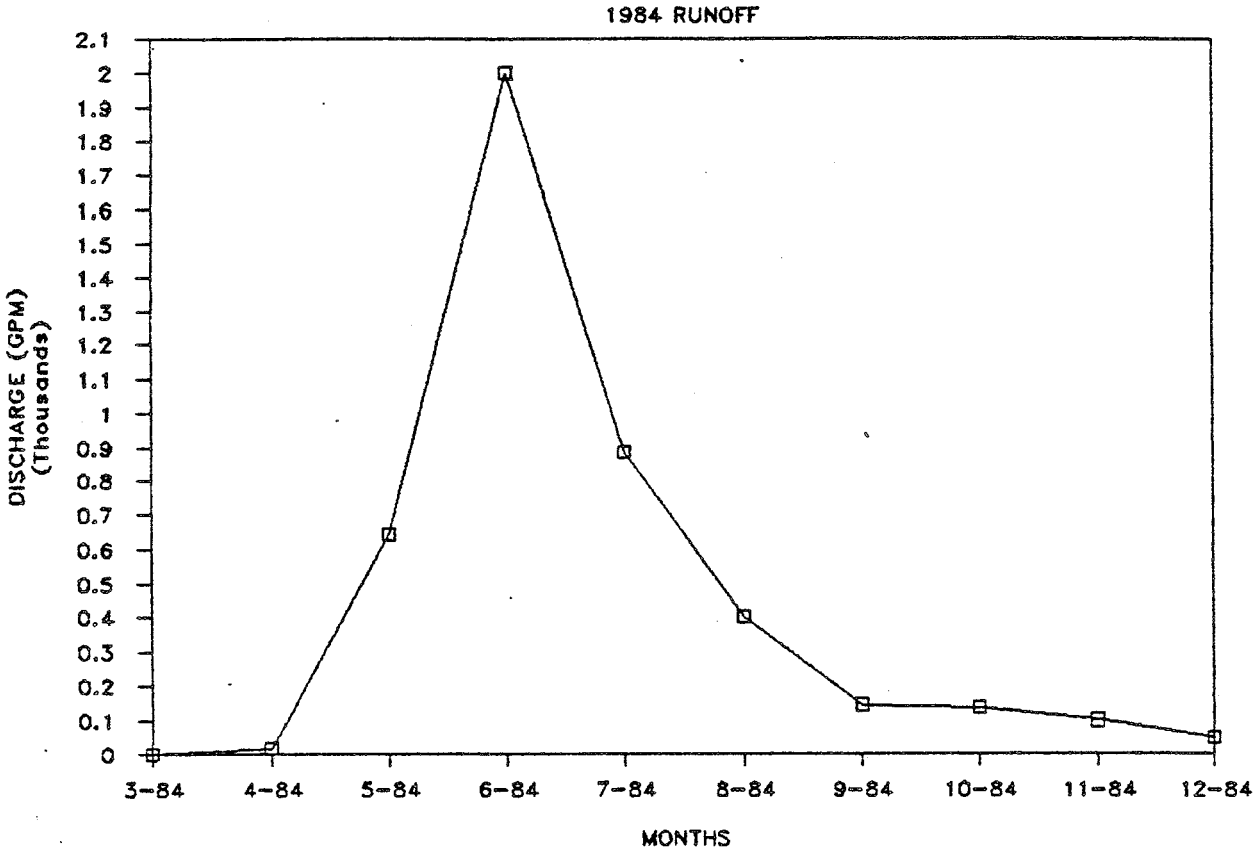
DEER CREEK AT PERMIT BOUNDARY



DEER CREEK BELOW MINE



MEETINGHOUSE



APPENDIX C

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
). Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 4965
Date Rec'd 1-9-84
Date Sampled 1-9-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Right Fork
Flow 12.6 GPM

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	680	umhos/cm 1/10
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	8.0	Units 1/10
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	350	mg/l 1/10
Solids, Total Suspended	25.0	mg/l 1/10
Sulfate		mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron	0.25	mg/l 1/10
Lead		mg/l
Magnesium		mg/l
Manganese	< 0.01	mg/l 1/10
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium		mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted [signature] 1/10/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 4966

Date Rec'd 1-9-84

Date Sampled

Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Below the Mine
Flow Est. 75 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1700	umhos/cm	1/10
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.85	Units	1/10
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	923	mg/l	1/10
Solids, Total Suspended	11.5	mg/l	1/10
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.45	mg/l	1/10
Lead		mg/l	
Magnesium		mg/l	
Manganese	0.07	mg/l	1/10
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 1/10/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 4964
Date Rec'd 1-9-84
Date Sampled 1-9-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Left Fork
Flow Est. 60 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	600	umhos/cm	1/10
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.85	Units	1/10
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	301	mg/l	1/10
Solids, Total Suspended	< 0.5	mg/l	1/10
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	1/10
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	1/10
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 1/10/84

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5289
Date Rec'd 4-12-84
Date Sampled 4-12-84
Time Sampled 1120

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Right Fork
Temp. 32°
Flow 14.8 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	750	umhos/cm	4/12
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.3	Units	4/12
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	477	mg/l	4/13
Solids, Total Suspended	42.0	mg/l	4/13
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.24	mg/l	4/12
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	4/12
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 4-16-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5288
Date Rec'd 4-12-84
Date Sampled 4-12-84
Time Sampled 1130

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Left Fork
Temp. 34°
Flow 75 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	600	umhos/cm	4/12
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
rogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.4	Units	4/12
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	352	mg/l	4/13
Solids, Total Suspended	30.5	mg/l	4/13
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	4/12
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	4/12
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 4-16-84

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5290

Date Rec'd 4-12-84

Date Sampled 4-12-84

Time Sampled 1215

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Below the Mine
Temp. 48°
Flow Est. 315 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1000	umhos/cm	4/12
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.3	Units	4/12
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	690	mg/l	4/13
Solids, Total Suspended	25.0	mg/l	4/13
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.10	mg/l	4/12
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	4/12
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 4-16-84

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5406
Date Rec'd 5-7-84
Date Sampled 5-7-84
Time Sampled 1335

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Right Fork
Temp 37°

.62/212.7 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	600	umhos/cm	5/8
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
ogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.0	Units	5/8
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	323	mg/l	5/9
Solids, Total Suspended	1482.0	mg/l	5/9
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	1.05	mg/l	5/8
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	5/8
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Larsen

Respectfully submitted [signature] 5-9-84

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5407
Date Rec'd 5-7-84
Date Sampled 5-7-84
Time Sampled 1315

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Left Fork
Temp 36°

Est. 250 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	610	umhos/cm	5/8
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.9	Units	5/8
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	337	mg/l	5/9
Solids, Total Suspended	76.0	mg/l	5/9
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.09	mg/l	5/8
Lead		mg/l	
Magnesium		mg/	
Manganese	<0.01	mg/l	5/8
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janney

Respectfully submitted 5-9-84

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5408
Date Rec'd 5-7-84
Date Sampled 5-7-84
Time Sampled 1350

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Below the Mine
Temp. 44°

Est. 700 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	990	umhos/cm	5/8
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.8	Units	5/8
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	587	mg/l	5/9
Solids, Total Suspended	107.0	mg/l	5/9
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.32	mg/l	5/8
Lead		mg/l	
Magnesium		mg/l	
Manganese	<0.01	mg/l	5/8
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janney

Respectfully submitted [signature] 5-9-84

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5529
Date Rec'd 6-6-84
Date Sampled 6-5-84
Time Sampled 1350

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash Runoff
Right Fork
Temp. 48°
.55/176.4 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	600	umhos/cm	6/7
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.9	Units	6/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	360	mg/l	6/7
Solids, Total Suspended	48.5	mg/l	6/7
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.14	mg/l	6/6
Lead		mg/l	
Magnesium		mg/.	
Manganese	< 0.01	mg/l	6/7
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janes

Respectfully submitted [illegible] 6/11/84

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5530
Date Rec'd 6-6-84
Date Sampled 6-5-84
Time Sampled 1325

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash Runoff
Left Fork
Temp. 44°
.86/727.1 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	675	umhos/cm	6/7
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.9	Units	6/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	396	mg/l	6/7
Solids, Total Suspended	18.5	mg/l	6/7
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.06	mg/l	6/6
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	6/7
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Lanny

Respectfully submitted [signature] 6/11/84

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5531
Date Rec'd 6-6-84
Date Sampled 6-5-84
Time Sampled 1320

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash Runoff
Below the Mine
Temp. 48°
1125 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	800	umhos/cm	6/7
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.95	Units	6/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	506	mg/l	6/7
Solids, Total Suspended	24.5	mg/l	6/7
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.07	mg/l	6/6
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	6/7
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 6/11/84

Analyst: David A Janusy

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5758
Date Rec'd 7-16-84
Date Sampled 7-16-84
Time Sampled 1020

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Right Fork
Temp 54°
Flow .28/61.9 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	550	umhos/cm	7/17
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
ogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.1	Units	7/17
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	246	mg/l	7/20
Solids, Total Suspended	35.4	mg/l	7/20
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.13	mg/l	7/18
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Ganley

Respectfully submitted David A Ganley
07/23/84

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5757
Date Rec'd 7-16-84
Date Sampled 7-16-84
Time Sampled 945

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Left Fork
Temp 52°
Flow .45/260.3 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	675	umhos/cm	7/17
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.8	Units	7/17
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	278	mg/l	7/20
Solids, Total Suspended	2.6	mg/l	7/20
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	7/18
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	7/18
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Young

Respectfully submitted David A Young
07/23/84

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STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5756
Date Rec'd 7-16-84
Date Sampled 7-16-84
Time Sampled 940

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Below the Mine
Temp 54°
Flow 750 GPM (Est)

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1000	umhos/cm	7/17
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
rogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.65	Units	7/17
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	457	mg/l	7/20
Solids, Total Suspended	20.9	mg/l	7/20
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	7/18
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	7/18
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Jenny

Respectfully submitted David A Jenny
07/23/84

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5855
Date Rec'd 8-7-84
Date Sampled 8-6-84
Time Sampled 1318

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Right Fork
Temp. 62°
Flow 0.15/23.8 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	470	umhos/cm	8/7
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.7	Units	8/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	294	mg/l	8/7
Solids, Total Suspended	13.0	mg/l	8/7
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.15	mg/l	8/7
Lead		mg/l	
Magnesium		mg/l	
Manganese	0.02	mg/l	8/7
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janney

Respectfully submitted [signature] 8-8-84

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5854

Date Rec'd 8-7-84

Date Sampled 8-6-84

Time Sampled 1139

Client: Utah Power & Light Co.
P. O. Box 1005
Field Office
Huntington, Utah 84528

Sample ID: Grimes Wash
Left Fork
Temp 62°
Flow .35/175 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	620	umhos/cm	8/7
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
rogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.3	Units	8/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	364	mg/l	8/7
Solids, Total Suspended	4.0	mg/l	8/7
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	8/7
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	8/7
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A. Ramsey

Respectfully submitted [signature] 8-8-84

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5856
Date Rec'd 8-7-84
Date Sampled 8-6-84
Time Sampled 1135

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Below the Mine
Temp 58°
Flow 200 GPM est.

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1000	umhos/cm	8/7
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.3	Units	8/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	593	mg/l	8/7
Solids, Total Suspended	5.0	mg/l	8/7
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.06	mg/l	8/7
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	8/7
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 8-8-84

Analyst: [signature]

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6031
Date Rec'd 9-10-84
Date Sampled 9-10-84
Time Sampled 1250

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Right Fork
Temp. 59°
Flow 10.0 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	510	umhos/cm	9/11
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
rogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.4	Units	9/11
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	279	mg/l	9/13
Solids, Total Suspended	7.0	mg/l	9/13
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	9/12
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	9/12
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: [signature]

Respectfully submitted [signature]

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6032
Date Rec'd 9-10-84
Date Sampled 9-10-84
Time Sampled 1305

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Left Fork
Temp. 62°
Flow .21/80.8 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	610	umhos/cm	9/11
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.45	Units	9/11
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	343	mg/l	9/13
Solids, Total Suspended	3.0	mg/l	9/13
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	9/12
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	9/12
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: [illegible]

Respectfully submitted [illegible]

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6033
Date Rec'd 9-10-84
Date Sampled 9-10-84
Time Sampled 1204

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Below the Mine
Temp. 58°
Flow Est. 90 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1100	umhos/cm	9/11
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
trogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.3	Units	9/11
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	658	mg/l	9/13
Solids, Total Suspended	1.0	mg/l	9/13
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	9/12
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	9/12
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: [signature]

Respectfully submitted [signature]

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6196
Date Rec'd 10-8-84
Date Sampled 10-8-84
Time Sampled 1219

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Right Fork
Temp. 47°
Flow 10.0 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	590	umhos/cm	10/9
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.3	Units	10/9
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	332	mg/l	10/10
Solids, Total Suspended	9.0	mg/l	10/10
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.09	mg/l	10/11
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	10/11
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A. Janney

Respectfully submitted [signature] 10/12/84

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6197
Date Rec'd 10-8-84
Date Sampled 10-8-84
Time Sampled 1150

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Left Fork
Temp. 52°
Flow 0.2/71.2 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	685	umhos/cm	10/9
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
rogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.4	Units	10/9
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	380	mg/l	10/10
Solids, Total Suspended	< 0.5	mg/l	10/10
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	10/11
Lead		mg/l	
Magnesium		mg/l	
Manganese	< 0.01	mg/l	10/11
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A. Janney

Respectfully submitted [signature] 10/12/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6198
Date Rec'd 10-8-84
Date Sampled 10-8-84
Time Sampled 1145

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Grimes Wash
Below the Mine
temp. 50°
Flow 81.0 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total		mg/l $CaCO_3$	
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride		mg/l	
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1220	umhos/cm	10/9
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	8.05	Units	10/9
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	780	mg/l	10/10
Solids, Total Suspended	1.0	mg/l	10/10
Sulfate		mg/l	
Sulfide		mg/l	
Turbidity		NTU	

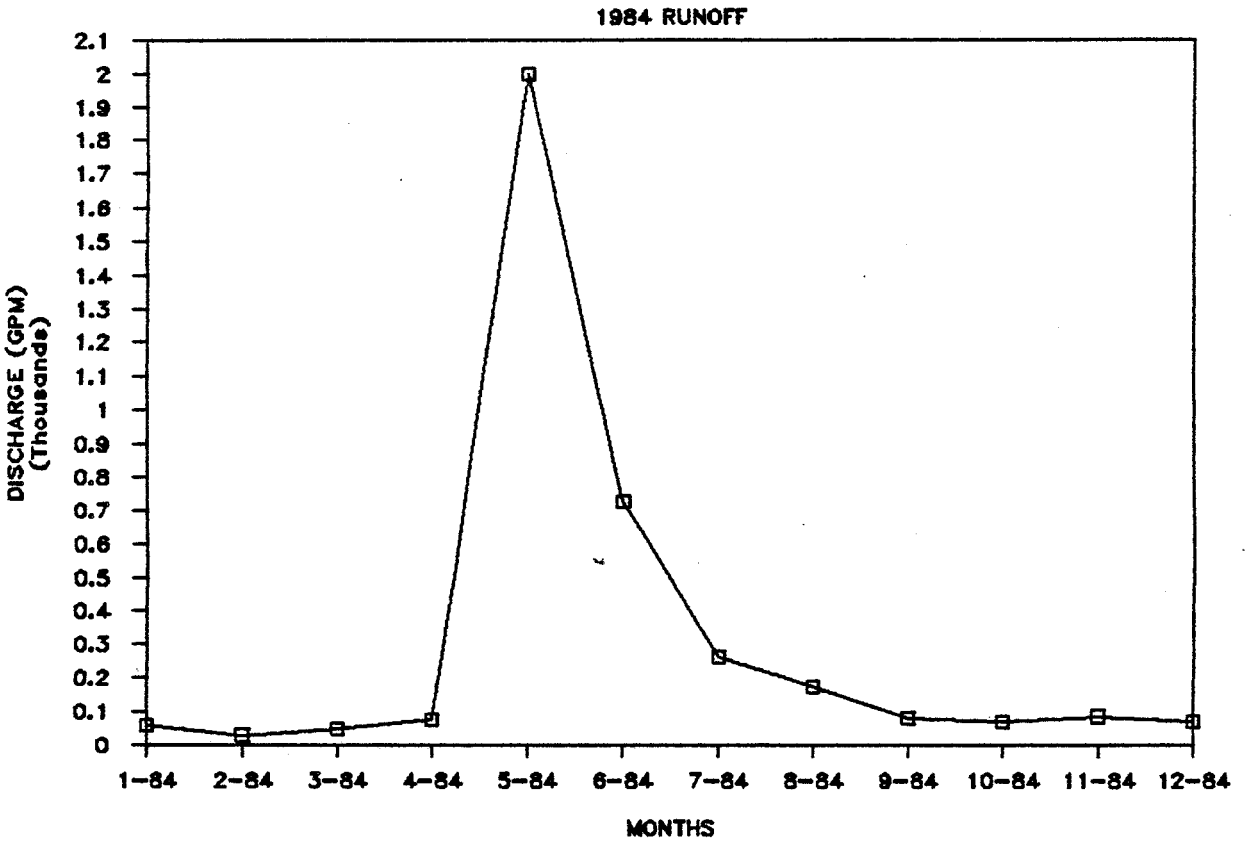
Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.06	mg/l	10/11
Lead		mg/l	
Magnesium		mg/l	
Manganese	0.02	mg/l	10/11
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted 10/12/84

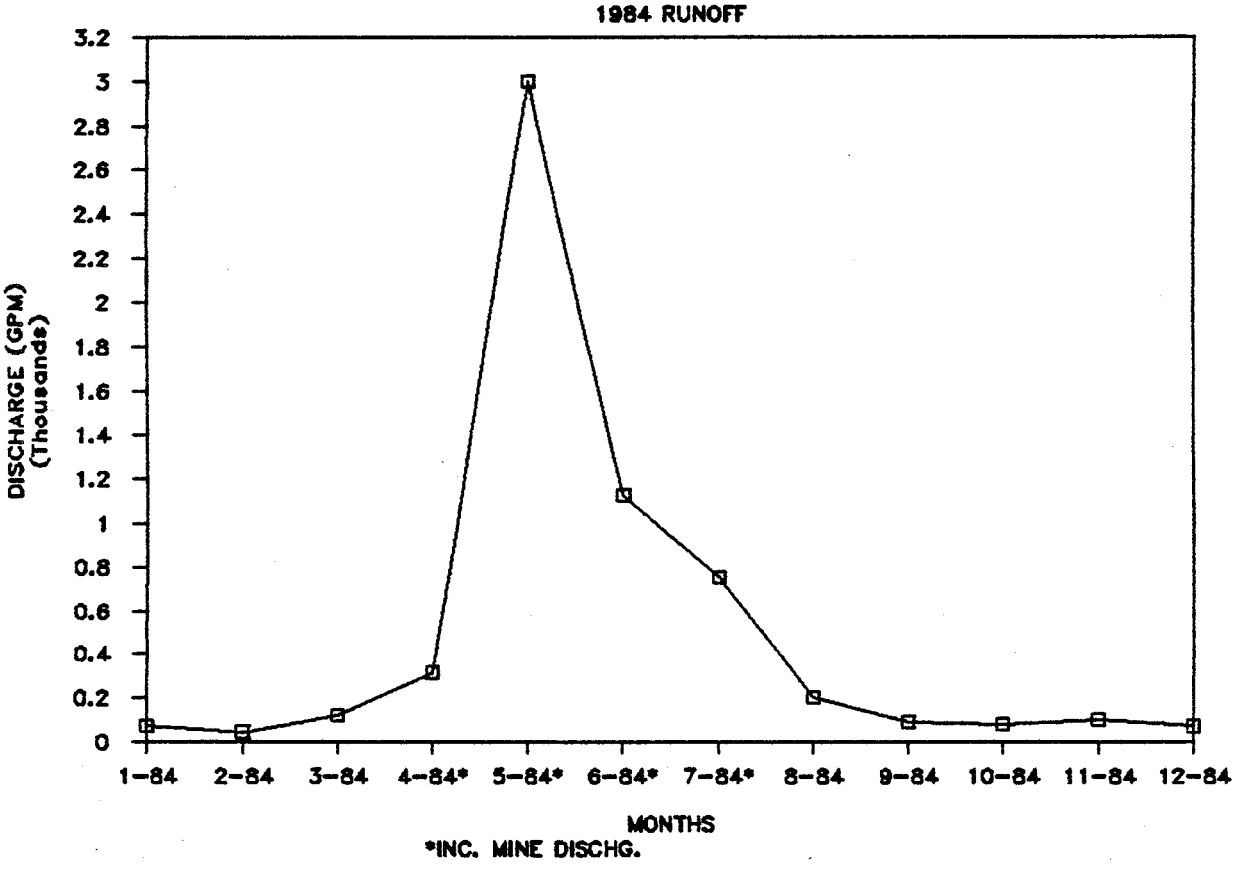
Analyst: David A Jensen

Certified Environmental Laboratory

LEFT FORK GRIMES WASH

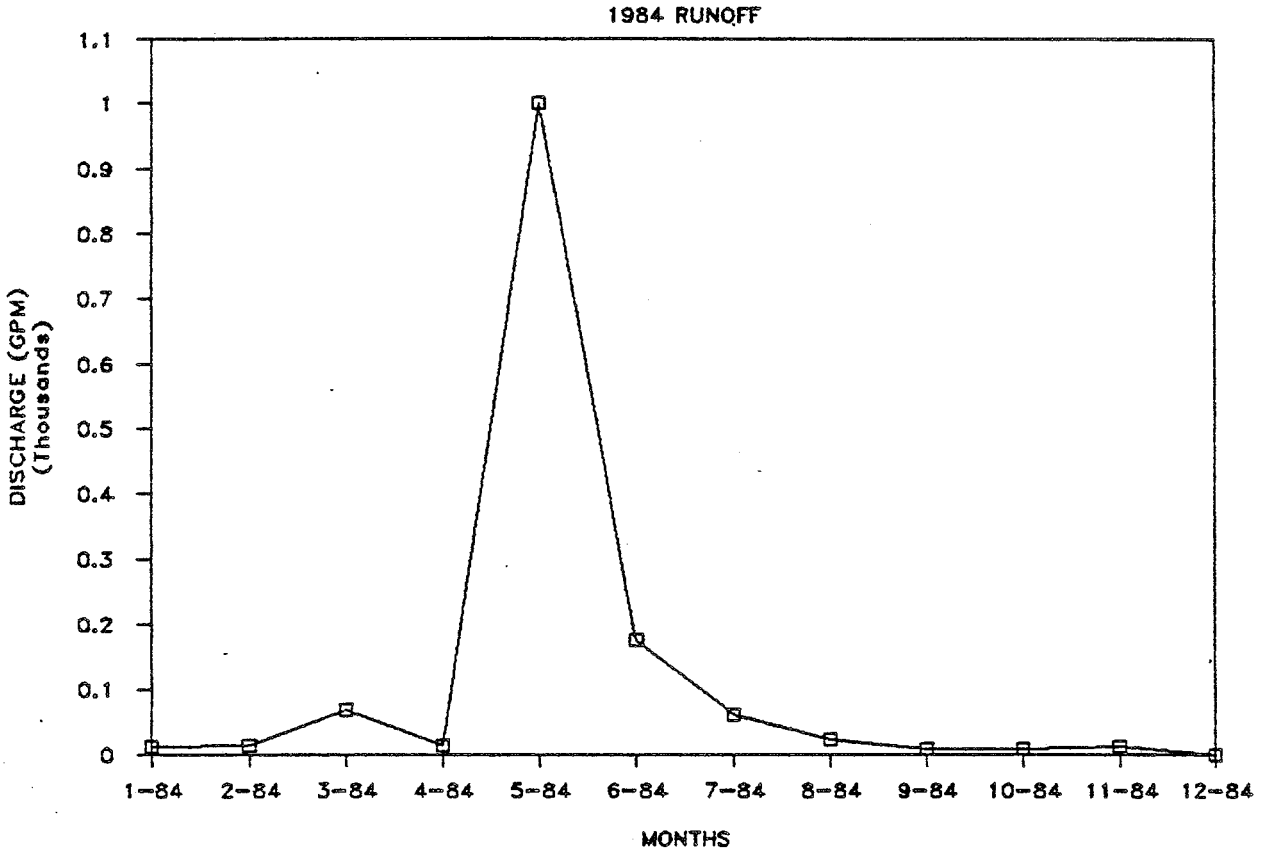


GRIMES WASH BELOW MINE

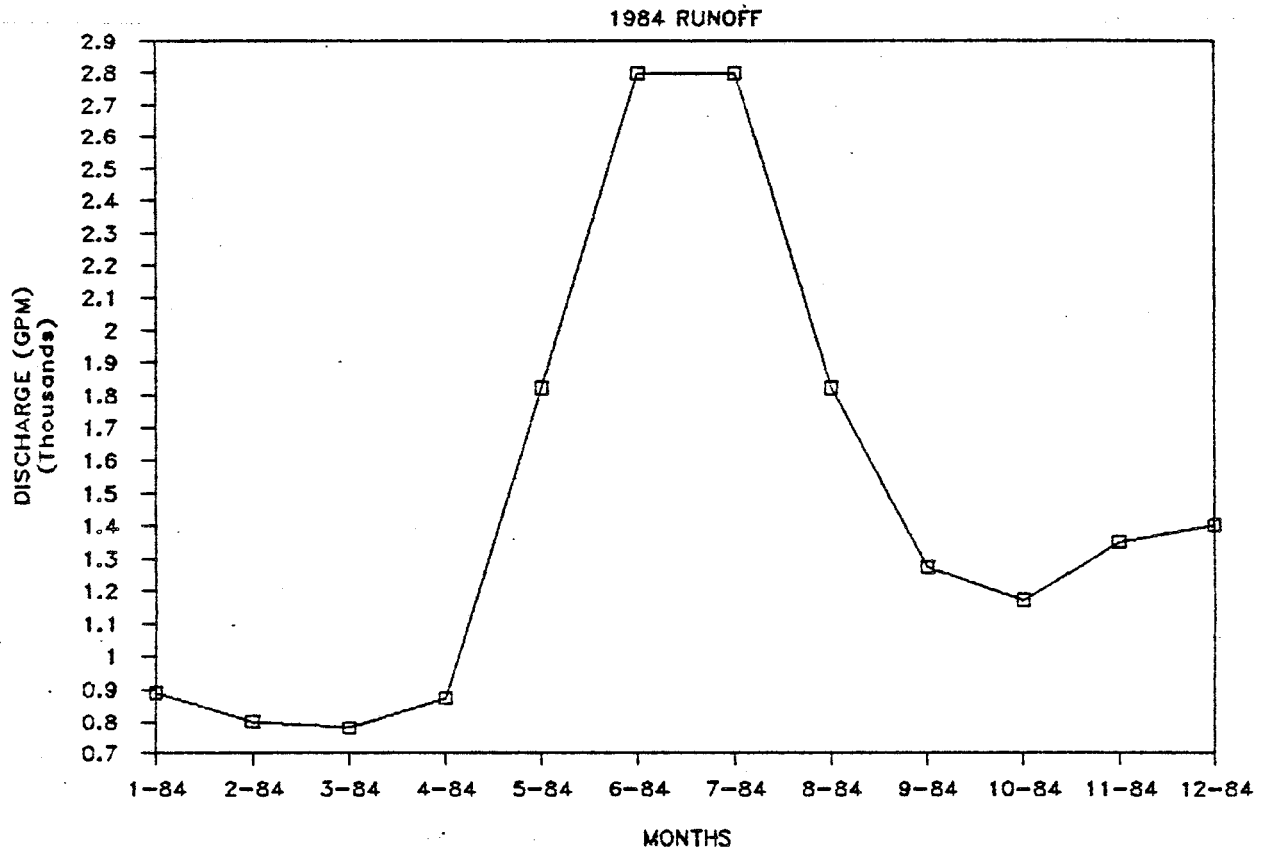


*INC. MINE DISCHG.

RIGHT FORK GRIMES WASH



COTTONWOOD CREEK



APPENDIX D

SPRINGS GEOLOGIC CONDITIONS INVENTORY

Spring Name/Number: 84-53

Location: 820 Feet S 140 Feet E of the Northwest Corner of Section 20 Township 17 South Range 7 East

Elevation: 9280 Feet above mean sea level

Location Comments: Spring located in small meadow surrounded by aspen trees, approximately 100 feet east of the road.

Formation: North Horn 270 Feet from Top

Probable Recharge Area: East Mountain highlands to the East.

Relationship to Adjacent Springs: Spring occurs in same manner as Springs 79-26, 79-27, 79-28 and 79-29.

Geologic Circumstances of Spring: Water flowing down through fractures in the North Horn formation intersect a sandstone channel and flows laterally through the formation. A spring is formed when the sandstone channel intersects the land surface.

SPRINGS GEOLOGIC CONDITIONS INVENTORY

Spring Name/Number: 84-54

Location: 200 Feet N ■ 280 Feet E ■ of the Southwest Corner of Section 5 Township 17 South Range 7 East

Elevation: 9550 Feet above mean sea level

Location Comments: This spring is located at the head of the South Fork of Meetinghouse Canyon.

Formation: North Horn 100 Feet from Top

Probable Recharge Area: Highland areas of East Mountain located to the West.

Relationship to Adjacent Springs: This spring is associated with Elk Springs, 79-18, 79-19 and 79-20.

Geologic Circumstances of Spring: Water flows down from the Flagstaff limestone along vertical fractures which intersect moderately permeable fluvial sandstones in the North Horn formation. The spring is formed where this channel samdstone intersects the land surface.

SPRINGS GEOLOGIC CONDITIONS INVENTORY

Spring Name/Number: 84-55

Location: 2060 Feet N [redacted] 0 Feet E W of the Southwest Corner of Section 21 Township 17 South Range 7 East

Elevation: 9160 Feet above mean sea level

Location Comments: This spring is located in a meadow which is surrounded by Spruce trees.

Formation: Contact zone between North Horn and Price River

Probable Recharge Area: Areas of higher elevations on East Mountain which are located to the Southwest (possible remergence of water from Spring 79-39).

Relationship to Adjacent Springs: This spring occurs in the same manner as spring 79-40.

Geologic Circumstances of Spring: Water flowing laterally through a channel sandstone underlain by a thin impermeable mudstone at the base of the North Horn Formation intersects the land surface forming the spring.

SPRINGS GEOLOGIC CONDITIONS INVENTORY

Spring Name/Number: 84-56

Location: 1520 Feet N 600 Feet E of the Southwest Corner of Section 28 Township 17 South Range 7 East

Elevation: 9335 Feet above mean sea level

Location Comments: This spring is located at the head of a small stock reservoir; spring source is enclosed by a log fence.

Formation: North Horn 215 Feet from Top

Probable Recharge Area: Highland areas of East Mountain located to the West.

Relationship to Adjacent Springs: No other springs are located within the immediate vicinity.

Geologic Circumstances of Spring: Water flowing laterally through a channel sandstone in the North Horn Formation intersects the land surface forming the spring.

SPRINGS GEOLOGIC CONDITIONS INVENTORY

Spring Name/Number: 84-57

Location: 2400 Feet N 800 Feet W of the Southeast Corner of Section 10 Township 17 South Range 7 East

Elevation: 7700 Feet above mean sea level

Location Comments: This spring is located approximately 30 feet behind the Deer Creek main fan installation.

Formation: Blackhawk 680 Feet from Top

Probable Recharge Area: Areas of higher elevation which are located to the West.

Relationship to Adjacent Springs: Spring not associated with any other springs on East Mountain.

Geologic Circumstances of Spring: A combination of surface fractures along with lateral migration through a channel sandstone in the Blackhawk Formation which intersects the land surface forming the spring.

