



**Southern Utah  
Fuel Company**

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

Subsidiary of  
Coastal States  
Energy Company

*File: ACT/041/002  
# 3 & 15 w/map*

May 8, 1985

Mr. Wayne Hedberg  
Division of Oil, Gas and Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203

RECEIVED

MAY 10 1985

DIVISION OF OIL  
GAS & MINING

Dear Mr. Hedberg:

SUBJECT: SUBSTATION MODIFICATION

We herein request Division approval to upgrade our existing substation for a 69 kV power supply and to make changes necessary to conform to Utah Power and Light Company's current substation safety requirements. We believe the request can be processed and approved as a minor modification to our Mining and Reclamation Plan. To ensure power will be available for a planned conversion to longwall mining methods this fall, the modification to the substation must be made this coming summer.

The modification project will consist of replacing the existing 25 kV/12.5 kV transformer with a 69 kV/12.5 kV transformer and expanding the existing fenced perimeter to gain required safety clearances. In addition, a grounding grid will be buried inside the fence and eight feet outside the conductive segments of the fence to conform with Utah Power and Light Company's current substation safety requirements (drawing 85 Elect 114B). The total area affected is within the disturbed area previously calculated for bonding and is shown on the enclosed topographic map number 85.4.

To eliminate installing the ground grid on the slope of the hill, the current east and south fences will be replaced with nonconductive fences (drawing 85-3, Substation and Fence Layout). The south fence will be moved out an addition 5.5 feet from the substation pad to meet the minimum required distance of UP&L's code specifications for 69 kV power service. This will require excavating the bottom of the hillside on the southeast corner of the present substation. The cut slope will be moved back eight feet and will be reestablished at the present 1.5 to 1 slope.

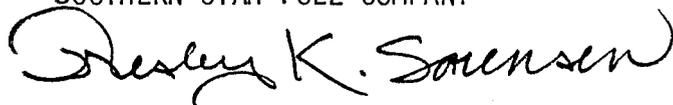
The topsoil from the cut extension above the present substation slope will be collected at the top of the slope. The estimated volume of topsoil is 19.4 cubic yards from a four inch depth over 1,570 square feet of surface area. After the slope has been cut back and reestablished, this topsoil will be distributed over the top of the new slope using a track backhoe. The estimated total volume of material to be excavated from the slope is 770 cubic yards. The excavated material will be used to repair the slope above the tire storage area where it has subsided and to build up the area north of the substation. The interception ditch used to bypass the undisturbed runoff from the area upslope of the substation pad will be reconstructed on the backside of the nonconductive fence from the bypass culvert drain on the north side of the substation to the undisturbed runoff interception ditch along the East Side road on the south side of the substation. Drainage area flow and ditch sizing calculations in our M&RP, Volume 8, pages 41h-5 will still apply. A revised diversion map to replace Map No. 83-2 in Volume 8 is included in this submittal.

The drop drain inside of the substation area will be removed or plugged off. As before, the entire substation area will be covered with a minimum of four inches of one to two-inch coarse gravel to inhibit vegetation growth on, and sediment contribution from, this area. The slope will be revegetated with the approved SUFCo reclamation seed mix during late fall. We still wish to maintain the small area exemption status for this area. A containment berm will be included around the fence to prevent flow of transformer oil away from the site in the event of an accidental spill. The new transformer contains 1500 gallons of oil. The surface area inside of the berm is 3,218 square feet not including the concrete pad which would only require a depth of 3/4 inch to contain an accidental oil spill. The spill would be cleaned up as outlined in our Spill Prevention Control and Countermeasure Plan.

During construction, it will be necessary to change the transformers at the substation which will require dragging them up and down the East Side road on a skid with two track bulldozers. This process may cause temporary damage to the drainage ditch along the road. If such damage occurs, it will be repaired immediately and to the standards required in our M&RP.

Please insert this request as an addendum in the back of Volume 8 of our M&RP and replace Map number 83-2 in Volume 8 with the revised map included with this modification submittal.

Sincerely,  
SOUTHERN UTAH FUEL COMPANY



Wesley K. Sorensen  
Chief Engineer

MD:cfc

Enclosures

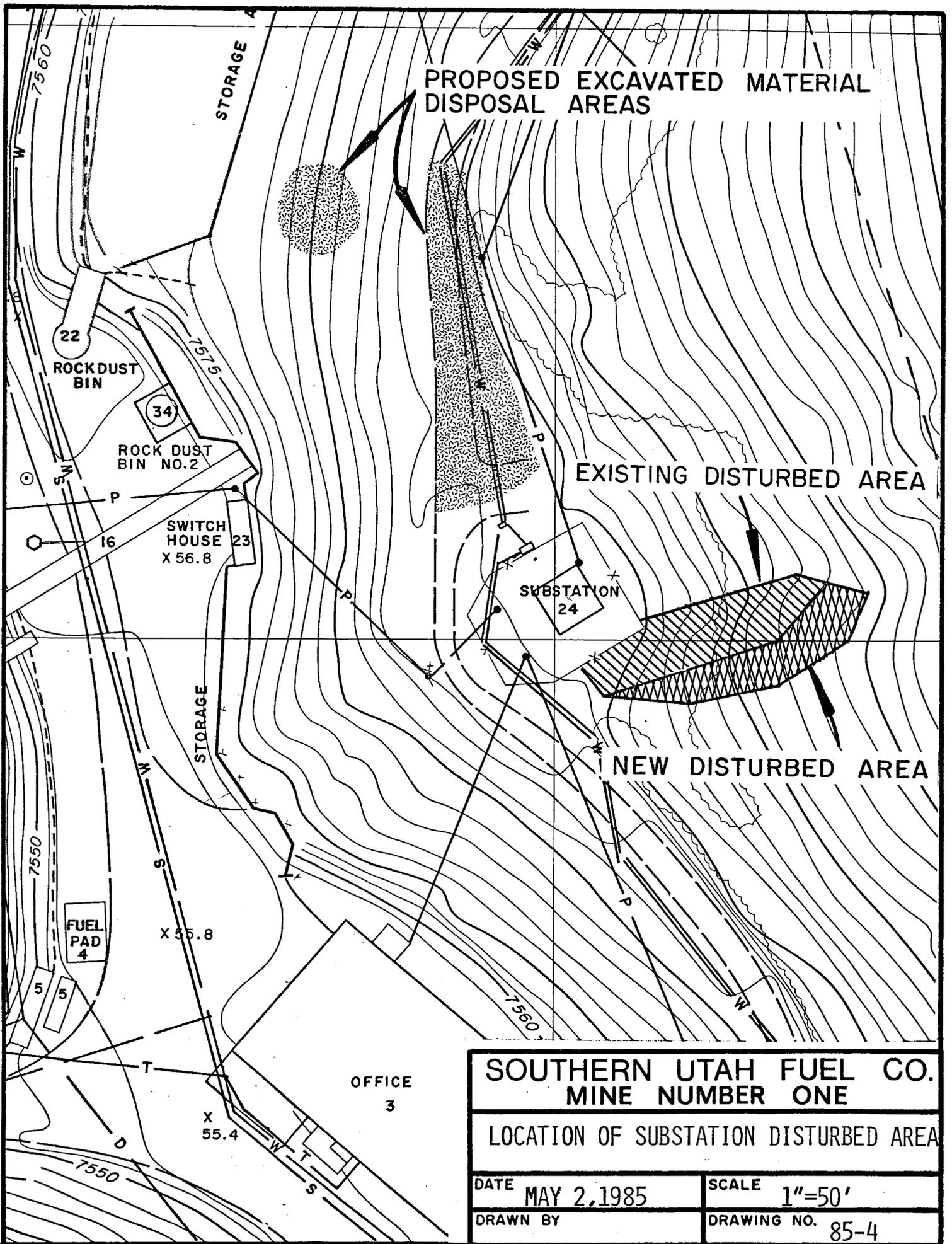
Mr. Wayne Hedberg  
May 8, 1985  
Page 3

xc: Mr. Charles R. Allred  
District Ranger  
Fishlake National Forest

Mr. Reed Christensen  
Supervisor  
Manti-LaSal National Forest

Mr. John Neibergall  
District Ranger  
Manti-LaSal National Forest

Sevier County Courthouse  
Richfield, Utah



**SOUTHERN UTAH FUEL CO.  
MINE NUMBER ONE**

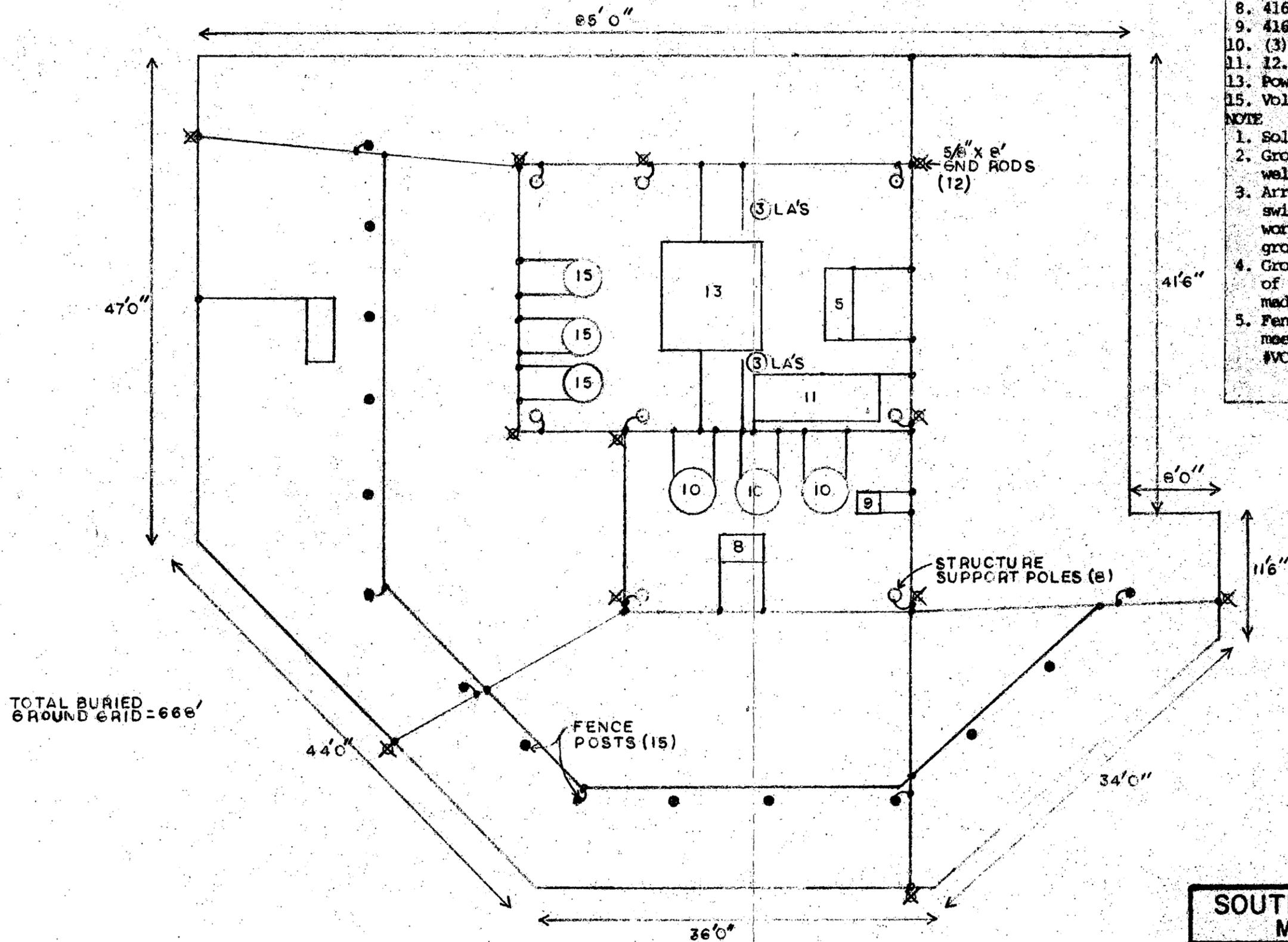
**LOCATION OF SUBSTATION DISTURBED AREA**

DATE **MAY 2, 1985**

SCALE **1"=50'**

DRAWN BY

DRAWING NO. **85-4**



- 3. (3) 60kV station arrestors.
  - 5. 69KV power circuit breaker.
  - 8. 4160V vacuum switch.
  - 9. 4160V ground resistor.
  - 10. (3) 833KVA power transformers
  - 11. 12.5kV ground resistor.
  - 13. Power transformer.
  - 15. Voltage regulators.
- NOTE
- 1. Solid line is 4/0 copper ground grid.
  - 2. Ground buss connections to be cad welded as much as practicable.
  - 3. Arrestors, metering transformers, and switches mounted on the structure framework are to have multiple paths to the ground grid.
  - 4. Ground grid is to be buried a minimum of one foot except where connection is made to equipment frames.
  - 5. Fence construction and grounding is to meet Utah Power and Light specification #VC-57923-C

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DIVISION OF OIL  
GAS & MINING

<b>SOUTHERN UTAH FUEL CO. MINE NUMBER ONE</b>	
69KV SUBSTATION GROUNDING	
DATE 3-26-85	SCALE 1"=10'0"
DRAWN BY ADB	DRAWING NO. B5ELECT 114B

TOTAL BURIED  
6 ROUND GRID=666'



**Southern Utah  
Fuel Company**

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

April 15, 1985

Ms. Susan Linner  
Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203

Dear Susan:

For several months, we have been investigating the adequacy of our electrical power supply at SUFCo in consideration of a planned conversion to longwall mining methods later this year. Both an electrical consulting firm and Utah Power and Light Company (UP&L) have assisted us in this study. This recently completed study shows that the existing 25 kV supply is indeed inadequate and must be replaced with a 69 kV distribution line.

Utah Power and Light Company's existing corridor will be used for the new line and we understand their right-of-way clearances are all in order. However, to conform with their new substation safety requirements, the substation pad at our minesite must be slightly modified to include a buried ground-grid both inside and outside the substation fence. No new area will be disturbed. However, an excavation into the bottom of the hillside immediately east and south of our present substation will be necessary to allow installation of the ground-grid to UP&L's code specifications. To ensure power will be available for the longwall equipment when it is installed next fall, the modification to the substation must be made this coming summer.

We assume we must now alter our Mining and Reclamation Plan to show the new substation modification. As before, the entire area will be covered with coarse gravel to prevent both vegetation growth and sediment contribution. In addition, a containment berm will be included to prevent flow of transformer oil away from the site in the event of an accidental spill. We still propose to keep the area exempt from flow through the main sediment pond.

File: ACT/641/006  
# 3, 15

Subsidiary of  
Coastal States  
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**APR 18 1985**

**DIVISION OF OIL  
GAS & MINING**

Ms. Susan Linner  
April 15, 1985  
Page 2

Engineering design of the substation area modifications is in progress at this time. A detailed plan of the construction activity proposed in the substation area will be submitted to the Division before May 1, 1985 for review. We expect Division approval will be required prior to June 1, 1985 to allow construction scheduling during the summer.

This preliminary notification of the forthcoming submittal is provided because we know you are in the midst of final overall M&RP plan approval through OSM and Washington, D.C. If you anticipate the need to include consideration of the substation modifications in your final dealings with OSM, let me know right away. Our preference would be for you to proceed with the permitting process and later (by July 1, 1985) approve the substation work as a minor modification to the overall Mining and Reclamation Plan.

Sincerely,

SOUTHERN UTAH FUEL COMPANY



Kerry A. Frame  
Mine Services Manager

KAF:cfc



**Southern Utah  
Fuel Company**

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

*File: Act/04/1002*  
*# 3, 7, 15 w/map*  
*Approved*  
Subsidiary of  
Coastal States  
Energy Company

**RECEIVED**

**JUN 19 1985**

**DIVISION OF OIL  
GAS & MINING**

June 11, 1985

Mr. Wayne Hedberg  
Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203

Dear Mr. Hedberg:

SUBJECT: Main Fan Diversion Modification

Because of a concern for water quality expressed by DOGM inspection personnel, Southern Utah Fuel Company requests Division approval to eliminate the main mine fan small area exemption from its Mine and Reclamation Plan. The proposed modifications will convey the runoff from this area through the sediment pond control facilities. The area involved was included in the original pond sizing design calculations. The condensation from the humid mine air generates a small amount of water that runs out of the fan into the small area exemption. Runoff within the area also picks up rock dust deposited by the fan. The silt fence sediment control facility used to treat this water has had limited success. The average water quality of this drainage for the first quarter of 1984 is: Fe 7.41 mg/l, TSS 1,302 mg/l, TDS 3,193 mg/l, and a pH of 7.20.

The following is provided for your consideration in approving the proposed drainage change. A request for a small area exemption for the main mine fan area was requested in 1981 after the new fan was installed because of the difficulty in draining water from this area to the sediment pond. This area is nine feet lower than the yard drainage system. The total area of all the surface facilities including the fan area was included in the ATOF (area top of fill) category in Merricks' hydrologic work in 1979, Exhibit 9, Volume 2 of the M&RP. The same ATOF hydrologic data including the fan area was used by Valley Engineering to design the current sediment pond in 1980, Drainage/Sediment Control, Volume 6 of the M&RP. The pond was shown to meet the design criteria in the July 15, 1983 submittal to DOGM.

