(200)
WRi
no. 77-17

Department of the Interior
United States Geological Survey

Prepared in cooperation with the
Mississippi Board of Water Commissioners
Jack W. Pepper, Water Engineer

WATER-RESOURCES INVESTIGATIONS 77-17
SHEET 3 OF 3 OPEN-FILE REPORT

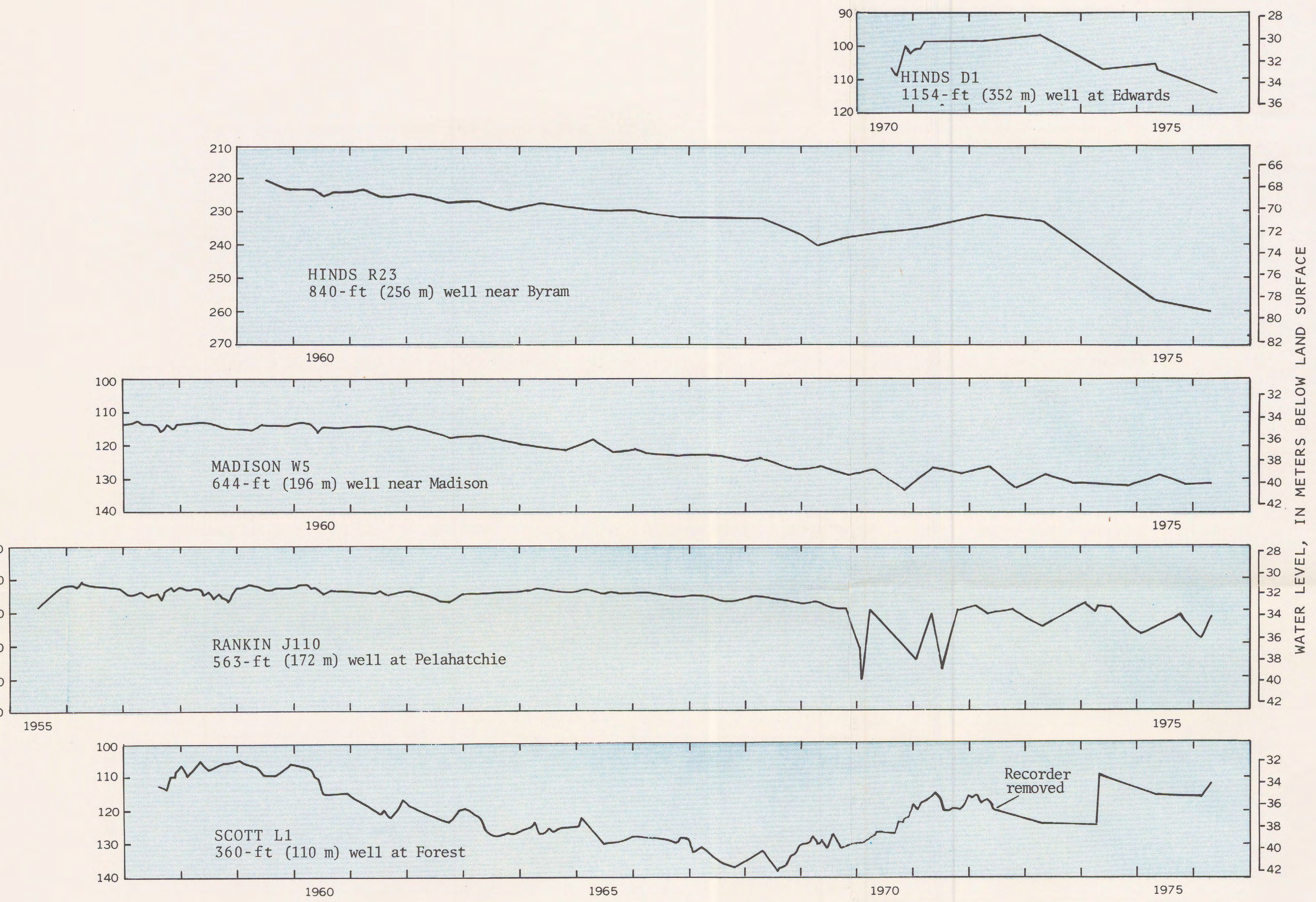

Figure 11.--Hydrographs for selected observation wells in the Cockfield aquifer.

