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Report of Investigations 112

SELENIUM IN SOUTH DAKOTA WATERS

by

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INTRODUCTION

Previous Work

This publication serves as a final report to the completion report *Selenium in South Dakota Ground and Surface Waters* (project number A-066-SDAK) by Stach and others (1978). Listed below are the changes which were made in finalizing this completion report:

1. Additional data are included.

2. All data were reviewed by legal location, and only those data were used that had as a minimum -- township, range and section number.

3. If more specific legal location information was available, it was used in the final report.

Overview

Selenium (Se) was discovered by the Swedish chemist, Berzelius, in 1817. This element exists in a number of valence states, the most common being -2, 0, +4, and +6. Its chemical and physical properties resemble those of sulfur. However, some of its compounds are very toxic, much more so than its sulfur analogs.

Since the discovery in the early 1930's that selenium in vegetation was the source of the so-called "alkali disease," considerable work has been done on the distribution of the element in the soils of the state. Most of the work has been concentrated in specific problem areas and the geological units known to be seleniferous. These units are:

> Glacial deposits: Selenium concentrations vary greatly in the glacial deposits of eastern South Dakota. The element has been found in nearly all of eastern South Dakota, the amount in any specific locality depending on the bedrock from which the glacial material was derived (Searight and Moxon, 1945).
>
> Cretaceous formations: The most consistently seleniferous Cretaceous formation units in South Dakota are the Pierre Shale and the Niobrara Formation, with the highest known concentrations, 845 micrograms per liter (ug/L), occurring in the latter (South Dakota Agricultural Experiment Station, unpublished data). In the Pierre Shale, the highest concentrations occur in the Sharon Springs Member near the base of the formation, and in the Mobridge and upper Virgin Creek Members near the top of the formation (Moxon and others, 1950).
>
> Miscellaneous formations: Several other formations are in need of some further study, since they are locally seleniferous: the Ogallala Group (Pliocene), the White River Group (Oligocene), the Tongue River and Ludlow Formations (Paleocene),

and the Hell Creek Formation (Late Cretaceous) (Pipiringos and others, 1965; Denson and Gill, 1965).

Selenium Toxicity

Biologists gave the element very little attention until the early 1930's, when it was found to exist naturally in some soils at concentrations high enough to render plants growing in these soils toxic to livestock (Moxon, 1937). Their interests were further stimulated when it was found to be an essential dietary element, often deficient in feeds produced in a number of areas of the world (Subcommittee on Selenium, 1971).

Because of its toxicity, 10 ug/L has been recommended to the Environmental Protection Agency (EPA) as the maximum acceptable concentration of selenium in drinking waters for man, or 50 ug/L for livestock waters (Environmental Studies Board, 1973). These concentrations are far below what has been demonstrated in experimental animals to produce signs of toxicity. Indeed, waters have not been shown to produce selenium toxicosis in the field, with one possible exception, which was poorly documented (Anonymous, 1962).

While South Dakota does have some areas where soils produce vegetation with toxic concentrations of selenium, waters of the state have not thus far been implicated in any animal poisonings. However, a report on Nebraska waters (Engberg, 1973) and data collected in some preliminary studies by the South Dakota Geological Survey (SDGS) and the South Dakota Agricultural Experiment Station (SDAES) suggested that there might be a number of waters exceeding the 10 ug/L concentration, with some exceeding the 50 ug/L limit.

In view of this, it was felt that a more extensive study of selenium in South Dakota waters was warranted in order to determine how often the standards chosen may be exceeded and whether or not some reconsideration of the drinking-water standard for man might be advisable.

Sample Collection

Samples for this study were collected during the period 1977-9. More than 1,000 samples were examined. While the collection was random, an effort was made to obtain samples that were representative of ground waters in the state, however, a few surface water samples are included in this report. Figure 1 shows sampling density to be greater in the eastern part of the state, and since a majority of the samples were taken from domestic wells this reflects the greater population. Aquifers sampled ranged in age from Precambrian to Recent, and depths of the wells ranged to several thousand feet.

Where necessary, suspended matter was removed by filtration through a 0.45 micron membrane filter. The samples were then placed in polyethylene bottles and preserved by adding 2-3 milliliters of concentrated nitric acid to each liter of water. Samples used to determine the form of selenium

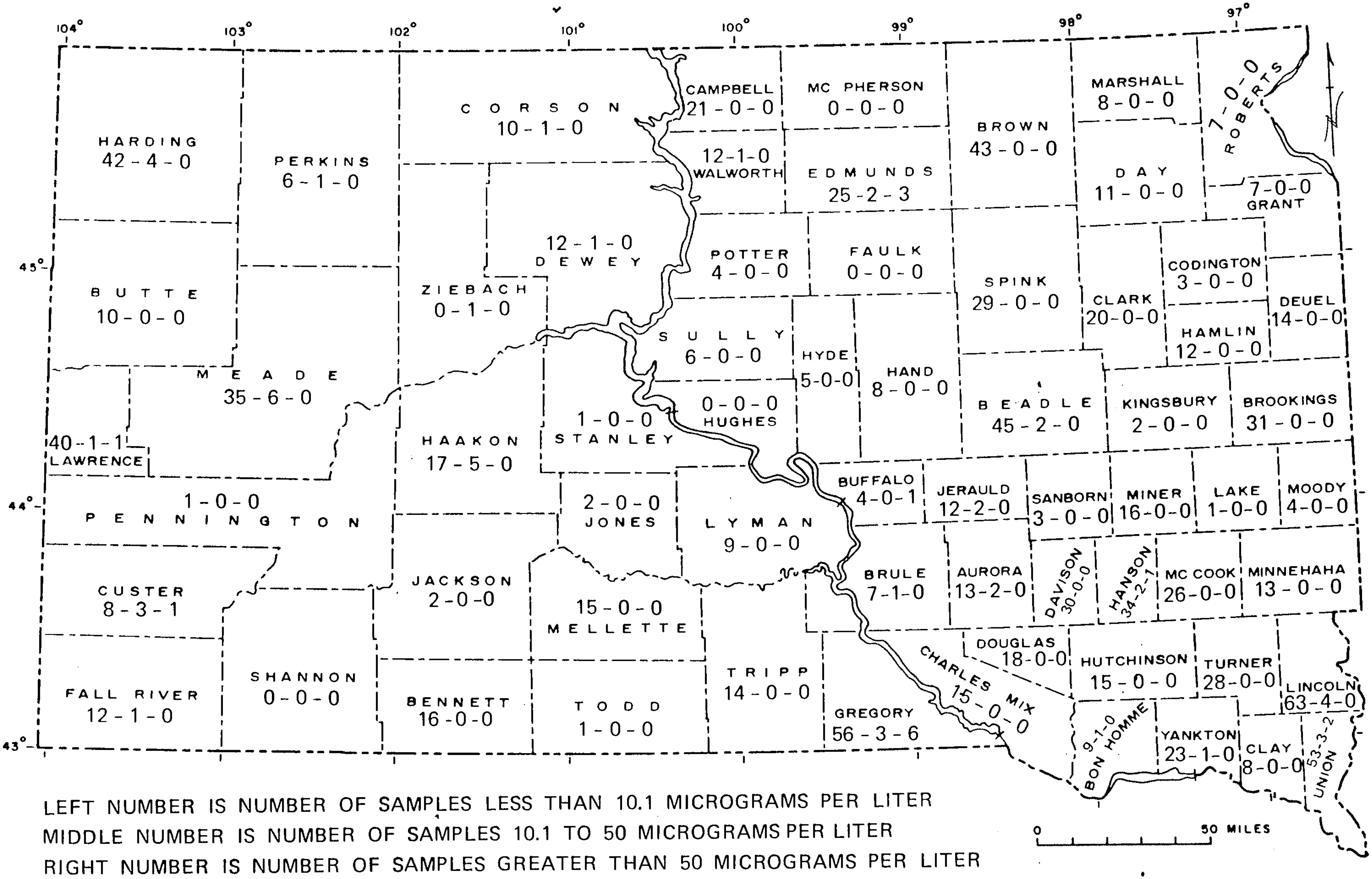

Figure 1. Selenium concentrations in South Dakota waters.

TABLE 1. Comparison of methods of concentrating water on their selenium contents

Sample	Dissolved solids (mg/L)	Selenium content (ug/L)		
		Method (1)	Method (2)	Method (3)
W-9	9010	121	128	130
W-11	4800	37	38	40
W-10	650	7.6	8.7	8.7
W-12	8500	4.3	5.1	4.3
W-8	2670	0.9	0.7	0.5

had no preservative added, but they were kept cold and processed within a few days. Samples used for nitrate-nitrogen determinations were preserved by adding approximately 40 milliliters of formaldehyde to each liter of water.

Methods of Analysis

Selenium analyses were made by a modification of the fluorometric method of Olson and others (1975). The modification involved concentration of samples containing less than 50 ug/L selenium prior to analysis. Three methods of concentration were studied and compared:

1. evaporation on a steam bath of an appropriate aliquot, made alkaline to phenolphthalein with 25 percent NaOH, and transfer of the residue to a digestion flask with concentrated HNO_3;

2. evaporation on a rotary evaporator at about 60°C of an appropriate aliquot, neutralized as above in a 100 milliliter micro-Kjeldahl flask; or

3. treatment as in (2) above with the addition of 50 milligrams sucrose prior to evaporation.

The results obtained by the three methods are summarized in table 1.

The various methods of concentration gave similar results, the data in table 2 suggesting that the differences were due entirely to differences in the actual measurement of the element. The data in this table were obtained using method (3) for concentrating the sample.

Recovery studies were also made. Samples were evaporated by method (3) after adding selenium to one sample of a pair. The results are shown in table 3. These results, and those for methods of concentrating and for reproducibility, indicate that the method is adequate for this type

TABLE 2. Analytical precision for selenium determination

Sample	Volume of sample (ml)	Selenium content (ug/L) with relative standard deviation[1]
W-17	10	37 ± 5%
W-18	10	26 ± 3%
W-15	25	7.1 ± 3%
W-16	25	6.2 ± 20%
W-14	25	5.7 ± 14%

[1] Data are for three determinations made on separate days over a period of 2 weeks.

of study. In view of these studies, it was decided that method (3) would be used for the concentration of samples. Aliquots of 25 milliliters were used for analysis, with lesser amounts for samples containing more than 15 ug/L selenium. Single determinations were used where values of 3.0 ug/L selenium or less were obtained, and duplicate determinations were made on samples found to contain more than 3.0 ug/L. All analyses are reported to two significant figures.

Some of the samples were analyzed for nitrate-nitrogen. The method used was based on the reduction of nitrate to nitrite with cadmium followed by a spectrophotometric determination of the nitrite (Anonymous, 1974). Nitrite-nitrogen is thus included in the results.

Statistical analyses were made according to Steel and Torrie (1960).

TABLE 3. Recovery of added selenium from various waters

Sample	Dissolved solids (mg/L)	Selenium added		Selenium found		Recovery %
		Form	ug/L	In water ug/L	In water with added selenium ug/L	
W-1	2670	$SeO_3^{=}$	8.0	0.5	8.7	102
W-1	2670	$SeO_4^{=}$	8.0	0.5	8.7	103
W-10	650	$SeO_3^{=}$	16.0	8.3	25.1	105
W-10	650	$SeO_4^{=}$	16.0	8.3	24.3	100
LP no. 2	3830	$SeO_4^{=}$	32.0	35.8	66.4	95
LP no. 2	3830	$SeO_4^{=}$	40.0	35.8	76.8	102

Acknowledgments

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CHEMICAL FORM OF SELENIUM IN WATERS

Surface and ground waters of South Dakota are, with few exceptions, alkaline. According to Geering and others (1968), the inorganic selenium in these waters therefore should occur as Se^{+4} (selenite) or, more likely, as Se^{+6} (selenate). However, the selenite ion has a strong affinity for certain soil colloids (Gile and Lakin, 1941), and this limits the likelihood that it would predominate in waters where soil colloids are abundant. Some waters of this area contain hydrogen sulfide, and selenium may also be present as the selenide. However, because of its instability, selenide may not be detected in samples that have been standing for any period of time after drawing. Organic forms of the element might also occur, especially in surface waters, but probably not in significant amounts.

The determination of selenite, selenate and total selenium in some selected waters was undertaken. The results of this type of study are important in evaluating the biological effects of the selenium in waters, the development of analytical techniques, and the design of techniques for its removal, should this become necessary.

The method used for identifying and measuring the selenite and selenate selenium in waters is based on that of Shrift and Virupaksha (1965). A 12 x 75 millimeter column of AG 2 x 10, 100-200 mesh resin (Biorad) was treated with 75 milliliters of 4 N HCl, which flowed through by gravity. The column was then washed exhaustively with glass-distilled water to remove the unadsorbed chloride ions. From 25 to 150 milliliters of water containing at least 0.3 ug of naturally occurring unlabelled Se and spiked with 10,000 counts per minute (cpm) each of $^{75}SeO_3^=$ and $^{75}SeO_4^=$ was added to the column and allowed to percolate through. (The labelled, radioactive selenite and selenate were added to verify the position of the peaks.) The column was washed with 50 milliliters of glass-distilled water, the effluent being collected for counting. Then, 50 milliliters of 0.05 N HCl was passed through the column and the effluent was collected in 3 milliliter fractions. This was followed by 50 milliliters of 1.5 N HCl, the effluent again being collected in 3 milliliter fractions. The flow rate for the column was about 1.5 milliliters/minute.

The various fractions were counted with a gamma spectrometer and analyzed for selenium by the fluorometric method. The data are summarized in figure 2. They show a very close correlation between radioactivity and selenium contents for the tubes under the selenate peak (r = 0.996). A similar correlation has been found for selenite in waters spiked with this form of the element. It should be noted that the initial effluent and water wash contained less than 0.01 percent of the

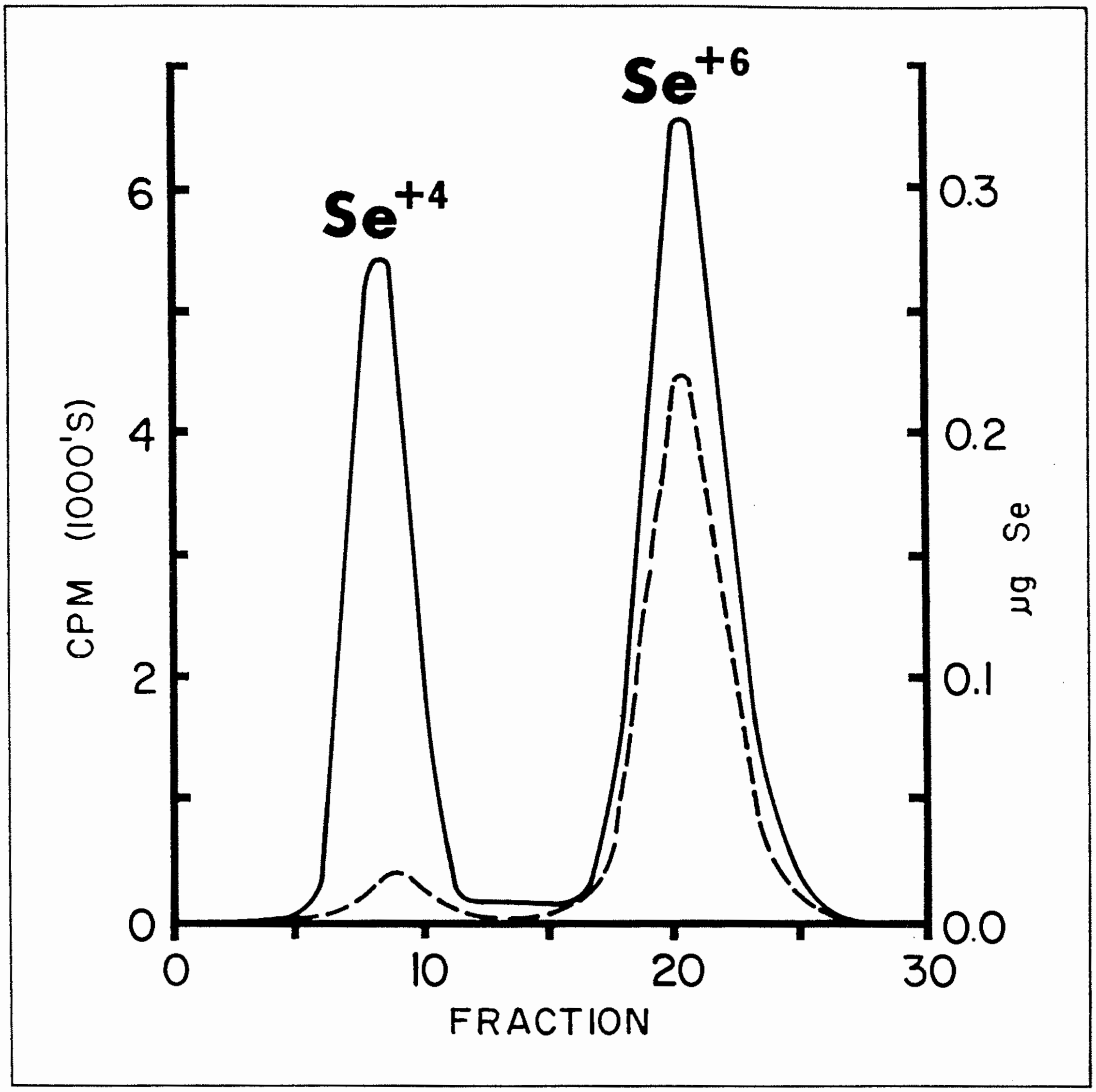

Figure 2. Measurement of selenite and selenate Se in water with the aid of radioisotopes.

