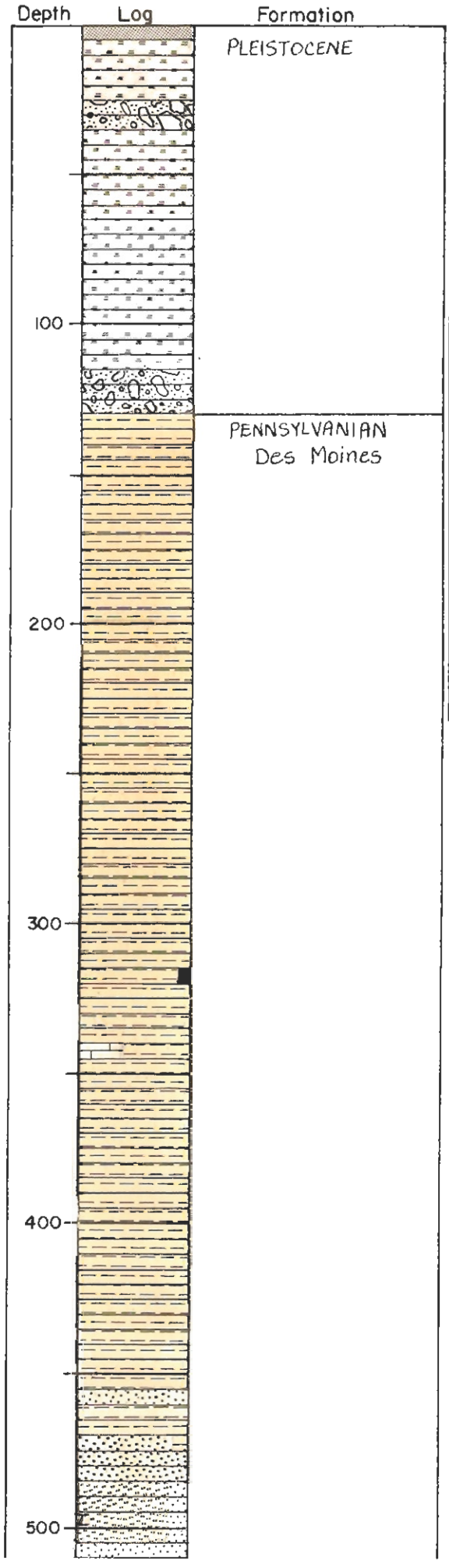
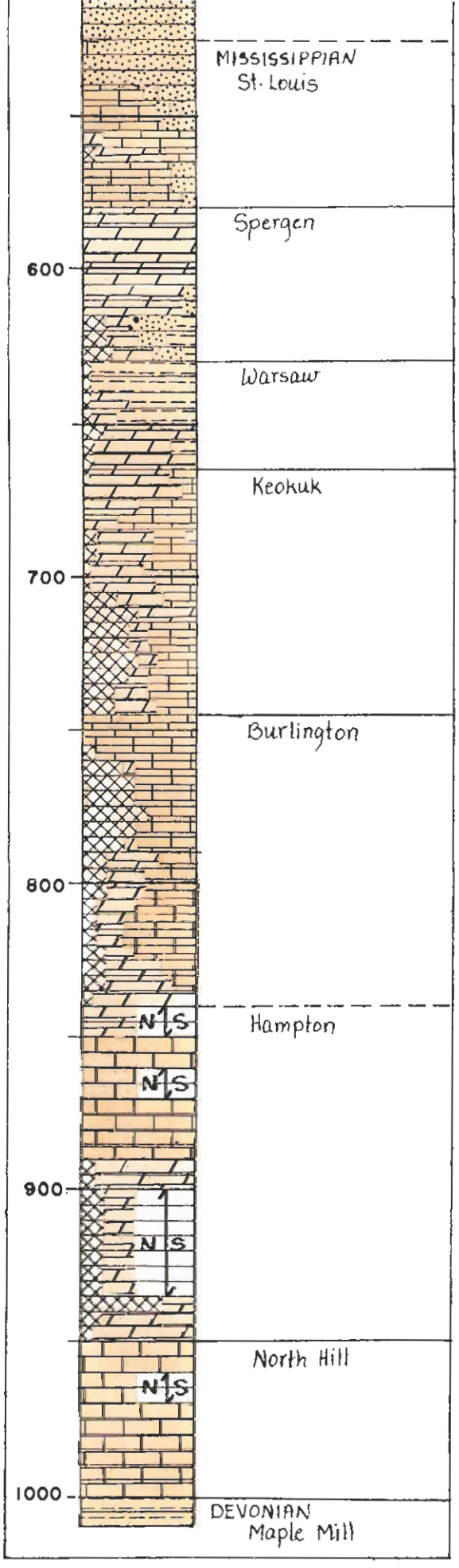


