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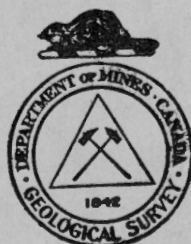
PRELIMINARY REPORT

GROUND-WATER RESOURCES
OF THE
RURAL MUNICIPALITY OF MOOSE MOUNTAIN
No. 63
SASKATCHEWAN

BY

B. R. MacKay, H. N. Hainstock & P. D. Eugg

Water Supply Paper No. 15



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GROUND WATER RESOURCES OF THE RURAL MUNICIPALITY

OF MOOSE MOUNTAIN, NO. 63

SASKATCHEWAN

INTRODUCTION

Lack of rainfall during the years 1930 to 1934 over a large part of the Prairie Provinces brought about an acute shortage both in the larger supplies of surface water used for irrigation and the smaller supplies of ground water required for domestic purposes and for stock. In an effort to relieve the serious situation the Geological Survey began an extensive study of the problem from the standpoint of domestic uses and stock raising. During the field season of 1935 an area of 80,000 square miles, comprising all that part of Saskatchewan south of the north boundary of township 32, was systematically examined, records of approximately 60,000 wells were obtained, and 720 samples of water were collected for analyses. The examination of so large an area and the interpretation of the data collected were possible because the bedrock geology and the Pleistocene deposits had been studied previously by McLearn, Warren, Rose, Stansfield, Wickendon, Russell, and others of the Geological Survey. The Department of Natural Resources of Saskatchewan and local well drillers assisted considerably in supplying several hundred well records. The base maps were supplied by the Topographical Surveys Branch of the Department of the Interior.

Publication of Results

The essential information pertaining to the ground water conditions is being published in reports, one being issued for each municipality. Copies of these reports are being sent to the secretary treasurers of the municipalities and to certain Provincial and Federal Departments, where they can be consulted by residents of the municipalities or by other persons, or they may be obtained by writing direct to the Director, Bureau of Economic Geology, Department of Mines, Ottawa. Should anyone require more detailed information than that contained in the reports such additional information as the Geological Survey possesses can be obtained on application to the director. In making such request the applicant should indicate the exact location of the area by giving the quarter section, township, range, and meridian concerning which further information is desired.

The reports are written principally for farm residents, municipal bodies, and well drillers who are either planning to sink new wells or to deepen existing wells. Technical terms used in the reports are defined in the glossary.

How to Use the Report

Anyone desiring information about ground water in any particular locality should read first the part dealing with the municipality as a whole in order to understand more fully the part of the report that deals with the place in which he is interested. At the same time he should study the two figures accompanying the report. Figure 1 shows the surface and bedrock geology as related to the ground water supply, and Figure 2 shows the relief and the location and type of water wells. Relief is shown by lines of equal elevation called "contours". The elevation above sea-level

is given on some or all of the contour lines on the figure.

If one intends to sink a well and wishes to find the approximate depth to a water-bearing horizon, he must learn: (1) the elevation of the site, and (2) the probable elevation of the water-bearing bed. The elevation of the well site is obtained by marking its position on the map, Figure 2, and estimating its elevation with respect to the two contour lines between which it lies and whose elevations are give on the figure. Where contour lines are not shown on the figure, the elevations of adjacent wells as indicated in the Table of Well Records accompanying each report can be used. The approximate elevation of the water-bearing horizon at the well-site can be obtained from the Table of Well Records by noting the elevation of the water-bearing horizon in surrounding wells and by estimating from these known elevations its elevation at the well-site.¹ If the water-bearing horizon is in bedrock the depth to water can be estimated fairly accurately in this way. If the water-bearing horizon is in unconsolidated deposits such as gravel, sand, clay, or glacial debris, however, the estimated elevation is less reliable, because the water-bearing horizon may be inclined, or may be in lenses or in sand beds which may lie at various horizons and may be of small lateral extent. In calculating the depth to water, care should be taken that the water-bearing horizons selected from the Table of Well Records be all in the same geological horizon either in the glacial drift or in the bedrock. From the data in the Table

¹ If the well-site is near the edge of the municipality, the map and report dealing with the adjoining municipality should be consulted in order to obtain the needed information about nearby wells.

of Well Records it is also possible to form some idea of the quality and quantity of the water likely to be found in the proposed well.

GLOSSARY OF TERMS USED

Alkaline. The term "alkaline" has been applied rather loosely to some ground waters. In the Prairie Provinces a water is usually described as "alkaline" when it contains a large amount of salts, chiefly sodium sulphate and magnesium sulphate in solution. Water that tastes strongly of common salt is described as "salty". Many "alkaline" waters may be used for stock. Most of the so-called "alkaline" waters are more correctly termed "sulphate waters".

Alluvium. Deposits of earth, clay, silt, sand, gravel, and other material on the flood-plains of modern streams and in lake beds.

Aquifer or Water-bearing Horizon. A water-bearing bed, lens, or pocket in unconsolidated deposits or in bedrock.

Buried pre-Glacial Stream Channels. A channel carved into the bedrock by a stream before the advance of the continental ice-sheet, and subsequently either partly or wholly filled in by sands, gravels, and boulder clay deposited by the ice-sheet or later agencies.

Bedrock. Bedrock, as here used, refers to partly or wholly consolidated deposits of gravel, sand, silt, clay, and marl that are older than the glacial drift.

Coal Seam. The same as a coal bed. A deposit of carbonaceous material formed from the remains of plants by partial decomposition and burial.

Contour. A line on a map joining points that have the same elevation above sea-level.

Continental Ice-sheet. The great ice-sheet that covered most of the surface of Canada many thousands of years ago.

Escarpment. A cliff or a relatively steep slope separating level or gently sloping areas.

Flood-plain. A flat part in a river valley ordinarily above water but covered by water when the river is in flood.

Glacial Drift. The loose, unconsolidated surface deposits of sand, gravel, and clay, or a mixture of these, that were deposited by the continental ice-sheet. Clay containing boulders forms part of the drift and is referred to as glacial till or boulder clay. The glacial drift occurs in several forms:

(1) Ground Moraine. A boulder clay or till plain (includes areas where the glacial drift is very thin and the surface uneven).

(2) Terminal Moraine or Moraine. A hilly tract of country formed by glacial drift that was laid down at the margin of the continental ice-sheet during its retreat. The surface is characterized by irregular hills and undrained basins.

(3) Glacial Outwash. Sand and gravel plains or deltas formed by streams that issued from the continental ice-sheet.

(4) Glacial Lake Deposits. Sand and clay plains formed in glacial lakes during the retreat of the ice-sheet.

Ground Water. Sub-surface water, or water that occurs below the surface of the land.

Hydrostatic Pressure. The pressure that causes water in a well to rise above the point at which it is struck.

Impervious or Impermeable. Beds, such as fine clays or shale, are considered to be impervious or impermeable when they do not permit of the perceptible passage or movement of the ground water.

Pervious or Permeable. Beds are pervious when they permit of the perceptible passage or movement of ground water, as for example porous sands, gravel, and sandstone.

Pre-Glacial Land Surface. The surface of the land before it was covered by the continental ice-sheet.

Recent Deposits. Deposits that have been laid down by the agencies of water and wind since the disappearance of the continental ice-sheet.

Unconsolidated Deposits. The mantle or covering of alluvium and glacial drift consisting of loose sand, gravel, clay, and boulders that overlie the bedrock.

Water Table. The upper limit of the part of the ground wholly saturated with water. This may be very near the surface or many feet below it.

Wells. Holes sunk into the earth so as to reach a supply of water. When no water is obtained they are referred to as dry holes. Wells in which water is encountered are of three classes.

(1) Wells in which the water is under sufficient pressure to flow above the surface of the ground. These are called Flowing Artesian Wells.

(2) Wells in which the water is under pressure but does not rise to the surface. These wells are called Non-Flowing Artesian Wells.

(3) Wells in which the water does not rise above the water table. These wells are called Non-Artesian Wells.

NAMES AND DESCRIPTIONS OF GEOLOGICAL FORMATIONS, REFERRED
TO IN THESE REPORTS

Wood Mountain Formation. The name given to a series of gravel and sand beds which have a maximum thickness of 50 feet, and which occur as isolated patches on the higher parts of Wood mountain. This is the youngest bedrock formation and, where present, overlies the Ravenscrag formation.

Cypress Hills Formation. The name given to a series of conglomerates and sand beds ~~which~~ occur in the southwest corner of Saskatchewan, and rest upon the Ravenscrag or older formations. The formation is 30 to 125 feet thick.

Ravenscrag Formation. The name given to a thick series of light-coloured sandstones and shales containing one or more thick lignite coal seams. This formation is 500 to 1,000 feet thick, and covers a large part of southern Saskatchewan. The principal coal deposits of the province occur in this formation.

Whitemud Formation. The name given to a series of white, grey, and buff coloured clays and sands. The formation is 10 to 75 feet thick. At its base this formation grades in places into coarse, limy sand beds having a maximum thickness of 40 feet.

Eastend Formation. The name given to a series of fine-grained sands and silts. It has been recognized at various localities over the southern part of the province, from the Alberta boundary east to the escarpment of Missouri coteau. The thickness of the formation seldom exceeds 40 feet.

Bearpaw Formation. The Bearpaw consists mostly of incoherent dark grey to dark brownish grey, partly bentonitic shales, weathering light grey, or, in places where much iron

is present, buff. Beds of sand occur in places in the lower part of the formation. It forms the uppermost bedrock formation over much of western and southwestern Saskatchewan and has a maximum thickness of 700 feet or somewhat more.

Belly River Formation. The Belly River consists mostly of non-marine sand, shale, and coal, and underlies the Bearpaw in the western part of the area. It passes eastward and northeastward into marine shale. The principal area of transition is in the western half of the area where the Belly River is mostly thinner than it is to the west and includes marine zones. In the southwestern corner of the area it has a thickness of several hundred feet.

Marine Shale Series. This series of beds consists of dark grey to dark brownish grey, plastic shales, and underlies the central and northeastern parts of Saskatchewan. It includes beds equivalent to the Bearpaw, Belly River, and older formations that underlie the western part of the area.

WATER-BEARING HORIZONS OF THE MUNICIPALITY

The rural municipality of Moose Mountain is an area of 324 square miles in southeastern Saskatchewan. It consists of nine townships described as townships 7, 8, and 9, ranges 1, 2, and 3 west of the 2nd meridian. The centre of the municipality lies near Carlyle, 117 miles southeast of Regina. The municipality is covered by a mantle of unconsolidated drift which was deposited by the continental ice-sheet, and by the water resulting from its melting. This deposit of glacial drift is 180 feet in thickness in the southwestern corner of the municipality, 300 feet in the eastern part, and at least 400 feet in thickness in Moose Mountain area. The glacial drift conceals the bedrock throughout the municipality.

~~Water-bearing~~ Horizons in the Unconsolidated Deposits

The northern and northeastern parts of the municipality are characterized by a belt of hillocks and undrained depressions formed of a thick and irregular accumulation of glacial drift (terminal moraine), which was laid down at the margin of the continental ice-sheet when it was stationary, or nearly so. As a result, this area has very irregular surface features and culminates in Moose mountain. The highest elevation reached in Moose mountain, in the north of this municipality, is 2,600 feet above sea-level. To the south, the elevation drops to 2,100 feet, a decrease of 500 feet in 5 miles. Deposits of glacial sand and gravel, occurring in the form of tongues, extend out on the plain in front of the terminal moraine and can be traced for a short distance back into the morainic deposits. Similar deposits also occur along Auburton creek. Great Bear lake, and numerous smaller lakes occur within the depressions in Moose mountain. Some of the water from these lakes seeps downward into the glacial drift and underlying Ravenscrag formation.