—————— Radioactivity of various fractions in thousands of counts per minute CPM

– – – – – – μg Se measured fluorometrically

TABLE 4. Selenate and selenite selenium in some South Dakota waters

Sample	Selenium content (ug/L)	% of total Se present as Selenate	% of total Se present as Selenite	Selenium recovered (% of total)
Well water	1.9	88	15	103
Missouri River	2.4	68	35	103
Well water [1]	34	86	6	92
Well water	44	96	4	100
Surface water [2]	3370	104	0	104

[1] Same data as that used for figure 2

[2] A highly saline water in a small pond that had nearly evaporated to dryness

counts placed on the column, the 0.05 N HCl eluted the selenite, and the 1.5 N HCl eluted the selenate (Shrift and Virupaksha, 1965).

For several other waters, a similar procedure was used, except that after locating the selenite and selenate peaks by counting, the tubes under each peak were combined for fluorometric analysis. The data obtained are shown in table 4. Data for the example shown in figure 2 are also included. The data in this table show selenate to be strongly predominant. Except in the case of the Missouri River water, only a very small portion of the total selenium was present as selenite. The recovery data suggest that selenides or organic selenium comprise only a small portion of the total, if they are present at all. These data are in agreement with those of Cutter (1978) for sea water at La Jolla, California. However, Cutter found lake and marsh waters, as well as rain, in that area to contain selenium largely as selenite.

While this part of the study was rather limited, it nevertheless suggests that methods of analysis or of removal of the element from South Dakota waters should be based upon the assumption that all or most of the element occurs in the form of selenate.

SELENIUM IN GROUND WATERS

Alluvial Aquifers

Alluvium is found along nearly all of the drainages in South Dakota. Its composition is highly variable, depending upon the material from which it is derived. Alluvial aquifers are usually thin (about 5 to 20 feet) and they yield quantities of water ranging from less than a gallon to several hundred gallons a minute, depending on specific local conditions. Water quality in these aquifers is dependent on local conditions and ranges from dissolved solids concentrations of a few hundred parts per million (ppm) to a salt content that renders the water unfit for consumption.

Four factors appear to control the selenium concentration in alluvial aquifers.

1. Recharge to the alluvial aquifer by adjacent bedrock aquifers.

2. Selenium in the materials that compose the alluvial aquifer.

3. Recharge by, and selenium concentration of, the stream flowing on the alluvium.

4. Direct recharge by precipitation falling on the alluvium.

The selenium concentrations for 108 samples from alluvial aquifers (including terrace gravels) were analyzed in this study and ranged from less than 1.0 to 53 ug/L (app. A). Only one of the samples exceeded the 50 ug/L concentration limit set for livestock, and 13 (12 percent) contained more than the 10.0 ug/L limit for municipal supplies (table 5).

Outwash Aquifers

Outwash deposits are found along and east of the Missouri River. The deposits were formed during melting of the glacial ice sheets and consist primarily of sand and gravel. Although irregular in shape and size, collectively, the outwash aquifers form one of the major sources of water in the state. They are the source for nearly all irrigation wells and for a large number of municipal and private wells. Yields from the outwash aquifers range from a few to over 2,000 gallons per minute. Water quality varies widely from excellent to very poor and varies not only between aquifers, but with position within the aquifer.

Selenium concentrations for 399 samples from outwash deposits ranged from less than 1.0 to 182 ug/L (app. A); 16 (4 percent) exceeding the 10 ug/L limit and 4 (1 percent) exceeding the 50 ug/L limit (table 5).

Till

Till is found only east of the Missouri River in South Dakota. Most deposits consist mainly of clay with sand, gravel and boulders in widely varying proportions. Locally thin "streaks" of sand and gravel may occur. Till usually has low water yields, so it is normally used when it is the only practical source of water. Most frequently, this is when the glacial drift is relatively thin (less than 100 feet). The wells often penetrate through the till into the bedrock. Thus, the producing horizon is often the joints in the bedrock as well as the till.

TABLE 5. Frequency distribution of selenium concentrations in surface and ground waters

Water sources	Number of samples having selenium concentrations (ug/L) of <2.0	2.0-10.0	10.1-25.0	25.1-50.0	>50.0	Total samples
Alluvial aquifers	53	42	11	1	1	108
Outwash aquifers	290	93	8	4	4	399
Till	13	7	2	2	1	25
Ogallala group	32	16	2	0	1	51
White River group	2	7	1	0	0	10
Ludlow aquifer	9	2	2	2	0	15
Hell Creek aquifer	0	1	1	0	0	2
Fox Hills aquifer	19	1	0	0	0	20
Pierre Shale	9	5	2	0	5	21
Niobrara aquifer	25	12	2	0	0	39
Carlile aquifer	19	3	0	0	0	22
Artesian system	112	14	0	0	0	126
Sioux Quartzite aquifer	13	3	0	0	0	16
Surface waters	86	32	3	1	1	123
Unknown	67	30	3	1	2	103
TOTALS	749	268	37	11	15	1080

Water from till is usually of poor quality, most of the wells being used only for livestock watering. Of the 25 samples analyzed, selenium concentrations ranged from less than 1 to 120 ug/L (app. A). Five samples (19 percent) contained more than 10 ug/L and 1 (4 percent) exceeded the 50 mg/L limit (table 5).

Ogallala Group

The Ogallala Group (Pliocene), consisting of light-colored sand and silt, forms an important aquifer in southwest and south-central South Dakota. Depth of production ranges from surface springs to about 200 feet, with typical well depths mostly from 50 to 100 feet. Properly constructed wells in the Ogallala Group are capable of yielding several hundred gallons per minute of good- to excellent-quality water.

Selenium concentrations in 51 samples were found to range from less than 1.0 to 60 ug/L (app. A), with 3 (6 percent) exceeding 10 ug/L and 1 (2 percent) exceeding 50 ug/L (table 5).

White River Group

The White River Group (Oligocene) is a locally significant aquifer in southwest South Dakota, with some production from erosional remnants capping buttes in the northwest corner of the state. It consists of light-colored clay, channel sandstones, and limestone lenses. Water quality, depth of production, and production are similar to those for the Ogallala Group.

Selenium concentrations in 10 samples ranged from 1.1 to 22 ug/L (app. A) with one sample exceeding the 10 ug/L limit (table 5).

Ludlow, Hell Creek, and Fox Hills Formations

These geologic units are restricted to the northwest corner of South Dakota. Yields from these sandstone aquifers are typically 5 to 20 gallons per minute, and the water quality is highly variable.

The Ludlow Formation (Paleocene) has a maximum thickness of 350 feet and lies conformably on the Hell Creek Formation. It is composed of light-colored sandstones and clays interbedded with many thin lignite beds. Of 15 samples analyzed, the selenium concentration ranged from less than 1.0 to 33 ug/L (app. A), with 4 (27 percent) exceeding the 10 ug/L limit (table 5).

The Hell Creek Formation (Late Cretaceous) consists of clays and sands which are dull brown in color. Its maximum thickness is 550 feet. Only two waters from this formation were analyzed; the values obtained were 9.0 and 17 ug/L (app. A).

The Fox Hills Formation (Late Cretaceous) is composed of yellow to red sandstone interbedded with clays and silts. It has a maximum thickness of 200 feet. Of 20 samples analyzed, none exceeded 3.2 ug/L in selenium content (app. A).

Pierre Shale

The Pierre Shale (Late Cretaceous) ranges in composition from black shale to marl. The dominant lithology is medium dark-gray shale.

Pierre Shale at or near the surface, is capable of yielding 1 to 5 gallons per minute of generally poor quality water to large diameter bored wells. Better recovery is obtained where the shale has a covering of more permeable material such as gravel, loess, or sand. In these cases, the overlying material probably serves as a source of recharge to the shale or as a primary production source. Although the Pierre Shale is not quantitatively very important as a water source, economically it is often very important. In many areas where it lies at or near the surface it is the only available source other than a deep artesian system (in which it may cost thousands of dollars to develop a well).

Quite often, wells in the Pierre are drilled through some alluvium, and production is from the alluvium as well as from the Pierre. Assigning a producing horizon (see app. A) in these cases calls for very subjective judgment. The present classification is based on what is considered the dominant factor. If it was presumed that nearly all of the production was from alluvium, the well was assigned to the alluvial aquifers (please refer to previous discussion). However, if it was presumed that the shale was making a significant contribution to the well, the source was classified as Pierre Shale.

The 21 samples of water from the Pierre Shale ranged in selenium concentration from less than 1.0 to 610 ug/L, with 7 (33 percent) exceeding the 10 ug/L level and 5 (24 percent) exceeding the 50 ug/L level (table 5 and app. A).

Niobrara Formation

The Niobrara Formation (Late Cretaceous) is a medium-gray speckled chalk or marl which weathers to a white or buff color and is locally heavily jointed and fractured. It thickens from approximately 120 feet in eastern South Dakota to about 300 feet in the western part of the state.

The Niobrara is capable of yielding large volumes of water. To date, however, production has been largely from domestic and stock wells because of the generally poor water quality.

The selenium concentrations of 39 samples ranged from less than 1.0 to 15 ug/L (app. A), with 2 (5 percent) exceeding the 10 ug/L limit (table 5).

Carlile Aquifers

The Carlile Formation (Late Cretaceous) is a dark-gray shale with several sandstone layers. The thickest of these layers is the Codell Sandstone Member. This member reaches a maximum thickness of approximately 100 feet and in South Dakota is restricted to the eastern part of the state. It is used for domestic and stock wells and typically yields 10 to 20 gallons per minute of rather poor quality water. In western South Dakota, the Turner Sandy Member occurs near the middle of the Carlile Formation and is capable of yielding significant quantities of water only in and adjacent to its outcrop on the flanks of the Black Hills.

Of 22 samples from the Carlile, none exceeded 2.6 ug/L of Se.

Artesian System

As used in this report the artesian system is defined to include the Madison Formation (Mississippian Limestone), the Minnelusa Formation (Pennsylvanian sandstone, limestone, and shale), the Sundance Formation (Jurassic sandstone), the Inyan Kara Group (Early Cretaceous sandstones) which includes the Fall River Formation, and the Dakota Formation (Late Cretaceous). The reader interested in the hydrology of this system is referred to Schoon (1971) for details.

The artesian system is the most areally extensive aquifer in South Dakota. East of the Missouri River, the Dakota Formation supplies water to many municipalities and domestic and stock wells. The importance of this unit is illustrated in Sanborn County, where over 600 wells have been drilled into the Dakota. West of the Missouri River, this formation thins, and the other units play an increasingly important role as water sources. The major drawbacks to the artesian system are its depth and its generally poor water quality.

Of 126 samples obtained from this system, none contained more than 10 ug/L of Se (see app. A and table 5). In appendix A, these samples are listed by formation or group name.

Sioux Quartzite

The Sioux Quartzite (Precambrian) is a locally significant aquifer in eastern South Dakota, 30 miles either side of a line from Sioux Falls to Mitchell. Well-water production is from joints and fractures in the quartzite and is usually between 5 to 10 gallons per minute. Water quality is erratic, but is often very poor. The determining factor in water quality appears to be how much glacial till the water infiltrates before it reaches the quartzite (the thinner the drift cover, the better the water quality).

Of 16 samples from the quartzite, the highest selenium value was 3.3 ug/L (table 5 and app. A).

SELENIUM IN SURFACE WATERS

Surface Waters

Surface waters were included in this study, because they reflect the selenium content of the rocks the water has flowed across and of the aquifers that are discharging to them.

The quality of surface waters fluctuates not only seasonally, but also geographically. The quality tends to be very good during the spring runoff, and then deteriorates for the remainder of the year.

Selenium concentrations in the 123 surface water samples examined ranged from less than 1.0 to 120 ug/L (app. A). Five (4 percent) exceeded the 10 ug/L limit for municipal supplies and only one exceeded the 50 ug/L limit recommended for livestock supplies (table 5).

Miscellaneous

In addition, other samples have been analyzed for which details of the water source is unknown (table 5 and app. A). Of a total of 103 samples, 68 contained less than 2.0 ug/L selenium, 6 exceeded the 10 ug/L limit and 2 exceeded the 50 ug/L limit.

DISCUSSION AND CONCLUSIONS

Selenium analyses were made on 1,080 samples. Of the total, 123 were surface water samples and 103 samples were from an unknown water source. Overall, selenium concentrations varied between less than 1.0 to 610 ug/L. Among the samples for which location data were not available, one contained 3,370 ug/L.

Of the 977 samples from known origins, 57 (6 percent) exceeded the drinking water standard of 10 ug/L and 13 (1 percent) exceeded the livestock water standard of 50 ug/L. Except for the Hell Creek Formation, from which only two samples were obtained, the highest percentage of waters exceeding the 10 ug/L limit was found for those from the Pierre (33 percent), with the next highest from the Ludlow (27 percent). The Pierre also yielded a high percentage (24 percent) of waters exceeding the 50 ug/L limit.

A possible trend toward high selenium values in shallow wells may be indicated. Of the 51 samples, ground-water samples of known origin, with selenium concentrations greater than 10 mg/L, 30 were from wells of known depth. Seventeen of the 30 (57 percent) were from wells less than or equal to 50 feet deep. Nine of the 30 (30 percent) were from wells between 50 to 100 feet deep. Three (10 percent) were from wells between 100 and 150 feet deep and one (3 percent) was from a well between 150 and 200 feet deep.

The recommended daily dietary allowance of selenium for an adult man is not less than 50 nor more than 200 ug/day (Food and Nutritional Board, 1979). Water containing as much as 25 ug/L might, itself, provide the minimum allowance, but would most likely not provide more than about 10 percent of the maximum allowance. Since a large percentage of the waters analyzed contained in excess of the 10 ug/L limit, and in view of the dietary recommendations and the report of Tsongas and Ferguson (1977) that they could find no health effects on individuals consuming waters containing 50 to 125 ug Se/L, it seems that some consideration should be given to raising the Se limit of 10 ug/L set on water for human consumption.

Since the addition of up to 300 ug/kg Se of diet has been authorized for livestock feeds (Food Drug Administration, 1987), it would seem that the 50 ug/L limit for waters may also be too restrictive and should be reconsidered. Particularly in states like South Dakota, where water is often difficult to obtain and unnecessarily restrictive standards might well become the cause of hardship for some. However, a recent reevaluation of this matter (Palmer and others, 1989) suggests that the present standard for livestock is proper.

In addition to the selenium analyses, 359 of the samples were also analyzed for nitrate-nitrogen concentration (NO_3-N). About 72 percent of the samples analyzed for both selenium and NO_3-N were found to contain less than 2.0 ug/L selenium; about 72 percent contained less than 1 mg/L NO_3-N. Thus, a sample taken at random had about three chances in four of containing low amounts of either of these two components. If a value above either of these concentrations is arbitrarily classed as anomalous, then 63 percent of the samples with anomalous (>2 ug/L) selenium values also has anomalous (>1 mg/L) NO_3-N values and 61 percent of those with anomalous NO_3-N values also had anomalous selenium values. Therefore, it appears there may be a relationship between nitrate and selenium in South Dakota waters. The correlation coefficient, based on the data for samples analyzed for both selenium and nitrate-nitrogen and using a value of 0.0 mg/L NO_3-N for those samples with <0.5 mg/L and of 0.0 ug/L for those with <1.0 ug/L Se, was 0.246 ($p<0.01$). Chi square for the data was found to be >4.6 ($P<.01$). These statistical comparisons appear to offer some confirmation for the possible relationship of nitrate and selenium.

