county Harrison

sec 3 twp 62 rge 26

owner Elwell etal.

elev 918 MGS# 5629 rge Smpl.

farm Maple, John No. 1 TD 1907 fm TD Jeff. City shows none

status d & a date completed Sept. 1939

remarks:

00002

00001

✓

RECENT DRILLING

in

NORTHWESTERN MISSOURI

By

FRANK C. GREENE

REPORT OF INVESTIGATIONS NO. 1

1945

EDWARD L. CLARK, *Director and State Geologist*

MISSOURI GEOLOGICAL SURVEY AND
WATER RESOURCES

ROLLA, MISSOURI

Log of H. V. Elwell, *et al* No. 1 John Maple. Location: 1040 feet north and 990 feet east of southwest corner of SE 1/4 sec. 3, T. 62 N., R. 26 W., Harrison County, Missouri. Surface elevation, 918 feet (P.T.). Completed, 10-1-1939. Total depth, 1907 feet. Dry and abandoned. Drilled with cable tools. Casing record: 12 1/2 inch set at 524 feet; 10 inch at 749 feet; and 8 inch at 1347 feet. Contractor: Ward McGinnis.

FORMATIONAL SUMMARY

	Thickness, feet	*Depth, feet*
No samples	5	5
Pennsylvanian system:		
Kansas City group	50	55
Pleasanton group	102	157
Henrietta group	96	253
Cherokee group	495	748
Mississippian system:		
Ste. Genevieve (?) formation	43	791
St. Louis formation	35	826
Spergen-Upper Warsaw formations	34	860
Warsaw formation	76	936
Koekuk-Burlington formations	109	1045
Chouteau formation	56	1101
Kinderhook shale	31	1132
Devonian system	384	1516
Ordovician system:		
Kimmswick formation	173	1689
Decorah formation	33	1722
St. Peter sandstone (may contain Glenwood of Iowa in upper 24 feet)	83	1805
Ordovician or Canadian system:		
Jefferson City formation	102	1907, T.D.

SAMPLE LOG

	Thickness, feet	*Depth, feet*
No samples	5	5
Pennsylvanian system:		
Kansas City group:		
Limestone (Bethany Falls), tan, dense to sub-lithographic with some calcite. Residue, small, less than 10 percent, of fossil fragments replaced by kaolin. The residue between 5 and 15 feet contains about 20 percent of caved material from the surface soil and glacial drift	25	30
Shale, black, carbonaceous with some limestone, as above	10	40

	Thickness, feet	*Depth, feet*
Shale and limestone: shale, gray; and limestone, white and tan, dense, sandy. Residue, 20 percent, of fine-grained sand aggregates, gray shale, some spines and small kaolin balls	10	50
Limestone (Hertha), white, dense, sparingly fossiliferous. Residue, 10 percent, of kaolin, spines and fine sandstone	5	55
Pleasanton group:		
Sandstone, medium fine-grained, angular with calcareous cement	20	75
Shale, gray with pyrite and some sand aggregates	5	80
Shale, black, carbonaceous	10	90
Shale, gray, sandy with mica, plant remains and calcareous cement	10	100
Sandstone, medium coarse, angular grains with plant remains, mica and calcareous cement	57	157
Henrietta group:		
Limestone, white, shaly, fossiliferous. Residue, 10 percent, of chalcedonic chert, bryozoans and other fossil fragments replaced by kaolin	5	162
Limestone, light gray and white, fossiliferous. Residue, about 10 percent, of fossil fragments replaced with kaolin and some chalcedonic chert	10	172
Shale, gray with some sandstone	4	176
Limestone, gray, dense, fossiliferous with brachiopods and bryozoans. Residue, 10 percent, of spines, silicified tubes and kaolin	14	190
Shale and limestone: shale, tan and gray with calcareous fossils (small brachiopods) and pyrite	15	205
Limestone, dark gray, argillaceous, fossiliferous with productid shells. Residue, 10 percent, of dark gray shale, silicified tubes and fossil prints	5	210
Shale, black, carbonaceous with impure coal and limestone, as above	5	215
NOTE: May be Lexington coal zone.		
Limestone, dense, fine-grained crystalline. Residue, 15 percent, of gray shale, kaolin and pyrite	5	220
Limestone and shale: limestone, fine-grained; and shale, gray	15	235
Shale, black, carbonaceous with brown limestone with many brachiopods	5	240
Limestone, light tan, fine-grained crystalline, shaly in upper and lower parts	13	253
Cherokee group:		
Sandstone, fine-grained, angular, micaceous with nodules of light tan limestone and siderite	11	264
Sandstone, as above, with pyrite, plant remains and and much concretionary siderite	9	273
Shale, black with sand, as above, and nodular limestone	9	282
Sandstone, fine-grained, angular, micaceous with concretions of siderite	13	295
Siltstone, fine-grained with brown concretions of siderite	12	307
Shale, black with impure coal and woody fragments and many calcareous fossils, chiefly brachiopod fragments	10	317
Sandstone, medium-grained, angular, micaceous with plant remains and calcareous fossil fragments	10	327
Shale, gray with some limestone and siderite nodules	13	340

