

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

W 7047

RECORD OF WELL

Location: Aage Anderson farm NE of town

(NE)

Town: RED OAK (SW): County MONTGOMERY

E.

SW 4 sec. 14 T. 72 N., R. 38 W. Twp.

Well name and number CITY WELL (1955)

Owner CITY of Red Oak Address _____

Tenant _____ Address _____

Contractor Layne-Western Co. Address OMAHA, NEBR

Drillers _____

Drilling dates April 1955

Well data:

Altitudes: Drilling curb _____ feet; Land surface 1137 feet

Determined by GROUP ALTIMETER RUN 8/65

Topographic position _____

Total depth: Reported 160 + feet, Measured _____ feet

Drilling method Rot.

Hole and casing data Gravel Pack

These samples taken from one of side holes (Gravel feed hole)

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

Source of data _____

Sources of water: Principal _____

Others _____

Production Data

Date _____
 Static water level _____
 Measuring point _____
 Pumping water level _____
 Yield (g. p. m.) _____
 Duration of pumping _____
 Specific capacity _____

Pump Data

Type pump _____ Column diameter and length _____
 Cylinder or bowls diameter and length _____
 Suction pipe _____ Airline _____
 Power _____ Production _____ g. p. m. for _____ hours per day
 Use of water _____

Dissolved constituents and properties (in parts per million except as indicated)

Date sampled _____
 Sampled by _____
 Silica (SiO₂) _____
 Iron (Fe) _____
 Manganese (Mn) _____
 Calcium (Ca) _____
 Magnesium (Mg) _____
 Potassium (K) _____
 Sodium (Na) _____
 Carbonate (CO₃) _____
 Bicarbonate (HCO₃) _____
 Sulfate (SO₄) _____
 Chloride (Cl) _____
 Fluoride (F) _____
 Nitrate (NO₃) _____
 Dissolved solids _____
 Hardness (as CaCO₃) _____
 Total _____
 Grains per gallon _____
 Noncarbonate _____
 Alkalinity (as CaCO₃) _____
 pH _____
 Specific conductance _____
 (micromhos at 25°C) _____
 Temperature (°F) _____
 Analysis No. _____

Laboratory Data EG3.7

Well No. **W 7047** Sample range 0-160 No. of samples 32
 No. of dupls. and cond. 32 Good Washed range 40-160
 Samples prepared by Winget Grewe Hudson Date 4/15/55
 Logged by NORTUP Parker 2/27/62 Date 6/30/55
 Correlations by NORTUP Parker " Date 6/30/55

Verified PMJ
Punched ERC

U. S. DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Water Resources Division Well Schedule Form

MASTER CARD

Record by D. AARONSON Source of data FILE Date 4/21/66 County MONTEGOMERY Map 1:63,360 COUNTY HWY.

State IOWA 16 County (or town) 69 Sequential number: 1

Latitude: 41° 10' 15.4" N Longitude: 09° 51' 13.3" W

Lat-long accuracy: 2 T 72 S 38 E Sec 14 Twp 54 R 5 S

Local well number: 07238W14CC Other well number: W-7047

Local use: 07047 55 CITY Owner or name: RED OAK CITY WELL (1954)

Owner or name: RED OAK CITY Address: RED OAK, IA.

Ownership: County, Fed Gov't, City, Corp or Co, Private, State Agency, Water Dist M

Use of water: (A) Air cond, Comm, Dewatering, Fire, Dom, Irr, Ind, P, S, Stock, Instic, Unused P

Use of well: (A) Anode, Drain, Seismic, Obs, Oil-gas, Recharge, Spring, Test, Unused, Withdraw, Waste, Destroyed W

DATA AVAILABLE: Well data 4 Freq. W/L meas.: NONE N Field aquifer char. 72

Hyd. lab. data: 73

Qual. water data; type: COMPLETE C

Freq. sampling: INTERMITTENT 1/4 I Pumpage inventory: yes 76 no: period: 77

Aperture cards: yes 77

Log data: GEOLOGIST LOG G

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 160 ft 160 Meas. rept. accuracy 24

Depth cased: (first perf.) 160 ft 160 Casing type: 160 ; Diam. 160 in 29

Finish: (C) porous gravel w. concrete, (F) gravel w. (screen), (H) horiz. open perf., (O) screen, (P) sd. pt., (S) shored, (T) open hole, (W) other, (X) other, (Z) other 31

Method: (A) air bored, (B) dug, (C) jetted, (D) air reverse, (E) percussive, (F) trenching, (G) driven, (H) wash, (I) other 32

Date drilled: APRIL 1955 5 5 Pump intake setting: 160 ft 36

Driller: LAYNE WESTERN CO. OMAHA, NEB.