This possible relationship was found to carry into areas where it was thought that very low selenium values would be found because the surface rocks contain minor amounts of the element.

Of two example areas, one is an outwash plain in Union County and another in the Dallas-Fairfax aquifer in Gregory County. In both cases, the aquifers are unconfined, are composed of sand from the surface down to bedrock, and are shallow (a depth to water table of 10 to 30 feet). Thus, oxidizing conditions probably occur from the surface to the water table.

Oxidizing conditions could be responsible for an interrelationship between selenium and nitrate-nitrogen. The preceding discussion on chemical form showed that selenium in ground water is dominantly selenate ($SeO_4^{=}$), the highest oxidation state of the element. Since nitrate is the highest oxidation state of nitrogen, it seems consistent that it should occur with selenate. Both selenate and nitrate are readily leached and difficult to "fix." However, further work is needed to verify and explain this possible relationship if, indeed, it does exist.

Another seeming anomaly noticed in the results is the relatively low selenium content of ground water from the Niobrara Formation. Our own and previous research (Moxon and others, 1950) has found the sediment of the Niobrara to be the most consistently seleniferous formation in the state, with a nominal average of 20 to 30 parts per million (ppm) and local concentrations as high as 845 ppm of the element. In view of this, it seemed at the outset of this study that this formation would yield waters of high selenium concentrations. However, concentrations were generally low. Since nearly all of the wells were at moderate depth (100 to 300 feet), it may be that the lack of oxidizing conditions are responsible for the low values in water.

Obviously, there is need for much additional study of the selenium in natural waters, but the results presented here suggest that the occurrence of waters exceeding to 10 ug/L limit for selenium is not rare in this state.

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APPENDIX A

Selenium and nitrate-nitrogen concentrations in waters from various locations and aquifers in South Dakota

Data are listed by legal location within each county. Locations within the section are indicated by the letters a, b, c, and d according to the following:

a = NE¼ b = NW¼ c = SW¼ d = SE¼

The first letter following the section number indicates the quarter within the section, the second letter the quarter within that quarter, etc. Thus, the NE¼SE¼SW¼NW¼ of section 16 would be 16bcda (note reversed order). An R indicates that the location is on the Sisseton reservation. A number after the section quarter letters indicates that there is more than one well at that location.

* The selenium value is the result of a single analysis or is an average for samples containing more than 3 ug/L selenium and analyzed in duplicate or triplicate.

** F indicates a flowing well.

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
		AURORA COUNTY			
420	T101N R64W sec. 17cccc	Outwash	1.3	2.8	---/ 86
1092	T102N R66W sec. 4bcbb	-------	1.7	-----	---/ 345
894	T104N R63W sec. 3b	Niobrara	9.7	-----	---/ 173
865	T104N R63W sec. 6b	Carlile	2.6	-----	---/ 206
246	T104N R63W sec. 9aaaa	Niobrara	3.1	<.5	---/ 98
1101	T104N R63W sec. 11daad	-------	2.2	-----	---/ 125
895	T104N R63W sec. 20a	Niobrara	4.5	-----	---/ 147
866	T104N R64W sec. 11c	Niobrara	4.1	-----	---/ 180
909	T104N R64W sec. 11c	Niobrara	3.4	-----	---/ 180
1098	T105N R63W sec. 17cccc	-------	2.8	-----	---/ 135
893	T105N R63W sec. 25c	Niobrara	1.0	-----	---/ 145

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
892	T105N R63W sec. 33d	Niobrara	15	-----	---/ 120
1102	T105N R63W sec. 36bbbb	-------	3.3	-----	---/ 159
896	T105N R64W sec. 23b	Niobrara	5.9	-----	---/ 257
897	T105N R64W sec. 35	Niobrara	13	-----	---/ 166
		BEADLE COUNTY			
731	T109N R59W sec. 9cddc	Outwash?	<1.0	0.8	---/----
803	T109N R59W sec. 20cccb	Dakota?	<1.0	<0.5	---/----
576	T109N R60W sec. 14dddd	Outwash	<1.0	-----	---/ 105
1008	T109N R63W sec. 36a	Outwash	2.4	-----	---/ 95
899	T109N R64W sec. 35c	Outwash	<1.0	-----	---/ 125
815	T110N R59W sec. 4bbac	Outwash	<1.0	<0.5	---/ 80
802	T110N R59W sec. 8aaaa	Outwash	<1.0	<0.5	---/ 72
446	T110N R59W sec. 8aaaa	Outwash	1.8	<0.5	---/ 13
749	T110N R59W sec. 15ccba	Dakota	<1.0	0.5	---/ 800-900
568	T110N R59W sec. 16bbbb	Outwash	1.1	<0.5	---/ 66
804	T110N R59W sec. 16bbbb	Outwash	<1.0	<0.5	---/ 65
463	T110N R59W sec. 16bbbb	Outwash	<1.0	-----	22/ 68
445	T110N R59W sec. 16bbbb	Outwash	<1.0	-----	22/ 68
782	T110N R59W sec. 16ddaa	Dakota	<1.0	<0.5	---/ 800-900
707	T110N R59W sec. 16ddac	Dakota	<1.0	0.5	---/ 900
714	T110N R59W sec. 16ddbb	Outwash	<1.0	0.5	---/ 72
798	T110N R59W sec. 21aacd	Outwash	<1.0	<0.5	---/ 80
752	T110N R59W sec. 21abca	Outwash	1.1	0.5	---/ 90

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
454	T110N R59W sec. 29dddd	Outwash	<1.0	<0.5	---/ 79
817	T110N R59W sec. 29dddd	Outwash	<1.0	<0.5	---/ 79
569	T110N R59W sec. 29dddd	Outwash	<1.0	-----	---/ 82
779	T110N R59W sec. 32abad	Outwash	<1.0	<0.5	---/ 70
747	T110N R59W sec. 32abba	Outwash	<1.0	0.9	---/ 68
461	T110N R60W sec. 10dd	Outwash	<1.0	<0.5	15/----
452	T110N R60W sec. 15bc	Outwash	1.9	<0.5	19/----
468	T110N R61W sec. 5cd	Surface	<1.0	<0.5	---/----
449	T110N R61W sec. 5cdcc	Surface	1.4	<0.5	---/----
466	T110N R61W sec. 5cdcc	Dakota?	<1.0	<0.5	---/----
469	T110N R61W sec. 5cdcc	Surface	<1.0	<0.5	---/----
----	T110N R61W sec. 6cda	Surface	15.0	-----	---/----
455	T110N R61W sec. 8bbda	Surface	<1.0	<0.5	---/----
453	T110N R61W sec. 8bcab	Surface	<1.0	<0.5	---/----
1005	T110N R62W sec. 31dddd2	Outwash	<1.0	-----	---/ 88
1013	T111N R59W sec. 18aaaa	Outwash	<1.0	-----	45/ 126
448	T111N R59W sec. 29dddd	Outwash	7.9	-----	19/ 35
575	T111N R59W sec. 29dddd	Outwash	<1.0	-----	---/ 38
811	T111N R59W sec. 29dddd	Outwash	6.3	<0.5	---/ 35
1034	T111N R60W sec. 23dddd1	Outwash	2.0	-----	---/ 35
1001	T111N R60W sec. 23dddd2	Outwash	<1.0	-----	---/ 148
1000	T111N R60W sec. 33abbb	Outwash	<1.0	-----	---/ 113
1011	T112N R59W sec. 30dddd	Outwash	3.3	-----	---/ 49

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
456	T112N R60W sec. 9bbbb	Outwash	<1.0	<0.5	15/ 88
578	T112N R60W sec. 9bbbb	Outwash	1.4	-----	---/ 86
450	T112N R61W sec. 1cccc	Outwash	1.2	<0.5	---/ 128
565	T112N R61W sec. 1cccc	Outwash	<1.0	-----	---/ 126
861	T113N R61W sec. 6dddd	Outwash	1.8	-----	---/ 62
1146	T113N R 63W sec. 2bbbb	-------	12	-----	---/ 71

BENNETT COUNTY

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
966	T36N R34W sec. 18cccc	Ogallala	1.2	-----	---/ 80
967	T36N R36W sec. 22dddd	White River	2.4	-----	---/ 265
963	T36N R37W sec. 11bbbb	White River	3.9	-----	---/ 322
1134	T36N R38W sec. 10addd	-------	<1.0	-----	---/ 450
961	T36N R40W sec. 2abaa	White River	2.8	-----	---/ 405
965	T37N R33W sec. 17cccc	Ogallala	<1.0	-----	---/ 184
1133	T37N R34W sec. 9addd	-------	<1.0	-----	---/ 96
968	T37N R35W sec. 20bccd	Ogallala	1.3	-----	---/ 166
971	T37N R35W sec. 21dddd	Ogallala	2.6	-----	---/ 122
969	T37N R35W sec. 31aaaa	White River	2.3	-----	---/ 305
973	T37N R38W sec. 28aaaa	White River	1.1	-----	---/ 405
972	T37N R39W sec. 17dddd	White River	4.7	-----	---/ 320
1131	T37N R39W sec. 25bbbb	-------	<1.0	-----	---/ 416
1110	T37N R39W sec. 34bbbb	-------	2.2	-----	---/ 250
970	T38N R35W sec. 16cccc	White River	2.4	-----	---/ 266

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
964	T38N R35W sec. 23baaa	White River	1.5	-----	---/ 263
		BON HOMME COUNTY			
125	T93N R59W sec. 4abbb	Niobrara	1.5	-----	F/ 180
126	T93N R59W sec. 5bbaa	Till?	1.5	-----	---/----
74	T93N R60W sec. 1baaa	Niobrara	2.1	-----	---/ 180
171	T94N R58W sec. 24bdbb	Outwash	1.5	-----	---/ 40
124	T94N R59W sec. 33ccdd	Carlile	1.5	-----	---/ 180
123	T94N R59W sec. 33dcdd	Dakota	<1.0	-----	---/----
127	T95N R61W sec. 16adbb	Niobrara	1.3	-----	---/ 320
129	T95N R61W sec. 21acdd	Niobrara	1.6	-----	288/ 365
130	T96N R61W sec. 16aadd	Till	36	-----	---/ 60
128	T96N R61W sec. 33ddcc	Carlile	<1.0	-----	---/ 500
		BROOKINGS COUNTY			
718	T109N R47W sec. 20ab	Outwash	4.2	-----	---/----
1084	T109N R51W sec. 11dddd	Outwash	1.1	-----	---/ 50
913	T110N R47W sec. 29cccc	Outwash	<1.0	-----	---/ 162
911	T110N R48W sec. 36bccb	Outwash	<1.0	-----	---/ 140
1067	T110N R49W sec. 15bbbb	Outwash	2.3	-----	---/ 20
1083	T110N R49W sec. 20aaaa	Outwash	2.7	-----	---/ 20
1075	T110N R49W sec. 33cccc	Outwash	<1.0	-----	---/ 20
----	T110N R50W sec. 5cbcb	-------	<1.0	-----	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
1065	T110N R50W sec. 18bbbb	Outwash	1.0	-----	---/ 35
1068	T110N R51W sec. 11aaaa	Outwash	1.2	-----	---/ 20
1073	T110N R51W sec. 11cccc	Outwash	2.5	-----	---/ 35
1080	T110N R51W sec. 16aaaa	Outwash	1.2	-----	---/ 50
1076	T110N R51W sec. 23aaad	Outwash	1.1	-----	---/ 20
1082	T110N R51W sec. 36cccc	Outwash	1.3	-----	---/ 40
1066	T111N R50W sec. 17dddd	Outwash	<1.0	-----	---/ 54
1072	T111N R50W sec. 17dddd	Outwash	<1.0	-----	---/ 18
1069	T111N R50W sec. 30dddd	Outwash	1.1	-----	---/ 50
411	T111N R51W sec. 4bbbb	Outwash	<1.0	<0.5	---/ 66
408	T111N R51W sec. 10cccc	Outwash	3.8	0.8	---/ 25
1168	T111N R51W sec. 12cdda	-------	1.3	-----	---/ 22
918	T112N R49W sec. 6aaaa	Outwash	<1.0	-----	---/ 112
920	T112N R49W sec. 16bbbb	Outwash	<1.0	-----	---/ 99
405	T112N R50W sec. 5ccdd	Outwash	2.5	0.7	---/ 36
914	T112N R50W sec. 13dddd	Outwash	4.6	-----	---/ 35
1079	T112N R50W sec. 18dcdc	Outwash	1.5	-----	---/----
1159	T112N R50W sec. 30cbbc	-------	1.7	-----	---/ 52
409	T112N R51W sec. 9bbaa	Outwash	<1.0	<0.5	---/ 52
406	T112N R51W sec. 20bbbb	Outwash	1.9	0.9	---/ 79
1163	T112N R51W sec. 24aaaa	-------	<1.0	-----	---/ 40
1158	T112N R51W sec. 25aaaa	-------	<1.0	-----	---/ 33
1171	T112N R51W sec. 35dddd	-------	2.2	-----	---/ 36

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
		BROWN COUNTY			
209	T121N R63W sec. 17dccc	Inyan Kara	1.5	-----	900/1400
----	T121N R65W sec. 2	-------	1.8	-----	---/ 55
----	T121N R65W sec. 2	-------	1.5	-----	---/----
198	T121N R65W sec. 6aaaa	Inyan Kara	4.0	-----	---/1500
235	T121N R65W sec. 6aaaa	Till	1.9	-----	---/ 40
----	T121N R65W sec. 9	-------	2.7	-----	F/1819
----	T121N R65W sec. 15	-------	2.1	-----	---/----
----	T121N R65W sec. 16	-------	8.1	-----	---/----
172	T121N R65W sec. 18dada	Dakota?	<1.0	-----	---/----
----	T121N R65W sec. 20	Surface	4.2	-----	---/----
197	T121N R65W sec. 20add	Surface	1.1	-----	---/----
254	T121N R65W sec. 27bbbb1	Outwash	<1.0	-----	---/ 46
252	T121N R65W sec. 27bbbb2	Outwash	1.0	-----	---/ 126
164	T121N R65W sec. 31ccbb	Inyan Kara	<1.0	-----	---/1200
1050	T121N R65W sec. 1aaaa1	Outwash	1.4	-----	40/----
185	T122N R63W sec. 20cccc	Dakota	<1.0	-----	---/1100
196	T122N R63W sec. 27cbcc	Surface	1.1	-----	---/----
192	T122N R63W sec. 32bbaa	Dakota	1.2	-----	---/ 850
203	T122N R64W sec. 13bbdd	Surface	1.0	-----	---/----
165	T122N R65W sec. 18abaa	Surface	<1.0	-----	---/----
158	T122N R65W sec. 18dcdd	Till	<1.0	-----	50/ 65
206	T122N R65W sec. 18dcdd	Inyan Kara	1.6	-----	---/1400

