CANADA
DEPARTMENT OF MINES

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BUREAU OF ECONOMIC GEOLOGY

GEOLOGICAL SURVEY

PRELIMINARY REPORT

GROUND-WATER RESOURCES OF THE RURAL MUNICIPALITY OF McKILLOP No. 220 SASKATCHEWAN

BY

B. R. MacKay, H. N. Hainstock & J. A. Chalmers

Water Supply Paper No. 165

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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 fine the approximate depth to a water-bearing horizon, be 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 given 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 rests 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 McKillop, No. 220, comprises an area of approximately 260 square miles in the central part of southern Saskatchewan. It western border and part of its southern border are formed by Last Mountain lake. The centre of the municipality lies 17 miles west and 36 miles north of the city of Regina. The area consists of five full townships described as tp. 22, range 22; tps. 23 and 24, ranges 21 and 22; and parts of six townships described as tp. 21, range 22; tps. 21, 22, 23, and 24, range 23, and tp. 24, range 24, all W. 2nd mer. The area is drained by a number of small, intermittent creeks flowing into Last Mountain lake. The municipality is served by two branch lines of the Canadian Pacific railway. The Saskatoon-Brandon branch-line crosses the northeastern part of the township, running around the base of Last mountain, and on it are located the village of Bulyea and the town of Strasbourg. The Bulyea-Regina branch-line runs due south of Bulyea, and enters the municipality at Saskatchewan Beach.

The greater part of the municipality is covered by a thick mantle of moraine. A narrow area bordering the lake, the northwestern part of township 24, range 22, and the greater part of township 24, range 23, are mantled by glacial till. In a narrow strip along the lake in the northern part of the municipality, Recent lake sands overlie the till to an approximate depth of 25 feet. Three small areas of glacial outwash deposits are located in secs. 19 and 30, tp. 22, range 22; secs. 24 and 25, tp. 22, range 23; and secs. 21 and 28, tp. 24, range 22. The soil is fairly heavy over the greater part of the municipality, but in the vicinity of the lake it becomes sandy and quite stony. Scattered clumps of trees are to be found over the entire area with the exception of a strip of country adjacent to the lake.

Water-bearing Horizons in the Unconsolidated Deposits

Few continuous water-bearing horizons are encountered in the upper part of the drift and those that are present are of very limited areal extent. Most wells sunk to a maximum depth of 40 feet obtain water from scattered pockets of sand and gravel located either in the yellow or weathered boulder clays of the drift, at the contact between the yellow and blue boulder clays, or in the upper part of the blue boulder clay. The quality of water obtained varies considerably, some of the wells yielding soft water, whereas that from others is hard and some is "alkaline". The water is usually suitable for domestic purposes and stock use. The yield varies according to the nature and extent of the aquifer encountered. Wells that tap fairly extensive pockets of sand and gravel yield fairly abundant supplies. A 22-foot well in the SW.$\frac{1}{4}$, sec. 33, tp. 24, range 22, yields 8,000 gallons an hour. Wells that tap small pockets of sand or gravel, or that are dug beside sloughs, yield smaller supplies that are readily affected by drought conditions. Small test augers should be used to locate water-bearing deposits at shallow depth before wells are dug.

A number of wells sunk to a maximum depth of 180 feet obtain water from sand and gravel aquifers in the blue clay. The water from most of these wells is hard, but suitable for domestic purposes. The water from some of the wells, however, is "alkaline" and is often unfit for domestic purposes, but is usable for stock. The supply obtained is generally fairly abundant, but in some wells, as for example the three Canadian Pacific Railway wells at Bulyea, only very small supplies are obtained. The water in most of the wells is under sufficient pressure to rise to points 50 or 60 feet below the surface. A number of these wells are located in the eastern half of township 23, range 21. They vary considerably in depth,

however, and as deep, dry holes are also sunk close to wells producing large supplies the water-bearing deposits are not thought to form a continuous aquifer.

One well located in the NW.¼, sec. 9, tp. 23, range 21, two wells located in sec. 30, tp. 24, range 21, and a group of wells located in the area outlined by the "A" line in township 23, range 22, in Figure 1 of the accompanying map, obtain water from the glacial drift at depths of 150 to 340 feet. The water is hard and contains iron, but is suitable for domestic purposes and for stock. The water is under considerable hydrostatic pressure and the supply is sufficient for local needs.

Water-bearing Horizons in the Bedrock

One well located in the SE.¼, sec. 8, tp. 22, range 22, and two wells located in the NW.¼, sec. 28, and the SW.¼, sec. 34, tp. 24, range 23, obtain water from aquifers encountered in the Marine Shale series at depths of 418, 273, and 345 feet, respectively. The aquifers are not believed to be continuous, but wells sunk in the vicinity of the producing wells may obtain water at similar depths. In the central part of the municipality the bedrock is believed to lie at a considerably lower elevation and drilling to it is inadvisable, as the quality of the water obtained does not warrant the expense of drilling. The water from the three wells is soft and salty and is unsuitable for domestic purposes. The water from the well in the SW.¼, section 34, is too salty even for stock and the supply is small. The supply from the other two wells is fairly abundant. Bedrock outcrops along the shore of Last Mountain lake in tp. 21, range 22, and a dry hole in the SE.¼, sec. 25, tp. 21, range 22, may have encountered bedrock, but the information is not definite.

GROUND WATER CONDITIONS BY TOWNSHIPS

Township 21, Range 22

Only the part of this township that lies to the north of Last Mountain lake occurs in the municipality of McKillop. With the exception of a strip of glacial till or boulder clay, approximately one-half mile wide, adjacent to the lake, this part of the township is mantled by moraine.

The water supply in this area is derived from wells that tap scattered pockets of sand and gravel within 32 feet of the surface. These wells are dug through 1 to 3 feet of loam, and 5 to 20 feet of yellow clay, before they tap the sand or gravel deposits. Wells sunk in sections 25, 26, and 32 encounter very little yellow clay, but strike the aquifers in blue clay. Two wells located in the SW.$\frac{1}{4}$, section 25, and the SE.$\frac{1}{4}$, section 26, may be drawing their supplies from a common aquifer at an approximate elevation of 1,744 feet above sea-level. The water from these wells is soft, and under sufficient pressure to rise to a point 6 feet below the surface. The yield is sufficient for 35 head of stock. The remaining wells in the area yield hard water, and that from four wells is "alkaline", but not sufficiently so to render it unfit for domestic use. The water from three wells is reported to contain iron. The yield from most of the shallow wells is small, many supplying insufficient water for 10 head of stock. In such instances two or more wells are used, or water is hauled from Last Mountain lake.

Several dry holes were sunk in the SE.$\frac{1}{4}$, section 25, the deepest being 130 feet. No wells, with the probable exception of the above-mentioned dry hole, have penetrated the Marine Shale series, although shale is reported to outcrop along the shore of Last Mountain lake in sections 27, 28, and 29, at an approximate elevation of 1,640 feet above sea-level.

Township 21, Range 23

A very small portion of this township, probably not more than 10 acres, occurs within the municipality of McKillop. It is mantled by glacial till or boulder clay.

No wells have been sunk in this small area. Water could probably be obtained by seepage from the lake, should wells be dug along the lake shore.

Township 22, Range 22

Most of this township is mantled by moraine, the eastern parts of sections 6 and 7 being covered by glacial till. Glacial outwash sands and gravels occur in parts of sections 19 and 30. The ground surface is very uneven, and slopes towards Last Mountain lake. Numerous ravines dissect the land surface in the vicinity of the lake. The soil is a light sandy loam, and becomes quite gravelly towards the southwestern corner. The northeastern part of the area is characterized by numerous clumps of trees. The uppermost source of water in this township is from scattered pockets of sand and gravel that occur within the upper 40 feet of drift. Three wells located in sections 6, 7, and 18 are dug through gravelly clay and gravel, whereas wells located a greater distance from the lake encounter blue boulder clay quite near the surface. One well in the SW.$\frac{1}{4}$, section 25, was dug in yellow boulder clay that was underlain by sand at a depth of 30 feet. Water was encountered in the sand. Dry holes are numerous and water-bearing deposits in the upper part of the drift are apparently of common occurrence. The supply of water obtained from the wells varies greatly, and some do not yield adequate supplies for local needs. A well in the NW.$\frac{1}{4}$, section 23, is described as yielding an abundant supply. In those areas where an individual well does not yield an adequate supply of water,

several wells are used, or water is hauled. The water from these shallow wells is usually hard, and that from four or five wells is "alkaline", but it is usable for domestic needs or for stock.

A number of wells from 45 to 125 feet deep obtain water from pockets of sand or gravel that occur in the unweathered or blue clay. These wells yield a better supply of water than the shallower wells, although two wells in sections 2 and 12 yield inadequate supplies. In these sections two or more wells must be used or water hauled to obtain sufficient supplies for local needs. The water in four of the deeper wells is under sufficient hydrostatic pressure to rise to points 20 to 40 feet below the surface. The water is suitable for drinking, although that from some of the wells is slightly "alkaline" and contains a small amount of iron.

One well located in the SE.$\frac{1}{4}$, section 8, sunk to a depth of 418 feet, obtains water from an aquifer in the Marine Shale series. This well yields an abundant supply of soft water, but the concentration of sodium chloride is so high that it is quite undesirable for domestic purposes. The water is under sufficient pressure to rise to a point 80 feet below the surface. It is questionable if the quality of water from the bedrock warrants the expense of drilling deep wells. A sufficient supply should be obtained from the glacial drift.

Township 22, Range 23

Only that part of this township lying to the east of Last Mountain lake occurs within the municipality of McKillop. The land surface drops fairly rapidly from an approximate elevation of 1,750 feet in the northeastern corner to 1,608 feet at the lake. The northeastern corner of the area is mantled by moraine, with a small deposit of glacial outwash

occurring in parts of sections 24 and 25. Glacial till or boulder clay covers a narrow area paralleling the lake.

Water supplies in this area are obtained from wells, springs, and Last Mountain lake. The springs are located in the Sw.$\frac{1}{4}$, section 24, and in the NE.$\frac{1}{4}$, and the SE.$\frac{1}{4}$, section 27. These yield a good supply of hard water that is usable for all general farming purposes.

A number of wells sunk to depths of 8 to 40 feet obtain water from sand and gravel aquifers. Dry holes have been sunk to a depth of 30 feet in the SE.$\frac{1}{4}$, section 35, indicating that the aquifers are of small areal extent and are not continuous. The water from the shallow wells is hard, and is suitable for domestic purposes and for stock. The supply obtained is not large, but is usually sufficient for local needs.

