GROUND-WATER RECORDS FOR THE AREA SURROUNDING THE CHICKASAW NATIONAL RECREATIONAL AREA, MURRAY COUNTY, OKLAHOMA

U.S. GEOLOGICAL SURVEY
OPEN-FILE REPORT 83-27

Prepared in cooperation with
THE NATIONAL PARK SERVICE

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By Robert L. Goemaat and Cass C. Willard

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Oklahoma City, Oklahoma
1983

UNITED STATES DEPARTMENT OF THE INTERIOR
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GEOLOGICAL SURVEY
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GROUND-WATER RECORDS FOR THE CHICKASAW NATIONAL RECREATIONAL AREA, MURRAY COUNTY, OKLAHOMA

By

Robert L. Goemaat and Cass C. Willard

This report is a compilation of ground-water records, water levels, and water-quality field determinations, for wells in a 132 square-mile (342 square kilometer) area surrounding the Chickasaw National Recreational Area in south-central Oklahoma. This information was collected in cooperation with the National Park Service. The location of the study area is shown on Figure 1; the well locations are shown on Figure 2. Data from 101 wells are summarized in this report.

WELL-NUMBERING SYSTEMS

Wells in this report are identified by two numbering systems: (1) the township, range, and section; and (2) the geographic coordinates.

The standard method of giving location by fractional section, section, township, and range is replaced by the method illustrated on page 4. The location of the site would normally be described as NW 1/4 SW 1/4 SE 1/4 sec. 12, T. 01 N., R. 03 E. The method used in this report reverses the order and indicates quarter subdivisions of the section by letters. By this method, the location of the site is given as 01N-03E-12 DCB 1. The final digit (1) is the sequential number of a site within the smallest fractional subdivision.