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
170	T122N R65W sec. 31dadd	Dakota	1.2	-----	---/1130
236	T123N R60W sec. 13ddcc	Dakota	<1.0	-----	10/ 990
208	T123N R61W sec. 3aabb	Dakota	1.6	-----	---/----
205	T123N R61W sec. 20cccc	Inyan Kara	2.4	-----	---/1100
226	T123N R61W sec. 22ddcc	Dakota	<1.0	-----	---/----
160	T123N R61W sec. 26baba	Dakota	<1.0	-----	F/ 900
182	T124N R62W sec. 31dada	Dakota	1.1	-----	---/----
183	T124N R63W sec. 34cbcc	Dakota	3.8	-----	F/ 950
230	T124N R65W sec. 23ddda	Surface	1.0	-----	---/----
260	T125N R63W sec. 16aaaa	Outwash	<1.0	-----	---/ 57
211	T125N R64W sec. 3dadd	Surface	2.3	-----	---/----
1046	T126N R61W sec. 5cccc	Outwash	2.0	-----	---/ 65
161	T126N R62W sec. 2baaa	Surface	1.3	-----	---/----
255	T127N R61W sec. 20cdcd	Outwash	<1.0	-----	---/ 163
232	T127N R64W sec. 14bccc	Surface	1.3	-----	---/----
200	T127N R65W sec. 26cccd	Surface	1.1	-----	---/----
1044	T128N R61W sec. 1baab	Outwash	2.1	-----	---/ 76
1042	T128N R61W sec. 12bbbc	Outwash	2.2	-----	---/ 74
1045	T128N R61W sec. 19bbcc	Outwash	1.7	-----	---/ 79
210	T128N R61W sec. 29aabb	Surface	<1.0	-----	---/----
194	T128N R65W sec. 20bdaa	Surface	2.4	-----	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
		BRULE COUNTY			
216	T101N R70W sec. 12bbaa	Dakota	1.3	-----	120/1070
297	T102N R70W sec. 2ddbc	Dakota	<1.0	-----	30/1000
224	T102N R70W sec. 26dccc	Dakota	1.1	-----	---/1000
310	T103N R69W sec. 1dbdb	Dakota	<1.0	-----	80/ 960
233	T103N R69W sec. 11baaa	Outwash	2.8	-----	---/ 126
----	T104N R66W sec. 10ad	Surface	1.3	-----	---/----
295	T104N R68W sec. 35dd	Dakota	<1.0	0.5	---/1050
1047	T104N R69W sec. 31bbcb	Outwash	16	-----	---/ 165
		BUFFALO COUNTY			
244	T106N R65W sec. 11aaba	Outwash	3.6	-----	---/ 25
1039	T106N R69W sec. 32dddd	Outwash	<1.0	-----	---/ 85
243	T107N R68W sec. 14bbbb	Outwash	4.0	2.0	---/ 73
1026	T108N R68W sec. 17aaaa	Outwash	150	-----	---/ 115
1037	T108N R68W sec. 27cccc	Outwash	<1.0	-----	---/ 65
		BUTTE COUNTY			
1089	T8N R2E sec. 22bbcd	Minnelusa	10	-----	---/----
14	T8N R5E sec. 24acab	Alluvium	1.8	1.8	---/----
51	T8N R5E sec. 24caab	Alluvium	3.1	<0.5	---/----
48	T8N R5E sec. 24cabd	Surface	3.6	0.8	---/----
10	T8N R5E sec. 24dbbc	Alluvium	4.3	<0.5	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
510	T8N R5E sec. 25baba	Surface	<1.0	-----	---/----
368	T9N R5E sec. 25dccc	Inyan Kara	<1.0	-----	---/2600
----	T9N R5E sec. 35	-------	1.1	-----	---/ 20
34	T10N R2E sec. 14abbb	Surface	9.4	-----	---/----
32	T11N R3E sec. 33babb	Surface	2.8	-----	---/----
		CAMPBELL COUNTY			
885	T125N R74W sec. 18bbbb	Outwash	<1.0	-----	---/ 267
890	T125N R74W sec. 24aaaa	Outwash	1.4	-----	---/ 196
867	T125N R75W sec. 32bbbb	Outwash	1.0	-----	---/ 38
864	T125N R76W sec. 1cccc	Outwash	1.8	-----	---/ 66
872	T125N R76W sec. 20bbbb	Outwash	<1.0	-----	---/ 266
919	T126N R74W sec. 19bbbb	Outwash	<1.0	-----	---/ 303
916	T126N R75W sec. 26cccc	Outwash	<1.0	-----	---/ 174
214	T126N R75W sec. 30dccc	Till	4.6	-----	40/ 65
186	T126N R75W sec. 30dccc	Pierre	<1.0	-----	45/ 130
189	T126N R76W sec. 21dddd	Pierre	1.1	-----	---/ 18
921	T126N R76W sec. 22aaaa	Outwash	<1.0	-----	---/ 35
191	T126N R76W sec. 22adbb	Outwash	<1.0	-----	F/ 120
199	T126N R76W sec. 23adaa	Pierre	1.3	-----	60/ 80
212	T126N R76W sec. 23adaa	Till	6.1	-----	15/ 21
213	T126N R76W sec. 24cbbb	Pierre	1.0	-----	---/ 60
912	T126N R76W sec. 32aaab	Outwash	<1.0	-----	---/ 262

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
204	T126N R77W sec. 24bccc	Pierre	1.9	-----	70/ 100
215	T126N R77W sec. 26aabb	Outwash	1.2	-----	F/ 135
917	T127N R76W sec. 32cccc	Outwash	<1.0	-----	---/ 288
332	T127N R77W sec. 2	Outwash	4.7	12	13/ 20
923	T128N R77W sec. 32bbbb	Outwash	<1.0	-----	---/ 221
		CHARLES MIX COUNTY			
1164	T96N R63W sec. 20aaab	-------	1.7	-----	---/ 183
879	T97N R62W sec. 31dddd	Outwash	4.0	-----	---/ 227
1169	T97N R63W sec. 26aaaa	-------	1.0	-----	---/ 204
1176	T97N R63W sec. 33aaaa1	-------	2.4	-----	---/ 185
1154	T97N R63W sec. 33aaaa2	-------	5.8	-----	---/ 55
889	T97N R66W sec. 5dddd	Outwash	1.1	-----	---/ 225
886	T98N R63W sec. 31dddd	Outwash	1.8	-----	---/ 225
315	T98N R68W sec. 6dacc	Dakota	<1.0	-----	200/ 960
322	T98N R68W sec. 7dcdd	Till	1.6	-----	80/ 160
320	T98N R68W sec. 8dcdd	Dakota	<1.0	-----	150/1000
323	T99N R69W sec. 27cccc	Dakota	<1.0	-----	75/ 900
326	T99N R69W sec. 28bacc	Pierre	1.3	-----	6/ 20
318	T99N R69W sec. 29dccc	Pierre	<1.0	-----	---/ 60
316	T99N R69W sec. 29dccc	Pierre	9.6	-----	---/ 60
222	T100N R70W sec. 12ccba	Dakota	<1.0	-----	50/ 965

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
		CLARK COUNTY			
953	T113N R57W sec. 22baba	Outwash	<1.0	-----	---/ 81
944	T114N R57W sec. 17aaaa	Outwash	1.4	-----	---/ 42
947	T114N R57W sec. 20dddd	Outwash	<1.0	-----	---/ 54
247	T114N R59W sec. 9aaaa	Outwash	<1.0	-----	---/ 66
1126	T115N R57W sec. 7cdcd	-------	<1.0	-----	---/ 37
816	T115N R57W sec. 18cacc	Surface	<1.0	-----	---/----
241	T115N R58W sec. 6dddd1	Outwash	1.3	2.7	---/ 157
242	T115N R58W sec. 17baaa	Outwash	1.6	-----	---/ 146
819	T116N R57W sec. 19aaad	Outwash	<1.0	-----	---/ 80
1125	T116N R57W sec. 30bbbb	-------	1.4	-----	---/ 38
698	T116N R57W sec. 30bbc	Surface	<1.0	-----	---/----
738	T116N R57W sec. 30bccb	Outwash	6.0	-----	---/ 52
841	T116N R57W sec. 31cccc	Outwash	2.6	-----	---/ 35
945	T117N R57W sec. 10cccc	Outwash	<1.0	-----	---/ 150
942	T117N R59W sec. 5dddd1	Outwash	<1.0	-----	---/ 66
951	T117N R59W sec. 5dddd2	Outwash	<1.0	-----	---/ 133
954	T117N R59W sec. 11bbbb	Outwash	1.4	-----	---/ 993
943	T117N R59W sec. 23cccc	Outwash	2.3	-----	---/ 89
952	T118N R59W sec. 4aaaa	Outwash	1.4	-----	---/ 166
789	T119N R56W sec. 14cbda	-------	<1.0	-----	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
		CLAY COUNTY			
67	T92N R52W sec. 14cbbb	Surface	1.5	-----	---/----
63	T92N R52W sec. 14cbbb	Surface	<1.0	-----	---/----
62	T95N R51W sec. 1ddba	Dakota	3.5	-----	---/ 630
28	T95N R51W sec. 2daaa	Niobrara	1.7	-----	---/----
56	T95N R51W sec. 14aabb	Till	10	-----	57/ 63
1178	T95N R52W sec. 26bbbb	-------	1.1	-----	---/ 51
53	T95N R53W sec. 27dccc	Dakota	2.9	-----	200/ 600
58	T95N R53W sec. 32abbb	Niobrara	1.6	-----	---/ 80
		CODINGTON COUNTY			
1094	T116N R53W sec. 13bbba	-------	2.6	-----	---/ 46
1090	T117N R53W sec. 28ccbb	-------	1.5	-----	---/ 25
1113	T119N R55W sec. 29aabb	-------	<1.0	-----	---/ 18
		CORSON COUNTY			
----	T19N R25E sec. 14	-------	<1.0	-----	---/----
----	T19N R26E sec. 17	-------	1.3	-----	---/----
----	T20N R26E sec. 36	-------	5.5	-----	---/----
----	T20N R27E sec. 22	-------	19	-----	---/----
----	T20N R29E sec. 6	-------	<1.0	-----	---/----
----	T21N R24E sec. 14	-------	<1.0	-----	---/----
----	T21N R24E sec. 24	-------	<1.0	-----	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
----	T21N R25E sec. 24bd	-------	<1.0	-----	---/----
----	T21N R29E sec. 28	-------	10	-----	---/----
----	T21N R30E sec. 12	-------	<1.0	-----	---/----
----	T22N R30E sec. 14	-------	<1.0	-----	---/----
		CUSTER COUNTY			
336	T3S R8E sec. 30baaa	Fall River	<1.0	-----	75/ 100
330	T4S R7E sec. 1ddcc	Fall River	<1.0	-----	80/ 500
365	T4S R7E sec. 12daaa	Alluvium	4.8	-----	20/ 32
371	T4S R7E sec. 12daaa	Fall River	1.7	-----	160/ 315
304	T5S R8E sec. 1abbb	Terrace Gravel	3.4	-----	10/ 50
363	T5S R8E sec. 2aabb	White River?	22	-----	---/----
383	T5S R8E sec. 14abca	Pierre	6.5	-----	5/ 56
364	T5S R8E sec. 14abca	Terrace Gravel	16	-----	35/ 45
367	T5S R8E sec. 14daca	Terrace Gravel	14	-----	15/ 35
362	T5S R8E sec. 14daca	Terrace Gravel	7.1	-----	14/ 16
339	T5S R8E sec. 18cddd	Pierre	270	-----	---/ 80
305	T6S R8E sec. 18abbb	Terrace Gravel	<1.0	-----	50/ 55
		DAVISON COUNTY			
175	T101N R60W sec. 1ccbb	Outwash	1.0	1.9	18/ 31
134	T101N R60W sec. 2ddda	Outwash	1.0	<0.5	10/ 23
103	T101N R60W sec. 10aada	Carlile	1.0	<0.5	20/ 115

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
265	T101N R60W sec. 14addd	Sioux Quartzite	<1.0	<0.5	---/----
933	T101N R60W sec. 15bbbb	Niobrara	1.1	-----	---/ 77
940	T101N R60W sec. 22cccc	Carlile	2.3	-----	---/ 145
----	T101N R60W sec. 23	Niobrara	1.3	-----	---/----
937	T101N R60W sec. 33cccc	Niobrara	4.7	-----	---/ 99
935	T101N R60W sec. 35cccd	Niobrara	2.7	-----	---/ 95
1095	T102N R60W sec. 28cbbb	-------	<1.0	-----	---/ 66
292	T103N R60W sec. 1cbcb	Niobrara	1.1	<0.5	---/ 35
402	T103N R60W sec. 2ccbb	Outwash	<1.0	<0.5	90/----
354	T103N R60W sec. 11abbc	Niobrara	<1.0	<0.5	---/ 130
287	T103N R60W sec. 11dbca	Carlile	<1.0	<0.5	---/ 147
291	T103N R60W sec. 13dadd	Outwash	<1.0	<0.5	---/ 77
400	T103N R60W sec. 14dbbc	Carlile	<1.0	<0.5	---/ 145
432	T103N R60W sec. 24	Outwash	<1.0	<0.5	---/----
----	T103N R61W sec. 23	Niobrara	1.8	-----	---/----
151	T104N R60W sec. 19abbb	Dakota	1.4	<0.5	---/----
72	T104N R60W sec. 19abbb	Dakota	1.9	<0.5	F/----
145	T104N R60W sec. 21cbbc	Dakota	1.6	<0.5	F/----
173	T104N R60W sec. 21cbbc	Dakota	1.6	<0.5	F/----
----	T104N R60W sec. 34	Niobrara	1.3	-----	---/----
39	T104N R61W sec. 3aadb	Niobrara	<1.0	<0.5	---/ 120
69	T104N R61W sec. 3babb	Outwash	2.7	<0.5	---/ 55
141	T104N R61W sec. 3bbcd	Dakota	<1.0	<0.5	F/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
82	T104N R61W sec. 4adaa	Outwash	2.4	<0.5	82/----
100	T104N R61W sec. 4adaa	Outwash	2.0	<0.5	82/----
----	T104N R61W sec. 15	Niobrara	<1.0	-----	---/----
71	T104N R62W sec. 1bccc	Dakota	3.5	<0.5	F/ 650
		DAY COUNTY			
949	T120N R54W sec. 23dddc	Outwash	1.7	-----	---/ 200
955	T120N R55W sec. 14aaab	Outwash	1.4	-----	---/ 76
956	T120N R57W sec. 35ccdd	Outwash	<1.0	-----	---/ 46
948	T121N R53W sec. 23bbba R	Outwash	<1.0	-----	---/ 83
950	T121N R54W sec. 34aada	Outwash	1.5	-----	---/ 86
946	T122N R53W sec. 11dddd R	Outwash	7.7	-----	---/ 35
928	T122N R59W sec. 1adda	Outwash	1.1	-----	---/ 66
924	T122N R59W sec. 28dddd	Outwash	<1.0	-----	---/ 38
202	T122N R59W sec. 30aaaa	Surface	1.0	-----	---/----
162	T123N R58W sec. 17ccd	Surface	<1.0	-----	---/----
217	T123N R59W sec. 21aaad	Surface	1.3	-----	---/----
		DEUEL COUNTY			
407	T113N R50W sec. 22aadd	Outwash	5.8	8.6	86/----
403	T113N R50W sec. 31aaaa	Outwash	5.6	<0.5	28/ 36
418	T113N R50W sec. 32aaaa	Outwash	2.1	<0.5	---/----
440	T115N R47W sec. 4	Outwash	<1.0	<0.5	9/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
939	T115N R47W sec. 5cccd	Outwash	1.7	-----	---/ 96
931	T115N R47W sec. 10cccd	Outwash	4.1	-----	---/ 86
932	T115N R47W sec. 16cccc1	Outwash	1.1	-----	---/ 141
934	T115N R47W sec. 16cccc2	Outwash	1.7	-----	---/ 115
571	T115N R47W sec. 17bbbc	Outwash	<1.0	-----	---/ 47
941	T115N R48W sec. 20cccc	Outwash	3.2	-----	---/ 161
577	T115N R49W sec. 4dddd1	Outwash	3.0	-----	---/ 20
570	T115N R49W sec. 10dcdd	Outwash	1.1	-----	---/ 18
----	T115N R49W sec. 25ba	Surface	2.5	-----	---/----
938	T116N R49W sec. 32aaad	Outwash	6.0	-----	---/ 48

DEWEY COUNTY

----	T16N R22E sec. 1dd	Fox Hills	<1.0	-----	---/----
----	T16N R22E sec. 5cb	Fox Hills	<1.0	-----	---/----
----	T16N R22E sec. 6da	Fox Hills	1.5	-----	---/----
----	T16N R22E sec. 14bb	Fox Hills	<1.0	-----	---/----
----	T16N R22E sec. 17da	Fox Hills	<1.0	-----	---/----
----	T16N R22E sec. 22cc	Fox Hills	<1.0	-----	---/----
----	T16N R22E sec. 32	-------	<1.0	-----	---/ 40
----	T16N R26E sec. 20bd	-------	27	-----	---/----
----	T17N R22E sec. 5dd	Fox Hills	1.1	-----	---/----
----	T17N R22E sec. 6	-------	1.5	-----	---/----
----	T17N R22E sec. 32aa	Fox Hills	1.5	-----	---/----

