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SUPPLEMENTAL REPORT ON MINERAL RESOURCES OF THE LOUISVILLE RESERVOIR SITE, CLAY AND EFFINGHAM COUNTIES, ILLINOIS

Compiled by W. Calhoun Smith

INTRODUCTION

This Supplemental Report has been prepared by the Illinois State Geological Survey to provide information on the mineral resources in the proposed Louisville Reservoir project area. The information presented herein brings up to date, insofar as is possible, the information contained in Mineral Survey Report prepared for this project in 1966 by Abbott Renick of the U. S. Bureau of Mines. The Louisville District, Corps of Engineers, requested the up-to-date information for use in preparing a draft Environmental Impact Statement on the proposed project. The original request was sent to Thomas O. Glover, Liaison Officer--Illinois, U. S. Bureau of Mines, by letter dated September 3, 1974; the request was referred to our Survey by Mr. Glover.

This report contains only information related to the mineral resources, their potential, and their production in the Louisville Reservoir site area. Published data as well as unpublished information in the files of the Illinois State Geological Survey have been used in preparing this report.

ACKNOWLEDGMENTS

The revision of the mineral resource information contained in this report was done by several members of the staff of the Illinois State Geological Survey. The section on coal resources was prepared by George J. Allgaier; the petroleum section was prepared by Thomas F. Lawry and W. Calhoun Smith; the section on industrial minerals was prepared by James C. Bradbury and W. Arthur White; the section on mineral production was prepared by Ramesh Malhotra.

MINERAL RESOURCES

INDUSTRIAL MINERALS

Limestone

The Iola Stone and Material Company, Inc., quarries limestone from a bed that ranges from 8 to 20 feet in thickness. This is the Iola Quarry and is located in sec. 11, T 4 N, R 5 E, about 3 miles west of the Louisville damsite. It is the only quarry being worked in the area at present. The limestone bed is the Omega Limestone Member of the Mattoon Formation. The same bed crops out at several places along Crooked Creek in secs. 10, 11, and 14, T 4 N, R 5 E. These locations are outside the reservoir area.

Outcrops of Omega Limestone are also known along Dismal Creek, which will become an arm of the proposed reservoir. An abandoned quarry, operated in 1938-39 by Hewitt Engineering and Materials of Iola, exploited a 6- to 10-foot thickness of Omega Limestone on the north side of Dismal Creek in the SW $\frac{1}{4}$ sec. 25, T 5 N, R 5 E. This quarry, now abandoned, is indicated on the accompanying topographic map, plate 1. Other, more limited exposures in secs. 25, 26, and 36, T 5 N, R 5 E, and sec. 31, T 5 N, R 6 E, suggest that a 2- to 4-foot thickness may be more typical of the Omega along Dismal Creek. Further, drillers' logs of oil tests in the vicinity of Dismal Creek fail to record evidence of a persistent 10-foot thick limestone at the expected depth of the Omega. Although it is likely that quarryable thicknesses, such as the 10 feet in sec. 25 and the 8 to 20 feet in the Iola Stone and Material Company quarry along Crooked Creek, are attained locally by the Omega Limestone at other places in this part of the county, there is no evidence of additional occurrences along Dismal Creek.

Sand and Gravel

No sand and gravel deposits of commercial significance are known in the area of the proposed reservoir.

Clay and Shale

There are large potential reserves of clay and shale along Dismal Creek and Little Wabash River in Clay County and near the towns of Mason and Watson in Effingham County.

At the present time there is no production of clay and shale from these areas.

FUELS

Coal

There has been no production of coal in Clay County except for 800 tons marketed in 1963 as a by-product of limestone production at the Iola Quarry of the Iola Stone and Material Company, Inc. The coal seam from which production came occurs about 2 feet below the Omega Limestone Member and ranges from a few inches to as much as 3 feet in thickness. Elsewhere in Clay County this seam is not considered economically minable.

A number of coal beds are recorded in oil well drilling records that have been correlated stratigraphically by the Illinois State Geological Survey with control drill holes. Of the more than 20 coal horizons recognized, the majority are thin and in part discontinuous. Coals of possible minable thickness are the Herrin (No. 6) and the Harrisburg (No. 5) Coal Members of the Carbondale Formation.

Accurate measurements of the thickness, extent, and quality of the Herrin (No. 6) and Harrisburg (No. 5) Coals from coal test drilling are not available because there has been no subsurface coal exploration in this area. However, on the basis of numerous drill records of oil tests, it is known that these two coals underlie much of Clay and Effingham counties. In the area of the proposed site, the Herrin (No. 6) Coal is found at depths that range between approximately 860 feet and 1075 feet below the surface. The Harrisburg (No. 5) Coal lies approximately 30 to 45 feet below the Herrin (No. 6) Coal. The depth to the coals tends to increase to the east and northeast toward the deeper part of the Fairfield Basin.

Electric logs made from oil or gas test holes have been used with increasing frequency and confidence in recent years to estimate the thickness of coals penetrated. Thickness estimates from electric logs indicate that the Herrin (No. 6) Coal averages 4 feet thick in most of the area of the proposed Louisville reservoir site. However, this coal tends to become substantially thinner in western Clay and Effingham counties. The Harrisburg (No. 5) Coal is believed to be between 3 and 4 feet thick throughout this area. These thicknesses are estimates and could be confirmed only by exploratory drilling.

The quantities of the coal resources in this area were calculated on the basis of thicknesses estimated from electric logs and projections made from these data points. Resource data were adopted from recent studies of the Herrin (No. 6) Coal and from studies by Cady and others (1952) of the Harrisburg (No. 5) Coal. Only coal estimated to be greater than 42 inches thick was used in calculating the quantities of coal given on page 4.

Estimated Coal Resources
(millions of tons)

<u>Township</u>	<u>Herrin (No. 6) Coal</u>	<u>Harrisburg (No. 5) Coal</u>
Effingham County		
T 7 N, R 5 E	19.8	85.3
T 7 N, R 6 E	148.8	150.2
T 6 N, R 5 E	0	47.0
T 6 N, R 6 E	51.4	111.2
Total within county	220.0	293.7
Clay County		
T 5 N, R 5 E	35.2	41.5
T 5 N, R 6 E	134.7	40.8
T 4 N, R 5 E	24.6	56.7
T 4 N, R 6 E	61.3	26.5
Total within county	255.8	165.5
Area Total	475.8	559.2

It was not possible to evaluate the minability of the coal with respect to the technologic, economic, and legal aspects that may be involved. However, coal has been mined extensively elsewhere in Illinois under similar conditions, although at shallower depths. Evaluation of the potential for future development will require a fairly extensive coal test drilling program to define more accurately the quantity and quality of the coal.

The proposed reservoir should not preclude development of coal mining in the area if demand and economics should warrant the exploitation.

Petroleum

General - There are six oil fields in the site area of the proposed Louisville reservoir. These fields have produced significant quantities of oil in the past, but today, production from them is declining rapidly. Production to date has been from the Chesterian and Valmeyeran Series rocks of Mississippian age and is considered to be relatively shallow production. A generalized bedrock section of southern Illinois is given in table 1. The higher prices now being paid for petroleum has stimulated interest in exploring the deeper rocks. The degree of success of the development of oil production from the deeper rocks in the proposed Louisville reservoir area cannot be predicted at this time.

The locations and names of the six oil fields in the site area are shown on the accompanying topographic map, plate 1. The individual fields are shown on figures 1 through 4. These figures were prepared from copies of the oil and gas development maps published by the Illinois State Geological Survey. Copies of the entire oil and gas development maps of the Kinmundy and Louisville areas accompany this report as plates 2 and 3, respectively, and they show by a system of symbols the status of every well.

Table 1. - Generalized Bedrock Section of Southern Illinois

SYSTEM	SERIES OR GROUP	FORMATION	
PENNSYLVANIAN	McLEANSBORO GR.	Mattoon Bond Modesto	
	KEWANEE GR.	Carbondale Spoon	
	McCORMICK GR.	Abbott Caseyville	
MISSISSIPPIAN	CHESTERIAN	Grove Church Kinkaid Degonia Clore Palestine Menard Waltersburg Vienna Tar Springs Glen Dean Hardinsburg Haney Fraileys Beech Creek Cypress Ridenhower Bethel Downeys Bluff Yankeetown Renault	
		VALMEYERAN	Aux Vases Ste. Genevieve St. Louis Salem Ullin Borden
		KINDERHOOKIAN	Chouteau
		UPPER	New Albany Shale Gr.
DEVONIAN		MIDDLE	Lingle Grand Tower
		LOWER	Clear Creek Back Bone Grassy Knob Bailey
			NIAGARAN-CAYUGAN
SILURIAN		ALEXANDRIAN	Sexton Creek Edgewood

The status of each well shown is in accord with the records of the Illinois State Geological Survey on October 15, 1974. Plates 2 and 3 show the relationship of the oil fields in the proposed reservoir area to others in the vicinity.

For each of the six oil fields, specific information is given in tables 2 through 7 for each well having a surface elevation less than 500 feet above Mean Sea Level. The 500-foot elevation was chosen because wells located below that elevation would be subject to inundation and, for that reason, are believed to be the most critical with regard to environmental impact. Similar information is available for the other wells in the fields and can be tabulated, if needed.