In township 7, range 3, there is a bed of an old glacial lake, the approximate location of which is shown on the accompanying

map. Deposits of fine lake sands, in many places attaining a thickness of 40 feet, overlain by 10 to 20 feet of black clay, occur in this basin. The clay gradually decreases in thickness towards the east.

With the exception of this lake bed, the upper 10 to 50 feet of the glacial drift in this municipality is composed of yellow clay. In the morainic area the yellow clay varies from a few feet to 50 feet in thickness, but on the plain, south of the moraine, the thickness usually averages 20 feet. Scattered beds and pockets of sand and gravel occur throughout this zone of yellow clay. The yellow clay is underlain to a depth of from 100 to 300 feet by a fine, compact, blue clay. Scattered pockets of sand occur within the upper 20 feet of this blue clay. Deposits of sand and gravel occur at the base of the blue clay and immediately overlie the Ravenscrag formation.

Three water-bearing horizons occur in the glacial drift of this municipality. The first horizon is formed by deposits of lake sands that occur in the old glacial lake basin, by deposits of glacial sands and gravels that occur as tongues extending out on the plain below Moose mountain and as a narrow band along Auburton creek, and by scattered layers and pockets of sand and gravel that occur within the yellow clay and at the contact of the yellow and blue clays. This horizon is the source of water for all of the shallow wells in the municipality. The best supplies are obtained from the glacial lake sands, and from the tongues of glacial sand and gravel.

The second water-bearing horizon is formed by deposits of sand that occur within the upper 20 feet of the blue clay. This horizon yields only a small supply of alkaline water.

The third horizon is formed by deposits of sand and gravel that occur at the base of the blue clay, at depths of from 160 to 200 feet. This horizon appears to be fairly continuous

throughout the municipality. It yields a fairly abundant supply of hard water, that has a high iron content.

Water-bearing Horizons in the Bedrock

The Ravenscrag bedrock formation underlies the glacial drift throughout the municipality. This formation is composed of a series of beds of sandstone, shale, and sandy shale, and contains two or more seams of lignite coal.

Three water-bearing horizons occur in this formation and yield an abundant supply of water. The first horizon is formed by a bed of sand that is overlain by a thin seam of lignite coal, and underlain by beds of impervious shale. This horizon occurs at depths of 180 to 200 feet and appears to be confined to township 8, range 2, township 7, range 2, and township 7, range 3. The second horizon is formed by a thin layer of fine sand which is overlain and underlain by impervious shale. It occurs at a depth of from 320 to 400 feet, and with the exception of possibly Moose mountain area, it extends throughout the municipality. The third horizon occurs at a depth of approximately 480 feet and is a fine white sand. This horizon has been tapped by wells located in township 7, range 2, and township 7, range 3, but elsewhere it has not been located.

GROUND WATER CONDITIONS BY TOWNSHIPS

Township 7, Range 1

The glacial drift of this township contains one water-bearing horizon. This is formed by glacial gravels that occur along Auburton creek, by fairly extensive deposits of sand and gravel in the southeastern corner of the township, and by a few scattered pockets of sand occurring within the upper 30 feet of the drift throughout the remainder of the township. The water that is derived from this horizon is hard in character and is usable for both humans and animals. The wells along Auburton creek are only affected by extreme drought conditions, and will

water from 40 to 80 head of stock. The remainder of the township experiences a shortage of water, making it necessary for the farmers to excavate dugouts to conserve a supply of water for stock use or to haul from the wells along Auburton creek.

Only two wells have been drilled into bedrock. A well on SW. $\frac{1}{4}$, section 7, is deriving an abundant supply of water from a sand bed of the Ravenscrag formation at a depth of 260 feet. The water has a high iron content and is not suitable for domestic use. The well located on SW. $\frac{1}{4}$, section 25, is 365 feet deep and is deriving an abundant supply of water from possibly the same horizon. The water has a strong laxative effect and was pronounced unfit for human consumption. The hydrostatic pressure is sufficient to cause the water to rise to within 9 feet of the surface in the well located in SW. $\frac{1}{4}$, section 7, and to within 60 feet of the surface in the well located in SW. $\frac{1}{4}$, section 25. It is probable that an abundant supply of water, having the same characteristics as that obtained from the two wells mentioned above, can be obtained from the Ravenscrag formation throughout the township at depths of 260 to 360 feet.

Township 7, Range 2

The ground water supply from the glacial drift in this township lies within 20 to 30 feet of the surface. In the north-eastern corner of the township a fair supply of hard, usable water is being obtained from pockets of sand that occur within yellow and blue clays. Over the remainder of the township, the aquifer is generally a 2 to 5-inch bed of sand that occurs between the yellow and blue clays. Many dry holes have been dug, and although a few have struck small sand pockets the supply obtained is inadequate in times of drought.

Three water-bearing horizons are known to occur in the Ravenscrag formation. The uppermost horizon is a fine, sandy bed immediately underlying a thin, lignite coal seam, and it is encountered

throughout the township at depths of 180 to 230 feet or an approximate elevation of 1,780 feet. The water is medium soft in character and in some instances is cloudy. It is usable for stock, but has a laxative effect on humans. The water from individual wells tapping this horizon is sufficient to water from 100 to 200 head of stock and little difficulty should be experienced in obtaining an abundant supply from this horizon throughout the township. The hydrostatic pressure is fairly high and causes the water to rise to within 50 feet of the surface.

A second water-bearing horizon lies beneath a 50-foot bed of shale at a depth of 380 to 400 feet. This horizon is formed by a deposit of coarse sand and as a result the water is soft and usable for both humans and animals. The hydrostatic pressure is sufficient to cause the water to rise to within 15 to 35 feet of the surface. The well located on the NW. $\frac{1}{4}$, section 14, disclosed a third horizon at a depth of 480 feet or an elevation of 1,500 feet. The water is hard and contains a high total dissolved solid content (6,628 parts per million) so that it is not usable for humans or stock. The first two horizons should be continuous throughout the township and should prove a source of supply of water if further drilling is done in the township.

Township 7, Range 3

With the exception of two areas in which sand deposits are extensive the glacial drift of this township is composed of impervious yellow and blue clays. An old glacial lake bed bordering on Moose creek and extending north, comprises one area. Its approximate boundary is shown on the accompanying map. The deposits in the lake bed are composed of fine lake sands, which underlie a 10 to 20-foot layer of black clay. There is an abundant supply of clear, medium hard, usable water in these sands, which is little affected by long periods of drought. The wells that are located in this area will water from 100 to 200 head of stock even in drought years. The

second area lies south of Moose creek in the north of sections 7, 8, and 9. This is probably only a large pocket of sand and gravel lying about 20 feet below the surface, but wells tapping these gravels yield a fair supply of hard, usable water.

The Ravenscrag formation is encountered at a depth of 180 to 200 feet. There are at least three water-bearing horizons in this formation from which an abundant supply of water can be obtained. The first horizon is formed by a sand bed that immediately underlies a thin layer of lignite coal at a depth of 200 feet. The water is hard and is usable for stock, but has a strong laxative effect on humans. However, it is used for domestic purposes in many instances, as it is the only water that can be obtained. The hydrostatic pressure is sufficient to cause the water to rise to within 15 to 25 feet of the surface. The second horizon is a sand bed encountered throughout the southern part of the township at depths of 240 to 260 feet. The water from this horizon is soft in character and rises to within 50 feet of the surface. It is usable for both humans and animals and individual wells tapping this horizon will supply from 200 to 300 head of stock. The third horizon is found at a depth of 350 to 400 feet. This aquifer is a fine white sand which lies beneath a layer of shale. The water rises to within 30 feet of the surface and the individual wells tapping this horizon yield sufficient water for 300 to 500 head of stock. Should other wells be drilled throughout the township, an adequate supply of water should be located at any one of these three horizons.

Township 8, Range 1

The glacial drift of this township is composed mainly of blue clay, but a narrow area of glacial gravels occurs along the Auburton creek. The approximate location of this area of glacial gravel is shown on the accompanying map. These glacial gravels, which lie within 10 to 20 feet of the surface, constitute the main water-bearing horizon of this township. The water is hard in character

and is an excellent water for domestic use. Due to the irregular topography of this township, numerous sloughs occur and they serve as a source of water for stock use when there is sufficient rainfall, but in times of drought the farmers are forced to haul from the few good wells along Auburton creek. Throughout the remainder of the township the dug wells have yielded small supplies of seepage water, that are only sufficient for domestic purposes.

Two deep wells in this township have penetrated the same water-bearing horizon in the Ravenscrag formation. They are 516 and 600 feet in depth and yield a moderate supply of water which is unfit for both humans and animals. The 516-foot well, located on the SW. $\frac{1}{4}$, section 3, flowed when first drilled, but of late years it has become plugged with sand. From the knowledge derived from these two wells it would seem to be impracticable to drill for water in this township. The writer is of the opinion that the best method for the conservation of water in this township would be the construction of dams and dugouts. In many cases the sloughs could be deepened and cleaned out, making a natural dugout.

Township 8, Range 2

The glacial sands and gravels that extend out from the slopes of Moose mountain form the main water-bearing horizon in the glacial drift of this township. The approximate location of these sand and gravel beds is shown on the accompanying map. The water from this horizon is hard and is ~~usable~~ for both humans and animals. In most instances the individual wells that tap the horizon will water 50 head of stock and they are not affected to any great extent by long periods of drought. Elsewhere in the township practically no water is located in the upper 50 feet of the glacial drift, as many dry holes have been sunk into yellow and blue clay. However, a good supply of hard, ~~usable~~ water is located at a depth of 200 to 225 feet in sand and gravel. This horizon occurs at the contact of glacial drift and the Ravenscrag formation. The water contains a

large amount of iron, but is used for domestic purposes as well as for stock use. The supply from the individual wells is sufficient to water about 300 head of stock.

In the Ravenscrag formation two water-bearing horizons are located which yield an abundant supply of usable water. The first horizon occurs from 260 to 300 feet below the surface and is formed by a bed of sand which is overlain by a seam of coal. The wells tapping this horizon yield sufficient water to supply about 200 head of stock. The hydrostatic pressure is sufficient to cause the water to rise to within 20 feet of the surface and the well located on SW. $\frac{1}{4}$, section 16, flowed when first drilled. The water is hard in character and contains a large amount of iron. The second horizon occurs at a depth of 320 to 400 feet. This aquifer which underlies shale beds, is a fine sand and this sand has a tendency to plug the wells unless sand screens or hack-sawed pipes are installed when the wells are drilled. The water is very hard and in many cases is milky in appearance, but it has no apparent injurious effect on animals. It is only used for domestic purposes when other water cannot be obtained. An abundant supply of water can be obtained from both of these horizons anywhere in the township, but the water derived is not desirable for domestic use.

Township 8, Range 3

Extensive deposits of glacial sands and gravels occur in the northern part of this township. These glacial gravel and sand deposits form the main water-bearing horizon of the glacial drift. The approximate location of these deposits is shown on the accompanying map. The wells tapping these glacial gravels are from 10 to 20 feet in depth and yield a supply of hard, usable water that is sufficient for 50 to 150 head of stock, even during pronounced drought periods. Another horizon from which a moderate supply of hard, usable water is obtained is located in sections 2, 3, 4, 5, and 6. This horizon is a sand and gravel bed lying 30 to 60 feet below the yellow

clay. The hydrostatic pressure is not great as the water rises only a few feet in most wells, but it maintains a constant water-level and as a result the individual wells supply sufficient water for 50 head of stock.

Elsewhere in the township, small pockets of sand have been located in yellow clay, but in dry seasons the wells tapping them become completely dry. In many cases dry holes are sunk before the small pockets of sand are located.

An abundant supply of hard, usable water is obtained from the glacial drift at a depth of 165 to 175 feet. This may be a sand and gravel bed that was laid down on the bedrock, as the Ravenscrag formation is reported at about this depth in the deeper wells. The water has a laxative effect and has a high iron content, but it is used for both animals and humans. The hydrostatic pressure is sufficient to cause the water to rise to within 60 feet of the surface and it maintains a constant water-level. The individual wells tapping this horizon will water 500 head of stock.

