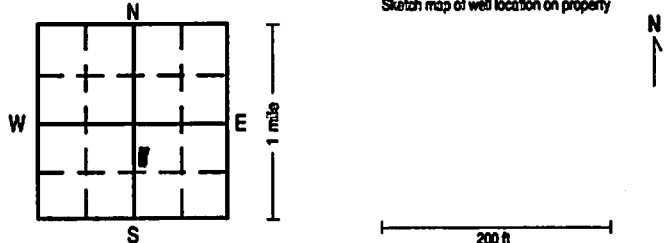


Site Identification
 Property Owner City of Bernard Well Number _____
 Address ITW Engineers + Surveyors, 4155 Pennsylvania Avenue
 Tenant Contact: Gary Sejkora
 Well Depth 701 ft Date Completed 08/24/95

Drill method rotary auger cable other _____
Hole size
 14 1/8 inch from 0 ft to 75 ft hole size continued 6 1/2 inch from 380 ft to 668 ft
 11 1/8 inch from 75 ft to 380 ft 5 inch from 668 ft to 701 ft
 Record all depth measurements from ground level (GL). Use (+) for above GL measurements.

Location County Dubuque
 _____ mi. N and _____ mi. E of intersection of _____ and _____
 _____ 1/4 of the _____ 1/4 of the _____ 1/4 of Sec 27 TWP 87 RNG 1 E W
 Show exact location of well in section grid with a dot (•).
 Sketch map of well location on property


Casing Drive shoe (yes/no) _____ Pileless adaptor (yes/no) _____

Size (ID/OD)	Type / Wt	Depth top	Depth bottom	Amount (length)
7"00	Steel	-2'	380'	382'
5 5/8"	Steel	559'	668'	109'

Perforated or slotted casing? (yes/no) no
 Perforated / slotted from _____ ft to _____ ft
 Perforated / slotted from _____ ft to _____ ft

Casing grouted? (yes/no) yes

Type	Depth Top	Depth Bottom	Amount
Neat Cement	0'	380'	215 sacks
Neat Cement			5 sacks Holeplug

upland hillside valley Elevation (if known) _____

Formation log

From	To	Color	Hardness	Formation description
0'	12'	Brown		Brown clay
12'	36'	Blue		Blue clay
36'	37'			Sandy clay
37'	61'	Blue		Blue clay
61'	63'			Sand
63'	69'	Blue		Clay, soft, sand, blue
69'	71 1/2'	orange		Orange rock
71 1/2'	73'	white-yellow		White-yellow limerock soft
73'	91'	yellow		limerock, yellow, fair
91'	101'	Gray Brown		Gray-Brown limerock
101'	138'	yellow		Yellow limerock
138'	176'	Gray Brown		Gray-Brown limerock
176'	271'	Blue		Blue Shale
271'	315'	Brown		Brown shale rock
315'	336'	Brown		Dark Brown shale
336'	380'			Buff
380'	570'			Galena
570'	590'			Shale rock
590'	596'			Shale soft
596'	662'			Shale rock

use additional sheets as needed

Well screen? (yes/no) no
 Diameter _____ Slot size _____ Depth Top _____ Depth Bottom _____ Length _____ Material _____
 Bottom capped (yes/no) with _____
 Seals / Packers (yes/no) kind _____ depth _____ ft
 Gravel packed (yes/no) from _____ ft to _____ ft
 type _____ amount _____

Well developed? (yes/no) yes
 Explain Air lift: 45 GPM at 540'
22 GPM at 440'

Pump installed? (yes/no) _____ Date _____/_____/_____
 Installer's name _____
 Type of pump _____ Depth to intake _____ ft
 Pump diameter _____ Rated capacity _____ GPM

Water information Aquifer: sand/gravel limestone sandstone
 Main water-supply zone from _____ ft to _____ ft
 Final water level (static water level) 301 ft (below/above) GL.
 Pumping water level 540 ft below GL; tape airline E-line
 At yield of 40 GPM; orifice volumetric estimate Date _____

Water quality test? (yes/no) _____ Date tested _____/_____/_____
 Tested by _____
 Test results _____

Remarks (including depth of lost drilling fluids, materials, or tools)
662' 699' Sandstone
699' 701' Shale + limerock

Well use
 Domestic Municipal Industrial
 Livestock Public Supply Monitoring
 Test Well Irrigation Other _____ (explain)

Contractor Shawver Well Company, Inc.
 Address Fredericksburg, IA 50630
 Driller Dave Halweg Certification no. 40162

