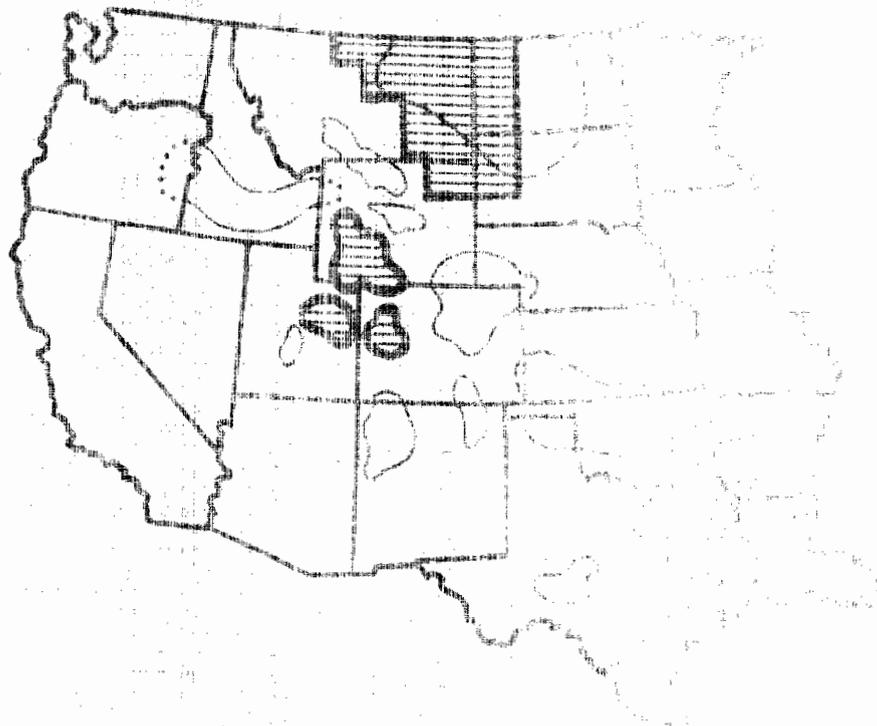


Western Gas Sands Project Quarterly Basin Activities Report



July 31, 1978



Prepared for
U.S. Department of Energy
Bartlesville Energy Technology Center
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Compiled by CER Consultants
Las Vegas, Nevada

Contract EY-76-C-00000

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ABBREVIATIONS AND ACRONYMS

Completed Wells

WF unsuccessful new field wildcat
WFD new field discovery
WD unsuccessful deeper pool wildcat
WDD deeper pool discovery
WS unsuccessful shallower pool wildcat
WSD shallow pool discovery
WP shallow pool discovery
WPD new pool discovery
WO unsuccessful wildcat outpost
WOE wildcat outpost extension
D unsuccessful development well
DG development gas well

Drilling/Staked Wells

WF new field wildcat
WD deeper pool wildcat
WS shallower pool wildcat
WP new pool wildcat
WO wildcat outpost
D development

BHC Borehole Compensated Log
Comp Drilling completed
DIL Dual Induction Laterolog
D&A Dry and Abandoned
FDC Formation Density Log
FR First Report
GR Gamma Ray
PB Plugged back
SDW Shut down for weather
SI Shut in
Spud Commencement of drilling
SP Spontaneous Potential
SDR Shut down for repairs
SN Sidewall Neutron
TD Total Depth
WOCT Waiting on completion tools

1. INTRODUCTION

This quarterly basin activity report is a summation of the drilling and testing activity in the four primary study areas and the USGS designated core sites of the Western Gas Sands Project (WGSP) (Figure 1-1). Pertinent review information for April, May and June 1978, included for each study area, is divided into two sections. The core program section identifies industry activity within the USGS recommended core areas and relates the status of WGSP core acquisition developments. The second part, the activity section, details drilling and testing operations of interest to the WGSP throughout the entire basin or province. Newly staked or completed wells are listed in tabular form. Newly staked wells are shown on a map with yellow numbers and completed wells are shown with red numbers.

The drilling information used in this report was obtained primarily from The Rocky Mountain Region Report, published daily by Petroleum Information Corporation. Additional information sources include the Montana Oil and Gas Journal, The Oil and Gas Journal, and the Western Oil Reporter.

Additional background and geologic information can be obtained from the Quarterly Basin Activities Reports, dated January 1, 1978, (NVO/0655-03) and April 1, 1978, (NVO/0655-05) respectively. Included in these reports are stratigraphic correlation charts, cross-sections and a brief account of the geology for each area and information relating to the USGS recommended coring locations. For additional information related to the Core Program, refer to the WGSP Core Program, January 12, 1978. All of these reports can be obtained from Technical Information Center (TIC), P.O. Box 62, Oak Ridge, Tennessee, 37830, except the Core Program document, which is available from CER Corporation, 4220 So. Maryland Parkway, Suite 801, Las Vegas, Nevada 89109.

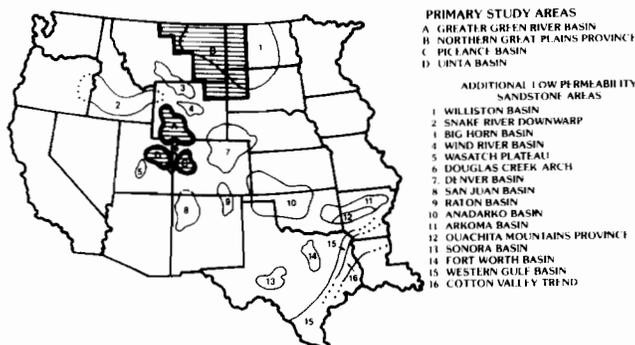


Figure 1-1 Map of Western United States, Showing Areas of Interest

2. NORTHERN GREAT PLAINS PROVINCE

2.1 Core Program

The Montana portion of the Northern Great Plains Province (Figure 2-1 and 2-2), was selected as the area to initiate the WGSP coring program. Four sites (Figure 2-2) were selected by the USGS for the following reasons:

- The sites are removed from productive fields and little data is available.
- There are two or more potential reservoir intervals and adjacent source beds at the selected sites.
- The combination of these sites will test several different reservoir types, including sections with fine-grained carbonates, such as chalk, and fractured reservoirs found along lineament zones.

The objectives are Cretaceous horizons ranging from the Judith River Formation through the older Mowry Formation (Figure 2-4, Page 16). Drilling depths to reach these objectives are shallower here (2,000 - 4,000 ft) than in the basins of Wyoming, Colorado and Utah. Therefore, costs for recovering core as well as obtaining complete log data should be less than in basins where the objectives are deeper.

Operators active in and around the selected core areas are initially located through information supplied by Petroleum Information Lease Maps and the Rocky Mountain Region Report. The companies with drilling and testing operations in progress at the end of June were Joseph J.C. Paine & Associates, Midlands Gas Co., Anschutz Corp., Falcon-Colorado Exploration, Montana Power and Odessa Natural Gas Co. (Table 2-1). All of these companies, with the exception of Falcon-Colorado Exploration, were contacted for possible participation in DOE's Core Program.

The first operation under the WGSP Core Program was scheduled for July, 1978, at the Joseph J.C. Paine & Associates well, (Midlands Federal 1-0296) located in Section 2, T29N, R36E, Valley County, Montana*. This well is in the USGS designated core area "C," shown by Figure 2-2.

* Core recovery was completed on July 12, 1978.

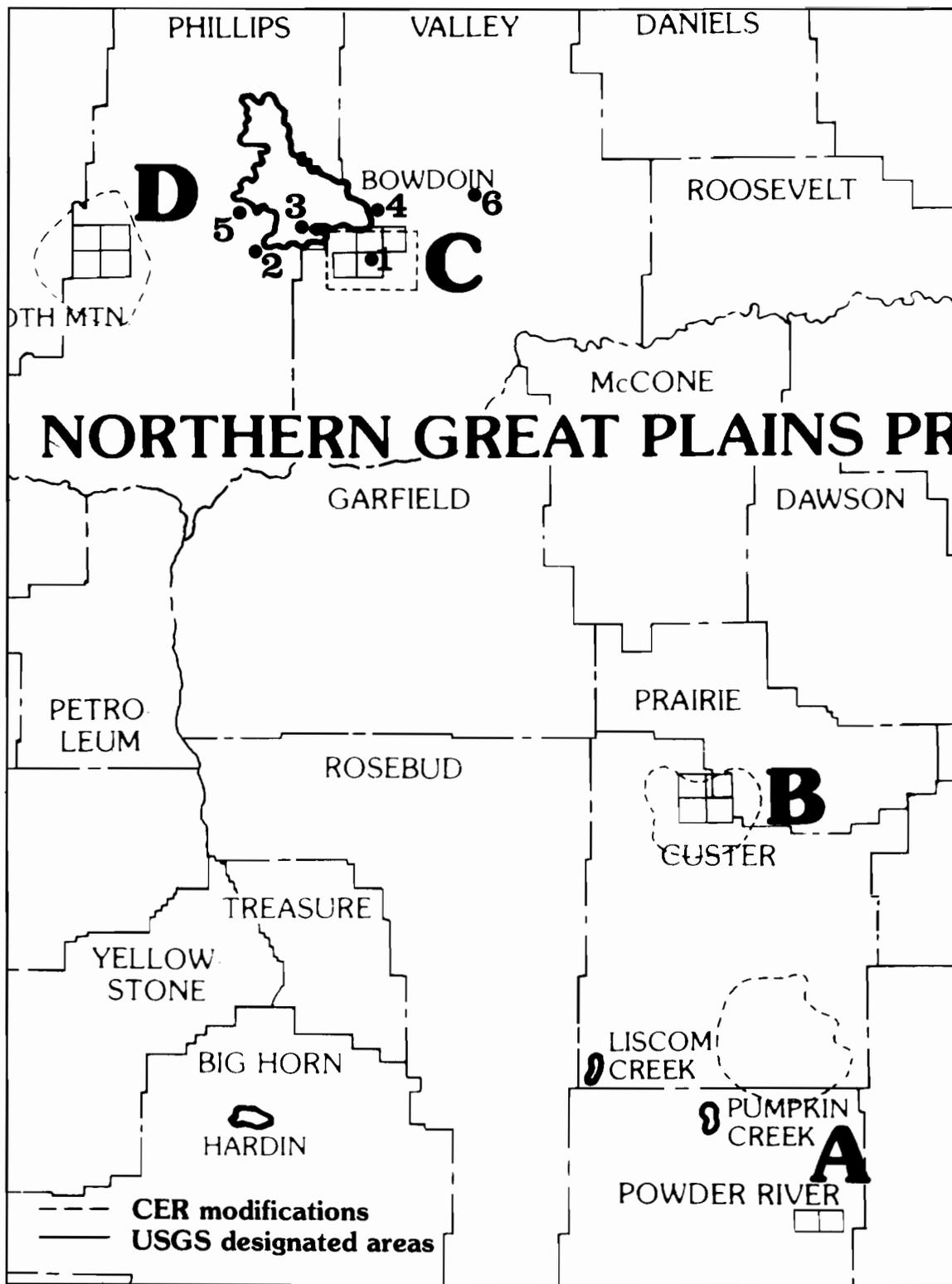


Figure 2-2 Detail of USGS Designated Core Areas and Wells of Interest, Northern Great Plains Province (refer to Table 2-1)

Table 2-1 Summary of Wells located in USGS designated Core Areas, April-June
(Data as of June 29, 1978)**

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF In MCFD
FR 6-27-78	Joseph J. C. Paine & Assoc.	1-0269	1	Lot6 2-29n-36e Wildcat Field Valley Cty,MT	Phillips (1900)			WF	
FR 6-14-78	Midlands Gas Co.	1 Federal	2	senw 1-30n-32e Bowdoin Field Phillips Cty. MT	Phillips (1700)			D	
FR 6-14-78	Midlands Gas Co.†	2 Federal	3	swne 22-31n-33e Bowdoin Field Phillips Cty. MT	Phillips (1700)			D, Operator has 1 additional Phillips test in this locale	
FR 5-30-78	Midlands Gas Co.	1 Federal 3415	4	nwse 34-31n-35e Bowdoin Field Valley Cty, MT	Phillips (1700)			D	
FR 6-14-78	Anschutz Corp.	1 Federal	5	senw 7-32n-30e Wildcat Field Phillips Cty. MT	Phillips (1900)			WF, Operator has 2 additional Phillips test in this locale	
FR 5-24-78	Falcon- Colorado Exploration	1-1 Bowman	4	swse 1-32n-34e Swanson Creek Field-Phillips Cty, MT	Phillips (1800)			D, Operator has 7 additional Phillips tests in this locale	
Spud 5-16-78 Comp 6-2-78	Montana Power	5-8-32-10 State	6	swnw 8-32n-40e Wildcat Field Valley Cty, MT	Mississippian	5190		WF,completed D&A, tight	
FR 12-29-77	Odessa Natural	273333 Federal	4	swne 27-33n-33e Bowdoin Field Phillips Cty. MT	Phillips (1600)			Operator has 11 additional Phillips tests in this locale	
FR 5-24-78	Falcon- Colorado Exploration	1 Green	4	sww 31-33n-35e Swanson Creek Field-Valley Cty, MT	Phillips (1800)			D, Operator has 2 additional Phillips tests in this locale	

* Refer to Figure 2.2

** From Petroleum Information

† Listed in Table 2-4, Summary of New Wells

Approximately 400 ft of coring was planned in the Upper Cretaceous sections of this wildcat with an expected TD of about 2,000 ft. The following core intervals were selected:

Eagle	approx. 550 - 670 ft
	830 - 920 ft
Carlile (Bowdoin Member)	approx. 1,390 - 1,540 ft
Greenhorn (Phillips Member)	approx. 1,640 - 1,760 ft

Casing size will restrict the core diameter to 2.5 inches.

Logs scheduled to be run are:

DIL/SP/GR	surface to TD
Proximity Microlog	approx. 160 ft to TD
FDC/SN/GR	approx. 160 ft to TD
BHC/GR	approx. 160 ft to TD
Spectral Gamma Ray	approx. 160 ft to TD

A SARABAND log is also to be computed.

2.2 Drilling Activity

This review covers activity in the important Cretaceous sands of the Northern Great Plains Province. Tight gas potential is evident in the entire area from one or more intervals within the Judith River, Eagle, Niobrara/Carlile, Frontier, Mowry and Muddy Formations. These potential reservoirs are thin, discontinuous siltstones and sandstones enclosed in thick sequences of marine shale.

Drilling activity is concentrated in the northern portion of Montana and ranges from the Sweetgrass Arch, Toole County, Montana, to the west flank of the Bowdoin Dome, Valley County, Montana. The principal counties of interest are Toole, Hill, Chouteau, Blaine, Phillips, and Valley (Figure 2-3).

During the second quarter of 1978, there were 24 gas completions in the tight Upper Cretaceous sands compared to 55 during the first quarter. Ten wildcat wells and 14 development wells had been completed by the end of June. This compares to 16 completed wildcats and 41 completed development wells during the first quarter. The most productive formation was the Eagle, which accounted for 5,174 MCFD of new production. During the first quarter, commingled Bowdoin/Phillips production added 15,894 MCFD and was the most productive interval (Table 2-2).

During the quarter, the untreated Eagle sands in the Tiger Ridge Field, Blaine County accounted for 5,174 MCFD of new production. The major operator was Tricentral United States, who recently staked five additional locations to test the Eagle at 1,900 ft.

Of greater interest to the WGSP are wells which produce gas from treated or fractured tight intervals. Midlands Gas, Inc., completed four fractured wells in the Bowdoin Field. Joseph J.C. Paine also completed a well in this area which established a new total production figure of 1,639 MCFD from five wells. Table 2-2, 2-3, and Figure 2-3 summarize this information.

Southwest of the town of Shelby in Pondera County, American Quasar Petroleum and Milan R. Ayers have been testing Cretaceous gas sands on the Sweetgrass Arch. The wells are projected to the Dakota sand, but the primary objectives are the Blackleaf and Bow Island Formations at approximately 1,700 and 2,400 ft respectively. One well was D&A during the quarter, another was waiting on completion tools at the end of June, a third had been spudded and was drilling ahead, and two wells had been staked. To the north in Toole County, there were five new Bow Island tests staked by Wexpro, Inc., (Table 2-4).

