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

W-0021

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 E. W. Mott Twp.

Well name and number City Well #1

Owner _____ Address _____

Tenant _____ Address _____

_____

Contractor _____ Address _____

Drillers _____

Drilling dates 1900

Well data:

Elevations: Drilling curb 1100.7 feet; Land surface 1104.2 feet

Pumps set in pit in pumping station

_____

Determined by H.L. by K.E.A.

Topographic position _____

Total depth: Reported 1709' feet, Measured _____ feet

_____

Drilling method _____

Hole and casing data _____
(Give amount, size, kind, and depth of all casing; type and

position of seals and packers; cementing; how finished--perforated pipe, screen,

gravel pack, open hole, etc.)

_____

_____

_____

Original depth to water _____ 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 123 Measuring point _____

Pumping level _____ at 500 g.p.m.

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

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

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

Power _____ Airline _____

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

Use of water _____

WATER ANALYSES (in parts per million)

Date sampled	4/19/49			
Sampled by	K.E.A			
Total solids	633			
Insoluble matter	26			
Alkalinity (Meo)	294			
Alkalinity (Phn)	0			
pH	5/2/49 7.3			
Fe_2O_3+ Mn_2O_3+Al_2O_3	9.5			
Alkali as sodium	49.2			
Calcium	99.9			
Magnesium	38.3			
Iron (unfiltered)	less than 0.1 ppm			
Manganese	0			
Nitrate	0			
Fluoride	1.8			
Chloride	10.			
Sulfate	207.4			
Bicarbonate	358.7			
Hardness (ppm)	407			
Hardness (gpg)	23.8			

Remarks _____

Laboratory data: Sample storage location _____

Sample range 0-1709' No. spls. 82 No. dupls. & cond. _____

Spls. prepared by _____ Washed range _____ by _____

Driller's log and cond. _____

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

Microscopic study Talley strip log Jan. 30, 1950 EMP

Gen. log _____ Correl. by _____

Franklin

March 1, 1948

Mr. E. L. Patera
625 Royal Union Building
Des Moines 9, Iowa

Dear Mr. Patera:

Re: General geology and ground-water conditions in the vicinity of Hampton, Iowa.

In response to your request of February 23, we have prepared the following discussion of the general ground-water conditions at Hampton from data in the open files of the Geological Survey.

The City of Hampton is located in the central part of Franklin County in sections 27, 28, 29, 32, 33 and 34, T. 92 N., R. 20 W. The population of the city was 4,006 in 1940. The upland surface in the main part of town is about 1,145 feet above sea level.

Since 1900, most of the city's supply has been secured from deep wells. Well No. 1 was completed in 1900 in the Jordan sandstone at a reported depth of 1,709 feet. In 1920, the non-pumping level was about 50 feet below land surface. The well was pumped at the rate of about 160 gallons per minute. The main supply was reported to have been encountered at a depth of 1,100 feet, about 65 feet above the top of the St. Peter sandstone. The curb elevation of the well is about 1,100 feet above sea level.

Well No. 2 was completed in 1926 at a depth of 1,700 feet. The curb elevation is about level with well No. 1. The principal supply was reported to have been encountered in the Jordan sandstone. At that time, the non-pumping level was reported to be 153 feet below the surface. At a pumping rate of 1,000 gallons per minute, the drawdown was 23 feet. In March 1947, the non-pumping level was 142 feet below the pump base. At a pumping rate of between 475 and 490 gallons per minute, the drawdown was about 30 feet. Thus, while the well is still capable of being pumped at a large rate, the specific capacity has fallen off considerably. This may be due to sand having filled in the lower part of the hole and retarding the movement of water into and up the well bore. The non-pumping water level may be affected by other aquifers open to the well which have a higher head than that of the Jordan sandstone.

In the vicinity of Hampton, the drift is thin. In the shallow stream valleys, there are numerous rock outcrops. The following tabulation of the anticipated geologic section at Hampton to the St. Lawrence formation is based on a starting elevation of 1,145 feet, the elevation of the upland slope.

Formation and Description	Thickness	From	To
Pleistocene system (undifferentiated) (clay with thin gravel bed at base)	50	0	50
Mississippian system			
Prospect Hill formation (siltstone)	45	50	95
Hannibal formation (dolomite, gray to yellow)	30	95	125
Maple Mill formation)			
Devonian system) (shale)	60	125	185
Sheffield formation)			
Lime Creek formation (dolomite)	40	185	225
(dolomite and shale)	50	225	275
(shale)	60	275	335
Shell Rock-Cedar Valley-Wapsipinicon formations (limestone and dolomite)	300	335	635
Ordovician system			
Maquoketa formation (shale)	60	635	695
(dolomite)	50	695	745
(shale)	30	745	775
(dolomite)	140	775	915
Galena formation (limestone)	240	915	1155
Decorah-Platteville formations (limestone)	20	1155	1175
(shale)	40	1175	1215
St. Peter formation (sandstone)	60	1215	1275
Prairie du Chien formation (dolomite sandy)	140	1275	1415
(sandstone, dolomitic)	100	1415	1515
(dolomite)	160	1515	1675
Cambrian system			
Jordan formation (sandstone)	80	1675	1755
St. Lawrence formation (dolomite)		1755	

The drift material and the consolidated rocks above the Shell Rock formation are composed mostly of clay and shale. Appreciable water has not been encountered in the limestone and dolomite beds in this interval and in places where a large supply of water is requirel, the wells have been cased to the top of the Shell Rock formation in this locality.

The Shell Rock, Cedar Valley and Wapsipinicon formations are potentially water bearing. However, in general, no large supplies of water have been encountered in these rocks in the vicinity of Hampton. The Hemp Mill well located in the south part of Hampton was finished in rocks of Devonian age at a depth of 483 feet. A supply of 12 gallons per minute was secured with a drawdown of 40 feet. A well drilled at Beeds Lake State Park to an equivalent depth of about 600 feet at Hampton, obtained a supply of 50 gallons per minute with a drawdown of about 30 feet. At Hampton, the static water level would probably stand within 60 feet of the surface on the upland in a well finished in rocks of Devonian age. The quality of the water pumped from the Hemp Mill and State Park well is shown on the attached data sheet.

The next lower promising horizon is the limestone strata belonging to the Galena and Decorah formations. These strata usually yield some water but no large yields of water have been reported from these aquifers except in city well No. 1. Here a production rate of 160 gallons per minute was reported but the accompanying drawdown was not given.

In Mason City, to the north of Hampton, a well finished in the St. Peter formation produced 220 gallons per minute with a drawdown of 68 feet.

