PACIFIC POWER • UTAH POWER

324 South State
P.O. Box 26128
Salt Lake City, Utah 84126-0128

PACIFICORP
ELECTRIC OPERATIONS GROUP

June 4, 1990

Mr. Fred Pherson, Manager
Permitting, Compliance and Monitoring
Bureau of Water Pollution Control
State of Utah
Department of Health
288 North 1460 West
P. O. Box 16690
Salt Lake City, UT 84116-0690

Re: UPDES Permit No. UT-0023604

Dear Mr. Pherson:

Transmitted herewith is our response to our meeting held in your office on May 11, 1990 and to Mr. Hilden's letter dated May 17, 1990.

To simplify matters, the application submitted on April 18, 1990 has been revised to include the information which Mr. Hilden requested. Three (3) complete copies of the updated application are included for your staff's review. Please note that we have now identified outfalls 002A and 002B in Deer Creek Canyon. Outfall 002A is our original planned discharge point near the portal, and outfall 002B would involve installing a tee in the 10-inch supply line (to Huntington Power Plant) beyond the forest boundary. Outfall 002B would give us some relief but would not accommodate the amount of water we would need to discharge overall.

Due to the urgency of this matter our plan is threefold, and application is hereby submitted for the following.

1. Petition for an administrative agreement to allow emergency discharge at Outfall 002A (near the Deer Creek Mine portal) to enter into the storm bypass culvert (draft agreement included),

2. Apply for removal of canyon segments from State Regulation R448 2-12.13 for both Deer Creek and North Fork Meetinghouse canyons (three copies of application included), and

3. Request outfall location 002B in Deer Creek Canyon beyond the forest boundary (to include splitting the existing 10-inch supply line for interim relief).

Scheduled mine development is being hampered due to the inability to dewater the perched aquifers in the area west of 4th South. Scheduled longwall mining is planned for September 1, 1990 and cannot commence unless the water is removed. The administrative agreement would allow us to discharge this water while we seek removal of the canyon segments under the anti-degradation policy.

Your cooperation in this matter is greatly appreciated. Please feel free to contact me at 220-4612 should you have any questions.

Sincerely,

Scott M. Child
Senior Compliance Land Status Analyst

SC/sh
Enclosure

cc: Pamela Grubaugh-Littig - DOGM

UTAH POWER & LIGHT COMPANY
APPLICATION TO REMOVE STREAM SEGMENTS
FROM STATE REGULATION R448 SECTION 2-12.13

Utah Power & Light Company (UP&L) owns and operates the Deer Creek Coal Mine located approximately ten miles northwest of Huntington, Utah. The coal produced from the Deer Creek Mine is utilized by the UP&L's Huntington Power Plant (see Figure 1).

Underground mine development has intercepted large quantities of water which have flooded portions of the mine and threaten future development. Because this influx of water has made it necessary to discharge water from the mine, on April 18, 1990 an application was submitted to amend UPDES Permit No. UT-0023604 to include two (2) additional discharge points in Deer Creek and Meetinghouse canyons.

As a result of consultation with the Bureau of Water Pollution Control it was determined that the two discharge points applied for would have to be considered as new point sources located within the national forest and would fall under the criteria of the State of Utah Wastewater Disposal Regulation R448, Section 2-12.13.

With respect for the water quality standards and the anti-degradation policy of the State of Utah, application is hereby made and submitted by Utah Power & Light Company to the State of Utah Department of Health requesting removal of specific segments of Deer Creek and North Fork Meetinghouse canyons from R448, Section 2-12.13 statewide anti-degradation segments.

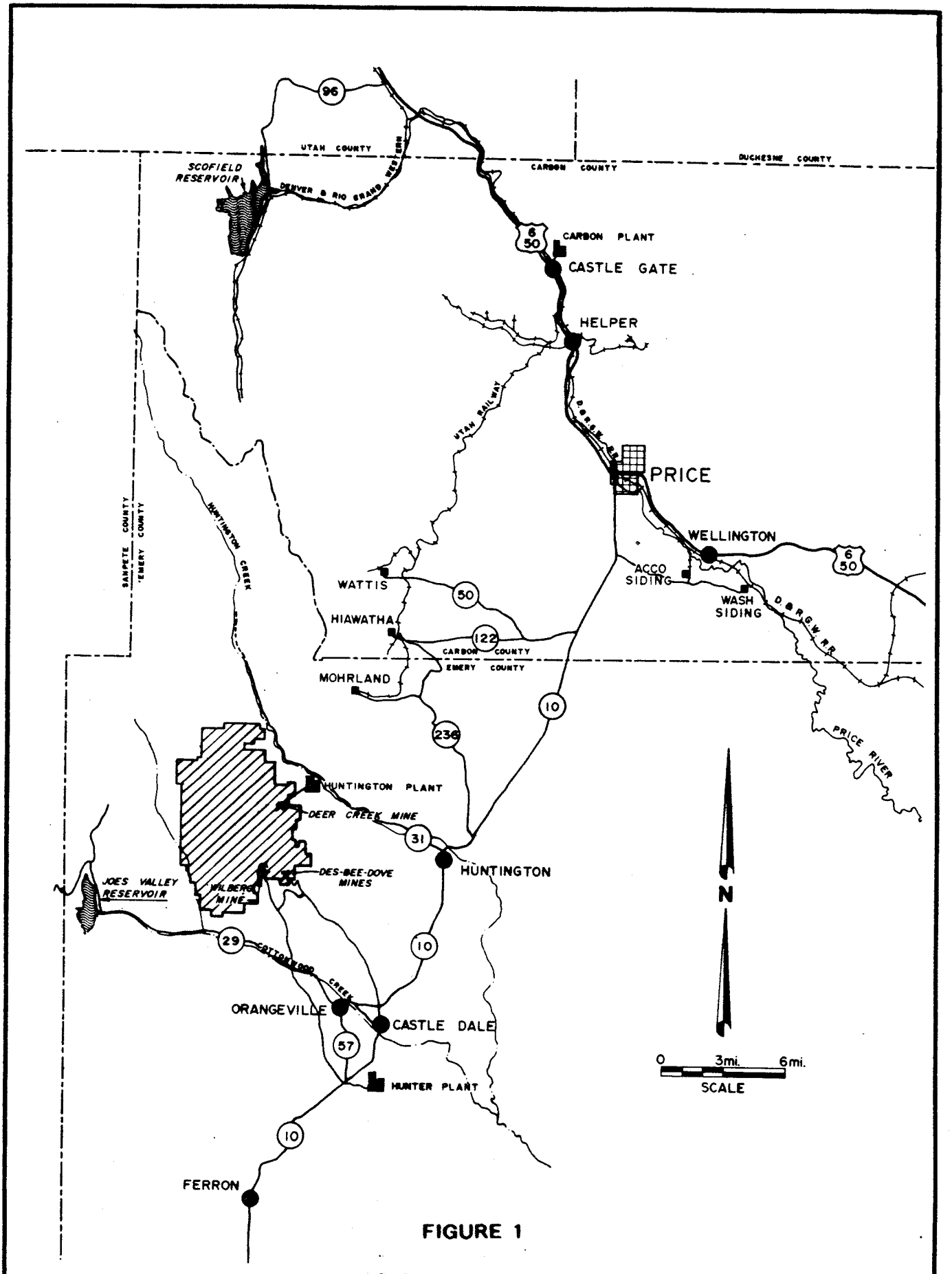


FIGURE 1

LOCATION MAP

Location

Deer Creek and North Fork Meetinghouse canyons are both located within the Manti-LaSal National Forest in Emery County, Utah. Deer Creek is a small intermittent stream, whereas the North Fork Meetinghouse is ephemeral. Both canyons are tributaries within the Huntington Creek Drainage.

The segments proposed for removal from Section 2-12.13 include the following:

Deer Creek Canyon - From the Deer Creek mine portal following the canyon drainage to the forest boundary line, covering approximately 4800 feet being situated within the SE¼ Section 10 and W½ Section 11, T.17S., R.7E., S.L.M.

North Fork Meetinghouse Canyon - From the air intake portals following the canyon drainage to the forest boundary line, covering approximately 5000 feet being situated within the S½ Section 34, T.16S., R.7E., S.L.M.

Refer to Maps 1 and 2 for general location and delineation of segments.

Purpose

The present active mine areas have been experiencing increased amounts of water over the past three (3) years (1988-90). Generally, all mine water has been captured and shipped via a 10-inch pipeline from the mine down Deer Creek Canyon to the Huntington Power Plant. The Deer Creek Mine will continue to ship as much water to the power plant as possible. The amount of water being sent to the plant averages 3500 gpm. Present active mining sections are producing in excess of 5000 gpm.

Hydrologic forecasting suggests that further development in the same mining sections, together with future planned development in and around the Roans Canyon Fault System, could produce in excess of 10,000 gpm.

Mine water will continue to be shipped to the power plant; however, mine water production can exceed power plant consumption. It is therefore imperative for the mine to have the flexibility to discharge excess mine water down canyon within the forest boundary so as to prevent: (1) mine inundation, (2) loss of reserves and production, and (3) impact to the economic and social development in the area.

Alternatives to discharging mine water beyond the forest boundary would require the installation of pipelines in both canyons which, (1), does not accommodate the urgency of this matter and, (2), causes unnecessary disturbances within the canyons.

The applicant and other concerned government agencies are jointly working together in support of allowing the mine water to discharge within the two canyon segments.

The remaining portions of this application address the geology, hydrology, environmental resources, operation plan, post-mining, socio-economics, and benefits.

GEOLOGY OF EAST MOUNTAIN

The East Mountain property is located in the central portion of the Wasatch Plateau Coal Field in Emery County, Utah. Generally, this area is a flat-topped mesa surrounded by heavily vegetated slopes which extent to precipitous cliffs leading to the valley below. The plateau has a vertical relief of up to 2,500 feet, rising from Castle Valley to the east. The following discussion summarizes the structural geology, stratigraphy, and economic coal deposits of the region and the permit areas located within the East Mountain property.

