



MEMORANDUM

To: Carolyn McKee

Date: September 26, 1990

Subject: FC Federal #16
W/2, Section 9, T27N, R8W
Unorthodox Location

The Fruitland Coal drilling window in the southwest quarter of this section is on the side of Blanco Mesa with 600' of elevation relief across the window. All other wells in this quarter section have been drilled unorthodox.

The original orthodox location proposed was rejected during the BLM onsite due to topography and drainage. The location was restricted in width to 150' with a 20' cut and a 20' fill. This location was bounded by a mesa face on one side and a hard sandstone bottom wash on the other side. Due to topography the cut and fill slopes would be vertical with no drainage diversion other than on location which did not meet BLM's location specifications. The access road would have to move a 30' hill which also did not meet BLM's surface management criteria. The BLM would not consider any other alternate location in the drilling window due to topography.

The location was moved into the northwest quarter of the section. Directional drilling back into an orthodox bottom hole location in the southwest quarter is not practical due to the shallow depth (1900') of the Fruitland Formation and mechanical problems associated with sucker rod pumping a directional well.

Ted Cottrell

Ted L. Cottrell

tlm

xc: EEH, WRMc, JAB, Well File

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK
 DRILL DEEPEN PLUG BACK

b. TYPE OF WELL
 OIL WELL GAS WELL OTHER SINGLE ZONE MULTIPLE ZONE

2. NAME OF OPERATOR
 Mesa Operating Limited Partnership

3. ADDRESS OF OPERATOR
 P.O. Box 2009, Amarillo, Texas 79189

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
 At surface 2520 FNL & 1525 FWL
2155 FSL & 970 FWL
 At proposed prod. zone
 Same

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
 15 miles SE of Blanco, New Mexico

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any) 970'

16. NO. OF ACRES IN LEASE 320

17. NO. OF ACRES ASSIGNED TO THIS WELL W/2 320

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT. 1300'

19. PROPOSED DEPTH 2330'

20. ROTARY OR CABLE TOOLS Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)
 6049' GR

22. APPROX. DATE WORK WILL START*

5. LEASE DESIGNATION AND SERIAL NO.
 NM 029144

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
 FC FEDERAL

9. WELL NO.
 # 16

10. FIELD AND POOL, OR WILDCAT
 Basin Fruitland Coal

11. SEC., T., E., M., OR BLK. AND SURVEY OR AREA
 Sec. 9-27N-8W

12. COUNTY OR PARISH 13. STATE
 San Juan NM

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
12 1/4"	8 5/8"	24#	200'	150 'B' + 2% CaCl (Surface)
7 7/8"	5 1/2"	17#	2330'	300 Poz/200 "B" (Surface)

Propose to spud well with 12 1/4" hole and drill to 200' and set 8 5/8" surface casing. Will cement with 150 sx of Class "B" (177 Ft³) and raise cement to surface. Will nipple up 2000 psi BOP assembly and drill 7 7/8" hole to TD of + 2330' with fresh water mud system. Will then log well and evaluate for possible commercial production. If successful, will then run 5 1/2" casing to + 2330' and cement with 300 sx Pozmix (570 Ft³) followed by 200 sx (230 Ft³) Class "B" cement. Will move off drilling rig and move in completion unit.

xc: BLM-Farmington (0+5), NMOCD-Aztec (1), WF, Reg, Land, Expl., Drlg.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program if any.

24. SIGNED Carey L. McKee TITLE Regulatory Analyst DATE 6/20/90

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY _____ TITLE _____ DATE _____
 CONDITIONS OF APPROVAL, IF ANY:

*See Instructions On Reverse Side

Submit to Appropriate District Office
 State Lease - 4 copies
 Fee Lease - 3 copies

State of New Mexico
 Energy, Minerals and Natural Resources Department

Form C-162
 Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088
 Santa Fe, New Mexico 87504-2088

DISTRICT I
 P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
 P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
 1000 Rio Brazos Rd., Aztec, NM 87410

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator MESA OPERATING LIMITED PARTNERSHIP		Lease FC FEDERAL		Well No. 16
Unit Letter F	Section 9	Township 27 N	Range 8 W	County San Juan
Actual Footage Location of Well: 2520 feet from the North line and 1525 feet from the West line				
Ground level Elev. 6007	Producing Formation Fruitland Coal	Pool Basin Fruitland Coal	Dedicated Acreage: W/2 320 Acres	

- Outline the acreage dedicated to the subject well by colored pencil or hatchure marks on the plat below.
- If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
- If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?

Yes No If answer is "yes" type of consolidation _____

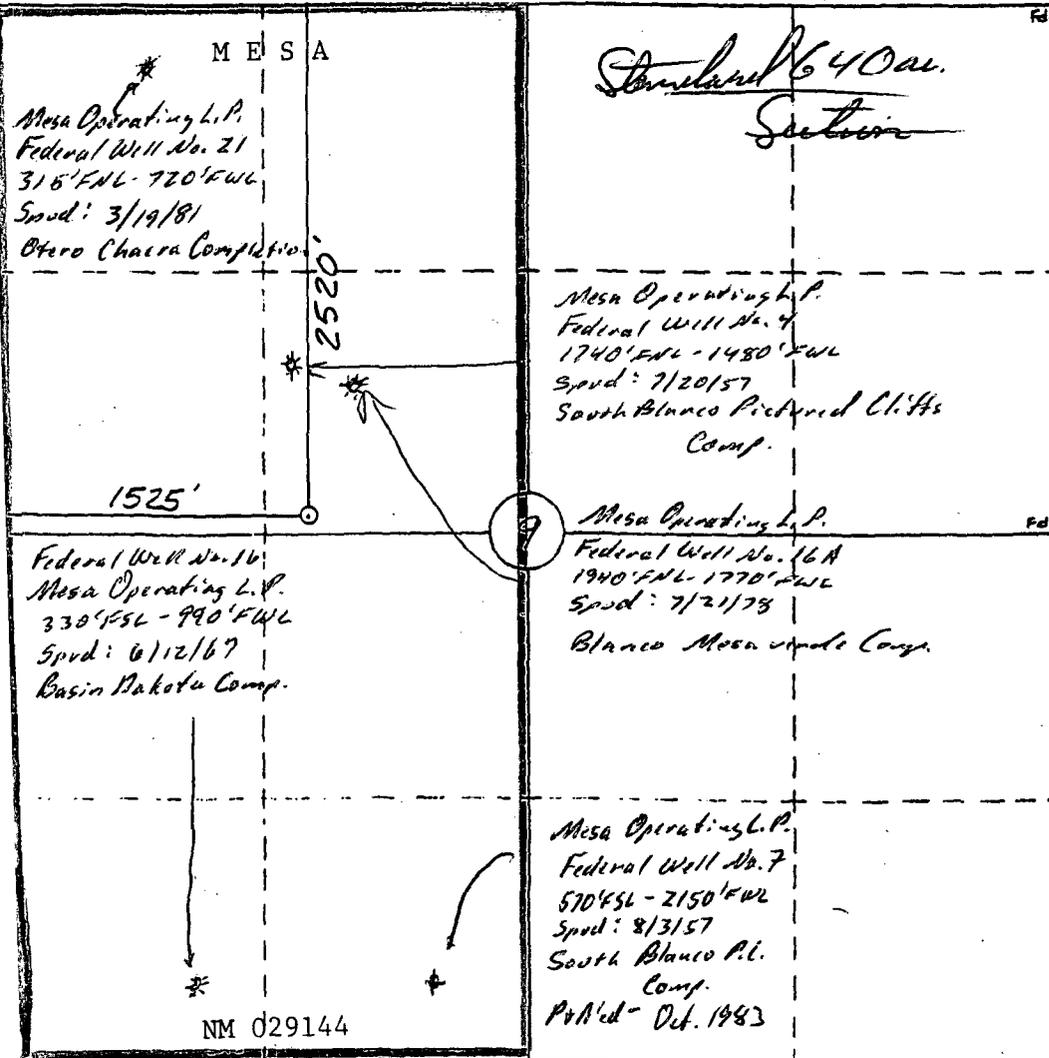
If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.)