Information regarding the naming and classification of oil fields is given in Appendix A. Dry holes not within a field are also discussed briefly in Appendix A. Information about oil well elevations is given in Appendix B. Information about crude oil production records and unit operations is given in Appendix C.

Production - Crude oil production is reported only as "runs" in the Pipeline Production Report of the Petroleum Information Corporation. For this reason, production on a well by well basis is impracticable. In the following paragraphs, production for each field is discussed. Through 1973 a total of 18,371,600 barrels of oil has been produced by the six fields in the proposed Louisville reservoir area. Production from these fields has been declining for a number of years, and the major part of current production is by waterflood operations.

a) Eberle Field - Eberle field was discovered in 1947, and was abandoned in 1967. It produced 112,600 barrels of oil from nine wells. Specific information about the wells having surface elevations below 500 feet is given in table 2. Wells not tabulated have surface elevations above 500 feet. The locations of the wells in Eberle field are shown on figure 1. Several dry holes were drilled in this field.

b) Hill Field - Hill field was discovered in 1943, and through 1972 it produced 44,000 barrels of oil from four wells. During each of the years 1971 and 1972, this field produced 700 barrels of oil, and the field was abandoned in 1972. Specific information about the wells having surface elevations below 500 feet is given in table 3. Wells not tabulated have surface elevations above 500 feet. The locations of the wells in Hill field are shown on figure 1. Several dry holes were drilled in this field.

c) Hill East Field - Hill East field was discovered in 1954, and through 1973, it produced 1,277,000 barrels of oil. There were 38 producing wells in the field, and of these, 5 were producing at the end of 1973. Annual production from Hill East field was 12,100 barrels in 1971, 11,800 barrels in 1972, and 8,200 barrels in 1973. The locations of the wells in Hill East field are shown on figure 1. Three wells in the western part of this field have surface elevations below 500 feet, and information

Table 2

EBERLE FIELD

Well Sites at Surface Elevation 500' or Lower

Operator	Farm	Well No.	Location	Surface Elevation	Remarks
<u>23-6N-6E</u>					
Robinson & Puckett	Becker	1	NW NW SE	498' L&S*	Spar Mtn. producer 5-51 to 5-52, TD 2680, casing: 10" - 158', 5½" - 2674', now ABD
Robinson & Puckett	Becker	2	SE NE SW	497' L&S	Dry hole, drilled 6/51, TD 2786, casing: 18" - 162'
<u>24-6N-6E</u>					
R. O. Wilson II	Jacobs-Davis Comm.	1	NE SW NW	501' GL	Cypress producer, drilled 10-11-73, TD 2448, casing: 8" - 163', 5½" - 2435', production information has not yet appeared (May, 1974) in Pipeline Production Report
H. Rutherford	Etha Sims May Comm.	1	SW SW NW	502' G	Dry hole, drilled 6/63, TD 2811, casing: 8" - 120'

* See Appendix B for meaning of letter symbols.

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Table 3

HILL FIELD

(Abandoned) Well Sites at Surface Elevation 500' or Less - Includes Former Producers and Dry Holes

Operator	Farm	Well No.	Location	Surface Elevation	Date Drilled	Date ABD	Casing Size & Footage Run	
							Surface	Long String
<u>16-6N-6E</u> (Former Producing Wells)								
Magnolia	Morris	1	C-NW NW	478'	11-16-43	1945	10"-94"	7"-2556'
Williams	Bushoe	1	C-SW NW	480'	10-5-43	12-50	10"-92'	5"-2604'
Glenn L. Lyons	Westfall	1	NW NW SW	476'		3-16-72	8"-92'	4½"-2598'
<u>16-6N-6E</u> (Dry Holes)								
L. L. & L. Drilling Co.	Crawford	1	SE NW NE	480'	1-24-67	Dry Hole	13"-35'	Not Run
Moorehead	Norris	1	S/2 NW NW	491'L&S *	12-26-48	" "	10"-41'	Not Run
E. Botts	Westfall	1	NE NW SW	485.3 GL	10-72	" "	8"-86'	Not Run
<u>17-6N-6E</u> (Former Producing Well)					Dry Hole Worked Over for Short-Time Producer			
Bell Brothers	Bushoe	3	C-NE SE	478'L&S	3-15-70	8-26-71	10"-75'	5½"-2575'
<u>17-6N-6E</u> (Dry Hole)								
H. Cullett	Warner, J. S.	1	NE SE NE	481'L&S	2-20-45	Dry Hole	10"-84'	

* See Appendix B for meaning of letter symbols.

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about them is tabulated in table 4. Cumulative production from the Partlow and Cochonour No. 1 Wright well as of the end of May 1972, 1973, and 1974, taken from the Pipeline Production Report of the Petroleum Information Corporation, is shown in table 4. Inspection of these figures reveals that from the end of May 1972 to the end of May 1973, production was 167 barrels and that there was no production from this well the following year.

d) Hord South Consolidated Field - Hord South Consolidated field was discovered in 1942, and through 1973, it produced 1,783,000 barrels of oil. There were 28 producing wells in the field, and of these, 20 were producing at the end of 1973. Annual production from Hord South Consolidated field was 6,000 barrels in 1971, 4,500 barrels in 1972, and 4,500 barrels in 1973. Most of Hord South Consolidated field is shown on figure 2. The two westward extensions of this field are the only parts that would be directly affected by the proposed reservoir. Specific information about 5 wells that lie within the boundaries of the field as drawn on figure 2 is given in table 5. Information about five dry holes in sec. 4, T 4 N, R 6 E outside the field boundary is also given in table 5. All of these wells have surface elevations below 500 feet. Cumulative production from the Calvert Eastern No. 2 Woods well as of the end of May 1972, 1973, and 1974, taken from the Pipeline Production Report of the Petroleum Information Corporation, is given in table 5. Inspection of these figures reveals that from the end of May 1972 to the end of May 1973, this well produced 4,107 barrels, and during the 12 months ending May 1974, it produced 2,510 barrels of oil.

e) Iola Consolidated Field - Iola Consolidated field was discovered in 1939, and through 1973, it produced 15,074,000 barrels of oil. There were 300 producing wells in the field, and of these, 220 were producing at the end of 1973. Annual production from Iola Consolidated field was 303,800 barrels in 1971, 254,100 barrels in 1972, and 233,200 barrels of oil in 1973. Iola Consolidated field is shown on figures 3 and 4. Note that these figures have considerable overlap. This is the largest oil field that would be affected by the proposed reservoir. Specific information about wells and dry holes that have surface elevations below 500 feet is given in table 6. Cumulative production figures for three wells as of the end of May 1972, 1973, and 1974, taken from the Pipeline Production Report of the Petroleum Information Corporation, are given on the third and fourth pages of table 6. Inspection of these figures reveals no production in those years from one of the wells, a marked decline in production from another, and a small increase in production from the third well. It is not likely that this increase will be maintained.

Table 4

HILL EAST FIELD

Well Sites at Surface Elevation 500' or Less (Producing Wells, Abandoned Producers and Dry Holes)

Operator	Farm	Well No.	Location	Surface Elevation	Remarks
<u>10-6N-6E</u>					
R. H. Robben	C. Brown	1	660'NL, 400'EL SW NE	490'L&S*	Dry hole, drilled 5-25-54, TD 2718', casing: 10" - 105'
Partlow and Cochonour	Wright	1	NE SE NE	492'L&S	Rosiclare and McClosky produce, cumulative oil production, BBL May <u>1974</u> <u>1973</u> <u>1972</u> 57,617 57,617 57,450
<u>11-6N-6E</u>					
Partlow and 1 Cochonour	Kraas	2	SW NW NW	492'L&S	McClosky producer 8-10-54 to 10-12-71, TD 2669', casing: 10" - 98'; 5½" - 2650' - now abandoned

* See Appendix B for meaning
of letter symbols.

