W 8574

IOWA GEOLOGICAL SURVEY

In Cooperation with U. S. Geological Survey

RECORD OF WELL

Location: JUST E. OF TEST HOLE #8 DRILLED IN 1956 STONE AVE. & GORDON AVE.

(N E)

Town: SIOUX CITY (S W) :County WOODBURY

NE SE sec. 35 T. 89 N., R. 47 W. E. Twp.

Well name and number _____

Owner SIOUX CITY CITY WELL (1957) Address _____

Tenant _____ Address _____

Contractor LAYNE-WESTERN Address OMAHA, NEBR.

Drillers _____

Drilling dates SUMMER 1957

Well data:

Altitudes: Drilling curb 1169.4 feet; Land surface 1167 † feet

_____

Determined by _____

Topographic position _____

Total depth: Reported 390'? feet, Measured _____ feet

_____

Drilling method ROTARY?

Hole and casing data _____

_____

_____

_____

_____

Original depth to water _____ ft. above 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 (SiO_2)				
Iron (Fe)				
Manganese (Mn)				
Calcium (Ca)				
Magnesium (Mg)				
Potassium (K)				
Sodium (Na)				
Carbonate (CO_3)				
Bicarbonate (HCO_3)				
Sulfate (SO_4)				
Chloride (Cl)				
Fluoride (F)				
Nitrate (NO_3)				
Dissolved solids				
Hardness (as $CaCO_3$)				
Total				
Grains per gallon				
Noncarbonate				
Alkalinity (as $CaCO_3$)				
pH				
Specific conductance (micromhos at 25°C)				
Temperature (°F)				
Analysis No.				

Laboratory Data

Well No. W 8574 Sample range 0–390 No. of samples 77

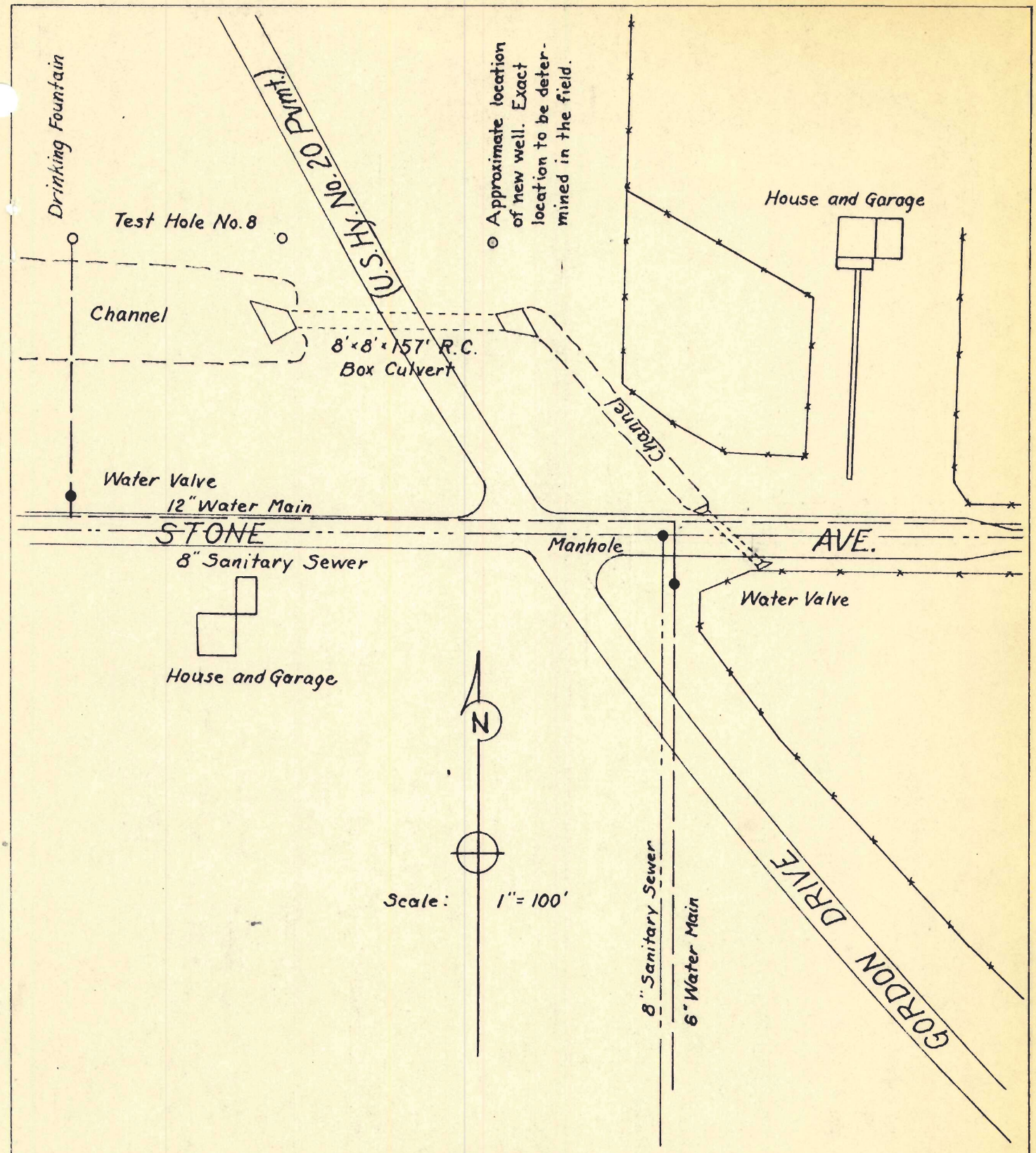
No. of dupls. and cond. 77 Good Washed range ~

