IOWA GEOLOGICAL SURVEY
Iowa City, Iowa

Well Log Record

Owner of well Hampton #2 County Franklin

Tenant _____ Town _____

Location _____ sec. ____, T. ____ N., R. ____ E. W. _____ Twp.

Curb elevation _____ ft. Present depth _____ ft. final depth _____ ft.

Static level: (Depth to water above / below curb) _____ ft. Pumping level _____ ft. at _____ gpm.

Contractor _____ Date drilled _____

Description*	FEET			Description*	FEET		
	Thick	From	To		Thick	From	To
Galena		890	1100				
Gray		1100	1110				
oilrock		1110	1130				
clay		1130	1155				
McGregor		1155	1160				
Glenwood		1160	1190				
St. P.		1190					

*Abbreviate descriptions; use one line for each formation.

Remarks on water zones and casings _____

Agnew 9/29/45

Temperature: Air ____ °F., Water ____ °F. at ____ A.M. / P.M. _____ 19__

Record obtained from _____ Recorded by _____

Franklin.

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

Name of Well Hampton City Well No. 2 Survey No. W-0537

Location SW/c NE SW SE NW sec. 34, T. 92 N., R. 20 W. Franklin County

Drilled by Thorpe, 1926

Total Depth 1700 ft. Curb Elevation 1100.7 ft. Static Level _____ ft.

Pumping Test ____ Hours ____ Min; Gal. per min. _____ Drawdown _____ ft. in ___ min.

Casing Data 187' of 20" O.D. welded pipe from 0 to 187', 116'6" of 16" O.D. Std. Reading pipe from 183'6" to 300' (3'6" overlap at top and 12' overlap at bottom, both with lead seals), 512' of 10" Std. Reading pipe from 288' to 800', 135' of 8" Std. Reading pipe from 1097' to 1232', with 8" lead packer at 1118'

Description of Formations

No.	Rock Unit	Thick.	From (feet)	To
	MISSISSIPPIAN SYSTEM English River formation			
1.	Sand, very fine, and silt, 50% each, light gray speckled black, angular grains, friable, soft, one sample	20	0	20
2.	Siltstone with 35% to 40% fine sand, light drab, very slightly dolomitic	30	20	50
	DEVONIAN SYSTEM Sheffield formation			
3.	Dolomite, light medium drab and gray, medium-grained, subsaccharoidal, porous	10	50	60
4.	Dolomite, light drabish brown, fine-grained, hard, slightly porous	10	60	70
5.	Shale 60%, light gray, slightly dolomitic and silty. Dolomite 40%, medium drabish gray, medium-grained, silty and argillaceous	10	70	80
6.	Chert 60%, pale gray with black fossils, conchoidal, subvitreous, to granular, dull. Dolomite 40%, light medium drabish gray, fine- to medium-grained, granular, dense	5	80	85
7.	Limestone, light brownish drab, mottled medium brown and gray, fine-grained, fossiliferous, with trace chert as in 80 to 85 feet	4	85	89

Notes:

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No.	Rock Unit	Description	Thick	From	To
8.		Shale, light drab and greenish gray, slightly dolomitic, soft, structureless, with 10% to 20% dolomite, light drab, fine-grained, soft, very silty	31	89	120
9.		Shale, medium drab to light greenish gray, soft, structureless, slightly dolomitic, with trace limestone 120 to 130 feet, and 15% dolomite 130 to 140 feet, medium brown, medium-grained, dense, hard, translucent	20	120	140
	Lime Creek formation Owen (?) member				
10.		Dolomite, medium to dark brownish drab, fine-grained, silty and argillaceous	10	140	150
11.		Dolomite, light gray mottled dark gray and brown, fine-grained, dense, hard, silty and argillaceous, with 20% shale, medium drabish gray, slightly dolomitic, soft, structureless	10	150	160
	Cerro Gordo (?) member				
12.		Limestone 50% to 70%, pale cream, very fine-grained, with medium brown dolomite rhombs embedded. Dolomite 30% to 50%, dark gray and brown, medium-grained, dense, hard, slightly silty	20	160	180
13.		Shale 80%, light medium greenish gray, slightly dolomitic, soft, with 10% each of limestone and dolomite, as in 160 to 180 feet	10	180	190
14.		Limestone, very light cream to light gray speckled with medium brown dolomite rhombs in part, lithographic to fine-grained. Dolomite 15%, dark brown and gray, medium-grained, dense, hard, slightly silty	10	190	200
15.		Shale 65%, light medium gray slightly greenish, slightly dolomitic, micaceous, silty, soft, faintly laminated. Dolomite 30%, medium drabish gray, medium-grained silty. Limestone 5%, brown, sublithographic	10	200	210
16.		Limestone, medium drab and gray, fine-grained, very soft, dense, silty, argillaceous	20	210	230
17.		Shale, light medium gray, soft, structureless, dolomitic, with trace to 20% dolomite, medium to dark brown and gray, fine-grained, silty and argillaceous	40	230	270
18.		Shale 80% as in 230 to 270 feet, with 20% limestone and dolomite, medium drab, medium-grained, very silty and argillaceous	20	270	290

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No.	Rock Unit	Description	Thick	From	To
	Shell Rock formation				
19.		Limestone, pale to light buffish gray and cream, sublithographic to very fine-grained, translucent, dense	40	290	330
20.		Limestone 80%, pale cream mottled light buff and gray, fine-grained, dense, crystalline. Dolomite, coarse-grained	20	330	350
	Cedar Valley (?) formation				
21.		Dolomite 90%, medium drab, fine- to medium-grained, dense, with masses coarse clear calcite crystals embedded. Limestone 10%, very light buffish gray, very fine-grained, dense	10	350	360
22.		Dolomite 60%, pale to light buffish gray, coarse-grained, calcareous. Shale 40%, light greenish gray, dolomitic, slightly fissile, silty, soft	10	360	370
23.		Dolomite, pale to very light buffish brown and gray, very coarse-grained, subsaccharoidal, with few clear calcite crystals embedded	10	370	380
24.		Limestone 70%, pale to light drabish gray, sublithographic to very fine-grained, dolomitic. Dolomite 30%, medium brownish buff, fine-grained, dense, granular	10	380	390
25.		Dolomite, light to medium buffish brown, fine- to medium-grained, dense, granular, with 20% limestone, light drab, sublithographic	20	390	410
26.		Dolomite, light cream and buff mottled brown, coarse-grained; dolomite, light gray, very fine-grained, granular. Shale 15%, light green, calcareous, nonfissile, silty	10	410	420
27.		Dolomite, light to medium buff, brown, and gray, fine-grained, dense, granular, slightly calcareous. Shale 5%, as in 410 to 420 feet. Sand trace in lower 10 feet, loose, medium, curvilinear, frosted	20	420	440
	Wapsipinicon (?) formation, undifferentiated				
28.		Dolomite 60%, light medium gray, fine- to medium-grained, dense. Dolomite 40%, light medium pinkish brown, fine-grained, granular, very calcareous	10	440	450

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No.	Rock Unit	Description	Thick	From	To
29.		Dolomite, light to light medium drab, brown, and buff, fine-grained, dense. Limestone 40% from 450 to 460 feet, light creamy drab, fine-grained, granular	20	450	470
30.		Dolomite, light medium brown and grayish brown, medium-grained, granular, subsaccharoidal, with 10% limestone, light drab and buff, lithographic. Shale trace, light grayish green, dolomitic, silty, soft	10	470	480
31.		Dolomite, light medium brown with rare black mottlings, medium-grained, dense, hard, crystalline, with trace limestone, pale gray, very fine-grained, dense	10	480	490
32.		Dolomite as in 480 to 490 feet, and dolomite, light gray to buff mottled dark gray, fine-grained, dense, granular, with 30% limestone, pale creamy gray, very fine-grained, granular. Calcite trace, loose, coarse, clear crystals	10	490	500
33.		Dolomite, very light to light buff, brown, and drabish gray, fine- to medium-grained, dense, grading into 25% limestone of same color, lithographic to very fine-grained, hard, dense	10	500	510
34.		Dolomite, light drabish gray, fine-grained, granular, silty, with trace to 5% limestone, pale to light gray, lithographic, dense. Trace calcite, coarsely crystalline, clear, free	20	510	530
35.		Dolomite, medium drabish brown, medium-grained, granular, dense with traces of limestone and calcite crystals as in 510 to 520 feet	10	530	540
36.		Dolomite, light medium drabish gray, fine-grained, granular, silty, slightly calcareous, with 20% dolomite 540 to 550 feet, light medium brown, medium-grained, translucent	20	540	560
37.		Limestone, pale gray to pale drabish gray and flesh, very fine-grained with coarsely crystalline fossil fragments embedded. Dolomite 20% from 560 to 570 feet, light medium drab, fine-grained, granular	30	560	590
	Neda (?) formation				
38.		Shale, light maroon, bluish green, and olive green banded, very calcareous, slightly fissile, soft, with trace to 40% limestone very light to light yellow, pink, and buff, very fine- to coarse-grained, with embedded fossil fragments	30	590	620
	Maquoketa (?) formation				
39.		Shale, light medium grayish green slightly mottled maroon and purple, slightly dolomitic, structureless	30	620	650

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No.	Rock Unit	Description	Thick	From	To
40.		Dolomite, light buffish brown, medium-grained, granular, dense, with traces limestone, pale buffish gray, very fine-grained, dense. Shale trace, medium green, slightly dolomitic and fissile	10	650	660
41.		Chert 60% to 90%, light gray with embedded black specks, dolomitic, dull, stony, subvitreous in part, opaque to slightly chalcedonic, with crystalline quartz and pyrite embedded. Dolomite 40% grading downward to 10%, light buff, drab, and brown, fine- to medium-grained, dense, granular. Trace shiny rounded grains of soft purplish gray shale, very fine grained, dolomitic	30	660	690
42.		Limestone, light to medium gray, drab and brown mottled medium gray with embedded white translucent calcite crystals, fine-grained with coarsely crystalline crinoid fragments embedded, argillaceous. Chert trace, as in 660 to 690 feet	10	690	700
43.		Shale, light to light medium blue green, brown, and maroon, slightly calcareous, semiunctuous, soft, structureless, with 10% to 20% dolomite, medium brown, fine-grained, granular, very argillaceous. Limestone 10% 700 to 710 feet, light to medium drab, gray, and brown, very fine- to coarse-grained	20	700	720
44.		Shale, light medium brownish gray, slightly dolomitic, soft, structureless, with 10% limestone and trace dolomite as in 700 to 720 feet	10	720	730
45.		Limestone, light to medium brown and drab, mottled dark gray, medium- to coarse-grained, subsaccharoidal, with few coarsely crystalline fossil fragments embedded. Shale trace, light yellowish brown to green, slightly dolomitic in part, soft, faintly laminated	10	730	740
46.		Dolomite, light to medium drabish brown and gray, mottled, medium- to coarse-grained, with embedded fragments corals, bryozoa, brachiopods, and clear calcite crystals. Limestone trace to 10%, light buff, fine-grained, with fossil fragments and dolomite rhombs embedded. Shale trace to 20%, drab, gray, yellow, and olive green, slightly dolomitic, faintly fissile, soft	40	740	780
47.		Limestone, pale to light drabish and grayish buff, mottled medium gray, coarse-grained, fossil fragments and dolomite rhombs embedded. Shale trace to 15%, medium brownish gray, dolomitic, nonfissile, soft	20	780	800
		Ft. Atkinson member			
48.		Limestone 65%, very light to light buff and gray mottled medium gray, fine-grained with coarsely crystalline fossil fragments embedded. Chert 20%, light gray with few black specks, subvitreous, granular, slightly dolomitic, with traces crystalline quartz embedded. Dolomite 15%, light medium drabish gray, medium grained, granular	10	800	810