Large supplies of water have been developed from wells finished in the Jordan sandstone and the underlying St. Lawrence dolomite. Analyses of waters from wells finished in the Jordan sandstones are shown on the attached data sheet.

In summary, there is a possibility of developing a supply of 100 gallons per minute from aquifers in the Devonian system of rocks at a depth of 635 feet or less. A supply of 200 gallons per minute might be developed from aquifers in the St. Peter and higher formations. The most consistantly large yielding aquifers arethe Jordan sandstone and the St. Lawrence dolomite.

If we can be of further assistance to you in this matter, please let us know.

Very truly yours,

H. G. Hershey

HGH:WEH:AEH
Enc. 1

Sheet No. 1 Name of Well City Well No 21 Survey No. W-0021

Location Hampton, Iowa Date Drilled (Analyst Talley

Curb Elev. 1116 ft. (C.G.W. RR Sta. 1140 ft)

Curb Elev. 1100.7 ft - Hand Level & city survey
USC&GS datum

00

10 10

Ss. 98% a maj. gr 1/8-1/16, prim. sub 1/16-1/32;
Ls as cement, 1% ±

20 20

Ss. similar to 10-20

30 30

Sls. 98% lgt. gry non-calc firm, tough.

40 40

Sls. similar to 30-40

50 50

Dol. 98% lgt. to med. gry. med. xline. granular, porous, friable, silty;

60 60

Dol. 98% lgt. to med. brown. med. xline, granular, porous, friable, silty;

70 70

Sls. 98% lgt. gry non-calc. firm. thinly laminated, sandy.

80 80

Ls. 90% cream and dk brown med. to fine xline firm;
Chert 10% wh and lgt gry

85

Ls. 90% cream to lt. med to fine xline. firm; Chert, 10% wh and lgt. gry; Lt Ss. - brach. frags., bryozoa, crinoid stems

89

Sls. 90% lgt. gry. calc. 10-20% soft, friable

90 90

Sls 98% lgt gry calc 10-15% sol. soft. friable;

00 100

Sheet No. 2 Name of Well City Well No 7 Survey No. W-0021

Location Hampton, Iowa Date Drilled Analyst Talley

00	100	Sls. 98% lgt. gry. 10-20% sol. soft, friable;
10	110	Sls. 98% lgt. gry. 10-20% sol. soft friable;
20	120	Sls. 98% lgt gry. 10-20% sol. soft, friable.
30	130	Sls. 98% lgt. gry. 3-5% sol soft, friable.
40	140	Ls. 98% lgt to med. brwn. med. xline, granular, poroas friable;
50	150	Sh. 80% lgt. gry. calc. 15-20% sol. soft, friable; Ls 20% lgt to med brwn med. xline, (maybe caved)
60	160	Ls. 98% cream and dk. brwn. med. to fine xline, firm; flfs - brach frags.
70	170	Ls. 98% similar to 160-170.
80	180	Sh. 98% lgt. gry. calc. 10-15% sol. soft, friable, silty; ls frags. 10% + probably caved
90	190	Ls. 98% cream and med. brwn. med. to fine xline, silty; flfs brach frags.
00	200	

Sheet No. 3 Name of Well City Well No. 7 Survey No. W-0021

Location Hampton Iowa Date Drilled Analyst Talley

00 200 Sh. 98% lgt. gry. calc. 10-15% sol. soft friable silty.

10 210 Ls. 98% lgt. to med. brwn. med xline, granular. friable porous; Sh. lgt. gry. 1%, may be cave.

20 220 Ls. 98% lgt. to dK. brwn. med xline, granular. friable porous.

30 230 — Sh. 98% lgt. gry. calc. 15-25% sol soft, friable;

40 240 Sh. similar to 230-240

50 250 Sh. 98% lgt. gry. calc. 15-25% sol. soft, friable;

60 260 Sh. 98% lgt. gry. calc. 15-25% sol. soft, friable.

70 270 Sh. 98% similar to 260-270

80 280 Sh. 98% lgt. gry. calc. 15-25% sol. soft, friable

90 290 — Ls. 98% cream to lgt. gry. med to fine xline, granular. friable, porous.

00 300

Sheet No. 4 Name of Well City Well No. 1 Survey No. W-0021

Location Hampton Iowa Date Drilled Analyst Talley

00 300 Ls. 98% cream. fine xline, granular. friable porous.

10 310 Ls. 98% cream to bf. med. to fine xline, granular, friable, porous.

20 320 Ls. 98% cream to bf., med. to fine xline, granular, porous. friable.

30 330 Ls. 98% cream to bf. and dk. gry., med xline, granular, friable, porous.

40 340 LS. 98% cream to bf. med. to coarse xline, granular, friable, porous; gry sh. caved, tr.

50 350 Ls. 98% mod. to dk. brwn. med to coarse xline, granular, firm; pyrite, tr.

60 360 Sh. 65% lgt. gry, grnh. calc. 5-10% sol. firm, silty; Ls 35% bf to lgt. brwn. med. xline, granular, friable.

70 370 Ls. 98% bf. to lgt brwn and med. gry., med. to fine xline, granular, friable, porous; qtz. grains, A, coarse, 1% ±; glauconite, tr; gry. sh. and grn. sls. caved, 1%.

80 380 Ls. 98% bf to lgt brwn. med to fine xline, granular, friable porous; Sls. gry-bf. caved tr.

90 390 Ls. 98% similar to 380-390

00 400

Sheet No. 5 Name of Well City Well No 7 Survey No. W-0021

Location Hampton, Iowa Date Drilled Analyst Talley

00 400 Dol. 98% bf to lgt. brwn. and med grey. med to fine xline, firm;

10 410 Dol. and ls. 95% bf. to lgt. brwn. and med. grey. med. to fine xline, firm; Sh. 5% grey. grnb. calc. 10-15% sol. soft. friable.

20 420 Dol. and ls. 98% bf. to med. brwn. med. to fine xline, firm; Sh. grn. may be cared. 1%.

