CANADA
DEPARTMENT OF MINES

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

BUREAU OF ECONOMIC GEOLOGY

GEOLOGICAL SURVEY

PRELIMINARY REPORT

GROUND-WATER RESOURCES OF THE RURAL MUNICIPALITY OF HURON No. 223 SASKATCHEWAN

BY

B. R. MacKay & D. C. Maddox

Water Supply Paper No. 68

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INTRODUCTION

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

Publication of Results

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

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

How to Use the Report

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

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

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

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

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

GLOSSARY OF TERMS USED

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

WATER-BEARING HORIZONS OF THE MUNICIPALITY

The rural municipality of Huron comprises nine townships, designated as tps. 22, 23, and 24, ranges 1, 2, and 3, W. 3rd mer. The centre of the municipality is about 62 miles northwest of Moose Jaw, the nearest city, and about 96 miles northwest of Regina.

Qu'Appelle river flows in a general southeasterly direction through the southern two-thirds of the municipality. The headwaters of Qu'Appelle river are about $\frac{1}{4}$-mile west of the western boundary of the municipality, at an elevation of about 1,750 feet above sea-level. The average width of the valley of Qu'Appelle river within the municipality is about $\frac{3}{4}$-mile. There is a fairly abrupt rise of 100 feet from the valley floor to the prairie level of 1,850 feet. Eyebrow lake occupies about $4\frac{1}{2}$ miles of the part of the valley in township 23, range 2, the elevation of water-level in the lake being 1,715 feet above sea-level. The lowest part of the valley within the municipality is a little over 1,700 feet above sea-level. Within the municipality Qu'Appelle river is joined by a number of tributaries. Squaw creek joins the main valley about a mile west of the eastern boundary of the municipality, and about 3 miles upstream from Squaw creek an unnamed tributary comes in from the south. Both these creeks have carved fairly deep valleys in the soft sediments. Ridge creek joins Qu'Appelle river about $3\frac{1}{2}$ miles from the source of the latter. This creek is much longer than the other creeks mentioned, and in its lower part is a permanent stream; it occupies a fairly shallow valley. About 2 miles upstream from the upper end of Eyebrow lake, an intermittent stream about 2 miles long joins the main valley from the north. Drainage is to the valley of

Qu'Appelle river and its tributaries, except for a small area in the southern part of township 22, range 2, in which drainage is to Eye lake and to a low, marshy area about 2 miles west of the lake. Drainage in parts of the Elbow forest reserve is into lakes having no outlets.

In the northeast part of the municipality the ground slopes very gently southwestward from an elevation of a little over 2,100 feet above sea-level in the northeast corner of the municipality to about 1,850 feet above sea-level at the edge of the valley of Qu'Appelle river. In the northwest part most of the area north of Qu'Appelle valley is occupied by sandy deposits in the Elbow forest reserve. This part of the municipality is comparatively flat and elevations range from 1,850 feet to 1,900 feet above sea-level. There are two small, undrained lakes in this part of the forest reserve. A large part of Elbow forest reserve is occupied by sand dunes and the topography is typical of sand dune areas. South of Qu'Appelle valley, in township 22, range 1, and in the south half of township 22, range 2 the relief is much greater than north of the valley. The creeks have cut deep valleys and there are many irregular hills and depressions. Eye lake, the water level of which is 2,018 feet above sea-level, occupies a depression in Eyebrow hills near the south boundary of the municipality. In the western half of township 22, range 3, the country is comparatively flat. The wide, shallow valley of Ridge creek and of its tributary occupies a large part of the area, and there is a small lake, the water-level of which is 1,906 feet above sea-level, near the centre of the western boundary of this township.

Water-bearing Horizons in the Unconsolidated Deposits

Qu'Appelle River valley is occupied by alluvial deposits of sand, silt, and gravel in which ground water is probably within about 20 feet of the surface. North and south of Qu'Appelle River valley, in townships 22 and 23, ranges 1 and 2, there is a belt of clay which was laid down in a glacial lake. Most of the part of the eastern half of township 23, range 3, south of Qu'Appelle river is occupied by lake clays, as is part of the valley of Ridge creek. The lake clays are usually fine grained and do not yield water readily to wells, but there are usually beds of sand in the clays in which water may be found. On the margins of this clay area there is a narrow belt of glacial sands and gravels that represent the shore or shallow water deposits of the glacial lake. Water is usually found in these deposits within 20 feet of the surface, but these deposits in this township are thin. The Elbow forest reserve is underlain by wind-blown sands which form a natural reservoir for ground water, which is usually fairly soft and is in many places obtained by the use of sand-points. In the northeastern part of the municipality an area of the terminal moraine type of glacial deposit lies between the glacial lake clays and sands and the eastern and part of the northern boundaries of the municipality. The southwest part of the municipality, including the greater part of township 22, range 3, and of the south half of township 22, range 2, is underlain by glacial till or boulder clay. In the moraine and till types of glacial deposits ground water is found only in beds of sand and gravel that occur at various depths in the clay and the beds are generally small in extent.

Water-bearing Horizons in the Bedrock

The Bearpaw formation underlies the unconsolidated deposits over the entire municipality and outcrops in the eastern half of the municipality at several points in Eyebrow hills, in the valleys of Qu'Appelle river and of some of its tributaries, and north and northwest of Tugaske. The Bearpaw formation consists chiefly of a dark grey shale, but includes beds of sandstone near the top and at or near the base. The lower sands contain soft or salty water which supplies many deep wells in the Darmody-Riverhurst areas. In this municipality nine wells, ranging from 250 feet to 765 feet deep, obtain water from the lower sands in the Bearpaw. The elevation of the contact between the Bearpaw formation and the underlying Belly River formation in this municipality is not known, but it seems probable that the deeper bedrock wells obtain water from sands in the Belly River formation. Except in the western part of the municipality,,water from the bedrock is not very good, being either salty or containing a large amount of dissolved solids. Within this municipality there are several water sands in the bedrock. West and south of the valley of Qu'Appelle river there appears to be four water-bearing sands, at elevations of: 1,283 to 1,323 feet; 1,444 feet to 1,492 feet; 1,606 feet; and 1,725 feet. East of the valley of Qu'Appelle river, two deep wells obtained water from sands at about 1,390 feet above sea-level. The upper sands in the Bearpaw formation outcrop for about a mile between Tugaske and Bridgeford at elevations of 1,950 feet to 2,000 feet. Several wells in the vicinity of Tugaske, apparently, obtain water from these sands.

GROUND WATER CONDITIONS BY TOWNSHIPS

Township 22, Range 1

The valley of Qu'Appelle river passes from the northwest corner of this township to about the centre of the eastern boundary. The country is, generally, gently rolling in character, except for the southwest part of the township which is dissected by the valley of a creek that runs in a northeasterly direction from Eyebrow hills. Qu'Appelle river occupies a valley about $\frac{3}{4}$ mile in average width, which lies 150 to 200 feet below prairie level. Elevations range from a little over 1,700 feet above sea-level in the valley of Qu'Appelle river to a little over 2,100 feet above sea-level in Eyebrow hills in the southwest corner. Drainage is to Qu'Appelle river and its tributaries. The valley of Qu'Appelle river is floored by alluvial deposits of sand, silt, and gravel, which extends for short distances from the main valley up in the valleys of the tributary creeks. With the exception of an area of about 2 square miles in the southwest of the township, underlain by glacial till, the township back from Qu'Appelle River valley is underlain by glacial lake clays.

The depthof the wells in the glacial drift ranges from 11 feet to 160 feet, and no well-defined ground water horizons occur. One well 11 feet deep obtained water in the valley of Qu'Appelle river. A well close to the south edge of this valley, 160 feet deep, obtained no water. Several wells in the southeast part of the township obtained water from a gravelly horizon in sand or yellow clay, at depths of 26 to 68 feet. In the southern third of the township several wells yield, "alkaline" water and water for household use is hauled. Several springs occur in the coulées that lead northwards to Qu'Appelle River valley. Several of the wells are dependant on seepage for their water supply, and ground water conditions in the township are generally not very good.

A well in the SE.¼, section 6, 765 feet deep, is the only one that has reached bedrock. This well is believed to have obtained its water from the Belly River formation, but the water was salty and highly mineralized and the well is not now in use. No water was apparently obtained in this well from the overlying sands of the Bearpaw formation, although two wells drilled close to, but a little west of, the western boundary of this township obtained water from the Bearpaw horizon. The water was salty, so that the Bearpaw sands are not a likely source of good water in this township.

Township 22, Range 2

The valley of Qu'Appelle river passes through the northeast corner of this township. The greater part of the northern half of the township is flat or gently rolling. In the southern half, and the western part of the northern half, the relief is greater, and the country is rolling to hilly in character. Elevations range from about 1,715 feet above sea-level in Qu'Appelle River valley to over 2,150 feet above sea-level in Eyebrow hills. Drainage is to Qu'Appelle river except for two small areas in the south that drain into Eye lake and into a marshy area about 2 miles west of it. The valley of Qu'Appelle river is underlain by alluvial deposits of sand, silt, and gravel. Glacial lake clays occupy much of the northern and eastern parts of the township, and a belt of glacial lake sands lies between these clays and the glacial till that underlies the southern part of the township. Ground water conditions within the township are very variable. In the northeast quadrant wells in the lake clays and sands obtain water at depths of 14 to 30 feet. In the valley in which Eye lake lies wells obtained water at depths of 10 to 32 feet. Elsewhere in the township ground water conditions are so variable that no generalizations can be made. The deepest

well in the glacial drift is 200 feet deep and is reported to have struck quicksand at 100 feet. The water of most of the wells in the glacial drift is hard but drinkable. The water of three wells in the southern half of the township, however, is "alkaline", and in some of the seepage wells the water is comparatively soft. Two wells in the southwest and one in the northwest yield large supplies. Water is being hauled to at least one farm. Two dry holes are also reported.

