CANADA
DEPARTMENT OF MINES

HON. T. A. CRERAR, MINISTER; CHARLES CAMSELL, DEPUTY MINISTER

BUREAU OF ECONOMIC GEOLOGY

GEOLOGICAL SURVEY

PRELIMINARY REPORT

GROUND-WATER RESOURCES OF THE RURAL MUNICIPALITY OF MOOSOMIN No. 121 SASKATCHEWAN

BY

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

Water Supply Paper No. 80

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GROUND WATER RESOURCES OF THE RURAL MUNICIPALITY OF MOOSOMIN, NO. 121 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 facts obtained have been classified and the information pertaining to any well is readily accessible. 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, Wickenden, 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 used 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

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[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 Moosomin, No. 121, is an area of 216 square miles in southeastern Saskatchewan. It consists of six townships described as tps. 13, 14, and 15, ranges 30 and 31, W. 1st mer. The town of Moosomin, which is approximately 135 miles east of Regina on the main line of the Canadian Pacific railway, is situated on the western side of the municipality, approximately 6 miles from its southern boundary.

Pipestone creek, which flows through secs. 6 and 7, tp. 13, range 31, is the only permanent stream in the municipality. The general slope of the land surface is toward the northeast, the elevation decreasing from 1,900 feet in the southwestern corner to 1,700 feet above sea-level in the northeastern corner. The entire area is a rolling plain except where the streams have cut their valleys.

The municipality is covered by glacial drift. In a narrow area, approximately 2 miles wide, extending in a north to south direction near the western edge of the municipality, the drift is in the form of a glacial moraine. There is also an area of similar deposits in the northeastern corner. Glacial outwash sands and gravels have been deposited in township 15, range 31. The remainder or greater part of the municipality is mantled with glacial till or boulder clay.

Water-bearing Horizons in the Unconsolidated Deposits

The uppermost water-bearing horizon occurs throughout the municipality but is not in the form of a continuous aquifer. It is formed by scattered pockets of sand and gravel that occur within the upper 30 feet of the glacial drift. Many dry holes have been dug in the boulder clay in an effort to locate the sand and gravel pockets that are of small areal extent. Seasonal precipitation affects the quantity and the quality of the water derived from this

horizon. During periods of drought many of these wells go dry, or only small quantities of water can be obtained, necessitating the hauling of water. The water is hard, but is more suitable for domestic purposes than that obtained from the deeper horizons in the municipality.

A second water-bearing horizon formed by a bed of sand or gravel between beds of impervious blue clay is encountered at a depth of 35 to 75 feet. The aquifer varies in thickness from a few inches to 8 to 10 feet, and in some localities is entirely absent. The amount and quality of the water from the individual wells tapping this horizon vary a great deal within short distances. The water is highly mineralized due to being in contact with the blue clay beds, but in general is being used for all local purposes as water of better quality cannot be located. This water-bearing horizon is, at present, the main source of supply for the municipality.

Throughout the municipality attempts have been made to locate water at depths of 100 to 160 feet. Although many of the holes were dry, in every township a few wells encountered an aquifer of sand or gravel. The sand or gravel beds are probably of small areal extent as, with few exceptions, only small amounts of water are obtained. The water is under a slight hydrostatic pressure. In townships 14 and 15, range 31, a few wells that tap this water-bearing horizon will each supply sufficient water for 100 to 200 head of stock. The water is objectionable for domestic purposes because of its high mineral content, iron being particularly noticeable.

In township 15, range 31, a number of wells have been drilled to a depth of 260 to 300 feet, in glacial drift. At these depths, or at an elevation of about 1,540 feet, a bed of fine sand was penetrated from which large amounts of water were

derived. This horizon is an unsatisfactory source of water as the water is highly mineralized, and is under small hydrostatic pressure, only rising to a point 100 to 185 feet below the surface. The fine sand of the aquifer also tends to plug the casings and shut off the supply. It does not appear advisable to drill to depths in excess of 200 feet in an attempt to locate water in this municipality.

Water-bearing Horizons in the Bedrock

The Marine Shale series underlies the glacial drift throughout the municipality. The general elevation at which it is penetrated is approximately 1,550 feet above sea-level. In secs. 5, 7, and 8, tp. 13, range 30, and sec. 24, tp. 13, range 31, a number of wells stop on encountering shale at an elevation of 1,770 feet above sea-level, but elsewhere it is reported as being encountered at an elevation of approximately 1,550 feet. No water-bearing horizons have been found in the Marine Shale, but in most of the wells in which shale is reported water is being obtained froma fine sand immediately overlying the shale. This water has a high "total dissolved solid content", the salts of sodium being the most abundant. The water from a few wells cannot be used for drinking due to the large amount of sodium chloride or common salt that it contains; but the water from some is being used, as water of better quality is not obtainable within reasonable distance of the farm buildings.

GROUND WATER CONDITIONS BY TOWNSHIPS

Township 13, Range 30

The elevation of this township rises from 1,700 feet in the northwestern part to 1,850 feet in the southwestern part.

The whole township is covered with boulder clay or glacial till. The uppermost 10 to 30 feet of this drift mantle is composed mainly of yellow clay which is underlain by a 40- to 60-foot bed of impervious blue clay. At the base of this bed of blue clay there is a 3-to4-foot thick bed of gravel that is underlain by fine-textured, blue clay of unknown thickness.

The first water-bearing horizon occurs in the upper 30 feet of the glacial drift and is formed by small, isolated pockets of sand and gravel in the yellow clay; it yields varying amounts of hard water. Numerous holes are dug before the pockets are located and the amount of water depends on the areal extent of the pocket of sand or gravel, and the amount of annual precipitation. This source of supply is quite inadequate during periods of drought.

The second water-bearing horizon is formed by the bed of gravel occurring below the bed of blue clay at a depth of 50 to 80 feet. This is the main source of supply for the township, there being a sufficient amount of water from the individual wells to supply 50 to 100 head of stock. The water is very hard and the iron content is sufficiently high to discolour enamelled ware. However, it is being used for drinking and all other farm needs. The water rises to a level 20 to 30 feet below the surface.

Other water-bearing horizons may be located in various parts of the township, but only one well, on the NE.$\frac{1}{4}$, section 27, has located any great amount of water. This well is 120 feet deep and the aquifer is a bed of gravel. The water is termed as soft, and salty, and is highly mineralized. It cannot be used for drinking or other domestic purposes.

The Marine Shale series underlies the glacial drift throughout the township. In sections 5, 7, and 8 it occurs at a depth of 30 to 70 feet or an elevation of 1,770 feet above sea-level. No water-bearing horizons occur within the upper 200 feet of this formation, as a hole on the SE.$\frac{1}{4}$, section 7, was drilled to this depth and no water located. It is generally considered that this formation is non-water-bearing.

Township 13, Range 31

This township is a rolling plain, with an average elevation of 1,850 feet, except where Pipestone creek has entrenched its valley in sections 6 and 7.

The western third of the township is largely mantled with moraine deposits, and the remainder is covered with boulder clay or glacial till. The uppermost water-bearing horizon in this drift mantle lies within 30 feet of the surface. It is formed by scattered pockets of sand and gravel in the yellow clay and upper few feet of blue clay. Wells tapping these pockets of sand and gravel yield varying amounts of water, which is usually suitable for domestic purposes. This source of supply is very unsatisfactory, as during periods of drought many of the wells may go dry.

Many holes have been bored to a depth of 50 to 70 feet in an effort to locate a water-bearing horizon, but only a few holes have encountered thin beds of sand which yield small supplies of water. Wells drilled to a depth of 100 to 120 feet, however, derive a good supply of water from beds of sand and gravel. This water-bearing horizon probably extends throughout the township as wells in different localities have tapped it. The water is hard and highly mineralized, but is used for drinking where water of better quality is not obtainable. The hydrostatic pressure is sufficient to cause the water to rise to a point 50 to 60 feet below the surface. The individual wells tapping

this horizon will supply sufficient water for 100 to 200 head of stock throughout the year.

Two wells located in sections 26 and 28 have encountered an abundant supply of water at depths of 142 and 168 feet, respectively. The aquifer is a bed of gravel that is overlain by a 40-foot bed of impervious blue clay. The water has a high total dissolved solid content, but is used for household purposes. It is under pressure and rises to a point 40 feet below the surface where it maintains a constant level. This water-bearing horizon is probably not of large areal extent as it has not been encountered in deeper holes a few miles away.

The Marine Shale series underlies the glacial drift throughout the township. A well 230 feet deep on the SE.$\frac{1}{4}$, section 19, encountered shale at a depth of 170 feet or an elevation of 1,700 feet, and one on the SE.$\frac{1}{4}$, section 24, entered shale at a depth of 90 feet or an elevation of 1,760 feet above sea-level. Good supplies of water are being obtained from both wells, the supply being sufficient for 100 and 200 head of stock, respectively. The water is very highly mineralized, but is being used for drinking purposes. The main aquifer in both wells is a fine sand bed that immediately overlies the shale. This water-bearing bed does not occur at the same elevation in other parts of the township. A hole on the NW.$\frac{1}{4}$, section 13, was still in blue clay at a depth of 180 feet or an elevation of 1,672 feet. Also a well on the SW.$\frac{1}{4}$, section 34, drilled to a depth of 303 feet, or an elevation of 1,567 feet above sea-level, tapped only a small supply of hard and very highly mineralized water. This latter well probably penetrated the bedrock, but no information is available as to the elevation at which it occurs in the well.

