THE RELATIONSHIPS BETWEEN SETTLEMENT AND THE PHYSICAL ENVIRONMENT IN PART OF THE WEST LAKE AREA OF MANITOBA FROM 1878 TO 1963

Thesis

Presented to

The Faculty of Graduate Studies and Research

University of Manitoba

In Partial Fulfillment of

the Requirements for the Degree of

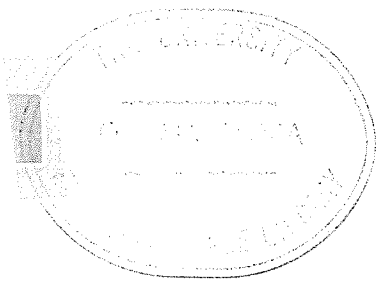
Master of Arts

---

by

William John Carlyle

April, 1965



ABSTRACT

This study of a portion of the West Lake Area of Manitoba is primarily concerned with the manner in which man has reacted to the physical features of an area in the process of organizing it for settlement. The examination of the relationships between man and the physical environment in the study area begins with the first permanent settlement, a homestead registered in 1878, and ends with 1963, the year in which fieldwork was done. In general, the study is concerned with the influence the physical environment has had on the locations or sites of settlement features such as towns, farmhouses, trails and roads, railways, cultivated and uncultivated land and wells and dugouts. An historical or developmental approach, beginning with the earliest data available, was taken in an attempt to find out why the relationship between any particular settlement feature and the physical environment, once established, changed or remained the same through time. Moreover, it was found that in many instances relationships established for the study area applied to other parts of the West Lake Area, that is, the study area appeared to be representative of the West Lake Area as a whole in so far as the topic under discussion was concerned.

ACKNOWLEDGMENTS

The writer wishes to express his sincere thanks to present and past members of the staff of the Department of Geography of the University of Manitoba. In particular he would like to thank Dr. T. R. Weir, Chairman of the Department, and Dr. J. Warkentin for their help in the selection of the topic and area of study. Further thanks are extended to Dr. T. R. Weir and Professor R. Irving for constructively criticizing various drafts of the thesis. Outside the Department of Geography, the writer is grateful for the assistance of the Department of Agriculture at the University of Manitoba, the Manitoba Department of Agriculture and Immigration and all the interviewed residents of the study area. On a more personal basis thanks are extended to Mrs. L. Squires for typing the thesis and to members of the writer's family, without whose encouragement, the study could not have been completed.

TABLE OF CONTENTS

CHAPTER PAGE

LIST OF FIGURES

FIGURE PAGE

FIGURE PAGE

LIST OF TABLES

LIST OF OVERLAYS

OVERLAY

CHAPTER I

INTRODUCTION

PURPOSE OF THE STUDY

In the process of occupying an area man constructs and organizes settlement features such as roads, railways, farms and towns to serve his needs. The type, general distribution and specific location or site of these settlement features is often influenced by, amongst other factors, the physical environment of the area being occupied.[1] It is to be expected that at any particular time there will be a variety of relationships between settlement features and the physical environment due to differences in individual or group evaluations of the same physical environment and/or variations in the environment from place to place within the area. In addition, changes in the relationships established at any particular time will often occur over a period of years due to technological developments, government policies, economic considerations and practical knowledge gained by living in the area. For example, in the early days of settlement in an area composed chiefly of marshy land interspersed with a few well drained ridges, transportation routes, farmhouses and fields may be more or less confined to the higher land on the ridges. Then, with the

---

[1]For the purposes of this thesis the physical environment includes all the naturally occurring as opposed to the man-made elements of an area. The most important physical elements are large and small scale relief features, soil, vegetation, climate, drainage (surface and subsurface) and stoniness.

passage of time artificial drainage may allow these settlement features to extend onto the formerly marshy areas.

It was an interest in the relationship between man and the physical environment which prompted the writer to undertake this study. The purpose of the study will be to examine the relationships between settlement features and the physical environment in a selected area of Manitoba from the time of first organized white settlement[1] until the present.[2]

METHOD OF PROCEDURE

For the sake of clarity and continuity in discussing the complexity of settlement features and the changes they have undergone the following divisions have been made:

a) Settlement features have been divided into the following main groups:

1) Farmhouses and farmlands - settled versus unsettled lands, general distribution and specific sites of farmhouses, general and detailed land use.[3]

2) Towns - the discussion will be concerned chiefly with the sites of towns.

---

[1]Indians and itinerant fur traders who passed through the area prior to actual permanent habitation have been excluded from the study.

[2]The term "present" in this instance and all subsequent ones is taken to be (as will be more fully discussed later) the year 1963.

[3]Lack of information did not allow the writer to determine either the exact locations (sites) of farmhouses or an accurate distribution of farmlands for any year but 1963. However, the general distribution of settled and unsettled land and the most favoured farmsites and their relationships to the physical environment were, through interviews (chiefly with older settlers in the area), determined as accurately as possible for the years prior to 1963.

3) Transportation routes - trails, roads and highways, railways.

4) Artificial drainage facilities.

5) Building materials and fuel.

6) Time sequence of occupance or sale of the land and abandonment.

7) Features constructed to obtain a supply of domestic or livestock water such as wells and dugouts.

8) Other settlement features felt worthy of special consideration.

b) Periods of relative stability in the more important settlement features have been recognized and used as a basis for dividing the development through time into intervals of varying length. The periods are as follows:

1) Pre-Railway Settlement 1878 to 1895.

2) Railways and Townsites 1896 to 1908.

3) Artificial drainage, Soldier Settlement and Greater Production Campaign 1909 to 1921.

4) Depressions and Drought 1922 to 1938.

5) Recovery and Adjustment 1939 to 1963.

Within each period some or all of the settlement features listed under (a) above will be discussed in an order most convenient for the development of the thesis.

THE WEST LAKE AREA

The general setting for the thesis is the West Lake Area of Manitoba. In the following sections the location, extent, present administrative divisions, and main physical features of the area will be described. Following this, reasons will be advanced for the choice of a particular cross section within the area as the central focus of the study.

Location and Extent

As mentioned above, the general setting for the thesis is the West Lake Area of Manitoba. Although it has been defined in various ways,[1] the West Lake Area, in general terms, can be taken to be that part of Manitoba between the Riding Mountain Escarpment, which is part of the Manitoba Escarpment separating the First and Second Prairie Levels, and Lake Manitoba (Figure 1). For the purposes of this study, a boundary was chosen which, it was felt, more closely approximated the area between the Riding Mountain Escarpment and Lake Manitoba than the two definitions of the West Lake Area quoted in footnote (1) below. The western boundary, from Townships 18 to 22, was taken to be the Riding Mountain National Park, and from Townships 15 to 18 to be the western edge of Range 15 (Figure 3). In general, this western boundary, closely approximates the summit of the Riding Mountain Escarpment. The eastern boundary coincides with the western shore of Lake Manitoba. The

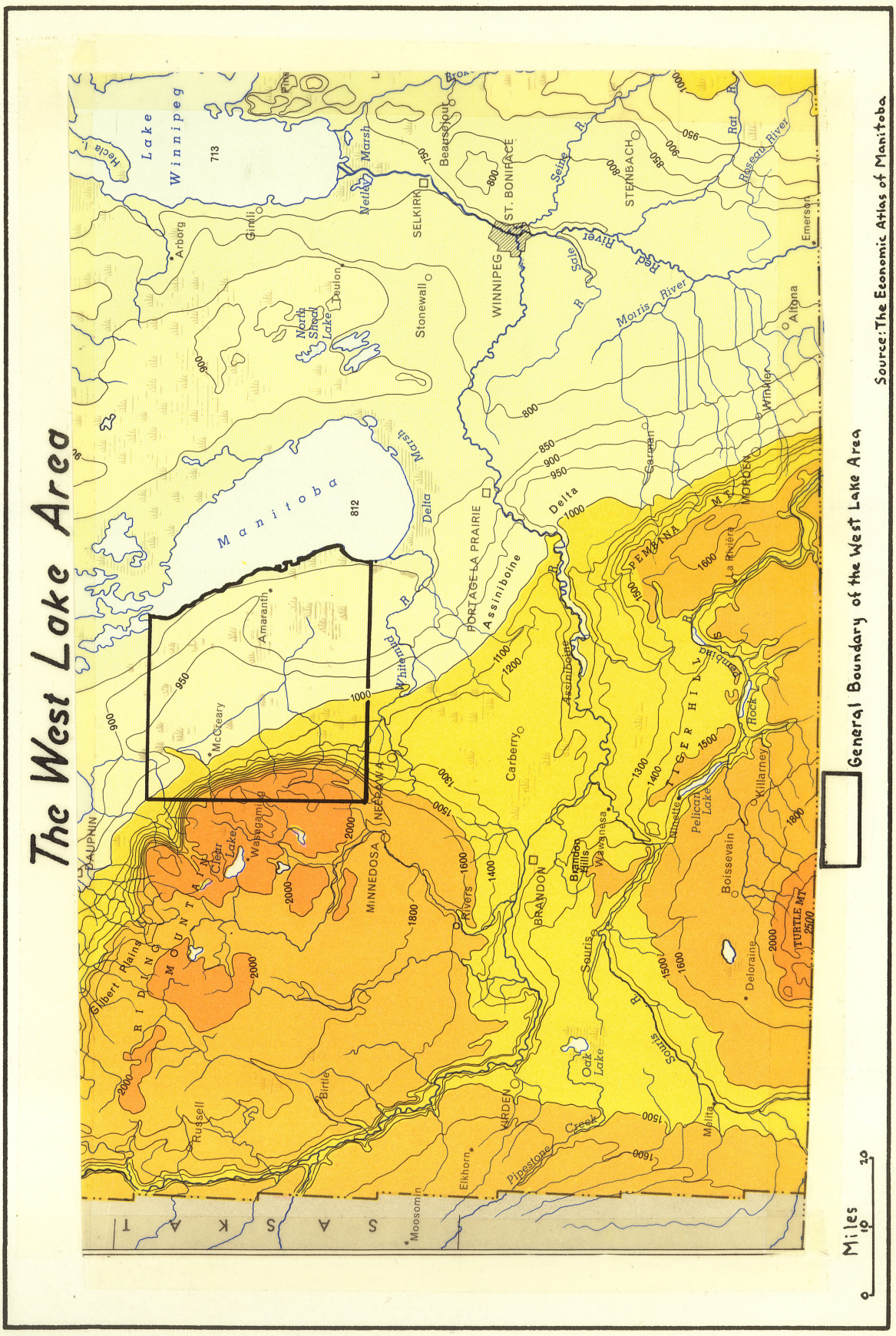
---

[1] J. H. Ellis, The Soils of Manitoba (Winnipeg: Manitoba Economic Survey Board, 1938), p. 58.

W. A. Ehrlich, et al., Report of Reconnaissance Soil Survey of West-Lake Map Sheet Area. Soils Report No. 8 (Manitoba Department of Agriculture and Immigration, 1958).

On p. 58 of the "Soils of Manitoba", in a section entitled "The West Lake Area" it is stated "The extreme western edge of this zone [The West Lake Area] is marked by the highest beach of Lake Agassiz which is between 1,300 feet and 1,400 feet above sea level. From this altitude the land falls eastward to the shore of Lake Manitoba and Lake Winnipegosis, the present remains of Lake Agassiz". Hence, as can be seen from figures 1 and 2, this definition includes all the lowland between Riding Mountain and Lake Manitoba but excludes most of the steep face of the escarpment and the plateau extending westwards. On the other hand, in "Report of Reconnaissance Soil Survey of West-Lake Map Sheet Area" it states in an introductory summary "The Reconnaissance Soil Survey of the West Lake Map Sheet area covers 2,316 square miles in the central portion of Southern Manitoba between Lake Manitoba and the Riding Mountain National Park [Figure 3 shows the Riding Mountain National Park]. The West-Lake map area is divided into two broad physiographic areas by the Manitoba escarpment". Hence, this definition includes, unlike the first one, part of the Riding Mountain and all the escarpment face itself.

Figure 1, page 5



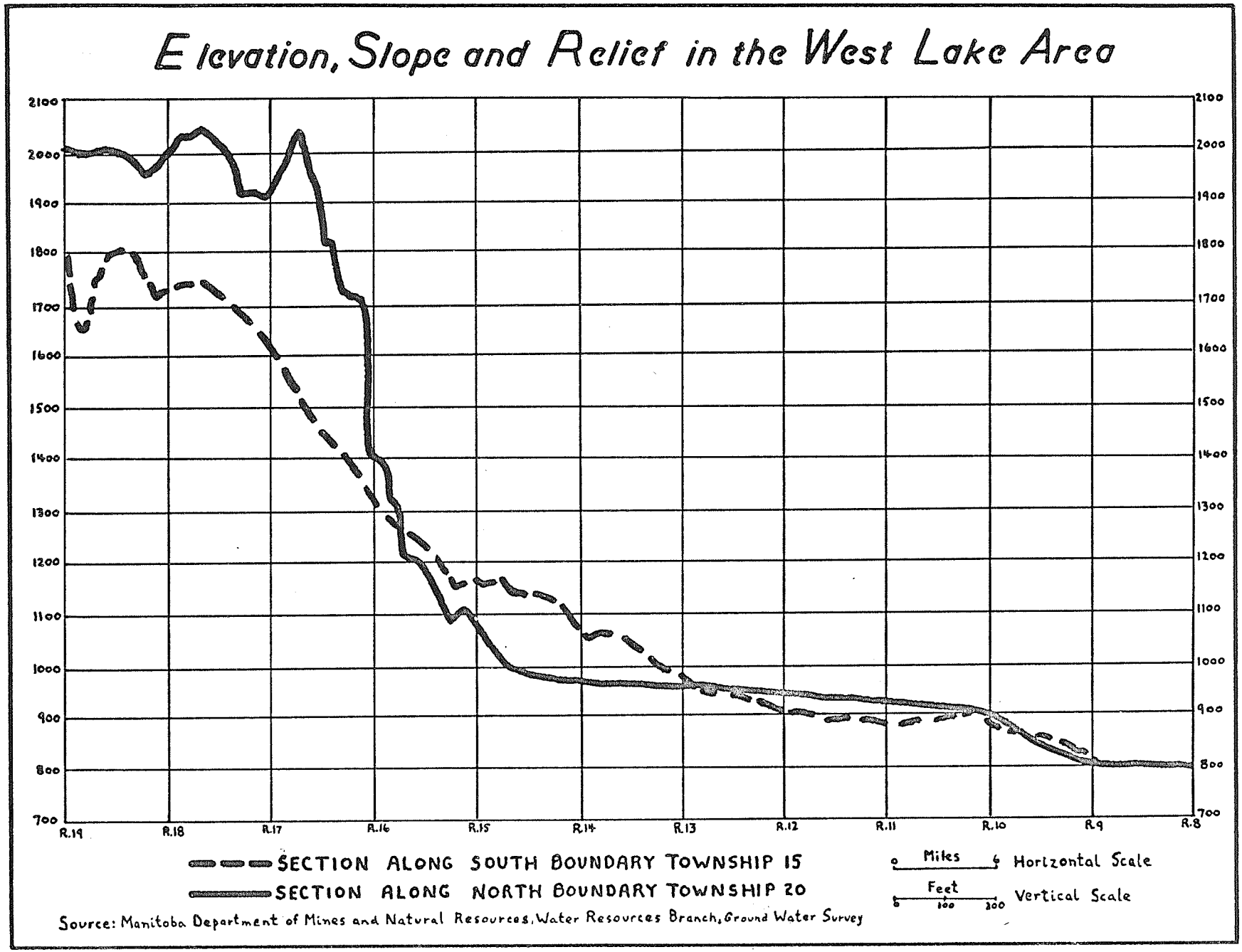
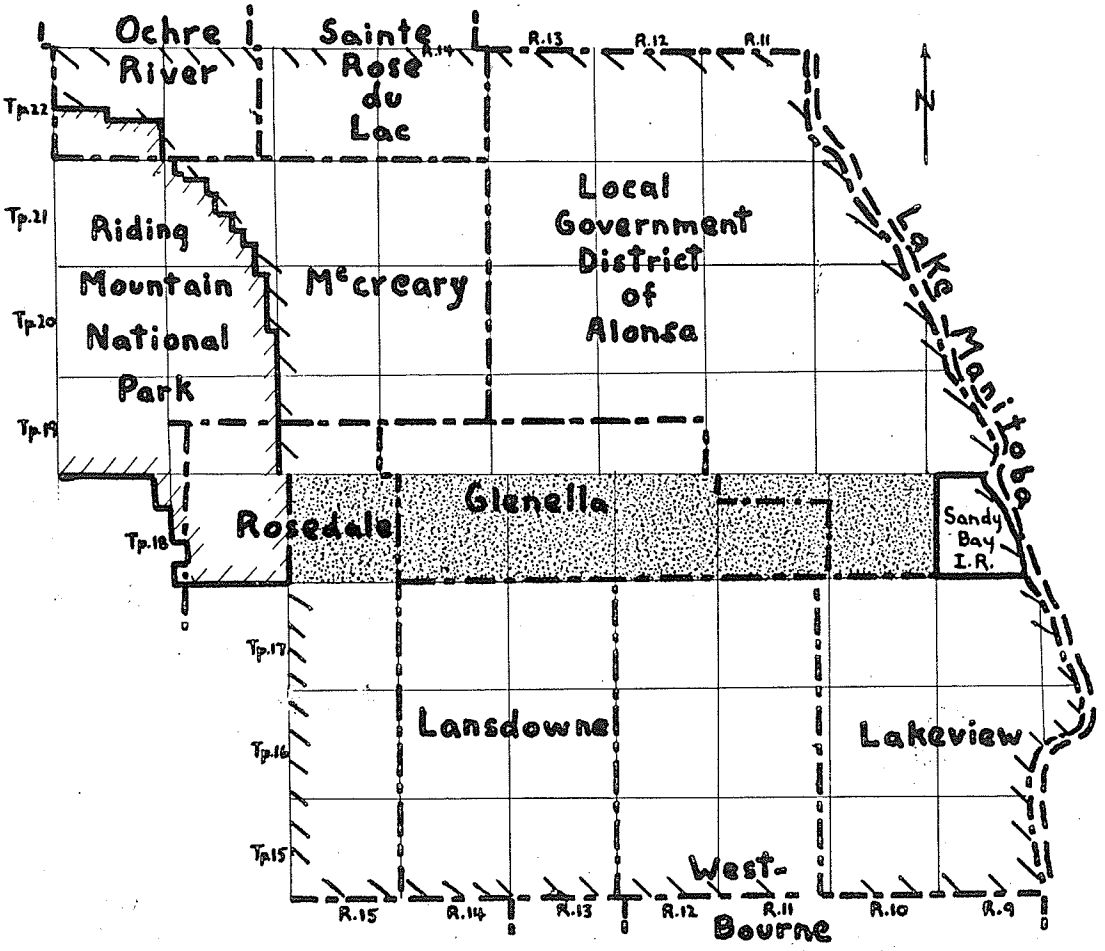


Figure 2, page 6

The West Lake Area
Extent-Administrative Divisions



Source: Manitoba Soils Report No. 8.

southern boundary, Township 15, and the northern boundary, Township 22, closely approximate the north-south extent of the Riding Mountains (Figures 1 and 3).

Present Administrative Divisions

The West Lake Area covers the municipalities of Lakeview, Glenella, McCreary, and portions of the municipalities of Sainte Rose du Lac, Ochre River, Rosedale, Landsdowne and Westbourne. In addition it includes the Sandy Bay Indian Reservation and part of the Local Government District of Alonsa. The cross section chosen for intensive study comprises Township 18, Ranges 10 to 15 inclusive[1] (Figure 3).

Physical Setting

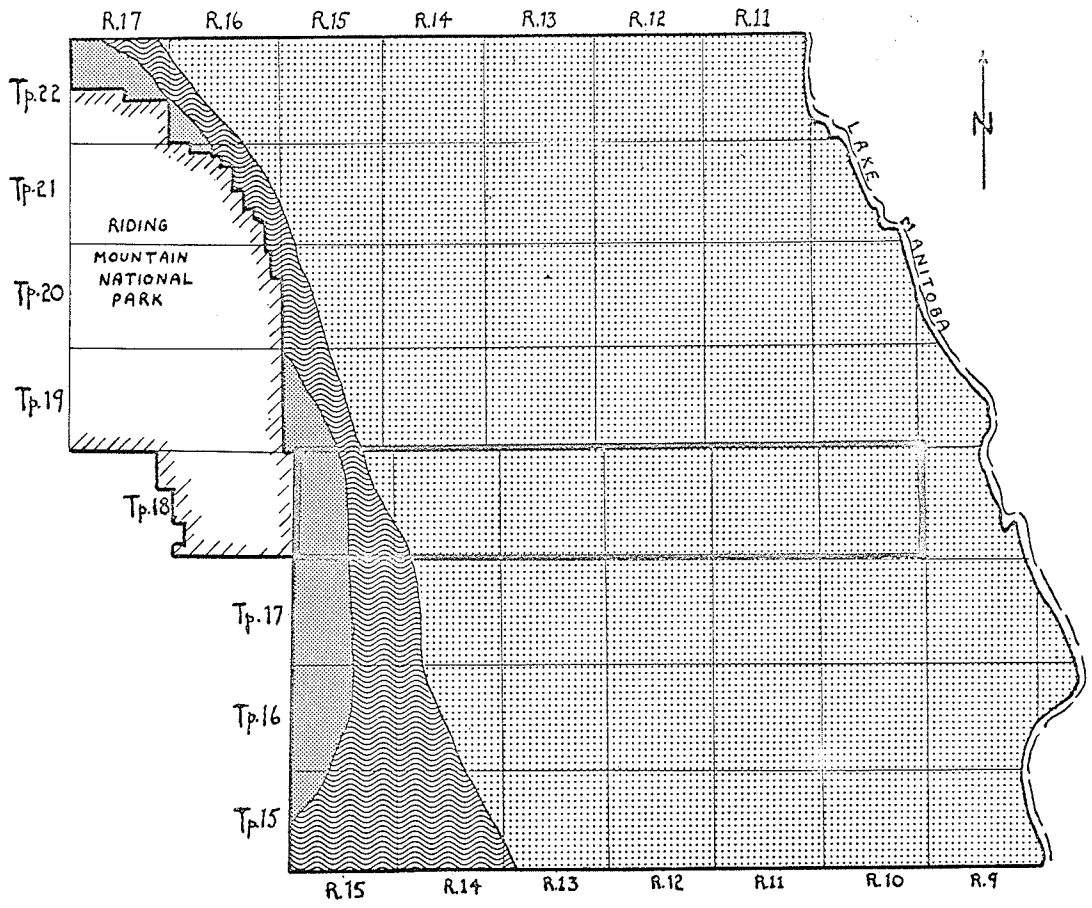
Geology and Physiography

Geology.--Sedimentary bedrocks in the West Lake Area are the result of several periods of deposition in salt water seas followed by intervening uplifts and sub-aerial erosion prior to the Pleistocene Epoch or Ice Age which began about 600,000 years ago. Erosion of these sedimentary beds, which dip gently at approximately 15 degrees to the southwest, has produced a series of northwest-southeast trending formations of varying width (Figure 4). On an east to west traverse in the central part of the area the following beds are encountered: (1) a wide belt of Jurassic and Lower Cretaceous sandstones, limestones, gypsums, and shales, (2) a narrow belt of Lower and Upper Cretaceous shales, (3) the eastern erosional edge of Upper Cretaceous shales which extend westwards into Saskatchewan (Figure 4).