Four wells have been drilled into the lower sands of the Bearpaw formation. Two of these wells are close to the northern boundary and two are close to the eastern boundary of the township. In all four wells the water is salty and is used only for stock. The water in one of the eastern group is too salty to be used continously for stock. Gas in small quantities is reported in one of the northern group of wells. It is improbable that water of good quality will be found in the lower Bearpaw sands in this township. The upper sands in the Bearpaw formation are exposed about 1½ miles north of Tugaske at elevations of a little less than 2,000 feet, and although the well located in the NE.¼, section 18, yielding soft water, is shown on the map as a drift well, it is possible that the sand that occurs in this well from 12 feet to 50 feet belongs to the upper part of the Bearpaw formation.

Township 22, Range 3

The country is gently rolling in character. Ridge creek and its tributary occupy a wide, rather shallow valleys in the western part of the township, and a lake, the water-level of which is 1,906 feet above sea-level, lies close to the western boundary of the township in this valley. In the eastern part several irregularly shaped hills rise to 2,000 feet above sea-level. Drainage is to Ridge creek and its tributaries. Elevations

range from about 1,875 feet above sea-level in the valley of Ridge creek to over 2,000 feet above sea-level west of Tugaske.

A belt of glacial lake sands passes through the northeast corner of the township. Glacial lake clay occurs north of the lake in the valley of Ridge creek. With these two exceptions, the remainder of the township is occupied by glacial till. The wells in this township are comparatively deep, very few being less than 25 feet deep. In the western two-thirds a number of wells are from 50 to 100 feet deep, but no well-defined aquifer can be traced over a considerable area. The deepest well in the glacial drift is one 200 feet deep in the southeast corner. The water in wells in the glacial drift is hard but drinkable.

The upper Bearpaw sands are exposed about 1½ miles north of Tugaske and along the railway about 2 miles northwest of Tugaske. Twelve soft water wells in the township are thought to obtain water from sands in the Bearpaw. Ground water conditions in the township are fairly good, several of the wells yielding large supplies of water. The soft water from wells in the bedrock is unsatisfactory for irrigation.

Township 23, Range 1

This township is a plain that slopes gently and comparatively uniformly,,at the rate of about 25 feet to the mile, from an elevation of about 2,045 feet above sea-level in the northeast corner to about 1,850 feet above sea-level at the edge of the valley of Qu'Appelle river, which passes through the southwestern corner of the township. In the southeast, Squaw creek has excavated a valley 50 to 80 feet deep. The lowest elevation in this township is inthe valley of Qu'Appelle river and is about 1,715 feet above sea-level. Drainage is to Qu'Appelle

river and its tributaries. Glacial lake clays occupy the southwestern and southern parts, and glacial lake sands underlie an area of about 1½ square miles in the southeast corner. In the southeast quadrant a narrow belt of glacial till lies between the glacial lake clays and sands and the moraine that covers most of the northeastern half of the township.

The depth of the wells in the glacial drift ranges from 10 to 67 feet. In that part of the township underlain by glacial lake clays the wells are from 12 feet to 36 feet deep. In the northeast quadrant there are a number of shallow seepage wells that depend for their supply on sloughs and that dry out or become very low in dry seasons. In section 16 quicksand occurs at depths of 80 feet to 120 feet, but wells put down to it went dry after a short time and the quicksand appears to be a pocket in the drift. The water in the drift is hard but drinkable, except in the case of three wells near the contact between the lake clays and the terminal moraine in which the water is "alkaline". In the centre one of the three the water is too "alkaline" for continuous use by cattle.

The well in the S.W.¼, section 16, is the only one drilled to bedrock, the water is salty and undrinkable and contains so much dissolved matter that it is unsuitable for stock use. The supply from this well was large, but has decreased, probably due to sanding up of the well. The base of the well is 1,392 feet above sea-level, and it is probable that the water comes from sands in the Belly River formation. The sands in the lower part of the Bearpaw do not appear to extend into this township. No dry holes are reported, but on two farms water is hauled. Ground water conditions in general are not very good.

Township 23, Range 2

Qu'Appelle river passes through the township in a generally southeasterly direction from a point on the western boundary about 1½ miles south of the northern boundary to the southeast corner of the township. Within the township the river valley is about a mile wide, the valley floor being from 100 to 150 feet below prairie level. One intermittent stream about 2 miles long joins the valley from the north at a point a little over 2 miles east of the western boundary of the township. The lower half of the course of the valley is occupied by Eyebrow lake, the elevation of which is 1,715 feet above sea-level. There was a little water in the lake in 1935, but in dry seasons the lake bed is at times completely dry. About 3 square miles in the northwest corner is underlain by dune sands. Alluvial deposits underlie the floor of Qu'Appelle River valley. About one square mile in the northeast corner is occupied by lake sands and moraine; the remainder of the township is underlain by glacial lake clays. The country is gently rolling and east of Qu'Appelle river the land slopes very gently southwestwards toward Qu'Appelle River valley. Drainage is to Qu'Appelle river and its tributaries. Elevations range from about 1,715 feet above sea-level in the valley of Qu'Appelle river to about 1,940 feet in the northeast corner.

All wells examined were in drift, and their depths range from 10 to 102 feet. In the south half of the township wells in the glacial lake clays are 26 feet deep or less, the water in one well is "alkaline". East of Qu'Appelle River valley the wells are 16 to 102 feet deep, but except in the northern row of sections they are 28 feet deep or less. Three wells in this part of the township yield "alkaline" water, in one well the water is too "alkaline" for stock use, and in the SW.¼, section 25, water too "alkaline" for use

was found in a well 100 feet deep. Springs are reported in section 27 near the edge of Qu'Appelle River valley, and the water in one of the wells is soft and is probably derived from a spring. A well located in NW.$\frac{1}{4}$, section 36, bored to a depth of 102 feet, is the deepest well in the township. It obtained water in gravel at 91 feet, but this horizon was not reported in other wells in the vicinity.

Township 23, Range 3

Qu'Appelle river follows a generally east-west course through the northern half of the township. The river is over 100 feet below prairie level. In the eastern part the river valley is about one-half mile wide and the valley sides are comparatively steep. Towards the west the valley widens and the sides have gentle slopes. Ridge creek joins Qu'Appelle river from the south near the centre of the township and follows a very winding course from the southwest corner of the township. The valley of Ridge creek is comparatively shallow except for the first few miles. Back from the stream valleys the country is flat to gently rolling. The sand dune country of the Elbow forest reserve occupies most of the northern third of the township. Elevations range from about 1,725 feet above sea-level in the valley of Qu'Appelle river to over 1,950 feet above sea-level north and east of Bridgeford. The valley of Qu'Appelle river is floored by alluvial deposits of silt, sand, and gravel in which water is usually within a few feet of the surface. In the dune sands of the forest reserve, large quantities of comparatively soft water are found at slight depths, and may be obtained by the use of sand-points. In the glacial lake clays that underlie most of the southeastern quarter of the township and occupy a small area south and east of Bridgeford water is found in irregular beds of

sand in the clay. A band of glacial lake sands crosses the south half of the township in a southeasterly direction. An area of about one-half square mile north of Bridgeford is underlain by outwash sands and gravel. In both these types of glacial deposits water is usually found near the surface.

All the wells visited are south of Qu'Appelle River valley. In and near the valleys of Ridge creek and Qu'Appelle river the wells are shallow, being usually less than 25 feet deep, elsewhere the depth of the wells varies greatly. Springs occur in the coulées leading to Ridge creek. The only well that reached bedrock is a 450-foot well drilled for oil and gas in the SW.$\frac{1}{4}$, section 4. The upper Bearpaw sands outcrop near this well; the depth to rock elsewhere in the township is not known. Most of the wells yield enough water for domestic use and for a small number of stock.

Township 24, Range 1

This township forms part of the plain that slopes very gently southwesterly towards the valley of Qu'Appelle river. Elevations within the township range from a little less than 1,950 feet above sea-level in the southwest corner to a little over 2,100 feet in the northeast. There are no streams in the township, but a small low area in section 12, probably provides for surface run-off in the vicinity: with this exception the direction of surface run-off is towards the valley of Qu'Appelle river.

With the exception of a narrow strip, less than a mile wide, at the northern boundary of the township that is underlain by glacial till, the entire township is underlain by the moraine type of glacial drift. Ground water in the drift will be found only in lenses or discontinuous beds of sand and gravel that are enclosed in the clay of the glacial drift.

The distribution of aquifers is very irregular and no widespread water horizons are present. The depth of the wells varies so widely that no depth to ground water zones can be outlined. The glacial drift in this township appears to be very thick. A 300-foot well in NW.¼, section 10, passed into shale at 260 feet, but the water in the well appears to come from an horizon above the shale, probably from the base of the glacial drift. Conditions in a 225-foot well in NE.¼, section 9, seem to be generally similar, shale being reported as occurring at the bottom of the well. In both wells the supply of water was large, but the quality was not very good. In three wells the water was "alkaline" and at four farms water was hauled. A small spring near the centre of the township supplies water to one farm. Two farmers report dry holes, and ground water conditions are not very favourable. Only one well has been drilled to bedrock; this well obtained laxative, salty water from an horizon which seems to be Belly River sands.

