CANADA

DEPARTMENT OF MINES

AND

TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA

WATER SUPPLY PAPER No. 271

GROUND-WATER RESOURCES

OF

TOWNSHIPS 43 TO 46, RANGES 1 TO 4,

WEST OF FOURTH MERIDIAN,

ALBERTA

Records collected by P. S. Warren and G. S. Hume; compiled by G. S. Hume

OTTAWA

1947

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MINES AND GEOLOGY BRANCH
BUREAU OF GEOLOGY AND TOPOGRAPHY

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CONTENTS

Illustrations

GROUND-WATER RESOURCES OF TOWNSHIPS 35 TO 38, RANGES 1 TO 4, WEST 4TH MERIDIAN, ALBERTA

INTRODUCTION

Information on the ground-water resources of east-central Alberta and western Saskatchewan was collected, mostly in 1935, during the progress of geological investigations for oil and gas. The region studied extends from Edmonton in the west to Battleford in the east, and from township 32 on the south to township 59 in central Alberta, township 63 in eastern Alberta, and in part as far north as township 56 in western Saskatchewan.

This region is crossed by North Saskatchewan and Battle Rivers, and includes other more or less permanent streams. Most of the lakes within the area, however, are alkaline, and water is obtained in wells from two sources, namely, from water-bearing sands in surface or glacial deposits, and from sands in the underlying bedrock.

A division has been made in the well records, in so far as possible, between glacial and bedrock water-bearing sands. In investigations for oil and gas, however, the bedrock wells were used to trace the lateral extent of geological formations, with the result that the records deal more particularly with this type of well. No detailed studies were made of the glacial materials in relation to the water supply, nor were the glacial deposits mapped adequately for this purpose. In almost all of the region investigated in Alberta, and in all but the northeast part of the region studied in Saskatchewan, water can be obtained from bedrock. In a few places, however, the water from the shallower bedrock sands is unsatisfactory, and deeper drilling may be necessary.

The water records were obtained mostly from the well owners, some of whom had acquired the land after the water supply had been found, and hence had no personal knowledge of the water-bearing beds that had been encountered in their wells. Also, the elevations of the wells were taken by aneroid barometer and are, consequently, only approximate. In spite of these defects, however, it is hoped that the publication of these water records may prove of value to farmers, town authorities, and drillers in their efforts to obtain water supplies adequate for their needs.

In collecting this information several parties were employed. These were under the direction of Professors R. L. Rutherford and P. S. Warren of the University of Alberta, C. H. Crickmay of Vancouver, and C. O. Hage, until recently a member of the Geological Survey. The oil and gas investigations of which these water records are a part were undertaken under the general supervision of G. S. Hume.

Publication of Results

The essential information pertaining to ground-water conditions is being issued in reports that in Saskatchewan cover each municipality, and in Alberta cover each square block of sixteen townships beginning at the 4th meridian and lying between the correction lines. The secretary treasurer of each municipality in Saskatchewan and Alberta will be supplied with the information covering that municipality. Copies of the reports will also be available for study at offices of the Provincial and Federal Government Departments. Further assistance in the interpretation of the reports may be obtained by applying to the Chief Geologist, Geological Survey, Ottawa. Technical terms used in the reports are defined in the glossary.

How to Use the Report

Anyone desiring information concerning ground water in any particular locality will find the available data listed in the well records. These should be consulted to see if a supply of water is likely to be found in shallow wells sunk in the glacial drift, or whether a better supply may be obtained at greater depth in the underlying bedrock formations. The wells in glacial drift commonly show no regional level, as the sands or gravels in which the water occurs are irregularly distributed and of limited extent. As the surface of the ground is uneven, the best means of comparing water wells is by the elevations of their water-bearing beds. For any particular well this elevation is obtained by subtracting the figure for the depth of the well to the water-bearing bed from that for the surface elevation at the well. For convenience, both the elevation of the wells and the elevation of the water-bearing bed or beds in each well are given in the well record tables. Where water is obtained from bedrock, the name of the formation in which the water-bearing sand occurs is also listed in these tables, and this information should be used in conjunction with that provided on bedrock formations, pages 4 to 11, which describes these formations and gives their thickness and sequence. Where the level of the water-bearing sand is known, its depth at any point can easily be calculated by subtracting its elevation, as given in the well record tables, from the elevation of the surface at that point.

With each report is a map consisting of two figures. Figure 1 shows the bedrock formations that will be encountered beneath the unconsolidated surface deposits. Figure 2 shows the position of all wells for which records are available, the class of well at each location, and the contour lines or lines of equal surface elevation. The elevation at any location can thus be roughly judged from the nearest contour line, and the records of the wells show at what levels water is likely to be encountered. The depth of the well can then be calculated, and some information on the character and quantity of water can be obtained from a study of the records of surrounding wells.

GLOSSARY OF TERMS USED

Alkaline. The term "alkaline" has been applied rather loosely to some ground waters that have a peculiar and disagreeable taste. In the Prairie Provinces, water that is commonly described as alkaline usually contains a large amount of sodium sulphate and magnesium sulphate, the principal constituents of Glauber's salts and Epsom salts respectively. Most of the so-called alkaline waters are more correctly termed sulphate waters, many of which may be used for stock without ill effect. Water that tastes strongly of common salt is described as salty.

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 porous bed, lens, or pocket in unconsolidated deposits or in bedrock that carries water.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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 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.

(2) Wells in which the water is under pressure but does not rise to the surface.

(3) Wells in which the water does not rise above the water-table.

BEDROCK FORMATIONS IN EAST-CENTRAL ALBERTA

The formations that outcrop in east-central Alberta are mainly of Upper Cretaceous age, but Tertiary beds occur to the southwest in the Red Deer area. These higher strata are sandstones and shales with thin coaly and carbonaceous beds. Commercial coal beds occur in the Upper Cretaceous Edmonton formation, but other thin coal seams are present, particularly in the Ribstone Creek formation and in the Pale and Variegated Beds. Carbonaceous beds also occur in the Bearpaw formation and are widely scattered through other formations. The Edmonton formation contains some harder sandstones, but almost the whole Upper Cretaceous succession consists of softer sands and sandstones alternating with shales in which ironstone nodules are commonly present. The succession, character, and estimated thickness of the formations are shown in the following table:

Age	Formation	Character	Thickness Feet
Tertiary	Paskapoo	Sandstones and shales with thin coal seams and carbonaceous beds; basal sandstones, massive and crossbedded; some siliceous limestone 150 to 200 feet above the base of the formation.	A few hundred feet thick in Red Deer area. The thickness increases to the south and west.

	Edmonton	Grey to white bentonitic sandstones with grey and greenish shales; coal seams prominent in some areas as at Castor, Alberta.	1,000 to 1,150
	Bearpaw	Dark shales, green sands with smooth black chert pebbles; partly non-marine, with white bentonitic sands, carbonaceous shales, or thin coal seams similar to Pale Beds; shales at certain horizons contain lobster claw nodules and marine fossils; at other horizons are abundant selenite crystals.	300 to 600; Thins rapidly to the northwest.
Upper Cretaceous	Pale and Variegated Beds	Light grey sands with bentonite; soft, dark grey and light grey shales with selenite and ironstone; carbonaceous shales and coal seams; abundant selenite crystals in certain layers.	950 to 1,000 in Czar-Tit Hills area; may be thinner elsewhere.
	Birch Lake	Grey sand and sandstone in upper part; middle part of shales and sandy shales, thinly laminated; lower part with grey and yellow weathering sands; oyster bed commonly at base.	100 in west, but less to east and south
	Grizzly Bear	Mostly dark grey shale with a few minor sand horizons; marine origin, with selenite crystals and nodules up to 6 or 8 inches in diameter	Maximum, 100
	Ribstone Creek	Grey sands and sandstones at the top and bottom, with intermediate sands and shales; thin coal seams in the vicinity of Wainwright; mostly non-marine, but intermediate shale in some areas is marine.	Maximum, 325 at Viking; thins eastward.
	Lea Park	Dark grey shales and sandy shales with nodules of ironstone; a sand 70 feet thick 110 feet below the top of the formation in the Ribstone area.	950 to 1,100

Paskapoo Formation

The Paskapoo formation was first named by Tyrrell from exposures of the lower part of the formation occurring along Blindman

River near its confluence with the Red Deer. It is composed essentially of sandstones and shales of freshwater deposition, and includes some thin coal seams and carbonaceous beds. The basal beds are massive, crossbedded sandstones that weather buff-yellow, and are in striking contrast to the underlying, light-coloured, bentonitic clays of the Edmonton formation. About 150 to 200 feet above the base of the formation are beds of siliceous limestones containing gastropods and pelecypods, but these beds are lenticular rather than continuous, although a zone of them appears widely distributed at about the same stratigraphic level.

Edmonton Formation

The name Edmonton formation was first applied to the beds containing coal in the Edmonton area, and later to the same beds in adjoining areas. The formation has a total thickness of 1,000 to 1,150 feet, but is bevelled off eastwards, and the east edge of the formation follows a northwest line from Coronation through Tofield to a point on North Saskatchewan River about midway between Edmonton and Fort Saskatchewan. No Edmonton beds occur northeast of this line, but the formation becomes progressively thicker to the southwest due to the fact that the beds dip in that direction and are bevelled across at the surface.

