WRD Exp. (GW)
April 1966

Well No. 085-10W-16 CBB

# WELL SCHEDULE

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

## MASTER CARD

Record by R. KARSTEN Source of data FILE Date 9/4/69 Map BENTON CO. HWY

State IOWA (1 2) County (or town) BENTON (3 4) 06

Latitude: 42 deg 10 min 23 sec N (5 7 9 11) Longitude: 092 degrees 01 min 36 sec (12 15 18) Sequential number: 1 (19)

Lat-long accuracy: 2 (20) T. 85 S, R. 10 W, Sec. 16, NW ¼, NW ¼, SW ¼ 5

Local well number: 085 10W 16 CBB (21 25 30 34) Other number: W-0219 B & M

Local use: 00219 (35 40 45 51) Owner or name: VINTON CITY WELL #1

Owner or name: VINTON CITY 1 (52 56 61 66) Address: VINTON, IA

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, (P) Private, (S) State Agency, (W) Water Dist — 67 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, (Y) Desal-other, (Z) Other — 68 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 — 69 W

DATA AVAILABLE: Well data 1 (70) Freq. W/L meas.: (71) Field aquifer char. (72)

Hyd. lab. data: (73)

Qual. water data; type: (74) C

Freq. sampling: I (75) Pumpage inventory: yes / no, period: (76)

Aperture cards: yes (77)

Log data: GEOLOGIST (78 79) G

## WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD (1 19) Depth well: 1508 ft (20 23) 1508 Meas. rept accuracy — 24 3

Depth cased; (first perf.): 608 ft (25 28) 608 Casing type: STEEL; Diam. 16 in (29 30) 16

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, (Z) other — 31 X

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, (H) hyd rot., (J) jetted, (P) air percussion, rotary, (R) reverse, (T) trenching, (V) driven, (W) drive wash, (Z) other — 32 C

Date Drilled: 1939 (33 35) Pump intake setting: ft (36 38)

Driller: THORPE WELL CO (name), DES MOINES, IA (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 (39) Deep Shallow (40)

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

Descrip. MP: LSD ft above below LSD, Alt. MP 788

Alt. LSD: 788 (42 45) 788 Accuracy: (source) ALT — 47 7

Water Level 33 ft above below MP; Ft above below LSD (48 51) 33 Accuracy: — 52 D

Date meas: 1939 (53 55) 39 Yield: 1445 gpm (56 60) 1445 Method determined 4

Drawdown: 141 ft (62 64) 141 Accuracy: 3 (65) Pumping period hrs (66 68)

QUALITY OF WATER DATA: Iron 2.8 ppm (69) 5 Sulfate 190 ppm (70) 5 Chloride 6 ppm (71) 0 Hard. 340 ppm (72) 7

Sp. Conduct 910 K x $10^6$ (73) 4 Temp. °F (74 76) Date sampled 5/6/68 (77 79) 5 6 8

Taste, color, etc. CLOUDY, YELLOW COLOR

Well No. 085-10W-16 CBB

Well No. 085- 10W - 16 CBB

Latitude-longitude 42 d 10 m 23 s N 092 d 01 m 36 s W

## HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) | Physiographic Province: CENT. LOWLAND [12] (20–21) | Section: DISS. TILL PLAIN [E] (22) | Drainage Basin: CEDAR [25E] (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: CAM system, ST. CROIX series [CB] (28–29) TREM. JORDAN aquifer, formation, group [JJ] (30–31)

Lithology: DOL SS [DV] (32–33) Origin: MARINE [6] (34) Aquifer Thickness: 64 ft

[64] (35–37) Length of well open to: ft [ ] (38–40) Depth to top of: ft [ ] (41–43)

MINOR AQUIFER: ORD. system, MID series [ØA] (44–45) ST. PETER aquifer, formation, group [MP] (46–47)

Lithology: LS SS [LV] (48–49) Origin: MARINE [6] (50) Aquifer Thickness: 55 ft

[55] (51–53) Length of well open to: ft [ ] (54–56) Depth to top of: ft [ ] (57–59)

Intervals Screened: PERF 608 - 972

Depth to consolidated rock: 115 ft [115] (60–63) Source of data: [C] (64)

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

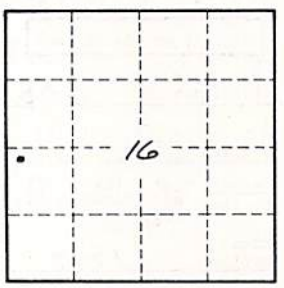
Surficial material: [ ] (70–71) Infiltration characteristics: [ ] (72)

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

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

WELL ORIGINALLY DRILLED IN 1889 BY W.N. CASEY & SON TO A DEPTH OF 1287' Vol. 21, p. 435

DEEPENED & RECASED BY THORPE 1939.