Township 24, Range 2

Relief in this township is very low. The surface slopes very gently towards the southwest from an elevation of a little over 2,050 feet above sea-level in the northeast to a little less than 1,850 feet in the southwest. The sand dune type of topography is characteristic of the forest reserve in the west. There are no streams in the township. The forest reserve is underlain by wind-blown sand in which moderately soft water can usually be obtained at slight depths by the use of sand-points. A belt of glacial lake sands, a little less than a mile wide, passes across the township in a northwesterly direction. Water is usually found in these sands at slight depths but in this township the sands are apparently thin, as it has been necessary to sink wells into the

underlying boulder clay to obtain water. An area of about 2 square miles at and near the southern boundary of the township is underlain by glacial lake clays in which water is often found in beds of sand. The northeast part of the township is underlain by moraine, the type of glacial deposit in which ground water is only found in irregularly distributed lenses or pockets of sand and gravel, usually small in extent.

Most of the wells in the township are comparatively deep, a large proportion of them being 60 to 90 feet deep. Well records do not show the presence of a widespread aquifer. In the southeast, wells located on the NE.$\frac{1}{4}$, SE.$\frac{1}{4}$, and SW.$\frac{1}{4}$, section 2, appear to obtain water from the same horizon. Wells located on the NW.$\frac{1}{4}$, section 12, SE.$\frac{1}{4}$, section 14, and SW.$\frac{1}{4}$, section 14, also appear to have reached a common aquifer, but the water horizons of the two groups do not correspond in elevation. In the northwest, wells located on the NE.$\frac{1}{4}$, section 20, and the SE.$\frac{1}{4}$, section 30, both obtain water from a horizon approximately 1,820 feet above sea-level. In three wells the water is reported as "alkaline", but the water in one is fit for drinking. A spring occurs in the SE.$\frac{1}{4}$, section 25. No wells in the dune sand areas are reported. No wells reached bedrock and the thickness of the glacial drift is not known; it seems to be at least 80 to 90 feet thick over a large part of the township. It is not known whether the sands near the base of the Bearpaw underlie the township, but it seems probable that if these sands are present they will not contain water of good quality.

Township 24, Range 3

In this township relief is very low. About two-thirds of the area is occupied by Elbow forest reserve, in which low sand hills, characteristic of dune topography, occur. There are two small lakes in the eastern half of the township. Elevations

range from about 1,860 feet above sea-level, the elevation of the larger of the two lakes, to a little over 1,900 feet above sea-level at the tops of some of the sand hills in the forest reserve. At and near the northern boundary, there is a belt underlain by glacial lake sands in which water is usually found at slight depths. In the sands of the forest reserve water is usually found near the surface and large quantities are often obtained by the use of sand-points.

All well records obtained are from the part of the township lying north of the forest reserve. In the western half of this part, the wells are less than 20 feet deep and obtain a fair supply of water from a sandy horizon which in many places is reported as quicksand. In the eastern half of this part, wells are 18 to 40 feet deep. There appears to be a bed of sand near the surface in this part, but in some places the water supply obtained from it is inadequate for local needs.

STATISTICAL SUMMARY OF WELL INFORMATION IN RURAL MUNICIPALITY OF HURON, NO. 223, SASKATCHEWAN

Township	22	22	22	23	23	23	24	24	24	Total No. in Municipality
West of 3rd. mer. Range	1	2	3	1	2	3	1	2	3	
Total No. of Wells in Township	27	60	54	36	32	24	53	34	16	336
No. of wells in bedrock	1	5	12	1	0	1	1	0	0	21
No. of wells in glacial drift	26	55	42	35	32	23	52	34	16	315
No. of wells in alluvium	0	0	0	0	0	0	0	0	0	0
Permanency of Water Supply										
No. with permanent supply	23	53	54	34	32	24	35	33	16	304
No. with intermittent supply	3	4	0	2	0	0	7	1	0	17
No. dry holes	1	3	0	0	0	0	11	0	0	15
Types of Wells										
No. of flowing artesian wells	0	0	1	0	0	0	0	0	0	1
No. of non-flowing arestain wells	8	22	37	10	11	4	20	16	1	129
No. of non-artesian wells	18	35	16	26	21	20	22	18	15	191
Quality of Water										
No. with hard water	23	47	41	33	30	22	35	30	14	275
No. with soft water	3	10	13	3	2	2	7	4	2	46
No. with salty water	1	4	0	1	1	0	1	0	0	8
No. with "alkaline" water	8	8	11	10	6	4	7	12	3	69
Depths of Wells										
No. from 0 to 50 feet deep	20	45	22	31	27	22	31	16	16	230
No. from 51 to 100 feet deep	5	7	26	4	4	1	17	18	0	82
No. from 101 to 150 feet deep	0	3	2	0	1	0	2	0	0	8
No. from 151 to 200 feet deep	1	1	2	0	0	0	0	0	0	4
No. from 201 to 500 feet deep	0	3	2	0	0	1	2	0	0	8
No. from 501 to 1,000 feet deep	1	1	0	1	0	0	1	0	0	4
No. over 1,000 feet deep	0	0	0	0	0	0	0	0	0	0
How the Water is used										
No. usable for domestic purposes	18	34	48	21	23	16	25	27	15	227
No. not usable for domestic purposes	8	23	6	15	9	8	17	7	1	94
No. usable for stock	23	55	51	35	30	21	38	34	15	302
No, not usable for stock	3	2	3	1	2	3	4	0	1	19
Sufficiency of Water Supply										
No. sufficient for domestic needs	23	53	54	34	32	24	35	33	16	304
No. insufficient for domestic needs	3	4	0	2	0	0	7	1	0	17
No. sufficient for stock needs	15	32	43	19	26	18	31	25	11	220
No. insufficient for stock needs	11	25	11	17	6	6	11	9	5	101

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 Huron, No. 223, 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.	NW.	24	22	2	3	564	7,083															Trace		(1)	Trace	✱3
2.	NE.	30	22	3	3	53	1,428															(2)	(1)	(3)		✱2
3.	SW.	16	23	1	3	512	6,063												(2)		(3)	(4)	(1)	(5)		✱3
4.	NE.	3	23	3	3	Spring	743											(3)	(1)		(2)		(4)		(5)	✱1
5.	SW.	10	24	1	3	612	7,160	220	210	10	4,030	145	60	22	33	3,440		145	47					6,501	119	✱3
6.	SW.	14	24	2	3	22	503											(3)	(1)		(2)				(4)	✱1
7.	SW.	26	24	2	3	77	3,240	1,100	1,000	100	43	350	200	180	1,911	988		350	10		536		2,183	71		✱1

Water samples indicated thus, ✱1, are from glacial drift.
Water samples indicated thus, ✱2, are from bedrock, Bearpaw formation.
Water samples indicated thus, ✱3, are from bedrock, Belly River formation.
Analyses are reported in parts per million; where numbers (1), (2), (3), (4), and (5) are used instead of parts per million, they represent the relative amounts in which the five main constituents are present in the water.
Hardness is the soap hardness expressed as calcium carbonate ($CaCO_3$).
Analyses Nos. 1 to 4, 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

Reference to the table of analyses shows that there are three types of water from the glacial drift. Analysis No. 4 illustrates the composition of spring water that contains comparatively little total solids and chloride. Calcium sulphate and magnesium sulphate are the chief constituents and give permanent hardness to the water. Calcium carbonate is also present and gives temporary hardness. Sodium sulphate is subordinate in amount. Analysis No. 6 is of water from a well in gravel that yields large supplies of water; the coarse nature of the aquifer makes circulation of the water more rapid than in fine sands and this may account for the unusually small amount of total solids in the water. This analysis resembles that of analysis No. 4, except that sodium sulphate is absent. Analysis No. 7, is characteristic of water from the deeper wells in the glacial drift, in which water circulation is not rapid. Sodium sulphate is the chief constituent, and the combined sulphates of magnesium and calcium are also high. Calcium carbonate is next in order of abundance and sodium chloride small in amount. This water will be very hard, even after boiling, and the combined sodium sulphates and magnesium sulphate will make it laxative if drunk in large amounts. It differs from the usual waters from the glacial drift in that there is more magnesium sulphate than calcium sulphate. The high total solid content and the laxative action of the water makes it unfit for drinking except in small amounts. It is used for stock, however. Analyses Nos. 4 and 6 represent waters well adapted for irrigation purposes, "black alkali" is absent and "white alkali" is subordinate or absent. Analysis No. 7 represents water that is not well adapted for irrigation purposes. "White alkali" is high and under conditions of rainfall and drainage existing in the township would probably accumulate in the soil to a dangerous extent.

Water from the Bedrock

Analysis No. 2 is typical of the soft water obtained from the Bearpaw formation. The order of relative abundance of the three constituents, sodium sulphate, sodium carbonate, sodium chloride, is that of most of the deep, soft water wells in the Darmody-Riverhurst artesian area. Compared with waters in eastern Canada, this water contains a fairly large amount of total solids and it will be slightly laxative if drunk in large amounts, but similar water has been in use at many farms in the district for a number of years and no ill effects have been reported.

