IOWA GEOLOGICAL SURVEY W-0980

In Cooperation with U. S. Geological Survey

RECORD OF WELL

Location:

Town: Andrew (N E) (S W): County Jackson E.

NW-SE-SE sec. 22 T 85 N., R. 3 W. Perry Twp.



Well name and number Andrew Town Well

Owner Town of Andrew Address

Tenant Address

Contractor D E Edwards Address West Branch.

Drillers Jack

Drilling dates 2/23/39 - 6/1/39

Well data:

Elevations: Drilling curb 864 feet; Land surface 862.4 feet

Determined by

Topographic position Upland

Total depth: Reported 850 feet, Measured feet

Drilling method cable

Hole and casing data 117'6" of 8" casing from +1'6" to 116'

234'6" of 6" casing from 265'6" to 500'

Original depth to water ft. above below Date

Original elevation of water level ft.; Source of data

Sources of water: Principal Ordovician - Platt - St Peter; Others

Production data: Date June 1, 1939

Static depth to water 142 Measuring point Curb
Pumping level 270 at 30 g.p.m.

Specific capacity 23 g.p.m. per ft. drawdown; Temperature 54½ °F.

Pump data: Type pump Turbine Column Dia. _____ Length 293
Cylinder or bowls: Dia. _____ Length _____ Suction pipe 0

Power 7½ H.P. Electric Motor Airline _____

Estimated rate of production: _____ g.p.m. for _____ hrs. a day
Use of water City Supp

WATER ANALYSES (in parts per million)

Date samples	June 1, 1939	June 17, 1943		
Sampled by	W.O. Schulat.	K.E. Andersen		
Total solids	706	505		
Insoluble matter	21.0	14.5		
Alkalinity (Meo)	274.0	272.0		
Alkalinity (Phn)	0.0	0.0		
pH	7.4	7.4		
$Fe_2O_3 + Mn_2O_3 + Al_2O_3$	4.5	1.0		
Alkali as sodium	69.7	24.0		
Calcium	100.0	87.6		
Magnesium	37.2	38.9		
Iron (unfiltered)	1.0	0.2		
Manganese	0.10	0.00		
Nitrate	22.00	18.00		
Fluoride	Trace	0.0		
Chloride	106.0	67.0		
Sulfate	83.7	60.3		
Bicarbonate	334.3	331.8		
Hardness (ppm)	405	379		
Hardness (gpg)	23.7	22.2		

Remarks _____

Laboratory data: Sample storage location _____

Sample range 1-850(exps) No. spls. 177 No. dupls. & cond. 177 Good

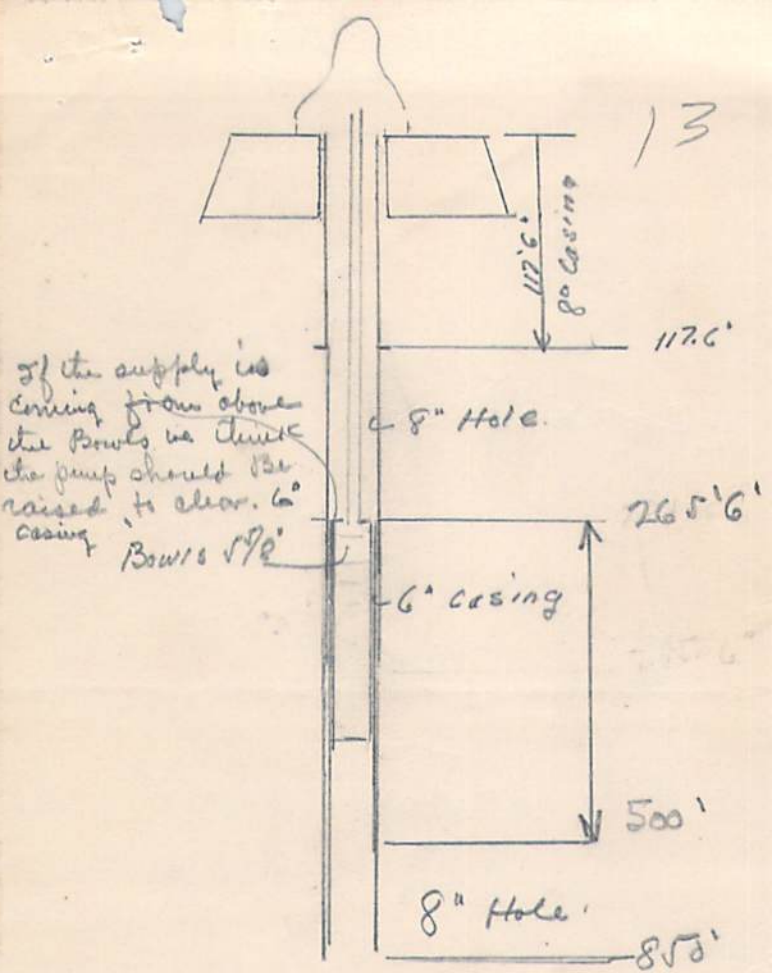
Spls. prepared by _____ Washed range _____ by _____