SDGS Num-ber (1)	Location (2)	Pro-ducing horizon (3)	Sele-nium ug/L (4)*	Ni-trate mgN/L (5)	Feet to water/ well depth (6)**
----	T17N R22E sec. 32bddc	Hell Creek	9.0	-----	---/ 30
----	T17N R23E sec. 32ba	Fox Hills	<1.0	-----	---/----
		DOUGLAS COUNTY			
1161	T98N R62W sec. 3cccc	-------	2.0	-----	---/ 321
1170	T98N R63W sec. 24bbbb	-------	<1.0	-----	---/ 225
1175	T99N R62W sec. 25dddd	-------	1.5	-----	---/ 315
1153	T99N R63W sec. 7bbbb	-------	1.9	-----	---/ 260
1174	T99N R63W sec. 28dddd1	-------	1.5	-----	---/ 32
234	T99N R66W sec. 7aadd	Carlile	<1.0	-----	120/ 300
239	T99N R66W sec. 8accc	Carlile	<1.0	-----	160/ 430
219	T100N R64W sec. 13baca	Carlile	<1.0	-----	---/----
218	T100N R65W sec. 14aabb	Carlile	<1.0	-----	---/ 300-400
221	T100N R65W sec. 14cbbb	Carlile	<1.0	-----	---/ 400
231	T100N R65W sec. 21bbbb	Carlile	<1.0	-----	---/ 380
311	T100N R66W sec. 10ccdd	Carlile	<1.0	-----	200/ 450
314	T100N R66W sec. 13dccc	Carlile?	<1.0	-----	170/----
309	T100N R66W sec. 15bbca	Niobrara	<1.0	-----	---/ 180
312	T100N R66W sec. 19dddd	Carlile	<1.0	-----	150/ 408
229	T100N R66W sec. 30dadc	Carlile	<1.0	-----	---/ 400
238	T100N R66W sec. 31daaa	Niobrara	<1.0	-----	---/----
237	T100N R66W sec. 32bbcc	Niobrara	<1.0	-----	---/ 200

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
		EDMUNDS COUNTY			
----	T121N R66W sec. 1	Surface	1.2	-----	---/----
----	T121N R66W sec. 4	-------	2.1	-----	---/----
----	T121N R66W sec. 4	Till	6.2	-----	---/ 10
----	T121N R66W sec. 5	Surface	1.4	-----	---/----
179	T121N R66W sec. 9baaa	Dakota	2.4	-----	---/----
----	T121N R66W sec. 10	Surface	2.0	-----	---/----
----	T121N R66W sec. 10	Till	3.0	-----	---/ 10
181	T121N R66W sec. 22cccc	Till?	16	-----	---/----
----	T121N R66W sec. 26	Surface	2.2	-----	---/----
180	T121N R66W sec. 28dddd	Dakota	1.1	-----	---/1120
----	T122N R66W sec. 15	-------	2.2	-----	---/----
----	T122N R66W sec. 15	Surface	1.9	-----	---/----
----	T122N R66W sec. 15	-------	2.2	-----	---/----
193	T122N R66W sec. 15ccdc	Till	1.3	-----	5/ 20
----	T122N R66W sec. 22	-------	1.1	-----	---/----
----	T122N R66W sec. 27	Till?	1.3	-----	---/ 58
----	T122N R66W sec. 27	Till?	38	-----	---/ 56
----	T122N R66W sec. 27	Inyan Kara	3.7	-----	---/3000
187	T122N R66W sec. 27bbbb	Till?	2.0	-----	---/ 70
190	T122N R66W sec. 27bbbb	Till?	3.0	-----	---/ 50
----	T122N R66W sec. 28	-------	1.4	-----	---/----
----	T122N R66W sec. 32	-------	120	-----	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
----	T122N R66W sec. 32	--------	66	-----	---/----
----	T122N R66W sec. 35	--------	1.5	-----	---/----
207	T123N R66W sec. 13dd	Surface	1.7	-----	---/----
167	T123N R66W sec. 14dccc	Surface	1.6	-----	---/----
166	T123N R66W sec. 22adaa	Till?	<1.0	-----	---/----
169	T123N R66W sec. 23cccc	Fall River	<1.0	-----	F/1950
----	T123N R66W sec. 25	Surface	1.1	-----	---/----
----	T123N R66W sec. 26	Till?	120	-----	---/ 20
		FALL RIVER COUNTY			
376	T8S R6E sec. 11bddd	Surface	1.7	-----	---/----
361	T8S R6E sec. 11ccdd	Niobrara	3.8	-----	---/ 25
340	T8S R6E sec. 28	Surface	2.0	-----	---/----
366	T8S R7E sec. 27aadb	Terrace Gravel	3.1	-----	32/ 56
329	T8S R7E sec. 32dccc	Terrace Gravel	5.5	-----	15/ 50
391	T9S R3E sec. 19bccc	Inyan Kara	<1.0	-----	500/1060
370	T9S R7E sec. 3bbdd	Terrace Gravel	14	-----	---/ 38
338	T9S R7E sec. 4addd	Terrace Gravel	2.4	-----	15/ 28
327	T10S R2E sec. 24dbdb	Pierre	2.2	-----	1/ 10
337	T10S R2E sec. 24dbdb	Sundance	<1.0	-----	---/4000
345	T10S R3E sec. 11dadd	Inyan Kara	1.4	-----	---/1575
328	T11S R3E sec. 20bbbb	Surface	<1.0	-----	---/----
381	T12S R4E sec. 8accc	Surface	5.1	-----	---/----

SDGS Num- ber (1)	Location (2)	Pro- ducing horizon (3)	Sele- nium ug/L (4)*	Ni- trate mgN/L (5)	Feet to water/ well depth (6)**
			GRANT COUNTY		
1124	T119N R48W sec. 14bbbb	-------	<1.0	-----	---/ 58
1121	T120N R47W sec. 32bbbb	-------	1.7	-----	---/ 26
1118	T120N R50W sec. 3bbbb	-------	1.1	-----	---/ 215
1119	T120N R52W sec. 9bbbb R	-------	<1.0	-----	---/ 126
1120	T666N R47W sec. 6cccc	-------	<1.0	-----	---/ 133
1091	T121N R52W sec. 13bbba R	-------	3.5	-----	---/ 210
1093	T121N R52W sec. 25cccc R	-------	<1.0	-----	---/ 185
			GREGORY COUNTY		
----	T95N R67W sec. 4db	Surface	120	2.0	---/----
877	T95N R69W sec. 1dddd	Ogallala	8.8	-----	---/ 65
1060	T95N R69W sec. 7bc	Surface	<1.0	-----	---/----
1052	T95N R69W sec. 7cb	Surface	<1.0	-----	---/----
1055	T95N R69W sec. 7cc	Surface	2.7	-----	---/----
887	T95N R69W sec. 14aaaa	Ogallala	10	-----	---/ 85
----	T95N R69W sec. 19ba	Surface	1.4	<0.5	---/----
----	T95N R69W sec. 35aa	Surface	1.6	<0.5	---/----
----	T95N R70W sec. 10	Ogallala	1.7	<0.5	---/----
----	T95N R71W sec. 1ba	Surface	<1.0	0.5	---/----
----	T95N R71W sec. 11db	Surface	1.0	<0.5	---/----
875	T95N R72W sec. 22dddd	Ogallala	5.4	-----	---/ 105
----	T96N R67W sec. 29cd	Surface	1.3	-----	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
----	T96N R68W sec. 7c	Surface	<1.0	1.0	---/----
----	T96N R68W sec. 23bc	Surface	5.9	2.0	---/----
----	T96N R70W sec. 22	Ogallala	1.0	-----	---/----
----	T96N R70W sec. 26	Ogallala	1.4	-----	---/----
----	T96N R70W sec. 26	Ogallala	1.2	-----	---/----
----	T96N R70W sec. 27	Ogallala	1.4	-----	---/----
----	T96N R70W sec. 28	Ogallala	1.6	-----	---/----
----	T96N R70W sec. 28	Ogallala	1.3	-----	---/----
----	T96N R70W sec. 29	Ogallala	1.5	-----	---/----
----	T96N R70W sec. 33	Ogallala	1.5	-----	---/----
----	T96N R70W sec. 34	Ogallala	1.1	-----	---/----
----	T96N R70W sec. 34	Ogallala	1.3	-----	---/----
719	T96N R71W sec. 2	Ogallala	1.1	-----	---/----
850	T96N R71W sec. 3cddc	Ogallala	8.9	12	---/----
695	T96N R71W sec. 4cdab	Ogallala	<1.0	10	---/----
884	T96N R71W sec. 6aaaa	Ogallala	2.3	-----	125/ 175
721	T96N R71W sec. 7	Ogallala	1.8	-----	---/----
855	T96N R71W sec. 9dddd	Ogallala	<1.0	12	---/ 62
702	T96N R71W sec. 10bbac	Surface	<1.0	<0.5	---/----
847	T96N R71W sec. 10bcbc	Surface	<1.0	<0.5	---/----
690	T96N R71W sec. 10cbbb	Ogallala	<1.0	<0.5	---/----
683	T96N R71W sec. 15bbca	Ogallala	<1.0	14	36/ 82
----	T96N R71W sec. 23	Ogallala	2.3	-----	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
----	T96N R71W sec. 24	Ogallala	1.5	-----	---/----
----	T96N R71W sec. 36	Ogallala	1.9	-----	---/----
----	T97N R69W sec. 4	Surface	2.7	-----	---/----
----	T97N R69W sec. 4	Surface	4.8	-----	---/----
----	T97N R69W sec. 9	Dakota	<1.0	-----	---/----
----	T97N R69W sec. 14	Surface	2.3	-----	---/----
----	T97N R69W sec. 15	-------	1.1	-----	F/4300
54	T97N R72W sec. 21dddd	Ogallala	2.3	1.8	25/ 40
257	T97N R72W sec. 27dddd	Ogallala	1.4	-----	---/ 56
60	T97N R72W sec. 22cccc	Ogallala	2.7	-----	15/ 50
131	T97N R72W sec. 22ddda	Ogallala	2.9	-----	20/ 60
150	T97N R72W sec. 23cdcc	Ogallala	5.7	-----	20/ 50
153	T97N R72W sec. 23cdcc	Ogallala	3.3	-----	20/ 50
102	T97N R72W sec. 26bbaa	Ogallala	3.4	-----	10/ 60
99	T97N R72W sec. 26bbbb	Ogallala	2.6	-----	10/ 70
59	T97N R72W sec. 27addd	Ogallala	4.8	-----	10/ 50
57	T97N R72W sec. 27cddd	Ogallala	2.9	-----	10/ 50
101	T97N R72W sec. 27dddd	Ogallala	1.7	2.0	15/ 60
261	T97N R72W sec. 21dddd	Ogallala	<1.0	-----	54/ 56
298	T98N R71W sec. 1ddcc	Ogallala	60	-----	---/----
220	T98N R71W sec. 11bbbb	Ogallala	14	-----	12/ 50
302	T98N R71W sec. 11bbbb	Ogallala	13	-----	12/ 50
227	T98N R71W sec. 11ccca	Dakota	<1.0	-----	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
306	T98N R71W sec. 12bbdd	Pierre	16	-----	---/----
317	T98N R71W sec. 12bbdd	Pierre	93	-----	12/ 42
308	T99N R73W sec. 1bbbd	Pierre	88	-----	---/----
321	T99N R73W sec. 12ccca	Dakota	1.4	-----	265/1300
223	T99N R73W sec. 25baaa	Pierre	610	-----	---/----
325	T99N R73W sec. 35adba	Pierre	200	-----	10/ 60
		HAAKON COUNTY			
75	T1N R20E sec. 24aaaa	Madison	2.2	-----	---/4010
1088	T1N R20E sec. 27acba	Alluvium	15	-----	---/ 9
81	T5N R18E sec. 12ba	Fall River	1.5	-----	60/2400
68	T5N R18E sec. 35	Fall River	1.7	-----	F/2380
89	T5N R20E sec. 5dd	Terrace Gravel	8.1	-----	30/ 45
73	T5N R20E sec. 17da	Terrace Gravel	2.0	-----	25/ 50
87	T5N R20E sec. 18bb	Terrace Gravel	<1.0	-----	20/ 30
465	T7N R18E sec. 33a	Alluvium	<1.0	<0.5	---/----
467	T7N R18E sec. 33a	Surface	<1.0	1.0	---/----
471	T7N R18E sec. 33a	Alluvium	7.2	<0.5	---/----
472	T7N R18E sec. 33aaaa	Alluvium	5.3	<0.5	---/----
50	T7N R18E sec. 33aaaa	Alluvium	3.4	-----	---/----
458	T7N R18E sec. 33acac	Alluvium	<1.0	-----	---/----
661	T7N R18E sec. 33adaa	Alluvium	<1.0	-----	---/----
12	T7N R18E sec. 33addd	Alluvium	3.2	-----	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
662	T7N R18E sec. 33addd	Alluvium	7.5	-----	---/----
451	T7N R18E sec. 33daad	Alluvium	4.1	<0.5	---/ 11
447	T7N R18E sec. 33ddad	Alluvium	17	2.5	---/----
668	T7N R18E sec. 33ddad	Alluvium	8.7	-----	---/----
666	T7N R18E sec. 34adab	Alluvium	14	-----	---/----
3	T7N R18E sec. 34c	Alluvium	15	-----	---/----
457	T7N R18E sec. 34c	Alluvium	15	4.0	---/----

HAMLIN COUNTY

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
441	T113N R51W sec. 13cdcc	Outwash	2.9	6.0	30/----
417	T113N R51W sec. 19cccc	Outwash	<1.0	<0.5	---/ 36
412	T113N R51W sec. 23abbb	Outwash	3.6	3.9	22/----
415	T113N R51W sec. 34bccc	Outwash	<1.0	<0.5	---/ 55
416	T113N R52W sec. 10cccc	Outwash	<1.0	<0.5	86/----
419	T113N R53W sec. 8dccc2	Outwash	<1.0	<0.5	---/ 21
404	T113N R53W sec. 22aaad	Outwash	1.9	<0.5	36/ 54
414	T114N R51W sec. 27cccc	Outwash	7.1	4.5	---/ 55
413	T114N R51W sec. 28cccc	Outwash	5.2	4.7	---/ 22
422	T114N R52W sec. 4dddd	Outwash	<1.0	<0.5	---/ 66
410	T114N R52W sec. 29daaa	Outwash	1.2	<0.5	---/ 26
421	T114N R53W sec. 20cadc	Outwash	<1.0	<0.5	---/ 40

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
		HAND COUNTY			
1002	T111N R66W sec. 2cdcc	Outwash	2.2	-----	---/ 35
863	T111N R66W sec. 14dccc	Outwash	<1.0	-----	---/ 136
1004	T113N R67W sec. 8bbbb	Outwash	6.1	-----	---/ 65
1025	T115N R67W sec. 18dddd	Outwash	1.4	-----	---/ 145
1021	T115N R67W sec. 25aaaa	Outwash	<1.0	-----	---/ 105
1016	T115N R70W sec. 4aaaa	Outwash	<1.0	-----	---/ 105
1003	T115N R70W sec. 6aaaa	Outwash	1.3	-----	---/ 75
1035	T116N R67W sec. 34dddd	Outwash	1.4	-----	---/ 80
		HANSON COUNTY			
133	T101N R57W sec. 1bbba	Outwash	3.2	58	---/----
132	T101N R57W sec. 2baaa	Till	1.1	-----	50/----
358	T101N R57W sec. 4dcac	Outwash	22	-----	40/ 90
139	T101N R57W sec. 8aaaa	Till	4.7	-----	39/----
267	T101N R57W sec. 11dddd	Sioux Quartzite	<1.0	-----	---/ 117
280	T101N R57W sec. 17	Dakota	<1.0	-----	12/ 500
138	T101N R58W sec. 1dddd	Outwash	55	54	---/ 28
334	T102N R57W sec. 13cccd	Outwash	2.8	-----	18/ 36
360	T102N R57W sec. 22dddd	Sioux Quartzite	<1.0	<0.5	50/ 278
136	T102N R57W sec. 25acda	Outwash	1.6	<0.5	---/ 40
353	T102N R57W sec. 31ddbd	Outwash	3.7	-----	21/ 57
149	T102N R57W sec. 34ca	Outwash	6.1	87	---/ 75

