SOUTHERN UTAH FUEL COMPANY

SUFCO COAL MINE

COASTAL STATES ENERGY COMPANY

1980

VOLUME 3

VOLUME 3

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United States Department of the Interior
OFFICE OF SURFACE MINING
Reclamation and Enforcement
BROOKS TOWERS
1020 15TH STREET
DENVER, COLORADO 80202

OFFICE OF THE REGIONAL DIRECTOR

12 MAY 1980

Mr. Ronald Daniels
Division of Oil, Gas and Mining
1588 West North Temple
Salt Lake City, Utah 84116

Dear Mr. Daniels:

This office has performed an "apparent completeness review" of the information provided by Coastal States Energy Company for the Convulsion Canyon Mine plan addendum, of Southern Utah Fuel Company. Based upon this review the plan appears to address the major components of Subchapter G of the permanent regulatory program and therefore, we are planning to publish Notice of Availability of the plan. However, additional information and clarification is needed before OSM can begin an in-depth technical analysis. We would therefore like you to please forward the request for additional required information (enclosed) to the appropriate Coastal States Energy Company official for response, with the understanding that our technical analysis can not begin until OSM receives that response. (We are sending Coastal States a copy of this letter and the enclosure to expedite their response). OSM understands from conversations with Kevin Yokem of Coastal States Energy Company, that portions of the original mine plan, submitted November 22, 1978 should also be included in our technical analysis. Coastal States Energy Company should incorporate those portions of the original mine plan that are pertinent to Subchapter G of the permanent regulatory program, into their mine plan addendum submitted October 1979. This should expedite our technical analysis and clarify any conflicting information. The timing of our technical analysis, as well as our need for additional information and clarification is directly dependent on the timely submittal of an adequate response to our information request.

The plan was reviewed in the context of the permanent regulatory program. We recognize that implementation of the permanent program was delayed, but we believe that applicants with long range plans for mining, such as Coastal States Energy Company, will want to plan for the permanent program. We note that, with few exceptions, the important information listed in the enclosure is required by 30 CFR 211.10.

Enclosed is a copy of the proposed notice of availability to the public. We will publish it in the Federal Register, as soon as we have ensured its accuracy. Your recommendations would be appreciated.

If questions arise, please feel free to have your staff contact Mark Humphrey of this office (303-837-2451).

Sincerely,

DONALD A. CRANE

Enclosures

cc: Coastal States Energy Co.

U. S. DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT

NOTICE OF AVAILABILITY FOR PUBLIC REVIEW OF A MAJOR MODIFICATION TO A MINING AND RECLAMATION PLAN FOR A UNDERGROUND COAL MINE PROPOSED BY

COASTAL STATES ENERGY COMPANY AND SOUTHERN UTAH FUEL COMPANY
FOR THE CONVULSION CANYON MINE
SEVIER COUNTY, UTAH
(FEDERAL LEASE NO. SL-062583, U-062453, U-0149084 and U-28297)

AGENCY: Office of Surface Mining, Reclamation and Enforcement, Department of the Interior

ACTION: Availability for Public Review of Proposed Major Modification to a Coal Mining and Reclamation Plan

SUMMARY:

Pursuant to Sections 211.5 of Title 30 and Section 1500.2 of Title 40, Code of Federal Regulations, notice is hereby given that the Office of Surface Mining (OSM) has received an application from Coastal States Energy Company and Southern Utah Fuel Company to mine Federal coal at the Convulsion Canyon Mine. A brief description of the location follows:

LOCATON OF LANDS TO BE AFFECTED

Applicant: Coastal States Energy Company and Southern Utah Fuels Company

Mine Name: Convulsion Canyon

State: Utah

County: Sevier

Section, Township, Range: T. 21 S., R. 4 E. SLM, All Sec. 36; T. 21 S., R. 5 E., SLM, SW/4SW/4 Sec. 28, SE/4SE/4 Sec. 29, N/2 Sec. 30, All Sec. 31, S/2 Sec. 32, W/2W/2 Sec. 33; T. 22 S., R. 4 E., SLM, Lots 1, 2, 3, and 4,

S/2W/2, S/2 Sec. 1, NW/4 Sec. 12; T. 22 S., R. 5 E., W/2W/2 Sec. 4, All Sec. 5, NE/4, S/2, E/2NW/4 Sec. 7, All Sec. 8, NE/4, N/2SE/4 Sec. 12, NE/4, N/2NW/4 Sec. 17, and N/2 Sec. 18

Office of Surface Mining Reference No. UT 0026

The mine is an existing mine operating on Federal coal lands located approximately 30 miles east of Salina, Utah, in Sevier County. The proposed modification involves mining an area of 5555 acres of leased federal coal. The operation would involve the exraction of coal from the upper Hiawatha coal seam. The Hiawatha seam lies above the Blind Canyon seam which is also commonly mined in the area. The total surface disturbance will be approximately 27 acres. The surface disturbance will include a newly constructed sediment pond, and existing facilities such as: load-out, portal, warehouse, office and roads. The coal is shipped by truck to Salina and Leyan and then shipped by either truck or rail to buyers. The proposed annual production rate would be 2.1 million tons per year. The proposed modification involves an extension of mining activities east from the presently mined area. The area scheduled for mining are new leases adjacent to the Federal lease currently being mined by Southern Utah Fuel Company.

A notice of availability for public review of Southern Utah Fuel Company's Convulsion Canyon Mining and Reclamation Plan was published in the Federal Register, January 19, 1979 for Federal lease No. U-28297. In

October 1979 Coastal States Energy Company and Southern Utah Fuel Company submitted an addendum to the Convulsion Canyon Mining and Reclamation Plan. The addendum included three additional Federal leases (Federal lease Nos. SL-062583, U-062453, and U-0149084).

The mining and reclamation plan has been determined to be sufficiently complete and this notice is issued to inform the public of the availability of the revised plan for review. The Office of Surface Mining will prepare a technical analysis (TA) to determine whether the proposed plan meets the requirements of SMCRA and an environmental assessment (EA) which will evaluate the impacts of actions the Department of the Interior may take on the plan. During the analytical review, it is possible that OSM will request additional information from the company. Any further information obtained would also be available for public review.

No action on the modified plan will be taken by the Regional Director for a period of 30 days after publication of this Notice of Availability in the Federal Register. Prior to making a final decision on this proposed modification, the Office of Surface Mining will issue a Notice of Pending Decision pursuant to Section 211.5(c)(2) of Title 30, Code of Federal Regulations.

The plan is available for public review at the Office of Surface Mining, Region V, Brooks Towers, 1020 15th Street, Denver, Colorado 80202. Comments on the proposed mine plan application should be addressed to the Regional Director, Office of Surface Mining, at the above Denver address.

FOR FURTHER INFORMATION CONTACT

Mark Humphrey or John Hardaway, Office of Surface Mining, Brooks Towers, 1020 15th Street, Denver, Colorado 80202.

DONALD A. CRANE
Regional Director

SECTION I

ITEMS NOT INCLUDED OR NOT MEETING MINIMUM STANDARDS

SPECIFIED BY OSM REGULATIONS

782.13 IDENTIFICATION OF INTERESTS

a)(4) Include statement regarding any purchaser of record under a real estate contract of the areas to be affected and of the coal to be mined.

b The application (Exhibit 3) lists Federal Lease numbers and identifies sections of land covered, but doesn't clearly state if these leases constitute permits. Lease No. U-28297 is referred to as being applied for, but no disposition of the application is stated. The applicant should provide a document indicating that the applicant has been issued this lease, and clearly identify on a map the permit boundaries that these leases constitute.

e) Names and addresses of surface and subsurface owners. This is not conclusive, although federal ownership is implied for all contiguous land except 640 acres owned by applicant. Pages 15, 16, and 17. Paragraph D of Exhbit 4 appear to contain conflicting statements and should be clarified.

g) Statement is not sufficient to meet requirements.

782.15 RIGHT OF ENTRY AND OPERATION INFORMATION

a) No documents are included; the only reference is to lease numbers. Status of lease U-282997 is uncertain.

b)(2) A copy of document of conveyance that reserves or grants right of extraction should be included.

782.17 PERMIT TERM INFORMATION

a) None of the requirements are addressed.

782.19 IDENTIFICAITON OF OTHER LICENSES AND PERMITS

c)d) Include list of all other licenses and permits.

783.12 GENERAL CULTURAL RESOURCES INFORMATION

b) The archaeological reports provided do not contain information describing the sites located, the environmental contexts of the sites, or evaluations of their significance. Also missing is any indication of the problem orientation in the investigation of the sites: the recommendations for avoidance or mitigation of the sites; are aimed at the core drilling activities only. Recommendations should also be included for the actual mining operations.

The mine plan area has not been fully inventoried as called for under Executive Order 11593 and the amended Historic Preservation Act. Such an inventory should be included in the application. The entire mine plan area must be inventoried if there is a potential for subsidence.

The Hadley Monument is not adequately evaluated for its historic significance. Information should be provided which justifies a determination that it is either eligible or ineligible for nomination to the National Register of Historic Places (NRHP). The crteria for nomination (36 CFR 60.6) should be referenced in the discussion. Documentation should be provided which indicates that the Utah SHPO concur with this evaluation.

783.13 HYDROLOGY AND GEOLOGY-GENERAL REQUIREMENTS

a) No distinctions are made among general area, adjacent area and mine plan area.

784.14 GEOLOGY DESCRIPTION

a) The MPR indicates that little is known as to the strata below the lowest coal seam. How will mining effect the nearest aquifer below the lowest coal seam?

1)(i) Subsurface water at face up area is not addressed although the mine pumps 250 to 325 gpm.
(ii) The lithology of strata should be included in the application.
(iii) Physical properties of stratum in overburden should be described.
(iv) Chemical analyses of each stratum should be included in the application.
2)(1) Location of subsurface water should be described.
(iii) Pyrite and clay content of the strata above and below the coal seam should be given.

783.15 GROUND WATER INFORMATION

a) Two appendix reports referred to should be included (Exhibits 3 & 5).

(1) Depth and extent of water table and aquifers should be addressed quantitatively, or on maps.

(2) Lithology and thickness of aquifers should be addressed.

(4) Water quality from observation wells should be addressed; otherwise quality of the aquifers above or below the coal seam can not be evaluated.

(4)(b)
Recharge, storage and discharge characteristics of the aquifers should be addressed quantitatively or on maps. Parameters describing transmissivity, permeability, storativity, and others as required should also be provided.

783.16 SURFACE WATER INFORMATION

a) Locations of all surface water bodies should be mapped legibly at required scales.

Seasonal variations in water quality and quantity should be provided - data are biennial.

b) 1) The parameters listed under 30 CFR 783.16(b) for ground water discharges should be addressed.

2) Water quality data should be depicting seasonal variations should be provided.

783.17 ALTERNATIVE WATER SUPPLY INFORMATION

Specific alternative sources of supply should be provided.

Extent to which surface flows will be affected by future quality of mine effluent should be addressed - predicted trends or changes in trends are also needed.

783.19 VEGETATION INFORMATION

a) Extents of each major vegetation type in the permit area are not calculated pursuant ot 30 CFR 816.111. The applicant should provide acreage calculations for each major vegetation type. Productivity estimates are reported by vegetation types (v1: p. 21-26) but species compostion and cover are not (v2: Exhibit 5, p. 21-28). The applicant should provide production, and cover estimates by species and major vegetation types.

783.21 SOIL RESOURCES INFORMATION

1) Although preparation of such is cited as part of the 1979 monitoring plan (v2: Exhibit 6), the SUF Co. mine plan should contain a soils map.

3) The soils analysis should include saturation percent, particle size, and USDA texture.

4) Soils productivity should be discussed relative to sampling data. There should be a correlation between vegetation types and soils.

783.22 LAND USE INFORMATION

a) Although existing uses are well documented in the permit area, which is under U.S. Forest Service Management, a land use map should be provided.

b) The applicant should discuss the extent of coal removed previous to this permit application.

783.24 MAPS: GENERAL REQUIREMENTS

The application shall include maps showing:

a) This is incomplete, see 782.13(a) above.

c) Boundaries of areas to be affected over life of activities are not included.

Also not included is a description of size, sequence and timing of mining of subareas for which additional permits will be sought.

d) This is adequate except that the maps which show buildings do not show the permit boundary.

e) Location of man-made features wihin, through or over permit area:

Electric lines are not shown.

Pipelines incompletely shown.

No drainage tile fields in area.

g) Map showing drainages in the area in not included.

i. The map of the mine plan area (Figure 3) does not include the locations of the archaeological sites (42SV671 and 42SV672) noted in the archaeological letter report of June 16, 1976. The map of the mine plan is not at the same scale as the sketch map included in the letter report. None of the maps adequately indicate the areas examined in the previous investigations. The Hadley Monument is not shown on any map. The map coverage should include on the same sheet the locations of the areas surveyed, known sites and areas of possible disturbance.

783.25 CROSS SECTIONS, MAPS, PLANS

Applications shall include sections, maps and plans showing:

a) Elevations and locations of test borings and core samplings. None included, but the geology section, Chapter III p. 20 (Exhibit IV) of the EAR by the USFS and BLM refers to drill hole data.

b) Elevations and locations of monitoring stations are not precise enough for technical analysis - need to be plotted on topographic maps of appropriate scales.

c) Coal seams to be mined: Basal Blackhawk Fm.
Upper Hiawatha bed: 7 to 16' thick, avg. 13 ft.

Seams above the mined seam: Text refers to "coal seams", p. 20, op. cit., but doesn't identify any seams above the Upper Hiawatha and none are shown on FIg. 9, p. 23, op.cit.

Stratum below mined seam: Are not described in sufficient detail to identify rock type except that the Hiawatha coal bed, 2-4 feet thick, lies 15-25 feet below the Upper Hiawatha.

d) Crop lines are not shown, but strike and dip are described in the text.

e) Location and extent of known workings (u/g) (within and adjacent to mine area), and openings to the surface - not shown, mentioned p. 17, vl as map 1A SUF co. mine plan, but not included. Portals are shown, but workings connected to them are not.

f) Maps and cross-sections at required scales, showing areal and vertical distributions of aquifers, and seasonal differences of head and movement of ground water are not provided.

g) Irrigation ditches are not addressed.

Locations of surface water bodies are not presented on maps of required scales or in the required detail.

j) Water wells in MPAA are not discussed.

783.27 PRIME FARMLAND INVESTIGATON

a) There is no evidence in the mine plan that a specific investigation was carried out to identify prime farmland. In Exhibit 4:32, the statement is made that no prime or unique farmlands are located in the lease area (See Section II).

c) d)
An authoritative statement of negative determination from the Soil Conservation Service, USDA, should be included in the mine plan.

784.11 OPERATON PLAN: GENERAL REQUIREMENTS

b) The requirements of this paragraph are adequately described in various places except that the Mine Site maps show "coal slide" areas. These are not described or discussed in the text. The application should clarify their extent, content and reclamation.

784.12 OPERATION PLAN: EXISTING STRUCTURES

a) (2) Plans and condition should be stated.

(3) Construction dates should be listed.

(4) There are no showings of compliance with Subchapter K (permanent program) or Subchapter B (interim program).

784.13 RECLAMATION PLAN: GENERAL REQUIREMENTS

b) (2) 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.

(8) Include a description of sealing and managing openings to the surface.

784.14 RECLAMATION - HYDROLOGIC BALANCE PROTECTION

a) (1) Detailed description, including maps and cross-sections showing potential quantitative changes in ground water recharge, discharge and points of charges in water quality should be provided.

(2) Well and/or water use permits should be provided, with exception of NPDES Nos.

(3) Specific quantities of ground water existing now or that will be affected by mining should be calculated and presented.

(4) Figure 10 showing surface facilities (and presumably portal drainages) should be provided (Exhibit 3).

b) (1) Description of plan for control of surface and ground water drainages should be provided.

Plans for hydrologic tests of the aquifer(s) should be provided including infiltration, pumping, drilling, and surface flow and storage tests.

c) A specific quantitative determination of the probable hydrologic consequences of mining should be provided. Reduced discharge of springs and changes in water quality should be discussed and analyzed quantitatively.

d) Descriptions and drawings of seals and barriers should be provided.

784.16 RECLAMATION PLAN - PONDS, ETC.

a) 1) (iv) Survey of effect of subsidence from past mining has not been included but apparently there is a study presently underway. A progress report should be submitted providing information collected to date.

(v) No certification statement is included - presumption is that no additional structures are planned, but this should be stated in the mine plan.

2) (ii) Geotechnical investigation should be included for sediment control structure.

784.17 PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

The measures described in the materials provided are incomplete under the requirements of 36 CFR 800.4 (a)(1), 800.4 (a)(4) and 800.6 (b).

The applicant should consult with OSM, SHPO and ACHP to develop a mitigation plan that includes a detailed problem-oriented program of inventory, testing, evaluation and mitigation of adverse effects as necessary.

784.20 SUBSIDENCE CONTROL PLAN

Description and discussion of the effects and control of subsidence appear to be adequate except there are no maps or accurate descriptions showing the relation of areas mined by room and pillar and those mined by longwall methods and their relationship to surface areas that might be affected. The study underway to monitor subsidence control should provide all available data to date.

784.23 OPERATION PLAN: MAPS AND PLANS

a) The application should discuss and indicate on a map those lands that are to be affected by mining throughout the life of the mine.

b) (1) Utility corridors should be shown on a map.

(2) Land to be affected by subsidence should be described.

(3) Areas for which a performance bond will be posted must be described and indicated on a map.

(6) (10) (12)
Maps should be at the required scale (771.23(e)(1)); no cross-sections are included; most maps have insufficient detail or are incomplete (see review response, Sections 782.24 and 783.25).

785.19 SURFACE COAL MINING AND RECLAMATION OPERATIONS

Alluvial valley floor determination was not made; information necessary for regulatory authority to make determination should be included in the permit application.

SECTION II

ITEMS IDENTIFIED DURING THE COMPLETENESS REVIEW

AS APPARENTLY NOT MEETING TECHNICAL STANDARDS

771.23 PERMIT APPLICATIONS - GENERAL REQUIREMENTS FOR FORMAT AND CONTENTS

a) Format compliance is generally adequate. Incomplete or insufficient information is noted in the following notes.

e) Format is disorganized.

Mine plans and adjacent area maps are acceptable, but do not show an outline of extent of underground mining planned.

782.13 IDENTIFICATION OF INTEREST

a) (2) Applicant should provide complete documentation as to who owns the land (USFS, BLM, private owner - see 782.15).

e) Give addresses owners (e.g. BLM and Kemmerer Coal) of areas contiguous to the proposed permit area; these were submitted to the USGS on April 13, 1977, but are not included in this addendum.

782.14 COMPLIANCE INFORMATION

c) (5) Include statement regarding actions taken to abate the grading and surface drainage violations.

782.15 RIGHT OF ENTRY AND OPERATION INFORMATION

b) (1) According to Exhibits 3 and 4 which were prepared by USGS, BLM and USFS, all land is federal and therefore, consent is inherent, but this condition should be stated definitely in the application.

782.16 RELATIONSHIP TO AREAS DESIGNATED UNSUITABLE

a) The MRP (v1:12) states that to the applicant's knowledge, no portion of the area to be permitted is or is not under study to be designated unsuitable for underground or surface mining under 30 CFR Parts 764 and 765. A statement should be provided to describe the method for arriving at this determination.

783.13 HYDROLOGY AND GEOLOGY-GENERAL REQUIREMENTS

a) The general area is assumed to be that mapped as Figure 1 in Exhibit 5 or Figure 6 in Exhibit 4. These figures are not at required scales (no scale for the Figure 1 "sketch map"), Figure 6 is illegible and "sites" and "springs" cannot be differentiated on Figure 6.

2) Information applicant gathered and submitted is incomplete and deficient (see review responses in Sections 783.14, 15, 16, 17 and following sections).

783.14 GEOLOGY DESCRIPTION

a) Insufficient information is provided to technically evaluate subsurface water location. Geologic, structure, overburden isopach, aquifer thickness and extent, and piezometric surface maps should be provided.

783.15 GROUND WATER INFORMATION

a) MPAA is not distinguished from general area.

1) Applicant provides water level data only and only from 1978 from 3 observation wells. Well design well logs, and accurate well locations on a map of required or larger scale should be included.

4) The only subsurface water quality data is from the mine effluent. The methods of collection, preservation, and analysis should be provided.

783.16 SURFACE WATER INFORMATION

b) (1) Runoff data provided cover period of insufficient duration to characterize patterns. Regional relations based on drainage area and storm frequency and character, or data from nearby gages, would be helpful.

Water quality data are insufficient to show seasonal variations; monthly measurements from any nearby sampling site should be provided.

783.17 ALTERNATIVE WATER SUPPLY INFORMATION

Interruption of the existing fluvial regime due to proposed mining and expected subsidence should be addressed in adequate detail.

783.19 VEGETATION INFORMATION

a) The vegetation map that OSM requested be included in Southern Utah Fuel Company's amended mine plan is present (v3, Exhibit 11). Nomenclature applied to the map, however, is not consistent with that used in the text (v1:p. 23; v1: Exhibit 4; v2: Exhibit 5). The applicant should correct this inconsistency.

783.21 SOIL RESOURCES INFORMATION

(2) In the MRP (v1: p. 38-42), soils of several locations in the mine area are coded and their texture and profile description given where applicable. Reference is made to chemical analyses of soils from these locations (v2: Exhibit 7) but there is no correlation of soil with appropriate sample numbers (e.g., location of sample #6 is east of the office complex on the cut bank just above the coal seam). Table 2 in Exhibit 7, which shows results of soils analyses, obscures the sample numbers and, again, no correlation to soils types described in the text. The applicant should provide an adequate correlation for OSM to properly evaluate the soil sample.

783.24 MAPS - GENERAL REQUIREMENTS

Maps showing hydrologic features of minimum scales as specified (1:24,000 for MPAA; 1:6000 for MPA) should be included.

b) Boundaries of land within the permit area where applicant has the legal right to enter should be indicated.

g) Public roads should be marked on the maps; for example, Exhibits 9-1 through 9-3, which show the plan area in detail, and Exhibit 9-9 should show which roads are public.

784.13 RECLAMATION PLAN: GENERAL REQUIREMENTS

(B) (5) The appropriateness of mulching techniques should be addressed as well as the methods. The plan for determining the success of revegetation pursuant to 30 CFR 817.116 should also be provided.

(9) Section M of the MRP quantifies some emissions and contains a proposed monitoring plan. The applicant should submit a copy of all air quality permits that have been obtained. However, if none have been obtained, then the applicant should list the permits that the applicant has made application to receive permits.

784.15 RECLAMATION PLAN: POSTMINING LAND USES

a) Postmining land use is directly (or indirectly, as the case may be) addressed in v1: 52-54, Exhibit 3: 24, and Exhibit 4: 50-54, but should also discuss the ability of the land to support other than premining uses.

b) No specific comments on postmining land use plans by the USFS or other interestd agencies should be included in the MRP.

784.18 RELOCATION OR USE OF PUBLIC ROADS

Two public roads exist in and adjacent to the mine plan area: East Side Road and Mine Access Road (v1: 30-32). Neither road will be relocated but mining will occur within their vicinity. Maps and cross sections of these roads should be included (See 783.24(b)).

784.21 FISH AND WILDLIFE PLAN

b) The wildlife monitoring plan is an extension of the methods used in animal sampling. The title of the plan (v2: Exhibit 6) indicates 1979 monitoring, and the text contains no schedule to indicate monitoring beyond that time. Explain.

(1) Threatened and endangered species, per se, are not mentioned in the wildlife monitoring plan v2: Exhibit 6), although the State's environmental assessment (v1: Exhibit 3) indicates the Bald Eagle (not listed at that time) present on the site. The subsequent federal environmental assessment (v1: Exhibit 4) refers to the Bald Eagle and Peregrine Falcon as possibly present but Fish and Wildlife Service predicted no impact and made no special stipulations for their protection. The applicant's onsite animal sampling did not record their presence at that time (v2: Exhibit 5). Explain.

(2) (3) The plan should specifically address raptors, migratory birds, and other protected species, nor habitats of unusually high value.

784.26 AIR POLLUTION CONTROL PLAN

a) The air quality monitoring plan (v1: 47-51) probably is not adequate since monitoring will not be conducted upwind and downwind of fugitive sources.

b) Section M of the MRP (p. 47-51) discusses fugitive emissions in a generic manner. The fugitive emissions could be further quantified with percent reductions for applicable control measures of 30 CFR 817.95.

The fugitive dust plan should propose control measures as listed in Section 817.95.

Additional comments provided by other federal agencies that should be addressed by the Applicant.

Geological Survey

1. The narrative on outside rock disposal - page 29 - states in part, "consequently, no waste rock material shall be transported outside of the underground mine for disposal purposes." This could be modified because it may be necesary at some future date to have the coal washed in a preparation facility to achieve maximum economic recovery and an acceptable product. This could be the situation in the new Federal lease U-28297 where there is evidence of the seam splitting. The company has the alternative of including these facilities in the current plan or filing for an approval of a major modification at a later date.

2. The narrative relative to sub-mains on page 17, vol. 1 states there will be three entries driven to the surface from each one of the 2 & 3 East sub-mains. Map No. 1A of the approved plan only shows two entries breaking out for each sub-main.

3. The original 30 CFR 211 plan dated February 12, 1977, included pending Federal lease U-28297. The review of the plan and subsequent environmental analyses included this area. The plan was approved on February 2, 1978. Approval was restricted to that area then under lease - not U-28297. Our approval letter dated February 3, 1978, included stipulations, one of which required the company to change the mine maps because of the inability of Coastal State to acquire Federal lease U-28297 at that time. We are in agreement with the original submittal; however, since lease U-28297 has been acquired an updated mine map should be submitted showing a 5-year forecast that is consistent with the present mine works.

4. We request that the new approval by the Secretary contain a stipulation that the company describe a method of operation and measures by which the operator plans to comply with the obligations and requirements set forth in 30 CFR 211.4 and 211.40 and any special terms and conditions of the lease or license.

5. We would also like to have the number of acres affected with each phase of the mining operation.

6. Typical cross-section maps of the underground strata including the coal seams should be provided.

Fishlake National Forest

1. The culvert system leading to the sediment pond should be constructed to allow for flushing-out into the sediment pond or otherwise cleaning out any sediment which may accumulate and restrict or block passage of run-off thru the system. All sediment removed from the system shall be deposited in the sediment pond, or at another location as approved by the authorized officer, to avoid its entering the natural drainage system or be otherwise uncontrolled.

2. Water bars should be constructed and/or maintained to ensure effectiveness.

3. Those portions of the sediment control system, including the sediment pond, which are located outside of the lease area will require authorization by Forest Service Special Use Permit.

4. The plan for monitoring surface water is adequate. However, efforts have been made to implement the plan, but monitoring structures have failed. New efforts are needed in order for implementation.

5. Species of vegetation to be used in reclamation activities shall require approval by the Forest Service.

771.23

771.23(a)	Response Follows
771.23(b)	Various
771.23(c)(1)	79 Sub. 80 Sub., Various Reports
771.23(c)(2)	79 Sub. 80 Sub., Various Reports
771.23(c)(3)	79 Sub. 80 Sub., Various Reports
771.23(d)	80 Sub., Various Reports
771.23(e)(1)	80 Sub., Various Maps
771.23(e)(2)	77 Plan 80 Sub., Map 8-2

COMMENT 771.23(a),(e) (Section I)

(a) Format compliance is generally adequate. Incomplete or insufficient information is noted in the following notes.

(e) Format is disorganized.

Mine plans and adjacent area maps are acceptable, but do not show an outline of extent of underground mining planned.

RESPONSE:

The Applicant has incorporated a Cross Reference in Volume I to relate various portions of this mining and reclamation plan. Additional information is submitted as a part of this Application in response to the notations of the previous review.

An updated mine projection map (Map 80-2) illustrates the extent of coal previously mined as well as future areas to be mined.

771.25 Advisory

771.27 79 Sub.

782.13(a)(1)	77 Plan 79 Sub.
782.13(a)(2)	80 Sub., Map 80-1
782.13(a)(3)	79 Sub.
782.13(a)(4)	Response Follows
782.13(a)(5)	79 Sub.
782.13(a)(6)	79 Sub.
782.13(b)	79 Sub. 80 Sub., Response Follows
782.13(b)(1)	79 Sub.
782.13(b)(2)	79 Sub.
782.13(b)(3)	79 Sub.
782.13(c)	79 Sub.
782.13(d)	79 Sub. 80 Sub., Response 784.13(b)
782.13(3)	80 Sub., Response 782.13(b)
782.13(f)	79 Sub. 80 Sub., Response 782.19(c), (d)
782.13(g)	Response Follows

COMMENT 782.13(a)(2) (Section II)

Applicant should provide complete documentation as to who owns the land (USGS, BLM, private owner - see 782.15).

RESPONSE:

The names and addresses of the legal or equitable owners of record of areas to be affected by the surface operations and facilities are:

United States of America
Department of Agriculture
U.S. Forest Service
Fishlake National Forest
55 South 100 East
Richfield, Utah 84701

Coastal States Energy Company (as Lessee)
Nine Greenway Plaza
Houston, Texas 77046

The names and addresses of the legal or equitable owners of record of surface acreage in areas for which underground mining is being conducted or is proposed:

United States of America
Department of Agriculture
U.S. Forest Service
Fishlake National Forest
55 South 100 East
Richfield, Utah 84701

United States of America
Department of Agriculture
U.S. Forest Service
Manti LaSal National Forest
350 East Main Street
Price, Utah 84501

Neal J. Mortensen
c/o UNELCO, Inc.
Aurora, Utah 84620

Roger E. Nielsen and Ruth Nielsen
18 West 200 North
Salina, Utah 84654

The names and addresses of the owners of the coal to be mined are presented at Response to Comment 782.13(b) as well as a copies of the instruments granting to the Applicant the right to mine the coal.

A property ownership map of the permit area and adjacent area is presented as Map 80-1.

COMMENT 782.13(a)(4) (Section I)

Include statement regarding any purchaser of record under a real estate contract of the areas to be affected and of the coal to be mined.

REPONSE:

No area within the lands to be affected by surface operations and facilities or within the area of coal to be mined is under a real estate contract.

COMMENT 782.13(b) (Section I)

The application (Exhibit 3) lists Federal lease numbers and identifies sections of land covered, but doesn't clearly state if these leases constitute permits. Lease No. U-28297 is referred to as being applied for, but no disposition of the application is stated. The applicant should provide a document indicating that the application has been issued this lease, and clearly identify on a map the permit boundaries that these leases constitute.

RESPONSE:

The Applicant proposes to mine portions of several federal coal leases and fee properties leased to or owned by the Applicant. When the original SUFCo Mine Plan was approved in 1977, U-28297 was only an application for a federal coal lease. Subsequently, the Applicant was awarded the lease following a competitive bid. All references to "U-28297" or "Application U-28297" should be read "Federal Coal Lease U-28297". The Federal coal leases for which mining is hereby proposed are:

Federal Coal Lease U-28297
Federal Coal Lease U-062453
Federal Coal Lease U-0149084
Federal Coal Lease U-062583

The Applicant owns in fee 640 acres of coal which is included in the area for which mining is proposed.

*In October, 1980, the Applicant filed an Emergency Lease Application (Federal Coal Lease No. U-47080) with the Bureau of Land Management covering 1,160 acres of coal lands adjacent to the existing leasehold. The Application, when approved by the respective agencies, will allow the lands to be leased for coal mining purposes in the event that the Applicant hereunder is the successful bidder and subsequently is issued the federal coal lease covering these lands, the lands are to be included in the permit area of this Revised

*Denotes change or addition (6/81)

Mining and Reclamation Permit Application. The lands covered by the Application are illustrated on Property Map 80-1.

The Applicant has, during the last five years, held in addition to the SUFCo mining permit, a permit for its Skyline Coal Project located near Scofield, Utah. The Skyline mine permit was approved on June 24, 1980.

COMMENT 782.13(e) (Section I)

Names and addresses of surface and subsurface owners. This is not conclusive, although federal ownership is implied for all contiguous land except 640 acres owned by applicant. Pages 15, 16, and 17. Paragraph D of Exhibit 4 appears to contain conflicting statements and should be clarified.

RESPONSE:

"Ownership Map" (Map 80-1) of the SUFCo permit and adjacent lands is presented in Volume 3.

The names and addresses of the surface and subsurface owners are presented in the Responses to Comments 782.13(a)(2) and 782.13(b).

COMMENT 782.13(e) (Section II)

Give addresses of owners (e.g. BLM and Kemmerer Coal) of areas contiguous to the proposed permit area; these were submitted to the USGS on April 13, 1977, but are not included in this addendum.

RESPONSE:

I. The following list contains the names and addresses of all owners of surface lands contiguous to the permit boundary:

United States of America
Department of Agriculture
U.S. Forest Service
Manti LaSal National Forest
350 East Main Street
Price, Utah 84501

United States of America
Department of Agriculture
U.S. Forest Service
Fishlake National Forest
55 South 100 East
Richfield, Utah 84701

*Kemmerer Coal Company
Frontier, Wyoming 83121

State of Utah
Division of State Lands
411 Empire Building
231 East 400 South
Salt Lake City, Utah 84111

II. The following list contains the names and addresses of the owners of mineral * acreage contiguous to the permit boundary:

United States of America
Department of the Interior
Bureau of Land Management
University Club Building
Salt Lake City, Utah 84138

*Typographic Correction (6/81)

State of Utah
Division of State Lands
411 Empire Building
231 East 400 South
Salt Lake City, Utah 84111

*Kemmerer Coal Company
Frontier, Wyoming 83121

*Typographic Correction (6/81)

COMMENT 782.13(g) (Section I)

Statement is not sufficient to meet requirements.

RESPONSE:

*The Applicant owns or controls, directly or indirectly, no legal equitable interest in any lands contiguous to the permit area. However, the Applicant has made applications to lease certain lands west and adjacent to the existing SUFCo leasehold. The location of these lands is presented on Map 80-1. It is the Applicant's intentions to include these lands within the permit area upon lease issuance to the Applicant.