Driller's log and cond. _____

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

Microscopic study ✓ Elva Agnew strip log ✓ Elva

Gen. log ✓ Correl. by Elva Agnew



Northwestern States Portland Cement Co.
MASON CITY, IOWA
Phones - - - 254, 255, 256, 257
District Sales Office
MINNEAPOLIS, MINN. - - - Atlantic 4491

Sheet No. ..... Name of Well Andrew City Well Survey No. WI-0380

Location Jackson Co. Date Drilled ..... Analyst M. Elias

Curb elev. 860'

00 0 No sample

1 loess - lt. yellowish brown non calc.

5

loess - lt. pinkish brown v. slightly calc. grains dolo. + qtz. up to 1 m.m.

10 10

loess - lt. pinkish brown v. slightly calc. iron stain number dolo + qtz. grains reduced

15

more fine material than 1-15'

loess - lt. buff slightly calc. iron stain rare sand grains

20 20

loess - lt. buff slightly more calc. iron stain rare sand grains slightly micac.

25

sand maj. gr. - 2-1 mm princ. sub - 1-½ mm., 1-2 mm. angular-sub. ang. qtz. 75% calc. loess cement lt. yellowish brown

30 30

sand poorly sorted maj. gr. 1-½ mm - princ. sub. ½-½ gravel up to 15 mm angular qtz. 25% calc. clay cement lt. brown dk. ig. grains + lt. grains rare

35

sand maj. gr. 2-1 princ. sub. 1-½ 1-2 mm. ang.-sub. ang. poorly sorted qtz. dk. ig. grains + lt. + dolo. grains (rare) 40% quite calc. clay cement buff.

40 40

sand maj. gr. 2-1 princ. sub. 1-½, 1-2 mm ang.-subang. poorly sorted qtz., dk. ig. grains, chert, lt. + dolo. grains 40% quite calc. clay buff

45

washed sand maj. gr. 2-1 princ. sub. 1-½, 1-2 mm. ang-sub. ang. poorly sorted. qtz., qtzite, granite, fn. grained basic ex. lt., dolo. Unwashed shows cement - loess to clay, quite calc., lighter buff than 40-45', 35% (one small granite curiously)

50 50

washed 60% sand maj. gr. 1-½, princ. sub. ½-¼, 2-1 mm. angular poorly sorted qtz., little ig. matter 40% dolo., lt. gry., fn. to med. grained, rapid effervescence. Unwashed - clay calc. buff (little dark mottling)

Pleistocene

Silurian

Hopkinton

53

55

Dolomite lt. gry. to grayish drab, fn. grained, dense, a few small euhedral xls. of dolomite in vugs. 1% sand, clear qtz. ½-1 m.m. ang.

60 60

Dolomite, grayish drab fn. to med. grained saccharoidal, vugs. stylolite.

65

Dolomite grayish drab fn. to med. grained v. porous with vugs.

70 70

Dolomite grayish drab fn. to med. grained, vugs

75

No Sample

80 80

Dolomite light drab , med. grained saccharoidal fewer vugs, occasional large euhedral xl.