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
272	T102N R59W sec. 3abbb	Outwash	3.9	50	---/ 220
386	T102N R59W sec. 3abbb	Outwash	1.0	<0.5	---/----
278	T102N R59W sec. 8ba	Sioux Quartzite	1.5	-----	23/ 128
281	T102N R59W sec. 19aacc	Carlile	1.5	-----	---/ 148
397	T102N R59W sec. 20addd	Sioux Quartzite	<1.0	<0.5	70/ 123
344	T102N R59W sec. 23aa	Sioux Quartzite	1.4	-----	---/ 300
357	T102N R59W sec. 23aa	Sioux Quartzite	2.1	-----	---/----
1100	T103N R57W sec. 12dddd	-------	<1.0	-----	---/ 113
285	T103N R59W sec. 18bcaa	Carlile	<1.0	2.4	---/ 265
294	T104N R57W sec. 1ab	Carlile?	<1.0	-----	20/ 200
104	T104N R57W sec. 8	Outwash	<1.0	-----	---/ 159
393	T104N R57W sec. 9aa	Sioux Quartzite?	<1.0	-----	10/ 320
288	T104N R57W sec. 9dc	Sioux Quartzite?	<1.0	-----	10/ 320
271	T104N R57W sec. 15bb	Dakota	<1.0	-----	---/ 500
276	T104N R57W sec. 18ba	Sioux Quartzite?	<1.0	-----	---/ 320
891	T104N R57W sec. 36ddd	Outwash	<1.0	-----	---/ 185
906	T104N R57W sec. 36dddd	Sioux Quartzite	<1.0	-----	---/ 500
1103	T104N R58W sec. 2aaaa2	-------	1.6	-----	---/ 205
279	T104N R58W sec. 2ccca	Dakota	1.2	<0.5	---/ 470
1099	T104N R58W sec. 5bbbb	-------	12.9	-----	---/ 147
388	T104N R58W sec. 10	Outwash	<1.0	-----	80/ 136
1104	T104N R58W sec. 17ddaa	-------	2.7	-----	---/ 180
1096	T104N R58W sec. 22ddcc	-------	<1.0	-----	---/ 202

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
384	T104N R58W sec. 23ddcc	Carlile	<1.0	2.6	10/ 315
1097	T104N R58W sec. 33dddd	-------	<1.0	-----	---/ 102

HARDING COUNTY

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
559	T18N R1E sec. 2cbd	Surface	1.3	-----	---/----
519	T19N R5E sec. 29ccbb	Surface	3.2	-----	---/----
536	T21N R5E sec. 1bbda	Ludlow?	1.6	-----	---/----
515	T21N R5E sec. 26	Fox Hills?	<1.0	-----	---/----
548	T21N R5E sec. 27aaab	Fox Hills?	<1.0	-----	---/----
524	T21N R5E sec. 33addc	Ludlow?	<1.0	-----	---/----
527	T21N R6E sec. 6bcbb	Fox Hills?	<1.0	-----	---/----
553	T21N R6E sec. 31acba	Surface	3.1	-----	---/----
564	T21N R6E sec. 31cddd	Fox Hills?	<1.0	-----	---/----
557	T22N R1E sec. 24cccc	Surface	1.6	-----	---/----
535	T22N R5E sec. 1aaca	Ludlow	6.0	-----	---/ 20
533	T22N R5E sec. 1aacd	Ludlow	<1.0	-----	---/ 20
563	T22N R5E sec. 1acaa	Ludlow	5.0	-----	---/ 20
554	T22N R5E sec. 1bcbb	Ludlow	<1.0	-----	---/ 48
547	T22N R5E sec. 1bccc	Ludlow	33	-----	---/ 55
556	T22N R5E sec. 2d	Surface	<1.0	-----	---/----
540	T22N R5E sec. 10addd	Surface	<1.0	-----	---/----
537	T22N R5E sec. 11bcca	Ludlow	16	-----	---/ 60
541	T22N R5E sec. 12cbdd	Ludlow	<1.0	-----	---/ 100

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
549	T22N R5E sec. 22ac	Surface	1.6	-----	---/----
512	T22N R5E sec. 26bdda	Surface	<1.0	-----	---/----
523	T22N R6E sec. 4dccc	Alluvium	<1.0	-----	---/ 15
561	T22N R6E sec. 4dccd	Ludlow	31	-----	---/ 20
558	T22N R6E sec. 6bccc	Ludlow?	13	-----	---/----
544	T22N R6E sec. 17aaaa	Fox Hills	<1.0	-----	---/ 100
534	T22N R6E sec. 18caca	Fox Hills	<1.0	-----	---/ 150
560	T22N R6E sec. 18cccd	Fox Hills	<1.0	-----	---/ 220
518	T22N R6E sec. 20	Surface	<1.0	-----	---/----
532	T22N R6E sec. 20bddb	Surface	<1.0	-----	---/----
516	T22N R6E sec. 20bddd	Fox Hills?	<1.0	-----	---/----
562	T22N R6E sec. 24bbdc	Surface	<1.0	-----	---/----
538	T22N R6E sec. 27cbba	Surface	4.7	-----	---/----
546	T22N R7E sec. 2abdd	Ludlow?	<1.0	-----	---/----
542	T22N R7E sec. 2accc	Ludlow?	<1.0	-----	---/----
528	T22N R7E sec. 11accc	Fox Hills	1.2	-----	---/ 650-700
531	T22N R7E sec. 12	Ludlow?	<1.0	-----	---/----
517	T22N R8E sec. 9dddb	Surface	<1.0	-----	---/----
514	T23N R1E sec. 22b	Surface	1.1	-----	---/----
551	T23N R4E sec. 36cdcc	Surface	<1.0	-----	---/----
545	T23N R5E sec. 20bbdb	Surface	<1.0	-----	---/----
520	T23N R5E sec. 28dbcb	Surface	1.2	-----	---/----
539	T23N R5E sec. 28cccd	Surface	<1.0	-----	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
521	T23N R5E sec. 33dbd	Fox Hills	3.2	-----	---/ 60
525	T23N R5E sec. 36dbbb	Ludlow	<1.0	-----	---/ 20
552	T23N R6E sec. 34ccc	Surface	<1.0	-----	---/----
513	T23N R7E sec. 35caca	Surface	<1.0	-----	---/----
		HUTCHINSON COUNTY			
18	T97N R57W sec. 9bddb	Outwash	3.3	<0.5	---/ 35
17	T97N R58W sec. 2ccaa	Outwash	<1.0	<0.5	30/ 96
905	T97N R58W sec. 12d	Outwash	1.6	-----	---/ 185
174	T97N R60W sec. 18	Alluvium	2.4	8.2	---/ 12
43	T99N R56W sec. 26cccd	Outwash	<1.0	<0.5	---/----
16	T99N R56W sec. 27ccbb	Niobrara	3.9	<0.5	90/ 140
40	T99N R60W sec. 9	Niobrara	1.5	<0.5	16/ 190
1152	T99N R61W sec. 3bbbb	-------	1.8	-----	---/ 170
1166	T99N R61W sec. 18cccc	-------	3.5	-----	---/ 166
1155	T99N R61W sec. 20dddd	-------	1.1	-----	---/ 264
390	T100N R56W sec. 9	Niobrara	<1.0	-----	80/ 190
273	T100N R56W sec. 11bbbb	Outwash	<1.0	2.0	60/ 130
343	T100N R56W sec. 12baaa	Outwash	<1.0	<0.5	---/ 164
900	T100N R60W sec. 21ccbc	Niobrara	1.1	-----	---/ 106
936	T100N R61W sec. 8aaaa	Outwash	3.4	-----	---/ 97

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
		HYDE COUNTY			
1020	T112N R73W sec. 15bbcc	Outwash	3.1	-----	---/ 41
1018	T112N R73W sec. 18bbbb	Outwash	1.6	-----	---/ 25
1024	T115N R71W sec. 1bbcc	Outwash	2.3	-----	---/ 65
1022	T115N R72W sec. 7dddd	Outwash	3.9	-----	---/ 143
1017	T115N R72W sec. 16aaaa	Outwash	2.5	-----	---/ 145
		JACKSON COUNTY			
85	T2S R22E sec. 32accc	Inyan Kara	1.1	-----	---/2600
76	T2S R24E sec. 24cddd	Inyan Kara	1.7	-----	---/2410
		JERAULD COUNTY			
908	T106N R63W sec. 34cccc	Outwash	<1.0	-----	---/ 105
898	T106N R66W sec. 24baab	Outwash	26	-----	---/ 24
915	T107N R67W sec. 34cccc	Outwash	3.5	-----	---/ 65
901	T106N R67W sec. 7adda	Outwash	<1.0	-----	---/ 305
341	T107N R63W sec. 31cdbd	Surface	<1.0	-----	---/----
401	T107N R63W sec. 31cdcc	Till	12	-----	25/ 30
248	T107N R67W sec. 8aaaa	Outwash	4.8	2.1	---/ 46
904	T107N R67W sec. 36dddd	Outwash	2.6	-----	---/ 86
903	T108N R63W sec. 17dcdcl	Outwash	<1.0	-----	---/ 106
907	T108N R63W sec. 23ccbc	Outwash	1.1	-----	---/ 25
910	T108N R63W sec. 21bbbb	Outwash	3.4	-----	---/ 106

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
1010	T108N R64W sec. 1ddcd	Outwash	<1.0	-----	---/ 58
902	T108N R64W sec. 16dcdd	Outwash	<1.0	-----	---/ 25
922	T108N R64W sec. 22addd	Outwash	<1.0	-----	24/ 46
		JONES COUNTY			
78	T1S R30E sec. 26cccc	Dakota	1.3	-----	---/±2150
80	T2S R28E sec. 12aaaa	Surface	2.7	-----	---/----
		KINGSBURY COUNTY			
574	T111N R56W sec. 17bbcc	Outwash	2.0	-----	---/ 92
572	T112N R56W sec. 31bbbb	Outwash	1.0	-----	---/ 45
		LAKE COUNTY			
1145	T105N R53W sec. 31bbbb	-------	1.6	-----	---/ 23
		LAWRENCE COUNTY			
36	T5N R2E sec. 4dccc	Surface	1.0	-----	---/----
835	T5N R3E sec. 27dcc	Surface	2.0	<0.5	---/----
838	T5N R3E sec. 27dcc	Surface	<1.0	<0.5	---/----
507	T6N R4E sec. 2bdaa	Alluvium	5.3	4.9	---/ 20
506	T6N R4E sec. 2bdaa	Alluvium	5.0	6.7	---/ 20
508	T6N R4E sec. 2bddb	Alluvium	3.7	3.7	---/ 15
591	T6N R4E sec. 2cdda	Alluvium	5.3	-----	---/ 20

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
497	T6N R4E sec. 10abdd	Alluvium	2.3	16	---/ 30
582	T6N R4E sec. 10acda	Alluvium	<1.0	4.5	---/ 18
492	T6N R4E sec. 10acdb	Alluvium	4.3	3.3	---/ 15
496	T6N R4E sec. 10acdb	Alluvium	4.7	16	---/ 17
477	T6N R4E sec. 10caac	Alluvium	2.6	1.8	---/ 18
483	T6N R4E sec. 10caac	Surface	2.5	1.0	---/----
481	T6N R4E sec. 10cadb	Alluvium	1.5	1.0	---/ 20
482	T6N R4E sec. 10cadc	Alluvium	2.6	2.5	---/ 15
494	T6N R4E sec. 15baaa	Alluvium	2.1	<0.5	---/ 60
505	T6N R4E sec. 15cabb	Alluvium	4.2	7.3	---/ 50
504	T6N R4E sec. 15cabc	Alluvium	3.5	8.2	---/ 40
509	T6N R4E sec. 22bbca	Inyan Kara	8.7	-----	F/----
687	T6N R4E sec. 22bbd	Alluvium	5.2	12	---/ 20
1	T6N R4E sec. 22bbda	Alluvium	1.7	-----	---/ 20
503	T6N R4E sec. 22bdbd	Alluvium	3.9	1.0	---/ 50
8	T6N R4E sec. 22ccdd	Surface	1.9	5.9	---/----
49	T6N R4E sec. 22cddb	Alluvium	6.3	-----	---/ 40
619	T6N R4E sec. 22cddb	Surface	3.3	-----	---/----
493	T6N R4E sec. 27ccaa	Minnekahta	5.0	10	90/ 120
607	T6N R4E sec. 27ccbd	Alluvium	2.4	9.7	---/----
----	T6N R8E sec. 3	-------	2.6	-----	---/----
37	T7N R2E sec. 10abbb	Surface	4.7	-----	---/----
33	T7N R2E sec. 27ddbb	Surface	1.2	-----	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
598	T7N R4E sec. 25cbdd	Alluvium	3.2	4.4	---/----
636	T7N R4E sec. 25ddcc	Inyan Kara	<1.0	-----	F/----
500	T7N R4E sec. 35adba	Inyan Kara	<1.0	<0.5	F/ 600-800
627	T7N R4E sec. 35bdbd	Alluvium	3.3	-----	---/----
606	T7N R4E sec. 35ccad	Alluvium	53	4.5	---/----
580	T7N R4E sec. 35ccdb	Alluvium	17	14	---/----
499	T7N R4E sec. 35dabb	Alluvium	<1.0	0.6	---/ 40
502	T7N R4E sec. 35dabd	Alluvium	6.7	2.5	24/ 28
623	T7N R4E sec. 35dbab	Alluvium	4.5	-----	---/----
605	T7N R4E sec. 35dcca	Alluvium	4.5	1.7	---/----
583	T7N R5E sec. 4dcbb	Alluvium	<1.0	-----	---/----
490	T7N R5E sec. 17ddbd	Surface	9.7	-----	---/----
		LINCOLN COUNTY			
23	T96N R50W sec. 34ccdb	Outwash	4.4	-----	36/ 94
593	T97N R49W sec. 10d	Dakota?	<1.0	-----	---/----
728	T97N R50W sec. 3	Dakota	<1.0	1.0	190/ 490
722	T97N R50W sec. 5	Dakota	<1.0	0.8	---/----
727	T97N R50W sec. 5	Outwash	1.4	<0.5	---/ 157
594	T97N R50W sec. 5b	Dakota?	<1.0	-----	---/----
748	T97N R50W sec. 9b	Dakota	<1.0	<0.5	---/ 501
756	T97N R50W sec. 9b	Dakota?	<1.0	1.6	---/----
595	T97N R50W sec. 16cc	Dakota?	<1.0	-----	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
832	T97N R50W sec. 21b	Dakota	<1.0	<0.5	---/ 490
730	T97N R51W sec. 1	Dakota	<1.0	<0.5	220/ 525
763	T97N R51W sec. 2	Dakota	<1.0	1.0	160/ 375
808	T97N R51W sec. 7ccdd	Outwash	<1.0	<0.5	---/----
769	T97N R51W sec. 10	Dakota	<1.0	<0.5	170/ 420
712	T97N R51W sec. 11cca	Outwash	1.0	<0.5	---/ 56
705	T97N R51W sec. 13	Outwash	28	0.8	---/----
771	T97N R51W sec. 14	Dakota	<1.0	1.0	160/ 425
776	T97N R51W sec. 16ccbc	Dakota	<1.0	3.6	---/ 338
710	T97N R51W sec. 18	Dakota	<1.0	<0.5	---/ 384
801	T97N R51W sec. 18	Outwash	25	0.8	---/ 18
781	T97N R51W sec. 19bbbb1	Outwash	<1.0	<0.5	---/ 47
780	T97N R51W sec. 19bbbb1	Outwash?	1.4	<0.5	---/----
773	T97N R51W sec. 19bbbb2	Outwash?	<1.0	1.0	---/----
1040	T97N R51W sec. 19bbbb2	Outwash	1.9	-----	---/ 39
809	T97N R51W sec. 19bbbb2	Outwash	<1.0	<0.5	---/ 160
754	T97N R51W sec. 19bdaa	Outwash	26	13	---/ 17
1058	T97N R51W sec. 19cccc	Outwash	1.8	<0.5	---/ 36
703	T97N R51W sec. 19cd	Outwash	37	15	---/ 25
711	T97N R51W sec. 19dbc	Outwash	1.6	<0.5	---/ 86
720	T97N R51W sec. 20dccd	Dakota	<1.0	<0.5	---/ 392
706	T97N R51W sec. 29aad	Dakota	<1.0	3.2	80/ 375
775	T97N R51W sec. 30	Outwash	8.7	1.0	---/ 20