Analyses Nos. 1, 3, and 5 represent water from an horizon thought to be the Belly River. Analyses Nos. 1 and 5 are generally similar; both consist chiefly of sodium chloride or common salt, and the amount of this salt is so large that it is questionable whether these waters would quench thirst and it would be advisable to supplement their use, even for stock, by water less high in dissolved solids. For irrigation they are useless, due to the large amount of sodium chloride. Analysis No. 3 differs from that of the bedrock waters in that it represents a hard water. This water will also be laxative and its constant use is not recommended, even for stock. The high total solid content of this water and the presence of "black alkali" and "white alkali" make it unsuitable for irrigation purposes.

WELL RECORDS—Rural Municipality of HURON NO. 223, 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.	2	22	1	3	Dug	38	1,935	- 23	1,912	38	1,897	Glacial drift	Hard	43	D, S	Sufficient for 20 head stock.
2	SW.	3	"	"	"	Dug	15	1,960	- 13	1,947	15	1,945	Glacial drift	Hard, "alkaline"	43	D, S	Sufficient for 20 head stock.
3	SE.	6	"	"	"	Drilled	765	2,058	-140	1,918	765	1,293	Belly River sandstone	Very salty, hard		N	Well abandoned; too salty for use.
4	SE.	6	"	"	"	Dug	23	2,058	- 12	2,046	23	2,035	Glacial drift	Hard	43	S	Sufficient for stock.
5	SW.	8	"	"	"	Bored	57	1,995	- 22	1,973	57	1,938	Glacial drift	Hard	41	S	Sufficient for local needs.
6	SW.	8	"	"	"	Dug	24	1,980	- 7	1,973	24	1,956	Glacial drift	Soft	41	D, S	Seasonal variation in supply.
7	SE.	10	"	"	"	Bored	69	1,950	- 54	1,896	69	1,881	Glacial drift	Hard, "alkaline"	43	S	Insufficient supply of poor quality water.
8	NE.	11	"	"	"	Dug	26	1,915	- 16	1,899	26	1,889	Glacial drift	Hard	43		Farm deserted.
9	SW.	12	"	"	"	Bored	50	1,910	- 25	1,885	50	1,860	Glacial drift	Hard	42	D, S	Sufficient; for 15 head stock; second well 35 feet deep.
10	NW.	12	"	"	"	Dug	25	1,900	- 22	1,878	25	1,875	Glacial drift	Hard, "alkaline"	43	D, S	Sufficient; poor quality water.
11	SE.	13	"	"	"	Bored	25	1,880	- 22	1,858	25	1,855	Glacial drift	Hard, stagnant	44		Farm deserted.
12	SW.	13	"	"	"	Bored	68	1,950	- 58	1,892	68	1,882	Glacial drift	Hard, slightly, "alkaline"		S	Sufficient for 35 head stock; water for house hauled.
13	SW.	14	"	"	"	Dug	3	1,925	0	1,925	2	1,923	Glacial sand and gravel	Hard	50	D, S	Sufficient for 7 head stock.
14	SE.	15	"	"	"	Dug	20	1,930	- 12	1,918	20	1,910	Glacial sand	Hard		D,	Sufficient for domestic use; spring used for stock.
15	NW.	21	"	"	"	Dug	11	1,750	- 9	1,741	11	1,739	Glacial sand	Hard	43	D, S	Sufficient for 6 head stock; another well 22 feet deep.
16	SE.	28	"	"	"	Bored	75	1,940	- 65	1,875	75	1,865	Glacial sand	Hard, "alkaline"	45	N	
17	NE.	28	"	"	"	Dug	12	1,850	- 10	1,840	12	1,838	Glacial sand	Hard	43	D, S	Well in valley.
18	SW.	30	"	"	"	Bored	96	1,880	- 36	1,844	96	1,784	Glacial drift	Hard, stagnant	43		Farm deserted.
19	NW.	30	"	"	"	Drilled	160	1,870					Glacial drift				Dry hole.
20	NW.	30	"	"	"	Dug	18	1,860	- 15	1,845	18	1,842	Glacial drift	Hard, "alkaline"	45	D	Sufficient for domestic use; spring in coulee for stock.
21	SE.	32	"	"	"	Bored	22	1,860	- 16	1,844	22	1,838	Glacial drift	Soft ?	44	D, S	Sufficient for 50 head stock.
22	SW.	33	"	"	"	Bored	12	1,888	- 11	1,877	12	1,876	Glacial drift	Hard	42		Farm deserted.
1	NE.	1	22	2	3	Dug	40	2,100	- 32	2,068	40	2,060	Glacial sand	Hard	41	D, S	Sufficient; second well in coulee 8 feet deep.
2	NW.	2	"	"	"	Dug	10	2,048	- 8	2,040	10	2,038	Glacial sand	Soft	43	D, S	Sufficient for 16 head stock; second similar well.
3	NW.	3	"	"	"	Dug	77	2,060	- 75	1,985	77	1,983	Glacial drift	Hard, stagnant	42		Farm deserted.
4	NW.	4	"	"	"	Dug	45	2,000	- 42	1,958	45	1,955	Glacial drift	Hard	43	D, S	Sufficient for 22 head stock.
5	NW.	5	"	"	"	Bored	110	2,000	- 40	1,960	110	1,890	Glacial drift	Hard			Large supply.
6	SE.	6	"	"	"	Bored	96	1,985	- 30	1,955	96	1,889	Glacial drift	Hard, "alkaline"	40	D, S	Sufficient for 50 head stock.

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

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

WELL RECORDS—Rural Municipality of HURON NO. 223, SASKATCHEWAN

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (−) Surface	Elev.	Depth	Elev.	Geological Horizon				
7	NW.	6	22	2	3	Drilled	200	2,000	-100	1,900	200	1,800	Glacial drift	Hard	42	D, S	Sufficient for 25 head stock.
8	SW.	7	"	"	"	Drilled	139	2,020			139	1,881	Glacial drift	Hard	42	D, S	Sufficient for local needs.
9	NW.	8	"	"	"	Dug	40	1,995	- 35	1,960	40	1,955	Glacial sand	Hard	41	D, S	Sufficient; with another well 20 feet deep and dugout.
10	NW.	9	"	"	"	Dug	28	2,005	- 18	1,987	28	1,977	Glacial sand	Hard	42	D, S	Sufficient for local needs.
11	SE.	10	"	"	"	Dug	14	2,040	- 8	2,032	14	2,026	Glacial drift	Hard, stagnant	43		Farm deserted.
12	NE.	10	"	"	"	Dug	32	2,060	- 29	2,031	32	2,028	Glacial gravel	Soft	42	D, S	Waters 16 head stock during summers.
13	SE.	12	"	"	"	Dug	19	2,000	- 16	1,984	19	1,981	Glacial drift	Hard	42	D, S	Barely sufficient in normal years.
14	NW.	12	"	"	"	Dug	18	1,940	- 17	1,923	18	1,922	Glacial drift	Hard, "alkaline"	44	S	Insufficient; water hauled for house.
15	SE.	13	"	"	"	Dug	12	1,925	- 8	1,917	12	1,913	Glacial drift	Hard	42	S	Sufficient for 20 head stock; second well 12 feet deep for house.
16	SE.	13	"	"	"	Drilled	150	1,925					Bedrock ? sandstone				Dry hole.
17	SE.	14	"	"	"	Bored	35	1,945	- 20	1,925	35	1,910	Glacial drift	Hard		S	Probably used for house.
18	NW.	15	"	"	"	Dug	18	2,000	- 11	1,989	18	1,982	Glacial drift	Hard	44		Farm deserted.
19	SE.	15	"	"	"	Dug	12	2,035	- 8	2,027	12	2,023	Glacial drift	Fairly soft	43	D, S	Sufficient for 3 head stock.
20	NE.	16	"	"	"	Bored	50	1,955	- 18	1,937	50	1,905	Glacial drift	Hard, "alkaline"	42	S	Sufficient; second well fed by spring for domestic supply.
21	SW.	17	"	"	"	Dug	28	1,970	- 4	1,966	28	1,942	Glacial drift	Hard, "alkaline"	43	D, S	Only enough for 24 head stock; second well for remainder of stock.
22	NE.	18	"	"	"	Bored	50	1,990	- 46	1,944	50	1,940	Glacial sand	Soft	40	D, S	Good supply for 25 head stock; second well not used.
23	NW.	18	"	"	"	Bored	45	2,000	- 35	1,965	45	1,955	Glacial sand	Hard, iron		D, S	Sufficient for 50 head stock.
24	SW.	18	"	"	"	Bored	33	1,985	- 19	1,966	33	1,952	Glacial drift	Hard	42		Farm deserted.
25	SW.	21	"	"	"	Dug	37	1,948	- 22	1,926	37	1,911	Glacial drift	Hard, "alkaline"	41	S	Insufficient and of poor quality.
26	SW.	21	"	"	"	Dug	12	1,894	- 8	1,886	12	1,882	Glacial drift	Hard, "alkaline"	41	S	Sufficient for stock; water for house hauled.
27	SW.	23	"	"	"	Dug	14	1,935	- 11	1,924	14	1,921	Glacial drift	Hard	43		Farm deserted.
28	NW.	24	"	"	"	Drilled	564	1,887	- 50	1,837	564	1,323	Bearpaw sandstone	Soft, salty	43	S	Farm deserted.
29	SE.	25	"	"	"	Drilled	447	1,891	- 12	1,879	447	1,444	Bearpaw sandstone	Soft, salty	43	S	
30	NE.	26	"	"	"	Dug	21	1,895	- 18	1,877	21	1,874	Glacial drift			S	
31	NW.	26	"	"	"	Dug	15	1,875	- 10	1,865	15	1,860	Glacial drift	Hard	42	S	Second seepage well 10 feet deep.
32	NE.	27	"	"	"	Bored	30	1,875	- 16	1,859	30	1,845	Glacial drift	Hard	42		Farm deserted.
33	SE.	27	"	"	"	Dug	20	1,885	- 15	1,870	20	1,865	Glacial drift	Hard		S	Second well, 18 feet deep.