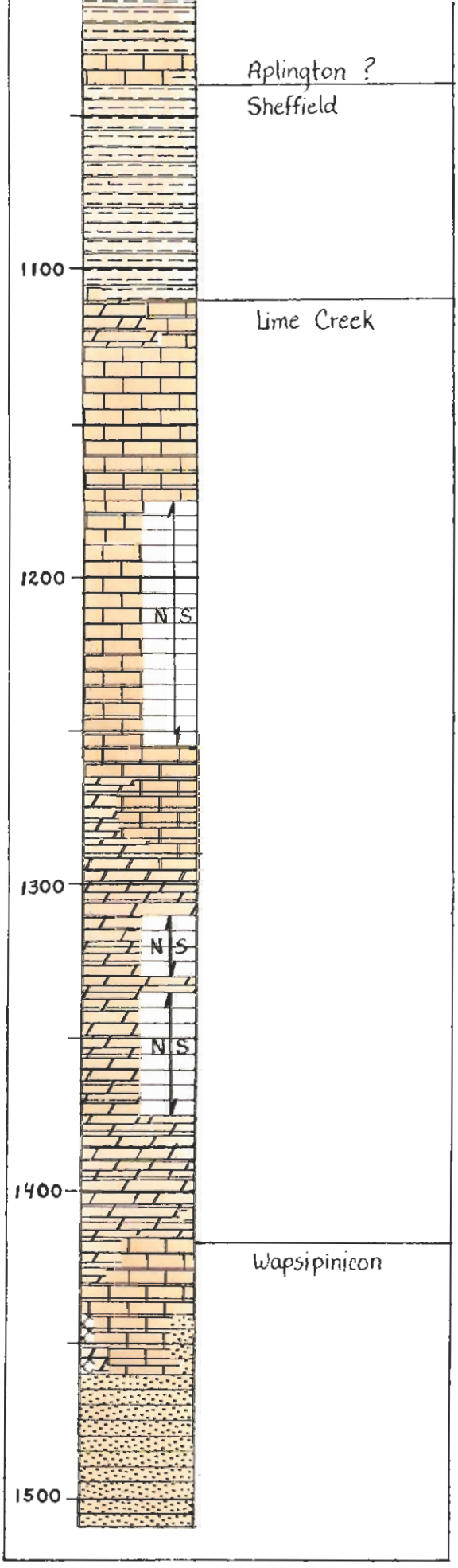
IOWA GEOLOGICAL SURVEY
In Cooperation with
U. S. GEOLOGICAL SURVEY
Iowa City, Iowa