Lift: (A) air, (B) bucket, (C) cent. jet, (D) multiple, (E) multiple, (F) none, (G) piston, (H) rot., (I) submerg, (J) turb., (K) other 39 Deep 40

Power: (type) diesel, elec, gas, gasoline, hand, gas, wind, H.P. 41 Trans. or meter no. 40

Descrip. MP LSD above 1137 ft below 1137 Alt. MP 1137

Alt. LSD: 1137 1137 Accuracy: ALTIMETER 47

Water Level: 1137 ft above 1137 ft below 1137 Accuracy: 52

Date meas: 1002 1002 Yield: 1002 gpm 1002 Method determined 61

Drawdown: 0.02 ft 0.02 Accuracy: 0.02 0.02 Pumping period 9 hrs 66

QUALITY OF WATER DATA: Iron 0.02 Sulfate 845 Chloride 1.0 Hard. 178 5

Sp. Conduct 370 K x 10⁶ 3 Temp. 54 Date sampled 4/18/60 460

Taste, color, etc. 77

072-3BW-14CC6

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD Physiographic Province: CENTRAL LOWLAND Section: DISSECTED

TILL PLAIN E Drainage Basin: MISSISSIPPI Subbasin: 35D

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

MAJOR Aquifer: CRETACEOUS LOWER K1 DAKOTA FM. DD

Lithology: COARSE SANDSTONE 4V Origin: MARINE 6 Aquifer Thickness: 90 ft

Length of well open to: 90 ft 90 Depth to top of: 90 ft 90

MINOR Aquifer: 44 45 aquifer, formation, group 46 47

Lithology: 48 49 Origin: 50 Aquifer Thickness: 50 ft

Length of well open to: 54 ft 54 Depth to top of: 54 ft 54

Intervals Screened: 51 53

Depth to consolidated rock: 37 ft 37 Source of data: WELL CUTTINGS C

Depth to basement: 43 ft 43 Source of data: 49

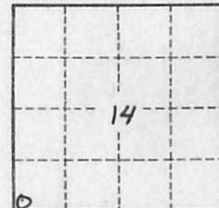
Surficial material: LOESS Q Infiltration characteristics: POOR 4

Coefficient Trans: 73 73 Coefficient Storage: 78 78

Perm: 73 73 Spec cap: 78 78 Number of geologic cards: 79

CASING:

NO INFORMATION.



IOWA PRESS
CLIPPING BUREAU

Des Moines, Iowa

Express
Red Oak, Iowa

MAY 26 1955

Testing of New City Well is Much Better Than Expected

The city's newly dug northeast well has turned out "far better than expectations" better than preliminary anticipations, to use the words of Engineer Chuck Wever, Corning.

Drilled to a depth of 157 feet, the well has pumped up to 1,300 gallons a minute in recent surge tests. Water temperature is 52 degrees.

During a 19-hour testing period this month, the well pumped 800 gallons a minute for seven hours, 1,002 gallons a minute for nine hours, 1,002-plus gallons for three hours.

Recovery of the well was immediate after test-pumping ended.

Another six-hour test was run to see if there were any relationship

between the new well on the Aage Andersen farm and the existing east wells. Both wells were pumped continuously, and the water level in the old east well was higher than it had been at any time since the first of May.

Recovery of the old well went from 22 feet to 65 feet in 50 minutes. In the new well, the water level rose from 16 feet to 45 feet in an hour.

Engineer Wever's conclusion, as reported to the city council:

"I was satisfied with the production of the new well at the end of the first test. However, to satisfy members of the council, the second test was made for the sole purpose of trying to establish a possible relationship between the two wells.

No Relationship

"Certainly, by test pumping, the above records show there was no relationship established. It is further believed that the new well will meet all expectations and certainly confirms the preliminary data.

"For the information of the council, during the test periods and surging operation of 33 hours continuous pumping, we pumped somewhat over two million gallons of water, and during the second test-pumping of the new well, pumping over 1,000 gallons per minute, after the original drawdown at the beginning of the test period, the well gained over the pumping operation during the six hours. Certainly from all appearances the well is more than anticipated."

The well is capped and is awaiting setting of the pump, building of power lines and laying of pipe from it to the standpipe.

It is expected that the new well will be supplying water for city use by August or September. The Layne-Western Co. of Omaha had the contract for drilling the well.

