

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

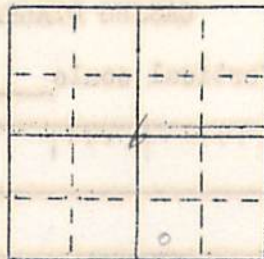
W-0230

RECORD OF WELL

Location:

Town: Martelle (NE) (SW): County Jones

SE-SW sec. 6 T 83 N., R. 4 W. Greenfield Twp.



Well name and number TERA Town Well

Owner Town of Martelle

Address _____

Tenant _____

Address _____

Contractor C.D. Nolan Well Co.

Address Cedar Rapids

Drillers _____

Drilling dates Dec. 19, 1934 - Feb. 12, 1935

Well data:

Elevations: Drilling curb 90.8 feet; Land surface _____ feet

Determined by _____

Topographic position Level plain

Total depth: Reported 121 feet, Measured _____ feet

Drilling method cable

Hole and casing data 89'6" of 12" casing from curb to 89'6" 10" open

hole from 89'6" to 121'

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

Original elevation of water level _____ ft.; Source of data _____

Sources of water: Principal Silurian; Others _____

Production data:

Date _____

Static depth to water 30

Measuring point _____

Pumping level 91at 55

g.p.m.

Specific capacity _____ g.p.m. per ft. drawdown; Temperature 50 °F.Pump data: Type pump Cylinder Column Dia. _____ Length 115'

Cylinder or bowls: Dia. _____ Length _____ Suction pipe _____

Power Electric Airline _____

Estimated rate of production: _____ g.p.m. for _____ hrs. a day

Use of water _____

WATER ANALYSES (in parts per million)

Date samples	<u>Feb. 29, 1936</u>			
Sampled by	<u>H.C. Tester</u>			
Total solids				
Insoluble matter	<u>19.4</u>			
Alkalinity (Meo)	<u>215.0</u>			
Alkalinity (Phm)	<u>0.0</u>			
pH	<u>7.2</u>			
Fe ₂ O ₃ + Mn ₂ O ₃ + Al ₂ O ₃	<u>4.8</u>			
Alkali as sodium	<u>68.89</u>			
Calcium	<u>62.88</u>			
Magnesium	<u>17.52</u>			
Iron (unfiltered)	<u>0.15</u>			
Manganese	<u>0.0</u>			
Nitrate	<u>0.0</u>			
Fluoride	<u>0.0</u>			
Chloride	<u>5.0</u>			
Sulfate	<u>151.56</u>			
Bicarbonate	<u>212.30</u>			
Hardness (ppm)	<u>229.87</u>			
Hardness (gpg)				
Remarks				

Laboratory data:

Sample storage location _____

Sample range 0-121 No. spls. 36 No. dupls. & cond. 35 cond.

Spls. prepared by _____ Washed range _____ by _____

Driller's log and cond. _____

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

Microscopic study Rowser strip log Emb Jan. 27, 1950

Gen. log _____ Correl. by _____

Location Martelle, Iowa Date Drilled 1935 Analyst Rowser

Snd casing followed drill down to 69', failed to shut off snd at that depth, probably because it was broken at bottom by drill.