Two wells located in the NE.$\frac{1}{4}$, section 25, and the SE.$\frac{1}{4}$, section 35, encounter sand pockets at depths of 50 and 55 feet. The water from these two wells is hard and the supply is sufficient only for 4 or 5 head of stock. The farmers in these localities are forced to haul water from the lake.

One well located in the SW.$\frac{1}{4}$, section 25, is sunk to a depth of 100 feet. It is thought that this well taps a sand or gravel aquifer in the blue clay of the glacial drift. The water is hard and contains iron, but is quite suitable for domestic purposes or for stock. The yield is adequate for local needs. Information is not available as to the areal extent of this aquifer, but water will no doubt be obtained from similar deposits throughout the area.

Township 23, Range 21

The maximum elevation of more than 1,900 feet above sea-level is attained in the northeastern corner of the township. From that point the elevation decreases gradually in a south-

westerly direction. The entire township is characterized by knolls and undrained depressions, and is covered by moraine. The top soil is a heavy loam, and is suitable for the raising of cereal grains. Clumps of poplar and willow occur throughout the area.

The supply of water in this township is fairly abundant and it is mainly derived from wells that are dug into the glacial drift. The uppermost source of water is from scattered pockets of sand and gravel that occur within the yellow or weathered boulder clay; at the contact of the yellow and blue boulder clays; or within the upper few feet of the blue boulder clay. The wells that tap these deposits are from 14 to 40 feet deep. In the southern part of the township the yellow or weathered clays appear to be absent and few shallow wells are found in this area. An 18-foot well in the SE.$\frac{1}{4}$, section 6, obtains water from sand and gravel overlying the blue boulder clay. This well yields a good supply of soft water. The remaining wells in the township yield hard water that in some instances is slightly "alkaline". The water from one well only, however, is too highly mineralized for domestic use. The shallow wells do not yield large supplies of water, but the supply is usually sufficient for 15 to 25 head of stock. The water from the wells that tap aquifers in the upper part of the blue clay may be under slight hydrostatic pressure.

A number of wells sunk to depths of 50 to 180 feet obtain water from sand pockets encountered in the blue clay. The sand aquifers do not appear to be continuous as they occur at various depths and elevations. For instance a well in the NE.$\frac{1}{4}$, section 12, is drilled to a depth of 120 feet, whereas a well in the SE.$\frac{1}{4}$, section 13, which yields similar water, is sunk to a depth of 180 feet. It appears necessary to drill to greater depths to obtain water in the eastern part of the

township than in the western part. In section 36, two wells were drilled to depths of 183 and 275 feet without obtaining any water. Although it cannot be definitely stated at what depth a water-bearing pocket of sand and gravel would probably be encountered, it is quite possible that water could be obtained within 50 to 180 feet of the surface anywhere in the township, with the exception of the northeastern corner. The water obtained from these deeper drift wells is usually under hydrostatic pressure. It is hard and contains varying amounts of iron, but is quite suitable for domestic purposes and for stock. The yield is adequate for farm needs, and in some instances is more than sufficient.

One well located in the NW.$\frac{1}{4}$, section 9, drilled to a depth of 340 feet, obtains an abundant supply of hard water from a sand aquifer believed to be in the glacial drift. The water is under sufficient pressure to rise to a point 140 feet below the surface. The water contains iron, but is usable for domestic purposes and for stock. No difficulty should be experienced in obtaining a fairly abundant supply of water from the drift in this township.

Township 23, Range 22

The surface elevation in this township decreases from approximately 1,800 feet above sea-level in the northeastern corner to 1,750 feet in the southwestern corner. Moraine covers the entire township and the ground surface is characterized by prominent knolls, and undrained depressions. The area is rather thickly dotted with clumps of poplar and willow.

The supply of water in this township is obtained chiefly from wells. Dry holes have been sunk to a maximum depth of 200 feet and one farmer in the SW.$\frac{1}{4}$, section 5, is forced to haul water from the lake. Wells sunk to depths of

8 to 40 feet obtain water from pockets of sand located in the weathered part of the glacial drift or in the upper part of the underlying blue clay. The water is usually hard and "alkaline", but that from some seepage wells is relatively soft. The water from a well located in the NE.$\frac{1}{4}$, section 34, is unsuitable for domestic purposes. The supply from the shallow wells varies considerably and depends upon the size of the pocket encountered, but it is usually sufficient for 15 or 20 head of stock. In the southern part of the township, and especially in the southwestern part, blue boulder clay is encountered a short distance beneath the surface. Few sand pockets are present in the upper part of the blue clay and as a result there are few shallow wells in this area. The discontinuous nature of the aquifers in the northern part is indicated by the presence of dry holes in the SE.$\frac{1}{4}$, section 20, and the NE.$\frac{1}{4}$, section 22.

A number of wells obtain water from pockets of sand that occur in the blue boulder clay at depths of 40 to 105 feet. These pockets are encountered chiefly in the northeastern quarter of the township, although one well located in the NW.$\frac{1}{4}$, section 18, taps a sand aquifer at a depth of 90 feet. Most of these wells yield hard water and that from the well in the NW.$\frac{1}{4}$, section 18, is too highly mineralized for domestic use, water from a 30-foot well being used for that purpose. The water from several wells contains a small quantity of iron, but the above-mentioned well is the only one that is not used for domestic purposes. The supply obtained is usually sufficient for local needs. The water in most of these wells is under considerable pressure.

A number of wells in the area outlined by the "A" boundary line on Figure 1 of the accompanying map obtain water at depths of 150 to 336 feet. The aquifer encountered by each

well is sand, and it is possible that all these wells tap a common aquifer. If such is the case it appears that this aquifer dips to the south, as the wells in the southern sections obtain water at a considerably lower elevation. The water in all these wells is under hydrostatic pressure and rises to points approximately 100 feet below the surface. It is hard and contains varying amounts of iron, but is used for domestic purposes and for stock. Most of these wells yield abundant supplies and all are capable of watering at least 30 head of stock.

The best supplies of water in this township are obtained from wells in the area outlined on the map, Figure 1. It is doubtful if water can be obtained in the southern part of the township at shallow depth. Drilling within the outlined area should obtain water at depths of 150 to 340 feet. Prior to digging shallow wells it is advisable to locate water-bearing deposits by means of a small test auger. Dugouts can be used to collect surface water for stock use.

Township 23, Range 23

Only that part of this township lying to the east of Last Mountain lake is included in the municipality. The maximum elevation of 1,760 feet above sea-level is attained in the northeastern corner of the township. From this point the elevation decreases rather abruptly to 1,608 feet at the lake-level. The greater part of the area is covered by moraine and the ground surface is rough. An area bordering the lake is mantled by moraine and in a narrow strip adjacent to the lake the till is overlain by Recent lake sands. The moraine-covered area is characterized by clumps of trees, but tree growth becomes sparser towards the lake.

Wells sunk to a maximum depth of 40 feet obtain water in scattered pockets of sand and gravel in the upper part of the drift. The pockets of sand are usually found in the yellow or weathered boulder clay, but in a few wells the weathered clay does not appear to be present and the aquifers occur in the upper part of the blue clay. In such instances the water is commonly under slight pressure. One well, located in the SW.$\frac{1}{4}$, section 32, in the area covered by Recent sands, passed through 1 foot of surface soil and 13 feet of sandy clay before encountering a pocket in the blue boulder clay. The water obtained from the shallow wells is hard, and that from three deep wells is slightly "alkaline". Only one shallow well, in the NW.$\frac{1}{4}$, section 36, yields soft water. All these wells, however, are usable for domestic purposes and for stock. The supplies obtained vary considerably, some wells yielding sufficient water for 30 head of stock, whereas others yield only enough for 5 or 6 head of stock and domestic purposes.

Three wells located in the SE.$\frac{1}{4}$, section 1, the SE.$\frac{1}{4}$, section 2, and the SE.$\frac{1}{4}$, section 25, are sunk to depths of 60 and 70 feet. The water is hard and that in the well in section 25 is under slight hydrostatic pressure. The well in section 2 yields sufficient water for 25 head of stock, but the other two yield only very small supplies and water must be hauled from Last Mountain lake.

Township 24, Range 21

The elevation in this township rises from less than 1,800 feet above sea-level in the southwestern corner to slightly more than 2,050 feet in section 34. The southern part of Last mountain occurs in this township. The entire township is mantled by moraine. The ground surface is very rough, but no well-defined drainage channels occur. The area is thickly

wooded with clumps of trees and is rather sparsely settled. The soil is sandy and stony and is more suitable for stock raising than for grain growing.

Wells serve as the chief source of water supply in this area, but where an inadequate supply of water is obtained from wells, farmers have been forced to use sloughs and to melt snow, in order to secure an adequate supply. Wells ranging in depth from 8 to 36 feet obtain water from scattered pockets of sand and gravel that occur in the upper part of the glacial drift. These wells have passed through 1 to 3 feet of surface soil, 15 to 30 feet of yellow boulder clay, and in some areas are dug a few feet into the blue boulder clay that underlies the yellow or weathered clay. Pockets of sand and gravel occur at various depths in the blue boulder clay, but more frequently they are found at the contact of the yellow and blue clays. Dry holes have been sunk to a maximum depth of 350 feet in sections 15, 20, 29, 31, and 36, so the water-bearing deposits are of scattered occurrence. With one exception the water from the shallow dug wells in this township is hard and slightly "alkaline", but not sufficiently so to prevent it being used for domestic purposes. One well in the NE.$\frac{1}{4}$, section 8, yields an intermittent supply of soft water that is chiefly obtained by seepage from impounded surface water. The supply from the wells varies considerably. Some wells yield intermittent supplies and become dry in drought periods. Most of the wells, however, yield sufficient water for 10 to 30 head of stock, and one well located in the NW.$\frac{1}{4}$, section 33, cannot be pumped dry. It is advisable to prospect the upper 40 feet of the drift with a small hand auger to locate water-bearing deposits prior to digging shallow wells, as this lessens the chances of digging dry holes.

A number of wells sunk to depths of 44 to 124 feet obtain water from pockets of sand and gravel that occur in the blue boulder clay. The aquifers do not show any continuity and are formed by individual pockets. The water from a considerable number of wells is under hydrostatic pressure. It is hard and much of it "alkaline", but is usable for domestic purposes. The water from a number of wells also contains a considerable amount of iron. In general the yield is fairly abundant and only one well, located in the SE.$\frac{1}{4}$, section 5, does not yield sufficient water for local requirements.

