CANADA
DEPARTMENT OF MINES
AND
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WATER SUPPLY PAPER No. 192

PRELIMINARY REPORT

GROUND-WATER RESOURCES OF THE RURAL MUNICIPALITY OF COTE NO. 271 SASKATCHEWAN

By

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

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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 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 age.

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 Cote, No. 271, comprises an area of approximately 372 square miles in southeastern Saskatchewan. It consists of nine full townships, described as townships 28, 29, and 30, ranges 30, 31 and 32; three fractional townships, described as townships 28, 29, and 30, range 33; and those parts of township 26, range 30, and townships 27, ranges 30 and 31, lying east and north of Assiniboine river; all of which are west of the First meridian. The town of Kamsack, on the Canadian National railway, is located in the northwestern corner of the municipality, 18 miles west of the Manitoba border and 160 miles north of the International Boundary line.

Assiniboine river enters the municipality in the northwestern corner, flows in a southeasterly direction, and forms the southern border of the municipality in the southeastern corner. Its valley is from $\frac{1}{2}$ mile to 2 miles wide and from 60 to 300 feet deep, the depth and width gradually increasing toward the southeast. The river channel ranges in elevation from 1,500 feet in the northwestern corner of the municipality to 1,400 feet in the southeastern corner, but the elevation of the ground surface above the valley rises from approximately 1,500 to 1,750 feet above sea-level in the same direction. From the Assiniboine, the elevation rises to the southwest, attaining 1,645 feet in the southwestern corner. To the northeast of the river the elevation rises to approximately 1,800 feet in a distance of a few miles, beyond which the land surface rises more rapidly, attaining approximately 2,200 feet above sea-level in Duck Mountain Forest Reserve. Assiniboine river has a well-developed tributary drainage system in this municipality; Kamsack creek and its tributaries in the west-central part, Little Boggy creek in the east-central part, and numerous other smaller creeks in the southern

townships, drain into this river. Whitesand river joins Assiniboine river on the west, in the northwestern corner of the municipality approximately 1 mile west of Kamsack. A number of lakes, the largest of which is Madge lake, occur in the northeastern corner of the municipality.

The municipality is roughly divisible into three physiographic areas: a flat or gently sloping area in the northwestern corner that marks the site of the glacial Lake Assiniboine; a rough hilly area in the northeastern corner that is mantled by moraine; and gently undulating areas in the south that are mantled by glacial till or boulder clay. Small moraine-covered areas also occur in the southwest and south-central parts of the municipality.

The glacial Lake Assiniboine extended into the northwestern corner of the municipality, and covered the greater part of townships 29 and 30, ranges 32 and 33. Deposits of glacial lake sands, silts, and clays cover this area. The glacial lake sands are from a few feet to 28 feet thick, and contain layers of bright yellow, silty clay. In the vicinity of the town of Kamsack, and of Kamsack creek, heavy, dark lake clays cover a considerable area. Moraine covers much of the northeastern half of the municipality and its southwestern corner. The moraine in the northeastern corner is part of the large moraine that forms Duck mountains, in Manitoba. The area is very rough, and is characterized by steep knolls and undrained depressions. It is heavily wooded with poplar, birch, and a few spruce, and township 30, range 30, is part of Duck Mountain Forest Reserve No. 2. Cote Indian Reservation No. 64 occupies parts of townships 30, ranges 31 and 32.

Most of the southeastern half of the municipality and much of the northeastern half are mantled by glacial till or boulder clay. These areas are thickly settled as the soil is quite

suitable for cultivation. The glacial till in general consists of: 2 to 4 feet of loamy top soil; 4 to 15 feet of yellow or weathered boulder clay containing scattered pockets of sand and gravel; discontinuous beds of sand and gravel 2 to 10 feet thick; and unweathered blue clay that extends to bedrock. Many thin layers of sand and gravel occur at various elevations in the blue clay.

Water-bearing Horizons in the Unconsolidated Deposits

Few wells that yield abundant supplies have been dug in the glacial lake deposits in the northwestern corner of the municipality. Several wells sunk into the thicker deposits of glacial lake sands yield sufficient water for 30 to 100 head of stock in years of normal rainfall, but during drought periods, such as that experienced from 1930 to 1934, the supply is greatly reduced. The water is moderately hard and usable for all farm purposes. A few wells sunk to the base of the glacial lake clays tap pockets of sand of small areal extent which yield sufficient water for 10 to 25 head of stock. Most of the wells that have been dug in the lake clays, however, are dry or yield small, intermittent supplies of water. The water is very highly mineralized and is usually not suitable for drinking or household purposes. It is generally termed "alkaline", and acts as a strong laxative on those not accustomed to the use of highly mineralized water.

The principal and uppermost water-bearing horizon in the moraine and glacial till-covered areas in this municipality is formed by pockets of sand and gravel in the yellow boulder clay, and by discontinuous beds of sand and gravel that directly underlie the yellow clay. Wells tapping this horizon are from 8 to 30 feet deep, and they are located in all parts of the municipality that are mantled by moraine and glacial till, except township 30, range 30. A few wells that tap pockets or beds of sand and gravel of large areal extent yield abundant supplies of

water, which in some wells is under slight hydrostatic pressure. The water is moderately hard and usable for domestic and other farm purposes. These wells generally yield adquate supplies of water for 50 to 100 head of stock. They are located mainly in townships 28, ranges 30 and 31, and in the southeastern sections of township 29, range 31. Most wells that tap this upper water-bearing horizon, however, yield supplies that are sufficient only for a few head of stock, and in many sections from two to five wells are used to obtain adequate supplies of water for local needs. The water from wells that yield small supplies is more highly mineralized than that from wells yielding large supplies, but with few exceptions it is usable for all farm purposes. In some sections numerous dry holes have been sunk before water was located. It is advisable to locate the water-bearing sands and gravels by means of a small hand auger before digging a well.

Many attempts have been made to locate water at depths of 40 to 125 feet in the glacial drift. In most townships of the municipality a few wells encounter thin layers of sand in the blue boulder clay from which supplies of water are obtained. Most of the wells are from 40 to 60 feet deep and are located principally in townships 29, ranges 30, 31, and 32. The water is usually very hard and "alkaline", but that from most of the wells is used for domestic purposes. It has a laxative effect on those not accustomed to the use of highly mineralized water. The hydrostatic pressure varies with the individual wells, but usually the water rises from 15 to 30 feet below the surface.

The area outlined by the "A" boundary line on Figure 1 of the accompanying map is the northern extension of an area in the rural municipality of Calder, No. 241, in which a number of wells obtain small supplies of water from sand and gravel aquifers at depths of 100 to 150 feet. The sand beds are exceptionally thick, and in the municipality of Cote are at least 65 feet in

thickness. Only small quantities of water are obtained as the sand beds are drained by numerous springs on the slopes of Assiniboine valley. The water is moderately hard and usable for all farm purposes, but the yield from the individual wells is very small and farmers are forced to haul from the springs in the valley. It is not advisable to drill within this area if large supplies of water are required.

Many residents of this municipality are unable to obtain adequate supplies of water from wells, but they can usually obtain water from springs or from neighbouring wells yielding abundant supplies. The greatest difficulty in obtaining water is experienced in the glacial lake clay-covered area. The many creeks and Assiniboine river are used by some farmers for watering stock. Rain water, stored in cisterns, and ice are often used for domestic needs. Dugouts or dams can be employed in most sections to collect and store surface water for stock use.

Water-bearing Horizons in the Bedrock

The Marine Shale series underlies the glacial drift throughout the municipality. It outcrops at the junction of Assiniboine and Whitesand rivers. In the southern part of township 30, range 32, it is encountered in a number of wells at depths of 14 to 66 feet, or at an average elevation of 1,400 feet above sea-level. Three attempts were made to locate water in the shale, and wells have been drilled to depths of 500 to 912 feet without obtaining water. The shale has a thickness of at least 872 feet, and it is useless to drill into these shale beds in search of water in this part of Saskatchewan.

GROUND WATER CONDITIONS BY TOWNSHIPS

Township 26, Range 30

Only that part of this township lying north of Assiniboine river, or sections 35 and 36, and parts of 26, 33, and 34, is in the municipality of Cote. This 3½ square mile area includes the flood-plain and valley slopes of Assiniboine river, and the area is unsettled. The flood-plain is mantled by Recent sands and silts, but boulder clay or glacial till covers the valley slopes. The area is thickly wooded with poplar and willow.

Water for stock and domestic purposes can be obtained from numerous springs located along Assiniboine valley and its tributaries. The water is moderately hard and usable for all purposes, including irrigation.

Township 27, Range 30

That part of the township lying to the north of Assiniboine river, totalling 32 square miles, is included in the municipality of Cote. The Assiniboine valley is at least 250 feet deep, and its slopes are quite steep. A deep tributary valley extends in a northerly direction through the centre of the township. With the exception of Recent deposits of sand and silts on the flood-plains of the valleys, the township is mantled by glacial till or boulder clay. Boulders are thickly strewn in sections in the south-central part, and the soil in this area is very sandy and unsuitable for cultivation.

Few good wells exist in the township. Most of the water is derived from wells that tap pockets of sand and gravel in the weathered zone of the drift. These deposits do not form a continuous water-bearing horizon, as holes have failed to strike sand and gravel aquifers. A few of the producing wells tap fine sand aquifers and yield sufficient water for 30 to 40 head of stock, but most of

them yield small or intermittent supplies that are adequate only for a few head of stock. In some sections two or more shallow wells are necessary in order to obtain sufficient water for local needs. The water from these shallow wells is moderately hard and usable for all farm purposes. With further prospecting, it is possible that other producing wells would be located. It is advisable to locate the water-bearing deposits with a small hand auger before digging a well.

Several attempts have been made to locate water at depths of 35 to 60 feet. Three wells have encountered thin layers of sand in the blue clay from which small supplies of water are obtained. Six holes were dry or obtained only small seepages of water. The water is very highly mineralized due to the proximity of the unweathered blue clay, but it can be used for drinking by those who are accustomed to the use of such water. These wells are a very poor source of supply.

In the central sections of the township some difficulty has been experienced in obtaining supplies of water. Several holes have been dug or drilled to depths of 100 to 115 feet, or to an elevation of 1,640 feet above sea-level. The wells strike sand below blue clay at a depth of 50 feet, and are still in fine sand at their bases. Very small supplies of water are obtained, and none of the wells yields sufficient water for local needs. The water is moderately hard and usable for all domestic purposes. These wells lie within the area bounded by the "A" boundary line. The numerous springs that occur along Assiniboine river are thought to drain the thick sand bed that forms the aquifer.

If water is not located at shallow depth, it is advisable to excavate dugouts to retain surface water for stock use rather than to drill deep wells.

Township 27, Range 31

Only parts of four sections in this township occur in the municipality of Coto. This area includes the flood-plain of the river and the steep slopes of the valley. Water in this $2\frac{1}{2}$ square mile area can be obtained from Assiniboine river, and from springs that are located on the valley slopes. The flood-plain is suitable for agricultural purposes, especially in section 36. Shallow wells in this area would possibly encounter water-bearing deposits.

Township 28, Range 30

The ground surface throughout most of this township is rolling, but in the east-central and west-central parts it becomes fairly rough. Two creeks flowing in a southerly direction drain the township. The valley of the eastern one starts in section 15, and is from 15 to 30 feet deep; that of the western creek starts in section 32, and is from 30 to 60 feet deep and approximately $\frac{1}{4}$ mile wide. The floors of the valleys are flat and very swampy. A small lake is situated in sections 24 and 25, and many small sloughs occur in other sections of the township. Many bluffs of small poplar and willow are scattered throughout the township. The elevation rises from 1,680 feet in the southwestern corner to approximately 1,900 feet in the northeastern corner, and to 1,826 feet above sea-level at Togo in the southeastern corner of the township.

With the exception of all or parts of sections 13, 24, 25, 26, 27, and 35, and parts of sections 18, 19, and 30, which are covered by moraine, the township is covered by glacial till or boulder clay. The deposits of moraine and glacial till are here very similar in composition, and in general consist of 1 to 3 feet of sandy top soil; 16 to 20 feet of yellow clay; discontinuous beds of sand and gravel of varying thickness; and black clay or blue

bouldor clay. It is possiblo that at loast two till sheets occur in this area. Tho uppermost is approximatoly 60 foot thick, and consists of yollow or oxidizod bouldor clay. A 92-foot dry holo, in the NW. $\frac{1}{4}$, soction 25, has the following log: 16 feet of yellow clay; 4 inches gravol; 30 foot of bluo clay; 6 foot of black clay; 8 foot of hard clay containing troo trunks and branches; and fine-textured, bluo-black clay.

Water supplies aro obtained from crooks, lakes, springs, sloughs, and wells. In most of tho valleys and ravines small creeks flow intermittontly. Whon the crooks aro not running shallow wells dug in the floors of the valleys yield an abundant supply of water. Many springs, some of which flow throughout the yoar, are situated along some of the valleys. Some of the springs have been dug out and yield an abundant supply of water.

Most of the wells aro from 10 to 30 feet deep, and tap pockets of sand and gravol that are scattered throughout the yellow clay or occur as discontinuous beds of sand and gravel lying between the yellow and bluo bouldor clays. A few wells tap pockets or beds of sand and gravol of largo areal extent, and yield a supply of water sufficient for 50 to 100 head of stock. Tho water is moderately hard and usable for domestic and other farm purposes. Most of these wells yield water under slight hydrostatic pressuro. Many of the wells yield smaller supplies of water which aro usually adequate for 8 to 20 head of stock. In some instances the supply has to be augmented by using a second well, or sloughs, crooks, and springs. Tho water from wells yielding small supplios is more highly mineralized, but is usable for all farm purposes, including the irrigation of small gardens. In a few sections numerous dry holes were sunk before a bed of water-bearing sand or gravel was located. It is advisable to locate the deposits by means of a test auger bofore digging.

