WRD Exp. (GW)
April 1966

Well No. 081-09W-26 BBD

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR — GEOLOGICAL SURVEY — WATER RESOURCES DIVISION

MASTER CARD

Record by D. AARONSON | Source of data FILE | Date 2/9/67 | Map 1:63,360 COUNTY NWY.

State IOWA [16] | County (or town) IOWA [48]

Latitude: 41 47 59 N | Longitude: 091 52 09 | Sequential number: 1

Lat-long accuracy: 2 | T. 81 N, R 9 W Sec 26, SE ¼, NW ¼, NW ¼ 5

Local well number: 081 09W26BBD | Other number: W-13780 B & M

Local use: 13780 62 CITY 4 | Owner or name: AMANA SOCIETY CITY WELL #4 (1962)

Owner or name: AMANA IOWA | Address: AMANA, IA.

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, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Z) Desal-other, Other — P

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, (Z) Destroyed — W

DATA AVAILABLE: Well data 1 | Freq. W/L meas.: INVENTORY 0 | Field aquifer char.

Hyd. lab. data:

Qual. water data; type:

Freq. sampling: | Pumpage inventory: yes / no, period:

Aperture cards: yes

Log data: GEOLOGIST LOG — G

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD | Depth well: 601 ft [601] Meas. rept accuracy: DRILLER'S LOG — 3

Depth cased; (first perf.): 440 ft [440] | Casing type: STEEL; Diam. 10 in [10]

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 — 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 — C

Date Drilled: JULY 1962 [962] | Pump intake setting: ft

Driller: LAYNE WESTERN CO. (name), AMES, 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 D

Power (type): diesel, elec, nat gas, gasoline, hand, LP gas, wind; H.P. | Trans. or meter no.

Descrip. MP: LSD ft above/below LSD. Alt. MP 737

Alt. LSD: 737 [737] Accuracy: (source) ALTIMETER — 7

Water Level: 63 ft above/below MP; Ft above/below LSD [63] Accuracy: DRILLER'S LOG — D

Date meas: JULY 1962 [762] Yield: 123 gpm [123] Method determined

Drawdown: 107 ft [107] Accuracy: 3 Pumping period hrs

QUALITY OF WATER DATA: Iron ppm | Sulfate ppm | Chloride ppm | Hard. ppm

Sp. Conduct K x 10^6 | Temp. °F | Date sampled

Taste, color, etc.

Punched ERC

Verified PMJ

Well No. 081-09W-26 BBD

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Latitude-longitude 41 47 59 (N) (S) 091 52 09.1
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: CENTRAL LOWLAND [12] (20–21) Section: DISSECTED

TILL PLAIN [E] (22) Drainage Basin: IOWA [25D] (23–25) Subbasin: [ ] (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, (F) flat, (H) hilltop, (K) sink, (L) swamp, (Φ) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat [ ] (27)

MAJOR AQUIFER: SILURIAN system, ____ series [S] (28–29) ____ aquifer, formation, group [X] (30–31)

Lithology: FINE DOL. & SANDSTONE [2D] (32–33) Origin: MARINE [6] (34) Aquifer Thickness: 135 ft

[135] (35–37) Length of well open to: 135 ft [135] (38–40) Depth to top of: 460 ft [460] (41–43)

MINOR AQUIFER: DEVONIAN system, MIDDLE series [D2] (44–45) WAPSIPINICON FM aquifer, formation, group [MW] (46–47)

Lithology: SUBLITH LS. & FINE DOL. [2D] (48–49) Origin: MARINE [6] (50) Aquifer Thickness: 35 ft

[35] (51–53) Length of well open to: 20 ft [20] (54–56) Depth to top of: 425 ft [425] (57–59)

Intervals Screened: NONE

Depth to consolidated rock: 50 ft [50] (60–63) Source of data: WELL CUTTINGS [C] (64)

Depth to basement: ____ ft [ ] (65–68) Source of data: ____ [ ] (69)

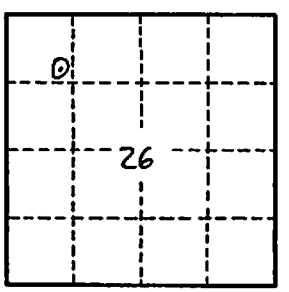
Surficial material: NONCALC. LOESS [NQ] (70–71) Infiltration characteristics: POOR [4] (72)

Coefficient Trans: ____ gpd/ft [ ] (73–75) Coefficient Storage: ____ [ ] (76–78)

Coefficient Perm: ____ gpd/ft^2; Spec cap: 1.1 gpm/ft; Number of geologic cards: ____ [ ] (79)

CASING:

346' 5" OF 10" CASING.
115' OF 8" LINER 325'-440'.