Structure

The geologic structure of the area is fairly simple. The strata are gently down-folded in the area of the Straight Canyon Syncline which is present in the northern portion of the property (see Figure G-1). Dips in the syncline range from two to six degrees with the north limb dipping the steepest.

In the area south of the Straight Canyon Syncline the coal seam dips gently in a northwest direction toward the syncline; however, to the northwest of the Straight Canyon Syncline both the Hiawatha and Blind Canyon seams dip in a southeast direction at three to five degrees.

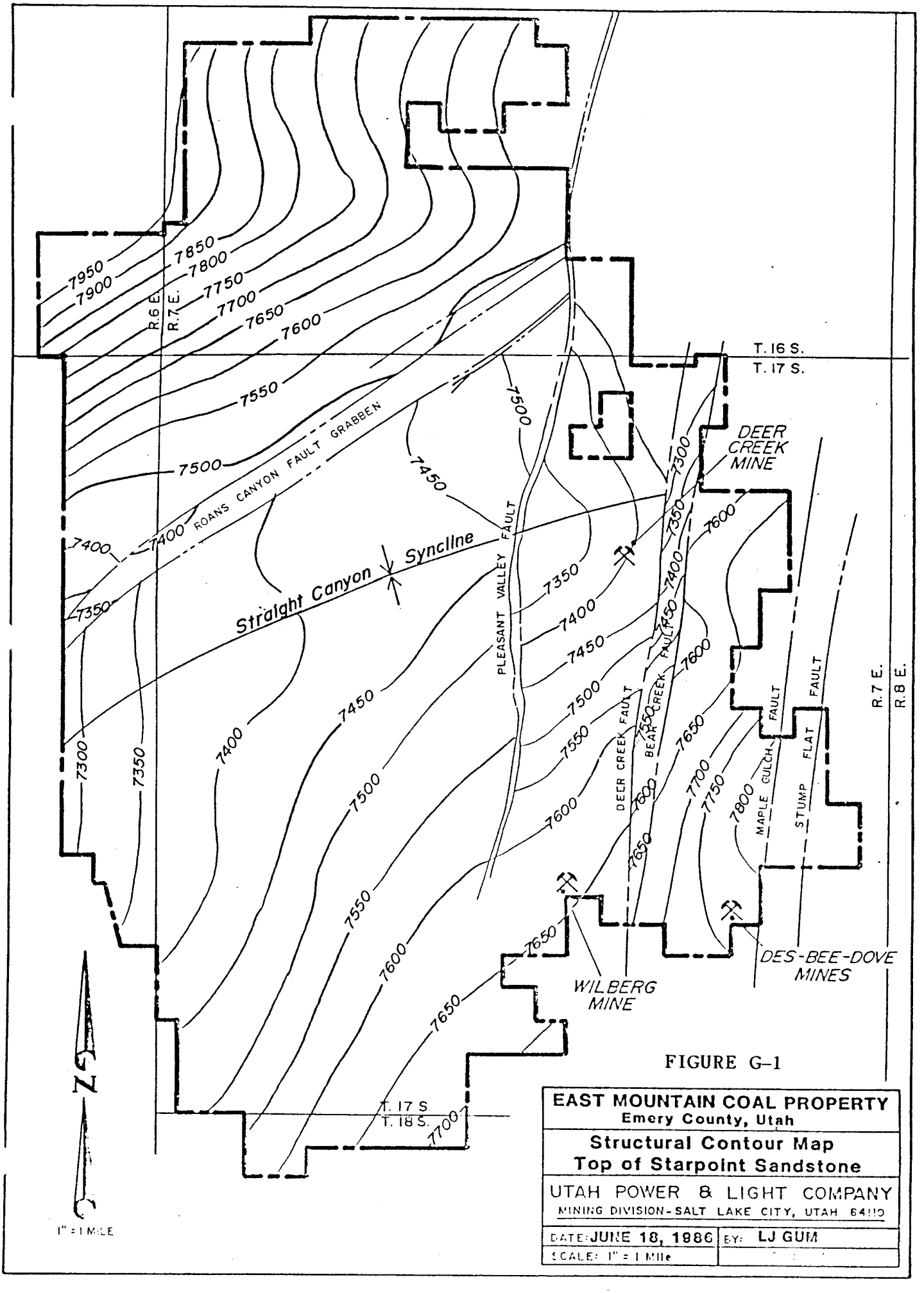


FIGURE G–1

EAST MOUNTAIN COAL PROPERTY Emery County, Utah	
Structural Contour Map Top of Starpoint Sandstone	
UTAH POWER & LIGHT COMPANY MINING DIVISION - SALT LAKE CITY, UTAH 84110	
DATE: JUNE 18, 1986	BY: LJ GUM
SCALE: 1" = 1 Mile	

Faulting

The strata within the property have been offset by a series of north-south trending fault zones. Generally, the faults are nearly vertical and do not have significant amounts of fault gouge or drag associated with them. One of the major faults present in the region, the Pleasant Valley Fault, has been intersected in both the Deer Creek and Wilberg mines.

The Pleasant Valley Fault consists of two parallel fractures about 150 feet apart. The fault's total displacement, where it was intersected in the Deer Creek Mine, to the north is 150 feet with its downthrown side on the east. The displacement diminishes to less than one foot where it was intersected in the Wilberg Mine near the south end of the property.

Another north-south trending fault, the Deer Creek Fault, is present to the east of the Pleasant Valley Fault. It limits the eastward development of the Wilberg/Cottonwood and Deer Creek mines. The displacement of the Deer Creek Fault ranges from 100 to 170 feet with the east block being downthrown.

A northeast-southwest trending fault system, the Roans Canyon Graben, is present along the axis of the Straight Canyon Syncline. The system contains up to six normal faults having displacements ranging from a few feet to over 150 feet. Coal deposits present to the north of the fault will be accessed through rock tunnels being driven from the 3rd North section of the Deer Creek Mine. The Roans Canyon Graben forms a major aquiclude to the southward migration of groundwater and is discussed in greater detail in the hydrologic section of this application.

Stratigraphy

The rock formations exposed in the East Mountain area range from Upper Cretaceous to Tertiary in age (see Figure G-2). The formations, in ascending order, are the Masuk Shale member of the Mancos Shale, Starpoint Sandstone, Blackhawk, Castlegate Sandstone, Price River, North Horn, and Flagstaff formations. The coal deposits are restricted to the lower portions of the Blackhawk Formation.

The Masuk Shale is the upper member of the Mancos Shale and consists of light to medium gray marine mudstones. Usually this formation weathers readily, forming slopes which are often covered by debris. It is generally devoid of water.

Overlying and intertonguing with the Masuk Shale is the Starpoint Sandstone. In the East Mountain area the Starpoint consists of three or more cliff-forming massive sandstones totaling about 400 feet in thickness. Generally, the sandstones are fine to medium-grained and moderately well-sorted. The upper contact of the Starpoint is usually quite abrupt and readily identifiable on the outcrop. Locally, the Starpoint Sandstone exhibits aquifer characteristics.

The Blackhawk Formation consists of alternating mudstones, siltstones, sandstones, and coal. Although coal is generally found throughout the Blackhawk Formation, the economic seams are restricted to the lower 150 feet of the formation. The sandstones contained within the Blackhawk Formation are fluvial and increase in number in the upper portions of the formation. Many of the tabular sandstone channels form local perched water tables. The total thickness of the Blackhawk Formation in the East Mountain area is about 750 feet.

FIGURE G-2

Stratigraphy of East Mountain (Doelling, 1972)

System	Series	Stratigraphic Unit		Thickness (feet)	Description
TERTIARY	Eocene	Green River Formation		–	Chiefly greenish lacustrine shale and siltstone.
		Wasatch Group	Colton Formation	300-1,500	Varicolored shale with sandstone and limestone lenses, thickest to the north.
	Paleocene		Flagstaff Limestone	200-1,500	Dark yellow-gray to cream limestone, evenly bedded with minor amounts of sandstone, shale and volcanic ash, ledge former.
			North Horn Formation (Lower Wasatch)	500-2,500	Variegated shales with subordinate sandstone, conglomerate and freshwater limestone, thickens to north, slope former.
CRETACEOUS	?	Mesaverde Group	Price River Formation	600-1,000	Gray to white gritty sandstone interbedded with subordinate shale and conglomerate, ledge and slope former.
	Maestrichthian		Castlegate Sandstone	150- 500	White to gray, coarse-grained often conglomeratic sandstone, cliff former, weathers to shades of brown.
			Blackhawk Formation *MAJOR COAL SEAMS*	700-1,000	Yellow to gray, fine- to medium-grained sandstone, interbedded with subordinate gray and carbonaceous shale, several thick *coal* seams.
	Campanian		Star Point Sandstone	90-1,000	Yellow-gray massive cliff-forming sandstone, often in several tongues separated by Masuk Shale, thickens westward.
	Santonian	Mancos Shale	Masuk Shale	300-1,300	Yellow to blue-gray sandy shale, slope former, thick in north and central plateau area, thins southward.
			Emery Sandstone *COAL (?)*	50- 800	Yellow-gray friable sandstone tongue or tongues, cliff former, may contain *coal* (?) in south part of plateau if mapping is correct, thickens to west and south. *Coal* may be present in subsurface to west.
	Coniacian		Blue Gate Member	1,500-2,400	Pale blue-gray, nodular and irregularly bedded marine mudstone and siltstone with several arenaceous beds, weathers into low rolling hills and badlands, thickens northerly.
	Turonian		Ferron Sandstone Member *MAJOR COAL SEAMS*	50- 950	Alternating yellow-gray sandstone, sandy shale and gray shale with important *coal* beds of Emery coal field, resistant cliff former, thickens to the south.
	Cenomanian		Tununk Shale Member	400- 650	Blue-gray to black sandy marine slope forming mudstone.
	Albian	Dakota Sandstone *MINOR COAL*		0- 60	Variable assemblages of yellow-gray sandstone, conglomerate shale and *coal*. Beds lenticular and discontinuous.

Generalized section of rock formations, Wasatch Plateau coal field.