The ATOF has the following calculated design values:

- Acres: 12.0
- Runoff Volume: 0.49 Ac. Ft. for a 10 year, 24 hour event
- Peak Flow: 9.2 cfs

Mr. Wayne Hedberg  
June 11, 1985  
Page 2

The main mine fan area which is included in the above values has the following calculated contribution to the ATOF design values:

- Acres: 0.23
- Runoff Volume: 0.02 Ac. Ft. for a 10 year, 24 hour event
- Peak Flow: 0.176 cfs

The modification project will consist of installing a sump pump with automatic float controls in front of the main mine fan. This sump pump will collect the runoff from this area and pump it into the yard drain line which discharges into the sediment control facilities (see Revised Mine Drainage Diversion Map 83-2). In addition, the undisturbed interception ditch will be modified by moving the riprap ditch above the area affected by the rock dust. Pipes will be installed down the slope and through the fan area to the present drain line box to the ESC bypass culvert, this drain line box will be capped and sealed to prevent runoff from the fan area entering it. The drainage modification calculations are included on the enclosed revised pages of our M&RP.

This submittal has been prepared following the format outlined in Dr. Nielson's May 6, 1985 letter. Although we are concerned that this will obscure the record of the M&RP development, please replace the appropriate pages with the enclosed revised pages and diversion Map 83-2 in your copies of Volume 8 of our Mining and Reclamation Plan. If you have any questions, please call Mike Davis at 637-4880.

Sincerely,  
SOUTHERN UTAH FUEL COMPANY

  
Wesley K. Sorensen  
Chief Engineer

MD:cfc

Enclosures

xc: Mr. Charles R. Allred  
District Ranger  
Fishlake National Forest

Mr. Reed Christensen  
Supervisor  
Manti-LaSal National Forest

Mr. John Neibergall  
District Ranger  
Manti-LaSal National Forest

Sevier County Courthouse  
Richfield, Utah

4. East Spring Canyon and Mud Spring Hollow Bypass Culverts

The calculations for the diversion for this drainage is described in the Merrick and Company Study, Volume 2. The culverts are located and were built as shown in the Valley Engineering Alternate #1.

5. Sediment Pond Access Road Diversion

This diversion is described in the Valley Engineering Alternate #1, Volume 6.

6. Sediment Trap-Sediment Pond Diversion System

This diversion collects all the runoff from the disturbed area, the drainage from the contributing basin west (CBW) and the toe of the east slope behind the warehouse and office facilities. All of these drainage areas flow across the mine yard into the sediment trap and sediment pond diversion system as shown in the Valley Engineering Alternate #1, Volume 6.

7. Sediment Pond Spillway

This diversion is described in the Valley Engineering Alternate #1 and in the 1983 Completeness Response to Comment UMC 817.47.

8. Substation Pad Diversion

The runoff from a small area (0.188 acres as delineated on Exhibit 9-1, Volume 2) enclosing the mine main power substation will be diverted into the east side road diversion ditch. Since the substation pad is on the uphill drainage of the diversion ditch, channeling the runoff to the sediment pond without ponding water on the pad is technically and economically unfeasible and could create a hazardous and unsafe area. Prior ponding of water on the substation pad has caused saturation of the area and initiated movement of the slope and substation. Because of these considerations, the runoff of the pad above the east side road diversion ditch will be diverted away from the sediment pond facility into the east side road diversion ditch in accordance with the small area exemption criteria.

9. Main Mine Fan Diversion

The runoff from a small area (0.23 acres) enclosing the main mine fan is located in a depression which is nine feet below the adjacent mine yard drainage system. A sump pump with automatic float controls in front of the main fan will pump the runoff from this area into the yard drain line which discharges into the sediment control facilities.

Riprap sizes used in minesite diversions were sized in accordance with the table presented in the 1981 mine plan submittal, Comment 817.44, Volume 7. The design velocity calculations and assumptions used in conjunction with the chart were obtained from either the Merrick and Company Study, the Valley Engineering design, or SUFCo calculations as discussed in 1983 Completeness Response to Comment UMC 817.47, Volume 8.

UMC 784.22 Diversions:

Response: (cont'd)

3. Item #9 are located in the DOC/TD (July, 1983) Response Comment  
UMC 817.43

The comments under #4 and #7 are no longer applicable, see revised Map 83-2 and response to UMC 817.42, page 36b, Volume 8.

A diversion not specified above is the substation pad undisturbed interception ditch which diverts the undisturbed runoff from CBE away from the substation pad to prevent saturation of the area. Saturation in the past has caused some slope movement. The cross-section and required riprap layer are discussed in the DOC/TD (July, 1983) Response to Comment UMC 817.43

UMC 817.42 Hydrologic Balance: Water Quality Standards and Effluent Limitations:

(a)(3)(i) The three areas for which the operator has requested small area exemption status in the 1983 ACR Response (Volume 8) must have alternate sediment control facilities. Additionally, the operator is required to demonstrate that the drainage will meet effluent limitations. The south end parking lot area has a proposed silt fence treatment facility. The substation pad and the main mine fan areas must also have alternate sediment control measures. The applicant must also commit to a plan for sampling the drainage from these areas during runoff events to demonstrate effluent limitation compliance. Reports of the sample analysis must be submitted to the Division until the sample size is determined to be adequate.

Response:

Two of the above three areas were added back into the sediment control system; The parking lot in 1984, and the main mine fan in 1985. The substation pad area qualifies for small area exemption and will be equipped with alternate sediment control facilities. The substation pad area will be graveled and equipped with silt fence sediment control facilities. Sampling of the area will be done on a monthly basis during snowmelt runoff. Runoff from major precipitation events that occur during the day when engineering staff are available to collect the sample, will be sampled. Reports of the results of the sampling will be submitted quarterly (February, May, August, November) to the Division of Oil, Gas and Mining until the sample size adequately represents the effluent quality during such events. The parameters to be measured will be those as required under the NPDES permit for mine discharges.

<u>Size</u>	<u>A</u>	<u>R</u>	<u>Q</u>	
12	0.79	0.25	3.54	No Good
18	1.77	0.375	10.39	Good
15	1.23	0.28	5.94	No Good

Use 18" corrugated metal pipe

Q/Q Full = 0.60                      V = 3.5 fps

### 3. East Side Road Continuance Diversion

Calculations are presented in the Merrick and Company Study, Volume 2.

### 4. Sediment Pond Access Road Diversion

Calculations are presented in the Valley Engineering design study incorporating a design freeboard of no less than 0.3 feet.

$$A = 1.92$$

$$R = 0.48$$

$$S = 15\%$$

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2} \text{ from Manning}$$

$$n = 0.045$$

$$Q = 24.62 \text{ cfs}$$

The diversion is more than adequate to handle the total contributing basin west (CBW) which Merrick and Company calculated to have a peak flow of 9.5 cfs for the 10-year, 24-hour precipitation event. This drainage diversion handles only a part of the contributing basin west drainage whereas most of the runoff from CBW flows through the yard to the sediment trap system and then on to the sediment pond.

5. Sediment Pond Spillway

Calculations are in the Completeness Response to Comments UMC 817.47 and UMC 817.46, Volume 8.

6. East Spring Canyon and Mud Spring Hollow Bypass Culverts

Calculations for these bypass culverts are presented in the Merrick and Company Study, Volume 2.

7. General Sediment Trap/Sediment Pond Diversion System

Calculations for the sediment trap/sediment pond diversion system are presented in the Merrick and Company Study, Volume 2, and in the Valley Engineering calculations, Volume 6.

## 8. Substation Pad Diversion

Area of the substation pad is 0.188 acres. Since the peak flow for 10-year, 24-hour event is 9.2 cfs for 12.0 acres (for the area top of fill as calculated in the Merrick and Company Study), the 0.188 acre substation pad has a corresponding Q of 0.14 cfs. The runoff flow for the east side road diversion was calculated by Merrick and Company to be 6.2 cfs. The ditch handling the east side road runoff was designed for 7.1 cfs. Therefore, the combined total of 6.34 cfs is still well under the 7.1 cfs design sizing for the diversion interception ditch.

## 9. Main Mine Fan Diversion

Diversion area around fan is 0.23 acres. Using the same reasoning as Item 8 just above, the  $Q = 0.176$  cfs.

Calculations for the sump pump and pipeline are:

$$Q = 0.176 \text{ cfs} = 79 \text{ gal/min}$$

$$\text{Elevation head on pump} = 9 \text{ feet}$$

Friction losses for 4" Std. steel pipe at 80 gal/min = 0.788 head loss/100 ft. From pump operator's data table.

$$\begin{aligned} \text{Head equivalent for 4" pipe} &= (82' \text{ equiv. leng.})(.788/100 \text{ ft}) \\ &= 0.65 \text{ feet} \end{aligned}$$

$$\text{Total dynamic head} = 9.65 \text{ feet}$$

A sump pump with characteristics that will meet these conditions will be installed. One such pump is a Prosser 2 Hp, 1 PH, 60 HZ, 230 volt mine pump.

Riprap sizes used in minesite diversions were sized in accordance with the table presented in the 1981 mine plan submittal under part 817.44, Volume 7. The design velocity calculations and assumptions used in conjunction with the chart were obtained from either the Merrick and Company Study, the Valley Engineering design, or SUFCo calculations as discussed in the 1983 Completeness Response to Comment UMC 817.47.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
Shallow Ground Water Flow and Ephemeral Streams:

DEFICIENCIES (cont'd)

8. The undisturbed drainage from the area directly north of the ATOF (warehouse) should be diverted to the ESC or MSH culvert using a diversion ditch around the fill perimeter. The operator should address this area and present plans and calculations for any existing or proposed diversions.
9. The branch from the bypass substation culvert extending in a north-east direction (see Exhibit 9.1, Volume 2) should be explained and detailed in the plan and calculations if this is in fact a proposed culvert or diversion.

Response:

The design plans for diversions #5, 6, 9 and 10 as labeled under Comments for UMC 784.22 are included under the responses below which correspond to the item numbers needing clarification or corrections.

1. The CBE diversion has been designed for a 0.3 feet freeboard. The East side road which is the CBE diversion ditch depicted in Volume 2 as 0.6 feet deep has a one foot high berm along the edge of the road for the freeboard as shown in the East side road cross-sections in Appendix 784.18 in the 1981 Responses to the Completeness Review, Volume 7.
2. This deficiency concerning the parking lot is no longer applicable because the exemption was eliminated in 1984. All runoff is now treated through the sediment control facilities.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
 Shallow Ground Water Flow and Ephemeral Streams:

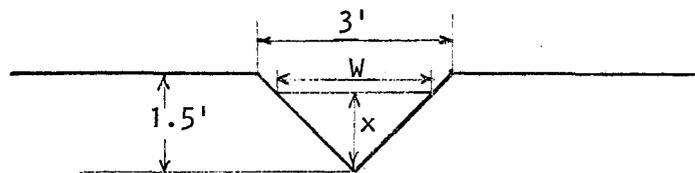
3. East Road Continuance Diversion.

Q = 6.2 from Merrick and Company Study, Volume 2, Exhibit 9

S = 10% Minimum

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2} \text{ from Manning}$$

n = 0.045



<u>W</u>	<u>X</u>	<u>A</u>	<u>R</u>	<u>Qcfs</u>
3	1.5	2.25	0.53	15.4
3	1.0	1.5	0.42	8.73
3	0.8	1.2	0.35	6.22

Therefore, the size of this diversion (3' x 1.5') is adequate to handle the runoff with a freeboard of 0.3 feet. The riprap size required is 4" as determined using the riprap chart presented in the 1981 Completeness Response for comment 817.44, Volume 7. The discharge from this channel is directed on an existing boulder in the natural drainage as an energy dissipator.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
Shallow Ground Water Flow and Ephemeral Streams:

Response: (con't)

4. The mine yard drainage system was not planned or designed to handle the 10-year, 24-hour peak flow. The mine yard surface area is the diversion for the 10-year, 24-hour peak flow. The surface area is graded to divert all the runoff flow to the sediment trap leading to the sediment pond treatment facility. The mine yard drain system was installed to handle the normal surface flow to reduce the mud and erosion in the mine yard. The main mine yard drainage system consists of drop drains and a 10" pipeline leading to the sediment trap. The runoff overflow to this system will run over the surface to the sediment trap.
  
5. Applicant does not have the hydrologic expertise in-house to supply method of calculations and design for the determination of the peak flow for the 10-year, 24-hour storm event to meet the July 8, 1983 submittal date. Applicant commits to having a qualified consulting firm prepare the calculations and diversion design for submittal to the Division of Oil, Gas and Mining for its review before these diversions are installed.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
 Shallow Ground Water Flow and Ephemeral Streams:

Response: (cont'd)

6. The size of riprap used in the diversions requiring riprap that are not already included in this response and with corresponding velocity values used in determination of that size are:

	<u>Diversion</u>	<u>Riprap Size</u>	<u>Velocity</u>	<u>Velocity or Riprap Source</u>
1.	East Side Road (CBE)	1/2"	1.97 fps	Merrick & Co.  (Volume 2, Exhibit 9)
2.	Sediment Pond  Access Road	3" Class III		Valley Engineering Design  (Sheet 2)
3.	Sediment Pond  Spillway	30"	18 fps	page 50, Volume 8

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
Shallow Ground Water Flow and Ephemeral Streams:

Response: (cont'd)

7. Pipe #5 Diversion

Drainage from the proposed pipe #5 (Exhibit 9-2) south to the corner of the road leading into the mine drains north toward the pipe. The drainage area (11.48 acres) south of the CBW will be diverted through the pipe across the mine and sediment pond access roads and will not drain into the sediment pond. The area delineated as CBW on Exhibit 9-9 currently drains to the sediment pond.

Applicant does not have the hydrologic expertise in-house to supply method of calculations and design for the determination of the peak flow for the 10-year, 24-hour storm event to meet the July 8, 1983 submittal date. Applicant commits to having a qualified consulting firm prepare the calculations and diversion design for submittal to the Division of Oil, Gas and Mining for its review before this diversion is installed.

8. Area north of ATOF diversion - The undisturbed drainage (1.83 acres) from the area directly north of the ATOF is diverted both ways to the East Spring Canyon (part A) and Mud Spring Canyon (part B) culverts. This diversion consists of a riprapped diversion ditch running along the edge of the disturbed area from the MSH culvert behind the warehouse annex to the yard fence. The flow to ESC is then piped through the main mine fan diversion to ESC culvert. The runoff directly above the mine fan diversion is diverted through 6" pipe drain lines down the slope and through the fan area into the ESC culvert as shown on Map 83-2.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
Shallow Ground Water Flow and Ephemeral Streams:

Response: (cont'd)

9. The two branches and three drop drains on the substation pad leading to the bypass substation culvert are 12" c.m.p. culverts. The substation pad surface area will be graded, graveled and sloped to divert the 10-year, 24-hour event to the east side road diversion which runs on the outside edge of the pad area. The drop drains and culverts will help divert part of the runoff flow to the CBE bypass culvert to reduce the time and runoff water will be on the pad area to reduce the chance of water migrating through the substation pad fill and lubricating the substation slide slip zone.
10. A diversion not specified above is the substation pad undisturbed interception ditch which runs above the substation pad. This diversion diverts part of the undisturbed area (CBE) runoff away from the substation pad to prevent saturation of the area. Saturation in the past has caused some slope movement.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
 Shallow Ground Water Flow and Ephemeral Streams:

Response:

The following assumptions and input calculations are supplied for the determination of the peak flow for the 10-year, 24-hour storm event for items 5, 7, 8 and 10 of the DOC/TD-July 1983 submittal, Volume 8:

ASSUMPTIONS AND INPUT CALCULATIONS

<u>Area</u>	<u>Acres</u>	<u>CN</u>	<u>Length</u>	<u>Change In Elevation</u>	<u>Tc*</u>	<u>QP (cfs)</u>
CBE Substation Bypass Culvert	16.07	72	1,250	630	0.121	4.09
Substation Pad	0.39	90	285	10	0.08	0.40
Area North of ATOF Part A	1.8	79	900	425	0.112	0.91
Part B	18.4	79	1,850	745	0.167	3.78
Area Upslope of Substation Pad Undisturbed Drainage Ditch	6.9	72	820	390	0.117	0.96
CBW Draining to Pipe #5	11.48	79	1,450	794	0.121	5.81

\*Calculated as mean of four methods: Kirpich's, Kent's, USBR/Kirpich and Hathaways.

The design calculations for the above diversions follow:

A. Item #5, p. 41e

1. CBE Substation Bypass Culvert

$$Q_p = 4.09 \text{ cfs}$$

$$Q_p \times 1.5 \text{ S.F.} = 6.14 \text{ cfs}$$

Design flow used was 6.2 cfs Volume 8, p. 37. Therefore, this diversion design is adequate with  $Q = 10.39$  cfs for the 18" culvert.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
 Shallow Ground Water Flow and Ephemeral Streams:

Response: (cont'd)

2. Substation Pad

$$Q_p = 0.40 \text{ cfs}$$

$$Q_p \times 1.5 \text{ S.F.} = 0.6 \text{ cfs}$$

The added runoff from the substation pad (0.6 cfs) combined with the CBE runoff (6.2 cfs Merrick and Company East Side Road Volume 2, Exh. 9) has the combined total of 6.8 cfs which is still under the 7.1 cfs design sizing for the diversion interception ditch (Merrick and Company Volume 2), the 10.39 cfs sizing for the 18" substation Bypass Culvert (Vol. 8, p. 38) and the East Road Continuance Diversion sizing for 8.73 cfs (Vol. 8, p. 41d).

B. Item 7, p. 41g - Pipe #5 Diversion

$$Q_p = 5.81 \text{ cfs}$$

$$Q_p \times 1.5 \text{ S.F.} = 8.71 \text{ cfs}$$

$$S = 2\%$$

$$n = 0.024$$

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2} \text{ from Manning}$$

<u>Size</u>	<u>A</u>	<u>R</u>	<u>Q cfs</u>	<u>v fps</u>
18"	1.767	0.375	8.05	
21"	2.405	0.437	12.13	5.04

Use 21" corrugated metal pipe.