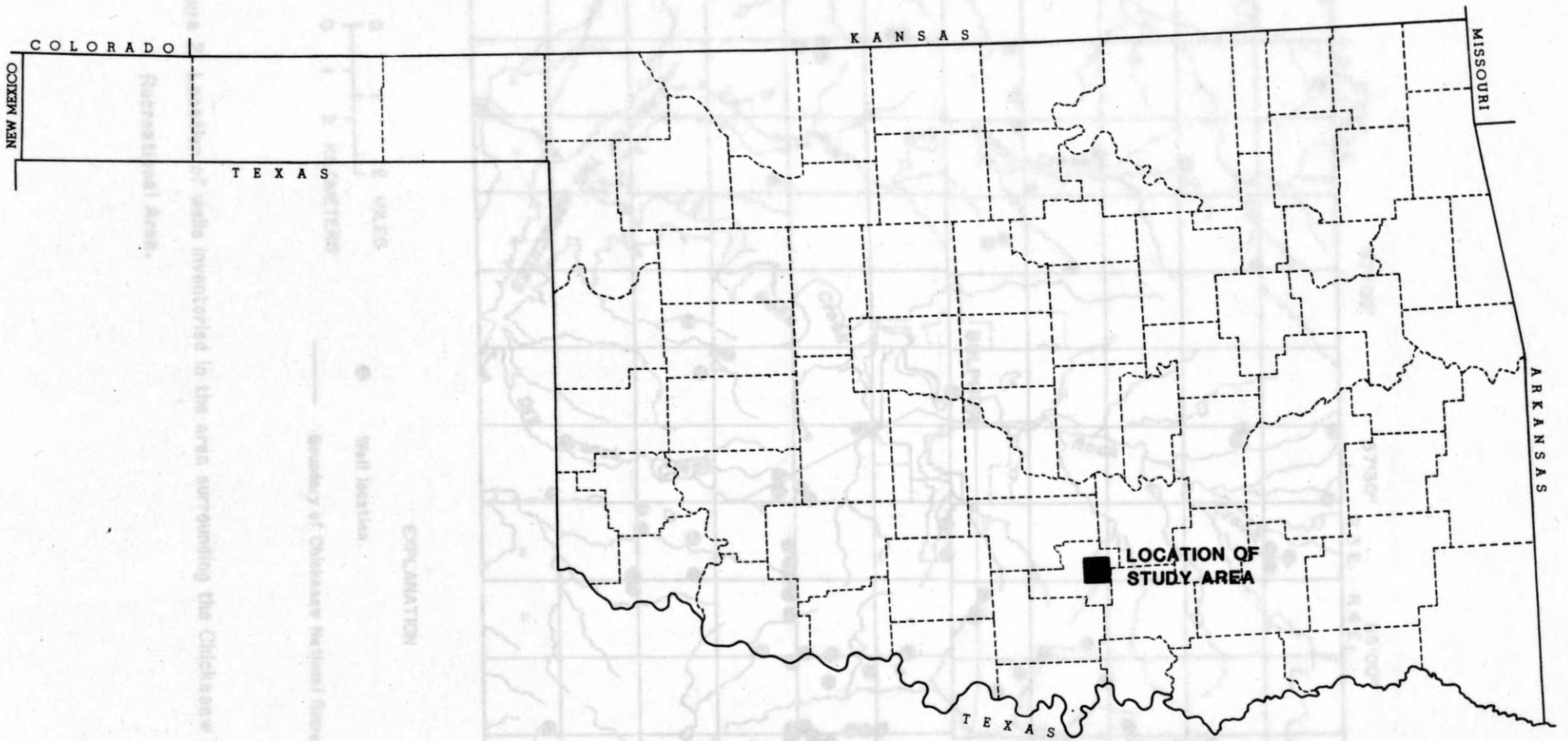


Figure 1 Location of study area.

