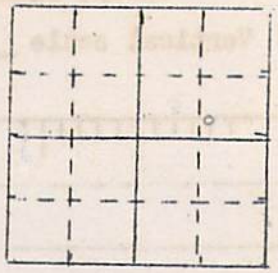
IOWA GEOLOGICAL SURVEY
In Cooperation with U. S. Geological Survey

W-1897

RECORD OF WELL



Location:

Town: Grundy Center (N E S W); County Grundy E.

SW¼ SE¼ NE¼ sec. 12 T. 87 N., R. 17 W. Paleroo Twp.

Well name and number City of Grundy Center No. 3

Owner City of Grundy Center Address _____

Tenant _____ Address _____

Contractor Hoeg & Ames Address Lincoln

Drillers Rhodes

Drilling dates Started June 24, 1944 Finished July 26, 1944

Well data:

Elevations: Drilling curb 1020.0 feet; Land surface 1018.9 feet

Drilling curb, top of 16-inch O.D. casing

Determined by hand level by W.E.H.

Topographic position Upland

Total depth: Reported _____ feet; Measured 558 below L.S. feet

559 feet below drilling curb.

Drilling method Cable tool

Hole and casing data 25 feet of 16-inch casing from +1' to 24'; 16-inch hole to 40 feet. 155 feet of 12-inch casing from 0 to 155 feet, (The 12-inch casing will be removed). 331 feet-2-inches of 10-inch casing from +1.1 feet to 330 feet. (After the 12-inch casing is removed, the upper 40 feet of annular space outside the 10-inch casing will be cemented.)

(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.)

Original depth to water 138.30 ft. ~~above~~ below Curb Date July 27, 1944

Original elevation of water level 882.7 ft.; Source of data Direct Measurement.

Sources of water: Principal Devonian Wapsi (485-495); Others _____ (from 495 to 559)

Production data: Date July 27, 1944

Static depth to water 138.30; Measuring point top of 10-inch casing.-Elev 1020.0

Pumping level	at	g.p.m.
142.35	153	
145.67	253	
146.00	264	
146.95	300	

Specific capacity 34 g.p.m. per ft. drawdown; Temperature 50 °F.

Pump data: Type pump Turbine; Column: Dia. 3 1/2 Length 160

Cylinder or bowls: Dia. _____ Length 5'; Suction pipe _____

Power Gasoline Engine; Airline _____

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

Use of water Public supply

WATER ANALYSES (in parts per million)

Date sampled	July 27, 1944			
Sampled by	W.E. Hale			
Total solids	984			
Insoluble matter	32.4			
Alkalinity (Meo)	232.0			
Alkalinity (Phn)	0.0			
pH	7.2			
$Fe_2O_3+Mn_2O_3+Al_2O_3$	4.0			
Alkali as sodium	2.0			
Calcium	163.0			
Magnesium	79.9			
Iron (unfiltered)	0.8			
Manganese	Trace			
Nitrate	3.5			
Fluoride	2.0			
Chloride	2.0			
Sulphate	470.8			
Bicarbonate	285.0			
Hardness (ppm)	737			
Hardness (gpg)	43.1			

Remarks Water slightly cloudy, found H₂S odor

Laboratory data: Sample storage location _____

Sample range 0-556 No. spls. 101 No. dupls & cond. _____

Spls. prepared by Schultz Washed range _____ by _____

Driller's log and cond. _____

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

Microscopic study Split strip log by Schultz

Gen. log E. Schultz Correl. by E. SCHULTZ

Sheet No. 1 Name of Well Grundy Center City Well #3 Survey No. W-1897

Location Grundy Center (Grundy) Date Drilled June-July '44 Analyst E. Schultz

Depth	Description
00	
	Soil dk gr sd [illegible]
10	Till bff ox not leached slty sdy
	Till bff ox sdy
20	Till bff ox few qtz grains & lg pebs
	Till bff ox Tr Ig
30	Till dkb not ox Ig peb
	Till dkb Tr Ig Ls pebs
40	Till dkb micac Tr Ig Ls pebs
	Till dkb sdy Ig 20% v. crse Ls pebs
50	a.a. Ls pebs
	Till dkb sd: md-crs, Ls pebs predom, Ig peb
60	a.a.
	a.a.
70	a.a.
80	a.a.
	a.a.
90	a.a.
	a.a.
100	a.a.

