Pumping Test at Charles City, Iowa
June 7, 1955

A pumping test was made by Hoeg & Ames, drilling contractors, June 7, 1955 on a new well for the city of Charles City, Iowa. The test was made to determine the yield of the new well. The Geological Survey cooperated in obtaining data on the change in depth to water due to pumping. Representatives of the Rowat-Murray engineering firm (engineers retained by the city) were in charge of the test and made the discharge measurements.

The well was pumped at the rate of 450 g.p.m. for 3 hours. The rate of discharge was then increased to 615 g.p.m. for $2\frac{1}{2}$ hours. The recovery was measured for 45 minutes. A larger motor was to be obtained so the well could be pumped at a higher rate of discharge.

The data obtained indicates a drawdown of about 50 feet (from a static water level of about 111 feet) after 3 hours of pumping at a rate of 450 g.p.m. or a specific capacity of 9 g.p.m./ft., and a drawdown of 75 ft. after $2\frac{1}{2}$ hours of pumping at 614 g.p.m. or a specific capacity of 8 g.p.m./ft. A further increase of the pumping rate would probably decrease the specific capacity a little more, but it seems likely that 1000 g.p.m. could be obtained from the well with a pumping level of about 240 or 250 feet.

The well recovered to 115.7 feet (4.5 feet below s.w.l.) 45 minutes after the well had been pumped for $5\frac{1}{2}$ hours and then shut down. It was recovering at the rate of 1 ft. in twenty minutes when measurements were discontinued.

Table 1
City of Charles City
Well No. 6

Location: SENENW sec. 12, T. 95 N., R. 16 W.

Total depth: 1355 ft.

Contractor: Hoeg & Ames

Date drilled: January 11 - June 4, 1955

Casing data: 38'-10" of 26" (+2'-10"-- 36'), 359' at 20" (0-359) 519' of 16" (317-836), 15" open hole from 836-1355. casing cement grouted from 250'-359'.

Water level: Depth to water before pumping was 111.21 feet below the top of casing which was approximately 2' above l. s. d.

Test pump: Turbine powered by gas motor with belt drive. 197 feet of column and 8 feet of bowls.

Aquifer: Prairie du Chien, Jordan, and St. Lawrence.

Measurements: Discharge measurements were made by use of a tank equipped with a rectangular weir and "hook gage." Water level measurements were made by use of an electric line.

Observer: R. Gale McMurtrey.

Charles City
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| Time | Depth to water (ft.) | Temperature (deg. F) | GPM | Remarks |
|---|---|---|---|---|
| 10:10 | 108.61 | | | |
| 10:25 | 108.72 | | | |
| 10:47 | 108.85 | | | pump raised 1 ft. |
| 11:10 | 108.97 | | | |
| 11:30 | 109.09 | | | |
| 12:05 | 109.25 | | | |
| 12:51 | 122 | | | pump on |
| 12:58 | 131 | | 200 | speeded up a little |
| 1:05 | | | | pump off |
| 2:18 | 111.21 | | | |
| 2:40 | 111.21 | | | |
| 3:00 | 111.21 | | | |
| 3:15 | 111.21 | | | |
| 3:30 | 111.38 | | | pumped for 1 min. |
| 4:00 | | | | pump on |
| 4:02 | 137.09 | | | |
| 4:04 | 150.00 | | | |
| 4:05 | 152.04 | 52° | 425 | |
| 4:07 | 152.91 | | | |
| 4:08 | 153.28 | | | |
| 4:10 | 154.42 | | | |
| 4:11 | 154.90 | | 425 | |
| 4:13 | 156.40 | | | |
| 4:14 | 156.69 | | | |
| 4:16 | 157.19 | | | |
| 4:18 | 157.67 | | | |
| 4:20 | 158.13 | | 425 | |
| 4:22 | 158.30 | | | |
| 4:26 | 155.88 | | 403 | sandy water |
| 4:30 | 153.22 | | 380 | water milky |
| 4:34 | 155.24 | | 403 | |
| 4:38 | 156.19 | | 426 | |
| 4:42 | 156.70 | | | |
| 4:46 | 157.00 | | | water clearing |
| 4:53 | 158.00 | | 437 | a little |

Charles City 2 June 7, 1955

| Time | Depth to water (ft.) | Temperature (deg. F) | GPM | Remarks |
|---|---|---|---|---|
| 4:57 | | | 451 | |
| 5:00 | 158.76 | 52° | | slight odor |
| 5:05 | 159.54 | | | |
| 5:10 | 159.80 | | 451 | |
| 5:15 | 159.90 | | | |
| 5:25 | 160.13 | | | |
| 5:34 | | | | |
| 5:43 | 160.77 | | 460 | |
| 6:00 | 161.10 | | | |
| 6:20 | 161.78 | | | |
| 6:40 | | | 472 | |
| 7:00 | 161.87 | | | sampled |
| 7:13 | | | | increased speed of |
| 7:15 | 178.47 | | | pump |
| 7:16 | 180.46 | | | water cloudy |
| 7:17 | 181.31 | 52° | 614 | |
| 7:18 | 181.76 | | | |
| 7:19 | 182.11 | | | |
| 7:20 | 182.34 | | | |
| 7:23 | 182.73 | | | |
| 7:28 | 183.30 | | | |
| 7:30 | | | 614 | water cloudy |
| 7:35 | 183.55 | | | |
| 7:40 | 183.66 | 52° | | |
| 8:00 | 184.05 | | | |
| 8:02 | | | 614 | |
| 8:30 | 185.12 | | | |
| 9:00 | 185.82 | 52° | | |
| 9:15 | | | | |
| 9:18 | 186.19 | | 614 | |
| 9:24 | 186.09 | | | pump off |
| 9:25 | 140.32 | | | |
| 9:26 | 128.38 | | | |
| 9:27 | 122.93 | | | |
| 9:28 | 120.90 | | | |
| 9:29 | 119.90 | | | |
| 9:30 | 119.29 | | | |
| 9:31 | 118.90 | | | |
| 9:32 | 118.62 | | | |
| 9:34 | 118.20 | | | |
| 9:36 | 117.88 | | | |

| Time | Depth to water(ft.) | Temperature (deg. F) | GPM | Remarks |
|---|---|---|---|---|
| 9:38 | 117.61 | | | |
| 9:41 | 117.27 | | | |
| 9:44 | 116.98 | | | |
| 9:49 | 116.64 | | | |
| 10:09 | 115.69 | | | |