One water-bearing horizon is found in the Ravenscrag formation at a depth of 260 to 300 feet. The water is derived from a fine sand which is overlain by an impervious layer of shale. The water is soft in character and will water from 200 to 500 head of stock. The water rises to within 60 feet of the surface and is used for both domestic and stock purposes. Farmers who contemplate drilling will very likely find a strong supply of water at a depth of 170 feet, but a better water will probably be obtained at a depth of about 300 feet.

Township 9, Range 1

One main water-bearing horizon is located in the glacial drift of this township. It is formed by the deposits of glacial gravels that occur below the slopes of Moose mountain. The wells tapping this horizon are from 20 to 45 feet in depth and yield an abundant supply of hard, usable water. The water maintains a

constant level and the individual wells will water 100 head of stock even in long periods of drought. Over the remainder of the township numerous sand and gravel pockets are located within 30 feet of the surface and when they are tapped they yield a fair supply of hard water. However, many dry holes are generally dug into the clays before these sand pockets are located. Along the eastern boundary of this township a few deep wells have penetrated another sand bed in the glacial drift at a depth of 160 to 200 feet. This horizon yields a fair supply of hard water which is sufficient for 100 head of stock. The water has a high iron content, but is used for both humans and animals. The hydrostatic pressure is sufficient to cause the water to rise to within 70 feet of the surface. A second horizon is located at a depth of 260 feet in the glacial drift. This aquifer is a fine sand probably deposited on the surface of the Ravenscrag, as the bed-rock is penetrated near this level. The wells are 260 to 270 feet in depth and supply an abundance of hard, usable water for both humans and animals. The water will only rise to within 90 feet of the surface, making the pumping of the water a difficult problem.

Two wells located on SW. $\frac{1}{4}$, section 24, and SE. $\frac{1}{4}$, section 23, are obtaining water from a water-bearing horizon in the Ravenscrag formation. The wells are 300 to 335 feet in depth and the aquifer in each case is a fine sand. The water is hard and contains a large amount of iron, but is used for domestic purposes as well as for animals. There is sufficient hydrostatic pressure to cause the water to rise to within 30 feet of the surface. The supply is so great that the water-level cannot be lowered in the wells. In the well located on the SE. $\frac{1}{4}$, section 23, a shale layer was penetrated beneath a blue sand bed. This shale formation is probably the upper surface of the Marine shale formation. This township does not experience a grave shortage of water, but if it were necessary to drill deep

wells, an abundant supply of water would probably be located from the horizons mentioned above. The best supply, both from the standpoint of quantity and quality, will be obtained at a depth of 300 to 350 feet.

Township 9, Range 2

This township consists of the White Bear reserve, except for a row of sections along the south and east. One water-bearing horizon is known to exist in the glacial drift in this area. It is composed of the glacial gravels that extend out from the slopes of Moose mountain. The water is of excellent quality, being hard and **usable**, and the individual wells supply 40 to 80 head of stock. Along the eastern boundary of the township a number of springs which yield an abundant supply of clear, **usable** water are found in gravel.

Two deep wells have encountered the Ravenscrag at a depth of about 290 feet. Two water horizons occur in this formation. The first is formed by a sand bed which is underlain by a bed of shale. It occurs at a depth of 275 feet. The second occurs immediately below the shale and is a fine sand. It yields an abundant supply of hard, **usable** water that is high in iron. The hydrostatic pressure in the upper horizon is sufficient to cause the water to rise to within 20 feet of the surface and in the second horizon to within 105 feet of the surface. The numerous lakes and sloughs in the Indian reserve supply the inhabitants with sufficient water throughout all seasons of the year.

Township 9, Range 3

Moose Mountain Forest reserve, occupies the greater part of this township. One water-bearing horizon is located within 10 to 20 feet of the surface in the glacial drift and it is formed by beds of gravel and sand. These deposits of gravel and sand are found along the numerous valleys and ravines and wells tapping them yield an abundant supply of clear, hard, **usable** water. The supply varies

with each well, but generally there is sufficient water for about 30 head of stock. The numerous lakes and sloughs provide the main supply of water for stock use, so that only a supply sufficient for domestic purposes is required from the wells.

A well located in the NE. $\frac{1}{4}$, section 2, is 465 feet in depth and it encounters the Ravenscrag formation at a depth of 460 feet or an elevation of 1,875 feet. No water was obtained, however. Other dry holes have been drilled to a depth of 480 feet. It is doubtful if any supply of water will be obtained at depth in this township.

STATISTICAL SUMMARY OF WELL INFORMATION IN RURAL
MUNICIPALITY OF MOORE MOUNTAIN, NO. 63, SASKATCHEWAN

	Township	Range	7	7	7	8	8	8	9	9	9	Total No. in Municipality
			1	2	3	1	2	3	1	2	3	
West of 2nd. mer. 2												
<u>Total No. of Wells in Township</u>												
No. of Wells in bedrock			58	72	80	57	72	69	74	29	24	535
No. of Wells in glacial drift			2	8	17	2	16	7	3	1	2	58
No. of wells in alluvium			56	64	63	55	56	62	71	28	22	477
<u>Permanency of Water Supply</u>												
No. with permanent supply			22	47	64	26	44	50	50	21	16	340
No. with intermittent supply			9	8	3	13	11	8	10	1	3	66
No. dry holes			27	17	13	18	17	11	14	7	5	129
<u>Types of Wells</u>												
No. of flowing artesian wells			0	0	0	0	0	0	0	0	0	0
No. of non-flowing artesian wells			3	8	17	2	15	14	8	2	2	71
No. of non-artesian wells			28	47	50	37	40	44	52	20	17	335
<u>Quality of Water</u>												
No. with hard water			29	45	57	39	53	55	58	21	14	371
No. with soft water			2	10	10		2	3	2	1	5	35
No. with salty water						1	1					2
No. with "alkaline" water			7	16	4	1	3	6	4			41
<u>Depths of Wells</u>												
No. from 0 to 50 feet deep			55	59	62	43	44	49	56	25	16	409
No. from 51 to 100 feet deep			1	4	2	12	12	5	9	2	3	50
No. from 101 to 150 feet deep									1			1
No. from 151 to 200 feet deep				2	1			8	3			14
No. from 201 to 500 feet deep			2	6	14		16	7	5	2	5	57
No. from 501 to 1,000 feet deep				1		2						3
No. over 1,000 feet deep					1							1
<u>How Water is Used</u>												
No. usable for domestic use			28	42	54	32	40	50	57	20	19	342
No. not usable for domestic use			3	13	13	7	15	8	3	2		64
No. usable for stock use			31	52	63	37	54	58	59	21	19	394
No. not usable for stock use				3	4	2	1		1	1		12
<u>Sufficiency of Water Supply</u>												
No. sufficient for domestic needs			31	55	67	38	54	57	59	21	19	401
No. insufficient for domestic needs						1	1	1	1	1		5
No. sufficient for stock needs			21	39	50	27	35	45	47	20	10	294
No. insufficient for stock needs			10	16	17	12	20	13	13	2	9	112

ANALYSES AND QUALITY OF WATER

General Statement

Samples of water from representative wells in surface deposits and bedrock were taken for analyses. Except as otherwise stated in the table of analyses the samples were analysed in the laboratory of the Borings Division of the Geological Survey by the usual standard methods. The quantities of the following constituents were determined; total dissolved mineral solids, calcium oxide, magnesium oxide, sodium oxide by difference, sulphate, chloride, and alkalinity. The alkalinity referred to here is the calcium carbonate equivalent of all acid used in neutralizing the carbonates of sodium, calcium, and magnesium. The results of the analyses are given in parts per million--that is, parts by weight of the constituents in 1,000,000 parts of water; for example, 1 ounce of material dissolved in 10 gallons of water is equal to 625 parts per million. The samples were not examined for bacteria, and thus a water that may be termed suitable for use on the basis of its mineral salt content might be condemned on account of its bacteria content. Waters that are high in bacteria content have usually been polluted by surface waters.

Total Dissolved Mineral Solids

The term "total dissolved mineral solids" as here used refers to the residue remaining when a sample of water is evaporated to dryness. It is generally considered that waters that have less than 1,000 parts per million of dissolved solids are suitable for ordinary uses, but in the Prairie Provinces this figure is often exceeded. Nearly all waters that contain more than 1,000 parts per million of total solids have a taste due to the dissolved mineral matter. Residents

accustomed to the waters may use those that have much more than 1,000 parts per million of dissolved solids without any marked inconvenience, although most persons not used to highly mineralized water would find such waters highly objectionable.

Mineral Substances Present

Calcium and Magnesium

The calcium (Ca) and magnesium (Mg) content of water is dissolved from rocks and soils, but mostly from limestone, dolomite, and gypsum. The calcium and magnesium salts impart hardness to water. The magnesium salts are laxative, especially magnesium sulphate (Epsom salts, MgSO_4), and they are more detrimental to health than the lime or calcium salts. The calcium salts have no laxative or other deleterious effects. The scale found on the inside of steam boilers and tea-kettles is formed from these mineral salts.

Sodium

The salts of sodium are next in importance to those of calcium and magnesium. Of these, sodium sulphate (Glauber's salt, Na_2SO_4) is usually in excess of sodium chloride (common salt, NaCl). These sodium salts are dissolved from rocks and soils. When there is a large amount of sodium sulphate present the water is laxative and unfit for domestic use. Sodium carbonate (Na_2CO_3) "black alkali", sodium sulphate "white alkali", and sodium chloride are injurious to vegetation.

Sulphates

Sulphates (SO_4) are one of the common constituents of natural water. The sulphate salts most commonly found are sodium sulphate, magnesium sulphate, and calcium sulphate (CaSO_4). When the water contains large quantities of the sulphate of sodium it is injurious to vegetation.

Chlorides

Chlorides are common constituents of all natural water and are dissolved in small quantities from rocks. They usually occur as sodium chloride and if the quantity of salt is much over 400 parts per million the water has a brackish taste.

Iron

Iron (Fe) is dissolved from many rocks and the surface deposits derived from them, and also from well casings, water pipes, and other fixtures. More than 0.1 part per million of iron in solution will settle as a red precipitate upon exposure to the air. A water that contains a considerable amount of iron will stain porcelain, enamelled ware, and clothing that is washed in it, and when used for drinking purposes has a tendency to cause constipation, but the iron can be almost completely removed by aeration and filtration of the water.

Hardness

Calcium and magnesium salts impart hardness to water. Hardness of water is commonly recognized by its soap-destroying powers as shown by the difficulty of obtaining lather with soap. The total hardness of a water is the hardness of the water in its original state. Total hardness is divided into "permanent hardness" and "temporary hardness". Permanent hardness is the hardness of the water remaining after the sample has been boiled and it represents the amount of mineral salts that cannot be removed by boiling. Temporary hardness is the difference between the total hardness and the permanent hardness and represents the amount of mineral salts that can be removed by boiling. Temporary hardness is due to the bicarbonates of iron, calcium and magnesium, and permanent hardness to the sulphates, and chlorides of calcium and magnesium. The permanent hardness

can be partly eliminated by adding simple chemical softeners such as ammonia or sodium carbonate, or many prepared softeners. Water that contains a large amount of sodium carbonate and small amounts of calcium and magnesium salts is soft, but if the calcium and magnesium salts are present in large amounts the water is hard. Water that has a total hardness of 300 parts per million or more is usually classed as excessively hard. Many of the Saskatchewan water samples have a total hardness greatly in excess of 300 parts per million; when the total hardness exceeded 3,000 parts per million no exact hardness determination was made. Also no determination for temporary hardness was made on waters having a total hardness less than 50 parts per million. As the determinations of the soap hardness in some cases were made after the samples had been stored for some time, the temporary hardness of some of the waters as they come from the wells probably is higher than that given in the table of analyses.