	Thickness, feet	Depth, feet
Limestone (Ardmore ?), brown, very shaly, fossiliferous with black shale. Residue, 40 percent, of black shale, pyrite and kaolinized fossil fragments	10	350
Shale, black and gray with woody fragments and impure coal. Residue, 40 percent, of gray and black shale with silicified and pyritized fossil fragments	5	355
Shale, gray with spherulites of siderite. Sand occurs in the samples between 355-365 feet	30	385
Shale, gray, sandy with concretions of siderite	10	395
Shale, black, carbonaceous with some gray shale and dark, fossiliferous limestone. A thin coal bed occurs between 400-405 feet. Some siderite concretions occur in this interval	30	425
Shale, light gray, soft	10	435
Sand and shale; sand, fine-grained, angular with black and gray shales and much concretionary siderite or "clay ironstone". A coarse-grained, arkosic sand bed occurs between 467-472 feet	47	482
Shale, dark gray, sandy, calcareous with plant remains	35	517
No samples	8	525
Coal; dark, carbonaceous shale; and brown, fossiliferous limestone. Coal makes up only from 10 to 15 percent of the sample	5	530
Shale, gray with plant remains and some concretionary siderite	6	536
Shale, black, platy with plant remains and sand aggregates. Some coal, pyrite and siderite occur between 552-557 feet	21	557
Sand, argillaceous with gray shale and plant remains	5	562
Shale, gray with much pyrite and concretions of siderite or "clay ironstone"	5	567
Shale, black, carbonaceous with much pyrite and siderite and some pyritized wood	5	572
Limestone, light tan, cherty, fossiliferous containing fusulinids. Residue, 25 percent, of pyrite and gray chert with fusulinid and coral fragments	8	580
Limestone, as above, with black, carbonaceous shale	10	590
Shale, black, platy, carbonaceous with pyrite. A sandy zone occurs between 600-605 feet	18	608
Sand, coarse, sub-rounded grains. Some gray shale occurs at 645-652 feet and 683-690 feet	87	695
Shale, black and gray with very coarse sand grains and siderite concretions	8	703
Sand and shale: shale, gray to black with fine-grained sand aggregates and much pyrite. Very heavy pyrite (approximately 20 percent of samples) between 715-735 feet	32	735
Shale, black, platy, carbonaceous with pyrite	13	748
Mississippian system:		
Ste. Genevieve (?) formation:		
Sandstone, medium-grained, angular, regenerated grains with some fragments of tan limestone, pyrite and some pink sand grains. A few white, calcareous oolites occur between 760-770 feet. Residue, 90 percent, of sand, as described above, with small amounts of quartzose chert	22	770
Limestone, white, oolitic. Residue, small, 10 percent or less, of tan and white, quartzose chert, sand grains and pyrite	21	791
St. Louis formation:		
Limestone, light tan, dense to lithographic, non-fossiliferous. Oolitic and sandy limestone occurs with the dense limestone between 810-820 feet. Residue, 10 percent, of quartzose chert, silica rosettes, coarse, pink and white, frosted sand grains and some pale pink, quartzose chert	35	826
Spergen-Upper Warsaw formations:		
Limestone, tan, highly fossiliferous. Residue, 10 percent, of beckite chert, small silicified fossils and pink chert	7	833
Shale, pale green and some red, with some brown dolomite. Residue, 20 percent, of green and red shale, red chalcedonic chert and some silicified fossils	12	845
Limestone, tan, shaly, fossiliferous. Residue, 20 percent, of red and gray, chalcedonic chert, silicified crinoids, pyrite and green shale	8	853
Dolomitic limestone, gray, argillaceous. Residue, 10 to 25 percent, of red chalcedonic chert, gray, mottled, fossiliferous chert, pyrite, and spine aggregates	7	860
Warsaw formation:		
Dolomitic limestone, brown, fine-grained crystalline, cherty. Residue, 30 percent, of tan, brown and gray, mottled chert with spine aggregates and some geodal quartz	15	875
Shale, green, and dolomitic limestone, as described above. Residue, 20 percent, of green shale and blue, mottled chert with silicified spine aggregates	10	885
Limestone, gray, crystalline, fossiliferous, cherty and containing some glauconite. Residue, 15 to 30 percent, of blue, mottled, spinose chert with bryozoans	20	905
Dolomitic limestone, tan, fine-grained crystalline, cherty. Residue, 30 percent, of tan to gray, dense, flaky chert with spine aggregates and bryozoans	15	920
Limestone, gray, crystalline, argillaceous, cherty with many small fossils. Residue, 30 to 40 percent, of brown, tan, and gray, mottled, fossiliferous chert and some chert with dark specks	16	936