Samples prepared by V. Dow Date 8/1/57

Logged by Northup Date 4/30/58

Correlations by " Date 4/30/58

EA 7-17



SIOUX CITY WATER SYSTEM
PROPOSED NEW WELL

ENGINEERING CONSULTANTS

Buell & Winter
Sioux City, Iowa

Howard R. Green Company
Cedar Rapids, Iowa

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Local Well No. 089-47W-35DA
Aquifer Code(s) KIDI
Owner's Name Sioux City (1957)
W Number 08574

Card Q

State: Iowa [19] (1 2) County: Woodbury [97] (3 4) Town: Sioux City, Iowa

Well No. Latitude [4228501N] (5–11) Longitude [0962110] (12–18) Seq. No. [1] (19) Date M D Y [072259] (20–25)

Sampling Depth [380] (26–29) Type [1] (30) Kx10^6 [610] (31–35) pH [7.4] (36–38) Temp. °F [54] (39–41)

SiO_2 [15.] (42–44) Ca [87.] (45–49) Mg [25.] (50–53) Na [92.] (54–58) K [4.7] (59–61)

HCO_3 [400] (62–65) CO_3 [0] (66 67) SO_4 [24.] (68–72) Cl [5.] (73–78) Source No. [3] (79) [Q] (80)

Card R

Duplicate Columns 1-25 from Card Q

F [.4] (26–28) NO_3 [4.] (29–32) PO_4 [.] (33–35) B [.] (36–38) Al [.] (39–41) Fe [.59] (42–45)

Mn [.12] (46–49) Cu [.] (50–52) Pb [ ] (53 54) Zn [.] (55–57)

Determined Solids [313] (58–63) Calc. [ ] (64–69) Ca,Mg Hardness [320] (70–73) Non-Carb. [0] (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 $CaCO_3$ [328] (32–35) Free CO_2 [ ] (36–38) SAR [.] (39–41)

RSC [ ] (42–44) ABS [.] (45–47) [.] (48–50) [ ] (51–54)

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: 1W

Published:

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Local Well No. 089-47W-35DA
Aquifer Code(s) KIDI
Owner's Name Sioux City (1957)
W Number 08574

Card Q

State: Iowa [19] (1 2) County: Woodbury [97] (3 4) Town: Sioux City, Iowa

Well No. Latitude [4228501N] (5–11) Longitude [096211106] (12–18) Seq. No. [1] (19) Date M D Y [111766] (20–25)

Sampling Depth [380] (26–29) Type [1] (30) Kx10^6 [640] (31–35) pH [7.1] (36–38) Temp. °F [54] (39–41)

SiO_2 [19.] (42–44) Ca [96.] (45–49) Mg [24.] (50–53) Na [11.] (54–58) K [6.0] (59–61)