---

[1]The eastern boundary was taken to be Range 10 because it excludes the Sandy Bay Indian Reservation where settlement features developed under a different cultural environment.

THE WEST LAKE AREA GEOLOGY



Lower Cretaceous and Jurassic Limestones, Gypsums and Shales

Upper Cretaceous Shales

Lower Cretaceous Sandstones and Shales

Study Area

Miles
0 6 12

Sources: Ellis, J.H. "The Soils of Manitoba", Manitoba Soils Report No. 8.

Physiography.--The large scale relief features or physiography of the West Lake Area owe their origin chiefly to sub-aerial erosion of sedimentary rocks before the Ice Age. West of the study area the Upper Cretaceous shales (Figure 4) form a plateau or upland (Second Prairie Level) having an elevation[1] of approximately 2,000 feet. In the west central part of the West Lake Area the Riding Mountain Escarpment,[2] which is the eastern erosional edge of these beds, rises in a series of terraces separated by steep escarpments from 1,200 feet to 2,000 feet (Figure 2). From the base of the Riding Mountain Escarpment the Lowland Plain slopes gently eastwards to Lake Manitoba (elevation 814 feet) in a distance of thirty-five to forty miles (Figure 2). For the purposes of this study the Lowland Plain has been divided into two parts, the Upper and the Lower Lowland Plains (See overlay 1 in back pocket). The Upper Lowland Plain is a bench or structural terrace of Upper and Lower Cretaceous shales forming a transition between the Riding Mountain Region and the Lower Lowland Plain.[3] A minor escarpment rising in an east to west direction from

---

[1]All elevations are given in feet above mean sea level.

[2]For the purposes of this study the Manitoba Escarpment will be referred to as the Riding Mountain Escarpment or the Riding Mountain Region.

[3]Warren Upham, The Glacial Lake Agassiz (Washington: Government Printing Office, 1895), p. 422. While doing reconnaissance south of the West Lake Area, Warren Upham, a well known American geologist, described the origin of the same bedrock terrace (in the area he studied the Manitoba Escarpment is called the Pembina Mountains) as follows:

> "Along the course of the Cretaceous terrace, thinly covered with till, which borders the Pembina Mountain for at least 25 miles northward from the international boundary, the upper Campbell shoreline, there having an elevation of 1,045 to 1,050 feet, coincides generally with the low escarpment which forms the east margin of this terrace. A portion of the sculpturing of this escarpment was doubtless done by the waves of the lake; [During the Pleistocene Epoch or Ice Age a large glacial lake called Lake Agassiz covered all of south-central Manitoba] but the main outlines of the terrace as a bench between the Red River Valley and the high Pembina escarpment seem clearly attributable to subaerial erosion before the Ice Age."

ten to forty feet in a distance varying from almost nothing (that is, an almost vertical escarpment) to half a mile separates the two plains over most of the West Lake Area. Since this escarpment formed the western shoreline of Glacial Lake Agassiz during the Campbell[1] stage and was steepened by wave erosion at that time it has been called the Campbell Escarpment. Truncated sedimentary rocks of the Lower Cretaceous and Jurassic Ages form the Lower Lowland Plain which extends from the Campbell Escarpment to Lake Manitoba. All these bedrocks, which give the area its broad general outlines, are overlaid by glacial drift. This glacial drift, in varying thicknesses and forms, provides the small scale relief or topographic features of the area.

Surface Deposits and Topography

During the Ice Age continental ice sheets advanced and retreated four times over the West Lake Area, the last advance being in a southeasterly direction. Glacial drift varying in depth from a few feet to over one hundred feet was deposited over the bedrock of the area. On the Lowland Plain the drift deposited from the underside of the glacier (ground moraine or till) took the form of an almost flat plain, grading in composition from mainly limestone in the east to mainly shale in the west. The bedrock of the Riding Mountain Region was covered by ground moraine in areas where the glacier advanced and retreated uniformly, but in areas where the glacier remained for long periods of time in one position, ice marginal hummocky deposits of till called terminal moraine were formed. During the last glacial recession meltwaters were trapped between the

---

[1]During the recession of Glacial Lake Agassiz it remained for relatively long periods of time at one level. These periods or stages of quiescence have been given names, one of which is the Campbell stage referred to above.

southern edge of the ice sheet and higher land to the west, south, and east to form a large lake known as Glacial Lake Agassiz. In the West Lake Area the Riding Mountain Escarpment formed the western shoreline of the lake when it was at its greatest extent and depth. The glacial waters receded spasmodically, sometimes maintaining stationary levels for long periods, so that the entire lowland area has been more or less affected by the action of the waters of this lake. It was during the stationary periods that shoreline features such as beaches, bars, and wave-cut terraces, notably the Campbell Escarpment dividing the Lower from the Upper Lowland Plain (See footnote 1, p. 11), were formed. At other times the lake waters retreated more rapidly, modifying the till deposits which formed the bed of the lake. In the southern and western part of the area rivers flowing from the west deposited sands, silts and clays in the form of lake bed and delta deposits over the till.

Beach Ridges (Figures 5 and 6).--With the exception of the Campbell Escarpment, the gentle slopes of the Lowland Plain favoured the development of beach ridges and bars rather than wave-cut terraces. The beach ridges, running continuously for many miles in a northwest-southeast direction across the general direction of landfall to the east, are the most prominent topographic features in the area. They have been described as follows:

> The beach ridges of Lake Agassiz commonly rise 3 to 10 feet above the adjoining land on the side that was away from the lake, and 10 to 20 feet above the adjoining land on the side where the lake lay. In breadth these ridges vary from 10 to 25 or 30 rods.[1]

Across most of the beach ridges there is a textural change due to water sorting. The western margin and crest are usually gravelly and cobbly,

---

[1]Upham, The Glacial . . ., p. 26.

grading eastwards into coarse sand and gravel in the middle portion, to fine sand on the eastern margin. The highest beach is found at an elevation of approximately 1,250 feet, near the base of the Riding Mountain Escarpment. A series of five or six closely spaced ridges composed chiefly of sand were formed at the base of the Campbell Escarpment. Further east prominent ridges were formed in Range 13 and in Ranges 10 and 9.[1]

Modified Till.--Wave modified till forms the surface deposits over extensive areas in the north and east of the West Lake Area (Figure 6). The modified till is characterized by a northwest-southeast trending ridge and swale topography (that is, low ridges interspersed with swales or imperfectly drained soils). The low ridges are invariably sandy, gravelly, or shingly in their crests, and in many cases are mixed with stone in the upper eighteen inches to two feet (Figure 5). The land between the ridges varies considerably. In some areas there is an abundance of stones, in others, stones are almost completely absent.

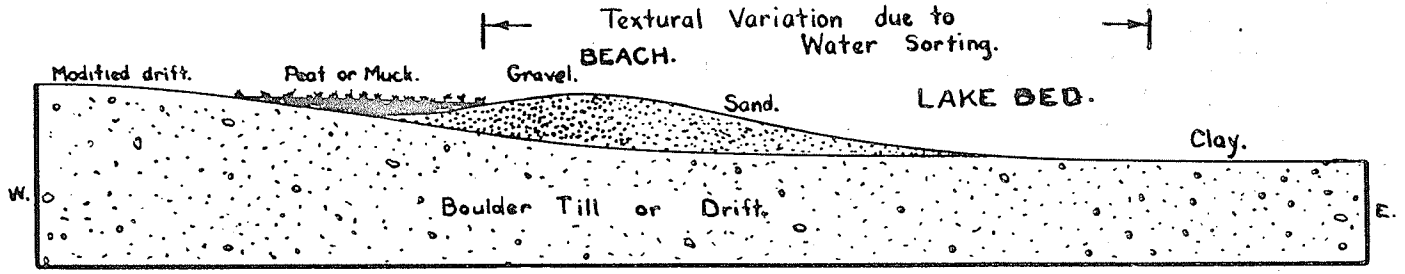
Unmodified Till.--With the exception of a small strip along its eastern margin, the Riding Mountain Escarpment was not subjected to the action of lake waters. Consequently the boulder till surface deposits, in the form of unmodified till and moraine, are usually free from the surface stoniness characterizing the modified till of the Lowland Plain. Over most of the escarpment the till has assumed the general form of the underlying bedrock (that is, gently sloping terraces separated by steeply

---

[1]The most prominent beach ridges in the West Lake Area have been given names. The two largest of the series of five or six at the base of the Campbell Escarpment are called the Arden Ridge and the McCauleyville Ridge. Another well developed ridge running through Ranges 9 and 10 is called the Langruth Ridge.

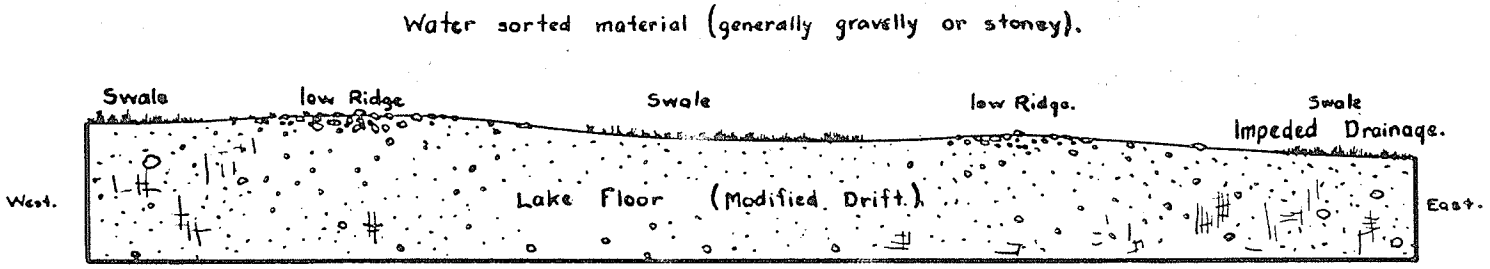
TEXTURAL VARIATION IN THE WEST-LAKE REGION OF MANITOBA.

PARENT MATERIAL OF SOILS SHOWING MODIFICATION BY LAKE ACTION.



GENERALIZED CROSS-SECTION THROUGH A GRAVEL BEACH.

A.



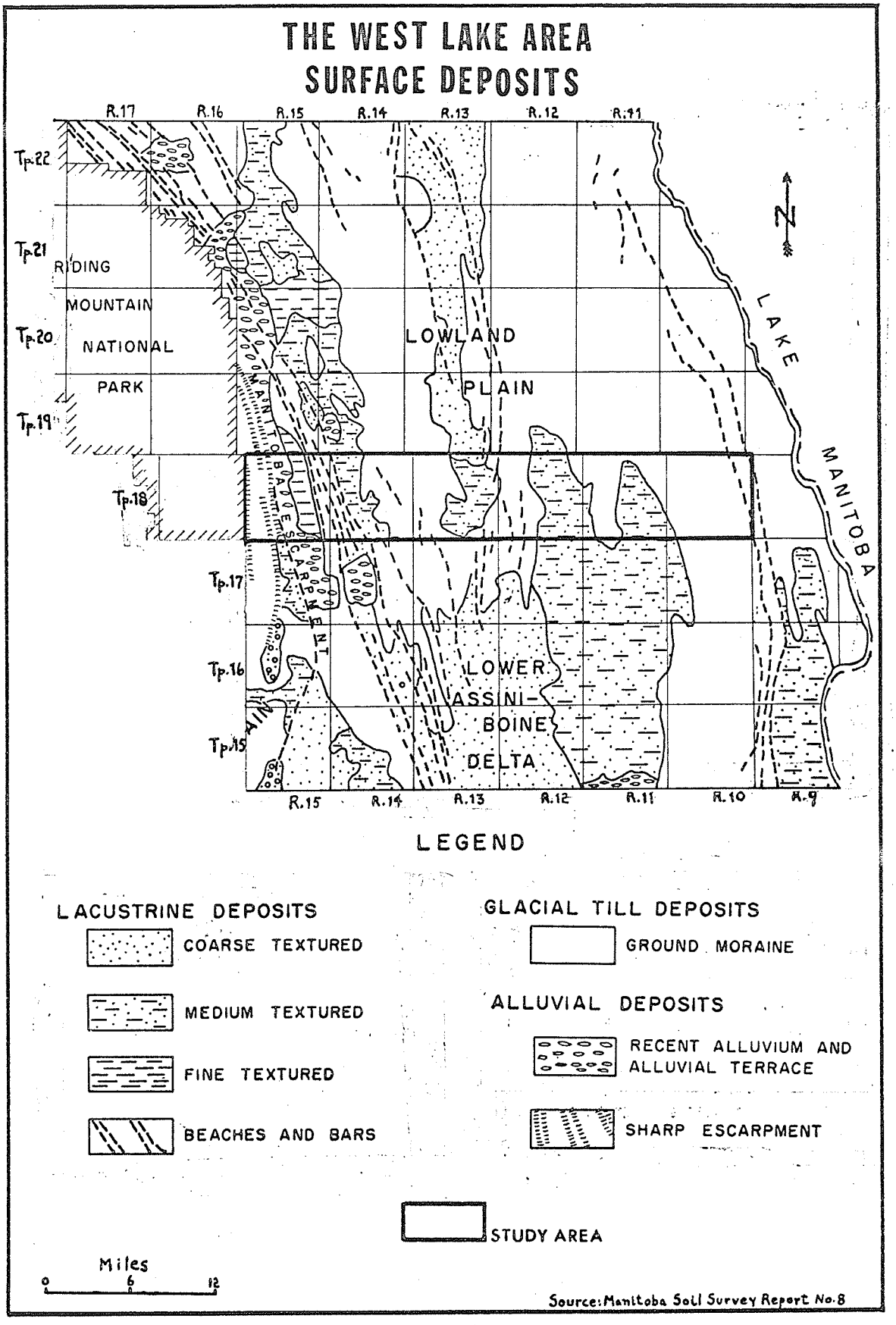
GENERALIZED CROSS-SECTION SHOWING MICRO RELIEF OF THE LAKE BED BETWEEN THE BEACHES.

B.

SOURCE: J.H. ELLIS "THE SOILS OF MANITOBA"

Figure 5, page 14

Figure 6, page 15



sloping escarpments). Owing to a different manner of deposition the areas covered by moraine are more hummocky or rolling than areas covered by ground moraine.

Lacustrine Deposits.--Flat to gently sloping lacustrine deposits, grading in texture and composition from coarse sands and gravels to silts and clays, occur throughout the West Lake Area. The most extensive deposits are found in the south, where the Lower Assiniboine Delta extends northwards, and in the west where rivers flowing off the Riding Mountain Escarpment deposited material on the Upper Lowland Plain. Less extensive areas are found in the north central Lower Lowland Plain and along the southwest margin of Lake Manitoba (Figure 6).

Alluvial Deposits.--Beginning while Glacial Lake Agassiz was still extant and continuing to the present time, streams have been cutting into the shales of the Riding Mountain Escarpment and depositing the eroded material on the Upper Lowland Plain. Where the sudden break in slope occurs at the base of the escarpment, alluvial fans, fifteen to twenty feet high and composed chiefly of coarse shale, have been formed adjacent to the larger streams. Finer silts and clays have been deposited in the form of flat lying sediments on the peripheries of the fans (Figure 6).

Peat and Muck.--Peat and muck surface deposits of varying thicknesses are found in depressional sites throughout the Lowland Plain. The most common of these are in the form of linear swamps on the western margins of beach ridges and swales on the modified till plains (Figure 5). The largest single occurrence is found west of the Kinosota Ridge[1] in a

---

[1]A low, broad bedrock ridge, covered by till and varying in width from one-half to three-quarters of a mile, runs in a northwest-southeast

large depression called the Big Grass Marsh (Figure 7).

Surface Drainage

Geological youth,[1] gentle slopes, and the presence of beach ridges and till plain ridges running across the general direction of landfall to the east have led to poorly developed drainage on most parts of the Lowland Plain. However, heavy rainfall[2] and steep slopes have led to the formation of many streams along the Riding Mountain Escarpment (Figures 2 and 7). Few of these streams are able to maintain their channels farther ~~than~~ the base of the Campbell Escarpment, (that is, the eastern margin of the Upper Lowland Plain), where a series of beach ridges impede drainage. Farther eastward streams are prevented from flowing into Lake Manitoba by the Kinosota Ridge. The only natural drainage channel of any consequence on the Lower Lowland Plain is the Big Grass River.[3] This river arises in a depressional area called the West Marsh in Township 18, Range 13 and flows in a southeasterly direction into the Big Grass Marsh. From the West Marsh to the middle of Township 18, Range 12, the land slopes sufficiently for the river to maintain a clearly defined channel. From here to the Big Grass Marsh the land slopes very gently. In this section

---

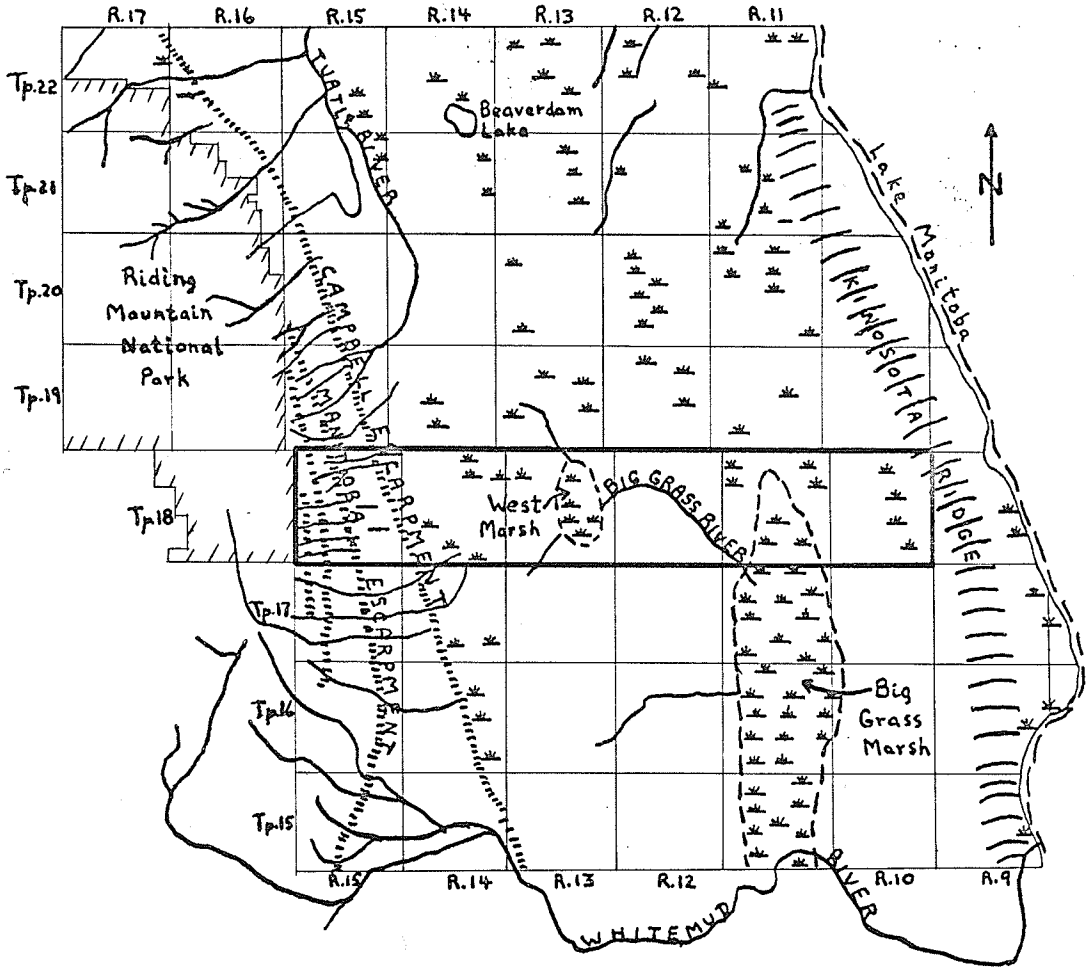
direction through Ranges 9 and 10 (Figure 7). It is called the Kinosota Ridge by inhabitants of the area. The Langruth beach ridge, which runs along this bedrock ridge, formed the site of an early trail (to be discussed later) leading to a fur trading post operated by the Hudson's Bay Company in the northeastern corner of the West Lake Area. This trading post has been variously called Manitoba House and Kinosota.

[1]From the Ice Age to the present, the Lowland Plain has passed through a succession of stages from lake bottom, to pond, to swamp, to meadow and improved drainage. Streams have not had time to develop deep channels or a system of tributaries.

[2]Ehrlich et al., Soils Report No. 8, p. 27.

[3]The Turtle River and the Whitemud River originate on the Lowland Plain but they do not remain in the West Lake Area throughout their entire courses as does the Big Grass River.

The West Lake Area
Surface Drainage



Sources: Manitoba Soils Report No. 8, Topographic Sheets Dominion Lands Survey Maps 1872-1873.

the river meanders tortuously and often changes its course. In wet years, the Big Grass Marsh, which is a semi cut-off lake, expands and spills its excess into the Whitemud River to the south. The Whitemud River flows in a southeasterly direction around the southernmost extension of the Kinosota Ridge, from whence it flows northward into Lake Manitoba.

Subsurface Drainage

Along the eastern slopes of the Riding Mountain, where surface runoff is rapid, the main source of subsurface water is seepage from the land to the west. At sudden breaks in slope at the base of escarpments, this water, which is under great hydrostatic pressure, often moves upwards, causing wet subsoil conditions on the terraces. On alluvial fans at the base of the Riding Mountain Escarpment surface water percolates rapidly downwards through the coarse shale. This water augments water seeping downslope from the west and provides a constant supply of subsurface water at depths of ten to twenty feet below the surface of the fans. On the peripheries of the fans semi-impervious clays and silts often impede the downward movement of water. On the eastern margin of the Upper Lowland Plain and in many parts of the Lower Lowland Plain a compact layer of till (hardpan) close to the surface causes soil flooding. Good internal drainage is found on the deeper medium to coarse textured lacustrine deposits and on the beach ridges where "water passes freely down from the surface and laterally down the slope from marshy ground usually found behind the ridge".[1]

---

[1] W. A. Johnston, Surface Deposits and Ground-water Supply of Winnipeg Map-area, Manitoba, Canada Department of Mines Memoir 174 (Ottawa: The King's Printer, 1934), p. 9.

