

IOWA GEOLOGICAL SURVEY
In Cooperation with U. S. Geological Survey

RECORD OF WELL

Location:

Town: DUBUQUE (N E)
(S W); County DUBUQUE
SW-SW-SE sec. 7 T. 89 N., R. 2 W. Twp.

W-0974

Well name and number DUBUQUE CITY WELL #7

Owner City of Dubuque Address _____

Tenant _____ Address _____

Contractor C. W. Varnar Address _____

Drillers _____

Drilling dates Dec. 13, 1938 - April 17, 1939

Well data:

Elevations: Drilling curb 630.84' feet; Land surface 628.52' feet
(City 45.16') (City 42.84')

Determined by _____

Topographic position _____

Total depth: Reported 1560' feet, Measured _____ feet

Drilling method _____

Hole and casing data 119' of 30" casing; 209' of 28"; 75' of 26";
(Give amount, size, kind, and depth of all casing; type and
95' of 25"; 1062' of 15" casing
position of seals and packers; cementing; how finished--perforated pipe, screen,
gravel pack, open hole, etc.)

Original depth to water _____ above
ft. below _____ Date _____

Original elevation of water level _____ ft.; Source of data _____

Sources of water: Principal _____; Others _____

Production data:

Date _____

Static depth to water

605

Measuring point _____

Pumping level

487

at

2351

g.p.m.

Specific capacity

19.9

g.p.m. per ft. drawdown; Temperature

°F.

Pump data; Type pump

Column Dia.

Length

Cylinder or bowls: Dia.

Length

Suction pipe

Power

Airline

Estimated rate of production:

g.p.m. for

hrs. a day

Use of water

WATER ANALYSES (in parts per million)

Date sampled

Sampled by

Bulter

Total solids

295

Insoluble matter

7.6

Alkalinity (Meo)

280.0

Alkalinity (Phn)

0.0

pH

7.6 $\text{Fe}_2\text{O}_3 + \text{Mn}_2\text{O}_3 + \text{Al}_2\text{O}_3$ 1.6

Alkali as sodium

8.2

Calcium

57.2

Magnesium

23.7

Iron (unfiltered)

0.3

Manganese

0.00

Nitrate

0.00

Fluoride

Trace

Chloride

5.0

Sulfate

19.2

Bicarbonate

341.6

Hardness (ppm)

282

Hardness (gpg)

16.5

Remarks

Laboratory data:

Sample storage location

Sample range 0-1560No. spls. 302No. dupls. & cond. 302-good

Spls. prepared by

Washed range 60-1560

by

Driller's log and cond. No

Insoluble residues: Prepared by

Studied by

Strip log

Microscopic study 0-1560strip log 5/22/3910/19/45

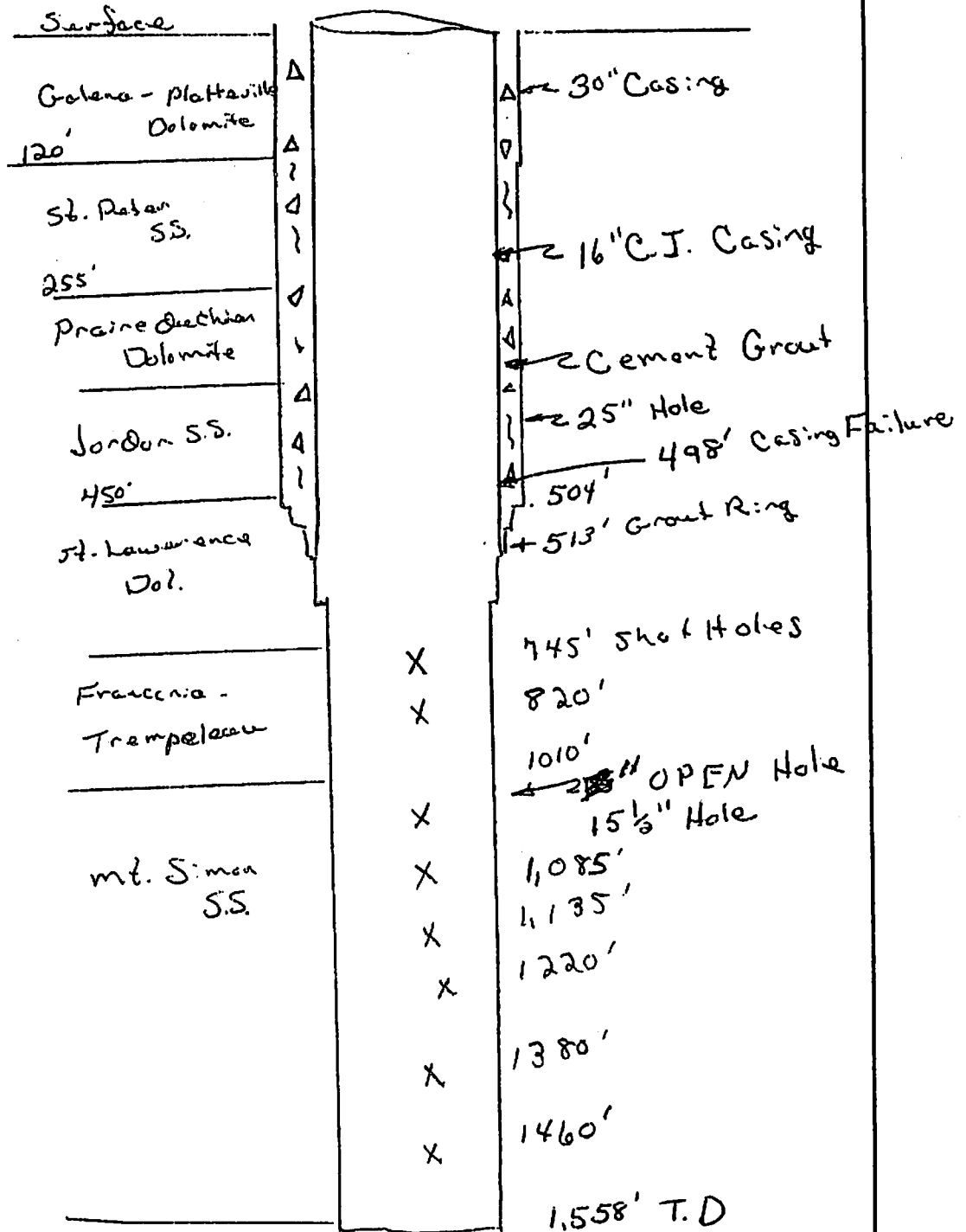
Gen. log

Correl. by SchuldtBaldwin

w-974

Peerless Service Co.**Water Supply Contractors
Well & Pump Service****17656 S. John Deere Road
Dubuque, IA 52001
563-583-1707****Terry Nauma
563-552-25
Jim Sass
563-556-81**

Elev. 630'



IOWA GEOLOGICAL SURVEY
Generalized Log Based on Detailed
Description of Drill Cuttings.

Name of Well: Dubuque City Well No.7 Survey No. W-0974
Drilled By: C. W. Varner Date Nov.22,1938 to Apr.27,1939.
Total Depth: 1560 ft; Curb Elevation: 23.15 ft.Static Level; 22.15 ft.Elev.
Casing Data: 500 ft. of 16" Cast Iron Casing(Cemented in)
Pump and Screen Data: Temporary Test Pump used
Pumping Test; 24 hrs. Gal.Per Min. 2351; Drawdown 118.38 ft. in 570 min.

Description of Formations

<u>No.</u>	<u>Rock Unit</u>	<u>Thick.</u>	<u>From (Feet)</u>	<u>To</u>
PLEISTOCENE SYSTEM				
1.	Recent Alluvium Glacial sand, brown, fine to medium grained, silty, high in grains of igneous material	65	0	65
ORDOVICIAN SYSTEM				
<u>Galena-Platteville formations</u>				
2.	Dolomite, brown, medium to coarse euhedral crystalline, friable to strongly cemented, with 10-25% fresh to weathered porcelain textured chert in the upper 35', becoming slightly sandy (?) in the lower 20'	54	65	119
<u>St. Peter formation</u>				
3.	Sandstone, light brown, fine to coarse grained, poorly sorted, angular to subround, well frosted, dominantly medium grained, white and slightly pyritic in lower 50 feet	91	119	210
4.	Sandstone, white, very fine grained, poorly sorted, angular, slightly frosted	15	210	225
5.	Sandstone, white, medium to fine grained, fairly well sorted, subangular, moderate frothing	30	225	255
<u>St. Peter (?) or Shakopee (?) formation</u>				
6.	Shale, gray, homogeneous, structureless, non-calcareous, with small percentage red and green shale	5	225	260
7.	Shale, deep red, structureless, non- calcareous, with small percentage green shale	5	260	265
<u>Prairie du Chien group</u>				
<u>Shakopee formation</u>				
8.	Dolomite, light drab, coarse crystalline, sugary textured, sandy, translucent, hard, with small percentage red and green shale	5	265	270