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No.	Rock Unit	Description	Thick	From	To
49.		Chert 50% to 60%, light gray mottled medium drab, with black fossil specks embedded, dull to subvitreous, granular to conchoidal, opaque. Dolomite 20% to 40%, light drabish gray, fine- to medium-grained, calcareous and cherty. Limestone up to 30%, pale to light medium drab, very fine- to fine-grained with abundant brown and drab dolomite rhombs embedded	50	810	860
50.		Chert 60%, light gray, few black fossil specks embedded, fine-grained, dense, subconchoidal, opaque; chert trace, light drab vitreous, conchoidal. Limestone 40%, very light buff, specked with drab dolomite rhombs, very fine-grained, with few coarsely crystalline fossil fragments embedded	10	860	870
	Galena formation				
51.		Limestone, very light to light medium drabish and buffish gray with light drab translucent dolomite rhombs and trace "cinnamon specks" embedded, fine-grained with abundant coarsely crystalline crinoid stem fragments	30	870	900
52.		Limestone, pale to light buff with fine drab dolomite rhombs and abundant "cinnamon specks" embedded, fine-grained with crinoid stems as in 870 to 900 feet	30	900	930
53.		Limestone, as in 900 to 930 feet, dolomitic with 15% to 40% dolomite, light drabish brown, medium-grained, dense, granular, calcareous	40	930	970
	Prosser formation				
54.		Limestone 60%, light cream with fine brown dolomite rhombs embedded, fine-grained, granular. Chert 40%, very light gray mottled black, dull, granular to mostly subvitreous, conchoidal	10	970	980
55.		Chert 40%, light cream and gray mottled translucent light drab and dark gray, vitreous, conchoidal, slightly quartzose. Limestone 20% to 60%, pale to light buffish gray mottled dark gray, very fine-grained, with fossil fragments, and dolomite rhombs embedded. Dolomite 10% to 40%, light drab, fine- to coarse-grained, fossiliferous	20	980	1000
56.		Limestone, very light buff mottled dark gray, very fine-grained with few coarsely crystalline fossils and dolomite rhombs embedded. Chert, very light buff, mottled light gray, dull, conchoidal, opaque	20	1000	1020
57.		Limestone, very light to light buff and drab, mottled heavily by dark gray, fine-grained with coarsely crystalline fossil fragments embedded. Chert trace to 10%, as in 1000 to 1020 feet	30	1020	1050

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No.	Rock Unit	Description	Thick	From	To
58.		Limestone, light medium drab mottled by dark gray fossil fragments, fine- to coarse-grained. Shale, medium green, few black specks, fissile, medium hard, trace conodonts	10	1050	1060
59.		Limestone, very light creamy drab black speckled, to medium brown, very fine- to fine-grained, slightly dolomitic and fossiliferous	30	1060	1090
60.		Limestone, mottled very light buff and brown, speckled black in part, fine-grained, slightly fossiliferous, with 15% chert, light brown slightly mottled white, vitreous, conchoidal, subtranslucent to opaque	10	1090	1100
61.		Limestone, light gray mottled very heavily by drab dolomite rhombs and black coarsely crystalline fossil fragments, fine-grained. Sand trace, free, coarse-grained, subangular to curvilinear, with very rough surfaces	10	1100	1110
	Decorah formation				
62.		Limestone, very light to light buff and brown mottled by black fossil fragments (bryozoa and brachiopods), speckles rust red, very fine-grained. Dolomite 10%, 1110 to 1120 feet, medium drabish gray with many rust red specks embedded, fine-grained, dense, granular, calcareous	20	1110	1130
	Platteville formation Spechts Ferry member				
63.		Shale, light grayish green, unctuous, fissile, soft, trace pyrite embedded. Limestone 15%, as in 1110 to 1130 feet	10	1130	1140
64.		Shale, light medium drabish brown with few black specks, calcareous, structureless, soft with 10% limestone, dark gray, fine-grained, dense, fossiliferous (bryozoa)	10	1140	1150
65.		Shale 85%, light green with black specks, splintery, fissile, soft. Limestone 15%, very light buff to light brown, fine-grained dense. Sand trace, loose, medium-grained	10	1150	1160
66.		Limestone 30%, light buff, drab, and gray, fine-grained, with fine- to medium-grained sand embedded. Sand 40%, free, medium- to little coarse-grained, subangular to curvilinear, well frosted. Shale 30%, light brownish gray, calcareous, silty, soft	10	1160	1170

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No.	Rock Unit	Description	Thick	From	To
		Glenwood member			
67.		Sand, mostly free with 10% cemented by silica and pyrite, mostly coarse-grained, subangular, coarsely pitted and scratched; (2-1 mm. 10%, 1-½ mm. 45%, ½-¼ mm. 20%). Shale 25%, as in 1160 to 1170 feet	10	1170	1180
		St. Peter formation			
68.		Sand, free, white, mostly coarse-grained, subangular, finely frosted by pits and grooves; (2-1 mm. 15%, 1-½ mm. 50%, ½-¼ mm. 25%, ¼-1/8 mm. 10%)	20	1180	1200
69.		Shale, medium green slightly drabish, few black specks, semiwaxy, fissile, soft. Sand 20%, free to partly cemented by dolomite and siliceous material, medium- to coarse-grained, subangular, finely frosted	10	1200	1210
70.		Sand, free, white to yellow (iron stained), mostly medium-grained, subangular, well frosted by fine pits and grooves; (½-¼ mm. 50%, ¼-1/8 mm. 45%, 1/8-1/16 mm. 5%)	29	1210	1239
		Prairie du Chien group Willow River formation			
71.		Dolomite 40%, light drab, fine-grained, dense to subsaccharoidal, with sand, mostly fine-grained, subangular to curvilinear, finely frosted by scattered pits	11	1239	1250
72.		Dolomite, very light to light creamy drab, fine-grained, dense, with traces fine- to medium-grained sand embedded. Sand trace to 20%, free, medium- to coarse-grained, angular to subangular, very rough surfaces	20	1250	1270
73.		Dolomite, very light to light cream and buff, very fine- to fine-grained, dense, with embedded fine- to medium-grained sand. Sand, free, trace, medium, subangular, well frosted. Chert trace 1270 to 1280 feet, oolitic	20	1270	1290
74.		Dolomite, very light to light cream and buff, fine- to medium-grained, dense, granular, with embedded fine- to medium-grained sand. Sand trace to 30%, free, medium-to coarse-grained, subangular, pitted, few reconstructed crystal faces	60	1290	1350
75.		Dolomite, very light to light cream, buff, and brown, fine- to coarse-grained, trace spongy, porous, with trace embedded sand. Chert trace to 10%, white, dull, granular, oolitic. Sand, trace, as in 1290 to 1350 feet	20	1350	1370

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No.	Rock Unit	Description	Thick	From	To
76.		Dolomite, light buffish brown, medium- to coarse-grained, dense, trace oolitic, with much embedded sand, medium- to coarse-grained. Chert trace, as in 1350 to 1370 feet	10	1370	1380
	New Richmond (Root Valley) formation				
77.		Sand 60%, free, mostly medium-grained, subangular to curvilinear, very rough surfaces with small reconstructed crystal faces. Dolomite 30%, very light cream, very fine-grained, oolitic, with trace embedded sand. Chert 10%, pale gray, conchoidal, cementing oolites with large sand grain nuclei	10	1380	1390
78.		Dolomite 70%, as in 1380 to 1390 feet, fine-grained, granular, very abundant small oolites with sand grain cores, trace embedded medium sand. Sand 30%, free, fine- to coarse-grained, angular to subangular, rough surfaces with reconstructed crystal faces	10	1390	1400
79.		Sand, free, medium- to coarse-grained, angular to subangular, strongly frosted with trace reconstructed crystal faces. Dolomite 20%, as in 1390 to 1400 feet	20	1400	1420
80.		Dolomite, very light to light grayish cream, fine- to coarse-grained, dense, trace embedded sand. Sand 15% to 25%, free, as in 1400 to 1420 feet. Chert 10% 1430 to 1440 feet, white to light drab, vitreous, conchoidal, oolitic	20	1420	1440
81.		Sand, free, mostly medium-grained, subangular, well frosted, traces reconstructed crystal faces; (1-½ mm. 15%, ½-¼ mm. 50%, ¼-1/8 mm. 10%). Dolomite 25%, as in 1420 to 1440 feet	20	1440	1460
82.		Sand, free, mostly medium, angular to subangular, strongly frosted as in 1440 to 1460 feet. Dolomite 40%, very light to light creamy gray, medium-grained, dense, crystalline	20	1460	1480
	Oneota formation				
83.		Dolomite, very light drab, gray, and cream, medium-grained, dense to subsaccharoidal. Chert trace to 15%, light gray, banded in part, quartzose, Cryptozoon, and chert light gray, vitreous, conchoidal, opaque. Sand 10% to 20% as in 1460 to 1480 feet	20	1480	1500
84.		Sand, free, 60%, mostly medium-grained, subangular, strongly frosted. Dolomite 35%, light cream, drab, and brown, fine- to medium-grained, dense. Chert 5%, white to light drab, vitreous, conchoidal to dull, granular, trace oolitic	10	1500	1510
85.		Dolomite, very light to light buff, medium- to coarse-grained, dense to subsaccharoidal. Sand trace 1510 to 1550 feet, free, medium, subangular, well frosted. Chert trace, white to light buff, quartzose, chalcedonic, and oolitic	60	1510	1570

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No.	Rock Unit	Description	Thick	From	To
86.		Dolomite, light cream, gray, and buff, medium- to coarse-grained, granular, dense. Chert trace, pale bluish gray, vitreous, chalcedonic, quartzose in part. Sand trace, as in 1510 to 1570 feet.	40	1570	1610
87.		Dolomite, light drabish brown medium- to coarse-grained, dense. Chert 15%, pale gray translucent, chalcedonic to quartzose with trace light drabish brown speckled black, subvitreous, dense, conchoidal, subtranslucent; chert 10% very light buff, dull, tripolitic, slightly dolomitic	10	1610	1620
88.		Dolomite 40%, very light to light drab, fine-grained, subsaccharoidal, trace fine-grained sand embedded. Sand, loose, mostly medium, subangular, finely pitted, trace reconstructed crystal faces; (1-½ mm. 15%, ½-¼ mm. 45%). Chert trace, as in 1610 to 1620 feet	10	1620	1630
89.		Dolomite 80%, light brownish buff, mottled dark gray, fine-grained, subsaccharoidal. Sand 15%, mostly medium, subangular, strongly frosted. Chert 5% as in 1620 to 1630 feet	10	1630	1640
	CAMBRIAN SYSTEM Jordan formation				
90.		Sand, free, white, mostly coarse, subangular to a little curvilinear, very strongly frosted; (2-1 mm. trace, 1-½ mm. 60%, ½-¼ mm. 25%, ¼-1/8 mm. 10%, 1/8-1/16 mm. 5%)	50	1640	1690
91.		No sample	10	1690	1700
	Total Depth				1700

R-1-B

THORPE BROTHERS WELL COMPANY

2340 Sixth Avenue

DES MOINES, IOWA

~~W-0021~~

Drilled for City of Hampton *at* Hampton, Ia.