Economic Coal Occurrences

Three economic coal seams are present on the property: the Hiawatha, the Cottonwood, and the Blind Canyon seams. The current workings of the Wilberg Mine are located in the basal, or Hiawatha, seam.

The Hiawatha Seam is of mineable thickness in both the southern and extreme northern portions of the East Mountain property. The seam rests directly on the Starpoint Sandstone and ranges in thickness from sixteen (16) feet to less than five (5) feet. The Hiawatha Seam is not present throughout a major portion of the property. This lack of coal is due to a major distributary river channel which flowed through the coal swamp in an easterly direction.

The Blind Canyon Seam, the second major mineable seam within the East Mountain property, is located from fourteen (14) to 140 feet above the Hiawatha Seam. The average separation between the seams is seventy to eighty (70-80) feet but increases up to 140 feet in the southern portion of the property. The Blind Canyon Seam is of mineable thickness through most of the property and is mined through the Deer Creek Mine. The seam ranges in thickness from sixteen (16) feet to less than five (5) feet. The seam thins to less than five (5) feet in the southwest portion of the property.

The Cottonwood Seam is located stratigraphically between the Hiawatha and Blind Canyon seams. The seam is located generally about seventy (70) to ninety (90) feet above the Hiawatha Seam but is found in mineable thickness only in the south half of lease U-47978 where it reaches up to sixteen (16) feet in thickness. The seam is extensively burned on outcrop. Heat released from the burn has elevated

the temperature of the strata to above 250° Fahrenheit in some areas. Because of its high temperature the Cottonwood Seam reserves are not mineable using current technology. Data indicate that the burn is currently inactive despite the high temperatures.

The Castlegate Sandstone generally caps the escarpment which surrounds the eastern limit of the property. The Castlegate consists of about 250 feet of coarse-grained, light gray, fluvial sandstones; pebble conglomerates; and subordinate zones of mudstones. Although the sandstone is very permeable, it lacks water because of insufficient recharge.

The Price River Formation overlies the Castlegate Sandstone. The formation is about 350 feet thick and forms slopes which extend upward from the Castlegate escarpment. Although some mudstones are present, fine-grained, poorly sorted sandstones dominate the Price River Formation. The Price River Formation generally lacks water.

The North Horn Formation is about 850 to 900 feet thick in the East Mountain area. Mudstones dominate the rock types present and are generally gray to light brown in color. Localized, lenticular sandstone channels are present throughout the formation. The sandstone beds are more common near the upper and lower contacts of the formation and many times host localized perched water tables.

The Flagstaff Formation is the youngest formation exposed in the permit area and consists of white to light gray lacustrine limestone. An erosional remnant of 100 to 150 feet of this formation remains, forming a cap on the highest plateaus. The formation is fairly well fractured, allowing surface water to percolate down to lower strata.

HYDROLOGY OF EAST MOUNTAIN

HUNTINGTON CREEK DRAINAGE SYSTEM

SURFACE WATERS

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 No. 3). The drainage boundaries, including minor subdivisions to Cottonwood and Huntington creeks, are designated on Map No. 3. 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, a tributary of the Green River. The application will focus on two minor subdivisions of Huntington Creek known as Deer Creek and Meetinghouse canyons.

HUNTINGTON CREEK DRAINAGE SYSTEM

A. HUNTINGTON CREEK

Huntington Creek is comprised of many smaller tributary streams that feed the main stream. Deer Creek and Meetinghouse Canyon creeks are the only tributaries to Huntington Creek that emanate from within UP&L's coal mine portal areas.

Huntington Creek water quality information is compiled on a quarterly basis for stations above and below the Huntington Plant, Huntington Creek below Electric Lake and the Right Fork. The location of water quality sampling stations on Huntington Creek that were considered for this report are listed below (refer to Map No. 3).

a. Below Electric Lake*

b. Above the Forks*

c. Below the Power Plant Diversion

d. Below the Power Plant

* Not listed on map due to scale

In general, the water shows a gradual increase in concentration of dissolved minerals as the flow proceeds down Huntington Canyon (see Table HT-1).

The values at the station below Electric Lake do not express the actual natural drainage water quality characteristics 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.

B. DEER CREEK

Deer Creek, a tributary of Huntington Creek, is an intermittent stream which flows from the same canyon in which the Deer Creek Mine is located. UP&L monitors the flow on a monthly basis and quality on a quarterly basis the following locations:

1. Above the Mine
2. @ Permit Boundary*
3. Below the Mine (see Map No. 3)

* Flow and field parameters only.

As stated above, flow information is collected monthly throughout the year with the use of three Parshall flumes (see Map No. 3). Hydrographs

TABLE HT-1

HUNTINGTON CREEK WATER QUALITY (1989 Water Year)

	Below Electric Lake			Right Above Left Fork			Above Power Plant			Below Power Plant		
Parameter	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.
pH (N.U.)	7.55	7.7	7.3	7.9	8.2	7.7	7.95	8.3	7.6	7.95	8.0	7.9
Sulfate	10	10	10	17	17	17	23.5	43	4	61	88	34
Suspended Solids	1	1	1	18	42	2	17	21	13	16.5	32	1
Dissolved Solids	177	200	138	202	226	150	321	386	256	279	360	198
Spec. Cond. (umhos)	258	266	251	346	351	341	300	400	200	390	400	380

HUNTINGTON CREEK WATER QUALITY 1988-1989

	Below Electric Lake		Right Fork Above Left Fork		Above Power Plant		Below Power Plant	
Parameter	1989	1988	1989	1988	1989	1988	1989	1988
pH (N.U.)	7.55	7.9	7.9	8.3	7.95	8.2	7.95	8.2
Sulfate	10	10.7	17	16.6	23.5	85	61	61
Total Susp. Solids	1.0	2.4	18	140*	17	10	16.5	15
Total Diss. Solids	177	149	202	184	321	379	279	379

* One sample taken during heavy rainstorm which increased average for the year.

comparing historical average flows are shown in figures HF-1. Quality samples collected from Deer Creek at the sites above the Deer Creek Mine and below the mine are summarized in Table HT-2. It is apparent from the table that the quality of the Deer Creek run-off degradates slightly from the upper to the lower sampling point. The quality of the lower sampling point is thought to be affected by the Mancos Shale which causes the increase in TDS.

C. MEETINGHOUSE CANYON CREEK

Meetinghouse Canyon Creek is a tributary of Huntington Creek and is made up of two subdivisions known as the North and South forks. The North Fork is ephemeral whereas the South Fork is intermittent. UP&L monitors the characteristics of the South Fork for flow on a monthly basis and quality on a quarterly basis (see Map No. 3 for location).

As stated above, flow information is collected monthly with the use of a Parshall flume located near the confluence of the North and South forks (see Map No. 3). A hydrograph comparing historical average is shown in Figure HF-1. Quality sampling was initiated in 1986; results of the samples collected are presented in Table HT-2. It is apparent from Table HT-2 that the quality of the South Fork of Meetinghouse is similar to that of Deer Creek Above the Mine. With only one sampling site in the Meetinghouse drainage it is difficult to assess the amount of degradation which would occur downstream at the Huntington Creek confluence; but, due to the thick alluvial deposits, the amount of degradation should be minimal.

TABLE HT-2

DEER CREEK SURFACE WATER QUALITY

HISTORICAL (1986-1989)

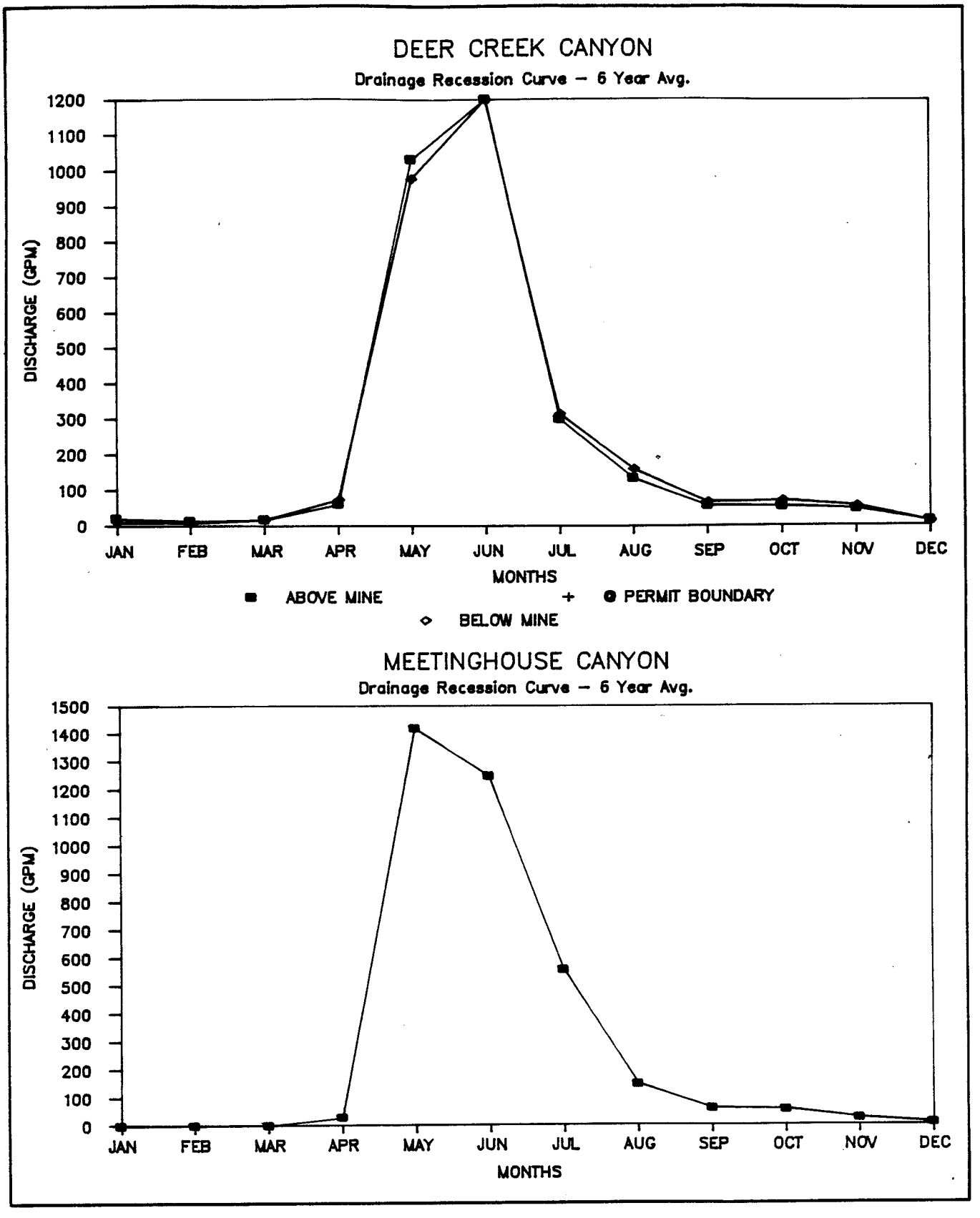
	ACIDITY	ALKALINITY BICARBONATE	CALCIUM	CARBONATE	CHLORIDE	CONDUCTIVITY	DISSOLVED OXYGEN	HARDNESS	---- IRON ---- DISSOLVED	TOTAL	MAGNESIUM	MANGANESE	OIL & GREASE	pH	POTASSIUM	SODIUM	SULFATE	----- SOLIDS ----- TDS	TSS	SETTLEABLE
ABOVE THE MINE																				
MIN	<1.0	262	2.2	0.6	3.5	360	5.3	225	<0.02	0.03	24.8	<0.01	<0.5	7.0	0.5	13.4	10.0	231	<0.5	<0.1
MAX	137.0	397	107	8.0	176.0	1580	10.2	599	0.09	40.10	83.9	0.24	2.6	8.5	4.33	111.6	255.0	897	3592.0	<0.5
MEAN	13.5	262	55.9	1.7	24.1	593	8.1	306	0.05	0.84	39.0	0.04	0.8	7.89	1.3	28.9	28.9	347	116.9	0.23
BELOW THE MINE																				
MIN	<1.0	244	1.4	<1.0	22.0	420	5.4	284	0.03	0.04	34.5	<0.01	<0.5	6.9	1.0	32.6	65.0	273	<0.5	<0.1
MAX	90.0	442	129.1	11.0	420.0	2300	11.0	815	0.64	170.00	122.8	0.27	9.0	8.6	7.6	233.8	500.0	1544	20540.0	1.5
MEAN	9.3	310	72.4	2.1	119.9	1153	8.4	502	0.12	3.49	66.4	0.04	1.6	7.98	4.05	110.4	233.7	692	470.5	0.3