Vegetation[1]

The West Lake Area lies within the Boreal Forest Region of Canada. Three sections of this Region occur within the West Lake Area and are designated: (1) Mixedwood Section, (2) Manitoba Lowlands Section, (3) Aspen-Oak Section (Figure 8).

Mixedwood Section.--The Mixedwood Section occurs in the Riding Mountain Region and is characterized by a mixture of aspen, balsam-poplar, white spruce and white birch. Large areas of well developed aspen and balsam-poplar associations occur towards the contact with the Aspen-Oak Section. Some sites are covered almost entirely by white spruce. The undergrowth is usually thick, being hazel, wood rose, and cranberry bush.

Manitoba Lowlands Section.--In the Manitoba Lowlands Section the prevailing forest cover is jack pine on the well drained sandy ridges, tamarack on the poorly drained sites, and aspen and balsam-poplar associations in a pure state or mixed with white spruce on imperfectly to poorly drained sites.

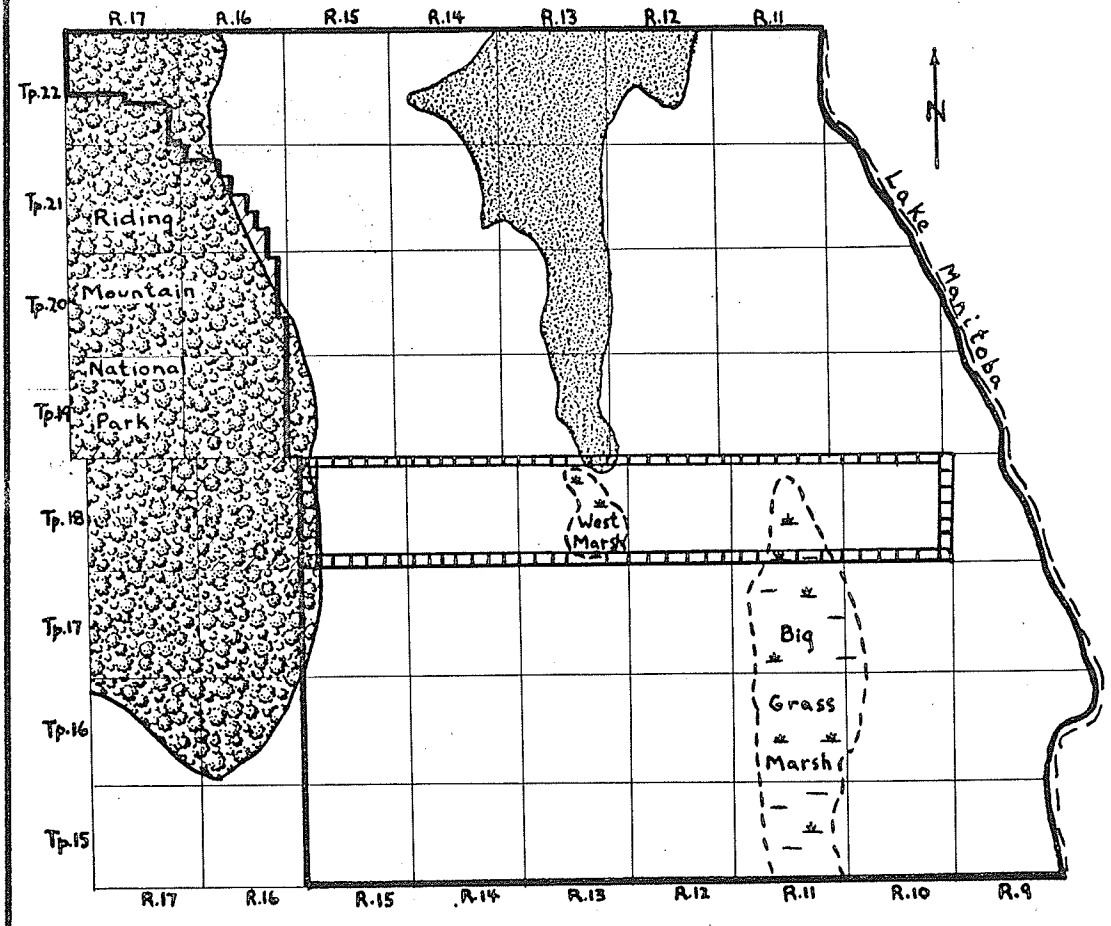
Aspen-Oak Section.--The Aspen-Oak Section forms a broad transition zone between the Boreal Forest and the Grassland Regions and has characteristics of both. Aspen is the prevalent species, ranging from small groves invading the grassland, to continuous stands in association with balsam-poplar approaching the forest region. Bur oak is found in a stunted form on the dry gravelly ridges. Elm, green ash, Manitoba maple and basswood are found along the larger streams. Small poorly drained areas and the Big Grass Marsh are covered by meadow grasses, reeds and sedges.

---

[1]Ehrlich et al., Soils Report No. 8, p. 27.

The West Lake Area

Vegetation



Sources: Dominion Lands Survey 1872-1877, Manitoba Soils Report No. 8

Climate[1]

The West Lake Area is sub-humid with a yearly mean precipitation of 17.4 inches. Approximately eighty percent of the precipitation falls as rain during the period April to October and about twenty percent as snow during the five winter months November to March. June is the wettest month with an average precipitation of 3.11 inches and December is the driest with an average precipitation of 0.62 inches. According to Ehrlich et al. some important micro-climatic variations occur within the West Lake Area but there is very little recorded meteorological data to give numerical expression of these variations. Short term records indicate the average temperatures in the Riding Mountain Region are approximately 2^{o} F. lower than those on the Lowland Plain. This temperature difference reflects the effect of elevation and is indicative of a corresponding difference in the length of growing season between the Lowland and Upland Regions. Field observations also indicate an average of two inches more rainfall on the eastern slopes of Riding Mountain than on the Lowland Plain. The forest vegetation of the Riding Mountain Region reflects its more humid climate.

Soils

The main factors contributing to the development of soils in their natural state are (1) parent material, (2) relief, (3) drainage, (4) native vegetation and climate, (5) geological age. As the soils of the West Lake Area are youthful geologically - they have formed mainly on glacial drift - similar soils tend to be developed on the same kinds of parent materials.[2] For this reason a geological classification based on parent materials

---

[1] Ibid., pp. 24 - 26. Long term meteorological records of temperature and precipitation were not available for the West Lake Area itself but records for Minnedosa, a town immediately to the southwest (Figure 1), are given in Appendix I.

[2] W. A. Johnston, Surface Deposits . . ., p. 96.

(that is, surface deposits) have been used to divide the soils of the area into five main groups (Figure 6) as follows:

1) Medium to fine textured lacustrine and alluvial soils.
2) Coarse textured lacustrine and alluvial soils.
3) Modified till soils.
4) Unmodified till soils.
5) Swamp soils.

Medium to Fine Textured Lacustrine and Alluvial Soils.--Soils of this group are black earth soils[1] developed under aspen-oak vegetation. Roots of prairie grasses, and in places vegetation buried under silt deposited by flood waters, formed an abundant source of organic matter that was readily converted to humus, giving these soils a medium to high natural fertility and organic reserve. Stones occur in the upper soil horizons where the deposits are thin and underlain by modified till. The deepest and most fertile soils of this group have developed on fine textured deposits in the western part of the area, principally on the Upper Lowland Plain (Compare figure 6 and overlay 1).

Coarse Textured Lacustrine and Alluvial Soils.--Coarse textured lacustrine and alluvial soils have developed on alluvial fans, beach ridges, and sandy or gravelly lake bed deposits. Soils of this group, in Range 13, Townships 19 to 22 inclusive, developed under woodland of the Manitoba Lowlands Section and are classified as imperfectly drained grey-wooded soils. In general, these soils have less humus and are more strongly leached than other soils in this group, all of which developed under vegetation of the Aspen-Oak Section. The soils occurring on sandy or gravelly lake bed deposits are stony and poorly drained where they have developed on thin deposits over modified till. Because of the ridged or rounded surface topography and the porous nature of the alluvial fans and

---

[1] J. H. Ellis, The Soils of Manitoba, figure 13.

beach ridges, the natural drainage, especially on the upper parts, is usually excessive and the soil is easily affected by drought. The group as a whole suffers from wind erosion due to a single grained soil structure.

Modified Till Soils.--The soils developed on modified till plain surface deposits vary considerably in their suitability for agricultural use. The best soils of this type are found in areas where the till is of varied bedrock origin (principally granite, limestone and shale) and has not been severely modified by wave action. On these soils the ridge and swale topography (See p. 13) is usually not developed to the extent where surface drainage is impeded. Surface stones are the main drawback to cultivation over extensive areas but pockets of excellent agricultural soil occur where a sandy layer mantles the stones. Soils developed from till of mixed rock origin with little wave modification are found chiefly on the Upper Lowland Plain (on figure 6, the Upper Lowland Plain is that area between the Manitoba Escarpment and the first beach ridge east of it). Soils formed principally from limestone drift but having a sandy surface mantle covering the stones are found in small pockets on the Lower Lowland Plain, one of the largest ones being in Township 18, Range 13[1] of the cross section chosen for intensive study. The poorest soils of this group are found in the eastern and northeastern parts of the West Lake Area (Figure 6) where severe wave modification has caused extreme stoniness and a water impeding ridge and swale topography. They are thin, have a steeply

---

[1]Personal interviews with Dr. W. A. Ehrlich, Soils Department, University of Manitoba and Mr. E. Poyser, Soils and Crops Branch, Manitoba Department of Agriculture. Both these gentlemen gained an intimate knowledge of the soils of the West Lake Area while preparing the soils report first referred to in footnote 1, p. 4.

undulating ridge and swale topography which impedes surface drainage, suffer from severe stoniness in the upper soil horizons, and have a porous gravel subsurface layer which hinders the upward movement of soil moisture.

Regardless of the degree of wave modification, till plain soils on the Lower Lowland Plain are characterized by a high lime carbonate content[1] (over 40 percent) which denies plants the variety of minerals necessary for good growth and may cause physiological drought.[2] In addition, extensive areas are underlain, at depths of two to four feet, by a layer of hardpan (See p. 19) which impedes subsurface drainage, thus leading to flooding of the overlying soil in wet years. On the Upper Lowland Plain, where the till is of mixed limestone, shale, and granitic rock origin, the soils provide an adequate supply of minerals for good plant growth and do not suffer seriously from physiological drought.

Unmodified Till Soils.--The small area of unmodified till soils within the West Lake Area developed in the Riding Mountain Region under vegetation of the Mixedwood Section. As a group they are low in humus and organic reserve. The supply of minerals available for plant growth varies considerably according to the composition of the drift deposits. Soils formed on till of mixed limestone, shale, and granitic rock origin have an adequate supply of minerals; soils developed on till of high shale content do not. Steeply undulating to rolling topography makes these soils

---

[1]Ehrlich et al., Soils Report No. 8, p. 77. These soils are commonly referred to as Rendizina soils.

[2]Personal interview with Professor J. Ellis, May 10, 1963. Professor Ellis, who is now retired from the Soils Department at the University of Manitoba, has done fieldwork on the soils of the study area for the Manitoba Soils Survey.

susceptible to surface washing when cultivated.

Swamp Soils.--Swamp soils occur in pockets throughout the Lowland Plain. They consist of organic matter (peat) of over one foot in depth over mineral deposits. They have a smooth topography and usually occupy depressional areas. These areas are very poorly drained and the peat is saturated with water for most of the spring and summer.

Salinity.--Periodic flooding of many of the soils on the Lower Lowland Plain, regardless of the parent material from which they were derived, has led to a concentration of soluble salts in the upper soil horizons. Where this concentration is great the soils are said to suffer from salinity, a condition which inhibits or prevents plant growth. The most extensive areas suffering from salinity are: (1) along the base of the Campbell Escarpment, where a series of beach ridges impedes drainage, (2) on the periphery of the Big Grass Marsh where expansion of the basin in wet years floods the surrounding land and (3) in the West Marsh Area.

Choice of the Cross Section

It is clear from the preceding discussion that the physical fabric of the West Lake Area trends in a northwest to southeast direction. Physiographic and geological boundaries and topographic features such as terraces, beach ridges, and till plain ridges run in a northwest-southeast direction and the most significant changes in soils in vegetation, climate and drainage are encountered in east-west traverses. Consequently it was felt that an east-west cross section would be representative of the entire area. Township 18, Ranges 10 to 15 inclusive, was chosen in preference to other east-west cross sections because it included a more representative variety of physical features and, unlike the others, contained enough towns

to form a basis for generalizations with regard to the siting of towns in the West Lake Area (other cross sections have either one town or lack them completely and hence no generalization could be made). Although time did not permit a detailed examination of the degree to which the relationships between settlement features and the physical environment in the study area were applicable to other parts of the West Lake Area it was felt that:

a) Some of the relationships established for the study area appear so conclusive as to warrant the assumption that, in all probability, they would apply to the entire West Lake Area.

b) In the course of gathering material for the study area relationships applying to other parts of the West Lake Area (which are mentioned from time to time throughout the thesis) appeared to indicate that the study area was a representative one.

SOURCES OF DATA

During the course of eight weeks fieldwork in the spring and autumn of 1963 every farmer and numerous townspeople in the study area were interviewed. Information gained from these interviews formed the main source for the sections dealing with present and past settlement. Additional data on settlement was obtained from sessional papers, newspapers, and government publications.

Information on the physical environment of the area was obtained from surveyors' reports and maps, various soils reports, including the Manitoba Soil Survey, personal observations and interviews as well as correspondence with agricultural representatives and soil scientists familiar with the area.

CHAPTER II

PRE-RAILWAY SETTLEMENT 1878 TO 1895

Surveys Prior to Settlement

In 1857, Captain John Palliser was sent to Western Canada by the British Government to assess the potentiality of the land for supporting settlement and a transcontinental railway. He classified the soil west of the Red River Settlement into two types, the "willow prairie", which had originally been forest but had been burnt by prairie fires, and the "true prairie" (that is, soils formed under grassland vegetation) to the south of the "willow prairie". In Palliser's view the northern "fertile belt" or "willow prairie" of which the West Lake Area is a part, possessed natural qualities for agricultural settlement. There was a good supply of rich pasture and natural hay to provide for cattle throughout the year. Sufficient areas had been cleared by fires that the settler might begin to cultivate his lands immediately. There was ample timber for the construction of buildings and wood for fuel. From Palliser's findings and similar reports by two Canadian surveyors, Henry Y. Hind and S. E. Dawson:

> It was anticipated that settlement would avoid the "true prairie" region and avail itself of communication to the "willow prairie" or as it came to be called the "fertile belt" by river and lake. The "true prairie" partly on account of its soil, but also because it was timberless, would not be favourable to colonization.[1]

---

[1]Chester Martin, "Dominion Lands" Policy, ed. W. A. Mackintosh and W. L. G. Joerg (9 vols.; Canadian Frontiers of Settlement; Toronto: The Macmillan Company of Canada Limited, 1938), II Part II, p. 421.

Hence, the prevailing feeling of the time was that the mixture of prairie and forest vegetation characterizing the West Lake Area would be well suited for agricultural settlement.

However, the West Lake Area was not settled until after the Hudson's Bay Company relinquished control over Rupert's Land[1] to the Government of Canada in 1869. Thereafter, the area was divided into the Province of Manitoba and the Northwest Territories in 1870.[2] In order to prevent the loss of Western Canada to the United States, the Dominion Government administered the land policies of these two areas. Rapid settlement was encouraged by the passing of the Land Act[3] in 1872 and the proposal to build a transcontinental railway by 1885. In 1872 the Dominion Lands Survey was undertaken to assess the suitability of the lands of Western Canada for settlement and to survey the area into townships, ranges, and sections.

Survey System.--The basic unit adopted was the six mile square township running north-south and east-west. Each township was divided into thirty-six sections of 640 acres and each section was divided into quarter sections of 160 acres. Sections eleven and twenty-nine were set aside as School Lands to be administered by the Provincial Government. Three quarters of section twenty-six was granted to the Hudson's Bay Company.[4] The remaining odd numbered sections were reserved for special purposes; the remaining even numbered sections were opened for homestead.[5] Road allowances were reserved along each section line to

---

[1]Rupert's Land, which was under the jurisdiction of the Hudson's Bay Company before 1869, included the West Lake Area.

[2]From 1870 until 1886 the study area was part of the Northwest Territories. In 1886 the boundaries of Manitoba were extended to include the entire West Lake Area.

[3]The Land Act made provision for homestead entries upon quarter sections of 160 acres, with a fee of ten dollars and residence requirements of three years before patent.

[4]In every fifth township the Hudson's Bay Company received the whole of section twenty-six.

[5]Until 1880, all lands, with the exception of School Lands and Hudson's Bay Lands, were open for homestead. In 1880, however, all the odd numbered sections not already granted or homesteaded, were reserved by the Dominion Government for special purposes. Between 1880 and 1895 these reserved lands were closed to settlement in the thesis area.

facilitate ingress and egress for the settlers.

Survey of the Study Area.--Township 18, Ranges 10 to 15 were surveyed and assessed for settlement by government surveyors in 1872 and 1873. Their maps (Figure 9) and reports provide a description of the environment prior to organized settlement as well as an insight into the requirements of potential settlers at that time. The reports are considered to be of such importance that they are herewith quoted in their entirety:

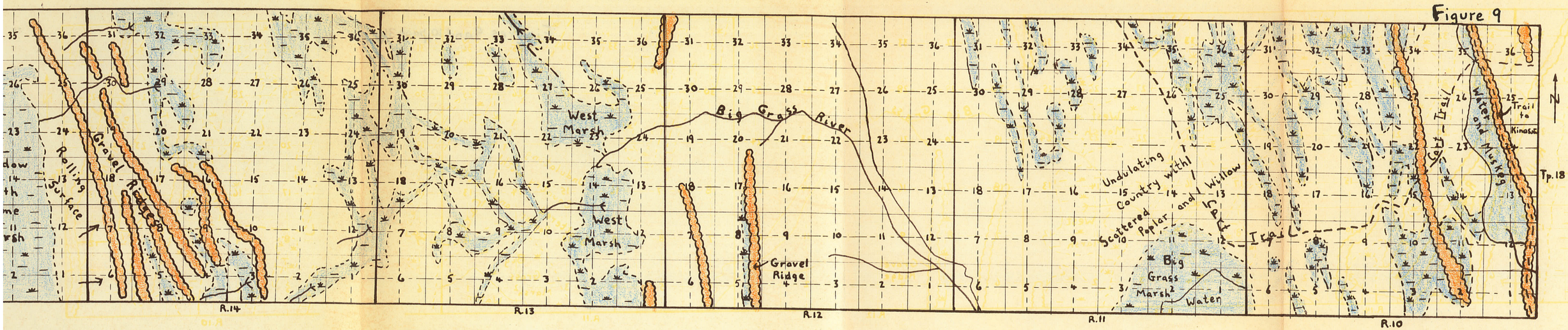
> (Township 18 Range 15) That is to say: that the Eastern Sections of this Township are low, and wet, but will by drainage [be] fit for cultivation, at least it would make magnificent pasture lands. There are several fine running streams. This portion is intersected with dense matted clumps of Willow and Alder Bushes, and at intervals with groves of Spruce and Balsam, also [a] few poplar trees.
>
> The South-Eastern sections are likewise low and inclined to be wet but can easily be drained and would doubtless turn out to be fine agricultural soil - the timber is composed of poplar and ash with high thick underbrush - The two western tiers of sections is a rolling surface broken into ravines - and covered with a splendid growth of poplar, Maple, oak, ash and Birch -
>
> The Ravines are very deep and at the bottom run very rapid and clear streams. This part of the Township ascends towards the West in plateaus forming a part of the Riding Mountain -
>
> There is no indication of metal neither of coal - The soil is not suitable for agricultural purposes as it is only of a depth of 3 or 4 inches with a subsoil of shale and gravel -
>
> In concluding I may say that with drainage the greater part of this may become agricultural, but the rest is only valuable for the timber which is very fine indeed, and with the good road running south might easily be transported to the settlements.
>
> (Township 18 Range 14) The Soil in township Eighteen range Fourteen West is principally light sandy loam. It is all second class land.[1] Nearly one fourth of this township is marsh or hay land. The land is low and level excepting a few gravel ridges in the west half of the township. About one half of it will be flooded in the spring as the waters of several streams, from the Riding Mountain, pass through it. A large portion of that colored to represent marshy land produces a rank growth of Hay. With the exception of sections 6, 7, & 18 the timber has been all destroyed by fire.
>
> (Township 18 Range 13) Township Eighteen range Thirteen West contains very little good farming land. The soil with the exception of the Marshy land is principally light sandy loam

---

[1] On the basis of its suitability for agricultural settlement, each quarter section was classified numerically. The classes were numbered from one to four, with the lowest number being the most highly rated land.

DOMINION LANDS SURVEY OF THE STUDY AREA 1872-1873

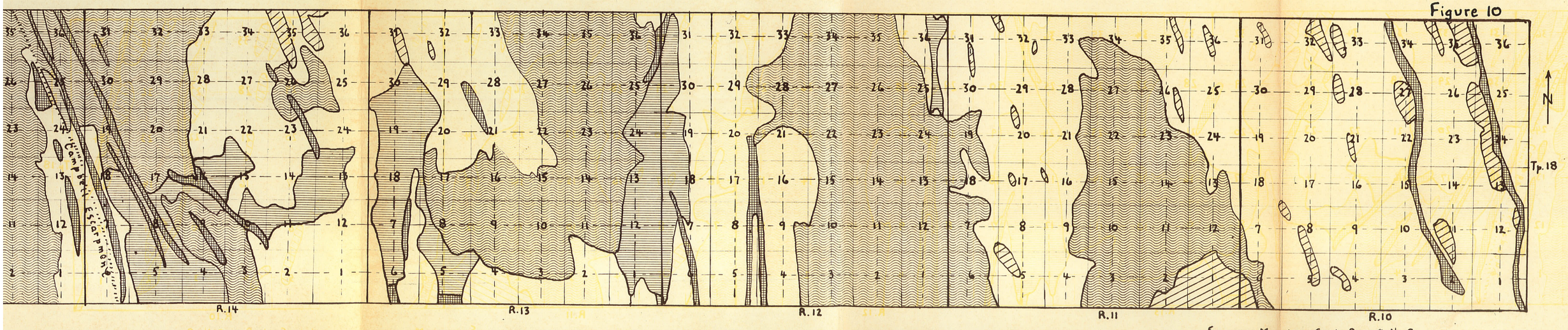
Figure 9



Source: Maps and Reports of Dominion Lands Survey 1872-1873.