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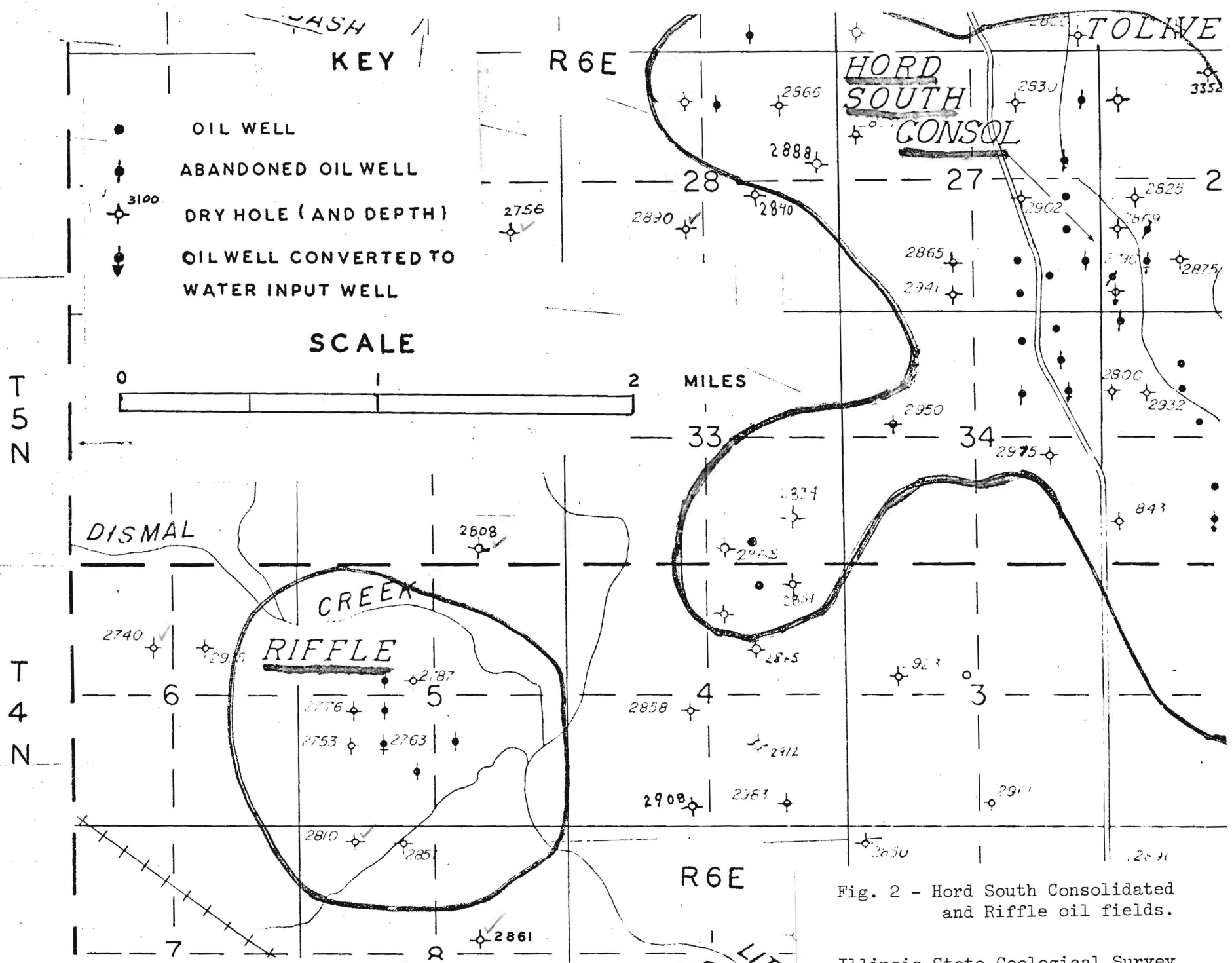


Fig. 2 - Hord South Consolidated and Riffle oil fields.

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Table 5

HORD SOUTH CONSOL. (EXTENSION)

Producing Wells and Dry Holes

Operator	Farm	Well No.	Location	Surface Elevation	Remarks						
<u>4-4N-6E</u>											
Calvert Eastern	Woods	2	NE NW NE	495' GL*	Active producer, comp. 8-2-69, cumulative production - May to May <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">1974</td> <td style="text-align: center;">1973</td> <td style="text-align: center;">1972</td> </tr> <tr> <td style="text-align: center;">19,083</td> <td style="text-align: center;">16,573</td> <td style="text-align: center;">12,466</td> </tr> </table>	1974	1973	1972	19,083	16,573	12,466
1974	1973	1972									
19,083	16,573	12,466									
Skelly	J. B. Blair	1	SW SE SE	494' L&S	Dry hole, casing: 10" - 97', plugged 5/47, TD 2983						
Bell Brothers	S. Phillips	1	NE NE SW	484' L&S	Dry hole, TD 2858, plugged 10-6-55, casing: 10" - 56'						
John Dunnill	S. Phillips	1	SE SE SW	450' G	Dry hole, TD 2906, plugged 9-10-67, casing: 8" - 36'						
Calvert Eastern	Pierson	1	SE NW SE	484' GL	Dry hole, TD 2912, plugged 12-24-68, casing: 8" - 49'						
Calvert Eastern	Woods, E.	1	NE SW NE	474.4' GL	Dry hole, TD 2865, plugged 6-2-69, casing: 8" - 115'						
Calvert Eastern	Woods, E.	3	SW NW NE	484' L&S	Dry hole, TD 2853, plugged 5-25-70, casing: 8" - 101'						
R. M. Harris	Woods, Z.	1	NW NE NE	478.5' GL	Dry hole, TD 2854, plugged 9-28-69, casing: 8" - 88'						
<u>33-5N-6E</u>											
Moore Production Co.	Frye-Douglas Comm.	1	SE SW SE	494' GL	Spar Mountain producer, comp. 12-72, runs do not appear in Production Report						
Moore Production Co.	Frye-Wood Comm.	1	NW SE SE	498' GL	dry hole, plugged 1-5-73, casing: 8" - 115'						

* See Appendix B for meaning of letter symbols.

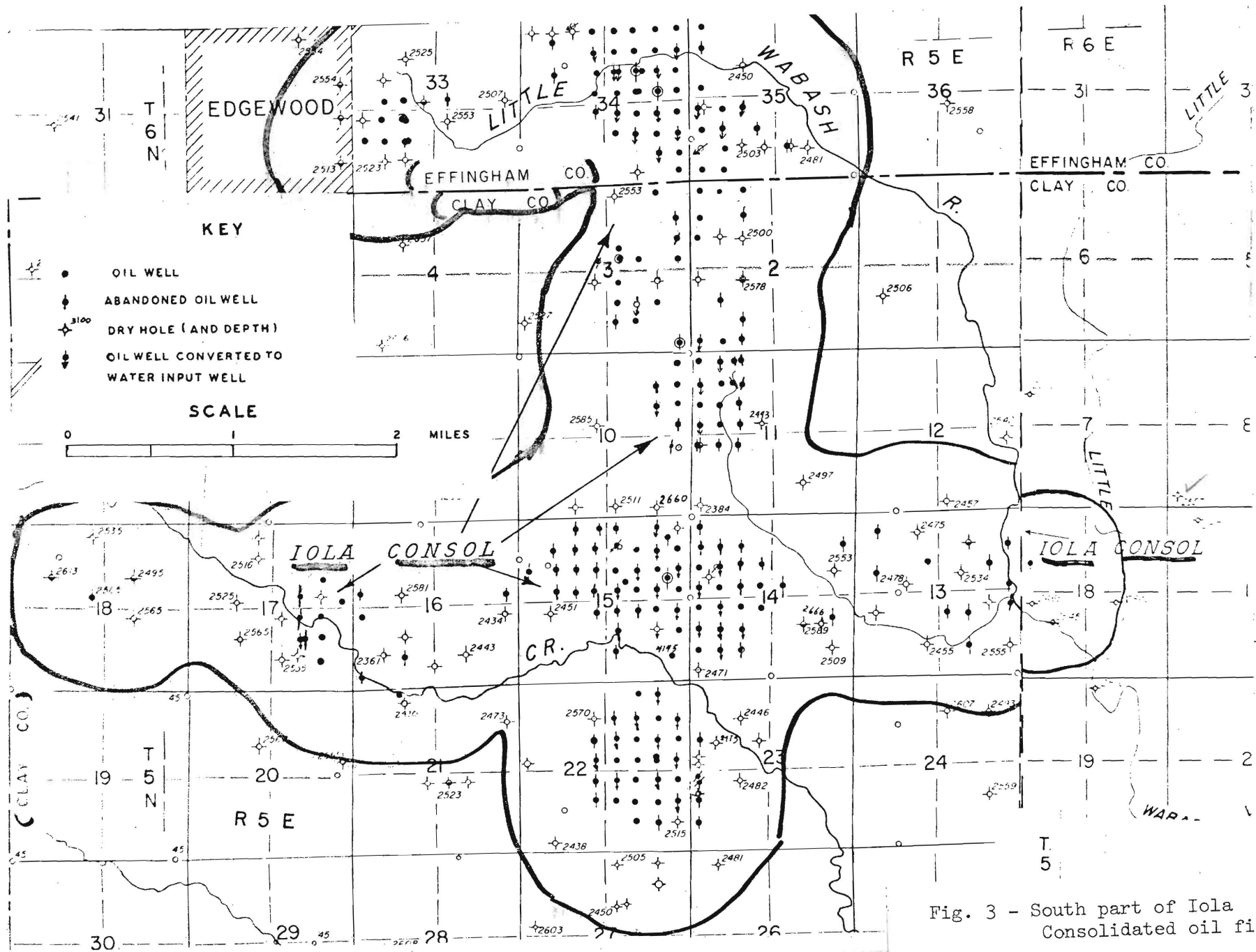


Fig. 3 - South part of Iola Consolidated oil field.

