CANADA
DEPARTMENT OF MINES

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

BUREAU OF ECONOMIC GEOLOGY

GEOLOGICAL SURVEY

PRELIMINARY REPORT

GROUND-WATER RESOURCES OF THE RURAL MUNICIPALITY OF CYMRI No. 36 SASKATCHEWAN

BY

B. R. MacKay & H. N. Hainstock

Water Supply Paper No. 34

OTTAWA

1936

CANADA

DEPARTMENT OF MINES

BUREAU OF ECONOMIC GEOLOGY

GEOLOGICAL SURVEY

GROUND WATER RESOURCES OF THE RURAL MUNICIPALITY OF CYMRI

NO. 36

SASKATCHEWAN

BY

B.R. MacKAY and H.N. HAINSTOCK

WATER SUPPLY PAPER NO. 34

CONTENTS

Illustrations

GROUND WATER RESOURCES OF THE RURAL MUNICIPALITY OF CYMRI, NO. 36 SASKATCHEWAN

INTRODUCTION

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

Publication of Results

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

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

How to Use the Report

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

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

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

---

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

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

GLOSSARY OF TERMS USED

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

WATER-BEARING HORIZONS OF THE MUNICIPALITY

The rural municipality of Cymri is an area of 324 square miles in southeastern Saskatchewan. It is comprised of nine townships described as tps. 4, 5, and 6, ranges 10, 11, and 12, W. 2nd mer. The town of Midale lies at the approximate centre of the municipality. A mantle of glacial drift in the form of boulder clay covers the whole of the municipality. Along Souris river, however, the till has been modified by water action and the finer materials have been washed away leaving the coarser deposits exposed on the surface. There is a small area in the northwestern corner of the municipality in which deposits of glacial lake clays overlie the boulder clay. Recent deposits of silt, sand, and gravel occur along the flood-plain of Souris valley.

The average thickness of the glacial drift is from 100 to 150 feet, but nowhere does its maximum thickness attain 200 feet. The minimum thickness of 15 to 40 feet is found in the northwestern corner of the municipality.

Throughout the greater part of the municipality the upper 30 feet of the drift is composed of yellow boulder clay. This zone of yellow clay is underlain by a fine-textured, compact, blue clay, which in certain areas is exposed at the surface. Pockets and lenses of sand and gravel occur within the yellow clay and at the contact of the yellow and blue clays. They do not form a continuous deposit, but occur as small scattered pockets and as narrow bands conforming to small buried stream channels. Scattered lenses of sand also occur within the blue clay, and are common in its upper 25 to 50 feet. Throughout the municipality deposits of sand and gravel are found immediately underlying the blue clay. They do not form a continuous layer but occur in depressions and old stream channels in the preglacial bedrock surface.

Water-bearing Horizons in the Unconsolidated Deposits

The deposits of sand and gravel form water-bearing horizons. The horizon that is formed by the sand pockets within the yellow clay and by the recent flood-plain deposits is the source of water for most of the shallow wells in the municipality. The supply of water from this horizon is entirely dependent upon the amount of annual precipitation and during drought periods the wells that tap the horizon do not yield a supply that is sufficient for local needs. In years of normal rainfall, however, the individual wells tapping this horizon yield a supply that is sufficient for household needs and for 10 to 25 head of stock. The water is hard and in many instances "alkaline" in character. Unless the "alkaline" content is too high it can be used for domestic purposes.

The lenses of sand that occur within the blue clay constitute a second water-bearing horizon. The wells that tap this horizon are usually from 35 to 60 feet in depth. This horizon is not continuous, but it yields a more abundant supply of water than the horizon that is formed by the pockets of sand within the yellow clay. The water is hard and usually too "alkaline" for domestic use. The "alkaline" content is apparently derived from the blue clay.

The deposits of sand and gravel that immediately underlie the blue clay form a third water-bearing horizon. As the deposits that form this horizon occur in depressions and old stream channels in the bedrock surface, the location and areal extent of the horizon can be determined only as it is encountered by wells. It is encountered at depths of 90 to 150 feet. The majority of wells that tap this horizon yield an abundant supply of hard water usually "alkaline" in character. It is satisfactory for stock use, but it is not desirable for household purposes. The

water is under pressure, and unless the casings become plugged with sand it rises to within 20 to 60 feet of the surface. Should this horizon not be encountered at depths of 90 to 150 feet in other drilled wells, the drilling should be continued into the underlying Ravenscrag formation until one of its water-bearing horizons is encountered.

Water-bearing Horizons in the Bedrock

The Ravenscrag formation underlies the glacial drift throughout the municipality. The thickness of this formation is not known, but it is not much thinner in the northern part of the municipality than it is in the southern part. It is composed of a series of soft shale, sandy shale, and sandstone beds, which contain one or more small lignite coal seams. One of these coal seams outcrops along Souris River valley in the northwestern corner of the municipality.

The sandy shale and sandstone strata, and the coal seams, constitute water-bearing horizons. Three horizons were noted and two of them are fairly continuous throughout the municipality. The uppermost is a coal seam and it is encountered at a depth of approximately 200 feet. This horizon has been encountered by a number of wells located in the southeastern part of the municipality and it appears to be confined to this locality. The water from this horizon is soft in character and abundant in quantity. The hydrostatic pressure is sufficient to cause the water to rise to within a few feet of the surface or to flow a short distance above it. A strong flow of water is not to be expected. The area in which flowing artesian wells occur is shown on the accompanying map.

The second horizon is formed by sandy strata, and with the exception of township 6, ranges 11 and 12, it is encountered throughout the municipality at a depth of 300 to 340 feet. In the

northwestern part of the municipality, the bedrock is apparently non-water-bearing at that depth. Elsewhere in the municipality this horizon yields an abundant supply of soft water, but it is usually too salty for domestic use. The hydrostatic pressure is sufficient to cause the water to rise to within 70 feet of the surface in the majority of wells, but in one well located in township 4, range 11, the water flowed 2 feet above the surface.

A sandy bed occurring at a depth of 400 to 460 feet constitutes a third water-bearing horizon. This horizon has been encountered in township 4, ranges 11 and 12, and it should occur at other localities in the southern part of the municipality. The water is abundant in quantity, but it is too saline for domestic use.

In the northwestern portion of the municipality where the Ravenscrag formation comes close to the surface a small supply of water can be obtained at depths up to 265 feet. An abundant supply is not to be expected, however, as the formation is thin and the sandy beds present appear to be of small extent. It is doubtful if a suitable supply of water, both from the standpoint of quantity and quality, can be obtained below a depth of 500 feet throughout the municipality, and drilling below this depth is not recommended as only non-water-bearing shale will be encountered.

GROUND WATER CONDITIONS BY TOWNSHIPS

Township 4, Range 10

The glacial drift of this township contains three water-bearing horizons. The uppermost occurs at a depth of 14 to 20 feet and it is formed by the deposits of sand that lie between the yellow and blue clays or within the yellow clay. These sand deposits are in the form of pockets and in places many dry holes are dug before one is located. The majority of the wells that tap this horizon yield a supply of hard, slightly "alkaline" water that is sufficient for 10 to 30 head of stock, but in a few wells the aquifer is thin and the supply of water derived from it is insufficient for local needs. In such instances it is necessary to haul water from neighbouring wells. The excavation of dugouts has proved to be a practical method of storing a supply of water for stock use during the summer months and this method can be practised throughout the township.

The second water-bearing horizon in the glacial drift occurs at a depth of from 30 to 60 feet and it is formed by scattered lenses of sand that lie within the upper part of the blue clay. This horizon yields a moderate supply of water that is usually too "alkaline" for household use.

The third horizon is formed by the deposits of sand and gravel that immediately underlie the blue clay. The extent of this aquifer is not known as it has been tapped by only two wells, but it will probably be of local occurrence also. The two wells that have tapped this horizon are located in sections 24 and 35, and are 80 and 90 feet in depth, respectively. The water is hard and "alkaline" in character and fairly abundant in quantity. It is under pressure and rises to within 25 feet of the surface.

Two water-bearing horizons are known to occur in the Ravenscrag formation. A coal seam and its underlying sandy beds constitute the first horizon at a depth of 180 to 210 feet. The

water is soft in character, abundant in quantity, and is used for both stock and domestic purposes. The hydrostatic pressure is sufficient to cause the water to flow above the surface in two wells located in section 8, and to rise to within 35 to 50 feet of the surface in other wells. This horizon should be continuous throughout the township and if it is tapped by other wells an abundant supply of water is to be expected. The second horizon is formed by a sandy bed at a depth of 300 to 340 feet. The continuity of this horizon is not known as it has been tapped by only two wells, but the writers are of the opinion that it will be encountered throughout most of the township. The water from this horizon is soft in character and has a definite soda taste; it is abundant in quantity and rises to within 60 feet of the surface.

Township 4, Range 11

Three water-bearing horizons occur in the glacial drift in this township. The uppermost is formed by the pockets and layers of sand and gravel that occur within the upper 30 feet of the drift. The supply of water that is obtained from this horizon is directly dependent upon the amount of precipitation. In years of normal rainfall the supply from the individual wells is sufficient for 10 to 50 head of stock, but in drought periods some water must be hauled. The best supply from this horizon is obtained in sections 25 to 30. The water is hard and "alkaline" in character, but unless the "alkaline" content is very high it can be used for domestic as well as for stock purposes. Souris river and the few springs that occur along it, are used by farmers who reside in its vicinity.

The second horizon is formed by the lenses of sand that occur within the blue clay. Two wells have encountered this horizon at depths of 70 feet, but the water is so "alkaline" in character that it cannot be used for domestic purposes.

The deposits of sand and gravel that lie immediately below the blue clay constitute the third water-bearing horizon. This horizon is encountered at a depth of 100 and 140 feet by two wells located in sections 16 and 23. It does not appear to be continuous and the deposits that form it apparently occur in small basins in the bedrock surface. The water is abundant in quantity, but is very "alkaline" in character.