MEETINGHOUSE CANYON

HISTORICAL (1978-1989)

	ACIDITY	ALKALINITY BICARBONATE	CALCIUM	CARBONATE	CHLORIDE	CONDUCTIVITY	DISSOLVED OXYGEN	HARDNESS	---- IRON ---- DISSOLVED	TOTAL	MAGNESIUM	MANGANESE	OIL & GREASE	pH	POTASSIUM	SODIUM	SULFATE	----- SOLIDS ----- TDS	TSS	SETTLEABLE
MIN	<1.0	215	2.2	<1.0	3.0	300	5.4	195	0.04	<0.05	22.50	<0.01	0.1	7.25	0.60	3.8	20.0	190	0.1	0.05
MAX	49.0	307	71.1	8.0	47.5	500	10.3	350	0.30	0.90	36.50	0.04	10.9	8.55	1.62	13.1	100.0	304	74.0	<1.00
MEAN	7.8	247	45.3	2.1	8.7	415	7.9	247	0.11	0.18	28.81	0.02	1.4	7.87	1.18	8.9	42.8	255	20.9	0.16

FIGURE HF-1


DEER CREEK CANYON
Drainage Recession Curve – 6 Year Avg.
DISCHARGE (GPM)
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
MONTHS
ABOVE MINE
PERMIT BOUNDARY
BELOW MINE
MEETINGHOUSE CANYON
Drainage Recession Curve – 6 Year Avg.
DISCHARGE (GPM)
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
MONTHS

GROUNDWATER

A. GROUNDWATER RECHARGE

The majority of the groundwater recharge on East Mountain comes from the winter snowpack which melts and infiltrates the surface of East Mountain. The water flows down vertical fractures which intersect sandstone channel systems in the North Horn and Blackhawk formations. The majority of the groundwater reaching this point intersects the surface in springs located in the North Horn Formation. Very little recharge intersects the Price River Formation and Castlegate Sandstones; consequently, they are not water saturated where intersected in the numerous drill holes penetrating those units. The remaining water then flows downdip (to the southeast) from the northern reaches of East Mountain until it intersects the northeast trending Roans Canyon Fault Graben. In-mine long-hole drilling completed to test the hydrology of this fault system has shown that the system acts as an imperfect aquiclude to further southeast migration of water. The system acts as an aquiclude because swelling bentonitic clays along the fault prohibit most of the water from penetrating across the fault. Most of the recharge south of the Roans Canyon Fault System comes from the snow melt directly above. The same mode of water migration occurs there as to the north; but, when the water intersects the sandstone channels, it migrates toward the canyon which surround and dissect the permit area.

B. AQUIFER DESCRIPTION BY FORMATION

Data has been collected from numerous coal exploration drill holes, from within the mine workings, from surface drainages, and from the springs

in the area. The data have not identified any laterally continuous aquifers present throughout the area but have identified localized perched water tables in the North Horn and Blackhawk formations. Stratigraphy is the main controlling factor restricting groundwater movement and development of regional and perched aquifer systems within the East Mountain property. The following is a description of various formations and how they influence the groundwater systems. The description is in descending order, which parallels the general groundwater flow (see Figure HF-2).

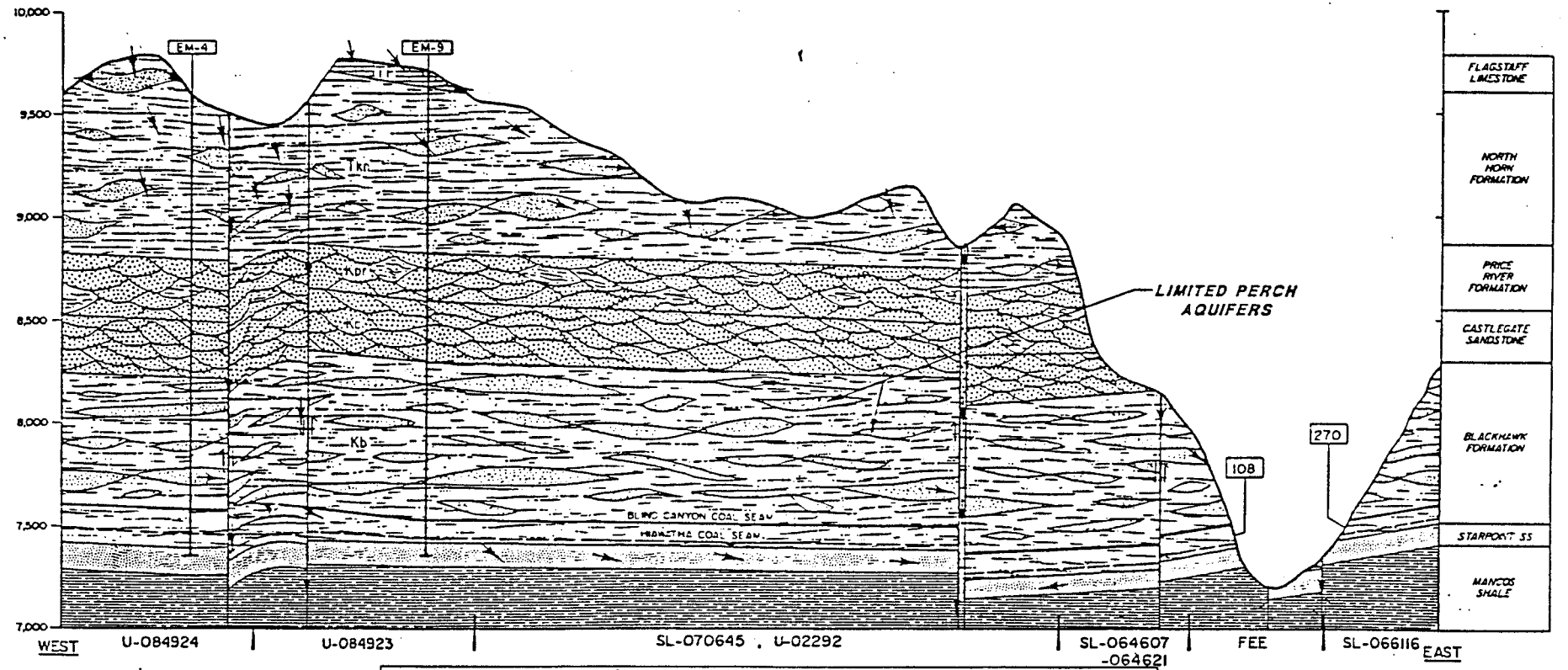
1. FLAGSTAFF LIMESTONE

An erosional remnant of Flagstaff Limestone 150 feet in thickness caps the upper portions of East Mountain. This formation displays a strong joint pattern which permits good groundwater movement both vertically and horizontally through the formation.

2. NORTH HORN FORMATION

The North Horn Formation is a lacustrine sequence 750 feet in thickness. This formation is comprised of a variety of rock types which range from highly calcareous sandstone to mudstone. Its permeability is variable.

Lenticular sandstone channels are oftentimes present in the upper portion of the formation. Water which percolates down fractures from the overlying Flagstaff Limestone works its way into the sandstones, forming the perched water tables. The actual lateral extent, or



GEOLOGIC CROSS SECTION FROM EM-4 TO EM-9,
AND THROUGH MEASURED SECTIONS 108 - 270 IN DEER CREEK CANYON

DATE	REVISIONS	MARK

UTAH POWER AND LIGHT CO.
MINING DIVISION
HUNTINGTON, UTAH 84528

TYPICAL GROUNDWATER MOVEMENT
EAST MOUNTAIN PERMIT AREA

DRAWN BY:	APPROVED BY:	
K. LARSEN		HF-2
SCALE:	DATE: JAN. 23, 1989	

correlation, between the perched water tables has not been identified, and it is not practical to do so because the tables are limited in extent and variable in stratigraphic location. Many springs have been identified where the sandstone channels intersect the land surface.