Analyses of Water Samples from the Municipality of Moose Mountain, No. 63, Saskatchewan.

LOCATION				Depth of Well, Ft.	Total dis'vd. solids	HARDNESS		CONSTITUENTS AS ANALYSED					CONSTITUENTS AS CALCULATED IN ASSUMED COMBINATIONS								Source of water			
No.	Qtr.	Sec.	Trp.			Rge.	Mer.	Total	Perm.	Temp.	Alkalinity	CaO	MgO	SO ₄	Na ₂ O	Solids	CaCO ₃	CaSO ₄	MgCO ₃	MgSO ₄		Na ₂ CO ₃	Na ₂ SO ₄	NaCl
1.	NW.	7	8	2	2	2,250									2,250	(4)	(2)		(3)		(1)		(5)	± 2
2.	NW.	7	8	2	2	1,983									1,983	(4)	(2)		(3)		(1)		(5)	± 1
3.	Indian Reserve				8	726									726	(3)	(1)		(2)		(4)			± 1
4.	Indian Reserve				24	2,285									2,285	(5)	(1)		(3)		(4)		(2)	± 1
5.	Carlyle Lake Resort				12	3,148									3,148					(5)	(3)	(1)	(2)	± 1
6.	Carlyle Lake Resort				7	497									497	(3)	(1)		(2)				(4)	± 1
7.	SE.	16	7	2	2	11,800	3000+		440	915	440	2473	1369		11,095	787		109	7,215		2,258	726		± 1
8.	SW.	32	7	2	2	1,500	1200		18	280	260	194	361	158	1,463	280	250		578		325	30		± 1
9.	SW.	32	7	3	2	640	450	200	14	325	130	50	180	108	592	233		77	39		220	23		± 1
10.	SE.	32	8	1	2	3,340	2800		95	325	630	454	1915	121	3,010	325	1,087		1,355		86	157		± 1
11.	SW.	1	8	3	2	3,400	1300		103	120	520	184	2013	824	3,137	120	615		548		1,684	170		± 2
12.	NW.	21	8	3	2	3,840	2400		33	225	400	482	2242	427	3,295	225	666		1,436		914	54		± 1
13.	NE.	14	9	1	2	2,060	850		78	165	150	158	1082	458	1,801	165	141		471		895	129		± 1

Water samples indicated thus, ± 1, are from glacial drift or other unconsolidated deposits.

Water samples indicated thus, ± 2, are from bedrock, Ravenscrag formation.

Analyses are reported in parts per million; where numbers (1), (2), (3), (4), and (5) are used instead of parts per million, they represent the relative amounts in which the five main constituents are present in the water.

Hardness is the soap hardness expressed as calcium carbonate (CaCO₃).

Analyses Nos. 1, 2, 3, 4, 5, and 6, by Provincial Analyst Regina.

For interpretation of this table read the section on Analyses and Quality of Water.

Water from the Unconsolidated Deposits

The results of the analyses of 11 samples of water from the glacial drift in this municipality are given in the accompanying table. The waters from the wells in the glacial drift show marked variation in the amount of salts in solution, even within short distances. The sample taken from the well on the SE. $\frac{1}{4}$, sec. 16, tp. 7, range 2, has a total dissolved solid content of 11,800 parts per million, whereas that taken from the well in the SW. $\frac{1}{4}$, sec. 32, tp. 7, range 3, has a total dissolved solid content of only 640 parts per million. Intermediate types between these two samples are found, but most of the samples have a total dissolved solid content ranging from 2,000 to 3,000 parts per million. This content is generally considered to render the water unfit for drinking, although in some cases they are being used without any noticeable ill effects.

In only one sample analysed was the sodium chloride (common salt) so concentrated as to render the water unfit for drinking. This sample is from the well located on the SE. $\frac{1}{4}$, sec. 16, tp. 7, range 2, and it has a sodium chloride content of 726 parts per million. In the majority of the samples analysed, magnesium sulphate is found in relatively large amounts, and these waters may have a laxative effect on persons not accustomed to their use. Calcium sulphate is also present in fairly large quantities but is not injurious.

Water from the Bedrock

Two samples of water from the Ravenscrag formation were analysed. The total dissolved solid content of these samples is 2,250 and 3,400 parts per million respectively. In both samples sodium sulphate is the most abundant salt with calcium sulphate and magnesium sulphate being next in order of abundance. These waters have a laxative effect and therefore are not suitable for drinking. In this municipality the water from the Ravenscrag formation contains a relatively large amount of iron in solution.

Upon standing exposed to the air, this iron content is oxidized and precipitated as a red sediment which forms a scum on the water.

The iron content still further renders the water unsuitable for drinking. Much of the iron, however, can be eliminated by aeration and filtration of the water.

WELL RECORDS—RURAL MUNICIPALITY OF MOOSE MOUNTAIN, NO. 63.

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE OF WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in ° F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (-) Surface	Elev.	Depth	Elev.	Geological Horizon				
1	NE.	2	7	1	2	Dug	13	2,005	- 4	2,001	13	1,992	Glacial, sand, gravel	Clear, slightly hard		D, S	Waters over 50 head stock.
2	SW.	2	"	"	"	"	22	1,979	- 17	1,962	22	1,957	Glacial "	Hard, alkaline		D, S	" 20 " " ; slow stream.
3	SE.	7	"	"	"	Drilled	260	1,981	- 9	1,972	?	?	Ravenscrag	Hard, reddish		S	Sufficient when well not plugged.
4	NE.	8	"	"	"	Dug	19	2,000	- 16	1,984	16	1,984	Glacial sand	" clear	47	D, S	" but decreasing. Another well--alkaline water.
5	SW.	12	"	"	"	"	20	2,012	- 17	1,995	20	1,992	" quicksand	" "		D, S	Waters over 30 head stock all year.
6	SE.	12	"	"	"	"	20	2,010					Recent gravel	Clear		D, S	Dug 64 wells; poor supply; variable supply; possibilities in bedrock.
7	SW.	13	"	"	"	"	10	1,995	- 6	1,989	10	1,985	Glacial sand, gravel	Hard, clear		D, S	Waters 20 head stock in summer.
8	SE.	14	"	"	"	"	8	1,995	- 6	1,989	6	1,989	Glacial, sand, gravel	" "		D, S	Good supply.
9	NE.	14	"	"	"	"	10	2,005	- 6	2,019	10	2,015	Glacial, " gravel	" "		D, S	" " ; another similar well.
10	NW.	15	"	"	"	"	22	2,009	- 18	1,991	22	1,987	Glacial, " gravel	Medium hard, clear	47	D, S, I	Sufficient supply; garden use; water turned red when standing.
11	NE.	20	"	"	"	"	20	2,055	- 10	2,045	20	2,035	Glacial Quick-sand, blue clay	Hard, red when boiled		S	Waters 20 head stock; blue clay reached.
12	SE.	22	"	"	"	"	12	2,020	- 7	2,013	12	2,008	Glacial sand, gravel	Hard, clear		D, S	" over 45 head stock easily.
13	SW.	22	"	"	"	"	10	1,995	- 5	1,990	10	1,985	Glacial coarse sand	" "		D, S	Good supply.
14	SW.	22	"	"	"	"	20	2,010	- 13	1,997	20	1,990	Glacial, sand	" "		D	Sufficient for house and 2 horses; uses slough.
15	NE.	24	"	"	"	"	15	2,031	- 4	2,027			" blue clay	" , alkaline cloudy	46	S	Insufficient supply; goes dry.
16	SW.	25	"	"	"	Drilled	365	2,051	- 60	1,991			Ravenscrag	Hard, smells of coal oil clear		N	Water not suitable for man or stock.
17	SW.	26	"	"	"	Dug	12	2,040	- 4	2,036			Glacial, gravel	Hard, clear	45	D, S, I	Waters 56 head stock; used for garden irrigation.
18	SE.	27	"	"	"	"	9	2,035	- 4	2,031	9	2,026	" "	" "		D, S	Sufficient supply; yields 25 bbls. a day.
19	NW.	27	"	"	"	"	10	2,005	- 3	2,002	3	2,002	" "	Medium hard, clear		D, S	Over sufficient.
20	NW.	28	"	"	"	"	30	2,083	- 20	2,063	20	2,063	" "	Hard, clear	42	S	Intermittent supply; waters 12 head stock.
21	SE.	28	"	"	"	"	24	2,057					" blue clay				Used as reservoir only.
22	NW.	30	"	"	"	"	15	2,060					" " "			N	Dry hole.
23	SE.	31	"	"	"	"	15	2,081	- 7	2,074			" quicksand	" " iron		D, S	Waters 40-50 head stock.
24	NE.	32	"	"	"	"	25	2,080	- 19	2,061	19	2,061	" gravel	" "		D, S	" 15 " " .
25	NW.	33	"	"	"	"	36	2,084	- 32	2,052	32	2,052	" sand	" "		D	Insufficient supply.
26	NW.	34	"	"	"	"	25	2,088					" blue clay				Reservoir use only.

NOTE:—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

WELL RECORDS—RURAL MUNICIPALITY OF

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in ° F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (-) Surface	Elev.	Depth	Elev.	Geological Horizon				
27	NE.	34	7	1	2	Dug	8	2,040	- 2	2,038	2	2,038	Glacial sand	Medium hard, clear	43	D, S	Over sufficient supply.
28	SW.	35	"	"	"	"	12	2,055	12	2,043	12	2,043	" gravel	Soft, clear		D, S, I	" " " "
29	NE.	35	"	"	"	"	20	2,070	- 4	2,066	4	2,066	" " sand	Hard, "	43	D, S, I	Used for garden irrigation; over sufficient comes slowly; also dam.
30	SE.	36	"	"	"	"	12	2,055	- 6	2,049	12	2,043	" "	Soft, "		D, S	Over sufficient supply.
31	SE.	1	"	"	"	"	18	1,980					" blue clay	" "		N	Dry hole.
1	SE.	1	7	2	2	Dug	7	1,955	- 4	1,951	0	1,955	" sand	Hard, "		D, S, I	Waters 100 head stock; garden use also.
2	SW.	2	"	"	"	"	70	1,900					" "			N.	Dry hole; water is hauled from creek.
3	SE.	4	"	"	"	Drilled	275	1,965	- 50	1,915	275	1,690	Ravenscrag	Turns red, soft, iron		S	Sufficient supply; another well 35' with hard alkaline water.
4	SW.	5	"	"	"	"	215	1,975			215	1,760	" sand	Fine sediment		S	Insufficient supply; well now plugged; laxative.
5	NW.	5	"	"	"	Dug	32	1,970	- 26	1,944	30	1,940	Glacial "	Hard, clear		D	Only sufficient for house use.
6	SW.	6	"	"	"	Drilled	200	1,975	- 40	1,935	200	1,775	Ravenscrag coal	Med. soft,		S	Sufficient supply; laxative.
7	SE.	7	"	"	"	"	355	1,970	- 35	1,935	355	1,615	" "	Soft, clear		D, S	Waters 100 head stock.
8	SW.	8	"	"	"	"	362	1,965	- 15	1,950	362	1,603	Hard shale Ravenscrag	" "	44	S	Sufficient for 10 head stock; supply low.
9	NW.	10	"	"	"	Dug	30	1,940			30	1,910	Glacial sand, gravel	Hard, " alkaline	45	D, S	" supply.
10	NE.	10	"	"	"	"	18	1,950	- 4	1,946			Glacial, " gravel	Hard, clear		D, S	Stock use this sometime; another similar well.
11	NW.	12	"	"	"	Drilled	200	1,970					Glacial?			N	Insufficient supply; water is bad.
12	NW.	13	"	"	"	Dug	9	1,985	- 2	1,983	3	1,982	" sand	Medium soft, clear	43	D, S	Sufficient supply; could be used for garden.
13	NW.	14	"	"	"	Drilled	479	1,980	- 20	1,960	479	1,501	Ravenscrag shale	Hard, clear		N	Gas; water not suitable for use.
14	NW.	14	"	"	"	Dug	34	1,980	- 20	1,960			Glacial	" "		S	Insufficient supply; haul from Moose Creek; laxative.
15	SE.	16	"	"	"	"	12	1,940	- 8	1,932	8	1,932	" sand	Soft, clear, med. Hard		D	Only sufficient for house use. #
16	SE.	18	"	"	"	"	5	1,910	- 1	1,909	0	1,910	" "	" "		D, S	Waters 50 head stock; could be used for irrigation. Several shallow wells; good supply.
17	NE.	19	"	"	"	"	33	1,995	- 12	1,983	12	1,983	" gravel	Hard, clear, alkaline		D, S	Waters 50 head stock; laxative.
18	SW.	20	"	"	"	"	20	1,975	- 6	1,969	20	1,955	" "	Hard, clear	40	D, S	Sufficient supply.
19	SE.	21	"	"	"	"	25	1,975	- 22	1,953	22	1,953	" " clay	" alkaline		D	" for house only; another alkaline well used by stock.
20	NW.	21	"	"	"	"	14	1,995	- 2	1,993	2	1,993	" " sand	Med. soft, clear		D, S	Waters only 25 head stock; could be used for irrigation.
21	SE.	24	"	"	"	"	10	1,990	- 4	1,986	4	1,986	" "	Med. hard, clear		D, S, I	Waters 50 head stock; garden use.
22	SE.	25	"	"	"	"	16	2,040	- 12	2,028	0	2,040	" "	Hard, clear	42	D, S,	Sufficient supply.

