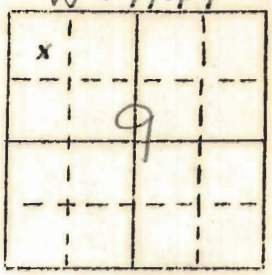
IOWA GEOLOGICAL SURVEY
In Cooperation with U. S. Geological Survey

W-1149

RECORD OF WELL



Location:

Town: Wiota (N E / S W); County Cass

NW NW sec. 9 T. 76 N., R. 35 ~~E.~~ W. Franklin Twp.

Well name and number Town Well No. 1

Owner Town of Wiota Address

Tenant Address

Contractor Thorpe Well Co. Address Des Moines

Drillers G. L. Poffenberger

Drilling dates March 25 to April 1, 1940

Well data:

Elevations: Drilling curb 1244 feet; Land surface 1242 feet

Determined by H. G. H

Topographic position upland slope

Total depth: Reported 156 feet, Measured feet

Drilling method a cable tool gravel packed

Hole and casing data 141' of 8-inch black pipe from +1'3" to 139'9". 15' of 6-inch Thorpe screen from 137 to 152 ft. Screen in 8-inch hole with gravel packed in annular space between 6" screen and 8" hole

(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 53' ft. ~~above~~ below Date April 1940

Original elevation of water level 1191 ft.; Source of data H G Henshey

Sources of water: Principal Dakota; Others Pennsylvanian

Production data: Date April 8, 1940

Static depth to water 53 Measuring point

Pumping level 58 at 43 g.p.m.

Specific capacity 8.6 g.p.m. per ft. drawdown; Temperature 51 3/4 °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	April 8 1940			
Sampled by	H G Hershey			
Total solids	222			
Insoluble matter	8.0			
Alkalinity (Meo)	160.0			
Alkalinity (Phn)	0.0			
pH	7.0			
Fe_2O_3+ Mn_2O_3+Al_2O_3	4.4			
Alkali as sodium	2.2			
Calcium	56.0			
Magnesium	10.6			
Iron (unfiltered)	0.4			
Manganese	Tr			
Nitrate	13.00			
Fluoride	Tr			
Chloride	7.0			
Sulfate	8.0			
Bicarbonate	195.2			
Hardness (ppm)	184			
Hardness (gpg)	10.8			

Remarks taken during pumping test

Laboratory data: Sample storage location

Sample range 0-156 No. spls. 33 No. dupls. & cond. 32 pairs

Spls. prepared by Summerford Washed range by

Driller's log and cond. none

Insoluble residues: Prepared by Studied by Strip log

Microscopic study 0-156 E.S. strip log 3/25/46 E.S.

Gen. log Correl. by E. Schultz

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Local Well No. 076-35W-09BB
Aquifer Code(s) NX KIDI
Owner's Name WIOTA CITY WELL #1 (1940)
W Number 01149

Water Quality
(ppm)

Card Q

State: IOWA (19) County: CASS (15) Town: WIOTA, IOWA

Well No. Latitude 412400N (5–11) Longitude 0945320 (12–18) Seq. No. 1 (19) Date M D Y 02 28 60 (20–25)

Sampling Depth 156 (26–29) Type 1 (30) Kx10^6 400 (31–35) pH 7.2 (36–38) Temp. °F 42 (39–41)

SiO_2 22. (42–44) Ca 69. (45–49) Mg 12. (50–53) Na 7.4 (54–58) K 1.1 (59–61)

HCO_3 177 (62–65) CO_3 0 (66–67) SO_4 38. (68–72) Cl 11. (73–78) Source No. 3 Q (79–80)

Card R

Duplicate Columns 1-25 from Card Q

F .3 (26–28) NO_3 47. (29–32) PO_4 (33–35) B (36–38) Al (39–41) Fe .58 (42–45)

Mn .14 (46–49) Cu (50–52) Pb (53–54) Zn (55–57)

Solids Determined 298 (58–63) Calc. (64–69) Hardness Ca,Mg 223 (70–73) Non-Carb. 78 (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 $CaCO_3$ 145 (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: T Date:

Published:

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Local Well No. 076-35W-09BB
Aquifer Code(s) NX KIDI
Owner's Name WIOTA CITY WELL #1 (1940)
W Number 01149