The riprap size required for outlet with 5.04 fps velocity is 4" as determined using the riprap chart presented in the 1981 Completeness Response for comment 817.44, Volume 7.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
Shallow Ground Water Flow and Ephemeral Streams:

Response: (cont'd)

C. Item 8, p. 41g - Area North of ATOF

- A. Part A as shown on Map 83-2 of the Area North of ATOF flow (Q = 0.91 cfs) is diverted to the ESC bypass culvert with diversion ditches and 6" pipe drain lines down the steep slope and through the fan area.

For the 6" steel pipe drain lines.

$$Q_p = 0.91$$

$$S = 6.7\% \text{ min.}$$

$$n \doteq 0.015 \text{ for smooth pipe}$$

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2} \text{ from Manning}$$

$$A = 0.196 \quad R = 0.125 \quad Q = 1.26 \text{ cfs} \quad v = 6.4 \text{ fps}$$

Therefore, the six inch steel pipe is more than adequate to handle the runoff of 0.91 cfs.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
Shallow Ground Water Flow and Ephemeral Streams:

Response: (cont'd)

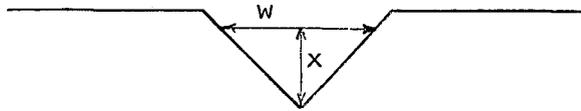
For the diversion ditch design and cross section to the 6" pipe.

$$Q_p = 0.91$$

$$S = 4\% \text{ min.}$$

$$n = 0.045$$

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2} \text{ from Manning}$$



$$\frac{W}{1.5}$$

$$\frac{X}{0.7}$$

$$\frac{A}{0.525}$$

$$\frac{R}{0.255}$$

$$\frac{Q}{1.39}$$

$$\frac{v}{2.65}$$

Therefore, a diversion ditch 1.5 feet wide and one foot deep is adequate to handle the runoff ( $Q = 1.39$  cfs) with a freeboard of 0.3 feet. The riprap size required for  $S = 25\%$  max., ditch 1.5 feet wide, flow is .3 deep,  $Q = 0.996$  cfs,  $v = 4.43$  fps is 3" as determined using the riprap chart presented in the 1981 Completeness Response for comment 817.44, Volume 7.

2. Part B of the Area North of ATOF runoff flow ( $Q = 3.78$  cfs) is diverted with a diversion ditch to Mud Spring Hollow Bypass Culvert.

$$Q_p = 3.78 \text{ cfs}$$

$$Q_p \times 1.5 \text{ S.F.} = 5.67 \text{ cfs}$$

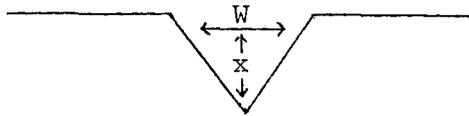
$$S = 4\%$$

$$n = 0.045$$

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2} \text{ from Manning}$$

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow, Shallow Ground Water Flow and Ephemeral Streams:

Response: (Cont'd)



$\frac{W}{2.5}$	$\frac{X}{1.2}$	$\frac{A}{1.5}$	$\frac{R}{0.434}$	$\frac{Q}{5.68}$	$\frac{v}{3.79}$
-----------------	-----------------	-----------------	-------------------	------------------	------------------

Therefore, a diversion ditch 2.5 feet wide and 1.5 feet deep is adequate to handle the runoff with a freeboard of 0.3 feet.

The rip rap size required for  $v = 3.79$  fps is 2" as determined using the rip rap chart presented in the 1981 Completeness

Response for comment 817.44, Volume 7.

D. Item 10, p. 41h - Area Upslope of Substation Pad Undisturbed Drainage Ditch

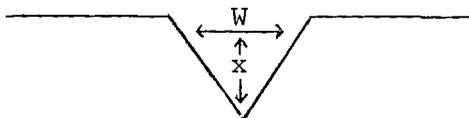
$Q_p = 0.96$  cfs

$Q_p \times 1.5$  S.F. = 1.44 cfs

$S = 2\%$

$Q = \frac{1.49}{n} AR^{2/3} S^{1/2}$  from Manning

$n = 0.045$



$\frac{W}{2}$	$\frac{X}{1}$	$\frac{A}{1.0}$	$\frac{R}{0.35}$	$\frac{Q}{2.3}$	$\frac{v}{2.3}$
2	.8	.8	0.313	1.72	2.15



STATE OF UTAH  
NATURAL RESOURCES  
Oil, Gas & Mining

Norman H. Bangerter, Governor  
Dee C. Hansen, Executive Director  
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

March 19, 1985

Mr. Allen D. Klein, Administrator  
Western Technical Center  
Office of Surface Mining  
Brooks Towers  
1020 Fifteenth Street  
Denver, Colorado 80202

Dear Mr. Klein:

RE: Response to Division of Oil, Gas and Mining Deficiency  
Letter, 5 East Breakout Portal, Southern Utah Fuel  
Company, Convulsion Canyon Mine, ACT/041/002, #3, #4 and  
#15, Sevier County, Utah

Enclosed please find four (4) copies of Southern Utah Fuel Company's response to deficiencies outlined by Division correspondence dated March 11, 1985. This modification was approved by the Division on March 15, 1985.

Should you have questions pertaining to this information, please call me.

Sincerely,

A handwritten signature in cursive script, appearing to read "D. Wayne Hedberg".

FOR

D. Wayne Hedberg  
Permit Supervisor/  
Reclamation Hydrologist

DH/btb

cc: Dave Darby  
Randy Harden  
Sue Linner  
Tom Portle

0338R-32



UNITED STATES DEPARTMENT OF AGRICULTURE  
 FOREST SERVICE  
 FISHLAKE N. F.  
 RICHFIELD R. D.  
 115 EAST 900 NORTH  
 RICHFIELD, UTAH 84701

File AC/041/002  
 #3,2

#15 w/mpp

Reply To: 2820 SUFCO

Date: March 14, 1985

RECEIVED

SUE LINNER  
 DIVISION OF OIL GAS & MINING  
 355 W N TEMPLE  
 3 TRIAD CENTER SUITE 350  
 SALT LAKE CITY, UTAH  
 84180-1203

MAR 14 1985

DIVISION OF OIL  
 GAS & MINING

Dear Ms. Linner;

This letter provides concurrence to the ventilation portal requested by SUFCO in section 5 T.22 S. R.5 E. Please advise them of our action. if futher help is needed please advise District Ranger Charles Allred or Darrel Hintze. We appreciate your cooperation and concern for the environmental impacts generated from this mining activity.

Sincerely,

*J. Kent Taylor*  
 J. KENT TAYLOR  
 Forest Supervisor

cc:Ken Payne. SUFCO  
 cc:OSM.Denver



Ken Payne  
General Manager



**Southern Utah  
Fuel Company**

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

*File Act/041/002  
# 2, 3  
maps to #15  
+ M&R copies*

Subsidiary of  
Coastal States  
Energy Company

March 12, 1985

Ms. Susan Linner  
Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203

Dear Ms. Linner:

The additional information you requested by telephone on March 8, 1985 regarding the 5 East breakout portal is included below:

1. Attached is a partial print of the USGS Accord Lakes quadrangle sheet showing the breakout location. Note that it is on the Fishlake Forest in the W 1/2, NE 1/4, NE 1/4, section 5, T225, R5E.
2. Extraordinary care will be exercised in "holing through" to the surface to minimize downslope casting of material. Material will be pulled back into the mine entries. No pads will be constructed on the slope. The slope gradient is in excess of 100%.
3. The 5 East breakout area will be reclaimed in the same manner as previously committed for other portals broken out from within the mine. Those commitments are addressed in M&RP, Volume 8, February 1984 response to stipulation 817.56-(1-5)-DD and include:

Reclamation of Breakout Areas -- The area to be disturbed at the site is less than one acre (approximately 30 feet square) and a detailed reclamation plan should not be required for a site of this size. However, the regulatory authorities have required that methods be discussed if they are to vary from those proposed for the primary mine portal area in East Spring Canyon, or to show that they do not vary from those proposed for the mine portal area. Such discussion follows.

Sealing -- A breakout seal will be constructed in the breakout area from the inside as shown on the Typical Portal Seal drawing presented in Volume 3 at page 216. The seal will be of a substantial design and constructed of concrete block utilizing a waterproof sealant such that the seal will withstand the hydraulic head that could develop if the entire mine was inundated.

In compliance with 30 CFR 75.1711-2, seals will be installed in all entries as soon as mining is completed and the mine is to be abandoned. Prior to installation, all loose material within three feet of the seal area will be removed from the roof, rib, and floor. The mine entry seals will be made of solid concrete blocks (average minimum compressive strength of 1,800 psi; tested in accordance with A.S.T.M. C-140-70) and mortar (one part cement, three parts sand, and no more than seven gallons of water per sack of cement).

Seals will be installed in the following manner: The seal will be recessed at least 16 inches deep into the rib and 12 inches deep into the floor. No recess will be made into the roof. The blocks will be at least six inches high except on the top course, and eight inches wide. The blocks will be laid and mortared in a transverse pattern. In the bottom course, each block will be laid with the long axis parallel to the rib. The long axis in succeeding courses will be perpendicular to the long axis block in the preceding course. An interlaced pilaster will be constructed in the center. The seals will have a total thickness of 16 inches. The entry will then be backfilled and graded to the slope of the area surrounding the portal entry. For details, see Figures 783.13/A and 783.13/B.

Revegetation -- The 5 East breakout area consists of one portal located on a north-facing slope in the pinyon-juniper and douglas fir community type. This community is very similar to the other portal sites. Vegetation and soils information is contained in M&RP, Volume 5, in "Report of Studies of Vegetation and Soils for Coastal States Energy Company Convulsion Canyon Mine of Southern Utah Fuel Company (SUFCo) Sevier County, Utah". The disturbance area at the site will be so small as to create minimal disturbance to the surrounding vegetative communities. The understory grass and forb species of this community type are very similar to that found in the mine portal area and, therefore, no change in the seed mix is recommended for reclaiming this site. After sealing and burial of the breakout opening, scarification of the slope by hand raking will take place. Then the appropriate amounts of the standard seed mix will be planted. Establishment of shrub species will take place by natural reinvasion.

Ms. Susan Linner  
March 12, 1985  
Page 3

This information along with the original January 28, 1985 request for the 5 East portal breakout attached as Exhibit I should be included as part of our M&RP in the back of Volume 8. Included are the seven copies required to update the M&RP.

Sincerely,  
SOUTHERN UTAH FUEL COMPANY

  
Ken Payne  
V. P. & General Manager

WKS:cfc

Enclosures

xc: Fishlake Forest  
Manti-LaSal Forest  
Sevier County Recorder

Ken Payne  
General Manager

EXHIBIT I



**Southern Utah  
Fuel Company**

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

Subsidiary of  
Coastal States  
Energy Company

January 28, 1985

Mr. Ron Daniels  
Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203

Dear Mr. Daniels:

We herein request Division approval to construct a new ventilation portal into Quitchupah Canyon at the eastern outcrop of our Southern Utah Fuel Company Mine Number One. We believe the request can be processed and approved as a minor modification to our Mining and Reclamation Plan submittal.

Two maps of SUFCo's underground operations are enclosed. Map One shows the entire underground operation and mine layout. Map Two shows the proposed portal location and details underground entry development required for access to the single opening.

The proposed new portal will be used for ventilation air intake to the easterly section in the mine. In addition, it will also provide increased safety to the miners by allowing for quick escape from the 5 East and 6 East work areas in the event the mine requires evacuation.

Portal construction in this area has been previously addressed as part of the Mining and Reclamation Plan submittal. The portal we are now requesting is in the same location as the one originally shown in Volume 1, Map 1-A. It is also indicated on Map 80-2, Volume 3 at the northern end of the 4 North entries. Underground mine planning has varied from the projections of both Map 1-A and Map 80-2 with regard to panel orientation.

With your approval, work on this project will begin near the end of March 1985. This portal will be constructed in a similar manner to the 3 East and Quitchupah portal projects except that only one opening to the surface will be made. For construction details, see our mine plan submittal, Volume 3, pages 215-219. There are no plans for any surface access to the location or any surface construction activity. We are not expecting any water drainage from the portal since mining activity will include measures to prevent water discharge. Upon abandonment, this portal will be sealed according to the Mining and Reclamation Plan submittal, Volume 3, page 215.

Mr. Ron Daniels  
January 28, 1985  
Page 2

Our archeological consultants performed a cultural resource inventory near to the proposed portal in 1982. The conclusion and recommendations of that inventory indicate a low probability of resource impact. A copy of that report is attached.

Please review and approve this request. If you have any questions or need more information, contact myself or Bob Ochsner.

Yours truly,  
SOUTHERN UTAH FUEL COMPANY



Ken Payne  
V. P. & General Manager

REO:cfc

Enclosures

xc: Sam Rowley, BLM



# ARCHEOLOGICAL - ENVIRONMENTAL RESEARCH CORPORATION

588 West 800 South Bountiful, Utah 84010  
Tel: (801) 292-7061 or 292-9668

January 8, 1982

Subject: Cultural Resource Inventory of a Coal Mine  
Ventilation Breakout in the Little Duncan  
Mountain Locality in Sevier County, Utah.

Project: Southern Utah Fuel Company, Mine Number 1

Project No.: CSEC-82-1

Permit: NA

To: Mr. Keith Welch, Environmental Coordinator,  
Coastal States Energy Company, 411 West  
7200 South, Suite 200, Midvale, Utah 84047

#### GENERAL INFORMATION:

On January 6, 1982, AERC was requested to do a cultural resource inventory of a proposed ventilation portal breakout in the 3 East drift of Southern Utah Fuel Company's Mine Number One. The proposed ventilation portals will be opened from within and are located in Township 21 South, Range 5 East, NE $\frac{1}{4}$  of the SW $\frac{1}{4}$  of the SW $\frac{1}{4}$  of the NE $\frac{1}{2}$  of Section 32 (see map). The area of impact to the surface will be limited to the actual positions of emergence which will consist of three portals, each approximately 10 feet high by 18 feet wide, spaced about 30 feet apart. No new roads are proposed as surface access to these portals.

Snow cover and the steep northeast facing slope precluded examination of breakout area at this time. Surface access to the proposed portal location would be difficult even without snow cover, however, because of the steepness of the slope.

#### CONCLUSION AND RECOMMENDATIONS:

The location of the proposed impact area will be on a steep (35<sup>0</sup>) northeast facing slope at an elevation of about 7600 feet where the possibility for a cultural resource site, based on previous AERC inventories in adjacent areas, is considered extremely low. In addition, the total surface area of the proposed disturbance will be limited to the size of each portal and will be located within the face of the coal outcrop. For these reasons, AERC does not consider that an inventory evaluation of the actual surfaces is warranted and recommends that a cultural resource clearance be granted to Southern Utah Fuel Company based upon adherence to the following stipulation:

A qualified archeologist is consulted should cultural remains from surface or subsurface deposits be exposed during construction of the portals.

*Dennis G. Weder*

---

Dennis G. Weder  
Staff Archeologist

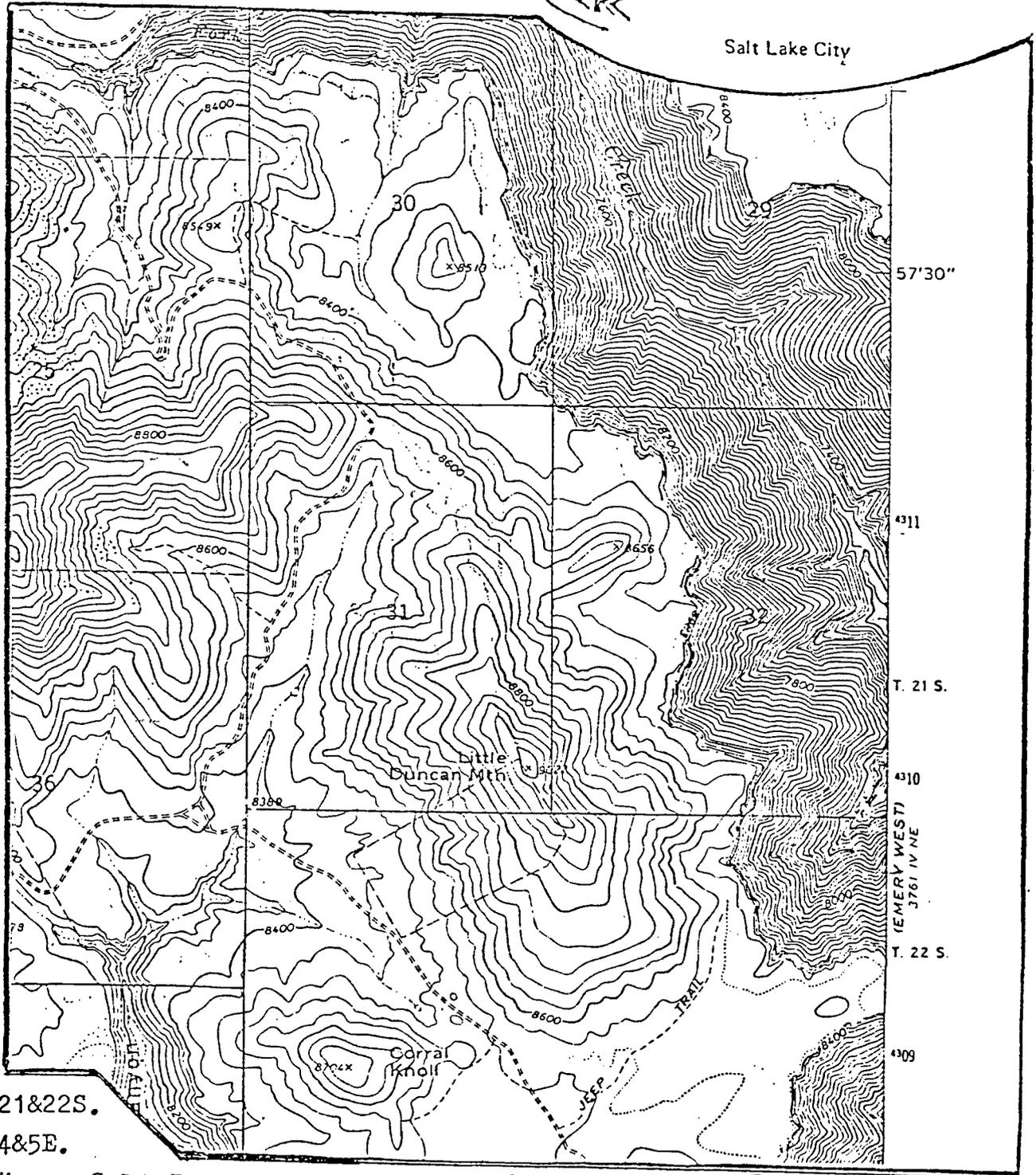
*F. R. Hauck, Ph.D. (by dp)*

---

F. R. Hauck, Ph.D.  
President

AERK

Salt Lake City



T. 21&22 S.

R. 4&5 E.

Meridian: Salt Lake B. & M.

