CANADA
DEPARTMENT OF MINES

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BUREAU OF ECONOMIC GEOLOGY

GEOLOGICAL SURVEY

PRELIMINARY REPORT

GROUND-WATER RESOURCES OF THE RURAL MUNICIPALITY OF KEY WEST No. 70 SASKATCHEWAN

BY

B.R.MacKay, H. H. Beach & E. L. Ruggles

Water Supply Paper No. 37

OTTAWA

1936

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INTRODUCTION

Lack of rainfall during the years 1930 to 1934 over a large part of the Prairie Provinces brought about an acute shortage both in the larger supplies of surface water used for irrigation purposes and the smaller supplies of ground water required for domestic and stock-raising purposes by settlers, villages, and Indian reserves. The drought conditions resulted in repeated crop failures, and in a large number of farms in the acute drought areas of Saskatchewan and Alberta being abandoned. In an effort to relieve the serious situation a number of special studies of the water problem were begun by both Federal and Provincial Governments and allied organizations. The Federal Department of Agriculture undertook among other phases of the drought problem an investigation into the existing supplies of surface water, their conservation by means of dams and dug-outs, and how they could be made more generally available for irrigation. The Geological Survey of the Federal Department of Mines began an extensive study of the underground water conditions of southern Saskatchewan, this water being used principally for domestic and stock-raising purposes. For many years past the water problem in this and other provinces of Canada have engaged the attention of the Geological Survey, and considerable information had already been collected. A number of short reports dealing with the ground water conditions of special areas in Manitoba, Saskatchewan and Alberta have been published by both the Federal and Provincial Geological Surveys, but no systematic study of the ground water resources has been made up to the present.

Field Work

The senior author was in charge of this investigation and was instructed to cover as much of the territory as possible in the season. To effect this it was decided to maintain an

office at Regina and to have a large party consisting of twenty-six units, each to consist of three men who would cover their respective areas and visit every farm. In order that the information gathered by these different party units would be as complete and uniform as possible a questionnaire was prepared on which could be tabulated answers to all the essential questions required for a detailed study of the ground water conditions. An effort was made in the field by each party unit to fill in the questionnaire as completely as possible. In many instances, however, it was found that wells had either been abandoned, or the resident had little or no knowledge of the character of the water-bearing horizon and associated beds. When a party unit had completed the survey of a township the set of questionnaires and a report describing the characteristic features pertaining to the underground water conditions were mailed to the field office. Messrs. D.C. Maddox, F.H. Edmunds, H.H. Beach, H.N. Hainstock, R.D. MacDonald, and D.P. Goodall acted as supervisors in inspecting the work of the field units.

During the field season an area of 80,000 square miles, comprising 2,200 townships, was systematically examined, and records of approximately 60,000 wells were obtained, together with water samples for analyses obtained from 720 representative wells. These are systematically classified so that information pertaining to any well may be readily consulted. These records are supplemented by a set of 24 sectional sheets which cover all of southern Saskatchewan north to include township 32. Each sectional sheet comprises 120 townships. On these are indicated by symbol the location, type, and source of water of each of the 60,000 wells.

Publication of Results

The publication of such a great mass of detailed information is out of the question. This forms the permanent record of the Geological Survey. It is highly desirable, however, that a digest of the essential information pertaining to the ground water conditions of each municipality be furnished in convenient form to the municipality offices, to certain Provincial and Federal departments, and to allied organizations, at which centres it will be possible for any resident of the municipality or other party interested in any particular area to consult these reports. Should anyone find that he requires more detailed data than that contained in the report such additional information as the Geological Survey possesses can be procured on application to the Director, Bureau of Economic Geology, Department of Mines, Ottawa. In making such request the applicant should indicate the exact location of the area by giving the quarter section, township, range and meridian.

The reports have been prepared principally for farm residents, municipal bodies, and well drillers who are either contemplating sinking a well for the first time or considering deepening their well to a lower horizon in order to obtain a more abundant supply of water. In describing the water and geological conditions a certain number of technical terms must of necessity be used, and in case the reader should not be familiar with them their meanings have been defined in the glossary.

How to Use the Report

It is advisable that anyone desiring water information pertaining to a particular section of the municipality read over first the section dealing with the municipality as a whole, as by so doing he will be in a much better position to understand the section of the report dealing with the ground water conditions of

the area in which he is particularly interested. As he reads the text he should keep open before him for constant reference the accompanying map of the municipality on which are two figures, one showing the surface and bedrock geology of the area as they affect the ground water supply, and the other the relief and the location and type of water wells. The land relief is shown by means of lines of equal elevation, termed "contours", which lie generally at vertical intervals of 50 feet. The elevation above sea-level of each fourth line is indicated on the map. The statistical summary that follows the text gives at a glance the main characteristics of the wells in each township of the municipality and of the municipality as a whole as listed under the various sub-headings. This is followed by a section dealing with the analyses and quality of the water derived from the unconsolidated deposits and from bedrock. The table of well records gives the detailed information pertaining to each well. In this are tabulated the altitude of the well, its depth, the height to which the water will rise, and the elevation of the water horizon. The wells are grouped in the table by townships and are numbered from the lower right corner of the township westward and northward, and the location of each well by its quarter section is given. The elevations used were determined by aneroid barometer and were checked frequently by elevations on the published maps or by instrument surveys.

Where the ground surface of an area is comparatively flat an effort has been made to indicate the position of the water-bearing horizon in feet below the surface. In rolling country where there is a considerable difference of elevation within short distances a uniform figure for the depth to the water horizon is not generally possible. It then becomes necessary to indicate the position in terms of the elevation of a water-bearing bed in feet above sea-level.

Should one desire to ascertain at any location at which no well has as yet been sunk, the approximate depth at which a particular water-bearing horizon can be reached it is necessary to know two things--first, the elevation of the land surface, and second, the probable elevation of the water-bearing bed, or aquifer. The elevation of the land surface can be obtained by noting the position of the well site on the map. Figure 2, with respect to the two bounding contour lines of known elevation, and estimating either how far above the lower, or how far below the upper, control elevation line the well site lies. The approximate elevation of the water-bearing horizon at the well site can be obtained by noting on the table of well records the elevation of the horizon in the wells adjacent to the proposed location and from the range of elevations given and the relative positions of the wells shown on the map to select what appears to be its most probable elevation at the new well site. Having determined this elevation the depth that it is necessary to sink in order to tap it is the difference between its elevation and the elevation of the land surface. This method is especially applicable when the water-bearing horizon is in bedrock. In unconsolidated deposits the water horizon either conforms to the rolling land surface or occurs in isolated sand beds at various horizons that do not form a continuous water-bearing bed over a large area. Care should be taken in making any calculations for depth of water-bearing horizons to be sure that the elevations selected for the determinations occur in the same geological horizon, that is they should be either all in glacial drift or in the same bedrock formation.

The table of well records also contains notes on the temperature, quality, and quantity of the water being obtained from the various wells, and from this it is possible to draw reasonable conclusions as to the character and quantity of the water likely to be encountered at the proposed well site.

Glossary of Terms Used

Alluvium. Deposits of earth, silt, sand and gravel, and other transported material laid down by rivers, floods, or other causes upon land that has been submerged beneath the waters of lakes or rivers.

Aquifer. Layers or pockets of water-bearing sand or gravel that occur in unconsolidated deposits or as beds forming part of a bedrock formation.

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 deposits of gravel, sand, silt, and marl that have been laid down by the agency of water and which through a long period of time and the weight of the overlying sediments have become cemented into a solid rock.

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 section in a river valley that is 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 exerted by the water at any given point. It is due mainly to the weight of the column of water occurring at higher levels in the same aquifer or water-bearing bed.

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

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

Potable. Suitable for drinking.

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.

Water-bearing Horizon. A layer in either unconsolidated deposits or in bedrock formations that is water-bearing; same as aquifer.

Zone of Saturation. An area in which the permeable rocks are saturated with water that will move under ordinary hydrostatic pressure.

Names and Descriptions of Geological Formations, Referred to in These Reports

Wood Mountain Formation. The local name given to a series of gravel and thin sand beds which have a maximum thickness of 50 feet, and which occurs as isolated patches on the higher elevations of Wood mountain. They are the youngest of the consolidated rocks and, where present, rest upon the beds of the Ravenscrag formation.

Cypress Hills Formation. The local name given to a series of conglomerates and sand beds occurring in the southwest corner of Saskatchewan, which rests upon the Ravenscrag or older formations. The thickness of this formation varies from 30 to 125 feet.

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

Whitemud Formation. The local name given to a series of white, grey, and buff coloured clays and sands that varies in thickness from 10 to 75 feet. The base of this formation grades in places into a coarse, limy sand having a maximum thickness of 40 feet.

Eastend Formation. The local 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 eastern escarpment of the Missouri coteau. The The thickness of the formation seldom exceeds 40 feet.

Marine Shale Formation. The general name given to the thick deposit of incoherent, dark grey to dark brownish grey, plastic shales, which weather light grey to buff in places. It forms the uppermost bedrock formation over the greater part of eastern and central Saskatchewan. In the western part of the province it consists of a series of dark shales termed the Bearpaw formation. This is underlain by a series of sands, shales, and coal seams, known as the Belly River formation.

WATER-BEARING HORIZONS OF THE MUNICIPALITY

The rural municipality of Key West is an area of 324 square miles in the central part of southern Saskatchewan, the centre being 50 miles directly south of the mid-point between Regina and Moose Jaw. The municipality consists of nine townships described as tps. 7, 8, and 9, ranges 22, 23, and 24, W. 2nd mer. A rolling plain of ground moraine or boulder clay extends across the southern half of township 8, range 23, the northeast corner of township 7, range 23, and occupies the greater part of townships 7 and 8, range 22. The remainder of the municipality is a typical terminal moraine area characterized by low, irregular hills and numerous, undrained depressions. The surface of the land rises gradually from an elevation of 2,300 feet above sea-level in the southwest corner of township 7, range 24, to 2,450 feet in township 9, range 22.

The ground water supplies of the municipality are obtained in part from wells sunk in the glacial drift, which covers the whole area, and in part from wells that penetrate the immediately underlying Ravenscrag bedrock formation.

Water-bearing Horizons in the Unconsolidated Deposits

Glacial drift covers the entire municipality. In the southwest corner of township 7, range 24, the glacial drift is only 30 feet thick, but over the remainder of the municipality it increases to a thickness varying from 150 to 300 feet. The boulder clay, which makes up most of the glacial drift, is nearly impervious and cannot be considered as more than a very poor source of ground water supply. The small seepages that have been encountered in the clay are charged with large amounts of mineral salts that render the water unsuitable for domestic use. Where shallow wells are located beside sloughs or dugouts the clay or other materials act as a natural filter, rendering the supplies from this source in general suitable for household use.

Continuous water horizons do not exist in the glacial drift, but numerous, isolated, water-bearing sand and gravel pockets occur within the upper 35 feet of the drift. The glacial drift in those areas shown on the map as terminal moraine and glacial sand and gravel outwash is more sandy and porous than in the area of glacial till or boulder clay. Consequently better water supplies are to be expected in the former than in the area of glacial till. Moreover, the water in the areas of porous deposits is not so highly mineralized as the water from the boulder clay. It has been found that in several sections of the municipality good water supplies are easily obtained from the glacial drift within 35 feet of the surface. These areas have been shown on the map, Figure 1, enclosed by the lines marked "A". Outside of these areas water-bearing pockets in the drift also occur, but they are much more difficult to locate and in many places no sand or gravel aquifers can be found.

The water from a small number of wells in these sand pockets is soft, but in the majority of cases it is hard. Only very rarely is the water from the sand or gravel too highly mineralized for domestic use. The quantity of water obtainable from these pockets probably depends on the extent of the pocket. In a few places the quantity of water produced by the wells is sufficient only for household use, but generally supplies ample for the watering of 10 to 50 head of stock are available, and a few wells located at various points throughout the municipality yield sufficient water for 150 to 200 head of stock. It is advised that prospecting for water in the glacial drift be confined to within 35 feet of the surface, as water located at lower levels will generally have a much higher dissolved mineral content.