HCO_3 [429] (62–65) CO_3 [0] (66 67) SO_4 [25.] (68–72) Cl [2.] (73–78) Source No. [3] [Q] (79 80)

Card R

Duplicate Columns 1-25 from Card Q

F [.4] (26–28) NO_3 [12.] (29–32) PO_4 [...] (33–35) B [...] (36–38) Al [...] (39–41) Fe [1.0] (42–45)

Mn [.19] (46–49) Cu [...] (50–52) Pb [..] (53 54) Zn [...] (55–57)

Solids Determined [357] (58–63) Calc. [.....] (64–69) Ca,Mg Hardness [340] (70–73) Non-Carb. [0] (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 $CaCO_3$ [352] (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. ABRONSON

Punched by: T Date: 1W

Published:

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
Water Resources Division

Water Quality
(ppm)

Local Well No. 089-47W-35DA
Aquifer Code(s) KIDI
Owner's Name Sioux City (1957)
W Number 08574

Card Q

State: IOWA (19) (1 2) County: WOODBURY (97) (3 4) Town: Sioux City, Iowa

Well No. Latitude 42 28 50 N (5–11) Longitude 096 21 10 (12–18) Seq. No. 1 (19) Date M D Y 04 25 57 (20–25)

Sampling Depth 380 (26–29) Type 1 (30) Kx10^6 580 (31–35) pH 7.4 (36–38) Temp. °F 55 (39–41)

SiO_2 12. (42–44) Ca 85. (45–49) Mg 23. (50–53) Na 86. (54–58) K 5.1 (59–61)

HCO_3 371 (62–65) CO_3 0 (66 67) SO_4 18. (68–72) Cl 40. (73–78) Source No. 3 (79) Q (80)

Card R

Duplicate Columns 1-25 from Card Q

F .5 (26–28) NO_3 .4 (29–32) PO_4 . (33–35) B . (36–38) Al . (39–41) Fe .84 (42–45)

Mn .18 (46–49) Cu . (50–52) Pb . (53 54) Zn . (55–57)

Solids Determined 354 (58–63) Calc. (64–69) Hardness Ca,Mg 307 (70–73) Non-Carb. 3 (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 $CaCO_3$ 304 (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: 1/W

Published:

HOWARD R. GREEN CO.
Consulting Engineers

WATER SUPPLY AND TREATMENT
SEWERS AND SEWAGE DISPOSAL
STRUCTURES, BRIDGES, BUILDINGS
UTILITY VALUATIONS, RATES
INVESTIGATIONS, REPORTS

213 BEVER BUILDING, CEDAR RAPIDS, IOWA

January 20, 1958

Iowa Geological Survey
Geology Annex
Iowa City, Iowa

Attention: Mr. Paul Horick

Gentlemen:

Enclosed is plat showing the location of test wells at Sioux City referred to in our preliminary report of 1956. Also enclosed are drawings showing the location and construction log of the new well for your information.

Will you please check with Dr. Brown on the status of the letter he was going to get out concerning the Marshalltown ground water forecast? It is our opinion based upon our investigations of the municipal wells and also of the Iowa Electric Light & Power Co. wells that a substantial reserve of ground water exists in this area which might be developed by the construction of properly designed wells 250 to 300 ft. deep.

This reserve has not been drawn upon by the City since 1955 the last date of pumping from the two deep wells. Since 1955 the total supply has been drawn from the 9 suction wells. The characteristics of the existing suction system limits the drawdown in the field to a maximum suction lift of about 20 ft. This limited drawdown permits only a fraction of the potential yield of the acquifer to be developed in our opinion.

Very truly yours,

HOWARD R. GREEN CO.

JAS:w

J. A. SAMPSON

January 29, 1958

Mr. J. A. Sampson
Howard R. Green Co.
213 Bever Building
Cedar Rapids, Iowa

Dear Mr. Sampson:

We want to thank you for the material on Sioux City. This material will be of great aid to us.

Through an oversight we did not send you a copy of the letter concerning the Marshalltown well field. Enclosed is a copy of our letter to Mr. Mains on this subject.

We hope this information is what you desire.

Please let us know if we can be of any further aid.

Very truly yours,

H. G. Hershey

CNB:dh
Enc.

Layne-Western Company
WATER WELL DRILLING
EXPLORATION BORINGS AND TEST SURVEYS
LAYNE TURBINE PUMPS

AFFILIATED WITH
LAYNE & BOWLER, INC.