A second discontinuous water-bearing horizon occurs at depths of 35 to 77 feet. The aquifer is formed by beds of sand that lie within the blue or dark-coloured clays. The water is very highly mineralized, often being "alkaline", and that from some wells is not usable for household purposes. A few of the wells yield an abundant supply of water, sufficient for 70 to 100 head of stock, but most of them yield smaller supplies, sufficient for 10 to 30 head of stock. The water in these wells is under hydrostatic pressure.

Three wells from 80 to 120 feet deep were sunk, and the 120-foot well in the NE. $\frac{1}{4}$, section 23, was the only one that encountered water. It tapped a bed of grey sand at an elevation of 1,786 feet above sea-level. The water is highly mineralized and contains a considerable amount of iron that settles out as a reddish sediment of iron oxide when the water comes in contact with the air. It is used for domestic and stock purposes, and for the irrigation of small gardens, although it is not satisfactory for the latter use. The water is under sufficient hydrostatic pressure to rise to a point 63 feet below the surface, where it maintains a constant level. The well yields sufficient water for 40 head of stock. It is possible that other holes to similar depths in other sections would encounter water-bearing beds. Sufficient water for local needs, however, can usually be obtained by using two or more shallow wells. The supply from wells can be supplemented by the use of dams or dugouts to collect and retain surface water.

Township 28, Range 31

The Assiniboine valley runs from section 33 in a south-easterly direction to section 2. The valley is from 1 to 2 miles wide and the slopes rise abruptly for 150 to 200 feet. The river meanders through a wide flood-plain which is mantled by yellow and black silts. The elevation decreases from 1,680 feet in the

east, 1,550 feet in the northwestern part, and 1,600 feet in the western part, to 1,400 feet above sea-level at river-level. Much of the area to the east of Assiniboine river is mantled by moraine, and the ground surface is very rough and characterized by knolls and undrained depressions. The area to the west of the valley is slightly rolling and is covered by glacial till or boulder clay. The township is well wooded with small poplar and willow.

Farmers located in Assiniboine valley or near its tributary valleys obtain water for stock from the river or creeks, and water for household purposes from springs or shallow wells. Many of the springs flow continuously and yield moderately hard water which is usable for all purposes, including irrigation. Many of the shallow wells are intermittent springs that have been dug out, and others are sunk in the creek beds and tap deposits of Recent sand or gravel that yield fairly abundant supplies of water. In the Assiniboine valley several wells sunk into the yellow, sandy silts yield small supplies of fairly highly mineralized water.

The main water-bearing horizon in this township is encountered at depths of 10 to 30 feet in the deposits of moraine and glacial till, and is formed by scattered pockets of sand and gravel in the yellow clay, or by discontinuous beds of sand and gravel lying between the yellow and blue boulder clays. A few of these wells in the southwestern sections yield an abundance of moderately hard water which is used for drinking, irrigation, and other farm purposes. Many of the shallow wells, particularly in the northwestern sections, are intermittent, or yield only small supplies of water that is more highly mineralized, but which is usable for all general farm purposes. In some sections a sufficient supply cannot be obtained from two to five shallow wells, and it is necessary to haul water during part of the year.

In many places a number of dry holes are dug before water is located, and it is, therefore, advisable to locate the water-bearing deposits by means of a test auger before digging a well.

A few farmers have attempted to locate water at depths of 35 to 80 feet, and in some sections fairly abundant supplies were located. Wells in sections 4, 5, and 24, yield sufficient water for 20 to 60 head of stock, but this is an exception as many other holes to similar depths were either dry or encountered small seepages of water. The water is highly mineralized, usually "alkaline", and not always usable for drinking and household purposes. It has a slight laxative effect on those not accustomed to the use of highly mineralized water. The water from wells that yield an abundant supply is under hydrostatic pressure. By further prospecting, other deposits of water-bearing sand and gravel may be located at similar depths.

It is not advisable to drill to great depths for water in this township, as few water-bearing beds are thought to occur in the boulder clay. If water is struck, it is usually too highly mineralized to be of any use. The use of dugouts or dams to retain surface water for stock use is highly recommended.

Township 28, Range 32

This township is a rolling plain, and the elevation rises gradually from 1,530 feet above sea-level in the east, to 1,640 feet above sea-level in the western parts. A small area in the southwestern corner is mantled by moraine, and is characterized by knolls and depressions. The remainder of the township is covered by glacial till or boulder clay. A thin deposit of lake clay overlies the till in the northern part of sections 32 and 33. Clumps of poplar and willow are common in all sections of the township.

The deposits of moraine and glacial till are similar in composition and consist of a weathered zone, composed of a thin

layer of sandy top soil; 2 to 30 feet of yellow boulder clay; and an unweathered zone of blue boulder clay that extends to a depth of at least 85 feet. Pockets or lenses of sand occur at various elevations in the weathered and unweathered clays.

The uppermost water-bearing horizon is formed by the scattered pockets of sand and gravel in the yellow clay. In some localities the yellow clay is very thin, and the pockets are sparsely distributed. An abundant supply of moderately hard water is obtained from shallow wells in sections 13, 25, 28, 31, and 34, but most of the other wells yield small supplies, sufficient for only a few head of stock. The amount of water obtainable is dependant upon the areal extent of the sand and gravel deposits, and upon the amount of annual rainfall. Although the water from wells yielding a small supply contains a relatively large amount of mineral salts in solution, it is usable for drinking and other domestic purposes. Care should be taken that the shallow wells are not contaminated by surface waters containing animal refuse. The water should be tested frequently for bacteria.

Many wells from 40 to 84 feet deep have been sunk into the unweathered blue boulder clay. Fourteen wells have tapped beds of sand and gravel from which fair supplies of water are obtained. Other wells to these depths obtained only small seepages of water or were dry holes. The water from the producing wells is highly mineralized, and is usually termed "alkaline", but with few exceptions it is used for household purposes. Several of the wells yield an abundance of water that is under slight hydrostatic pressure. The water-bearing horizon, however, is not continuous, and as it yields highly mineralized water, is not a good source of supply.

Approximately twenty farmers in this township are short of well water, or obtain enough for only a few head of stock. Springs occur in some of the ravines, and water is hauled from

them or from neighbouring wells that yield abundant supplies. In some sections sloughs are used for stock, and a few farmers have small dams or dugouts that retain surface water during part of the year. Should larger supplies of water be desired, it is advisable to conserve surface water by means of dams or large dugouts. Deep drilling is not advised as there is no indication that water will be located, and if it is located, it is apt to be too highly mineralized for farm use. Sufficient water for household needs can usually be obtained from shallow wells.

Township 28, Range 33

This fractional township is an area of 3 square miles, and consists of the eastern halves of sections 1, 12, 13, 24, 25, and 36. With the exception of section 36, the area is mantled by moraine, and is very rolling and thickly wooded with small poplar and willow.

Five wells, 25, 12, 22, 79, and 32 feet deep, have been reported in this township. The wells 12 to 32 feet deep tap pockets of sand and gravel in the yellow clay. The water is moderately hard, and usable for all farm purposes. It is probable that with further prospecting, other water-bearing deposits could be located at shallow depths.

The 79-foot well in the NE. $\frac{1}{4}$, section 25, taps a layer of sand between beds of blue clay. The water is very hard, "alkaline", and has a high iron content. It can be used for household needs, but a shallower well in the same quarter section yields water that is more suitable for domestic purposes.

Township 29, Range 30

The topography of the township is rough and is characterized by many high hills, knolls, and deep depressions. Little Boggy creek occupies a deep, steep-sided valley that runs in a southwesterly direction from section 36 to section 19. Boulder clay

or glacial till covers a narrow area to the south of this creek, and a narrow strip along the southern boundary of the township. The remainder of the area is mantled by moraine. From Little Boggy creek the elevation rises rapidly. In the moraine-covered areas the surface attains an elevation of 2,150 feet above sea-level, approximately 500 feet higher than the elevation of Little Boggy creek. Boomerang lake, in section 15, occupies a deep basin with hills rising 300 to 400 feet on either side.

In this township the supply of water is obtained from Little Boggy and tributary creeks, Boomerang lake, numerous springs, and from shallow wells. Little Boggy creek is a permanent stream, and Boomerang lake is also a permanent body of water. They are both fed by numerous springs. Many of the springs flow continuously, but others flow only at intervals, depending upon the amount of rainfall. They are located in most valleys throughout the township. The land in this township is not particularly suitable for cultivation. Only a few farmers have settled in the area and, consequently, few wells have been sunk. The glacial till-covered areas are usually cultivated, and most of the wells are located in these areas. They are from 8 to 20 feet deep, and tap pockets of sand and gravel in yellow boulder clay. Most of these wells yield sufficient water for 15 to 20 head of stock. The water is moderately hard and usable for all farm purposes. In sections 4, 9, 10, and 30, holes dug from 30 to 83 feet deep did not locate water, and farmers residing in these sections are forced to haul water from springs or lakes. It is advisable in these areas to conserve surface water for stock by the construction of dams or the excavation of dugouts. The supply of water obtained throughout the area with the exception of the sections mentioned above is fairly abundant.

Township 29, Range 31

Assiniboine river flows in a southeasterly direction, and occupies a wide valley in sections 4, 5, 7, 8, 18, and 19. Little Boggy creek flows in a westerly direction and joins the Assiniboine in section 8. At the junction the elevation is approximately 1,430 feet above sea-level. South of Little Boggy creek and east of Assiniboine river the elevation rises gradually to 1,660 feet above sea-level. From the hamlet of Cote, at an elevation of 1,496 feet, the elevation rises to the north to approximately 1,790 feet in section 33. The maximum elevation of 2,033 feet is attained in section 25.

Recent deposits of alluvium cover the flood-plains of Assiniboine river and Little Boggy creek. Parts of sections 5, 6, 7, 16, 17, 18, 19, 20, 21, and 30, are mantled by glacial lake clays that are at least 60 feet thick, and which are usually composed of 10 to 40 feet of fine-textured, bright yellow clay, underlain by black clay. In some areas the yellow, silty clay is absent, and the black clay occurs at the surface. A few scattered deposits of sand and gravel occur in the lake clays. Moraine covers areas in the northeastern corner and in the south-central part of the township. Boulder clay or glacial till mantle the remainder of the area. The contact between the boulder clay and moraine-covered areas is quite marked. The till-covered areas are gently undulating, but the moraine-covered areas are rough, and are characterized by rock-strewn knolls and undrained depressions. The elevation rises rapidly in the moraine covered areas.

Water supplies in this township are obtained from Assiniboine river, Boggy and other creeks, springs, sloughs, artificial reservoirs, and shallow wells. The water from Assiniboine river and from the creeks is used extensively for

stock, but in a few areas it is also used for household purposes. The springs are situated along the deeper valleys, and a few have a continuous flow and yield an abundant supply of water that is used for all farm purposes. The sloughs and dams retain sufficient water for a few head of stock during part of the year, but the sloughs and dams usually become dry during the autumn.

Small supplies of water are obtained from shallow wells sunk in the Recent deposits along the river and Little Boggy creek. The wells derive seepage water from the streams and are used for household purposes, stock being watered at the river or creek.

A few wells sunk into the glacial lake deposits have encountered sand or gravel aquifers from which small supplies of water are obtained. The water is very highly mineralized and is not usable for domestic purposes, and the wells are not used to any extent. The residents of the hamlet of Cote obtain water from Little Boggy creek in summer, and during the winter snow or ice is melted. They also store ice for use during the summer months.

Residents in the moraine and glacial till-covered areas derive water from wells that tap sand or gravel pockets in the glacial drift. Most of the wells are from 10 to 30 feet deep and yield sufficient water for 15 to 25 head of stock. Many dry holes are dug, so that it is advisable to locate the water-bearing deposits with a small hand auger before digging the wells. The water is hard and frequently "alkaline", but is usable for domestic purposes.

A few wells, from 40 to 60 feet deep, in the glacial till and moraine-covered areas have tapped thin layers of sand in the boulder clay. The water is very highly mineralized, and that from most wells is not usable for household purposes. It has a strong laxative effect upon those not accustomed to highly mineralized water.

With the exception of those who reside in the glacial lake clay-covered areas, and in sections in the northwestern corner of the township, the residents are fairly well supplied with water. In the above-mentioned areas water is hauled from Assiniboine river in the summer, and ice is melted in the winter. A few small dams are used to retain surface water for stock use during the summer months. It is not advisable to drill to great depths in this township as it is improbable that usable water will be located. A 125-foot hole in the NW. $\frac{1}{4}$, section 35, sunk to an elevation of 1,778 feet, is the deepest hole in the area, and it failed to encounter water. It is thought that the Marine Shale series occurs at an approximate elevation of 1,400 to 1,450 feet above sea-level. These shale beds are considered to be non-water bearing in this part of Saskatchewan.

Township 29, Range 32

The elevation of this township varies from 1,400 feet to 1,560 feet above sea-level, the maximum elevation being attained in the southwestern sections and the minimum in Assiniboine valley. The river occupies a wide valley that passes through the northeastern corner of the township. The eastern slopes of the valley rise abruptly, but the western slope rises gently to plain level. Kamsack creek and its numerous tributaries drain the west-central and southwestern sections of the township. Kamsack creek occupies a valley that is from $\frac{1}{4}$ to $\frac{1}{2}$ mile wide, and from 20 to 50 feet deep.

The wide flood-plain of the Assiniboine consists of several feet of Recent alluvium, made up of sandy top soil and fine-textured yellow silts and black clay. The flood-plain of Kamsack creek also consists of Recent deposits.