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5697

Date Rec'd 7-06-84

Date Sampled 7-05-84

Time Sampled

Client: Utah Power & Light Co.
Field Office

Sample ID: EMS Burnt Tree
42° F
Flow: 26.6 GPM

Acidity		mg/l $CaCO_3$
Alkalinity, Total	262	mg/l $CaCO_3$
Alkalinity, Bicarbonate	320	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride	4.7	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	510	umhos/cm
Fluoride	0.24	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	6.8	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	289	mg/l
Solids, Total Suspended	4.0	mg/l
Sulfate	9	mg/l
Sulfide		mg/l
Turbidity	2.5	NTU

Total Cations 5.75 meq/l

Total Anions 5.57 meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	54.6	mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved)	< 0.05	mg/l
Lead		mg/l
Magnesium	30.0	mg/
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	0.6	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	12.5	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted 7-13-8

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5737
Date Rec'd 7-12-84
Date Sampled 7-10-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Elk Springs
Temp 39°
Flow 427.9 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	240	mg/l $CaCO_3$	7/13
Alkalinity, Bicarbonate	293	mg/l $CaCO_3$	7/13
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	3.0	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	525	umhos/cm	7/13
Fluoride	0.22	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
ogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.1	Units	7/13
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	217	mg/l	7/20
Solids, Total Suspended	< 0.5	mg/l	7/20
Sulfate	6	mg/l	7/19
Sulfide		mg/l	
Turbidity	0.8	NTU	7/13
Cation, Total	5.19	meq/l	
Anion, Total	5.02	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	59.2	mg/l	7/20
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/18
Lead		mg/l	
Magnesium	23.8	mg/l	7/20
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.6	mg/l	7/16
Selenium		mg/l	
Silica		mg/l	
Sodium	6.0	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janusz

Respectfully submitted 7-25-84

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5769
Date Rec'd 7-19-84
Date Sampled 7-17-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: East Mountain Springs
Jerk Water
Temp. 41°
Flow 2.75 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	355	mg/l $CaCO_3$	7/19
Alkalinity, Bicarbonate	433	mg/l ~~$CaCO_3$~~ HCO_3	7/19
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	8.0	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	725	umhos/cm	7/19
Fluoride	0.26	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.1	Units	7/19
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	383	mg/l	7/26
Solids, Total Suspended	< 0.5	mg/l	7/26
Sulfate	15	mg/l	7/25
Sulfide		mg/l	
Turbidity	0.5	NTU	7/19
Cation, Total	7.77	meq/l	
Anion, Total	7.65	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	84.0	mg/l	7/26
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/26
Lead		mg/l	
Magnesium	32.3	mg/	26
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.7	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	21.1	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janusy

Respectfully submitted [signature] 7-27-84

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5751
Date Rec'd 7-16-84
Date Sampled 7-13-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Pine Springs
Temp. 44°
Flow 4.4 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	230	mg/l $CaCO_3$	7/17
Alkalinity, Bicarbonate	280	mg/l $CaCO_3$	7/17
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	1.3	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	460	umhos/cm	7/17
Fluoride	0.19	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	6.5	Units	7/17
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	233	mg/l	7/20
Solids, Total Suspended	< 0.5	mg/l	7/20
Sulfate	5	mg/l	7/19
Sulfide		mg/l	
Turbidity	0.3	NTU	7/17
Cation, Total	4.85	meq/l	
Anion, Total	4.75	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	75.2	mg/l	7/20
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/18
Lead		mg/l	
Magnesium	12.2	mg/l	7/20
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.1	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	2.1	mg/l	7.20
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 7-25-84

Analyst: David A Janney

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STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5750
Date Rec'd 7-16-84
Date Sampled 7-13-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Sheba Springs
Temp. 41°
19.8 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	216	mg/l $CaCO_3$	7/17
Alkalinity, Bicarbonate	263	mg/l $CaCO_3$	7/17
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	2.1	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	440	umhos/cm	7/17
Fluoride	0.18	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.55	Units	7/17
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	222	mg/l	7/20
Solids, Total Suspended	< 0.5	mg/l	7/20
Sulfate	5	mg/l	7/19
Sulfide		mg/l	
Turbidity	0.5	NTU	7/17
Cation, Total	4.57	meq/l	
Anion, Total	4.49	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	72.0	mg/l	7/20
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/18
Lead		mg/l	
Magnesium	10.2	mg/l	.0
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.2	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	3.1	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janney

Respectfully submitted 7-25-84

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STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5698
Date Rec'd 7-06-84
Date Sampled 7-05-84
Time Sampled

Client: Utah Power & Light Co.
Field Office

Sample ID: EMS 79-2
41° F
Flow: 9.7 GPM

Acidity		mg/l $CaCO_3$
Alkalinity, Total	290	mg/l $CaCO_3$
Alkalinity, Bicarbonate	354	mg/l ~~$CaCO_3$~~ HCO3
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride	3.3	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	550	umhos/cm
Fluoride	0.21	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
ogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	6.7	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	307	mg/l
Solids, Total Suspended	< 0.5	mg/l
Sulfate	6	mg/l
Sulfide		mg/l
Turbidity	0.6	NTU

Total Cations	5.86 meq/l
Total Anions	6.02 meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	69.3	mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved)	< 0.05	mg/l
Lead		mg/l
Magnesium	24.0	mg/l
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	0.5	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	9.5	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted 7-13-84

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STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5705
Date Rec'd 7-06-84
Date Sampled 7-05-84
Time Sampled

Client: Utah Power & Light Co.
Field Office

Sample ID: EMS 79-3

Temp: 42° F
Flow: 21.8 GPM

Acidity		mg/l $CaCO_3$
Alkalinity, Total	280	mg/l $CaCO_3$
Alkalinity, Bicarbonate	342	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride	4.0	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	575	umhos/cm
Fluoride	0.23	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	6.7	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	298	mg/l
Solids, Total Suspended	2.0	mg/l
Sulfate	8	mg/l
Sulfide		mg/l
Turbidity	1.5	NTU

Total Cations	6.09	meq/l
Total Anions	5.89	meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	65.1	mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved)	< 0.05	mg/l
Lead		mg/l
Magnesium	28.0	mg/
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	0.5	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	12.3	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted 7-13-84

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5768
Date Rec'd 7-19-84
Date Sampled 7-17-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: East Mountain Springs
79-13
Temp. 44°
Flow 21.4 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	332	mg/l $CaCO_3$	7/19
Alkalinity, Bicarbonate	405	mg/l ~~$CaCO_3$~~ HCO_3	7/19
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	3.0	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	650	umhos/cm	7/19
Fluoride	0.22	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
rogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.0	Units	7/19
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	332	mg/l	7/26
Solids, Total Suspended	< 0.5	mg/l	7/26
Sulfate	5	mg/l	7/25
Sulfide		mg/l	
Turbidity	0.8	NTU	7/19
Cation, Total	6.82	meq/l	
Anion, Total	6.84	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	92.8	mg/l	7/26
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/26
Lead		mg/l	
Magnesium	23.3	mg/l	7/26
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.9	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	6.0	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janusz

Respectfully submitted 7-27-84

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5773
Date Rec'd 7-19-84
Date Sampled 7-17-84
Time Sampled

Client: Utah Power & LIght Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: East Mountain Springs
79-15
Temp. 41°
Flow 26.1 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	260	mg/l $CaCO_3$	7/19
Alkalinity, Bicarbonate	317	mg/l ~~$CaCO_3$~~ HCO_3	7/19
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	4.2	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	550	umhos/cm	7/19
Fluoride	0.22	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.3	Units	7/19
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	289	mg/l	7/26
Solids, Total Suspended	2.0	mg/l	7/26
Sulfate	6	mg/l	7/25
Sulfide		mg/l	
Turbidity	0.4	NTU	7/19
Cation, Total	5.69	meq/l	
Anion, Total	5.45	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	68.8	mg/l	7/26
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/26
Lead		mg/l	
Magnesium	24.3	mg/l	.6
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.6	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	5.8	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janway

Respectfully submitted 7-27-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5699
Date Rec'd 7-06-84
Date Sampled 7-05-84
Time Sampled

Client: Utah Power & Light Co.
Field Office

Sample ID: EMS 79-22
51° F
Flow: 2.4 GPM

Acidity		mg/l $CaCO_3$
Alkalinity, Total	307	mg/l $CaCO_3$
Alkalinity, Bicarbonate	374	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride	5.0	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	650	umhos/cm
Fluoride	0.22	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
ogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.1	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	379	mg/l
Solids, Total Suspended	3.0	mg/l
Sulfate	16	mg/l
Sulfide		mg/l
Turbidity	1.5	NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	73.5	mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved)	< 0.05	mg/l
Lead		mg/l
Magnesium	32.0	mg/l
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	0.5	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	12.5	mg/l
Vanadium		mg/l
Zinc		mg/l

total Cations 6.85 meq/l
total Anions 6.62 meq/l

Respectfully submitted [signature] 7-13-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5771
Date Rec'd 7-19-84
Date Sampled 7-17-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: East Mountain Springs
79-23
Temp. 43°
Flow 3.6 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	380	mg/l $CaCO_3$	7/19
Alkalinity, Bicarbonate	463	mg/l ~~$CaCO_3$~~ HCO_3	7/19
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	10.3	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	780	umhos/cm	7/19
Fluoride	0.29	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.3	Units	7/19
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	403	mg/l	7/26
Solids, Total Suspended	< 0.5	mg/l	7/26
Sulfate	11	mg/l	7/25
Sulfide		mg/l	
Turbidity	1.4	NTU	7/19
cation, Total	8.22	meq/l	
Anion, Total	8.14	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	76.8	mg/l	7/26
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/26
Lead		mg/l	
Magnesium	45.2	mg/l	
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.6	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	15.2	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janney

Respectfully submitted 7-27-84

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STANDARD LABORATORIES, INC.
P O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5738
Date Rec'd 7-12-84
Date Sampled 7-11-84
Time Sampled

Client: Utah Power & Light co.
P. O. Box 1005
Huntington, Utah 84528

Sample ID: East Mountain Springs
79-28 Flag Lake
Temp. 41°
Flow 11.2 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	264	mg/l $CaCO_3$	7/13
Alkalinity, Bicarbonate	322	mg/l $CaCO_3$	7/13
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	13.3	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	800	umhos/cm	7/13
Fluoride	0.38	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
ogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.1	Units	7/13
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	338	mg/l	7/20
Solids, Total Suspended	< 0.5	mg/l	7/20
Sulfate	61	mg/l	7/19
Sulfide		mg/l	
Turbidity	0.8	NTU	7/13
Cation, Total	7.41	meq/l	
Anion, Total	6.94	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	48.8	mg/l	7/20
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/18
Lead		mg/l	
Magnesium	31.1	mg/l	7/20
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	1.5	mg/l	7/16
Selenium		mg/l	
Silica		mg/l	
Sodium	54.7	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janusy

Respectfully submitted 7-25-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5774

Date Rec'd 7-19-84

Date Sampled 7-17-84

Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: East Mountain Springs
79-34
Temp 40°
Flow 42.9 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	289	mg/l $CaCO_3$	7/19
Alkalinity, Bicarbonate	352	mg/l ~~$CaCO_3$~~ HCO_3	7/19
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	6.6	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	530	umhos/cm	7/19
Fluoride	0.24	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.2	Units	7/19
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	328	mg/l	7/26
Solids, Total Suspended	5.0	mg/l	7/26
Sulfate	12	mg/l	7/25
Sulfide		mg/l	
Turbidity	1.5	NTU	7/19
Cation, Total	6.68	meq/l	
Anion, Total	6.23	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	72.8	mg/l	7/26
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/26
Lead		mg/l	
Magnesium	31.6	mg/	26
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.9	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	9.7	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted 7-27-84

Analyst: David A Janusy

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5775
Date Rec'd 7-19-84
Date Sampled 7-17-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: East Mountain Springs
79-35
Temp. 40°
Flow 10.2 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	241	mg/l $CaCO_3$	7/19
Alkalinity, Bicarbonate	294	mg/l ~~$CaCO_3$~~ HCO_3	7/19
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	2.7	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	490	umhos/cm	7/19
Fluoride	0.18	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
rogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.15	Units	7/19
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	250	mg/l	7/26
Solids, Total Suspended	3.0	mg/l	7/26
Sulfate	5	mg/l	7/25
Sulfide		mg/l	
Turbidity	1.0	NTU	7/19
Cation, Total	4.77	meq/l	
Anion, Total	5.00	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	71.2	mg/l	7/26
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/26
Lead		mg/l	
Magnesium	12.6	mg/l	7/26
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.2	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	4.0	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Panusy

Respectfully submitted 7-27-84

Certified Environmental Laboratory

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5772

Date Rec'd 7-19-84

Date Sampled 7-17-84

Time Sampled

Client: Utah Power & Light co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: East Mountain Springs
79-37
Temp. 59°
Flow 0.5 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	326	mg/l $CaCO_3$	7/19
Alkalinity, Bicarbonate	398	mg/l ~~$CaCO_3$~~ HCO_3	7/19
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	6.5	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	700	umhos/cm	7/19
Fluoride	0.25	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.3	Units	7/19
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	343	mg/l	7/26
Solids, Total Suspended	120.0	mg/l	7/26
Sulfate	15	mg/l	7/25
Sulfide		mg/l	
Turbidity	56.0	NTU	7/19
Cation, Total	6.95	meq/l	
Anion, Total	7.02	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	49.6	mg/l	7/26
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/26
Lead		mg/l	
Magnesium	40.3	mg/	26
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	1.4	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	25.8	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janney

Respectfully submitted [signature] 7-27-84

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5776
Date Rec'd 7-19-84
Date Sampled 7-17-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: East Mountain Springs
79-38
Temp. 41°
Flow 9.2 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	322	mg/l $CaCO_3$	7/19
Alkalinity, Bicarbonate	393	mg/l ~~$CaCO_3$~~ HCO_3	7/19
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	8.5	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	695	umhos/cm	7/19
Fluoride	0.26	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
ogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.3	Units	7/19
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	348	mg/l	7/26
Solids, Total Suspended	22.0	mg/l	7/26
Sulfate	15	mg/l	7/25
Sulfide		mg/l	
Turbidity	6.2	NTU	7/19
Cation, Total	7.17	meq/l	
Anion, Total	7.00	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	92.8	mg/l	7/26
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/26
Lead		mg/l	
Magnesium	17.2	mg/l	7/26
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.7	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	25.7	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janney

Respectfully submitted 7-27-84

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5695

Date Rec'd 7-06-84

Date Sampled 7-05-84

Time Sampled

Client: Utah Power & Light Co.
Field Office

Sample ID: EMS 80-41

Flow: 15.0 GPM

Acidity		mg/l $CaCO_3$
Alkalinity, Total	368	mg/l $CaCO_3$
Alkalinity, Bicarbonate	448	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride	10.1	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	800	umhos/cm
Fluoride	0.27	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.7	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	468	mg/l
Solids, Total Suspended	17.0	mg/l
Sulfate	50	mg/l
Sulfide		mg/l
Turbidity	5.0	NTU

Total Cations 8.52 meq/l

Total Anions 8.70 meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	81.9	mg/l
Chromium		mg/l
Copper		mg/l
Iron (dissolved)	< 0.05	mg/l
Lead		mg/l
Magnesium	42.0	mg/
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	0.8	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	21.8	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted [signature] 7-13-84

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5696
Date Rec'd 7-06-84
Date Sampled 7-05-84
Time Sampled

Client: Utah Power & Light Co.
Field Office

Sample ID: EMS 80-42
Temp. 50°
Flow: 4.3 GPM

Acidity		mg/l $CaCO_3$
Alkalinity, Total	346	mg/l $CaCO_3$
Alkalinity, Bicarbonate	422	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride	3.1	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	650	umhos/cm
Fluoride	0.25	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
rogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.35	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	368	mg/l
Solids, Total Suspended	9.0	mg/l
Sulfate	6	mg/l
Sulfide		mg/l
Turbidity	4.4	NTU

Total Cations 7.03 meq/l

Total Anions 7.14 meq/l

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Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	79.8	mg/l
Chromium		mg/l
Copper		mg/l
Iron (dissolved)	< 0.05	mg/l
Lead		mg/l
Magnesium	32.0	mg/l
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	1.2	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	8.6	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted [signature] 7-13-84

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5704

Date Rec'd 7-06-84

Date Sampled 7-05-84

Time Sampled

Client: Utah power & Light Co. Field Office

Sample ID: EMS 80-43

Temp: 42° F

Flow: 20 gpm

Acidity		mg/l $CaCO_3$
Alkalinity, Total	280	mg/l $CaCO_3$
Alkalinity, Bicarbonate	342	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride	3.1	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	550	umhos/cm
Fluoride	0.23	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	6.9	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	275	mg/l
Solids, Total Suspended	5.0	mg/l
Sulfate	6	mg/l
Sulfide		mg/l
Turbidity	2.3	NTU

Total Cations	5.94	meq/l
Total Anions	5.82	meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	63.0	mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved)	< 0.05	mg/l
Lead		mg/l
Magnesium	30.0	mg/l
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	0.9	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	7.1	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted [signature] 7-13-84

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5702
Date Rec'd 7-06-84
Date Sampled 7-05-84
Time Sampled

Client: Utah Power & Light Field Office

Sample ID: EMS 80-44

Flow: 13.1 GPM

Acidity		mg/l $CaCO_3$
Alkalinity, Total	394	mg/l $CaCO_3$
Alkalinity, Bicarbonate	481	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride	11.1	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	975	umhos/cm
Fluoride	0.28	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
rogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.1	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	559	mg/l
Solids, Total Suspended	27.0	mg/l
Sulfate	85	mg/l
Sulfide		mg/l
Turbidity	7.5	NTU

total Cations 9.96 meq/l

total Anions 9.97 meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	86.1	mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved)	< 0.05	mg/l
Lead		mg/l
Magnesium	44.0	mg/l
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	1.0	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	46.2	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted 7-13-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5703
Date Rec'd 7-06-84
Date Sampled 7-05-84
Time Sampled

Client: Utah Power & Light co. Field Office

Sample ID: EMS 80-45

Flow: 1.1 GPM

Acidity		mg/l $CaCO_3$
Alkalinity, Total	372	mg/l $CaCO_3$
Alkalinity, Bicarbonate	454	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride	10.6	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	800	umhos/cm
Fluoride	0.26	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.1	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	446	mg/l
Solids, Total Suspended	110.0	mg/l
Sulfate	35	mg/l
Sulfide		mg/l
Turbidity	28.0	NTU

Total Cations	8.41	meq/l
Total Anions	8.48	meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	81.9	mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved	< 0.05	mg/l
Lead		mg/l
Magnesium	40.0	mg/
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	1.5	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	22.7	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted [signature] 7-13-84

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STANDARD LABORATORIES, INC.
P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5700
Date Rec'd 07-06-84
Date Sampled 07-05-84
Time Sampled

Client: Utah Power & Light Co.
Field Office

Sample ID: EMS 80-46

Flow: 28.3 GPM

Acidity		mg/l $CaCO_3$
Alkalinity, Total	270	mg/l $CaCO_3$
Alkalinity, Bicarbonate	329	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride	4.9	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	550	umhos/cm
Fluoride	0.23	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
ogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.1	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	295	mg/l
Solids, Total Suspended	< 0.5	mg/l
Sulfate	13	mg/l
Sulfide		mg/l
Turbidity	0.6	NTU

Total Cations	5.77 meq/l
Total Anions	5.81 meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	56.7	mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved)	< 0.05	mg/l
Lead		mg/l
Magnesium	30.0	mg/l
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	0.6	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	10.3	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted 7-13-84

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5701

Date Rec'd 7-06-84

Date Sampled 7-05-84

Time Sampled

Client: Utah Power & Light Co. Field Office

Sample ID: EMS 80-47

Flow: 15.0 GPM

Acidity		mg/l $CaCO_3$
Alkalinity, Total	300	mg/l $CaCO_3$
Alkalinity, Bicarbonate	366	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride	5.9	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	600	umhos/cm
Fluoride	0.24	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	6.7	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	322	mg/l
Solids, Total Suspended	220.0	mg/l
Sulfate	15	mg/l
Sulfide		mg/l
Turbidity	55.0	NTU

Total Cations 6.44 meq/l

Total Anions 6.49 meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	58.8	mg/l
Chromium		mg/l
Copper		mg/l
Iron (Dissolved)	< 0.05	mg/l
Lead		mg/l
Magnesium	34.0	mg/l
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	1.2	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	15.4	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted 7-13-84

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5747
Date Rec'd 7-13-84
Date Sampled 7-12-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: East Mountain Springs
80-49
Temp. 41°
Flow 42.9 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	333	mg/l $CaCO_3$	7/13
Alkalinity, Bicarbonate	406	mg/l $CaCO_3$	7/13
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	7.6	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	800	umhos/cm	7/13
Fluoride	0.21	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
ogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.25	Units	7/13
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	344	mg/l	7/20
Solids, Total Suspended	< 0.5	mg/l	7/20
Sulfate	33	mg/l	7/19
Sulfide		mg/l	
Turbidity	0.4	NTU	7/13
Cation, Total	7.96	meq/l	
Anion, Total	7.58	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	80.8	mg/l	7/20
Chromium		mg/l	
Copper		mg/l	
Iron, Diss	< 0.05	mg/l	7/18
Lead		mg/l	
Magnesium	42.0	mg/l	7/20
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	1.0	mg/l	7/16
Selenium		mg/l	
Silica		mg/l	
Sodium	10.2	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janusz

Respectfully submitted: 7-25-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5777
Date Rec'd 7-19-84
Date Sampled 7-17-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: East Mountain Springs
82-51
Temp. 43°
Flow 5.9 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	291	mg/l $CaCO_3$	7/19
Alkalinity, Bicarbonate	355	mg/l ~~$CaCO_3$~~ HCO_3	7/19
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	15.8	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	820	umhos/cm	7/19
Fluoride	0.24	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.3	Units	7/19
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	504	mg/l	7/26
Solids, Total Suspended	2.0	mg/l	7/26
Sulfate	90	mg/l	7/25
Sulfide		mg/l	
Turbidity	1.0	NTU	7/19
Cation, Total	8.77	meq/l	
Anion, Total	8.16	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	80.8	mg/l	7/26
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/26
Lead		mg/l	
Magnesium	44.0	mg/l	7/26
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.6	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	27.0	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janusz

Respectfully submitted [signature] 7-27-84

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5778
Date Rec'd 7-19-84
Date Sampled 7-17-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: East Mountain Springs
82-52
Temp. 41°
Flow 48.0 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	342	mg/l $CaCO_3$	7/19
Alkalinity, Bicarbonate	417	mg/l ~~$CaCO_3$~~ HCO_3	7/19
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	10.5	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	710	umhos/cm	7/19
Fluoride	0.28	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.2	Units	7/19
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	381	mg/l	7/26
Solids, Total Suspended	1.0	mg/l	7/26
Sulfate	18	mg/l	7/25
Sulfide		mg/l	
Turbidity	0.5	NTU	7/19
Cation, Total	7.56	meq/l	
Anion, Total	7.52	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	71.2	mg/l	7/26
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/26
Lead		mg/l	
Magnesium	36.0	mg/l	7/26
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.9	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	24.1	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A. Janusy

Respectfully submitted [signature] 7-27-84

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5770

Date Rec'd 7-19-84

Date Sampled 7-18-84

Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: East Mountain Springs
84-56
temp. 41°
Flow 6.3 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	285	mg/l $CaCO_3$	7/19
Alkalinity, Bicarbonate	348	mg/l ~~$CaCO_3$~~ HCO_3	7/19
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	10.2	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	610	umhos/cm	7/19
Fluoride	0.27	mg/l	7/23
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.1	Units	7/19
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	327	mg/l	7/26
Solids, Total Suspended	< 0.5	mg/l	7/26
Sulfate	19	mg/l	7/25
Sulfide		mg/l	
Turbidity	0.5	NTU	7/19
Cation, Total	6.57	meq/l	
Anion, Total	6.39	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	59.2	mg/l	7/26
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	7/26
Lead		mg/l	
Magnesium	33.5	mg/l	-6
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	1.0	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	19.0	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted 7-27-84

Analyst: David A Janney

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6289
Date Rec'd 10-26-84
Date Sampled 10-25-84
Time Sampled

Client: Utah Power & Light Co.
P. O. Box 1005
Field Office
Huntington, Utah 84528

Sample ID: Burnt Tree
Temp. 41°
Flow 15 GPM

Acidity		mg/l $CaCO_3$	Aluminum		mg/l
Alkalinity, Total	268	mg/l $CaCO_3$ 10/30	Arsenic		mg/l
Alkalinity, Bicarbonate	327	mg/l ~~$CaCO_3$~~ HCO_3 10/30	Barium		mg/l
Alkalinity, Carbonate		mg/l $CaCO_3$	Beryllium		mg/l
Chloride	4.3	mg/l 10/30	Boron		mg/l
Coliform, Fecal		MPN/100 ml	Cadmium		mg/l
Coliform, Total		MPN/100 ml	Calcium	59.2	mg/l 11/5
Conductivity	520	umhos/cm 10/30	Chromium		mg/l
Fluoride	0.37	mg/l 11/5	Copper		mg/l
Hardness, Total		mg/l $CaCO_3$	Iron, Diss.	< 0.05	mg/l 10/3
Nitrogen, Ammonia		mg/l	Lead		mg/l
Nitrogen, Nitrate		mg/l	Magnesium	28.2	mg/l 11/5
Nitrogen, Nitrite		mg/l	Manganese		mg/l
Oil & Grease		mg/l	Mercury		ug/l
pH	7.1	Units 10/30	Nickel		mg/l
Phosphorus, Ortho		mg/l	Potassium	0.6	mg/l 10/3
Phosphorus, Total		mg/l	Selenium		mg/l
Solids, Total Dissolved	274	mg/l 10/30	Silica		mg/l
Solids, Total Suspended	1.0	mg/l 10/30	Sodium	11.1	mg/l 10/30
Sulfate	9	mg/l 10/30	Vanadium		mg/l
Sulfide		mg/l	Zinc		mg/l
Turbidity	1.0	NTU 10/30			
Cation, Total	5.77	meq/l			
Anion, Total	5.68	meq/l			

Respectfully submitted [signature] 11/8/84

Analyst: [signature]

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6278

Date Rec'd 10-25-84

Date Sampled 10-24-84

Time Sampled

Client: Utah Power & Light Co.
P. O. Box 1005
Field Office
Huntington, Utah 84528

Sample ID: Jerk Water
Temp. 40°
Flow 2.0 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	355	mg/l $CaCO_3$	10/25
Alkalinity, Bicarbonate	433	mg/l ~~$CaCO_3$~~ HCO_3	10/25
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	7.0	mg/l	10/26
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	690	umhos/cm	10/25
Fluoride	0.39	mg/l	10/25
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.1	Units	10/25
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	370	mg/l	10/30
Solids, Total Suspended	< 0.5	mg/l	10/30
Sulfate	16	mg/l	10/25
Sulfide		mg/l	
Turbidity	0.35	NTU	10/25
Cation, Total	7.57	meq/l	
Anion, Total	7.64	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	82.4	mg/l	11/5
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	10/3
Lead		mg/	
Magnesium	32.1	mg/l	11/5
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.6	mg/l	10/3
Selenium		mg/l	
Silica		mg/l	
Sodium	18.3	mg/l	10/3
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted 11/x/84

Analyst: David A Janway

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STANDARD LABORATORIES, INC.

O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6272

Date Rec'd 10-24-84

Date Sampled 10-23-84

Time Sampled

Client: Utah Power & Light Co.
P. O. Box 1005
Field Office
Huntington, Utah 84528

Sample ID: EMS Sheba
Temp. 42°
Flow 3.5 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	234	mg/l $CaCO_3$	10/25
Alkalinity, Bicarbonate	285	mg/l ~~$CaCO_3$~~ HCO_3	10/25
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	2.1	mg/l	10/26
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	500	umhos/cm	10/25
Fluoride	0.30	mg/l	10/25
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.2	Units	10/25
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	258	mg/l	10/30
Solids, Total Suspended	< 0.5	mg/l	10/30
Sulfate	6	mg/l	10/25
Sulfide		mg/l	
Turbidity	0.4	NTU	10/25
Cation, Total	5.15	meq/l	
Anion, Total	4.97	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	82.4	mg/l	11/5
Chromium		mg/l	
Copper		mg/l	
Iron		mg/l	
Lead		mg/l	
Magnesium	10.7	mg/l	11/5
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.2	mg/l	10/30
Selenium		mg/l	
Silica		mg/l	
Sodium	3.4	mg/l	10/3
Vanadium		mg/l	
Zinc		mg/l	
Iron, Diss.	< 0.05	mg/l	

Analyst: David A Janney

Respectfully submitted 11/8/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6277

Date Rec'd 10-25-84

Date Sampled 10-24-84

Time Sampled

Client: Utah Power & Light Co.
P. O. Box 1005
Field Office
Huntington, Utah 84528

Sample ID: Ted's Tub
Temp. 37°
Flow 5.8 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	276	mg/l $CaCO_3$	10/25
Alkalinity, Bicarbonate	337	mg/l ~~$CaCO_3$~~ HCO_3	10/25
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	2.9	mg/l	10/26
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	500	umhos/cm	10/25
Fluoride	0.32	mg/l	10/25
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.4	Units	10/25
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	286	mg/l	10/30
Solids, Total Suspended	10.0	mg/l	10/30
Sulfate	8	mg/l	10/25
Sulfide		mg/l	
Turbidity	4.4	NTU	10/25
Cation, Total	5.64	meq/l	
Anion, Total	5.77	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	75.2	mg/l	11/5
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	10/30
Lead		mg/l	
Magnesium	19.9	mg/l	/5
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.5	mg/l	10/30
Selenium		mg/l	
Silica		mg/l	
Sodium	5.4	mg/l	10/30
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted 11/8/84

Analyst: David A Janusz

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6290
Date Rec'd 10-26-84
Date Sampled 10-25-84
Time Sampled

Client: Utah Power & Light Co.
P. O. Box 1005
Field Office
Huntington, Utah 84528

Sample ID: EMS 79-2
Temp. 40°
Flow 2.7 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	274	mg/l $CaCO_3$	10/30
Alkalinity, Bicarbonate	334	mg/l ~~$CaCO_3$~~ HCO_3	10/30
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	2.6	mg/l	10/30
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	580	umhos/cm	10/30
Fluoride	0.32	mg/l	11/5
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.0	Units	10/30
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	286	mg/l	10/30
Solids, Total Suspended	1.0	mg/l	10/30
Sulfate	10	mg/l	10/30
Sulfide		mg/l	
Turbidity	0.9	NTU	10/30
Cation, Total	6.08	meq/l	
Anion, Total	5.77	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	76.8	mg/l	11/5
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	10/3
Lead		mg/l	
Magnesium	22.3	mg/l	11/5
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.3	mg/l	10/3
Selenium		mg/l	
Silica		mg/l	
Sodium	9.2	mg/l	10/3
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 11/8/84

Analyst: David A Janusy

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6291
Date Rec'd 10-26-84
Date Sampled 10-25-84
Time Sampled

Client: Utah Power & Light Co.
P. O. Box 1005
Field Office
Huntington, Utah 84528

Sample ID: EMS 79-3
Temp. 41°
Flow 0.30 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	292	mg/l $CaCO_3$	10/30
Alkalinity, Bicarbonate	356	mg/l ~~$CaCO_3$~~ HCO_3	10/30
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	5.3	mg/l	10/30
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	610	umhos/cm	10/30
Fluoride	0.32	mg/l	11/5
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	6.9	Units	10/30
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	323	mg/l	10/30
Solids, Total Suspended	2.0	mg/l	10/30
Sulfate	16	mg/l	10/30
Sulfide		mg/l	
Turbidity	2.4	NTU	10/30
Cation, Total	6.44	meq/l	
Anion, Total	6.33	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	70.4	mg/l	11/5
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	10/30
Lead		mg/l	
Magnesium	24.3	mg/l	11/5
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.6	mg/l	10/30
Selenium		mg/l	
Silica		mg/l	
Sodium	21.0	mg/l	10/30
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A January

Respectfully submitted 11/8/84

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6279
Date Rec'd 10-25-84
Date Sampled 10-24-84
Time Sampled

Client: Utah Power & Light Co.
P. O. Box 1005
Field Office
Huntington, Utah 84528

Sample ID: EMS 79-15
Temp. 41°
Flow 5.4 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	278	mg/l $CaCO_3$	10/25
Alkalinity, Bicarbonate	339	mg/l ~~$CaCO_3$~~ HCO_3	10/25
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	3.4	mg/l	10/26
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	500	umhos/cm	10/25
Fluoride	0.37	mg/l	10/25
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.2	Units	10/25
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	287	mg/l	10/30
Solids, Total Suspended	2.0	mg/l	10/30
Sulfate	7	mg/l	10/25
Sulfide		mg/l	
Turbidity	1.2	NTU	10/25
Cation, Total	5.73	meq/l	
Anion, Total	5.81	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	71.2	mg/l	11/5
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	10/3
Lead		mg/l	
Magnesium	23.3	mg/l	11/5
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.6	mg/l	10/3
Selenium		mg/l	
Silica		mg/l	
Sodium	5.5	mg/l	10/3
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janson

Respectfully submitted 11/8/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6292
Date Rec'd 10-26-84
Date Sampled 10-25-84
Time Sampled

Client: Utah Power & Light Co.
P. O. Box 1005
Field Office
Huntington, Utah 84528

Sample ID: EMS 79-28
Temp. 40°
Flow 6.5 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	254	mg/l $CaCO_3$	10/30
Alkalinity, Bicarbonate	310	mg/l ~~$CaCO_3$~~ HCO_3	10/30
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	17.3	mg/l	10/30
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	700	umhos/cm	10/30
Fluoride	0.48	mg/l	11/5
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.1	Units	10/30
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	381	mg/l	10/30
Solids, Total Suspended	< 0.5	mg/l	10/30
Sulfate	75	mg/l	10/30
Sulfide		mg/l	
Turbidity	0.6	NTU	10/30
Cation, Total	7.28	meq/l	
Anion, Total	7.13	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	44.0	mg/l	11/5
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	10/30
Lead		mg/	
Magnesium	27.9	mg/l	11/5
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	2.1	mg/l	10/30
Selenium		mg/l	
Silica		mg/l	
Sodium	62.8	mg/l	10/30
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janney

Respectfully submitted [signature] 11/8/84

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6293
Date Rec'd 10-26-84
Date Sampled 10-25-84
Time Sampled

Client: Utah Power & Light Co.
P. O. Box 1005
Field Office
Huntington, Utah 84528