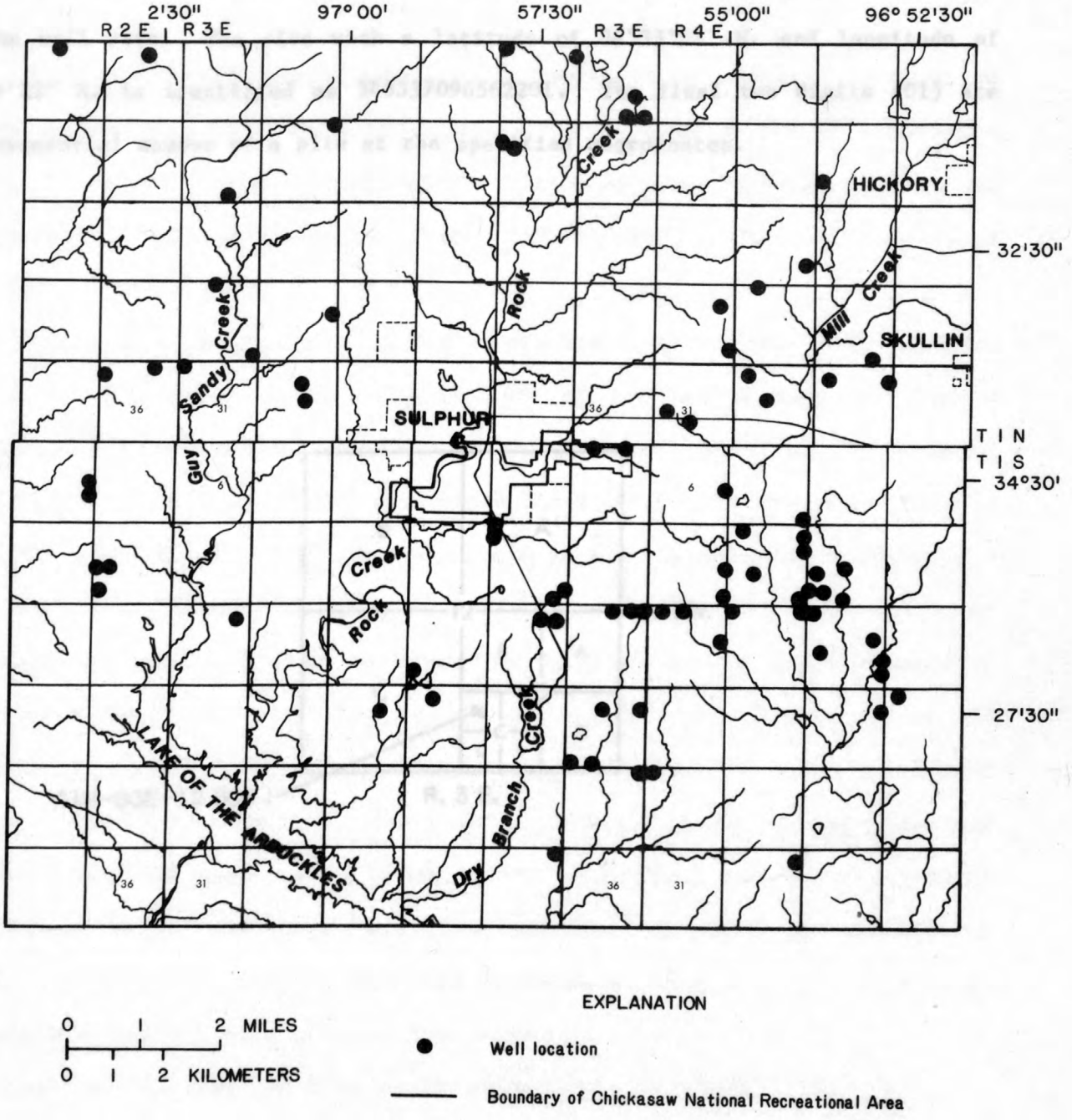
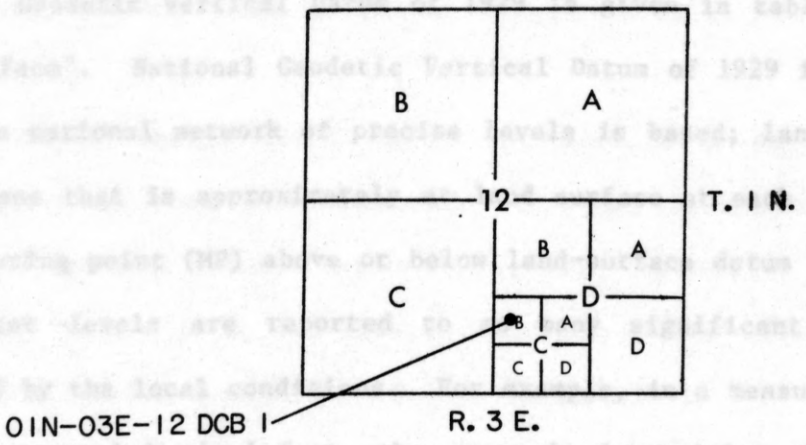


Figure 2 Location of wells inventoried in the area surrounding the Chickasaw National Recreational Area.

Site identification numbers are also determined by geographic coordinates at the well site. The site with a latitude of 34°33'57" N. and longitude of 96°56'22" E. is identified as 343357096562201. The final two digits (01) are the sequential number of a site at the specified coordinates.



COLLECTION OF DATA

Measurements are made in many types of wells, under varying conditions of access and at different temperatures, hence, neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will ensure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference to land-surface datum (lsd). The altitude of the land-surface datum above National Geodetic Vertical Datum of 1929 is given in table 1 as "altitude of land surface". National Geodetic Vertical Datum of 1929 is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. The height of the measuring point (MP) above or below land-surface datum is given in table 1.

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth of water of several hundred feet, the error in determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements is greater. Accordingly, most measurements are accurate to a hundredth of a foot, but some are accurate only to a tenth of a foot or a larger unit.

Feet may be converted to meters by multiplying by 0.3048.

Degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) by using the following formula: $°F = 9/5°C + 32$.

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ABBREVIATIONS AND CONVERSION FACTORS

The following abbreviations are used in Table 1:

HYDROLOGIC UNIT (OWDC)--Hydrologic unit as determined from the Hydrologic Unit Map-1974 State of Oklahoma.