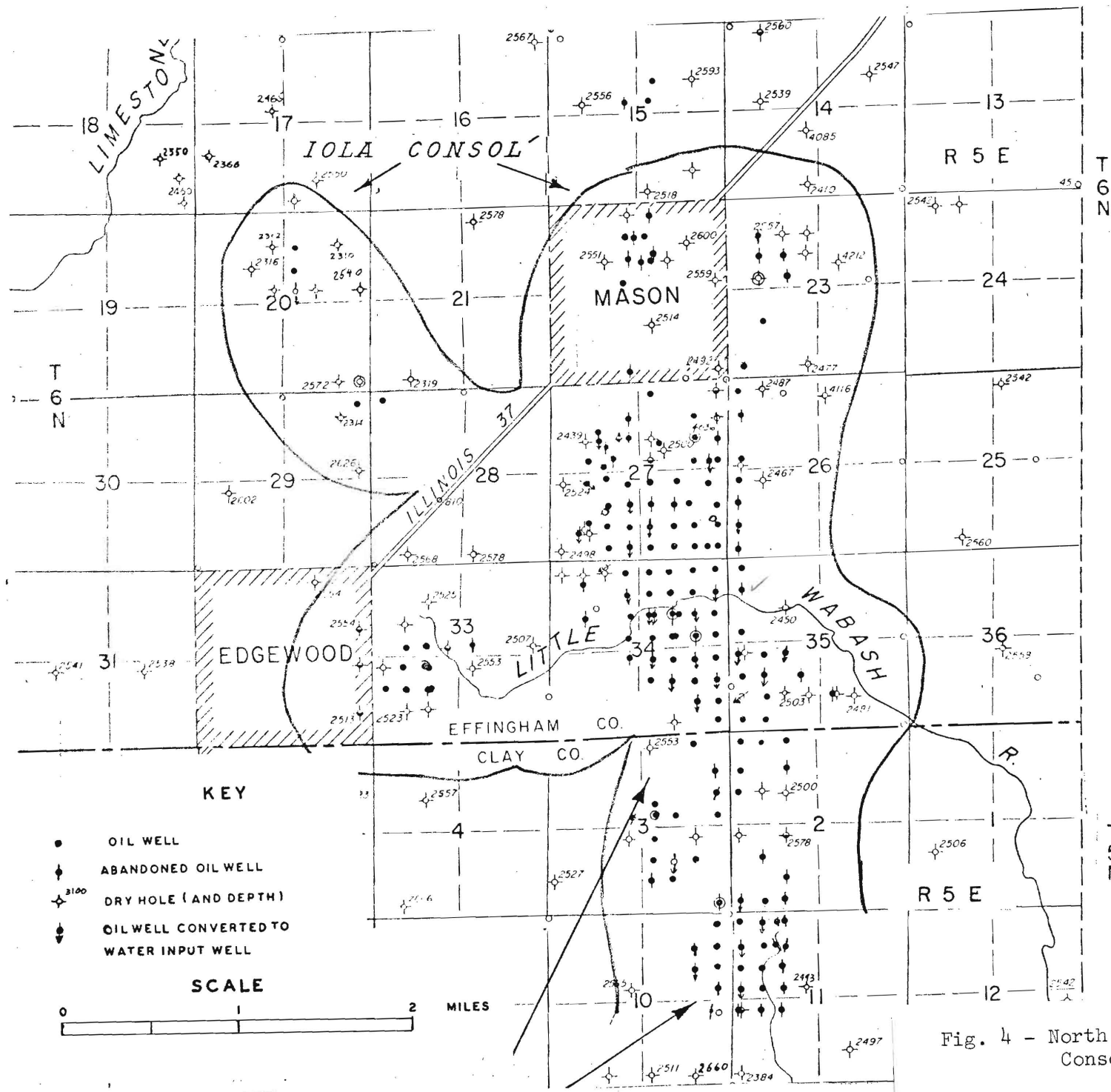


Fig. 4 - North part of Iola Consolidated oil field.

Table 6

IOLA FIELD

Wells at Surface Elevation 500 Feet or Less Including Producers, Dry Holes, and Former Producers

Operator	Farm	Well. No.	Location	Surface Elevation	Remarks
<u>12-5N-5E</u>					
Waggoner	Bailey	1	NE NE SE	471'	Dry hole, drilled 6-6-44, TD 2542, surface casing: 10" - 63'
A. A. Richey	Logan	1	SW SW SE	484' L&S*	Dry hole, drilled 11-15-55, TD 2457, surf. 10" - 68', 5" csg. - 2452
<u>13-5N-5E</u>					
A. A. Richey	Gen. Am. Life Ins. Co.	1	330'SL, 380'EL SE NE	465' L&S	Former producing well, TD 2453, 5-31-55 to 10-16-63, casing 10" - 95', 5½" - 2453', now abandoned
A. A. Richey	Gen. Am. Life Ins. Co.	3	NW SE NE	483' L&S	Former producing well, TD 2441, 9-6-55 to 10-17-63, casing 10" - 95', 5½" - 2431, now abandoned
A. A. Richey	Gen. Am. Life Ins. Co.	4	SE NE NE	465' L&S	Former producing well, TD 2433, 11-1-55 to 10-15-56, casing: 10" - 128'; 5½" - 2416', now abandoned
A. A. Richey	Fancher	1	NW NE SE	463' L&S	Dry hole S.O., drilled 5-29-56, TD 2432, casing: 10" - 84', 5½" - 2415'
A. A. Richey	Gosnell	1	E/2 NW SE	467' L&S	Former producing well, 10-11-55 to 8-16-57, TD 2419, casing: 10" - 97', 5½" - 24-8', now abandoned
Partlow & Cochonour	Graves-Burge	1	NE SE SW	470' L&S	Dry hole, drilled 10-16-55, TD 2455, casing: 8" - 65'
A. A. Richey	Harper, G.	1	NE NE SE	463' L&S	Former producing well, 9-6-55 to 6-27-67, TD 2442, casing: 10" - 94', 5" - 2442', now abandoned

(Continued on next page)

Operator	Farm	Well No.	Location	Surface Elevation	Remarks
Gulf Oil Co.	Pilcher	1	C - NW SW	478' L&S*	Dry hole, S.O., TD 2421, casing: 8" - 109', 5" - 2410'
A. A. Richey	Remkus	1	NE SW SE	490' approx.	Former producing well, TD 2423, 9-9-55 to 10-8-56, casing: 10" - 45', 5½" - 2410'
<u>14-5N-5E</u>					
T. Kiernan	Fahrnkopf	1	NE NE SE	476' GL	Dry hole, S.O., TD 2462, drilled 5-28-70, casing: 8" - 83', 4" - 2462'
Carter Oil Co.	Harper, L.	1	50' SE of Cen. SE NE	480' L&S	Dry hole, TD 2553, drilled 7-6-43, casing: 8" - 118'
McCollum & Kincaid	(Medford or) Mefford, P.	1	SW SW NE	503' L&S	Former producing well, 8-7-56 to 9-27-60, TD 2339, casing: 10" - 73', 5½" - 2320', now abandoned
T. S. Doran	Moss, M.	1	SW SW SW	481' (L&S?)	Dry hole, drilled 10-17-52, TD 2471, casing: 10" - 33'
Schaeffer & Tolliver	Reed Heirs	1	SW NE NW	497' (L&S)	Former producer, 5-29-44 to 7-30-47, TD 2323, casing: 10" - 78', 5" - 2310', now abandoned
<u>15-5N-5E</u>					
Texaco	Kidwell, A. L.	2	SW NE NW	501' L&S	Former producing well 2-9-43 to 6-12-68, TD 2327, casing: 10" - 97', 7" - 2266', now abandoned
Texaco	Kidwell, A. L.	4	330'SL, 355'EL SE NW	488' L&S	Former producing well 2-16-43 to 6-15-68, TD 2318', casing: 10" - 67', 7" - 2245', now abandoned
Shell	Leonard Comm.	1	NE NE SW	494' L&S	Former producer converted to water input, TD 2372', casing: 8" - 104', 4" - 2310', abandoned 2-16-67
Texaco	Risser, F. W.	1	NW NW SE	498' I 3' topo	Former producing well 2-23-43 to 1-25-67, casing: 10" - 90', 7" - 2320', now abandoned

(Continued on next page)

Operator	Farm	Well No.	Location	Surface Elevation	Remarks
Texaco	Risser, F. W.	3	SW NW SE	483' L&S*	Former producing well converted to WI, 1959, TD 2314, casing: 10" - 75', 7" - 2291', abandoned 1-19-67
Carter	Vangeison, R.	3	SW NE SE	497' L&S	Former dry hole, now WI well, operated by Rhea Fletcher, TD 2420
C.R.A.	Vangeison, R.	1 (or 5)	710'SL, 610'EL SE	484' DF	Deep test, dry hole, TD 4145, PB for use as waterflood producer now operated by Rhea Fletcher cumulative production Vangeison lease 3 producing wells and 2 water inputs <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> May <u>1974</u> 428,190 </div> <div style="text-align: center;"> 1973 <u>428,101</u> </div> <div style="text-align: center;"> 1972 <u>427,404</u> </div> </div>
<u>16-5N-5E</u>					
Pierce & Farmer	Smith Comm.	1	SW SW SW	499' GR	Former producing well 10-62 to 6-64, TD 2340, casing: 8" - 82', 4" - 2362', now abandoned
<u>17-5N-5E</u>					
F. Bridge	Landrith	2	SE SW NE	499' L&S	No information was ever received from the operator on this well casing 10" - 93', 5" - 2325', TD 2342, Comp. 12-21-43, now ABD
R. H. Troop	Ging	1	SW SE NE	498' L&S	Dry hole, show of oil, casing: 8" - 82', 5" - 2333', drilled 5-8-59
Burnett & Evans	Liggett, C.	1	178'SL, 250'WL, NE SE	499' L&S	Aux Vases producer 1939, casing: 8" - 72', 5" - 2327', does not appear in production report - possibly plugged
J. H. Smith	Liggett	1	NE NW SE	499' L&S	Apparently producer now owned by J. H. Smith, TD 2343, casing: 10" - 92', 7" - 2316', cumulative production - 3 wells <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> May <u>1974</u> 79,959 </div> <div style="text-align: center;"> 1973 <u>79,037</u> </div> <div style="text-align: center;"> 1972 <u>78,287</u> </div> </div>
J. H. Smith	Liggett	2	NW NE SE	498' L&S	Producing well since 1-11-44, TD 2314, casing: 8" - 92', 5" - 2314', probably should be included with Liggett #1

