Punched F

WRD Exp. (GW)
Aug. 1964 Verified

U. S. DEPARTMENT OF THE INTERIOR — GEOLOGICAL SURVEY

Water Resources Division Well Schedule Form

MASTER CARD

Record by R. W. COBLE Source of data FILE Date 7/8/65 Map 1:63,360 County Hwy

State IOWA [16] County (or town) GUTHRIE [39]

Latitude: [41 31 15 N] N S Longitude: [094 24 14] Sequential number: [1]

Lat-long accuracy: [2] T 78 (N) S, R 31 (W) E, Sec 27, NW ¼, SW ¼, SE ¼ 5 B & M

Local well number: [78 31 27 DCB] Other number: W-2974

Local use: [47 ... 2] Owner or name: MENLO CITY WELL

Owner or name: [MENLO IØWA] Address: MENLO, IOWA

Ownership: (C) County, (F) Fed Gov't, **(M) City** (circled), (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist [M]

Use of water: (A) Air cond, (C) Comm, (D) Dewatering, (F) Fire, (H) Dom, (I) Irr, (N) Ind, **(P) P S** (circled), (S) Stock, (T) Instit, (U) Unused [ ]

Use of well: (A) Anode, (D) Drain, (G) Seismic, (O) Obs, (P) Oil-gas, (R) Recharge, (S) Spring, (T) Test, (U) Unused, **(W) Withdraw** (marked), (X) Waste, (Z) Destroyed [ ]

DATA AVAILABLE: Well data [3] Freq. W/L meas.: INVENTORY [1] Field aquifer char. [ ]

Hyd. lab. data: ______ [ ]

Qual. water data; type: complete [C]

Freq. sampling: IRREGULAR [I] Pumpage inventory: yes no (circled) period: ______ [ ]

Aperture cards: ______ yes [ ]

Log data: GEOLOGIC [ ]

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 1679 ft [1679] Meas. rept REPT [R]

Depth cased: (first perf.) 1502 ft [ ] Casing type: ______; Diam. 10 in [10]

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, **(X) open hole** (circled), (Z) other [X]

Method Drilled: (A) air rot., (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) other [ ]

Date Drilled: 1947 [1947] Pump intake setting: ______ ft [ ]

Driller: THORPE WELL CO. (name), DES MOINES (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other [ ] Deep Shallow [ ]

Power (type): diesel, elec, nat gas, gasoline, hand, LPG gas, wind; H.P. ______ [ ] Trans. or meter no. ______

Descrip. MP LSD ______ ft above below lsd, Alt. MP 1261

Alt. LSD: 1261 [1261] Accuracy: (source) ALT [ ]

Water Level 340 ft above below MP; Ft above below lsd [340] Accuracy: DRL [ ]

Date meas. 8/1947 [847] Yield: 20 gpm [20] Method determined [ ]

Drawdown: 180 ft [180] Accuracy: DRL [ ] Pumping period ______ hrs [ ]

QUALITY OF WATER DATA: Iron 1.5 ppm [5] Sulfate 1810 ppm [9] Chloride 145 ppm [3] Hard. 1570 ppm [9]

Sp. Conduct 3720 K x 10[6] [6] Temp. ______ °F [ ] Date sampled 1/19/65 [ ]

Taste, color, etc. ______

0 31W-27dcb

Well Number 15 N/S 094 24 14.1

d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD

Physiographic Province: CENT. LOW. Section: DISS TILL

PLAIN

Drainage Basin: DES MOINES 2 5 B Subbasin: ______

Topo of well site: local depression (D), flat surface (F), hilltop (H), hillside (S), terrace (T), valley flat (V), ______

MAJOR AQUIFER: DEVONIAN (system), ______ (series) D | aquifer, formation, group X

Lithology: CHERTY DOL Q D Origin: MARINE Aquifer Thickness: 399± ft

Length of well open to: 399 ft Depth to top of: 1290 ft A 2

MINOR AQUIFER: ______ (system), ______ (series) | aquifer, formation, group

Lithology: ______ Origin: ______ Aquifer Thickness: ______ ft

Length of well open to: ______ ft Depth to top of: ______ ft

Intervals Screened: ______

Depth to consolidated rock: 180 ft 1 8 0 Source of data: SAMPLES

Depth to basement: ______ ft Source of data: ______

Surficial material: TILL Infiltration characteristics: ______

Coefficient Trans: ______ gpd/ft Coefficient Storage: ______

Coefficient Perm: ______ gpd/ft^2; Spec cap: ______ gpm/ft; Number of geologic cards: ______