The greater part of this township was once covered by a glacial lake, known as Lake Assiniboine, and with the exception of small areas of glacial till in the southern sections, and the

Recent flood-plains, the township is mantled by glacial lake deposits. In the northwestern corner the lake deposits are composed of a sandy top soil and sandy yellow clay. The other glacial lake deposits in general consist of a sandy loam or a clay loam top soil which is underlain in some sections by a fine-textured yellow clay and in others by black clay. The deposits increase in thickness toward the west, and in some areas thin layers of sand and gravel occur in the clay. The deposits of glacial till consist of a sandy top soil; 15 to 20 feet of yellow boulder clay in which scattered pockets of sand and gravel occur; and blue clay of unknown thickness.

Small supplies of water are obtained from wells sunk in the flood-plain deposits along the deeper valleys. The water is seepage from the river or creek, and is only used for household purposes, stock being watered at the creek or river. If a creek ceases to flow, wells are sunk into the bed of the creek, and large supplies of water are generally obtained. In some of the valleys springs yield abundant supplies of water that is used for all purposes by those residing near the valleys.

Fair supplies of water are obtained from the deposits of glacial lake sands at depths of 15 to 33 feet, the aquifers usually being layers of sand in the weathered yellow clay. The water is hard, but usable for household purposes, and the yield from individual wells is usually adequate for 15 to 20 head of stock.

In the glacial lake clay-covered areas, wells sunk to depths of 15 to 33 feet have tapped thin layers of sand from which small and intermittent supplies of water are obtained. A few of the wells yield sufficient water for 15 to 25 head of stock, but most of them yield small supplies, sufficient for only a few head of stock. The water is very highly mineralized, and that from most wells is not usable for domestic purposes, or drinking. Most of the farmers in the lake clay-covered area haul water during the

summer from neighbouring wells that yield good supplies. Ice is stored during the winter and is used for domestic purposes during the summer months. A few farmers have small dams that retain surface water which is used as an auxiliary supply for stock. This is the best method of increasing water supplies in this township. In some sections, where there are no ravines or valleys, dugouts can be excavated. They should be at least 12 feet deep in order to retain water throughout the year.

Several wells in the glacial till-covered areas yield large supplies of water that is usable for all farm purposes. A 23-foot well in the SW. $\frac{1}{4}$, section 2, flows continuously, yielding an abundance of water. Other wells yield smaller or intermittent supplies, and often two or more wells are used to supply adequate water for local needs. Several wells, 40 to 55 feet deep, have penetrated the glacial lake deposits and tap sand aquifers in the underlying glacial till. Water from these wells is very hard, highly mineralized, and generally termed "alkaline", and with few exceptions it cannot be used for household purposes. It has a slight laxative effect on those not accustomed to its use. The water is not under pressure, and the yield from these wells is small.

The Marine Shale series underlies the glacial drift throughout this township. In the NE. $\frac{1}{4}$, section 34, three holes have been drilled for the town of Kamsack. They are 500, 773, and 912 feet deep, and encountered shale at a depth of 50 feet, or at an elevation of 1,395 feet above sea-level. The 773-foot hole tapped a pocket of gas that was under considerable pressure, and the casing was broken. Drilling was stopped in the 912-foot hole when a very hard layer was encountered at the base of the well, at an elevation of 533 feet above sea-level. The hole indicated that the Marine Shale series at this point is at least 872 feet thick, and non-water bearing. Where this shale series

is encountered in this part of Saskatchewan it is generally considered useless to continue drilling operations. The supply of water for the town of Kamsack is pumped from Assiniboine river, a distance of $1\frac{3}{4}$ miles, into a 100,000 gallon storage tank.

Township 29, Range 33

This fractional township comprises an area of 3 square miles, and is composed of the eastern halves of sections 1, 12, 13, 24, 25, and 36. The elevation at the southern part of the area is 1,580 feet above sea-level, but it decreases gradually to 1,506 feet in section 36. The southern half of the area is mantled by glacial till, and the northern half by glacial lake deposits. The glacial till-covered area is very rolling, but the glacial lake-covered area is quite flat.

Fair supplies of water are obtained from wells that are sunk into the lake sands in section 36. The sand aquifer is 12 to 20 feet thick, and is underlain by blue clay. The water is moderately hard, and is usable for all farm purposes. Two or more wells are often used to obtain sufficient water for local needs.

In sections 1 and 12 several wells from 15 to 25 feet deep strike sand pockets of small areal extent from which small supplies of water are obtained. The water is highly mineralized, and that from some wells is not usable for domestic purposes. Some farmers have two or three wells from which they obtain water, but during drought periods are often forced to haul water. In the NE. $\frac{1}{4}$, section 12, two wells 50 feet deep tap thin beds of sand in blue clay, and obtain very small amounts of water. The water is not usable for household purposes. Ice is used for domestic needs.

Dams or dugouts to retain surface water are recommended in this township. An abundant supply of water is not to be expected from wells.

Township 30, Range 30

This township lies entirely within the Duck Mountain Forest Reserve, and the area is heavily wooded with poplar, birch, and a few spruce. The township is mantled by moraine which is part of the large moraine that forms Duck mountain to the east. The area is characterized by numerous knolls and undrained depressions. The north-central part of the township is occupied by Madge lake which lies at an approximate elevation of 2,012 feet above sea-level. Steep hills surround the lake, and possibly attain an elevation of 2,200 feet above sea-level.

Yellow boulder clay forms the upper part of the glacial drift. Gravel and sand deposits occur in the vicinity of Madge lake. Blue clay underlies the deposits of yellow clay. The well at Ministik beach, in the NW. $\frac{1}{4}$, section 27, yields an abundant supply of water that is derived by seepage from Madge lake. The water is very hard and "alkaline", but usable for drinking and household purposes. In the NW. $\frac{1}{4}$, section 28, four wells, 11 to 12 feet deep, were dug in the sand and gravel at the lake shore, and yield an abundance of water that is used for all purposes at the ranger station, and by those camping at Kamsack beach. The water is "alkaline" and contains a considerable amount of iron. A 42-foot dry hole was sunk in blue clay a short distance from the lake. Springs are reported to be common throughout the hills of the township, and sloughs and small lakes are numerous.

Township 30, Range 31

The southwestern sections of this township are mantled by glacial till, and the ground surface is rolling. The remainder

of the township is covered by part of the large Duck Mountain moraine. This area is very rough, with numerous knolls and undrained depressions. The northern part of the township is thickly wooded with poplar, birch, and spruce. The surface elevation increases from 1,580 feet above sea-level in the southwestern part, to 1,955 feet in the northeastern part of the township. The area is drained by two small creeks, one flowing into Green lake in the northeastern corner, and the other flowing in a southwesterly direction from Roe lake.

Sections 16 to 21 inclusive, and part of 30, lie within the Cote Indian Reserve, No. 64, and no wells are located in this area. The northern part of the township is so rough and thickly wooded that it is only sparsely settled. Most of the inhabitants have settled in the southwestern sections, as this area is more suitable for cultivation.

The principal water-bearing horizon in the township is encountered in the upper 30 feet of the glacial drift, and is formed by scattered pockets of sand and gravel. The amount of water derived from an individual well depends upon the areal extent of the pocket tapped, and upon the amount of rainfall. Several wells in sections 5, 6, and 7 yield abundant supplies of water, sufficient for 40 to 50 head of stock. A 19-foot well in the SE. $\frac{1}{4}$, section 7, is a flowing artesian well, and the water will rise 5 feet above the ground surface. The water is moderately hard, and used for all farm purposes. In the moraine-covered area the shallow wells recorded yield small supplies, and usually several wells are used to obtain amounts sufficient for local needs. The water is usable for all farm purposes. It is advisable to use a small test auger to locate water-bearing deposits before digging a shallow well.

Four wells, from 44 to 67 feet deep, in sections 2, 4, 8, and 9, tap sand beds in blue clay. The water is very highly

mineralized, since it comes in contact with the blue clay, and that from the well in the NW. ¼, section 9, is not usable for household or stock purposes as it is strongly laxative. The other three wells yield water that is under hydrostatic pressure, and which is usable for domestic purposes. The well in the SW. ¼, section 4, yields sufficient water to supply at least 100 head of stock, but the others will only supply 15 to 20 head of stock. It is possible that with further prospecting, water could be located at similar depths in other sections of the township.

No deep wells have been sunk, and it is not advisable to drill deep holes as bedrock occurs at the base of a dry hole in the NW. ¼, section 6, at an elevation of 1,577 feet above sea-level. The bedrock or Marine Shale series is considered to be non-water bearing. The use of dams or dugouts to collect and retain surface water for stock is highly recommended.

Township 30, Range 32

The western half of this township is dissected by Assiniboine and Whitesand rivers. The Assiniboine occupies a valley approximately ½ mile wide and not more than 60 to 80 feet deep, and meanders in a southerly direction through a wide flood-plain. Whitesand river occupies a similar valley and flows in a southeasterly direction to join Assiniboine river in section 3. Small valleys from 10 to 30 feet deep and 300 feet wide are tributary to both rivers.

The flood-plains of the rivers are composed of Recent sands and silts that were deposited by the flood waters. The greater part of this township was once occupied by a glacial lake, Lake Assiniboine, and thick deposits of lake sands and clays mantle most of the area. The area to the west of Whitesand river is mantled by glacial lake sands. To the east of Assiniboine river the deposits are thinner, and, with the exception of a small

area in the northeastern corner that is mantled by boulder clay and moraine, the surface deposits consist of glacial lake clays. The area between the rivers is covered by boulder clay that is modified by water action.

Cote Indian Reserve No. 64 occupies the greater part of the township. Water supplies in the reserve are obtained from the rivers, creeks, and a few springs and shallow wells. At the Indian Agency, in the northeastern part of the area, a well 26 feet deep encounters fine sand in the yellow boulder clay, and yields a fairly large supply of usable water. Suitable supplies of water for local needs should be obtained at shallow depths in other parts of the reservation.

Outside the Indian Reserve water supplies are obtained mainly from shallow wells 10 to 32 feet deep. The well in the SW. $\frac{1}{4}$, section 1, yields an abundant supply of water, sufficient for at least 40 head of stock. The other wells yield small or intermittent supplies. Many dry holes have been sunk in attempting to locate water, and a number of intermittent wells, which become dry during drought periods, are also located in the township.

Three attempts have been made to locate water at depths of 66 to 75 feet. Two wells tapped sand deposits in blue clay from which small supplies of highly mineralized water are obtained, but the third well did not encounter water. Many of the residents haul water from Assiniboine river. A few have small dams or dugouts that supply water for stock during the spring and early summer months. In some sections rain water is used for drinking or ice is melted. An abundant supply of water is not to be expected in this area, and the use of cisterns to collect rain water for domestic needs, and dams or dugouts to retain surface water for stock, is highly recommended in this township. It is useless to drill to depth in this township as the Marine Shale series is encountered in sections 2, 3, and 11 at depths of 14 to

28 feet. In this part of Saskatchewan the Marine Shale series rarely contains usable water.

Township 30, Range 33

This fractional township is an area of 3 square miles, being the eastern halves of sections 1, 12, 13, 24, 25, and 36. With the exception of Recent alluvial deposits on the flood-plain of the Assiniboine in section 36, the area is mantled by glacial lake sands. The average elevation of the township is 1,520 feet above sea-level. Assiniboine valley cuts through section 36, and is approximately 60 feet deep in this area.

The deposits of glacial lake sands vary in thickness from a few feet in the northern and southern parts of the area, to at least 28 feet in the SE. $\frac{1}{4}$, section 13. Layers of bright yellow, silty clay occur within the sands. Shallow wells in section 1 yield fairly large supplies of water, but two or more wells are required to yield sufficient supplies for local needs. In the SE. $\frac{1}{4}$, section 12, three wells have been dug. One well encounters sand in yellow clay, and yields an intermittent supply of water. The other two yield larger supplies and in seasons of normal rainfall they water 30 and 100 head of stock, respectively. In the NE. $\frac{1}{4}$, section 24, small supplies of water are obtained from wells 15 to 35 feet deep, but in the NE. $\frac{1}{4}$, section 25, holes from 33 to 60 feet deep failed to locate water. In these sections auxiliary water supplies are obtained from small sloughs. If water cannot be located at shallow depths it is not advisable to dig or drill to depth in this township, as there is little probability of encountering water-bearing beds. In section 12, the creek could be dammed and the impounded water used for stock. In other sections where the glacial lake sands are thin, it is advisable to excavate dugouts to retain surface water for stock.