Township 14, Range 30

The elevation of this township decreases from 1,750 feet in the west to 1,650 feet in the east. The ground surface is generally rolling, and is cut by a few easterly trending valleys and ravines. Glacial drift in the form of boulder clay or glacial till mantles the township to a depth of approximately 170 feet.

Many holes have been dug, bored, and drilled in this township in an attempt to locate water-bearing horizons. A few dug wells have encountered isolated pockets of sand and gravel, within the upper 30 feet of the drift, or small areas of gravels along the deeper valleys. Fair supplies of medium hard water are obtained from this source, but during periods of drought many of these wells go dry, necessitating the hauling of water from wells yielding a permanent supply. Some farmers by using a number of shallow wells obtain a sufficient amount of water to supply a few head of stock.

Intermittent supplies of water are being obtained from depths of 40 to 70 feet. This aquifer is formed by several beds or lenses of sand only three to four inches thick imbedded in the blue clay, and as a result the seepage into the wells is very slow. Few of these wells will water 20 head of stock throughout the year and during the last few years of the drought many of them were practically dry. Most of the farmers have from three to five wells and by using all of them they obtain a sufficient supply for domestic purposes and a few head of stock. The water is very hard and in a few wells it is so bitter that it is unfit even for stock.

A number of holes have been drilled to depths of from 80 to 100 feet in different sections of the township, but little or no water was obtained. A hole on the SE.$\frac{1}{4}$, section 9, 90 feet deep, penetrated a 30-foot bed of sand, but only a very small supply of water was obtained.

In the SW.$\frac{1}{4}$, section 1, and the SE.$\frac{1}{4}$, section 20, wells were drilled to a depth of 130 and 170 feet, respectively, or to an elevation of 1,560 feet. In both wells a dark shale was penetrated near the base of the well. This shale belongs to the Marine Shale series which underlies the glacial drift of this area. An abundant supply of very highly mineralized water was obtained from both wells, the water from the first-mentioned well being obtained from a bed of fine sand that immediately overlies the marine shale and in the second well from the upper few feet of the formation itself. The water was unsuitable for drinking due to its high content of sodium chloride or common salt. The hydrostatic pressure is sufficient to cause the water to rise to a point 20 to 30 feet below the surface, where it maintains a constant level.

This township experiences a grave shortage of water, particularly during dry seasons. There are no good water-bearing horizons in the glacial drift, and the underlying Marine Shale series is considered to be non-water-bearing. Therefore, it is necessary to conserve the run-off water by the construction of dams or by the excavation of dugouts. At the present time a few farmers have small dams or dugouts, but the supply of water retained is inadequate for any large number of stock. Dugouts in order not to freeze dry during the winter should be excavated to a depth of at least 12 feet. There are a number of ravines in the township that offer suitable locations for the construction of dams.

Township 14, Range 31

The elevation of the township varies from 1,750 feet above sea-level in the east to 1,900 feet in the west. The ground surface is rolling, and is cut by a few abrupt valleys or ravines.

The township is mantled with glacial drift to a depth of at least 165 to 200 feet. In the western 2 miles of the township the drift is in the form of moraine, and over the remainder of the township it is in the form of boulder clay or glacial till.

Three water-bearing horizons occur in this mantle of glacial drift. The uppermost lies within 30 feet of the surface and is formed by scattered pockets of sand in the weathered zone of the drift. These pockets of sand and gravel are difficult to locate and in places many dry holes are dug before an adequate supply of water is encountered. However, in a few sections, particularly sections 11, 12, and 13, abundant supplies of relatively soft water have been located. Elsewhere, the wells yield intermittent supplies that are greatly affected by the amount of precipitation.

The second water-bearing horizon occurs at a depth of 50 to 70 feet, and is formed by a bed of sand and gravel, 5 to 10 feet thick, which is overlain by impervious blue clay. This horizon appears to be continuous throughout the township. The water is highly mineralized and in a few places can not be used for drinking or domestic use. In some places, however, it is being used, as a water of better quality is not obtainable. There is not an abundant supply from this source as the seepage is very slow. The water rises to a point 25 to 40 feet below the surface and is lowered only by long periods of drought.

A third water-bearing horizon is a bed of sand and gravel at a depth of 100 to 165 feet below the surface. The aquifer apparently slopes towards the east, as the wells are deeper in the eastern part of the township. The water has a high dissolved mineral salt content and the water from a few of the wells is so salty that it cannot be used for drinking or other

domestic purposes. The hydrostatic pressure is sufficient to cause the water to rise to a point 25 feet below the surface and individual wells will supply 60 to 100 head of stock with water throughout the year.

A well on the SW.$\frac{1}{4}$, section 6, encountered bedrock at a depth of 165 feet, or at an elevation of 1,730 feet above sea-level. This is the Marine Shale series that underlies the glacial drift throughout the township. In this well the water is obtained from a sand bed immediately overlying the shale. No water-bearing horizon was located in the bedrock. The bedrock apparently slopes to the east and north as wells in those localities have been drilled to a depth of 200 feet, or to an elevation of 1,580 feet, without encountering shale. One well on the NE.$\frac{1}{4}$, section 31, 200 feet deep, encountered a pocket of gas that forced sand 50 feet in the air, and the hole soon became plugged with sand.

This township is poorly supplied with water. Each farmer generally has two or three shallow wells, and by using them all can obtain a supply that is barely sufficient for his needs. During the drought period many of the wells went dry, necessitating the hauling of water from neighbouring deeper wells. In certain localities the run-off waters could be conserved for stock use by the construction of dams and the excavation of dugouts. It is possible that on many sections wells to a depth of 150 to 200 feet would tap the third water-bearing horizon.

Township 15, Range 30

The average elevation of this township is 1,700 feet above sea-level. The whole area is slightly rolling with a few abrupt ravines and valleys. The greater part of the township is drained by a valley that runs in a northeasterly direction.

The northeastern corner of the township is mantled by moraine, and an area in sections 7 and 18 is covered by glacial outwash sands and gravels. The remainder of the township is underlain by boulder clay or glacial till.

Numerous holes have been dug in the upper 30 feet of glacial drift in an effort to locate water, but only a few wells have tapped water-bearing beds and the amount of water obtained is sufficient only for domestic use.

A water-bearing horizon at a depth of from 35 to 60 feet below the surface is formed by a bed of sand and gravel that lies between layers of impervious blue clay. This horizon is the main source of water in the township. As the aquifer ranges from a few inches to 10 feet in thickness, the supply of water obtained from it varies greatly with the individual well. The water is highly mineralized but where water of better quality is not obtainable it is being used for drinking and other household purposes. It contains a considerable amount of iron.

A few attempts have been made to locate water at a depth of 90 to 100 feet, but the holes were dry. On the NE.$\frac{1}{4}$, section 12, a well tapped a bed of gravel at a depth of 125 feet, and a fairly abundant supply of comparatively soft water, which was under sufficient hydrostatic pressure to rise to a point 35 feet below the surface, was obtained. It is being used for all farm needs, although it has a strong laxative effect on those not accustomed to its use. Other water-bearing horizons may occur at depth in other parts of the township.

No water is obtained from the bedrock Marine Shale series. It is reported that a well on the NW.$\frac{1}{4}$, section 24, encountered this formation at a depth of 75 feet, or at an elevation of 1,685 feet above sea-level. It is improbable that any large supplies of usuable water will be obtained from the Marine Shale.

Township 15, Range 31

The surface of this township is undulating and is cut by a few rather abrupt valleys and ravines. With the exception of parts of sections 4, 5, 8, 9, and 17, which are mantled by part of a glacial moraine, and a larger area in the east-central to north-central part that is covered by glacial outwash sands and gravels, the township is underlain by boulder clay or glacial till. The glacial drift is from 165 to 300 feet thick and holds a number of water-bearing horizons.

The uppermost water-bearing horizon is the upper 30 feet of the glacial drift. It is formed by the deposits of glacial outwash sands and gravels, and by scattered pockets of sand in the yellow boulder clay. Numerous holes are dug before these pockets of sand and gravel are located, but in a few instances excellent supplies of medium soft water have been located. In some places in the glacial outwash area the sand and gravel deposits are only a few feet thick, and as a result are greatly affected by seasonal precipitation. Most of the inhabitants of this township obtain water for domestic purposes from this horizon.

The next water-bearing horizon is of small areal extent and occurs at a depth of 100 to 120 feet in the northeastern corner of the township. The aquifer is a bed of fine sand that lies between two 90-foot beds of impervious blue clay. The sand bed is 60 feet thick in some places, but gradually becomes thinner toward the south and west, and disappears in the NE.$\frac{1}{4}$, section 16. The water is highly mineralized, but is used for drinking and other household purposes. The hydrostatic pressure is sufficient to cause the water to rise to a point 60 feet below the surface. The individual wells will supply from 100 to 200 head of stock.