Table 3.--Water quality data for the Cockfield aquifer.

(Dissolved constituents and hardness given in milligrams per liter)

WELL NO.	WATER BEARING UNIT	WELL DEPTH (FT)	DATE OF COLLECTION	SILICA (SIO2)	IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO3)	SULFATE (SO4)	CHLORIDE (CL)	FLUORIDE (F)	DISSOLVED SOLIDS	HARDNESS AS CACO3	SPECIFIC CONDUCTANCE (MICROMHO3 AT 25°C)	PH	COLOR
BOLIVAR COUNTY																		
C046	124CCKF	469	4/72	11	0.05	5.7	2.5	180	2.5	353	0.0	100	0.2	479	20	846	7.9	0
F048	124CCKF	303	3/71	13	0.02	3.0	0.1	68	1.6	154	0.6	21	0.1	188	8	293	7.3	5
R073	124CCKF	490	3/71	13	0.12	0.7	0.3	109	1.2	242	0.0	17	0.4	274	3	460	8.7	30
CLARKE COUNTY																		
L008	124CCKF	138	8/68	25	0.50	20	7.3	89	8.1	282	32	11	0.2	331	80	536	7.8	10
Q001	124CCKF	420	8/68	13	0.14	6.0	2.4	146	1.5	333	43	21	0.5	405	25	664	7.7	10
R002	124CCKF	211	1/54	1.2	0.00	2.9	2.8	--	--	--	27	22	0.3	469	16	--	8.3	50
R002	124CCKF	211	5/55	3.6	0.12	4.6	1.3	182	5.0	436	33	22	1.0	451	17	796	8.2	45
R002	124CCKF	211	12/67	13	0.09	7.0	0.1	187	3.3	450	28	21	0.8	504	18	811	7.4	60
R012	124CCKF	208	11/69	45	0.39	22	2.9	45	4.8	185	9.8	3.2	0.1	229	67	311	7.5	5
HINDS COUNTY																		
C002	124CCKF	1106	12/60	19	--	0.0	0.0	--	--	--	17	69	0.6	513	0	--	8.4	100
D006	124CCKF	1177	6/74	15	0.10	0.8	0.1	180	1.5	382	23	22	1.0	443	2	689	8.3	100
F003	124CCKF	1034	10/56	--	--	0.9	0.2	142	2.5	272	40	26	-- 0	382	3	607	8.6	60
G062	124CCKF	724	8/61	10	--	22	9.2	--	--	--	103	36	0.2	450	93	--	7.6	--
G062	124CCKF	724	6/74	20	0.04	18	7.9	140	5.3	289	83	34	0.3	233	77	700	7.4	3
L030	124CCKF	1168	6/74	17	0.02	1.1	0.1	150	1.4	298	40	26	0.6	275	3	625	8.2	80
M100	124CCKF	766	6/75	18	0.05	5.0	1.4	94	1.8	246	1.7	5.4	0.4	234	18	360	7.5	8
P047	124CCKF	1150	8/63	19	--	0.0	0.0	--	--	--	0.0	20	0.5	459	0	--	8.5	200
S034	124CCKF	1280	10/75	15	0.18	2.5	0.4	550	2.6	1350	8.3	60	5.1	1320	8	1910	8.3	1000
JASPER COUNTY																		
E001	124CCKF	420	11/67	16	0.37	58	21	103	9.6	303	109	77	0.3	544	230	919	7.3	5
E001	124CCKF	420	11/71	--	0.30	--	--	--	--	--	--	77	0.0	--	223	--	7.4	0
E003	124CCKF	380	11/67	19	0.95	88	31	40	11	332	99	56	0.2	509	346	855	7.5	5
F001	124CCKF	372	9/68	28	3.30	82	11	9.0	3.7	286	31	7.9	0.2	314	252	512	7.9	5
G001	124CCKF	250	11/67	32	1.10	131	24	18	4.3	312	183	28	0.1	597	428	855	7.2	5
J001	124CCKF	600	11/60	4.0	0.30	5.6	2.3	--	--	--	71	44	0.0	382	24	--	7.6	5
J003	124CCKF	617	11/60	4.4	0.30	5.3	2.6	--	--	--	70	47	0.1	373	24	--	7.3	5
J005	124CCKF	526	9/68	17	0.25	35	10	142	6.3	298	107	64	0.1	533	130	883	7.5	5
J009	124CCKF	545	7/52	--	0.50	--	--	--	--	--	--	55	--	--	114	--	7.2	0