CSG. RECORD

120' OF 16" SET AT 120'

516' OF 12½" SET AT 607' 7"

164'4" OF 10" SET AT 971' 8"

10" PIPE PERFORATED.

Well No. 085- 10W - 16 CBB

GPO 857–700

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

W0219

RECORD OF WELL




Location:

Town: VINTON ( N E S W); County BENTON E.

NE, SW, SW, sec. 16 T. 85 N., R. 10 W. TAYLOR Twp.

Well name and number VINTON CITY WELL #1

Owner CITY OF VINTON Address

Tenant Address

Contractor W. N. CASEY & SON (1889) Address

~~Driller~~ THORPE WELL CO. (1939) (DEEPENED)

Drilling dates 1889 & 1939 (DEEPENED)

Well data:

Elevations: Drilling curb 796' feet; Land surface feet

Determined by

Topographic position

Total depth: Reported 1508' feet, Measured feet

Drilling method

Hole and casing data 612' of 5", galvanized casing, DEPTH 612'.
(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.)
THORPE - 120' of 16" set at 120'; 516' of 12½" set at 604'7"; 164'4" of 10" set at 971'8"; 10" pipe perforated

Original depth to water 28½ ft. above ~~below~~ curb Date 1889

Original elevation of water level 800½ ft.; Source of data I. G. S. ANN. REP. Vol 21, 1910-11; PP. 434-435

Sources of water: Principal ST. PETER SANDSTONE; Others MAQUOKETA, GAL.

CASING DIAGRAM

LOG

Vertical scale 1 Space = 50'

5"

6"

1450' sandy dolo, dolo, 1490'

116' Limestone
135' dolomite
150'

Limestone, qtz, grns, chrt

250'

dolomite

385' clay
395' sandstone

dolomite

560'

Shale with limestone

542' dolomite

565'

Shale with limestone

620'

Limestone, H, qtz

Limestone, crmi

807', no SPLES!
820'

Limestone, bluish qtz

1020'

SS with LS frags,
SS, cln qtz, rd,
1075' chert with dolo & shale

dolomite

1175' sandstone
1190'

dolomite, wh & H. qtz.
some cht.

1275' chert, minute calc. frags.
1286'

no. SPLES.

1370'
1382' SS, dolo R.A.C. ↓

sandstone

1450

Production data: Date _____

Static depth to water 33 Measuring point _____

Pumping level 174 at 1445 g.p.m.

_____ _____

_____ _____

_____ _____

Specific capacity _____ g.p.m. per ft. drawdown; Temperature 49 °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 C G 10

Sample range 1370-1490 No. spls. 10 No. dupls. & cond. 10 good

Spls. prepared by Yohe Washed range 1370-1490 by Yohe

Driller's log and cond. Log 115-1287 in 165 Vol 24

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

Microscopic study _____ strip log K.E.A. & S.E.H. Jr. R.A.C.