No.	Rock Unit	Description of Formations	Thick (ft)	From (Ft)	To (Ft)
9		Dolomite, red buff to greenish, sub-crystalline, hard, in part argillaceous	5	270	275
10		Dolomite, light gray to green gray, very fine granular texture, in part argillaceous	5	275	280
11		Dolomite, light buff, extremely fine crystalline, grading to green and red, with 20-30% green and red shale, green shale hard, with much finely disseminated pyrite, sandy in part	35	280	315
12.		Dolomite, light drab, fine crystalline, hard, sandy in parts, siliceous, with 20% green and red shale between 320'-325', 20% orange chert highly oolitic	15	315	330
13.		Dolomite, drab, translucent, fine to medium crystalline, hard, sandy in part with 20-30% white highly oolitic chalcedonic chert	20	330	350
14.		Dolomite, red brown, fine to medium crystalline, hard, translucent, with 5% brown to red chert	7	350	357
15.		Dolomite, light buff, subcrystalline, translucent, hard	8	357	365
16.		Dolomite, drab to red, fine to medium crystalline, hard, translucent, sandy in parts	25	365	390
		<u>New Richmond formation</u>			
17.		Sandstone, coarse grained, chert white, fresh to weathered, oolitic, brown dolomite, and red and green shale interbanded	10	390	400
		<u>Oneota formation</u>			
18.		Chert, white and red, fresh to partly weathered, oolitic in part, massive bedded, lower 5' highly porous, fine to very coarse sandy and with drusy cavities, pyritic	119	400	419
		<u>CAMBRIAN SYSTEM</u>			
		<u>Trempeleau formation</u>			
		<u>Jordan member</u>			
19.		Sandstone, white, fine to very coarse grained, poorly sorted, subangular to curvilinear, well frosted	11	419	430
20.		Sandstone, white, medium to very coarse, poorly sorted, with considerable development of secondary quartz crystal faces	45	430	475
		<u>Lodi member</u>			
21.		Sandstone, white, fine to medium grained, strongly dolomite, cemented, hard	10	475	485

No.	Rock Unit	Description of Formations	Thick (Ft)	From (Ft)	To (Ft)
	St. Lawrence Member				
22.		Dolomite, light brown, fine to sub-crystalline, hard, translucent, with small percentages red and green shale	15	485	500
23.		Dolomite, light brown to reddish, very fine crystalline, hard, with green pyritic shale in parts	59	500	559
24.		Dolomite, light brown to reddish, fine crystalline, hard, glauconitic, pyritic, fine sandy in upper 5'	35	559	594
25	<u>Franconia formation</u>				
		Sandstone, very light buff, fine to medium grained, angular, highly glauconitic, partially dolomite cemented, with local bands red, and green pyritic shale. Local bands dolomite in lower part	78	594	670
26.		Sandstone, white, clean, medium to very coarse, subangular to curvilinear, frosted, very poorly sorted	15	670	685
	<u>Dresbach formation</u>				
	Galesville member				
27.		Sandstone, white, medium to coarse grained, dominantly coarse, clean, fairly well sorted, subangular to curvilinear, moderately well frosted	55	685	740
28.		Sandstone, white medium to coarse grained, dominantly medium with minor percentages medium crystalline sandy drab dolomite, and local bands light green shale. Fine to medium in lower 10'	20	740	760
29.		Sandstone, white, fine to coarse grained, dominantly medium or coarse grained, poorly sorted, subangular to curvilinear, frosted	65	760	825
30.		Sandstone, white, dominantly fine or medium grained, fair to poor sorting, subangular, moderately frosted	49	825	874
	Eau Claire Member				
31.		Sandstone, white, dominantly coarse grained, dolomite cemented in part, glauconitic, with light green shale bands, poorly sorted	21	874	895
32.		Sandstone, light buff, fine grained, strongly cemented, glauconitic, with small percentages green and red shale, and some drab, medium crystalline hard brown glauconitic dolomite. Some s amples deep red from iron oxide coating	65	895	960