MP--Measuring point; height above land surface, in feet.

Use of water--

H, Domestic

I, Irrigation

S, Stock Supply

U, Unused

Table 1. List of wells, their depth, water level, and water quality field determinations; Murray County, Oklahoma

SITE-ID	LOCAL NUMBER	SOURCE OF DATA	PRINCIPAL AQUIFER	HYDROLOGIC UNIT (OWDC)	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	MP HEIGHT (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED
MURRAY COUNTY										
343442097043501	01N-02E-10 AAB 1	USGS	--	11130303	910	38.29	0.51	13.20	S	06/04/1981
343444097031801	01N-02E-11 AAA 1	USGS	--	11130303	1040	50.50	0.00	1.10	S	--
343442097035401	01N-02E-11 BAA 1	USGS	--	11130303	1010	98.20	0.80	2.18	S	06/04/1981
343440097035402	01N-02E-11 BAA 2	USGS	--	11130303	990	17.12	1.80	0.16	S	06/04/1981
343359097031801	01N-02E-11 DDA 1	USGS	--	11130303	975	55.85	0.70	1.55	S	06/04/1981
343443097030601	01N-02E-12 ABB 1	USGS	--	11130303	1047	28.30	0.00	0.80	S	06/03/1981
343312097045001	01N-02E-15 DCB 1	USGS	--	11130303	890	18.00	--	--		--
343203097040501	01N-02E-23 CBC 1	USGS	318USCR	11130303	875	15.00	--	9.99	S	12/05/1968
343156097044601	01N-02E-27 ABC 1	USGS	--	11130303	875	20.00	-1.10	14.90	S	06/02/1981
343148097045601	01N-02E-27 ABC 2	USGS	--	11130303	875	26.00	-2.20	20.10	SP	09/02/1981
343154097045201	01N-02E-27 BDA 1	USGS	--	11130303	860	22.70	0.50	17.41	S	06/02/1981
343115097023501	01N-02E-36 ABA 1	USGS	--	11130303	980	13.70	1.30	8.70	S	06/02/1981
343107097031401	01N-02E-36 BBC 1	USGS	--	11130303	995	40.28	0.62	--		--
343500097005001	01N-03E-05 CAC 1	USGS	318USCR	11130303	980	15.00	--	10.96	S	12/06/1968
343443097021401	01N-03E-07 BBB 1	USGS	--	11130303	1060	27.32	2.50	9.90	SZ	06/03/1981
343430096565901	01N-03E-11 AAD 1	USGS	--	11130303	1075	640.00	--	0.00	S	06/11/1981
343438096575601	01N-03E-11 BBB 1	USGS	--	11130303	1185	7.00	1.45	0.00	SZ	06/11/1981
343406096561501	01N-03E-12 DBD 1	USGS	--	11130303	1065	30.35	0.00	6.39	SZ	06/10/1981
343410096562001	01N-03E-12 DBC 1	USGS	--	11130303	1045	166.92	0.65	4.70	SZ	06/10/1981
343357096562201	01N-03E-12 DCB 1	USGS	--	11130303	1075	--	0.00	5.54	SZ	06/11/1981
343352096562601	01N-03E-12 DCC 1	USGS	--	11130303	1060	--	0.00	1.82	S	06/11/1981
343351096565601	01N-03E-12 DCC 2	USGS	--	11130303	1060	41.17	1.20	0.39	S	06/11/1981
343356096561601	01N-03E-12 DCD 1	USGS	--	11130303	1055	12.37	1.79	0.00	S	06/11/1981
343352096560901	01N-03E-12 DDC 1	USGS	--	11130303	1165	21.76	0.00	3.36	SZ	06/10/1981
343335096574601	01N-03E-14 BCA 1	USGS	--	11130303	1030	17.00	0.00	4.38	S	06/10/1981
343347097001201	01N-03E-17 AAA 1	USGS	--	11130303	1030	34.95	0.00	5.30	SZ	06/09/1981
343300097014001	01N-03E-18 DCC 1	USGS	--	11130303	985	48.70	0.50	35.37	S	06/04/1981
343206097012101	01N-03E-19 DDC 1	USGS	--	11130303	940	12.30	3.50	7.98	S	06/03/1981
343141097001001	01N-03E-29 ADD 1	USGS	--	11130303	1035	91.74	0.51	13.56	SZ	06/10/1981
343206097014901	01N-03E-30 BAA 1	USGS	--	11130303	985	29.75	0.70	3.62	S	06/03/1981
343116097011201	01N-03E-30 DDD 1	USGS	--	11130303	970	14.15	0.00	1.30	S	06/09/1981
343109097021101	01N-03E-31 BBB 1	USGS	--	11130303	980	27.25	2.90	1.44	S	06/03/1981
343102097021001	01N-03E-31 CBB 1	USGS	--	11130303	980	67.60	2.70	0.60	SP	06/02/1981
343213096525201	01N-04E-21 DDA 1	USGS	367ABCKU	11130304	1180	1170.00	1.50	92.44	S	10/21/1976
343132096530401	01N-04E-28 DBD 1	USGS	367ABCKU	11130304	1170	165.00	-0.80	102.95	S	11/12/1976
343158096543101	01N-04E-29 BAB 1	USGS	367ABCKU	11130304	1200	249.00	0.00	124.02	S	11/18/1976
343141096550901	01N-04E-30 ADB 1	USGS	367ABCKU	11130304	1200	307.00	-3.00	133.28	S	11/18/1976
343121096545701	01N-04E-30 DDA 1	USGS	322VNSS	11130304	1195	190.00	-1.00	128.05	S	11/18/1976
343037096552101	01N-04E-31 CAD 1	USGS	322VNSS	11130304	1190	195.00	0.00	105.96	S	11/18/1976
343045096554201	01N-04E-31 CBA 1	USGS	322VNSS	11130304	1220	225.00	0.00	129.12	S	03/30/1977