Gen. log _____ Correl. by _____

COPY

CITY OF VINTON

Records on Well No. 1

| Time 7-28-39 | Pump R.P.M. | Engine R.P.M. | Draw Down | Gal. P.M. | Static head 33-4 Temperature 50 |
|---|---|---|---|---|---|
| 8:00 a.m. | 1775 | 1130 | | 828 | |
| 9:00 a.m. | 1758 | 1204 | 93-4 | 707.68 | |
| 10:00 a.m. | 1766 | 1228 | 97-4 | 707.68 | |
| 11:00 a.m. | 1785 | 1253 | 98-6 | 692.84 | |
| 12:00 noon | 1783 | 1231 | 99 | 692.84 | |
| 7-29-39 | | | | | |
| 1:00 a.m. | 1925 | 1203 | 103-8 | 737.49 | |
| 2:00 a.m. | 1930 | 1228 | 103 | 750 | |
| 3:00 a.m. | 1963 | 1221 | 102 | 737.49 | |
| 4:00 a.m. | 1967 | 1222 | 102-6 | 737.49 | |
| 5:00 a.m. | 1951 | 1220 | 105-7 | 737.49 | |
| 6:00 a.m. | 1945 | 1225 | 103-4 | 737.49 | |
| 8:00 a.m. | 1955 | 1236 | 97-8 | 750 | |
| 9:00 a.m. | 1951 | 1220 | 100-10 | 737.49 | |
| 11:00 a.m. | 1525 | 1027 | 80-8 | 575.91 | |
| 8-4-39 | | | | | |
| 8:00 a.m. | 1312 | 838 | 78 | 808 | 29' static head |
| 9:00 a.m. | 1212 | 778 | 94 | 950 | Lowered impellers |
| 10:30 a.m. | 1250 | 875 | 100-8 | 1092.5 | Changed pulleys |
| 8-5-39 | | | | | |
| 1:00 am. | 1345 | 937 | 109-8 | 926 | |
| 2:00 a.m. | 1357 | 945 | 109-10 | 926 | |
| 3:00 a.m. | 1362 | 955 | 111-2 | 926 | |
| 4:00 a.m. | 1372 | 963 | 109 | 926 | |
| 5:00 a.m. | 1405 | 975 | 112 | 846 | |
| 6:00 a.m. | 1372 | 965 | 111 | 846 | |
| 8:00 a.m. | 1345 | 950 | 105-3 | 926 | |
| 9:00 a.m. | 1336 | 925 | 114-2 | 926 | |
| 10:00 a.m. | 1355 | 970 | 115-4 | 926 | |
| 11:00 a.m. | 1375 | 960 | 115-9 | 926 | |
| 8-7-39 | | | | | |
| 2:00 a.m. | 1295 | 921 | 94-3 | 1092.5 | |
| 3:00 a.m. | 1260 | 880 | 89-7 | 926 | |
| 4:00 a.m. | 1305 | 904 | 100-5 | 950 | |
| 5:00 a.m. | 1320 | 913 | 106-3 | 1007.5 | |
| 9:00 a.m. | 1322 | 912 | 101-4 | 1007.5 | |
| 11:00 a.m. | 1325 | 925 | 101-5 | 950 | |
| 8-9-39 | | | | | |
| 1:00 a.m. | 1338 | 930 | 94-10 | 926 | |
| 2:00 a.m. | 1340 | 933 | 96 | 950 | |
| 3:00 a.m. | 1365 | 952 | 96-7 | 950 | |
| 4:00 a.m. | 1382 | 962 | 97-1 | 950 | |
| 5:00 a.m. | 1405 | 980 | 103-2 | 926 | |
| 6:00 a.m. | 1405 | 987 | 105 | 926 | |
| 8:00 a.m. | 1395 | 954 | 90-9 | 950 | |
| 9:00 a.m. | 1381 | 961 | 93-4 | 950 | |
| 10:00 a.m. | 1387 | 964 | 94 | 950 | |
| 11:00 a.m. | 1418 | 978 | 101-3 | 926 | |

| | | | | | |
|---|---|---|---|---|---|
| 8-11-39 | | | | | Diesel R.P.M. |
| 4:00 a.m. | 1521 | 1041 | 105-7 | 1399 | 952 |
| 5:00 a.m. | 1538 | 1077 | 118-8 | 1353 | 1179 |
| 6:00 a.m. | 1548 | 1048 | 121 | 1353 | |
| 8:00 a.m. | 1546 | 1091 | 119-6 | 1353 | 1210 |
| 8-12-39 | | | | | |
| 1:00 a.m. | 1607 | 1118 | 125-9 | 1353 | 1222 |
| 2:00 a.m. | 1605 | 1125 | 128-2 | 1353 | 1224 |
| 3:30 a.m. | 1600 | 1116 | 124-6 | 1353 | 1202 |
| 4:30 a.m. | 1615 | 1114 | 125-8 | 1353 | 1235 |
| 5:30 a.m. | 1610 | 1106 | 129-3 | 1353 | 1190 |

