Coastal States Energy Company

1979

PROPOSED DRILLING PROGRAM

for

SOUTHERN UTAH FUEL COMPANY

FEDERAL COAL LEASE U-28297

SEVIER COUNTY, UTAH

COASTAL STATES GAS CORPORATION

Loren A. Williams
Vice President
Resource Acquisition

0010

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Subsidiary of
Coastal States
Gas Corporation

March 27, 1979

Mr. Jackson W. Moffitt
Area Mining Supervisor
Branch of Mining Operations
U.S. Geological Survey
Room 8426, Federal Building
Salt Lake City, Utah 84111

Dear Mr. Moffitt:

Submitted with this letter are seven copies of a proposed 1979 drilling program and seven copies of a proposed 1979 seismic program, both programs to be conducted on federal coal lease U-28297. Please note that no archaeological report is attached. Archaeological inspection of seismic lines, drill sites, and certain access routes will begin as soon as the area is accessible.

Very truly yours,

Loren A. Williams

Loren A. Williams

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Proposed Drilling Program

for

SOUTHERN UTAH FUEL COMPANY

SEVIER COUNTY, UTAH

Submitted Pursuant to 30 C.F.R. 211.10

To: Mr. Jackson W. Moffitt
Area Mining Supervisor
Branch of Mining Operations
U.S. Geological Survey
Room 8426, Federal Building
Salt Lake City, Utah 84111

From: Loren A. Williams
Vice President, Resource Acquisition
Coastal States Energy Company
Nine Greenway Plaza
Houston, Texas 77046

TABLE OF CONTENTS

Name and Address of Responsible Person 1

Brief Description - Geology 1
Water 3
Vegetation 3
Wildlife 4
Land Use 4

Drilling Operations 5
Protection of the Environment 7
Surface Reclamation 9

Estimated Time Table 11

Reference 12

EXPLORATION PLAN

1. PROJECT RESPONSIBILITY

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2. DESCRIPTION

Geology

The coal which is extracted from the SUFCo No. 1 Mine occurs in the lower portion of the Blackhawk Formation of the Mesaverde Group of sediments of Upper Cretaceous age. Doelling identifies the seam as being the Upper Ivie bed while we call it the Upper Hiawatha. The Blackhawk is overlain by the Price River Formation including the Castlegate Sandstone, and is underlain by the Star Point Sandstone all being members of the Mesaverde Group (Figure 1).

The Price River Formation is the youngest or uppermost competent sedimentary unit exposed in the vicinity of the mine. It is the uppermost member of the Mesaverde Group and consists of gray to white sandstone interbedded with subordinate shale and conglomerate. The formation is resistant to weathering and is a ledge and slope former. In the vicinity of the mine it is the uppermost unit capping the mesa which forms the Old Woman Plateau. The formation is reported to be about 550 feet thick near the mine.

The Castlegate Sandstone is a massive, cliff-forming, white to gray, coarse-grained sandstone, often conglomeratic, and which weathers

brown. It is considered as the basal member of the Price River Formation. It overlies the Blackhawk Formation and is reported as being 90 to 200 feet thick (Doelling). The Castlegate Sandstone, together with the other beds of the Price River Formation, constitutes the cap rock which forms the mesa and plateau landforms in the area of lease U-28297.

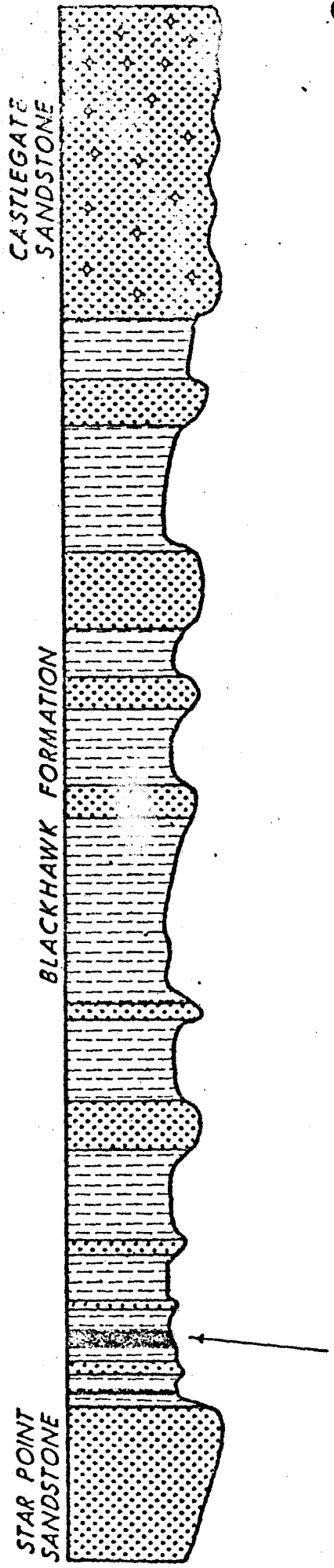
The Blackhawk Formation, according to Doelling, consists of "yellow to gray, fine to medium-grained sandstone, interbedded with subordinate gray and carbonaceous shale (and having) several thick coal seams." He presents a section of the Blackhawk Formation measured in Quitchupah Canyon in the SE-¼, NE-¼ of Section 8, Township 22 South, Range 5 East as having a thickness of about 670 feet. In this section, the Upper Hiawatha (Ivie) bed lies about 50 feet above the base of the Blackhawk.