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.

330 660 990 1320 1650 1980 2310 2640 2000 1500 1000 500 0

N 89° 03' W

78.95 ch.



NM 029144

N 88° 15' W

78.42 ch.

OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Signature
Carolyn L. McKee

Printed Name
 Carolyn L. McKee

Position
 Sr. Regulatory Analyst

Company
 Mesa Ltd Partnership

Date
 8/9/90

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

7-28-90

Date Surveyed
 William E. Mahnke II

Signature & Seal of Professional Surveyor
William E. Mahnke II

Certificate No. 8466

NEW MEXICO
 #8466
 WILLIAM E. MAHNKE II
 SURVEYOR

MESA OPERATING LIMITED PARTNERSHIP
 FC FEDERAL # 16
 2155' FSL & 970' FWL
 Section 9, T27N, R8W
 San Juan County, New Mexico

DRILLING PROGRAM

1. The estimated tops of important geological markers are:

<u>FORMATION</u>	<u>DEPTH</u>
Farmington Sands	1105'
Lo Kirkland Shale	1775'
Fruitland	1990'
Pictured Cliffs	2195'

2. No fresh water is expected. Casing will be run to 200'. Coal is expected in the Fruitland at 1990'. Gas is expected in the Fruitland Coal at 1990'.
3. The following equipment will be installed per API RP 53 specifications as noted: a 2000 psi working pressure BOP stack as per Section 2-C, choke manifolds per Section 3-A, kill lines per Section 4-A and closing unit per Section 5-A. Ram-type preventors and related control equipment will be tested at 70% of the minimum internal yield pressure of the casing and annular-type preventors will be tested to 50% of their rated working pressure. See Attachment 1 for stack arrangement and Attachment 2 for choke manifold assembly. Attachment 3 shows the rig layout for locations of rig floor and ground level remotes and accumulator system. Blowout prevention drills will be held and pressure tests conducted at the time the BOP's are installed, and just prior to reaching the Fruitland Coal gas zone.
4. The casing program consists of the following sizes, weights and grades:

I. Surface Casing

<u>Interval</u>	<u>Length</u>	<u>Size</u>	<u>Weight</u>	<u>Grade</u>	<u>Connection</u>
0 - 200'	200'	8 5/8"	24#	K-55	ST&C

II. Production Casing

<u>Interval</u>	<u>Length</u>	<u>Size</u>	<u>Weight</u>	<u>Grade</u>	<u>Connection</u>
0 - 2330'	2330'	5 1/2"	17#	I-70	LT&C
0 - 2250'	2250'	2 3/8"	4.7#	J-55	EUE

5. The well is proposed to be drilled using fresh water as follows:

MUD PROGRAM

<u>Interval</u>	<u>Mud Weight (lbs./gal.)</u>	<u>Viscosity (secs)</u>	<u>Fluid Loss (cc)</u>	<u>Mud Type</u>
0 - 200'	8.4 - 9.5	35 - 50	No Control	Native Spud Mud
200' - 2000'	8.4 - 9.5	35 - 45	No Control	Water, Polymer, Gel Caustic
2000' - 2330'	8.4 - 9.5	35 - 40	10	Water, Lo Solids Non-Dispersed

Will be drilling with kill mud. No special reserve volume. Mud pit volume will be monitored visually for signs of loss or gains to the system.

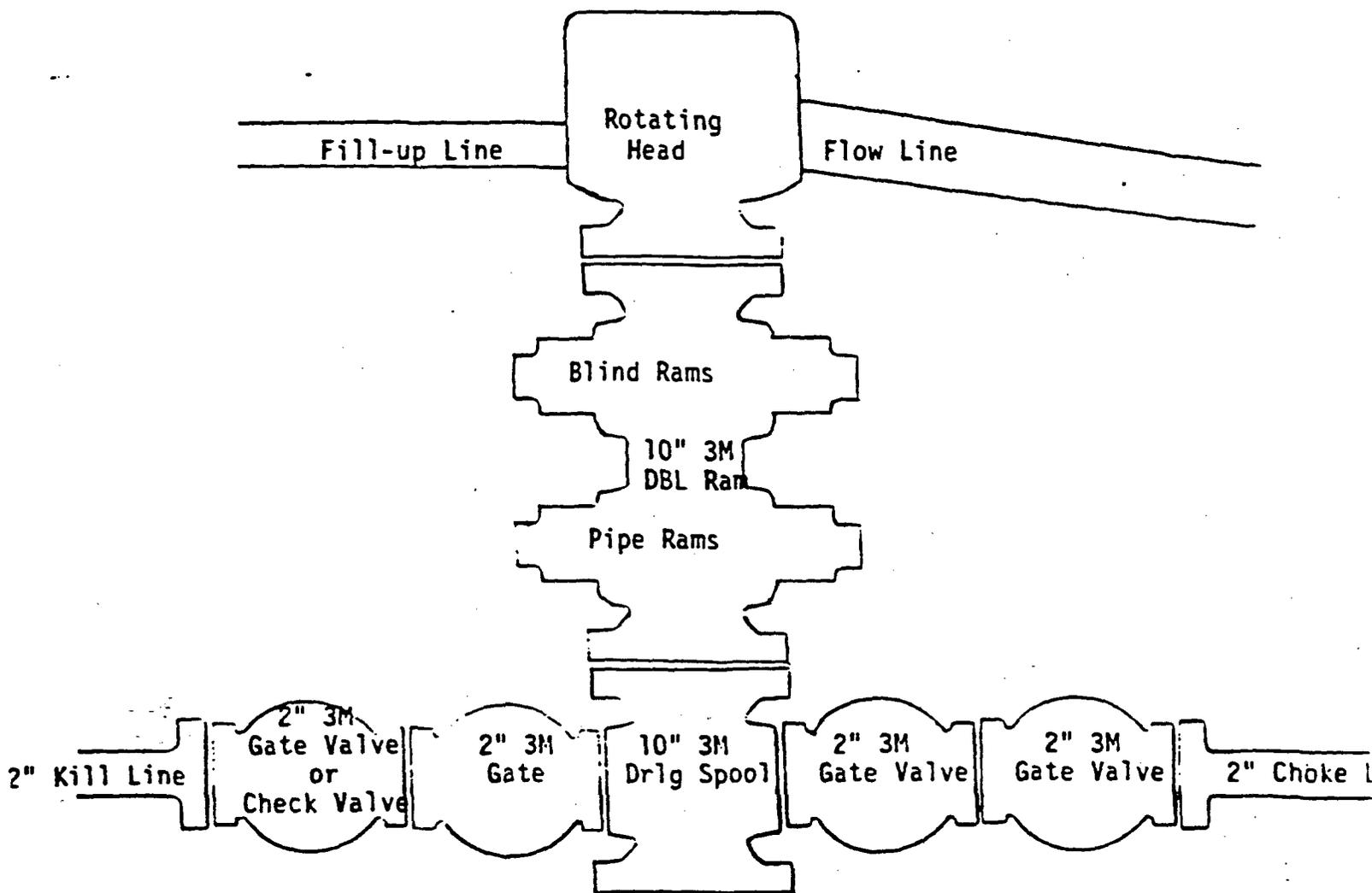
6. No DST's or cores are planned. CNL/FDC and DIL/MSFL logs will be run.
7. The Fruitland reservoir pressure should be 800 psi. No abnormal pressures are anticipated. No H₂S should be encountered in the well.