STATISTICAL SUMMARY OF WELL INFORMATION IN RURAL MUNICIPALITY OF COTE, NO. 271, SASKATCHEWAN

	Township	26	27	27	28	28	28	28	29	29	29	29	30	30	30	30	Total No. in Municipality	Cote Indian Reserve No. 64
West of 1st mer.	Range	30	30	31	30	31	32	33	30	31	32	33	30	31	32	33		
Total No. of Wells in Township		0	44	0	116	116	101	6	44	72	73	10	7	54	47	13	703	2
No. of wells in bedrock		0	0	0	0	0	0	0	0	0	3	0	0	0	5	0	8	0
No. of wells in glacial drift		0	44	0	116	115	101	6	44	72	68	10	7	54	40	13	690	2
No. of wells in alluvium		0	0	0	0	1	0	0	0	0	2	0	0	0	2	0	5	0
Permanency of Water Supply																		
No. with permanent supply		0	32	0	76	65	66	6	33	54	44	0	6	32	10	8	438	1
No. with intermittent supply		0	6	0	9	7	9	0	4	7	20	4	0	10	13	1	90	1
No. dry holes		0	6	0	31	44	26	0	7	11	9	0	1	12	24	4	175	0
Types of Wells																		
No. of flowing artesian wells		0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	0
No. of non-flowing artesian wells		0	2	0	21	11	8	2	2	5	2	0	0	10	2	0	65	0
No. of non-artesian wells		0	36	0	64	61	67	4	35	56	61	10	6	31	21	9	461	2
Quality of Water																		
No. with hard water		0	30	0	85	60	71	5	35	53	61	7	6	41	19	9	482	2
No. with soft water		0	8	0	0	12	4	1	2	8	3	3	0	1	4	0	46	0
No. with salty water		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. with "alkaline" water		0	0	0	8	20	15	1	6	18	29	3	6	21	7	0	134	1
Depths of Wells																		
No. from 0 to 50 feet deep		0	36	0	104	96	82	6	42	64	67	10	7	52	44	12	622	2
No. from 51 to 100 feet deep		0	7	0	11	19	19	0	2	7	3	0	0	2	3	1	74	0
No. from 101 to 150 feet deep		0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	4	0
No. from 151 to 200 feet deep		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. from 201 to 500 feet deep		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
No. from 501 to 1,000 feet deep		0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0
No. over 1,000 feet deep		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
How the Water is Used																		
No. usable for domestic purposes		0	33	0	78	64	64	6	36	47	43	5	6	36	15	8	441	1
No. not usable for domestic purposes		0	5	0	7	8	11	0	1	14	21	5	0	6	8	1	87	1
No. usable for stock		0	34	0	85	71	72	6	37	59	59	10	6	37	19	8	503	2
No. not usable for stock		0	4	0	0	1	3	0	0	2	5	0	0	5	4	1	25	0
Sufficiency of Water Supply																		
No. sufficient for domestic needs		0	30	0	76	62	63	6	33	53	39	6	6	31	10	7	422	1
No. insufficient for domestic needs		0	8	0	9	10	12	0	4	8	25	4	0	11	13	2	106	1
No. sufficient for stock needs		0	23	0	67	52	46	4	23	46	30	5	6	28	10	5	345	1
No. insufficient for stock needs		0	15	0	18	20	29	2	14	15	34	5	0	14	13	4	183	1

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 boilders 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 hardness to the sulphates and chlorides of calcium and magnesium. The permanent hardness

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

Analyses of Water Samples from the Municipality of Cote, No. 271, Saskatchewan

No.	LOCATION					Depth of well, Ft.	Total dis'vd solids	HARDNESS			CONSTITUENTS AS ANALYSED						CONSTITUENTS AS CALCULATED IN ASSUMED COMBINATIONS									Source of Water
	qtr.	Sec.	Tp.	Rge.	Mer.			Total	Perm.	Temp.	Cl.	Alka-linity	CaO	MgO	SO_4	Na_2O	Solids	$CaCO_3$	$CaSO_4$	$MgCO_3$	$MgSO_4$	Na_2CO_3	Na_2SO_4	NaCl	$CaCl_2$	
1	NE.	1	28	30	1st	50	602											(3)	(1)		(2)		(4)		(5)	✱1
2		12	28	30	1	36	2,454											(4)	(1)		(2)		(3)		(5)	✱1
3	SE.	18	28	30	1	52	426											(1)		(2)					(3)	✱1
4		34	29	32	1	18	862											(3)	(1)		(2)		(4)		(5)	✱1
5	Town of Kamsack						582	Source Assiniboine river										(2)	(1)		(3)				(4)	

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

Analyses Nos. 1, 2, 3, 4, and 5, by Provincial Analyst, Regina.
For interpretation of this table read the section on Analyses and Quality of Water.

Water from the Unconsolidated Deposits

Four samples of water from the glacial drift of the municipality and one from Assiniboine river were analysed, and the results are listed in the accompanying table. Samples 1 to 4, inclusive, are taken from wells 18 to 52 feet deep, and are probably representative of the water derived from shallow depth. The total dissolved solid content varies from 426 to 2,454 parts per million. The striking of highly mineralized water at one locality does not indicate widespread conditions and slightly mineralized water may be obtained a short distance away. The predominant mineral salts generally found in solution are calcium sulphate, magnesium sulphate, calcium carbonate, and smaller amounts of sodium sulphate and calcium chloride. The waters analysed are being used for domestic purposes. Some of the water from wells in this municipality, particularly from those that encounter aquifers in the blue clay, may have a laxative effect on people unaccustomed to the use of highly mineralized water. It will be suitable for stock use. Sample 5 is of the water supplied through the water-mains from Assiniboine river to the town of Kamsack. It has a comparatively low total dissolved solid content, and is used for all purposes in the town. It is purified by filtration and chlorination.

Water from the Bedrock

Any water that may be obtained from the Marine Shale series in this municipality will probably be too highly mineralized to be used for general farm purposes.

WELL RECORDS—Rural Municipality of COTE NO. 271, 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	27	30	1	Spring		1,630	0	1,630	0	1,630	Glacial sand	Soft, clear		D, S	Sufficient for local needs.
2	SW.	10	"	"	"	Dug	100	1,740	- 90	1,650	9	1,650	Glacial sand	Hard, clear		N	Was a sufficient supply, but well has caved in; not used.
3	SW.	12	"	"	"	Dug	11	1,760	- 5	1,755	7	1,753	Glacial gravel	Hard, clear		D, S	Sufficient for local needs; also a 36-foot well that is caved in.
4	SE.	12	"	"	"	Dug	36	1,760	- 13	1,747			Glacial sand	Hard, clear		D, S	Sufficient for local needs.
5	SW.	13	"	"	"	Dug	16	1,770	- 11	1,759	11	1,759	Glacial sand	Soft, clear		D, S	Insufficient for local needs.
6	NW.	13	"	"	"	Dug	40	1,765	- 20	1,745	40	1,725	Glacial sand	Soft, clear		D, S	Sufficient for local needs.
7	NE.	15	"	"	"	Dug	35	1,770	- 31	1,739	31	1,739	Glacial gravel	Hard, clear		D, S	Sufficient for local needs.
8	SW.	17	"	"	"	Dug	8	1,740	- 3	1,737	3	1,737	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
9	NE.	18	"	"	"	Dug	40	1,740	- 38	1,702			Glacial drift	Hard, clear		D	Intermittent supply; also another well 15 fe deep; is used for stock.
10	NW.	18	"	"	"	Dug	14	1,720	- 10	1,710	10	1,710	Glacial sand	Soft, clear		N	Intermittent supply; use water from creek.
11	NE.	19	"	"	"	Dug	12	1,740	- 7	1,733	7	1,733	Glacial gravel	Hard, clear		D, S	Sufficient for local needs.
12	NE.	20	"	"	"	Dug	115	1,740	-112	1,628	112	1,628	Glacial sand	Hard, clear		D, S	Intermittent supply; also several dry holes.
13	SW.	22	"	"	"	Drilled	100	1,750					Glacial sand	Hard, clear		N	This well cannot be used due to plugging by sand; another similar well.
14	NW.	23	"	"	"	Dug	30	1,800	- 20	1,780			Glacial drift	Hard, clear		D, S	Sufficient for local needs; also a spring on farm.
15	NW.	24	"	"	"	Dug	26	1,770	- 20	1,750	24	1,746	Glacial sand	Hard, clear, iron		D, S	Insufficient for local needs; also another well 16 feet deep.
16	SE.	24	"	"	"	Spring		1,650	0	1,650	0	1,650	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
17	NW.	25	"	"	"	Bored	40	1,770	- 22	1,748	22	1,748	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
18	NW.	26	"	"	"	Dug	30	1,815	- 26	1,789	26	1,789	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
19	NE.	27	"	"	"	Dug	12	1,800	- 6	1,794			Glacial drift	Hard, clear		D, S	Intermittent supply; also an 8-foot well, and a 72-foot dry hole.
20	SE.	28	"	"	"	Dug	40	1,640									Dry hole; base in glacial blue clay.
21	SW.	29	"	"	"	Dug	18	1,740	- 14	1,726	14	1,726	Glacial sand	Soft, clear		D, S	Water-level constant.
22	NE.	30	"	"	"	Dug	24	1,740	- 21	1,719	21	1,719	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
23	NW.	31	"	"	"	Dug	60	1,740	- 58	1,682			Glacial sand	Hard, clear		D, S	Intermittent supply; also a 60-foot dry hole use creek for stock.
24	NW.	32	"	"	"	Dug	6	1,740	- 3	1,737	3	1,737	Glacial sand and gravel	Soft, clear		D, S	Sufficient for local needs.
25	SE.	32	"	"	"	Dug	12	1,745	- 7	1,738	7	1,738	Glacial sand and gravel	Soft, clear		D, S	Sufficient for local needs.
26	SW.	34	"	"	"	Dug	26	1,800	- 14	1,786	26	1,774	Glacial gravel	Hard, clear		D, S	Sufficient for 70 head stock; also a 22-foot well with intermittent supply.
27	NE.	34	"	"	"	Spring		1,810	0	1,810	0	1,810	Glacial sand	Hard, clear		D, S	Sufficient for local needs; also two other wells 8 and 14 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 COTE NO.271, SASKATCHEWAN

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
28	NE.	35	27	30	1	Dug	34	1,820	- 28	1,792	30	1,790	Glacial sand	Hard,clear		D, S	Sufficient for local needs.
29	SW.	36	"	"	"	Dug	12	1,770	- 10	1,760			Glacial sand	Hard,clear		D, S	Sufficient for local needs; also two other wells 36 and 12 feet deep.
1	NE.	1	28	30	1	Dug	38	1,826	- 18	1,808	35	1,791	Glacial gravel	Hard,clear		D, S, M	Sufficient supply; also a number of similar wells; also a 50-foot well. #
2	SW.	1	"	"	"	Dug	34	1,823	- 32	1,791	32	1,791	Glacial sand and gravel	Hard,clear		D, S	Sufficient for 8 head horses.
3	SE.	2	"	"	"	Dug	30	1,820	- 22	1,798	28	1,792	Glacial sand	Hard,clear		D, S, I	Oversufficient for local needs.
4	NE.	3	"	"	"	Dug	50	1,785	- 43	1,742	50	1,735	Glacial sand and gravel	Hard,clear, iron		D, S, I	Sufficient for 40 head stock; also a spring on farm.
5	SW.	3	"	"	"	Dug	40	1,790	- 37	1,753			Glacial drift	Hard,clear, "alkaline"		D, S, I	Intermittent supply; also a 40-foot dry hole.
6	SE.	4	"	"	"	Dug	22	1,763	- 16	1,747	22	1,748	Glacial gravel	Hard,clear		D, S, I	Sufficient for local needs; also a spring on farm.
7	SW.	4	"	"	"	Dug	14	1,728	- 9	1,719	9	1,719	Glacial sand	Hard,clear		D, S, I	Sufficient for local needs.
8	NW.	4	"	"	"	Dug	10	1,741	- 8	1,733	8	1,733	Glacial sand and gravel	Hard,clear		D, S	Oversufficient for local needs; also four dry holes to a depth of 30 feet.
9	NE.	5	"	"	"	Dug	14	1,711	- 9	1,702	12	1,699	Glacial gravel	Hard,clear		D, S	Sufficient for local needs.
10	SW.	5	"	"	"	Dug	18	1,708	- 10	1,698	13	1,695	Glacial sand	Hard,clear		D, S	Sufficient for local needs.
11	SE.	6	"	"	"	Dug	30	1,685	- 23	1,662	25	1,660	Glacial sand	Hard,clear		D, S	Sufficient for local needs.
12	SW.	6	"	"	"	Dug	22	1,680	- 16	1,664	17	1,663	Glacial sand	Hard,clear		D, S	Sufficient for local needs; also another well 18 feet deep.
13	NW.	6	"	"	"	Dug	62	1,682	- 59	1,623	59	1,623	Glacial sand	Hard,clear		D, S, I	Sufficient for local needs with aid of another well 10 feet deep; also a 55-foot dry hole.
14	NW.	7	"	"	"	Dug	20	1,680	- 15	1,665	18	1,662	Glacial sand	Hard,clear		D, S	Sufficient for 100 head stock; also an 80-foot dry hole.
15	SE.	7	"	"	"	Dug	52	1,691	- 46	1,645	51	1,640	Glacial sand	Hard,clear, lime		D, S, I	Sufficient for 30 head stock.
16	SW.	8	"	"	"	Dug	14	1,702	- 7	1,695			Glacial drift	Hard,clear		D, I	Sufficient only for domestic needs; use a spring for stock needs.
17	SW.	9	"	"	"	Dug	14	1,734	- 9	1,725	10	1,724	Glacial sand	Hard,clear		D, S, I	Sufficient for 35 head stock; also two other similar wells.
18	NW.	9	"	"	"	Dug	19	1,740	- 16	1,724	16	1,724	Glacial sand	Hard,clear		D, S, I	Oversufficient for local needs; also a spring on farm.
19	SW.	10	"	"	"	Dug	25	1,768	- 20	1,748	20	1,748	Glacial gravel	Hard,clear, iron		D, S	Sufficient for local needs.
20	SE.	10	"	"	"	Bored	38	1,768	- 31	1,737	31	1,737	Glacial sand	Hard,clear		D, S, I	Oversufficient for local needs; also a 13-foot well.
21	SW.	11	"	"	"	Dug	18	1,792	- 15	1,777	15	1,777	Glacial sand	Hard,clear		D, S	Oversufficient for local needs.
22	SE.	11	"	"	"	Dug	10	1,806	- 8	1,798	8	1,798	Glacial sand	Hard,clear, "alkaline"		D, S	Sufficient for local needs; also a spring on farm.
23	NE.	11	"	"	"	Dug	35	1,856	- 32	1,824	32	1,824	Glacial sand	Hard,clear, iron		D, S, I	Sufficient for 27 head stock.
24		12	"	"	"	Dug	36						Glacial drift	Hard			#