The Blackhawk Formation is underlain by the Star Point Sandstone, also of the Mesaverde Group. The Star Point Sandstone is reported by Doelling as consisting of a "yellow-gray, massive cliff-forming sandstone often in several tongues separated by Masuk Shale." The Star Point Sandstone is from 200 to 300 feet thick near the mine.

Generally, the sediments have a strike which trends roughly northeast and a shallow dip of about 250 feet per mile to the northwest. Several small faults, most of which have an apparent vertical displacement of about 3 feet or less, have been encountered in the mine workings. One fault has an 8' displacement. These faults have a trend of about N 10 to 15 degrees W and are near-vertical. A joint set occurs parallel to the fault trend and another bears a normal or conjugate relationship.

GENERALIZED STRATIGRAPHIC SECTION

Federal Coal Lease U-28297



LIGHT - GRAY TO WHITE, MEDIUM - TO COARSE - GRAINED SANDSTONE, CONGLOMERATIC IN PART

MEDIUM - GRAY TO BLACK SHALE, SILTY SHALE, AND CLAYSTONE, WITH ABUNDANT LIGHT - GRAY, VERY FINE - TO MEDIUM - GRAINED SANDSTONE BEDS AND LENSES, AND SPARSE MEDIUM - GRAY, THIN - BEDDED SILTSTONE

UPPER HIAWATHA SEAM

AVERAGES 15 FEET IN THICKNESS, THICKER TOWARDS THE NORTHWEST AND THINNER TOWARDS THE SOUTHEAST.

Bottom Of Seam 20 Feet To 40 Feet Above Top Of Star Point Sandstone

LIGHT - GRAY TO WHITE, VERY FINE - TO MEDIUM - GRAINED, BURROWED SANDSTONE WITH SORTINGS AND GRAIN SIZE INCREASING UPWARDS

FIGURE 1

It is along these faults that much of the underground seepage of water is encountered. This structure has not significantly affected mining to date, but may have an adverse affect on total coal recovery.

Water

Surface drainage from the lease area comprises the eastern extremities of East Spring Canyon. There are no measurable stream flows or springs.

All groundwater aquifers will be protected by cementing the drill hole in compliance with the "Rocky Mountain Area Well Abandonment Requirements."

Hydrology of the area is covered comprehensively in the SUFCo Mine Plan submitted by Coastal States to the USGS, February 12, 1977.

Vegetation

Vegetation changes from one landform to another. On the benches landform, there is a combination of sagebrush-grass community and ponderosa pine stands. Also occurring intermixed in these types are patches of low quality Quaking Aspen, Mountain Mahogany, and Manzanita brush. Ground cover is composed of several native grasses, forbs, and low brush species. Density is generally good.

The steep slopes and scarp faces landform is sparsely vegetated. Pinyon, Juniper, and Mountain Mahogany are scattered over the landform. The site is very harsh and ground vegetation is limited to light quantities of native grasses and forbs in cracks and shelves where soil can accumulate. Composition includes a few drought resistant grasses, annual forbs, Mountain Mahogany and other brush.

Narrow stringers in the canyon bottoms landform are the most productive in the area. Vegetation is primarily native grass, low brush and forbs growing together to form a heavy sod. Brush types include willow, rose, rabbit brush, sand brush and others. Carex grows in some of the wetter spots. Only an occasional tree occurs in the bottom.

The rolling hills landform is covered by an occasional small patch of trees which include Ponderosa Pine, Douglas-fir, Alpine-fir, Spruce and Aspen. More common are brush species including oak, snowberry, and sagebrush. Grasses and forbs are very sparse and include several native species.

No threatened or endangered plants are known to occupy the lease area.