Card Q

State: IOWA (19) County: CASS (15) Town: WIOTA, IOWA

Well No. Latitude 412400N (5–11) Longitude 0945320 (12–18) Seq. No. 1 (19) Date M D Y 04 08 40 (20–25)

Sampling Depth 156 (26–29) Type 1 (30) Kx10⁶ (31–35) pH 7.0 (36–38) Temp. °F 52 (39–41)

SiO_2 (42–44) Ca 56 (45–49) Mg 11 (50–53) Na + K 22 (54–58) K .C (59–61)

HCO_3 195 (62–65) CO_3 (66–67) SO_4 80 (68–72) Cl 70 (73–78) Source No. 3 Q (79–80)

Card R

Duplicate Columns 1-25 from Card Q

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

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

Solids Determined 222 (58–63) Calc. (64–69) Ca,Mg 184 (70–73) Hardness Non-Carb. 24 (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 $CaCO_3$ 160 (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:

IOWA
STATE DEPARTMENT OF HEALTH
DIVISION OF PUBLIC HEALTH ENGINEERING
DES MOINES

2

Town Wiota, Iowa Date July 25, 1939

Report on Water Supply (New Development)

By E. G. Fiala Approved Director
Division of Public Health Engineering

Pursuant to a request from Mr. R. W. Gearhart, Consulting Engineer of Cedar Rapids, the writer accompanied by Mr. F. W. Pickworth visited in Wiota for the purpose of discussing the proposed development with the town officials and at the same time investigate a number of well sites that could be considered satisfactory for development.

At the present time the Town of Wiota does not have a municipal water supply. The water for the community is taken from a number of individual wells and no information is available as to the quality of these waters.

For some time the citizens of Wiota have been discussing the water supply. However, a definite program has never been formulated. It is thought at this time that the public favors the water works improvement and consequently the local officials engaged Mr. Gearhart of Cedar Rapids to work out the engineering details of the proposal.

During this visit the writer had an opportunity to discuss in a general way the minimum requirements governing water supply development with several members of the council. A survey of several sites was then made by the writer in company with Mayor Jordan and a member of the council. As a matter of record and for the information of those interested, these well sites will be discussed in their order of preference as follows:

LOCATION NO. 1. This well site is located on the main street in the business district, on property known as the City Park. The topography about this area is such that adequate drainage facilities are provided, and the property is rather high and easily accessible. The disadvantage of the location, however, is that there are a number of earth pit toilets located within the immediate vicinity. Approval is therefore granted this location subject to the following:

1. All earth pit toilets located within 250 feet of the proposed well shall be removed and replaced with water-tight concrete vaults or approved type septic tanks.

2. The top of the finished well shall extend to a point above the existing street. It is believed that approximately three and one-half or four feet above the existing ground level should be sufficient.

3. In the event the well is constructed on the site as pointed out to Mayor Jordan and the member of the council, approximately three and one-half or four feet of fill would be necessary at the east end of the lot.

4. Suitable construction shall be provided for the permanent well so as to exclude any shallow or surface water.

In the event the well is developed at this site it is suggested that the permanent well be located approximately 60 feet north of the alley and about 130 feet east of the main street.

LOCATION NO. 2. This well site is located west of the main street and in the residential section. The site consists of a vacant lot owned by Mr. M. T. Neiens. This particular area is well drained. However, there are a number of earth pit toilets located within the immediate vicinity. It is believed a suitable supply can be developed at this site. However, there are a number of defects that must be corrected in order that this site can be approved. The recommendations offered are as follows:

1. Remove all earth pit toilets within a radius of 250 feet of the proposed well and substitute with either watertight concrete vaults or approved type septic tanks.

2. Remove the old building located on the east end of the lot and provide suitable fill for the area immediately about the well. It is believed that possibly enough filling material can be graded from the east end of the lot.

3. Final approval of this site, of course, is dependent upon the type of construction provided for the permanent well.

LOCATION NO. 3. This well site is directly north of Location No. 2, on vacant property located in the residential district. The property is now owned by Mr. L. L. Reed. The area investigated consists of the south half of this property. The site is well drained and on rather high ground. However, there are also a number of earth pit toilets within the restricted distance. Approval can be granted this site subject to the same recommendations as governing Location No. 2.