ATTACHMENT 1

**MESA OPERATING LP
San Juan Basin
Fruitland Coal Wells
BOP Schematic**

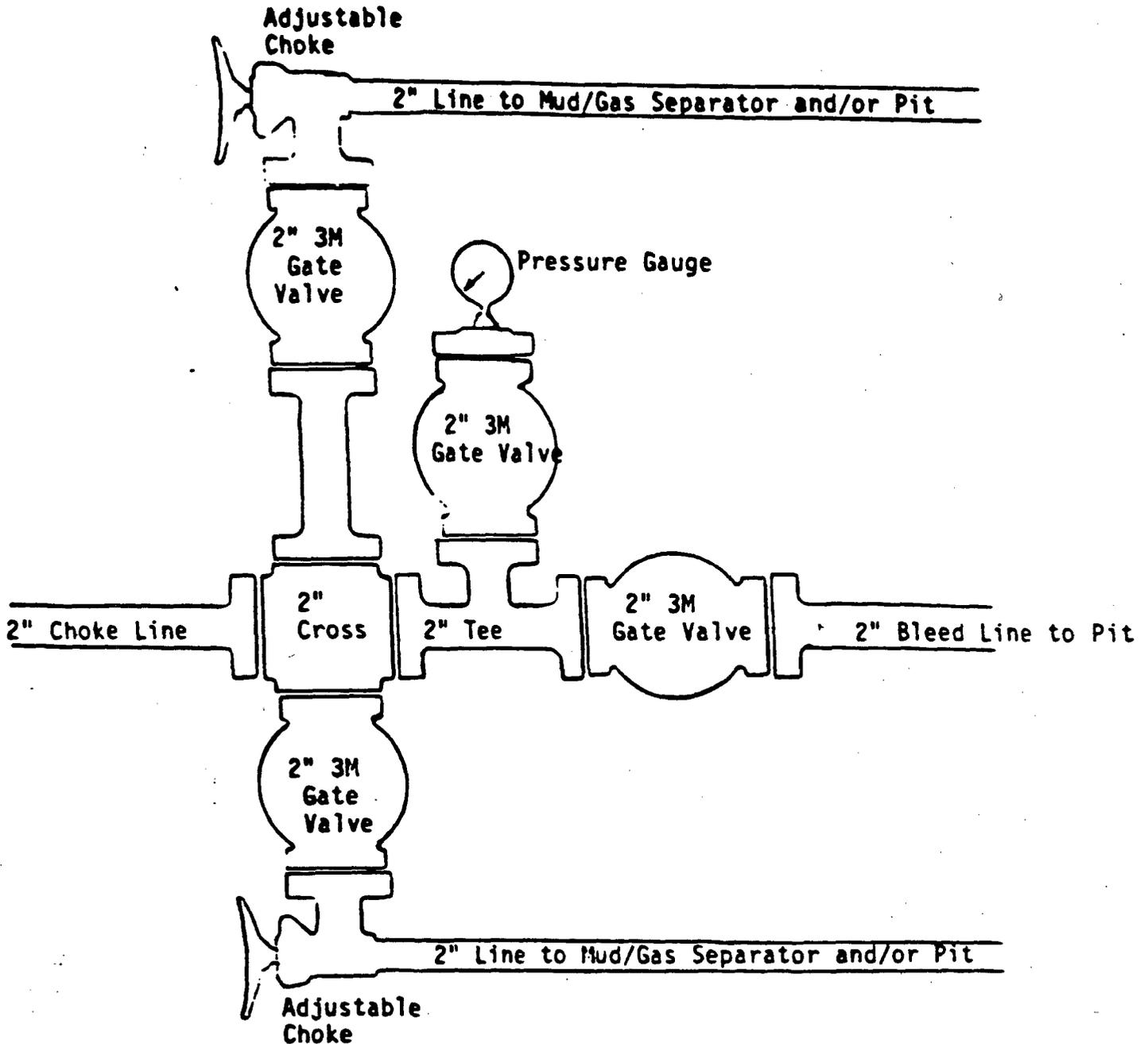
Work string accessory equipment:

1. Upper kelly cock valve with handle available
2. Safety valve and subs to fit all drill strings in use



Note: In Mesa's area of operations the anticipated pressure in the Fruitland Coal Formation is less than 1500 psi and maximum anticipated surface pressure is 1200 psi or less. Mesa plans to work under the BOP guidelines of Onshore Order No. 2, 2000 psi WP systems. This schematic and the actual well control equipment used will meet or exceed these requirements. The actual well control equipment used may vary slightly from this schematic due to the variance of different contractor rig inventories.

MESA OPERATING LP
 San Juan Basin
 Fruitland Coal Wells
 Choke Manifold Schematic