NOTE: The contact of the Warsaw with the Keokuk-Burlington formations is questionable. It may occur as high as 905 feet.

Keokuk-Burlington formations:		
Limestone, gray and white, crystalline, crinoidal, cherty. Residue, about 40 percent, of white, flaky, crinoidal chert with some quartz druses	39	975
Dolomitic limestone white, fine-grained crystalline. Residue, 20 percent, of chert, as described above	5	980
Limestone, white, crystalline, crinoidal, with caved (?) black shale. Residue, about 30 percent, of white, dense, crinoidal chert	65	1045
Chouteau formation:		
Dolomitic limestone, gray, fine-grained crystalline. Residue, 10 to 30 percent, of gray, dense, flaky chert with some quartz and ostracod fragments	25	1070
Limestone, tan to gray, dense, fossiliferous with brachiopods, crinoids and ostracods. Residue, 30 percent to less than 10 percent (decreasing in quantity toward the base), of gray, dense chert and crinoidal chert with some pyrite. The residue contains, at 1095 feet, some brown, "sugary", silicified, crinoid fragments	31	1101

	Thickness, feet	*Depth, feet*
Kinderhook shale (undifferentiated):		
Shale, gray and green with large black, spore-like bodies and some limestone fragments	14	1115
Shale, as above, with gray silt and fine-grained sand aggregates. Contains about 20 percent of brown dolomite, some chalcedonic chert and phosphate nodules	17	1132
Devonian system:		
Limestone, tan, dense and some brown, crystalline dolomite. Residue, less than 10 percent, of coralline chert	4	1136
Limestone, tan, dense to lithographic. Residue, as above	19	1155
Limestone, light gray-tan, dense to lithographic. Residue, less than 10 percent, of coralline chert, green shale, pyrite and a few sand grains	57	1212
Dolomite, gray-tan, finely granular. Residue, less than 5 percent, of green shale	18	1230
Limestone, light gray, lithographic. Residue, less than 10 percent, of green shale, pyrite and at 1275 feet, some coralline chert	70	1300
Limestone, as above, with some brown, finely crystalline dolomite. Residue, less than 5 percent, of green shale	5	1305
Limestone, light brown, lithographic. Residue, less than 5 percent, of brown shale	5	1310
Limestone, as above, with some brown, finely crystalline dolomite. Residue, as above	10	1320
Limestone, light gray, lithographic. Residue, as above, with some white chert	5	1325
Limestone, as above, with brown, crystalline dolomite. Residue, less than 5 percent, of green shale and a little white chert	22	1347
Dolomite, brown, finely crystalline. Residue, less than 5 percent, of tan chert, sand, pyrite and green shale	22	1369
Dolomite, as above, with a little dense limestone. Residue, as above	6	1375
Limestone, light gray, lithographic. Residue, less than 5 percent, of green shale and white, dense chert	18	1393
Dolomite, light gray, finely crystalline and granular. Residue, less than 5 percent, of green shale, sand grains and pyrite	47	1440
Limestone, gray-tan, lithographic. Residue, 10 percent, of white, quartzose chert and sand grains	19	1459
Dolomite, white, finely crystalline. Residue, 10 percent, of gray, semi-translucent chert	13	1472
Dolomite, tan, dense to finely crystalline. Residue, 20 percent, of sub-angular sand and a little gray-blue, semi-translucent chert	14	1486
Dolomite and sand, as above, of about half sand and half dolomite. The sand becomes rounded below 1503 feet	30	1516
Ordovician system:		
Kimmswick formation:		
Dolomite, gray-blue, medium crystalline. Residue, about 50 percent, of white and tan chert with black specks. Some dolocastic chert occurs at 1594 feet	78	1594
Dolomite, cream-brown, crystalline. Residue, 10 percent, of gray-tan chert, a few sand grains and silicified crinoid segments and brachiopod fragments	95	1689

