

Exhibit #3 : Map of the surface facilities

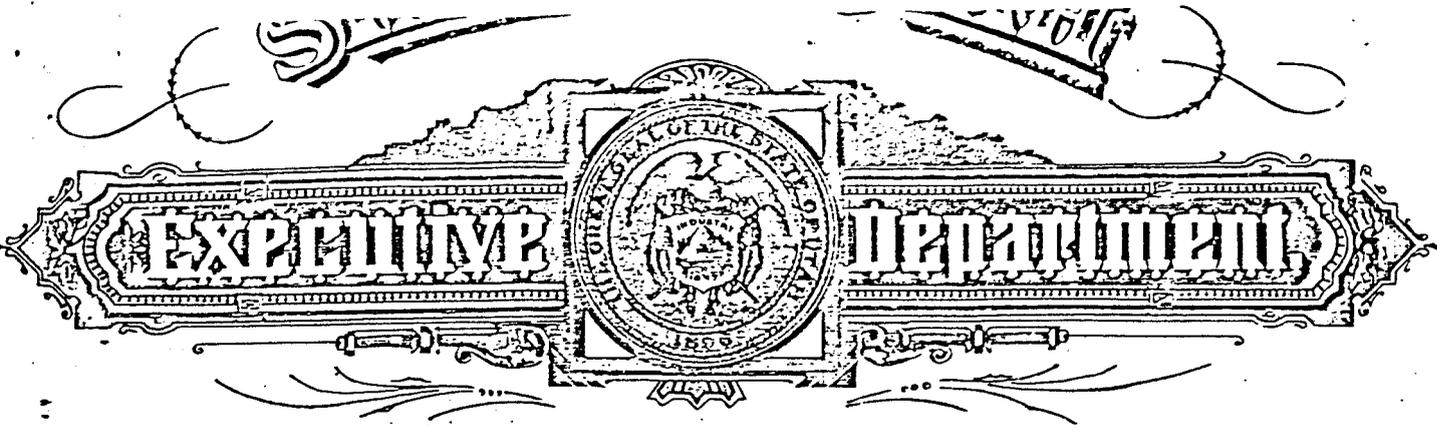


Exhibit #1 : Property map showing ownership interest



Exhibit #2 : Articles of incorporation





Office of Lt. Governor/Secretary of State

I, DAVID S. MONSON, LT. GOVERNOR/SECRETARY OF STATE OF THE STATE OF UTAH, DO HEREBY CERTIFY THAT the attached is a full, true and correct copy of the Articles of Incorporation and Amendments of SWISHER COAL CO., and said corporation which was filed in this office June 19, 1975, is in good standing,

AS APPEARS OF RECORD IN MY OFFICE.



IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Great Seal of the State of Utah at Salt Lake City, this _____ 9th _____ day of _____ May _____ A.D. 1977.

DAVID S. MONSON
LT. GOVERNOR/SECRETARY OF STATE

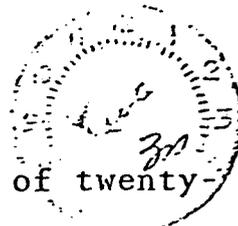

AUTHORIZED PERSON

FILED in the office of the Secretary of State, of the State of Utah, on the 19th day of June A.D. 1975
- CLEVELAND L. AMMER
Secretary of State

JUN 19 75 AM

G E X Utah, Inc.

65925



We, the undersigned natural persons of the age of twenty-one years or more, acting as incorporators of a corporation under the Utah Business Corporation Act, adopt the following Articles of Incorporation for such corporation:

FIRST: The name of the corporation is:

G E X Utah, Inc.

SECOND: The period of its duration is perpetual.

THIRD: The purposes for which the corporation is organized are to engage in coal mining and related activities, and to engage in any other lawful business activities.

FOURTH: The aggregate number of shares which the corporation shall have authority to issue is ten thousand (10,000), each with one dollar (\$1.00) par value. All stock shall be common stock, of the same class having the same rights and priveleges.

FIFTH: The corporation will not commence business until consideration of the value of at least \$1,000.00 has been received for the issuance of shares.

SIXTH: The shareholders shall not have preemptive rights to acquire additional shares of the corporation.

SEVENTH: The post office address of its initial registered office is 607 Kearns Building, Salt Lake City, Utah 84101, and the name of its initial registered agent at such address is Paul B. Cannon.

EIGHTH: The number of directors constituting the initial board of directors of the corporation is three, and the names and addresses of the persons who are to serve as directors until the first annual meeting of the shareholders or until their successors are elected and shall qualify are:

<u>NAME</u>	<u>ADDRESS</u>
Eugene E. Nearburg	4219 Sigma Road Dallas, Texas 75240
C. N. Bailey	4219 Sigma Road Dallas, Texas 75240
William G. Ferguson	180 East Broad Street Columbus, Ohio 43215

NINTH: The name and address of each incorporator is:

<u>NAME</u>	<u>ADDRESS</u>
Paul B. Cannon	607 Kearns Building Salt Lake City, Utah 84101
Platte E. Clark	353 East 300 South Salt Lake City, Utah 84111
Mert Rasmussen	353 East 300 South Salt Lake City, Utah 84111

DATED: June 19, 1975

Paul B Cannon
Incorporator

Platte E Clark
Incorporator

Mert Rasmussen
Incorporator

STATE OF UTAH)
): ss:
County of Salt Lake)

I, Stephena Rasmussen, a notary public, hereby certify that on the 19th day of June, 1975, personally appeared before me, Paul B. Cannon, Platte E. Clark, and Mert Rasmussen, who being by me first duly sworn, severally declared that they are the persons who signed the foregoing document as incorporators and that the statements therein contained are true.

IN WITNESS WHEREOF, I have hereto set my hand and seal this 19th day of June, 1975.

My commission expires:

April 17, 1977

Stephena Rasmussen
Notary Public
Residing in Salt Lake City, Utah

OF

SWISHER COAL CO. with and into GEX UTAH, INC. GENERAL MANAGER
with its name changed to SWISHER COAL CO. SECRETARY OF STATE

The undersigned corporations pursuant to Section 69 of the "Utah Business Corporation Act" hereby execute the following articles of merger:

ARTICLE ONE

The plan of merger is as follows:

See Exhibit A attached hereto and made a part hereof.

ARTICLE TWO

As to each corporation, the number of shares outstanding, and the number and designation of the shares of any class entitled to vote as a class, are:

<u>Name of Corporation</u>	<u>Total Number of Shares Outstanding</u>	<u>Designation of Class Entitled to Vote as a Class (if any)</u>	<u>No. of Shares of Such Class (if any)</u>
Swisher Coal Co.	2,000	N/A	N/A
GEX Utah, Inc.	301	N/A	N/A

ARTICLE THREE

As to each corporation, the number of shares voted for and against the plan respectively, and the number of shares of any class entitled to vote as a class voted for and against the plan, are:

<u>Name of Corporation</u>	<u>Total Shares Voted For</u>	<u>Total Shares Voted Against</u>	<u>Class</u>	<u>Shares Voted For</u>	<u>Shares Voted Against</u>
Swisher Coal Co.	2,000	- 0 -	N/A	N/A	N/A
GEX Utah, Inc.	301	- 0 -	N/A	N/A	N/A

IN WITNESS WHEREOF each of the undersigned corporations has caused these articles of merger to be executed in its name by its

12/17/1981/150

president or vice president and secretary or assistant secretary,
as of the 15 day of August, 1975.

SWISHER COAL CO.

By *Ray A. Pelt*
President

and *Hunt S. Warrick*
UNIT Secretary

GEX UTAH, INC.

By *Ray A. Pelt*
President

and *Hunt S. Warrick*
UNIT Secretary

STATE OF Utah)
COUNTY OF Salt Lake) SS

Before me, *Charles E. Smith*, a Notary
Public in and for the said County and State, personally appeared
Ray A. Pelt who acknowledged before me
that he is the *President* of SWISHER COAL CO., a
Title of office

Utah corporation and that he signed the foregoing document as his
free and voluntary act and deed for the uses and purposes therein
are set forth.

In witness whereof I have hereunto set my hand and seal this
15 day of August, A.D. 1975.

My commission expires May 2, 1979.

Charles O. Steth
Notary Public

STATE OF Utah)
COUNTY OF Salt Lake) SS

Before me, Charles O. Steth, a Notary Public in and for the said County and State, personally appeared Max A. Ritt who acknowledged before me that he is the President of GEX UTAH, INC., a Utah corporation and that he signed the foregoing document as his free and voluntary act and deed for the uses and purposes therein set forth.

In witness whereof I have hereunto set my hand and seal this 15 day of August, A.D. 1975.

My commission expires May 2, 1979.

Charles O. Steth
Notary Public

PLAN OF MERGER

OF

SWISHER COAL CO. with and into GEX UTAH, INC.
with its name changed to SWISHER COAL CO.

(a) Swisher Coal Co., a Utah corporation (the "Merging Corporation") shall be merged into GEX Utah, Inc. a Utah corporation (the "Surviving Corporation"), which shall be the surviving corporation. The Merging Corporation and the Surviving Corporation are hereinafter sometimes referred to jointly as the "Constituent Corporations."

(b) The terms and conditions of the merger are as follows:

(1) The Constituent Corporations shall be a single corporation which shall be the Surviving Corporation as the surviving corporation, and the separate existence of the Merging Corporation shall cease.

(2) The Surviving Corporation shall thereupon and thereafter possess all of the rights, privileges, immunities, powers and franchises, as well of a public as of a private nature, of each of the Constituent Corporations and all property, real, personal and mixed, all debts due on whatever account, including subscriptions to shares and all other choses in action, and all and every other interest, of or belonging to or due to each of the Constituent Corporations shall be taken and deemed to be transferred to and vested in the Surviving Corporation without further act or deed; and the title to all real estate, or any interest therein, vested in either of the Constituent Corporations shall not revert or be in any way impaired by reason of the merger.

(3) The Surviving Corporation shall be responsible and liable for all of the liabilities and obligations of each of the Constituent Corporations, and any claim existing or action or proceeding pending by or against either of the Constituent Corporations may be prosecuted to judgment as if the merger had not taken place, or the Surviving Corporation may be substituted in its place, and neither the rights of creditors nor any liens upon the property of either of the Constituent Corporations shall be impaired by the merger.

(4) All corporate acts, plans, policies, agreements, arrangements, approvals and authorizations of

the Merging Corporation, its shareholders, Board of Directors and committees thereof, officers and agents, which were valid and effective immediately prior to the effective date of the merger shall be taken for all purposes as the acts, plans, policies, agreements, arrangements, approvals and authorizations of the Surviving Corporation and shall be as effective and binding thereon as the same were with respect to the Merging Corporation. The employees and agents of the Merging Corporation shall become the employees and agents of the Surviving Corporation and continue to be entitled to the same rights and benefits which they enjoyed as employees and agents of the Merging Corporation.

(5) The By-laws of the Surviving Corporation as in effect on the effective date of the merger shall be and constitute the By-laws of the surviving corporation until the same shall be properly altered, amended or repealed.

(6) The directors and officers of the Surviving Corporation in office on the effective date of the merger shall be and constitute the directors and officers of the surviving corporation.

(c) Upon the issuance of a certificate of merger by the Secretary of State of Utah, the 2,000 shares of the par value of \$5.00 each of the Merging Corporation now issued, all of which are owned by the Surviving Corporation, shall be cancelled and the stated capital represented by such shares shall be eliminated.

(d) The following is a statement of all changes in the articles of incorporation of the Surviving Corporation to be effected by the merger:

Article First is amended to read as follows:

"FIRST: The name of the corporation is:
SWISHER COAL CO."

(e) This plan of merger may be abandoned by the Surviving Corporation by appropriate resolution of its Board of Directors at any time prior to the issuance of a certificate of merger by the Secretary of State of Utah.

(f) The merger is intended by the Constituent Corporations to be a transaction to which Section 334(b)(2) of the Internal Revenue Code of 1954, as amended, applies.

* * *

Exhibit #6 : Hydrologic Report prepared by Vaughn Hansen Associates



WATER QUALITY AND HYDROLOGIC STUDY
IN VICINITY OF
HUNTINGTON CREEK MINE NO. 4 AND LITTLE BEAR SPRING

Prepared for
SWISHER COAL COMPANY

August 1977

CONSULTANTS/ENGINEERS

**VAUGHN
HANSEN
ASSOCIATES**

SALT LAKE CITY, UTAH

TABLE OF CONTENTS

CONTRACT RESPONSIBILITY	1
PROBLEM	1
OBJECTIVE OF THE STUDY	1
COORDINATION WITH FOREST SERVICE	2
PERIOD OF FIELD STUDY	2
RESULTS AND DISCUSSION	10
CONCLUSIONS	21
LITERATURE CITED	22

LIST OF FIGURES

FIGURE 1	ELEVATION CONTOUR MAP OF LITTLE BEAR AND NEIGHBORING CANYONS	4
FIGURE 2	CROSS SECTION OF LITTLE BEAR CANYON FROM WESTERN MOST POINT TO MOUTH SHOWING GEOLOGICAL TYPES, SEEPS, AND SPRINGS	5
FIGURE 3	WATER QUANTITY AND QUALITY SAMPLING STATIONS NEAR HUNTINGTON CREEK MINE NO. 4	7
FIGURE 4	FLOW RATES MEASURED AT THE LOWER SPRINGS NEAR HUNTINGTON CREEK MINE NO. 4	13
FIGURE 5	CATION-ANION DIAGRAMS OF SAMPLES COLLECTED NOVEMBER 8 THROUGH 12, 1976	15
FIGURE 6	CATION-ANION DIAGRAMS OF SAMPLES COLLECTED MAY 31 TO JUNE 4, 1977	16

LIST OF APPENDICES

Appendix A	Raw Water Quality Data	A-1
Appendix B	Water Quality Sampling Location Maps	B-1

CONTRACT RESPONSIBILITY

The study described in the following report was conducted for the purpose of determining the potential impact on ground water resulting from mining operations of Swisher Coal Company with recommendations for mitigating any potentially serious ground water impacts.

PROBLEM

Swisher Coal Company plans to expand their mining activity at Huntington Creek Mine No. 4 and Mill Fork Canyon, which is approximately twelve miles northwest of Huntington, Utah up Huntington Canyon. The expansion would be to the northwest in the vicinity of Little Bear Spring in Little Bear Canyon. Water from the spring is being used near Huntington for a domestic water supply. Concern has been expressed that extension of coal mining activity toward Little Bear Spring might intercept part or all of the flow that is now appearing at the spring and also that the quality of the spring water might be deteriorated.

OBJECTIVE OF THE STUDY

Vaughn Hansen Associates was requested to study the water quality and the hydrology in the vicinity of the intended activity. Two objectives were to guide the endeavor: (1) to determine the probable impact on Little Bear Spring of expanded mining and (2) to obtain background information pertaining to water quality for a reference to assess the cause of any changes in future quantity and quality of water at Little Bear Spring.

COORDINATION WITH FOREST SERVICE

Leases essential to the intended expansion of the mine are being requested from the U. S. Forest Service. This Federal Agency is concerned, therefore, about the probable adverse impact from the mining.

Several meetings have been held with staff from the Price office of the Forest Service to discuss the problem, to outline data acquisition procedures, and to discuss observations.

Forest Service personnel were to make geological observations in the area. Vaughn Hansen Associates was to gather and have analyzed water quality samples and to study the hydrology and fracturing patterns that may be related to water movement and water yield.

PERIOD OF FIELD STUDY

Field studies were conducted from November 8th through the 12th, 1976. These observations were after a dry fall and before the winter storms commenced. Data from water samples would, in general, reflect a base flow condition. In addition, samples were taken and field observations made during the period of May 31st through June 4th, 1977. This period of observation and sampling was preceded by an unusually wet May. Some ice was still melting in the deeper sections of Little Bear Creek. However, the snow cover had melted.

Little Bear Canyon, a tributary to Huntington Creek, is situated between Crandall Canyon and Mill Fork. (See Figure 1). It is located primarily in sections 8 and 9 of T.16S., R.7E. Because of the abrupt drainage divide created by the incision of Crandall Canyon and Mill Fork, Little Bear Canyon has been left quite isolated from surrounding canyons by past geologic events. Its average change in elevation of 1600 feet per mile compares with 660 feet per mile in Crandall Canyon and 590 feet per mile in Mill Fork. This rate of change difference and degree of isolation is especially striking when seen from aerial photos and from figure 1, which shows that lines of equal elevation occur in Little Bear Canyon at a point much further east than in the surrounding canyons. Ridges are sharp and the sides of the canyons surrounding Little Bear Canyon are steep. Drainage into Crandall Canyon and into Mill Fork Canyon has eroded to a common sharp ridge only one-half of a mile west of the head of Little Bear Canyon. This erosional pattern essentially intercepts any shallow ground water flow before it can reach Little Bear Canyon.

The drainage basin of Little Bear Canyon, covering approximately 755 acres, exposes six different geologic types, primarily cretaceous in age (See Figure 2): The North Horn Formation (a fluvial sandstone and mudstone), the Price River Formation (fluvial and marine sandstone and mudstone), the Castle Gate Sandstone (deltaic in origin), the Blackhawk Formation (sandstone, mudstone, shale, and coal), the Star Point Sandstone (deltaic and beach deposits), and the Masuk Shale member of the Mancos

FIGURE 1: ELEVATION CONTOUR MAP OF LITTLE BEAR AND NEIGHBORING CANYONS

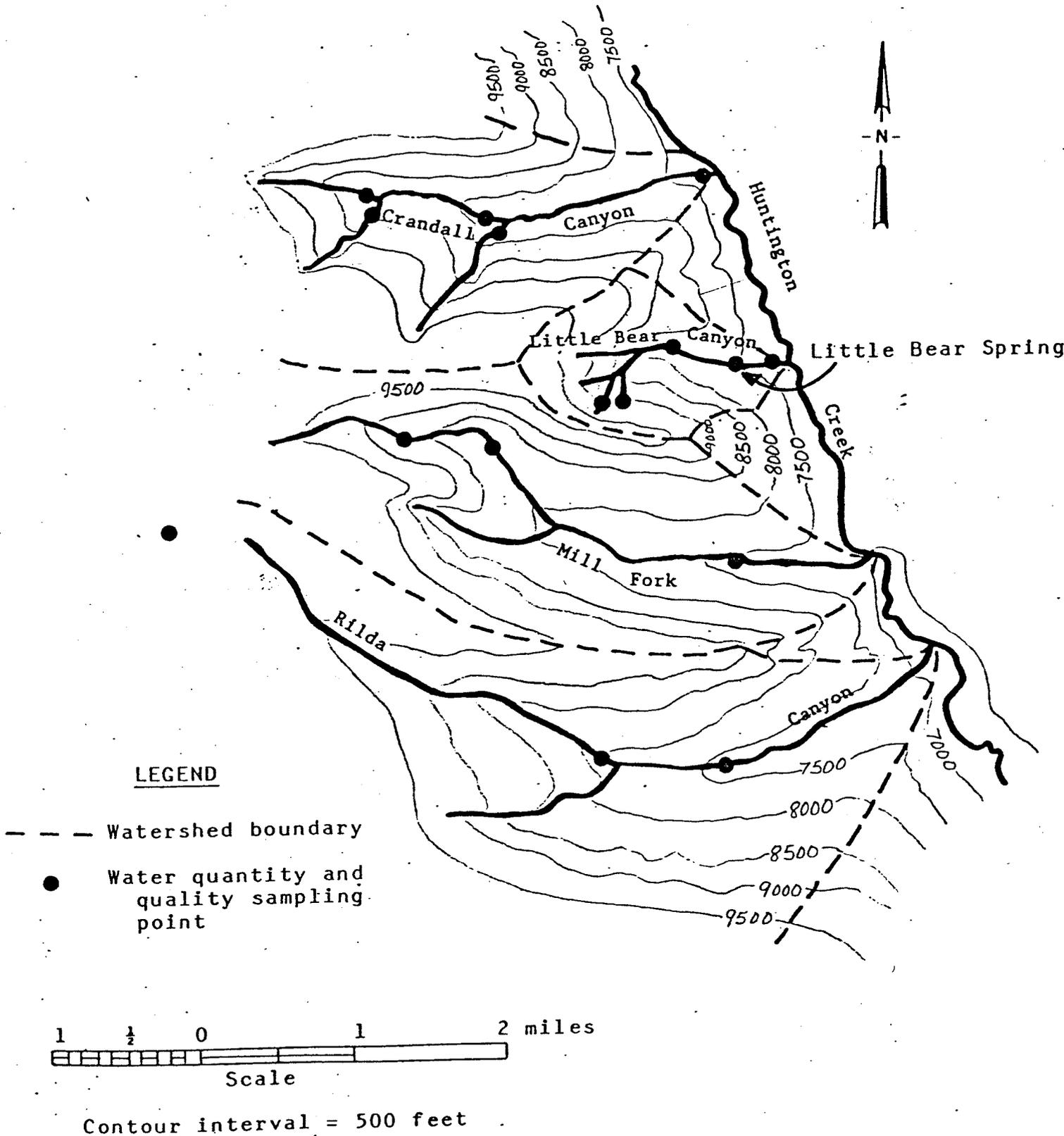
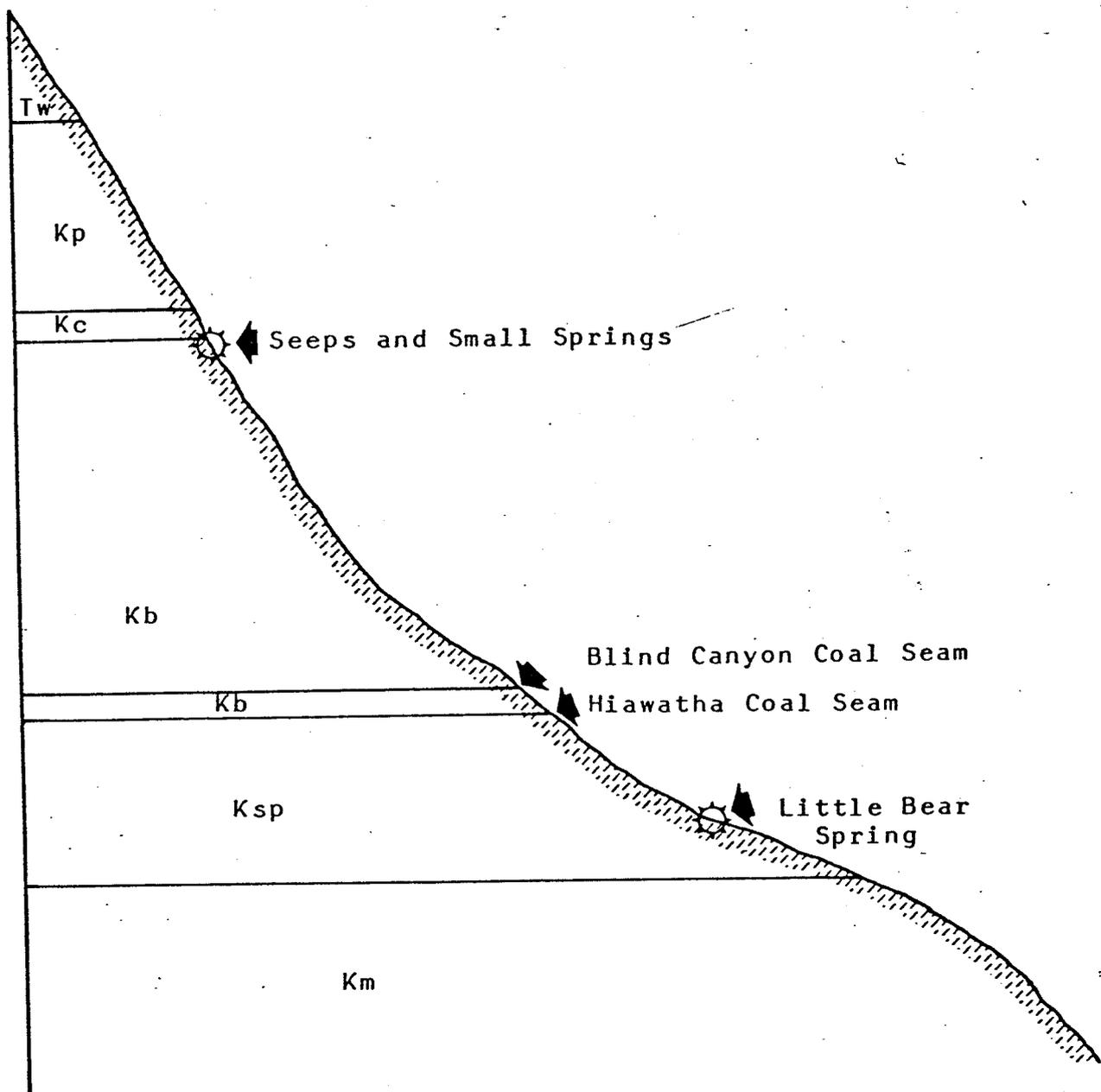


FIGURE 2: CROSS-SECTION OF LITTLE BEAR CANYON FROM WESTERN MOST POINT TO MOUTH SHOWING GEOLOGICAL TYPES, SEEPS, AND SPRINGS.



LEGEND

- Tw = North Horn Formation
- Kp = Price River Formation
- Kc = Castle Gate Sandstone
- Kb = Blackhawk Formation
- Ksp = Star Point Sandstone
- Km = Mancos Shale (Masuk Member)

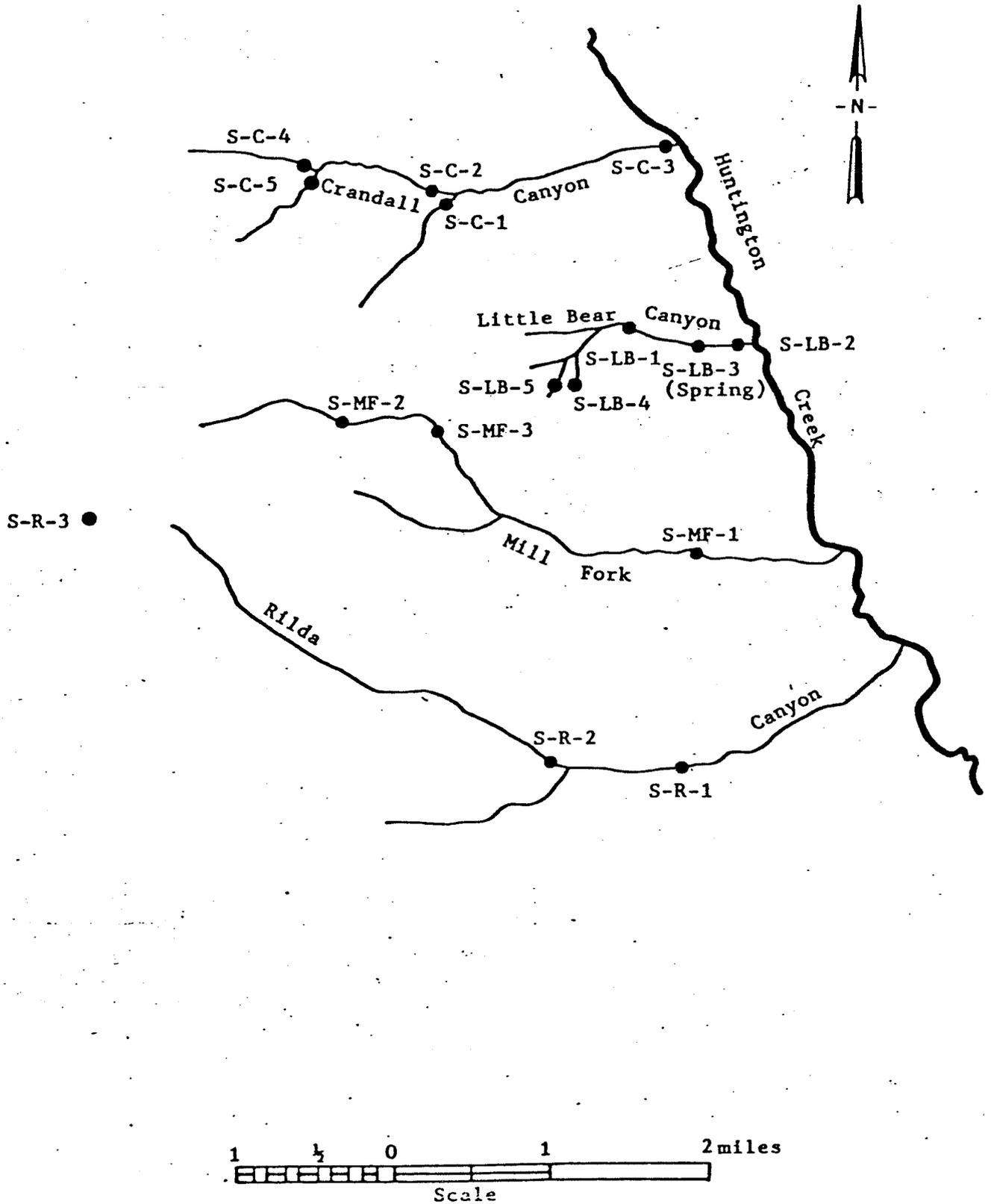
shale (marine in origin). The Hiawatha and Blind Canyon Coal Seams, of interest in this study, appear at or near the bottom of the Blackhawk Formation. Springs surface in the upper reaches of the canyon near the Castle Gate Sandstone - Blackhawk Formation boundary while Little Bear Spring issues from the Star Point Sandstone. The predominate faulting pattern according to information supplied by the U.S. Forest Service, is from the northwest to the southeast accompanied by additional faults in a northeast southwest direction and a set of faults orthogonal to the former set extending in a southwest - northeast direction.

Jeppson et al. (1968) indicate a normal annual precipitation of approximately 20 inches and a potential evapotranspiration of 18 to 21 inches per year in and near Little Bear Canyon. A comparison of the area with the headwaters of the nearby Price River Basin (as reported by Mundorff, 1972) leads one to believe that most of this precipitation falls as snow during the winter months. The steepness of Little Bear Canyon suggests that only a small portion of the summer precipitation infiltrates and appears later as spring flow. The bulk presumably runs off as surface flow.

METHODS OF DATA COLLECTION

A total of sixteen water quantity and quality sampling stations were selected in Crandall, Little Bear, Mill Fork, and Rilda Canyons (see Figure 3). A more complete description of the

FIGURE 3: WATER QUANTITY AND QUALITY SAMPLING STATIONS
NEAR HUNTINGTON CREEK MINE NO. 4



DESCRIPTION OF WATER QUANTITY AND QUALITY SAMPLING
STATIONS NEAR HUNTINGTON CREEK MINE NO. 4

<u>Station Code</u>	<u>Location*</u>	<u>Description</u>
S-C-1	(D-16-7) 6 dab	Crandall Canyon, 100 yards above confluence with West Branch.
S-C-2	(D-16-7) 6 dba	Crandall Canyon, 1.6 miles above highway, 200 yards above confluence with East Branch.
S-C-3	(D-16-7) 4 bbd	Crandall Canyon Creek above confluence with Huntington Creek.
S-C-4	(D-16-6) 1 acb	2.5 miles up Crandall Canyon on Right Fork of Each Branch, beyond fence.
S-C-5	(D-16-6) 1 acb	2.5 miles up Crandall Canyon on Left Fork of East Branch, beyond fence.
S-LB-1	(D-16-7) 8 daa	Little Bear Creek, 2400 feet north and 500 feet west of southeast corner of Section 8.
S-LB-2	(D-16-7) 9dac	Little Bear Creek, above confluence with Huntington Creek.
S-LB-3	(D-16-7) 9cad	Little Bear Spring, 0.3 mile up Little Bear Canyon.
S-LB-4	(D-16-7) 8dbd	Draw flowing north-west from hillside, below last fork, Little Bear Canyon.
S-LB-5	(D-16-7) 8 dbb	Middle Fork of south branch, Little Bear Canyon.
S-MF-1	(D-16-7) 21 baa	Mill Fork Canyon Spring near lower coal loading area, 1 mile up canyon.
S-MF-2	(D-16-6) 13 aab	Spring 3.9 miles up Mill Fork Canyon, on north branch.
S-MF-3	(D-16-7) 18 abd	Mill Fork Canyon, 100 yards below major split in canyon east side.
S-R-1	(D-16-7) 28 cab	Rilda Canyon Creek, 30 feet above bridge at old Helco Mine.

TABLE 1 con't
DESCRIPTION OF WATER QUANTITY AND QUALITY SAMPLING
STATIONS NEAR HUNTINGTON CREEK MINE NO. 4

<u>Station Code</u>	<u>Location*</u>	<u>Description</u>
S-R-2	(D-16-7) 29 bdd	Rilda Canyon Springs water system, 2.6 miles up canyon on north fork.
S-R-3	(D-16-6) 14 cdb	Spring near the head of Rilda Canyon, near upper ridge.

* Based on the well and spring numbering system used in the State of Utah.

stations is found in Table 1. Stations four and five in Crandall and Little Bear Canyons as well as station three in Rilda Canyon were added for the June 1977 sampling period along with the other eleven stations sampled in November 1976.

During each of the sampling periods, data were collected to assess water quantity and quality. Flow measurements were estimated by the float method when applicable or by visual estimation in the case of low flows. The flow at Little Bear Spring was measured at a 90° V-notch weir located slightly downstream from the spring. Dip samples were also collected for chemical analyses. Those samples to be analyzed for trace metals were fixed with nitric acid. Chemical analyses were completed by Ford Chemical Laboratory in Salt Lake City.

For convenience in making comparisons, stations S-LB-3, S-MF-1, and S-R-1 have been grouped together and collectively called the lower springs. All other stations will be referred to as the upper stations. This was deemed justifiable due to the similarities found among the lower springs, as will be discussed.

RESULTS AND DISCUSSION

Water Quantity

Water in the upper portion of each of the canyons studied flows intermittently and originates as interflow which surfaces above or near the Castle Gate Sandstone - Blackhawk Formation interface

and/or overland flow. The former process presumably dominates during the spring runoff season while the latter is most common during the summer thundershower period, especially in Little Bear Canyon as previously discussed.

Springs throughout the area appear to be surfacing primarily above and below the Blackhawk Formation, with little groundwater activity showing in the Blackhawk, field observations in mines located in the San Rafael and Price River Basins have shown that typically, only a limited amount of subsurface water is found in the Blackhawk Formation. Apparently, even though fracturing in the area has presumably also penetrated the Blackhawk, the nature of the material (i.e. fine texture) is such that these fractures have sealed and thus remained relatively impermeable. It would appear, therefore, that water which does enter the ground in either the Castle Gate or Star Point Sandstone surfaces in the same formation in which it entered, with very little passing through the Blackhawk.

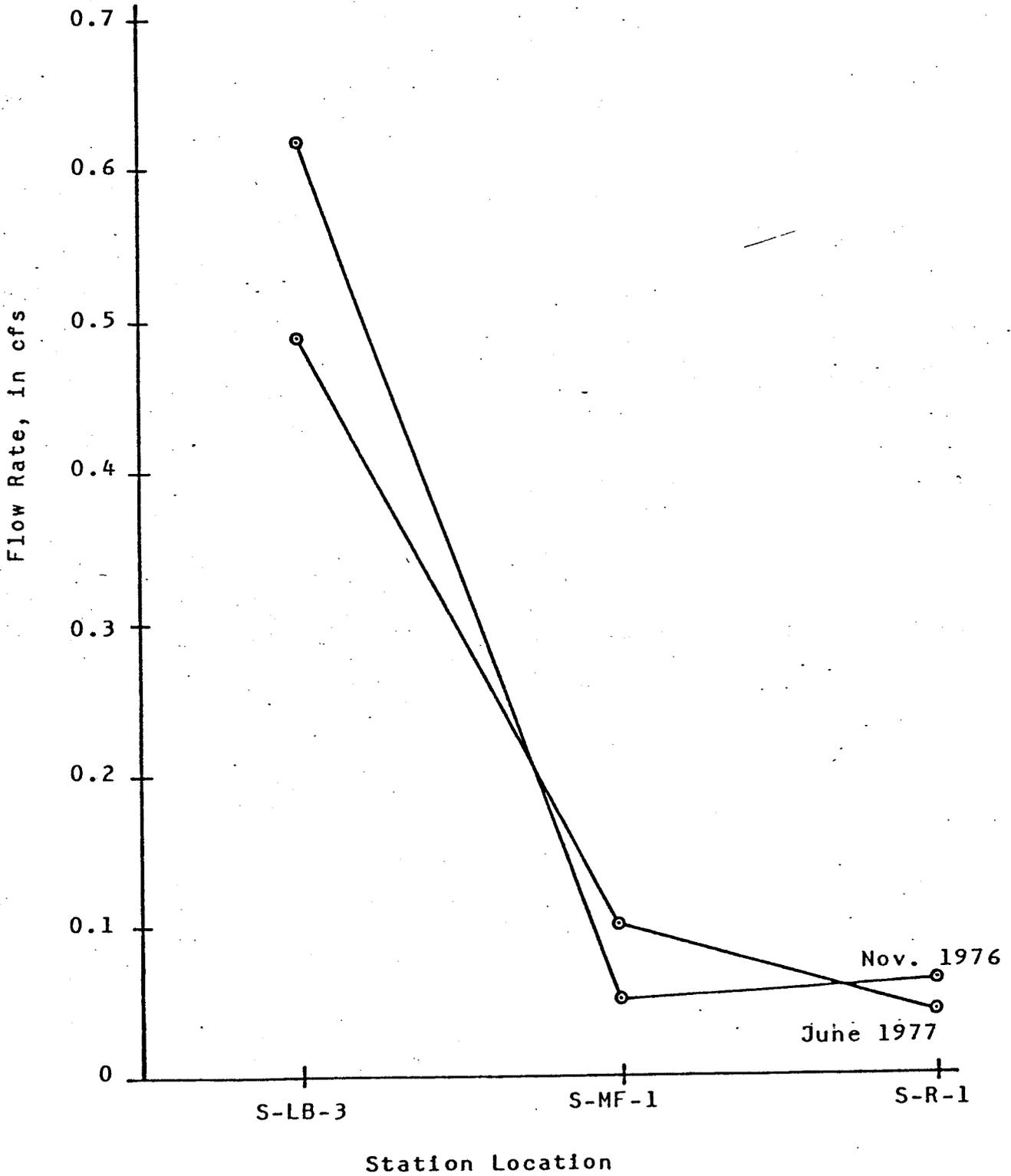
Subtracting the previously indicated annual potential evapotranspiration from the normal annual precipitation, the expected yield from Little Bear Canyon should be on the order of one to two inches per year. A comparison with similar areas in the nearby Price River Basin indicates that an upper limit of four inches of runoff might be expected from the canyon annually (See Utah Division of Water Resources, 1975). Measurements of flow quantities at Little Bear Spring during each of the two

sampling periods, however indicate an average annual yield of approximately six inches from the spring alone during the course of a severe drought period. This suggests that at least a portion of the water in Little Bear Spring is originating at some point other than on the watershed to the west above. Hughes¹ has indicated that springs issuing from fractures in the Star Point Sandstone between Rilda Canyon and Bear Creek Canyon to the south produce flows at a fairly constant rate, almost independent of season. Such a faulting system is present in the Star Point at and near Little Bear Spring, as indicated by field observations by the U.S. Forest Service and Vaughn Hansen Associates.

It has been observed that spring and surface water flow rates decrease in a southerly direction from canyon to canyon in the study area. This phenomenon is especially marked in the lower springs as seen in Figure 4. In addition, information supplied by the U.S. Forest Service indicates that the number of springs in the Huntington Creek drainage decrease as one approaches Little Bear Spring from the northwest. This, plus the information already presented, leads to the conclusion that ground water is approaching the area from the north or northwest, with a progressive downstream depletion of the aquifer.

¹Treavor C. Hughes, Associate Professor of Civil and Environmental Engineering, Utah Water Research Laboratory, Logan, Utah. Written communication received 18 July 1977.

FIGURE 4: FLOW RATES MEASURED AT THE LOWER SPRINGS
NEAR HUNTINGTON CREEK MINE NO. 4



In summary, fractures in the more permeable sandstones above and below the Blackhawk Formation are presumably the means whereby ground water is surfacing in the area. The presence of the less permeable Blackhawk, the isolated nature and relatively small surface contributing area of Little Bear Canyon, the large flow measured at the spring, and the southward depletion in spring flow rates throughout the area indicate that water at Little Bear Spring originates primarily in the north, flowing through the Star Point Sandstone, rather than originating on the watershed to the west.

Water Quality

The waters of Crandall, Little Bear, Mill Fork, and Rilda Canyons are all chemically very closely related. The cation-anion configurations for all samples collected confirms this (see Figure 5 and 6). A progressive deterioration in water quality from north to south and west to east is also seen. It appears that if the water could be intercepted high in the system and discharged without passing through the lower portions of the various canyons, water of a higher quality would be available.

The major cation and anion concentrations remained fairly constant from November 1976 to June 1977. An increase in magnesium, noted at the lower stations, was observed in June with decreases in most other cases. The cation-anion ratios for all stations were similar during both sampling periods. The following is a synopsis of chemical quality results of the samples collected. See Appendix A

FIGURE 5: CATION-ANION DIAGRAMS OF SAMPLES COLLECTED
NOVEMBER 8 THROUGH 12, 1976

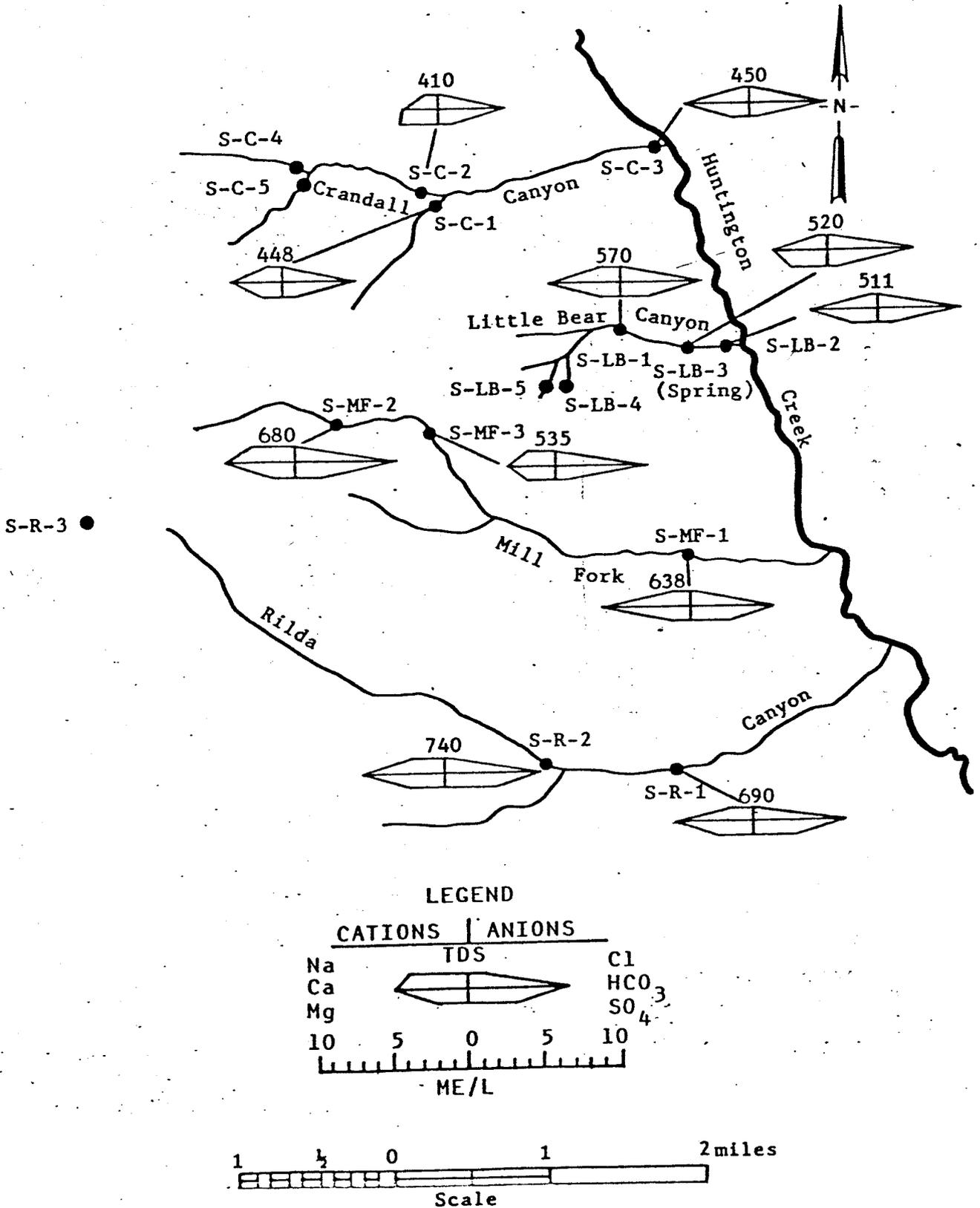
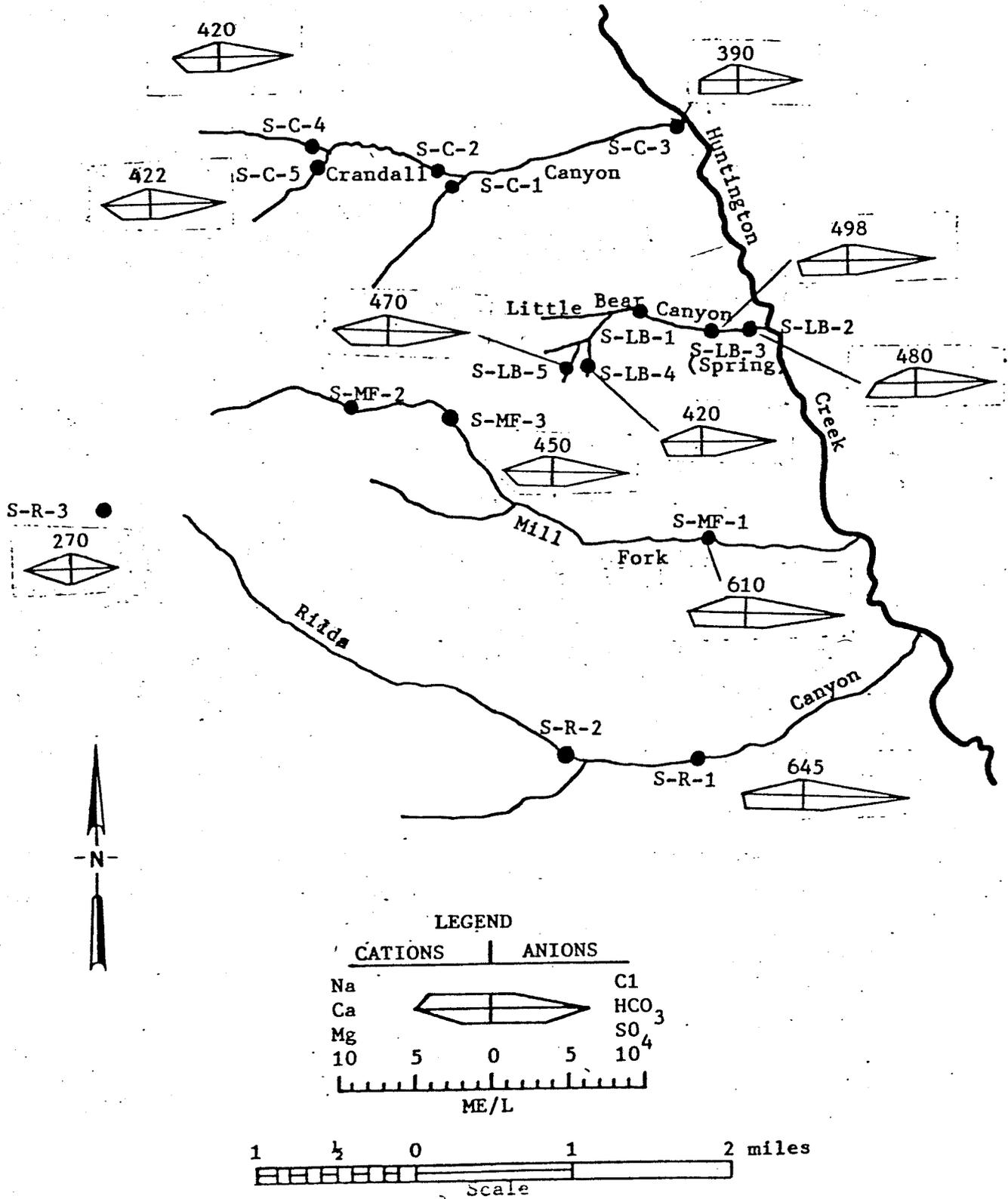


FIGURE 6: CATION-ANION DIAGRAMS OF SAMPLES COLLECTED

MAY 31 to JUNE 4, 1977



for a tabular presentation of all water quality data and Appendix B for maps showing the location of these data in the field.

Total Dissolved Solids

The recommended drinking water standard limit of 500 mg/l was exceeded at eight of the eleven stations sampled in the Fall. The average concentration was 563 mg/l. No samples in Crandall Canyon were in excess of 500 mg/l. During June 1977 two of the eleven stations sampled had TDS concentrations in excess of 500 mg/l. The average concentration was 461 mg/l. The two stations in excess of the recommended standard were the lower stations in both Mill Fork and Rilda Canyons. Concentrations typically increased from north to south in the study area.

Hardness

Hardness levels tended to increase as the water reached the deeper parts of the various canyons.

Alkalinity

Increases in alkalinity levels are seen as the water reaches the deeper canyon area.

Barium

None of the water samples exceeded the mandatory maximum limit of 1.0 mg/l. The concentrations ranged from 0.002 mg/l to 0.37 mg/l.

Bicarbonate

Bicarbonate showed the same increasing trends as alkalinity and hardness.

Boron

In November 1976, all analyses for boron were below the laboratory detection limit of 0.001 mg/l. In June 1977, the concentrations for boron ranged from less than 0.001 mg/l to 0.085 mg/l.

Calcium

Calcium concentrations increased as the water reached the deeper portions of Huntington Canyon. The highest concentrations were found in Rilda Canyon.

Chloride

Chloride is of little concern in this area. The recommended maximum concentration for drinking water supplies is 250 mg/l and the highest concentration found was 10 mg/l. The average concentration was 5 mg/l.

Copper

Copper concentrations were consistently low. The high concentration was 0.040 mg/l, found in Little Bear Spring, Mill Fork, and Rilda Canyons during the November sampling period. The high concentration in June was 0.035 mg/l in lower Crandall.

Fluoride

Fluoride concentrations averaged 0.18 mg/l. The concentrations increased deeper in the canyons.

Iron

Iron concentrations averaged 0.14 mg/l for both sampling periods. Upper Little Bear Canyon had the high concentration of 0.311 mg/l in November 1976.

Magnesium

Magnesium concentrations ranged from 2.88 mg/l on top of Rilda Canyon to 46.08 mg/l at the lower Rilda Canyon station. The average concentration for all samples was 25.09 mg/l. The June sampling averaged 10 mg/l higher in concentration than the November samples.

Manganese

No violations of the 0.05 mg/l recommended limit were observed. The average concentration was 0.008 mg/l.

Potassium

Potassium concentrations averaged 1.17 mg/l in November and 1.99 mg/l in June. The concentrations increased as the water reached the deeper parts of the canyons.

Sodium

Sodium concentrations increased in the deeper portions of Huntington Canyon. The November average was 31.1 mg/l. June's average concentration was 9.6 mg/l.

Sulfate

Sulfate concentrations increased from north to south with the highest concentrations being found in Rilda Canyon. The average concentrations were 74.9 mg/l and 41.8 mg/l in November and June, respectively. There was a greater range of sulfate concentrations in the Fall (27.7 to 167 mg/l) over the Summer (34 to 66 mg/l).

Zinc

Zinc concentrations increased in the lower waters. The average in November was 0.055 mg/l while only 0.010 mg/l in June.

The water quality data thus far collected indicate concentration gradients in both a north-south and west-east direction. This again leads to the conclusion that subsurface water supplies originate from one of two sources: (1) water which falls in the upper portions of the canyons tributary to Huntington Creek and subsequently infiltrates and flows east, surfacing normally above the Blackhawk Formation or (2) water which enters the area through aquifers in the Star Point Sandstone from the north, possibly being fed by Huntington Creek or its tributaries.

Data from this study and from the 208 water Quality Study show increases in concentration from increased contact with the mancos derived soils. The deeper the canyon, the more both the Blackhawk formation above the Star Point Sandstone and the underlying mancos formation are exposed. The longer the flow path, the greater the concentration.

CONCLUSIONS

Water quantity and quality data collected during November 1976 and June 1977 suggest that surface and subsurface water enters the study area both from the west and also from the north. Because of the apparent limited amount of ground water which flows through the less permeable Blackhawk Formation, water at Little Bear Spring is suspected to originate in the north, flowing through aquifers in the Star Point Sandstone, and surfacing usually at fractures ~~is~~ in the formation. The southward depletion in flow noted at the lower springs suggests that little ground water would be encountered if mining coal at the Blackhawk Formation-Star Point Sandstone interface were to expand in that direction.

The water table at Little Bear Spring is below the coal seams to be mined. Crandall Canyon serves as a major interceptor drain cutting into the Star Point Formation. These conditions indicate that increased mining proposed by Swisher Coal Company would have little or no effect on the Little Bear Spring.

Water quantity and quality should be monitored during the mining operation to document the impact on adjacent ground water.

LITERATURE CITED

Jeppson, R. W., G. L. Ashcroft, A. L. Huber, G. V. Skogerboe, and J. M. Bagley. 1968 Hydrologic Atlas of Utah, Utah Water Research Laboratory and Utah Department of Natural Resources. PRWG 35-1, Utah State University, Logan, Utah.

Mundorff, J. D. 1972. Reconnaissance of Chemical Quality of Surface Water and Fluvial Sediment in the Price River Basin, Utah. Utah Department of Natural Resources, Division of Water Rights. Technical Publication No. 39, Salt Lake City.

Utah Division of Water Resources, 1975. Hydrologic Inventory of the Price River Basin. Utah Department of Natural Resources, Salt Lake City.