An abundant and permanent supply of water can be obtained from the Ravenscrag formation throughout the township. Three water-bearing horizons are known to occur. The uppermost is formed by a coal seam and an underlying sandy bed and it is encountered at depths of 204 and 217 feet, by two wells located in sections 11 and 14. The water is soft and slightly saline in character, abundant in quantity, and it rises to the surface or flows a short distance above it. This horizon does not appear to be productive in the northern part of the township. The second horizon occurs at a depth of 310 to 340 feet and is formed by a sandy bed. This horizon appears to be continuous throughout the township. The water is soft and salty in character and has a soda taste; it is not desirable for household purposes but is satisfactory for stock use. The hydrostatic pressure is sufficient to cause the water to flow, or to rise to within a few feet of the surface in the southern part of the township, and to rise to within 30 feet of the surface in the northern part of the township. In the northeastern corner of the township three wells are deriving an abundant supply of soft, salty water from a horizon that occurs at a depth of from 400 to 440 feet. It is not known if this horizon extends over all of the township, but it probably does, as water is obtained from the same depth in the townships to the south. The water is too salty for domestic purposes but is satisfactory for stock.

Township 4, Range 12

Two water-bearing horizons are known to occur in the glacial drift of this township. The uppermost is formed by the pockets of sand that occur within the upper 30 feet of the drift. Several dry holes are often dug before a sand pocket is located. The wells that tap this horizon yield a supply of hard water that is sufficient for household purposes and for 4 to 20 head of stock. By using two or more wells of this type the majority of farmers obtain a supply that is sufficient for local needs. The supply, however, is dependent upon the amount of rainfall and in drought years there is a shortage of water. Those farmers who live close to Souris river use the water from it for stock purposes.

The second horizon is formed by the lenses of sand that occur within the blue clay. This horizon is encountered at a depth of 80 to 60 feet by two wells located in sections 6 and 21. The water is abundant in quantity, but is too "alkaline" for domestic use. This horizon may occur at other localities in the township.

Two water-bearing horizons occur in the Ravenscrag formation. A sandy bed forms the uppermost at a depth of 325 to 340 feet. This horizon is encountered in sections 4 and 30 and doubtless will be tapped elsewhere should other wells be drilled. The water is abundant in quantity and soft and saline in character. It is too salty for domestic purposes but is very satisfactory for stock use. The second horizon is also a sandy bed and is encountered at a depth of 460 and 434 feet by two wells located in sections 2 and 3. The water is soft and salty in character and abundant in quantity. It is under hydrostatic pressure and rises to within 70 feet of the surface. The areal extent of this horizon is not known, but it will probably prove to be continuous throughout the township.

Township 5, Range 10

Ground water from the glacial drift of this township is derived from three horizons. The uppermost horizon is formed by the pockets of sand that occur within the upper 30 feet of the drift. These pockets are small and scattered, and in many places numerous dry holes are dug before one is encountered. In years of normal rainfall the average individual well tapping this horizon yields a supply of water that is sufficient for 10 to 20 head of stock. An abundant supply, however, is not to be expected. The water is hard and "alkaline" in character. The lenses of sand and gravel that occur within the upper part of the blue clay at depths of 35 to 50 feet, constitute the second horizon. These lenses are also irregularly distributed, but where tapped they yield a more abundant supply of water than those of the upper horizon. The water is quite "alkaline" in character and cannot be used for domestic purposes. The deposits of sand and gravel that lie immediately below the blue clay form the third water-bearing horizon in the glacial drift. This horizon is fairly continuous throughout the township and it is encountered at depths of 90 to 150 feet. The water is hard and "alkaline" in character and is abundant in quantity. It is under hydrostatic pressure and rises to within 15 to 60 feet of the surface. It is too "alkaline" for household use, but is satisfactory for stock.

Only one well has been drilled into the Ravenscrag formation and it is obtaining an abundant supply of soft water from a sand bed occurring at a depth of 325 feet. This horizon will doubtless be found to occur throughout the most of the township.

Township 5, Range 11

Ground water is derived from two main horizons in the glacial drift of this township. The uppermost is formed by the pockets of sand that occur in the yellow clay at depths down to 35 feet, and also within the upper part of the blue clay at depths of 40 to 60

feet. The supply from this horizon is not abundant, but in years of normal rainfall the individual wells that tap the horizon yield sufficient water for 10 to 60 head of stock. The water is usually "alkaline" in character. It is satisfactory for stock use, but its high "alkaline" content makes much of it unfit for household purposes. The second horizon is formed by the deposits of sand and gravel that immediately underlie the blue clay. This horizon is encountered at depths of 75 to 140 feet by a number of wells located in the north-central part of the township. The water is hard and "alkaline" in character and unless the wells become plugged with sand, the supply is abundant. It is usually too "alkaline" for domestic purposes but is satisfactory for stock. The hydrostatic pressure is sufficient to cause the water to rise to within 20 feet of the surface.

Two wells located in the NE.$\frac{1}{4}$, section 18, and the SE.$\frac{1}{4}$, section 20, are deriving an abundant supply of water from the Ravenscrag formation at depths of 260 and 318 feet, respectively. It is soft in character, but its common salt content is so high that it cannot be used for domestic purposes. Similar supplies of water can doubtless be obtained from the Ravenscrag formation throughout the township.

Township 5, Range 12

The majority of the wells in this township derive their supply of water from the deposits of sand and gravel that occur within the upper 35 feet of the drift. These deposits are in the form of small pockets and layers, and often a number of dry holes are dug before water is located. The wells that tap the layers yield a fairly abundant supply of water, but those that are dug into the pockets are dependent upon rainfall for their supply. A few wells that are dug in the flood-plain deposits of Souris river yield a moderate supply of water and are dependent upon seepage from the river.

Some water can also be obtained from the sand and gravel deposits that occur within the blue clay. Three wells of this type were noted, but the supply of water from them is small and quite "alkaline" in character.

Little is known about the water-bearing horizons of the bedrock, as only one well has been drilled into it. It encountered water at a depth of 320 feet, but the casings became plugged with sand and the supply was shut off. A fairly abundant supply of water can probably be obtained at depths of 300 to 400 feet, but it will probably prove to be too saline for domestic use.

Township 6, Range 10

Ground water is obtained from two horizons in the glacial drift of this township. The uppermost horizon is formed by the pockets of sand and gravel that occur within the upper 30 feet of the drift. Only a very small supply of water is obtained from this horizon, however, as the sand deposits are small and of scattered occurrence. The water is "alkaline" in character and is not suitable for domestic purposes. Unless deep wells are drilled, the only method of conserving a supply of water is by the excavation of dugouts and they may be made large enough to retain a supply of water during most of the year.

The second horizon is formed by the deposits of sand and gravel that immediately underlie the blue clay. This horizon is encountered by a number of wells at a depth of 90 to 145 feet. It is not continuous, however, and apparently occurs in depressions in the bedrock surface. The water from the horizon is too "alkaline" for domestic use, but it is suitable for stock. It is abundant in quantity and the hydrostatic pressure is sufficient to cause it to rise to within 30 feet of the surface. This horizon will doubtless occur at other localities within the township.

A number of wells have been drilled into the Ravenscrag formation, but only a few are obtaining an abundant supply of water. One well located in the SE.$\frac{1}{4}$, section 30, is deriving its supply of hard, "alkaline" water from a series of sandy beds that occur at a depth of 200 feet. This horizon was not encountered in the other well, however, so it is probably of small extent. A second horizon is encountered at a depth of 300 and 314 feet by two wells located in the SE.$\frac{1}{4}$, section 22, and the NW.$\frac{1}{4}$, section 24, and it is formed by sandy strata. A number of other wells were drilled to greater depths in the same quarter sections without obtaining an adequate supply, so the horizon that occurs at 300 feet is apparently not continuous. The water is soft and tastes of soda, but it can be used for domestic purposes as well as for stock. It is possible that this horizon may be encountered at other localities in the township, but as the Ravenscrag formation disappears a few miles to the north it is problematic if any quantity of water will be obtained from it.

Township 6, Range 11

The water supply for this township is derived from three horizons in the glacial drift. The pockets of sand and gravel that occur within the yellow clay, and at the contact of the yellow and blue clays, form the uppermost horizon. This horizon is not continuous and several dry holes are usually dug before a pocket is located. The supply from the individual wells is dependent upon the amount of rainfall and upon the size of the sand deposits encountered. A few of the wells yield sufficient water for 50 head of stock, but the majority supply enough for 15 to 20 head during the summer months. This necessitates the hauling of water for stock purposes. The lenses of sand that occur within the upper part of the blue clay form a second horizon. The wells that tap this horizon are from 30 to 60 feet in depth. The water is hard and is too "alkaline" for household use, but is satisfactory for stock.

A third horizon is encountered at a depth of 90 feet by two wells located in sections 24 and 26. This horizon is formed by deposits of sand that are thought to occur at the base of the blue clay. The water is hard and "alkaline" in character and unless the casings become plugged with sand the supply is fairly abundant. The hydrostatic pressure is sufficient to cause the water to rise to within 16 feet of the surface. Although this horizon is not continuous it will probably be found to occur at other locations in the township.

Only a small amount of water is to be expected from the Ravenscrag formation as it becomes very thin in this township. A number of wells have been drilled to a depth of 360 feet without obtaining any water. The only method of assuring a fairly permanent supply of water in this township is by the excavations of large dugouts in which to conserve the run-off waters.

Township 6, Range 12

Ground water from the glacial drift can be obtained throughout the township at depths of 12 to 60 feet. The water-bearing horizon is formed by the pockets and layers of sand and gravel that occur within the yellow clay, and also by lenses of sand lying within the upper part of the blue clay. The majority of the wells that tap these lenses are dependent upon rainfall for their supply and during the drought period they went completely dry or yielded an insufficient supply of water. The water is hard in character and it is often too "alkaline" for household use. Dugouts can be used to advantage throughout the township and this method of retaining the run-off waters for stock use is highly recommended.

A few wells are deriving a moderate supply of water from the Ravenscrag formation. They are drawing their water from different depths. The shallowest is located in section 25 and its aquifer is a coal seam that occurs at a depth of 38 feet below the

surface. Three other wells have tapped horizons at depths of 108, 180, and 265 feet, but they are producing only a small supply of water. No water has been encountered between depths of 300 and 500 feet as the bedrock at that depth is non-water-bearing. Small supplies, however, will probably be obtained from wells ranging up to 300 feet in depth.