Drilling started _____ *19* ____ *Completed* _____ *19* ____

Well No. 2 *Kind of Well* _____ *Depth* 1700' *Size hole started* _____ *in.*

Finish _____ *G. P. M.* _____ *Static head* _____ *Drawdown* _____

Water was first encountered at _____ *in* _____ *Approximate Amount* _____

Remarks _____

RECORD OF PERMANENT PIPE					TEMPORARY PIPE	
SIZE PIPE	AMOUNT OF PIPE	DEPTH TO BOTTOM OF PIPE	DEPTH TO TOP OF PIPE	MAKE OF PIPE	SIZE PIPE	AMOUNT
20"	187'	187'	Surface			
16"	300'	300'	"			
10"	800'?	1067'?	267'	See blue print.		
8"	1351	1367	1100'			

187
116.6
303 6

Driller _____ *From Surface to* _____ *feet*

Driller _____ *From* _____ *feet to* _____ *feet*

Driller _____ *From* _____ *feet to* _____ *feet*

Pumpage at Hampton

Nov 1945
81123300
74305300
6,818,000

Dec 1945
87022100
81123300
5,898,800

Jan 1946
92355200
87022100
5,333,100

Feb
97309100
92355200
4,953,900

Mar.
02986500
97309100
5,677,400

Apr
9111900
2986500
6,125,400

May
15320900
9111900
6,209,000

June
24369900
15320900
9,049,000

July
34144400
24369900
9,774,500

Aug.
43490000
34144400
9,345,600

Sept.
53288000
43490000
9,798,000

Oct 1946
59605800
53288000
6,317,800

Nov.
65312600
59605800
5,706,800

Dec. 1946
70987300
65312600
5,674700

Jan 1947
77381800
70987300
6,394,500
leaks?

Feb
83066000
77381800
5,684200

Mar.

Hampton well #2 Franklin Co.

April 2, 1947

Mr. Clyde M. Saylor, Mayor
City of Hampton
Hampton, Iowa

Dear Mr. Saylor:

At your request, I visited the municipal water plant on March 12 to make some observations on the performance of the pump installed on your well No. 2. I hope the following discussion will be helpful to you in the solution of your problem.

The non-pumping level in your No. 2 well stood 142 feet below the pump base after pumping had ceased for three hours. Assuming that the water meter registers correctly the amount of water pumped, the pumping rate was about 480 gallons per minute at the end of about four hours pumping, and the resulting pumping level was about 174.3 feet. Thus the well at the present time has a specific capacity of about 15.1 gallons per foot of drawdown. At a pumping rate of 600 gallons per minute then the pumping level should be about 182 feet. This yield is much lower now than the original reported yield, but the well is still very good and has probably not changed much in the last few years. It is normal for the water levels in a pumped well to continue to lower from year to year but at a decreasing rate. However, the specific capacity should not lower appreciably unless there is an accumulation of deposits on the wall of the well which will retard the movement of water into the well or else some material may have caved into the well. This has apparently occurred to some extent. Hence, in purchasing a pump for the well, tests should have been conducted to determine the yield of the well at the time and should not be based on the results obtained at the time the well was completed.

The amount of work that the pump has to do depends on the amount of water that is to be pumped and the effective distance it has to be lifted. At Hampton the total lift resolved into feet at a pumping rate of 600 gallons per minute and with the tank full is about as follows:

Anticipated Total Lift at Pumping Rate of 600 Gallons Per Minute With Full Tank.

Item	Equivalent Lift in Feet
Lift from pumping level to pump base	182±
Difference in elevation between pump base and base of water tower	45±
Base of water tower to base of tank	88±
Base of tank to top of tank	35±
Head loss in pumping water to tower in 8-inch and 6-inch lines	30±
Total	380±

Thus the maximum lift appears to be about 380 feet. If the tank is not full then that much should be subtracted to obtain the correct pumping lift. As the desired pumping rate is 600 gallons per minute the total amount of work to be done can be computed.

Work done in foot pounds= 600 X 8.33 X 380= 1,900,000 ft. lbs./ min.
or about 57½ horsepower

Turbine pumps operated by direct drive by electric motors generally have an overall efficiency of between 60 and 75 per cent. The electric motor installed was apparently designed to deliver 75 horsepower. Thus the pump should deliver about 56 horsepower without overloading the motor, which is a little short of the required horsepower. However, electric motors can be overloaded as much as 10 per cent without serious effect, but the efficiency will fall off somewhat. Assuming for the moment that the efficiency will remain the same and with the motor overloaded 10 per cent, the pump might deliver 62 horsepower or a little over the required horsepower. Thus at best, the pump installation would meet the requirements demanded.

Going back to the normal operation of the pump and assuming that it will deliver 56 horsepower, the pump should deliver about 580 gallons per minute with a total lift of 380 feet. As the pump is usually operating against a head of somewhat less than 380 feet and as it is delivering only 480 gallons per minute the efficiency of the pump is much less than should be expected. There is certainly the possibility that the water meter is registering incorrectly which would throw all of these calculations off.

In summary, the well does not produce as much water now at the same pumping level as it did when the well was first finished. The lowering of the water level is due to continued pumping which is normal and to some precipitation of minerals on the wall of the well or some cave material which has decreased the yield still more. The well, however, is still very good but will require a larger pump than would have been necessary when the well was first completed. This should have been taken into account when the firm agreed to furnish a pump adequate for the job to be done.

The present pump installation might be adequate if the motor was overloaded somewhat. However, under normal operations the pump does not appear to have as high an efficiency as might be expected. This may be due to wearing of the bowls by sand grains if an appreciable amount of sand is being pumped or it may be due to an insufficient number of bowls. The concern which installed the pump should be able to advise you on the efficiency to be expected under normal operation and the efficiency of the pump with the motor overloaded.

We would appreciate it if you would send us all the information on the pump that is installed in the well such as the speed of the pump, the diameter of and number of bowls. The water superintendent had a copy of the characteristics of the pump installed which would be helpful to us. When we have received this information we will have some additional comments to make. We will return any data on specifications and contracts that you may be willing to send us for inspection.

In the meantime if we can be of service to you or if you have some questions in regard to this discussion please let us know.

Very truly yours,

WEH:AEH

William E. Hale

MOORE'S MODERN METHODS

Hampton City Well No. 2 — 3-12-47

Time	Depth to Water	Discharge GPM	Remarks
3-12-47			
10:10a	174.3	481	Pumping since 6:45 AM.
10:25a		475	
10:29			Water temp. 52½°F
10:30			Pumping stopped
10:32	152.6		Recovery measurements
10:35	150.0		
10:40	148.8		Pumping head ≈ 170'-187' Gage
10:50	146.87		
11:00	145.85		
11:46	143.60		
12:20 p	142.90		
12:26	143.00		
1:05	142.4		
1:22	142.2		
1:24			Pumping Resumed
1:25	161.35		
1:28	165.80		
1:30	166.95		
1:32	167.73	490	Discharge rate obtained from water meter
1:38	169.45		
1:50	170.82		
1:58	171.37	485	
2:00p	171.62		

Non pumping level 142' ±
Pumping level 174.3' at 480 gpm
Drawdown 31.7' " " " after 5½ hrs
Sp. Capacity 15.1 gallons/ft.

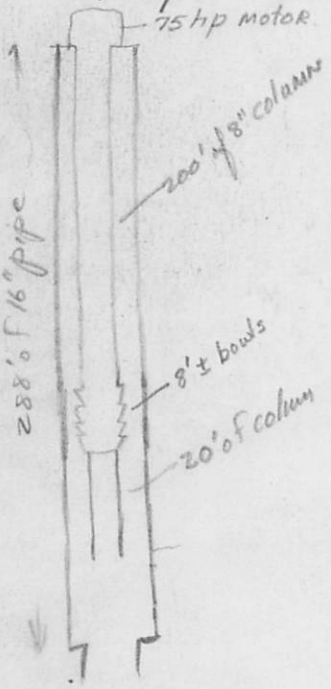
At 600 gpm drawdown should be 39.7' or pumping level of 182' ±.

Hampton — 3-12-47

Water Supply

Well No. 2

Pump installed by Thorpe Well Co.



From well to tower about 135 feet.

Eff. hp - 52.5 = 1,500,000 lbs/mi. = 1,730,000 ft lbs/min.

Poss. lift at 600 gpm

300' at 60% eff.

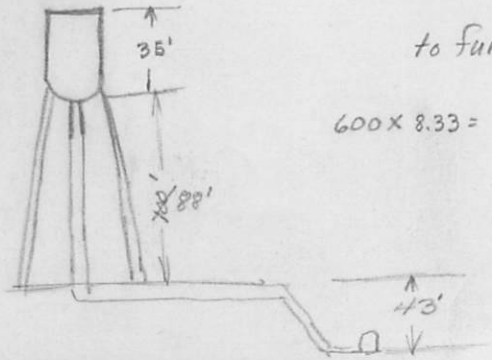
350'± at 70% eff.

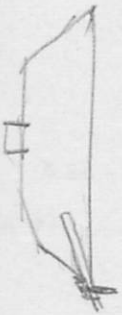
330' at 66% eff.

65-70 %

to furnish 600 gpm

600 × 8.33 =





Jan 12, 1947

Pumping Level 164.8'

Static Level 140'

~~Jan~~ Oct 7, 1947

Pump started 8:00 am Non pumping level 143'

pumping level 171'

at 10 am.

Total head
350 feet

From 10 to 11' pumped 26,800 gallons

at 11:00 pumping level 172'

443 gpm.

Pressure at 9:10 am on 3-12-47

Alt. gage with well pumping 166 ft.

Pressure gage 80# 184 ft.