Well No. 081-09W-26 BBD

GPO 857-700

081-09W-26 BBD

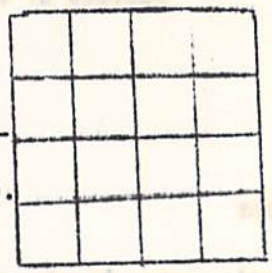
W13780

IOWA GEOLOGICAL SURVEY
In Cooperation with U. S. Geological Survey
RECORD OF WELL

Location: JUST S. OF OX YOKE INN

Town: AMANA (NE) (SW) County IOWA (E)

SE NW NW sec. 26 T. 81 N., R. 9 (W) Twp.



Well name and number

Owner AMANA SOCIETY CITY WELL #9 Address AMANA, IOWA

Tenant Address

Contractor LAYNE-WESTERN Co. Address AMES, IOWA

Drillers

Drilling dates 1961-1962

Well data:
Altitudes: Drilling curb feet; Land surface feet 736

Determined by

Topographic position

Total depth: Reported 601 feet; Measured feet

Drilling method CABLE TOOLS

Hole and casing data

Original depth to water ft. above below Date

Source of data

Sources of water: Principal SILURIAN

Others

PRODUCTION DATA

Date

Static water level 63'

Pumping water level 170'

Yield (g.p.m.) 123

Measuring point

Duration of pumping

Specific capacity

LABORATORY DATA

TL4-474 - TL4-475

Well No. W13780 Sample range 0-600' No. of samples 120

No. of dupls. and cond. 119 Good Washed range 85'-600'