In view of the fact that the number of well sites in Wiota are rather limited and also the fact that no sewerage system is provided, the earth pit toilets seem to be the most dangerous hazard to contend with.

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Wiota, Iowa
Water Supply
New Development

7-25-39

It is felt, however, that these conditions can be corrected at a reasonable cost and that a satisfactory supply could be developed at any of the locations above mentioned. It is the writer's opinion that Location No. 1 would be the most suitable and is therefore recommended as such.

The present proposal is to sink a deep well eight inches in diameter to a depth of approximately 150 feet. Most of the existing wells in and about Wiota are of the drilled type penetrating to a depth around 120 to 125 feet. It is the writer's opinion that an ample supply can be obtained from any of the sites investigated.

It is believed that the requirements of the State Department of Health are well understood by the local officials and the writer has been assured that full cooperation will be extended this office relative to this proposal. Mr. Gearhart will prepare plans and specifications for this development and submit them to this office for approval.

Respectfully submitted,

E. G. Fiala
Assistant Engineer

EGF/MM

WALTER L. BIERRING, M. D.
COMMISSIONER

State of Iowa
Department of Health
Des Moines

DIVISION OF
PUBLIC HEALTH ENGINEERING
AND INDUSTRIAL HYGIENE

August 22, 1939.

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

Should be North

Dear Mr. Hershey:

This will acknowledge receipt of your letter of August 18th with reference to the water supply at Wiota.

You are quite right that the town is situated on Turkey Creek, which ultimately empties into the Nishnabotna River. However, the town itself lies to the south of Turkey Creek on the upland and the difference in elevation from the valley to the highway is considerable. We propose to drill the well on this hill. My estimate of 145 feet is based upon the existing wells located on the hill. The school well, I believe, is 125 feet deep and several wells south toward town are also 125 to 135 feet deep. I agree with you that if the well was to be located in the valley, approximately 35 or 40 feet would be ample for depth, but the whole valley is subject to flooding and not considered the most desirable for well development, particularly in view of the fact that an ample supply is now being taken from deep wells located on the hill.

I am enclosing herewith a copy of a report of a survey conducted in Wiota, which I trust may be of some value to you. We shall appreciate receiving your forecast and comments when completed.

Very truly yours,

E. G. Fiala

E. G. Fiala,
Assistant Engineer.

EGF/MM
Enc.

November 21, 1939

Mr. Ralph W. Gearhart
349 21st Street S. E.
Cedar Rapids, Iowa

Dear Mr. Gearhart:

In response to your recent request for information regarding ground water possibilities at Wiota, Cass County, Iowa, I take pleasure in submitting the following report based on a preliminary field study and data in the files of the Iowa Geological Survey.

Glacial drift is at the surface at Wiota, but no information is available as to whether the Dakota sandstone is present or if Pennsylvanian coal measure shales immediately underlie the glacial drift. In any event, there is a water-bearing sand or sandstone or both at the base of the drift.

When I was in Wiota Mr. Carl Reed, the Town Clerk, gave me a location for the well suitable to the Council immediately south of U.S. Highway 6 and immediately east of the F. J. Mailander Gasoline Station. Apparently Mr. Fiala of the State Department of Health was not informed that this site was available when he made his investigation since he does not mention it in his report of July 25, 1939. The elevation of the above proposed site is 1260 feet above sea level. At this point, yellow and blue glacial drift clay should occur from the surface to a depth of approximately 115 feet. The clay will be underlain by glacial sand or Dakota sandstone or both, although the exact thickness of the formations present is not known. The owner of a well nearby reports a thickness of approximately 50 feet of sand or sandstone beneath the drift. The school well and several private wells in the immediate vicinity obtain water from this aquifer at depths of approximately 125 feet. No information could be obtained on the water producing capacity of the formation and I suggest that a rigid pumping test be made before the well is accepted.

The static water level could not be definitely ascertained, but it should be less than 80 feet.

If a site is chosen on lower ground the difference in elevation between it and the site discussed above will have to be subtracted from all depth figures. In this regard, it may interest you to know that the elevation of the railroad at the depot is 1203 feet and the elevation in front of Reed's store is approximately 1244 feet.