00	clay - 30-40% silt - 25-35% sand - 25-30% gravel - 10-20% sample is yellow to brown - leached & oxidized - This sample is at bottom of pit, top soil & has been reworked - probably upper 2 or 3 feet
5	Drift - oxidized & unleached - yellow to grayish brown; calc - 10-20% soluble; silt - 30-40%; clay - 20-30%; sand - 25-35%; max. grd - 1/2 - 1/4 - prin sub - 1/4 - 1/8 - shape - A - 10% - a - 35% - C - 40%; gravel - 15-20% - up to 10 mm
10	Drift - oxidized & unleached - yellow to buff; 10-20% soluble; silt - 30-35%; sand - 30-35% size - 1/2 - 1/4 - prin sub - 1/4 - 1/8; shape - A - 15% - a - 25% - C - 60%; r - 5%; clay - 20-30%; gravel, 15-20% - some ls. pebbles
15	Drift - oxidized & unleached - yellow to drk. buff; 15-25% soluble; sand - 30-40% - similar to that in 10-15; silt, 25-35%; clay - 20-30%; gravel, 10-20%; up to 8 mm
20	Drift - partially oxidized and unleached - yellow to buff; calc; 15-25% soluble; silt, 40-45%; sand - 30-35%; 1/2 - 1/4 - prin. sub, 1/4 - 1/8; shape - A - 15, a - 35%; C - 50%; clay - 20-30%; gravel - 15-20%; some ls. pebbles - a few green ign. & quartz
25	Drift - oxidized & unleached - drk. buff to brown; calc; 20-25% soluble; sand - 40-50%; size - max. grd - 1 1/2 - prin sub, 1 - 1/2; shape - A - 20%; a - 70% C - 10%; silt, 30-40%; clay - 10-20%; gravel, 5-10%; up to 20 mm
30	Drift - unoxidized & unleached - brown to buff - proportions of sand, silt, clay & gravel like 25-30.
35	Drift - unox. & unleached - very calc - 30-35% soluble; sand - 20-30%; gravel, 30-40% - ls. pebbles very abundant; clay - 20-30%; silt, 20-30%
40	Drift - unox. & unleached - yellow to buff; calcareous; 10-20% sol; sand - 30-40% max. grd - 1 1/2 - prin sub - 1/2 - 1/4 - shape - A - 20%; a - 40%; C - 40%; gravel - 10-20% - fine; silt, 20-30%; clay - 20-30%; some ls. pebbles
45	Drift - unox. & unleached - yellow to brn. buff; calc - 20-30% sol; sand - 30-40% coarse - 2-1; prin sub - 1 1/2 - gravel, 25-30%; up to 10 mm - many ls. pebbles; clay - 10-20%; silt, 10-20%
50	Drift - unox. & unleached - drk buff to brown; chiefly silt - 30-40%; sand - 25-30%; clay - 10-20%; gravel 10-15% - up to 10 mm - few ls. pebbles
55	Drift - unox. unteac. - drk. gry to yelsh, brown; chiefly silt - 35-40%; gravel - 30-35%; sand - 20-25%; clay - 15-20% solubility = 20-30%
58	Drift - unox. & unleached - drk. gry to slightly brown; chiefly silt - 40-50%; sand - 20-30% - fine; gravel, 10-20% clay - 20-30% solubility = 10-20%
60	
65	No sample
67 1/2	Drift - unox. & unleached - sand - 50-60% coarse - 2-1; prin sub - 1 1/2 - A - 20% - a - 75% C - 5% gravel, 10-20%; silt 25%; clay - 10-20%
69	No sample
70	Dolomite - buff, fine xline; sample is 70-80% sand, as in 67-67 1/2, from caving at 69'
71	Dolo - 60-70% - fine xline; dense - non porous; pure; buff; sand - 30-40% - from cavings at 69'
73	Dolo - 60-70% - 1st buff; rough, fine xline; rather dense - pure; sand - 30-40% - from above
75 1/2	Dolo - 70-80% - buff; pure; rough, rather dense - sand - 20-30% - from above, (69')
78	Dolo - 80-90% - drk buff - denser color than above - dense, tough, non porous; sand - 10-20% - from above
80	Dolo - 70-80% - 1st buff; very fine xline; very dense for a dolo; tough; sand - 20-30% - is from above
82 1/2	Dolo - 70-80% - 1st buff; very similar to 80-82 1/2 - sand - 20-30% - from above
85	dolo - 80-90% - buff - much more porous than 80-82 1/2 - softer than 80-85
86	dolo - 80-90% - from above
88 1/2	dolo - 80-90% - buff - dense - fine xline - pure; sand - 10-20% from above - at 69'
89 1/2	dolo - 80-90% - 1st buff - moderately porous; fine xline; sand - 10-20% - from above
90	Dolo - 100% - 1st buff to nearly cream; fine xline; tough - mod. porous
92 1/2	Dolo - 100% - 1st buff to gry - rather porous - fine xline; many cleav. dolo. xls, numerous cavities showing frag. of organic impressions
95 1/2	Dolo - 100% - 1st buff - xls of mod. size; not as porous as 92 1/2 - 95 1/2 - a few frag. of cleav. dolo. xls, Prob. formed in cavities
99	
100	

Top of dolo. at 69'

Casing set at 89 1/2'

Location Martelle, Iowa Date Drilled 1935 Analyst Rowser

99- Dolo = 100% to 1st buff to gry rather tough, somewhat porous;
clear dolo. xls abundant.