Water-bearing Horizons in the Bedrock

The whole municipality is underlain by the Ravenscrag formation, which consists of yellow to brown shales, buff to bluish grey sands, and occasional thin seams of lignite coal. Only one water-producing horizon has been encountered. This is a bed of sand usually described as a "pepper and salt" sand. In the southwest corner of township 7, range 24, this bed lies at an elevation of about 2,260 feet above sea-level. From that point it slopes off to the northeast corner of the township, whence it continues across the municipality at an elevation of 2,130 to 2,170 feet above sea-level and is nearly flat-lying. In the southwest corner of township 7, range 24, the bedrock lies 30 feet from the ground surface, but the depth of covering increases rapidly to the north and east, so that throughout most of the municipality this water-producing horizon lies 150 to 300 feet below the land surface. An analysis of the water from one well showed it to be very hard and to have a large sulphate content. In some localities the water is potable, but in others the high sulphate content renders the water usable only for stock, and the water from a few wells is too highly mineralized even for stock use. Sufficient water for at least 20 head of stock is supplied by each of the wells sunk into the bedrock, and most of the wells will yield considerable more water than is required for local use.

GROUND WATER CONDITIONS BY TOWNSHIPS

Township 7, Range 22

The supply of water from wells that exist in this township is not sufficient for all local requirements. The water is being derived from two sources, the glacial drift that covers the entire township, and the Ravenscrag bedrock formation that immediately underlies the glacial drift.

Gravel and sand pockets are quite numerous throughout the hilly land of terminal moraine in the southwest corner and along the southern edge of the township and lie 10 to 20 feet beneath the surface. Supplies of fairly soft to hard, potable water sufficient for 10 to 20 head of stock may usually be found in these pockets. In some instances the water is slightly "alkaline", but not to a degree that renders it unfit for household use. Water-bearing sand and gravel pockets are less numerous in the remainder of the township in which the glacial drift covering is in the form of ground moraine or boulder clay. Supplies for at least 10 head of stock can generally be expected from isolated gravel pockets in the clay, but in many cases the supply is only enough for household requirements. Numerous wells have been sunk in the boulder clay from which they derive small seepages.

An aquifer of fine sand in the Ravenscrag formation has been encountered in wells located in sections 5 and 30 of the township at depths of 190 and 309 feet below the ground surface, or at an elevation about 2,130 feet above sea-level. In each well large supplies of water under hydrostatic pressure were found, but one well soon became blocked by the infiltration of quick-sand and in the other the flow was sealed off by the well casing. A third well, 297 feet deep, located at Ogema, tapped a large aquifer at an elevation of 2,116 feet above sea-level, but the water is so highly mineralized as to be unfit for use. It is probable that this well passed through the Ravenscrag formation and is deriving water either from the Eastend formation or from the Marine shale, in which case only poor water is to be expected. Deep drilling in the township should not be carried below an elevation of about 2,130 feet above sea-level, the elevation of the water-bearing horizon in the Ravenscrag. To reach this elevation about 200 feet of drilling would be necessary on the plains in the north of the township, and about 300 feet on the hills area in the south.

Township 7, Range 23

Ground water supplies in this township are being derived from two sources, the glacial drift and the underlying Ravenscrag formation. In general the supply is sufficient for local requirements.

The northeastern part of the township is covered by a mantle of glacial drift composed of boulder clay in which occur isolated pockets of sand and gravel. Little water can be expected from the clay due to its impervious nature, but by locating wells close to sloughs small, intermittent supplies of seepage water may be obtained. In most instances this water is hard and is highly mineralized but it is used for drinking. Over most of the township the glacial drift is in the form of terminal moraine, and in it more reliable supplies of water are found in sand and gravel pockets which lie 10 to 30 feet below the ground surface. Wells tapping these pockets yield hard but usable water in quantities sufficient for 10 to 40 head of stock. On the SE. $\frac{1}{4}$, section 9, and SW. $\frac{1}{4}$, section 10, a large bed of water-bearing sand and gravel lies within a few feet of the surface. From this aquifer large quantities of moderately hard, potable water may be drawn. One well on section 9 has supplied the needs of 200 head of stock. Ground water conditions are found to be better in the area enclosed by the "A" line, Figure 1, than in other parts of the township.

A well 207 feet deep on section 33 represents the only attempt to obtain water from the sands of the Ravenscrag formation which lie at an elevation between 2,130 and 2,200 feet above sea-level. The water from this well has been analysed and found to have a fairly high sulphate content, but it seems to be satisfactory for all farm purposes. Sufficient water is obtained from this well for the watering of 30 head of stock. Similar supplies of ground water should be obtained by drilling approximately 200 feet

on the lower land and 250 to 300 feet on the high areas.

Township 7, Range 24

Deposits of glacial drift cover the whole of the township. In the region of Channel lake and in the southwest corner of the township they are 30 feet thick and they increase to over 200 feet in thickness in the northeast. Below this deposit is the Ravenscrag formation. Ground water is being derived from both the drift and the bedrock.

The glacial drift in this township is part of a broad belt of terminal moraine that overlies much of the municipality. It consists of boulder clay in which occur pockets of sand and gravel. Little water can be expected from the boulder clay due to its impervious nature, except when the wells are situated beside sloughs, in which water of a high mineral content may be anticipated. Larger quantities of less highly mineralized water, however, occur in the sand and gravel pockets which appear to be quite numerous throughout the northwestern part of the township. Individual wells tapping these pockets yield a supply sufficient for 10 to 50 head of stock. In each case the water is hard, but it is reported to be satisfactory for household use. Elsewhere throughout the township the glacial drift has not been prospected for water to the same degree, but the sand and gravel deposits appear to be less numerous. However, by careful prospecting, sand and gravel pockets can doubtlessly be located that will yield more satisfactory supplies than do many of the existing wells in this area.

The Ravenscrag formation, which immediately underlies the glacial drift, has a slight dip within the township to the northeast. Due to this slope and to the rise of the surface of the glacial drift in the same direction the depth of covering of the water-bearing horizon in the bedrock increases from 30 feet close to Channel lake to 275 feet on section 36. The aquifer in

the Ravenscrag formation in this locality is described as a "pepper and salt" sand and in some places the sand is quite fine. On section 8, close to the lake, it appears that the water from the aquifer rises through 20 or 30 feet of glacial covering to form a continuously flowing spring. Water from this horizon is hard and quite high in sulphates, but is used for all farm requirements. In some cases it is found to have a laxative effect on persons unaccustomed to it. The quantity of water available cannot be estimated, but in each of the existing wells there is more water than locally required.

Township 8, Range 22

The supply of ground water in this township is obtained from two sources, the glacial deposits that mantle the whole of the area, and the Ravenscrag formation which underlies the glacial drift over the entire municipality.

The glacial drift over most of the township is a heterogeneous mixture of clay, boulder, and occasional pockets of sand and gravel. In the northern part and in the northeastern corner of the township the drift is of the terminal moraine type and the remainder of the township is covered by boulder clay or ground moraine. In this township there appears to be little difference in the water-bearing quantities of the two types of glacial drift. The boulder clay itself is generally so impervious that very little water can be obtained from wells in it unless they are situated so as to receive seepage water from sloughs. In some cases the water is not potable due to a high content of salts in solution. In the terminal moraine area the sand and gravel pockets are as a rule more numerous, and when they occur within 10 to 30 feet of the land-surface more satisfactory water supplies are usually obtained from them. The quality of the water, derived from the sand and gravel pockets in the ground moraine,

although generally hard and alkaline, is invariably better than that obtained from the boulder clay itself, but in a few cases this water also is too highly mineralized for domestic use. The quantity of water obtained from individual wells ranges from that barely sufficient for household use to quantities ample for 40 head of stock. Water-bearing sand and gravel pockets seem to be more numerous in the west-central and southeastern parts of the township, shown on the map as being overlain by ground moraine, than in the northeastern part which is covered by the terminal moraine.

Larger supplies of water have been located by wells 165 to 260 feet deep which have penetrated water-bearing sand beds of the Ravenscrag formation, lying at an elevation of about 2,170 feet above sea-level. Each of the bedrock wells supplies sufficient water for at least 50 head of stock. The water in each case is hard. The water from three of the wells is so highly charged with mineral salts as to be unfit for household use. The area over which water of poor quality may be expected from the bedrock can not be determined, but good supplies of stock water should be available in any locality.

Township 8, Range 23

Ground water supplies used in this township are derived from two sources, namely, the glacial drift that forms a covering about 200 feet thick over the whole area, and the sand beds of the Ravenscrag formation which lies below the glacial drift.

No continuous aquifer can be traced through the glacial deposits. Boulder clay is the chief constituent of the drift in the southeastern half of the township, but scattered through it are sand and gravel pockets. Very small supplies of water are obtained from wells in the clay, but the water is hard and in some cases has to high a content of salts to be fit for drinking.

Seepage from sloughs is the source of water in many of the wells. Larger and more reliable water supplies are found in the sand and gravel deposits which occur irregularly in the drift generally 10 to 70 feet below the surface. These pockets are found to be more numerous in the west-central, northeast, and east-central parts of the township as shown on the map, Figure 1, by the areas enclosed by lines marked "A". The water in a few wells is soft, but most commonly is hard. Sufficient water is usually available for watering 20 head of stock. A fairly large supply of good water flows continuously from a spring on section 13. The water in this spring may be rising from the bedrock formation below. It is advisable to confine the search for water in the glacial drift to within 35 feet of the surface as the dissolved mineral content of the ground water increases with depth. This fact is well illustrated by a 50-foot well on section 25 and a 75-foot well on section 34 in both of which the water is too highly mineralized to be used for drinking.

Two wells, one on section 15, the other on section 17, are deriving water from the fine sand beds of the Ravenscrag formation. Fairly large supplies of water may be taken from these wells, but the water is only suitable for stock. Similar supplies probably could be found in all parts of the township 250 to 350 feet below the surface. The quality of water may be better in some localities than in others.

Township 8, Range 24

All of the ground water supplies in this township come from glacial drift of various types, which mantles the entire area to undetermined depths. Up to the present sufficient water for all local needs has been available from this source. As will be seen from the accompanying map, Figure 1, most of the township is covered by deposits of glacial outwash sands

and gravels. These deposits are quite porous and supplies of ground water are found in them within 15 feet of the surface. Terminal moraine deposits, which are less permeable than the glacial sands and gravels, occupy the northeast and southwest corners of the township, and a narrow strip along the southern edge. Numerous water-bearing pockets of sand and gravel are found in these deposits within 50 feet of the surface. A small area of boulder clay occurs in the southeast part of the township. Although the clay itself is nearly impervious water-bearing sand and gravel pockets occur in it within 35 feet of the ground surface.

In a few isolated wells small quantities of hard, water that has a high mineral content are being drawn from clay, but the majority of the wells are located in sand and gravel pockets. These pockets are well distributed throughout the township as indicated on the map, Figure 1, by the areas enclosed by the lines marked "A" in which ample supplies of water are being obtained from sand and gravel pockets within 35 feet of the surface. The water is soft in a few wells, but is generally hard. With the exception of those in the southwest corner of the township every well yields potable water. Sufficient water for 10 to 50 head of stock is available from all wells deriving their supply from sand and gravel, and in a few instances 150 head of stock could be watered from individual wells.

No wells have been drilled to the bedrock in this township, but it is believed that good supplies of water could be found in the sand beds of the Ravenscrag formation by drilling wells 225 to 275 feet deep. However, as good supplies of water are obtainable within 50 feet of the surface almost anywhere in this area it is not necessary to drill to such depths.

Township 9, Range 22

Ground water in this township is derived from two sources, the glacial drift that covers the whole area, and the underlying bedrock. Except in the northeastern corner of the township which is covered by boulder clay, all the township is covered by terminal moraine. This has a thickness of at least 130 feet over most of the area. Ground water is drawn only from the upper 40 feet except in a few isolated wells that have reached depths as great as 70 feet. In this area it is not advisable to seek water in the glacial drift below 40 feet from the surface as the water at greater depths is generally too highly mineralized to be fit for domestic use. Where the deposit is largely boulder clay the water derived from it even at shallow depths is in many cases found to be too highly mineralized for domestic use, and the quantity available is small. The pockets of sand and gravel, which occur irregularly distributed throughout the terminal moraine deposits, yield much more satisfactory supplies. The water is hard and contains varying amounts of "alkali", but it is nearly always superior in quality to the water in the enclosing compact boulder clay. Although a few wells do not yield supplies sufficiently large for local requirements, in most cases the supply is ample for 10 to 50 head of stock. Throughout the west-central and southwest part of the township water-bearing sand and gravel pockets appear to be more numerous than in the remainder of the area.

