

OILFIELD RESEARCH LABORATORIES

536 NORTH HIGHLAND - CHANUTE, KANSAS 66720 - PHONE (316) 431-2650

October 10, 1980

Pineridge Development Corporation
14150 Elderberry Road
Golden, Colorado 80401

Gentlemen:

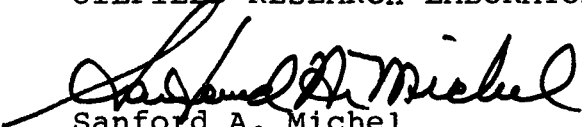
Enclosed herewith are the results of tests run on the rotary core samples taken from the Markley Lease, Well No. 4, located in Linn County, Kansas and submitted to our laboratory on September 4, 1980.

The samples were sealed in plastic bags by a representative of the client. In examining this core, it is assumed that each sample represents one foot of core.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES


Sanford A. Michel

SAM/ks

5 c to Golden, Colorado

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Pineridge Development Corporation, Lease Markley Well No. 4
 Location NE $\frac{1}{4}$ NE $\frac{1}{4}$
 Section 1 Twp. 22S Rge. 23E County Linn State Kansas

Elevation, Feet	-	-
Name of Sand	Squirrel	Upper Bartlesville
Top of Core	221.0	325.0
Bottom of Core	232.0	339.0
Top of Sand	221.0	325.0
Bottom of Sand	232.0	339.0
Total Feet of Permeable Sand	8.0	14.0

Distribution of Permeable Sand:
Permeability Range
Millidarcys

	Feet	Cum. Ft.	
	<u>SQUIRREL SAND</u>		
0 - 8	6.0	6.0	
12 & Above	2.0	8.0	
	<u>UPPER BARTLESVILLE SAND</u>		
0 - 10	6.0	6.0	
10 - 36	3.0	9.0	
36 - 72	2.0	11.0	
72 & Above	3.0	14.0	
Average Permeability Millidarcys		7.12	55.6
Average Percent Porosity		14.0	18.0
Average Percent Oil Saturation		39.0	48.3
Average Percent Water Saturation		53.6	42.4
Average Oil Content, Bbls./A. Ft.		449.	681.
Total Oil Content, Bbls./Acres		4,041.	9,540.

LOGName Pineridge Development CorporationLease MarkleyWell No. 4

<u>Depth Interval, Feet</u>	<u>Description</u>
	<u>SQUIRREL SAND</u>
221.0 - 223.0	Gray very shaly sandstone.
223.0 - 224.0	Brown very shaly sandstone.
224.0 - 225.0	Brown shaly sandstone.
225.0 - 226.0	Brown slightly calcareous sandstone.
227.0 - 228.0	Brown calcareous shaly sandstone.
228.0 - 229.0	Brown calcareous sandstone.
229.0 - 230.0	Gray and brown laminated shale and sandstone.
230.0 - 232.0	Brown very shaly sandstone.
	<u>UPPER BARTLESVILLE SAND</u>
325.0 - 326.0	Brown slightly calcareous shaly sandstone.
326.0 - 327.0	Brown slightly calcareous sandstone.
327.0 - 331.0	Brown shaly sandstone.
331.0 - 336.0	Brown slightly calcareous sandstone.
336.0 - 337.0	Brown slightly calcareous slightly shaly sandstone.
337.0 - 339.0	Brown slightly calcareous sandstone.

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Pineridge Development Corporation Lease Markley Well No. 4

Sample No.	Depth, Feet	Effective Porosity Percent	Percent Saturation		Oil Content Bbls. / A Ft.	Perm., Mill.	Feet of Sand		Total Oil Content	Perm. Capacity Ft. X md.
			Oil	Water			Ft.	Cum. Ft.		
1	222.0	8.4	3	89	20		1.0	1.0	20	0.00
2	223.5	15.9	40	51	493	Imp. 0.78	1.0	2.0	493	0.78
3	224.5	15.3	41	49	487	7.5	1.0	3.0	487	7.50
4	225.5	14.8	37	54	425	31.	1.0	4.0	425	31.00
5	227.5	12.9	64	25	641	1.7	1.0	5.0	641	1.70
6	228.5	16.5	54	37	691	12.	1.0	6.0	691	12.00
7	229.5	12.9	10	88	100	3.6	1.0	7.0	100	3.60
8	230.5	13.7	41	54	436	0.18	1.0	8.0	436	0.18
9	231.5	15.8	61	35	748	0.20	1.0	9.0	748	0.20
					<u>SQUIRREL SAND</u>					
					<u>UPPER BARTLESVILLE SAND</u>					
10	325.5	14.6	41	47	464	6.6	1.0	1.0	464	6.60
11	326.5	16.0	58	39	720	16.	1.0	2.0	720	16.00
12	327.5	15.6	38	57	460	6.2	1.0	3.0	460	6.20
13	328.5	15.6	38	53	460	5.9	1.0	4.0	460	5.90
14	329.5	11.7	52	43	472	2.1	1.0	5.0	472	2.10
15	330.5	19.0	62	21	914	0.25	1.0	6.0	914	0.25
16	331.5	20.7	49	36	787	32.	1.0	7.0	787	32.00
17	332.5	22.1	46	35	789	30.	1.0	8.0	789	30.00
18	333.5	20.6	52	40	831	99.	1.0	9.0	831	99.00
19	334.5	22.0	63	34	1075	399.	1.0	10.0	1075	399.00
20	335.5	21.1	50	42	819	37.	1.0	11.0	819	37.00
21	336.5	17.4	47	40	634	8.7	1.0	12.0	634	8.70
22	337.5	18.5	47	46	675	89.	1.0	13.0	675	89.00
23	338.5	17.2	33	61	440	46.	1.0	14.0	440	46.00