85

Dolomite light drab med. grained saccharoidal vugs weak effervescence iron stain coarse and large euhedral xls

90 90

Dolomite light drab , fn. to med. grained saccharoidal vugs with large euhedral xls. med. effervescence iron stain

95

Dolomite light drab med. grained saccharoidal, some fn. grained places. strongly effervescent , iron stain

100 100

Sheet No. 2 Name of Well Andrew Town Well Survey No. W-0990

Location ..... Date Drilled ..... Analyst M. Elias

100 – 100

Dolomite light drab med. grained saccharoidal, some large Xls., occasional vugs, weakly effervescent

– 105

Dolomite as above. v. little iron stain

110 – 110

60% dolomite lt. drab fn. to med. grained
40% ls. fawny pinkish, med. grained, saccharoidal; small black mineral grains scattered thru, and the pinkish color, create a greisenlike appearance; fragment of some large calc. Xls.; fragment of calc. bryozoan(?)

– 115

Dolomite lt. drab , a few pieces pinkish, fn. to med. saccharoidal, some pieces with fine black specks
10% ls. as in 110-115'

120 – 120

pinkish
Dolomite buff, fn. to med. saccharoidal, porous with vugs, a few pieces with black mineral specks

– 125

pinkish
Dolomite buff fn. to med. saccharoidal, porous with vugs, few fragments of large Xls., rare pieces with black specks

130 – 130

Dolomite pinkish buff, few pieces yellowish, fn. to med. saccharoidal, porous, some pieces with black specks

– 135

Dolomite, pale pinkish buff fn. to med. saccharoidal, quite porous, slight effervescence, rare small black specks

140 – 140

Dolomite, pale pinkish buff, med. saccharoidal, quite porous, slight effervescence, rare small black specks

– 145

Dolo. as 140-145'

150 – 150

Dolomite, pale buff, fn. to med. grained saccharoidal, full of iron oxide (20%) filling vugs?) moderate to strong effervescence
piece of milky chert.

– 155

Dolomite as 150-55' less iron oxide

160 – 160

Dolomite, some, iron oxide 5-10%, pieces of large Xls.

– 165

Dolomite lt. drab to pinkish buff, fn. to med. grained, porous, small coat of iron oxide, med. effervescence
1% chert white

170 – 170

Dolomite lt. drab to pinkish buff, fn. to med grained saccharoidal, porous, small coat iron oxide
5% chert white, containing some clear, some occurring as a crust

– 175

Dolomite lt. drab to pinkish buff, fn. to med. saccharoidal, porous; v. little iron oxide
15% chert, chalk white and some clear. A few small euhedral Xls of qtz.

180 – 180

Dolomite same as 175-80' 10% chert, white to clear some occurring as a crust

– 185

Dolomite, buff to pinkish buff, fn. to med. saccharoidal, porous 1% chert

190 – 190

Dolomite, buff, a little pinkish, fn. to med. saccharoidal, porous 1% chert

– 195

Dolomite, lt. drab, a little pinkish drab, fn. to med. saccharoid, slightly porous 5% chert white to clear

200 – 200

Sheet No. 3 Name of Well Andrews Town Well Survey No. W-0990

Location ..... Date Drilled ..... Analyst M. Elias

200 -200

Dolomite, lt. drab to buff, fn. to med. saccharoidal, slightly porous, slight effervescence
10% chert white dull + vitreous, and clear, one piece with tubular structure due to fossil, coral or bryozoan?

-205

Dolomite, as 200-205' chert 5-10% white dense and granular, some clear spots (indicating fossil fragments?)