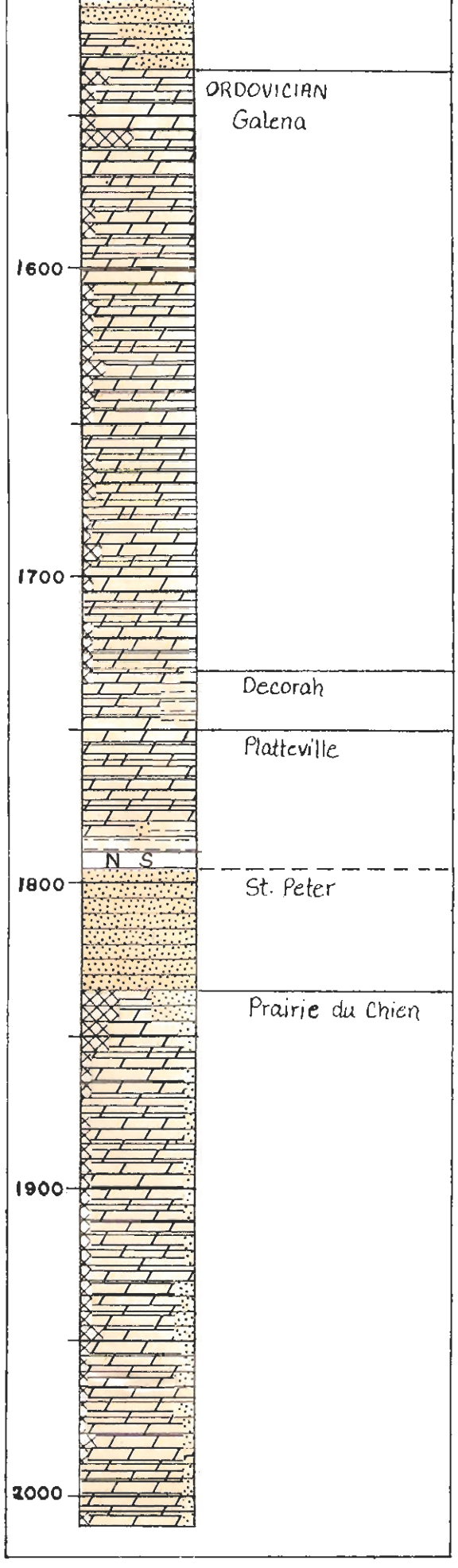
Name: MORAVIA TOWN WELL 1968	State: IOWA
Town: MORAVIA — County: APPANOOSE	Loc.: NW NW SE
Contractor: THORPE WELL CO. — Driller:	Sec.: 4
Drilling Dates: MAY 27, 1968 — SEPT. 17, 1968	T. 70 N., R. 17 W.
Casing Record: 157' OF 16" CSG. 0-157' 343' OF 14" LINER 107-450' 167' OF 10" LINER 971'-1138' OF 5" LINER -1925' 159' OF 8" LINER 1675'-1834' 756' OF 8" CSG. +1' TO 755' 1166'1" OF 5" CSG. 755'-1922'1" (CEMENTED FROM 1922'1" TO SURFACE)	
S.W.L.: 371' — G.P.M.: 150 — D.D.: 16	
Remarks: WELL WAS ACIDIZED	Elev.: 999'
	T.D.: 2400'
Logged By: NORTHUP	I.G.S. No.: W-20573

