Rural Water Supplies in South Dakota: Buffalo County

Walter V. Searigh
*Cooperative Extension Service, South Dakota State College*

Elmer E. Meleen
*Cooperative Extension Service, South Dakota State College*

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Rural Water Supplies in South Dakota

BUFFALO County

January, 1940
Special Extension Circular
Number 47

Extension Service
South Dakota State College
Brookings, S. D.
RURAL WATER SUPPLIES
IN
SOUTH DAKOTA
BUFFALO COUNTY

BY
WALTER V. SEARIGHT
AND
ELMER E. MELEEN

PREPARED BY THE WORK PROJECTS ADMINISTRATION
AS A REPORT ON THE WELL SURVEY CONDUCTED
AS WORK PROJECTS ADMINISTRATION OFFICIAL PROJ-
ECT 665-74-3-126; SPONSORED BY THE EXTENSION
SERVICE AND THE EXPERIMENT STATION SOUTH DAK-
OTA STATE COLLEGE, IN COOPERATION WITH THE
STATE GEOLOGICAL SURVEY.

JANUARY 1940
FOREWORD

This study was first proposed as a project of the Mineral Resources Committee of the State Planning Board under the direction of the State Geological survey and undertaken as a Work Projects Administration project sponsored by the State Planning Board, and was continued under the Planning Board until that body was abolished July 1, 1939 by the State Legislature. At that time sponsorship was transferred to the South Dakota Agricultural Experiment Station and the State College Extension Service, South Dakota State College. Field work was begun October 1, 1938 and was practically completed by February 15, 1939. Workers were assigned in the several counties under the supervision and direction of the County Agricultural Agents and Field Supervisors who were employed by the Work Projects Administration. Questionnaires were mailed out from the offices of the County Agents and were checked and tabulated in these offices. The material was then forwarded to the central office for final tabulation and analysis under the direction of Elmer E. Meleen and Walter V. Searight.

Particular credit should be given to the individual County Agricultural Agents in the various counties of the state who arranged the contacts with the individuals from whom these data were collected, furnished a large portion of the necessary supplies for field work, and directed the workers engaged in collecting field data. Without this assistance in gathering basic data, this study could not have been conducted. The value of the report is therefore in direct proportion to the accuracy and adequacy of these basic data.
INTRODUCTION

PURPOSE

This report on rural water supplies of South Dakota has been prepared to present data recently made available on the types and the sources of water supply, exclusive of stream, lake and dam waters. The information presented is of importance to evaluate present supplies. It should also prove useful as a basis for further development of supplies where they are needed or become necessary. Further, it is hoped that the facts presented may prove of value in any program of water conservation.

SOURCES OF INFORMATION

Questionnaires were sent to all, or essentially all of the farmers of the state, asking for complete data on farm wells and supplementary supplies, with the exception of the supplies above noted. A most gratifying number returned questionnaires, actually 60.1% average for the entire state. The coverage is probably more than 60.1% since it is likely that many unanswered inquiries were those to farmers who were without wells, the type of supply emphasized in the questionnaires. The data thus obtained were supplemented with information contained in the files of the State Geological Survey, the office of the State Engineer, and reports of the United States Geological Survey. This supplementary information, together with that contained in questionnaires was used in making the well location maps included in this report.

PROCEDURE

All data from the questionnaires were tabulated and analyzed statistically by counties, which were made the areal units of study. Within the county, Acknowledgments - The authors wish especially to acknowledge and commend the conscientious assistance of Mr. E. L. Woodburn, Supervisor, for careful and painstaking supervision of statistical work. The authors also desire to express appreciation for the constant interest and support of this project by Mr. Bob Butts, Director of Research and Records Projects, South Dakota Work Projects Administration.
supplies were allocated as to kind on county maps. Since shallow waters are the most important source of rural supply in South Dakota, wells 200 feet deep and less were plotted on county maps from which maps indicating depths of wells by 50 foot intervals were made. Springs, shown on the well location map, and cisterns were also tabulated as important supplementary supplies, although the latter do not appear on maps or in the tables in this report.

PRESENTATION OF DATA

For convenience and utility, this report has been divided into sections each covering one county, and each county section bound separately. Each county report contains the following material wherever possible.

1. Well Location Map: This map shows the location of all wells and springs within the county, so far as information is now available. These have been plotted in such a manner that artesian and shallow wells can be differentiated readily by the reader. Artesian wells, where they occur, are divided into flowing and pumped. Artesian wells showing decreased flow and those reported as controlled are also indicated by symbols. Shallow wells are differentiated as adequate and inadequate, and dry holes as of 1938 are located. Wells from other sources of information other than questionnaires collected by this survey are shown in blue.