The Edmonton formation consists of poorly bedded grey and greenish clay shales, coal seams, and sands and sandstones that contain clay and a white material known as bentonite. This material when wet is very sticky and swells greatly in volume, and when dry tends to whiten the beds containing it. Such beds are relatively impervious to water, and at the surface produce the "burns" of barren ground, where vegetation is scanty or absent.

Water is relatively abundant in the Edmonton formation, which contains much sand, commonly in the form of isolated lenses distributed irregularly through the formation. Water occurs in these sands, and, hence, there is little uniformity in the depth of wells even within a small area. Water also occurs commonly with coal seams, and, unlike the sand lenses, these beds are much more regular and persistent. In contrast with the water from the bentonitic sands, which is generally "soft", water from the coal seams, as the water from the shallow surface deposits, may be "hard". The basal beds of the Edmonton formation usually contain fresh water, but this may become brackish locally, where the underlying Bearpaw beds contain highly alkaline or salty water.

Bearpaw Formation

In southern Alberta, where the Bearpaw formation is thickest, the beds composing it are mainly shales that have been deposited in sea water. In the area north of township 32 the formation thins to the northwest and becomes a shoreline deposit composed of shales containing bentonite, impure sands, and thin coal seams. In some areas, as at Ryley and near Monitor, Alberta, and in the Neutral Hills, the Bearpaw contains pebble beds. At Ryley these are consolidated into a conglomerate, but mostly the pebbles are loosely distributed in shale or sandy beds.

In the area immediately north of township 32 the Bearpaw occupies a widespread belt beneath the glacial drift, but farther northwest the belt narrows, and at Ryley and northwestward it is only a few miles wide. This belt crosses North Saskatchewan River about midway between Edmonton and Fort Saskatchewan. Bearpaw beds form the main bedrock deposits of the Neutral Hills. Farther south, where they have an exposed thickness of at least 400 feet, they contain green sands, and beds of marine shale interfinger with the bentonitic shales and sands of the underlying formation. To the north, on the banks of North Saskatchewan River, the division between the Bearpaw and the overlying and underlying formations is indefinite, and the thickness of beds of Bearpaw age is relatively small.

The water in the Ryley area is from the Bearpaw formation, and is salty. In other areas to the south the marine Bearpaw formation carries green sand beds that yield fresh water, but commonly a much better supply is found by drilling through the Bearpaw into the underlying Pale Beds.

In Saskatchewan, Bearpaw beds occur southeast of Macklin and south of Luseland and Kerrobert. Only the basal beds are present, and these contain green sands that are commonly water-bearing.

Pale and Variegated Beds

Underlying the Bearpaw formation is a succession of bentonitic sands, shales, and sandy shales containing a few coal seams. The upper part of this succession, due to the bentonitic content, is commonly light coloured and has been described as the Pale Beds, whereas the lower part is darker, and is known as Variegated Beds. In part, dark shales are present in both Pale and Variegated Beds; others are greenish, grey, brown, and dark chocolate carbonaceous types. The sands may also be yellow, but where bentonite is present it imparts a light colour to the beds. Both Pale and Variegated Beds are characterized by the presence of thin seams of ironstone, commonly dark reddish, but in part purplish. Selenite (gypsum) crystals are, in places, abundant in the shales.

The best sections of Pale Beds exposed in the region are in the Tit Hills, southwest of Czar. These hills carry a thin capping of Bearpaw shales, beneath which, and around Bruce Lake, more than 200 feet of Pale Beds are exposed. The total thickness of Pale and Variegated Beds in the Tit Hills area is about 970 feet. Variegated Beds outcrop near Hawkins on the Canadian National Railway west of Wainwright, but no area exposes the complete succession, which is considered to comprise about 200 feet of beds.

Records of wells drilled into the Pale and Variegated Beds do not, in general, indicate lateral persistence of sands for long distances, nor any uniform average depth to water-bearing sands in a local area. This points to the conclusion that the sands are mainly lenticular, but as such lenses are numerous few wells fail to obtain water. In the Cadogan area many flowing wells have been obtained from sands about midway in the succession. In western Saskatchewan, Pale and Variegated Beds occur over a wide area from Macklin and Kerrobert northeast through Wilkie to the Eagle Hills, south of Battleford. Numerous outcrops occur in the area south of Unity at Muddy Lake, but south and east around Biggar these beds are almost wholly concealed by glacial drift.

The water from the sands of the Pale and Variegated Beds is generally soft. The supply, apparently, is dependent in part on the size of the sand body that contains the water and in part on the ease with which water may be replenished in the sand. Small sand lenses surrounded by shales may be filled with water that has infiltrated into them, but when tapped by a well the supply may be very slowly replenished. In many instances such wells yield only a small supply, although this is commonly persistent and regular.

Birch Lake Formation

The Birch Lake formation underlies the Variegated Beds, but in many areas the division is not sharp. The type area of the formation is along the north shore of Birch Lake south of Innisfree, where a section 65 feet thick, composed mostly of sand, is exposed. The total thickness of the formation in this area is about 100 feet, and although this is dominantly sand a central part is composed of alternating thin sand and shale beds. At the base of the formation, in a number of places, is an oyster bed, and this is exposed in a road-cut in a section 73 feet thick on the east side of Buffalo Coulée, in sec. 3, tp. 47, rge. 7, W. 4th mer. In both upper and lower parts of the formation the sand is commonly massive and outcrops tend to consolidate into hard, nodular masses from a foot to a few feet in diameter. Apparently these are formed through the deposition of salts from the water that finds an outlet at the outcrops. In fact, in some areas the sand may be traced along the side of a hill by the presence of small springs or nodular masses of sandstone.

The Birch Lake formation occurs under the drift and in outcrops in a large area south of North Saskatchewan River and northeast of a line from Willingdon to Innisfree and Minburn. East of this area the southwest boundary is more irregular, but outcrops are persistent on the banks of Battle River from a few miles north of Hardisty to and beyond the mouth of Grizzly Bear Coulée in tp. 47, rge. 5. It is believed, too, that a large area near Edgerton and Chauvin is underlain by the Birch Lake formation and that it extends southeastward into Saskatchewan around Manitou Lake, and southeast to Vera.

It is thought that the Birch Lake formation thins eastwards from its type section at Birch Lake, and that it loses its identity in western Saskatchewan. Deep wells drilled at Czar, Castor, and elsewhere no longer show the Birch Lake as a clearly recognizable sand formation, so that its southern limit beneath younger formations is unknown. Wherever it occurs as a sand, however, it is water-bearing, although in some areas the sand is apparently too fine to yield any considerable volume of water. In other areas, however, it persistently yields good wells. There is no apparent uniformity in the character of the water, which is either hard or soft in different wells in the same general area. Direct contact with surface waters that contain calcium sulphate may in time change a "soft" water well to a "hard" water well, and many wells are not sufficiently cased to prevent the percolation of water from surface sands into the well, and hence into the deeper, soft water producing sands. In part this accounts for the change in character of the water in a well, a feature that has been noted by many well owners.

Grizzly Bear Formation

The type locality for the Grizzly Bear formation, which underlies the Birch Lake beds, is near the mouth of Grizzly Bear Coulée, a tributary of Battle River with outlet in tp. 47, rge. 5. The formation is mainly composed of dark shales that were deposited in sea water. At the mouth of Grizzly Bear Coulée two shale sections, each about 100 feet thick, are separated by a zone of thin sand beds. It is now recognized that the upper section is the Grizzly Bear shale, and that the lower one, very similar in character and also deposited in sea water, occurs in the next lower formation, the Ribstone Creek. The Grizzly Bear shale contains a thin nodular zone about 50 feet above the base, that is, at about the centre of the formation. This zone is sandy, and is believed to yield water in various wells. Other thin sands, in places water-bearing, are also present. The impervious nature of the Grizzly Bear shales makes the overlying Birch Lake sand a strong aquifer, as water collects in the sand above the shale. The contact of the Birch Lake and Grizzly Bear formations can be traced in some places by the occurrence of springs issuing from the base of the Birch Lake sand even where this is not exposed.

Grizzly Bear shales occur in a road-cut on the south side of Battle River near the Jasper highway bridge at Fabyan. The shales in this area are about 100 feet thick. It is thought they extend as far west as the Viking gas field, where they have been recognized in samples from deep wells. It is probable, however, that the shales thin westward and thicken eastwards so that their general form is a wedge between both higher and lower sand beds. The position of the thin edge of the wedge to the west is unknown, but evidently the Grizzly Bear marine shale underlies a large area in east-central Alberta, extending into Saskatchewan mainly in the area south of Battle River.

Ribstone Creek Formation

The type area of the Ribstone Creek formation is on Ribstone Creek near its junction with Battle River in tp. 45, rge. 1, W. 4th mer. At this place the lower sand beds of the formation are well exposed. On the north side of Battle River, in the northeast part of sec. 26, tp. 47, rge. 5, near the mouth of Grizzly Bear Coulée, the upper part of the lower sand member of this formation outcrops. Above it, higher on the bank and at a short distance from the river, there is a 12-foot zone of carbonaceous and coaly beds in two layers, each about 2 feet thick, separated by 8 feet of shale. Above this are 90 feet of dark shales that are thought to have been deposited in sea water, that is, they are marine shales.