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| 3:00 a.m. | 1365 | 952 | 96-7 | 950 | |
| 4:00 a.m. | 1382 | 962 | 97-1 | 950 | |
| 5:00 a.m. | 1405 | 980 | 103-2 | 926 | |
| 6:00 a.m. | 1405 | 987 | 105 | 926 | |
| 8:00 a.m. | 1395 | 954 | 90-9 | 950 | |
| 9:00 a.m. | 1381 | 961 | 93-4 | 950 | |
| 10:00 a.m. | 1387 | 964 | 94 | 950 | |
| 11:00 a.m. | 1418 | 978 | 101-3 | 926 | |

| | | | | | |
|---|---|---|---|---|---|
| 8-11-39 | | | | | Diesel R.P.M. |
| 4:00 a.m. | 1521 | 1041 | 105-7 | 1399 | 952 |
| 5:00 a.m. | 1538 | 1077 | 118-8 | 1353 | 1179 |
| 6:00 a.m. | 1548 | 1048 | 121 | 1353 | |
| 8:00 a.m. | 1546 | 1091 | 119-6 | 1353 | 1210 |
| 8-12-39 | | | | | |
| 1:00 a.m. | 1607 | 1118 | 125-9 | 1353 | 1222 |
| 2:00 a.m. | 1605 | 1125 | 128-2 | 1353 | 1224 |
| 3:30 a.m. | 1600 | 1116 | 124-6 | 1353 | 1202 |
| 4:30 a.m. | 1615 | 1114 | 125-8 | 1353 | 1235 |
| 5:30 a.m. | 1610 | 1106 | 129-3 | 1353 | 1190 |

DEC -7 '51

OFFICERS
Mayor . . M. J. Barnes
Clerk . . . L. L. Berry

COUNCILMEN
D. A. Anderson
Harry Kray
R. E. Elson

# City of Vinton

Vinton, Iowa

OFFICERS
City Solicitor, Karl W. Fischer

COUNCILMEN
J. M. Ludden
F. C. Stahr
T. R. Dick

December 5, 1951

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

Dear Garland:

I am happy to learn that the Geological Survey will be of assistance to us in determinating the specific capacity of our two city water wells.

The limited available local record shows that both of these wells are finished in the Jordon Sandstone at 1505 feet for one of them and "the same depth" for the second well. They are located within one hundred yards of each other and are very definately affected by pumping of the other well. Pump settings in each are reputed to be such that the bottom of the tail pipe is at 150 feet. Both are pumped at 450 gpm. and under continous operation in the heavy summer season will operate at that rate without pulling air at zero on the air line. The outlet of the air line according to local witnesses is "at the very bottom" of the suction pipe. The fact that they are operated at zero on the air line without pulling air leads me to question the location of the end of the air line, yet differential head determinations may be made irrespective of the location of the terminal point.

Our present production capacity is too small to meet our peak demand of about 1½ millon gallons per day without drawing too heavily on storage capacity. Our demand rates are very seasonable and for that and economy reasons I am presently contemplating recommending to the City Fathers that additional capacity be secured by higher capacity pumps set at greater depths in our wells IF our wells are capable of producing more water at reasonable pumping heads without damaging the wells. I believe it would also be desirable to have the capacity of one of the pumps be twice that of the other to give greater versility in their operation. The location of our treatment plant and the limitations of our piping system make it mandatory for economy to develope all of our supply at the site of the present wells if at all possible.

Variations in pumping rates can be achieved by back pressure thru valve closure and by changing the impellor settings. A water meter in the discharge line will give discharge quanities. Any tests will have to be made in the winter seasom as it is the only time of the year we can supply our load for any length of time from above ground storage. Ordinary items of tools and equipment, and personel to assist in the tests are locally available.

OFFICERS
Mayor . . M. J. Barnes
Clerk . . . L. L. Berry
COUNCILMEN
D. A. Anderson
Harry Kray
R. E. Elson

# City of Vinton

Vinton, Iowa

OFFICERS
City Solicitor, Karl W. Fischer
COUNCILMEN
J. M. Ludden
F. C. Stahr
T. R. Dick

H. G. Hershey 2

The Howard Green Company of Cedar Rapids and the Thorpe Well Co. of Des Moines have done the well work for this City in past years and may have in their files information of value concerning our problem. I have hesitated to contact either of these firms to date as I was not prepared to engage either of them for work on the item.

There is in the file here some limited data on well pumping tests made in the 1930 decade which may be of value to you in your appraisal of our wells. It will be made available to you and I hope I can find someone to make a copy of the material for you before you or one of your men arrive.

We appreciare your offer of assistance and are available here in Vinton at all times for a visit with you or any other personel of your Department. Please advise in advance of the time of your call and we will accommodate your schedule.

With kind regards,

Yours truly,

G. L. Ziemer