2. Shallow Well Map: This map shows, as accurately as possible, in 50 foot intervals, the depths at which shallow supplies are commonly obtained. Where shallow wells are abundant, as indicated by the well location map, the map is as accurate as the information on which it is based, but where such wells are sparsely distributed, errors are likely to occur. In many places reports of shallow wells are absent in which case the area has been left blank.

3. Table of Pumped Wells, from 0 to 200 feet (inclusive) in depth: This table shows minimum, maximum, and average depths of wells within the county, as reported in the questionnaires. Tabulations are by townships. The general character of the water, hard, medium, and soft, as reported by farm-
ers, and the number of wells suitable or unsuitable for drinking are shown
in this table. Further, the adequacy of supply, as indicated on the question-
naires, and use for irrigation are shown here.

4. **Table of Wells greater in depth than 200 feet:** Minimum, maximum,
and average depths are indicated. Character, reported as hard, medium or
soft is tabulated. Adequacy and use for irrigation are shown as in the pre-
ceding table.

5. **Table of flowing wells:** Minimum, maximum, and average depths are
shown together with general character and use for irrigation. The volume of
flow as reported, and the number of flowing wells reported as equipped with
control valves is also included in this table.

**SUMMARY OF STATE SUPPLIES**

In the entire state, a total of 46,479 wells were reported in response
to questionnaires, returned by 60.2% of the recipients. If those who did not
respond have a number of wells in proportion to those who reported, there are
approximately 80,000 wells in South Dakota. There are possibly many less than
this number since several counties with large numbers of wells returned over
75% of the questionnaires and since many farmers without wells did not reply
because they were not requested to do so in the formal questionnaire. Of the
wells reported, 16.2% are artesian, including both pumped and flowing wells.
Shallow wells are 83.8% of the wells reported. Wells from shallow sources
are thus obviously by far the most important means for obtaining water in
rural South Dakota.

Important supplementary supplies are cisterns and springs. Roughly,
there is more than one cistern to each 40 wells. Many springs are reported,
however, in counties with very few wells, so that in some localities they are
of considerable importance.
Buffalo County

Buffalo county is located in the southwestern part of eastern South Dakota. It is bounded on the north by Hyde and Hand counties, on the east by Jerauld county, on the south by Brule county and on the west by the Missouri river, which separates it from Lyman county. The county has an area of approximately 177 square miles.

![Map of South Dakota showing location of Buffalo county](image)

Buffalo county is mostly farmed, with about three fourths of the area, 74.1 per cent or 227,175 acres in farms. The farmed portion was divided into 304 farms averaging approximately 747 acres in each farm unit. Hay, corn, barley, wheat, rye and oats are the important field crops. Livestock raising is important, cattle, hogs and sheep being produced in the order named.

In a farm area where livestock is important, generally distributed sources of water are necessary. Supplies required are not necessarily great, but adequate and suitable supplies must be available at reasonably low cost in order to operate farms of the organization common in Buffalo county. The well location map of Buffalo county suggests that, for the most part, well water supplies are available and are widely distributed.

On the well location map of Buffalo county all wells which obtain water under pressure from artesian sands are shown in black and all other wells re-

*South Dakota Agricultural Statistics, Annual Report, 1937.*
LOCATION OF ARTESIAN AND SHALLOW WELLS IN BUFFALO COUNTY

ARTESIAN WELLS
- O FLOWING WELLS—STEADY OR INCREASING
- ● FLOWING WELLS—DECREASED FLOW
- X CEASED FLOWING
- □ PUMPED
- / CONTROLLED WELLS Ø Ø

SHALLOW WELLS
- O ADEQUATE SUPPLY
- ● INADEQUATE SUPPLY
- X DRY WELLS
- □ SPRINGS
- ○ WELLS FROM OTHER SOURCES
ported by questionnaires are shown in red as shallow wells regardless of depth. On all other maps, in tables and in the text of this report, shallow wells are those 200 feet or less in depth and all wells deeper than 200 feet are deep wells, unless otherwise stated.

Questionnaires returned from farmers and owners of Buffalo county were 72.8 per cent of the recipients. These data are an excellent basis for this report.