	Thickness, feet	*Depth, feet*
Decorah formation:		
Dolomite, dark brown, crystalline. Residue, about 30 percent, of sand, some brown, porous shale and brown chert	17	1706
Dolomite, as above. Residue, about 10 percent, of sand, brown shale and brown chert	16	1722
Glenwood (?) or St. Peter formation:		
Sand, medium to coarse, rounded, frosted with a little brown dolomite	16	1738
Dolomite, gray, medium crystalline. Residue, about 10 percent, of sand and a little gray-tan chert	8	1746
St. Peter formation:		
Sand, white, medium to coarse, rounded, frosted	59	1805
Ordovician or Canadian system:		
Jefferson City formation:		
Dolomite, gray-tan, sandy with oolitic chert	102	1907, T.D.

Formation	Thickness	Depth	
	20	860	
Lime, brown	15	875	
Lime, broken	10	885	
Lime	20	905	
Lime	55	960	
Lime	20	980	
Lime, broken	15	995	
Lime	15	1010	
Lime	40	1050	
Lime	15	1065	
Lime	10	1075	
Lime	7	1082	
Lime	3	1085	
Lime	10	1095	
Lime	8	1103	
Shale, gray	2	1105	
Filled hole to 1075'			
Shale	2	1107	
Lime	6	1113	
Shale, light	12	1125	
Shale, blue	10	1135	
Lime, brown	10	1145	
Lime, brown	15	1160	
Lime	5	1165	
Lime	5	1170	
Lime	10	1180	
Lime	15	1195	
Lime, brown	10	1205	
Lime	10	1215	
Lime, brown	15	1230	
Lime	15	1245	
Lime	10	1255	
Lime	5	1260	
Lime, white	10	1270	
Lime	15	1285	
Lime, gray	10	1295	
Lime	10	1305	
Lime	15	1320	
Lime	10	1330	
Lime	2	1332	
Lime	13	1345	
Lime	2	1347	(Ran 8" pipe)
Lime	4	1351	
Lime	13	1364	(HFW)
Lime, dolomite, brown	10	1374	
Lime, gray	9	1383	
Lime	10	1393	
Lime	8	1401	
Lime, chalky, white	24	1425	
Lime, chalky, blue	10	1435	
Lime, chatty	12	1447	
Lime, chatty, brown	8	1455	
Lime	11	1466	
Lime	6	1472	
Lime, brown, sharp	7	1479	
Lime, sharp, gray	10	1489	
Lime, sandy	9	1498	
Lime, sand	12	1510	
White water sand	5	1515	
Lime, light, chatty	5	1520	
Lime	10	1530	
Lime and chat	17	1547	
Lime	23	1570	
Lime, soft	15	1585	
Lime, chatty	2	1587	
Lime	13	1600	
Lime, brown	14	1614	
Lime, brown	12	1626	
Lime, brown	12	1638	
Lime, brown	10	1648	

Log of Well — Maple No. 1

Formation	Thickness	Depth
Lime, brown	12	1660
Lime, brown	13	1673
Lime, brown	8	1681
Lime	8	1689
Lime 30%	11	1700
Shale, gray)		
Shale, brown) 70%		
Sand)		
Lime	12	1712
Lime	10	1722
Sand	10	1732
Sand	14	1746
Sand, white	19	1765
Lime, white	3	1768
Shale, blue	2	1770
Sand, white	12	1782
Sand, white	10	1792
Sand, white	8	1800
Sand	5	1805
Lime, gray	5	1810
Lime	11	1821
Lime	2	1823
Shale, green	2	1825
Lime	6	1831
Lime, white	11	1842
Lime	8	1850
Lime	11	1861
Lime	10	1871
Lime	9	1880
Lime	10	1890
Lime	5	1895
Lime	5	1900
Lime	7	1907
TOTAL DEPTH		1907'

Filled hole with mud from 1907' back to shallow water sands, bridged and cemented, then filled mud to surface, filled with rocks and cemented cellar.

Measurement checked and log signed by R. R. Ransom for Skelly Oil Company.
12:00 P. M. Oct. 1, 1939

Ward A. McGinnis
CONTRACTOR

State of Kansas, Greenwood County, SS:

Ward A. McGinnis, of lawful age, being first duly sworn on his oath states: That he is the contractor who drilled Maple No. 1 in the SE NE SW SE of Sec. 3, Twp. 62, Rg. 26, Harrison County, Mo., and that the above is a true and correct copy of the log of said well to the best of his knowledge and belief.