210 -210

Dolomite, lt buff as above; chert 5% white dense + granular, some clear spots

-215

Dolomite, lt buff med. grained, saccharoidal; 10-15% chert as above

220 -220

Dolomite, lt. buff to pinkish buff, fn. to med. saccharoidal, vugs; 10% chert white to clear, some slightly buff, dense and granular

-225

Dolomite, lt buff, fn. to med. saccharoidal, porous; 35% chert white with clear spots suggesting fossil fragments dense, some granular
little iron oxide

230 -230

Dolomite, lt drab to buff, few pieces gray, med. saccharoidal 35% chert as above

-235

Dolomite lt. drab to buff, med. saccharoidal 25% chert, white to buff, opaque with clear spots

240 -240

Dolomite, as 235-40' 25% chert as above, one piece show banding, one piece with black dendrites

-245

Dolomite, pale gray to buff, fn. to med. 50% chert wh.-lt gray to lt. buff + pinkish

250 -250

Dolomite, pale gray to little buff, some drab gray mottling, fn to med, a little saccharoidal, pyrite XX, one piece, some chalcopyrite?
50% chert wh.-lt gray, a little buff

-255

Dolomite as 250-255' 40% chert white to buff

260 -260

Dolomite as above 30% chert

-265

Dolomite, lt gray, a few pieces grey - fn grained, med. effervescence, pyrite (most common in the darker fragments)
a little iron oxide

270 -270

Dolomite, lt gray (85%) and buff (15%), fn. to med. grained, some saccharoidal, pyrite, a little iron oxide
20% chert, white to buff, opaque and clear

-275

Dolomite, lt gray speckled with fine black grains, fn grained, med. effervescence; 10% buff dolo. as above
little pyrite and iron oxide 10% chert as above

280 -280

Dolomite, lt gray black speckled (shape of specks suggest fragments of fossils) fn grained, med. effervescence
little pyrite, some iron oxide 10% buff dolo. 2% chert

-285

Dolomite, lt. gray as 280-85'; 10% dolomite, buff, fn to med. saccharoidal, 1% chert, some iron oxide

290 -290

Dolomite, lt gray, a few pieces pale gray, black speckled, fn grained, trace of pyrite

-295

Dolomite, lt gray, black speckled, fn. grained; 5% dolo. buff, fn to med. saccharoidal, vuggy; 1% chert (some with a little pyrite)
some iron oxide

300 -300

Sheet No. 4 Name of Well Andrew Town Well Survey No. W-0990

Location ..... Date Drilled ..... Analyst M. Elias

300 – 300
Dolomite, shaly, lt. greenish gray, fn. grained, mod. effervescence, fn. Xls. of pyrite scattered thru, common. 10% granular lt gry. dolo. as in 295-300'.

305
Dolomite, shaly, as above, fn. pyrite scattered thru and larger Xls. up to 2 mm. 5% dolo. buff, mod. mechanical, porous

310 – 310
Shale, v. dolomitic, greenish gray, slightly grayer than above, pyrite Xls. common. Few fragments chert + buff dolo. some iron oxide

315
Same as above. 3% dolo. buff, mod. to coarsely Xlin., one chert.

320 – 320
Shale, sandy and dolomitic, mottled greenish gray and maroon; sand maj. gr. ½-1 mm. prim. sub. 1-2, ¼-½ mm. up to 4 mm. sand sub-rounded to sub-angular, qtz., jasper, little ls. material; greenish part more dolomitic (poorly sorted)

325
Shale sandy, calcareous as above but more sandy

330 – 330
Same, a little more dolomitic

335
Shale, v. dolomitic, sandy, lt. bluish gray to gray, soft with hard dolomitic areas, less sand than in shale above 320-330

340 – 340
Dolomite, v. shaly, sandy, lt. gray, some dolomite fragments olive gray, sand as in 320-25'

345
Shale, v. dolomitic, sandy, lt. greenish gray, mod. hd., few olive gray and gray dolomitic fragments, sand as above

350 – 350
Shale, dolomitic, sandy, lt. greenish gray, mod. hard, little sand.

355
Shale, v. dolomitic, slightly sandy, lt. gray, mod. hard, dolomite granular, fn. grained.

360 – 360
Same as 355-60'

365
Shale, dolomitic, lt. gray, mod. hd.; a few pieces dark grayish drab dolomite, slight effervescence, with a little pyrite

370 – 370
Shale, as above, more dark grayish drab dolo., small amt. sand

375
Shale, dolomitic, sandy, lt. gray with yellowish brown patches, mod. hd., about 20% sand, maj. gr. ½-1 prim. sub. ½-½, 1-2 mm. up to 6 mm., sub rounded to sub angular, qtz. and jasper.