30 430 Ls. 98% bf. to lgt. brwn med. to fine xline, slightly argillaceous;

40 440 Ls. 98% bf. to lgt. brwn. med. xline, firm; Grn. sh. cared. 1% ±

50 450

60

70

80

90

00

IOWA GEOLOGICAL SURVEY

TABULATION OF WATER ANALYSES

(parts per million)

COUNTY _____

TOWN Well No. Depth Use & location Ft.	Geol. form.	Diss. Solids	Ins. Mat.	NO_3	Na	Ca	Mg	Fe	Mn	Al	F	Cl	SO_4	HCO_3	PO_4	BO_3	Calc. Hard.	
Hampton Hemp Mill 483'	Dev.	292	26.0	0.28	3.9	75.0	27.8	1.1	0.0		0.4	1.0	6.0	353.8			304	
Beeds Lake State Park 600'	Dev.	494	12.0	0.0	29.3	97.6	27.4	0.5	0.05		2.5	11.0	73.9	396.5			357	
Mason City Ideal American Laundry 810'	St.Peter	709	41.5	0.6	64.1	145.5	4.2	0.1	0.0		0.0	46.0	172.4	370.9			380.8	
Mason City No. 11 1306'	Jordan	430	9.0	0.0	22.4	105.1	38.6	0.2			1.2	12.0	35.0	475.8			422	
Hampton City No. 2 1700'	Jordan	625	35.1	0.0	65.0	54.5	65.4	0.5	0.0	0.9	1.0	10.0	192.0	397.7			406	
3/10/48 n 1700		630	—	0	69	100	34	0.0	0		1.6	10	198	390			386	
#1 1709		649		1.4	28	86	61	2	0	—	2.0	8.0	185	400			468	
4/19/49 #1		633	0	0	49	100	38	<0.1	0		1.8	10	207	359			407	

NOTES:

Location of City Wells 1 & 2

SW/c-NE-SW-SE-NW-34-92-20
In the pumping station, E. of town

Ground level at wells est. 40' below ground at standpipe on basis of pressure readings, according to city clerk.

11/25/41
K.E.A.

Elevation of City Wells 1 & 2

Pumps set in pit in pumping station, curb (air gage, etc.) 4' below ground level

Ground level at pumping station is 43.2' below U.S.C.& G.S. B.M. at City Hall, determined by hand level from city datum bench marks. City Hall B.M. = 1147.888'

Ground Elev. = 1104.7'
Curb Elev. = 1100.7'

Hampton old well

INVESTIGATION OF THE GROUND WATER RESOURCES OF IOWA
IOWA GEOLOGICAL SURVEY

Mount Vernon, Iowa,.....

M. S. J. Parker - City Clerk
Hampton, Iowa.

DEAR SIR:—

In the investigation of the deep wells of Iowa, we wish to obtain all facts relating to their present condition and especially to any failure or deterioration and its causes. The importance of this inquiry, will I trust, enlist your cooperation. Will you kindly fill out as fully as possible the following blank as to your own well, and return it in the enclosed envelope which requires no postage. The results of these replies will be published together with much other valuable information for the information of well owners in a bulletin, a copy of which wll be sent you gratis. Thanking you for any help you can give us.

Yours very truly,

W. H. NORTON.

---

1. Is your deep well still in use? yes
2. Has there been any loss of head or pressure, or diminution of flow or pumping capacity? yes, 18 ft
3. If so, when was it first noticed? 3 years ago
4. If flowing, what is the present pressure of the well in pounds?.....Or the height above curb to which water will now rise in tube?.....What is the discharge?.....
5. If non-flowing, how far below the curb does the water now stand? 153 ft
6. What is its present pumping capacity in gallons per minute? 366 +
7. Is the capacity of the pumps the same as when the well was first used? yes
8. Has the well been repaired by deepening no by cleaning out no by rimming out no by repacking no, by recasing, (if so, mention lengths and place of new casing.).....
9. When were such repairs made.....and what was their effect?.....
10. In case of loss of head, was the loss gradual gradual or sudden.....and when did it occur?.....
11. Is the cause of such loss known to be either leakage around old packing do not know, filling up with sediment no, rusting out of casing probably, interference of new well or wells, (if the latter, mention new well and date of its completion.) New Wells Completed Feb 1, 1926
12. **Names of owners of deep wells drilled the last ten years years in your town and county and such wells in prospect**

Thorpe Bros Des Moines, Iowa

INVESTIGATION OF THE GROUND WATER RESOURCES OF IOWA
IOWA GEOLOGICAL SURVEY

Mount Vernon, Iowa, April 28, '25

M The Superintendent of Waterworks

Hampton, Ia.

DEAR SIR:—

In the investigation of the deep wells of Iowa, we wish to obtain all facts relating to their present condition and especially to any failure or deterioration and its causes. The importance of this inquiry, will I trust, enlist your cooperation. Will you kindly fill out as fully as possible the following blank as to your own well, and return it in the enclosed envelope which requires no postage. The results of these replies will be published together with much other valuable information for the information of well owners in a bulletin, a copy of which wll be sent you gratis. Thanking you for any help you can give us.

Yours very truly,

W. H. NORTON.

---

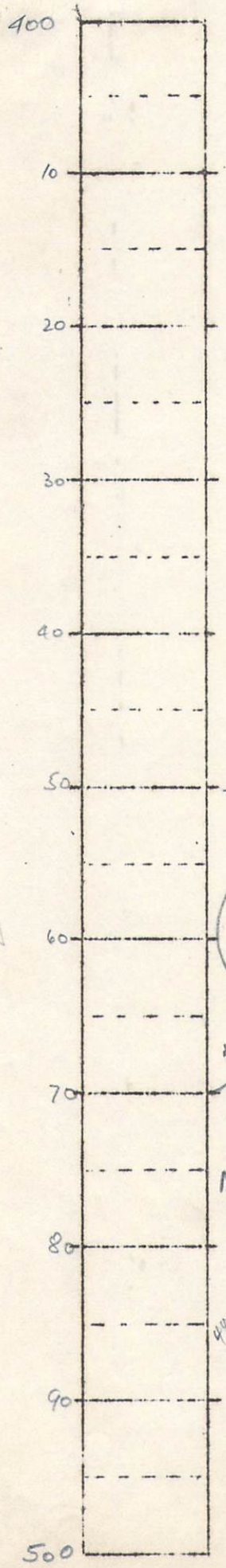
1. Is your deep well still in use? yes
2. Has there been any loss of head or pressure, or diminution of flow or pumping capacity? yes
3. If so, when was it first noticed? one year ago
4. If flowing, what is the present pressure of the well in pounds? ..... Or the height above curb to which water will now rise in tube? ..... What is the discharge? .....
5. If non-flowing, how far below the curb does the water now stand? 123 ft
6. What is its present pumping capacity in gallons per minute? 500 gal P. M.
7. Is the capacity of the pumps the same as when the well was first used? more
8. Has the well been repaired by deepening no by cleaning out no by rimming out no by repacking no, by recasing, (if so, mention lengths and place of new casing.) none
9. When were such repairs made ..... and what was their effect? .....
10. In case of loss of head, was the loss gradual yes or sudden ..... and when did it occur? one year ago
11. Is the cause of such loss known to be either leakage around old packing yes, filling up with sediment yes, rusting out of casing yes, interference of new well or wells, (if the latter, mention new well and date of its completion.) we are going to have anew well this summer
12. **Names of owners of deep wells drilled the last ten years years in your town and county and such wells in prospect** dont no of any.