In Hill County, an Energetics, Inc. well, staked during April, 1978, was drilled and abandoned. In the same area, Elenburg Exploration completed two Eagle tests, one D&A, and the other was still being tested. All three

Table 2-2 Summary of Drilling Activities, Northern Great Plains Province*

	NO. OF WELLS				Producing Horizons in MCFD														Total					
	Wildcats	D&A	Development		Undifferentiated	Virgelle	Shannon	Eagle			Niobrara	Undifferentiated	Bowdoin	Undifferentiated	Carlile	Phillips	Belle Fourche Shale	Frontier		Blackleaf	Mowry Shale	Bow Island - Muddy	Commingled	
			D&A	Disc				Prod.	Telegraph Creek															
4th Quarter 1977	13	6	17	50	86	340	0	7,068 ¹	0	1,348	0	0	0	0	0	0	0	0	227	1,417	0	5,373	12,359 ²	31,169
1st Quarter 1978	13	3	13	26	55	40	0	6,985	0	0	0	0	0	0	0	0	0	0	0	0	0	2,489	17,943 ³	27,766
2nd Quarter 1978	9	1	4	10	24	0	0	5,174 ⁴	0	0	0	0	0	0	0	0	0	0	0	0	645	0	253 ⁵	6,072

1. IPF not available from 1 producing well.
2. Commingled production - Bowdoin/Greenhorn - 12,359 MCFD
3. Commingled production - Judith River/Eagle - 60 MCFD
 Bowdoin/Phillips - 15,894 MCFD
 Bowdoin/Greenhorn/Phillips - 844 MCFD
 Greenhorn/Phillips - 1,145 MCFD
4. IPF not available from 1 producing well.
5. Commingled Production - Fish Scales/Bow Island - 253 MCFD

* Data Compiled from P. I. Rocky Mountain Region Report "Completions," October 6, 1977-June 29, 1978.

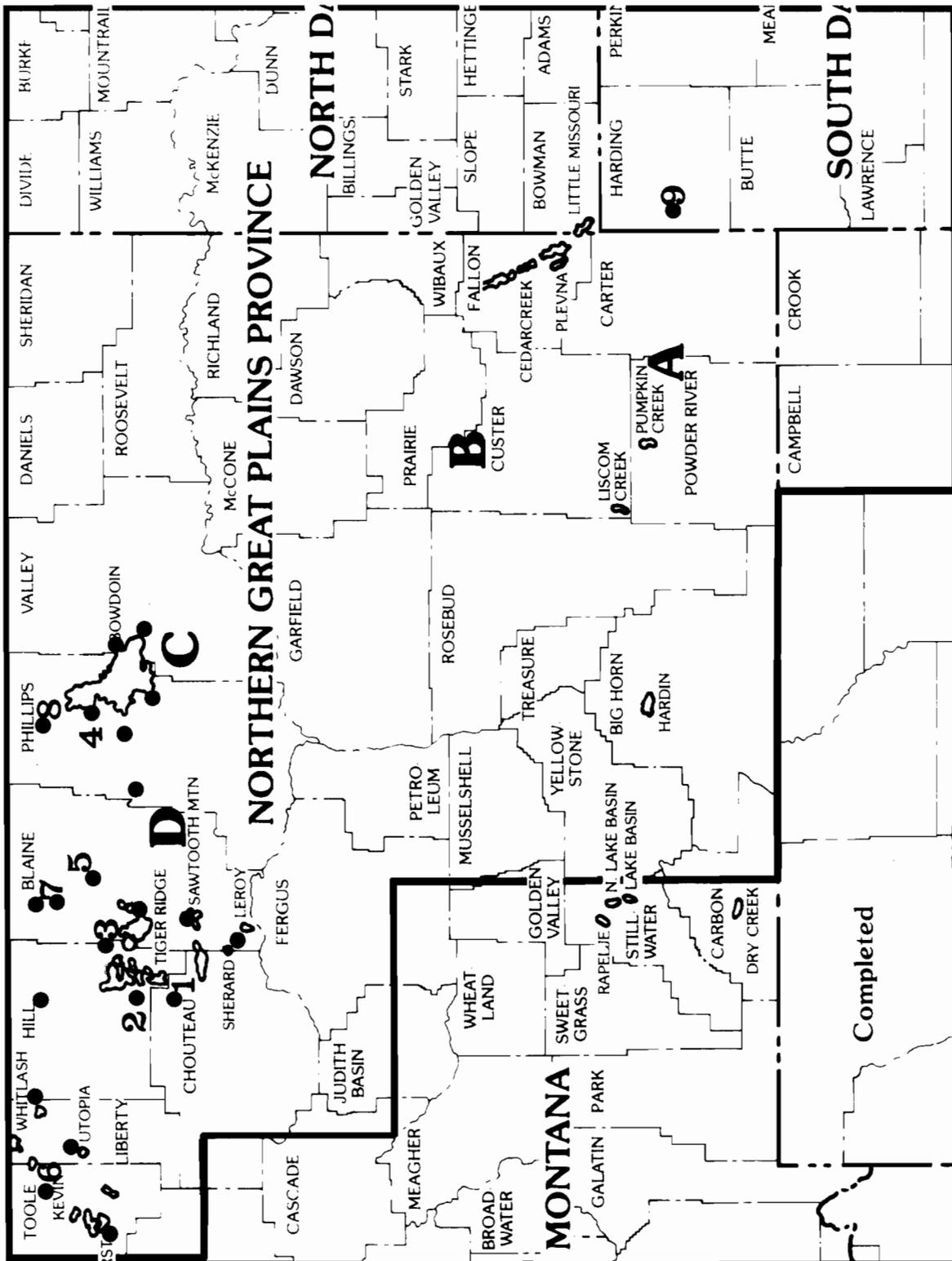


Figure 2-3 USGS Designated Core Areas, Wells completed and staked, Northern Great Plains Province (refer to Tables 2-3 and 2-4)

Table 2-3 Summary of Wells Completed, April-June (Data as of June 29, 1978)**

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF In MCFD
FR 6-5-78 No spud date rep.	Montana Power	7-17 J. Pursley	1	swne 17-28n-14e Unnamed Field Chouteau Cty. MT	Eagle	2019		D, testing	
Spud 6-21-78 FR 5-1-78	Tricentrol United States	14-11 Nystrom	2	nesw 14-30n-15e Tiger Ridge Field-Hill Cty. MT	Eagle	1850 PB 1781		D, WOCT	
Spud 4-3-78 Comp 4-7-78	Energetics Inc.	36-1 State	2	sene 36-31n-16e Wildcat Field Hill Cty,MT	Telegraph Creek	1700		Completed D&A no cores or tests	
Spud 4-24-78 FR 4-14-78	Elenburg Exploration	12-32 Solomon	2	nsw 32-31n-17e Tiger Ridge Field-Hill Cty. MT	Eagle	1695		D, perf 1208- 1212 testing	
Spud 6-1-78 FR 5-31-78	J. Burns Brown	5-32-15E State	2	sene 5-32n-15e Unnamed Field Hill Cty, MT	Eagle	1194		D, WOCT, Oper- ator has 6 additional Eagle tests in this locale	
Spud 4-14-78 FR 4-13-78	J. Burns Brown	15-32-18 WERK	3	sww 15-32n-18e Wildcat Field Blaine Cty, MT	Eagle	1400		WF, WOCT	
Spud 4-28-78 FR 4-19-78	Elenburg Exploration	2-18 Gagel	3	swnw 18-33n-15e Wildcat Field Hill Cty, MT	Eagle	1452		WF, WOCT, no cores, DST 568-588 (misrun)	
Spud 6-21-78 FR 6-5-78	Havre Drilling	1 State	3	swae 28-33n-18e Lohman Gas Field-Blaine Cty, MT	Eagle	1144		D, WOCT	
Spud 4-17-78 Comp 4-28-78	Midlands Gas	1 Federal 1441	4	senw 14-33n-31e Unnamed Field Phillips Cty, MT	Phillips (1273-99)	1400	Nitrogen frac	DG	252
Spud 4-21-78 FR 4-19-78	Xeno Inc.	6-7 E. Chouteau	5	senw 7-35n-20e Unnamed Field Blaine Cty, MT	Eagle	1645		D, Prep. to run casing	
Spud 1-13-78 Comp 5-12-78	Sun Oil	1-19 E M Price	6	nenw 19-36n-4e Middle Butte Field-Liberty Cty, MT	Bow Island	2450	10,000 gal. emulsion, 18,000 lb sand	D, D&A	
Spud 11-16-77 FR 11-8-77	Oil Resources	Pet Resources 30-4 Hodges	6	nwnw 30-36n-8e Unnamed Field Hill Cty, MT	2nd White Specks (Phillips)	2500 PB 1871		SI, perf. 1,778-88 1,803-14	
Spud 6-2-78 FR 4-28-78	Xeno Inc.	11-23 Battle	7	sese 23-36n-19e Unnamed Field Blaine Cty, MT	Eagle	1640		D, WOCT	
Spud 6-5-78 FR 4-3-78	Xeno Inc.	13-24 Battle	7	sww 24-36n-19e Unnamed Field Blaine Cty, MT	Eagle	1707		D, WOCT	

Table 2-3 Continued

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF In MCFD
Spud 4-11-78 Comp 5-16-78	Midlands Gas	1 Hellie-0560	8	nene 5-36n-30e Bowdoin Field Phillips Cty. MT	Bowdoin (1294- 1349)	1600 PBDT 1564	15,078 gal water, 40,000 lb sand, 137,584 SCF N ₂	DG	288
Spud 11-8-77 Comp 11-11-77	Midlands Gas	1 Hellie-1060	8	swne 10-36n-30e Unnamed Field Phillips Cty. MT	Bowdoin (1334- 1400) Phillips (1514-79)	1688 PB 1632	14,280 gal emul 34,000 lb sand	P, commingled	284
Spud 7-1-77 Comp 10-8-77	Joseph J. C. Paine & Assoc.	1-0471 Federal R. Anderson	8	nwse 4-37n-31e Unnamed Field Phillips, Cty. MT	Bowdoin (1445- 89)Greenhorn (1623-33) Phillips (1641- 56)	1775 PB 1678	Acidized,250 gal, 40,000lb sand,30,000lb sand	No cores or tests, commingled	447
Spud 11-11-77 Comp 5-4-78	Midlands Gas	1 Harrison- La-Rouche	8	swse 7-37n-31e Unnamed Field Phillips Cty. MT	Bowdoin (1516- 63) Greenhorn (1688- 92)	1871 PBDT- 1781	13,314 gal water,40,000lb sand,140,000 SCF N ₂ 250 gal acid 6846 gal water 40,000lb sand 265,000 SCF N ₂	D, commingled	
Spud 5-12-78 FR 5-17-78	Jerry McCutchin	1018 Heikkila	9	wyse 18-16n-2e West Short Pine Field-Harding Cty, SD	Shannon	1480		WOCT	

* Refer to Figure 2-3

** From Petroleum Information

Table 2-4 Summary of New Wells, April-June (Data as of June 29, 1978)**

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON Projected Depth (In Ft.)	COMMENTS
Spud 6-24-78 FR 5-9-78	Fuel Resources Development	10-24-18-B Olson	1	sww 10-24n-18e Leroy Field-Blaine Cty, MT	Eagle (1745)	D, drilling, no depth reported-Operator has 8 additional Eagle tests in this locale
FR 6-2-78	Tricentral United States	8-5 Wortman	1	swnw 8-25n-18e Sherard Unit Field Blaine Cty, MT	Eagle (1900)	D, Operator has 7 additional Eagle tests in this locale
FR 6-5-78	Montana Power	5-12 USA	2	swnw 12-27n-20e Wildcat Field-Blaine Cty, MT	Eagle (1500)	WF
Spud 4-10-78 FR 4-13-78	J. Burns Brown	1-29-14 Rocky Boy	3	sese 1-29n-14e Unnamed Field Chouteau Cty, MT	Eagle (2000)	D, drilling, no depth reported, tight hole, Operator has 1 additional Eagle test in this locale
FR 6-14-78	Midland Gas Co.*	1 Federal	4	senw 1-30n-32e Bowdoin Field Phillips Cty, MT	Phillips (1700)	D, Operator has 2 additional Phillips tests in this locale
FR 6-28-78	Joseph J. C. Paine & Associates	1-3406 Porteen	5	nesw 34-30n-36e Wildcat Field Valley Cty, MT	Phillips (1900)	WF, Operator has 2 additional Phillips tests in this locale
FR 6-23-78	Montana Power	10-17 Hayes	6	nwse 17-31n-19e Bowes Field Blaine Cty, MT	Eagle (1500)	D
FR 6-29-78	Trio Petro, Inc.	1 Nylander	7	nwne 1-31n-27e Wildcat Field Phillips Cty, MT	Phillips (2300)	WF, Operator has 2 additional Muddy tests in this locale, plans call for tests on Eagle, Bowdoin & Phillips
FR 5-30-78	Midlands Gas	1 Federal 3415	5	nwse 34-31n-35e Bowdoin Field Valley Cty, MT'	Phillips (1700)	D
FR 6-9-78	J. Burns Brown	3-32-15 State	8	swne 3-32n-1w Unnamed Field Toole Cty, MT	Eagle (1600)	D
FR 4-21-78	Wexpro	1-3 Rogers	9	sene 3-32n-15e Unnamed Field Hill Cty, MT	Bow Island (1000)	D, Operator has 4 additional Bow Island tests in this locale
Spud 5-9-78 FR 5-5-78	J. Burns Brown	832-15 Sathre	8	nene 8-32n-15e Unnamed Field Hill Cty, MT	Eagle (1600)	D, drilling, no depth reported, tight hole
FR 4-24-78	J. Burns Brown	9-32-19 Wright	6	swse 9-32n-19e Unnamed Field Blaine Cty, MT	Eagle (1600)	D
FR 6-14-78	Anschutz Corporation	1 Federal	10	senw 7-32n-30e Wildcat Field Phillips Cty, MT	Phillips (1900)	WF, Operator has 2 additional Phillips tests in this locale

Table 2-4 Continued

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON Projected Depth (In Ft.)	COMMENTS
FR 6-20-78	Falcon-Colorado Exploration	1-19 Federal	11	nese 19-32n-35e Swanson Creek Field Phillips Cty, MT	Phillips (1800)	D, Operator has 8 additional Phillips tests in this locale
FR 6-28-78	Gordon H. Prescott	1 State	12	nwnw 3-33n-4e Wildcat Field Liberty Cty, MT	Bow Island (2500)	WF
Spud 4-24-78 FR 4-24-78	J. Burns Brown	30-33-15 Long	8	nsw 30-33n-15e Badlands Gas Hill Cty, MT	Eagle (2000)	D, drilling, no depth reported, tight hole
Spud 5-18-78 FR 5-4-78	J. Burns Brown	29-33-18 Nemetz	6	swse 29-33n-18e Lohman Gas Field Blaine Cty, MT	Eagle (1600)	D, drilling, no depth reported, Operator has 4 additional Eagle tests in this locale
FR 6-23-78	Montana Power	8-12 Keith- Standiford	13	sene 12-35n-6e Unnamed Field Liberty Cty, MT	Bow Island (2200)	D
FR 5-15-78	Anschutz Corporation	1 Dyrdaahl	14	senw 31-35n-30e Wildcat Field Phillips Cty, MT	Phillips (2000)	WF
Spud 6-23-78 FR 6-21-78	Xeno, Inc.	5-32 NE Saddle	15	swnw 32-36n-14e Wildcat Field Hill County, MT	2nd White Specks (2620) (Phillips)	WF, drilling, no depth reported
FR 6-19-78	Walsh & Watts	Cyrus Frost 1-8 Thomas	15	nwnw 8-36n-16e Wildcat Field Hill Cty, MT	Eagle (1600)	WF
Spud 5-28-78 FR 4-10-78	Xeno, Inc.	6-27 Battle	16	senw 27-36n-19e Unnamed Field Blaine Cty, MT	Eagle (1740)	D, drilling, no depth reported, tight hole, operator has 11 additional Eagle tests in this locale
FR 6-28-78	Joseph J. C. Paine & Associates	10562 Anderson	14	nsw 5-36n-32e Unnamed Field Phillips Cty, MT	Phillips (1700)	D
FR 5-19-78	Odessa Natural	313632 Fee	14	senw 21-36n-32e Unnamed Field Phillips Cty, MT	Phillips (1600)	D, Operator has 17 additional Phillips tests in this locale

* Refer to Figure 2-3

** From Petroleum Information

‡ Listed in Table 2-1, Summary of Wells Located in USGS Designated Core Areas

sites are located in the Tiger Ridge Field, which produces from the Judith River and Eagle sands. Although production is usually "natural" in the Tiger Ridge Field, the area is being monitored by the WGSP for possible wildcat locations of significance to the core program and for fracture treatments used to enhance gas production. In northern Blaine County, Xeno, Inc., was drilling four Eagle tests at the end of June. Last quarter, Xeno announced plans for 25 - 30 Eagle tests in the Battle Creek Field. As part of this development program, a well producing 627 MCFD from the untreated Eagle was placed onstream during June. This indicates that the Xeno, Inc., wells should produce without treatment. South of the Battle Creek activity, near Tiger Ridge Field, J. Burns Brown and Kissinger Petroleum were drilling three Eagle tests which were staked in April, 1978. The wells are located three miles west of Sawtooth Mountain Field and 3.5 miles northeast of Bullwacker Field (see Figure 2-3).