Samples prepared by BUCHHEIT Date 8/30/62

Logged by NORTHUP Date 1962

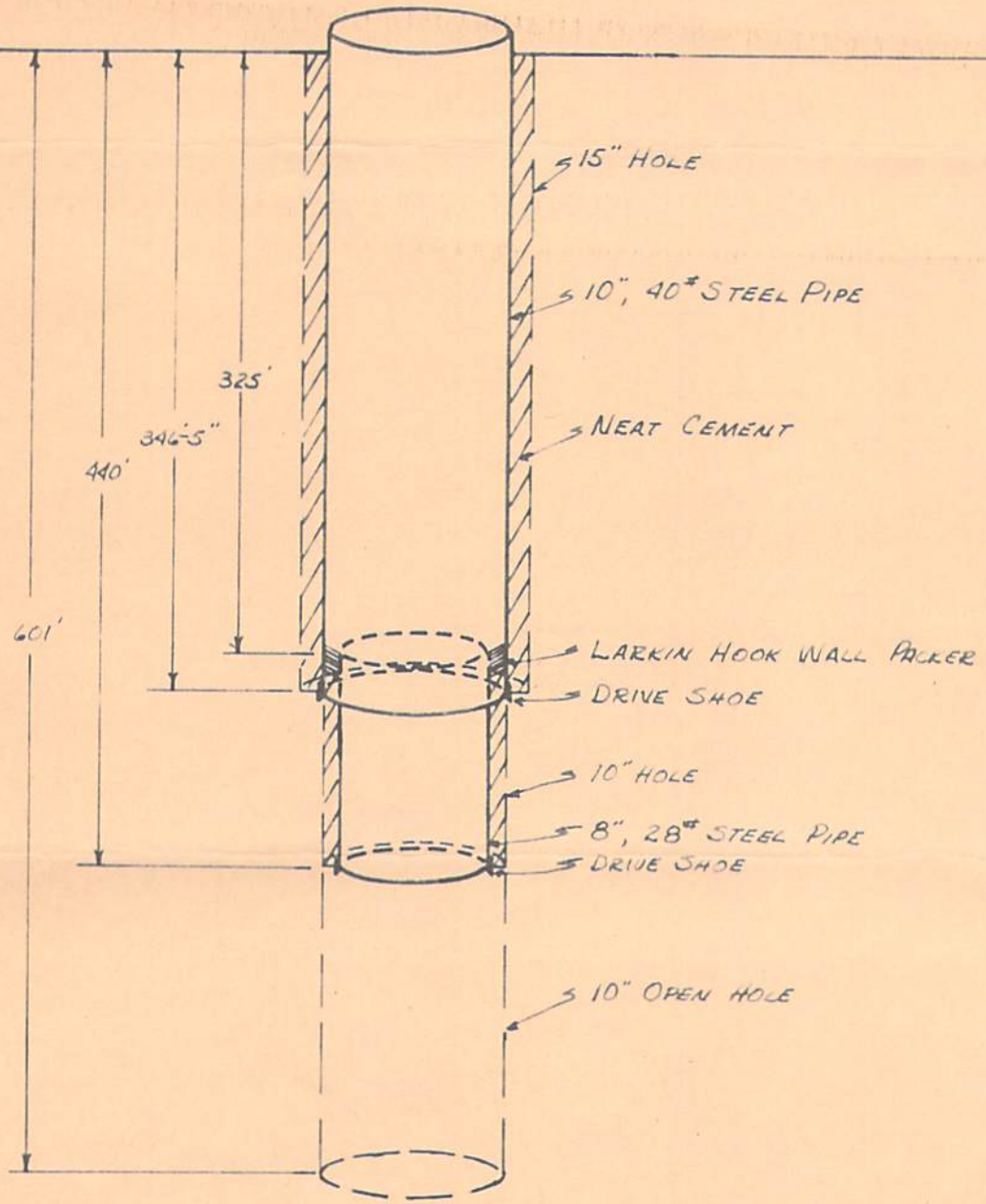
Correlations by Date

DETAIL OF WELL CONSTRUCTION
FOR
AMANA SOCIETY, AMANA, IOWA

2

LAYNE-WESTERN COMPANY, AMES, IOWA — JULY 1962

CONSTRUCTION



LOG

0'	OVERBURDEN
61'	SHALE
257'	LIMESTONE & SHALE
289'	SHALE
345'	LIMESTONE & SHALE
371'	LIMESTONE
593'	SHALE
601'	

PUMPING TEST RESULTS

PUMPING RATE	123 GPM	PUMPING LEVEL	170'
DRAWDOWN	107'	STATIC WATER LEVEL	63'

WATER ANALYSIS REPORT

GENERAL FILTER COMPANY
AMES, IOWA

WATER ANALYSIS REPORT

CUSTOMER Layne Western Company DATE

ADDRESS Ames, Iowa

Amana, Iowa

SAMPLE NUMBER		62466				
DATE COLLECTED		10-10-62				
DATE RECEIVED		10-12-62				
SAMPLING POINT						
CALCIUM	PPM AS $CaCO_3$	230				
MAGNESIUM	PPM AS $CaCO_3$	110				
SODIUM	PPM AS $CaCO_3$	75				
ALKALINITY (M)	PPM AS $CaCO_3$	300				
ALKALINITY (P)	PPM AS $CaCO_3$	0				
SULFATE	PPM AS $CaCO_3$	85				
CHLORIDE	PPM AS $CaCO_3$	30				
TOTAL HARDNESS	PPM AS $CaCO_3$	340				
NON CARBONATE HARD	PPM AS $CaCO_3$	40				
FREE CARBON DIOXIDE	PPM AS CO_2	26				
IRON	PPM AS Fe	0.2				
MANGANESE	PPM AS Mn	NIL				
SILICA	PPM AS SiO_2	2				
pH		7.3				
TURBIDITY	PPM AS SiO_2	6				
COLOR	AWWA					

REMARKS:

N. K. Simmons
CHEMIST


RECEIVED
OCT 19 1962
WAYNE-WESTERN CO.
AMES, IOWA

G-W Iowa Co. G-D

August 2, 1961

MEMO

TO: Dr. H. G. Hershey
FROM: Richard C. Northup
RE: Phone call from Frank Flores

Frank Flores, Layne-Western Co., phoned Tuesday afternoon regarding a new well for Amana. The present well drilled to the top of the Maquoketa, in 1950, is satisfactory, but the town needs a bigger supply. They intend to drill another well about a quarter of a mile west of their No. 3 (1950) well, and Frank wanted a bit of information on water quality at Homestead, East Amana, and Amana proper as well as construction data. I gave him as much information as I could find by phone. The proposed well will also go to the top of the Maquoketa.