NOTE:—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

WELL RECORDS—RURAL MUNICIPALITY OF

WELL NO.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in ° F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (-) Surface	Elev.	Depth	Elev.	Geological Horizon				
24	SW.	27	7	1	2	Dug	38	2,015	- 28	1,987	28	1,987	Glacial clay	Hard, clear		D, S	Sufficient supply; waters 25 head stock; could be used for irrigation.
25	NW.	29	"	"	"	Drilled	297	2,000	- 97	1,991	297	1,703	Ravenscrag sand	Medium hard, clear		S	Insufficient supply; laxative; cylinder of pump in casing.
26	SE.	30	"	"	"	Dug	45	2,000	- 20	1,980	33	1,967	Glacial sand	Hard, clear		D, S, I	Waters 50 head stock and gardens. Also other alkaline wells.
27	SW.	30	"	"	"	"	12	1,955	- 0	1,955	0	1,955	" "	Soft, "		D, S	Could be used for irrigation; waters 100 head stock.
28	NW.	30	"	"	"	"	8	1,995	- 4	1,991	6	1,989	" gravel	Hard, "	41	D, S	60 head watered in summer, 35 in winter; could be used for irrigation.
29	SE.	31	"	"	"	"	23	2,025	- 13	2,012			" clay, quicksand	" "		D	Sufficient for house use only.
30	NW.	31	"	"	"	"	18	2,025	- 10	2,015	16	2,009	Glacial sand	" "	40	D, S	Waters 25 head stock.
31	SE.	32	"	"	"	"	16	2,015	- 11	2,004			" "	Med. Hard, clear		N	Well caved in.
32	SW.	32	"	"	"	"	30	2,025	- 20	2,005	20	2,005	Glacial sand	Med. hard, clear		D, S	Sufficient supply; sand comes in base. #
33	NE.	32	"	"	"	"	12	2,030	- 9	2,021	5	2,025	" "	Med. Hard, clear		D, S	Waters 100 head stock; could be used for irrigation.
34	NE.	33	"	"	"	"	21	2,045	- 9	2,036	21	2,024	Gravel	Hard, clear		D, S	Waters 100 head stock; could be used for irrigation.
35	SW.	34	"	"	"	"	10	2,040	- 0	2,040	0	2,040	" "	" "	42	D, S	Waters 15 head stock; sufficient supply.
36	SE.	35	"	"	"	"	16	2,035	- 8	2,027	8	2,027	" "	Medium hard, clear		D, S	" 75 " " ; could be used for irrigation.
37	NE.	36	"	"	"	"	18	2,075	- 12	2,063	12	2,063	quicksand Glacial sand	Hard, clear	42	D, S	Waters 20 head stock.
1	SE.	2	7	3	2	Drilled	263	1,960	- 50	1,910			Ravenscrag gravel	Soft, clear		D, S	" 100 " " .
2	NW.	2	"	"	"	Dug	16	1,956	- 8	1,948	14	1,942	Glacial sand	Hard, "	44	D, S, I	" 20 " " ; garden irrigation.
3	NE.	3	"	"	"	Drilled	260	1,958	- 30	1,928	260	1,698	Ravenscrag coal sand	Soft, "	43	D, S	" 100 " " .
4	SE.	3	"	"	"	"	366	1,950	- 35	1,925	366	1,594	Ravenscrag quicksand	Soft, milky	43	D, S, I	Steady supply; milky colour before storm; laxative; garden use.
5	NE.	4	"	"	"	"	250	1,965	- 30	1,935	250	1,715	Ravenscrag sand	Hard, red	42	S	Steady supply; laxative. Shallow well for house use.
6	SW.	4	"	"	"	"	186	1,958	- 20	1,938	186	1,772	" gravel, coal	" "	44	S	Supplies 100 - 200 head stock.
7	NW.	5	"	"	"	Dug	28	1,965	- 22	1,943	25	1,940	Glacial, quicksand	" clear		D, S	Waters 5 head stock.
8	SE.	6	"	"	"	"	24	1,957	- 8	1,949	12	1,945	Glacial gravel	" "	44	S	Sufficient supply; very poor quality; waters 10 head stock.
9	NW.	6	"	"	"	"	40	1,957	- 36	1,921	36	1,921	" "	" "	45	D	Only sufficient for house use.
10	NW.	6	"	"	"	Drilled	232	1,956	- 40	1,916	232	1,724	sand Ravenscrag	Soft, "	44	D, S	Sufficient supply; burns gardens.
11	NW.	7	"	"	"	Dug	19	1,960	- 7	1,953	17	1,943	Glacial gravel	Hard, "	44	D, S	Waters 40 head stock.
12	NE.	7	"	"	"	"	30	1,963	- 15	1,948	22	1,941	" fine sand	Med. soft, clear		D, S, I	Garden use; waters 60 head stock.
13	NW.	8	"	"	"	"	8	1,973	- 5	1,968	0	1,973	" " "	Hard, clear	43	D, S, I	Steady supply; garden use.
14	NW.	8	"	"	"	"	14	1,981	- 6	1,975	0	1,981	" clay "	" "	45	D, S	Insufficient for 5 head stock.

NOTE:—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

4
WELL RECORDS—RURAL MUNICIPALITY OF MOOSE MOUNTAIN, NO. 63.

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in ° F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (-) Surface	Elev.	Depth	Elev.	Geological Horizon				
15	NE.	8	7	3	2	Dug	22	1,981	- 19	1,962	8	1,973	Glacial gravel	Hard, clear	43	D, S	Only sufficient for 10 head stock.
16	NW.	9	"	"	"	"	22	1,980	- 10	1,970	0	1,980	" clay	" "	44	D, S	" " " 10 " "
17	NE.	10	"	"	"	Drilled	215	1,978	- 35	1,943	215	1,763	Ravenscrag sand	Soft, "	44	S	Waters 50-60 head stock.
18	SW.	11	"	"	"	"	210	1,965	- 14	1,951	180	1,780	" coarse "	Hard, "	43	S	Steady sufficient supply.
19	SE.	13	"	"	"	Dug	35	1,959	- 25	1,934	35	1,924	Glacial "	" "		N	
20	NE.	14	"	"	"	"	14	1,957	- 4	1,953	0	1,957	" "	Soft, "	46	D, S	Waters 20 head stock in summer; sufficient supply.
21	SW.	14	"	"	"	Drilled	440	1,967	- 40	1,927	440	1,527	Ravenscrag coal			N	No casing; 2 other wells 350' filled with quicksand.
22	SW.	15	"	"	"	"	180	1,983	- 15	1,968	180	1,803	" sand	Med. Hard, clear	42	D, S	Good supply; laxative.
23	NW.	15	"	"	"	"	100	1,980			100	1,880	Glacial	Hard, iron, clear		D, S	Sufficient supply.
24	SW.	16	"	"	"	"	200	1,984	- 20	1,964	200	1,784	Ravenscrag sand, coal	Med. soft, clear	43	S	Good supply; laxative.
25	SW.	16	"	"	"	Dug	22	1,979	- 7	1,972	16	1,963	Glacial sand	Hard, clear	46	D, S	Waters 15 head stock.
26	SW.	17	"	"	"	Drilled	225	1,962	- 25	1,937	225	1,737	Ravenscrag sand	Soft, "	44	D, S	Very good supply.
27	SW.	18	"	"	"	Dug	20	1,981	- 14	1,967	17	1,964	Glacial gravel	Hard, "	41	D, S	Waters 25 head stock.
28	SE.	19	"	"	"	"	17	1,980	- 8	1,952	17	1,943	" "	" "	43	D, S, I	Garden use; laxative; good supply.
29	SW.	20	"	"	"	"	45	1,963	- 27	1,936	27	1,936	" "	" "	42	D, S	Waters 30 head stock.
30	SW.	20	"	"	"	"	10	1,943	- 6	1,937	0	1,943	" quicksand	" "	47	S	" 100 " " ; steady supply.
31	NW.	20	"	"	"	"	23	1,948	- 18	1,930	20	1,928	" sand	" "	42	D, S	" 15 " " .
32	SW.	22	"	"	"	"	28	1,940	- 6	1,934	24	1,916	" "	alkaline Hard, clear	42	D, S	Very good supply.
33	SW.	23	"	"	"	Drilled	335	1,952	- 35	1,917	333	1,619	Ravenscrag gravel	" "	44	D, S	Waters 200 head stock; laxative.
34	NE.	24	"	"	"	Dug	40	2,004	- 28	1,976	36	1,968	Glacial sand	" "	44	D, S	" 30-50 " " .
35	NW.	24	"	"	"	"	42	1,960	- 34	1,926	35	1,925	" "	" "	40	D, S	" over 50 " " .
36	NW.	26	"	"	"	"	22	2,002	- 15	1,987	20	1,982	" "	iron Hard, "	41	D, S	Over sufficient for 20 head stock.
37	NW.	27	"	"	"	"	21	1,995	- 17	1,978	20	1,975	" "	alkaline Hard, clear	43	D, S	Waters 25 head stock.
38	SE.	28	"	"	"	"	20	1,960	- 14	1,946	18	1,942	" quicksand	" "	42	D, S, I	Excellent supply; garden use.
39	NW.	29	"	"	"	"	20	1,980	- 14	1,966	17	1,963	" gravel	" "	41	D, S	Over sufficient for 100 head stock.
40	NW.	31	"	"	"	"	30	2,006	- 25	1,981	28	1,978	" sand	" "	39	D, S	Waters 100 head stock.
41	SW.	32	"	"	"	Drilled	80	2,020	- 40	1,980	80	1,940	" gravel	" "		D, S	Excellent supply. #