380 – 380
Shale, dolomitic, lt. gray, mod. hd., v. little sand, a few pieces of buff dolomite

385
Shale, dolomite, lt. gray, mod hd., fragments of dark grayish drab dolo., just a few grains of sand

390 – 390
Shale, dolomitic, slightly sandy, lt. gray to lt. olive gray, v. few dark grayish buff dolo. fragments, little pyrite

395
Shale, dolomitic, lt. gray, mod. hd., some dolomitic pieces olive gray, v. little sand

400 – 400

Sheet No. 5 Name of Well Andrew Town Well Survey No. W-0990

Location ..... Date Drilled ..... Analyst M. Elias

400 — 400
Shale, dolomitic, lt. gray, med. hd., more dolomitic parts slightly darker, several large hunks of marcasite
405
Same as above
410 — 410
Same as 400-5'
415
Shale as 400-5', little sand, few small grains of buff dolo.
420 — 420
Shale as 400-5', v. little sand, more marcasite than above
425
Shale, dolomitic, lt. gray, med. hd., more dolomitic parts slightly darker, no marcasite, v. little sand, fragments of chert and buff dolo. (cave?)
430 — 430
Shale, dolomitic, lt. gray, med. hd., more dolomitic parts slightly darker; fragment buff dolo. (cave?)
435
Sh., more dolomitic than above, lt. gray, more dolomitic parts darker gray, med. hd.; few fragments buff dolo.
440 — 440
Same as 435-40'
445
Sh. as above; fragment of marcasite, no buff dolo. fragments.
450 — 450
Sh. v. dolomitic, lt. gray, more dolomitic parts darker gray, med. hd.; some marcasite grains, few grains buff dolo. & chert
455
Dolomite, shaly, gray, fn. grained, strong effervescence, a little marcasite, few grains buff dolo.
458
Sh. v. dolomitic, lt. gray with more dolomitic parts darker gray as dolo. in 455-58', few grains chert & buff dolo. (cave?) med. hd., some marcasite
460 — 460
Shale, dolomitic, slightly sandy, lt. gray, med. hd.
465
Shale, dolomitic, slightly sandy, lt. gray, the more dolomitic parts slightly darker gray, some marcasite fragments of dolo. buff fn. to med. grained, drusy, and chert.
468
Shale, slightly dolomitic, gray to dark gray, med. to hard, a little pyrite; ostracods v. common; small gastropod; [illegible] fragments all [illegible]
470 — 470
Shale as above, few dark gray material
475
Dolomite, lt. gray, a few pieces darker gray, med. grained, carbonaceous, speckled with brown fn. pyrite grains; a few [illegible]
480 — 480
Dolomite, lt. gray, med. grained, carbonaceous, small vugs, fn. pyrite & scattered flint; 35% speckled with brown.
482
Dolomite, lt. gray slightly drab, med. grained, carbonaceous, small vugs, a little fine pyrite, 35% brown speckled
485
Dolomite, lt. gray slightly drab, a few pieces darker gray, med. grained, carbonaceous, small vugs, a little pyrite, 50% brown speckled, a few pieces of lt. black gray dolo.
490 — 490
Dolomite as above
495
No Sample
500 — 500