Casing

10"	218'
5/8"	311'7"
8 1/4"	308'10"
6" steel	86'6"
6" WI	295'6"
6"	165'10"
	1283' ±

GPO 844-725

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Local Well No. 078-31W-27DCB
Aquifer Code(s) D X
Owner's Name MENLO CITY WELL (1947)
W Number 02974

Card Q

State: IOWA (19) (1-2) County: GUTHRIE (39) (3-4) Town: MENLO, IOWA

Well No. Latitude 413115N (5-11) Longitude 0942414 (12-18) Seq. No. 1 (19) Date M 12 D 10 Y 47 (20-25)

Sampling Depth 1679 (26-29) Type 1 (30) Kx10^6 (31-35) pH 7.9 (36-38) Temp. °F (39-41)

SiO_2 (42-44) Ca 299 (45-49) Mg 100 (50-53) Na +K 360 (54-58) K .C (59-61)

HCO_3 164 (62-65) CO_3 0 (66-67) SO_4 1720 (68-72) Cl 17 (73-78) Source No. 3 (79) Q (80)

Card R

Duplicate Columns 1-25 from Card Q

F 0 (26-28) NO_3 0 (29-32) PO_4 (33-35) B (36-38) Al (39-41) Fe .19 (42-45)

Mn 0 (46-49) Cu (50-52) Pb (53-54) Zn (55-57)

Determined Solids 2770 (58-63) Calc. Solids (64-69) Ca,Mg 1160 (70-73) Hardness Non-Carb. 1027 (74-77)

Color (78-79) No. R (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26-28) I (29-31) Alk. as $CaCO_3$ 134 (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. S (80)

Recorded by: D. AARONSON

Punched by: I Date:

Published:

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Local Well No. 078-31W-27 DCB
Aquifer Code(s) D X
Owner's Name MENLO CITY WELL (1947)
W Number 02974

Card Q

State: IOWA (19) County: GUTHRIE (39) Town: MENLO, IOWA

Well No. 413115N (Latitude, 5–11) 0942414 (Longitude, 12–18) Seq. No. 1 (19) Date M D Y: 01 25 52 (20–25)

Sampling Depth 1679 (26–29) Type 1 (30) Kx10^6 2180 (31–35) pH 7.4 (36–38) Temp. °F (39–41)

SiO_2 (42–44) Ca 188 (45–49) Mg 59 (50–53) Na +K 259 (54–58) K C (59–61)

HCO_3 272 (62–65) CO_3 0 (66–67) SO_4 967 (68–72) Cl 45 (73–78) Source No. 3 (79) Q (80)

Card R

Duplicate Columns 1-25 from Card Q

F 3.3 (26–28) NO_3 13 (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe .2 (42–45)

Mn 0. (46–49) Cu (50–52) Pb (53–54) Zn (55–57)

Determined 17600 (58–63) Solids Calc. (64–69) Ca,Mg 712 (70–73) Hardness Non-Carb. 489 (74–77)

Color (78–79) No. R (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ 223 (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. S (80)

Recorded by: D. AARONSON

Punched by: _____ Date: _____

Published: _____

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Local Well No. 078-31W-27DCB
Aquifer Code(s) D X
Owner's Name MENLO CITY WELL (1947)
W Number 02974

Card Q

State: IOWA (19) County: GUTHRIE (39) Town: MENLO, IOWA

Well No. Latitude 413115N (5–11) Longitude 0942414 (12–18) Seq. No. 1 (19) Date M D Y 020862 (20–25)

Sampling Depth 1679 (26–29) Type 1 (30) Kx10^6 3370 (31–35) pH 7.3 (36–38) Temp. °F (39–41)

SiO_2 16. (42–44) Ca 400. (45–49) Mg 134. (50–53) Na 318. (54–58) K 19. (59–61)

HCO_3 220 (62–65) CO_3 0 (66–67) SO_4 1830. (68–72) Cl 156. (73–78) Source No. 3 (79) Q (80)