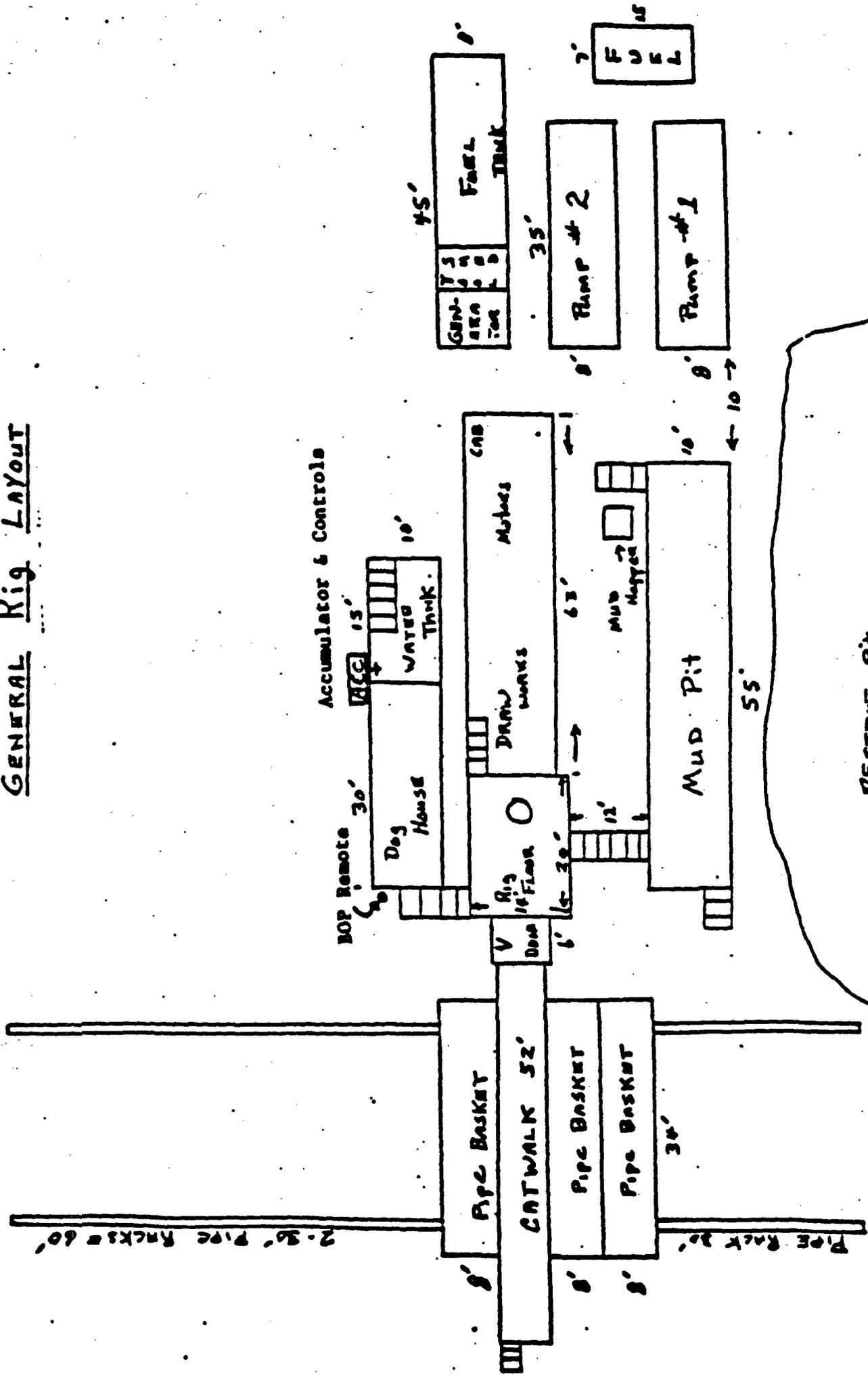
Note: In Mesa's area of operations the anticipated pressure in the Fruitland Coal Formation is less than 1500 psi and maximum anticipated surface pressure is 1200 psi or less. Mesa plans to work under the BOP guidelines of Onshore Order No. 2, 2000 psi WP systems. This schematic and the actual well control equipment used will meet or exceed these requirements. The actual well control equipment used may vary slightly from this schematic due to the variance of different contractor rig inventories.

125 feet

125 feet

ATTACHMENT 3

GENERAL Rig LAYOUT



RESERVE PIT
100' X 60' X 5'

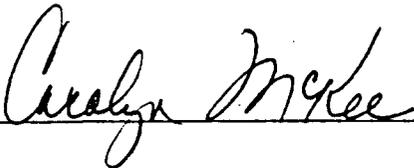
MESA OPERATING LIMITED PARTNERSHIP
FC FEDERAL # 16
2155' FSL & 970' FWL
Section 9, T27N, R8W
San Juan County, New Mexico