Falcon-Colorado Exploration staked ten Phillips tests in the Swanson Creek Field. Seven of the locations are in Phillips County, and three are in Valley County. Joseph J.C. Paine & Associates is also active in this area and has staked seven Phillips tests close to the WGSP core site "C" (Figure 2-2). Trio Petro, Inc., staked a Phillips and two Muddy tests near Core Site "D." Plans call for testing the Eagle, Bowdoin, and Phillips in all three wells. Also, Anschutz Corp. scheduled three wildcats in this area to test the Phillips at 1,900 ft. On the Blaine County-Fergus County line, Fuel Resources Development Co. has staked nine wells projected to the Eagle. One well was drilling at the end of June, four were completed D&A, one was waiting on completion tools and the remaining three had not been spudded.

In Chouteau County, Montana Power planned three new Eagle tests. Two are projected to 3,500 ft and the third to 1,700 ft. The County has most of its exploratory activity focused in the northeast sector, around the Bullwacker Field where production is from the Eagle and Carlile Formations. The Montana Power 4,750 ft Mississippian test, of interest to the DOE Core Program, was completed D&A (Table 2-1). The wildcat was located in Valley County along the east flank of Bowdoin Dome.

Parts of North and South Dakota make up the eastern boundary of the Northern Great Plains Province. A Cretaceous test by Cabot Corp. in Tripp County, South Dakota was abandoned, and drilling had not started at quarter's end on three Niobrara tests by Montana-Dakota Utilities in Haakon County, South Dakota. In the West Short Pine Hills Field, Jerry McCutchin reactivated efforts to develop the Shannon gas pool discovered last year. One well was completed for 640 MCFD and another was drilled and waiting on completion tools.

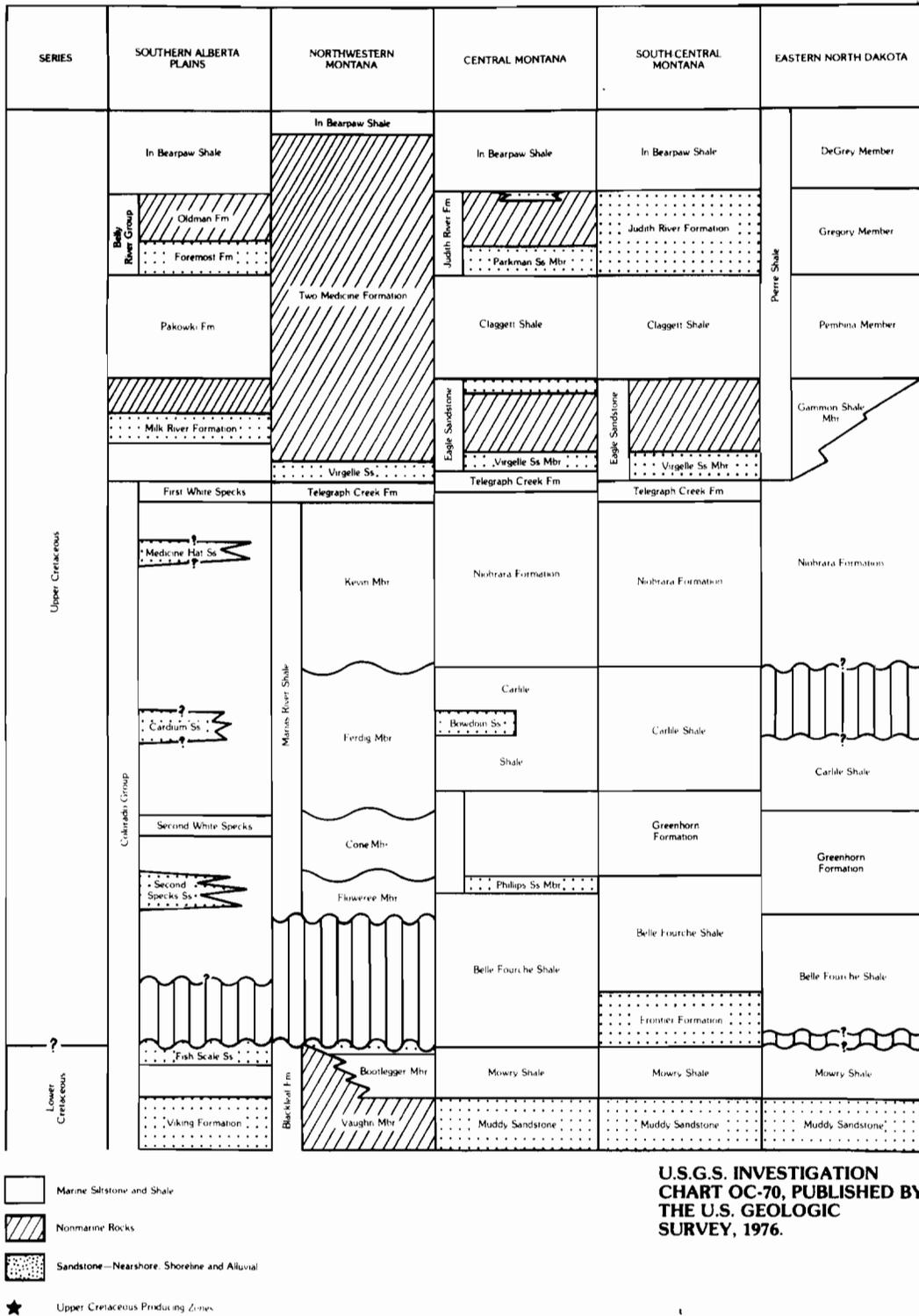


Figure 2-4 Correlation Chart of Cretaceous Rocks of the Northern Great Plains Province

3. GREATER GREEN RIVER BASIN

3.1 Core Program

The entire Greater Green River Basin of western Wyoming (Figure 3-1) has a thick sedimentary section with "tight gas sand" potential in Upper Cretaceous and Tertiary formations. Figure 3-3 (Page 30) is a stratigraphic correlation chart. In an effort to assess the resource potential within the basin, the USGS has recommended core acquisition in the following areas:

Area 1.

The crest of the Wamsutter Arch in Sweetwater and Carbon Counties, the northern edge of which borders on the Red Desert Basin and the southern edge occupies part of the Washakie Basin, T17N to T21N, and R91W to R97W. The section below the commercial Almond and Ericson (Mesaverde) is of primary interest in this area.

Area 2.

The area east of the Big Piney/LaBarge Field in Sweetwater and Sublette Counties, running north and south through the Pinedale area and to the northern edge of the Green River Basin. These areas skirt the edge of the Wind River Range. Production here is primarily Frontier, with some Mesaverde and Ft. Union tests.

Area 2 has been divided into four subdivisions which are:

- 2a West of R104W to R109W and from T22N, north to T28N
- 2b R106W to R111W and from T27N to T31N
- 2c R108W to R112W but not including development drilling, and T30N to T35N
- 2d North edge of Green River Basin; north into the Hoback Basin, T36N to 39N and R112W to 114W.

The core sites contain thick sections of tight, but generally untested gas sands and the operators active in these areas are being contacted concerning possible participation in DOE's Core Program.

At the quarter's end, core area no. 1 (Figure 3-1) had a large number of operators active, most of whom were drilling into the commercial Almond

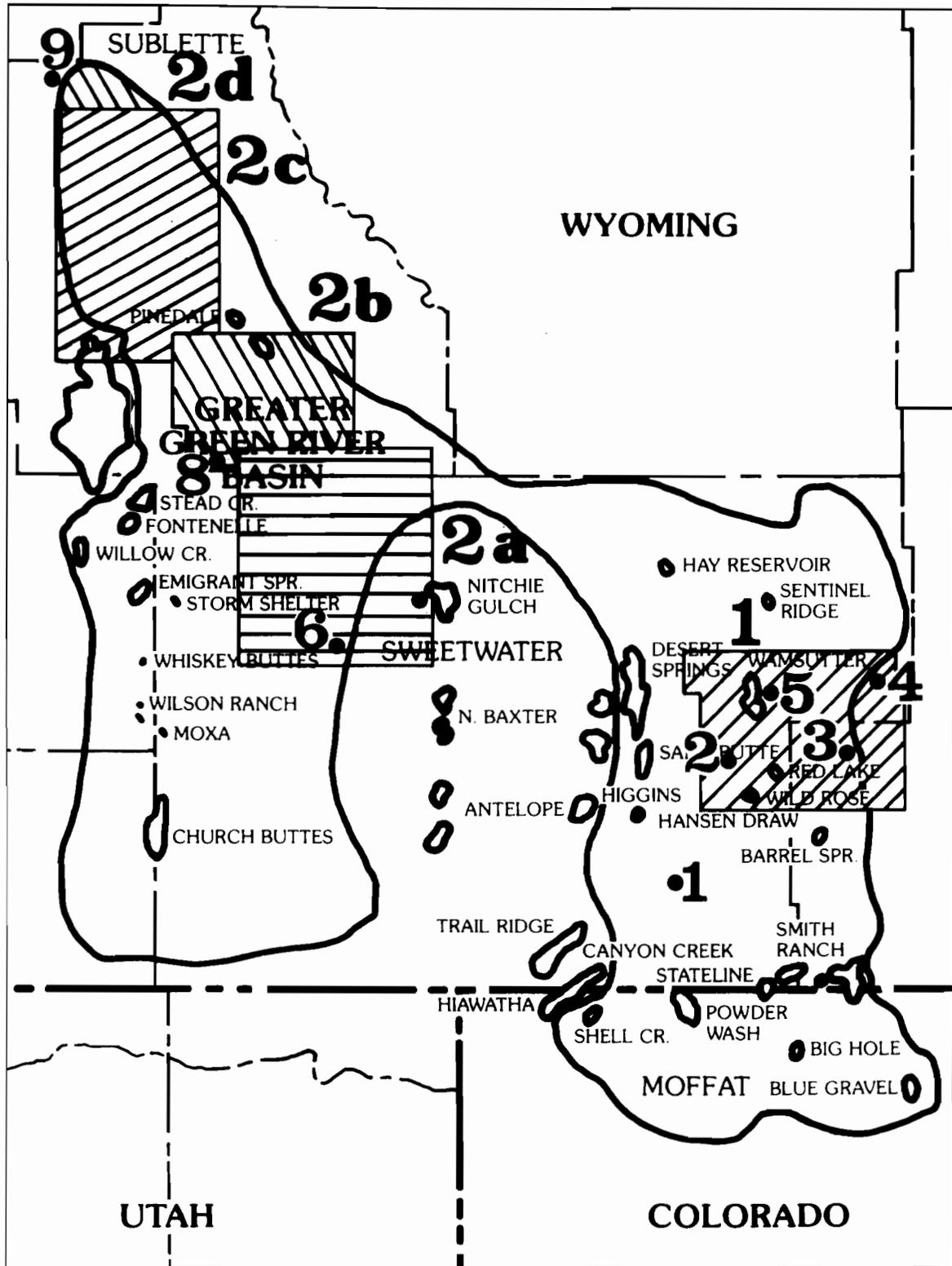


Figure 3-1 USGS Designated Core Areas and Wells of Interest, Greater Green River Basin (refer to Table 3-1)

Table 3-1 Summary of Wells located in USGS designated Core Areas, April-June
(Data as of June 29, 1978)**

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF In MCFD
FR 6-12-78	Koch Exploration†	1 Adobe Town Unit	1	swse 20-15n-97w Wildcat Field Sweetwater Cty, WY	Mesaverde (17,500)			WF, close to core area #1, deep test	
FR 11-2-77	Amoco Production	1 Champlin 221-Amoco B	2	csw 7-18n-95w Wells Bluff Field Sweetwater Cty, WY	Mesaverde	11,570		WO, testing, Operator has 4 additional Mesaverde tests in this locale	
FR 3-24-76 no comp or spud date reported	Amoco Production	1 Fillmore Creek WI Unit	3	nsw 1-19n-92w Wildcat Field Carbon Cty, WY	Mesaverde	11,655	Acidized-2,200 gal., 164,660 gal.emul. 314,000 lb sand	WF, prepare to abandon	
FR 12-22-77	Marathon Oil	1-26 Tierney II	2	csw 26-19n-94w Wildcat Field Sweetwater Cty, WY	Mesaverde (11,250)			WF	
Spud 6-7-77 FR 3-28-77	Amoco Production	2 Buck Draw Unit	4	csw 27-20n-91w Wildcat Field Sweetwater Cty, WY	Mesaverde	11,140		WF, testing, Operator has 3 additional Mesaverde tests (12,590-13,600 ft) in this locale	
FR 6-29-78	Amoco Production	1 Champlin 339 Amoco B	5	csw 3-20n-93w Five Mile Gulch Field Sweetwater Cty, WY	Mesaverde (10,980)			WO	
Spud 9-5-76 FR 8-23-76	Amoco Production	6 Unit	2	nsw 9-21n-94w Siberia Ridge Field Sweetwater Cty, WY	Mesaverde	12,250	Acidized-6,500 gal.	D, SI	
FR 9-16-77	Forest Oil	31-1 Federal	6	sww 31-22n-106w Wildcat Field Sweetwater Cty, WY	Mesaverde (9,200)			WF, drilling 8,584 ft, tight hole	
FR 4-6-78	Forest Oil†	25-1 Blue Gap II Unit	6	swse 25-22n-107w Wildcat Field Sweetwater Cty, WY	Frontier (16,200)			WF	
FR 11-14-77	Diamond Shamrock	32-25 Hanover Federal	7	nwne 25-23n-104w Wildcat Field Sweetwater Cty, WY	Mowry (8,900)			WF	
FR 5-12-77 no spud or comp date given	Davis Oil	1 Ferry Island Unit	8	csw 29-28n-109w Wildcat Field Sublette Cty, WY	Frontier	16,806	Acidized 3,000 gal., 199,962 gal. gel, 125,000 lb sand	WF, tight hole SI, Operator has additional Frontier test in this locale	
FR 8-30-77	Rainbow Resources	32-10 Federal	9	swne 10-38n-114w Wildcat Field Sublette Cty, WY	Frontier (16,800)			WF Abandoned location, expected to relocate well in this general area.	