No water is being obtained from the Ravenscrag formation in this township. A well on section 27 passed through this formation without striking water. It is believed that throughout the southwest half of the township ground water supplies may be obtained from the Ravenscrag formation in wells about 250 feet deep. However, it is fairly certain that such water will be

highly mineralized and may not be potable even for stock. The well on section 27 passed through the Ravenscrag formation and obtained water in the sands of the immediate underlying Eastend formation. This water is unfit for use. Another well on section 36 obtained highly mineralized, non-potable water from the underlying Marine shale formation.

Township 9, Range 23

All ground water used in this township comes from the glacial deposits. These deposits are a heterogeneous mixture of boulder clay, sand, and gravel, typical of a terminal moraine area, and are at least 150 feet thick. Small quantities of hard,water, sufficient only for household use and a few head of stock, are obtained from a few wells located in the boulder clay. More satisfactory supplies cannot be expected from the clay due to its impervious nature. However, much larger supplies of water of better quality are found in the sand and gravel pockets that occur irregularly distributed throughout the moraine. The water is hard and in many cases has a fairly high mineral content, but very few wells were reported that yield water unsuitable for drinking. Sufficient water for 10 to 40 head of stock may be taken from these wells and in a few cases the supply is even greater. The gravel and sand pockets are more numerous in the west and central parts of the township than in the remainder of the area as indicated by line "A", Figure 1. The search for ground water should not be carried beyond 35 feet from the surface, as any water found in the drift at greater depths will probably be too highly mineralized for use.

Failure to find water in the Ravenscrag formation in two holes drilled on section 29 and 32 indicates that the formation is less permeable here than elsewhere throughout most of the municipality. There is a possibility that water might be found

at depths of 200 to 250 feet in the southern half of the township, but the water might be usable only for stock. Drilling should not be carried beyond 300 feet as the Eastend formation and Marine shale formation which lie below this depth yield water unfit for use.

Township 9, Range 24

An adequate supply of ground water is being derived in this township from the glacial drift which covers the bedrock over the whole area. Water is found in very small quantities in the boulder clay, which is the main constituent of the drift, and in isolated sand and gravel pockets. Those wells that are sunk in the boulder clay yield very little water unless they are situated close to sloughs from which they may obtain seepage water. At irregular intervals sand and gravel pockets have been penetrated by wells that yield sufficient water only for household use in a few cases, but generally sufficient for 10 to 50 head of stock. A well on section 11 produces enough water for 100 head of stock. The quantity of the water varies from soft to very hard. These water-bearing pockets are most numerous in the northeast and central parts of the township, as shown by the lines marked "A" on the map, Figure 1. The sand or gravel pockets as a rule occur within 35 feet of the surface and it is not advisable to seek water in the glacial drift at greater depths than this, since any water that has seeped to lower levels would probably be too highly mineralized to be of use.

Although no wells have been drilled to the bedrock there is a possibility that supplies of water could be obtained from the sand beds of the Ravenscrag formation at depths of 250 to 300 feet.

STATISTICAL SUMMARY OF WELL INFORMATION IN RURAL MUNICIPALITY OF KEY WEST, NO. 70, SASKATCHEWAN

Township	7	7	7	8	8	8	9	9	9	Total No. in
West of 2nd meridian Range	22	23	24	22	23	24	22	23	24	Municipality
Total No. of Wells in Township	80	61	74	81	84	49	86	49	56	620
No. of wells in bedrock	3	1	7	6	2	0	2	2	0	23
No. of wells in glacial drift	77	60	67	75	82	49	84	47	56	597
No. of wells in alluvium	0	0	0	0	0	0	0	0	0	0
Permanency of Water Supply										
No. with permanent supply	56	35	40	59	58	41	62	36	34	421
No. with intermittent supply	13	13	0	6	20	0	14	6	12	84
No. dry holes	11	13	34	16	6	8	10	7	10	115
Types of Wells										
No. of flowing artesian wells	0	0	0	0	0	0	0	0	0	0
No. of non-flowing artesian wells	14	4	12	18	4	3	12	5	16	88
No. of non-artesian wells	55	44	28	47	74	38	64	37	30	417
Quality of Water										
No. with hard water	60	45	37	63	74	36	70	35	35	455
No. with soft water	8	3	3	2	4	5	6	7	11	49
No. with salty water	0	0	0	0	2	0	0	0	0	2
No. with alkaline water	31	12	6	14	28	8	22	14	9	144
Depth of Wells										
No. from 0 to 50 feet deep	65	56	62	67	73	47	71	41	48	530
No. from 51 to 100 feet deep	9	4	6	6	9	0	14	3	6	57
No. from 101 to 150 feet deep	2	0	1	3	0	2	0	3	1	12
No. from 151 to 200 feet deep	2	0	2	3	0	0	0	1	1	9
No. from 201 to 500 feet deep	2	1	3	2	2	0	1	0	0	11
No. from 501 to 1,000 feet deep	0	0	0	0	0	0	0	1	0	1
No. over 1,000 feet deep	0	0	0	0	0	0	0	0	0	0
How the Water is used										
No. usable for domestic purposes	45	46	38	56	55	39	45	31	43	398
No. not usable for domestic purposes	23	2	2	9	23	2	31	11	3	106
No. usable for stock	61	48	40	62	60	40	66	39	45	461
No. not usable for stock	7	0	0	3	18	1	10	3	1	43
Sufficiency of Water Supply										
No. sufficient for domestic needs	65	47	40	65	78	41	76	42	45	499
No. insufficient for domestic needs	2	1	0	0	0	0	0	0	1	4
No. sufficient for stock needs	37	23	38	46	41	37	50	33	21	326
No. insufficient for stock needs	30	25	2	19	37	4	26	9	25	115

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 and unless the figure is very high it does not imply that the water is too alkaline for irrigation purposes. The analyses are given in parts per million--that is, in parts by weight of the constituents in 1,000,000 parts by volume 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 practically all rocks, but in larger amounts 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 teakettles 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, and waters that contain a large amount of them cannot be used for irrigation.

Sulphates

Sulphates (SO_4) are one of the common constituents of natural water. The sulphate salts most commonly found are sodium sulphate (Glauber's Salt, Na_2SO_4), magnesium sulphate (Epsom

Salts, $MgSO_4$) and calcium sulphate ($CaSO_4$). Waters that contain these sulphate salts are called "sulphate waters". When the water contains large quantities of the sulphate of sodium ("White Alkali") it is injurious to vegetation and cannot be used for irrigation. According to Thresh and Beale, London, the continued use of water that contains 1,200 parts or more per million of magnesium sulphate and 500 parts or more per million of sodium sulphate causes diarrhoea and scour among stock, and one half this quantity makes the water unfit for domestic use.

Chlorides

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

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 out 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 had 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 to the bicarbonates of calcium and magnesium, and permanent hardness to the sulphates, and chlorides of calcium and magnesium. The permanent hardness can be partly eliminated by adding simple chemical softeners such as ammonia or sodium carbonate, or many prepared softeners. Water that contains a large amount of sodium carbonate and small amounts of calcium and magnesium salts is soft, but if the calcium and magnesium salts are present in large amounts the water is hard. The following table from "The Examination of Water and Water Supplies" by Thresh and Beale, London, 1925 , can be used for determining the relative hardness of a water.

Total Hardness	Character
Less than 50 parts per million.	Very soft
50 - 100 " " "	Moderately soft
100 - 150 " " "	Slightly hard
150 - 200 " " "	Moderately hard
200 - 300 " " "	Hard
Over 300 " " "	Excessively hard

Many of the Saskatchewan water samples analysed by the Geological Survey 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.

The term "alkaline" has been applied rather loosely to some ground waters. Its original meaning was a chemical one and it implied that the substance in question would neutralize acids. The carbonates of calcium, magnesium, and sodium are the only compounds found in ground water that would make it alkaline chemically. A later application of the term "alkaline" was to soils that contain sufficient "black alkali" or "white alkali" to make them unfit for vegetation. In the Prairie Provinces a water is usually considered to be alkaline when it contains so much dissolved solids that it is not very suitable for human consumption; except that 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".

Analyses of Water Samples from the Municipality of Key West, No. 70, Saskatchewan.

No.	LOCATION					Depth of Well, Ft.	Total dis'vd solids	HARDNESS			CONSTITUENTS AS ANALYSED						CONSTITUENTS AS CALCULATED IN ASSUMED COMBINATIONS								Source of Water
	Qtr.	Sec.	Tp.	Rge.	Mer.			Total	Perm.	Temp.	Cl.	Alkalinity	CaO	MgO	SO_4	Na_2O	Solids	$CaCO_3$	$CaSO_4$	$MgCO_3$	$MgSO_4$	Na_2CO_3	Na_2SO_4	NaCl	$MgCl_2$	
1.	NW.	27	7	22	2	87	452																		x 1
2.	SE.	9	7	23	2	9	560	425	425		14	295	110	72	144	1	506	286		8	180			2	26	x 1
3.	NW.	33	7	23	2	207	2,420	1,500	1500		41	385	440	223	1263	259	2,173		1,068	18	631	386		68		x 2
4.	NE.	18	8	22	2	243	3,329												(1)		(2)		(3)	(4)		x 2
5.	SW.	3	8	23	2	20	1,729												(1)		(2)	(3)		(4)		x 1

Water samples indicated thus, x1, are from glacial drift or other unconsolidated deposits.
Water samples indicated thus, x2, are from bedrock, Ravenscrag formation.
Analyses are reported in parts per million; where numbers (1),(2), (3) and (4) are used instead of parts per million, they represent the relative amounts in which the five main constituents are present in the water.
Hardness is the soap hardness expressed as calcium carbonate ($CaCO_3$).

For interpretation of this table read the section on Analyses and Quality of Water.

Water from the Unconsolidated Deposits

The quality of the ground water from the glacial drift varies so greatly within short distances that it is impossible to anticipate the quality of water to be found at any locality. In one well hard, potable water may be found, whereas in a nearby well water being obtained from the same depth may be too highly mineralized for use.

Only one sample of water from the glacial drift in the municipality was analysed. The results of the analysis are shown in the accompanying table. The results of analyses made by the Provincial Analyst are also given in which the four main mineral salts present are listed in the order of their comparative quantities. Several analyses have been made of water from the glacial drift in various parts of the municipality. It is reported that some of these were found to have such large sulphate contents that they were unfit for use. The mineral salts commonly found in the water from the glacial drift of this region are the following, listed in the sequence of their usual relative quantities: sodium sulphate (Na_2SO_4), magnesium sulphate ($Mg\ SO_4$), calcium carbonate ($CaCO_3$), calcium sulphate ($CaSO_4$), magnesium carbonate ($MgCO_3$), sodium chloride (NaCl), and sodium carbonate ($NaCO_3$). Water of better quality than that from the glacial till would be expected from those areas shown on the map as covered by glacial sands and gravels or by terminal moraine deposits. This is due to the fact that in the glacial till or boulder clay the water is less in quantity and is in more intimate contact with clay from which the mineral salts are dissolved than in the case of the more permeable sands and gravels.

Water from the Bedrock

One sample of water from the Ravenscrag formation in this municipality was analysed and its mineral content is shown in the accompanying table. The relative amounts of the four mineral salts in another sample analysed by the Provincial Analyst are also shown in the table.

The water obtained from the Ravenscrag formation is soft in places and excessively hard in other places and shows great variations within this municipality. As a rule the water from beds lying close to the surface shows a lower degree of mineralization than the water from lower beds. The water has a high sulphate content. Generally the sodium salts predominate in water from the Ravenscrag formation, but in both samples tested here calcium sulphate ($CaSO_4$) and magnesium sulphate ($MgSO_4$) which make the water hard, are present in the largest proportions. Magnesium sulphate (Epsom Salts) gives the water a laxative effect, as also does sodium sulphate (Glauber's Salt). The high magnesium sulphate and sodium sulphate content of much of the water renders it unfit for human consumption, but in most cases it is used for stock. Water from some wells, found to be high in sodium salts and therefore soft, is being used for drinking, but is harmful to vegetation.