Clark-1116

Couser

Name of Well Hampton W-0021 Sheet No. 1

Depth Range 400-500 Scale: 1 inch=10 feet.



Note: Samples in this well are numbered at even 10' zones, ie. 460, 470, 480 etc.

> - indicates change in lithology.

(Powers)

460 Dolomite ~~+ limestone~~: 95-100% gray to brown dolo + ls, cannot be told apart by color. 0-5% unassorted, detrital qtz + opaque minerals. Sh.; grn; compact. 0% ±;

460-470 Dolomite ~~+ limestone~~: 98-100% gray to brown dolo + ls. Probably more dolomite. Some ls looks to be clastic. 1-2% opaque mineral grains some look clastic. Detrital qtz. present.

470-480

(Powers)

Dolomite ~~+ limestone~~. 99% gray to brown dolo + ls. Ratio of dolo + ls is probably about 70-30. 1% Detrit qtz, opaque minerals, xsTline calcite.

480-490

Dolomite: 90-100% gray to dk brown xsTline dolo. 1-10% lt gray ls + xsTline calcite. Detrit qtz present.

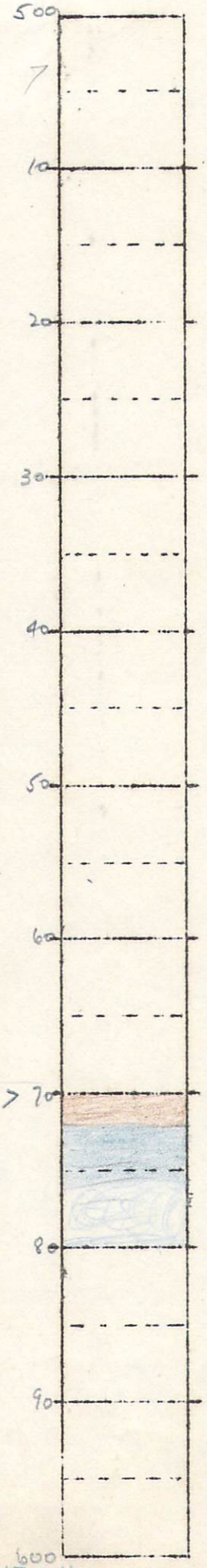
I

Sil. (140')

Couser

Name of Well Hampton W-0021 Sheet No. 2

Depth Range 500-600 Scale: 1 inch=10 feet.



Dolomite: 70-80% lt to dk brown dolo, 20-30% lt gray ls + xsTline calcite. Pyrite and detrital qtz present.

Dolomite: 80-90% gray to brown, xsTline dolomite, 10-20% ls and xsTline calcite. Detrital qtz + shale present.

Dolomite; 80-90% gray to brown, xsTline dolomite. 10-20% ls and xsTline calcite. Detrital qtz + qtz xsTls, Pyrite present.

Dolomite; ~~80-90%~~ 80% + lt gray to dk brown, xsTline dolo. 10-20% lt gray ls and xsTline calcite. 1% detrital qtz with qtz xsTls common with 2 rhombohedrons. Pyrite present; sec. qutz. with enbed. chars. 1-2%.

Dolomite: 90-95% dk. gray to brown xsTline dolomite. 1-5% lt gray ls + xsTline calcite. Green shale, detrital qtz, qtz xsTls rare.

Dolomite: 98-100% lt gray to dk brown dolomite. 1-2% lt gray ls + xsTline calcite. most dolomite grains are coated by ~~calcareous silt~~.

Dolomite; 98-100% lt gray to dk brown, dolomite. 1-2% lt gray ls + xsTline calcite ~~Grains coated by cal. silt~~. qtz xsTls. present.

Limestone: 80-90% white on lt. gray, xsTline ls, 10-20% dk brown, to dk gray dolo. opaques present.

Limestone; 90-95% white to lt gray limestone 5-10% dk gray to brown dolomite. Detrital qtz and opaque minerals present.

Limestone; 98-100% white to lt. gray ls + calcite. 1-2% dk gray to brown dolo. Detrital qtz present

Sil. (140')

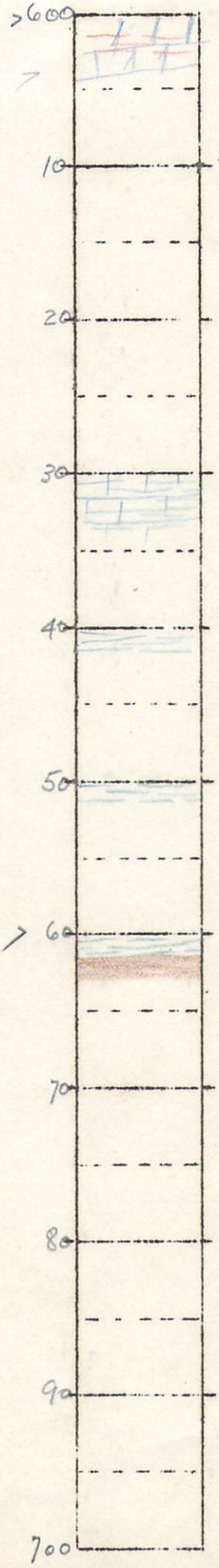
Mag. (132')

677
718
677
#1

Name of Well Hampton W-0021 Sheet No. 3

Depth Range 600-700 Scale: 1 inch=10 feet.

Maj. (132')



>600 Shale: ~~40~~-50% dk brown to reddish brown shale, 20-30% white to light gray ls + calcite, 5-10% dk. gray to lt brown dolo, 1-2% unasserted detrit qtz + opaque minerals.

10 Shale: 40-50% dk. brown + green shale, 20-30% white to light gray ls + calcite, 10-20% dk gray to brown dolo. Detrit, qtz and opaques present.

20 Shale: 80-90% dk brown, slightly greenish shale. 10-20% gray ls, dolomite, calcite + detrital qtz; silty, 5% ±.

30 Shale: 100% calcareous, red and green shale.

40 Shale: Similar to sample at 630 feet.

50 Shale: 100% ~~bright red but mostly~~ lt green, striped calcareous shale.

60 Dolomite: 80-90% dk gray to lt brown, xstline dolo. 10-20% white to lt gray ls and calcite. Pyrite present.

70 Dolomite: 90-100% lt to dk gray, hard, xstline dolomite. 1-5% red + green shale. 1-5% ls + xstline calcite. Pyrite present. Bryozoa, brachiopods, Trilobites present.