Sheet No. 2 Name of Well City Well #3 Survey No. W-1897

Location Grundy Center (Grundy) Date Drilled June-July '44 Analyst E. Ohholtz

100

a.a.

10

a.a.

a.a.

20

a.a.

a.a.

30

a.a.

a.a.

40

a.a.

a.a.

50

a.a.

a.a.

60

Ls. lt bff drb v.fn dense gran

Ls. v.lt gr-bff dns vfn-sublith porous (pores much larger than gran)

Sh. 35% gr. hrd v.fn.lam dead

Ls. 65% a.a.

70

Sh lt gr grn tinge slty soft v. dolo fissile, slty xlln

80

Ls - 15%

Sh - gr, slty dull, lam v.v. dolo

Charophyta
Crinoid
Echinoid

Sh

90

a.a.

Sh. gr. a.a.

Ls. gr-bff 25% sublith brd

Sheet No. 3 Name of Well. City Well #3 Survey No. W-1897

Location Grundy Center (Grundy) Date Drilled Analyst Schultz

200
Sh 80% gr v calc dull (no struct. massive)
Ls aa
10
Sh aa few o
aa
Bryozoan
20
Sh aa
Sh & Ls
Charophyte
30
Sh
sh gr soft silty v calc dull
40
aa
Sh aa Bryozoa
50
Sh aa Bryozoa
Bryozoa
Brach frag
Crinoid
aa
60
aa
Crinoid
charophyte
Echinoid
Bryozoa
aaaa
70
aa
aa
Bryo
Charophyte
80
aa
Crinoid
Echinoid
90
aa
aa
300

Sheet No. 4 Name of Well City Well #3 Survey No. W-12897

Location Grundy Center (Grundy Date Drilled .... Analyst Schultz

300

Sh gy-grn lam, non-calc sltly waxy

LS 90% dirty wht-lt bff sublith & v. fn. med porous

Sh. gr pet lam calc

10

LS 30% gr argill, dolc, dense, gran

LS 70% lt bff fn med-porous xtln - calcite rhombs

Brach.

20 LS dk bff v fn v dense Xtln Bryozoa

LS dirty wht-bff v fn xtln dense

sl+ wht LS bff

30 LS dirty wht slty v fn dense xtln

LS - lt bff med gran egg shaped pellets porous argill

40 LS same characteristics as sample from 325-30

LS a.a.

50 LS. a.a.

LS 80% wht vfn-sublith, dense } slty or argill.

LS 20% brn vfn-fn less dense gran

60 LS a.a.

LS a.a.

70 a.a.

a.a. Crinoid

80 a.a.

a.a.

90 a.a.

a.a.

a.a.

400

Sheet No. 5 Name of Well City well [illegible] Survey No. [illegible]

Location Grundy Center (Grundy) Date Drilled 6-7/44 Analyst [illegible]

Depth	Description
00	Ls 60% bff sublith dense, dolo } sl[illegible] Ls 40% lt gr mot sublith dense }
	a a
10	a a
	a a
20	a a
	Ls. a a
30	a. a.
	a a
40	Ls - 79% drb v fn, dense Dolo 25% bff, v fn, gran, calc Dolo 5% wht dense v fn Chty Ls - gr 20% blk streaks v fn dense, gran Ls. - bff 80% partly mot sublith dense
50	Ls - a a Ls. - 25% bff - sublith. Sh - 15% gr-grn - hrd, slv vcalc Ls. - 60% wht vfn - sublith gran
60	Dolo 5% drk-brn fn med xtln porous Ls. 50% bff & wht a. a. a. a.
70	Dolo - 75% drk brn Ls - 25% Ls (cave) gr. v fn slv Dolo - 90% bff drb fn, porous gran Dolo - dirty wht 10% vfn porous gran
80	N S
90	Dolo 75% bff brn 15% Cht Dolo - wht grain opaque inc. 10% Cht wht transparent [illegible]