A third water-bearing horizon that probably extends throughout the township occurs at a depth of 165 to 300 feet, the deeper wells being in the southwestern part of the township where the surface elevation is greatest. The aquifer is a bed of sand that is overlain by blue clay and probably underlain by the Marine Shale series, as a shale bed was encountered at the bottom of several of the wells. The water is very highly mineralized, but most of it can be used for domestic purposes. The water is objectionable for drinking as it contains a relatively large amount of iron. The water rises to a point 150 feet below the surface where it maintains a constant level. The individual wells will supply 100 to 200 head of stock with water throughout the year.

No water-bearing horizons have been located in the Marine Shale series that underlies the glacial drift throughout the township. It was encountered in a number of wells located on the SE.$\frac{1}{4}$, section 1, the SW.$\frac{1}{4}$, section 10, and the NE.$\frac{1}{4}$, section 18, at elevations of 1,608, 1,540, and 1,538 feet above sea-level, respectively.

STATISTICAL SUMMARY OF WELL INFORMATION IN RURAL MUNICIPALITY OF MOOSOMIN, NO. 121, SASKATCHEWAN

Township	13	13	14	14	15	15	Total No. in Municipality
West of 1st meridian Range	30	31	30	31	30	31	
Total No. of Wells in Township	80	74	96	73	104	109	546
No. of wells in bedrock	1	1	1	0	0	4	7
No. of wells in glacial drift	79	73	95	73	114	105	539
No. of wells in alluvium	0	0	0	0	0	0	0
Permanency of Water Supply							
No. with permanent supply	66	37	74	64	76	59	376
No. with intermittent supply	7	8	16	8	15	15	69
No. dry holes	7	29	6	1	23	35	101
Types of Wells							
No. of flowing artesian wells	0	0	0	0	0	0	0
No. of non-flowing artesian wells	33	12	16	28	20	16	125
No. of non-artesian wells	40	33	74	44	71	58	320
Quality of Water							
No. with hard water	71	40	84	66	88	68	417
No. with soft water	2	5	6	6	3	6	28
No. with salty water	1	1	5	3	1	5	16
No. with "alkaline" water	20	13	12	19	23	10	97
Depths of Wells							
No. from 0 to 50 feet deep	44	45	73	41	68	84	355
No. from 51 to 100 feet deep	34	18	19	25	45	9	150
No. from 101 to 150 feet deep	1	5	2	3	1	3	15
No. from 151 to 200 feet deep	0	4	2	4	0	5	15
No. from 201 to 500 feet deep	1	2	0	0	0	8	11
No. from 501 to 1,000 feet deep	0	0	0	0	0	0	0
No. over 1,000 feet deep	0	0	0	0	0	0	0
How the Water is Used							
No. usable for domestic purposes	58	34	70	54	80	66	362
No. not usable for domestic purposes	15	11	20	18	11	8	83
No. usable for stock	70	39	88	70	33	72	422
No. not usable for stock	3	6	2	2	8	2	23
Sufficiency of Water Supply							
No. sufficient for domestic needs	65	37	74	65	76	59	376
No. insufficient for domestic needs	8	8	16	7	15	15	69
No. sufficient for stock needs	46	21	33	40	56	48	244
No. insufficient for stock needs	27	24	57	32	35	26	201

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 mainly to the bicarbonates of calcium and magnesium and iron, and permanent harness 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 Moosomin, No. 121, Saskatchewan.

No.	LOCATION					Depth of Well, Ft.	Total dis'vd solids	HARDNESS			CONSTITUENTS AS ANALYSED						CONSTITUENTS AS CALCULATED IN ASSUMED COMBINATIONS									Source of Water
	Qtr.	Sec.	Tp.	Rge.	Mer.			Total	Perm.	Temp.	Cl.	Alka-linity	CaO	MgO	SO_4	Na_2O	Solids	$CaCO_3$	$CaSO_4$	$MgCO_3$	$MgSO_4$	Na_2CO_3	Na_2SO_4	NaCl	$CaCl_2$	
1	NW.	11	13	30	1	42	2,220	800	650	150	236	150	110	144	933	558	1,838	150	63		429		807	389		* 1
2	SE.	36	13	30	1	32	763										763		(2)		(4)	(3)	(1)	(5)		* 1
3	NW.	28	13	31	1	168	1,800										1,800		(2)		(4)	(3)	(1)	(5)		* 1
4	NE.	33	13	31	1	180	1,860	822			735	251	79	94	929	400	1,665		269		466	267	542	121		* 1
5	NW.	35	15	30	1	52	1,051										1,051	(3)	(1)		(2)				(4)	* 1

Water samples indicated thus, * 1, are from glacial drift.
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 ($CaCO_3$).

Analyses Nos. 2, 3, 4, and 5, by Provincial Analyst, Regina.
For interpretation of this table read the section on Analyses and Quality of Water.

Water from the Unconsolidated Deposits

Five samples of water from the glacial drift of the municipality of Moosomin were analysed and the results are listed in the accompanying table. Three of the samples were taken from wells tapping aquifers at depths of 32, 42, and 52 feet. The other samples were from depths of 168 and 180 feet. All of these water samples are quite hard. In general the water that is derived from the upper part of the drift is of better quality than that obtained at depth. This fact is fairly well shown in the samples analysed. Sample No. 1, however, has a total dissolved solid content of 2,220 parts per million.

In all of the samples analysed the sulphates of sodium, magnesium, and calcium are the predominant mineral salts in solution. In some cases the waters may have a laxative effect on those not accustomed to the use of highly mineralized water. Samples Nos. 2, 3, and 4 contain a fairly large amount of sodium carbonate, or "black alkali". These waters are unfit for irrigation. Samples Nos. 3 and 4 also contain a fairly large amount of iron. In general, the waters from the upper part of the glacial drift in this municipality, unless contaminated by sewage, are suitable for drinking and for stock requirements. The waters from the deeper wells, however, are often too highly mineralized to be used for drinking. Out of a total of 445 wells in this municipality, 83 have been classed as yielding water that is unfit for drinking.

Water from the Bedrock

No wells in this municipality are definitely known to be obtaining water from an aquifer in the bedrock Marine Shale series. Should water be encountered in this formation it will probably contain a large amount of mineral salts in solution and may be unfit for drinking, and in some cases may not be suitable for any farm purpose.

WELL RECORDS—Rural Municipality of MOOSOMIN NO. 121, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE: Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED: Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
1	SE.	1	13	30	1	Bored	62	1,735	- 52	1,683	62	1,673	Glacial gravel	Hard, iron, red sediment		D, S	Intermittent supply; dry in dry years.
2	NW.	1	"	"	"	"	68	1,748	- 22	1,726	66	1,682	" sand	Hard, clear, "alkaline"		S	Sufficient for local needs.
3	NE.	3	"	"	"	Dug	18	1,770	- 8	1,762	8	1,762	" gravel	Hard, clear		D, S, I	" " " " .
4	SE.	5	"	"	"	Bored	70	1,840					"	""alkaline"			Intermittent; very poor supply.
5	NW.	6	"	"	"	Dug	16	1,855	- 10	1,845	10	1,845	" sand	Hard, clear, iron, "alkaline"		D	" .
6	SW.	6	"	"	"	Dug	16	1,855	- 5	1,850	5	1,850	Glacial gravel	Soft, clear		D, S	Sufficient supply in normal years.
7	SE.	7	"	"	"	Drilled	240	1,854					Marine shale				Dry hole.
8	SW.	7	"	"	"	Bored	54	1,855	- 50	1,805	54	1,801	Glacial gravelly clay	Hard, clear, "alkaline"		D, S	Sufficient for domestic use only.
9	NE.	8	"	"	"	Dug	32	1,804	- 29	1,775	29	1,775	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient for local needs.
10	SW.	8	"	"	"	Bored	72	1,830	- 45	1,785	72	1,758	"	Hard, clear, "alkaline"		S	Intermittent supply; dry in dry years.
11	SW.	9	"	"	"	"	52	1,800	- 8	1,792	52	1,748	"	Hard, clear, "alkaline"		S	Insufficient supply in dry years.
12	NW.	11	"	"	"	Dug	42	1,750	- 18	1,732	42	1,708	" gravel	Hard, iron, clear		D, S	Sufficient for local needs. #
13	SE.	16	"	"	"	Bored	50	1,780	- 23	1,757	50	1,730	" "	Hard, iron, red sediment		D, S	Oversufficient for local needs.
14	SW.	16	"	"	"	"	60	1,785	- 35	1,750	60	1,725	" "	Hard, iron, clear		D, S	Sufficient for local needs.
15	NE.	19	"	"	"	"	62	1,810	- 39	1,771	62	1,748	" "	Salty, red sediment		D, S	Oversufficient for local needs.
16	SW.	20	"	"	"	Dug	12	1,800	- 6	1,794	6	1,794	" "	Hard, clear		D, S	Sufficient for local needs.
17	SW.	21	"	"	"	"	40	1,760	- 20	1,760	40	1,740	" "	Hard, clear, iron		D, S	" " " " .
18	SE.	22	"	"	"	"	12	1,745	- 8	1,737	8	1,737	" "	Hard, clear, iron, "alkaline"		D, S	" " " " .
19	NE.	22	"	"	"	Bored	67	1,745	- 30	1,715	64	1,681	Glacial gravel	Hard, clear		D, S	Oversufficient for 50 head stock.
20	SW.	23	"	"	"	"	80	1,740	- 40	1,700	80	1,660	" "	Hard, iron, red sediment		D, S	" " 70 " " .
21	NE.	23	"	"	"	Dug	20	1,700	- 10	1,690	10	1,690	" "	Hard, clear		D, S	Sufficient for local needs in years of normal rainfall, but dry in dry years.
22	SE.	24	"	"	"	Bored	40	1,708	- 28	1,680	40	1,668	" "	Hard, clear, iron		D, S	Sufficient for local needs.
23	SW.	24	"	"	"	"	74	1,720	- 34	1,686	74	1,646	" "	Hard, clear, iron, "alkaline"		S	Sufficient for local needs.
24	SE.	25	"	"	"	Dug	50	1,710	- 24	1,686	50	1,660	" "	Hard, iron, clear		D, S	Sufficient for 50 head stock.
25	NE.	26	"	"	"	"	6	1,695	- 4	1,691	4	1,691	" sand	Hard, clear		D, S	Oversufficient for local needs.