WELL RECORDS—RURAL MUNICIPALITY OF KEY WEST NO.70 SASKATCHEWAN

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
1	SE.	2	7	22	2	Dug	15	2,320	- 12	2,308	12	2,308	Glacial gravel clay	Hard, clear iron, "alkaline"		D, S	Sufficient for local needs in wet seasons.
2	NW.	2	"	"	"	"	16	2,360	- 10	2,350	16	2,344	Glacial sand	Hard, clear		S,	" " 29 head stock.
3	NW.	4	"	"	"	" "	24	2,450	- 14	2,436	12	2,438	" " yellow clay	Soft, "		S,	" " local needs.
4	NE.	4	"	"	"	"	35	2,420	- 31	2,389	31	2,389	Glacial clay	Hard, "		D, S	Insufficient for local needs.
5	NW.	5	"	"	"	Bored	28	2,410	- 3	2,407	3	2,407	Glacial blue clay	" "		D, S	Sufficient for 14 head stock.
6	NE.	5	"	"	"	Drilled	309	2,440	?	?	309	2,131	Ravenscrag fine sand	" "alkaline" soda		N,	" " a few horses.
7	NE.	5	"	"	"	Dug	14	2,430	- 9	2,421	9	2.421	Glacial gravel	Soft, clear		D, S	" " 15 head stock.
8	NE.	5	"	"	"	"	10	2,430	- 5	2,425	5	2,425	" clay	Hard, clear, "alkaline"		S,	Insufficient for local needs.
9	SE.	6	"	"	"	" "	18	2,375	- 12	2,363	12	2,363	" sand	Hard, clear, "alkaline"		D,	Sufficient for household needs only.
10	NW.	6	"	"	"	"	18	2,350	- 12	2,338	12	2,338	" sandy clay	Hard, "alkaline"		S,	" " 12 head stock.
11	NW.	10	"	"	"	Bored	55	2,380	- 49	2,331	55	2,325	" gravel	" clear		S,	Insufficient" 13 " " .
12	SW.	11	"	"	"	Dug	13	2,360	- 9	2,351	9	2,351	" blue clay	" "		D,	Sufficient for household needs only.
13	SW.	12	"	"	"	Bored	20	2,340	- 14	2,326	14	2,326	" sand	" "alkaline"		D, S	" " local needs.
14	NW.	13	"	"	"	Dug	17	2,390	- 11	2,379	11	2,379	" gravel	Soft, clear		D, S	" " " " , in wet seasons.
15	SW.	14	"	"	"	Bored	35	2,375	- 15	2,360	15	2,360	" sand	Hard, "		D, S	" " 8 head stock.
16	SE.	15	"	"	"	Dug	16	2,375	- 10	2,365	16	2,359	" gravel	" "		D, S	" " 10 " " .
17	NW.	15	"	"	"	"	17	2,390					" clay	" "	43	D, S	Insufficient for local needs.
18	SE.	16	"	"	"	Bored	85	2,390	- 15	2,375			" blue clay	" "alkaline"		S,	" " " " .
19	SW.	16	"	"	"	Dug	16	2,360	- 12	2,348	12	2,348	" gravel	Soft, clear		D, S	About 1 bbl. a day.
20	SE.	18	"	"	"	"	26	2,415					" sandy clay	Hard, "			Insufficient for local needs.
21	SW.	18	"	"	"	Bored	20	2,405	- 8	2,397	8	2,397	" blue clay	" "alkaline"		S,	" " " " .
22	SW.	20	"	"	"	Dug	22	2,405	- 6	2,399	22	2,383	" sandy black clay	Hard, clear		D, S	Sufficient for 30 head stock.
23	SW.	20	"	"	"	?	100	2,410					Glacial	" iron, "alkaline"		N,	Filled in, in 1934.
24	SE.	21	"	"	"	Dug	14	2,390	- 12	2,378	12	2,378	Glacial clay	Hard, clear		D, S	Insufficient for 6 head stock.
25	SW.	21	"	"	"	"	20	2,415	- 5	2,410	20	2,395	" gravel	" "alkaline"		D,	Sufficient for household needs only.
26	SW.	21	"	"	"	"	18	2,415	- 2	2,413			" blue clay	Soft, clear		S,	" " 4 head stock.
27	SE.	22	"	"	"	"	22	2,380	- 11	2,369	11	2,369	" gravel	Hard, clear		D, S	Insufficient for local needs.

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

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

WELL RECORDS—RURAL MUNICIPALITY OF KEY WEST NO.70, SASKATCHEWAN.

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (−) Surface	Elev.	Depth	Elev.	Geological Horizon				
28	SW.	22	7	22	2	Dug	30	2,380	- 10	2,370	30	2,350	Glacial	Hard, clear, "alkaline"		N,	Filled in.
29	SW.	22	"	"	"	"	25	2,379	- 21	2,358			Glacial	Hard		N,	No longer use, water became polluted.
30	SW.	22	"	"	"	"	20	2,379	- 14	2,365	18	2,361	" gravel	Hard, clear	43	D,	Sufficient for domestic use only.
31	?	22	"	"	"	Drilled	297	2,379	-123	2,256	263	2,116	Ravenscrag black clay, gravel	"		N,	Strong supply, not fit for use.
32	SW.	23	"	"	"	Dug	14	2,300	- 9	2,291	12	2,388	Glacial sandy clay	" clear		D, S	Insufficient for local needs.
33	SE.	24	"	"	"	"	22	2,390	- 5	2,385	22	2,368	Glacial gravel	" "		D,	Sufficient for domestic use only.
34	SW.	27	"	"	"	"	17	2,380	- 12	2,368	12	2,368	" "	" "		D, S	" " 8 head stock.
35	SW.	27	"	"	"	"	16	2,380					"				Dry hole.
36	SW.	27	"	"	"	"	12	2,380			12	2,368	" clay	Hard, alkaline		D, S	Sufficient for 8 head stock.
37	NW.	27	"	"	"	"	20	2,375	- 18	2,357	18	2,357	" blue clay	Hard, clear, "alkaline"		S,	Insufficient for local needs.
38	NW.	27	"	"	"	Bored	87	2,380	- 20	2,360	87	2,293	" gravelly sand	Hard, clear, "alkaline"		N,	Analysed and declared unfit for use. #.
39	SE.	28	"	"	"	Dug	20	2,395	- 8	2,387	8	2,387	Glacial gravel	Hard, clear		D, S	Sufficient for local needs, 45 barrels a day.
40	NW.	28	"	"	"	"	14	2,335	- 11	2,324	11	2,324	" "	" "		S,	" " " " .
41	SW.	30	"	"	"	Bored		2,360	- 22	2,338	26	2,334	" sand	" "	42	D, S	" " " " .
42	NE.	30	"	"	"	Dug	12	2,330	0	2,330			" clay	" " "alkaline"		D,	Insufficient for domestic needs.
43	SE.	33	"	"	"	"	18	2,375	- 16	2,359	10	2,365	" sand	Soft, clear		D, S	" " local needs.
44	NW.	33	"	"	"	"	8	2,415	- 6	2,409	6	2,409	"	Hard,			" " " " .
45	NE.	33	"	"	"	"	14	2,350	- 11	2,339	11	2,339	" sand	Hard, clear, "alkaline"		D, S	Sufficient for 12 head stock.
46	NW.	34	"	"	"	"	14	2,350					"	Hard, "alkaline"		N,	" " local needs.
47	SE.	35	"	"	"	"	14	2,380	- 12	2,368	12	2,368	" blue clay	Soft, clear		D, S	" " " " .
48	NW.	35	"	"	"	?	25	2,380	- 23	2,357	23	2,357	" " "	Soft,			Insufficient for local needs.
1	SW.	2	7	23	2	Dug	15	2,340	- 12	2,328	12	2,328	Glacial sand	Hard, clear		D, S	Sufficient for 10 head stock.
2	NE.	2	"	"	"	"	12	2,395	- 10	2,385	10	2,385	" gravel	" "	44	D, S	" " 10 " " .
3	SE.	3	"	"	"	"	25	2,425	- 22	2,403	22	2,403	" gravel and sand	" "		D, S	Insufficient even for domestic use.
4	SE.	4	"	"	"	"	9	2,390	- 4	2,386	4	2,386	Glacial sand	Soft,		D, S	2 barrels a day.
5	SW.	4	"	"	"	"	11	2,390			2	2,388	" "	Hard,		D, S	Insufficient for local needs.
6	NE.	4	"	"	"	"	8	2,400	- 5	2,395	3	2,397	" "	Hard, clear, "alkaline"		D, S	Sufficient for 21 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.

B 4-4

WELL RECORDS—RURAL MUNICIPALITY OF KEY WEST NO.70, SASKATCHEWAN.

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
7	SE.	5	7	23	2	Dug	30	2,390	- 26	2,364	26	2,364	Glacial gravel	Hard, clear, iron		D, S	Was sufficient for local needs. Caved in now.
8	NW.	6	"	"	"	"	20	2,370	- 18	2,352			" clay	Hard, clear, "alkaline"		D, S	Insufficient for local needs.
9	SE.	7	"	"	"	"	15	2,400	- 10	2,390			" sand	Hard, clear, "alkaline"		D, S	Sufficient for local needs.
10	SE.	9	"	"	"	"	9	2,390	- 3	2,387	9	2,381	" gravel	Hard, clear	48	D, S, I	Sufficient for 200 head stock.
11	SW.	10	"	"	"	"	14	2,390					" "	"		N,	
12	NE.	10	"	"	"	"	30	2,415	- 24	2,391	24	2,391	" "	" clear		D, S	Sufficient for 3 families and 10 head stock.
13	SE.	12	"	"	"	"	14	2,400	- 13	2,387	13	2,387	" "	" "alkaline"		D,	Sufficient for domestic needs only.
14	SW.	12	"	"	"	"	20	2,385					" "	" " clear		D, S	Insufficient for local needs.
15	SE.	13	"	"	"	"	21	2,405	- 18	2,387	18	2,388	" sand	Soft, clear		D, S	" " " " .
16	NE.	13	"	"	"	"	16	2,400	- 15	2,385	16	2,384	" coarse red sand	Hard, clear		D, S	" " 6 head stock.
17	SW.	14	"	"	"	"	12	2,400	- 8	2,392			Glacial blue clay	Soft, "		D, S	Sufficient for local needs.
18	SW.	14	"	"	"	"	14	2,400	- 12	2,388	8	2,392	" sand and gravel	Hard, clear, "alkaline"		S,	" " 25 head stock.
19	NW.	17	"	"	"	"	60	2,380	- 45	2,335			Glacial clay	Hard, iron		D, S	Insufficient for 6 head stock.
20	NW.	17	"	"	"	Bored	26	2,380	- 20	2,360	20	2,360	" sand	" clear		D, S	Sufficient for 12 head stock.
21	NW.	18	"	"	"	Dug	10	2,430	- 8	2,422	6	2,424	" sand	" "		D, S	" " 17 " " .
22	SE.	19	"	"	"	"	14	2,450	- 12	2,438			" sand and gravel	" "alkaline"		D, S	" " 17 " " .
23	NW.	19	"	"	"	"	10	2,420	- 8	2,412	8	2.412	Glacial gravel	Hard, clear		D, S	" " 40 " " .
24	NE.	19	"	"	"	"	24	2,420					" clay				Dry hole.
25	NE.	20	"	"	"	"	20	2,365	- 18	2,347	18	2,347	Glacial sand and gravel	Hard,		D, S	Insufficient for local needs.
26	SE.	22	"	"	"	"	20	2,415	- 14	2,401	14	2,401	Glacial gravel	" clear		D, S	Sufficient for 15 head stock.
27	SE.	23	"	"	"	"	20	2,375					" clay	"		D, S	Insufficient for local needs.
28	NE.	23	"	"	"	"	14	2,380	- 10	2,370			"	"			Sufficient for local needs.
29	NE.	27	"	"	"	Bored	70	2,360	- 10	2,350			" clay	" clear, "alkaline"		D, S	Insufficient for local needs.
30	NW.	28	"	"	"	Dug	14	2,380					" clay	Hard,		N,	
31	NE.	28	"	"	"	"	12	2,370	- 10	2,360	10	2,360	" sand	Hard, clear		D, S	Sufficient for 12 head stock.
32	SE.	31	"	"	"	"	20	2,400	- 15	2,385	15	2,385	" "	" "		D, S	" " 15 " " .
33	SE.	33	"	"	"	"	20	2,360	0	2,360			" blue clay	" "		D, S	Insufficient for local needs.