STATISTICAL SUMMARY OF WELL INFORMATION IN RURAL MUNICIPALITY OF CYMRI, NO. 36, SASKATCHEWAN

Township	4	4	4	5	5	5	6	6	6	Total No. in municipality
West of 2nd mer. Range	10	11	12	10	11	12	10	11	12	
Total No. of Wells in Township	76	48	47	78	82	53	95	47	61	587
No. of wells in bedrock	8	10	4	1	2	0	6	1	10	42
No. of wells in glacial drift	68	38	43	77	80	48	89	46	50	539
No. of wells in alluvium						5			1	6
Permanency of Water Supply										
No. with permanent supply	46	39	29	29	63	36	34	31	43	350
No. with intermittent supply	1	2	1	7	5	4	4	12	7	43
No. dry holes	29	7	17	42	14	13	57	4	11	194
Types of Wells										
No. of flowing artesian wells	2	3								5
No. of non-flowing artesian wells	7	10	4	13	10	1	9	3	8	65
No. of non-artesian wells	38	28	26	23	58	39	29	40	42	323
Quality of Water										
No. with hard water	41	24	21	33	57	26	36	40	42	320
No. with soft water	6	17	9	3	11	14	2	3	8	73
No. with salty water		6	3		2			3	2	16
No. with "alkaline" water	23	18	9	19	29	15	19	23	27	182
Depths of Wells										
No. from 0 to 50 feet deep	62	34	39	62	72	46	74	39	44	472
No. from 51 to 100 feet deep	7	3	4	7	5	2	5	4	7	44
No. from 101 to 150 feet deep	1	1		6	2	2	7	1	4	24
No. from 151 to 200 feet deep	3	1		2	1		3		1	11
No. from 201 to 500 feet deep	3	9	4	1	2	3	6	3	5	36
No. from 501 to 1,000 feet deep										
No. over 1,000 feet deep										
How the Water is Used										
No. in use for domestic purposes	29	26	18	12	40	27	19	26	30	227
No. not in use for domestic purposes	18	15	12	24	28	13	19	17	20	166
No. in use for stock	44	38	29	33	66	38	31	40	44	363
No. not in use for stock	3	3	1	3	2	2	7	3	6	30
Sufficiency of Water Supply										
No. sufficient for domestic needs	47	40	30	35	68	39	35	41	49	384
No. insufficient for domestic needs		1		1		1	3	2	1	9
No. sufficient for stock needs	33	24	20	25	54	25	15	21	28	245
No. insufficient for stock needs	14	17	10	11	14	15	23	22	22	148

ANALYSES AND QUALITY OF WATER

General Statement

Samples of water from representative wells in surface deposits and bedrock were taken for analyses. Except as otherwise stated in the table of analyses the samples were analysed in the laboratory of the Borings Division of the Geological Survey by the usual standard methods. The quantities of the following constituents were determined; total dissolved mineral solids, calcium oxide, magnesium oxide, sodium oxide by difference, sulphate, chloride, and alkalinity. The alkalinity referred to here is the calcium carbonate equivalent of all acid used in neutralizing the carbonates of sodium, calcium, and magnesium. The results of the analyses are given in parts per million--that is, parts by weight of the constituents in 1,000,000 parts of water; for example, 1 ounce of material dissolved in 10 gallons of water is equal to 625 parts per million. The samples were not examined for bacteria, and thus a water that may be termed suitable for use on the basis of its mineral salt content might be condemned on account of its bacteria content. Waters that are high in bacteria content have usually been polluted by surface waters.

Total Dissolved Mineral Solids

The term "total dissolved mineral solids" as here used refers to the residue remaining when a sample of water is evaporated to dryness. It is generally considered that waters that have less than 1,000 parts per million of dissolved solids are suitable for ordinary uses, but in the Prairie Provinces this figure is often exceeded. Nearly all waters that contain more than 1,000 parts per million of total solids have a taste due to the dissolved mineral matter. Residents

accustomed to the waters may use those that have much more than 1,000 parts per million of dissolved solids without any marked inconvenience, although most persons not used to highly mineralized water would find such waters highly objectionable.

Mineral Substances Present

Calcium and Magnesium

The calcium (Ca) and magnesium (Mg) content of water is dissolved from rocks and soils, but mostly from limestone, dolomite, and gypsum. The calcium and magnesium salts impart hardness to water. The magnesium salts are laxative, especially magnesium sulphate (Epsom salts, $MgSO_4$), and they are more detrimental to health than the lime or calcium salts. The calcium salts have no laxative or other deleterious effects. The scale found on the inside of steam boilers and tea-kettles is formed from these mineral salts.

Sodium

The salts of sodium are next in importance to those of calcium and magnesium. Of these, sodium sulphate (Glauber's salt, Na_2SO_4) is usually in excess of sodium chloride (common salt, NaCl). These sodium salts are dissolved from rocks and soils. When there is a large amount of sodium sulphate present the water is laxative and unfit for domestic use. Sodium carbonate (Na_2CO_3) "black alkali", sodium sulphate "white alkali", and sodium chloride are injurious to vegetation.

Sulphates

Sulphates (SO_4) are one of the common constituents of natural water. The sulphate salts most commonly found are sodium sulphate, magnesium sulphate, and calcium sulphate ($CaSO_4$). When the water contains large quantities of the sulphate of sodium it is injurious to vegetation.

Chlorides

Chlorides are common constituents of all natural water and are dissolved in small quantities from rocks. They usually occur as sodium chloride and if the quantity of salt is much over 400 parts per million the water has a brackish taste.

Iron

Iron (Fe) is dissolved from many rocks and the surface deposits derived from them, and also from well casings, water pipes, and other fixtures. More than 0.1 part per million of iron in solution will settle as a red precipitate upon exposure to the air. A water that contains a considerable amount of iron will stain porcelain, enamelled ware, and clothing that is washed in it, and when used for drinking purposes has a tendency to cause constipation, but the iron can be almost completely removed by aeration and filtration of the water.

Hardness

Calcium and magnesium salts impart hardness to water. Hardness of water is commonly recognized by its soap-destroying powers as shown by the difficulty of obtaining lather with soap. The total hardness of a water is the hardness of the water in its original state. Total hardness is divided into "permanent hardness" and "temporary hardness". Permanent hardness is the hardness of the water remaining after the sample has been boiled and it represents the amount of mineral salts that cannot be removed by boiling. Temporary hardness is the difference between the total hardness and the permanent hardness and represents the amount of mineral salts that can be removed by boiling. Temporary hardness is due mainly to the bicarbonates of calcium and magnesium and iron, and permanent harness to the sulphates and chlorides of calcium and magnesium. The permanent hardness

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

Analyses of Water Samples from the Municipality of Cymri, No. 36, Saskatchewan

LOCATION						Depth of Well, Ft.	Total dis'vd solids	HARDNESS			CONSTITUENTS AS ANALYSED						CONSTITUENTS AS CALCULATED IN ASSUMED COMBINATIONS								Source of Water
No.	Qtr.	Sec.	Tp.	Rge.	Mer.			Total	Perm.	Temp.	Cl.	Alkalinity	CaO	MgO	SO_4	Na_2O	Solids	$CaCO_3$	$CaSO_4$	$MgCO_3$	$MgSO_4$	Na_2CO_3	Na_2SO_4	NaCl	
1.	NE.	8	4	10	2	190	2,140	260	120	140	176	530	30	43	890	956	2,140	54		90		391	1,315	290	*1
2.	NW.	36	6	12	2	180	1,420	10	Not det.		340	800	10	7		771	1,404	18		15		810		561	*2

Water samples indicated thus, *1, are from glacial drift.
Water samples indicated thus, *2, are from bedrock, Ravenscrag formation.
Analyses are reported in parts per million.
Hardness is the soap hardness expressed as calcium carbonate ($CaCO_3$).
For interpretation of this table read the section on Analyses and Quality of Water.

WATER FROM THE UNCONSOLIDATED DEPOSITS

The waters from the glacial drift vary greatly in quality. All of the waters contain the same mineral salts in solution, but the amounts of the individual salts vary greatly. The glacial drift through which the water seeps contains varying amounts of the different mineral salts which are dissolved out by the downward percolating water. Thus, it is not uncommon to find water that is so highly mineralized as to be unfit for use, at the same depth, and not far distant from good water. The finding of water unfit for use in one locality does not indicate a widespread condition in that locality.

It has been found that waters derived from large deposits of sand are purer than those derived from small layers and pockets of sand. Similarly, better water is obtained from sand and gravel deposits that are covered by thin veneers of clay than where the clay cover is thick. This fact is well shown in the municipality of Cymri. No samples of water from the upper two water-bearing horizons of the glacial drift in this municipality were taken for analysis.

Water is derived from three horizons in the drift. The water that is derived from sand pockets within the upper 30-foot or weathered zone is hard and as a rule slightly "alkaline" in character. The "alkaline" nature of the water is due to the presence of sulphate salts, chiefly sodium sulphate (Glauber's Salt) and magnesium sulphate (Epsom Salts). It is these salts that give the water a laxative effect, and when they occur in large amounts the water is unfit for domestic, and occasionally for stock, purposes. When large amounts of magnesium sulphate are present the water may have a bitter taste. Excessive amounts of sodium sulphate may also impart a so-called sweet taste to the water. Generally speaking, however, the waters from this horizon are satisfactory for household and stock use.

The water from the horizon that lies within the blue clay is not of as good a quality as that from the upper horizon. It contains a greater total dissolved solid content and is often unfit for domestic use due to its high content of magnesium, and sodium sulphates. This high, dissolved solid content is derived from the overlying blue clay. In most instances the water is suitable for stock use, but generally the mineral salt content is so high that it cannot be used for household purposes.

One sample of water from the horizon that occurs at the base of the blue clay, was analysed. It contains a total dissolved solid content of 2,140 parts per million, and is moderately hard in character. Sodium sulphate (Glauber's Salt) is the most abundant mineral salt present, 1,315 parts per million, and forms over half of the total dissolved solid content. Sodium carbonate (black alkali) is next in order of abundance with 391 parts per million. This amount of this mineral salt causes the water to be unfit for irrigation. Sodium chloride is third in order of abundance with 290 parts per million, and may impart a slightly salty taste to the water. Small amounts of calcium and magnesium carbonates also occur.