Card R

Duplicate Columns 1-25 from Card Q

F .30 (26–28) NO_3 .4 (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe .17 (42–45)

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

Solids Determined 3370 (58–63) Calc. (64–69) Hardness Ca,Mg 1550 (70–73) Non-Carb. 1370 (74–77)

Color (78–79) No. R (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ 180 (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. S (80)

Recorded by: D. AARONSON

Punched by: _____ Date: _____

Published: _____

078-31W-27 DCB

DX

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

W-2974

Water Quality
(ppm)

Card Q

State: IOWA (1 2) County: GUTHRIE (3 4) Town: MENLO

Well No. Latitude (5–11) Longitude (12–18) Seq. No. (19) Date M D Y (20–25)

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

SiO_2 (42–44) Ca (45–49) Mg (50–53) Na (54–58) K (59–61) Source No. (79–80)

HCO_3 (62–65) CO_3 (66–67) SO_4 (68–72) Cl (73–78)

Card R

Duplicate Columns 1-25 from Card Q

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

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

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

Color (78–79) No. (80)

Card S

Duplicate Columns 1-25 from Card Q

Br (26–28) I (29–31) Alk. as $CaCO_3$ (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. (80)

Recorded by: RW

Punched FCH

Punched by: _____ Date: _____

Published: _____

WALTER L. BIERRING, M. D.
COMMISSIONER

State of Iowa
Department of Health
Des Moines

DIVISION OF
PUBLIC HEALTH ENGINEERING
AND INDUSTRIAL HYGIENE

Nov. 9, 1938

Dr. H. G. Hershey,
Asst. State Geologist,
Iowa Geological Survey,
Iowa City, Iowa.

Dear Dr. Hershey:

I was in Menlo day before yesterday with Mr. Delay, Engineer for the new water development at Menlo. He asked me to accompany him to look over proposed testing in the valley immediately south of the town.

The proposed site of development is near the head waters of this particular drainage area and at the point of the proposed development the valley is very narrow with no indication of any flood plain. It occurred to me that there was little likelihood of any sand or gravel deposit laid down by surface streams and that the likelihood of finding water-bearing sand or gravel in the drift would be no greater in this than in other locations already tested.

As you know, they have put down three drill holes, two about a hundred feet in depth and one to a depth of about 230 feet. I did not see Mr. McCutcheon, however, was informed that cuttings had been sent to you. In one of the holes, about ten feet of sand and gravel was encountered which yielded about twelve gallons a minute. The other two holes were yellowish-gray clay with a little sand and gravel mixed with the clay, one of them extending to 230 feet.

A third hole is being drilled immediately to the north of the test hole on the east edge of town. If they fail to find water at this place, they propose to test out the area along the creek south of town.

Very truly yours,

A. H. Wieters, Director,
Division of Public Health Engineering.

AHW/MM

December 16, 1938

Mr. A. H. Wieters, Director
Division of Public Health Engineering
Department of Health
Des Moines, Iowa

Dear Mr. Wieters:

I have had no word in regard to the underground water and drilling situation at Menlo since your letter of November 9, and I appreciate your remarks on developments at that time.

My first recommendation at Menlo was to drill one or two test holes to the top of the Pennsylvanian in an attempt to establish the presence or absence of sand within or at the base of the drift and to ascertain if the Dakota sandstones and conglomerates were present. Less than four miles north of Menlo at a much lower elevation there is a thick exposure of the Dakota formation which would have made an excellent acquifer if it had extended as far south as Menlo.

The test drilling showed that no good acquifer was present above the top of the Pennsylvanian and I suggested that the best possibility of obtaining an adequate water supply was to test some distance north of town for the south extension of the Dakota in that area. I pointed out at that time that a final well developing the Dakota might be a mile or more north of town and was informed that the expense of piping the water that far would be out of the question.

It was my understanding that the town wished to exhaust every possibility in the near vicinity of town. Since the southern-most well drilled, up to the time of my last visit, had shown the most promise, I felt that one or at the most two more holes south of town would be advisable. I felt as you do that the topographic indications there are not promising and that the chances of finding thick sand or gravel are not good, but it appeared to be the best untested site. I am still of the opinion that the most satisfactory water supply available in the area is the Dakota sandstone or conglomerate, but there appears to be a possibility that a

Mr. Wieters:

large diameter, shallow dug well may serve the purpose at the locality of the test hole which you say showed about ten feet of sand and gravel which yielded about twelve gallons of water per minute. I am very sorry that I have not had an opportunity to answer this letter adequately before this time.