*Denotes change or addition (6/81)

782.14(a)(1)	79 Sub.
782.14(a)(2)	79 Sub.
782.14(b)	Not Applicable
782.14(c)	79 Sub.
782.14(c)(1)	79 Sub.
782.14(c)(2)	79 Sub. 80 Sub., Response 782.14(c)(5)
782.14(c)(3)	79 Sub. 80 Sub., Response 782.14(c)(5)
782.14(c)(4)	79 Sub. 80 Sub., Response 782.14(c)(5)
782.14(c)(5)	Response Follows

COMMENT 782.14(c)(5) (Section II)

Include statement regarding actions taken to abate the grading and surface drainage violations.

REPONSE:

The following constitute all of the citations for alleged violations of the surface mining regulations at the Applicant's SUFCo and Skyline mining operations located in Carbon and Emery County, Utah:

SUFCo

On May 10, 1979, SUFCo was cited by the Office of Surface Mining, Reclamation and Enforcement of the Department of the Interior for the following alleged violations of the Surface Mining Control and Reclamation Act of 1977:

1. Failure to have a copy of permit available for inspection.
2. Failure to grade road cuts to main entry and other surface work areas.
3. Failure to pass surface drainage through a sedimentation pond.
4. Failure to dispose of excess rock and earth materials in an area approved by the regulatory authority.

A request for hearing and review of the above alleged violations has been made and a hearing has been set for December 1, 1980.

1. Failure to retain all earth, rock and other mineral and waste materials on the solid portion of existing or new benches of road cuts, mine workings, or other benches.
2. Failure to segregate, stockpile, and protect the topsoil from wind, water erosion, or contaminants in an approved manner.

No legal action has yet been taken in regard to the above citations.

Skyline

On September 23, 1980, citation was issued by the Office of Surface Mining, Reclamation and Enforcement for the following alleged violations of the Surface Mining Control and Reclamation Act of 1977:

1. Operating without a permit.
2. Failure to remove or segregate, stockpile, or protect topsoil.

On September 24, 1980, citation was issued by the Division of Oil, Gas and Mining of the Department of Natural Resources of the State of Utah for the following alleged violations of the Utah Coal Mining Reclamation Act of 1979:

1. Failure to pass surface drainage through a sedimentation pond.
2. Failure to maintain culverts on access roads.

On October 10, 1980, further citations were issued by the Division of Oil, Gas and Mining as follows:

1. Failure to pass surface drainage through sedimentation ponds.
2. Fording a stream.
3. Failure to maintain culverts.

Petitions for hearing and review of all of the above citations have been filed. No hearing has been set as of November 14, 1980.

The conditions cited in the Notice of Violations have been abated, and the Applicant intends to continue its mining operation in compliance with all laws and regulations.

782.15(a)	Response Follows
782.15(b)(1)	Response Follows
782.15(b)(2)	Response Follows
782.15(b)(3)	Not Applicable

COMMENT 782.15(a),(b)(2) (Section I)

(a) No documents are included; the only reference is to lease numbers.

(b)(2) A copy of document of conveyance that reserves or grants right of extraction should be included.

RESPONSE:

Copies of documents granting the Applicant the legal right to enter and begin underground coal mining activities are presented in this section.

The surface facilities are constructed upon federally owned lands leased to the Applicant by way of Federal Coal Lease SL-062583. Construction of the proposed sedimentation pond will be upon Federally owned land and immediately south and adjacent to SL-06253. The Fishlake National Forest has approved construction of the facility in the proposed location. This area for which construction is proposed is to be a part of the permit area and area to be bonded.

None of the rights previously granted to the Applicant are subject to pending litigation.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

COAL LEASE

Serial Number

U-28297

This lease, is entered into on JAN 1 1979 , by the United States of America, the lessor, through the Bureau of Land Management, and

Coastal States Energy Company
Nine Greenway Plaza
Houston, TX 77046

, the lessee,

and shall become effective on , (effective date).

Sec. 1. STATUTES AND REGULATIONS – This lease is issued pursuant and subject to the terms and provisions of the Mineral Leasing Act of February 25, 1920, 41 Stat. 437, as amended, 30 U.S.C. Sections 181–263, hereafter referred to as the Act. This lease is also subject to all regulations of the Secretary of the Interior (including, but not limited to, 30 CFR Part 211 and 43 CFR Group 3000) which are now or hereafter in force and which are made a part hereof, except that no amendment to the regulations made subsequent to the effective date of this lease shall alter the rental and production royalty requirements in Section 5 and 6 of this lease. continued under Sec 30.

WITNESSETH:

Sec. 2. RIGHTS OF LESSEE – The lessee, in consideration of the bonus, rents, and royalties and other conditions hereinafter set forth hereby grants and leases to the lessee the exclusive right and privilege to mine and ~~dispose of all coal in the following-described tracts (leased lands) situated in the State of~~ the coal in the Upper Hiawatha Coal Seam located in the following-described lands:

T. 21 S., R. 5 E., SLM, Utah
Sec. 32, lots 1–4, N½S½;
Sec. 33, lot 1, NW¼SW¼.

T. 22 S., R. 5 E., SLM, Utah
Sec. 4, lot 4, SW¼NW¼, W½SW¼;
Sec. 5, all;
Sec. 7, S½NE¼, E½SW¼, SE¼;
Sec. 8, all;
Sec. 17, NE¼, N½NW¼;
Sec. 18, NE¼, E½NW¼.

containing 2,631.98 acres, more or less, together with the right to construct all works, buildings, structures, equipment, and appliances which may be necessary and convenient for the mining and preparation of the coal for market, and, subject to the conditions herein provided, to use so much of the surface as may reasonably be required in the exercise of the rights and privileges herein granted for a period of 20 years and so long thereafter as the condition of continued operation is met.

Sec. 3. DILIGENCE – The lessee shall engage in the diligent development of the coal resources subject to the lease. After diligent development is achieved, the lessee shall maintain continued operation of the mine or mines on the leased lands. The terms diligent development and continued operation are defined in the regulations.

Sec. 4. BOND – The lessee shall file with the appropriate Bureau of Land Management office a lease bond in the amount of $ 10,000 , for the use and benefit of the United States, to insure payment of rentals and royalties and to insure compliance with all other terms of this lease, the exploration and mining plans, the regulations and the Act. An increase in the amount of the lease bond may be required by the lessor upon approval of the exploration or mining plan or upon approval of a change in either plan, or at any other time during the life of the lease to reflect changed conditions.

Sec. 5 RENTAL – An annual rental of 3.00 for each acre or fraction thereof shall be paid in advance on or before the anniversary date of this lease. The anniversary date is the anniversary of the effective date of this lease.

Sec. 6 PRODUCTION ROYALTY – The lessee shall pay a production royalty of ~~percent of the value of coal produced by underground mining methods.~~ 11.68 percent of the value of coal produced by underground mining methods. The value of coal shall be determined as set forth in the regulations. Production royalties paid for a calendar month shall be reduced by the amount of any advance royalties paid under this lease to the extent that such advance royalties have not been used to reduce production royalties in a previous month. However, production royalties payable after the 20th year of the lease shall not be reduced by advance royalties paid during the first 20 years of the lease. Production royalties shall be payable the final day of the month succeeding the calendar ~~month~~ quarter in which the coal is mined. continued under Sec. 30.

Sec. 7. ADVANCE ROYALTY – Upon request by the lessee the mining supervisor may accept, for a total of not more than 10 years, the payment of advance royalties in lieu of the condition of continued operation for any particular year. Any payment of advance royalties in lieu of continued operation shall be pursuant to an agreement, signed by the lessee and lessor, which shall be made a part of this lease. The agreement shall include a schedule of payments and shall be subject to the advance royalty conditions set forth in the regulations. continued under Sec. 30.

Sec. 8. METHOD OF PAYMENTS – The lessee shall make rental payments to the appropriate Bureau of Land Management office until either production royalties or advance royalties become payable. Thereafter, all rentals, production royalties and advance royalties shall be paid to the mining supervisor. All remittances to Bureau of Land Management shall be made payable to the Bureau of Land Management; those to the Geological Survey shall be made payable to the United States Geological Survey.

Sec. 9. EXPLORATION PLAN – As specified in the regulations, the lessee shall submit to the mining supervisor an exploration plan before conducting any exploration on the leased lands, except casual use, between the effective date of this lease and the date of approval of the mining plan. The lessee shall not commence exploration until the mining supervisor has approved the exploration plan. Thereafter,

the lessee shall conduct all exploration [illegible] the approved exploration plan.

Sec. 10. MINING PLAN — As specified in the regulations, the lessee shall submit a mining plan to the mining supervisor not more than 3 years after the effective date of this lease. Until the mining supervisor has approved the mining plan, the lessee shall not conduct any operations on the leased lands except casual use or, exploration if an exploration plan has been approved. Thereafter, the lessee shall conduct all operations in accordance with the approved mining plan.

Sec. 11. LOGICAL MINING UNITS (LMU) — This lease is automatically considered to be an (LMU) and may be combined with other land, including other Federal leaseholds and non-Federal interests in coal, to form a larger (LMU). The mining plan for the (LMU) must include a production schedule that provides for the mining of all the (LMU) reserves, both Federal and non-Federal, within 40 years from the date of the approval of the plan. The definition of (LMU) and (LMU) reserves and other conditions applicable to them are set forth in the regulations.

Sec. 12. OPERATIONS ON LEASED LANDS — In accordance with the conditions of this lease, the exploration and mining plans, the regulations and the Act, the lessee shall exercise reasonable diligence, skill, and care in all operations on the leased lands. The lessee's obligations shall include, but not be limited to, the following:

(a) The lessee shall conduct all operations on the leased lands so as to avoid injury to life, health, or property;

(b) The lessee shall conduct operations in such a manner as may be needed to avoid or, where avoidance is impracticable, to minimize and, where practicable, to repair damage to: (i) any forage and timber growth on Federal or non-Federal lands in the vicinity of the leased lands; (ii) crops, including forage and timber, or improvements of a surface owner; or (iii) improvements, whether owned by the United States or by its permittees, licensees, or lessees. The lessor must approve the steps to be taken and the restoration to be made in the event of the occurrence of damage described in this subsection.

(c) The lessee shall minimize to the maximum extent possible wasting of the mineral deposits and other resources, including, but not limited to, surface resources which may be found in, upon, or under such lands.

Sec. 13. CULTURAL RESOURCES — (a) Before the approval of a mining plan, the authorized officer may require a survey of all or part of the leased land to provide an inventory of any historical, cultural, and archeological values. The survey shall be conducted by a qualified professional archeologist, approved by the authorized officer, and a report of the survey shall be submitted to the authorized officer. The approval of an exploration or mining plan or the continuation of lease operations may be conditioned on the approval of the survey report and the approval of measures to protect the historical, cultural, and archeological values. The cost of any survey or measures to protect such values discovered as a result of the survey shall be borne by the lessee and items and features of historical, cultural, or archeological value shall remain under the jurisdiction of the United States.

(b) If any items or features of historical, cultural, or archeological value are discovered during lease operations, the lessee shall immediately notify the mining supervisor and shall not disturb such items or features until the mining supervisor issues instructions. If the lessee is ordered to take measures to protect any items or features of historical, cultural, or archeological value discovered during lease operations, the cost of the measures shall be borne by the lessee and such items and features shall remain under the jurisdiction of the United States.

Sec. 14. AUTHORIZATION OF OTHER USES AND DISPOSITION OF LEASED LANDS — (a) The lessor reserves the right to authorize other uses of the leased lands by regulation or by issuing, in addition to this lease, leases, licenses, permits, easements, or rights-of-way, including leases for the development of minerals other than coal under the Act. The lessor may authorize any other uses of the leased lands that do not unreasonably interfere with the exploration and mining operations of the lessee, and the lessee shall make all reasonable efforts to avoid interference with such authorized uses.

(b) The lessor reserves the right: (i) to sell or otherwise dispose of the surface of the leased lands under existing law or laws hereafter enacted insofar as said surface is not necessary for the use of the lessee in the extraction and removal of the coal therein, or (ii) to dispose of any resource in such lands if such disposal will not unreasonably interfere with the exploration and mining operations of the lessee.

(c) If the leased lands have been or shall hereafter be disposed of under laws reserving to the United States the deposits of coal therein, the lessee shall comply with all conditions as are or may hereafter be provided by the laws and regulations reserving such coal.

Sec. 15. EQUAL OPPORTUNITY CLAUSE — During the performance of this lease, lessee agrees to comply with the following:

(a) Lessee will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. Lessee will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Lessee agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the lessor setting forth the provisions of this Equal Opportunity clause.

(b) Lessee will, in all solicitations or advertisements for employees placed by or on behalf of the lessee, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(c) Lessee will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the lessor, advising the labor union or workers' representative of the lessee's commitments under this Equal Opportunity clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) Lessee will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) Lessee will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, as amended, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the Secretary of the Interior and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the lessee's noncompliance with the Equal Opportunity clause of this contract or with any of the said rules, regulations, or orders, this lease may be cancelled, terminated or suspended in whole or in part and the lessee may be declared ineligible for further Government contracts or leases in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, as amended, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, as amended, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) Lessee will include the provisions of paragraphs (a) through (g) of this section 15 in every contract, subcontract, or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, as amended, so that such provisions will be binding upon each contractor, subcontractor, or vendor. Lessee will take such action with respect to any contract, subcontract, or purchase order as the Secretary of the Interior may direct as a means of enforcing such provisions including sanctions for noncompliance: *Provided, however,* That in the event the lessee becomes involved in, or is threatened with, litigation with a contractor, subcontractor, or vendor as a result of such direction by the Secretary of the Interior, the lessee may request the United States to enter into such litigation to protect the interests of the United States.

Sec. 16. CERTIFICATION OF NONSEGREGATED FACILITIES — By entering into this lease, the lessee certifies that he does not and will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not and will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The lessee agrees that a breach of this certification is a violation of the Equal Opportunity clause of this lease. As used in this certification, the term "segregated facilities" means, but is not limited to, any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. Lessee further agrees that (except where lessee has obtained identical certifications from proposed contractors and subcontractors for specific time periods) lessee will obtain identical certifications from proposed contractors and subcontractors prior to award of contracts or subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that lessee will retain such certifications in lessee's files; and that lessee will forward the following notice to such proposed contractors and subcontractors (except where proposed contractor or subcontractor has submitted identical certifications for specific time periods). Notice to prospective contractors and subcontractors of requirement for certification of nonsegregated facilities. A *Certification of Nonsegregated Facilities*, as required by the May 9, 1967 order (32 F.R. 7439, May 19, 1967) on *Elimination of Segregated Facilities*, by the Secretary of Labor, must be submitted prior to the award of a contract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity clause. Certification may be submitted either for each contract and subcontract or for all contracts and subcontracts during a period (i.e., quarterly, semiannually, or annually).

Sec. 17. EMPLOYMENT PRACTICES — The lessee shall pay all wages due persons employed on the leased lands at least twice each month in lawful money of the United States. The lessee shall grant all miners and other employees complete freedom to purchase goods and service of their own choice. The lessee shall restrict the workday to not more than 8 hours in any one day for underground workers, except in case of emergency. The lessee shall employ no person under the age of 16 years in any mine below the sur-

face. If the laws of the State in which the mine is situated prohibit the employment, in a mine below the surface, of persons of an age greater than 16 years, the lessee shall comply with those laws.

Sec. 18. MONOPOLY AND FAIR PRACTICES – The lessor reserves full authority to promulgate and enforce orders and regulations under the provisions of Sections 30 and 32 of the Act (30 U.S.C. Sections 187 and 189) necessary to insure that any sale of the production from the leased lands to the United States or to the public is at reasonable prices, to prevent monopoly, and to safeguard the public welfare, and such regulations shall upon promulgation be binding upon the lessee.

Sec. 19. ASSIGNMENT – This lease may be assigned, upon approval of the authorized officer, in accordance with the provisions of 43 CFR Subpart 3506. An assignment will become effective on the first day of the month following approval by the authorized officer or, if the assignee requests, the first day of the month of the approval.

Sec. 20. RELINQUISHMENT OF LEASE – The lessee may file a request to relinquish all or any legal subdivision of this lease. The request shall be filed in duplicate with the authorized officer. The authorized officer shall approve the relinquishment if he determines that the lessee has complied with the requirements of the lease, the exploration and mining plans, the regulations and the Act. Upon approval, the relinquishment shall be effective as of the date it is filed, subject to the continued obligation of the lessee and his surety to pay all accrued rentals and royalties and to comply with all other requirements of the lease, the regulations, the exploration and mining plans, the regulations and the Act.

Sec. 21. NONCOMPLIANCE – Any failure to comply with the conditions of this lease, the exploration and mining plans, the regulations, or the Act shall be dealt with in accordance with the procedures set forth in the regulations.

Sec. 22. WAIVER OF CONDITIONS – The lessor reserves the right to waive any breach of the conditions contained in this lease, except the breach of such conditions as are required by the Act, but any such waiver shall extend only to the particular breach so waived and shall not limit the rights of the lessor with respect to any future breach; nor shall the waiver of a particular breach prevent cancellation of this lease for any other cause, or for the same cause occurring at another time.

Sec. 23. READJUSTMENT OF TERMS AND CONDITIONS – (a) The lessor may propose the reasonable readjustment of any conditions of this lease, including royalty rates, the first readjustment to be effective on the 20th year after the effective date and subsequent readjustments to be effective at 10-year intervals thereafter. The lessor shall notify the lessee whether he intends to readjust conditions and, if he intends to readjust, the nature of the readjustments. If it is feasible, the lessor shall give such notice 120 days before the effective date of the readjustment. In any event, until the lessee has been notified either that the lease terms will be readjusted or that they will not be readjusted, the lessor reserves the right to require readjustment. Unless the lessee, within 30 days after receipt of such notice, files with the lessor an objection to the proposed readjusted conditions or relinquishes the lease as of the effective date of the readjustment, the lessee shall be deemed conclusively to have agreed to such conditions.

(b) If the lessee files objections to the proposed readjusted conditions with the lessor, and agreement cannot be reached between the lessor and the lessee within a period of 60 days after the filing of the objection, the lease may be terminated by either party upon giving 30 days' notice to the other party; *however*, the lessor's right to terminate the lease shall be suspended by the lessee's filing of a notice of appeal pursuant to section 29 of this lease, and if the lessee is ultimately successful in his appeal, the lease shall continue without the change in the provisions, the imposition of which, the lessee appealed. If the lessee is unsuccessful in his appeal and, within 30 days of the decision on appeal notifies the lessor that he accepts the decision rendered upon such appeal, then the lease shall continue as amended by the decision.

(c) If the lessee files objections to the proposed readjusted conditions, the existing conditions, except those concerning royalties, shall remain in effect until there has been an agreement between the lessor and the lessee on the new conditions to be incorporated in the lease, or until the lessee has exhausted his rights of appeal under section 29 of this lease, or until the lease is terminated, *however*, the readjusted royalty provisions shall be effective until there is either agreement between the lessor and the lessee or until the lease is terminated. If the readjusted royalty provisions are subsequently rescinded or amended, the lessee shall be permitted to credit any excess royalty payments against royalties subsequently due to the lessor.

Sec. 24. DELIVERY OF PREMISES – Upon termination of this lease for any reason, or relinquishment of a part of this lease, the lessee shall deliver to the lessor in good order and condition all or the appropriate part of leased lands. Delivery of the leased lands shall include underground timbering and such other supports and structures as are necessary for the preservation of the mine or deposit, and shall be in accordance with all other applicable provisions of the regulations for the completion of operations and abandonment.

Sec. 25. PROPRIETARY INFORMATION – Geological and geophysical data and information, including maps, trade secrets, and commercial and financial information which the lessor obtains from the lessee shall be treated in accordance with 43 CFR Part 2.

Sec. 26. LESSEE'S LIABILITY TO LESSOR – (a) The lessee shall be liable to the United States for any damage suffered by the United States in any way arising from or connected with the lessee's activities and operations under this lease, except where damage is caused by employees of the United States acting within the scope of their authority.

(b) The lessee shall indemnify and hold harmless the United States from any and all claims arising from or connected with the lessee's activities and operations under this lease.

(c) In any case where liability without fault is imposed on the lessee pursuant to this section, and the damages involved were caused by the action of a third party, the rules of subrogation shall apply in accordance with the law of the jurisdiction where the damages occurred.

Sec. 27. INSPECTIONS AND INVESTIGATIONS – (a) All books and records maintained by the lessee showing information required by this lease or regulations must be kept current and in such manner that the books and records can be readily checked, upon request, by the mining supervisor or his representative at the place where they are customarily maintained.

(b) The lessee shall permit any duly authorized officer or representative of the lessee at any reasonable time (1) to inspect or investigate the leased lands and all surface and underground improvements, works, machinery, and equipment, and all books and records pertaining to the lessee's obligations to the lessor under this lease and regulations and (2) copy, and make extracts from any such books and records.

Sec. 28. UNLAWFUL INTEREST – No member of, or Delegate to, Congress, or Resident Commissioner, after his election or appointment, either before or after he has qualified and during his continuance in office, and no officer, or employee of the Department of the Interior, except as provided in 43 CFR 7.4(a)(3), shall hold any share or part in this lease or derive any benefit therefrom. The provisions of Section 3741 of the Revised Statutes, as amended, 41 U.S.C. Section 22, and the Act of June 25, 1948, 62 Stat. 702, as amended, 18 U.S.C. Sections 431–433, relating to contracts, enter into and form a part of this lease insofar as they may be applicable.

Sec. 29. APPEALS – The lessee shall have the right to appeal (a) under 43 CFR 3000.4 from an action or decision of any official of the Bureau of Land Management (b) under 30 CFR Part 290 from an action, order, or decision of any official of the United States Geological Survey, or (c) under applicable regulation from any action or decision of any other official of the Department of the Interior arising in connection with this lease, including any action or decision pursuant to Section 23 of this lease with respect to the readjustment of conditions.

Sec. 30. Special Stipulations – See attached.

Section 1 continued: This lease is also subject to all regulations of the Secretary of Energy promulgated pursuant to Section 302 of the Department of Energy Organization Act which are now or hereafter in force and which are made a part hereof, except that no amendment to the regulations made subsequent to the effective date of this lease shall alter the rental and production royalty requirement in Section 5 and C of this lease.

Special Stipulations (cont.)

Section 6 continued: The production royalty shall be 11.68 percent of the gross value of coal produced, but not less than $2.10 per ton of 2,000 pounds, shall be due on coal extracted by the lessee from the leased lands.

Section 7 continued: The advance royalty shall be based on a percent as specified in the lease of the value of a minimum number of tons which shall be determined on a schedule sufficient to exhaust the leased reserves in 40 years from the date of approval of the mining plan.

THE UNITED STATES OF AMERICA

By Paul L Howard
(Signing Officer)

STATE DIRECTOR
(Title)

DEC 20 1978
(Date)

WITNESS TO SIGNATURE OF LESSEE

Eugene Owen Rode
ASSISTANT SECRETARY

Loren A. Williams
VICE PRESIDENT (Signature of Lessee)

Approved as to form
Legal Test

(Signature of Lessee)

(Signature of Lessee)

(If lessee is associated is a corporation, it must bear the corporate seal)

GPO 861-832

Form 4–696
(December 1958)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Land Office
Salt Lake City, Utah

Serial Number
Utah-062453

COAL LEASE

Act of February 25, 1920 (41 Stat. 437), as amended

This lease, entered into on MAR 1 1962, 19__, by the United States of America, the lessor, through the Bureau of Land Management and Reiner Coal Company, Judge Building, Salt Lake City, Utah, Southern Utah Fuel Company, Salina, Utah and Equipment Rental Service, Salt Lake City, Utah
the lessee, pursuant and subject to the terms and provisions of the act of February 25, 1920 (41 Stat. 437), as amended, hereinafter referred to as the act, and to all reasonable regulations of the Secretary of the Interior now in force which are made a part hereof,

Witnesseth:

Section 1. *Rights of lessee.* The lessor, in consideration of the rents and royalties to be paid and the conditions to be observed as hereinafter set forth does hereby grant and lease to the lessee the exclusive right and privilege to mine and dispose of all the coal in the following-described tracts of land, situated in the State of Utah:

T. 21 S., R. 5 E., SL Mer., Utah
Sec. 28: SW¼SW¼
Sec. 29: SE¼SE¼
Sec. 32: N½
Sec. 33: W½NW¼

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BUREAU OF LAND MANAGEMENT
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containing 480 acres, more or less, together with the right to construct all such works, buildings, plants, structures, and appliances as may be necessary and convenient for the mining and preparation of the coal for market, the manufacture of coke or other products of coal, the housing and welfare of employees, and, subject to the conditions herein provided, to use so much of the surface as may reasonably be required in the exercise of the rights and privileges herein granted.

Sec. 2. In consideration of the foregoing, the lessee hereby agrees:

(a) *Bond.* To maintain the bond furnished upon the issuance of this lease, which bond is conditioned upon compliance with all the provisions of the lease, and to increase the amount or furnish such other bond as may be required.

(b) *Rental.* To pay the lessor annually, in advance, for each acre or part thereof covered by this lease, beginning with the date hereof, the following rentals: 25 cents for the first year, 50 cents for the second, third, fourth, and fifth years, respectively, and $1 for the sixth and each succeeding year during the continuance of the lease, such rental for any year to be credited against the first royalties as they accrue under the lease during the year for which the rental was paid.

(c) *Royalty.* To pay the lessor a royalty of 15 cents on every ton of 2,000 pounds of coal mined during the first 20 years succeeding the execution of this lease. Royalties shall be payable quarterly within 30 days from the expiration of the quarter in which the coal is mined.

(d) *Minimum production.* Beginning with the sixth year of the lease, except when operations are interrupted by strikes, the elements, or casualties not attributable to the lessee, or unless on application and showing made, operations shall be suspended when market conditions are such that the lessee cannot operate except at a loss or suspended for the other reasons specified in section 39 of the act, to mine coal each year and pay a royalty thereon to a value of $1 per acre or fraction thereof. Operations under this lease shall be continuous except in the circumstances described or unless the lessee shall pay a royalty, less rent, on such minimum amount of the leased deposits, for one year in advance, in which case operations may be suspended for that year.

(e) *Payments.* To make rental payments to the Manager of the appropriate Land Office, except that when this lease becomes productive the rentals and royalties shall be paid to the appropriate Regional Mining Supervisor of the United States Geological Survey, with whom all reports concerning operations under the lease shall be filed. All remittances to the Manager of the Land Office shall be made payable to the Bureau of Land Management, those to the Geological Survey shall be made payable to the United States Geological Survey.

(f) *Plats, reports, maps.* At such times and in such form as the lessor may prescribe, to furnish a plat showing development work and improvements on the leased lands and a report with respect to stockholders, investment, depreciation, and costs. To furnish in such form as the lessor may prescribe, within 30 days from the expiration of each quarter a report covering such quarter, certified by the superintendent of the mine, or by such other agent having personal knowledge of the facts as may be designated by the lessee for such purpose, showing the amount of leased deposits mined during the quarter, the character and quality thereof, amount of its products and by-products disposed of and price received therefor, and amount in storage or held for sale. To keep and prepare maps of the leased lands in accordance with the regulations in 30 CFR, part 211.

(g) *Weights.* To determine accurately the weight or quantity and quality of all leased deposits mined, and to enter accurately the weight or quantity and quality thereof in due form in books to be kept and preserved by the lessee for such purposes.

(h) *Inspection.* To permit at all reasonable times (1) inspection by any duly authorized officer of the Department, of the leased premises and all surface and underground improvements, works, machinery, equipment, and all books and records pertaining to operations and surveys or investigations under this lease; and (2) the lessor to make copies of and extracts from any or all books and records pertaining to operations under this lease, if desired.

(i) *Assignment.* To file for approval in the appropriate Land Office within 90 days from the date of execution, any assignment or transfer made of this lease, whether by direct assignment, operating agreement, working or royalty interest, or otherwise. Such instrument will take effect the first day of the month following its approval by the Bureau of Land Management, or if the assignee requests, the first day of the month of approval. The showing required to be made with an assignment or transfer is set forth in the regulations, 43 CFR 193.25.

(j) *Nondiscrimination.* In connection with the performance of work under this lease, the lessee agrees not to discriminate against any employee or applicant for employment because of race, religion, color, or national origin. The aforesaid provision shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The lessee also agrees to post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of the nondiscrimination clause. The lessee further agrees to insert the foregoing provision in all subcontracts hereunder, except subcontracts for standard commercial supplies or raw materials.

(k) *Lands disposed of with coal deposits reserved to the United States.* If the lands embraced herein have been or shall hereafter be disposed of under laws reserving to the United States the deposits of coal therein, to comply with all conditions as are or may hereafter be provided by the laws and regulations reserving such coal.

(l) *Operations, wages, freedom of purchase.* To comply with the operating regulations (30 CFR, part 211), to exercise reasonable diligence, skill, and care in the operations of the property, and to carry on all operations in accordance with approved methods and practices as provided in the operating regulations having due regard for the prevention of injury to life, health or property, and of waste or damage to any water or mineral deposits, to fairly and justly weigh or measure the coal mined by each miner, to pay all wages due miners and employees, both above and below ground, at least twice each month in lawful money of the United States, to accord all miners and employees complete freedom of purchase, to restrict the workday to not exceeding eight hours in any one day for miners and workers, except in cases of emergency, to employ no boy under the age of sixteen and no girl or woman,

the laws of the State otherwise provide, in which case the State laws control.

(m) *Taxes.* To pay when due, taxes lawfully assessed and levied under the laws of the State or the United States upon improvements, output of mines, or other rights, property, or assets of the lessee.

(n) *Overriding royalties.* Not to create, by assignment or otherwise, an overriding royalty interest in excess of 50 percent of the rate of royalty first payable to the United States under this lease or an overriding royalty interest which when added to any other outstanding overriding royalty interest exceeds that percentage, excepting, that where an interest in the leasehold or in an operating agreement is assigned, the assignor may retain an overriding royalty interest in excess of the above limitation if he shows to the satisfaction of the Bureau of Land Management, that he had made substantial investments for improvements on the land covered by the assignment.

(o) *Delivery of premises in case of forfeiture.* In case of forfeiture of this lease, to deliver up to the lessor in good order and condition the land leased, including all buildings, and underground timbering and such other supports and structures as are necessary for the preservation of the mine or deposit.

Sec. 3. The lessor expressly reserves:

(a) *Rights reserved.* The right to permit for joint or several use such easements or rights-of-way, including easements in tunnels upon, through, or in the land leased, occupied, or used as may be necessary or appropriate to the working of the same or other lands containing the deposits described in the act, and the treatment and shipment of the products thereof by or under authority of the Government, its lessees or permittees, and for other public purposes.

(b) *Disposition of surface.* The right to lease, sell, or otherwise dispose of the surface of the leased lands under existing law or laws hereafter enacted, insofar as said surface is not necessary for the use of the lessee in the extraction and removal of the coal therein, or to dispose of any resource in such lands which will not unreasonably interfere with operations under this lease.

(c) *Monopoly and fair prices.* Full power and authority to promulgate and enforce all the provisions of section 7 of the act to insure the sale of the production of said leased lands to the United States and to the public at reasonable prices, to prevent monopoly, and to safeguard the public welfare.

(d) *Readjustment of terms.* The right reasonably to readjust and fix royalties payable hereunder and other terms and conditions at the end of 20 years from the date hereof and thereafter at the end of each succeeding 20-year period during the continuance of this lease unless otherwise provided by law at the time of the expiration of any such period. Unless the lessee files objections to the proposed terms or a relinquishment of the lease within 30 days after receipt of the notice of proposed terms for a 20-year period, he will be deemed to have agreed to such terms.

(e) *Waiver of conditions.* The right to waive any breach of the conditions contained herein, except the breach of such conditions as are required by the act, but any such waiver shall extend only to the particular breach so waived and shall not limit the rights of the lessor with respect to any future breach; nor shall the waiver of a particular cause of forfeiture prevent cancellation of this lease for any other cause, or for the same cause occurring at another time.

Sec. 4. *Relinquishment of lease.* Upon a satisfactory showing that the public interest will not be impaired, the lessee may surrender the entire lease or any legal subdivision thereof. A relinquishment must be filed in duplicate in the appropriate Land Office. Upon its acceptance it shall be effective as of the date it is filed, subject to the continued obligation of the lessee and his surety to make payment of all accrued rentals and royalties and to provide for the preservation of any mines or productive works or permanent improvements in accordance with the regulations and terms of the lease.

Sec. 5. *Protection of the surface, natural resources, and improvements.* The lessee agrees to take such reasonable steps as may be needed to prevent operations from unnecessarily: (1) Causing or contributing to soil erosion or damaging any forage and timber growth thereon; (2) polluting the waters of springs, streams, wells, or reservoirs; (3) damaging crops, including forage, timber, or improvements of a surface owner; or (4) damaging range improvements whether owned by the United States or by its grazing permittees or lessees; and upon any partial or total relinquishment or the cancellation or expiration of this lease, or at any other time prior thereto when required by the lessor and to the extent deemed necessary by the lessor, to fill any sump holes, ditches and other excavations, remove or cover all debris, and, so far as reasonably possible, restore the surface of the leased land to its former condition, including the removal of structures as and if required. The lessor may prescribe the steps to be taken and restoration to be made with respect to lands of the United States and improvements thereon.

Sec. 6. *Removal of equipment, etc., on termination of lease.* Upon termination of this lease, by surrender or forfeiture, the lessee shall have the privilege at any time within a period of 90 days thereafter of removing from the premises all machinery, equipment, tools and materials, other than underground timbering placed by the lessee in or on the leased lands, which are not necessary for the preservation of the mine. Any materials, tools, appliances, machinery, structures, and equipment, subject to removal as above provided, which are allowed to remain on the leased lands shall become the property of the lessor on expiration of the 90-day period or such extension thereof as may be granted because of adverse climatic conditions, but the lessee shall remove any or all of such property where so directed by the lessor.

Sec. 7. *Proceedings in case of default.* If the lessee shall not comply with any of the provisions of the act or the regulations thereunder or default in the performance or observance of any of the provisions of this lease, and such default shall continue for a period of 30 days after service of written notice thereof by the lessor, the lessor may institute appropriate proceedings in a court of competent jurisdiction for the forfeiture and cancellation of this lease as provided in section 31 of the act (30 USC, sec. 188). If the lessee fails to take prompt and necessary steps to prevent loss or damage to the mine, property, or premises, or danger to the employees, the lessor may enter on the premises and take such measures as may be deemed necessary to prevent such loss or damage or to correct the dangerous or unsafe condition of the mine or works thereof, which shall be at the expense of the lessee. However, the lessee shall not be held responsible for delays or casualties occasioned by causes beyond the lessee's control.