Quad:

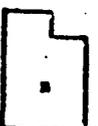
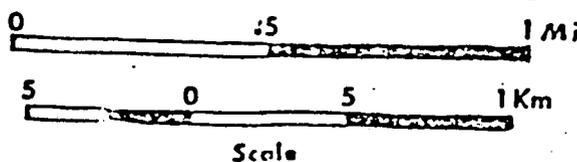
Project: CSEC-82-1  
 Series: Central Utah  
 Date: 1-8-82

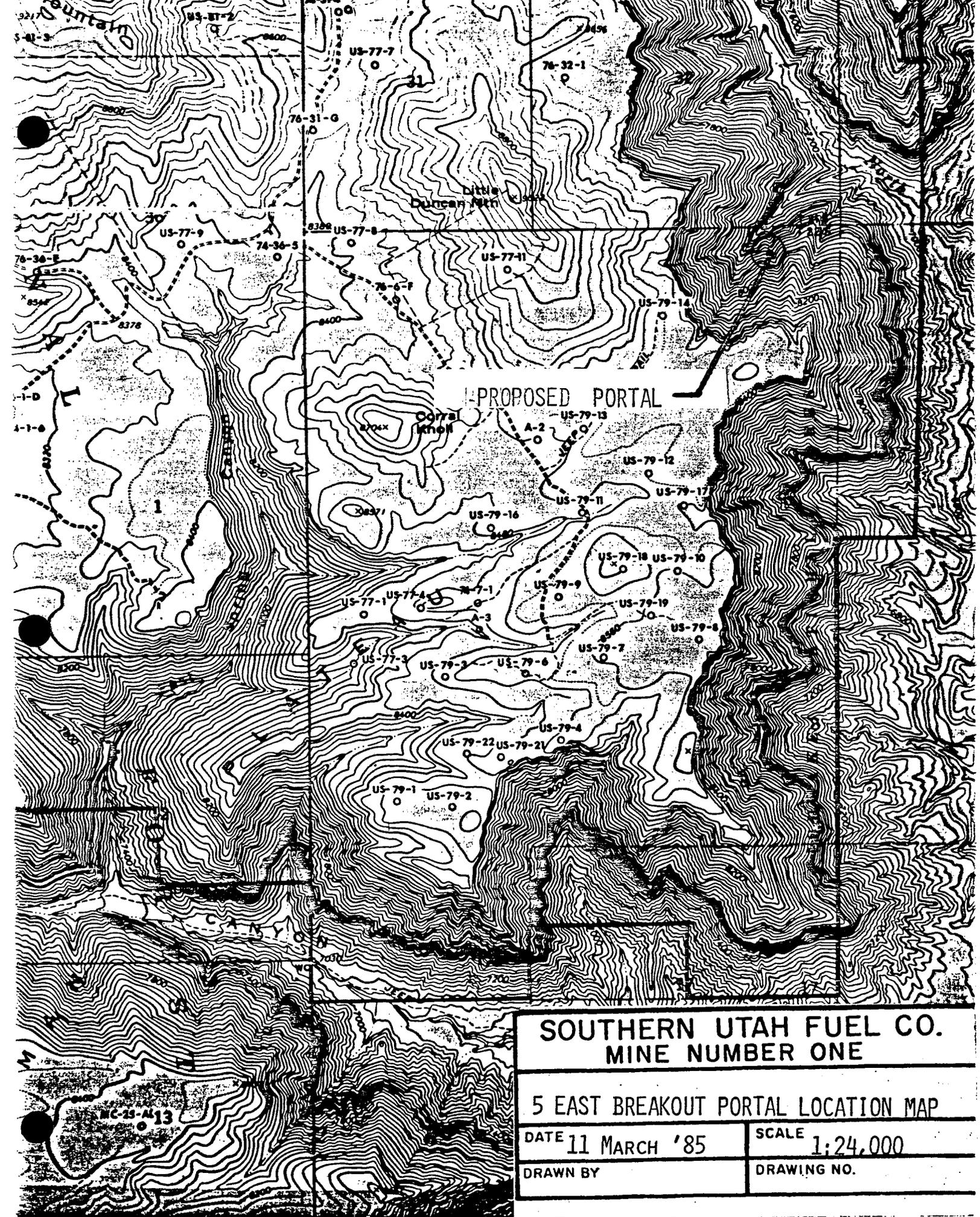
LOCATION OF PROPOSED  
 VENTILATION PORTALS,  
 SOUTHERN UTAH FUEL COMPANY,  
 MINE NUMBER ONE IN THE  
 LITTLE DUNCAN MOUNTAIN  
 LOCALITY OF  
 SEVIER COUNTY, UTAH

Accord Lakes,  
 Utah  
 7.5 Minute  
 USGS

Legend:

Proposed  
 ventilation  
 portal





**SOUTHERN UTAH FUEL CO.  
MINE NUMBER ONE**

**5 EAST BREAKOUT PORTAL LOCATION MAP**

DATE 11 MARCH '85

SCALE 1:24,000

DRAWN BY

DRAWING NO.



**Southern Utah  
Fuel Company**

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

ACT/041/002  
# 3 & 15

Subsidiary of  
Coastal States  
Energy Company

December 26, 1984

**RECEIVED**  
JAN 07 1985

Mr. Wayne Hedberg  
Division of Oil, Gas and Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203

DIVISION OF  
OIL, GAS & MINING

Dear Mr. Hedberg:

The enclosed print shows a minor change that we are currently undertaking in our coal processing facilities. Two belts are being built in the coal processing yard to allow us to reprocess run of mine coal through our specialty coal circuit. These belt lines will be suspended belts with Belt No. 1 being 160 feet long and Belt No. 2 being 125 feet long. As shown on the print, the belts will be entirely within our present yard area. The foundation at the tail of Belt No. 1 contains about 13 cubic yards of concrete. The foundation near the fuel pad contains about 22 cubic yards of concrete. This small amount of construction should not appreciably effect the reclamation schedule or bonding costs.

We plan on having these belts operational by the middle of January 1985. If you have questions concerning this construction, please feel free to contact Wess Sorensen.

Sincerely,  
SOUTHERN UTAH FUEL COMPANY

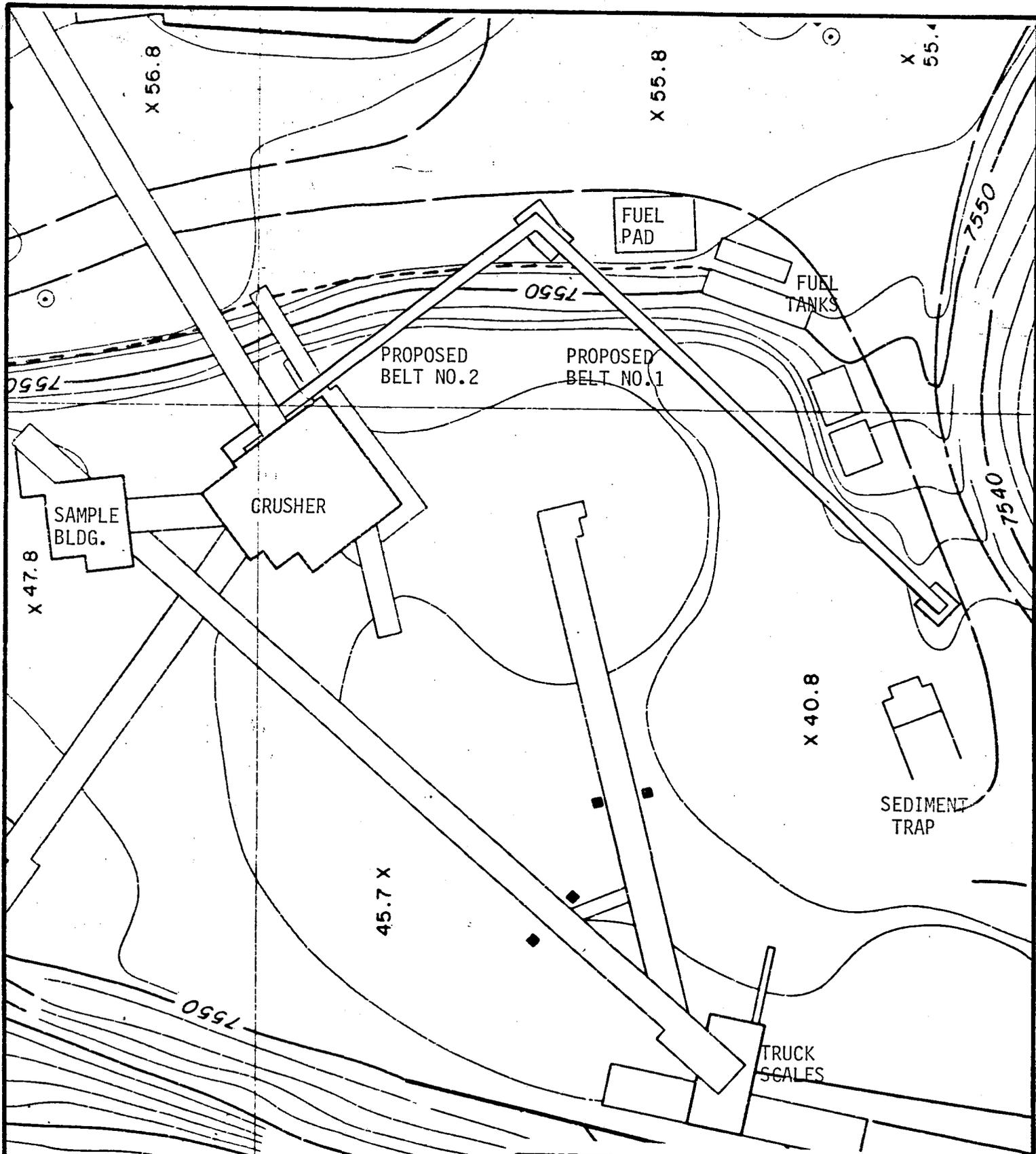
*W.K. Sorensen for*

Wesley K. Sorensen  
Chief Engineer

WKS:cfc

Attachment

xc: Darrel Hintze, USFS  
Ken Payne, SUFCo



**SOUTHERN UTAH FUEL CO.  
MINE NUMBER ONE**

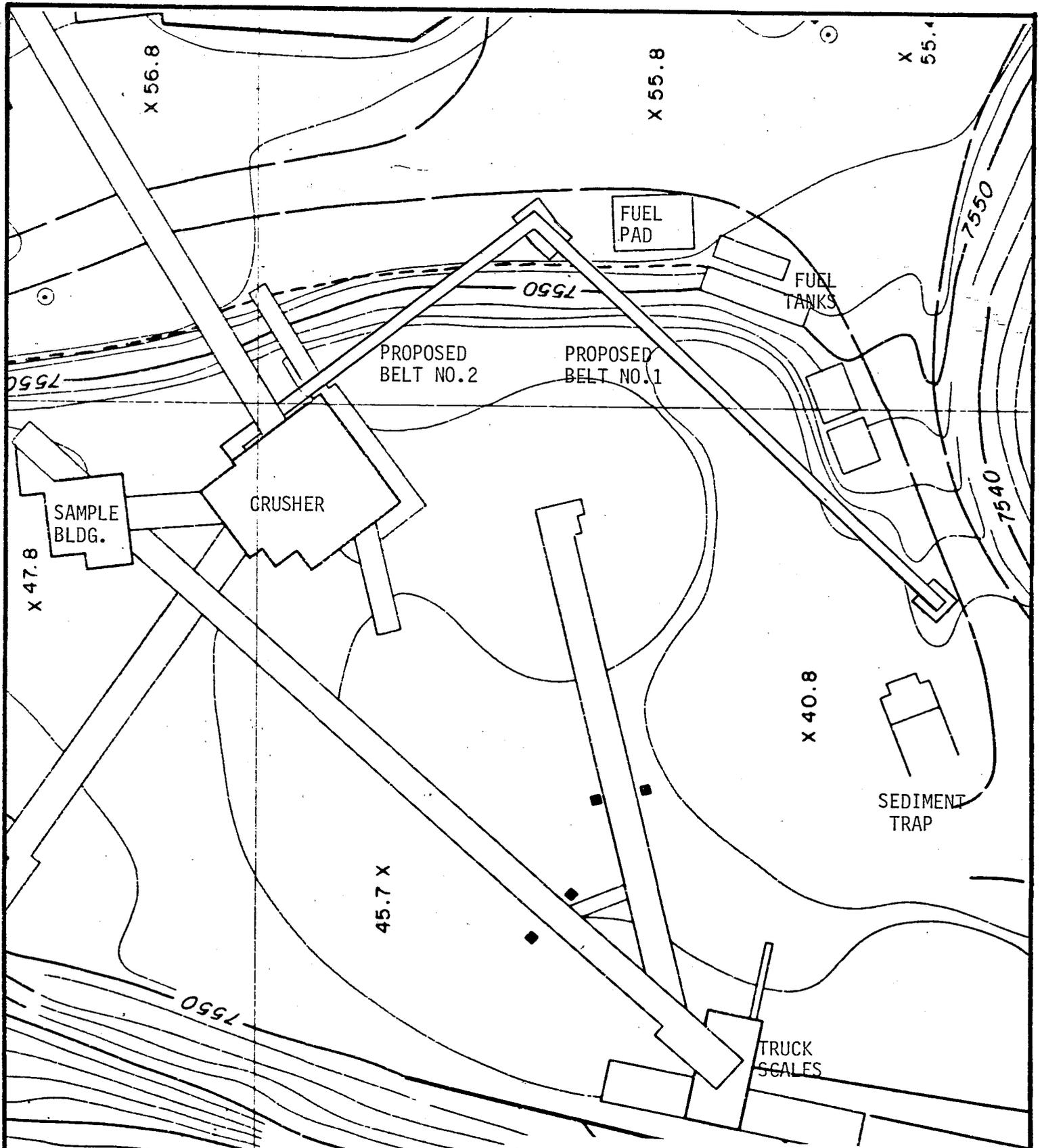
**COAL PROCESSING FACILITIES**

DATE JAN. 2, 1985

SCALE 1"=40'

DRAWN BY S.K.S.

DRAWING NO.



**SOUTHERN UTAH FUEL CO.  
MINE NUMBER ONE**

**COAL PROCESSING FACILITIES**

DATE	JAN. 2, 1985	SCALE	1"=40'
DRAWN BY	S. K. S.	DRAWING NO.	

Ken Payne  
Vice President & General Manager



**Southern Utah  
Fuel Company**

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

September 26, 1983

Mr. James W. Smith  
Division of Oil, Gas and Mining  
4241 State Office Building  
Salt Lake City, Utah 84114

RE: Stoker Coal Storage Area Modifications

Dear Mr. Smith:

Concerning the provisions in the Division's approval letters on our storage area modification dated December 14, 1982 and January 20, 1983 over the potential for runoff of oil into the ground and onto the pad area, the following design changes have been made to the oil slack pad:

1. The pad area will be constructed of concrete instead of compacted road base and coal to eliminate any oil seeping into the ground.
2. The concrete pad will be constructed sloping to an oil skimmer to eliminate the possibility of oil getting into the mine yard drainage system that runs into the sediment pond systems.

Only the east half of the previous approved storage area will be constructed at this time. A drawing showing the design changes is attached.

If you have any questions concerning this matter, please call Mike Davis at (801) 637-4880.

Sincerely,  
SOUTHERN UTAH FUEL COMPANY

  
Ken Payne  
Vice President and General Manager

MLD:cfc

Attachments

xc: Steve McNeal, DOH  
Vernal Mortenson, CSEC  
J. Kent Taylor, USFS

TO RICK  
File ACT/OUI/002  
Folder No. 3 E  
Subsidiary of  
Coastal States  
Energy Company

Revision Binder

**RECEIVED**  
SEP 30 1983

Copy to  
Steve Dave  
Sawby D.