Sheet No. 6 Name of Well Andrews Town Well Survey No. W-0390

Location ..... Date Drilled ..... Analyst M. Ellis

500	500	Dolomite, lt. gray slightly drab, med. grained saccharoidal, a little pyrite, 5% milk brown specks
	505	Dolo. lt. gray slightly drab, med. grained saccharoidal, small vugs, rare pyrite
510	510	Same
	515	Same
520	520	Same
	525	Same
530	530	Same, rare chert
	535	Dolo. lt gray slightly drab, med grained saccharoidal, 1% chert, white to slightly buff, small clear spots
540	540	Same, 2% chert
	545	Same, 1% chert
550	550	Dolo. lt gray slightly drab with a small amount of gray matter, med grained saccharoidal, 1% chert
	555	50% dolomite, lt gray slightly drab, med grained saccharoidal, rare pyrite; 50% dolomite, pale drab almost white v. fine grained, calcareous, soft, ground mass, with more or less clear, lt buff, med sized euhedral Xls. of weak effervescence thickly distributed thruout.
560	560	As above but percentage 45% and 55%; some fragments of clear white large dolomite Xls.
	565	Same as above
570	570	Same as above but percentage 20% and 80% respectively
	575	Same, 25% and 75%
580	580	Same, 25% and 75%
	585	45% Dolomite, grayish drab, fine med. grained; 40% dolomite, pale drab almost white, v. fine dolo. grained, soft calcareous ground mass, with transluscent lt buff, med sized euhedral Xls.; 15% chert, white opaque and lt gray/ish buff, dense and finely granular (weathered); v. small dark lt green slightly dolomitic fragments of pyrite
590	590	Same as above with a little lt yellowish buff dolo. fine med. grained.
	595	Same, 5% of the lt yellowish buff dolo.
600	600	

Sheet No. 7 Name of Well Andrew Town Well Survey No. W-0980

Location ..... Date Drilled ..... Analyst M. Ellis

600 – 609

Dolomite, calcareous, pale greyish drab, v. fn. to fn., soft, ground mass, with few or many subhedral lt. buff translucent med. size dolo. Xls.; 20% dolo. greyish drab, fn. to med. grained; 5% chert

610 – 618

Same as above, with < 1% of dark reddish brown sh.

618 – 628

Limestone, dolomitic, pale greyish drab, v. fn. to fn. with few or many lt. drab, translucent med. to large dolomite rhomb. Xls.; 20% dolo. greyish drab, fn. to med.; occasionally bluish gray spots in both kinds of fragments in some of which are fn. pyrite grains; 2% dk. reddish brown sh., chert 5% pale drab to gray opaque + translucent mottled, cinnamon.

620 – 635

As above

Same

630 – 640

As above but with 50% of the med. grained greyish drab dolo.; reddish brown sh. films coatings on dolomite + few pieces of lt. yellowish buff med. grained dolo.

As in 630-35' with 10% of lt. yellowish buff dolo.

640 – 650

40% lt. dolomite, pale greyish drab, v. fn. to fn. with few or many med. lt. drab subhedral dolo. rhombs.; 40% dolo. grey to greyish drab, med. grained; 20% dolo. lt. yellowish buff, med. grained recrystallized a little chert, pale grey almost white, opaque, fn. small clear spots, some small black specks.

Same but percentages 50%, 45%, and 5%

650 – 660

Same, with no yellowish buff dolo.

In and dolo. as in 640-45 but no lt. yellowish buff dolo.; a little pyrite and chert

660 – 670

lt. and dolo. as in 640-45; 1% lt. yellowish buff dolo; 5% greenish gray fn. grained dolo. little pyrite

lt. and dolo. as in 640-45; no yellowish buff dolo.; a little pyrite and chert

670 – 680

60% Dolomite, gray to greyish drab, med. grained; 40% lt. dolomitic, pale greyish drab to almost white, v. fn. to fn., soft few or many med. lt. drab translucent dolo. rhombs.; v. little chert

Same as above, percentage 50-50

680 – 690

As 670-75 with a few of the dolo. rhombs. quite dark; 10% chert

85% lt. dolomitic, pale greyish drab almost white, fn. to v. fn. grained, with few to many med. lt. drab translucent dolo. rhombs.; 10% chert greyish white to pale drab, opaque with small clear spots, slightly mottled; 5% dolo. lt. greyish drab, med. grained.

690 – 700

Same as 685-690' with v. little dk. reddish brown sh.; a few fn. pyrite Xls.

In as in 685-90'; 75% dolo. lt. greyish drab, med. grained; 2% chert; a little fn. pyrite

Sheet No. 8 Name of Well Andrew Town Well Survey No. W-0980

Location ..... Date Drilled ..... Analyst M. Elias

700 — Ls., dolomitic, pale grayish drab; v. fn. grained, v. solid, containing a few to many, med. sized, dolo. rhombs

705 — Ls. as above, grading into gray and grayish drab mottled, med. grained, dolomitic; a little chert; v. little dk. reddish brown sh.

