Iowa Department of Natural Resources Geological Survey Bureau
109 Trowbridge Hall Iowa City, Ia. 52242-1319 PH (319) 335-1575

# WELL RECORD #40318

Permit No. Permitted by Veenstra+Kimm, Inc

## Site identification

Property Owner W. Des Moines Water Works Well Number 19
Address 1505 Railroad Ave, W. Des Moines, IA 50265
Tenant W. Des Moines Water Works
Well Depth 47 ft From Final Casing Elevation Date Completed 11 / 04 / 95

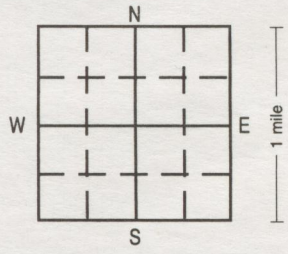
## Location

County Polk

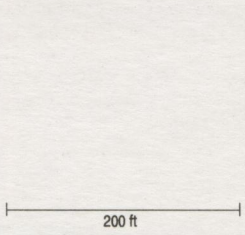
____mi. N/S and ____mi. E/W of intersection of _____ and _____

____1/4 of the ____1/4 of the ____1/4 of Sec ____ TWP ____ RNG ____ E/W

Show exact location of well in section grid with a dot ( ● ).




Sketch map of well location on property




☐ upland ☐ hillside ☒ valley Elevation (if known) _____

## Formation log

| From | To | Color | Hardness | Formation description |
|---|---|---|---|---|
| 0 | 11 | Black | | Clay |
| 11 | 18 | Gray | | Clay w/gravel |
| 18 | 43 | " | | Sand, gravel + cobbles |
| 43 | 44 | " | | Clay w/cobbles |

use additional sheets as needed

**Remarks** (including depth of lost drilling fluids, materials, or tools)

## Well use

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

## Drill method

☒ rotary ☐ auger ☐ cable other _____

## Hole size

52 inch from 0 ft to 43 ft
____ inch from ____ ft to ____ ft

hole size continued
____ inch from ____ ft to ____ ft
____ inch from ____ ft to ____ ft

Record all depth measurements from ground level (GL). Use (+) for above GL measurements.

## Casing

Drive shoe ( yes / no ) Pitless adaptor ( yes / no )

| Size (ID/OD) | Type / Wt | Depth top | Depth bottom | Amount (length) |
|---|---|---|---|---|
| 20" | 0.500" | +4' | 33' | 37' |
| | | | | |
| | | | | |
| | | | | |

## Perforated or slotted casing? (yes / no)

Perforated / slotted from _____ ft to _____ ft
Perforated / slotted from _____ ft to _____ ft

## Casing grouted? (yes / no)

| Type | Depth Top | Depth Bottom | Amount |
|---|---|---|---|
| Neat Cement | 0' | 10' | 6 yds. |
| | | | |

## Well screen? (yes / no)

| Diameter | Slot size | Depth Top | Depth Bottom | Length | Material |
|---|---|---|---|---|---|
| 20" | 0.065" | 37' 33 | 47' 43 | 10' | SST. |
| | | | | | |

Bottom capped (yes / no) with SST. Plate
Seals / Packers (yes / no) kind Bentonite depth 10-18 ft
Gravel packed (yes / no) from 18 ft to 43 ft
type Northern #2 amount 16 Tons

## Well developed? (yes / no)

Explain Surge block, bailer, pump

## Pump installed? (yes / no) Date 06 / 18 / 96

Installer's name Joe Dooling
Type of pump Vertical Turbine Depth to intake 44 ft From Top of Casing
Pump diameter 10" Rated capacity 550 GPM

40.

## Water information

Aquifer: ☒ sand/gravel ☐ limestone ☐ sandstone
Main water-supply zone from 37 ft to 47 ft
Final water level ( static water level ) 14 ft (below / above ) GL.
Pumping water level 27 ft below GL; ☐ tape ☐ airline ☒ E-line
At yield of 570 GPM; ☒ orifice ☐ volumetric ☐ estimate Date 11/4/95

## Water quality test? (yes / no) Date tested ____ / ____ / ____

Tested by West Des Moines Water Works
Test results _____

Contractor Layne-Western
Address 912 S. 14th Ave, Marshalltown, IA 50158
Driller Dave Beaver Certification no. 40259

white copy - **Iowa DNR, Geological Survey Bureau** blue copy - **Well Contractor** pink copy - **Customer** yellow copy - **County Health Officer**

