88849

WATER · MINERAL · ENERGY

WELL INFORMATION - ROCK WELLS

Layne Christensen Company

PROFESSIONAL SERVICES FOR WATER SYSTEMS

721 West Illinois Avenue • Aurora, Illinois 60506-2892 • Phone 630/897-6941
229 West Indiana Avenue • Beecher, Illinois 60401 • Phone 708/946-2244

Name Of Job: Walnut, IA New Jordan Well — Date: 02/28/18

City: Walnut — State: IOWA

Well No.: 3 — Drillers: Jerry Gomez and Anthony Davis

Well Location: _____ ft. (_____) and _____ ft. (_____) of the _____ corner of

the NW 1/4 of Section 16 ,Twp. 77N ( ), Range 38W ( ) Potawattamie County

Otherwise located as: NE1/4 of the NW ¼ of Section 16; 200 ft SE of Well #2 located at the City water plant.

Work Began: 10/16/17 — Work Completed: 01/19/18

Casing Record:

Amount	Dia.	Wt. or Thickness	Material					
41’	22” OD	0.375”	Steel	with	Zero	joints from +1’	to	40’
295’	16” OD	0.375”	HSLA Steel	with	Welded	joints from +2	to	293’
775’	10” ID	0.375”	HSLA Steel	with	Welded	joints from +2’	to	775’
5’	10” ID x 8” Swage	0.375”	HSLA Steel		Welded	Joints from 775’	to	780’
1580’	8” ID	0.375”	HSLA Steel	with	Welded	joints from 780’	to	2360’

Hole Record:

28”	inch from	0	to	41’	
20”	inch from	41’	to	300’	
14 ¾”	inch from	300’	to	780’	
13”	inch from	780’	to	2401’	
7 7/8”	inch from	2401’	to	2615’	bottom of hole

Cementing Record: 22” cemented w/ 13 sack neat cement; 16” cemented w/ 222 sacks of neat cement; 10” x 8” longstring

Cemented with 888 sacks of neat cement using Halliburton method

Well Test Data: Static Level 300 ; pumping level 441’ after 24 hours pumping at 400 g.p.m.

Length of test 24 hrs. See Well Test Data Sheet Dated 01/27/18

Remarks

Layne Job No. 46854 — Well Permit No.: 2017-0466W

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WELL LOG

Feet		Feet	Description
0	to	40	Brown clay
40	to	50	Fine sand, small gravel
50	to	65	Sandy clay brown
65	to	85	Tan sandy clay
85	to	110	Gray sandy clay @ 90 ft.
110	to	145	Gray sandy clay with little gravel
145	to	160	Gray sandy clay
160	to	200	Sand, clay. gravel
200	to	215	Clay more gravel/less sand
215	to	230	Sticky clay, gravel
230	to	260	Gray sandy clay with coarse gravel
260	to	265	Gray rock, gravel
265	to	285	Gray and black gravel
285	to	295	Rock and quartz
295	to	300	Black rock and gravel
300	to	305	Dark colored gravel
305	to	310	Gray coarse gravel
310	to	315	Fine gray gravel
315	to	320	Shale, brown hard clay, gravel-gray
320	to	325	Shale, clay, gravel, some quartz
325	to	330	Brown clay, gray shale, gravel, limestone
330	to	345	Gray shale, mudstone, limestone with little gravel
345	to	360	Gray shale, mudstone, limestone
360	to	420	Brown clay, limestone, shale
420	to	425	Black brittle rock
425	to	435	Gray shale with limestone
435	to	445	Black coal, gray shale with little limestone
445	to	455	Lignite coal black, limestone, gray shale
455	to	460	Lignite coal, gray shale
460	to	475	Gray shale with little limestone
475	to	480	Gray shale with lignite and limestone