Sec. 8. *Heirs and successors in interest.* Each obligation hereunder shall extend to, and be binding upon, and every benefit hereof shall inure to, the heirs, executors, administrators, successors, or assigns of the respective parties hereto.

Sec. 9. *Unlawful interest.* No Member of, or Delegate to, Congress or Resident Commissioner, after his election or appointment, or either before or after he has qualified and during his continuance in office, and no officer, agent, or employee of the Department of the Interior, except as provided in 43 CFR 7.4(a)(1), shall be admitted to any share or part in this lease or derive any benefit that may arise therefrom; and the provisions of section 3741 of the Revised Statutes of the United States, as amended (41 USC, sec. 22), and sections 431, 432, and 433, title 18, U. S. Code, relating to contracts, enter into and form a part of this lease so far as the same may be applicable.

IN WITNESS WHEREOF:

THE UNITED STATES OF AMERICA

By _____
(Signing Officer)

(Title) (Date)

WITNESSES TO SIGNATURE OF LESSEE

EQUITABLE RENTAL SERVICE, INC.

By _____
(Signature of Lessee)

President.

HELPER COAL COMPANY

By _____
(Signature of Lessee)

President

SOUTHERN UTAH FUEL COMPANY

By _____
(Signature of Lessee)

Secretary

(If this lease is executed by a corporation, it must bear the corporate seal)

Form 4-216
(May 1959)

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

STIPULATION FOR LANDS UNDER JURISDICTION OF DEPARTMENT OF AGRICULTURE*

The lands embraced in this lease or permit being under the jurisdiction of the Secretary of Agriculture, the lessee or permittee hereby agrees:

(1) To conduct all operations authorized by this lease or permit with due regard for good land management, not to cut or destroy timber without first obtaining permission from the authorized representative of the Secretary of Agriculture, and to pay for all such timber cut or destroyed at the rates prescribed by such representative; to avoid unnecessary damage to improvements, timber, crops, or other cover; unless otherwise authorized by the Secretary of Agriculture, not to drill any well, carry on operations, make excavations, construct tunnels, drill, or otherwise disturb the surface of the lands within 200 feet of any building standing on the lands and whenever required, in writing, by the authorized representative of the Secretary of Agriculture to fence or fill all sump holes, ditches, and other excavations, remove or cover all debris, and so far as reasonably possible, restore the surface of the lands to their former condition, including the removal of structures as and if required, and when required by such representative to bury all pipelines below plow depth.

(2) To do all in his power to prevent and suppress forest, brush, or grass fires on the lands and in their vicinity, and to require his employees, contractors, subcontractors, and employees of contractors or subcontractors to do likewise. Unless prevented by circumstances over which he has no control, the lessee or permittee shall place his employees, contractors, subcontractors, and employees of contractors and subcontractors employed on the lands at the disposal of any authorized officer of the Department of Agriculture for the purpose of fighting forest, brush, or grass fires on or originating on the lands or on adjacent areas or caused by the negligence of the lessee or permittee or his employees, contractors, subcontractors and employees of contractors and subcontractors, with the understanding that payment for such services shall be made at rates to be determined by the authorized representative of the Secretary of Agriculture, which rates shall not be less than the current rates of pay prevailing in the vicinity for services of a similar character: *Provided*, that if the lessee or permittee, his employees, contractors, subcontractors, or employees of contractors or subcontractors, caused or could have prevented the origin or spread of said fire or fires, no payment shall be made for services so rendered.

During periods of serious fire danger to forest, brush, or grass, as may be specified by the authorized representative of the Secretary of Agriculture, the lessee or permittee shall prohibit smoking and the building of camp and lunch fires by his employees, contractors, subcontractors, and employees of contractors or subcontractors within the area involved except at established camps, and shall enforce this prohibition by all means within his power: *Provided*, that the authorized representative of the Secretary of Agriculture may designate safe places where, after all inflammable material has been cleared away, campfires may be built for the purpose of heating lunches and where, at the option of the lessee or permittee, smoking may be permitted.

The lessee or permittee shall not burn rubbish, trash, or other inflammable materials *except* with the consent of the authorized representative of the Secretary of Agriculture and shall not use explosives in such a manner as to scatter inflammable materials on the surface of the lands during the forest, brush, or grass fire season, *except* as authorized to do so or on areas approved by such representative.

*This form of stipulation may be used in connection with leases and permits issued under the acts of February 25, 1920, as amended (30 U.S.C. 181 et seq.); August 7, 1947 (30 U.S.C. 351 et seq.); February 7, 1927, as amended (30 U.S.C. 281 et seq.); April 17, 1926, as amended (30 U.S.C. 271 et seq.); October 20, 1914, as amended (48 U.S.C. 432 et seq.); June 28, 19[illegible] (58 Stat. 463 et seq.); September 1, 1949 (30 U.S.C. 192c); June 30, 1950 (16 U.S.C. 508b); or under the authority of any of the acts cited in section 402 of the President's Reorganization Plan No. 3 of 1946 (5 U.S.C. 133y–16, Note).

The lessee or permittee shall build or construct such fire lines or do such clearing on the lands as the authorized representative of the Secretary of Agriculture decides is essential for forest, brush, and grass fire prevention which is or may be necessitated by the exercise of the privileges authorized by this lease or permit, and shall maintain such fire tools at his headquarters or at the appropriate location on the lands as are deemed necessary by such representative.

(3) In the location, design, construction and maintenance of all authorized works, buildings, plants, waterways, roads, telegraph or telephone lines, pipelines, reservoirs, tanks, pumping stations, or other structures or clearance, the lessee or permittee shall do all things reasonably necessary to prevent or reduce to the fullest extent scarring and erosion of the lands, pollution of the water resources and any damage to the watershed. Where construction, operation, or maintenance of any of the facilities on or connected with this lease or permit causes damage to the watershed or pollution of the water resources, the lessee or permittee agrees to repair such damage and to take such corrective measures to prevent further pollution or damage to the watershed as are deemed necessary by the authorized representative of the Secretary of Agriculture.

(4) To pay the lessor or permitter or his tenant or the surface owner or his tenant, as the case may be, for any and all damage to or destruction of property caused by the lessee's or permittee's operations hereunder, to save and hold the lessor or permitter or the surface owner or their tenants harmless from all damage or claims for damage to persons or property resulting from the lessee's or permittee's operations under this lease or permit.

(5) To recognize existing uses and commitments, in the form of Department of Agriculture grazing, timber cutting, and special use permits, water developments, ditch, road, trail, pipeline, telephone line, and fence rights-of-way and other similar improvements, and to conduct his operations so as to interfere as little as possible with the rights and privileges granted by these permits or with other existing uses.

(6) To install and maintain cattle guards to prevent the passage of livestock in any openings made in fences by the lessee or permittee or his contractors to provide access to the lands covered by this lease or permit for automotive and other equipment.

(7) If lessee or permittee shall construct any camp on the lands, such camp shall be located at a place approved by the authorized representative of the Secretary of Agriculture, and such representative shall have authority to require that such camp be kept in a neat and sanitary condition.

(8) To comply with all the rules and regulations of the Secretary of Agriculture governing the national forests or other lands under his jurisdiction which are embraced in this lease or permit.

(9) Unless otherwise authorized, prior to the beginning of operations to appoint and maintain at all times during the term of this lease or permit a local agent upon whom may be served written orders or notices respecting matters contained in this stipulation, and to inform the authorized representative of the Secretary of Agriculture, in writing, of the name and address of such agent. If a substitute agent is appointed, the lessee or permittee shall immediately so inform the said representative.

(10) To address all matters relating to this stipulation to ~~Forest Supervisor, Richfield National Forest, Post office Building, Richfield, Utah and Forest Supervisor, Manti-LaSal National Forest, Forester's Building, Price, Utah~~, who is the authorized representative of the Secretary of Agriculture, or to such other representative as may from time to time, be designated, provided that such designation shall be in writing and be delivered to the lessee or permittee or his agent.

(11) If all or any part of the lands lie within a municipal watershed, or are, in the opinion of the authorized representative of the Secretary of Agriculture, primarily valuable for watershed protection, the lessee or permittee shall reseed or otherwise restore the vegetative cover, as required by the authorized representative of the Secretary of Agriculture, for watershed protection and erosion prevention on any areas damaged because of the operation.

See paragraphs 12, 13 & 14 attached h

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Coal

(Lessee)

and

Coal Lease
Utah 062453

ALSO, the following stipulations are included in the lease:

(12) The lessee will obtain the advance approval of the authorized representative of the Secretary of Agriculture of location and construction standards prior to undertaking any road construction on national forest lands. Such approval will be conditioned on reasonable requirements to prevent erosion and damage to surface values and may be further conditioned upon the posting of a bond to assure compliance with this clause.

(13) To advise the authorized representative of the Secretary of Agriculture and obtain his approval prior to undertaking any operations on the leased land; provided, that such approval may be conditioned on reasonable requirements to prevent erosion, water pollution, or damage to the surface resources, and to assure reasonable restoration or rehabilitation of the surface.

(14) This permit does not authorize prospecting for or removal of any mineral deposits by stripping, rim cutting, open pit, or any other method involving the use of mechanical earth-moving equipment without the prior written approval of the forest supervisor. Such approval may be conditioned on stipulations for the protection of surface values and may require a bond to insure compliance.

EQUIPMENT RENTAL SERVICE, INC.
By _____ President
Lessee

HEINER COAL COMPANY
By _____ President
Lessee

SOUTHERN UTAH FUEL COMPANY
By _____ Secretary
Lessee

Utah-062453
Coal Lease

Form 3130–1
(February 1965)
(formerly 4–696)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

COAL LEASE

Land Office and Serial Number

Salt Lake City, Utah
U 0149084

This lease, entered into on the 1st day of June, 19 66, by the United States of America, the lessor, through the Bureau of Land Management, and Southern Utah Fuel Co., Salina, Utah.

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SALT LAKE CITY, UTAH
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pursuant and subject to the terms and provisions of the Act of February 25, 1920 (41 Stat. 437), as amended, the lessee, hereinafter referred to as the Act, and to all reasonable regulations of the Secretary of the Interior now or hereafter in force which are made a part hereof,

WITNESSETH:

Sec. 1. *Rights of Lessee.* The lessor, in consideration of the rents and royalties to be paid and the conditions to be observed as hereinafter set forth does hereby grant and lease to the lessee the exclusive right and privilege to mine and dispose of all the coal in the following-described tracts of land, situated in the State of Utah:

Salt Lake Meridian

T. 22 S., R. 4 E.,
sec. 12, NE¼ and N½SE¼

Subject to attached stipulations.

Acreage Control Record

containing 240.00 acres, more or less, together with the right to construct all such works, buildings, plants, structures, and appliances as may be necessary and convenient for the mining and preparation of the coal for market, the manufacture of coke or other products of coal, the housing and welfare of employees, and subject to the conditions herein provided, to use so much of the surface as may reasonably be required in the exercise of the rights and privileges herein granted.

Sec. 2. In consideration of the foregoing, the lessee hereby agrees:

(a) Bond. To maintain the bond furnished upon the issuance of this lease, which bond is conditioned upon compliance with all the provisions of the lease, and to increase the amount or furnish such other bond as may be required.

(b) Rental. To pay the lessor annually, in advance, for each acre or fraction thereof covered by this lease, beginning with the date hereof, the following rentals: 25 cents for the first year; 50 cents for the second, third, fourth, and fifth years, respectively; and $1 for the sixth and each succeeding year during the continuance of the lease, such rental for any year to be credited against the first royalties as they accrue under the lease during the year for which the rental was paid.

See Sec. 2 (c) on last page of lease.

(c) Royalty. [illegible] Royalties shall be payable [illegible]

(d) Minimum production. Beginning with the sixth year of the lease, *except* when operations are interrupted by strikes, the elements, or casualties not attributable to the lessee, or unless on application and showing made, operations shall be suspended when market conditions are such that the lessee cannot operate *except* at a loss or suspended for the other reasons specified in Section 39 of the Act, to mine coal each year and pay a royalty thereon to a value of $1 per acre or fraction thereof. Operations under this lease shall be continuous *except* in circumstances described or unless the lessee shall pay a royalty, less rent, on such minimum amount of the leased deposits, for one year in advance, in which case operations may be suspended for that year.

(e) Payments. To make rental payments to the Manager of the appropriate Land Office, *except* that when this lease becomes productive the rentals and

royalties shall be paid to appropriate Regional Mining Supervisor of the United States Geological Survey, with whom all reports concerning operations under the lease shall be filed. All remittances to the Manager of the Land Office shall be made payable to the Bureau of Land Management, those to the Geological Survey shall be made payable to the United States Geological Survey.

(f) Plats, reports, maps. At such times and in such form as the lessor may prescribe, to furnish a plat showing development work and improvements on the leased lands and a report with respect to stockholders, investment, depreciation, and costs. To furnish in such form as the lessor may prescribe, within 30 days from the expiration of each quarter a report covering such quarter, certified by the superintendent of the mine, or by such other agent having personal knowledge of the facts as may be designated by the lessee for such purpose, showing the amount of leased deposits mined during the quarter, the character and quality thereof, amount of its products and byproducts disposed of and price received therefor, and amount in storage or held for sale. To keep and prepare maps of the leased lands in accordance with the appropriate regulations.

(g) Weights. To determine accurately the weight or quantity and quality of all leased deposits mined, and to enter accurately the weight or quantity and quality thereof in due form in books to be kept and preserved by the lessee for such purposes.

(h) Inspection. To permit at all reasonable times (1) inspection by any duly authorized officer of the Department, of the leased premises and all surface and underground improvements, works, machinery, equipment, and all books and records pertaining to operations and surveys or investigations under this lease; and (2) the lessor to make copies of and extracts from any or all books and records pertaining to operations under this lease, if desired.

(i) Assignment. To file for approval in the appropriate Land Office within 90 days from the date of execution, any assignment or transfer made of this lease, whether by direct assignment, operating agreement, working or royalty interest, or otherwise. Such instrument will take effect the first day of the month following its approval by the Bureau of Land Management, or if the assignee requests, the first day of the month of approval. The showing required to be made with an assignment or transfer is set forth in the appropriate regulations.

(j) Nondiscrimination clauses. During the performance of this contract the lessee agrees as follows:

(1) The lessee will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The lessee will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The lessee agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

(2) The lessee will, in all solicitations or advertisements for employees placed by or on behalf of the lessee, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

(3) The lessee will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the said labor union or workers' representative of the lessee's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The lessee will comply with all provisions of Executive Order No. 10925 of March 6, 1961, as amended, and of the rules, regulations, and relevant orders of the President's Committee on Equal Employment Opportunity created thereby.

(5) The lessee will furnish all information and reports required by Executive Order No. 10925 of March 6, 1961, as amended, and by the rules, regulations, and orders of the said Committee, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Committee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the lessee's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this lease may be cancelled, terminated, or suspended in whole or in part and the lessee may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 10925 of March 6, 1961, as amended, and such other sanctions may be imposed and remedies invoked as provided in the said Executive Order or by rule, regulation, or order of the President's Committee on Equal Employment Opportunity, or as otherwise provided by law.

(7) The lessee will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to Section 303 of Executive Order No. 10925 of March 6, 1961, as amended, so that such provisions will be binding upon each subcontractor or vendor. The lessee will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: *Provided, however,* that in the event the lessee becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the lessee may request the United States to enter into such litigation to protect the interests of the United States.

(k) Land disposed of with coal deposits reserved to the United States. If the lands embraced herein have been or shall hereafter be disposed of under laws reserving to the United States the deposits of coal therein, to comply with all conditions as are or may hereafter be provided by the laws and regulations reserving such coal.

(l) Operations, wages, freedom of purchase. To comply with the appropriate operating regulations, to exercise reasonable diligence, skill, and care in the operations of the property, and to carry on all operations in accordance with approved methods and practices as provided in the operating regulations, having due regard for the prevention of injury to life, health or property, and of waste or damage to any water or mineral deposits; to fairly and justly weigh or measure the coal mined by each miner, to pay all wages due miners and employees, both above and below ground, at least twice each month in lawful money of the United States; to accord all miners and employees complete freedom of purchase; to restrict the workday to not exceeding eight hours in any one day for underground

workers, except in cases of emergency; to employ no boy under the age of sixteen and no girl or woman, without regard to age, in any mine below the surface; unless the laws of the State otherwise provide, in which case the State laws control.

(m) Taxes. To pay when due, all taxes lawfully assessed and levied under the laws of the State or the United States upon improvements, output of mines, or other rights, property, or assets of the lessee.

(n) Overriding royalties. Not to create, by assignment or otherwise, an overriding royalty interest in excess of 50 percent of the rate of royalty first payable to the United States under this lease or an overriding royalty interest which when added to any other outstanding overriding royalty interest exceeds that percentage, excepting, that where an interest in the leasehold or in an operating agreement is assigned, the assignor may retain an overriding royalty interest in excess of the above limitation if he shows to the satisfaction of the Bureau of Land Management, that he has made substantial investments for improvements on the land covered by the assignment.

(o) Delivery of premises in case of forfeiture. In case of forfeiture of this lease, to deliver up to the lessor in good order and condition the land leased, including all buildings, and underground timbering and such other supports and structures as are necessary for the preservation of the mine or deposit.

Sec. 3. The lessor expressly reserves:

(a) Rights reserved. The right to permit for joint or several use such easements or rights-of-way, including easements in tunnels upon, through, or in the land leased, occupied, or used as may be necessary or appropriate to the working of the same or other lands containing the deposits described in the Act, and the treatment and shipment of the products thereof by or under authority of the Government, its lessees or permittees, and for other public purposes.

(b) Disposition of surface. The right to lease, sell, or otherwise dispose of the surface of the leased lands under existing law or laws hereafter enacted, insofar as said surface is not necessary for the use of the lessee in the extraction and removal of the coal therein, or to dispose of any resource in such lands which will not unreasonably interfere with operations under this lease.

(c) Monopoly and fair prices. Full power and authority to promulgate and enforce all the provisions of Section 30 of the Act to insure the sale of the production of said leased lands to the United States and to the public at reasonable prices, to prevent monopoly, and to safeguard the public welfare.

(d) Readjustment of terms. The right reasonably to readjust and fix royalties payable hereunder and other terms and conditions at the end of 20 years from the date hereof and thereafter at the end of each succeeding 20-year period during the continuance of this lease unless otherwise provided by law at the time of the expiration of any such period. Unless the lessee files objections to the proposed terms or a relinquishment of the lease within 30 days after receipt of the notice of proposed terms for a 20-year period, he will be deemed to have agreed to such terms.

(e) Waiver of conditions. The right to waive any breach of the conditions contained herein, *except* the breach of such conditions as are required by the Act, but any such waiver shall extend only to the particular breach so waived and shall not limit the rights of the lessor with respect to any future breach; nor shall the waiver of a particular cause of forfeiture prevent cancellation of this lease for any other cause, or for the same cause occurring at another time.

Sec. 4. *Relinquishment of lease.* Upon a satisfactory showing that the public interest will not be impaired, the lessee may surrender the entire lease or any legal subdivision thereof. A relinquishment *must* be filed in *duplicate* in the appropriate Land Office. Upon its acceptance it shall be effective as of the date it is filed, subject to the continued obligation of the lessee and his surety to make payment of all accrued rentals and royalties and to provide for the preservation of any mines or productive works or permanent improvements on the leased lands in accordance with the regulations and terms of the lease.

Sec. 5. *Protection of the surface, natural resources, and improvements.* The lessee agrees to take such reasonable steps as may be needed to prevent operations from unnecessarily: (1) causing or contributing to soil erosion or damaging any forage and timber growth thereon; (2) polluting the waters of springs, streams, wells, or reservoirs; (3) damaging crops, including forage, timber, or improvements of a surface owner; or (4) damaging range improvements whether owned by the United States or by its grazing permittees or lessees; and upon any partial or total relinquishment or the cancellation or expiration of this lease, or at any other time prior thereto when required by the lessor and to the extent deemed necessary by the lessor, to fill any sump holes, ditches and other excavations, remove or cover all debris, and, so far as reasonably possible, restore the surface of the leased land to its former condition, including the removal of structures as and if required. The lessor may prescribe the steps to be taken and restoration to be made with respect to lands of the United States and improvements thereon.

Sec. 6. *Removal of equipment, etc., on termination of lease.* Upon termination of this lease, by surrender or forfeiture, the lessee shall have the privilege at any time within a period of 90 days thereafter of removing from the premises all machinery, equipment, tools and materials, *except* underground timbering placed by the lessee in or on the leased lands, which are necessary for the preservation of the mine. Any materials, tools, appliances, machinery, structures, and equipment, subject to removal as above provided, which are allowed to remain on the leased lands shall become the property of the lessor on expiration of the 90-day period or such extension thereof as may be granted because of adverse climatic conditions, but the lessee shall remove any or all of such property where so directed by the lessor.

Sec. 7. *Proceedings in case of default.* If the lessee shall not comply with any of the provisions of the Act or the regulations thereunder or default in the performance or observance of any of the provisions of this lease, and such default shall continue for a period of 30 days after service of written notice thereof by the lessor, the lessor may institute appropriate proceedings in a court of competent jurisdiction for the forfeiture and cancellation of this lease as provided in Section 31 of the Act. If the lessee fails to take prompt and necessary steps to prevent loss or damage to the mine, property, or premises, or danger to the employees, the lessor may enter on the premises and take such measures as may be deemed necessary to prevent such loss or damage or to correct the dangerous or unsafe condition of the mine or works thereof, which shall be at the expense of the lessee. However, the lessee shall

not be held responsible delays or casualties occasioned by causes beyond the lessee's control.

Sec. 8. *Heirs and successors in interest.* Each obligation hereunder shall extend to, and be binding upon, and every benefit hereof shall inure to, the heirs, executors, administrators, successors, or assigns of the respective parties hereto.

Sec. 9. *Unlawful interest.* No Member of, or Delegate to, Congress, or Resident Commissioner, after his election or [illegible]tment, or either before or after he has qualified and during his continuance in office, and no officer, agent, or employee of the Department of the Interior, except as provided in 43 CFR 7.4(a)(1), shall be admitted to any share or part in this lease or derive any benefit that may arise therefrom; and the provisions of Section 3741 of the Revised Statutes of the United States, as amended (41 U.S.C. Sec. 22), and Sections 431, 432, and 433, Title 18, U.S.C., relating to contracts, enter into and form a part of this lease so far as the same may be applicable.

Sec. 2 (c) To Pay the lessor a royalty of 15 cents a short ton for coal mined by underground methods and 17½ cents a short ton for coal mined by surface methods including auger mining for the first 10-year period. A royalty of 17½ cents a short ton for coal mined by underground methods and 20 cents a short ton for coal mined by surface methods including auger mining for the second 10-year period. Royalties will be payable quarterly within 30 days from the expiration of the quarter in which the coal is m[illegible]d.

Sec. 10. Mining or exploratory operations shall not be conducted which, in the opinion of the Regional Mining Supervisor, Geological Survey, would be hazardous to oil and gas production**

**or would unreasonably interfere with the orderly development and production under and gas leases issued for the same lands prior to the date of this lease.

$2,000 bond accepted.

THE UNITED STATES OF AMERICA

Ed. D. Cox

By Ed D. Cox (Signing Officer)

Acting Chief, Minerals Section
(Title)

JUN 8 1955
(Date)

WITNESS TO SIGNATURE OF LESSEE

E. P. Lindsay

Southern Utah Fuel Co
Lessee

(Signature of Lessee)

(Signature of Lessee)

(Signature of Lessee)

(If this lease is executed by a corporation, it must bear the corporate seal)

STIPULATION FOR LANDS UNDER JURISDICTION OF
DEPARTMENT OF AGRICULTURE

The lessee will not undertake any drilling, construction of roads or pipelines, or any other activity which involves removal of vegetation until a plan of construction and development has been approved by the Forest Service representative. Such approval may be conditioned on reasonable requirements to prevent erosion, water pollution, or damage to surface resources and to provide for restoration of the surface.

This lease does not authorize prospecting for or removal of any mineral deposits by stripping, rim cutting, open pit, or any other method involving the use of mechanical earth-moving equipment without the prior written approval of the Forest Supervisor. Such approval may be conditioned on stipulations for the protection of surface values.

Permitee/Lessee

RECEIVED
STATE OF UTAH
SALT LAKE CITY, UTAH
1966 JUN 6 AM 10 47.9
DEPT. OF THE INTERIOR
BUR OF LAND MGMT

Form 3103-2
(October 1964)
(formerly 4-216)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

STIPULATION FOR LANDS UNDER JURISDICTION OF DEPARTMENT OF AGRICULTURE*

The lands embraced in this lease or permit being under the jurisdiction of the Secretary of Agriculture, the lessee or permittee hereby agrees:

(1) To conduct all operations authorized by this lease or permit with due regard for good land management, not to cut or destroy timber without first obtaining permission from the authorized representative of the Secretary of Agriculture, and to pay for all such timber cut or destroyed at the rates prescribed by such representative; to avoid unnecessary damage to improvements, timber, crops, or other cover; unless otherwise authorized by the Secretary of Agriculture, not to drill any well, carry on operations, make excavations, construct tunnels, drill, or otherwise disturb the surface of the lands within 200 feet of any building standing on the lands and whenever required, in writing, by the authorized representative of the Secretary of Agriculture to fence or fill all sump holes, ditches, and other excavations, remove or cover all debris, and so far as reasonably possible, restore the surface of the lands to their former condition, including the removal of structures as and if required, and when required by such representative to bury all pipelines below plow depth.

(2) To do all in his power to prevent and suppress forest, brush, or grass fires on the lands and in their vicinity, and to require his employees, contractors, subcontractors, and employees of contractors or subcontractors to do likewise. Unless prevented by circumstances over which he has no control, the lessee or permittee shall place his employees, contractors, subcontractors, and employees of contractors and subcontractors employed on the lands at the disposal of any authorized officer of the Department of Agriculture for the purpose of fighting forest, brush, or grass fires on or originating on the lands or on adjacent areas or caused by the negligence of the lessee or permittee or his employees, contractors, subcontractors and employees of contractors and subcontractors, with the understanding that payment for such services shall be made at rates to be determined by the authorized representative of the Secretary of Agriculture, which rates shall not be less than the current rates of pay prevailing in the vicinity for services of a similar character: *Provided*, that if the lessee or permittee, his employees, contractors, subcontractors, or employees of contractors or subcontractors, caused or could have prevented the origin or spread of said fire or fires, no payment shall be made for services so rendered.

During periods of serious fire danger to forest, brush, or grass, as may be specified by the authorized representative of the Secretary of Agriculture, the lessee or permittee shall prohibit smoking and the building of camp and lunch fires by his employees, contractors, subcontractors, and employees of contractors or subcontractors within the area involved except at established camps, and shall enforce this prohibition by all means within his power: *Provided*, that the authorized representative of the Secretary of Agriculture may designate safe places where, after all inflammable material has been cleared away, campfires may be built for the purpose of heating lunches and where, at the option of the lessee or permittee, smoking may be permitted.

The lessee or permittee shall not burn rubbish, trash, or other inflammable materials *except* with the consent of the authorized representative of the Secretary of Agriculture and shall not use explosives in such a manner as to scatter inflammable materials on the surface of the lands during the forest, brush, or grass fire season, *except* as authorized to do so or on areas approved by such representative.

The lessee or permittee shall build or construct such fire lines or do such clearing on the lands as the authorized representative of the Secretary of Agriculture decides is essential for forest, brush, and grass fire prevention which is or may be necessitated by the

* This form of stipulation may be used in connection with leases and permits issued under the Acts of February 25, 1920, as amended (30 U.S.C. 181 *et seq.*); August 7, 1947 (30 U.S.C. 351 *et seq.*); February 7, 1927, as amended (30 U.S.C. 281 *et seq.*); April 17, 1926, as amended (30 U.S.C. 271 *et seq.*); October 20, 1914, as amended (48 U.S.C. 432 *et seq.*); June 28, 1944 (58 Stat 483 *et seq.*); September 1, 1949 (30 U.S.C. 192c); June 30, 1950 (16 U.S.C. 508b); or under the authority of any of the Acts cited in Section 402 of the President's Reorganization Plan No. 3 of 1946 (5 U.S.C. 133y-16, Note).

exercise of the privileges authorized by this lease or permit, and shall maintain such fire tools at his headquarters or at the appropriate location on the lands as are deemed necessary by such representative.

(3) In the location, design, construction and maintenance of all authorized works, buildings, plants, waterways, roads, telegraph or telephone lines, pipelines, reservoirs, tanks, pumping stations, or other structures or clearance, the lessee or permittee shall do all things reasonably necessary to prevent or reduce to the fullest extent scarring and erosion of the lands, pollution of the water resources and any damage to the watershed. Where construction, operation, or maintenance of any of the facilities on or connected with this lease or permit causes damage to the watershed or pollution of the water resources, the lessee or permittee agrees to repair such damage and to take such corrective measures to prevent further pollution or damage to the watershed as are deemed necessary by the authorized representative of the Secretary of Agriculture.

(4) To pay the lessor or permitter or his tenant or the surface owner or his tenant, as the case may be, for any and all damage to or destruction of property caused by the lessee's or permittee's operations hereunder; and to save and hold the lessor or permitter or the surface owner or their tenants harmless from all damage or claims for damage to persons or property resulting from the lessee's or permittee's operations under this lease or permit.

(5) To recognize existing uses and commitments, in the form of Department of Agriculture grazing, timber cutting, and special use permits, water developments, ditch, road, trail, pipeline, telephone line, and fence rights-of-way and other similar improvements, and to conduct his operations so as to interfere as little as possible with the rights and privileges granted by these permits or with other existing uses.

(6) To install and maintain cattle guards to prevent the passage of livestock in any openings made in fences by the lessee or permittee or his contractors to provide access to the lands covered by this lease or permit for automotive and other equipment.

(7) If lessee or permittee shall construct any camp on the lands, such camp shall be located at a place approved by the authorized representative of the Secretary of Agriculture, and such representative shall have authority to require that such camp be kept in in a neat and sanitary condition.

(8) To comply with all the rules and regulations of the Secretary of Agriculture governing the national forests or other lands under his jurisdiction which are embraced in this lease or permit.

(9) Unless otherwise authorized, prior to the beginning of operations to appoint and maintain at all times during the term of this lease or permit a local agent upon whom may be served written orders or notices respecting matters contained in this stipulation, and to inform the authorized representative of the Secretary of Agriculture, in writing, of the name and address of such agent. If a substitute agent is appointed, the lessee or permittee shall immediately so inform the said representative.

(10) To address all matters relating to this stipulation to Forest Supervisor
Fishlake National Forest

at 170 North Main
Richfield, Utah 84701

who is the authorized representative of the Secretary of Agriculture, or to such other representative as may from time to time be designated, provided that such designation shall be in writing and be delivered to the lessee or permittee or his agent.

(11) If all or any part of the lands lie within a municipal watershed, or are, in the opinion of the authorized representative of the Secretary of Agriculture primarily valuable for watershed protection, the lessee or permittee shall reseed or otherwise restore the vegetative cover, as required by the authorized representative of the Secretary of Agriculture, for watershed protection and erosion prevention on any areas damaged because of the operation.

Southern Utah Fuel Co.
By [signature]
(Signature of Lessee)

GPO 844-821

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
UTAH STATE OFFICE
Post Office Box No. 11505
Salt Lake City, Utah 84111

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DEPT. OF INTERIOR
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UTAH STATE OFFICE

Office: Salt Lake City, Utah

Serial No.: SL 062583

MODIFIED COAL LEASE UNDER SECTION 3
Act of February 25, 1920 (41 Stat. 437), as amended

This lease, entered into on February 1, 1973, by the United States of America, the lessor, through the Bureau of Land Management, and Southern Utah Fuel Company of 655 West First South, Salina, Utah 84654, the lessee.

WITNESSETH:

THAT, WHEREAS, the lessee is now the holder of Coal Lease SL 062583, issued September 11, 1941, under the Act of February 25, 1920 (41 Stat. 437), as amended, which lease, as previously modified, embraces 2,042.77 acres in Sevier County, Utah.

AND WHEREAS, upon application by the lessee for modification of the lease, it has been found that it will be to the advantage of the lessee and the United States to modify the lease under Section 3 of the Act cited to include as additional lands the N½NE¼, E½NW¼, Sec. 7, T. 22 S., R. 5 E., SL Mer., Utah, containing 160.00 acres.

NOW, THEREFORE, the lessor, in consideration of the rents and royalties to be paid and the covenants to be observed as set out in said lease, does hereby grant and lease to the lessee the exclusive right and privilege to mine and dispose of all coal under, upon or in the N½NE¼, E½NW¼, Sec. 7, T. 22 S., R. 5 E., SL Mer., Utah, subject to the following conditions:

(a) that the rental on the additional lands shall be $1.00 for each acre or fraction thereof for the period from date hereof to the next anniversary of the original lease and thereafter at the rate provided for the lands embraced in the original lease.

(b) that the required bond to secure the lease shall be $15,000.00.

(c) that all of the other terms and conditions of the original lease in effect on date hereof shall be unaffected hereby and shall be applicable to the lease as modified herein. The modified lease is also hereby made subject to the terms and conditions contained in the attached Forest Service stipulations, comprised of Form 3109-3 and Special Stipulations.

The lease, as modified herein, embraces the following described lands:

Salt Lake Meridian, Utah
T. 21 S., R. 4 E.,
Sec. 36, S½.
T. 21 S., R. 5 E.,
Sec. 31, All.
T. 22 S., R. 4 E.,
Sec. 1, Lots 1 to 4 incl., S½N½, S½;
Sec. 12, NW¼.
T. 22 S., R. 5 E.,
Sec. 6, All;
Sec. 7, N½NE¼, E½NW¼.
Containing 2,202.77 acres.

THE UNITED STATES OF AMERICA

By: _____
Ed. B. Cox, Chief
Branch of Realty Services

SOUTHERN UTAH FUEL COMPANY

By: _____
(Name and Title)

COMMENT 782.15(b)(1) (Section II)

According to Exhibits 3 and 4 which were prepared by USGS, BLM and USFS, all land is federal and therefore, consent is inherent, but this condition should be stated definitely in the application.