Very truly yours,

HGH:LM

H. G. Hershey

January 27, 1945

Recent revised for Brooks Jan 1946

Mr. Sylvan Ames
Lincoln, Iowa

Dear Mr. Ames:

We have examined the data in our files concerning ground water conditions at Menlo. The results are not encouraging.

As you know it is very difficult to obtain water at moderate depths in this area in sufficient quantity for town supplies. Glacial sands and gravels have generally been the most satisfactory source but large production from them is mainly limited to stream valleys. The town of Menlo is on the upland near only the headwaters of streams.

The last testing program of which we have record was in 1939 when several test holes were put down. A town well was completed at 82½ feet in the drift and a pumping test was run on March 22, 1939. Results show that the static level was about 70 1/3 feet and 16¼ g.p.m. were produced with a drawdown of about 6 feet. We have no record to indicate whether or not this is the only present source of water for the town. The drift has been rather thoroughly prospected for water and probably not much more than the amount produced from the well just discussed could be obtained.

The Pennsylvanian sandstones contain small quantities of water suitable for farm supply in some places but there is no evidence that they will yield enough for the needs of the town.

The Mississippian rocks also produce rather small quantities of water in this region. The well which you drilled for the town of Jamaica in 1939 may be considered about the average for these rocks. It penetrated the entire section of Mississippian rocks and yet only 15 g.p.m. was obtained with a 222-foot drawdown. In the north central part of the state the Mississippian rocks are commonly good aquifers, but it appears unlikely that a much larger quantity of water than 15 to 25 g.p.m. could be obtained from these rocks at Menlo.

The Devonian rocks generally yield moderate quantities of water in this region. The town of Adair has a well drilled in 1940 to a depth of 1738'10" into these rocks. The original pumping test obtained 44 g.p.m. with a drawdown of 267 feet from a static level of 444 feet. Subsequently the well was acidized and production was increased to 72 g.p.m. with a drawdown of 56 feet. The static level also rose ten feet to 434 feet.

The water is of undesirable quality as it is very highly mineralized. The hardness is 2413 p.p.m. and sulphates, chlorides, fluorine and iron are all very high. Indirectly we have heard that the well has been abandoned because of the poor quality of the water.

On the other hand, if sufficient water could be found within the upper 200 feet of the Devonian rocks the quality probably would be very much better. Although the hardness is 888 p.p.m. and other mineral constituents are also high from this horizon in a well near Redfield, Dallas County, still it is much better than the lower water. The amount of water available from this horizon is probably not large as no well of which we have record in this area has been completed in it. At the Hunt #1 Moncelle well near Redfield some water was encountered in the Mississippian rocks although no test was made.

Deeper drilling should encounter water in the Galena, St. Peter, Prairie du Chien, and Jordan formations. Prospects for picking up very much water in the Galena are not very promising, although an estimated 25 to 30 g.p.m. has been reported. The hardness is about the same as the upper Devonian water but the iron is likely to be lower and the sulphates higher.

Apparently the St. Peter sandstone is an undependable aquifer in this part of the State. Drilling was carried to lower water-bearing beds at Stuart and Greenfield. At the Hunt #1 Moncelle well, although no test was made, a large quantity of water was believed to be present in the St. Peter and the driller estimated that 100 g.p.m. might possibly be produced from it.

Little is known about the water-bearing character of the Prairie du Chien formation as few wells have penetrated it and none has been completed in it in the general area around Menlo. Probably a moderate quantity of water could be produced from it.

The Jordan sandstone is a good aquifer and at Stuart an average of 212 g.p.m. was produced from it with a drawdown of less than 52 feet. Almost certainly an adequate water supply could be obtained from this formation at Menlo.

The quality of the St. Peter, Prairie du Chien and Jordan waters is apparently similar. The hardness may be expected to be between 800 and 900 g.p.m., with high sulphate but low iron. Fluorine is likely to be above 1 p.p.m. from the St. Peter but less than that figure in the underlying waters.