Red Oak (Montgomery)

Express
Red Oak, Iowa

JAN 6 1955

Contracts Let On New Well For Red Oak

Job is Awarded To Low Bidders In Long Session

Voting 3-1, the city council overruled objections to a proposed new well northeast of Red Oak Tuesday afternoon, opened bids and accepted those of Layne-Western of Omaha and Jansen Construction Co. of Beatrice, Neb.

Voting for overruling an objectors' petition carrying 56 signatures were Councilman Richard Jensen, John Odell and Paul R. Nelson.

Councilman Lucian L. Rush, steadfastly opposed to the project, voted "nay."

Absent for the hearing was Councilman Frank W. Floren.

Successful bidders were Layne-Western Co. of Omaha, \$17,798 for construction of a "Thorpe"-type well on the Aage Andersen farm, and Jansen Construction Co. of Beatrice, Neb., \$58,796.98 for furnishing and installing a water supply line.

Next Low Bid

Next in line on these bids were Thorpe Well Co. of Des Moines, \$21,622, and Pella Construction Co. of Pella, \$61,307.36.

Immediately after the vote to go ahead with the opening of bids, Rush got to his feet and elaborated on his stand against the well. He pointed out with his own reasoning that water rates would have to rise four- to five-fold to pay for the well—a statement that other councilmen thought to be far from correct.

After five minutes of oration, Rush said:

"I'll shut up now."

Remarked Councilman Nelson:

"That's a good idea, Lucian."

Retorted Rush:

"Paul, you and I have never been able to agree on anything. But that's what makes America."

Under Estimates

The \$76,594.98 total for the two bids is under the early estimates by engineers. One estimate placed the total at from \$80,000 to \$90,000 and others guessed it as high as \$100,000.

According to Mayor O. E. Smith, Iowa Power and Light Co. will build the electric lines to the well site from the city and only charge for current used. The city, the mayor added, will build the pump house with city crews. It will cost from \$800 to \$1,000, the mayor believed.

Water revenue bonds will not be issued for some time, a city official said. They will be bid on at a public letting.

At Tuesday's hearing the Chamber of Commerce was represented by President John F. Boeye, Vice-president John R. Loomis and Manager Sherrell Watson.

No Stand

Boeye emphasized that they were there "just to ask questions and get information and were taking no stand one way or the other on the well proposition."

The hearing and opening of bids lasted from 2 p.m. until 10:30 p.m., with a 10-minute recess between the hearing and opening of bids and a recess for dinner.

According to the published call for bids, work on the well should start by Feb. 1 and be finished by April 1.

IOWA PRESS
CLIPPING BUREAU
Des Moines, Iowa

Express
Red Oak, Iowa

APR 7 1955

Begin Digging Of City Well

Regular Meeting Of City Council

Digging of the new city well for Red Oak started Friday on the Aage Andersen farm northeast of town. It is being dug by Layne-Western Co. of Omaha under contract with the city for \$17,798.

Jansen Construction Co. of Beatrice, Neb., has the contract to furnish and install the water line for the well. Contract amount is \$58,796.98.

The Red Oak city council this week authorized City Engineer Charles Wever to purchase 250 tons of pea gravel from Northern Gravel Co., Muscatine, to be used in packing the well.

Mayor O. E. Smith told The Express Wednesday that laying of the water line connecting the new well with the city system will not be done until testing of the well has been completed.

He said that although financial arrangements to pay for the line had not been completed they were in the process and it was expected the money would be available by the time it was needed.

Other council action at the regular Monday night meeting included granting approval to Asel Stiles to remove some trees near the south edge of the cemetery. Mr. Stiles said the trees interfered with his farming.

Sewer - Water

Council visitors were C. E. Tuttle, Vernon Mainquist, Fred Kennon, Carl Fredrickson and Richard Demarest asking how soon the city would have sewer and water service extended to the Tuttle-Kennon addition in northeast Red Oak.

Engineer Wever told them the action could not be taken until property owners concerned had taken proper procedure in street dedication recording at the office of the county recorder.

GW Red Oak G.D.
Montgomery Co.

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STATE OF IOWA
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a place to grow

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Assistant State Geologist

April 29, 1977

Jerry F. Shellberg
H. Gene McKeown and Associates Inc.
Consulting Engineers
206 Coolbaugh Street
P.O. Box 449
Red Oak, Iowa 51566

Dear Mr. Shellberg:

A careful review of our files and unstudied well sample sets indicate that no new information has been obtained at Red Oak since my report to Ron Kraft of the Red Oak Industrial Corporation on December 8, 1971.