USE OF WATER	TEMPERATURE (DEGREES C)	SPECIFIC CONDUCTANCE (UMHOS/CM AT 25 C)	PH (UNITS)	DATE QUALITY PARAMETERS MEASURED
U	18.2	686	7.6	06/04/1981
U	20.6	467	7.6	06/03/1981
U	20.5	248	8.1	06/04/1981
U	19.8	1758	7.3	06/04/1981
U	17.6	1555	8.2	06/04/1981
U	20.0	479	7.6	06/03/1981
H	22.3	555	8.1	06/04/1981
H	--	--	--	--
U	19.0	993	7.5	06/02/1981
H	20.4	789	7.2	06/07/1981
H	21.1	2000	7.6	06/02/1981
U	18.1	592	8.0	06/02/1981
U	22.1	322	7.8	06/03/1981
H	--	--	--	--
U	17.8	667	8.6	06/03/1981
U	--	--	--	--
U	18.0	482	6.9	06/11/1981
U	17.5	723	6.9	06/10/1981
U	18.5	1245	7.9	06/10/1981
U	--	--	--	--
U	--	--	--	--
U	17.5	607	6.8	06/11/1981
U	18.5	557	7.0	06/11/1981
U	18.0	464	6.7	06/10/1981
U	20.0	691	6.9	06/10/1981
U	19.0	524	6.9	06/09/1981
U	17.6	710	6.7	06/04/1981
H	18.6	722	7.3	06/03/1981
U	17.5	617	7.2	06/10/1981
U	21.7	497	8.2	06/03/1981
U	24.0	744	7.0	06/09/1981
U	20.3	497	7.5	06/03/1981
U	18.9	1256	8.1	06/02/1981
I	--	--	--	--
S	7.0	540	8.0	11/12/1976
U	--	--	--	--
H	15.5	460	7.3	11/18/1976
H	--	--	--	--
U	--	--	--	--
U	--	--	--	--