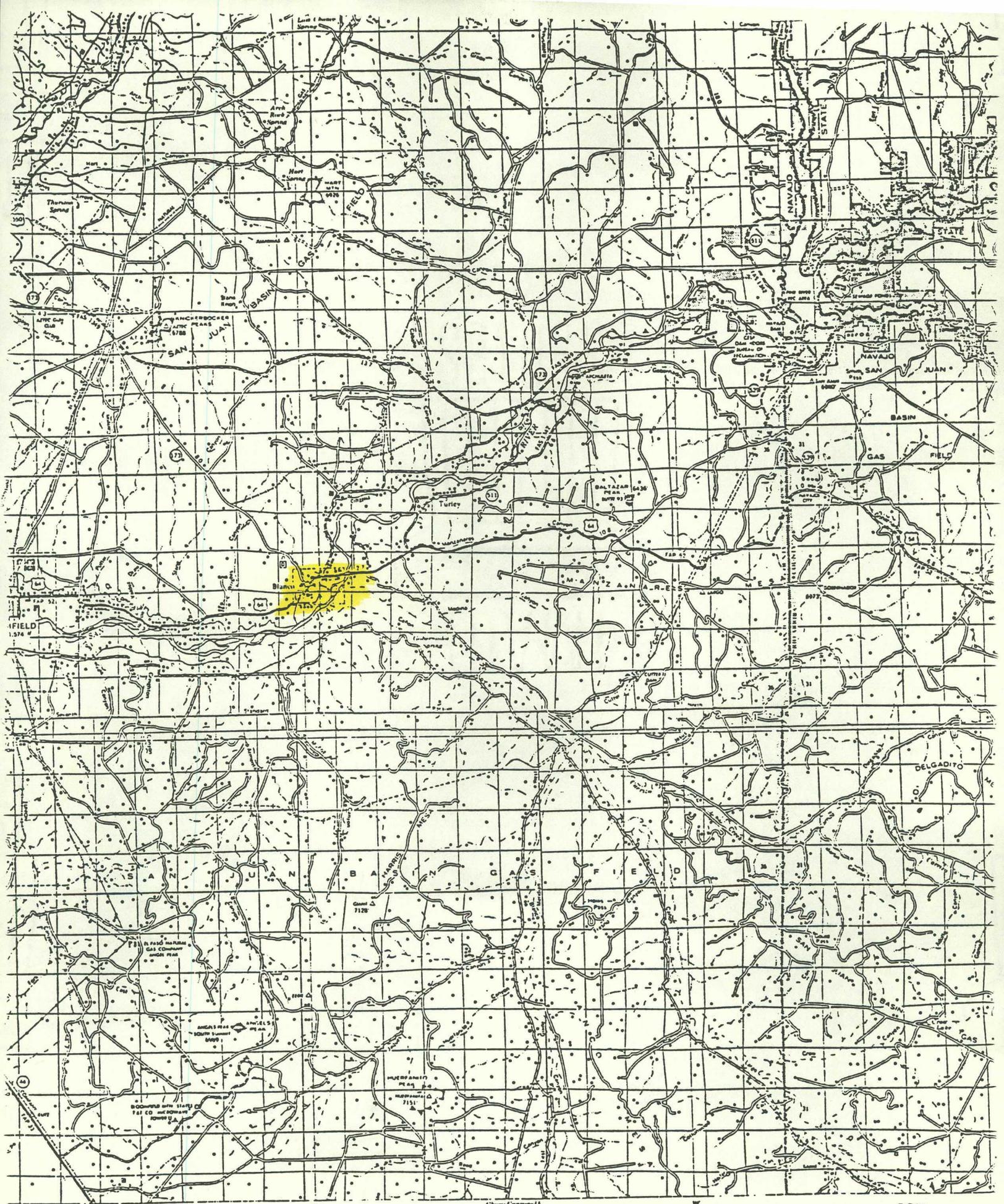
SURFACE USE PROGRAM

1. Attachment 4 is an area map showing the access route to the subject well from approximately one mile east of Blanco. Access will be via existing lease and public roads with 1/4 mile of new road being required. Travel east one mile from Blanco, New Mexico, turn right down Largo Canyon and go 4 miles and cross the 5-mile crossing bridge; go 9 miles then turn right onto lease road; go 3/4 miles and turn left on new access road and follow 1/4 mile to location.
2. Approximately 1/4 mile of new road will be required to link up with existing lease road. No turnouts or drainage will be required.
3. Attachment 5 is a one mile radius map depicting producing wells on this lease, associated roads and pipelines.
4. Attachment 6 is the layout of typical production facilities planned for the Fruitland Coal gas wells. No hydration pond is planned. Facilities to treat for CO₂ and water disposal will be located at a central site in the area to be determined at a later date. ROWs will be obtained for pipelines to the disposal and treatment facility.
5. Fresh water will be obtained from the San Juan River by commercial sources and hauled to the location by truck.
6. Construction materials will be obtained on location.
7. Drill cuttings will be placed in the reserve pit. A trash bin will be used. The drill pit will be fenced on 3 sides while drilling and on the fourth side after the rig is removed and until reclaimed with sheep-proof type fencing. Portable toilets will be used while the rig is on location. All fluids produced will be evaporated in the pit or hauled to a disposal well.
8. No ancillary facilities are planned.
9. Attachment 7 is a well site layout showing the proposed location of the reserve pit and rig equipment to be used while drilling the well. The reserve pit will be lined.
10. The surface will be reclaimed as per BLM requirements. The pits will be backfilled and leveled when sufficiently dry.
11. The surface is public land administered by the BLM.

12. The Cultural Resources Class III inventory report was completed by DCA and was forwarded to the BLM.
13. Point of contact for Mesa Operating Limited Partnership is R. E. Mathis, P.O. Box 2009, Amarillo, Texas. His phone number is (806) 378-4886.
14. I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which currently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with operations proposed herein will be performed by Mesa Operating Limited Partnership and its contractors and sub-contractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

MESA OPERATING LIMITED PARTNERSHIP

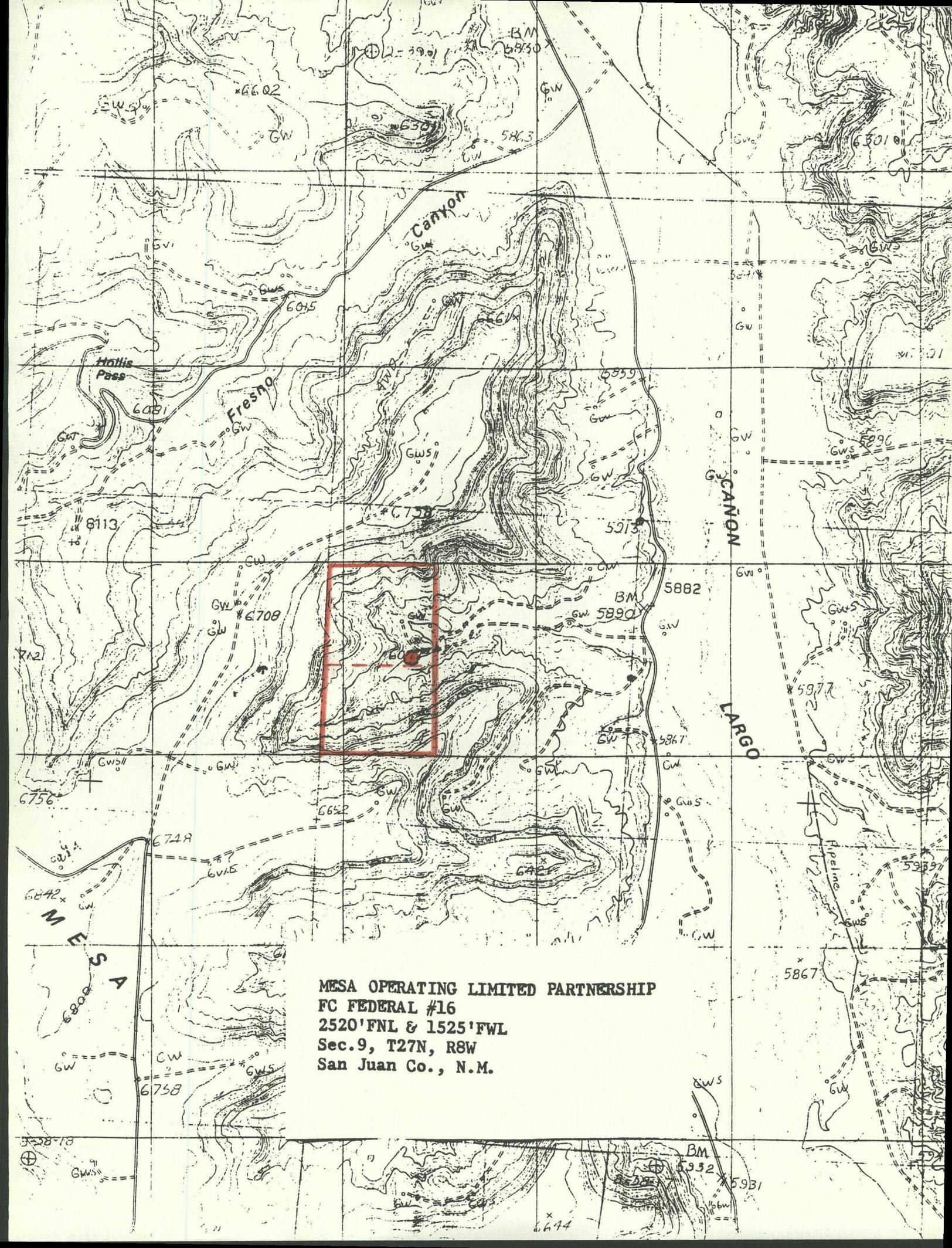
By: 



W. R.10.W. R.9.W. R.8.W. R.7.W. QU

United States, U.S. Geological Survey,
 Office of Land Management and Planning Division
 Standard Frame 314, North American Datum