This water is quite satisfactory for stock use. The high sodium sulphate content may cause the water to be slightly laxative, and it may be unfit for domestic purposes. The salty or baking-soda taste imparted to it by the sodium salts makes it unpalatable for human consumption. It is unsuitable for irrigation. The sample analysed is believed to be representative of the water derived from this horizon.

Water from the Bedrock

One sample of water from the bedrock Ravenscrag formation was analysed and the results are listed in the accompanying table. This sample is representative of the water derived from the Ravenscrag formation.

It is very soft, having a total hardness of only 10 parts per million. The total dissolved solid content is 1,420 parts per million. Eight hundred and ten parts of this content is composed of sodium carbonate (black alkali). This renders the water unfit for irrigation and gives it a flat, soda taste. NaCl (common salt) is next in order of abundance with 561 parts per million. This amount renders the water unpalatable for drinking as it gives it a very salty taste. Small amounts of calcium and magnesium carbonate also occur. In summary, the waters from the Ravenscrag formation are suitable in the majority of instances for stock use only. The high common salt, and sodium carbonate, content renders the water too salty and unpalatable for domestic use. The high sodium carbonate content prohibits its use for irrigation.

WELL RECORDS—Rural Municipality of CYMRI NO. 36, 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	NE.	1	4	10	2	Dug	29	1,905	- 27	1,878	27	1,878	Glacial	Hard, clear, "alkaline"		D, S	Waters 30 head stock.
2	NE.	2	"	"	"	Dug	34	1,910	- 28	1,882	28	1,882	Glacial sand	Hard, clear, "alkaline"	47	S	Insufficient supply; 20 foot well for house.
3	NW.	2	"	"	"	Dug	16	1,895	- 10	1,885	7	1,888	Sandstone?	Hard, clear	44	D, S	Insufficient supply; also a 100 foot no supply.
4	NW.	4	"	"	"	Drilled	340	1,875	- 20	1,855	340	1,535	Ravenscrag sand	Soft, clear	47	S	Kills plants; waters 100 head stock; 11 dry holes to 40 feet.
5	SW.	6	"	"	"	Dug	22	1,870	- 18	1,852	14	1,856	Glacial gravel	Hard, clear	41	D, S	Waters 30 head stock.
6	NW.	8	"	"	"	Drilled	200	1,900	+ 1	1,901	180	1,720	Ravenscrag coal	Soft, brown	45	D, S	Kills plants; abundant supply.
7	NE.	8	"	"	"	Drilled	190	1,900	+ 2	1,902	182	1,718	Glacial gravel	Hard, clear	45	D, S	Abundant supply. #
8	SW.	10	"	"	"	Drilled	200	1,890	- 35	1,855	188	1,702	Ravenscrag coal	Soft, clear	48	D, S	Abundant supply.
9	NW.	10	"	"	"	Dug	14	1,900	- 9	1,891	9	1,891	Glacial sand	Hard, clear	46	D, S	Waters 30 head stock.
10	NE.	10	"	"	"	Dug	40	1,895	- 34	1,861	38	1,857	Glacial sand	Hard, clear, "alkaline"	42	D, S	Laxative. 90 foot dry hole; insufficient supply.
11	NE.	11	"	"	"	Dug	35	1,890	- 23	1,867	33	1,857	Glacial sand	Hard, clear, "alkaline"	44	D, S	Waters 14 head stock.
12	NE.	15	"	"	"	Dug	32	1,910					Glacial sand	Hard, clear	43	D, S	Waters 16 head stock.
13	NW.	15	"	"	"	Dug	22	1,900	- 8	1,892	9	1,891	Glacial sand	Hard, clear	44	D, S	Waters 25 head stock.
14	NE.	16	"	"	"	Dug	32	1,905	- 24	1,881	7	1,898	Glacial sand	Hard, clear	44	D, S	Waters 22 head stock.
15	NE.	17	"	"	"	Dug	15	1,900	- 13	1,887	13	1,887	Glacial sand	Hard, clear "alkaline"		S	Insufficient for 25 head stock.
16	SW.	17	"	"	"	Dug	30	1,900	- 27	1,873	27	1,873	Glacial sand	Hard, clear, "alkaline"	42	S	Waters 20 head stock.
17	NE.	19	"	"	"	Dug	16	1,895	- 13	1,882	13	1,882	Glacial sand	Hard, clear, "alkaline"	46	S, I	Insufficient for 45 head stock; 20 foot dry hole.
18	NE.	20	"	"	"	Dug	60	1,880	- 48	1,832	56	1,824	Glacial sand	Hard, clear "alkaline"	45	S	Insufficient supply.
19	SE.	21	"	"	"	Dug	19	1,920	- 2	1,918	5	1,915	Glacial sand	Hard, clear, "alkaline"	45	D, S	Waters 8 head stock.
20	NE.	21	"	"	"	Dug	30	1,900	- 18	1,882	28	1,872	Glacial sand	Hard, clear, "alkaline"	46	S	Waters 15 head stock.
21	SW.	22	"	"	"	Dug	37	1,900	- 33	1,867	33	1,867	Glacial sand	Hard, clear, "alkaline"	43	S	Sufficient supply.
22	SE.	22	"	"	"	Dug	24	1,900	- 22	1,878	22	1,878	Glacial sand	Hard, clear, "alkaline"	46	D, S, I	Waters 30 head stock.
23	NE.	22	"	"	"	Dug	25	1,900	- 10	1,890	23	1,877	Glacial sand	Hard, iron		D, M	Supplies town of 126 people.
24	SW.	24	"	"	"	Dug	40	1,905	- 8	1,897			Glacial drift	Hard, clear	43	D, S	Waters 14 head stock.
25	SE.	24	"	"	"	Drilled	100	1,900	- 50	1,850	80	1,820	Glacial sand	Hard, iron, "alkaline"	46	S	Waters 20 head stock; 150 foot dry hole.
26	NW.	25	"	"	"	Dug	57	1,910	- 56	1,854	55	1,855	Glacial sand	Hard, iron, "alkaline"		S	Practically a dry hole.
27	SE.	26	"	"	"	Drilled		1,895	- 10	1,885			Ravenscrag ?	Soft, clear	45	S	Abundant 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 CYMRI NO. 36, SASKATCHEWAN

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
28	SE.	27	4	10	2	Dug	29	1,895	- 11	1,884	14	1,881	Glacial gravel	Hard, clear		D, S, I	Waters 11 head stock.
29	SE.	28	"	"	"	Dug	15	1,900	- 9	1,891	12	1,888	Glacial sand	Hard, clear	44	D, S, I	Waters 13 head stock; 50 foot well, very "alkaline" water.
30	SW.	29	"	"	"	Dug	28	1,905	- 23	1,882	27	1,878	Glacial sand	Hard, clear, "alkaline"	40	S	Waters 15 head stock.
31	SW.	30	"	"	"	Dug	16	1,905	- 6	1,899	14	1,891	Glacial sand	Hard, clear, "alkaline"	41	D, S, I	Goes dry in summer months. Two 20 foot dry holes.
32	SW.	32	"	"	"	Drilled	216	1,895	- 50	1,845	208	1,687	Ravenscrag sand	Soft, white sediment	46	D, S	Waters 325 head stock; 12 dry holes to 35 feet.
33	SE.	34	"	"	"	Dug	26	1,900	- 14	1,886	23	1,877	Glacial sand	Hard, clear, "alkaline"	45	S	Waters 8 head stock.
34	NE.	35	"	"	"	Drilled	100	1,910	- 25	1,885	100	1,810	Glacial sand	Hard, clear, "alkaline"	46	S	Hauls drinking water; waters 15 head stock.
35	NW.	36	"	"	"	Dug	18	1,910	- 3	1,907	17	1,893	Glacial sand	Hard, clear	40	D, S	Insufficient for 13 head stock; 52 foot well very "alkaline".
36	SE.	36	"	"	"	Drilled	300	1,890	- 60	1,830	300	1,590	Ravenscrag	Soft, clear	45	S	Waters 60 head stock; 19 foot well for house.
1	SW.	2	4	11	2	Spring		1,800					Glacial gravel	Hard, salty		D, S	Sufficient supply.
2	SW.	3	"	"	"	Dug	35	1,818	- 14	1,804	29	1,789	Glacial sand	Hard, clear, "alkaline"	45	D, S	Well not used in 1935.
3	SE.	5	"	"	"	Dug	20	1,858	- 16	1,842	16	1,842	Glacial sand	Soft, cloudy	46	D, S	Waters 10 head stock.
4	NW.	6	"	"	"	Dug	10	1,860	- 7	1,853	7	1,853	Glacial gravel	Soft, clear	44	S	Waters 6 head stock only.
5	SE.	7	"	"	"	Dug	20	1,855	- 18	1,837	18	1,837	Glacial sand	Hard, clear "alkaline"	44	D, S	Small supply. Also 16 and 30 foot wells.
6	SW.	7	"	"	"	Dug	14	1,875	- 12	1,863	12	1,863	Glacial sand	Soft, clear	47	D, S	Waters 8 head stock. 2 dry holes.
7	SE.	11	"	"	"	Drilled	204	1,854			204	1,650	Ravenscrag	Soft, clear		N	Plugging with sand. Flows. 169 foot well caved in.
8	SW.	12	"	"	"	Dug	20	1,859	- 14	1,845	20	1,839	Glacial sand	Hard, clear, "alkaline"		N	Toc "alkaline" for use.
9	NW.	12	"	"	"	Dug	12	1,857	- 5	1,852	5	1,852	Glacial sand	Hard, clear		N	No supply; 1 similar well.
10	NE.	12	"	"	"	Drilled	305	1,866	+ 2	1,868	300	1,566	Ravenscrag sand	Soft, clear	43	D, S	Flowed for 1 week; abundant supply.
11	NW.	14	"	"	"	Drilled	217	1,873	+ 4	1,877	217	1,656	Ravenscrag	Soft, salty	45	D, S	2 gallons a minute.
12	NE.	16	"	"	"	Bored	70	1,864	- 64	1,800	60	1,804	Glacial sand	Hard, clear, "alkaline"	42	D, S	Waters 20 head stock.
13	NE.	16	"	"	"	Bored	100	1,864	- 90	1,774	100	1,764	Glacial	Hard, clear, "alkaline"		S	Abundant supply.
14	NW.	20	"	"	"	Dug	8	1,888					Glacial sand				Dry hole.
15	NW.	22	"	"	"	Dug	20	1,874	- 5	1,869	18	1,856	Glacial sand	Hard, clear	44	D, S	Waters 12 head stock.
16	NE.	23	"	"	"	Drilled	70	1,902	- 15	1,887	70	1,832	Glacial sand	Hard, bitter "alkaline"	43	S	Abundant supply.
17	NE.	23	"	"	"	Drilled	138	1,900	- 17	1,883	130	1,770	Glacial sand	Hard, bitter "alkaline"	43	S	Abundant supply; plugs with sand.
18	NW.	24	"	"	"	Dug	18	1,900	- 16	1,884	16	1,884	Glacial sand	Hard, clear "alkaline"	44	S	Waters 6 head stock; hauls drinking water.