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Pineridge Development Corporation Lease Markley Well No. 4

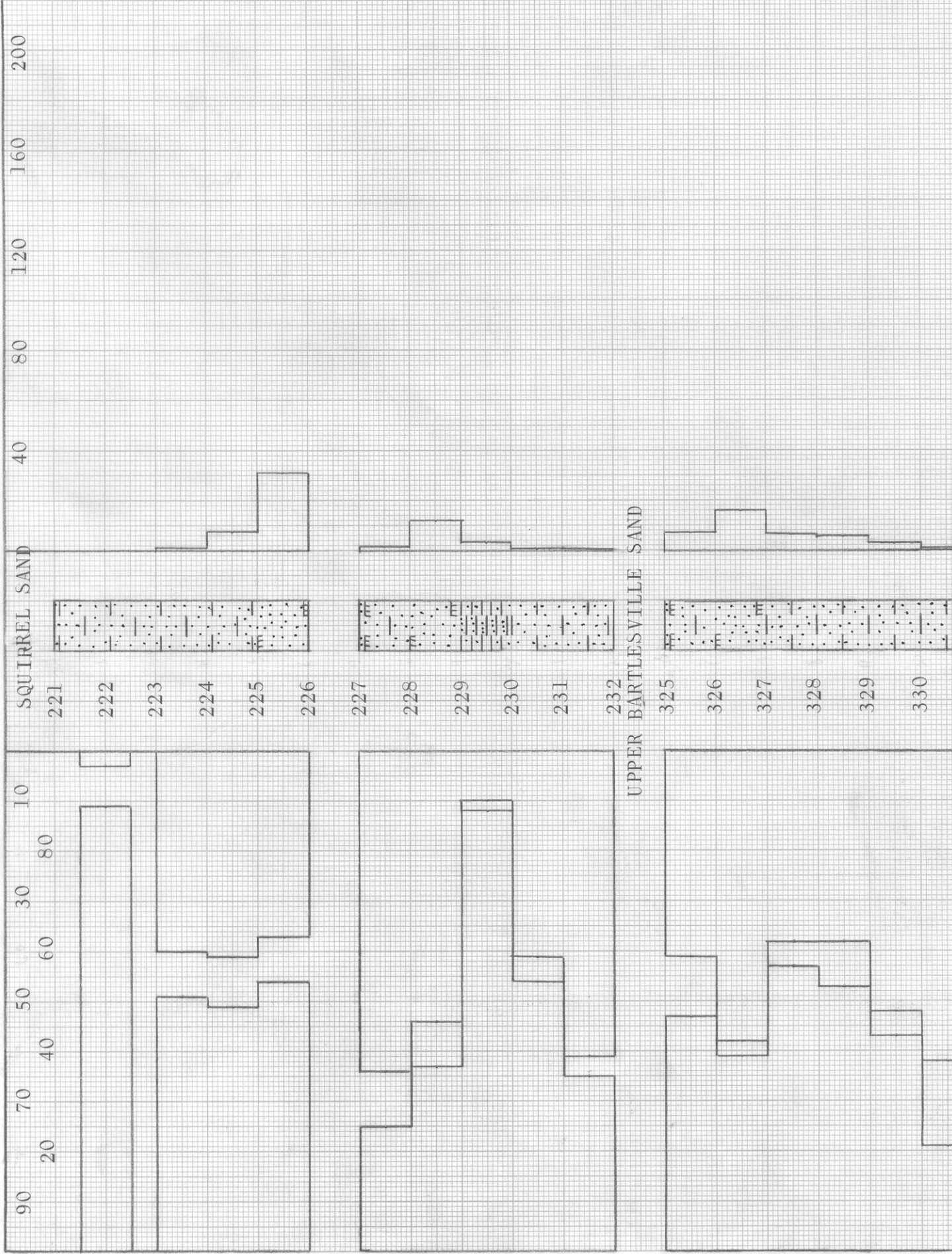
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
<u>SQUIRREL SAND</u>			
221.5 - 232.0	8.0	7.12	56.96
<u>UPPER BARTLESVILLE SAND</u>			
325.0 - 339.0	14.0	55.6	777.75