WAM Ward A. McGinnis

Subscribed and sworn to before me this 4th day of October, 1939.

Nelle M. Kirkpatrick
Notary Public

My commission expires Oct. 26, 1939.

Stripped

62 26
3

H. V. ELWELL, ET AL

L O G OF W E L L MAPLE NO. 1

LOCATION: SE NE SW SE Sec. 3, Twp. 62, Rg. 26,
HARRISON COUNTY, MO.

Commenced Aug. 23, 1939
Completed Oct. 1, 1939
Dry Hole
Total Depth 1907'
Elevation 918

Formation	Thickness	Depth	
Cellar	7	7	
Clay, yellow	5	12	
Lime	8	20	
Shale	1	21	
Lime	9	30	
Lime	3	33	
Shale	2	35	
Lime	2	37	
Shale, black	3	40	
Gravel	5	45	
Lime	5	50	
Shale, sandy	35	85	
Coal	5	90	
Shale	10	100	
Sand, light	35	135	
Lime, blue	10	145	
Shale, green	10	155	
Shale	5	160	
Lime	5	165	
Shale	15	180	
Lime	10	190	
Shale, white	10	200	
Shale, blue	20	220	
Shale	25	245	
Shells	10	255	
Sand	15	270	
Sandy shale	25	295	
Shale	20	315	
Coal	5	320	
Shale, sandy	5	325	
Shale	18	343	
Shale	52	395	(Slight show oil at 390'
Sandy shale, black	15	410	
Shale, light	10	420	
Shale, blue	5	425	
Shale, sandy, white	42	467	
Sand water	15	482	(3 b. water at 470')
Lime	4	486	
Shale, light	5	491	
Sand water	29	520	(1/2 b.w. at 505'-515')
Shale, blue	4	524	(Ran 12½" casing)
Shale, blue	46	570	
Shale, dark	30	600	
Sand water, light	50	650	(HFW 600' to 650')
Lime, dark	4	654	
Sand, light	16	670	
Sand	20	690	
Sandy shale	5	695	
Shale, dark	25	720	
Sand	5	725	
Shale, black	10	735	
Shale, black	5	740	(Caving. Ran 740' of 10"
Shale, black	8	748	casing, lowered 10" to
Lime	2	750	749')
Sand	20	770	(HFW 750' - 770')
Lime	35	805	
Lime	20	825	
Lime, gray	8	833	
Shale, green	7	840	

No Coal to 1907'

Gilman NE1 SE NE SW SE

Driller's log of H. V. Elwell et al, John Maple No. 1 well. Location: 1040 feet north and 990 feet east of the center of south line, Sec. 3, T. 62 N., R. 26 W., Harrison County, Missouri. Elevation: 918 feet (P.T.) Completed: September, 1939.

62 26 3

	Thickness feet	Depth feet
Cellar	7	7
Clay, yellow	5	12
Lime	8	20
Shale	1	21
Lime	9	30
Lime	3	33
Shale	2	35
Lime	2	37
Shale, black	3	40
Gravel	5	45
Lime	5	50
Shale, sandy	35	85
Coal	5 -6'	90
Shale	10	100
Sand, light	35	135
Lime, blue	10	145
Shale, green	10	155
Shale	5	160
Lime (1/2 barrel water at 165 feet)	5	165
Shale	15	180
Lime	10	190
Shale, white	10	200
Shale, blue	20	220
Shale	25	245
Shells	10	255
Sand	15	270
Sandy shale	25	295
Shale	20	315
Coal	5	320
Shale, sandy	5	325
Shale	18	343
Shale (slight show oil at 390')	52	395
Sandy shale, black	15	410
Shale, light	10	420
Shale, blue	5	425
Shale, sandy, white	42	467
Sand water (3 b. water at 470')	15	482
Lime	4	486
Shale, light	5	491
Sand water (1/2 b.w. at 505'-515')	29	520
Shale, blue (ran 12 3/4" casing at 539 feet)	4	524
Shale, blue	46	570
Shale, dark	30	600
Sand water, light (HFW 600' to 650')	50	650
Lime, dark	4	654
Sand, light	16	670
Sand	20	690
Sandy shale	5	695
Shale, dark	25	720
Sand	5	725
Shale, black (caving. Ran 740' of 10"	10	735
casing, lower 10" to 749)	5	740
Shale, black	8	748
Lime	2	

Driller's log of H. V. Elwell et al, John Maple No. 1 well, continued.