DEPTH AND DISTRIBUTION

Wells are widely distributed over Buffalo county although, for the most part, they are distributed sparsely. Over the county those reported average one to every four square miles or approximately nine to a township of 36 sections. Some parts of the county, however, have many more than the average and some fewer. One township, T.107N., R.73W., reports approximately three wells to two square miles. Five townships report a well to every two square miles. Two townships report only one well to five square miles, and one, T.107N., R.71W., has one to nine square miles. Three, T.107N., R.70W., T.108N., R.71W., T.106N., R.72W., reported only two wells each. One township, a small fractional township, T.108N., R.73W., reported no wells.

Most of the rural wells of Buffalo county are shallow wells, 200 feet or less in depth. Eighty one per cent of all wells reported were shallow. From two townships, T.107N., R.70W., and T.107N., R.73W., all wells reported were shallow, (the latter is a small fractional township), and three townships, T.107N., R.69W., T.108N., R.69W., and T.106N., R.70W., report more than 90 per cent of the wells to be shallow. In addition, six other townships reported 3/4 or more of the wells to be shallow wells. These are listed as follows:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>106N</td>
<td>70W</td>
<td>107N</td>
<td>72W</td>
</tr>
<tr>
<td>106</td>
<td>71</td>
<td>107</td>
<td>69</td>
</tr>
<tr>
<td>107</td>
<td>69</td>
<td>108</td>
<td>68</td>
</tr>
</tbody>
</table>

From two townships, T.106N., R.68W., and T.106N., R.69W., somewhat more than
BUFFALO COUNTY

SHALLOW WELLS (0-200FT)
DEPTH AT WHICH SUPPLIES ARE COMMONLY OBTAINED

- 0-50 FT
- 50-100 FT
- 100-150 FT
- 150-200 FT

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N

MILES
0 2 4 6
half the wells reported, 58.9 per cent and 52.6 per cent respectively, were shallow. No shallow wells were reported from T.108N., R.71E., and T.108N., R. 72N., or T.108N., R.73W. The latter, however, is a small, fractional township.

Somewhat more than three fifths, 60.9 per cent, of the shallow wells reported were 50 feet or less in depth and about one fifth, 20.3 per cent, in addition are 100 feet or less in depth. Thus, more than four fifths, 81.2 per cent, of all shallow wells reported from Buffalo county are 100 feet or less in depth. The remainder were 10.1 per cent from 100 to 150 feet and 8.7 per cent from 150 feet to 200 feet.

The shallow well map outlines the areas of shallow wells on 50 foot depth intervals and further indicates the prevailing use of wells of lesser depths, wherever possible.

Deep wells, both pumped and flowing, are important sources of water in Buffalo county. They are approximately one fifth, 19.1 per cent, of the wells reported. In some townships of very few wells they are the only kind of wells reported. In several townships they are from 5.3 to 47.4 per cent even though numerous wells were reported. In order to show the relative importance of these wells they have been tabulated below together with minimum, maximum and average depths, number, percent of total wells, and the number which were flowing, township by township:

<table>
<thead>
<tr>
<th>Twp. Rge.</th>
<th>Number Deep Flowing Wells</th>
<th>Percent of Total Wells</th>
<th>Min. Depth</th>
<th>Max. Depth</th>
<th>Average Depth</th>
<th>Deep Flowing Wells</th>
</tr>
</thead>
<tbody>
<tr>
<td>106N 68W</td>
<td>7</td>
<td>41.2%</td>
<td>830</td>
<td>1020</td>
<td>993</td>
<td>1</td>
</tr>
<tr>
<td>106 69</td>
<td>9</td>
<td>47.4%</td>
<td>839</td>
<td>1042</td>
<td>907</td>
<td>8</td>
</tr>
<tr>
<td>106 70</td>
<td>1</td>
<td>12.5%</td>
<td>900</td>
<td>900</td>
<td>900</td>
<td>1</td>
</tr>
<tr>
<td>106 71</td>
<td>1</td>
<td>12.5%</td>
<td>1130</td>
<td>1130</td>
<td>1130</td>
<td>1</td>
</tr>
<tr>
<td>107 68</td>
<td>1</td>
<td>5.3%</td>
<td>1130</td>
<td>1130</td>
<td>1130</td>
<td>1</td>
</tr>
<tr>
<td>107 69</td>
<td>3</td>
<td>13.3%</td>
<td>1140</td>
<td>1280</td>
<td>1233</td>
<td>1</td>
</tr>
<tr>
<td>107 71</td>
<td>1</td>
<td>25.1%</td>
<td>900</td>
<td>900</td>
<td>900</td>
<td>1</td>
</tr>
<tr>
<td>107 72</td>
<td>1</td>
<td>25.1%</td>
<td>900</td>
<td>900</td>
<td>900</td>
<td>1</td>
</tr>
<tr>
<td>108 68</td>
<td>4</td>
<td>11.8%</td>
<td>208</td>
<td>260</td>
<td>231</td>
<td>1</td>
</tr>
<tr>
<td>108 69</td>
<td>2</td>
<td>23.3%</td>
<td>1200</td>
<td>1360</td>
<td>1280</td>
<td>1</td>
</tr>
<tr>
<td>108 70</td>
<td>1</td>
<td>6.3%</td>
<td>1200</td>
<td>1200</td>
<td>1200</td>
<td>1</td>
</tr>
<tr>
<td>108 71</td>
<td>2</td>
<td>100.0%</td>
<td>1100</td>
<td>1130</td>
<td>1115</td>
<td>2</td>
</tr>
<tr>
<td>108 72</td>
<td>2</td>
<td>100.0%</td>
<td>1240</td>
<td>1317</td>
<td>1278</td>
<td>1</td>
</tr>
<tr>
<td>35</td>
<td>Avg. 19. Avg. 983 Avg 1049 Avg 1015</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ARTESIAN AREAS 1938