Sample ID: EMS 80-46
Temp. 40°
Flow 8.2 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	280	mg/l $CaCO_3$	10/30
Alkalinity, Bicarbonate	342	mg/l ~~$CaCO_3$~~ HCO_3	10/30
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	4.7	mg/l	10/30
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	580	umhos/cm	10/30
Fluoride	0.32	mg/l	11/5
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.3	Units	10/30
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	295	mg/l	10/30
Solids, Total Suspended	< 0.5	mg/l	10/30
Sulfate	13	mg/l	10/30
Sulfide		mg/l	
Turbidity	0.4	NTU	10/30
Cation, Total	6.18	meq/l	
Anion, Total	6.02	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	64.0	mg/l	11/5
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	10/30
Lead		mg/l	
Magnesium	30.6	mg/l	11/5
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.6	mg/l	10/3
Selenium		mg/l	
Silica		mg/l	
Sodium	10.3	mg/l	10/30
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 11/8/84

Analyst: David A January

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6294
Date Rec'd 10-26-84
Date Sampled 10-25-84
Time Sampled

Client: Utah Power & Light Co.
P. O. Box 1005
Huntington, Utah
Field Office

Sample ID: EMS 80-47
Temp. 40°
Flow 10 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	291	mg/l $CaCO_3$	10/30
Alkalinity, Bicarbonate	355	mg/l ~~$CaCO_3$~~ HCO_3	10/30
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	4.8	mg/l	10/30
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	590	umhos/cm	10/30
Fluoride	0.31	mg/l	11/5
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.5	Units	10/30
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	304	mg/l	10/30
Solids, Total Suspended	< 0.5	mg/l	10/30
Sulfate	14	mg/l	10/30
Sulfide		mg/l	
Turbidity	0.6	NTU	10/30
Cation, Total	6.32	meq/l	
Anion, Total	6.26	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	64.8	mg/l	11/5
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	10/30
Lead		mg/l	
Magnesium	30.2	mg/l	11/5
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.7	mg/l	10/30
Selenium		mg/l	
Silica		mg/l	
Sodium	13.5	mg/l	10/30
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A January

Respectfully submitted 11/8/84

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Client: Utah Power & Light Co.
P. O. Box 1005
Field Office
Huntington, Utah 84528

Sample ID: EMS 82-52
Temp. 40°
Flow 12.0 GPM

Lab. No. 6280
Date Rec'd 10-25-84
Date Sampled 10-24-84
Time Sampled

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	355	mg/l $CaCO_3$	10/25
Alkalinity, Bicarbonate	433	mg/l ~~$CaCO_3$~~ HCO_3	10/25
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	8.8	mg/l	10/26
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	690	umhos/cm	10/25
Fluoride	0.43	mg/l	10/25
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.1	Units	10/25
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	360	mg/l	10/30
Solids, Total Suspended	2.0	mg/l	10/30
Sulfate	16	mg/l	10/25
Sulfide		mg/l	
Turbidity	1.5	NTU	10/25
Cation, Total	7.05	meq/l	
Anion, Total	7.69	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	65.6	mg/l	11/
Chromium		mg/l	
Copper		mg/l	
Iron, Diss.	< 0.05	mg/l	10/
Lead		mg/l	
Magnesium	35.2	mg/l	11/
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	0.8	mg/l	10/
Selenium		mg/l	
Silica		mg/l	
Sodium	19.7	mg/l	10/
Vanadium		mg/l	
Zinc		mg/l	