The lower two-thirds (upper Cretaceous in age) of the formation is generally highly bentonitic mudstone which is impermeable. It is likely that this material is acting as an aquiclude, preventing adequate recharge from reaching the Price River Formation or Castlegate Sandstone below. The mudstones present appear to swell when they come in contact with water. Therefore, vertical migration of water along fractures through this material is limited because the fractures are sealed by the swelling clays.

The depth of the aquifers in the North Horn Formation is variable due to the rugged topography. The localized perched water tables may either intersect the surface of the ground or be covered by as much a 1,000 feet of overburden. They are located at least 1,400 feet above the coal seam to be mined. Communication of water between the perched aquifers in the North Horn Formation and the water flowing into the mine is limited in quantity and occurs very slowly. The monitoring of the numerous springs located on East Mountain gives UP&L the ability to assess any effects that mining might have on the North Horn Formation perched aquifers.

With the data available it is not possible to compile a piezometric map of the water-bearing strata in the North Horn Formation.

3. PRICE RIVER FORMATION

The Price River Formation is a braided stream deposit 300 feet in thickness. It is comprised predominantly of sandstone but commonly contains mudstone beds between the point bar deposits. It is generally void of water because it lacks adequate recharge.

4. CASTLEGATE SANDSTONE

The Castlegate Sandstone is 350 feet in thickness and consists of successive sequences of point bar deposits. Generally the sandstone is medium- to fine-grained, but occasionally pebble conglomerates are present near the base of some sequences. The formation is thought to be fairly permeable but, where it has been intersected by drill holes, has never been found to be water-saturated. It is oftentimes dry or slightly damp in some zones. It is void of significant water because it lacks adequate recharge.

5. BLACKHAWK FORMATION

The Blackhawk Formation contains the economic coal deposits within East Mountain. The formation is 750 feet in thickness and consists of mudstones, sandstones, interbedded mudstone and sandstone, and coal. The coal deposits are located in the lower 120 feet of the Formation. The Blind Canyon Seam, which is the upper coal seam, is situated seventy (70) feet above the base of the Blackhawk Formation. The lowest coal seam present on the property is the Hiawatha Seam, which immediately overlies the Starpoint Sandstone.

The Blackhawk Formation contains only perched or limited aquifers which exist within the strata overlying the coal seams. The perched aquifers exist as fluvial channels (ancient river systems) which overlie and scour into the underlying strata. These channel systems were part of a deltaic depositional setting active during and after the coal-forming peat accumulation. The largest influx of water encountered during the mining process occurs beneath the fluvial channels. The sandstone channels are mainly composed of a fine- to medium-grained sand with characteristics similar to the Starpoint Sandstone. The semi-permeable and porous nature of the channels allows an effective route for water transport. Other constituents of the Blackhawk Formation ((i.e., mudstone, carbonaceous mudstone, and interbedded material) generally act as aquicludes which impede water flow unless fracturing or faulting of the units has induced secondary permeability.

The majority of the water flowing into the mines comes from within the limited fluvial channel aquifers; however, water is also transmitted into the mine workings by way of faults, joints or fractures, and in-mine drill holes. Since 1978, the quantity and quality of water flowing into the mine workings has been measured. Many locations within the mines have been monitored in the past, but a limited number of accessible long-term water monitoring locations now exists because most water-producing areas of the mines are dewatered and stop flowing shortly after initial mining in the area.

In several locations in the Deer Creek Mine, such as retreated longwall panels, water is being produced but cannot be measured because the workings are inaccessible. The water entering these areas flows into numerous low areas in the mine which act as temporary sumps. The water is then pumped to the main sump located near the mine portal.

Based on current data, several observations have been made concerning the Blackhawk water-bearing strata. The sandstone, which is semi-permeable and porous, affords an effective route of water transport; while relatively impervious shale in the Blackhawk Formation prevents significant downward movement of the percolating water. Of the water-producing areas, those closest to the active mining face exhibit the greatest flows. As mining advances the area adjacent to the active face continues to be excessively wet, and previously mined wet areas experience a decrease in flow. It appears that the water source is being dewatered since excavated areas of the mine do not continue to produce water indefinitely. The water source must be either of limited extent, e.g., a perched aquifer, or have a limited recharge capacity.

6. STARPOINT SANDSTONE

The Starpoint Sandstone overlies and intertongues with the Masuk Shale. The formation is approximately 150 to 200 feet in thickness and consists of at least three upward coarsening sandstone units. Mudstone units of the Masuk Shale are present above the lower two sandstone members of the Starpoint Sandstone due to the interfingering nature of the contact between the two units.

The Starpoint Sandstone, which immediately underlies the Hiawatha Coal Seam, exhibits some characteristics of an aquifer but experiences little recharge. Studies conducted by the USGS indicated that the Starpoint Sandstone is of low permeability, thus limiting its usefulness as a water-producing aquifer. Most of the water discharge from the Starpoint is where it has been intersected by the major canyons in the plateau.

C. STRUCTURAL HYDROLOGIC FEATURES

Three important structural hydrologic features have been identified within the East Mountain permit area. They are the Roans Canyon Fault Graben, Straight Canyon Syncline, and the Deer Creek Fault (see Map No. 3).

The Roans Canyon Fault Graben separates reserves currently being mined from future reserves. In order to access coal reserves from the northern third of the property, the Deer Creek Mine Plan includes a fault crossing to be completed during 1989-90.

A hydrogeologic investigation of the Roans Canyon Fault Graben was completed during 1988 in order to develop plans for management of groundwater inflow during and after the construction of three parallel rock tunnels. Aquifer test results indicated the horizontal flow component is the result of flow in the graben from the west toward the east where the graben intercepts the canyon walls and, presumably, the groundwater system discharges. The vertical flow component is controlled by the Starpoint Sandstone which underlies the entire graben.

The Straight Canyon Syncline is the second structurally related hydrologic feature within the permit boundary. It parallels and lies adjacent to the Roans Canyon Fault Graben (see Map No. 3). Because the syncline forms a stratigraphic depression, groundwater is funneled into it and migrates to the southwest and northeast. Wet conditions have been experienced where mining has taken place in the base of the syncline.

The third feature is the Deer Creek Fault. Mining in the Deer Creek and Wilberg mines to the west of the Deer Creek Fault had intersected wet strata while the Des-Bee-Dove Mine to the east had dry strata, indicating that the fault forms an aquiclude to water migration to the east.

D. GROUNDWATER QUALITY

The factor that most affects the quality of water discharge from the different formations is the environment which existed during sediment deposition. For instance, the Flagstaff Formation is a freshwater limestone, and groundwater associated with it is the highest quality found on the East Mountain property (TDS normally ranges from 225 to 250 mg/l). Marine environment influences increase in descent from the Flagstaff to the Mancos Shale. For example, the Blackhawk and Starpoint Sandstone formations were deposited in a coastal swamp system adjacent to the marine environment, whereas the Mancos Shale was deposited in a late cretaceous inland sea. The lower portion of the Blackhawk, Starpoint, and the Mancos Shale have the greatest effect on the level of TDS for both groundwater and surface water within the Wasatch Plateau region.

Due to the increased total dissolved solids (TDS) concentration, the quality of groundwater entering the East Mountain property generally decreases from the north to the south. Increased TDS concentration is mainly due to increased levels of calcium, bicarbonate, magnesium, and sulfate. The trend of increased TDS concentration from north to south has also been detected in springs which are located above the coal horizon. Changes in the dissolved solid concentrations from north to south could possibly indicate the direction to groundwater movement.

Average quality of groundwater intercepted by Deer Creek Mine has remained relatively constant for each individual location. Quality of all samples collected since 1977 is presented in Table HT-3. The samples reveal that the predominant dissolved chemical constituents are bicarbonate, calcium, magnesium, and sulfate, with minor amounts of chloride and sodium. These findings are similar to other studies conducted on the Wasatch Plateau Coal Field.

E. GROUNDWATER QUANTITY; MINE DISCHARGE - DEER CREEK

Underground coal mines in the Wasatch Plateau Coal Field typically intersect groundwater from strata surrounding the coal seam. In the Deer Creek Mine groundwater has been encountered throughout the period mining has occurred; however, recently the quantity of water intersected has increased significantly. All water encountered in the mine that is not used in the mining process is transported to and used at the Huntington Power Plant.