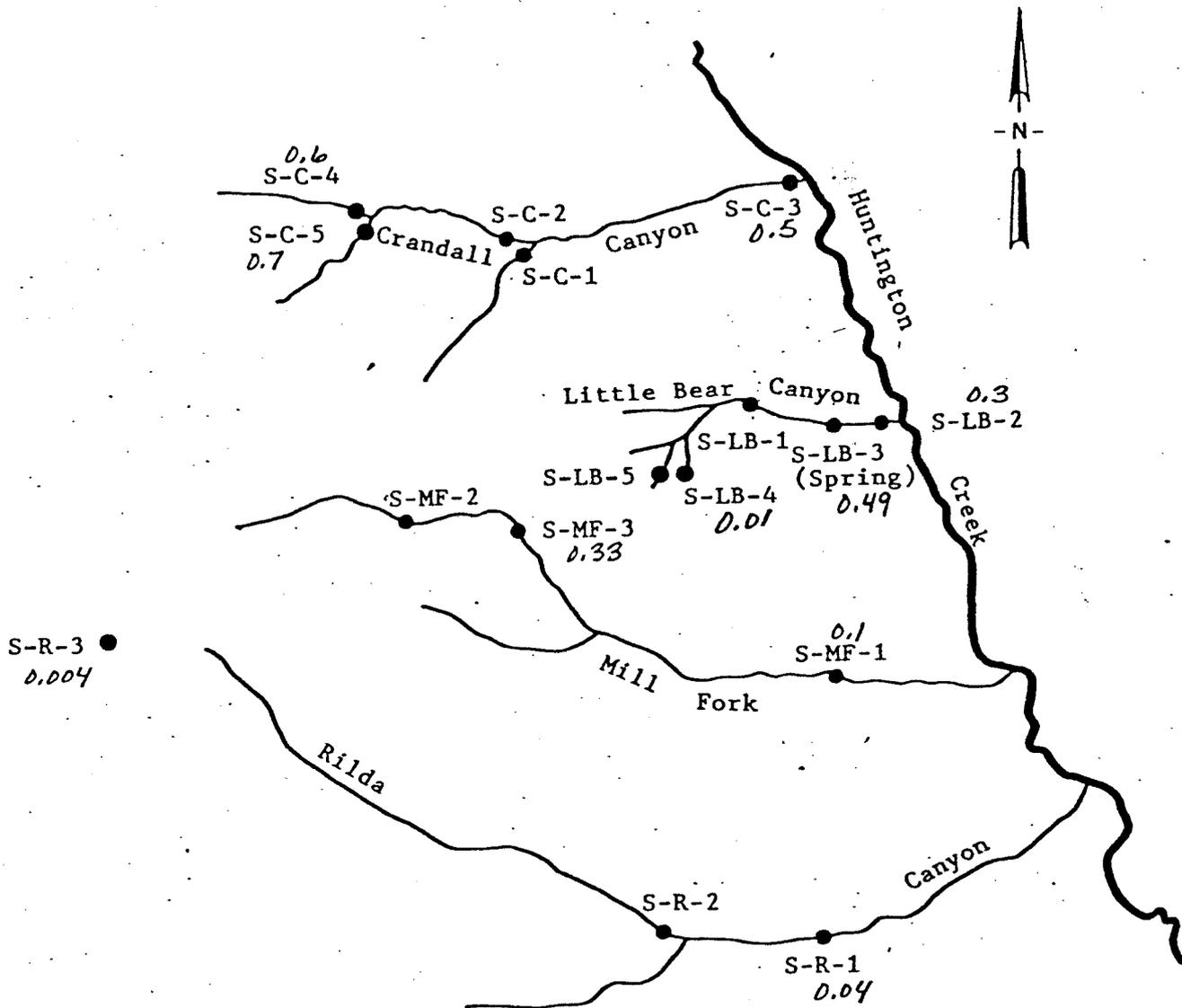
APPENDIX A

RAW WATER QUALITY DATA

APPENDIX B

WATER QUALITY SAMPLING
LOCATION MAPS

WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY

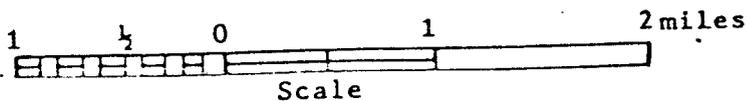


Parameter Flow
Date May 31 to June 4, 1977

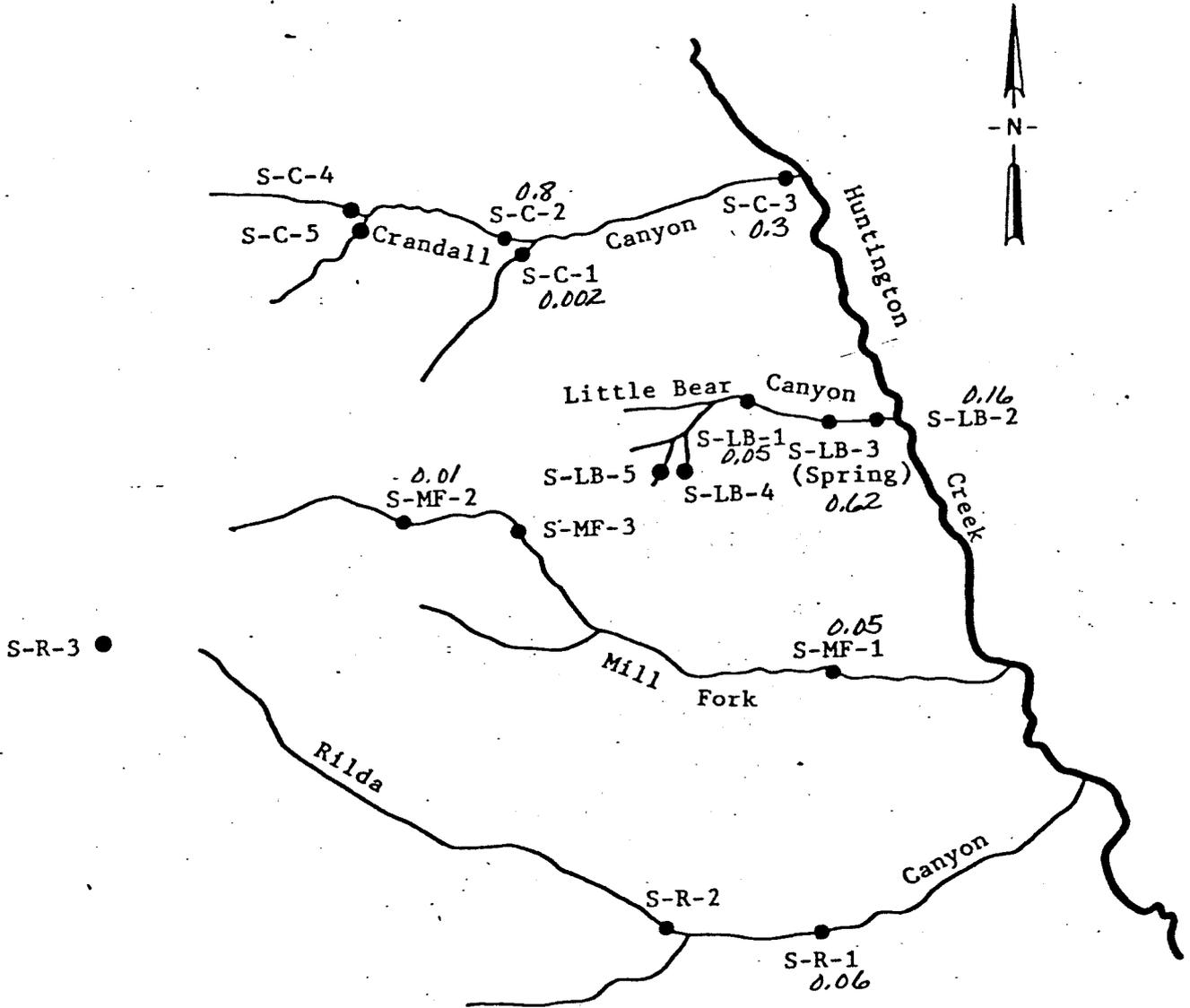
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY

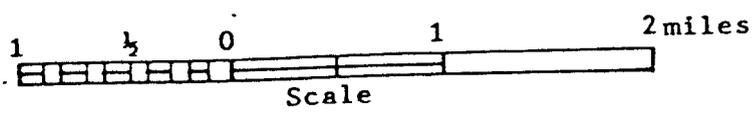


Parameter Flow, cfs.
 Date November 8-12, 1976

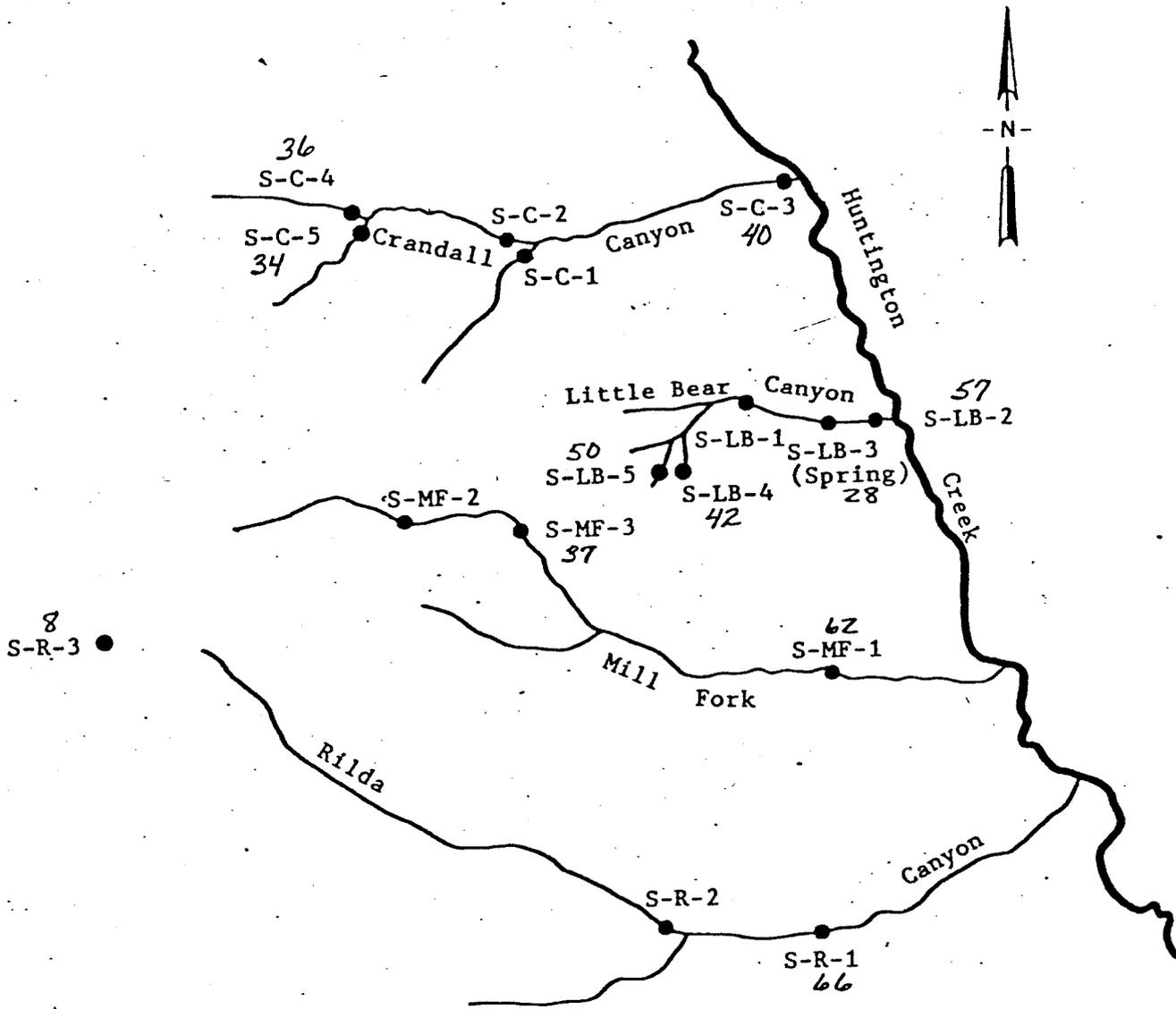
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
 lower _____
 upper _____

Vaughn Hansen Associates
 5620 South 1475 East
 Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY

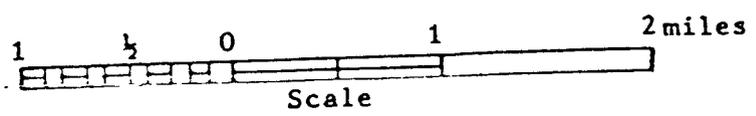


Parameter Sulfate
Date May 31 to June 4, 1977

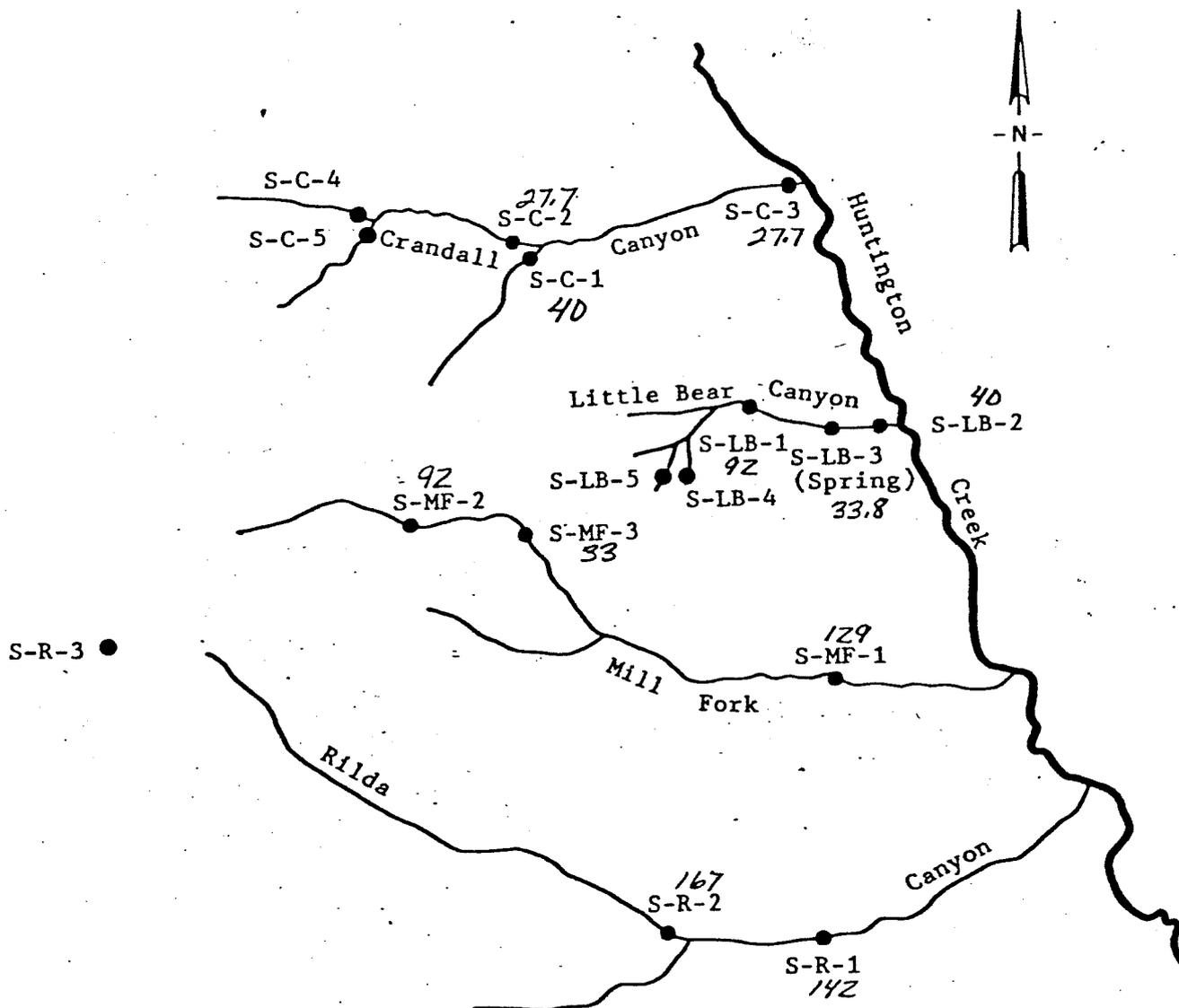
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper 250 mg/l Recommended

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY

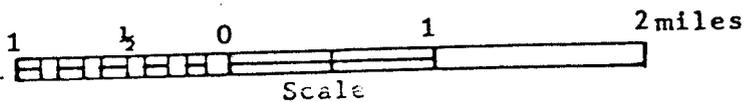


Parameter Sulfate
Date November 8-12, 1976

NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper 250 mg/l Recommended

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121

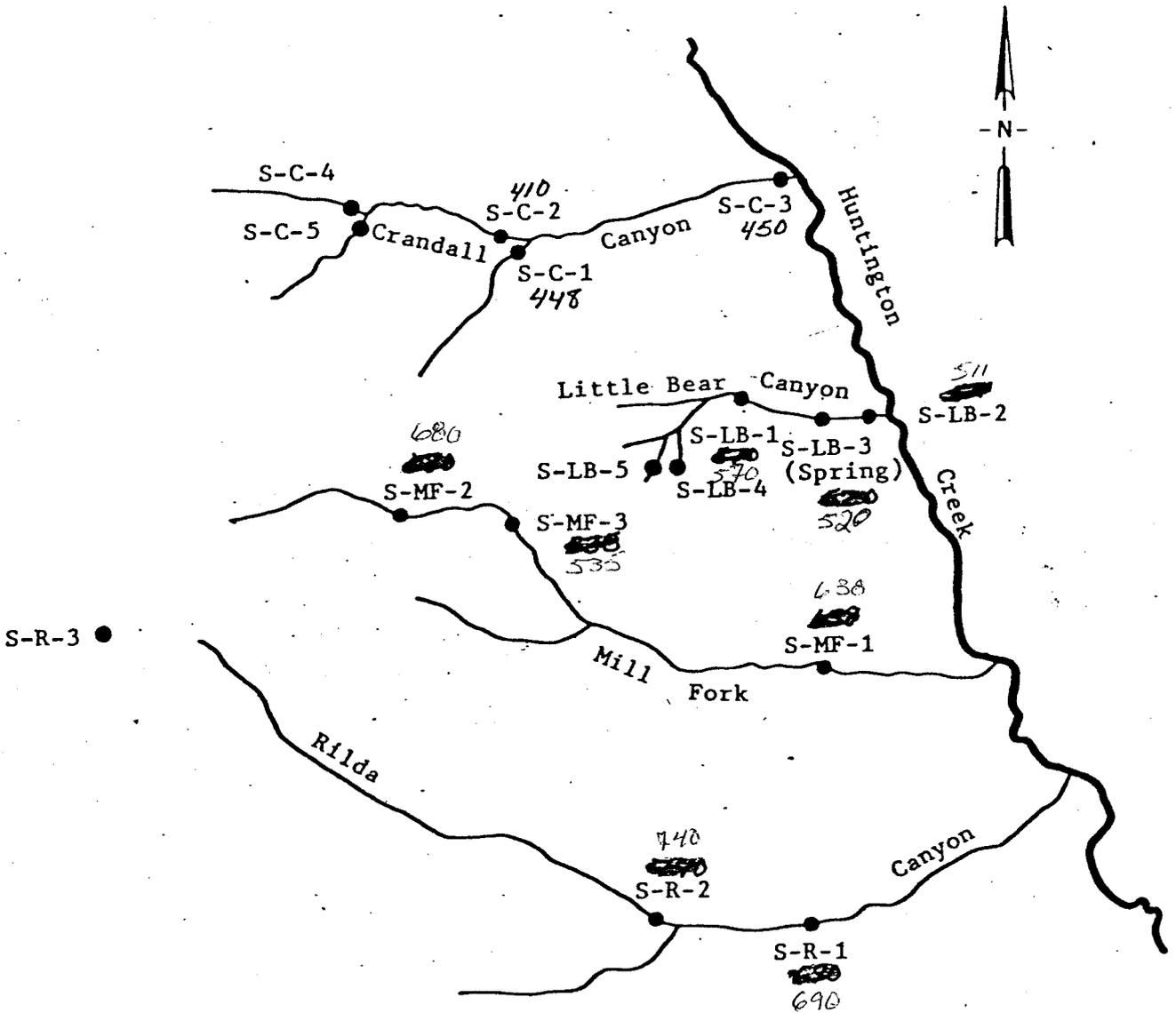


On the original report the values of the T. D. S. parameter was in exceedance of the Drinking water standard and was shaded in red. Through zeroxing appeared to be crossed out.

Value in blue pen obtained from Rich White, Vaughn HANSEN Associates.

Tom Sochoski
1/8/79

WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Total Dissolved Solids
Date November 8-12, 1976

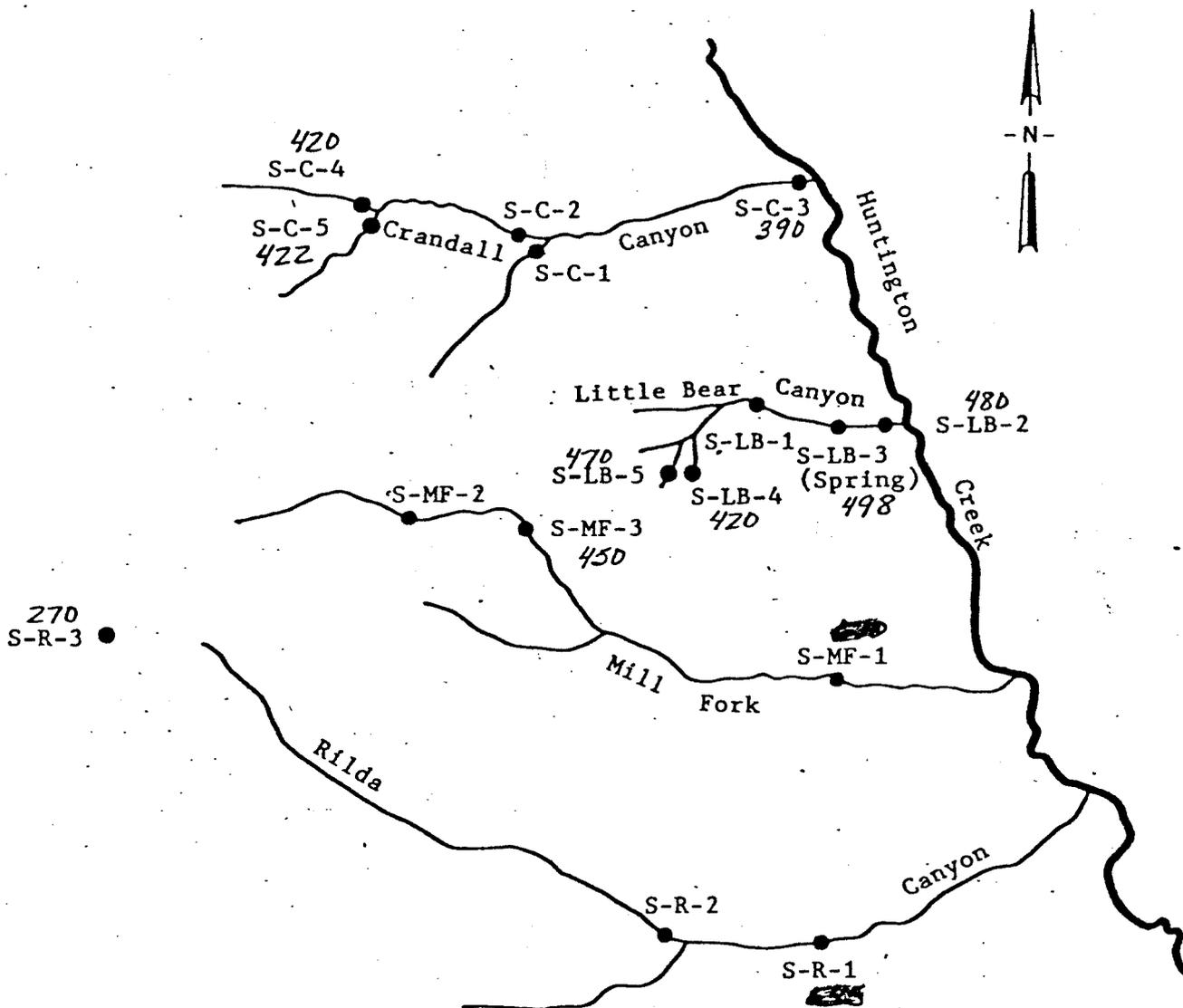
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper 500 mg/l Recommended

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Total Dissolved Solids
Date May 31 to June 4, 1977

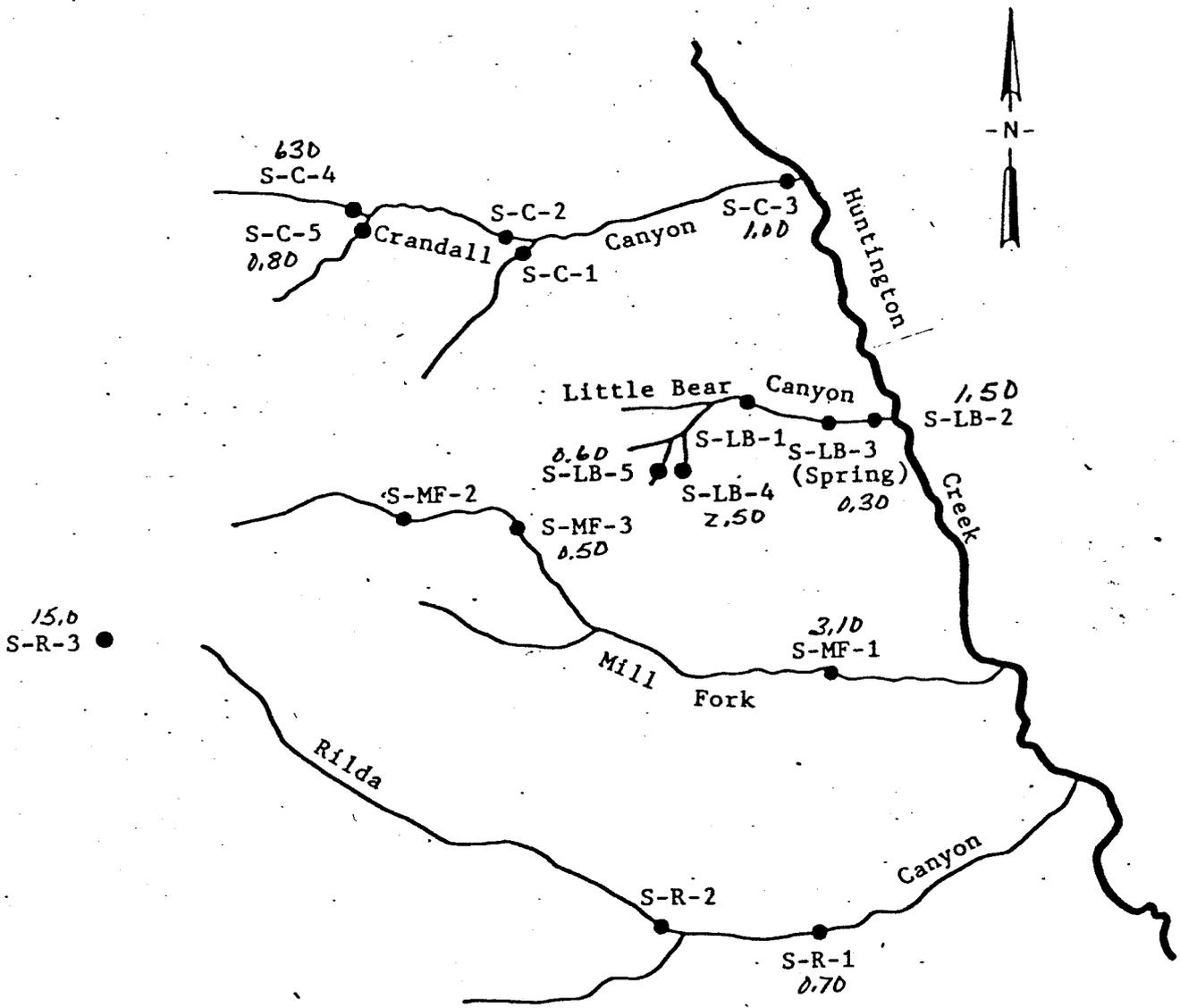
NOTE: Stations marked in red
are outside of state limits
for the sample taken during
the above sampling period.

LIMITS:
lower _____
upper 500 mg/l Recommended

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY

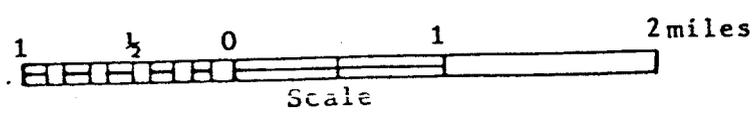


Parameter Turbidity
Date May 31 to June 4, 1977

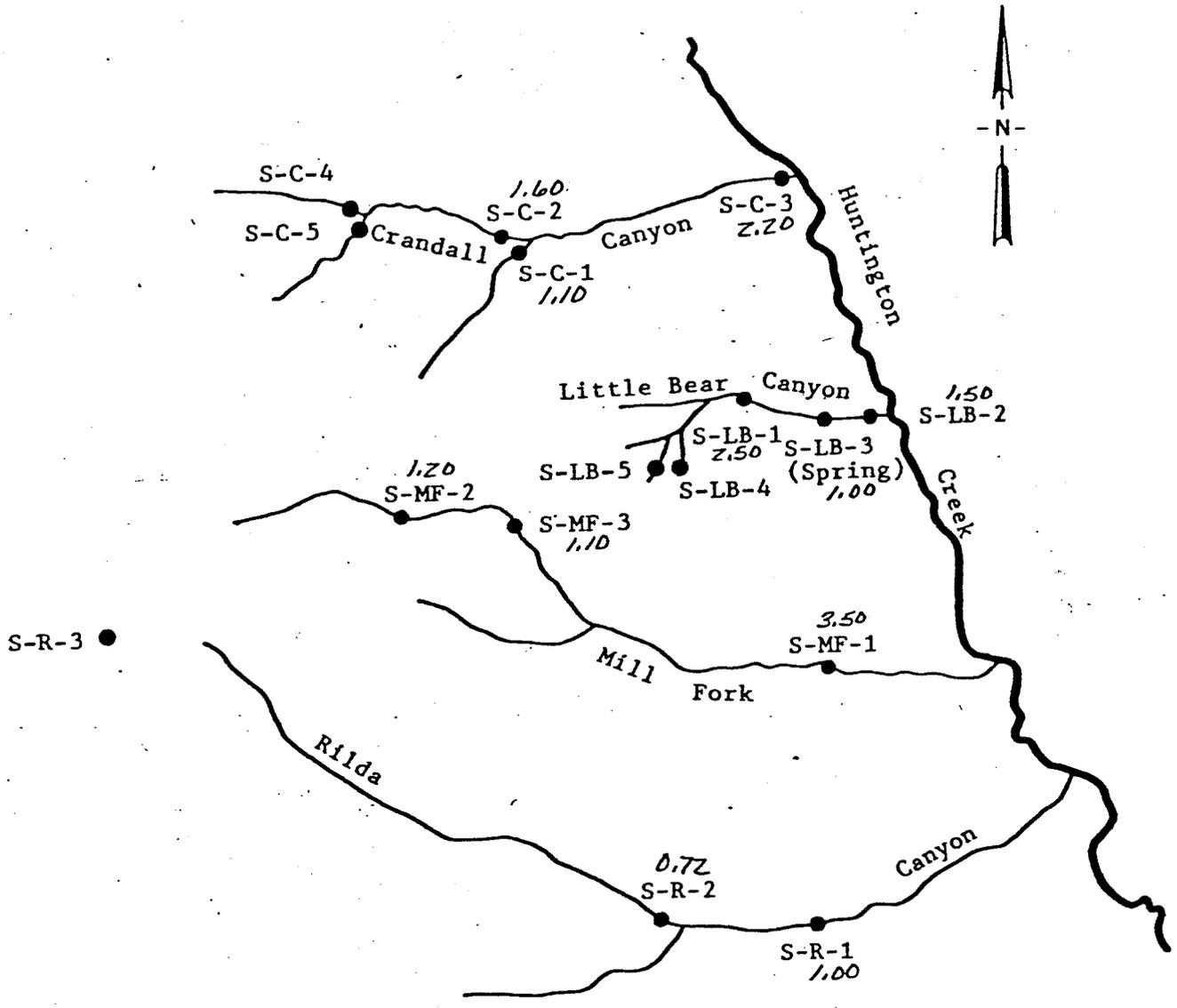
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Turbidity
Date November 8-12, 1976

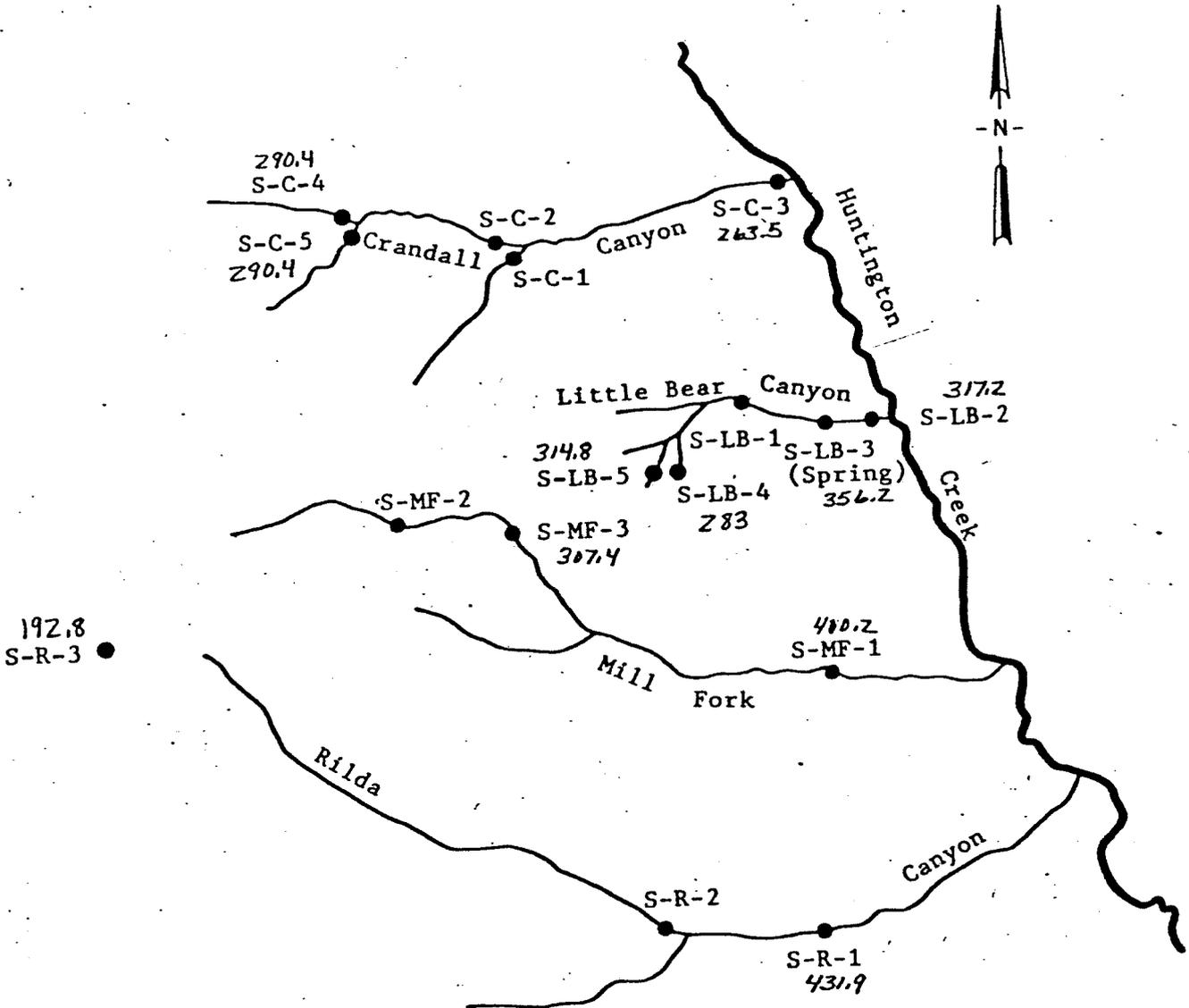
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Bicarbonate
 Date May 31 to June 4, 1977

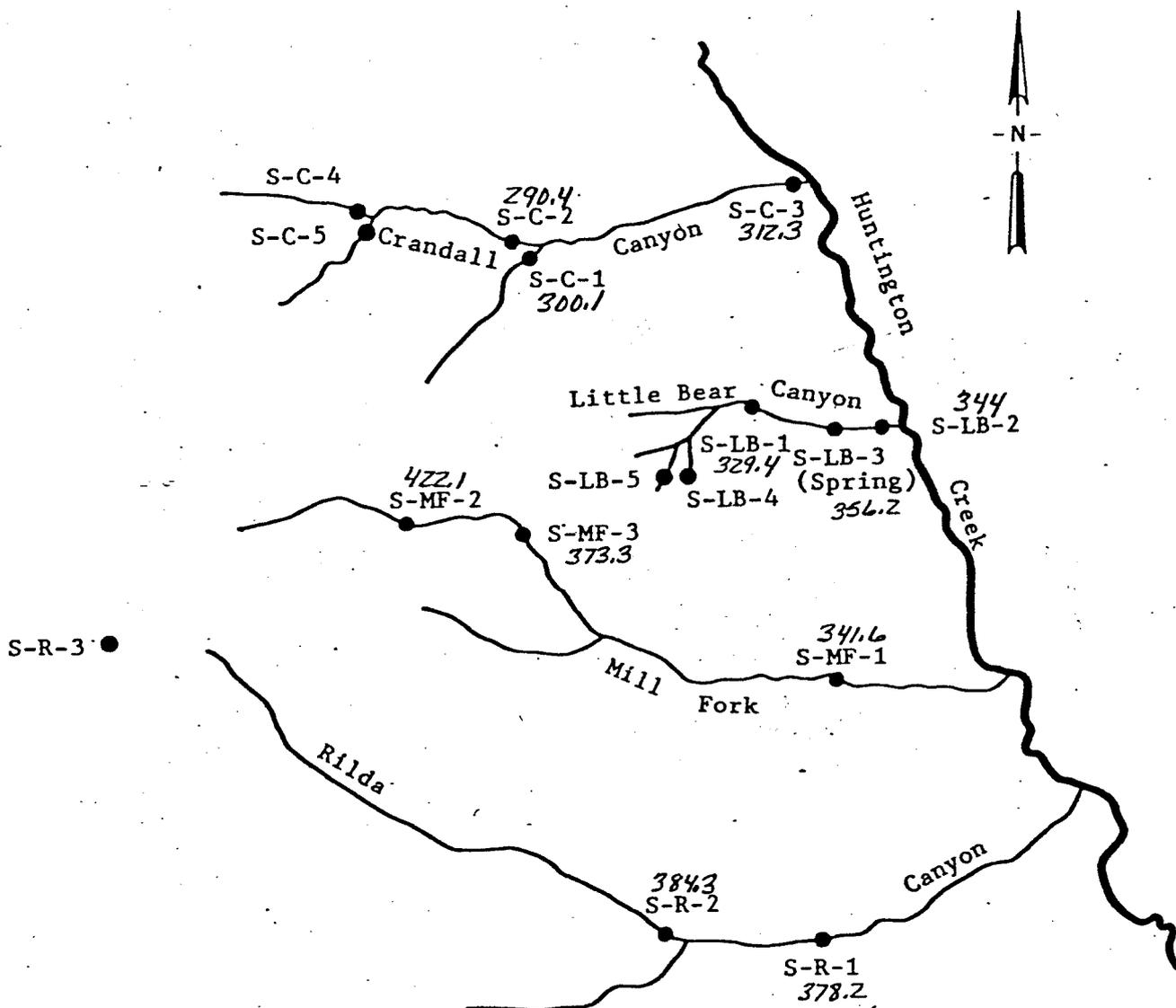
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
 lower _____
 upper _____

Vaughn Hansen Associates
 5620 South 1475 East
 Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Bicarbonate
Date November 8-12, 1976

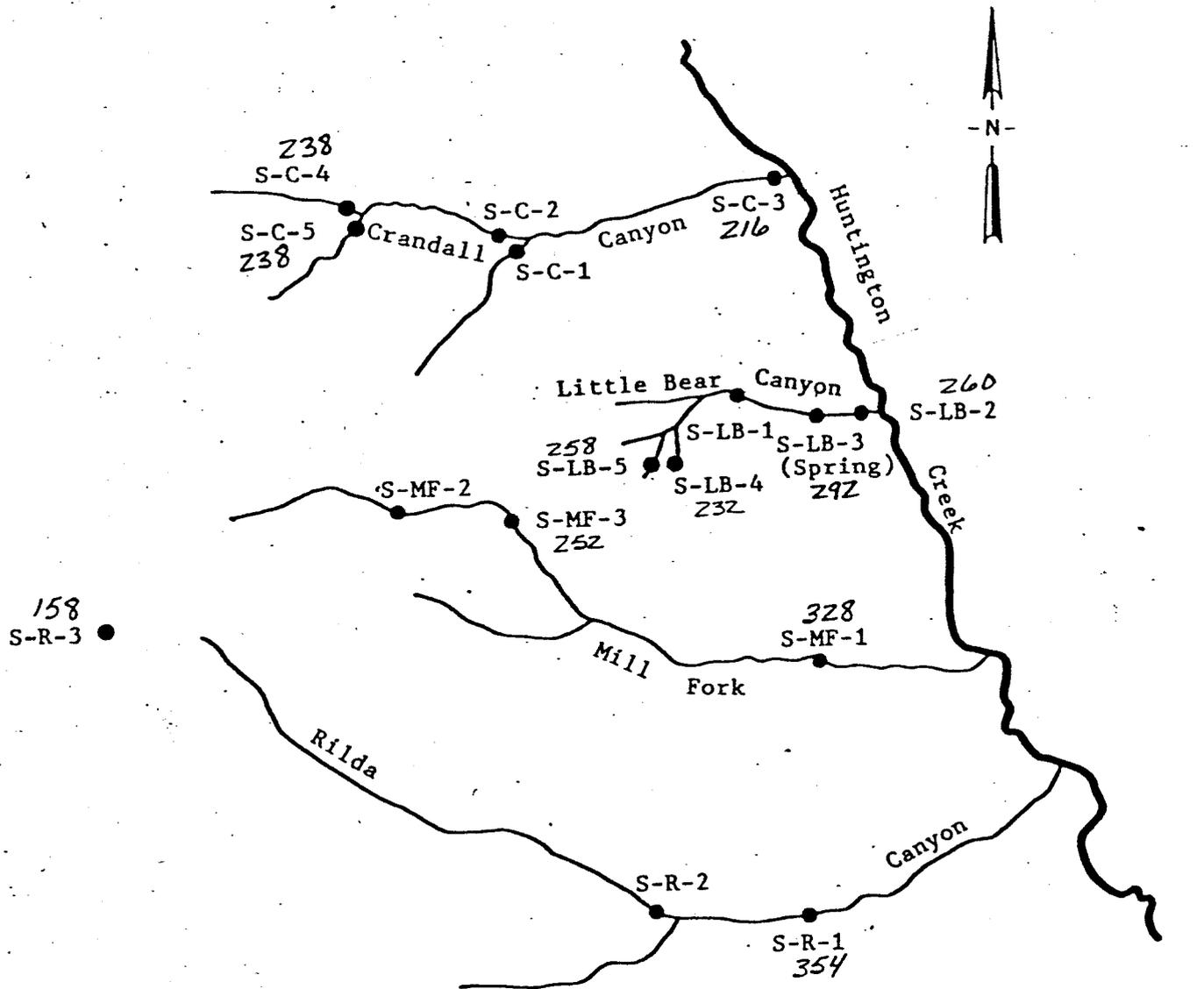
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY

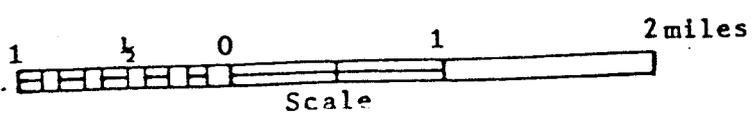


Parameter Total Alkalinity
Date May 31 to June 4, 1977

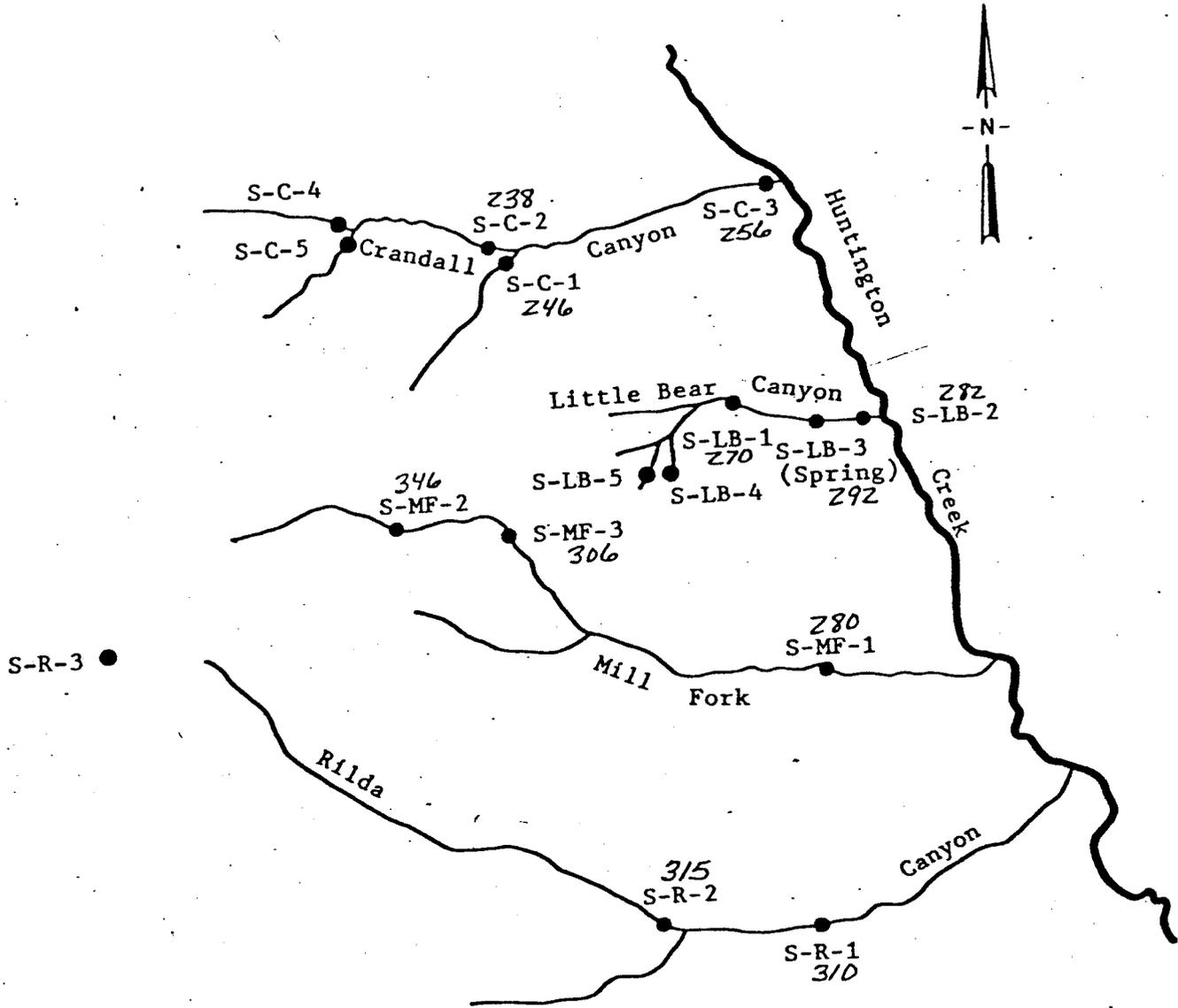
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Alkalinity (Total)
Date November 8-12, 1976

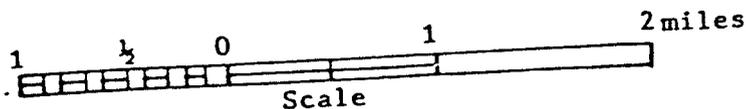
NOTE: Stations marked in red
are outside of state limits
for the sample taken during
the above sampling period.