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

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

WELL RECORDS—RURAL MUNICIPALITY OF KEY WEST , NO.70 SASKATCHEWAN

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
34	SE.	33	7	23	2	Dug	12	2,360	- 8	2,352			Glacial blue clay	Hard,		N,	Well filled in now.
35	NW.	33	"	"	"	Drilled	207	2,400	- 60	2,340	207	2,193	Ravenscrag sand	Hard, clear, "alkaline"		D, S	Sufficient for 30 head stock.
36	NE.	33	"	"	"	Dug	25	2,360	- 15	2,345			Glacial clay	Hard, clear		D, S	Insufficient for local needs.
37	SW.	35	"	"	"	"	15	2,335	- 13	2,322	6	2,329	Glacial gravel sand	Hard, clear, iron		D,	Sufficient for domestic use only.
38	SW.	35	"	"	"	"	18	2,335	- 16	2,319	6	2,329	Glacial sand	Hard, clear		S,	" " 25 head stock.
39	NW.	36	"	"	"	"	18	2,335	- 8	2,327	8	2,327	" "	" " "alkaline"		S,	Sufficient for local needs only in wet seasons.
1	SE.	1	7	24	2	Bored	60	2,325	- 30	2295	60	2,365	Glacial gravel	Hard, clear	45	D, S	Sufficient for 20 head stock.
2	SW.	2	"	"	"	Dug	14	2,300			14	2,286	" clay and sand	Soft, clear		D, S	Sufficient for local needs.
3	SE.	5	"	"	"	"	14	2,300	- 4	2,296	14	2,286	Glacial sand	Hard, clear		D, S	" " " " .
4	NE.	6	"	"	"	Bored	34	2,300	- 24	2,276	34	2,266	Ravenscrag sand	Hard, clear, "alkaline"	45	D, S	" " 15 head stock.
5	SE.	7	"	"	"	"	54	2,300	- 48	2,252	54	2,246	" "	Hard, clear, "alkaline"	42	D, S	Sufficient for local needs.
6	NW.	7	"	"	"	"	32	2,300	- 12	2,288	32	2,268	Ravenscrag pepper and salt sand	Soft, clear, iron	45	D, S	" " 20 head stock.
7	NW.	8	"	"	"	Spring	0	2,300	0	2,300			Ravenscrag sand-stone	Soft, clear, iron	42	D, S	" " local needs.
8	SE.	10	"	"	"	Bored	30	2,350	- 5	2,345	30	2,320	Glacial yellow clay	Hard, clear		D, S	" " " " in wet seasons.
9	NE.	11	"	"	"	"	16	2,300	- 12	2,288	16	2,284	Glacial sand	" "		D, S	Insufficient for local needs.
10	NE.	13	"	"	"	Dug	13	2,400	- 10	2,390	13	2,387	" "	" "	45	D, S	Sufficient " " " .
11	NW.	14	"	"	"	Drilled	227	2,400	- 87	2,313	227	2,173	Ravenscrag pepper and salt rock	" rust sediment		D, S	" " " " .
12	NW.	15	"	"	"	Bored	16	2,400	- 14	2,386	16	2,384	Glacial yellow clay	Hard, clear		D,	Sufficient for domestic use only.
13	SW.	15	"	"	"	Drilled	180	2,400	- 80	2,320	180	2,220	Bedrock salt and pepper sand	" "		D, S	" " local needs.
14	NE.	16	"	"	"	Bored	25	2,400	- 12	2,388	25	2,375	Glacial yellow clay	" "	45	D, S	" " " " .
15	NE.	17	"	"	"	"	24	2,300	- 23	2,277	24	2,276	Glacial sand and gravel	"		D, S	Insufficient for local needs.
16	SE.	18	"	"	"	"	60	2,400	- 10	2,390	60	2,340	Glacial gravel	Hard, alkaline		S,	Sufficient for local needs.
17	NW.	19	"	"	"	Dug	27	2,400	- 25	2,375	27	2,373	Glacial sand	Hard, clear	45	D, S	" " " " .
18	SE.	20	"	"	"	Bored	18	2,300					" yellow clay				Dry hole.
19	NE.	20	"	"	"	"	25	2,300	- 10	2,290	25	2,275	Glacial yellow clay	Hard, alkaline		D, S	Insufficient for local needs.
20	NE.	20	"	"	"	"	13	2,400	- 8	2,392	13	2,387	Glacial gravel	Hard, clear		D, S	Sufficient for 16 head stock.
21	SW.	21	"	"	"	?	60	2,400					" "				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 KEY WEST, NO. 70. 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
22	NW.	22	7	24	2	Drilled	255	2,400	-127	2,273	255	2,145	Ravenscrag salt and poppor sand	Hard		D, S	Sufficiont for local needs.
23	NW.	22	"	"	"	?	100	2,400					Glacialblue clay				Dry hole.
24	NW.	22	"	"	"	Bored	20	2,400	- 16	2,384	20	2,380	Glacial yellow clay	Hard, clear	44	D, S	Sufficient for local needs.
25	SE.	25	"	"	"	Dug	18	2,400	- 13	2,387	18	2,382	Glacial gravel	" "	42	D, S	" " " " .
26	SW.	26	"	"	"	Bored	18	2,400	- 13	2,387	18	2,382	Glacial sand	" "	45	D, S	" " " ".
27	NE.	27	"	"	"	"	28	2,400	- 12	2,388	28	2,372	Glacial yellow clay	" "	45	D, S	" " 25 head stock.
28	SW.	28	"	"	"	"	22	2,400	- 9	2,391	22	2,378	Glacial yellow clay	" "		D, S	" " 8 " " .
29	SE.	28	"	"	"	Dug	13	2,300	- 8	2,292	13	2,287	Glacial gravel	" "	45	D, S	Sufficient for local needs.
30	NE.	30	"	"	"	Bored	16	2,300	- 8	2,292	16	2,284	Glacial blue clay	" "	45	S,	" " 14 head stock.
31	NE.	30	"	"	"	"	30	2,400	- 15	2,385	30	2,370	" yellow clay	"alkaline" Hard, clear, "alkaline"		D, S	" " local needs.
32	SE.	32	"	"	"	"	21	2,400	- 12	2,388	21	2,379	" " "	Hard, clear	45	D, S	" " 25 head stock.
33	SE.	32	"	"	"	Dug	22	2,400	- 10	2,390	11	2,389	" sand	" "	45	D, S	" " 10 " " .
34	NE.	32	"	"	"	"	22	2,400					" clay				Dry hole.
35	SW.	33	"	"	"	"	12	2,400	- 7	2,393	12	2,388	" gravel	Hard, clear	45	D, S	Sufficient for local needs.
36	NE.	34	"	"	"	Bored	171	2,400					" blue clay				Dry hole, 3 other dry holes.
37	SW.	34	"	"	"	?	20	2,400					" clay				" " .
38	NW.	35	"	"	"		50	2,300					"				" " .
39	NE.	36	"	"	"	Drilled	275	2,400	-145	2,255	275	2,125	Ravenscrag pepper and salt sand	Hard, clear	42	D, S	Sufficient for local nneds.
1	NE.	1	8	22	2	Dug	14	2,380	- 12	2,368	14	2,366	Glacial sand	"		D, S	Sufficient for 40 head stock.
2	SW.	2	"	"	"	"	27	2,375	?	?	27	2,348	" "	Soft, clear		D,	" " local needs.
3	SW.	3	"	"	"	"	30	2,350					" "	Hard,		D, S	Insufficient for local needs.
4	NE.	3	"	"	"	"	16	2,345	- 13	2,332	16	2,329	" "	" clear		D, S	Sufficient for 10 head stock.
5	NW.	5	"	"	"	"	25	2,370	- 20	2,350	25	2,345	" "	" "		D, S	Insufficient for local needs.
6	SW.	6	"	"	"	"	5	2,380	0	2,380	5	2,375	" grey clay	" "		S,	Sufficient " " " .
7	SW.	6	"	"	"	Bored	30	2,390	- 22	2,368	30	2,360	" " "	"alkaline" Hard, clear		D, S	" " 12 horses.
8	NW.	6	"	"	"	Drilled	218	2,390	- 8	2,382	218	2,172	Ravenscrag coarse sand	" "	42	D, S	" " local needs.
9	NE.	6	"	"	"	Dug	20	2,370			20	2,350	Glacial	"			Sufficient for domestic needs only.

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 KEY WEST, NO. 70, 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
10	SE.	7	8	22	2	Bored	80	2,370					Glacial clay				Dry hole.
11	NW.	7	"	"	"	"	80	2,395					Glacial				Dry hole, another dry hole 40 feet.
12	NW.	7	"	"	"	Spring		2,395	0	2,395			Glacial clay	Hard, clear, "alkaline"		S,	Sufficient for 10 head stock.
13	SW.	9	"	"	"	Dug	18	2,470	- 4	2,466	18	2,452	" sand and clay	Hard, clear		D, S	Insufficient for local needs.
14	NE.	10	"	"	"	"	25	2,360	- 16	2,344	25	2,335	Glacial sand	Soft, clear		D, S	Sufficient for local needs.
15	SE.	12	"	"	"	"	13	2,360	- 10	2,350	13	2,347	" "	Hard, clear		D, S	" " " " .
16	NE.	12	"	"	"	"	20	2,350	- 2	2,348	20	2,330	" grey clay	" " "alkaline"		N,	Not used due to alkaline.
17	NE.	13	"	"	"	"	28	2,360	- 15	2,345	23	2,337	" sand	Hard, clear		D, S	Sufficient for 20 head stock.
18	SE.	15	"	"	"	"	16	2,400	- 9	2,391	16	2,384	" gravel and clay	" "		D, S	" " 10 " " .
19	NE.	16	"	"	"	"	20	2,360	- 10	2,350	20	2,340	Glacial clay	" "		D, S	" " 30 " " .
20	SW.	17	"	"	"	"	16	2,340	- 13	2,327	16	2,324	" sand	" "		D, S	" " 15 " " .
21	NE.	18	"	"	"	Drilled	245	2,410	- 60	2,350	245	2,165	Ravenscrag sand	" "	42	D, S	" " 25 " " .
22	NW.	19	"	"	"	Dug	15	2,345	- 5	2,340	15	2,330	Glacial sand	" " iron		D, S	" " 16 " " .
23	NE.	19	"	"	"	"	16	2,330	- 13	2,317	16	2,314	" "	Hard, clear		D, S	" " 30 " " .
24	NE.	19	"	"	"	Drilled	165	2,330	-150	2,180	165	2,165	Ravenscrag stones clay	" "alkaline"		S,	Insufficient for local needs.
25	SW.	20	"	"	"	"	204	2,370	- 30	2,340	204	2,166	Ravenscrag fine sand	" iron		D, S	Sufficient for 50 head stock.
26	NE.	20	"	"	"	Dug	12	2,350	- 8	2,342	12	2,338	Glacial sandy clay	" clear		D, S	" " 20 " " .
27	SW.	21	"	"	"	"	20	2,350	- 16	2,334	20	2,330	Glacial sand	"alkaline"		D, S	Insufficient for local needs,
28	NW.	21	"	"	"	Drilled	186	2,350	- 40	2,310	186	2,164	Ravenscrag sand gravel	" " sulphur, iron	43	S,	Sufficient for local needs.
29	NE.	21	"	"	"	"	260	2,380	- 20	2,360	200	2,180	Ravenscrag sand	Hard, iron		N,	Well filled in.
30	NE.	21	"	"	"	Dug	18	2,380	- 13	2,367	18	2,362	Glacial yellow sandy clay	" clear		D, S	Sufficient for 20 head stock.
31	SE.	23	"	"	"	"	8	2,395	- 4	2,391	8	2,387	Glacial sand	" "		D, S	" " 30 " " .
32	SW.	23	"	"	"	"	28	2,385					Glacial blue clay				Dry hole, another dry hole 12 feet deep.
33	NW.	24	"	"	"	"	14	2,390	- 12	2,378	14	2,376	" sand	Hard, clear, "alkaline"		S,	Sufficient for 10 head stock.
34	NE.	25	"	"	"	"	30	2,420	- 27	2,393	30	2,390	" clay	Hard, clear		D,	Sufficient for household needs only.
35	SE.	28	"	"	"	"	20	2,370	- 12	2,358	20	2,350	" sand	" "		D, S	" " 28 head stock.
36	NE.	28	"	"	"	"	20	2,360	- 18	2,342	20	2,340	" "	" "		D, S	Insufficient for local needs.