TABLE HT-3: DEER CREEK WATER QUALITY
HISTORICAL (1977-1989)

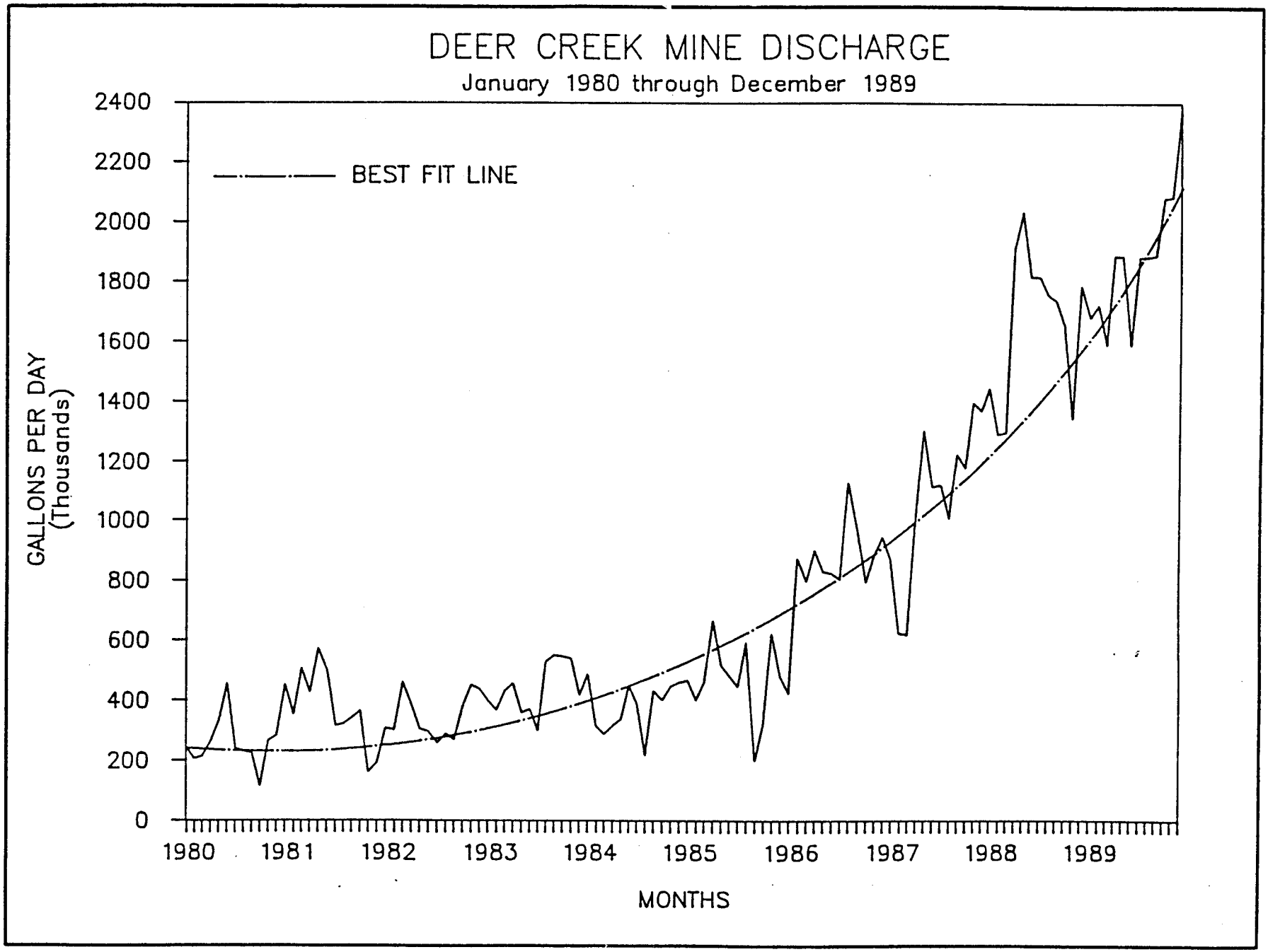
	IN-MINE INTERCEPTED GROUNDWATER		MINE WATER DISCHARGE TO POWER PLANT	
PARAMETER	AVERAGE	NO. OF ANALYSES	AVERAGE	NO. OF ANALYSES
Bicarbonate	433	38	340.5	62
Calcium	103.9	69	120.5	62
Carbonate	< 1.0	31	< 1.0	43
Chloride	10.5	76	60.7	142
Conductivity	855	75	1150	140
Hardness	422	40	494	54
Iron, Dissolved	0.13	28	0.27	40
Magnesium	46.91	70	58.9	63
Manganese	0.02	46	0.03	97
pH	7.27	91	7.57	145
Potassium	3.43	69	6.53	63
Sodium	20.69	69	58.9	63
Sulfate	140.6	83	232.6	147
TDS	513	91	627	145

An in-line water meter is utilized to record the amount of water discharged from the mine, after which the water passes through an oil skimmer before being piped to UP&L's Huntington Power Plant.

The total water discharged from the Deer Creek Mine during 1989 was estimated at 2,008 acre feet, or 654.3 million gallons. The recorded flow of 2,008 acre feet during 1989 is a thirteen percent (13%) increase from the 1988 discharge of 1,770 acre feet. A graph displaying the historical discharge rates is included as Figure HF-3. The volume of water discharged from the mine has increased at a significant rate over the past several years due to at least five factors. First, in previous years water discharged was measured with a Stevens Recorder installed in Parshall flume. It was difficult to maintain calibration of the recorder and, in 1985, in-line flow meters (totalizer and instantaneous flow) were installed, allowing for a more accurate measurement of discharge. Second, mining has progressed into areas largely dominated by sandstone roof. The inflow from those areas is greater per acre of exposed area than areas of mudstone top. Third, mining has progressed into the bottom of the Straight Canyon Syncline, the lowest part of the mine, where a significant amount of water has been intersected. Fourth, mining has intersected the Roans Canyon Fault Graben which has released additional water into the mine workings. Last, prior to 1985 water used in mining was pumped directly from the in-mine sumps. Since that time all water has been pumped from the mine through the metering system. Mining water is then pumped back into the mine through a high-pressure steel line to the mining faces where it is utilized.

UP&L has been sampling the quality of the water intersected by the mine workings and water that is discharged to the power plant for over twelve

FIGURE HF-3

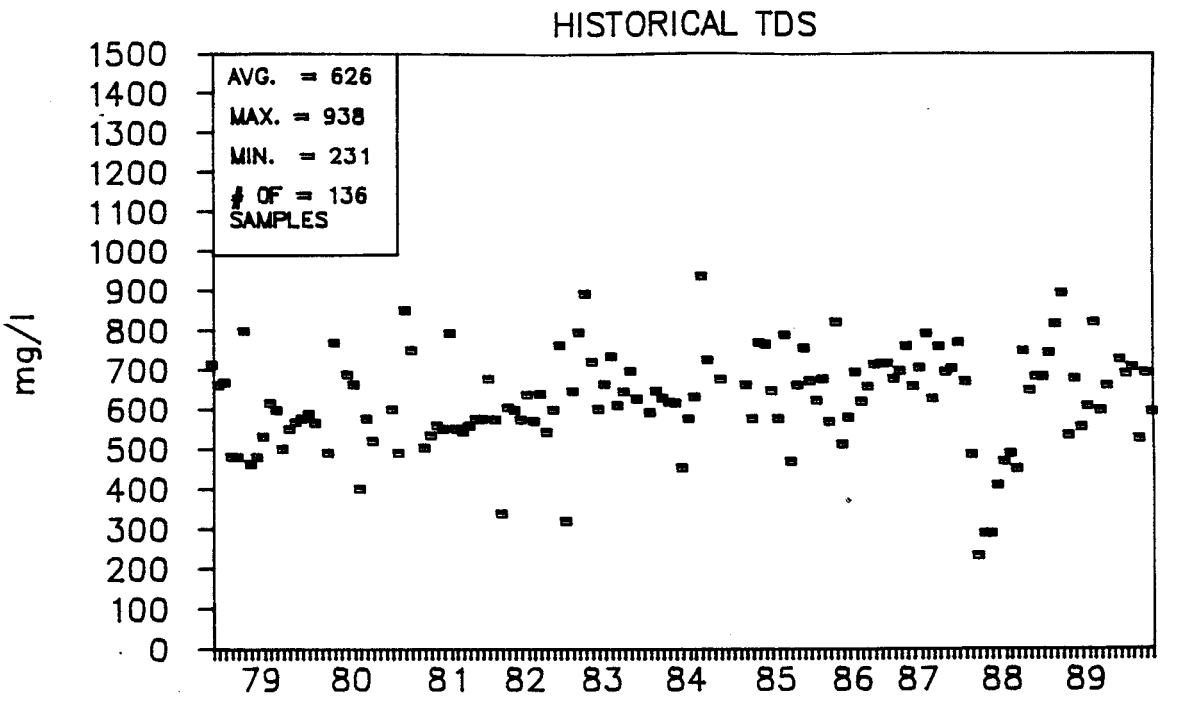

DEER CREEK MINE DISCHARGE
January 1980 through December 1989
BEST FIT LINE
GALLONS PER DAY
(Thousands)
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
MONTHS

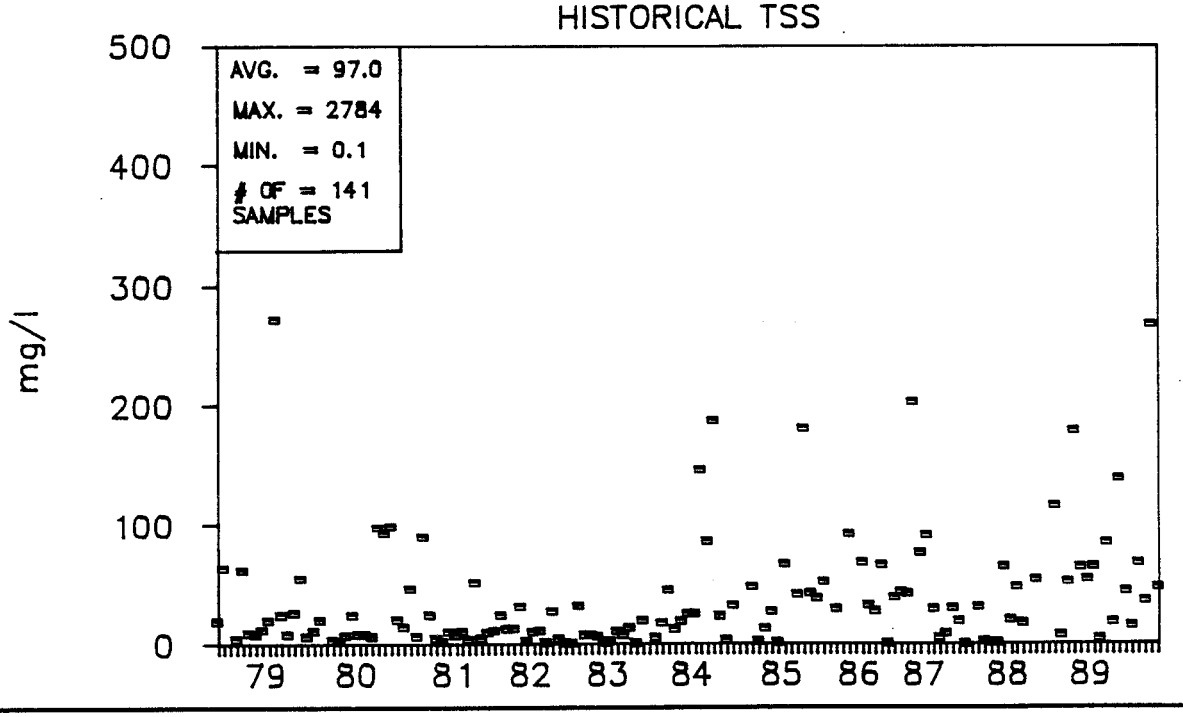
(12) years. The samples collected indicate that the water is of good quality. Table HT-3 summarizes the historical data (both data sets) collected from the mine since 1977 (see Figure HF-4 for TDS and TSS historical results). The intercepted water shows a slight difference with in-mine water discharge due to the fact that intercepted water is sampled at accessible points in the mine where inflow occurs and mine water discharge includes a significant quantity of water flowing from inaccessible areas in the mine (sealed abandoned workings).