SITE-ID	LOCAL NUMBER	SOURCE OF DATA	PRINCIPAL AQUIFER	HYDROLOGIC UNIT (OWDC)	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	HP HEIGHT (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED
MURRAY COUNTY -- CONTINUED										
343111096543301	01N-04E-32 BBA 1	USGS	367ABCKU	11130304	1160	800.00	0.00	84.00	S	11/12/1976
343051096542901	01N-04E-32 BDD 1	USGS	367ABCKU	11130304	1160	188.00	--	54.59	SR	10/22/1976
343105096525001	01N-04E-33 AAD 1	USGS	367ABCKU	11130304	1200	170.00	-0.50	111.25	S	11/12/1976
343105096534401	01N-04E-33 BBC 1	USGS	367ABCKU	11130304	1150	180.00	-3.00	69.70	S	11/12/1976
342951097032101	01S-02E-02 DAA 1	USGS	--	11130303	945	152.17	1.05	8.03	SZ	06/09/1981
342948097031901	01S-02E-02 DAD 1	USGS	--	11130303	945	16.02	1.76	4.60	SZ	06/09/1981
342858097031601	01S-02E-12 CBB 1	USGS	--	11130303	990	40.05	1.10	6.32	S	06/09/1981
342850097031801	01S-02E-12 CCB 1	USGS	--	11130303	980	9.95	1.50	3.77	SZ	06/09/1981
343017096561501	01S-03E-01 ABA 1	USGS	364SMPS	11130303	1140	96.00	0.00	63.50	R	07/25/1978
343020096565001	01S-03E-01 BAB 1	USGS	364SMPS	11130303	1004	300.00	--		F	04/ /1968
343022096565701	01S-03E-01 BBB 1	USGS	364SMPS	11130303	1080	70.00	0.00	29.26	R	07/31/1978
342923096580001	01S-03E-11 BBC 1	USGS	--	11130303	1020	180.00	3.40	4.30	SZ	06/19/1981
342929096575801	01S-03E-11 BBB 1	USGS	--	11130303	1020	210.00	--	0.00	RP	--
342846096570401	01S-03E-11 DDA 1	USGS	364SMPS	11130303	1165	110.00	--	35.00	R	06/01/1977
342838096571501	01S-03E-11 DDC 1	USGS	364SMPS	11130303	1170	171.00	--	--		--
342836096560201	01S-03E-13 AAA 1	USGS	--	11130303	1130	94.45	0.20	42.50	SZ	06/16/1981
342837096560801	01S-03E-13 AAB 1	USGS	--	11130303	1135	111.80	1.20	67.00	SZ	06/16/1981
342836096562801	01S-03E-13 ABB 1	USGS	364SMPS	11130303	1180	68.00	0.20	10.64	S	02/09/1977
342632096572301	01S-03E-14 ABD 1	USGS	364SMPS	11130303	1170	55.00	0.00	19.86	S	02/09/1977
342654096564201	01S-03E-14 AAC 1	USGS	--	11130303	1130	49.15	0.50	11.60	SR	06/17/1981
342831096571901	01S-03E-14 ABD 1	USGS	--	11130303	1170	37.50	2.50	11.43	SZ	06/17/1981
342828097012701	01S-03E-18 AAC 1	USGS	--	11130303	1000	168.45	0.55	14.17	S	06/10/1981
342742096591901	01S-03E-21 AAC 1	USGS	364SMPS	11130303	1030	188.00	0.50	87.69	S	07/27/1977
342734096584901	01S-03E-22 BAC 1	USGS	364SMPS	11130303	1045	254.00	1.50	45.99	S	02/10/1977
342727096560301	01S-03E-24 ADA 1	USGS	367ABCKU	11130303	1100	102.00	0.30	59.13	S	02/09/1977
342731096563001	01S-03E-24 BDA 1	USGS	364SMPS	11130303	1045	--	--	--		--
342658096570001	01S-03E-24 CCC 1	USGS	--	11130303	1060	58.00	--	10.00	RP	06/16/1981
342654096560601	01S-03E-25 AAA 1	USGS	364SMPS	11130303	1060	60.00	1.50	12.08	S	02/10/1977
342701096570401	01S-03E-35 AAA 1	USGS	--	11130303	970	35.65	0.00	10.70	SR	06/15/1981
342933096535601	01S-04E-05 DDD 1	USGS	364SMPS	11130304	1167	133.00	0.00	61.24	S	01/19/1977
342952096545801	01S-04E-06 DAA 1	USGS	--	11130304	1160	400.00	--	10.00	RP	--
342901096550101	01S-04E-07 DAA 1	USGS	--	11130304	1190	252.00	0.40	111.60	RP	06/18/1981
342842096550001	01S-04E-07 DDD 1	USGS	--	11130304	1175	62.55	1.10	9.05	SR	06/17/1981
342905096535501	01S-04E-08 AAD 1	USGS	--	11130304	1150	50.00	--	27.00	RP	--
342911096535601	01S-04E-08 ADA 1	USGS	--	11130304	1165	79.95	0.28	47.22	SP	06/18/1981
342928096534401	01S-04E-08 BBA 1	USGS	--	11130303	1060	99.65	0.00	33.70	SZ	06/18/1981
342903096540501	01S-04E-08 DAB 1	USGS	364SMPS	11130304	1145	105.00	0.30	72.25	S	02/09/1977
342840096535701	01S-04E-08 DDD 1	USGS	364SMPS	11130304	1130	98.00	0.00	14.60	S	02/10/1977
342905096532801	01S-04E-09 CAA 4	USGS	--	11130304	1130	23.80	2.50	11.00	SZ	06/17/1981
342901096532901	01S-04E-09 CAA 1	USGS	--	11130304	1115	15.95	3.00	11.45	SZ	06/17/1981