	Thickness feet	Depth feet
Sand (HFW 750' - 770')	20	770
Lime	35	805
Lime	20	825
Lime, gray	8	833
Shale, green	7	840
Lime, broken	20	860
Lime, brown	15	875
Lime, broken	10	885
Lime	20	905
Lime	55	960
Lime	20	980
Lime, broken	15	995
Lime	15	1010
Lime	40	1050
Lime	15	1065
Lime	10	1075
Lime	7	1082
Lime	3	1085
Lime	10	1095
Lime	8	1103
Shale, gray	2	1105
Filled hole to 1075'		
Shale	2	1107
Lime	6	1113
Shale, light	12	1125
Shale, blue	10	1135
Lime, brown	10	1145
Lime, brown	15	1160
Lime	5	1165
Lime	5	1170
Lime	10	1180
Lime	15	1195
Lime, brown	10	1205
Lime	10	1215
Lime, brown	15	1230
Lime	15	1245
Lime	10	1255
Lime	5	1260
Lime, white	10	1270
Lime,	15	1285
Lime, gray	10	1295
Lime	10	1305
Lime	15	1320
Lime	10	1330
Lime	2	1332
Lime	13	1345
Lime (ran 8" pipe)	2	1347
Lime	4	1351
Lime (HFW)	13	1364
Lime, dolomite, brown	10	1374
Lime, gray	9	1383
Lime	10	1393
Lime	8	1401
Lime, chalky white	24	1425
Lime, chalky, blue	10	1435

Driller's log of H. V. Elwell et al, John Maple No. 1 well, continued.

	Thickness feet	Depth feet
Lime, chatty	12	1447
Lime, chatty, brown	8	1455
Lime	11	1466
Lime	6	1472
Lime, brown, sharp	7	1479
Lime, sharp, gray	10	1489
Lime, sandy	9	1498
Lime, sand	12½	1510
White water sand (water)	5	1515
Lime, light, chatty	5	1520
Lime	10	1530
Lime and chat	17	1547
Lime	23	1570
Lime, soft	15	1585
Lime, chatty	2	1587
Lime	13	1600
Lime, brown	14	1614
Lime, brown	12	1626
Lime, brown	12	1638
Lime, brown	10	1648
Lime, brown	12	1660
Lime, brown	13	1673
Lime, borwn	8	1681
Lime,	8	1689
Lime 30%	11	1700
Shale, gray)		
Shale, brown) 70%		
Sand)		
Lime	12	1712
Lime	10	1722
Sand	10	1732
Sand	14	1746
Sand, white	19	1765
Lime, white	3	1768
Shale, blue	2	1770
Sand, white	12	1782
Sand, white	10	1792
Sand, white	8	1800
Sand	5	1805
Lime, gray	5	1810
Lime	11	1821
Lime	2	1823
Shale, green	2	1825
Lime	6	1831
Lime, white	11	1842
Lime	8	1850
Lime	11	1861
Lime	10	1871
Lime	9	1880
Lime	10	1890
Lime	5	1895
Lime	5	1900
Lime	7	1907 TD

COUNTY, Harrison. OWNER, Elwell et al., Maple No. 1. LOCATION, Sec. 3, T. 62 N., R. 26 W.

ANALYST, R. T. Rolufs. TOTAL DEPTH, 1907 feet.