In anticipation of the need to discharge water from the Deer Creek Mine to the receiving stream, UP&L has conducted six (6) acute replacement toxicity tests of water intercepted by the mine (3 samples) and of water discharged to the Huntington Power Plant (3 samples). The tests were performed using the current guidelines, "Methods for Measuring the Acute Toxicity of Effluent to Freshwater and Marine Organisms," EPA-600/4-85-013 (rev. March 1985). Each test included a 48-hour static toxicity test using Ceriodaphnia sp. and an acute 96-hour static replacement toxicity test using fathead minnows five (5) days of age. All tests passed in all concentrations of the effluent.

FIGURE HT–4

DEER CREEK MINE DISCHARGE





HYDROLOGIC BALANCE

PREDICTION OF MINING IMPACTS (GROUNDWATER):

The water discharge rates from the mines are variable and dependent on several factors. One of the most significant is that when the mine enters virgin country, a significant amount of water is liberated. In virtually all cases the amount of water which flows into the mine exceeds the recharge and, in time, the water inflow decreases in volume. If new areas are not mined, the discharge from the mine will decrease accordingly.

Water discharged from the Deer Creek Mine is currently transported directly to the Huntington Power Plant by way of an underground pipeline. As discussed earlier, the volume of water discharged from the mine has increased at a significant rate over the past several years.

The monitoring of in-mine water sources has shown that the long-term water flow from a given area is much less than ten percent (10%) of the initial flow from the area. Most of the current inflow into the mine workings is from areas where the water storage has not been depleted. After the storage has been depleted, the flow will reduce to roughly equal the recharge rate, which is expected to be less than ten percent (10%) (historical data) of the current discharge rate. The current discharge rate from the Deer Creek Mine is approximately 2500 to 3000 GPM; therefore, the post-mining discharge rate is expected to be approximately 250 to 300 GPM.

PREDICTION OF MINING IMPACTS (SURFACE WATER):

Data collected by UP&L indicate mining has had only minor impact on surface water quality and quantity. During periods of high runoff changes in quality are insignificant; however, in low flow conditions some degradation is likely due to the fact that the mine discharge waters are higher in total dissolved solids (TDS) than the surface waters. It is difficult to assess the degradation because it is not known from where or how much of the water discharged from the mine would naturally have been discharged into the receiving stream by springs and seeps. Post-mining conditions will likely cause water to be discharged from portals in Deer Creek and North Fork of Meetinghouse canyons. The cumulative effect of discharge waters on post-mine use is thought to be insignificant because the volume of water to be discharged is negligible in comparison to the volume which flows in Cottonwood and Huntington creeks.

The most significant impact of the discharge on the receiving stream quality will take place when the stream is at its lowest flow (about 15-30 CFS), at which time the total discharge into either Cottonwood or Huntington Creek will be small in proportion to the volume of water flowing in the creeks. The TDS levels of Huntington Creek is about 300 to 350 mg/l, while the discharge water TDS levels are 300 to 700 mg/l. Even with the differential in quality, the effect the discharge waters will have on the stream water quality will be minimal due to the difference in flow volume.

CLIMATOLOGICAL INFORMATION

A. PRECIPITATION

The climate of the permit area has been described by the U.S. Geological Survey, which states that it is semi-arid to subhumid and precipitation generally increases with altitude. The average annual precipitation ranges from about ten (10) inches in the lowest parts of the permit area (southeast) to more than twenty-five (25) inches in the highest parts (northwest). UP&L's weather station, located adjacent to the permit area, has provided data showing that the summer precipitation in the form of thundershowers averages about the same as the winter precipitation in the form of snowfall. Because much of the summer precipitation runs off without infiltration, the winter precipitation has the greatest impact on groundwater.

B. TEMPERATURES

Air temperatures vary considerably both diurnally and annually throughout the permit area. Midsummer daytime temperatures in lower areas commonly exceed 100° Fahrenheit, and midwinter nighttime temperatures throughout the area commonly are well below zero degrees Fahrenheit. The summer temperatures are accompanied by large evaporation rates. Although not recorded, there probably also is significant sublimation of the winter snowpack, particularly in the higher plateaus which are unprotected from dry winds common to the region.

VEGETATION

The vegetation types identified within Deer Creek and North Fork Meetinghouse canyons are primarily mixed conifer and pinon-juniper intermixed with grass and sagebrush. Within these vegetation types narrow bands of riparian areas are found along the creek channels.

The mixed conifer community occurs primarily at higher elevations and on lower elevations with a northern exposure. The pinon-juniper is found on the steep rocky slopes with a southern exposure and on the flat ground at lower elevations near the mouths of both canyons. It is common for the pinon-juniper and mixed conifer communities to intermix at higher elevations.

Narrow bands of riparian vegetation occur along Deer Creek, primarily within the forest boundary below the Deer Creek Mine where water is more frequent than in the North Fork of Meetinghouse. Although North Fork Meetinghouse is normally a dry canyon, it does provide a very small riparian community near the confluence with South Fork Meetinghouse.

SOILS

The soils found within Deer Creek and North Fork Meetinghouse are characterized by a dominance of rock outcrop, rubble, and shallow soils typical of the steep rock cliffs forming each canyon. In general, the soil classification for both canyons are synonymous; each is characterized by Typic Cryochrepts, Lithic Cryorthents, and Rock Outcrop. Soils are shallow and are mostly loamy-skeletal and Lithin in this area of sandstone outcrops of forty to sixty percent slopes. Typic Cryochrepts makes up about fifty percent, Lithic Cryorthents about twenty-five percent, and Rock

Outcrop and Rubble Land about twenty percent. Included are small areas of Mollisols on north and east-facing slopes.

The Cryochrepts can be generally described as pale brown, gravelly loam or sandy loam surface layer with twenty-five percent sandstone fragments, 35 cm thick, underlain by a pale brown, gravelly or stony loam with thirty-five to fifty percent sandstone fragments, 100 cm thick.

The Cryorthents are mostly shallow, underlain by rock within 50 cm of the surface.

Rubble Lands are those areas where the soils are covered by large boulders so close together that there is little area between the boulders for plants to grow.

Rock Outcrop is exposed areas of bedrock. Areas of rock outcrop are often nearly vertical cliff walls within the canyons.

LAND USE AND WILDLIFE RESOURCE

Geographically, Deer Creek and Meetinghouse canyons are located adjacent to each other on the east side of East Mountain. Both canyons are small tributaries to the Huntington Creek Drainage.

Canyon elevations range from 6600 F.A.S.L. to 9500 F.A.S.L. where forested communities dominate the higher regions with abundant shrub cover for animal habitat. The lower areas and south facing slopes support arid plant communities of pinon-juniper and sagebrush.

Both canyons are very steep and narrow from the canyon mouths to the upper elevations. Historically both canyons' first organized land use was grazing by early settlers. Today no grazing takes place in either canyon. North Fork Meetinghouse Canyon is located within the Gentry Mountain allotment but does not receive any

use as it is not allowed by the U.S. Forest Service. In the 1940's the north fork of Meetinghouse Canyon sustained a small coal mine known as the Seagull Mine. It was reclaimed in 1989 by the State of Utah Abandoned Mine Reclamation Department.

North Fork Meetinghouse Canyon is rated as deer and elk winter range by the U.S. Forest Service and the Utah Division of Wildlife Resources. Current herd management levels are one deer per twenty acres of winter range (UDWR, 1982).

Land use capability is limited by the steep topography, rocky soils, and an intermittent water supply. Recreational use is limited to hunting. Other than mining, the highest and best use is wildlife habitat. No fisheries exist in either canyon.

Raptor nest sites are located within both Deer Creek and North Fork Meetinghouse canyons. Raptor surveys, 1986 through 1990, indicate no occupancy of nests in North Fork Meetinghouse Canyon; however, active cliff nest sites have been located in Deer Creek Canyon immediately above the mine facilities. This indicates the raptors have become adapted to mine-related activities; therefore, the proposed project will have no additional impact. Preliminary investigations have not revealed any high interest wildlife species; however, site specific wildlife studies will be conducted by the applicant as required.

SOCIO-ECONOMICS

UP&L's Huntington Power Plant and nearby Deer Creek Mine represent more than $400 million of investments in Utah's economy. The mine is a reliable, lifetime source of low sulfur coal for the 800-megawatt plant; and the plant provides a ready market for the tracts of federal coal which UP&L has diligently developed.

The mutual dependence of Deer Creek and the mine-mouth power plant is a highly efficient arrangement, but both operations must operate at high levels of productivity to remain viable in the extremely competitive western energy markets.

The continued operation of Deer Creek Mine provides a steady stream of royalty income to the Federal and State treasuries. The 1989 royalty payments were $15,763,906. Additional benefits of the mine operation to the state and the Carbon-Emery area include:

1. Taxable wages to 331 miners and managers directly employed by the mine;
2. Property taxes to Emery County from the mine and plant;
3. Taxable payroll at the power plant, which employs more than 200 workers;
4. Reliable, low cost electricity for Utah Power customers.