Of course the primary drawback to the pre-Devonian waters is their depth. The top of the Devonian is expected at about 1215 feet, the Galena at 2150 and the St. Peter at 2360 feet. The Jordan is about 350 feet below the top of the St. Peter sandstone in the Menlo area. A forecast of the generalized geologic section is inclosed on a separate page.

If you have any questions concerning these data or if we can be of further assistance we shall be glad to hear from you.

Very truly yours,

H. G. Hershey

SEH:KNB

Inc.

Forecast of Generalized Geologic Section at Menlo

Assumed starting elevation 1265 feet at R. R. Station

	Thickness	From	To
Pleistocene system - drift, till and some sand and gravel	200-250	0	200-250
Pennsylvanian system - shale, some sandstones, bands of limestone and coal	505-555	200-250	755
Mississippian system - limestone, cherty dolomite, some shale	420	755	1175
Maple Mill shale	40	1175	1215
Devonian system			
Limestone	80	1215	1295
Dolomite, gypsum below 1475 feet	565 ~~570~~	1295	1860 ~~1865~~
Ordovician system			
Maquoketa formation - red shale at top followed by cherty dolomite	270 ~~285~~	1860 ~~1865~~	2130 ~~2150~~
Galena formation - dolomite	125 105	2130 ~~2150~~	2255
Decorah-Platteville formations - limestone and shale	105	2255	2360
St. Peter formation - sandstone	25	2360	2385
Prairie du Chien formation - sandy and cherty dolomite	320	2385	2705
Cambrian system			
Jordan formation sandstone		2705	

Feb 9, 46

LAYNE-WESTERN COMPANY

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BRANCHES - REPRESENTATIVES
THROUGHOUT THE COUNTRY

AMES, IOWA

JAN 29 1946

January 28, 1946

Dr. H. G. Hershey
Iowa Geological Survey
Geology Annex Building
Iowa City, Iowa

Dear Dr. Hershey:

We would appreciate your forecast on the depth required at Menlo, Iowa, to secure 20 GPM.

The shallow well which we recently completed is not satisfactory and the town is now giving some consideration to a deep well.

Yours very truly

LAYNE-WESTERN COMPANY

R. W. Brooks

rwb/mdc

February 12, 1946

Mr. R. W. Brooks
Layne-Western Company
P. O. Box 662
Ames, Iowa

Dear Mr. Brooks:

The forecast for a deep well at Menlo which you requested has been prepared. A generalized log of the anticipated geologic section is enclosed on a separate page.

As you know it is very difficult to obtain water at moderate depths in this area in sufficient quantity for town supplies. Glacial sands and gravels have generally been the most satisfactory source, but large production from them is mainly limited to stream valleys. The sands and gravels present in the vicinity of Menlo apparently will not yield an adequate supply.

The Pennsylvanian section is here composed principally of shale, but some limestone and sandstone beds are present which may be water-bearing. The sandstones vary greatly in thickness from place to place, and unfortunately we have no record at Menlo to indicate whether a thick sandstone is present or not. At Greenfield sandstones in the lower part of the section are reported to have yielded a small quantity of water. East of Redfield lower Pennsylvanian sandstones are relatively close to the surface, and considerable quantities of water are available from them. If present at Menlo they may yield a satisfactory supply, although they will be strongly mineralized.

The Mississippian rocks produce rather small quantities of water in this region. A well drilled for the town of Jamaica may be considered about the average for these rocks. It penetrated the entire Mississippian section, yet only 15 g.p.m. was obtained with a drawdown of 222 feet. Some water was reported in the Mississippian limestones at Greenfield, but apparently little was encountered at Adair or Stuart. Nevertheless, if as much as 15 g.p.m. could be obtained initially, production might be increased enough by acidizing to meet the needs of the town.

The Devonian system yields moderate quantities of water in this region. The town of Adair has a well drilled to a depth of 1739 feet into these rocks. The original pumping test obtained 44 g.p.m. with a drawdown of 267 feet from a static level of 444 feet. Subsequently the well was acidized and production was increased to 72 g.p.m. with a drawdown of 56 feet. The static level rose 10 feet to 434 feet. Dexter also obtained considerable water from the Devonian limestones at a depth of 1240 feet.