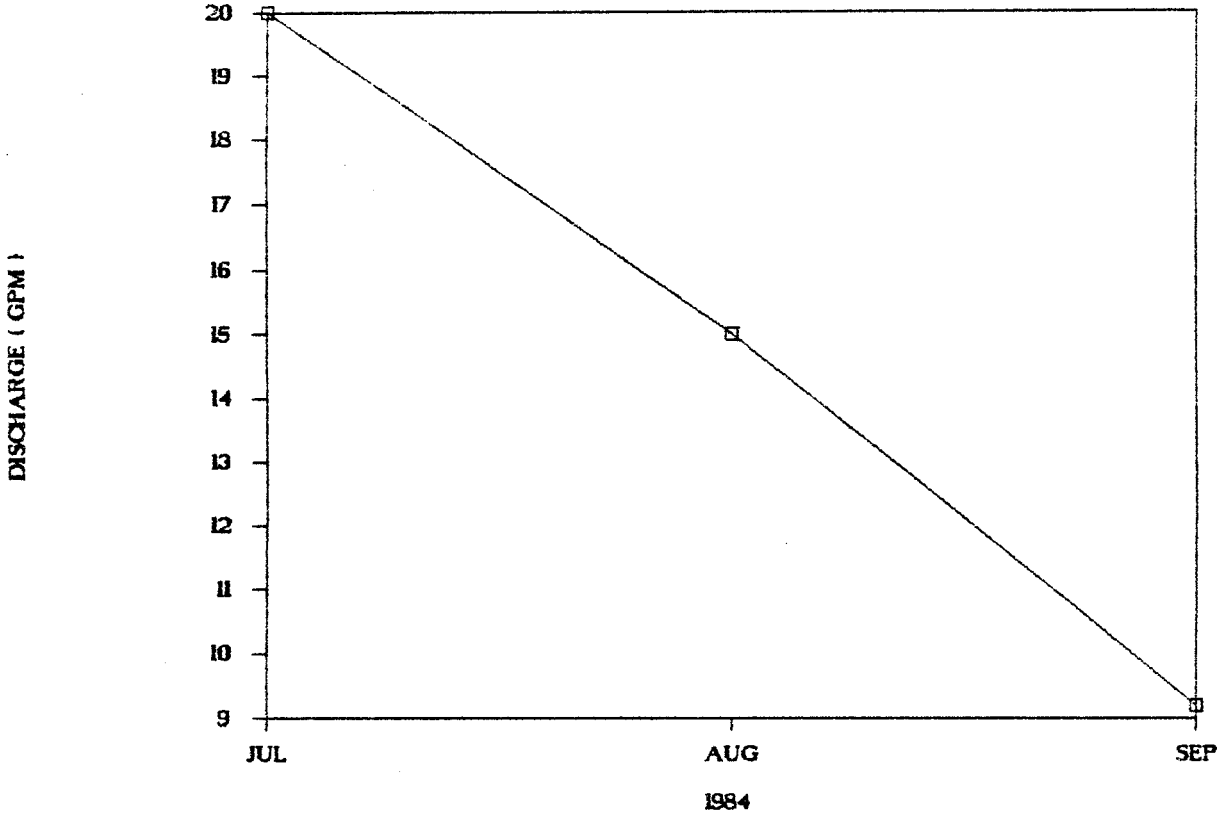
Analyst: David A Janusy

Respectfully submitted [signature] 11/8/84

Certified Environmental Laboratory

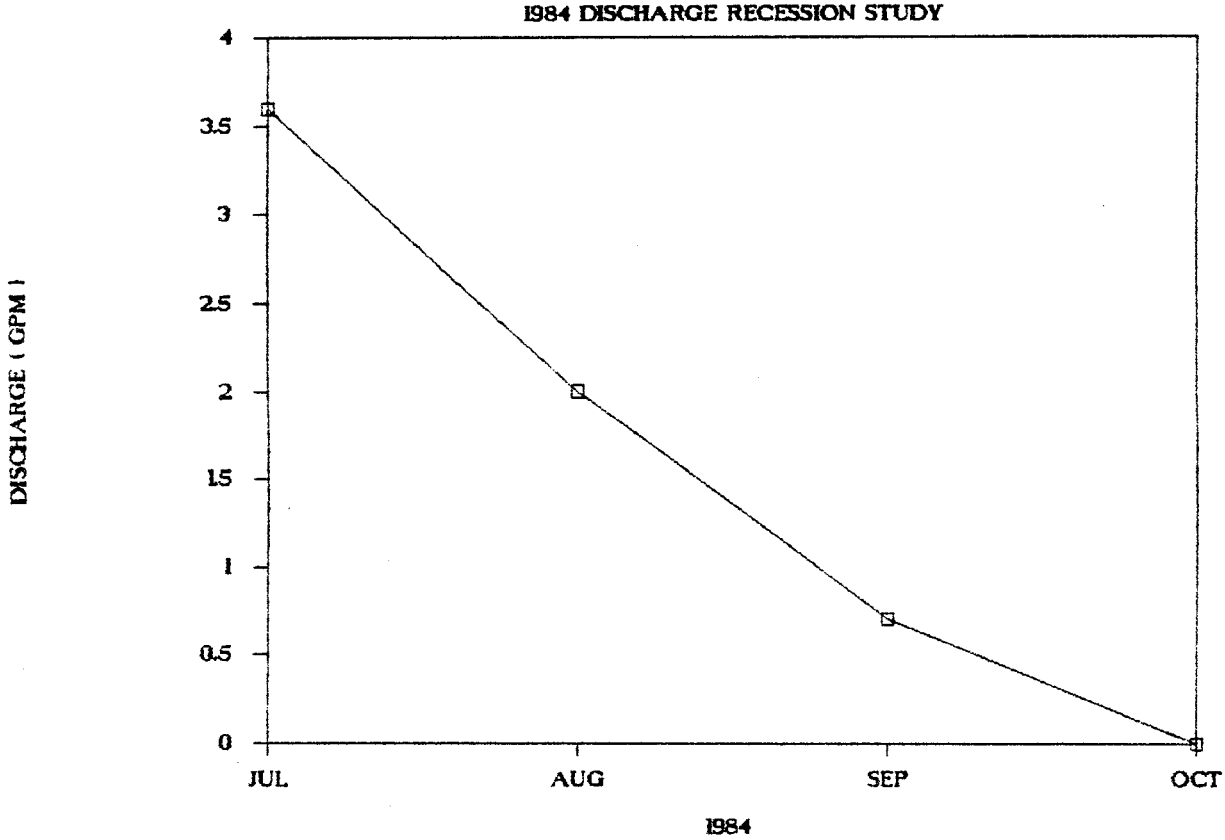
SPRING 79-10

1984 DISCHARGE RECESSION STUDY



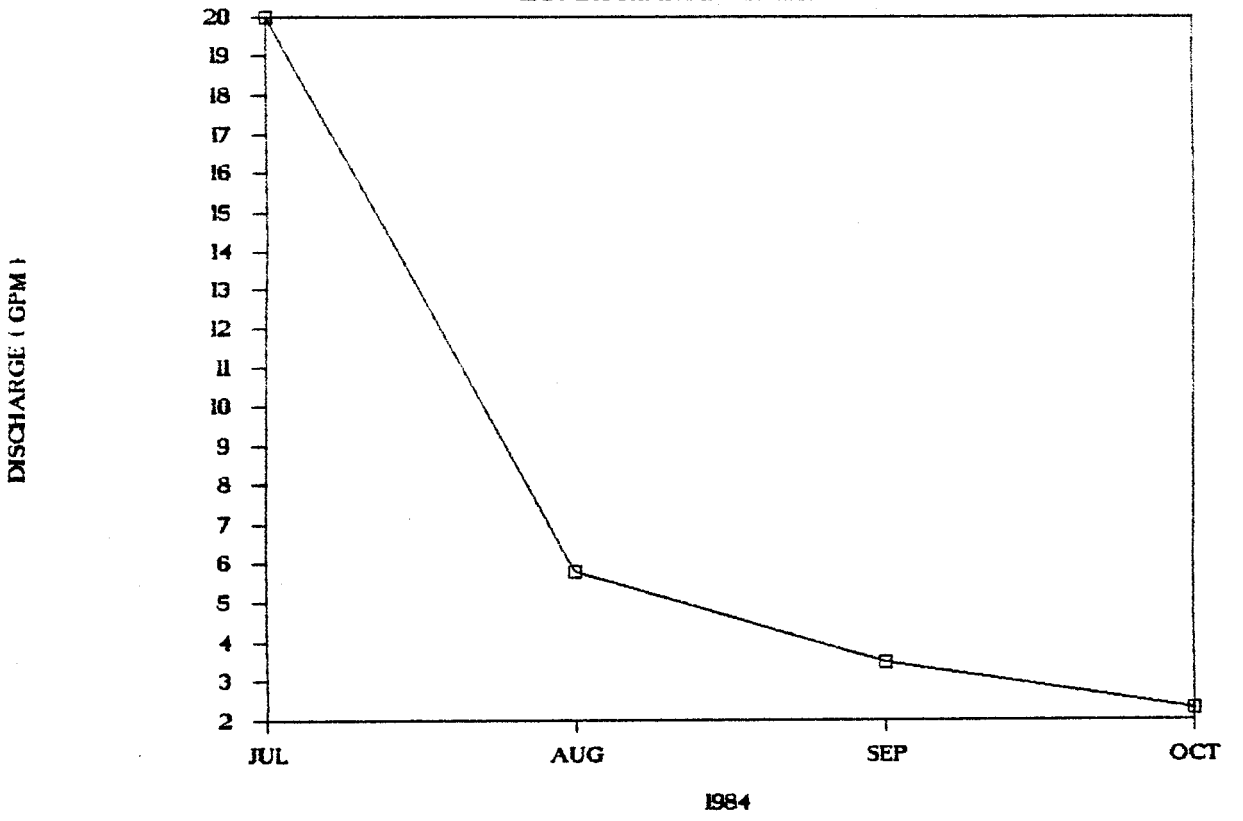
SPRING 79-23

1984 DISCHARGE RECESSION STUDY



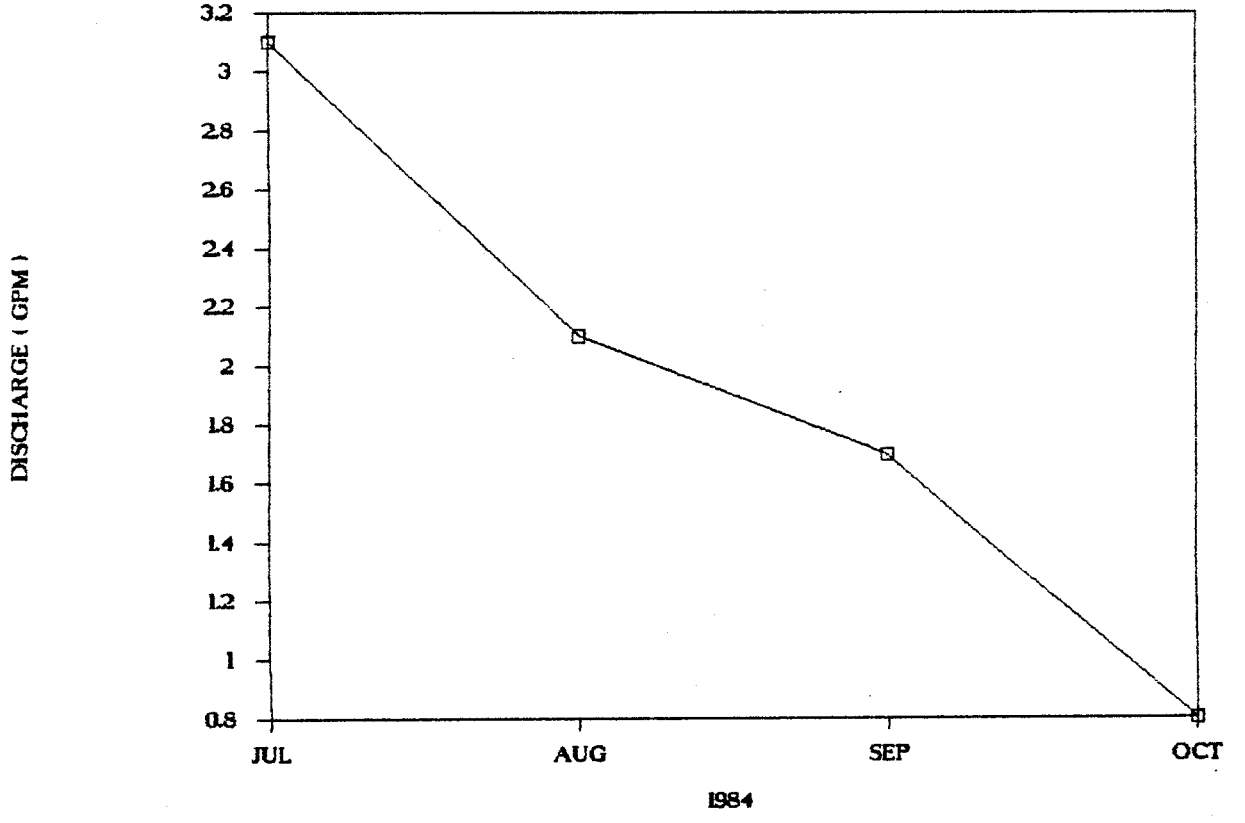
SPRING 79-26

1984 DISCHARGE RECESSION STUDY



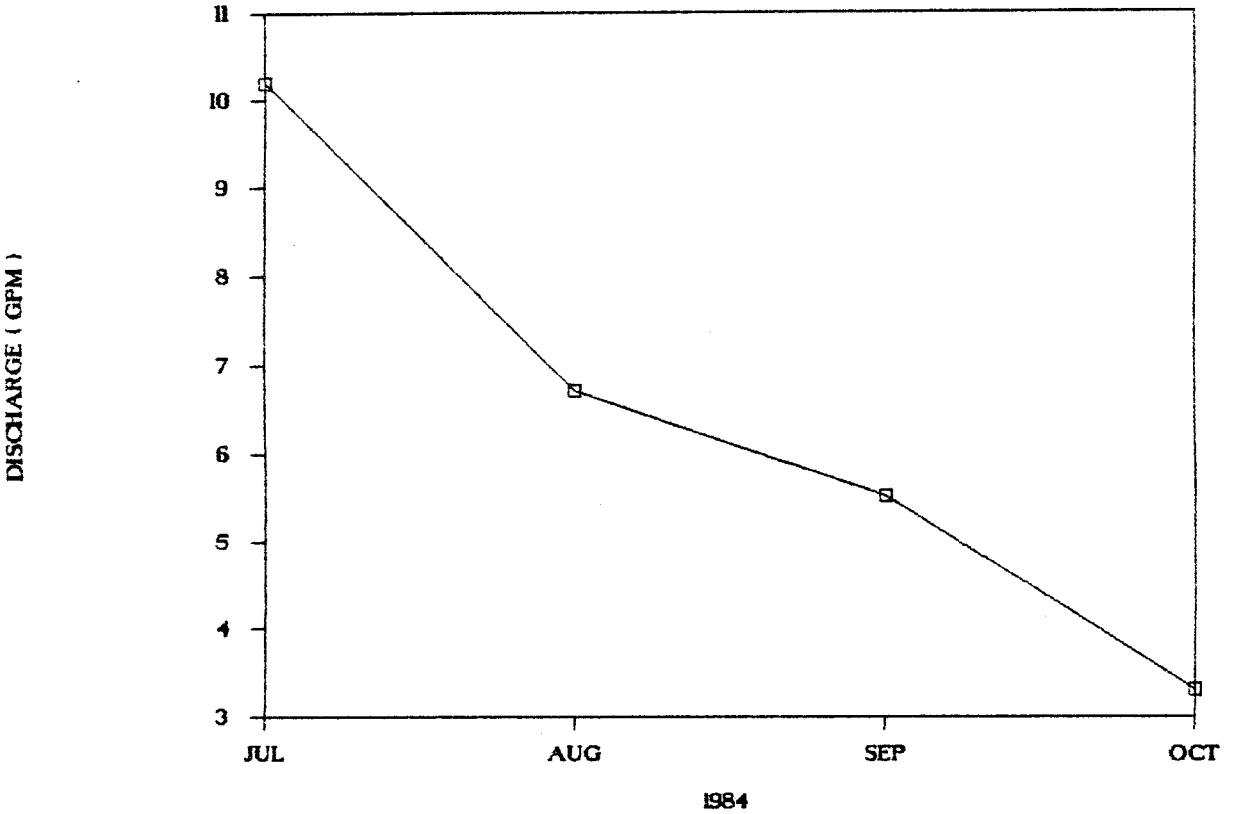
SPRING 79-32

1984 DISCHARGE RECESSION STUDY



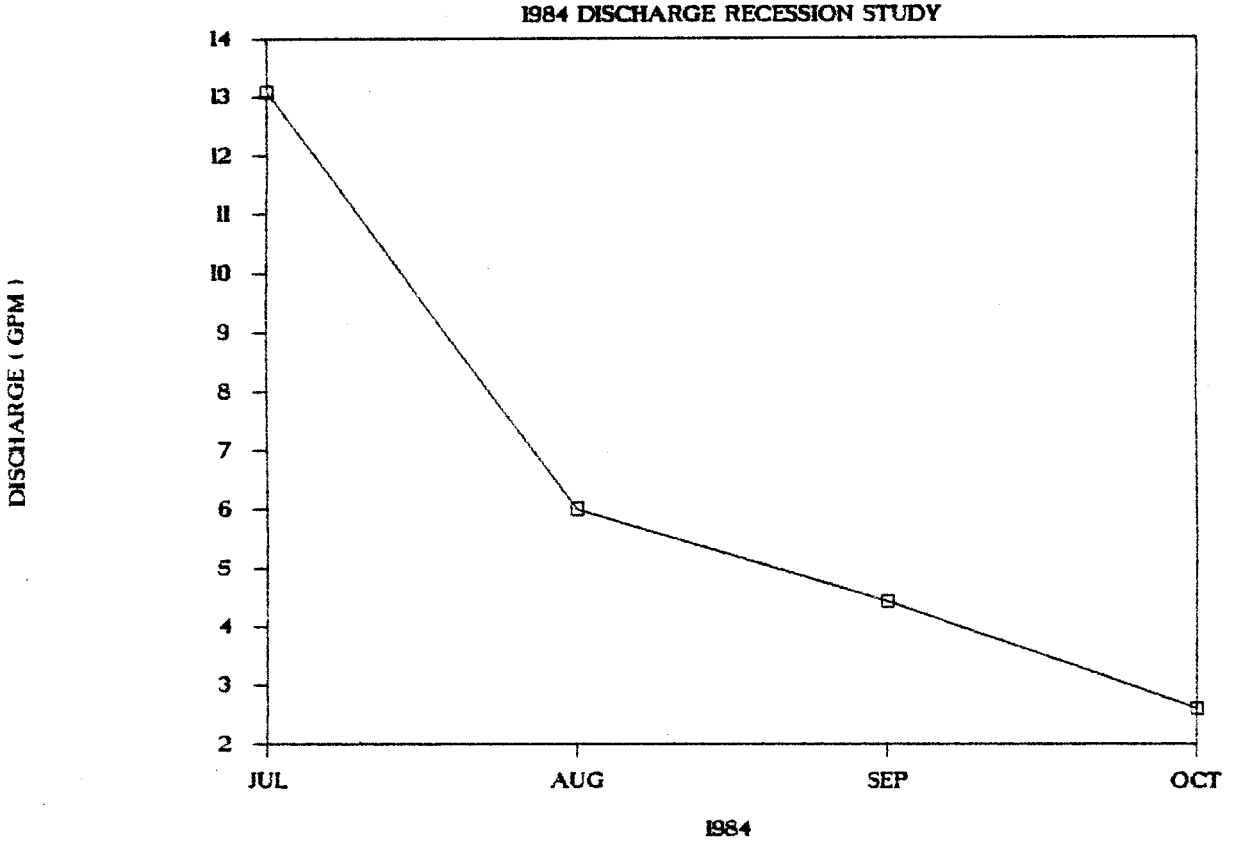
SPRING 79-35

1984 DISCHARGE RECESSION STUDY



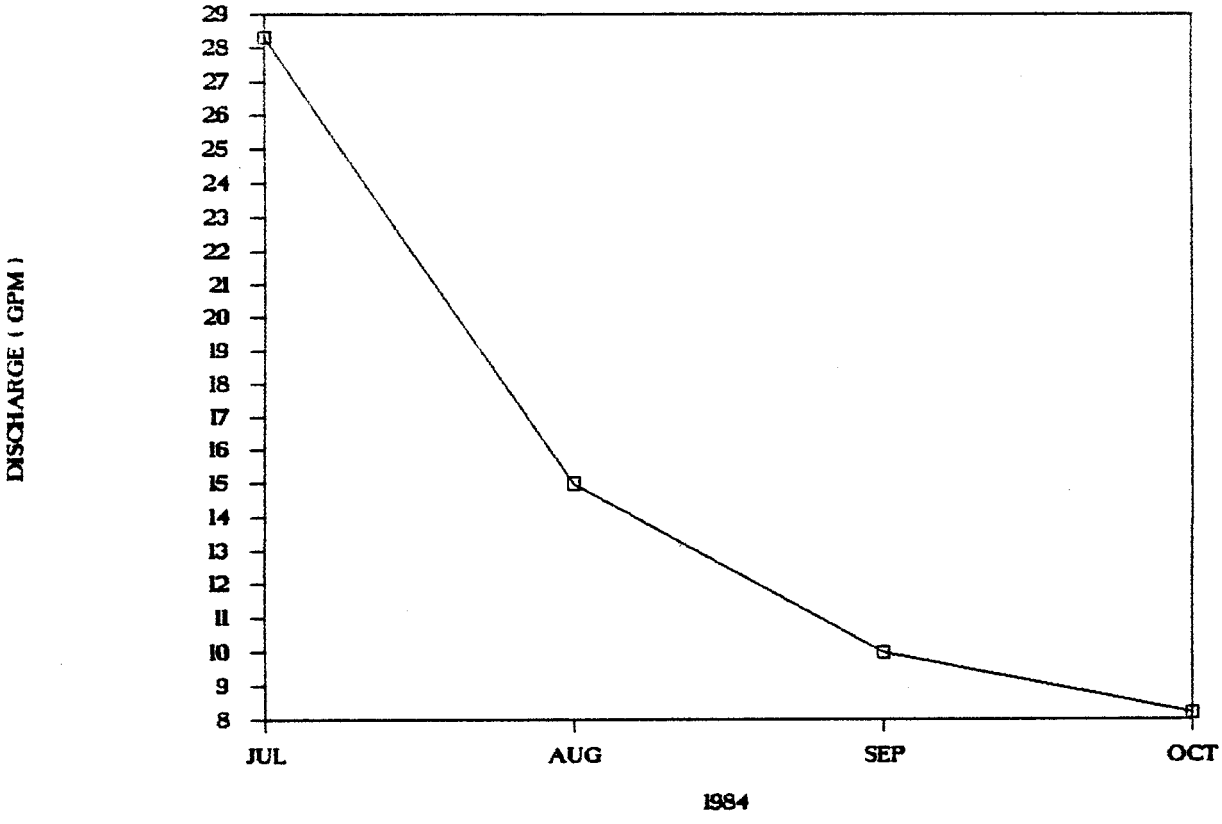
SPRING 80-44

1984 DISCHARGE RECESSION STUDY



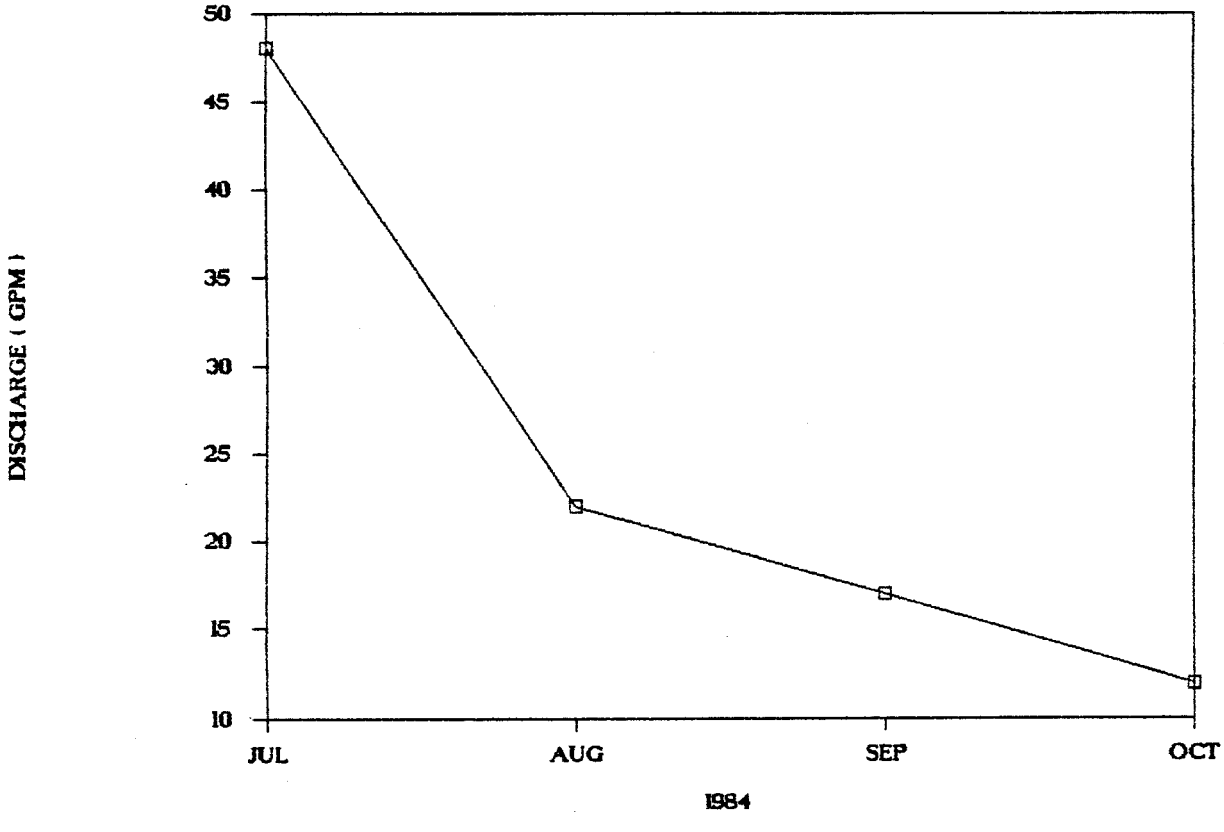
SPRING 80-46

1984 DISCHARGE RECESSION STUDY



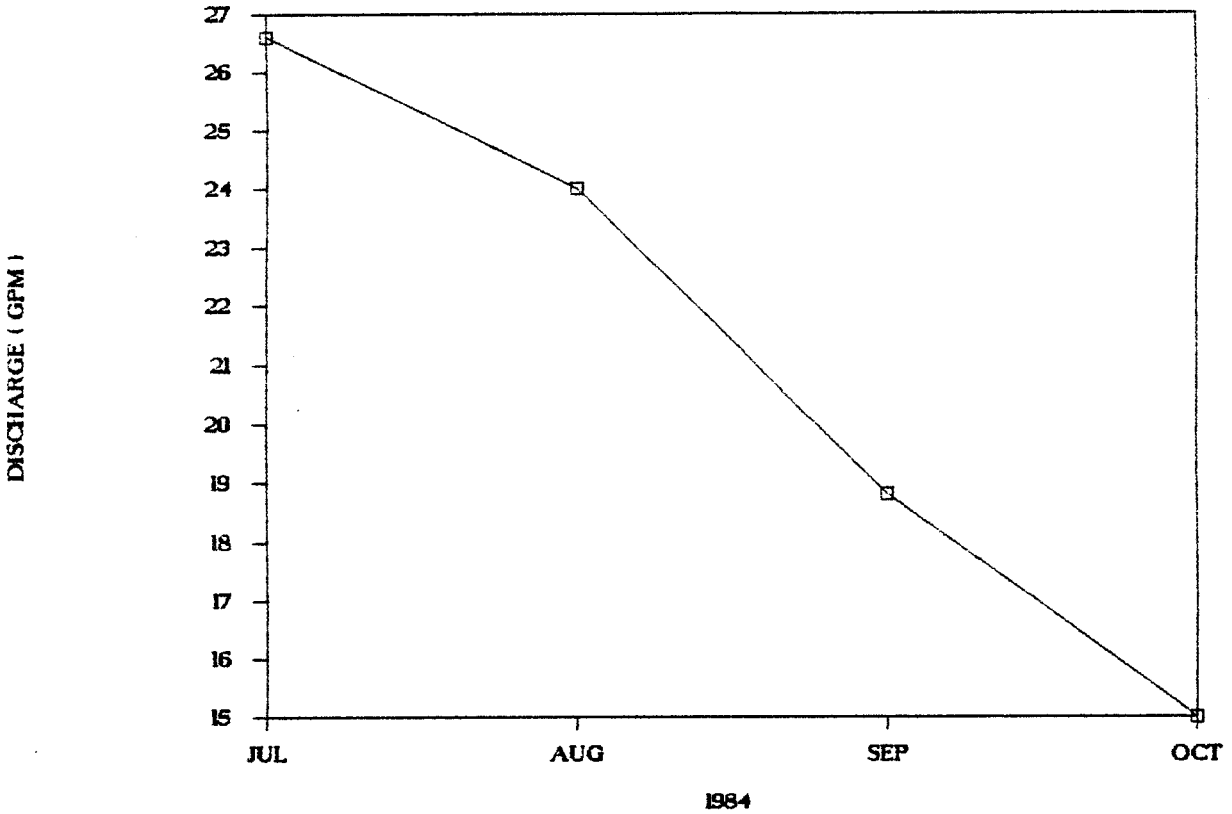
SPRING 82-52

1984 DISCHARGE RECESSION STUDY



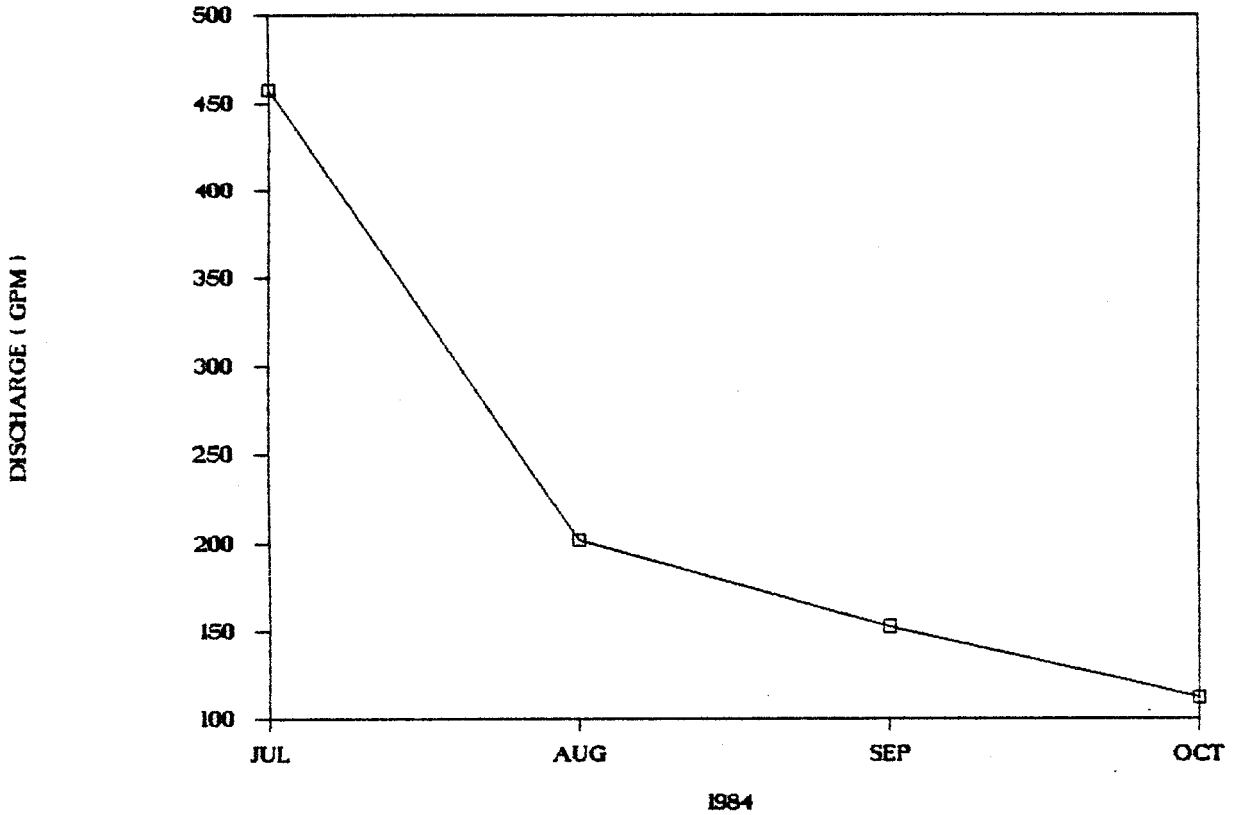
BURNT TREE SPRINGS

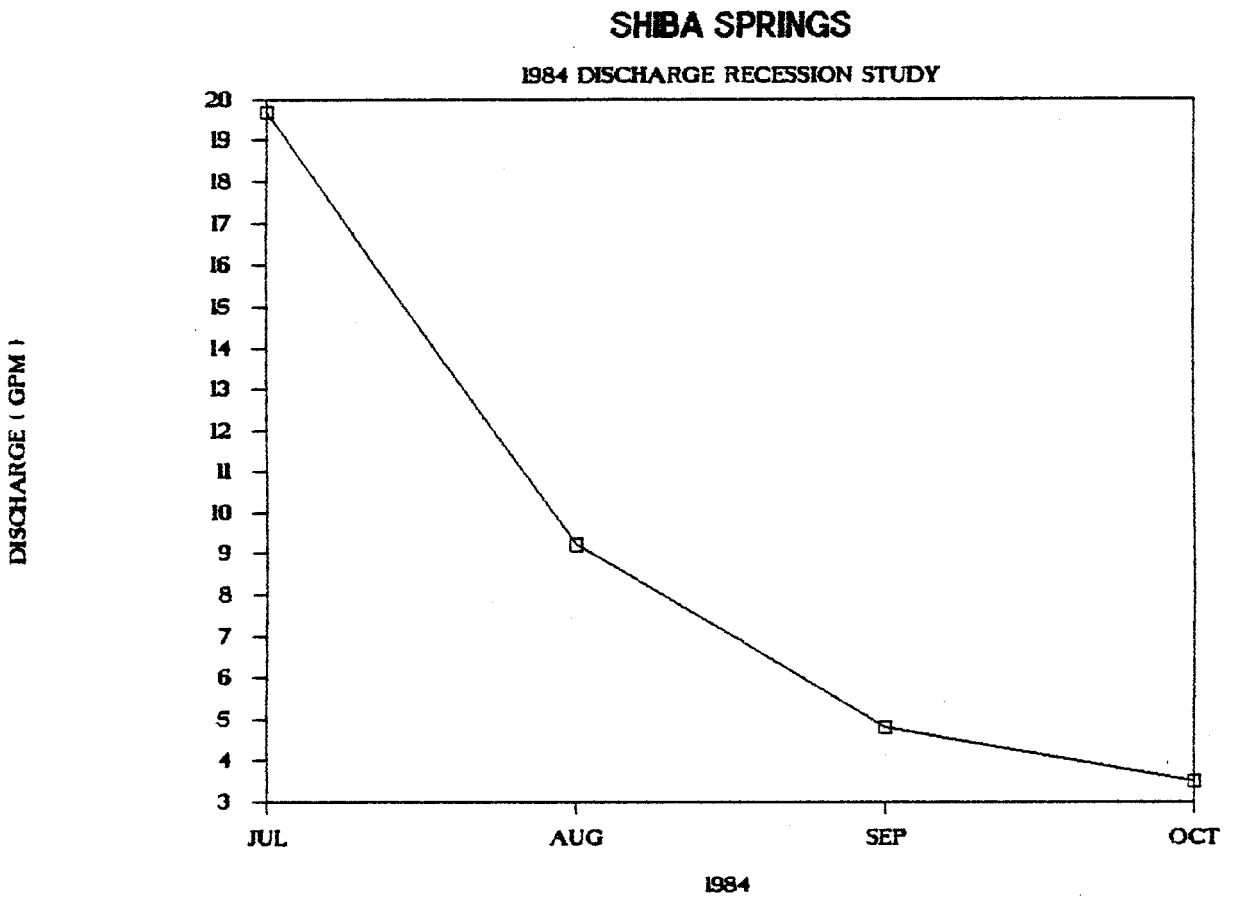
1984 DISCHARGE RECESSION STUDY



ELK SPRINGS

1984 DISCHARGE RECESSION STUDY




SHIBA SPRINGS
1984 DISCHARGE RECESSION STUDY
DISCHARGE (GPM)
20
19
18
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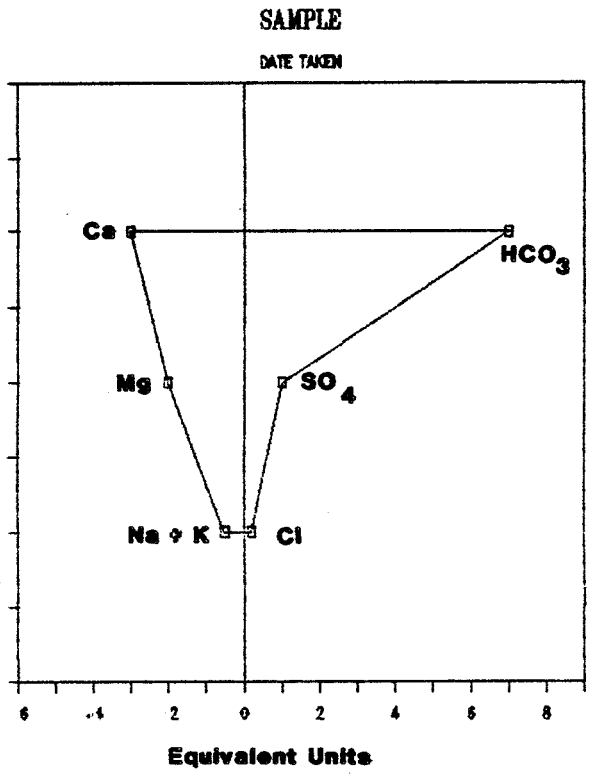
JUL
AUG
SEP
OCT
1984