**DIVISION OF  
OIL, GAS & MINING**

**JIM**

SEP 30 1983

*No response  
required as  
these surpass  
suggestions made  
with approval  
with approval letter.*

Ken Payne  
Vice President & General Manager



**Southern Utah  
Fuel Company**

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

*Work  
Prop 4*

*Kenneth L. Kraston  
for mine file*  
Subsidiary of  
Coastal States  
Energy Company  
ACT/041/002-81B

November 24, 1987

Dr. Diane Nielson  
Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203

Dear Dr. Nielson:

We are hereby requesting Division approval to construct a new ventilation portal into Quitchupah Canyon in the SW $\frac{1}{4}$  of the SE $\frac{1}{4}$  of Section 29, T21S, R5E, SLB&M. Coastal States Energy Company owns the coal and surface on this parcel. Neal Mortensen, et al, retained an overriding royalty interest on coal produced. The ventilation portal would enter the mine from the south in a small draw. We believe this request can be processed and approved as a minor modification to our approved M&RP.

This proposed ventilation portal will be used as a ventilation intake and as an escapeway for quick escape from the 4 East area of the mine in the event the mine requires evacuation. The portal is also designed to be used as a fan portal in the event another mine fan is later needed to mine the northern most coal reserves. Because of this dual purpose design, a small earthen pad will need to be leveled in the breakout area for the possible future fan installation. No water will be discharged from this portal location.

A partial print of the Accord Lakes USGS 7 $\frac{1}{2}$  minute quadrangle, Map 1, shows the portal location and surface features. A map of SUFCo's underground workings showing the location of the breakout is included as Map 2. Map 3 is a detail of the portal entries and breakout.

Our engineering calculations show that about 700 cubic yards of earth will need to be moved to construct the 1/4 acre fan pad shown on Map 3. This pad may be needed for a future fan location for mining the northern most reserves. Although the fan is not needed at this time, it is necessary to construct the pad at the time of the breakout. Diligent efforts will be expended to minimize the amount of disturbance at the site. Because of the thinness of the topsoil, small areal extent of disturbance, and the boulder strewn nature of the site, topsoil will not be collected.

**RECORDED**  
NOV 25 1987

DIVISION OF  
OIL, GAS & MINING

The portal location was examined by Dr. Hauck of AERC for possible archeological sites. His report is included as Exhibit 1. No sites were found. Endangered Plant Studies, a botanical consulting firm, performed a vegetation and soil survey of the proposed site. Dr. Welsh's report is included as Exhibit 2.

Final Reclamation Plan -- Reclamation of the 4 East portal will proceed as follows. First, all structures on the pad will be removed including foundations. The pad will then be roughened. The portal will be sealed and revegetated as outlined below.

Sealing -- A breakout seal will be constructed in the breakout area from the inside as shown on the Typical Portal Seal drawing presented in Volume 3 of the M&RP on page 216. The seal will be of a substantial design and constructed of concrete block utilizing a waterproof sealant such that the seal will withstand the hydraulic head that could develop if the entire mine was inundated.

In compliance with 30 CFR 75.1711-2, seals will be installed in the entry as soon as mining is completed and the mine is to be abandoned. Prior to installation, all loose material within three feet of the seal area will be removed from the roof, rib, and floor. The mine entry seal will be made of solid concrete blocks (average minimum compressive strength of 1,800 psi; tested in accordance with A.S.T.M C-140-70) and mortar (one part cement, three parts sand, and no more than seven gallons of water per sack of cement).

The seal will be installed in the following manner: The seal will be recessed at least 16 inches deep into the rib and 12 inches deep into the floor. No recess will be made into the roof. The blocks will be at least six inches high except on the top course, and eight inches wide. The blocks will be laid and mortared in a transverse pattern. In the bottom course, each block will be laid with the long axis parallel to the rib. The long axis in succeeding courses will be perpendicular to the long axis block in the preceding course. An interlaced pilaster will be constructed in the center. The seals will have a total thickness of 16 inches. The entry will then be backfilled and graded to the slope of the area surrounding the portal entry. For details, see Figures 783.13/A and 783.13/B.

Revegetation -- The 4 East breakout area consists of one portal located on a south-facing slope in the pinyon-juniper community type. This community is very similar to the other portal sites. Vegetation and soils information are contained in Exhibit II. The disturbed area at the site will be so small as to create minimal disturbance to the surrounding vegetative communities. After sealing and burial of the breakout opening, scarification of the slope by hand raking will take place. Then the appropriate amounts of the seed mix given in Exhibit II will be planted. Establishment of shrub species will take place by natural reinvasion.

Dr. Dianne Nielson  
November 24, 1987  
Page 3

Please approve this 4 East ventilation portal plan as a minor modification of our approved M&RP. Enclosed are 15 copies of this minor modification for your distribution to the appropriate State and Federal agencies. This minor modification should be inserted in the back of Volume 8 of Southern Utah Fuel Company's M&RP.

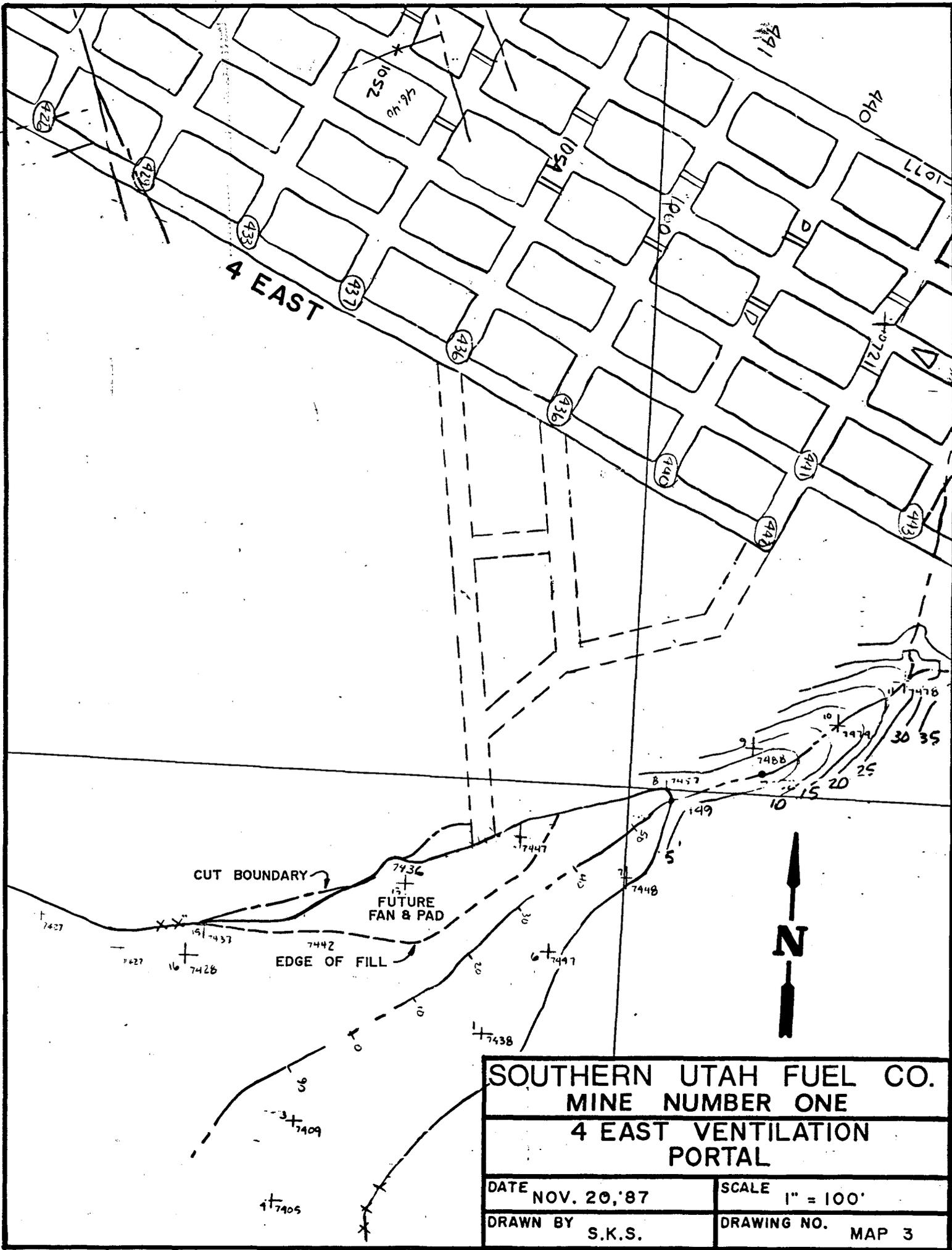
Sincerely,  
SOUTHERN UTAH FUEL COMPANY



Ken M. Payne  
V. P. & General Manager

WKS:cfc

Enclosures - Map 1, 4 East Portal Location Map  
Map 2, 4 East Portal Underground Map 1" = 1000'  
Map 3, 4 East Portal Detail 1" = 100'  
Exhibit 1, AERC Report  
Exhibit II, Endangered Plant Studies Report



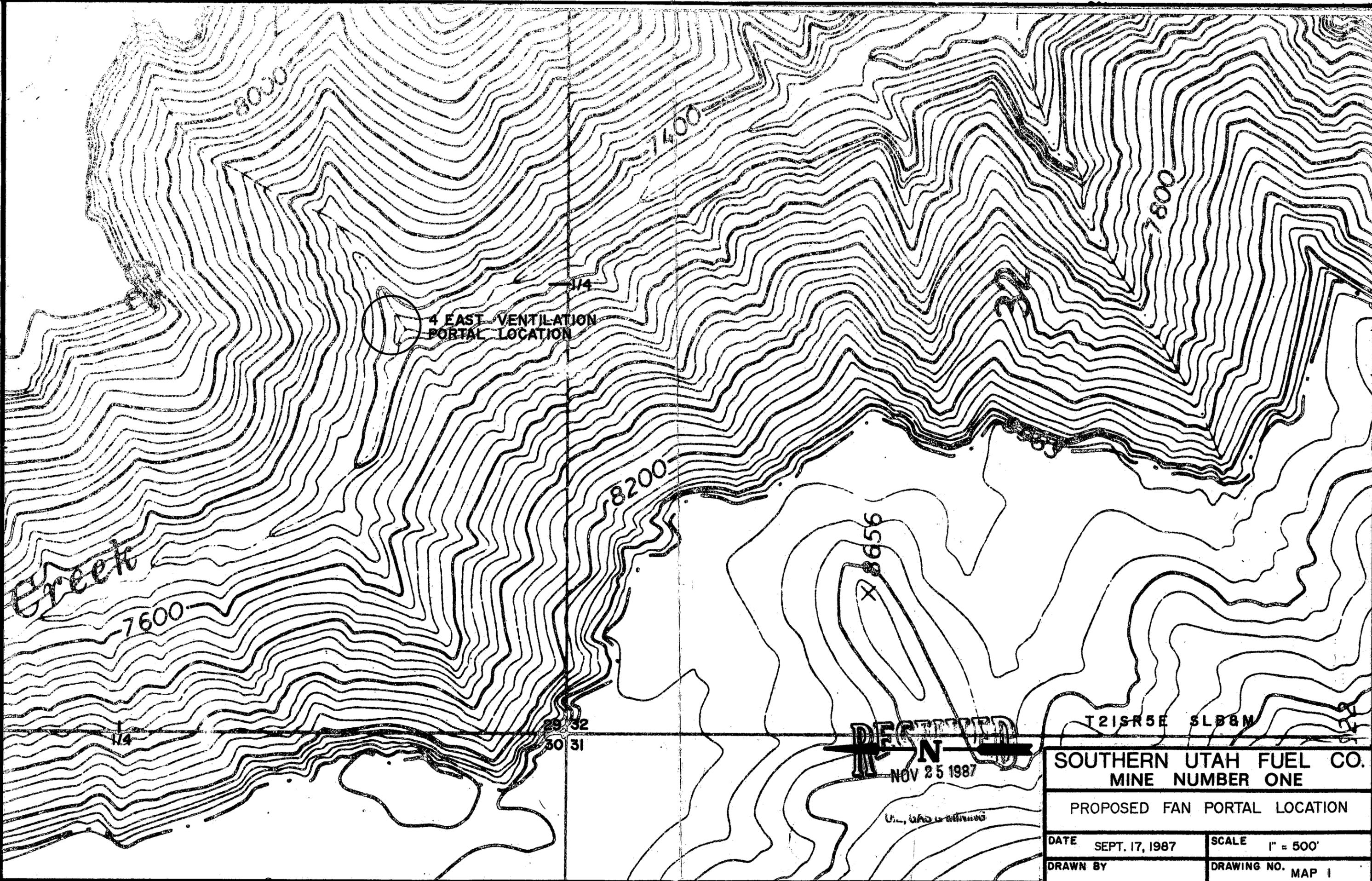
**SOUTHERN UTAH FUEL CO.  
MINE NUMBER ONE  
4 EAST VENTILATION  
PORTAL**

DATE NOV. 20, '87

SCALE 1" = 100'

DRAWN BY S.K.S.

DRAWING NO. MAP 3



Creek

4 EAST VENTILATION PORTAL LOCATION

~~RESTRICTED~~  
NOV 25 1987

T21SR5E SLB8M

SOUTHERN UTAH FUEL CO.  
MINE NUMBER ONE

PROPOSED FAN PORTAL LOCATION

DATE SEPT. 17, 1987

SCALE 1" = 500'

DRAWN BY

DRAWING NO. MAP 1

EXHIBIT I  
NOVEMBER 24, 1987  
SUFCO SUBMITTAL



# ARCHEOLOGICAL - ENVIRONMENTAL RESEARCH CORPORATION

P.O. Box 853 Bountiful, Utah 84010  
Tel: (801) 292-7061, 292-9668

October 7, 1987

**Subject: CULTURAL RESOURCE EVALUATION OF A PROPOSED  
BREAKOUT LOCATION IN THE QUITCHUPAH CANYON  
LOCALITY OF SEVIER COUNTY, UTAH**

**Project: Southern Utah Coal Company-Coastal States  
Energy Company**

**Project No.: CSEC-87-1**

**Permit No.: Dept. of Interior U-87-54937  
Utah State Project No. 87-AF-637b**

**To: Mr. Wess Sorensen, SUFCO, P.O. Box P, Salina, Utah  
84654**

Bureau of Land Management, Sevier River Resource Area,  
180 North 100 East, Richfield, Utah 84701

**Info: Mr. Keith Welch, Coastal States Energy Company, 175  
East 400 South, Salt Lake City, Utah 84111**

Utah State Preservation Office, Division of State  
History, 300 Rio Grande, Salt Lake City, Utah 84101

Mr. Rich Fike, BLM State Archeologist, Bureau of  
Land Management, CFS Financial Center Bldg., 324  
South State, Salt Lake City, Utah 84111-2303

Summary Report of  
 Inspection for Cultural Resources

**QUITCHUPAH CANYON BREAKOUT**

1. Report Title . . . . . 11 SUFCO Proposed Fan Portal Location  
 2. Development Company . . . . .  
 3. Report Date . . . . . 1 0 7 1 9 8 7 4. Antiquities Permit No. 87-UT-54937  
 41 42 43 46  
 5. Responsible Institution . . . . . A E R C C S E C - 8 7 - 1 Sevier County  
 47 61  
 6. Fieldwork . . . . . 2 1 S 0 5 E 2 9  
 Location: TWN . . . . . RNG . . . . . Section. . . . .  
 62 65 66 69 70 71 72 73 74 75 76 77  
 7. Resource Area . . . . . TWN . . . . . RNG . . . . . Section. . . . .  
 .S.E. 78 81 82 85 86 87 88 89 90 91 92 93  
 110 111  
 TWN . . . . . RNG . . . . . Section. . . . .  
 94 97 98 101 102 104 106 108

8. Description of Examination Procedures:  
 The archeologist, F. R. Hauck, walked a series of 10 to 15 meter wide transects within a 30 meter radius of the portal breakout location.

9. Linear Miles Surveyed . . . . . 10. Inventory Type . . . . . I  
 and/or 112 117 130  
 Definable Acres Surveyed . . . . . R = Reconnaissance  
 and/or 118 123 I = Intensive  
 Legally Undefinable . 2 S = Statistical Sample  
 Acres Surveyed . . . . .  
 124 129

11. Description of Findings: 12. Number  
 No previously unrecorded sites Sites Found .0. . . . .  
 were recorded and evaluated during (No sites = 0) 131 135  
 the survey. 13. Collection: .N.  
 Y = Yes, N = No) 136

14. Actual/Potential National Register Properties Affected:  
 The National Register of Historic Places (NRHP) has been consulted and no registered properties will be affected by the proposed development.