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
778	T97N R51W sec. 30baaa	Outwash	<1.0	1.0	---/ 20
807	T97N R51W sec. 30cbc	Outwash	<1.0	<0.5	---/ 30
1049	T97N R51W sec. 30cccc	Outwash	2.4	-----	---/ 31
812	T97N R51W sec. 30cccc	Outwash	1.2	-----	---/ 31
799	T97N R51W sec. 30cddd	Outwash	1.5	<0.5	---/----
788	T97N R51W sec. 30ddaa	Outwash	1.1	<0.5	---/----
713	T97N R51W sec. 31daa	Outwash	1.6	<0.5	---/ 94
732	T98N R50W sec. 5	Dakota	<1.0	1.8	220/ 594
729	T98N R50W sec. 5	Dakota	<1.0	<0.5	160/ 479
765	T98N R50W sec. 5	Dakota	<1.0	<0.5	160/ 482
147	T98N R50W sec. 6addc	Dakota	<1.0	<0.5	---/----
596	T98N R50W sec. 9	Dakota	<1.0	-----	---/----
759	T98N R50W sec. 13	Dakota	<1.0	0.6	300/ 385
737	T98N R50W sec. 14c	Dakota	<1.0	<0.5	200/ 511
774	T98N R50W sec. 16	Dakota	<1.0	<0.5	---/ 528
836	T98N R50W sec. 21	Dakota	<1.0	<0.5	150/ 470
764	T98N R50W sec. 21c	Dakota	<1.0	0.5	---/----
734	T98N R50W sec. 23	Dakota	<1.0	<0.5	---/ 425
828	T98N R50W sec. 24	Dakota	<1.0	2.1	180/ 396
829	T98N R50W sec. 26	Dakota	<1.0	<0.5	---/ 400
826	T98N R50W sec. 28	Dakota	<1.0	<0.5	---/ 498
830	T98N R50W sec. 29c	Dakota	1.0	<0.5	---/----
736	T98N R50W sec. 30	Dakota	<1.0	<0.5	---/----

SDGS Num- ber (1)	Location (2)	Pro- ducing horizon (3)	Sele- nium ug/L (4)*	Ni- trate mgN/L (5)	Feet to water/ well depth (6)**
686	T98N R50W sec. 32d	Dakota	<1.0	<0.5	173/ 520
599	T98N R50W sec. 32dddc	Dakota	1.1	-----	---/ 655
597	T98N R50W sec. 32dddd	Dakota	<1.0	-----	---/----
723	T98N R50W sec. 34a	Dakota	1.2	2.5	180/ 450
790	T97N R52W sec. 13dadd	Outwash	1.3	<0.5	---/----
733	T98N R50W sec. 34b	Dakota	<1.0	2.0	---/----
724	T98N R50W sec. 34c	Dakota	<1.0	-----	180/ 450
772	T98N R51W sec. 11b	Outwash	<1.0	0.8	117/ 147
825	T98N R51W sec. 25	Dakota	<1.0	1.0	180/ 397
822	T98N R51W sec. 25a	Outwash	<1.0	5.0	---/ 80
726	T99N R50W sec. 33	Dakota	<1.0	<0.5	120/ 382
758	T99N R50W sec. 33	Dakota	<1.0	<0.5	244/ 470
		LYMAN COUNTY			
313	T102N R73W sec. 1bbaa	Dakota	<1.0	-----	---/ 700
307	T102N R73W sec. 12bcac	Pierre	3.6	-----	20/ 30
319	T103N R73W sec. 3ccca	Alluvium	<1.0	-----	---/ 20
324	T103N R73W sec. 3ccca	Alluvium	<1.0	-----	---/ 20
303	T104N R73W sec. 3ccda	Pierre	4.9	-----	---/ 50
79	T105N R73W sec. 21caaa	Dakota	1.2	-----	---/1188
84	T105N R75W sec. 17baaa	Dakota	1.9	-----	---/1300
83	T105N R77W sec. 10cccc	Dakota	1.4	-----	---/1500
77	T105N R79W sec. 3dbbb	Dakota	1.4	-----	---/1700

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
		MARSHALL COUNTY			
157	T125N R58W sec. 12bb	Surface	2.9	-----	---/----
163	T125N R59W sec. 21ddac	Till	1.9	-----	---/ 22
168	T125N R59W sec. 22abab	Till	<1.0	-----	3/ 37
225	T125N R59W sec. 26cddd	Dakota	<1.0	-----	---/ 903
195	T125N R59W sec. 34baaa	Dakota	2.3	-----	---/----
228	T126N R59W sec. 28ddcc	Dakota	<1.0	-----	---/----
201	T126N R59W sec. 33cccc	Dakota	<1.0	-----	6/ 963
927	T127N R55W sec. 12d	Outwash	2.3	-----	---/ 18
		McCOOK COUNTY			
269	T101N R55W sec. 10cccc	Till	<1.0	<0.5	---/ 182
266	T101N R55W sec. 14bcaa	Outwash	<1.0	<0.5	---/ 145
270	T101N R55W sec. 17aaaa	Outwash	1.0	<0.5	100/ 152
268	T101N R55W sec. 18adcc	Till	<1.0	<0.5	---/----
264	T101N R55W sec. 18cddd	Outwash	1.0	-----	---/----
301	T101N R55W sec. 20aaaa	Outwash	1.1	0.7	---/----
1088a	T101N R55W sec. 20dadd	Sioux Quartzite	3.3	-----	---/ 172
144	T101N R55W sec. 20dcdd	Outwash	1.5	<0.5	62/ 144
284	T101N R55W sec. 20dcdd	Outwash	<1.0	-----	62/ 145
140	T101N R55W sec. 21bbba	Outwash	<1.0	1.0	---/ 130
342	T101N R55W sec. 21dccc	Outwash	<1.0	<0.5	50/ 150
431	T101N R55W sec. 22cc	Outwash	<1.0	-----	---/ 157

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
300	T101N R55W sec. 27caaa	Outwash	<1.0	0.5	---/----
445a	T101N R55W sec. 28bccc	Outwash	<1.0	-----	---/----
1085	T101N R55W sec. 28dccc	Outwash	1.2	-----	---/ 175
1087	T101N R55W sec. 29dddd	Outwash	<1.0	-----	---/ 160
355	T101N R55W sec. 30dddd	Outwash	<1.0	<0.5	---/ 145
1086	T101N R55W sec. 34cccc	Outwash	1.4	-----	---/ 165
275	T101N R56W sec. 5cddd	Sioux Quartzite	1.2	<0.5	---/ 96
299	T101N R56W sec. 21badd	Outwash	<1.0	<0.5	---/ 100
289	T101N R56W sec. 25cccc	Outwash	<1.0	<0.5	60-80/ 145
277	T101N R56W sec. 31addd	Outwash	6.7	58	60/ 65
274	T101N R56W sec. 36bddc	Sioux Quartzite	1.5	<0.5	---/ 65
176	T102N R56W sec. 19ccdc	Outwash	1.5	-----	---/ 80
142	T103N R53W sec. 34bbbd	Sioux Quartzite	1.6	<0.5	---/ 120
61	T103N R55W sec. 7aa	Sioux Quartzite?	3.3	-----	---/----
		MEADE COUNTY			
380	T3N R8E sec. 9aadd	Surface	2.2	-----	---/----
375	T4N R7E sec. 2ddc	Surface	30	-----	---/----
373	T4N R7E sec. 11aabd	Surface	13	-----	---/----
374	T4N R7E sec. 12ba	Surface	<1.0	-----	---/----
377	T4N R8E sec. 7ab	Surface	1.9	-----	---/----
379	T4N R8E sec. 7db	Surface	3.4	-----	---/----
378	T4N R8E sec. 7dbd	Surface	1.9	-----	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
31	T5N R6E sec. 6aaaa	Surface	2.3	-----	---/----
369	T5N R10E sec. 23aaaa	Pierre	1.7	-----	---/ 30
479	T5N R12E sec. 27b	Alluvium	1.1	<0.5	---/----
475	T5N R12E sec. 27cadc	Alluvium	23	5.0	---/----
667	T5N R12E sec. 27dcba	Alluvium	21	-----	---/----
4	T5N R13E sec. 28bbcc	Alluvium	1.1	<0.5	---/----
6	T5N R13E sec. 29a	Surface	11	-----	---/----
11	T5N R13E sec. 29aabd	Alluvium	<1.0	1.0	---/----
350	T6N R6E sec. 32dbbd	Inyan Kara	2.7	0.7	---/----
372	T6N R7E sec. 16cba	Surface	3.5	-----	---/----
382	T6N R7E sec. 21bab	Surface	7.4	-----	---/----
88	T6N R13E sec. 29daaa	Terrace Gravel	26	-----	18/ 38
484	T7N R5E sec. 4ca	Surface	1.8	1.4	---/----
486	T7N R5E sec. 4dcbb	Alluvium	1.1	<0.5	4/----
603	T7N R5E sec. 4dbbc	Alluvium	8.5	<0.5	---/ 14
618	T7N R5E sec. 4dbcb	Alluvium	8.1	10	5/ 20
625	T7N R5E sec. 17dcab	Inyan Kara	<1.0	<0.5	F/----
490	T7N R5E sec. 17ddbd	Surface	9.7	1.3	---/----
485	T7N R5E sec. 19	Alluvium	<1.0	14	8/----
646	T7N R5E sec. 19aaaa	Alluvium	<1.0	<0.5	16/----
638	T7N R5E sec. 19ddba	Alluvium	<1.0	<0.5	17/----
637	T7N R5E sec. 19ddba	Surface	1.0	1.4	---/----
498	T7N R5E sec. 20cbcc	Alluvium	<1.0	<0.5	14/ 26

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
35	T7N R5E sec. 29bbda	Inyan Kara	2.0	-----	F/ 700
38	T7N R5E sec. 29bbda	Inyan Kara	<1.0	-----	F/1000
839	T7N R5E sec. 29bbda	Alluvium	1.1	<0.5	---/----
630	T7N R5E sec. 29ccbb	Inyan Kara	<1.0	-----	F/----
480	T7N R5E sec. 30bbbc	Alluvium	2.2	<0.5	7/----
5	T7N R8E sec. 34	Surface	8.5	-----	---/----
478	T7N R8E sec. 34cddb	Alluvium	<1.0	<0.5	---/----
671	T7N R18E sec. 33aaaa	Alluvium	4.7	-----	---/----
670	T7N R18E sec. 33acaa	Alluvium	<1.0	-----	---/----
555	T12N R14E sec. 10adaa	Surface	1.1	-----	---/----
348	T12N R17E sec. 10	Fox Hills	1.4	<0.5	---/----
		MELLETTE COUNTY			
962	T40N R32E sec. 32bbbb	White River	5.7	-----	---/ 266
64	T43N R29E sec. 4	Alluvium	1.1	<0.5	---/----
93	T43N R29E sec. 4	Alluvium	<1.0	<0.5	---/----
94	T43N R29E sec. 4	Alluvium	1.2	<0.5	---/----
120	T43N R29E sec. 4	Alluvium	1.4	<0.5	---/----
148	T43N R29E sec. 4	Alluvium	<1.0	<0.5	---/----
154	T43N R29E sec. 4	Alluvium	<1.0	<0.5	---/----
152	T43N R29E sec. 4abbb	Alluvium	<1.0	<0.5	8/ 20
121	T43N R29E sec. 5	Alluvium	<1.0	<0.5	---/----
156	T43N R29E sec. 8	Alluvium	<1.0	<0.5	---/ 18

SDGS Num- ber (1)	Location (2)	Pro- ducing horizon (3)	Sele- nium ug/L (4)*	Ni- trate mgN/L (5)	Feet to water/ well depth (6)**
122	T43N R29E sec. 9	Alluvium	1.5	0.8	---/----
346	T43N R29E sec. 10	Surface	1.8	<0.5	---/----
98	T44N R29E sec. 32	Alluvium	<1.0	<0.5	---/ 20
155	T44N R29E sec. 32	Alluvium	1.1	0.8	---/ 17
66	T44N R29E sec. 34	Alluvium	1.5	<0.5	---/----
		MINER COUNTY			
1137	T105N R55W sec. 1aaaa	-------	2.3	-----	---/ 235
1140	T105N R56W sec. 21aaaa	-------	2.9	-----	---/ 106
959	T105N R57W sec. 10cddd	Outwash	<1.0	-----	---/ 23
958	T105N R57W sec. 20aaad	Outwash	1.4	-----	---/ 240
693	T105N R57W sec. 20aaad	Outwash	1.4	<0.5	---/ 240
290	T105N R57W sec. 33	Dakota	<1.0	-----	310/----
1041	T105N R57W sec. 33aaaa	Outwash	<1.0	-----	---/ 164
1031	T105N R58W sec. 8bbbb	Outwash	<1.0	-----	---/ 135
975	T105N R58W sec. 23abbb	Niobrara	1.8	-----	---/ 160
1105	T105N R58W sec. 34cccc	-------	<1.0	-----	---/ 210
----	T106N R56W sec. 11	Surface	2.5	-----	---/----
960	T106N R57W sec. 27abab	Outwash	<1.0	-----	---/ 30
1142	T106N R58W sec. 6aaaa	-------	1.6	-----	---/ 106
1027	T106N R58W sec. 35bbbb	Outwash	<1.0	-----	---/ 167
1156	T107N R57W sec. 16dddd	-------	1.0	-----	---/ 75
957	T108N R58W sec. 33bbbb	Outwash	<1.0	-----	---/ 100

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
		MINNEHAHA COUNTY			
681	T101N R48W sec. 3aaac	Outwash	<1.0	<0.5	---/----
740	T101N R48W sec. 3accb	Outwash	1.2	<0.5	---/----
688	T101N R48W sec. 3bdcd	Outwash	3.6	24	---/----
697	T101N R48W sec. 3cdac	Outwash	<1.0	<0.5	---/----
692	T101N R48W sec. 4dccc	Outwash	<1.0	<0.5	---/ 20
677	T101N R48W sec. 10bbbb	Outwash	<1.0	2.5	---/----
696	T101N R48W sec. 10bcca	Outwash	<1.0	<0.5	---/----
700	T102N R48W sec. 27ccca	Outwash	<1.0	1.2	---/----
699	T102N R48W sec. 33adda	Outwash	1.9	5.9	---/----
856	T102N R48W sec. 33ddba	Outwash	<1.0	<0.5	---/----
691	T102N R48W sec. 34accd	Outwash	5.4	-----	---/----
679	T102N R48W sec. 35babd	Outwash	<1.0	2.0	---/----
146	T102N R52W sec. 10dddd	Outwash	<1.0	<0.5	---/----
		MOODY COUNTY			
1165	T105N R49W sec. 10dddd	-------	2.4	-----	---/ 15
1179	T105N R49w sec. 14bccc	-------	1.3	-----	---/ 27
1157	T107N R48W sec. 5dccc	-------	2.0	-----	---/ 23
573	T107N R48W sec. 32abbb	Outwash	2.3	-----	---/ 29
		PENNINGTON COUNTY			
387	T1N R10E sec. 23aaaa	Pierre	<1.0	-----	---/ 60

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
		PERKINS COUNTY			
389	T15N R10E sec. 14ddbb	Pierre	24	-----	15/ 40
526	T15N R13E sec. 31adaa	Surface	<1.0	-----	---/----
543	T16N R16E sec. 4ccaa	Surface	<1.0	-----	---/----
550	T17N R10E sec. 16bcbc	Surface	<1.0	-----	---/----
522	T20N R10E sec. 6bbba	Surface	<1.0	-----	---/----
530	T21N R16E sec. 18dddd	Surface	<1.0	-----	---/----
529	T21N R17E sec. 21aaaa	Surface	<1.0	-----	---/----
		POTTER COUNTY			
262	T119N R74W sec. 17addd	Outwash	1.0	0.7	---/ 23
249	T119N R74W sec. 33ddad	Outwash	6.8	3.2	---/ 19
1063	T120N R74W sec. 5baba	Outwash	1.9	-----	---/----
258	T120N R74W sec. 33c	Outwash	7.9	-----	---/ 38
		ROBERTS COUNTY			
925	T122N R49W sec. 7bbbb	Outwash	<1.0	-----	---/ 186.5
930	T122N R52W sec. 2bbbb R	Outwash	2.0	-----	---/ 59.3
929	T122N R52W sec. 5cccc R	Outwash	3.6	-----	---/ 31.8
926	T122N R52W sec. 32aaaa R	Outwash	2.9	-----	---/ 25.5
1123	T126N R51W sec. 35aada	-------	1.6	-----	---/ 53
1116	T128N R50W sec. 21aaba	-------	<1.0	-----	---/ 128
1117	T128N R50W sec. 21cccc	-------	<1.0	-----	---/ 45