Pumping started 6:45 am

DW at 10:10 am - 174.3 at 481 gallons/MIN

Alt. gage 170'

Pres. gage 81#/sq in 187

12:40 PM 138' pressure on line (one gage)

72#sq in = 167 (other gage

Hampton - 3-12-47

City well No. 2

Pumping started at 6:45 am.

			Head pressure
10:10 am	- 481 gpm	DW. 174.3	166-184
10:25	— 475 gpm		170-187
10:30	— pumping stopped		52½°F
10:32	— 152.6	- water running back into pump	
10:35	— 150.0	15 gpm ±	
10:40	— 148.8		
10:50	— 146.87		
11:00	— 145.85		
11:26	143.60		
12:20 p	142.90		
12:21 p	Lub line off		
12:26	143.00		
12:27	Lub line on		
1:05	142.+		
1:22	142.2		
1:24	Pumping started		
1:25	161.35		
1:28	165.80		
1:30	166.95		
1:32	167.73		
1:36		490 gpm gage(1) 167' gage(2) 81#	
1:38	169.45		
1:50	170.82		
1:58	171.37	485 gpm gage(1) 168' gage(2) 81#	
2:00 p	171.62		

Line measures .2 foot short and add. Knobs may put off a total of .5 foot

City well site - 38°F

Base of tower

11:25a	962
11:29a	1004
11:35a	964
11:40a	1007
11:45	968

Ref point on pump

pump to tower 45 + 85 + 35 = 165

head loss 20±

pumping head 175 -

360'

Assume output eff at 66% of rated - 49.5 hp =

5400' of 8" } calculate loss

3700' of 6" }

Sheet No. 1 Name of Well City Well No. 2 Survey No. W0537

Location Hampton- Franklin Co. Date Drilled 1926 Analyst Carrier 4/30/42

00

One sple 0-20

10 — V.fn.sand 50%, silt-50% - lt.gr. speck. blk, genenenal appearance, with clear grains — A., friable soft. v.sltly dolom.

Glacial sd-(igs. del. Echert) - 10%

20 — 20

V.fn.sand 35% - silt 65%, friable v.sltly dolom. - lt.drb. etc. as above.

Glacial material - cave - as ab.

30 — 30

Very fn. sand 40% silt — 60% — friable - v.sltly dol. etc. as above. lt.gr. to bf. - with fn. red & blk. spks emb. - soft.

40 — 40

Sltstone, dol., with fn.sd.emb., lt.med.drb. mottled med.gr.

Eng. River?
Sheffield

50 — 50

Dol, lt-med.drb & gr. mottled, fn-med.xln, sub-sac. & porous. some dense.

60 — 60

Dol. lt.drbsh.brn. - fn.xln. hard, sltly porous

70 — 70

Dol. med. drbsh gr. streaked dkgr. fn-med.xln. dense granular silty & arg. - 40%

Sh. lt. gr. sltly silty, dolm., soft - 60%

80 — 80

(wht & brn mottlings)
Cht - palegr, with blk fos spks, conch, semi-vit. to cht. lt.gr gran. dull tr. emb. chal. & qtz. xls (in vugs.) - 60% - looks like Maquoketa - Ft. Atkinson.
Dol. lt-med. drbsh-gr fn. to med.xln. gran. dense - 40%? Boiler Housed?

85

Cht. as above - tr.
(mot. brn & medgr)
Ls. v.sltly dolm. v.lt to lt. brnsh-drb. fn xln. gran. sltly phenool. - many loose frags. cri-stems, brachiopods -

89

Dol silty, lt gr & drb. fn. xln. gran. Tracepyrite - Sh. lt.gr. soft sltly calc - 10%

90 — 90

Dol. med brn. fn. - med.xln. dense hard - 10%

Sh. lt-med. yell-drb, sltly dolm., soft, 90%

100

Sheet No. 2 Name of Well City Well No. 2 Survey No. W.0537

Location Hampton - Franklin Co. Date Drilled 1926 Analyst Carrier 4/30/42

/00 — 100

Dol v. silty or dolmtic siltstone. lt drb fn. grained soft - 20%

Sh. lt grnsh-gr. sltly dolm. soft, structureless - 80%

10 — 110

Sh. lt gr. - v. sltly greenish - sltly dolm. soft

20 — 120

Ls. lt - drb fn. xln. dense - v. silty & arg. - iron stained in pt. - tr

Sh. med. drb. or olive drb, soft sltly dolm. structureless - 100%

30 — 130

Dol. med brn. semi-transl. fn-med. xln., dense, hard - 15%

Sh. lt grnsh-gr. soft, structureless, sltly calc - 85%

40 — 140

Lime Creek.

Owen(?)

Dol. med to dk brnsh drb. fn. xln. gran. dense hard, silty + arg.

/50 — 150

Dol. lt drb gr. mot. dk. gr. + brn. fn. xln., gran, dense, hard silty + arg. 80%

Sh. med. drbsh-gr. soft, sltly dolm. - 20%

? 60 — 160

Cerro Gordo?

Dol. dark gr & brn. fn. to fn-med. xln, dense, hard - sltly silty - as above. - 30%

Ls. pale crm v. fn xln with med. lt. brn. dol rhombs emb. in pt - 60%

Ls. sltly dolom. lt brn fn-med. xln. - sub-sac - (dol) as embedded in the pale crm ls. - 10%

70 — 170

Dol. dark gr + brn med xln. dense, hard - 30%

Dol. lt brn - med. xln. sub-sac - calc - 20%.

Ls. pale crm etc. - as above - 50%.

80 — 180

Dol dk. gr-brn as above - 10%

Ls. lt. crm with brn. dol. rhombs emb-as ab. - 10%

Sh. lt: med grn-gr. sltly dol. soft - 80%

90 — 190

Dol. dk brn-gr. med xln. dense hard. - sltly silty - 15% - tr. crse clear calcite xls. emb.

Ls. - v. lt. crm to lt. gr (+brn) spkled with med. brn dol. rh in pt. - lithog to fn. xln.

Rather heterogeneous sples.

200 — 200

Sheet No. 3 Name of Well. City Well No. 2 Survey No. W-0537

Location Hampton - Franklin Co. Date Drilled 1926 Analyst Gaskins 5-1-42

200 —

Dol. med drb sh-gr. fn-med x ln dense gran - silty - tr dk brn - med. x ln - 30%

Ls. lt-med brn (gr) - sub-lithographic - 5%

Sh. lt-med gr slty grash, silty, micaceous, soft, slty fissile, v. slty dolm - 65%

10 —

Ls. med drb-gr & brn-gr. fn. x ln, gran, v. soft, v. silty & arg. - or a calcareous siltstone. - 90%

Ls. lt. bf-gr., slty silty, fn. x ln. dense - 10%

Few masses coarse clear calcite x ls emb. & loose.

20 —

Spl. ss. drlg. 210-220.

30 —

Dol. lt. med drb-gr fn. x ln gran - silty & arg. ± 15%

Shale. v dolm. lt-med gr, soft, structureless - 85%

Ls. - tr as above.

40 —

Dol. as above ± 20%

Sh. " " less dolem. - 80%

250 —

Dol. dk. brn - tr.

Ls. - lt. bf fn x ln - tr.

Sh. lt-med gn etc as above.

60 —

Dol. med drb sh-gr. fn-med x ln. gran. v. silty & arg. ± 20%

Sh. slty dolem - silty lt-med. gr. as above - 80%

70 —

Ls. med drb-gr. fn-med. x ln-grain - v. silty & arg - & dolom ± 20%

Sh. as above - 80%

80 —

Dol. lt-med gr. v. arg & silty (& dk) - fn-med. x ln. - soft. ± 20%

Sh. as above - ± 80%

90 —

Ls. v lt crm to lt bf, gr & brn. lith to v fn. x ln. transl in pt. mottled. pure.

Dol. med brn - med. x ln. dense - 5%

300 —

Sheet No. 4 Name of Well... City Well No. 2 Survey No. W-537

Location ... Hampton - Franklin Co. ... Date Drilled ... 1926 ... Analyst ... Garrison 5-1-42

300 — 300

Ls. pale bf to sh-gr. v. fn. x ln. dense, hard, pure.

10 — 310

Ls. pale to lt. bf. gr. etc. as above.

20 — 320

Ls. pale bf, crm x gr. to lt. gr. x bf mottled fn. x ln. to sub-lith. dense hard & pure.

30 — 330

Dol pale drb. crse x ln. sac; translucent - 20%.

Ls. pale crm, lt bf-gr x lt. gr. x drb-gr. mottled v. fn. x ln. dense scrappy, heterogeneous. - 80%

40 — 340

Dol. pale drb as above - 20%

Ls. pale to lt. crm, gr, x bf - mottled - fn. x ln. with minor amount crse x ln. or mottled to appear crs. x ln - not phenocrystic.

350 — 350

Dol. med. drb. fn. to med. x ln. dense granular with masses of crse clear calcite emb. - 90%

Ls. v lt bf. gray, v. fn. x ln. dense - 10%

60 — 360

Dol. (calc) pale to lt. bf gray, coarse x ln. scrappy - calc. - 60%

Sh. lt. grnsh. - gr. dolm, soft, slty fissile, slty silty. - 40%

70 — 370

Dol. (pale gr to) v. lt bf. brn. x little lt. gr, crse x ln. sub-sac. with few clear calcite x ls. emb.

80 — 380

Dol. lt-med brnsh-bf. fn. x ln. dense granular - 30%

Ls. dolm in small pt. pale to lt drb-gr x bf. sub-lith to x fn. x ln dense. - 70%

90 — 390

Dol. lt.-med bf-brn to gr. fn. to med. x ln - little crse, dense, granular, tr. emb med, C, frosted, sd.

Ls. lt. drb, x bf, sub lithog - 20%

400 — 400

CV?

Sheet No. 5 Name of Well City Well No. 2 Survey No. W-0537

Location Hampton - Franklin Co. Date Drilled Analyst Carrier 5-1-42

400	400	Dol. lt bf-brn. fn.xln, granular, dense 50% Dol. lt. gr, silty bf, v. fn. grained dense - 30% Dol. pale drb. crse xln. sub-sac - 20%
10	410	Dol. v. lt to lt. crm. bf-brn + bf. gray. mottled. - bf + brn grains v. crse xln, gr. grains v. fn. xln. gran. heter. material. - 85% calc in pt. Sh. lt grn-calc. silty soft structureless. - 15%
20	420	Dol. lt. to med. bf-brn, and lt. bf. calc. fn. xln. gran hard. dense. slty silty. Sh. grn as above 5% Sh. brn dolan. silty - tr.
30	430	Dol. lt. bf, gr + brn. mottled. fn. xln. dense, granular. - calcareous in small pt. Clear, crse xln, masses of calcite emb. + loose - tr. Sd. med C frsted - loose - tr.
? 40	440	Dol. lt-med gr + brn gr. fn. to med. xln. mostly dense - tr. sac. - 60% Dol. lt-med. pinkish brn. fn. xln. gran. + calc. - 40%
450	450	Dol. lt-med drb + brn. fn-med. xln. dense. - 60% Ls. lt. crm-drb. fn. xln. gran. mottled - 40%
60	460	(v lt to) Dol. lt. bf-brn + bf-gr. fn. xln. dense, gran - slty calc in pt
70	470	Dol. lt-med brn + gr-brn. med xln. gran to sub-sac - 90% Ls. lt drb & bf - lithographic - 10%
80	480	Sh. lt gr-grn dolm, silty micac soft rudely fissile — tr. Dol. lt-med. brn. with blk (+ dk gr) mottlings rare, med. xln. - ~~med. xln.~~ dense, hard, sparkly. Ls. pale gr. mottled v. fn. xln dense - tr.
90	490	Dol. lt-med. brn., lt. gr + bf mott. dk. gr. fn. xln. dense granular - 70% Ls. pale crmy-gr. v. fn. xln. gran 30% Coarse xln, clear calcite, loose, - v. strong tr.
500	500	

Wapsipinicon

Sp. Gr. ?