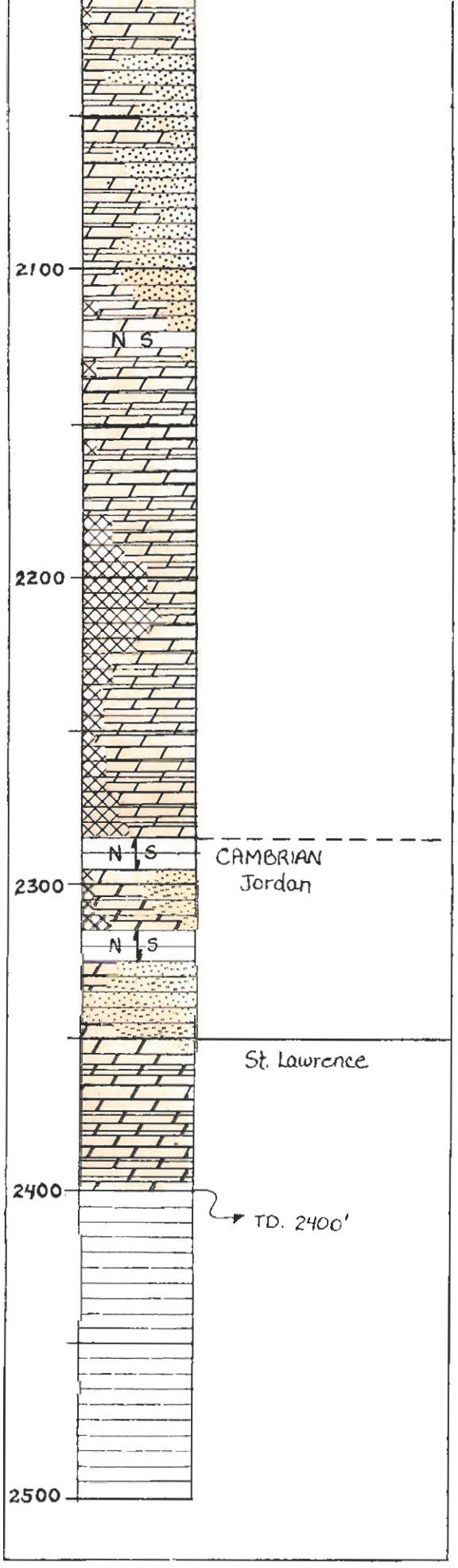
Explanation of Colors

- Soil
- Loess, Silt or Siltstone
- Drift
- Sand & Gravel
- Shale
- Sandstone
- Limestone
- Dolomite
- Chert
- Gypsum or Anhydrite
- Coal
- N S — No Samples


MISSISSIPPIAN
St. Louis
Spergen
600
Warsaw
Keokuk
700
Burlington
800
N S
Hampton
N S
900
N S
North Hill
N S
1000
DEVONIAN
Maple Mill


Aplington ?
Sheffield
1100
Lime Creek
1200
N S
1300
N S
N S
1400
Wapsipinicon
1500


ORDOVICIAN
Galena
1600
1700
Decorah
Platteville
N S
1800
St. Peter
Prairie du Chien
1900
2000


2100
N S
2200
N S
CAMBRIAN
Jordan
2300
N S
St. Lawrence
2400
TD. 2400'
2500

Information for Ginny Acheson 11/21/18

Moravia Pumping Test

SWL 390

PL 516 @ 130 GPM

468 @ 175 GPM. @ 11:30 PM

478 @ 225 GPM.

515 @ 240 GPM.

1/2" or Sand w SWL.

Pump Quit @ 7:30 AM.

Recovery TL 477' after 10 minutes

463' " 21 minutes

455' " 45 minutes

Will try to achieve level

Rather than shoot for a gallon

IOWA GEOLOGICAL SURVEY
NOV 29 1968

THORPE WELL COMPANY

2340 SIXTH AVENUE
DES MOINES, IOWA

R-1-8

Drilled for Town of Moravia *at* Moravia, Iowa

Well is located ____ *miles N-E-S-W and* ____ *miles N-E-S-W from* ____

in the NW ¼ SE ¼ *Section* 4 *Township* 70N *Range* 17W

Drilling started May 27 19 68 *Completed* September 17 19 68

Well No. 4 *Kind of Well* Jordan Sand *Depth* 2400' *Size hole started* 24" *in*

Finish 8" *G. P. M.* 150 *Static Head* 371 *Pumping level from surface* 387

Water was first encountered at ____ *in* ____ *Approx. Amt.* ____ *Temp.* 75

Remarks. Sand free at 150 GPM. Trace of sand at 285 GPM. Acidized with 3500 Gallons of acid.

(GIVE DETAILS OF PERFORATED PIPE AND SEALS)

RECORD OF PERMANENT PIPE					TEMPORARY PIPE	
SIZE PIPE	AMOUNT OF PIPE	DEPTH TO BOTTOM OF PIPE	DEPTH TO TOP OF PIPE	MAKE OF PIPE	SIZE PIPE	AMOUNT
16"	157'	156'	Surface	Steel	24"	7'
14"	343'6"	449'6"	106'	Steel	20"	71'2"
10"	167'	1138'	971'	Steel		
8"	159'	1834'	1675'	Steel		
8"	756'	755'	Surface	5"x8" Swedge		
5"	1166'1"	1922'1"	755'	Cemented from 1922'1" to surface.		