J101	124CCKF	652	5/55	12	0.21	3.8	1.2	142	4.6	230	73	40	0.7	420	14	684	7.4	5
K001	124CCKF	341	12/62	4.4	0.10	43	17	--	--	--	71	41	0.1	366	177	--	7.1	--
M002	124CCKF	483	6/67	28	0.10	60	17	66	10	345	66	16	0.4	435	220	710	7.4	5
N002	124CCKF	913	11/67	12	0.10	2.4	1.2	202	2.2	361	82	53	0.2	546	11	899	7.8	10
P013	124CCKF	610	9/70	--	--	--	--	--	--	--	--	40	--	--	30	--	8.4	--
P013	124CCKF	610	2/71	--	--	4.0	2.2	148	1.5	--	47	37	0.0	385	19	--	8.5	5
Q002	124CCKF	360	4/55	11	0.03	2.1	1.0	152	5.2	287	56	30	0.1	418	9	676	8.5	7
Q002	124CCKF	360	11/60	0.4	0.00	2.9	0.7	--	--	--	16	32	0.4	339	10	--	8.2	--
Q003	124CCKF	304	11/67	14	0.21	5.0	1.8	144	3.9	309	50	30	0.3	409	20	672	7.7	5
U001	124CCKF	560	11/67	13	0.12	2.5	0.9	162	3.3	334	48	28	0.5	428	10	705	8.1	5
U015	124CCKF	595	11/70	0.0	--	2.0	0.0	197	2.0	--	39	33	0.7	513	5	--	8.4	100
JONES COUNTY																		
D045	124CCKF	710	10/62	15	0.10	1.0	0.0	--	--	--	50	27	0.2	489	10	--	8.4	65
LEAKE COUNTY																		
J004	124CCKF	77	7/70	15	0.63	11	4.0	26	0.5	32	0.6	51	0.0	190	44	236	6.8	10
MADISON COUNTY																		
O001	124CCKF	295	10/56	--	11.00	34	12	17	1.4	72	100	9.8	--	226	59	355	7.5	5
T020	124CCKF	462	10/56	--	0.99	16	6.1	47	3.8	153	30	7.5	0.1	209	65	327	8.4	5
W002	124CCKF	650	6/58	--	0.00	2.6	2.1	120	8.4	248	53	20	0.0	387	15	387	7.5	9
W003	124CCKF	680	6/58	--	0.04	0.6	1.1	142	7.0	268	51	32	0.1	414	6	585	7.9	5
W040	124CCKF	578	8/64	15	0.20	10	7.1	118	--	--	50	24	0.0	360	--	--	7.3	0
NEWTON COUNTY																		
K007	124CCKF	98	9/68	22	14.00	4.0	0.7	2.2	1.0	22	0.2	3.0	0.0	47	13	46	6.6	10
P003	124CCKF	110	9/68	19	0.40	3.9	0.5	1.5	0.8	14	0.6	2.8	0.0	39	12	39	7.1	5
RANKIN COUNTY																		
K039	124CCKF	865	1/59	12	0.14	0.4	0.2	158	4.6	270	69	38	0.3	390	2	657	8.1	20
K074	124CCKF	454	9/61	--	0.30	2.4	0.0	--	--	--	--	21	--	--	6	--	8.4	--
K078	124CCKF	624	11/61	5.2	0.00	3.0	0.0	--	--	--	30	17	--	295	8	--	8.6	--
K117	124CCKF	614	4/62	3.6	0.10	3.5	3.5	--	--	--	38	18	--	396	23	--	8.6	--
L002	124CCKF	860	2/58	16	0.34	1.8	1.2	114	3.6	182	63	36	0.2	355	10	522	7.8	7
L033	124CCKF	789	3/74	17	--	0.7	0.1	150	2.0	226	76	40	0.2	397	2	659	8.0	5
SCOTT COUNTY																		
A012	124CCKF	309	8/68	27	5.10	10	3.6	19	1.8	67	19	7.0	0.1	120	40	169	6.6	20
E002	124CCKF	328	8/68	44	0.84	18	2.9	13	2.2	59	31	7.1	0.1	152	57	192	7.3	10
G027	124CCKF	175	9/68	21	0.81	6.5	1.2	6.1	0.5	33	0.2	6.4	0.1	69	21	79	7.0	10
L001	124CCKF	360	8/60	23	1.00	24	4.4	--	--	--	48	10	0.0	143	77	--	5.8	--
L005	124CCKF	360	8/60	15	0.40	18	2.7	--	--	--	32	7.0	0.0	109	57	--	5.8	--
L010	124CCKF	360	5/61	5.6	2.00	15	3.0	--	--	--	18	6.0	0.1	89	50	--	5.8	--