Unfortunately the water is of undesirable quality as it is very highly mineralized. Indirectly we have heard that Adair has abandoned its deep well because of this fact. Dexter, on the other hand, uses its deep well to supplement their gravel wells when necessary. Near Redfield water from the upper part of the Devonian limestones was somewhat less highly mineralized than that from Adair and Dexter although the hardness is still 888 p.p.m. If a well should be drilled to the Devonian limestones every effort should be made to obtain water in the upper 100 to 150 feet of the system above the gypsum-bearing horizons.

Deeper drilling should encounter water in the Galena, St. Peter, Prairie du Chien, and Jordan formations. Probably 25 to 30 g.p.m. could be obtained from the Galena dolomites. The hardness is about the same as the upper Devonian water, but the iron is likely to be lower and the sulphates higher.

Apparently the St. Peter sandstone is an undependable aquifer in this part of the State. Drilling was carried to lower water-bearing beds at Stuart and Greenfield, but at the Hunt #1 Moncelle well near Redfield, the driller estimated that 100 g.p.m. could be obtained from the St. Peter sandstone. Undoubtedly sufficient water could be obtained from either the Prairie du Chien or the Jordan formations.

The quality of water from the St. Peter, Prairie du Chien and Jordan formations is apparently similar. The hardness may be expected to be between 800 and 900 p.p.m. with high sulphates but low iron. Fluorine is likely to be above 1 p.p.m. from the St. Peter but less than that from the underlying waters.

If you have any questions concerning this information or if we can be of further assistance we shall expect to hear from you. Naturally we shall be very much interested in following any drilling which might be done at Menlo.

Very truly yours,

H. G. Hershey

HGH:SEH:BH

STATE OF IOWA
IOWA GEOLOGICAL SURVEY
GEOLOGY ANNEX
IOWA CITY

Forecast of Generalized Geologic Section at Menlo

Assumed starting elevation 1265 feet at R. R. Station

	Thickness	From	To
Pleistocene system - drift, till and some sand and gravel	200-250	0	200-250
Pennsylvanian system - shale, some sandstones, bands of limestone and coal	505-555	200-250	755
Mississippian system - limestone, cherty dolomite, some shale	420	755	1175
Maple Mill shale	40	1175	1215
Devonian system			
Limestone	80	1215	1295
Dolomite, gypsum below 1475 feet	565	1295	1860
Ordovician system			
Maquoketa formation - red shale at top followed by cherty dolomite	270	1860	2130
Galena formation - dolomite	125	2130	2255
Decorah-Platteville formations - limestone and shale	105	2255	2360
St. Peter formation - sandstone	25	2360	2385
Prairie du Chien formation - sandy and cherty dolomite	320	2385	2705
Cambrian system			
Jordan formation sandstone		2705	

Guthrie

Dec 5. 1947
JB Cooper

Menlo —

Pete Allen (driller)

Pump bottom at 540'
Pumped 30 min - Tues — Leather valved - Dec 4
Pumped 1½ hr - Fri — Bucket full qgs. - Dec 5

about 10-15 g/min - falling qgs.
water cloudy to dirty — no samples taken.

Allen calling T. Thorpe Dec. 5 to determine next step. Allen does not believe further testing necessary at this level as water is insignificant in quantity.

There is a water samples bottle at Menlo mill site

Information obtained from Thorpe records by C.W. Lane in 1951

SW1 340'
PW1 520' @ 20 gpm
24 hr test

Guthrie
9/20/46

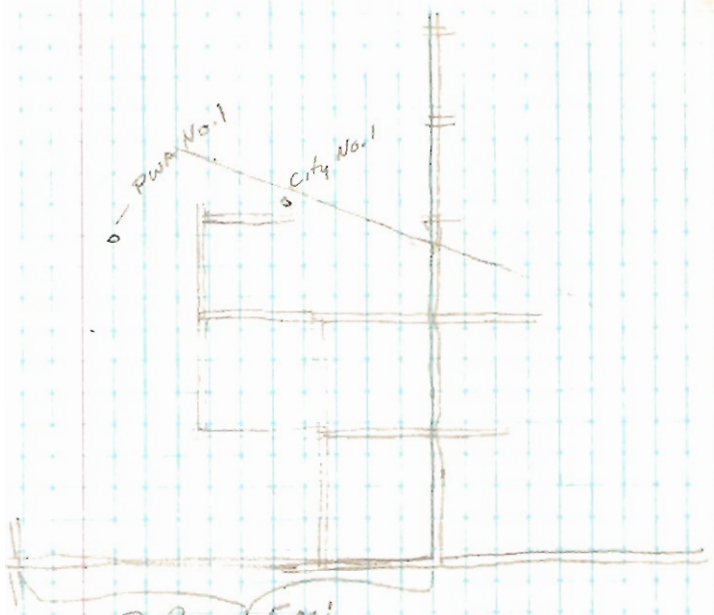
MENLO, IA.