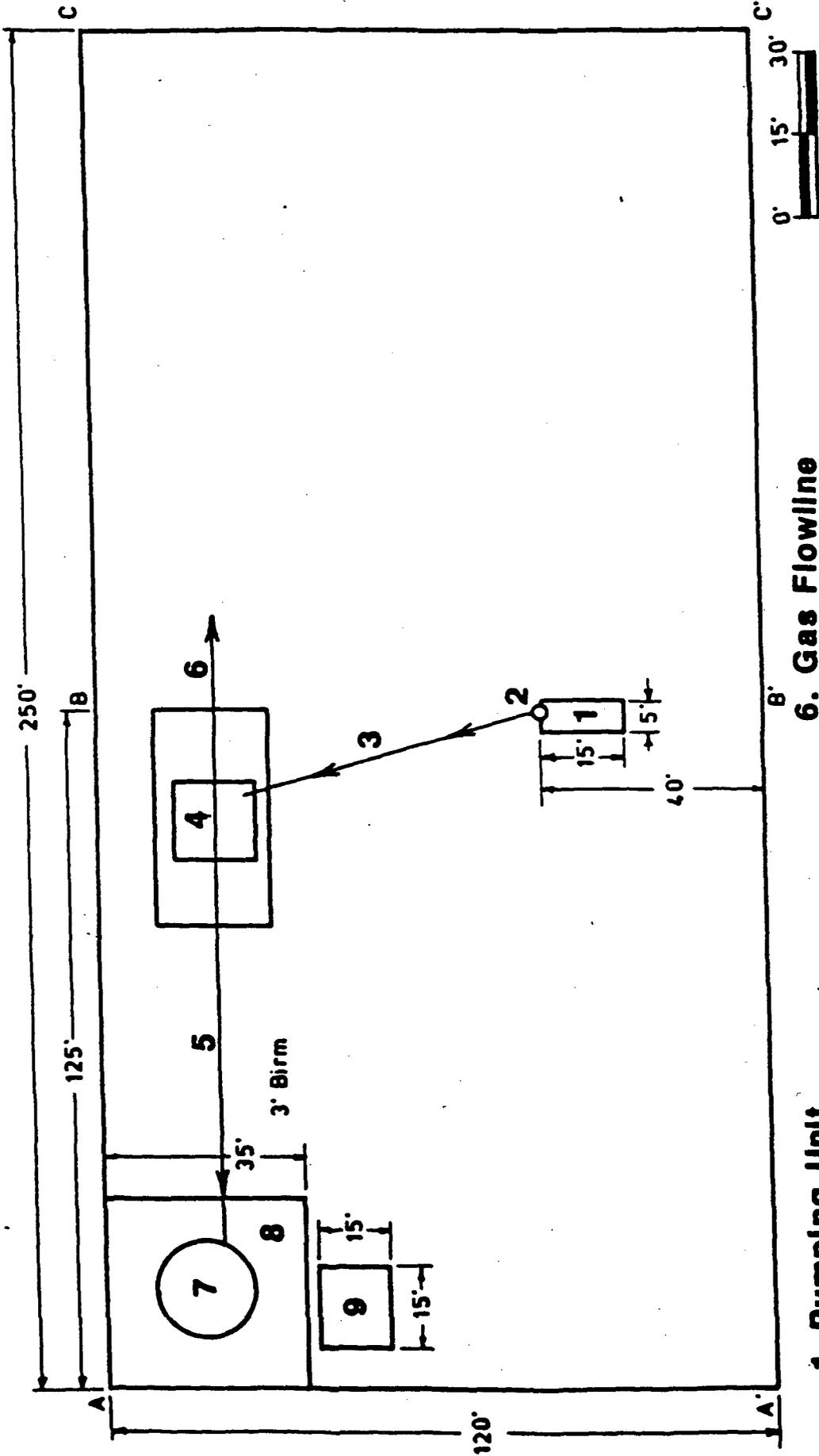
Scale $\frac{1}{150000}$ or 1 inch = 3 Miles
 STATUTE MILES



MESA OPERATING LIMITED PARTNERSHIP
FC FEDERAL #16
2520'FNL & 1525'FWL
Sec.9, T27N, R8W
San Juan Co., N.M.

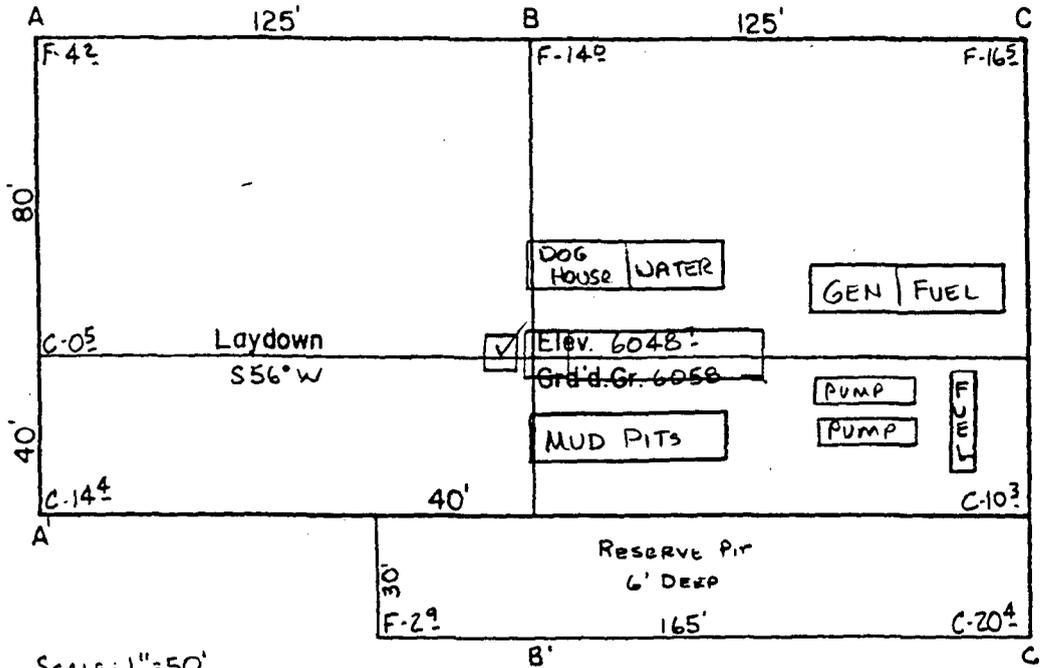


TYPICAL FRUITLAND COAL PRODUCTION FACILITY



- | | |
|-----------------------------|------------------------|
| 1. Pumping Unit | 6. Gas Flowline |
| 2. Well Head | 7. 500 BBL Tank |
| 3. Gas & Water Flowline | 8. 650 BBL Birm |
| 4. Coal Gas Production Unit | 9. Water Transfer Pump |
| 5. Water Flowline | |