* Refer to Figure 3-1

** From Petroleum Information

† Listed in Table 3-3, Summary of New Wells

and Ericson Formations of the Mesaverde Group. Amoco Production had 12 tests ongoing in the deeper Mesaverde and was the most active operator in the area. The tests range in depth from 10,980 - 13,600 ft (Table 3-1). Koch Exploration staked a 17,500 ft Mesaverde test in June which is located southwest of core area no. 1. Well details for this section are summarized in Table 3-1 and located on Figure 3-1.

Forest Oil and Diamond Shamrock are active in core area no. 2a. Forest Oil Co. staked a 9,200 ft Mesaverde test in 1977 and a new 16,200 ft Frontier well in April, 1978, but neither of the wells was spudded during the quarter. Northeast of the Forest Oil locations, Diamond Shamrock was testing the Mowry horizon at the end of June (Table 3-1).

Davis Oil was the sole active operator during the second quarter in core area no. 2b. The company completed a Frontier test (tight hole) to a total depth of 16,806 ft and had another deep Frontier well planned. The WGSP is most interested in obtaining core from these northwestern locations because there are numerous anticipated tight gas intervals with production potential and the well objectives are in the comparatively deep Frontier.

Rainbow Resources abandoned the site of a 16,800 ft Frontier test in the Hoback Basin, but planned to stake a new location in the immediate vicinity (Table 3-1).

3.2 Drilling Activity

Major objectives in the Greater Green River Basin are the Mesaverde Group in Carbon and Sweetwater Counties and the Frontier Formation in Sublette, Uinta and Lincoln Counties. The Lewis Formation is most often the target in the Sand Wash Basin, Moffat County, Colorado (see Figure 3.2).

During the second quarter of 1978, new gas production from Upper Cretaceous and Tertiary horizons increased significantly over the first quarter. The Mesaverde Group accounted for 47 percent of the total new production and the Lewis Formation a further 24 percent. First quarter new production was less than half that of the second quarter and the Mesaverde and Frontier horizons each accounted for approximately 40 percent of the total.

The number of well completions was 43 percent higher than during the first three months of 1978. The number of wildcat discoveries increased by 20 percent in the second quarter (from five to six) and development wells completed for production more than doubled over the same period.

Much of the second quarter increase is attributable to the end of the winter season. Still, the number of completions is far below that of the last three months of 1977. Of greatest interest is the fact that

Table 3-2 Summary of Drilling Activities, Greater Green River Basin*

	NO. OF WELLS					Producing Horizons in MCFD											Total		
	Wildcats		Development		Total	Lance	Fl. Union	Lewis	Undifferentiated	Mesaverde					Frontier	Aspen-Mowry		Bear River	Commingled
	D&A	Disc	D&A	Prod.						Almond	Eticson	Rock Springs	Blair	Hilliard					
4th Quarter 1977	20	13	10	31	74	450	1,026	9,218	19,156	17,001	3,982	0	1,298	0	21,189	0	760	362 ¹	74,442
1st Quarter 1978	7	5	6	12	30	0	0	1,852	5,385 ⁴	450	0	0	0	0	8,603	400	0	1,500 ²	18,190
2nd Quarter 1978	7	6	3	27	43	0	0	11,020	14,304	6,994	0	0	0	5,179	0	0	0	4,239 ³	45,595

1. Commingled Production - Lewis/Almond - 362 MCFD.
2. Commingled Production - Lewis/Almond - 1,500 MCFD.
3. Commingled Production - Frontier/Bear River - 4,239 MCFD.
4. IPF not available for 1 producing well.

* Data compiled from P.I. Rocky Mountain Region Report "Completions," October 6, 1977-June 29, 1978.

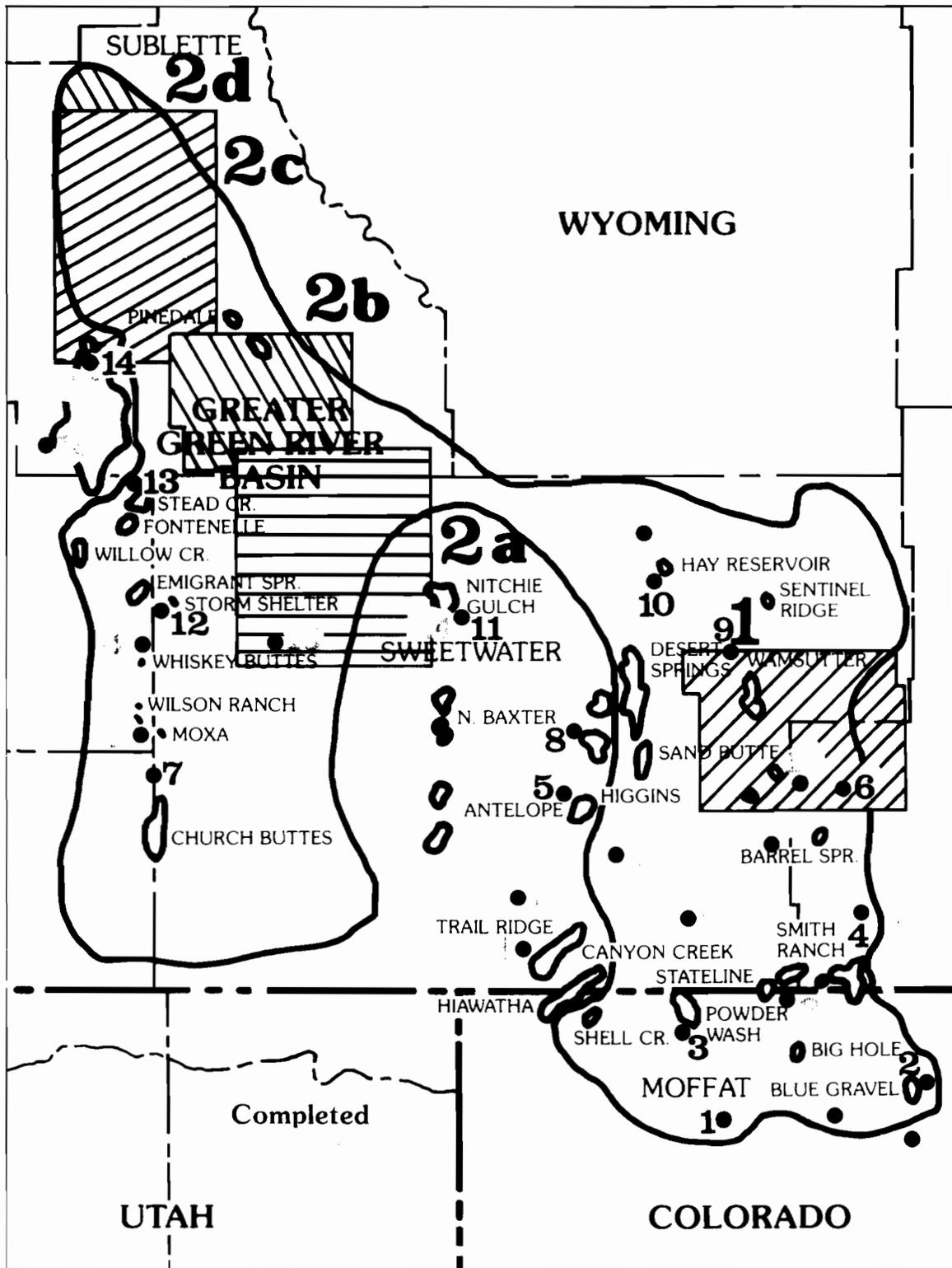


Figure 3-2 USGS Designated Core Areas, Wells completed and staked, Greater Green River Basin (refer to Tables 3-3 and 3-4)

Table 3-3 Summary of Wells Completed, April-June (Data as of June 29, 1978)**

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF In MCFD
Spud 11-5-77 Comp 2-1-78	Northwest Exploration	1 Weaver	1	new 4-9n-93w Unnamed Field Moffat Cty, CO	Lewis (7,306- 7,541)	9,300	75,480 gal. emul. 160,000 lb sand	WFD, Lewis Discovery New Field	2,300
Spud 12-26-77 Comp 3-7-78	Anadarko Production	1-27 Villard	2	sww 27-10n-90w Unnamed Field Moffat Cty, CO	Lewis (4,657- 4,800)	6,900	Acidized 3,600 gal., 50,000 gal. emul, 106,000 lb sand	WFD, Lewis Discovery- New Field	2,087
Spud 11-28-77 Comp 3-21-78	Energy Reserves Group	305A-Joyce Wolf	3	nese 18-11n-97w Powder Wash Field Moffat Cty, CO	Fort Union (6,736-6,754)	7,380 PB 6,810	16,000 gal. water, 25,875 lb sand	DG, no cores or tests	725
Spud 11-4-77 Comp 5-1-78	Getty Oil	1 SW Robbers Gulch	4	cne 27-14n-92w Unnamed Field Carbon Cty, WY	Mesaverde (8,310-9,047)	9,500 PB 9,268	112,000 gal. gel., 157,250 lb sand	WFD, Mesaverde Discovery	522 3 BC
Spud 10-25-77 Comp 3-2-78	William Moss Properties	9-12-14-93	4	swne 12-14n-93w Blue Gap Field Carbon Cty, WY	Mesaverde (9,592-9,993)	10,410 PB 10,006	53,000 gal. water, 105,000 lb sand	DG	1,149
Spud 12-23-77 Comp 4-12-78	William Moss Properties	11 Federal	4	nwse 19-15n-92w Blue Gap Field Carbon Cty, WY	Mesaverde (8,728-9,065)	9,610	55 gal. gel 105,00 lb sand	DG, no cores or tests	1,650
Spud 9-15-77 Comp 11-10-77	Sinclair Oil	22-1 Hamilton- Federal	4	cse 22-15n-92w Blue Gap Field Carbon Cty, WY	Mesaverde (7,453-8,130)	8,300 PB 8,252	sd emul frac, no size reported	DG, no cores or tests	4,600
Spud 10-4-77 Comp 1-12-78	Sinclair Oil	26-1 Hamilton Federal	4	cse 26-15n-92w Blue Gap Field Carbon Cty, WY	Mesaverde (7,178-7,538)	8,050 PB 7,800	sd emul frac, no size reported	DG	850
Spud 8-4-77 Comp 4-27-78	Kenneth Luff	2-23 Amoco Champlin	5	cse 23-17n-100w Antelope Field Sweetwater Cty, WY	Mesaverde Almond (5,619- 5,630) Member	5,750 PB 5,677	Oil fract w/ 44,625 lb sand	DG	220
Spud 6-26-77 Comp 1-21-78	Michigan-Wisconsin Pipeline	1-27 Creston- Nose	6	nwse 27-18n-92w Unnamed Field Carbon Cty, WY	Mesaverde (7,788-7,828)	10,346 PB 10,290	20,000 gal. water, 22,000 lb sand	Mesaverde extension Unnamed Field, WOE	1,043
Spud 1-30-78 Comp 5-12-78	Mountain Fuel Supply	8 Unit	7	senw 8-18n-112w Bruff Field Uinta Cty, WY	Frontier (11,492-11,522)	11,700 PBT 11,622	208,000 gal. emul., 354,000 lb sand	DG	1,605
Spud 2-17-78 Comp 5-2-78	Mountain Fuel Supply	7 Unit	7	senw 20-18n-112w Bruff Field Uinta Cty, WY	Frontier (11,643-11,683)	11,920 PB 11,870	208,000 gal. emul., 390,000 lb sand	DG	1,243
Spud 3-30-78 Comp 5-10-78	Mountain Fuel Supply	9 Unit	7	senw 22-18n-112w Bruff Field Uinta Cty, WY	Frontier (11,744-11,792)	11,900 PB 11,804	220,000 gal. emul., 365,000 lb sand	DG	3,676
Spud 2-3-78 Comp 3-15-78	Texaco	35 Unit	8	nwne 29-19n-97w Table Rock Field Sweetwater Cty, WY	Mesaverde Almond Member (7,285-7,303)	7,450	Acidized-500 gal., 12,000 gal emul., 30,000 lb sand	DG	1,000

Table 3-3 Continued

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF In MCFD
Spud 3-14-78 Comp 5-11-78	Mountain Fuel Supply	10 Unit	7	nene 23-19n-112w Bruff Field Sweetwater Cty, WY	Frontier (11,481-11,513)	11,670 PBD 11,575	136,500 gal. emul.,239,000 lb sand	DG, no cores	1,049
Spud 1-9-77 Comp 2-11-78	Amoco Production	1 Champlin 359 Amoco-A	7	nene 23-19n-111w Unnamed Field Sweetwater Cty, WY	Frontier Almond Member (12,412-12,571)	12,762	2,310 BO, 63,000 lb sand	WFD, no tests	884 12 BC
Spud 2-15-76 Comp 4-24-78	Amoco Production	1 Stock Pond WI Unit	9	nwse 11-22n-95w Unnamed Field Sweetwater Cty, WY	Mesaverde Almond Member (10,765-11,034)	12,701 PB 11,060	Acidized 5,810 gal. 98,910 gal. emul, 138,308 lb sand	Almond discovery New Field	522 3 BC
Spud 2-14-78 Comp 4-6-78	Davis Oil	16 Unit	10	swne 1-23n-97w Hay Reservoir Field Sweetwater Cty, WY	Lewis (9,872-90)	10,076 PB 10,000	146,750 gal. emul,195,000 lb sand	DG, no cores or tests	1,295
Spud 10-7-77 Comp 3-23-78	Elf Aquitaine	13-3 Federal	11	csw 3-23n-103w Nitchie Gulch Field Sweetwater Cty, WY	2nd Frontier (9,282-96)	10,090 PB 9,968	Acidized-4,000 gal.	DG,	1,400
Spud 7-5-77 Comp 2-10-78	Davis Oil	10 Unit	12	nwse 8-23n-111w Storm Shelter Field Sweetwater Cty, WY	2nd Frontier (10-242-10,279)	10,500 PB 10,296	Acidized- 30,000 gal.,274,350 gal. emul, 558,000 lb sand	DG,	73
Spud 12-11-77 Comp 3-27-78	Davis Oil	9 Unit	10	nwse 15-24n-97w Hay Reservoir Field Sweetwater Cty, WY	Lewis (10,271- 10,324)	10,839 PB 10,580	143,000 gal. oil, 195,000 lb sand	DG,	3,801
Spud 4-15-77 Comp 1-11-78	Davis Oil	7 Unit	10	senw 23-24n-97w Hay Reservoir Field Sweetwater Cty, WY	Lewis (10,352- 10,369)	10,690 PB 10,495	Acidized-5,000 gal.,125,916 gal. oil, 100,000 lb sand	DG	525
Spud 12-8-77 Comp 3-31-78	Davis Oil	14 Unit	10	senw 25-24n-97w Hay Reservoir Field Sweetwater Cty, WY	Lewis (10,200 10,229)	10,464 PB 10,382	104,496 gal. emul,112,000 lb sand	DG	1,012 33 BC
Spud 12-1-77 Comp 3-21-78	Elf Aquitaine	13-33 Nitchie Gulch Amoco	11	csw 33-24n-103w Nitchie Gulch Field Sweetwater Cty, WY	2nd Frontier (9,505-81)	10,467	Acidized w/ 18,000 gal. fract w/65,000 gal. emul, 85,000 lb sand	WOE 2nd Frontier extension	76
Spud 7-10-77 Comp 3-8-78	Pacific Trans- mission Supply	42-32 Buck	13	sene 32-26n-112w Fontenelle Field Lincoln Cty, WY	2nd Frontier (7,857-7,936)	8,070 PB 8,002	Acidized w/ 2,000 gal. emul,675,000 lb sand	DG	420
Spud 6-6-77 Como 1-24-78	Pacific Trans- mission Supply	42-33 Federal	13	sene 33-26n-112w Fontenelle Field Lincoln Cty, WY	2nd Frontier (7,802-99)	7,995 PB	341,700 gal.gel 672,000 lb sand	DG	193
Spud 2-16-77 Comp 10-24-77	Pacific Trans- mission Supply	23-25 Unit	13	nesw 35-26n-112w Fontenelle Field Lincoln Cty, WY	2nd Frontier (8,025-8,106)	8,248 PB 8,125	738,000 gal. emul. 1,450,000 lb sand	DG, very large frac	200
Spud 4-11-77 Comp 9-19-77	Pacific Trans- mission Supply	24-36 State	13	sesw 36-26n-112w Fontenelle Field Lincoln Cty, WY	2nd Frontier (8,388-8,481)	8,600 PB 8,450	Acidized-3,500 gal.,456,000 gal. emul 900,000 lb sand	DG, no cores	1,000