PHONE PLEASANT 2388

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

4430 COMMERCIAL AVENUE
OMAHA 10
NEBRASKA

June 5, 1958

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

Dear Dr. Hershey:

Thank you for the geological log of the new well we installed for the City of Sioux City. We note that you indicate a high percentage of silt in the Dakota sandstone section. Perhaps this accounts for the considerable variance in capacity in wells developed in the Dakota. This particular well turned out quite good as it delivers over 1500 GPM.

Yours truly,

LAYNE WESTERN COMPANY

G. H. Beard

G. H. Beard

ghb/rp

SIOUX CITY WATER SYSTEM
CONSTRUCTION LOG
FOR
PROPOSED NEW WELL

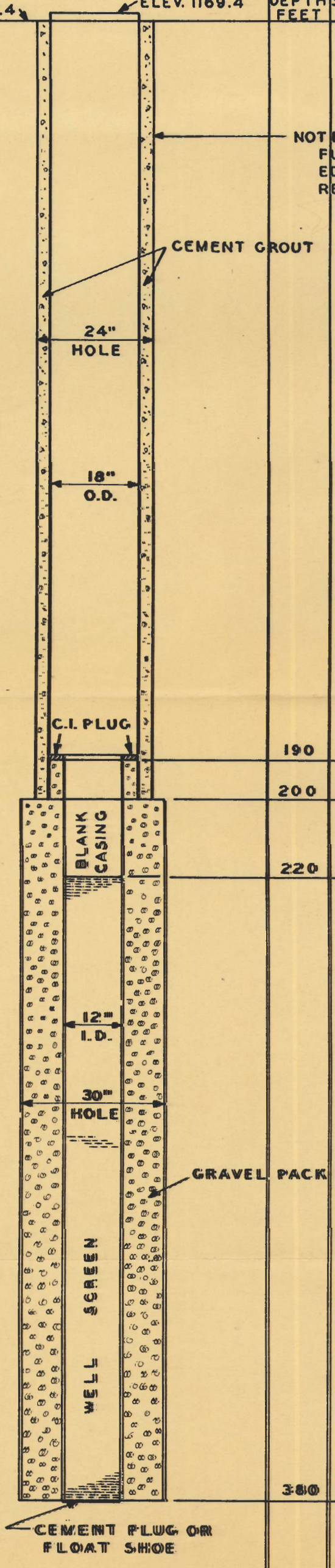
BUELL AND WINTER
SIOUX CITY, IOWA

HOWARD R. GREEN COMPANY
CEDAR RAPIDS, IOWA

LOG OF TEST WELL NUMBER 8

DESCRIPTION	FROM	TO
TOP SOIL	0	5
CLAY GRAY TO TANNISH GRAY SILTY	5	20
CLAY BLUISH GRAY SILTY	20	55
SAND TAN TO LIGHT BROWN MEDIUM GRAINED	55	75
CLAY MEDIUM GRAY SILTY	75	110
SAND TAN MEDIUM TO COARSE GRAINED	110	120
SAND TAN FINE GRAINED SILTY	120	185
SANDSTONE TAN FINE GRAINED TO SILTY FAIRLY WELL CEMENTED	185	210
SAND QUARTZ TAN PREDOMINANTLY FINE GRAINED WITH SILT	210	225
SAND QUARTZ DARK TAN TO LIGHT BROWN FINE GRAINED TO SILTY	225	240
SAND DARK TAN FINE GRAINED TO SILTY	240	265
SAND TAN FINE GRAINED TO SILTY	265	315
SAND TAN MEDIUM TO COARSE GRAINED	315	378
LIMESTONE LIGHT GRAY MASSIVE	378	410

PROPOSED WELL CONSTRUCTION



TOTAL DEPTH FEET	LENGTH SECTION FEET	DIAM. INCHES	TYPE MAT'L.	WALL THICK. INCHES
190	1.5	12 I.D.	C.I.	2 5/16
200	200	18 O.D.	S.	3/8
220	30	12 I.D.	S.S.	3/16
380	160	12 I.D.	S.S.	3/16