LIMITS:

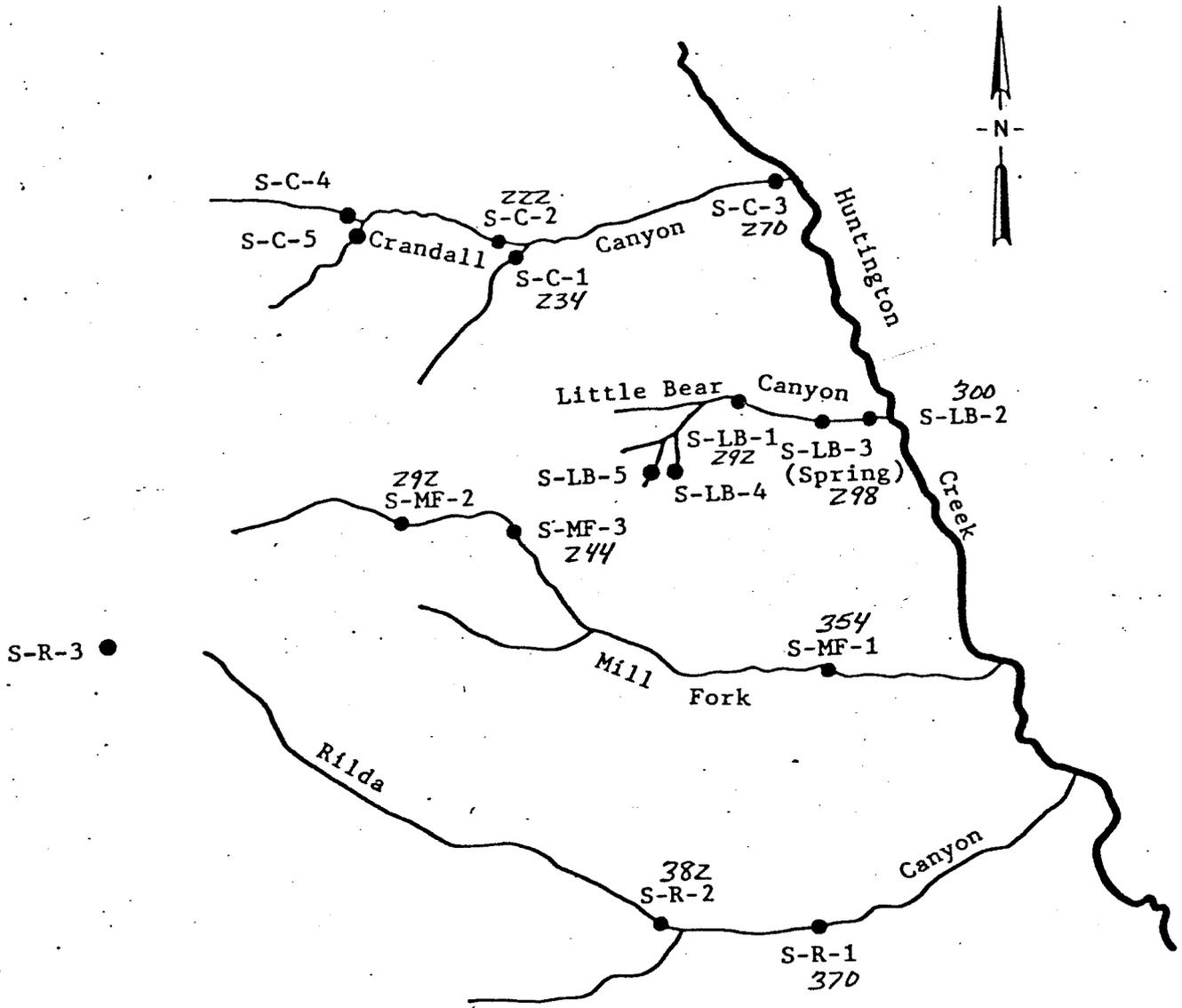
lower _____

upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY

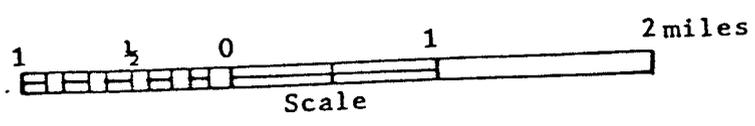


Parameter Hardness
Date November 8-12, 1976

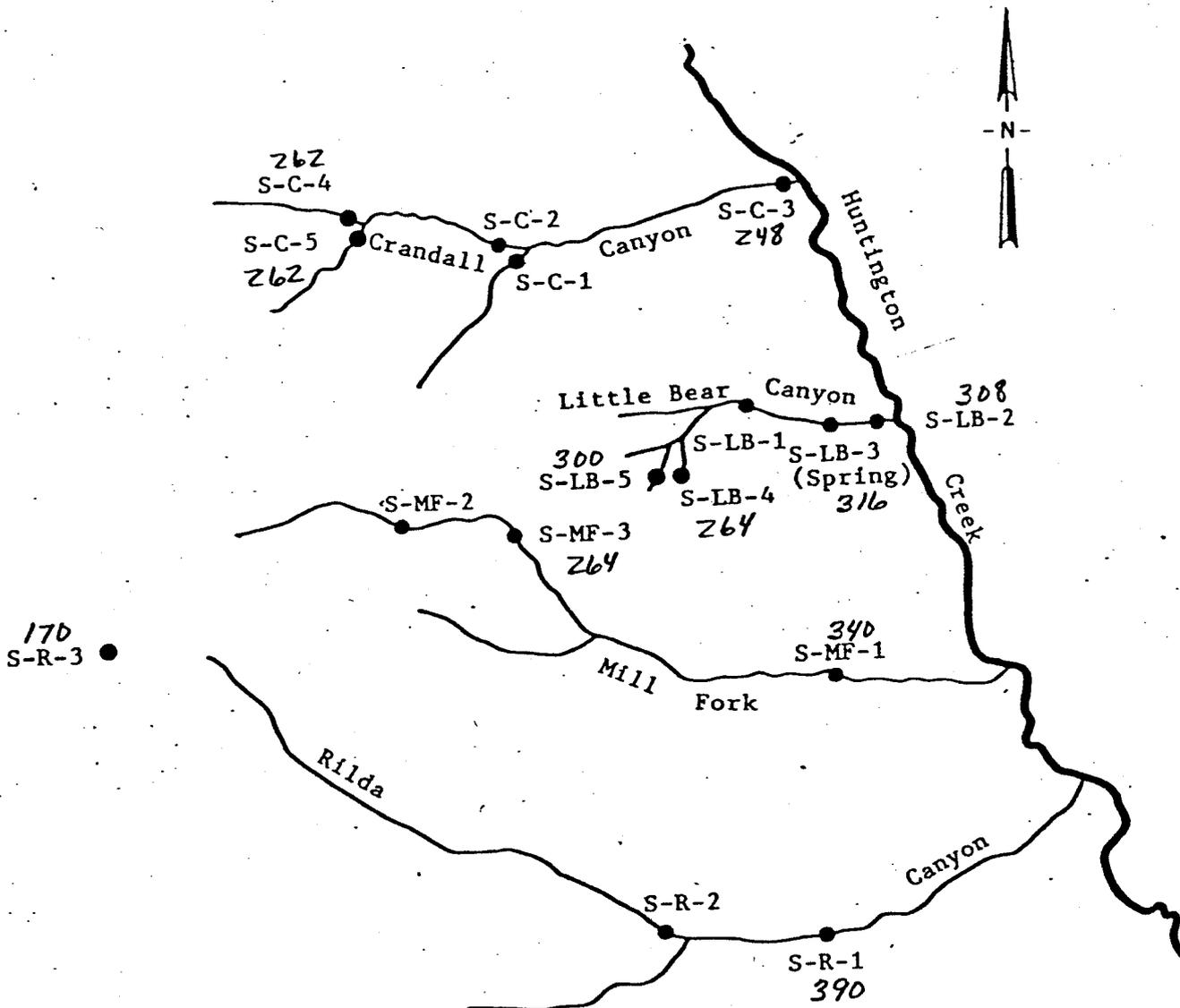
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Hardness
Date May 31 to June 4, 1977

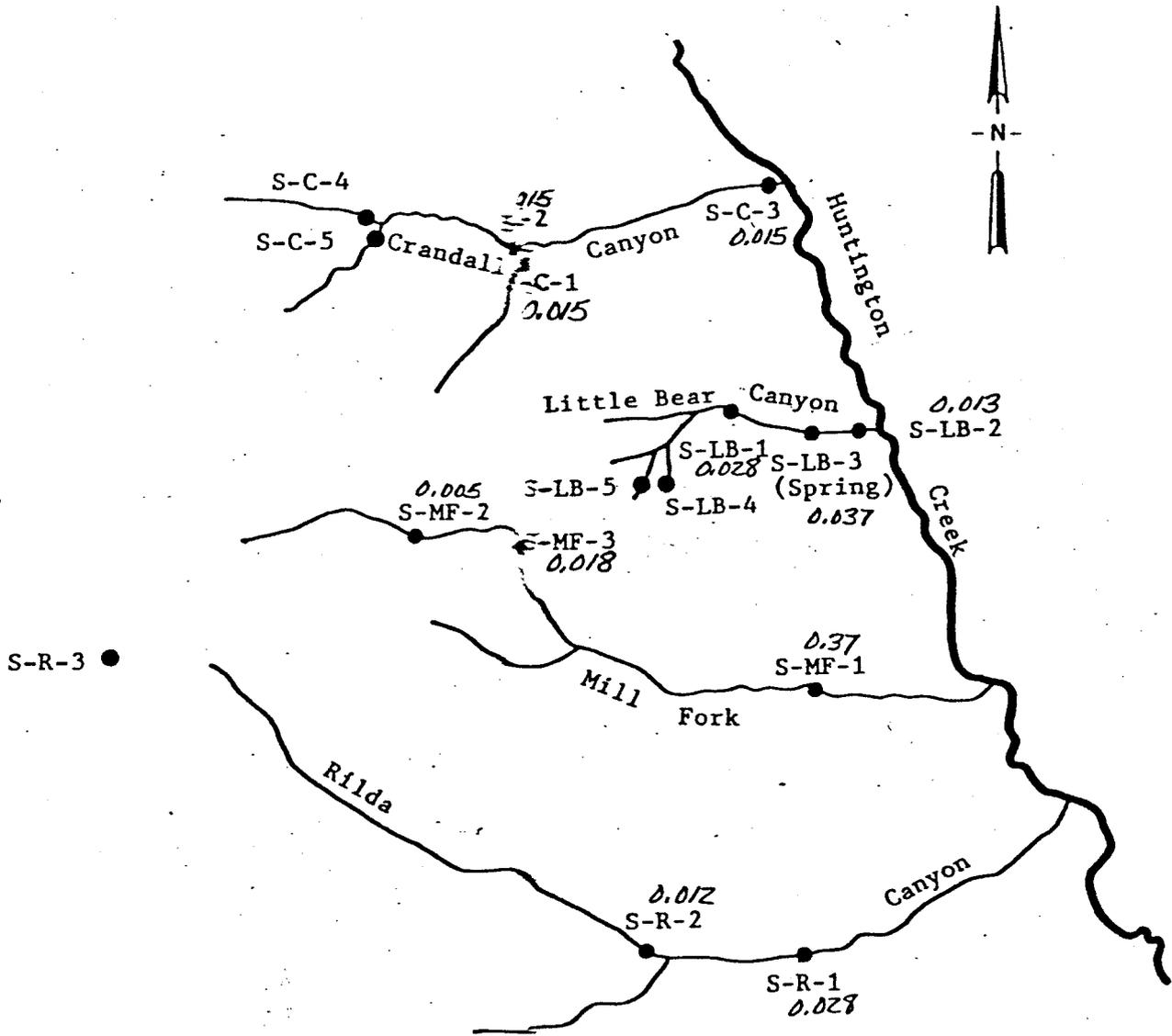
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON MINE 4
SWISHER COMPANY

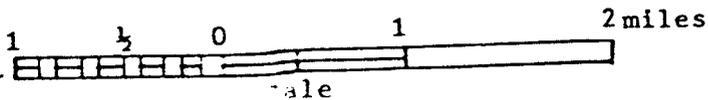


Parameter Barium
Date November 8-12, 1976

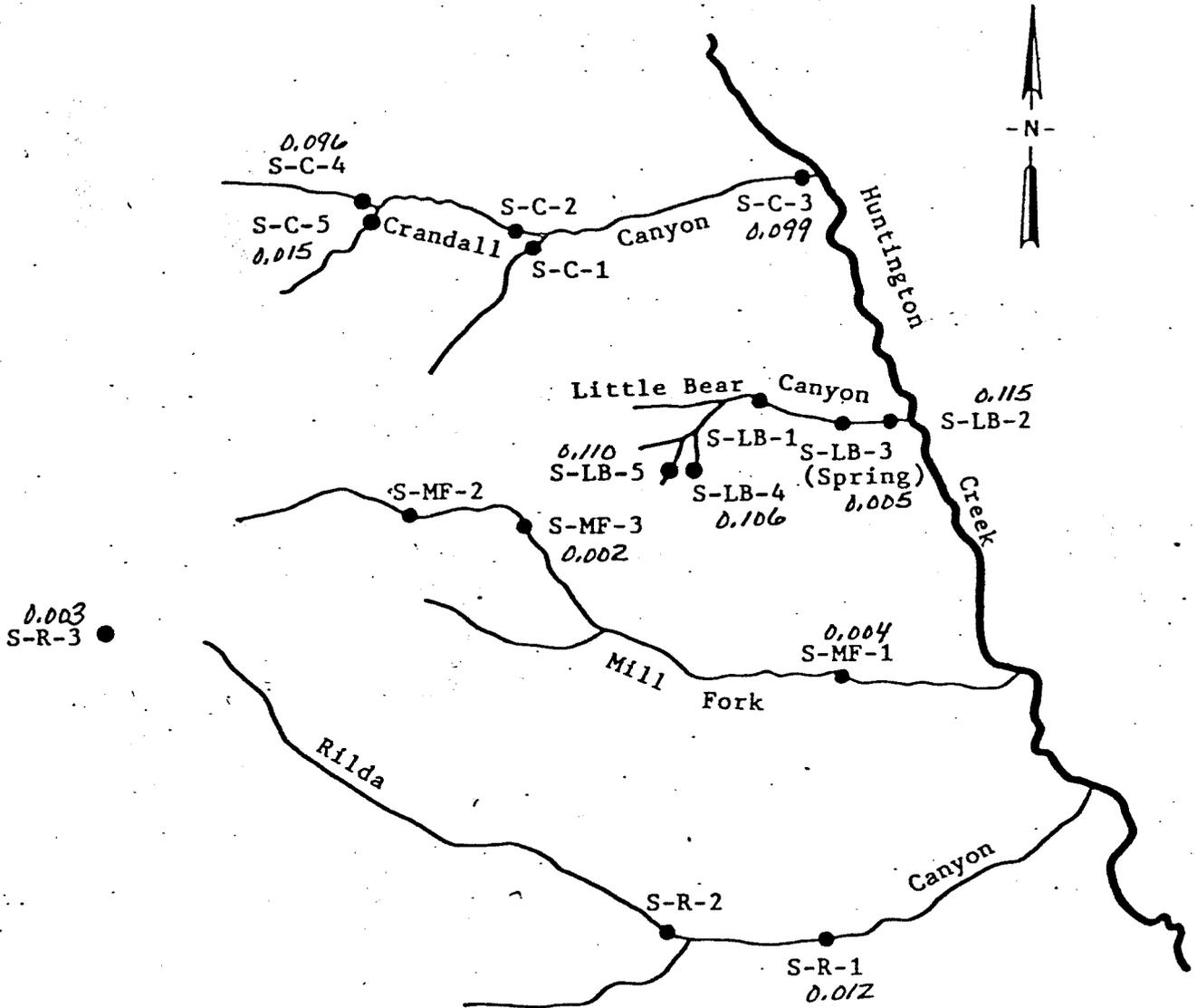
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper 1.0 mg/l Mandatory

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Barium
Date May 31 to June 4, 1977

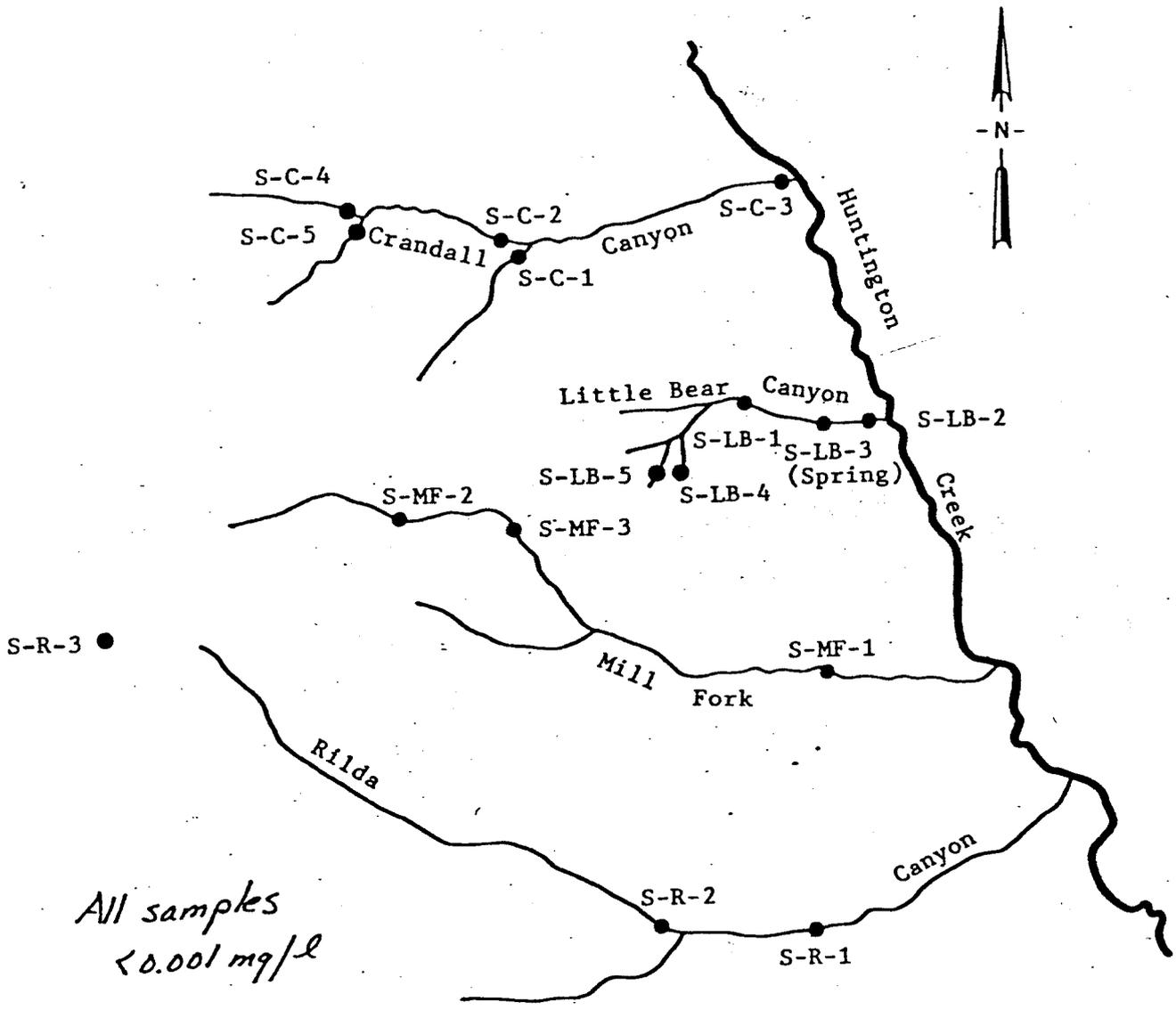
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper 10 mg/l mandatory

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Boron
Date November 8-12, 1976

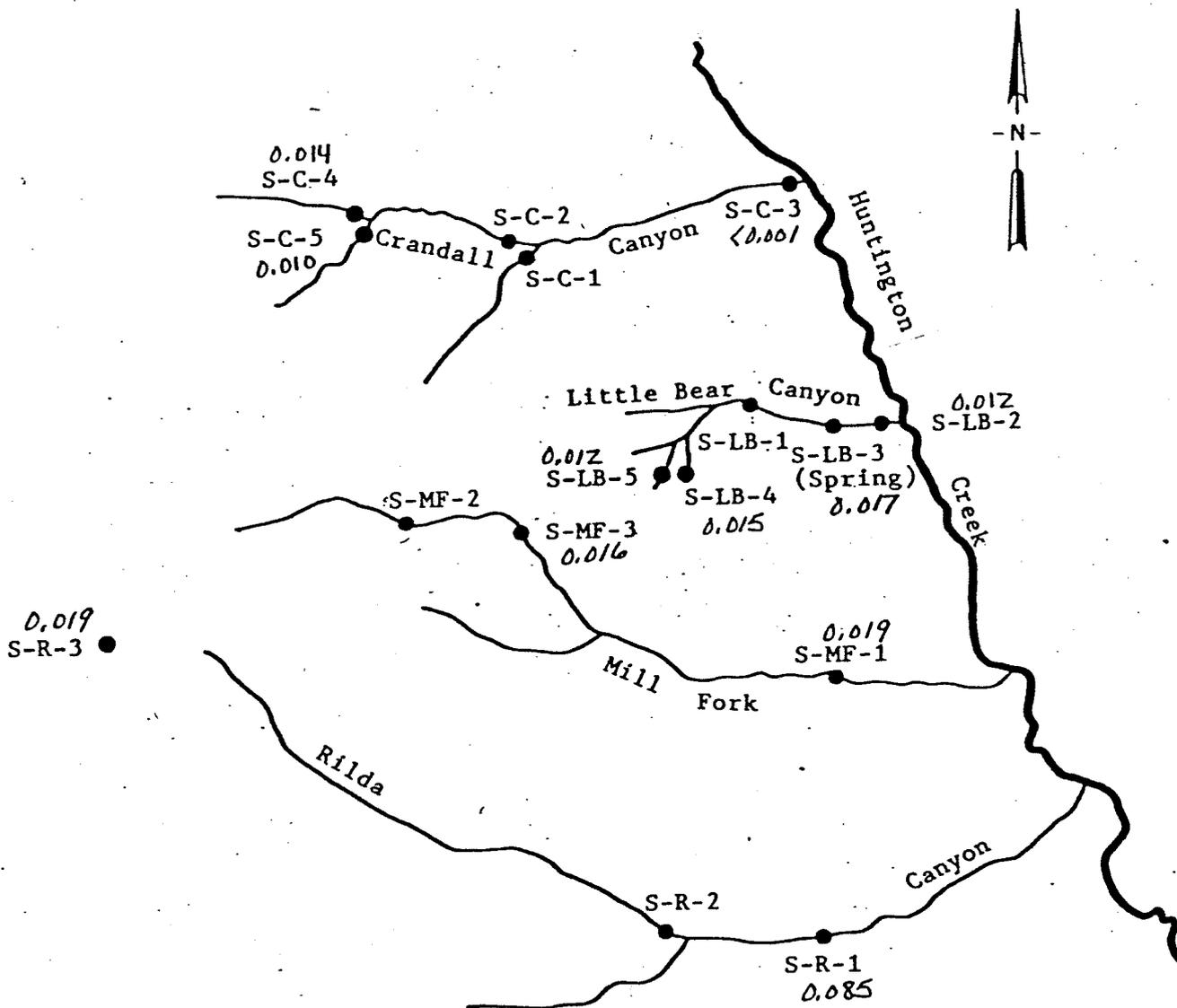
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Boron
Date May 31 to June 4, 1977

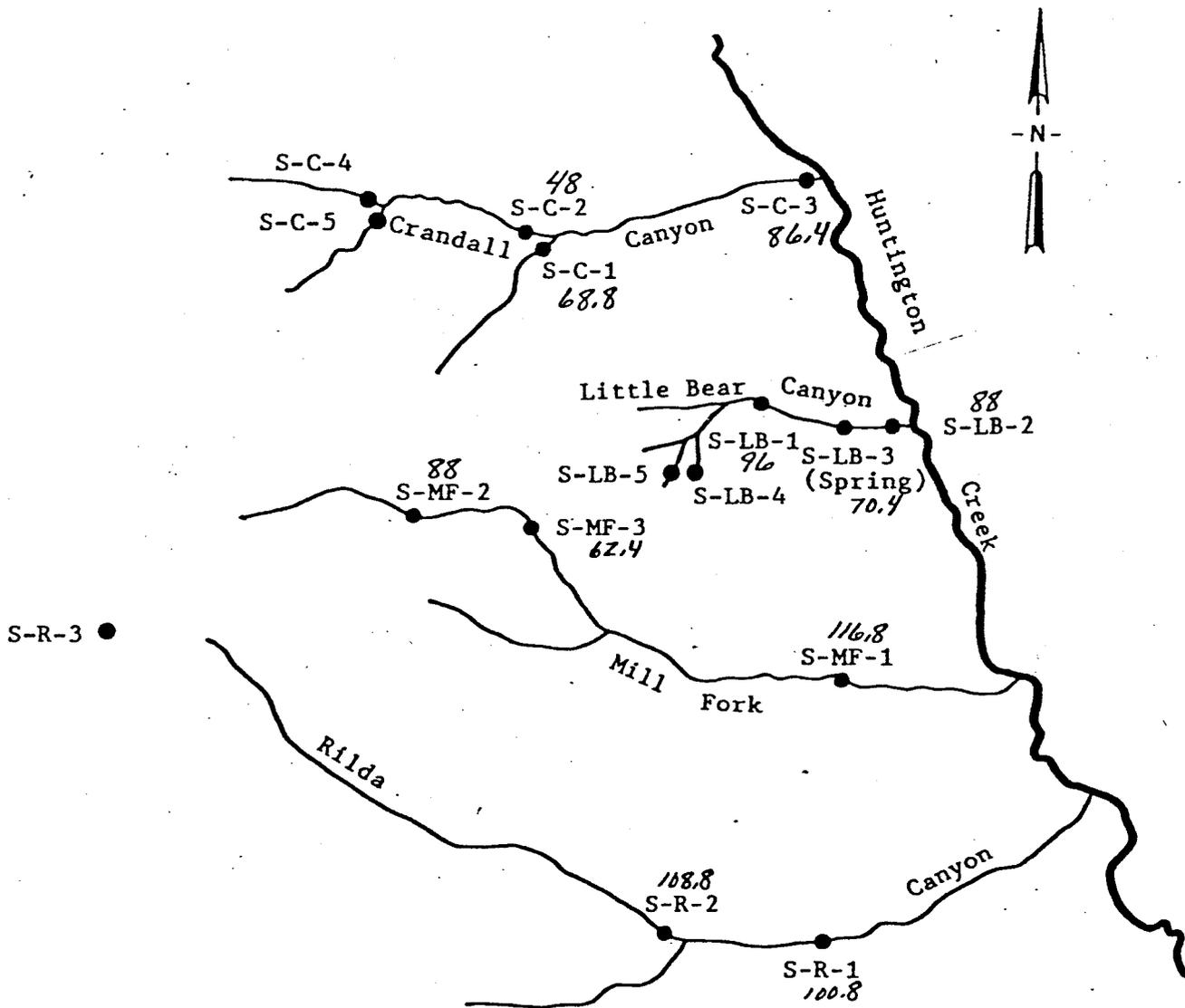
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Calcium
Date November 8-12, 1976

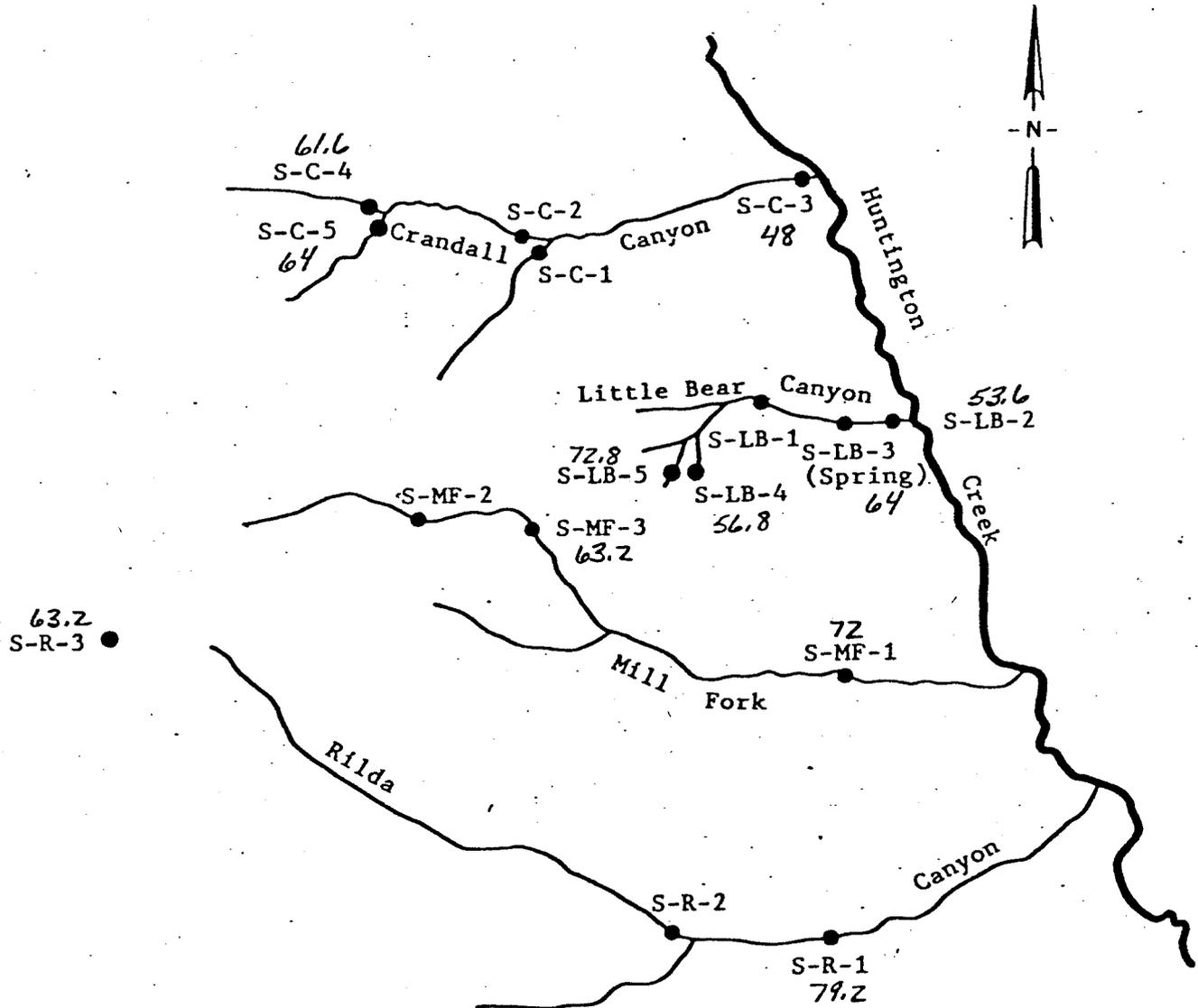
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY

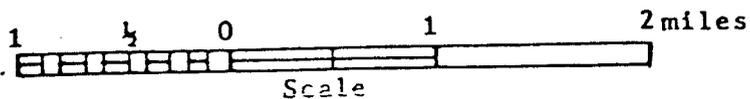


Parameter Calcium
Date May 31 to June 4, 1977

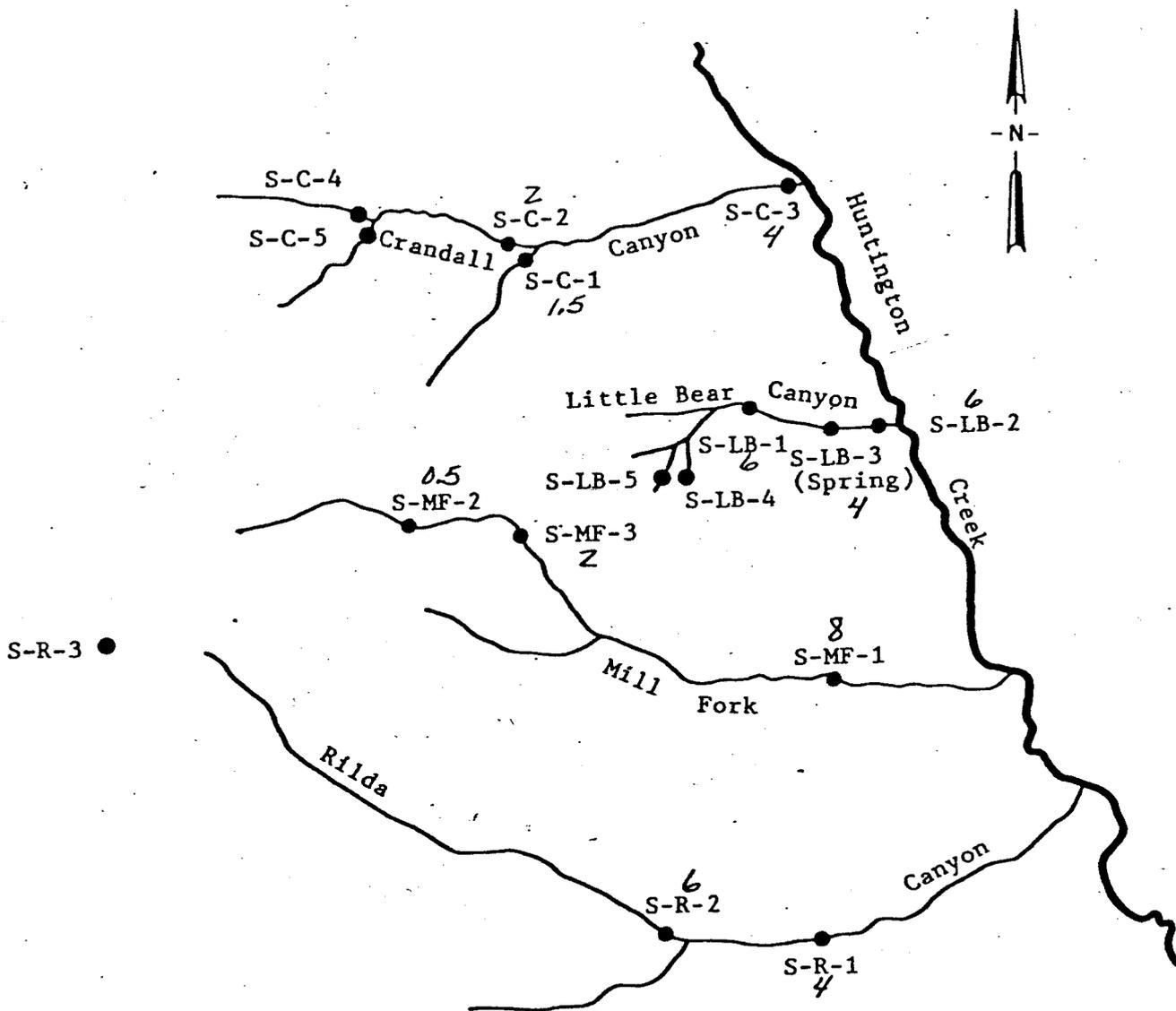
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Chloride
Date November 8-12, 1976

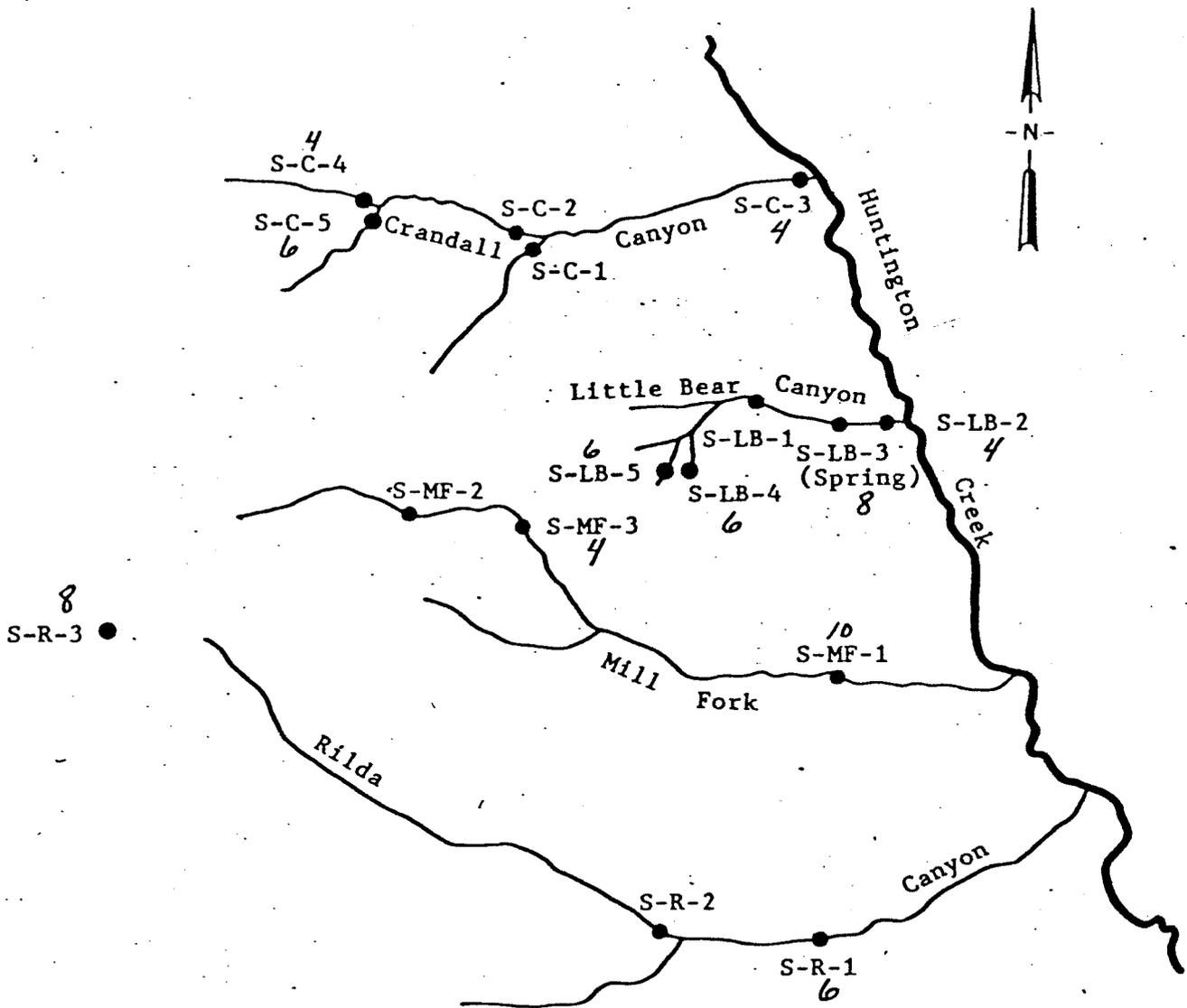
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper 250 mg/l Recommended

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Chloride
Date May 31 to June 4, 1977

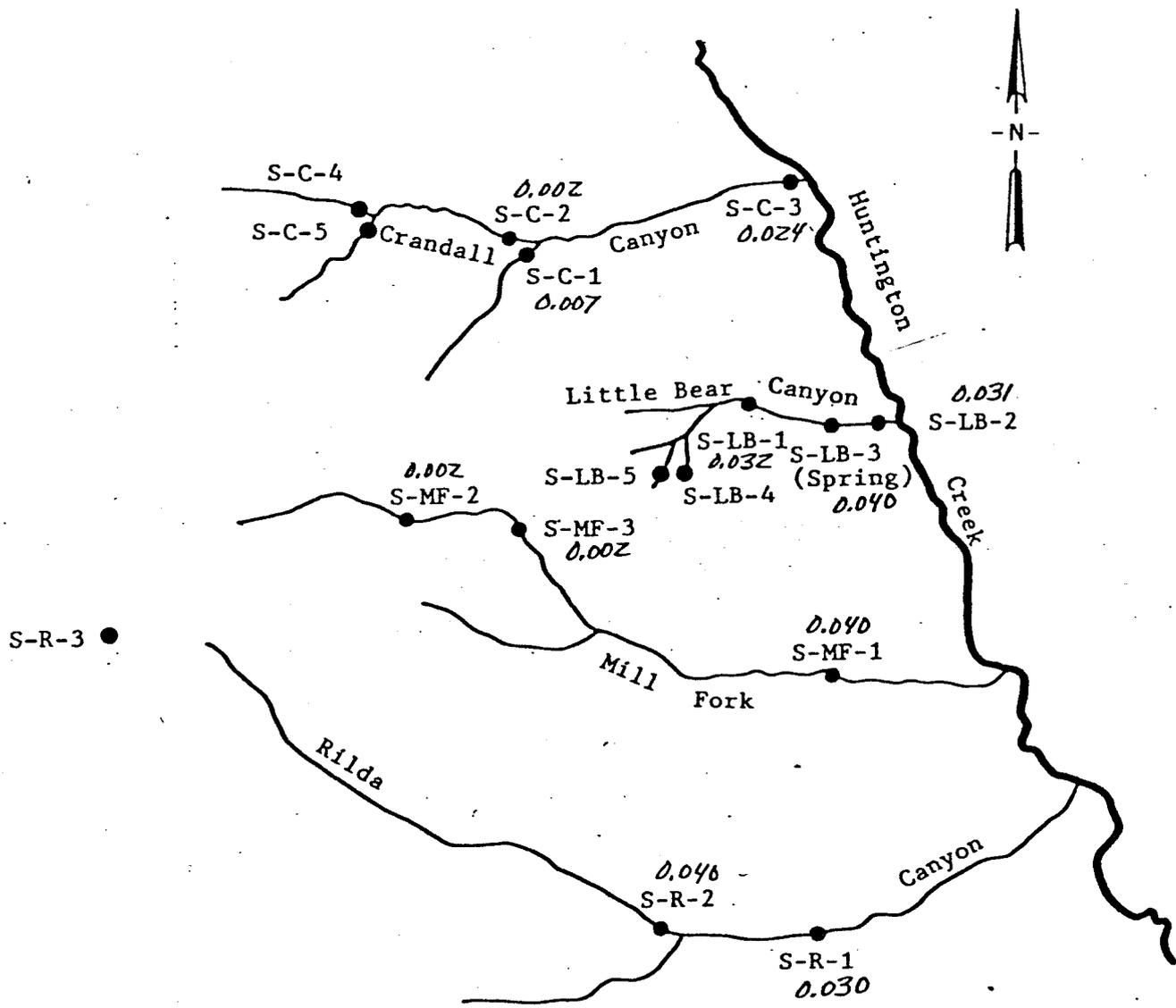
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper 250 mg/L Recommended

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Copper
Date November 8-12, 1976

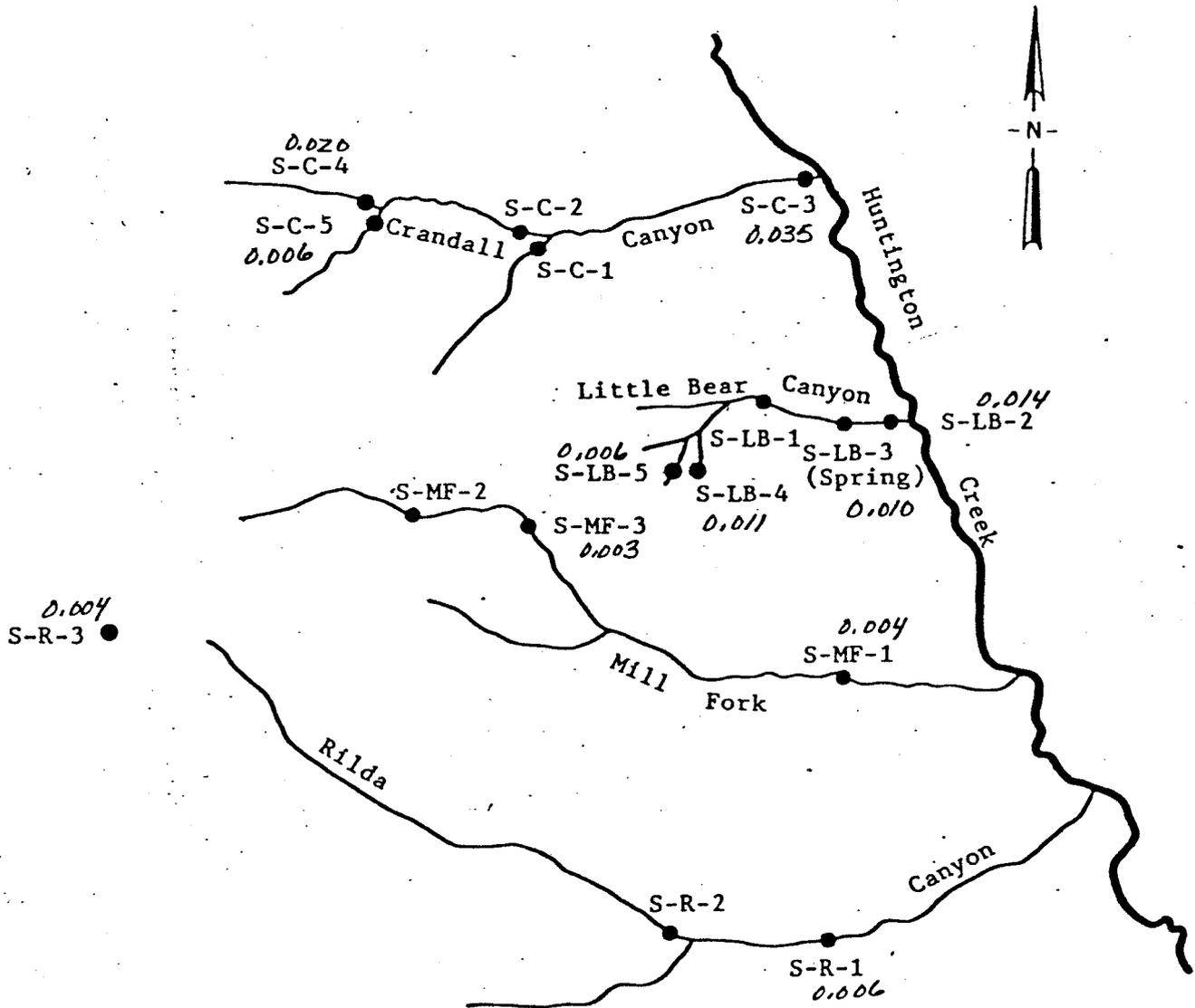
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper 1.0 mg/l Recommended

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Copper
Date May 31 to June 4, 1977

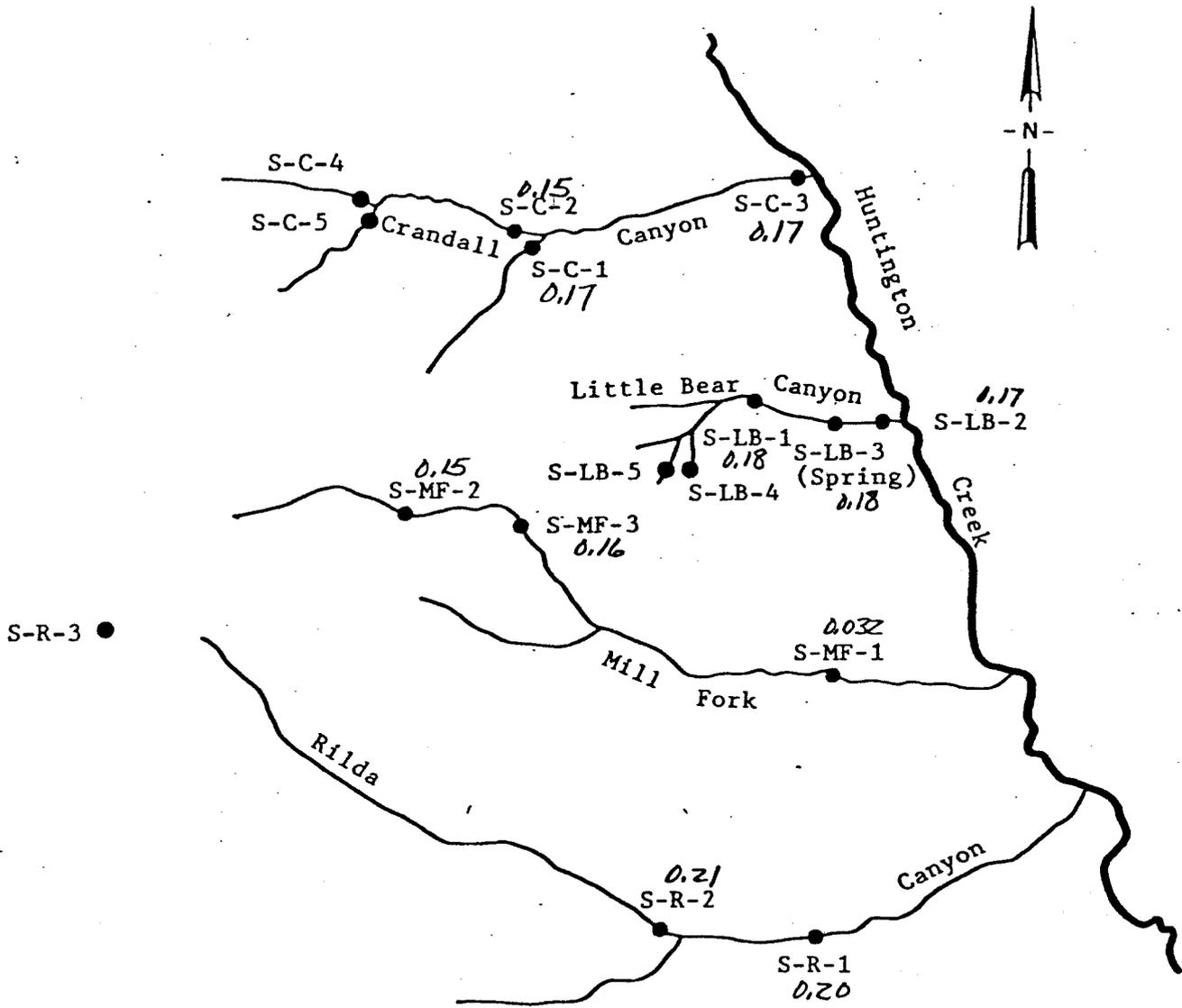
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper 1.0 mg/l Recommended

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Fluoride
Date November 8-12, 1976

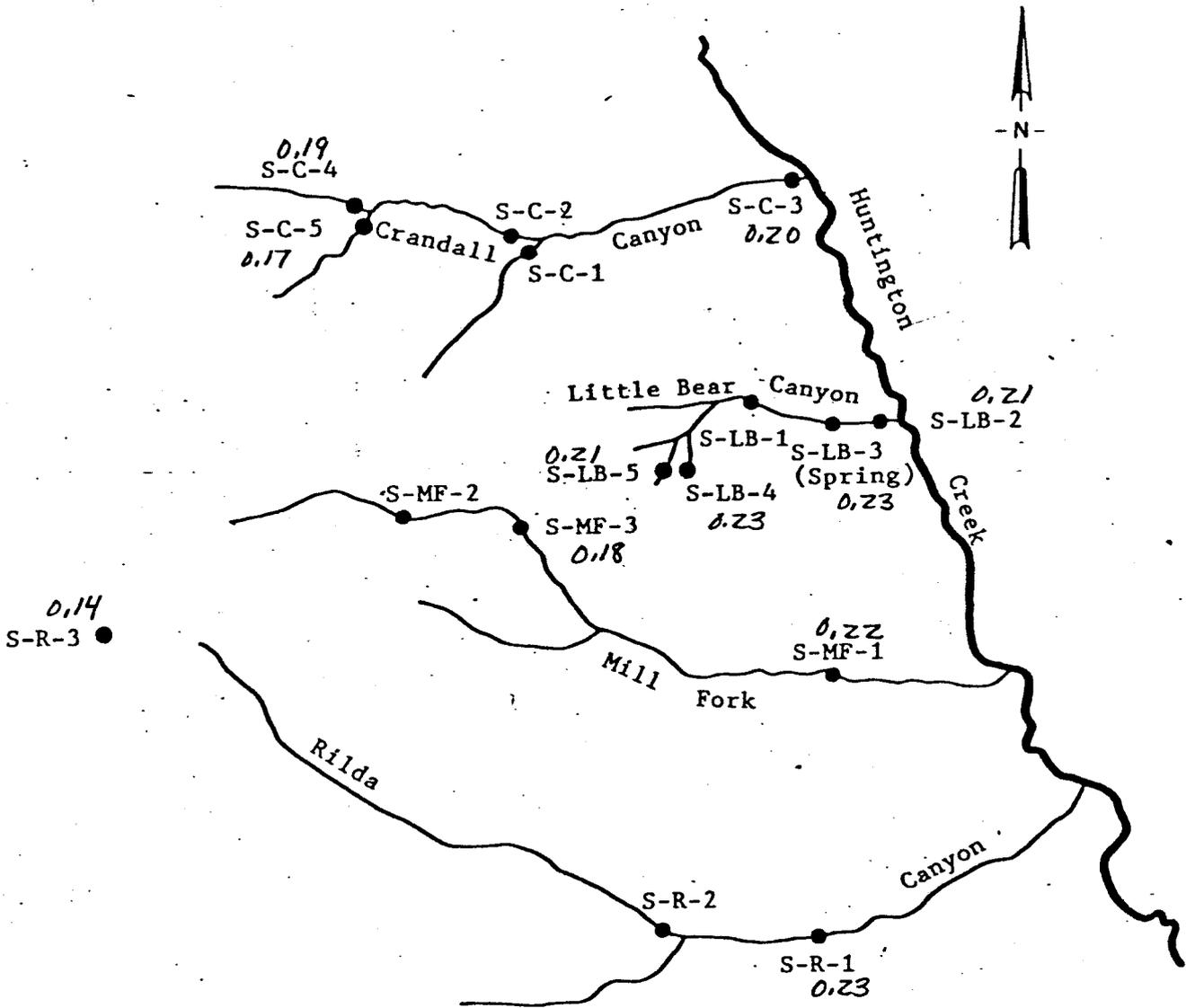
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
upper 1.0 mg/l Recommended
2.0 mg/l mandatory

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Fluoride
Date May 31 to June 4, 1977

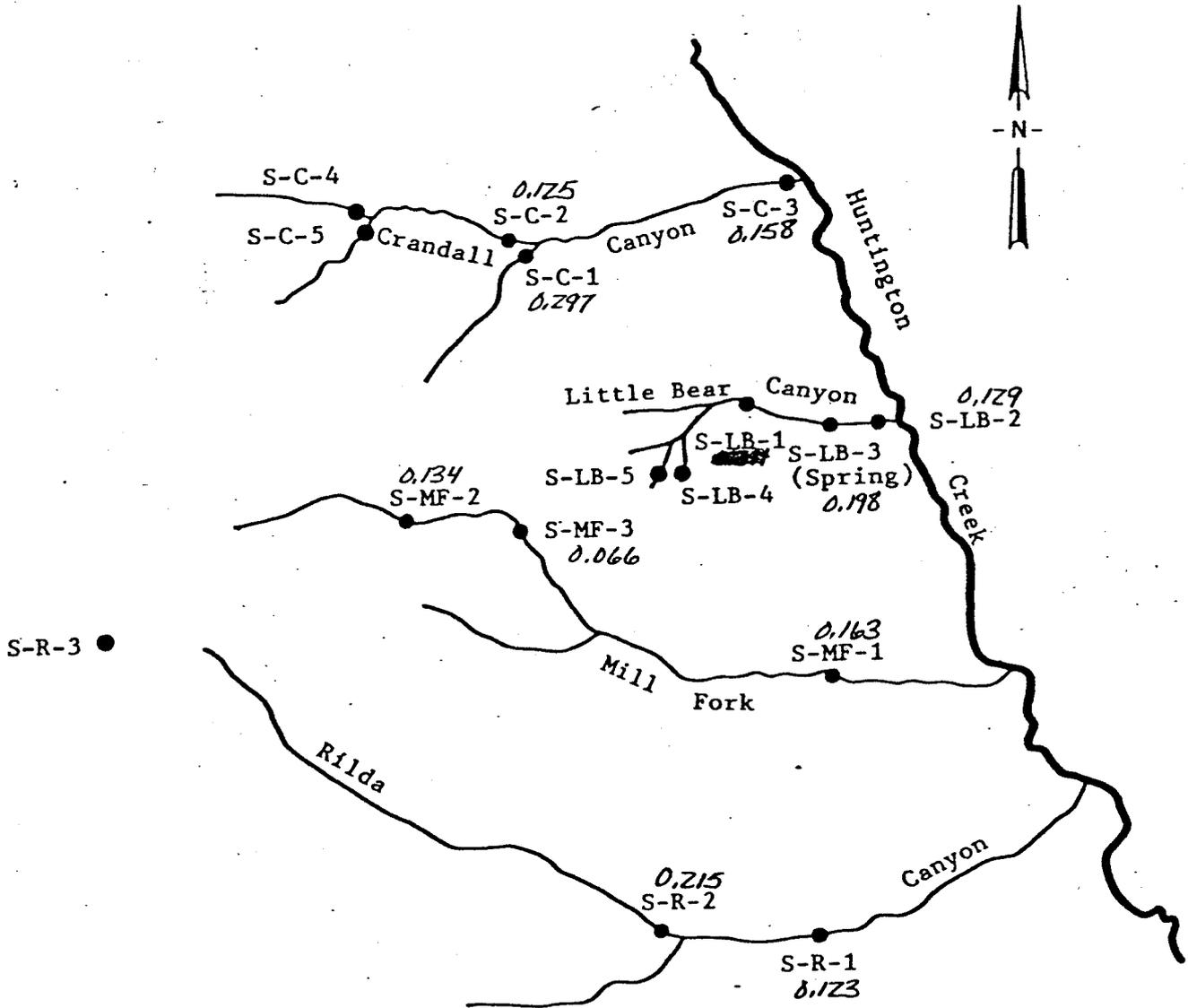
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
upper 1.0 mg/l Recommended
2.0 mg/l Mandatory

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
 HUNTINGTON CREEK MINE 4
 SWISHER COAL COMPANY



Parameter Iron - (Total)
 Date November 8-12, 1976

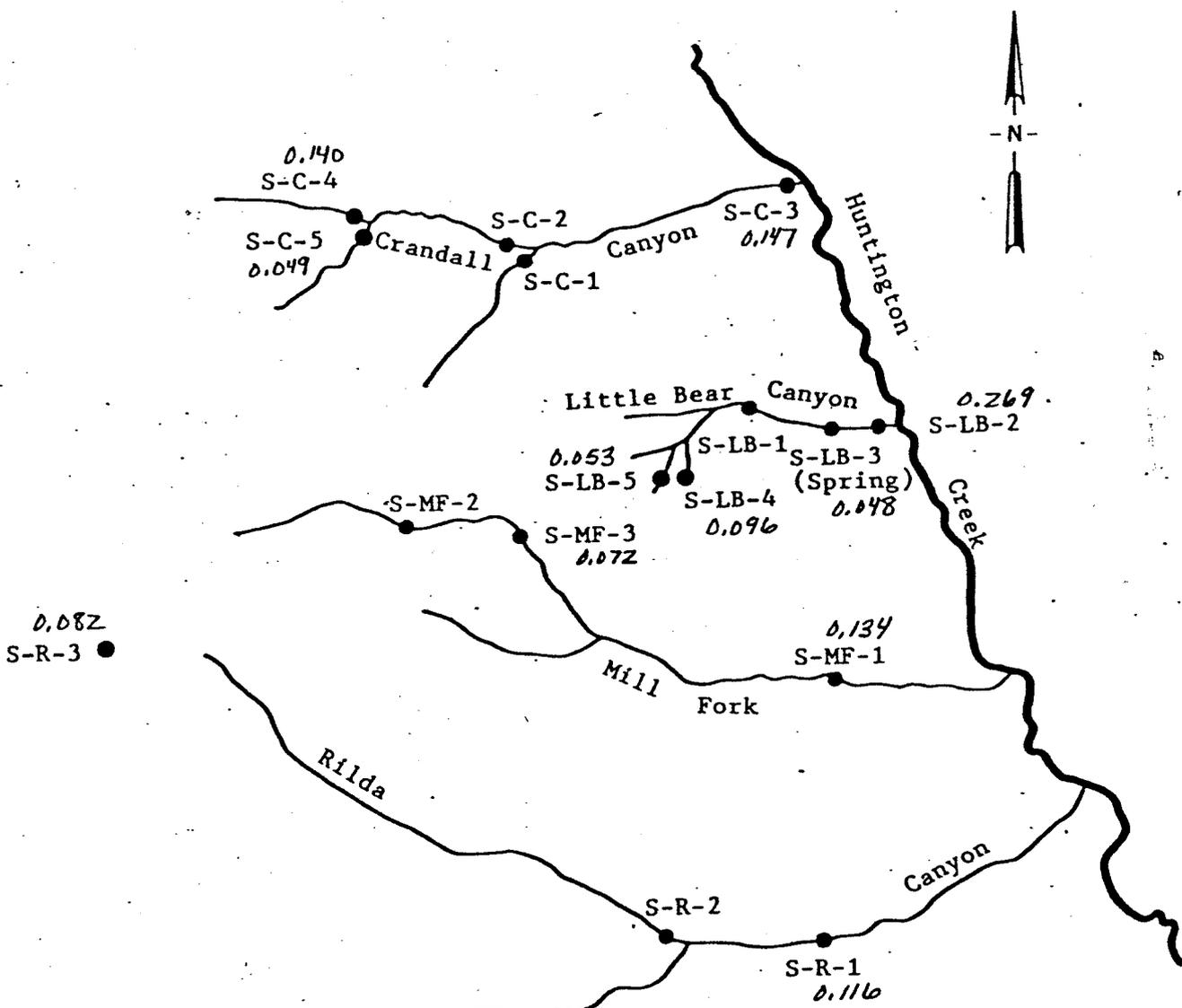
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
 lower _____
 upper 0.3 mg/l Recommended

Vaughn Hansen Associates
 5620 South 1475 East
 Salt Lake City, Utah 84121.