Sheet No. 6 Name of Well. Cuty. Well No. 2 Survey No. W-05537

Location Hampton-Franklin Co. Date Drilled. 1926 Analyst. Carrier 5-1-42

500 — 500

Dol v. lt to lt. bf, brn & drb-gr. fn. to med x ln. dense. ± 75%

Ls. color ditto dol, but lith. to v. fn. x ln. hard dense - ± 25%

Heter. spic. Tr. scalenohedrons loose

10 — 510

Dol. lt drbsh gr - fn. x ln. gran - silty - uniform text. & color -

Ls. - " " " - lithographic - tr.

Clear coarse x ln masses of calcite - loose - tr.

20 — 520

Dol. as above

Ls. pale gr. v. fn. x ln. dense - 5%

Calcite x ls as above - tr & tr. masses x ln. qtz.

30 — 530

Dol. med drb - brn fn - med. x ln. gran, dense - clear vuggy coze calcite emb -

Ls. v. lt. drb. fn. x ln - tr.

40 — 540

Dol. lt - med. drbsh - gr. fn. x ln gran silty (as in 510 - 520) 80%

Dol. lt - med brn med. x ln. transl. non - silty - 20%

Both types slightly calc.

550 — 550

Dol. lt - med. drb - gr mott blk. slightly - fn. x ln. gran - as above. - silty calc.

Tr. Ls. lithographic etc as above

Tr. pyrite.

60 — 560

Dol. lt - med drb - sl tly brnsh, fn. x ln. gran - 20%

Ls. pale drabish - gray. v. fn. x ln with tr. coze x ls emb. 80%

70 — 570

Dol. as above - tr - cave?

Ls " " fn. to coze x ln - phenoclastic in lyg. pal. lt.

80 — 580

Dol as above - tr - prob. cave from 550 - 60.

Ls. pale gr. to pale v. lt. pinkish bf. (pale Cherokee color) - v. fn. x ln with tr. phenoclastic.

90 — 590

"Neda" — Dol. dk maroon - brn, fn. x ln. dense - tr.

Ls v. lt. pink - bf, yell & drb. phenoclastic - 40%

Sh. lt. maroon, banded blue - grn & calc, sl tly fissile - soft - 60%

600 — 600

Sheet No. 7 Name of Well. City Well No. 2 Survey No. WA537

Location Hampton - Franklin Co. Date Drilled Analyst Carriker 5-2-92

600	600	Ls. v lt. to lt. yell, drb & bf. v. fn. x ln. to crse phenoclastic - 30%
		Sh. v. calc. lt maroon, chive-grn, & blue-grn banded - 70%
10	610	Ls as above - tr.
		Sh. lt. maroon, slitly banded blue-grn. less calc. than above
20	620	Dol. lt. flesh - fn. - med x ln. gran. - tr.
Maquoketa		Sh. lt med. gry, ch-grn. slitly matt. lt maroon & purple. slitly dolom.
30	630	Ls. lt. gr & bf. fn. x ln. dense - tr.
		Shale as above -
40	640	Sh. as above - but slitly more dolom.
50	650	Dolomite - lt. bf to sh - brn., med x ln. - granular, dense, -
		Ls - pale bf. gr. v fn. x ln. dense - tr.
		Sh. slitly dolom, med. grn - slitly fissile - tr.
60	660	Cht. lt. gr. gran dolom to conch. vit with blk. spks emb. in it - + lt gr. dull stony siliceous material - slitly dol. - 60%
		Dol. lt. bf & drb. fn. - med x ln. gran. dense - slitly silty - 40%
70	670	Cht, lt. gr. stony, dull, opaque, silty vitreous, few blk spks. few masses x ln. qtz. + slitly chalcedonic with comb. pyrite - 20%
		Dol. lt. drb gr & brn. fn. - med x ln, dense, granular. - 20%
80	680	Tr. polished pebbles, soft pple gr. shale - v. fn gr. - dolom.
		Cht as above - 90%
		Dol. as above - 10%
		Tr. polished. silty pebs as above
90	690	Tr. var. colored sh - calc soft fissile - cave
		cht as above - tr.
		Ls. lt to lt - med gr. brn & drb matt med gr, emb. wht transl x ls. arg, - scrappy, heterogeneous - fn. med to coarse phenoclastic.
		Cri - stem plates. Sh. tr. as above - cave.
700	700	

Sheet No. 8 Name of Well. City Well No 2 Survey No. W.e.5.37.

Location Hampton Franklin Co. Date Drilled 1926. Analyst Canner 5-4-42

700 — 700

Dol. med. brn. fn. x ln. gran. arg, - 10%
Ls. lt. to med. drb, gr, & brn. fn. to crse phenoclastic 10%

Sh. lt-med. brn - sl ty maroon. calc. - 40%
Sh. lt. blue-grn. semi-unctuous. v. fn. grained. soft, structureless
v sl ty calc 40%

710 — 10

Dol. arg & silty - med. drb-brn. speckled. fn. x ln. granular with tr.
masses. clear coarse calcite emb. ± 20%

Sh. calc, variecolored with bands of alternating gr-grn & maroon sh.

720 — 20

Ls. lt to med. drb. & gr. mott. fn. x ln. dense, arg, - ± 10%
Dol. med brn. fn. x ln. gran sl ty arg - tr.

Sh. sl ty dolm lt-med brn sh-gr- (mouse colored) — soft, structureless,

730 — 30

Ls. - lt. to med. brn & drb & dk. gr. mottled. med. to crse x ln. gran, &
sub-sac - scrappy - heterog. - phenoclastic.

Sh. lt. yell brn, non fissile, non-calc - tr.
Sh. lt. grn, sl ty dolm. soft, sl ty mic & lam. - tr.

740 — 40

Dol, sl ty calc, med drb-gr. mottled & spkled lt & lt-med. - med. x ln
emb. fos fragments corals, - emb. crse clear calcite x ls - 90%
Ls. lt brt, dol rhombs emb. in pt. fn. x ln. to crse phenoclastic - 10%

Sh. as above - tr. cave.

750 — 50

Cht. lt. gr. blk spks (not Ft. A. spks.) emb. semi-vit, opaque - tr.
Dol. lt-med. drb-gr. spkled & mott. as above - fn to fn-med. x ln. 75%
dense, granular. Rhinidictya(?) & Brach. frags.
Ls. lt. yell & brt. transl. fn. x ln, transl - tr.
Sh. v. sl ty dolom. mouse gr. soft, sl ty fissile - 20%

760 — 60

Dol. lt to med drab-brn med to coarse x ln. sub-sac -

Ls, dolm, lt yell-drb coarse x ln, sac - 10%.

Sh. grn & yell-brn - tr as above -

770 — 70

Dol. lt to med drb-brn. etc as above -
Ls. as above - 10% - Rhinidictya as above.

Sh. yell → olive → grn sl ty calc, mic. soft sl ty fissile. 5%
Sh. lt-med. gr (sl ty maroon) mic, calc, soft, sl ty fissile - 5%

780 — 80

Tr. polished gr. mudstone - sl ty calc - rded & polished by drill?
Ls. lt. drb sh-brt mottled med. gr - coarse x ln. phenoclastic
few grains dolom (rhombs emb.) — scrappy. heterog. 85%

Sh. dolom. lt-med. brn-gr., soft, non-fissile - 15%

790 — 90

Shiny nodules of mudstone as above.
Ls. pale gr-brt mott. heavily med. gr, phenoclastic, coarse x ln.
Tr. phos nod (?).

Sh. - brn-gr etc as above - tr. cave.

800 — 00

Sheet No. 9 Name of Well. City Well No. 2 Survey No. Mo 537

Location Hampton - Franklin Co. Date Drilled 1926. Analyst Carrier 5/4/42

800 Ft. Atkinson

Cht. lt. gr. few blk spks. granular, slt ly dolomitic (semi vit) fr. masses xln. qtz. - 20%

Dol. lt-med drb-gr. med xln gran - 15%

Ls v. lt to lt. bf + gr mott. med. gr in pt. - fn. to crse xln (phenocl.)

Much bit calcy rust.

900 — 10

Chert v. lt. gr. to gr. mot. drb. (+ lt med drb) speckled. blk. by pyrite, + Ft. Atk.-like blk. fos. and. sponge-spicules (?) - gran. to conch vitreous. - brach shell frags. - 50%

Dol. lt-med drb-gr. + med xln. dense granular. sub-sac. - 20%

Ls. lt. drb. fn. xln with med, lt brn. dol. rhombs emb. abundt. - 30%

920. 20

Cht. lt. gr. with blk. Ft. Atkinson-like fos spks (spines or condonts) emb. gran to sub-conch - opaque - 60% slt ly dolom - (gran pt)

Dol. lt-med. drb-gr. med xln, dense, granular. - 40%

930. 30

Cht. as above - 50%

Dol. calc in pt. lt-med. drab sh-gr. med. xln. dense. 40%

Ls. v. lt. drb spked with drab dol. rhombs. - fn. xln. 10%

940 40

Onesple 940-960

50

Cht. lt. gr. slt ly drb sh few blk fos. spks - sub-conch - dull opaque - 50% fr chalcedony.

Dol. lt gr. v. fn. xln, cherty, dense - + dol. as above - 40%

Ls. pale drb. v. fn. xln. dense with lt-med. drb, med. xln, dol rhombs emb. - 10%

960 — To Glacial Sd 60

Cht. lt. gr. fn. grained. sub-conch. dense, opaque, with occas blk. fos spks emb. + fr. lt. drb, vit, conch, cht. 60%

Ls. v. lt. bf spked. drb dol. rhombs as above - v. fn. xln to slt ly phenoc fr. blk. spks in ls as well as cht

970 70

Galena

Cht as above - 10%

Ls lt to lt-med drb sh-gr. with few dol. rhombs emb., fn. to v. crse phenoclastic with abundt. cristem plates.