Sheet No. 6 Name of Well City Well #3 Survey No. 1897

Location Grundy Center Date Drilled [illegible] Analyst Schulte

500 Dolo 60% drb fn-med x'ln calc
Dolo - wht 20% a.a Dolo 10% wht x'ln grain
510 Chrt - 10% ch dolo subranch

510 Dolo 70% drb brn fn-med calc grain
Dolo wht. chty 10%
520 Chrt 10% wht subranch dlo cal

520 Dolo 75% bff-drb fn-med x'ln. calc
Dolo 15% wht grain fn
530 Chrt 10% wht cal
Sh - 20% grn dull lam v calc

540 Dolo - drb grn med-fn

Dolo - drb-gren - a.a.

556

OFFICE COPY

IOWA GEOLOGICAL SURVEY
Iowa City, Iowa
Generalized Well Log
Based on Examination of Drill Cuttings

Name of Well Grundy Center City Well No. 3 Survey No. W. 1597

Location SW¼ SW¼ NE¼ sec. 12, T. 87 N., R. 17 W. County Grundy

Total depth 559 ft. Drilled by Homer Rhodes Date June 24 - July 26, 1944
below drilling curb

Drilling Curb elevation 1020.0 ft. Static level 133.45 ft.; Drawdown 8.65 ft. at 300 gal. per min.

Casing and hole size record 25' of 16" OD casing from +1.1 to 24'; 155' of 12" casing from 0-155'; 331'2" of 10" casing from + 1.1 to 330'.

Description of Formation	Thickness	Depth in feet From	To
Pleistocene system			
Kansan series			
1. Till, buff, oxidized	25	0	25
2. Till, drab, sandy. Limestone and igneous pebbles	130	25	155
Devonian system			
Upper Devonian series			
Lime Creek formation			
Owen member			
3. Limestone, light grey, very fine-grained, slightly porous	15	155	170
Carro Gordo member			
4. Shale, gray, soft, dull, very calcareous, slightly fossiliferous. Limestone, small percentages	55	170	225
Juniper Hill member			
5. Shale, gray, soft, dull, fossiliferous, very calcareous	80	225	305
Cedar Valley formation			
6. Limestone, light buff, very fine-grained, crystalline, argillaceous, dense	95	305	400
7. Limestone, buff, sublithographic, dense, partly dolomitic	60	400	460

cc to Miss Heliene Hilberger, City Clerk, Grundy Center, August 26, 1944
Hoeg and Ames, Lincoln, Iowa, August 26, 1944

Description	Thick.	From	To
Middle Devonian series Wapsipinicon formation			
8. Dolomite, drab, fine-grained, granular, porous. Limestone, 10 to 40% buff, dense, dolomitic	20	460	480
9. No samples	15	480	495
10. Dolomite 90%, buff, fine-grained, porous. Chert 10%, white, opaque, conchoidal	35	495	530
11. Dolomite 70%, drab, granular, cherty. Shale 30%, green, laminated, very calcareous, dull	10	530	540
12. Dolomite, drab, granular, porous	19	540	559

T. D. 559 feet

STATE OF IOWA
IOWA GEOLOGICAL SURVEY
GEOLOGY ANNEX
IOWA CITY

Results of Pumping Test of Grundy Center City Well 3 Grundy Center, Iowa July 27, 1944