NOTE:—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

WELL RECORDS—RURAL MUNICIPALITY OF MOOSE MOUNTAIN, NO. 63, SASKATCHEWAN

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (-) Surface	Elev.	Depth	Elev.	Geological Horizon				
42	SE.	32	7	3	2	Dug	28	2,010	- 14	1,996	28	1,982	Glacial sand	Hard, clear	43	D, S, I	Excellent supply; waters 100 head stock.
43	NE.	32	"	"	"	"	40	2,005	- 30	1,975	40	1,965	" quicksand	Med. soft, clear	42	D, S	Insufficient supply; only waters 6 head stock.
44	SE.	33	"	"	"	"	32	2,008	- 24	1,984	28	1,980	" "	Hard, clear	41	D, S	Waters 60 head stock.
45	NE.	34	"	"	"	"	48	2,000	- 37	1,963	47	1,953	" gravel	" "	42	D, S	" 25 " " .
46	SW.	36	"	"	"	"	25	2,015	- 18	1,997	0	2,015	"	" "		D, S	Over sufficient supply.
47	NE.	36	"	"	"	"	12	2,105	- 7	2,098	6	2,099	" sand	" "	41	D, S	" " " for 25 head stock.
1	SE.	2	8	1	2	Dug	8	2,025	- 5	2,020	5	2,020	" white clay, gravel	" "		D, S, I	Waters 60 head stock; garden use.
2	SW.	2	"	"	"	"	8	2,025	- 6	2,019	6	2,019	Glacial gravel	" "		D, S	" 40-50 " " .
3	SW.	3	"	"	"	Drilled	600	2,060					Ravenscrag coal	iron " , brown sediment, hard		N	Sufficient supply; poor quality.
4	SW.	3	"	"	"	Dug	20	2,055	- 10½	2,044½	10	2,045	Glacial sand	Hard, clear	44	D, S	" for house and a few stock.
5	SE.	4	"	"	"	"	15	2,065	- 12	2,053	12	2,053	" "	Med. hard, clear	41	D, S	" supply.
6	SE.	5	"	"	"	"	20	2,070					" "	Med. hard, clear		D, S	Insufficient; comes in slowly.
7	NE.	5	"	"	"	Drilled	516	2,085	0	2,085	516	1,569	Ravenscrag	Hard, salty		S	Sufficient supply.
8	NE.	5	"	"	"	Dug	17	2,080	0	2,080	0	2,080	Glacial clay	" clear		D, S	Intermittent supply.
9	NW.	5	"	"	"	"	10	2,080					" "	" "		N	Well gone dry.
10	SE.	6	"	"	"	"	25	2,160	- 21	2,139			" sand, gravel	" "		D, S	Waters 15 head stock.
11	NE.	6	"	"	"	"	14	2,160	0	2,160			Glacial gravel	" "		S	Insufficient supply; haul water.
12	SE.	7	"	"	"	"	10	2,070	0	2,070			" blue clay	" "		D, S	Waters 30 head stock in average year.
13	SW.	9	"	"	"	"	15	2,100	- 12	2,088			Glacial sand, clay	" "	38	D, S	Intermittent, insufficient supply.
14	SW.	10	"	"	"	"	20	2,074					Glacial gravel	alkaline Hard, clear		D, S	Sufficient supply.
15	SW.	10	"	"	"	"	35	2,074	- 32	2,042	32	2,042	"	Very hard, clear	40	N	Not fit for man or beast.
16	NW.	10	"	"	"	"	5	2,080	- 1	2,079	1	2,079	" " clay	" "		D	Intermittent supply; house use only.
17	NE.	10	"	"	"	"	14	2,050	- 8	2,042	8	2,042	" coarse gravel	Hard, clear	44	D, S	Waters 50 head stock; sufficient supply.
18	SE.	11	"	"	"	"	16	2,085	- 6	2,079	6	2,079	Glacial gravel	Med. hard, clear	43	D, S, I	Sufficient supply; waters 16 head stock and garden.
19	SW.	12	"	"	"	"	7	2,040	+ 2	2,042	5	2,035	" "	Med. " clear		S	Waters 30 head stock.
20	NW.	12	"	"	"	"	22	2,100	- 12	2,088	12	2,088	" sand	Hard, clear		D, S	Intermittent supply; seepage well.
21	NE.	12	"	"	"	"	10	2,055	- 4	2,051	0	2,055	" "	Med. hard	48	D, S	Waters 20 head stock.

NOTE.—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

WELL RECORDS—RURAL MUNICIPALITY OF MOOSE MOUNTAIN, NO. 63, SASKATCHEWAN

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (-) Surface	Elev.	Depth	Elev.	Geological Horizon				
22	NW.	14	8	1	2	Dug	16	2,055	-0	2,055	0	2,055	Glacial sand	Hard, clear		D, S	Waters 15-20 head stock.
23	SW.	16	"	"	"	"	15	2,100	-5	2,095			"	"		D, S	Intermittent supply.
24	NE.	19	"	"	"	"	20	2,150	-15	2,135	15	2,135	" "	Med. hard, clear		D	Only sufficient for house use.
25	SE.	20	"	"	"	"	35	2,140	-31	2,109			" stones	Hard, clear	43	N.	Laxative.
26	SW.	23	"	"	"	"	15	2,070	-10	2,060	10	2,060	" gravel	"		D, S	Only sufficient for house use.
27	NW.	23	"	"	"	"	12	2,100	-10	2,090			" "	Med. hard, clear		S	Waters 60 head stock.
28	NE.	26	"	"	"	"	14	2,155	-7	2,148			" " clay	Hard, clear		N.	Laxative.
29	SE.	27	"	"	"	"	12	2,095	-7	2,088	-	2,095	" "	Med. hard, clear		S	Waters 20 head stock.
30	SE.	27	"	"	"	"	30	2,100	-28	2,072			" "	Hard, clear		N	Intermittent supply; usually dry.
31	NW.	28	"	"	"	"	26	2,160	-10	2,150	10	2,150	" sand	"	40	D, S	Sufficient supply.
32	SE.	30	"	"	"	"	9	2,145	-4	2,141	0	2,145	" gravel	"		D, S, I	Very good supply; garden use only.
33	SE.	30	"	"	"	"	16	2,147	-13	2,134	13	2,134	" sand	"	41	I	Only sufficient for house use.
34	NE.	30	"	"	"	"	8	2,155	-1	2,154	1	2,154	" gravel	"		I	Sufficient for 10 head stock; could be used for garden.
35	NW.	32	"	"	"	"	14	2,180	-2	2,178	2	2,178	" sand	iron Hard,	44	D, S	Waters 25 head stock.
36	SE.	32	"	"	"	"	28	2,175	-14	2,161	14	2,161	" "	"	44	D, S	Waters 20-30 head stock. #
37	NE.	33	"	"	"	"	30	2,170	-24	2,146	24	2,146	" gravel	"		D, S	Sufficient supply.
38	SW.	35	"	"	"	"	35	2,155	-5	2,150	5	2,150	" sand	Med. hard, clear		D, S	Waters 10 head stock steadily.
1	NW.	2	8	2	2	Bored	40	2,095								N	Dry hole.
2	SE.	3	"	"	"	Drilled	320	2,055	-30	2,025	320	1,735	Ravenscrag black sand	Hard, clear, turns red		S	Sufficient for many stock; laxative.
3	NE.	3	"	"	"	Dug	25	2,062	-17	2,045			Glacial sand	Hard, clear	47	D, S	Intermittent supply.
4	NE.	4	"	"	"	Drilled	320	2,055	-15	2,040	320	1,735	Ravenscrag sand	" sandy	44	S	Waters 50 head stock; drinking water hauled.
5	SE.	5	"	"	"	Dug	40	2,040	-20	2,020			Glacial "	" clear, alkaline		D, S	Insufficient supply in winter; waters 10 head stock in summer.
6	NW.	5	"	"	"	Drilled	207	2,057	-30	2,027	207	1,850	Ravenscrag "	Very hard, iron, milky		S	Waters 100 head stock; laxative.
7	NE.	6	"	"	"	"	325	2,055	-100	1,955	325	1,730	" "	Hard, " red sediment		D, S	" 100 " " ; laxative.
8	NW.	7	"	"	"	"	200	2,073	-110	2,062	200	1,873	" gravel	Hard, clear, red sediment		D, M	Supplies Town of Carlyle; #.
9	NW.	7	"	"	"	Dug	20	2,073	-7	2,066	10	2,063	Glacial	Hard, clear		D, M	Used by town; #.
10	SW.	8	"	"	"	"	16	2,070	0	2,070	0	2,070	" sand	" cloudy		S	Insufficient supply for 16 head stock some-times.

NOTE.—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

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WELL RECORDS—RURAL MUNICIPALITY OF MOOSE MOUNTAIN, NO. 63, SASKATCHEWAN

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (-) Surface	Elev.	Depth	Elev.	Geological Horizon				
11	NE.	8	8	2	2	Drilled	300	2,070	- 10	2,060	300	1,770	Ravenscrag sand	Hard, red sediment		N	
12	SE.	10	"	"	"	"	385	2,090	- 15	2,075	385	1,705	" " shale	Hard, fine sediment		N	Well plugged at present.
13	SW.	13	"	"	"	Dug	25	2,100	- 23	2,077			Glacial clay			N	Scarcity of water locally.
14	SE.	14	"	"	"	"	32	2,140	- 23	2,117	10	2,130	" sand	Hard, clear		D, S	Only sufficient for house use.
15	NE.	14	"	"	"	Bored	22	2,150	- 16	2,134	2	2,148	" gravel	" "	45	D, S	Waters 100 head stock.
16	NW.	15	"	"	"	Drilled	300	2,135	- 20	2,115	300	1,835	Ravenscrag sand, gravel	" , red sediment		N	
17	SW.	16	"	"	"	"	272	2,103	- 5	2,098	272	1,831	Ravenscrag gravel	" red, hard, clear	43	S	Sufficient for many stock.
18	NW.	16	"	"	"	"	265	2,120	- 11	2,109	265	1,855	Ravenscrag gravel	" , iron, cloudy		S	Laxative; waters 100 head stock.
19	SW.	18	"	"	"	Dug	12	2,075	- 11	2,064	0	2,075	Glacial gravel	Hard, clear	43	D, S	Sufficient supply.
20	NW.	18	"	"	"	"	10	2,070	- 5	2,065	0	2,070	" "	" "	45	D, S	" "
21	NE.	19	"	"	"	"	10	2,115	- 6	2,109			" sand, "	Med. hard, clear	44	D, S	Waters 45-50 head stock.
22	NE.	20	"	"	"	Drilled	264	2,150	- 38	2,112	264	1,886	Ravenscrag sand	Hard, yellow		S	Waters many head stock; laxative.
23	SW.	21	"	"	"	"	270	2,135	- 5	2,130	270	1,865	" "	" iron, cloudy		D, S	Sufficient supply.
24	SE.	22	"	"	"	"	303	2,160	- 70	2,090	303	1,857	" "	Hard, red sediment		S	Waters 100 head stock.
25	SE.	23	"	"	"	Dug	21	2,165	- 19	2,146	0	2,165	Glacial gravel	Hard, clear, Med. hard		D, S	Waters 150-300 head stock.
26	SE.	24	"	"	"	"	24	2,145	- 18	2,127	- 0	2,145	" sand	" "		D, S	Could be used for garden.
27	NW.	24	"	"	"	"	22	2,155	- 20	2,135	6	2,149	" "	" , hard, alkaline	43	S	Insufficient supply.
28	NE.	25	"	"	"	"	25	2,170	- 7	2,163			" gravel	Hard, clear		D, S	Waters 20 head stock.
29	SW.	26	"	"	"	Drilled	390	2,190	- 90	2,100	390	1,800	Ravenscrag "	" "		S	" 50 " "
30	NE.	26	"	"	"	Dug	10	2,197	- 0	2,197	0	2,197	Glacial sand	turns red Soft, clear		D, S	Could be used for irrigation.
31	NE.	27	"	"	"	"	21	2,220	- 15	2,205			"	Med. hard, clear		D, S	Waters 40 head stock.
32	SE.	28	"	"	"	"	14	2,175	- 9	2,166	6	2,169	" "	Hard, clear	43	D, S	" 50 " " ; could be used for irrigation.
33	NW.	29	"	"	"	Bored	90	2,155					"			N	No water; has tested many holes.
34	NE.	30	"	"	"	"	30	2,155	- 24	2,131	6	2,149	" "	" "		D	Only sufficient for house use.
35	SE.	30	"	"	"	Dug	12	2,150	- 6	2,144	12	2,138	Gravel	"		D, S	Sufficient supply.
36	SW.	31	"	"	"	Drilled	225	2,175	- 25	2,150	225	1,950	Ravenscrag coal	" cloudy		D, S	" "
37	NE.	31	"	"	"	Dug	12	2,200	- 9	2,191	0	2,200	Glacial gravel	Med. hard, clear		D, S	Waters 40 head stock.