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 MOOSOMIN NO. 121, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
26	SE.	27	13	30	1	Bored	65	1,725	- 35	1,690	65	1,660	Glacial sand	Hard, clear, iron		D, S	Oversufficient for local needs.
27	NE.	27	"	"	"	Drilled	120	1,725	- 2	1,723	120	1,605	" gravel	Soft, salty, clear		D, S	Sufficient for local needs.
28	NE.	28	"	"	"	Bored	54	1,755	- 19	1,736	54	1,701	" "	Hard, clear, iron, "alkaline"		S	Oversufficient for local needs.
29	SW.	28	"	"	"	"	65	1,775	- 25	1,750	65	1,710	" "	Hard, iron, "alkaline"		D, S	Sufficient for local needs.
30	SE.	29	"	"	"	"	80	1,775	- 25	1,750	80	1,695	" "	Hard, clear, iron, "alkaline"		D, S	Oversufficient for local needs.
31	SW.	29	"	"	"	"	60	1,780	- 15	1,765	60	1,720	" "	Hard, clear, iron		D, S	Oversufficient for local needs.
32	SE.	30	"	"	"	"	55	1,800	- 25	1,775	50	1,750	" sand	Hard, clear, iron		D, S	" " 100 head stock.
33	SW.	30	"	"	"	Dug	9	1,800	- 4	1,796	4	1,796	" gravel	Iron, clear		D, S	" " local needs.
34	NE.	30	"	"	"	Bored	60	1,780	- 30	1,750	60	1,720	" sand	Hard, clear, iron		D, S	Sufficient for local needs.
35	SE.	31	"	"	"	"	66	1,770	- 20	1,750	66	1,704	" gravel	Hard, clear, iron		D, S	" " 35 head stock.
36	NW.	31	"	"	"	Dug	56	1,760	- 36	1,744	56	1,724	" "	Hard, clear		D, S	" " local needs.
37	SE.	32	"	"	"	Bored	70	1,748	- 50	1,698	60	1,688	" sand	Hard, clear, iron, "alkaline"		D, S	Intermittent supply; dry some years.
38	NW.	32	"	"	"	Dug	10	1,751	- 5	1,746	5	1,746	" "	Hard, clear		D, S	Sufficient for 60 head stock.
39	SW.	33	"	"	"	Bored	80	1,750	- 25	1,725	76	1,674	" gravel	" "		D, S	Sufficient for local needs.
40	NW.	33	"	"	"	"	60	1,740	- 33	1,707	60	1,680	" sand	Hard, iron, red sediment		D, S	" " " " .
41	NE.	33	"	"	"	"	80	1,720					" gravel	Hard, iron, "alkaline" red sediment		S	Insufficient for local needs.
42	SE.	34	"	"	"	"	68	1,720	- 38	1,682	68	1,652	" "	Hard, clear, iron		D, S	Oversufficient for local needs.
43	SW.	34	"	"	"	"	60	1,735	- 20	1,715	60	1,675	" "	Hard, iron, sulphur, cloudy		D, S	" " " " .
44	SE.	36	"	"	"	"	32	1,690	- 17	1,673	15	1,675	" sand	Hard, iron, clear		D, S	Insufficient for local needs. #
1	SW.	3	13	31	1	Dug	30	1,885	- 20	1,865			Glacial sand	Soft, clear		D, S	Intermittent supply; varies with rainfall.
2	SE.	4	"	"	"	Bored	60	1,860	- 25	1,835	60	1,800	" gravel	Hard, clear, "alkaline"		D, S	Sufficient for 20 head stock.
3	SW.	4	"	"	"	Dug	26	1,860	- 16	1,844			" sand	Hard, clear, "alkaline"		D, S	" " 100 " " .
4	NW.	4	"	"	"	"	20	1,870	- 14	1,856	19	1,851	" gravel	Hard, clear		D, S	" " 40 " " .
5	NE.	5	"	"	"	Drilled	90	1,865	- 25	1,840	90	1,775	" "	Hard, iron, clear		D, S	Oversufficient for local needs.
6	NW.	6	"	"	"	Dug	24	1,904	- 20	1,884	24	1,884	" "	Hard, clear, "alkaline"		D, S	Sufficient for 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 MOOSOMIN NO.121, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
7	NE.	8	13	31	1	Drilled	107	1,865	- 55	1,810	1	1,758	Glacial sand	Hard, clear, iron		D, S	Sufficient for 40 head stock.
8	NE.	8	"	"	"	Dug	18	1,860	- 15	1,845	18	1,842	" gravel	Hard, clear, "alkaline"			No one living here and well only used for engines when threshing; good supply.
9	NE.	10	"	"	"	"	36	1,872	- 31	1,841	36	1,836	" sand	Hard, clear		D, S	Sufficient for local needs.
10	NW.	12	"	"	"	Drilled	100	1,855	- 90	1,765	90	1,765	" "	" " iron, "alkaline"		D, S	" " 40 head stock.
11	NW.	13	"	"	"	Bored	28	1,856	- 12	1,84[illegible]	28	1,828	Glacial clay	Hard, clear		S	Intermittent supply, dry in dry years.
12	NW.	13	"	"	"	Drilled	180	1,852					" blue clay				Dry hole.
13	NW.	14	"	"	"	"	118	1,865	- 64	1,801			" "	Hard, clear		D, S	Sufficient for 50 head stock.
14	SW.	16	"	"	"	"	90	1,860	- 70	1,790	90	1,770	" "	" "		D, S	" " 70 " " .
15	NE.	16	"	"	"	Dug	20	1,860	- 10	1,850	10	1,850	" "	" " "alkaline"		D, S	" " 20 " " .
16	SW.	18	"	"	"	"	55	1,905									Dry hole.
17	SE.	19	"	"	"	Drilled	230	1,865	-100	1,765	170	1,695	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient for 100 head stock.
18	SE.	21	"	"	"	Dug	35	1,860			35	1,825	" gravel	Hard, iron, clear		D, S	Insufficient for local needs.
19	NW.	21	"	"	"	"	60	1,870	- 56	1,814			" clay	Hard, clear, iron, "alkaline"		D	Intermittent supply; dry in dry years.
20	SE.	23	"	"	"	Dug	10	1,850			10	1,840	Glacial gravel	Hard, clear		D, S	Intermittent supply; dry in dry years.
21	NW.	23	"	"	"		26	1,850					" drift				Dry hole; also 2 other dry hles.
22	SE.	24	"	"	"	Drilled	91	1,851	- 6	1,845	89	1,762	Marine shale	Hard, clear, iron		S	Sufficient for 210 head stock.
23	NW.	25	"	"	"	"	112	1,825	- 92	1,733	92	1,733	Glacial gravel	Hard, clear, salty		S	Intermittent supply; hauls in winter.
24	NW.	26	"	"	"	"	142	1,850					" "	Hard, clear, iron, "alkaline"		D, S	Sufficient for local needs.
25	NW.	28	"	"	"	"	168	1,890	- 64	1,826	166	1,724	Glacial sand	Hard, clear		D, S, I	Sufficient for 300 head stock. #
26	SE.	29	"	"	"	Dug	30	1,880	- 6	1,874			" "	" "		D, S, I	Sufficient for domestic use only.
27	NW.	30	"	"	"	"	50	1,900			50	1,850	" gravel	" " "alkaline"		S	Insufficient supply; will water 10 head stock.
28	NE.	30	"	"	"	"	20	1,895	- 19	1,876			" sand	Hard, clear, "alkaline"			Yields 10 pails a day.
29	SW.	31	"	"	"	"	30	1,885	- 18	1,867	24	1,861	" gravel	Hard, clear, "alkaline"		D, S	Insufficient for local needs.
30	NW.	31	"	"	"	"	30	1,890	- 20	1,870	20	1,870	" clay	Hard, clear, "alkaline"		S	" " " " .
31	NE.	31	"	"	"	"	30	1,900					"				Dry hole.
32	NW.	32	"	"	"	"	20	1,895	0	1,895			" clay			N	Dry at 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.