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY

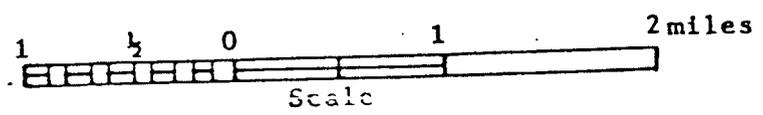


Parameter Iron (Total)
Date May 31 to June 4, 1977

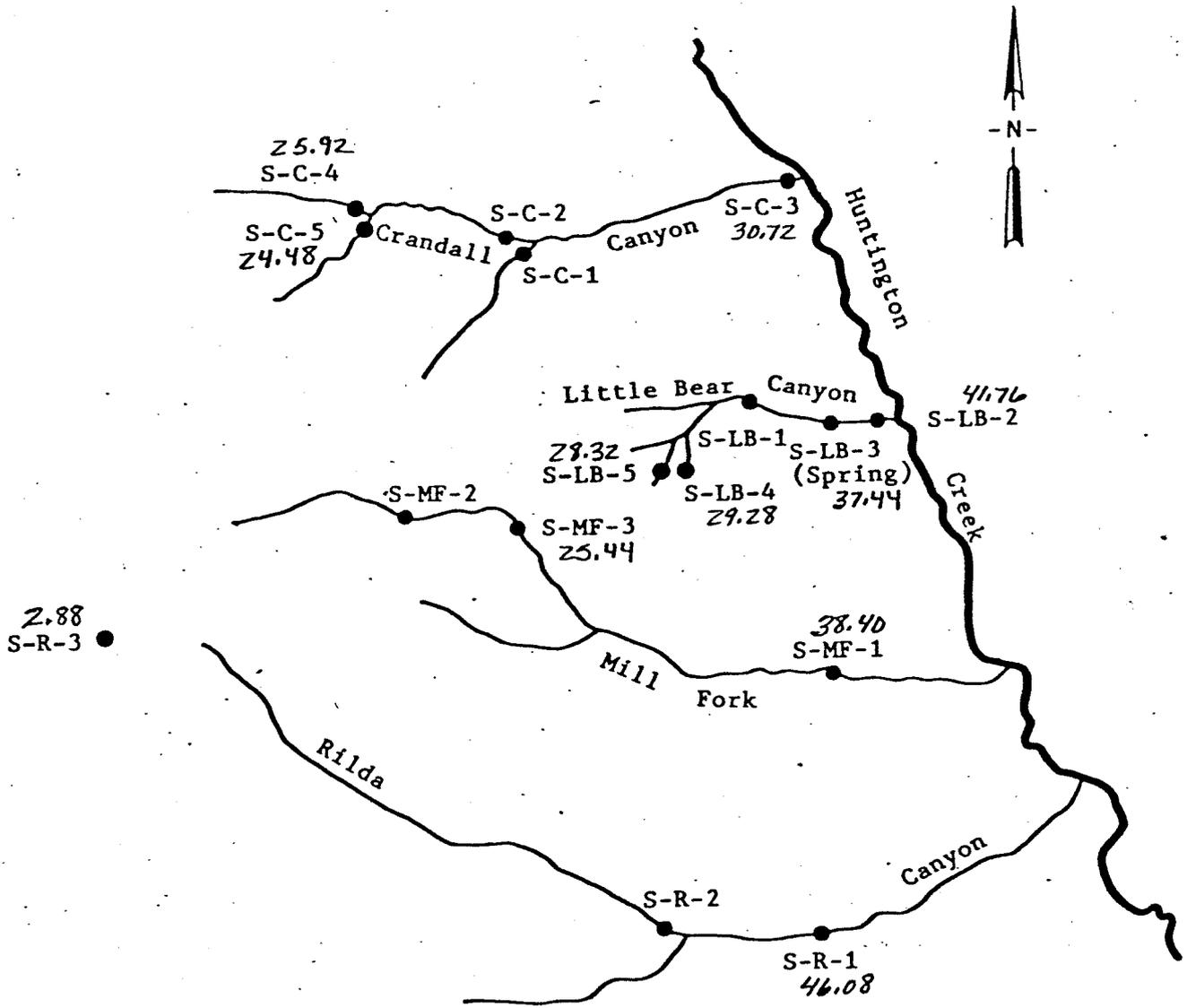
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper 0.3 mg/l Recommended

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Magnesium
Date May 31 to June 4, 1977

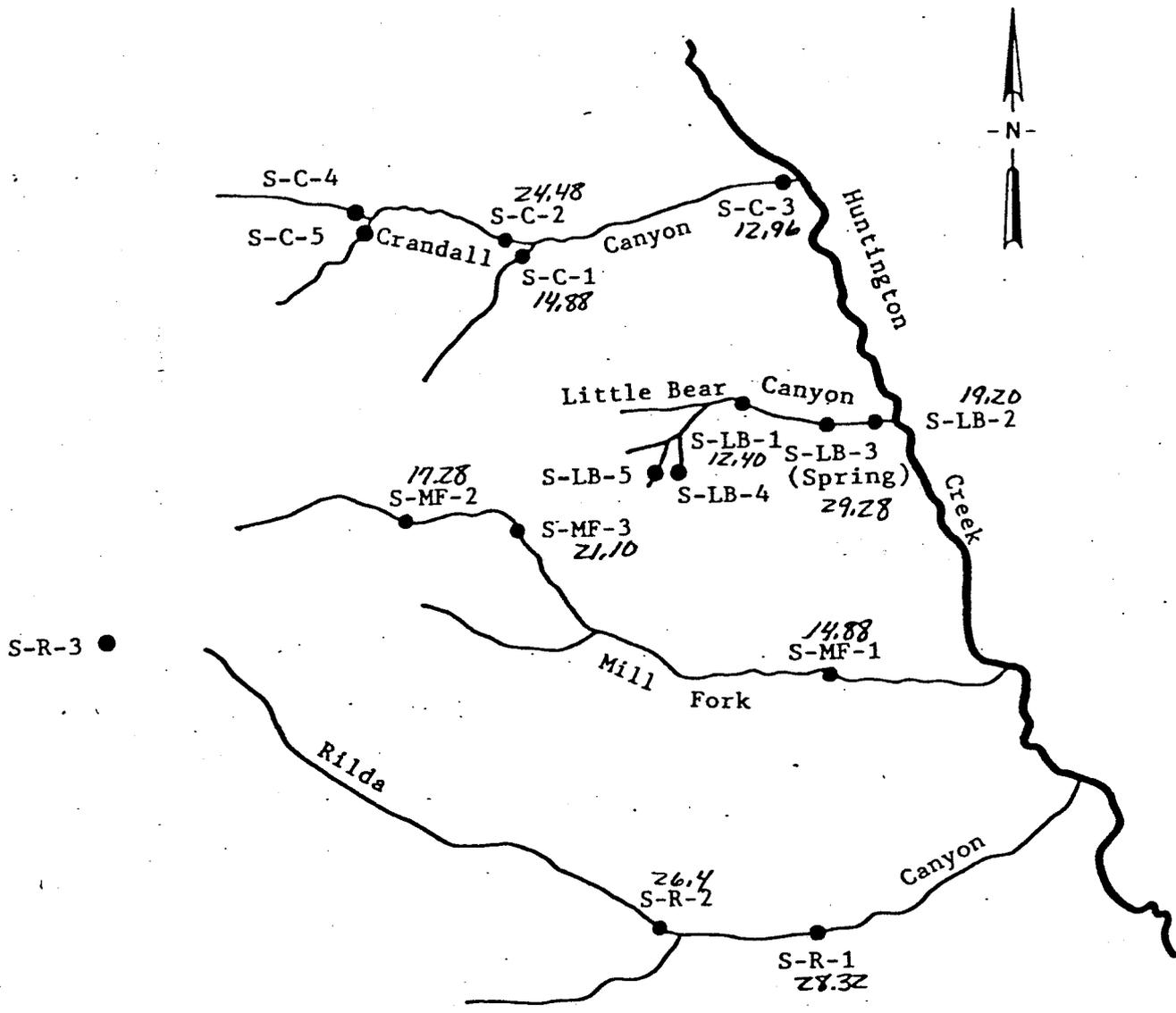
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY

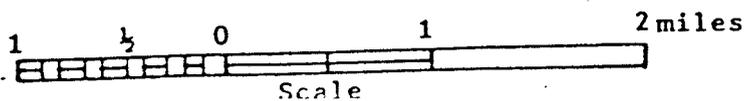


Parameter Magnesium
Date November 8-12, 1976

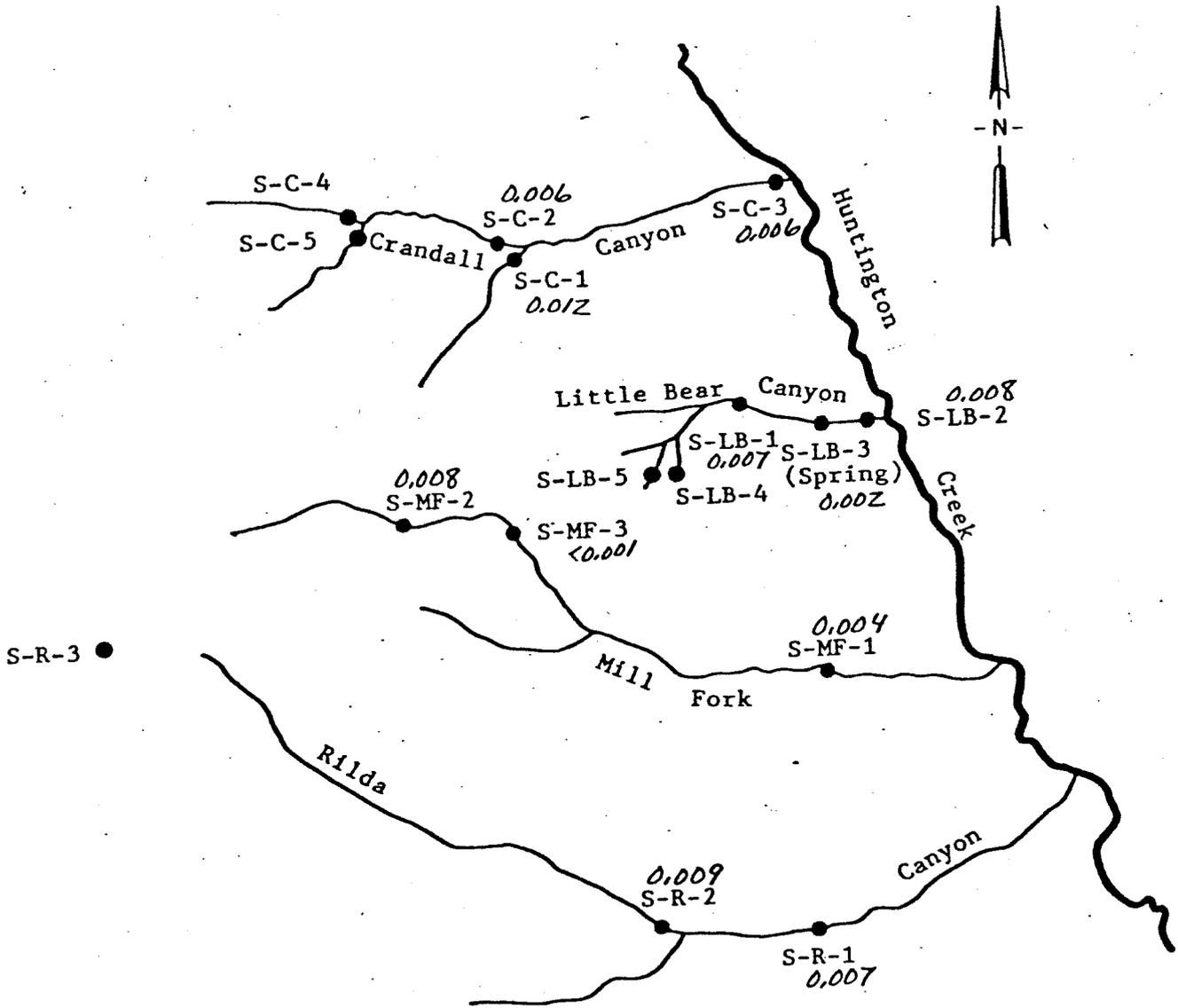
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Manganese
Date November 8-12, 1976

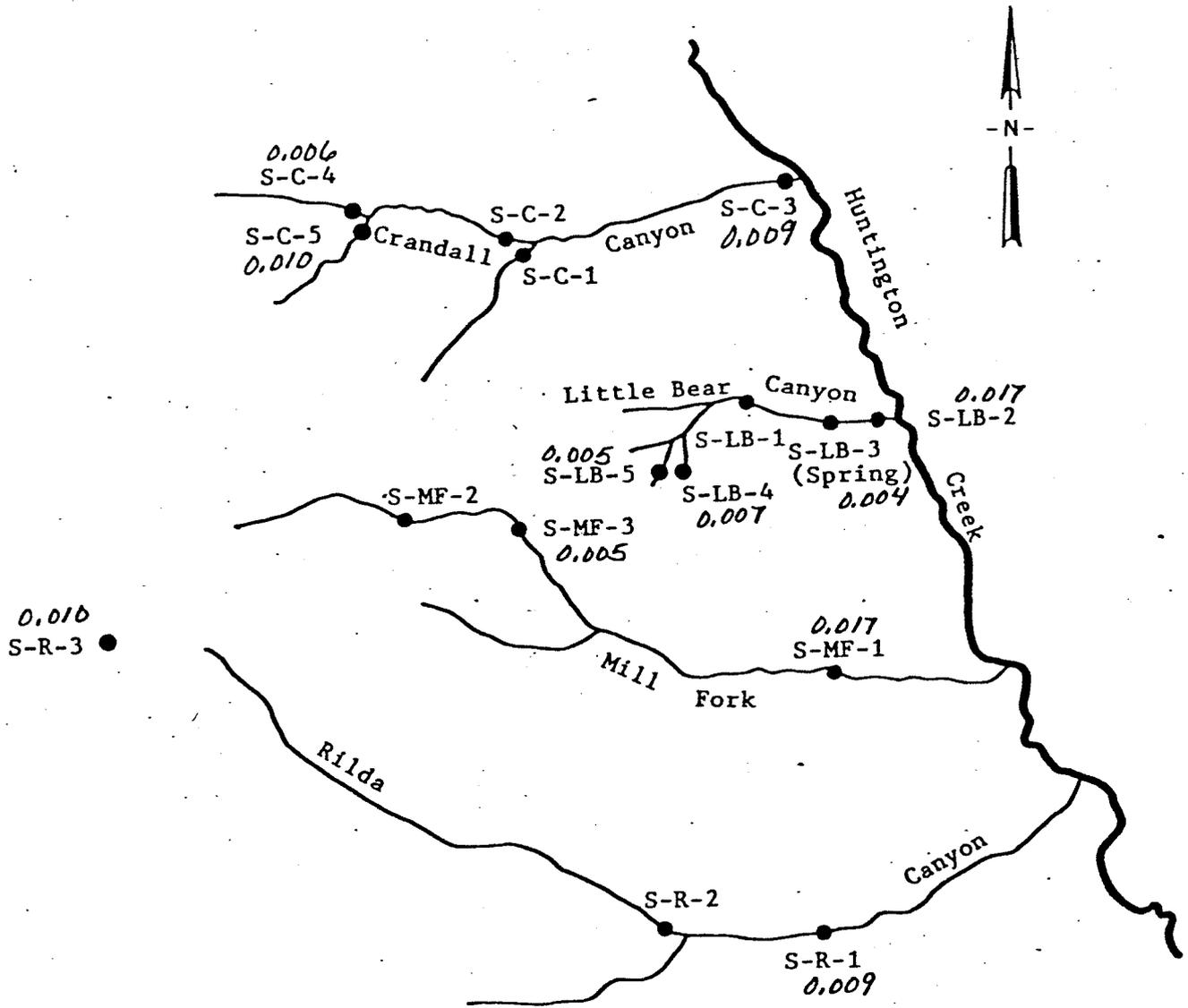
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper 0.05 mg/l Recommended

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Manganese
Date May 31 to June 4, 1977

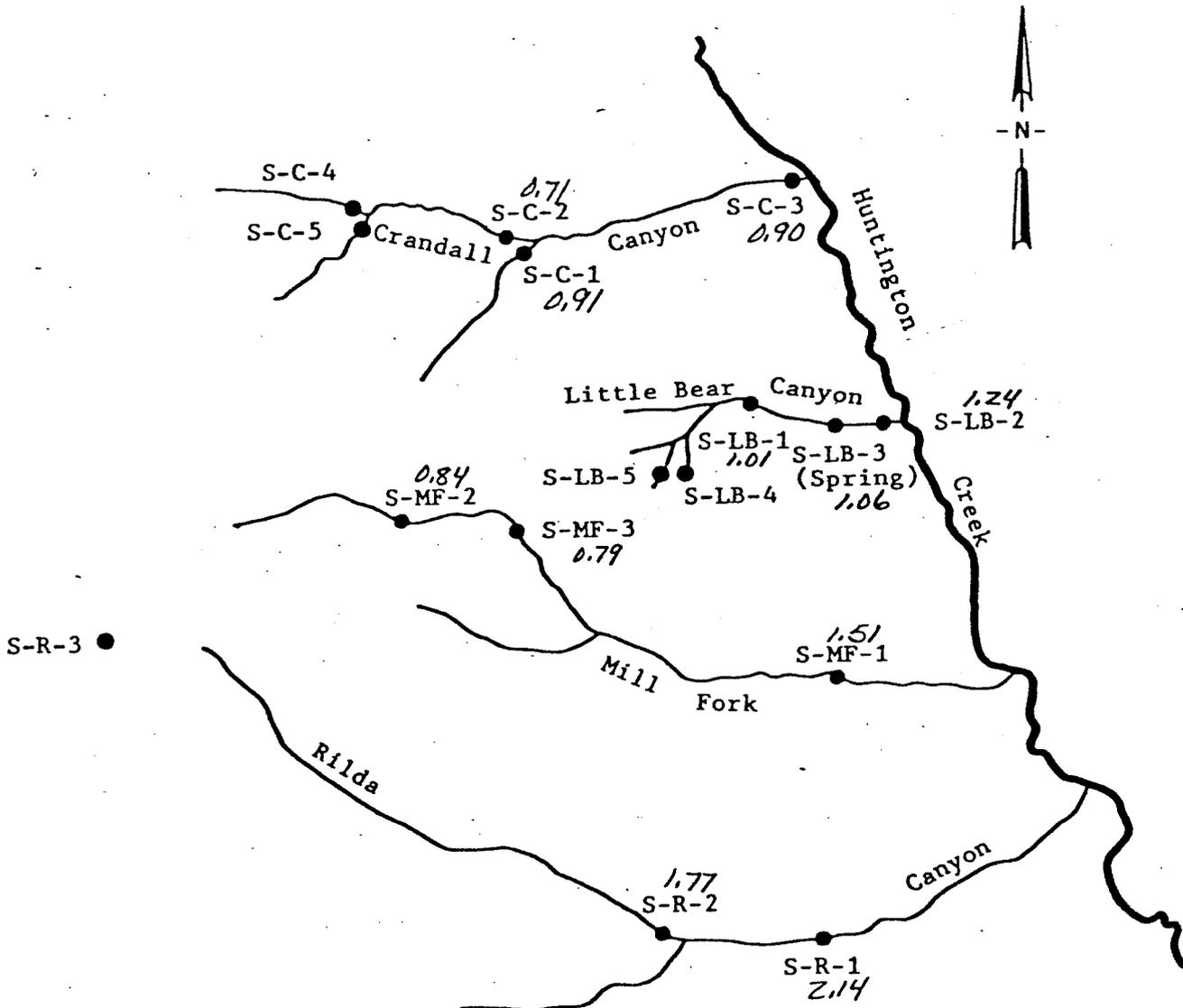
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper 0.05 mg/l Recommended

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Potassium
Date November 8-12, 1976

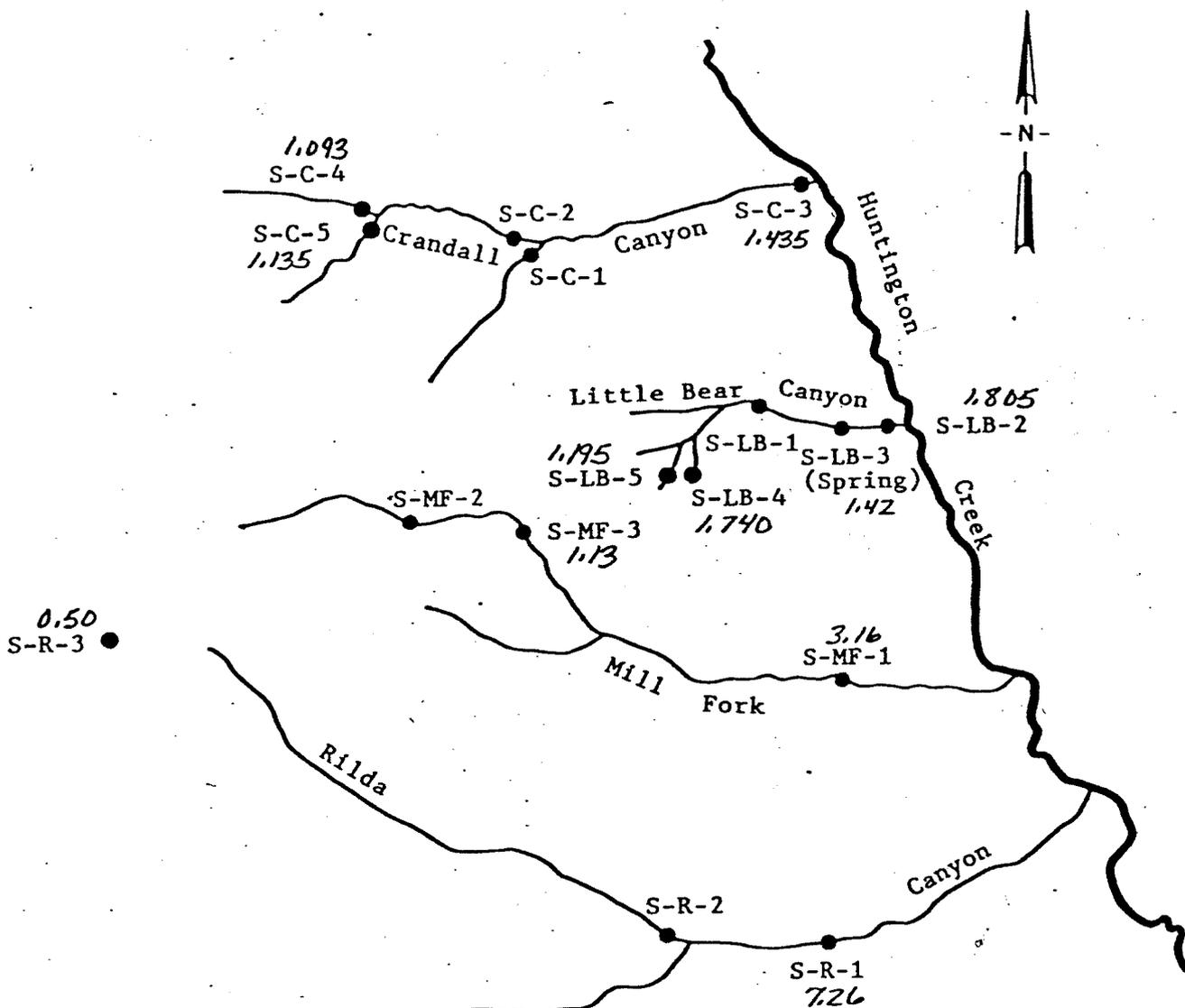
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Potassium
Date May 31 to June 4, 1977

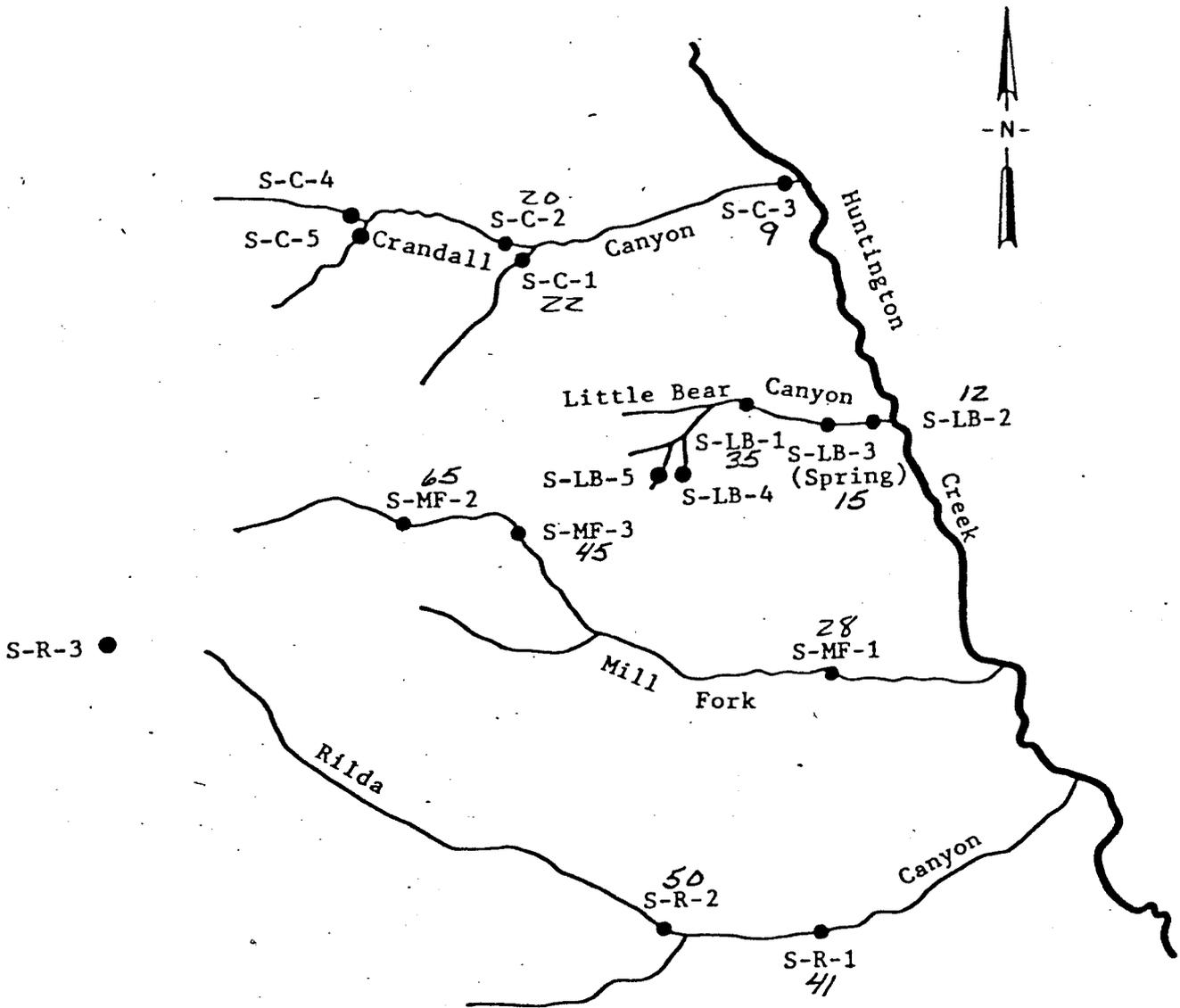
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Sodium
Date November 8-12, 1976

NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

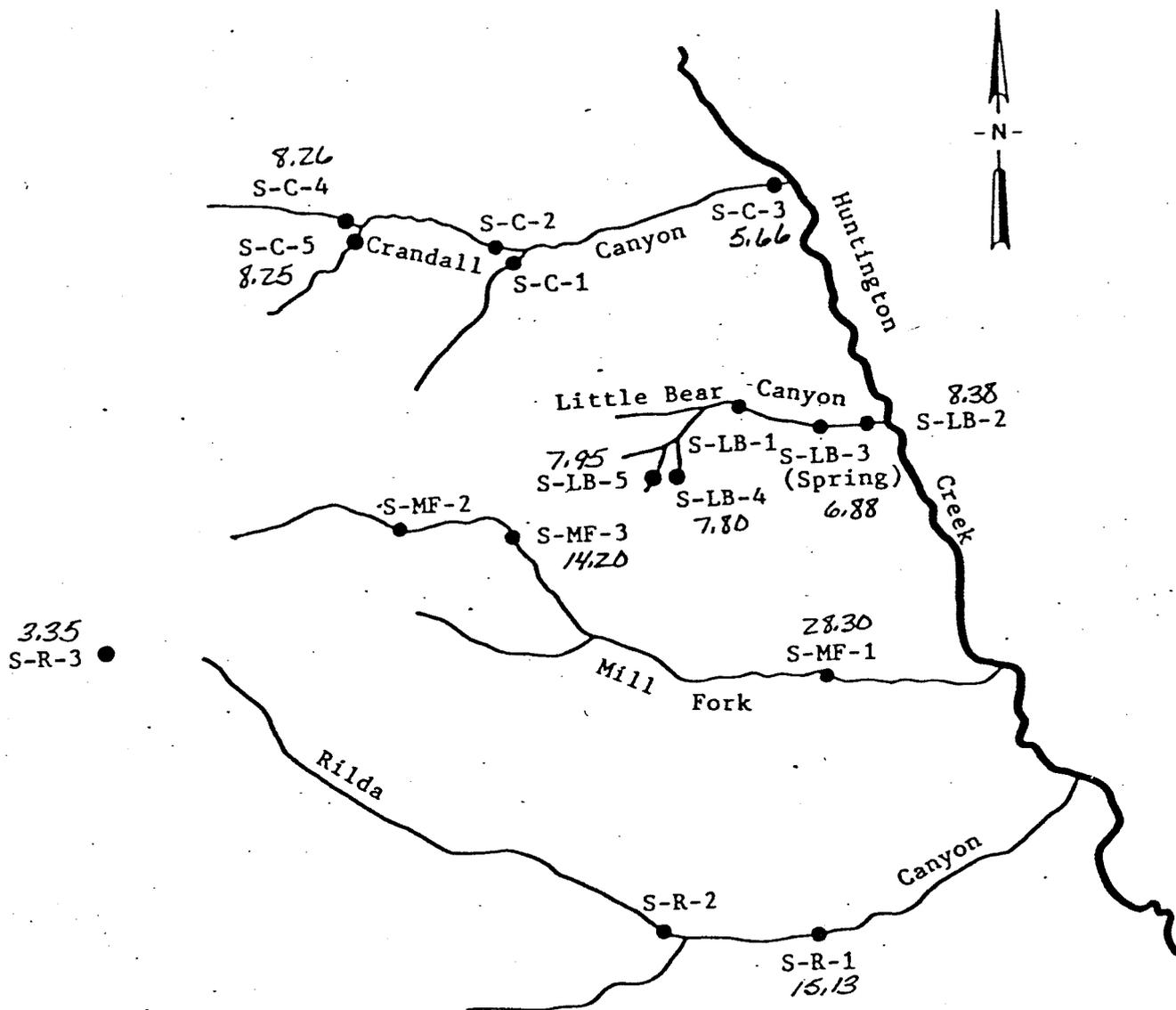
LIMITS:

lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Sodium
Date May 31 to June 4, 1977

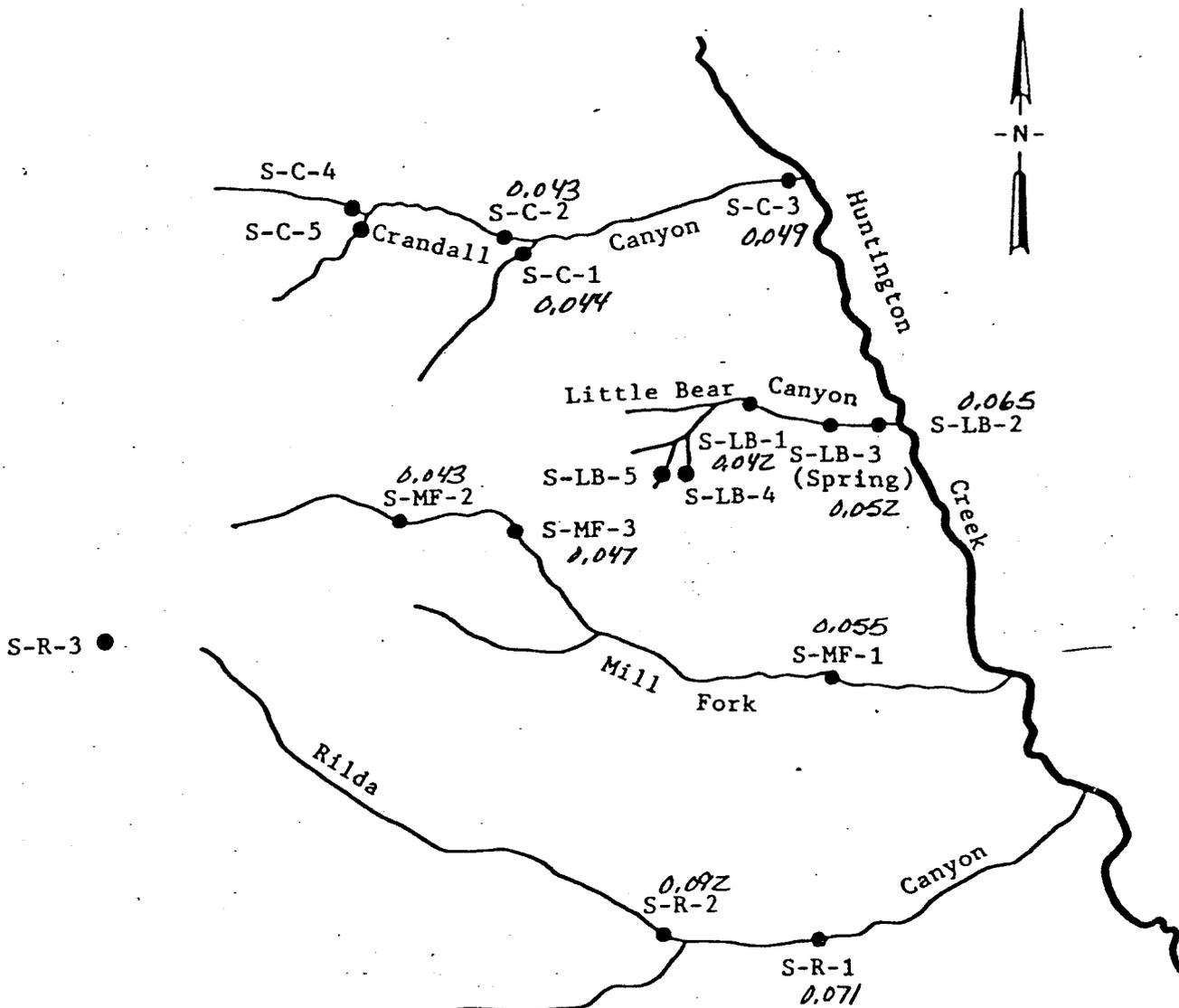
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper _____

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Zinc
Date November 8-12, 1976

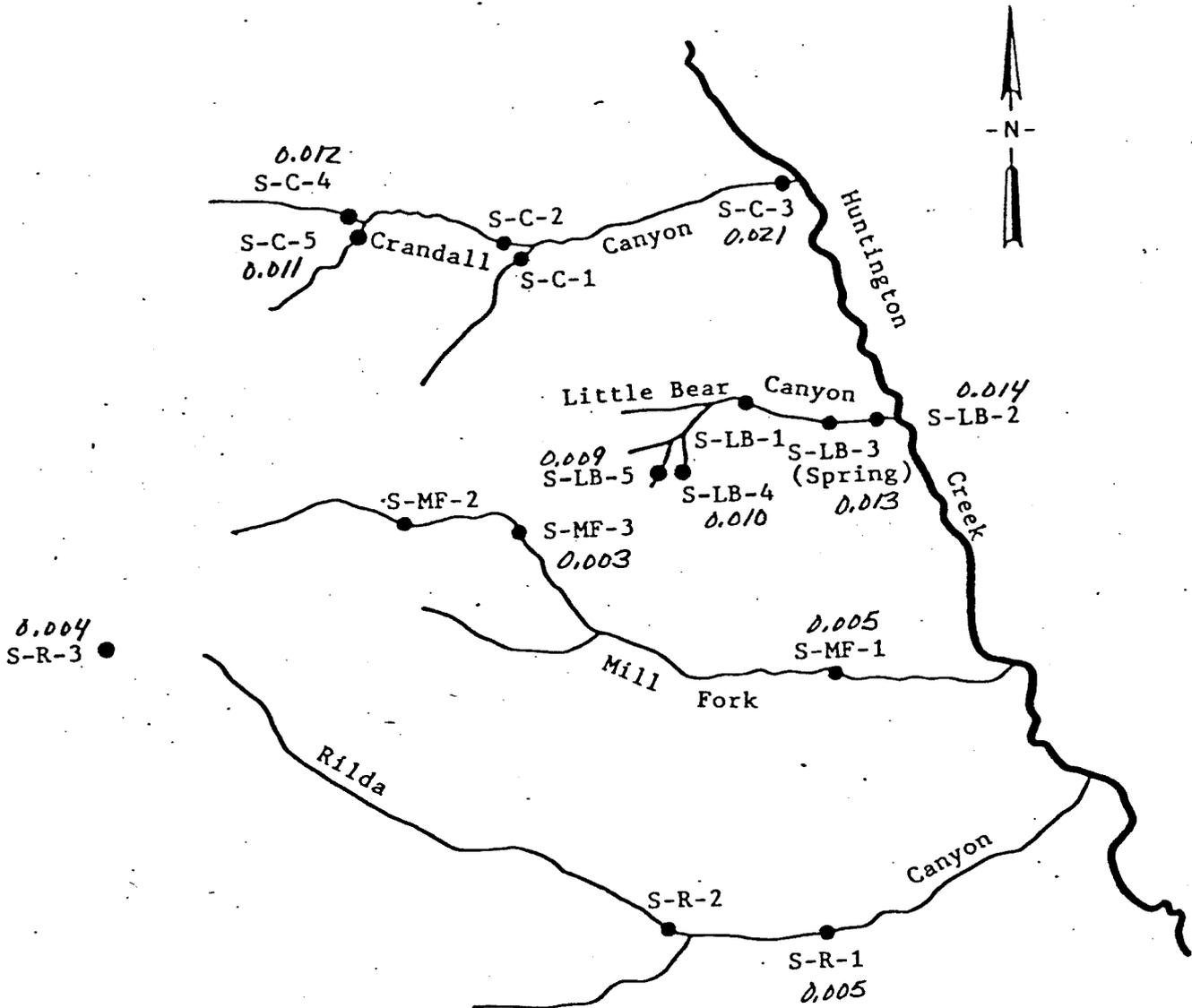
NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper 5.0 mg/l Recommended

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



WATER QUALITY SAMPLING LOCATIONS
HUNTINGTON CREEK MINE 4
SWISHER COAL COMPANY



Parameter Zinc
Date May 31 to June 4, 1977

NOTE: Stations marked in red are outside of state limits for the sample taken during the above sampling period.

LIMITS:
lower _____
upper 5.0 mg/l Recommended

Vaughn Hansen Associates
5620 South 1475 East
Salt Lake City, Utah 84121



Exhibit #8 : Topographic map showing property boundaries, man-made features, etc.



Exhibit #7 : Environmental Analysis Report prepared by the U.S. Forest Service



ENVIRONMENTAL ASSESSMENT REPORT/TECHNICAL EXAMINATION

Subpart 3041 of Title 34 CFR

Short-Term Coal Lease Sale No. U-33454
Swisher Coal Company, Applicant

Interdisciplinary Team:

J. Alessi - Geologist
R. Anderson - Hydrologist
E. Hansen - Civil Engineer
C. Jemmett - Wildlife Biologist
B. Johnson - Forester
D. Rapin - Soil Scientist

D. Steinfeld - Soil Scientist
R. Thomas - Forester
F. Thompson - Geologist
R. Wilson - Geologist
D. Wiseman - Wildlife Biologist

Approval of Report
Recommended by:

Fred Thompson
Forest Geologist

Date 8-3-78

William B. Baly
Forest Engineer

Date 8-3-78

Ira Hatch
District Ranger, Price R.D.

Date 8-3-78

Report Approved by:

Reed C. Christensen
Forest Supervisor

Date 8/3/78

NEGATIVE DECLARATION

2820

File Designation

August 4, 1978

Date

Short-Term Coal Lease Sale No. U-33454

Name of Activity

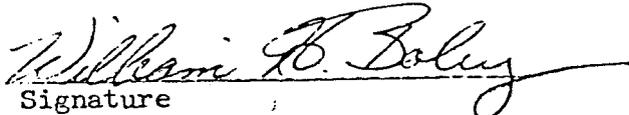
Price

Ranger District

Manti-LaSal

National Forest

The proposed activity is not considered to be a major Federal action significantly affecting the quality of the human environment (requiring an environmental statement pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969 (PL91-190) or to be highly controversial. Those actions that could adversely affect the quality of the physical and biological components in the project area will be sufficiently minimized to prevent long-term environmental impacts. Overall social and economic effects of the proposal are considered to be beneficial. Consultation with others on the proposed project did not reveal significant adverse reaction. These determinations are based upon evaluations made in the attached Environmental Analysis Report.



Signature

for

REED C. CHRISTENSEN

Forest Supervisor

Title

Enclosure

TABLE OF CONTENTS

	<u>Page</u>
I. Introduction	1
II. Background Information	2
1. Land Description	2
2. History	3
3. Mine Development	4
4. Land Management Direction	4
5. Lease Other Than Applicant	5
6. Present and Projected Demands for the Mineral Materials	5
7. Exploration	6
8. Federal Actions Required	6
III. Description of Existing Environment, Associated Impacts of the Proposed Action, and Measures to Mitigate Adverse Impacts	8
1. Topography	8
2. Geology	12
3. Ground Water	14
4. Soils	16
5. Climate	17
6. Hydrology	18
7. Fire	18
8. Wildlife and Fish	20
9. Vegetation	20
10. Socio-Economic	22
11. Historical, Archeological, and Paleontological	22
12. Public Health and Safety	23
13. Timber Management	23
14. Range Management	24
15. Recreation and Aesthetics	24
16. Minerals Other Than Coal	25
17. Transportation	25
18. Administrative Improvements	25
19. Research and Special Land Uses	25
20. Roadless Area Review Evaluation II	25
IV. Summary of Probable Adverse Environmental Impacts Which Cannot be Avoided (Residual Impacts)	27
V. Relationship Between Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity	28

TABLE OF CONTENTS (Continued)

	<u>Page</u>
VI. Irreversible and Irretrievable Commitment of Resources	29
VII. Alternatives to the Proposed Actions	30
VIII. Record of Out-Service Persons, Groups, and Government Agencies Consulted	31
IX. Summary of Management Requirements and Constraints	32

ILLUSTRATIONS

<u>FIGURE</u>		<u>PAGE</u>
1	Vicinity Map	2A
2	Land Ownership Map	2B
3	Mine Plan	3A
4	Mine Yard Facilities	3B
5	Location of Old Works/Drill Holes/Proposed Mains	3C
6	Generalized Section of Rock Formations	8A
7	Local Faulting	8B
8	Geologic Cross Section	10A
9	Existing Jointing and Faulting Patterns	12A
10	Soils Capabilities Units	14A

I. INTRODUCTION

Swisher Coal Company of Price, Utah, in January, 1977, applied to the Bureau of Land Management for 440 acres of Federal coal to be leased under the short-term criteria. This lease tract is identified as lease U-33454, and is located in Mill Canyon in T16S, R7E,

Section 8	S $\frac{1}{2}$ SE $\frac{1}{4}$
Section 16	N $\frac{1}{2}$ N $\frac{1}{2}$, SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$
Section 17	NE $\frac{1}{4}$

This tract lies contiguous and is intermixed with Swisher-owned or controlled fee lands, and Swisher lease SL-064903 (see Figure 2). All mining activity would be underground.

Lease application U-33454 was evaluated by the Bureau of Land Management in 1977, and was found to meet the requirements of the short-term lease criteria then in effect. The Bureau of Land Management recommended the acreage be leased, pending the preparation of a Technical Examination/Environmental Assessment Report. The Forest Service in cooperation with the Bureau of Land Management performed the Part 23 Technical Examination and prepared the Environmental Analysis Report dated September 16, 1977. A public meeting was held in Price, Utah, on April 25, 1978, and comments were received concerning the lease application:

The Environmental Assessment/Technical Examination was prepared as required by the National Environmental Protection Policy Act of 1969. The Technical Examination was performed by a Forest Service Interdisciplinary Team.

The Forest Service and the Geological Survey have co-authored an Environmental Analysis Report as required by 30 CFR 211 for the approval of the existing Swisher Mine for undermining of lease SL-064903. This report, dated August 18, 1976, presents the impacts associated with this existing mine. These impacts will not be further reiterated, except as they might further affect the proposed lease sale U-33454. The assessment report is available at the Forest Service and the Geological Survey offices.

The purpose of this assessment is to evaluate impacts from leasing the 440 acre tract under the short-term criteria.

II. BACKGROUND INFORMATION

1. Land Description

Federal Coal Lease SL-064903, Lease Sale Tract U-33454, and three tracts of private land which is owned or controlled by Swisher Coal Company, are located contiguous to and intermingled with each other in Emery County, Utah, within the Manti-LaSal National Forest, Price Ranger District (Figure 1). They are located approximately 12 miles northwest of the community of Huntington, Utah (pop. 3,000).

Federal Coal Lease SL-064903 and proposed Lease Sale Tract U-33454 are on National Forest lands (Figure 2). There are no known easements, withdrawals, or rights-of-way on these lands.

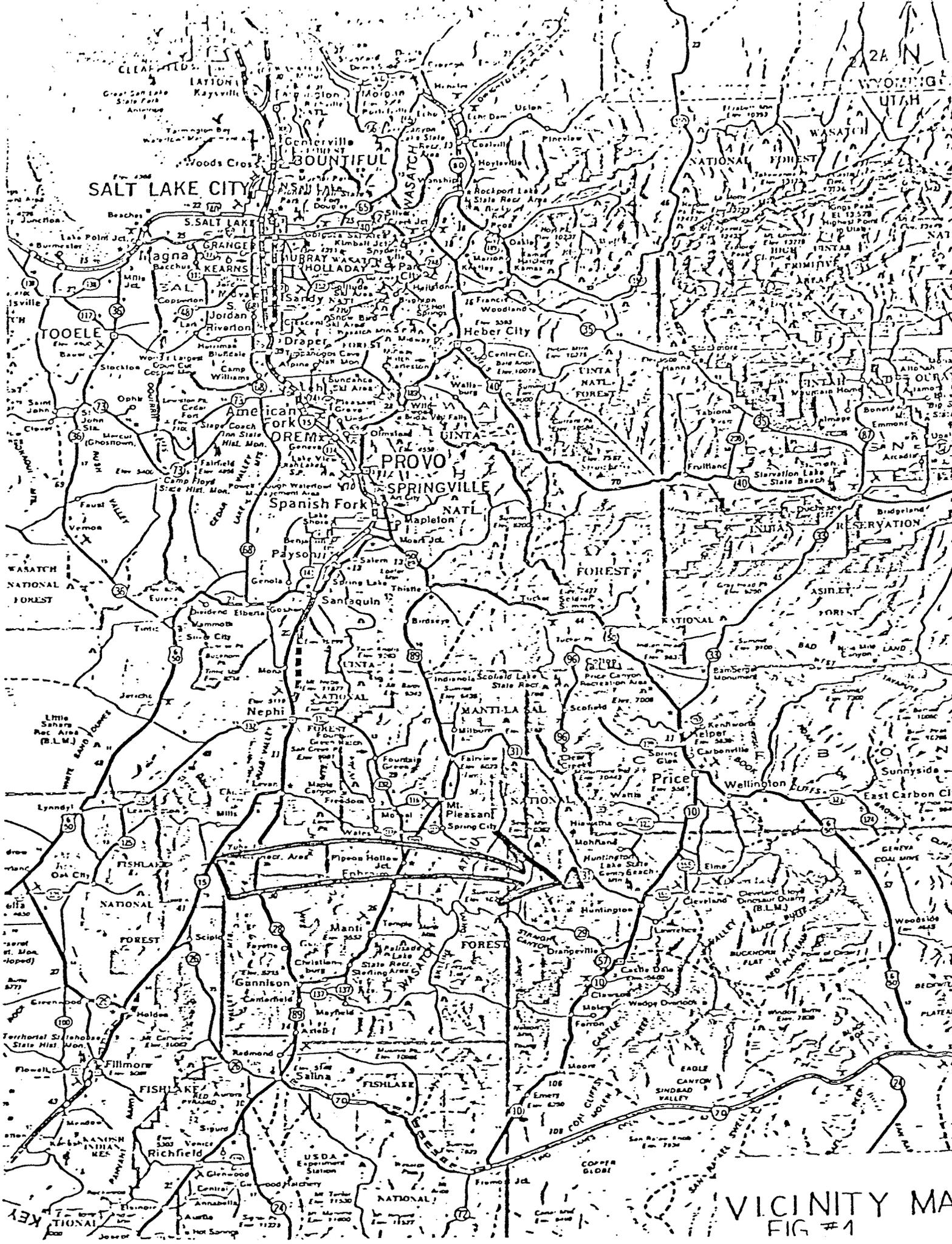
Vehicle access to the specified area is provided by an asphalt-surfaced road up Huntington Canyon via Utah Highway 31 to Mill Fork Canyon, and a gravel-surfaced road, Forest Development No. 50086, up Mill Fork Canyon to Swisher No. 4 Mine. Access to the surface of the area is from the west, provided by a jeep trail from Cottonwood Creek west of this tract via big East Mountain.

2. History

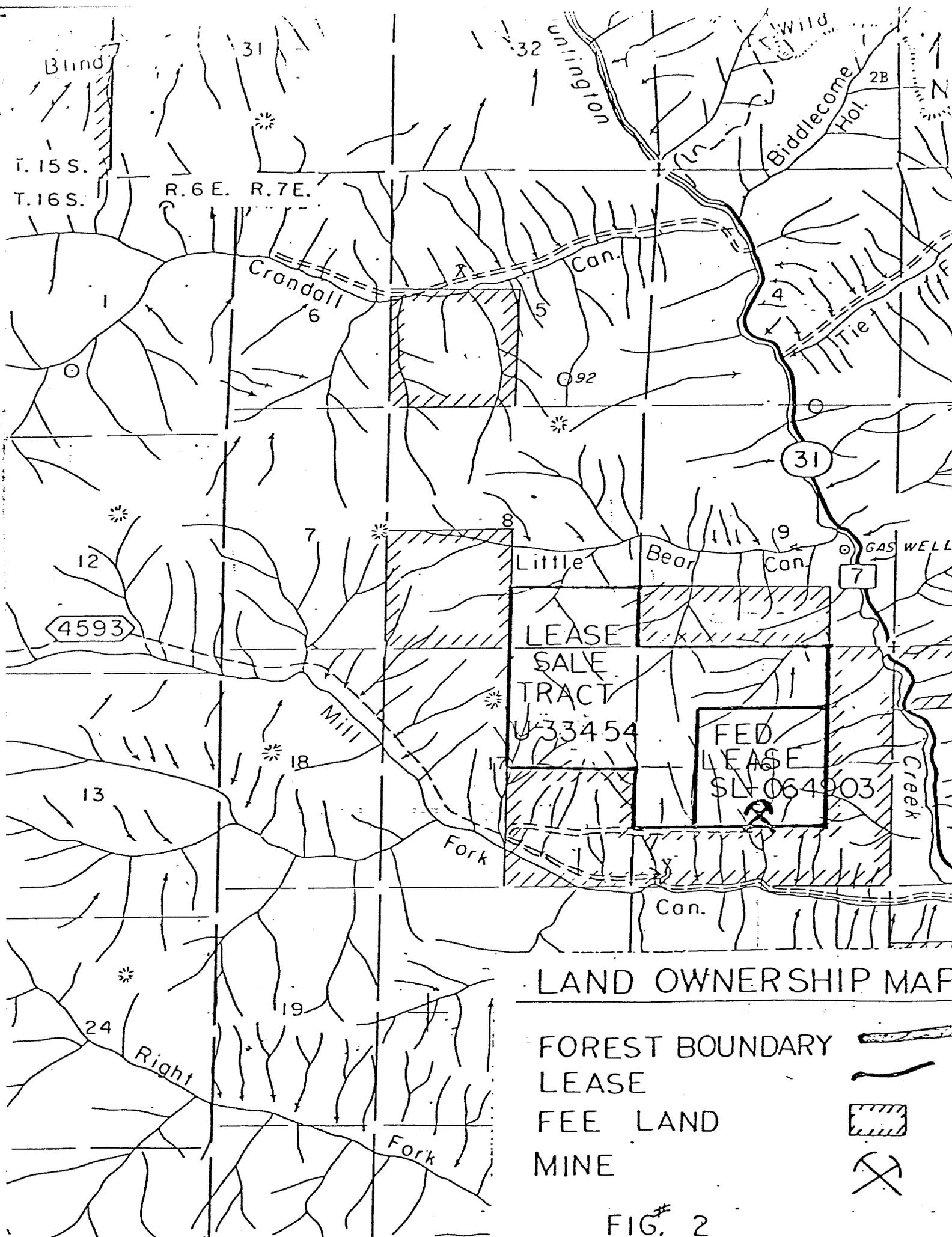
The discovery of coal within Emery County was first reported by the Corps of Topographical Engineers in 1853. In 1875, a mine was opened in Meetinghouse Canyon, three miles south of Mill Fork Canyon, by the Fairview Coal and Coke Company. Other mines soon followed and since these early beginnings, coal mining has grown to be a major industry of Emery County.

On January 24, 1946, Lease SL-064903 for 40 acres was issued to Vernon Leamaster, located in Section 16, T16S, R7E, NE $\frac{1}{4}$ SW $\frac{1}{4}$. On May 24, 1949, the lease was modified to include 40 acres in Section 16, NW $\frac{1}{4}$ SE $\frac{1}{4}$. Another modification occurred in 1957 which added 80 acres in Section 16, bringing the lease to its present size of 160 acres. As pointed out previously, this lease area is completely surrounded by open Federal land and private land.

Production of the Leamaster Mine in 1948, the first full year of operation, was 30 tons per day. Between 1949 and 1952, production averaged from 60 to 100 tons per day. In 1958, a flash flood destroyed the mine tipples and loading facilities. They were rebuilt, but production dropped to 40 tons per day. The mine was shut down in 1964, its total production being 114,101 tons. Approximately 17 acres of the lease had been mined.