NOTE.—All depths, altitudes, heights and elevations
given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

WELL RECORDS—RURAL MUNICIPALITY OF MOOSE MOUNTAIN, NO. 63, SASKATCHEWAN

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (-) Surface	Elev.	Depth	Elev.	Geological Horizon				
38	SW.	32	8	2	2	Dug	12	2,183	- 6	2,177	0	2,183	Glacial red clay	Med. hard, clear		D, S	Waters 40 head stock.
39	NE.	32	"	"	"	"	8	2,200	- 6	2,194	0	2,200	"	Med. Hard, clear		D, S	" 20 " " .
40	SE.	33	"	"	"	"	12	2,225	- 5	2,220	5	2,220	" gravel	Hard, clear	48	D, S	" 50 " " .
41	SW.	34	"	"	"	"	15	2,225	- 5	2,220			" "	Med. Hard, clear		D, S	Sufficient supply.
42	NW.	34	"	"	"	"	15	2,250			15	2,235	" clay, sand	Hard, clear		D, S	Insufficient but good quality.
43	SE.	34	"	"	"	"	15	2,280	- 8	2,272	8	2,272	" gravel	Hard, clear	46	D, S	Waters 25 head stock.
44	NE.	36	"	"	"	"	14	2,200	- 6	2,194	12	2,188	" "	" "		D, S	" 50 " " .
1	SW.	1	8	3	2	Drilled	300	2,046	- 26	2,020	296	1,750	Ravenscrag black sand	Soft, "		N	Used in 1918; plugged now. #
2	SW.	1	"	"	"	Dug	26	2,046	- 20	2,026	23	2,023	Glacial quick-sand	Hard, "	44	D, S	Waters 100 head stock.
3	NE.	2	"	"	"	Drilled	280	2,055	- 30	2,025	280	1,775	Ravenscrag black sand	Med. soft, clear	44	S	" large number of stock; laxative.
4	NE.	2	"	"	"	Dug	9	2,055	- 6	2,049	0	2,055	Glacial yellow clay	Hard, clear	45	D	Sufficient for house use only.
5	NE.	3	"	"	"	"	30	2,025	- 28	1,997	26	1,999	Glacial sand	" "	42	D, S	Waters 100-200 head stock.
6	SE.	4	"	"	"	"	30	2,021	- 26	1,995	26	1,995	" "	" "	43	D, S, I	" 30 head stock and garden.
7	NW.	4	"	"	"	"	50	2,056	- 44	2,012	44	2,012	" gravel	" "	44	D, S, I	" 40 " " " " .
8	NE.	5	"	"	"	"	54	2,060	- 50	2,010	48	2,012	" "	" "	43	D, S	" 50 " " .
9	SW.	5	"	"	"	Drilled	300	2,054			294	1,760	Ravenscrag yellow clay.	" "		N	Well closed up.
10	SW.	5	"	"	"	Dug	60	2,054	- 57	1,997	54	2,000	Glacial gravel	Med. hard, clear	43	D, S	Waters 50 head stock.
11	NW.	6	"	"	"	"	40	2,030	- 32	1,998	34	1,996	" quicksand	" , hard	42	D, S	200-300 bbls. a day.
12	NW.	9	"	"	"	Drilled	160	2,060	- 40	2,020			" ?	Smells, " , turns red	42	D, S	Very steady supply; laxative.
13	NE.	10	"	"	"	Dug	12	2,054	- 2	2,052	0	2,054	" blue clay	Hard, clear	48	D, S	Only house supply; insufficient.
14	NW.	11	"	"	"	"	20	2,058	- 4	2,054	10	2,048	"	" "	45	D, S	Insufficient supply; dry often.
15	NE.	11	"	"	"	"	24	2,053	- 4	2,049	0	2,053	" "	" "	46	D, S	" " .
16	SE.	12	"	"	"	"	14	2,050	- 9	2,041	0	2,050	" gravel	" "	44	D, S, I	Sufficient supply; used for garden irrigation.
17	NE.	12	"	"	"	"	26	2,055	- 21	2,034	22	2,033	" "	" "	44	D, S	Very sufficient supply.
18	NE.	13	"	"	"	Drilled	327	2,070	- 60	2,010	327	1,743	Ravenscrag gravel	" reddish	44	S	Waters 100 head stock; laxative.
19	SE.	14	"	"	"	"	260	2,060	- 40	2,020	260	1,800	Ravenscrag sand	Very hard, turns red		D, S, I	Good supply; garden use; laxative.
20	SE.	15	"	"	"	Dug	30	2,050	- 5	2,045	0	2,050	Glacial clay	Hard, clear	43	D, S	Sufficient; waters 2 horses; also use creek.

NOTE.—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

WELL RECORDS—RURAL MUNICIPALITY OF MOOSE MOUNTAIN, NO. 65, SASKATCHEWAN

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (-) Surface	Elev.	Depth	Elev.	Geological Horizon				
21	SW.	15	8	3	2	Drilled	170	2,055	- 50	2,005	170	1,885	Glacial sand	Hard, turns reddish	44	D, S	Good supply; laxative.
22	NE.	17	"	"	"	Dug	60	2,088	- 50	2,038	56	2,032	"	Very hard, al- kaline, brown	43	S	Many stock watered; strong laxative.
23	NE.	19	"	"	"	Drilled	165	2,085	- 60	2,025	165	1,920	" gravel	Hard, reddish	43	S	Waters many stock; laxative.
24	SE.	20	"	"	"	Bored	29	2,075					" yellow clay			N	Dry hole.
25	NW.	20	"	"	"	Dug	15	2,090	- 12	2,078	13	2,077	" gravel	Hard, clear	44	D, S	Waters 20 head stock; good quality; insufficient
26	NW.	21	"	"	"	Drilled	172	2,090	- 50	2,040	172	1,918	" sand	Very hard, rusty	44	D, S, I	Large supply; garden irrigation.
27	NW.	22	"	"	"	Dug	14	2,085	- 10	2,075	9	2,076	" gravel, yellow clay	Hard, clear		D, S, I	Waters 20 head stock; garden irrigation. #
28	SW.	22	"	"	"	"	10	2,092	- 8	2,084	7	2,085	Glacial	" "	46	D, S	Plenty; waters 100 head stock.
29	NE.	22	"	"	"	"	15	2,095	- 6	2,089	6	2,089	" yellow, blue clay	" "		D, S	Waters 50 headstock.
30	SW.	24	"	"	"	Drilled	292	2,085	- 80	2,005	250	1,835	Ravenscrag sand	" cloudy	42	D, S, I	Steady supply; garden irrigation; laxative.
31	NE.	24	"	"	"	"	265	2,115	- 70	2,045	265	1,850	" "	" clear	44	D, S, I	" " ; " " ; " ;
32	SW.	26	"	"	"	Dug	10	2,058	- 8	2,050	8	2,050	Glacial gravel	" "	44	D, S	another well 14' deep waters 50 head stock. Only sufficient for house use.
33	SE.	27	"	"	"	"	13	2,060	- 10	2,050	5	2,055	" "		44	D, S	Waters 200 head stock.
34	NW.	28	"	"	"	"	18	2,145	- 10	2,135	7	2,138	" sand	Med. soft, clear	45	D, S	" 15 " " ; also other wells.
35	SW.	29	"	"	"	"	13	2,092	- 10	2,082	0	2,092	" gravel	Med. hard, clear	43	D, S	" 12-20 " " .
36	SW.	30	"	"	"	"	18	2,078	- 8	2,070	15	2,063	"	" "		D, S	" 30 " " .
37	NW.	30	"	"	"	"	20	2,140	- 11	2,129	0	2,140	" "	alkaline Hard, clear		D	Only sufficient for house use.
38	SW.	31	"	"	"	"	12	2,150	- 9	2,141	10	2,140	" "	" "	43	D, S	" waters 10 head stock.
39	SW.	32	"	"	"	"	35	2,175	- 25	2,150	0	2,175	" "	" "	44	D, S	" 15 " " .
40	SW.	32	"	"	"	Drilled	317	2,180	- 100	2,080			Ravenscrag	alkaline Hard, clear		N	Closed now; was a small supply.
41	NW.	33	"	"	"	Dug	14	2,215	- 12	2,203	0	2,215	Glacial gravel	Very hard, al- kaline, clear		D, S	Only sufficient for house; haul for stock.
42	SE.	33	"	"	"	"	8	2,200	- 4	2,196	0	2,200	" "	Hard, "	46	D, S	Only waters 10 head stock.
43	NW.	34	"	"	"	"	18	2,350	- 10	2,340	0	2,350	" yellow clay	" "	43	D, S	Waters 10 head stock.
44	NE.	34	"	"	"	"	20	2,250	- 16	2,234	18	2,232	Glacial	" "	43	D, S	" 25 " " ; another alkaline well.
45	SW.	35	"	"	"	"	14	2,150	- 6	2,144	0	2,150	" gravel, blue clay	Med. hard , clear		D, S	" 15 " " easily.
46	NE.	35	"	"	"	"	12	2,255	- 9	2,246	0	2,255	Glacial gravel	Med. soft, clear	46	D, S	" 50-100 " " ; seems to be on spring.

NOTE.—All depths, altitudes, heights and elevations
given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