Table 3-3 Continued

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF In MCFD
Spud 9-13-77 Comp 3-27-78	Anache Corp.	2-23 Bird Canyon Federal	13	cnw 23-27n-112w Figure Four Canyon Field Sublette Cty, WY	Frontier (7,773-8,021) Bear River (8,475-8,628)	8,693	Acidized-3,000 195,510 gal. emul, 95,200 lb sand	DG, no cores, commingled	2,830
Spud 1-2-78 Como 4-26-78	Energetics, Inc.	10-30 Federal	13	senw 30-27n-111w Bird Canyon Field Sublette Cty, WY	2nd Frontier (8,809-74) Bear River (9,432-74)	9,612 PB 9,569	Acidized-1,000 gal., 72,000 gal. water, 120,000 lb sand acidized-1,000 gal., 75,300 gal water, 80,000 lb sand	DG commingled	1,409
Spud 11-17-77 Comp 3-18-78	Chevron	102 Unit	13	nesw 1-27n-113w Birch Creek Sublette Cty, WY	Frontier (7,032-7,181) Bear River (7,548-86)	7,970 PB 7,909	780,000 gal. emul, 378,000 lb sand, acidized 4,000 gal., 28,000 gal. wtr 40,000 lb sand	DG, commingled	2,490
Spud 10-16-77 Comp 3-26-78	Chevron	101 Unit	13	sesw 12-27n-113w Birch Creek Field Sublette Cty, WY	Frontier (6,877-6,999) Bear River (7,647-75)	7,770 PB 7,715	Acidized-1,240 gal, reacidized 2,500 gal., 107,000 gal. wtr. 152,000 lb sand, acidized-1,500 gal., 29,000 gal. wtr., 40,000 lb sand	DG, commingled no cores or test	9,330
Spud 11-25-77 Comp 3-30-78	Belco Petroleum	5-24-28	14	sesw 28-30n-113w Deer Hill Field Sublette Cty, WY	Transition (2,162-3022)	3,450 PB 3,186	33,515 gal. emul 23,000 lb sand	DG	2,191
Spud 4-7-78 Comp 6-6-78	Belco Petroleum	26-33S Unit	14	nenw 33-30n-113w Deer Hill Field Sublette Cty, WY	Transition (2,102-2,939)	3,082	25,768 gal. emul, 239,000 lb sand	DG, no cores or tests	1,697

* Refer to Figure 3-2

** From Petroleum Information

Table 3-4 Summary of New Wells, April-June (Data as of June 29, 1978)**

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON Projected Depth (In Ft.)	COMMENTS
FR 6-23-78	Sun Gas	29-1 Federal-Fox	1	nwnw 29-8n-90w North Craig Field Moffat Cty, CO	Lance (3,800)	D,
FR 4-12-78	Northwest Exploration	1 Bruder	2	nene 4-9n-93w Unnamed Field Moffat Cty, CO	Lewis (8,350)	WO, Operator has 4 additional Lewis tests in this locale
FR 4-21-78	Gary Operating	2-4 Chambers Federal	3	nwnw 2-12n-93w Wildcat Field Carbon Cty, WY	Wasatch (2,500)	WF, Operator has 3 additional Wasatch tests in this locale
Spud 6-10-78	Gary Operating	10-4 Jerry Chambers Federal	3	nwnw 10-12n-93w Smith Ranch Field Carbon Cty, WY	Ft. Union (2,500)	D, well name changed from 10-4 Federal, logging
FR 6-6-78	Anadarko Production	1 Fireplace Rock Unit	3	sese 16-12n-95w Wildcat Field Sweetwater Cty, WY	Mesaverde Almond Member (9,900)	WF
FR 6-20-78	Oil Development of Texas	16-34 Unit	4	swnw 34-13n-101w Canyon Creek Field Sweetwater Cty, WY	Lewis (4,420)	D, Operator has 3 additional Lewis tests in this locale
FR 5-3-78	Sinclair Oil	2-1 Grynberg- Federal	5	cne 2-14n-92w Blue Gap Field Sweetwater Cty, WY	Mesaverde (8,300)	El: 6,449 Gr. loc. D, Operator has 1 addi- tional Mesaverde test in this locale
FR 6-12-78	Koch Exploration	1 Adobe Town Unit	6	swse 20-15n-97w Wildcat Field Sweetwater Cty, WY	Mesaverde (17,500)	El: 6,784 Gr. loc. WF, close to core area A
Spud 6-23-78	Jerry Chambers	1-20 Scheggs Draw	7	sese 20-15n-101w Wildcat Field Sweetwater Cty, WY	Mesaverde	El: 6,964 Gr. WF, drilling 1,524
FR 5-2-78	CIG Exploration	1-2-16-94 Federal	8	cse 2-16n-94w Wildcat Field Sweetwater Cty, WY	Mesaverde (11,000)	WF
Spud 5-12-78	CIG Exploration	1-23-16-94 Federal	8	s4se 23-16n-94w Wildcat Field Sweetwater Cty, WY	Mesaverde (11,400)	WF, drilling 3,485
Spud 6-1-78	Smokey Oil	2-12 King Resources Federal	9	csw 12-16n-98w Wildcat Field Sweetwater Cty, WY	Mesaverde (13,300)	WF, drilling Operator has an additional Mesaverde test in this locale
FR 6-19-78	Amoco Production	1 Champlin 261 Amoco G	10	csw 17-18n-93w Unnamed Field Carbon Cty, WY	Mesaverde (9,555)	WO, Operator has 3 additional Mesaverde tests in this locale
FR 4-14-78	CIG Exploration	1-26-19-93 Federal	10	e4sw 26-19n-93w Wildcat Field Carbon Cty, WY	Mesaverde (9,850)	WF

Table 3-4 Continued

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON Projected Depth (In Ft.)	COMMENTS
FR 4-25-78	Amoco Production	1 Champlin 285 Amoco-B	11	sesw 3-19n-112w Wildcat Field Lincoln Cty, WY	Frontier (11,486)	WF, Operator has an additional Frontier test in this locale
Spud 5-9-78	Marathon Oil	1-14 Latham	10	sene 14-20n-93w Wildcat Field Sweetwater Cty, WY	? (10,900)	WF, drilling 10,463
FR 3-31-78	Amoco Production	21 Unit	12	nesw 9-21n-112w Whiskey Buttes Field Lincoln Cty, WY	Frontier (11,216)	D, operator has 7 additional Frontier tests in this locale
FR 4-6-78	Forest Oil*	25-1 Blue Gap II Unit	13	swse 25-22n-107w Wildcat Field Sweetwater Cty, WY	Frontier (16,200)	WF
FR 4-13-78	Woods Petroleum	1 Steamboat Mtn. Unit	14	senw 3-23n-102w Wildcat Field Sweetwater Cty, WY	? (12,500)	WF
Spud 5-23-78	Davis Oil	1 Five Fingers Unit	15	swne 14-25n-98w Wildcat Field Sweetwater Cty, WY	Mesaverde (13,000)	WF, drilling 10,636
FR 4-26-78	Mountain Fuel Supply	Supply 27 Unit	16	nwnw 14-27n-114w Dry Piney Field Sublette Cty, WY	Frontier (7,000)	D
FR 6-2-78	Belco Petroleum	20-34 Chimney Buttes Unit	16	nenw 34-28n-113w Big Piney Field Sublette Cty, WY	Frontier (7,800)	D, operator has 3 additional Frontier tests in this locale
FR 4-24-78	Belco Petroleum	5-27-33 Unit	17	swne 33-30n-113w Deer Hill Field Sublette Cty, WY	Ft. Union (3,400)	D

* Refer to Figure 3-2

** From Petroleum Information

† Listed in Table 3-1, Summary of Wells Located in USGS Designated Core Areas

the number of wildcats drilled dropped from 33 during the fourth quarter of 1977, to only 12 and 13 respectively in the succeeding quarters (Table 3-2).

The most active area was in the southwestern corner of Sweetwater County and the western area of Carbon County. The western section of the Basin, had the greatest proportion of new production with approximately 55 percent of the gas wells completed in horizons of interest during the quarter (Table 3-3, Figure 3-2). The Bruff Field in Uinta County contributed 7,573 MCFD from four fractured Frontier completions by Mountain Fuel Supply (Table 3-3).

In western Carbon County, Getty Oil completed a Mesaverde wildcat, for a new field discovery three miles southwest of the shut in Robbers Gulch Field. A sand emulsion fracture treatment was used to enhance gas production.

New developments in the eastern portion of the basin included the staking of four new Wasatch tests and a Ft. Union venture by Gary Operating. The well sites are located 2.5 to 3.5 miles west of South Baggs Field, which produces from the Lewis, Mesaverde and Ft. Union (Table 3-4). Other operators in the area are Sinclair Oil, Smokey Oil, Amoco Production, Mobil Oil and Equity Oil. Amoco Production has six wildcat outposts in the Wamsutter Arch locality projected to the Mesaverde (9,480 - 9,715 ft) and a deeper test at 12,230 ft, nine miles northeast of the Wamsutter Field.

In Sweetwater County there has been increased interest in the Lewis Formation. In the northern part of the County, Davis Oil put two Lewis producers onstream in Hay Reservoir Field. Canyon Creek Field, located in the southern part of the county, had four Lewis tests (4,066 - 4,420) staked by Oil Development of Texas.

The Frontier Formation is the principal objective in the western part of Sweetwater County and Sublette, Lincoln and Uinta Counties. Emphasis is on the development of established gas fields including Tip Top, Figure Four, Big Piney, Whiskey Buttes and Fontenelle.

In Lincoln County, Amoco staked three new Frontier tests in the Whiskey Buttes Field and FMC scheduled an 8,500 ft Frontier test in Rocking Chair Field. Energetics was active in the Bird Canyon Field, Sublette County, with two Bear River tests in progress at quarter's end and a completion in April with commingled production from the second Frontier and Bear River. Mountain Fuel Supply, mentioned previously, put four Frontier wells onstream, all fractured to enhance production.

On the Lincoln/Sweetwater County line, Amoco Production made a new field discovery in February on the east flank of the Moxa Arch. Well production began during the second quarter at 884 MCFD from the Frontier.

Moffat County, Colorado comprises the southernmost portion of the Greater Green River Basin. The two most active operators are Northwest Exploration and Sun Gas Co. Northwest Exploration has scheduled four stepouts to a recent Lewis gas discovery. One of these wells was spudded and drilling at quarter's end. Northwest Exploration is also active in Great Divide Field where they have staked a wildcat outpost to test the Lewis. Sun Gas Co. continued development of the Lance Formation in the North Craig Field.

4. UINTA BASIN

4.1 Core Program

Located in northeastern Utah, the Uinta Basin (see Figure 4-1) has potential production from "tight gas sands" in a thick section of Upper Cretaceous through Tertiary sediments (Figure 3-3, Page 30). The Cretaceous tight horizons include the Castlegate and Sege sandstones and the Blackhawk, Price River, Neslen and Farrer Formations. Within the Tertiary, tight gas sands are found in the Tuscher, North Horn, Wasatch and Green River Formations. Certain areas have been designated by the USGS for the acquisition of core for the WGSP core program. These areas are:

- A. Wasatch and Duchesne Counties - T4S to T7S, R5W to R11W; in Wasatch County, T9S to T11S, R7, 8, and 9E; in Carbon County, T11S to T12S, R7E to R13E.
- B. Duchesne and Uintah Counties - T3S to T4S, R2E to R2W and parts of T8S, R16E to R18E.
- C. Uintah County - T8S and T9S and R23, 24, and 25E.
- D. Uintah and Grand Counties - T10S, R18E; T11S to T16S, R18E to R25E; and in T17S, T18S, and T19S, R21E and R22E.

Choice of the core areas was based largely on the lack of core and well data in those locations which lay outside the main productive fields of the Uinta Basin. At present, activity is centered around the Natural Buttes and Red Wash Fields, where production is primarily from the Green River and Wasatch Formations and Mesaverde Group.

Operators active in the core areas are contacted for possible participation in the WGSP core program. As is shown in Table 4-1, and located in Figure 4-1, there are a number of wells scheduled or drilling in the Uinta Basin core areas. No cooperative agreements were reached with operators of these wells during the second quarter and no coring was known to be planned.

4.2 Drilling Activity

During the second quarter of 1978, activity in the Uinta Basin was in the proven gas fields. Eighteen wells were completed, only two of which were wildcat wells. First quarter activity had a total of twelve com-

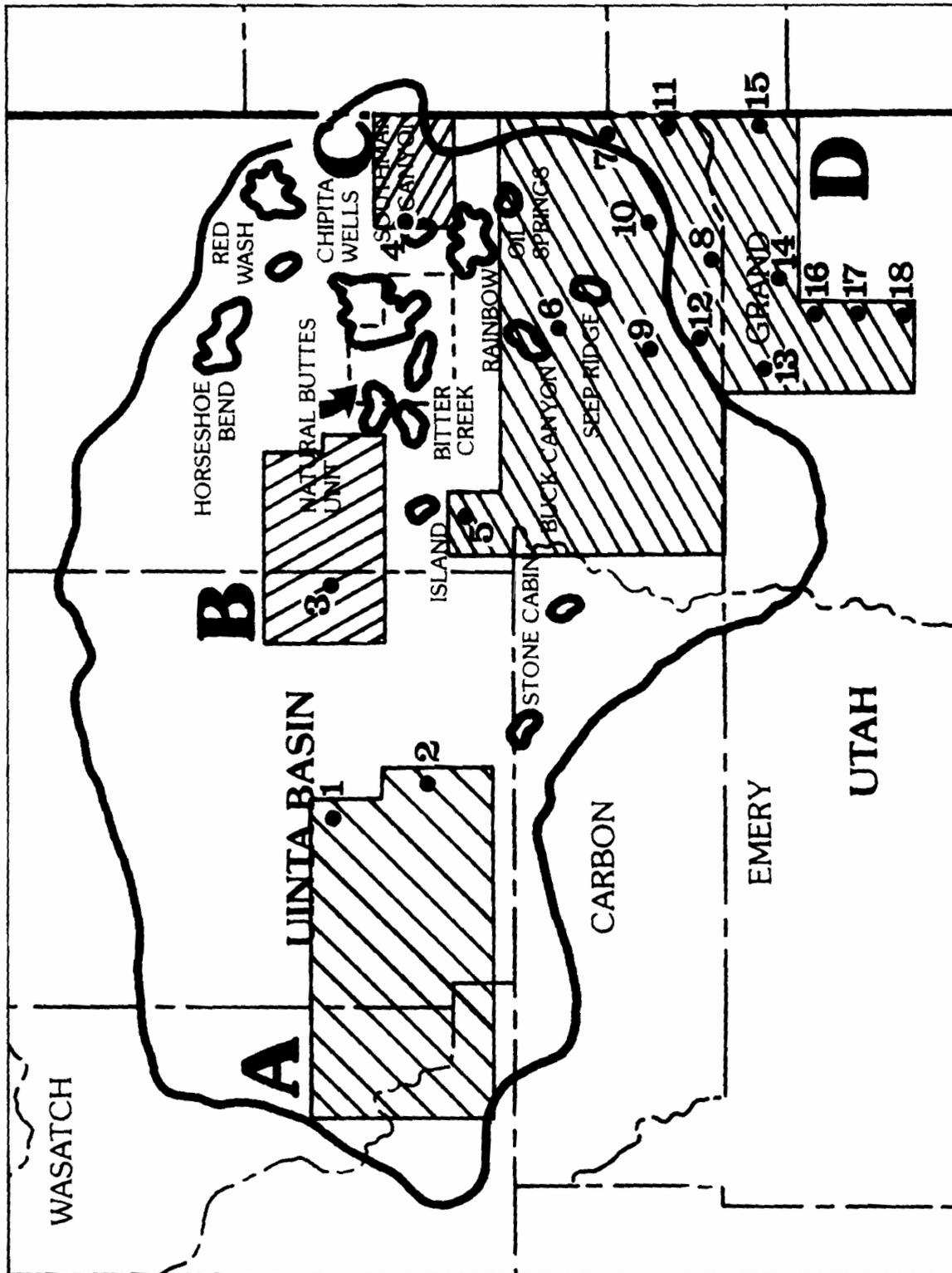


Figure 4-1 USGS Designated Core Areas and Wells of Interest, Uinta Basin (refer to Table 4-1)