15. Literature Search, Location/ Date: Utah SHPO 10-2-87  
 Price Area BLM Office - 10-6-87

16. Conclusion/ Recommendations:  
 AERC recommends that a cultural resource clearance be granted to Coastal States Energy Company and the Southern Utah Fuel Company relative to this proposed project based upon adherence to the following stipulations: (see reverse)

17. Signature of Administrator & Field Administrator  
 & Field Supervisor Field  
 Supervisor  
 UT 8100-3 (2/85)

*[Handwritten signatures]*

5. continued:

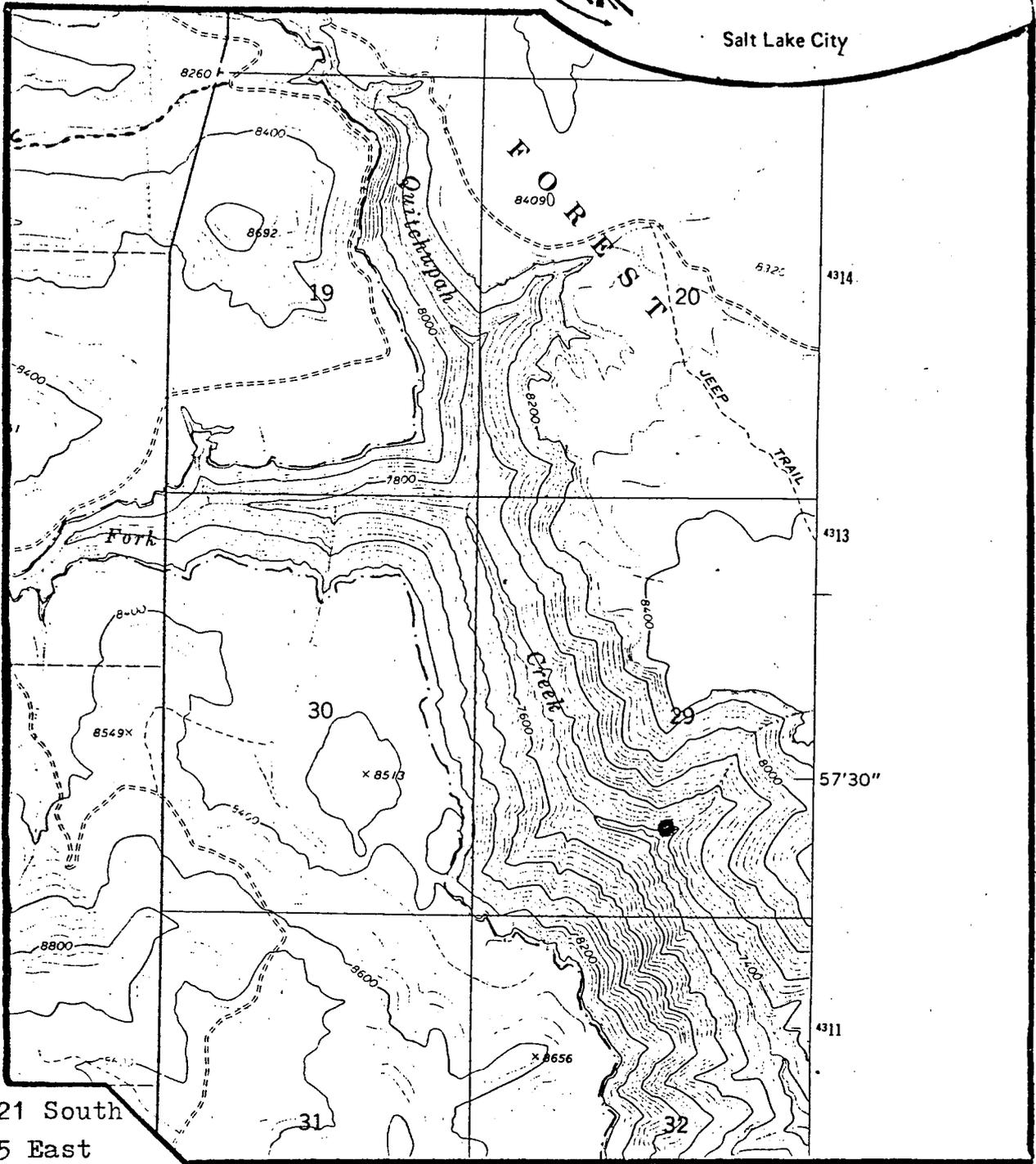
1. All vehicular traffic, personnel movement, construction and restoration operations should be confined to the locations examined as referenced in this report, and to the existing roadways and/or evaluated access routes.

2. All personnel should refrain from collecting artifacts and from disturbing any cultural resources in the area.

3. The authorized official should be consulted should cultural remains from subsurface deposits be exposed during construction work or if the need arises to relocate or otherwise alter the location of the construction area.



Salt Lake City



T. 21 South  
R. 5 East

Meridian: Salt Lake B. & M.

Quad:

**Project:** CSEC-87-1  
**Series:** Central Ut.  
**Date:** 10-7-87

Cultural Resource Survey  
of a Proposed Fan Portal  
Breakout Location in the  
Quitcupah Canyon Area of  
Sevier County, Utah

Acord Lake,  
Utah  
7.5 minute-USGS



Legend:

Breakout Location ●



2.64" = 1 mile  
Scale

EXHIBIT II  
NOVEMBER 24, 1987  
SUFCO SUBMITTAL

EXHIBIT II

ENDANGERED PLANT STUDIES, INC.  
129 North, 1000 East  
Orem, Utah 84057  
(801) 225-7085

23 October 1987

Mr. Keith Welch  
Coastal States Energy Company  
175 East, 400 South  
Suite 800  
Salt Lake City, Utah 84111

Dear Mr. Welch:

On October 3rd and 5th an on-site survey was conducted by Mr. M. A. Franklin of the proposed fan portal location at T21S, R5E, S29, SW/SE, Southern Utah Fuel Company, Mine Number One. The site is located in a re-entry along the east side of the canyon of the North Fork of Quitcupah Creek. The proposed portal location is at approximately the 7435 foot contour on a generally south-facing slope. The fan is proposed for placement in an area approximately 100 feet long and 25 feet wide. The total area to be modified by placement of the fan and construction of the portal is less than 0.1 acres.

The area of the breakout was surveyed on foot. It consists of a pinyon-juniper community. Plants noted on the site include the following:

Trees and shrubs -

Pinus edulis	Two-needle pinyon
Juniperus osteosperma	Utah juniper
Chrysothamnus nauseosus	Rubber rabbitbrush
Eriogonum corymbosum	Corymb buckwheat
Cercocarpus ledifolius	Curl-leaf mountain mahogany
Amelanchier utahensis	Utah serviceberry
Quercus gambelii	Gambel oak
Artemisia nova	Black sagebrush
Echinocereus triglochidiatus	Claretcup

Forbs -

Petradoria pumila	Rock goldenrod
Machaeranthera grindelioides	Gumweed aster
Penstemon rostriflorus	Bridges penstemon
Stanleya pinnata	Princes plume
Physaria chambersii	Chambers twinpod

Grasses

Elymus salinus	Salina wildrye
Elymus trachycaulus	Slender wheatgrass
Stipa hymenoides	Indian ricegrass

The list of plants is typical for the area; no threatened or endangered plant species or candidate species were noted.

A composite soil sample was collected. A pit was dug to a depth of one foot, and a thin layer shaved from one side of the pit was brought to the soils laboratory at Brigham Young University. The following items were determined at the laboratory:

pH = 6.6; Ec x 10<sup>3</sup> = 2.60; ppm Ca = 624.00; ppm Mg = 104.96; ppm K = 15.68; ppm Na = 13.60; SAR 0.13; % sand = 33.28; % silt = 27.44; % clay = 39.28; % moisture = 51.92; texture = clay loam.

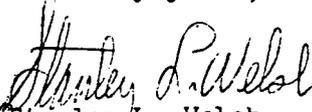
It is recommended that the area immediately around the portal and the fan be reclaimed by seeding with a mixture of grass, shrub, and forb seeds (pure live seed) in the following proportions:

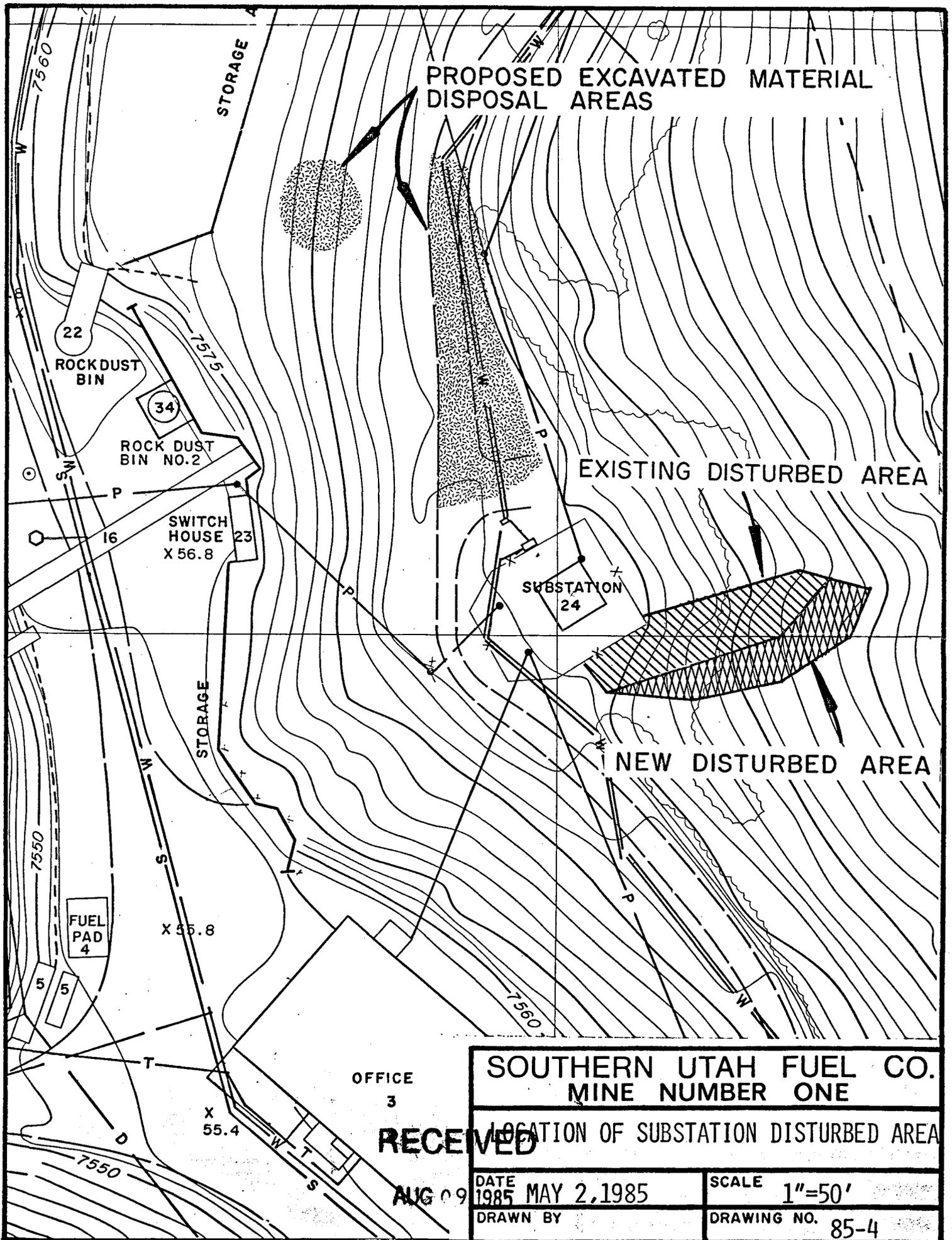
Bluebunch wheatgrass ( <u>Elymus spicatus</u> )	(rate 3 lbs/acre)
Western wheatgrass ( <u>Elymus smithii</u> )	(rate 4 lbs/acre)
Great Basin wildrye ( <u>Elymus cinereus</u> )	(rate 3 lbs/acre)
Rocky Mountain penstemon ( <u>Penstemon strictus</u> )	(rate 1/4 lbs/acre)
Blue flax ( <u>Linum perenne</u> )	(rate 1/4 lbs/acre)
Yarrow ( <u>Achillea millefolium</u> )	(rate 1/4 lbs/acre)
Yellow sweetclover ( <u>Melilotus officinalis</u> )	(rate 1 lb/acre)
Rubber rabbitbrush ( <u>Chrysothamnus nauseosus</u> )	(rate 2 lbs/acre)
Vasey big sagebrush ( <u>Artemisia tridentata</u> )	(rate 2 lbs/acre)
Utah serviceberry ( <u>Amelanchier utahensis</u> )	(rate 2 lbs/acre)

The seeding mixture as recommended should be seeded in late summer or autumn, when temperatures are sufficiently warm to allow germination and when moisture from rainfall is adequate. Seed can be broadcast and raked in manually.

If additional information is required please contact me.

Sincerely yours,

  
Stanley L. Welsh,  
President



**SOUTHERN UTAH FUEL CO.  
MINE NUMBER ONE**

LOCATION OF SUBSTATION DISTURBED AREA

**RECEIVED**

AUG 09 1985 MAY 2, 1985

SCALE 1"=50'

DRAWN BY

DRAWING NO. 85-4

File: ACT/041/002  
MRP (Approved Plan)



**Southern Utah  
Fuel Company**

P.O. Box P  
Salina, Utah 84654  
(801) 529-7428

Division of  
Coastal States  
Energy Company

August 7, 1985

**RECEIVED**

**AUG 09 1985**

**DIVISION OF OIL  
GAS & MINING**

Mr. D. Wayne Hedberg  
Permit Supervisor  
Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203

Dear Mr. Hedberg:

Enclosed please find ten copies of the revised text and maps to update the Federal and State permit applications. Copies are included for the Electrical Substation Upgrading and Extension to the Previously Approved Coal Pad Storage Facilities, and the Main Mine Fan Diversion modifications that were approved by the Division on July 18, 1985.

Sincerely,  
SOUTHERN UTAH FUEL COMPANY

Wesley K. Sorensen  
Chief Engineer

WKS:cfc

Attachments



**Southern Utah  
Fuel Company**

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

Subsidiary of  
Coastal States  
Energy Company

June 11, 1985

Mr. Wayne Hedberg  
Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203

**RECEIVED**

**AUG 09 1985**

**DIVISION OF OIL  
GAS & MINING**

Dear Mr. Hedberg:

SUBJECT: Main Fan Diversion Modification

Because of a concern for water quality expressed by DOGM inspection personnel, Southern Utah Fuel Company requests Division approval to eliminate the main mine fan small area exemption from its Mine and Reclamation Plan. The proposed modifications will convey the runoff from this area through the sediment pond control facilities. The area involved was included in the original pond sizing design calculations. The condensation from the humid mine air generates a small amount of water that runs out of the fan into the small area exemption. Runoff within the area also picks up rock dust deposited by the fan. The silt fence sediment control facility used to treat this water has had limited success. The average water quality of this drainage for the first quarter of 1984 is: Fe 7.41 mg/l, TSS 1,302 mg/l, TDS 3,193 mg/l, and a pH of 7.20.

The following is provided for your consideration in approving the proposed drainage change. A request for a small area exemption for the main mine fan area was requested in 1981 after the new fan was installed because of the difficulty in draining water from this area to the sediment pond. This area is nine feet lower than the yard drainage system. The total area of all the surface facilities including the fan area was included in the ATOF (area top of fill) category in Merricks' hydrologic work in 1979, Exhibit 9, Volume 2 of the M&RP. The same ATOF hydrologic data including the fan area was used by Valley Engineering to design the current sediment pond in 1980, Drainage/Sediment Control, Volume 6 of the M&RP. The pond was shown to meet the design criteria in the July 15, 1983 submittal to DOGM.

The ATOF has the following calculated design values:

- Acres: 12.0
- Runoff Volume: 0.49 Ac. Ft. for a 10 year, 24 hour event
- Peak Flow: 9.2 cfs

The main mine fan area which is included in the above values has the following calculated contribution to the ATOF design values:

- Acres: 0.23
- Runoff Volume: 0.02 Ac. Ft. for a 10 year, 24 hour event
- Peak Flow: 0.176 cfs

The modification project will consist of installing a sump pump with automatic float controls in front of the main mine fan. This sump pump will collect the runoff from this area and pump it into the yard drain line which discharges into the sediment control facilities (see Revised Mine Drainage Diversion Map 83-2). In addition, the undisturbed interception ditch will be modified by moving the riprap ditch above the area affected by the rock dust. Pipes will be installed down the slope and through the fan area to the present drain line box to the ESC bypass culvert, this drain line box will be capped and sealed to prevent runoff from the fan area entering it. The drainage modification calculations are included on the enclosed revised pages of our M&RP.

This submittal has been prepared following the format outlined in Dr. Nielson's May 6, 1985 letter. Although we are concerned that this will obscure the record of the M&RP development, please replace the appropriate pages with the enclosed revised pages and diversion Map 83-2 in your copies of Volume 8 of our Mining and Reclamation Plan. If you have any questions, please call Mike Davis at 637-4880.

Sincerely,  
SOUTHERN UTAH FUEL COMPANY



Wesley K. Sorensen  
Chief Engineer

MD:cfc

Enclosures

xc: Mr. Charles R. Allred  
District Ranger  
Fishlake National Forest

Mr. Reed Christensen  
Supervisor  
Manti-LaSal National Forest

Mr. John Neibergall  
District Ranger  
Manti-LaSal National Forest

Sevier County Courthouse  
Richfield, Utah

4. East Spring Canyon and Mud Spring Hollow Bypass Culverts

The calculations for the diversion for this drainage is described in the Merrick and Company Study, Volume 2. The culverts are located and were built as shown in the Valley Engineering Alternate #1.

5. Sediment Pond Access Road Diversion

This diversion is described in the Valley Engineering Alternate #1, Volume 6.

6. Sediment Trap-Sediment Pond Diversion System

This diversion collects all the runoff from the disturbed area, the drainage from the contributing basin west (CBW) and the toe of the east slope behind the warehouse and office facilities. All of these drainage areas flow across the mine yard into the sediment trap and sediment pond diversion system as shown in the Valley Engineering Alternate #1, Volume 6.

7. Sediment Pond Spillway

This diversion is described in the Valley Engineering Alternate #1 and in the 1983 Completeness Response to Comment UMC 817.47.

8. Substation Pad Diversion

The runoff from a small area (0.188 acres as delineated on Exhibit 9-1, Volume 2) enclosing the mine main power substation will be diverted into the east side road diversion ditch. Since the substation pad is on the uphill drainage of the diversion ditch, channeling the runoff to the sediment pond without ponding water on the pad is technically and economically unfeasible and could create a hazardous and unsafe area. Prior ponding of water on the substation pad has caused saturation of the area and initiated movement of the slope and substation. Because of these considerations, the runoff of the pad above the east side road diversion ditch will be diverted away from the sediment pond facility into the east side road diversion ditch in accordance with the small area exemption criteria.