Name and No.: Grundy Center City Well 3
Location: SW¼ SE¼ NE¼ sec. 12, T. 87 N., R. 17 W. Palermo Twp.
Elevation: Drilling curb, top of 16-inch O.D. casing, 1020.0 feet above sea level. Land surface, 1018.9 feet above sea level.
Owner: City of Grundy Center
Contractor: Hoeg and Ames, Lincoln, Iowa
Driller: Homer Rhodes
Date started: June 24, 1944
Date finished: July 26, 1944
Depth: 559 feet below drilling curb
Casing: 25 feet of 16-inch O.D. casing from +1.1 to 24 feet
155 feet of 12-inch casing from 0 to 155 feet
331 feet 2 inches of 10-inch casing from +1.1 to 330 feet
Note: Tentative plan is to remove 12-inch casing and cement the upper 40 feet of hole outside the 10-inch casing
Test Pump: Turbine, 160 feet of 3½" column + 5 feet of bowls (12 stages). Powered by gasoline engine connected directly to pump with right angle drive.
Measuring point: All depth to water measurements are referred to the pump base, 0.15 foot above top of 10-inch casing and at an elevation of 1020.15 feet above sea level
Production: Discharge measurements were made by determining volume of water pumped into a tank in given length of time. Discharge line consisted of 50 feet of 3½" fire hose during latter part of the pumping period.
Principal Aquifer: Water encountered from 485 to 559 feet below drilling curb. Main supply from 485 to 495 feet.
General Conditions: There are two city wells located near the No. 3 well. These wells were pumped from time to time during and preceding the pumping period on the No. 3 well. General data for these two wells is shown below.

Grundy Center City Well 1: (No. 2 ?)

Location: 63 feet north and 66 feet west of well 3
Elevation: Pump house floor 1018.4 feet above sea level
Depth: #255 feet
Casing: #10-inch casing to unknown depth
Non pumping water level reported to be 150± feet
Drawdown: Reported 6 feet when pumped at rate of 185 gallons per minute
Pump: Turbine, 160 feet of pump colum + 5 feet of bowls + 20 feet of suction pipe
Temperature of water: 49 3/4° F.

Grundy Center City Well 2: (No. 1?)

Location: 42 feet North and 69 feet west of well 3
Elevation: Pump house floor 1018.4 feet above sea level
Depth: *469 feet. Also reported to be 505 feet deep
Casing: *Hole size 8 to 4 inches, 6-inch casing part way
Non-pumping level reported to be 150± feet below land-surface
Drawdown: Reported 6 feet when pumped at rate of 120 gallons per minute
Pump: Turbine, approximate setting at 165 feet.

*From I.G.S. Volumes 21 and 33

Time	Depth to water in feet	Discharge Gallons per minute	Remarks
July 27, 1944			
2:10p.m.			Pumping stopped in wells 1 & 2
2:40	138.45		
2:43	138.55		Pumping started at well 2, 120 gpm
2:50	138.57		
2:55	138.57		Pumping started at well 1, 185 gpm
2:57	138.97		
3:02	139.11		
3:10			Pumping stopped at wells 1 & 2
4:00			Pumping started at well 3
4:12	141.65		Water cloudy, faint odor of H_2S, water temperature 50° F Air temperature 84°F
4:20		153	Pumping started in wells 1 & 2
4:30	144.10		
4:32			Pumping stopped in wells 1 & 2
4:36	142.55		
4:39	142.50		
4:40:30	144.70		Discharge increased from well 3
4:43	145.0		
4:47		253	Water cloudy, Temperature 50°F Air temperature 84°F.
4:53	145.82		
4:59	145.55		
5:10	145.28		
5:14			Discharge decreased from well 3 in order to remove section of hose on discharge line
5:15	141.90		
5:24	146.16	264	Discharge increased in well 3, water cloudy, faint H_2S odor. Water temperature 50°F. Air temperature 76°F.

Time	Depth to water in feet	Discharge Gallons per minute	Remarks
July 27, 1944			
5:42 p.m.	145.93		
5:45	146.03		
5:57	146.15		
6:50	147.02		
6:56			Pumping stopped from well 3 motor trouble
6:57	138.58		
6:59	138.52		
7:00			Pumping started on well 3
7:02	146.60		
7:05	146.92		
7:10		296	
7:22	147.15		
7:29	147.30		Water sample collected, Water cloudy, faint H_2S odor. Water temperature 50°F Air temperature 76°F.
7:35	147.10	300	
7:50	147.20		
7:57	147.05		
8:00			Pumping stopped from well 3
8:00:30	137.95		
8:01:30	138.50		
8:02	138.53		
8:04	138.50		
8:06	138.58		
8:08	138.50		
8:12	138.47		
8:26	138.57		
8:32	138.50		