Two wells located in section 30 are sunk to depths of 270 and 298 feet. The aquifers in these wells appear to be in the lower part of the drift and not in the bedrock. Both wells have tapped sand aquifers at elevations of 1,610 and 1,542 feet and yield a good supply of hard water that is suitable for domestic purposes and for stock. The water from the well in the SW.$\frac{1}{4}$, section 30, contains iron in solution. A 350-foot dry hole was drilled in the NE.$\frac{1}{4}$, section 36. No continuous aquifers appear to occur in the drift, but pockets of water-bearing sand and gravel that yield varying supplies of water may occur at any elevation.

Township 24, Range 22

The northern parts of sections 31 and 32, and slightly more than the southeastern half of the township, are mantled by moraine. Parts of sections 21 and 28 are covered by glacial outwash sands and gravels, and the remainder of the township is mantled by boulder clay or glacial till. The ground surface is characterized by prominent knolls, and several, large, undrained depressions. The elevation decreases gradually from 1,850 feet above sea-level in the northeastern corner to 1,750 feet in the southwestern corner. The southern part of the area is more thickly wooded than the northern part.

The supply of water in this area is obtained from sloughs, dugouts, and wells. The scattered pockets of sand and gravel that occur in the weathered boulder clays, at the contact of the yellow and blue boulder clays, or within the upper few feet of the blue boulder clay, form the uppermost source of water. Wells tapping these deposits are from 16 to 40 feet deep. The water is hard and that from some wells is "alkaline" and contains iron, but it is usable for both domestic and stock-raising purposes. When the aquifer is located in the blue boulder clay the water may be under slight hydrostatic pressure. Some of the wells yield a very small supply and the farmers must supplement the supply by using sloughs or dugouts. Most of these wells, however, yield sufficient water for 15 to 40 head of stock, and a 22-foot well in the SW.$\frac{1}{4}$, section 33, yields 8,000 gallons an hour.

A number of wells sunk to depths of 50 to 100 feet obtain water from sand and gravel aquifers located in the blue boulder clay. It is probable that the aquifers are of small areal extent. The water is hard and in some instances "alkaline", but it is as a rule usable for domestic purposes and for stock. One well in the SW.$\frac{1}{4}$, section 19, is reported as yielding water that contains iron. Most of these wells yield sufficient water for local requirements. Four of them, however, located in the NW.$\frac{1}{4}$, section 1, the NE.$\frac{1}{4}$, section 18, the NE.$\frac{1}{4}$, section 24, and the SE.$\frac{1}{4}$, section 29, yield sufficient water for only 5 or 10 head of stock, and water is hauled from neighbouring wells and Last Mountain lake, or dugouts are used.

No wells have been sunk into the bedrock in this area and the depth of the drift is not definitely known. It is believed, however, that the drift is quite thick, and may be 300 feet in thickness throughout the area. It is not advisable to drill wells into the bedrock, as the water, if any is obtained, would probably be too salty for use.

Township 24, Range 23

The surface of this township slopes rather steeply from an approximate elevation of 1,780 feet in the northeastern corner to 1,608 feet above sea-level at the lake. A small area in the northeastern corner is covered by moraine, but the remainder of the area is mantled by glacial till or boulder clay. For a distance of approximately 1 mile back from the lake the glacial till is overlain by Recent lake sands. The area is not thickly wooded.

A fair supply of water is generally derived from wells in this township, but dry holes have been sunk in sections 4, 8, 9, 20, and 22 to a maximum depth of 61 feet, so that water-bearing deposits are discontinuous. A well located in the NW.$\frac{1}{4}$, section 5, is the only one obtaining water from the Recent lake sands. This well is 25 feet deep, and yields a supply of usable water sufficient for local needs. Two wells have been dug through the lake sands and derive water from the underlying glacial till.

A number of wells tap aquifers in the glacial drift and they may be grouped into two general classes. Wells sunk to depths of 10 to 40 feet obtain water from sand or gravel pockets encountered in the weathered or yellow boulder clay, at the contact of the yellow and blue boulder clays, or in the upper part of the blue boulder clay. The water is hard and that from some wells is too highly mineralized for domestic purposes, whereas the water from others is being used although it is quite laxative. A 22-foot well in the SE.$\frac{1}{4}$, section 2, yields water that is very highly mineralized. The water from two wells is reported to contain iron, but not in sufficient quantity to render it unsuitable for domestic purposes. The shallow wells in the northern part of the township yield water of better quality than do those in the southern part.

Wells ranging from 40 to 100 feet deep encounter pockets of sand and gravel in the blue clay. These wells yield water that is hard, in many cases slightly "alkaline", and containing small amounts of iron, but it is quite suitable for domestic purposes or for stock. The water in most of these wells is under considerable hydrostatic pressure, rising to a point 18 feet below the surface in a well in the NE.$\frac{1}{4}$, section 21. Most of these wells yield very good supplies of water, but three located in the SE.$\frac{1}{4}$, section 16, the NE.$\frac{1}{4}$, section 30, and the SE.$\frac{1}{4}$, section 32, yield insufficient supplies, and the supply must be supplemented by using a second well or by hauling.

Two wells located in the NW.$\frac{1}{4}$, section 28, and the SW.$\frac{1}{4}$, section 34, obtain water from aquifers encountered in the Marine Shale series. Both wells yield soft, salty water that cannot be used for domestic purposes, and that from the well in section 34 is too salty for stock. The water from the well in section 28 has a soda taste. It is thought that the wells obtain water from different aquifers. Information is lacking as to the supply obtained from the well in the SW.$\frac{1}{4}$, section 34, but an abundant supply is derived from the well in section 28. It is doubtful if satisfactory supplies of water will be derived from the bedrock in this township.

It is advisable to locate shallow water-bearing deposits by means of a small auger before wells are dug. Dugouts to retain surface water for stock use could be advantageously employed in the southeastern part of the township. Deposits of sand and gravel in the lower part of the drift may yield fairly abundant supplies of water, but drilling into the bedrock is not advised.

Township 24, Range 24

Approximately 1¼ square miles of this township are located in the municipality of McKillop. The area is mantled by boulder clay or glacial till, but with the exception of the NE.¼, section 36, it is overlain by Recent lake sands. No wells have been sunk in this area, but water should be located in the Recent sands at shallow depth, or in pockets of sand and gravel in the underlying glacial till.

STATISTICAL SUMMARY OF WELL INFORMATION IN RURAL MUNICIPALITY OF McKILLOP, NO. 220, SASKATCHEWAN

Township	21	21	22	22	23	23	23	24	24	24	24	Total No. in municipality
West of 2nd meridian Range	22	23	22	23	21	22	23	21	22	23	24	
Total No. of Wells in Township	27	0	o7	20	o1	58	32	o2	51	54	0	432
No. of wells in bedrock	1	0	1	0	0	0	0	0	0	2	0	4
No. of wells in glacial drift	26	0	66	20	61	58	32	62	51	51	0	427
No. of wells in alluvium	0	0	0	0	0	0	0	0	0	1	0	1
Permanency of Water Supply												
No. with permanent supply	10	0	53	17	57	49	24	46	50	44	0	350
No. with intermittent supply	1	0	0	1	0	0	0	4	0	2	0	8
No. dry holes	1o	0	14	2	4	9	8	12	1	8	0	74
Types of Wells												
No. of flowing artesian wells	0	0	0	0	0	0	0	0	0	0	0	0
No. of non-flowing artesian wells	2	0	10	1	28	17	4	15	17	15	0	109
No. of non-artesian wells	9	0	43	17	29	32	20	35	33	31	0	249
Quality of Water												
No. with hard water	9	0	50	18	55	48	23	49	50	44	0	346
No. with soft water	2	0	3	0	2	1	1	1	0	2	0	12
No. with salty water	0	0	1	0	0	0	0	0	0	2	0	3
No. with "alkaline" water	4	0	11	1	o	4	4	7	14	13	0	64
Depths of Wells												
No. from 0 to 50 feet deep	11	0	53	18	31	37	28	44	40	46	0	308
No. from 51 to 100 feet deep	15	0	10	2	12	o	4	12	11	6	0	78
No. from 101 to 150 feet deep	1	0	3	0	8	2	0	3	0	0	0	17
No. from 151 to 200 feet deep	0	0	0	0	8	o	0	0	0	0	0	14
No. from 201 to 500 feet deep	0	0	1	0	2	7	0	3	0	2	0	15
No. from 501 to 1,000 feet deep	0	0	0	0	0	0	0	0	0	0	0	0
No. over 1,000 feet deep	0	0	0	0	0	0	0	0	0	0	0	0
How the Water is Used												
No. usable for domestic purposes	9	0	51	18	55	46	23	48	48	34	0	332
No. not usable for domestic purposes	2	0	2	0	2	3	1	2	2	12	0	26
No. usable for stock	7	0	53	18	57	49	24	49	49	44	0	350
No. not usable for stock	4	0	0	0	0	0	0	1	1	2	0	8
Sufficiency of Water Supply												
No. sufficient for domestic needs	10	0	53	18	57	49	24	43	50	45	0	349
No. insufficient for domestic needs	1	0	0	0	0	0	0	7	0	1	0	9
No. sufficient for stock needs	11	0	28	15	42	39	18	29	39	26	0	247
No. insufficient for stock needs	0	0	25	3	15	10	o	21	11	20	0	111

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 McKillop, No. 220, 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.	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	SE.	8	22	22	2nd	418	4,720	90	20	70	2,425	240	50	25	127	2,257	4,425	90		52		95	188	4,000		x2
2	NW.	27	22	22	2nd	82	2,140												(2)		(4)	(3)	(1)	(5)		x1
3	NE.	23	23	22	2nd	20	[illegible]33												(2)		(3)	(5)	(1)	(4)		x1
4		23	24	22	2nd	40	1,003											(4)	(1)		(2)		(3)		(5)	x1
5	NE.	24	24	22	2nd	28	971												(2)		(4)	(3)	(1)	(5)		x1
6	SW.	25	24	22	2nd	22	2,834											(4)	(1)		(2)		(3)		(5)	x1

Water samples indicated thus, x1, are from glacial drift.
Water samples indicated thus, x2, are from bedrock, Marine Shale series.
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. 2,3,4,5, 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 analyses of five samples of water from the glacial drift are listed in the accompanying table. Samples 3, 4, 5, and 6, are from wells 22 to 40 feet deep and indicate the varying quality of water derived from the upper part of the drift. The total dissolved mineral salt content varies from 971 to 6,883 parts per million. Sodium sulphate, calcium sulphate, and magnesium sulphate are the predominant salts present, and lesser amounts of sodium carbonate, sodium chloride, and calcium chloride also occur. With the exception of sample 3, the waters from the upper part of the drift that were analysed are suitable for general farm purposes. Sample 3 is too highly mineralized for drinking and should not be used even for stock. The water from the shallow wells in this municipality is usually suitable for stock and most of it can be used for drinking.