9. Main Mine Fan Diversion

The runoff from a small area (0.23 acres) enclosing the main mine fan is located in a depression which is nine feet below the adjacent mine yard drainage system. A sump pump with automatic float controls in front of the main fan will pump the runoff from this area into the yard drain line which discharges into the sediment control facilities.

Riprap sizes used in minesite diversions were sized in accordance with the table presented in the 1981 mine plan submittal, Comment 817.44, Volume 7. The design velocity calculations and assumptions used in conjunction with the chart were obtained from either the Merrick and Company Study, the Valley Engineering design, or SUFCo calculations as discussed in 1983 Completeness Response to Comment UMC 817.47, Volume 8.

UMC 784.22 Diversions:

Response: (cont'd)

3. Item #9 are located in the DOC/TD (July, 1983) Response Comment  
UMC 817.43

The comments under #4 and #7 are no longer applicable, see revised Map 83-2 and response to UMC 817.42, page 36b, Volume 8.

A diversion not specified above is the substation pad undisturbed interception ditch which diverts the undisturbed runoff from CBE away from the substation pad to prevent saturation of the area. Saturation in the past has caused some slope movement. The cross-section and required riprap layer are discussed in the DOC/TD (July, 1983) Response to Comment UMC 817.43

UMC 817.42 Hydrologic Balance: Water Quality Standards and Effluent Limitations:

(a)(3)(i) The three areas for which the operator has requested small area exemption status in the 1983 ACR Response (Volume 8) must have alternate sediment control facilities. Additionally, the operator is required to demonstrate that the drainage will meet effluent limitations. The south end parking lot area has a proposed silt fence treatment facility. The substation pad and the main mine fan areas must also have alternate sediment control measures. The applicant must also commit to a plan for sampling the drainage from these areas during runoff events to demonstrate effluent limitation compliance. Reports of the sample analysis must be submitted to the Division until the sample size is determined to be adequate.

Response:

Two of the above three areas were added back into the sediment control system; the parking lot in 1984, and the main mine fan in 1985. The substation pad area qualifies for small area exemption and will be equipped with alternate sediment control facilities. The substation pad area will be graveled and equipped with silt fence sediment control facilities. Sampling of the area will be done on a monthly basis during snowmelt runoff. Runoff from major precipitation events that occur during the day when engineering staff are available to collect the sample, will be sampled. Reports of the results of the sampling will be submitted quarterly (February, May, August, November) to the Division of Oil, Gas and Mining until the sample size adequately represents the effluent quality during such events. The parameters to be measured will be those as required under the NPDES permit for mine discharges.

<u>Size</u>	<u>A</u>	<u>R</u>	<u>Q</u>	
12	0.79	0.25	3.54	No Good
18	1.77	0.375	10.39	Good
15	1.23	0.28	5.94	No Good

Use 18" corrugated metal pipe

Q/Q Full = 0.60                      V = 3.5 fps

### 3. East Side Road Continuance Diversion

Calculations are presented in the Merrick and Company Study, Volume 2.

### 4. Sediment Pond Access Road Diversion

Calculations are presented in the Valley Engineering design study incorporating a design freeboard of no less than 0.3 feet.

$$A = 1.92$$

$$R = 0.48$$

$$S = 15\%$$

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2} \text{ from Manning}$$

$$n = 0.045$$

$$Q = 24.62 \text{ cfs}$$

The diversion is more than adequate to handle the total contributing basin west (CBW) which Merrick and Company calculated to have a peak flow of 9.5 cfs for the 10-year, 24-hour precipitation event. This drainage diversion handles only a part of the contributing basin west drainage whereas most of the runoff from CBW flows through the yard to the sediment trap system and then on to the sediment pond.

5. Sediment Pond Spillway

Calculations are in the Completeness Response to Comments UMC 817.47 and UMC 817.46, Volume 8.

6. East Spring Canyon and Mud Spring Hollow Bypass Culverts

Calculations for these bypass culverts are presented in the Merrick and Company Study, Volume 2.

7. General Sediment Trap/Sediment Pond Diversion System

Calculations for the sediment trap/sediment pond diversion system are presented in the Merrick and Company Study, Volume 2, and in the Valley Engineering calculations, Volume 6.

## 8. Substation Pad Diversion

Area of the substation pad is 0.188 acres. Since the peak flow for 10-year, 24-hour event is 9.2 cfs for 12.0 acres (for the area top of fill as calculated in the Merrick and Company Study), the 0.188 acre substation pad has a corresponding Q of 0.14 cfs. The runoff flow for the east side road diversion was calculated by Merrick and Company to be 6.2 cfs. The ditch handling the east side road runoff was designed for 7.1 cfs. Therefore, the combined total of 6.34 cfs is still well under the 7.1 cfs design sizing for the diversion interception ditch.

## 9. Main Mine Fan Diversion

Diversion area around fan is 0.23 acres. Using the same reasoning as Item 8 just above, the  $Q = 0.176$  cfs.

Calculations for the sump pump and pipeline are:

$$Q = 0.176 \text{ cfs} = 79 \text{ gal/min}$$

$$\text{Elevation head on pump} = 9 \text{ feet}$$

Friction losses for 4" Std. steel pipe at 80 gal/min = 0.788 head loss/100 ft. From pump operator's data table.

$$\begin{aligned} \text{Head equivalent for 4" pipe} &= (82' \text{ equiv. leng.})(.788/100 \text{ ft}) \\ &= 0.65 \text{ feet} \end{aligned}$$

$$\text{Total dynamic head} = 9.65 \text{ feet}$$

A sump pump with characteristics that will meet these conditions will be installed. One such pump is a Prosser 2 Hp, 1 PH, 60 HZ, 230 volt mine pump.

Riprap sizes used in minesite diversions were sized in accordance with the table presented in the 1981 mine plan submittal under part 817.44, Volume 7. The design velocity calculations and assumptions used in conjunction with the chart were obtained from either the Merrick and Company Study, the Valley Engineering design, or SUFCo calculations as discussed in the 1983 Completeness Response to Comment UMC 817.47.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
Shallow Ground Water Flow and Ephemeral Streams:

DEFICIENCIES (cont'd)

8. The undisturbed drainage from the area directly north of the ATOF (warehouse) should be diverted to the ESC or MSH culvert using a diversion ditch around the fill perimeter. The operator should address this area and present plans and calculations for any existing or proposed diversions.
9. The branch from the bypass substation culvert extending in a north-east direction (see Exhibit 9.1, Volume 2) should be explained and detailed in the plan and calculations if this is in fact a proposed culvert or diversion.

Response:

The design plans for diversions #5, 6, 9 and 10 as labeled under Comments for UMC 784.22 are included under the responses below which correspond to the item numbers needing clarification or corrections.

1. The CBE diversion has been designed for a 0.3 feet freeboard. The East side road which is the CBE diversion ditch depicted in Volume 2 as 0.6 feet deep has a one foot high berm along the edge of the road for the freeboard as shown in the East side road cross-sections in Appendix 784.18 in the 1981 Responses to the Completeness Review, Volume 7.
2. This deficiency concerning the parking lot is no longer applicable because the exemption was eliminated in 1984. All runoff is now treated through the sediment control facilities.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
 Shallow Ground Water Flow and Ephemeral Streams:

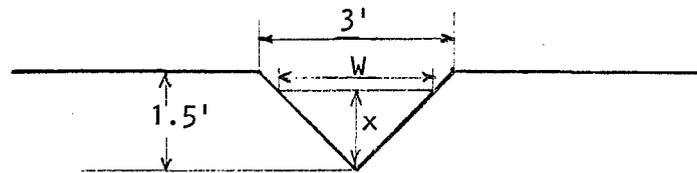
3. East Road Continuance Diversion.

Q = 6.2 from Merrick and Company Study, Volume 2, Exhibit 9

S = 10% Minimum

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2} \text{ from Manning}$$

n = 0.045



<u>W</u>	<u>X</u>	<u>A</u>	<u>R</u>	<u>Qcfs</u>
3	1.5	2.25	0.53	15.4
3	1.0	1.5	0.42	8.73
3	0.8	1.2	0.35	6.22

Therefore, the size of this diversion (3' x 1.5') is adequate to handle the runoff with a freeboard of 0.3 feet. The riprap size required is 4" as determined using the riprap chart presented in the 1981 Completeness Response for comment 817.44, Volume 7. The discharge from this channel is directed on an existing boulder in the natural drainage as an energy dissipator.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
Shallow Ground Water Flow and Ephemeral Streams:

Response: (con't)

4. The mine yard drainage system was not planned or designed to handle the 10-year, 24-hour peak flow. The mine yard surface area is the diversion for the 10-year, 24-hour peak flow. The surface area is graded to divert all the runoff flow to the sediment trap leading to the sediment pond treatment facility. The mine yard drain system was installed to handle the normal surface flow to reduce the mud and erosion in the mine yard. The main mine yard drainage system consists of drop drains and a 10" pipeline leading to the sediment trap. The runoff overflow to this system will run over the surface to the sediment trap.
  
5. Applicant does not have the hydrologic expertise in-house to supply method of calculations and design for the determination of the peak flow for the 10-year, 24-hour storm event to meet the July 8, 1983 submittal date. Applicant commits to having a qualified consulting firm prepare the calculations and diversion design for submittal to the Division of Oil, Gas and Mining for its review before these diversions are installed.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
Shallow Ground Water Flow and Ephemeral Streams:

Response: (cont'd)

6. The size of riprap used in the diversions requiring riprap that are not already included in this response and with corresponding velocity values used in determination of that size are:

	<u>Diversion</u>	<u>Riprap Size</u>	<u>Velocity</u>	<u>Velocity or Riprap Source</u>
1.	East Side Road (CBE)	1/2"	1.97 fps	Merrick & Co.  (Volume 2, Exhibit 9)
2.	Sediment Pond  Access Road	3" Class III		Valley Engineering Design  (Sheet 2)
3.	Sediment Pond Spillway	30"	18 fps	page 50, Volume 8

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
Shallow Ground Water Flow and Ephemeral Streams:

Response: (cont'd)

7. Pipe #5 Diversion

Drainage from the proposed pipe #5 (Exhibit 9-2) south to the corner of the road leading into the mine drains north toward the pipe. The drainage area (11.48 acres) south of the CBW will be diverted through the pipe across the mine and sediment pond access roads and will not drain into the sediment pond. The area delineated as CBW on Exhibit 9-9 currently drains to the sediment pond.

Applicant does not have the hydrologic expertise in-house to supply method of calculations and design for the determination of the peak flow for the 10-year, 24-hour storm event to meet the July 8, 1983 submittal date. Applicant commits to having a qualified consulting firm prepare the calculations and diversion design for submittal to the Division of Oil, Gas and Mining for its review before this diversion is installed.

8. Area north of ATOF diversion - The undisturbed drainage (1.83 acres) from the area directly north of the ATOF is diverted both ways to the East Spring Canyon (part A) and Mud Spring Canyon (part B) culverts. This diversion consists of a riprapped diversion ditch running along the edge of the disturbed area from the MSH culvert behind the warehouse annex to the yard fence. The flow to ESC is then piped through the main mine fan diversion to ESC culvert. The runoff directly above the mine fan diversion is diverted through 6" pipe drain lines down the slope and through the fan area into the ESC culvert as shown on Map 83-2.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
Shallow Ground Water Flow and Ephemeral Streams:

Response: (cont'd)

9. The two branches and three drop drains on the substation pad leading to the bypass substation culvert are 12" c.m.p. culverts. The substation pad surface area will be graded, graveled and sloped to divert the 10-year, 24-hour event to the east side road diversion which runs on the outside edge of the pad area. The drop drains and culverts will help divert part of the runoff flow to the CBE bypass culvert to reduce the time and runoff water will be on the pad area to reduce the chance of water migrating through the substation pad fill and lubricating the substation slide slip zone.
10. A diversion not specified above is the substation pad undisturbed interception ditch which runs above the substation pad. This diversion diverts part of the undisturbed area (CBE) runoff away from the substation pad to prevent saturation of the area. Saturation in the past has caused some slope movement.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
 Shallow Ground Water Flow and Ephemeral Streams:

Response:

The following assumptions and input calculations are supplied for the determination of the peak flow for the 10-year, 24-hour storm event for items 5, 7, 8 and 10 of the DOC/TD-July 1983 submittal, Volume 8:

ASSUMPTIONS AND INPUT CALCULATIONS

<u>Area</u>	<u>Acres</u>	<u>CN</u>	<u>Length</u>	<u>Change In Elevation</u>	<u>Tc*</u>	<u>QP (cfs)</u>
CBE Substation Bypass Culvert	16.07	72	1,250	630	0.121	4.09
Substation Pad	0.39	90	285	10	0.08	0.40
Area North of ATOF Part A	1.8	79	900	425	0.112	0.91
Part B	18.4	79	1,850	745	0.167	3.78
Area Upslope of Substation Pad Undisturbed Drainage Ditch	6.9	72	820	390	0.117	0.96
CBW Draining to Pipe #5	11.48	79	1,450	794	0.121	5.81

\*Calculated as mean of four methods: Kirpitch's, Kent's, USBR/Kirpitch and Hathaways.

The design calculations for the above diversions follow:

A. Item #5, p. 41e

1. CBE Substation Bypass Culvert

$$Q_p = 4.09 \text{ cfs}$$

$$Q_p \times 1.5 \text{ S.F.} = 6.14 \text{ cfs}$$

Design flow used was 6.2 cfs Volume 8, p. 37. Therefore, this diversion design is adequate with  $Q = 10.39$  cfs for the 18" culvert.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
 Shallow Ground Water Flow and Ephemeral Streams:

Response: (cont'd)

2. Substation Pad

$$Q_p = 0.40 \text{ cfs}$$

$$Q_p \times 1.5 \text{ S.F.} = 0.6 \text{ cfs}$$

The added runoff from the substation pad (0.6 cfs) combined with the CBE runoff (6.2 cfs Merrick and Company East Side Road Volume 2, Exh. 9) has the combined total of 6.8 cfs which is still under the 7.1 cfs design sizing for the diversion interception ditch (Merrick and Company Volume 2), the 10.39 cfs sizing for the 18" substation Bypass Culvert (Vol. 8, p. 38) and the East Road Continuance Diversion sizing for 8.73 cfs (Vol. 8, p. 41d).

B. Item 7, p. 41g - Pipe #5 Diversion

$$Q_p = 5.81 \text{ cfs}$$

$$Q_p \times 1.5 \text{ S.F.} = 8.71 \text{ cfs}$$

$$S = 2\%$$

$$n = 0.024$$

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2} \text{ from Manning}$$

<u>Size</u>	<u>A</u>	<u>R</u>	<u>Q cfs</u>	<u>v fps</u>
18"	1.767	0.375	8.05	
21"	2.405	0.437	12.13	5.04

Use 21" corrugated metal pipe.

The riprap size required for outlet with 5.04 fps velocity is 4" as determined using the riprap chart presented in the 1981 Completeness Response for comment 817.44, Volume 7.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
Shallow Ground Water Flow and Ephemeral Streams:

Response: (cont'd)

C. Item 8, p. 41g - Area North of ATOF

- A. Part A as shown on Map 83-2 of the Area North of ATOF flow (Q = 0.91 cfs) is diverted to the ESC bypass culvert with diversion ditches and 6" pipe drain lines down the steep slope and through the fan area.

For the 6" steel pipe drain lines.

$$Q_p = 0.91$$

$$S = 6.7\% \text{ min.}$$

$$n \approx 0.015 \text{ for smooth pipe}$$

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2} \text{ from Manning}$$

$$A = 0.196 \quad R = 0.125 \quad Q = 1.26 \text{ cfs} \quad v = 6.4 \text{ fps}$$

Therefore, the six inch steel pipe is more than adequate to handle the runoff of 0.91 cfs.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow,  
Shallow Ground Water Flow and Ephemeral Streams:

Response: (cont'd)

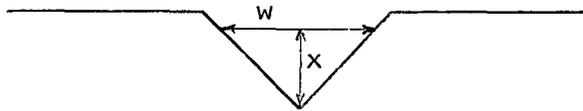
For the diversion ditch design and cross section to the 6" pipe.

$$Q_p = 0.91$$

$$S = 4\% \text{ min.}$$

$$n = 0.045$$

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2} \text{ from Manning}$$



$$\frac{W}{1.5}$$

$$\frac{X}{0.7}$$

$$\frac{A}{0.525}$$

$$\frac{R}{0.255}$$

$$\frac{Q}{1.39}$$

$$\frac{v}{2.65}$$

Therefore, a diversion ditch 1.5 feet wide and one foot deep is adequate to handle the runoff ( $Q = 1.39$  cfs) with a freeboard of 0.3 feet. The riprap size required for  $S = 25\%$  max., ditch 1.5 feet wide, flow is .3 deep,  $Q = 0.996$  cfs,  $v = 4.43$  fps is 3" as determined using the riprap chart presented in the 1981 Completeness Response for comment 817.44, Volume 7.

2. Part B of the Area North of ATOF runoff flow ( $Q = 3.78$  cfs) is diverted with a diversion ditch to Mud Spring Hollow Bypass Culvert.

$$Q_p = 3.78 \text{ cfs}$$

$$Q_p \times 1.5 \text{ S.F.} = 5.67 \text{ cfs}$$

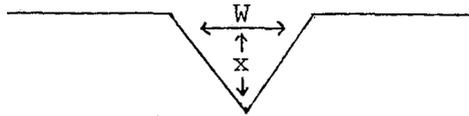
$$S = 4\%$$

$$n = 0.045$$

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2} \text{ from Manning}$$

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow, Shallow Ground Water Flow and Ephemeral Streams:

Response: (Cont'd)



$\frac{W}{2.5}$	$\frac{X}{1.2}$	$\frac{A}{1.5}$	$\frac{R}{0.434}$	$\frac{Q}{5.68}$	$\frac{v}{3.79}$
-----------------	-----------------	-----------------	-------------------	------------------	------------------

Therefore, a diversion ditch 2.5 feet wide and 1.5 feet deep is adequate to handle the runoff with a freeboard of 0.3 feet.