710 — Ls. as in 700-5'; a little chert and v. little dk. reddish brown sh.

715 — Ls. as in 700-5'; a little dk. reddish brown sh.; some stromatoid structures; a few fragments of shells

720 — Ls. as in 700-5', grading to grayish drab.

725 — Ls. as in 700-5'; grading into grayish drab, med. grained, dolo., some pieces cinnamon speckled; v. little pyrite; dk. reddish brown sh. coating on a few pieces. Small fossil shell.

730 — Same as above

735 — 50% dolomite, dark reddish brown from shale contained in it; 50% lt. as in 700-5'; little pyrite and chert, lt. grayish drab to dk. gray.

740 — Sh., slightly gritty green, med. hard, poorly laminated; containing 25% lt. to dk. gray to fn. to med. grained 10-15% pyrite in large blk.

745 — As above; in ls. fragments many bryozoa and pieces of shells

750 — Dolomite, lt. grayish drab to dk. brownish gray, fn. grained, small fragments; 10-15% green sh.; little pyrite

755 — Dolomite, lt. grayish drab, fn. and med. grained; 1% green sh.; 1% gray sh. same appearance and fracture as green sh.

760 — Same as above

765 — Dolomite, slightly calc., lt. grayish drab to gray, fn. to med. grained; v. little pyrite

770 — Dolomite, calc., lt. gray to gray, fn. to med. grained, with fragment of a bryozoan

775 — Dol. same as 770-75'

780 — Dolomite, calc., lt. gray (drawn) to gray, fn. to med., sandy in part

785 — Same as above

790 — Same as 780-85' with a little pyrite

795 — 50% dolomite, gray slightly drab, softened, sandy in part; 40% sh., green slightly grayed, med. hd., poorly laminated 10% sand, maj. gr. .5-1 mm., carb. brown to subrounded, frosted; little pyrite

800

Sheet No. 9 Name of Well Andrew Town Well Survey No. W-0990

Location ..... Date Drilled ..... Analyst M Elias

800 -800

Same as 795-800' but percentages are - 15%, 80% and 5% respectively. Fragment of fossil in shale

-802

80% Sand, clear frosted qtz., maj. gr. ½-¼, prin. rnds ½-¼, ¼-⅛ mms, subangular to curvilinear; 10% dolomite as in 795-800'; 10% green shale; little pyrite

-805

Same as 802-5' but only 5% dolo. and 5% sh.

-809

810

Sand as in 802-5'; few grains of dolo. and sh.; a little pyrite

-815

As above

820

-820

Sand as in 802-5'

-825

Sand as in 802-5'

830

-830

Sand as in 802-5'

-835

Sand as in 802-5'

840

-840

Sand as in 802-5'

-845

Sand as in 802-5'

850

-850

860

870

880

890

900

IOWA GEOLOGICAL SURVEY
Generalized Log Based on Detailed
Description of Drill Cuttings

Name of Well: Andrew City Well Survey No. W- 0980

Drilled by: D. E. Edwards Date _____, 193__

Total Depth: 850 ft; Curb Elevation: 860 ft; Static Level: 142 ft.

Casing Data: _____

Pump and Screen Data: _____

Pumping Test: 9 Hours 8 Min; Gal. Per Min. 30± ; Drawdown 128 ft. in -- min.

Description of Formations

No.	Rock Unit	Thick.	From (Feet)	To
	PLEISTOCENE			
1.	Loess, yellow, non-calcareous	4'	1'	5'
2.	Loess, slightly calcareous, little sand, slightly micaceous at base	20'	5'	25'
3.	Sand, calcareous, clay cement angular, glacial, poorly sorted, little gravel	25'	25'	50'
	SILURIAN SYSTEM			
	Hopkinton Formation			
4.	Dolomite, drab, fine to medium sacharoidal, vugs	70'	50'	120'
5.	Dolomite, pinkish buff, some black speckled fine to medium sacharoidal vugs	30'	120'	150'
6.	Dolomite, buff to light drab, fine to medium sacharoidal; little chert thruout, up to 30% at base, fossiliferous	95'	150'	245'
7.	Dolomite, light gray, fine to medium; up to 50% chert, white and gray to buff, opaque with a few clear spots	30'	245'	275'
	ORDIVICIAN SYSTEM			
	Maquoketa Formation			
8.	Dolomite, light gray, fine grained, speckled, thickly with black phosphate plates	25'	275'	300'
9.	Shale, light gray, little maroon and greenish gray mottling in top, very dolomitic, sand in top, very fossiliferous at the very base, mostly ostracodes, fewer small gastropods and brachiopod fragments	175'	300'	475'