L012	124CCKF	351	2/67	46	1.70	16	3.6	9.1	3.8	52	25	6.6	0.2	144	55	172	6.2	5
M002	124CCKF	280	11/67	41	1.70	45	6.5	14	4.0	64	98	17	0.0	266	139	370	6.1	0
M003	124CCKF	274	5/61	8.0	3.00	19	3.1	--	--	--	48	7.0	--	119	60	--	6.2	--
M004	124CCKF	254	5/61	8.0	3.00	19	3.1	--	--	--	48	7.0	--	119	60	--	6.2	--
SHARKEY COUNTY																		
G004	124CCKF	365	2/62	17	2.90	82	36	79	2.7	538	63	22	0.3	572	351	1250	7.3	5
SIMPSON COUNTY																		
C002	124CCKF	1111	5/70	15	0.11	0.4	0.0	165	1.8	346	44	22	0.6	425	1	695	8.2	90
SMITH COUNTY																		
A001	124CCKF	645	11/67	35	2.90	6.6	2.8	78	3.8	167	52	13	0.0	287	28	432	7.2	20
C006	124CCKF	637	9/69	54	2.90	37	9.1	28	6.0	98	96	13	0.1	291	130	405	7.2	5
D007	124CCKF	493	9/68	47	6.80	18	4.4	16	3.6	88	19	7.0	0.1	161	63	204	6.7	15
F001	124CCKF	880	6/67	17	0.30	0.8	0.0	140	1.5	244	68	34	0.2	390	2	617	7.9	15
R002	124CCKF	1135	5/55	--	0.21	0.9	0.5	173	3.4	362	30	26	--	467	4	696	8.5	70
WARREN COUNTY																		
A003	124CCKF	582	7/62	10	0.41	1.2	0.5	506	6.3	1020	1.2	51	3.8	1200	8	1940	8.8	200
B001	124CCKF	857	5/61	13	0.15	0.7	0.3	187	1.6	386	41	33	0.9	514	3	788	7.5	70
C001	124CCKF	1076	3/62	11	0.33	1.5	0.3	185	1.6	305	82	36	0.3	490	5	801	8.5	15
F005	124CCKF	1263	3/62	11	0.49	7.5	0.6	269	2.7	593	0.4	18	1.4	765	21	1070	8.7	100
F007	124CCKF	1200	3/62	10	0.33	0.0	0.0	244	1.2	522	2.6	16	1.3	680	0	936	8.4	200
J001	124CCKF	1208	9/62	9.4	3.40	3.1	1.0	396	3.9	1020	10	2.0	0.3	1070	12	1600	8.2	1000
K013	124CCKF	1128	3/62	10	0.22	2.4	0.0	350	2.0	888	2.0	29	2.4	835	6	1390	8.2	400
M002	124CCKF	960	3/62	4.9	0.11	5.5	0.1	787	4.7	1170	16	320	4.0	1930	14	700	8.9	700
G001	124CCKF	1100	3/62	7.0	0.26	20	3.7	1910	12	862	3.6	2380	3.0	4870	65	8430	8.6	200
WASHINGTON COUNTY																		
A025	124CCKF	565	7/54	5.6	0.14	0.3	0.1	112	1.1	238	0.8	24	0.3	282	1	459	8.5	40
A026	124CCKF	570	7/54	8.6	0.19	0.4	0.1	108	1.1	243	0.8	22	0.3	277	1	449	8.3	40
A027	124CCKF	445	11/59	6.8	0.00	2.1	0.5	--	--	--	1.3	40	0.4	285	5	--	8.7	10
A039	124CCKF	503	2/68	14	0.03	5.0	1.8	90	0.8	241	0.0	16	0.4	250	20	416	7.7	20
B005	124CCKF	590	2/68	16	0.95	0.0	0.0	145	0.3	287	0.0	37	0.5	355	0	590	8.6	80
C008	124CCKF	500	2/68	14	0.05	1.1	0.3	162	0.5	415	0.2	20	0.3	406	4	665	8.0	40
D015	124CCKF	527	5/51	17	0.03	1.2	0.5	156	9.9	293	2.3	68	0.2	398	5	654	8.5	55
D015	124CCKF	527	11/59	11	0.00	1.7	0.0	--	--	--	0.0	57	0.5	332	4	--	7.6	50
D015	124CCKF	527	6/67	3.2	0.00	0.0	0.0	--	--	--	0.0	62	0.6	353	--	--	8.5	55
D055	124CCKF	441	3/62	11	4.90	0.7	0.1	106	0.5	253	0.0	18	0.3	313	2	432	7.5	50
D055	124CCKF	441	4/63	8.0	0.32	2.8	1.0	102	0.9	251	0.0	21	0.4	254	11	441	8.0	40