USE OF WATER	TEMPERATURE (DEGREES C)	SPECIFIC CONDUCTANCE (UMHOS/CM AT 25 C)	PH (UNITS)	DATE QUALITY PARAMETERS MEASURED
H,S	--	--	--	--
S	15.5	510	7.5	10/22/1976
S	10.0	460	7.4	1956
S	15.0	1100	6.9	11/12/1976
U	16.5	754	6.8	06/09/1981
U	20.0	367	6.9	06/09/1981
U	16.5	676	6.6	06/09/1981
U	18.5	552	6.8	06/09/1981
U	--	473	8.1	08/ /1972
U	22.0	--	--	04/01/1968
U	--	668	8.1	08/ /1972
H	20.6	612	7.6	06/19/1981
H	23.9	543	6.7	06/19/1981
H	24.5	600	7.1	06/01/1977
U	--	--	--	--
U	21.0	598	6.7	06/16/1981
U	18.7	535	6.7	06/16/1981
S	--	--	--	--
H	22.0	790	6.8	02/09/1977
H	19.7	966	6.5	06/17/1981
H	18.0	1060	6.6	06/17/1981
U	18.0	567	6.0	06/10/1981
S	--	--	--	--
U	--	--	--	--
H	--	--	--	--
S	16.0	600	7.5	02/22/1977
H	20.0	840	6.7	06/16/1981
U	--	--	--	--
H	19.0	1058	6.7	06/15/1981
H	23.0	550	7.3	01/19/1977
I	22.5	1406	6.4	06/19/1981
H	18.9	360	6.6	06/18/1981
H	20.2	494	6.6	06/17/1981
H	21.0	587	6.8	06/18/1981
H	22.9	585	7.1	06/16/1981
U	--	--	--	--
H	--	--	--	--
H	--	--	--	--
U	17.5	367	7.0	06/17/1981
U	16.9	754	6.8	06/17/1981