CASING SHOULD BE CHECKED

WRD Exp. (GW)
Aug. 1964

Verified PMJ

U. S. DEPARTMENT OF THE INTERIOR Punched PMJ GEOLOGICAL SURVEY

Water Resources Division Well Schedule Form

MASTER CARD

Record by TWENTER Source of data FILES Date 7/28/65 Map 1:63,360 COUNTY HIGHWAY

State IOWA (16) County (or town) WOODBURY (97)

Latitude: 42°28'50"N Longitude: 096°21'10" Sequential number: 1

Lat-long accuracy: 3 T. 89 N S, R 47 W Sec 35, ¼, NE ¼, SE ¼, 5 B & M

Local well number: 089473N35d2 Other number: W-8574

Local use: 085741 57 CITY Owner or name: CITY OF SIOUX CITY

Owner or name: SIOUX CITY IOWA Address: SIOUX CITY, IOWA

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

Use of water: (A) Air cond, (C) Comm, (D) Dewatering, (F) Fire, (H) Dom, (I) Irr, (N) Ind, (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.: NONE (N) Field aquifer char.

Hyd. lab. data:

Qual. water data; type: C

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

Aperture cards: yes

Log data: SAMPLE LOG G

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 380 ft (380) Meas. rept accuracy — 6

Depth cased: (first perf.) 220 ft (220) Casing type: STEEL ; Diam. 18 in — S

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, (Z) 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 — H

Date Drilled: 1957? (9 5 7) Pump intake setting: ft

Driller: LAYNE-WESTERN CO name, OMAHA, NEB. 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): nat, LPG, diesel, elec, gas, gasoline, hand, gas, wind; H.P. Trans. or meter no.

Descrip. MP LSD ft above below lsd, Alt. MP 1169.4

Alt. LSD: 1169.4 (1 1 6 9) Accuracy: (source) ALTIMETER — 7

Water Level 100 ft above (below) MP; Ft above (below) lsd (100) Accuracy: — D

Date meas: (4 5 7) Yield: 1500+ gpm (1500) Method determined

Drawdown: 64 ft (64) Accuracy: (3) Pumping period hrs — 72

QUALITY OF WATER DATA: Iron (4) ppm Sulfate (1) ppm Chloride (0) ppm Hard. ppm — 7

Sp. Conduct K x 10^6 (4) Temp. °F (54) Date sampled 17NOV.1966 — N 6 6

Taste, color, etc.

089-47W-35 da 1

Well Number 42, 28, 50 N 096, 21, 10, 1
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: CENTRAL LOWLANDS [1 2] (20–21) Section: DISSECTED TILL PLAIN [e] (22) Drainage Basin: MISSOURI [3 6 D] (23–25) Subbasin: [ ] (26)

Topo of well site: local depression, flat surface, hilltop, hillside, terrace, valley flat, [ ] (27)

MAJOR AQUIFER: CRETACEOUS system, LOWER series [K 1] (28–29) DAKOTA SANDSTONE aquifer, formation, group [D 1] (30–31)

Lithology: SANDSTONE [V] (32–33) Origin: MARINE [6] (34) Aquifer Thickness: [ ] ft

Length of well open to: 160 ft [1 6 0] (38–40) Depth to top of: [ ] ft [2 2 0] (41–43)

MINOR AQUIFER: [ ] system, [ ] series [ ] (44–45) [ ] aquifer, formation, group [ ] (46–47)

Lithology: [ ] (48–49) Origin: [ ] (50) Aquifer Thickness: [ ] ft

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

Intervals Screened: [ ]

Depth to consolidated rock: 145 ft [1 1 4 5] (60–63) Source of data: SAMPLE LOG [C] (64)

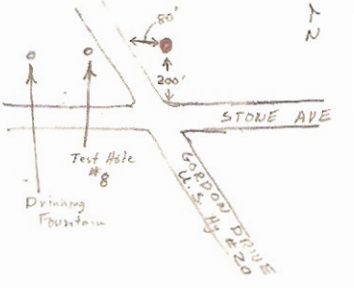
Depth to basement: [ ] ft [ ] (65–68) Source of data: [ ] (69)

Surficial material: TILL [T] (70–71) Infiltration characteristics: FAIR [3] (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)

CASING:
18" casing = 0' to 200'
12" casing = 200' to 280'
Cement plug at bottom



GPO 844-225