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

WELL RECORDS—RURAL MUNICIPALITY OF KEY WEST NO. 70 SASKATCHEWAN

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
37	NE.	28	8	22	2	Dug	14	2,370	- 6	2,364	14	2,356	Glacial sand	Hard, clear		S,	Sufficient for local needs.
38	SE.	28	"	"	"	"	16	2,480	- 12	2,468	16	2,464	" clay	" " "alkaline"		D, S	Insufficient for 15 head stock.
39	SE.	30	"	"	"	"	12	2,320	- 8	2,312	12	2,308	" gravel	Hard, "alkaline"		S,	Sufficient for local needs.
40	SW.	30	"	"	"	"	13	2,370	- 9	2,361	13	2,357	" clay	Hard, clear, "alkaline"		D, S	" " 12 head stock.
41	SE.	32	"	"	"	"	12	2,380			12	2,368	" sand	Hard, clear		D, S	Insufficient for local needs.
42	SE.	34	"	"	"	"	11	2,390	- 5	2,385	11	2,379	" "	" "		D, S	Sufficient for 15 head stock.
43	NE.	34	"	"	"	Bored	68	2,390					" clay				Dry hole, 2 other dry holes 40 feet deep.
44	NW.	35	"	"	"	Dug	16	2,360	?	?	16	2,344	" "	Hard, clear		D,	Sufficient for domestic needs only.
45	SW.	36	"	"	"	"	14	2,380	- 6	2,374	14	2,366	" sand	Hard, clear, "alkaline"		D,	" " local needs.
46	SW.	36	"	"	"	"	25	2,400	- 19	2,381	25	2,375	" "	Hard, clear, "alkaline"		N,	
47	NW.	36	"	"	"	Bored	30	2,400	- 26	2,374	30	2,370	" "	Hard, clear, "alkaline"		D, S	Insufficient for 10 head stock.
48	NE.	36	"	"	"	Dug	20	2,420	- 15	2,405	20	2,400	" "	Hard, clear		D, S	Sufficient for 6 head stock.
1	SW.	2	8	23	2	Dug	16	2,375	- 13	2,362			Glacial clay	Hard		D, S	Sufficient for household needs only.
2	NW.	2	"	"	"	"	10	2,360	- 6	2,354	6	2,354	" sand	Soft, clear		D, S, I	Sufficient for several families.
3	NE.	2	"	"	"	"	15	2,360	- 13	2,347	13	2,347	" "	Hard, clear, "alkaline"		D, S	Insufficient for 7 head stock.
4	SW.	3	"	"	"	Bored	20	2,370					" gravel	Hard, clear		D, S	" " local needs. #
5	NE.	3	"	"	"	Dug	9	2,360	- 5	2,355	7	2,353	Glacial sand gravel	" "		D, S	Sufficient for 3 head stock.
6	SW.	4	"	"	"	"	20	2,330					Glacial clay				Dry hole, another dry hole 10 feet deep.
7	NE.	4	"	"	"	"	7	2,340	- 3	2,337	3	2,337	" sand	Hard, clear		D, S	Sufficient for 16 head stock.
8	NW.	9	"	"	"	Tested	40	2,370	- 8	2,362	8	2,362	" gravelly clay	" black colour, soda, "alkaline"		N,	Not fit for human consumption.
9	NE.	9	"	"	"	Dug	25	2,365					Glacial			N,	Not used in last 3 years. Very little water.
10	SE.	10	"	"	"	"	20	2,360	- 17	2,343	17	2,343	" grey and blue caly	Hard, salty, "alkaline"		N,	Well not used.
11	SW.	12	"	"	"	Bored	30	2,370	- 16	2,354	16	2,354	Glacial grey clay	Hard, clear, "alkaline"		S,	Insufficient for local needs.
12	NW.	12	"	"	"	Dug	16	2,400	- 10	2,390	10	2,390	Glacial sand	Hard, clear		D, S	Sufficient for 20 head stock.
13	SE.	13	"	"	"	"	5	2,390	0	2,390			" " coarse gravel	" " "alkaline", soda		D, S	" " local needs.
14	NW.	13	"	"	"	Bored	28	2,385	- 25	2,360	6	2,379	Glacial sand	Hard, clear		D,	Sufficient for household needs.
15	NW.	13	"	"	"	Dug	26	2,385	- 18	2,367	22	2,363	" "	" "		S,	" " 14 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 KEY WEST NO.70, 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
16	SW.	14	8	23	2	Bored	80	2,385					Glacial grey clay fine grey sand				Dry hole.
17	SW.	14	"	"	"	"	72	2,385	- 66	2,319	72	2,313	Glacial gravel and sand	Hard, black "alkaline" odour		N,	Well filled in, not fit for use.
18	SW.	15	"	"	"	Dug	22	2,360	- 19	2,341	19	2,341	Glacial sand	Hard, clear		D, S	Just sufficient from 3 wells for house and 4 head stock.
19	SW.	15	"	"	"	Drilled	320	2,360	- 40	2,320	320	2,040	Ravenscrag sand	Hard, very irony		S,	Was sufficient for local needs, not used now.
20	SE.	17	"	"	"	Dug	22	2,370	- 17	2,353	17	2,353	Glacial sand	Hard, "alkaline"		N,	Too alkaline for use.
21	NW.	17	"	"	"	"	20	2,390	- 13	2,377	10	2,380	" " and gravel	" clear		D, S	Sufficient for 15 head stock.
22	NE.	17	"	"	"	Drilled	280	2,380	- 30	2,350	280	2,100	Ravenscrag sand	" iron	43	S,	" " local needs.
23	NW.	18	"	"	"	Dug	16	2,400					Glacial sand	" clear		D, S	Insufficient for local needs.
24	NE.	18	"	"	"	"	25	2,400	- 22	2,378	22	2,378	" "	" " iron		D, S	Sufficient for 19 head stock.
25	SE.	19	"	"	"	"	15	2,390	- 11	2,379	8	2,382	" " gravel	Hard, clear		D, S	" " 9 " " .
26	SW.	20	"	"	"	Bored	40	2,390					Glacial clay				Dry hole.
27	NW.	20	"	"	"	Dug	32	2,390	- 30	2,360	30	2,360	" sand	Hard, clear, "alkaline"		D, S	Insufficient for 2 head stock.
28	SE.	21	"	"	"	Bored	40	2,360					" blue clay	Hard,		N,	Well not used on account of odour of water.
29	SE.	21	"	"	"	Dug	12	2,360					" sand	"		D,	Sufficient for household needs only.
30	SE.	22	"	"	"	"	14	2,390	- 11	2,379	11	2,379	" "	" clear		D, S	" " 6 horses.
31	SE.	22	"	"	"	?	12	2,390	- 9	2,381			"	Soft		S,	"" " 6 head stock.
32	SW.	22	"	"	"	Dug	30	2,350	- 8	2,342			" clay	Hard,		D, S	Insufficient for local needs.
33	SW.	23	"	"	"	"	20	2,380					" "	" "alkaline"		N,	Not fit for use.
34	NW.	25	"	"	"	Bored	50	2,450	- 20	2,430	15	2,435	" "	" "		N,	" " " " .
35	NW.	25	"	"	"	"	70	2,440					" yellow clay				Dry hole.
36	NW.	25	"	"	"	Dug	12	2,450	- 8	2,442	8	2,442	Glacial fine sand	Hard		D, S	Sufficient for 28 head stock.
37	SW.	26	"	"	"	"	20	2,420	- 16	2,404	16	2,404	Glacial gravel	Hard, clear		D, S	" " 12 " " .
38	NW.	26	"	"	"	"	40	2,420					" stony clay	"alkaline"		N,	Only used occasionally for stock.
39	NE.	26	"	"	"	Spring		2,440	0	2,440			" gravel	" clear		D, S	Sufficient for over 30 head stock.
40	SE.	27	"	"	"	Dug	25	2,450	- 14	2,436	14	2,436	" gravelly clay	" "alkaline"		D, S	Sufficient for 20 head stock.
41	SW.	27	"	"	"	"	20	2,360	- 18	2,342	20	2,340	Glacial sand	Hard, clear		D, S	" " 3 " " .
42	SE.	28	"	"	"	"	18	2,380	- 12	2,368	12	2,368	" gravel	" "		D, S	Sufficient from 3 wells for 13 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 KEY WEST NO. 70 SASKATCHEWAN

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
43	SW.	32	8	23	2	Dug	20	2,410	- 18	2,392	10	2,400	Glacial sand and gravel	Hard, clear		D, S	Insufficient for local needs.
44	SE.	33	"	"	"	"	16	2,400	- 12	2,388	12	2,388	Glacial gravel	Soft, "		D, S	Sufficient for local needs.
45	NE.	34	"	"	"	Bored	30	2,450	- 10	2,440	6	2,444	" sand	Hard, "		D, S	" " 6 head stock.
46	NE.	34	"	"	"	"	75	2,450	- 25	2,425	26	2,424	" green sand	" salty, "alkaline"		N,	Not fit for use.
47	NW.	35	"	"	"	Dug	16	2,440	- 10	2,430	10	2,430	Glacial fine sand	Hard, clear		D,	Sufficient for household needs.
48	SW.	36	"	"	"	"	10	2,450	- 6	2,444	6	2,444	Glacial sand	Hard, clear, "alkaline"		S,	Sufficient for local needs.
49	NW.	36	"	"	"	Bored	18	2,450	- 13	2,437	10	2,440	" gravel	Hard, clear		D,	" " household needs.
1	NE.	1	8	24	2	?	23	2,400					"				Dry hole.
2	SE.	1	"	"	"	Dug	18	2,400	- 15	2,385			" yellow clay	Hard, clear "alkaline"		D,	Insufficient for local needs.
3	NW.	2	"	"	"	"	12	2,400	- 11	2,389	11	2,389	Glacial gravel	Hard, clear		D, S,	Sufficient for 20 head stock.
4	NE.	2	"	"	"	Bored	30	2,400	- 15	2,385	24	2,376	" sand	Hard, clear, soda	42	D, S	" " local needs.
5	SE.	2	"	"	"	"	127	2,400					" " blue clay				Dry hole.
6	NW.	3	"	"	"	Dug	9	2,400	- 5	2,395	9	2,391	Glacial gravel	Hard, clear		D, S	Sufficient for local needs.
7	SE.	4	"	"	"	Bored	26	2,400	- 12	2,388	26	2,374	" yellow clay	" "		D, S	" " household, 10 pails a day.
8	SE.	4	"	"	"	?	27	2,400					Glacial				Dry hole.
9	SW.	4	"	"	"	Dug	11	2,400	- 9	2,391	11	2,389	" coarse gravel	Hard, clear	45	D, S	Sufficient for 150 head stock.
10	NE.	5	"	"	"	Spring	6	2,375	- 4	2,371			Glacial sand and gravel	Soft, clear		D, S	" " local needs.
11	NW.	6	"	"		Dug	14	2,400	- 8	2,392	8	2,392	Glacial sand and gravel	Hard, clear, "alkaline"	45	D, S	" " " " .
12	NW.	7	"	"	"	Bored	30	2,400	- 20	2,380	30	2,370	Glacial gravel	Hard, clear, "alkaline"		D, S	" " " " .
13	SW.	7	"	"	"	Dug	14	2,400	- 8	2,392	8	2,392	" "	Hard, clear, "alkaline"	45	D, S	" " 15 head stock.
14	SE.	9	"	"	"	Spring	3	2,400	0	2,400			" sand and gravel	Hard, clear	45	D, S	" " local needs.
15	SW.	9	"	"	"	"	10	2,400	- 6	2,394	6	2,394	Glacial sand and gravel	" " "alkaline"	42	D, S	" " " " .
16	SW.	12	"	"	"	Dug	10	2,400	- 9	2,391	9	2,391	Glacial gravel	Hard, clear	45	D, S	" " " " .
17	SE.	13	"	"	"	"	23	2,400	- 11	2,389	23	2,377	" sand	Soft, "	45	D, S	" " 20 head stock.
18	SW.	13	"	"	"	"	15	2,400	- 12	2,388	6	2,394	" "	Hard, "	45	D, S	" " 40 " " .
19	NE.	15	"	"	"	Spring	?	2,400	0	2,400			" " and gravel	" "		D, S	" " local needs.
20	SE.	16	"	"	"	Dug	?	2,400	- 3	2,397	3	2,397	Glacial gravel	" "	45	D, S	" " " " .