(Continued on next page)

Operator	Farm	Well No.	Location	Surface Elevation	Remarks
J. & H. Smith	Smith & Dehart	1	NW SE SE	499' GL*	Producing well since 1965 apparently inactive, cumulative production: <div style="text-align: right; margin-left: 200px;"> May <u>1974</u> <u>1973</u> <u>1972</u> 1,196 1,196 1,196 </div> Drilled 12/65, TD 2381, Csg. 8"-80', 5½"-2380'
<u>21-5N-5E</u>					
P. Doran	Peyton, C. J.	1	SE NE NE	501' L&S	Dry hole, drilled 2-10-48, TD 2473, casing: 8" - 75' approx.
Pfeiffer & Smith	Smith	1	150'NL, 150'WL NE NW	493' L&S	Bethel producer, TD 2309 drilled 1939. Does not appear in Production Report; possibly abandoned or shut down
<u>22-5N-5E</u>					
Texaco	Byers	6	NW SW NE	489' L&S	Aux Vases producer converted to water input status 6-8-64, COTD 2292
Texaco	Byers	7	SE SE NW	495' L&S	Aux Vases producer converted to water input status 6-11-64, COTD 2332
J. H. Smith	Moss	1	NE SE NW	500' GL	McClosky producer 6-64 to 10-73, casing: 8" - 81', 5½" - 2418', now abandoned
Texaco	Rush "B"	2	SE NE NE	492' L&S	Aux Vases producer converted to WI by Texaco 7-3-62, TD 2326
Texaco	Williams	1	SE NW NE	489' L&S	Aux Vases producer converted to WI in Aux Vases sand by Texaco 6-2-64, TD 2318
					Total production (cumulative barrels) Iola South Unit, Texaco, Inc. 9 producers, 9 injectors
					May <u>1974</u> <u>1973</u> <u>1972</u> 971,558 968,067 963,248

(Concluded on next page)

Operator	Farm	Well No.	Location	Surface Elevation	Remarks
<u>23-5N-5E</u>					
M. C. Milam	Rodgers	1	SW NE NW	481' DF*	Dry hole, drilled 9-22-63, TD 2446, casing: 10" - 33'
National Petroleum Co.	Smith, J.	1	NE SE NW	479' L&S	Dry hole, drilled 10-27-42, TD 2342, surface casing: 10" - 80'
<u>17-5N-6E</u>					
J. L. Black	G. Danks	1	NE NW NW	463' L&S	Dry hole, drilled 9-24-49, TD 2571, casing: 10" - 62'
<u>18-5N-6E</u>					
M. H. Richardson	Cogswell	1	NW NW SW	463' L&S	Dry hole, drilled 6-14-55, TD 2465, casing: 10" - 58'
J. L. Black	Danks, I.	1	NE NW SE	466' L&S	Dry hole, drilled 8-15-49, TD 2480, casing: 10" - 68'
A. A. Richey	Gen. Am. Life Ins. Co.	2	NW SW NW	483' L&S	Spar Mountain producer 10-2-50 to 11-19-56, casing: 10" - 65', 4½" - 2476', now abandoned
<u>19-5N-6E</u>					
J. L. Black	Danks	3	NW NW NE	464' L&S	Dry hole, drilled 10-1-49, TD 2510, casing: 10" - 60'

* See Appendix B for meaning of letter symbols.

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Unit operations, wherein producing wells under different leases and ownerships are linked for production by waterflood methods from a strategically located well or small group of wells, complicate the determination of accurate current production figures. Cumulative production figures as of the end of May 1972, 1973, and 1974, are given at the bottom of the fourth page of table 6 for the Iola South Unit, which is operated by Texaco, Inc. Inspection of these figures shows a decline in production in the two periods from 4,819 barrels to 3,491 barrels. Unit operations are common in waterflood production. Additional information about production records and unit operations is given in Appendix C.

f) Riffle Field - Riffle field was discovered in 1948 and was abandoned before 1971. It produced 81,000 barrels of oil from five wells. Specific information about wells and dry holes that have surface elevations below 500 feet is given in table 7. Wells not tabulated have elevations above 500 feet. The locations of the wells and dry holes in Riffle field are shown on figure 2.

Dry Holes (No Field Assignment) - A number of dry holes that are not assigned to any field have been drilled outside of field boundaries. Seventeen of these dry holes in the area of the proposed reservoir have surface elevations below 500 feet, and red check marks have been placed by the 12 of them that appear on figures 1 through 4. Sixteen of them have been checked on plates 2 and 3; one, located in sec. 23, T 7 N, R 5 E, is located about three miles north of the boundary of plate 2. Specific information about these dry holes is given in table 8. Although there was no production from these holes, knowledge of their locations may be important, as they may be subject to inundation.

Pipelines - Six crude oil pipelines cross the proposed Louisville reservoir area, and their routes are shown on plate 1. Marathon Pipe Line Company has a 20-inch line that crosses the area north of Watson and a 10-inch line that passes near Mason. Gulf Refining Company has two 10-inch lines that cross the area about three miles south of Edgewood. Marathon Pipe Line Company has constructed a new 20-inch line that crosses the area about two miles north of Iola. These lines all run northeast-southwest. Sohio Pipe Line Company has a 3-inch line that runs north-south just west of Mason and Iola. This connects with an east-west 2-inch feeder line from the Riffle field. As the Riffle field is abandoned, this line may not be in use. It has been announced that one of the 10-inch lines owned by Gulf Refining Company was to be taken over by Williams Brothers Pipe Line Company and converted to the transportation of fertilizer, perhaps, anhydrous ammonia.

Future Oil Potential - In the proposed Louisville reservoir area, oil production has come from relatively shallow depths. Exploration down to the Ste. Genevieve Formation has been moderately thorough; however, there are still areas where these rocks have not been explored. The marked decline in production from fields in the site area indicates that little further production is to be expected from them.

Table 7

RIFFLE FIELD (ABANDONED) 5-4N-6E, CLAY COUNTY

Operator	Farm	Well No.	Location	Surface Elevation	Remarks
J. L. Black	Clay County State Bank	1	C-N/2 SW NE	500'L&S*	Dry hole, drilled 4-18-50, TD 2735', casing: 10" - 60'
J. L. Black	Hammer	1	SW NE SW	502'L&S	Producer from 12-7-48 to 9-26-61, TD 2763', casing: 10" - 60'; 5½" - 2735', now abandoned
J. L. Black	Hammer	2	200'NL, 330'EL SE SW	498'L&S	Producer from 6-14-49 to 7-25-58, TD 2759', casing: 10" - 60'; 5½" - 2741', now abandoned
J. L. Black	Hayes	1	330'SL, 480'WL NW SE	500'L&S	Producer from 8-9-49 to 9-19-50, TD 2759', casing: 10" - 60'; 5½" - 2741', now abandoned
J. L. Black	Owens	1	NW NE SW	498'L&S	Producer from 5-17-49 to 7-23-58, TD 2753', casing: 10" - 61'; 5½" - 2725', now abandoned
J. L. Black	Owens	2	330'SL, 470'WL SE NW	494'L&S	Dry hole, drilled 12-31-48, TD 2787', casing: 10" - 60'
J. L. Black	Owens	3	SW SE NW	499'L&S	Producer from 8-9-49 to 8-4-56, TD 2743', casing: 10" - 61'; 5½" - 2725', now abandoned
J. L. Black	Pierson	1	NE NW SW	502'L&S	Dry hole, drilled 6-21-49, TD 2776', casing: 10" - 65'
J. L. Black	Pierson	2	SE NW SW	501'L&S	Dry hole, drilled 8-9-49, TD 2753', casing: 10" - 60'

* See Appendix B for meaning of letter symbols.