VICINITY MAP
FIG #1



LAND OWNERSHIP MAP

- FOREST BOUNDARY 
- LEASE 
- FEE LAND 
- MINE 

FIG. 2

The lease and mine sat idle until 1973 when Lease SL-064903 was assigned to Duvels, Inc. In 1974, Dick Bastion Associates was made the designated operator. In 1975, the lease was assigned to General Exploration Company (or the Hardy Coal Company). In 1976, the Hardy Coal Company designated the Swisher Coal Company of Utah as operator.

On April 12, 1976, Swisher Coal Company made lease application for 2,673 acres of adjacent lands. The application was modified on January 25, 1977, to include only 440 acres. This coal is needed by Swisher to economically develop Federal Lease SL-064903 and their contiguous fee lands as a logical unit.

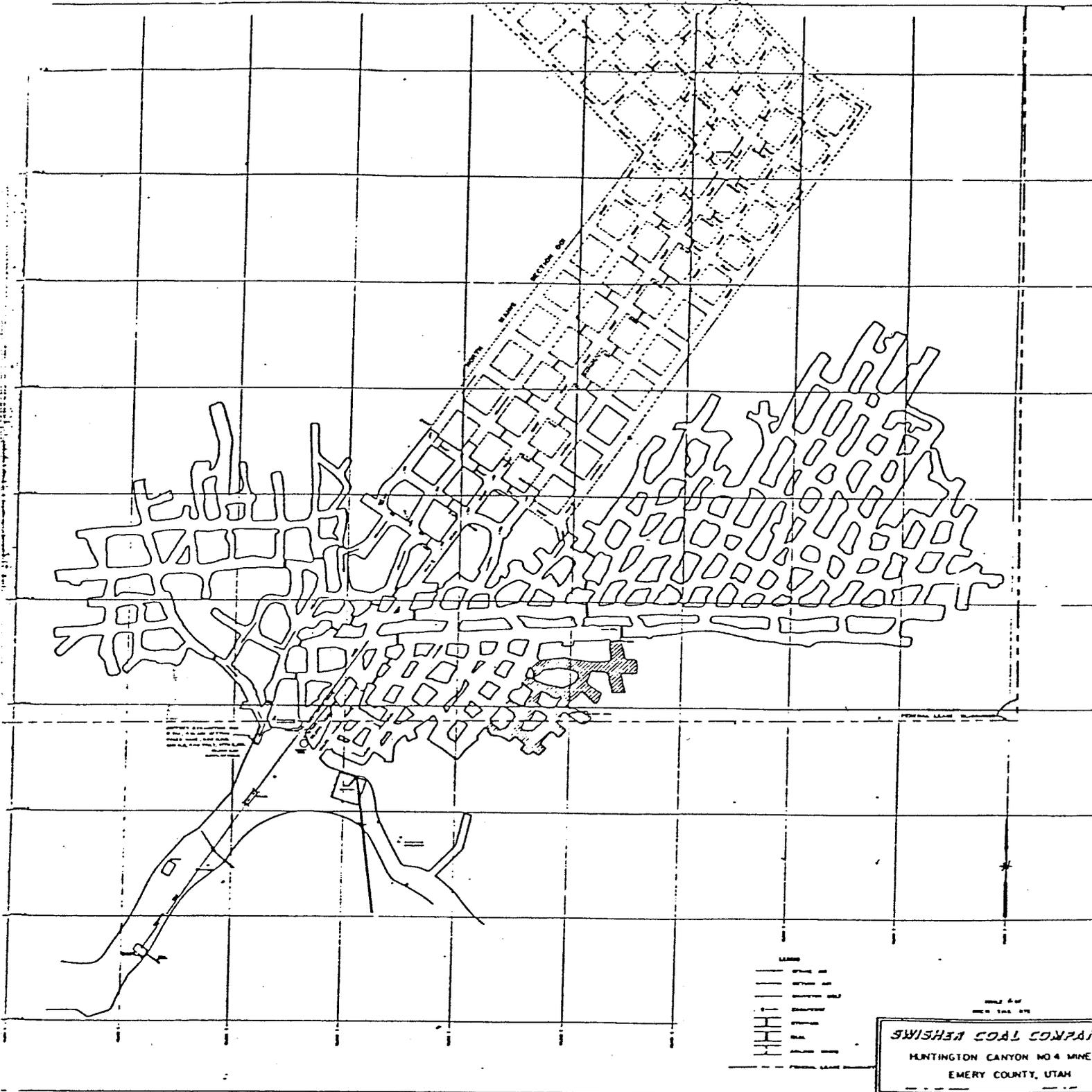
3. Mine Development

In 1975, Swisher Coal Company began construction of surface facilities on fee land, at the location of the old Leamaster's Mine, immediately adjacent to Lease SL-064903. In the fall of 1976, Swisher's Mining and reclamation plan was approved by the Geological Survey with concurrence of the Forest Service, and underground mining of the lease began.

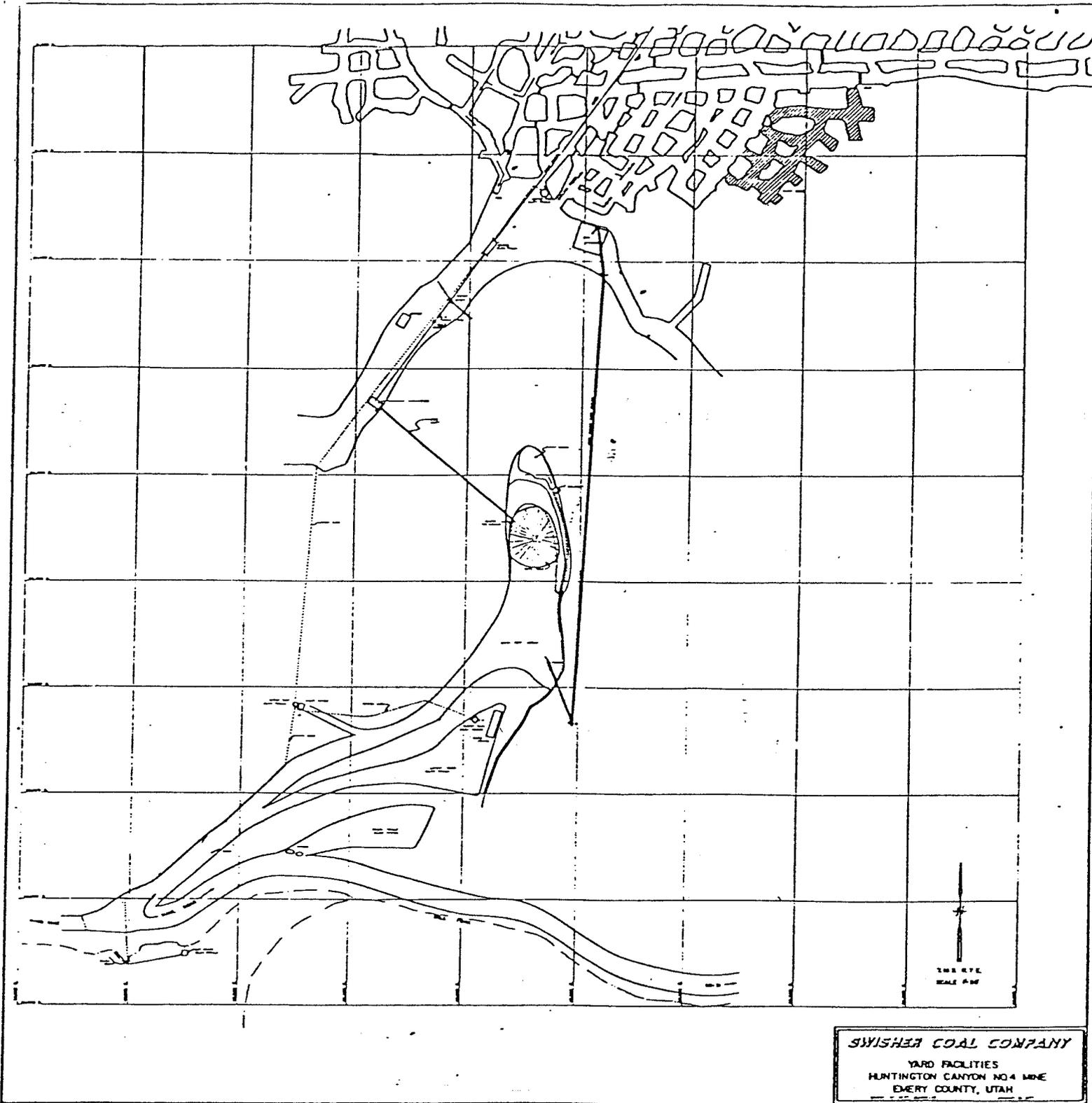
The Swisher No. 4 Mine is a 5-entry system, utilizing two of the old Leamaster's portals on the outcrop. Main entries are being driven through and beyond the old works to the northeast. At approximately 1,100 feet from the entries, the mains will turn northwest to parallel the outcrop. The proposed lease sale tract would tie the existing Federal lease and Swisher Coal Company private land into a block of coal that could be reached without another opening.

Coal production is via a continuous miner using room and pillar method. (Figures 3, 4, and 5.) Plans are to produce 1,000 tons of coal per day, increasing to 3,000 tons per day within two years. The production of 3,000 tons per day is dependent on Swisher receiving the short-term lease. The coal is brought out on a 42-inch belt conveyor, run through a single roll crusher, then discharged down a chute onto a 2,000-ton open storage pile located on a lower level. From here the coal will be hauled by truck to a railroad loading/preparation plant site.

Mine development is in the Blind Canyon coal seam. It has a thickness averaging nine feet. The Hiawatha seam and the Bear Canyon seam also occur and are potentially mineable. The mine plan for Lease SL-064903 does not discuss the mining of these underlying seams.



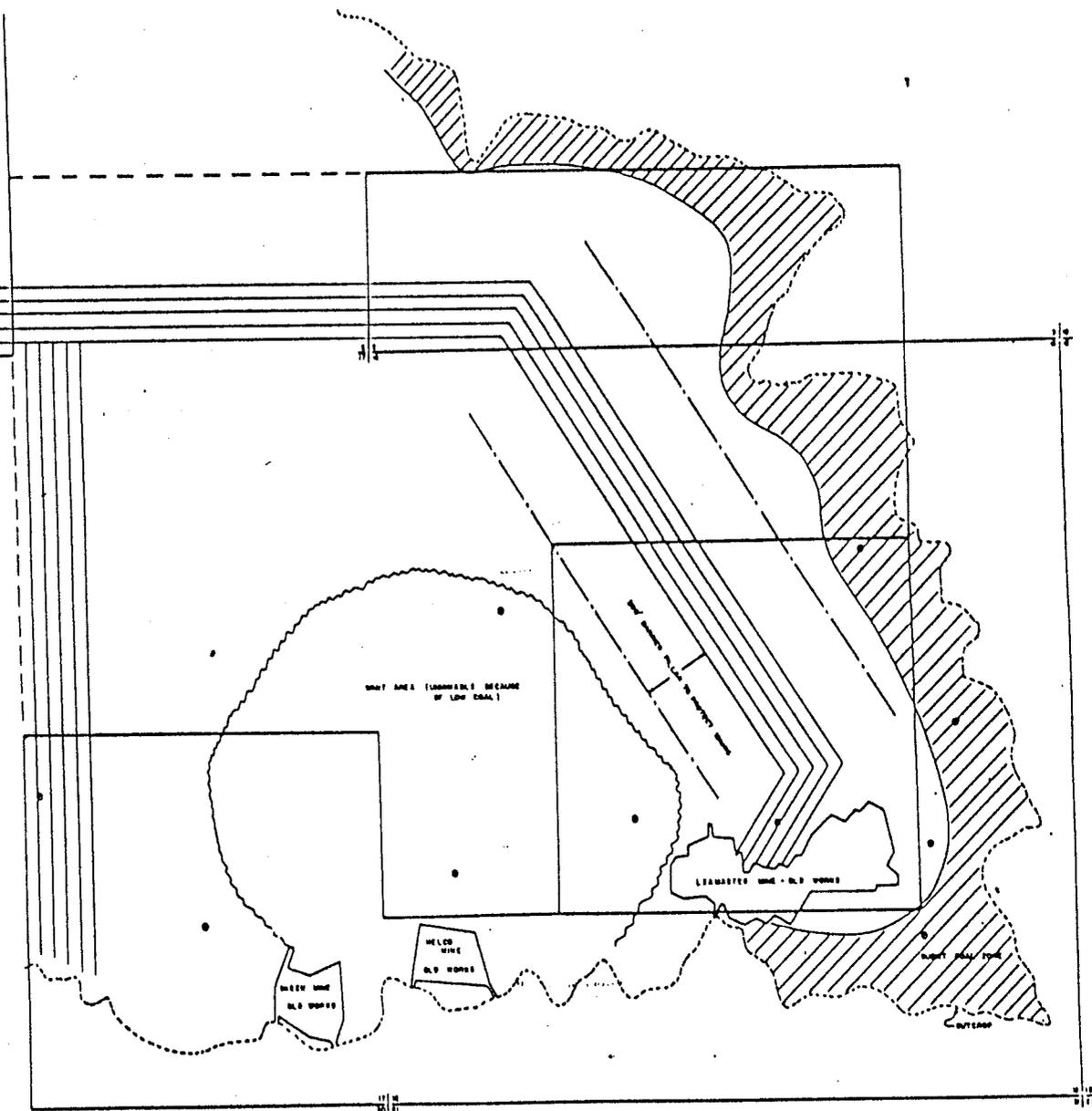
MINE PLAN
FIG. #3



SWISHER COAL COMPANY
YARD FACILITIES
HUNTINGTON CANYON NO. 4 MINE
EMERY COUNTY, UTAH

MINE YARD FACILITIES
FIG. # 4

-  GENERAL LEASE SL-064408
-  FEE
-  MODIFIED LEASE APPLICATION
-  DRILL HOLES



SWISHER COAL COMPANY
 SHORT TERM LEASE APPLICATION
 HUNTINGTON CANYON #4 MINE
 EMERY COUNTY, UTAH

LOCATION OF OLD WORKS / DRILLHOLES / PROPOSED MAINS
 FIG# 5

4. Land Management Direction

The subject tract is under Federal ownership and the surfaces are administered by the Manti-LaSal National Forest, Price Ranger District.

This area is presently managed under the guidance of the Price Ranger District Multiple Use Management Plan. This plan is being updated by the Ferron-Price Land Management Plan scheduled for completion in 1978.

The Forest Service presently administers these lands for livestock forage, wildlife habitat, watershed, dispersed recreation, and coal mining.

The Forest Service plans to coordinate and manage all the resources under the concept of multiple use.

5. Lease Other Than Applicant

Lease application U-33454 was made by Swisher Coal Company and complements the existing coal operation as explained in the section entitled Mine Development.

Figure 2 shows the relationship of application U-33454 to other adjacent lands. It should be noted that the lands proposed for lease sale are bounded by fee lands on the south, west, east, and north, by open Federal land on the north and west, and by the existing lease SL-064903 on the east. The adjacent fee lands are either owned or controlled by Swisher Coal Company. This intermingling of various lands and their associated ownership problems would be resolved if Swisher was the successful recipient of the lease sale.

If Swisher is not the successful bidder, construction and mining from an alternative site will be necessary. This development would probably consist of access roads, buildings, parking areas, coal conveyor, power lines, and all the other necessary surface facilities usually found in underground mines.

Surface access over Federal land would not be permitted from Little Bear Canyon, as discussed in later sections of this report. The remainder of the proposed lease tract is completely surrounded by fee land, except for one-fourth mile on the west. If this were utilized, an access road from the canyon bottom would be necessary. These developments and their associated site specific impacts would be evaluated in a later Environmental Analysis Report upon receipt of a formal mining plan.

Since access up the canyon bottom is largely owned by Swisher, other mining operators would be required to obtain the proper right-of-way through these lands.

Mining in this area is done largely from the coal outcrop. This is the most economical method available. This method also produces immediate coal as versus other methods where shafts are excavated or overburden is removed to get to the coal. The coal outcrop line is at approximate elevation 7,900 feet. The western one-fourth mile available for access is at elevation 8,600 feet, some 700 feet above the outcrop. This essentially means that for an operator to reach the coal seam, a tunnel or vertical shaft would be necessary. The expense of an operation such as this, plus the small acreage being offered, will probably preclude bidders other than Swisher.

A further complication of an operator other than Swisher is the loss of coal experienced by leaving coal in place. In cases where property is owned by different parties, either Federal or fee lands, a pillar of coal is left in place to protect the adjacent property owners boundary. This barrier pillar is usually a minimum of 100 feet in width, with provisions for increasing the width in some cases. An interior barrier pillar scheme will not be necessary if Swisher is the successful bidder. An applicable amount of coal will be lost to barriers if another operator gets the lease.

6. Present and Projected Demands for the Mineral Materials

Swisher Coal Company has secured a market for its coal. A Letter of Intent was signed by the Southern Company, a public utility holding company operating in Alabama, Georgia, and Mississippi, agreeing to purchase 500,000 tons in 1977, 1,000,000 tons in 1978, and 1,500,000 tons in 1979, and forward until termination 10 years hence. Swisher anticipates supplying 800,000 tons of this commitment from the No. 4 Mine and the remainder from Swisher's other Utah mines. This commitment from No. 4 Mine is dependent upon their ability to obtain additional coal from either their private lands and/or other Federal lands.

7. Exploration

For a lease area to be efficiently and safely mined, some geologic investigation is necessary. Drilling from the surface of the lease is the most common method for obtaining this data.

In 1976, three holes were drilled on lease and six additional holes were drilled on adjacent fee lands. To date, there has been no exploration drilling on the proposed short-term tract.

Opportunities for drilling on the proposed lease tract are limited because of steep, unstable slopes where reasonable rehabilitation cannot be accomplished. Access is confined to the road on top of the ridge which was used for previous drilling. Drilling from existing access roads or the use of helicopters or skid rigs would be allowed.

All drilling proposals will require site specific evaluation and preparation of an Environmental Assessment Report.

8. Federal Actions Required

The Federal action being assessed is issuance of a competitive coal lease in accordance with 43 CFR Part 3520 and under the short-term provisions of the Secretary of Interior's announced coal leasing policy of February 17, 1973. This action is also in compliance with the NRDC versus Hughes action of June 14, 1978.

The issuance of the coal lease implies the right to explore, develop, and produce the coal. Responsibility for environmental protection and restoration would also be integral components of the lease. If Coastal States obtains this lease, the proposed developments and production methods described in this chapter would be used. It is assumed, for analysis purposes, that full development would occur should the lease be issued.

If the short-term coal lease application is approved, mining and reclamation plans would be required under Sections 502 and 523 of the Surface Mining Control and Reclamation Act of 1977 (P.L. 95-87) and regulations promulgated pursuant to the Act. The mining and reclamation plans would be submitted by the lease holder for evaluation by the Office of Surface Mining and USGS to determine compliance with the requirements of Federal regulations contained in 30 CFR 211 and 30 FR 700 et. seq. The mining and reclamation plans would contain site specific information on requirements of the initial regulations. The lease holder would be required to use mitigating measures contained in Chapter IV of this EAR in development of mining and reclamation plans.

The existing mining and reclamation plan does not meet OSM requirements. If the proposed area is leased to the Swisher Company, the existing plan will be returned to the company for revision in order to include the newly leased area. At that time, the plan will also be revised in accordance with OSM's applicable initial regulation. All such changes in the mining plan, including the OSM regulations, will be developed through full coordination and consultation with the Forest Service so that a mutually agreeable revised mining plan can be developed.

The Bureau of Land Management is responsible for issuance of the lease and has lead responsibility for this action with participation and consultation from the U.S. Geological Survey and the U.S. Forest Service. By issuing the lease, the Federal Government would grant the lessee the exclusive right to mine and dispose of all coal under the terms and conditions of the lease.

Under the terms set forth in 43 CFR Part 3520, the BLM has the right to adjust royalties and other terms and conditions of a coal lease at the end of the initial 20-year lease period and every 10 years thereafter.

It may be necessary at some time in the future for the operator to break to the surface for air. This action will be handled through approval of the U.S. Geological Survey and consultation with the Forest Service. No other actions, such as issuance of rights-of-ways or special use permits, are anticipated in conjunction with this lease sale.

III. DESCRIPTION OF EXISTING ENVIRONMENT, ASSOCIATED IMPACTS OF THE PROPOSED ACTION, AND MEASURES TO MITIGATE ADVERSE IMPACTS

1. Topography

The proposed lease tract is confined to a ridge on the western slope of Huntington Canyon. The area is bounded on the north by Little Bear Canyon, and on the south by Mill Fork Canyon. The terrain is mountainous, with steep cliffs and deeply incised drainages. Elevation on the tract ranges from 7,900 feet to 9,500 feet, giving 1,600 feet of relief (Figure 6).

Slopes grade from 50-90 percent giving a "stair-step" effect of resistant sandstone ledges and shale slopes typically mantled by sandstone talus.

Due to the steep topography on the lease tract, construction activities involving any significant earth moving will be limited. Exploration by truck-mounted drill rigs requiring road construction and drill pad leveling which would greatly alter areas with steep and unstable side slopes where reasonable reclamation cannot be attained will not be permitted.

2. Geology

The lease tract is located on the Wasatch Plateau, a transitional zone between the complex Basin and Range Province to the west, and the simple flat-lying rock of the Colorado Plateau to the east. The Wasatch Plateau commonly shares the geologic characteristics of both of these provinces.

The various rock formations in the general area are shown in the stratigraphic column included in this report (Figure 7). They consist of a sequence of essentially flat-lying sedimentary rocks: sandstones, limestones, and shales, which display such sedimentary structures as interbedding, crossbedding, scour, and fill structures, flute casts, and lenticular bodies. The bottom of Little Bear and Mill Fork Canyon is Mancos shale. The top of the ridge between the canyons is the North Horn Formation.

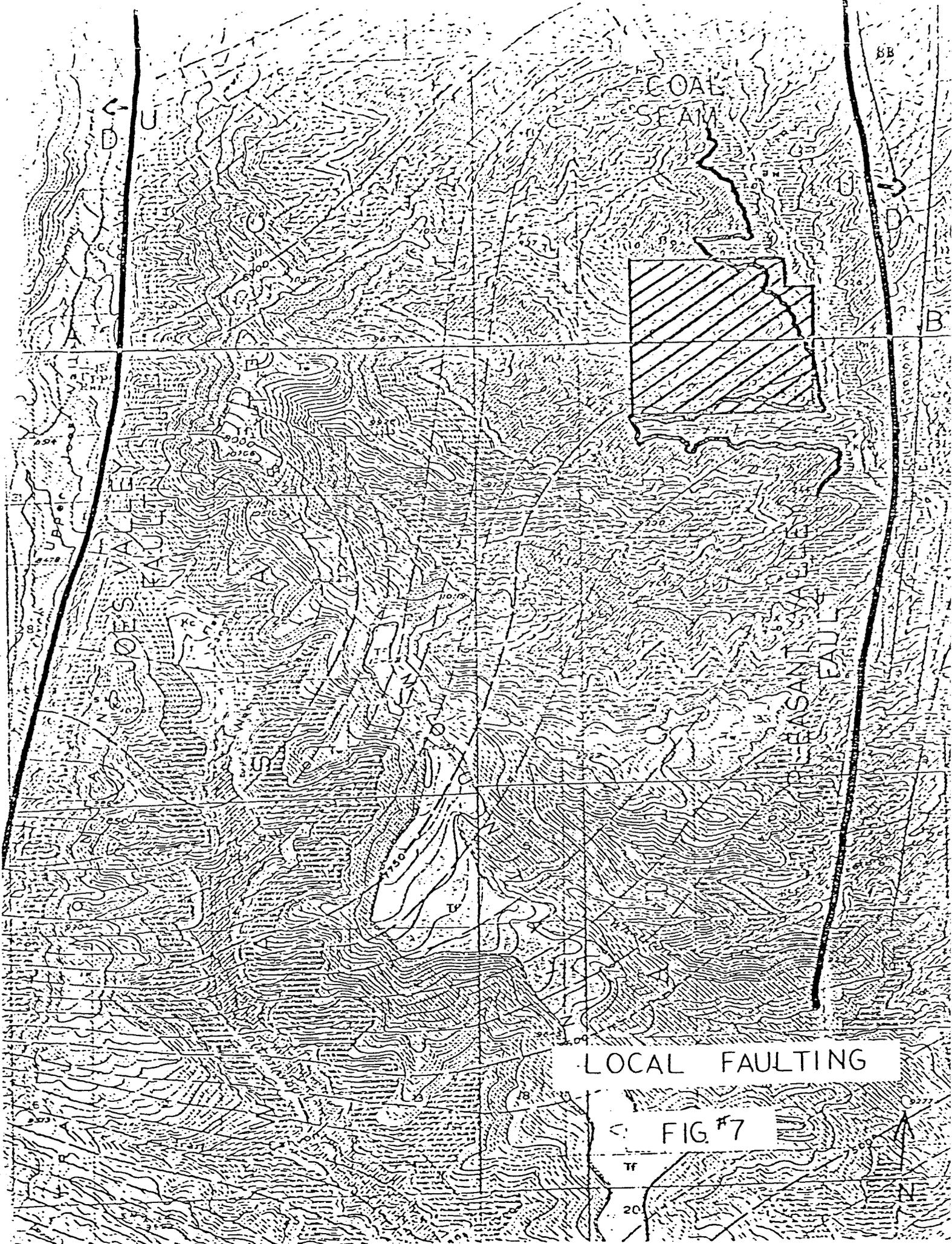
The geologic structure of the area is fairly simple. The rock formations dip less than five degrees to the southwest. The tract is located within a horst (or upthrown block) between the Joe's Valley Fault and the Pleasant Valley Fault (Figure 7), however, no identifiable faults are present on the proposed lease tract. A strong lineation does cross the tract which shows nine feet of displacement in Little Bear Canyon.

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	Variocolored 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	Variogated shales with subordinate sandstone, conglomerate and freshwater limestone, thickens to north slope former.
CRETACEOUS	?				
	Campanian	Mesaverde Group	Price River Formation	600-1,000	Gray to white gritty sandstone interbedded with subordinate shale and conglomerate, ledge and slope former.
			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.
			Star Point Sandstone	90-1,000	Yellow-gray massive cliff-forming sandstone, often in several tongues separated by Masuk Shale, thickens westward.
	Santonian	Manson 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	Manson Shale	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
	Albian		Dakota Sandstone MINOR COAL	0- 60	Variable assemblages of yellow-gray sandstone, conglomerate shale and coal. Beds lenticular and discontinuous.

FIG. 6

Generalized section of rock formations, Wasatch Plateau coal field

(Taken from Doelling, 1972, Monograph Series



LOCAL FAULTING

FIG #7

11

20

There are three prominent jointing patterns on the lease tract. The most dominant is parallel to the trend of the major faults (N14W). A second jointing system trends nearly east-west (N72E) and almost perpendicular to the primary pattern. The third pattern (N16E) is observable throughout the area and may be related to the occurrence of springs in the area. Although these joints can be helpful in relieving the overburden pressures, when coal is removed, they may pose a problem. The joints may act as preferential planes of movement and within the mine can contribute to poor and unstable roof conditions. Near steep slopes, these planes can cause mass movement in the form of slumps, slides, rockfalls, and blockfalls.

The area contains several geologic concerns. Slump occurs naturally within the Huntington drainage; however, there are no known zones of slumping on the tract. Rockfalls occur naturally, but can be more frequent with activities associated with mining such as increased men, machinery, noise, and bulk movement of soil using tractors and mining equipment.

Overburden (or the mass above the coal seam) on the lease tract ranges from a minimum of 250 feet to a maximum of 1,900 feet. It has been observed that the undermining of areas of thin cover may tend to increase the effects of subsidence. Overburden on the lease tract exceeds 800 feet. Subsidence of the land surface can be a major impact of coal mining and may affect surface resource values.

The commercial coal beds on the tract occur in the Blackhawk Formation which outcrops in the canyon walls between 7,500 and 8,000 feet above sea level. The Blackhawk has a variable thickness of 700-1,000 feet but averages about 900 feet on most of the tract. It also varies in composition from sandstone to shale with interbedded layers.

The effects and the impacts of subsidence over removed coal beds are dependent upon many factors, and in most areas not fully understood. The mining method, thickness of coal seams, depth and lithology of the overburden materials are possibly the most significant factors which influence the magnitude of subsidence. Past experience has shown that subsidence does occur with impacts upon surface resources varying from insignificant to high.

In order that the effects of mining on the surface and subsurface resources can be evaluated, a monitor-inventory program is required. This program will be developed in conjunction with the U.S.G.S. and have concurrence of the Forest Service. It should be continued until the necessary information is obtained. Areas of investigation should include changes of topography, underground and surface hydrology, and effects on vegetation and animal life. All important springs and water flows are to be included.

Curves like a bow, zones of compressive stress called compression arches, tend to occur above and below the mine panels and transfer the overburden load in coal extraction areas to adjacent solid coal boundaries or barrier pillars. The caving and flexure of strata in the zone encompassed by the arches compounds the stresses in the mine workings. Bedding of strata produces tensile and compressive stresses within lithologic units and shear stresses across their boundaries. Mine voids are widened and the compression arches migrate higher in the overlying strata and may eventually reach the surface. This migration transfers overburden stresses back into the extraction area. The rate of migration of compression arches, and consequently the rate of stress transfer, depends on thickness and strength of overburden strata, duration and rate of mining, mine geometry, and mining sequence.

Subsidence of the land surface should be expected in varying degrees over the lease area from very little, to perhaps several feet in some areas. The effects of subsidence are expected to be similar to those observed at other mines in the vicinity. It is expected that subsidence will be gradual and, in most cases, will begin to some degree at the onset of the mining and will continue beyond the life of the mine.

Subsidence effects have been casually observed at several locations. Measured data is unavailable, therefore, the magnitude and effect of the subsidence cannot be predicted.

Most features observed are subtle and include small slumps on steep slopes, slight depressions, and some tipping of trees and shrubs. Drainage patterns did not appear significantly changed or erosion increased. The present land use did not appear to be affected of changed significantly.

There were no observed features developed from mine subsidence that pose possible hazards to human or animal life, or are deleterious to present land uses.

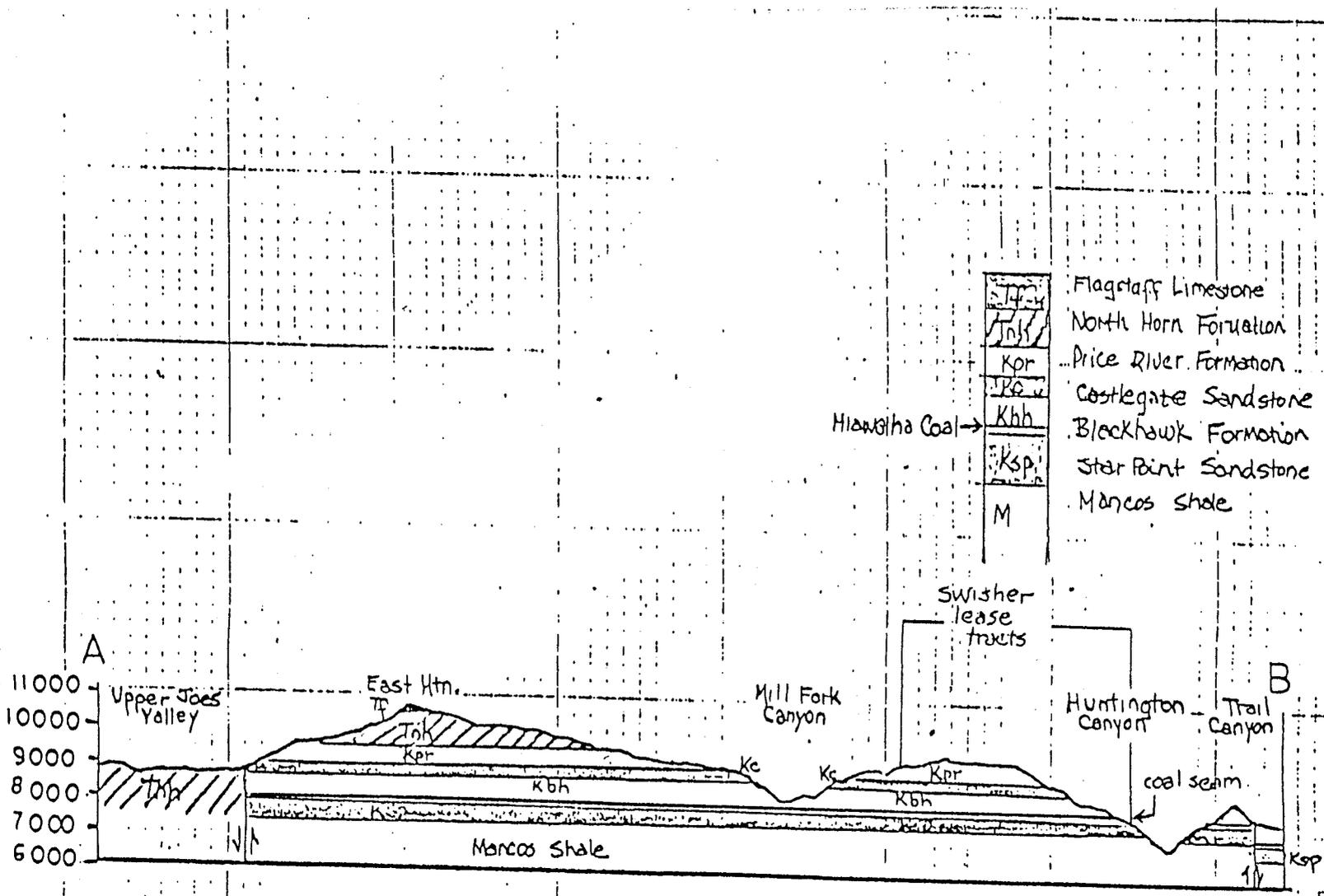


FIG. #8 GEOLOGIC CROSS SECTION
 SWISHER HUNTINGTON CANYON #4 MINE

(see Fig. #7 for location)

SCALE 1:62500

The volume of surface flow of Mill Fork and Little Bear Creeks may be decreased by subsidence.

The effect subsidence had upon the natural ground water flow system in areas which have subsidence could not be determined by observation and is, therefore, unknown. This would require a monitor and inventory program established prior to mining. It is expected, however, that mining and subsidence will have some significant effect upon the natural ground water flow. Interception of water courses by mining and fracturing of aquifers by subsidence may alter flow patterns, increase recharge, and change spring flows.

The proposed lease tract has not been drilled. Based on information obtained from adjoining lands, it has been determined that there are two coal seams of economic importance. The lower seam is the Hiawatha, which lies directly above the contact of the Blackhawk, and the Star Point Sandstone. The upper seam is the Blind Canyon, which lies about 85-90 feet above the Hiawatha.

No data is available on the thickness of the seam on the proposed lease tract. The thickness averages 6 feet for the Hiawatha and 9 feet for the Blind Canyon seams at the existing Swisher Mine which lies adjacent to the tract. The existing mine portals enter the outcrop of the Blind Canyon seam at 7,820 feet elevation.

The coal quality in the existing mine and adjacent vicinity as reported by Doelling, 1972, is:

Moisture	4.4%
Volatile Matter	42.3%
Fixed Carbon	46.4%
Ash	7.0%
Sulfur	.4%
BTU/lb	14,400

This is one of the better quality coals in the area. Its low sulfur content and high BTU makes it both efficient and economical.

The tract is located in a high seismic risk zone. Characteristically four shocks of 5.0 or greater, on the Richter Scale, per decade per square degree of latitude and longitude are predicted (Simon 1972, Smith and Bar, 1974). This increases the possibility of mine damage and safety hazards through roof falls, landslides, and rockfalls.

3. Ground Water

Most ground water recharge comes from precipitation, which averages about 20 inches/year in the southern and western sections of East and Trail Mountains.

Mill Fork and Little Bear Canyons have springs at their heads which supply stream runoff to Huntington Creek. These springs originate in perched aquifers, within the Blackhawk, Castle Gate, Star Point, and Price River Formations. Generally, springs occur above the coal outcrop at elevations greater than 7,800 feet. A deviation from this is the occurrence of Little Bear Spring at 7,400 feet which is below the coal outcrop.

Little Bear Spring is currently the primary water supply for Huntington City. They obtain 68-75 percent of their water volume from this spring. This is a very important water source located adjacent to the proposed lease tract.

Faults and joints play a major role in ground water movement and accumulation. These natural channels in the rock serve as conduits for ground water flow. A fault with displacement of approximately nine feet was observed in Little Bear Canyon (Figure 9). Inspection of aerial photographs reveals extension of the lineation through Mill Fork and Rilda Canyons. This lineation transects the lease tract in Sections 8 and 17, however, it is unknown if displacement has occurred in the lease tract.

Three jointing systems are noted in the immediate area (Figure 9). The primary jointing pattern trends N 14° W. Huntington Canyon closely follows the trend of this primary jointing system. A second system trends parallel to the major faults. Its attitude is N 16° E. The fault noted above and two smaller local faults in the southeast corner of the map also follow this trend.

A third pattern of jointing is perpendicular to the primary pattern. It trends N 72 E. It is also perpendicular to Huntington Creek and most of the feeder canyons and prominent ridges follow this trend.

It has been observed throughout the area and also near the proposed lease tract, that seeps and springs are controlled by the jointing and the stratigraphy. The sandstone beds in which seeps and springs occur are of low permeability, allowing only small seepage. They do, however, become permeable in areas where there is an increase in

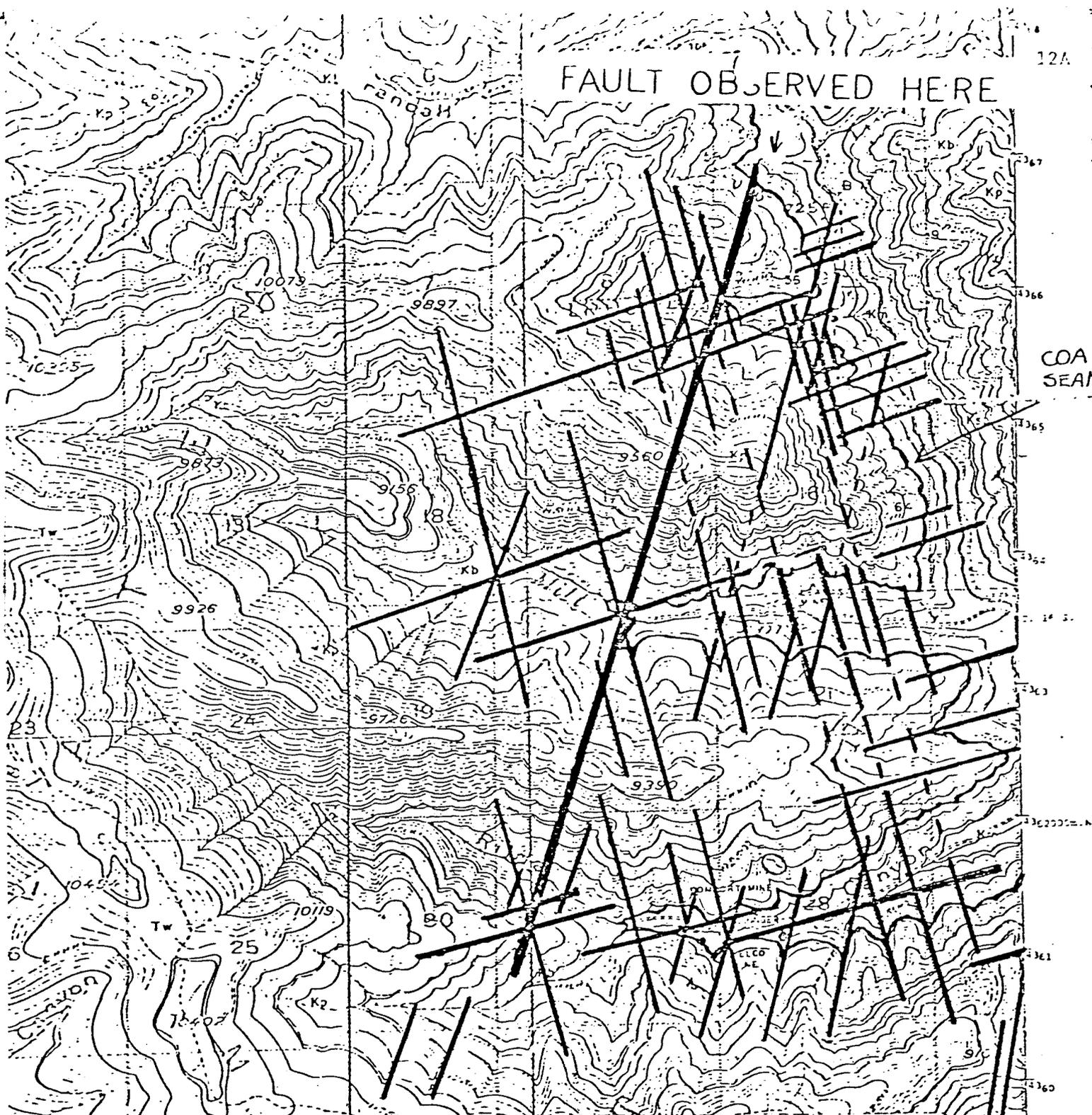


FIG. #9
EXISTING JOINTING AND
FAULTING PATTERNS

SYMBOL	TREND
	N 16 E
	N 14 W
	N 72 E
	N 16 E FAULT
	SPRING

N

Scale 1:42

joints and cracks. The ground water is most often confined to the sandstone aquifers by underlying and overlying shale aquicludes. Percolation of water from a higher aquifer to a lower aquifer through the shale aquiclude is also primarily through these joint systems.

Ground water flow (according to the study of Vaughn Hansen) is from the northwest to the southeast in this area. This is also evidenced by the slope of the permanent ground water table which is from northwest to the southeast.

Some small springs occur intermittently on the lease tracts, and within the immediate area. There also occurs small seeps and flows within the existing adjacent mine. Little Bear Spring, just north of the tract has a substantial flow and serves as a municipal water supply to Huntington. The spring occurs at the intersection of cross-cutting joints that may act as a large scale collection circuit.

Swisher Coal Company retained Vaughn Hansen Associates to study the water quality and the hydrology in the vicinity of the proposed coal lease tract. Their purpose was to determine the potential impact on ground water resulting from mining operations, with recommendations for mitigating any potentially serious ground water impacts.

Two objectives were to guide this effort: (1) Determine the probable impact on Little Bear Spring of any expanded mining activity, and (2) to obtain background information pertaining to water quality for a reference to assess the cause of any changes in future quantity and quality of water at Little Bear Spring. The conclusion of this study is that the water table at Little Bear Spring is below the coal seams to be mined. Crandall Canyon serves as a major interceptor drain cutting into the Star Point Formation. The conditions indicate that increased mining activity would have little or no affect on Little Bear Canyon Spring.

Water quantity and quality should be monitored both during the mining operation and for a sufficient time after mining to document the impact on adjacent ground water and detect early possible changes.

A copy of this report showing the background data and results is available for review at Swisher Coal Company offices.

Interception of ground water, by the mining operation creates several problems. According to Swisher's mining engineer, the seeping ground water decomposes rock and coal yielding areas of poor roof control. Flooding at the Huntington Canyon #4 Mine has occurred in the southeastern portion of the old Leamaster Mine. At present the area is inundated by two and one-half feet of water.

Our conclusions based on Vaughn Hansen Associates studies and the documented interception of water in the existing mine indicate that there is water sources above the Little Bear Canyon Spring.

Swisher Coal Company and Huntington City have a documented written agreement stating that if any alteration is noted in water quality and/or quantity that mining operations will cease until an acceptable agreement is reached between the two parties. Any deviation in quantity will be restored by water being taken out of the stream and properly treated for culinary use.

No provisions are made to protect this water supply in the event that another party other than Swisher Coal Company is the successful bidder on the lease tract.

Based on available data, Huntington City is currently supplying culinary water to approximately 700 families. Huntington City officials indicate that Little Bear Spring is currently producing water for approximately 535 families. Huntington City is presently constructing a water treatment facility to supplement their existing water supply system. This plant will have the initial capability of providing water for 850 families, with provisions for other units to be added to increase the capacity for an additional 550 families. This plant would ultimately have capacity to provide water for 1,400 families, if and when additional units are added to take care of increased use.

The relationship of the jointing and the ground water movement is direct. However, insufficient data are available to define source recharge of the various seeps and springs.

4. Soils

The lease area is classified as Steep Dissected Canyon Landtype Association in the Ferron-Price Soil Resource Inventory. The lease area was broken down into three capability units (see Figure #10). The following is a brief description of the various units.

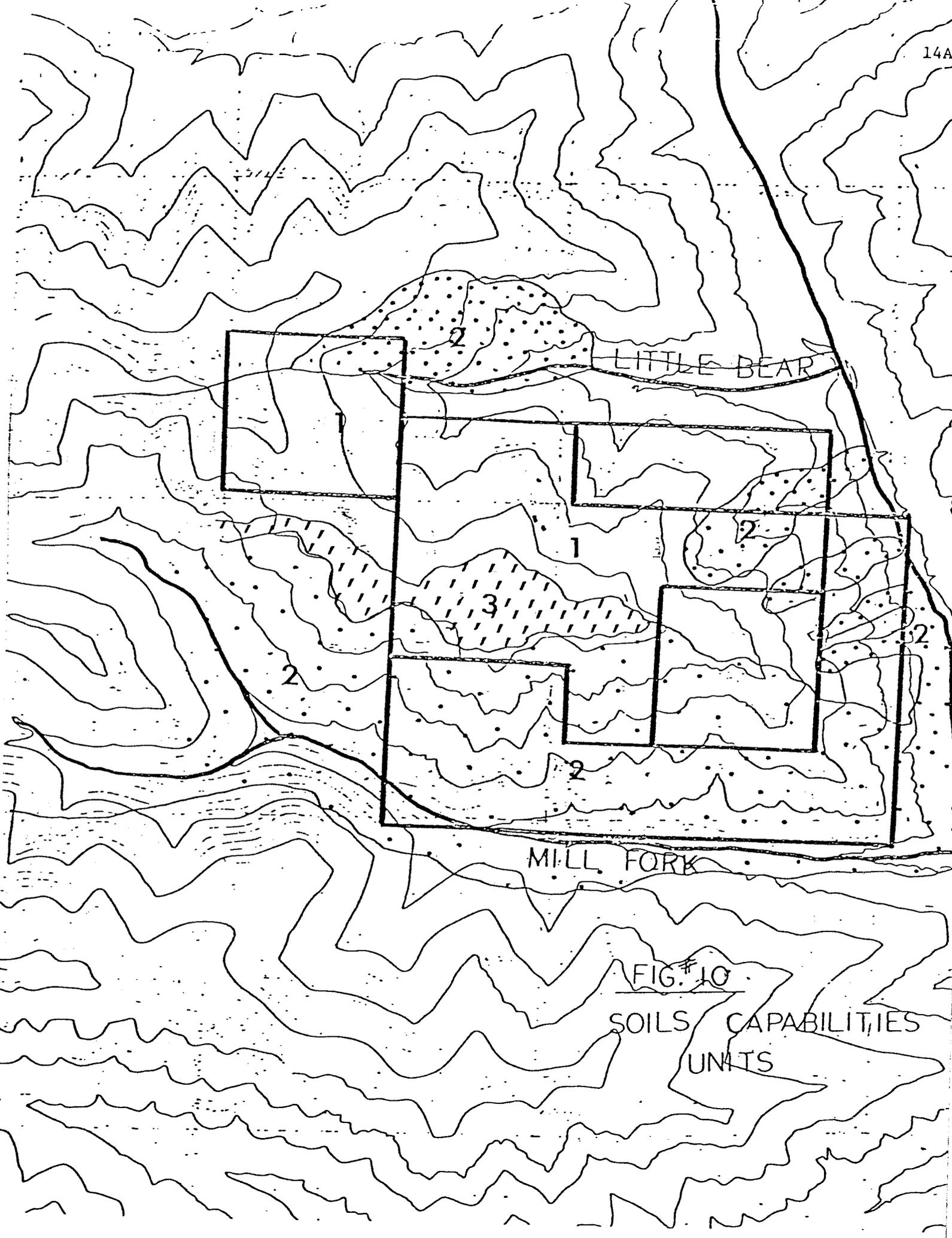


FIG. 10

SOILS CAPABILITIES
UNITS

Capability Unit I. Most of this unit is dissected by first order drainages. The soils have developed from cobbly and stony colluvium derived from the sandstone and shale bedrock. They are dominantly moderately deep (20 to 40 inches) and have a relatively high coarse fragment content (35 to 50 percent gravel and cobble). Surface horizons generally have dark brown colors and loam to clay loam textures. Subsoils are gravelly and cobbly clay loams.

These soils have low to moderate inherent erodibilities and slight limitations for revegetation. Sensitivity to surface disturbance is moderate - they can withstand temporary exposure without excessive loss of productivity or sediment production and will show a fair response to normal revegetation practices. The soil instability potential is moderate to high. Deep soil disturbances, such as road cuts, will result in occasional to common slumping and sliding, especially during periods when soil moisture content is high. These soils, when situated on steep slopes, have a moderate to severe hazard for the location and construction of low standard nonsurfaced roads.

Capability Unit II. Slopes are dissected by shallow, closely-spaced, parallel drainages. Rock outcrops and stony colluvium are at the surface over much of the unit.

The soils have developed from stony colluvium derived from sandstone and shale bedrock. They are generally shallow (< 20 inches) over bedrock and stony colluvium. The soils are not well-developed. Textures are gravelly and cobbly loams and clay loams. They have a high coarse fragment content (25 to 50 percent) throughout the profile but increasing with depth from the surface.

These soils have moderate inherent erodibilities and severe limitations for revegetation. Their sensitivity to surface disturbance is judged to be high - unprotected disturbed soils will yield high volumes of sediment and poor response to normal revegetation practices can be expected. The soil instability potential is moderate - deep disturbances such as road cuts will result in some slumping and sliding. On steep slopes, these soils have severe instability potential for location and construction of low standard, unsurfaced roads.

Capability Unit III. Soils have developed from residual parent material derived from sandstone, shale, and limestone bedrock (North Horn Formation).

Soils are moderately deep (20 to 40 inches) over fractured, weathered bedrock. They have dark brown-colored surface horizons and a high content of gravel and cobble in the subsoils (> 50 percent).

These soils have low inherent erodibilities and the revegetation potential is judged to be moderate. The overall sensitivity to surface disturbance is considered moderate - although bare soil can be temporarily exposed with minimal precautionary conditions without excessive loss in productivity.

Only fair response to normal revegetation practices can be expected and more than one year may be needed to establish a protective cover. Soil instability potential is slight for deep disturbances, such as road cuts; slumps and slides will be infrequent. Soil instability potential increases if soils become saturated seasonally. The soils have a moderate hazard for the location and construction of low standard, unsurfaced roads due to their potential for rutting and loss of traction when wet.

Soil type No. 2 is the most limiting soil for construction and revegetation. Most of the surface facilities and roads are constructed on this soil type and have required provisions to insure stability. The following table summarizes the interpretations made from the survey and the limitations to construction and reclamation:

<u>Capability Unit</u>	<u>Limitations for Road Location & Construction</u>	<u>Limitations for Revegetation</u>	<u>Inherent Soil Erodibility</u>	<u>Soil Instability Potential</u>
I	Mod. - Severe	Slight	Low - Mod.	Mod. - High
II	Severe	Severe	Moderate	Moderate
III	Moderate	Moderate	Low	Low

There are no prime, unique farmlands, flood plains, or alluvial valley floors located on the proposed lease tract area or in the general area.

5. Climate

Temperature is quite variable due to the wide range of exposures and elevations present. The mean annual temperatures in the area ranges between 44° and 33° Fahrenheit. The frost-free period ranges from 40 to 100 days each year. Freezing will be most common from November through March.

Precipitation varies with elevation and ranges from 15 to 19 inches, with 60 to 70 percent as snow during the months of October through May. The average snowfall is approximately 27 inches, however, snow accumulation on the proposed lease will vary with aspect.

Snows will persist on the north aspects of Little Bear Canyon until late May and early June in years of high snowfall. The south-facing slopes in Mill Fork Canyon will receive the same snowfall, but accumulations will be less because of higher melt rates.

6. Hydrology

The hydrology of the land in the area is varied. These conditions were inventoried by dividing the two primary drainages, Mill Fork and Little Bear Creek, into units that would respond homogeneously through phases of the hydrologic cycle.

That portion of the lease tract which lies in Mill Fork Canyon has the greatest potential to produce surface runoff. Sparse vegetation and bare rock allows most precipitation to runoff. Runoff is channeled into ephemeral streams that are tributaries to Mill Fork Creek. The drainage pattern is trellis shaped. This rectilinear arrangement of channels does not concentrate water as quickly as the dendritic pattern which is found in the Little Bear drainage.

In 1964, a fire denuded a large portion of the vegetation in the Little Bear drainage resulting in severe flooding. Although present hydrologic conditions are stable, concentrated surface runoff from large construction sites may cause channel cutting and high sediment production.

Surface water in the drainages containing the lease tract has several uses. Mill Fork and Little Bear Canyons are sources of water for the Swisher Mine and City of Huntington, respectively. Currently, the Forest Water Uses Needs Inventory claims 0.2 acre feet of water for livestock and wildlife use from the head waters of Mill Fork and Little Bear Creeks to their confluence with Huntington Creek. The supply for the Swisher Mine is obtained from Mill Fork Creek. A concrete cutoff wall across the creek forces subsurface flows to the surface. The water is then diverted to a pumping cistern for distribution. This system will be susceptible to flood flows from Mill Fork Canyon because it is located in the erodible colluvium. The risk of flood posed to this system is, however, very low because of the existing good watershed conditions in Mill Fork Canyon. The only depleted watershed units are located at the head of Mill Fork Canyon and thus peak flows are attenuated before they reach the mine vicinity. This stable condition is borne out by the good to excellent channel conditions in lower Mill Fork. The Huntington City water supply, though it was partially destroyed in 1965, faces no significant flood hazard due to the previously-mentioned improvement in watershed condition.

The surface water on the area is fair to good quality. A survey performed by Vaughn Hansen Associates showed that total dissolved solids (TDS) and total iron concentrations (TIC) occasionally exceed recommended limits at various locations in the vicinity of the Swisher Mine. This data illustrates a general trend for TDS concentrations to decrease as streams flow toward Huntington Creek. This suggests that much of the dissolved constituent loads enter the streams in upper elevations, and concentrations are diluted as the streams pick up volume along their channels. Total containment of mine waters has not been prescribed in the Southeastern Utah Association of Governments Water Quality Management Plan as a viable method of eliminating pollution of water from coal mines. The recommended alternative is treatment and discharge to surface waters in accordance with a National Pollution Discharge Elimination Permit.

7. Fire

The occurrence of wildfire (man or lightning caused) within the immediate area is low. The following summarizes the fire record in this area:

<u>Date</u>	<u>Acreage</u>	<u>Location</u>	<u>Cause</u>
1934	2,700	Crandall Canyon	Lightning
1964	620	Little Bear Canyon	Lightning
1969	.10	On lease tract	Lightning
1973	-(Very small)	On lease tract	Lightning

The presence of coal and mining facilities in the area increases the potential for fires. Spontaneous combustion may ignite the coal underground or in surface storage piles. These fires are oftentimes very difficult to extinguish and may smolder for years.