It will be necessary, of course, to case the well from the surface to the top or if practicable a few feet into the water bearing formation. If the aquifer is a glacial sand, a screen will be necessary and the well should be carefully developed, under contract terms. If the aquifer is Dakota sandstone a screen may or may not be necessary. There is a possibility that a sand and gravel zone will be present and be underlain by the Dakota sandstone. We will be glad to examine the samples to determine the age of the aquifer if you desire.

A second possibility of obtaining a town water supply for Wiota is from the alluvial sand and gravel in the valley of Turkey Creek south of town. A well utilizing this source would be shallow, but before a final well could be started test drilling should be done to determine the most favorable location. Mr. Fiala has indicated that the location of a well in the valley would not be the most desirable from a sanitary viewpoint.

The results that can be obtained from drilling a well at Wiota will be of extreme interest and value to us and we will appreciate it if you will include a clause in your specifications requiring the driller to save samples of the cuttings and a log of the well, for the Geological Survey.

If you have any questions regarding this report or if I can be of further service on the Wiota project, please do not hesitate to call on me.

Very truly yours,

H. G. Hershey
Assistant State Geologist

HGH:N

Copy to Mr. Fiala

Punched FCH
Verified PMJ

WRD Exp. (GW)
Aug. 1964

U. S. DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY

Water Resources Division Well Schedule Form

MASTER CARD

Record by R.W. COBLE Source of data FILES Date 7/12/65 Map 1:63360 county HWY

State IOWA [16] County (or town) CASS [15]

Latitude: 41 21 40 00 N Longitude: 094 53 20 Sequential number: 1

Lat-long accuracy: 3 T. 76 N S, R. 35 E W, Sec 9, NW ¼, NW ¼, ¼ 5

Local well number: 076 35 W 09 bb B & M Other number: W-1149

Local use: C 1149 4 OCITY Owner or name: TOWN OF WIOTA

Owner or name: WIOTA IOWA Address: WIOTA, IOWA

Ownership: (C) County, (F) Fed Gov't, (M) City, (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, (S) Stock, (T) Instit, (U) Unused [P]

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

DATA AVAILABLE: Well data [1] Freq. W/L meas.: ORIGINAL [4] Field aquifer char.

Hyd. lab. data:

Qual. water data; type: COMPLETE [C]

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

Aperture cards: yes

Log data: GEOLOGIC AND DRILLERS [GD]

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 156 ft [1156] Meas. rept DRL accuracy [3]

Depth cased; (first perf.) 140 ft [1140] Casing type: ; Diam. 8 in [08]

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

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: 4/1/40 [940] Pump intake setting: ft

Driller: THORPE WELL CO. name, DES MOINES, IOWA 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, gas, gasoline, hand, nat gas, LPG, wind; H.P. Trans. or meter no.

Descrip. MP LSD ft above below lsd, Alt. MP 1249

Alt. LSD: 1249 [1244] Accuracy: (source) ALT [7]

Water Level 53'7" ft above below MP; Ft above below lsd [54] Accuracy: TAPE [0]

Date meas: 4/5/40 [4 40] Yield: 43 gpm [43] Method determined

Drawdown: 5 ft [5] Accuracy: DRL [3] Pumping period 24 hrs [24]

QUALITY OF WATER DATA: Iron 0.12 ppm [2] Sulfate 25 ppm [1] Chloride 13 ppm [1] Hard. 219 ppm [4]

Sp. Conduct 435 K x 10⁶ [3] Temp. °F Date sampled 10/15/54 [0 54]

Taste, color, etc.

076-35W-09b6

Well Number 41 , 29 , 00 (N) 094 , 53 , 20 , 1
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) | Physiographic Province: CENT. LOW. PLAIN (20–21) | Section: DISS TILL (22) | Drainage Basin: NISHNABOTNA (23–25) | Subbasin: (26)

Topo of well site: local depression, (D) flat surface, (F) hilltop, (H) hillside, (S) terrace, (T) valley flat, (V) (27)

MAJOR AQUIFER: PENN (system), (series) | N (28–29) Undifferentiated (aquifer, formation, group) | X (30–31)

Lithology: VERY FINE GS | IL (32–33) | Origin: MARINE | 6 (34) | Aquifer Thickness: ft