SURFACE DEPOSITS OF THE STUDY AREA

Figure 10



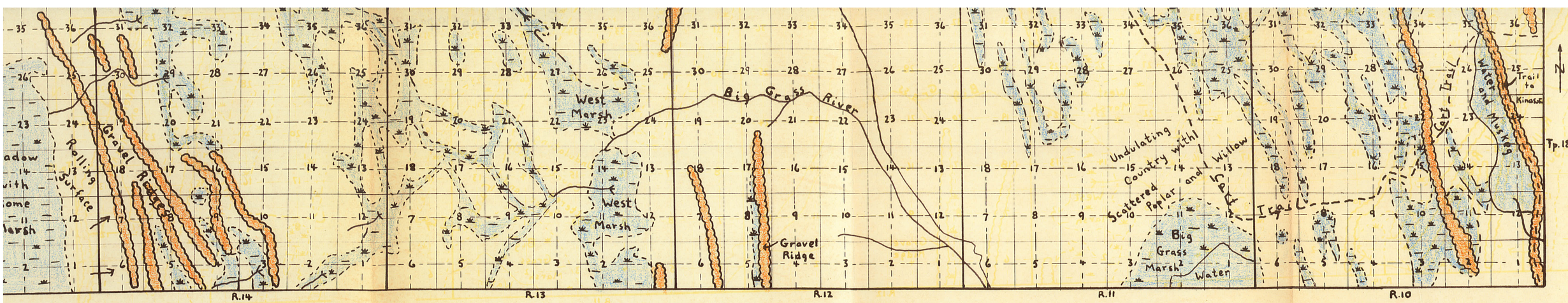
Sources: Manitoba Soils Report No.8,
Canada Department of Mines Memoir 174.

Moraine and Unmodified Till Plain

Modified Till Plain

Coarse Textured Lacustrine and Alluvial

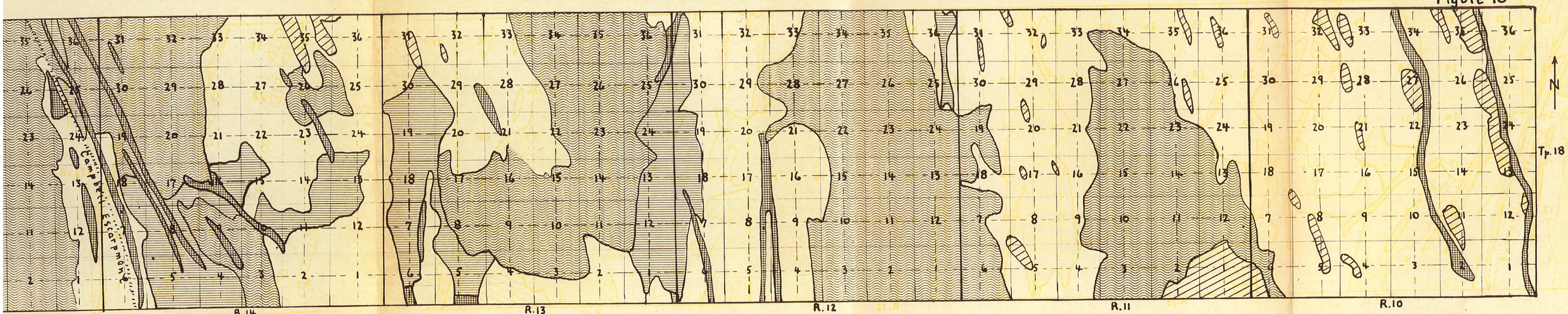
Beach Ridge



Source: Maps and Reports of Dominion Lands Survey 1872-1873.

SURFACE DEPOSITS OF THE STUDY AREA

Figure 10



Sources: Manitoba Soils Report No. 8,
Canada Department of Mines Memoir 174.

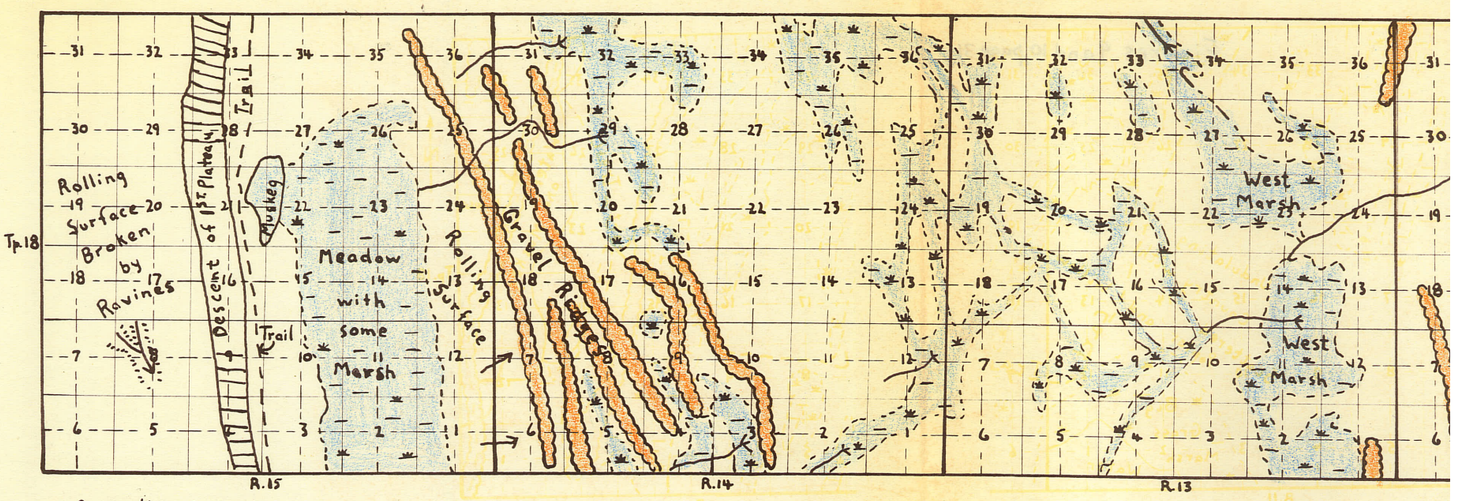
- Moraine and Unmodified Till Plain
- Modified Till Plain
- Bog and Half Bog
- Fine and Medium Textured Lacustrine and Alluvial

Coarse Textured Lacustrine and Alluvial

- Beach Ridge
- Lake Bed
- Alluvial Fan

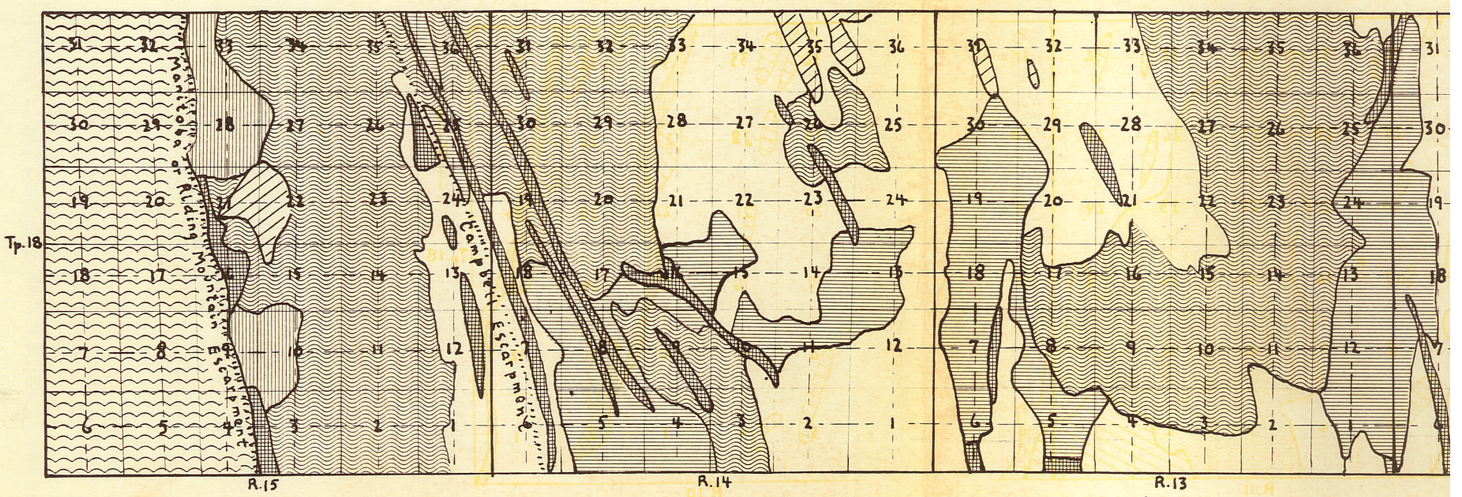
Fig 9

DOMINION LANDS SURVEY OF T



Scale: ½ inch = 1 mile

SURFACE DEPOSITS O



Scale: ½ inch = 1 mile

Moraine and Unmodified Till Plain

Modified Till Plain

Bog and Half Bog

Fine and Medium Textured Lacustrine and Alluvial

> This Township being very low and level is flooded with the water from the Riding Mountain. Nearly one third of this township is marsh or hay land, and in the spring over one half of it will be covered with water.
>
> The timber has been all destroyed by fire, and consequently is of no value except for fuel. A large portion of that colored to represent marsh, is good hay land.
>
> (Township 18 Range 12) The soil in this Township is good, more especially in the southern part, and [the] whole contains plenty of wood for the needs of the Farmer.
>
> It is traversed by the Big Grass River which supplies it with excellent water.
>
> I think it favourable for settlement.
>
> (Township 18 Range 11) This township is principally covered with thick willow Brush.
>
> The Big Grass River intersects the South West corner which is good, but I cannot particularly recommend the rest of the Township to the farmer, especially the north East corner which contains some bad muskegs.
>
> (Township 18 Range 10) This Township is covered with dense brush, broken in places by large muskegs: the soil is shallow but there is a quantity of good Poplar timber.[1]

Summary of the Surveyors' Reports.--Rough topography and thin soils, developed on shaly or gravelly unmodified till deposits under woodland vegetation, made the Riding Mountain Region (that is, the area of unmodified till and moraine surface deposits between the western edge of Township 15 and the Riding Mountain Escarpment on figure 10) unsuitable for agricultural settlement. The Upper Lowland Plain (on figure 9 the area between the "Descent of the 1st Plateau" and the first gravel ridge; on figure 10 the area between the Riding Mountain Escarpment and the Campbell Escarpment) was considered well suited for settlement. Lacustrine and alluvial soils in the central part of the plain, when drained, would make excellent agricultural land. The modified till soils on its eastern margin although underlain by gravel, were also highly rated.[2] Streams flowing off the

---

[1]The original field books from which these summaries are taken were obtained by the kind permission of Mr. H. P. Baldock, Surveys Branch, Manitoba Department of Mines and Natural Resources, Winnipeg.

[2]Obtained from the field book on Township 18, Range 15, the summary of which has been quoted above.

escarpment would provide plenty of water. Timber for fuel and building purposes could be easily obtained from the Riding Mountain. A good trail,[1] running mainly along beach ridges and alluvial fans to avoid the wet land to the east, would provide easy haulage of timber to markets in the south. The Lower Lowland Plain (that is, all the land east of the Campbell Escarpment on figure 10) with the exception of Range 12 and the southwestern part of Range 11, were considered marginal for settlement. Poor drainage appears to have been the main problem; lack of streams for water and timber for building purposes were also serious drawbacks. However, high land provided by a series of beach ridges, and good timber in Sections 6, 7, and 18 made the land immediately east of the Campbell Escarpment more attractive than the other marginal areas. In the opinion of the surveyors, agricultural settlement could not be supported on the severely modified till plain soils in Ranges 10 and 11 because of their thinness and impeded drainage resulting from a ridge and swale microrelief running at right angles to the general direction of landfall to the east (on figure 10 the term "undulating country" is used to describe the ridge and swale relief). Although not mentioned in the surveyors' reports, the trail to Kinosota running along the Langruth beach ridge (See footnote 1, page 16) and a cart trail running along higher land[2] to avoid numerous marshes were indicated on the surveyors' maps (Figure 10).

It should be stressed that, on the whole, the surveyors seemed to judge the land of the Lower Lowland Plain on the basis of surface drainage

---

[1]The "good road" or trail mentioned by the surveyor is locally known as the Dauphin Trail.

[2]On the basis of fieldwork it has been determined that the portion of the cart trail in Range 11 ran along a till plain ridge.

rather than on surface deposits and soils. For example, they recommended all of Range 12, which contained a sizeable portion of stony modified till plain deposits[1] whereas all of Range 13, which contained lacustrine deposits and modified till deposits of a better quality than those in Range 12 (See footnote 1, p. 24), was considered marginal for settlement because of its poor drainage. Also, the surveyors apparently held little hope for the efficacy of draining the Lower Lowland Plain for, unlike the Upper Lowland Plain where (presumably because of its deep rich soils and sufficient eastward slope) they considered artificial drainage advisable, drainage of the Lower Lowland Plain was not recommended.

Approaches to the Study Area

By 1872 settlement was established on the southeastern boundary of the West Lake Area in the vicinity of Gladstone,[2] where settlers had been attracted by the Lower Assiniboine Delta soils and Aspen-Oak or "parkland" vegetation. One visitor to this area remarked, "Your district can boast plenty of hay, wood, and water. I could not help thinking that I was travelling through some of the parks surrounding the stately mansions of the 'great' in England."[3] Another said:

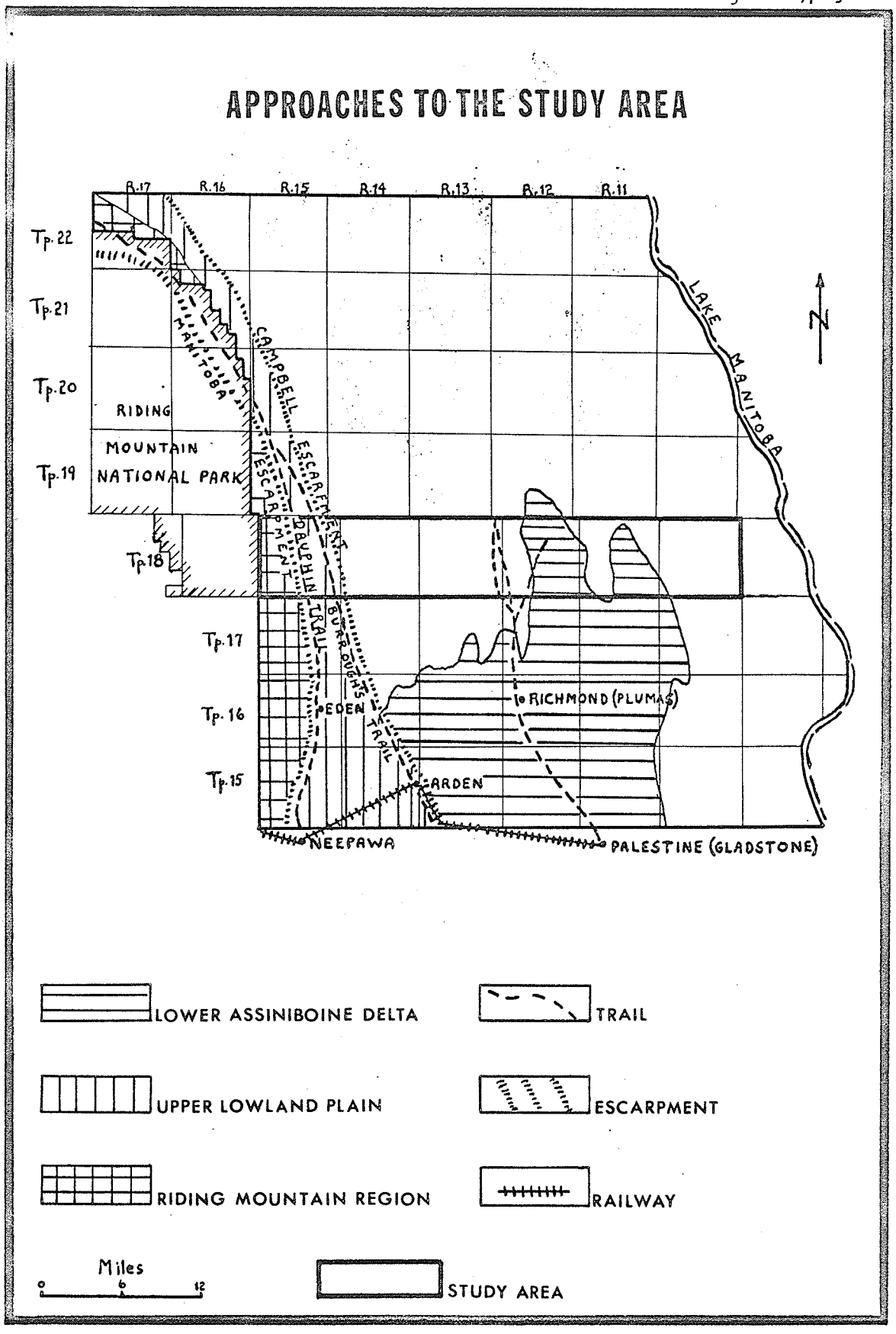
> I have travelled over the prairie to some considerable extent .... and have everywhere been impressed with its beauty and adaptibility to mixed farming, as there seems to be no scarcity of water and grass land for stock raising, also plenty of plowable land for cropland and what is best of all ready for the plow, which is strange to one used

---

[1] Apparently the stoniness characteristic of most of the modified till plain deposits went unnoticed. This was probably due to marshes concealing the exposed stones and the fact that many of the stones were hidden in the upper soil horizons just below the surface.

[2] At this time Gladstone was called Palestine [The Promised Land].

[3] The Gladstone Age, June 14, 1884.


APPROACHES TO THE STUDY AREA
R.17
R.16
R.15
R.14
R.13
R.12
R.11
Tp. 22
Tp. 21
Tp. 20
Tp. 19
Tp. 18
Tp. 17
Tp. 16
Tp. 15
RIDING MOUNTAIN NATIONAL PARK
MANITOBA ESCARPMENT
CAMPBELL ESCARPMENT
DAUPHIN TRAIL
BURROUGHS TRAIL
LAKE MANITOBA
N
to RICHMOND (PLUMAS)
EDEN
ARDEN
NEEPAWA
PALESTINE (GLADSTONE)
LOWER ASSINIBOINE DELTA
UPPER LOWLAND PLAIN
RIDING MOUNTAIN REGION
TRAIL
ESCARPMENT
RAILWAY
STUDY AREA
Miles
0
6
12

to a wooded country.[1]

From Gladstone, settlement spread rapidly northwards along the Lower Assiniboine Delta. By 1878 the town of Plumas[2] was established and settlers were beginning to move into Ranges 11 and 12 of the study area (Figure 11).

By 1874 settlement was spreading northwards along the Upper Lowland Plain by two main routes (Figure 11). One was the Dauphin Trail[3] along the base of the Riding Mountain Escarpment. The other route consisted of two trails running northwards from Arden along the Arden and McCauleyville Ridges.[4] The suitability of the beach ridges for travel purposes is given by the following quotation:

> On the Manitoba and North-western Railway the Upper Campbell [Arden Ridge] is a massive rounded ridge thirty to fifty rods wide along whose eastern slope the railway runs for about three miles. Before the railway was built [1882-1883] the old trail from Winnipeg passed along the top of this ridge.... This portion of the trail was a good dry road throughout the year, being thus remarkably contrasted with the deep mud along most of the trail during the rainy season.[5]

The ridges were not only well drained but also free of trees[6] so that travel was unhindered. By 1877 settlement had moved northward on the Upper Lowland Plain to the vicinity of Eden (Figure 11). North of Eden settlement moved more slowly through the more densely wooded country bordering the foothills

---

[1] Ibid., June 28, 1884.

[2] At that time called Richmond.

[3] See footnote 1, p. 33.

[4] See footnote 1, p. 13. Since these two trails closely parallel each other they have been treated as one route. About 15 miles north of Arden the trail on the Arden Ridge crossed over to the one on the McCauleyville Ridge. North of this junction the trail was called Burrough's Trail.

[5] Upham, The Glacial . . . , p. 424.

[6] Ibid..

of Riding Mountain[1] (Compare figures 8 and 11). By 1885 settlers were moving into Township 18, Range 15 of the study area.

Areas Settled to 1895[2]

As can be seen from figure 12 and overlay 2 (in back flap) the homesteaders[3] during this period generally followed the pattern of settlement recommended by the Dominion Lands surveyors.[4] Preference for flat land and Aspen-Oak or "parkland" vegetation (See quotation p. 34), affording easy and rapid cultivation, led to the avoidance of the rough, heavily forested Riding Mountain Region in favour of the well drained parts of the Lowland Plain (on overlay 2 the area indicated as unmodified till and end moraine surface deposits is the Riding Mountain Region). Rapid settlement of the Upper Lowland Plain (on overlay 2 the area between the Riding Mountain Escarpment and the Campbell Escarpment) between 1885 and 1895 may be attributed, on the basis of the surveyors' reports, to the deep, rich soils and promise of easy drainage of the central portion of marsh and meadow. On the Lower Lowland Plain (all the study area east of the Campbell Escarpment on overlay 2) settlers generally chose the well drained areas for homesteads[5] (that is, Range 12, the southwest of Range 11, the

---

[1]Irene Lawrence Richards, The Story of Beautiful Plains (Papers read before the Historical and Scientific Society of Manitoba) Series III, No. 8.

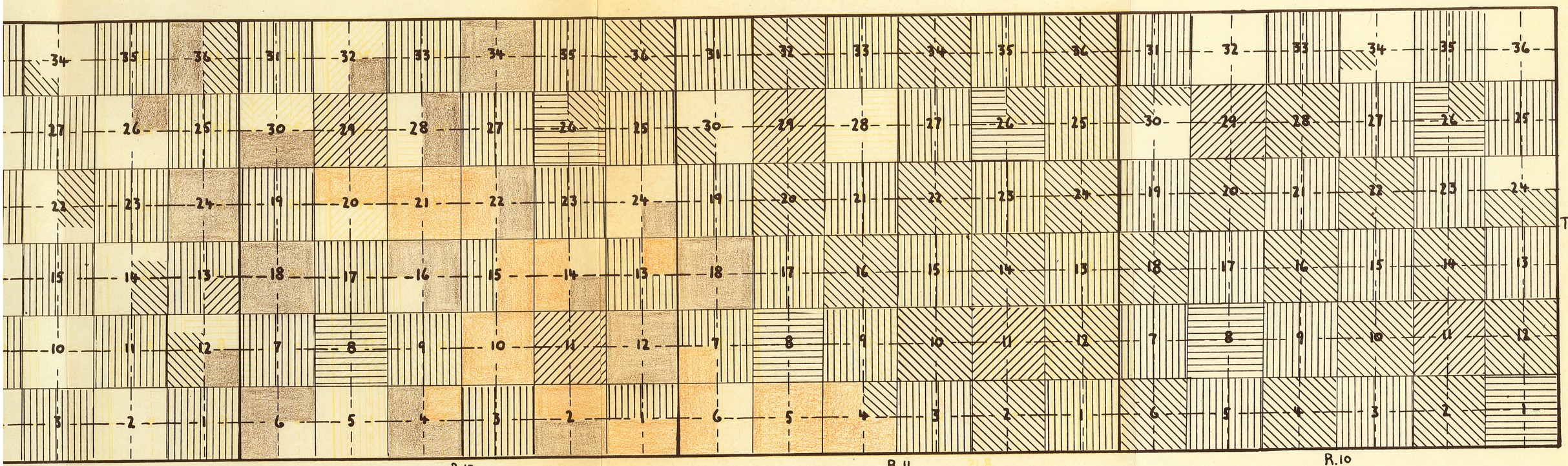
[2]Throughout this period no Hudson's Bay Lands or School Lands were sold. Apparently the Hudson's Bay Company and the Provincial Government, who sold their lands at public auction, did not think they could command high prices while so many Homestead Lands were available.