The surface structures and underground facilities of mines are constructed of fireproof materials and are equipped with proper fire extinguishing appliances. The overall operations are subject to both State and Federal coal mining regulations which guard against fires.

8. Wildlife and Fish

The elements of topography, timber, shrub, and grassland produce an abundance of favorable habitat for wildlife. The conifer and grassland burn area on the north portion of the lease accounts for the largest percentage (42 percent) of vegetative cover by area. The south portion of the lease area is composed primarily of the pinyon-juniper cover type.

Mule deer utilize the lease area and surrounding territory for both summer and winter range. During severe winters or periods of deep snow, the majority of the deer move into the canyons for shelter and feeding. The higher elevations within and around the lease are utilized by Rocky Mountain elk for both summer and winter range.

Other mammals that have been observed in the immediate vicinity of the lease include: cougar, bobcat, coyote, badger, porcupine, snowshoe hare, cottontail rabbit, rock squirrel, golden mantled squirrel, Uinta ground squirrel, and kangaroo rat. Mammals not observed but probably occurring in the area include: black bear, red fox, gray fox, beaver, striped skunk, mink, weasel, marmot, western pocket gopher, chipmunk, flying squirrel, and several other species of small rodents.

Many species of birds occur in the area. However, due to migration and seasonal inhabitation, only a limited number of birds were observed during field reconnaissance. The birds observed were: golden eagle, red-tailed hawk, common raven, common crow, red-shafted flicker, yellow-bellied sapsucker, robin, mountain bluebird, house wren, phainopepla, gray-headed junco, Stellar's jay, mountain chickadee, vesper sparrow, Audubon warbler, and Oregon junco. Other birds that inhabit or frequent the area include rough-legged hawk, goshawk, screech owl, great horned owl, turkey vulture, pinion jay, Clark's nutcracker, nuthatches, plain titmouse, sparrows spp., band-tailed pigeon, and mourning dove. The red-tailed hawks observed on the lease are nesting in Section 16, NW $\frac{1}{4}$ NE $\frac{1}{4}$. There is also a goshawk nest located in Little Bear Canyon approximately one-half mile north of the lease. No golden eagle nest was located on the lease. The unique northern bald eagle periodically winters in the vicinity of the lease area. Recent observations have not indicated their presence on the proposed lease area.

Huntington Creek provides a permanent source of water to wildlife on the north and east sides of the lease area.

There are no fisheries within the lease, but the drainages from the lease area flow into Huntington Creek which is an important fishery. The lower 24 miles of stream is rated as Class V and Class VI (of little or no value to the State fishery). Most of the more valuable fishery sections are upstream of the lease area in Huntington Creek.

Some of the reptiles and amphibians occurring in the vicinity include the boreal toad, leopard frog, northern sagebrush lizard, Rocky Mountain rubber boa, Great Basin gopher snake, and Great Basin rattlesnake.

Wildlife on the lease tract is dependent upon the seeps and springs which provide them water.

THERE ARE NO KNOWN THREATENED OR ENDANGERED SPECIES OF FISH OR WILDLIFE KNOWN TO OCCUR WITHIN THE PROPOSED LEASE AREA.

Prior to the approval of the mining plan for coal lease SL-064903, there were some concerns expressed that the behavioral patterns of wildlife would be altered due to human activity. Indications are that this is a temporary occurrence and that the animals became accustomed to the activity. Deer are now seen along the roads and constructed facilities. Also noted is the fact that increased road kills have not occurred as predicted. Very little, if any, additional road kill can be directly attributed to this coal mine operation. The impacts in these areas of concern associated with the sale and development of U-33454 would not materially alter that fact.

9. Vegetation

The majority of the timber on the subject area was destroyed by fire in 1964. After the fire, the area was seeded with grass. There are a few scattered Englemann spruce sapling within the burn, but the regeneration of this area is slow and poor.

The remainder of the area consists of scattered trees and small stands of timber broken up by rock outcrops and large expanses of grass and brush.

The major vegetative species that inhabit the area are: Douglas-fir, aspen, white fir, subalpine fir, limber pine, pinyon-pine, Utah juniper, Rocky Mountain juniper, slender wheatgrass, small needle grass, Kentucky bluegrass, fine leaf sedge, western yarrow, big mountain sagebrush, serviceberry, and mountain mahogany.

THERE ARE NO KNOWN THREATENED OR ENDANGERED SPECIES OF PLANTS KNOWN TO OCCUR WITHIN THE PROPOSED LEASE AREA.

10. Socio-Economic

The coal mining industry within Emery County has shown several erratic periods of renewed growth and sudden decline. During the 1950-1960 census period, the population of Emery County declined 8.79 percent. From 1960-1970, Emery County's population declined .74 percent per year. From 1970 to 1975, the population increased from 5,137 to an estimated 6,700 persons, a 23 percent increase.

The reversal from past population trends is expected to continue in response to the Federal drive for energy self-sufficiency, and the demand for low sulfur coal.

From 1973 to 1974, 561 new miners were employed, a 33 percent increase in the local mining employment. Coal mining and power generating companies presently in operation, are expected to bring 4,741 new mining employees to the Carbon-Emery area by 1979 (not including any associated construction employment).

An indication of the trend is the 1971-1972 increase in average number of non-agricultural jobs which was 10 percent for the Carbon-Emery area compared to 6.6 percent for Utah. From January to June 1973, the rate of increase for Carbon-Emery was 13 percent (Utah Industrial Development Information System (UIDIS, 1973)).

A new work force population would create special utility problems. Presently, most communities in the area are experiencing shortages in water supply and nearing capacity in their sewer systems.

The City of Huntington has constructed an adequate sewerage system and is currently rebuilding its water system to accommodate additional users. The Castle Dale and Orangeville systems can accommodate additional water users, but the exact number of subscribers has not been determined. They are also constructing a new sewage disposal system.

Currently, Swisher Coal Company employs approximately 20 people at its Huntington Canyon #4 Mine. This is a one section mine at this time. The short-term lease application anticipated that with this additional coal available, the mine could expand to a two section mine producing approximately one-half million tons annually. A two section mine would require approximately 60 persons to operate. If the area is leased, it would necessitate an increase of approximately 40 persons to operate the mine.

Based on past experience, 50 percent of these persons will locate in Huntington, with the balance locating in Castle Dale, Orangeville, Price, Sanpete County, and northern Emery County.

Population expansion has already impacted Emery County and surrounding areas. For example, building lots are nearly impossible to find, and local motels and restaurants are usually filled to capacity. There has also been great stress on the county school system and public services.

A royalty is paid to the Government on the coal. A portion of which is returned to the local governments. Additional supportive services will be needed to handle increased mining activity. This reflects in the local economy.

Increased revenue could be used for water and sewer improvements and other public services in the communities.

11. Historical, Archeological, and Paleontological

The project area is not known to contain any archeological sites. The Price District contains only a small number of known sites in comparison to the surrounding lands. There is evidence of the Fremont Culture and early Ute usage to the south and east of the Forest. Generally, the settlements were established in the lower elevations.

On July 17, 1975, archeological investigations were made of Swisher's drill sites in this area. One site was on lease SL-064903 and the other sites were just outside the lease tract. No evidence of historical or archeological significance was discovered during these investigations.

A site specific archeological survey will be conducted prior to any surface disturbance.

Fossils are found on the lease tract in nearly all of the geologic units. With the exception of dinosaur footprints found in the coal seams of the Blackhawk, no significant paleontologic specimens are known to be present.

There are no known historical sites on the proposed lease area or in the vicinity of the mining operation.

12. Public Health and Safety

Activities associated, directly and indirectly, with development of this tract could create conditions yielding contamination of surface or ground waters with toxic materials. Water encountered during mining may experience increased hardness or possible contamination from lubricants (oil and grease).

The coal is low in sulfur, about .5 percent, and toxic solutions should be no different than those from other mines operating in the near vicinity. On April 26, 1976, a water analysis was made at the nearby Deer Creek Mine yielding an average pH of the mine water as 7.4 by the U.S.G.S. Water Resource Division. This is nearly neutral. We would expect similar conditions from this lease tract.

Surface waters near the area could become contaminated by (1) airborne coal dust, (2) water percolating through the mine site, (3) de-icing chemicals and materials, and (4) other toxic materials, resulting from accidental spills.

No hazardous underground mining conditions are known to exist within the lease tract. The old Leamaster Mine had excellent roof and floor conditions, that required very little roof control (roof bolting). In addition, the old works did not encounter any hazardous gas. Control of underground dust is regulated by Federal and State mine ventilation requirements.

Airborne dust outside the portals may temporarily affect the air quality on the lease tract. Dust originates from the coal haul road, coal stock pile, and the mine yard. This air pollution is very localized and usually disseminated by canyon winds, consequently, does not present a health hazard.

13. Timber Management

The tree species within the area of the lease tract are pinyon-pine, Utah juniper, Rocky Mountain juniper, limber pine, Douglas-fir, white fir, subalpine fir, and aspen.

The commercial value of the timber is low. Most of the timber is classified as non-commercial because of:

1. Sparseness.
2. Steepness of terrain and inaccessibility.
3. Economics.
4. Environmental constraints.

There are no timber management activities planned in this area for at least the next five years.

The timber is located primarily on the ridge top and southern exposure, with small pockets on the wetter sites in the burned area.

There is little impact expected on the timber values from the development of this lease tract.

14. Range Management

The lease tract is within the Crandall Ridge S&G range allotment.

The majority of the acreage on the tract is classified as non-range and is not used for grazing because of slope, accessibility, rock outcrops, timber, scarcity of grazable vegetation, and lack of water. The area in Little Bear Canyon is closed to livestock grazing.

There are no range improvements on the area.

The development of this area will have minimal impacts on the present range management system.

15. Recreation and Aesthetics

Recreational uses of the area are primarily hunting, sightseeing, and hiking. The primary recreation use is in the fall during deer and elk hunting season.

There are no developed campgrounds within the area. None are planned for the future.

The natural beauty of the area is typical of lower Huntington Canyon. Although the surrounding canyons are not pristine, colorful displays of exposed rocks, timbered north slopes, and small streams offer a pleasant visual contrast from the nearby desert. During the fall, the various colored leaves offers much viewing pleasure.

Portions of the lease are visible to the passing motorists from State Highway 31 while traveling through Huntington Canyon.

16. Minerals Other Than Coal

Much of the Wasatch Plateau is leased for exploration and development of oil and gas. A Federal Oil and Gas Lease, No. U-15208, held by John Snyder of Billings, Montana, encompasses 2,457.18 acres including portions of Sections 8 and 17, which overlaps the lease tract proposal.

Considerable interest in exploration for oil and gas has occurred in recent years. No exploration has occurred on the lease tract itself, but a wildcat exploratory well was drilled at the mouth of Little Bear Canyon which is adjacent to the lease tract area.

No other known mineral resources are present on the lease tract.

17. Transportation

Vehicle access to the lease tract is provided by a recently reconstructed road up Mill Fork Canyon, Forest Development Road 50086. This road is a 30 foot wide, high standard gravel road, with a design speed of approximately 25 miles per hour. The road provides access to the No. 4 Mine for coal haulage, men, and supplies. The road crosses from National Forest land on to fee property. The portion on National Forest land is under a road use permit issued to Swisher Coal Company.

Access to the interior of the lease tract is provided by a horse trail going up the bottom of Mill Fork Canyon to the top (Trail No. 4593), and a jeep trail coming in from upper Cottonwood Creek (East Mountain) to the west, and continuing down the ridge between Little Bear Canyon and Mill Fork Canyon. This ridge trail was originally a 4-wheel drive road built for access to the 1964 fire. It was later used as drilling access by Swisher Company during the summer of 1975 and 1976. Portions of this road has since been closed out.

18. Administrative Improvements

The Department of the Interior began the surveying of T16S, R7E in July, 1976. This will include the brass-capped monumentation of all section and quarter corners. The survey is approximately half completed at this time.

There are no other administrative improvements on the lease tract.

19. Research and Special Land Uses

There are no continuing research studies, nor does the Forest Service have any outstanding Special Use Permits on the lease sale area.

20. Roadless Area Review Evaluation II

The Forest Service Roadless Area Review and Evaluation (RARE II), is the process used to determine which of the inventoried roadless areas should be; recommended to Congress for inclusion in the National Wilderness Preservation System; should be managed for nonwilderness uses; or which require further planning before a reasonable decision can be made. These areas were identified through applying minimum "criteria for wilderness considerations" under the Wilderness Act. RARE II is being accomplished in conjunction with the preparation of the Ferron-Price Land Management Plan that is scheduled for completion in the fall of 1978.

Interim activities are allowed in these RARE II areas as long as they do not detract from or impair the wilderness characteristics of the area. The proposed lease sale area U-33454, along with the existing lease area SL-064903, the service road to the mine and the surface facilities for Swisher No. 4 Mine are all within the boundaries of the East Mountain No. 409 inventoried RARE II area.

Underground mining of coal from the proposed lease sale area will not alter the wilderness characteristics of the area. There will be no additional surface facilities located on the lease sale tract if it is mined from the existing Swisher No. 4 Mine. If another entity other than Swisher Coal Company gets the lease, possible development on the RARE II area would be necessary. This development would need to follow the prescribed policies and regulations pertaining to use on these areas.

IV. SUMMARY OF PROBABLE ADVERSE ENVIRONMENTAL IMPACTS WHICH CANNOT BE AVOIDED
(Residual Impacts)

The probability of encountering substantial water in the underground works has been highlighted in the sections on ground water and hydrology. With the exception of Little Bear Spring, and some springs high in Mill Fork Canyon, water surfaces from the ground as seeps. These seeps may become dry and flow from the springs may be decreased or completely interrupted.

The flow in Little Bear Springs could be decreased, completely interrupted or not affected, depending on the character of the flow and the geologic makeup of the parent rock. (See the discussions under Ground Water and Geology.)

Subsidence could occur over the entire lease tract and even beyond because of the angle of draw. A rule of thumb used to estimate subsidence is 50 percent of the total thickness of the coal removed. Using this rationale, up to five feet of subsidence could be expected to occur. The depth of the surface from the coal will also influence the amount of subsidence as the broken rock swells to occupy the voids. Surface deformation on the proposed lease area would probably be expressed as broad depressions with associated fractures above the area of subsidence activities.

V. RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Subsidence and surface fractures would be permanent surface deformation directly related to mining. The entire lease tract, plus a possible greater area due to the angle draw, would be subject to subsidence resulting from mining activities on the proposed lease tract.

Long-term productivity of ground waters may be reduced if mining is found to have a detrimental effect on the established aquifers. Water quality may be reduced if intercepted waters are contaminated by the mining operation. Some wildlife use and riparian vegetation may be affected by a depletion in surface water sources.

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Mining of the coal is an irreversible and irretrievable commitment of the resource.

The subsidence that may occur as a result of the mining would have long-term irreversible and irretrievable effects on the hydrologic regimen and surface structure of the lease tract.

Changes that could occur in the quality and quantity of flow from Little Bear Spring is an irreversible and irretrievable commitment of the water resource.

VII. ALTERNATIVES TO THE PROPOSED ACTIONS

A. Short-Term Lease Proposal

1. Not to lease the tract.
2. To alter the acreage of the tract.
3. To lease the tract, in accordance with all laws to date, providing surface protection stipulations.

Alternative No. 1 is not economically sound for the Federal Government. If the short-term lease application were not approved, the result would be:

1. Loss in royalty to the Government.
2. Not utilizing Federal lands to their potential at a time when the resource is in demand.
3. Would result in the existing mine being forced to close.

Alternative No. 2 is not profitable for maximum coal extraction. The lease tract was so designed as to connect several adjacent fee areas which are privately owned.

Alternative No. 3 will provide:

1. Advance royalties to the Government for sale of a Federal Mineral Resource.
2. Stimulation of production of the lease in an orderly and timely fashion.
3. Mining of a tract that connects several small holdings; and if acquired by Swisher Coal Company, will require no further construction of surface facilities, and thus no further disturbance to the environment.
4. A logical mining unit which will maximize extraction of the coal.

B. Alternatives to Ownership of the Short-Term Lease Tract

Since the short-term criteria is a competitive lease sale, this alternative is important. The leasee could be:

1. Swisher Coal Company
2. Other than Swisher

Alternative No. 1 seems most complementary, as the short-term lease incorporates privately owned patches of land around the existing No. 4 Mine. If Swisher becomes leasee, coal could be extracted from these areas via the already existing portals and surface facilities, and there would be no further surface disturbance.

If Swisher is not the leasee (alternative No. 2), the lease will have to be developed from a new site.

VIII. RECORD OF OUT-SERVICE PERSONS, GROUPS, AND GOVERNMENT AGENCIES CONSULTED

U.S. Geological Survey		
Ralph Blumer	-	Salt Lake City
Bureau of Land Management		
Lyman Moore	-	Salt Lake City
George Laskar	-	Price
Swisher Coal Company		
Dave Shaver	-	Price Office
Vaughn Hansen Associates		
Vaughn Hansen	-	Salt Lake City
Utah Division of Wildlife Resources	-	Price Office

Approximately 25 persons attended the public meeting held April 25, 1978.

No adverse reaction to the proposed lease or any anticipated environmental impacts was expressed at the meeting. Huntington City expressed concern over the possible affect mining would have on Little Bear Springs.

IX. SUMMARY OF MANAGEMENT REQUIREMENTS AND CONSTRAINTS

This summary contains the management requirements and constraints developed in the body of this report and are identified by the underlined sentences.

1. This report should be approved.
2. All drilling proposals will require site specific evaluation and preparation of an Environmental Analysis Report.
3. Exploration by truck-mounted drill rigs requiring road construction and drill pad leveling which would greatly alter areas with steep and unstable side slopes, where reasonable reclamation cannot be attained, will not be permitted.
4. In order that the effects of mining on the surface and subsurface resources can be evaluated, a monitor-inventory program is required.
5. Water quantity and quality will be monitored both during the mining operation, and for a sufficient time after mining, to document the impacts on adjacent ground water and detect early possible changes.
6. At the conclusion of mining, all unused facilities will be removed, and any disrupted sites will be rehabilitated in accordance with 30 CFR 211 and the requirements set forth in the site specific Environmental Analysis Report.

Exhibit 11: Drill hole logs, analysis sheets



PLATE III

HARDY COAL COMPANY
HUNTINGTON CANYON, UTAH

Test Hole No. 1
EL 8109.4'
Scale 1" = 32.5'

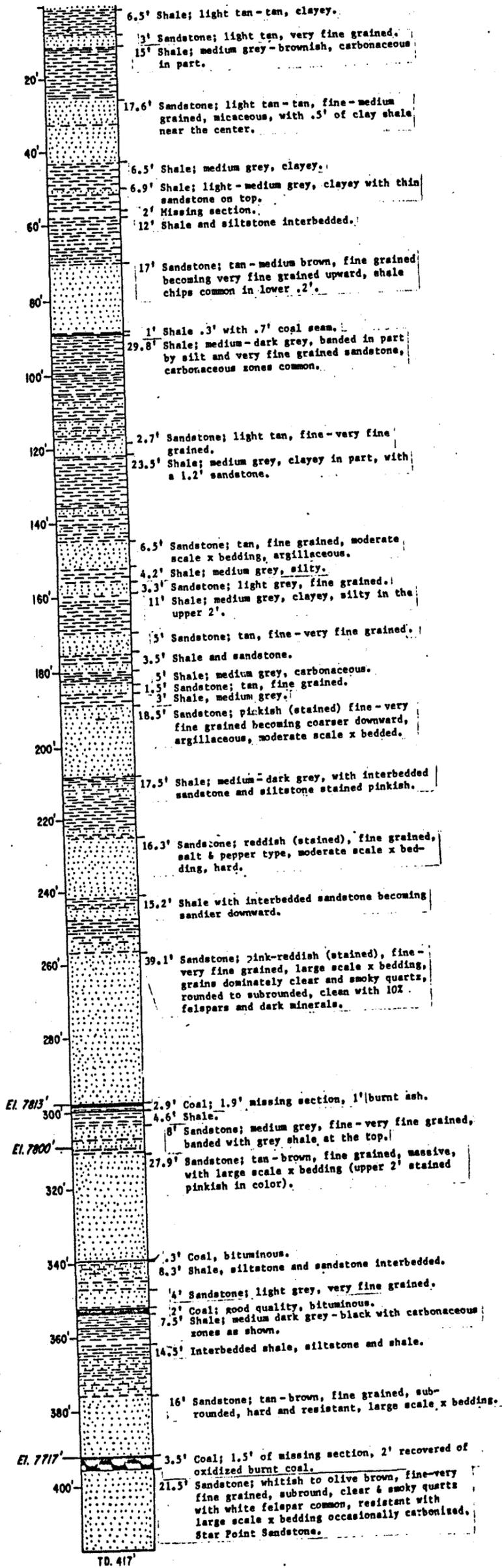


PLATE IV

HARDY COAL COMPANY
HUNTINGTON CANYON, UTAH

Test Hole No. 10
El. 8439'
Scale 1" = 32.5'

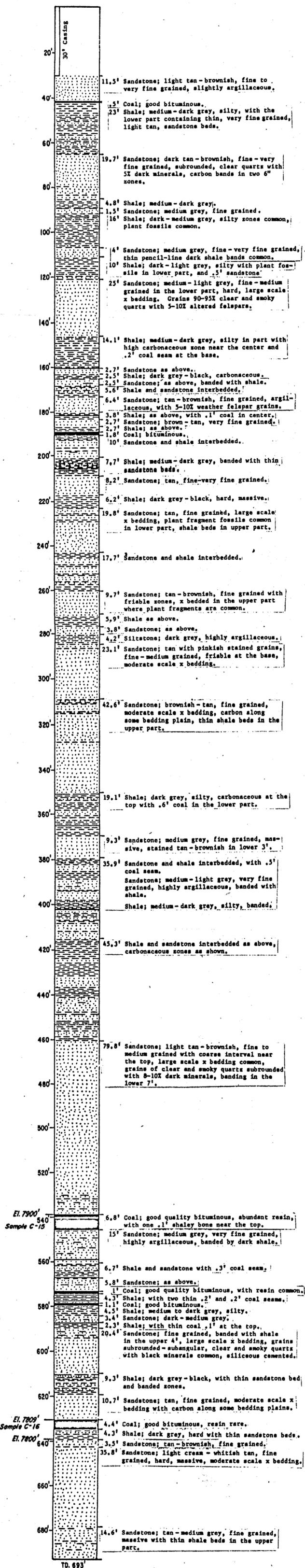


PLATE V

HARDY COAL COMPANY
HUNTINGTON CANYON, UTAH

Test Hole No. 8
El. 8404'
Scale 1" = 32.5'

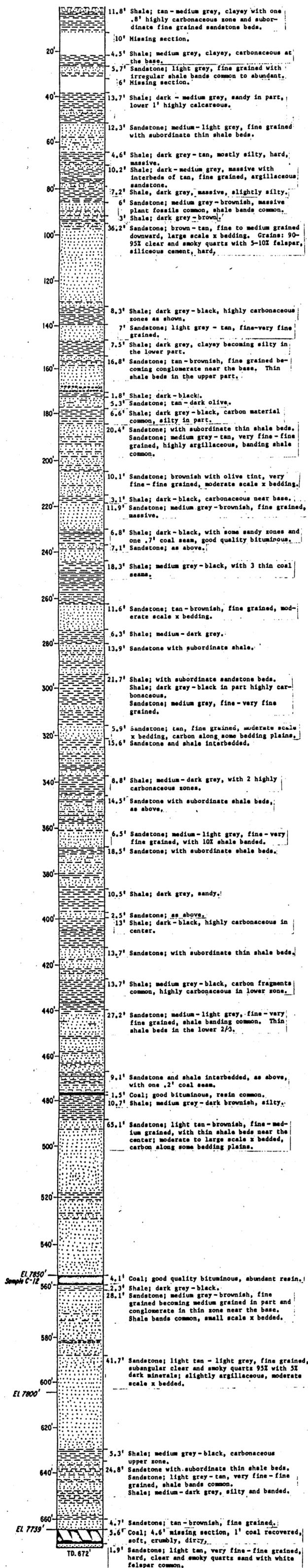


PLATE VI

HARDY COAL COMPANY
HUNTINGTON CANYON, UTAH

Test Hole No. 7
El. 8438'
Scale 1" = 32.5'

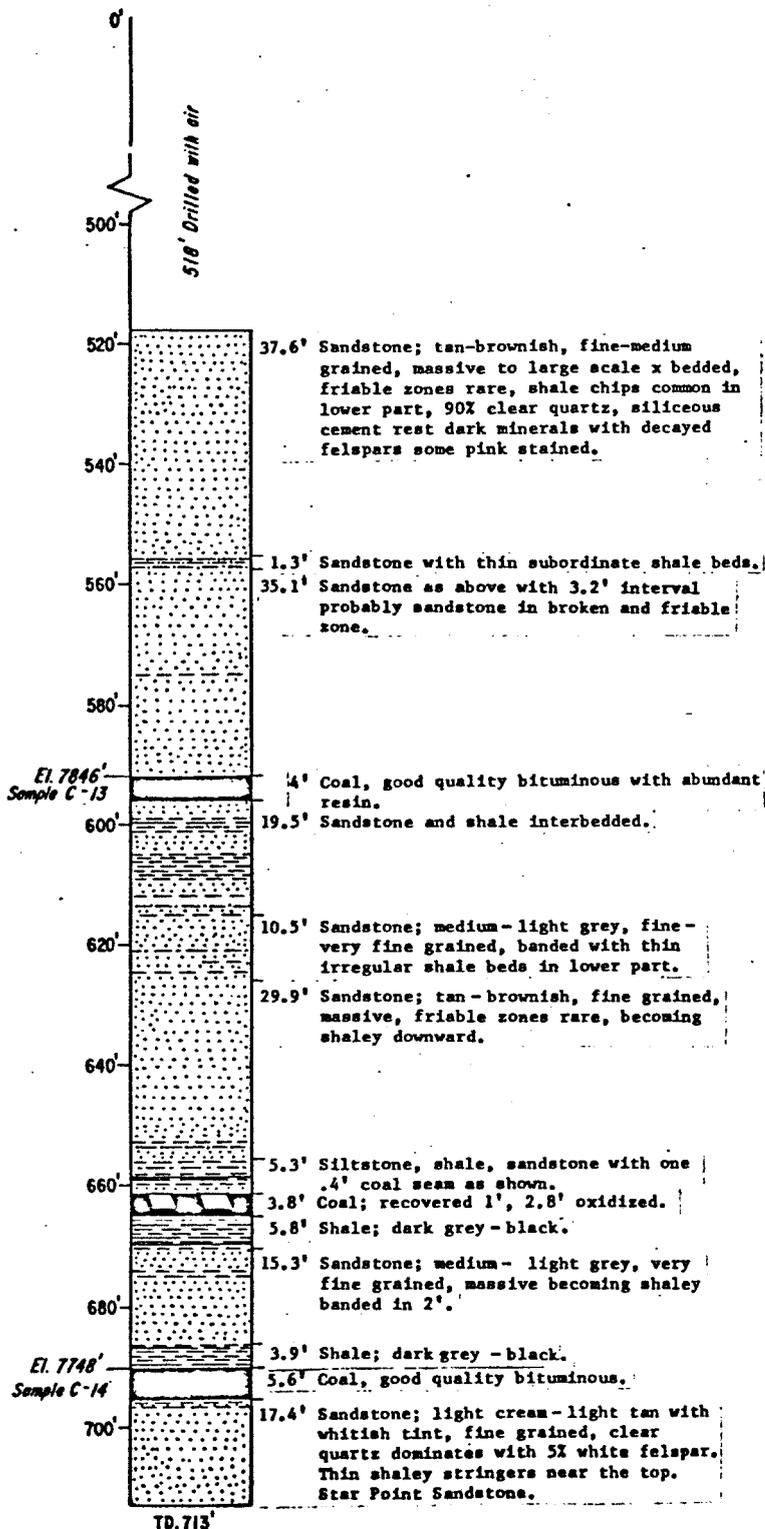


PLATE VII

HARDY COAL COMPANY
HUNTINGTON CANYON, UTAH

Test Hole No. 6
El. 8330'
Scale 1" = 32.5'

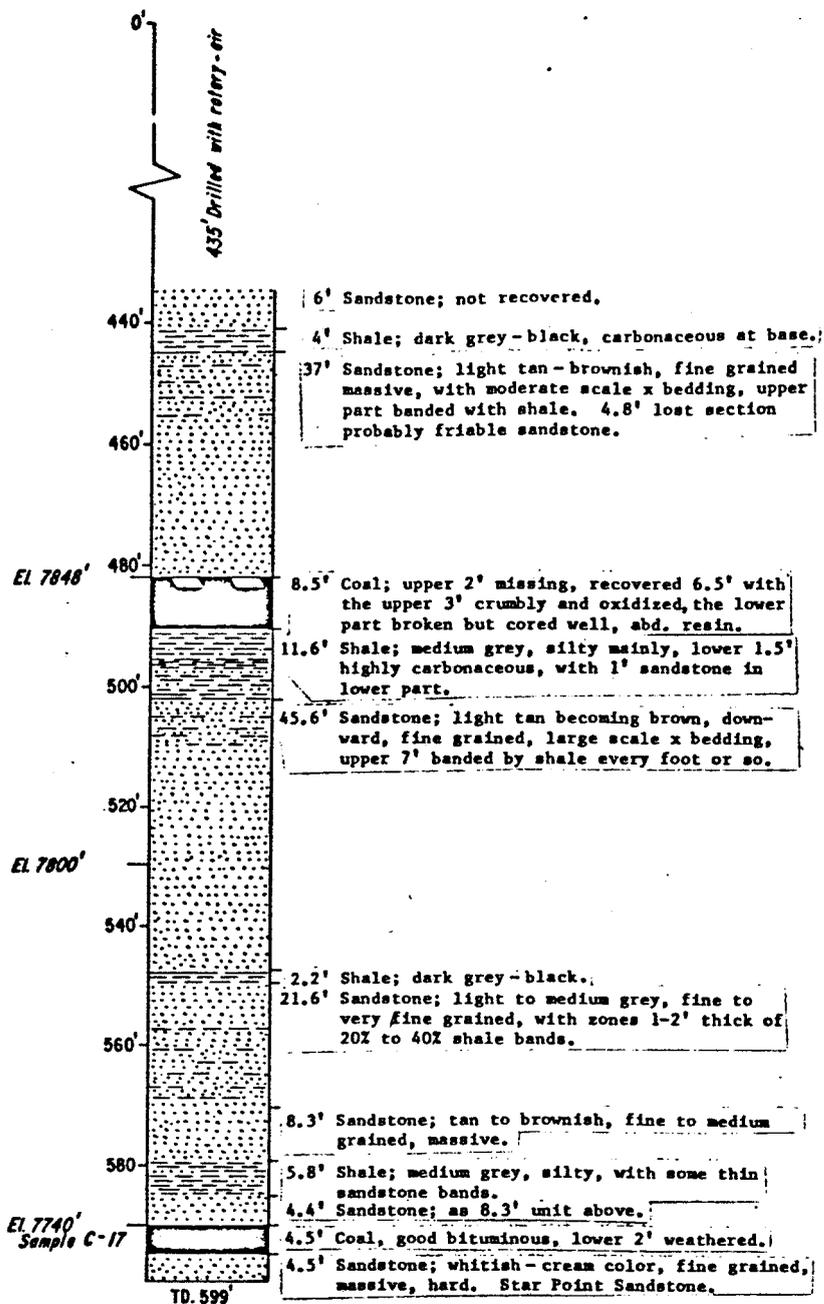


PLATE VIII

HARDY COAL COMPANY
 HUNTINGTON CANYON, UTAH
 Test Hole No. 9 (Rd.)
 El. 8420'
 Scale 1" = 32.5'

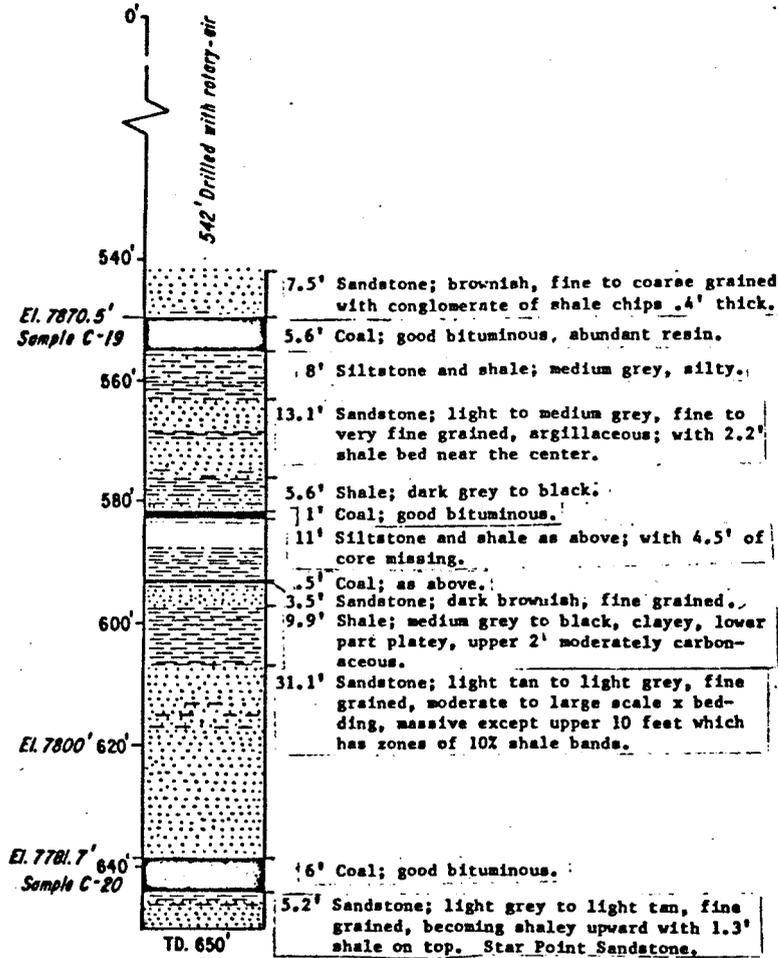


PLATE IX

HARDY COAL COMPANY HUNTINGTON CANYON, UTAH

Test Hole No. 3

El. 8065±

Scale 1" = 32.5'

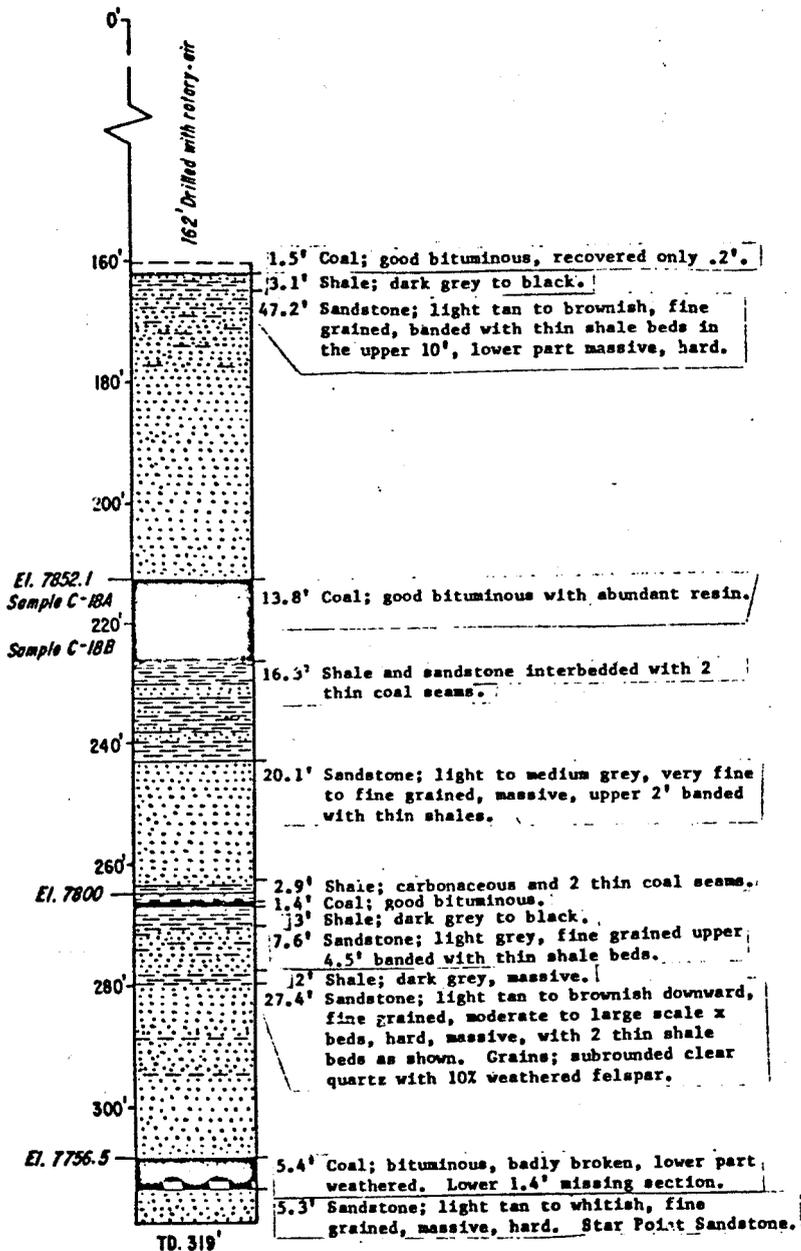


PLATE X

HARDY COAL COMPANY
HUNTINGTON CANYON, UTAH

Test Hole No. 2 (Rd.)

EI. 8067'

Scale 1" = 32.5'

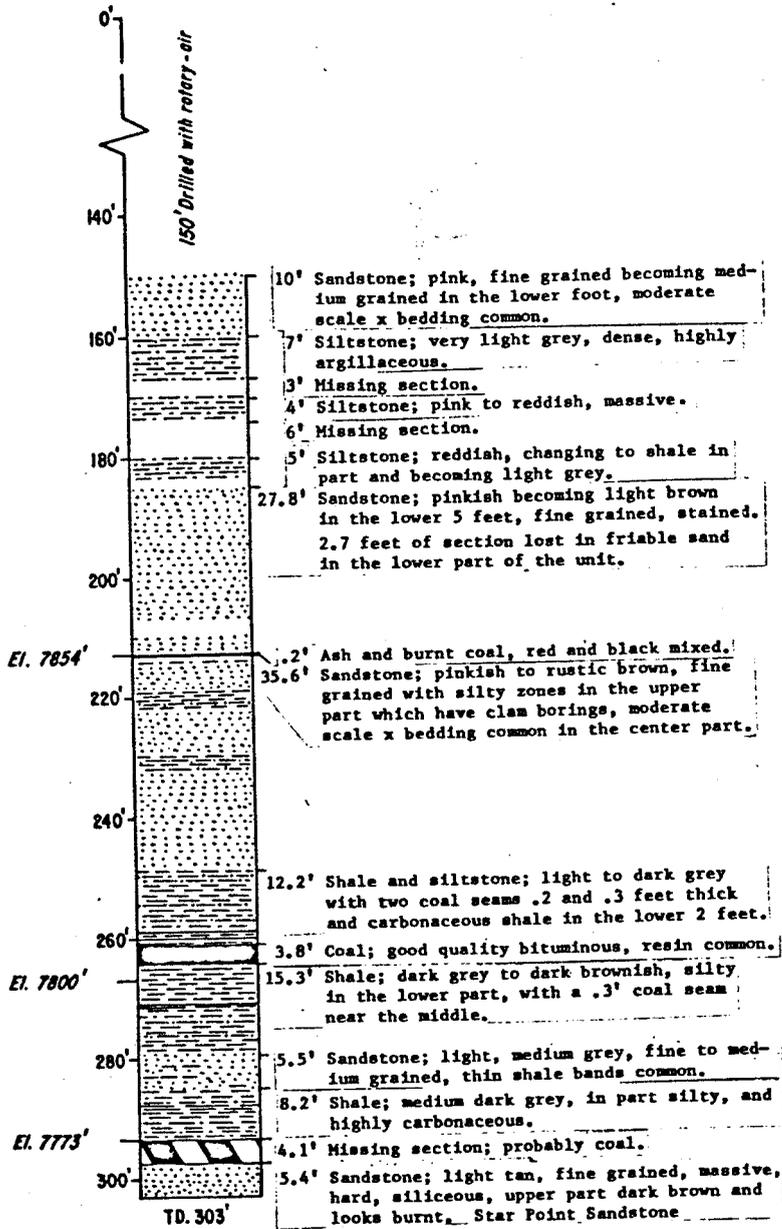
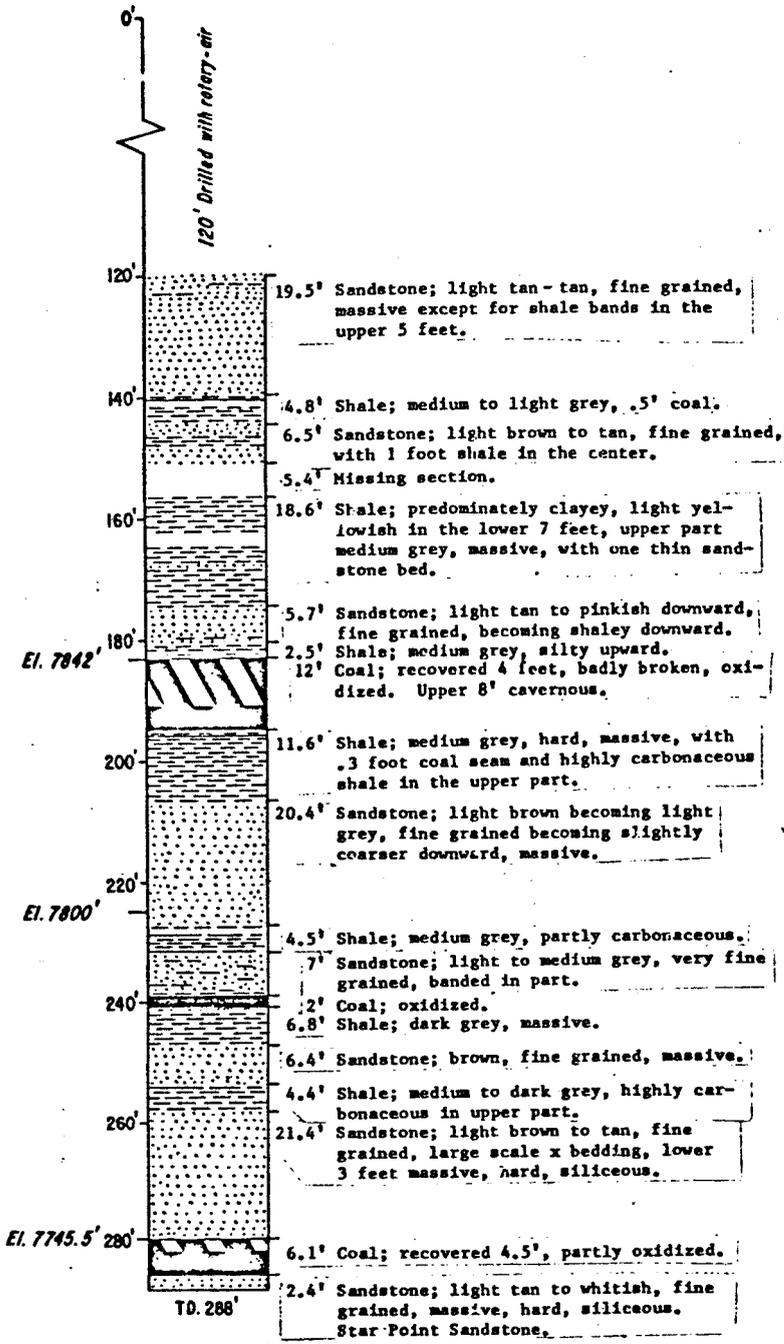


PLATE XI

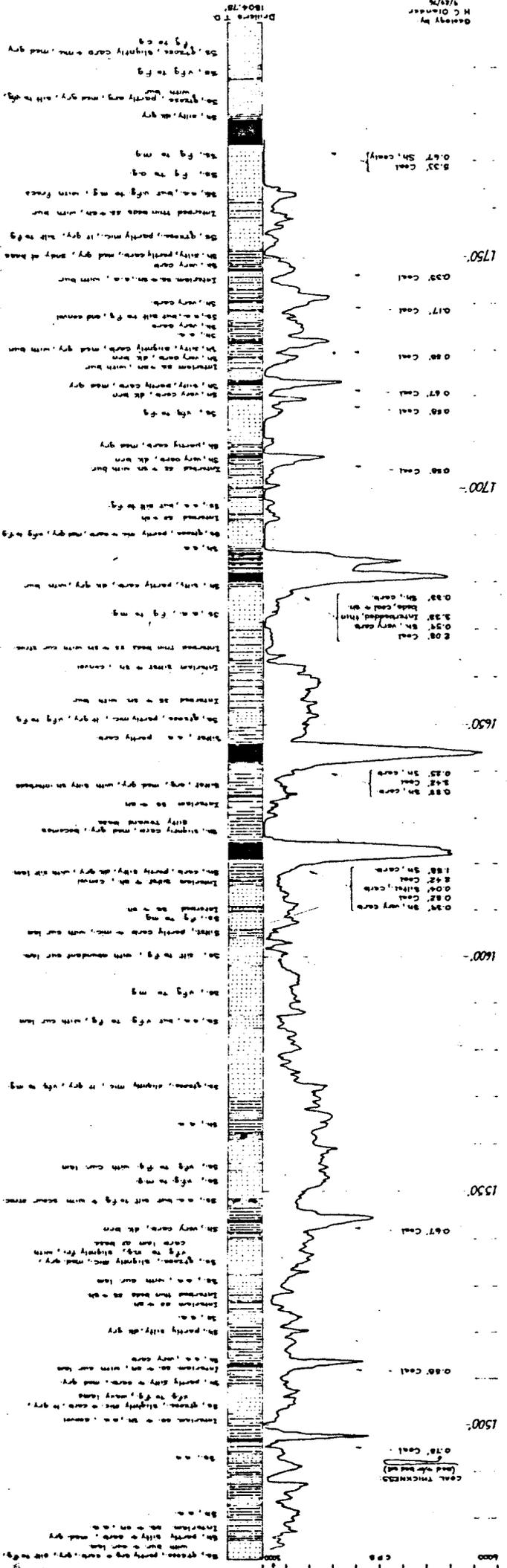
HARDY COAL COMPANY
HUNTINGTON CANYON, UTAH

Test Hole No. 4
El. 8025'
Scale 1" = 32.5'



SWISHER COAL COMPANY
HUNTINGTON CANYON, UTAH
LEG OF CORES INTERVAL
TEST HOLE NO. 276A
CT 9660.9

GAMMA RAY DENSITY
CPB



Geology by
H. C. Olander
7/21/76

4-25

COMMERCIAL TESTING & ENGINEERING CO.

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10775 EAST 51st AVE., DENVER, COLO. 80239



OFFICE TEL. (303) 373-4772

TED L. HANKS
Exploration Geologist
379 North Univ. Ave.
Suite 304
Provo, Utah 84601

Oct. 27, 1975

Sample Identification
by

Ted L. Hanks

Sample No. T-2

~~Blind Canyon~~

*BLIND CANYON ~ TED HANKS LETTER
OCT. 31, 1975*

Kind of sample reported to us: Coal
Sample taken at: Crandall Canyon
Sample taken by: Ted L. Hanks
Date Sampled: xxxxx
Date Received: 10-2-75

Analysis report no. 72-36629 Page 1

PROXIMATE ANALYSIS

	<u>As received</u>	<u>Dry basis</u>
% Moisture	12.41	xxxxx
% Ash	8.02	9.16
% Volatile	38.24	43.66
% Fixed Carbon	41.33	47.18
	<u>100.00</u>	<u>100.00</u>
Btu	10583	12083
% Sulfur	0.50	0.57

ULTIMATE ANALYSIS

	<u>As received</u>	<u>Dry basis</u>
% Moisture	12.41	xxxxx
% Carbon	60.65	69.24
% Hydrogen	4.48	5.11
% Nitrogen	1.40	1.60
% Chlorine	0.00	0.00
% Sulfur	0.50	0.57
% Ash	8.02	9.16
% Oxygen (diff)	12.54	14.32
	<u>100.00</u>	<u>100.00</u>

SULFUR FORMS

	<u>As received</u>	<u>Dry basis</u>
% Pyritic Sulfur	xxxxx	xxxxx
% Sulfate Sulfur	xxxxx	xxxxx
% Organic Sulfur (Diff)	xxxxx	xxxxx
% Total Sulfur	xxxxx	xxxxx

FUSION TEMPERATURE OF ASH

	<u>Reducing</u>	<u>Oxidizing</u>
Initial Deformation	2060 °F	2140 °F
Softening (H=W)	2100 °F	2190 °F
Softening (H=1/2W)	2140 °F	2200 °F
Fluid	2190 °F	2240 °F

HARDGROVE GRINDABILITY INDEX = xxxxx at xxxxx % Moisture

% EQUILIBRIUM MOISTURE = xxxxx

FREE SWELLING INDEX = 0-N.A.

LWT/vh

Respectfully submitted,

COMMERCIAL TESTING & ENGINEERING CO.

L. W. Taylor
L.W. TAYLOR, Western Division Manager



Charter Member

A

CABLE ADDRESS COMTE

A-22
BD

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OFFICE TEL. (303) 373-4772



April 17, 1975

HARDY COAL COMPANY
P. O. Box 939
Sugarcreek, Ohio 44581

Sample Identification
by

Hardy Coal Company

Sample No. C-19 *Blind Core*
Well Core - *5'6 coal*
Hole #9 - 1000' NW of Steen Portal

Kind of sample reported to us Coal
Sample taken at xxxxx
Sample taken by Hardy Coal Co.
Date Sampled xxxxx
Date Received 4-1-75

Analysis report no. 72-2857A PROXIMATE ANALYSIS

	<u>As received</u>	<u>Dry basis</u>
% Moisture	4.17	xxxxx
% Ash	6.10	6.37
% Volatile	42.39	44.23
% Fixed Carbon	47.34	49.40
	<u>100.00</u>	<u>100.00</u>
Btu	13270	13847
% Sulfur	0.62	0.65

FUSION TEMPERATURE OF ASH

	<u>Reducing</u>	<u>Oxidizing</u>	
Initial Deformation	2240°F	2260°F	H is Cone Height
Softening (H=W)	2320°F	2325°F	W is Cone Width
Softening (H=1/2W)	2360°F	2375°F	
Fluid	2540°F	2650°F	

Respectfully submitted,

COMMERCIAL TESTING & ENGINEERING CO.

L. W. Taylor
L.W. TAYLOR, Western Division Manager



LWT/pt

B

CABLE ADDRESS COMTECO

A-21

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OFFICE TEL. (303) 373-4772



HARDY COAL COMPANY
P. O. Box 939
Sugarcreek, Ohio 44681

April 15, 1975

Sample Identification
by

Hardy Coal Company

Sample No. C-18-B
Bottom 6.9' Well Core

BLIND CANYON SEAM
HUNTINGTON CANYON
MINE #4

Kind of sample reported to us Coal
Sample taken at xxxxx
Sample taken by Hardy Coal Company
Date Sampled xxxxx
Date Received 4-1-75

Analysis report no. 72-28573 PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	4.03	xxxxx
% Ash	4.18	4.36
% Volatile	43.84	45.68
% Fixed Carbon	47.95	49.96
	<u>100.00</u>	<u>100.00</u>
Btu	13695	14270
% Sulfur	0.48	0.50

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing	H is Cone Height
Initial Deformation	2110°F	2185°F	
Softening (H=W)	2140°F	2200°F	W is Cone Width
Softening (H=1/2W)	2160°F	2210°F	
Fluid	2180°F	2220°F	

Respectfully submitted,

COMMERCIAL TESTING & ENGINEERING CO.

L.W. Taylor
L.W. TAYLOR, Western Division Manager



LWT/pt

B

4-20

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OFFICE TEL. (303) 373-4772

HARDY COAL COMPANY
P. O. Box 939
Sugar creek, Ohio 44681

April 15, 1975

Sample Identification
by

Hardy Coal Company

Sample No. C-18A

TOP 6.9' Well Core Hole #3
West of Western edge of Seaman's
workings - thickness 13'8"

Kind of sample reported to us Coal
Sample taken at xxxxx
Sample taken by Hardy Coal Company
Date Sampled xxxxx
Date Received 4-1-75

BLIND CANYON SEAM
HUNTINGTON CANYON
MINE #4

Analysis report no. 72-28572

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	4.41	xxxxx
% Ash	4.32	4.52
% Volatile	43.78	45.80
% Fixed Carbon	47.49	49.68
	<u>100.00</u>	<u>100.00</u>
Btu	13449	14069
% Sulfur	0.55	0.58

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing	
Initial Deformation	2010°F	2115°F	H is Cone Height
Softening (H=W)	2040°F	2125°F	
Softening (H=1/2W)	2060°F	2140°F	W is Cone Width
Fluid	2100°F	2160°F	

Respectfully submitted,

COMMERCIAL TESTING & ENGINEERING CO.

L. W. Taylor

L.W. TAYLOR, Western Division Manager



LWT/pt

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A-17
73

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OFFICE TEL. (303) 373-4772



April 1, 1975

HARDY COAL COMPANY
P. O. Box 939
Sugar Creek, Ohio 44681

Sample Identification
by

Hardy Coal Company

Sample No. C-15 Blind CANYON
Hole # 10 - 6.8 - NW of Steen

Kind of sample reported to us Coal
Sample taken at Test Hole Core
Sample taken by Hardy Coal Company
Date Sampled xxxxx
Date Received 3-11-75

Analysis report no. 72-28363 Page 2
PROXIMATE ANALYSIS

	<u>As received</u>	<u>Dry basis</u>
% Moisture	2.47	xxxxx
% Ash	9.57	9.81
% Volatile	42.92	44.01
% Fixed Carbon	45.04	46.18
	<u>100.00</u>	<u>100.00</u>
Btu	12968	13296
% Sulfur	0.75	0.77

FUSION TEMPERATURE OF ASH

	<u>Reducing</u>	<u>Oxidizing</u>	
Initial Deformation	2450°F	2480°F	H is Cone Height
Softening (H=W)	2475°F	2510°F	W is Cone Width
Softening (H=1/2W)	2510°F	2540°F	
Fluid	2550°F	2580°F	

Respectfully submitted,

COMMERCIAL TESTING & ENGINEERING CO.