Sample 2 is from an 82-foot well that taps an aquifer in the blue clay. It contains 2,140 parts per million of total dissolved solids. It is suitable for stock, but may act as a laxative on those not accustomed to its use. Water from deeper wells in the drift usually contains more mineral salts in solution and much of it is unsuitable for drinking. The water from a number of these wells in this municipality contains a considerable amount of iron in solution. It is usable for stock, but may be undesirable for domestic use.

Water from the Bedrock

One sample of water from the bedrock was taken for analysis and the results are listed in the accompanying table. The water is soft, although it contains 4,720 parts per million of total dissolved solids. NaCl or common salt is the most abundant mineral salt present, 4000 parts per million. Smaller

amounts of sodium sulphate, sodium carbonate, calcium carbonate, and magnesium carbonate also are present. This water is representative of that derived from the bedrock in this municipality. It is not usable for domestic purposes, or for irrigation, but the water is being used for stock. That from another well in the municipality, however, is too salty to be used even for stock.

WELL RECORDS—Rural Municipality of McKILLOP NO. 220, 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.	25	21	22	2	Bored	130	1,780									Dry hole base in Marine Shale ?; also 15 holes 20 to 130 feet deep.
2	SW.	25	"	"	"	Dug	16	1,760	- 6	1,754	16	1,744	Glacial sand	Soft, clear	42	D, S	Sufficient for local needs.
3	SE.	26	"	"	"	Dug	18	1,760	- 6	1,754	18	1,742	Glacial sand	Soft, clear,		D, S	Sufficient for 35 head stock; also an 18-foot well for stock use.
4	NW.	26	"	"	"	Bored	22	1,760	- 20	1,740	20	1,740	Glacial sand	Hard, clear, "alkaline" iron	43	D, S	Insufficient supply; 20-foot well for stock; haul water from neighbours.
5	SE.	32	"	"	"	Dug	22	1,730	- 15	1,715	15	1,715	Glacial gravel	Hard, clear, "alkaline" iron	43	D, S	Sufficient for 10 head stock.
6	NE.	32	"	"	"	Dug	32	1,730	- 16	1,714	16	1,714	Glacial gravel	Hard, clear, "alkaline"	42	D, S	Sufficient for local needs.
7	SW.	34	"	"	"	Dug	23	1,750	- 16	1,734	16	1,734	Glacial sand	Hard, clear, iron	42	D, S	Sufficient for local needs.
8	NW.	34	"	"	"	Dug	22	1,750	- 15	1,735	15	1,735	Glacial sand	Hard, clear	42	D, S	Intermittent supply; haul water from lake.
9	SE.	35	"	"	"	Dug	22	1,770	- 18	1,752	18	1,752	Glacial gravel	Hard, clear, "alkaline"		D, S	Sufficient for local needs.
10	SW.	36	"	"	"	Dug	12	1,775	- 7	1,768	7	1,768	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
1	SE.	2	22	22	2	Dug	60	1,780	- 45	1,735	60	1,720	Glacial drift	Soft, clear	41	D, S	Sufficient for local needs; also two wells 12 and 30 feet deep.
2	NE.	2	"	"	"	Dug	70	1,780	- 60	1,720			Glacial clay	Hard, clear, "alkaline"	40	D, S	Sufficient only for domestic use; also a 20-foot well used for stock.
3	SW.	2	"	"	"	Bored	30	1,760	- 25	1,735	25	1,735	Glacial drift	Hard, clear		D, S	Sufficient for local needs; also a 10-foot well with good supply.
4	SE.	5	"	"	"	Dug	45	1,740	- 30	1,710			Glacial sand and stones	Hard, clear, "alkaline" iron	42	D, S	Sufficient for 29 head stock; 20-foot well abandoned.
5	NE.	6	"	"	"	Dug	12	1,710	- 8	1,702	8	1,702	Glacial sand	Hard, clear		D, S	Sufficient only for 5 head stock; haul water.
6	NE.	7	"	"	"	Dug	8	1,720	- 4	1,716	4	1,716	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient for 40 head stock.
7	SE.	8	"	"	"	Drilled	418	1,740	- 80	1,660	418	1,322	Marine Shale	Soft, clear, salty		S	Abundant supply; 6 intermittent wells to 20 feet.# 20 dry holes to 70 feet, 100-foot dry hole, 20-foot seepage well.
8	SE.	10	"	"	"	Dug	40	1,760	- 38	1,722	38	1,722	Glacial drift	Hard, clear	42	D, S	Insufficient supply; also a 40-foot well used for stock.
9	NW.	10	"	"	"	Dug	22	1,760									Dry hole base in glacial drift.
10	SE.	12	"	"	"	Bored	58	1,800	- 20	1,780	58	1,742	Glacial drift	Hard, clear, "alkaline"	42	D, S	Sufficient for local needs.
11	SW.	12	"	"	"	Dug	70	1,790	- 60	1,730	60	1,730	Glacial drift	Hard, clear, "alkaline"	41	D, S	Insufficient for local needs; haul water.
12	NE.	14	"	"	"	Dug	16	1,800	- 13	1,787	13	1,787	Glacial sand	Soft, clear	41	D, S	Sufficient for local needs; also a spring in ravine.
13	SW.	14	"	"	"	Dug	32	1,780	- 28	1,752	28	1,752	Glacial sand	Hard, clear	42	D, S	Sufficient for local needs; also an 8-foot well in ravine.
14	SE.	16	"	"	"	Dug	28	1,760	- 20	1,740	20	1,740	Glacial sand	Hard, clear	41	D, S	Insufficient for local needs; several wells up to 40 feet in depth.

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 McKILLOP NO. 220, 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
15	SE.	17	22	22	2	Dug	23	1,740	- 20	1,720	20	1,720	Glacial drift	Hard, clear, "alkaline"		D, S	Insufficient for local needs.
16	NW.	18	"	"	"	Dug	20	1,730	- 10	1,720	20	1,710	Glacial sand	Hard, clear	41	D, S	Insufficient for local needs.
17	NE.	18	"	"	"	Dug	18	1,735					Glacial drift				
18	NE.	21	"	"	"	Dug	35	1,760									Dry hole base in glacial drift; several other dry holes and an 18-foot seepage well.
19	SW.	22	"	"	"	Dug	20	1,770	- 14	1,756	14	1,756	Glacial gravel	Hard, clear	41	D, S	Sufficient for 25 head stock; also an 18-foot well, good supply.
20	NE.	23	"	"	"	Dug	30	1,780	- 17	1,763	30	1,750	Glacial drift	Hard, clear, iron	41	D, S	Abundant supply.
21	NE.	24	"	"	"	Dug	75	1,800									Dry hole base in glacial drift.
22	NW.	24	"	"	"	Dug	40	1,790	- 38	1,752	38	1,752	Glacial gravel	Hard, clear	45	D, S	Sufficient for local needs.
23	SW.	24	"	"	"	Dug	9	1,790					Glacial gravel				Abundant supply.
24	SE.	25	"	"	"	Dug	24	1,800	- 16	1,784	16	1,784	Glacial gravel	Hard, clear	40	D, S	Abundant supply.
25	SW.	25	"	"	"	Dug	30	1,790	- 23	1,767	23	1,767	Glacial sand	Hard, clear, "alkaline"	42	D, S	Sufficient for local needs.
26	SE.	27	"	"	"	Dug	30	1,780									Dry hole base in glacial drift; haul water from neighbours.
27	NE.	27	"	"	"	Dug	30	1,780									Dry hole base in glacial drift; hauls water.
28	SW.	27	"	"	"	Dug	30	1,780	- 27	1,753	27	1,753	Glacial sand	Hard, clear, "alkaline" iron	41	D, S	Sufficient for 10 head stock.
29	NW.	27	"	"	"	Bored	82	1,770	- 40	1,730	82	1,688	Glacial drift	Hard, clear, iron	40	D, S	Sufficient for 50 head stock. #
30	SE.	30	"	"	"	Dug	38	1,730	- 30	1,700	38	1,692	Glacial sand	Hard, clear	41	D, S	Sufficient for 25 head stock; also a 12-foot well with fair supply.
31	NW.	30	"	"	"	Dug	40	1,740	- 38	1,702	38	1,702	Glacial drift	Hard, clear	42	D, S	Insufficient for local needs; haul water from neighbours.
32	SW.	32	"	"	"	Dug	103	1,760	- 97	1,663	97	1,663	Glacial sand	Hard, clear, iron	42	D, S	Sufficient for local needs; also a 22-foot well for stock.
33	NE.	32	"	"	"	Drilled	105	1,770	- 95	1,675	95	1,675	Glacial drift	Hard, clear, iron	42	D, S	Sufficient for local needs.
34	SE.	34	"	"	"	Dug	45	1,780									Dry hole base in glacial drift; haul water from neighbours.
35	SW.	34	"	"	"	Bored	125	1,780					Glacial sand	Hard, clear, iron	40	D, S	Sufficient for 15 head stock.
36	SE.	35	"	"	"	Dug	33	1,780	- 20	1,760	33	1,747	Glacial sand	Hard, clear	41	D, S	Sufficient for 20 head stock; dry holes 16 to 60 feet deep.
37	NE.	36	"	"	"	Dug	26	1,790	- 23	1,767	23	1,767	Glacial sand	Hard, clear, "alkaline"	42	D, S	Insufficient for local needs; hauls water from neighbours.
38	SW.	36	"	"	"	Dug	38	1,790	- 18	1,772	38	1,752	Glacial sand	Hard, black	41	D, S	Sufficient for local needs; also an 18-foot dry hole.
1	SE.	1	22	23	2	Dug	8	1,630	- 2	1,628	2	1,628	Glacial sand	Hard, clear, "alkaline"	40	D, S	Abundant supply.
2	NE.	12	"	"	"	Dug	18	1,700	- 15	1,685	15	1,685	Glacial drift	Hard, clear	45	D, S	Sufficient for 20 head stock; also another well not used.