Table 4-1 Summary of Wells located in USGS designated Core Areas, April-June
(Data as of June 29, 1978)**

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF In MCFD
Spud 3-11-78 FR 7-6-77	W.A. Moncrief	15-1 Gulf Tribal	1	nene 15-4s-6w Wildcat Field Duchesne Cty, UT	Confidential test			WF @ 11,087 SDR-shut down for repairs	
FR 5-15-78	Gulf Oil	1-22 Ute [†] Tribal	1	nwne 22-4s-6w Wildcat Field Duchesne Cty, UT	Wasatch (6,500)			WF, Operator has additional Wasatch test & a Green River test in this locale	
Spud 10-10-77 FR 6-9-77	Phoenix Resources	22-1 Wolf Hollow	2	sww 22-6s-5w Wildcat Field Duchesne Cty, UT	Wasatch	5,183	81,300 gal. foam, 48,000 lb sand, acidized	WF, ST, Operator has an additional Wasatch test in this locale	
Spud 3-1-78 FR 12-28-78	Pacific Transmission Supply	32-29 PTS Federal	3	swne 29-8s-17e Wildcat Field Duchesne Cty, UT	Castlegate	14,245 PBTD 6,600		WF, WOCT	
Spud 2-23-78 FR 1-11-78	Pacific Transmission Supply	23-11 Sand Ridge Unit	4	nesw 11-9s-23e Natural Buttes Field Uintah Cty, UT	Mesaverde	7,400		D, WOCT	
FR 1-9-78	Continental Oil	13 Chapita Federal	4	sese 13-9s-23e Natural Buttes Field Uintah Cty, UT	Mesaverde (8,749)			D, Operator has 4 additional Mesaverde tests in this locale	
Spud 1-29-78 Comp 5-21-78	Belco Petroleum	41-18 Chapita Wells Unit	4	swnw 18-9s-23e Natural Buttes Field Uintah Cty,	Wasatch (5,607-7,121)	7,180 PB 7,137	63,000 gal. emul, 195,000 lb sand	DG, no cores or tests, Operator has an additional Wasatch producer (369 MCFD) in this locale	
Spud 1-19-78 FR 12-23-78	Pacific Transmission Supply	41-9 Devil's Playground	4	nene 9-9s-24e Natural Buttes Field Uintah Cty, UT	Castlegate	6,470	Acidized 3,500 gal.	WO, F 24 MCFD, tstg	
Spud 9-16-77 Comp 10-23-77	Belco Petroleum	1-6 E Eight Mile Unit	5	nwne 6-10s-18e Unnamed Field Uintah Cty, UT	Green River (4,234-38)	7,995 PB 4,478	Acidized w/500 gal. 4,000 gal. emul 7,000 lb sand	WFD Green River Discovery New Field	56 BOPH
Fr 4-26-78	Mapco, Inc. [‡]	5-11 D R BU	5	swnw 11-10s-18e Uteland Butte Field Uintah Cty, UT	Mesaverde (8,455)			D, Operator has 8 additional Mesaverde tests in this locale	
Spud 3-8-78 FR 1-20-78	Amoco Production	1 Buck Camp	6	nene 22-12s-22e Wildcat Field Uintah Cty, UT	Mississippian (15,000)			WF, @15,082 reaming	
Spud 11-3-77 Comp 5-16-78	Texaco, Inc.	8 Sleep Ridge	6	nwse 14-13s-22e Sleep Ridge Field Uintah Cty, UT	Morrison	10,350	Acidized - 4,500 gal.	D, D&A	
FR 4-6-78	Exxon	2 Crooked Canyon	6	nwne 34-13s-23e Wildcat Field Uintah Cty, UT	Morrison (9,150)			WF	
Spud 1-3-77 FR 11-9-78	Taiga Energy	1 Dry Burn Unit	7	nwse 29-13s-25e Wildcat Field Uintah Cty, UT	Mancos	5,796		WF, perf, tstg Operator has an additional Mancos test in this locale	

Table 4-1 Continued

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF In MCPD
FR 8-3-77	Exxon Corp.	2 Pine Spring Unit	9	new 3-14s-21e Wildcat Field Uintah Cty, UT	Morrison (10,000)			WF Abandoned loca -tion	
Spud 10-9-77 FR 6-21-77	Exxon, USA	1 Pine Spring Unit	9	new 15-14s-22e Wildcat Field Uintah Cty, UT	Jurrassic	9,700		WF, SI	
Spud 7-29-77 Comp 1-28-78	Exxon, USA	1 Crooked Canyon	10	nwne 20-14s-23e Wildcat Field Uintah Cty, UT	Dakota (9,016- 9,142)	9,728 PB 9,291	Acidized - 9,500 gal. Fract w/ 63,200 gal. water, 73,600 lb sand	WFD, Dakota Discovery-New Field	143
Spud 11-23-77 Comp 4-14-78	Taiga Energy	1L-23 Federal	10	swne 23-14s-24e Wildcat Field Uintah Cty, UT	Mancos (5,416- 5,804)	5,903	61,970 gal. emul, 216,000 lb sand	WFD, Mancos Discovery-New Field	288
Spud 9-30-77 Comp 11-19-77	Taiga Energy	1 Rat Hole Canyon	11	nwse 8-14s-25e Wildcat Field Uintah Cty, UT	Mancos (4,166- 4,532)	4,950	35,000 gal. emul., 90,000 lb sand	Mancos Discovery 314 New Field	
FR 6-21-78	Taiga Energy	3 Rat Hole Canyon	7	senw 9-14s-25e Unnamed Field Uintah Cty, UT	Mancos (4,950)			WO, Operator has 2 additional Mancos tests in this locale	
FR 4-17-78	Taiga Energy	14-16 Main Canyon Unit	8	new 16-15s-23e Wildcat Field Uintah Cty, UT	Navajo (9,320)			WF	
FR 6-21-78	Taiga Energy	3 Black Horse Canyon	8	nesw 9-15s-24e Wildcat Field Uintah Cty, UT	Mancos (6,100)			WF	
FR 1-13-78	Exxon, USA	1 Wolf Point Unit	12	sese 2-15s-21e Wildcat Field Uintah Cty, UT	Wasatch (10,500)			WF	
FR 6-13-77	Anschutz Corp.	1 State-920	13	nws 28-16s-21e Segundo Canyon Grand Cty, UT	Morrison (9,930)			D	
Spud 2-28-78	Anschutz Corp.	921-1 Ten Mile-State	13	new 34-16s-21e Segundo Canyon Field Grand Cty, UT	Mancos (8,850)			WS, SDW @300	
FR	Anschutz Corp	1 State-915	13	nwnw 17-16s-22e Unnamed Field Grand Cty, UT	Entrada (10,500)			WD	
FR 6-13-77	Anschutz Corp.	1 State-400	14	nene 17-16s-23e Wildcat Field Grand Cty, UT	Entrada (9,210)			WF	
FR 4-17-78	Palmer O&G	16-4 State	15	nene 16-16s-26e San Arroyo Field Grand Cty, UT	Salt Wash (4,970)			D	

Table 4-1 Continued

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF In MCPD
Spud 5-22-78	Palmer O&G	33-13 Federal	15	swse 33-16s-26e San Arroyo Field Grand Cty, UT	Morrison	4,180		WOCT, tight hole D,	
FR 9-30-77	Anschutz Corp.	1 State-402	13	swne 36-17s-20e Wildcat Field Grand Cty, UT	Dakota (9,400)			WF	
FR 6-13-77	Anschutz Corp.	1 State-404	16	nenw 23-17s-21e Segundo Canyon Field Grand Cty, UT	Morrison (8,900)			WO	
FR 10-1-76	Anschutz Corp.	1-414 State	17	sesw 32-18s-21e Wildcat Field Grand Cty, UT	Entrada (8,000)			WF, Operator has an additional Entrada test in this locale	

* Refer to Figure 4-1

** From Petroleum Information

† Listed in Table 4-4, Summary of New Wells

Table 4-2 Summary of Drilling Activities, Uinta Basin*

	NO. OF WELLS				Producing Horizons in MCFD										Total		
	Wildcats		Development		Total	Green River	Wasatch	Undifferentiated	Mesaverde					Mancos B		Commingled	
	D&A	Disc	D&A	Prod.					Price River	Black Hawk	Star Point	Mancos	Mancos B				
4th Quarter 1977	4	0	2	14	20	0	21,901	1,850	0	0	0	0	0	0	0	1,400 ¹	25,151
1st Quarter 1978	5	1	0	6	12	0	8,182	0	0	0	0	0	0	0	0	0	8,182
2nd Quarter 1978	1	1	1	15	18	0	19,411	329	0	0	0	314	0	0	750 ²	20,804	

1. Commingled Production - Wasatch/Mesaverde - 1,400 MCFD

2. Commingled Production - Wasatch/Mesaverde - 750 MCFD

* Data compiled from P.I. Rocky Mountain Region Report "Completions," October 6, 1977-June 29, 1978

pleted wells and six wildcat locations. There was only one wildcat discovery for each of the first three quarters and no discoveries during the fourth quarter of 1977 (Table 4-2).

Development drilling within the Basin was principally around the Natural Buttes unit of Uintah County. Enserch Exploration had staked two Mesaverde development well locations in this area during the first quarter of the year. One of the two wells was spudded during May. Mapco, Belco, CIG Exploration and Gas Producing Enterprises all staked development locations during the second quarter around Natural Buttes with the planned objectives being the Wasatch or Mesaverde. At the end of the quarter, all three companies had drilling in progress at one of the new locations.

Taiga Energy staked a number of Mancos tests in June, which were also of interest to the WGSP core program. At the end of the quarter, two of the locations had come into conflict with the federally-designated roadless areas.

Other new wells of interest were staked by Gulf Oil and Jerry Chambers. These details are summarized in Tables 4-3 and 4-4.

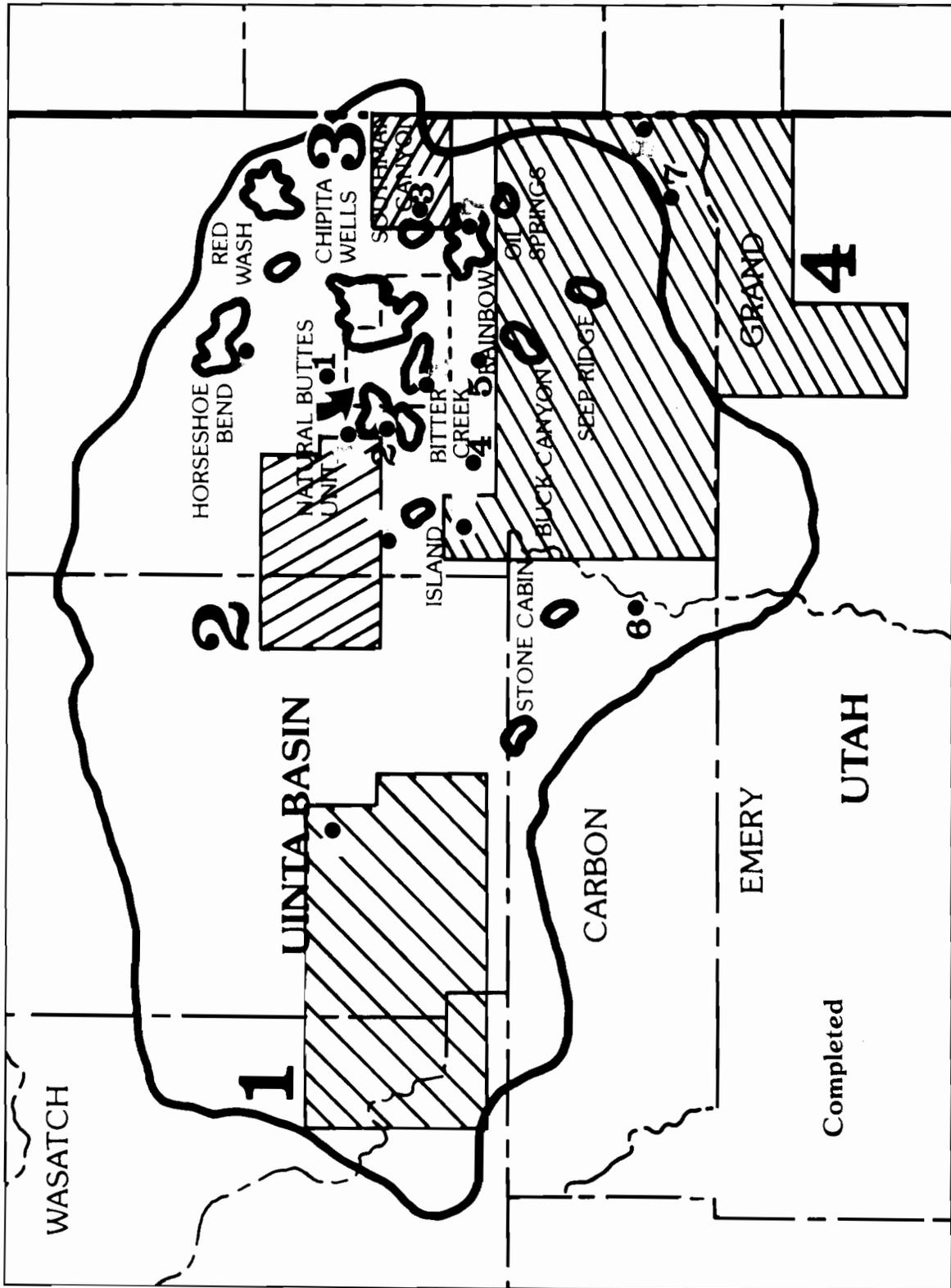


Figure 4-2 USGS Designated Core Areas, Wells completed and staked, Uinta Basin (refer to Table 4-3 and 4-4)