D083	124CCKF	503	2/68	12	0.09	1.2	0.2	180	1.1	329	0.2	81	0.5	474	4	823	8.5	60
D083	124CCKF	503	5/68	--	--	--	--	--	--	--	--	80	--	488	--	840	--	80
E024	124CCKF	582	10/59	6.4	0.10	2.2	0.0	--	--	--	0.8	123	1.2	604	6	--	8.7	100
E024	124CCKF	582	4/64	14	0.04	0.0	0.0	253	1.0	452	0.2	123	0.9	637	0	1040	8.0	100
F036	124CCKF	537	4/64	15	0.06	0.0	0.0	113	0.8	260	0.0	17	0.5	293	0	446	8.0	50
E046	124CCKF	645	1/68	12	0.11	0.8	0.0	192	1.2	424	0.6	46	0.5	481	2	787	7.8	60
F011	124CCKF	325	1/62	13	8.70	22	6.3	102	2.9	356	0.6	6.8	0.4	351	80	560	7.4	5
F021	124CCKF	532	2/58	12	0.16	0.5	0.2	168	0.8	372	0.0	51	0.7	426	2	702	8.2	100
G047	124CCKF	578	2/68	12	0.29	3.0	0.6	302	1.3	428	0.0	219	0.9	754	10	1320	8.0	15
H049	124CCKF	609	12/70	13	0.10	7.4	1.8	1000	8.2	700	3.8	1170	1.3	2700	26	4610	8.2	25
J014	124CCKF	398	2/68	11	0.05	0.8	0.0	146	0.7	356	0.4	24	0.5	372	2	600	7.8	40
J017	124CCKF	400	7/68	19	0.09	0.5	0.2	136	0.3	368	0.0	8.1	0.4	351	2	587	8.1	30
K010	124CCKF	464	3/58	--	--	--	--	--	--	547	--	922	--	--	46	--	8.4	--
K010	124CCKF	464	9/58	6.0	0.20	16	2.9	752	5.7	572	0.4	860	1.1	2080	52	3420	8.1	22
K010	124CCKF	464	10/61	--	--	--	--	--	--	--	--	971	--	--	56	3790	--	--
K026	124CCKF	420	10/61	--	--	--	--	--	--	--	--	461	--	--	13	2170	--	--
K026	124CCKF	420	4/64	16	0.09	7.5	2.2	419	6.6	502	2.4	364	1.8	1120	28	1860	7.5	200
L027	124CCKF	650	10/59	12	0.00	3.3	0.7	--	--	--	0.0	515	0.8	1372.	13	--	8.4	35
L027	124CCKF	650	4/64	21	0.02	2.0	1.9	566	2.5	580	0.0	532	0.0	1410	13	2420	7.9	20
L027	124CCKF	650	2/68	11	0.07	3.0	1.1	555	2.5	578	0.0	518	0.7	--	12	2500	7.7	20
L030	124CCKF	580	2/58	15	0.42	61	17	365	0.8	557	0.0	372	0.3	--	222	1980	7.3	30
L031	124CCKF	548	7/68	21	5.40	28	13	272	1.1	521	0.4	213	0.6	822	122	1460	7.9	20
M015	124CCKF	515	2/68	13	0.07	12	2.7	96	1.7	294	2.6	4.9	0.2	288	41	461	7.6	15
O014	124CCKF	500	7/68	12	0.19	5.6	0.5	240	0.6	496	1.4	96	0.5	621	16	1050	8.0	40
P022	124CCKF	385	7/11	16	3.50	17	4.4	--	--	376	6.0	14	--	382	60	--	--	--
WAYNE COUNTY																		
D006	124CCKF	190	9/64	20	0.36	31	8.4	54	7.0	256	19	4.2	0.3	325	112	426	7.9	5
D010	124CCKF	222	6/65	20	0.10	9.0	2.1	168	4.3	406	45	9.8	0.6	478	31	762	7.6	10
F011	124CCKF	685	6/65	14	0.14	3.4	0.9	276	4.3	712	8.8	25	3.0	730	12	1170	7.8	24
YAZOO COUNTY																		
C002	124CCKF	417	5/58	--	2.80	28	9.4	17	3.4	138	13	14	0.1	206	108	272	7.0	4
C009	124CCKF	760	6/58	--	0.32	1.8	0.5	62	6.2	148	12	7.0	0.0	229	6	257	7.8	50
N004	124CCKF	433	5/58	--	0.55	28	8.0	23	4.5	172	3.2	8.0	0.1	203	103	274	8.1	7
O008	124CCKF	560	1/76	15	--	0.0	0.1	120	1.3	250	27	18	0.2	310	0	430	8.3	10
W017	124CCKF	544	3/72	21	0.25	1.2	0.5	100	1.6	229	29	8.5	0.3	268	5	410	7.7	5