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

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

WELL RECORDS—Rural Municipality of CYMRI NO. 36, SASKATCHEWAN

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
19	NE.	24	4	11	2	Drilled	400	1,903	- 50	1,853	400	1,503	Ravenscrag sand	Soft, salty	44	S	15foot well for house use; abundant supply.
20	SW.	25	"	"	"	Drilled	435	1,905	- 60	1,845	435	1,470	Ravenscrag sand	Soft, salty	48	S	Abundant supply; haul drinking water.
21	NE.	26	"	"	"	Dug	22	1,908	- 20	1,888	20	1,888	Glacial sand	Hard, clear		D, S	2 barrels an hour.
22	NE.	27	"	"	"	Dug	22	1,902	- 15	1,887	22	1,880	Glacial sand	Hard, clear	45	D, S	Waters 25 head stock.
23	NW.	27	"	"	"	Dug	22	1,896	- 19	1,877	19	1,877	Glacial sand	Hard, clear	43	D, S	Waters 14 head stock.
24	SE.	28	"	"	"	Drilled	305	1,889	- 30	1,859	300	1,589	Ravenscrag gravel	Soft, clear	46	S	Abundant supply; 18 foot well for house use.
25	NW.	28	"	"	"	Dug	13	1,870	- 5	1,865	5	1,865	Glacial sand	Hard, clear, "alkaline"		S	Waters 50 head stock; hauls drinking water.
26	NE.	28	"	"	"	Dug	20	1,898	- 17	1,881	17	1,881	Glacial sand	Hard, clear "alkaline"	44	D, S	Waters 15 head stock.
27	SE.	29	"	"	"	Dug	10	1,891	- 8	1,883	4	1,887	Glacial sand	Soft, clear	46	D, S	Waters 30 head stock.
28	SW.	32	"	"	"	Dug	30	1,877	- 26	1,851	28	1,849	Glacial sand	Hard, clear, "alkaline"		S	Waters 15 head stock only; 14 foot well for house.
29	SE.	33	"	"	"	Dug	12	1,904	- 9	1,895	10	1,894	Glacial sand	Hard, clear	43	D, S	Waters 16 head stock only; 1 similar well.
30	NE.	33	"	"	"	Dug	20	1,900	- 16	1,884	16	1,884	Glacial sand	Hard, very "alkaline"	42	S	Seldom used.
31	NW.	34	"	"	"	Drilled	342	1,901	- 25	1,876	342	1,559	Ravenscrag	Soft, salty	44	D, S	Abundant supply.
32	NW.	36	"	"	"	Drilled	440	1,903	- 20	1,883	440	1,463	Ravenscrag	Soft, salty	43	S	Abundant supply; 342 foot similar well on same ¼ section.
33	NE.	36	"	"	"	Drilled	309	1,898	- 40	1,858	300	1,598	Ravenscrag	Soft, salty	44	S	Abundant supply; 20 foot well for house use.
1	SW.	2	4	12	2	Drilled	480	1,920	- 60	1,860	480	1,440	Ravenscrag	Soft, salty	48	S	Waters 30 head stock.
2	SE.	3	"	"	"	Drilled	434	1,900	- 70	1,830	434	1,466	Ravenscrag sand	Soft, salty		S	Abundant supply.
3	NE.	4	"	"	"	Drilled	350	1,922	-150	1,772	350	1,572	Ravenscrag	Soft, salty	50	S	Waters 60 head stock.
4	NE.	5	"	"	"	Dug	30	1,918	- 22	1,896	27	1,891	Glacial sand	Hard, clear "alkaline"	48	S	Laxative; 18 foot well for house. Waters 15 head stock.
5	SE.	6	"	"	"	Bored	80	1,938	- 70	1,868	79	1,859	Glacial sand	Hard, clear, "alkaline"	46	D, S	Waters 17 head stock; numerous dry holes.
6	SW.	6	"	"	"	Dug	15	1,925	- 2	1,922	12	1,913	Glacial sand	Soft, clear		D	House supply only.
7	SW.	9	"	"	"	Dug	23	1,908	- 19	1,889	19	1,889	Glacial sand	Hard, clear		D, S	House supply only; 5 dry holes to 25 feet.
8	SE.	10	"	"	"	Dug	18	1,898	- 15	1,883	15	1,883	Glacial sand	Hard, clear	44	D, S	Waters 20 head stock.
9	NW.	10	"	"	"	Dug	22	1,902	- 19	1,883	19	1,883	Glacial sand	Hard, clear	45	D, S	Waters 11 head stock only.
10	NE.	11	"	"	"	Dug	12	1,896					Glacial clay				Dry hole.
11	SW.	12	"	"	"	Dug	26	1,887	- 23	1,864	20	1,867	Glacial sand	Hard, clear	43	D	House supply only; 28 foot well waters 9 head stock.
12	SW.	14	"	"	"	Dug	18	1,895	- 15	1,880	15	1,880	Glacial sand	Hard, clear	46	D, S	Waters 4 head stock only; 1 similar well, 22 foot dry hole.

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 CYMRI NO.36, 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	SE.	15	4	12	2	Dug	13	1,880	- 11	1,869	10	1,870	Glacial sand	Hard, clear	42	D, S	House use and 8 head stock.
14	SW.	16	"	"	"	Dug	8	1,896	- 4	1,892	6	1,890	Glacial sand	Soft, clear		D, S	House use and 4 head stock; 2 other shallow wells.
15	SE.	20	"	"	"	Dug	20	1,897	- 10	1,887	20	1,877	Glacial sand	Hard, clear, "alkaline"		S	Waters 8 head stock only; 10 foot well by creek for house use.
16	NW.	20	"	"	"	Dug	14	1,890	- 10	1,880	8	1,882	Glacial sand	Hard, clear	44	D, S	House use and 12 head stock.
17	NE.	20	"	"	"	Dug	18	1,890	- 9	1,881	9	1,881	Glacial sand	Hard, clear	48	D, S	Waters 12 head stock.
18	SW.	21	"	"	"	Bored	60	1,897	- 20	1,877	56	1,841	Glacial sand	Hard, clear, "alkaline"		S	Waters 50 head stock. 12 foot well for house use.
19	NW.	22	"	"	"	Dug	15	1,863	- 10	1,853	15	1,848	Glacial sand	Hard, clear "alkaline"	43	S	Waters 12 head stock only; 20 foot well for house use.
20	NW.	24	"	"	"	Dug	10	1,887	- 6	1,881	6	1,881	Glacial gravel	Hard, clear	43	D, S	Abundant supply.
21	SW.	30	"	"	"	Drilled	326	1,900	- 9	1,891	325	1,575	Ravenscrag sand	Soft, clear	44	S	Waters 21 head stock.
22	SE.	34	"	"	"	Dug	16	1,865					Glacial clay				Dry hole.
23	NE.	36	"	"	"	Dug	22	1,871			22	1,849	Glacial sand	Hard, clear	44	D, S	Waters 6 head stock.
1	NE.	3	5	10	2	Drilled	325	1,910	- 90	1,820	325	1,585	Ravenscrag sand	Soft, clear		S	Abundant supply; kills plants.
2	SW.	3	"	"	"	Dug	33	1,905	- 22	1,883			Glacial clay	Hard, clear, "alkaline"		S	Waters 19 head stock.
3	NE.	4	"	"	"	Dug	45	1,915	- 35	1,880	45	1,870	Glacial sand	Hard, clear		S	Waters 11 head stock; 14 foot well for house use.
4	SW.	9	"	"	"	Dug	40	1,920	- 30	1,890	36	1,884	Glacial sand	Hard, clear, "alkaline"		S	Waters 16 head stock; 12 foot dry hole.
5	SW.	10	"	"	"	Dug	24	1,900	- 2	1,898	22	1,878	Glacial gravel	Hard, clear		D, S	House use and 6 head stock.
6	NW.	10	"	"	"	Drilled	100	1,930	- 20	1,910	90	1,840	Glacial sand	Hard, clear, iron		D, S	Waters 30 head stock.
7	SE.	10	"	"	"	Dug	48	1,925	- 31	1,884	46	1,879	Glacial gravel	Hard, clear "alkaline"		S	Waters 60 head stock.
8	NE.	11	"	"	"	Dug	30	1,925	- 25	1,900	26	1,899	Glacial sand	Hard, clear		D, S	Waters 15 head stock. Several dry holes.
9	NE.	12	"	"	"	Dug	15	1,930	- 12	1,918	13	1,917	Glacial sand	Hard, clear,		D, S	Waters 18 head stock; also 40 foot well.
10	NW.	14	"	"	"	Dug	50	1,935	- 19	1,916	28	1,907	Glacial gravel	Hard, clear, "alkaline"		S	Waters 30 head stock. #
11	SE.	15	"	"	"	Dug	15	1,925					Glacial clay	Soft, clear		D, S	Small seepage from slough; numerous shallow dry holes.
12	SE.	16	"	"	"	Drilled	125	1,915			125	1,790	Glacial sand	Hard, clear, "alkaline"		S	Waters 22 head stock; dry holes to 30 feet.
13	SW.	16	"	"	"	Drilled	120	1,925	- 20	1,905	110	1,815	Glacial sand	Hard, iron, clear		S	Abundant supply. Many dry holes.
14	NW.	18	"	"	"	Drilled	90	1,930	- 60	1,870	78	1,852	Glacial sand	Hard, clear, "alkaline"		D, S	Laxative. 2 dry holes to 60 feet. Abundant supply.
15	NW.	19	"	"	"	Drilled	90	1,955	- 20	1,935	85	1,870	Glacial sand	Hard, iron		S	Waters 13 head stock.
16	NW.	20	"	"	"	Dug	32	1,955	- 16	1,939	32	1,923	Glacial sand	Hard, clear, "alkaline"		S	Abundant supply. 10 foot dry hole.