Wildlife

The lease has a similar component of animals common to the Old Woman Plateau. Of the number of animals common to this area, only a few might be impacted by exploration activities. Bald eagles have been observed, and it is believed eagles winter in the steep slopes and scarp faces on the eastern edge of the lease. Mule deer use the area for summer range. Elk winter is in the lease area. Black bear, coyote and mountain lion are present. The intermittent flow of streams is not capable of supporting fishlife. The only rare and endangered species that might occur is the bald eagle.

Land Use

The surface area is grazed by cattle under the Quitchupah C and H

allotment. The allotment is under an intensive rest-rotation management system. Several ranchers in Emery are dependent on the allotment. Structural range improvements include one watering trough and two cattle guards on the access route into the lease. Water in the trough is supplied by a spring.

Recreation is primarily big game hunting. It is light, occurring over a month's period of time each year. Snow-mobiling also occurs.

The timber on the lease area is open grown Ponderosa Pine. All commercial stands occur on the benches. Trees are of low quality because of the poor tree growing site. Cutting is limited to older over-matured trees.

Land use in the surrounding area is covered comprehensively in the U.S. Forest Service report, Final Environmental Statement for Land Use Plan - Salina Planning Unit.

3. DRILLING OPERATIONS

The drilling program in lease U-28297 (proposed locations plotted on Plate 1) as outlined in this report is designed to accomplish several objectives. The first objective is to delineate structures within the Upper Hiawatha coal seam which were noted in holes drilled in lease SL-052583 to the West. The structures are thought to extend across parts of lease U-28297. The program will facilitate the acquisition of more accurate reserve data than is presently available and will also provide data on coal quality, roof and floor rock composition and faulting which may affect future mine planning. The program consists of two parts - primary drilling and contigency drilling. Eight holes (listed on Table 1) are planned which

Coastal States Energy Company feels will accomplish the above mentioned objectives. In the event that structures within the Upper Hiawatha deviate from the anticipated trend, seven contigency holes have been planned. The contigent operations are necessary for an effective drilling program, and have been designed with full consideration for the surface lands and will be carried out in such a manner as to assure minimal permanent surface disturbance. An attempt has been made to locate drill holes along existing roads where possible. At those locations where road work is necessary, it has been deigned to minimize excavation and disturbance of vegetation. Where a side hill cut may be required, it will be done so that the original slope can be restored as close as possible and reseeded.

It is anticipated that one drilling rig (Gardner Denver 1500 or 2000 or equivalent sized truck) will be contracted from a reputable firm. Drill sites will be prepared in the following manner. Any sagebrush or other vegetation presenting a fire hazard will be cleared in an area approximately 40 feet by 60 feet. This area will accommodate the drilling rig, drill service vehicle, water truck, logging truck and vehicles for transporting drilling and supervisory crews. At each site, a mud pit eight feet wide by ten feet long by five feet deep will be dug to contain cuttings and drilling fluid. Topsoil will be stockpiled separately.

Surface casing will be set as follows. A 10½ inch holeopener will drill well through alluvium and any surface water. Surface casing (6 5/8 inches) will be set, and grouted with neat cement if necessary. Surface casing will usually extend about one foot above ground level.

The hole will be drilled as follows:

1. Change to 5 5/8 inch tricone rock bit.
2. Drill to about 200 feet with air.
3. Drill to core point with air-mist injection.
4. Core 30 feet of roof, coal seam, and 5 feet of floor with 4½ inch by 3 inch core barrel.
5. Ream cored interval with 5 5/8 inch tricone rock bit.
6. Drill about 100 feet to total depth.

The logging unit will be on standby in the project area. Immediately after pulling out the drill steel after reaming, the logging probe will be run in the hole. The hole will be filled with water as the probe comes up the hole.

Water will be hauled from an approved source by truck.

Use of air-mist injection will minimize water usage and will also minimize water truck travel on location roads.

Drill water economy cannot be estimated at this time. Drilling mud will be used only in the event of circulation problems.

Protection of the Environment

The preservation of the environment will be taken into account through all phases of this drilling program. All drill sites are planned to minimize disturbance to the terrain.

Pits will be used to contain all water and mud used in drilling. These drilling fluids will not be allowed to run into the stream drainages.

All groundwater aquifers will be protected by cementing the drill hole in compliance with the "Rocky Mountain Area Well Abandonment Requirements."

Throughout all phases of this drilling program, the personnel of the district ranger's office of the U.S. Forest Service will be informed of all drilling and reclamation progress.

It has been the policy of this company to reclaim all drill sites and associated roads to the same condition, or in some cases, better condition than they were prior to drilling. During this drilling program and in the future, we shall continue to protect all aspects of the environment in the region.