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 COTE NO. 271, 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
25	SW.	13	28	30	1	Dug	40	1,871	- 33	1,838	48	1,823	Glacial sand ?	Hard, clear, iron		D, S	Oversufficient for 100 head stock.
26	SE.	14	"	"	"	Dug	45	1,850	- 30	1,820	45	1,805	Glacial sand	Hard, clear, iron		D, S	Sufficient for local needs.
27	NE.	14	"	"	"	Dug	68	1,852	- 29	1,823	29	1,823	Glacial sandy clay	Hard, clear, "alkaline"		S	Insufficient for local needs; also a 30-foot well.
28	SW.	16	"	"	"	Dug	14	1,775	0	1,775			Glacial drift	Hard, clear		S	Sufficient for local needs with aid of two other wells.
29	SE.	17	"	"	"	Dug	14	1,660	- 10	1,650			Glacial drift	Hard, clear, "alkaline"		D, S	Intermittent supply; also three dry holes.
30	SW.	17	"	"	"	Dug	50	1,700	- 44	1,656	47	1,653	Glacial sand	Hard, clear		D, S	Sufficient for 26 head stock.
31	SE.	18	"	"	"	Dug	50	1,700	- 30	1,670	40	1,660	Glacial sand	Hard, clear		D	School well; sufficient for local needs.
32	NE.	18	"	"	"	Dug	40	1,700	- 37	1,663	37	1,663	Glacial sand	Hard, clear		D	Sufficient only for domestic needs; another well 16 feet deep.
33	SW.	18	"	"	"	Dug	45	1,682	- 31	1,651	31	1,651	Glacial drift	Hard, clear		S	Intermittent supply; another well 20 feet deep.
34	NW.	18	"	"	"	Dug	26	1,696	- 20	1,676	26	1,670	Glacial sand	Hard, clear		D, S	Sufficient for 16 head stock.
35	SW.	19	"	"	"	Dug	77	1,690	- 30	1,660	77	1,613	Glacial sandy clay	Hard, clear		S	Sufficient for 25 head stock; also four other wells, 17, 30, 45, and 50 feet deep with intermittent supplies.
36	SE.	20	"	"	"	Dug	22	1,702	- 12	1,690	14	1,688	Glacial sand	Hard, clear		D, S	Sufficient for 12 head stock.
37	NW.	20	"	"	"	Dug	42	1,710	- 34	1,676	36	1,674	Glacial sand	Hard, clear		D, S	Sufficient for 20 head stock.
38	NE.	21	"	"	"	Dug	39	1,801	- 37	1,764	39	1,762	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient for local needs.
39	NW.	22	"	"	"	Dug	19	1,801	- 13	1,788			Glacial sand	Hard, clear		D, S, I	Sufficient for 20 head stock; another well 8 feet deep.
40	NE.	23	"	"	"	Dug	120	1,906	- 63	1,843	120	1,786	Glacial sand	Hard, clear, iron, rod sediment		D, S, I	Sufficient for 40 head stock.
41	SE.	24	"	"	"	Dug	72	1,894	- 10	1,884	20	1,874	Glacial drift	Hard, clear, iron		D, S	Sufficient for 30 head stock; also a 20-foot dry hole.
42	NW.	25	"	"	"	Dug	51	1,880	- 49	1,831	50	1,830	Glacial sand	Hard, clear		D, S	Insufficient for local needs; also two dry holes 61 and 92 feet deep.
43	NE.	26	"	"	"	Dug	52	1,874	- 40	1,834	52	1,822	Glacial gravel	Hard, clear		D, S	Sufficient for 30 head stock; another well 35 feet deep.
44	NW.	26	"	"	"	Dug	50	1,875	- 36	1,839	40	1,835	Glacial sand	Hard, clear		D, S, I	Sufficient for local needs.
45	SE.	28	"	"	"	Dug	27	1,802	- 20	1,782	23	1,779	Glacial sand and gravel	Hard, clear		S	Sufficient for local needs with the aid of another 50-foot well.
46	NE.	29	"	"	"	Dug	30	1,740	- 4	1,736			Glacial gravelly clay	Hard, clear, "alkaline"		D, S	Intermittent supply; also two other wells 15 and 10 feet deep.
47	SE.	30	"	"	"	Dug	18	1,680	- 13	1,667	15	1,665	Glacial sand	Hard, clear		D, S	Sufficient for 14 head stock; also seven dry holes.
48	NW.	30	"	"	"	Dug	38	1,674	- 14	1,660	38	1,636	Glacial sand	Hard, clear		S	Sufficient for local needs; also a 43-foot well with poor supply.
49	SW.	31	"	"	"	Dug	19	1,673	- 16	1,657			Glacial drift	Hard, clear, "alkaline"		D, S, I	Sufficient for 2 cows and domestic needs; also two dry holes 20 and 40 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 COTE NO.271, 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
50	NE.	32	28	30	1	Dug	40	1,805	- 20	1,785			Glacial drift	Hard,clear, "alkaline"		D, S, I	Oversufficient for local needs; another well 10 feet deep; also a 20-foot dry hole.
51	NW.	33	"	"	"	Dug	11	1,842	- 6	1,836	6	1,836	Glacial sand	Hard,clear		D, S, I	Sufficient for 25 head stock.
52	NW.	34	"	"	"	Dug	11	1,870	- 8	1,862	11	1,859	Glacial gravel	Hard,clear		D, S, I	Oversufficient for local needs.
53	NW.	35	"	"	"	Dug	40	1,896									Dry hole; base in glacial blue clay.
54	NE.	35	"	"	"	Spring							Glacial drift	Hard		D, S	Farmer in NW.¼ section 35, uses this spring.
55	SW.	35	"	"	"	Dug	20	1,870	- 10	1,860	10	1,860	Glacial gravelly clay	Hard,clear, "alkaline"		D, S	Intermittent supply; also seven dry holes 12 to 16 feet deep.
1	NE.	1	28	31	1	Dug	32	1,668	- 20	1,648	32	1,636	Glacial sand	Hard,clear, "alkaline"		D, S, I	Sufficient for local needs.
2	SE.	1	"	"	"	Dug	37	1,653	- 22	1,631	22	1,631	Glacial sandy clay	Hard,clear		D, S	Intermittent supply; also six dry holes.
3	SW.	3	"	"	"	Dug	45	1,567	- 39	1,528	39	1,528	Glacial sand	Hard,clear		D, S	Sufficient for 10 head stock; also a 30-foot well and a spring.
4	NW.	4	"	"	"	Bored	50	1,570	- 43	1,527	47	1,523	Glacial gravel	Hard,clear, iron,"alkaline"		D, S	Sufficient for 25 head stock; also a 12-foot well and a spring.
5	SW.	4	"	"	"	Dug	22	1,546	- 17	1,529	17	1,529	Glacial sand	Soft,clear		D	Sufficient only for domestic needs; also another well 9 feet deep.
6	SE.	5	"	"	"	Dug	38	1,618	- 12	1,606	38	1,580	Glacial sand and gravel	Hard,clear, "alkaline"		D, S	Sufficient for 20 head stock.
7	NW.	6		"	"	Dug	20	1,600	- 10	1,590	10	1,590	Glacial sand	Hard,clear		D, S	Sufficient for local needs.
8	SW.	6	"	"	"	Bored	80	1,622	- 70	1,552			Glacial drift	Hard,clear		D, S	Sufficient for local needs.
9	NE.	8	"	"	"	Dug	32	1,605	- 29	1,576	29	1,576	Glacial sand	Hard,clear, "alkaline"		D, S	Sufficient for local needs; also a spring that is sufficient for 100 head stock.
10	SW.	8	"	"	"	Bored	55	1,620	- 30	1,590	51	1,569	Glacial gravel	Hard,clear		D, S	Sufficient for local needs.
11	NW.	9	"	"	"	Dug	30	1,620	- 15	1,605			Glacial drift	Hard,clear, "alkaline"		S	Sufficient for local needs; another well 50 feet deep.
12	SE.	9	"	"	"	Dug	9	1,568	- 4	1,564	4	1,564	Glacial sand	Soft,clear		D, S	Sufficient for local needs.
13	SW.	9	"	"	"	Dug	11	1,625	- 8	1,617	9	1,616	Glacial sand	Hard,clear, "alkaline"		D, S	Sufficient for 20 head stock.
14	NE.	10	"	"	"	Dug	53	1,610	- 50	1,560	50	1,560	Glacial sand	Soft,clear		D, S	Constant water-level; another well 56 feet deep; an 81-foot wellwas filled in due to gas.
15	NW.	12	"	"	"	Bored	80	1,675	- 30	1,645	80	1,595	Glacial gravel	Hard,clear, iron		D, S, I	Oversufficient for local needs.
16	SE.	12	"	"	"	Dug	73	1,673	- 70	1,603	70	1,603	Glacial sand	Hard,clear		D	Insufficient for local needs; haul water for stock.
17	NE.	13	"	"	"	Dug	70	1,681	- 67	1,614	70	1,611	Glacial sand and gravel	Hard,clear, "alkaline"		D, S, I	Sufficient for 200 head stock; also a spring on farm.
18	SW.	15	"	"	"	Dug	25	1,598	- 15	1,583			Glacial sand	Soft,clear		N	Not used due to caving of cribbing.
19	SE.	16	"	"	"	Dug	22	1,588	- 19	1,569	19	1,569	Glacial fine sand	Soft,clear		D, S	Sufficient for local needs.
20	SW.	16	"	"	"	Dug	20	1,580	- 10	1,570	12	1,568	Glacial sand	Hard,clear		D, S	Sufficient for local needs.

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

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

WELL RECORDS—Rural Municipality of COTE NO. 271, 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	NW.	17	28	31	1	Dug	36	1,619	- 20	1,599			Glacial gravel	Hard,clear		D, S	Sufficient for local needs.
22	SE.	17	"	"	"	Dug	15	1,590	- 9	1,581	11	1,579	Glacial sand	Hard,clear, "alkaline"		D, S	Sufficient for local needs.
23	NW.	18	"	"	"	Dug	23	1,617	- 16	1,601			Glacial drift	Hard,clear, "alkaline"		D, S	Sufficient for local needs.
24	SW.	18	"	"	"	Dug	28	1,631	- 23	1,608			Glacial drift	Hard,clear, "alkaline"		S	Insufficient for 20 head stock.
25	NW.	19	"		"	Dug	20	1,604	- 16	1,588	16	1,588	Glacial gravel	Hard,clear, iron		D, S	Sufficient for local needs.
26	NE.	20	"	"	"	Dug	55	1,605									Dry hole; base in glacial blue clay.
27	SE.	20	"	"	"	Dug	26	1,616	- 18	1,598	26	1,590	Glacial gravel	Hard,clear		D, S	Sufficient for 50 head stock.
28	NE.	21	"	"	"	Dug	35	1,575	- 30	1,545	30	1,545	Glacial sand	Hard,clear		D, S	Sufficient for local needs; also two other similar wells.
29	SE.	21	"	"	"	Dug	30	1,601	- 27	1,574	27	1,574	Glacial sand	Soft,clear		D, S	Abundant supply.
30	SW.	21	"	"	"	Dug	25	1,600	- 20	1,580			Glacial sand and gravel	Hard,clear, iron		D, S	Sufficient for local needs.
31	NW.	22	"	"	"	Dug	6	1,524	- 2	1,522	2	1,522	Glacial sand	Soft,clear		D, S	Abundant supply.
32	SW.	22	"	"	"	Dug	10						Glacial sand	Soft		D, S	Sufficient for local needs.
33	SW.	24	"	"	"	Dug	82	1,650	- 80	1,570	80	1,570	Glacial sand	Hard,clear		D, S	Sufficient for local needs.
34	SE.	24	"	"	"	Dug	60	1,679	- 48	1,631	48	1,631	Glacial drift	Hard,clear, "alkaline"		D, S	Insufficient for 25 head stock; another well 55 foot deep.
35	NE.	25	"	"	"	Dug	38	1,661	- 19	1,642			Glacial sand	Hard,clear		D, S, I	Intermittent supply; also ten dry holes to a depth of 70 foot.
36	SE.	25	"	"	"	Bored	40	1,660	0	1,660	40	1,620	Glacial sand	Hard,clear, "alkaline"		S, I	Sufficient for local needs; 3 other wells 48, 40 and 30 foot deep.
37	NE.	26	"	"	"	Dug	14	1,623	- 12	1,611	12	1,611	Glacial sand	Hard,clear		D, S	Sufficient for local needs.
38	NW.	27	"	"	"	Dug	14	1,425	- 10	1,415	10	1,415	Glacial gravel	Hard,clear		D,	Sufficient for domestic needs; use river for stock.
39	NE.	28	"	"	"	Dug	12	1,489	- 8	1,481	8	1,481	Recent silt	Hard,clear		S	Intermittent supply; also a 50-foot dry hole.
40	SW.	29	"	"	"	Dug	14	1,589	- 10	1,579	13	1,576	Glacial sand and gravel	Soft,clear		D, S	Abundant supply; also seven dry holes to a depth of 60 foot.
41	SE.	29															Eighteen dry holes; bases in glacial blue clay.
42	NW.	30	"	"	"	Dug	12	1,570	- 2	1,568	11	1,559	Glacial gravel	Hard,clear, "alkaline"		D, S	Intermittent supply.
43	NW.	30	"	"	"	Dug	18	1,545					Glacial sand	Hard,clear, "alkaline"		S	Intermittent supply; haul water for domestic needs.
44	SW.	30	"	"	"	Dug	30	1,586	- 10	1,576	10	1,576	Glacial gravel	Hard,clear		D, S	Intermittent supply; another similar well 45 foot deep.
45	SW.	31	"	"	"	Dug	15	1,530	- 5	1,525			Glacial sandy clay	Hard,clear		D, S	Sufficient for local needs; also fifteen dry holes, the deepest of which is 125 foot.
46	SE.	32	"	"	"	Dug	23	1,553	- 19	1,534	20	1,533	Glacial gravel	Hard,clear		D, S	Sufficient for local needs.
47	SE.	33	"	"	"	Dug	9	1,423	- 5	1,418	5	1,418	Glacial sand and gravel	Soft,clear		D	Abundant supply; stock watered at river.