WELL RECORDS—Rural Municipality of MOOSOMIN NO.121, 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				
33	NE.	32	13	31	1	Bored	41	1,890	- 16	1,874	41	1,849	Glacial sand	Hard, clear		D, S	Insufficient for local needs.
34	NE.	33	"	"	"	Drilled	180	1,890					Glacial gravel	Hard, clear		D, S	Moosomin town well, strong supply. #
35	SW.	34	"	"	"	Drilled	303	1,870	- 60	1,810				Hard, clear, salty		S	Sufficient for local needs.
36	NE.	36	"	"	"	Dug	68	1,800	- 25	1,775	68	1,732	Glacial gravel	Hard, clear, iron, "alkaline"		D, S	Intermittent supply; dry in dry years.
1	SW.	1	14	30	1	Drilled	130	1,690	- 62	1,628			Glacial	Hard, iron, salty, red sediment		S	Insufficient for local needs.
2	SE.	2	"	"	"	Bored	40	1,690					Glacial sand	Hard, clear		N	Usable but almost plugged with sand.
3	NW.	2	"	"	"	Dug	7	1,704	- 3	1,701	5	1,699	Glacial gravel	Hard, clear		D, S	Sufficient for local needs.
4	SW.	2	"	"	"	Dug	43	1,704	- 28	1,676	35	1,669	Glacial gravel	Hard, clear, iron		S	Insufficient for local needs at times.
5	SE.	3	"	"	"	Dug	40	1,715	- 25	1,690	40	1,675	Glacial sand	Hard, clear		D, S	Insufficient for local needs.
6	NE.	4	"	"	"	Dug	8	1,710	- 6	1,704	6	1,704	Glacial gravel	Soft, clear		D, S	Sufficient for local needs.
7	SE.	5	"	"	"	Dug	40	1,755	- 28	1,727	40	1,715	Glacial gravel	Hard, clear, iron		S	Intermittent supply; dry at times.
8	NW.	5	"	"	"	Dug	60	1,755	- 40	1,715	60	1,695	Glacial sand	Hard, "alkaline"		D, S	Insufficient for local needs.
9	NE.	6	"	"	"	Dug	60	1,755	- 20	1,735	60	1,695	Glacial gravel	Hard, iron, red sediment		S	Insufficient for local needs.
10	SW.	6	"	"	"	Bored	45	1,770	- 25	1,745	40	1,730	Glacial sand	Hard, "alkaline" red sediment		S	Sufficient for 25 head stock.
11	SE.	7	"	"	"	Drilled	14	1,750	- 38	1,712	38	1,712	Glacial clay	Hard, clear, iron, "alkaline"		D, S	Intermittent supply; dry in dry years. Another well dug 54 feet deep.
12	NE.	8	"	"	"	Dug	61	1,735	- 21	1,714	61	1,674	Glacial gravel	Hard, cloudy, iron, yellow		S	Oversufficient for 30 head stock.
13	NW.	8	"	"	"	Bored	60	1,740	- 15	1,725	40	1,700	Glacial gravel	Hard, clear, "alkaline"		S	Insufficient for local needs.
14	SE.	9	"	"	"	Bored	90	1,715			60	1,655	Glacial sand	Hard, iron, "alkaline" red sediment		S	Insufficient for local needs.
15	SE.	10	"	"	"	Dug	18	1,690	- 12	1,678	12	1,678	Glacial sand	Hard, iron red sediment		S	Insufficient for local needs.
16	SE.	10	"	"	"	Dug	10	1,700	- 2	1,698	2	1,698	Glacial sand	Hard, clear		D	Sufficient for local needs.
17	SE.	12	"	"	"	Dug	16	1,670	- 14	1,656	14	1,656	Glacial sand	Soft, clear		D, S	Sufficient for local needs.
18	NE.	13	"	"	"	Dug	12	1,640	- 4	1,636	4	1,636	Glacial sand	Soft, clear		D, S	Sufficient for 50 head stock.
19	NE.	14	"	"	"	Dug	14	1,625	- 9	1,616	9	1,616	Glacial gravel	Hard, clear, iron		D, S	Sufficient for local needs.
20	SE.	14	"	"	"	Dug	36	1,770	- 30	1,740	30	1,740	Glacial gravel	Hard, clear		D, S	Sufficient for local needs.
21	NE.	15	"	"	"	Dug	52	1,690	- 30	1,660	52	1,638	Glacial gravel	Hard, clear, iron		D, S	Intermittent supply; dry in dry years

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 MOOSOMIN NO.121, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
22	SW.	15	14	30	1	Dug	10	1,700	- 5	1,695	5	1,695	Glacial sand	Soft, clear		D, S	Sufficient for 30 head stock.
23	SE.	16	"	"	"	Dug	34	1,710	- 16	1,694	16	1,694	Glacial clay	Hard, clear		S	Insufficient for local needs.
24	NW.	16	"	"	"	Bored	160	1,708					Glacial sand	Hard, clear, salty, "alkaline"		N	Not usable; small supply.
25	SW.	16	"	"	"	Dug	40	1,720	- 36	1,684	38	1,682	Glacial gravel	Hard, clear		D, S	Intermittent supply; dry in dry years.
26	NW.	19	"	"	"	Dug	32	1,735	0	1,735	8	1,727	Glacial gravel	Soft, clear		D, S	Intermittent supply local needs.
27	SE.	20	"	"	"	Drilled	170	1,725	- 10	1,715	140	1,585	Marine shale	Hard, clear, salty		S	Intermittent supply 200 head stock.
28	SW.	20	"	"	"	Dug	42	1,730	- 22	1,708	40	1,690	Glacial gravel	Hard, cloudy, iron, "alkaline"		S	Insufficient for local needs.
29	NW.	21	"	"	"	Dug	70	1,700	- 18	1,682	68	1,632	Glacial gravel	Hard, clear, iron		D, S	Sufficient for 20 head stock.
30	SW.	22	"	"	"	Dug	12	1,690	- 8	1,682	8	1,682	Glacial sand	Hard, clear		S	Sufficient for 30 head stock.
31	SW.	23	"	"	"	Dug	42	1,680	- 30	1,650	34	1,646	Glacial gravel	Hard, iron, red sediment		D, S	Insufficient for local needs in dry years.
32	NW.	24	"	"	"	Dug	54	1,665	- 42	1,623	52	1,613	Glacial gr vel	Hard, clear, iron		D, S	Sufficient for local needs.
33	SE.	25	"	"	"	Dug	58	1,680	- 50	1,630	50	1,630	Glacial sand	Hard, clear, "alkaline"		D	Sufficient for 40 head stock.
34	NW.	25	"	"	"	Dug	12	1,680	- 5	1,675	5	1,675	Glacial gravel	Hard, clear		D, S	Intermittent supply; dry in dry years.
35	SE.	27	"	"	"	Dug	42	1,660	- 12	1,668	12	1,668	Glacial clay	Hard, clear		D, S	Intermittent supply; dry in dry years.
36	NE.	28	"	"	"	Drilled	90	1,695					Glacial				Dry hole.
37	SE.	29	"	"	"	Dug	24	1,700	- 9	1,691	6	1,694	Glacial sand	Hard, clear		D, S	Sufficient for 60 head stock.
38	NW.	29	"	"	"	Dug	16	1,720	- 8	1,712	8	1,712	Glacial gravel	Hard, clear		S	Sufficient for local needs.
39	NW.	30	"	"	"	Dug	20	1,725	- 14	1,711	14	1,711	Glacial sand	Hard, clear		D, S	Insufficient for local needs.
40	SE.	31	"	"	"	Dug	49	1,725	- 20	1,705	15	1,710	Glacial sand	Hard, clear		D, S	Sufficient for 30 head stock.
41	NW.	31	"	"	"	Dug	14	1,720	- 10	1,710	10	1,710	Glacial gravel	Soft, clear		D, S	Sufficient for 20 head stock.
42	NW.	32	"	"	"	Dug	65	1,715	- 10	1,705			Glacial gravel	Hard, clear		D, S	Intermittent supply; dry in dry years.
43	SW.	32	"	"	"	Dug	70	1,715	- 50	1,665	66	1,649	Glacial gravel	Hard, clear		D, S	Insufficient for local needs.
44	NE.	34	"	"	"	Dug	50	1,680	- 10	1,670	44	1,636	Glacial sand	Hard, clear, "alkaline"		D, S	Intermittent supply; fair at times.
45	NW.	34	"	"	"	Dug	70	1,680	- 30	1,650	30	1,650	Glacial gravel	Hard, clear, iron		D, S	Intermittent supply; good supply in wet years.
46	NW.	34	"	"	"	Dug	50	1,685	- 30	1,655	50	1,635	Glacial gravel	Hard, clear		D, S	Insufficient for local needs.
1	SE.	1	14	31	1	Bored	50	1,790	- 25	1,765	50	1,740	Glacial sand	Hard, clear, iron		D, S	Insufficient for local needs.