Air pollution - no burning will be allowed.

Wild life - drilling operations are curtailed from November 1 through April 1 to avoid interfering with wintering elk.

Other resources - no producing oil, gas, or water wells exist in the lease area.

Public Health and Safety - drilling operations will be conducted in a safe and efficient manner, minimizing the contact with the public and environment.

Laws and Regulation - Responsibility lies within Coastal States Energy Company to comply with all regulations of the BLM, USGS, Forest Service and State of Utah and to assure that contractors and subcontractors know and understand the exploration plan and its stipulations. Sundry

notices will be submitted to the USGS in a timely manner after exploration is completed.

Surface Reclamation

Reclamation will be performed contemporaneously with drilling.

Upon completion of drilling and testing, an attempt will be made to remove drill casing from the holes. The holes will then be cemented bottom to top, then site restoration will be commenced. The site will be cleaned and all material foreign to the natural setting will be buried and removed. Liquids in the pits will be allowed to evaporate and the remaining cake will be removed. The pit will be filled with the stockpiled soil. The area will be raked with a power rake and the seed mixture will be sown with a hand spreader. Seed will be buried by a drag attached to a pickup. Since drilling will take place during the dry summer months, seeding will be postponed until the fall season. No fertilizer will be applied to avoid attracting animals to a greener patch.

Seed Mixture and Density

Crested Wheatgrass - Fairway strain	4# per acre
Sodar Streambank Wheatgrass	4# per acre
Hard Fescue (Durar)	4# per acre
Ladak Alfalfa (innoculated)	2# per acre
	14# per acre

4. ESTIMATED TIME TABLE

The archaeological survey will be conducted as soon as it is possible to get to the area, probably in May or early June, 1979.

The drilling program would begin as soon after May 15, 1979, as feasible and continue through August, 1979. We have estimated that no more than ten days will be required for any one drill site. A list of hole locations and depths is given in Table 1.

TABLE 1

Preliminary Drill Hole Locations

Hole #	Location (T22S, R5E, SLM)	Elevation	Total Depth (estimated)
US-79-1	Sec 7: NW¼ SW¼ SE¼	8490'	920'
US-79-3	Sec 7: SW¼ SE¼ NE¼	8520'	960'
US-79-5	Sec 8: NE¼ SE¼ SW¼	8580'	1010'
US-79-8	Sec 8: NW¼ SW¼ NE¼	8570'	1000'
US-79-11	Sec 5: SE¼ SW¼ SW¼	8515'	965'
US-79-13	Sec 5: NE¼ NW¼ SW¼	8540'	1010'
US-79-14	Sec 5: NE¼ SE¼ NW¼	8550'	1030'
US-79-15	Sec 5: SW¼ SW¼ NE¼	8560'	1030'