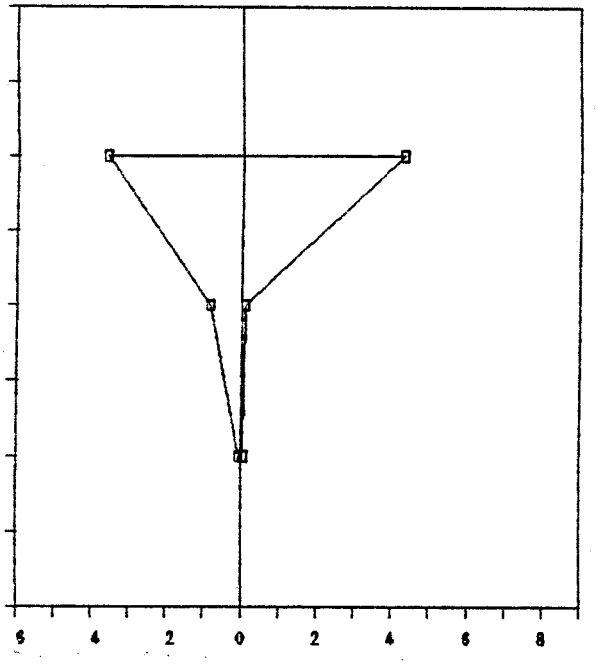
CATION ANION DIAGRAMS



FLAGSTAFF FORMATION

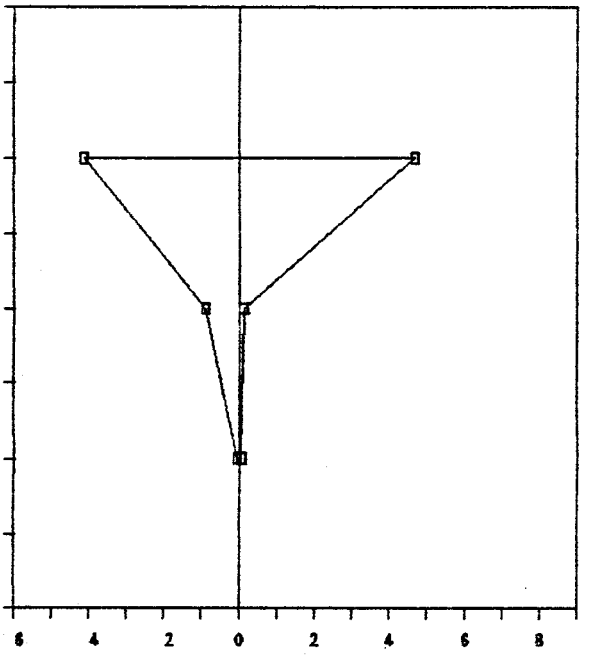
SHEBA SPRINGS

7-13-84



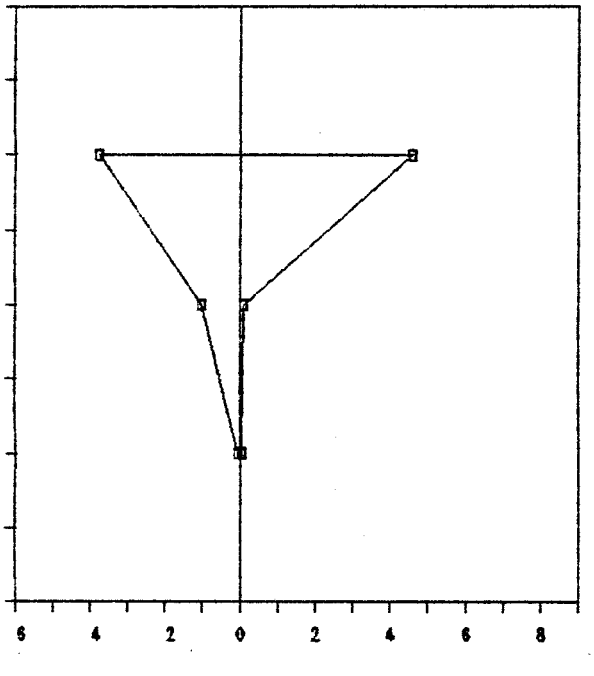
SHEBA SPRINGS

10-23-84



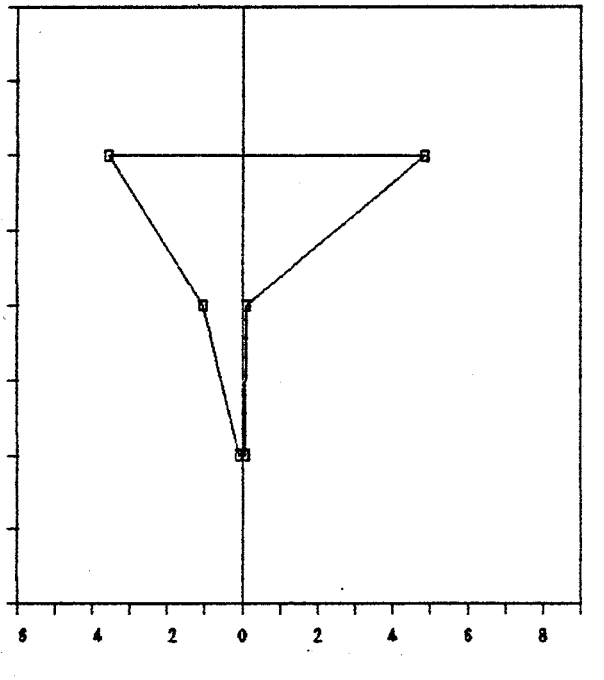
PINE SPRINGS

7-13-84



79-35

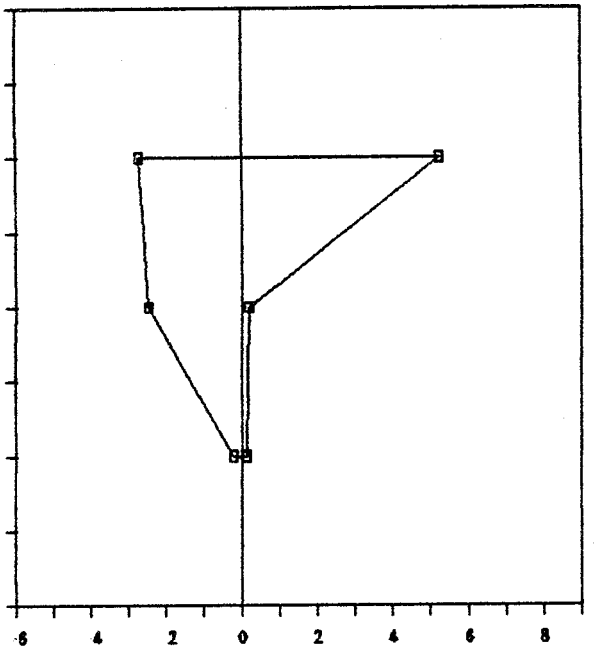
7-17-84



NORTH HORN FORMATION

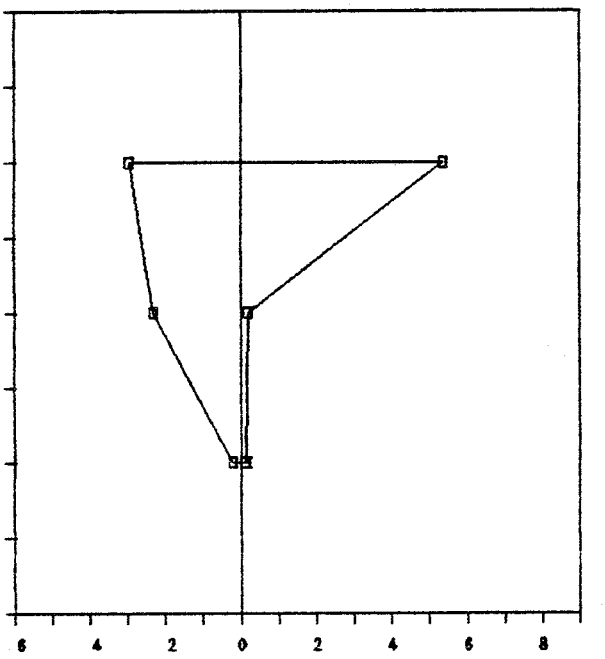
BURNT TREE

7-05-84



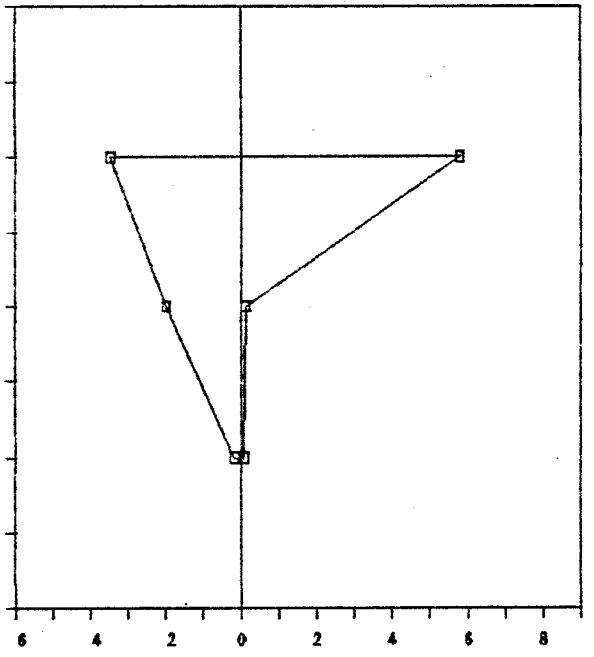
BURNT TREE

10-25-84



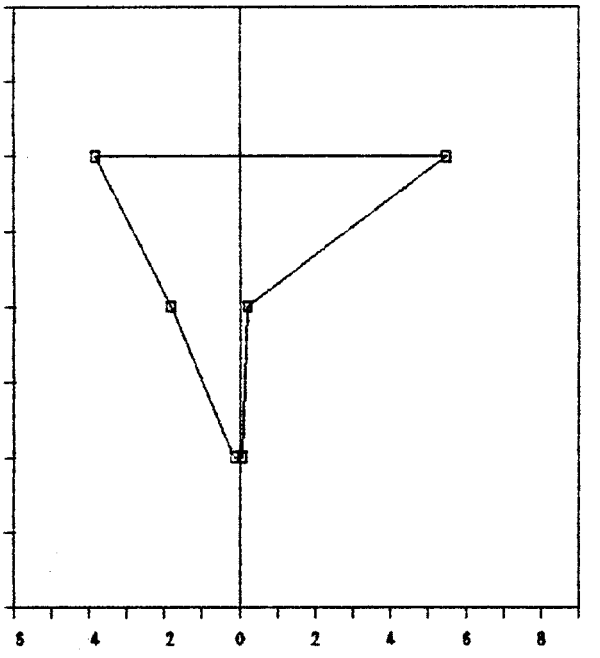
79-2

7-05-84



79-2

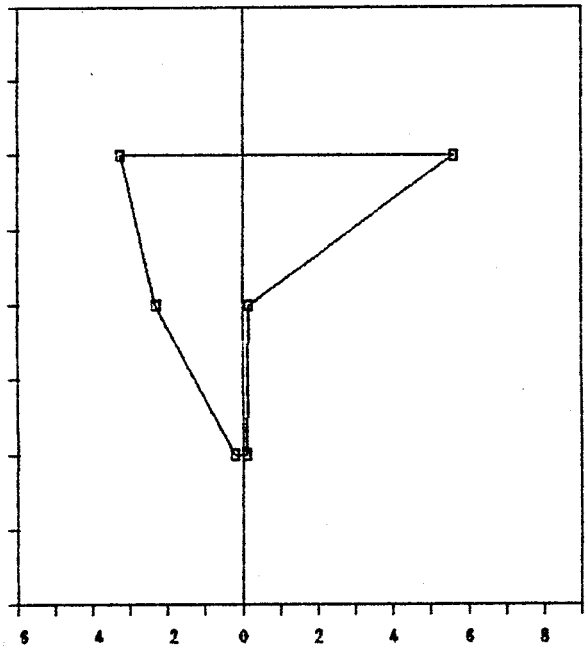
10-25-84



NORTH HORN FORMATION

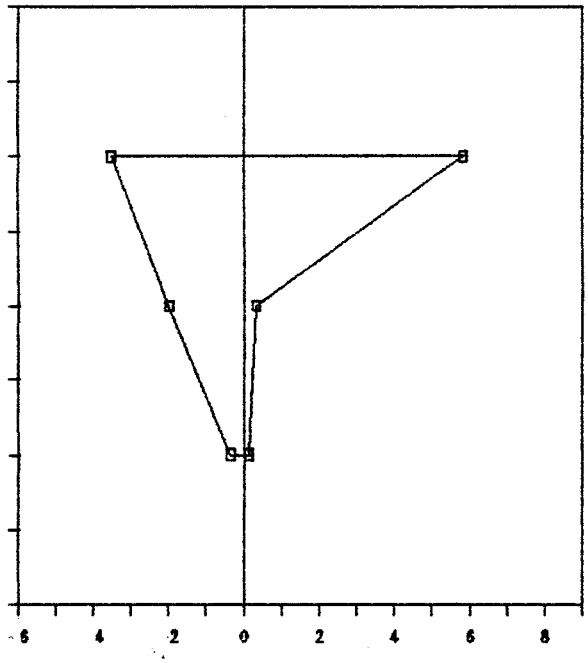
79-3

7-05-84



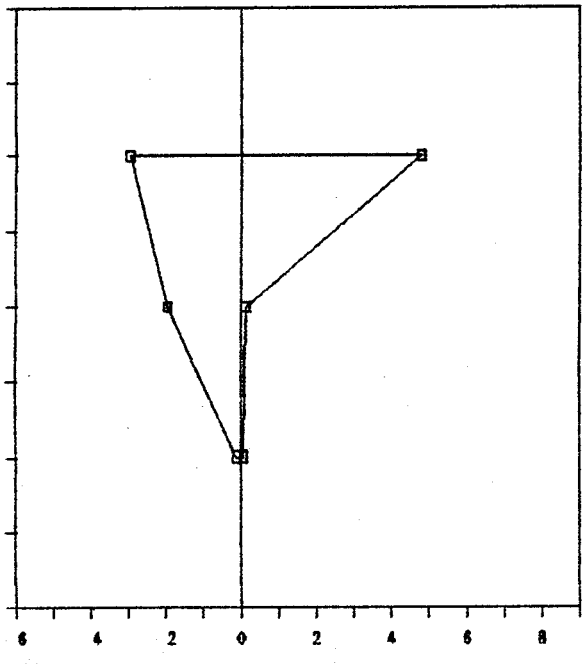
79-3

10-25-84



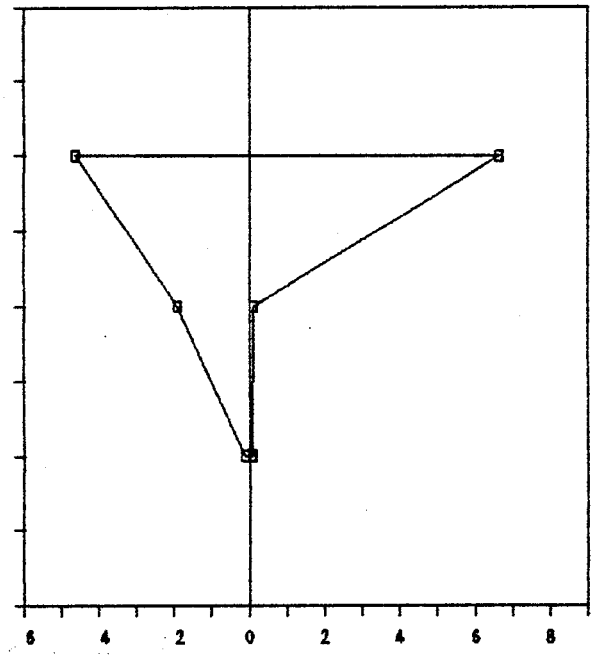
ELK SPRINGS

7-10-84



79-13

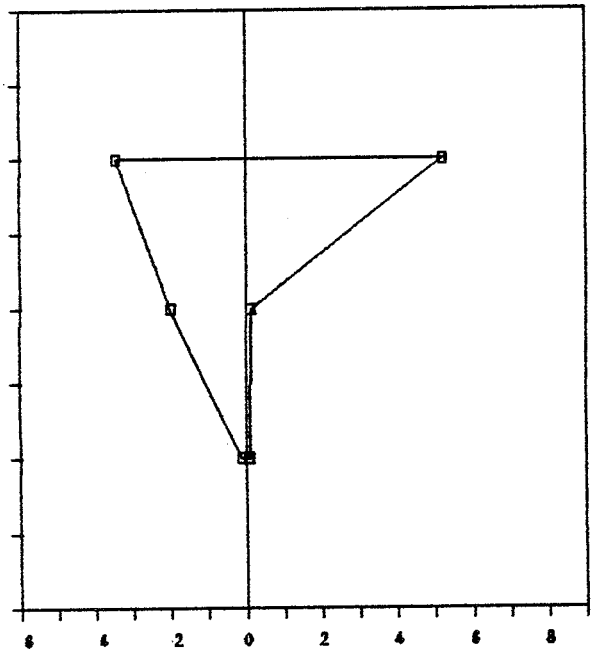
7-17-84



NORTH HORN FORMATION

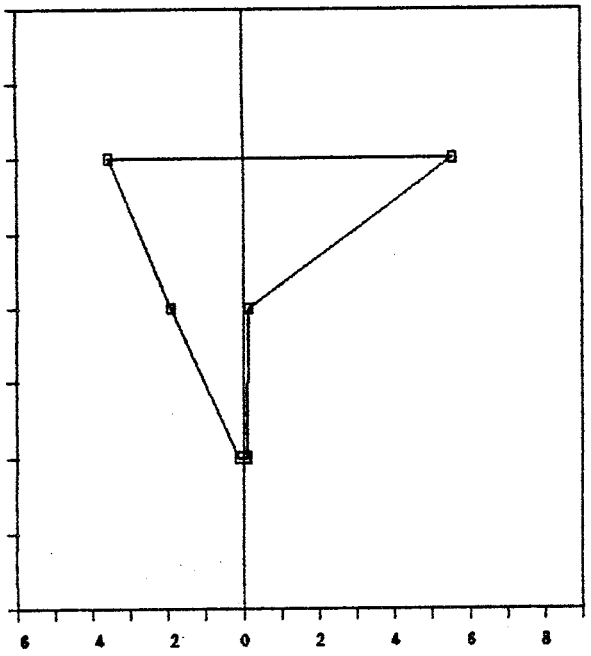
79-15

7-17-84



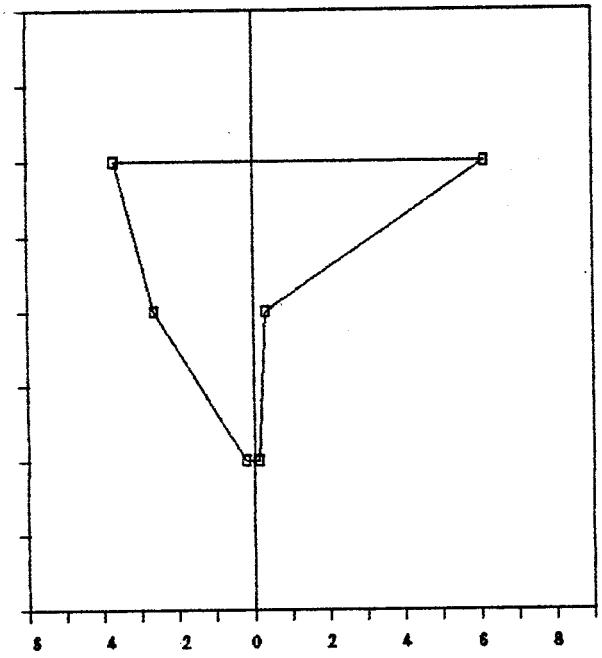
79-15

10-24-84



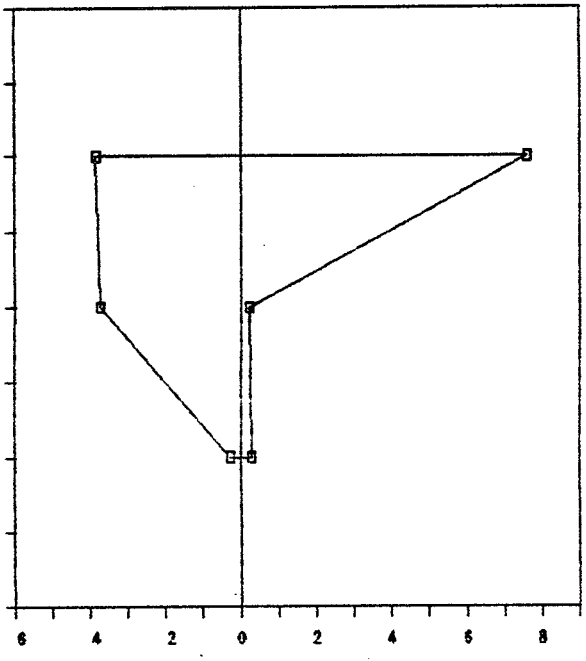
79-22

7-05-84



79-23

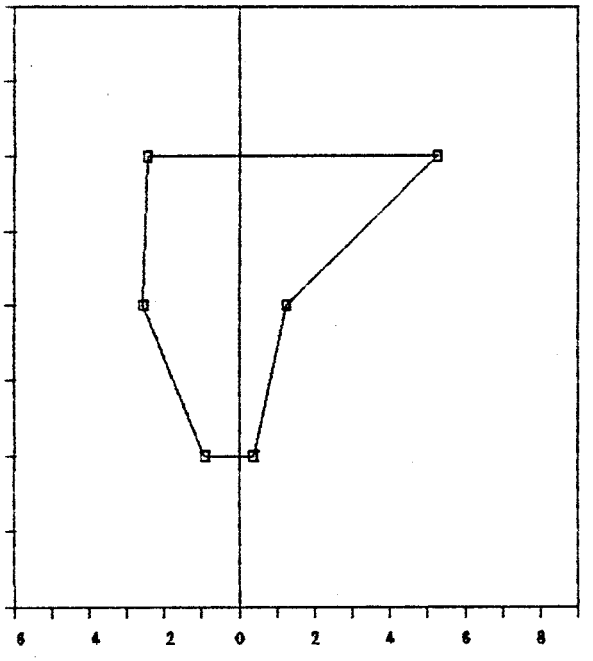
7-17-84



NORTH HORN FORMATION

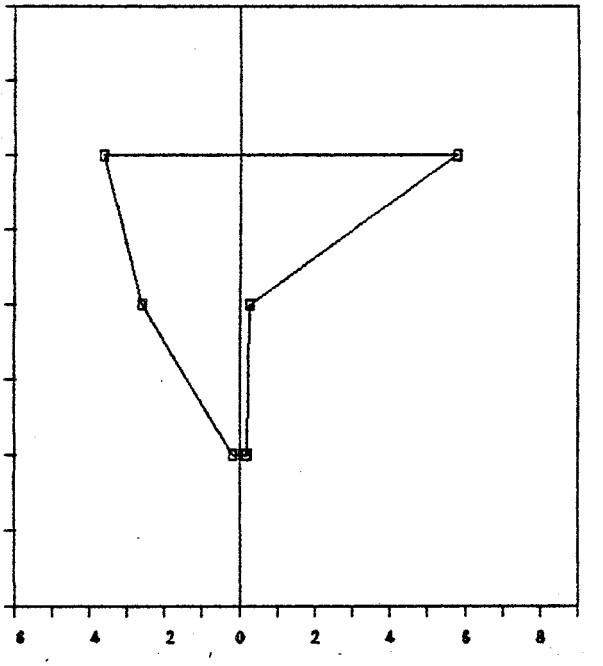
79-28

7-11-84



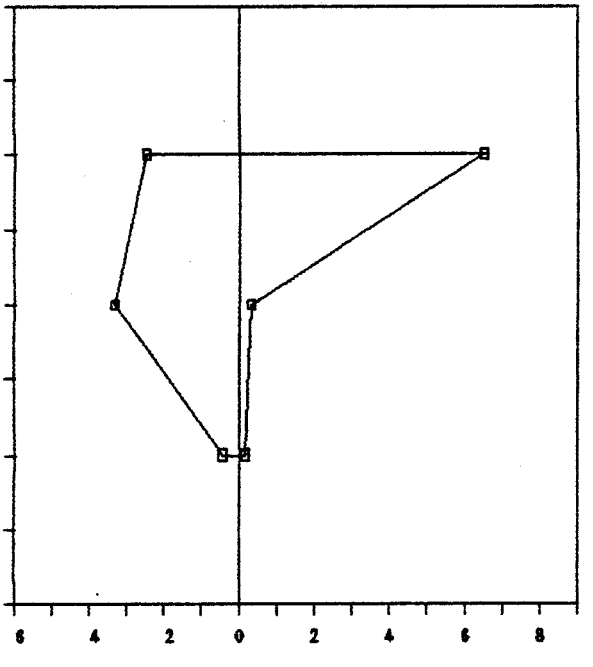
79-34

7-17-84



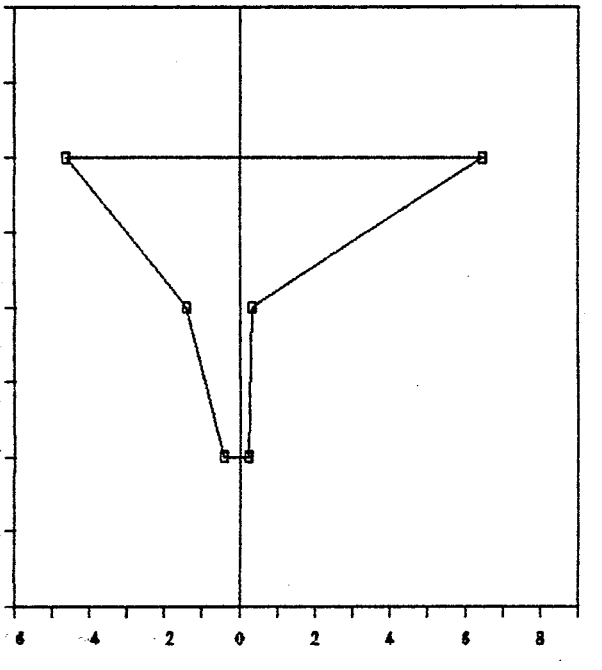
79-37

7-17-84



79-38

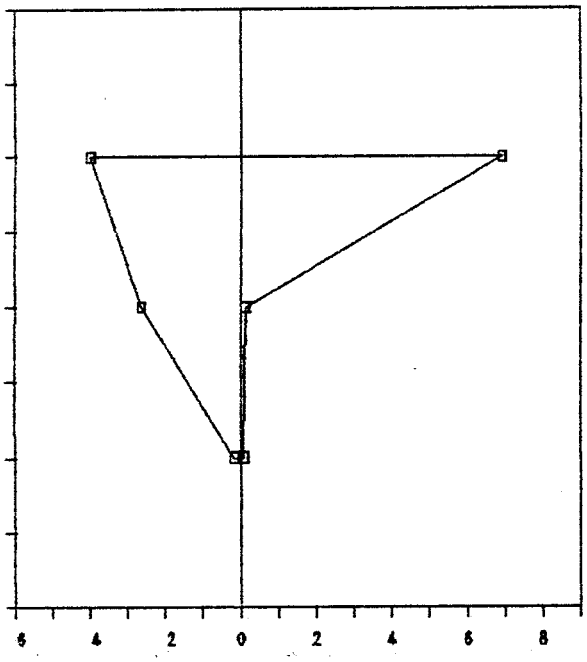
7-17-84



NORTH HORN FORMATION

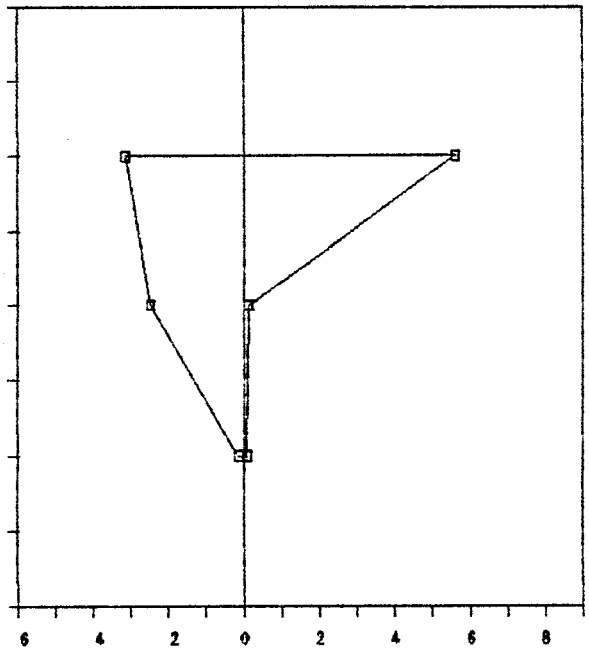
80-42

7-05-84



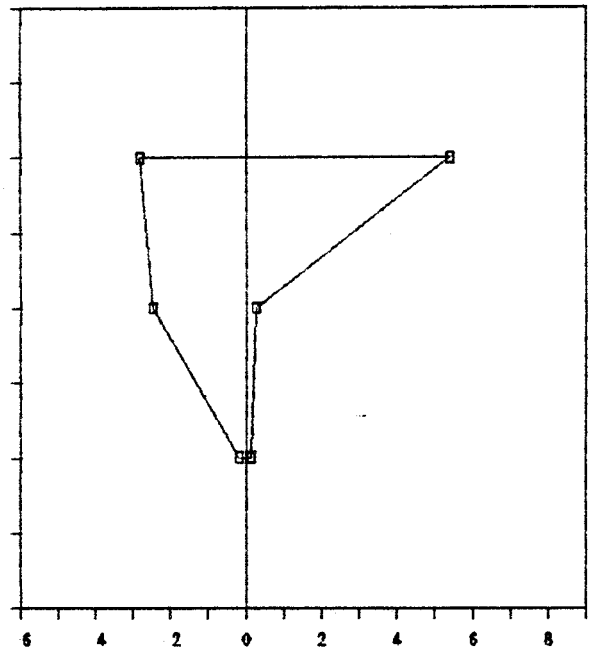
80-43

7-05-84



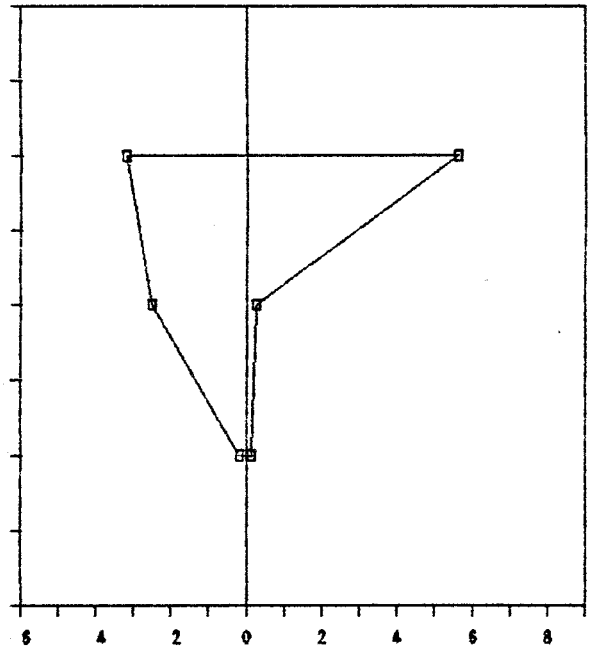
80-46

7-05-84



80-46

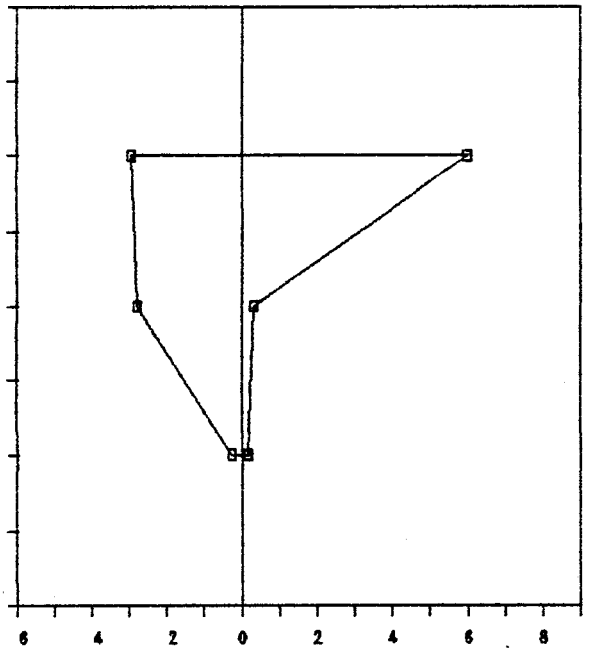
10-25-84



NORTH HORN FORMATION

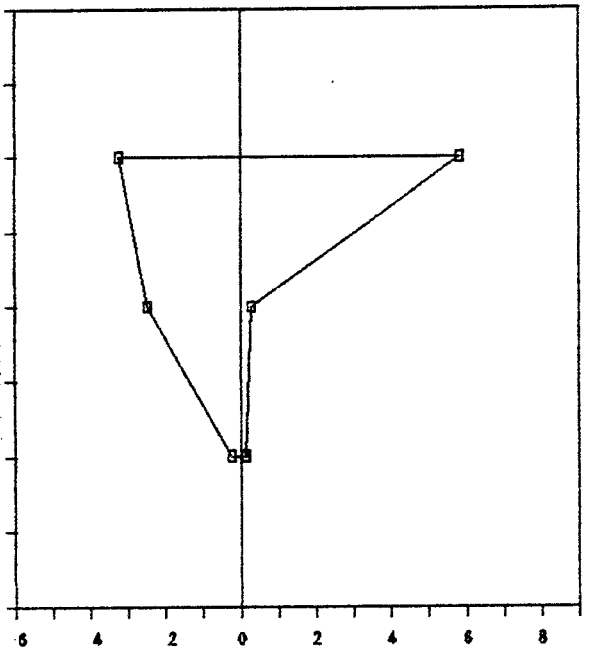
80-47

7-05-84



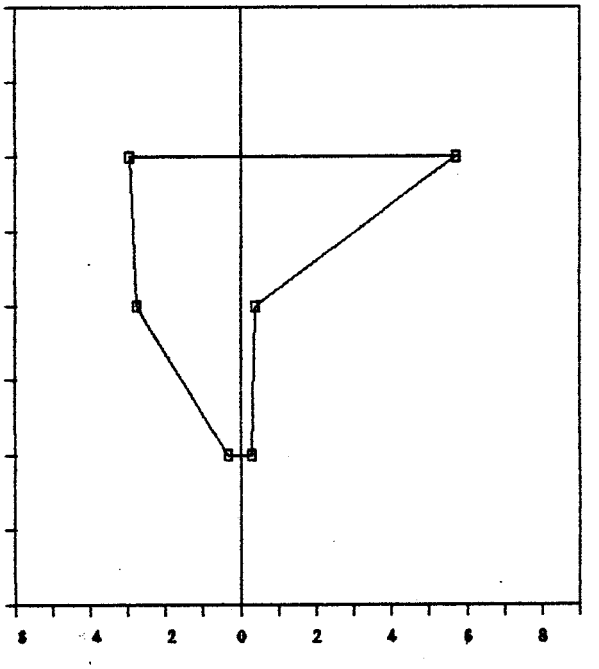
80-47

10-25-84



84-56

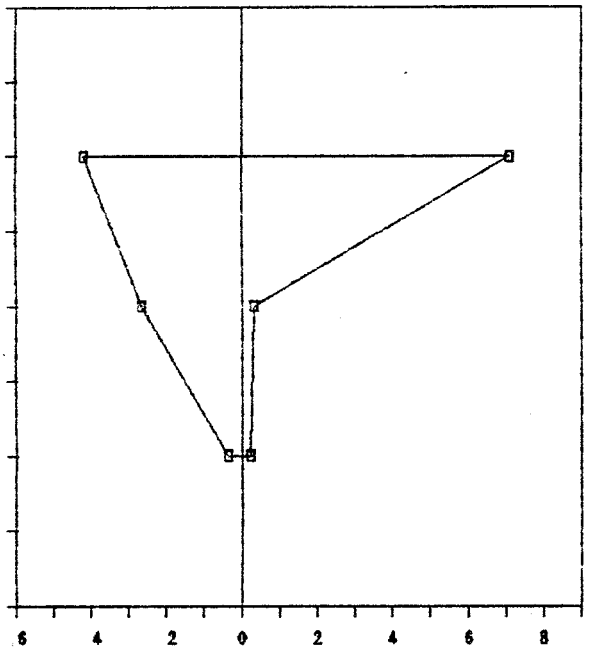
7-18-84



PRICE RIVER FORMATION

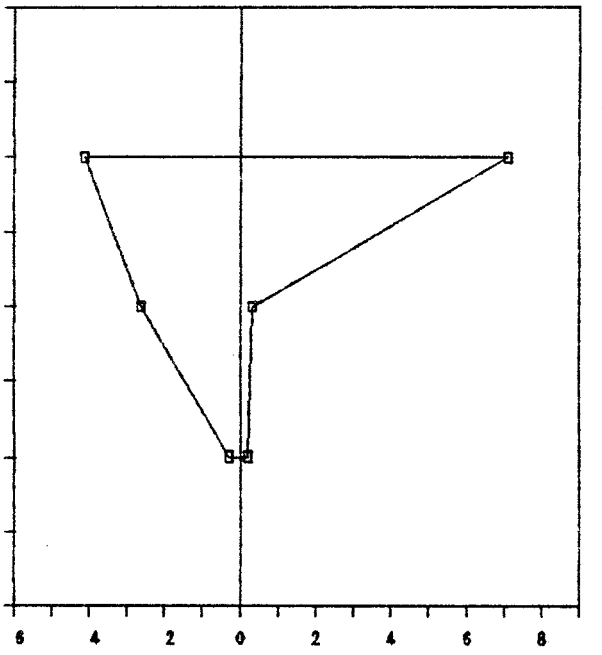
JERKWATER

7-17-84



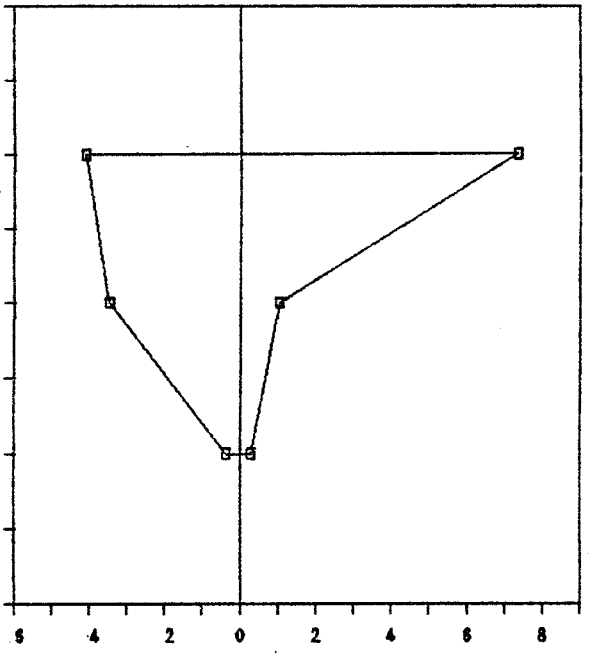
JERKWATER

10-24-84



80-41

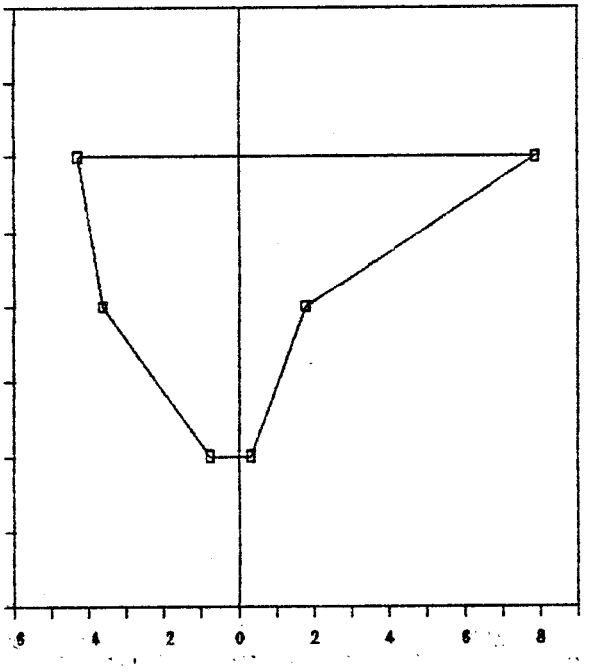
7-05-84



PRICE RIVER FORMATION

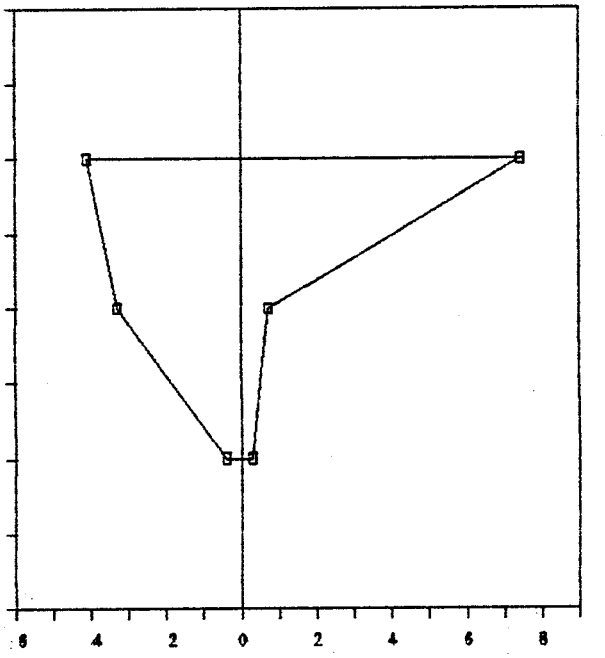
80-44

7-05-84



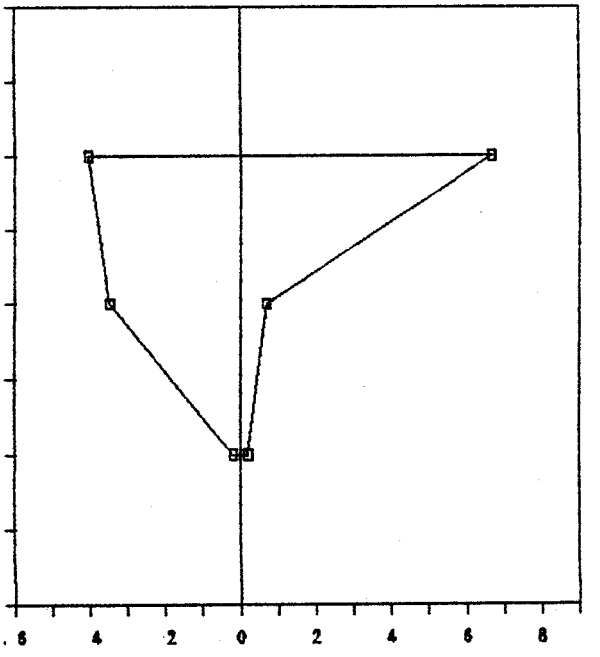
80-45

7-05-84



80-49

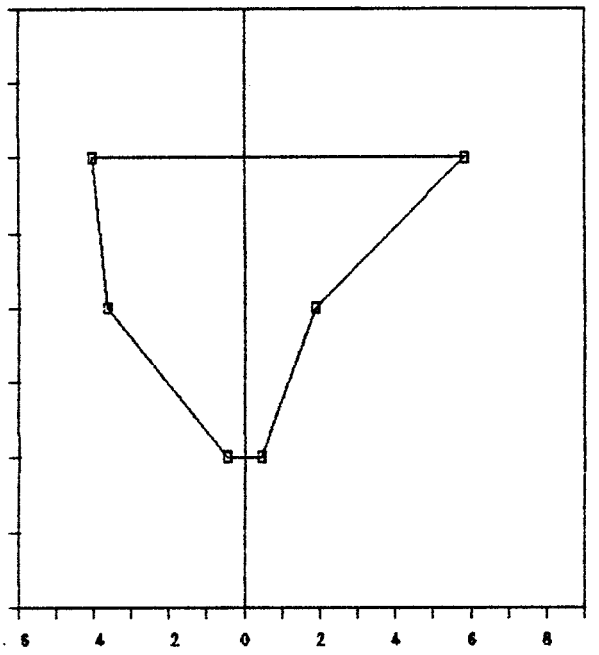
7-12-84



PRICE RIVER FORMATION

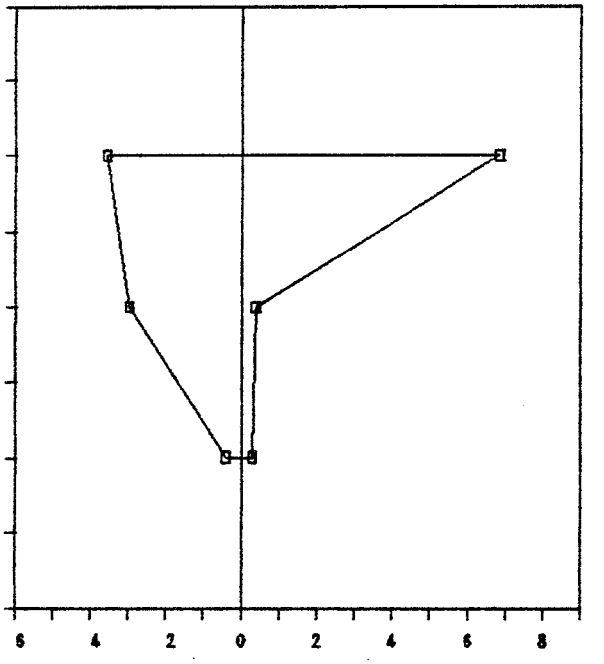
82-51

7-17-84



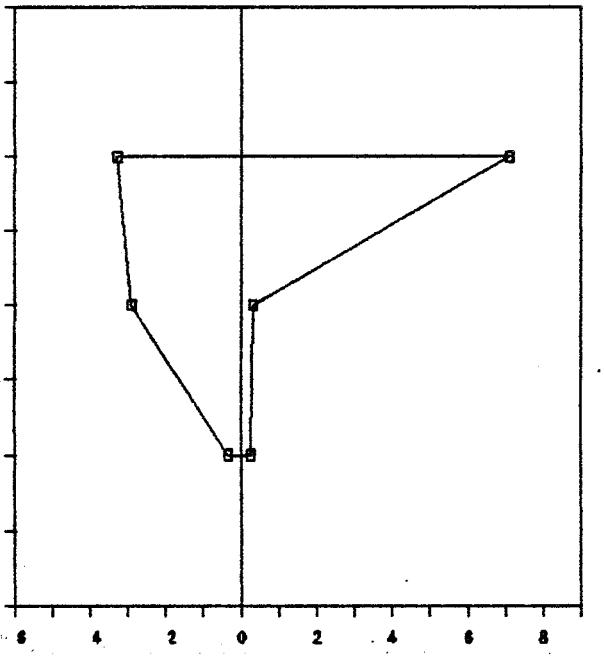
82-52

7-17-84



82-52

10-24-84



APPENDIX E

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

FOR Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Lab. No. 5040

Date Rec. 2-6-84

Date Sampled 2-3-84

Sample ID Wilberg In-Mine 1st N x C 13 2 R temp. 46° Flow 0.19 GPM

pH	7.1 Units	2/6
Alkalinity, Total	415 mg/l $CaCo_3$	2/6
Alkalinity, Bicarbonate	mg/l $CaCo_3$	
Calcium	153.6 mg/l	2/6
Chloride	13.7 mg/l	2/6
Conductivity	1100 umhos/cm	2/6
Dissolved Oxygen	mg/l	
Hardness	mg/l $CaCo_3$	
Magnesium	67.1 mg/l	2/6
Nitrogen, Nitrate	mg/l	
Phosphorus, Total	mg/l	
Phosphorus, Ortho	mg/l	
Potassium	2.6 mg/l	2/6
Sodium	20.4 mg/l	2/6
Solids, Total Dissolved	740 mg/l	2/6
Solids, Total Suspended	< 0.5 mg/l	2/6
Sulfate	250 mg/l	2/6
Cation, Total	14.15 meq/l	
Anion, Total	13.90 meq/l	

Arsenic	mg/l
Beryllium	mg/l
Boron	mg/l
Cadmium	mg/l
Chromium	mg/l
Copper	mg/l
Iron	mg/l
Lead	mg/l
Manganese	mg/l
Mercury	µg/l
Nickel	mg/l
Selenium	mg/l
Zinc	mg/l

Respectfully submitted 2/6/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

FOR Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Lab. No. 5041

Date Rec. 2-6-84

Date Sampled 2-3-84

Sample ID Wilberg In-Mine 1st N x C-46 3R Temp. 52° Flow 0.28 GPM

pH	7.3	Units	
Alkalinity, Total	401	mg/l $CaCo_3$	2/6
Alkalinity, Bicarbonate		mg/l $CaCo_3$	
Calcium	199.2	mg/l	2/6
Chloride	16.0	mg/l	2/6
Conductivity	1425	umhos/cm	2/6
Dissolved Oxygen		mg/l	
Hardness		mg/l $CaCo_3$	
Magnesium	91.7	mg/l	2/6
Nitrogen, Nitrate		mg/l	
Phosphorus, Total		mg/l	
Phosphorus, Ortho		mg/l	
Potassium	3.3	mg/l	2/6
Sodium	27.4	mg/l	2/6
Solids, Total Dissolved	1033	mg/l	2/6
Solids, Total Suspended	1.5	mg/l	2/6
Sulfate	460	mg/l	2/6
Cation, Total	18.77	meq/l	
Anion, Total	18.06	meq/l	

Arsenic		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Manganese		mg/l
Mercury		µg/l
Nickel		mg/l
Selenium		mg/l
Zinc		mg/l

Respectfully submitted 2/6/2

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5327
Date Rec'd 4-18-84
Date Sampled 4-18-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: 2nd S x C-11 2 L
Temp. 52°
Flow 0.11 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	383	mg/l $CaCO_3$	4/29
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	13.5	mg/l	4/20
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1400	umhos/cm	4/19
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
·ogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.85	Units	4/19
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	973	mg/l	4/19
Solids, Total Suspended	< 0.5	mg/l	4/19
Sulfate	430	mg/l	4/20
Sulfide		mg/l	
Turbidity		NTU	
Cation, Total	17.01	meq/l	
Anion, Total	17.00	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	127.6	mg/l	4/23
Chromium		mg/l	
Copper		mg/l	
Iron		mg/l	
Lead		mg/l	
Magnesium	62.0	mg/l	4/23
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	5.6	mg/l	4/23
Selenium		mg/l	
Silica		mg/l	
Sodium	124.0	mg/l	4/23
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 4-23-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg In-Mine
Repeat

Lab. No. 5327
Date Rec'd 4-18-84
Date Sampled 4-18-84
Time Sampled

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved		mg/l
Solids, Total Suspended		mg/l
Sulfate	380	mg/l 4/25
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	116.0	mg/l 4/25
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Magnesium	104.0	mg/l
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium	23.6	mg/l 4/2[illegible]
Vanadium		mg/l
Zinc		mg/l

Analyst: David A Janusz

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5328
Date Rec'd 4-18-84
Date Sampled 4-18-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: MW x C-109 1L
Temp. 56°
Flow 0.05 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	357	mg/l $CaCO_3$	4/19
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	7.7	mg/l	4/20
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	910	umhos/cm	4/19
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
rogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.9	Units	4/19
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	545	mg/l	4/19
Solids, Total Suspended	3.5	mg/l	4/19
Sulfate	135	mg/l	4/20
Sulfide		mg/l	
Turbidity		NTU	
Cation, Total	9.78	meq/l	
Anion, Total	10.18	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	48.0	mg/l	4/23
Chromium		mg/l	
Copper		mg/l	
Iron		mg/l	
Lead		mg/l	
Magnesium	33.0	mg/l	4/23
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	5.5	mg/l	4/23
Selenium		mg/l	
Silica		mg/l	
Sodium	104.0	mg/l	4/23
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5328

Date Rec'd 4-18-84

Date Sampled 4-18-84

Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg In-Mine
Repeat

Acidity		mg/l $CaCO_3$	Aluminum		mg/l
Alkalinity, Total		mg/l $CaCO_3$	Arsenic		mg/l
Alkalinity, Bicarbonate		mg/l $CaCO_3$	Barium		mg/l
Alkalinity, Carbonate		mg/l $CaCO_3$	Beryllium		mg/l
Chloride		mg/l	Boron		mg/l
Coliform, Fecal		MPN/100 ml	Cadmium		mg/l
Coliform, Total		MPN/100 ml	Calcium	62.0	mg/l 4/25
Conductivity		umhos/cm	Chromium		mg/l
Fluoride		mg/l	Copper		mg/l
Hardness, Total		mg/l $CaCO_3$	Iron		mg/l
Nitrogen, Ammonia		mg/l	Lead		mg/l
Nitrogen, Nitrate		mg/l	Magnesium	52.2	mg, 25
Nitrogen, Nitrite		mg/l	Manganese		mg/l
Oil & Grease		mg/l	Mercury		ug/l
pH		Units	Nickel		mg/l
Phosphorus, Ortho		mg/l	Potassium		mg/l
Phosphorus, Total		mg/l	Selenium		mg/l
Solids, Total Dissolved		mg/l	Silica		mg/l
Solids, Total Suspended		mg/l	Sodium	51.9	mg/l 4/25
Sulfate	135	mg/l 4/25	Vanadium		mg/l
Sulfide		mg/l	Zinc		mg/l
Turbidity		NTU			

Analyst: David A Janusz

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5783
Date Rec'd 7-23-84
Date Sampled 7-23-84
Time Sampled 13:00

Client: Utah Power & Light Co.
Field Office
Huntington, Utah

Sample ID: Wilberg In-Mine
1st N x Cut-46-3R

56°
Flow: 0.17 gpm

Acidity			mg/l $CaCO_3$
Alkalinity, Total	7/25	395	mg/l $CaCO_3$
Alkalinity, Bicarbonate			mg/l $CaCO_3$
Alkalinity, Carbonate			mg/l $CaCO_3$
Chloride	7/27	13.4	mg/l
Coliform, Fecal			MPN/100 ml
Coliform, Total			MPN/100 ml
Conductivity	7/25	1575	umhos/cm
Fluoride			mg/l
Hardness, Total			mg/l $CaCO_3$
Nitrogen, Ammonia			mg/l
ogen, Nitrate			mg/l
Nitrogen, Nitrite			mg/l
Oil & Grease			mg/l
pH	7/25	7.2	Units
Phosphorus, Ortho			mg/l
Phosphorus, Total			mg/l
Solids, Total Dissolved	7/30	1084	mg/l
Solids, Total Suspended	7/30	< 0.5	mg/l
Sulfate	7/30	460	mg/l
Sulfide			mg/l
Turbidity			NTU

Total Cations 18.22 meq/l
total anions 17.87 meq/l

Aluminum			mg/l
Arsenic			mg/l
Barium			mg/l
Beryllium			mg/l
Boron			mg/l
Cadmium			mg/l
Calcium	7/26	198.0	mg/l
Chromium			mg/l
Copper			mg/l
Iron			mg/l
Lead			mg/l
Magnesium	7/26	87.8	mg/l
Manganese			mg/l
Mercury			ug/l
Nickel			mg/l
Potassium	7/30	4.0	mg/l
Selenium			mg/l
Silica			mg/l
Sodium	7/30	23.0	mg/l
Vanadium			mg/l
Zinc			mg/l

Respectfully submitted [signature] 7-30-84

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5782
Date Rec'd 7-23-84
Date Sampled 7-23-84
Time Sampled 13:30

Client: Utah Power & Light Co.
Field Office
Huntington, Utah

Sample ID: Wilberg In-Mine
1st N x Cut-13-2L

50°
Flow: 0.18 gpm

Acidity		mg/l $CaCO_3$
Alkalinity, Total 7/25	423	mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride 7/27	11.6	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity 7/25	1225	umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH 7/25	7.2	Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved 7/30	762	mg/l
Solids, Total Suspended 7/30	<0.5	mg/l
Sulfate 7/30	240	mg/l
Sulfide		mg/l
Turbidity		NTU

Total Cations	13.73 meq/l
total Anions	13.80 meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium 7/26	148.0	mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Magnesium 7/26	67.3	mg/l
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium 7/30	3.2	mg/l
Selenium		mg/l
Silica		mg/l
Sodium 7/30	16.6	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted [signature] 7-30-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6357
Date Rec'd 11-7-84
Date Sampled 11-7-84
Time Sampled 1105

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg In-Mine
3rd North x C - 5 1 L
Temp. 56°
Flow 0.18 GPM

Acidity		mg/l $CaCO_3$
Alkalinity, Total	312	mg/l $CaCO_3$ 11/9
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride	13.2	mg/l 11/9
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	1000	umhos/cm 11/9
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
rogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.7	Units 11/9
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	564	mg/l 11/12
Solids, Total Suspended	< 0.5	mg/l 11/12
Sulfate	150	mg/l 11/14
Sulfide		mg/l
Turbidity		NTU
Cation, Total	8.45	meq/l
Anion, Total	9.74	meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	12.0	mg/l 11/14
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Magnesium	4.9	mg/l 11/1
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	1.2	mg/l 11/14
Selenium		mg/l
Silica		mg/l
Sodium	170.8	mg/l 11/14
Vanadium		mg/l
Zinc		mg/l