BUFFALO COUNTY

FLOWING WELLS

PUMPED WELLS

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Most of the flowing wells are deep, but one shallow one 150 feet deep was reported. Fifteen flowing wells are reported to be deep wells. Other flowing wells are deep and range in depths downward to 1317 feet. (Table 3). The flow was reported to vary from one to 20 gallons per minute. Four were reported to be equipped with a control valve.

These wells are artesian wells and the areas in which they occur appear on the artesian map of Buffalo county, and the relation of these areas to the artesian areas of the state is shown on the artesian map of South Dakota.

CHARACTER OF WATER

The character of well waters of Buffalo county has been determined from the responses of farmers to questionnaires. Each farmer was asked whether he considered the water from his well to be hard, moderately hard, or soft and whether the water was satisfactory for drinking. Although analyses of farm waters, the most satisfactory basis for determination of quality, are rarely available, usage is probably a fairly good criterion. Detailed determinations, however, must await laboratory analyses.

Well waters of Buffalo county are predominantly hard, whatever the locality or depth. The averages of all wells reported for the county included 45.2 per cent hard, 46.3 per cent moderately hard and 8.5 per cent soft. Thus, 91.5 per cent of all wells were reported hard or moderately hard.

Shallow wells, possibly as a rule, produce water somewhat less hard than the average since the reports were hard 38 per cent, moderately hard 53.6 per cent and soft 8.5 per cent, of the shallow wells reported. A single shallow flowing well reported was said to supply soft water. Deep pumped wells were reported 65 per cent hard, 20 per cent moderately hard, and 15 per cent soft. Flowing wells apparently are more pronounced in tendency toward hardness with 86.7 per cent hard and 13.3 per cent moderately hard.

Only eight per cent of the shallow wells were reported unsatisfactory
ARTESIAN AREAS OF SOUTH DAKOTA
1938

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P 665-74-3-426
WP 3636
for drinking, 25 per cent of the deep pumped wells and 31.3 per cent of the deep flowing wells were reported unsuitable for drinking. These data suggest that deep water sources supply much water which is not potable.

ADEQUACY OF SUPPLY

Farmers were also asked whether or not wells furnished supplies of water sufficient for current needs. Changes in farm management, amount of precipitation, and other factors modify adequacy from time to time. Shallow wells, however, were reported to be adequate, for the most part, 12.7 per cent being reported to supply water insufficient for current needs. This percentage is less than in many other areas in eastern South Dakota. Deep pumped wells were reported adequate except in T.110N., R.66W., T.107N., R.69W., and T.108N., R.70W., (see table 2). The deep flowing wells were reported generally adequate, but 13.3 per cent were reported inadequate.

IRRIGATION

Well waters are used in many places in Buffalo county to irrigate small farm garden plots. Twenty two shallow wells were thus used to irrigate 4 3/8 acres varying in size from 1/8 acre to one acre. A shallow flowing well was used to irrigate 1/2 acre, seven deep flowing wells to irrigate 1 1/4 acres in plots of 1/8 to 3/4 acres in size and two deep pumped wells were used to irrigate 1/2 acre.