These marine shales in turn are overlain by a sandy zone about 20 feet thick containing oysters in the basal part. This sandy zone is the upper sand member of the Ribstone Creek formation. It thickens to the east and west from the Grizzly Bear area, but is probably at no place much more than 50 feet thick.

The lower sand member of the Ribstone Creek formation also varies in thickness from a minimum of about 25 feet. On the banks of Vermilion Creek, north of Mannville, the basal sand is at least 60, and may be 75, feet thick. It is overlain by shaly sand and sandy shale beds, which replace the shale beds in the central part of the formation as exposed at the mouth of Grizzly Bear Coulée. In the Wainwright area, where the formation has been drilled in deep wells, the basal sand is 60 feet thick, with the central part composed of shale containing sand streaks. The upper sand member is about 20 feet thick in this area. The total thickness of the formation in the Wainwright area is 180 to 200 feet, but this increases to the west and in the Viking area exceeds 300 feet.

The Ribstone Creek formation is widely exposed in a northwest-trending belt in east-central Alberta. The southern boundary on the Alberta-Saskatchewan meridian is in the south part of township 44, south of Battle River, whereas the northern boundary is in township 51, a few miles north of Lloydminster. The southwest boundary of this northwest-trending belt passes through the mouth of Grizzly Bear Coulée in tp. 47, rge. 5, and beyond to the Tit Hills area in tp. 54, rge. 12, whereas the northeast boundary crosses North Saskatchewan River southwest of Elk Point and extends northwest to include an area only slightly north of St. Paul des Metis and Vilna to tp. 60, rge. 14. Within this belt water wells are common in the Ribstone Creek sands, which are almost without exception water-bearing in some part of the formation. The limits of the belt to the northeast determine the limits of water from this source, but to the southwest of the belt, as here outlined, water may be obtained in this formation by drilling through the younger beds that overlie it. The Ribstone Creek sands are a prolific source of water in many places, and hence the distribution of this formation is of considerable economic importance. Where the formation consists of upper and lower sands with a central shale zone only the sands are water-bearing, although thin sand members may occur in the shale. Where the formation is largely sand the distribution of water may be in any part of the formation, although the upper and lower sands are perhaps the better aquifers. To the east of Alberta along Battle River and Big Coulée in Saskatchewan the Ribstone Creek sands are marine. Marine conditions apparently become more prevalent to the southeast, and it is believed that in this direction the sands are gradually replaced by marine shales. Thus at some distance southeast of Battleford the Ribstone Creek formation loses its identity and its equivalents are shales in a marine succession.

Lea Park Formation

The Lea Park formation is largely a marine shale, and only in the upper 180 feet is there any water. In the Dina area south of Lloydminster the upper beds of the Lea Park consist of silty shales about 110 feet thick underlain by silty sands 70 feet thick. Below these sands are marine shales only, and these yield no fresh water either in east-central Alberta or west-central

Saskatchewan. The sand in the upper Lea Park formation is thus the lowest freshwater aquifer within a very large area. The extent of this sand in the Lea Park, particularly to the northeast, is not known, but as the strata in east-central Alberta have a southwest inclination, progressively lower beds occur at the surface to the northeast. Consequently, at a short distance beyond the northeast boundary of the Ribstone Creek formation, as previously outlined, the sand in the upper Lea Park reaches the surface, and represents the last bedrock aquifer in that direction. Farther northeast water must be obtained from glacial or surface deposits only. In Alberta this area without fresh water in the bedrock includes the country north of North Saskatchewan River in the vicinity of Frog Lake and a large area extending to and beyond Beaver River. In this area, however, more freshwater streams are present than farther south, and bush lands help to retain the surface waters. The area northeast of North Saskatchewan River in Saskatchewan is almost wholly within the Lea Park formation, where water can be found only in surface deposits.

TOWNSHIPS 43 TO 46, RANGES 1 TO 4, WEST FOURTH MERIDIAN

ALBERTA

Physical Features

Battle River, with a flat valley bottom and banks 200 to 250 feet high, cuts across the northeast part of this area. It is joined from the south by Ribstone Creek, which near its confluence with Battle River has cut a deep, narrow valley, but a few miles south and west, in the vicnity of Edgerton, it flows through a wide valley with gently sloping sides. Elsewhere the topography is gently rolling to hilly. A northwest-trending but poorly defined ridge extends from Chauvin to the northwest corner of the area north of Edgerton. South of the Canadian National Railway, particularly in the vicinity of Ribstone, the soil is sandy and in places sand hills are prominent. Southwest of Edgerton a plateau rises a couple of hundred feet above the level of the country to the east. The edge of this plateau is sand dunes and hills mostly covered with a growth of scrub and poplar trees.

Geology

The geology of this area is quite diverse, from Lea Park shales exposed in Battle River Valley near the 4th meridian to Pale and Variegated Beds presumed to underlie the drift in the western part. On Ribstone Creek near its mouth are extensive sand outcrops of the lower part of the Ribstone Creek formation, and at various places along the banks of Battle River are outcrops of Ribstone Creek, Grizzly Bear, and Birch Lake strata. Some deep wells have been drilled for oil and gas, and the Dina field, in tp. 45, rge. 1, for a number of years produced heavy crude oil from several wells.

Water Supply

In the south part of the area, where sand and sandy soil occurs, water is obtained close to the surface. Other wells yield water from sand and gravel beds in the glacial drift, but a great many wells have been sunk into the underlying bedrock. Water is obtained in all formations, including the upper part of the Lea Park where, in the Dina area, a sand about 70 feet thick occurs 110 feet below the base of the Ribstone Creek formation. This sand is thought to have been reached in NW. sec. 30, tp. 45, rge. 1, in a well drilled to a depth of 312 feet. Water was also reported from it in a number of deep wells drilled for oil and gas. This sand probably underlies a considerable part of the area, but in many cases wells have not had to be drilled this deep in order to obtain an adequate water supply. The sands of the Birch Lake and particularly the lower sand of the Ribstone Creek, formation are widespread and dependable sources of water.

Township 43, Range. 1. Several wells in this township obtain water in surface sand. Others, as in township 42, reach water-bearing sands in the glacial drift, and still others obtain water from Birch Lake and Ribstone Creek sands. In a well 246 feet deep, on SW. section 17, the water sand is presumably in the upper part of the Ribstone Creek formation at an elevation of 1,844 feet.

Wells on sections 19 and 20 at depths of 355 and 366 feet respectively reach a slightly lower horizon at 1,814 to 1,855 feet, and a well 400 feet deep, on NW. section 21, obtains salty water at a still lower horizon in the Lea Park formation at an elevation of 1,665 feet. Presumably this salty horizon is lower stratigraphically than that encountered at an elevation of 1,700 feet in the wells drilled for oil and gas at Vera, slightly more than 30 miles to the southeast.

Township 43, Range 2. In this township water is obtained at relatively shallow depths from sand and sandy soil. Deeper wells reach the Birch Lake and Ribstone Creek formations where a good supply of water is available. One well, 125 feet deep, on SE. section 12 reaches a water-bearing sand at an elevation of 1,947 feet. This may be a Birch Lake sand, although the evidence is not altogether satisfactory. Wells on sections 24, 25, 26 and 35 at depths of 260 to 307 feet reach Ribstone Creek sands at elevations of 1,825 to 1,850 feet, and a well on NE. section 14, at a depth of 325 feet, reaches a still deeper Ribstone Creek sand at an elevation of 1,743 feet. Thus anywhere in this township deep wells into the Ribstone Creek would be expected to find a good supply of soft water.

Township 43, Range 3. In this township water accumulates at very shallow depths in large areas of sand and sand dunes, and two deep wells were drilled for oil and gas. The latter were both drilled with rotary drills, and the samples are difficult to interpret. It is thought the base of the Ribstone Creek formation was encountered in London Ribstone No. 1 well at a depth of 303 feet, and water was reported at various depths to this level. The water at a depth of 75 feet is perhaps from glacial materials or possibly from Birch Lake sand. Evidence from other wells in this municipality indicates that it is probably not the Ribstone Creek formation, although this was formerly[1] thought to be so. In London Ribstone No. 2 well, on

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1 Hume, G. S.: Geol. Surv., Canada, Ec. Geol. Ser. No. 5, p. 217 (1933)

NW. section 22, water was reported at 10, 30, and 60 feet respectively, and evidently it was in drift materials. No deeper water-bearing sands were reported in the upper strata, but some were undoubtedly present and were probably "mudded off" by the rotary method of drilling.

Township 43, Range 4. Most wells in this township obtain water in glacial sand, mainly at depths of 10 to 50 feet. Others, 270 to 440 feet deep, reach bedrock and there find water-bearing beds. One well, 270 feet deep, on NE. section 31 produces from a water-bearing sand at an elevation of 2,030 feet, possibly in the Variegated Beds. Another sand occurs in a well 316 feet deep on SW. section 34 at an elevation of 1884 feet. Obviously this is the same horizon as that in NW. section 16, tp. 42, rge. 4, at a depth of 300 feet and an elevation of 1,890 feet. It is not known to what formation this sand belongs, but it may be Ribstone Creek. Another, more prominent water-bearing sand occurs in wells on NW. section 2 at an elevation of 1,793 feet, on SE. section 14 at 1,820 feet, on NW. section 22 at 1,805 feet, and on NW. section 26 at 1,785 feet. A still lower sand occurs in a well 442 feet deep on SW. section 2 at 1,718 feet. In all these deep wells, except the one that obtains its water from the Variegated Beds, the water rises almost to the surface, and in one well where the surface elevation is 2,095 feet the water flows. Thus the formation sands offer a good supply of water, which, although the wells are fairly deep, comes within easy pumping distance of the surface.