980 80

One sple - 980-990

90

Ls. v. lt to lt bf gr with abund't dt. drb, transl. dol. rhombs, & cin spks. fn. xln to v. crse phenoclastic.

900 900

Sheet No. 10 Name of Well City Well No 2 Survey No. W 05 37

Location Hampton - Franklin Co. Date Drilled Analyst Carrier 5-4-42

Depth	Description
900	Ls. (pale to) v. lt. buff with fn dol. rhombs as above + very abund't "cin spks." fn. xln. to phenoclastic. - cri stems.
910	Ls. as above with only trace "cin spks"
920	Ls. as above - with strong tr. "cin spks"
930	Dol. lt drb. brn - calc, med. xln. dense granular. ± 15% grades into Ls. as above with many dol. rhombs emb. phenoclastic - tr. "cin spks."
940	Dol. as above (non calc), but sltly crser xlline - 40% Ls. as above - no cin spks. - 60%
950	Dol. as above - 40% Ls " " 60% - cri stem plates
960	Dol. as above - but calc - + grading into ls. - few "cin spks" ± 20% Ls. as above - few blk fossil mott. - 80%
970 (Prosser)	Cht. v. lt. gr, sltly drb, with areas xln. qtz in vugs. gran dull to mostly conch semi - vitreous. - with few blk. mottlings 40% Ls. lt crm. with fn. lt brn. dol. rhombs emb. in pt., fn. xln. gran. not phenoclastic
980	Cht. lt. crm + gr with lt. drb transl. + dk. gr. mottlings. - conch, vit - 40% Dol. - lt drb., transl. in pt. fn. to crse (phenoclastic) xln - 40% Ls. dol. (rhombs) - lt. gr + drb fn. xln. - scrappy phenocl. in pt 20% Het. sple.
990	Cht. sltly dolom, lt. drb. + gray. conch vit spk. blk. + transl. drb in pt. banded. dk. gr in pt; sltly qtzose - 40% Dol. lt - med drb. fn. xln gran. spk. blk - 10% Ls. pale bf - gr. mottled dk gr. v. fn. xln. few emb. dol. rhombs. - sltly phenoclastic - 50%
1000	

Sheet No. 11 Name of Well. City Well No. 2 Survey No. W-0537

Location Hampton, Franklin Co. Date Drilled 1926 Analyst. Carrier 5-4-42

1000 — 1000 — Cht. v. lt bf - moth. lt gr. in pt. conch dull, opaque - 15%

Ls. v. lt bf few dk. gr. mottlings v. fn. x ln. with tr. fn. dol. rhombs. slightly phenoclastic

10 — 10 — Spherulite 1000 - 1010.

20 — 20 — Cht. v. lt bf to lt. drb. v gr. spkled blk. in pt. - 10%

Ls. v. lt. bf v. dk. matt. heavily dk. gr. fn. x ln. - phenoclastic in pt. - 90%

30 — 30 — Cht. as above - tr.

Ls. lt bf v. drb. as above - matt dk. gr. -

40 — 40 — Ls. as above with 5% med. gr. fn. x ln. grain -

1050 — 50 — Ls. lt. - med. drb mottled dk. gr. with foss. frags - fn. x ln. to crs. phenocl. Rhinidictya - 60%

— Sh. med. grn. non-calc. med. hard, fissile, few blk spks. - tr. conodonts. 40%

60 — 60 — Ls. v. lt. crm drb. speckled blk in small part. few brn transl, fn, dol. rhombs. v fn. x ln. few fos. frags.

70 — 70 — Ls. as above plus small amount lt. med. gr. brn. drab fn. x ln. ls.

All of these spls look out-of-place.

80 — 80 — Ls. as above

90 — 90 — Cht. lt. brn. mot. wht in pt. - conch vit semi-transl. to opaque - 15%

Ls. v. lt bf mott. v. lt brn in pt. few areas of blk. spks. fn. x ln. with few fos. frags emb. - 85%

1100 — 1100 —

Sheet No. 12 Name of Well City Well No 2 Survey No. W0537

Location Hampton- Franklin Co. Date Drilled 1926 Analyst Carrier 5-5-42

Depth	Formation	Description
1100		
		Ls. lt. gr. mott. very heavily drb (dol. rhombs) & blk. fos. frags. fn. to coarse (phenoclastic) xln.
10 (1110)	Decorah-Ion.	Sd. coarse, loose, a to c very rough surfaces - tr.
		Dol. (calc) med. drb gr. with many rust spks emb. - fn. xln dense-gran. - 10%
		Ls. v. lt. to lt. bf. mottled. blk (fos frags.) v. fn. xln. phenoclastic frags of original shell of brachiopod. also Bryozoa. specked. rust red. as the dolomite
20 (1120)		Sh. lt-med grn. calc. fissile soft. - tr.
		Ls. lt-med bf-brn. speck. by transl. reddish-brn. v. fn. dol. rhombs 20%
		Ls. v lt. gr. heavily mott. black. (fos frags) - fn. xln. dense - 20%
		Ls. v. lt to lt bf. fn. xln. granular dense 60%
		Sh. grn. as above - tr.
30 (1130)	Spechts Ferry	Ls. as above - 15%
		Sh. lt. gr-grn. non-calc., fissile, soft, unctuous, tr. pyrite emb.
40 (1140)		Ls. dk. gray. fn. xln, dense, scrappy, fossiliferous - bryozoa. - 10%
		Sh. lt-med drb-brn. few blk spks, calc, soft, structureless -
		Sh. grn. as above. - tr.
1150		Ls. v lt. bf. (to lt. brn) fn. xln. dense. sltly mottled blk. - 15%
		Sh. lt. grn, blk spks, non calc, fissile splintery, soft - 85%. ironstained in pt.
60 (1160)		Tr. loose sand.
		Ls. lt. bf, drb, gr. fn. xln. with fn. (to med) emb. sd. - 30%
		Sd. med. to little crse a to c well frsted - 40%
		Sh. lt. brnsh. gr. silty calc - soft - 30%
70 (1170)	Glenwood	Ls. as above - tr. - cave
		Sd. mostly loose, but 10% cemented by silica & pyrite. - v. crse 10% coarse 50% med. 25% a. very crsely pitted and straight, crse, scratches, sltly ironstained.
		Sh. grn. as above - 15%
80 (1180)	St. Peter.	Sd. loose wht, v. crse 20%, crse 55%, med 20% fn. 5% - a to little c; some grains scarcely pitted, but most is well frosted by short wavy grooves - solution? pitting.
90 (1190)		Sd. loose, v. crse 10%, crse 40%, med 30%, fn. 15%, v. fn. 5%, a, fnly frsted. by v. fn. pits & fn. grooves.
1200		Tr. sht. cave.

Sheet No. 13 Name of Well City Well No 2 Survey No. W0537

Location Hampton - Franklin Co Date Drilled Analyst Carrier 5-5-42

1200 — 1200
Sd. 10% cemented by lt. drb dol & siliceous material - 10% crse, 10% med. a. fnly frsted by pits.

Sh. med. grn. sltly drabish few blk spks soft, fissile, sltly waxy non-calc -

Sple of of place?

10 — 1210
Sd. tr. cement as above.

Sd. loose wnpt crse tr, med. 50%, fn. 45%, v.fn 5% - a. fnly frsted by v.fn pits, & fn. short grooves.

Sh. - grn as above - tr - cave.

20 — 1220

Sd. free, ironstained yellow wnpt - crse tr, med 40% fn. 50% v.fn. 10% - A to a. fnly pitted - matted surface.

Bitscale tr - ironstain probably from bit Pyrit. dol & grnsh - tr cave.

30 — 1230
Dol. lt. drb. fn. to crse xln. dense - 10%.

Sd. loose - crse tr. med. 60% fn. 40 v.fn. tr., a. v. fnly pitted with smooth shiny surface between pits.

split 39

Willow River

40 — 1240.
Dol. lt. drab. fn. xln. dense to sub-sac. 40%

Sd. free, med. 20%, fn. 30% v.fn. 10% a to C fnly frsted by pits with smooth surfaces between.

Much grn sh - cave.

1250 — 1250
Dol. v. lt to lt. crm-drb. fn. xln. dense with tr. emb fn. to med. sd.

Sd. loose crse trace, med 10%, fn - tr. - a well frosted. - 10%.

Grn sh - as above 20% of sple - cave.

60 — 1260
Dol. as above - tr. "spongy"

Sd. loose med. A, very rough surfaces, 2nd xl faces. - tr.

Grn sh - as above - cave.

70 — 1270
Dol. v. lt to lt. buff v.fn. to fn. xln. dense. with emb. fn. sd. / frosted.

Cht. ools v. lt. bf. - v. strong tr.

Sd. med a to C very rough surfaces - 2nd xls faces, pits, & grooves tr.

80 — 1280
Dol. lt. crm. to bf. v.fn. xln. dense - tr. emb. fn. sd.

Sd. (free) med a. well frsted fn. pits - tr.

Sh. grn. as above - 20% - cave.

90 — 1290
Dol v. lt. crm. v.fn. xln. dense - with much v.fn. sd. emb.

Sh. grn. - as above 15% of sple.

1300 — 1300

Sheet No. 14 Name of Well City Well No 2 Survey No. W-0537

Location Hampton - Franklin Co. Date Drilled ..... Analyst Carrier 5/6/42

1300

Dol. lt. bf. fn to fn. med xln dense granular
Sd. free coarse to little med. a. to C. strongly frosted by solution? pits & grooves. - 5%

1310. Grn. sh - 10% - cave.

Dol. v. lt bf. fn xln gran with tr fn emb sd 60%
Sd free, coarse 10%, med 30% fn. 10% (a) strongly frosted as above except for small 2nd x/l faces. Much grn sh - cave.

1320.

Dol as above with tr emb fn sd
Sd. loose, crse 10% med. 10%, strongly pitted with 2nd glazed surface between pits Grn sh - cave

1330.

Dol. lt bf. fn to little crse, tr emb med. sd - slty. tr stained bit?
Sd loose, crse to med - a well frosted - tr.
Grn sh - cave

1340.

Cht - small ool lt bf. - tr.
(v. lt to) Dol. v. lt to lt brn sh bf. fn to little med xln - tr emb med sd dense gran-
Sd. loose, crse to med. - a to C. heavily frosted. 10%.

1350 1350 Grn sh - cave

Cht. wht gran cementing sd grains + oolitic + conch. - tr.
Dol v lt bf or crm, med to crse xln. tr emb sd
Sd. free. med a. frosted - tr.
Grn sh - aa - cave.

1360

Cht. small wht ools. cemented by wht gran cht + free - 10%
+ tr. dolomite ools. (por.
Dol. lt crm to lt. brn. - fn. to crse xln. tr emb fn sd - tr. spongy." dol.
Sd free, med, A to C. well frosted except for occasional 2nd x/l faces. <10%

1370 Grn sh - tr - cave

Cht. wht semi-conch tr. ools. as above.
(med to crse)
Dol. lt. bf. brn med to crse xln dense with much emb sd + faint tr.
lt. bf brn. dolomite ools.
Sd. loose med. a to C. - tr.