~~#40408~~
36724

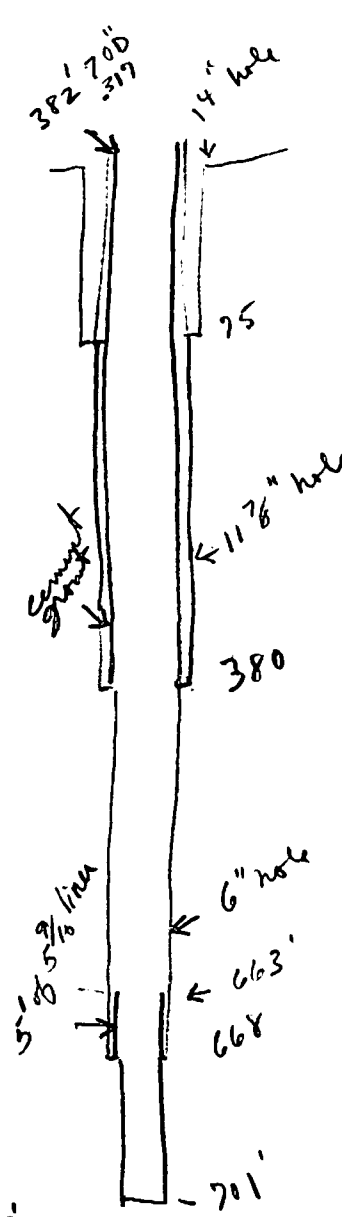
id 5884 well number 9508203
owner name CITY OF BERNARD
second name CONTACT: GARY SEJKORA
address 1 IIW ENGINEERS & SURVEYORS
address 2 4155 PENNSYLVANIA AVENUE
city/state DUBUQUE, IA
zip 52002
start date 08/14/95
end date 08/24/95
county Dubuque
township PRAIRIE CREEK 87 - 1 E
section 27
quarters
s w l 301'
r p s 540' AT 40 GPM
water test inf

LOG OF WELL

0'	TO	12'	BROWN CLAY
12'	TO	36'	BLUE CLAY
36'	TO	37'	SANDY CLAY
37'	TO	61'	BLUE CLAY
61'	TO	63'	SAND
63'	TO	69'	CLAY, SOFT SAND, BLUE
69'	TO	71«'	ORANGE ROCK
71«'	TO	73'	WHITE YELLOW LIMEROCK, SOFT
73'	TO	91'	LIMEROCK, YELLOW, FAIR
91'	TO	101'	GRAY - BROWN LIMEROCK
101'	TO	138'	YELLOW LIMEROCK
138'	TO	176'	GRAY - BROWN LIMEROCK
176'	TO	271'	BLUE SHALE
271'	TO	315'	BROWN SHALE ROCK
315'	TO	336'	DARK BROWN SHALE
336'	TO	380'	BUFF, 340
380'	TO	570'	GALENA, 392' - 6 GPM, 430 - 8
GPM			
570'	TO	590'	SHALE ROCK
590'	TO	596'	SHAKE, SOFT
596'	TO	662'	SHALE ROCK
662'	TO	699'	SANDSTONE
699'	TO	701'	SHALE AND LIMEROCK