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 HURON NO.223, 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
34	SW.	28	22	2	3	Dug	18	1,890	- 17	1,873	18	1,872	Glacial sand	Hard, stagnant	41		Farm deserted.
35	SW.	29	"	"	"	Bored	65	2,000	- 50	1,950	65	1,935	Glacial drift	Hard	42	D, S	Sufficient; second similar well for stock.
36	NE.	29	"	"	"	Bored	33	1,870	0	1,870	33	1,837	Glacial sand	Hard	42	S	Only enough for 20 head stock; dry holes to 80 feet deep.
37	NW.	30	"	"	"	Bored	65	1,950	- 40	1,910	65	1,885	Glacial sand	Hard			Large supply.
38	NE.	30	"	"	"	Dug	40	1,940	- 35	1,905	40	1,900	Glacial drift	Hard	41	D, S	Sufficient for 30 head stock; second well for house use.
39	SW.	30	"	"	"	Bored	40	1,975	- 23	1,952	40	1,935	Glacial drift	Hard	43	D, S	Sufficient; second similar well.
40	SW.	30	"	"	"	Dug	16	1,975	- 10	1,965	16	1,959	Glacial drift	Soft			Large supply.
41	NE.	32	"	"	"	Drilled	410	1,902	- 40	1,862	410	1,492	Bearpaw sandstone	Soft, salty		S	
42	NW.	33	"	"	"	Drilled	414	1,898	- 25	1,873	414	1,484	Bearpaw sandstone	Soft	44	S	Used for stock only.
43	SW.	33	"	"	"	Dug	14	1,890	- 6	1,884	14	1,876	Glacial drift	Hard	43	D	Sufficient for domestic use.
44	NE.	34	"	"	"	Bored	15	1,865	- 13	1,852	15	1,850	Glacial drift	Hard	43		Farm deserted.
45	SW.	34	"	"	"	Dug	15	1,880	- 14	1,866	15	1,865	Glacial sand	Stagnant			Farm deserted.
46	SE.	35	"	"	"	Dug	15	1,865	- 10	1,855	15	1,850	Glacial drift	Hard, stagnant	43		Farm deserted.
1	NE.	1	22	3	3	Bored	200	2,010	-100	1,910	200	1,810	Glacial sand	Hard, iron	41	D, S	Sufficient for 12 head stock.
2	SW.	1	"	"	"	Bored	70	1,990	- 30	1,960	70	1,920	Glacial sand	Hard, iron	42	D, S	Sufficient for 20 head stock.
3	SW.	2	"	"	"	Drilled	250	1,975	- 8	1,967	250	1,725	Bearpaw sand	Soft	43	D, S	Large supply.
4	NE.	3	"	"	"	Bored	45	1,970	- 35	1,935	45	1,925	Glacial sand	Hard, "alkaline"	44	D, S	Sufficient for 12 head stock.
5	NE.	4	"	"	"	Drilled	160	1,970	- 8	1,962	160	1,810	Bearpaw sand	Soft	44	D, S	More than sufficient for 50 head stock.
6	SW.	4	"	"	"	Bored	22	1,960	- 15	1,945	16	1,944	Glacial drift	Hard	43	N	Sufficient, but farm unoccupied.
7	NE.	7	"	"	"	Drilled	140	1,912	0	1,912	140	1,772	Bearpaw sandstone	Soft		D, S	Water flowing.
8	NE.	8	"	"	"	Bored	50	1,948	- 45	1,903	50	1,898	Glacial drift	Hard, iron	42	D, S	Insufficient for local needs.
9	NW.	10	"	"	"	Bored	102	1,990	- 3	1,987	102	1,888	Glacial sand	Hard, iron	41	D	Very small supply; another well 160 feet deep has small supply.
10	NE.	10	"	"	"	Bored	55	2,010	- 45	1,965	55	1,955	Glacial drift	Hard, slightly, "alkaline" iron	42	D, S	Sufficient for 20 head stock.
11	SW.	12	"	"	"	Drilled	100	1,995	- 25	1,970	100	1,895	Bearpaw sandstone	Soft, clear	41	D, S	Oversufficient for 10 head stock; 5 other wells, water too "alkaline" for use.
12	NE.	12	"	"	"	Dug	22	1,985	- 16	1,969	22	1,963	Glacial drift	Hard, clear	44		Farm deserted.
13	SE.	13	"	"	"	Dug	19	2,000	- 17	1,983	19	1,981	Glacial drift	Soft			
14	SE.	13	"	"	"	Dug	40	1,985	- 20	1,965	40	1,945	Glacial sand and gravel	Hard		D, S	More than sufficient for 15 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 HURON NO. 223, 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	NE.	13	22	3	3	Dug	32	1,983			32	1,951	Bearpaw sandstone				Very large supply.
16	NE.	13	"	"	"	Dug	26	1,983	- 21	1,962	23	1,960	Bearpaw sandstone	Fairly hard		D	Town of Tugaski well.
17	SW.	13	"	"	"	Dug	16	1,990	- 12	1,978	16	1,974	Glacial sand	Hard, slightly "alkaline"	43	D, S	Excellent supply; with two other well 12 feet and 18 feet deep, waters 80 head stock.
18	SE.	14	"	"	"	Dug	50	2,005	- 47	1,958	50	1,955	Glacial sand	Fairly hard	43	D, S	Sufficient for 25 head stock.
19	NE.	14	"	"	"	Bored	50	1,995	- 30	1,965	50	1,945	Glacial sand	Hard, slightly "alkaline"	44	D, S	Sufficient for 25 head stock.
20	SW.	14	"	"	"	Bored	65	2,000	- 57	1,943	65	1,935	Glacial sand	Hard, iron	41	D, S	Sufficient for 35 head stock.
21	NW.	14	"	"	"	Drilled	90	2,010	- 60	1,950	90	1,920	Glacial drift	Hard			Large supply.
22	SE.	15	"	"	"	Bored	65	2,030	- 62	1,968	65	1,965	Glacial sand	Hard	43	D, S	Sufficient for 25 head stock.
23	NE.	16	"	"	"		90	2,007	- 70	1,937	90	1,917	Glacial sand and gravel	Hard	42		Large supply.
24	NW.	16	"	"	"	Drilled	90	1,980			90	1,890	Glacial sand	Hard, iron	41	D, S	Sufficient for 5 head stock; fine sand aquifer limits supply by plugging.
25	NE.	17	"	"	"	Bored	72	1,968	- 60	1,908	72	1,896	Bearpaw sandstone	Soft	42	D, S	Large supply.
26	NW.	18	"	"	"	Drilled	312	1,918	- 8	1,926	312	1,606	Bearpaw sandstone	Soft	43	D, S	Sufficient for 15 head stock.
27	NW.	20	"	"	"	Bored	70	1,968	- 55	1,913	70	1,898	Glacial sand	Hard	41	D, S	Sufficient for local needs.
28	NE.	20	"	"	"	Bored	80	1,968	- 70	1,898	80	1,888	Glacial drift	Hard, iron	42	D, S	Sufficient for local needs.
29	SE.	21	"	"	"		100	2,010			100	1,910	Glacial sand				Fine sand aquifer chokes supply.
30	SE.	22	"	"	"	Dug	60	2,020	- 3	2,017	60	1,960	Glacial drift	Hard, clear	42	D, S	Sufficient for 20 head stock.
31	NE.	22	"	"	"	Dug	72	1,995	- 69	1,926	72	1,923	Glacial sand	Hard, clear	43	D, S	Sufficient for 35 head stock.
32	SW.	23	"	"	"	Bored	62	2,030	- 56	1,974	62	1,968	Glacial sand	Hard	42	D, S	Sufficient for 22 head stock.
33	SW.	24	"	"	"	Dug	39	2,000	- 36	1,964	39	1,961	Glacial sand	Hard, iron	42	D, S	Sufficient for 45 head stock.
34	SE.	24	"	"	"	Dug	30	1,982	- 15	1,967	30	1,952	Glacial sand	Hard		D, S	Sufficient for 35 head stock.
35	NE.	24	"	"	"	Bored	59	1,980	- 54	1,926	59	1,921	Glacial drift		43		Farm deserted.
36	SW.	25	"	"	"	Bored	29	1,980	- 17	1,963	29	1,951	Glacial sandy gravel	Hard, iron	42	D, S	Sufficient for 12 head stock.
37	SE.	27	"	"	"	Bored	100	2,035	- 85	1,950	100	1,935	Bearpaw sandstone	Soft	41	D, S	Sufficient for 30 head stock.
38	NE.	27	"	"	"	Bored	39	1,990	- 25	1,965	39	1,951	Glacial drift	Stagnant	43		Farm deserted.
39	SE.	29	"	"	"	Bored	80	1,965	- 75	1,890	80	1,885	Bearpaw sandstone	Soft	42	D, S	Sufficient for 10 head stock.