RESPONSE:

Federal Coal Lease SL-062583 grants the Applicant the right to utilize lands for the construction and utilization of surface facilities necessary for underground coal mining. A copy of lease SL-062583 is presented in Response to Comment 782.15(a),(b)(2).

782.16(a)	79 Sub.
782.16(b)	Not Applicable
782.16(c)	Not Applicable

COMMENT 782.16(a) (Section II)

The MRP (v1:12) states that to the applicant's knowledge, no portion of the area to be permitted is or is not under study to be designated unsuitable for underground or surface mining under 30 CFR Parts 764 and 765. A statement should be provided to describe the method for arriving at this determination.

RESPONSE:

Based on available information, the mine permit area is not known to contain any areas designated unsuitable for underground mining activities under 30 CFR 764 and 765. The "unsuitability criteria" as defined in the Federal Register 43 CFR 3461.1, effective July 19, 1979, have been applied to that portion of the permit area located Township 22 South wherein it was recommended that "All Federal coal areas within the Wasatch Plateau and Emery KRCRAs area determined to be 'acceptable for future coal lease consideration.'" However, some of these areas will require protective stipulations.*

That portion of the permit area located in Township 21 South has not, as of this date, been subjected to an unsuitability study. The Applicant is providing data to the Forest Service and to the Bureau of Land Management to assist in this study which is tentatively scheduled in the near future.

* Department of Agriculture, Forest Service, Fishlake National Forest and Department of the Interior, Bureau of Land Management, Richfield District. 1980. Forest planning unit coal unsuitability study.

782.17(a)	77 Plan 79 Sub. 80 Sub., Response Follows
782.17(b)	77 Plan 79 Sub. 80 Sub., Response Follows

COMMENT 782.17(a) (Section I)

None of the requirements are addressed.

RESPONSE:

The following information is presented to identify permit term requirements and stipulations. The Applicant is presently operating the SUFCo Mine with room and pillar mining methods. Although the Mining and Reclamation Permit Application is to cover the next five-year period of mining, information is presented below for the life of the mining operation.

1.	First coal produced	1941
2.	Total coal produced through 1979	8,438,044 tons
3.	Peak production rate	2,160,000 tons per year
4.	Peak production years	1982 thru 1990
5.	Termination of mining activity	December, 2006
6.	Horizontal extent of mine workings to date	1,593.76 acres
7.	Maximum horizontal extent of mine workings to date	5,205.5 acres
*8.	Vertical extent of mine	Surface to 1,100 feet (2,200 fee if Lease U-47080 is acquired)
9.	Surface facilities disturbance to date	17.5 acres
10.	Area of exploration drilling disturbance to date	9.35 acres
11.	Reclamation to date of previously disturbed acreage	7.9 acres

The anticipated number of total acres to be affected or disturbed over the *entire mining operation is 5,930. This includes approximately 25 acres of surface disturbance for operation and final reclamation of the surface facilities. The legal description of acreage to be bonded is presented in the Response to Comment 784.33(b)(3) and is illustrated as Map 80-11. During the next five years, 1,261.82 acres will be disturbed due to extension of the underground mining activities.

*Denotes change or addition (6/81)

Extent of the horizontal workings will continue on an annual basis after the *first five years, affecting approximately 400 to 500 acres per year until *1990. In 1991, the mine will be in a retreat mining mode such that recovery of previously developed pillars comprises a significant portion of production. During the period from 1995 until the end of the mine life, between five and 35 acres of additional horizontal extension will be disturbed each year.

The location of the disturbance during the next five years is shown on the mine sequence map (Map 80-2) incorporated in this Permit Application. The location of the total acreage which will have been affected upon termination of mining operations is also shown on this sequence projection map.

*Denotes change or addition (6/81)

782.18 79 Sub.

782.19

782.19(a)	79 Sub. 80 Sub., Response 782.19(c),(d)
782.19(b)	79 Sub. 80 Sub., Response 782.19(c),(d)
782.19(c)	Response Follows
782.19(d)	Response Follows

Include list of all other licenses and permits.

RESPONSE:

The following list presents 1) all permits previously issued to the Applicant for the SUFCo underground mine; 2) all pending applications for permits which have been filed with the appropriate governmental agency; and 3) permit recognized as necessary in the future for which no application has been filed.

Permit	Issuing Authority	Approval Status/ Identification No.
Mining and Reclamation *Permit ACT/041/002	State of Utah Department of Natural Resources Division of Oil, Gas and Mining Department of Interior U.S. Geological Survey and Office of Surface Mining Department of Agriculture U.S. Forest Service Fishlake National Forest and Manti LaSal National Forest	1977 Mine Plan was approved on September 14, 1977
N.P.D.E.S. Permit *UT-0022918	Environmental Protection Agency	Approved
Disposal for Water Discharge	Utah Department of Health	Approved
Business License	Sevier County	Approved
Mine Health and Safety Permits	Mine Safety and Health Administration Utah	All approved
Radio Permits	Federal Communications Commission	Approved

*Denotes change or addition (6/81)

Permit	Issuing Authority	Approval Status/ Identification No.
Certificate of Insurance and Authorization to do Business in State	State Industrial Development Commission	Approved
Public Water Supply Permit #21020	State of Utah Department of Health Division of Environmental Health	Approved
*Special Use	U.S. Forest Service Fishlake National Forest	Approved
*Air Quality Approval Order	State of Utah Utah Air Conservation Committee Division of Environmental Health Department of Health	Approved

*Denotes change or addition (6/81)

782.20 79 Sub.

782.21 80 Sub., Technical Correspondenc

783.12(a)	80 Sub., Map 80-2
783.12(b)	80 Sub., Archaeological Report 80 Sub., Response Follows

COMMENT 783.12(b) (Section I)

The archaeological reports provided do not contain information describing the sites located, the environmental contexts of the sites, or evaluations of their significance. Also missing is any indication of the problem orientation in the investigation of the sites: the recommendations for avoidance or mitigation of the sites; are aimed at the core drilling activities only. Recommendations should also be included for the actual mining operations.

The mine plan area has not been fully inventoried as called for under Executive Order 11593 and the amended Historic Preservation Act. Such an inventory should be included in the application. The entire mine plan area must be inventoried if there is a potential for subsidence.

The Hadley Monument is not adequately evaluated for its historic significance. Information should be provided which justifies determination that it is either eligible or ineligible for nomination to the National Register of Historic Places (NRHP). The criteria for nomination (36 CFR 60.6) should be referenced in the discussion. Documentation should be provided which indicates that the Utah SHPO concur with this evaluation.

RESPONSE:

Updated information is presented in the Archaeological Report (October, 1980), located in Volume 4.

*Additional site analyses are presented in the 1981 Supplement, Volume 4.

783.13(a)	77 Plan 79 Sub. 80 Sub., Hydrometrics Report 80 Sub., Response Follows
783.13(a)(1)	77 Plan 80 Sub., Hydrometrics Report
783.13(a)(2)	80 Sub., Hydrometrics Report
783.13(b)	Advisory

COMMENT 783.13(a) (Section I)

No distinctions are made among general area, adjacent area and mine plan area.

RESPONSE:

A statement to clarify areas is submitted in the Hydrometrics Report, (November, 1980), page 1, located in Volume 4.

COMMENT 783.13(a) (Section II)

The general area is assumed to be that mapped as Figure 1 in Exhibit 5 or Figure 6 in Exhibit 4. These figures are not at required scales (no scale for the Figure 1 "sketch map"), Figure 6 is illegible and "sites" and "springs" cannot be differentiated on Figure 6.

RESPONSE:

Revised maps (as Figures H-1 and H-6) are located in the Hydrometrics Report (November, 1980) on pages 2 and 41, respectively, located in Volume 4.

COMMENT 783.13(a)(2) (Section II)

Information applicant gathered and submitted is incomplete and deficient (see review responses in Sections 783.14, 15, 16, 17 and following sections).

RESPONSE:

This information is discussed in Sections 783.13, 783.14, 783.15, 783.16 and 783.17 in the Hydrometrics Report (November, 1980), located in Volume 4.

COMMENT 783.14(a) (Section I)

The MRP indicates that little is known as to the strata below the lowest coal seam. How will mining affect the nearest aquifer below the lowest coal seam?

RESPONSE:

STRATIGRAPHY

General Statement

All of the rock units within the SUFCo property boundaries are sedimentary. There are no known igneous or metamorphic units. Exposed, consolidated sedimentary formations of the area were deposited during the Mesozoic Era. All of the units are Cretaceous. The oldest unit is the Upper Cretaceous Masuk Member of the Mancos Shale, which is overlain in order of the increasingly younger rocks, by the Star Point Sandstone, Blackhawk Formation, Castlegate Sandstone Member of the Price River Formation and the upper member of the Price River Formation (Fig. 783.14(a)).

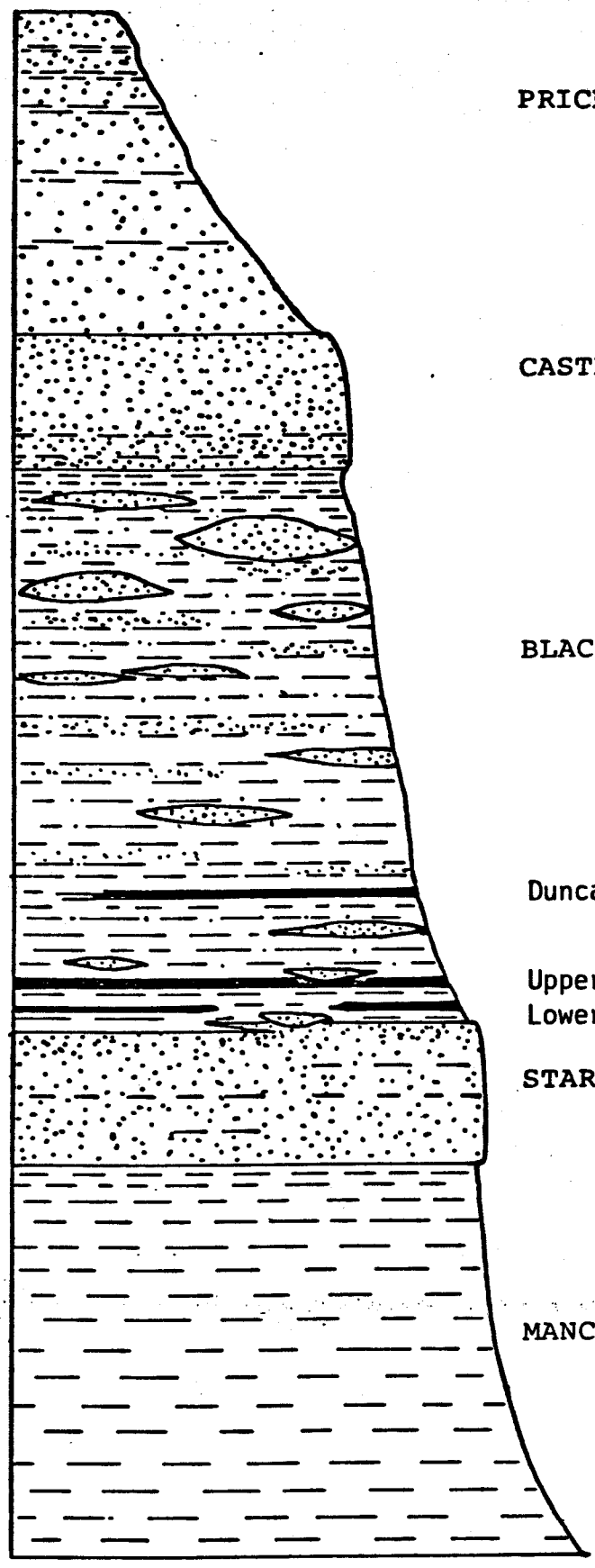
MANCOS SHALE (MASUK MEMBER)

Distribution and Thickness

The Masuk Member of the Mancos Shale has been mapped throughout eastern Utah and western Colorado. In the Wasatch Plateau, it crops out along the entire eastern edge varying in thickness from 300-1,300 feet (Davis, Doelling, 1976). It thins from north to south and from east to west. The Masuk is 500-600 feet thick in North Fork Quitchupah Canyon on the east side of the SUFCo property.

Lithology and Topographic Expression

The Masuk Member of the Mancos Shale is composed of blue-gray fissile claystone which weathers light blue-gray to light tan. The unit contains thin calcareous sandy or silty interbeds which increase in frequency toward the top of the



SOUTHERN UTAH FUEL COMPANY
a subsidiary of
Coastal States Energy Company
Generalized Stratigraphic Colum
Scale 1" = 250'

FIGURE 783.14(a)

unit. The interbeds are usually light tan to yellow, and in places their weathering gives the Masuk a light tan cast. The member forms the lower slopes of Convulsion and North Fork Quitchupah Canyons on the south and east sides of the SUFCo property. It forms steep, barren, easily eroded slopes with occasional ledges of more resistant fine-grained sandstone, siltstone, or sandy claystone.

STAR POINT SANDSTONE

Distribution and Thickness

Exposures of the Star Point Sandstone form a broad arcuate band crossing eastern Utah and extending into eastern Wyoming, where it is roughly correlative to the Shannon Sandstone of the Cody Shale, and into southwestern Colorado and northeastern New Mexico, where its equivalent is the Point Lookout Sandstone (McGookey, D.P., 1972). In Utah, the Star Point is almost continuously exposed for about 100 miles along the eastern edge of the Wasatch (Spieker, 1931).

The unit ranges in thickness to more than 1,000 feet in the Pleasant Valley area in the northern part of the Wasatch Plateau. Eastward it intertongues and grades with the Mancos Shale until it is absent as a unit near Sunnyside in the Bookcliffs. The unit thins southward along the Wasatch Plateau, and the lowermost units of the Star Point grade into the underlying Masuk Shale (Spieker, 1931). Near the SUFCo property, Bucurel (1976) estimates the Star Point to be about 200 feet thick. The top of the Star Point is nearly a plane in the SUFCo area, with the exception of some intertonguing with the overlying Blackhawk Formation (Marley, 1980) in Convulsion Canyon, and again in the Link Canyon-Muddy Creek area northeast of SUFCo.

Lithology and Topographic Expression

The Star Point Sandstone is a tan to gray, fine- to medium-grained, friable, usually well sorted sandstone, with minor thin interbeds of siltstone or claystone. In places, the upper few feet are bleached white. Marley and Flores (1977) note that the Star Point contains tract fossils, and that siltstones and shales in the unit are intensely bioturbated. Marley (et.

al., 1979) states that the Star Point is a coastal complex of distributary channel, delta front, and beach barrier sediments. The Star Point in the SUFCo area is a massive cliff-forming unit which forms a nearly unbroken ledge along Convulsion and North Fork Quitchupah Canyons. The unit can be scaled only where it V's in the larger canyons or where a large earth slide has covered the cliff.

BLACKHAWK FORMATION

Distribution and Thickness

The Blackhawk Formation crops out from Thousand Lake Mountain in southcentral Utah along the Wasatch Plateau northward to the Bookcliffs, and eastward along the Bookcliffs to a few miles east of Thompson, Utah, in Grand County, where it pinches out. The unit is well exposed along the front of the Wasatch Plateau and in the canyons cutting the Plateau. In the SUFCo area, it is well exposed in Convulsion and Quitchupah Canyons. The Blackhawk (in the Wasatch Plateau) varies in thickness from 400 feet, south of John's Peak (Davis, Doelling, 1976), to 1,750 feet in the Pleasant Valley area (Hintze, 1973), with a general thickening from east to west. On the SUFCo property the Blackhawk has been penetrated by 46 drill holes. The unit varies in thickness from 710 to 833 feet. The only pattern that can be discerned from the data is a general northeastward thickening.

Lithology and Topography Expression

The Blackhawk Formation consists of interbedded continental deposits of sandstone, siltstone, claystone and coal. Sandstone makes up 60 to 65 percent of the total thickness of the Blackhawk Formation. The fine to medium grained sandstones occur as thin to massively bedded paleochannel deposits.

The paleochannels increase in frequency, thickness and lateral extent upward in the formation. There is also a vertical repetition of scours within the upper sandstones (Marley et. al., 1979). The sandstones grade laterally into

siltstone and shale. Most of the coal in the unit occurs in the bottom 200 feet, with the major units occurring in the lower 150 feet.

Three coal seams (the Upper Hiawatha Seam, and two others of lesser importance, the Lower Hiawatha Seam and the Duncan Seam) with thickness greater than five feet have been noted in the Blackhawk Formation within the SUFCo property. The Upper Hiawatha Seam is the only one of the three which is continuous within the SUFCo boundaries. The seam maintains a thickness between nine and 18 feet, thinning sufficiently to affect mineability in the southeastern portion of the property where it is split. The Lower Hiawatha Seam occurs below the Upper Hiawatha seam two to 29 feet above the Star Point Sandstone. The interval between the two seams varies, in drill holes, between 5.6 and 47.5 feet. The Lower Hiawatha Seam is thin and discontinous, varying in unsplit thickness from 0 to 5.9 feet. The seam is split over much of the property and the interburden between it and the Upper Hiawatha Seam is greater than 30 feet in only a few widely scattered places.

The third, and last important seam, occurs 100 to 130 feet above the Upper Hiawatha. It has been informally named the Duncan Seam by Trimble (see cross section maps, 80-6 and 80-7), because it is of such limited lateral extent that it cannot be correlated with any seams in areas surrounding the property. It has a maximum known thickness of ten feet.

The Blackhawk generally forms a steep irregular slope between the cliffs of the underlying Star Point Sandstone and the overlying Castlegate Sandstone. Ledges of sandstone up to 50 feet thick break the slope. In some exposures, the unit is nearly vertical where the Star Point below has sheared off and erosion has not brought the slope to equilibrium. In Convulsion and Quitchupah Canyons, there are large areas of burned coal which have baked the enveloping clays and sandstones. The areas are generally steeper than the surrounding slopes. Cover is generally light and the strata can be easily seen, except on some north-facing slopes where vegetation masks the unit.

Distribution and Thickness

The Castlegate Sandstone extends across the eastern part of Utah, along part of the Bookcliffs and the entire length of the Wasatch Plateau, but loses its character as a cliff former south of Interstate Highway 70 (Spieker, 1931). It is correlative to the Cliffhouse Sandstone of southwestern Colorado and northern New Mexico (McGookey, 1972). In the Wasatch Plateau, its thickness varies from 50 to 500 feet (Spieker, 1931). It is thickest in Price River Canyon at the north end of the Wasatch Plateau. The Castlegate Sandstone is exposed along the rims of Convulsion and North Fork Quitchupah Canyons. Its thickness varies across the property from about 120 to 260 feet with a general northwestward thickening.

Lithology and Topographic Expression

The Castlegate Sandstone is a fluvial deposit composed mostly of sandstone, conglomerate sandstone, pebble conglomerate, and gritstone lenses. This member represents the most productive water bearing unit in the stratigraphic column. (See Response to Comment 783.15(a)). There are some thin interbeds of siltstone and claystone, especially toward the base of the unit. The member forms the surface of Old Woman Plateau in the southern part of the SUFCo property, and creates a nearly unbroken cliff along the canyons which flank SUFCo on the south and east.

783.14(a)	77 Plan 79 Sub. 80 Sub., Hydrometrics Report 80 Sub., Response Follows
783.14(a)(1)	77 Plan
783.14(a)(1)(i)	80 Sub., Hydrometrics Report
783.14(a)(1)(ii)	77 Plan 80 Sub., Map 80-6 80 Sub., Response Follows
783.14(a)(1)(iii)	77 Plan 80 Sub., Response Follows
783.14(a)(1)(iv)	Response Follows
783.14(a)(2)(i)	80 Sub., Hydrometrics Report
783.14(a)(2)(ii)	77 Plan 80 Sub., Map 80-2
783.14(a)(2)(iii)	Response Follows
783.14(a)(2)(iv)	77 Plan

COMMENT 783.14(a) (Section II)

Insufficient information is provided to technically evaluate subsurface water location. Geologic, structure, overburden isopach, aquifer thickness and extent, and piezometric surface maps should be provided.

RESPONSE:

Additional information to evaluate subsurface water locations is addressed on page 3 and discussed in Section 783.15 of the Hydrometrics Report (November, 1980), pages 6-9, located in Volume 4.

COMMENT 783.14(a)(1)(i) (Section I)

Subsurface water at face up area is not addressed although the mine pumps 250 to 325 gpm.

RESPONSE:

A description of subsurface water is presented in the Hydrometrics Report (November, 1980), pages 4-5, located in Volume 4.

COMMENT 783.14(a)(1)(ii) (Section I)

The lithology of strata should be included in the application.

RESPONSE:

The lithology of the strata in areas to be mined is described in the Response to Comment 784.14(a). Additional information regarding the lithology of the strata is illustrated on Map 80-6, "Cross Section A-A'", located in Volume 3.

*Further lithology analyses are presented in the Geology 1981 Supplement located in Volume 7. Geologic cross sections (Maps 81-3 and 81-4) are also provided.

COMMENT 783.14(a)(1)(iii) (Section I)

The MRP indicates that little is known as to the strata below the lowest coal seam. How will mining effect the nearest aquifer below the lowest coal seam?

Physical properties of stratum in overburden should be described.

RESPONSE:

The physical properties of strata in overburden is described in the Response to Comment 783.14(a). No overburden will be removed during mining nor will it be disturbed by surface facilities or operations due to the fact that the SUFCo operation has been in existence since 1941.

COMMENT 783.14(a)(1)(iv) (Section I)

Chemical analyses of each stratum should be included in the application.

RESPONSE:

Information regarding the chemical analyses of each stratum to be affected can be found in the Response to Comment 783.14(a)(2)(iii). Since the SUFCo mining operations have been in existence since 1941, no overburden will be disturbed by surface facilities. No overburden will be removed by the mining operations due to the nature of underground coal mining.

COMMENT 783.14(a)(2)(i) (Section I)

Location of subsurface water should be described.

RESPONSE:

This topic is discussed within the Responses to Comment 783.14(a)(1)(i) - *Description of Subsurface Water; and Comment 783.15 - Groundwater Information of the Hydrometrics Report, (November, 1980), Volume 4.

*Typographic Correction (6/81)

COMMENT 783.14(a)(2)(iii) (Section I)

Pyrite and clay content of the strata above and below the coal seam should be given.

RESPONSE:

Pyritic content and potential alkalinity of the strata immediately above and below the coal seam (Upper Hiawatha) to be mined has been determined. Standard sulfur form tests and water soluble alkali tests were preformed by Commercial Testing and Engineering Company on samples of roof and floor strata from 13 core holes. Copies of the analysis sheets are in Appendix 783.14(a)(2)(iii) and a tabulation of the analyses is presented in Table 783.14(a)(2)(iii). Sulfur forms and water soluble alkalies (as received and dry basis) are listed in the table on roof and floor strata which also includes partings in the seam to be mined. Pyritic sulfur (dry basis) ranges from 0.10% to 0.86% in roof samples, with a mean of 0.31% and a standard deviation of 0.21%. The coal seam to be mined contains a parting in the southern half of Lease U-28297 which varies in thickness from zero feet to greater than 24 feet. The parting will be mined with the coal where the parting is no greater than 0.75 feet (nine inches) thick. Where the parting exceeds 0.75 feet in thickness, the coal above the parting will then be the seam to be mined, and the top of the parting will be the floor of the seam to be mined. Pyritic content of floor samples in areas where the parting will be mined with the coal ranged from 0.05% to 2.33%, with a mean of 0.58% and a standard deviation of 0.88%. The floor rock sample analysis report for bore hole US-79-14 is anomalously high (2.33%). Disregarding this sample report, the range is 0.05% to 0.48%, with a mean of 0.22% and a standard deviation of 0.20%.

In the areas where the top of the parting is the floor of the seam to be mined, the pyritic content ranges from 0.14% to 0.77% with a mean of 0.35% and a standard deviation of 0.23%.

The potential alkalinity of the roof and floor rocks is summarized as follows.

Water Soluble Alkalies (Dry Basis)

		No. of Samples	Max.	Min.	Mean	Standard Deviation
Roof	NA_2O	13	.130	.007	.01	.002
	K_2O	13	.004	.019	.01	.005
Floor where parting mined	NA_2O	6	.035	.007	.016	.01
	K_2O	6	.024	.008	.015	.006
Floor of Upper Bench	NA_2O	7	.007	.013	.01	.002
	K_2O	7	.022	.01	.017	.005

Pyrite, marcasite, and sulfur content of the Upper Hiawatha coal seam was determined by the standard "forms of sulfur" analysis, Appendices 783.14(a)(2)(iii), Table 783.14(a)(2)(iii). Marcasite was not determined directly for the following reasons:

- The standard wet chemical analysis (ASTM D2492) determines iron soluble in nitric acid, and calculates from this the pyrite content. This test does not separate marcasite values from pyrite values and, therefore, reports the total as pyrite.

- The Applicant consulted with Commercial Testing and Engineering Company in Denver, Colorado, and Standard Laboratories, Inc. in Charleston, West Virginia, and did not find an accurate and quantitative method to determine marcasite content in coal.

Clay content of floor samples was not determined analytically. The lithology of the stratum immediately below the mineable coals varies from bore hole to bore hole. Accordingly, clay content will range from almost 100% in a pure claystone, to less than 5% in a submature or mature sandstone.

Southern Utah Fuel Company (SUFCO)
Coastal States Energy Company
SUFCO mine

TABLE 783.14(a)(2)(iii)

TABULATION OF ROOF, PARTING & FLOOR ANALYSES

UPPER HIAWATHA COAL SEAM

Core Hole No.	Source Rock	SULFUR FORMS As Received % Pyr.	% Sul.	% Org.	% Total Sulfur	Dry % Pyr.	% Sul.	% Org.	% Total Sulfur	WATER SOLUBLE ALKALIES As Received NA_2O	K_2O	Dry NA_2O	K_2O	Discussion
US-79-1	Roof	.09	.00	.03	.12	.10	.00	.03	.13	.01	.004	.01	.004	
	Parting	.48	.00	.05	.55	.51	.00	.06	.59	.009	.007	.01	.008	Parting mined with full seam
	Floor	.47	.00	.00	.47	.48	.00	.00	.48	.007	.009	.007	.009	
US-79-2	Roof	.27	.02	.00	.29	.28	.02	.00	.30	.007	.008	.007	.008	Roof of upper coal split
	Parting	.14	.01	.03	.18	.15	.01	.03	.19	.007	.015	.007	.015	Floor of upper coal split
	Parting	2.09	.06	.37	2.52	2.16	.06	.38	2.60	.007	.014	.007	.015	Roof of lower coal split
	Floor	.04	.00	.18	.22	.04	.00	.19	.23	.01	.008	.01	.008	Floor of lower coal split
US-79-3	Roof	.55	.00	.09	.64	.58	.00	.09	.64	.01	.008	.01	.008	Roof of upper coal split
	Parting	.23	.00	.03	.26	.24	.00	.03	.27	.007	.016	.007	.017	Floor of upper, roof of lower coal split
	Floor	.42	.00	.06	.48	.43	.00	.06	.49	.007	.011	.007	.011	Floor of lower coal split
US-79-4	Roof	.84	.07	.00	.91	.86	.07	.00	.93	.01	.019	.01	.019	Roof of upper coal split
	Parting	.20	.01	.05	.26	.22	.01	.05	.28	.009	.02	.01	.021	Floor of upper coal split
	Parting	.32	.02	.24	.58	.34	.02	.25	.61	.009	.011	.01	.012	Roof of lower coal split
	Floor	.11	.01	.03	.15	.11	.01	.03	.15	.007	.01	.007	.01	Floor of lower coal split
US-79-6	Roof	.14	.00	.06	.20	.15	.00	.06	.21	.01	.008	.01	.008	Roof of upper coal split
	Parting	1.35	.04	.07	1.46	1.49	.04	.08	1.61	.009	.009	.01	.01	Parting mined with upper coal split
	Parting	.13	.00	.05	.18	.14	.00	.05	.19	.01	.01	.01	.01	Floor of upper coal split
	Parting	.49	.01	.10	.60	.53	.02	.10	.65	.012	.007	.013	.008	Roof of lower coal split
	Floor	.05	.00	.03	.08	.05	.00	.03	.08	.01	.01	.01	.01	Floor of lower coal split
US-79-7	Roof	.34	.02	.04	.40	.35	.02	.04	.41	.007	.008	.007	.008	Roof of upper coal split
	Parting	.39	.02	.07	.48	.42	.02	.08	.52	.009	.021	.01	.022	Floor of upper, roof of lower coal split
	Floor	.61	.00	.00	.61	.67	.00	.00	.67	.009	.007	.01	.008	Floor of lower coal split
US-79-9	Roof	.11	.01	.05	.17	.12	.01	.05	.18	.013	.008	.013	.008	Roof of upper coal split
	Parting	.45	.02	.02	.49	.49	.02	.02	.53	.012	.01	.013	.011	Floor of upper, roof of lower coal split
	Floor	.63	.01	.64	1.28	.68	.01	.69	1.38	.015	.007	.016	.008	Floor of lower coal split
US-79-10	Roof	.41	.01	.02	.44	.42	.01	.02	.44	.007	.004	.007	.004	Roof of upper coal split
	Parting	.70	.03	.12	.85	.77	.03	.14	.94	.009	.020	.01	.022	Floor of upper, roof of lower coal split
	Floor	.07	.01	.02	.10	.07	.01	.02	.10	.007	.014	.007	.014	Floor of lower coal split
US-79-11	Roof	.36	.02	.03	.41	.37	.02	.03	.41	.01	.016	.01	.016	
	Parting	.72	.03	.49	1.24	.77	.03	.50	1.33	.029	.018	.031	.020	Parting mined with full seam
	Floor	.09	.01	.13	.23	.09	.01	.14	.24	.017	.018	.018	.019	
US-79-12	Roof	.26	.01	.11	.38	.28	.01	.11	.40	.009	.015	.01	.016	
	Parting	.30	.02	.22	.54	.35	.02	.27	.64	.020	.041	.023	.016	Parting mined with full seam
	Floor	.37	.03	.08	.48	.39	.03	.08	.50	.033	.018	.035	.019	
US-79-13	Roof	.20	.01	.03	.24	.21	.01	.03	.25	.01	.014	.01	.015	No parting
	Floor	.11	.00	.12	.23	.11	.00	.13	.24	.007	.009	.007	.009	
US-79-14	Roof	.23	.00	.26	.49	.24	.00	.27	.51.	.012	.01	.013	.01	
	Floor	2.27	.03	.20	2.50	2.33	.03	.20	2.56	.016	.012	.016	.012	No parting
US-79-15	Roof	.12	.00	.45	.57	.13	.00	.48	.61	.012	.007	.013	.008	
	Floor	.05	.00	.02	.07	.05	.00	.02	.07	.013	.023	.013	.024	No parting

APPENDIX 783.14(a)(2)(iii)

F-461

COMMERCIAL TESTING & ENGINEERING CO.

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10775 EAST 51st AVE., DENVER, COLO. 8023
OFFICE TEL. (303) 373-477

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Roof	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - A Core Hole No. US-79-1 796.00' - 796.75' Salina No. 2173
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	9-12-79	

Analysis report no. 72-36291-A Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	4.77	XXXXX
% Ash	86.84	91.19
Btu/lb.	375	394
% Sulfur	0.12	0.13

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

F-464

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Roof	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - A Core Hole No. US-79-1 796.00' - 796.75 Salina No. 2173
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	9-12-79	

Analysis report no. 72-86291-A Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.09	0.10
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur (Diff)	0.03	0.03
% Total Sulfur	0.12	0.13

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.010	0.010
% K_2O	0.004	0.004

APPARENT SPECIFIC GRAVITY at 4.77% Moisture = 2.47

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample No. E
Sample taken by	Coastal States Energy Co.	Core Hole No. US-79-1
Date sampled	xxxxx	801.94' - 802.69'
Date received	9-12-79	Salina No. 2177

Analysis report no. 72-86291-E Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	6.62	XXXXX
% Ash	73.87	79.11
Btu/lb.	2306	2469
% Sulfur	0.55	0.59

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October , 1979

Sample identification by

Coastal States Energy Co.

Sample No. E
Core Hole No. US-79-1
801.94' - 802.69'
Salina No. 2177

Kind of sample reported to us	Parting
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	9-12-79

Analysis report no. 72-86291-E Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.48	0.51
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur (Diff)	0.05	0.06
% Total Sulfur	0.55	0.59

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.009	0.010
% K_2O	0.007	0.008

TRUE SPECIFIC GRAVITY at 6.62% Moisture (As Rec'd) = 2.16

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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October 26, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Kind of sample reported to us	Floor	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - I Core Hole No. US-79-1 809.44' - 810.00' Salina No. 2181
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	9-12-79	

Analysis report no. 72-86291-I Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	2.57	XXXXX
% Ash	91.74	94.16
Btu/lb.	365	375
% Sulfur	0.47	0.48

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/vt

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

RN DIVISION MANAGER
W. TAYLOR, JR.

PLEASE ADDRESS ALL CORRESPONDENCE TO:
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OFFICE TEL. (303) 373-4772

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Floor	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - I
Sample taken by	Coastal States Energy Co.	Core Hole No. US-79-1
Date sampled	xxxxx	809.44' - 810.00'
Date received	9-12-79	Salina No. 2181

Analysis report no. 72-86291-I Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.47	0.48
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur (Diff)	0.00	0.00
% Total Sulfur	0.47	0.48

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.007	0.007
% K_2O	0.009	0.009

TRUE SPECIFIC GRAVITY at 2.57% Moisture (As Rec'd) = 2.48

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/yt

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

November 15, 1979

Sample identification by

Coastal States Energy Co.