Length of well open to: 10 ft (35–37) | 10 (38–40) | Depth to top of: 145 ft (41–43)

MINOR AQUIFER: CRETACEOUS (system) LOW (series) | K1 (44–45) DAKOTA SS. (aquifer, formation, group) | D1 (46–47)

Lithology: MED SS | 3V (48–49) | Origin: MARINE | 6 (50) | Aquifer Thickness: 10 ft

Length of well open to: 15 ft (51–53) | 5 (54–56) | Depth to top of: 140 ft (57–59)

Intervals Screened: 140 - 156

Depth to consolidated rock: 130 ft (60–63) | 130 | Source of data: SAMPLES | C (64)

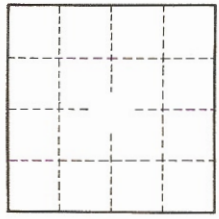
Depth to basement: ft (65–68) | Source of data: (69)

Surficial material: LEACHED TILL | NT (70–71) | Infiltration characteristics: POOR | 4 (72)

Coefficient Trans: gpd/ft (73–75) | Coefficient Storage: (76–78)

Coefficient Perm: gpd/ft^2; Spec cap: 8.6 gpm/ft; Number of geologic cards: (79)

CASING -
8" + 13" - 139'
6" SCH 40 137-152
grav. pack.



GPO 844-225

Wiota, Cass Co
Town Well - Final, pumping test
Apr. 8, 1940

T.D. 156 - bottom of screen 152

Time	Water Level	Production G.P.M.	Temperature Air	Temperature Water	
8:30					Start pumping
9:50	58'0				
10:07	58'1	42.9			~~28 spm~~ ~~42.9 gpm~~
10:45	58'0½		48	51¾	~~W. 51¾ A 48~~
11:10	58'1"		49	51¾	~~W 51¾ A 49~~
11:45	58'1"	42.9	49	51¾	~~A 49 W 51¾ 42.8 gpm~~
11:55					Pump shut off.
11:56	55'10"				
11:57	55'5				
12:00	54'11"				
12:05	54'7"				
12:10	54'6"				
1:17	54'2"				

The water level measurements are 0.5' too great

Wiota, Cass Co
Town Well - NW ¼ Sec. 9, T 76 N R 35W, Franklin Twp.
Apr. 7, 1940

Thorpe Well Co. - Glenn L. Poffenberger on rig
T.D = 156
8" casing from 1'2" to 139'9"
6" Thorpe screen from 137' to 152' gravel packed around screen and 11'8" of 5½" pipe screwed into top of screen.
Sandstone (Dakota) 141 - 145
Limestone 145 - 156 then shale
"All materials stood up well", GLP.
On pumping test of Apr. 6 Mr. Poffenberger reports: "Pumping at 55 gpm pulled down to 71' from top of 8" clamps on top of casing, later recovered to 59'. At 70 gpm. PWL = 60' "

SWL as measured by M.G.H. 1:30 p Apr. 7 = 53'7 from top of 6" clamps set on top of casing

Ground level elev. from previous M.L. work = 1242

Well pumped 24 hours Apr. 5-6, 1940

Drillers Log

Black dirt	0	2	
Ylw clay (sdy 20-35	2	35	
Blue clay, sandy	35	45	
Yellow clay	45	135	
Blue clay	135	141	
Sandstone	141	145	
Limestone	145	156	
Black shale	156	+	T.D. 156

Wiota, Cass Co.
NW, Sec 9, T76N, R35W, Franklin Twp

Nov. 18, 1939

Top of rail - CR I+P	1203.5
Bed of Turkey ck at	1185
Flood plain " " "	1197 - 1190 est
In front of Reeds store	1247 H.L
High point in town	1275 ± est (School + F.J. Mallander Wells ±
Matz Well	1264 ± Ht from sta
Population 285 (1930 census)	

Turkey Ck. flows SW just S. of town in valley ½ mi ± wide

Proposed site S. of Route 6 E of Mallander filling sta. el = 1260 ±

Mr. Carl Reed - City Clerk

School well reported 125' deep (drilled about 1920)
F.J. Mallander Well " 125' " (drilled many years ago)
Bottom of pump reported at 80'.
Both SW¼ SW¼ Sec 4, T.76N, R35W.

Topog. higher to N.