102 1/2 Dolo = 100% to gry to buff, dense - harder than 99-102 1/2 -
a bit less porous at 99-102 1/2.

105 dolo - gry to cream - rather dense - tough; contains
clear xls of dolo.

110 dolo - gry to cream - similar to 105-110 - contains a
few iron concretions.

112 dolo - gray - more porous than 105-112 - and not as hard;
clear, transparent dolo. xls common.

115 dolo - gry to cream rather porous - easily broken; clear, transparent
dolo. xls common.

117 1/2 dolo - dk gry to bl to gry - very porous - easily broken; quite common,
in very minute xls, adhering to cavities in rock.

20 dolo - gry - porous - slightly harder than 117 1/2 - 120 - clear dolo. xls common.

121

30

40

50

60

70

80

90

00

JUL 5 1968

MODERN EQUIPMENT

L. F. WINSLOW

Well Drilling

WELLS FOR EVERY PURPOSE -- 5 TO 30 INCH

PHONE, DAV. 391-5740

P. O., WALCOTT, IOWA, R. R. 1 52773

WELL TESTForCITY OF WEST BRANCH, IOWA

Make, Kind and Size of Power V 12 G.M.C. Diesel 5 X 6 Orifice
 Bowl No. 3 Size 10 inch Stages 8 Total Depth 446 Feet
 Column Setting 170 feet Size 8 Shaft size 1 15/16
 Static Water Level Before Pumping 92 feet Temperature 53 Degrees

Date	Time	Inches on	Pumping Level	Gallons Per. MIN.	Remarks
June 20,	10:45		92		Start
	11:00	28 $\frac{1}{2}$	108	650	Cloudy
	11:15	"	108	614	
	11:30	"	108	614	
	12:00	44	109	602+	Speeded up Eng.
	12:15	"	116	824	to 2500 R.P.M.
	12:24	39+	116	770	
	12:38	39-	119	770	
	1:07	37.5	122	754	Cloudy
	1:20	39	122	770	Partly Cloudy
	1:40	37.5	124	754	
	2:00	37-	126	748	
	2:30	35.5	127	732	
	2:45	37.5	131	754	
	3:00	37.5	129	754	
	4:00	37.5	132	754	
	4:15	39	132	770	
	4:30	38.5	132.5	765	
	4:45	38.5	133	765	Clear
	5:00	39	133	770	
	6:00	39	133	770	
	7:00	39	133	770	
	7:44	39	127		Recovery

March 15, 1935

SUBJECT: FINAL REPORT ON MARTELLE WELL

TO: A. E. Michel, Chief Engineer
Iowa Emergency Relief Administration
Des Moines, Iowa

NAME OF PROJECT: Martelle city well, IERA Project.

LOCATION: City water works pump house and stand pipe,
Martelle, Iowa.

CONTRACTOR: C. D. Nolan Well Co., Cedar Rapids, Iowa.

CURB ELEVATION: 908 ft. TOTAL DEPTH: 121 ft.

TOPOGRAPHIC POSITION: Level plain.

TYPE OF FORMATIONS: Glacial drift from curb to 69 ft.;
Silurian dolomite from 69 ft. to 121 ft.