Notes:

Copy to C. L. Daudell, Andrew, Iowa January 15, 1940.

Description	Thick.	From	To
Galena Formation			
Dubuque - Stewartville			
10. Dolomite, gray with brown speckling, medium sacharoidal, small vugs	20'	475'	495'
No sample	5'	495'	500'
11. Dolomite, light grayish drab, medium sacharoidal, small vugs	55'	500'	555'
12. Dolomite, light grayish drab, with 50% or more of dolomite, calcareous, pale gray, fine grained ground mass, with dolomite rhombs	30'	555'	585'
Prosser - Decorah (?)			
13. Dolomite, light grayish drab, with 50% or more of dolomite, calcareous, pale gray, fine grained ground mass with dolomite rhombs, in top 30'; lower this ground mass becomes a dolomitic limestone. Chert thruout, 15% at top, less below	155'	585'	740'
Platteville Formation			
Spechts Ferry			
14. Shale green, poorly laminated, very pyritic, with 25% limestone, dark and light gray, fine to medium, containing many fossils, mostly bryozoans	10'	740'	750'
15. Dolomite, light gray to gray, fine to medium, calcareous in lower 30', fossiliferous	47'	750'	797'
Glenwood			
16. Shale, green, poorly laminated, fossiliferous	5'	797'	802'
St. Peter Formation			
17. Sandstone, white, medium, sub-angular to curvilinear, frosted	48'	802'	850'

IOWA GEOLOGICAL SURVEY

Results of Pumping Test on Town Well No. 1, Andrew, Ia.

June 1, 1939

Date and Time	Corrected Water Level Reading	Remarks
June 1, 1939		
A. M. 9:25	143'	(Static level) (pump started)
11:15	269'	30 g. p. m., 36 strokes
12:00	273'	30 " 36 "
P. M. 12:50	273'	30 " 36 "
2:15	271' 6"	30 " 37 "
4:00	272' 10"	32 " 37 "
		(Above readings by D. E. Edwards)
5:38	268' 5½"	
5:42		27 g. p. m., 36 strokes
6:00	271' 5½"	Increased speed to 40 strokes
6:02		31 g. p. m.
6:05		Temp. 57°
6:06		Motor stopped
6:11½		Motor started
6:14		35 strokes 1 min.
6:27		Collected sample
6:30	266' 3½"	
6:33		Stopped pumping (final)
6:33½	259' 8"	Recoveries
6:34	253' 2½"	
6:35	246' 3½"	
6:36	242' 6"	
6:37	240' 3½"	
6:38	238' 10"	
6:39	237' 10½"	
6:40	237' ½"	
6:41	236' 3"	
6:42	235' 8"	
6:43	235' 3½"	
6:45	234' 6½"	
6:50	233' ¾"	
6:55	232' 3½"	
7:01	231' 7½"	
7:10½	230' 9½"	
7:20	229' 4½"	
7:30	227' 6½"	
8:00	223' 7½"	
8:20	221' 11"	

N.B. True SWL much lower -- see end of pump test ICSA

Date and Time	Corrected Water Level Reading	Remarks
8:00	223' 7⅞"	
8:50	219' 8⅜"	
9:40	218' 10"	
11:15	216' 9"	
A. M. 6:24	213' 6"	

Constructional Features of well at Andrew, Iowa, at time of pumping test on June 1, 1939.

116' of 14" hole
117' 6" of 8" steel casing from 1.5' above curb to 116'
734' of 8" hole
234' 6" of 6" from 265' 6" to 500'