Analyst: David A Janusy

Respectfully submitted [signature] 11/24/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg In-Mine
4th East x C - 42 1 L
Temp. 51°
Flow 0.05 GPM

Lab. No. 6358
Date Rec'd 11-7-84
Date Sampled 11-7-84
Time Sampled 1300

Acidity		mg/l $CaCO_3$
Alkalinity, Total	525	mg/l $CaCO_3$ 11/9
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride	18.5	mg/l 11/9
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	2000	umhos/cm 11/9
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH	7.0	Units 11/9
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	1534	mg/l 11/12
Solids, Total Suspended	1.0	mg/l 11/12
Sulfate	610	mg/l 11/14
Sulfide		mg/l
Turbidity		NTU
Cation, Total	25.26	meq/l
Anion, Total	23.74	meq/l

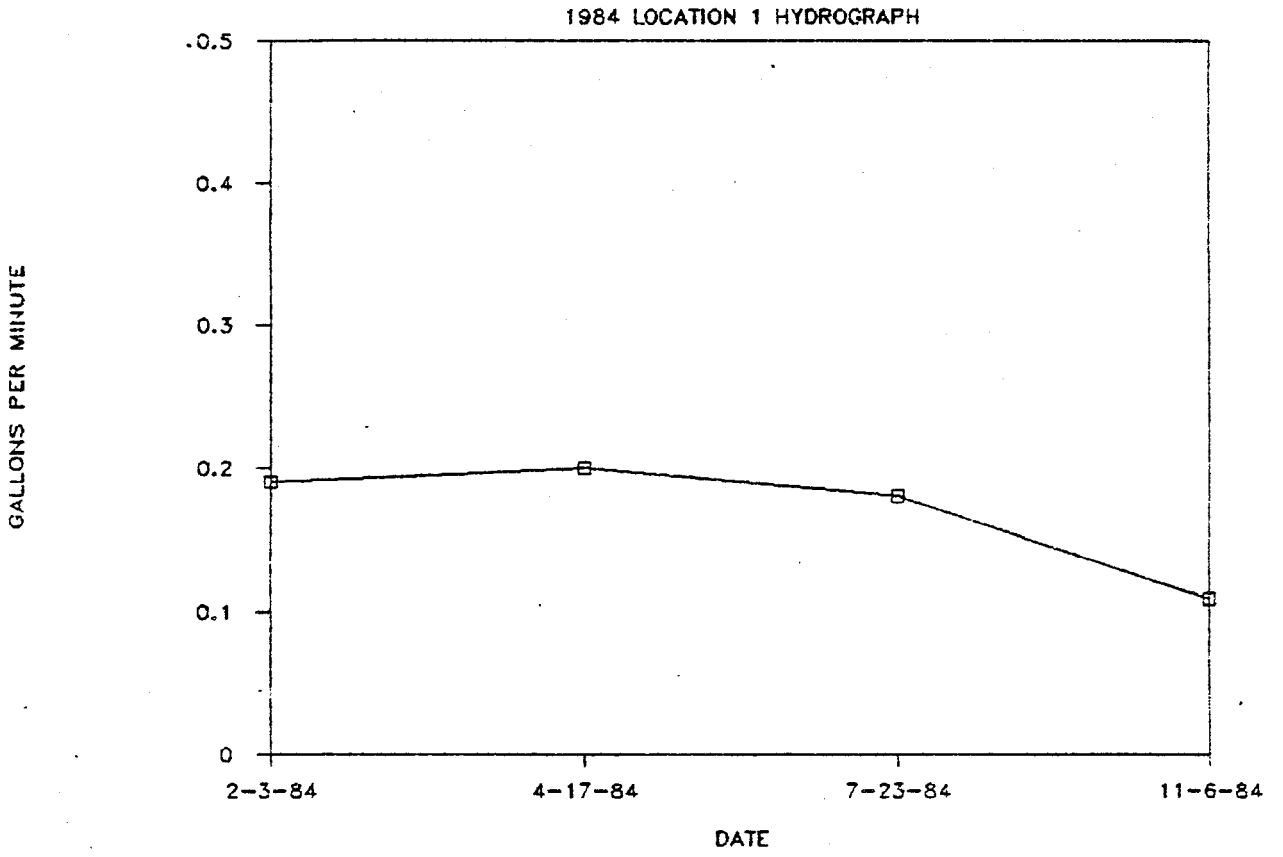
Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	224.0	mg/l 11/14
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Magnesium	119.2	mg/l 11/14
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	5.1	mg/l 11
Selenium		mg/l
Silica		mg/l
Sodium	26.0	mg/l 11
Vanadium		mg/l
Zinc		mg/l

Analyst: David A Janusz

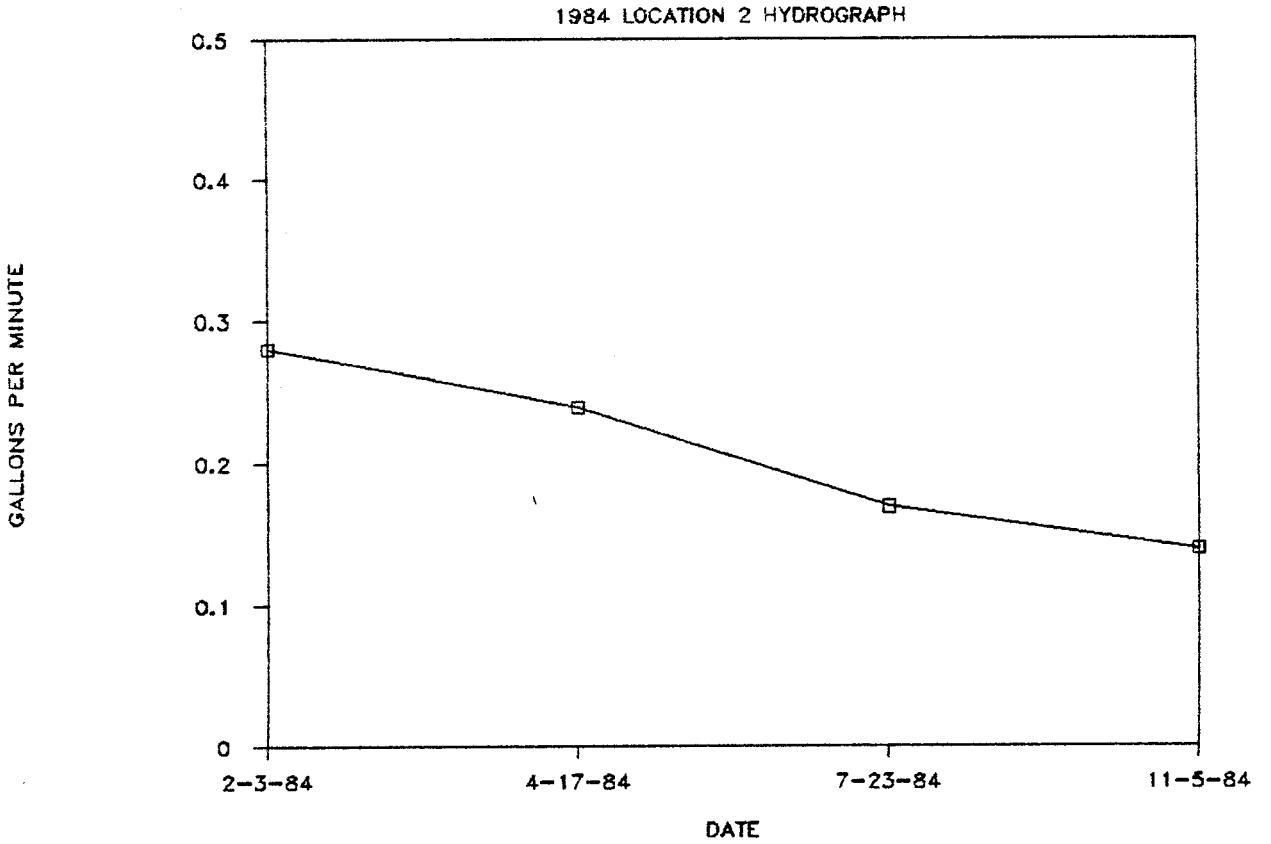
Respectfully submitted [signature] 11/28/84

Certified Environmental Laboratory

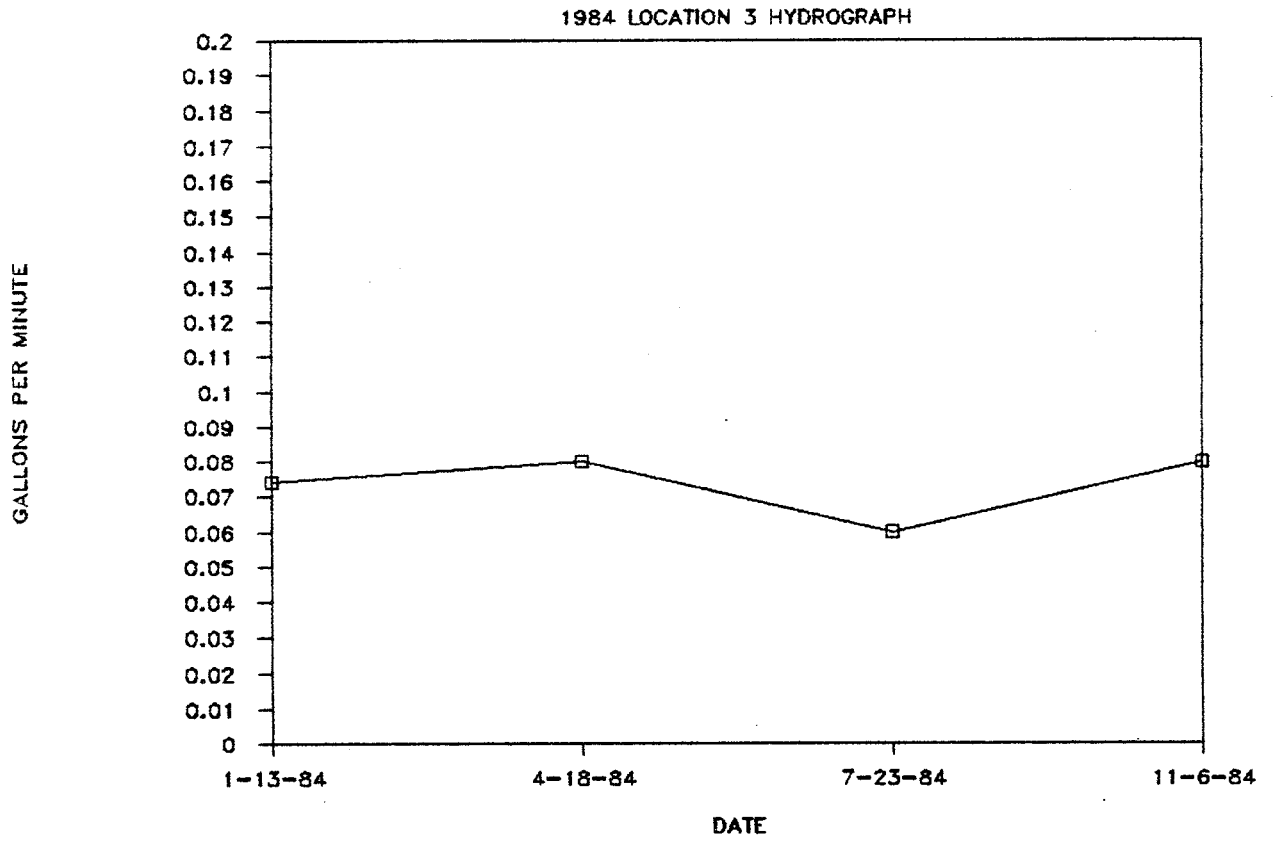
WILBERG IN-MINE WATER MONITORING



WILBERG IN-MINE WATER MONITORING

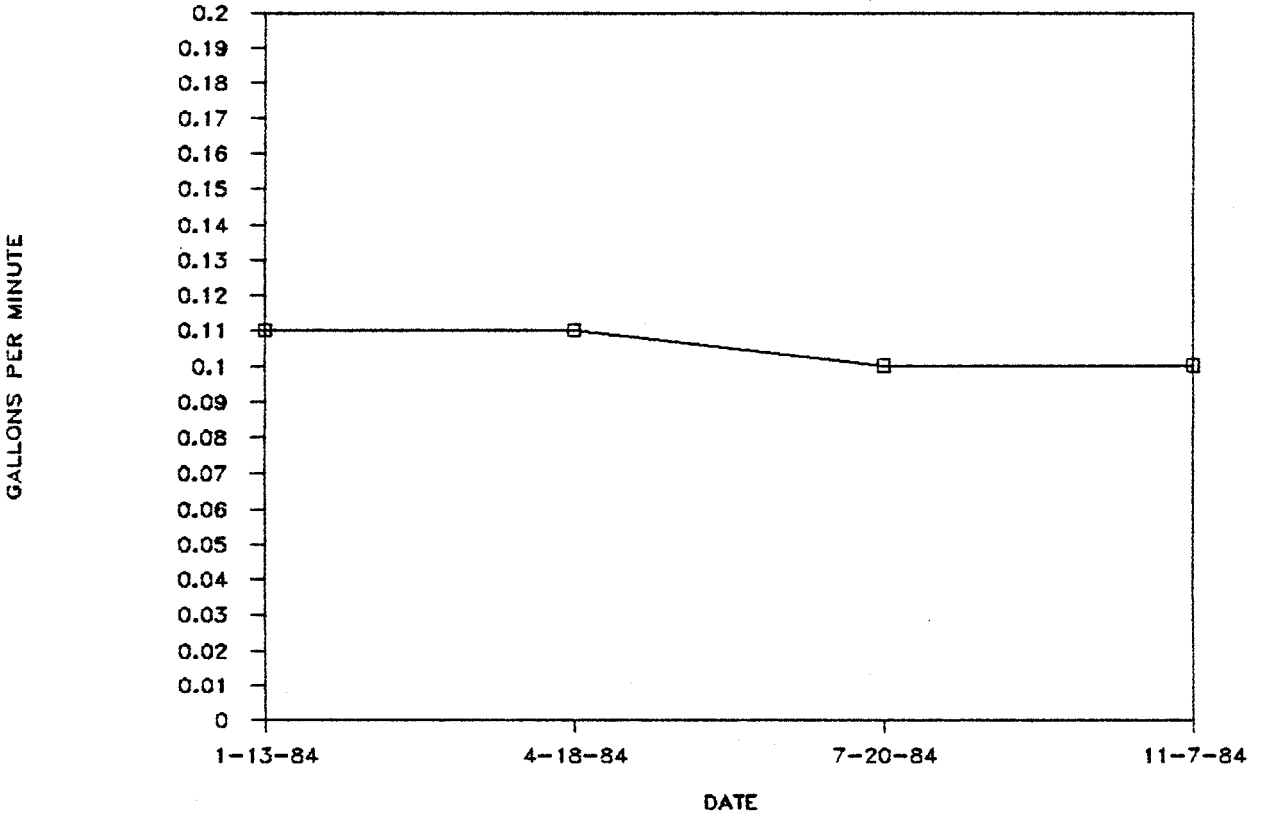


WILBERG IN-MINE WATER MONITORING



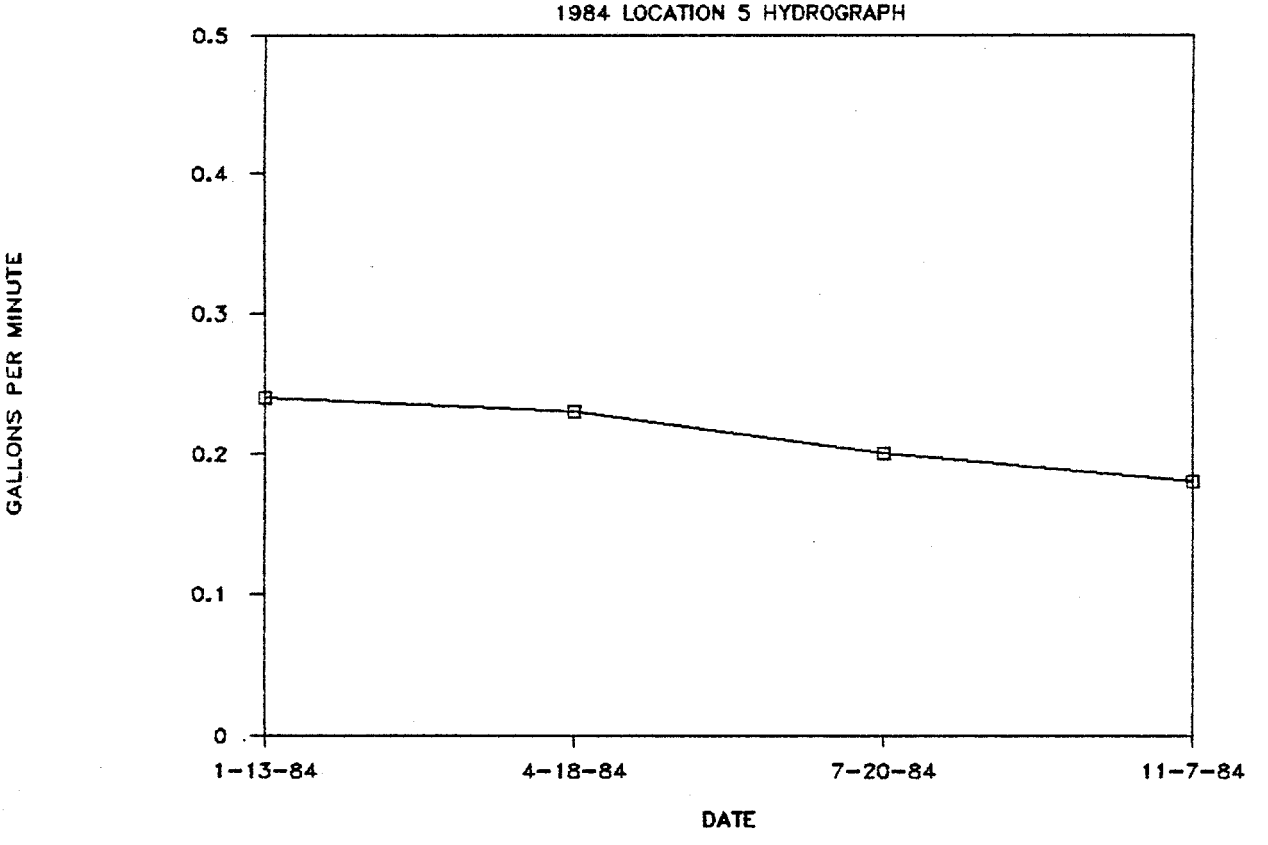
WILBERG IN-MINE WATER MONITORING

1984 LOCATION 4 HYDROGRAPH



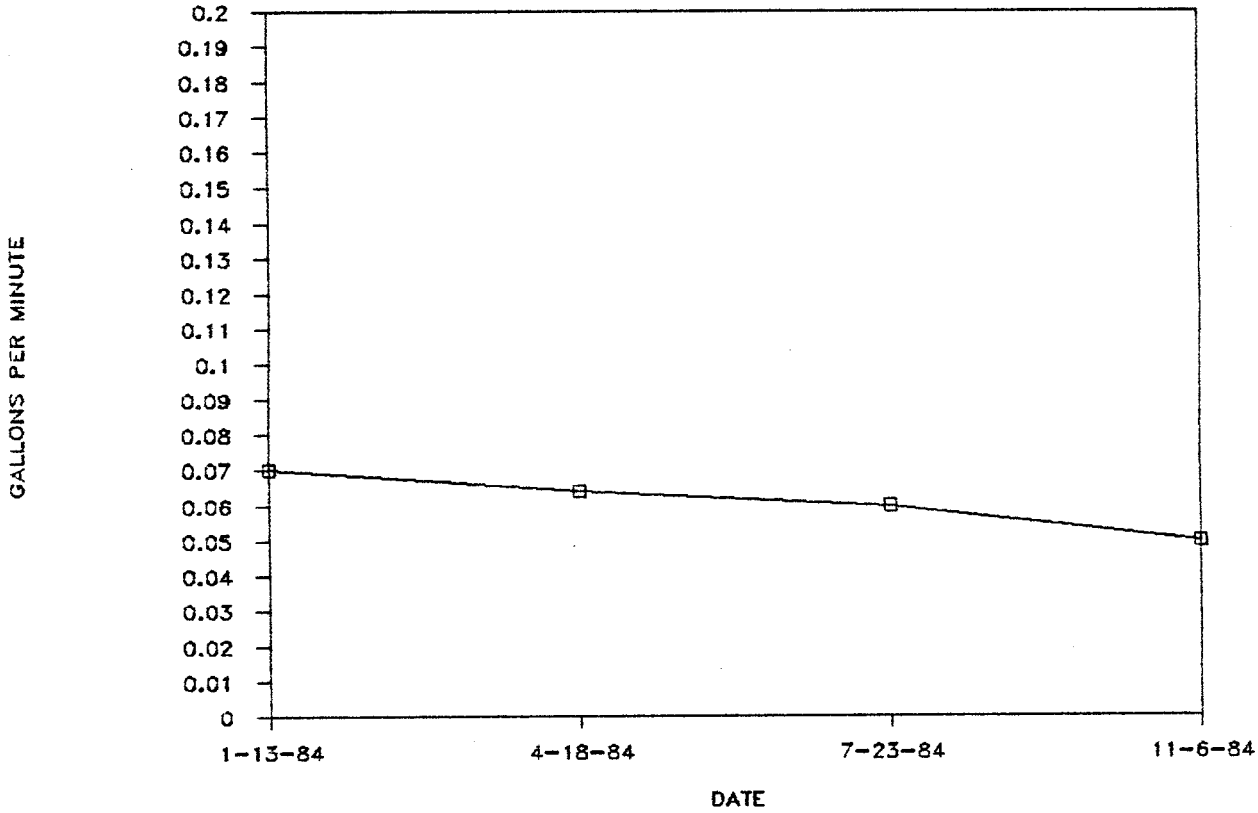
WILBERG IN-MINE WATER MONITORING

1984 LOCATION 5 HYDROGRAPH



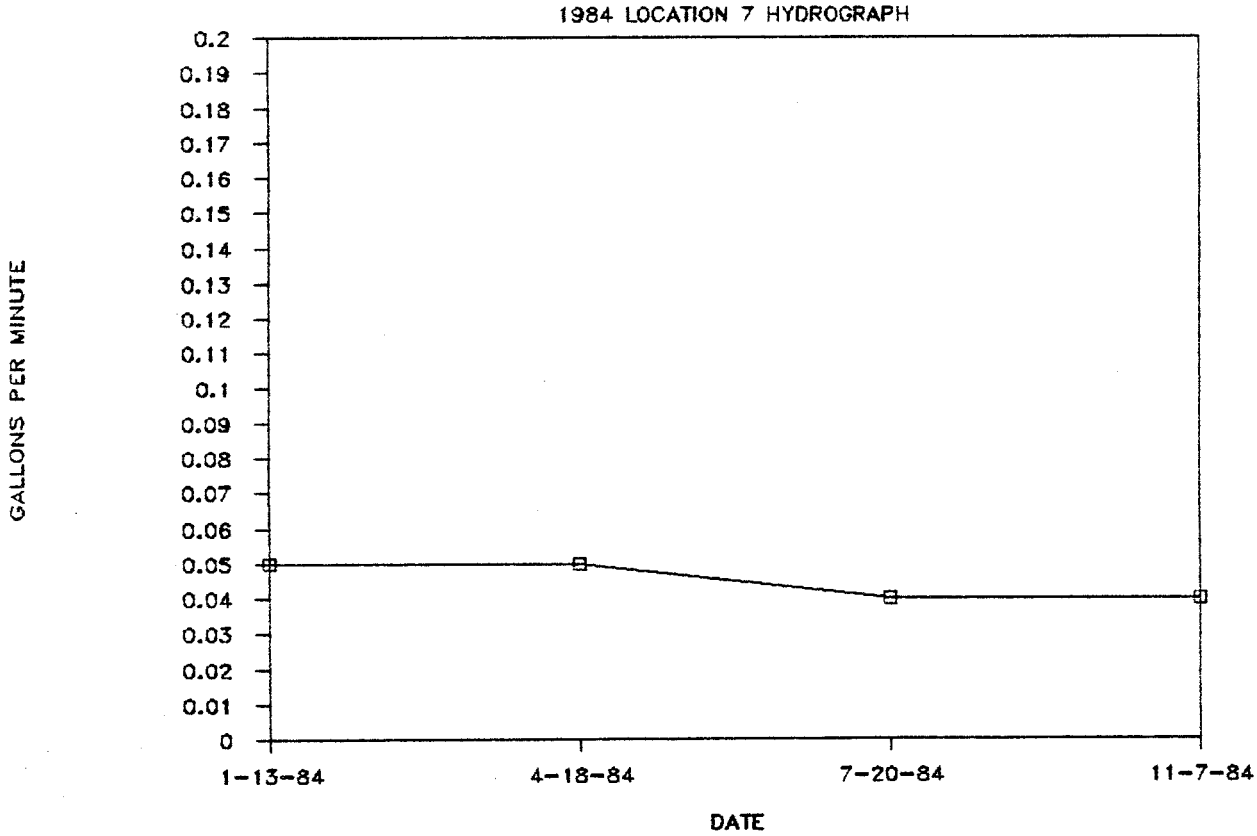
WILBERG IN-MINE WATER MONITORING

1984 LOCATION 6 HYDROGRAPH



WILBERG IN-MINE WATER MONITORING

1984 LOCATION 7 HYDROGRAPH



APPENDIX F

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5239
Date Rec'd 3-27-84
Date Sampled 3-26-84
Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek In-Mine
EM-3
Temp. 54°
Flow 3.51 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	395	mg/l $CaCO_3$	3/27
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	10.3	mg/l	3/27
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1000	umhos/cm	3/27
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.3	Units	3/27
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	579	mg/l	3/28
Solids, Total Suspended	< 0.5	mg/l	3/28
Sulfate	140	mg/l	3/27
Sulfide		mg/l	
Turbidity		NTU	
Cation, Total	11.15	meq/l	
Anion, Total	11.12	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	113.6	mg/l	3/28
Chromium		mg/l	
Copper		mg/l	
Iron		mg/l	
Lead		mg/l	
Magnesium	55.0	mg/l	3/28
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	3.1	mg/l	3/28
Selenium		mg/l	
Silica		mg/l	
Sodium	20.0	mg/l	3/27
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted 3/29/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5240
Date Rec'd 3-27-84
Date Sampled 3-26-84
Time Sampled 3-27-84

Client: Utah Power & Light
Field Office
Huntington, Utah 84528

Sample ID: Deer Creek In-Mine
3RD S xC - 33IL
Temp: 55
Flow: 0.46 GPM

Acidity			mg/l $CaCO_3$
Alkalinity, Total	3/27	330	mg/l $CaCO_3$
Alkalinity, Bicarbonate			mg/l $CaCO_3$
Alkalinity, Carbonate			mg/l $CaCO_3$
Chloride	3/27	8.7	mg/l
Coliform, Fecal			MPN/100 ml
Coliform, Total			MPN/100 ml
Conductivity	3/27	800	umhos/cm
Fluoride			mg/l
Hardness, Total			mg/l $CaCO_3$
Nitrogen, Ammonia			mg/l
Nitrogen, Nitrate			mg/l
Nitrogen, Nitrite			mg/l
Oil & Grease			mg/l
pH	3/27	7.4	Units
Phosphorus, Ortho			mg/l
Phosphorus, Total			mg/l
Solids, Total Dissolved	3/28	434	mg/l
Solids, Total Suspended	3/28	< 0.5	mg/l
Sulfate	3/27	63	mg/l
Sulfide			mg/l
Turbidity			NTU

Total Cations: 8.41 meq/l
Total Anions: 8.17 meq/l

Aluminum			mg/l
Arsenic			mg/l
Barium			mg/l
Beryllium			mg/l
Boron			mg/l
Cadmium			mg/l
Calcium	3/27	76.8	mg/l
Chromium			mg/l
Copper			mg/l
Iron			mg/l
Lead			mg/l
Magnesium	3/27	43.3	mg/l
Manganese			mg/l
Mercury			ug/l
Nickel			mg/l
Potassium	3/28	5.1	mg/l
Selenium			mg/l
Silica			mg/l
Sodium	3/27	20.3	mg/l
Vanadium			mg/l
Zinc			mg/l

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5636
Date Rec'd 6-19-84
Date Sampled 6-18-84
Time Sampled 1000

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek In-Mine
Temp 52°
1st S x C 40 1 L
Flow 0.44 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	364	mg/l $CaCO_3$	6/20
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	7.4	mg/l	6/20
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	900	umhos/cm	6/20
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
rogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	6.95	Units	6/20
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	497	mg/l	6/20
Solids, Total Suspended	2.5	mg/l	6/20
Sulfate	110	mg/l	6/20
Sulfide		mg/l	
Turbidity		NTU	
Cation, Total	9.95	meq/l	
Anion, Total	9.79	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	102.0	mg/l	6/20
Chromium		mg/l	
Copper		mg/l	
Iron		mg/l	
Lead		mg/l	
Magnesium	50.1	mg/l	6/20
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	2.3	mg/l	6/22
Selenium		mg/l	
Silica		mg/l	
Sodium	15.5	mg/l	6/22
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janney

Respectfully submitted David A Janney
06/25/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5635

Date Rec'd 6-19-84

Date Sampled 6-18-84

Time Sampled 1210 6-19-84

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek In-Mine
Temp 56°
3rd S "B" x C-21 1 R
Flow 0.79 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	363	mg/l $CaCO_3$	6/20
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	8.0	mg/l	6/20
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	900	umhos/cm	6/20
Fluoride		mg/l	
Hardness, Total	-	mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	6.85	Units	6/20
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	499	mg/l	6/21
Solids, Total Suspended	0.5	mg/l	6/21
Sulfate	116	mg/l	6/20
Sulfide		mg/l	
Turbidity		NTU	
Cation, Total	9.96	meq/l	
Anion, Total	9.92	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	96.0	mg/l	6/20
Chromium		mg/l	
Copper		mg/l	
Iron		mg/l	
Lead		mg/l	
Magnesium	52.3	mg/l	20
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	3.1	mg/l	6/22
Selenium		mg/l	
Silica		mg/l	
Sodium	18.0	mg/l	6/22
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janusz

Respectfully submitted David A Janusz
06/25/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6174
Date Rec'd 9-28-84
Date Sampled 9-28-84
Time Sampled 1155

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek In-Mine
EM-3
Temp. 56°
Flow 3.51 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	380	mg/l $CaCO_3$	10/1
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	10.1	mg/l	10/4
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	995	umhos/cm	10/1
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.0	Units	10/1
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	560	mg/l	10/5
Solids, Total Suspended	< 0.5	mg/l	10/5
Sulfate	135	mg/l	10/8
Sulfide		mg/l	
Turbidity		NTU	
Cation, Total	10.73	meq/l	
Anion, Total	10.70	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	114.0	mg/l	10/8
Chromium		mg/l	
Copper		mg/l	
Iron		mg/l	
Lead		mg/l	
Magnesium	52.2	mg/l	10/8
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	3.1	mg/l	10/8
Selenium		mg/l	
Silica		mg/l	
Sodium	15.0	mg/l	10/8
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 10/10/84

Analyst: [signature]

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6175
Date Rec'd 9-28-84
Date Sampled 9-28-84
Time Sampled 1315

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek In-Mine
3rd N x C-41 3 R
Temp. 54°
5.4 GPM

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	293	mg/l $CaCO_3$	10/1
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	4.0	mg/l	10/4
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	690	umhos/cm	10/1
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH	7.2	Units	10/1
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	340	mg/l	10/5
Solids, Total Suspended	< 0.5	mg/l	10/5
Sulfate	42	mg/l	10/8
Sulfide		mg/l	
Turbidity		NTU	
Cation, Total	6.87	meq/l	
Anion, Total	6.86	meq/l	