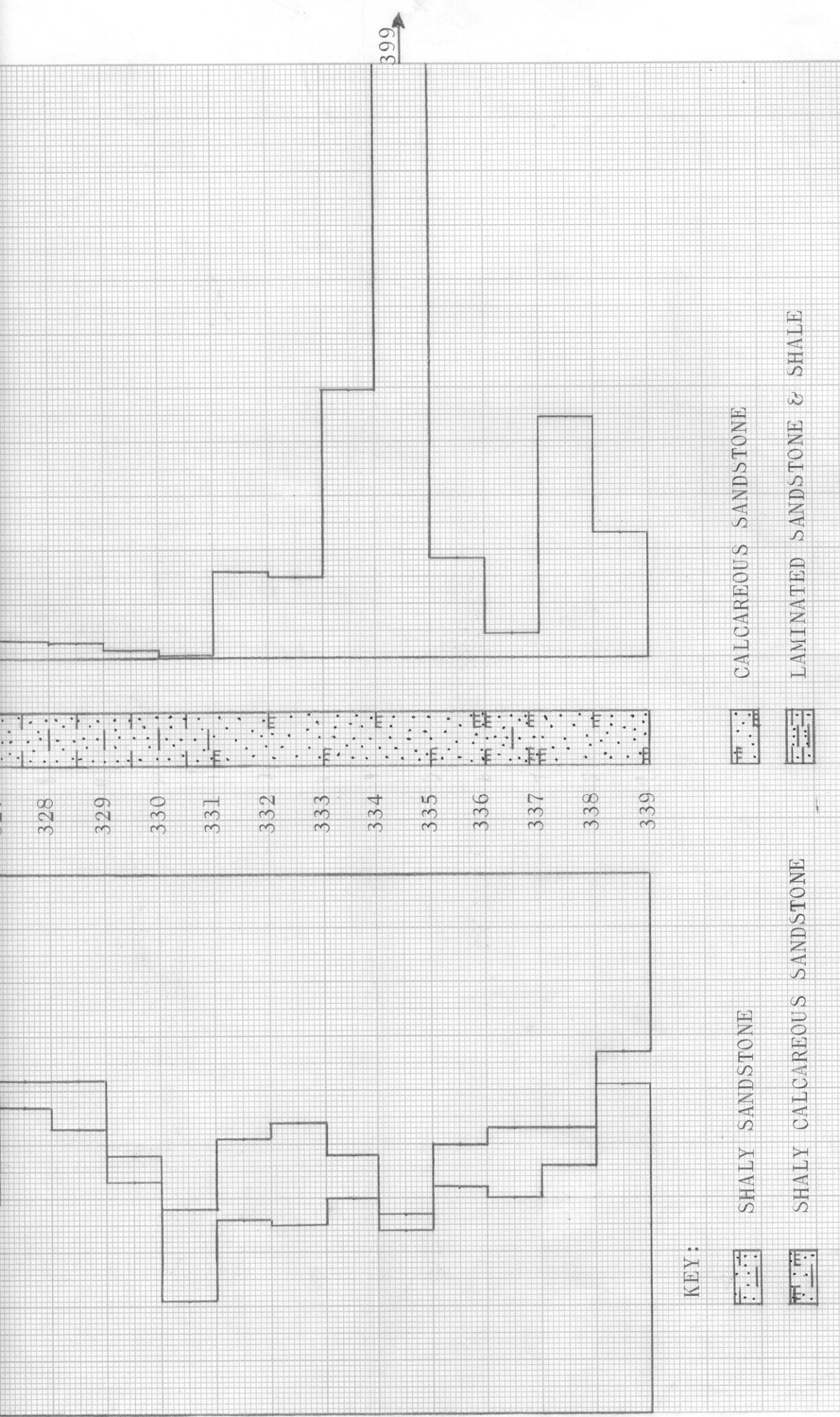
Depth Interval, Feet	Average Percent Porosity	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.	Total Oil Content Bbls./Acre
<u>SQUIRREL SAND</u>					
221.5 - 232.0	14.0	39.0	53.6	449	4,041
<u>UPPER BARTLESVILLE SAND</u>					
325.0 - 339.0	18.0	48.3	42.4	681	9,540

PERMEABILITY, IN MILLIDARCYS

WATER SAT., PERCENT →

← OIL SAT., PERCENT





KEY:



SHALY SANDSTONE



SHALY CALCAREOUS SANDSTONE



CALCAREOUS SANDSTONE



LAMINATED SANDSTONE & SHALE

PINERIDGE DEVELOPMENT CORP.

MARKLEY LEASE

WELL NO. 4

LINN COUNTY, KANSAS

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE POROSITY PERCENT	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEABILITY MILLIDARCS
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SQUIRREL SAND

221.5 - 232.0	9.0	14.0	39.0	53.6	7.12
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UPPER BARTLESVILLE SAND

325.0 - 339.0	14.0	18.0	48.3	42.4	55.6
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(PRIMARY &
WATERFLOODING)

(PRIMARY &
WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
OCTOBER, 1980