Sample - A
Core Hole No. US-79-2
808.70' - 809.50'
Salina No. 2489

Kind of sample reported to us	Roof
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	10-10-79

Analysis report no. 72-88059-A Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	4.93	XXXXX
% Ash	84.89	89.29
Btu/lb.	279	293
% Sulfur	0.29	0.30

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

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Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

November 15, 1979

Sample identification by

Kind of sample reported to us	Roof	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - A
Sample taken by	Coastal States Energy Co.	Core Hole No. US-79-2
Date sampled	xxxxx	808.70' - 809.50'
Date received	10-10-79	Salina No. 2489

Analysis report no. 72-88059-A Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.27	0.28
% Sulfate Sulfur	0.02	0.02
% Organic Sulfur (Diff)	0.00	0.00
% Total Sulfur	0.29	0.30

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.007	0.007
% K_2O	0.008	0.008

APPARENT SPECIFIC GRAVITY at 4.93% Moisture = 2.38

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/vt

COMMERCIAL TESTING & ENGINEERING CO.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

November 15, 1979

Kind of sample reported to us	Parting
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	10-10-79

Sample identification by

Coastal States Energy Co.

Sample - F
Core Hole No. US-79-2
815.99' - 816.70'
Salina No. 2493

Analysis report no. 72-88059-F Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	3.66	XXXXX
% Ash	75.00	77.85
Btu/lb.	410	426
% Sulfur	0.18	0.19

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½ W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/pm

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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W[illegible]IN DIVISION MANAGER
LLOYD W. TAYLOR, JR.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

November 15, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - F
Sample taken by	Coastal States Energy Co.	Core Hole No. US-79-2
Date sampled	xxxxx	815.99' - 816.70'
Date received	10-10-79	Salina No. 2493

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.14	0.15
% Sulfate Sulfur	0.01	0.01
% Organic Sulfur (Diff)	0.03	0.03
% Total Sulfur	0.18	0.19

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.007	0.007
% K_2O	0.015	0.015

APPARENT SPECIFIC GRAVITY at 3.66% Moisture = 2.50

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/yt

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

November 19, 1979

Sample identification by

Kind of sample reported to us	Floor
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	10-10-79

Coastal States Energy Co.

Sample - K
Core Hole No. US-79-2
828.55' - 829.22'
Salina No. 2498

Analysis report no. 72-88059-K Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	4.19	XXXXX
% Ash	69.52	72.56
Btu/lb.	3191	3331
% Sulfur	0.22	0.23

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

November 19, 1979

Sample identification by

Kind of sample reported to us	Floor	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - K Core Hole No. US-79-2 828.55' - 829.22' Salina No. 2498
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-88059-K Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.04	0.04
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur (Diff)	0.18	0.19
% Total Sulfur	0.22	0.23

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.010	0.010
% K_2O	0.008	0.008

APPARENT SPECIFIC GRAVITY at 4.19% Moisture = 2.03

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GP/vt

F-461

COMMERCIAL TESTING & ENGINEERING CO.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 8, 1979

Sample identification by

Coastal States Energy Co.

Sample - A
Core Hole No. US-79-3
827.83' - 828.46'
Salina No. 2046

Kind of sample reported to us	Roof
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-15-79

Analysis report no. 72-85430-A Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	5.06	XXXXX
% Ash	80.10	84.37
Btu/lb.	1229	1294
% Sulfur	0.64	0.67

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	XXX °F	XXX °F
Softening (H = W)	XXX °F	XXX °F
Softening (H = ½W)	XXX °F	XXX °F
Fluid	XXX °F	XXX °F

H = Cone Height
W = Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

GDP/md/pm

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 8, 1979

Sample identification by

Kind of sample reported to us	Roof
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-15-79

Coastal States Energy Co.

Sample - A
Core Hole No. US-79-3
827.83' - 828.46'
Salina No. 2046

Analysis report no. 72-85430-A Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.55	0.58
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur (Diff)	0.09	0.09
% Total Sulfur	0.64	0.67

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.010	0.010
% K_2O	0.008	0.008

APPARENT SPECIFIC GRAVITY at 5.06% Moisture = 2.22

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

GDP/vt

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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October 8, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Coastal States Energy Co.

Sample - C
Core Hole No. US-79-3
831.26' - 833.86'
Salina No. 2048

Kind of sample reported to us	Parting
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-15-79

Analysis report no. 72-85430-C Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	5.33	XXXXX
% Ash	80.32	84.84
Btu/lb.	664	701
% Sulfur	0.26	0.27

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H=W)	xxx °F	xxx °F
Softening (H=½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/pm

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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

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October 8, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Kind of sample reported to us	Parting
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-15-79

Coastal States Energy Co.

Sample - C
Core Hole No. US-79-3
831.26' - 833.86'
Saline No. 2048

Analysis report no. 72-85430-C Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.23	0.24
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur (Diff)	0.03	0.03
% Total Sulfur	0.26	0.27

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.007	0.007
% K_2O	0.016	0.017

TRUE SPECIFIC GRAVITY at 5.33 % Moisture = 2.41

Respectfully submitted.
COMMERCIAL TESTING & ENGINEERING CO.

GDP/vt

G. D. PALMER, Manager Denver Laboratory

F-461

COMMERCIAL TESTING & ENGINEERING CO.

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W[illegible]ERN DIVISION MANAGER
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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 8, 1979

		Sample identification by
Kind of sample reported to us	Floor	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - H Core Hole No. US-79-3 840.46' - 841.10'
Sample taken by	Coastal States Energy Co.	Salina No. 2053
Date sampled	xxxxx	
Date received	8-15-79	

Analysis report no. 72-85430-H Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	2.19	XXXXX
% Ash	84.26	86.15
Btu/lb.	949	970
% Sulfur	0.48	0.49

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/pm

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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

WESTERN DIVISION MANAGER
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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 8, 1979

Sample identification by

Kind of sample reported to us	Floor	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - H Core Hole No. US-79-3
Sample taken by	Coastal States Energy Co.	840.46' - 481.10'
Date sampled	xxxxx	Salina No. 2053
Date received	8-15-79	

Analysis report no. 72-85430-H Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.42	0.43
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur (Diff)	0.06	0.06
% Total Sulfur	0.48	0.49

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.007	0.007
% K_2O	0.011	0.011

APPARENT SPECIFIC GRAVITY at 2.19 % Moisture = 2.40

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

GDP/vt

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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October 25, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Kind of sample reported to us	Roof
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	10-10-79

Sample identification by

Coastal States Energy Co.

Sample - A
Core Hole No. US-79-4
793.00' - 793.49'
Salina No. 2414

Analysis report no. 72-87379-A Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	2.46	XXXXX
% Ash	87.09	89.29
Btu/lb.	744	763
% Sulfur	0.91	0.93

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½ W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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WESTERN DIVISION MANAGER
D W. TAYLOR, JR.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Roof	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - A Core Hole No. US-79-4 793.00' - 793.49' Salina No. 2414
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.84	0.86
% Sulfate Sulfur	0.07	0.07
% Organic Sulfur (Diff)	0.00	0.00
% Total Sulfur	0.91	0.93

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.010	0.010
% K_2O	0.019	0.019

APPARENT SPECIFIC GRAVITY at 2.46% Moisture = 2.38

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/vt

COMMERCIAL TESTING & ENGINEERING CO.

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L[illegible] V. TAYLOR, JR.

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October 2., 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Kind of sample reported to us	Parting
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	10-10-79

Coastal States Energy Co.

Sample - F
Core Hole No. US-79-4
799.56' - 800.26'
Salina No. 2418

Analysis report no. 72-87379-F Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	6.82	XXXXX
% Ash	83.06	89.14
Btu/lb.	565	606
% Sulfur	0.26	0.28

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md /vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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L[illegible] W. TAYLOR, JR.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - F Core Hole No. US-79-4 799.56' - 800.36' Salina No. 2418
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87379-F Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.20	0.22
% Sulfate Sulfur	0.01	0.01
% Organic Sulfur (Diff)	0.05	0.05
% Total Sulfur	0.26	0.28

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.009	0.010
% K_2O	0.020	0.021

APPARENT SPECIFIC GRAVITY at 6.82 % Moisture = 2.42

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/kt

F-461

COMMERCIAL TESTING & ENGINEERING CO.

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

W[illegible]ERN DIVISION MANAGER
[illegible] W. TAYLOR, JR.

PLEASE ADDRESS ALL CORRESPONDENCE TO:
10775 EAST 51st AVE., DENVER, C[illegible]. 80239
OFFICE TEL. (30[illegible] 373-4772

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample – H Core Hole No. US-79-4 809.20' - 209.84' Salina No. 2420
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87379-H Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	5.36	XXXXX
% Ash	60.89	64.34
Btu/lb.	4580	4839
% Sulfur	0.58	0.61

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - H Core Hole No. US-79-4 809.20' - 809.84' Salina No. 2420
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87379-H Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.32	0.34
% Sulfate Sulfur	0.02	0.02
% Organic Sulfur (Diff)	0.24	0.25
% Total Sulfur	0.58	0.61

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.009	0.010
% K_2O	0.011	0.012

APPARENT SPECIFIC GRAVITY at 5.36 % Moisture = 1.86

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GP/vt

COMMERCIAL TESTING & ENGINEERING CO.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Floor	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - L Core Hole No. US-79-4 817.01' - 817.70'
Sample taken by	Coastal States Energy Co.	Salina No. 2457
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87379-L Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	2.17	XXXXX
% Ash	66.29	67.76
Btu/lb.	361	369
% Sulfur	0.15	0.15

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½ W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Floor	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - L Core Hole No. US-79-4 817.01' -817.70' Salina No. 2457
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87379-L Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.11	0.11
% Sulfate Sulfur	0.01	0.01
% Organic Sulfur (Diff)	0.03	0.03
% Total Sulfur	0.15	0.15

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.007	0.007
% K_2O	0.010	0.010

APPARENT SPECIFIC GRAVITY at 2.17% Moisture = 2.59

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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...RN DIVISION MANAGER
LLOYD W. TAYLOR, JR.

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October 26, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Kind of sample reported to us	Roof	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - A Core Hole No. US-79-6 836.76' - 837.75' Salina No. 2212
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87372-A Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	3.59	XXXXX
% Ash	79.65	82.62
Btu/lb.	1435	1488
% Sulfur	0.20	0.21

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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LE[illegible] W. TAYLOR, JR.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Roof	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - A
Sample taken by	Coastal States Energy Co.	Core Hole No. US-79-6
Date sampled	xxxxx	836.76' - 837.75'
Date received	10-10-79	Salian No. 2212

Analysis report no. 72-87372-A Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.14	0.015
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur (Diff)	0.06	0.06
% Total Sulfur	0.20	0.21

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.010	0.010
% K_2O	0.008	0.008

TRUE SPECIFIC GRAVITY at 3.59% Moisture (As Rec'd) = 2.25

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

F-461

COMMERCIAL TESTING & ENGINEERING CO.

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October 26, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Kind of sample reported to us	Parting
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	10-10-79

Coastal States Energy Co.

Sample - C
Core Hole No. US-79-6
839.75' - 840.23'
Salina No. 2214

Analysis report no. 72-87372-C Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	9.43	XXXXX
% Ash	75.68	83.56
Btu/lb.	1656	1828
% Sulfur	1.46	1.61

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

Charter Me[illegible]

F-464

COMMERCIAL TESTING & ENGINEERING CO.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Parting
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	10-10-79

Coastal States Energy Co.

Sample No. C
Core Hole No. US-79-6
839.75' – 840.23'
Salina No. 2214

Analysis report no. 72-87372-C Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	1.35	1.49
% Sulfate Sulfur	0.04	0.04
% Organic Sulfur (Diff)	0.07	0.08
% Total Sulfur	1.46	1.61

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.009	0.010
% K_2O	0.009	0.010

TRUE SPECIFIC GRAVITY at 9.43% Moisture (As Rec'd) = 2.22

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/vt

COMMERCIAL TESTING & ENGINEERING CO.

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

WE[redacted] DIVISION MANAGER
LLO[redacted] TAYLOR, JR.

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October 25, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - E
Sample taken by	Coastal States Energy Co.	Core Hole No. US-79-6
Date sampled	xxxxx	841.75' - 842.25'
Date received	10-10-79	Salina No. 2216

Analysis report no. 72-87372-E Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	4.65	XXXXX
% Ash	78.30	82.12
Btu/lb.	1290	1353
% Sulfur	0.18	0.19

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md /vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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

WI[illegible]RN DIVISION MANAGER
LE[illegible] W. TAYLOR, JR.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - E Core Hole No. US-79-6 841.75' - 842.25' Salina No. 2216
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87372-E Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.13	0.14
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur (Diff)	0.05	0.05
% Total Sulfur	0.18	0.19

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.010	0.010
% K_2O	0.010	0.010

TRUE SPECIFIC GRAVITY at 4.65% Moisture (As Rec'd) = 2.28

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/vt

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Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

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WESTERN DIVISION MANAGER
[illegible] W. TAYLOR, JR.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample – F Core Hole No. US-79-6 843.75' – 844.50'
Sample taken by	Coastal States Energy Co.	Salina No. 2217
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87372-F

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	7.32	XXXXX
% Ash	70.96	76.56
Btu/lb.	2158	2328
% Sulfur	0.60	0.65

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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W[illegible]RN DIVISION MANAGER
LE[illegible] W. TAYLOR, JR.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - F Core Hole No. US-79-6 843.75' - 844.50' Salina No. 2217
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87372-F Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.49	0.53
% Sulfate Sulfur	0.01	0.02
% Organic Sulfur (Diff)	0.10	0.10
% Total Sulfur	0.60	0.65

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.012	0.013
% K_2O	0.007	0.008

TRUE SPECIFIC GRAVITY at 7.32% Moisture (As Rec'd) = 2.06

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/vt

COMMERCIAL TESTING & ENGINEERING CO.

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

WESTERN DIVISION MANAGER
LEE W. TAYLOR, JR.

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OFFICE TEL. (303) 373-4772

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Floor	Coastal States Energy Co.
Sample taken at	xxxxx	Sample – K Core Hole No. US-79-6 851.66' – 852.49' Salina No. 2222
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87372-K Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	4.56	XXXXX
% Ash	86.08	90.19
Btu/lb.	501	525
% Sulfur	0.08	0.08

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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W[illegible]ERN DIVISION MANAGER
[illegible] W. TAYLOR, JR.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 26, 1979

Sample identification by

Kind of sample reported to us	Floor	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - K Core Hole No. US-79-6 851.66' - 852.49' Salina No. 2222
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.05	0.05
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur (Diff)	0.03	0.03
% Total Sulfur	0.08	0.08

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.010	0.010
% K_2O	0.010	0.010

TURE SPECIFIC GRAVITY at 4.56% Moisture = (As Rec'd) = 2.44

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/vt

COMMERCIAL TESTING & ENGINEERING CO.

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

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L... W. TAYLOR, JR.

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October 8, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Coastal States Energy Co.

Sample - A
Core Hole No. US-79-7
842.00' - 842.98'
Salina No. 2096

Kind of sample reported to us	Roof
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-15-79

Analysis report no. 72-85437-2 Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	2.95	XXXXX
% Ash	84.52	87.09
Btu/lb.	708	730
% Sulfur	0.40	0.41

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx°F	xxx°F
Softening (H = W)	xxx°F	xxx°F
Softening (H = ½W)	xxx°F	xxx°F
Fluid	xxx°F	xxx°F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager Denver Laboratory

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WE[illegible] DIVISION MANAGER
LL[illegible] .. TAYLOR, JR.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 8, 1979

Sample identification by

Kind of sample reported to us	Roof
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-15-79

Coastal States Energy Co.

Sample - A
Core Hole No. US-79-7
842.00' - 842.98'
Salina No. 2096

Analysis report no. 72-85437-A Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.34	0.35
% Sulfate Sulfur	0.02	0.02
% Organic Sulfur (Diff)	0.04	0.04
% Total Sulfur	0.40	0.41

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.007	0.007
% K_2O	0.008	0.008

APPARENT SPECIFIC GRAVITY at 2.95% Moisture = 2.11

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

GDP/vt

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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

WESTERN DIVISION MANAGER
L[illegible] D W. TAYLOR, JR.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 8, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - E Core Hole No. US-79-7 847.33' - 850.52'
Sample taken by	Coastal States Energy Co.	Salina No. 2100
Date sampled	xxxxx	
Date received	8-21-79	

Analysis report no. 72-85437-E Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	6.97	XXXXX
% Ash	74.01	79.56
Btu/lb.	1164	1251
% Sulfur	0.48	0.52

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

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Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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L[illegible] W. TAYLOR, JR.

PLEASE ADDRESS ALL CORRESPONDENCE TO:
10775 EAST 51st AVE., DENVER, COLO. 80239
OFFICE TEL. (303) 373-4772

October 8, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Coastal States Energy Co.

Sample - E
Core Hole No. US-79-7
847.33' - 850.52'
Salina No. 2100

Kind of sample reported to us	Parting
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-21-79

Analysis report no. 72-85437-E Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.39	0.42
% Sulfate Sulfur	0.02	0.02
% Organic Sulfur (Diff)	0.07	0.08
% Total Sulfur	0.48	0.52

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.009	0.010
% K_2O	0.021	0.022

APPARENT SPECIFIC GRAVITY at 6.87 % Moisture = 2.30

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 8, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - I Core Hole No. US-79-9 858.00' - 858.79' Salina No. 2129
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	8-22-79	

Analysis report no. 72-85730-I Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	3.88	XXXXX
% Ash	83.36	86.73
Btu/lb.	701	729
% Sulfur	0.17	0.18

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

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Respectfully submitted,
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G. D. PALMER, Manager, Denver Laboratory

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 25, 1979

Sample identification by

Coastal States Energy Co.

Sample - I
Core Hole No. US-79-9
858.00' - 858.79'
Salina No. 2129

Kind of sample reported to us	Parting
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-22-79

Analysis report no. 72-85730-I Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.11	0.12
% Sulfate Sulfur	0.01	0.01
% Organic Sulfur (Diff)	0.05	0.05
% Total Sulfur	0.17	0.18

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.013	0.013
% K_2O	0.008	0.008

APPARENT SPECIFIC GRAVITY at 3.88% Moisture = 2.44

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/vt

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OFFICE TEL. (303) 373-4772

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 8, 1979

Sample identification by

Coastal States Energy Co.

Sample - M
Core Hole No. US-79-9
864.06' - 865.65'
Salina No. 2133

Kind of sample reported to us	Parting
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-22-79

Analysis report no. 72-85730-M Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	7.69	XXXXX
% Ash	78.93	85.51
Btu/lb.	851	922
% Sulfur	0.49	0.53

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/pm

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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D W. TAYLOR, JR.

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OFFICE TEL. (303) 373-477

October 8, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Kind of sample reported to us	Parting
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-22-79

Coastal States Energy Co.

Sample - M
Core Hole No. US-79-9
864.06' - 865.65'
Salina No. 2133

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.45	0.49
% Sulfate Sulfur	0.02	0.02
% Organic Sulfur (Diff)	0.02	0.02
% Total Sulfur	0.49	0.53

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.012	0.013
% K_2O	0.010	0.011

APPARENT SPECIFIC GRAVITY at 7.69% Moisture = 2.24

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 8, 1979

Kind of sample reported to us	Floor
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-22-79

Sample identification by

Coastal States Energy Co.

Sample - P
Core Hole No. US-79-9
870.65' - 871.31'
Salina No. 2136

Analysis report no. 72-85730-P Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	6.95	XXXXX
% Ash	43.38	46.62
Btu/lb.	6403	6881
% Sulfur	1.28	1.38

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/pm

Respectfully submitted,
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G. D. PALMER, Manager, Denver Laboratory

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October 8, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Kind of sample reported to us	Floor
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-22-79

Coastal States Energy Co.

Sample - P
Core Hole No. US-79-9
870.65' - 871.31'
Salina No. 2136

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.63	0.68
% Sulfate Sulfur	0.01	0.01
% Organic Sulfur (Diff)	0.64	0.69
% Total Sulfur	1.28	1.38

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.015	0.016
% K_2O	0.007	0.008

APPARENT SPECIFIC GRAVITY at 6.95% Moisture = 1.69

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

GDP/vt

G. D. PALMER, Manager, Denver Laboratory

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October 8, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

		Sample identification by
Kind of sample reported to us	Roof	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - A Core Hole No. US-79-10 857.80' - 858.71'
Sample taken by	Coastal States Energy Co.	Salina No. 2057
Date sampled	xxxxx	
Date received	8-15-79	

Analysis report no. 72-85441 - A Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	2.92	XXXXX
% Ash	89.62	92.32
Btu/lb.	598	616
% Sulfur	0.44	0.45

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

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Respectfully submitted,
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G. D. PALMER, Manager, Denver Laboratory

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 8, 1979

Sample identification by

Kind of sample reported to us	Roof
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-15-79

Coastal States Energy Co.

Sample - A
Core Hole No. US-79-10
857.80' - 858.71'
Salina No. 2057

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.41	0.42
% Sulfate Sulfur	0.01	0.01
% Organic Sulfur (Diff)	0.02	0.02
% Total Sulfur	0.44	0.45

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.007	0.007
% K_2O	0.004	0.004

APPARENT SPECIFIC GRAVITY at 2.92 % Moisture = 2.36

Respectfully submitted,
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LL[illegible]N. TAYLOR, JR.

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OFFICE TEL. (303) 373-4772

October 8, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Kind of sample reported to us	Parting
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-15-79

Sample identification by

Coastal States Energy Co.

Sample - E
Core Hole No. US-79-10
852.17' - 863.80'
Salina No. 2061

Analysis report no. 72-8544[illegible]-E Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	9.14	XXXXX
% Ash	71.31	78.48
Btu/lb.	1765	1943
% Sulfur	0.85	0.94

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H=W)	xxx °F	xxx °F
Softening (H=½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

Respectfully submitted,
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OFFICE TEL. (303) 373-477

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 8, 1979

Sample identification by

Kind of sample reported to us	Parting
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-15-79

Coastal States Energy Co.

Sample - E
Core Hole No. US-79-10
862.17' - 863.80'
Salina No. 2061

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.70	0.77
% Sulfate Sulfur	0.03	0.03
% Organic Sulfur (Diff)	0.12	0.14
% Total Sulfur	0.85	0.94

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.009	0.010
% K_2O	0.020	0.022

APPARENT SPECIFIC GRAVITY at 9.14% Moisture = 2.12

Respectfully submitted,
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WESTERN DIVISION MANAGER
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October 8, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Coastal States Energy Co.

Sample - H
Core Hole No. US-79-10
868.92' - 869.80'
Salina No. 2064

Kind of sample reported to us	Floor
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-15-79

Analysis report no. 72-85441-H Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	2.36	XXXXX
% Ash	79.81	81.74
Btu/lb.	2342	2399
% Sulfur	0.10	0.10

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

Respectfully submitted,
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October 8, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Coastal States Energy Co.

Sample - H
Core Hole No. US-79-10
868.92' - 869.80'
Salina No. 2064

Kind of sample reported to us	Floor
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	8-15-79

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.07	0.07
% Sulfate Sulfur	0.01	0.01
% Organic Sulfur (Diff)	0.02	0.02
% Total Sulfur	0.10	0.10

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.007	0.007
% K_2O	0.014	0.014

APPARENT SPECIFIC GRAVITY at 2.36 % Moisture = 2.59

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 30, 1979

Sample identification by

Kind of sample reported to us	Roof	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - A Core Hole No. US-79-11 872.80' - 874.13' Salina No. 2260
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-37386-A Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	2.48	XXXXX
% Ash	75.62	77.54
Btu/lb.	660	677
% Sulfur	0.41	0.42

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

Respectfully submitted,
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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 30, 1979

Sample identification by

Kind of sample reported to us	Roof	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - A Core Hole No. US-79-11 872.80' - 874.13' Salina No. 2260
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87386-A Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.36	0.37
% Sulfate Sulfur	0.02	0.02
% Organic Sulfur (Diff)	0.03	0.03
% Total Sulfur	0.41	0.42

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.010	0.010
% K_2O	0.016	0.016

APPARENT SPECIFIC GRAVITY at 2.48% Moisture = 2.42

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

GDP/vt

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 30, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - F Core Hole No. US-79-11 881.37' - 882.19' Salina No. 2265
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87386-F Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	7.00	XXXXX
% Ash	53.49	57.52
Btu/lb.	4334	4660
% Sulfur	1.24	1.33

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½ W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

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COMMERCIAL TESTING & ENGINEERING CO.

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WE[illegible]RN DIVISION MANAGER
L[illegible] W. TAYLOR, JR.

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OFFICE TEL. (303) 373-4772

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 30, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - F Core Hole No. US-79-11 881.37' - 882.19' Salina No. 2265
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.72	0.77
% Sulfate Sulfur	0.03	0.03
% Organic Sulfur (Diff)	0.49	0.50
% Total Sulfur	1.24	1.33

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.029	0.031
% K_2O	0.018	0.020

APPARENT SPECIFIC GRAVITY at 7.00% Moisture = 1.72

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

GDP/vt

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G. D. PALMER, Manager, Denver Laboratory

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

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W[illegible]RN DIVISION MANAGER
L[illegible] W. TAYLOR, JR.

PLEASE ADDRESS ALL CORRESPONDENCE TO
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OFFICE TEL. (303) 373-4772

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 30, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - I Core Hole No. US-79-11 887.86' - 888.52' Salina No. 2268
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87336-I Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	4.95	XXXXX
% Ash	69.95	73.59
Btu/lb.	1963	2065
% Sulfur	0.23	0.24

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

Respectfully submitted,
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G. D. PALMER, Manager, Denver Laboratory

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Houston, Texas 77046

October 30, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample – I Core Hole No. US-79-11 887.86' – 888.52' Salina No. 2268
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87386-I Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.09	0.09
% Sulfate Sulfur	0.01	0.01
% Organic Sulfur (Diff)	0.13	0.14
% Total Sulfur	0.23	0.24

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.017	0.018
% K_2O	0.018	0.019

APPARENT SPECIFIC GRAVITY at 4.95% Moisture = 2.43

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

GDP/vt

G. D. PALMER, Manager, Denver Laboratory

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5 Greenway Plaza East
Houston, Texas 77046

October 29, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample – K Core Hole No. US-79-12 878.76' - 879.28' Salina No. 2399
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87396-K Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	5.90	XXXXX
% Ash	71.43	75.91
Btu/lb.	1042	1107
% Sulfur	0.38	0.40

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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October 29, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - K Core Hole No. US-79-12 878.76' - 879.28' Salina No. 2399
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87396-K Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.26	0.28
% Sulfate Sulfur	0.01	0.01
% Organic Sulfur (Diff)	0.11	0.11
% Total Sulfur	0.38	0.40

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.009	0.010
% K_2O	0.015	0.016

APPARENT SPECIFIC GRAVITY at 5.90% Moisture = 2.32

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/vt

Charles Me[illegible]

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5 Greenway Plaza East
Houston, Texas 77046

November 19, 1979

		Sample identification by
Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - P Core Hole No. US-79-12 885.42' - 886.12' Salina No. 2406
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87396-P Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	15.12	XXXXX
% Ash	53.98	63.60
Btu/lb.	3600	4241
% Sulfur	0.54	0.64

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Gail D. Palmer

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

November 19, 1979

Sample identification by

Kind of sample reported to us	Parting	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - P Core Hole No. US-79-12 885.42' - 886.12' Salina No. 2406
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.30	0.35
% Sulfate Sulfur	0.02	0.02
% Organic Sulfur (Diff)	0.22	0.27
% Total Sulfur	0.54	0.64

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.020	0.023
% K_2O	0.014	0.016

APPARENT SPECIFIC GRAVITY at 15.12% Moisture (As Rec'd) = 2.00

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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LLOYD W. TAYLOR, JR.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 29, 1979

Sample identification by

Kind of sample reported to us	Floor	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - U Core Hole No. US-79-12 892.23' - 892.92'
Sample taken by	Coastal States Energy Co.	Salina No. 2411
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87396-U Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	4.16	XXXXX
% Ash	70.55	73.61
Btu/lb.	1563	1631
% Sulfur	0.48	0.50

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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W[illegible]ERN DIVISION MANAGER
U[illegible]D W. TAYLOR, JR.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 29, 1979

Sample identification by

Kind of sample reported to us	Floor	Coastal States Energy Co.
Sample taken at	xxxxx	Sample – U Core Hole No. US-79-12 892.23' – 892.92'
Sample taken by	Coastal States Energy Co.	Salina No. 2411
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87396-U Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.37	0.39
% Sulfate Sulfur	0.03	0.03
% Organic Sulfur (Diff)	0.08	0.08
% Total Sulfur	0.48	0.50

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.033	0.035
% K_2O	0.018	0.019

APPARENT SPECIFIC GRAVITY at 4.1[illegible]% Moisture = 2.34

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/vt

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November 15, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Kind of sample reported to us	~~Coal~~ Rock	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - I
Sample taken by	Coastal States Energy Co.	Core Hole No. US-79-13
Date sampled	xxxxx	903.00' - 903.79'
Date received	10-10-79	Salina No. 2148

Analysis report no. 72-87403-I Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	3.01	XXXXX
% Ash	67.92	70.03
Btu/lb.	1179	1216
% Sulfur	0.24	0.25

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/pm

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Gerald D Palmer

G. D. PALMER, Manager, Denver Laboratory

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WESTERN DIVISION MANAGER
LEE W. TAYLOR, JR.

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OFFICE TEL. (303) 373-477

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

November 15, 1979

Sample identification by

Kind of sample reported to us	~~Coal~~ Rock
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	10-10-79

Coastal States Energy Co.

Sample – I
Core Hole No. US-79-13
903.00' – 903.79'
Salina No. 2148

Analysis report no. 72-87403-I Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.20	0.21
% Sulfate Sulfur	0.01	0.01
% Organic Sulfur (Diff)	0.03	0.03
% Total Sulfur	0.24	0.25

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.010	0.010
% K_2O	0.014	0.015

APPARENT SPECIFIC GRAVITY at 3.01% Moisture = 2.46

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/vt

COMMERCIAL TESTING & ENGINEERING CO.

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W[illegible]ERN DIVISION MANAGER
LL[illegible] W. TAYLOR, JR.

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October 29, 1979

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

Sample identification by

Kind of sample reported to us	Floor	Coastal States Energy Co.
Sample taken at	xxxxx	Sample – O
Sample taken by	Coastal States Energy Co.	Core Hole No. US-79-13
Date sampled	xxxxx	915.26' – 916.52'
Date received	10-10-79	Salina No. 2154

Analysis report no. 72-87403-O Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	3.52	XXXXX
% Ash	85.08	88.18
Btu/lb.	971	1006
% Sulfur	0.23	0.24

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 29, 1979

Sample identification by

Kind of sample reported to us	Floor	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - O Core Hole No. US-79-13 915.26' - 916.52' Salina No. 2154
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87403-O Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.11	0.11
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur (Diff)	0.12	0.13
% Total Sulfur	0.23	0.24

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.007	0.007
% K_2O	0.009	0.009

APPARENT SPECIFIC GRAVITY at 3.52 % Moisture = 2.37

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/vt

COMMERCIAL TESTING & ENGINEERING CO.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 30, 1979

Sample identification by

Kind of sample reported to us	Roof	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - A Core Hole No. US-79-14 945.36' - 946.05'
Sample taken by	Coastal States Energy Co.	Salina No. 2333
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87401-A Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	4.40	XXXXX
% Ash	53.12	55.56
Btu/lb.	3461	3620
% Sulfur	0.49	0.51

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 30, 1979

Sample identification by

Kind of sample reported to us	Roof	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - A Core Hole No. US-79-14 945..36' - 946.05' Salina No. 2333
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87401-A Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.23	0.24
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur (Diff)	0.26	0.27
% Total Sulfur	0.49	0.51

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.012	0.013
% K_2O	0.010	0.010

APPARENT SPECIFIC GRAVITY at 4.40% Moisture = 2.69

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/vt

Charter Me

COMMERCIAL TESTING & ENGINEERING CO.

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WESTERN DIVISION MANAGER
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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

October 29, 1979

Sample identification by

Kind of sample reported to us	Floor
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	10-10-79

Coastal States Energy Co.

Sample - I
Core Hole No. US-79-14
961.31' - 962.17'
Salina No. 2340

Analysis report no. 72-87401-I Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	2.41	XXXXX
% Ash	85.46	87.57
Btu/lb.	915	938
% Sulfur	2.50	2.56

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

GDP/md/vt

G. D. PALMER, Manager, Denver Laboratory

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5 Greenway Plaza East
Houston, Texas 77046

October 29, 1979

Sample identification by

Kind of sample reported to us	Floor	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - I Core Hole No. US-79-14 961.31' - 962.17'
Sample taken by	Coastal States Energy Co.	Salina No. 2340
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-87401-I Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	2.27	2.33
% Sulfate Sulfur	0.03	0.03
% Organic Sulfur (Diff)	0.20	0.20
% Total Sulfur	2.50	2.56

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.016	0.016
% K_2O	0.012	0.012

APPARENT SPECIFIC GRAVITY at 2.41% Moisture = 2.49

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

GDP/vt

COMMERCIAL TESTING & ENGINEERING CO.

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WESTERN DIVISION MANAGER
LLOYD W. TAYLOR, JR.

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

November 19, 1979

Sample identification by

Kind of sample reported to us	Coal/Clay	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - C Core Hole No. US-79-15 906.06' - 907.13'
Sample taken by	Coastal States Energy Co.	Salina No. 2532
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-88060--C Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	7.11	XXXXX
% Ash	44.35	47.74
Btu/lb.	6317	6801
% Sulfur	0.57	0.61

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

Original Copy Watermarked For Your Protection

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

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

WE[illegible]RN DIVISION MANAGER
LLC[illegible] W. TAYLOR, JR.

PLEASE ADDRESS ALL CORRESPONDENCE TO:
10775 EAST 51st AVE., DENVER, COLO. 80239
OFFICE TEL. (303) 373-4772

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

November 19, 1979

Sample identification by

Kind of sample reported to us	Coal/Clay	Coastal States Energy Co.
Sample taken at	xxxxx	Sample - C Core Hole No. US-79-15 906.06' - 907.13' Salina No. 2532
Sample taken by	Coastal States Energy Co.	
Date sampled	xxxxx	
Date received	10-10-79	

Analysis report no. 72-88060-C Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.12	0.13
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur (Diff)	0.45	0.48
% Total Sulfur	0.57	0.61

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.012	0.013
% K_2O	0.007	0.008

APPARENT SPECIFIC GRAVITY at 7.11% Moisture (As Rec'd) = 1.69

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

G. D. PALMER, Manager, Denver Laboratory

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COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

November 19, 1979

Sample identification by

Kind of sample reported to us	Floor
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	10-10-79

Coastal States Energy Co.