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 GOOSE NO. 271, 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
48	NW	35	28	31	1	Dug	20	1,592	- 4	1,588	17	1,575	Glacial gravel	Hard, clear		D, S	Sufficient for 40 head stock; also an 8-foot well and a spring.
49	NW	36	"	"	"	Bored	50	1,660	- 40	1,620	40	1,620	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient for local needs; also another well 40 feet deep.
50	NE	36	"	"	"	Dug	14	1,663	- 10	1,653	10	1,653	Glacial gravel	Hard, clear, "alkaline"		D, S	Insufficient supply during winter; haul water for stock.
51	SE	36	"	"	"	Dug	20	1,686	- 15	1,671	19	1,667	Glacial gravel	Hard, clear		D	Insufficient supply during winter; also another well 10 feet deep.
52	SE	36	"	"	"	Dug	60	1,667									Dry hole; base in glacial clay; also a 16-foot seepage well.
53	S	36	"	"	"	Dug	10	1,688	- 6	1,682	6	1,682	Glacial gravel	Hard, clear		D, S	Oversufficient for local needs.
54	SW	36	"	"	"	Dug	12	1,652	- 6	1,646	6	1,646	Glacial sand	Hard, clear		D, S	Sufficient only for domestic needs; also two dry holes.
1	NE	2	28	32	1	Dug	30	1,529	- 15	1,514			Glacial drift	Hard, clear		D	Intermittent supply; also another well 14 feet deep.
2	SE	2	"	"	"	Dug	20						Glacial gravel	Hard		D, S	Fair supply.
3	SE	3	"	"	"	Dug	22	1,583	- 19	1,564			Glacial gravel	Hard, clear		D, S	Sufficient for local needs; another well 22 feet deep.
4	NE	3	"	"	"	Dug	45	1,574	- 40	1,534	40	1,534	Glacial sand	Hard, clear		D, S	Sufficient supply; another well 30 feet deep; also a 10-foot dry hole.
5	SE	4	"	"	"	Bored	72	1,599	- 48	1,551	72	1,527	Glacial sand	Hard, clear, iron		D, S	Sufficient for 70 head stock.
6	SE	5	"	"	"	Bored	40	1,621	- 34	1,587			Glacial drift	Hard, clear		D, S	Sufficient for local needs.
7	NW	5	"	"	"	Bored	83	1,621	- 30	1,591	83	1,538	Glacial gravel	Hard, clear		D, S	Abundant supply; also a number of dry holes.
8	NE	6	"	"	"	Bored	35	1,608	- 20	1,588	35	1,573	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
9	NE	7	"	"	"	Dug	13	1,630	- 9	1,621	12	1,618	Glacial sand	Hard, clear		D, S	Insufficient supply; another well 40 feet deep.
10	NE	9	"	"	"		50	1,597									Dry hole; base in glacial blue clay; also a 16-foot seepage well.
11	SE	10	"	"	"	Bored	37	1,558	- 15	1,543			Glacial gravel	Hard, clear		D, S	Insufficient for local needs.
12	NW	10	"	"	"	Dug	80	1,591	- 30	1,561			Glacial sand	Hard, clear		D, S	Sufficient supply; also two other wells 42 and 12 feet deep.
13	SE	11	"	"	"	Dug	10	1,546	- 7	1,539	7	1,539	Glacial sand	Soft, clear		D, S	Sufficient for local needs; also a 33-foot dry hole.
14	SW	12	"	"	"	Bored	80	1,529	- 30	1,499			Glacial drift	Hard, clear, "alkaline"		D, S	Sufficient for local needs.
15	NW	12	"	"	"	Dug	40	1,548	- 36	1,512			Glacial drift	Hard, clear, iron		D, S	Intermittent supply; another similar well 25 feet deep is not used.
16	SW	13	"	"	"	Bored	24	1,532	- 12	1,520	24	1,508	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient for local needs.
17	NE	13	"	"	"	Dug	30	1,620	- 26	1,594			Glacial fine sand	Hard, cloudy, "alkaline"		S	Sufficient for local needs; haul water for domestic needs.
18	NW	14	"	"	"	Dug	28	1,538	- 20	1,518	28	1,510	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
19	NE	14	"	"	"	Dug	50	1,530	- 40	1,490			Glacial drift	Hard, clear, "alkaline"		D, S	Intermittent 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 COTE NO. 271, 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
20	SW.	16	28	32	1	Dug	45	1,598	- 30	1,568	12	1,586	Glacial sand	Hard,clear, "alkaline"		D, S	Sufficient for local needs.
21	SE.	17	"	"	"	Dug	43	1,610	- 30	1,580			Glacial drift	Hard,clear, "alkaline"		D, S	Intermittent supply.
22	NW.	17	"	"	"	Bored	30	1,612	- 15	1,597	20	1,592	Glacial drift	Hard,clear, iron		D, S	Insufficient for local needs.
23	NE.	17	"	"	"	Dug & Bored	72	1,593	- 16	1,577			Glacial sand	Hard,clear, iron,"alkaline"		D, S	Intermittent supply.
24	SW.	18	"	"	"	Bored	42	1,645	- 20	1,625	20	1,625	Glacial gravel	Hard,clear		D, S	Abundant supply.
25	SE.	19	"	"	"	Dug	15	1,638	- 10	1,628			Glacial sandy clay	Hard,clear		D, S	Insufficient for local needs; another similar well 20 feet deep.
26	SE.	20	"	"	"	Dug	35	1,610	- 28	1,582			Glacial sandy clay	Hard,clear		D, S	Sufficient for local needs.
27	SW.	20	"	"	"	Dug	60	1,629	- 20	1,609			Glacial drift	Hard,clear		D	Sufficient for domestic needs; another well 20 feet deep; also 30-foot dry hole.
28	NW.	20	"	"	"	Dug	18	1,611	- 14	1,597	14	1,597	Glacial sand	Hard,clear		D, S	Insufficient for local needs; also an 84-foot well with a very small supply.
29	NE.	21	"	"	"	Bored	46	1,629	- 38	1,591			Glacial drift	Hard,clear		S	Insufficient for local needs; also springs in ravine used by stock.
30	SE.	22	"	"	"	Dug	16	1,547									Dry hole; base in glacial blue clay.
31	SW.	22	"	"	"	Dug	40	1,631	- 25	1,606			Glacial drift	Hard,clear, iron,"alkaline"		D, S	Insufficient supply during dry seasons.
32	NE.	22	"	"	"	Bored	70	1,553	- 30	1,523			Glacial drift	Hard,clear, iron,"alkaline"		D, S	Sufficient for local needs.
33	SE.	24	"	"	"	Bored	75	1,626	- 40	1,586			Glacial drift	Hard,"alkaline"		D, S	Sufficient for local needs; another well 40 feet deep.
34	NW.	25	"	"	"	Dug	22	1,565	- 12	1,553	20	1,545	Glacial gravel	Hard,clear		S	Abundant supply; another well 60 feet deep has a small supply; also a 90-foot dry hole.
35	NE.	25	"	"	"	Dug	18	1,582	- 13	1,569	17	1,565	Glacial gravel	Hard,clear, "alkaline"		D, S	Sufficient for local needs with aid of another similar well.
36	NE.	26	"	"	"	Dug	30	1,593	- 18	1,575	27	1,566	Glacial gravel	Hard,clear		D, S	Sufficient for local needs; two other similar wells not used.
37	NW.	27	"	"	"	Dug	25	1,637	- 10	1,627			Glacial drift	Hard,clear, "alkaline"		D, S	Sufficient for local needs.
38	NW.	28	"	"	"	Dug	6	1,542	0	1,542			Glacial gravel	Hard,clear, iron		D, S	Abundant supply; also a spring on farm.
39	NE.	28	"	"	"	Bored	80	1,616	- 12	1,604	80	1,536	Glacial sand	Hard,iron, red sediment		D, S	Abundant supply; also two dry holes 50 and 30 feet deep.
40	SE.	28	"	"	"	Bored	50						Glacial drift	Hard		D	Sufficient only for domestic needs.
41	SW.	28	"	"	"	Spring							Glacial drift	Hard		S	Sufficient for local needs.
42	SE.	29	"	"	"	Dug	20	1,625	- 18	1,607	18	1,607	Glacial sand	Hard,clear		S	Intermittent supply; also another well 14 feet deep.
43	NE.	29	"	"	"	Dug	26	1,608	- 22	1,586	24	1,584	Glacial gravel	Hard,iron, red sediment		D	Insufficient for local needs.
44	NW.	31	"	"	"	Dug	9	1,595	- 7	1,588	7	1,588	Glacial sand and gravel	Soft,clear		D, S	Abundant supply; used also by neighbours.

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 COTE NO. 271, 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
45	NE.	31	28	32	1	Dug	22	1,592	- 18	1,574	20	1,572	Glacial sand	Hard,clear		D, S	Sufficient for local needs.
46	SE.	32	"	"	"	Dug	12	1,614	- 9	1,605			Glacial sand	Hard,clear		D, S	Sufficient for 10 head stock.
47	S..	32	"	"	"	Dug	20	1,598	- 14	1,584			Glacial sandy clay	Hard,clear		D, S	Sufficient for local needs.
48	NW.	32	"	"	"	Dug	10	1,582	- 3	1,579			Glacial sand	Soft,clear		D, S	Oversufficient for 20 head stock.
49	S..	33	"	"	"	Dug	25	1,607	- 11	1,596			Glacial clay	Hard,clear		D, S	Intermittent supply.
50	NE.	34	"	"	"	Dug	13	1,556	- 7	1,549			Glacial sand	Hard,clear		D, S	Sufficient for 50 head stock; another well 12 feet deep; also a 45-foot dry hole.
51	SE.	35	"	"	"	Dug	12	1,540	0	1,540	0	1,540	Glacial sand and gravel	Hard,clear		D, S	Abundant supply; another well 80 feet deep with small supply.
52	S..	36	"	"	"	Dug	25	1,573	- 18	1,555			Glacial sandy clay	Hard,clear		D, S	Sufficient for local needs with aid of two other similar wells.
53	NE.	36	"	"	"		64	1,541									Fourteen dry holes 30 to 64 feet deep; bases in glacial blue clay.
1	NE.	24	28	33	1	Dug	25	1,653	- 15	1,638	20	1,633	Glacial sand	Hard,clear, iron		D, S	Sufficient for local needs,
2	NE.	25	"	"	"	Dug	12	1,643	- 5	1,638	5	1,638	Glacial sand	Soft,clear		D	Sufficient only for domestic needs; another well 79 feet deep.
3	SE.	36	"	"	"	Dug	22	1,627	- 16	1,611	20	1,607	Glacial gravel	Hard,clear		D, S	Insufficient for local needs during dry seasons.
4	NE.	36	"	"	"	Dug	15	1,603	- 5	1,598	12	1,591	Glacial sand	Hard,clear		D, S	Sufficient for local needs; also another well 32 feet deep.
1	SE.	2	29	30	1	Dug	15	1,926	- 8	1,918	12	1,914	Glacial sand	Hard,clear		D, S	Sufficient supply; except during 1934.
2	S..	2	"	"	"	Dug	24	1,911	- 17	1,894	17	1,894	Glacial gravelly clay	Hard,clear		D, S	Oversufficient for local needs; another well 7 feet deep.
3	NE.	3	"	"	"	Dug	22	1,969	0	1,969			Glacial drift	Hard,cloudy		D, S	Insufficient for local needs; seven other similar wells.
4	S..	3	"	"	"	Dug	8	1,965	- 4	1,961	6	1,959	Glacial gravel	Hard,clear		D, S, I	Oversufficient for local needs; another simil well; also a 23-foot well with intermittent supply.
5	NE.	4	"	"	"	Dug	37	1,938	- 24	1,914	36	1,902	Glacial sand	Hard,clear, iron,"alkaline"		D, S	Sufficient for local needs; also use a lake for stock.
6	S..	4	"	"	"	Dug	50	1,877									Dry hole; base in glacial blue clay.
7	S..	5	"	"	"	Spring		1,760					Glacial gravel	Hard,clear		D, S	Oversufficient for local needs; also use a creek for stock.
8	SW.	6	"	"	"	Dug	19	1,645	- 9	1,636	16	1,629	Glacial sand	Hard,clear, iron		D, S	Oversufficient for 20 head stock.
9	S..	6	"	"	"	Dug	15	1,645	- 12	1,633	12	1,633	Glacial sand and gravel	Hard,clear		D, I	Sufficient for local needs; used also by hamlet of Runnymede.
10	NE.	7	"	"	"	Dug	25	1,780	- 23	1,757	23	1,757	Glacial sand	Hard,clear, "alkaline"		D, S, I	Sufficient for 10 head stock; also use a lake for stock.
11	SW.	7	"	"	"	Dug	18	1,660	- 6	1,654	14	1,646	Glacial sand and gravel	Hard,clear, iron,"alkaline"		D, S	Insufficient for 15 head stock; also two springs on farm; haul water from creek.
12	SE.	9	"	"	"	Dug	80	1,988									Dry hole; base in glacial blue clay; also a 35-foot well with an intermittent supply.