WELL NO. WATER BEARING UNIT WELL DEPTH (FT) DATE OF COLLECTION SILICA (SIO2) IRON (FE) CALCIUM (CA) MAGNESIUM (MG) SODIUM (NA) POTASSIUM (K) BICARBONATE (HCO3) SULFATE (SO4) CHLORIDE (CL) FLUORIDE (F) DISSOLVED SOLIDS HARDNESS AS CACO3 SPECIFIC CONDUCTANCE (MICROMHO3 AT 25°C) PH COLOR

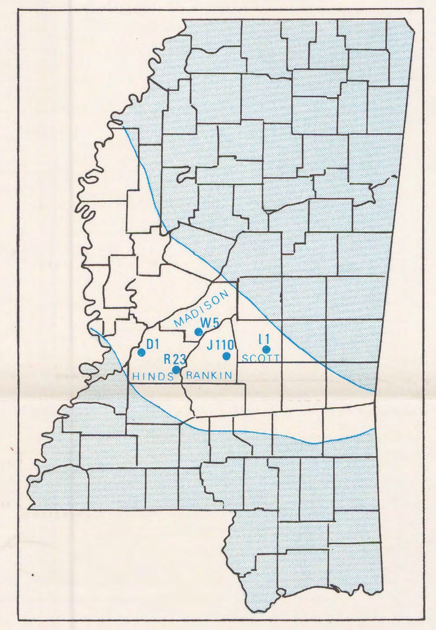

Figure 12.--Locations of selected observation wells in the Cockfield aquifer.