City Well No. 1 & PWA well 1 is about level with RR Sta

El. 1261'

= #4 on S 400' about 15' below Sta

1246



PWA	#1	-	NW¼	SE¼	SW	Sec 27	T 78 N	R 51 W
City	#1	-	NE	SE	SW			
Test	4 on S	-	NW	SW	SE			

Menlo — Apr. 19, 1948

Menlo town well.

T.D. 1679' following casing listed on bill depths not known

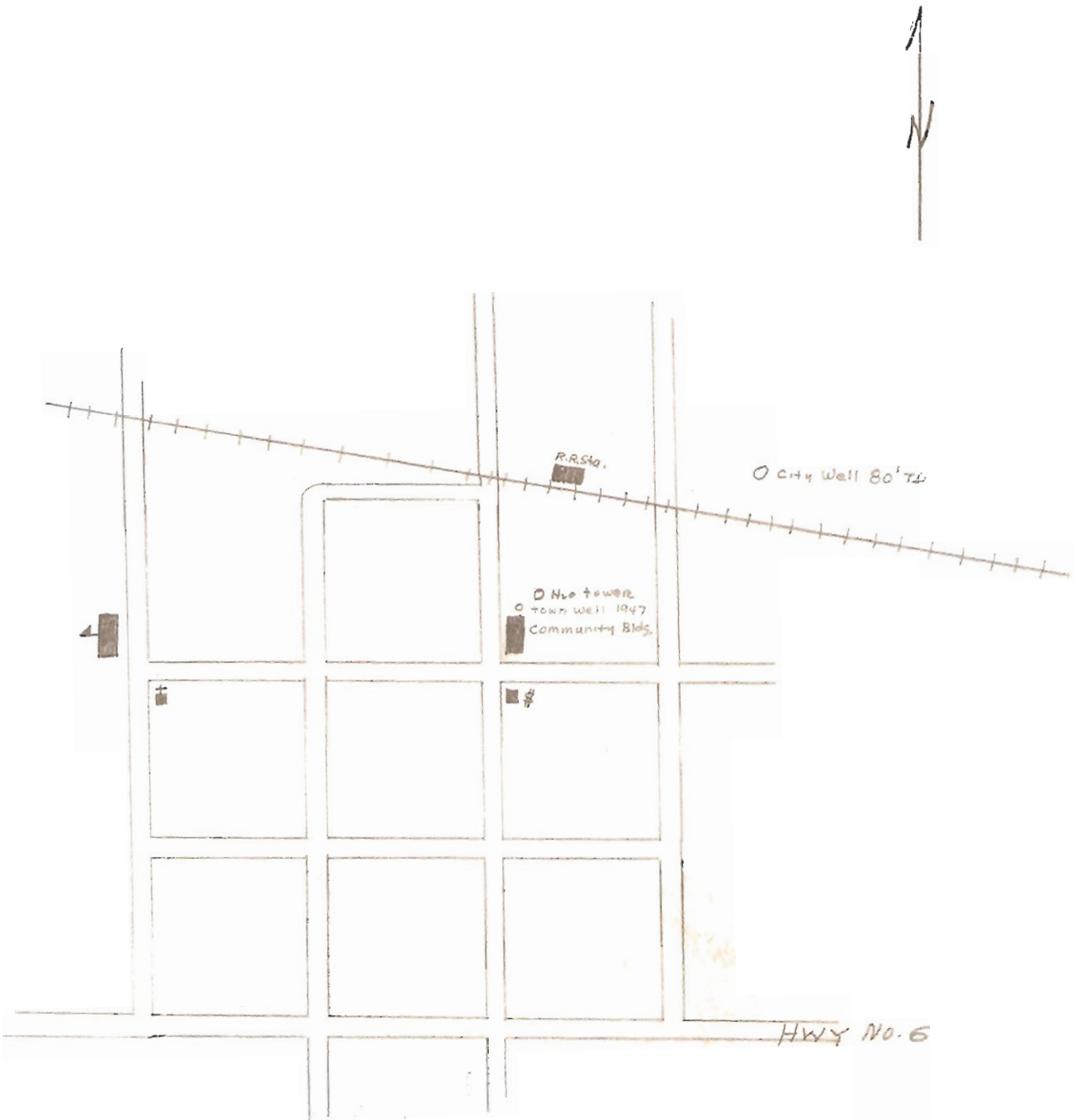
165'10" of 6" pipe
218'10" of 10" pipe
311'7" of 9⅝" pipe
308'10" of 8¼" pipe