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

WELL RECORDS—Rural Municipality of COTE NO. 271, 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
13	SW.	10	29	30	1	Dug	22	1,942	0	1,942	20	1,922	Glacial gravel	Hard, clear, iron, red sediment		D, S, I	Intermittent supply; also a similar well 83 feet deep.
14	NW.	10	"	"	"	Dug	12	1,950	- 9	1,941	9	1,941	Glacial sandy clay	Hard, clear		D, S, I	Sufficient for local needs; also use a lake for stock.
15	SE.	14	"	"	"	Spring		1,976					Glacial sand	Hard, clear		D, S	Sufficient for local needs.
16	SW.	14	"	"	"	Dug	3	1,980	- 1	1,979	1	1,979	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
17	SE.	17	"	"	"	Dug	8	1,764	- 4	1,760			Glacial gravel	Hard, clear		D, S	Sufficient for local needs.
18	NE.	19	"	"	"	Spring		1,620					Glacial gravel	Hard, iron, "alkaline" red sediment		D, S	Oversufficient for local needs.
19	SW.	21	"	"	"	Dug	17	1,970	- 13	1,957	13	1,957	Glacial gravel	Soft, clear		D, S, I	Oversufficient for local needs; also use a lake and a spring for stock.
20	SW.	22	"	"	"	Dug	20	1,973	- 18	1,955	18	1,955	Glacial sand	Hard, clear		S	This well has not been tried to any extent, a spring is used also.
21	SE.	23	"	"	"	Dug	23	1,975	- 16	1,959	22	1,953	Glacial gravel	Hard, clear, iron		D, S	Sufficient for 12 head stock.
22	NW.	30	"	"	"	Dug	30	2,026									Dry hole; base in glacial blue clay; two other dry holes 35 and 20 feet deep.
23	SW.	30	"	"	"	Bored	40	2,000									Dry hole; base in glacial blue clay; another dry hole 20 feet deep.
24	SE.	30	"	"		Spring		1,880					Glacial gravel	Hard, clear, iron, "alkaline"		D, S	Oversufficient for local needs.
25	NE.	34	"	"	"	Spring	4	2,155	- 1	2,154	1	2,154	Glacial gravel	Hard, clear, iron, "alkaline"		D, S	Oversufficient for local needs.
1	SW.	1	29	31	1	Dug	15	1,659	- 11	1,648	13	1,646	Glacial gravel	Hard, clear		D, S	Sufficient for local needs.
2	NW.	1	"	"	"	Dug	33	1,642	- 8	1,634	25	1,617	Glacial gravel	Hard, clear		D, S	Sufficient for local needs.
3	SE.	2	"	"	"	Dug	10	1,659	- 7	1,652	7	1,652	Glacial sand and gravel	Hard, clear		D, S	Oversufficient for 50 head stock; another well 45 feet deep; also a 75-foot dry hole.
4	SE.	3	"	"	"	Dug	22	1,596	- 16	1,580	16	1,580	Glacial sand	Hard, clear		D, S	Abundant supply; also two other wells 20 feet deep and a spring.
5	SW.	3	"	"	"	Dug	15	1,549	- 12	1,537	12	1,537	Glacial gravel	Hard, clear		D, S	Intermittent supply; two other wells 10 and 8 feet deep.
6	NE.	3	"	"	"	Dug	35	1,590	- 30	1,560	30	1,560	Glacial gravel	Hard, clear		D, S	Sufficient for local needs.
7	SE.	4	"	"	"	Dug	10	1,568	- 5	1,563	5	1,563	Glacial sand	Hard, clear		D, S	Sufficient for local needs; sloughs used by stock.
8	NE.	4	"	"	"	Dug	18	1,535	- 14	1,521	14	1,521	Glacial sand	Soft, clear		D, S	Sufficient for local needs; another well 10 feet deep; also a dry hole.
9	NE.	5	"	"	"	Dug	12	1,468	- 5	1,463	5	1,463	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient for local needs.
10	NW.	6	"	"	"	Dug & Bored	35	1,520	- 20	1,500	28	1,492	Glacial sand	Hard, clear		S	Intermittent supply; another well 19 feet deep.
11	SE.	9	"	"	"	Dug	3	1,525	- 2	1,523	2	1,523	Glacial sand and gravel	Soft, clear		D, S	Abundant supply; also another well 10 feet deep with intermittent 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 COTE NO.271, 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
12	SE.	9	29	31	1	Bored	55	1,578	- 50	1,528	50	1,528	Glacial sand and gravel	Soft, clear		D	Abundant supply; also a 55-foot dry hole.
13	NE.	9	"	"	"	Dug	8	1,500	- 4	1,496	4	1,496	Glacial sand and gravel	Hard, clear		D, S	Sufficient supply; also a spring and a 16-foot dry hole.
14	SE.	10	"	"	"	Dug	60	1,595	- 54	1,541	54	1,541	Glacial drift	Hard, cloudy		D, S	Sufficient for 40 head stock.
15	SW.	10	"	"	"	Dug	5	1,465	- 2	1,463	2	1,463	Glacial sand	Hard, clear		D, S	Abundant supply.
16	NE.	10	"	"	"	Dug	43	1,573	- 19	1,554	24	1,549	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient for 30 head stock.
17	NE.	11	"	"	"	Dug	16	1,562	- 10	1,552	14	1,548	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
18	SW.	12	"	"	"	Dug	20	1,606	- 17	1,589	17	1,589	Glacial sand and gravel	Hard, clear		D, S	Sufficient for local needs.
19	NE.	12	"	"	"	Dug	7	1,655	- 4	1,651	6	1,649	Glacial sand and gravel	Hard, clear, "alkaline"		D, S, I	Sufficient for 18 head stock; another similar well 7 feet deep is not used.
20	SE.	14	"	"	"	Dug	32	1,545	- 30	1,515	30	1,515	Glacial sand	Hard, clear		D, I	Sufficient only for domestic needs; stock watered at [illegible] lake.
21	SE.	15	"	"	"	Dug	28	1,564	- 14	1,550			Glacial drift	Hard, clear, "alkaline"		D, S	Sufficient for 50 head stock.
22	SE.	16	"	"	"	Dug	8	1,453	- 5	1,448	5	1,448	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
23	NW.	17	"	"	"	Test-auger	40	1,432									Dry hole; base in glacial blue clay.
24	SW.	20	"	"	"	Dug	45	1,547	- 35	1,512	35	1,512	Glacial drift	Hard, clear, iron, "alkaline"		S	Sufficient supply; two other similar wells.
25	SE.	21	"	"	"	Dug	45	1,503	- 38	1,465	40	1,463	Glacial sandy clay	Hard, clear, "alkaline"		S	Sufficient for 20 head stock; another well 33 feet deep.
26	SW.	21	"	"	"	Bored	40	1,486	- 31	1,455	40	1,446	Glacial gravel	Hard, clear, "alkaline"		S	Sufficient supply.
27	NW.	21	"	"	"	Dug	28	1,570	- 16	1,554	28	1,542	Glacial sand	Hard, clear, iron, "alkaline" sulphur		D, S	Sufficient for local needs.
28	SW.	22	"	"	"	Dug	18	1,559	- 12	1,547	12	1,547	Glacial drift	Hard, clear		D, S	Sufficient for local needs.
29	NE.	23	"	"	"	Dug	24	1,567	- 13	1,554	17	1,550	Glacial gravel	Hard, clear		D, S	Sufficient for local needs.
30	NE.	25	"	"	"	Dug	11	2,033	- 1	2,032			Glacial drift	Hard, clear, "alkaline"		S	Sufficient for 17 head stock; also a 10-foot dry hole.
31	SW.	25	"	"	"	Spring		2,000					Glacial drift	Hard		D, S	Abundant supply.
32	SE.	27	"	"	"	Dug	18	1,454	- 13	1,441	13	1,441	Glacial gravelly clay	Hard, clear, "alkaline"		D, S	Insufficient for local needs.
33	SE.	28	"	"	"	Bored	59	1,566	- 56	1,510	56	1,510	Glacial sandy clay	Hard, clear, "alkaline"		S	Insufficient supply; use creek for all requirements.
34	NW.	29	"	"	"	Dug	30	1,592									Dry hole; base in glacial clay; also two seepage wells 19 and 5 feet deep.
35	SE.	30	"	"	"	Dug	8	1,582	- 1	1,581	5	1,577	Glacial gravel	Hard, clear		S	Sufficient supply; use ice for domestic needs.
36	NW.	30	"	"	"	Dug	8	1,572	- 2	1,570	7	1,565	Glacial gravel	Hard, clear, iron		S	Sufficient supply; another well 25 feet deep; use ice for domestic needs.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of COTE NO.271, 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
37	NE.	30	29	31	1	Bored	30	1,597	- 28	1,569			Glacial sandy clay	Hard,clear		D	Intermittent supply.
38	NE.	32	"	"	"	Dug	7	1,628	- 3	1,625	3	1,625	Glacial sand ?	Hard,clear		S	Sufficient supply.
39	NE.	33	"	"	"	Dug	22	1,790	- 9	1,781	9	1,781	Glacial gravelly clay	Hard,dark, "alkaline"		N	Intermittent supply.
40	NW.	35	"	"	"	Drilled	125	1,903									Dry hole; base in glacial blue clay; three other dry holes 15 feet deep; also a 6-foot well.
41	NE.	35	"	"	"	Dug	5	1,975	- 2	1,973	3	1,972	Glacial gravel	Soft,clear		S	Sufficient for 16 head stock; another well 58 feet deep is used for domestic needs.
42	SW.	36	"	"	"	Bored	44	1,957	- 14	1,943	14	1,943	Glacial sand and gravel	Hard,clear, iron		D, S	Sufficient for 70 head stock; also springs on farm.
1	NW.	1	29	32	1	Dug	15	1,487	- 7	1,480	7	1,480	Glacial sandy clay	Hard,clear		D, S	Sufficient for local needs.
2	NE.	1	"	"	"	Dug	25	1,520	- 22	1,498	22	1,498	Glacial sand	Hard,clear, iron		S	Constant water-level; three other wells 12 to 25 feet deep with mineralized water.
3	SE.	1	"	"	"	Dug	20	1,525	- 15	1,510			Glacial drift	Hard,clear		D, S	Intermittent supply; another similar well 12 feet deep; also a 62-foot dry hole.
4	SW.	1	"	"	"	Dug	55	1,520	- 8	1,512	50	1,470	Glacial sand	Hard,clear, iron,"alkaline"		S	Intermittent supply.
5	SW.	2	"	"	"	Dug	20	1,520	+ 1	1,521	23	1,497	Glacial drift	Hard,cloudy		D, S, I	Sufficient for local needs.
6	SE.	3	"	"	"	Dug	24	1,530	- 8	1,522	16	1,514	Glacial sand	Hard,dark		N	Intermittent supply; another similar well 20 feet deep; also a 20-foot well.
7	NE.	5	"	"	"	Dug	10	1,477	- 7	1,470			Glacial drift	Hard,clear			Intermittent supply.
8	SW.	5	"	"	"	Bored	15	1,560	- 11	1,549			Glacial sand ?	Hard,clear		D, S	Sufficient for 25 head stock.
9	SE.	6	"	"	"	Dug	18	1,560	- 14	1,546	14	1,546	Glacial sandy clay	Hard,cloudy		D, S	Sufficient for local needs.
10	NW.	8	"	"	"	Dug	28	1,507	- 4	1,503	4	1,503	Glacial drift	Soft,clear		D, S	Intermittent supply; also a spring on farm.
11	SW.	8	"	"	"	Spring							Glacial drift	Hard		D, S	Sufficient for local needs.
12	NE.	10	"	"	"	Bored	50	1,501	- 40	1,461			Glacial drift	Hard,clear, iron,"alkaline"		D, S	Sufficient for local needs.
13	SW.	10	"	"	"	Dug	27	1,518	- 15	1,503			Glacial drift	Hard,clear		D, S	Intermittent supply; another similar well 15 feet deep.
14	NW.	11	"	"	"	Dug	25	1,502	- 19	1,483			Glacial drift	Soft,clear		D, S	Sufficient for local needs.
15	NE.	12	"	"	"	Dug	14	1,474	- 2	1,472			Glacial drift	Hard,clear, "alkaline"		N	Intermittent supply; also several dry holes 15 to 20 feet deep.
16	SW.	12	"	"	"	Dug	18	1,487	- 12	1,475	12	1,475	Glacial sandy clay	Hard,clear, "alkaline"		S	Sufficient for local needs.
17	NE.	14	"	"	"	Dug	12	1,425	- 4	1,421	4	1,421	Glacial sandy clay	Hard,clear		D, S	Insufficient supply during dry seasons.
18	SW.	14	"	"	"	Dug	45	1,500	- 25	1,475			Glacial drift	Hard,clear		D, S	Sufficient supply; stock also watered at river.
19	NE.	15	"	"	"	Dug	30	1,480	- 27	1,453	27	1,453	Glacial sand	Hard,clear, iron,"alkaline"		S	Sufficient for 100 head stock; also a 36-foot dry hole.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of COTE NO.271, 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
20	SE.	15	29	32	1	Dug	12	1,459	- 6	1,453	6	1,453	Recent sand	Hard,clear, "alkaline"		S	Sufficient for local needs.
21	SW.	15	"	"	"	Dug	25	1,454	- 9	1,445			Glacial drift	Hard,clear		S	Intermittent supply; also a spring on farm.
22	NW.	16	"	"	"	Dug	20	1,438	- 10	1,428	18	1,420	Glacial sand	Hard,clear, "alkaline"		S	Intermittent supply; also another similar well
23	SE.	17	"	"	"	Dug	40	1,496	- 28	1,468			Glacial sand ?	Hard,clear, iron		D, S	Sufficient for local needs.
24	SW.	17	"	"	"	Dug	10	1,481	- 7	1,474	7	1,474	Glacial gravelly clay	Hard,clear		D, S	Insufficient for local needs; also five other similar wells.
25	NW.	18	"	"	"	Dug	30	1,543	- 18	1,525	20	1,523	Glacial sand	Hard,clear		S	Sufficient for local needs; also use sloughs for stock.
26	NE.	19	"	"	"	Dug	33	1,510	- 10	1,500	10	1,500	Glacial sandy clay	Hard,clear		D, S	Intermittent supply; another well 11 feet deep.
27	NW.	20	"	"	"	Dug	32	1,493	- 18	1,475	27	1,466	Glacial sand	Hard,clear, "alkaline"		D, S	Sufficient for local needs.
28	NW.	21	"	"	"	Dug	30	1,482	- 27	1,455	28	1,454	Glacial sand	Hard,clear, "alkaline"		D, S	Sufficient for 20 head stock.
29	NE.	25	"	"	"	Dug	30	1,535	- 5	1,530			Glacial sand	Hard,clear		D, S	Intermittent supply; another well 12 feet deep.
30	NW.	26	"	"	"	Bored	25	1,407	- 13	1,394			Glacial drift	Hard,clear, "alkaline"		D	Sufficient supply; stock watered at river.
31	SE.	27	"	"	"	Dug	22	1,400	- 16	1,384	16	1,384	Glacial sandy clay	Hard,clear		D, S	Sufficient for local needs; also use river for stock.
32	NW.	30	"	"	"	Dug	15	1,496	- 7	1,489	7	1,489	Glacial sandy clay	Hard,clear		D, S	Sufficient for local needs.
33	NE.	30	"	"	"	Dug	24	1,502	- 18	1,484			Glacial drift	Hard,clear, iron		D, S	Intermittent supply.
34	SE.	30	"	"	"	Dug	16	1,491	- 9	1,482			Glacial sand	Hard,clear		D, S	Insufficient for local needs; also another well that is not used.
35	NW.	31	"	"	"	Dug	20	1,502	- 14	1,488	17	1,485	Glacial sand	Hard,clear		D, S	Sufficient for local needs.
36	NE.	31	"	"	"	Bored	40	1,498	- 10	1,488	18	1,480	Glacial sand	Hard,"alkaline"		S	Sufficient supply; also another similar well.
37	SW.	32	"	"	"	Bored	35	1,504	- 23	1,481			Glacial drift	Hard,clear		D, S	Insufficient for local needs; also a 16-foot dry hole.
38	NE.	33	"	"	"	Bored	84	1,434	- 68	1,366	68	1,366	Glacial sand	Hard,"alkaline"		D, S	Intermittent supply; two other similar wells 12 feet deep.
39	SE.	34	"	"	"	Dug	20	1,419	- 13	1,406			Glacial drift	Hard,clear, "alkaline"		D, S	Sufficient for local needs.
40	NE.	34	"	"	"	Drilled	512	1,445									Dry hole; base in Marine Shale; also two other dry holes 773 and 500 feet deep.
41		34	"	"	"	Dug	18						Glacial sandy clay	Hard,clear			#
42	SW.	35	"	"	"	Dug	16	1,437	- 11	1,426			Glacial drift	Hard,clear		D, S	Intermittent supply; also a spring on farm.
43	SW.	36	"	"	"	Dug	14	1,430	- 10	1,420			Recent silt	Hard,clear, "alkaline"		N	Not used; small supply.
1	NE.	1	29	33	1	Dug	15	1,580	- 11	1,569			Glacial sandy clay	Hard,clear, iron		S	Sufficient supply; hauls drinking water.
2	SE.	1	"	"	"	Dug	25	1,580	- 15	1,565			Glacial drift	Hard,clear		D, S	Sufficient for local needs.