Table 4-3 Summary of Wells Completed, April-June (Data as of June 29, 1978)**

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF In MCFD
Spud 6-13-78 FR 4-18-78	Continental Oil	34-2 Conoco Mtn. Lion	1	nese 34-8s-21e Wildcat Field Uintah Cty, UT	Mancos	3,531		WF, WOCT, projected depth was 10,735 ft	
Spud 11-11-77 Comp 1-17-78	Belco Petroleum	1-11 G Duck Creek	2	nsw 11-9s-20e Natural Buttes Field Uintah Cty, UT	Wasatch (5,503- 6,241)	6,690 PB 6,313	56,500 gal. emul. 102,000 lb sand	DG, no cores or tests	367
Spud 12-10-77 Comp 2-17-78	Belco Petroleum	11-14 B Natural Buttes Unit	2	snw 14-9s-20e Natural Buttes Field Uintah Cty, UT	Wasatch (5,803- 6,572)	6,677 PB 6,601	94,200 gal. emul. 172,000 lb sand	DG, no cores or tests	627
Spud 2-9-78 Comp 4-10-78	Belco Petroleum	21-20 B Natural Buttes Unit	2	nene 20-9s-20e Natural Buttes Field Uintah Cty, UT	Wasatch (6,092- 6,916)	7,025 PB 6,982	82,317 gal. emul. 212,000 lb sand	DG, no cores or tests	5,863
Spud 1-8-78 Comp 2-2-78	Belco Petroleum	12-23 B Natural Buttes Unit	2	snw 23-9s-20e Natural Buttes Field Uintah Cty, UT	Wasatch (6,088- 6,381)	6,500 PB 6,478	Fract w/124,000 gal.emul., 260,000 lb sand	DG, no cores or tests	3,975
Spud 3-10-78 Comp 4-29-78	Belco Petroleum	25-20 B Natural Buttes Unit	2	snw 20-9s-21e Natural Buttes Field Uintah Cty, UT	Wasatch (5,260- 6,071)	6,800 PB 6,570	89,000 gal. emul. 188,500 lb sand	DG, no cores or tests	802
Spud 1-29-78 Comp 5-21-78	Belco Petroleum	41-18 Chapita Wells Unit	3	snw 18-9s-23e Natural Buttes Field Uintah Cty, UT	Wasatch (5,607- 7,121)	7,180 PB 7,137	63,000 gal. emul. 195,000 lb sand	DG, no cores or tests	461
Spud 12-9-77 Comp 1-25-78	Belco Petroleum	40-27 Chapita Wells Unit	3	nwnw 27-9s-23e Natural Buttes Field Uintah Cty, UT	Wasatch (5,069- 5,280)	5,500 PB 5,432	Acidized 3,000 gal., 44,000 gal. emul., 83,000 lb sand	DG, no cores or tests	369
Spud 3-20-78 Comp 5-9-78	Belco Petroleum	26-13 B Natural Buttes Unit	4	sese 13-10s-20e Natural Buttes Field Uintah Cty, UT	Wasatch (5,730- 6,252)	6,342 PB 6,300	77,000 gal. emul. 168,000 lb sand	DG, no cores or tests	1,351
Spud 1-31-78 Comp 3-21-78	Belco Petroleum	16-6 B Natural Buttes Unit	4	sese 6-10s-21e Natural Buttes Field Uintah Cty, UT	Wasatch (4,939- 5,898)	6,455 PB 6,380	121,500 gal. emul. 296,000 lb sand	DG, no cores or tests	3,310
Spud 9-5-77 Comp 1-30-78	Gas Producing Enterprises	29 Natural Buttes Unit	4	nsw 11-10s-21e Natural Buttes Field Uintah Cty, UT	Wasatch (5,576-81) Mesaverde (7,420- 9,626)	9,900	Acidized 5,000 gal. 315,000 gal. emul. 660,000 lb sand	DG commingled no cores or tests no breakdown on frac reported	750
Spud 10-25-77 Comp 12-15-77	Belco Petroleum	17-18 B Natural Buttes Unit	4	swse 18-10s-21e Natural Buttes Field Uintah Cty, UT	Wasatch (5,189- 6,122)	6,185 PB 6,142	111,000 gal. emul. 208,000 lb sand	DG, no cores or tests	980
Spud 2-22-78 Comp 4-9-78	Belco Petroleum	23-19 B Natural Buttes Unit	4	sene 19-10s-21e Natural Buttes Field Uintah Cty, UT	Wasatch (5,245- 6,062)	6,141 PB 6,089	63,000 gal. emul. 128,000 lb sand	DG, no cores or tests	2,030
Spud 3-3-78 Comp 5-29-78	Belco Petroleum	22-27 B Natural Buttes Unit	4	swne 27-10s-21e Natural Buttes Field Uintah Cty, UT	Wasatch (4,218- 5,434)	5,505 PB 5,460	100,900 gal. emul., 264,000 lb sand	DG, no cores or tests	1,450

Table 4-3 Continued

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF In MCPD
Spud 12-31-77 Comp 2-15-78	Belco Petroleum	20-1 B Natural Buttes Unit	5	swse 27-10s-21e Natural Buttes Field Uintah Cty, UT	Wasatch (4,218- 6,893)	5,505 PB 6,915	219,000 gal. emul., 520,000 lb sand	DG, no cores or tests	1,506
Spud 1-29-77 Comp 9-1-77	CIG Exploration	20-1 B CIGE	5	nsw 22-10s-22e Natural Buttes Field Uintah Cty, UT	Mesaverde (6,629- 8,412)	9,317 PB 8,450	Acidized 6,000 gal.; 1,396,080 gal. water; 1,420,000 lb sand	DG, massive frac ture, no cores or tests	329
Spud 2-23-78 Comp 4-26-78	Enserch	1-17 Flat Mesa	5	nsw 7-10s-23e Natural Buttes Field Uintah Cty, UT	Wasatch (5,580-94) Mesaverde (6,587- 6,954)	7,018	Acidized 1,638 gal. 131,400 gal. gel, 230,000 lb sand	DG, commingled, no cores or tests, Fracture treatment break- down not reported	3,000
Spud 3-25-78 Comp 5-7-78	Enserch	1-17 Crooked Canyon Federal	5	new 17-10s-23e Natural Buttes Field Uintah Cty, UT	Wasatch (5,368-70) Mesaverde (5,930- 7,010)	7,085	Acid frac, 201,000 gal. water, 334,000 lb sand	DG, commingled, operator has 4 additional Mesa- verde tests in this locale	2,200
Spud 7-28-77 Comp 8-21-77	Reserve Oil	14 Peters Point	6	new 7-13s-17e Peters Point Carbon Cty, UT	Wasatch	1,678		D, D&A	
Spud 11-23-77 Comp 4-14-78	Taiqa	1L-23 Federal	7	swne 23-14s-24e Wildcat Field Uintah Cty, UT	Mancos (5,416- 5,804)	5,903 PBTD 5,855	50,000 gal. emul, 180,000 lb sand	WFD-Mancos Discovery-New Field	288
Spud 9-30-77 Comp 11-19-77	Taiqa Energy	1 Rat Hole Canyon	7	nwse 8-14s-25e Unnamed Field Uintah Cty, UT	Mancos (4,166- 4,532)	4,950 PB 4,878	35,000 gal. water, 90,000 lb sand	WFD Mancos Discovery New Field	314

* Refer to Figure 4-2

** From Petroleum Information

Table 4-4 Summary of New Wells, April-June (Data as of June 29, 1978)**

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON Projected Depth (In Ft.)	COMMENTS
FR 5-15-78	Gulf Oil†	1-22 Ute Tribal	1	nwne 22-4s-6w Wildcat Field Duchesne Cty, UT	Wasatch (6,500)	WF, operator has 1 additional Wasatch test in this locale
FR 5-1-78	Gulf Oil	1-11 Neilsen-Ute	1	nwse 11-5s-6w Indian Canyon Field Duchesne Cty, UT	Green River (4,000)	WO
FR 5-5-78	Jerry Chambers	1-4 Horseshoe Bend Federal	2	4-7s-21e Horseshoe Bend Field Uintah Cty, UT	Uinta (3,600)	D,
FR 6-13-78	Continental Oil	35-8 Conoco-Ute Tribal	3	nese 35-8s-20e Natural Buttes Field Uintah Cty, UT	Mesaverde (11,743)	D, operator has 3 additional Mesaverde tests in this locale
FR 3-7-78	Gulf Oil	2 Uinta Test	3	nwsW 16-8s-21e Red Wash Field Uintah Cty, UT	Uinta (1,750)	WS, drilling no depth reported, operator has 2 additional Uinta tests in this locale
FR 4-26-78	Mapco, Inc.	7-25 B R BU	4	sene 25-9s-19e Natural Buttes Field Uintah Cty, UT	Mesaverde (8,730)	D,
FR 6-12-78	Belco Petroleum	2-10 Duck Creek	4	SWSW 10-9S-20E Natural Buttes Field Uintah Cty, UT	Wasatch (7,500)	D, operator has 11 additional Wasatch tests in this locale
FR 5-9-78	Gas Producing Enterprises	11-14-9-20 NBU- CIGE	4	swse 14-9s-20e Natural Buttes Field Uintah Cty, UT	Wasatch (6,700)	D
FR 5-9-78 Spud 3-29-78	CIG Exploration	6-19-9-21 Natural Buttes Unit	5	nese 19-9s-21e Bitter Creek Field Uintah Cty, UT	Not reported	D, drilling, no depth reported, operator has 4 additional Wasatch tests in this locale
FR 4-26-78	Mapco, Inc.†	5-11 D R BU,	6	swnw 11-10s-18e Uteland Butte Field Uintah Cty, UT	Mesaverde (8,455)	D, Operator has 8 additional Mesaverde tests in this locale, one of which is drilling ahead
FR 3-27-78	Enserch Exploration	1-6 Sage HEN Federal	7	nese 6-10s-23e Natural Buttes Field Uintah Cty, UT	Mesaverde (7,000)	D, operator has 6 additional Mesaverde
FR 5-9-78	Enserch Exploration	11-1 Federal	7	swne 11-10s-23e Southman Canyon Field Uintah Cty, UT	Mesaverde (7,000)	D,
FR 6-12-78	Taiga Energy	2 Dry Burn Unit	8	nwne 35-13s-25e Wildcat Field Uintah Cty, UT	Mancos (6,130)	WF, operator has 4 additional Mancos tests in this locale

* Refer to Figure 4-2

** From Petroleum Information

† Listed in Table 4-1, Summary of Wells Located in USGS Designated Core Areas

5. PICEANCE BASIN

5.1 Core Program

The Piceance Basin of northwestern Colorado (Figure 5-1), has a thick section of tight upper Cretaceous and Tertiary gas sands, such as the Castlegate, Segoe, Corcoran and Cozzette Members of the Mancos Formation, the Iles and Williams Fork Formations of the Mesaverde Group, and the Ft. Union and Wasatch Formations (Figure 3-3, Page 30). Some of these horizons are producing gas in very active fields, including Cathedral, Piceance Creek, Trail Canyon, Thunder, Dragon Trail and Texas Mountain. However, in areas remote to producing fields, or for horizons below known producing zones, very little information is available. For instance, in the Piceance Creek Field, there is interest in, but little data concerning horizons below the commercial Wasatch. Suitable core data in particular is lacking.

In an effort to better understand areas or horizons with limited control, the USGS has designated several key areas from which cores should be obtained. Within the Piceance Basin these areas are:

- A. East of Rangely Field in Rio Blanco County, T1S to T2N, R98W to R99W.
- B. Piceance Creek Field area, Rio Blanco County, T2S, R96W to R97W (Below the Wasatch).
- C. Garfield and Mesa Counties, T5S to T8S, R95W to R99W in the north tapering down to T98W to R99W on the southern part of the area.
- D. Garfield and Mesa Counties, T8S to T10S, R92W to R94W (this area is flanked on the northwest and southeast by the Grand Mesa National Forest) (Figure 5-1).

Operators active within the designated core areas have been contacted for possible participation in DOE's core program.

Three new wells were reported during the quarter in areas of interest to the WGSP core program. Union Oil of California located one development well projected to 8,200 ft while Exxon's 2 Vega Unit was drilling at an unspecified depth at the end of the quarter. Houston Oil and Minerals staked a 10,700 ft Weber wildcat in June, but General Crude Oil had not

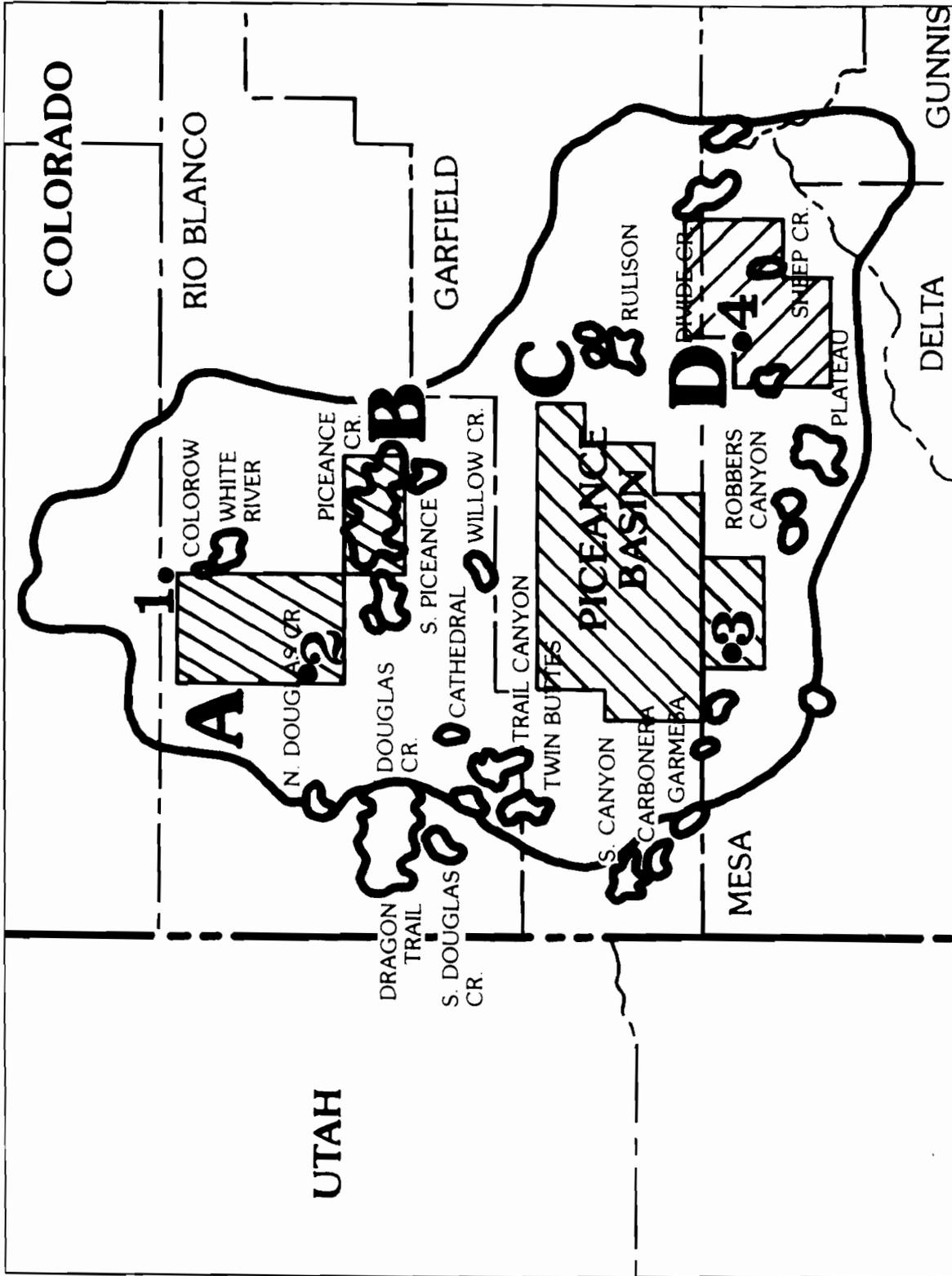


Figure 5-1 USGS Designated Core Areas and Wells of Interest, Piceance Basin (refer to Table 5-1)

Table 5-1 Summary of Wells located in USGS designated Core Areas, April-June
(Data as of June 29, 1978)**

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF In MCFD
FR 3-14-78	General Crude Oil	15-29 Colorow Gulf Federal	1	swse 29-3n-97w Wildcat Field Rio Blanco Cty, CO	Weber (12,400)			WF	
FR 6-13-78	Houston Oil & Minerals	24X-21 Federal	1	sesw 21-3n-98w Wildcat Field Rio Blanco Cty, CO	Weber 10,700			WF	
Spud 2-5-78 FR 8-8-77	David M. Munson	30-1-99 Cities Service	2	nesw 30-1s-99w Wildcat Field Rio Blanco Cty, CO	Mancos	9,610		WF-tight hole	
FR 1-23-78	Teton Energy	1-34 Federal	3	sene 34-8s-98w Coon Hollow Field Mesa Cty, CO	Morrison (7,500)			D, tight hole	
FR 5-15-78	Union Oil of California	1 Gunderson	4	nwne 20-9s-93w Buzzard Creek Field, Mesa Cty, CO	? (8,200)			D,	
FR 4-5-78	Exxon	2 Vega Unit	4	nws 34-9s-93w Unnamed Field Mesa Cty, CO	Corcoran (8,630)			WO, drilling, no depth reported.	

* Refer to Figure 4-1

** From Petroleum Information

begun drilling a 12,400 ft Weber test staked during the first quarter. Both locations are situated on the northern margin of designated core area A (Table 5-1). Two other wells within the specified areas were tight-holed by the operators, David M. Munson and Teton Energy.