The rip rap size required for  $v = 3.79$  fps is 2" as determined using the rip rap chart presented in the 1981 Completeness

Response for comment 817.44, Volume 7.

D. Item 10, p. 41h - Area Upslope of Substation Pad Undisturbed Drainage Ditch

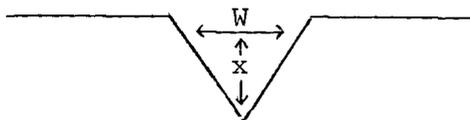
$Q_p = 0.96$  cfs

$Q_p \times 1.5$  S.F. = 1.44 cfs

$S = 2\%$

$Q = \frac{1.49}{n} AR^{2/3} S^{1/2}$  from Manning

$n = 0.045$



$\frac{W}{2}$	$\frac{X}{1}$	$\frac{A}{1.0}$	$\frac{R}{0.35}$	$\frac{Q}{2.3}$	$\frac{v}{2.3}$
2	.8	.8	0.313	1.72	2.15



**Southern Utah  
Fuel Company**

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

Subsidiary of  
Coastal States  
Energy Company

June 21, 1985

Mr. D. Wayne Hedberg  
Permit Supervisor/Reclamation Hydrologist  
Division of Oil, Gas and Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203

Dear Mr. Hedberg:

RE: M&RP Amendments Substation Upgrade and Previously Approved Coal Pad  
Storage Facilities

The Division's request for reformatting the above amendments previously submitted on May 8, 1985 is enclosed. The format is as described in Dr. Nielson's May 6, 1985 letter with pages to be inserted in the PAP.

As previously stated, the substation upgrade approval is needed urgently to allow us to modify the electrical substation for needed 69 kV service. Please insert pages 183-1 and 183-2 covering the substation modification behind page 183 in Volume 3 of the PAP along with drawings 85-3, 85-4, and 85 Elect 114B.

The reclamation cost estimate for the previously approved coal storage pad has been added to the revised pages 211 and 213 included for insertion into Volume 3 of the PAP. The coal storage pad will consist of a 106' x 50' concrete pad with a 12' high containment wall on the back and sides.

Maps 83-2, 80-4a, and 80-4b have been updated to reflect the addition of the substation modification, the coal storage pad, and the stoker reclaim belts. Please replace Maps 80-4a and 80-4b in Volume 3 and Map 83-2 in Volume 8 of the PAP

Sincerely,  
SOUTHERN UTAH FUEL COMPANY

Wesley K. Sorensen  
Chief Engineer

WKS:cfc

Enclosures

SUBSTATION MODIFICATION:

The modification project will consist of replacing the existing 25 kV/12.5 kV transformer with a 69 kV/12.5 kV transformer and expanding the existing fenced perimeter to gain required safety clearances. In addition, a grounding grid will be buried inside the fence and eight feet outside the conductive segments of the fence to conform with Utah Power and Light Company's current substation safety requirements (drawing 85 Elect 114B). The total area affected is within the disturbed area previously calculated for bonding; therefore, no additional reclamation cost is anticipated. See Map 85-4. Reclamation will be in accordance with the Consolidated Reclamation Plan provisions submitted to the Division on 4 April 1984, Volume 8.

To eliminate installing the ground grid on the slope of the hill, the current east and south fences will be replaced with nonconductive fences (drawing 85-3, Substation and Fence Layout). The south fence will be moved out an addition 5.5 feet from the substation pad to meet the minimum required distance of UP&L's code specifications for 69 kV power service. This will require excavating the bottom of the hillside on the southeast corner of the present substation. The cut slope will be moved back eight feet and will be reestablished at the present 1.5 to 1 slope.

The upper 6" of the soil material (topsoil) from the cut extension above the present substation slope will be collected at the top of the slope. After the slope has been cut back and reestablished, this topsoil will be distributed over the top of the new slope using a track backhoe. The estimated total volume of material to be excavated from the slope is 770 cubic yards. The excavated material will be used to repair the slope above the tire storage area where it has subsided and to build up the area north of the substation. The interception ditch used to bypass the undisturbed runoff from the area upslope of the substation pad will be reconstructed on the backside of the nonconductive fence from the bypass culvert drain on the north side of the substation to the undisturbed runoff interception ditch along the East Side road on the south side of the substation. Drainage area flow and ditch sizing calculations in our PAP, Volume 8, pages 41h-5 will still apply. See Map No. 83-2 in Volume 8 for diversion routing.

Should slope failure occur on the extended cut slope, stabilization measures will be implemented within 60 days of receiving regulatory approval, weather permitting.

The drop drain inside of the substation area will be removed or plugged off. As before, the entire substation area will be covered with a minimum of four inches of one to two-inch coarse gravel to inhibit vegetation growth on, and sediment contribution from, this area. The slope will be revegetated with the approved SUFCo reclamation seed mix during late fall. We still wish to maintain the small area exemption status for this area. A containment berm 6" high will be included around the fence to prevent flow of transformer oil away from the site in the event of an accidental spill. The new transformer contains 1500 gallons of oil. The surface area inside of the berm is 3,218 square feet not including the concrete pad which would only require a depth of 3/4 inch to contain an accidental oil spill. The spill would be cleaned up as outlined in our Spill Prevention Control and Countermeasure Plan.

During construction, it will be necessary to change the transformers at the substation which will require dragging them up and down the East Side road on a skid with two track bulldozers. This process may cause temporary damage to the drainage ditch along the road. If such damage occurs, it will be repaired immediately and to the standards required in our PAP. Any new power poles of Southern Utah Fuel Company will be equipped with raptor protection per our PAP and REA Bulletin 61-10. Existing poles have already been so equipped, inspected, and approved by the regulatory authority.

COMMENT 784.13(b)(2)

(Section I)

Detailed estimate of reclamation cost - none is listed, but with deferment of reclamation due to long life of mine, meeting this requirement can be done as mining cessation approaches.

RESPONSE:

The following information is a list of the estimated reclamation costs for the Southern Utah Fuel Company mine.

SALVAGING AND DIRTWORK

<u>Description</u>	<u>Amount</u>	<u>Unit Cost</u>	<u>Subtotal</u>
Foundation Removal	950/yd <sup>3</sup> (est.)	\$55.00/yd <sup>3</sup>	\$ 52,250
Building Removal			
Shop	11,000/ft <sup>2</sup>	\$ 1.00/ft <sup>2</sup>	11,000
Warehouse	4,500/ft <sup>2</sup>		4,500
Offices	9,000/ft <sup>2</sup>		9,000
Garage	580/ft <sup>2</sup>		580
Storage Shed	2,000/ft <sup>2</sup>		2,000
Misc. Structures	5,000/ft <sup>2</sup>		5,000
Coal Handling Structures			
(Steel & equipment removal)	375/ton	\$10.00/ton	3,750
Coal Storage Pads	324/yd <sup>3</sup> (est.)	\$55.00/yd <sup>3</sup>	17,820
Asphalt Removal	1,780/yd <sup>2</sup>	\$ 2.50/yd <sup>2</sup>	4,450
Dirtwork-Cut & Fill	413,000/yd <sup>3</sup>	\$ 1.50/yd <sup>3</sup>	619,500
			<hr/> <hr/>
TOTAL			\$729,850

FINAL RECLAMATION OF MINESITE

Total number of acres to be disturbed requiring reclamation: 20.88 acres

Ripping - 20.88 acres x \$2,000/acre	\$ 41,760
Topsoil addition - 20.88 acres x \$2,200/acre	45,936
Fertilization - 20.88 acres x \$300/acre	6,264
Seeding - 20.88 acres x \$500/acre	10,440
Moisture retention - 20.88 acres x \$1,000/acre	20,880
Maintenance & monitoring - 20.88 acres x \$1,000/acre	<u>20,880</u>
	\$146,160

TOTAL COST

Salvaging and Dirtwork	\$729,850
Reclamation Activities	<u>146,160</u>
	\$876,010



**Southern Utah  
Fuel Company**

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

*FILE: ACT/041/002  
# 3 (text)  
# 15 (w/maps)*

Subsidiary of  
Coastal States  
Energy Company

**RECEIVED**

**JUN 28 1985**

**DIVISION OF OIL  
GAS & MINING**

June 21, 1985

Mr. D. Wayne Hedberg  
Permit Supervisor/Reclamation Hydrologist  
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Wesley K. Sorensen  
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(Section I)

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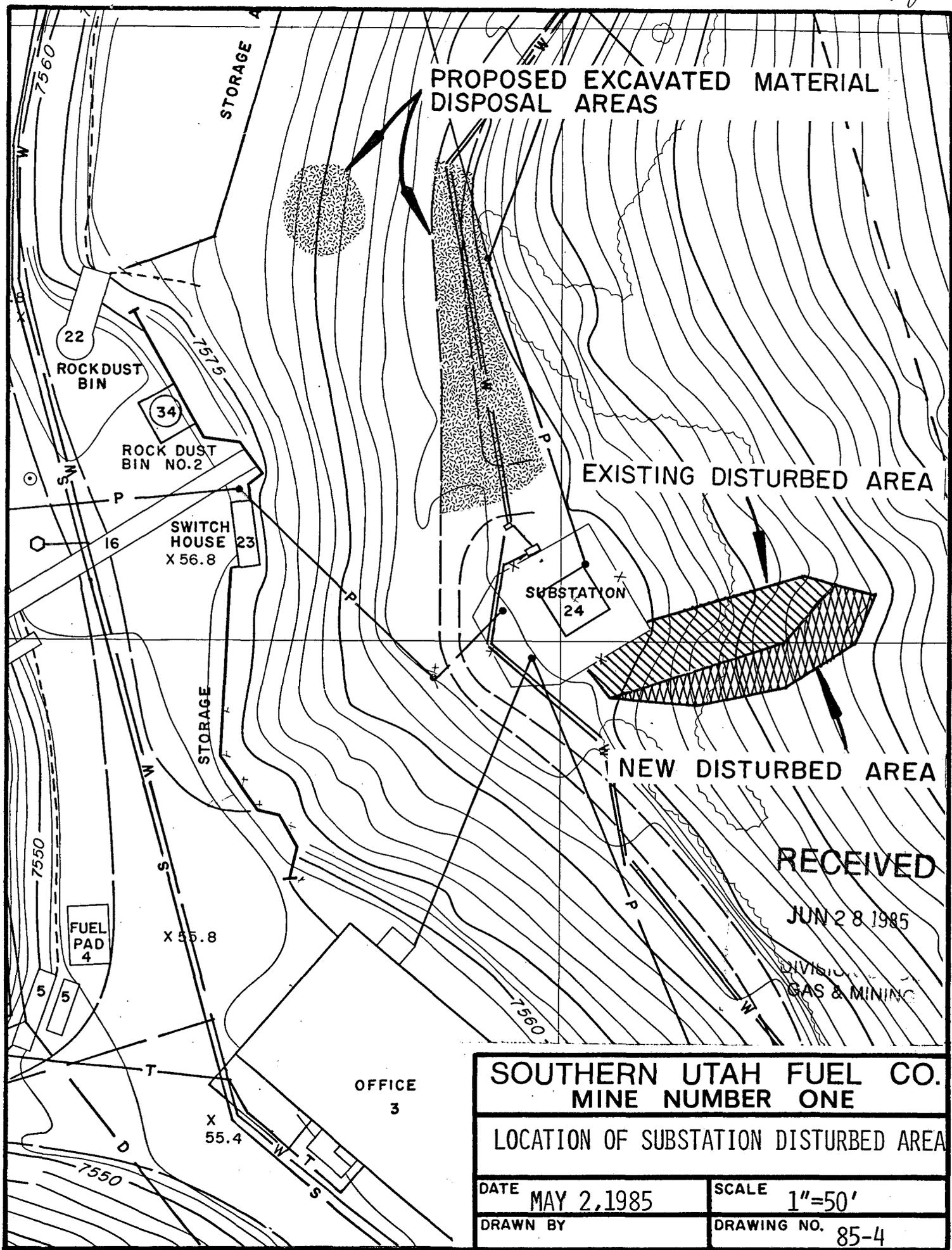
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TOTAL COST

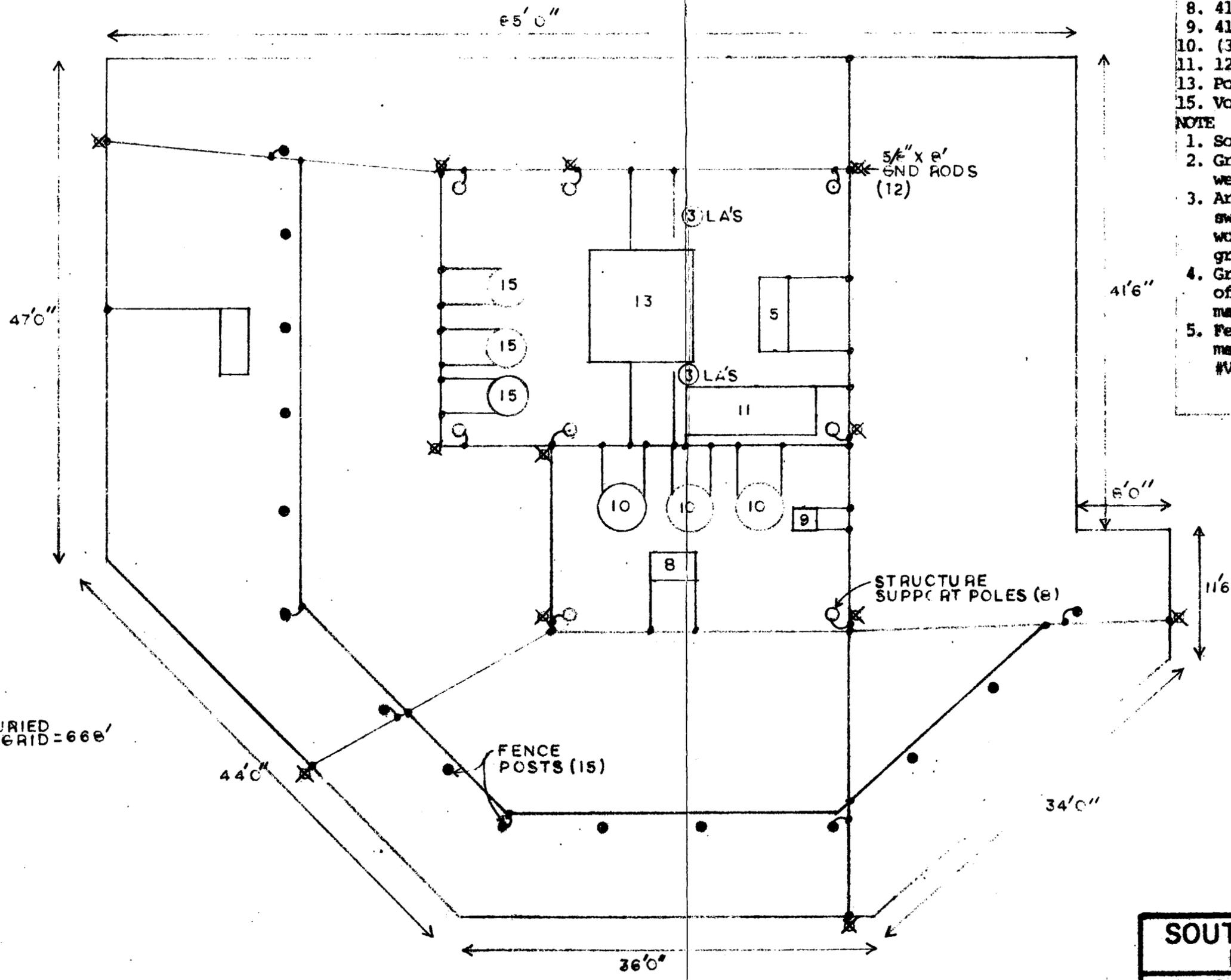
Salvaging and Dirtwork	\$729,850
Reclamation Activities	<u>146,160</u>
	\$876,010



RECEIVED  
 JUN 28 1985

DIVISION  
 GAS & MINING

SOUTHERN UTAH FUEL CO. MINE NUMBER ONE	
LOCATION OF SUBSTATION DISTURBED AREA	
DATE MAY 2, 1985	SCALE 1"=50'
DRAWN BY	DRAWING NO. 85-4



- 3. (3) 60kV station arrestors.
- 5. 69KV power circuit breaker.
- 8. 4160V vacuum switch.
- 9. 4160V ground resistor.
- 10. (3) 833KVA power transformers
- 11. 12.5kV ground resistor.
- 13. Power transformer.
- 15. Voltage regulators.

NOTE

- 1. Solid line is 4/0 copper ground grid.
- 2. Ground buss connections to be cad welded as much as practicable.
- 3. Arrestors, metering transformers, and switches mounted on the structure frame work are to have multiple paths to the ground grid.
- 4. Ground grid is to be buried a minimum of one foot except where connection is made to equipment frames.
- 5. Fence construction and grounding is to meet Utah Power and Light specification #UC-57923-C

TOTAL BURIED GROUND GRID = 666'

RECEIVED

JUN 28 1985

DIVISION OF OIL GAS & MINING

<b>SOUTHERN UTAH FUEL CO. MINE NUMBER ONE</b>	
<b>69KV SUBSTATION GROUNDING</b>	
DATE 3-26-85	SCALE 1" = 10' 0"
DRAWN BY ADS	DRAWING NO. 88SELECT 114B