80 Dolomite; 95-100% lt to dk. gray, hard, xstline dolo. 1-3% gray ls and xstline calcite. 1-2% red + green shale. Pyrite present.

90 Dolomite; 80-90% lt to dk gray or brown dolomite. 10-15% gray ls + calcite. 5-10% ~~gray~~ + green + ~~red~~ shale. Detrital qtz + pyrite present. Bryozoa in capsule.

700

Name of Well Hampton W-0021 Sheet No. 4

Depth Range 700-800 Scale: 1 inch=10 feet.

700

Dolomite: ~~60-70~~% dk gray to brown, xsttine dolo. 30-40% white to lt gray ls + xsttine calcite Pyrite + detrital qtz present.

710

Shale: 100% lt. gray, green + reddish slightly calcareous shale. Opaques present.

720

Shale: Similar to sample at 710 ~~feet~~.

Mag. (730 - 32')

730

Dolomite: 60-70% dk gray to dk brown, xsttine dolo, 20-30% white to lt gray ls + xsttine calcite. *10% green shale. Pyrite present.

Gal. (330')

740

Dolomite: 60-70% dk gray to brown, xsttine dolo. 20-30% white to lt gray ls and calcite. 10-20% green + dk red shale, pyrite and detrital qtz present.

750

Dolomite: 70-80% dk gray to brown, xsttine dolo. 10-20% white to gray ls and calcite. 10-20% reddish and green shale. Detrital qtz + pyrite present.

760

Dolomite: 80-90% dk gray to brown, xsttine dolomite 5-10% white to gray ls and calcite, 5-10% reddish and green shale. Detrital qtz and pyrite present. Bunch. fragments.

770

Dolomite: 85-95% dk gray to brown, xstline dolomite, 5-10% white to lt gray ls and calcite. 1-2% red and green shale. Detrital qtz and pyrite present.

780

Dolomite; 80-90% dk gray to brown, xsttine dolomite 10-20% white to lt gray ls and xsttine calcite. 1-2% red + green shale. Detrital qtz present.

790

Dol. ~~Limestone~~ 70-80% white + lt. gray, xsttine ls + xsttine calcite. 15-25% dk gray + dk. brown dolo. 5-10% green + red shale. Detrital qtz and pyrite present.

800

Name of Well Hampton W-0021 Sheet No. 5

Depth Range 800-900 Scale: 1 inch=10 feet.

800 Dol. ~~limestone~~: 80-90% white to lt. gray ls and xsttine calcite, 10-20% dk brown ls; red green shale. opaque minerals present.

10 Limestone; 90-95% white to lt. gray ls and xsttine calcite, 5-10% dk. gray to brown dolo. chert, detrital qtz and pyrite present.

20 Dolomite; 30-40% dk gray to brown, xsttine dolo. 30-40 white chert. 20-30% white to lt. gray ls and xsttine calcite, Detrital qtz and opaques present.

30 Dolomite: 30-40% dk gray to brown, xsttine dolo. 30-40% white chert. 20-30% white to lt. gray ls.

40 Dolomite: 50-60% dk gray to brown, xsttine dolo. 30-40% white chert. 20-30% white & lt. gray ls.

Gal. 50 Missing

60 Dolomite; 60-70% lt. gray dolomite; 20-30% white to lt. gray chert. 1-5% dk. brown dolo.

70 Dolomite: 90-100% white, to lt. gray dolo. some dk brown in color. 1-5% white chert. 1-5% white to lt gray ls. Crinoid stems in capsule

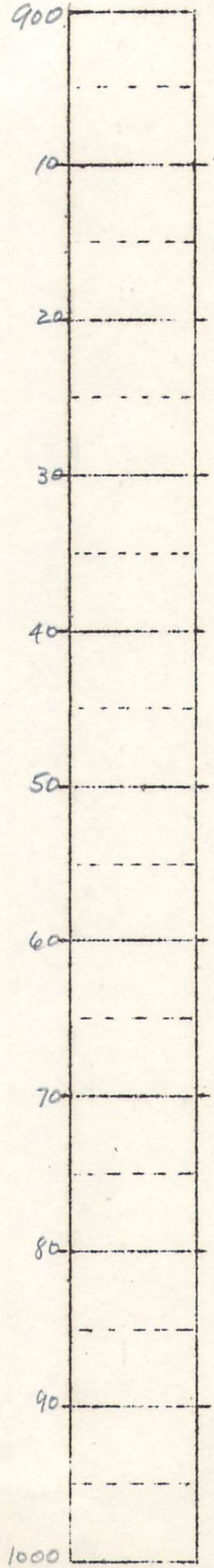
80 Dolomite: 80-90% lt gray, dk gray to brown, xsttine dolo. 1-5% white chert. 1-5% lt gray or white ls & xsttine calcite.

90 Missing

900

Name of Well Hampton W-0021 Sheet No. 6

Depth Range 900 - 1000 Scale: 1 inch=10 feet.



900 Dolomite; 40-50% lt gray to light brown, xsttine dolo. 30-40% white to lt. gray ls and xsttine calcite. 1-5% chert. 1-5% shale

10 Dolomite: 80-90% white to lt. gray, xsttine dolo. 5-10% lt gray ls + xsttine calcite, 5-10% reddish to green shale.

20 Dolomite; 90-95% white, lt gray, dk gray to lt brown, xsttine dolo, 5-10% lt gray ls + xsttine calcite. Opaques and chert present.

30 Dolomite: Similar to sample at 920 feet.

40 Dolomite: Similar to sample at 920 feet.

50 Gal. Dolomite; 99-100% white to dk brown, xsttine dolo. 1-2% lt gray ls + calcite, chert + opaque minerals present.

60 Dolomite: 99+100% white to dk. brown, xsttine dolo, 0-1% calcite and ls. chert, detrital qtz, and opaque minerals present.