Township 44, Range 1. In this area, as in the adjoining township to the south, several wells obtain water in shallow surface sands and sandy soil. Deeper wells obtain water in sands in the drift, and still deeper wells reach water-bearing Ribstone Creek sands at elevations of 1,885, 1,865, 1,810, and 1,760 feet. As the Ribstone Creek formation in this township is probably only 180 to 200 feet thick, the lower horizon may be close to the base of the formation. In a well 190 feet deep on SE. section 16 gravel was reported at an elevation of 1,865 feet. This is probably material that has fallen into the well from above, and the water-bearing bed corresponds to the Ribstone Creek water-bearing sand in a well 140 feet deep on NE. section 15.

Township 44, Range 2. In this township there are few very shallow wells. A considerable number derive water from glacial sands about 40 feet deep, but others as deep as 80 feet are believed to be in glacial materials. In a well on SE. section 28 a water sand that did not yield a sufficient supply was reported at a depth of 200 feet or an elevation of 1,960 feet. Presumably this is the top of the Ribstone Creek formation. The well was deepened to 400 feet and struck another sand in the Ribstone Creek formation at an elevation of 1,760 feet. In a number of wells a somewhat higher Ribstone Creek horizon was encountered between 1,815 and 1,830 feet. The two deep Ribstone Creek sands very closely correspond to those in tp. 44, rge. 1.

Township 44, Range 3. A few wells 25 to 65 feet deep in this township obtain water from glacial sands. Other wells, however, have been drilled and produce from Ribstone Creek sands, which apparently lie between elevations as high as 1,930 feet and as low as 1,830 feet. From an examination of the records in this township it appears that the bedrock is broadly folded, and that the variations in elevations as shown by numerous wells are in part evidence of the dip of the strata. Most of these deep wells are located across the township from the northwest to the southeast corner. At least four water-bearing beds are present, and these are 50 to 70 feet higher than similar beds that appear to be present in tp. 44, rge. 1. It thus appears that the London Ribstone wells were drilled on a fold that may have a considerable southward plunge.

Township 44, Range 4. Some parts of this township, as around Dymott Lake in tp. 44, rge. 4, are covered with sand, and a few wells obtain water in it at relatively shallow depths. Other wells are reported to furnish water from beds of gravel, but it is evident there is very little gravel in this township and hence an abundant water supply from this source is not to be expected. A number of wells from 50 to 90 feet deep obtain water at elevations between 2,130 and 2,185 feet. Apparently these wells have tapped sands near the base of the Variegated Beds. As these beds are mainly shales, and as the sands in this formation are relatively thin and of restricted extent, the amount of water in them usually is not large. It is thought that in this area the underlying Birch Lake formation is finer sand and more shale than farther west and, therefore, is not likely to hold much water. The underlying Grizzly Bear beds are also shales. It is probable that the best water supply is in the still deeper sands of the Ribstone Creek formation lying at depths of 240 to 320 feet depending on the surface elevation. These sands underlie the whole township and everywhere offer a source of water should wells in higher beds fail to produce a sufficient supply.

Township 45, Range 1. A few wells in this township obtain water from glacial sands and gravels of irregular distribution. A well drilled on SW. section 3 to a depth of 90 feet encountered only blue clay. This well was close to the top of the Lea Park, and drilled the upper shales of this formation, which in this area are 110 feet thick. Beneath these shales is a water-bearing sand 70 to 80 feet thick. The well appears, therefore, to have bottomed above the water horizon. The same is true of another well, 95 feet deep on SW. section 6, which, being somewhat higher in surface elevation, would have had to go somewhat deeper than in section 3 to reach the same horizon. On section 5 the Imperial Oil Company drilled a deep well for gas. At this location the contact of the Ribstone Creek sands and Lea Park shales occur at an elevation of 1,900 feet. The water sand in the Lea Park formation, therefore, occurs between elevations of 1,720 and 1,790 feet. This was shown by the wells drilled for oil and gas in this township. In all of these wells water was obtained at an approximate elevation of 1,730 feet in the Lea Park formation. As no deeper freshwater horizon was recorded in any well it is inferred none is present. It is thus apparent that several wells were sunk beyond the bottom of this sand. One of these, on SE. section 27, is 387 feet deep and reached an elevation of 1,590 feet. It is certain that the lower part of this well is in shale and that the well was drilled more than 100 feet below the water sand. In all the wells drilled for oil and gas a good supply of water was obtained, so that it is inferred this is a good water-bearing sand in spite of the fact that the well 387 feet deep was reported to have encountered only a poor supply. It is probable also that the well 274 feet deep, on SW. section 22, also went to a considerable depth beneath the water-bearing sand.

Township 45, Range 2. It is thought that some of the wells in this township derive their water from sands in the glacial drift. The depths to these are highly variable, and the sands have an irregular distribution. A few wells have been drilled to deeper sands. One well, 120 feet deep on SE. section 17, reaches the lower Ribstone Creek sands at an elevation of 1,935 feet, whereas two other wells obtain water from Lea Park sands. In one of these, 400 feet deep on NE. section 22, the well appears to have been sunk below the water-bearing Lea Park sand, so that the water probably comes into the well some distance above the bottom. It is possible that a few wells obtain water from elevations of 2,025 to 2,040 feet in the upper Ribstone Creek sands. These sands outcrop on sec. 3, tp. 46, rge. 2, just north of this township at an elevation of about 2,000 feet. One well, 50 feet deep on SW. section 18, reported water in shale. Evidently this is Grizzly Bear shale, which in places is sufficiently sandy to be water-bearing.

Township 45, Range 3. The southwest part of this township is presumed to be underlain by Variegated Beds with Birch Lake and Grizzly Bear formations beneath the drift to the northeast. The arrangement is due to a southwest dip of a few feet to a mile. It is thought that a few wells obtain water in sands in the Variegated Beds. Apparently there are two sands, one at 2,135 to 2,140 feet in elevation and one at 2,165 and 2,170 feet. Owing to the southwest dip these beds will be deeper toward the south and west. The Birch Lake sands provide water in several wells. A well, 220 feet deep on NW. section 4, reached a water-bearing sand in the Birch Lake formation at 2,070 feet. The supply was so small, however, that the well was deepened to a Ribstone Creek sand. The same Birch Lake sand occurs in a well 75 feet deep on NE. section 30, and the supply of water there is also small. A somewhat lower Birch Lake water sand occurs in a well 50 feet deep on SW. section 32 and in a well 100 feet deep on SW. section28 at elevations of 2,040 to 2,045 feet. The Ribstone Creek formation has water-bearing sands from 1,755 to 1,850 feet in elevation, the upper of which is slightly below the top of the formation whereas the lower is a short distance above the bottom. It is known that below these beds a still deeper water-bearing sand occurs in the Lea Park formation.

Township 45, Range 4. The deepest well known in this township is 78 feet. It is probable, however, that it does not reach bedrock, although some others starting at lower levels but less deep may do so. A water-bearing bed in what is assumed to be glacial materials occurs at elevations of 2,215 to 2,240 feet in several wells. The water-bearing materials may be of the nature of an outwash deposit in front of a moraine and appear to slope gently toward the west. Another water-bearing horizon occurs at elevations between 2,150 and 2,170 feet and may be in the Variegated Beds, but some of the shallower wells, as those in section 18, find water at these elevations but undoubtedly are in the base of surface sands. Everywhere in the township a supply of water is available from the Birch Lake and Ribstone Creek formations. The water-bearing sand in the Birch Lake probably is at an elevation of approximately 2,020 to 2,065 feet, and that in the top of the Ribstone Creek 100 feet or more lower.

Township 46, Range 1. This township is wholly underlain by the Ribstone Creek formation, and sands in the lower part provide the most reliable water supply. A few wells, however, of moderate depth find sufficient water in the glacial gravels and sands, but as these are irregular in distribution they are not dependable at every location. In two test wells sunk to determine geological structure water was encountered in the lower sand of the Ribstone Creek formation at an elevation of 1,985 to 1,990 feet. In a deep well drilled for oil and gas in section 1, water that flowed into the well at the rate of 6 to 8 barrels an hour occurred at an elevation of 1,750 to 1,770 feet in the Lea Park formation. This same sand was encountered in a well 345 feet deep on NW. section 24 at an elevation of 1,772 feet.