40	NE.	29	"	"	"	Drilled	86	1,968	- 72	1,896	86	1,882	Glacial sand and gravel	Hard, iron	42	D, S	
41	NW.	30	"	"	"	Bored	41	1,918	- 30	1,888	41	1,877	Glacial sand	Hard, iron	43	D, S	Sufficient for 15 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 HURON NO.223, 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
42	SE.	30	22	3	3	Dug	65	1,968	- 55	1,913	65	1,903	Glacial sand	Hard, "alkaline"	41	D, S	Sufficient for 40 head stock.
43	NE.	30	"	"	"	Dug	53	1,948	- 50	1,898	53	1,895	Bearpaw sandstone	Soft, clear	42	D, S	Sufficient for 10 head stock; second similar well.
44	SW.	32	"	"	"	Bored	86	1,953	- 70	1,883	86	1,867	Glacial sand	Hard, slightly "alkaline"	41	D, S	Sufficient for 30 head stock.
45	NE.	32	"	"	"	Dug	70	1,930?	- 62	1,868	70	1,860	Glacial sandstone	Hard		D, S	Good supply.
46	NE.	32	"	"	"	Bored	60	1,928	- 45	1,883	60	1,868	Bearpaw sandstone	Soft	42	D, S	
47	NW.	33	"	"	"	Bored	79	1,918	- 49	1,869	79	1,839	Glacial gravel	Fairly soft	42	D, S	Sufficient for 10 head stock.
48	SW.	35	"	"	"	Dug	26	1,970	- 24	1,946	26	1,944	Glacial drift	Stagnant	44		Farm deserted.
49	SE.	35	"	"	"	Bored	60	2,000	- 45	1,965	60	1,940	Glacial drift	Hard	41	D, S	Sufficient for local needs.
50	SW.	36	"	"	"	Bored	48	1,995	- 39	1,956	48	1,947	Glacial sand	Hard	43	D, S	Sufficient for local needs.
1	SE.	1	23	1	3	Dug	17	1,935	- 16	1,919	17	1,918	Glacial drift		43		Farm deserted.
2	SE.	5	"	"	"	Bored	17	1,875	- 14	1,861	17	1,858	Glacial drift	Hard	44		Farm deserted.
3	SE.	7	"	"	"	Dug	31	1,870	- 23	1,847	31	1,839	Glacial drift	Hard	42	D, S	Sufficient, with dugout for 25 head stock.
4	SW.	8	"	"	"	Bored	24	1,885	- 20	1,865	24	1,861	Glacial sand	Hard, slightly "alkaline"	43	D, S	Sufficient for 15 head stock.
5	NW.	8	"	"	"	Dug	16	1,890	- 13	1,877	16	1,874	Glacial drift	Hard		D	Sufficient for domestic use; another well used for stock.
6	NE.	9	2	"	"	Bored	67	1,920	- 19	1,901	67	1,853	Glacial drift	Hard, "alkaline"		S	Insufficient for local needs.
7	SE.	10	"	"	"	Dug	18	1,905	- 15	1,890	18	1,887	Glacial sand	Hard	42	D, S	Sufficient for 30 head stock.
8	SW.	16	"	"	"	Drilled	512	1,904	- 48	1,856	512	1,392	Belly River sandstone				Well now abandoned.
9	SW.	16	"	"	"	Bored	30	1,900	- 20	1,880	30	1,870	Glacial sand	Hard, "alkaline;" iron	44	S	Insufficient; stock will only drink this water when very thirsty.
10	SE.	18	"	"	"	Bored	32	1,880	- 9	1,871	32	1,848	Glacial drift	Hard	43		Farm deserted.
11	SW.	19	"	"	"	Bored	19	1,880	- 15	1,865	19	1,861	Glacial sandy clay	Stagnant	43		Farm deserted.
12	NW.	19	"	"	"	Bored	36	1,900	- 32	1,868	36	1,864	Glacial drift			S	Water hauled.
13	SE.	20	"	"	"	Bored	48	1,920	- 24	1,896	48	1,872	Glacial drift	Hard	43	D, S	Farm deserted; well used by neighbours.
14	NE.	20	"	"	"	Bored	36	1,925	- 19	1,906	36	1,889	Glacial drift	Hard, "alkaline"	42		Amos school well.
15	NW.	20	"	"	"	Bored	60	1,930	- 46	1,884	60	1,870	Glacial drift	Hard, "alkaline"	42	S	Insufficient for local needs.
16	SW.	21	"	"	"	Dug	15	1,920	- 6	1,914	15	1,905	Glacial drift		43	S	Farm deserted; seepage well.
17	SW.	24	"	"	"	Dug	14	1,995	- 10	1,985	14	1,981	Glacial sand	Hard		D, S	Good supply for 30 head stock; second well 14 feet deep for 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 HURON NO.223, 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
18	SE.	24	23	1	3	Dug	16	1,975	- 9	1,966	16	1,959	Glacial drift	Hard	43	D, S	Sufficient; second well for stock.
19	NW.	25	"	"	"	Dug	20	2,005	- 4	2,001	20	1,985	Glacial drift	Hard	45	D, S	Insufficient for stock in dry years.
20	NW.	27	"	"	"	Dug	13	1,965	- 3	1,962	13	1,952	Glacial drift	Hard	43		Farm deserted.
21	SW.	28	"	"	"	Bored	56	1,940	- 31	1,909	56	1,884	Glacial drift	Hard	42		Farm deserted.
22	NW.	29	"	"	"	Bored	37	1,925	- 20	1,905	37	1,888	Glacial drift	Hard	43		Farm deserted.
23	SW.	29	"	"	"	Dug	30	1,920	- 20	1,900	30	1,890	Glacial drift	Hard	42	D, S	
24	NE.	30	"	"	"	Bored	37	1,910	- 8	1,902	37	1,873	Glacial drift	Hard	42		Farm deserted.
25	NW.	30	"	"	"	Dug	12	1,940	- 8	1,932	12	1,928	Glacial sand	Soft		D, S	Sufficient; seepage well.
26	SE.	33	"	"	"	Dug	11	1,965	- 8	1,957	11	1,954	Glacial sand	Hard, "alkaline"	44	D, S	Sufficient for 15 head stock, 3 other similar wells.
27	SW.	34	"	"	"	Dug	10	1,990	- 3	1,987	10	1,980	Glacial drift	Hard	43	D, S	Sufficient for local needs.
28	NE.	34	"	"	"	Dug	8	2,010	- 2	2,008	8	2,002	Glacial drift				Farm deserted; seepage well.
29	SW.	35	"	"	"	Bored	66	1,985	- 15	1,970	66	1,919	Glacial drift	Hard		D, S	Sufficient; seepage well.
30	NE.	36	"	"	"	Dug.	28	2,025	- 2	2,023	28	1,997	Glacial drift	Soft	44	S	Only sufficient for 17 head stock; water hauled for house.
1	SE.	4	23	2	3	Bored	23	1,870	- 22	1,848	23	1,847	Glacial clay	Hard	43	N	Well has partly caved in.
2	NW.	4	"	"	"	Dug	22	1,870	- 16	1,854	22	1,848	Glacial sand	Hard	42		
3	SE.	5	"	"	"	Dug	27	1,870	- 23	1,847	27	1,843	Glacial sand	Hard, "alkaline", laxative	43	S	Sufficient for 10 head stock; another well 17 feet deep for house.
4	SW.	5	"	"	"	Dug	18	1,895	- 10	1,885	18	1,877	Glacial clay	Hard	42	D, S	Sufficient for 6 head stock.
5	NE.	6	"	"	"	Dug	18	1,895	- 10	1,885	18	1,877	Glacial drift	Hard	41		Farm deserted.
6	SW.	6	"	"	"	Bored	21	1,870	- 17	1,853	21	1,849	Glacial sandy clay	Hard	43	D, S	Sufficient for 10 head stock.
7	NE.	7	"	"	"	Dug	13	1,880	- 9	1,871	13	1,867	Glacial clay	Hard	43		Farm deserted.
8	NW.	8	"	"	"	Dug	12	1,885	- 9	1,876	12	1,873	Glacial clay	Hard	43		Farm deserted.
9	NW.	10	"	"	"	Dug	12	1,840	- 6	1,834	12	1,828	Glacial drift		44		Farm deserted.
10	SW.	18	"	"	"	Dug	10	1,860	- 8	1,852	10	1,850	Glacial clay	Hard	42	D	Sufficient supply school well.
11	SW.	19	"	"	"	Dug	26	1,860					Glacial sand	Not very hard			Large supply; farm deserted.
12	SW.	19	"	"	"	Bored	65	1,860	- 52	1,808	65	1,795	Glacial drift	Hard	43		Farm deserted.
13	NW.	20	"	"	"	Bored	75	1,852	- 58	1,794	75	1,777	Glacial drift	Hard	41	D, S	Sufficient for 15 head stock.
14	SW.	24	"	"	"	Dug	16	1,875	- 6	1,869	16	1,859	Glacial clay	Hard	43	D	Sufficient for house only.