Sample - K
Core Hole No. US-79-15
920.11' - 921.10'
Salina No. 2539

Analysis report no. 72-83060-K Page 1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	2.90	XXXXX
% Ash	82.52	84.98
Btu/lb.	182	187
% Sulfur	0.07	0.07

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx °F	xxx °F
Softening (H = W)	xxx °F	xxx °F
Softening (H = ½W)	xxx °F	xxx °F
Fluid	xxx °F	xxx °F

H = Cone Height
W = Cone Width

GDP/md/vt

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Gail D Palmer

G. D. PALMER, Manager, Denver Laboratory

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OFFICE TEL. (303) 373-4772

COASTAL STATES ENERGY COMPANY
5 Greenway Plaza East
Houston, Texas 77046

November 19, 1979

Sample identification by

Kind of sample reported to us	Floor
Sample taken at	xxxxx
Sample taken by	Coastal States Energy Co.
Date sampled	xxxxx
Date received	10-10-79

Coastal States Energy Co.

Sample - K
Core Hole No. US-79-15
920.11' - 921.10'
Salin No. 2539

Analysis report no. 72-88060-K Page 2

SULFUR FORMS

	As Received	Dry Basis
% Pyritic Sulfur	0.05	0.05
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur (Diff)	0.02	0.02
% Total Sulfur	0.07	0.07

WATER SOLUBLE ALKALIES

	As Received	Dry Basis
% Na_2O	0.013	0.013
% K_2O	0.023	0.024

APPARENT SPECIFIC GRAVITY at 2.90% Moisture = 2.55

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Gail D Palmer

G. D. PALMER, Manager, Denver Laboratory

Original Copy Withheld For Your Protection

Member

783.15(a)	77 Plan 80 Sub., Hydrometrics Report 80 Sub., Response Follows
783.15(a)(1)	80 Sub., Hydrometrics Report 80 Sub., Response Follows
783.15(a)(20)	80 Sub., Hydrometrics Report 80 Sub., Response Follows
783.15(a)(3)	77 Plan 79 Sub.
783.15(a)(4)	77 Plan 79 Sub. 80 Sub., Hydrometrics Report 80 Sub., Response Follows
783.15(b)	80 Sub., Hydrometrics Report 80 Sub., Response Follows

COMMENT 783.15(a) (Section I)

Two appendix reports referred to should be included (Exhibits 3 and 5).

RESPONSE:

Exhibits 3 and 5 are included in Volume 2.

COMMENT 783.15(a)(1) (Section I)

Depth and extent of water table and aquifers should be addressed quantitatively, or on maps.

RESPONSE:

Depth and extent of water table and aquifers are addressed in the Hydrometrics Report (November, 1980), page 20, Volume 4, and discussed in the Response to Comment 783.15.

COMMENT 783.15(a)(1) (Section II)

Applicant provides water level data only and only from 1978 from 3 observation wells. Well design well logs, and accurate well locations on a map of required or larger scale should be included.

RESPONSE:

Information on observation wells is addressed on page 20 and discussed in *Section 783.15 in the Hydrometrics Report (November, 1980), Volume 4. Well locations are shown on Plate H-II.

*Typographic Correction (6/81)

COMMENT 783.15(a)(2) (Section I)

Lithology and thickness of aquifers should be addressed.

RESPONSE:

Lithology and thickness of aquifers are addressed in Section 783.15, pages 6-19, of the Hydrometrics Report (November, 1980), located in Volume 4.

COMMENT 783.15(a)(4) (Section I)

Water quality from observation wells should be addressed; otherwise quality of the aquifers above or below the coal seam cannot be evaluated.

RESPONSE:

Quality of subsurface waters is presented in the Hydrometrics Report (November, 1980), pages 22-26, located in Volume 4.

*Additional subsurface water quality information is presented in the 1981 Supplement, Volume 4.

*Denotes change or addition (6/81)

COMMENT 783.15(a)(4) (Section II)

The only subsurface water quality data is from the mine effluent. The methods of collection, preservation, and analysis should be provided.

RESPONSE:

Methods of collection, preservation and analysis are addressed on page 21 and discussed in Section 783.15 in the Hydrometrics Report (November, 1980), Volume 4.

COMMENT 783.15(b) (Section I)

Recharge, storage and discharge characteristics of the aquifers should be addressed quantitatively or on maps. Parameters describing transmissivity, permeability, storativity, and others as required should also be provided.

RESPONSE:

Aquifer information is presented in Section 783.15, pages 6-19 of the Hydrometrics Report (November, 1980), Volume 4.

783.16(a)	77 Plan 79 Sub. 80 Sub., Hydrometrics Report 80 Sub., Response Follows
783.16(b)(1)	77 Plan 79 Sub. 80 Sub., Hydrometrics Report 80 Sub., Response Follows
783.16(b)(2)	77 Plan 79 Sub. 80 Sub., Hydrometrics Report 80 Sub., Response Follows
783.16(b)(2)(i)	77 Plan 79 Sub.
783.16(b)(2)(ii)	77 Plan 79 Sub.
783.16(b)(2)(iii)	77 Plan 79 Sub. 80 Sub., Hydrometrics Report
783.16(b)(2)(iv)	77 Plan 79 Sub.
783.16(b)(2)(v)	77 Plan 79 Sub.
783.16(b)(2)(vi)	77 Plan 79 Sub.

COMMENT 783.16(a) (Section I)

Locations of all surface water bodies should be mapped legibly at required scales.

Seasonal variations in water quality and quantity should be provided - data are biennial.

RESPONSE:

Locations of surface water bodies and discussion on seasonal variations in water quality are included in the Hydrometrics Report (November, 1980), pages 27-37, located in Volume 4.

COMMENT 783.16(b)(1) (Section I)

The parameters listed under 30 CFR 783.16(b) for groundwater discharges should be addressed.

RESPONSE:

Groundwater discharges are discussed in the Hydrometrics Report (November, 1980), pages 38-50, located in Volume 4.

COMMENT 783.16(b)(1) (Section II)

Runoff data provided cover period of insufficient duration to characterize patterns. Regional relations based on drainage area and storm frequency and character, or data from nearby gauges, would be helpful.

Water quality data are insufficient to show seasonal variations; monthly measurements from any nearby sampling site should be provided.

RESPONSE:

Runoff data is provided on pages 38-50, in the Hydrometrics Report (November, 1980), located in Volume 4. Seasonal variations in water quality are discussed in Section 783.16 (a), pages 27-37, of the same report.

COMMENT 783.16(b)(2) (Section I)

Water quality data depicting seasonal variations should be provided.

RESPONSE:

Seasonal variations in water quality are addressed in the Hydrometrics Report (November, 1980), page 51, Volume 4, and discussed in Section 783.16(a).

783.17

77 Plan
77 Adden. #2
79 Sub.
80 Sub., Hydrometrics Report
80 Sub., Response Follows

COMMENT 783.17 (Section I)

Specific alternative sources of supply should be provided.

Extent to which surface flows will be affected by future quality of mine effluent should be addressed - predicted trends or changes in trends are also needed.

RESPONSE:

Alternative water supply is described in the Hydrometrics Report (November, 1980), pages 52-54, located in Volume 4.

*Further discussion of alternative water supply is presented in the 1981 Supplement, Volume 4.

*Denotes change or addition (6/81)

COMMENT 783.17 (Section II)

Interruption of the existing fluvial regime due to proposed mining and expected subsidence should be addressed in adequate detail.

RESPONSE:

A discussion on the interruption of the existing fluvial regime is located in the Hydrometrics Report (November, 1980), pages 52-54, located in Volume 4.

783.18(a)(1)	77 Plan 79 Sub.
783.18(a)(2)	77 Plan 79 Sub.
783.18(a)(3)	77 Plan 79 Sub.
783.18(b)	80 Sub., Air Monitoring and Particulate Emissions Reports

783.19(a)	77 Plan 79 Sub.
783.19(b)	79 Sub. 80 Sub., Vegetation/Soils Repor

COMMENT 783.19(a) (Section I)

Extents of each major vegetation type in the permit area are not calculated pursuant to 30 CFR 816.111. The applicant should provide acreage calculations for each major vegetation type. Productivity estimate are reported by vegetation types (v1: p. 21-26) but species composition and cover are not (v2: Exhibit 5, p. 21-28). The applicant should provide production, and cover estimates by species and major vegetation types.

RESPONSE:

A discussion of each major vegetation type is presented in the Vegetation and Soils Report (October, 1980), on pages 2-11, located in Volume 5. Also included are maps titled "Lease Area Vegetation" (Map A), and "Pond Area Vegetation" (Map C).

*Additional information of each major vagetation type is presented in the 1981 Supplement, Volume 5.

COMMENT 783.19(a) (Section I)

Extents of each major vegetation type in the permit area are not calculated pursuant to 30 CFR 816.111. The applicant should provide acreage calculations for each major vegetation type. Productivity estimate are reported by vegetation types (v1: p. 21-26) but species composition and cover are not (v2: Exhibit 5, p. 21-28). The applicant should provide production, and cover estimates by species and major vegetation types.

RESPONSE:

A discussion of each major vegetation type is presented in the Vegetation and *Soils Report (October, 1980), on pages 2-11, located in Volume 5. Also included are maps titled "Lease Area Vegetation" (Map A), and "Pond Area Vegetation" (Map C).

*Additional information of each major vegetation type is presented in the 1981 Supplement, Volume 5.

*Denotes change or addition (6/81)

COMMENT 783.19(a) (Section II)

The vegetation map that OSM requested be included in Southern Utah Fuel Company's amended mine plan is present (v3, Exhibit 11). Nomenclature applied to the map, however, is not consistent with that used in the text (v1: p. 23; v1: Exhibit 4; v2: Exhibit 5). The applicant should correct this inconsistency.

RESPONSE:

Nomenclature information is provided in the Vegetation and Soils Report *(October, 1980), Appendix A, on pages 103-107, located in Volume 5. A "Lease Area Vegetation" map (Map A) and "Pond Area Vegatation" map (Map C) are also provided.

*Additional nomenclature information and vegetation map are included in the 1981 Supplement, Volume 5.

*Denotes change or addition (6/81)

783.20(a)	77 Plan 77 Adden. #2 79 Sub. 80 Sub., Wildlife Report
783.20(b)	79 Sub. 80 Sub., Wildlife Report
783.20(c)	79 Sub. 80 Sub., Wildlife Report

783.21(a)	77 Plan 79 Sub. 80 Sub., Vegetation/Soils Repor
783.21(a)(1)	79 Sub. 80 Sub., Vegetation/Soils Repor 80 Sub., Response Follows
783.21(a)(2)	79 Sub. 80 Sub., Vegetation/Soils Repor 80 Sub., Response Follows
783.21(a)(3)	77 Plan 79 Sub. 80 Sub., Vegetation/Soils Repor 80 Sub., Response Follows
783.21(a)(4)	79 Sub. 80 Sub., Vegetation/Soils Repor 80 Sub., Response Follows
783.21(b)	Not Applicable

COMMENT 783.21(a)(1) (Section I)

Although preparation of such is cited as part of the 1979 monitoring plan (v2: Exhibit 6), the SUFCo mine plan should contain a soils map.

RESPONSE:

Soils maps (Map B and D) are provided in the Vegetation and Soils Report, *(October, 1980), Volume 5.

*An additional soils map is presented in the 1981 Supplement located in Volume 5.

*Denotes change or addition (6/81)

COMMENT 783.21(a)(2) (Section I)

In the MRP (v1: p. 38-42), soils of several locations in the mine area are coded and their texture and profile description given where applicable. Reference is made to chemical analyses of soils from these locations (v2: Exhibit 7) but there is no correlation of soil with appropriate sample number (e.g., location of sample #6 is east of the office complex on the cut bank just above the coal seam). Table 2 in Exhibit 7, which shows results of soils analyses, obscures the sample number and, again, no correlation to soils types described in the text. The applicant should provide an adequate correlation for OSM to properly evaluate the soil sample.

RESPONSE:

Soils analyses information is located in the Vegetation and Soils Report *(October, 1980), pages 13-15, located in Volume 5.

*Additional soils analyses are presented in the 1981 Supplement, Volume 5.

*Denotes change or addition (6/81)

COMMENT 783.21(a)(3) (Section I)

The soil analysis should include saturation percent, particle size, and USDA texture.

RESPONSE:

A soil description is presented in the Vegetation and Soils Report (October, *1980), pages 13-15, located in Volume 5.

*Additional soils analyses and descriptions are provided in the 1981 Supplement, Volume 5.

*Denotes change or addition (6/81)

COMMENT 783.21(a)(4) (Section I)

Soils productivity should be discussed relative to sampling data. There should be a correlation between vegetation types and soils.

RESPONSE:

Soils productivity is discussed in the Vegetation and Soils Report (October, *1980), on pages 15-34, located in Volume 5.

*Denotes change or addition (6/81)

783.22(a)	77 Plan 79 Sub.
783.22(a)(1)	80 Sub., Response 783.22(a) 80 Sub., Map 80-3
783.22(a)(2)(i)	77 Plan 79 Sub 80 Sub., Vegetation/Soils Repor
783.22(a)(2)(ii)	77 Plan 79 Sub. 80 Sub., Vegetation/Soils Repor
783.22(b)(1)	79 Sub. 80 Sub., Response 783.22(b)
783.22(b)(2)	80 Sub., Response 783.22(b)
783.22(b)(3)	80 Sub., Response 783.22(b)
783.22(b)(4)	79 Sub. 80 Sub., Response 783.22(b)
783.22(b)(5)	77 Plan 79 Sub. 80 Sub., Map 80-3
783.22(c)	77 Plan 79 Sub. 80 Sub., Map 80-3

COMMENT 783.22(a) (Section I)

Although existing uses are well documented in the permit area, which is under U.S. Forest Service Management, a land use map should be provided.

RESPONSE:

A "Land Use" map (Map 80-3) is presented in Volume 3.

COMMENT 783.22(b) (Section I)

The applicant should discuss the extent of coal removed previous to this permit application.

RESPONSE:

Portions of the proposed mine plan area were mined prior to the filing of this permit application. Southern Utah Fuel Company began a small operation mining the Upper Hiawatha Coal seam in 1941. Since then, it has been continuously operating and expanding into the mine it is today.

From 1941 through 1974, the coal was removed by conventional mining techniques. From 1974 through 1978, both conventional and continuous mining methods have been used. Since 1978, all mining has been by means of continous mining methods. The portion of the seam mined by conventional methods was only partially extracted, leaving all pillars for support. Most of the seam mined by continous methods was completely extracted.

The extent of coal removed prior to this permit application was approximately 8 million tons mined and removed from 1,500 acres of land. These earlier workings are shown on the mine maps as an integral part of the mining operation.

Use of the land preceding mining was primarily grazing. Some of the area supports limited timbering in the Ponderosa stands, and most of the area is used occasionally for hunting.

783.24(a)	80 Sub., Map 80-1 80 Sub., Response Follows
783.24(b)	80 Sub., Hydrometrics Report
783.24(c)	77 Plan 80 Sub., Map 80-2 80 Sub., Response Follows
783.24(d)	80 Sub., Maps 80-4, 4a, 4b, 4c and 80-11 80 Sub., Response Follows
783.24(e)	77 Plan 79 Sub. 80 Sub., Maps 80-4, 4a, 4b, 4c 80 Sub., Response Follows
783.24(f)	80 Sub., Vegetation/Soils Report
783.24(g)	Response Follows
783.24(h)	77 Plan
783.24(i)	Response Follows

COMMENT 783.24(a) (Section I)

This section is incomplete, see 782.13(a) above.

RESPONSE:

A "Land Ownership" map (Map 80-1) is presented in Volume 3. Areas to be affected are illustrated on "Mine Layout Showing Five Year Projection" (Map 80-2), and "Areas to be Bonded" (Map 80-11), located in the same volume.

COMMENT 783.24(b),(h) (Section II)

Maps showing hydrologic features of mininmum scales as specified (1:24,000 for MPAA: 1:6,000 for MPA) should be included.

(b) Boundaries of land within the permit area where applicant has the legal right to enter should be indicated.

(h) Public roads should be marked on the maps; for example, Exhibits 9-1 through 9-3, which show the plan area in detail, and Exhibit 9-9 should show which roads are public.

RESPONSE:

Maps are provided in the Hydrometrics Report (November, 1980), and discussed on page 55, located in Volume 4.

COMMENT 783.24(c) (Section I)

Boundaries of areas to be affected over life of activities are not included.

Also not included is a description of size, sequence and timing of mining of subareas for which additional permits will be sought.

RESONSE:

Boundaries of areas affected over mine-life are shown on the "Mine Layout Showing Five Year Projection" (Map 80-2) presented in Volume 3.

*Additional information on the projected mining by year is provided in the Mining Operation discussion located in Volume 7. Mine sequence maps (Exhibits 1 and 2) are also provided.

*Denotes change or addition (6/81)

COMMENT 783.24(d) (Section I)

This is adequate except that the maps which show buildings do not show the permit boundary.

RESPONSE:

Maps presented as Map 80-4, 80-4a through 80-4c, and 80-11, located in Volume 3, show structures of the SUFCo mining operation as well as permit and/or property boundaries.

COMMENT 783.24(e) (Section I)

Location of man-made features within, through or over permit area:

Electric lines are not shown.

Pipelines incompletely shown.

No drainage tile fields in area.

RESPONSE:

Maps have been prepared showing all man-made features. The maps are:

1. One inch equalling 500 feet scale map (Map 80-4) showing entire permit area with man-made features presented in Volume 3. This map illustrates an area which is delineated with dashed lines which covers East Spring Canyon to Convulsion Canyon. Three larger scale maps fit this delineated area and provide more detail of the features.

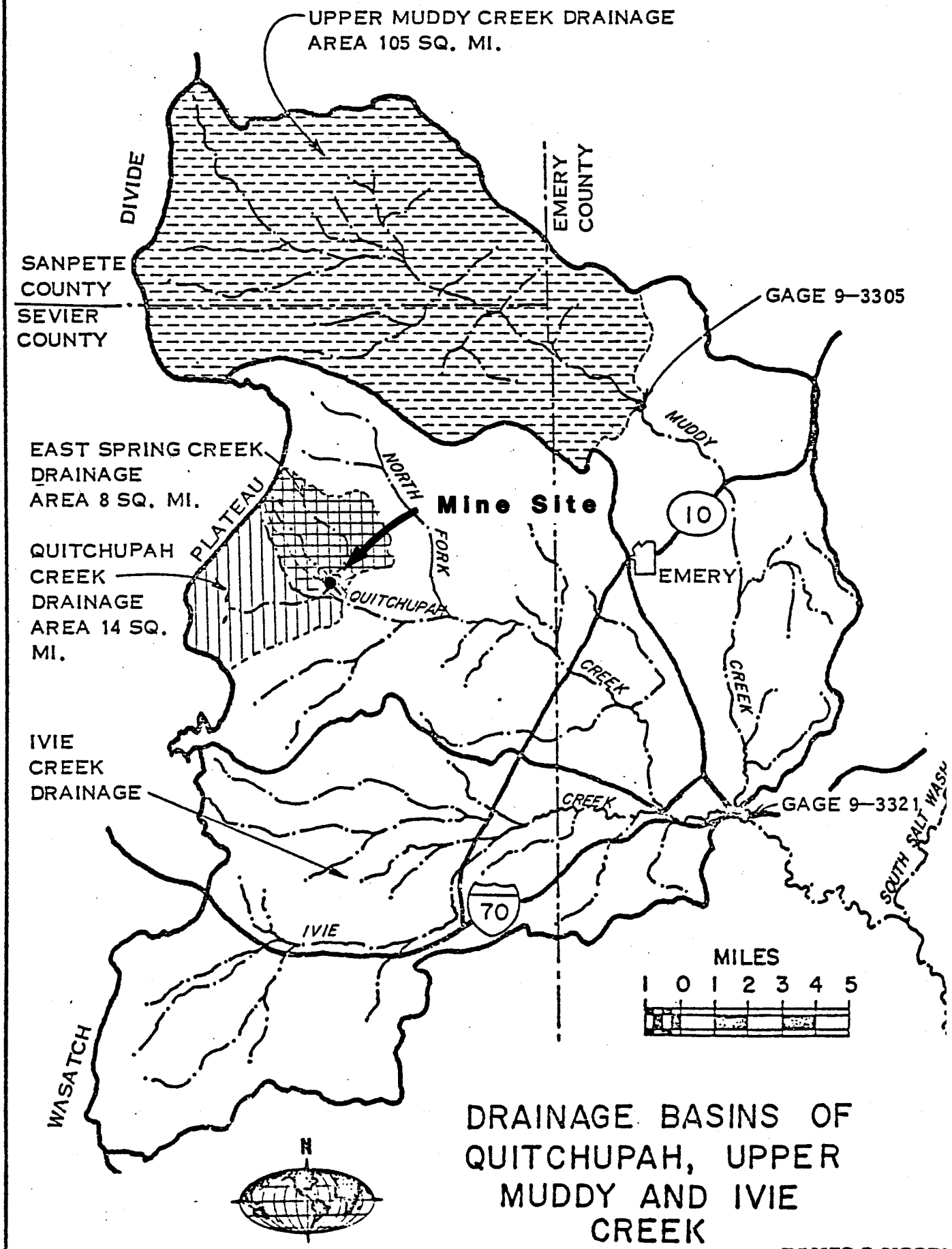
2, 3, 4. One inch equalling 50 feet scale maps (Maps 80-4, 4a, 4b and 4c) showing man-made features from Spring Canyon to Convulsion Canyon.

COMMENT 783.24(g) (Section 1)

Map showing drainages in the area is not included.

RESPONSE:

Figure 783.24(g) (Drainage Basins of Quitchupah, Upper Muddy and Ivie Creek) illustrates the drainages in the general area of SUFCo mining operation.



DRAINAGE BASINS OF QUITCHUPAH, UPPER MUDDY AND IVIE CREEK

DAMES & MOORE

FIGURE 783.24(g)

COMMENT 783.24(i) (Section I)

The map of the mine plan area (Figure 3) does not include the locations of the archaeological sites (42SV671 and 42SV672) noted in the archaeological letter report of June 16, 1976. The map of the mine plan is not at the same scale as the sketch map included in the letter report. None of the maps adequately indicate the areas examined in the previous investigations. The Hadley Monument is not shown on any map. The map coverage should include on the same sheet the locations of the areas surveyed, known sites and areas of possible disturbance.

RESPONSE:

An updated map of the mine plan area is submitted in the Archaeological Survey (August, 1980), Volume 4.

783.25(a)	77 Plan 80 Sub., Map 80-5 80 Sub., Response Follows
783.25(b)	Response Follows
783.25(c)	77 Plan 80 Sub., Response Follows
783.25(d)	77 Plan 80 Sub., Response Follows
783.25(e)	77 Plan 80 Sub., Response Follows
783.25(f)	80 Sub., Hydrometrics Report 80 Sub., Response Follows
783.25(g)	80 Sub., Hydrometrics Report 80 Sub., Response Follows
783.25(h)	Not Applicable
783.25(i)	77 Plan 79 Sub. 80 Sub., Valley Engineering Report 80 Sub., Maps 80-4, 4a, 4b, 4c
783.25(j)	80 Sub., Hydrometrics Report 80 Sub., Response Follows
783.25(k)	79 Sub. 80 Sub., Maps 80-4, 4a, 4b, 4c
783.25(l)	80 Sub., Technical Correspondenc

COMMENT 783.25(a) (Section I)

Elevations and locations of test borings and core samplings. None included, but the geology section, Chapter III p. 20 (Exhibit IV) of the EAR by the USFS and BLM refers to drill hole data.

RESPONSE:

Elevations and locations of test borings and core samplings are shown on "Geologic Map of SUFCo and Surrounding Area" (Map 80-5).

*Additional information is presented in the Geology discussion located in Volume 7. Geologic maps (Maps 81-2, 81-3, and 81-4) are also provided.

*Denotes change or addition (6/81)

COMMENT 783.25(b) (Section I)

Elevations and locations of monitoring stations are not precise enough for technical analysis - need to be plotted on topographic maps of appropriate scales.

RESPONSE:

Monitoring stations have been plotted upon topographic maps contained within the various 1980 updated reports to provide locations and elevation of the stations.

COMMENT 783.25(c) (Section I)

Coal seams to be mined: Basal Blackhawk Formation Upper Hiawatha bed: 7 to 16' thick, average 13 feet.

Seams above the mine seam: Text refers to "coal seams", p. 20, op. cit., but doesn't identify any seams above the Upper Hiawatha and none are shown on Fig. 90, p. 23, op. cit.

Stratum below mined seam: Areas not described in sufficient detail to identify rock type except that the Hiawatha coal bed, 2-4 feet thick, lies 15-25 feet below the Upper Hiawatha.

RESPONSE:

Two general cross sections with expanded columnar sections plus an isopach map of the coal are provided (Maps 80-6, 80-7, 80-8A) to show the nature, depth, and thickness of the coal seams to be mined, any coal or rider seams above the seam to be mined, each strata of the overburden, and the stratum immediately below the lowest coal seam to be mined.

*Additional information is presented in the Geologic discussion located in Volume 7. Geologic cross sections (Maps 81-3 and 81-4) are also provided.

COMMENT 783.25(d) (Section I)

Crop lines are not shown, but strike and dip are described in the text.

RESPONSE:

Crop line of the coal seam to be mined is shown on the isopach of the coal (Map 80-8A), the strike and dip of the coal and crop lines of geologic formations within the property are shown on the geologic map (Map 80-5).

COMMENT 783.25(e) (Section I)

Location and extent of known workings (u/g) (within and adjacent to mine area), and openings to the surface - not shown, mentioned p. 17, v1 as map 1A SUFCo mine plan, but not included. Portals are shown, but working connected to them are not.

RESPONSE:

Location and extent of known workings are on "Mine Layout Showing Five Year Projection" (Map 80-2). All portals, presently existing or planned, are shown and labelled on this map as well as all future mine workings.

COMMENT 783.25(f) (Section I)

Maps and cross-sections at required scales, showing arial and vertical distributions of aquifers, and seasonal differences of head and movement of ground water are not provided.

RESPONSE:

Maps and cross-sections of aquifers are presented in the Hydrometrics Report (November, 1980), page 56, and discussed in the Responses to Comments 783.14 and 783.15.

COMMENT 783.25(g) (Section I)

Irrigation ditches are not addressed.

Location of surface water bodies are not presented on maps of required scales or in the required detail.

RESPONSE:

A statement regarding irrigation ditches is provided in the Hydrometrics Report (November, 1980), page 57, located in Volume 4.

COMMENT 783.25(j) (Section I)

Water wells in MPAA are not discussed.

RESPONSE:

A discussion on water wells is presented in the Hydrometrics Report (November, 1980) on page 58, located in Volume 4.

783.27(a)	80 Sub., Response 783.27(a)
783.27(b)(1)	77 Plan 80 Sub., Response 783.27(a), (c),(d)
783.27(b)(2)	80 Sub., Maps 80-4, 4a, 4b, 4c
783.27(b)(3)	80 Sub., Response 783.27(a), (c), (d)
783.27(b)(4)	80 Sub., Response 783.27(a), (c), (d)
783.27(b)(5)	80 Sub., Response 783.27(a), (c), (d)
783.27(c)	80 Sub., Response 783.27 (a), (c), (d)
783.27(d)	80 Sub., Response 783.27 (a), (c), (d)

COMMENT 783.27(a),(c),(d) (Section I)

(a) There is no evidence in the mine plan that a specific investigation was carried out to identify prime farmland. In Exhibit 4:32, the statement is made that no prime or unique farmlands are located in the lease area (See Section II).

(c),(d) An authoritative statement of negative determination from the Soil Conservation Service, USDA, should be included in the mine plan.

RESPONSE:

A pre-application investigation was conducted by the Applicant to determine if any prime farmland would be impacted by the project. Based on the criteria in 30 CFR 783.27 paragraph (b), the Convulsion Canyon area cannot be classified as prime farmland. This opinion is substantiated by Dr. Theron B. Hutchings, State Soil Scientist for the Soil Conservation Service. (Copies of correspondence and substantiation follow this Comment.) Therefore, a negative determination for prime farmland classification of the SUFCo project area is requested.

Coastal States
Energy Company

411 West 7200 South
Midvale, Utah 84047
(801) 566-7111

Subsidiary of
The Coastal
Corporation

May 22, 1980

Dr. Theron Hutchings
U.S. Soil Conservation Service
Federal Building, Rm. 4012
125 South State Street
Salt Lake City, Utah 84138

Dear Dr. Hutchings:

Southern Utah Fuel Company personnel are currently preparing an amended application for a mining permit for their Convulsion Canyon Mine. The operation, which began at this location approximately 40 years ago, is being expanded eastward into a new lease.

In accordance with the requirements of Section 783.27 of the Surface Coal Mining and Reclamation Operation Regulations, we are requesting that the SCS provide us with a pre-application evaluation of the area proposed to be affected by the total project to determine whether lands within the area may be prime farm land. A map is attached which delineates the total project area as well as the new expansion lease.

Your response should be sent to:

Keith W. Welch
Environmental Coordinator
Coastal States Energy Company
1354 East 3300 South, #303
Salt Lake City, Utah 84106

Please advise if additional data are required.

Sincerely,

Keith W. Welch

Keith W. Welch
Environmental Coordinator

KWW:jc

Attachment

United States Department of Agriculture
Soil Conservation Service
4012 Federal Building
125 South State Street
Salt Lake City, UT 84138

May 27, 1980

Keith W. Welch
Environmental Coordinator
Coastal States Energy Company
1354 East 3300 South, #303
Salt Lake City, Utah 84106

Dear Mr. Welch:

I have examined your map delineating the total project. The Soil Conservation Service has no soil surveys on this tract of land. However, from the knowledge of experienced soil scientists who are familiar with similar areas close by, it is the concensus that there are no prime farm lands in the tract due to the soils at that elevation being classed as Cryic soils. These do not qualify for prime farm land because of coldness.

Elevations range up to more than 8,600 feet above sea level. At such elevations we have not found prime farm land at similar elevations in Utah.

Sincerely,

T. B. Hutchings
State Soil Scientist

784.11(a)	77 Plan 79 Sub.
784.11(b)(1)	80 Sub., Valley Engineering Report 80 Sub., Response Follows
784.11(b)(2)	77 Plan 80 Sub., Response 784.11(b)
784.11(b)(3)	77 Sub. 79 Sub.
784.11(b)(4)	77 Plan 79 Sub. 80 Sub., Response 784.11(b)
784.11(b)(5)	77 Plan 79 Sub.
784.11(b)(6)	77 Plan 79 Sub.

COMMENT 784.11(b) (Section I)

The requirements of this paragraph are adequately described in various places except that the Mine Site maps show "coal slide" areas. These are not described or discussed in the text. The application should clarify their extent, content and reclamation.

RESPONSE:

Southern Utah Fuel Company (SUFCo) operates a two million tons per year underground coal mine with portals in East Spring Canyon, Sevier County, Utah. It is located within the Fishlake National Forest and the Manti LaSal National Forest, and is served by the paved Convulsion Canyon access road.

Several years ago, waste rock and coal fines, called "gob" by the miners, were dumped into the canyon from the access road causing slides from the road to the canyon bottom. The dumping points are located several hundred feet south *of the previous mine permit area on Fishlake National Forest lands. Southern Utah Fuel Company has made a commitment to the Fishlake National Forest to rehabilitate these unsightly slides. Contained herein is the proposed plan to stabilize and revegetate them so that further erosion and sedimentation of coal material contained in these slides do not continue to move into East Spring Creek and eventually into Quitchupah Creek.

Description of Slides

The North-South mine access road is located on the west slope of East Spring Canyon 300 feet above the canyon floor. The most unsightly slide is located 320 feet south of the company's gate, below the mine access road. It is approximately 20 feet wide at the top near the road. The flow of the material fanned out to cover approximately 150 feet of the stream channel in the canyon bottom to a maximum depth of nine or ten feet. This dam created an impoundment which subsequently filled with run-off sediment. The total length of the disturbed area of the stream channel is 250 feet. The slide has stabilized with respect to mass movement and is covered with rock talus at its lower end. However, erosion on the face of the slide and erosion over the dam

*Typographic Correction (6/81)

contributes dark grey sediment to the stream when it contains run-off flows. The gob material has been tested by Al Southard, a soils scientist from Utah State University, and his report regarding vegetative potential is presented *in Volume 5.

A second slide is located 450 feet south of the above described grey slide. It is composed primarily of natural tan sand and talus. However, the south quarter of the fan at the bottom consists of fine coal particles. Several hundred square feet of this material is exposed and evident from various vantage points in the canyon. Although no erosional channel occurs in the material, it is unconsolidated and subject to wind erosion. It is estimated to be no deeper then four feet and does not obstruct the stream channel.

A third slide exists between the above described slides. It developed during the course of construction of the road and consists entirely of light tan rock material. No coal or underground mining waste material is in this slide. Tumble weeds have made considerable progress in vegetating the slide.

REHABILITATION PLAN

The northern-most slide, which is described first above, has caused the most concern to both the Forest Service (Fishlake) and SUFCo due to its visability and impact on the stream channel. It is proposed to rehabilitate this slide by vegetating the slide slope to eliminate face erosion and to stabilize the stream channel through the created dam at the bottom. Access to the bottom with heavy equipment is impossible without major disturbance to the canyon floor between the slide and Convulsion Canyon.

The slide slope will first be terraced to key in a later topsoil covering. Three terraces at equal intervals will be dug by hand either into base material or with a three foot wide bench, whichever occurs first. The slope of the terrace benches will be down into the face of the hill and horizontal along their length to provide an adequate keying surface. Topsoil will then be dumped from the road down over the slide. It is anticipated that the source of soil will be from the Sevier Valley and that it will be hauled to the site in end dump coal trucks. A sufficient quantity to cover the face three inches

*Denotes change or addition (6/81)

deep will be used. Working from the top down, the surface will be hoed with horizontal terraces approximately three feet apart, and the width of a garden hoe. These will direct run-off water to the sides of the slide so erosion will be minimized down the fill face.

Rocks in the canyon bottom of the dam will be moved manually to channelize the stream. The channel will be riprapped five feet wide and three feet deep in the center. The riprap material will be sandstone or siltstone and range in size from one foot diameter to as large as two men can handle. The channel will be established in the present water course and energy dissipating rocks will be placed to prevent further erosion.