Depth Sample Collected	1645-1649	1645-1649	1695-1700	1712-1717	1765-1770	1800	1890-1896	1903-1907
Analysis Number	2480,NB772	3177	3153	2480,NB772	3154	3178	2480,NB772	3155
Date Analyzed	10-5-39	10-25-39	10-17-39	10-5-39	10-17-39	10-25-39	10-5-39	10-17-39
Turbidity	Tur.B.Sp.	Tur.B.Sp.	Tur.B.Sp.	Tur.B.Sp.	Tur.B.Sp.	Tur.B.Sp.	Tur.B.Sp.	Tur.B.Sp.
Color	None	None	None	None	None	None	None	None
Odor	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	.....	ND	ND	.....	ND	ND	.....	ND
Total Dissolved Solids	6214.0	6214.0	6363.0	6169.0	6364.0	6033.0	6032.0	6004.0
Loss on Ignition	.....	ND	ND	.....	ND	ND	.....	ND
Chloride Radicle (Cl)	2453.9	2433.9	2490.9	2416.9	2463.2	2305.7	2352.0	2379.8
Nitrate Radicle (NO_3)	.....	ND	ND	.....	ND	ND	.....	ND
Sulphate (SO_4)	1131.0	1131.0	1124.4	1111.1	1153.8	1104.5	1093.4	1112.9
Bi-Carbonate Radicle (HCO_3)	.....	281.2	225.0	.....	219.3	253.1	.....	267.1
Carbonate Radicle (CO_3)	.....	00	00	.....	00	00	.....	00
Sodium (Na) Potassium (K) as Na	.....	1677.5	1735.7	.....	1740.4	1647.6	.....	1656.2
Magnesium (Mg)	.....	184.5	189.2	.....	174.5	138.7	.....	177.8
Iron (Fe)	.....	ND	ND	.....	ND	ND	.....	ND
Manganese (Mn)	.....	.....	.....	.....	.....	.....	.....	.....
Silica (SiO_2)	.....	5.6	2.0	.....	9.6	4.4	.....	8.0
Calcium (Ca)	.....	189.2	182.0	.....	213.9	261.0	.....	200.8
Total Hardness	.....	1229.5	1230.7	.....	1250.2	1221.2	.....	1231.0
Carbonate Hardness	.....	230.6	184.5	.....	179.8	207.5	.....	219.0
Alkalinity	.....	230.6	184.5	.....	179.8	207.5	.....	219.0
Precipitated Iron (Pp't Fe.)	.....	ND	ND	.....	ND	ND	.....	ND
Temporary Hardness	.....	ND	ND	.....	ND	ND	.....	ND
$Al_2O_3 + Fe_2O_3$	.....	1.60	1.60	.....	3.60	.80	.....	2.00
Bromine	.....	10.75	5.42	.....	6.16	7.10	.....	9.84
Fluorine	.....	4.00	6.52	.....	5.25	3.50	.....	5.00
Formational Source	Kimmswick	Kimmswick	Decorah	Decorah	St. Peter	St. Peter	Cotter	Cotter
Iodine	.....	.28	0.19	.....	0.22	.3	.....	0.14

Remarks: 1712-1717: SWL 200.

COUNTY, Harrison. OWNER, Elwell et al., Maple No. 1. LOCATION, Sec. 3, T. 62 N., R. 26 W.

ANALYST, R. T. Rolufs. TOTAL DEPTH, 1907 feet.

Depth Sample Collected	1347	1369-1371*	1369-1371	1371-1374	1371-1374	1501-1503	1510-1513	1539-1544
Analysis Number	3176	3141	.....	.....	2480,NB772	2480,NB772	3142	3152
Date Analyzed	10-25-39	10-4-39	9-23-39	9-23-39	9-27-39	9-27-39	10-4-39	10-17-39
Turbidity	Tur.B.Sp.	Tur.B.Sp.	.....	.....	Tur.B.Sp.	Tur.B.Sp.	Tur.B.Sp.	Tur.B.Sp.
Color	None	None	.....	.....	None	None	None	None
Odor	ND	ND	.....	.....	ND	ND	ND	ND
Total Suspended Solids	ND	ND	.....	.....	.....	.....	ND	ND
Total Dissolved Solids	5732.0	6025.0	.....	.....	5948.0	6109.0	5996.0	6059.0
Loss on Ignition	ND	ND	.....	.....	.....	.....	ND	ND
Chloride Radicle (Cl)	2185.4	2389.1	2398.3	2333.5	2342.8	2370.6	2352.0	2426.1
Nitrate Radicle (NO_3)	ND	ND	.....	.....	.....	.....	ND	ND
Sulphate (SO_4)	1090.7	1060.6	.....	.....	1091.1	1075.7	1073.8	1064.1
Bi-Carbonate Radicle (HCO_3)	293.9	225.0	.....	.....	.....	.....	209.5	246.1
Carbonate Radicle (CO_3)	00	00	.....	.....	.....	.....	00	00
Sodium (Na) Potassium (K) as Na	1692.4	1662.1	.....	.....	.....	.....	1687.7	1675.9
Magnesium (Mg)	96.7	189.7	.....	.....	.....	.....	183.3	214.3
Iron (Fe)	ND	ND	.....	.....	.....	.....	ND	ND
Manganese (Mn)	.....	.....	.....	.....	.....	.....	.....	.....
Silica (SiO_2)	8.8	8.4	.....	.....	.....	.....	21.6	21.6
Calcium (Ca)	175.5	163.1	.....	.....	.....	.....	176.9	134.9
Total Hardness	835.2	1185.5	.....	.....	.....	.....	1193.8	1215.9
Carbonate Hardness	241.0	184.5	.....	.....	.....	.....	171.8	201.8
Alkalinity	241.0	184.5	.....	.....	.....	.....	171.8	201.8
Precipitated Iron (Pp't Fe.)	ND	ND	.....	.....	.....	.....	ND	ND
Temporary Hardness	ND	ND	.....	.....	.....	.....	ND	ND
$Al_2O_3 + Fe_2O_3$	2.40	.80	.....	.....	.....	.....	1.20	2.40
Bromine	8.16	4.84	.....	.....	.....	.....	4.37	6.71
Fluorine	6.0	1.55	.....	.....	.....	.....	1.80	2.00
Formational Source	Pre Cooper	Devonian	.....	.....	Devonian	Devonian	Devonian	Kimmswick
Iodine	.47	0.24	.....	.....	.....	.....	0.29	0.22