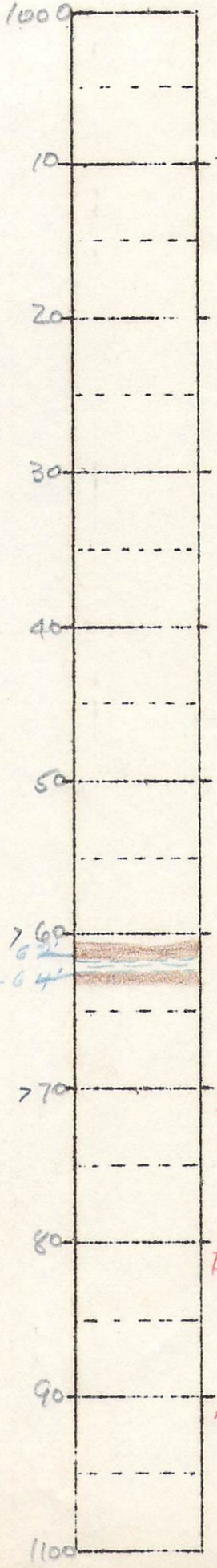
70 Dolomite: 100% white to dk brown, xsttine dolo. calcite, chert, ls, + opaque minerals.

80 Dolomite; 80-90% white to gray, xsttine dolo. 5-10% ls + calcite: 5-10% chert. Opaque minerals present.

90 Dolomite: 80-90% white to gray, xsttine dolo. 10-15% gray chert, 1-5% calcite + ls. Opaque minerals present. Crinoid stems in capsule

Name of Well Hampton W-0021 Sheet No. 7

Depth Range 1000 - 1100 Scale: 1 inch=10 feet.



1000 Dolomite: 80-90% White, lt gray to dk gray xsttine dolomite. 5-10% gray chert. 5-10% ls + calcite. Detrit. qtz, pyrite present. Bryozoa in capsule.

10 Dolomite; 80-90% lt to dk gray to lt brown, xsttine dolo. 5-10% gray chert. 5-10% ls + xsttine calcite clvg. frags. Detrital qtz, pyrite + other opaques present.

20 Dolomite; Similar to sample at 1010 feet.

30 Dolomite: 90-100% lt to dk gray, xsttine dolo. 1-5% gray chert. 1-5% lt gray ls and xsttine calcite. Detrit qtz, pyrite, + other opaques present.

40 Dolomite; 95-100% lt, dk gray to dk brown, xsttine dolo. 1-5% lt gray ls + xsttine calcite. Chert, detrit qtz + opaque minerals present.

50 Dolomite: 95-100% lt, dk gray to lt. brown, xsttine dolo. 1-5% lt gray ls + xsttine calcite. Green shale, chert, pyrite, bryozoan fragments present.

60 Dolomite; 50-60% lt to dk gray or brown dolo. 30-40% lt gray ls. 1-5% green shale. 1% bryozoa (in capsule) calcite, pyrite + other opaques present.

70 Dol, ~~ls~~; 50-60% lt gray limestone. 30-40% lt to dk. gray or brown xsttine dolo. 1-5% green shale. Detrital qtz, pyrite chert, bryozoa present.

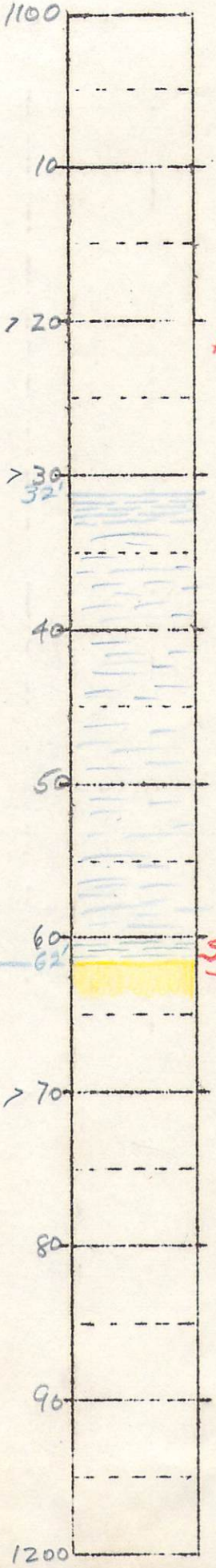
80 Dol, ~~limestone~~ + dolomite: 100% lt to dk gray ls + dolo. About 60% ls, 40% dolo which is darker colored. Bryozoan ls. Pyrite, calcite clvg fragments present.

90 Dol, ~~limestone~~ + dolomite; 100% lt to dk gray ls + dolo. About ~~50% lt gray ls~~ 60% dk gray dolo. Pyrite; bryozoa + calcite clvg fragments present.

1100

Name of Well Hampton W-0021 Sheet No. 8

Depth Range 1100 - 1200 Scale: 1 inch=10 feet.



Platt. (68')

Glwd. (30')

Glwd. (30')

St. P. (88')

Dolomite: 80-90% lt to dk gray or pinkish brown, xstline dolo. 10-20% lt gray ls + calcite in clvg. fragments. Chert and pyrite present.

Dolomite: 95-100% lt to dk gray dolomite, 1-5% lt gray ls and calcite in clvg fragments. Chert, detrital qtz, + opaque minerals present. Fossiliferous

Dol., ~~limestone~~: 60-70% lt gray to dk gray, fossiliferous Dol., Bryozoa + brachs common. 20-30% dk gray to brown dolo 5-10 red + green shale. Det. qtz, chert + opaques present.

Shale: ~~90%~~ ~~red~~ + green shale slightly calcareous, ~~30-40%~~ ls + dolo, lt to dk. gray fossiliferous (bryozoa) Pyrite, chert, detrital qtz present.

Shale: 95-99% lt green to dk green, slightly calcareous shale, 1-5% lt gray to pinkish dolo + ls. Pyrite + other opaques present. Bryozoa present.

Shale: 99-100% dk brown, lt to dk green, calcareous shale, 0-1% fossiliferous fragments of Platteville ls and dolo. Bryozoa present.

SS. ~~Shale: 100%~~ dk brown, lt to dk green, calcareous shale. The calc. content is probably due to shale being coated by churning of drill. Dolo. ls. opaques present.

SS: 60-70% sub-angl to sub. rd, clear + frosted qtz sand. 10-20% green + reddish shale. 10-20% ls and dolo. chert, pyrite present. Major sand grade ½-¼. Subs. 1-½

SS: 80-90% sub-angl to sub-rd, clear + frosted, qtz sand. Major grade ½-¼, subs. grade 1-½. 10-15% green shale. 1-5% ls + dolo. Pyrite + other opaques present.

SS, 98-100% white, some iron stained, sub-angl to sub-rd, clear + frosted, qtz sand. Major grade ½-¼, subs. grade 1-½. 0-2% green shale. Pyrite present.

Name of Well Hampton W-0021 Sheet No. 9

Depth Range 1200 – 1300 Scale: 1 inch=10 feet.

1200

SS: 99-100% white, sub-ang to sub-rd, clear + frosted qtz sand; major grade ¼-½, subs. grade ½-⅛. 0-1% green shale, dolo. + limestone.