DESCRIPTION OF WELL

WORK WAS COMMENCED ON AUGUST 14, 1995 ON THE BERNARD CITY WELL. A 14 3/4' HOLE WAS DRILLED TO A DEPTH OF 75' AND APPROXIMATELY 77' OF 13 3/8' OD THREADED AND COUPLED CASING WAS INSTALLED AS A TEMPORARY CASING. THE 11 7/8' HOLE WAS THEN DRILLED FROM 75' TO A DEPTH OF 380'. THE GALENA LIMEROCK WAS ENCOUNTERED AT 340'. THE WELL DID MAKE SOME WATER IN THE GALENA PRIOR TO THE CASING BEING SET, BUT THE QUANTITY WAS VERY LITTLE. SUBSEQUENTLY, 382' OF 7' OD X .317 WALL PLAIN END CASING WAS INSTALLED COMPLETE WITH A GROUT SHOE. 2' GUIDES WERE AFFIXED TO THE CASING TO KEEP IT CENTRALIZED IN THE 11 7/8' BORE HOLE. GROUTING EQUIPMENT WAS INSTALLED IN PLACE AND SIXTEEN 50# BAGS OF A 200 MESH BENTONITE WERE CIRCULATED PRIOR TO PUMPING OF THE GROUT. UPON COMPLETION OF THIS, 215 SACKS OF NEAT CEMENT WAS PUMPED IN THE ANNULAR SPACE TO SEAL THE BORE HOLE AND THE 13 3/8 OD CASING WAS REMOVED. AFTER THE CASING WAS ALLOW TO SET FOR A PERIOD OF 72 HOURS FOR THE GROUT TO CURE, DRILLING WAS THEN AGAIN COMMENCED. A 6--' OPEN HOLE WAS DRILLED FROM 380' TO 668'. DRILLING TOOLS WERE REMOVED AND A 5' LINER X 5 9/16' OD X .258 WALL WAS INSTALLED. THIS LINER IS NOT PERFORATED. THE PURPOSE OF THIS LINER WAS TO LINE OUT THE DECORAH PLATVILLE FORMATION AND THE STREAKS OF SHALE THAT WERE SOFT. A 5' HOLE WAS THEN DRILLED FROM 668' TO 701' THROUGH THE UNDERLYING ST. PETER SANDSTONE. THE WELL WAS AIR LIFTED FROM DIFFERENT DEPTHS: FROM 540' THE WELL PRODUCED 45 GPM. FROM 440' THE WELL PRODUCED 22 GPM. WORK WAS COMPLETED ON THE WELL ON AUGUST 24, 1995. THE TEST PUMP WAS SUBSEQUENTLY INSTALLED AND TEST PUMPED. THE WELL WAS TEST PUMPED AT A RATE OF 35 GPM. THE STATIC WATER LEVEL PRIOR TO PUMPING WAS 299'8". AFTER PUMPING THE WELL AT A RATE OF 35 GPM FOR A PERIOD OF 17 1/2 HOURS, THE WELL DREW DOWN TO A LEVEL OF 350' AT 35 GPM. AS OF THIS WRITING, THE WATER HAD BEEN TESTED SEVERAL TIMES FOR BACTERIA AND BOTH COLIFORM AND FECAL BACTERIA APPEARED IN THE WELL. AS OF THIS WRITING, WE ARE UNABLE TO DETERMINE THE SOURCE OF THE BACTERIA.



BOREHOLE DATA

0'	TO	75'	14 3/4' DIAMETER
75'	TO	380'	11 7/8' DIAMETER
380'	TO	668'	6--' DIAMETER
668'	TO	701'	5' DIAMETER

driller DAVE HALWEG

459 gpm @ 540'
22 gpm @ 440'
Test pumped @ 35 gpm
17 1/2 hrs
SWL 299'8"
PWL 350'

S H A W V E R W E L L C O . , I N C .
W E L L L O G D A T A

#36724

Well NO: 9508203
 Owner Name: CITY OF BERNARD
 Second Name: CONTACT: GARY SEJKORA
 Address1: IIW ENGINEERS & SURVEYORS
 Address2: 4155 PENNSYLVANIA AVENUE
 City: DUBUQUE, IA
 Zip: 52002
 Short Co. Name: DUB Dubuque
 Township: PRAIRIE CREEK 87-1E
 Section: 27
 Quarters:
 Start Date: 08/14/95
 End Date: 08/24/95

Log of Well	0'	TO	12'	BROWN CLAY
	12'	TO	36'	BLUE CLAY
	36'	TO	37'	SANDY CLAY
	37'	TO	61'	BLUE CLAY
	61'	TO	63'	SAND
	63'	TO	69'	CLAY, SOFT SAND, BLUE
	69'	TO	71½'	ORANGE ROCK
	71½'	TO	73'	WHITE YELLOW LIMEROCK, SOFT
	73'	TO	91'	LIMEROCK, YELLOW, FAIR
	91'	TO	101'	GRAY - BROWN LIMEROCK
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	271'	TO	315'	BROWN SHALE ROCK
	315'	TO	336'	DARK BROWN SHALE
	336'	TO	380'	BUFF, 340
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	570'	TO	590'	SHALE ROCK
	590'	TO	596'	SHAKE, SOFT
	596'	TO	662'	SHALE ROCK
	662'	TO	699'	SANDSTONE
	699'	TO	701'	SHALE AND LIMEROCK

Description

Static Water Level: 301'
 Pump Setting: 540' AT 40 GPM
 Water Test:

Bore Hole Data

0'	TO	75'	14 3/4" DIAMETER
75'	TO	380'	11 7/8" DIAMETER
380'	TO	668'	6¼" DIAMETER
668'	TO	701'	5" DIAMETER

Driller: DAVE HALWEG