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

WELL RECORDS—Rural Municipality of HURON NO. 223, 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	NW.	24	23	2	3	Bored	24	1,894	- 14	1,880	24	1,870	Glacial clay	Hard, salty?		N	Water not usable by men or stock.
16	SW.	25	"	"	"	Dug	28	1,895	- 8	1,887	28	1,867	Glacial sandy gravel	Hard	42	D	Domestic supply only; another well 100 feet deep water very "alkaline; dugout for stock.
17	SW.	26	"	"	"	Bored	27	1,870	- 22	1,848	27	1,843	Glacial drift	Hard, "alkaline"	42	S	Water for house hauled; stock use slough water when available.
18	SE.	27	"	"	"	Bored	24	1,800	- 14	1,786	24	1,776	Glacial clay	Soft	43	D, S	Large supply; another bored well 25 feet deep not used, also spring.
19	NW.	27	"	"	"	Spring		1,840	0	1,840			Glacial sand	Hard	41	D, S	Sufficient supply; flows 8 gallons a minute.
20	NE.	32	"	"	"	Dug	35	1,860	- 32	1,828	35	1,825	Glacial clay	Hard, "alkaline"	43	D, S	Insufficient supply.
21	NW.	33	"	"	"	Bored	50	1,898	- 38	1,860	50	1,848	Glacial drift	Hard	43	N	
22	SE.	34	"	"	"	Bored	54	1,880	- 24	1,856	54	1,826	Glacial drift	Hard	42	D, S	Sufficient supply; another well 10 feet deep, 8 feet water, used for garden.
23	SW.	34	"	"	"	Bored	34	1,895	- 10	1,885	34	1,861	Glacial drift	Hard	42	D, S	
24	SW.	34	"	"	"	Bored	43	1,904	- 25	1,879	43	1,861	Glacial drift	Hard	43	N	Stagnant water.
25	NW.	34	"	"	"	Bored	67	1,900	- 37	1,863	67	1,833	Glacial drift	Hard, iron	42	D, S	Sufficient supply.
26	NE.	36	"	"	"	Bored	49	1,940	- 21	1,919	49	1,891	Glacial drift	Hard	41		Farm deserted.
27	NW.	36	"	"	"	Bored	102	1,920	- 72	1,848	102	1,818	Glacial gravel	Hard, slightly "alkaline" iron	41	D, S	Sufficient for 15 head stock; another well 86 feet deep, water 20 feet from surface.
1	SE.	4	23	3	3	Dug	12	1,858	- 10	1,848	12	1,846	Glacial gravel	Hard	43	D, S	Sufficient supply; several wells up to 85 feet, good water but caved in. Spring on NW.3 good supply.
2	NE.	4	"	"	"	Dug	15	1,885	- 8	1,877	15	1,870	Glacial clay	Hard, "alkaline"	43	S	Insufficient supply. Spring supplies house.
3	SW.	4	"	"	"	Drilled	450	1,920			450	1,470	Bearpaw sandstone				
4	NW.	6	"	"	"	Dug	20	1,906	- 10	1,896	20	1,886	Glacial drift	Hard	44	D, S	Sufficient supply.
5	SW.	7	"	"	"	Dug	30	1,916	- 25	1,891	30	1,886	Glacial sand	Hard, iron	43	D, S	Sufficient supply.
6	SW.	8	"	"	"	Drilled	60	1,940			60	1,880	Glacial drift	Hard, iron	42	D, S	Sufficient for 12 head stock.
7	SE.	13	"	"	"	Dug	18	1,860	- 15	1,845	18	1,842	Glacial sand	Hard	42	D, S	Sufficient supply; 1 other well 20 feet deep, not used now.
8	SW.	13	"	"	"	Dug	16	1,858	- 3	1,855	16	1,842	Glacial quicksand	Hard, "alkaline"	43	S	Sufficient supply; another well 12 feet deep for house.
9	SW.	14	"	"	"	Dug	14	1,850	- 7	1,843	14	1,836	Glacial drift	Soft	44	D	Only sufficient for house; another well used for stock.
10	NW.	14	"	"	"	Bored	22	1,858	- 10	1,848	22	1,836	Glacial drift	Hard	42		Farm deserted.
11	SE.	16	"	"	"	Bored	30	1,897	- 24	1,873	30	1,867	Glacial sand	Hard		S	No house near well.
12	NE.	16	"	"	"	Dug	14	1,775	- 10	1,765	14	1,761	Glacial sand	Hard, "alkaline"	43	D, S	Sufficient supply; another well 21 feet deep, good supply.
13	NW.	17	"	"	"	Dug	34	1,895	- 29	1,866	34	1,861	Glacial drift	Hard	43	D, S	Sufficient supply; another well in use.

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

WELL RECORDS—Rural Municipality of HURON NO. 223, 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
14	NE.	18	23	3	3	Dug	21	1,900					Glacial sand			N	Farm deserted; well partly,caved in.
15	SW.	18	"	"	"	Dug	27	1,930	- 26	1,904	27	1,903	Glacial sandy clay	Hard	44		Farm deserted.
16	NE.	23	"	"	"	Dug	10	1,780	- 4	1,776	10	1,770	Glacial drift	Soft	41	D, S	Large supply; seepage from creek.
17	SW.	24	"	"	"	Bored	50	1,895	- 45	1,850	50	1,845	Glacial drift	Hard,"alkaline"	41	S	Insufficient supply; another smilar well not used; water hauled.
1	NE.	2	24	1	3	Dug	22	2,055	- 12	2,043	22	2,033	Glacial drift	Hard	43	N	Farm deserted; another well in slough.
2	NE.	9	"	"	"	Drilled	225	2,010	-125	1,885	225	1,785	Glacial drift	Hard,iron	43	D, S	Oversufficient supply; not good quality.
3	SW.	10	"	"	"	Drilled	612	2,005	-200	1,805	612	1,393	Belly River sandstone	Hard,salty, laxative	45	S	Very large supply; another well 20 feet deep for house.
4	NW.	10	"	"	"	Drilled	300	2,030	-240	1,790	300	1,730	Glacial drift	Hard,"alkaline"	42	S	Very large supply, water poor quality; water hauled for house.
5	SE.	10	"	"	"	Dug	11	2,023	- 2	2,021	11	2,012	Glacial gravel	Soft	44	D, S	Sufficiont supply.
6	NE.	10	"	"	"	Bored	38	2,060	- 18	2,042	38	2,022	Glacial sand	Soft	42	D, S	Sufficient for 10 head stock; seepage well; two other similar wells.
7	NE.	11	"	"	"	Dug	16	2,055	- 13	2,042	16	2,039	Glacial sand and gravel	Soft	43	D, S	Sufficient supply in 1935; also 6 dry holes from 50 to 100 feet.
8	SW.	12	"	"	"	Dug	19	2,060	- 4	2,056	19	2,041	Glacial drift	Soft ?	44		Farm deserted.
9	NW.	12	"	"	"	Bored	100	2,076	- 70	2,006	100	1,976	Glacial drift	Hard,iron	42	D, S	Sufficient for 10 head stock.
10	SW.	13	"	"	"	Bored	52	2,093	- 30	2,063	52	2,041	Glacial sand	Hard	43	S	Almost sufficient for stock; domestic supply hauled.
11	SE.	14	"	"	"	Bored	23	2,055	- 7	2,048	23	2,032	Glacial drift		44		Farm deserted.
12	SE.	17	"	"	"	Bored	130	2,023	-105	1,918	130	1,893	Glacial drift	Hard,stagnant	43		Farm deserted.
13	SW.	18	"	"	"	Dug	43	1,986	- 20	1,966	43	1,943	Glacial sand	Hard,laxativealkaline"	43	S	Large supply of water,poor quality; water for house hauled.
14	NW.	18	"	"	"	Bored	40	1,995	- 25	1,970	40	1,955	Glacial quicksand	Hard,iron, good	44	D, S	Sufficient for 12 head stock.
15	NW.	19	"	"	"	Bored	60	1,997	- 25	1,972	60	1,937	Glacial sand	Hard	42	D, S	Sufficient for 14 head stock.
16	SW.	20	"	"	"	Bored	106	2,000	- 76	1,924	106	1,894	Glacial drift	Hard	43		Farm deserted.
17	NW.	20	"	"	"	Bored	56	2,020	- 16	2,004	56	1,964	Glacial drift	Hard	43		Farm deserted.
18	SW.	22	"	"	"	Bored	19	2,070	- 10	2,060	19	2,051	Glacial drift	Hard	44	D	Barely sufficient for house; spring used for stock.
19	SE.	22	"	"	"	Bored	28	2,080	- 20	2,060	28	2,052	Glacial drift	Hard	43		Farm deserted.
20	NW.	24	"	"	"	Bored	40	2,095	- 25	2,070	40	2,055	Glacial drift	Hard	43	D, S	Sufficient for 35 head stock.
21	SE.	24	"	"	"	Bored	50	2,130	- 38	2,092	50	2,080	Glacial drift	Hard	44	D, S	Just sufficient for 15 horses; another similar well,both caving in.
22	NE.	24	"	"	"	Bored	30	2,095	- 16	2,079	30	2,065	Glacial sand	Hard,iron	43	D, S	Sufficiont for 30 head stock.
23	NE.	25	"	"	"	Bored	40	2,100	- 38	2,062	40	2,060	Glacial drift	Hard	43	D	Very small supply; water for house hauled; several dry holes.