1210

Shale; 99-100% lt to dk green, silty, calc. shale; 0-1% frosted, detrit, fine ⅛-1/16 qtz sands; Iron oxide + other opaques present.

1220

SS: 98-100% wh to lt. gray, a to r, clear + frosted, qtz sand; 0-2% lt. to dk green shale, opaque minerals, dolo. present.

1230

SS: 98-100% lt. gray to yellow, a to r, clear + frosted qtz, sand. 0-1% green shale. 0-1% dk gray, dense dolo; with included xs fine calcite, opaque minerals present. Major grade ½-⅛

1240

SS: 90-100% lt gray to yell, a to r, clear + frosted, qtz sand. 1-5% dk. gray to brn. xs fine dolo, 1-5% green shale, chert, ls, calcite + opaques present. Major sand gr. ½-⅛ Subs. ½-¼

St. P (91')

1250

Dolomite: 50-60% lt to dk. gray, fine fragmental dolo; 30-40% lt gray to yell. a to r clear + frosted qtz sand. Major grade ½-⅛ Subs. grade ⅛-1/16. 1-5% green shale, chert, op. present,

Z 1253'

Sh.; green; compact; 15-20%

Shale (128')

1260

Dolomite: 70-80% lt, dk gray to brn., xs fine dolo, in rhombs; 10-20% green shale; 5-10% a to r, ¼-⅛, detrital qtz; chert, calcite + pyrite present.

1270

Dolomite: Similar to sample at 1260 feet.

1280

Dolomite: 80-90% lt. gray to brown, dense, dolo; 10-20% green shale; 1-5% fine det. qtz; chert, calcite, pyrite other opaques present.

1290

Dolomite; 70-80% lt. gray to brown, dense dolo; 10-20% green shale, 5-10% calcite, pyrite, chert, iron oxide.

1300

Name of Well Hampton W-0021 Sheet No. 10

Depth Range 1300 – 1400 Scale: 1 inch=10 feet.

1300

Dolomite; 70-80% lt to dk gray, dense dolo; 10-20% green shale; 5-10% detrital qtz, calcite, ls, pyrite.

10

Dolomite; 80-90% lt, dk gray to brownish, dense, dolo; 10-20% lt to dk green shale, Fine detrital qtz, calcite, chert, pyrite and other opaques present.

20

Dolomite: 60-70% lt. gray to dk. brown dense dolo. 10-20% lt gray, a to r. ½-¼; subs. grade 1-½; 5-10% green shale. calcite, pyrite + chert present.

Sh.; grn.; compact; 20-25%.

30

Dolomite; 50-60% lt. dk gray to brownish, dense + xs fine in places; 30-40% green shale; 1-5% lt. gray, ℓ to r, major grade ½-¼, subs. grade ¼-⅛. Pyrite + calcite present.

40

Dolomite; 80-90% lt gray to lt. brown, xs fine dolo; 10-20% green shale; 0-1% lt. gray, fine detrit. qtz, some cemented by dolo; calcite, pyrite, iron oxide, present.

50

Dolomite; 90-100% lt gray to lt brown, dense dolo; 1-10% green shale; Detrit qtz, calcite, chert, pyrite present.

60

Dolomite; 95-100% lt. gray to lt. brown, dense dolo. 1-5% green shale; chert, calcite, pyrite + other opaques present.

70

Dolomite; 80-90% lt gray to lt. brown, dense dolo; 5-10% green shale; 1-5% fine detrital lt gray qtz, sand; 1-5% white chert; calcite, pyrite, present. chert oolitic

Shale (128') 80

N. Rich. (93')

81 SS. ~~Dolomite~~: 90 ± % lt. gray to dk, brown, dense + xs fine dolo; 1-5% green shale; 1-5% fine detrital, lt. gray, qtz sand; 1-5% oolitic white chert. calcite, pyrite present.

90

90% ±

Dol. ~~ss~~; 70-~~80~~ % lt. gray, a to r, clean + frosted qtz sandy, Mayon grade ½-¼ subs. grade 1-½; 1-5% green shale containing bryozoa; 1-5% gray to br. dolo; 1-5% wh. oolitic chert. opaques present.

1400

Name of Well *Hampton W-0021* Sheet No. *11*

Depth Range *1400-1500* Scale: 1 inch=10 feet.

1400 — SS: 50-60% lt. gray, a to r, clear + frosted, qtz sand; Major grade ½-¼. Subs. grade ¼-⅛; 30-40% lt to dk. gray dense dolo; oolitic. ~~5~~-10% green shale. chert + calcite present.

10 — SS; 70-80% lt. gray or white, a to r, clear mostly frosted qtz sand: Major grade ½-¼, subs. grade ¼-⅛; 10-20% lt to dk. gray, dense, dolo; 5-10% green shale: chert, calcite, pyrite present.

20 — SS; 60-70% lt. gray or white, a to r, clear, mostly frosted, qtz sand; Major grade ½-¼. Subs. grade ¼-⅛; 20-30% lt. to dk. gray, dense dolo; 5-10% green shale; chert, calcite, pyrite present.

30 — Dolomite: 70-80% lt. to dk. gray, xstline dolo; 10-20% lt. gray a to r, clear mostly frosted qtz sand. Major grade ½-¼, subs. grade ¼-⅛; 5-10% green shale. Iron oxide, pyrite, other opaques present.

40 — Ss. ~~Dolomite~~; 80-90% lt to dk gray, dense, dolo; 5-10% green shale; 5-10% lt. gray, medium grained qtz ~~sand~~ Dol. oolitic chert present.

50 — SS: 70-80% white to lt. gray, a to r, clear + frosted, ½-¼, qtz sand; 10-20% lt to dk gray or brown, dense dolo; 1-5% green shale; chert, calcite + opaques present.

60 — SS: 80-90% white to lt. gray, a to r, clear mostly frosted, qtz sand. Major grade ½-¼, subs ¼-⅛; 5-10% lt to dk gray dolo; 1-5% green shale: chert, opaques present.

70 — Dolomite: 40-50% lt, dk. gray to brownish, xstline + dense, dolo; 20-30% wh. to gray, frosted qtz sand. Major grade ¼-⅛. Subs. ⅛-1/16; 10-20% green shale; chert, calcite + opaques present.

N. Rich. (93)

74

Oneota (166)

80 — Dol. ~~SS; 50-70%~~ wh. to lt. gray, a to r, clear + frosted, qtz sand. Major grade ½-¼. Subs. grade ¼-⅛; 30-~~x~~% lt to gray to brown dense dolo; 5-10% green shale (brown-red); calcite, chert, opaques present.