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
		SANBORN COUNTY			
1032	T107N R62W sec. 8cccc	Outwash	2.9	-----	---/ 146
1030	T107N R62W sec. 15cccc	Outwash	3.4	-----	---/ 56
1038	T108N R62W sec. 34dddc	Outwash	<1.0	-----	---/ 132
		SPINK COUNTY			
869	T114N R61W sec. 16bbbb	Outwash	1.1	-----	---/ 76
868	T114N R62W sec. 2dddd	Outwash	<1.0	-----	---/ 86
1029	T114N R63W sec. 5cccc	Outwash	1.0	-----	---/----
1033	T114N R64W sec. 25bbbb	Outwash	1.0	-----	---/ 73
253	T115N R60W sec. 19bbbb	Outwash	<1.0	-----	---/ 45
873	T115N R60W sec. 22aaaa	Outwash	1.1	-----	---/ 74
870	T115N R61W sec. 8cddd	Outwash	1.1	-----	---/ 105.9
1043	T115N R63W sec. 21bbbb	Outwash	<1.0	-----	---/ 65
1028	T115N R63W sec. 25bbbb	Outwash	1.5	-----	---/----
143	T115N R64W sec. 2cb	Outwash	<1.0	-----	---/----
177	T115N R64W sec. 8dd	Surface	1.8	-----	---/----
42	T115N R64W sec. 9cccb	Surface	<1.0	-----	---/----
29	T115N R64W sec. 10dda	Outwash	<1.0	<0.5	40/ 85
30	T115N R64W sec. 22bba	Outwash	1.9	<0.5	18/ 30
137	T116N R64W sec. 10	Dakota	<1.0	0.6	---/----
347	T116N R64W sec. 10	Dakota	<1.0	<0.5	---/----
178	T116N R64W sec. 34ad	Outwash	1.2	<0.5	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
282	T116N R64W sec. 34ad	Outwash	<1.0	<0.5	---/----
135	T116N R64W sec. 34da	Outwash	4.1	6.0	30/ 50
283	T116N R64W sec. 34dd	Outwash	4.1	3.4	---/----
460	T116N R64W sec. 35	Outwash	<1.0	-----	4/ 65
96	T116N R64W sec. 35cccc	Outwash	1.2	<0.5	4/ 65
462	T116N R64W sec. 35cccc	Outwash	1.1	-----	4/ 65
464	T116N R64W sec. 35cccc	Outwash	<1.0	-----	4/ 65
874	T117N R60W sec. 26bccc	Outwash	<1.0	-----	---/ 85.7
878	T117N R61W sec. 32abbb	Outwash	<1.0	-----	---/ 77.9
250	T120N R65W sec. 4cccc	Outwash	<1.0	-----	---/ 145
159	T120N R65W sec. 9bbaa	Dakota	<1.0	-----	---/----
263	T120N R65W sec. 15cccc	Outwash	1.0	-----	---/ 85
		STANLEY COUNTY			
----	T5N R31E sec. 21d	Surface	1.3	-----	---/----
		SULLY COUNTY			
1009	T113N R78W sec. 9bbbb	Outwash	4.6	-----	---/ 29
1019	T114N R74W sec. 4cbbb	Outwash	<1.0	-----	---/ 35
1012	T114N R74W sec. 30dddd	Outwash	6.7	-----	---/ 16
1015	T114N R78W sec. 9bbbb	Outwash	1.7	-----	---/ 45
1006	T114N R78W sec. 35bbbb	Outwash	2.2	-----	---/ 65
1023	T115N R74W sec. 13ccdd	Outwash	1.7	-----	---/ 22

SDGS Num- ber (1)	Location (2)	Pro- ducing horizon (3)	Sele- nium ug/L (4)*	Ni- trate mgN/L (5)	Feet to water/ well depth (6)**
			TODD COUNTY		
1132	T37N R29W sec. 28dddd	-------	<1.0	-----	---/ 195
			TRIPP COUNTY		
1109	T95N R76W sec. 7bbcc	-------	2.2	-----	---/ 25
880	T96N R76W sec. 6dddd	Ogallala	1.6	-----	---/ 76
883	T97N R76W sec. 1dddd	Ogallala	1.7	-----	---/ 46
1130	T97N R76W sec. 5bbbb	-------	<1.0	-----	---/ 42
881	T97N R76W sec. 15aaba	Ogallala	1.6	-----	---/ 85
882	T97N R76W sec. 17bbbb	Ogallala	1.5	-----	---/ 165
876	T97N R76W sec. 19dddd	Ogallala	<1.0	-----	---/ 168
888	T97N R76W sec. 23dddd	Ogallala	<1.0	-----	---/ 66
871	T97N R77W sec. 23bbbb	Ogallala	<1.0	-----	---/ 107
1136	T98N R76W sec. 28baaa	-------	7.2	-----	---/ 86
1111	T98N R76W sec. 29ddda	-------	3.8	-----	---/----
1107	T98N R76W sec. 31bddb2	-------	2.7	-----	---/ 110
1127	T98N R76W sec. 31bdca	-------	1.4	-----	---/ 118
1108	T98N R76W sec. 32aadd	-------	1.8	-----	---/ 63
			TURNER COUNTY		
25	T96N R53W sec. 28adaa	Niobrara	3.2	0.5	---/ 60
717	T97N R52W sec. 1cccc	Outwash	<1.0	<0.5	---/----
742	T97N R52W sec. 1cccc	Outwash	<1.0	<0.5	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
840	T97N R52W sec. 6cbbb	Outwash	<1.0	<0.5	---/----
745	T97N R52W sec. 10abaa	Outwash	<1.0	<0.5	---/----
857	T97N R52W sec. 10abaa	Outwash	<1.0	<0.5	---/----
753	T97N R52W sec. 11cd	Surface	1.5	<0.5	---/----
750	T97N R52W sec. 12cb	Outwash	<1.0	2.8	---/ 45
800	T97N R52W sec. 12cdc	Outwash	4.2	<0.5	---/----
709	T97N R52W sec. 12dd	Outwash	1.1	<0.5	---/----
704	T97N R52W sec. 13ddaa	Outwash	3.3	<0.5	---/----
716	T97N R52W sec. 13dddd	Outwash	1.4	<0.5	---/ 90
708	T97N R52W sec. 24bbbb	Outwash	<1.0	<0.5	---/----
813	T97N R52W sec. 24bbbb	Outwash	2.7	<0.5	---/----
20	T97N R53W sec. 23dadb	Outwash	1.5	1.0	---/ 60
26	T98N R52W sec. 30cbdb	Outwash	3.2	14	18/ 20
1071	T98N R53W sec. 5ccdd2	Outwash	8.6	-----	---/ 20
1074	T98N R53W sec. 5ccdd3	Outwash	1.0	-----	---/ 84
1077	T98N R53W sec. 15cccc	Outwash	1.2	-----	---/ 40
862	T99N R52W sec. 19aaaa	Outwash	2.3	-----	---/----
13	T99N R52W sec. 28	Outwash	1.1	<0.5	---/----
24	T99N R53W sec. 18acbb	Outwash	<1.0	<0.5	13/ 17
19	T99N R53W sec. 25bbbc	Outwash	1.1	<0.5	7/ 25
1070	T99N R53W sec. 28bbbb	Outwash	<1.0	-----	---/ 45
1081	T99N R53W sec. 35aaaa2	Outwash	2.5	-----	---/ 42
46	T99N R54W sec. 6bdad	Carlile	2.7	<0.5	---/ 250

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
41	T99N R54W sec. 13aada	Outwash	2.7	28	21/ 24
459	T100N R55W sec. 18aabb	Outwash	<1.0	<0.5	---/----
		UNION COUNTY			
435	T89N R48W sec. 21bccc	Outwash	5.6	0.8	---/----
44	T89N R48W sec. 23daad	Outwash	8.9	4.3	---/----
684	T89N R48W sec. 26cddd	Alluvium	<1.0	<0.5	---/ 37
398	T89N R48W sec. 27bddd	Outwash	3.8	1.7	---/----
22	T89N R48W sec. 27dacb	Outwash	3.6	<0.5	---/----
430	T89N R48W sec. 28adaa	Outwash	<1.0	<0.5	10/ 96
442	T89N R48W sec. 30dccc	Outwash	<1.0	<0.5	---/----
425	T89N R48W sec. 32	Outwash	2.6	1.1	---/----
767	T89N R48W sec. 36abba	Alluvium	<1.0	<0.5	---/ 42
792	T89N R48W sec. 36abba	Alluvium	<1.0	<0.5	---/ 42
810	T89N R48W sec. 36abba	Alluvium	<1.0	<0.5	---/ 42
814	T89N R48W sec. 36abba	Alluvium	<1.0	<0.5	---/ 42
851	T89N R48W sec. 36abba	Alluvium	<1.0	<0.5	---/ 42
443	T89N R49W sec. 1ddaa	Outwash	<1.0	<0.5	---/----
427	T89N R49W sec. 4bddd	Outwash	<1.0	<0.5	---/----
437	T89N R49W sec. 7dccc	Outwash	182	33	---/----
429	T89N R49W sec. 9cbbb	Outwash	<1.0	<0.5	---/----
818	T89N R49W sec. 10abbb	Outwash	<1.0	<0.5	---/ 98
385	T89N R49W sec. 14dcdd	Outwash	<1.0	<0.5	---/----

SDGS Num- ber (1)	Location (2)	Pro- ducing horizon (3)	Sele- nium ug/L (4)*	Ni- trate mgN/L (5)	Feet to water/ well depth (6)**
423	T89N R49W sec. 15aaaa	Outwash	<1.0	<0.5	---/----
820	T89N R49W sec. 15daaa	Outwash	1.8	<0.5	---/ 92
352	T89N R49W sec. 16cccc	Outwash	<1.0	<0.5	---/----
351	T89N R49W sec. 20cbcc	Outwash	<1.0	<0.5	---/----
392	T89N R49W sec. 21daaa	Outwash	1.2	<0.5	---/----
701	T89N R49W sec. 22bdcb	Alluvium	<1.0	<0.5	---/ 42
842	T89N R49W sec. 22bdcb	Alluvium	<1.0	<0.5	---/ 42
849	T89N R49W sec. 22bdcb	Alluvium	<1.0	<0.5	---/ 42
859	T89N R49W sec. 22bdcb	Alluvium	<1.0	<0.5	---/ 42
755	T89N R49W sec. 23cadd	Outwash	<1.0	<0.5	---/ 77
694	T89N R49W sec. 23cbba	Outwash	<1.0	<0.5	---/ 97
751	T89N R49W sec. 24abcd	Outwash	<1.0	<0.5	---/ 97
715	T89N R49W sec. 24bdc	Surface	3.0	<0.5	---/----
428	T89N R49W sec. 24dddd	Outwash	9.7	1.1	---/----
757	T89N R49W sec. 27abcd	Outwash	<1.0	<0.5	---/ 80
394	T89N R49W sec. 32daaa	Outwash	<1.0	<0.5	---/----
356	T89N R49W sec. 35bbbb	Outwash	17	2.0	---/----
444	T89N R49W sec. 36cddd	Outwash	<1.0	<0.5	---/----
335	T89N R50W sec. 13daaa	Outwash	<1.0	<0.5	---/----
439	T90N R48W sec. 31bddd	Outwash	22	<0.5	---/----
433	T90N R49W sec. 28aaaa	Outwash	<1.0	<0.5	---/----
438	T90N R49W sec. 35bddd	Outwash	55	10	---/----
21	T90N R49W sec. 36dddd	Outwash	2.8	<0.5	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
685	T90N R50W sec. 25babb	Outwash	1.4	<0.5	---/ 37
858	T91N R49W sec. 30ccbb	Alluvium	<1.0	<0.5	---/ 37
45	T91N R50W sec. 13ccdb	Outwash	2.3	<0.5	---/----
15	T91N R50W sec. 13cdcb	Outwash	3.6	<0.5	---/----
689	T91N R50W sec. 36abbb	Alluvium	<1.0	<0.5	---/ 25
741	T91N R50W sec. 36abbb	Alluvium	1.0	<0.5	---/ 23
746	T91N R50W sec. 36abbb	Alluvium	<1.0	<0.5	---/ 23
1129	T92N R50W sec. 22dddd	-------	2.1	-----	---/ 185
1128	T93N R50W sec. 29aaaa	-------	<1.0	-----	---/ 163
259	T94N R50W sec. 3dddd	Outwash	<1.0	<0.5	---/ 66
245	T94N R50W sec. 4aaaa	Outwash	1.1	-----	---/ 114
2	T95N R49W sec. 2dddc	Outwash	1.1	-----	---/----
47	T95N R49W sec. 28bada	Outwash	4.9	56	---/----
27	T95N R49W sec. 29ddaa	Outwash	12	11	---/ 90
240	T95N R50W sec. 22aaaa	Outwash	<1.0	0.7	---/ 58
251	T95N R50W sec. 35bbba	Outwash	<1.0	0.9	---/ 86
		WALWORTH COUNTY			
256	T121N R74W sec. 27baab2	Outwash	<1.0	<0.5	---/ 146
1056	T121N R76W sec. 7addd	Outwash	1.1	-----	---/ 22
1036	T122N R75W sec. 13aaaa	Outwash	<1.0	-----	---/ 9
188	T123N R74W sec. 30aadd	Outwash	3.9	-----	---/ 60
184	T123N R75W sec. 23dddd	Outwash	3.0	-----	---/ 35

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
1054	T124N R76W sec. 3dddd2	Outwash	<1.0	-----	---/ 12
1062	T124N R76W sec. 7dccc	Outwash	1.3	-----	---/ 14
1064	T124N R76W sec. 8abaa	Outwash	1.4	-----	---/ 13
1048	T124N R76W sec. 9bcbc	Outwash	2.1	-----	---/ 11
1053	T124N R77W sec. 3dddd1	Outwash	1.7	-----	---/ 13
1057	T124N R77W sec. 14bbbb	Outwash	<1.0	-----	---/ 33
1059	T124N R78W sec. 19aada	Outwash	<1.0	-----	---/ 21
1061	T124N R78W sec. 23bbbb	Outwash	22	-----	---/ 74

YANKTON COUNTY

65	T93N R54W sec. 7cccc	Surface	1.6	-----	---/----
70	T94N R54W sec. 7cccc	Surface	1.6	-----	---/----
95	T94N R55W sec. 12aacc	Outwash	<1.0	-----	80/ 160
97	T94N R55W sec. 13adaa	Outwash	1.3	-----	---/----
105	T95N R54W sec. 2aaaa	Outwash	<1.0	-----	---/ 140
111	T95N R54W sec. 3adbb	Outwash	2.2	-----	---/ 150
112	T95N R54W sec. 19cbaa	Outwash	1.4	-----	---/ 200
116	T95N R54W sec. 30cbaa	Outwash	<1.0	-----	---/ 200
1160	T95N R55W sec. 7cccc	-------	3.4	-----	---/ 95
108	T95N R55W sec. 25addd	Outwash	<1.0	-----	---/----
117	T95N R56W sec. 5bbbb	Outwash	<1.0	-----	---/ 200
118	T95N R56W sec. 6bacd	Outwash	<1.0	-----	---/ 200
90	T95N R57W sec. 5bbdd	Outwash	1.0	-----	---/----

SDGS Number (1)	Location (2)	Producing horizon (3)	Selenium ug/L (4)*	Nitrate mgN/L (5)	Feet to water/ well depth (6)**
1143	T95N R57W sec. 30cccc	-------	1.4	-----	---/ 254
1151	T96N R54W sec. 4aaaa	-------	2.5	-----	---/ 217
92	T96N R54W sec. 6cbca	Niobrara	<1.0	-----	---/ 350
109	T96N R54W sec. 31dccc	Niobrara	1.4	-----	---/ 180
91	T96N R54W sec. 33dcad	Niobrara	<1.0	-----	---/ 320
115	T96N R54W sec. 35dbdd	Niobrara	<1.0	-----	---/ 150
113	T96N R55W sec. 12aadd	Outwash	12	-----	---/----
110	T96N R55W sec. 32cdda	Dakota	1.2	-----	---/ 600
119	T96N R55W sec. 34cddd	Outwash	1.2	-----	---/ 230
114	T96N R56W sec. 34dcaa	Outwash	<1.0	-----	---/ 168
106	T96N R57W sec. 36ddcc	Outwash	1.6	-----	---/----
		ZIEBACH COUNTY			
----	T17N R20E sec. 21bdc	Hell Creek	17.0	-----	---/----