Remarks: 1347: This sample from 1347 feet before setting 8" pipe. Sample taken at end of 6 bailers full. 1539-1544: SWL 200 + — feet.
*Representative water from Devonian after setting 8" casing at 1347'.

WATER ANALYSES

COUNTY, Harrison. OWNER, Elwell et al., Maple No. 1. LOCATION, Sec. 3, T. 62 N., R. 26 W.
ANALYST, R. T. Rolufs. TOTAL DEPTH, 1907 feet.

Depth Sample Collected	467-482*	600-650	600-650*	750-775**	1181	1270-1280	1270-1280	1347
Analysis Number	3137	2480,NB772	3138	3139	3140	.....	3175	.....
Date Analyzed	10-4-39	9-27-39	10-4-39	10-4-39	10-4-39	9-21-39	10-25-39	9-21-39
Turbidity	Tur.B.Sp.	Tur.B.Sp.	Tur.B.Sp.	Tur.B.Sp.	Tur.B.Sp.	.....	Tur.B.Sp.	.....
Color	None	None	None	None	None	.....	None	.....
Odor	ND	ND	ND	ND	ND	.....	ND	.....
Total Suspended Solids	ND	.....	ND	ND	ND	.....	ND	.....
Total Dissolved Solids	3567.0	4870.0	4870.0	5609.0	4737.0	.....	5097.0	.....
Loss on Ignition	ND	.....	ND	ND	ND	.....	ND	.....
Chloride Radicle (Cl)	1185.3	1676.0	1676.1	2166.8	1898.3	2074.2	1944.6	2333.5
Nitrate Radicle (NO_3)	ND	.....	ND	ND	ND	.....	ND	.....
Sulphate (SO_4)	752.2	1051.8	1051.8	1023.3	898.1	.....	943.0	.....
Bi-Carbonate Radicle (HCO_3)	521.6	.....	530.1	258.7	222.1	.....	246.1	.....
Carbonate Radicle (CO_3)	1.4	.....	00	00	00	.....	00	.....
Sodium (Na) Potassium (K) as Na	1351.3	.....	1758.5	1624.7	1506.7	.....	1594.1	.....
Magnesium (Mg)	16.0	.....	32.3	102.1	61.9	.....	66.1	.....
Iron (Fe)	ND	.....	ND	ND	ND	.....	ND	.....
Manganese (Mn)	.....	.....	.....	.....	.....	.....	.....	.....
Silica (SiO_2)	10.0	.....	11.2	7.6	1.6	.....	1.6	.....
Calcium (Ca)	26.8	.....	70.3	244.3	111.7	.....	118.9	.....
Total Hardness	132.6	.....	308.2	1029.3	533.0	.....	568.3	.....
Carbonate Hardness	132.6	.....	308.2	212.1	182.1	.....	201.8	.....
Alkalinity	428.9	.....	434.7	212.1	182.1	.....	201.8	.....
Precipitated Iron (Pp't Fe.)	ND	.....	ND	ND	ND	.....	ND	.....
Temporary Hardness	ND	.....	ND	ND	ND	.....	ND	.....
$Al_2O_3 + Fe_2O_3$	2.80	.....	1.60	1.20	1.60	.....	.80	.....
Bromine	3.62	.....	4.36	5.81	4.47	.....	4.66	.....
Fluorine	2.80	.....	1.80	2.90	2.90	.....	2.45	.....
Formational Source	Cherokee	Cherokee	L. Cherokee	Ste. Gen.	Devonian	.....	Devonian	.....
Iodine	.09	.....	0.18	0.23	0.15	.....	.55	.....

Remarks: *467-482 Representative water from Cherokee above casing point at 539'; 600-650 representative water from Cherokee below casing point at 539.

**750-775 representative water from Ste. Genevieve (casing (10") at 749').