WELL RECORDS—RURAL MUNICIPALITY OF MOOSE MOUNTAIN, NO. 63, SASKATCHEWAN

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (-) Surface	Elev.	Depth	Elev.	Geological Horizon				
47	SW.	36	8	3	2	Drilled	280	2,160	-100	2,060	280	1,880	Ravenscrag sand	Hard, clear, scum on top		D, S	Waters 200-300 head stock; laxative.
48	NE.	36	"	"	"	"	325	2,210	-60	2,150			" "	Hard, cloudy brown	43	D, S	Plenty of water; also shallow wells.
1	SW.	2	9	1	2	Dug	10	2,170	0	2,170	0	2,170	Glacial yellow clay	Hard, clear		N.	Waters depend on rain and seepage from slough.
2	NE.	2	"	"	"	"	12	2,175	0	2,175	0	2,175	Glacial	" "		D	Only sufficient for house.
3	SW.	3	"	"	"	"	12	2,150	0	2,150	0	2,150	" gravel	" "	48	D, S	Waters 50-100 head stock.
4	NE.	4	"	"	"	"	12	2,190	0	2,190	0	2,190	" "	" "		N	Only used for stock in winter.
5	SW.	5	"	"	"	"	8	2,195	-6	2,189	0	2,195	" "	Med. soft, clear		D, S	Could be used for irrigation.
6	SW.	6	"	"	"	"	26	2,205	-18	2,187	24	2,181	" "	Hard, clear		D, S	Over sufficient supply.
7	NE.	6	"	"	"	"	34	2,220	-31	2,189	30	2,190	" sand	Med. hard, clear	45	D, S	Only waters 6 head stock.
8	SW.	7	"	"	"	"	20	2,250	-18	2,232	4	2,246	" gravel	Med. hard, clear		D, S	Water comes in very quickly.
9	NW.	8	"	"	"	"	16	2,195	-12	2,183	0	2,195	" "	Med. hard, alkaline, clear	43	S	Waters 50 head stock.
10	NW.	9	"	"	"	Bored	40	2,215			0	2,215	" sand	Hard, "	43	D, S	Water comes in slowly.
11	SW.	10	"	"	"	Dug	12	2,155	-6	2,149	0	2,155	" gravel	" "	50	D, S	Waters over 65 head stock all year.
12	NE.	12	"	"	"	Drilled	270	2,165	-80	2,085	270	1,895	" fine sand	" "		D, S	Over sufficient supply.
13	NW.	14	"	"	"	Dug	45	2,180	-25	2,155	45	2,135	" "	Med. hard		D, S	" " " ; could be used for irrigation.
14	NE.	14	"	"	"	Drilled	250	2,180	-90	2,090	250	1,930	" "	Hard, red sediment		D, S, I	Over sufficient; garden use; laxative. #
15	NE.	15	"	"	"	Dug	26½	2,185	-23	2,162	23	2,162	" coarse sand	Med. hard, clear		D, S, I	" " ; also 3 other wells and spring.
16	SW.	17	"	"	"	"	10	2,240	-4	2,236	2	2,238	" sand	" "		D, S	" " ; water comes in quickly.
17	NW.	17	"	"	"	"	10	2,230	-4	2,226	4	2,226	" out wash	Med. soft, clear		D, S	Sufficient supply; water comes quickly.
18	NE.	17	"	"	"	"	34	2,140	-14	2,216	14	2,126	" clay	Very hard, clear		D, S	Waters 15 head stock.
19	NE.	18	"	"	"	"	16	2,260	-12	2,248	13	2,247	" sand, gravel	" "	44	D, S	Insufficient supply; depends on rainfall.
20	NW.	19	"	"	"	"	16	2,325	-10	2,315			" sandy clay	alkaline Hard, clear		N	Well not used now.
21	SE.	20	"	"	"	"	23	2,225	-8	2,217	8	2,217	" sand, gravel	Med. hard, clear		D, S	Very strong supply.
22	NW.	21	"	"	"	"	8	2,230	-3	2,227	0	2,230	Glacial sand	Hard, clear		S	Water comes in quickly.
23	SW.	22	"	"	"	"	30	2,200	-15	2,185	25	2,175	" "	" "		D, S	Very good supply.
24	SE.	23	"	"	"	Drilled	335	2,180	-25	2,155	335	1,845	gravel Ravenscrag blue sand	" red sediment		D, S	Good steady supply.
25	SE.	23	"	"	"	Dug	46	2,180	-6	2,174	38	2,142	Glacial gravel	Hard, clear	44	D, S	Waters 25 head stock.

NOTE.—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

WELL RECORDS—RURAL MUNICIPALITY OF

MOOSE MOUNTAIN, NO. 63, SASKATCHEWAN

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (-) Surface	Elev.	Depth	Elev.	Geological Horizon				
26	SW.	23	9	1	2	Bored	43	2,180	- 36	2,144	41	2,139	Glacial gravel	Very hard, clear		D, S, I	Waters 5 head stock; garden use.
27	NW.	23	"	"	"	Dug	36	2,180	- 16	2,164	19	2,161	" "	Hard, "		D, S, I	" 40 " " ; " "
28	SW.	24	"	"	"	Drilled	298	2,170	- 30	2,140	298	1,872	Ravenscrag clay	" red sediment		D, S	Good supply; water comes quickly.
29	NE.	24	"	"	"	Dug	8½	2,155	- 2	2,153	0	2,155	Glacial gravel	Hard, clear		D, S	Supplies 2 tanks at one pumping; fills again in 1 hour.
30	NE.	25	"	"	"	"	13	2,170	- 10	2,160	0	2,170	" "	Med. hard, clear		D, S	Waters 25 head stock.
31	SW.	25	"	"	"	Drilled	160	2,175	-100	2,075	160	2,015	" clay	Very hard, red sediment		D, S, I	Sufficient supply; garden use.
32	NE.	26	"	"	"	"	160	2,180	- 30	2,150	160	2,020	" sand	Hard, red sediment		D, S, I	Garden use; sufficient supply.
33	SW.	27	"	"	"	Dug	75	2,200	- 73	2,127	71	2,129	" "	Hard, clear		N	Another 12' well, 8' of water; supplies all stock and house; near creek.
34	SW.	28	"	"	"	"	14	2,225	- 12	2,213	0	2,225	" "	Med. soft, clear	48	D, S	Good supply; water comes in quickly.
35	SE.	30	"	"	"	"	33	2,295	- 28	2,267	31	2,264	" gravel	Med. hard, clear	43	D, S, I	Garden use; waters 50-75 head stock; 2 other similar wells.
36	NE.	32	"	"	"	"	16	2,220	- 9	2,211	0	2,220	" "	Hard, "		D, S	Waters 40 head stock; could be used for garden.
37	SW.	34	"	"	"	"	40	2,210	- 10	2,200	34	2,176	" fine blue sand	" "		D, S, I	" 40 " " only; garden use.
38	SE.	36	"	"	"	"	10	2,175	- 2	2,173	3	2,172	" "	" "		D, S	" 4 " " " .
39	SW.	36	"	"	"	Drilled	230	2,177	- 30	2,147	230	1,947	" sand	" red sediment		D, S	Abundant supply. Another 8' well, 5' of water.
40	NE.	36	"	"	"	Dug	14	2,170	- 2	2,168	5	2,165	" "	Hard, clear		D, S	Insufficient in winter; also 6 other wells.
1	NE.	2	9	2	2	Sand point	16	2,350	- 12	2,338	0	2,350	Glacial sand, gravel	Hard, clear	43	D, S	Good steady supply.
2	SE.	2	"	"	"	Dug	16	2,255	- 14	2,241	13	2,242	" yellow fine sand	" "	45	D, S	Only waters 6 head stock.
3	SW.	2	"	"	"	"	14	2,290	- 11	2,279	0	2,290	Glacial coarse sand	" "	44	D, S	" " 30 " " .
4	SW.	3	"	"	"	"	6	2,310	- 0	2,310	0	2,310	" red "	Med. hard, clear	49	D, S	Spring that flows most of year.
5	NE.	4	"	"	"	"	68	2,320					"	"		N	Shortage of water on this quarter.
6	SE.	4	"	"	"	"	12	2,250	- 4	2,246	10	2,240	" gravel	Hard, "	45	D, S, I	Waters 40 head stock and garden.
7	SW.	4	"	"	"	"	12	2,250	- 7	2,243	10	2,240	" "	Med. hard, clear	46	D, S	" 25 " " .
8	NW.	5	"	"	"	"	10	2,350	- 5	2,345	0	2,360	" "	" hard "	46	D, S	" 25 " " .
9	SW.	5	"	"	"	Drilled	275	2,240	- 20	2,220	275	1,965	Ravenscrag	Hard, salty, red sediment	44	S	" 100-200 head stock; laxative.
10	SE.	6	"	"	"	Dug	10	2,240	- 5	2,235	0	2,240	Glacial gravel	Med. soft, clear	46	D, S	" 60-100 " " ; other people have water from here.
11	NW.	6	"	"	"	Drilled	306	2,340	-105	2,235	305	2,035	Ravenscrag fine sand	Hard, iron red sediment	43	D, S	Steady sufficient supply.
12	NW.	12	"	"	"	Dug	21	2,335	- 3	2,332	12	2,323	Glacial gravel	Hard, clear	45	D, S	Insufficient supply; 5 head stock in winter

50 " " " summer.

NOTE.—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.

WELL RECORDS—RURAL MUNICIPALITY OF MOOSE MOUNTAIN, NO. 63.

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in ° F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (-) Surface	Elev.	Depth	Elev.	Geological Horizon				
13	SW.	13	9	2	2	Bored	33	2,330	- 15	2,315	30	2,300	Glacial sand	Hard, clear	44	S	Waters 30 head stock.
14	NE.	14	"	"	"	Dug	5	2,375	0	2,375	0	2,375	" grey sand	" "	49	D, S	" 30-50 " " ; spring supply.
15	SW.	24	"	"	"	"	6	2,375	+ 1	2,376	0	2,375	" sand, gravel	" "	48	D, S	Good supply; flowing spring.
16	SE.	24	"	"	"	Bored	18	2,300	- 7	2,293	16	2,284	Glacial sand	" "	42	D, S	Only sufficient for house use.
17	NE.	24	"	"	"	Dug	15	2,305	- 11	2,294	13	2,292	" gravel clay	" "		N	Water condemned; haul water.
18	SE.	25	"	"	"	"	8	2,375	+ 1	2,376	6	2,369	" gravel sand	" "	43	D, S	Sufficient supply; flows all year.
19	White Bear Indian Reserve, # 70					"	8	2,430	- 4	2,426	5	2,425	" "	" cloudy	45	D, S	Very good supply.
20	White Bear Indian Reserve, # 70					"	24	2,428	- 12	2,416	18	2,410	" "	" "	44	D	Only sufficient for domestic use; #.
21	Carlyle Lake Resort					Sand Point	12	2,420	- 8	2,412	8	2,412	" "	" slightly yellow	48	D	Seepage from lake, #.
22						Dug	7	2,425	- 3	2,422	5	2,420	" "	" slightly cloudy	45	D	Sufficient supply; water comes quickly; #.
1	NW.	1	9	3	2	Dug	15	2,360	- 6	2,354	6	2,354	Glacial gravel	Very hard, clear	44	D, S, I	Strong supply in summer; garden use; none in winter.
2	SE.	2	"	"	"	"	28	2,275	- 24	2,251	6	2,269	" "	Med. soft, clear	41	D, S, I	Good supply; comes in quickly.
3	NW.	2	"	"	"	"		2,380					" "	Med. soft, iron, clear		D, S	Flows year round.
4	NE.	2	"	"	"	Drilled	465	2,340	- 80	2,260	465	1,875	Ravenscrag soap-stone	Hard, "	43	D, S	Small supply; many dry holes 60'-365'-480'.
5	SE.	3	"	"	"	Dug	18	2,325	- 8	2,317			Glacial clay	" "		D, S	Supply varies with water in creek; sometimes sufficient for stock.
6	SW.	3	"	"	"	Bored	31	2,400	- 27	2,373	15	2,385	" sand	" "		D, S	Sufficient for 20 head stock.
7	NE.	3	"	"	"	Dug	5	2,400	+ 1	2,401	0	2,400	"	" "		D, S, I	Good supply; flows quickly; garden use.
8	NW.	7	"	"	"	"	6	2,500	- 2	2,498	0	2,500	" gravel	Soft, "		D, S	
9	NE.	7	"	"	"	"	5	2,500	+ 1	2,501	0	2,500	" "	Hard, "		D	Good supply; water comes quickly.
10	NW.	8	"	"	"	"	33	2,460	- 28	2,432			" sand "	Soft, "	44	D, S	Excellent quality.
11	NE.	9	"	"	"	"	10	2,440	- 2	2,438			" clay	Med. soft, clear		D	Insufficient; only sufficient for house use.
12	SE.	12	"	"	"	Bored	62	2,355	- 4	2,351			" black quick-sand	Very hard, " sulphur	44	D, S, I	Waters 50-100 head stock and gardens.
13	SW.	15	"	"	"	Dug	32	2,525	- 17	2,508			" grey clay	Hard, clear	44	D, S	" only 8 " " ; 10 other dry wells.
14	SW.	18	"	"	"	"	8	2,520	+ 1	2,521			" gravel	" "		D, S, I	Strong flow; garden use.
15	NW.	18	"	"	"	"	18	2,560	- 15	2,545			" " clay	" "		D	Only sufficient for house use.

NOTE:—All depths, altitudes, heights and elevations given above are in feet.

(D) Domestic; (S) Stock; (I) Irrigation; (M) Municipality; (N) Not used.
(#) Sample taken for analysis.