No.	Rock Unit	Description of Formations	Thick (Ft)	From (Ft)	To (Ft)
33	Shale, light green, micaceous, pyritic, flaky		3	960	963
	Mount Simon Member				
34.	Sandstone, white, dominantly medium grained, well sorted, clean, sub-angular, moderate frosting		42	963	1005
35.	Sandstone, white, ranging from fine to coarse grained and dominantly medium or fine, fair to poor sorting, clean, subangular to curvilinear, moderately frosted		120	1005	1125
36.	Sandstone, ranging from fine to coarse and dominantly medium or coarse grained, for the most part poorly sorted, with slight dolomite cementation in parts; with considerable development of secondary crystal faces in parts. Some samples pink or red from iron oxide		180	1125	1305
37.	Sandstone, light buff (to red buff in some beds), fine to very coarse grained to granules, very poorly sorted, angular to subangular with local development of secondary crystal faces. Dominantly coarse grained, frosting poor to moderate		65	1305	1370
38.	Sandstone, light buff, medium to very coarse to granules, dominantly medium grained, poorly sorted, sub-angular, slightly frosted		80	1370	1400
39.	Sandstone, buff to red buff, medium to very coarse grained to granules, dominantly coarse grained, poor to fair sorting, subangular, fair frosting, with considerable development of secondary crystal faces		160	1400	1560 T.D.

DUBUQUE, IOWA- NEW WELL NO.7

On November 22nd, 1938- C. W. Varner, Well Driller, started moving some of his equipment and material to the site of the New No.7 Artesian Well, at the northeast corner of Lincoln Avenue and Shiras Street. From November 22nd, to December 13, preparations were being made preliminary to the actual construction of the well.

A bench mark was established near the site of the well based on elevations, at the Eagle Point Station, which are (City 25.83': Gov. 611.51'). The elevation of the bench mark at the new well is (City 42.84': Gov. 628.52'). The steel platform on the drilling rig from which all depths were measured was at elevation (City 45.16': Gov. 630.84').

On December 13, 1938, actual construction on the well proper was begun.

On December 30, 1938, the shoe on the lower end of the 30" casing was firmly placed on solid rock at elevation (Gov. 511.57'). The upper end of this 30" casing terminates at elevation 625.67').

Drilling of the 28" diameter hole was started on December 30, 1938 and drilled to a depth of 828', which was reached on Jan.17, 1939.

On Jan.18, 1939- 75 feet of 26" O. D. Casing was placed in the well with its bottom resting at elevation 302.84'.

The drilling of a 25" diameter hole was started on Jan.19th and drilled to elevation 132.84' which was reached on Jan.26, 1939.

From elevation 132.84' to 120.84' the diameter of the hole was reduced from 25" to 15".

The 15" diameter hole was drilled from elevation +120.84' to -982.16' between Jan.30th and Feb. 23rd.

On Feb. 28 and Mar.1, 8 shots of dynamite were exploded at elevations -834.16'; -754.16'; -594.16'; -509.16'; -459.16'; -384.16'; -194.16' and -119.16'.

On Mar.3, 1939 the driller started cleaning out the hole. On Mar.6th the cable broke and the bailer was dropped to elevation -517.16'.

On Mar.24th the bailer was recovered and cleaning out of the hole was resumed and continued until April 6th when the bottom (elevation -982.16') was reached.

On April 7th and 8th- 500 ft. of 16" cast iron casing was installed with the bottom of the shoe placed at elevation + 126.0'.

Between April 10th and 15th the well was being cemented.
A Total of 1049 sacks of cement were required to fill the space outside of the 16" cast iron pipe.

On April 17th the plug at the bottom of the 16" casing was punched out and the water allowed to rise inside the pipe.

From April 17th to 22nd preparations were being made to test the well for capacity.

On April 26th and 27th a test run was made. Attached is a copy of the results of this test. Readings were taken every 15 minutes.

The following test was run under the supervision of the following;

A. A. Rhomberg, City Manager.
J. J. Hail, Supt. of Water Dept.
H. P. Hoskins, Resident Engineer
J. W. Straub, Field Engineer
C. W. Varner, Well Contractor