Table 8

Dry Holes, Wildcat Locations (No Field Assignment) Range 5 East

Operator	Farm	Well No.	Location	Surface Elevation	Remarks
<u>1-6N-5E</u>					
Texas Co.	L. T. Crampton	1	SE NW SW	489' L&S*	Dry hole, drilled 12-14-54, TD 2574, casing: 10" - 68'
<u>2-6N-5E</u>					
A. H. Gibson	Brummer	1	C-NE SW	500' GL TOPO	Dry hole, drilled 10-6-42, TD 2523, casing: 8" - 41', 5½" - 2412' (probably pulled)
<u>3-6N-5E</u>					
Texas Co.	P. H. Tonn	1	NW NW SW	496' GR	Dry hole, drilled 12-12-50, TD 2441', OWWO in 1965, still dry hole, casing: 10" - 77'
<u>35-6N-5E</u>					
F. Farrar	J. W. Byers	1-A	SW NW NW	502' L&S	Dry hole, drilled 8-17-48, TD 2507, casing: 10" - 30' - OWWO short time oil well 11/57-10/60, now ABD
<u>23-7N-5E</u>					
Slagter Prod	L. White	1	NW NE NW	503' L&S	Dry hole, drilled 10-16-57, TD 2431, casing: 8" - 105'

End Dry Holes Range 5 East

(Continued on next page)

Table 8

Dry Holes, Wildcat Locations (No Field Assignment) Range 6 East

Operator	Farm	Well No.	Location	Surface Elevation	Remarks
<u>6-4N-6E</u>					
J. B. Murvin	Ina Hayes	1	NE SE NW	500'GL* TOPO	Dry hole, drilled 6-2-59, TD 2740, casing: 10" - 60'
<u>8-4N-6E</u>					
A. J. Slagter	Dillman	1	SE SW NE	499'L&S	Dry hole, drilled 5-10-49, TD 2861, casing: 10" - 40'
J. L. Black	E. M. Harper	1	NE NW NW	497'L&S	Dry hole, drilled 5-12-49, TD 2810, casing: 10" - 80'
<u>8-5N-6E</u>					
F. Beeson	Burvil Kincaid	1	SW SW SW	465'L&S	Dry hole, drilled 9-65, TD 2557', casing: 8" - 80'
<u>28-5N-6E</u>					
Gulf Petroleum	Griffy	1	SE NE SW	493'L&S	Dry hole, drilled 10-19-48, TD 2890, casing: 8" - 97'
<u>29-5N-6E</u>					
Lowell & Leon Hagan	Robinson	1	SW NE SE	468'GL	Dry hole, drilled 11-71, TD 2756, casing: 8" - 36'
<u>32-5N-6E</u>					
NAPCO	Chas Frye	1	SE SW SE	465'GL	Dry hole, drilled 5-71, TD 2808, casing: 8" - 74'
Perry Fulk & Gulf Oil Corp.	Schnore	1	NE NE SW	468'L&S	Dry hole, drilled 3-29-49, TD 2842, casing: 10" - 60'
<u>3-6N-6E</u>					
Partlow & Cochonour	C. A. Davis	1	NE NE SW	491'L&S	Dry hole, drilled 10-10-54, TD 2673, casing: 10" - 125'

(Concluded on next page)

Table 8

Dry Holes, Wildcat Locations (No Field Assignment) Range 6 East - 2

Operator	Farm	Well No.	Location	Surface Elevation	Remarks
<u>8-6N-6E</u>					
P. N. Wiggins	Macklin	1	C-SW SE	481'L&S*	Dry hole, drilled 1-18-45, TD 5000', casing: 10" - 105'
<u>9-6N-6E</u>					
Magnolia	M. Morris	2	NE SW SW	497'L&S	Dry hole, drilled 1-18-45, TD 2710', casing: 8" - 201'
<u>21-6N-6E</u>					
Kingwood	Richhelm	1	340'NL, 610'EL NE NE	482'	Dry hole, drilled 1-3-40, TD 2955', casing: 10" - 205'

End Dry Holes Range 6E (None in 7N-6E Below 500' Elev.)

* See Appendix B for meaning of letter symbols.

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The present need for increased supplies of petroleum has stimulated interest in exploring the rocks below the Ste. Genevieve Formation. A well in sec. 15, T 5 N, R 5 E, was drilled into the Devonian System of rocks, but it encountered no commercial shows of oil and was subsequently plugged back to produce from the Aux Vases Formation. In 1974, Texaco, Inc., drilled a well in the NE $\frac{1}{4}$ sec. 28, T 4 N, R 6 E, about a mile west of the Village of Louisville. This well was reported to have been drilled into the Devonian System, but no oil was reported from the deeper horizons. It was also reported that oil in commercial quantities was encountered at three horizons above the Devonian. This may help to stimulate interest in exploring the deeper rocks.

Tertiary recovery methods have been developed but have not been widely applied to oil fields in Illinois.

In recent years, seismic techniques have been developed which permit better selection of possible subsurface structures in the Devonian, Silurian, and, possibly, Ordovician rocks. These techniques may have been applied in the Louisville area, but, if so, the results have not been released and must be considered proprietary information at the present time.

Without the development of production from either the deeper rocks or by tertiary recovery methods, it is most likely that production from existing fields will continue to decline.

MINERAL PRODUCTION

During 1973, 1.4 million barrels of crude oil, valued at \$5.8 million, was produced in Clay County. Besides crude oil, a small amount of limestone was also produced in Clay County by Shakespeare Oil Company and Shoot Stone Quarry Company. The limestone produced during 1973 was valued at less than half a million dollars and was sold primarily for construction aggregate purposes.

During 1973, crude oil produced in Effingham County amounted to 257,816 barrels, which, at \$4.31 per barrel, was valued at \$1.1 million. No other mineral material was produced in this county in 1973.

APPENDICES

Appendix A

Oil Fields - The naming and classification of oil fields is governed rigidly by a set of rules. Generally, an oil field is named for a town or settlement near by. If a well drilled more than one and a half miles from another producing well finds oil and is completed as a producing well, it is considered to be a field discovery well. If additional wells are drilled less than half a mile from the discovery well, they simply enlarge the field; wells drilled between half a mile and one and a half miles from the nearest producing well extend the field. A field name is retained in perpetuity unless subsequent drilling brings two fields together. The name of the older, larger field is generally retained, and the field then becomes a consolidated field. In that case, older contributing field names are dropped; abandoned fields are "revived" if a new well is drilled less than one and a half miles from the site of a former producing well in the abandoned field.

Dry Holes - In addition to dry holes drilled in or near named oil fields, a number of wells that turned out to be dry holes were drilled at sites that were more than one and a half miles from named fields. Some of the dry holes were drilled less than one and a half miles from named fields prior to discovery of the field and were "wildcat" well locations at the time of drilling.

Appendix B

Well Elevations - Prior to 1961, well elevations were determined by Laughlin & Simmons Company. The elevation was generally taken after the drilling rig was on the well site, and the elevation measured was that of the derrick floor. The relationship between the elevation of the derrick floor and ground level varied from site to site depending upon height of the rig floor above the ground as well as the topography the rig sat on. The average rig drilling in Clay and Effingham counties generally sat from 3 to 5 feet above ground level on fairly level ground. In many cases, no subsequent reference to ground level was entered in well records and the actual ground level elevation of the well site was never determined. For this reason, L & S elevations for some wells may represent elevations 3 to 5 feet above the surface of the ground.

About 1960, the Illinois Department of Mines and Minerals began to require that the real surface elevation be determined for each well site. Following are letter symbols used to indicate ground surface elevation in tables 2 through 8:

G	Ground
GL	Ground level
GR	Ground

DF is used by some to indicate derrick floor. Topo means the elevation was obtained from a topographic map.

Appendix C

Crude Oil Production Records and Unit Operations - Because crude oil production is reported only as runs in the Pipeline Production Report of the Petroleum Information Corporation, a reliable estimate of current production can best be obtained by reviewing cumulative production for 2 or 3 years. The most recent Production Report is for May 1974. For producing wells with data available, cumulative production for May of 1972, 1973, and 1974 is reported in tables 2 through 7. This avoids the overrun that would occur in the particular month in which a crude oil run is made and also eliminates the blank spot that would occur during the month or months during which no run to pipeline is made.

Texaco, Inc. operates the Iola South Waterflood Unit as part of Iola Consolidated field. The wells are located in sec. 22, T 5 N, R 5 E, Clay County. The unit was created in 1962 to permit Texaco to develop and operate the waterflood in the most efficient manner possible. The unit originally consisted of nine water input and nine producing wells. Four of the water input wells that have surface elevations at 500 feet or less are listed on the fourth page of table 6. Oil from the unit is reported by Petroleum Information Corporation as a single figure for the unit. Without access to unit participation factors, it is not possible to determine the current production rate assigned to any particular well. Data supplied to the Illinois State Geological Survey for the waterflood oil produced in 1973 indicates that the Iola South Waterflood Unit produced only 1800 barrels of waterflood oil and a total of 3,491 total barrels of oil for the year. The same report listed only one water input well and one producing well as being still active. This information would seem to indicate that this waterflood unit is rapidly approaching economic limit.

Another waterflood project is operated by Rhea Fletcher as a single lease. This operation consists of three producing and two water input wells. Production data are available only for the entire lease and are reported on the third page of table 6 in the remarks for the C.R.A. No. 1 Vangeison well. Information about the Carter No. 3 Vangeison well, a water input well in this lease, is also given on the third page of table 6.