No agreements were reached with operators to participate in the DOE core program.

5.2 Drilling Activity

The major drilling objectives in the Piceance Basin are the Mancos and Wasatch Formations in Rio Blanco County, the Cozzette/Corcoran Members (Mancos Formation) and Mesaverde Group in Mesa County, and the Dakota/Morrison Formations in the Douglas Creek Arch area of Garfield County. Drilling targeted for the Dakota or Morrison Formations is not monitored closely for the Western Gas Sands Project.

During the second quarter of 1978, three wildcat and 14 development wells were drilled to completion. One wildcat and 12 of the development wells were productive, all from the Mancos "B"/Emery Formations. The number of completions continued to sharply decline from the fourth quarter of 1977, although the numbers of wildcats drilled each quarter has remained fairly constant. New production has also steeply declined over the same period. In the fourth quarter of 1977 there was 22.8 MMCFD of new production from tight horizons in the Tertiary and Upper Cretaceous. By the second quarter of 1978, new production had declined to 4.5 MMCFD (Table 5-2).

Approximately 90 percent of the gas wells completed in horizons of interest during the quarter were located in the central region of Rio Blanco County, specifically within the proven Cathedral, Thunder, Piceance Creek, Lower Horse Draw, Dragon Trail and Philadelphia gas fields. Gas completions were made in the Mancos and Wasatch Formations, but only Mancos production (4.8 MMCFD) was placed onstream during the quarter. These developments are summarized in Table 5-3.

The quarterly report covering January-March, 1978, cited seven planned Mancos tests by Joseph B. Gould in the Lower Horse Draw Field. During the second quarter, three of the seven wells were completed and were testing at the end of June. American Resources Management remained active in Trail Canyon Field and in Cathedral Field, active operators included Northwest Exploration, Fuel Resources Development, Mountain Fuel Supply, Twin Arrow and Chandler and Associates.

In the central area of Rio Blanco County around the Piceance Creek Field, the Indian Wells Company and Mobil Oil Company had 16 wells planned, drilling or completed by the end of the quarter. One Mobil well (swne, Section 30, T2S, R95W) had been fractured but specific information was not available (Table 5-3).

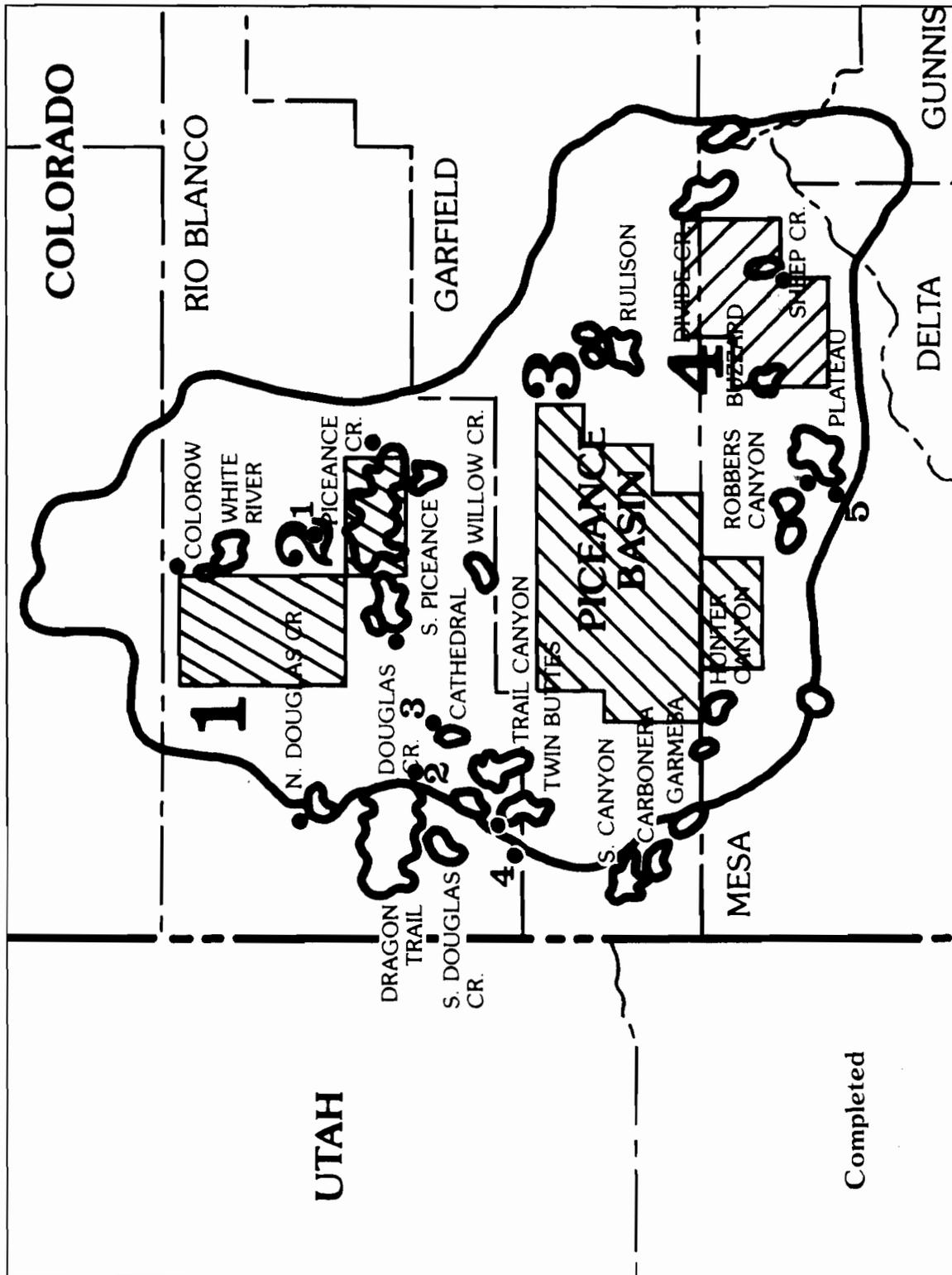


Figure 5-2 USGS Designated Core Areas, Wells completed and staked, Piceance Basin (refer to Tables 5-3 and 5-4)

Table 5-3 Summary of Wells Completed April-June (Data as of June 29, 1978)**

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF In MCFD
Spud 4-24-78 FR 2-21-78	Indian Wells Oil	33-1-97 Indian Wells Federal	1	nese 32-1s-97w Piceance Creek Field Rio Blanco Cty, CO	Wasatch	6,168		WO,WOCT	
Spud 4-23-78 FR 1-13-78	Mobil Oil	T 81-18G USA	1	nene 18-2s-96w Piceance Creek Field Rio Blanco Cty, CO	Wasatch	3,600	Acidized-3,500 gal.,fract.	D,SI	
Spud 5-13-78 FR 1-13-78	Mobil Oil	T87-3G USA	1	sese 3-2s-97w Piceance Creek Field Rio Blanco Cty, CO	Wasatch	3,300		D, SI	
Spud 5-3-78 FR 1-13-78	Mobil Oil	T73-11G USA	1	sene 11-2s-97w Piceance Creek Field Rio Blanco Cty, CO	Wasatch	3,400		D, SI	
Spud 12-28-77 Comp 3-15-78	J&D Associates	10-4 Federal	2	nsw 10-2s-101w Philadelphia Creek Rio Blanco Cty, CO	Mancos B Zone (2,270-2,582)	2,900 PB 2,616	Acidized-1,000 gal.,84,000 gal.wtr. 202,500 lb sand	DG, No cores or tests	
Spud 10-14-77 Comp 2-27-78	Northwest Exploration	10 Philadelphia Creek	2	sw 11-2s-101w Cathedral Field Rio Blanco Cty, CO	Mancos B Zone (2,708-2,928)	3,100 PB 3,080	75,000 gal.wtr. 70,000 lb sand	DG, No cores or tests	69
Spud 10-24-77 Comp 2-27-78	Northwest Exploration	11 Philadelphia Creek	2	nsw 11-2s-101w Cathedral Field Rio Blanco Cty, CO	Mancos B Zone (2,857-3,145)	3,250 PB 3,242	Acidized 1,500 gal.,75,000 gal wtr.,70,000 lb sand	DG, No cores or tests	112
Spud 12-11-77 Comp 4-5-78	Mountain Fuel Supply	26-2 Big Horse Draw Federal	2	sw 26-2s-101w Cathedral Field Rio Blanco Cty, CO	Mancos (2,238-2,371)	2,626 PB 2,572	Acidized 3,612 gal.,68,410gal. emul.,174,132 lb sand	DG, No cores or tests	232
Spud 1-31-77 Comp 5-11-78	Twin Arrow	5-34 Mountain Fuel	2	nese 34-2s-101w Cathedral Field Rio Blanco Cty, CO	Mancos (1,959-2,220)	2,491	Acidized-1,000 gal.,212,000 lb sand,100 tons CO ₂	DG	261
Spud 12-1-77 Comp 4-4-78	Mountain Fuel Supply	35-1 MFSCO	2	sww 35-2s-101w Cathedral Field Rio Blanco Cty, CO	Mancos B Zone (2,113-2,277)	2,604 PB 2,593	Acidized 3,528 gal.,74,452 gal.wtr., 81,000 lb sand	DG, No cores or tests	77
Spud 3-7-77 Comp 6-3-77	Chandler & Associates	2-3 N Douglas Creek Federal	2	nsw 3-2s-102w Dragon Trail Rio Blanco Cty, CO	Mancos Emery Member (2,824-3,056)	5,986 PB 3,273	Acidized 1,500 gal.,85,806 gal wtr.,119,500 lb sand	DG, No cores or tests	310
Spud 10-19-77 Comp 12-12-77	Twin Arrow	1-7 C&K	3	nsw 7-3s-100w Cathedral Field Rio Blanco Cty, CO	Mancos (1,752-2,886)	3,104 PB 3,097	Acidized-5,900 gal.,142,000 lb sand & N ₂	DG, No cores or tests	309
Spud 12-6-77 Comp 4-4-78	Mountain Fuel Supply	2-1 Federal	3	sw 2-3s-101w Cathedral Field Rio Blanco Cty, CO	Mancos B Zone (2,476-2,681)	2,949 PB 2,685	Acidized-7,000 gal.,74,000 gal.wtr., 185,000 lb sand	DG, No cores or tests	21
Spud 12-17-77 Comp 4-5-78	Mountain Fuel Supply	3-1 Federal	3	sw 3-3s-101w Cathedral Field Rio Blanco Cty, CO	Mancos B Zone (2,102-2,305)	2,727 PB 2,685	Acidized-7,000 gal.,106,974 gal. wtr.	DG, No cores or tests	370

Table 5-3 Continued

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON (Projected Depth Or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPP In MCPD
Spud 8-4-77 Comp 1-10-78	Taiga Energy	1-G-20-4S-102 Taiga Federal	4	swne 20-4s-102w Thunder Field Rio Blanco Cty, CO	Mancos B Zone (4,328- 4,770)	4,800 PB 4,296	40,000 gal.wtr. 53,800 lb sand	DG, No cores or tests	221
Spud 9-3-77 Comp 12-18-77	Taiga Energy	14-1 Taiga Federal	4	nese 20-4s-102w Thunder Field Rio Blanco Cty, CO	Mancos (3,911- 4,285)	4,400 PB 4,296	70,000 gal.wtr 165,000 lb sand	DG, No cores or tests	191
Spud 9-28-77 Comp 12-8-77	Taiga Energy	8-G Taiga Federal	4	swne 21-4s-102w Thunder Field Rio Blanco Cty, CO	Mancos Emergy Member (3,098-3,179)	4,099 PB 3,207	Acidized-4,500 gal.,80,850 gal.wtr., 81,900 lb sand	DG, No cores or tests	303
Spud 10-6-77 Comp 1-14-78	Taiga Energy	9-5 Taiga Federal	4	nwse 21-4s-102w Thunder Field Rio Blanco Cty, CO	Mancos B Zone (3,027- 3,470)	4,110 PB 3,838	Acidized-1,700 gal.,92,500 gal.wtr., 175,000 lb sand	Mancos "B" Extension Thunder Field WO, no cores or tests	290
FR 3-20-78	Adolph Coors	1-26 Meader	5	nene 26-10s-97w Wildcat Field Mesa Cty, CO	Mancos Corcoran Member	3,350		WF, testing	

* Refer to Figure 4-2

** From Petroleum Information

Table 5-4 Summary of New Wells, April-June (Data as of June 29, 1978)**

DATE	OPERATOR	WELL NAME	WELL NO.*	LOCATION	HORIZON Projected Depth (In Ft.)	COMMENTS
FR 6-22-78	Houston Oil & Minerals*	24X-21 Federal	1	sew 21-3n-98w Wildcat Field Rio Blanco Cty, CO	? (10,700)	WF, within core area A
FR 6-22-78	Chandler & Associates	2-15-1-2 Fork Unit	2	sew 15-1s-102w Dragon Trail Field Rio Blanco Cty, CO	Mancos (3,050)	D, Operator has 8 Mancos tests in this locale
FR 4-24-78	Indian Wells Oil Co.	9-2-95 Indian Wells Federal	3	sew 9-2s-95w Piceance Creek Field Rio Blanco Cty, CO	Wasatch (6,600)	WO, Operator has 4 Wasatch tests in this locale
Spud 5-23-78 FR 1-13-78	Mobil Oil	T 73-30G-USA	3	swne 30-2s-95w Piceance Creek Field Rio Blanco Cty, CO	Wasatch (4,400)	D, drilling at 6,915 ft, Operator has 6 Wasatch tests in this locale
FR 6-12-78	David M. Munson	5-2-99 Federal	4	swnw 5-2s-99w Wildcat Field Rio Blanco Cty, CO	Mancos (9,300)	WF, Operator has a 9,600 ft test in this locale completed D&A
FR 4-28-78	Tipperary Oil & Gas Co.	6-30-D Soldier Canyon Unit	5	nws 30-4s-100w Trail Canyon Field Rio Blanco Cty, CO	? (9,400)	Operator has 2 additional tests in this locale
FR 4-24-78	Taiga Energy	10-N-21 Taiga Fee		nesw 21-4s-102w Thunder Field Rio Blanco Cty, CO	Mancos (3,836)	D, Operator has 7 additional Mancos tests in this locale
FR 5-15-78	Union Oil of California†	1 Gunderson	6	nwne 20-9s-93w Buzzard Creek Field Mesa Cty, CO	? (8,200)	D, within core area #4
FR 5-12-78	Adolph Coors Co.	1-19 Fetters	7	sew 19-10s-96w Plateau Field Mesa Cty, CO	? (3,200)	D, Operator has 12 additional tests in this locale
FR 6-8-78	Amoco Production	1 Hotchkiss Ranchers	8	nws 20-12s-89w Wildcat Field Gunnison Cty, CO	Mancos Rollins member (2,600)	WF

* Refer to Figure 5-2

† Listed in Table 5-1

Adolph Coors, Teton Energy and Norris Oil are active in the very productive Plateau Field, Mesa County. Adolph Coors has five tests slated in the area with probable objectives being the Rollins, Cozzette and Corcoran sandstone members of the Mancos Formation. At the end of the quarter, one of these wells was testing the Corcoran sandstone at 3,350 ft TD (Table 5-3 and 5-4).

A number of companies staked new locations during the quarter, including Tipperary Oil and Gas, Union Oil of California and Adolph Coors. Amoco Production staked a well in Gunnison County to test the Rollins sandstone member (Mancos Formation) at a projected TD of 2,600 ft. In Rio Blanco County, David M. Munson located four wells in the Sagebrush Hills unit while Chandler and Associates staked nine Mancos tests in the Dragon Trail Field with projected TD's ranging from 2,750 to 3,390 ft. Representative wells for both Munson and Chandler are incorporated into Table 5-4.

New developments are monitored closely, particularly in areas which are of interest to the WGSP Coring Program. These developments are covered under Section 5.1.