[3]As can be seen from figure 12 all the land settled during this period were quarter section homesteads.

[4]This is not unexpected because the Dominion Lands surveyors and most of the homesteaders were of British ethnic origin from Ontario.

[5]Rapid settlement was facilitated by the homesteading of odd as well as even numbered sections between 1878 and 1880. Fourteen homesteads

SETTLEMENT TO 1895

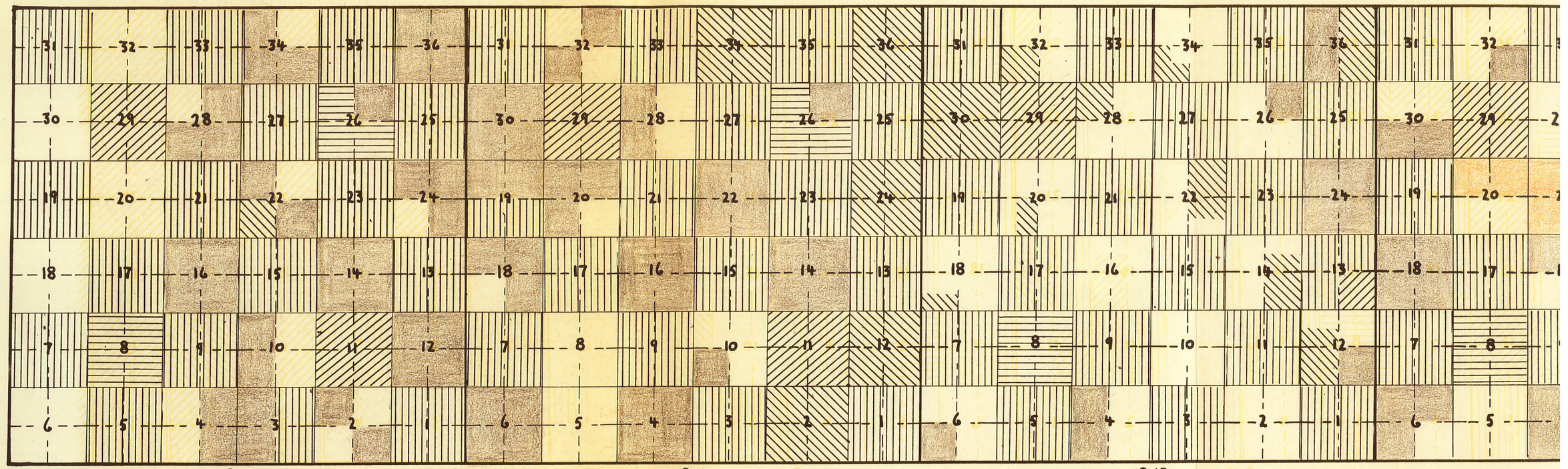


Classification of Land by the Dominion Government

- School Land
- Swamp Land
- Hudson's Bay Company Land
- Homestead Land
- Reserved Land

Sources: Manitoba Department of Mines and Natural Resources, Lands Branch Winnipeg; Hudson's Bay House, Winnipeg

SETTLEMENT TO 189



Scale: ¾ inch = 1 mile

Land Settled Between 1878 and 1895

1878 - 1885

1885 - 1895

Classifi

School Land

Hudson's Ba

eastern part of Range 13 and the western part of Range 14). Range 11, excepting for the southeast and all of Range 10 were devoid of settlers presumably because of the poor drainage. Trails apparently were not a factor of prime importance in the direction of settlement for the excellent trail running along the Langruth beach ridge (Figure 9) did not attract settlers into Ranges 10 or 11.

Transportation and Communications

During the period before 1896 communications were mainly in a north-south direction with established centres such as Eden, Arden, and Plumas and to a lesser extent with Gladstone, Westbourne, and Neepawa (Figure 11). Trails were more or less confined to well drained sites. The Dauphin Trail ran along beach ridges and alluvial fans at the base of the Riding Mountain Escarpment (Compare figures 9 and 10, the trail found at the "Descent of the 1st Plateau" on figure 9 being the Dauphin Trail); Burrough's Trail (Figure 13) followed a beach ridge[1] just east of the Campbell Escarpment (on figures 9 and 10 this beach ridge runs from Section 6, Range 14 to Section 35, Range 15). Further east, three main trails were used to travel to Plumas (Figure 11). North of the Big Grass River, the western trail followed a beach ridge and, having crossed the river at a ford (Figure 14), it branched into two trails. One ran along high land in the form of sandy outwash deposits immediately east of the West Marsh, the other followed a beach ridge (Figures 9 and 10). In the central part of Range 12 another trail on a beach ridge was often used.[2]

---

were taken out on odd numbered sections before they were closed to settlement for the remainder of this period (See footnote 4, p. 29).

[1]See footnote 4, p. 36.

[2]Good drainage in Range 12 as a whole permitted settlers to follow

Farmsites

From surveyors' reports and personal interviews it appears that the most favoured sites for farmhouses in this period offered:

1) A supply of domestic[1] and livestock water.

2) Good drainage.

3) Ease of ingress and egress.

Less restrictive but still important attributes were shelter for livestock and farm buildings and the availability of wood for building purposes and fuel. Many settlers were able to satisfy all these conditions by choosing sites along the Big Grass River. Trees fringing the river provided shelter as well as timber for fuel and building purposes. Water for livestock was obtained from the river; water for domestic purposes was available from shallow wells in lacustrine sediments or from springs along the river (Figure 15). Good drainage allowed farmers access to the main trails leading to Plumas. In other parts of the area beach ridges were the most favoured sites. They were well drained and usually yielded water at shallow depths. Livestock water was commonly found in the marshy land on the west side of the ridges (Figure 5). In addition, the ridges were excellent sites for trails. Preference for farm sites on beach ridges in other parts of the West Lake Area is indicated by the following quotation:

In Township 15, range 13, next east of Arden, the most western

---

numerous routes but the one mentioned above was the main one. In some cases feeder trails leading from farmhouses to this trail ran along the road allowances. Use of the road allowances in other parts of the area appears to have been prevented by poor drainage.

[1]Domestic water at this time was obtained from springs or dug wells.

> and upper one of the McCauleyville[1] beaches is called Lowdon's Ridge, from Thomas Lowdon, whose house, the first built on it, is in the middle of the east edge of section 30. The middle beach appears to be twofold in section 20 and 29, Joshua Ritchie's house being built on one of its ridges and the Rose schoolhouse, a quarter of a mile further east, on the other. About three-quarters of a mile east of the Rose Ridge is the lower McCauleyville beach, on which the trail to Dauphin runs northward through townships 15 and 16. Lewis McGhie's house is built on the eastern slope of this beach, in the northeast quarter of section 28, township 15. Lowdon's, Ritchie's and McGhie's wells, and others in this township on these beach ridges, pass through gravel and sand 5 to 15 feet and through till below to total depths of 30 to 40 feet, obtaining water in gravelly seams, from which it usually rises to 10 to 20 feet within a few hours, to its permanent level.[2]

Sites on the alluvial fans were favoured because they combined good drainage and water supply with access to the Dauphin Trail (Compare figures 9 and 10).

Building Materials

In this period all building materials were of local origin. Settlers in Ranges 14 and 15 were able to supplement the timber available from their quarter sections with that obtained from the forest of the Riding Mountain Region. In Range 12 and the settled parts of Ranges 11 and 13 trees from the banks of the Big Grass River formed the main source (Figure 16).[3] In some instances stones from modified till plain deposits were used for building foundations (Figure 17).

Artificial Drainage

It was pointed out in the section entitled "Surface Drainage" in Chapter I (p. 17) that poor surface drainage was a major problem in the

---

[1]See footnote 4, p. 36 and footnote 1, p. 39.

[2]Upham, The Glacial . . . , p. 441.

[3]There were no sawmills in the study area prior to 1895. Hence, farmbuildings were constructed of peeled logs or logs squared with axes.

study area. The following quotations indicate that early attempts were made to alter the natural drainage of the Lower Lowland Plain: "The ditch at Grassy River[1] [Big Grass River] is going ahead three miles being done."[2] and "The ditches in the Big Grass Marsh are working well, and good grass is now growing in the place of reeds."[3] Future plans for altering the natural drainage were made in 1893 when poorly drained even numbered sections were transferred to the control of the Provincial Government.[4] The revenue derived from the sale of these lands (Swamp Lands) was to be used by the province to drain them for agricultural use.[5] The largest concentrations of Swamp Lands were on the severely modified till plain soils in Ranges 10 and the northern part of Range 11, where ridges and swales impeded drainage,[6] and in the western part of Range 14 and the Big Grass Marsh Area, which were generally depressional sites (Figure 9). Few Swamp Lands were designated at this time in the West Marsh Area because the poorly drained sections were either odd numbered sections reserved for special purposes or Hudson's Bay and School Lands (Figure 12 and overlay 2).

Farm Units and Land Use

The availability of pasture and cropland, plus the need for self-sufficiency, made mixed farming the predominant type at this time. Oxen,

---

[1]The ditch was being constructed in the poorly defined section of the river (See pp. 17 - 18).

[2]The Gladstone Age, July 24, 1885.

[3]Ibid., October 23, 1885.

[4]These lands had been open for homesteading prior to 1893 but had been avoided by settlers.

[5]Martin, "Dominion Lands" . . . , pp. 436 - 437.

[6]See p. 24 for a description of the severely modified till plain soils.

which were less expensive than horses and could be fed on natural grasses rather than oats, were brought into the area by settlers and used for transportation and farm work. Although all farms were homesteads of 160 acres, cultivated acreages were limited by the slowness of oxen, recent settlement, and distance from market, to small plots of about 15 to 25 acres per farm.

Little information was available regarding the pattern of land use which developed during this period. However, as mentioned in the section "Areas Settled to 1895" (Page 37), the well drained areas attracted settlement. Hence, it would appear that the settlers at that time felt that, regardless of soil type, all the well drained land would be suitable for cultivation. Although a detailed description of land use is lacking it may be stated on the basis of interviews with older settlers or their descendants, that farmers who had beach ridges on their land often had most of their cultivated land on the sandy strip along its eastward margin (Figure 5). These sandy strips had the added advantage of being near the farmhouse which was usually located on the higher, better drained western part of the ridge (Figure 5). Interviews also indicate that, in order of importance, wheat, oats, barley and rye, which were adapted to the climate of the area, were the principal crops grown. Hay for livestock, which were apparently kept on all farms (as mentioned above) was readily available in the numerous marshy tracts throughout the area.

Summary

During the period 1878 to 1895 the main relationships between settlement features and the physical environment were:

1) Settlers avoided the rough topography and dense forests of the Riding Mountain Region in favour of the flat land and "Aspen-Oak" or "parkland" vegetation of the Lowland Plain.

2) On the Lowland Plain settlers chose the well drained land regardless of its soils.

3) The primary needs of good drainage and an easily obtainable supply of domestic water led to the siting of many farmhouses on beach ridges, alluvial fans and along the banks of the Big Grass River.

4) Trails followed the higher, well drained land to avoid the marshes rather than the sectional road allowances (with the exception of Range 12 where extensive dry areas allowed the grid pattern to develop). Good drainage and an unbroken northwest-southeast alignment made beach ridges the most favoured sites for main trails.

5) Building materials, in the form of stones from modified till plain deposits and peeled or squared logs, and cordwood for fuel were all of local origin.

6) Cultivation of the well drained land in combination with pasture on the marshy land, plus the need for self-sufficiency, made mixed farming prevalent throughout the study area. In other parts of the West Lake Area it would appear:

1) Trails often followed beach ridges. This is evidenced by Burrough's Trail and the trail along the Langruth beach ridge to Kinosota.

2) Farmhouses were often on beach ridges (See quotation pp. 40 - 41).

3) As discussed under "Approaches to the Study Area" (Page 34) settlers moving into the West Lake Area during this period (1878 - 1895) and prior to it chose the best land available, that is, the rich lacustrine and alluvial and not seriously modified till plain deposits along the base of Riding Mountain (Upper Lowland Plain)

and the well drained Lower Assiniboine Delta soils and "parkland" vegetation of the Lower Lowland Plain. Although the first township census was not taken until 1901, the general distribution of settlement then was probably much the same in 1895, that is, concentrated on the Lower Assiniboine Delta and along the Upper Lowland Plain (See figure 21 and overlay 1).

• 65 •

Figure 13
Burrough's Trail
The trail is sited on a beach ridge immediately east of the Campbell Escarpment. Note natural vegetation of grass on crest of the beach.
Location: Section 6, Range 14, Township 18.

JAN • 65

Figure 14
A ford used by settlers to cross the Big Grass River.
Location: Section 24, Range 13, Township 18.

JAN • 65

Figure 15
Spring used by early settlers circa 1890 along the banks of the Big Grass River. It is not used today (1963).
Location: The northeast quarter of Section 24, Range 13, Township 18.

• 65 •

Figure 16
A granary built circa 1890 from trees cut from the banks of the Big Grass River. The granary is still in use today (1963).
Location: The northeast quarter of Section 24, Range 13, Township 18.

JAN • 65 •

Figure 17
Stones from modified till plain surface deposits
used for a house foundation. circa ?
Location: Along Burrough's Trail Section 1, Township 18, Range 14.

CHAPTER III

RAILWAYS AND TOWNSITES 1896 TO 1908

In 1896 the first railway line and townsite in the study area were surveyed and in 1908, following the designation of more Swamp Lands in 1907, plans were being formed by the Provincial Government for a comprehensive scheme of artificial drainage. Other significant developments during this period include the taking of the first quintennial census in 1901 and the appearance of a second railway and townsite in 1902.

Railways and Townsites[1]

Between 1895 and 1896 a branch line of the Canadian Northern Railway was built from Gladstone to McCreary, continuing northward to Dauphin and Winnipegosis by 1897.[2] From Gladstone the railway followed

---

[1]Most of the information with respect to railway sites and townsites was obtained by personal interview with people in the study area.

[2]G. R. Stevens, O.B.E., Canadian National Railways - Volume 2 "Towards the Inevitable 1896 - 1922" (Toronto: Clarke, Irwin & Company Limited, 1962), pp. 24 - 28. In 1893, the contract to build a railway from Portage la Prairie through Gladstone to Winnipegosis was awarded to the Lake Manitoba Railway and Canal Company which was under the sponsorship of two Ottawa Contractors, M. P. and J. T. Davis. These sponsors were unable to attract investors, however, and in 1896 Donald Mann and William Mackenzie took over the company. In 1899, Mackenzie and Mann merged the Lake Manitoba Railway and Canal Company with another railway (Winnipeg Great Northern) to form the Canadian Northern Railway. This company existed until 1922; thereafter it became the Canadian National Railway under the jurisdiction of the Dominion Government.

the well settled Lower Assiniboine Delta to a point just north of Plumas (Figure 18). North of this point sparse settlement and varied physical conditions led to indecision on the route to be followed. At first it appeared that the railway would be built on high land in the western part of Range 12, closely approximating the route followed by early settlers[1] (Compare figures 19 and 25). As previously mentioned on page 39, this trail, running along well drained land in the form of coarse textured lacustrine deposits, had been used in the period from 1878 to 1895. It was anticipated that the railway would cross the Big Grass River on a bridge to be constructed at the ford in Section 24, Range 13 (Figures 14 and 19). The townsite of Glenella was to have been surveyed along the river near the crossing. However, this plan was abandoned in favour of a diagonal route following what appears to be a till plain ridge[2] across the West Marsh (Figure 19). North of the study area the diagonal route continued to McCreary. The following reasons may be advanced for the choice of this route:

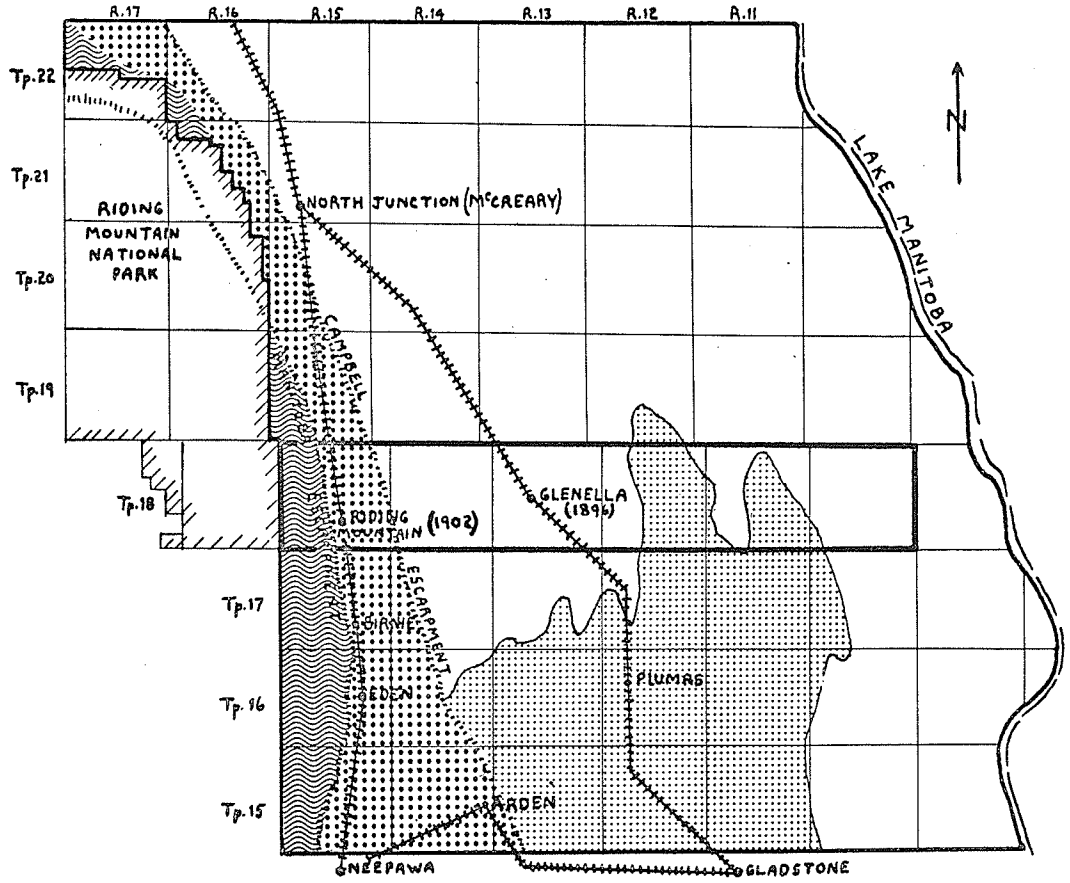
1) North of the Lower Assiniboine Delta there were no densely populated areas to serve, hence it would be more economical to take the shortest route to McCreary. This appears to have been the most

---

[1]Personal interviews with Mr. W. Lukin and Mr. C. Langseth, both of whom were living in the study area when the railway was built. These gentlemen relate that the railway company had gone as far as to cut trees along this route before an alternative one was chosen.

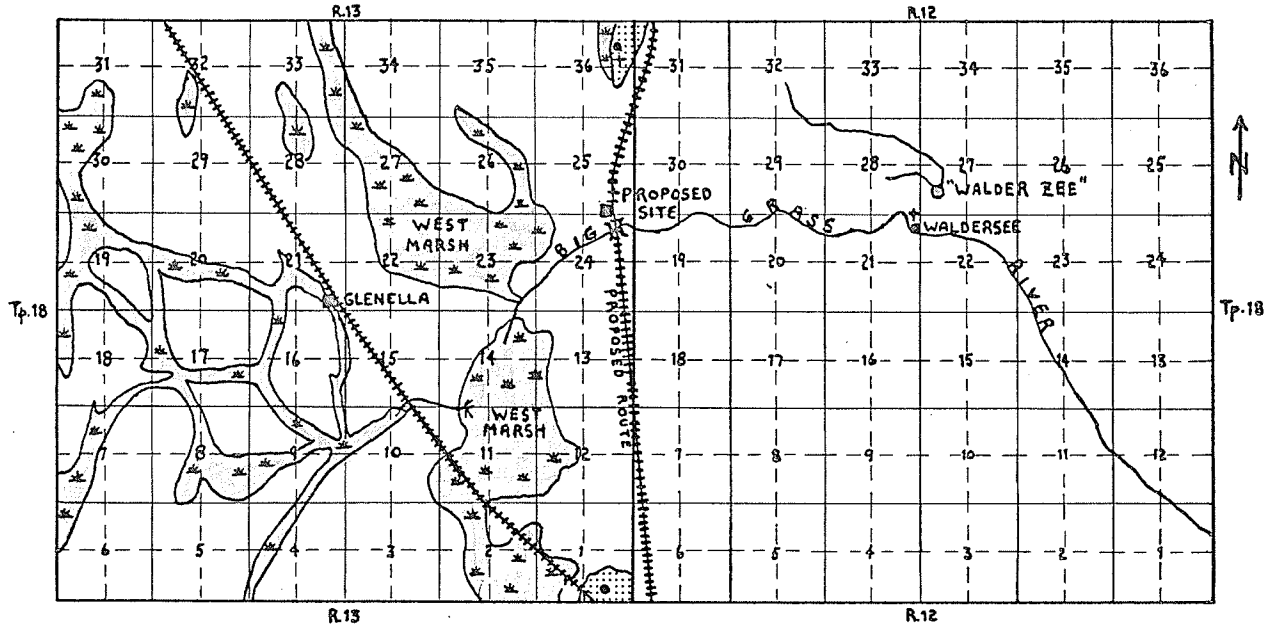
[2]The till plain ridge referred to is an exceptionally prominent one. W. A. Johnston, when mapping the surface deposits of this area for the Geological Survey of Canada (See footnote 1, p. 19), designated it as a beach ridge. However, subsequent studies by the Manitoba Soil Survey include the ridge as part of modified till plain deposits. Although the Manitoba Soil Survey does not indicate till plain ridges, it has been established by interview and fieldwork that this is in all probability a till plain ridge.

THE WEST LAKE AREA RAILWAY NETWORK BY 1903



SOURCES: MANITOBA SOILS REPORT NO. 8
STEVENS "CANADIAN NATIONAL RAILWAYS"

Site of 1896 Railway and Town of Glenella



Legend

- Beach Ridge
- Marsh
- Railway
- Gravel Pit
- Cemetery
- Ford

Miles 0 ½ 1

SOURCES: INTERVIEWS, DOMINION LANDS TOWNSHIP SURVEYS (1872–1873)

Figure 19, page 52

important reason.