GENERALIZED LOG:

<u>Formation</u>	<u>Thickness</u>		<u>From</u>		<u>To</u>	
	<u>Ft.</u>	<u>In.</u>	<u>Ft.</u>	<u>In.</u>	<u>Ft.</u>	<u>In.</u>
Loess and soil	5		0		5	
Till, yellow to buff- brown, sandy, gravelly	64		5		69	
Dolomite, gray to buff, fine crystalline, lower 15 feet dense	20		69		89	
Dolomite, buff to gray, medium crystalline, porous	18	6	89		102	6
Dolomite, buff to gray, dense, tough	15		102	6	117	6
Dolomite, dark gray, very porous, friable	2	6	117	6	121	

WATER PRODUCING FORMATIONS: Major supply of water in dolomite
from 89 ft. to 92 ft. 6 in., and from 117 ft. 6 in. to
120 ft.

DATA ON CONSTRUCTION OF WELL:

STARTED: December 18, 1934. **COMPLETED:** February 12, 1935.

Drilling completed February 5, 1935.

METHOD OF CONSTRUCTION: Drilled with cable and tools.

DIAMETER OF HOLE: 16 in. from curb to 89 ft. 6 in.;
10 in. from 89 ft. 6 in. to 121 ft.

CASING RECORD: 12 in. wrought iron pipe from curb to
89 ft. 6 in.; 10 in. open hole from 89 ft. 6 in.
to 121 ft.

CASING ABOVE CURB: 12 in. wrought iron pipe extends
2 ft. 6 in. above level of curb.

CEMENTING RECORD: 16 in. galvanized iron tubing from
curb to 89 ft.; cement packing (Hawkeye Supreme, no
sand) introduced at bottom of pipe between 12 in.
O.D. and 16 in. hole from 89½ ft. to 88 ft.; cement
grouting introduced at top of well between 12 in.
O.D. pipe and 16 in. galvanized iron tubing, from
surface to 88 ft.

CAP AT TOP: Temporary galvanized iron cap, held by
strap iron band with 3/8 in. bolt.

FIELD SUPERVISION: E. H. Rowser, Field Geologist.

DATA ON WATER:

TOTAL PRODUCTION: 25,150 gallons in 10 hours 15 minutes
at 40.9 g.p.m.

NATURAL RATE: 55 g.p.m.

STATIC HEAD: 30 ft. below curb; drawdown to 91 ft. in
10 hours 15 minutes of pumping at 55 g.p.m.

REMARKS ON WATER PRODUCTION: Pumping at 48 g.p.m. shows drawdown of 45 feet to 75 feet below static level of 30 feet. Pumping at rate of 10.4 g.p.m. for 24 hours would supply approximately 15,000 gallons per day or more than normal requirements. Pumping at rate of 48 g.p.m. from 75 feet depth would supply 15,000 in slightly less than 6 hours of pumping per day.

WATER ANALYSIS: No. 98367 (furnished by State Water Analysis Lab.) Final pumping test. After 9 hrs. pumping. Feb. 7, 1935.

Total Solids	327.0
Susp. Solids	
Diss. Solids	327.0
pH	7.0
Alkalinity (MeO)	232.0
Alkalinity (phn)	0.0
Insol. Matter	45.3
Nitrites	0.004
Nitrates	0.0
R ₂ O ₃	11.8
Alkalies (as Na)	10.1
Ca	64.6
Mg	20.3
Fe	5.0
Mn	Tr.
Al	2.4
F	0.5
Cl	2.5
SO ₄	5.5
HCO ₃	235.0
PO ₄	0.01
BO ₃	0.0
Calc. Hardness	254.0

REMARKS ON QUALITY OF WATER: An excellent water for domestic and industrial use except for iron. The iron content will reduce with pumping of well as open hole is thoroughly flushed. This water shows marked improvement over old school house well water.

STERILIZATION: Well not chlorinated, waiting for installation of pumping equipment. After pump is installed the State Board of Health regulations should be followed in sterilization process.

GENERAL REMARKS: Before this well is put into use it is essential that old school well be properly plugged with cement to shut off pollution of water zone and to protect sanitary quality of new well.

School
well plugged
OK

Allen C. Tester
Assistant State Geologist
Supervisor, IERA Project
S-28-1085

Enclosure: Blue print
showing log of formations
and construction of well.