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 McKILLOP NO. 220, 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
3	NE.	23	22	23	2	Dug	10	1,705	- 5	1,700	5	1,700	Glacial sand	Hard, clear	41	D, S	Sufficient for 20 head stock; also a similar well.
4	NE.	24	"	"	"	Dug	14	1,720	- 8	1,712	8	1,712	Glacial drift	Hard, clear	42	D, S	Sufficient for 30 head stock.
5	SE.	24	"	"	"	Dug	20	1,710	- 16	1,694	16	1,694	Glacial sand	Hard, clear	42	D, S	Sufficient for 25 head stock; also three similar wells.
6	SW.	24	"	"	"	Spring		1,710					Glacial drift	Hard			Good supply; also a shallow well with good supply.
7	NE.	25	"	"	"	Bored	50	1,730	- 48	1,682	48	1,682	Glacial drift	Hard, clear	40	D, S	Insufficient for local needs.
8	SW.	25	"	"	"	Drilled	100	1,700	- 60	1,640	100	1,600	Glacial gravel	Hard, clear, iron	40	D, S	Sufficient for local needs; also use lake.
9	NE.	27	"	"	"	Spring		1,630					Glacial drift	Hard, clear			Yields ½ gallon a minute.
10	SE.	27	"	"	"	Spring		1,630					Glacial drift	Hard, clear, iron			Yields 1 gallon a minute.
11	SE.	35	"	"	"	Dug	55	1,720	- 50	1,670	50	1,670	Glacial sand	Hard, clear	40	D, S	Insufficient for local needs; two 30-foot dry holes, and 30-foot stock well.
12	SE.	36	"	"	"	Dug		1,745					Glacial drift				Intermittent supply.
1	SW.	2	23	21	2	Dug	60	1,850									Dry hole base in glacial drift; haul water.
2	SE.	3	"	"	"	Bored	70	1,840	- 50	1,790	70	1,770	Glacial sand	Hard, clear, iron	41	D, S	Sufficient for 10 head stock; also a similar 50-foot well.
3	SW.	3	"	"	"	Bored	60	1,820	- 50	1,770	50	1,770	Glacial drift	Hard, clear	42	D, S	Sufficient for 15 head stock.
4	NE.	5	"	"	"	Dug	50	1,820	- 45	1,775	45	1,775	Glacial sand	Hard, clear, iron	41	D, S	Sufficient for 10 head stock.
5	SE.	6	"	"	"	Dug	18	1,800	- 12	1,788	12	1,788	Glacial sand	Soft, clear	43	D, S	Sufficient for 15 head stock.
6	NW.	7	"	"	"	Dug	14	1,800	- 5	1,795	5	1,795	Glacial drift	Hard, clear, "alkaline"	44	D, S	Sufficient for 25 head stock.
7	NE.	8	"	"	"	Dug	30	1,820	- 24	1,796	24	1,796	Glacial gravel	Hard, clear	43	D, S	Sufficient for 15 head stock.
8	NW.	9	"	"	"	Drilled	340	1,820	-140	1,680	340	1,480	Glacial drift	Hard, clear, iron	40	D, S	Oversufficient for local needs.
9	NE.	10	"	"	"	Dug	65	1,850	- 60	1,790	60	1,790	Glacial sand	Hard, clear, iron	40	D, S	Sufficient for local needs; several 40-foot seepage wells.
10	NE.	12	"	"	"	Drilled	120	1,870	- 60	1,810	120	1,750	Glacial sand	Soft, clear	41	D, S	Sufficient for local needs.
11	SW.	12	"	"	"	Drilled	100	1,870	- 85	1,785	100	1,770	Glacial sand	Hard, clear, iron	41	D, S	Sufficient for local needs.
12	NW.	12	"	"	"	Drilled	120	1,870					Glacial sand	Hard, clear, iron		D, S	Sufficient for 15 head stock.
13	SE.	13	"	"	"	Drilled	180	1,880	- 95	1,785	180	1,700	Glacial sand	Hard, clear, "alkaline" iron	41	D, S	Sufficient for local needs.
14	SW.	14	"	"	"	Drilled	160	1,850	- 60	1,790	160	1,690	Glacial sand	Hard, clear, iron	40	D, S	Sufficient for local needs.
15	SW.	14	"	"	"	Drilled	160	1,860	- 60	1,800	160	1,700	Glacial sand	Hard, cloudy, iron	42	D, S	Sufficient for 25 head stock.
16	NW.	14	"	"	"	Drilled	156	1,850	- 76	1,774	156	1,694	Glacial sand	Hard, clear, iron	40	D, S	Sufficient for 50 head stock; 16-foot well abandoned.

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 McKILLOP NO. 220, 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
17	SE.	16	23	21	2	Bored	80	1,820	- 60	1,760	80	1,740	Glacial sand	Hard, clear, iron	42	D, S	Waters 10 head stock.
18	NW.	16	"	"	"	Drilled	60	1,810	- 50	1,760	60	1,750	Glacial sand	Hard, clear, iron	42	D, S	Sufficient for local needs.
19	SE.	17	"	"	"	Dug	40	1,810	- 30	1,780	40	1,770	Glacial sand	Hard, clear, iron	42	D, S	Sufficient for local needs.
20	SW.	17	"	"	"	Dug	17	1,800	- 14	1,786	14	1,786	Glacial sand	Hard, clear	43	D, S	Sufficient for 15 head stock.
21	SE.	18	"	"	"	Dug	10	1,800	- 6	1,794	6	1,794	Glacial sand	Hard, clear	41	D, S	
22	NE.	18	"	"	"	Dug	28	1,800	- 14	1,786	28	1,772	Glacial sand	Hard, clear, "alkaline"	42	D, S	Sufficient for local needs.
23	SE.	19	"	"	"	Dug	40	1,795	- 28	1,767	40	1,755	Glacial sand	Hard, clear	41	D, S	Waters 10 head stock.
24	SE.	20	"	"	"	Dug	35	1,800	- 33	1,767	33	1,767	Glacial drift	Hard, clear	42	D, S	Sufficient for local needs.
25	NE.	20	"	"	"	Dug	30	1,800	- 28	1,772	28	1,772	Glacial sand	Hard, clear	44	D, S	Sufficient for 15 head stock.
26	NW.	20	"	"	"	Dug	15	1,800	- 10	1,790	15	1,785	Glacial sand	Hard, clear	41	D, S	Sufficient for 22 head stock.
27	NE.	21	"	"	"	Drilled	134	1,820	- 90	1,730	134	1,686	Glacial sand	Hard, cloudy, iron	42	D, S	Sufficient for 25 head stock.
28	SW.	21	"	"	"	Dug	48	1,810	- 40	1,770	40	1,770	Glacial sand	Hard, clear, "alkaline" iron	43	D, S	Insufficient for local needs.
29	NE.	22	"	"	"	Drilled	140	1,840	- 50	1,790	140	1,700	Glacial drift	Hard, clear, iron	40	D, S	Sufficient for local needs.
30	NE.	22	"	"	"	Drilled	125	1,830	- 50	1,780	125	1,705	Glacial sand	Hard, clear, iron	41	D, S	Sufficient for local needs.
31	SE.	24	"	"	"	Drilled	160	1,880	- 90	1,790	160	1,720	Glacial sand	Hard, clear, iron	42	D, S	Sufficient for local needs.
32	NE.	24	"	"	"	Dug	30	1,880	- 22	1,858	22	1,858	Glacial sand	Hard, clear	43	D, S	Sufficient for 10 head stock.
33	NW.	24	"	"	"	Drilled	100	1,870	- 89	1,781	100	1,770	Glacial sandy gravel	Hard, clear	42	S	Sufficient for local needs; also a 16-foot well for house use.
34	NE.	26	"	"	"	Dug	29	1,870	- 26	1,844	26	1,844	Glacial sand	Hard, clear	43	D, S	Sufficient for 15 head stock.
35	SW.	26	"	"	"	Drilled	168	1,850	- 93	1,757	168	1,682	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
36	SE.	27	"	"	"	Drilled	134	1,830					Glacial gravel				Canadian Pacific Railway well.
37	SE.	27	"	"	"	Drilled	118	1,830	- 62	1,768	87	1,743	Glacial gravel				Canadian Pacific Railway well.
38	SE.	27	"	"	"	Drilled	200	1,830					Glacial drift				Small water supply, Canadian Pacific Railway well.
39	SW.	27	"	"	"	Drilled	120	1,830	- 30	1,800	120	1,710	Glacial sand	Hard, cloudy, iron	42	D	Supplies village of Bullyea.
40	NE.	29	"	"	"	Dug	32	1,800					Glacial gravel	Hard, clear, "alkaline" iron	43	S	Sufficient for 16 head stock; also a 20-foot well for domestic use.
41	SE.	30	"	"	"	Dug	14	1,795	- 12	1,783	12	1,783	Glacial sand	Hard, clear	42	D, S	Sufficient for 12 head stock.
42	SW.	30	"	"	"	Dug	35	1,790	- 25	1,765	35	1,755	Glacial sand	Hard, clear, "alkaline" iron	42	D, S	Sufficient for 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 McKILLOP NO.220, 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
43	SE.	31	23	21	2	Dug	27	1,790	- 20	1,770	20	1,770	Glacial gravel	Hard,clear	43	D, S	Sufficient for 10 head stock.
44	SE.	33	"	"	"	Bored	85	1,830	- 79	1,751	79	1,751	Glacial sand	Hard,clear	41	D, S	Sufficient for 15 head stock; also a 20-foot well, poor supply.
45	NE.	34	"	"	"	Bored	68	1,850	- 28	1,822	68	1,782	Glacial sand	Hard,clear, iron	45	D, S	Sufficient for 30 head stock.
46	NE.	34	"	"	"	Dug	49	1,825	- 22	1,803	49	1,776	Glacial sand	Hard,clear, iron	43	D, S	Sufficient for 30 head stock.
47	SW.	35	"	"	"	Dug	90	1,860	- 85	1,775	85	1,775	Glacial sand	Hard,clear	40	D, S	Sufficient for local needs.
48	NE.	36	"	"	"	Drilled	275	1,910									Dry hole base in glacial drift; also 50-foot dry hole, use seepage well and haul water.
49	NW.	36	"	"	"	Dug	100	1,900	- 95	1,805	95	1,805	Glacial drift	Hard,clear	42	D, S	Sufficient for 15 head stock.
50	SW.	36	"	"	"	Drilled	183	1,900									Dry hole base in glacial drift; uses a 26-foot seepage well.
1	SE.	2	23	22	2	Drilled	300	1,780	-200	1,580	300	1,480	Glacial sand	Hard,cloudy, iron	42	D, S	Sufficient for 40 head stock.
2	SW.	2	"	"	"	Drilled	336	1,780	-100	1,680	336	1,444	Glacial sand	Hard,clear, iron	42	D, S	Sufficient for local needs.
3	SW.	3	"	"	"	Drilled	292	1,770	- 80	1,690	292	1,478	Glacial sand	Hard,clear	41	D, S	Sufficient for local needs.
4	NE.	4	"	"	"	Drilled	210	1,770	- 60	1,710	210	1,560	Glacial sand	Hard,clear, iron	41	D, S	Sufficient for localneeds; several dry holes 20 to 90 foot deep.
5	SW.	5	"	"	"	Dug	80	1,750									Dry hole base in glacial drift; haul water from lake and neighbours.
6	SE.	8	"	"	"	Drilled	212	1,765			212	1,553	Glacial sand	Hard,clear, iron	42	D, S	Sufficient for local needs.
7	NE.	9	"	"	"	Drilled	175	1,770			175	1,595	Glacial sand	Hard,clear, iron	42	D, S	Sufficient for 25 head stock.
8	SW.	9	"	"	"	Dug	16	1,765	- 12	1,753	12	1,753	Glacial sand	Hard,clear	42	D, S	Sufficient for 10 head stock.
9	SE.	10	"	"	"	Drilled	270	1,780	- 90	1,690	270	1,510	Glacial sand	Hard,cloudy, iron	42	D, S	Sufficient for 30 head stock.
10	NW.	10	"	"	"	Drilled	205	1,770	-100	1,670	205	1,565	Glacial drift	Hard,clear, iron	41	D, S	Also two 200-foot dry holes.
11	SE.	12	"	"	"	Dug	20	1,790					Glacial drift	Hard,clear	41	D, S	Sufficient for local needs; several similar wells.
12	SW.	12	"	"	"	Dug	23	1,790	- 20	1,770	20	1,770	Glacial sand	Hard,clear	41	D, S	Waters 20 head stock.
13	SE.	14	"	"	"	Dug	28	1,780	- 24	1,756	24	1,756	Glacial sand	Hard,clear	43	D, S	Sufficient for 20 head stock; also 200-foot well, small supply.
14	NE.	14	"	"	"	Dug	15	1,785	- 13	1,772	13	1,772	Glacial sand	Hard,clear	41	D, S	Waters 15 head stock.
15	SW.	14	"	"	"	Drilled	150	1,780			150	1,630	Glacial sand	Hard,clear	42	D, S	Sufficient for local needs.
16	SW.	15	"	"	"	Drilled	180	1,780	- 80	1,700	180	1,600	Glacial sand	Hard,clear, iron	41	D, S	Waters 35 head stock.
17	SW.	16	"	"	"	Dug	25	1,770	- 20	1,750	20	1,750	Glacial sand	Hard,clear	41	D, S	Waters 30 head stock; also a 25-foot well.
18	NW.	18	"	"	"	Bored	90	1,760	- 20	1,740	90	1,670	Glacial sand	Hard,clear, "alkaline"	42	S	Sufficient for 25 head stock; also a 30-foot well for domestic 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.