The dam will be covered with a one inch layer of topsoil from excess amounts dumped down the slide. The total disturbed area will be hydro-seeded with the mixture recommended by Dr. Southard of two pounds each of Yellow Sweet Clover, Crested Wheat Grass and Russian Wild Rye per 1,000 square feet, and nitrogen at 100 pounds per acre and phosphorus at 50 pounds per acre. The surface will then be covered with an erosion control fabric similar to "Hold Gro" which is a nylon net mesh material with decomposable paper strips woven through the net. Throughout the remainder of the 1980 growing season, SUFCo will sprinkle the slide with water on a frequent basis such that the soil remains moist but does not erode.

The Southern-most slide will be rehabilitated by first removing most of the coal fines with a front-end loader and truck. It is located near a vehicle path in the bottom confluence of Convulsion Canyon and East Spring Canyon. The material will be deposited at the mine site for later disposal with gob material in accordance with proper disposal methods now in use. Topsoil will then be emplaced on the excavated slide area to cover any remaining evidence of the coal fines. The entire slide will be hydro-seeded with the mixture mentioned above, and mulched. Because the damaged area is on a much flatter gradient, erosion control mesh should not be necessary. The entire slide will be watered as decribed above.

The Applicant plans to hydro-seed the middle slide. It has stabilized with respect to mass movement and is not unsightly due to color.

The vegetative growth on the Northern and Southern slides will be evaluated on a monthly basis until it has the same percentage ground cover as the natural slope on either side of the individual slides. Watering will be continued during the growing season on a gradually less frequent basis until it is shown that the growth is stabilized at that level of cover.

784.12(a)(1)	77 Plan 79 Sub.
784.12(a)(2)	80 Sub., Response 784.12(a)(2), (3)
784.12(a)(3)	80 Sub., Response 784.12(a)(2), (3)
784.12(a)(4)	Response Follows
784.12(b)	Not Applicable

COMMENT 784.12(a)(2),(3) (Section I)

(a)(2) Plans and condition should be stated.

(3) Construction dates should be listed.

RESPONSE:

LIST OF STRUCTURES AND CONSTRUCTION DATES

	Structure	Construction Date
1.	Ambulance Garage	Summer 1980
2.	Construction Storage Shed	Summer 1977
3.	Offices	Summer 1973
4.	Fuel Pad	Summer 1976
5.	Fuel Tanks	Summer 1976 & 1979
6.	Sediment Tank	Summer 1977
7.	Guardhouse	Summer 1977
8.	Ticket House	Summer 1977
9.	Scales	Summer 1975
10.	Load-out Bin	Summer 1975
11.	Load-out Conveyor	Summer 1975
12.	Stacker Conveyor	Summer 1975
13.	Lump-coal Conveyor	Fall 1977
14.	Stoker Conveyor	Fall 1977
15.	Crusher	Fall 1977
16.	Mine Run Conveyor	Fall 1977
17.	Transfer Conveyor	Fall 1977
18.	Sampler	Fall 1977
19.	Stoker Bin and Load-out	Fall 1977
20.	Tipple Foreman's Office	Fall 1977
21.	Stoker Oil Tanks	Fall 1977
22.	Rock Dust Bin	Fall 1976

LIST OF STRUCTURES AND CONSTRUCTION DATES
(Continued)

Structure	Construction Date
23. Switch House	Summer 1977
24. Substation	Summer 1975
25. Shop and Warehouse	Summer 1976
26. Motor House	Fall 1975
27. Fans a) main fan	Winter 1980
b) emergency fan	Fall 1975
28. Warehouse Annex	Summer 1979
29. Powder Magazine	Summer 1979
30. Pump Houses	Summer 1967 & 1975
31. 72" CMP Drainage Culvert	Summer 1976
32. Wash Bay	Fall 1981
33. Fan Generator Building	Fall 1981
34. Rock Dust No. 2	Fall 1981
35. Used Oil Tank	Summer 1982
36. Steel Storage Shed	Fall 1979
37. Lump Coal Storage	Fall 1981
38. Stoker Coal Bin	Fall 1981
39. Truck Scale & Building	Summer 1982
40. Snow Plow Garage	Fall 1981
41. ROM Stacker Belt	Spring 1989
42. ROM Reclaim Belt	Spring 1989

LIST OF STRUCTURES AND CONSTRUCTION DATES

(Continued)

Description and Condition of Existing Structures

The stoker bin and loadout, the tipple foreman's office, the warehouse annex and the powder magazine are constructed of concrete blocks.

The ambulance garage, offices, motor house, shop and warehouse are pre-engineered commercial steel buildings.

COMMENT 784.12(a)(4) (Section I)

There are no showings of compliance with Subchaper K (permanent program), or Subchapter B (interim program).

RESPONSE:

The Applicant believes that all existing structures (including any modifications thereto proposed by way of this Amendment) meet the performance standards of the Permanent Program and/or the Interim Program as set out in 30 CFR Subchapter K and Subchapter B.

784.13(a)	80 Sub., Response 784.13(b)(2)
784.13(b)(1)	77 Plan 77 Adden. #2
784.13(b)(2)	77 Plan 80 Sub., Response Follows
784.13(b))3)	77 Plan 77 Adden. #2 79 Sub.
784.13(b)(4)	77 Adden. #2 79 Sub.
784.13(b)(5)(i)	77 Plan 77 Adden. #2 79 Sub. 80 Sub., Vegetation/Soils Report 80 Sub., Response Follows
784.13(b)(5)(ii)	77 Plan 79 Sub. 80 Sub., Fishlake Response 5
784.13(b)(5)(iii)	77 Plan
784.13(b)(5)(iv)	80 Sub., Vegetation/Soils Report
784.13(b)(5)(v)	79 Sub.
784.13(b)(5)(vi)	80 Sub., Vegetation/Soils Report
894.13(b)(5)(vii)	80 Sub., Vegetation/Soils Report
784.13(b)(6)	77 Plan
784.13(b)(7)	77 Plan 79 Sub.

784.13(b)(8)	77 Plan 80 Sub., Response Follows
784.13(b)(9)	77 Plan 80 Sub., Response Follows 80 Sub., Particulate Emissions Report

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

Description	Amount	Unit Cost	Subtotal
Foundation Removal	950/yd^3 (est.)	\$55.00/yd^3	\$ 52,250
Building Removal			
Shop	11,000/ft^2	\$1.00/ft^2	11,000
Warehouse	4,500/ft^2		4,500
Offices	9,000/ft^2		9,000
Garage	580/ft^2		580
Storage Shed	2,000/ft^2		2,000
Misc. Structures	5,000/ft^2		5,000
Coal Handling Structures (Steel & equipment removal)	375/ton	\$10.00/ton	3,750
Asphalt Removal	1,780/yd^2	\$2.50/yd^2	4,450
Dirtwork-Cut & Fill	413,000/yd^3	\$1.50/yd^3	619,500
TOTAL			\$712,030

RECLAMATION COST AND TIME TO RECLAIM ONE ACRE

Ripping		
Equipment	40 hrs. x $31.00/hr. =	$1,240.00
Labor	40 hrs. x $19.00/hr. =	760.00
		$2,000.00
Topsoil Addition		
Equipment	44 hrs. x $31.00/hr. =	$1,364,00
Labor	44 hrs. x $19.00/hr. =	836.00
		$2,200.00
Fertilization		
Labor	32 hrs. x $ 8.00/hr. =	$ 256.00
Material		44.00
		$ 300.00
Seeding		
Equipment	8 hrs. x $46.50/hr. =	$ 372.00
Labor	16 hrs. x $ 8.00/hr. =	128.00
		$ 500.00
Moisture Retention	72 hrs. x $ 8.00/hr. =	$ 576.00
Labor		424.00
Material		$1,000.00
Maintenance & Monitoring		
Labor	100 hrs. x $ 8.00/hr. =	$ 800.00
Material		200.00
		$1,000.00
TOTAL COST FOR ONE ACRE		$7,000.00

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	20,880
	$146,160

ADDITIONAL SALVAGE AND DIRT WORK TO REMOVE ROM STOCKPILE

DESCRIPTION	AMOUNT	UNIT/COST	SUBTOTAL
Steel and Equipment Removal	46 Ton	$10.00/Ton	$ 460
Concrete Retaining Walls	1040 Yd^3	$55.00/$Yd.^3$	57,200
Binwall Removal	6250 $Ft.^2$	$ 1.00/$Ft.^2$	6,250
Additional Cutwork*	5000 $Yd.^3$	$ 0.50/$Yd.^3$	2,500
			$66,410

*D8L Productivity 520 Lcy/hr. @ $209/hr. = $0.50/$yd.^3$

TOTAL COST

Salvaging and Dirtwork	$729,850
Reclamation Activities	146,160
ROM Stockpile Addition	66,410
	$942,420

COMMENT 784.13(b)(5) (Section II)

The appropriateness of mulching techniques should be addressed as well as the methods. The plan for determining the success of revegetation pursuant to 30 CFR 817.116 should also be provided.

RESPONSE:

A description of the revegetation plan is presented in the Vegetation and *Soils Report (October, 1980), on pages 35-37, located in Volume 5.

*Denotes change or addition (6/81)

COMMENT 784.13(b)(8) (Section I)

Include a description of sealing and managing openings to the surface.

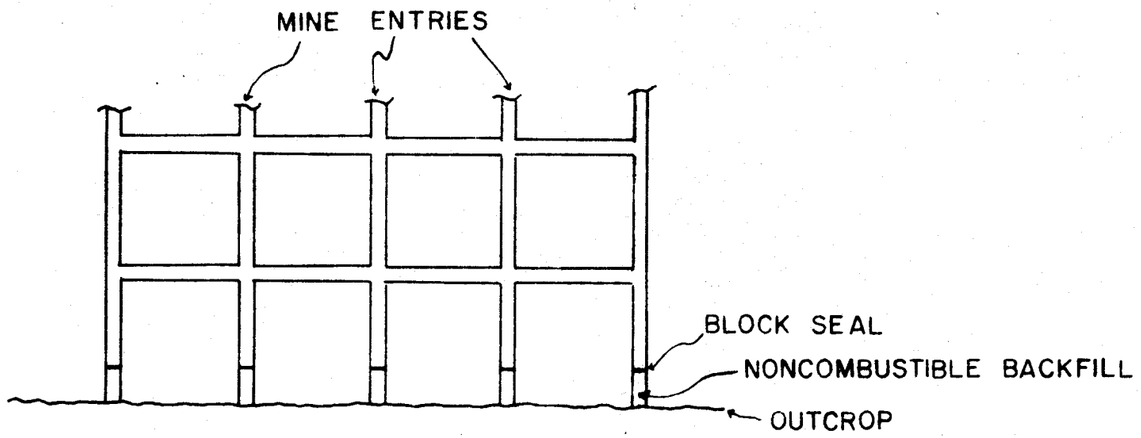
RESPONSE:

All drill holes, upon abandonment of drilling operations, were cemented with an approved slurry in accordance with the approved plan for exploratory drilling (1979). The slurry mixture was made using 5.2 - 5.5 gallons of water per bag of cement. An appropriate slurry device was lowered to the bottom of the hole and sufficient slurry pumped through the device to fill 200 feet of hole. The device was then raised 200 feet and the process repeated. Using this method, the holes were completely plugged from the bottom to the collar. As stipulated by the 1979 approved exploratory drilling plan, drill holes were appropriately marked.

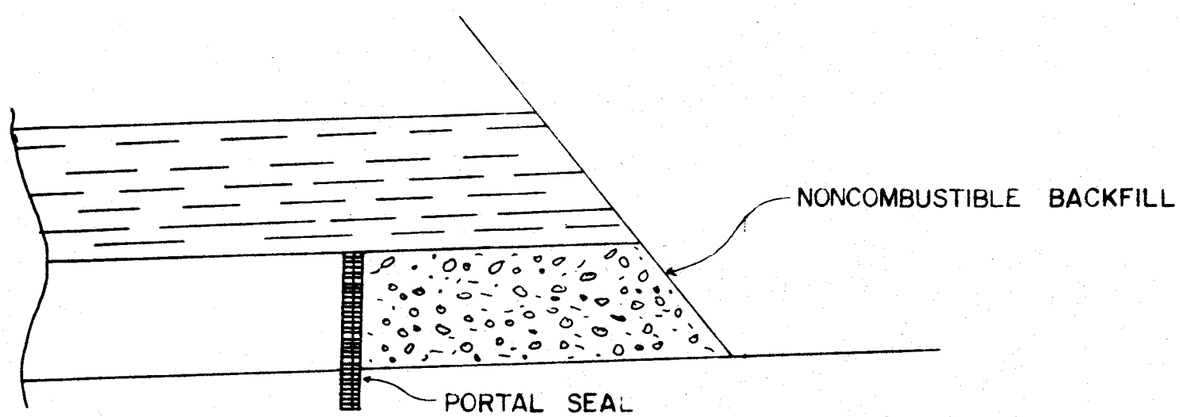
Mine Entries

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. The seals will be located at least 25 feet inside the portal mouth entry. 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 in 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 its long axis parallel to the rib. The long axis in succeeding courses will



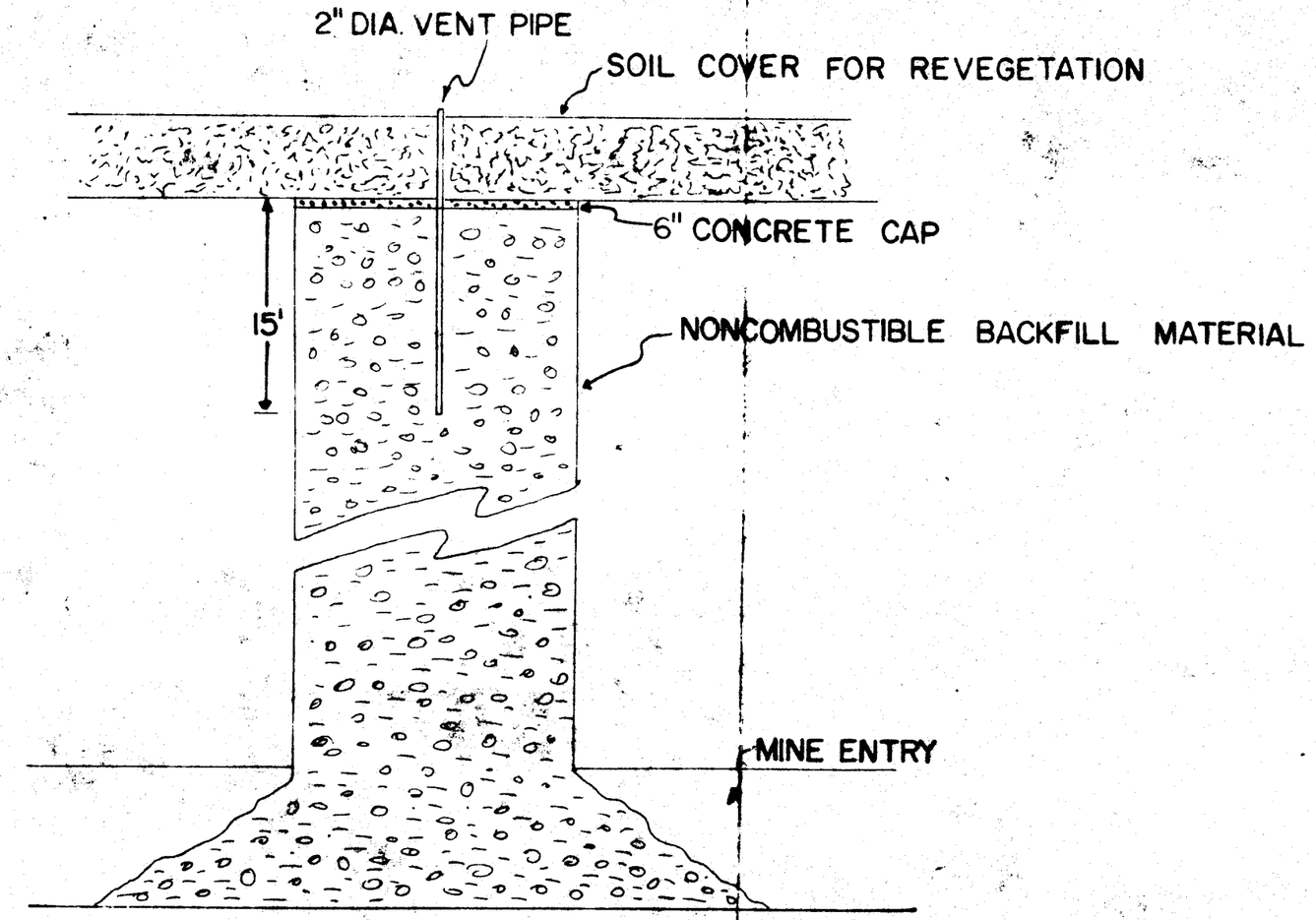
PLAN VIEW



SECTION VIEW

NO SCALE

SOUTHERN UTAH FUEL CO. MINE NUMBER ONE	
TYPICAL PORTAL SEAL	
DATE 7-3-80	SCALE
DRAWN BY D.A.N.	DRAWING NO 784.13/A



SOUTHERN UTAH FUEL CO.
MINE NUMBER ONE

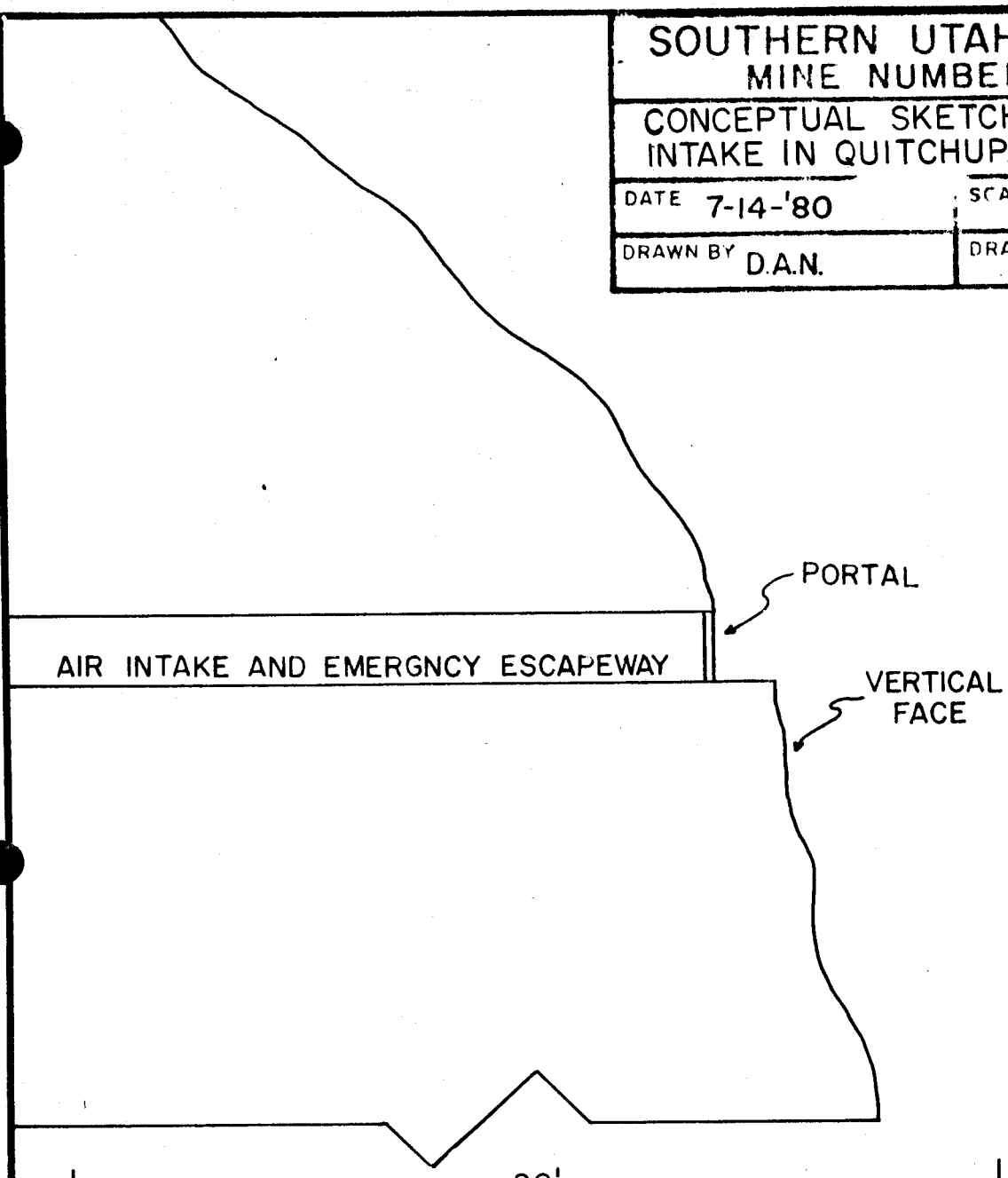
TYPICAL SHAFT SEALING

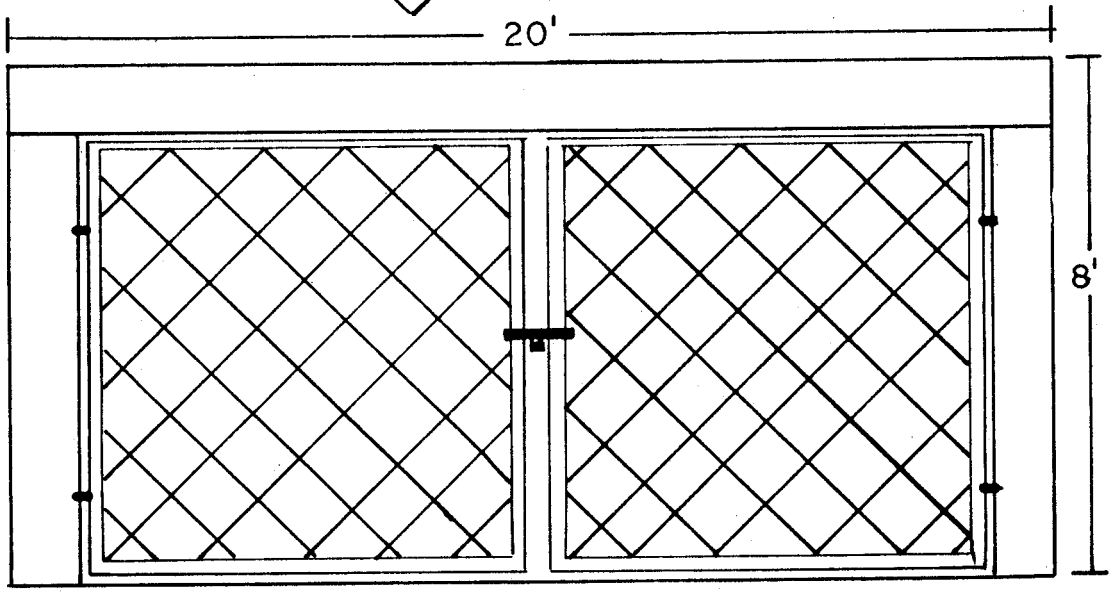
DATE 7-7-80	SCALE NO SCALE
DRAWN BY D.A.N	DRAWING NO. 784.13/B

SOUTHERN UTAH FUEL CO.
MINE NUMBER ONE

CONCEPTUAL SKETCH OF AIR INTAKE IN QUITCHUPAH CANYON

DATE 7-14-'80	SCALE NO SCALE
DRAWN BY D.A.N.	DRAWING NO 784.13/C





DETAIL OF PORTAL

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 sloped to match the cut slope at the portal entry. See Figures 783.13/A and 783.13/B.

Ventilation Entries in Quitchupah Canyon

*There is a proposed extension to the set of sub-main entries (2 East, 3 East, 4 North, and 5 North) from the main entries to the west wall of Quitchupah Canyon. The construction of three temporary wooden portals is proposed at the end of these sub-mains, which would be located directly above the Starpoint Sandstone in the canyon wall. Each portal would measure approximately eight feet high by 16 feet wide, and would be separated by 50 to 85 feet horizontally (this depends on the proper pillar sizing determined at the time mining progresses to this area). Steel mesh gates will be installed in each portal to prevent animal or human access to the mine. These gates would be kept locked at all times except for inspection purposes. Keys to the locks will be kept within 50 feet of at least one gate on the inside of the mine. Figure 3 presents a conceptual sketch of a typical ventilation entry.

These portals are needed to provide intake ventilation air for the mine. As the mine workings are extended, the added friction of longer air courses restricts air flow. These proposed portals, in the proposed location, will enhance ventilation by reducing the effective length and increasing the effective cross sectional area of the air passageways.

In addition, the portals will provide an emergency escapeway for mine personnel should the regular escapeway be restricted in some manner.

All construction access to these proposed portal sites will be from within the mine. No surface access routes will be established, and it is anticipated that the portals will not be readily distinguishable from the east rim across the canyon.

Following the conclusion of mining, the portal sites will be sealed and revegetated in the same manner as the portals in East Spring Canyon. All construction materials will be removed prior to reclamation.

*Denotes change or addition (6/81)

No groundwater is expected at the portal site. Handbuilt rock diversion berms will be installed on top of the portals as necessary to prevent surface run-off from entering the mine.

The proposed location is on a slope in excess of 100% (45°), and no topsoil is *present. The rock rubble will be inspected for archaeological artifacts or structures prior to break out, and the State of Utah Division of Oil, Gas, and Mining will be notified in the event such evidence is discovered.

*Typographic Correction (6/81)

COMMENT 784.13(b)(9) (Section II)

Section M of the MRP quantifies some emissions and contains a proposed monitoring plan. The applicant should submit a copy of all air quality permits that have been obtained. However, if none have been obtained, then the applicant should list the permits that the applicant has made application to receive permits.

RESPONSE:

A report prepared by Radian Corporation of Austin, Texas, quantifying the emissions of the presently existing SUFCo operations as well as the increase *in emissions due to projected mine expansion is presented in Volume 6, "Assessment of Particulate Emissions".

The estimated increase in emissions is not of sufficient amount to require a Federal "Prevention of Significant Deterioration" Permit, under presently existing regulations.

The Response to Comment 782.19(c),(d) includes a list of all permits necessary for the SUFCo mining operations.

*Denotes change or addition (6/81)

784.14	Advisory
784.14(a)(1)	80 Sub., Hydrometrics Report 80 Sub., Response Follows
784.14(a)(2)	80 Sub., Hydrometrics Report 80 Sub., Response Follows
784.14(a)(3)	80 Sub., Hydrometrics Report 80 Sub., Response Follows
784.14(a)(4)	Response Follows
784.14(b)(1)	79 Sub. 80 Sub., Hydrometrics Report 80 Sub., Response Follows
784.14(b)(2)	77 Plan 79 Sub.
784.14(b)(3)	79 Sub. 80 Sub., Hydrometrics Report
784.14(c)	79 Sub. 80 Sub., Hydrometrics Report 80 Sub., Response Follows
784.14(d)	80 Sub., Response 784.13(b)(8) 80 Sub., Response Follows

COMMENT 784.14(a)(1) (Section I)

Detailed description, including maps and cross-sections showing potential quantitative changes in groundwater recharge, discharge and points of charges in water quality should be provided.

RESPONSE:

A description of changes in surface and groundwater quality is provided in the Hydrometrics Report (November, 1980), page 59, located in Volume 4.

*Additional information on surface and groundwater quality is presented in the 1981 Supplement, Volume 4.

*Denotes change or addition (6/81)

COMMENT 784.14(a)(2) (Section I)

Well and/or water use permits should be provided, with exception of NPDES Nos.

RESPONSE:

There are no water wells within the permit area. The Hydrometrics Report (November, 1980), Volume 4, discusses well locations within the general area in Section 783.25(j). No adverse impacts are anticipated on present water well uses.

Springs and other surface water uses should not be adversely impacted by mining; alternative water supplies have been planned should unforeseen impacts occur (see Sections 784.14(a)(1); 784.14(a)(3); 783.17; 784.14(c); and 785.19 of the Hydrometrics Report).

COMMENT 784.14(a)(3) (Section I)

Specific quantities of groundwater existing now or that will be affected by mining should be calculated and presented.

RESPONSE:

A description of changes in the quantity of surface and groundwater is provided in the Hydrometrics Report (November, 1980), page 60, located in Volume 4.

COMMENT 784.14(a)(4) (Section I)

Figure 10 showing surface facilities and presumably portal drainages) should be provided (Exhibit 3).

RESPONSE:

Figure 10 has previously been submitted as Revised Figure 1A.

COMMENT 784.14(b)(1) (Section I)

Description of plan for control of surface and groundwater drainages should be provided.

Plans for hydrologic tests of the aquifer(s) should be provided including infiltration, pumping, drilling, and surface flow and storage tests.

RESPONSE:

A plan for control of surface and groundwater is addressed on page 61 of the Hydrometrics Report (November, 1980), Volume 4, and discussed in Section 784.14(a)(1). Plans for hydrologic tests of aquifers are included in Section 783.15.

COMMENT 784.14(c) (Section I)

A specific quantitative determination of the probable hydrologic consequences of mining should be provided. Reduced discharge of springs and changes in water quality should be discussed and analyzed quantitatively.

RESPONSE:

A discussion of probable hydrologic consequences is presented in the Hydrometrics Report (November, 1980), page 62, located in Volume 4.

*Further discussion of probable hydrologic consequences is provided in the 1981 Supplement, Volume 4.

*Denotes change or addition (6/81)

COMMENT 784.14(d) (Section I)

Descriptions and drawings of seals and barriers should be provided.

RESPONSE:

Descriptions and drawings of seals and barriers are presented in the Response to Comment 784.13(b)(8).

784.15(a)	77 Plan 77 Adden. #2 79 Sub. 80 Sub., Response 784.15(a), (b)
784.15(b)	80 Sub., Response 784.15(a), (b)

COMMENT 784.15(a),(b) (Section II)

(a) Postmining land use is directly (or indirectly, as the case may be) addressed in v1: 52-54, Exhibit 3: 24, and Exhibit 4: 50-54, but should also discuss the ability of the land to support other than premining uses.

(b) No specific comments on postmining land use plans by the USFS or other interested agencies should be included in the MRP.

RESPONSE:

Almost all of the lands to be affected by the SUFCo mining operation (illustrated on "Ownership Map", 80-1, presented in Volume 3) are federally owned and leased from the federal government to the Applicant. These federally owned lands are part of Fishlake National Forest and the Manti La-Sal National Forest. The U.S. Forest Service is the managing agency regulating, under the multiple use concept, the use of the National Forest lands. All of the National Forest lands within the Permit Area have Land Use Plans prepared by the respective Forest Service office which set out the Forest Service's short-*term and long-range management objectives for the properties. Any potential uses of these lands are discussed within the Land Use Plans.

The remoteness and terrain characteristics of the SUFCo permit area would severely reduce the potential for any uses other than the premining ones which are proposed for postmining.

*Typographic Correction (6/81)

784.16(a)	77 Plan 79 Sub.
784.16(a)(1)(i)	80 Sub., Technical Correspondence
784.16(a)(1)(ii)	79 Sub.
784.16(a)(1)(iii)	79 Sub.
784.16(a)(1)(iv)	Response Follows
784.16(a)(1)(v)	Response Follows
784.16(a)(2)(i)	80 Sub., Technical Correspondence
784.16(a)(2)(ii)	Response Follows
784.16(a)(2)(iii)	79 Sub.
784.16(a)(2)(iv)	Not Applicable
784.16(a)(3)	Not Applicable
784.16(b)(1)	79 Sub. 80 Sub., Fishlake Comment 1 80 Sub., Valley Engineering Report
784.16(b)(2)	80 Sub., Fishlake Comment 1
784.16(c)	80 Sub., Valley Engineering Report
784.16(d)	Not Applicable
784.16(e)	Not Applicable

COMMENT 784.16(a)(1)(iv) (Section I)

Survey of effect of subsidence from past mining has not been included but apparently there is a study presently underway. A progress report should be submitted providing information collected to date.

RESPONSE:

A subsidence monitoring plan was submitted as part of addendum to the approved SUFCo Mine Plan in 1978. The subsidence monitoring plan should satisfy 30 CFR 784.16 and is presented in Volume 2.

Subsidence monitoring is an ongoing project of SUFCo. An updated subsidence *monitoring report is presented in Volume 5, and maps of actual and projected subsidence (Maps 80-9 and 80-10) are located in Volume 3.

*Additional subsidence data is presented in the 1981 Supplement, Volume 5. An updated subsidence map is also included.

*Denotes change or addition (6/81)

COMMENT 784.16(a)(1)(v) (Section I)

No certification statement is included -- presumption is that no additional structures are planned, but this should be stated in the mine plan.

RESPONSE:

There are no structures proposed for the SUFCo mining operation which have not been described within this Application. Detailed design for all proposed structures are presented within this Application.

COMMENT 784.16(a)(2)(ii) (Section I)

Geotechnical investigation should be included for sediment control structure.

RESPONSE:

*Geotechnical data is presented in Volume 6 as a part of the Valley Engineering Report.

*Denotes change or addition (6/81)

784.17

79 Sub.
80 Sub., Response Follows

COMMENT 784.17 (Section I)

The measures described in the materials provided are incomplete under the requirements of 36 CFR 800.4(a)(1), 800.4(a)(4) and 800.6(b).

The applicant should consult with OSM, SHPO and ACHP to develop a mitigation plan that includes a detailed problem-oriented program of inventory, testing, evaluation and mitigation of adverse effects as necessary.

RESPONSE:

No public parks or historic places are located in areas to be affected by the SUFCo mining operation. The Applicant agrees, however, to notify the regulatory authority and the Utah State Historic Preservation Office (SHPO) of previously unidentified cultural resources discovered in the course of mining operations. The Applicant also agrees to have any such cultural resources evaluated in terms of National Register of Historic Places eligibility criteria. Protection of eligible cutural resources will be in accordance with regulatory authority and Utah SHPO requirements. The Applicant will also instruct its employees that it is a violation of federal and state laws to collect individual artifacts or to otherwise disturb cultural resources.

784.18	79 Sub. 80 Sub., Response Follows
784.18(a)	80 Sub., Response 784.18
784.18(b)	Not Applicable

COMMENT 784.18 (Section II)

Two public roads exist in and adjacent to the mine plan area: East Side Road and Mine Access Road (v1: 30-32). Neither road will be relocated but mining will occur within their vicinity. Maps and cross sections of these roads should be included (See 783.24 (b)).