2) The original route necessitated the extra expense of building a bridge across the Big Grass River.

3) The stony till plain ridge provided a natural route across the West Marsh. Although the original route also provided a good railway bed, marshy land north of the study area would have to be crossed, probably at greater expense, to reach McCreary.

Townsite of Glenella.--After the diagonal route was chosen, a settler in Range 13, who had been granted land by the railway company, donated a portion of his land for the townsite of Glenella. The town was surveyed on this site despite the fact that it was subject to flooding in the spring of the year.

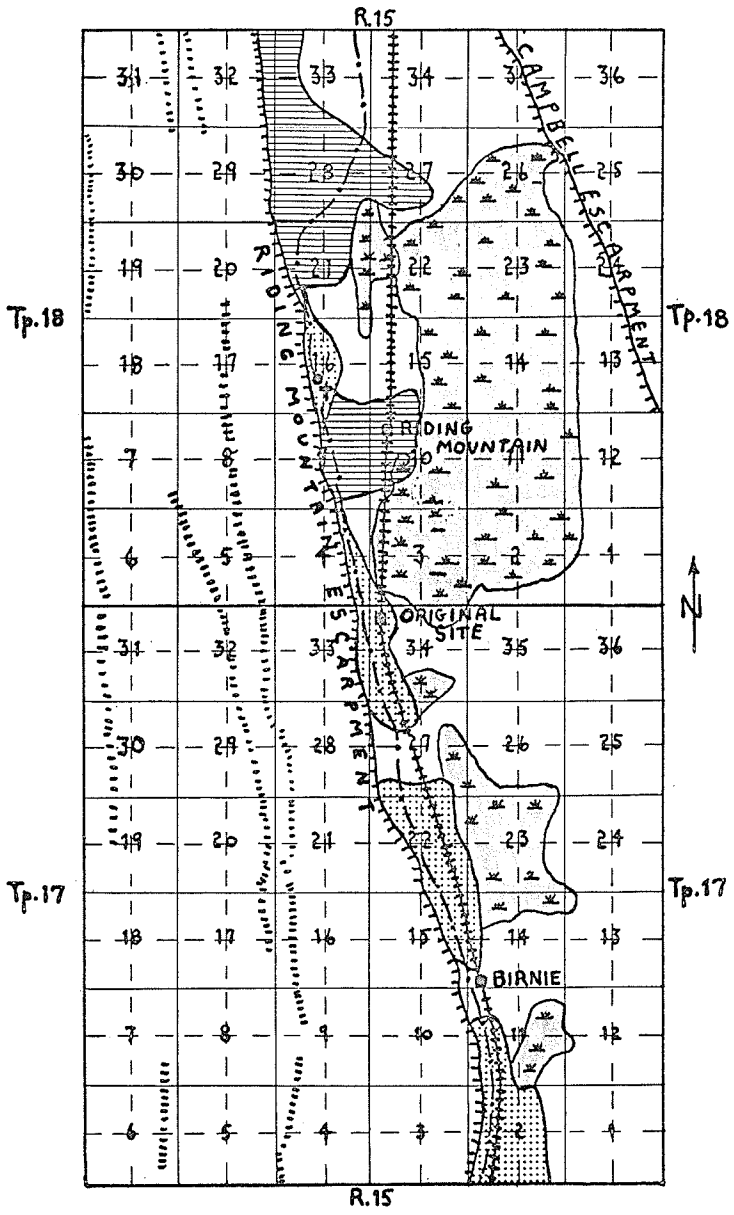
Between 1902 and 1903[1] another branch line of the Canadian Northern Railway was built from Neepawa to McCreary to serve settlement on the Upper Lowland Plain (Compare figures 18 and 21 and overlay 1). North of Birnie it ran closely parallel to the Dauphin Trail on a beach ridge to the southern boundary of Township 18, Range 15 (Figure 20). Here it separated from the Dauphin Trail and followed a route about one mile to the east, thereby avoiding the expense of cutting through the alluvial fans, bridging the streams and filling the bogs found at the base of the Riding Mountain Escarpment (Figure 20).

Townsite of Riding Mountain.--Originally, the town of Riding Mountain was to have been located on a wide beach ridge in Township 17, Range 15 (Figure 20). However, when the owner of this proposed site became aware that the railway company wanted a surveying fee of one-half the sale price of the lots, he refused to make an agreement. Subsequently, the town

---

[1]Stevens, Canadian National Railways, p. 46.

Site of 1902 Railway and Town of Riding Mountain



Legend

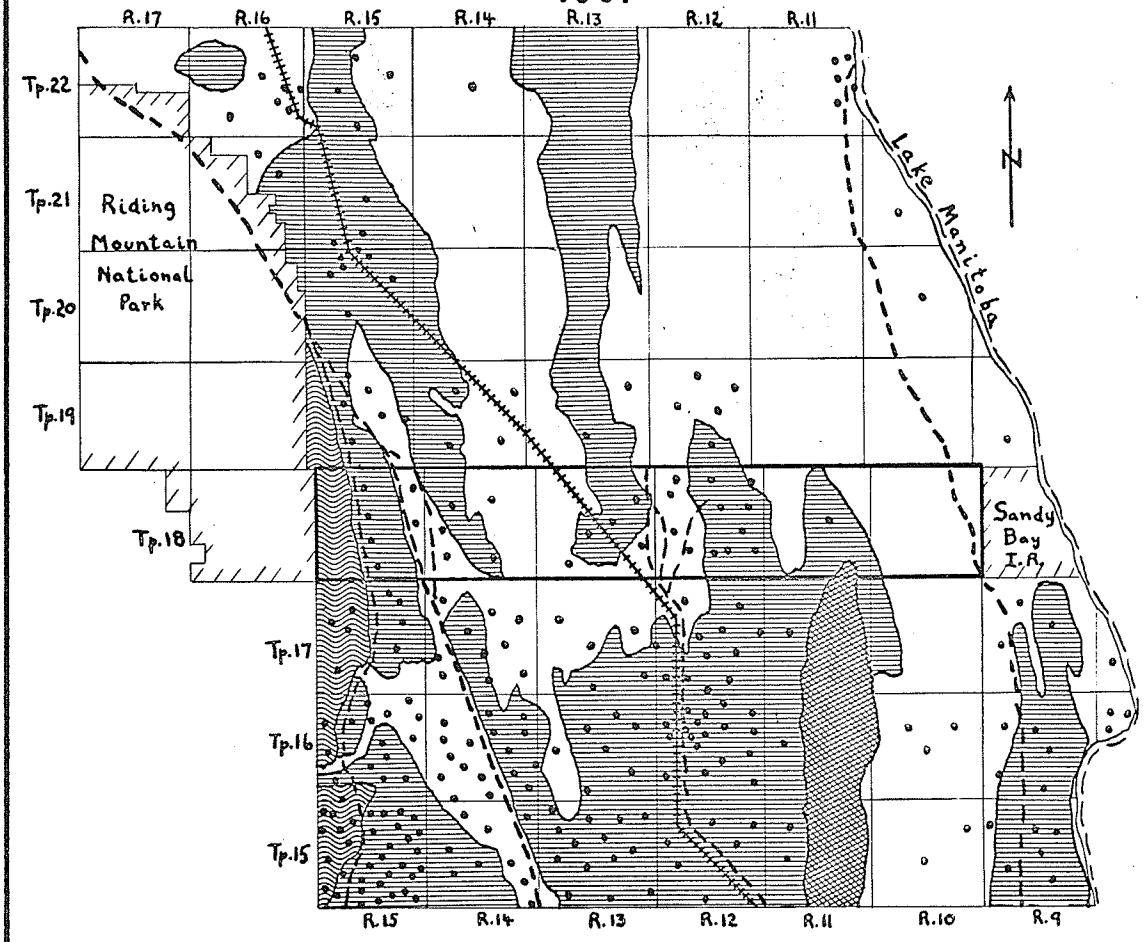
- Beach Ridge
- Alluvial Fan
- Marsh
- Escarpment
- Dauphin Trail
- Railway
- Gravel Pit
- Cemetery

Miles ½

Sources: Stevens, G.R.E. "Canadian National Railways"

Sources: Interviews, Manitoba Soils Report No. 8

Population Distribution in the West Lake Area 1901



Population of West Lake - 7,086

Population of Study Area - 724

GENERALIZED SURFACE DEPOSITS

- Lacustrine and Alluvial
- Bog and Half Bog
- Moraine and Unmodified Till Plain
- Modified Till Plain

- Railway
- Important Trail
- 1 Dot Represents 25 People
- Study Area

Miles 0 6 12

Sources: Manitoba Soils Report No. 8, Census of Canada 1901, Canada Department of Mines Memoir 174, Morton W.L. "Manitoba: A History"

was surveyed on the northwest quarter of Section 10, Township 18, Range 15, where the owner was compliant with their demands. The town was surveyed on the gently sloping to flat eastern periphery of an alluvial fan (Figure 20). As was the case with Glenella, the site of Riding Mountain was subject to flooding in the spring.

Waldersee.--In 1896, a post office was opened at a farmhouse on the southwest quarter of Section 27, in Range 12 (Figure 19). This farmhouse was a local meeting place for Austrian farmers in the vicinity.[1] Because a tree-fringed pond on this quarter reminded the settlers of their homeland it was called "Walder Zee"[2] (Figure 22). In 1898, a Lutheran[3] church and cemetery were built on the northeast quarter of Section 21, adjacent to the Big Grass River (Figure 19). A general store, adjacent to the church, was opened in the same year and the post office was moved to it. Subsequently this nucleated settlement took on the name Waldersee, a corruption of the original "Walder Zee".

Land Taken Up from 1895 to 1908

Until 1895, lands reserved for special purposes were closed to settlement. When the first railway was built through the area in 1896 the Canadian Northern Railway Company was allowed to choose whichever of these reserved lands they considered fairly fit for settlement from a belt extending twelve miles on either side of the railway.[4] In the study

---

[1]The movement of Austrian settlers into Range 12 will be discussed in later sections of this chapter.

[2]Translated literally "Walder Zee" means "Bush Pond".

[3]Almost all the Austrian settlers were members of the Lutheran faith.

[4]Martin, "Dominion Lands" . . . , p. 293.

area the twelve mile belt included all of Ranges 12, 13, 14, and 15 (Figure 23). After 1896 these Railway Lands could be bought from the railway company.[1] In Ranges 10 and 11, which were outside the railway belt, the lands reserved for special purposes remained closed to settlement for this period.[2]

1896 - 1901.--A rapid influx of settlers into Ranges 12 and 13 accompanied the first branch line of the Canadian Northern Railway (Figure 23). The first settlers to arrive were mainly Austrian immigrants who took up many of the Railway Lands and remaining Homestead Lands in Range 12. Later arrivals mainly of British, Ruthenian and Galician ethnic origin, settled in Range 13. The Galicians and Ruthenians were recent immigrants from Central Europe who had worked on the construction of the railway.[3] With the exception of the Upper Lowland Plain (on overlay 2 the area between the Riding Mountain Escarpment and the Campbell Escarpment), the rest of the study area received few settlers in this period. The first township census taken in 1901 indicates the general distribution of population at that time (Figure 24).

1902 - 1908.--From 1902 to 1908 settlers continued to take up land

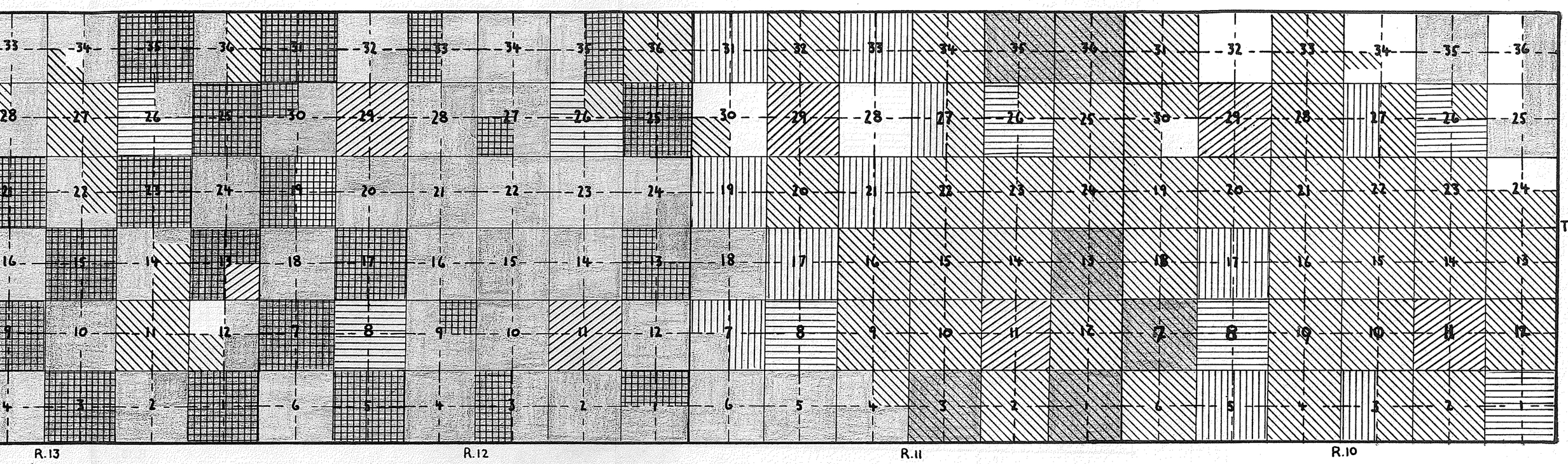
---

[1]All the lands taken up before 1896 were Homestead Lands. Since residence requirements (See footnote 2, p. 29) had to be fulfilled before patent, these lands were presumably settled. After 1896, Railway Lands in addition to other categories such as Swamp Lands, were sold. It is not known whether these lands were actually resided on. It is quite probable that some were bought by farmers expanding their original one-quarter homestead. Others, especially Swamp Lands, were sold to speculators. In the absence of precise data, the general course of settlement in this and subsequent periods was based on homestead patents, five year township censuses, and personal interviews.

[2]In 1907, some of the reserved lands in Ranges 10 and 11 were designated as Swamp Lands and thus became available for purchase.

[3]James Mavor, Report to the Board of Trade on the North West of Canada, with special reference to Wheat Production For Export (London: Printed for His Majesty's Stationery Office, by Eyre and Spottiswoode, 1904), p. 95.

SETTLEMENT TO 1908

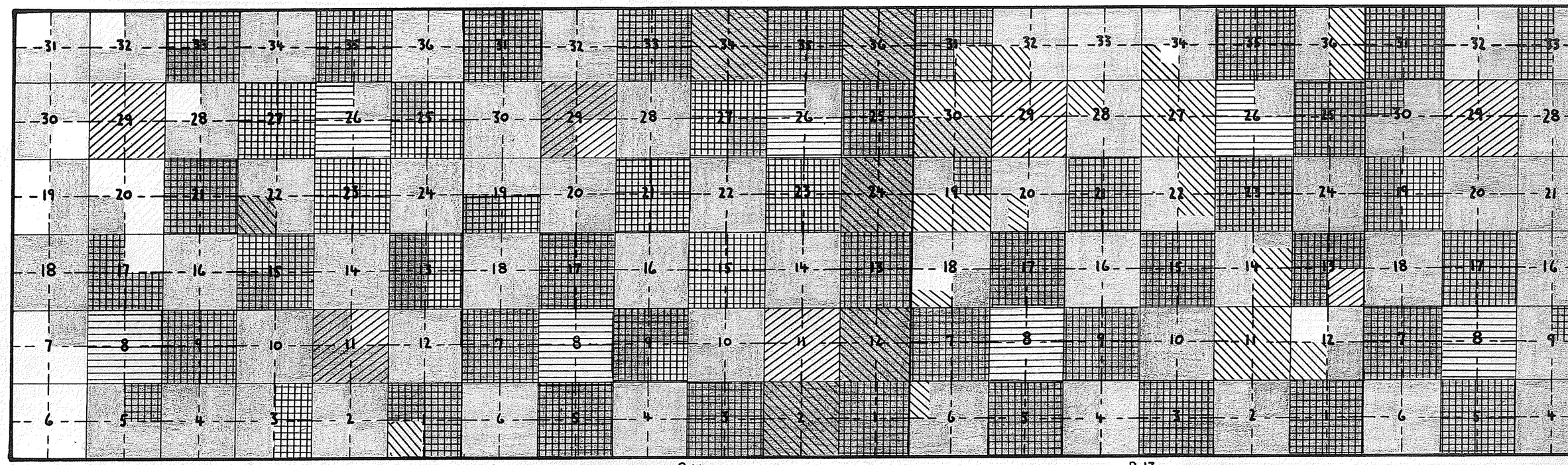


Classification of Land by the Dominion Government

- School Land
- Homestead Land
- Hudson's Bay Company Land
- Swamp Land
- Railway Land
- Reserved Land

Sources: Manitoba Department of Mines and Natural Resources, Lands Branch, Winnipeg; Hudson's Bay House, Winnipeg; Canadian National Railways, Land Survey and Sales, Winnipeg.

SETTLEMENT TO 1908



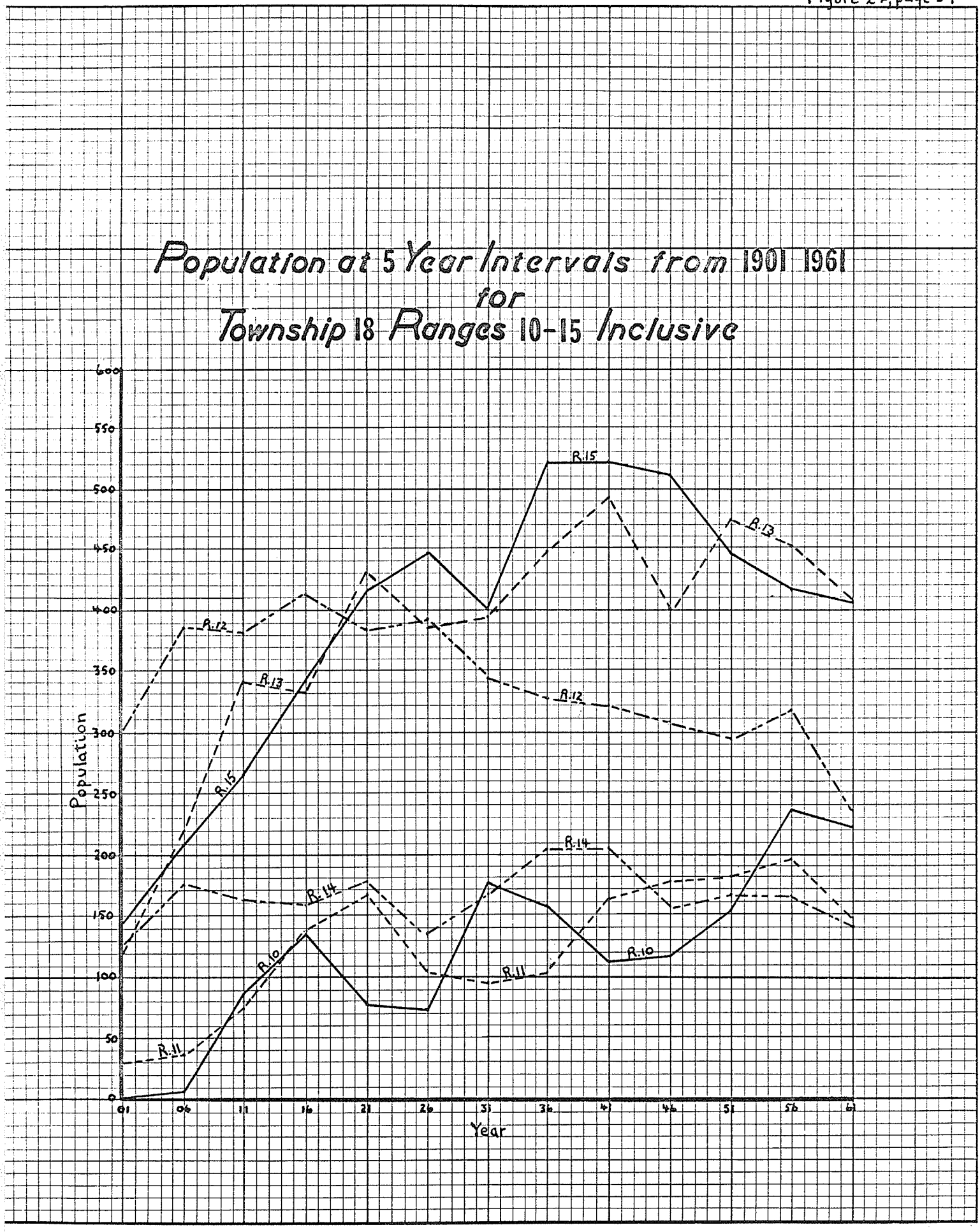
Scale: 3/4 inch = 1 mile

Land Settled by 1908

- 1878-1895
- 1896-1901
- 1902-1908

Cl

- School L
- Hudson's
- Railway


Population at 5 Year Intervals from 1901 1961
for
Township 18 Ranges 10-15 Inclusive
Population
Year
600
550
500
450
400
350
300
250
200
150
100
50
0
01
06
11
16
21
26
31
36
41
46
51
56
61
R.15
R.13
R.12
R.12
R.13
R.15
R.14
R.14
R.10
R.10
R.11
R.11

in Ranges 12 and 13. The second branch line of the Canadian Northern Railway brought an influx of British settlers into Ranges 14 and 15. By 1906 the Upper Lowland Plain was so densely settled that homesteaders had begun to move into the Riding Mountain Region (Figure 23 and overlay 2). Towards the end of this period a northward movement along the Langruth Ridge[1] had spread into Township 18, Range 10. In 1907, poorly drained sections of reserved lands were designated as Swamp Lands. By 1908, under pressure from speculators[2] and a few settlers who had purchased Swamp Lands, the Provincial Government was making preliminary surveys for a system of artificial drainage.

Transportation and Communications

Throughout most of the period from 1896 to 1908 communications remained mainly in a north-south direction. The trails used before 1896 (Figures 25 and 26) had been supplemented by two railway lines and several new trails. The Langruth Ridge (the beach ridge on the eastern edge of Range 10 on figure 9, p. 31) formed a natural highway for settlers moving into Range 10. Indeed, a proposed highway from Portage la Prairie to Kinosota[3] was surveyed on this ridge in 1901.[4] From Township 18, Range 13 a trail ran northward along a till plain ridge and, north of the study area, on a beach ridge to Beaverdam Lake, where lumber for building purposes

---

[1]See footnote 1, p. 13.

[2]Personal interviews indicate that most of the Swamp Lands were purchased by land companies from the United States.

[3]The settlement of Kinosota, which is located in the north-western part of the West Lake Area, originated as a Hudson's Bay trading post when this area was part of Rupert's Land (See footnote 1, p. 16).