UP&L has also constructed and operates the Electric Lake dam in Huntington Canyon for the benefit of the power plant and associated flood control, irrigation, and wildlife interests.

OPERATION PLAN AND POST-MINING

In order to provide adequate settling for the mine water before discharging to the surface locations, Deer Creek Mine plans to implement the following long-term dewatering plan.

Mine discharge water will be gathered at various satellite sumps throughout the mine. From these sumps water, at an estimated rate of 5000 to 10,000 gallons per minute, will be pumped through boreholes originating in the 4th South entries into the western side of the sealed Main West entries.

The collection area will provide storage for an estimated 17 million gallons of water. The water will be drawn from the east side of the Main West entries to the pumphouse located in the intersection of 3rd North and Main West.

From the pumphouse water will be pumped through 12-inch pipelines to the Main West (Deer Creek) and 9th East (North Fork Meetinghouse) portals for discharge (see Map No. 2).

Post-mining reclamation includes sealing all portals with M.S.H.A. approved permanent seals consisting of double blocked walls with at least twenty-five (25) feet of non-combustible material compacted to form an earthen plug.

Accumulated in-mine water near the portal will be allowed to flow through a dewatering system to the surface. The system will be designed in cooperation with regulatory agencies and will be installed in conjunction with the portal sealing to provide control of any post-mining discharge.

BENEFITS - PORTAL DISCHARGE VS. PIPELINE

1. Enhancement of wildlife habitat - Creation of riparian area.
2. No disturbance of a pipeline.
3. Maintenance free - no pipeline repairs, etc.
4. Implemented in a final state - to be in place during mining and post-mining.
5. No need to reclaim or cause unnecessary disturbance of removing a pipeline - final reclamation.
6. Energy dissipation throughout length of canyon.
7. Cost of pipe, construction, and reclamation.
8. Extrinsic benefits to local communities.

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SUPPORTING AGENCIES

UP&L has met with the Forest Service and Division of Wildlife Resources to discuss the potential benefits and impacts to be realized within the canyon segments. Further studies and detailed assessments would have to be addressed by the applicant to assure environmental enhancement.

Applicant will commit to further study should this proposal be found favorable and in the best interest of all concerned parties.

Mitigation measures will be coordinated and designed in concert with the U.S. Forest Service; Utah Division of Wildlife Resources; Utah State Engineer; Utah Department of Health; and Utah Division of Oil, Gas and Mining.

UTAH WATER POLLUTION CONTROL COMMITTEE

IN THE MATTER OF	:	**Docket No. _____**
UTAH POWER & LIGHT COMPANY	:	
UPDES PERMIT NO. UT-0023604	:	**SETTLEMENT AGREEMENT**

AGREEMENT

This Settlement Agreement ("Agreement") is entered into on _____, 1990 between UTAH POWER & LIGHT COMPANY ("UP&L") and the UTAH WATER POLLUTION CONTROL COMMITTEE ("Committee").

RECITALS:

A. On February 11, 1988, the Executive Secretary of the Committee issued UP&L authorization to discharge under the Utah Pollution Discharge Elimination System, Permit No. UT-0023604, in compliance with the provisions of the Utah Water Pollution Control Act, Title 26, Chapter 11, Utah Code Ann. 1953, as amended (the "Act").

B. By the terms of UPDES UT-0023604, UP&L's Deer Creek Coal Mine is authorized to discharge from the facility located at Section 11, Township 17 South, Range 7 East, Salt Lake Base and Meridian, Emery County, Utah to receiving waters named Deer Creek, a tributary to Huntington Creek, in accordance with discharge points, effluent limitations, monitoring requirements and other conditions set forth therein.

C. In conducting mining activities at the Deer Creek Mine, UP&L has encountered additional sources of mine water which it seeks to discharge into North Fork Meetinghouse and Deer Creek Canyons.

D. UP&L has submitted applications with the Committee for new point source discharge permits at North Fork Meetinghouse and Deer Creek Canyons at points within the boundaries of the Manti-LaSal National Forest. State regulation R448-2-12.13 applies an anti-degradation policy to "all surface waters geographically located within the outer boundaries of the United States National Forest, whether on private or public lands." New point source discharges of waste water, treated or otherwise, are prohibited in such segments pursuant to R448-2-3.2.

E. UP&L has submitted a petition with the Committee to redesignate the above-stated stream segments to remove them from the anti-degradation classification. The anti-degradation policy set forth at R448-2-3.2 allows exceptions on a case-by-case basis where "best management practices will be employed to minimize pollution effects."

F. The United States Forest Service and the Utah Division of Wildlife Resources supports redesignation of these stream segments provided that the quantity and quality of water discharged by the Mine can be of beneficial use to the canyons and wildlife habitat. UP&L is working in concert with these

agencies to assess the impacts and enhancement potential along these stream segments.

G. During consideration of UP&L's redesignation petition, UP&L seeks to discharge at proposed outfall number 002A identified in UPDES Permit No. UT-0023604 bypassing discharge facilities (001) located in Section 11, Township 17 South, Range 7 East, Salt Lake Base and Meridian, Emery County, Utah, more specifically set forth on the attached maps, to discharge into receiving waters in the Deer Creek, a tributary to Huntington Creek in accordance with the conditions set forth herein.

NOW, THEREFORE, the Committee and UP&L, in view of the foregoing circumstances and in consideration for the valuable covenants contained in this Agreement, agree and the Committee orders as follows:

OBLIGATIONS

1. Effective as of the date of this Agreement and for such period until the Committee has ruled on UP&L's redesignation petition and approved UP&L's pending UPDES permits, UP&L may discharge from proposed outfall point number 002A, identified in UPDES Permit No. UT-0023604, more specifically set forth on the attached map, in accordance with the effluent limitations, monitoring requirements and other conditions set forth therein, as modified by this Agreement.

2. For purposes of this discharge, effluent limitations will be as follows: TDS - less than 700 mg/l; TSS - less than 35 mg/l; oil and grease - less than 10 mg/l; iron - less than 2.0 mg/l; ph - 6.5-9.0; flow - n/a.

3. During discharge pursuant to this Agreement, UP&L will employ best management practices to minimize pollution effects.

4. Nothing contained in this Agreement shall preclude the Committee from taking appropriate action to abate an imminent endangerment to the public health or the environment should such a situation arise at UP&L's Deer Creek Mine facility.

AGREED TO this ___ day of _____, 1990.

UTAH POWER & LIGHT COMPANY

BY:_____

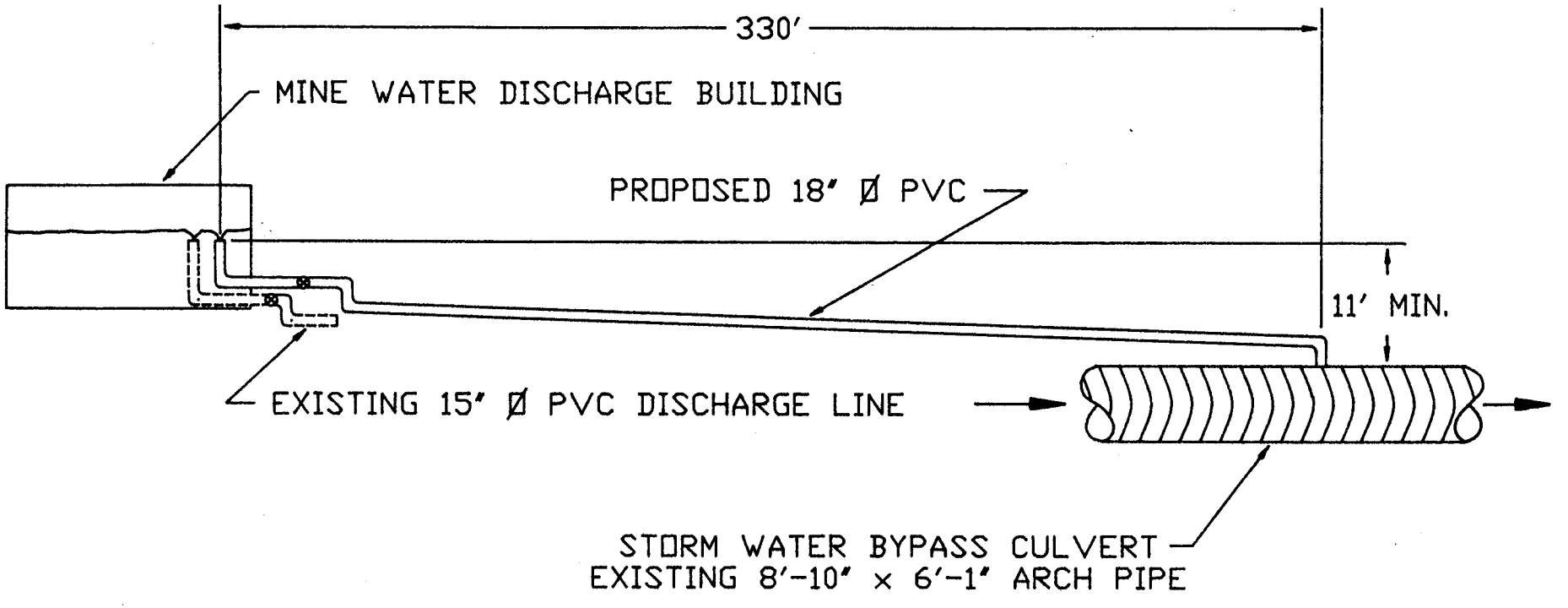
ITS:_____

UTAH WATER POLLUTION CONTROL COMMITTEE

BY:_____

ITS: EXECUTIVE SECRETARY

DAD:052290b



CAD FILE NAME/DISK#: DCMWD KL4

UTAH POWER & LIGHT
MINING DIVISION

P.O. BOX 310, HUNTINGTON, UTAH 84528

DEER CREEK MINE
PROPOSED 18" Ø PVC
DISCHARGE LINE
U.P.D.E.S. PERMIT #UT-0023604 OUTFALL 002A

DRAWN BY:	K. LARSEN		
SCALE:	NONE	DRAWING #:	
DATE:	4-25-90	SHEET 1 OF 1	REV. ___