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

WELL RECORDS—Rural Municipality of HURON NO. 223, 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
24	NE.	30	24	1	3	Bored	20	2,045	- 18	2,027	20	2,025	Glacial drift	Hard	44	S	Farm deserted.
25	SW.	30	"	"	"	Dug	22	2,035	- 20	2,015	22	2,013	Glacial sand	Hard	42	D, S	Supply sufficient in 1935.
26	SW.	32	"	"	"	Dug	25	2,050	- 16	2,034	25	2,025	Glacial sand	Hard, slightly "alkaline"	42	D, S	Sufficient for 20 head stock.
27	NW.	32	"	"	"	Dug	28	2,065	- 27	2,038	28	2,037	Glacial drift	Hard	43		Farm deserted.
28	NE.	33	"	"	"	Bored	85	2,078	- 35	2,043	85	1,993	Glacial sand	Hard, iron, laxative, "alkaline"	42	S	Waters 15 head stock; haul drinking water.
29	NE.	34	"	"	"	Bored	14	2,085	- 6	2,079	14	2,071	Glacial drift	Soft	47	D	Seepage well, only enough for house.
30	SW.	34	"	"	"	Bored	32	2,084	- 22	2,062	32	2,052	Glacial gravel	Medium soft	42	D, S	Oversufficient supply for 10 head stock.
31	NW.	35	"	"	"	Bored	44	2,084	- 31	2,053	44	2,040	Glacial drift	Hard, slightly laxative	42	D, S	Good supply.
32	NW.	36	"	"	"	Bored	97	2,098	- 94	2,004	97	2,001	Glacial drift	Hard, slightly "alkaline"	43	D, S	Sufficient for 12 head stock.
1	SE.	2	24	2	3	Bored	80	1,900	- 55	1,845	80	1,820	Glacial sand, clay	Hard, slightly "alkaline"	42	D, S	Sufficient for 25 head stock.
2	NE.	2	"	"	"	Bored	80	1,944	- 50	1,894	80	1,864	Glacial sand	Hard, "alkaline"	42	D, S	Supply sufficient; another well 14 feet deep, good water.
3	SW.	2	"	"	"	Bored	70	1,910	- 45	1,865	70	1,840	Glacial drift	Hard, "alkaline"	41	S	Insufficient supply.
4	SW.	2	"	"	"	Dug	10	1,915	- 8	1,907	10	1,905	Glacial drift	Hard	42		Seepage well used for house.
5	NW.	3	"	"	"	Dug	62	1,890	- 15	1,875	62	1,828	Glacial sand	Hard, iron	41	D, S	Waters 80 head stock; 7 other seepage wells from 16 to 28 feet deep.
6	SW.	4	"	"	"	Bored	56	1,875	- 49	1,826	56	1,819	Glacial drift	Hard	40	D	Sufficient supply; another seepage well 15 feet deep for stock.
7	SE.	9	"	"	"	Dug	12	1,915	- 5	1,910	12	1,903	Glacial sand	Hard, slightly "alkaline"	45	D, S	Sufficient supply.
8	SW.	10	"	"	"	Dug	14	1,924	- 9	1,915	14	1,910	Glacial quicksand	Hard	43	D, S	Sufficient for 13 head stock.
9	NE.	10	"	"	"	Bored	76	1,935	- 55	1,880	76	1,859	Glacial gravel	Hard, "alkaline"		D, S	Sufficient for 30 head stock.
10	SW.	12	"	"	"	Bored	15	1,940	- 1	1,939	15	1,925	Glacial quicksand	Soft	46	D, S	Sufficient for 11 head stock.
11	NW.	12	"	"	"	Bored	90	1,950	- 85	1,865	90	1,860	Glacial sand	Hard	41		Farm deserted.
12	SE.	14	"	"	"	Bored	90	1,945	- 81	1,864	90	1,855	Glacial gravel	Hard	45	D, S	Sufficient for 30 head stock.
13	NE.	14	"	"	"	Bored	80	1,958	- 60	1,898	80	1,878	Glacial sand	Hard, "alkaline"	43		Farm deserted.
14	SW.	14	"	"	"	Bored	60	1,925	- 57	1,868	60	1,865	Glacial sand	Hard	42	S	Very small supply.
15	SW.	14	"	"	"	Bored	22	1,913	- 6	1,907			Glacial gravel	Soft	42	D, S	Large supply.
16	NW.	14	"	"	"	Dug	14	1,945	- 8	1,937	14	1,931	Glacial sand	Hard	43	D, S	Sufficient for 6 head stock.
17	SE.	16	"	"	"	Bored	67	1,925	- 55	1,870	67	1,858	Glacial sand and gravel	Hard, slightly "alkaline"	42	D, S	Sufficient for 25 head stock.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of HURON NO. 223, 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
18	NE.	16	24	2	3	Bored	40	1,925	- 25	1,900	40	1,885	Glacial drift	Hard	43	D, S	Sufficient for 30 head stock; another well 35 feet deep with 25 feet of water.
19	NE.	20	"	"	"	Bored	80	1,900	- 40	1,860	80	1,820	Glacial sand, clay	Soft	43	N	Farm deserted, was large supply.
20	NE.	21	"	"	"	Bored	20	1,919	- 10	1,909	20	1,889	Glacial drift	Hard, slightly "alkaline"	43	D, S	Sufficient for 21 head stock; seepage well.
21	NW.	22	"	"	"	Dug	5	1,935	- 4	1,931	5	1,930	Glacial drift	Hard	42		Farm deserted; seepage well partly caved in.
22	SW.	24	"	"	"	Bored	63	1,980	- 48	1,932	63	1,917	Glacial sand	Hard	42		Farm deserted.
23	SE.	24	"	"	"	Bored	88	1,995	- 20	1,975	88	1,907	Glacial coarse sand	Hard, slightly "alkaline" iron	43	D, S	Sufficient for 30 head stock.
24	SE.	25	"	"	"	Dug	8	2,005	- 6	1,999	8	1,997	Glacial drift	Hard, iron "alkaline"		S	Could be used for house. Good spring on same quarter section.
25	NW.	25	"	"	"	Bored	80	2,000	- 20	1,980	80	1,920	Glacial drift	Hard, clear,	43	N	Farm deserted.
26	SW.	26	"	"	"	Bored	77	1,975	- 31	1,944	77	1,898	Glacial drift	Hard	43	S	Good supply for stock; water for house hauled.
27	SE.	30	"	"	"	Bored	90	1,908	- 50	1,858	90	1,818	Glacial drift	Hard, "alkaline"	43	S	Only used in winter; another well 11 feet deep used for house.
28	NW.	31	"	"	"	Bored	26	1,918	- 23	1,895	26	1,892	Glacial sand	Hard	42	S	Waters 22 head stock; another well 12 feet deep for house, water soft.
29	SW.	32	"	"	"	Bored	96	1,925	- 36	1,889	96	1,829	Glacial sand	Hard, slightly "alkaline"	44	D, S	Sufficient for 40 head stock.
30	NE.	36	"	"	"	Bored	50	2,060	- 30	2,030	50	2,010	Glacial sand	Fairly soft	43	D, S	Sufficient for 13 head stock.
1	NW.	19	24	3	3	Dug	10	1,875	- 8	1,867	10	1,865	Glacial sand	Soft, clear		D, S	
2	NE.	28	"	"	"	Dug	14	1,865	- 10	1,855	14	1,851	Glacial sand	Hard, clear	42	D, S	Sufficient for 35 head stock; other well 13 feet deep, good supply of good water.
3	NW.	29	"	"	"	Dug	9	1,865	- 5	1,860	9	1,856	Glacial drift	Hard, "alkaline"	42	S	Sufficient for 20 head stock; another well 20feet deep, good supply of good water.
4	SW.	31	"	"	"	Bored	19	1,885	- 12	1,873	19	1,866	Glacial sand				Farm deserted.
5	NW.	31	"	"	"	Bored	13	1,895	- 9	1,886	13	1,882	Glacial sand	Hard	44		Farm deserted.
6	SW.	32	"	"	"	Dug	16	1,895	- 12	1,883	16	1,879	Glacial sand	Hard	42	D, S	Sufficient for 16 head stock; similar well not used now.
7	NW.	32	"	"	"	Dug	19	1,895	- 17	1,878	19	1,876	Glacial sand	Hard	42	D, S	Sufficient for 10 head stock.
8	SE.	32	"	"	"	Bored	17	1,860	- 14	1,846	17	1,843	Glacial sand	Hard	42	D, S	Sufficient for 4 head stock; another 14-foot well, good supply.
9	SW.	35	"	"	"	Bored	28	1,868	- 19	1,849	28	1,840	Glacial sand	Soft	43	D	Only sufficient for house use.
10	SE.	36	"	"	"	Bored	37	1,880	- 22	1,858	37	1,843	Glacial sand	Hard, iron, "alkaline"	43	S	Oversufficient for 18 head stock; 1 other well 18 feet deep for house, small supply of water.
11	NE.	36	"	"	"	Bored	40	1,900	- 4	1,896	40	1,860	Glacial quicksand	Hard, good	42	D, S	Oversufficient for 20 head stock.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of HURON NO. 223 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
	SE	24	23	3	3		60	1850	-10	1840	50	1800	Glacial gravel	Fresh			No other information.

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(#) Sample taken for analysis.