To convert English units to International System units

Multiply	By	To obtain
feet(ft)	0.3048	meters(m)
miles(mi)	1.609	kilometers(km)
square miles(mi^2)	2.590	square kilometers(km^2)
gallons per minute(gal/min)	.06309	liters per second(l/s)
million gallons per day (Mgal/d)	.044	cubic meters per second(m^3/s)
feet per mile(ft/mi)	.189	meters per kilometer(m/km)
gallons per minute per foot of drawdown[(gal/min)/ft]	.21	liters per second per meter [(l/s)/m]
cubic feet per day per square foot[$(ft^3/d)/ft^2$]	.305	cubic meters per day per square meter[$(m^3/d)/m^2$]
cubic feet per day per foot [$(ft^3/d)/ft$]	.093	cubic meters per day per meter [$(m^3/d)/m$]

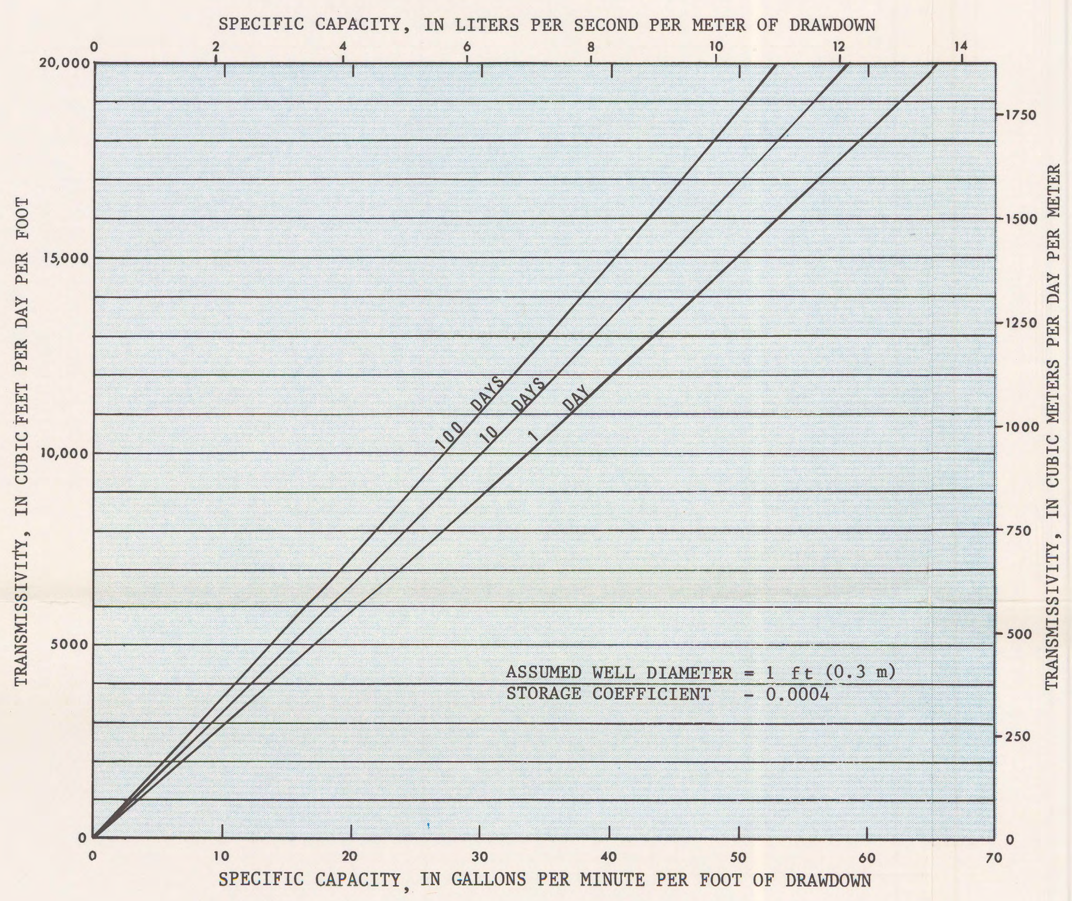

Figure 13.--Transmissivity-specific capacity relation for a fully efficient well.