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 CYMRI NO.36, SASKATCHEWAN

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
17	SE.	24	5	10	2	Drilled	131	1,940	- 15	1,925	125	1,815	Glacial gravel	Hard, clear, "alkaline"		S	Waters 35 head stock; 18 foot well for house use.
18	NW.	26	"	"	"	Bored	80	1,950	- 45	1,905	80	1,870	Glacial sand	Hard, clear "alkaline"		S	Insufficient for 21 head stock; 30 foot dry hole.
19	NW.	28	"	"	"	Dug	32	1,940	- 5	1,935	32	1,908	Glacial sand	Hard, clear, "alkaline"		S	Insufficient for 12 head stock. 25 foot dry hole.
20	SE.	29	"	"	"	Dug	35	1,945	- 28	1,917	35	1,910	Glacial gravel	Hard, clear "alkaline"		S	Insufficient for 20 head stock.200 foot well plugged by sand.
21	SW.	30	"	"	"	Drilled	90	1,950			90	1,860	Glacial sand	Hard, clear "alkaline"		S	Abundant supply but plugs with sand. Several dry holes.
22	SW.	32	"	"	"	Drilled	140	1,950	- 30	1,920	130	1,820	Glacial sand	Hard, iron, "alkaline"		S	Abundant supply; several dry holes.
23	NE.	34	"	"	"	Drilled	175	1,955	- 45	1,910	150	1,805	Glacial sand	Hard,iron, "alkaline"		S	Waters 27 head stock. 50 foot dry hole.
24	SE.	34	"	"	"	Drilled	116	1,955	- 60	1,895	96	1,859	Glacial sand	Hard, clear, "alkaline"		S	Sufficient supply.
1	SE.	1	5	11	2	Dug	27	1,890	- 17	1,873	27	1,863	Glacial sand	Hard, clear, "alkaline"	42	S	Waters 17 head stock; 5 dry holes to 60 feet. Laxative.
2	SW.	3	"	"	"	Dug	16	1,905			16	1,889	Glacial sand	Soft, clear	44	D, S	Waters 16 head stock; 26 foot well "alkaline".
3	SW.	4	"	"	"	Dug	16	1,913	- 12	1,901	12	1,901	Glacial sand	Hard,bitter "alkaline"	44	D, S	Waters 11 head stock; 28 foot well for stock.
4	NE.	4	"	"	"	Dug	14	1,890	- 11	1,879	9	1,881	Glacial sand	Soft, clear		D	Sufficient for 25 head stock.
5	SW.	5	"	"	"	Dug	14	1,900	- 10	1,890	12	1,888	Glacial sand	Hard, clear, "alkaline"	46	D, S	Waters 40 head stock; 15 foot well for house use.
6	NW.	6	"	"	"	Dug	17	1,901	- 8	1,893	8	1,893	Glacial gravel	Hard, clear, "alkaline"	44	S	Waters 25 head stock.
7	NW.	7	"	"	"	Dug	8	1,900	- 6	1,894	6	1,894	Glacial sand	Soft, clear	44	D, S	Waters 100 head stock.
8	NE.	9	"	"	"	Dug	18	1,904	- 14	1,890	18	1,886	Glacial sand	Hard,yellow "alkaline"		S	Waters 30 head stock; 18 foot well for house use.
9	SE.	10	"	"	"	Dug	20	1,900	- 16	1,884	16	1,884	Glacial sand	Soft, clear		D, S	21 tanks a day.
10	SW.	10	"	"	"	Dug	18	1,908	- 12	1,896	16	1,892	Glacial sand	Hard, clear, "alkaline"		S	Waters 20 head stock only.
11	NW.	11	"	"	"	Dug	36	1,890	- 20	1,870	36	1,854	Glacial sand	Hard, clear	42	D, S	Waters 80 head stock.
12	NW.	12	"	"	"	Dug	27	1,891	- 11	1,880	27	1,864	Glacial sand	Hard, clear	46	D, S	Waters 30 head stock.
13	SW.	13	"	"	"	Dug	15	1,905	- 12	1,893	12	1,893	Glacial sand	Hard, clear, "alkaline"	42	S	Waters 13 head stock; 14 foot well for house.
14	NW.	13	"	"	"	Dug	25	1,887	- 8	1,879			Glacial clay	Hard, clear		D	House supply only; 50 foot well for stock.
15	NW.	14	"	"	"	Dug	16	1,895	- 10	1,885	12	1,883	Glacial sand	Hard, clear	42	D	House supply only.
16	NW.	14	"	"	"	Dug	38	1,895	- 10	1,885	16	1,879	Glacial sand	Hard, clear	44	S	Waters 40 head stock; numerous shallow dry holes.
17	NE.	14	"	"	"	Dug	19	1,894	- 15	1,879	17	1,877	Glacial sand	Hard, clear, "alkaline"	42	S	Waters 22 head stock; 13 foot well for house use.
18	NW.	15	"	"	"	Dug	22	1,900	- 15	1,885	14	1,886	Glacial gravel	Hard, clear	46	S	Waters 25 head stock.
19	NE.	15	"	"	"	Drilled	65	1,895	- 17	1,878	65	1,830	Glacial sand	Hard, clear, "alkaline"	48	S	Waters 11 head stock.

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

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

WELL RECORDS—Rural Municipality of CYMRI NO.36, 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.	16	5	11	2	Dug	20	1,908	- 13	1,895	17	1,891	Glacial gravel	Hard, clear "alkaline"	49	D, S	Waters 40 head stock; laxative.
21	NE.	16	"	"	"	Dug	10	1,899	- 4	1,895	10	1,889	Glacial sand	Hard, clear, "alkaline"	46	S	Moderate supply.
22	SE.	17	"	"	"	Dug	13	1,905	- 10	1,895	10	1,895	Glacial sand	Hard, clear, "alkaline"		D, S	Waters 25 head stock.
23	NW.	17	"	"	"	Dug	12	1,901	- 10	1,891	10	1,891	Glacial sand	Hard, clear, "alkaline"	45	S	Waters 25 head stock.
24	NE.	18	"	"	"	Dug	12	1,895	- 9	1,886	12	1,883	Glacial sand	Hard, clear		D, S	Waters 6 head stock only; 1 similar well.
25	NE.	18	"	"	"	Drilled	260	1,895			260	1,635	Ravenscrag	Soft, salty, clear		S	Abundant supply.
26	NW.	19	"	"	"	Dug	20	1,895	- 2	1,893	15	1,880	Glacial sand	Hard, clear, "alkaline"	46	S	Abundant supply; 1 similar well.
27	NE.	19	"	"	"	Dug	40	1,900	- 34	1,866	34	1,866	Glacial sand	Hard, clear, "alkaline"	44	S	Waters 18 head stock.
28	SE.	20	"	"	"	Drilled	318	1,890			318	1,572	Ravenscrag	Soft, salty	48	S	Waters 26 head stock.
29	SE.	22	"	"	"	Drilled	148	1,910	- 18	1,892	138	1,772	Glacial sand	Soft, clear		N	Sufficient supply.
30	SW.	22	"	"	"	Drilled	90	1,897	- 20	1,877	90	1,807	Glacial sand	Hard, clear, "alkaline"	46	S, M	Sufficient supply; numerous shallow wells.
31	NW.	22	"	"	"	Drilled	112	1,910	- 30	1,880	110	1,800	Glacial sand	Hard, iron		D, S, M	Plugged by sand in 1930.
32	NE.	22	"	"	"	Bored	50	1,948	- 35	1,913	40	1,908	Glacial sand	Hard, clear, "alkaline"		S	Small supply; seepage well for house.
33	NW.	23	"	"	"	Dug	14	1,931	- 9	1,922	12	1,919	Glacial sand	Hard, clear, "alkaline"	46	D, S	Waters 25 head stock.
34	SW.	25	"	"	"	Drilled	200	1,954	- 60	1,894	200	1,754	Glacial sand ?	Clear		S	Sufficient supply.
35	SW.	27	"	"	"	Bored	36	1,936	- 15	1,921	36	1,900	Glacial sand	Soft, clear		D, S	Waters 14 head stock; 2 similar wells.
36	SW.	28	"	"	"	Dug	8	1,895	- 5	1,890	5	1,890	Glacial sand	Hard, clear	48	S	Waters 20 head stock; 18 foot dry hole.
37	SE.	30	"	"	"	Dug	12	1,898	- 7	1,891	6	1,892	Glacial sand	Hard, clear	46	D, S	Waters 15 head stock only.
38	SE.	33	"	"	"	Dug	28	1,942	- 20	1,922	20	1,922	Glacial clay	Hard, clear, "alkaline"	42	D, S	Waters 15 head stock.
39	SW.	34	"	"	"	Drilled	75	1,954	- 12	1,942	65	1,889	Glacial sand	Hard, clear, "alkaline"		S	Abundant supply.
40	NW.	34	"	"	"	Dug	60	1,945	- 56	1,889	40	1,905	Glacial sand	Hard, clear, "alkaline"	44	S	Insufficient supply.
41	NE.	34	"	"	"	Drilled	50	1,945	- 18	1,927	50	1,895	Glacial sand	Hard, clear	43	D, S	Abundant supply.
42	SW.	35	"	"	"	Dug	33	1,935	- 22	1,913	22	1,913	Glacial sand	Hard, clear,		S	Waters 50 head stock; 14 foot well for house.
1	NE.	5	5	12	2	Dug	22	1,792	- 19	1,773	19	1,773	Glacial gravel	Soft, clear		D	House use only.
2	SW.	6	"	"	"	Dug	34	1,869					Glacial sand				Dry hole.
3	SE.	10	"	"	"	Dug	8	1,861	- 6	1,855	6	1,855	Glacial gravel	Soft, clear		S	Waters 25 head stock; also dry holes.
4	NW.	10	"	"	"	Dug	23	1,884	- 20	1,864	20	1,864	Glacial sand	Soft, clear		D, S	Waters 45 head stock.