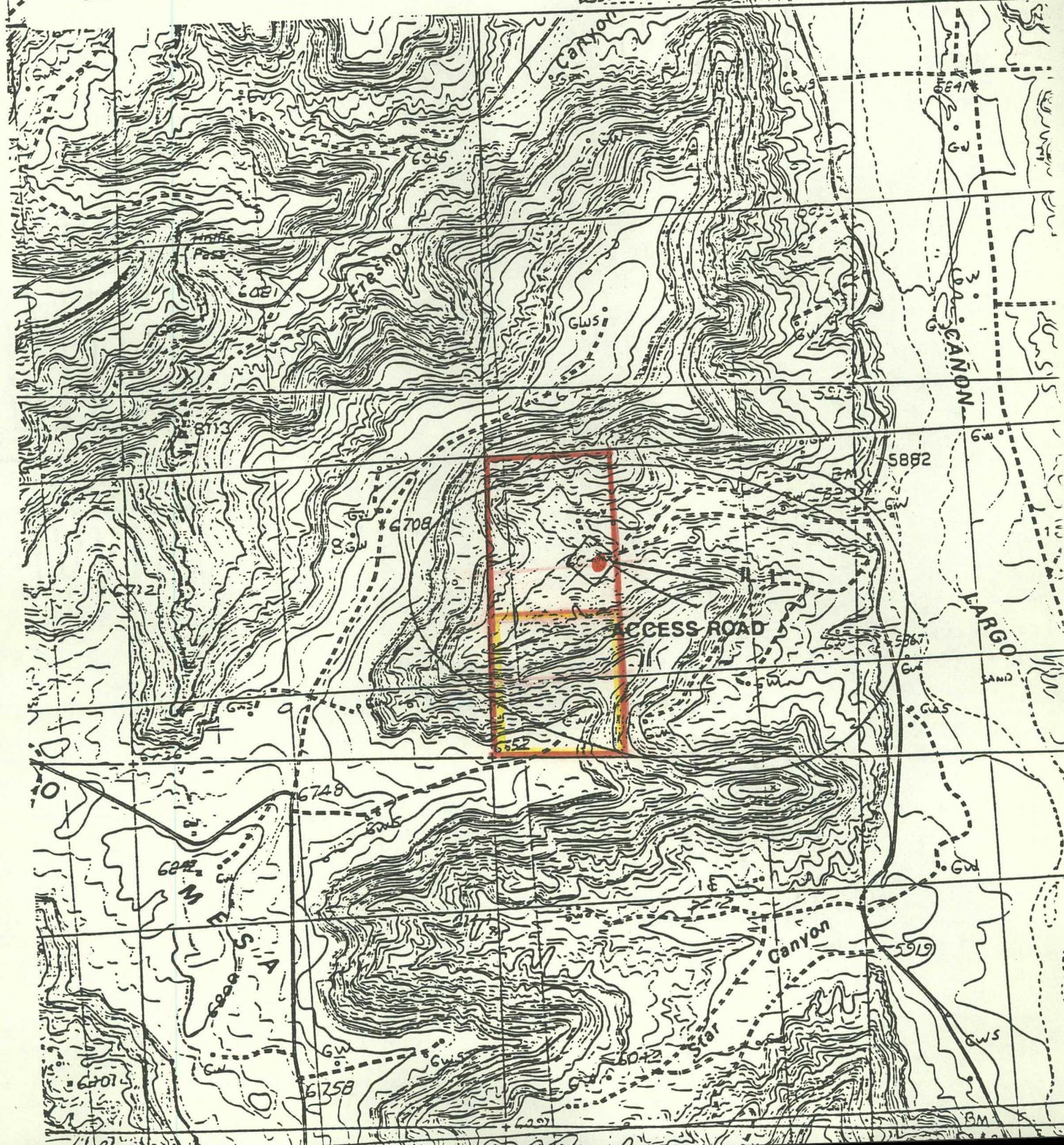
MESA OPERATING LIMITED PARTNERSHIP
 FC FEDERAL #16
 2155' FSL & 970' FWL
 Sec. 9, T27N, R8W
 San Juan Co., N.M.



SCALE: 1" = 50'

A-A'		Vert: 1" = 30'	Horiz: 1" = 100'	C/L
6060				
6050				
B-B'				
6060				
6050				
C-C'				
6060				
6050				

FIGURE 1
Proposed FC Federal No. 16 well pad and
access road on USGS 7.5' Fresno Canyon,
New Mexico., 1985 Prov. Edition, N.M.P.M.,
San Juan County, New Mexico , T27N, R8W,
Section 9.



Project No. 462-90-C

Cultural Resource Use Permit
7-2920-90-U (NM BLM)

An Archaeological Survey of the
Proposed FC Federal No. 16 Well Pad and Access Road
East of Blanco, San Juan County, New Mexico

for

Mesa Operating Limited Partnership

by

Patricia Hancock
Supervisory Archaeologist

Submitted by

Byron P. Johnson
Director

DIVISION OF CONSERVATION ARCHAEOLOGY

Technical Report No. 2211
San Juan County Archaeological Research Center and Library

August 9, 1990

ABSTRACT

On July 31, 1990, the Division of Conservation Archaeology of the San Juan County Museum Association completed an archaeological survey of the proposed FC Federal No. 16 well pad and access road for Mesa Operating Limited Partnership. The survey area is located east of Blanco in San Juan County, New Mexico and is under the jurisdiction of the Bureau of Land Management. Approximately 6.06 acres were intensively inventoried.

During the survey, one isolate was found. We recommend archaeological clearance for the proposed FC Federal No. 16 well pad and access road.

INTRODUCTION

On July 31, 1990, the Division of Conservation Archaeology (DCA) of the San Juan County Museum Association conducted an archaeological survey for Mesa Operating Limited Partnership of Amarillo, Texas. Ted Cottrell requested the survey and administered the project Mesa Operating Limited Partnership. Byron P. Johnson administered the project for DCA.

In recognition of the limited, nonrenewable nature of archaeological remains, the federal government has enacted legislation that is designed to conserve and protect these resources. The principal legislation includes the Antiquities Act of 1906 (PL 52-209), the Historic Preservation Act of 1966 (PL 89-665) and as amended (PL 96-515), the National Environmental Act of 1969 (PL 91-852), the 1971 Executive Order No. 11593, the Archaeological and Historical Conservation Act of 1974 (PL 93-291), and the Archaeological Resources Protection Act of 1979 (PL 96-95). In addition, the Navajo Nation and the states of Arizona, New Mexico, Utah, and Colorado have enacted laws to ensure compliance with federal legislation and to protect archaeological resources within their jurisdiction. Work undertaken in the course of this project is intended to comply with these statutes and is governed by the stipulations of Cultural Resource Use Permit 7-2920-90-U (NM BLM).

Patricia Hancock, DCA archaeologist, surveyed the project area for cultural remains.

METHODS

The area was surveyed by walking a series of straight line transects spaced 10 to 12 m apart. A construction zone of 50 ft and a cultural resource buffer zone of 100 ft were surveyed around the proposed well pad. The archaeologist recorded all cultural remains. Those whose information potential exceeded what could be extracted during the survey phase were assigned site status. Other cultural remains were documented as isolated loci (IL). Pertinent environmental data were also recorded.

PREVIOUSLY RECORDED SITES

In addition to field inspection, the archaeologist conducted a search of the records at the Bureau of Land Management (BLM) Farmington Resource Area office on July 30, 1990 and at DCA to determine if any sites had been recorded in the project area. Site and project records required by the BLM and the New Mexico Historic Preservation Division were completed.