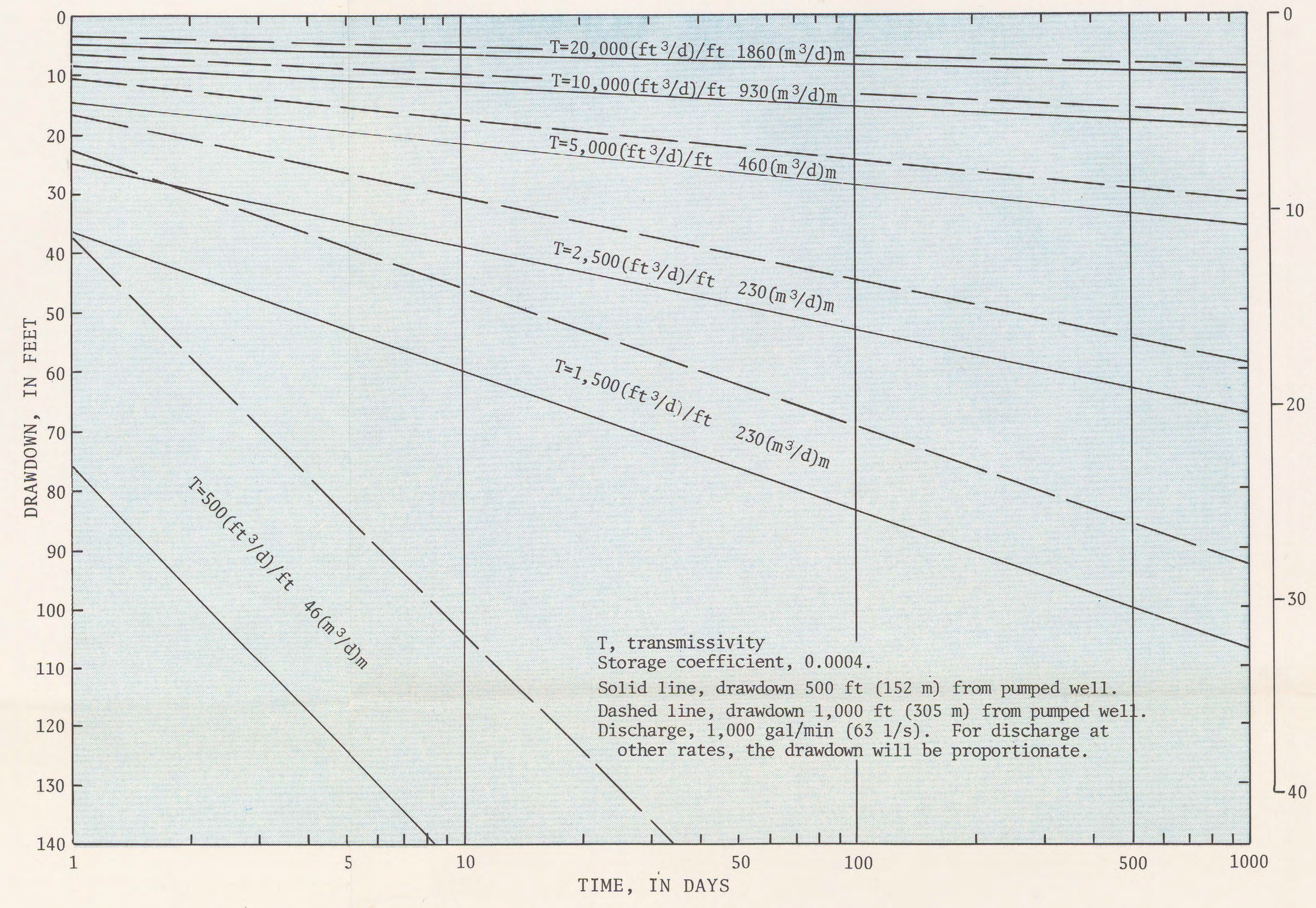

Figure 14.--Theoretical time-distance-drawdown relations for pumping from the Cockfield aquifer.

Figure 15.--Area in which dissolved solids concentrations are between 500 mg/L and 1000 mg/L in the Cockfield aquifer.

Figure 16.--Area in which excessive color occurs in water from the Cockfield aquifer.

Figure 17.--Area in which excessive iron and chloride occur in water from the Cockfield aquifer.

THE COCKFIELD AQUIFER IN MISSISSIPPI

C. A. Spiers

1976

U.S. GEOLOGICAL SURVEY
RESTON, VA.
MAY 06 1977
LIBRARY

Jackson, Mississippi
Cartography by Frances M. Hester