# WELL INSTALLATION REPORT
## *LAYNE-WESTERN*

1. **CONTRACT WITH:** West Des Moines Water Works **DATE:** 10-21-95
2. **CITY AND STATE:** West Des Moines, Iowa **DRILLER:** Dave Deaver
3. **WELL NO:** 19 **AT TEST HOLE NUMBER** 19 **WELL LOCATION:** Raccoon River Park.
4. **WORK COMPLETED:** **TOTAL MAN HOURS CHARGED TO JOB:**

5. **MATERIAL:**

| | LENGTH | DIA. | GAUGE OR THICKNESS | MATERIAL | TYPE | SLOT SIZE |
|---|---|---|---|---|---|---|
| 6. **SCREEN:** | 10.3' | 20" | Std. | SST. | W.W. | 0.065" |
| 7. **INNER CASING:** | 36.4' | 20" | 0.500" | Steel | Blank | |
| 8. **OUTER CASING:** | | | | | | |

9. 16 **TONS OF GRAVEL PACK USED IN THE WELL. SIZE:** Northern Gravel #2
10. **TEST OF WELL: TEST PUMP OR PERMANENT PUMP:** Test **BOWL SIZE** **STAGES**
11. **SIZE OF ORIFICE:** 6" x 5" **ORIFICE TUBE READING:**

12. **PUMPING TEST - MEASUREMENTS FROM GROUND LEVEL:**

| TIME | GPM | STATIC | DRAWDOWN | PUMPING LEVEL |
|---|---|---|---|---|
| See enclosed pumping test results. | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

13. **RECOVERY IN 5 MINUTES:** , **IN 30 MINUTES:**
14. **DID YOU SEAL BOTTOM OF WELL** Yes **THICKNESS:** Std. **MATERIAL:** SST.
15. **WELL UNDERREAMED?** No **FROM** **TO** , **FROM** **TO**
16. **IF ALL SCREEN WAS NOT PLACED AT BOTTOM, STATE HOW IT WAS PLACED?**
    **FROM** **TO** ; **FROM** **TO** ; **FROM** **TO**
17. **DEPTH OF WELL FROM GROUND LEVEL** 43' **SIZE OF DRILL HOLE:** 52"
18. **WAS CEMENT PLACED AROUND OR BETWEEN ANY OF THE CASINGS?** Yes
19. **IF SO, STATE INTERVALS, QUANTITY, AND METHOD USED:** From 0-10', 6 yards