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

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

WELL RECORDS—RURAL MUNICIPALITY OF KEY WEST NO. 70 SASKATCHEWAN

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
21	SW.	18	8	24	2	Bored	50	2,400	- 35	2,365	50	2,350	Glacial gravel and blue sand	Hard, clear, iron		S,	Sufficient for local needs.
22	NW.	24	"	"	"	Dug	6	2,400	- 3	2,397	3	2,397	Glacial gravel	Hard, clear		D, S	" " " " .
23	SE.	24	"	"	"	Bored	16	2,400	- 8	2,392	8	2,392	" sand	" "	45	D, S	" " " " .
24	NE.	25	"	"	"	Dug	15	2,400	- 9	2,391	10	2,390	" gravel yellow clay	" "		D, S	" " " " .
25	S½.	26	"	"	"	"	16	2,400	- 10	2,390			Glacial blue clay	" clear	45	D,	Sufficient for domestic needs only.
26	SW.	27	"	"	"	"	22	2,400	- 20	2,380			Glacial yellow clay	"alkaline"		S,	" " local needs in wet season.
27	SW.	32	"	"	"	Spring		2,400	0	2,400			Glacial sand and gravel	Hard		D, S	" " " " .
28	NE.	33	"	"	"	Dug	12	2,400	- 6	2,394	12	2,388	Glacial sand and clay	" xclear		D, S	" " 25 head stock.
29	SW.	33	"	"	"	"	7	2,400	- 4	2,396	4	2,396	Glacial gravel	" "	45	D, S	" " local needs.
30	NW.	34	"	"	"	Spring	5	2,400	- 1	2,399			" "	Soft, "	45	D, S	" " " " .
31	SW.	35	"	"	"	Dug	11	2,400	- 4	2,396	4	2,396	" "	" "		D, S	" " " " .
32	SE.	36	"	"	"	"	15	2,400	- 13	2,387	13	2,387	" "	Hard, clear		D, S	Sufficient for house and stock in summer but not in winter.
33	NE.	36	"	"	"	"	14	2,400	- 11	2,389	11	2,389	" "	" "	45	D, S	Sufficient for 10 head stock.
1	NE.	1	9	22	2	Dug	12	2,415	- 8	2,407	12	2,403	Glacial gravel	Soft, clear		S,	Sufficient for local needs.
2	NE.	1	"	"	"	Bored	80	2,415	- 45	2,370	80	2,335	" "	Hard, clear, "alkaline"	42	D, S	" " 40 head stock.
3	SW.	2	"	"	"	"	70	2,360			70	2,290	" clay"	Hard, clear "alkaline"	42	S,	Good supply of water but used only in winter for stock.
4	NE.	2	"	"	"	Dug	14	2,400	- 8	2,392	8	2,392	" clay with small stones	Hard, clear		D,	Sufficient for domestic needs.
5	NE.	2	"	"	"	"	8	2,400	- 2	2,398	2	2,398	Glacial	" " "alkaline"		S,	" " local needs.
6	NE.	2	"	"	"	Spring		2,355	0	2,355			"	Soft, clear		D, S	" " " " .
7	NW.	3	"	"	"	Dug	8	2,350	- 2	2,348			"	Hard, clear, "alkaline"		N,	Too alkaline for use.
8	NE.	5	"	"	"	"	16	2,375	- 10	2,365	10	2,365	" gravel	Hard, clear		D, S	Has caved in now, but was good supply.
9	SE.	6	"	"	"	Spring		2,425	0	2,425			" "	"		S,	Sufficient for local needs.
10	SW.	6	"	"	"	Dug	14	2,425	- 9	2,416			" clay	Hard, clear		D, S	" " " " .
11	SW.	6	"	"	"	"	16	2,425	- 12	2,413	13	2,412	" "	" " "alkaline"		S,	" " 15 head stock.
12	SW.	6	"	"	"	Bored	40	2,425					boulder gravel Glacial clay and gravel	Hard, "alkaline"		N,	Not fit for use.
13	NW.	6	"	"	"	Dug	10	2,430	- 7	2,423	3	2,427	Glacial gravel	" clear		D, S	Sufficient for local needs.
14	NW.	6	"	"	"	Bored	29	2,430	- 10	2,420	29	2,401	Glacial "	" "		S,	" " 10 horses.

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 KEY WEST, NO. 70. SASKATCHEWAN

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
15	SW.	7	9	22	2	Dug	12	2,425	- 10	2,415	10	2,415	Glacial gravel and sand	Hard, clear		D, S	Sufficient for 20 head stock.
16	NE.	7	"	"	"	Bored	60	2,420					Glacial black clay				Dry hole, 20 dry holes have been put down.
17	NE.	7	"	"	"	Drilled	90	2,410					Glacial blue clay				Dry hole.
18	NW.	8	"	"	"	Dug	22	2,400	- 17	2,383	17	2,383	Glacial sand	Hard, clear		D,	Sufficient for household needs only.
19	NE.	8	"	"	"	"	12	2,400	- 10	2,390	10	2,390	" gravel	" "		D, S	" " local needs.
20	NE.	8	"	"	"	"	20	2,400			20	2,380	" "	" "	42	D, S	" " local needs.
21	NW.	9	"	"	"	"	15	2,400	- 10	2,390	10	2,390	" dark clay white spots	" "alkaline"		S,	Insufficient for local needs.
22	NW.	9	"	"	"	Bored	60	2,400	- 10	2,390	51	2,349	Glacial gravel and sand	Hard, clear		S,	Sufficient for 20 head stock.
23	NW.	9	"	"	"	?	83	2,400					Glacial blue clay				Dry hole.
24	NE.	9	"	"	"	Dug	12	2,400	- 8	2,392	8	2,392	" gravel	Hard, clear		D, S	Sufficient for local needs.
25	NW.	10	"	"	"	"	10	2,350					" clay	" "		D, S	" " " " .
26	NE.	14	"	"	"	Bored	42	2,440	- 22	2,418	42	2,398	" gravel	" " iron	42	D, S	" " 50 head stock.
27	SE.	15	"	"	"	Dug	16	2,390	- 12	2,378	12	2,378	" clay and gravel	Hard, clear		D, S	" " local needs.
28	NW.	15	"	"	"	Bored	38	2,425	- 34	2,391	34	2,391	Glacial gravel	" "		D, S	" "" " " .
29	SE.	16	"	"	"	Dug	14	2,400	- 1	2,399			" clay	" "alkaline"		D, S	Insufficient for local needs.
30	NW.	16	"	"	"	Bored	36	2,400					" gravel	Hard, clear		D, S	Sufficient " " " .
31	SW.	17	"	"	"	Dug	17	2,410	- 4	2,406	15	2,395	" "	" "		S,	" " 13 head stock.
32	SW.	17	"	"	"	"	14	2,410	- 8	2,402			" sand	Soft, "	43	D,	" " local needs.
33	SE.	18	"	"	"	Bored	28	2,425	- 14	2,409	14	2,409	"	Hard, "		D, S	" " " " .
34	NW.	19	"	"	"	Dug	8	2,410	- 5	2,405	4	2,406	" coarse sand and gravel	Soft, "		S,	" " " " .
35	NW.	19	"	"	"	"	20	2,410	- 8	2,402	15	2,395	Glacial sand	" "		D, S	" " 18 head stock.
36	NW.	20	"	"	"	"	10	2,390	- 6	2,384	6	2,384	" gravel	" "	43	D, S	" " local needs.
37	NE.	20	"	"	"	Bored	40	2,450	- 25	2,425	25	2,425	" sand and gravel	" "alkaline"	43	S,	" " 25 head stock.
38	NE.	20	"	"	"	"	90	2,470					Glacial gravel	Hard, clear, iron	42	S,	" " 14 " " .
39	SE.	21	"	"	"	Dug	16	2,465	- 3	2,462	16	2,449	" yellow clay, stony	Hard, clear	43	D, S	" " 10 " " .
40	NW.	21	"	"	"	"	14	2,490					Glacial brown clay	" "		D, S	" " local needs.
41	NW.	21	"	"	"	"	12	2,490					Glacial sand				Dry hole.
42	SE.	22	"	"	"	Bored	32	2,450	- 14	2,436	21	2,429	" "	Hard, clear		S,	Sufficient for 15 head stock.