Driller Richard Nichols *From Surface to* 240 *feet*

Driller Boyd McLaughlin *From* 0 *feet to* 2400 *feet*

Driller ____ *From* ____ *feet to* ____ *feet*

AMOUNT IN FEET	KIND OF SOIL OR FORMATION (BE SPECIFIC)	TOTAL DEPTH FEET
5	Black dirt & fill	5
10	Clay - Yellow	15
10	Clay - Yellow _ Gray	25
10	Sand	35
25	Clay - Yellow - Sandy	60
5	Sand and gravel	65
6	Clay - Yellow - Sandy	71
45	Clay - Blue - Pebbles	116
14	Sand and gravel	130
5	Shale - Light gray	135
2	Lime Shell - Red	137
2	Shale - Brown	139
16	Shale - Gray - Dark	155
20	Shale - Gray - Light	175
25	Shale - Red	180
58	Shale - Gray	238
7	Shale - Brown	245
5	Shale - Blue	250
15	Shale - Black	265
1	Shale - White	266
12	Shale - Gray	278
12	Shale - White and red	290
5	Shale - Black	295
20	Shale - Gray	315
10	Shale - Light gray	325
5	Shale - Gray and dark	330
2	Coal	332
8	Shale - Black and white	340
5	Lime	345
5	Shale - Gray	350

AMOUNT IN FEET	KIND OF SOIL OR FORMATION (BE SPECIFIC)	TOTAL DEPTH FEET
10	Shale - Brown	360
35	Shale - Brown and gray	395
10	Shale - Black	405
10	Lime Shells	415
15	Shale - Brown - Sandy	430
20	Shale - Brown - Gray - Sandy	450
16	Sand - Hard	466
76	Sand - Hard with soft streaks	542
52	Lime	594
38	Lime	632
23	Shale	655
5	Sand and shale mixed	660
115	Sand and lime	775
232	Lime 775' -	1007
13	Shale 1007	1020
20	Lime 1020 -	1040
23	Shale 1040 -	1063
27	Lime shells 1063	1100
38	Lime 1100 -	1138
22	Lime - Brown	1160
15	Lime NO CUTTINGS	1175
88	Lime NO CUTTINGS	1255
42	Lime - Brown - Hard	1297
13	Lime - Brown	1310
20	Lime NO CUTTINGS	1330
10	Lime - Brown	1340
35	Lime NO CUTTINGS	1375
30	Lime - Brown	1405
25	Lime - Shells	1430
20	Lime	1450
10	Lime - Sandy - Sharp	1460
45	Sand	1505
55	Lime - Sharp	1560
150	Lime - Brown	1710
72	Lime - Brown - Broken	1782
12	Shale - Green	1794
51	Sand - St. Peter	1845
170	Lime - Brown	2015

AMOUNT IN FEET	KIND OF SOIL OR FORMATION (BE SPECIFIC)	TOTAL DEPTH FEET
50	Lime - Brown - Sandy	2065
155	Lime - Gray - Sandy	2220
50	Lime - Chert - Sandy	2270
10	Lime - NO CUTTINGS	2280
37	Lime - Chert	2317
8	Lime - NO CUTTINGS	2325
22	Sand - Jordan	2347
43	Lime - Hard	2390
10	Lime - Sandy	2400 T.D.

AMOUNT IN FEET	KIND OF SOIL OR FORMATION (BE SPECIFIC)	TOTAL DEPTH FEET
50	Lime - Brown - Sandy	2065
155	Lime - Gray - Sandy	2220
50	Lime - Chert - Sandy	2270
10	Lime - NO CUTTINGS	2280
37	Lime - Chert	2317
8	Lime - NO CUTTINGS	2325
22	Sand - Jordan	2347
43	Lime - Hard	2390
10	Lime - Sandy	2400 T.D.

MASTER CARD - A

9-26-69
RP 11-22-70

STATE	COUNTY	LATITUDE DEG	LATITUDE MIN	LATITUDE SEC	N or S	LONGITUDE DEG	LONGITUDE MIN	LONGITUDE SEC	SEQ NO
1 2	3 4	5 6	7 8	9 10	11	12 13 14	15 16	17 18	19
19	04	40	53	24	N	092	49	17	1