# WELL INSTALLATION REPORT (PAGE 2)

*LAYNE-WESTERN*

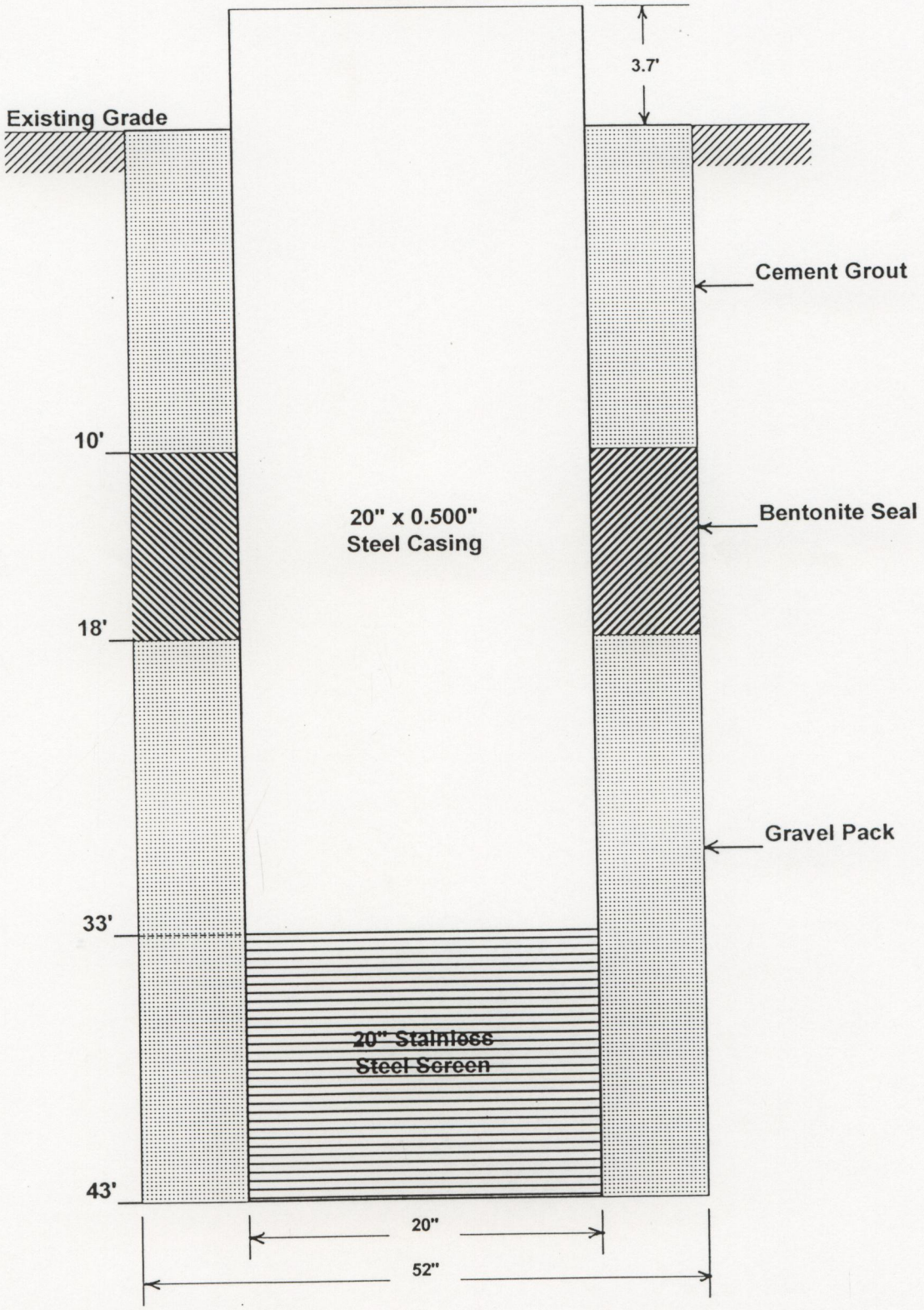
**CONTRACT WITH:** West Des Moines Water Works **WELL NO:** 19

**LOG OF WELL FROM GROUND LEVEL:**

| FEET | | FEET | FORMATION |
|---|---|---|---|
| 0 | to | 11 | Black clay |
| 11 | to | 18 | Gray to brown clay w/gravel |
| 18 | to | 43 | Sand and gravel - cobbles |
| 43 | to | 44 | Gray clay - cobbles |
| | to | | |
| | to | | |
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Layne

# WELL CONSTRUCTION DIAGRAM
# WEST DES MOINES WATER WORKS
# WELL #19




NOT TO SCALE

VERTICAL TURBINE

# PUMP INSTALLATION REPORT

## *Layne-Western*

**JOB NAME:** West Des Moines Water Works
Address: 1505 Railroad Ave., P.O. Box 65610
City, State: West Des Moines, Iowa 50265-0610

**DATE:** 6-18-96 Job Completion

Oil - (Water Lube)

**PUMP NO:** 96-09891-2 (New) - Repair

Pump Trouble: New Installation

| PUMP SIZE | DIAMETER | | LENGTHS |
|---|---|---|---|
| Discharge | 6" | (Above) / Below | |
| Column | 6" | (Screw) / Flange | 2 x 5'<br>3 x 10' |
| Tubing | | | |
| Shaft | 1" | Stainless / (Carbon) | 2 x 5'<br>3 x 10' |

Column setting to bowl: 40 ft.

**BOWL:**

Manufacturer: Layne
Diameter: 10" Shaft Diameter: 1-1/2"
Type: RKHC Stages: 3
Material: C.I. Bowl Length: 40"
Suction Diam: 6" Suct. Length: None
Special Paint, Coatings, Sleeves, etc:
Column: Epoxy coated column & bowl
Tubing:

**MOTOR OR GEAR DRIVE:**

Make: G.E. HP: 20
Speed: 1760 rpm Volts: 460
Frame: 256TP12 CD: 23.9"
BD: 12" Non-reverse: (Yes) / No
Serial # RKD5904015
Running Amps: 26 - 27 - 27
Running Volts: 480
Gear Drive Ratio: None Standard / Comb.

