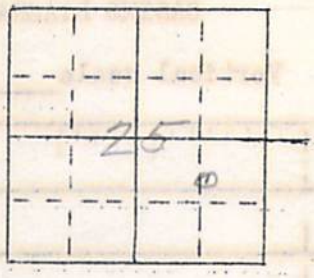
070-04W-25DACB

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

N-1550

RECORD OF WELL



Location:

Town: Middletown (N E / S W): County Des Moines

NW-SW NE-SE sec. 25 T 70 N., R. 4 W. Danville Twp.

Well name and number Middletown City Well #1

Owner _____ Address _____

Tenant _____ Address _____

Contractor Chas Nolan Address Cedar Rapids

Drillers Lee Summy

Drilling dates May 1942 - June 1942

Well data:

Elevations: Drilling curb 722± feet; Land surface _____ feet

Determined by _____

Topographic position _____

Total depth: Reported 200' feet, Measured _____ feet

Drilling method Cable

Hole and casing data 188'6" of 8" casing from +2' to 186'6"
16'4" of screen No. 40 slot from 186'6" to 200'10"

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

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

Sources of water: Principal Pleistocene; Others _____

Production data: Date

Static depth to water 60 Measuring point

Pumping level 144 at 25 g.p.m.

Specific capacity g.p.m. per ft. drawdown; Temperature 54 °F.

Pump data: Type pump Cylinder Column Dia. 6" Length 169

Cylinder or bowls: Dia. Length Suction pipe 0

Power Airline

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

Use of water Municipal

WATER ANALYSES (in parts per million)

Date samples	May 2, 1942			
Sampled by	D.A. Davis			
Total solids	473			
Insoluble matter	5.0			
Alkalinity (Meo)	404.0			
Alkalinity (Phn)	6.0			
pH	7.7			
$Fe_2O_3 + Mn_2O_3 + Al_2O_3$	8.0			
Alkali as sodium	31.8			
Calcium	97.6			
Magnesium	29.2			
Iron (unfiltered)	0.3			
Manganese	0.0			
Nitrate	0.6			
Fluoride	0.0			
Chloride	1.0			
Sulfate	7.4			
Bicarbonate	492.9			
Hardness (ppm)	364			
Hardness (gpg)	21.2			

Remarks

Laboratory data: Sample storage location

Sample range 0-200 No. spls. 40 No. dupls. & cond. 40 Cuttings

Spls. prepared by Hawkins Washed range 180-200 by

Driller's log and cond. Yes

Insoluble residues: Prepared by Studied by Strip log

Microscopic study EMR strip log Jan. 10, 1950

Gen. log Correl. by

2

To: H.G. Hershey

From: D.A. Davis

Date: May 11, 1942

Subject: Samples from Middletown city well

A generalized log of the well is as follows:

Yellowish brown clay, oxidized drift	30	30	30
Gray clay, unoxidized drift	20	30	50
Yellowish brown clay, oxifized drift	35	50	85
Gray clay, unoxidized drift	95	85	180
Fine gravel and sand	20	180	200

The estimated size grade distribution of the samples of sand are listed below:

Size	180-185	185-190	190-195	195-200
.156 in.	15%	10%	15%	15%
.078	15	15	15	20
.039	30	25	30	40
.0195	25	30	25	15
.0097	10	15	10	7
<.0097	5	5	5	3

The sand appears coarser than that from the test well. All the samples were washed by the driller and the amount of clay in the original samples is not known. Not more than 2% to 5% of any sample is below the silt grade in size.

The driller reported that some clay is present in all the sand.

Record of partial recovery measurements on
Middletown city well
June 2, 1942

Length of airline = 169 feet. Measuring point = 2 feet 6 inches above ground

Time	Airline Reading (feet)	Depth to Water (feet)	Production (g.p.m.)	Remarks
4:55	25	144	25	Temp. 54°F
4:58 1/2	25	144		Pump stopped
4:58 3/4	28	141		
4:59	33	136		
4:59 1/4	37	132		
4:59 1/2	38	131		
4:59 3/4	39	130		
5:00	43	126		
5:00 1/4	45	124		
5:00 1/2	47	122		
5:00 3/4	50	119		
5:01	54	115		
5:02	62	107		
5:03	68	101		
5:04	73	96		
5:05	77	92		
5:10	93	76		
5:15	98	71		
5:20	100	69		Last observation

C. MAXWELL STANLEY
ARTHUR E. STANLEY

STANLEY ENGINEERING COMPANY

CENTRAL STATE BANK BUILDING
MUSCATINE, IOWA

July 8, 1942

Mr. H. G. Hershey
State Geological Survey
Geology Annex
Iowa City, Iowa.

Re: MUNICIPAL WELL - MIDDLETOWN, IA.

Dear Mr. Hershey:

We are writing with reference to any comments you may have relative to the well at Middletown which has been drilled by Chas. D. Nolan as subcontractor for the Dan Christensen Construction Co. of Cedar Rapids. We understand you have sand samples from this well and that you had a representative present at the yield test on June 1st.

The well failed to fulfill the requirements of the specifications. A decision will have to be made in the near future as to what should be done to obtain the necessary water supply for the town.

A brief case history of the well from the information we have available is as follows:

(1) Well was drilled 11 ft. northeast from test well of Edwards.

(2) Well was drilled to 200 ft. depth.

(3) Bottom of screen is setting at 200 ft. There are 3 ft. of inactive screen at the bottom. It is an 8" screen with a No. 40 slot.

(4) Complete(all)11 ft. of active screen developed in one operation instead of in successive 3 ft. sections as called for in the specifications.

(5) Nolan advises there are 10 ft. of sand from 190 to 200 ft.

(6) Test of well on June 1st gave 28 gpm. with 75' drawdown from a static level of 60 ft. The contract on this well is guaranteed and calls for a minimum of 50 gpm. with a maximum of 30 ft. drawdown.

Telephone
1900

(7) Subsequent to June 1st, Nolan did the following additional work on the well:

a. The well was surged with a surge plunger again to see if more sand could be removed. This resulted in no more sand being removed and approximately 20 gpm. yield upon testing.

b. Compressed air was then used to force the fine sand, mud, and clay back from the screen.

First Step. An air pump was used to raise the water level to the top of the casing and then permitting it to run back thru the screen until a static level of 70 ft. was reached. This process was repeated for a period of 12 hours.

Second Step. Compressed air was applied to the casing raising the pressure to 90#, thereby flushing the water back out of the well thru the screen, after which the pressure was gradually released. This operation was repeated for a period of 5 hrs.

A yield test subsequent to the compressed air operation resulted in approximately 30 gpm. with a 90 ft. drawdown.

(8) The following two items were noted during pumping operations:

(a) The static water level in the test well is unaffected by these relatively large drawdowns in the well.

(b) The water level in the well returns to normal static level almost immediately after pumping operations have ceased.

We feel that F.W.A. will be asking our recommendations on this well situation within the next few days. They have already taken the position that it is a guaranteed well and contract.

We are enclosing a copy of the specifications on this well for your reference in case you do not have a copy available. If you need any more information, please do not hesitate to contact us at once.

Thanking you for your early attention to this matter, we are

Yours very truly,

STANLEY ENGINEERING COMPANY

By H. W. Hope

HWH:PVH
Encl.