WELL SCHEDULE

US GEOLOGICAL SURVEY

IOWA DISTRICT WRD

WELL NO 20573 CO APPANOOSE

OWNER TOWN ADDRESS MORAVIA

DRILLER THORPE WELL CO DATE DRLD 9-17-1968

MAP

SOURCE OF DATA FILE

DESCRIPTION M P LSD FEET (ABOVE) (BELOW) LSD

CONTINUED FROM ABOVE

ACCURACY	LOCAL WELL NUMBER T	R	E/W	SEC	QUARTERS	LOCAL USE W-NUMBER	LOCAL USE OPTIONAL	OWNER OR NAME	OWNERSHIP	WATER USE	WELL USE	WELL DATA	FREQ W/L	FIELD CHAR	HYD LAB	QW-DATA	QW-FREQ	PUMPAGE	APERTURE	LOG DATA	CARD DESIG
20	21 22 23	24 25	26	27 28	29 30 31 32 33 34	35 36 37 38 39	40 4 42 43 44 45 46 47 48 49 50 51	52 53 54 55 56 57 58 59 60 61 62 63 64 65 66	67	68	69	70	71	72	73	74	75	76	77	78 79	80
2	070	17	W	04	DBB	20573	// 68 CIJY	MORAVIA	M	P	W	I	Ø			C	I			G	A

WELL-DESCRIPTION CARD - B

DUPLICATE CARD A CC 1-19	DEPTH OF WELL	ACCURACY	DEPTH CASED OR FIRST PERF	DIAM. INCHES	WELL FINISH METH DRILLED	YEAR DRILLED	PUMP SETTING	METH LIFT	DEEP SHALLOW	POWER	ALTITUDE OF LSD (FEET)	ACCURACY	WATER LEVEL (FEET)	ACCURACY	DATE MONTH	DATE YEAR	YIELD OF WELL (GPM)	METH DET	DRAW-DOWN (FEET)	ACCURACY	PUMPING PERIOD (HOURS)	QUALITY OF WATER IRON	SULF	CHLOR	HARD	SP COND	TEMP	DATE SAMPLED	CARD DESIG.
	20 21 22 23	24	25 26 27 28	29 30	31	32 33 34 35	36 37 38	39	40	41	42 43 44 45 46	47	48 49 50 51	52	53	54 55	56 57 58 59 60	61	62 63 64	65	66 67 68	69	70	71	72	73	74 75 76	77 78 79	80
	2400	3	1922	5	X	9688					9997		3710		D	68	150	3	163										B

HYDROGEOLOGIC CARD - C

DUPLICATE CARD A CC 1-19	PHYS-IOG-RAPHY PROV	SEC	DRAINAGE BASIN	SUBBASIN	TOPO SETTING	MAJOR AQUIFER SYSTEM	SERIES USGS	SERIES IGS	UNIT	LITHOLOGY	ORIG	THICKNESS	LENGTH WELL OPEN TO	DEPTH TO TOP OF	MINOR AQUIFER SYSTEM	SERIES USGS	SERIES IGS	UNIT	LITHOLOGY	ORIG	THICKNESS	LENGTH WELL OPEN TO	DEPTH TO TOP OF	DEPTH TO CONSOLIDATED ROCK	SOURCE	DEPTH TO BASEMENT	SOURCE	SURF MAT. LITHOLOGY	SURF MAT. INFIL	COEF TRAN SIG FIG	COEF TRAN X10	COEF STOR SIG FIG	COEF STOR X10-	GEOL CARDS	CARD DESIG.
	20 21	22	23 24 25	26	27	28	29	30	31	32 33	34	35 36 37	38 39 40	41 42 43	44	45	46	47	48 49	50	51 52 53	54 55 56	57 58 59	60 61 62 63	64	65 66 67 68	69	70 71	72	73 74	75	76 77	78	79	80
	1	2F	25B		C	3	S	T		D	6		105	B	30	Ø	1	L	P		D	64	60	37	3	A	84	130	D			T	3				C

CASING AND SCREEN (SIZE, TYPE, INTERVALS):

157' ØF 16" CSG. 0-157'
343' ØF 14" LINER 107'-450'
167' ØF 10" LINER 971'-1138'
ØF 8" LINER -1925'
159' OF 8" LINER 1675'-1834'
756' OF 8" CSG. +1' TØ 755
1166' 1" OF 5" CSG. 755-1922
(CEMENTED FROM 1922' 1" TO SURFACE