**WELL:**

No: 19 Year Drilled: 1995
Location: North of Well No. 21
Diameter: 20" Depth: 46' 8"
Measured from top of 20 inch diameter casing which is (3) feet above ground
4' ?? 3,7' ??
Tape to water: 21'
Airline length: 40' A.L. Material: ¼" PVC

Static Gauge: 17' Static Level: 23'
Pumping Gauge: 10' Pumping Level 30'
Disch. Pressure: 43 psi when pumping into system at 480 gpm.

**INSTALLER:** Joe Dooling
Rig Used: R12 Pump Rig

**PUMP REPAIR**

| CONDITION OF PUMP WHEN PULLED | NEW PARTS INSTALLED |
|---|---|
| Column: | Column: New Installation |
| Tubing: | Tubing: |
| Shafting: | Shafting: |
| Bowl: | Bowl: |
| Suction: | Suction: |
| MACHINE WORK: | 1. DRAIN PORTS OPEN — Yes / (No)<br>2. CHLORINATE WELL — (Yes) / No<br>3. ALIGN PUMP HEAD WITH DIAL INDICATOR — (Yes) / No<br>4. GROUTED HEAD-BASE PLATE — (Yes) / No<br>5. PUMP RUNS — (Good) / Fair / Bad |

# WELL TEST DATA REPORT

*LAYNE-WESTERN COMPANY*

| | | | |
|---|---|---|---|
| **PROJECT:** | West Des Moines Water Works | **DATE TESTED:** | 11/2/95 - 11/4/95 |
| **LOCATION:** | West Des Moines, Iowa | **TESTED BY:** | David Deaver / Jim Hurd |
| **WELL NO:** | 19 | **DRIVER:** | Submersible motor |
| **WELL DIAMETER:** | 20 inches | **COLUMN AND SHAFT:** | 6" drop pipe |
| **WELL DEPTH:** | 45 feet - from top of casing | **BOWL SIZE & MAKE:** | |
| **TOP OF SCREEN:** | 35 feet - from top of casing | **MANUFACTURER:** | Grundfos |
| **STATIC LEVEL:** | 16.7 feet - from top of casing | **SERIAL NUMBER:** | |
| **ORIFICE SIZE:** | 6" x 5" | | |

| TIME | PIEZ. READ. (IN) | FLOW RATE (GPM) | AIRLINE READING (FEET) | WATER LEVEL (FEET) | DRAW DOWN (FEET) | DISCHARGE PRESSURE (LBS.) | DISCHARGE PRESSURE (FEET) | SPEC. CAPACITY (GPM/FT) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| 1 min. | | 584 | | 25.9 | 9.2 | | | 63.5 | Test was started |
| 2 | | 584 | | 26.2 | 9.5 | | | 61.5 | at 1:24 p.m. |
| 3 | | 584 | | 26.4 | 9.7 | | | 60.2 | |
| 4 | | 584 | | 26.5 | 9.8 | | | 59.6 | |
| 5 | | 584 | | 26.7 | 10.0 | | | 58.4 | |
| 6 | | 584 | | 26.7 | 10.0 | | | 58.4 | |
| 7 | | 584 | | 26.8 | 10.1 | | | 57.8 | |
| 8 | | 584 | | 26.9 | 10.2 | | | 57.3 | |
| 9 | | 584 | | 27.0 | 10.3 | | | 56.7 | |
| 10 | | 584 | | 27.0 | 10.3 | | | 56.7 | |
| 11 | | 584 | | 27.0 | 10.3 | | | 56.7 | |
| 12 | | 584 | | 27.1 | 10.4 | | | 56.2 | |
| 13 | | 584 | | 27.1 | 10.4 | | | 56.2 | |
| 14 | | 584 | | 27.1 | 10.4 | | | 56.2 | |
| 15 | | 584 | | 27.2 | 10.5 | | | 55.6 | |
| 18 | | 584 | | 27.2 | 10.5 | | | 55.6 | |
| 21 | | 584 | | 27.3 | 10.6 | | | 55.1 | |
| 24 | | 584 | | 27.4 | 10.7 | | | 54.6 | |
| 27 | | 584 | | 27.4 | 10.7 | | | 54.6 | |
| 30 | | 584 | | 27.5 | 10.8 | | | 54.1 | |
| 35 | | 584 | | 27.5 | 10.8 | | | 54.1 | |
| 40 | | 584 | | 27.6 | 10.9 | | | 53.6 | |
| 45 | | 584 | | 27.6 | 10.9 | | | 53.6 | |
| 50 | | 584 | | 27.7 | 11.0 | | | 53.1 | |
| 55 | | 584 | | 27.7 | 11.0 | | | 53.1 | |