Thank you for the summary sheet of the existing city wells with pertinent data on construction, water levels, yields, etc. It is unfortunate that a detailed topographic map is not available on this area which will show the terrain, elevations, river bottoms, cultural features, city boundaries, etc., and would be very useful for plotting wells and potential test well sites. As a substitute I am enclosing a xerox reproduction of a portion of the General Highway and Transportation map of Montgomery County. Using a red ballpoint pen I have marked the location of the existing city wells and promising locations for additional testing of both the alluvial and Dakota aquifers.

The results cannot be guaranteed of course, although I am reasonably optimistic that a dependable production in the range of 500 gpm can be developed from either source. As far as I know, the alluvial aquifer hasn't been tested extensively and based on the results of the city west well, a shallow well field might be constructed upstream of the city and close to the river that may yield 500 - 1,000 gpm by induced infiltration of river water. Furthermore, plastic well screens are now available that have a high resistance to corrosion and to clogging of the screen slots by incrustation.

The Cretaceous rocks, including the Dakota Sandstone, appear to be thicker east of the city and it would seem worth the cost of drilling some test wells north and east of the present wells to ascertain the potential of the aquifer in that direction. I am also enclosing copies of several logs to show the composition of the formations. From the logs you can observe that a considerable amount of shale commonly occurs in the Cretaceous. The shales will be essentially dry and will have to be cased off to prevent them from caving into and filling the well. A spacing distance of at least half a mile is advised for Dakota wells to reduce the interference effects.

In general, the previous discussion I prepared on Red Oak is still valid. The prospects appear favorable for developing large additional water supplies at Red Oak from alluvial wells along the East Nishnabotna River bottoms or from Dakota aquifer wells east of the city. The water from both sources will be of acceptable

Mr. Jerry F. Shellberg
April 29, 1977
page 2

quality for human consumption although treatment for iron removal and disinfection is advised especially for water derived from the alluvial aquifer.

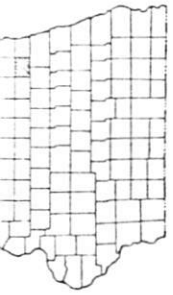
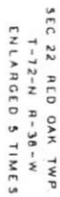
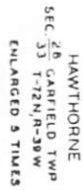
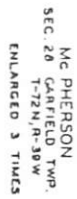
I hope this limited discussion will assist you in designing a new well for the city. On the whole, it would seem desirable to stick with the Dakota source for the present. The existing wells are capable of delivering in the range of 500 gpm and little treatment of the water is required. If any questions remain or if I can be of additional assistance on this, please let me know.

Very truly yours,

A handwritten signature in cursive script that reads "Paul J. Horick". The signature is fluid and written in dark ink.

Paul J. Horick
Chief, Ground Water Division

PJH:rlh
enclosures



R-38W

R-37W

- Existing city wells
- Δ Recommended test drilling for Dakota aquifer
- X " " " " Alluvial "



April 19, 1977

Mr. Paul J. Horick
Iowa Geological Survey
135 North Gilbert Street
Iowa City, Iowa 52240

RE: Municipal Water Supply Well
Red Oak, Iowa

Dear Mr. Horick:

Our firm has been authorized to proceed with design of an additional municipal water supply well for the city of Red Oak, Iowa. Your assistance is requested in providing a current forecast of the potential for developing a well with as much capacity as possible, in the range of 500 to 1,000 gallons per minute.

Enclosed is a copy of Table 2 with information on the existing city wells, from a 1974 report done by our firm for the city of Red Oak.

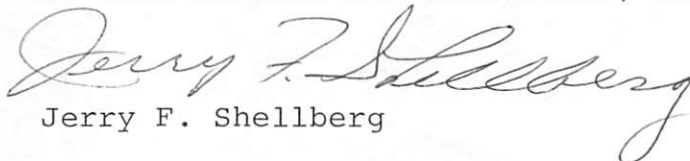
We have a copy of your report on industrial water supplies at Red Oak, Iowa, dated December 1971. The well referred to in your report as No. 1 is the south well; the well referred to as No. 3 is the upper east well; and the well referred to as No. 4 is the north well. These three wells are the ones currently being used to provide the municipal water supply for Red Oak.

We would like to know if there are modifications or changes to the projections given in your 1971 report as a result of subsequent information that might be available to you including that which we are enclosing.

Your comments and suggestions will be appreciated.

Very truly yours,

H. GENE MCKEOWN AND ASSOCIATES, INC.


Jerry F. Shellberg

JFS/jh

Enclosure