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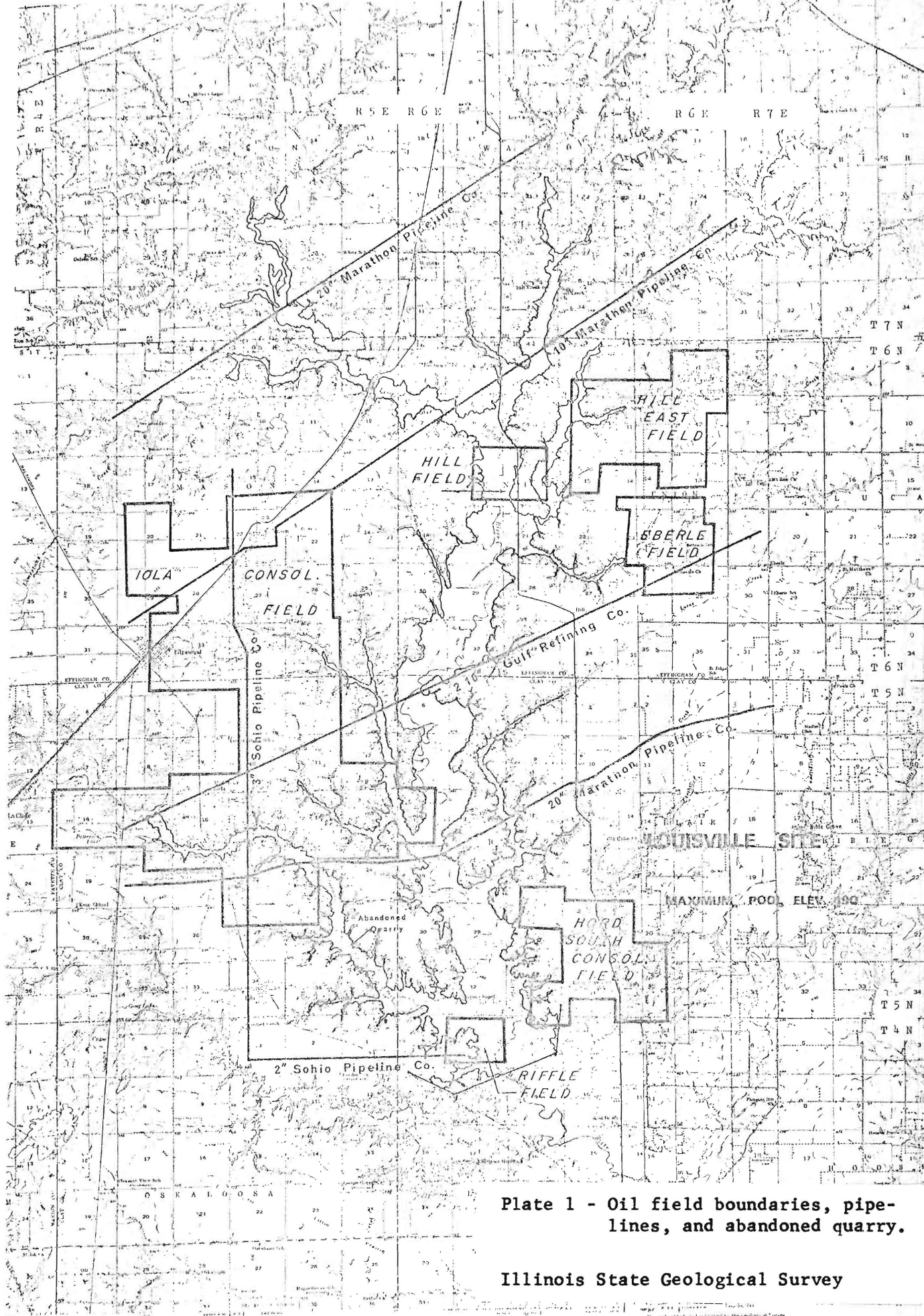
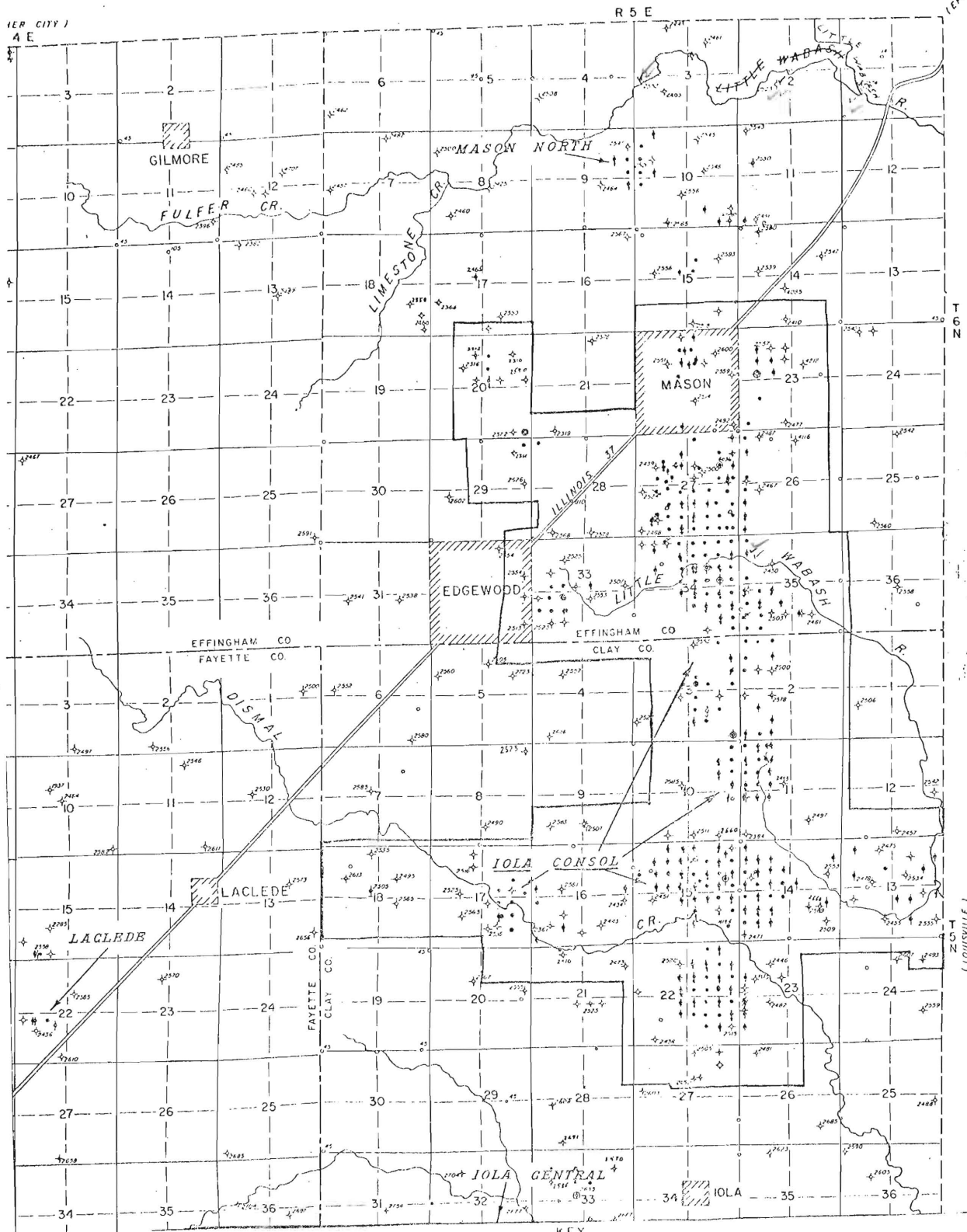


Plate 1 - Oil field boundaries, pipelines, and abandoned quarry.