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

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

WELL RECORDS—Rural Municipality of CYMRI NO.36, 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
5	NE.	10	5	12	2	Dug	18	1,881	- 13	1,868	9	1,872	Glacial sand	Hard, clear	44	D, S	House use and 20 head stock.
6	SE.	12	"	"	"	Dug	22	1,898	- 18	1,880	20	1,878	Glacial sand	Hard, clear, "alkaline"	46	S	Waters 28 head stock; 18 foot well for house.
7	SW.	12	"	"	"	Dug	22	1,884	- 8	1,876	22	1,862	Glacial gravel	Hard, clear		S	Waters 24 head stock only.
8	SW.	12	"	"	"	Drilled	130	1,884									Practically a dry hole.
9	SW.	12	"	"	"	Drilled	105	1,885	- 10	1,875	105	1,780	Sand	Hard, clear			Well never finished but good supply of water.
10	NW.	12	"	"	"	Dug	12	1,887	- 6	1,881	10	1,877	Glacial sand	Hard, clear "alkaline"	46	S	Sufficient for 10 head stock only.
11	NE.	12	"	"	"	Dug	15	1,904	- 12	1,892	10	1,894	Glacial sand	Hard, clear	43	D, S	10 barrels a pumping. 12 foot dry hole.
12	SW.	13	"	"	"	Dug	11	1,886	- 5	1,881	9	1,877	Glacial sand	Hard, clear	48	D, S	House use and 15 head stock.
13	NE.	13	"	"	"	Dug	12	1,886	- 8	1,878	8	1,878	Glacial sand	Soft, clear	43	D, S	Waters 20 head stock.
14	SW.	14	"	"	"	Dug	18	1,890	- 4	1,886	13	1,877	Glacial sand	Hard, clear, "alkaline"	48	S	Sufficient for 3 head stock; also 40 foot well.
15	NW.	14	"	"	"	Drilled	65	1,892	- 35	1,857	65	1,827	Glacial sand	Hard, clear		D, S	Waters 20 head stock.
16	NE.	14	"	"	"	Dug	12	1,880	- 10	1,870	11	1,869	Glacial sand	Soft, clear	46	D, S	Waters 20 head stock.
17	NW.	16	"	"	"	Dug	14	1,872	- 6	1,866	13	1,859	Glacial sand	Hard, clear		D, S	Sufficient supply.
18	SE.	18	"	"	"	Dug	16	1,780	- 14	1,766	14	1,766	Recent gravel	Soft, clear	49	D, M	Sufficient supply.
19	SE.	18	"	"	"	Dug	12	1,783	- 6	1,777	9	1,774	Recent sand	Hard, clear	51	D, S	Sufficient for 4 head stock.
20	SE.	20	"	"	"	Dug	22	1,800	- 20	1,780	18	1,782	Recent sand	Hard, clear		D	House use only.
21	SW.	20	"	"	"	Dug	24	1,784	- 22	1,762	22	1,762	Recent gravel	Hard, clear	49	S	Sufficient for 10 head stock only.
22	SE.	22	"	"	"	Dug	24	1,877	- 18	1,859	22	1,855	Glacial gravel	Soft, clear	46	D, S	Waters 30 head stock.
23	SE.	24	"	"	"	Dug	16	1,896	- 9	1,887	9	1,887	Glacial gravel	Hard, clear "alkaline"	43	D, S	Sufficient for 40 head stock; also has a 19 foot well.
24	NE.	24	"	"	"	Dug	16	1,901	- 12	1,889	14	1,887	Glacial gravel	Hard, clear	43	D, S	Sufficient for 6 head stock only; also has a 20 foot well.
25	SW.	25	"	"	"	Dug	9	1,887	- 2	1,885	6	1,881	Glacial gravel	Soft, clear	42	D, S	Waters 25 head stock; 40 foot well unfit for use.
26	SW.	31	"	"	"	Dug	17	1,902	- 11	1,891	17	1,885	Glacial sand	Soft, clear	46	D, S	Waters 16 head stock; also has a 26 foot well.
27	NE.	31	"	"	"	Dug	23	1,898					Glacial sand	Soft, clear		D, S	Very small supply; 2 dry holes.
28	SE.	32	"	"	"	Dug	18	1,877	- 17	1,860	17	1,860	Recent sand	Soft, clear		D, S	Dry in 1935.
29	NW.	33	"	"	"	Bored	80	1,872			80	1,792	Glacial gravel	Hard, iron, "alkaline"		S	Sufficient for 7 head stock.
30	NW.	35	"	"	"	Bored	35	1,892	- 16	1,876	35	1,857	Glacial gravel	Hard, clear		D, S	Waters 15 head stock.
31	SW.	36	"	"	"	Dug	20	1,902	- 15	1,887	15	1,887	Glacial sand	Hard, clear	43	D, S	Waters 20 head stock.

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

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

WELL RECORDS—Rural Municipality of CYMRI NO. 36, 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
32	NE.	36	5	12	2	Dug	25	1,894	- 19	1,875	13	1,881	Glacial sand	Hard, iron, "alkaline"		D, S	House use and 12 head stock.
33	NE.	36	"	"	"	Dug	16	1,890	- 6	1,884	5	1,885	Glacial sand	Soft, clear	47	S	Waters 8 head stock.
34	NE.	36	"	"	"	Dug	18	1,898	- 14	1,884	14	1,898	Glacial sand	Hard, clear		S	Enough for 2 head stock.
35	NE.	36	"	"	"	Dug	20	1,892	- 13	1,879	5	1,887	Glacial sand	Hard, clear, "alkaline"		S	Turns black upon standing; waters 4 head stock only.
1	NE.	2	6	10	2	Dug	25	1,960	- 18	1,942	24	1,936	Glacial sand	Hard, clear, "alkaline"		S	Waters 35 head stock; 45 foot dry hole.
2	SW.	2	"	"	"	Drilled	175	1,955	- 30	1,925	150	1,805	Ravenscrag sand?	Hard, clear		S	Abundant supply; 20 foot dry hole.
3	SE.	4	"	"	"	Drilled	90	1,950	- 16	1,934	85	1,865	Glacial sand	Hard, clear, "alkaline"		S	Waters 30 head stock; several dry holes.
4	NW.	4	"	"	"	Drilled	100	1,955	- 20	1,935	94	1,861	Glacial gravel	Hard, clear		S	Waters 30 head stock.
5	SE.	5	"	"	"	Drilled	150	1,945	- 30	1,915	130	1,815	Glacial sand	Hard, clear, "alkaline"		S	Waters 30 head stock; 50 foot dry hole.
6	SE.	6	"	"	"	Dug	45	1,945	- 20	1,925	45	1,900	Glacial sand	Hard, clear, "alkaline"		S	Waters 45 head stock; 3 dry holes up to 140 feet deep.
7	SW.	8	"	"	"	Dug	30	1,960	- 22	1,938	22	1,938	Glacial sand	Hard, clear, "alkaline"		S	Sufficient for only 4 head stock.
8	SW.	12	"	"	"	Drilled	160	1,960	- 80	1,880	140	1,820	Glacial sand	Hard, clear, "alkaline"		S	Abundant supply. 5 dry holes to 25 feet.
9	NE.	15	"	"	"	Dug	16	1,960	- 8	1,952	8	1,952	Glacial sandy clay	Hard, clear, "alkaline"		S	Insufficient supply.
10	SE.	16	"	"	"	Dug	30	1,960	- 18	1,942	30	1,930	Glacial sand	Hard, very "alkaline"		S	Waters 10 head stock; 2 dry holes.
11	SW.	17	"	"	"	Dug	18	1,960	- 8	1,952	14	1,946	Glacial sand	Hard, "alkaline"		S	Insufficient for 31 head stock; 3 dry holes.
12	NW.	22	"	"	"	Dug	50	1,960	- 8	1,952	17	1,943	Glacial gravel	Hard, cloudy "alkaline"		S	Insufficient for 21 head stock; numerous dry holes.
13	SE.	22	"	"	"	Drilled	316	1,960	- 80	1,880	286	1,674	Ravenscrag sand	Soft, soda		S	Abundant supply; dry holes to 375 feet.
14	NE.	23	"	"	"	Dug	126	1,960	- 98	1,862	126	1,834	Glacial sand	Hard, clear, "alkaline"		S	Waters 43 head stock; 16 foot well for house use
15	NW.	24	"	"	"	Drilled	354	1,960	- 50	1,910	314	1,646	Ravenscrag sand	Soft, soda		D, S	Abundant supply; 4 dry holes 100 to 350 feet.
16	SE.	30	"	"	"	Drilled	210	1,970	- 85	1,885	190	1,780	Ravenscrag sand	Hard, clear, "alkaline"		S	Waters 30 head stock. Several dry holes, 14 foot well for house use
17	SE.	32	"	"	"	Dug	18	1,965	- 12	1,953			Glacial clay	Hard, clear		D,	House supply only. 5 dry holes to 95 feet.
18	NE.	36	"	"	"	Dug	10	1,970	- 2	1,968	5	1,965	Glacial gravel	Hard, clear		D, S	Waters 35 head stock.
19	SW.	36	"	"	"	Dug	20	1,980	- 16	1,964	20	1,960	Glacial gravel	Hard, clear		D, S	Sufficient supply; 8 dry holes.
1	SE.	2	6	11	2	Drilled	66	1,933	- 36	1,897	60	1,873	Glacial sand	Hard, iron, "alkaline"		S	Waters 22 head stock; 16 foot well for house use.
2	NW.	2	"	"	"	Dug	35	1,944	- 27	1,917	35	1,909	Glacial sand	Hard, clear, "alkaline"	45	S	Waters 16 head stock.
3	SW.	4	"	"	"	Dug	20	1,940	- 18	1,922	18	1,922	Glacial gravel	Hard, clear	45	D, S	Sufficient supply.
4	SW.	7	"	"	"	Bored	60	1,947	- 20	1,927	60	1,887	Glacial drift	Hard, clear, "alkaline"	48	D, S	Waters 20 head stock.