H. GARLAND HERSHEY
DIRECTOR AND STATE GEOLOGIST

STATE OF IOWA

IOWA GEOLOGICAL SURVEY

GEOLOGY ANNEX

IOWA CITY

GEOLOGICAL BOARD

LEO A. HOEGH
GOVERNOR OF IOWA

VIRGIL M. HANCHER
PRESIDENT STATE UNIVERSITY OF IOWA

JAMES H. HILTON
PRESIDENT IOWA STATE COLLEGE

ROBERT W. GETCHELL
PRESIDENT IOWA ACADEMY OF SCIENCE

CHET B. AKERS
AUDITOR OF STATE

G-W files

MEMO

To: Dr. H. G. Hershey
From: Richard C. Northup
Re: New Amana City Well

Amana Gen Data
Iowa Co.

Frank Flores phoned on Friday morning to advise that Layne-Western is drilling a new well for the town of Amana. Drilling has reached 350' in the upper part of the Cedar Valley limestone. The well is located in the west part of town, about 2 or 3 blocks west of the old well completed in 1950, and is about 20' higher in elevation. According to Frank, they plan to set casing and then drill to the Maple Mill shale, leaving the Silurian and most of the Devonian open. They will drill another ten or fifteen feet to be sure they are in good solid limestone. We checked the section against the old well.

Iowa City Gen Data
Johnson Co.

The new Iowa City well is still at 185' in the upper Silurian, and they have been trying to cement off a bad section of caving shale and sand which was encountered from 162' - 180'. It is probably a crevice, or possibly an old sinkhole, which filled up with this material and which they were unlucky enough to be over at the well site. Frank hopes they will have the tools out and be drilling again by next week. They have had bad luck from the start since drilling commenced on September 25th.

G-W Amana City well 1962
Iowa Co.



Layne-Western Company

WATER WELL DRILLING
EXPLORATION BORINGS AND TEST SURVEYS
LAYNE TURBINE PUMPS

OFFICES
KANSAS CITY, MISSOURI
WICHITA, KANSAS
OMAHA, NEBRASKA
AMES, IOWA
AURORA, ILLINOIS
ST. LOUIS, MISSOURI
DENVER, COLORADO

SOUTH DUFF AVENUE
AMES, IOWA

TELEPHONE CEDAR 2-3563

April 10, 1963

IOWA GEOLOGICAL SURVEY
APR 11 1963

Dr. H. G. Hershey
Iowa Geological Survey
Iowa City, Iowa

Dear Sir:

We are in receipt of the geologic log that you have been attempting to forward to the Amana Society.

As we understand it none of the towns in the Amana Society are incorporated and therefore do not have city clerks. These towns are all run by the Amana Society. The secretary of their corporation is Peter Stuck with offices at Amana. Their engineer is Mr. Fred Berger and we are taking the liberty of forwarding this log directly to him.

Very truly yours,

Frank H. Flores

FHF:bt



Layne-Western Company

WATER WELL DRILLING
EXPLORATION BORINGS AND TEST SURVEYS
LAYNE TURBINE PUMPS

OFFICES
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DENVER, COLORADO

SOUTH DUFF AVENUE
AMES, IOWA

TELEPHONE CEDAR 2-3563

February 14, 1963

IOWA GEOLOGICAL SURVEY
FEB 15 1963

Mr. Dick Northrup
Iowa Geological Survey
Iowa City, Iowa

Dear Dick:

We are enclosing herewith a drawing detailing the construction and pumping information on the well for the Amana Society at Amana, Iowa.

There is also a chemical analysis of the water obtained.

Very truly yours,

LAYNE-WESTERN COMPANY

Frank

Frank H. Flores

FHF:rem

Enclosure