90 — Dolomite; 70-80% lt, dk gray to brown, finely fragmental, dense dolo; 5-10% fine detrital qtz; ~~5-10% green shale~~; 1-5% lt. gray chert; calcite, pyrite, iron oxide present.

Sh.; grn.; compact; 20% ±; interbedded

1500

Name of Well Hampton W-0021 Sheet No. 12

Depth Range 1500-1600' Scale: 1 inch=10 feet.

1500

Dolomite; 80-90% lt to dk gray, finely fragmental, dense dolo; ~~5-10% green shale~~; sdy; 5-10% detrital qtz; chert, calcite, pyrite, other opaques present.

Sh.; 20% ±; grn.; compact.

10

Dolomite; ~~30-70% lt~~ to dk gray or brown, finely fragmental dense dolo; 30-40% lt gray, cl to r, clear + frosted qtz sand, major grade ½-⅛, sub S. ¼-½; ~~to 20% green shale~~; chert, pyrite, calcite.

Sh.; grn.; compact; 15-20%.

20

Dolomite; 60-70% lt to dk gray to br dense dolo; 10-20% fine detrital qtz sand ¼-⅛; 5-10% green shale; calcite, chert, pyrite present.

30

Dolomite; 80-90% lt, dk gray to br. dense, xsttine dolo; finely fragmental; 5-10% green shale; 5-10% fine detrit. qtz; chert, pyrite, calcite present.

40

Dolomite; 90-95% lt, dk gray to br, xsttine dolo; 1-3% green shale; 1-2% fine detrit. qtz; calcite + opaque minerals present.

50

Dolomite; 98-99% lt, dk gray to brown, xsttine dolo; 1-2% green shale, fine detrital qtz, calcite, pyrite and other opaques. chert present.

0 meas

60

Dolomite; Similar to sample at 1550 feet.

70

Dolomite; 99% lt. dk gray, dense, xsttine dolo; 0-1% green shale; Pyrite, calcite, detrit. qtz present.

80

Dolomite; 70-80% lt to dk gray, finely fragmental, dense dolo, grains coated by chuvning; 10-20% green shale; 1-5% fine detrital qtz; chert, calcite, opaques present.

90

Dolomite; 90-99% lt. to dk. gray, xsttine dolo; 1-5% green shale; 1-5% fine detrital qtz; chert, pyrite, calcite + other opaques present.

1600

Name of Well Hampton W-0021 Sheet No. 13

Depth Range 1600 - 1700' Scale: 1 inch=10 feet.

1600

Dolomite: 80-90% lt to dk gray, dense, finely fragmental dolo; 1-5% green shale; 1-5% fine detrital qtz; 1-5% lt. gray chert; calcite + opaques present.

10

Dolomite; 90-95% lt to dk. gray, dense, finely fragmental dolo; 1-5% fine detrital qtz; 1-2% green shale; 1-3% chert, calcite, pyrite, other opaques.

20

Dolomite; 80-90% lt to dk gray or brown, very finely fragmental, dense dolo; 5-10% green shale; 1-5% lt. gray chert; 1-5% fine detrit. qtz; calcite, opaques present.

30

Dolomite: 50-60% lt. to dk. gray or brown, very finely fragmental dolo; 30-40% lt gray, a to r, frosted qtz. grains. Major grade $\frac{1}{2}$-$\frac{1}{4}$. Subs. $\frac{1}{4}$-$\frac{1}{8}$; 5-10% green shale, calcite, opaques.

Om. (166') Jor. (70')

40

SS Dolomite; 70-80% lt to dk gray or brown, dense x'ln dolo; 10-20% fine, frosted, detrit. qtz. Major $\frac{1}{4}$-$\frac{1}{8}$ subs. $\frac{1}{2}$-$\frac{1}{4}$; 1-5% green shale; chert, ls, pyrite, brach. fragment.

50

SS: 99-100% white to lt. gray, clear mostly frosted, C to r. Major grade $\frac{1}{2}$-$\frac{1}{4}$, Subs. grade $\frac{1}{4}$-$\frac{1}{2}$; Green shale, dolo, opaques present.

60

SS; 100% white, lt. gray to yellow, C to r, frosted qtz sand. Major grade $\frac{1}{2}$-$\frac{1}{4}$ subs. grade 1-$\frac{1}{2}$; Dolo, chert + opaque minerals, green shale.

70

SS: 99-100% white, lt. gray, C to r, frosted qtz sand, Major grade $\frac{1}{2}$-$\frac{1}{4}$. subs. grade $\frac{1}{4}$-$\frac{1}{8}$; Green shale, dolo opaques 0-1%.

80

SS; 100% white, lt. gray, C to r, frosted qtz sand. Major grade $\frac{1}{2}$-$\frac{1}{4}$, Subs. grade 1-$\frac{1}{2}$. Green shale, dolo, + opaque minerals.

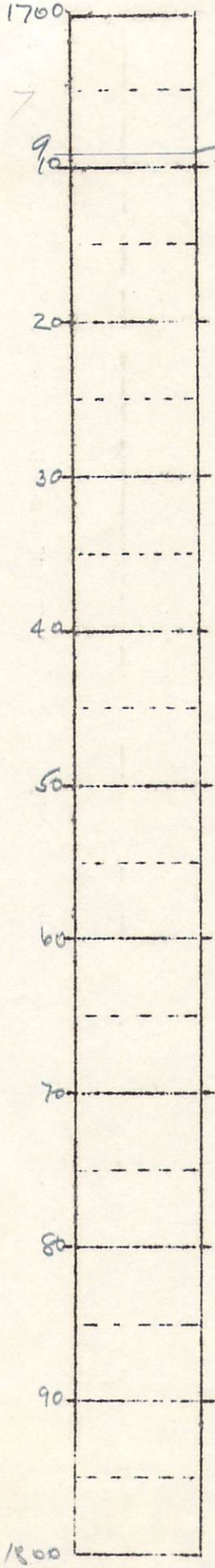
90

SS; Similar to sample at 1680 feet

1700

Name of Well Hampton W-0021 Sheet No. 14

Depth Range 1700 - 1800' Scale: 1 inch=10 feet.



SS; 98-100% lt. gray, +iron stained, a to r, clear mostly frosted qtz sand. Major grade ½-¼, Subs. grade ¼-⅛; 0-2% green shale, gray + br. dolo, iron oxide.

SS; 99-100% lt. gray +iron stained, a to r, clear + frosted qtz sand. Major grade ½-¼ Subs. ¼-⅛; 0-1% green shale, gr to br. dolo. iron oxide + opaque minerals.