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

WELL RECORDS—Rural Municipality of MOOSOMIN NO.121, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE: Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED: Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
2	NW.	1	14	31	1	Bored	60	1,790	- 20	1,770	60	1,730	Glacial gravel	Hard, clear, "alkaline"		N	Not usable for man or stock.
3	SE.	2	"	"	"	Drilled	72	1,805	- 15	1,790	72	1,733	Glacial	Hard, clear, "alkaline"		D, S	Sufficient for 60 head stock.
4	SW.	2	"	"	"	Dug	50	1,830	- 30	1,800	40	1,790	Glacial gravel	Hard, clear, "alkaline"		D, S	Sufficient for 50 head stock.
5	NE.	2	"	"	"	Drilled	65	1,800	- 15	1,785	65	1,735	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient for 60 head stock.
6	NE.	5	"	"	"	Dug	60	1,920			60	1,860	Glacial clay	Hard, iron, "alkaline"		N	Not usable; poor supply.
7	SE.	6	"	"	"	Drilled	145	1,902	- 60	1,842	140	1,762	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient for local needs.
8	SW.	6	"	"	"	Drilled	165	1,896	- 45	1,851	100	1,796	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient for local needs.
9	SE.	8	"	"	"	Dug	16	1,865	- 6	1,859	16	1,849	Glacial sand	Soft, clear		D, S	Sufficient for local needs.
10	SE.	9	"	"	"	Bored	84	1,835	- 49	1,786	84	1,751	Glacial	Hard, clear		D, S	Sufficient for local needs.
11	SW.	10	"	"	"	Drilled	70	1,837	- 60	1,777			Glacial sand	Hard, clear, iron		D, S	Insufficient for local needs.
12	SE.	11	"	"	"	Dug	10	1,790	- 1	1,789	1	1,789	Glacial sand	Soft, clear		D, S	Sufficient for 100 head stock.
13	NE.	12	"	"	"	Dug	50	1,730	- 40	1,690			Glacial clay	Hard, clear, iron, "alkaline"		S	Intermittent supply; dry in dry years.
14	NE.	13	"	"	"	Dug	10	1,750	- 8	1,742			Glacial gravel	Hard, clear		D, S	Sufficient for local needs.
15	SE.	14	"	"	"	Dug	21	1,775	- 15	1,760			Glacial gravel	Hard, "alkaline"		S	Sufficient for local needs.
16	NE.	14	"	"	"	Dug	10	1,780	- 8	1,772			Glacial sand	Hard, clear		D, S	Sufficient for local needs.
17	SE.	15	"	"	"	Dug	60	1,803	- 25	1,778			Glacial	Hard, clear		D, S	Insufficient for local needs in winter.
18	NW.	15	"	"	"	Dug	58	1,800	- 46	1,754	58	1,742	Glacial gravel	Hard, clear		S,	Sufficient for 30 head stock
19	SE.	16	"	"	"	Drilled	125	1,802	- 20	1,782			Glacial	Hard, clear		D, S	Sufficient for local needs.
20	NE.	16	"	"	"	Bored	11	1,851	- 10	1,841	55	1,796	Glacial gravel	Hard, clear, iron		D, S	Sufficient for 50 head stock. Another well dug 44 feet deep.
21	NE.	17	"	"	"	Drilled	90	1,850	- 70	1,780	70	1,780	Glacial sand	Hard, clear, iron		S	Intermittent supply; dry at times.
22	SE.	20	"	"	"	Drilled	58	1,830	- 25	1,805			Glacial	Hard, clear, iron		D, S	Sufficient for local needs.
23	NE.	20	"	"	"	Drilled	80	1,822	- 12	1,810	60	1,762	Glacial gravel	Hard, iron, cloudy		D, S	Sufficient for 110 head stock.
24	SE.	21	"	"	"	Drilled	70	1,800	- 40	1,760	60	1,740	Glacial gravel	Hard, clear		D, S	Insufficient for local needs.
25	NW.	21	"	"	"	Dug	50	1,800	- 30	1,770	30	1,770	Glacial	Hard, clear		D	Intermittent supply; dry at times.
26	SE.	22	"	"	"	Drilled	165	1,780	- 35	1,745	165	1,615	Glacial gravel	Hard, iron, salty, yellow sediment		D, S	Sufficient for local needs.
27	SW.	22	"	"	"	Drilled	71	1,800	- 38	1,762	38	1,762	Glacial clay	Hard, clear		D, S	Insufficient for local needs.

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(#) Sample taken for analysis.