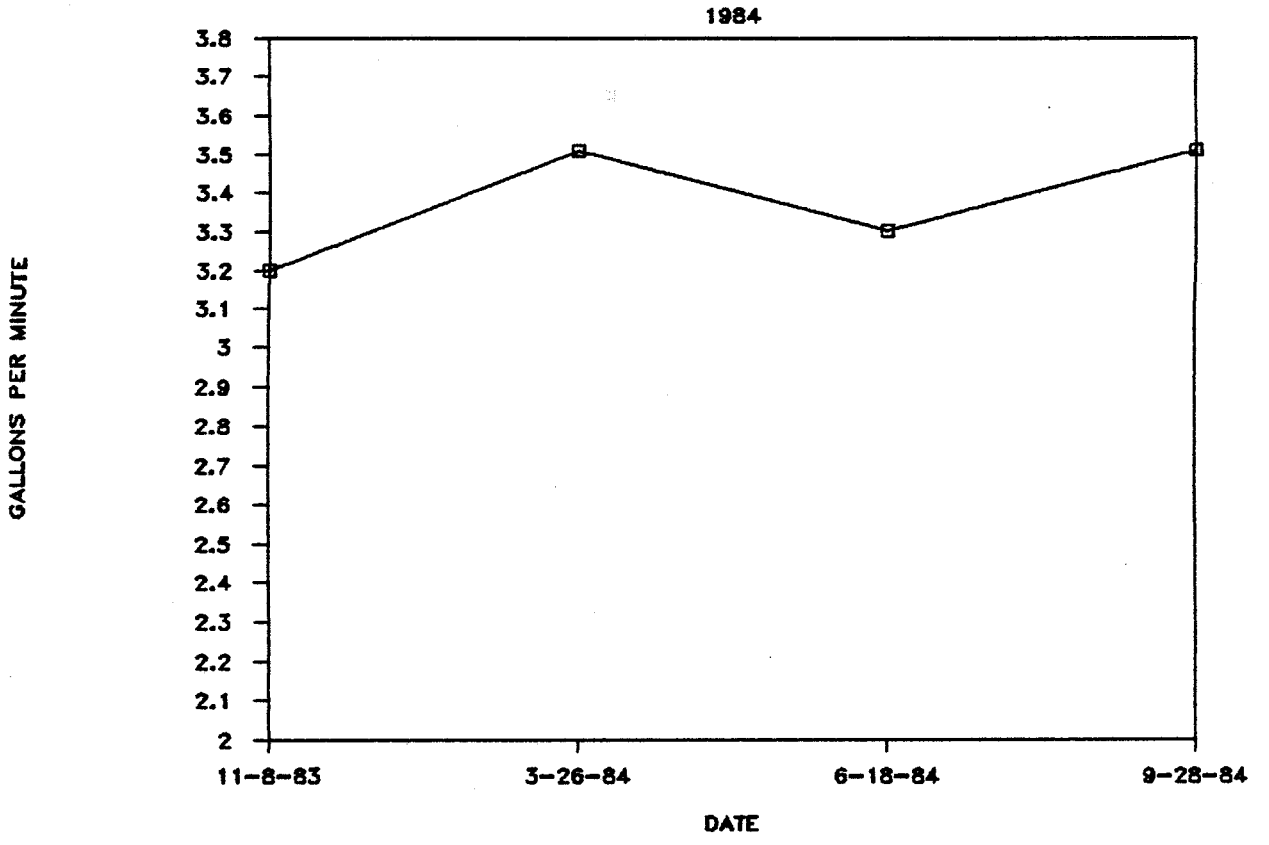
Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	66.0	mg/l	10/8
Chromium		mg/l	
Copper		mg/l	
Iron		mg/l	
Lead		mg/l	
Magnesium	35.0	mg/l	3
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	2.3	mg/l	10/8
Selenium		mg/l	
Silica		mg/l	
Sodium	14.0	mg/l	10/8
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Parrish

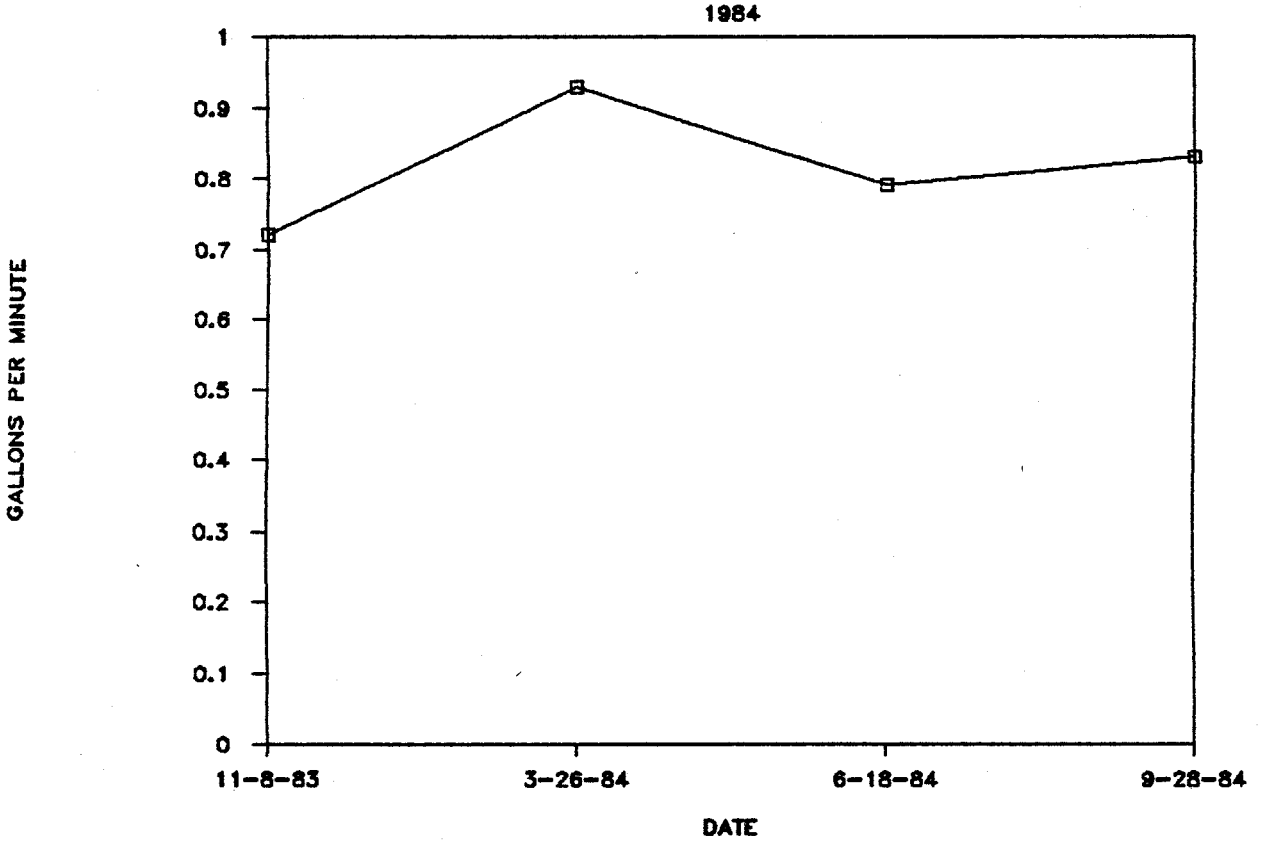
Respectfully submitted [signature] 10/10/84

Certified Environmental Laboratory

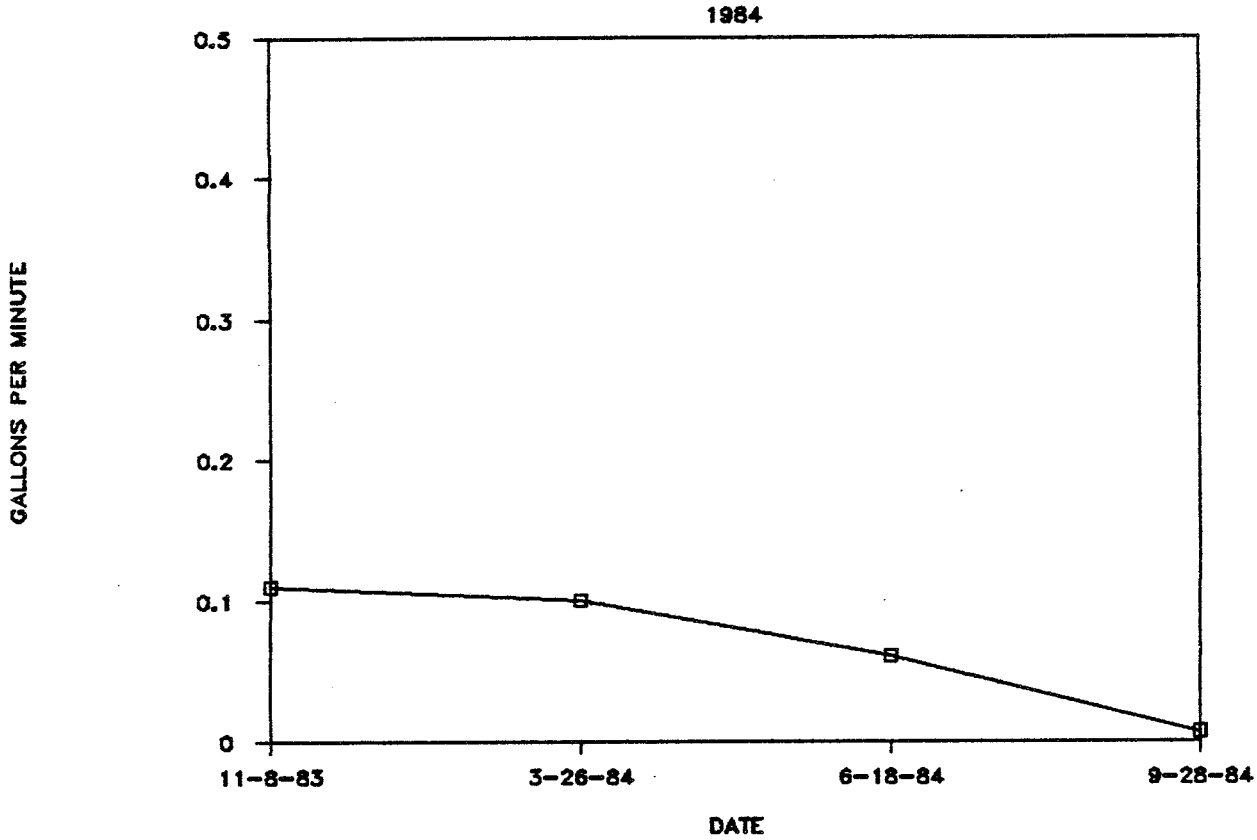
DEER CREEK IN-MINE MON. LOCATION 1



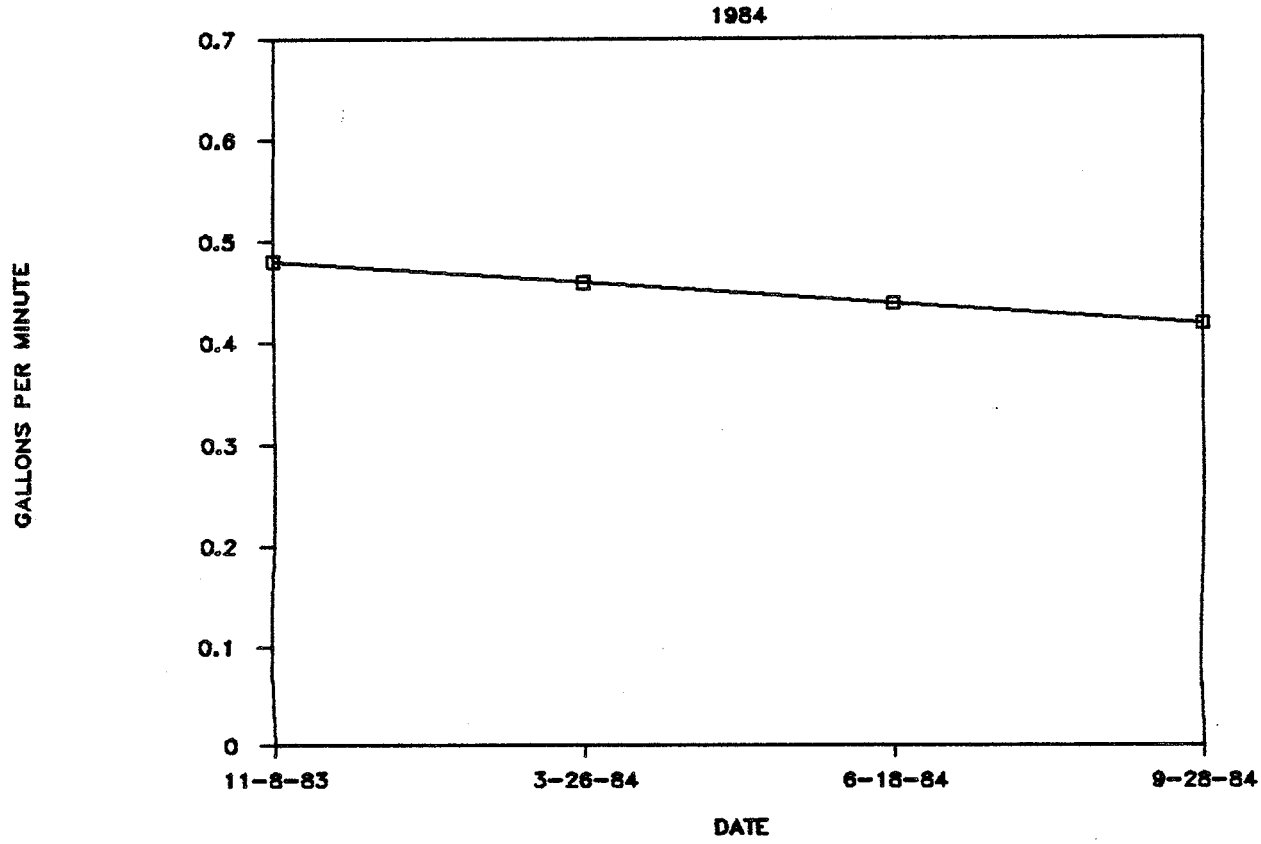
DEER CREEK IN-MINE MON. LOCATION 2

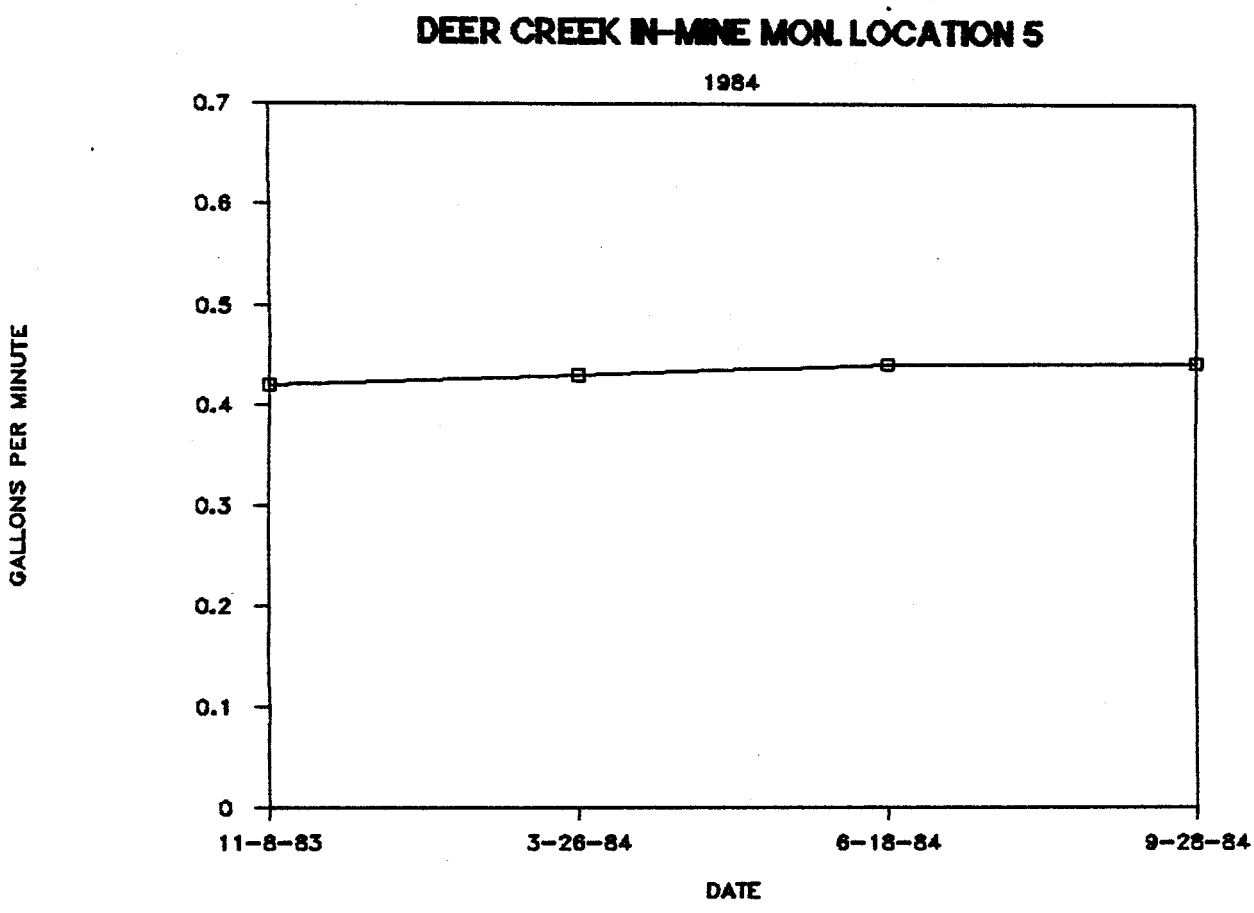


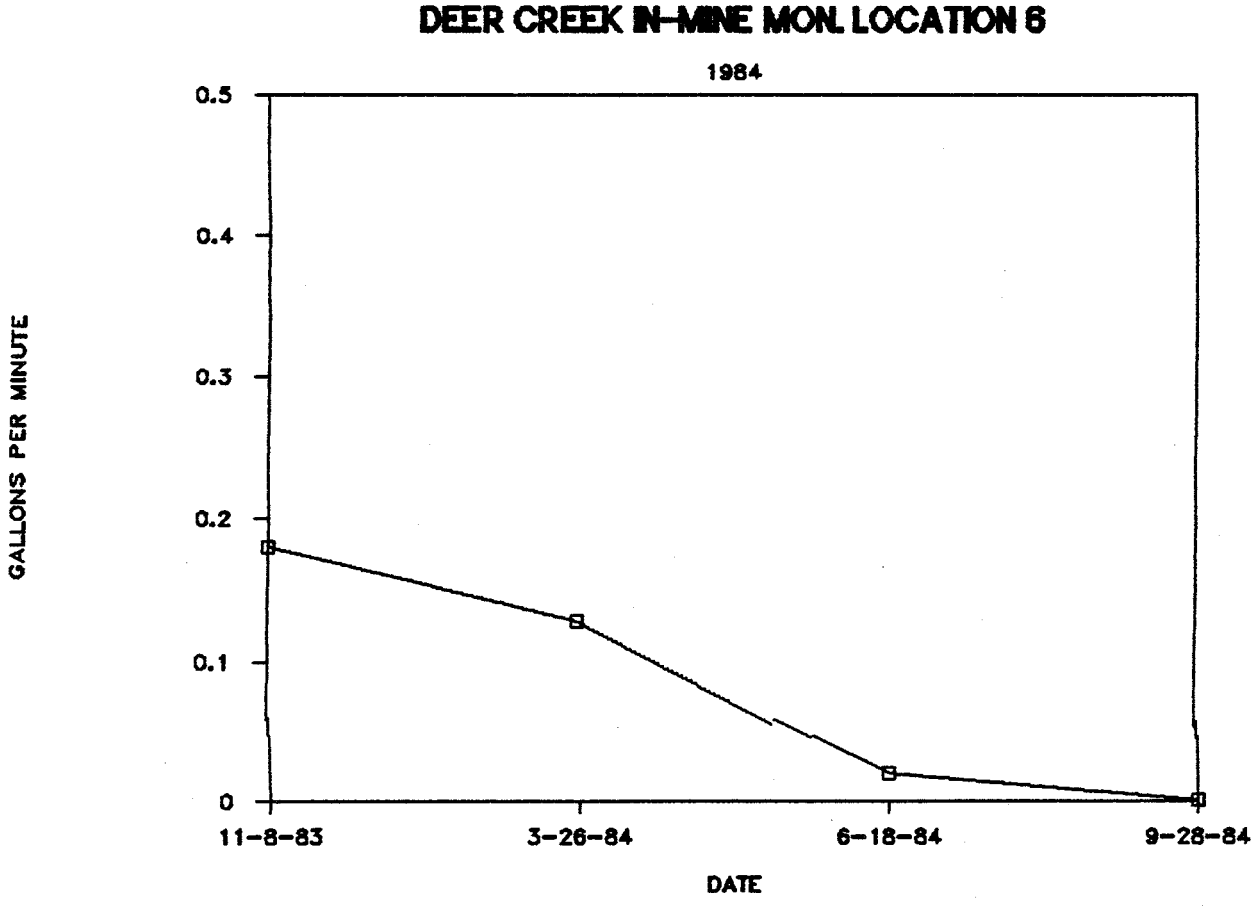
DEER CREEK IN-MINE MON. LOCATION 3



DEER CREEK IN-MINE MON. LOCATION 4




DEER CREEK IN-MINE MON. LOCATION 5
1984
GALLONS PER MINUTE
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
11-8-83
3-26-84
6-18-84
9-28-84
DATE


DEER CREEK IN-MINE MON. LOCATION 6
1984
GALLONS PER MINUTE
0.5
0.4
0.3
0.2
0.1
0
11-8-83
3-26-84
6-18-84
9-28-84
DATE

APPENDIX G

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

). Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 4962
Date Rec'd 1-9-84
Date Sampled 1-9-84
Time Sampled
TEMP. 53°

Client: Utah Power & Light co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Mine Discharge

Acidity	< 1.0	mg/l $CaCO_3$	1/10
Alkalinity, Total	289	mg/l $CaCO_3$	1/10
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	16.0	mg/l	1/10
Coliform, Fecal	< 2	MPN/100 ml	1/1
Coliform, Total	< 2	MPN/100 ml	1/1
Conductivity	1010	umhos/cm	1/10
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
rogen, Ammonia		mg/l	
itrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	1.5	mg/l	1/10
pH	7.4	Units	1/10
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	661	mg/l	1/10
Solids, Total Suspended	3.0	mg/l	1/10
Sulfate	275	mg/l	1/10
Sulfide		mg/l	
Turbidity		NTU	
B.O.D.5	13.0	mg/l	1/11

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.83	mg/l	1/10
Lead		mg/l	
Magnesium		mg/l	
Manganese	0.20	mg/l	1/10
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 1/16/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5079

Date Rec'd 2-14-84

Date Sampled 2-14-84

Time Sampled

TEMP. 54°

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Discharge

Acidity	< 1.0	mg/l $CaCO_3$	2/15
Alkalinity, Total	276	mg/l $CaCO_3$	2/15
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	13.2	mg/l	2/16
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1100	umhos/cm	2/15
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	0.7	mg/l	2/16
pH	7.8	Units	2/15
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	664	mg/l	2/15
Solids, Total Suspended	1.0	mg/l	2/15
Sulfate	270	mg/l	2/15
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.06	mg/l	2/15
Lead		mg/l	
Magnesium		mg/	
Manganese	0.01	mg/l	2/15
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 2/16

Certified Environmental Laboratory

UTAH POWER & LIGHT COMPANY

"Efficient Public Service"

TO Letter to the File FROM C. Semborski DATE April 16, 1984

ADDRESS

REPLYING TO DATE OUR FILE NO. CAS:lmt:336

SUBJECT TOTAL DISSOLVED SOLIDS (TDS) LEVEL FOR THE MONTH OF MARCH, WILBERG MINE DISCHARGE YOUR FILE NO.

Routine sampling of Wilberg Mine discharge water during the month of March, 1984, revealed a TDS level of 736 mg/l, which is believed to be in error. Upon receipt of the lab analysis, additional sampling with a split sample sent to another commerical lab was initiated. The table below summarizes the analytical results:

Date/Time	Primary Lab	Secondary Lab
	(TDS level mg/l)	
3-6-84/1420	763*	
3-9-84/1445	692	680
3-12-84/1600	720	680
3-16-84/930	650	540

*With a consistent historical TDS level, the 763 mg/l value is believed to be in error. The chemist reported a white residue in the evaporating dish. This could have been carbonate or sulfate precipitate as a result of improper oven temperature. The metals which constitute the TDS level (i.e. alkalinity, chloride, sulfate, calcium, magnesium and potassium) remained at historical levels.

The value utilized in the EPA self-monitoring report was the average of the seven values = 675 mg/l.

CAS:lmt
Attachments
cc: C. Shingleton
R. Fry
L. Guymon - EMC

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5130
Date Rec'd 3-6-84
Date Sampled 3-6-84
Time Sampled 1420

Client: Utah Power & Light co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Discharge

TEMP. 54°/225 GPM

Acidity	< 1.0	mg/l $CaCO_3$	3/7
Alkalinity, Total	269	mg/l $CaCO_3$	3/7
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	15.8	mg/l	3/7
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1090	umhos/cm	3/7
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	< 0.5	mg/l	3/6
pH	7.85	Units	3/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	~~675~~ 763	mg/l	3/7
Solids, Total Suspended	< 0.5	mg/l	3/7
Sulfate	230	mg/l	3/7
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	3/7
Lead		mg/l	
Magnesium		mg/	
Manganese	< 0.01	mg/l	3/7
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 3/7/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5163
Date Rec'd 3-12-84
Date Sampled 3-12-84
Time Sampled 1445

TEMP. 51° / 475 GPM

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Mine Discharge

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	692	mg/l 3/12
Solids, Total Suspended		mg/l
Sulfate		mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Magnesium		mg/l
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium		mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted [signature] 3/13/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5182
Date Rec'd 3-13-84
Date Sampled 3-12-84
Time Sampled 1600
TEMP 52° /475 GPM

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Discharge

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	720	mg/l 3/13
Solids, Total Suspended		mg/l
Sulfate		mg/l
Sulfide		mg/l
Turbidity		NTU

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Magnesium		mg/
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium		mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted [signature] 3/13/84

Certified Environmental Laboratory

Date: May 3, 1984

BOOKCLIFFS COMMERCIAL LABORATORIES
WATER ANALYSIS REPORT

Client: Utah Power and Light
Address: Mining and Exploration Field Office
P.O. Box 1005
Huntington, UT 84528
Attn: Mr. Chuck Semborski

Sample Date: 4/12/84
Date Received: 4/13/84

Sample I.D. Wilberg Mine Discharge 11:35

Lab No. 84-1704-W

Parameter	Concentration mg/l	Parameter	Concentration mg/l
Acidity (as $CaCO_3$)	0	Manganese	0.03
Alkalinity (as $CaCO_3$)	257	Oil & Grease	<1
BOD	<1	pH (units)	7.2
Calcium	102	Potassium	4.6
Chloride	13	Sodium	35
Coliforms, Total[1]	45 to 200*	Solids, Dissolved[3]	710
Coliforms, Fecal[1]	<4	Solids, Dissolved[4]	685
Conductivity[2]	1,010	Solids, Suspended	<4
Iron	0.10	Sulfate	317
Magnesium	59		

NOTE: Metals are total
1 (#/100mls)
2 (umhos/cm @ 25°C)
3 Measured value
4 Calculated value
* Excessive growth of non-coliform colonies prevented precise counting of total coliform colonies on the membrane filters.

Ralph V. Poulsen

Ralph V. Poulsen, Director

BOOKCLIFFS
COMMERCIAL LABORATORIES

Ford Chemical
LABORATORY, INC.
Bacteriological and Chemical Analysis
40 WEST LOUISE AVENUE
SALT LAKE CITY, UTAH 84115
PHONE 466-8761

DATE: 03/27/84
CERTIFICATE OF ANALYSIS

UTAH POWER & LIGHT
MINING & EXPLORATION
P.O. BOX 899
SLC, UT 84110

84-006377

SAMPLE: WILBERG MINE DISCHARGE WATER SAMPLE COLLECTED 3-16-84, 9:30
RECEIVED 3-22-84 FOR ANALYSIS.

	RESULTS
Alkalinity, CaCO3 mg/l SM403	125
Calcium, Ca mg/l SM303A	35.20
Chloride, Cl mg/l SM407A	24.6
Conductivity umhos/cm SM205	980
Magnesium, Mg mg/l SM303A	12.90
Potassium, K mg/l SM303A	4.7
Sodium, Na mg/l SM303A	37.80
Sulfate, SO4 mg/l SM426D	256
Total Dis. Solids mg/l SM209B	540
pH Units SM423	7.50

FORD CHEMICAL LABORATORY, INC.

All reports are submitted as the confidental property of clients. Authorization for publication of our reports, conclusions, or, extracts from or regarding them, is reserved pending our written approval as a mutual protection to clients, the public and ourselves.

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5207
Date Rec'd 3-19-84
Date Sampled 3-16-84
Time Sampled 930
TEMP 55° /475GPM

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Mine Discharge

Acidity		mg/l $CaCO_3$	
Alkalinity, Total	267	mg/l $CaCO_3$	3/19
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	16.0	mg/l	3/19
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1100	umhos/cm	3/19
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease		mg/l	
pH		Units	
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	650	mg/l	3/19
Solids, Total Suspended		mg/l	
Sulfate	300	mg/l	3/19
Sulfide		mg/l	
Turbidity		NTU	
Cation, Total	12.23	meq/l	
Anion, Total	12.10	meq/l	
TDS (Calculated)	689	mg/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	110.4	mg/l	3/19
Chromium		mg/l	
Copper		mg/l	
Iron		mg/l	
Lead		mg/l	
Magnesium	60.6	mg/	
Manganese		mg/l	
Mercury		ug/l	
Nickel		mg/l	
Potassium	5.0	mg/l	3/1
Selenium		mg/l	
Silica		mg/l	
Sodium	37.0	mg/l	3/19
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 3/19/84

Certified Environmental Laboratory

Ford Chemical
LABORATORY, INC.
Bacteriological and Chemical Analysis
40 WEST LOUISE AVENUE
SALT LAKE CITY, UTAH 84115
PHONE 466-8761

DATE: 03/19/84

CERTIFICATE OF ANALYSIS

UTAH POWER & LIGHT
MINING & EXPLORATION
P.O. BOX 899
SLC, UT 84110

84-008080

SAMPLE: WATER SAMPLES FROM WILBERG MINE RECEIVED 3-15-84 FOR ANALYSIS.

	WILBERG MINE DISCHARGE 3-9-84 14:45	WILBERG DISCHARGE 1600 3-12-84
STANDARD LAB #	5163	5182
Conductivity umhos/cm SM205	980	985
Total Dis. Solids mg/l SM209B	680	680

Lyle Ford KC
FORD CHEMICAL LABORATORY, INC.

All reports are submitted as the confidental property of clients. Authorization for publication of our reports, conclusions, or, extracts from or regarding them, is reserved pending our written approval as a mutual protection to clients, the public and ourselves.

Ford Chemical
LABORATORY, INC.
Bacteriological and Chemical Analysis
40 WEST LOUISE AVENUE
SALT LAKE CITY, UTAH 84115
PHONE 466-8761

DATE: 05/16/84

CERTIFICATE OF ANALYSIS

UTAH POWER & LIGHT
FIELD OFFICE
P.O. 1005
HUNTINGTON, UT 84528

84-009285

SAMPLE: WILBERG MINE DISCHARGE SAMPLE COLLECTED 4-12-84 RECEIVED 4-13-84 FOR ANALYSIS.

	RESULTS
Acidity as CaCO3 mg/l	10.00
Alkalinity,CaCO3 mg/l SM403	156
BOD Total 5 Day mg/l SM507	11.8
Calcium, Ca mg/l SM303A	130.00
Chloride, Cl mg/l SM407A	46.0
Conductivity umhos/cm SM205	720
Iron, Fe (Tot) mg/l SM303A	.06
MPN Fecal Coli/100 ml SM908C	2
MPN Total Coli/100 ml SM908A	79.0
Magnesium, Mg mg/l SM303A	20.60
Manganese,Mn (Tot) mgl SM303A	.01
Oil and Grease mg/l SM503C	<.1
Potassium, K mg/l SM303A	4.6

All reports are submitted as the confidental property of clients. Authorization for publication of our reports, conclusions, or, extracts from or regarding them, is reserved pending our written approval as a mutual protection to clients, the public and ourselves.

Ford Chemical
LABORATORY, INC.
Bacteriological and Chemical Analysis
40 WEST LOUISE AVENUE
SALT LAKE CITY, UTAH 84115
PHONE 466-8761

CERTIFICATE OF ANALYSIS
83-009285

	RESULTS
Sodium, Na mg/l SM303A	35.70
Sulfate, SO4 mg/l SM426D	123
Suspended Solids mg/l SM 209D	11.0
Total Dis. Solids mg/l SM209B	465
pH Units SM423	8.00

FORD CHEMICAL LABORATORY, INC.

All reports are submitted as the confidental property of clients. Authorization for publication of our reports, conclusions, or, extracts from or regarding them, is reserved pending our written approval as a mutual protection to clients, the public and ourselves.