# WELL TEST DATA REPORT

*LAYNE-WESTERN COMPANY*

PROJECT: West Des Moines Water Works
LOCATION: West Des Moines, Iowa
WELL NO: 19
WELL DIAMETER: 20 inches
WELL DEPTH: 45 feet - from top of casing
TOP OF SCREEN: 35 feet - from top of casing
STATIC LEVEL: 16.7 feet - from top of casing
ORIFICE SIZE: 6" x 5"

DATE TESTED: 11/2/95 - 11/4/95
TESTED BY: David Deaver / Jim Hurd
DRIVER: Submersible motor
COLUMN AND SHAFT: 6" drop pipe
BOWL SIZE & MAKE:
MANUFACTURER: Grundfos
SERIAL NUMBER:

| TIME | PIEZ. READ. (IN) | FLOW RATE (GPM) | AIRLINE READING (FEET) | WATER LEVEL (FEET) | DRAW DOWN (FEET) | DISCHARGE PRESSURE (LBS.) | DISCHARGE PRESSURE (FEET) | SPEC. CAPACITY (GPM/FT) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| 1 hr. | | 584 | | 27.7 | 11.0 | | | 53.1 | |
| 1:10 | | 584 | | 27.8 | 11.1 | | | 52.6 | |
| 1:20 | | 584 | | 27.8 | 11.1 | | | 52.6 | |
| 1:30 | | 584 | | 27.9 | 11.2 | | | 52.1 | |
| 1:40 | | 584 | | 27.8 | 11.1 | | | 52.6 | |
| 1:50 | | 584 | | 28.0 | 11.3 | | | 51.7 | |
| 2:00 | | 577 | | 28.0 | 11.3 | | | 51.1 | |
| 2:10 | | 577 | | 28.1 | 11.4 | | | 50.6 | |
| 2:20 | | 577 | | 28.1 | 11.4 | | | 50.6 | |
| 2:30 | | 577 | | 28.1 | 11.4 | | | 50.6 | |
| 2:40 | | 577 | | 28.1 | 11.4 | | | 50.6 | |
| 2:50 | | 577 | | 28.2 | 11.5 | | | 50.2 | |
| 3:00 | | 577 | | 28.2 | 11.5 | | | 50.2 | |
| 4 hrs. | | 577 | | 28.4 | 11.7 | | | 49.3 | |
| 5 | | 577 | | 28.5 | 11.8 | | | 48.9 | |
| 6 | | 577 | | 28.6 | 11.9 | | | 48.5 | |
| 7 | | 577 | | 28.7 | 12.0 | | | 48.1 | |
| 8 | | 577 | | 28.8 | 12.1 | | | 47.7 | |
| 9 | | 577 | | 28.9 | 12.2 | | | 47.3 | |
| 10 | | 577 | | 29.0 | 12.3 | | | 46.9 | |
| 11 | | 577 | | 29.1 | 12.4 | | | 46.5 | |
| 12 | | 577 | | 29.2 | 12.5 | | | 46.2 | |
| 13 | | 577 | | 29.3 | 12.6 | | | 45.8 | |
| 14 | | 577 | | 29.3 | 12.6 | | | 45.8 | |
| 15 | | 577 | | 29.4 | 12.7 | | | 45.4 | |

# WELL TEST DATA REPORT

*LAYNE-WESTERN COMPANY*

| | | | |
|---|---|---|---|
| **PROJECT:** | West Des Moines Water Works | **DATE TESTED:** | 11/2/95 - 11/4/95 |
| **LOCATION:** | West Des Moines, Iowa | **TESTED BY:** | David Deaver / Jim Hurd |
| **WELL NO:** | 19 | **DRIVER:** | Submersible motor |
| **WELL DIAMETER:** | 20 inches | **COLUMN AND SHAFT:** | 6" drop pipe |
| **WELL DEPTH:** | 45 feet - from top of casing | **BOWL SIZE & MAKE:** | |
| **AIRLINE LENGTH:** | 35 feet - from top of casing | **MANUFACTURER:** | Grundfos |
| **STATIC LEVEL:** | 16.7 feet - from top of casing | **SERIAL NUMBER:** | |
| **ORIFICE SIZE:** | 6" x 5" | | |