Feet	to	Feet	Description
480	to	550	Gray shale, gray limestone with little lignite coal
550	to	585	Shale, limestone
585	to	590	Shale, limestone, lignite
590	to	595	Shale, limestone, little lignite
595	to	605	Lignite, clay, shale
605	to	655	Gray shale, little brown clay, lignite coal, little limestone
655	to	665	Shale, limestone, lignite
665	to	700	Shale, limestone, gravel, light lignite
700	to	710	Shale, lignite, limestone
710	to	720	Shale gray
720	to	740	Lignite coal, gray shale with trace of limestone at 725 ft.
740	to	745	Lignite coal with trace of gray shale
745	to	750	Limestone, sandstone, lignite, shale, quartz
750	to	770	Lignite, limestone, shale
770	to	790	Yellow-brown clay, limestone, sandstone
790	to	800	Yellow clay, limestone, gravel, little lignite
800	to	810	Yellow clay, lime, gravel, lignite
810	to	815	Gray shale, lignite coal, limestone
815	to	860	Shale, lignite, sandstone, limestone, quartz
860	to	865	Shale, limestone, lignite, yellow clay
865	to	875	Large sand, shale
875	to	885	Large sand, shale, little lignite
885	to	900	Lignite, gray shale, limestone
900	to	915	Lignite, limestone, dark gray shale
915	to	925	Lignite, limestone, little quartz, shale
925	to	930	Lignite, pyrite, bigger quartz, orange and red rock
930	to	935	Lignite, limestone, shale, quartz, pyrite
935	to	940	Lignite, limestone, shale, pyrite

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Feet	to	Feet	Description
940	to	945	Pyrite, lots of lignite, limestone, shale
945	to	950	Shale, limestone
950	to	960	Lignite, limestone, pyrite, gray shale
960	to	970	@ 968 ft. – chert, pyrite, lignite, gray shale with little shale
970	to	990	Chert, pyrite, limestone, lignite, shale
990	to	1005	Chert, limestone, pyrite, lignite
1005	to	1010	Limestone, sandstone, pyrite, lignite, some chert
1010	to	1015	Rock, lignite, white clay, shell
1015	to	1035	Limestone, chert, trace of pyrite, white shale
1035	to	1040	Limestone, pyrite, lignite, white shale
1040	to	1050	Shale, white shale, limestone, lignite, pyrite
1050	to	1055	White shale, lignite, orange rock
1055	to	1085	Limestone, chert, trace of white shale
1085	to	1095	Limestone, white shale, lignite
1095	to	1100	Lots of pyrite, lignite, chert, limestone/shale
1100	to	1105	Limestone, chert, quartz
1105	to	1125	Quartz, limestone, chert, trace of shale
1125	to	1130	Dark brown shale, chert, limestone, lignite
1130	to	1160	Limestone, chert, gray shale
1160	to	1165	Lots of quartz, pyrite, little lignite
1165	to	1185	Limestone
1185	to	1190	Chert, lignite, shale, limestone
1190	to	1200	Quartz, limestone with little gray shale
1200	to	1255	Quartz, chert, limestone with trace of lignite and white shale
1255	to	1285	Chert, shale, limestone, lignite
1285	to	1290	Lignite, shale, limestone, chert, quartz
1290	to	1320	Limestone, chert with trace of lignite
1315	to	1321	Fractures

Feet	to	Feet	Description
1340	to	1350	Shale, limestone, chert
1350	to	1360	Limestone, chert
1360	to	1425	Limestone, chery with trace of gray shale
1425	to	1445	Limestone, chert with trace of white and gray shale
1445	to	1500	Limestone, chert with trace of gray shale
1500	to	1515	Limestone w/trace of cherts and white shale
1515	to	1530	Limestone, white shale with little sand
1530	to	1570	Tan limestone, cherts with trace of white and gray shale, little lignite
1570	to	1595	Tan limestone, chert with trace of white shale
1595	to	1608	Tan/brown limestone, chert, white and gray shale
1608	to	1615	Gray and brown limestone
1615	to	1655	Gray and brown limestone with trace of gray and white shale
1655	to	1680	Gray and brown limestone with gray and white shale
1680	to	1685	Gray and brown limestone
1685	to	1710	Tan limestone, cherts
1710	to	1740	Shale, limestone, chert brown
1740	to	1760	Shale, brown limestone, chert
1760	to	1800	Tan and gray limestone, chert
1800	to	1860	Gray and tan limestone, chert with trace of white shale
1860	to	1955	Gray and tan limestone with chert
1955	to	2000	Gray limestone with chert and gray shales
2000	to	2010	Gray limestone, cherts with trace of gray shales
2010	to	2045	Gray and tan limestone and cherts
2045	to	2085	Gray and white limestone, chert, no more brown limestone
2085	to	2095	Gray and tan limestone and chert
2095	to	2180	Tan limestone and chert with trace of white shales
2180	to	2220	Tan limestone 50%, cherts 50%
2220	to	2250	Limestone, chert
2250	to	2285	Tan limestone and white chert
2285	to	2360	Brown limestone

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Feet	to	Feet	Description
2360	to	2400	Tan, light brown and gray limestone and chert with trace of pyrite
2400	to	2525	Fractured, green and gray mudstone with little limestone
2525	to	2615	Tan dolomite with green gray mudstone
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