Contigency Drill Hole Locations

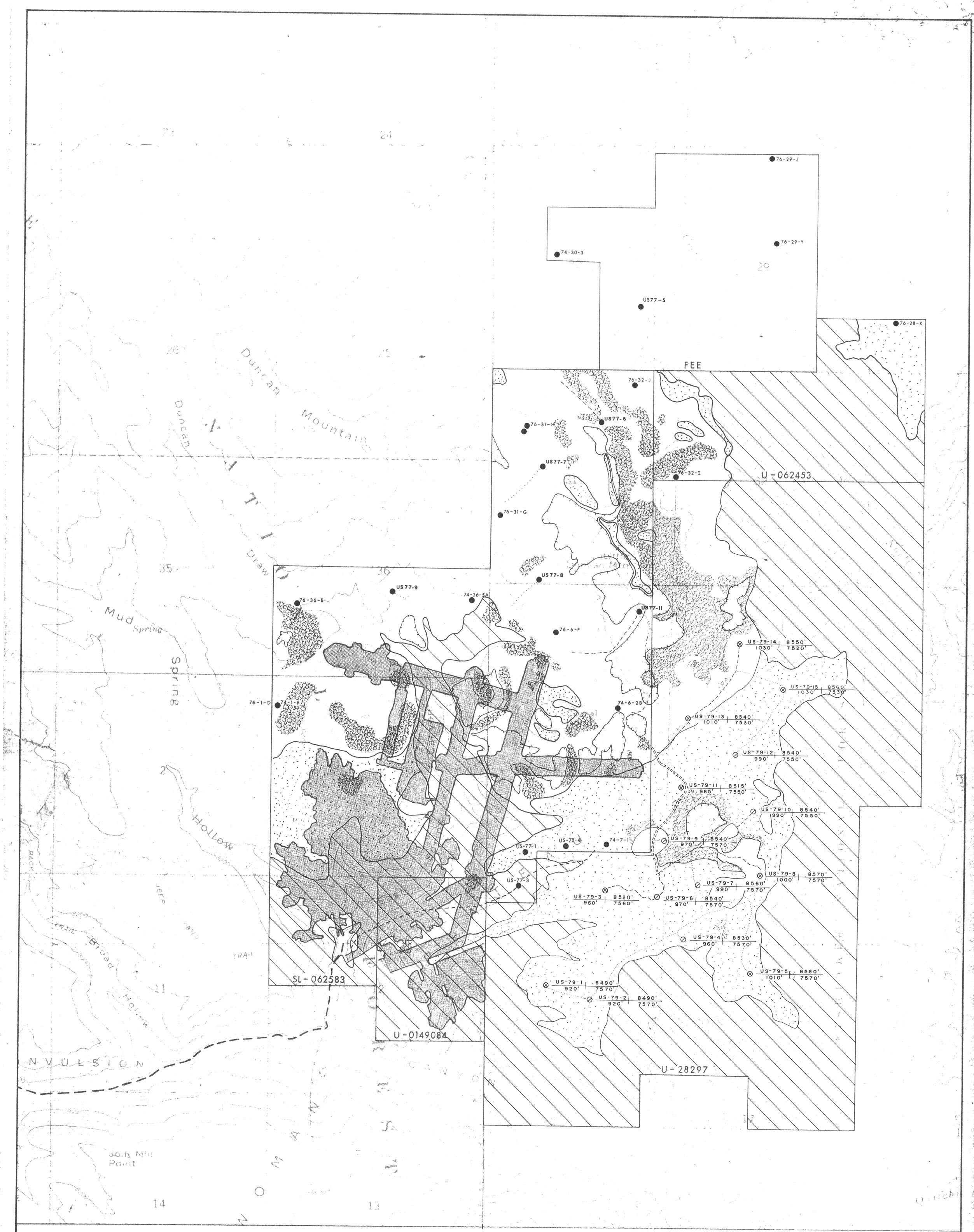
(To be drilled only if desirable

due to primary drilling results)

Hole #	Location (T22S, R5E,SLM)	Elevation	Total Depth (estimated)
US-79-2	Sec 7: SW¼ SE¼ SE¼	8490'	920'
US-79-4	Sec 8: SE¼ NW¼ SW¼	8530'	960'
US-79-6	Sec 8: SW¼ SW¼ NW¼	8540'	930'
US-79-7	Sec 8: SE¼ SW¼ NW¼	8560'	990'
US-79-9	Sec 8: SW¼ NW¼ NW¼	8540'	970'
US-79-10	Sec 8: NE¼ NE¼ NW¼	8540'	990'
US-79-12	Sec 5: NE¼ SE¼ SW¼	8540'	990'

REFERENCE

Doelling, H. H., 1972, Central Utah Coal Fields: Sevier-Sanpete, Wasatch Plateau, Bookcliffs and Emery, Utah Geological and Mineralogical Survey Monograph Series, No. 3.



SOUTHERN UTAH FUEL COMPANY

EXPLORATION PLAN 1979

EXPLANATION

- ● PREVIOUS DRILL HOLE LOCATION
- ==== ROAD
- ---- EXISTING JEEP ROAD
- ..... PROPOSED ACCESS ROAD

⊗ PRIMARY DRILL HOLE LOCATION

⊘ CONTINGENCY DRILL HOLE LOCATION

SHOWING:

HOLE NO. | SURFACE ELEVATION
TOTAL DEPTH | ELEVATION HOLE BOTTOM

VEGETATION TYPE & DENSITY

- PINE STANDS (5—10 Trees per Acre)
- ASPEN & MOUNTAIN MAHOGONY
- CLIFFS & CANYONS (Pine, Pinyon & Juniper)
- GRASS & LOW BRUSH

UNMARKED— SAGEBRUSH

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

Plate I

CLC 2·2·79
DRA 6·30·77

EXPLANATION

- PROPOSED DRILL HOLE
- ACCESS ROAD (new)
- PROPOSED WATER MONITORING

Rec. 7/26/79 XMY

N

ROUTT COUNTY DEVELOPMENT LTD.
COASTAL STATES ENERGY COMPANY

McKINNON PROPERTIES

Carbon and Emery Counties, Utah

Drawn by	Date 8/31/78
Geology by	Date
Approved by	Date

PROPOSED DRILLING PROGRAM

Drawing no