| TIME | PIEZ. READ. (IN) | FLOW RATE (GPM) | AIRLINE READING (FEET) | WATER LEVEL (FEET) | DRAW DOWN (FEET) | DISCHARGE PRESSURE (LBS.) | DISCHARGE PRESSURE (FEET) | SPEC. CAPACITY (GPM/FT) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| 16 hrs. | | 577 | | 29.5 | 12.8 | | | 45.1 | |
| 17 | | 577 | | 29.5 | 12.8 | | | 45.1 | |
| 18 | | 577 | | 29.6 | 12.9 | | | 44.7 | |
| 19 | | 577 | | 29.6 | 12.9 | | | 44.7 | |
| 20 | | 577 | | 29.7 | 13.0 | | | 44.4 | |
| 21 | | 577 | | 29.7 | 13.0 | | | 44.4 | |
| 22 | | 577 | | 29.8 | 13.1 | | | 44.0 | |
| 23 | | 577 | | 29.8 | 13.1 | | | 44.0 | |
| 24 | | 570 | | 29.8 | 13.1 | | | 43.5 | |
| 25 | | 570 | | 29.9 | 13.2 | | | 43.2 | |
| 26 | | 570 | | 29.9 | 13.2 | | | 43.2 | |
| 27 | | 570 | | 29.9 | 13.2 | | | 43.2 | |
| 28 | | 570 | | 30.0 | 13.3 | | | 42.9 | |
| 29 | | 570 | | 30.0 | 13.3 | | | 42.9 | |
| 30 | | 570 | | 30.1 | 13.4 | | | 42.5 | |
| 31 | | 570 | | 30.1 | 13.4 | | | 42.5 | |
| 32 | | 570 | | 30.1 | 13.4 | | | 42.5 | |
| 33 | | 570 | | 30.2 | 13.5 | | | 42.2 | |
| 34 | | 570 | | 30.2 | 13.5 | | | 42.2 | |
| 35 | | 570 | | 30.2 | 13.5 | | | 42.2 | |
| 36 | | 570 | | 30.3 | 13.6 | | | 41.9 | |
| 37 | | 570 | | 30.3 | 13.6 | | | 41.9 | |
| 38 | | 570 | | 30.3 | 13.6 | | | 41.9 | |
| 39 | | 570 | | 30.3 | 13.6 | | | 41.9 | |
| 40 | | 570 | | 30.4 | 13.7 | | | 41.6 | |

# WELL TEST DATA REPORT

*LAYNE-WESTERN COMPANY*

| | | | |
|---|---|---|---|
| PROJECT: | West Des Moines Water Works | DATE TESTED: | 11/2/95 - 11/4/95 |
| LOCATION: | West Des Moines, Iowa | TESTED BY: | David Deaver / Jim Hurd |
| WELL NO: | 19 | DRIVER: | Submersible motor |
| WELL DIAMETER: | 20 inches | COLUMN AND SHAFT: | 6" drop pipe |
| WELL DEPTH: | 45 feet - from top of casing | BOWL SIZE & MAKE: | |
| TOP OF SCREEN: | 35 feet - from top of casing | MANUFACTURER: | Grundfos |
| STATIC LEVEL: | 16.7 feet - from top of casing | SERIAL NUMBER: | |
| ORIFICE SIZE: | 6" x 5" | | |

| TIME | PIEZ. READ. (IN) | FLOW RATE (GPM) | AIRLINE READING (FEET) | WATER LEVEL (FEET) | DRAW DOWN (FEET) | DISCHARGE PRESSURE (LBS.) | DISCHARGE PRESSURE (FEET) | SPEC. CAPACITY (GPM/FT) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| 41 hrs. | | 570 | | 30.4 | 13.7 | | | 41.6 | |
| 42 | | 570 | | 30.4 | 13.7 | | | 41.6 | |
| 43 | | 570 | | 30.4 | 13.7 | | | 41.6 | |
| 44 | | 570 | | 30.5 | 13.8 | | | 41.3 | |
| 45 | | 570 | | 30.5 | 13.8 | | | 41.3 | |
| 46 | | 570 | | 30.5 | 13.8 | | | 41.3 | |
| 47 | | 570 | | 30.5 | 13.8 | | | 41.3 | |
| 48 | | 570 | | 30.5 | 13.8 | | | 41.3 | |
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