SUPPLEMENTARY WATER SUPPLIES

Springs and cisterns are important supplementary supplies in Buffalo county. Although only six springs were reported, these are in areas where wells are very sparse. Two were reported hard, two moderately hard and one soft. One was reported unsatisfactory for drinking, but was used to water stock. The other five were used for both stock and domestic purposes.

In any area where much of the well water is hard or where well waters
are unsatisfactory for drinking, cisterns are important supplementary supplies. A total of 59 were reported from Buffalo county, roughly one cistern to three wells. They are used generally for laundry and for drinking water in many places.
### Buffalo County

#### Table 1.

**Data on Pumped Wells from 0 to 200 Feet (incl.) in Depth**

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of Wells</th>
<th>Depth of Wells</th>
<th>Character of Water</th>
<th>Adequacy of Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twp. Rgs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>106 68</td>
<td>10</td>
<td>10</td>
<td>70</td>
<td>23</td>
</tr>
<tr>
<td>106 69</td>
<td>10</td>
<td>58</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>106 70</td>
<td>7</td>
<td>20</td>
<td>58</td>
<td>32</td>
</tr>
<tr>
<td>106 71</td>
<td>7</td>
<td>16</td>
<td>60</td>
<td>27</td>
</tr>
<tr>
<td>107 68</td>
<td>18</td>
<td>11</td>
<td>137</td>
<td>52</td>
</tr>
<tr>
<td>107 69</td>
<td>20</td>
<td>10</td>
<td>90</td>
<td>32</td>
</tr>
<tr>
<td>107 70</td>
<td>2</td>
<td>25</td>
<td>45</td>
<td>35</td>
</tr>
<tr>
<td>107 71</td>
<td>3</td>
<td>25</td>
<td>52</td>
<td>39</td>
</tr>
<tr>
<td>107 72</td>
<td>3</td>
<td>16</td>
<td>40</td>
<td>26</td>
</tr>
<tr>
<td>107 73</td>
<td>3</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>108 68</td>
<td>29</td>
<td>10</td>
<td>190</td>
<td>73</td>
</tr>
<tr>
<td>108 69</td>
<td>22</td>
<td>12</td>
<td>135</td>
<td>67</td>
</tr>
<tr>
<td>108 70</td>
<td>15</td>
<td>20</td>
<td>100</td>
<td>49</td>
</tr>
<tr>
<td>Total</td>
<td>149</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** No wells reported for the following townships and ranges in this group: T.106 R.72; T.108 R.71, 72.
<table>
<thead>
<tr>
<th>LOCATION</th>
<th>Number of Wells</th>
<th>DEPTH OF WELLS</th>
<th>CHARACTER OF WATER</th>
<th>ADEQUACY OF SUPPLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twp.</td>
<td>Age.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>68</td>
<td>6</td>
<td>900</td>
<td>1080</td>
</tr>
<tr>
<td>106</td>
<td>69</td>
<td>1</td>
<td>1048</td>
<td>1048</td>
</tr>
<tr>
<td>106</td>
<td>71</td>
<td>1</td>
<td>1130</td>
<td>1130</td>
</tr>
<tr>
<td>107</td>
<td>68</td>
<td>1</td>
<td>1130</td>
<td>1130</td>
</tr>
<tr>
<td>107</td>
<td>69</td>
<td>3</td>
<td>1140</td>
<td>1280</td>
</tr>
<tr>
<td>108</td>
<td>65</td>
<td>4</td>
<td>208</td>
<td>260</td>
</tr>
<tr>
<td>108</td>
<td>69</td>
<td>2</td>
<td>1200</td>
<td>1360</td>
</tr>
<tr>
<td>108</td>
<td>70</td>
<td>1</td>
<td>1200</td>
<td>1200</td>
</tr>
<tr>
<td>108</td>
<td>72</td>
<td>1</td>
<td>1240</td>
<td>1240</td>
</tr>
</tbody>
</table>

Total 20  

13 4 3 11 5 16 4 2 1/2

NOTE: No wells reported for the following townships and ranges in this group: T.106 R.70, 72; T.107 R.70, 71, 72, 73; T.108 R.71.
### BUFFALO COUNTY
**Table 3.**
**DATA ON FLOWING WELLS**