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WELL RECORDS—Rural Municipality of MOOSOMIN NO.121, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
28	SE.	23	14	31	1	Dug	65	1,770	- 55	1,715			Glacial	Hard, clear		S	Sufficient for local needs.
29	NW.	23	"	"	"	Dug	6	1,770	- 5	1,765	5	1,765	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
30	SW.	24	"	"	"	Bored	60	1,760	- 55	1,705	60	1,700	Glacial sand	Hard, iron, "alkaline"		S	Sufficient for 20 head stock.
31	SW.	25	"	"	"	Dug	72	1,748	- 60	1,688	72	1,676	Glacial sand	Hard, clear, iron, "alkaline"		S	Intermittent supply; varies with rainfall.
32	SE.	26	"	"	"	Bored	30	1,752	- 74	1,678	50	1,702	Glacial	Hard, clear, "alkaline"		D, S	Sufficient for local needs. Another well dug 50 feet deep.
33	NE.	26	"	"	"	Drilled	75	1,750	- 30	1,720			Glacial	Hard, clear, salty		S	Sufficient for local needs.
34	SW.	27	"	"	"	Dug	30	1,800	- 15	1,785			Glacial sand	Hard, "alkaline"		S	Sufficient for 20 head stock.
35	NE.	27	"	"	"	Dug	8	1,775	- 6	1,769	6	1,769	Glacial gravel	Hard, clear, "alkaline"		D, S	Sufficient for 20 head stock.
36	SE.	28	"	"	"	Dug	35	1,803	- 30	1,773	30	1,773	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
37	SW.	29	"	"	"	Drilled	65	1,880			65	1,815	Glacial gravel				
38	SW.	30	"	"	"	Drilled	130	1,850	- 24	1,826	130	1,720	Glacial	"Alkaline"		D, S	
39	SW.	30	"	"	"	Drilled	116	1,855					Glacial gravel				
40	SE.	31	"	"	"	Dug	40	1,860	- 20	1,840	40	1,820	Glacial gravel	Hard, clear		D, S	Sufficient for local needs.
41	NE.	31	"	"	"	Drilled	165	1,820					Glacial	Hard, iron, "alkaline" red sediment		S	Sufficient for 50 head stock.
42	SE.	32	"	"	"	Dug	60	1,820	- 50	1,770	50	1,770	Glacial clay	Hard, clear, "alkaline"		S	Intermittent supply; dry in dry years.
43	SE.	32	"	"	"	Dug	40	1,810	- 20	1,790	40	1,770	Glacial clay	Hard, clear, "alkaline"		S	Intermittent supply; dry at times.
44	NE.	32	"	"	"	Dug	13	1,803	- 11	1,792	11	1,792	Glacial sand	Hard, clear		D, S	Insufficient for local needs.
45	SW.	34	"	"	"	Dug	55	1,790	- 4	1,786			Glacial	Hard, clear		D, S	Insufficient for local needs.
46	SW.	35	"	"	"	Drilled	180	1,760	- 15	1,745			Glacial	Hard, clear, salty		S	Sufficient for local needs.
47	SW.	36	"	"	"	Dug	18	1,741	- 13	1,728	18	1,723	Glacial sand	Hard, clear, iron, "alkaline"		D, S	Sufficient for local needs.
48	NE.	36	"	"	"	Dug	19	1,725					Glacial sand	Hard, iron, cloudy		D, S	Sufficient for local needs.
1	NW.	1	15	30	1	Dug	11	1,675	- 9	1,666	11	1,664	Glacial gravel	Soft, clear		D, S	Sufficient for 10 head stock.
2	NW.	2	"	"	"	Dug	40	1,680	- 37	1,643	37	1,643	Glacial gravel	Hard, clear, iron, "alkaline"		S	Sufficient for local needs.
3	SW.	2	"	"	"	Dug	46	1,696	- 30	1,666	42	1,654	Glacial sand	Hard, clear, iron, "alkaline" sulphur		D, S	Insufficient for local needs.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of MOOSOMIN NO.121, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
4	N½	3	15	30	1	Dug	10	1,675	- 7	1,668	7	1,668	Glacial gravel	Hard, clear		D, S	Sufficient for local needs.
5	SE.	4	"	"	"	Dug	40	1,705	- 37	1,668	6	1,699	Glacial sand	Hard, clear, iron		S	Insufficient for local needs.
6	NW.	5	"	"	"	Dug	62	1,715	- 46	1,669	40	1,675	Glacial gravel	Hard, clear, iron		D, S	Oversufficient for 50 head stock.
7	SE.	6	"	"	"	Dug	50	1,700	- 47	1,653	47	1,653	Glacial gravel	Hard, clear, "alkaline"		S	Insufficient for local needs.
8	NW.	6	"	"	"	Dug	43	1,725	- 36	1,689			Glacial sand	Hard, clear		D, S	
9	SW.	7	"	"	"	Dug	50	1,730	- 36	1,694	44	1,686	Glacial	Hard, clear, "alkaline"		D, S	Intermittent supply.
10	NW.	7	"	"	"	Dug	8	1,720	0	1,720	7	1,713	Glacial sand	Hard, clear		D	Sufficient for domestic needs.
11	SE.	8	"	"	"	Dug	50	1,700	- 46	1,654	50	1,650	Glacial clay	Hard, iron, clear		D	Intermittent supply; dry at times.
12	SW.	8	"	"	"	Dug	10	1,710	- 7	1,703	7	1,703	Glacial gravel	Soft, clear		D, S	Yields 8 to 10 tanks a day.
13	NE.	9	"	"	"	Dug	53	1,693	- 37	1,656	16	1,677	Glacial gravel	Hard, clear		D, S	Sufficient for 100 head stock.
14	SE.	10	"	"	"	Dug	34	1,685	- 18	1,667	28	1,657	Glacial gravel	Hard, clear		D, S, I	Oversufficient for local needs.
15	SW.	10	"	"	"	Dug	45	1,690	- 27	1,663	40	1,650	Glacial gravel	Hard, clear		D, S	Insufficient supply in drought period.
16	SW.	11	"	"	"	Dug	56	1,675	- 46	1,629	46	1,629	Glacial gravel	Hard, clear		D, S	Insufficient supply in winter.
17	NE.	12	"	"	"	Bored	125	1,665	- 35	1,630	125	1,540	Glacial gravel	Soft, clear		D, S	Sufficient for 40 head stock.
18	SW.	13	"	"	"	Dug	52	1,670	- 22	1,648	22	1,648	Glacial clay	Hard, clear		D, S	Intermittent supply; dry at times.
19	NE.	13	"	"	"	Dug	40	1,665	- 25	1,640	40	1,625	Glacial sand	Hard, clear, iron, "alkaline"		D, S	Insufficient for local needs.
20	SW.	14	"	"	"	Dug	30	1,660	- 15	1,645	26	1,634	Glacial gravel	Hard, clear, "alkaline"		D, S	Sufficient for 30 head stock.
21	NW.	14	"	"	"	Bored	80	1,670	- 35	1,635	80	1,590	Glacial sand	Hard, clear, "alkaline"		D, S, I	Sufficient for local needs.
22	NW.	14	"	"	"	Bored	80	1,670	- 35	1,635	80	1,590	Glacial sand	Hard, clear, "alkaline"		D, S, I	Sufficient for local needs.
23	SE.	15	"	"	"	Dug	70	1,660	- 49	1,611	70	1,590	Glacial gravel	Hard, clear, "alkaline"		D, S	Sufficient for local needs.
24	SE.	16	"	"	"	Dug	35	1,700	- 18	1,682	18	1,682	Glacial clay and stones	Hard, clear		D, S	Sufficient for 50 head stock.
25	NW.	16	"	"	"	Dug	50	1,660	- 34	1,626	45	1,615	Glacial gravel	Hard, clear		D, S	Sufficient for 25 head stock.
26	SE.	17	"	"	"	Dug	38	1,705	-,32	1,673	32	1,673	Glacial gravel	Hard, clear		D, S	Sufficient for 50 head stock.
27	SW.	17	"	"	"	Dug	23	1,720	- 20	1,700	20	1,700	Glacial gravel	Hard, clear		D	Intermittent supply; plenty in wet years.
28	SE.	18	"	"	"	Dug	60	1,720	- 30	1,690	19	1,701	Glacial gravel	Hard, clear, iron		D, S	Intermittent supply; sufficient in wet years.
29	NW.	18	"	"	"	Dug	50	1,740	- 45	1,695	50	1,690	Glacial gravel	Hard, clear, iron		D, S	Sufficient for local needs.
30	SW.	19	"	"	"	Dug	50	1,740	- 40	1,700	50	1,690	Glacial gravel	Hard, clear, iron		D, S	Sufficient for 90 head stock. #

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

WELL RECORDS—Rural Municipality of MOOSOMIN NO. 121, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE: Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED: Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
31	NE.	19	15	30	1	Dug	70	1,710	- 66	1,644	24	1,686	Glacial gravel	Hard, clear, iron, "alkaline"		N	Not usable; intermittent supply.
32	NE.	20	"	"	"	Dug	60	1,700	- 48	1,652	30	1,670	Glacial gravel	Hard, clear, "alkaline"		D	Intermittent supply; dry in dry years.
33	SE.	21	"	"	"	Dug	59	1,700	- 39	1,661	55	1,645	Glacial	Hard, clear		D, S	Insufficient for local needs.
34	NE.	21	"	"	"	Dug	18	1,685	- 13	1,672	8	1,677	Glacial	Hard, clear, iron		D, S	Sufficient for 30 head stock.
35	SW.	22	"	"	"	Dug	37	1,670	- 43	1,627	43	1,627	Glacial gravel	Hard, clear, "alkaline"		D	Intermittent supply; dry at times.
36	SE.	22	"	"	"	Dug	10	1,650	- 6	1,644	10	1,640	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient for 50 head stock.
37	SE.	22	"	"	"	Dug	78	1,670	- 44	1,626	48	1,622	Glacial sand	Hard, clear, "alkaline"		S	Intermittent supply; dry in dry years.
38	SE.	23	"	"	"	Dug	48	1,670	- 43	1,627	43	1,627	Glacial sand	Hard, clear		D, S	Sufficient for 22 head stock.
39	NE.	23	"	"	"	Dug	35	1,665	- 30	1,635			Glacial clay	Hard, clear, iron, "alkaline"		D, S, I	Insufficient for 4 head stock.
40	SW.	24	"	"	"	Dug	41	1,665	- 21	1,644	31	1,634	Glacial gravel	Hard, clear, iron		D, S	Sufficient for 29 head stock.
41	NW.	24	"	"	"	Dug	75	1,660	- 30	1,630	75	1,585	Glacial	Hard, clear, iron		D, S	Sufficient for 60 head stock.
42	SW.	26	"	"	"	Dug	63	1,660	- 60	1,600	60	1,600	Glacial sand	Hard, clear, "alkaline"		S	Insufficient for 8 head stock.
43	NW.	26	"	"	"	Dug	50	1,660	- 46	1,614	47	1,613	Glacial gravel	Hard, clear		D, S	Sufficient for 40 head stock.
44	NW.	27	"	"	"	Dug	51	1,675	- 39	1,636	28	1,647	Glacial gravel	Hard, clear		D, S	Sufficient for 35 head stock.
45	SE.	30	"	"	"	Bored	80	1,710	- 78	1,632	78	1,632	Glacial sand	Hard, clear, iron		D, S	Sufficient for local needs.
46	SE.	31	"	"	"	Dug	18	1,700	- 15	1,685	14	1,686	Glacial sand	Hard, clear, iron, "alkaline"		S	Insufficient for local needs.
47	SW.	31	"	"	"	Dug	71	1,705	- 68	1,637	40	1,665	Glacial sand	Hard, clear		D, S	Sufficient for 50 head stock.
48	SW.	32	"	"	"	Dug	60	1,687	- 38	1,649	60	1,627	Glacial gravel	Hard, iron, red sediment		D, S	Sufficient for local needs.
49	NW.	32	"	"	"	Dug	50	1,710	- 10	1,700	25	1,685	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
50	NE.	32	"	"	"	Dug	70	1,680	- 65	1,615	40	1,640	Glacial sand	Hard, clear, iron		D, S	Sufficient for 50 head stock.
51	NW.	33	"	"	"	Dug	70	1,690	- 68	1,622	65	1,625	Glacial gravel	Hard, clear, iron		D, S	Sufficient for local needs.
52	SE.	34	"	"	"	Dug	50	1,665	- 47	1,618	47	1,618	Glacial gravel	Hard, clear		D, S	Oversufficient for local needs.
53	NE.	34	"	"	"	Dug	60	1,670	- 46	1,624	45	1,625	Glacial sand	Hard, clear		D, S	Oversufficient for local needs.
54	SW.	35	"	"	"	Dug	50	1,660	- 43	1,617	47	1,613	Glacial gravel	Hard, clear, "alkaline"		D, S	Sufficient for 30 head stock.
55	NW.	35	"	"	"	Dug	52	1,666	- 46	1,620	52	1,614	Glacial sand	Hard, clear, iron		D, S, I	Sufficient for local needs. #
56	SE.	36	"	"	"	Dug	44	1,625	- 24	1,601	44	1,581	Glacial sand	Hard, clear, iron, "alkaline"		D, S	Sufficient for 50 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.