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(#) Sample taken for analysis.

WELL RECORDS—Rural Municipality of GOTE NO. 271, 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.	12	29	33	1	Bored	50	1,547	- 40	1,507	46	1,501	Glacial sand	Hard, clear, iron, "alkaline"		S	Intermittent supply; also two other similar wells.
4	NE.	36	"	"	"	Dug	22	1,506	- 11	1,495	11	1,495	Glacial sandy clay	Hard, clear		D, S	Sufficient for local needs with aid of another similar well.
5	SE.	36	"	"	"	Dug	37	1,518	- 12	1,506			Glacial drift	Soft, clear		D, S	Intermittent supply; also two other wells 30 and 28 feet deep.
1	NW.	27	30	30	1	Dug	25	2,012	- 15	1,997	15	1,997	Glacial gravel	Hard, clear, iron, "alkaline"		D	Oversufficient for local needs ; another well 10 feet deep.
2	NW.	28	"	"	"	Dug	11	2,012	- 5	2,007	5	2,007	Glacial gravelly clay	Hard, clear, "alkaline" iron		D, S	Sufficient for local needs; three other similar wells; also a 42-foot dry hole.
1	SW.	1	30	31	1	Dug	8	1,980	- 4	1,976	6	1,974	Glacial fine sand	Hard, clear, iron, "alkaline"		D, S	Sufficient for 20 head stock.
2	SE.	1	"	"	"	Dug	8	1,985	- 2	1,983			Glacial drift	Hard, clear		D, S	Sufficient only for domestic needs; stock watered at a lake.
3	SE.	2	"	"	"	Bored	45	1,994	- 15	1,979	45	1,949	Glacial sand	Hard, clear		D, S, I	Sufficient for 30 head stock; stock watered also at a lake.
4	SW.	3	"	"	"	Dug	8	1,809	- 6	1,803	6	1,803	Glacial gravel	Hard, clear, "alkaline"		D, S	Insufficient supply during dry seasons; also use sloughs for stock.
5	SW.	4	"	"	"	Bored	46	1,787	- 44	1,743	48	1,739	Glacial sand	Hard, clear, "alkaline" iron		D, S	Sufficient for 100 head stock.
6	NW.	4	"	"	"	Bored	90	1,768	- 85	1,683			Glacial drift	Hard, iron		D, S	Intermittent supply.
7	SW.	5	"	"	"	Dug	22	1,666	- 20	1,646	20	1,646	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient for 8 head stock; also another well 18 feet deep.
8	NW.	5	"	"	"	Dug	18	1,676	- 14	1,662	18	1,658	Glacial gravel	Hard, clear, iron		D, S, I	Oversufficient supply.
9	SE.	5	"	"	"	Dug	12	1,669	- 8	1,661	12	1,657	Glacial sand	Hard, clear, "alkaline"		D, S, I	Oversufficient supply.
10	NW.	6	"	"	"	Dug	22	1,610	- 8	1,602	8	1,602	Glacial gravel	Soft, clear		D	Intermittent supply; another well 10 feet deep has a good supply; a 24-foot well unfit for use; also a 33-foot dry hole.
11	SE.	6	"	"	"	Dug	8	1,668	- 1	1,667	8	1,660	Glacial sand	Hard, clear, iron		D, S, I	Oversufficient supply; a 30-foot well is not used.
12	SE.	7	"	"	"	Dug	19	1,624	+ 5	1,629	19	1,605	Glacial sand	Hard, clear, iron		D, S	Oversufficient supply; also a 25-foot well and a 9-foot well.
13	NE.	7	"	"	"	Dug	32	1,676	- 4	1,672	32	1,644	Glacial sand	Hard, clear, iron, "alkaline"		D, S	Oversufficient supply; also a 16-foot well that is not used.
14	NW.	7	"	"	"	Dug	8	1,580	- 4	1,576			Glacial gravel	Hard, cloudy, "alkaline" iron		S	Intermittent supply; also a spring on farm.
15	NW.	8	"	"	"	Bored	44	1,711	- 12	1,699	44	1,667	Glacial sand	Hard, clear, "alkaline" iron		D, S	Sufficient for 18 head stock; also a 24-foot well with intermittent supply.
16	NW.	9	"	"	"	Bored	67	1,785					Glacial black sand	Hard, clear, "alkaline"		N	Unfit for use; also several springs on farm.
17	SW.	10	"	"	"	Spring		1,870	+ 2	1,872	0	1,870	Glacial drift	Hard, clear, iron		D, S	Oversufficient for local needs; also a 9-foot well with intermittent supply.

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WELL RECORDS—Rural Municipality of COTE NO.271, 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	NW.	10	30	31	1	Dug	9	1,869	- 1	1,868	8	1,861	Glacial gravel	Hard, clear, "alkaline" iron		D, S	Sufficient for 10 head stock; also three dry holes 9 to 20 feet deep.
19	SW.	12	"	"	"	Dug	6	2,025	- 3	2,022	3	2,022	Glacial sandy clay	Hard, clear		D, S, I	Sufficient for 20 head stock.
20	SW.	15	"	"	"	Dug	8	1,871	0	1,871			Glacial gravel	Hard, clear, "alkaline" iron		D, S	Sufficient for local needs; also two dry holes
21	SW.	22	"	"	"	Dug	22	1,882	- 17	1,865			Glacial drift	Hard, clear, "alkaline" iron		D, S	Sufficient for 15 head stock; also a spring on farm.
22	NE.	22	"	"	"	Dug	15	1,956	- 1	1,955			Glacial drift	Hard, clear, "alkaline"		D, S, I	Intermittent supply; also dry holes to a depth of 30 feet.
23	NE.	23	"	"	"	Dug	20	1,950					Glacial drift	Hard		D, S	Intermittent supply.
24	SW.	23	"	"	"	Dug	20	1,950					Glacial drift	Hard		D, S	Intermittent supply.
25	SE.	23	"	"	"	Dug	20	1,950					Glacial drift	Hard		D, S	Intermittent supply.
26	NW.	23	"	"	"	Dug	8	1,950	- 2	1,948	7	1,943	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient only for domestic needs.
27	NE.	28	"	"	"	Dug	40	1,920	- 20	1,900	40	1,880	Glacial sand	Hard, clear		D, S	Sufficient supply.
28	SW.	28	"	"	"	Dug	5	1,907	- 2	1,905	2	1,905	Glacial gravel	Hard, clear, iron		D, S	Oversufficient supply; also dry holes to a depth of 20 feet.
1	SW.	1	30	32	1	Dug	32	1,543	- 27	1,516	28	1,515	Glacial sand	Hard, clear		D, S	Sufficient for 46 head stock; also fifteen dry holes to 20 to 45 feet deep.
2	NE.	2	"	"	"	Dug	16	1,516	- 6	1,510	6	1,510	Glacial drift	Hard, clear, "alkaline"		S	Sufficient for stock needs; also a 32-foot well that is unfit for use.
3	NW.	2	"	"	"	Dug	14	1,445	0	1,445	6	1,439	Glacial gravel	Hard, clear, "alkaline" iron		D, S	Intermittent supply; also three dry holes 25 to 40 feet deep.
4	NE.	3	"	"	"	Dug	14	1,422									Dry hole; base in glacial blue clay; another dry hole 14 feet deep in Marine Shale.
5	SW.	5	"	"	"	Drilled	66	1,493	- 20	1,473	63	1,430	Glacial sand	Hard, clear		D, S	Sufficient for local needs.
6	NW.	6	"	"	"	Dug	18	1,513	- 14	1,499	14	1,499	Recent sandy	Hard, clear		D, S	Sufficient supply; another similar well 25 feet deep.
7	NE.	6	"	"	"	Dug	20	1,502	- 5	1,497			Glacial drift	Hard, black		N	Intermittent supply; two other similar wells.
8	NE.	7	"	"	"	Dug	30	1,505	- 27	1,478			Glacial drift	Hard		D, S	Intermittent supply; two other similar wells 20 feet deep.
9	SE.	10	"	"	"	Dug	10	1,475	- 7	1,468	7	1,468	Glacial gravel	Hard, clear, "alkaline"		D	Intermittent supply; another similar well.
10	NE.	10	"	"	"	Dug	10	1,479	0	1,479			Glacial drift	Hard, clear, "alkaline"		S	Intermittent supply.
11	SE.	11	"	"	"	Dug	13	1,528	0	1,528	10	1,518	Glacial gravel	Hard, clear, "alkaline"		D, S	Sufficient for 25 head stock; also three dry holes to depth of 28 feet.
12	NW.	11	"	"	"	Bored	70	1,503									Dry hole; base in Marine Shale.
13	SE.	12	"	"	"	Dug	7	1,585	- 4	1,581	44	1,581	Glacial sand and gravel	Soft, clear		D, S, I	Oversufficient for 25 head stock; also another similar 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 COTE NO.271, 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	SE.	18	30	32	1	Bored	75	1,505	- 30	1,475			Glacial drift	Hard,clear		S	Intermittent supply; two other similar wells
15	NW.	19	"	"	"	Dug	50	1,522	- 25	1,497	25	1,497	Recent sandy clay	Hard,clear		S	Sufficient for stock needs; also use river for stock; use ice for domestic needs.
1	NE.	1	30	33	1	Dug	17	1,510	- 11	1,499	11	1,499	Glacial sand	Hard,clear		D, S	Sufficient supply; also two other similar wells
2	SE.	12	"	"	"	Dug	20	1,520	- 6	1,514	14	1,506	Glacial sand	Hard,clear, iron		D, S	Intermittent supply; two other wells 20 and 1 feet deep.
3	SE.	13	"	"	"	Bored	28	1,540	- 15	1,525			Glacial sand	Hard		N	This well is only a test hole.
4	NE.	24	"	"	"	Dug	15	1,522	- 10	1,512			Glacial sandy clay	Hard,clear		D	Sufficient only for domestic needs; also another well 35 feet deep.
5	NE.	25	"	"	"	Dug	60	1,517									Dry hole; base in glacial blue clay; also several other dry holes.
										COTE	INDIAN RESERVE		NO.64,	SASKATCHEWAN			
1	NE.	14	31	32	1	Dug	9	1,510	- 8	1,502			Glacial drift	Hard,clear, "alkaline"		S	Intermittent supply.
2	NE.	26	"	"	"	Dug	16	1,485	- 12	1,473	12	1,473	Glacial sand	Hard,clear		D, S	

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.