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>Number of Wells</th>
<th>DEPTH OF WELLS</th>
<th>CHARACTER OF WATER</th>
<th>ADEQUACY OF SUPPLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twp. 106 Rge. 68</td>
<td>1</td>
<td>880</td>
<td>880</td>
<td>1</td>
</tr>
<tr>
<td>106 69</td>
<td>8</td>
<td>859</td>
<td>965</td>
<td>1</td>
</tr>
<tr>
<td>106 70</td>
<td>1</td>
<td>900</td>
<td>900</td>
<td>1</td>
</tr>
<tr>
<td>107 71</td>
<td>1</td>
<td>900</td>
<td>900</td>
<td>1</td>
</tr>
<tr>
<td>107 72</td>
<td>1</td>
<td>900</td>
<td>900</td>
<td>1</td>
</tr>
<tr>
<td>108 68</td>
<td>1</td>
<td>150</td>
<td>150</td>
<td>-</td>
</tr>
<tr>
<td>108 71</td>
<td>2</td>
<td>1000</td>
<td>1130</td>
<td>2</td>
</tr>
<tr>
<td>108 72</td>
<td>1</td>
<td>1317 1317</td>
<td>1317</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td></td>
<td></td>
<td><strong>13</strong></td>
</tr>
</tbody>
</table>

**NOTE:** No wells reported for the following townships and ranges in this group: T. 106 R. 71, 72; T. 107 R. 68, 69, 70; T. 107 R. 73; T. 108 R. 69, 70.
Buffalo County Well Notes

The following are pertinent remarks quoted from questionnaires returned by farmers and are included opinions of the water situation as expressed by the individual farmers and must be so applied.

T.106N., R.71W. Sec. 15
32 feet:
"This is a driven well, much difficulty is experienced on this farm, on account of quicksand, or river sand."

T.107N., R.69W. Sec. 10
1280 feet:
"This well did not furnish water in 1934, and was cleaned out. There was a brass pop off valve in the casing, out of a pump cylinder, it was about 20 ft. from the bottom of the well, since it was cleaned, it has worked good. If it stands for a day or two, it pumps rust for an hour or two."

T.107N., R.69W. Sec. 23
26 feet:
"Something has got into well, so is not safe to use for drinking purposes at present, am hauling water, will be O K when I install a new casing."

T.107N., R.69W. Sec. 24
16 feet:
"One well is 16 ft. deep, and is excellent water and lots of it, except that once in a while in summer it will slow up for a short period. But well water 100 head the year around. The other well is 30 ft. deep, and the water supply limited, only average about 10 barrels a day, and is not very good to drink, but all right for cooking."

T.108N., R.68W. Sec. 3
100 feet:
"I have lived on this farm for two years, and the water stream is too small to water 100 head of livestock, in hot weather successfully. I have used an engine day and night at times. By doing this the well could be pumped dry. There is a spring on the place, which could be developed by an experienced man. Also a good location for a dam."

T.108N., R.68W. Sec. 6
150 feet:
"This well is a flowing well, but not an artesian, the water is clear, does not have an odor, has a control valve, it flows 30 gal. per min. if open but keep it checked so it flows 6 gal. per min."

T.108N., R.68W. Sec. 24
170 feet:
"Yes we had difficulties, we drilled about 7 holes, till we had a well. It would have been a good well, but the fine sand, blocked up the well before we had casings in."

T.108N., R.70W. Sec. 1
1200 feet:
"Shallow wells have quicksand, and need quite frequently to be cleaned out. The artesian well we now have needs cleaning out or flushed out. The water rises to 100 ft., but the cylinder is placed 160 ft. down, with 14 ft. below it; has a 2 in. cylinder, will suck air when more than 2 1/2 gal. per min. is pumped."
<table>
<thead>
<tr>
<th>Township, Range, Section</th>
<th>Depth (feet)</th>
<th>Description</th>
</tr>
</thead>
</table>
| T.108N., R.70W., Sec. 8  | 45          | "This well was at one time 25 ft. from creek. Now the creek is cutting in closer, nearly destroying the well. Windmill was destroyed in 1934. The bend in the creek is so sharp, that the early spring water cuts the rip rap out each year."
| T.108N., R.70W., Sec. 15 | 20          | "The well is around 40 rods from the buildings, and the cistern water is not fit for house use. There is 3 other holes near the buildings, some are caved in. But I hear the water had a bad taste. The present well is on the bank of Elm Creek."
| T.108N., R.72W., Sec. 4  | 1240        | "When drilling for water the first time, struck rock at 800 feet and the next well would not flow, this water is at times salty, and has a queer taste, but never smells bad. We use it for drinking, and stock."
EXTENSION SERVICE
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Brookings, South Dakota