Township 46, Range 2. The formations in this township dip gently southwest at a rate of about 10 feet a mile. The base of the Ribstone Creek formation in the northeast corner occurs at an elevation of about 1,930 feet and may be as low as 1,850 to 1,860 feet in the southwest corner. The formation is considered to be at least 180 feet thick. Water is found in many wells in the lower sands of the Ribstone Creek formation, and a few obtain a supply in the upper sand. One of these, 65 feet deep on NW. section 36, reaches water at an elevation of 2,070 feet. This is presumably the same sand that yields water at an elevation of about 2,050 feet in a well 130 feet deep on SW. section 22 and in another well 40 feet deep on SE. section 30. The same sand, but probably a lower part of it, yields water at an elevation of 2,010 feet in a well 100 feet deep on SW. section 32. Two wells reach the water-bearing sands in the Lea Park formation. One of these, on SW. section 6, obtains water at an elevation of 1,725 feet from a depth of 415 feet, whereas the other well, on NW. section 10, is 300 feet deep and reaches an elevation of 1,770 feet. The difference in elevation in these two wells is partly explained by the southeast dip, although it is realized that the higher parts of the same sand may be water-bearing down the dip and dry higher up.

Oxville No. 1 well was drilled for oil and gas on l.s.d. 14, sec. 10, of this township and range. The well has an elevation of 2,046 feet. Sand and sandstone were encountered in the well between depths of 100 and 130 feet. This is presumably the basal sand of the Ribstone Creek formation. Beneath it, in the Lea Park formation, a water-bearing sand occurred between depths of 270 and 330 feet, with the base at an elevation of 1,716 feet. This is the water-bearing sand that occurs in the wells on SW. section 6 and on NW. section 10.

Township 46, Range 3. In this township several sands within the bedrock are water-bearing. The lowest of these occurs in a well 460 feet deep on NE. section 1. It is inferred, however, that the bottom of this well is considerably below the base of the sand in the Lea Park formation, which yields water in a well 400 feet deep at an elevation of 1,738 feet on SE. section 12. A few wells obtain water in the lower sands of the Ribstone Creek formation. The lowest of these was encountered in a well 285 feet deep on SW. section 24 at an elevation of 1,920 feet, which is thought to be between 30 and 40 feet above the base of this formation. Others obtain water about 100 to 120 feet higher in the formation and are thus evidently in the upper sand. It is also believed that a few wells in the western part of the township obtain water in Birch Lake sands between elevations of 2,175 and 2,190 feet. A few shallower wells derive hard, and in places alkaline, water from sands in the glacial drift. These various horizons thus assure an ample supply of water in this township, although relatively deep water wells may be necessary to obtain it.

Township 46, Range 4. Except along and in the valley of Battle River this township is underlain by Variegated Beds. Undoubtedly the shallower wells are in glacial sands, but some of those 50 feet or more deep may reach water-bearing sands in the Variegated Beds. A well on NE. section 22 is reported to have obtained water at a depth of 200 feet or an elevation of 1,985 feet in what is probably the Birch Lake sands. This well was drilled to a total depth of 409 feet, and reaches an oyster bed in the Ribstone Creek formation. No water is reported to have been found in the Ribstone Creek, although it is almost certain that at least one sand that is water-bearing elsewhere was penetrated. A well 350 feet deep on SW. section 34 reached a water-bearing sand at a depth of 298 feet or an elevation of 1,852 feet. This horizon may be in the upper part of the Ribstone Creek formation, and still lower water-bearing horizons may occur within this formation.

WELL RECORDS—~~Rural Municipality of~~ TOWNSHIPS 43-46, RANGES 1-4, WEST OF 4TH MERIDIAN, ALBERTA.

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	N W	3	43	1	4	Dug	75	2025			75	1950	Glacial	Hard		D.S.	Sufficient
2	S E	6				"	18	1998			18	1980	Glacial sand	"		"	Limited supply
3	S E	7				Bored	58	2065			58	2007	" "	"		"	Sufficient
4	S E	8				Dug	75	2070			75	1995	Sand	"		"	"
5	N W	12				"	14	1990			14	1976	Clay	"		"	"
6	S E	15				"	36	2060	-33	2027	36	2024	Glacial	"		"	
7	S W	16				"	40	2010			40	1970	"	Soft			
8	S W	17				Drilled	246	2090			246	1844	Ribstone Creek	Hard		"	Sufficient
9	S E	18				Dug	42	2060			42	2018	Glacial	"		"	"
10	N W	18				"	55	2152	-52	2100	55	2097	Fine sand	"		"	Poor supply
11	S E	19				Drilled	355	2170			355	1815	Ribstone Creek	Soft		"	Sufficient
12	S W	20				"	366	2180			366	1814	" "				"
13	N W	21				"	415	2065	-125	1940	400	1665	Lea Park	Salty		S.	Good supply
14	S E	22				Dug	20	2065			20	2045	Glacial	Hard		D.S.	
15	S W	30				"	40	2140			40	2100	"	"		"	Poor supply
16	S W	31				Drilled	210	2154			210	1944	Ribstone Creek	"		"	Sufficient
17	N E	33				Dug	20	2020			20	2000	Glacial	"		"	Limited supply
18	N E	35				"	10	1985			10	1975	Glacial	"		"	Sufficient
19	N E	36				Bored	37	2014	-27	1987	35	1979	Black sand			"	"
1	S W	1	43	2	4	Dug	24	2022	-22	2000	24	1998	Glacial sand	Hard		D.S.	Sufficient
2	N E	2				"	30	2030	-26	2004	30	2000	" "	"		"	"
3	S E	4				"	14	2200			14	2186	Glacial gravel	"		"	"
4	N W	5				"	15	2020	-13	2007	15	2005	Glacial	"		"	Poor supply
5	S E	6				"	20	2022	-17	2005	20	2002	" gravel	"		"	Sufficient
6	S E	9				"	28	2045	-16	2029	28	2017	" "	"		"	"
7	N E	9				"	43	2040	-30	2010	43	1997	Sand	"		"	"
8	N E	10				"	22	2062	-13	2049	22	2040	"	"		"	"
9	S E	12				Drilled	125	2072			125	1947	Birch Lake?	"		"	"
10	S W	13				Bored	75	2078			75	2003	Glacial	"		"	"
11	S E	14				"	40	2058			40	2018	Fine sand	"		"	"
12	N E	14				Drilled	325	2068			325	1743	Ribstone Creek	Soft		"	Good supply
13	N E	18				Bored	16	2024	-12	2012	16	2008	Glacial sand	Hard		"	Sufficient
14	N E	20				Dug	28	2030			28	2002	"	"		"	"
15	N W	24				Drilled	307	2132			307	1825	Ribstone Creek	Soft		"	Good supply
16	S W	25				"	300	2136			300	1836	" "			"	" "
17	S E	26				Bored	65	2100			65	2035	Sand	Hard		"	Sufficient
18	N E	26				Drilled	300	2131	-60	2071	300	1831	Ribstone Creek	Soft		"	Good supply
19	N W	28				Dug	15	1990			15	1975	Glacial	"		"	Sufficient
20	S W	32				"	20	2077			20	2057	" sand	Hard		"	Poor supply
21	S E	35				Drilled	260	2111			260	1851	Ribstone Creek	Soft		D.S.	Good supply
22	N W	36				Bored	45	2111	-43	2068	45	2066	Glacial	Hard		"	Sufficient
1	S W	1	43	3	4	Dug	10	2045			10	2035	Glacial	Soft		D.S.	Sufficient
2	N E	10				Drilled	2298	2080			75	2005	Glacial?				London Ribstone No. 1 well
											172	1908	Ribstone Creek				
											231	1849	" "				
											303	1777	" "				
	N W	22	43	3	4	Drilled	2122	2107			10	2097	Glacial				London Ribstone No. 2 well
											30	2077	"				
											60	2047	"				
	S E	36				"	250	2075			250	1825	Ribstone Creek	Soft		D.S.	Good supply