[4]Lands Branch, Manitoba Department of Mines and Technical surveys, Winnipeg. The highway was not built during this period of settlement.

Farmstead Sites in Ranges 12 and 13 to 1908

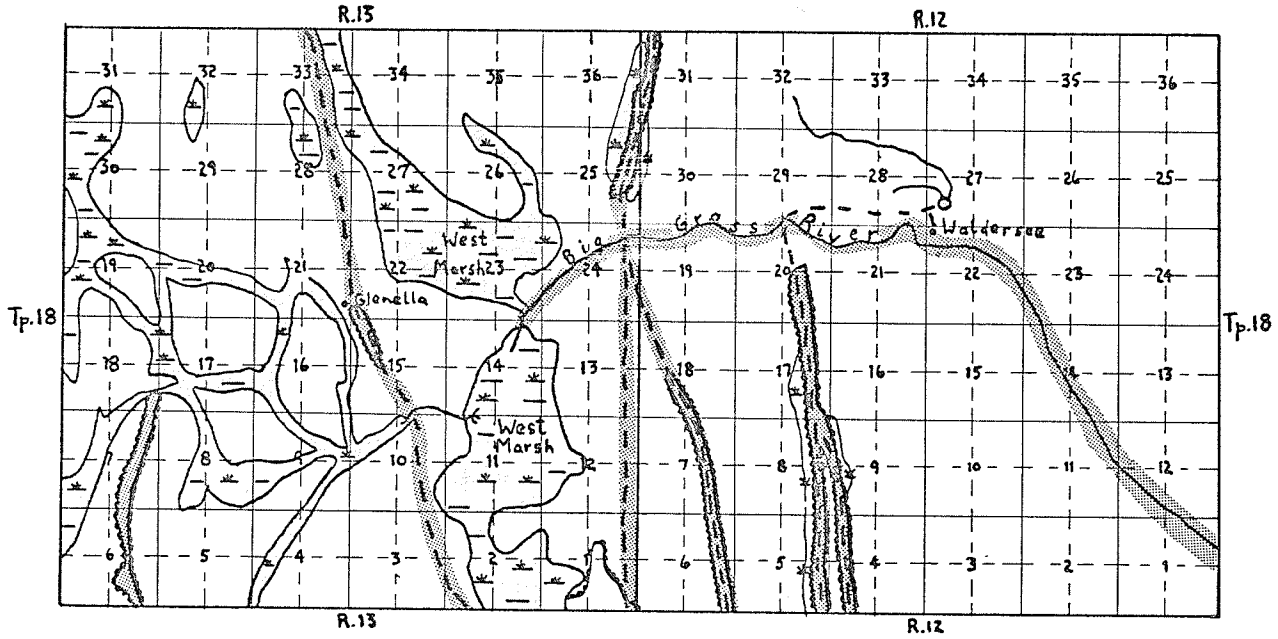


Figure 25, page 61

Farmstead Sites in Ranges 14 and 15 to 1908

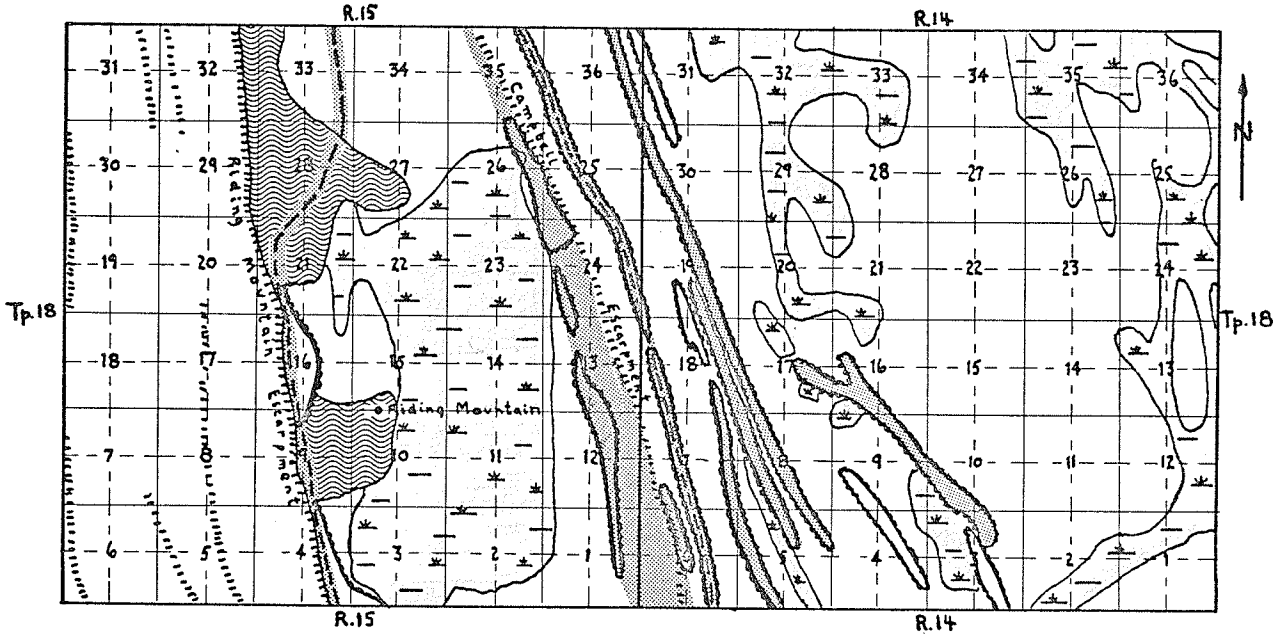


Figure 26, page 62

was obtained (See figure 7 for the location of Beaverdam Lake).

By the end of this period communications with centres to the south had been partially replaced by communications with the newly established towns of Riding Mountain and Glenella. By 1908 marketing and servicing facilities in Glenella included a post office, a school, a church, a general store, and two grain elevators. Riding Mountain boasted a general store and one grain elevator. A church, post office, and general store in Waldersee were patronized by Austrian settlers in the vicinity.

Farmsites

As indicated by figures 23 and 24, Townships 12 to 15 inclusive were quite densely settled in 1908. Interviews indicate that, as in the period 1878 to 1895, settlers favoured well drained sites for their farmhouses which, in the case of alluvial fans, beach ridges and along the banks of the Big Grass River, also yielded good water at shallow depths. Sites on the beach ridges and alluvial fans were also adjacent or close to the main routes of travel. As far as can be accurately determined the most favoured sites for settlement were as follows (Figures 25 and 26):

1) In Range 15 along the Dauphin Trail at the base of the Riding Mountain Escarpment either on beach ridges or alluvial fans, avoiding steep land to the west and wet land to the east.

2) In Range 15 east of the poorly drained central portion of the Upper Lowland Plain where the slopes of the Campbell Escarpment and till plain ridges provided well drained sites.

3) On numerous beach ridges at the base of the Campbell Escarpment.

4) In Range 13 on beach ridges in the southwest and northeast corners,

along the Big Grass River and on a till plain ridge (the site of a trail) west of the West Marsh and on a broad height of land east of the West Marsh (See p. 50 - this route was originally considered a good one for the railway built in 1896 and was also the site of a trail).

5) In Range 12 along the Big Grass River and on the beach ridges near trails leading to Plumas.

6) In Range 10, the few settlers there were settled on the Langruth beach ridge.

Cemeteries

The main requirement of good cemetery sites are good drainage, accessibility in all seasons of the year, and a central location with respect to the people they serve. All of the cemeteries set aside in the study area during the period from 1896 to 1908 fulfilled these requirements. A Lutheran cemetery, opened in 1898, was centrally located with respect to the Austrian settlers in Range 12. The site, adjacent to the Big Grass River, was well drained and accessible throughout the year (Figure 19). In 1900 Galician and Ruthenian settlers in Range 13 set aside a cemetery on a beach ridge. The site was well drained, centrally located, and adjacent to a main trail (Figure 19). In the same year British settlers in Range 15 set aside a cemetery on a beach ridge beside the Dauphin Trail (Figure 20).

Building Materials and Fuel

The few settlers in Range 10 used local poplar logs for building purposes and fuel. Settlers moving into the Riding Mountain Region had an abundant supply of oak, maple, birch and poplar. In Range 13, however, the lack of tree growth led many settlers to obtain lumber for building

purposes from Beaverdam Lake, which is located in the Manitoba Lowlands Vegetation Section (Compare figures 7 and 8). Spruce and tamarack, which grew in abundance on the margin of the lake, were sawn into lumber at a nearby sawmill. Wood for fuel in Range 13 could usually be bought within the study area from farmers who had surplus. In the areas settled before 1896 wood for fuel was usually obtained in adequate supplies from the farmer's home quarter. Ballast for the two railways built through the West Lake Area in this period was obtained mainly from beach ridges. In the study area three main pits were used (Figures 19, 20 and 27).

Farm Units and Land Use

The farmers who had settled in the area before 1896 were passing from a subsistence type of farming into a commercial type of farming which enabled them to market more of their produce. The elevators established at Riding Mountain and Glenella indicate this trend (See p. 63). The settlers arriving after 1895 were still mainly at a subsistence level. Most farms were 160 acres in size[1] with 40 to 50 acres under cultivation. Oxen were still in general use for transportation and farm work.

As far as can be determined by interview, cultivated land was still confined to the well drained areas with the marshes being used for pasture.

Summary

---

[1]Some of the early settlers probably had farms of 320 acres, consisting of a one-quarter homestead plus one-quarter of Railway Lands (See footnote 1, p. 57).

From 1896 to 1908, as in the period from 1878 to 1895, drainage appears to have been the most important of the physical factors influencing settlement within the study area. Some of the more important influences of drainage on the siting of settlement features were:

1) Farms and trails on well drained topographic features, notably beach ridges and till plain ridges.

2) Settled and cultivated land - the large marshy areas were avoided. This relationship does not hold completely true because Ruthenian and Galician settlers took out homesteads on poorly drained land in Range 13. They appeared satisfied with owning a farm of their own, however poor it may have seemed to other ethnic groups.[1]

3) Cemeteries were sited on beach ridges and along the Big Grass River.

4) Railway routes were chosen with a view to being on flat, well drained land.

The only important settlement features which were located on poorly drained sites were the towns of Riding Mountain and Glenella. Economic factors, bearing little or no relationship to the physical environment, appear to have been the most important ones influencing the choice of the sites of these towns by the Canadian Northern Railway Company.

Other important relationships established or continued during this period were:

1) Settlers moving into the previously uninhabited Riding Mountain

---

[1]The Galician and Ruthenians, unlike the Austrian and British, had never owned their own farms. A farmer of British origin in Range 13 relates: "My father was often called upon by the Galicians and Ruthenians to locate their homesteads. They had filed their homestead entries on poor land without even looking to see what it was like". Personal interview with Mr. Bill Lukin, June 10, 1963.

Region based their economy on the sale of forest products[1] rather than agriculture.[2]

2) Building materials and fuel were, as in the period 1878 - 1895, obtained chiefly from timber and stones within the study area. However, a general lack of good building logs in Range 13, where the vegetation consisted principally of marsh and prairie grasses, influenced some settlers to travel to Beaverdam Lake in the Manitoba Lowlands Vegetation Section of the West Lake Area. Ballast from local beach ridges was used for the newly constructed railways.

3) Many Swamp Lands, hitherto unsold, were bought by speculators in the anticipation that artificial drainage would enhance their market value. This is an example of the feeling prevalent at that time that poor drainage was the only physical factor preventing the settlement and eventual cultivation of the entire area. Apparently, the varying suitabilities of the soils for agricultural use, notably the contrast between the lacustrine and modified till plain soils, was not taken into serious consideration.

---

[1]By comparing figures 6 and 7 it can be seen that the Riding Mountain Region portion of the study area (that is, the area between the Riding Mountain or Manitoba Escarpment and the western boundary of Township 15) generally coincides with the Mixedwood Vegetation Region.

[2]It is interesting to note that the Dominion Lands surveyor of Township 18, Range 15 had advised a forest economy rather than agriculture in this area (See p. 30).

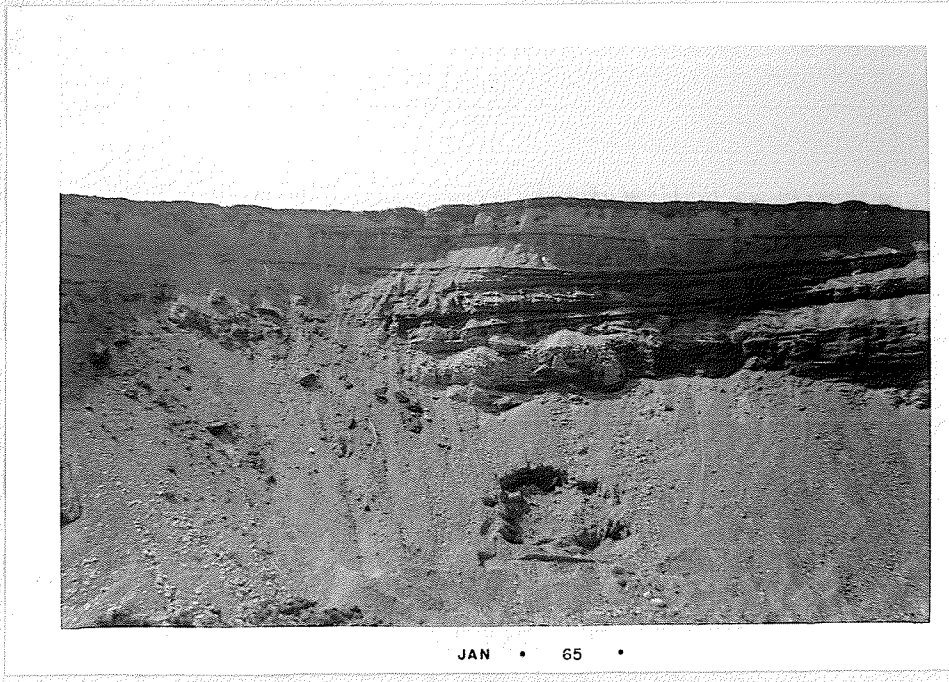


Figure 27
Beach ridge from which ballast was obtained for the Canadian Northern Railway line built in 1902. Gravel for roads is still (1963) obtained from this ridge.
Location: Northwest quarter of Section 16, Range 15, Township 18.

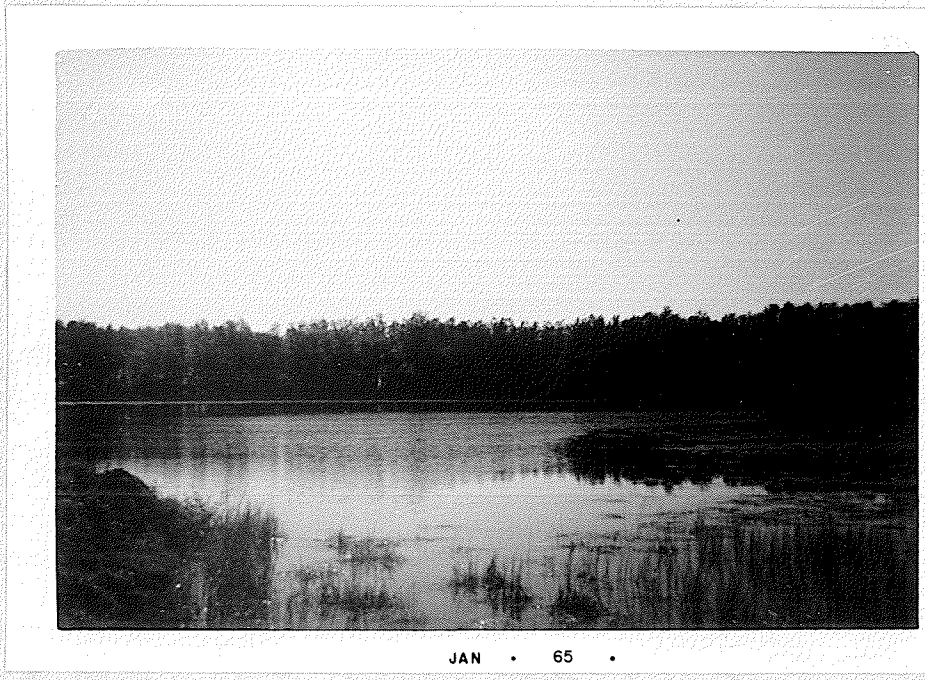


Figure 22
Tree-fringed pond from which the hamlet of Waldersee derived its name.
Location: The southwest quarter of Section 27, Range 12, Township 18.

CHAPTER IV

ARTIFICIAL DRAINAGE, GREATER PRODUCTION CAMPAIGN AND SOLDIER SETTLEMENT 1909 TO 1921

Although the movement of settlers into the study area slowed considerably after 1908, the hitherto sparsely settled areas recorded significant increases. An important event, from the standpoint of settlement, was the formation of Drainage District Number 8 in 1909. In addition, a branch line of the Canadian Northern Railway was built through Range 10 of the study area, the town of Amaranth was surveyed and under the impetus of two government sponsored land settlement schemes, the Greater Production Campaign and Soldier Settlement, many hitherto empty areas of Ranges 10 and 11 were settled between 1916 and 1919. By the end of this period mixed farming with a heavy emphasis on grain was the predominant type of agriculture in the area.

Artificial Drainage

As early as 1902 petitions urging a comprehensive system of drainage had been sent to the Provincial Government from the Big Grass River Area.[1] Although the Big Grass Marsh already had a dredge channel

---

[1]Professor John N. Finlayson, John Holland and John Spalding, Report Of the Land Drainage Arrangement Commission Respecting Municipalities Containing Land Subject to Levies Under "The Land Drainage Act" (Winnipeg: 1936), p. 29.

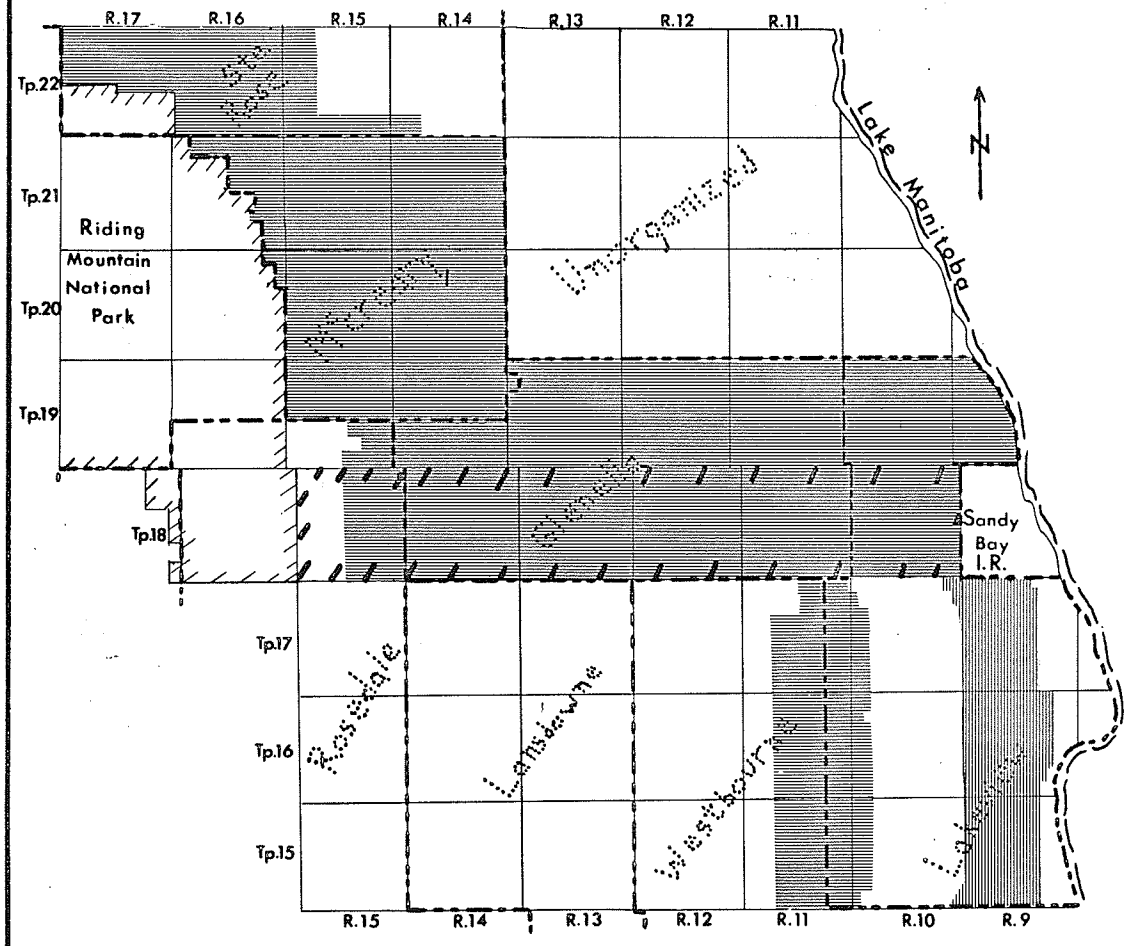
running through it from north to south,[1] it was silted in and was inadequate to handle heavy runoffs. In years of heavy or poorly distributed runoff the Whitemud River would flood, the Big Grass Marsh, denied its outlet, would expand, and the Big Grass River would be unable to remove water flowing onto the Lowland Plain from the Riding Mountain Region. Initially, government drainage engineers were doubtful that the land would support the expense of artificial drainage works. However, under pressure from speculators and settlers who had purchased Swamp Lands in the expectation of drainage, Drainage District Number 8 was formed in 1909. This drainage district covered an area of 394,000 acres in the present day rural municipalities of Glenella, McCreary, Rosedale, Westbourne, Lakeview and the Local Government District of Alonsa (Figure 28). Within the study area all the Lowland Plain (that is Township 18, Ranges 10, 11, 12, 13, 14 and the eastern half of Range 15) was included in the drainage district.[2] Wherever artificial drainage was necessary, the engineers decided to construct east-west and north-south ditches along the road allowances (Figure 29). These ditches were to be integrated, wherever possible, with angle ditches which followed former natural channels. The Big Grass River, from its origin in the West Marsh to Waldersee, was to be left in its natural state. From Waldersee to the Big Grass Marsh, where there was little natural slope, a dredge channel was to be cut through the meanders (Figure 30). Originally it was thought that the Big Grass Marsh could be drained by cutting a channel eastwards from it to Lake Manitoba. However, a government engineer, after studying

---

[1]See p. 42.

[2]Finlayson, Holland, and Spalding, Report Of the Land Drainage ..., p. 28.