L. W. Taylor
L.W. TAYLOR, Western Division Manager



Charter Member

LWT/pf

D

CABLE ADDRESS COMTECO

A-15

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10775 EAST 51st AVE., DENVER, COLO. 80239



OFFICE TEL. (303) 373-4772

HARDY COAL COMPANY
P. O. Box 939
Sugarcreek, Ohio 44681

April 1, 1975

Sample Identification
by

Hardy Coal Company

Sample No. C-13 - *Hole # 7*
Blind canyon
4' thickness

Kind of sample reported to us Coal
Sample taken at Test Hole Core
Sample taken by Hardy Coal Company
Date Sampled xxxxx
Date Received 3-11-75

Analysis report no. 72-28361 Page 2
PROXIMATE ANALYSIS

	<u>As received</u>	<u>Dry basis</u>
% Moisture	5.17	xxxxx
% Ash	8.07	8.51
% Volatile	42.18	44.48
% Fixed Carbon	44.58	47.01
	<u>100.00</u>	<u>100.00</u>
Btu	12592	13279
% Sulfur	0.74	0.78

FUSION TEMPERATURE OF ASH

	<u>Reducing</u>	<u>Oxidizing</u>	
Initial Deformation	2270°F	2290°F	H is Cone Height
Softening (H=W)	2300°F	2310°F	W is Cone Width
Softening (H=1/2W)	2315°F	2330°F	
Fluid	2335°F	2350°F	

Respectfully submitted,

COMMERCIAL TESTING & ENGINEERING CO.

L. W. Taylor
L.W. TAYLOR, Western Division Manager



Charter Member

LWT/pf

A-1A

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OFFICE TEL. (303) 373-4772



HARDY COAL COMPANY
P. O. Box 939
Sugarcreek, Ohio 44681

March 28, 1975

Sample Identification
by

Hardy Coal Company

Sample No. C-12

*Hole # 8 - Blind Canyon
Coal thickness 4.1*

Kind of sample reported to us Coal
Sample taken at Test Hole Core
Sample taken by Hardy Coal Company
Date Sampled xxxxx
Date Received 3-11-75

Analysis report no. 72-28360 Page 1
PROXIMATE ANALYSIS

	<u>As received</u>	<u>Dry basis</u>
% Moisture	3.87	xxxxx
% Ash	6.66	6.93
% Volatile	42.91	44.64
% Fixed Carbon	46.56	48.43
	<u>100.00</u>	<u>100.00</u>
Btu	13241	13774
% Sulfur	0.67	0.70

FUSION TEMPERATURE OF ASH

	<u>Reducing</u>	<u>Oxidizing</u>	
Initial Deformation	xxxxx	xxxxx	H is Cone Height
Softening (H=W)	xxxxx	xxxxx	W is Cone Width
Softening (H=1/2W)	xxxxx	xxxxx	
Fluid	xxxxx	xxxxx	

Respectfully submitted,

COMMERCIAL TESTING & ENGINEERING CO.

L. W. Taylor
L.W. TAYLOR, Western Division Manager



Charter Member

LWT/pf

CT & E Co.

4-10

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10775 EAST 51st AVE., DENVER, COLO. 80239

OFFICE TEL. (303) 373-4772



Dec. 21, 1974

HARDY COAL COMPANY
Route 2
Sugarcreek, Ohio 44861

Sample Identification
by

Hardy Coal Company

Sample No. C-9

BLIND CANYON

Kind of sample reported to us Coal

Sample taken at XXXXX

Sample taken by Hardy Coal Company

Date sampled Received 10-28-74

Analysis report no. 72-25209 Page 1

PROXIMATE ANALYSIS

As Received Dry Basis

% Moisture	5.67	xxxxx
% Ash	3.59	3.81
% Volatile	50.76	53.81
% Fixed Carbon	39.98	42.38
	<u>100.00</u>	<u>100.00</u>
Btu	13009	13791
% Sulfur	0.38	0.40

ULTIMATE ANALYSIS

As Received Dry Basis

% Moisture	5.67	xxxxx
% Carbon	72.26	76.60
% Hydrogen	5.59	5.93
% Nitrogen	1.36	1.44
% Chlorine	0.01	0.01
% Sulfur	0.38	0.40
% Ash	3.59	3.81
% Oxygen (diff)	11.14	11.81
	<u>100.00</u>	<u>100.00</u>

LWT/ko

Respectfully submitted,

CT & E Co.

L. W. Taylor

L.W. TAYLOR, District Manager



Charter Member

CT & E Co.

4-9

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OFFICE TEL. (303) 373-4772



Dec. 21, 1974

HARDY COAL COMPANY
Route 2
Sugarcreek, Ohio 44681

Sample Identification
by

Hardy Coal Company

Sample No. C-8

Kind of sample reported to us Coal

Sample taken at XXXXX

Sample taken by Hardy Coal Company

Date sampled Received 10-28-74

Analysis report no. 72-25208 Page 1

PROXIMATE ANALYSIS

As Received Dry Basis

% Moisture	4.56	xxxxx
% Ash	5.42	5.68
% Volatile	48.95	51.29
% Fixed Carbon	41.07	42.03
	<u>100.00</u>	<u>100.00</u>
Btu	13097	13723
% Sulfur	0.50	0.52

ULTIMATE ANALYSIS

As Received Dry Basis

% Moisture	4.56	xxxxx
% Carbon	72.06	75.50
% Hydrogen	5.56	5.83
% Nitrogen	1.39	1.46
% Chlorine	0.01	0.01
% Sulfur	0.50	0.52
% Ash	5.42	5.68
% Oxygen (diff)	10.50	11.00
	<u>100.00</u>	<u>100.00</u>

LWT/ko

Respectfully submitted,

CT & E Co.

L. W. Taylor

L.W. TAYLOR, District Manager



Charter Member

CT & E Co.

4-8

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10775 EAST 51st AVE., DENVER, COLO. 80239

OFFICE TEL. (303) 373-4772



HARDY COAL COMPANY
Route 2
Sugarcreek, Ohio 44687

Dec. 21, 1974

Sample Identification
by

Hardy Coal Company

Sample No. C-7

Kind of sample
reported to us

Coal

Sample taken at

XXXXX

Sample taken by

Hardy Coal Company

Date sampled

Received 10-28-74

Analysis report no. 72-25207 Page 1

PROXIMATE ANALYSIS

As Received Dry Basis

% Moisture	5.78	xxxxx
% Ash	5.65	6.00
% Volatile	42.76	45.38
% Fixed Carbon	45.81	48.62
	<u>100.00</u>	<u>100.00</u>
Btu	12639	13414
% Sulfur	0.67	0.71

ULTIMATE ANALYSIS

As Received Dry Basis

% Moisture	5.78	xxxxx
% Carbon	70.46	74.78
% Hydrogen	5.35	5.68
% Nitrogen	1.39	1.47
% Chlorine	0.01	0.01
% Sulfur	0.67	0.71
% Ash	5.65	6.00
% Oxygen (diff)	10.69	11.35
	<u>100.00</u>	<u>100.00</u>

LWT/ko

Respectfully submitted,

CT & E Co.

L. W. Taylor

L.W. TAYLOR, District Manager



Charter Member

CT & E Co.

(4-7)

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
10775 EAST 51st AVE., DENVER, COLO. 80239

OFFICE TEL. (303) 373-4772



Dec. 21, 1974

HARDY COAL COMPANY
Route 2
Sugar creek, Ohio 44681

Sample Identification
by

Hardy Coal Company

Sample No. C-6 at Western part
Keen Mine. Coal thickness 5 1/2'

Kind of sample reported to us Coal

Sample taken at XXXXX

Sample taken by Hardy Coal Company

Date sampled Received 10-28-74

Analysis report no. 72-25206 Page 1

PROXIMATE ANALYSIS

As Received Dry Basis

% Moisture	4.58	xxxxx
% Ash	3.53	3.70
% Volatile	44.12	46.24
% Fixed Carbon	47.77	50.06
	<u>100.00</u>	<u>100.00</u>
Btu	13389	14032
% Sulfur	0.52	0.52
	.50	
	95.42	

ULTIMATE ANALYSIS

As Received Dry Basis

% Moisture	4.58	xxxxx
% Carbon	73.87	77.42
% Hydrogen	5.70	5.97
% Nitrogen	1.42	1.49
% Chlorine	0.01	0.01
% Sulfur	0.52	0.55
% Ash	3.53	3.70
% Oxygen (diff)	10.37	10.86
	<u>100.00</u>	<u>100.00</u>

Respectfully submitted,

CT & E Co.

L. W. Taylor

L.W. TAYLOR, District Manager



Charter Member

CT & E Co.

4-2

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
10775 EAST 51st AVE., DENVER, COLO. 80239

OFFICE TEL. (303) 373-4772



Dec. 6, 1974

HARDY COAL COMPANY
Route 2
Sugarcreek, Ohio 44681

Sample Identification
by

Hardy Coal Company

Sample No. C-1

Leamaster Portal - 12' coal height

Kind of sample reported to us Coal

Sample taken at XXXXX

Sample taken by Hardy Coal Company

Date sampled Received 10-28-74

Analysis report no. 72-25201 Page 1

PROXIMATE ANALYSIS

As Received Dry Basis

% Moisture	4.24	xxxxx
% Ash	4.79	5.00
% Volatile	44.91	46.90
% Fixed Carbon	46.06	48.10
	<u>100.00</u>	<u>100.00</u>
Btu	13099	13679
% Sulfur	0.41	0.43

ULTIMATE ANALYSIS

As Received Dry Basis

% Moisture	4.24	xxxxx
% Carbon	73.10	76.34
% Hydrogen	5.51	5.75
% Nitrogen	1.32	1.38
% Chlorine	0.01	0.01
% Sulfur	0.41	0.43
% Ash	4.79	5.00
% Oxygen (diff)	10.62	11.09
	<u>100.00</u>	<u>100.00</u>

Respectfully submitted,

CT&E Co.

L. W. Taylor

L.W. TAYLOR, District Manager



Charter Member

LWT/pf

Exhibit #10: Drill hole map



Exhibit #9 : Cross-section of surface showing overburden, geology, coal seams, elevations, etc.



GENERALIZED COLUMNAR SECTION
MILL FORK-CRANDALL CANYON AREA

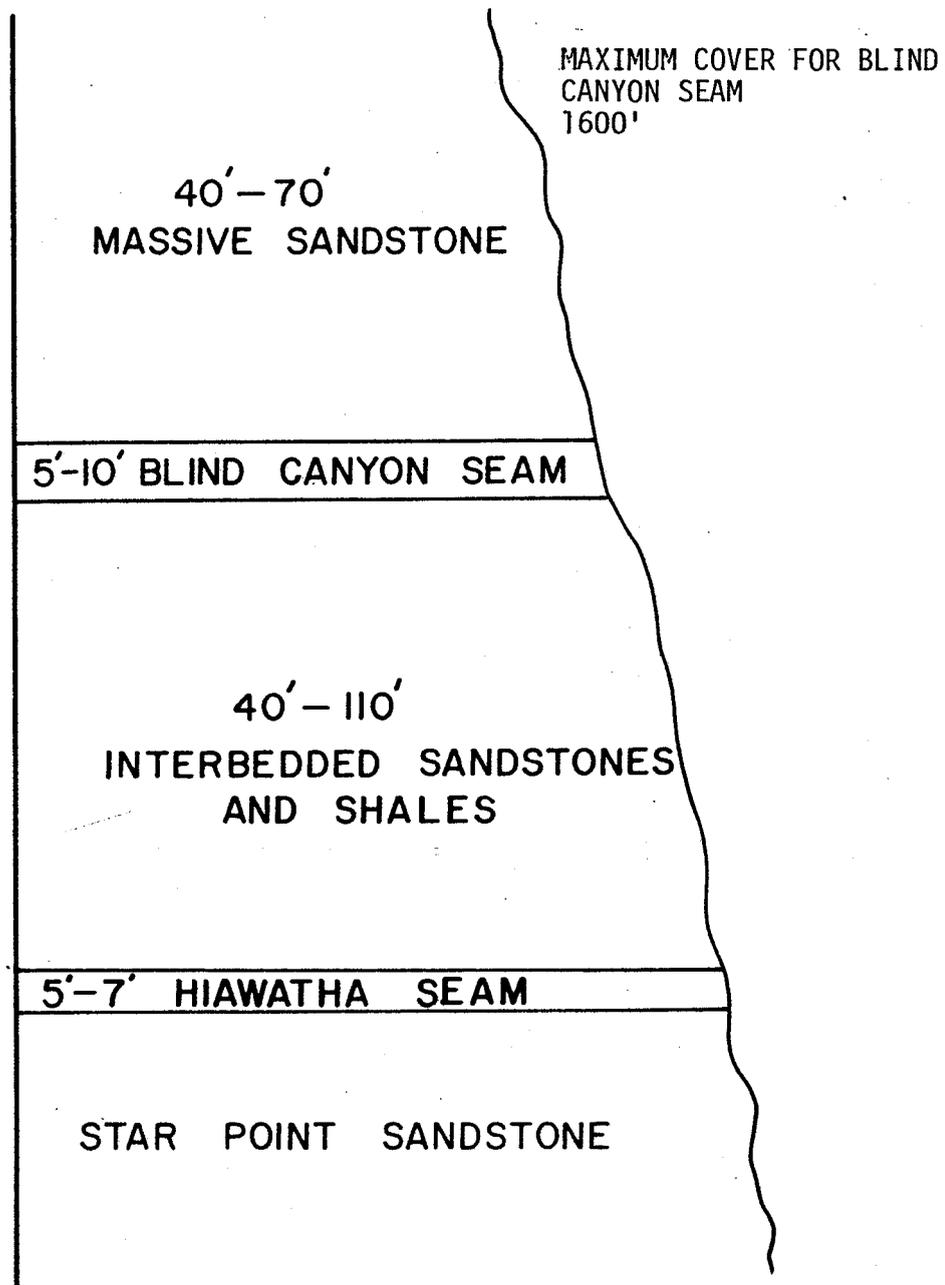


FIGURE 1



N O T I C E

The following information is submitted to the State of Utah Division of Oil, Gas, and Mining as agents for the Office of Surface Mining to fulfill the requirements for obtaining a mining and reclamation permit as required by Public Law 95-87 for the Huntington Canyon #4 Mine located in Mill Fork Canyon, a tributary of Huntington Canyon, Emery County, Utah. All persons who read the information submitted herein should be aware of the fact that the #4 Mine is an existing underground operation which began production in April 1977. All surface facilities needed in conjunction with the mine operation have been constructed. The mine is presently operating under a plan approved by the U.S. Geological Survey on 2-16-77 which plan encompasses the 211 regulations. The mine is also operating under a mining and reclamation plan approved by the Division of Oil, Gas, and Mining on 8-10-76. Cover letters for the plans are enclosed in the appendix as exhibit #26 and #27 respectively. The bodies of these plans are large and voluminous and are not included as part of this submittal. They are however, available upon request.

Even though the #4 Mine is an existing underground operation working under approved mining and reclamation plans, the company hereby submits the following information in a spirit of full cooperation with the governing agencies. In as much as the format for submitting information required for the permit is not yet specified and the final regulations are not yet in effect, information submitted herein follows in two forms: 1) Comments related to sections 507 and 508 of public law 95-87 and 2) Comments related to part 784 of the Surface Coal Mining and Reclamation Operations Permanent Regulatory Program as issued July 21, 1978. Much information is duplicated between the two but, for the sake of completeness, all items of each have been completed.

SURFACE COAL MINING AND RECLAMATION OPERATIONS

PERMANENT REGULATORY PROGRAM

JULY 21, 1978

784.12 (a) Within three months after termination of the underground mining operation, the following reclamation efforts will be started:

- 1) Remove all buildings, steel structures and other surface facilities 4 weeks
- 2) Clean up all trash and debris 1 week
- 3) Seal up all mine openings to the surface 2 weeks
- 4) Regrade mine yard to a smooth surface and reestablish principle drainage features to their original horizontal alignment 2 weeks
- 5) Spread topsoil 1 week
- 6) Plant approved seed mix to reestablish vegetation 1 week

784.12 (b) At this time the company is making no estimate of the cost of reclamation because such reclamation may not take place for another 40 years if the underground operation lasts that long. Because the rate of inflation over the next 40 years is anybody's guess an estimate based on today's dollar would be totally inappropriate at the time of reclamation.

784.12 (c) Signs, as prescribed by Subchapter K will be placed at the two entrances to the yard facilities as shown on Exhibit #3.

784.12 (d) As described in the answer to 784.12 (a) major drainage features will be restored to their original horizontal alignment to the extent practical. It will be impossible to restore the mine yards to the approximate original contour because these yards were dozed out of very steep, rugged, and rocky canyon walls. Nearly all fill material escaped over the edge of the canyon walls and cannot be retrieved. To fill the cuts would require making further cuts up-bank from the yards which would result in far greater environmental damage than now exists. Terracing and leveling is impossible due to the rocky steep nature of the terrain. Instead the area will be smoothed and contoured to a pleasing appearance and topsoil will be drifted over the area to assure the success of the revegetation efforts.

784.12 (e) Topsoil as needed to cover the disturbed area will be brought up from the canyon bottom where it is more plentiful. It will be smoothed out to a uniform thickness with a grader and compacted by wheel pressure to prevent the topsoil from blowing and/or washing away.

784.12 (e)(1) The placing, spreading, and compacting of the topsoil will be completed within 10 weeks after reclamation begins. Seeding will be done within a week after that.

784.12 (e)(2) The following seed mix has been prescribed by the Forest Service for revegetation in this area:

- 3 lb. Smooth Brome
- 3 lb. Timothy Grass
- 2 lb. Orchard Grass
- 2 lb. Chested Wheat Grass
- 1 lb. Kentucky Blue Grass
- 1 lb. Ranger Alfalfa
- 1 lb. Meadow Foxtail

13 lbs. per acre

784.12 (e)(3) See answer to 784.12 (e)(2)

784.12 (e)(4) Revegetation efforts can likely be completed successfully without mulching; however, mulching will be used where necessary to insure revegetation.

784.12 (e)(5) There will be no irrigation needed to encourage revegetation. Pest and disease control, if deemed necessary will be done under the directive of the U.S. Forest Service.

784.12 (e)(6) In as much as the Forest Service will prescribe the seed mix to rise and will monitor the success of the revegetation effort to their satisfaction the reference-area concept will not be utilized.

784.12 (f) It is in the interest of the company, both economically and operationally, to maximize full utilization of the coal resource. Mining plans are drawn up to allow extraction of pillars to maximize recovery to the greatest extent practicable. This plan is subject to the approval of the U.S. Geological Survey. (See Supplement)

784.12 (g)(1) Materials which constitute a fire hazard will be burned in an approved manner prior to reclamation. There is no reason to believe that any toxic or acid-forming material will have to be disposed of during reclamation since the coal has a very low sulfur content. However, all the yard will be regraded and covered with topsoil as a part of reclamation which will in itself dilute and render harmless any suspect toxic or acid forming material.

784.12 (g)(2) See answer to 784.12 (g)(1)

784.12 (h) After the extraneous steel is removed from the portals the mine openings will be sealed with a double thickness of 8" solid concrete blocks in the location shown on Exhibit #3.

784.12 (i) All mining equipment will be hauled away and re-used in other company application or else scrapped out depending on the condition of the equipment.

784.12 (j) Swisher is the holder of two NPDES permits issued by The Environmental Protection Agency for the #4 Mine. See Exhibit #14.

784.12 (k) All permits and approved plans issued by those agencies responsible for the enforcement of air, water, and other environmental resources stipulate reporting procedures and other remedial measures.

784.13 (a)(1) Complete information can be obtained from the Vaughn Hansen Report (Exhibit #6) and the USGS Water Resources Report (Exhibit #5).

784.13 (a)(2) The only surface water on the mine property is in Mill Fork Creek. The company presently has rights to 300 shares of this water as evidenced by the following documents:

- 1) Certificate of water stock-Exhibit #15
- 2) Approved right to divert water at the mine site approved by stub water engineer-Exhibit #17
- 3) Special use permit to construct diversion facilities from Forest Service-Exhibit #18

784.13 (a)(3) See answer to 784.13 (a)(2)

784.13 (b)(1),(2) Surface drainage shall be treated in a settling pond as described in Exhibit #19.

784.13 (b)(4) Refer to Exhibit #20

784.13 (c) Refer to Exhibits #5 and #6

784.13 (e) Exhibit 21 shows the only section of road in which grades are in excess of those outlined in CFR 717.17 (5)(2)(ii)(A). However, the Division of Oil, Gas, and Mining is now making a determination of whether this section of road must be reconstructed. Their decision will become part of this plan. See Exhibit #22.

784.14 (a) The land on which the mine is located has long been used for coal mining. The canyon has supported three underground operations in the past and the surface facilities of the #4 Mine are located in exactly the same area as those of the old Leamaster Mine which operated nearly a quarter of a century ago. Other than coal mining the only other use of the land has been deer hunting although this use has been only on a limited basis since the rocky terrain of the canyon walls is not as inviting to deer as the higher country which offers a more lush browse. After termination of mining operations, the disturbed areas will be revegetated to a degree acceptable by the U.S. Forest Service and the land will once again support its principle pre-mining use, ie: deer forage.

784.14 (b)(1) The proposed post-mining use of the land is to be achieved by regrading the yards, spreading topsoil, planting the area and monitoring the revegetative effort to the satisfaction of the U.S. Forest Service.

784.14 (b)(2) After the area has been reclaimed to range condition, the management of the area will be according to the Forest Service's master management plan.

784.14 (b)(3) The proposed post-mine use of the land does not differ from the pre-mining use.

784.14 (b)(4) Reclamation plans will be consistent with the uses as determined by the U.S. Forest Service, the U.S. Geologic Survey, and the State Division of Oil, Gas, and Mining.

784.14 (c) Other than surface owned by the company all facilities are on lands controlled by the Forest Service and have been approved by special use permits.

784.15 (a) See Exhibit #19. The dam will be constructed upon final design approval. Provisions can be made to clean the facility with a clam shell. After reclamation is complete, the dam and ponding facilities will be regraded to the approximate original contour and revegetated according to Forest Service specifications.

784.15 (b) Plans do not conflict with Mine Health and Safety Administration Section 77.216-2.

784.15 (b)(i) From visual observation and past excavation of the area there is no doubt concerning the presence of bedrock (massive sandstone) at the base of the proposed dam. No adverse geologic conditions occur in the area.

784.15 (b)(i)(A) The bedrock is solid sandstone and no adverse geologic conditions occur.

784.15 (b)(i)(B) There has been no past mining nor will there be any further mining in the area of the dam since it is located stratigraphically below the coal horizons.

784.15 (b)(ii) There are no seeps, spring, or ground water flow in the vicinity of the dam.

784.15 (b)(iii) The dam will not incorporate a subdrainage system.

784.15 (b)(iv) Material for construction will depend upon final approval design. Density, water content, shear strength, consolidation and permeability will be determined by a registered engineer to assure proper construction of the facility.

784.15 (b)(v) See Exhibit #19

784.15 (b)(vi) See Exhibit #19

784.15 (b)(vii) See Exhibit #19

784.15 (b)(ix) See Exhibit #19

784.15 (b)(x) See Exhibit #19

784.16 There are no public parks or historic places in the mining area.

784.17 There is no public road to be relocated as a result of the mine operation.

784.18 There is, nor will be, any waste or refuse disposal areas in this area. Any waste brought out of the mine will be hauled to our refuse pile at C.V. Spur where it will be disposed of in an area designed and approved for refuse disposal.

784.19 Subsidence Monitoring

See Exhibit #23 Detailed Monitoring Plan

See Exhibit #24 Letter of Explanation from Forest Service

See Exhibit #25 Map Showing Location of Set Control Points

784.20 It is the intent of reclamation to provide a browse cover equal to or greater than that which exists naturally in the native area. This would tend to enhance the environment for deer and other wildlife animals. There are no fish in Mill Fork Stream so nothing of the reclamation effort will either enhance nor detract fish.

784.21 There will be no blasting associated with the surface effects of the mine operation.

784.22 The underground mine is using room-and-pillar techniques of extraction. Major equipment consists of continuous mining machines, shuttle cars, feeder breakers, roof bolters, and conveyor belts. The mine is projected to produce approximately 500,000 tons per year reaching a maximum of 750,000 tons per year as addition federal leases are acquired.

Sections 507 and 508

Public Law 95-87

507 (b)(1)(A) Swisher Coal Company
P.O. Box AU, Price, Utah 84501

507 (b)(1)(B) Map #1 shows the property involved in the #4 Mine operation and the surface ownership.

507 (b)(1)(C) Map #1 shows the holders of record of leasehold interest.

507 (b)(1)(D) DNA

507 (b)(1)(E) DNA

507 (b)(1)(F) DNA

507 (b)(2) All property adjacent to the mine property is controlled by the federal government (surface: Forest Service, subsurface: Geological Survey)

507 (b)(3) Applicant does not hold any previous or current surface coal mining permits.

507 (b)(4) See attached Exhibit #2

507 (b)(5) Swisher Coal Company, nor any of its affiliates, has never had a mining permit suspended or revoked.

507 (b)(6) Advertisement will be published in the Sun Advocate (local paper serving southeastern Utah) on dates determined by the Division of Oil, Gas, and Mining after review of the plans.

507 (b)(7) The operation consists of an underground coal mine using the room-and-pillar method of mining. Mining equipment used includes continuous miners, shuttle cars, roof bolters, feeder-breakers, conveyor belts, and support machinery.

507 (b)(8) The mine began production in February 1977. The life of the mine is indefinite, depending upon acquisition of surrounding federal coal. Total acreage involved in surface facilities is 6.8 acres.

507 (b)(9) Enclosed is a map of the surface facilities (Exhibit #3). Authority to mine in this area is given by the lease assignments which are attached as Exhibit #4.

507 (b)(10) The mine is located in the water shed of Mill Fork Creek, a tributary of Huntington Creek, a tributary of the San Rafael River, a tributary of the Colorado River.

507 (b)(11) Enclosed are copies of the following reports which deal exclusively with the possible hydrologic impacts of the mining operation.

a) Environmental Impact Analysis for Swisher Coal Company Proposed Huntington Canyon #4 Underground Coal Mine. Prepared by the Water Resources Branch of the U.S. Geologic Survey Exhibit #5

b) Water Quality and Hydrologic Study in Vacinity of Huntington Creek Mine #4 and Little Bear Spring. Prepared by Vaughn Hansen Associates, consulting engineers. Exhibit #6

507 (b)(12) Climatological data of the area can be found in the Environmental Analysis Report prepared by the U.S. Forest Service. Applicable sections of this EAR are included as Exhibit #7.

507 (b)(13) Enclosed is a topographic map of the mine area showing property boundaries, man-made features, etc. Exhibit #8

507 (b)(14) Enclosed is a map of the surface configuration with three cross-sections showing representative slices thru the mine yards, showing overburden strata, elevations, coal seams, and other geologic factors (Exhibit #9). Also enclosed is a map showing the location of all drill holes, the outcrop line, strike and dip of the coal seam, old works in the area, etc. (Exhibit #10)

507 (b)(15) Enclosed are drill hole logs and analysis sheets for the coal. (Exhibit #11)

507 (b)(16) There is no farm land, not to mention prime farmland, in the area of the minesite.

507 (b)(17) DNA

507 (c) DNA

507 (d) Enclosed is a Reclamation Plan (Exhibit #12)

507 (e) A copy of this application will be made available at the Carbon County Court House, Price, Utah.

507 (f) Enclosed is a certificate of insurance from the Fidelity and Casualty Insurance Company certifying that Swisher Coal Company has a public liability insurance policy in force for the mining and reclamation operations outlined in the plan. (Exhibit #13)

507 (g) There will be no blasting for this operation and therefore no blasting plan is submitted.

508 (a)(1) All lands in the underground portion of the mining operation are shown on Exhibit #1. The surface effects of the operation will not be extended beyond the existing surface improvements.

508 (a)(2)(A) The land is presently used for underground coal mining and associated surface facilities. The land in the past has also been used for coal mining. In fact, the surface facilities of the Huntington Canyon #4 Mine are in the exact same area of those of the old Leamaster Mine and some of the older structures associated with the past operation can still be seen today in the area. Other than coal mining, the areas only other use has been deer hunting. The canyon walls are much too steep and rocky to support farming, domestic livestock grazing, logging, or any other use.

508 (a)(2)(B) See answer to 508 (a)(2)(A)

508 (a)(2)(C) See answer to 508 (a)(2)(B)

508 (a)(3) At such time as the land is no longer used for the purpose of coal mining it shall be regraded and revegetated to be suitable to deer grazing which was the principle pre-mining use of the land. Enclosed is a pertinent section of the multiple hand use plan for the mine area prepared by the U.S. Forest Service.

508 (a)(4) Post-mining land use will be achieved by regrading the mine site area, and covering such area with native topsoil sufficient to sustain a healthy growth of grasses and forbs as prescribed by the U.S. Forest Service. The growth will be checked and replanted periodically as needed to insure that the revegetation efforts are successful.

508 (a)(5) Mining will be done, and is being done, by underground room-and-pillar methods using continuous mining machines, shuttle cars, feeder breakers, and conveyor belts. Reclamation will be done using a D-8 Caterpillar Dozer, a 988 front end loader, and a G16 road grader. All surface irregularities will be smoothed out and graded so that drainage is slow and even over the disturbed areas. Topsoil will be hauled from the canyon bottom and spread over the recontoured yard and compacted with the wheels of the loader. Topsoil will be spread in sufficient depth to insure a successful revegetation effort. Surface drainage will be controlled by reestablishing to the extent practicable, the original drainage features. It is estimated that it will cost nearly \$2,000 per acre to reclaim the mine yard.

508 (a)(6) It is in the interest of the company, both economically and operationally, to maximize full utilization of the coal resources. Mining plans are drawn up to allow extraction of pillars to maximize recovery to the greatest extent practicable.

<u>508 (a)(7)</u>	Removal of surface structures	4 weeks
	Regrading and recontouring	2 weeks
	Topsoil covering	2 weeks
	Seeding	1 week
	TOTAL	<u>9 weeks</u>

508 (a)(8) Swisher is the surface owner.

508 (a)(9) Swisher is the holder of two NPDES permits issued by the Environmental Protection Agency for the #4 Mine. Exhibit #14

508 (a)(10) The entire mine area is located on extremely steep, rugged, rocky, ledgy terrain which makes obtaining original contour impossible. The reclamation plan strives to most effectively reinitiate pre-mining use to post-mining application.

508 (a)(11) See Exhibit #1

508 (a)(12) Results of test boring are shown on Exhibit #11

508 (a)(13)(A) Surface water and ground water systems are fully explained in Exhibits #5 and #6

508 (a)(13)(B) Enclosed is a copy of the certificate of water shares owned by Swisher Coal Company in the Huntington Area (Exhibit #15)

508 (a)(13)(C) Enclosed is a copy of an agreement reached between the City of Huntington and Swisher wherein Swisher agrees to replace any waters lost from the City's culinary source as a result of mining operations. Exhibit #16

List of Exhibits

- Exhibit #1 : Property map showing ownership interest
- Exhibit #2 : Articles of incorporation
- Exhibit #3 : Map of the surface facilities
- Exhibit #4 : Lease assignments
- Exhibit #5 : Report on the hydrologic impact of operations prepared by the Water Resources Division of the U.S. Geological Survey
- Exhibit #6 : Hydrologic Report prepared by Vaughn Hansen Associates
- Exhibit #7 : Environmental Analysis Report prepared by the U.S. Forest Service
- Exhibit #8 : Topographic map showing property boundaries, man-made features, etc.
- Exhibit #9 : Cross-section of surface showing overburden, geology, coal seams, elevations, etc.
- Exhibit #10: Drill hole map
- Exhibit #11: Drill hole logs, analysis sheets
- Exhibit #12: Reclamation plan as approved by the Division of Oil, Gas, and Mining
- Exhibit #13: Certificate of Insurance
- Exhibit #14: NPDES permits issued by the Environmental Protection Agency
- Exhibit #15: Certificate of Water Shares
- Exhibit #16: Agreement with City of Huntington
- Exhibit #17: Approved change of point of diversion from State Division of Water Rights
- Exhibit #18: Special use permit for pumping facilities
- Exhibit #19: Plan for construction and maintenance of settling pond facility
- Exhibit #20: Hydrologic monitoring plan
- Exhibit #21: Road reconstruction information
- Exhibit #22: Notice of hearing on road reconstruction

- Exhibit #23: Detailed subsidence monitoring plan
- Exhibit #24: Letter of concurrence from Forest Service about subsidence monitoring plan
- Exhibit #25: Map of subsidence monitoring control points
- Exhibit #26: Cover letter, U.S. Geological Survey mine plan and reclamation approval
- Exhibit #27: Cover letter, Division of Oil, Gas, and Mining mine plan and reclamation approval
- Exhibit #28: Plan for controlling drainage at C.V. Spur Preparation and Loading Facility
- Exhibit #29: Map of proposed drainage control at C.V. Spur
- Exhibit #30: Mining plan checklist (Added as supplement from mining plan submitted to U.S.G.S.)
- Exhibit #31: Mine plan for Huntington Canyon #4 Mine (Added as supplement from mining plan submitted to U.S.G.S.)

Exhibit 12: Reclamation plan as approved by the Division of Oil,
Gas, and Mining





STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1588 West North Temple
Salt Lake City, Utah 84116

NOTICE OF INTENTION TO COMMENCE MINING OPERATIONS
(See Rule M of General Rules and Regulations)

- 1. Name of Applicant or Company Swisher Coal Co.
Corporation (x) Partnership () Individual ()
- 2. Address 90 West First North, Price, UT 84501
Permanent Temporary
- 3. Name and title of person representing company Max A. Robb, President
- 4. Address 90 West First North, Price, UT Office Phone 801/637-5050

5. Location of Operation Emery Sec. 16 T. 16 R. 7
County

6. Name of Mine Huntington Canyon #4

- 7. Mineral to be mined: Mining method:

(x) Coal	() Flagstone	<u>Room-and-pillar</u>
() Copper	() Gravel	_____
() Manganese	() Shale	_____
() Iron Ore	() Uranium	_____
() Phosphate	() Gilsonite	_____
() Potash	() Bituminous Sandstone	_____
() Fluorspar	() Tungsten	_____
() Other (specify) _____		_____

8. Have you or any person, partnership or corporation associated with you received an approved Notice of Intention to Commence Mining Operations by the State of Utah for operations other than described herein?
() Yes (x) No
If yes, list all approval numbers now under surety:

- 9. Owner/Owners of record of the surface area within the land to be affected:

<u>Dick Nelson</u>	Address <u>501 East 2700 South</u> <u>Salt Lake City, Utah</u>
<u>M.M. Hiatt</u>	Address <u>317 Limestone Creek Rd.</u> <u>San Antonio, Texas</u>
<u>General Exploration Co.</u>	Address <u>4219 Sigma Rd.</u> <u>Dallas, Texas 75240</u>
<u>U.S. Forest Service</u>	Address <u>350 East Main</u> <u>Price, Utah</u>

CONFIDENTIAL

10. Owner/Owners of record of minerals to be mined:

<u>Dick Nelson</u>	Address	<u>501 East 2700 South Salt Lake City, Utah</u>
<u>M.M. Hiatt</u>	Address	<u>317 Limestone Creek Rd. San Antonio, Texas</u>
<u>General Exploration Co.</u>	Address	<u>4219 Sigma Road Dallas, Texas 75240</u>
<u>U.S.G.S.</u>	Address	<u>125 S. State Salt Lake City, UT</u>

11. Owner/Owners of record of all other minerals within any part of the land affected:

_____	Address	_____
_____	Address	_____
_____	Address	_____

11a. Have the above owners been notified in writing?
(x) Yes () No

12. Source of Operator's legal right to enter and conduct operations on land to be covered by the Notice land owned in fee, mine plans approved by U.S.G.S.

13. Approximate acreage to be disturbed: 4 acres

Mining Operation Area: 2 acres +
(include operations, storage, & disposal area)

Access Road or Haulageway: 2 acres +

Drainage System: _____ acres =

Total Acres: 4 Acres

14. Give the names and post office addresses of every principal Executive, Officer Partner, (or person performing a similar function) of Applicant:

Name:	Title:	Address:
a. <u>Max A. Robb</u>	<u>President</u>	<u>90 West First North Price, Utah 84501</u>
b. <u>Eugene E. Nearburg</u>	<u>Vice President</u>	<u>4219 Sigma Road Dallas, Texas 75240</u>
c. <u>William G. Ferguson</u>	<u>Chairman of the Board</u>	<u>180 E. Broad St. #816 Columbus, Ohio 43215</u>
	<u>Secretary-Treasurer</u>	<u>4219 Sigma Road</u>
d. <u>C. Nick Bailey</u>	<u>Vice President</u>	<u>Dallas, Texas 75240</u>

15. Has Applicant, any subsidiary or affiliate or any person, partnership, association, trust, or corporation controlled by or under common control with Applicant, or any person required to be identified by Item 14, ever had an approval of a Notice of Intention withdrawn or has surety relating thereto ever been forfeited? () Yes (x) No

If yes; explain:

CONFIDENTIAL

STATE OF Utah

COUNTY OF Carbon

I, Dave Shaver, Mining Engineer, having been duly sworn
depose and attest that all of the representations contained in the foregoing
application are true to the best of my knowledge; that I am authorized to
complete and file this application on behalf of the Applicant and this
application has been executed as required by law.

Signed: *Dave Shaver*

Taken, subscribed and sworn to before me the undersigned authority
in my said county, this 16th day of March, 19 76.

Notary Public *Kathleen Knight*

My Commission Expires: October 18, 1979



~~CONFIDENTIAL~~ ^{END} 9/19/76

Nature, location, size

Must publish Section at least in location.

Bond cost.

	<u>\$/lb</u>	<u>Total \$</u>
3# Em. Brome	.75	2.25
3# Timothy	.61	1.83
2# Orchard	.62	1.24
2# Crested	.65	1.30
1# Kentucky wheat	.81	.81
1# Pangea blf.	1.21	1.21
1# meadow foxtail	2.34	2.34
		<u>10.98</u>

\$12/a seed.

Remove surface irregularities
Ports will be sealed

Clean up debris

The final objective is to present an area aesthetically in appearance.

Plan for the Development of
Huntington Canyon #4 Mine

Huntington Canyon, Emery County, Utah

Swisher Coal Company

~~CONFIDENTIAL~~ ^{rus} 9/19/76



Description of Existing Area

The mine site is located in Mill Fork Canyon, a tributary to Huntington Canyon in Emery County, Utah, about 12 miles northeast of the town of Huntington. It is reached by a one mile access road taking off Utah State Route #31. The mine site area stands at an elevation of approximately 7900 feet in a highly dissected part of the Wasatch Plateau and supports a scattered growth of spruce, pine and juniper as well as lesser vegetation typical of the highland forest.

Scattered small scale mines have operated in the area of Huntington Canyon since the early 1930's. Presently coal is being produced nearby in Trail Canyon from the privately owned Co-op Mine and in Dear Creek Canyon by Peabody Coal Company.

The Huntington Canyon #4 Mine will extract coal from various tracts of fee land as well as from Federal Lease #SL064903 which contains 160 acres and is described as follows:

T16S, R7E, SLBM - Section 16:

SW1/4 NE1/4
NW1/4 SE1/4
NE1/4 SW1/4
SE1/4 NW1/4

This lease is bordered on the east and south by privately owned land and on west and north by open federal coal land. Surface facilities for the mine will be located almost entirely on fee land while access and haul roads will be located on both private land and U.S. Forest Service land. The haul road and that section of the access road lying in the canyon bottom will be maintained as a public road for users of the forest.

~~CONFIDENTIAL~~ Rev
4/17/76

Nature and Extent of Deposit

The Blind Canyon Seam has a relatively wide aerial extent and is one of the principle producing seams in the Huntington Canyon region. In the Mill Fork area of interest, the seam varies in thickness from 13 ft. in the Leamaster Mine to a reported 4 ft. in the Helco Mine located nearby to the west. The coal sits on a competent sandstone-siltstone foundation and is overlain by a massive sandstone which forms a very stable roof in the mine. No roof bolts have ever been used in the Leamaster Mine and many intersections have been cut in excess of 30 ft. wide with no signs of roof failure.

The seam shows localized rolls but over a wide area appears to be generally flat. Maximum cover is estimated to be about 1400 ft. occurring in the northwestern section of the lease block. From all available geologic data the area seems to be free of any major fault systems.

~~CONFIDENTIAL~~ *same*

Development Phases

The mine portal was opened and mining started by Vern Leamaster in 1943. and served the local domestic coal market until 1964. During that time approximately 127,000 tons were extracted from the mine from both the federal lease and fee properties. Nearby the Helco Mine and the Skeen Mine were also in operation although on a much smaller scale. In 1975 Swisher Coal Company of Price, Utah, a wholly owned subsidiary of General Exploration, acquired the option to purchase the mine and has been assigned the operatorship of the property.

Initial production from the mine is planned for the early part of 1976 at a rate of 1,000 to 2,000 tons per day. A production rate of 3,000 tons per day is not unlikely at some time in the future. Extraction will be from the upper Blind Canyon Seam, for which the reserves are estimated at nearby seven million tons. At 2,000 tons per day the life of the mine would be approximately 30 years. The lower Hiawatha Seam has an estimated reserve of 8.5 million tons.

~~CONFIDENTIAL~~ *same*

Proposed Mining Methods

The following surface improvements will be made:

1. Excavation of the upper mine yard and portal area.
2. Leveling and extending the coal stock piling and loading area located in the box canyon.
3. Up grading the existing access and haul roads.
4. Grading and leveling the lower mine yard which will be used for material storage and the location of the office and bath house.

All proposed and existing surface improvements are shown on the accompanying maps.

Coal production will come from a continuous miner section using room-and-pillar methods of extraction. Additional miner units will be put into production in the future as market requirements increase. Main entries will be driven with five entries on 80 ft. centers with cross-cuts also on 80 ft. centers. Butt entries will be driven with three or five entries on 80 ft. by 80 ft. centers. Rooms will be taken 500 ft. to 600 ft. on either side of the butt entries and a 220 ft. barrier pillar will be left to protect the mains. Entries, cross-cuts, and rooms will be driven 20 ft. wide. Where coal height allows, two feet of top coal will be left for protection and roof control will be accomplished by timbering and roof bolting. Abandoned and de-activated areas will be sealed off as they are worked out.

The mine will be developed from the outcrop and will utilize only a small portion of the old workings as shown on the enclosed map. Main entries will be driven through the old works in a northeasterly direction until the workings are cleared and then turn to the northwest to parallel the outcrop and to line up with property holdings to the north. Butt entries will be driven in an east-west direction to allow the most efficient extraction of the lease block and to provide the best access for proper development of surrounding coal lands should additional federal leases be acquired in the future.

Coal will be brought out of the mine on a 42 in. belt conveyor, run thru a single roll crusher and then discharge down an enclosed chute into a 2,000 ton capacity storage pile located in the lower box canyon. The coal will then be loaded into 28 ton trucks by a front end loader and hauled to market.

There will be no coal washing facilities on the site and, therefore, no refuse disposal. In the past the mine has been characteristically dry and mine water discharge was not a problem. Any water encountered in future

~~CONFIDENTIAL~~ *same*

operations will either leave with the coal product as interstitial moisture or will be sumped underground for subsequent use. Canyon drainage will be diverted around both the upper and lower mine yard to prevent erosional damage to the yards and to preclude siltation of Mill Fork. In the stock piling and loading area the drainage will be coursed to prevent contamination of the stream by coal from the storage pile.

Combustible trash will be burned in well designed incendiaries and incombustible trash will be disposed of in an approved sanitary land fill located on fee land. Sewage will be disposed of by a septic tank and drain field system, a holding tank or some other system approved by the State Health Department. Trailers will be used for offices, bath house and material storage. These will be of a semi-permanent nature and may be replaced with more permanent structures in the future if needed.

~~CONFIDENTIAL~~ *can*

Abandonment and Reclamation

1. After mining operations are permanently terminated, surface structures will be removed from the site. Useable items will be salvaged and un-useable items will be disposed of in a sanitary land fill.
2. All mine portals and openings will be tightly sealed to prevent unauthorized entry into the mine. Seals will be constructed of concrete blocks with mortared joints.
3. Surface areas and roads will be thoroughly cleaned of all debris. All disturbed areas will be re-seeded with a mix prescribed by the Forest Service.
4. As much as is practical prominent drainage features which have been diverted, channeled or culverted will be returned to their original alignment.
5. The purpose of reclamation will be to present an area aesthetic appearance and one compatible with surrounding forest use. Surveys will be made as often as is necessary to insure the objectives of reclamation are being fulfilled.

Power System

Power for the mine will initially be provided by a self-contained 440 volt diesel generator with an output of 900 kilowatts. The diesel will be equipped with a forest service approved spark arrestor. Eventually line service will be provided by Utah Power and Light as the existing power line to the mine is up graded sufficiently. At that time use of the diesel generator will be discontinued.

Water Requirements

The greatest use of water will be for the sprays on the mining machinery. For a two unit mine maximum water requirements for this purpose would be approximately 16,000 gallons per day, for a four unit mine, 32,000 gallons per day. Additionally, a maximum of 2,000 gallons per day would be needed for showering and sanitary purposes. Water will be obtained from either a well or a pumping station drawing out of Mill Fork or Huntington Creek. Such a pumping station would be constructed according to the specifications of the Forest Service and the State Water Engineer. Potable water will be tested and treated if necessary to comply with State Health Department standards.

Personnel Requirements

A maximum of about 120 people will be employed when the mine is in full operation, including hourly workers, supervisors and staff. Swisher Coal Company is an equal opportunity employer and is non-discriminating in its hiring practices. Support employment will be needed for truck haulage and mine services such as parts distributors and fuel outlets. Revenue will be generated in the area in the form of personal income of mine employees and of service and support industries as well as taxes, royalties and lease payments. The effect of the increased employment and revenue on the area economy will be healthy.

Health and Safety

Health and safety requirements in all coal mines are established by the Mining Enforcement and Safety Administration of the Department of the Interior. All phases of mining are regulated by M.E.S.A. including fire control, dust control, refuse disposal, roof control, ventilation, and haulage. In addition to the statutory provisions of the 1969 Coal Mine Health and Safety Act, the individual operators are required to submit various plans covering specific areas of health and safety which, when approved, become legally binding. The following plans have been submitted to M.E.S.A. and are included with this report:

1. Roof Control Plan
2. Ventilation System and Methane and Dust Control Plan
3. Fan Stoppage Plan
4. Plan for Search of Smoking Material
5. Emergency Medical Assistance Plan
6. Plan for Surface Organization and Procedure in Cast of Mine Fire or Explosion

File

DIVISION OF OIL, GAS, AND MINING
BOND ESTIMATE

OPERATOR: SWISHER COAL COMPANY
MINE NAME: Huntington Canyon #4 Mine
LOCATION: Sec. 16, T. 16 S., R. 7 E. #43-015-004
COUNTY: Emery County, Utah
DATE: April 14, 1976

	Operation	Amount	Rate	Cost
A.	CLEAN-UP			
	1. Removal of structures & equipment.	1 loader &	\$ 90./day	\$ 270.
	2. Removal of trash & debris.	1 truck		
	3. Leveling of ancillary facilities pads and access roads.			
B.	REGRADING & RECONTOURING			
	1. Earthwork including haulage and grading of spoils, waste and overburden.	500 yds.	\$ 0.10/yd.	50.
	2. Recontouring of highwalls and excavations.			
	3. Spreading of soil or surficial materials.			
C.	STABILIZATION			
	1. Soil preparation, scarification, fertilization, etc.	2 acres	30./ac.	60.
	2. Seeding or planting.	2 acres	12./ac.	24.
	3. Construction of terraces, waterbars, etc.			
D.	LABOR			
	1. Supervision.	3 man days	7.50/hr.	180.
	2. Labor exclusive of bulldozer time.	6 man days	5.00/hr.	240.
E.	SAFETY			
	1. Erection of fences, portal coverings, etc.	3 portal coverings	250. ea.	750.
	2. Removal or neutralization of explosive or hazardous materials.			
F.	MONITORING			
	1. Continuing or periodic monitoring, sampling & testing deemed necessary	N/A		26.
G.	OTHER			

TOTAL RECOMMENDED BOND: \$ 1,600.

SWISHER COAL CO.

90 WEST 18T NORTH
PRICE, UTAH 84501
PHONE 801-637-2575

Engineering - (801) 637-5052

March 19, 1976

Mr. Ron Daniels, Coordinator
Mined Land Development
Division of Oil, Gas and Mining
State of Utah
1588 West North Temple
Salt Lake City, Utah 84116

Dear Ron:

As a follow-up to our recent telephone conversation, I am sending you the Notice of Intention to Commence Mining Operations for the Huntington Canyon #4 Mine along with a narrative describing our mining and reclamation plans. This is the same plan that has been submitted to the U.S. Geological Survey and the U.S. Forest Service. Also included is the site plan for the mine as well as a property map showing surface and mineral ownership of the various tracts of land which we control in the Mill Fork area.

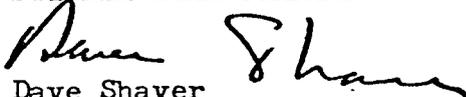
The following seed mix has been prescribed by the Forest Service for reclamation planting at the Huntington Canyon #4 Mine:

Per acre:	3# smooth brome
	3# Timothy grass
	2# Orchard grass
	2# Crested wheat grass
	1# Kentucky wheat grass
	1# Ranger alfalfa
	1# Meadow foxtail
Total Mixture	<u>13#</u> per acre

All information being submitted to you should be kept strictly confidential.

Sincerely,

SWISHER COAL COMPANY


Dave Shaver
Mining Engineer

DS:kk

Enclosure

BEFORE THE BOARD OF OIL, GAS, AND MINING
DEPARTMENT OF NATURAL RESOURCES
in and for the STATE OF UTAH

IN THE MATTER OF THE APPROVAL OF THE)
NOTICE OF INTENT AND RECLAMATION PLAN)
SUBMITTED BY SWISHER COAL COMPANY,)
HUNTINGTON CANYON #4 MINE, EMERY)
COUNTY, UTAH.)

ORDER TO SHOW CAUSE
No. 43-015-004

THE STATE OF UTAH TO ALL PERSONS INTERESTED IN TOWNSHIP 16 SOUTH,
RANGE 7 EAST, SECTION 16, EMERY COUNTY, UTAH.

Notice is hereby given that tentative approval has been given
by the Utah Division of Oil, Gas, and Mining, to Swisher Coal Company, to
re-commence coal mining operations on fee and federal lands in Section 16,
Township 16 South, Range 7 East, SLEM, Emery County, Utah. The mine is
known as the Huntington Canyon #4 Mine.

Swisher Coal Company has fulfilled obligations under the Mined
Land Reclamation Act of 1975 (Section 40-8) Utah Code Annotated, 1953, as
amended, and will perform mining and reclamation of the affected area as
described below:

(A) During Operations:

- (1) Coal will be mined by conventional underground methods, removed from the mine, crushed and stockpiled below the mine entrance for shipment.
- (2) Natural drainage will be intercepted and diverted around surface facilities and stockpile areas to avoid contamination.

(B) After Operations:

- (1) At the termination of operations, all surface structures, machinery, equipment, and debris will be removed from the site.
- (2) All mine portals and ventilation openings will be sealed with concrete blocks and mortar to prevent unauthorized entry.
- (3) Surface areas and roads will be water barred to prevent excessive erosion and a self-sustaining vegetative cover will be established through soil preparation and seeding or planting of specified plant species.
- (4) Diverted or channeled drainage will be returned to its natural course where practicable.

The objectives of the reclamation plan are to establish physical and biological stability of the mine site and to provide for future uses compatible with the surrounding forest environment. Surety will be established by the Board of Oil, Gas, and Mining to ensure fulfillment of the reclamation obligation.

SWISHER COAL COMPANY
No. 43-015-004
Page two

Any person or agency aggrieved by this tentative decision are hereby requested to submit written protest to the Division of Oil, Gas, and Mining, 1588 West North Temple, Salt Lake City, Utah 84116, setting forth factual reasons for his complaint, and thereafter, at a time and place here to be established, appear before the Board of Oil, Gas, and Mining, to show cause, if any there be, why this plan should not be approved.

DATED this 26th day of April, 1976.

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
BOARD OF OIL, GAS, AND MINING

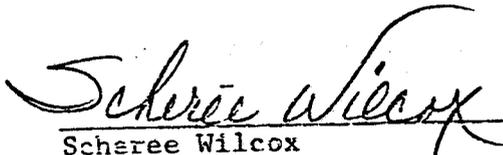
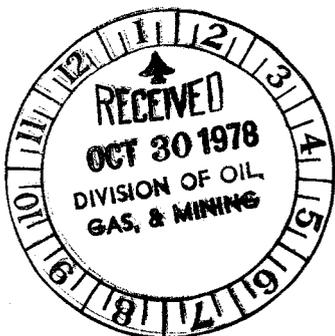

Scheree Wilcox
Secretary to the Board

Exhibit #4 : Lease assignments



RECEIVED
TAX STATE OFFICE
SALT LAKE CITY, UTAH

JAN 25 AM 11:30

DEPT. OF INTERIOR
BUREAU OF LAND MGMT.

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
LAND OFFICE
SALT LAKE CITY, UTAH

Involving:

Federal Coal Lease
Serial No. SL-064903

Acceptance of Assignment of Lease

Swisher Coal Co., a Utah corporation, by this instrument, hereby accepts that certain Assignment of Federal Coal Lease, Serial No. SL-064903 from Hardy Coal Company, Assignor, to Swisher Coal Co., Assignee, attached hereto; said coal lease and all rights of Assignor therein and thereunder.

The lands affected by said lease and assignment are particularly described as follows, to-wit:

Township 16 South, Range 7 East, S.L.M., Utah

Section 16: NE $\frac{1}{4}$ SW $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$

Containing 160 acres, more or less

and any lands included in any extension of such lease.

It is hereby certified that the undersigned is authorized by Assignee as an officer thereof to make this said Acceptance of Assignment for and on behalf of Swisher Coal Co.

Dated: January 20, 1974.

SWISHER COAL CO.

By J. Paul Kall
President
(corporate position)

Signed in the Presence of:

Arthur Knight

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
LAND OFFICE
SALT LAKE CITY, UTAH

DEPT. OF INTERIOR
SUR. OF LAND MGMT.

76 JAN 26 AM 11:29

RECEIVED
UTAH STATE OFFICE
SALT LAKE CITY, UTAH

INVOLVING:

COAL LEASE

SERIAL NO. SL-064903

LESSEE: HARDY COAL COMPANY

HARDY COAL COMPANY, an Ohio corporation, hereinafter called "Assignor" as owner of the record title to coal lease Serial No. SL-064903, in and for the consideration of the sum of Ten and no/100 Dollars (\$10.00), and other good and valuable consideration, does hereby transfer and assign to SWISHER COAL CO., a Utah corporation, whose address is:

607 Kearns Building, Salt Lake City, Utah 84101

hereinafter called "Assignee", said coal lease and all rights of Assignor therein and thereunder.

1. The lands affected by said lease and this assignment are particularly described as follows, to-wit:

Township 16 South, Range 7 East, S.L.M., Utah

Section 16: NE $\frac{1}{4}$ SW $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$

Containing 160 acres, more or less.

and any lands included in any extension of such lease.