86'6" of 6" steel pipe
295'6" of 6" Cem wrought iron pipe

+ 350'±

Picked up part of samples at Hope well Co and bulk of samples at town hall in Menlo.

W.E. Hale



Plat of town of MENLO, IA. Showing Well Locations

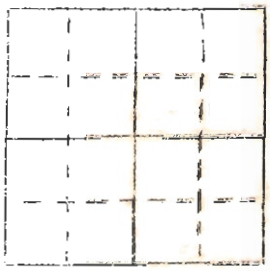
No Scale

JBC 5-8-1947

W-2974

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

RECORD OF WELL



Location:

Town: Menlo (N E / S W); County Guthrie

NW-SW-SE sec. 27 T. 78 N., R. 31 W. Beaver Twp.

Well name and number Menlo - City Well

Owner City of Menlo Address Menlo, Iowa

Tenant _____ Address _____

Contractor Thorpe Well Co Address Des Moines, Iowa.

Drillers _____

Drilling dates Nov - 1946 - Aug - 47

Well data:

Elevations: Drilling curb _____ feet; Land surface _____ feet

Determined by _____

Topographic position _____

Total depth: Reported 1679 feet, Measured _____ feet

Drilling method Cable tool

Hole and casing data 218' 12" & 10" pipe
(Give amount, size, kind, and depth of all casing; type and position of seals and packers; cementing; how finished--perforated pipe, screen, gravel pack, open hole, etc.)

Original depth to water 340 ft. ~~above~~ below _____ Date _____

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

Sources of water: Principal _____; Others _____

Production data: Date _____

Static depth to water 340 Measuring point _____

Pumping level 520 at 20 g.p.m.

_____ _____

_____ _____

_____ _____

Specific capacity _____ 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				
Total solids				
Insoluble matter				
Alkalinity (Meo)				
Alkalinity (Phn)				
pH				
Fe_2O_3+ Mn_2O_3+Al_2O_3				
Alkali as sodium				
Calcium				
Magnesium				
Iron (unfiltered)				
Manganese				
Nitrate				
Fluoride				
Chloride				
Sulfate				
Bicarbonate				
Hardness (ppm)				
Hardness (gpg)				

Remarks _____

Laboratory data: Sample storage location CD4-1,2,3,4

Sample range 0-1640 No. spls. 276 No. dupls. & cond. 274-F-G

Spls. prepared by RKS Washed range 265-1640 by EMR

Driller's log and cond. None

Insoluble residues: Prepared by _____ Studied by _____ Strip log _____

Microscopic study 0-1670 strip log 10-14-48

Gen. log _____ Correl. by K. Webber

2974

Name Menlo city well

Loc: NW SW SE 27-78N-31W, Guthrie Co

Drilling depth: 1290' base Maple Mill

Drilled: Thorpe Nov 1946 - Aug 1947

Log: W-2974 Wehner

Remarks: Well was completed in C.V. fm at 1677

Elevation		1261'	
Formations	Depth	Top	Base
St. Louis	763	498	
Warsaw	825	436	
Keokuk	915	346	
Burl.	970	291	
Gil. City	1125	136	
Hampton	1135	126	
No. Hill	1230	31	
Maple Mill	1245	16	
Dev.			
Lime Crk	1290	-29	