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

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

(Alk.) Alkaline

WELL RECORDS—Rural Municipality of

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	S W	2	43	4	4	Drilled	442	2160	- 80	2080	442	1718	Ribstone Creek	Soft		D.S.	Good supply
2	N W	2				"	327	2120	- 60	2060	327	1793	" "	"		"	" "
3	S W	3				Dug	10	2190	- 6	2184	10	2180	Glacial sand	Hard		"	Sufficient
4	N E	3				"	26	2125	- 22	2103	26	2099	" "	"		"	"
5	S E	14				Drilled	275	2095	Flows	2095+	275	1820	Ribstone Creek	Soft		"	Flow fills ½ inch pipe
6	N E	14				Dug	15	2080	- 12	2068	15	2065	Glacial sand	Hard		"	Sufficient
7	S W	15				Bored	71	2150	- 50	2100	71	2079		"		"	Limited supply.
8	S E	16				Dug	28	2200	- 16	2184	28	2172	" "	"		S.	Sufficient
9	S E	17				"	45	2330			45	2285	" gravel	Soft		D.S.	"
10	N W	22				Drilled	365	2170	- 52	2118	365	1805	Ribstone Creek	"		"	Good supply
11	N E	22				Bored	30	2110	- 10	2100	30	2080	Sand	Hard		"	Sufficient
12	S W	23				Dug	50	2105	- 40	2065	50	2055	"	"		"	"
13	N W	23				"	20	2090	- 16	2074	20	2070	Fine sand	"		"	Limited supply
14	N W	26				Drilled	325	2110	- 12	2098	325	1785	Ribstone Creek	Soft		"	Sufficient
15	N E	27				Bored	28	2095	- 20	2075	28	2067	Glacial gravel	Hard		"	Waters 40 Head of Stock.
16	N E	31				Drilled	270	2300	-170	2130	270	2030	Variegated sand	"		"	Sufficient
17	N E	33				Bored	48	2220	- 28	2192	48	2172	Glacial sand	"		"	"
18	S E	34				"	26	2110	- 25	2085	26	2084	Glacial gravel	"		"	"
19	S W	34				Drilled	316	2200			316	1884	Ribstone Creek?	Soft		"	"
20	N E	34				Dug	50	2125	- 39	2086	50	2075	Sand & Clay	Hard		"	"
21	S W	35	43	4	4	Dug	26	2090	- 20	2070	26	2064	Glacial sand	"		"	"
22	S W	36				"	15	2080	- 12	2068	15	2065	" "	"		"	"
1	S W	2	44	1	4	Dug	12	2004	-9	1995	12	1992	Glacial sand	Hard		D.S.	Poor supply
2	N E	2				Bored	59	2009			59	1950		"		"	" "
3	S W	4				Drilled	340	2100			340	1760	Ribstone Creek	Soft		"	Sufficient
4	N E	4				Dug	14	2015	-10	2005	14	2001	Glacial sand	Hard		"	"
5	S W	6				"	38	2110	- 6	2104	38	2072		"		"	Limited supply
6	N W	6				Bored	24	2092	- 7	2085	24	2068	Glacial gravel	"		"	Sufficient
7	S E	8				Drilled	287	2095	-100	1995	287	1808	Ribstone Creek	Soft		"	Good supply
8	N W	10				Dug	16	2034			16	2018	Glacial clay	Hard		"	Sufficient
9	N W	12				Bored	90	2004			90	1914		Hard Alk.		S.	Limited supply
10	N W	14				Drilled	150	2035	-130	1905	150	1885	Ribstone Creek	Soft		D.S.	Good supply
11	N E	15				"	119	2006			119	1887	" "	Hard		"	Poor "
12	N E	15				"	140	2006			140	1866	" "	Soft		"	Sufficient
13	S E	16				"	190	2055	-100	1955	190	1865	Fine gravel?	"		"	"
14	N E	21				Dug	10	2026	- 7	2019	10	2016	Glacial sand	Hard		"	"
15	N W	24				Bored	65	1913			65	1848		"		"	"
16	N W	30				Dug	14	2004	-10	1994	14	1990	Glacial sand	"		"	"
17	S W	35				"	10	1964			10	1954	" "	"		"	Poor supply
18	S E	36				Bored	40	1967			40	1927	Fine sand	"		"	" "
1	N W	4	44	2	4	Drilled	227	2053			227	1826	Ribstone Creek	Soft		D.S.	Good supply
2	N E	4				Bored	80	2073	-30	2043	80	1993	White sand	Hard		"	Sufficient
3	S W	5				"	36	2097	+ 1	2098	36	2061	Birch Lake	Sulphur		S.	Flowing well
4	N W	6				Dug	54	2110	-30	2080	54	2056	" "	Hard		D.S.	Sufficient
5	S W	10				Bored	35	2090			35	2055	" "	"		"	"
6	N E	12				Dug	20	2009	-17	1992	20	1889	Fine sand	Soft		"	"
7	S E	14				Bored	40	2066			40	2026		Hard		"	"
8	N E	14				Drilled	252	2082			252	1830	Ribstone Creek	Soft		"	Good supply

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

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

(Alk.) Alkaline

WELL RECORDS—~~Rural Municipality of~~

B 4-4

[illegible]

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
9	N W	17	44	2	4	Dug	35	2157	-32	2125	35	2122	Glacial	Hard		D.S.	Limited supply
10	N E	18				"	40	2157	-30	2127	40	2117	"	"		"	Sufficient
11	N W	19				Bored	38	2110	-12	2098	38	2072	"	" Alk.		"	"
12	N W	20				Dug	41	2157	-30	2127	41	2116	Glacial	"		"	"
13	N E	20				Bored	100	2172			100	2072	Birch Lake	"		"	"
14	S E	24				Dug	10	1924	- 6	1918	10	1914	Glacial	"		"	Poor supply
15	N W	24				Bored	40	2067	-20	2047	40	2027	"	"		"	Sufficient
16	N E	25				Dug	20	2012	-15	1997	20	1992	Glacial sand	"		"	"
17	N E	26				Drilled	272	2087			272	1815	Ribstone Creek	Soft		"	Good supply
18	S E	28				"	400	2160			200	1960	Ribstone Creek	Hard			
											400	1760	" "	Soft		"	Good supply
19	N W	30				Dug	60	2090			60	2030	Birch Lake	Hard		"	Poor "
20	N W	31				Bored	85	2155			85	2070	" "	"		"	Sufficient
21	N E	31				"	50	2135			50	2085	" "	"		"	"
22	N W	33				Dug	16	2120	-12	2108	16	2104	Glacial sand	"		"	"
23	N W	34				"	22	2130			22	2108	Glacial	"		"	"
24	N E	36				Bored	43	2041			43	1998	Ribstone Creek	" Alk.		"	"
1	S E	1	44	3	4	Drilled	255	2087			255	1832	Ribstone Creek	Soft		D.S.	Good supply
2	S E	2				"	255	2097	-55	2042	255	1842	" "	"		"	Good "
3	N W	9				Bored	65	2135			65	2070	Glacial	"		"	Sufficient
4	S W	10				Drilled	253	2155			253	1902	Ribstone Creek	"		"	"
5	S W	11				"	320	2150			320	1830	" "	"		"	Good supply
6	S W	12				"	286	2147			286	1861	" "	"		"	" "
7	N W	12				"	250	2127	-30	1997	250	1877	Ribstone Creek	"		"	" "
8	S E	16				"	280	2150			280	1870	" "				
9	N W	16				"	210	2134			210	1924	" "	Soft		D.S.	Good supply
10	N E	16				"	225	2123			225	1898	" "	"		"	" "
11	N W	19				"	240	2025	-100	1925	240	1785	" "	"		"	" "
12	N W	20				"	219	2124			219	1905	" "	"		"	Sufficient
13	N E	20				"	103	2144			103	2041	Birch Lake ?	"		"	"
14	N W	21				"	220	2154	- 90	2064	220	1934	Ribstone Creek	"		"	"
15	N W	22				"	200	2130	-160	1970	200	1930	" "	"		"	"
16	N W	23				"	223	2155			223	1932	Sandstone Creek	"		"	Good supply
17	N E	23				Bored	50	2170			50	2120	Glacial	Hard		"	Sufficient
18	S E	24				"	42	2160			42	2118	Glacial	" Alk.		"	"
19	N E	29				Drilled	243	2154			243	1911	Ribstone Creek	Soft		"	"
20	S E	30				"	212	2125			212	1913	" "	"		"	"
21	N W	30				Bored	60	2185	- 55	2130	60	2125	Glacial sand	Hard		"	Poor supply
22	S W	31				"	45	2260	- 20	2240	45	2215	" "	"		"	Sufficient
23	S W	32				Drilled	330	2219			330	1889	Ribstone Creek	Soft		"	Good supply
24	S W	34				Bored	42	2150			42	2108	Glacial	Hard Alk.		"	Sufficient
25	N W	35				Dug	34	2190	- 30	2160	34	2156	"	"		"	"
26	N E	35				"	24	2150			24	2126	"	"		"	"
27	S E	36				Bored	65	2158			65	2093		"		"	"
1	S W	1	44	4	4	Drilled	300	2125	-125	2000	300	1825	Ribstone Creek	Soft		D.S.	Sufficient
2	S E	2				Bored	20	2120	- 16	2104	20	2100	Sand	Hard		"	"
3	S E	4				Dug	40	2190	- 28	2162	40	2150	"	"		"	Limited supply
4	S W	12				Drilled	290	2135			290	1845	Ribstone Creek	Soft		"	Good supply
5	N E	12				"	285	2140			285	1855	" "	"		"	Sufficient
6	N E	18				"	320	2140	-125	2015	320	1820	" "	"		"	Good supply

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(#) Sample taken for analysis.