2. Interest of Assignor in such lands: entire leasehold interest.

3. Extent of such interest conveyed to Assignee: All.

4. Overriding royalty or production payments reserved herein to Assignor: None.

5. Overriding royalty or production payments previously reserved: None.

It is hereby certified that the statements made herein are true, complete and correct to the best of the undersigned's knowledge and belief.

Dated: January 20, 1976.

HARDY COAL COMPANY

SIGNED IN THE PRESENCE OF:

Fred R. Phillippe

By *Fred R. Phillippe*
F.R.P.
(corporate position)

STATE OF Ohio)
COUNTY OF TOSC.) SS

On the 20 day of January, 1976, personally appeared before me Fred R. Phillippe, who being duly sworn, did say that

he is the President of Hardy Coal Company, and that said Assignment was signed in behalf of said corporation by authority of its By-Laws or Resolution of its Board of Directors, and said Fred R. Phillips acknowledged to me that said corporation executed the same.

Dean Roy Miller
Notary Public

Residing: Rt 4 Millersburg, Ohio

My Commission Expires:
DEAN ROY MILLER, Notary Public
Holmes & Tipton Counties, Ohio
My Commission Expires JULY 10, 1970

Eph 11-3
Doc # 3

Recorded at Request of _____
at _____ M. Fee Paid \$ _____
by _____ Dep. Book _____ Page _____ Ref.: _____
Mail tax notice to _____ Address _____

CORRECTED QUIT-CLAIM DEED

DICK N. NIELSON and QUINEVERE A. NIELSON, husband & wife, grantors
of Salt Lake City, County of Salt Lake, State of Utah, hereby
QUIT-CLAIM to MELDON J. TANNER, DICK E. BASTIAN, TED
L. HANKS and FRANCIS W. CHRISTIANSEN,

of Orem, County of Utah, State of Utah grantee S
TEN AND 00/100 ----- for the sum of ----- DOLLARS,
and other valuable consideration
the following described tract of land in Emery County,
State of Utah:

TOWNSHIP 16 South, RANGE 7 East, Salt Lake Base and Meridian
Section 8: Southwest quarter
Containing 160 acres.

Reserving to the Grantors all oil and gas rights.

This deed is given subject to all exceptions, reservations or encumbrances of record and for the sole purpose of correcting that certain Quit-Claim Deed dated December 4, 1974 from the above Grantors to the above Grantees, which said deed is recorded in Book 80, at Page 593 of the Emery County Recorder's records.

WITNESS the hand of said grantor, this 28th day of February, A. D. one thousand nine hundred and seventy-five.

Signed in the presence of _____

Dick N. Nielson
Dick N. Nielson
Quinevere A. Nielson
Quinevere A. Nielson

STATE OF UTAH, } ss.
County of Salt Lake

On the 28th day of February, A. D. one thousand nine hundred and seventy-five personally appeared before me

Dick N. Nielson and Quinevere A. Nielson, husband and wife,

the signers of the foregoing instrument, who duly acknowledge to me that they executed the same.

[Signature]
Notary Public.

My commission expires Aug. 7, 1978 Address: Salt Lake City, Utah

Recorded at Request of _____
at _____ M. Fee Paid \$ _____
by _____ Dep. Book _____ Page _____ Ref.: _____
Mail tax notice to _____ Address _____

CORRECTED WARRANTY DEED

DICK N. NIELSON and QUINEVERE A. NIELSON, husband and wife, grantors
of Salt Lake City, County of Salt Lake, State of Utah, hereby
CONVEY and WARRANT to MELDON J. TANNER, DICK E. BASTIAN, TED
L. HANKS and FRANCIS W. CHRISTIANSEN, grantees

of Orem, County of Utah, State of Utah for the sum of
TEN AND 00/100 ----- DOLLARS,
and other valuable consideration
the following described tract of land in Emery County,
State of Utah:

TOWNSHIP 16 South, RANGE 7 East, Salt Lake Base & Meridian
Section 16: East 1/2 of East 1/2, Southwest 1/4 of Southwest 1/4
Southwest 1/4 of Southeast 1/4
Section 17: East 1/2 of the Southeast 1/4
Containing 320 acres.
Reserving to the Grantors all oil and gas rights.

This deed is given subject to all exceptions, reservations or encumbrances
of record and for the sole purpose of correcting that certain Warranty
Deed dated December 4, 1974 from the above Grantors to the above
Grantees insofar as reservations are concerned, only, recorded
December 19, 1974 in Book 80 at Page 592 of the records of the Emery
County Recorder.

WITNESS, the hand of said grantors, this 28th day of
February, A. D. 1975.

Signed in the Presence of

Dick N. Nielson
Dick N. Nielson
Quinevere A. Nielson
Quinevere A. Nielson

STATE OF UTAH,

County of Salt Lake

} ss.

On the 28th day of February, A. D. 1975
personally appeared before me

Dick N. Nielson and Quinevere A. Nielson, husband and wife,
the signers of the within instrument, who duly acknowledged to me that they executed the
same.

[Signature]
Notary Public.

My commission expires Aug. 7, 1978 Residing in Salt Lake City, Utah

A G R E E M E N T

THIS AGREEMENT is made and entered into this 29th day of October, 1974, by and between DUVELS, INC., a Corporation, hereinafter referred to as DuVels, and RICHARD BASTIAN and ASSOCIATES, hereinafter referred to as Bastian,

WITNESSETH:

1. DuVels has granted Bastian an Option to acquire the Leamaster Coal properties in Huntington Canyon and Bastian and his group are desirous of entering upon the property to take samples and drill one ore hole during the option period.

2. DuVels grants Bastian and his group the right to enter upon the Leamaster Coal property to take samples of coal from the mined area and to drill one hole on said property.

3. Bastian shall furnish DuVels and D. A. Frandsen copies of all drill logs, all analysis of coal and all reports, maps and other information within 15 days after the same are made available to Bastian.

4. Bastian shall carry liability and property damage insurance on all of the drilling, sampling and activities carried on on said property with DuVels as co-insured with policy limits of at least \$100,000 for any one person, \$200,000 for any one accident and \$50,000 property damage. Said policy shall be secured and a copy delivered to D. A. Frandsen for DuVels prior to any work or activities on said property.

Dated the day and year first above written.

DUVELS, INC., a Corporation

By D. A. Frandsen
President

[Signature]
[Signature]
[Signature]

---RICHARD BASTIAN & ASSOCIATES

A S S I G N M E N T

We, VERNON LEAMASTER and LEORA LEAMASTER, husband and wife, of Huntington, Utah, hereby assign, transfer and set over to DuVELS, INC., A corporation, with its principal place of business at Price, Utah, for valuable consideration, receipt of which is hereby acknowledged, all of their right, title and interest in that certain agreement between Emery County as sellers and Vernon Leamaster, buyer, dated September 2, 1969, wherein the following described land was sold without warranty of title by Emery County to Vernon Leamaster:

SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 16, Township 16 South, Range 7 East, SLB&M, containing 40 acres.

100000 100000

The consideration for this Assignment is the assumption by DuVels of the payment of the balance due on the said contract to Emery County which balance DuVels assumes and agrees to pay.

Dated this 30 day of March, 1970.

ASSIGNORS:

Vernon Leamaster
Leora Leamaster

ASSIGNEE:

DuVELS, INC., A Corporation

By V. C. Frazier
President

WARRANTY DEED

STATE OF UTAH X
 X KNOW ALL MEN BY THESE PRESENTS
COUNTY OF EMERY X

THAT, we, William H. Dellenback and wife, Julie Dellenback, hereinafter referred to as "Grantor" do hereby sell, convey and warrant unto Swisher Coal Co., a Utah corporation, hereinafter referred to as "Grantee" the hereinafter described property for the consideration as follows:

- (a) The sum of _____
payable upon the execution and delivery of this instrument, and
- (b) The additional consideration of _____
; payable in two equal annual installments of _____ each, the first of which shall be payable on or before August 1, 1976, the last of which shall be due and payable on or before August 1, 1977, and
- (c) The additional consideration of _____
; payable in two equal annual installments the first of which shall be due and payable on August 1, 1978, and the last of which shall be due and payable on August 1, 1979; provided, however, that each of the annual installments of _____
; payable under this subparagraph (c) shall be minimum advance royalty payments for the one year period following the dates of such payments, and in the event coal is produced from properties hereinafter described during such period, then all royalties accruing to the benefit of Grantor during said one year period up to and including the total amount of such annual payments shall be retained by Grantee herein as a recoupment of advance royalties so paid, and

(d) The additional consideration of _____, payable in Five equal annual installments of _____ each, the first of which shall be due and payable on or before August 1, 1980 and successive payments of _____ each shall be payable on or before August 1, of each ensuing year until such time as the entire consideration of _____ is paid. It is expressly provided, however, that each of such payments of _____ shall be advance minimum royalty payments, which shall be recouped by Grantee out of the first royalties accruing to the benefit of Grantor during the year for which such advance minimum royalties have been paid. It is further expressly provided that Grantee's obligation to make advance royalty payments of _____ per year pursuant to this subparagraph (d) shall cease and terminate when a total of _____ tons of coal have been mined from the hereinafter described premises if such should occur during the period for such payments.

The property herein conveyed is the following described tract of land lying and being situated in Emery County, State of Utah:

The Southwest Quarter (SW/4) of Section 5, Township 16 South, Range 7 East, SLBM, containing One Hundred and Sixty (160) acres, more or less, together with all improvements, tenements, hereditaments and appurtenances thereunto belonging or in anywise appertaining thereto.

Grantors do hereby expressly reserve unto themselves as a perpetual royalty the following:

- (a) _____ of the sale price at the portal of all coal mined and removed from the hereinabove described property for a period of seven (7) years from and after the date hereof, and _____ of the sale price at the portal of all coal mined and removed after seven (7) years from and after the date hereof, and

(b) _____ percent _____ of the value at
the well of all oil, gas and other hydrocarbons produced
and sold from the hereinabove described property.

TO HAVE AND TO HOLD unto the said Grantee, its successors and assigns
forever, but Grantor does hereby expressly reserve a vendor's lien upon the
premises hereby demised to secure the payment of the consideration hereinabove
recited.

AND Grantors covenant that they are lawfully seized in fee simple
of the said premises free and clear of all encumbrances, and that the said
Grantors, their heirs, executors and administrators shall warrant and forever
defend the said premises and every part and parcel thereof, against the law-
ful claims and demands of all persons whomsoever.

IN WITNESS WHEREOF, we have hereunto set our hands on this the _____
day of _____, 1976.

GRANTORS:

STATE OF UTAH Y
 Y
COUNTY OF EMERY Y

BEFORE ME, the undersigned authority, on this day personally appeared
William H. Dellenback and wife, Julie Dellenback, known to me to be the persons
whose names are subscribed to the foregoing instrument, and acknowledged to me
that they executed the same for the purposes and consideration therein expressed.

GIVEN under my hand and seal of office this the _____ day of _____,
1976.

Notary Public in and for _____
County, Utah.

AGREEMENT

This Agreement made and entered into this 7th day of July 1975, by and between

NOEL S. TANNER & VERLENE W. TANNER, HIS WIFE,
TED L. HANKS & DELLA J. HANKS, HIS WIFE,
MELDON J. TANNER & ALICE L. TANNER, HIS WIFE,
DICK E BASTIAN & JESSIE M. BASTIAN, HIS WIFE,
FRANCIS W. CHRISTIANSEN & ALTA BATES CHRISTIANSEN,
HIS WIFE, ROY M. KIZERIAN & ORA LEE KIZERIAN, HIS
WIFE, ROBERT H. BURGNER & DIANE BURGNER, HIS WIFE,

herein designated as the Sellers and GENERAL EXPLORATION COMPANY,
a Corporation, or its designee, hereinafter designated as the Buyer.

WITNESSETH

1. The above named parties as Optionors and Optionees have heretofore on the 13th day of November, 1974, entered into an agreement which consists of an option on the part of the Buyer, above named, to purchase certain assets consisting of real properties, private coal leases, and federal coal leases which option agreement was modified by a supplemental agreement dated February 12, 1974.

2. It is agreed that said prior agreements are hereby merged into this present agreement except as they are specifically incorporated herein. All claims of the default by the parties with respect to said prior agreements are hereby waived, and all claims or damages, if any, with respect to default or claims based on said agreements are waived by all the parties hereto, and there shall be no obligation with respect to said prior agreements but the obligation of said parties shall be only as set forth herein.

3. It is agreed that the relationship of the parties hereto are no longer that of Optionors and Optionees, but that they are now Sellers and Buyer of the properties hereinafter described without regard to a formal notice of exercise of the option of November 13, 1974.

4. The Sellers above named own, or have purchased, or have the right to purchase, or have leased the properties herein involved upon five instruments to which instruments the above named Sellers are parties. The list of such documents and copies of the same are attached hereto as Exhibits "A-1 to A-5," inclusive. Said properties are divided into three categories as follows:

U. S. COAL LEASES - DESIGNATED PROPERTIES NO. 1

a. Serial No. SL-050655 covering 80 acres land located in the SE1/4 NW1/4 and NE1/4 SW1/4, Sec. 13, T14S, R6E, SLBM, issued November 17, 1938, for 20 years.

b. Serial No. 062648 covering 80 acres of land located in the SW1/4 NW1/4, Sec. 5 and SE1/4 NE1/4 Sec. 6, T16S, R7E, SLBM issued January 3, 1942, for 20 years.

(The foregoing 2 leases are being purchased by Sellers from "JOHN F. SANDERS & ASSOCIATES" by agreement dated August 13, 1974. See Document No. 1)

c. Serial No. SL-064903 covering 160 acres of land located in the NE1/4 SW1/4, NW1/4 SE1/4, SE1/4 NW1/4, SW1/4 NE1/4, Sec. 16, T16S, R7E, SLBM.

(The foregoing lease designated as "c" was owned by DuVel's, Inc., the stock of which the Sellers or some of such Sellers have purchased and which corporation is in the process of liquidation and title to said lease has been or will be transferred by the Sellers or some of said Sellers. The Buyer is the equitable owner of said lease by reason of payment of the full consideration therefor.)

FEE LANDS - DESIGNATED PROPERTIES NO. 2

- a. The SE1/4 SW1/4, Sec. 16, T16S, R73, SLBM.

(The foregoing 40 acres designated "a" is in the same position so far as ownership by the Buyer is concerned as federal lease SL-064903 listed under "c".)

- b. E1/2 of E1/2, SW1/4 of SW1/4, Sec. 16, T16S, R7E, SLBM. SW1/4, Sec. 8, T16S, R7E, SLBM.

(The foregoing properties designed "b" are presently standing in the names of MELDON J. TANNER, DICK E. BASTIAN, TED L. HANKS, and FRANCIS W. CHRISTIANSEN, subject to mortgage securing a promissory note dated September 5, 1974, payable to the order of DICK N. NIELSON AND GWEN A. NIELSON, at the rate of \$7,083.33, per month or more until the whole amount is paid without interest. See Document No. 3)

NON-FEDERAL LEASES - DESIGNATED PROPERTIES NO. 3

- a. W1/2 SE1/4, Sec. 17, T16S, R7E, SLBM. ✓

(Property under "a" and under lease by MARENA SEVIER MADDEN, and 14 additional Lessors to DICK E. BASTIAN, ET AL, as Lessees dated April 1, 1975. See Document No. 4)

- b. S1/2 SW1/4 and SW1/4 SE1/4, Sec. 9, T16S, R7E, SLBM. (See Document No. 5) ✓

(Properties under "b" are under lease by WALKER BANK AND TRUST COMPANY, Administrator with will annexed of the estate of HERBERT FLEISHHACKER, dated April 30, 1975, to DICK E. BASTIAN, ET AL.)

- c. SW1/4 of Sec. 5, T16S, R7E, SLBM. ✓
(See Document No. 2. This property is under option from WILLIAM H. DELLENBACK and JULIE DELLENBACK, husband and wife, to TED L. HANKS, ET AL, dated the day of October, 1974.)

5. It is understood that pursuant to the option of November 13, 1974, and the supplemental agreement of February 12, 1975, that the Buyer has made the following payments to the Seller:

The recital of the foregoing payments is for the purpose of a clear understanding of past payments under prior agreements and for clarification of this agreement and for calculation of advance royalties.

DUVEL'S, INC. PROPERTIES

6. Out of the foregoing payments, the Sellers acquired all of the stock of DuVel's, Inc. which is in the process of being dissolved, which dissolution will vest legal title to the stockholders. It has been heretofore agreed that the Buyer, by reason of payments made to the Sellers, shall become and is now the equitable owner of the assets of DuVel's, Inc., consisting of Federal Coal Lease No. SL-064903, and the SE1/4 of the SW1/4 SEC. 16, T16S, R7E, SLBM with no option in the Sellers to repurchase the DuVel's property except as herein-after set forth. Sellers agree to cooperate and do all things reasonably necessary to complete the dissolution of DuVel's, Inc., and to convey legal title to the DuVel's properties in the Buyer.

7. The Buyer hereby agrees to pay the Sellers for the assets hereinabove described and described in the attached instruments, a royalty of / of the gross sales price at the tittle on all coal mined and sold from the properties herein described and from coal mined and sold from the property herein referred to as the property of "common interest." The following advance royalties shall be paid by the Buyer to the Sellers which shall be recouped as and when coal is mined and royalties become due to the Sellers by reason of the mining and sale of coal as hereinafter provided.

Advanced royalties as are necessary to meet the obligations of Seller with respect to the following properties:

- a. John Saunders Property - total payment due. ~~Seller attempting to renegotiate this payment to provide for monthly payments in the amount of without interest, or 4 equal annual payments of approximately each without interest.~~
- b. Dick N. Nielson Property - beginning September 1, 1975 and continuing until January 1, 1977 at which time payments will reduce to and continue until the total sum due is paid.
- c. Dellenback - obligation based upon results of drilling.
- d. Madden - as particularly set forth in the lease.
- e. Fleishhacker - as particularly set forth in the lease.
- f. DuVel - no payments due, paid in full.

Sellers do hereby agree to use their best efforts in a good faith attempt to secure a reduction in certain of such payments as hereinabove set forth.

In addition to the above obligations of Seller, Buyer agrees to make additional advance royalty payments to Seller as follows:

PAYMENTS SUBSEQUENT TO 1975

Advanced payments of _____ annually, payable in 12 equal monthly installments of _____ each, payable on the first of each month, commencing January 1, 1976 and continuing for a period of 15 years, the last such payment being due and payable on December 1, 1990.

ADDITIONAL ADVANCE ROYALTIES

The Buyer has heretofore made payments to the Sellers under the agreement of November 13, 1974, and February 12, 1975, of _____ which, under such agreement were option payments, and which were, in the event that said option was exercised, to be considered as advance royalties. It is hereby agreed that said _____ shall constitute advance royalties previously paid in addition to those additional advance royalties hereinabove specifically provided for, to be paid pursuant to the terms of this agreement.

8. It is agreed that there are additional properties having a potential for profitable mining of coal adjacent to and in the vicinity of the properties hereinabove described in Paragraph 4 of this Agreement. Sellers have made applications for leases, applications for prospecting permits and possibly take other steps toward securing coal leases or the right to mine coal with respect to such properties or portions thereof.

Such properties are hereby designated as properties of "common interest." The areas of "common interest" (estimated to be 15,800 acres more or less) are designated on the attached Exhibit "B", having the title "Geology and Property Map, Huntington Canyon Coal Project, Emery County, Utah," and are those portions of the property shown on said map designated "A" and "B", expressly excluding, however, that property designated on said map as "C". In consideration of the mutual covenants herein contained and monies agreed to be paid, it is agreed as follows:

- a. That Sellers will assign and deliver to the Buyer all applications for leases, prospecting permits, applications for prospecting permits, all correspondence and papers of whatever kind involving transactions between the Sellers and the BLM, the U.S.G.S. and other governmental agencies whose consent is required for prospecting and/or securing leases relative to the area of "common interest" property.
- b. That upon request, Sellers will assist the Buyer in the preparation of mining plans and other material for presentation to the BLM and all other pertinent governmental agencies, and in cases of state lands, the State of Utah, with a view to acquiring leases, permits or other authorization from the State or Federal Government for additional right to mine coal in the "common interest" property at Buyer's expense.
- c. The Buyer shall in accordance with its best judgment, but solely within its own discretion, proceed to prospect such properties of "common interest" for the purpose of determining the existence of minable coal therein. In the event that it determines minable coal, it will in accordance with its sole judgment and

and discretion, take such steps as it deems appropriate and necessary to acquire the right to mine coal from said properties of "common interest." In the event that the Buyer secures leases and the right to mine coal in said area of "common interest" and mines and sells coal therefrom, a royalty shall be paid to the Sellers on all such coal mined and sold under the same terms and conditions as royalties to be paid to the Sellers on the properties hereinabove specifically described in Paragraph 4 provided, however, that any amounts that it shall be required to pay by way of bonus to secure lease on said properties, and any amount which it shall be required to pay in bidding on said property, in the event that the United States Government, through its agencies, requires that leases be subject to competitive bidding, may be considered as advance royalties and added to the advance royalty account to be recovered on the basis of to Buyer and to Sellers, as hereinafter set forth.

9. Buyer shall recoup advance royalties paid hereunder as follows:

- a. Buyer shall retain the full royalty described in paragraph 7 hereof during each year until all advance royalties accruing and paid during such year have been recouped. Such advance royalties shall consist of the annual sum of payable to Sellers and any advance royalty payments made by Buyer during such year in fulfillment of an obligation under any instrument described in paragraph 7, a through f.

- b. After advance royalties for any current year have been recouped by Buyer, the full royalty accruing during the balance of such year shall be shared on the basis of . . . to Buyer and . . . to Seller until such time as Buyer shall have recouped all additional unrecovered advance royalties. Such additional unrecovered advance royalties shall include only (1) the . . . paid by Buyer to Seller under the Agreements of November 13, 1974 and February 12, 1975; (2) any annual advance payments made by Buyer to Seller and not recouped in the year in which the payment was made; (3) any annual advance payment made by Buyer in fulfillment of an obligation under any instrument described in paragraph 7, a through f hereof and not recouped in the year in which the payment was made; and (4) any consideration which may hereafter be paid by Buyer for a lease or option to mine coal on lands within the area of "common interest."
- c. If at the expiration of fifteen years, when annual advance royalty payments to Sellers have ceased, Buyer has not recovered all of the advance royalties theretofore paid by it, then the full . . . royalties shall be shared . . . to Buyer and . . . to Seller until all advance royalties have been recouped.
- d. After Buyer has recovered all of its advance royalty payments, the full . . . royalty shall be paid monthly to Sellers. If all additional advance royalties are recovered during the period when Seller is entitled to annual advance royalty payments, then such . . . actual royalty shall be payable to Sellers during that portion

of the year remaining after current advance royalties are paid. Thereafter, upon the expiration of 15 years, Seller shall be entitled to the full royalty after Buyer has recouped all of its advance royalties.

10. The Sellers agree that upon the signing of this agreement and the payment of the initial payment that they will assign to the Buyer all of the United States Coal Leases (or procure the owners to do so as soon as they have been paid for); that they will deed to the Buyer all of the fee lands by special warranty deed, and that they will assign to the Buyer all non-federal leases, together with any contractual rights to acquire interests in such properties. Buyer will pay all obligations as they become due and owing upon the five documents attached hereto, or which are necessary to maintain all titles in good standing from and after the date hereof.

11. The Buyer agrees that upon the assignment of the federal leases and the approval of such assignments by the BLM and upon the assignment of the leases by private individuals on fee lands that it will pay all of the royalties, minimum and actual, required thereafter to be paid and performed in accordance with said leases assigned.

12. The Sellers represent that they know of no objection to or reason which may prevent the Buyer from mining coal on all of the properties and area herein described (except area of "common interest") assuming that the Buyer performs its obligations and agreements herein contained and the approval of assignments by the BLM.

13. In the event that the Buyer is prevented from mining coal by any governmental regulation or condition or in the event of a strike by the United Mine Workers or the employees of the Buyer, then all advance minimum royalties provided for herein (except the amounts necessary to meet obligations to

Sellers' predecessors in title) shall be suspended during such period of strike or other governmental regulation prohibiting or preventing the mining of coal. Buyer shall use all reasonable and prudent efforts to forthwith cure any and all suspensions.

14. It is agreed that the only obligation of the Buyer with respect to this agreement or any part thereof or with respect to the property herein described are set forth herein and without limiting the foregoing that the Buyer is not obligated to pay any commissions or expenses other than the payments provided for and obligations herein specifically assumed.

15. In addition to complying with all of the terms of the leases herein to be assigned to the Buyer, the Buyer agrees that all operations on the properties shall be conducted in a reasonable and minerlike fashion so as to recover the maximum amount of coal according to good mining practice, and to comply with all governmental regulations applicable to the mining and operation of said properties. Buyer will permit Sellers or their designated agent access to said properties as well as all pertinent books of account and technical data at a reasonable time upon thirty days prior notice.

16. The Buyer agrees that it will pay all of the general taxes on the properties hereinabove specifically described after the year 1975, and that it will pay its prorata share of the 1975 general property taxes as of June 1, 1975. In the event that there are any severance taxes, occupational taxes, or taxes based upon production, the Buyer agrees to pay the same except that it may charge the Sellers their proportionate share of such taxes.

17. Sellers have heretofore furnished abstracts of title and other documents with respect to the title to the properties herein specifically described, and Buyer's counsel rendered opinions based upon such abstracts and other documents. Sellers agree to continue all abstracts to date of this agreement for further examination by counsel for the Buyer. Sellers agree

to perfect their title as to any matters relating to any objections raised by reason of matters appearing in the continuation of said abstracts.

18. All payments provided for in this agreement to be paid by the Buyer to the Sellers shall be made by depositing the amount of such payment to the account of "Huntington Canyon Coal Project" in the Utah Bank and Trust, Main at 8th South, Salt Lake City, Utah, Account No. 91-0754-2.

19. The Buyer and Sellers agree that should either default in any of the covenants or agreements contained herein, that the defaulting party shall pay all costs and expenses, including a reasonable attorney's fee which may arise or accrue from enforcing this agreement, or in obtaining possession of the premises covered hereby, or in pursuing any remedy provided by the laws or statutes of the State of Utah whether such remedy is pursued by filing a suit or otherwise; provided however, that Buyer may at any time terminate this agreement by 60 days written notice to the Sellers and the tender of reconveyances and reassignments of all properties and assets described herein; including any leases acquired in the area of "common interest." Sellers agree to pay the sum of \$300,000 to Buyer upon tender of reconveyance and reassignment, whereupon Buyer shall be released from all future obligations hereunder after the date of termination, but not as to matters to be performed prior to date of termination. In the event of such termination the Buyer shall have six months to remove all of its property and equipment from said premises. Buyer shall give Sellers all engineering and technical data with respect to its operations.

In the event Seller elects not to accept a reconveyance and reassignment within the 60 days notice period above provided, then Buyer may retain all of the properties herein described and Sellers shall be deemed to have waived all further payments hereunder.

20. Buyer shall be entitled to release or reassign unto Sellers any specific parcel of land described herein for the purpose of avoiding any payments to Sellers' predecessor in title; provided that any such partial release shall not diminish Buyer's obligation to make advance royalty payments as hereinabove provided. All obligations accruing prior to the date of assignment shall be the responsibility of Buyer.

21. All notices given or required to be given hereunder shall be given to the Sellers by a notice to the following at the address stated:

DICK E. BASTIAN
963 South State Street
Orem, Utah 84057

Notice to the Buyer shall be given addressed as follows:

EUGENE E. NEARBURG, President
General Exploration Company
4219 Sigma Road, Dallas, Texas 75240

All of such notices shall be certified mail, return receipt required. The address for official notices hereunder may be changed by either Buyer or Sellers by proper notification to the other in writing; provided that only one such address shall be so designated at any given time.

22. Sellers hereby designate and appoint Dick E. Bastian as their agent and attorney in fact with full authority to make any election or deliver any notice to Buyer hereunder. By written notice delivered to Buyer, a majority of Sellers in number may designate and appoint some other party as their representative for such purpose, but Buyer shall not be required to respond to any communication except from Sellers' duly designated representative.

23. This agreement shall be binding upon the parties hereto and shall enure to the benefit of all the parties and their respective successors and assigns. It is understood that this agreement is assignable by the Sellers and the Buyer in whole or in part, but assignment shall not release the assignor of any duties and obligations hereunder.

IN WITNESS WHEREOF, the Sellers have set their hands and the Buyer has caused this instrument to be executed by its proper officers and thereunto duly authorized.

Noel S. Tanner
NOEL S. TANNER

Verlene W. Tanner
VERLENE W. TANNER, HIS WIFE

Ted L. Hanks
TED L. HANKS

Della J. Hanks
DELLA J. HANKS, HIS WIFE

Meldon J. Tanner
MELDON J. TANNER

Alice L. Tanner
ALICE L. TANNER, HIS WIFE

Dick E. Bastian
DICK E. BASTIAN

Jessie M. Bastian
JESSIE M. BASTIAN, HIS WIFE

Francis W. Christiansen
FRANCIS W. CHRISTIANSEN
Gen. Partner

Alta Bates Christiansen
ALTA BATES CHRISTIANSEN, HIS WIFE
Gen. Partner

Roy M. Kizerian
ROY M. KIZERIAN
General Partner

Ora Lee Kizerian
ORA LEE KIZERIAN, HIS WIFE
General Partner

Robert H. Burgener
ROBERT H. BURGNER
General Partner

Diane Burgener
DIANE BURGNER, HIS WIFE
General Partner

GENERAL EXPLORATION COMPANY

BY: Eugene E. Nearburg
EUGENE E. NEARBURG
PRESIDENT

COAL MINING LEASE

This Lease made and entered into as of the 1st day of April, 1975, by and between MARENA SEVIER MADDEN, aka MARENA S. MADDEN; EDWARD F. MADDEN, aka E. F. MADDEN; RUSSELL H. GITTINGS; ALICE MADDEN BOGREN; MOLLIE MADDEN; MARENA MADDEN HIATT; NANCY S. MADDEN; WILLIAM J. MADDEN, aka W. J. MADDEN; and PATRICK A. MADDEN, aka P. A. MADDEN, hereinafter referred to as "Lessors", and DICK E. BASTIAN, NOEL S. TANNER, MELDON J. TANNER, and TED L. HANKS, hereinafter referred to as "Lessees".

RECITALS

Each of the Lessors has an undivided interest in all of the minerals and mineral rights in the following described lands situated in Emery County, State of Utah, to wit:

Township 16 South, Range 7 East, SLM
Section 17: W $\frac{1}{2}$ SE $\frac{1}{2}$

(Containing 80 Acres, more or less)

The following named Lessors: William J. Madden, Nancy S. Madden, and Marena Madden Hiatt, hereinafter sometimes referred to as "Surface Lessors", each has an undivided interest in the surface of said land.

Lessees desire to lease from Lessors the coal and coal rights in said land and to lease so much of the surface as may be required in the mining, preparation and shipping of coal from said land and from adjoining and adjacent land.

I

RIGHTS GRANTED LESSEES

Lessors for and in consideration of the sum of Ten Dollars (\$10.00) cash in hand paid to Lessees, receipt of which is hereby acknowledged, and in further consideration of the royalties, rentals, covenants and agreements hereinafter contained, do hereby lease to

Lessees the coal and coal rights in said land, together with the rights to use so much of the surface of said land as may be required in the mining, preparation and shipping of coal from said land and from adjoining and adjacent land.

Reservation by Lessors

Lessors reserve the oil, gas and all other minerals and mineral rights in said land, except coal, and Lessors reserve the right to use the surface of said land for the exploration, development and recovery of the reserved minerals. Lessors also reserve the right to use the surface of said land for grazing and other purposes; provided, however, that no use of the surface for reserved rights shall materially interfere with Lessees' operations in the mining, preparation and shipping of coal.

II

TERM OF LEASE

This lease shall begin on the date first above set forth and shall continue for a period of twenty (20) years, and as long thereafter as the rentals and royalties are paid as provided for in Paragraphs IV and V, unless sooner terminated in accordance with the provisions hereof.

III

LESSEES' ACCEPTANCE OF TITLE

Lessees acknowledge that they have examined title to said land and the coal and coal rights therein and accept the title without any representation or warranty by Lessors except that Lessors warrant they have not made any prior sale, lease or agreement affecting the leased rights granted herein nor has any agent or representative of Lessors made any prior sale, lease or agreement affecting the leased rights granted herein.

It is agreed that record title to one of the fractional interests in the mineral rights in said property is in the name of Susan Madden Gittings; that she is now deceased and that her estate has not been probated in the State of Utah; that she was a resident of Johnson County in the State of Kansas at the time of her death and that her Last Will and Testament was duly admitted to Probate in the Probate Court of said County and State and that Russell H. Gittings was the sole beneficiary under her Last Will and Testament as well as her only heir at law. The undersigned, Russell H. Gittings, as one of the Lessors herein, hereby represents and warrants that there are no creditors of the Estate of Susan Madden Gittings and that there are no other heirs at law or beneficiaries of her estate who have any rightful claims to her estate or in the land herein described. The undersigned, Russell H. Gittings, agrees to protect and save harmless the Lessees herein named and their assigns from any loss sustained by Lessees as a result of any breach of his said warranty.

IV

RENTALS

Lessee shall pay in advance to Surface Lessors during the term of this lease an annual rental as follows: _____ for the lease year commencing April 1, 1975, and _____ for each succeeding lease year this lease is in effect payable on or before April 1st.

Miss Nancy Sevier Madden is hereby designated as Surface Lessors' agent to receive from Lessees all payments of rental.

The rental shall be paid to said agent at 2900 Connecticut Avenue, N.W., Apt. 332, Washington, D.C. 20008, or to such other address or agent as Surface Lessors may designate from time to time by written notice to Lessees. The rental shall be received by the agent for the credit of the several Surface Lessors in proportion

to their interest in the surface as set out above. The agent is authorized to receipt for all rental payments.

V

ROYALTIES - MANNER AND PLACE OF PAYMENT

A. Minimum Advance Royalties: Lessees shall pay annually to Lessors a minimum advance royalty of _____ upon execution of this lease for the lease year commencing April 1, 1975. Lessees shall pay Lessors a minimum advance royalty of _____ for the lease year commencing April 1, 1976. Lessees shall pay Lessors a minimum advance royalty of _____ per year for the lease years commencing April 1, 1977, April 1, 1978, April 1, 1979, April 1, 1980, and April 1, 1981. Lessees shall pay Lessors a minimum advance royalty of _____ per year for each succeeding lease year this lease is in effect. All advance minimum royalty payments shall be made on or before the first day of the lease year.

Minimum advance royalties paid for a lease year shall apply and be credited upon royalties on production for the same lease year. Minimum advance royalties paid for a lease year shall not apply on royalties on production in a subsequent lease year. Upon expiration or sooner termination of this lease for any reason, Lessors shall not be obligated to Lessees with respect to minimum advance royalties paid other than to apply and credit them on royalties on production in the same lease year.

B. Production Royalties. Lessees shall pay to Lessors on all coal removed and shipped from said land a royalty of _____ percent _____ of the gross value of the coal at the place where it is loaded on or placed in a facility for shipment (including entrance into a pipeline) from the leased premises but not less than _____

_____ . Gross value shall be the value of the coal, as determined in an arm's length transaction, at the point of shipment. The production royalty shall be paid on or before the 25th

day of each month on coal shipped during the preceding lease month. Each royalty payment shall be accompanied by a certified statement showing the amount of coal from said land shipped during the preceding month, the amount per ton received for the coal and any other data relevant to determining the gross value of the coal shipped. If coal is shipped by railroad, such statement shall include the car numbers, dates of shipment, names of the parties to whom consigned and the car weights as shown by the railroad records.

C. Manner and Place of Payment. Miss Nancy Sevier Madden is hereby designated as Lessors' agent to receive from Lessees all royalty payments.

The royalty shall be paid to said agent at 2900 Connecticut Avenue, N.W., Apt. 332, Washington, D.C. 20008, or to such other address or agent as Lessors may designate from time to time by written notice to Lessees. The royalty shall be received by the agent for the credit of the several Lessors in proportion to their interest in the coal as set out above. The agent is authorized to receipt for all royalty payments.

VI

ACCOUNTS

Lessees shall keep accurate, permanent accounts of all coal shipped from said land showing the amount per ton received for the coal and any other data relevant to determining the amount of the production royalty.

VII

OPERATION OF MINE - MAPS

Lessees shall conduct all operations under this lease in a good and minerlike manner and in a manner which will result in the ultimate maximum economic recovery of the coal in said land. Lessee shall also conduct all operations in conformity with the coal mine

operating regulations relating to coal leases on public lands of the United States in Emery County and will conduct such operations in a manner which will minimize soil erosion, damage to forage and timber growth, and pollution of air and water.

Lessees shall maintain accurate maps of all mine workings tied to government survey and keep them current.

VIII

STATE AND FEDERAL ENACTMENTS - INDEMNIFICATION OF LESSORS

A. Lessees shall be subject to and comply with all applicable federal enactments, the laws of the State of Utah, and all federal, state and local rules and regulations applicable to operations under this lease, including health and safety regulations. Lessees shall carry employers liability insurance, workmen's compensation insurance and occupational disease compensation insurance.

B. Lessees covenant and agree to indemnify and hold harmless Lessors from and against the payment of any and all damages, claims, costs and expenses resulting from Lessees' failure to comply with such enactments or regulations or to carry such insurance. Lessees shall further indemnify and hold harmless Lessors from and against any and all damages, claims, costs, and expenses arising out of damage to property or injury to or death of the employees of Lessees or any other person whomsoever other than Lessors and those acting under Lessors where such injury, death or damage occurs because of or in connection with Lessees' operations on said land.

C. Lessees shall also indemnify and hold harmless Lessors from and against any and all claims and liens upon said premises or labor or materials furnished to Lessee.

IX

LABOR AND MATERIALS TO BE FURNISHED BY LESSEES - LIENS

A. Lessees at their own cost and expense shall furnish all

labor, materials and supplies necessary for their operations hereunder.

B. Lessees shall not permit or suffer liens of any kind or nature to attach to said land for any work done or materials furnished thereon or in relation thereto at the instance and request of the Lessees.

X

NON-LIABILITY NOTICES

Lessees shall keep posted in conspicuous places about said land where work is being conducted by Lessees, and shall duly record, when and if required by the laws of the State of Utah, such notices as will inform whom it may concern that said coal mining is being conducted under lease and that Lessors shall not be liable for any of the expenses or charges of operation.

XI

LESSORS' RIGHT OF INSPECTION

A. Lessors or their agents at all reasonable times shall have free access to said land and the mine workings thereon for the purpose of determining whether said land is being maintained, protected and used in accordance with the terms of this lease. Lessors shall give Lessees at least five (5) days advance written notice of any such intended visit to the land and mine workings.

B. Lessors or their agents at all reasonable times shall have access to maps of mine workings, data relating to drill holes, core and other evaluation data which Lessees now have or may hereafter obtain with respect to said land.

C. Lessors or their agents at all reasonable times shall have free access to the books and records of production under this lease for the purpose of verifying the production royalty.

XII

TAXES

Lessors shall pay all taxes levied and assessed on the surface of said land and Lessees shall pay all taxes levied and assessed on the improvements and personal property placed upon said land by Lessees.

Lessors shall pay all federal, state and county taxes assessed against Lessors on account of the receipt by Lessors of rentals and royalties hereunder.

Lessees shall pay any ad valorem taxes assessed and levied on coal reserves in said land.

Lessees and Lessors shall pay any severance, occupation and other taxes based on coal production, except ad valorem taxes based on production, in proportion to their respective interests in the coal production.

XIII

LESSEES' RIGHT OF SURRENDER

Lessees may surrender this lease at any time after giving Lessors sixty (60) days' written notice of their intention to surrender; provided, Lessees are in full compliance with all of the provisions of this lease including the placing of said land in a condition which complies with all federal and state laws and regulations.

XIV

DEFAULT - TERMINATION

This lease is made upon condition that Lessees shall perform all of the covenants and conditions herein set forth to be performed and observed by Lessees. If Lessees shall fail to make any payment of rentals or minimum advance royalty or royalties on production when due and payable or shall fail to comply with any of the other covenants or conditions of this lease, Lessors, may upon giving thirty

(30) days' written notice to Lessees of the default, cancel and forfeit this lease unless, within said thirty (30) day period Lessees shall cure the default if the default relates to the payment of rental or royalties or unless within said thirty (30) day period if the default relates to other than the payment of rentals or royalties, Lessees shall undertake in good faith to cure the default and shall diligently proceed to cure the default.

XV

REMOVAL OF EQUIPMENT

In case of forfeiture, surrender or expiration of this lease, all installed underground timbering shall be and remain a part of the realty and shall revert to Lessors without further consideration or compensation. All mine entries shall be left in a clean condition and free of waste. All underground air and water lines, installed underground power lines, trackage and all personal property of Lessees located within or upon said land and all buildings, machinery, equipment and tools shall, in case of forfeiture, surrender or expiration of this lease remain on said land and be held in lieu of bond until all covenants and conditions of this lease shall have been complied with. Upon such compliance Lessees may, within nine (9) months after termination of this lease or within such extension of time as may be granted by Lessors, remove from said land such equipment, personal property and improvements. If Lessees fail to move such equipment, personal property and improvements within said nine (9) months period or within such extended period as may be granted, then, and in such event, the equipment, personal property and improvements shall become the property of Lessors.

XVI

REQUIREMENTS ON TERMINATION OF LEASE

Notwithstanding anything in this lease to the contrary, upon

forfeiture, surrender or expiration of this lease, Lessees will, if required by Lessors; remove all buildings and other structures and leave all coal mines on said land in a condition meeting the standards required for permanent abandonment of similar coal mines on federal lands.

Lessees further agree that upon termination of said lease, Lessees will fill any core holes, ditches or other excavations, remove or cover all debris, cover all slurry or waste areas and so far as reasonably possible restore the surface of said land and access roads to their former condition. Lessees shall also leave said land in a condition which complies with all federal and state laws and regulations.

XVII

ASSIGNMENT

Lessees shall have the right to assign this lease in its entirety to General Exploration Company or to Hardy Coal Company provided it assumes and agrees to perform all of the covenants and conditions of said lease. Lessees shall not have the right to make any other assignment of said lease or of any interest therein, nor the right to sublet said lease without the written consent of Lessors provided, however, Lessors shall not unreasonably withhold such consent. Lessor, Marena Madden Hiatt, shall have authority to grant such consent for and on her own behalf and for and on behalf of said other Lessors. Lessees shall promptly furnish Lessors with a duplicate, certified or photostat copy of any such assignment.

Lessees shall not be chargeable with notice of any assignment or conveyance by Lessors or any of them until Lessees shall have been furnished with written notice of the assignment or conveyance and with a duplicate, certified or photostat copy of the instrument of assignment or conveyance.

XVIII

MANNER OF GIVING NOTICE

Any notice required or desired to be served upon Lessors shall be in writing and may be served by depositing it in the United States mail, postage prepaid, certified or registered, return receipt requested and addressed to Lessors in care of Nancy S. Madden, 2900 Connecticut Avenue, N.W., Apt. 332, Washington, D.C. 20008, or to such other party and such other address as Lessors or their successor or successors in interest may from time to time designate by a written notice to Lessees.

Any notice required or desired to be served upon Lessees shall be in writing and may be served by depositing it in the United States mail, postage prepaid, certified or registered, return receipt requested and addressed to Lessees in care of Huntington Canyon Coal Project, 1473 South 11th East, Salt Lake City, Utah 84105, or to such other party and at such other address as Lessees, or their successor or successors in interest may from time to time designate by written notice to Lessors.

Service of notice by mail shall be deemed effective and complete upon the date of mailing in accordance herewith, except as otherwise expressly provided herein. Personal service of notice shall be deemed sufficient notice and no mailing of notice shall be necessary in case of such personal delivery.

XIX

SHORT FORM OF LEASE

Lessors agree that upon request of Lessees they will execute a short form lease for recording purposes.

XX

QUITCLAIM DEED BY LESSEES

Lessees agree that upon forfeiture, surrender or expiration of

this lease they will execute and deliver to Lessors a quitclaim deed covering said land for the purpose of clearing the record title of the lease.

XXI

ENTIRE AGREEMENT

This lease constitutes the entire agreement between the parties with respect to the rights herein leased and there are no other agreements or understandings, oral or otherwise, regarding same.

XXII

HEADINGS

Headings of the sections of this lease are inserted only for purposes of convenience and are in no way to be considered in construing its meaning.

XXIII

EXECUTION IN COUNTERPARTS

This lease may be executed in several counterparts, no one of which must be executed by all the parties hereto. All such counterparts shall constitute but one and the same instrument and shall be binding upon all parties who have executed a counterpart with the same force and effect as if all of the parties had executed the same instrument.

IN WITNESS WHEREOF, the parties have executed this lease effective the day and year first above written.

LESSORS:

Marena Madden Hiatt
Marena Madden Hiatt
Nancy S. Madden
Nancy S. Madden
William J. Madden
William J. Madden

Marena Sevier Madden
Edward F. Madden
Russell H. Gittings
Alice Madden Bogren
Mollie Madden
Patrick A. Madden

By Marena Madden Hiatt
Marena Madden Hiatt

By Nancy S. Madden
Nancy S. Madden

By William J. Madden
William J. Madden

Their Agents and Attorneys In Fact

LESSEES:

Dick E. Bastian
Dick E. Bastian

Noel S. Tanner
Noel S. Tanner

Melton J. Tanner
Melton J. Tanner

Ted L. Hanks
Ted L. Hanks

JOINDER

The undersigned, Catherine C. Madden, wife of Edward P. Madden; Emily Madden, wife of William J. Madden; and Joyce Madden, wife of Patrick A. Madden, for good and valuable consideration, do hereby join in the foregoing Coal Mining Lease to bind any interest they or any of them may have or may hereafter have in the land covered by said lease.

Catherine C. Madden
Emily Madden
Joyce Madden

By Marena Madden Hiatt
Marena Madden Hiatt

By Nancy S. Madden
Nancy S. Madden

By William J. Madden
William J. Madden

Their Agents and Attorneys In Fact

STATE OF *Texas*)
COUNTY OF *Brewer*) ss.

On the *19* day of *May*, 1975, personally appeared before me MARENA MADDEN HIATT, the signer of the above instrument, who duly acknowledged to me that she executed the same.

Also, on the *19* day of *May*, 1975, personally appeared before me MARENA MADDEN HIATT who being by me duly sworn did say that she is one of the Attorneys In Fact of Marena Sevier Madden, Edward F. Madden, Russell H. Gittings, Alice Madden Bogren, Mollie Madden, and Patrick A. Madden, and that said instrument was signed in behalf of said parties by authority, and said Marena Madden Hiatt acknowledged to me that she as such Attorney In Fact executed the same.

Also, on the *19* day of *May*, 1975, personally appeared before me MARENA MADDEN HIATT who being by me duly sworn did say that she is one of the Attorneys In Fact of Catherine C. Madden, wife of Edward P. Madden; Emily Madden, wife of William J. Madden; and Joyce Madden, wife of Patrick A. Madden; and that the above Joinder was signed in behalf of said parties by authority, and said Marena Madden Hiatt acknowledged to me that she as such Attorney In Fact executed the same.

Constance Anne Zingler
Notary Public
Residing at: *Mercantile Bank*
Trust

My Commission Expires:
June 1, 1975

STATE OF Kansas)
 : ss.
COUNTY OF Linn)

On the 15 day of May, 1975, personally appeared before me WILLIAM J. MADDEN, the signer of the above instrument, who duly acknowledged to me that he executed the same.

Also, on the 15 day of May, 1975, personally appeared before me WILLIAM J. MADDEN who being by me duly sworn did say that he is one of the Attorneys In Fact of Marena Sevier Madden, Edward F. Madden, Russell H. Gittings, Alice Madden Bogren, Mollie Madden, and Patrick A. Madden, and that said instrument was signed in behalf of said parties by authority, and said William J. Madden acknowledged to me that he as such Attorney In Fact executed the same.

Also, on the 15 day of May, 1975, personally appeared before me WILLIAM J. MADDEN who being by me duly sworn did say that he is one of the Attorneys In Fact of Catherine C. Madden, wife of Edward P. Madden; Emily Madden, wife of William J. Madden; and Joyce Madden, wife of Patrick A. Madden, and that the above Joinder was signed in behalf of said parties by authority, and said William J. Madden acknowledged to me that he as such Attorney In Fact executed the same.



Oliver M. Waller
Notary Public

Residing at: Linn, Mo

My Commission Expires:
August 22, 1975

STATE OF UTAH)
 : ss.
COUNTY OF UTAH)

On the 7 day of May, 1975, personally appeared before me DICK E. BASTIAN, the signer of the above instrument, who duly acknowledged to me that he executed the same.

Marlin E. Hallgren
Notary Public

Residing at: Pleasant Grove, Ut

My Commission Expires:

January 1 1978

STATE OF UTAH)
 : ss.
COUNTY OF UTAH)

On the 7 day of May, 1975, personally appeared before me NOEL S. TANNER, the signer of the above instrument, who duly acknowledged to me that he executed the same.

Marlin E. Hallgren
Notary Public

Residing at: Pleasant Grove Utah

My Commission Expires:

January 1 1978

STATE OF UTAH)
 : ss.
COUNTY OF UTAH)

On the 7 day of May, 1975, personally appeared before me MELDON J. TANNER, the signer of the above instrument, who duly acknowledged to me that he executed the same.

Marlin E. Hallgren
Notary Public

Residing at: Pleasant Grove, Utah

My Commission Expires:

January 1 1978

STATE OF UTAH)
 : ss.
COUNTY OF UTAH)

On the 7 day of *May*, 1975, personally appeared before me TED L. HANKS, the signer of the above instrument, who duly acknowledged to me that he executed the same.

Martin E. Hallgren
Notary Public

Residing at: *Pleasant Grove, Utah*

My Commission Expires:

January 1 1978

COAL MINING LEASE AGREEMENT

PARTIES:

ESTATE OF HERBERT FLEISHHACKER, JR., by Walker Bank & Trust Company, Administrator With Will Annexed of the Estate of Herbert Fleishhacker, Jr., (hereinafter "Lessor"), on the one hand, and MESSRS. DICK E. BASTIAN, NOEL S. TANNER, MELDON J. TANNER, TED L. HANKS and FRANCIS W. CHRISTIANSEN (hereinafter "Lessees"), on the other hand.

DATE:

April 30, 1975

PLACE:

County of Emery, State of Utah.

RECITALS:

A. Lessor is the owner of the following described property situated in Emery County, Utah ("Property"), consisting of approximately One Hundred Twenty (120) acres, more or less, and more particularly described as follows:

SW/4 SE/4 SEC. 9, T. 16 S., R. 7 E., S.L.M.

SE/4 SW/4 SEC. 9, T. 16 S., R. 7 E., S.L.M.

SW/4 SW/4 SEC. 9, T. 16 S., R. 7 E., S.L.M.

The Property presently stands of record in said decedent's name.

B. Lessor owns all of the mineral and coal rights to the Property above described and desires to lease the coal rights only to the Lessees. Said Lessor excludes from this Lease Agreement, all oil, gas, geothermal and other mineral rights.

C. Lessor desires to lease the Property to Lessees and Lessees desire to lease the Property from

Lessor for the purpose of exploration, mining and removal of coal on and underlying the Property, upon the terms and conditions as hereinafter set forth.

AGREEMENT:

1. Lease of Premises. Subject to judicial or other governmental approval as Utah law may require, Lessor hereby leases the coal rights in and to the Property to Lessees and Lessees hereby lease the coal rights in and to the Property from Lessor on the terms, covenants and conditions following.

2. Purposes. Lessees are granted the right to prospect the Property, for coal, and to mine and remove by strip, surface or open-face mining, quarry, shaft, slope, drift or any other acceptable method of mining the coal on, in and underlying said premises, and to store, prepare for selling and sell said coal, and for such purposes, Lessees shall pay Lessor for any damage done to growing crops, or fences, gates and guards, caused by prospecting for coal. For purposes of this Lease Agreement "coal" shall include all coal in any form located upon the property, and excludes specifically oil, gas, geothermal and other mineral rights.

3. Usage of Property. Lessees are granted the right to use so much of the surface of said Property as may be required, necessary or convenient for any and all purposes incident to or connected with prospecting, mining, removal, preparation and selling of said coal, and transportation of coal on, under, to or from said Property, and to or from adjoining, adjacent or nearby lands, new or hereafter held, owned or leased by Lessees or their assigns. Lessees shall have the right to dig, drill, construct and use wells, ponds, pits and other excavations on said Property,

divert, dam and use any and all water courses on said Property in any and every legal manner which the Lessees deem necessary and/or convenient for the purposes for which this Lease Agreement is granted, together with the right to pump, drain and transport water out of any well, pit, pond, working place on, over, through or across said Property. Lessees shall in no event be liable to Lessor for any damages, or the pollution of any streams, wells, ponds or water courses, arising out of cave-ins or subsidence of said Property, not caused by the negligence of Lessees, Lessees' contractors, subcontractors, sublessees or their respective agents, employees, officers, licencees, invitees or their guests.

4. Term. The term of this Lease shall be for a period of ten (10) years commencing November 1, 1974, and expiring October 31, 1984, unless sooner terminated as provided in this Lease Agreement.

5. Minimum Royalty. Lessees agree to pay to Lessor or its order a minimum royalty of in cash, over the term of this lease ("Minimum Royalty"). The Minimum Royalty shall be due and payable in advance on each anniversary date of November 1, commencing November 1, 1974, and thereafter on each successive lease year, in accordance with the following schedule:

Lessor hereby acknowledges payment of the Minimum Royalty for the First lease year, to Lawton Fleishhacker.

6. Production Royalty. In the event that actual mining operations are commenced on the Property pursuant to this Lease Agreement, Lessees agree to pay as additional royalty ("Production Royalty") to Lessor, or its order, an amount equal to of the gross sales price of the coal at the tipple (which is understood to be at the minehead), without regard to receipt by Lessees of any sales price or income therefor. The Production Royalty shall be due and payable on or before the twentieth (20th) day of each month following the month in which coal has been mined. Lessees agree to maintain complete and accurate records regarding all survey, exploration, mining production and sales records and data relating to the Property. At Lessor's request, Lessees shall promptly provide certified copies of such records to Lessor. Lessees further agree to provide Lessor with a true and correct statement showing the tonnage of coal mined, and the amount of Production Royalty due on or before the twentieth (20th) day of each month. Production Royalty shall in all events be calculated against the then-applicable gross sales price of coal at the tipple, provided that said price shall be deemed to be at all times not less than Sixteen Dollars (\$16) per ton. The Minimum Royalty paid during any year in which production of coal by Lessees occurs shall be credited as an offset against any Production Royalty in such year.

7. Taxes. During the term of this Lease Agreement, Lessees shall timely pay all real and personal property taxes and all installments of assessments of any nature which have been or may be levied against the Property and which are applicable