The records check revealed 12 previously recorded sites within one mile of the proposed project area. Those sites are shown on BLM Supplement 1A which is provided to the BLM only. None of the sites are within 1000 ft of the project area.

PROJECT DESCRIPTION

Proposed FC Federal No. 16 Well Pad and Access Road
(Figures 1 and 2)

Legal Description:

T27N, R8W, Section 9, 2520' F/NL, 1525' F/WL
 SW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ (well pad and access road)
 SE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ " " "
 NW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ " " "

N.M.P.M., San Juan County, New Mexico

Map Source: U.S.G.S. 7.5' Fresno Canyon, New Mexico - 1985
 Provisional Edition

Land Jurisdiction: Bureau of Land Management

Project Area: 280' x 350' (well pad and construction zone)

Surveyed Area: 480' x 550' (well pad and construction zone with
 buffer and access road)

6.06 Acres

Project Background: At the request of the BLM, the original staking of the FC Federal No. 16 well pad, surveyed by Brabant (1990), was abandoned.

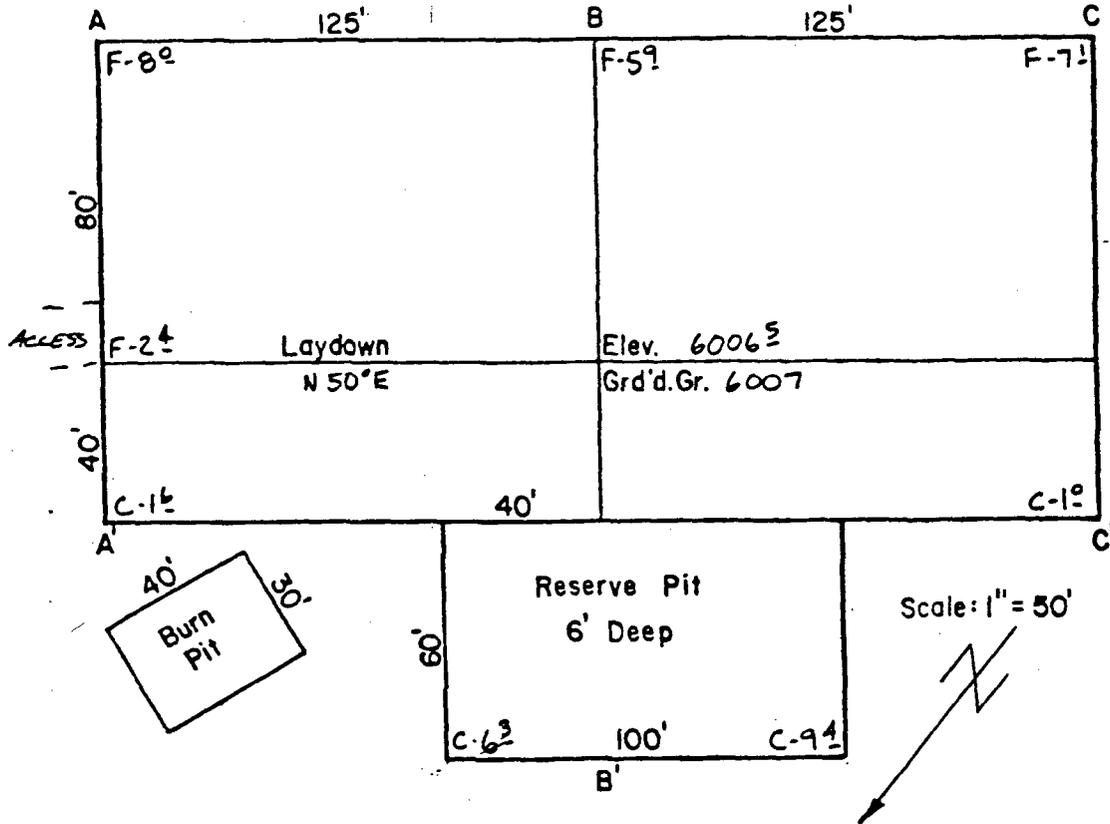
Environment: The proposed FC Federal No. 16 well pad and access road are located in a constricted side canyon of Largo Canyon. The terrain is rugged around the periphery of the proposed well pad. Clay hills capped with sandstone are to the north and west. The main canyon drainage is to the east. The soils are sandy and intermixed with sandstone talus debris. Vegetation includes pinyon pine (Pinus edulis), juniper (Juniperus sp), mountain mahogany (Cercocarpus sp), snakeweed (Gutierrezia sarothrae), rabbitbrush (Chrysothamnus nauseosus), Indian ricegrass (Oryzopsis hymenoides), Indian paintbrush (Castilleja), and firecracker penstemon (Penstemon eatoni). Ground cover is about 40 to 50%.

The short access road is in the eastern construction zone. This road connects with an existing access road to the existing Mesa Federal No. 4 well pad (1740' F/NL and 1480' F/WL). An existing pipeline runs along the south side of this road.

Cultural Resources: During the survey, one isolate was found. The isolate consists of one Dinetah Gray sherd located near the southeast corner stake in a shallow arroyo. Despite intensive investigation no other artifacts were found in the area. The isolate is detailed in the attached BLM Farmington Resource Area Isolated Artifact Form, provided to the BLM only.

MESA OPERATING LIMITED PARTNERSHIP
 FQ FEDERAL #16
 2520'FNL & 1525'FWL
 Sec.9, T27N, R8W
 San Juan Co., N.M.

FIGURE 2



A-A'	Vert.: 1" = 30'	Horiz.: 1" = 100'	C/L
6010			
6000			
B-B'			
6010			
6000			
C-C'			
6010			
6000			

Recommendations: Documentation of the isolate is considered sufficient to exhaust its research potential. We recommend archaeological clearance for the proposed FC Federal No. 16 well pad and access road.

REFERENCE CITED

Brabant, Merry Lynn
1990 An Archaeological Survey of the Proposed FC Federal No. 16 Well Pad and Access Road Located near Fresno Canyon T27N, R8W, Section 9, 2155' F/SL, 970' F/WL. Division of Conservation Archaeology Technical Report No. 2100. Farmington, New Mexico.

MERIDIAN OIL

OIL CONSERVATION DIVISION
RECEIVED
'90 OCT 16 AM 8 56

October 11, 1990

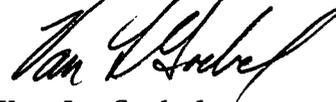
Mr. William J. LeMay
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

RE: Unorthodox Location Application
FC Federal #16
2520' FNL & 1525' FWL
Sec. 9, T27N, R8W
San Juan County, New Mexico

Gentlemen:

Please be advised that Meridian Oil Inc. as offset operator has no objection to the referenced unorthodox well location as proposed by Mesa in their letter dated September 21, 1990.

Very truly yours,



Van L. Goebel
Senior Landman

VLG:kaw
Mesa Corresp.
xc: Ms. Carolyn L. McKee
Sr. Regulatory Analyst
Mesa Limited Partnership
One Mesa Square
P.O. Box 2009
Amarillo, Texas 79189-2009