SITE-ID	LOCAL NUMBER	SOURCE OF DATA	PRINCIPAL AQUIFER	HYDROLOGIC UNIT (OWDC)	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	MP HEIGHT (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED
MURRAY COUNTY -- CONTINUED										
342904096535101	01S-04E-09 CBB 1	USGS	--	11130304	1145	85.85	0.80	73.20	SZ	06/17/1981
342904096534802	01S-04E-09 CBB 2	USGS	--	11130304	1145	140.00	--	40.00	RR	--
342848096535001	01S-04E-09 CCB 1	USGS	--	11130304	1125	35.00	--	10.00	R	--
342841096532801	01S-04E-09 CDD 1	USGS	--	11130304	1100	124.10	0.20	35.45	SR	06/18/1981
342842096565801	01S-04E-12 CCC 1	USGS	--	11130303	1130	101.23	0.00	12.61	SZ	06/16/1981
342818096525901	01S-04E-16 ADC 1	USGS	364SMPS	11130304	1095	40.00	0.00	16.33	S	07/27/1977
342832096535101	01S-04E-16 BBB 1	USGS	364SMPS	11130304	1125	102.00	--	11.06	S	04/28/1977
342834096534301	01S-04E-16 CBA 1	USGS	364SMPS	11130304	1105	122.00	0.00	19.46	S	04/28/1977
342810096534501	01S-04E-16 CBA 1	USGS	--	11130304	1100	57.00	--	17.00	RP	--
342803096525401	01S-04E-16 DAD 1	USGS	364SMPS	11130304	1085	--	3.00	16.38	S	07/27/1977
342835096535801	01S-04E-17 AAA 1	USGS	--	11130304	800	180.00	--	40.00	RP	06/17/1981
342835096545501	01S-04E-17 BBB 1	USGS	364SMPS	11130304	1175	186.00	0.50	43.38	SR	06/01/1977
342817096545901	01S-04E-18 ADD 1	USGS	364SMPS	11130304	1120	150.00	1.00	31.80	S	02/09/1977
342836096555001	01S-04E-18 BBA 1	USGS	--	11130304	1160	143.75	0.00	21.70	SP	06/17/1981
342837096553301	01S-04E-18 BAA 1	USGS	364SMPS	11130304	1180	118.00	0.50	6.84	S	02/10/1977
342759096545801	01S-04E-18 DDA 1	USGS	367ABCKU	11130304	1135	218.00	0.50	76.24	S	02/09/1977
342758096545801	01S-04E-18 DDA 2	USGS	367ABCKU	11130304	1135	106.00	0.40	72.60	S	02/09/1977
342728096525201	01S-04E-21 ADA 1	USGS	367ABCKU	11130304	1100	135.00	0.50	29.04		04/07/1977
342648096555101	01S-04E-30 BBB 1	USGS	361VIOL	11130303	1060	60.00	0.50	29.04	S	02/09/1977
342553096535401	01S-04E-32 AAD 1	USGS	367ABCKU	11130304	1150	60.00	1.60	5.32	S	04/27/1977
342533096531201	01S-04E-33 DBA 1	USGS	367ABCKU	11130304	1090	156.00	0.00	2.27	S	04/27/1977

USE OF WATER	TEMPERATURE (DEGREES C)	SPECIFIC CONDUCTANCE (UMHOS/CM AT 25 C)	PH (UNITS)	DATE QUALITY PARAMETERS MEASURED
H	19.7	793	6.8	06/17/1981
H	19.0	812	6.7	06/17/1981
H	22.5	1222	6.6	06/18/1981
S	24.8	661	6.6	06/18/1981
U	--	--	--	--
U	--	--	--	--
U	--	--	--	--
U	15.5	510	7.1	05/08/1979
H	22.0	150	6.2	06/18/1981
U	18.0	540	7.0	12/05/1978
H	18.9	821	6.6	06/17/1981
H,S	23.5	565	7.1	06/01/1977
H	--	--	--	--
H	20.0	557	6.7	06/17/1981
U	--	--	--	--
H	--	--	--	--
U	--	--	--	--
H,S	21.5	1000	7.1	06/01/1977
S	--	--	--	--
U	--	--	--	--
U	--	--	--	--