(Alk.) Alkaline

WELL RECORDS ~~Rural Municipality of~~

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
7	N W	19	44	4	4	Dug	12	2095			12	2083	Glacial sand	Hard		D.S.	Sufficient
8	S W	24				Drilled	240	2150			240	1910	Ribstone Creek?	Soft		"	"
9	N W	24				Dug	28	2150	- 15	2135	28	2122	Glacial sand	Hard		"	Good supply
10	N E	26				Bored	45	2225	- 25	2200	45	2180	Sand	"		"	Waters 35 head of stock.
11	S E	26				Dug	23	2140	- 20	2120	23	2117	" & Gravel	"		"	Sufficient
12	S W	28				"	16	2135	- 9	2126	16	2119	"	"		"	Good supply
13	S E	28				Bored	20	2140	- 17	2123	20	2120	Fine sand	Soft		"	" "
14	N W	28				"	54	2190			54	2136	Variegated Beds	Hard		S.	Limited supply
15	S E	30				Dug	5	2125	- 3	2122	5	2120	Sand	Soft		D.S.	Sufficient
16	S W	31				Bored	20	2120	- 16	2104	20	2100	"	Hard		"	"
17	N W	31				"	70	2200	- 50	2150	70	2130	Variegated Beds	"		"	"
18	S W	32				"	40	2130	- 20	2110	40	2090	Sand	"		"	Limited supply
19	N W	32				"	70	2220	- 20	2200	70	2150	Variegated Beds	"		"	Sufficient
20	N W	33				"	90	2275	- 85	2190	90	2185	" "	"		S.	Limited supply
1	S W	3	45	1	4	Dug	14	1972	- 9	1963	14	1958	Coarse gravel	Hard		D.S.	Sufficient. Dry Hole 90 feet in blue clay.
2	S E	4				"	16	1983	- 10	1973	16	1967	Gravel	"		"	"
3	S W	4				Bored	30	1986	- 28	1958	30	1956	Fine sand	"		D.	Poor supply. Another shallow well for stock.
4	S W	6				Dug	48	2031			48	1983	Ribstone Creek s.s.	Hard		D.S.	Waters 320 head of stock.
5	N W	6				"	36	2020	- 4	2016	36	1984	Ribstone Creek	"		"	Sufficient. Dry Hole 95 feet deep in clay.
6	N E	6				Drilled	325	2000			325	1675	Lea Park	Soft		"	"
7	N W	9				Bored	65	1800	- 25	1775	65	1735	" "				
8	N W	14				Dug	10	1927			10	1917	Sand	Soft		D.S.	Sufficient
9	N W	16				"	47	2040			47	1993	Glacial	Hard		"	"
10	N E	16				Drilled	80	1997	-50	1947	80	1917	Ribstone Creek	"		"	"
11	S W	22				"	274	1972	-200	1772	274	1698	" "	Soft		"	"
12	S E	27				"	387	1977	-20	1957	387	1590	Lea Park	"		D.	Poor supply
13	S E	28				Dug	27	2050			27	2023	Glacial	Hard		D.S.	Sufficient
14	S W	28				"	32	2060			32	2028	"	"		"	"
15	S E	30				Bored	72	2010			72	1938	"	"		"	Limited supply
16	N W	30				Drilled	312	2060			312	1748	Lea Park	Soft		"	Sufficient
17	N W	32				"	85	2062			85	1977	Ribstone Creek	Hard		"	"
18	N E	32				"	131	2060			131	1929	" "	"		"	"
19	N W	35				Bored	75	2022	-15	2007	75	1947	" "	"		"	"
20	S W	36				Dug	75	2022			75	1947	" "			S.	"
						WELLS DRILLED FOR OIL & GAS IN TSHIP. 45, RGE. 1 WITH REPORTED WATER HORIZONS											
	SW	16	45	1	4	Drilled	1803	1912			180	1732	Lea Park				Meridian No. 2
	S W	16	45	1	4	"	1889	1994	-190	1804	272	1722	" "				" No. 3
	N W	9	45	1	4	"	1782	1796			65	1731	" "				Imperial Ribstone No. 2
	S E	20	45	1	4	"	2100	2051			35	2016	Drift				Algonquin No. 1
											321	1730	Lea Park				
	S W	16	45	1	4	"	2206	2011	-190	1821	230	1781	Lea Park				Algonquin No. 2
									-190	1821	282	1729	" "				
1	S E	6	45	2	4	Bored	80	2145			80	2065		Hard		D.S.	Sufficient
2	N E	6				Dug	36	2125	-30	2095	36	2089	Gray sand	"		"	Good supply
3	S W	7				"	20	2160			20	2140	" "	"		"	
4	N E	7				Bored	51	2080	-35	2045	51	2029		"		"	Limited supply

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(Alk.) Alkaline

WELL RECORDS—~~Rural Municipality of~~

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (−) Surface	Elev.	Depth	Elev.	Geological Horizon				
5	S E	10	45	2	4	Dug	35	2097			35	2062		Hard		D.S.	Sufficient
6	S W	12				Bored	60	2050			60	1990		"		"	"
7	N E	13				Drilled	300	2010			300	1710	Lea Park Sand	Soft		"	"
8	S E	14				Dug	35	2050			35	2015		Hard		"	"
9	S W	14				Bored	67	2100	-44	2056	67	2033	Ribstone Creek	"		"	"
10	S E	16				Dug	27	2065			27	2038	" "	"		"	"
11	N E	16				Bored	45	2055			45	2010		"		"	"
12	S E	17				"	120	2055			120	1935	Ribstone Creek	Soft		"	"
13	S W	18				"	50	2085	-10	2075	50	2035	Birch Lake or Grizzly Bear	Hard		"	"
14	S E	21				"	80	2025									Dry sand with gas.
15	N E	22				Drilled	400	2065			400	1665	Lea Park	Hard		"	Sufficient
16	N W	33				Dug	23	2050			23	2027	Ribstone Creek	"		"	"
17	N E	36				"	47	2072	-31	2041	47	2025	" "	"		"	"
1	S E	1	45	3	4	Dug	20	2155	-17	2138	20	2135	Black sand	Hard		D.S.	Sufficient
2	N W	3				Bored	47	2215			47	2168	Variegated Beds	"		"	Poor supply
3	S W	4				Drilled	125	2260			125	2135	Variegated Beds	"		"	Sufficient. Dry Hole 500 feet.
4	N W	4				"	440	2290			220	2070	Birch Lake				
											440	1850	Ribstone Creek	Soft		"	Sufficient
5	S W	9				Bored	60	2265			60	2205		Hard		"	"
6	S E	14				Dug	30	2170	-28	2142	30	2140	Variegated Beds	"		"	Limited supply
7	S W	14					60	2154			60	2094	Birch Lake	"		"	Sufficient
8	N W	14				Bored	60	2174			60	2114		"		"	"
9	N E	14				Drilled	320	2114			320	1794	Ribstone Creek	Soft		"	"
10	S E	16				Bored	78	2244			78	2166	Variegated Beds	Hard		"	"
11	N E	16				Bored	43	2210			43	2167	" "	"		"	Waters 30 head of stock.
12	S E	19				"	62	2229	-52	2177	62	2167	" "	"		D.	Poor supply
13	N W	22				Drilled	370	2130			370	1760	Ribstone Creek	Soft		D.S.	Sufficient
14	S E	22				Bored	30	2154			30	2124	Glacial	Hard		"	"
15	S E	24				Drilled	60	2084			60	2024	"	" Alk.		"	"
16	S W	24				Dug	20	2059			20	2039	"	"		"	Waters 30 head of stock.
17	S W	25				Bored	48	2054			40	2014	Sand	"		D.	Poor supply
18	S W	28				Drilled	385	2140			100	2040	Birch Lake	"			
											330	1810	Ribstone Creek	Soft			
											385	1755	" "	"		D.S.	Sufficient
19	S E	30				Bored	60	2164			60	2104		Hard		"	Limited supply
20	S W	30				"	54	2185	-12	2173	54	2131	Variegated Beds	"		"	Sufficient
21	N E	30				"	75	2154			75	2079	Birch Lake	" Alk.		"	Poor supply
22	S W	32				Dug	50	2094	-46	2048	50	2044	Sand	"		"	
1	S W	1	45	4	4	Bored	43	2285			43	2242	Yellow sand	Hard		D.S.	Limited supply
2	S E	6				"	50	2269			50	2219	Sand	"		"	
3	S W	10				"	60	2298			60	2238	Glacial	"		"	Sufficient
4	S E	10				Dug	35	2305	-27	2278	35	2270	"	"		"	"
5	S E	11				"	32	2320			32	2288	"	"		"	"
6	S W	14				Bored	78	2310			78	2232	"	"		"	"
7	N W	16				Dug	10	2208			10	2198	"	"		"	
8	N E	16				Bored	60	2283			60	2223	Sand & Gravel	"		"	Sufficient
9	S E	18				"	18	2179			18	2161	Sand	" Alk.		"	Waters 40 head of stock.
10	N W	18				"	12	2160	- 4	2156	12	2148	"	Bitter		"	Limited supply
11	N E	18				"	30	2184			30	2154	Variegated Beds	Hard Alk.			
12	S W	20				"	45	2204	-16	2188	45	2159	" "	" "		"	Sufficient

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WELL RECORDS—~~Rural Municipality of~~