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INDEX MAP, KINMUNDY AREA

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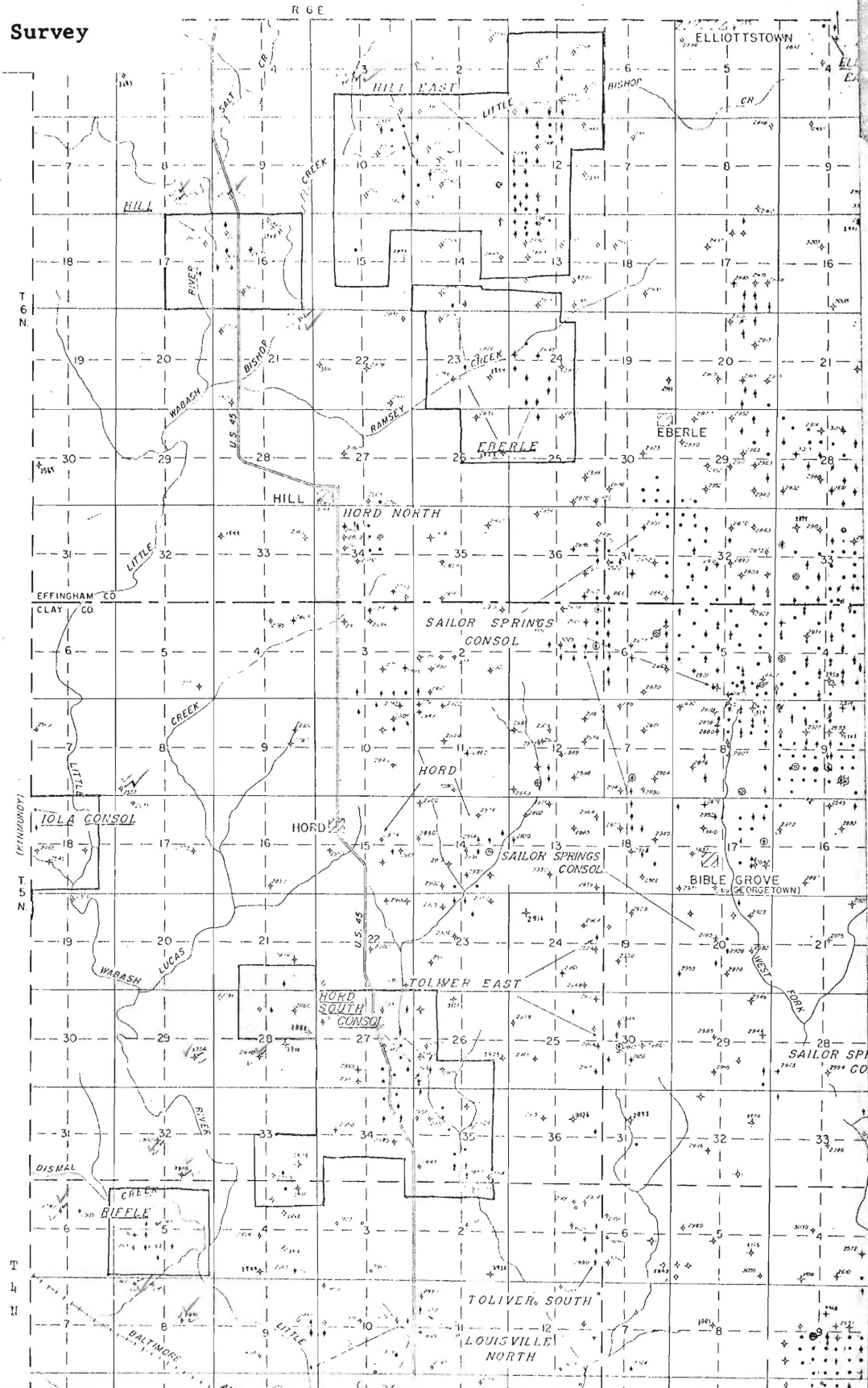
FAYETTE CO.	• OIL WELL	⊕ DRY HOLE, SHOW OF OIL	⊙ SALT WATER DISPOSAL WELL
MARION CO.	• DISCOVERY WELL (LAND DEPTH)	⊕ WATER INPUT WELL	⊕ COMBINATION OIL AND SALT WATER DISPOSAL WELL
	• ABANDONED OIL WELL	⊕ GAS INPUT WELL	⊕ OIL WELL CONVERTED TO SALT WATER DISPOSAL WELL
	• GAS WELL	⊕ OIL WELL CONVERTED TO WATER INPUT WELL	⊕ DRY HOLE CONVERTED TO SALT WATER DISPOSAL WELL
	• ABANDONED GAS WELL	⊕ GAS WELL CONVERTED TO WATER INPUT WELL	⊕ JUMPED HOLE
	• DRY HOLE (LAND DEPTH)	⊕ DRY HOLE CONVERTED TO WATER INPUT WELL	⊕ OTHER BORINGS (LAND DEPTH)
		⊕ SALT WATER DISPOSAL WELL CONVERTED TO WATER INPUT WELL	

KEY

SCALE

IOLA SOUTH

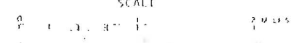
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KEY

- OIL WELL
- ◊ DISCOVERY WELL (AND DEPTH)
- ◊ ABANDONED OIL WELL
- ◊ GAS WELL
- ◊ ABANDONED GAS WELL
- ◊ DRY HOLE (AND DEPTH)
- ◊ DRY HOLE, SHOW OF OIL
- ◊ WATER INPUT WELL
- ◊ OIL WELL CONVERTED TO WATER INPUT WELL
- ◊ GAS WELL CONVERTED TO WATER INPUT WELL
- ◊ DRY HOLE CONVERTED TO WATER INPUT WELL
- ◊ SALT WATER DISPOSAL WELL CONVERTED TO WATER INPUT WELL
- ◊ GAS DISPOSEL WELL
- ◊ COMBINATION OIL AND SALT WATER DISPOSAL WELL
- ◊ OIL WELL CONVERTED TO SALT WATER DISPOSAL WELL
- ◊ DRY HOLE CONVERTED TO SALT WATER DISPOSAL WELL
- ◊ DRY HOLE
- ◊ OTHER BORINGS (AND DEPTH)

SCALE



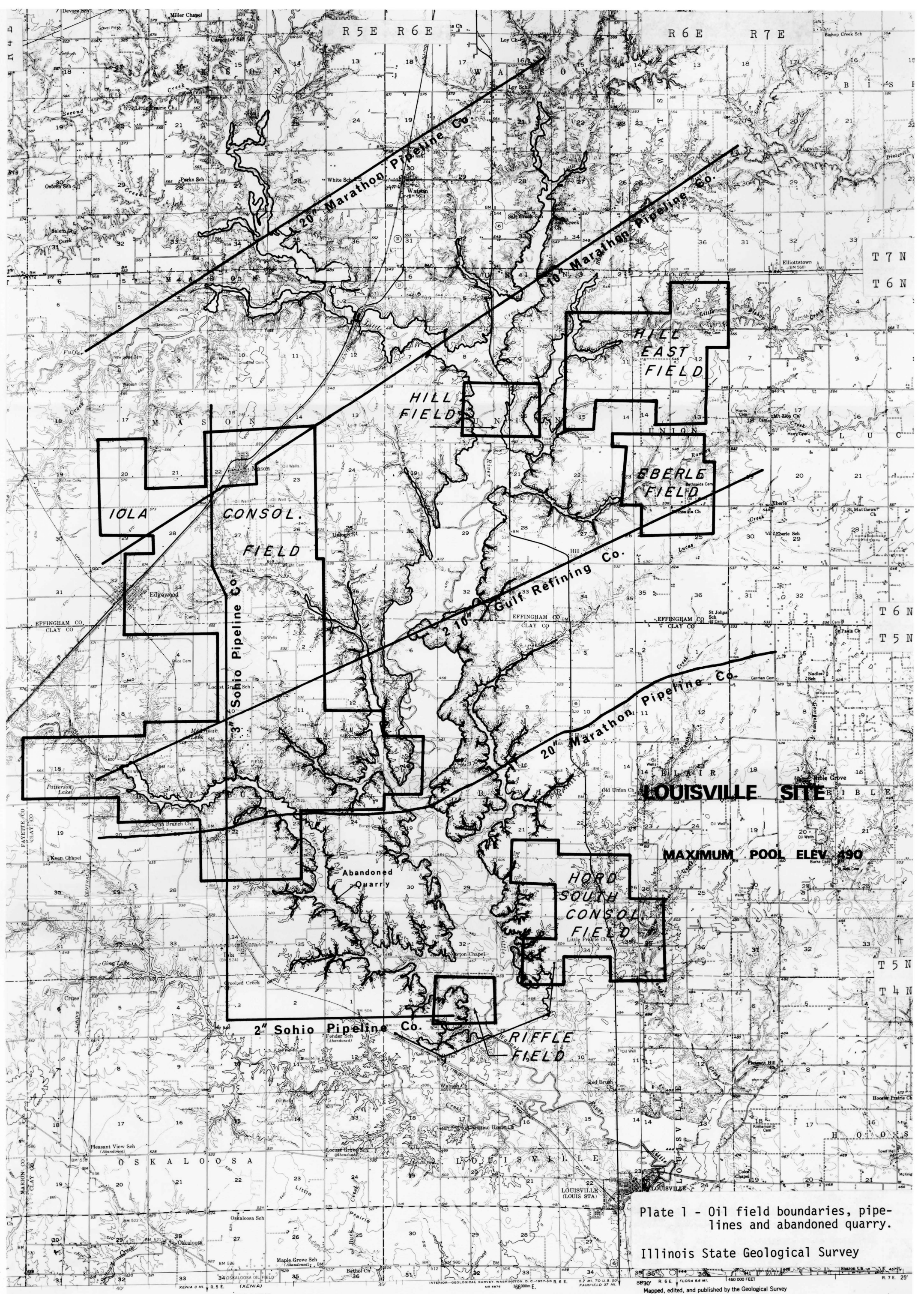
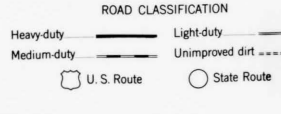
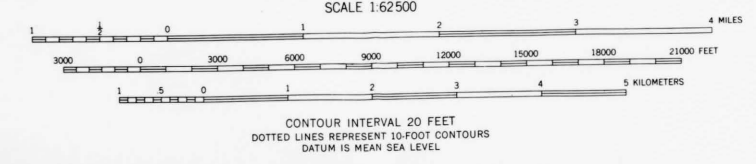


Plate 1 - Oil field boundaries, pipelines and abandoned quarry.

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Mapped, edited, and published by the Geological Survey
 Control by USGS and USC&GS
 Culture and drainage in part compiled from aerial photographs
 taken 1952. Topography by plane-table surveys 1953
 Polyconic projection. 1927 North American datum
 10,000-foot grid based on Illinois coordinate system,
 east zone

EDGEWOOD, ILL
 N 3845-W 8830/15

1956

APPROXIMATE MEAN MAGNETIC DECLINATION, 1956
 THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
 FOR SALE BY U. S. GEOLOGICAL SURVEY, WASHINGTON 25, D. C.
 AND BY THE STATE GEOLOGICAL SURVEY, URBANA, ILLINOIS
 A LIST OF AGENTS WHOSE NAMES AND SYMBOLS IS AVAILABLE ON REQUEST

APPROXIMATE MEAN
 MAGNETIC NORTH
 DECLINATION, 1953