1380

Cht. pale gr. conch cem. ools. with large sd grain cores - 10%
New Richmond (Root Valley)
(to deb) Dol. v lt crm to tn. xln tremb sd - 30% - to dol. ools as above. - 20%
Sd loose. - v crse tr. coarse 20%, med. 40% a to C very rough surfaces. grooved + scratched with small irregular 2nd x/l. faces.

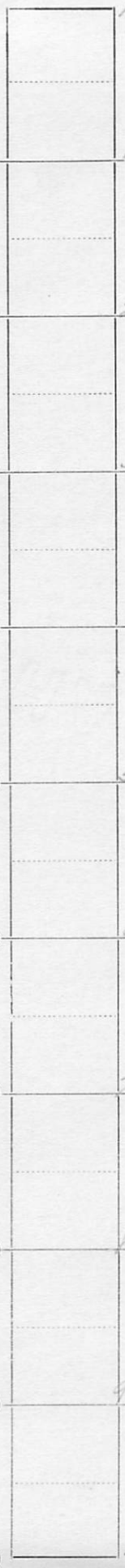
1390

(v lt to) Dol. v lt. crm. fn. xln. dense granular with very abundant small ools. with sd. grain cores. loose + cemented. - tr. emb. med. sd 70%
Sd loose, crse to med to fn 10%, A to a, very rough surfaces. crse pitting + grooving + 2nd x/l ization.
Grn sh - tr

1400 1400

Sheet No. 15 Name of Well. City Well No 3 Survey No. W.a 537

Location Hampton - Franklin Co. Date Drilled. Analyst. Carriker 5/6/42



1400 Dol. as above - oolitic etc - 20%
Sd. loose - crse 15% med. 65% A to a strongly frosted by pits & grooves - solution? - some 2nd xllization

10 Dol as above - tr ools & fn. sd emb. - 20%
Sd. free, coarse - 50% med 30% - a strongly solution frosted tr 2nd xllization -

20 ? Oneota ? Dol. v. lt grsh-crm. med to crs xln. dense tr. emb. sd
Sd. free - crse 40% med 5%, A to a etc as above.

30 Grn shale - cave.
cht. wht to lt drb. conch vit with ools emb which have sd grain centers. also free ools - 10% - slitly chalcedonic.
Dol. v lt to lt. grysh-crm. fn. to crse xln - tr emb. sd. - 25%
Sd. free, crse to med. a, very rough solution pitted & etched surfaces,

40 cht. in free ools - tr.
Dol. as above - 25% abund. emb. sd.
Sd. loose - crse 10%, med. 55%, fn. 10% a, surface very rough as above.

50 Dol. as above - 15%
Sd. loose & crse tr. crse 20% med 50% fn 15%, a - well frosted, with some polished surfaces due to 2nd xllization.

60 Dol. v. lt. to lt. crm-gr. med. xln. dense - sparkly - 40%
Sd loose crse tr. med 40%, fn. 10% A to a surface ET grains as above.

70 Dol. as above - crse xln. in pt. - 20%
Sd loose crse 10%, med 60% fn 10% - frosted as above

80 Oneota cht. lt gr transl to clear, banded in pt-gr rosa & cryptozoic and lt gr conch - vit opaque - 15%
Dol. v. lt to lt drb-gr & crm. med xln - little crse - dense
Sd. loose, med 10%, A to a. frosted as above.

90 cht. oolitic crypt. as above - tr.
Dol v lt drb-gr & crm, med xln. sub-sac. - 20%
Sd. loose, crse to med. a - frosting & 2nd xllization as above.

1500 Much grnsh cave - one ostracode - cave. 20%

Sheet No. 16 Name of Well City Well No. 2 Survey No. W 6537

Location Hampton - Franklin Co. Date Drilled Analyst Carrier 5/8/42

Depth	Sample depth	Description
1500	1500	Cht. wht to lt drb. conch vitreous, to granular dull - tr. oolis - 5% Dol. lt. crm to drb + brn fn. to med. xlline dense. 35% Sd. crse 10%, med 50%, a, strongly solution frosted
10	1510	Much grn sh - with one conodont - cave.
		Dol. lt. bf. med. to crse xln, dense, Sd. loose med to crse a, frosted by coarse pits + grooves - tr.
20	1520	Grn sh. as above - cave.
		Cht. wht. crypt. - tr. Dol. lt. bf. med. xln. porous sub-sac. - 95% Sd. med a, well frosted by solution pitting & grooving. 5% loose
30	1530	Cht. ool. - lt bf gr. - tr. Dol. as above - med to crse xln. por. sac - Sd. as above - tr. Grn. sh. cave.
40	1540	Dol. as above Sd. " " tr. Grn. sh - cave.
1550	1550	Cht. qtzose transp. + chalcedonic - 5% Dol. v. lt bf. (or crm) med. xln. dense to sub-sac.
60	1560	Cht. as above - tr. Dol. as above fn - med. xln. sub-sac. dense. Sh. grn. as above - cave.
70	1570	Cht. wht. conch, semi-vit. tr. Dol. lt. crm to gr. blk. spks in pt. fn - med to crse xln. dense, gran, much flour Sd - loose, tr as above. Grn. sh. as above - cave.
80	1580	Cht. pale blue - gr. chalcedonic to qtzose vit. - tr. Dol. lt to lt med drb. fn - med. xln. granular, sltly porous in pt. Sd., med., a well frsted pits & grooves - tr. Sh. grn as above - tr.
90	1590	Cht. pale blue - gr. transl. chalc. qtzose - 5% + tr. lt bf. conch vit. op. cht. Dol. lt. bf - drb. fn - med. xln. to little crse. dense to granular Sd. med. a. etc. a.a. - tr. Sh - grn - tr. cave.
1600	1600	

Sheet No. 17 Name of Well City Well No 2 Survey No. W-0537

Location Hampton - Franklin Co. Date Drilled ..... Analyst Carriere 5/6/42

1600 1600

Cht. as above plus tr. ool. -

Dol. as above - med x ln. dense.

Sd loose, arse - tr, med 10% a, well frosted by fn. solution (?) pits

10 10

Cht. pale gr. transl. chalc. gtzose - tr. v cht. lt. drb - brn. conch. semi - vitreous - transl. inpt with fn blk spks. 15%

Dol. lt. drb sh-brn. med to crse x ln. dense -

Cht. v lt bf-gran. soft - trip. - slty dolm - 10%

Sh. grn. - cave.

20 20

Cht. lt. drb - brn as above - tr.

Dol. v. lt to lt. drb. fine x ln, sub-sac - tr. fn. emb. sd 40%

Sd. loose - crse 15%, med 45% - a - fnly frosted by pits.

With some 2nd x llization.

Grn-sh - cave

30 30

Cht. lt. drb brn as above - 5%, plus tr. pale bf. oolitic

Dol. lt brn sh - bf. fn x ln. sub-sac. dense. few dk. gr mottlings.

Sd. loose - crse tr, med. 15%, a, strongly frosted. fn. pits & grooves.

40 40

Jordan.

Sd. loose white crse 50% med. 30% fn. 15% v. fn - 5

a. very strongly frosted. by fn. pits & grooves.

1650 50

Sd. crse - 10%, med 20% fn 10% well sorted. a to little C.

well frosted. as above.

60 60

Sd. crse 40%, med 20%, fn. 15% v. fn 5% a to little C.

very well frosted. by fn. pits

70 70

Sd. v. crse - tr, crse 50% med 25%, fn. 20% v fn. 5%

a to little C as above.

80 80

Sd. v. crse tr., crse - 50% med 25% fn. 15% v fn 10%,

a etc as above.

90 90

Last Sample - 1690'

Gap

TD - 1700'

1700

Hampton Well #2

March 5, 1947

Mr. Clyde M. Saylor, Mayor
City of Hampton
City Hall
Hampton, Iowa

Dear Mr. Saylor:

Your letter of February 27, concerning the production of water for municipal use at Hampton, has been received.

Just as soon as possible one of our small staff will call on you and do what he can to determine the cause of the decrease of production. At the moment I cannot set a definite date for this work, but I will write to you again in the near future about it.

Very truly yours,

H. G. Hershey

HGH:BH

CITY OF HAMPTON

CLYDE M. SAYLOR, MAYOR
H. H. BECKMAN, CITY CLERK

CITY HALL - 202 FIRST AVE. N. W.

HAMPTON, IOWA

February 27/47

Geological Department
Iowa City Iowa.

Gentlemen :

We are having some trouble here at Hampton with our water supply. Our flow of water is steadily decreasing and we are very anxious to know if the trouble is the well or the pump.

We bought and had installed a new pump (Fairbanks Morse) about a year ago which steadily lost its rated capacity. About thirty days ago we had the pump pulled out, overhauled and replaced. For a short time it again delivered its rated gallonage. At this time it has begun to loose its rated gallonage again .