CODED BY HEXUM gm DATE 7/18/72

PUNCHED BY HEXUM DATE 7-19-72

VERIFIED BY DATE

SKETCH ON REVERSE: YES NO

04

WELL NO 20573

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Card Q

State: IOWA (19) County: APPANOOSE (04) Town: MORAVIA

Well No. Latitude 405300N (5–11) Longitude 0924917 (12–18) Seq. No. 1 (19) Date M 07 D 19 Y 69 (20–25)

Sampling Depth (26–29) Type (30) $Kx10^6$ 1450 (31–35) pH 7.0 (36–38) Temp. °F (39–41)

SiO_2 13 (42–44) Ca 74 (45–49) Mg 26 (50–53) Na 230 (54–58) K 15 (59–61)

HCO_3 331 (62–65) CO_3 0 (66–67) SO_4 290 (68–72) Cl 110 (73–78) Source No. 2 (79–80)

Card R

Duplicate Columns 1-25 from Card Q

F 2.7 (26–28) NO_3 4.6 (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe .1 (42–45)

Mn .00 (46–49) Cu (50–52) Pb (53–54) Zn (55–57)

Solids Determined 913 (58–63) Calc. (64–69) Ca,Mg 29 (70–73) Hardness Non-Carb. 12 (74–77)

Color (78–79) No. (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ 274 (32–35) Free CO_2 (36–38) SAR (39–41)

RSC (42–44) ABS (45–47) (48–50)

Alpha (pc/l) (55–57) Beta (pc/l) (58–60) Ra (pc/l) (61–63) U (ug/l) (64–66)

No. 3 (80)

Recorded by: [illegible]

Punched by: MACGOWAN Date: 7-19-72

Published:

20573

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Card Q

State: IOWA (19) County: APPANOOSE (04) Town: MORAVIA

Well No. 405324N (Latitude, cols 5–11) 0924917 (Longitude, cols 12–18) Seq. No. 1 (19) Date M 07 D 29 Y 67 (20–25)

Sampling Depth (26–29) Type 1 (30) Kx10^6 1410 (31–35) pH 7.0 (36–38) Temp. °F (39–41)

SiO_2 15. (42–44) Ca 72. (45–49) Mg 316 (50–53) Na (54–58) K (59–61)

HCO_3 (62–65) CO_3 (66–67) SO_4 (68–72) Cl (73–78) Source No. 3 (79) 4 (80)

Card R

Duplicate Columns 1-25 from Card Q

F 2.7 (26–28) NO_3 2.1 (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe 9.4 (42–45)

Mn .05 (46–49) Cu (50–52) Pb (53–54) Zn (55–57)

Solids Determined 316 (58–63) Calc. (64–69) Ca,Mg 310 (70–73) Hardness Non-Carb. 26 (74–77)

Color (78–79) No. 4 (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ 284 (32–35) Free CO_2 (36–38) SAR (39–41)

RSC (42–44) ABS (45–47) (48–50)

Alpha (pc/l) (55–57) Beta (pc/l) (58–60) Ra (pc/l) (61–63) U (ug/l) (64–66)

No. 3 (80)

Recorded by: HIXUM

Punched by: MMC 8/4/84 Date: 7-19

Published:

GW Moravia well folder (1968)
Appanoose Co. Geo Data

September 13, 1968

GEM

Mr. Orian Atchison
Thorpe Well Company
P. O. Box 1376
Des Moines, Iowa 50313

Dear Mr. Atchison:

As requested by phone this morning, we wish to advise that the top of the Prairie du Chien at Moravia was picked at 1835 feet, and that we recommend that casing be set no higher than 1900 feet. In fact, it would not hurt to allow for as much as seventy five to a hundred foot penetration, which would still be short of the Root Valley Sandstone.

We will study all the remaining samples as soon as they become available, and would appreciate it very much if you will notify us a day or so before the pumping test so that a Survey representative may arrange to be on hand.

Please let us know if we can be of further service.

Very truly yours,

H. G. Hershey

HGH/RCN:njc