RESPONSE:

The Applicant has taken or will take the following measures to ensure that the interests of the public and the National Forests are protected during the mining activities with respect to public roads.

East Spring Canyon Road

This road, which provides access from the bottom of Convulsion Canyon to the upper plateau, has historically been used to herd livestock between different grazing allotments during seasonal changes. SUFCo uses the road for access to the mining operation's electrical and water supply systems. No relocation of the road is planned. However, mining activities are conducted within 100 feet of the right of way line and the road is shown on the Sevier County Class D system as a public road. The activities include the underground entry system underneath the road. No impact to the road due to these entries will occur as SUFCo will ensure that no subsidence or caving operations will be conducted as to affect any portion of the right of way. Surface activities will be conducted in a manner which will not block the road.

Old Woman Plateau Road

No surface activities are planned which will relocate or disrupt public use of this County Class D road system. The only surface effect upon the unpaved road might be the presence of surface tension cracks. As part of the subsidence monitoring program, the roads will be regularly inspected for such damage and, if such damage is evident, the road will be repaired by SUFCo.

No other road systems will be impacted on the permit area by SUFCo in the course of mining operations.

784.19

77 Plan
79 Sub.

784.20(a)	77 Plan 79 Sub. 80 Sub., Response 784.20
784.20(a)(1)	77 Plan 79 Sub. 80 Sub., Response 784.20
784.20(a)(2)	77 Plan 79 Sub. 80 Sub., Response 784.20
784.20(b)(1)	77 Plan 77 Adden. #2 79 Sub.
784.20(b)(2)	77 Plan 79 Sub. Subsidence Report 12-28-77 Subsidence Report 2-1-78
784.20(b)(3)	79 Sub. 80 Sub., Hydrometrics Report 80 Sub., Response 784.20
784.20(c)	80 Sub., Hydrometrics Report 80 Sub., Response 784.20
784.20(d)	80 Sub., Response 784.20

COMMENT 784.20 (Section I)

Description and discussion of the effects and control of subsidence appear to be adequate except there are no maps or accurate descriptions showing the relation of areas mined by room and pillar and those mined by longwall methods and their relationship to surface areas that might be affected. The study underway to monitor subsidence control should provide all available data to date.

RESPONSE:

The study of the control and effects of subsidence is an ongoing program at *SUFCo. An updated subsidence monitoring report is presented in Volume 5, containing survey information which provides the basis for determination of the extent of subsidence created by the SUFCo mining operations. Maps of actual and projected subsidence (Maps 80-9 and 80-10) are located in Volume 3.

*Additional subsidence data and a revised map (Map 81-1) are provided in the 1981 Supplement, Volume 5.

Subsidence

*Denotes change or addition (6/81)

784.21(a)(1)	80 Sub., Hydrometrics Report 80 Sub., Wildlife Report 80 Sub., Aquatic Resources Report
784.21(a)(2)	80 Sub., Hydrometrics Report 80 Sub., Aquatic Resources Report
784.21(b)	Response Follows
784.21(b)(1)	77 Plan 79 Sub. 80 Sub., Response Follows
784.21(b)(2)	79 Sub. 80 Sub., Avifauna Report 80 Sub., Response 784.21(b)(2), (3)
784.21(b)(3)	80 Sub., Response 784.21(b)(2), (3)

COMMENT 784.21(b) (Section II)

The wildlife monitoring plan is an extension of the methods used in animal sampling. The title of the plan (v2: Exhibit 6) indicates 1979 monitoring, and the text contains no schedule to indicate monitoring beyond that time. Explain.

RESPONSE:

Discussions of the wildlife monitoring plan are presented in the following *reports: "Wildlife Assessment", pages 54-56, Volume 5; "Raptor and General *Avifauna Studies", page 13, Volume 6; and the "Aquatic Resource Inventory", *pages 7-20, Volume 6.

*Denotes change or addition (6/81)

COMMENT 784.21(b)(1) (Section II)

Threatened and endangered species, per se, are not mentioned in the wildlife monitoring plan (v2: Exhibit 6), although the State's environmental assessment (v1: Exhibit 3) indicates the Bald Eagle (not listed at that time) present on the site. The subsequent federal environmental assessment (v1: Exhibit 4) refers to the Bald Eagle and Peregrine Falcon as possibly present but Fish and Wildlife Service predicted no impact and made no special stipulations for their protection. The applicant's on site animal sampling did not record their presence at that time (v2: Exhibit 5). Explain.

RESPONSE:

Discussion of threatened and endangered species are presented in the following *reports: "Wildlife Assessment", pages 8 and 44, Volume 5; "Raptor and General *Avifauna Studies", pages 8-9, Volume 6; and the "Aquatic Resource Inventory", *page 6, Volume 6.

*An additional statement and two exhibits are provided in the 1981 Supplement, Volume 5.

COMMENT 784.21(b)(2),(3) (Section II)

The plan should specifically address raptors, migratory birds, and other protected species, or habitats of unusually high value.

RESPONSE:

A discussion of raptors, migratory birds, other protected species, and high valued habitats is presented in the Raptors and General Avifauna Studies *(July, 1980), located in Volume 6.

*Denotes change or addition (6/81)

784.22

77 Plan
79 Sub.

784.23(a)	Response Follows
784.23(b)(1)	Response Follows
784.23(b)(2)	Response Follows
784.23(b)(3)	Response Follows
784.23(b)(4)	77 Plan 79 Sub.
784.23(b)(5)	77 Plan 79 Sub.
784.23(b)(6)	77 Plan 79 Sub. 80 Sub., Response Follows
784.23(b)(7)	77 Plan 79 Sub.
784.23(b)(8)	80 Sub., Valley Engineering Report
784.23(b)(9)	79 Sub.
784.23(b)(10)	77 Plan 79 Sub. 80 Sub., Various Maps
784.23(b)(11)	79 Sub.
784.23(b)(12)	Response Follows
784.23(b)(13)	Not Applicable

COMMENT 784.23(a) (Section I)

The application should discuss and indicate on a map those lands that are to be affected by mining throughout the life of the mine.

RESPONSE:

A discussion of lands affected by mining and a map showing area of potential subsidence are included in the updated subsidence report. The report and *map are presented in Volume 5.

*Denotes change or addition (6/81)

COMMENT 784.23(b)(1) (Section I)

Utility corridors should be shown on a map.

RESPONSE:

There are no public utility corridors crossing the mine property. All utility corridors for the mine's service are shown on the "Location of Man-Made Features" Maps (Maps 80-4, 80-4a, 4b, and 4c).

COMMENT 784.23(b)(2) (Section I)

Land to be affected by subsidence should be described.

RESPONSE:

A description of the land affected by subsidence is included in the updated subsidence report presented in Volume 4.

COMMENT 784.23(b)(3) (Section I)

Areas for which a performance bond will be posted must be described on a map.

RESPONSE:

The disturbed area is approximately defined by the dotted lines on the surface maps 80-4, 80-4a, 4b and 4c and is more particularly described as follows:

"Being an area of 27.79 acres of land included in metes and bounds described commencing at a point located North 2496.35 feet and East 1328.25 feet from the Southwest corner of Section 12, Township 22 South, Range 4 East, Salt Lake Base and Meridian; thence North 05°40'35" East 475.16 feet; thence North 10°48'06" East 733.69 feet; thence North 09°09'52" East 324.72 feet; thence North 79°52'45" East 566.78 feet; thence South 06°14'10" West 229.10 feet; thence South 02°27'59" West 315.17 feet; thence South 16°33' East 675.62 feet; thence South 04°14'46" East 384.92 feet; thence South 75°06'07" West 457.81 feet; thence South 74°53'25" West 151.96 feet; thence North 73°06'06" West 405.04 feet to the point of beginning."

Map 80-11 depicts the area to be bonded as described above which includes all areas to be disturbed by the placement of surface facilities for the SUFCo operation. The total number of acres to be disturbed within the area to be bonded is 20.88 acres, as discussed within the Response to Comment 784.13(b)(2).

*A 5,620 square foot area (0.129 acres) within the 20.88 acre area adjacent to point H at the mine fan is included in the area for bonding. However, due to its low elevation, it can not be drained with all other disturbed area into the sediment control system. Precipitation runoff is routed into the 72-inch mine area bypass culvert. The area is isolated from the remaining disturbed area by means of an earthen berm and covered with a three-inch layer of washed coarse gravel to eliminate sediment runoff during precipitation events. No equipment (other than the ventilation fan), storage, or

*Denotes change or addition (6/81)

work activity shall be permitted within the area except to maintain the fan.

*No additional bonding will be needed in the event the emergency lease (U-47080) is issued and incorporated into the permit area for there will be no increase in area to be disturbed except for subsidence in the emergency lease area. No portals or shafts will be needed in the emergency lease area.

*Denotes change or addition (6/81)

COMMENT 784.23(b)(6) (Section I)

Maps should be at the required scale (771.23(e)(1)); no cross sections are included; most maps have insufficient detail or are incomplete (see review response, Sections 782.24 and 783.25).

RESPONSE:

Water diversion, collection, conveyance, treatment, storage, and discharge facilities are shown on "Location of Man-Made Features" maps (Maps 80-4, 80-4a, 4b and 4c) presented in Volume 3.

COMMENT 784.23(b)(10) (Section I)

Maps should be at the required scale (771.23(e)(1)); no cross sections are included; most maps have insufficient detail or are incomplete (see review response, Sections 782.24 and 783.25).

RESPONSE:

Maps at appropriate scales have been included in this Application to provide sufficient detail.

COMMENT 784.23(b)(12) (Section I)

Maps should be at the required scale (771.23(e)(1)); no cross sections are included; most maps have insufficient detail or are incomplete (see review response, Section 782.24 and 783.25).

RESPONSE:

Maps at the appropriate scale have been included in the Application to provide sufficient detail.

784.24

77 Plan
77 Adden. #2
79 Sub.

784.25(a)

79 Sub.

784.26(a)	77 Plan 79 Sub. 80 Sub., Response Follows
784.26(b)	77 Plan 79 Sub. 80 Sub., Hydrometrics Report 80 Sub., Response Follows

COMMENT 784.26(a) (Section II)

The air quality monitoring plan (v1: 47-51) probably is not adequate since monitoring will not be conducted upwind and downwind of fugitive sources.

RESPONSE:

Radian Corporation of Austin, Texas, began an upgraded air quality monitoring program for the SUFCo mining operation. An interim report from this program *is presented in Volume 6. A final report will be submitted to the regulatory authorities upon completion of the one year monitoring period.

*Denotes change or addition (6/81)

COMMENT 784.26(b) (Section II)

Section M of the MRP (p. 47-51) discusses fugitive emissions in a generic manner. The fugitive emissions could be further quantified with percent reductions for applicable control measures of 30 CFR 817.95.

The fugitive dust plan should propose control measures as listed in Section 817.95.

RESPONSE:

Fugitive dust information is presented in the Assessment of Particulate *Emissions Report (October, 1980), Volume 6.

*Denotes change or addition (6/81)

785.19 Response Follows

COMMENT 785.19 (Section I)

Alluvial valley floor determination was not made; information necessary for regulatory authority to make determination should be included in the permit application.

RESPONSE:

Determination of alluvial valley floors is presented in the Hydrometrics Report (November, 1980), on pages 67-71, located in Volume 4.

*Further discussion of alluvial valley floors is provided in the 1981 Supplement, Volume 4.

*Denotes change or addition (6/81)

COMMENT No. 1

(USGS)

The narrative on outside rock disposal - page 29 - states in part, "consequently, no waste rock material shall be transported outside of the underground mine for disposal purposes." This could be modified because it may be necessary at some future date to have the coal washed in a preparation facility to achieve maximum economic recovery and an acceptable product. This could be the situation in the new Federal lease U-28297 where there is evidence of the seam splitting. The company has the alternative of including these facilities in the current plan or filing for an approval of a major modification at a later date.

RESPONSE:

The Applicant will not dispose of waste rock material outside of the underground mine without the approvals necessary for such disposal. In the event that outside waste disposal becomes necessary, the Applicant will seek approval of a modification to the mining and reclamation plan to allow outside waste rock disposal.

COMMENT NO. 2

(USGS)

The narrative relative to sub-mains on page 17, vol. 1 states there will be three entries driven to the surface from each one of the 2 & 3 East sub-mains. Map No. 1A of the approved plan only shows two entries breaking out for each sub-main.

RESPONSE:

The entries discussed in the narrative (page 17, volume 1) are not all of the entries which are planned for the SUFCo operations. An additional set of three entries are planned to be developed out from sub-mains in the south-east end of Lease U-28297 (One East) and two entries broken out from Two Right-North Mains in the very back of Quitchupah Canyon.

Map 1A has been modified (shown as corrected on Map 80-2) to indicate three entries in each of two and three East submains and the other ventilation entries are shown as stated above. The narrative, Mine Plan Addendum Volume 1, page 17, should read as follows:

"Map 1A of the Southern Utah Fuel Company Mine Plan, as filed, illustrates the proposed extension to three sets of sub-mains and one set of panel entries out to the west wall of Quitchupah *Canyon. They are designated Two East, Three East, Four North, and Five North. Proposed is the construction of three temporary wooden portals at the ends of these entries which would be located...".

*Denotes change or addition (6/81)

COMMENT No. 3

(USGS)

The original 30 CFR 211 plan dated February 12, 1977, included pending Federal lease U-28297. The review of the plan and subsequent environmental analyses included this area. The plan was approved on February 2, 1978. Approval was restricted to that area then under lease - not U-28297. Our approval letter dated February 3, 1978, included stipulations, one of which required the company to change the mine maps because of the inability of Coastal States to acquire Federal lease U-28297 at that time. We are in agreement with the original submittal; however, since lease U-28297 has been acquired an updated mine map should be submitted showing a 5-year forecast that is consistent with the present mine works.

RESPONSE:

An updated five-year forecast is incorporated within this amended mine plan and is presented in Volume 3 as (Map 80-2).

COMMENT No. 4

(USGS)

We request that the new approval by the Secretary contain a stipulation that the company describe a method of operation and measures by which the operator plans to comply with the obligations and requirements set forth in 30 CFR 211.4 and 211.40 any any special terms and conditions of the lease or license.

RESPONSE:

The Applicant believes that this Mining and Reclamation Plan and Permit Application complies with the obligations and requirements set forth in 30 CFR 211.4 and 211.40 as well as any special terms and conditions of the respective leases or licenses.

COMMENT No. 5

(USGS)

We would also like to have the number of acres affected with each phase of the mining operations.

RESPONSE:

The requested information can be found at in the Response to Comment 782.17, "Permit Term Information".

COMMENT No. 6

(USGS)

Typical cross-section maps of the underground strata including the coal seams should be provided.

RESPONSE:

Cross-sections of core holes in north-south and east-west directions have been shown on "Cross Section A-A'" (Map 80-6), and "Cross Section B-B'" (Map 80-7, located in Volume 3.

COMMENT No. 1

(Fishlake)

The culvert system leading to the sediment pond should be constructed to allow for flushing-out into the sediment pond or otherwise cleaning out any sediment which may accumulate and restrict or block passage of run-off through the system. All sediment removed from the system shall be deposited in the sediment pond, or at another location as approved by the authorized officer, to avoid its entering the natural drainage system or be otherwise uncontrolled.

RESPONSE:

A redesigned sedimentation pond has been approved by the respective agencies. Design of the pond is presented in the Valley Engineering Report which is to replace the design formerly proposed with the 1979 Amendment to the SUFCo mine plan. The area upon which this facility is to be built will be included in the Permit Area and is included within the area to be bonded (Map 80-11).

The Applicant is preparing a Topsoil Storage and Protection Plan for the topsoil from the sedimentation pond area. The plan will be submitted to the regulatory authorities on or by December 15, 1980.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
55 South First East
Richfield, Utah 84701

September 2, 1980

Don A. Crane
Director Office of Surface Mining
Brooks Towers
1020 15th Street
Denver, Colorado 80202

Dear Mr. Crane:

This letter gives the Fishlake National Forest recommendation and concurrence to implement Valley Engineering Alternate #1 to Southern Utah Fuel Company Mine Plan Addendum of October 1979. Alternate #1 is a sediment control program to correct an adverse dirty water problem at SUFCO. It is my understanding that you have already been given copies of Alternate #1 for review.

I am also rescinding previous concurrence given to the mine plan addendum program for correcting the dirty water problem. Alternate #1 will do what is needed with less adverse impacts on soil disturbance than the Mine Plan Addendum program. This concurrence is for the work as submitted in Alternate #1. Deviation from this program will be in violation of our concurrence.

If you have any questions about this letter, please feel free to contact me or District Ranger Charles R. Allred.

Sincerely,

J. Kent Taylor

J. Kent Taylor
Forest Supervisor

United States Department of the Interior

OFFICE OF SURFACE MINING
Reclamation and Enforcement
BROOKS TOWERS
1020 15TH STREET
DENVER, COLORADO 80202

OFFICE OF THE REGIONAL DIRECTOR

SEP 12 1980

Mr. Vernal J. Mortensen
Vice President
Utah Operations
Coastal States Energy Company
411 West 7200 South
Midvale, UT 84047

Dear Vern:

By letter of June 24, 1980, Southern Utah Fuel Company (SUFCO) petitioned the Office of Surface Mining (OSM) for approval of a revised sedimentation pond plan for the Convulsion Canyon Mine. This revised plan supersedes the sedimentation pond plan submitted with SUFCO's mine plan addendum currently considered incomplete by OSM. The revised plan includes the use of a concrete sedimentation basin in conjunction with a sedimentation pond.

After reviewing the revised plan and consulting with the Fishlake National Forest and the U.S. Geological Survey, OSM approves the revised plan with one stipulation. The stipulation requires SUFCO to state in writing, prior to dam construction, that SUFCO will comply with the requirements of the Mine Safety and Health Administration (30 CFR 77.216). This requirement should not prevent immediate construction of the access road, concrete sedimentation basin, or associated diversions.

Both OSM and the Forest Service consider the revised plans to be environmentally better than the initial sedimentation pond plan. OSM commends SUFCO for taking the initiative to make use of new technology. It is our wish to work closely with SUFCO on monitoring the effectiveness of this system.

Attached for your information is OSM's technical review of the sedimentation control system. I want to emphasize that prior to construction of the dam, OSM needs written acceptance by SUFCO of the above noted stipulation.

If you have any questions in regard to this approval, please contact John Nadolski of my staff (303-837-3773).

Sincerely,

DONALD A. CRANE

Attachment

cc: Mortensen, SUFCO (with attachment)
Taylor, USFS (with attachment)
Moffit, USGS, Salt Lake City (with attachment)
Trippe, USGS, Denver

Sedimentation Pond Technical Review

Sediment Storage Volume

The applicant proposed to make use of a concrete sedimentation basin on the top of the hill. The sedimentation basin will make use of filters, physical settling, and chemical floculation and will be in series with the sedimentation pond. It is estimated that a minimum of 65 percent of the total sediment volume from the mine portal facilities and crusher area will be removed by the sedimentation basin. A total of 12.0 acres will drain into the sedimentation basin. Between the sedimentation basin and the sedimentation pond is 2.5 area of slope fill which drains into the sedimentation pond.

A total of 0.34 acre-feet of sediment storage is reserved in the sedimentation pond.

Summary: Will comply with 717.17(e)(2).

Detention Time

Assuming a permanent pool condition, the sedimentation pond contains 1.18 acre-feet of storage between the principle spillway and the emergency spillway. Using the equation for steady state discharge, OSM calculated the theoretical detention of approximately 7.2 hours. This does not take into account credit for the permanent pool which would add a theoretical detention time of 9.7 hours (Ward, Barfield, and Tapp, 1979. Sizing Reservoirs for sediment control from Surface Mine Lands, University of Kentucky, Lexington, December 3-7, 1979).

Summary: Will comply with 717.17(e)(3).

Dewatering Device

A 12-inch MJ ductile iron pipe with an oil skimmer will be used as the principle spillway.

Summary: Will comply with 717.17(e)(4).

Short Circuiting

The sedimentation pond is oval in shape, approximately 110-feet long by 90-feet wide. The possibility of short circuiting does exist; however, rip-rap used in the energy dissipator (for the discharge from the sedimentation basin) should act as a baffle and disperse the water.

The sedimentation basin is rectangular in shape with a length/width ratio of 2:1. Also, friction treads are incorporated into the floor of the basin to reduce the velocity of and to disperse the water.

Summary: Will comply with 717.17(e)(5).

Outflow Through the Emergency Spillway

Runoff from the 10-year, 24-hour precipitation event is calculated to be 1.25 acre-feet. Assuming the worse-case condition of a permanent pool up to the level of the principle spillway, there is 1.19 acre-feet of storage spillway between the principle spillway and the crest of the emergency spillway. The principle spillway has the capacity to discharge the excess (0.07 acre-feet) in approximately 10 minutes.

Summary: Will comply with 717.17(e)(7).

Sediment Removal

Sediment will be removed from the sedimentation pond when the sediment volume reaches 60 percent of the total sediment volume.

Summary: Will comply with 717.17(e)(8).

Freeboard

Maximum water level is at elevation 7418 the maximum dam level is at elevation 7422. Seven feet separate the principle and emergency spillway.

Summary: Will comply with 717.17(e)(9).

Embankment Material and Settlement

Material for construction of the dam will conform to U.S. Bureau of Reclamation for design of small dams and will be obtained locally from previously disturbed areas. The earthwork structures will be designed with a minimum 1.5 to 1 safety factor.

Summary: Will comply with Section 717.17(e)(11), (15), and (16).

Top Width

As designed, the top width of the dam will be a minimum of 12-feet. The minimum required top width calculated by OSM 13.6-feet; however, a safety factor of 1.5 to 1 designed into the earthworks by the applicant.

Summary: Will comply with 717.17(e)(12).

Embankment Foundation

The dam will be keyed into the Star Point Formation.

Summary: Will comply with 717.17(e)(14).

Side Slopes

The downstream embankment slope is 2h:1v while the upstream embankment slope is 3h:1v.

Summary: Will comply with 717.17(e)(13).

Large Dams

The proposed dam height is 37-feet; therefore, the requirements for large dams is applicable.

The emergency spillway is designed to safely discharge the runoff resulting from the 100-year, 24-hour precipitation event (94 cfs) without considering the use of the principle spillway.

All significant hydraulic structures and earthwork structures are designed with a minimum 1.5 to safety factor. An anti-seep collar will be used on the principle spillway.

No commitment to the criteria of the Mine Safety and Health Administration (30 CFR 77.216) has been made.

Summary: Will comply with 717.17(e)(17)(i)(ii), & (iii); however, the applicant must commit to the requirements of 30 CFR 77.216 (717.17(e)(20).

Professional Engineer Certification

The plans are certified by a registered professional engineer for the State of Utah.

Summary: Will comply with Public Law 95-87, Section 515(b)(10)(3)(ii).

Removal of Sedimentation Pond

The applicant designed to sedimentation pond at the base of the fill in order to connect up with the portal facilities during final reclamation. OSM encourages the concept of keeping the control facilities close to the disturbed area, however, a problem arises. Sedimentation control is needed until the water quality requirements have been met. If the sedimentation pond is backfilled as suggested in the plan, another sediment control facility will be required at that time.

Associated Facilities

Access Road

The access road falls into the variance of 717.17(j)(4).

Glen A. Zumwalt
Vice President &
General Manager

Southern Utah
Fuel Company
P.O. Box P
Salina, Utah 84654
(801) 529-7428 Office
(801) 286-2361 Mine

Subsidiary of
Coastal States
Energy Company

October 2, 1980

Donald A. Crane, Regional Director
Office of Surface Mining
Brooks Towers
1020 15th Street
Denver, Colorado 80202

Re: OSM approval of SUFCo's revised sedimentation pond plan dated September 12, 1980.

Dear Mr. Crane:

The OSM approval of SUFCo's revised sedimentation pond design included one stipulation. This stipulation requires SUFCo to state in writing prior to commencing construction of the sedimentation pond dam that it will comply with 30 CFR 77.216.

SUFCo will comply with all regulations enforced by MSHA including 30 CFR 77.216. A copy of SUFCo's correspondence to the MSHA District Director, Mr. John Barton, regarding SUFCo's compliance with 30 CFR 77.216 is attached.

Construction of the sedimentation pond system is well underway. Dam construction will commence October 8th. The project is expected to be completed this year.

Your cooperation is appreciated.

Glen A. Zumwalt

GAZ:rtb

xc: Vernal J. Mortenson

bxc: BGL
JAW
KAF
MLD

Glen A. Zumwalt
Vice President &
General Manager

Southern Utah
Fuel Company

P.O. Box P
Salina, Utah 84654
(801) 529-7420-Office
(801) 286 2381-Mine

Subsidiary of
Coastal States
Energy Company

October 2, 1980

John Barton, District Director
Mine Safety and Health Administration
U.S. Department of Labor
P.O. Box 25367, DFC
Denver, Colorado 80225

Re: SUFCo Sedimentation Pond

Dear Mr. Barton:

Tuesday, September 30th, I conversed with Mr. Harold Dolan and Mr. Bill Denning of your office regarding impending construction of a sediment control system at SUFCo's Convulsion Canyon mine. I am sending you this letter and an attached plan of the sediment pond dam for your information as requested by Mr. Denning.

SUFCo has reviewed current MSHA regulations regarding such impounding structures (30 CFR 77.216) and finds that:

1. The pond's maximum impounding capacity is 1.62 acre feet.

2. The dam height is 18 feet from the spillway elevation to the upstream toe of the structure.

3. The location of the pond is below the minesite and the mine access route and therefore poses no hazard to coal miners.

These findings indicate the requirements of 77.216 do not apply to this structure. The attached drawing is supplied for MSHA's verification of SUFCo's conclusion.

(continued next page)

SUFCo has begun construction of the sediment control system based on OSM approval granted September 12, 1980. However, construction of the dam has not been started pending written notification to OSM by SUFCo that SUFCo will comply with 30 CFR 77.216. SUFCo is submitting that notification to OSM simultaneously with this letter to your office.

SUFCo will begin construction of the dam structure on October 8th, with the assumption the above review of the requirements of 77.216 as communicated with your office Tuesday is correct. If you need any additional information, please call.

Glen A. Zumwalt

GAZ:rtb

xc: Lamar Bishop, Subdistrict Manager, MSHA, Price, UT

U. S. Department of Labor

Mine Safety and Health Administration
P O Box 25367
Denver, Colorado 80225

Coal Mine Safety & Health
District 9

October 10, 1980

Glen A. Zumwalt
Vice President &
General Manager
Southern Utah Fuel Company
P.O. Box P
Salina, UT 84654

Re: Southern Utah Fuel
I.D. No. 42-00089
SUFCo Sedimentation Pond

Dear Mr. Zumwalt:

We are in receipt of your letter dated October 2, 1980, regarding the sedimentation pond at SUFCo's Convulsion Canyon Mine. Section 77.216, 30 CFR, requires the operator to submit impoundment plans whenever the impounding structure can (1) have a storage capacity of at least 20 acre-feet and a minimum depth of 5 feet above the upstream toe of the dam, or (2) impound water to a minimum depth of 20 feet or more above the upstream toe of the day, or (3) present a danger to the coal miners.

After reviewing your letter and attached material, it is apparent that the impoundment at Convulsion Mine does not meet these criteria and will not fall under MSHA jurisdiction. As such, no impoundment plan will be required.

Sincerely,

for John W. Barton
District Manager

COMMENT No. 2

(Fishlake)

Water bars should be constructed and/or maintained to ensure effectiveness.

RESPONSE:

Water bars should be constructed in all road drainage ditches and across all sloping ungraveled roads to prevent erosion of ditches and roads.

Water bars in roadside ditches shall be constructed of rocks to form low dams across the ditches. The rocks will be substantial enough to resist movement during anticipated run-off flows. They will be arranged to channel water down the center of the ditch rather than around the water bar ends to prevent erosion of the ditch side walls. Accumulations of sediment behind ditch water bars will be permitted to rise to the lowest height of the bar.

Water bars shall be constructed across dirt roads within the disturbed areas to channel water off the road onto downslopes or into roadside ditches. They will be constructed of in-place road material arranged in such a manner that hydrologic energy will be reduced prior to the water bar discharge pond. In cases where the water must be discharged on a downslope, the discharge will be channeled into existing natural drainways. Riprap will be in place along these transitions to minimize the potential for topsoil erosion. Water bars have already been constructed on the road up East Spring Canyon along the surface facilities. Upon completion of the sediment pond, water bars shall also be constructed on the access road to that facility.

COMMENT No. 3

(Fishlake)

Those portions of the sediment control system, including the sediment pond, which are located outside of the lease area will require authorization by Forest Service Special Use Permit.

RESPONSE:

The southern-most extent of the sediment dam construction is located 180 feet south of the lease boundary across East Spring Canyon. The Fishlake National Forest Service has approved the construction as proposed with the stipulation that the dam site be included in the disturbed mine permit area and subject to final reclamation. The area is included in the calculation of the disturbed area subject to bonding and in the calculation of final reclamation costs.

COMMENT No. 4

(Fishlake)

The plan for monitoring surface water is adequate. However, efforts have been made to implement the plan, but monitoring structures have failed. New efforts are needed in order for implementation.

RESPONSE:

Previous monitoring structures have failed due to heavy rainfall and/or large water flows. Those failing have been replaced with modified structures to ensure permanence. Any existing structure which fails will be replaced with sturdier installations.

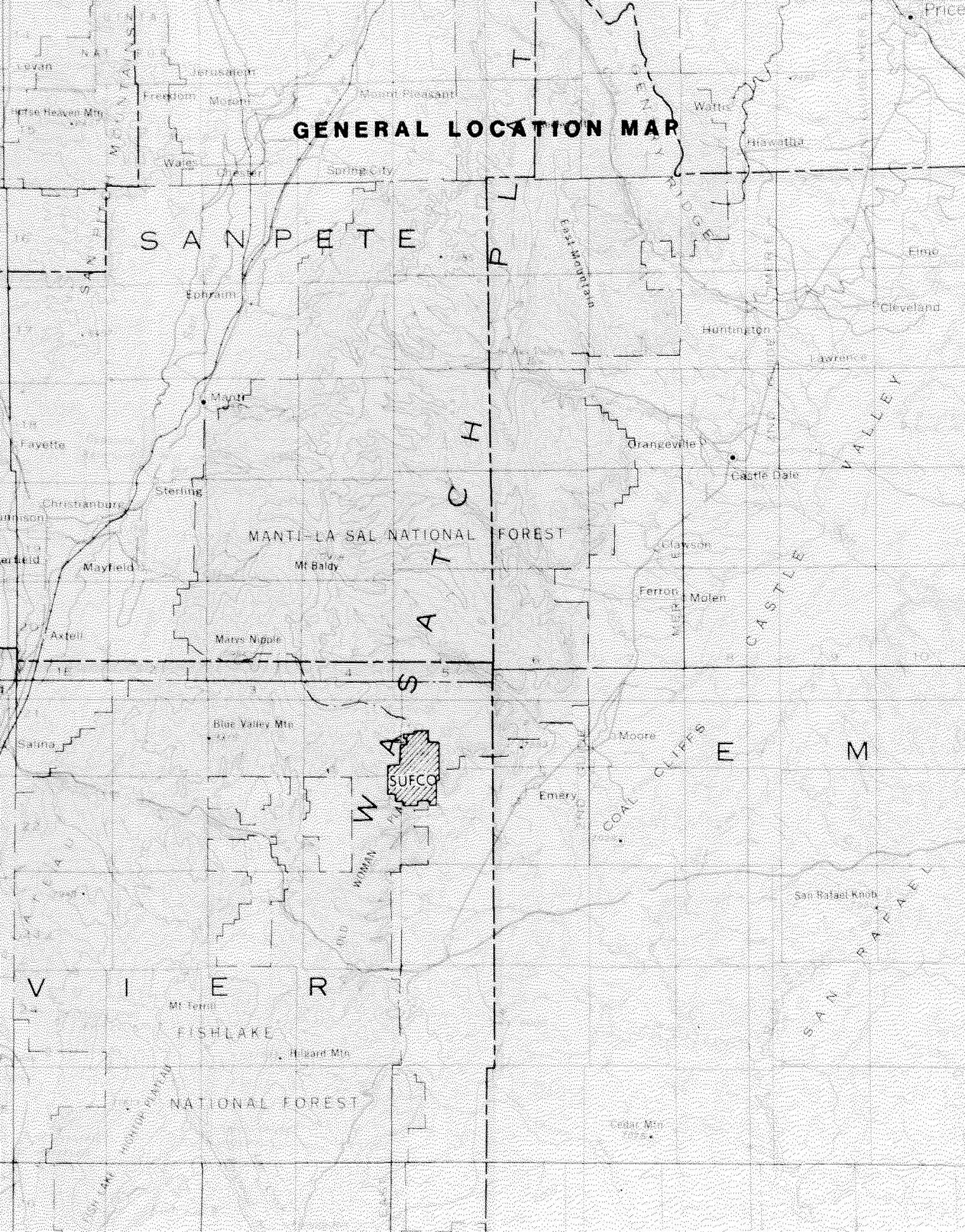
COMMENT No. 5

(Fishlake)

Species of vegetation to be used in reclamation activities shall require approval by the Forest Service.

RESPONSE:

All species of vegetation to be used in reclamation activities, whether planted by seed or seedlings, shall be approved by the appropriate governmental agencies before use in reclamation.


GENERAL LOCATION MAP
SANPETE
SEVIER
EMERY
MANTI-LA SAL NATIONAL FOREST
FISHLAKE
NATIONAL FOREST
SUFCO
Price
Wattis
Helper
Spring City
Ephraim
Mayfield
Fayette
Sterling
Christensen
Axtell
Mt Baldy
Mans Nipple
Blue Valley Mtn
Salina
Mt Terrill
Heard Mtn
Fish Lake Plateau
East Mountain
Huntington
Cleveland
Elmo
Lawrence
Orangeville
Castle Dale
Clawson
Ferron
Molen
Moore
Emery
San Rafael Knob
Cedar Mtn
Wasatch Plateau
Book Cliffs
Coal Cliffs
San Rafael Swell
Castle Valley
Muddy Creek
Salina Canyon