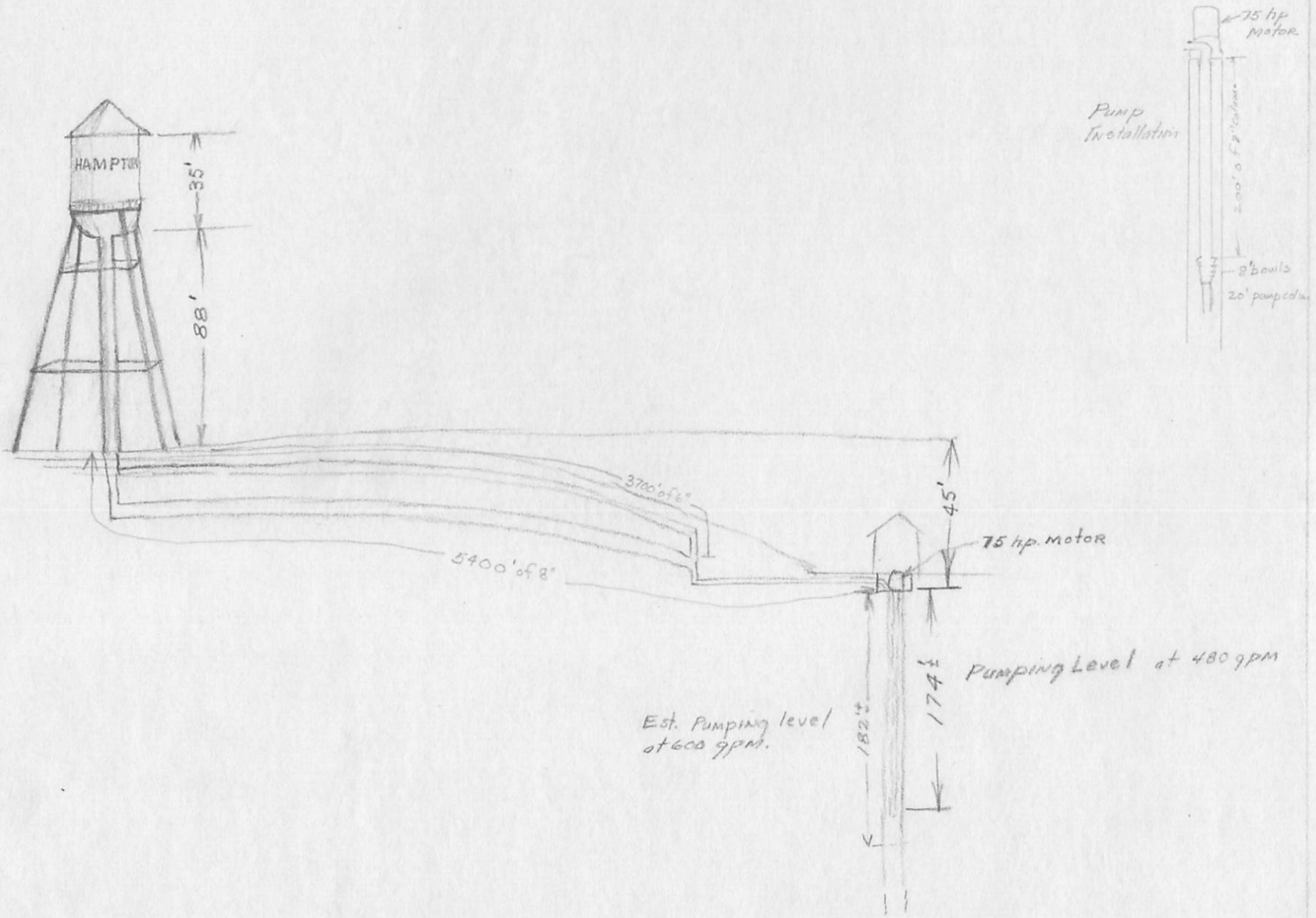
The firm from which we purchaced the pump contends the trouble is with the well. We feel it might be in the pump so would you please furnish us with some one from your department to help us determine wherein our difficulty lies.

Yours Truly

Clyde M. Saylor
Mayor

Attest H. H. Beckman
City Clerk

REB.


HAMPTON
35'
88'
3700' of 6"
5400' of 8"
45'
75 hp. motor
174'±
Pumping Level at 480 gpm
Est. Pumping level at 600 gpm.
182'±
Pump Installation
75 hp Motor
20' of 8" column
8' bowls
20' pump end

Hampton. New Well.
about 30 ft from old well

IOWA GEOLOGICAL SURVEY
GEORGE F. KAY, DIRECTOR.

SCHEDULE FOR DEEP WELL

Dear Sir:

In connection with the investigation of the water resources of Iowa, the Geological Survey in endeavoring to secure all the important facts relating to the deep wells of the state. It would be a special favor if you, as the owner of such a well, would fill out the blanks in the following schedule, so far as may be possible, and return this sheet at your earliest convenience in the inclosed addressed envelope. The facts thus obtained will be placed on permanent record and in return for your co-operation it will be our pleasure to send you our full reports when published.

Yours very truly,

W. H. NORTON, Asst. in charge of Artesian Wells.

Locality; Town Hampton *County, qr.* Franklin Iowa *qr.* ..... *sec.* ..... *tp* ..... *R* .....

Owner City of Hampton, Iowa

Name and address of driller Thorpe Bros. Des Moines, Iowa

Depth 1700 ft *Diameters from top to bottom* 180 ft 20" Casing-115 ft 16" 500 ft 10" 1388 ft 8" Casing

Date of completion Feb 1 1926 *Elevation relative to railway grade at station* .....

Depth at which principal supply of water was found 1700 ft

Depths of other water beds St Peter sand at 1200 ft (Cased out)

If a flowing well, how high would water rise above surface in pipe on completion of well? .....

How high will it rise in pipe at present? ..... *Flow in gallons per minute on completion* .....

Present flow ..... *If a non-flowing well, how near the surface did the water rise on completion* 153 ft

How near the surface does it now rise? 153 ft

Pumping capacity on completion 1000 per Minute *at present* Same

Depth of cylinder 200 ft *Effect of continuous pumping on level of water* 23 ft down

If the flow or pumping capacity has diminished, can you assign cause? .....

Have you any records to show the heights at which the water stood as the well was being drilled? 153 ft

Temperature .....

Casing: size, length and where placed Answered above one at 1200 ft

Packing: kind and place one at 180 ft sealed + one at 300 ft sealed

Quality of water, hard, soft, salty, alkaline, iron or sulphur bearing Hard, some iron

Effect on boilers hard

Effect on health of users do not Know

If you have an **analysis of water** *please place on back of this sheet.*
If you have **record of the beds passed** *through, please place it on back of this sheet.*

Names of persons who may have samples of drillings H. A. Mohring Supt.

Cost of well $23,000. *Cost of pumping machinery* $5000.

NAMES AND ADDRESSES OF OWNERS OF OTHER WELLS RECENTLY DRILLED .....

Date Oct. 26 1926 *Signed* S. J. Parker Clerk

5368

Notes on Hampton City Well No. 2
Survey No. W-0537

This is a good set of samples taken at 10 foot intervals with a few intervals of 20 feet. Samples from 1050 to 1100 feet do not appear to be usual for lower Prosser or Guttenberg. It may be that they are out of place. If the top of the Decorah (Ion) should be placed at 1050 feet, due to the presence of green shale there, the Decorah-Platteville sequence is abnormally thick. There is no drillers log for this well.

There are two distinct shales and an overlying silty sandstone in the upper portion of the hole, which are separated by two limestone and dolomite sequences. The upper dolomite is believed to be the one usually present in the Sheffield as shown by logs of Beeds Lake State Park and Ralston Purina No. 3. The lower limestone and dolomite is believed to be Owen-Cerro Gordo and the shale below to be Juniper Hill. The Lime Creek as a whole shows fairly consistent thickness, with slight thinning toward the north as shown by the Thornton and Rockford wells. It is 150 feet thick in Hampton No. 2, 137 feet in Thornton, 126 feet in Rockford; the latter thickness is about that of the described surface sections in Nelson's thesis. It is difficult to determine, however, where the top of the Juniper Hill should be placed. The general Lime Creek section is limy at the top and grades downward into shale. No two sections show the same limestone and shale breaks so that the top of the Juniper Hill jumps around quite a bit. This may be due to actual inconsistencies in the relationship of shale and limestone beds within the Lime Creek, or to poor sampling, or both.

The limestone from 560 to 590 feet which underlies the silty dolomite beds is believed to be the same as that in the similar sequence in Mason City wells. Directly underlying the limestone is a varicolored shale (Neda ?) grading downward into green shale, (Maquoketa). This is taken to be fairly conclusive evidence that the bottom of the limestone in the Mason City area marks the top of the Maquoketa although there is no shale at that horizon in any of the wells except Decker No. 1, which shows a few feet of it. The Maquoketa is much thicker in Hampton than in Mason City, being 250 feet here, whereas it is only 105 feet in Mason City No. 11. Also the Maquoketa shows two cherts at Hampton. The lower one appears to be more typically Ft. Atkinson.

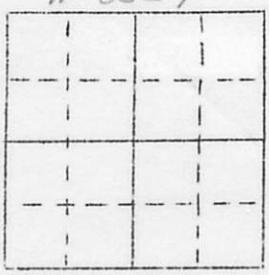
The top of Decorah is not definitely known. The first green shale at 1050 to 1060 feet may be Ion, but not in this writer's opinion, as discussed in the first paragraph above.

The sample from 1200 to 1210 feet in St. Peter is believed to be mostly cave or the sample out of place. Green and brown shale is not usually encountered in the St. Peter in this part of the State.

The New Richmond is well developed and contains a good many dolomite oolites. The boundary between Oneota and New Richmond (Root Valley) perhaps should be placed at 1420 feet and the heavy sand below (from 1440 to 1480 feet) may be interpreted as cave.

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

W-0537



RECORD OF WELL

Location:

Town: Hampton (N E / S W); County Franklin

SW/c NE-SW-SE-NW sec. 34 T. 92 N., R. 20 W. Math Twp.

Well name and number City Well #2

Owner _____ Address _____

Tenant _____ Address _____

Contractor Thorpe Well Co. Address Des Moines

~~Drillers~~ Engineers Currie Engineering Co. - Webster City, Iowa.

Drilling dates Feb. 1, 1926

Well data:

Elevations: Drilling curb 1100.7 feet; Land surface _____ feet

Determined by K.E.A.

Topographic position Valley

Total depth: Reported 170.0 feet, Measured _____ feet

Drilling method Drilled

Hole and casing data 187' of 20" O.D. welded pipe = 0-187'; 116'6" of 16" O.D. Std.
(Give amount, size, kind, and depth of all casing; type and
183'6" - 3 rows (3'6" overlap at top; 12' overlap at bottom both
position of seals and packers; cementing; how finished--perforated pipe, screen,
with lead seals) 512' of 10" Std. pipe = 228'-800'; 125' of
gravel pack, open hole, etc.)
8" Std. pipe 1097'-1232', with 8" lead packer at 1118'

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

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

Sources of water: Principal _____; Others _____

Production data: Date _____

Static depth to water 153.3 Measuring point _____

Pumping level 178 at 600 g.p.m.

_____ _____

_____ _____

_____ _____

Specific capacity 30 g.p.m. per ft. drawdown; Temperature 52 °F.

Pump data; Type pump Turbine Column Dia. _____ Length 225

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

Power Electricity Airline _____

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

Use of water City Supply

WATER ANALYSES (in parts per million)

Date sampled	Dec. 10, 1947			
Sampled by	H.G.H.			
Total solids	654			
Insoluble matter	2.0			
Alkalinity (Meo)	344.0			
Alkalinity (Phn)	0.0			
pH	7.2			
Fe_2O_3+ Mn_2O_3+Al_2O_3	31.0			
Alkali as sodium	52.7			
Calcium	109.3			
Magnesium	41.3			
Iron (unfiltered)	0.4			
Manganese	0.0			
Nitrate	0.0			
Fluoride	0.0			
Chloride	14.0			
Sulfate	198.8			
Bicarbonate	419.7			
Hardness (ppm)	444			
Hardness (gpg)	25.9			

Remarks _____

Laboratory data: Sample storage location _____

Sample range 20-1700 No. spls. 168 No. dupls. & cond. 0

Spls. prepared by _____ Washed range _____ by _____

Driller's log and cond. _____

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

Microscopic study 4/30/42 Cuvier strip log 5/6/42 Cuvier

Gen. log yes Correl. by Cuvier

LOG OF DEEP WELL
HAMPTON ~ IOWA

COMPLETED FEB. 2 - 1926

DRILLED BY

THORPE BRO'S. DES MOINES - IOWA

ENGINEERS

CURRIE ENGINEERING CO. WEBSTER CITY - IOWA