WELL RECORDS—Rural Municipality of McKILLOP NO. 220, 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
19	SE.	20	23	22	2	Dug	44	1,770	- 38	1,732	38	1,732	Glacial drift	Hard,clear	41	D, S	Sufficient for 11 head stock; several dry holes.
20	NE.	20	"	"	"	Dug	35	1,770	- 33	1,737	33	1,737	Glacial sand	Hard,clear, iron	47	D, S	Sufficient for 30 head stock.
21	SW.	20	"	"	"	Drilled	165	1,760	- 90	1,670	165	1,595	Glacial sand	Hard,clear, iron	41	D, S	Sufficient for 15 head stock.
22	NW.	20	"	"	"	Dug	38	1,760	- 30	1,730	30	1,730	Glacial sand	Hard,clear	42	D, S	Sufficient for 15 head stock.
23	NE.	22	"	"	"	Dug	30	1,770									Dry hole base in glacial drift; hauls water from neighbours.
24	SE.	24	"	"	"	Dug	30	1,790	- 24	1,766	24	1,766	Glacial drift	Hard, clear	43	D, S	Sufficient for 15 head stock.
25	SW.	24	"	"	"	Dug	15	1,780	- 13	1,767	13	1,767	Glacial sand	Hard,clear	41	D, S	Sufficient for 5 head stock.
26	NW.	24	"	"	"	Drilled	105	1,780	- 80	1,700	105	1,675	Glacial sand	Hard,clear, iron	42	D, S	Sufficient for local needs.
27	NW.	25	"	"	"	Dug	40	1,780	- 32	1,748	32	1,748	Glacial sand	Hard,clear, "alkaline" iron	42	D, S	Sufficient for 20 head stock.
28	SW.	26	"	"	"	Dug	16	1,775	- 12	1,763	12	1,763	Glacial drift	Hard,clear	41	D, S	Sufficient for 15 head stock.
29	SW.	27	"	"	"	Dug	35	1,770	- 30	1,740	30	1,740	Glacial sand	Hard,clear, iron	42	D, S	Insufficient for local needs.
30	SW.	28	"	"	"	Dug	43	1,770	- 40	1,730	40	1,730	Glacial drift	Soft,clear	42	D, S	Sufficient for 10 head stock.
31	NW.	28	"	"	"	Dug	20	1,770	- 10	1,760	10	1,760	Glacial sand	Hard,clear	41	D, S	Waters 10 head stock.
32	NE.	29	"	"	"	Dug	28	1,770	- 18	1,752	18	1,752	Glacial sand	Hard,clear	43	D, S	Sufficient for 15 head stock.
33	SE.	30	"	"	"	Dug	23	1,760	- 16	1,744	16	1,744	Glacial sand	Hard,clear	43	D, S	Sufficient for 25 head stock.
34	SE.	32	"	"	"	Dug	28	1,770	- 26	1,744	26	1,744	Glacial sand	Hard,clear, iron	42	D, S	Sufficient for 5 head stock.
35	NE.	32	"	"	"	Dug	24	1,770	- 17	1,753	17	1,753	Glacial drift	Hard,clear, iron	41	D, S	Waters 15 head stock.
36	NW.	33	"	"	"	Dug	28	1,770	- 26	1,744	26	1,744	Glacial sand	Hard,clear	42	D, S	Sufficient for local needs.
37	SE.	34	"	"	"	Dug	8	1,775	- 6	1,769	6	1,769	Glacial sand	Hard,clear, "alkaline"	43	D, S	Sufficient for 25 head stock.
38	NE.	34	"	"	"	Dug	38	1,780	- 18	1,762	38	1,742	Glacial drift	Hard,clear	42	S	Sufficient for 25 head stock; also 24-foot well for domestic use.
39	NW.	34	"	"	"	Dug	14	1,775	- 2	1,773	2	1,773	Glacial sand	Hard,clear, "alkaline"	44	D, S	Sufficient for 25 head stock.
40	SE.	35	"	"	"	Dug	26	1,780	- 22	1,758	22	1,758	Glacial sand	Hard,clear	41	D, S	Sufficient for local needs; also a 26-foot well; good supply.
41	NE.	35	"	"	"	Dug	30	1,780	- 15	1,765	30	1,750	Glacial sand	Hard,clear	41	D, S	Waters 15 head stock.
42	SW.	35	"	"	"	Dug	100	1,780	- 94	1,686	94	1,686	Glacial sand	Hard,clear, iron	42	D, S	Sufficient for local needs.
43	SE.	36	"	"	"	Dug	48	1,785	- 12	1,773	48	1,737	Glacial sand	Hard,clear	43	D, S	Insufficient for local needs.
44	NE.	36	"	"	"	Dug	80	1,785	- 40	1,745	80	1,705	Glacial sand	Hard,clear, sulphur,iron	41	D, S	Waters 20 head stock.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of McKILLOP NO.220, 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	23	23	2	Bored	70	1,720	- 65	1,655	65	1,655	Glacial sand	Hard,clear	41	D, S	Waters only 5 head stock; hauls water from lake.
2	SW.	1	"	"	"	Dug	8	1,690	- 4	1,686	4	1,686	Glacial sand	Hard,clear	44	D, S	Insufficient for 15 head stock; several dry holes to 17 feet.
3	SE.	2	"	"	"	Dug	60	1,680	- 50	1,630	50	1,630	Glacial drift	Hard,clear	42	D, S	Sufficient for 25 head stock.
4	NE.	10	"	"	"	Dug	25	1,660	- 21	1,639	21	1,639	Glacial sand	Hard,clear	43	D, S	Waters 12 head stock.
5	NE.	12	"	"	"	Bored	32	1,750	- 31	1,719	31	1,719	Glacial clay	Hard,clear, "alkaline"	43	D, S	Insufficient for local needs; 3 dry holes similar depth, haul water.
6	SW.	12	"	"	"	Dug	11	1,750	- 6	1,744	6	1,744	Glacial sand	Hard,clear	42	D, S	Sufficient for local needs.
7	SW.	13	"	"	"	Dug	28	1,725	- 10	1,715			Glacial clay	Hard,clear	41	D, S	Insufficient for local needs; hauls water from lake.
8	SE.	15	"	"	"	Dug	22	1,670	- 19	1,651	19	1,651	Glacial sand	Hard,clear	41	D, S	Sufficient for 18 head stock.
9	SE.	16	"	"	"	Dug	40	1,640	- 36	1,604	36	1,604	Glacial sand	Hard,clear	41	D, S	Sufficient for 5 head stock.
10	NE.	21	"	"	"	Dug	23	1,650	- 19	1,631	19	1,631	Glacial sand	Hard,clear	42	D, S	Waters 15 head stock; also a 36-foot well for house use.
11	NE.	23	"	"	"	Dug	26	1,750	- 10	1,740	26	1,724	Glacial sand	Hard,clear	42	S	Waters 30 head stock; hauls drinking water. #
12	NE.	24	"	"	"	Dug	14	1,750	- 2	1,748			Glacial gravel	Hard,clear	40	D, S	Sufficient for local needs.
13	NW.	24	"	"	"	Dug	22	1,750	- 18	1,732	18	1,732	Glacial sand	Hard,clear	42	D, S	Sufficient for 40 head stock.
14	SE.	25	"	"	"		60	1,760					Glacial drift	Hard,"alkaline"			
15	SW.	32	"	"	"	Bored	24	1,630	- 14	1,616	14	1,616	Glacial sand	Hard,clear	42	D, S	Sufficient for 10 head stock ; also dry holes 30 to 35 feet deep.
16	NE.	34	"	"	"	Dug	40	1,700	- 33	1,667	33	1,667	Glacial sand	Hard,clear, iron,"alkaline"	42	D, S	Sufficient for 25 head stock; also a 10-foot well.
17	SE.	35	"	"	"	Dug	32	1,760	- 20	1,740	32	1,728	Glacial sand	Hard,cloudy, iron	43	D, S	Sufficient for 20 head stock.
18	NW.	35	"	"	"	Dug	22	1,730					Glacial sand	Hard,clear, "alkaline"	42	D, S	Sufficient for 15 head stock; also use lake.
19	SE.	36	"	"	"	Dug	30	1,760	- 20	1,740	20	1,740	Glacial sand	Hard,clear	40	D, S	Insufficient for local needs; several wells, small supply.
20	NW.	36	"	"	"	Dug	12	1,760	- 9	1,751	9	1,751	Glacial sand	Soft,clear	45	D, S	Sufficient for local needs; other similar wells.
1	SW.	1	24	21	2	Dug	24	1,910	- 12	1,898	12	1,898	Glacial sand	Hard,clear	44	D, S	Sufficient for 10 head stock.
2	SW.	2	"	"	"	Dug	10	1,850	- 6	1,844	6	1,844	Glacial sand	Hard,clear	41	D, S	Intermittent supply; 15-foot well used also.
3	NW.	2	"	"	"	Dug	20	1,870	- 16	1,854	16	1,854	Glacial sand	Hard,clear	43	D, S	Sufficient for 10 head stock.
4	SW.	4	"	"	"	Dug	62	1,810	- 16	1,794	62	1,748	Glacial drift	Hard,clear	40	D, S	Sufficient for local needs.
5	NE.	4	"	"	"	Dug	44	1,840					Glacial drift	Clear,		D, S	
6	SE.	5	"	"	"	Dug	47	1,900	- 13	1,887	47	1,853	Glacial sand	Hard,clear, iron	40	D, S	Insufficient for local needs; also other shallow wells.