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5291
Date Rec'd 4-12-84
Date Sampled 4-12-84
Time Sampled 1135
TEMP. 52°/475 GPM

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Mine Discharge

Acidity	< 1.0	mg/l $CaCO_3$	4/12
Alkalinity, Total	278	mg/l $CaCO_3$	4/12
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	13.5	mg/l	4/13
Coliform, Fecal	< 2	MPN/100 ml	4/19
Coliform, Total	< 2	MPN/100 ml	4/19
Conductivity	1000	umhos/cm	4/12
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	< 0.5	mg/l	4/17
pH	7.7	Units	4/12
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	678	mg/l	4/13
Solids, Total Suspended	5.0	mg/l	4/13
Sulfate	280	mg/l	4/13
Sulfide		mg/l	
Turbidity		NTU	
Cation, Total	12.16	meq/l	
Anion, Total	11.78	meq/l	
TDS (calculated)	671	mg/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	106.0	mg/l	4/13
Chromium		mg/l	
Copper		mg/l	
Iron	0.05	mg/l	4/12
Lead		mg/l	
Magnesium	62.0	mg/l	4/13
Manganese	< 0.01	mg/l	4/12
Mercury		ug/l	
Nickel		mg/l	
Potassium	4.7	mg/l	4/16
Selenium		mg/l	
Silica		mg/l	
Sodium	37.8	mg/l	4/13
Vanadium		mg/l	
Zinc		mg/l	
B.O.D. 5	1.3	mg/l	4/13

Respectfully submitted [signature] 4/23/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5338

Date Rec'd 4-19-84

Date Sampled 4-19-84

Time Sampled 1000

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Discharge
EPA Split
pH 7.2
Flow 450 GPM
TEMP. 52°

Acidity	< 1.0	mg/l $CaCO_3$	4/20
Alkalinity, Total	278	mg/l $CaCO_3$	4/20
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	13.3	mg/l	4/20
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1025	umhos/cm	4/20
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	0.7	mg/l	4/23
pH	7.8	Units	4/20
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	670	mg/l	4/23
Solids, Total Suspended	4.5	mg/l	4/23
Sulfate	310	mg/l	4/20
Sulfide		mg/l	
Turbidity		NTU	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.07	mg/l	4/19
Lead		mg/l	
Magnesium		mg/	
Manganese	< 0.01	mg/l	4/23
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 4-23-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

). Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5403
Date Rec'd 5-7-84
Date Sampled 5-7-84
Time Sampled 1310

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Mine Discharge
Temp 54°

225 GPM

Acidity	< 1.0	mg/l $CaCO_3$	5/8
Alkalinity, Total	268	mg/l $CaCO_3$	5/8
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	13.9	mg/l	5/8
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1100	umhos/cm	5/8
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	< 0.5	mg/l	5/9
pH	7.7	Units	5/8
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	694	mg/l	5/9
Solids, Total Suspended	7.5	mg/l	5/9
Sulfate	300	mg/l	5/8
Sulfide		mg/l	
Turbidity		NTU	
Cation, Total	11.94	meq/l	
Anion, Total	12.00	meq/l	
Calculated TDS	681	mg/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	102.0	mg/l	5/9
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	5/8
Lead		mg/l	
Magnesium	62.0	mg/l	5/9
Manganese	< 0.01	mg/l	5/8
Mercury		ug/l	
Nickel		mg/l	
Potassium	5.2	mg/l	5/8
Selenium		mg/l	
Silica		mg/l	
Sodium	36.8	mg/l	5/8
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janusz

Respectfully submitted: [illegible] 5-9-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5416
Date Rec'd 5-9-84
Date Sampled 5-9-84
Time Sampled 940

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: State Split
Wilberg Mine Discharge
Field Test 11.4°
pH 7.7
D.O. 7.2 Cond. 969

Acidity	< 1.0	mg/l $CaCO_3$	5/10
Alkalinity, Total	258	mg/l $CaCO_3$	5/10
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	14.2	mg/l	5/11
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1100	umhos/cm	5/10
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	< 0.5	mg/l	5/11
pH	7.7	Units	5/10
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	689	mg/l	5/11
Solids, Total Suspended	6.3	mg/l	5/11
Sulfate	280	mg/l	5/11
Sulfide		mg/l	
Turbidity		NTU	
Cation, Total	11.79	meq/l	
Anion, Total	11.40	meq/l	
Calculated TDS	651	mg/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	102.0	mg/l	5/11
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	5/11
Lead		mg/	
Magnesium	62.0	mg/l	5/11
Manganese	0.01	mg/l	5/11
Mercury		ug/l	
Nickel		mg/l	
Potassium	4.7	mg/l	5/11
Selenium		mg/l	
Silica		mg/l	
Sodium	33.9	mg/l	5/11
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 6/12/84

Ammended Report to include Chloride

Analyst: David A. Janus

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5525
Date Rec'd 6-6-84
Date Sampled 6-5-84
Time Sampled 1325

Client: Utah Power & Light co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Mine Discharge
Temp. 56°

225 GPM

Acidity	< 1.0	mg/l $CaCO_3$	6/7
Alkalinity, Total	260	mg/l $CaCO_3$	6/7
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	13.0	mg/l	6/7
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1100	umhos/cm	6/7
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	< 0.5	mg/l	6/12
pH	7.6	Units	6/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	677	mg/l	6/7
Solids, Total Suspended	2.5	mg/l	6/7
Sulfate	300	mg/l	6/7
Sulfide		mg/l	
Turbidity		NTU	
Oxygen, Dissolved	9.0	mg/l	6/6
Cation, Total	12.18	meq/l	
Anion, Total	11.82	meq/l	
Calculated TDS	679	mg/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	104.0	mg/l	6/7
Chromium		mg/l	
Copper		mg/l	
Iron	0.09	mg/l	6/6
Lead		mg/l	
Magnesium	64.4	mg/l	6/7
Manganese	0.01	mg/l	6/7
Mercury		ug/l	
Nickel		mg/l	
Potassium	6.0	mg/l	6/7
Selenium		mg/l	
Silica		mg/l	
Sodium	35.3	mg/l	6/7
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 6/12/84

Analyst: David A Ramos

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5524

Date Rec'd 6-6-84

Date Sampled 6-5-84 (6-6)

Time Sampled

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Mine Discharge
State Split

Acidity	< 1.0	mg/l $CaCO_3$	6/7
Alkalinity, Total	260	mg/l $CaCO_3$	6/7
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	12.0	mg/l	6/7
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1010	umhos/cm	6/7
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	< 0.5	mg/l	6/12
pH	7.6	Units	6/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	645	mg/l	6/7
Solids, Total Suspended	3.8	mg/l	6/7
Sulfate	275	mg/l	6/7
Sulfide		mg/l	
Turbidity		NTU	
Oxygen, Dissolved	8.6	mg/l	6/6
Cation, Total	11.41	meq/l	
Anion, Total	11.27	meq/l	
Calculated TDS	638	mg/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	91.2	mg/l	6/7
Chromium		mg/l	
Copper		mg/l	
Iron	0.09	mg/l	6/6
Lead		mg/l	
Magnesium	62.5	mg/l	
Manganese	0.01	mg/l	6/7
Mercury		ug/l	
Nickel		mg/l	
Potassium	6.0	mg/l	6/7
Selenium		mg/l	
Silica		mg/l	
Sodium	36.0	mg/l	6/7
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted 6/12/84

Analyst: David A Ganey

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5752
Date Rec'd 7-16-84
Date Sampled 7-16-84
Time Sampled 950

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Mine Discharge
Quarterly
Temp 58°
Flow 425 GPM

Acidity	< 1.0	mg/l $CaCO_3$	7/17
Alkalinity, Total	260	mg/l $CaCO_3$	7/17
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	13.6	mg/l	7/23
Coliform, Fecal	< 2	MPN/100 ml	7/19
Coliform, Total	< 2	MPN/100 ml	7/19
Conductivity	1100	umhos/cm	7/17
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	< 0.5	mg/l	7/25
pH	7.2	Units	7/17
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	645	mg/l	7/25
Solids, Total Suspended	< 0.5	mg/l	7/25
Sulfate	290	mg/l	7/19
Sulfide		mg/l	
Turbidity		NTU	
Oxygen, Diss.	8.8	mg/l	7/16
Cation, Total	11.73	meq/l	
Anion, Total	11.63	meq/l	
Calculated TDS	662	mg/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	104.0	mg/l	7/20
Chromium		mg/l	
Copper		mg/l	
Iron	0.06	mg/l	7/18
Lead		mg/l	
Magnesium	63.3	mg/l	7/20
Manganese	0.02	mg/l	7/18
Mercury		ug/l	
Nickel		mg/l	
Potassium	4.6	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	30.6	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 7-25-84

Analyst: David A Janusz

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5849
Date Rec'd 8-3-84
Date Sampled 8-2-84
Time Sampled 1030

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Discharge
Temp. 56°
Flow 225 GPM

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved		mg/l
Solids, Total Suspended		mg/l
Sulfate		mg/l
Sulfide		mg/l
Turbidity		NTU
B.O.D. 5	< 1.0	mg/l 8/3

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Magnesium		mg/l
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium		mg/l
Vanadium		mg/l
Zinc		mg/l

Analyst: David A Janney

Respectfully submitted David A Janney
8-9-84

Certified Environmental Laboratory

Ford Chemical
LABORATORY, INC.
Bacteriological and Chemical Analysis
40 WEST LOUISE AVENUE
SALT LAKE CITY, UTAH 84115
PHONE 466-8761

DATE: 09/12/84

CERTIFICATE OF ANALYSIS

UTAH POWER & LIGHT
FIELD OFFICE
P.O. 1005
HUNTINGTON, UT 84528

84-002898

SAMPLE: WATER SAMPLES COLLECTED ON 8-6-84 RECEIVED 8-7-84 FOR ANALYSIS.

	WILBERG MINE DISCHARGE FLOW 225 GPM	DEER CR. DISCHARGE FLOW 298 GPM
Gross Alpha pci/l	<2.0	<2.0
Gross Beta pci/l	<3.0	<3.0
Tot.Organic Carbon mg/l SM505	58.31	60.78

FORD CHEMICAL LABORATORY, INC.

All reports are submitted as the confidental property of clients. Authorization for publication of our reports, conclusions, or, extracts from or regarding them, is reserved pending our written approval as a mutual protection to clients, the public and ourselves.

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5858
Date Rec'd 8-7-84
Date Sampled 8-6-84 (8-7)
Time Sampled 1234

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Mine Discharge
Temp. 57°
Flow 225 GPM

Acidity	< 1.0	mg/l $CaCO_3$	8/7
Alkalinity, Total	258	mg/l $CaCO_3$	8/7
Alkalinity, Bicarbonate	314	mg/l ~~$CaCO_3$~~ HCO_3	8/7
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	13.1	mg/l	8/10
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1080	umhos/cm	8/7
Fluoride	0.30	mg/l	8/10
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite	< 0.01	mg/l	8/7
Oil & Grease	< 0.5	mg/l	8/13
pH	7.6	Units	8/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total	< 0.01	mg/l	8/7
Solids, Total Dissolved	699	mg/l	8/10
Solids, Total Suspended	< 0.5	mg/l	8/10
Sulfate	280	mg/l	8/10
Sulfide		mg/l	
Turbidity		NTU	
TKN	0.17	mg/l	8/7
Cation, Total	11.68	meq/l	
Anion, Total	11.36	meq/l	
Calculated TDS	648	mg/l	

Aluminum		mg/l	
Arsenic	< 0.001	mg/l	8/10
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium	< 0.005	mg/l	8/13
Calcium	104.0	mg/l	8/13
Chromium		mg/l	
Copper		mg/l	
Iron	0.07	mg/l	8/7
Lead	< 0.05	mg/l	8/13
Magnesium	62.0	mg/	13
Manganese	< 0.01	mg/l	8/7
Mercury		ug/l	
Nickel		mg/l	
Potassium	5.0	mg/l	8/10
Selenium	< 0.005	mg/l	8/10
Silica	4.20	mg/l	8/10
Sodium	28.8	mg/l	8/10
Vanadium		mg/l	
Zinc	0.035	mg/l	8/13
Oxygen, Diss.	6.8	mg/l	8/7

Analyst: David A Jensen

Respectfully submitted [signature] 8-16-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6034
Date Rec'd 9-10-84
Date Sampled 9-10-84
Time Sampled 1255

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Mine Discharge

Acidity	< 1.0	mg/l $CaCO_3$	9/11
Alkalinity, Total	242	mg/l $CaCO_3$	9/11
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	18.0	mg/l	9/18
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1080	umhos/cm	9/11
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	< 0.5	mg/l	9/17
pH	7.5	Units	9/11
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	669	mg/l	9/13
Solids, Total Suspended	< 0.5	mg/l	9/13
Sulfate	275	mg/l	9/18
Sulfide		mg/l	
Turbidity		NTU	
Dissolved Oxygen	7.8	mg/l	9/11
Cation Total	11.69	meq/l	
Anion Total	11.10	meq/l	
Calculated TDS	638	mg/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	108.0	mg/l	9/11
Chromium		mg/l	
Copper		mg/l	
Iron	< 0.05	mg/l	9/12
Lead		mg/l	
Magnesium	61.0	mg/l	9/11
Manganese	< 0.01	mg/l	9/12
Mercury		ug/l	
Nickel		mg/l	
Potassium	4.0	mg/l	9/11
Selenium		mg/l	
Silica		mg/l	
Sodium	27.0	mg/l	9/11
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted

Analyst: David A. Johnson

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6193
Date Rec'd 10-8-84
Date Sampled 10-8-84
Time Sampled 1235

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Mine Discharge
Quarterly
Temp. 57°
Flow 400 GPM

Acidity	< 1.0	mg/l $CaCO_3$	10/9
Alkalinity, Total	253	mg/l $CaCO_3$	10/9
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	13.2	mg/l	10/15
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1000	umhos/cm	10/9
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	< 0.5	mg/l	10/16
pH	7.9	Units	10/9
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	689	mg/l	10/16
Solids, Total Suspended	< 0.5	mg/l	10/16
Sulfate	300	mg/l	10/11
Sulfide		mg/l	
Turbidity		NTU	
B.O.D. 5	< 1	mg/l	10/10
Dissolved Oxygen	8.8	mg/l	10/9
Cation, Total	11.78	meq/l	
Anion, Total	11.68	meq/l	
Calculated TDS	666.1	mg/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	108.0	mg/l	10/11
Chromium		mg/l	
Copper		mg/l	
Iron	0.05	mg/l	10/11
Lead		mg/l	
Magnesium	62.0	mg/l	/1
Manganese	< 0.01	mg/l	10/1
Mercury		ug/l	
Nickel		mg/l	
Potassium	4.0	mg/l	10/15
Selenium		mg/l	
Silica		mg/l	
Sodium	27.1	mg/l	10/15
Vanadium		mg/l	
Zinc		mg/l	

Analyst; David A Janusz

Respectfully submitted [signature] 10/16/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6356
Date Rec'd 11-7-84
Date Sampled 11-7-84
Time Sampled 1320

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Mine Discharge
Temp. 52°
Flow 400 GPM

Acidity	< 1.0	mg/l $CaCO_3$	11/9
Alkalinity, Total	269	mg/l $CaCO_3$	11/9
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	17.0	mg/l	11/9
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1050	umhos/cm	11/9
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	< 0.5	mg/l	11/14
pH	7.5	Units	11/9
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	696	mg/l	11/12
Solids, Total Suspended	2.0	mg/l	11/12
Sulfate	290	mg/l	11/14
Sulfide		mg/l	
Turbidity		NTU	
Cation, Total	11.55	meq/l	
Anion, Total	11.90	meq/l	
Dissolved Oxygen	6.8	mg/l	11/8
Calculated TDS	668	mg/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	112.0	mg/l	11/1
Chromium		mg/l	
Copper		mg/l	
Iron	0.06	mg/l	11/1
Lead		mg/l	
Magnesium	58.3	mg/l	11/1
Manganese	0.02	mg/l	11/1
Mercury		ug/l	
Nickel		mg/l	
Potassium	4.0	mg/l	11/1
Selenium		mg/l	
Silica		mg/l	
Sodium	24.3	mg/l	11/14
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted 11/28/84

Analyst: David A Jarvis

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6436
Date Rec'd 12-5-84
Date Sampled 12-5-84
Time Sampled 1200

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Wilberg Mine Discharge
Temp 52°
Flow 225 GPM

Acidity	< 1.0	mg/l $CaCO_3$	12/6
Alkalinity, Total	262	mg/l $CaCO_3$	12/6
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	17.0	mg/l	12/6
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1100	umhos/cm	12/6
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	0.6	mg/l	12/6
pH	8.0	Units	12/6
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	697	mg/l	12/6
Solids, Total Suspended	< 0.5	mg/l	12/6
Sulfate	275	mg/l	12/6
Sulfide		mg/l	
Turbidity		NTU	
Dissolved Oxygen	8.3	mg/l	12/5
Cation, Total	11.79	meq/l	
Anion, Total	11.45	meq/l	
Calculated TDS	653	mg/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	110.0	mg/l	12/6
Chromium		mg/l	
Copper		mg/l	
Iron	0.06	mg/l	12/7
Lead		mg/l	
Magnesium	60.1	mg/	6
Manganese	0.02	mg/l	12/7
Mercury		ug/l	
Nickel		mg/l	
Potassium	4.5	mg/l	12/6
Selenium		mg/l	
Silica		mg/l	
Sodium	28.5	mg/l	12/6
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted 12/10/84

Analyst: David A Janusy

Certified Environmental Laboratory

APPENDIX H

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

). Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5029

Date Rec. 1-30-84

Date Sampled 1-30-84

FOR Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah

Sample ID Deer Creek Discharge

TEMP 54°

pH	7.8	Units	1/31
Alkalinity, Total	323	mg/l $CaCo_3$	1/31
Alkalinity, Bicarbonate		mg/l $CaCo_3$	
Calcium		mg/l	
Chloride	9.2	mg/l	1/31
Conductivity	925	µmhos/cm	1/31
Dissolved Oxygen		mg/l	
Hardness		mg/l $CaCo_3$	
Magnesium		mg/l	
Nitrogen, Nitrate		mg/l	
Phosphorus, Total		mg/l	
Phosphorus, Ortho		mg/l	
Potassium		mg/l	
Sodium		mg/l	
Solids, Total Dissolved	453	mg/l	1/30
Solids, Total Suspended	25.0	mg/l	1/30
Sulfate	115	mg/l	1/31
Oxygen Dissolved	9.2	mg/l	1/30
Acidity	< 1.0	mg/l $CaCo_3$	1/31
Oil & Grease	< 0.5	mg/l	1/30

Arsenic		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.27	mg/l	1/30
Lead		mg/l	
Manganese	0.01	mg/l	1/30
Mercury		µg/l	
Nickel		mg/l	
Selenium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 1/31/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5110
Date Rec'd 2-23-84
Date Sampled 2-23-84
Time Sampled 1400

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Discharge

Temp. 58°

Acidity	< 1.0	mg/l $CaCO_3$	2/24
Alkalinity, Total	258	mg/l $CaCO_3$	2/24
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	10.9	mg/l	2/24
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	910	umhos/cm	2/24
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	1.6	mg/l	2/27
pH	7.85	Units	2/24
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	578	mg/l	2/27
Solids, Total Suspended	25.0	mg/l	2/27
Sulfate	165	mg/l	2/27
Sulfide		mg/l	
Turbidity		NTU	
Oxygen, Dissolved	9.1	mg/l	2/23

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.35	mg/l	2/27
Lead		mg/l	
Magnesium		mg/l	
Manganese	0.02	mg/l	2/27
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 2/27/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5281
Date Rec'd 4-6-84
Date Sampled 4-6-84
Time Sampled 1350

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Discharge
Temp. 52°

Acidity	< 1.0	mg/l $CaCO_3$	4/9
Alkalinity, Total	281	mg/l $CaCO_3$	4/9
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	17.2	mg/l	4/9
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1020	umhos/cm	4/9
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	19.9	mg/l	4/9
pH	7.7	Units	4/9
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	633	mg/l	4/9
Solids, Total Suspended	146.0	mg/l	4/9
Sulfate	280	mg/l	4/9
Sulfide		mg/l	
Turbidity		NTU	
Oxygen, Dissolved	8.8	mg/l	4/6

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.65	mg/l	4/9
Lead		mg/l	
Magnesium		mg/l	
Manganese	0.01	mg/l	4/9
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 4-9-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5351
Date Rec'd 4-27-84
Date Sampled 4-27-84
Time Sampled 1120

Client: Utah Power & Light Co.
Filed Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Discharge
Temp. 52°

Acidity	< 1.0	mg/l $CaCO_3$	4/27
Alkalinity, Total	283	mg/l $CaCO_3$	4/27
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	135.0	mg/l	4/30
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1480	umhos/cm	4/27
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	5.2	mg/l	5/1
pH	7.5	Units	4/27
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	938	mg/l	5/1
Solids, Total Suspended	85.5	mg/l	5/1
Sulfate	285	mg/l	4/30
Sulfide		mg/l	
Turbidity		NTU	
Oxygen, Dissolved	8.8	mg/l	4/27

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.48	mg/l	4/30
Lead		mg/l	
Magnesium		mg/l	
Manganese	0.01	mg/l	4/30
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted David A Janusy
05/01/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5464

Date Rec'd 5-23-84

Date Sampled 5-23-84

Time Sampled 1120

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Discharge
Temp. 56°
Flow 0.3 MGD

Acidity	< 1.0	mg/l $CaCO_3$	5/23
Alkalinity, Total	260	mg/l $CaCO_3$	5/23
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	17.0	mg/l	5/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1092	umhos/cm	5/23
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	3.6	mg/l	5/24
pH	7.8	Units	5/23
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	726	mg/l	5/24
Solids, Total Suspended	187.0	mg/l	5/24
Sulfate	270	mg/l	5/23
Sulfide		mg/l	
Turbidity		NTU	
Oxygen, Dissolved	8.7	mg/l	5/23

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.58	mg/l	5/24
Lead		mg/l	
Magnesium		mg/l	
Manganese	0.02	mg/l	5/24
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janusy

Respectfully submitted 5/24/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5634
Date Rec'd 6-19-84
Date Sampled 6-18-84
Time Sampled 1530

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Discharge
Temp 55°
Flow 0.59 MGD

Acidity	< 1.0	mg/l $CaCO_3$	6/20
Alkalinity, Total	280	mg/l $CaCO_3$	6/20
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	675	mg/l	6/20
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	3150	umhos/cm	6/20
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	0.9	mg/l	6/21
pH	7.3	Units	6/20
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	1711	mg/l	6/20
Solids, Total Suspended	23.0	mg/l	6/20
Sulfate	320	mg/l	6/20
Sulfide		mg/l	
Turbidity		NTU	
Oxygen, Diss.	7.5	mg/l	6/19

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.06	mg/l	6/20
Lead		mg/l	
Magnesium		mg/l	
Manganese	0.02	mg/l	6/20
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted David A Janney
06/25/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5753
Date Rec'd 7-16-84
Date Sampled 7-16-84
Time Sampled 1240

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Discharge
Temp 56°
Flow .43 MGD

Acidity	< 1.0	mg/l $CaCO_3$	7/17
Alkalinity, Total	302	mg/l $CaCO_3$	7/17
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	11.4	mg/l	7/23
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1075	umhos/cm	7/17
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
ogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	< 0.5	mg/l	7/25
pH	7.25	Units	7/17
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	677	mg/l	7/25
Solids, Total Suspended	3.0	mg/l	7/25
Sulfate	230	mg/l	7/19
Sulfide		mg/l	
Turbidity		NTU	
Oxygen, Diss.	9.3	mg/l	7/16
Cation, Total	11.37	meq/l	
Anion, Total	11.16	meq/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium	100.0	mg/l	7/20
Chromium		mg/l	
Copper		mg/l	
Iron	0.17	mg/l	7/18
Lead		mg/l	
Magnesium	63.3	mg/l	7/20
Manganese	0.01	mg/l	7/18
Mercury		ug/l	
Nickel		mg/l	
Potassium	5.5	mg/l	7/20
Selenium		mg/l	
Silica		mg/l	
Sodium	27.5	mg/l	7/20
Vanadium		mg/l	
Zinc		mg/l	

Analyst: David A Janus

Respectfully submitted [signature] 7-25-84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5857
Date Rec'd 8-7-84
Date Sampled 8-6-84
Time Sampled 1535

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Discharge
Temp. 57°
Flow .43 MGD

Acidity	< 1.0	mg/l $CaCO_3$	8/7
Alkalinity, Total	307	mg/l $CaCO_3$	8/7
Alkalinity, Bicarbonate	374	mg/l ~~$CaCO_3$~~ HCO_3	8/7
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	1460	mg/l	8/10
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	4900	umhos/cm	8/7
Fluoride	0.36	mg/l	8/10
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite	< 0.01	mg/l	8/7
Oil & Grease	< 0.5	mg/l	8/13
pH	7.8	Units	8/7
Phosphorus, Ortho		mg/l	
Phosphorus, Total	< 0.01	mg/l	8/7
Solids, Total Dissolved	2919	mg/l	8/10
Solids, Total Suspended	32.0	mg/l	8/10
Sulfate	250	mg/l	8/10
Sulfide		mg/l	
Turbidity		NTU	
TKN	0.11	mg/l	8/7
Cation, Total	50.54	meq/l	
Anion, Total	52.53	meq/l	

Aluminum		mg/l	
Arsenic	< 0.001	mg/l	8/10
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium	< 0.005	mg/l	8/13
Calcium	204.0	mg/l	8/13
Chromium		mg/l	
Copper		mg/l	
Iron	0.26	mg/l	8/7
Lead	< 0.05	mg/l	8/13
Magnesium	141.1	mg/l	.3
Manganese	< 0.01	mg/l	8/7
Mercury		ug/l	
Nickel		mg/l	
Potassium	12.2	mg/l	8/10
Selenium	< 0.005	mg/l	8/10
Silica	3.80	mg/l	8/10
Sodium	654.0	mg/l	8/10
Vanadium		mg/l	
Zinc	0.022	mg/l	8/13
Oxygen, Diss.	8.2	mg/l	8/7

Respectfully submitted [signature] 8-16-84

Analyst: David A Janusy

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

). Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 5883
Date Rec'd 8-9-84
Date Sampled 8-9-84
Time Sampled 1500

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Discharge

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate		mg/l $CaCO_3$
Alkalinity, Carbonate		mg/l $CaCO_3$
Chloride		mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride		mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved		mg/l
Solids, Total Suspended		mg/l
Sulfate		mg/l
Sulfide		mg/l
Turbidity		NTU
B.O.D. 5	1.0	mg/l 8/10

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium		mg/l
Chromium		mg/l
Copper		mg/l
Iron		mg/l
Lead		mg/l
Magnesium		mg/l
Manganese		mg/l
Mercury		ug/l
Nickel		mg/l
Potassium		mg/l
Selenium		mg/l
Silica		mg/l
Sodium		mg/l
Vanadium		mg/l
Zinc		mg/l

Analyst: David A Janway

Respectfully submitted [signature] 8-16-84

Certified Environmental Laboratory

Ford Chemical
LABORATORY, INC.
Bacteriological and Chemical Analysis
40 WEST LOUISE AVENUE
SALT LAKE CITY, UTAH 84115
PHONE 466-8761

DATE: 09/12/84

CERTIFICATE OF ANALYSIS

UTAH POWER & LIGHT
FIELD OFFICE
P.O. 1005
HUNTINGTON, UT 84528

84-002898

SAMPLE: WATER SAMPLES COLLECTED ON 8-6-84 RECEIVED 8-7-84 FOR ANALYSIS.

	WILBERG MINE DISCHARGE FLOW 225 GPM	DEER CR. DISCHARGE FLOW 298 GPM
Gross Alpha pci/l	<2.0	<2.0
Gross Beta pci/l	<3.0	<3.0
Tot.Organic Carbon ms/l SM505	58.31	60.78

FORD CHEMICAL LABORATORY, INC.

All reports are submitted as the confidental property of clients. Authorization for publication of our reports, conclusions, or, extracts from or regarding them, is reserved pending our written approval as a mutual protection to clients, the public and ourselves.

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6173
Date Rec'd 9-28-84
Date Sampled 9-28-84
Time Sampled 1424

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Discharge
temp 57°
Flow .27 MGD

Acidity	< 1.0	mg/l $CaCO_3$	10/1
Alkalinity, Total	283	mg/l $CaCO_3$	10/1
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	11.8	mg/l	10/4
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1050	umhos/cm	10/1
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	< 0.5	mg/l	10/8
pH	7.8	Units	10/1
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	663	mg/l	10/5
Solids, Total Suspended	48.0	mg/l	10/5
Sulfate	250	mg/l	10/8
Sulfide		mg/l	
Turbidity		NTU	
Dissolved Oxygen	7.0	mg/l	10/1

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.40	mg/l	10/1
Lead		mg/l	
Magnesium		mg/l	
Manganese	0.01	mg/l	10/1
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Analyst: Daniel A Ramsey

Respectfully submitted [signature] 10/10/84

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6271
Date Rec'd 10-24-8
Date Sampled 10-23-84
Time Sampled 315 PM

Client: Utah Power & Light Co.
P. O. Box 1005
Field Office
Huntington, Utah 84528

Sample ID: Deer Creek Discharge
Temp. 52°
Flow 1.8 Staff

Acidity	< 1.0	mg/l $CaCO_3$	10/25
Alkalinity, Total	310	mg/l $CaCO_3$	10/25
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	10.3	mg/l	10/26
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1000	umhos/cm	10/25
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	0.7	mg/l	11/5
pH	7.4	Units	10/25
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	577	mg/l	10/30
Solids, Total Suspended	2.0	mg/l	10/30
Sulfate	200	mg/l	10/25
Sulfide		mg/l	
Turbidity		NTU	
Dissolved Oxygen	7.0	mg/l	10/24

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.21	mg/l	10/3
Lead		mg/l	
Magnesium		mg,	
Manganese	0.01	mg/l	10/3
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

Respectfully submitted [signature] 11/8/84

Analyst: David A Janusy

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6425
Date Rec'd 11-30-84
Date Sampled 11-29-84
Time Sampled 1100

Client: Utah Power & Light Co.
Field Office
P. O. Box 1005
Huntington, Utah 84528

Sample ID: Deer Creek Discharge
Temp. 54°
Flow 0.42

Acidity	< 1.0	mg/l $CaCO_3$	12/3
Alkalinity, Total	276	mg/l $CaCO_3$	12/3
Alkalinity, Bicarbonate		mg/l $CaCO_3$	
Alkalinity, Carbonate		mg/l $CaCO_3$	
Chloride	11.5	mg/l	12/6
Coliform, Fecal		MPN/100 ml	
Coliform, Total		MPN/100 ml	
Conductivity	1150	umhos/cm	12/3
Fluoride		mg/l	
Hardness, Total		mg/l $CaCO_3$	
Nitrogen, Ammonia		mg/l	
Nitrogen, Nitrate		mg/l	
Nitrogen, Nitrite		mg/l	
Oil & Grease	2.1	mg/l	12/3
pH	7.5	Units	12/3
Phosphorus, Ortho		mg/l	
Phosphorus, Total		mg/l	
Solids, Total Dissolved	772	mg/l	12/3
Solids, Total Suspended	13.0	mg/l	12/3
Sulfate	265	mg/l	12/6
Sulfide		mg/l	
Turbidity		NTU	
Dissolved Oxygen	6.9	mg/l	

Aluminum		mg/l	
Arsenic		mg/l	
Barium		mg/l	
Beryllium		mg/l	
Boron		mg/l	
Cadmium		mg/l	
Calcium		mg/l	
Chromium		mg/l	
Copper		mg/l	
Iron	0.24	mg/l	12/3
Lead		mg/l	
Magnesium		mg/l	
Manganese	0.01	mg/l	12/3
Mercury		ug/l	
Nickel		mg/l	
Potassium		mg/l	
Selenium		mg/l	
Silica		mg/l	
Sodium		mg/l	
Vanadium		mg/l	
Zinc		mg/l	

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Respectfully submitted 12/6/84

Analyst: David A Janney

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6488
Date Rec'd 12-18-84
Date Sampled 12-18-84
Time Sampled 14:00

Client: Utah Power & Light Co.
P.O. Box 899
Salt Lake City, Utah 84110

Sample ID: Deer Creek Discharge
Temp. 52°
Flow 0.34

Acidity	12/19	<1.0	mg/l $CaCO_3$
Alkalinity, Total	12/19	294	mg/l $CaCO_3$
Alkalinity, Bicarbonate			mg/l $CaCO_3$
Alkalinity, Carbonate			mg/l $CaCO_3$
Chloride	12/20	55.6	mg/l
Coliform, Fecal			MPN/100 ml
Coliform, Total			MPN/100 ml
Conductivity		1110	umhos/cm
Fluoride			mg/l
Hardness, Total			mg/l $CaCO_3$
Nitrogen, Ammonia			mg/l
Nitrogen, Nitrate			mg/l
Nitrogen, Nitrite			mg/l
Oil & Grease	12/19	2.1	mg/l
pH	12/19	7.55	Units
Phosphorus, Ortho			mg/l
Phosphorus, Total			mg/l
Solids, Total Dissolved	12/19	768	mg/l
Solids, Total Suspended	12/19	27.0	mg/l
Sulfate	12/21	250	mg/l
Sulfide			mg/l
Turbidity			NTU

Dissolved Oxygen 12/19 7.6 mg/l

Aluminum			mg/l
Arsenic			mg/l
Barium			mg/l
Beryllium			mg/l
Boron			mg/l
Cadmium			mg/l
Calcium			mg/l
Chromium			mg/l
Copper			mg/l
Iron	12/19	0.35	mg/l
Lead			mg/l
Magnesium			mg/l
Manganese	12/19	0.09	mg/l
Mercury			ug/l
Nickel			mg/l
Potassium			mg/l
Selenium			mg/l
Silica			mg/l
Sodium			mg/l
Vanadium			mg/l
Zinc			mg/l

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Analyst: David A Janney

Respectfully submitted [signature] 12/21/84

Certified Environmental Laboratory