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WELL RECORDS—Rural Municipality of MOOSOMIN NO.121, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
57	SW.	36	15	30	1	Dug	12	1,650	- 6	1,644	11	1,639	Glacial sand	Hard, clear, "alkaline"		D	Sufficient for domestic use only.
1	SE.	1	15	31	1	Drilled	165	1,748	- 40	1,708	140	1,608	Marine shale	Hard, salty, "alkaline" clear		S	Sufficient for local needs.
2	SE.	4	"	"	"	Drilled	275	1,800	-150	1,650			Glacial gravel	Hard, clear, "alkaline"		D, S	Sufficient for local needs.
3	SW.	5	"	"	"	Dug	12	1,830	- 9	1,821	9	1,821	Glacial gravel	Hard, clear		D, S	Oversufficient for local needs.
4	SE.	5	"	"	"	Drilled	300	1,820	-100	1,720	300	1,520	Glacial sand	Hard, clear, iron		D, S, I	Sufficient for 100 head stock.
5	SE.	6	"	"	"	Dug	30	1,840	- 20	1,820	20	1,820	Glacial sand	Hard, clear, "alkaline"		D, S, I	Sufficient for 25 head stock.
6	SW.	7	"	"	"	Dug	35	1,835	0	1,835	35	1,800	Glacial sand	Hard, clear, "alkaline"		D, S	Intermittent supply.
7	SE.	8	"	"	"	Drilled	160	1,805	-144	1,661			Glacial sand	Hard, clear, iron		D, S	Sufficient for 30 head stock.
8	NW.	8	"	"	"	Dug	18	1,820	- 14	1,806	16	1,804	Glacial sand	Hard, salty, clear		S	Intermittent supply; dry in dry years.
9	SE.	9	"	"	"	Drilled	180	1,770	-150	1,620	180	1,590	Glacial gravel	Hard, clear, iron, "alkaline"		D, S	Sufficient for 20 head stock.
10	SW.	9	"	"	"	Drilled	260	1,775	-185	1,590	260	1,515	Glacial gravel	Hard, clear, iron		D, S	Sufficient for 25 head stock.
11	SW.	10	"	"	"	Drilled	240	1,780	-140	1,640			Marine shale	Hard, clear, salty		D, S	Oversufficient for local needs.
12	NE.	11	"	"	"	Dug	20	1,745	- 13	1,732	13	1,732	Glacial gravel	Hard, clear		D, S	Sufficient for local needs.
13	SE.	11	"	"	"	Dug	15	1,740	- 10	1,730	10	1,730	Glacial sand	Hard, clear		D, S	Sufficient for domestic use only.
14	NE.	12	"	"	"	Dug	20	1,728	- 5	1,723	5	1,723	Glacial sand	Soft, clear		D, S	Sufficient for local needs.
15	SW.	12	"	"	"	Dug	12	1,740	- 3	1,737	3	1,737	Glacial gravel	Hard, clear		D, S	Sufficient for domestic use only.
16	NE.	13	"	"	"	Dug	16	1,725	- 11	1,714	11	1,714	Glacial sand	Soft, clear		D, S	Sufficient for 30 head stock.
17	SE.	14	"	"	"	Dug	18	1,740	- 15	1,725	17	1,723	Glacial sand	Soft, clear		D, S	Sufficient for 30 head stock.
18	SW.	15	"	"	"	Dug	8	1,760	- 5	1,755	5	1,755	Glacial gravel	Soft, clear		D, S, I	Oversufficient for local needs.
19	NE.	15	"	"	"	Dug	16	1,740	- 8	1,732	8	1,732	Glacial gravel	Soft, clear		D, S, I	Intermittent supply; oversufficient at times.
20	SW.	16	"	"	"	Dug	40	1,775	- 10	1,765	30	1,745	Glacial gravel	Hard, iron, "alkaline"		D, S, I	Intermittent supply; dry in dry years.
21	NE.	16	"	"	"	Drilled	260	1,770	-140	1,630	260	1,510	Glacial sand	Hard, clear, iron		S	Sufficient for 70 head stock.
22	NW.	17	"	"	"	Dug	14	1,800	0	1,800	3	1,797	Glacial gravel	Hard, clear, "alkaline"		D, S	Intermittent supply; varies with rainfall.
23	NW.	18	"	"	"	Dug	16	1,825	- 14	1,811	13	1,812	Glacial gravel	Hard, clear		D, S, I	Sufficient for 20 head stock.
24	NE.	18	"	"	"	Drilled	286	1,820	- 80	1,740	282	1,538	Marine shale	Soft, clear, salty,		D, S, I	Sufficient for local needs.
25	NW.	19	"	"	"	Dug	12	1,815	0	1,815	12	1,803	Glacial sand	Hard, clear, "alkaline"		N	Small 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 MOOSOMIN NO. SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
26	NW.	20	15	31	1	Bored	70	1,790					Glacial				Dry hole.
27	SE.	20	"	"	"	Dug	30	1,790	- 10	1,780	29	1,761	Glacial gravel	Hard, clear		D, S, I	Intermittent supply; sufficient at times.
28	NE.	21	"	"	"	Dug	8	1,750	- 2	1,748	2	1,748	Glacial sand	Hard, clear		D, S, I	Sufficient for 30 head stock.
29	SW.	21	"	"	"	Dug	48	1,765	- 28	1,737	46	1,719	Glacial sand	Hard, clear, iron, "alkaline"		D, S	Sufficient for 30 head stock.
30	NW.	22	"	"	"	Dug	12	1,740	- 4	1,736	8	1,732	Glacial gravel	Hard, clear		D, S, I	Intermittent supply; varies with rainfall.
31	NE.	22	"	"	"	Dug	16	1,740	- 8	1,732	8	1,732	Glacial gravel	Hard, clear		D, S	Oversufficient for local needs.
32	SE.	23	"	"	"	Drilled	110	1,735	- 92	1,643	107	1,628	Glacial gravel	Hard, clear, iron		D, S	Sufficient for 70 head stock.
33	NW.	23	"	"	"	Dug	12	1,725	- 6	1,719	6	1,719	Glacial sandy clay	Hard, clear		D, S	Sufficient for local needs.
34	SE.	24	"	"	"	Dug	54	1,730					Glacial				Dry hole.
35	SW.	24	"	"	"	Dug	36	1,730	- 22	1,708	22	1,708	Glacial clay	Hard, clear, iron		D, S	Intermittent supply; dry in dry years.
36	SE.	26	"	"	"	Drilled	126	1,730	- 82	1,648	82	1,648	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
37	SW.	27	"	"	"	Dug	12	1,740	- 6	1,734	11	1,729	Glacial sand	Hard, clear		D, S	Sufficient for 30 head stock.
38	NW.	28	"	"	"	Dug	16	1,760	- 6	1,754	8	1,752	Glacial gravel	Hard, clear		D, S, I	Sufficient for local needs.
39	SE.	28	"	"	"	Dug	18	1,740	- 13	1,727	13	1,727	Glacial gravel	Hard, clear		D, S, I	Oversufficient for local needs.
40	SE.	29	"	"	"	Drilled	171	1,785	-131	1,654	156	1,629	Glacial sand	Hard, clear, iron		S	Oversufficient for local needs.
41	NE.	29	"	"	"	Dug	16	1,770	- 11	1,759	24	1,746	Glacial sand	Hard, clear		D, S	Insufficient for local needs.
42	NE.	30	"	"	"	Drilled	312	1,785	-125	1,660	175	1,610	Glacial sand	Hard, clear		D, S, I	Oversufficient for local needs.
43	SW.	31	"	"	"	Dug	25	1,800	- 6	1,794	25	1,775	Glacial sand	Hard, clear, "alkaline"		D, S	Intermittent supply; dry in dry years.
44	NW.	33	"	"	"	Dug	9	1,785	- 6	1,779	5	1,780	Glacial sand	Hard, clear		D, S	Oversufficient for local needs.
45	NE.	33	"	"	"	Dug	12	1,735	- 3	1,732	3	1,732	Glacial gravel	Hard, clear		D, S, I	Oversufficient for local needs.
46	NE.	34	"	"	"	Dug	30	1,730	- 26	1,704	26	1,704	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
47	SW.	34	"	"	"	Drilled	67	1,740			67	1,673	Glacial gravel	Hard, clear, iron		D, S	Oversufficient for local needs.
48	SW.	35	"	"	"	Drilled	190	1,720	-120	1,600	190	1,530	Glacial gravel	Hard, clear		D, S	Oversufficient for local needs.
49	NW.	35	"	"	"	Drilled	120	1,725	- 40	1,685	120	1,605	Glacial sand	Hard, clear, iron		D, S	Sufficient for local needs.
50	SE.	36	"	"	"	Dug	80	1,710	- 76	1,634			Glacial sand	Hard, clear, iron		D, S	Sufficient for local needs.
	SE	29	15	31	1		173	1800	-42	1758	173	1627	" gravel	Fresh			No other information.

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.