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 McKILLOP NO. 220, 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.	6	24	21	2	Bored	80	1,800	- 60	1,740	80	1,720	Glacial sand	Hard, clear, iron	40	D, S	Sufficient for 30 head stock; other abandoned wells.
8	NW.	6	"	"	"	Dug	90	1,800	- 50	1,750	90	1,710	Glacial sand	Hard, clear, iron	42	D, S	Sufficient for 25 head stock.
9	NE.	8	"	"	"	Dug	14	1,830	- 7	1,823			Glacial clay	Soft, clear	40	D, S	Intermittent supply.
10	SE.	9	"	"	"	Drilled	70	1,850					Glacial sand	Hard, clear	40	D, S	Oversufficient for 20 head stock; also an 20-foot well for domestic use.
11	SW.	10	"	"	"	Dug	20	1,850	- 8	1,842			Glacial sand	Hard, clear	43	D, S	Sufficient for 15 head stock.
12	SE.	12	"	"	"	Dug	10	1,925	- 6	1,919	6	1,919	Glacial sand	Hard, clear	43	D, S	Sufficient for 15 head stock.
13	SE.	13	"	"	"	Bored	76	1,930	- 32	1,898	76	1,854	Glacial sand	Hard, clear, iron	41	D, S	Sufficient for local needs; also a 76-foot well.
14	NE.	15	"	"	"	Dug	25	1,950					Glacial drift	Hard, clear, "alkaline"	40	D, S	Intermittent supply; hauls water.
15	SW.	15	"	"	"	Bored	90	1,910									Dry hole base in glacial drift; hauls water.
16	NE.	16	"	"	"	Bored	56	1,940	- 38	1,902	56	1,884	Glacial gravel	Hard, clear, iron	40	S	Sufficient for 40 head stock; also 22-foot well for domestic use.
17	NW.	17	"	"	"	Dug	112	1,840	-100	1,740	112	1,728	Glacial sand	Hard, clear	40	D, S	Sufficient for local needs.
18	NW.	18	"	"	"	Dug	82	1,800	- 60	1,740	82	1,718	Glacial drift	Hard, clear, iron	42	D, S	Waters 35 head stock.
19	NW.	20	"	"	"	Dug	29	1,850	- 20	1,830	29	1,821	Glacial sand	Hard, clear, "alkaline"	44	D, S	Sufficient for 20 head stock.
20	SW.	20	"	"	"	Dug	124	1,850	-120	1,730	120	1,730	Glacial sand	Hard, clear, iron	40	D, S	Sufficient for local needs; several dry holes to 40 feet in depth.
21	NE.	20	"	"	"	Bored	50	1,930	- 30	1,900	50	1,880	Glacial drift	Hard, clear, iron	42	D, S	Sufficient for local needs.
22	NW.	21	"	"	"	Dug	60	1,950	- 48	1,902	60	1,890	Glacial drift	Hard, clear, "alkaline" iron	42	D, S	Sufficient for local needs; also a 30-foot well.
23	NW.	22	"	"	"	Dug	50	2,010	- 40	1,970	40	1,970	Glacial gravel	Hard, clear, "alkaline" iron	42	D, S	Sufficient for local needs; also a 20-foot well.
24	SE.	22	"	"	"	Bored	51	1,970	- 12	1,958	51	1,919	Glacial sand	Hard, clear, "alkaline"	43	D, S	Sufficient for 15 head stock; also a 25-foot well, good supply.
25	NW.	23	"	"	"	Drilled	120	2,000	- 45	1,955	120	1,880	Glacial sand	Hard, clear, iron	42	D, S	Sufficient for local needs; also a 14-foot well.
26	SW.	25	"	"	"	Dug	22	1,970	- 19	1,951	19	1,951	Glacial sand	Hard, clear	41	D, S	Sufficient for 15 head stock.
27	SW.	26	"	"	"	Dug	18	2,000	- 12	1,988	12	1,988	Glacial gravel	Hard, clear	43	D, S	Sufficient for 25 head stock.
28	NE.	28	"	"	"	Dug	20	2,030	- 18	2,012	18	2,012	Glacial sand	Hard, clear	42	D	Sufficient only for domestic use; stock watered in sloughs.
29	SE.	28	"	"	"	Dug	18	2,010	- 13	1,997	13	1,997	Glacial clay	Hard, clear	42	D	Sufficient for domestic use only.
30	NW.	29	"	"	"	Bored	75	1,940									Dry hole base in glacial drift; several intermittent wells.
31	SW.	29	"	"	"	Dug	24	1,900									Dry hole base in glacial drift; several other dry holes.
32	SE.	30	"	"	"	Drilled	270	1,880	-120	1,760	270	1,610	Glacial sand	Hard, clear	40	D, S	Sufficient for local needs; also a 20-foot well.