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

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

WELL RECORDS—Rural Municipality of CYMRI NO.36, 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
5	SE.	9	6	11	2	Dug	13	1,946	- 7	1,939	4	1,942	Glacial sand	Hard, clear		D, S	Waters 80 head stock.
6	SE.	10	"	"	"	Drilled	360	1,930					Bedrock				Dry hole; dry hole in drift in NW.¼.
7	NW.	11	"	"	"	Dug	32	1,950	- 10	1,940	21	1,929	Glacial sand	Hard, clear, "alkaline"		D, S	Insufficient supply.
8	NW.	12	"	"	"	Dug	24	1,950	- 18	1,932	17	1,933	Glacial sand	Hard, clear, "alkaline"	46	S	Insufficient supply; 10 foot well for house use.
9	SE.	14	"	"	"	Dug	44	1,956	- 30	1,926	40	1,916	Glacial sand	Hard, clear	44	S	Waters 20 head stock only.
10	NW.	14	"	"	"	Dug	36	1,963			36	1,927	Glacial sand	Hard, clear		N	Dry from 1930 to 1934.
11	SE.	16	"	"	"	Dug	36	1,953	- 10	1,943	16	1,937	Glacial sand	Hard, clear, "alkaline"	44	S	Insufficient supply; uses sandpoint well.
12	NE.	17	"	"	"	Bored	50	1,953	- 48	1,905	48	1,905	Glacial clay	Hard, "alkaline" black		S	Sufficient for only 5 head stock; 2 wells in clay
13	NW.	18	"	"	"	Dug	16	1,936	- 6	1,930	6	1,930	Glacial sand	Hard, clear		D, S	Waters 15 head stock.
14	NW.	20	"	"	"	Dug	26	1,948	- 16	1,932	16	1,932	Glacial clay	Hard, clear		D, S	Waters 30 head stock.
15	NE.	21	"	"	"	Dug	24	1,965	- 15	1,950	22	1,943	Glacial gravel	Hard, clear, "alkaline"		S	Waters 17 head stock; 21 foot well for house.
16	SW.	23	"	"	"	Drilled	40	1,991	- 15	1,976	40	1,951	White sand	Hard, clear		D, S	Waters 20 head stock.
17	NE.	23	"	"	"	Dug	24	2,000	- 22	1,978	22	1,978	Glacial gravel	Hard, clear		D, S	Sufficient for only 15 head stock.
18	NW.	23	"	"	"	Dug	11	1,975	- 7	1,968	11	1,964	Glacial sand	Soft, clear		D, S	Sufficient supply.
19	NW.	24	"	"	"	Drilled	85	1,988	- 16	1,972	80	1,908	Coarse sand	Hard, iron, "alkaline"	48	S	Sufficient supply.
20	SW.	26	"	"	"	Dug	22	1,988	- 10	1,978	20	1,968	Glacial sand	Hard, clear		S	Dry in 1935.
21	SW.	26	"	"	"	Drilled	90	1,950	- 14	1,936	90	1,860	Fine sand	Hard, clear, "alkaline"		N	Good supply but plugged with sand.
22	SW.	28	"	"	"	Dug	26	1,966	- 14	1,952	19	1,947	Glacial sand	Hard, clear, "alkaline"		S	Waters 50 head stock.
23	SW.	29	"	"	"	Bored	30	1,965	- 10	1,955	30	1,935	Glacial gravel	Hard, clear, "alkaline"	45	D, S	Waters 100 head stock.
24	NE.	29	"	"	"	Dug	30	1,988	- 25	1,963	26	1,962	Glacial sand	Hard, clear	45	D, S	Waters only 20 head stock. Also 46 foot well.
25	SW.	30	"	"	"	Dug	30	1,948	- 26	1,922	26	1,922	Glacial gravel	Hard, clear, "alkaline"		D, S	Waters 16 head stock.
26	SW.	31	"	"	"	Dug	12	1,957					Glacial sand	Hard, clear		S	Seepage from slough.
27	NE.	33	"	"	"	Dug	36	1,987	- 12	1,975	24	1,963	Glacial drift	Hard, clear, "alkaline"		S	Waters 16 head stock; 20 foot well for house use.
28	NE.	34	"	"	"	Bored	64	2,003	- 29	1,974	44	1,959	Glacial sand	Hard, clear	44	S	Waters 24 head stock; 16 foot well for house use.
1	NE.	1	6	12	2	Bored	48	1,911	- 41	1,870	41	1,870	Glacial gravel	Hard, clear, "alkaline"		D, S	Sufficient for 2 head stock only. Uses 14 foot well for stock.
2	SE.	2	"	"	"	Bored	34	1,908	- 22	1,886	34	1,874	Glacial sand	Hard, clear, "alkaline"	46	D, S	Waters 17 head stock.
3	SW.	3	"	"	"	Drilled	140	1,895	- 17	1,878	125	1,770	Coarse sand	Hard, clear, "alkaline"		D, S	Abundant supply; turns yellow upon standing.

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 CYMRI NO.36, SASKATCHEWAN

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
4	SW.	3	6	12	2	Dug	30	1,898	- 24	1,874	24	1,874	Glacial gravel	Hard, clear, "alkaline"		D, S	Dry from 1931 to 1934.
5	SE.	6	"	"	"	Dug	25	1,902	- 17	1,885	23	1,879	Glacial sand	Hard, clear		D, S	House use and 8 head stock.
6	SE.	9	"	"	"	Dug	30	1,900	- 26	1,874	30	1,870	Glacial gravel	Hard, clear	45	D, S	Waters 25 head stock; 40 foot well not used.
7	NE.	9	"	"	"	Dug	26	1,907	- 20	1,887	20	1,887	Glacial sand	Hard, clear		D, S	Waters 60 head stock; 1 similar well.
8	SE.	10	"	"	"	Dug	22	1,908	- 16	1,892	20	1,888	Glacial sand	Hard, clear		D	House use only; 2 shallow wells supply 70 head stock.
9	NW.	10	"	"	"	Bored	50	1,910	- 10	1,900	46	1,864	Glacial sand	Hard, clear, "alkaline"		S	Waters 10 head stock.
10	NW.	10	"	"	"	Dug	20	1,910	- 10	1,900	19	1,891	Glacial gravel	Hard, clear		D, S	House use and 3 head stock; 1 similar well.
11	SE.	13	"	"	"	Bored	60	1,944	- 20	1,924	60	1,884	Glacial sand	Hard, clear,		N	Not used since 1930. Waters 30 head stock.
12	SW.	13	"	"	"	Bored	58	1,938	- 19	1,919	56	1,882	Glacial gravel	Hard, yellow "alkaline"		S	Abundant supply; laxative.
13	SE.	14	"	"	"	Dug	22	1,922	- 14	1,908	22	1,900	Glacial gravel	Hard, clear	46	D, S	Sufficient for 6 head stock only; 1 similar well.
14	NW.	14	"	"	"	Drilled	112	1,918	- 20	1,898	110	1,808	Glacial gravel	Hard, clear, "alkaline"		S	Abundant supply; several dry holes to depths up to 500 feet.
15	NE.	15	"	"	"	Dug	18	1,907	- 13	1,894	18	1,889	Glacial sand	Hard, clear, "alkaline"	44	D, S	Waters 22 head stock.
16	NE.	16	"	"	"	Dug	20	1,908	- 17	1,891	17	1,891	Bedrock sand?	Hard, bitter "alkaline"		S	Waters 10 head stock; 1 similar well.
17	SE.	17	"	"	"	Dug	6	1,830	- 2	1,828	6	1,824	Recent sand	Hard, "alkaline"		S	Poor supply.
18	NW.	18	"	"	"	Dug	12	1,878	- 11	1,867	10	1,868	Glacial sand	Hard, clear	43	D, S	Waters 30 head stock.
19	SE.	20	"	"	"	Bored	45	1,892	- 25	1,867	35	1,857	Glacial gravel	Hard, clear, "alkaline"	46	N	Too "alkaline" for use; several dry holes.
20	NE.	21	"	"	"	Drilled	70	1,904	- 20	1,884	67	1,837	Glacial gravel	Hard, clear		D, S	Abundant supply; 1 similar well.
21	SW.	22	"	"	"	Dug	18	1,903	- 13	1,890	13	1,890	Glacial sand	Hard, clear, "alkaline"		D, S	Waters 20 head stock.
22	NE.	22	"	"	"	Dug	28	1,910	- 16	1,894	28	1,882	Glacial sand	Hard, clear	45	D, S	Waters 70 head stock.
23	SE.	25	"	"	"	Bored	38	1,940	- 24	1,916	38	1,902	Ravenscrag coal	Soft, clear		D	Sufficient supply; 9 foot well waters 30 head stock.
24	NW.	26	"	"	"	Bored	30	1,930	- 14	1,916	28	1,902	Glacial sand	Hard, clear, "alkaline"		S	Sufficient for 6 head stock only. 1 similar well.
25	SE.	31	"	"	"	Drilled	265	1,892	-100	1,792	262	1,630	Ravenscrag gravel	Soft, salty, clear	48	D, S	Waters 14 head stock.
26	SE.	32	"	"	"	Dug	20	1,894					Glacial clay				Dry hole.
27	SE.	32	"	"	"	Dug	16	1,900	- 14	1,886	13	1,887	Ravenscrag sand	Hard, clear, "alkaline"		S	Waters 20 head stock; laxative.
28	NW.	34	"	"	"	Dug	12	1,909	- 4	1,905			Glacial drift	Hard, clear, "alkaline"		S	2 barrels a day.
29	NW.	34	"	"	"	Bored	90	1,918	- 20	1,898	90	1,828	Bedrock sand	Soft, dark		S	Sufficient for 6 head stock only; 15 foot well for house use.
30	SW.	35	"	"	"	Dug	18	1,928	- 13	1,915	9	1,919	Glacial sand	Soft, clear	46	D, S	Sufficient for 10 head stock only 2 similar wells.
31	SE.	36	"	"	"	Drilled	317	1,952					Bedrock				Dry hole.
32	SE.	36	"	"	"	Drilled	225	1,956					Bedrock				Dry hole.
33	SE.	36	"	"	"	Drilled	108	1,952	- 17	1,935	108	1,844	Bedrock?	Soft, clear		D, S	Waters only 4 head stock.
34	SW.	36	"	"	"	Drilled	180	1,945	- 24	1,921	180	1,765	Bedrock sand	Soft, soda, sulphur		D, S	Abundant 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.