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13	N W	20	45	4	4	Bored	50	2224	-20	2204	50	2174	Variegated Beds	Hard		D.S.	Sufficient
14	S W	21				"	35	2198			35	2163	" "				
15	N W	21				"	70	2271			70	2201	Glacial	"		"	Poor supply
16	S W	22				"	61	2285	-45	2240	61	2224	Sand	" Alk.		"	Sufficient
17	S W	24				"	68	2300			68	2232	Glacial	"		"	"
18	N W	24				"	60	2234	-20	2214	60	2174	Variegated Beds	"		"	"
19	N W	25				"	45	2195	-25	2170	45	2150	" "	" Alk.		"	"
20	S W	27				"	46	2280	-44	2236	46	2234	Glacial				
21	N W	28				"	64	2318			64	2254	"	"		"	Poor supply
22	S E	30				"	38	2265			38	2227	"	"		"	Sufficient
23	N E	30				Dug	30	2248			30	2218	Gravel	"		"	"
24	S W	31				Bored	30	2275	-27	2248	30	2245	Sand	"		"	Limited supply
25	N W	32				"	96	2298			96	2202	Hard Sand	Soft		"	" "
26	S E	34				"	40	2255			40	2215	Glacial	Hard		"	Sufficient
27	S W	34				Dug	38	2270			38	2232	"	"		"	
28	N W	34					40	2255			40	2215	"	"		"	Sufficient
29	S E	35				Bored	52	2245	-48	2197	52	2193		"		"	"
30	N E	36				Dug	40	2115	-20	2095	40	2075		"		"	"
1	S E	2	46	1	4	Drilled	80	2007			80	1927	Ribstone Creek	Hard		D.S.	Sufficient
2	S E	4				"	138	2076	-40	2036	138	1938	Ribstone sand	Soft		"	"
3	N E	4				"	109	2081			109	1972	Ribstone Creek	"		"	"
4	N W	5				Bored	120	2076			120	1956	" "	Hard		"	"
5	S W	6				Drilled	107	2052			107	1945	" "	"		"	"
6	N W	6				"	169	2112	-76	2036	169	1943	" sand	"		"	Good supply
7	S E	18				Bored	49	2142			49	2093	Gravel	"		"	Sufficient
8	S W	18				Dug	36	2132			36	2096	Sand	"		"	"
9	N E	20				"	25	2170			25	2145	"	"		"	Limited supply
10	S W	22				Bored	75	2101			75	1926	Ribstone Creek	"		"	Poor supply
11	N W	24				Drilled	345	2117	-272	1845	345	1772	Lea Park sand	Soft		"	Good supply
12	S E	27				Bored	80	2096			80	2016	Sand	Hard		"	Sufficient
13	N E	32				Dug	20	2182			20	2162	Glacial	Soft		"	"
14	N E	34				Drilled	230	2152			230	1922	Ribstone Creek	Hard		"	"
15	N E	34				"	130	2147			130	2017	" "	"		"	"
16	N W	35				Bored	60	2096			60	2036	Black sand	"		"	"
17	N E	36				"	55	2044			55	1989	Sand	"		"	Poor supply
						WELLS DRILLED FOR GAS & OIL IN TSHIP. 46, RGE. 1 WITH REPORTED WATER HORIZONS											
	S E	1	46	1	4	Drilled	2056	1921			150 to 170	1771 to 1751	Lea Park " "				Ribstone Oils No. 1 6 to 8 bbls. an hour
	N W	11	46	1	4	"	290	2075			90	1985	Ribstone Creek				Structural Test No. 1A well
	S E	19	46	1	4	"	301	2172			184	1989	" "				" " No. 20 "
1	N W	1	46	2	4	Dug	16	2082			16	2046	Sand	Hard		D.S.	Sufficient
2	S E	2				Bored	40	2102	- 20	2082	40	2062	Glacial	"		"	"
3	N E	5				"	32	2060			32	2028	"	Soft		"	"
4	S E	6				"	68	2170			68	2102	Sand	Hard		"	"
5	S W	6				Drilled	415	2140			160	1980	Ribstone Creek				
											415	1725	Lea Park			"	"

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WELL RECORDS—~~Rural Municipality of~~

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
6	N W	6	46	2	4	Bored	45	2110			45	2065	Sand	Hard		D.S.	Sufficient
7	N E	8				"	45	2060			45	2015	Glacial	"			
8	N W	9				"	90	2050			90	1960	Ribstone Creek	"		S.	Good supply
9	S W	10				"	81	2055			81	1974	" "	"		D.S.	Waters 30 head of stock
10	N W	10				Dug	54	2065			54	2011	" "	"		"	Limited supply
11	N W	10				Drilled	300	2070			300	1770	Lea Park	Soft		"	Sufficient
12	N E	10				"	140	2072	- 60	2012	140	1932	Ribstone sand	"		"	Good supply
13	N E	12				Bored	75	2112	- 20	2092	75	2037	" "	Hard Alk.		"	Sufficient
14	S W	14				Drilled	150	2092	-100	1992	150	1942	Ribstone Creek	"		"	Poor supply
15	N E	14				Bored	76	2140			76	2064	Clay	"		"	" "
16	S E	16				"	62	2060			62	1998	Ribstone Creek	"		"	Sufficient
17	S E	18				"	138	2130			30	2100	?	"		"	Poor supply
18	S W	18				"	79	2171			79	2092	Ribstone Creek	Soft		"	Sufficient
19	N E	20				"	60	2104			60	2044	" "	Hard		"	Poor supply
20	S E	22				"	125	2092			125	1967	Ribstone sand	" Alk.		"	Sufficient
21	S W	22				Drilled	130	2082	- 65	2017	130	2052	Ribstone Creek	Hard		"	"
22	N E	28				Bored	35	2104			35	2069	Glacial	"		"	
23	S E	30				"	40	2090	- 26	2064	40	2050	Ribstone Creek	"		"	Sufficient
24	S W	32				Drilled	103	2110	- 60	2050	100	2010	Ribstone Creek	"		"	"
25	S E	34				Bored	60	2217			60	2157	Glacial	"		"	Poor supply
26	N W	36				"	65	2135			65	2070	Ribstone Creek	"		"	Sufficient
	N W	10				Drilled	2260	2046			40	2006	Gravel				
											270	1776	Lea Park				Oxville Oil and Gas Company No. 1 well
1	N E	1	46	3	4	Drilled	460	2109	-300	1809	460	1649	Lea Park	Soft		D.S.	Good supply
2	S E	2				Bored	30	2110	- 5	2105	30	2080	Glacial	Hard		"	Poor "
3	S W	10				"	80	2100			80	2020	Ribstone Creek	Soft		"	Sufficient
4	S E	12				Drilled	400	2138			400	1738	Lea Park	"		"	"
5	N W	12				Bored	80	2095			80	2015	Ribstone Creek			N.	School well
6	S W	14				"	70	2171	- 40	2131	70	2101	Glacial ?	Hard		D.S.	Sufficient
7	S E	15				"	50	2161			50	2111	"	" Alk.		"	
8	S E	16				"	47	2150			47	2103	"	"		"	Sufficient
9	N W	18				"	66	2050			66	1984	"	"		"	"
10	N E	22				Dug	68	2210			68	2142	"	"		"	Poor supply
11	S W	24				Drilled	285	2205	-170	2035	285	1920	Ribstone sand	Soft		"	Sufficient
12	S E	25				Bored	70	2115	- 55	2060	70	2045	Ribstone Creek	Hard		"	"
13	N E	28				Dug	24	2300			24	2276	Glacial	"		"	Poor supply
14	S E	28				Bored	84	2260			84	2176	Birch Lake				
15	S E	30				"	90	2280			90	2190	" "	Hard		D.S.	Poor supply
16	N W	31				Dug	50	2250			50	2200	Glacial	"		"	Sufficient
17	S E	32				"	55	2230			55	2175	Birch Lake	"		"	"
18	N E	34				Bored	72	2113			72	2041	Ribstone Creek sandstone	Soft		"	
1	S E	2	46	4	4	Dug	50	2200	- 48	2152	50	2150	Glacial				Poor supply
2	S E	3				"	32	2270			32	2238	"				Sufficient
3	N W	4				Bored	72	2290	- 40	2250	70	2220	Fine sand	Soft		D.S.	"
4	S E	6				"	65	2300	- 45	2255	65	2235	Sand	Hard		"	Poor supply
5	S W	6				"	66	2290	- 15	2275	66	2224	"	"		"	" "
6	N W	6				"	48	2300	- 23	2277	48	2252	"	"		"	Sufficient
7	N E	16				Dug	18	2145			18	2127	Glacial	"		"	Limited supply
8	S E	18				"	50	2270	- 35	2235	50	2220	Sand	"		"	Poor "
9	N W	18				Bored	45	2245			45	2252	"	"		"	Well flowed at first. Good supply
10	N E	18				Dug	25	2200	- 17	2183	25	2175	"	"		"	Waters 50 head of stock.

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

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

(Alk.) Alkaline

WELL RECORDS ~~Rural Municipality of~~

B 4-4
1890—10,000

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	HEIGHT TO WHICH WATER WILL RISE: Elev.	PRINCIPAL WATER-BEARING BED: Depth	PRINCIPAL WATER-BEARING BED: Elev.	PRINCIPAL WATER-BEARING BED: Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
11	S W	20	46	4	4	Bored	50	2180	-25	2155	50	2130	Sand	Hard		D.S.	Limited supply
12	N E	20				Dug	17	2170			17	2153	"	"		"	Sufficient
13	S W	22				"	25	2225	-18	2207	25	2200	Gray sand	"		"	"
14	N W	22				Bored	25	2215	-23	2192	25	2190	Clay	"		"	Limited supply
15	N E	22				Drilled	409	2185	-50	2135	200	1985	Birch Lake	"		"	Sufficient
16	S E	28				Bored	52	2170	-20	2150	52	2118	Variegated sand	"		"	"
17	S W	28				"	79	2225	-30	2195	79	2146	Sand	"		"	"
18	S W	30				Dug	18	2170	- 8	2162	18	2152	Gravel	Hard		"	"
19	N E	31				Bored	60	2200	-12	2188	60	2140	Sand	" Alk.		"	Poor supply
20	S W	34				"	35	2150	-28	2122	35	2115	"	"		"	Sufficient
21	S W	34				Drilled	350	2150	-100	2050	298	1852	Ribstone Creek	Soft		"	"

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.

(Alk.) Alkaline