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 McKILLOP NO. 220 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
33	SW.	30	24	21	2	Drilled	298	1,840	- 70	1,770	298	1,542	Glacial sand	Hard, clear, iron	42	D, S	Waters 25 head stock.
34	SW.	31	"	"	"	Dug	36	1,880	- 30	1,850	30	1,850	Glacial gravel	Hard, clear	42	D, S	Sufficient for 11 head stock, six similar dry holes.
35	SW.	32	"	"	"	Dug	30	1,950	- 10	1,940			Glacial clay	Hard, clear		D, S	Intermittent supply.
36	NW.	33	"	"	"	Dug	8	2,050					Glacial gravel	Hard, clear	42	D, S	Oversufficient for local needs.
37	NE.	34	"	"	"	Dug	12	2,040	- 2	2,038	2	2,038	Glacial sand	Hard, clear, "alkaline"	44	D, S	Sufficient for 30 head stock; also a 50-foot well not used.
38	NE.	36	"	"	"	Drilled	350	1,950									Dry hole, also a 100-foot dry hole; several shallow seepage wells.
39	SE.	36	"	"	"	Dug	95	1,900	- 93	1,807	93	1,807	Glacial sand	Hard, clear, "alkaline"	41	D, S	Sufficient for 15 head stock; also a 12-foot well.
1	SE.	1	24	22	2	Dug	65	1,790	- 55	1,735	55	1,735	Glacial sand	Hard, clear, "alkaline"	41	D, S	Waters 25 head stock.
2	NW.	1	"	"	"	Bored	50	1,770	- 48	1,722	48	1,722	Glacial drift	Hard, clear, "alkaline"	42	D, S	Insufficient for 15 head stock.
3	SE.	4	"	"	"	Dug	24	1,760	- 18	1,742	18	1,742	Glacial sand	Hard, clear, "alkaline"	43	D, S	Sufficient for 25 head stock.
4	SW.	4	"	"	"	Dug	22	1,770	- 19	1,751	19	1,751	Glacial sand	Hard, clear	41	D, S	Waters 3 head stock.
5	NE.	5	"	"	"	Dug	30	1,750	- 24	1,726	24	1,726	Glacial sand	Hard, clear, "alkaline"	42	D, S	Waters 50 head stock.
6	SE.	6	"	"	"	Dug	34	1,760	- 26	1,734	34	1,726	Glacial sand	Hard, clear, iron	42	D, S	Waters 15 head stock.
7	SW.	6	"	"	"	Dug	40	1,750	- 20	1,730	40	1,710	Glacial gravel	Hard, clear, "alkaline"	44	D, S	Sufficient for 40 head stock.
8	NW.	7	"	"	"	Dug	33	1,755	- 11	1,744			Glacial sand	Hard, clear, iron	41	D, S	Sufficient for local needs.
9	NE.	9	"	"	"	Dug	50	1,760	- 40	1,720	40	1,720	Glacial drift	Hard, clear	42	D, S	Waters 10 head stock.
10	SW.	10	"	"	"	Dug	59	1,770	- 8	1,762	59	1,711	Glacial sand	Hard, clear	42	D, S	Sufficient for 40 head stock.
11	NE.	10	"	"	"	Dug	27	1,775	- 22	1,753	22	1,753	Glacial drift	Hard, clear	44	D, S	Sufficient for local needs.
12	SE.	10	"	"	"	Dug	29	1,760	- 12	1,748	29	1,731	Glacial sand	Hard, clear, "alkaline"	41	D, S	Sufficient for local needs.
13	NE.	11	"	"	"	Dug	30	1,760	- 24	1,736	24	1,736	Glacial sand	Hard, clear, "alkaline"	43	N	Not usable; use a 12-foot seepage well.
14	NW.	12	"	"	"	Dug	28	1,770	- 26	1,744	26	1,744	Glacial sand	Hard, clear, iron	42	D, S	Waters 15 head stock.
15	NW.	13	"	"	"	Dug	50	1,780	- 35	1,745	50	1,730	Glacial drift	Hard, clear	42	D, S	Sufficient for 30 head stock.
16	SW.	14	"	"	"	Dug	25	1,780	- 15	1,765	25	1,755	Glacial sand	Hard, clear	42	D, S	Waters 30 head stock.
17	SE.	16	"	"	"	Dug	40	1,760	- 31	1,729	31	1,729	Glacial sand	Hard, clear, iron	42	D, S	Waters 15 head stock.
18	NE.	16	"	"	"	Dug	16	1,760	- 10	1,750	10	1,750	Glacial sand	Hard, clear	42	S	Waters 14 head stock.
19	NE.	18	"	"	"	Bored	50	1,780	- 10	1,770			Glacial clay	Hard, clear	40	D, S	Insufficient for local needs; other seepage wells, hauls water.
20	SW.	18	"	"	"	Dug	40	1,760	- 20	1,740	40	1,720	Glacial sand	Hard, clear, iron	40	D, S	Sufficient for 30 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 McKILLOP NO.220, 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
21	SE.	19	24	22	2	Dug	25	1,760	- 13	1,747	25	1,735	Glacial sand	Hard, clear	42	D, S	Waters 8 head stock.
22	NW.	19	"	"	"	Dug	25	1,760	- 20	1,740	20	1,740	Glacial sand	Hard, clear	41	D, S	Waters 25 head stock; also a 30-foot well.
23	SW.	19	"	"	"	Bored	68	1,760	- 15	1,745	68	1,692	Glacial sand	Hard, clear, iron	40	D, S	Oversufficient for local needs.
24	NE.	21	"	"	"	Dug	28	1,750	- 20	1,730	20	1,730	Glacial sand	Hard, clear, "alkaline"	42	D, S	Waters 50 head stock.
25	SW.	24	"	"	"	Dug	60	1,770					Glacial sand	Hard, clear, iron	42	D, S	Waters 15 head stock.
26	NE.	24	"	"	"	Dug	78	1,810	- 72	1,738	72	1,738	Glacial sand	Hard, clear	42	D, S	Insufficient for 35 head stock; uses sloughs and hauls water.
27	SW.	25	"	"	"	Dug	60	1,790	- 35	1,755	60	1,730	Glacial sand	Hard, clear	40	D, S	Good supply; several wells averaging 40 feet in depth.
28	NE.	26	"	"	"	Dug	28	1,790	- 18	1,772	18	1,772	Glacial sand	Hard, clear, "alkaline"	43	D, S	Sufficient for 25 head stock; also a similar well.
29	SE.	27	"	"	"	Dug	40	1,750	- 38	1,712	38	1,712	Glacial sand	Hard, clear, "alkaline"	43	D, S	Sufficient for 20 head stock.
30	SE.	28	"	"	"	Dug	28	1,760	- 20	1,740	28	1,732	Glacial sand	Hard, clear, iron	43	D, S	Abundant supply.
31	SW.	28	"	"	"	Dug	40	1,760	- 37	1,723	37	1,723	Glacial sand	Hard, clear	42	D, S	Waters 15 head stock.
32	SE.	29	"	"	"	Dug	60	1,750	- 58	1,692	58	1,692	Glacial sand	Hard, clear	42	D, S	Insufficient for local needs; haul from Canadian Pacific Railway pump station.
33	SW.	29	"	"	"	Dug	35	1,770									Dry hole base in glacial drift, hauls water.
34	NE.	30	"	"	"	Dug	35	1,770	- 31	1,739	31	1,739	Glacial drift	Hard, clear	45	D, S	Sufficient for 5 head stock.
35	SE.	31	"	"	"	Dug	52	1,770	- 47	1,723	47	1,723	Glacial drift	Hard, clear	40	D, S	Sufficient for 15 head stock.
36	NE.	31	"	"	"	Bored	80	1,755	- 40	1,715	80	1,675	Glacial drift	Hard, clear	40	D, S	Sufficient for local needs.
37	SW.	32	"	"	"	Bored	100	1,760	- 50	1,710	100	1,660	Glacial drift	Hard, clear, "alkaline"	42	D, S	Waters 20 head stock.
38	NE.	32	"	"	"	Dug	36	1,750	- 33	1,717	33	1,717	Glacial gravel and sand	Hard, clear	42	D, S	Waters 15 head stock.
39	NW.	33	"	"	"	Dug	20	1,760	- 18	1,742	18	1,742	Glacial sand	Hard, clear, bitter	42	D, S	Sufficient for 25 head stock.
40	SW.	33	"	"	"	Dug	22	1,750	- 8	1,742	22	1,728	Glacial sand	Hard, clear	42	D	Canadian Pacific Railway well, yields 8,000 gallons an hour.
41	SE.	34	"	"	"	Bored	50	1,750	- 18	1,732			Glacial drift			D, S	
42	NW.	34	"	"	"	Dug	60	1,750	- 48	1,702	60	1,690	Glacial sand	Hard, clear, "alkaline"	42	D, S	Waters 20 head stock.
43	NE.	35	"	"	"	Dug	30	1,760	- 25	1,735	25	1,735	Glacial sand	Hard, clear, "alkaline" iron	42	D, S	Sufficient for local needs.
44	SE.	35	"	"	"	Dug	30	1,770	- 20	1,750	30	1,740	Glacial sand	Hard, clear, "alkaline"	42	D, S	Sufficient for local needs.
1	NE.	2	24	23	2	Dug	40	1,745	- 30	1,715	40	1,705	Glacial drift	Hard, clear, iron	40	D, S	Sufficient for 40 head stock.
2	SE.	2	"	"	"	Dug	22	1,750					Glacial gravel	Hard, clear, "alkaline"		S	Sufficient for local needs; also a 9-foot well with good 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 McKILLOP NO.220, 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
3	NW.	2	24	23	2	Dug	12	1,710	- 9	1,701	9	1,701	Glacial gravel	Hard,clear	40	D, S	Sufficient for local needs.
4	SW.	2	"	"	"	Dug	35	1,720	- 30	1,690	30	1,690	Glacial sand	Hard,clear, "alkaline"	42	D, S	Waters 10 head stock.
5	SW.	3	"	"	"	Bored	40	1,680	- 25	1,655	40	1,640	Glacial drift	Hard,green "alkaline"	40	S	Sufficient for local needs.
6	NW.	3	"	"	"		35	1,690					Glacial drift				Seepage well.
7	NE.	4	"	"	"		61	1,675									Dry hole base in glacia drift; also a 30-foot dry hole.
8	NW.	5	"	"	"	Dug	25	1,620	- 20	1,600	20	1,600	Recent sand	Hard,clear, "alkaline"	41	D, S	Waters 30 head stock; also a 27-foot well for stock and 12-foot well for drinking.
9	SW.	8	"	"	"	Dug	26	1,630	- 20	1,610	20	1,610	Glacial sand	Hard,clear, "alkaline"	40	D, S	Sufficient for 20 head stock; 20-foot dry hole, hauls water.
10	NE.	9	"	"	"	Dug	39	1,690	- 20	1,670	39	1,651	Glacial drift	Hard,cloudy, "alkaline" iron	43	D, S	Sufficient for 15 head stock; several 35-foot dry holes.
11	SE.	12	"	"	"	Dug	60	1,760	- 30	1,730	60	1,700	Glacial sand	Hard,clear	40	D, S	Sufficient for 30 head stock; also an abandoned well.
12	NE.	12	"	"	"	Dug	45	1,770	- 23	1,747	45	1,725	Glacial drift	Hard,clear, iron	42	D, S	Waters 30 head stock.
13	SE.	14	"	"	"	Dug	10	1,760	- 5	1,755	5	1,755	Glacial sand	Hard,clear, "alkaline"	40	D, S	Sufficient for 20 head stock.
14	NE.	15	"	"	"	Dug	20	1,750					Glacial drift	Hard,clear	45	D, S	Sufficient for local needs.
15	SE.	16	"	"	"	Bored	50	1,700	- 48	1,652	48	1,652	Glacial gravel	Hard,clear	45	D	Insufficient for local needs; also two wells 30 and 25 foot deep.
16	NE.	17	"	"	"	Dug	40	1,680	- 30	1,650	30	1,650	Glacial sand	Hard,sulphur, "alkaline"	43	D, S	Sufficient for 25 head stock.
17	SE.	18	"	"	"	Bored	33	1,640	- 18	1,622	18	1,622	Glacial gravel	Hard,clear	45	D, S	Insufficient for local needs; also 26-foot dry hole; hauls water.
18	NE.	19	"	"	"	Dug	46	1,660	- 16	1,644			Glacial sand	Hard,clear, "alkaline"			Intermittent supply; also a 40-foot well for house use.
19	NW.	20	"	"	"	Dug	20	1,700									Dry hole base in glacial drift.
20	NE.	21	"	"	"	Dug	52	1,730	- 18	1,712	52	1,678	Glacial drift	Hard,clear, "alkaline"		D, S	Sufficient for local needs.
21	NW.	22	"	"	"	Bored	43	1,740	- 20	1,720	43	1,697	Glacial gravel	Hard,clear, iron	40	D, S	Sufficient for local needs; also a 35-foot well.
22	NE.	22	"	"	"	Dug	46	1,760									Dry hole base in glacial drift; several seepage wells, hauls water.
23	NW.	24	"	"	"	Dug	100	1,770	- 5	1,765	100	1,670	Glacial sand	Hard,clear	42	D, S	Sufficient for local needs.
24	SW.	24	"	"	"	Dug	28	1,760	- 22	1,738	22	1,738	Glacial sand	Hard,clear	42	D, S	Also a 30-foot well.
25	SE.	24	"	"	"	Dug	32	1,755	- 12	1,743	32	1,723	Glacial gravel	Hard,clear	41	D, S	Waters 40 head stock.
26	NE.	25	"	"	"	Dug	35	1,765	- 2	1,763			Glacial sand	Hard,clear	40	D, S	Insufficient for local needs; also another well.
27	SE.	26	"	"	"	Dug	30	1,755	- 20	1,735	30	1,725	Glacial gravel	Hard,clear, iron	42	S	Sufficient for 30 head stock; also a 20-foot well for drinking.
28	NW.	28	"	"	"	Drilled	273	1,710	-130	1,580	273	1,437	Marine Shale	Soft,clear, salty,soda	40	S	Sufficient for local needs; hauls drinking water.

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 McKILLOP NO. 220, 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
29	SW.	29	24	23	2	Dug	26	1,670	- 6	1,664	26	1,644	Glacial drift	Hard, clear	40	D, S	Sufficient for local needs.
30	NE.	30	"	"	"	Drilled	100	1,680	- 90	1,590	90	1,590	Glacial sand	Hard, clear, "alkaline"	40	N	Intermittent supply; shallow well for drinking; hauls water.
31	NW.	32	"	"	"	Dug	16	1,690	- 3	1,687	16	1,674	Glacial gravel	Hard, clear	43	D, S	Abundant supply.
32	SE.	32	"	"	"	Bored	84	1,714	- 40	1,674	84	1,630	Glacial sandy clay	Hard, clear, "alkaline"	40	D, S	Insufficient for local needs; also a similar well.
33	NE.	32	"	"	"		30	1,715									Seepage well; hauled water, farm now vacant.
34	SW.	34	"	"	"	Drilled	345	1,740	-130	1,610	345	1,395	Marine Shale	Soft, salty, clear	40	N	Not usable, small yield; several seepage wells and a 34-foot well, good yield.

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.