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

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

WELL RECORDS—RURAL MUNICIPALITY OF KEY WEST NO. 70. SASKATCHEWAN

WELL No.	LOCATION ¼	Sec.	Tp.	Rge.	Mer.	TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE Above (+) Below (−) Surface	Elev.	PRINCIPAL WATER-BEARING BED Depth	Elev.	Geological Horizon	CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
43	SW.	22	9	22	2	Dug	19	2,455	- 11	2,444	11	2,444	Glacial clay	Hard, clear		D,	Sufficient for 15 head stock.
44	NE.	22	"	"	"	"	16	2,425			16	2,409	" "	" "	43	D,	" " household needs only.
45	NE.	22	"	"	"	Bored	13	2,425	- 1	2,424	13	2,412	" boulder clay	" "		S,	" " 15 head stock.
46	SE.	23	"	"	"	Dug	12	2,460	- 5	2,455	12	2,448	Glacial sand	" " iron		D, S	" " 30 " " .
47	SE.	23	"	"	"	Bored	20	2,455			20	2,435	" gravel	Hard, clear		D, S	Insufficient for local needs.
48	SW.	23	"	"	"	"	43	2,470	- 37	2,433	37	2,433	" yellow clay	" "	42	D,	Sufficient for domestic use only.
49	NW.	24	"	"	"	"	32	2,455	- 12	2,443	29	2,426	Glacial gravel	" "alkaline"	43	D,	" " " " " .
50	SW.	25	"	"	"	Dug	16	2,400	- 12	2,388	12	2,388	"	Hard, clear, "alkaline"	43	D, S	Insufficient for local needs.
51	NW.	25	"	"	"	Spring		2,360	0	2,360			"	Hard, clear		S,	Sufficient for local needs.
52	NE.	27	"	"	"	Drilled	286	2,370	-22	2,348	286	2,084	Eastend fine grey sand	Strong in minerals, clear		N,	Never used.
53	NE.	27	"	"	"	Dug	9	2,355	- 4	2,351	9	2,346	Glacial sandy clay	Hard, clear		D,	Sufficient for household needs.
54	SE.	28	"	"	"	Bored	45	2,420	- 40	2,380	40	2,380	Glacial sand	" " iron	42	S,	" " 4 head stock.
55	SW.	30	"	"	"	?	14	2,400	- 11	2,389	11	2,389	" "	Hard, "alkaline"		S,	" " 20 " " .
56	SW.	30	"	"	"	Dug	28	2,400	- 23	2,377	23	2,377	" "	" clear	42	D,	" " household needs only.
57	NW.	30	"	"	"	"	18	2,410					" gravel	"		D, S	A little more than required for house.
58	SW.	31	"	"	"	"	24	2,410					" " sand	" clear		S,	Sufficient for local needs.
59	NE.	32	"	"	"	Bored	64	2,450					Glacial sand	"alkaline", soda Hard, strong in minerals		N,	Never used.
60	NW.	33	"	"	"	"	75	2,450					" yellow sand	Hard, clear		N,	Well never developed, filled in.
61	NW.	34	"	"	"	"	28	2,420	0	2,420			Glacial blue clay	" "alkaline"	43	D, S	Insufficient for local needs.
62	NE.	34	"	"	"	Dug	16	2,290	- 4	2,286	14	2,276	" gravel	Hard, clear		D, S	Sufficient for household needs a few head stock
63	NE.	34	"	"	"	Bored	56	2,290			56	2,234	" "	" " iron		N,	Too much iron for use, good supply.
64	SE.	36	"	"	"	Dug	16	2,270	- 14	2,256	14	2,256	" sand	Hard, clear		D,	Sufficient for household needs.
65	SE.	36	"	"	"	"	40	2,270	- 24	2,246	40	2,230	" "	" "alkaline"	42	S,	" " 25 head stock.
66	NE.	36	"	"	"	Bored	65	2,245			65	2,180	Bearpaw blue shale	Hard, strongly "alkaline"		N,	Not fit for use, strong supply.
1	SW.	1	9	23	2	Bored	22	2,420	- 12	2,408			Glacial clay	Soft, clear	42	D,	Sufficient for household needs.
2	NW.	2	"	"	"	Dug	16	2,320	- 6	2,314	16	2,304	" sand and gravel	Hard, clear		D, S	" " local needs.
3	NW.	5	"	"	"	"	18	2,340	- 14	2,326	16	2,324	Glacial sand	" "		D, S	" " 16 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 KEY WEST NO. 70. 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.	6	9	23	2	Dug	14	2,340					Glacial silt	Hard, clear		D, S	Sufficient for local needs.
5	NW.	6	"	"	"	"	13	2,375	- 12	2,363			" clay	" " "alkaline"		D, S	Insufficient for 10 head stock.
6	SW.	7	"	"	"	Bored	94	2,360					" blue clay				Dry hole.
7	NE.	9	"	"	"	Dug	22	2,375	- 8	2,367	12	2,363	Glacial sand	Hard, clear		D, S	Sufficient for 16 head stock.
8	NE.	10	"	"	"	?	12	2,390	- 9	2,381	9	2,381	" "	" "		D, S	" " 14 " " .
9	NE.	12	"	"	"	Bored	16	2,420	- 10	2,410			" clay	Soft, clear		D, S	Insufficient for local needs.
10	NW.	12	"	"	"	"	30	2,420			30	2,390	" sand	Hard, clear "alkaline"		D, S	Well caved in now.
11	SE.	12	"	"	"	Dug	14	2,440	- 7	2,433	7	2,433	" yellow clay	Soft, clear		D, S	Sufficient for 16 head stock.
12	NE.	13	"	"	"	Bored	40	2,360					Glacial	Hard, clear, "alkaline"		S,	" " local needs.
13	SE.	14	"	"	"	"	50	2,400			50	2,350	" sand	Hard, clear, "alkaline"		D, S	" " 25 head stock.
14	SE.	15	"	"	"	Dug	16	2,360	- 13	2,347	13	2,347	" "	Hard, clear, iron, "alkaline"		N,	Not fit for man or stock.
15	SW.	17	"	"	"	"	14	2,350	- 11	2,339	11	2,339	" "	Hard, clear, "alkaline"		D, S	Sufficient for 10 head stock.
16	SE.	18	"	"	"	"	19	2,350	- 17	2,333			" gravel	Hard, clear		D, S	" " 16 " " .
17	NW.	19	"	"	"	Bored	34	2,350	- 29	2,321			" clay	" " "alkaline"		D, S	Sufficient in summer for 9 head stock.
18	NE.	20	"	"	"	Dug	16	2,350	- 14	2,336	14	2,336	" gravel	Hard, clear		D, S	" " " " 40 " " .
19	SW.	21	"	"	"	"	12	2,375	- 6	2,369	6	2,369	" fine sand	Soft, clear		D, S	" " 16 head stock.
20	SW.	22	"	"	"	"	9	2,350	- 6	2,344	6	2,344	" sand	Hard, clear		D, S	" " local needs.
21	SE.	23	"	"	"	"	20	2,400					"	" " "alkaline"		S,	" " " " ".
22	NW.	24	"	"	"	"	16	2,380	- 8	2,372	8	2,372	" sand	Hard, clear "alkaline"		D, S	" " 12 head stock.
23	SE.	24	"	"	"	Bored	60	2,400					"	Hard, clear, iron	43	D, S	" " 13 " " .
24	NW.	25	"	"	"	"	20	2,380	- 16	2,364	16	2,364	" sand	Hard, clear		D, S	Insufficient for 14 head stock.
25	NE.	26	"	"	"	Dug	12	2,380	- 10	2,370	10	2,370	" "	" "		D, S	Sufficient for house and some stock.
26	NW.	27	"	"	"	"	35	2,355	- 12	2,343	35	2,320	" "	" "		D, S	Insufficient for local needs.
27	NE.	27	"	"	"	"	8	2,365	- 6	2,359	6	2,350	" "	" " "alkaline"		D, S	Sufficient for 27 head stock.
28	SW.	29	"	"	"	?	160	2,340					Ravenscrag clay	Hard, clear			Dry hole.
29	NW.	30	"	"	"	Bored	120	2,350	-118	2,232			Glacial blue clay	Hard, clear, "alkaline"		N,	Well now caved had very small supply.
30	NE.	32	"	"	"	Drilled	800	2,350					Ravenscrag east-end bearpaw				Dry hole.

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

WELL RECORDS—RURAL MUNICIPALITY OF KEY WEST NO. 70. 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
31	NE.	32	9	23	2	Bored	125	2,350					Glacial sand and gravel				Dry hole.
32	SW.	34	"	"	"	Dug	12	2,350	- 10	2,340	10	2,340	Glacial sand	Soft, clear		D, S	Sufficient in summer for 20 head stock.
33	NE.	34	"	"	"	"	14	2,375	- 12	2,363			" clay	Hard, clear, "alkaline"		D,	" for household needs only.
34	SE.	35	"	"	"	Bored	110	2,390					" blue clay				Dry hole.
35	NE.	36	"	"	"	Dug	12	2,360	- 8	2,352	8	2,352	" sand and gravel	Hard, clear		D, S	Sufficient for local needs.
1	NE.	3	9	24	2	Dug	12	2,340	- 4	2,336			Glacial clay	Soft, clear		D, S	Sufficient for local needs.
2	SW.	4	"	"	"	"	25	2,350	- 15	2,335	15	2,335	" sandy clay	Hard, clear		D, S	" " 16 head stock.
3	NW.	4	"	"	"	Bored	28	2,400	- 14	2,386	27	2,373	" sand	" "	42	D,	" " household needs only.
4	NE.	5	"	"	"	Dug	16	2,400	- 8	2,392	10	2,390	" "	Soft, "		D, S	" " 12 head stock in summer.
5	SW.	6	"	"	"	"	22	2,360	- 20	2,340	15	2,345	" "	" "		D, S	Insufficient for local needs.
6	NW.	6	"	"	"	"	15	2,375	- 10	2,365	10	2,365	" "	" "		D, S	Sufficient for 25 head stock.
7	NW.	7	"	"	"	Bored	37	2,420	- 32	2,388	32	2,388	" "	Hard, alkaline		D, S	Insufficient for local needs.
8	SW.	10	"	"	"	Dug	54	2,375					" black clay				Dry hole.
9	SE.	10	"	"	"	Bored	45	2,380					" blue clay sand				" " .
10	SE.	11	"	"	"	Dug	16	2,375	- 13	2,362	16	2,359	Glacial fine sand	Hard, clear, "alkaline"		D, S	Sufficient for 16 head stock.
11	NE.	11	"	"	"	"	21	2,380	- 9	2,371	18	2,362	" sand	Hard, clear		D,	" " 100 people.
12	SE.	12	"	"	"	Bored	25	2,375	- 10	2,365			" blue clay	" "	42	D, S	" " 4 head stock.
13	SE.	13	"	"	"	?	120	2,360					" " " iron				Dry hole.
14	NW.	14	"	"	"	Dug	18	2,410	- 8	2,402			" sandy clay	Soft, clear		D, S	Sufficient for local needs.
15	SE.	15	"	"	"	"	12	2,400	- 9	2,391	10	2,390	" sand and gravel	Hard, clear, "alkaline"		D, S	Sufficient for 11 head stock.
16	NE.	15	"	"	"	Bored	34	2,420	- 27	2,393	32	2,388	Glacial sand	Hard, clear, "alkaline"		D, S	Sufficient for household needs.
17	NW.	15	"	"	"	"	28	2,420	- 22	2,398	27	2,393	" "	Hard, clear		D, S	" " 10 head stock.
18	NW.	17	"	"	"	"	23	2,380	- 15	2,365			" sandy clay	" "	42	D, S	" " 14 " " .
19	NE.	18	"	"	"	?	16	2,375	- 10	2,365	10	2,365	" sand	Soft, "		D, S	Insufficient for local needs.
20	NW.	18	"	"	"	Dug	18	2,400	- 12	2,388			" clay	Hard, "		D, S	Well is practically dry now.
21	NW.	18	"	"	"	"	20	2,380	- 17	2,363	17	2,363	" sand and gravel	" "		D,	Sufficient for household needs only.
22	SE.	20	"	"	"	"	8	2,420	- 6	2,414	5	2,415	Glacial gravel	" "		D, S	" " 20 head stock.

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(#) Sample taken for analysis.

WELL RECORDS—RURAL MUNICIPALITY OF KEY WEST NO. 70 . SASKATCHEWAN

WELL No.	LOCATION					TYPE OF WELL	DEPTH OF WELL	ALTITUDE WELL (above sea level)	HEIGHT TO WHICH WATER WILL RISE		PRINCIPAL WATER-BEARING BED			CHARACTER OF WATER	TEMP. OF WATER (in °F.)	USE TO WHICH WATER IS PUT	YIELD AND REMARKS
	¼	Sec.	Tp.	Rge.	Mer.				Above (+) Below (−) Surface	Elev.	Depth	Elev.	Geological Horizon				
23	SE.	23	9	24	2	Dug	25	2,410	- 20	2,390	20	2,390	Glacial clay	Soft, clear		D, S	Insufficient for local needs.
24	SW.	24	"	"	"	"	16	2,380	- 13				" "	" "	45	D, S	Sufficient for 3 head stock.
25	NE.	26	"	"	"	"	12	2,350	- 6	2,344	6	2,344	" sand	" "		D, S	" " 10 head stock.
26	SE.	27	"	"	"	"	14	2,375	- 12	2,363	6	2,369	" fine sand	Hard, clear, "alkaline"		D, S	" " 15 " " .
27	SW.	28	"	"	"	"	22	2,410	- 15	2,395	18	2,392	" sand	Hard, clear, iron	42	D, S	" " 21 " " .
28	NW.	28	"	"	"	"	8	2,390	- 3	2,387	7	2,383	" "	Hard, clear		D, S	" " 16 " " .
29	NW.	30	"	"	"	"	10	2,340	- 5	2,335	4	2,336	" gravel	" "		D, S	" " 30 " " .
30	NE.	31	"	"	"	"	9	2,375	- 6	2,369	4	2,371	" sand	"alkaline" Soft, clear		D, S	Insufficient for 6 head stock.
31	NE.	32	"	"	"	"	14	2,360	- 10	2,350	4	2,356	" "	" "		D, S	" " local needs.
32	NE.	33	"	"	"	"	12	2,375	- 9	2,366			" clay	Hard "		D, S	" " " " .
33	SW.	34	"	"	"	"	12	2,350	- 6	2,344	11	2,339	" sand	" "		D, S	Sufficient for 9 head stock in summer.
34	NW.	35	"	"	"	"	19	2,350	- 11	2,339	16	2,334	" blue clay	Soft, "		D, S	" " 17 " " .
35	SE.	35	"	"	"	"	14	2,330	- 9	2,321	13	2,317	" sand	Hard, clear	42	D, S	" " 8 " " .
36	NW.	36	"	"	"	"	22	2,375	- 6	2,369	22	2,353	" "	Hard, cloudy, to rusty, "alkaline", iron	44	S,	" " 16 " " .

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(#) Sample taken for analysis.