Drainage Districts and Municipal Boundaries in the West Lake Area 1921



Drainage District Number 8

Drainage District Number 11

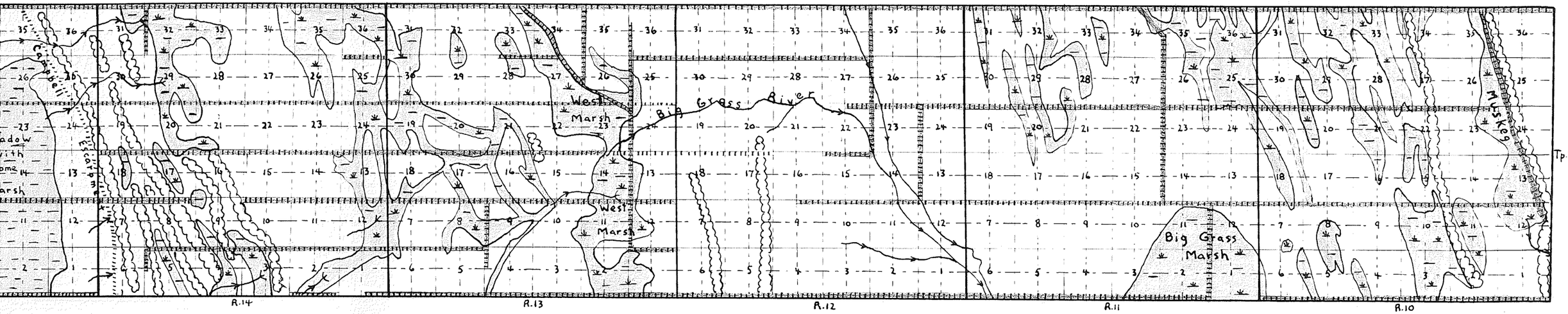
Study Area

Municipal Boundaries

0 6 12 Miles

Source: "Some of the Charts and Maps accompanyiny the Progress Report on the Manitoba Agricultural Survey 1921"

Drainage Ditches Constructed in the Study Area 1909-1916



Sharp Escarpment

Beach Ridge

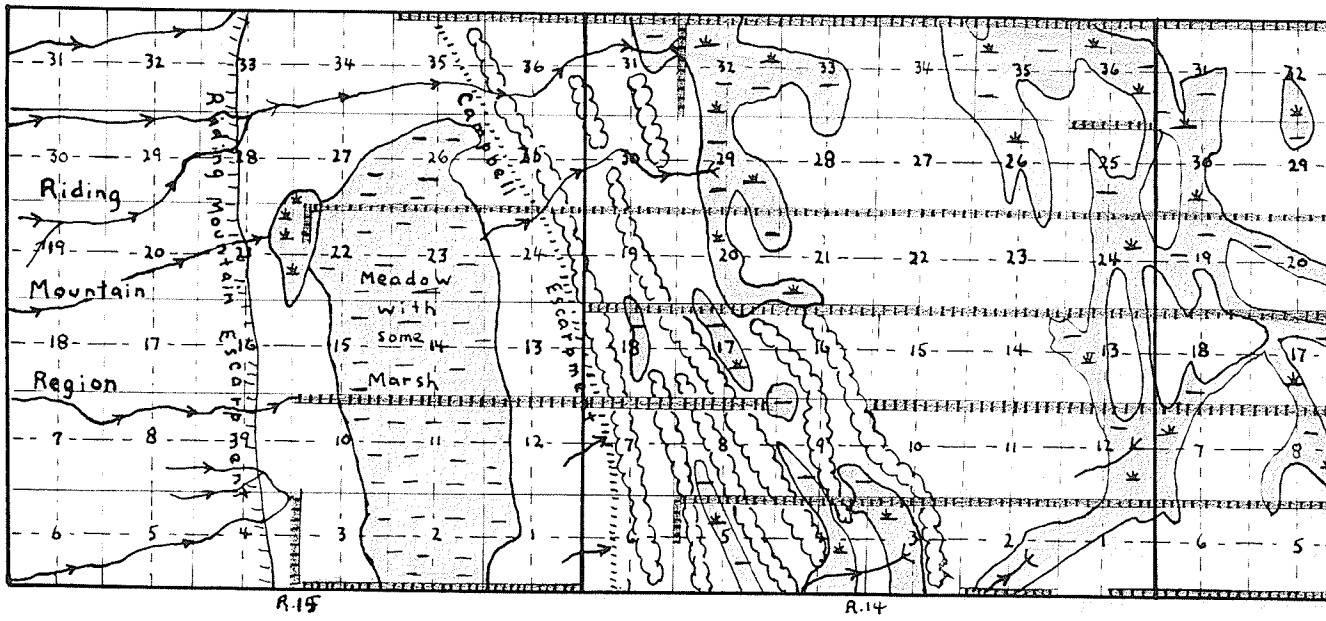
Marsh and Meadow (Prior to Drainage)

River or Stream

Drainage Ditch

Sources: Dominion Lands Survey 1872-1873
Report of the Land Drainage Arrangement Commission 1936.

Drainage Dit



Scale: ½ inch = 1 mile

Ranges 9 and 10, Townships 14 to 18 inclusive, reported that "any channel through the height of land [Kinosota Ridge] between Ranges 9 and 10 would exceed ten miles in length and have a maximum depth of thirty-two feet".[1] Owing to the great expense involved this idea was abandoned; instead the existing dredge channel in the Big Grass Marsh was to be deepened. By 1916, the drainage channels had been completed. As will be discussed more fully later, the artificial drainage works were not as efficient as had originally been hoped. The most successful results were realized on the Upper Lowland Plain where the natural slope and the Campbell Escarpment aided the artificial drainage (as had been predicted by the Dominion Lands surveyor - see pp. 30 - 32) so that by 1914 or 1915 all the marsh and meadow had disappeared (Figure 9 shows the original extent of the marsh and meadow) exposing excellent agricultural soils.[2] The most unsatisfactory results were in Ranges 10 and 11 where the Kinosota Ridge and ridge and swale topography of the severely modified till plain deposits continued to cause poor surface drainage. Moderate improvements of drainage took place in the West Marsh Area of Range 13 but in wet years the area would still be inundated.

Railways and Townsites

Encouraged by the success of homesteaders on lacustrine soils in the southeastern part of the West Lake Area,[3] settlers had spread northwards

---

[1] Ibid., p. 30.

[2] Personal correspondence with Mr. H. West, Special Projects Officer, Canada Department of Mines and Technical Surveys, Ottawa. Mr. West has access to maps not obtainable in Winnipeg and which cannot be removed from Ottawa, which indicate that when Township 18, Range 15 was mapped in 1916 the marsh and meadow were no longer in existence.

[3] The movement into the southeastern part of the area began in 1906 when two gentlemen from Ontario, Mr. Langdon and Mr. Ruth, took out homesteads. The town of Langruth (Figure 32) is named after them.

onto the modified till plain soils in Range 10 of the study area by 1909. The promise of eventually serving a prosperous agricultural population in this newly settled part of the West Lake Area was apparently the main factor[1] leading to the construction of a branch line of the Canadian Northern Railway in 1913[2] (a comparison of figures 21 and 31 shows the movement of settlers onto the lacustrine soils and thence northward onto the modified till plain soils in the southeastern part of the West Lake Area between 1901 and 1911). From the townsite of Langruth, which was located on the beach ridge now bearing its name, the railway ran along the Kinosota Ridge[3] to the northern boundary of Township 18, Range 10, where the townsite of Amaranth was surveyed.[4]

Amaranth.--The townsite of Amaranth was originally surveyed by the Canadian Northern Railway Company on the northwest quarter of Section 35, Township 18, Range 10 (Figures 32 and 33). The owner of the townsite offered 99 year leases on lots between the Langruth Ridge and the railroad

---

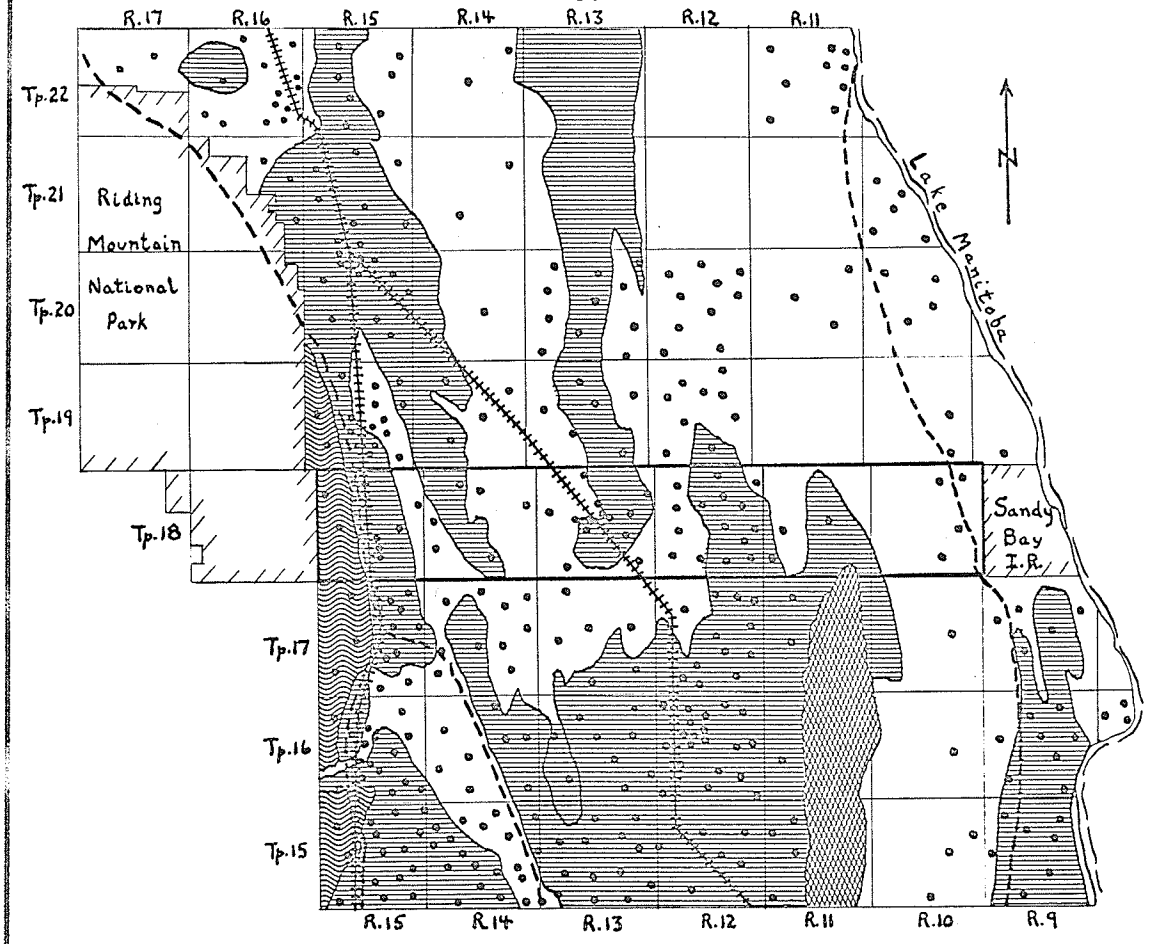
[1]Based on personal interviews with farmers and townspeople, both within and outside the study area, who were living in the southeastern part of the West Lake Area when the railway was built.

[2]Stevens, Canadian National Railways, p. 46.

[3]For approximately one mile north of Langruth, the Langruth Ridge, being in this section quite flat and approximately one-half mile in width, formed an excellent site for the railway. North of this point, however, the ridge assumes a linear, serpentine form which was unsuitable for a railway site. Here the route chosen followed the generally higher land called the Kinosota Ridge between the Big Grass Marsh and Lake Manitoba (See footnote 1, p. 16 for a description of the Kinosota Ridge).

[4]Interviews indicate that original plans were to continue the railway from Amaranth to Ste. Rose du Lac (Figure 32). However, the onset of World War I in 1914 brought a halt to railway construction and when the line was completed between 1921 and 1922 it was built only as far as Alonsa. The writer is of the opinion that the inability of the severely modified till plain soils in the northern part of the West Lake Area to support a significant rural population was the main factor (the experience of settlers on these soils will be discussed in Chapter V of the thesis).

Population Distribution In the West Lake Area 1911



Population of West Lake- 10,724
Population of Study Area- 1,308

GENERALIZED SURFACE DEPOSITS

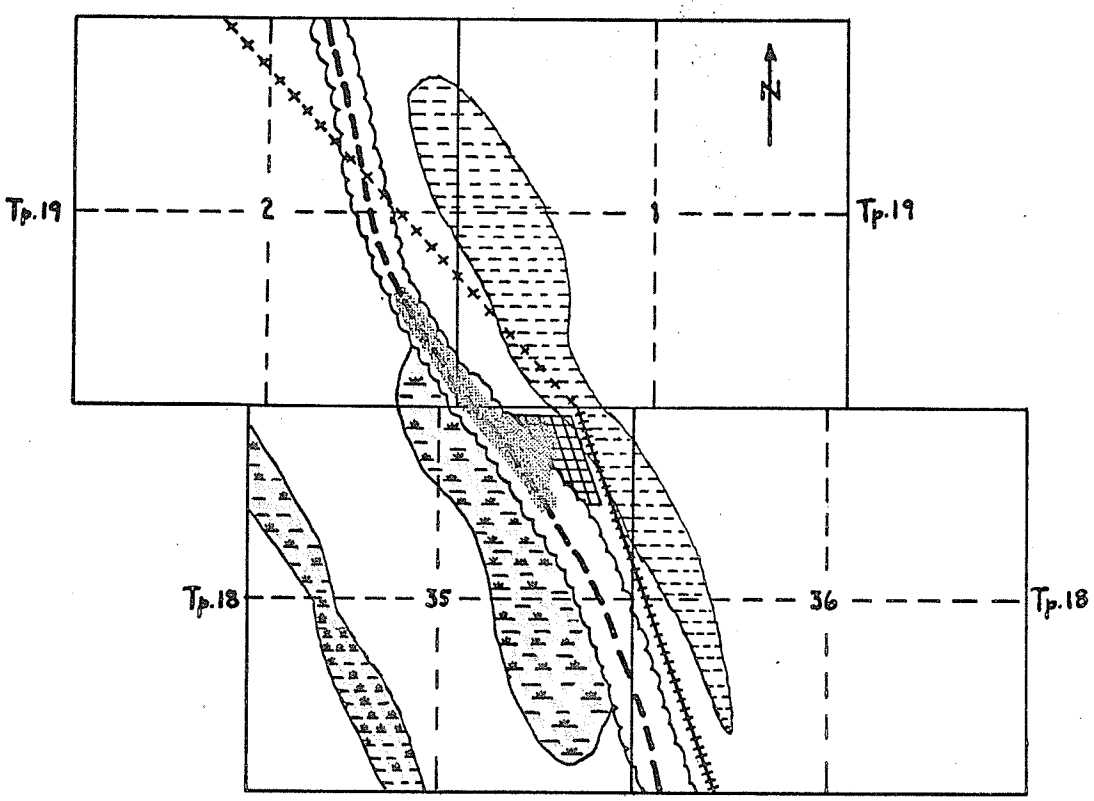
- Lacustrine and Alluvial
- Bog and Half Bog
- Moraine and Unmodified Till Plain
- Modified Till Plain

- Railway
- Important Trail
- 1 Dot Represents 25 People
- Study Area

Miles
0 6 12

Sources: Manitoba Soils Report No. 8, Census of Canada 1911, Canada Department of Mines Memoir 174, Morton, W.L., "Manitoba: A History", Interviews.

The Site of Amaranth



Site of Amaranth Surveyed in 1913 by the Canadian Northern Railway Co.

Approximate Limit of the Built Up Part of Amaranth in 1921

Muskeg

Land Subject to Spring Flooding

The "Langruth" Beach Ridge

Trail to Kinosota (Manitoba House)

Railway

Proposed Railway

Scale: 1 inch = ½ mile

Sources: Interviews, Stevens, O.B.E. "Canadian National Railways" Volume II, Manitoba Soils Report No. 8

but he would not sell or lease lots on the ridge itself. The land between the ridge and the railroad, not offering the good drainage, domestic water supply, and accessibility found on the ridge, attracted few settlers. Hoping to capitalize on the dissatisfaction of potential settlers with these conditions, the owner of the southwest quarter of Section 1, Township 19, Range 10 had his land surveyed for town lots. The main street ran along the Langruth Ridge; east-west and north-south streets were surveyed on the east side of the ridge. The lots along the main street were rapidly taken up but little development took place on the other streets. After most of the main street lots on the southwest quarter of Section 1, Township 19, Range 10 had been sold, the owner of the southeast quarter of Section 2, Township 19, Range 10 sold lots along the Langruth Ridge. Soon afterwards a new owner on the northeast quarter of Section 35, Township 18, Range 10 offered lots along the ridge. By 1921 the town had spread approximately three-quarters of a mile along the Langruth Ridge.[1]

Transportation and Communications

Lowland Plain.--Prior to the construction of drainage ditches, communications were mainly in a north-south direction by railway or by trail. Poor drainage in the area as a whole confined the main trails to high land which was usually found in the form of beach ridges. Trails leading from farmhouses to the main trails followed whatever high land was available. Few road allowances were in use (Footnote 2, p. 39).

---

[1]Most of the information concerning the townsite of Amaranth was obtained by personal interviews with the original and "new owner" of the northeast quarter of Section 35, Township 18, Range 10. Judge T. Ryan, the original owner, recently died in Winnipeg at the age of 89 years; the "new owner", Charles Parsons, aged 85 years, still lives in Amaranth.

With the construction of drainage ditches, however, the old system was radically changed. Earth and gravel spoil excavated for the drainage ditches was piled along the road allowances and angle ditches. When levelled, these served as the first man made roads in the study area (Figures 29 and 34). With the exception of the Dauphin Trail and the trail along the Langruth Ridge, all the former north-south trails were cut by drainage ditches. Since bridges were built only on the road allowances at the intersection of north-south and east-west ditches, the old trails were rendered useless as main travel routes. Nevertheless the ridges were important as sites for trails leading from farmhouses to the drainage ditch roads. The use of drainage ditch roads led to an increase in local communications. Farmers in the vicinity of Waldersee would often travel to Glenella instead of Plumas; those in Range 14 would go to Riding Mountain or Glenella instead of Arden.

Riding Mountain Region.--Throughout the period from 1907, when the first homestead was taken out, until 1921, trails in the Riding Mountain Region followed the natural terrain, avoiding steep escarpments and stream valleys.

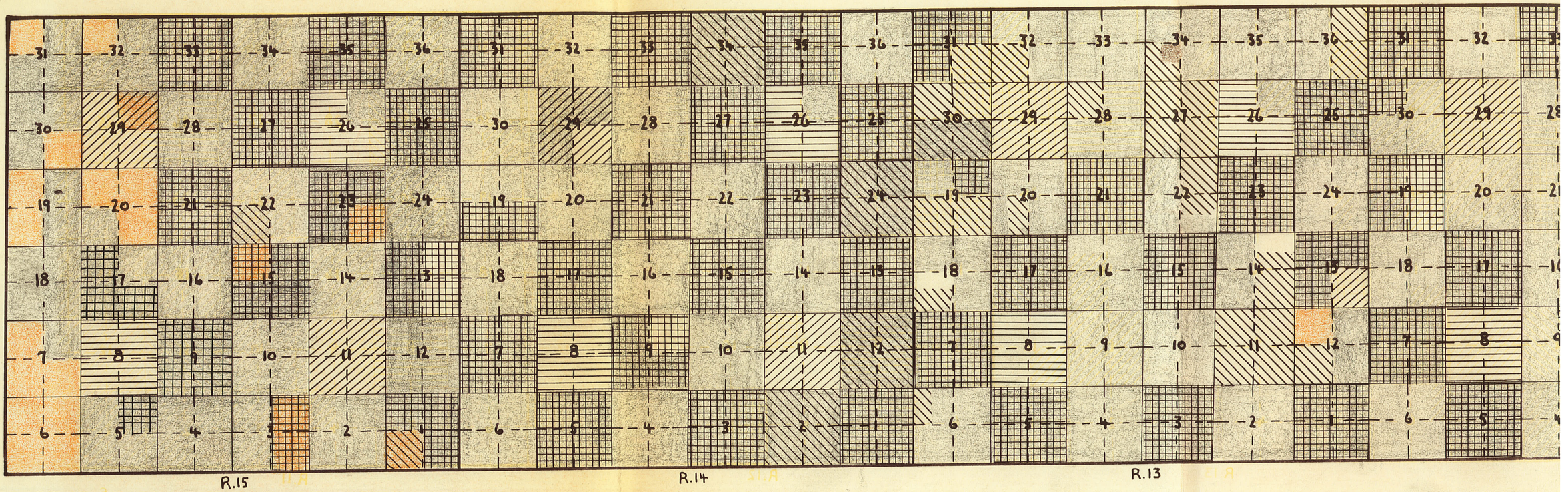
Land Taken Up 1909 - 1921

1909 - 1916.--After the remaining lands reserved for special purposes were opened for homesteading in 1908,[1] there was a rapid influx of settlers into Ranges 10 and 11 (Figure 35). As indicated by figures 35 and overlay 2 the remainder of the Lowland Plain received few settlers

---

[1]Morton, "Dominion Lands" . . ., p. 298. Since Ranges 10 and 11 were outside the railway belt the lands reserved for special purposes had not become available for settlement in 1896 as they had in other parts of the study area (See pp. 56 - 57). In 1908, however, the railway grants were

SETTLEMENT TO 1921



Scale: ¾ inch = 1 mile

Land Settled By 1921

- 1878-1908
- 1909-1916
- 1917-1921
- Soldier Settlement 1919

during this period. With the exception of Ranges 10 and 11 and the Riding Mountain Region, the only new lands taken up were five quarter sections of School Lands in 1916.[1] The population increase in Township 18, Range 15 (Figure 24) was principally due to a continued movement into the Riding Mountain Region plus a slight increase in the town of Riding Mountain.[2]

1917 - 1921.--With the exception of Ranges 10 and 11, few new lands in the study area were taken up and the rural population[3] remained approximately constant from 1917 to 1921 (Figures 24 and 35). In Ranges 10 and 11 a combination of circumstances led to the settlement of many of the Swamp Lands[4] and remaining Homestead Lands which had been considered unsuitable for settlement in previous periods. Firstly, artificial drainage works, constructed between 1909 and 1916, exposed former poorly

---

terminated and all the unalienated reserved lands were opened for homesteading.

[1]High wartime prices and a series of good crop years from 1914 to 1916 induced some farmers to expand their holdings. Consequently, the Provincial Government felt it was a propitious time to sell School Lands in areas where most of the other categories of land had been taken up.

[2]No population figures were available for the towns of Riding Mountain, Glenella, or Amaranth prior to 1956. However, on the basis of interview, the general development of these towns has been traced up to 1956.

[3]As far as can be ascertained by interview the increase in population of Township 18, Range 13 (Figure 24) occurred mainly in the town of Glenella. The rapid increase was apparently due to an influx of retired farmers (many of the farmers in Ranges 12 and 13 had settled in the 1880's and 1890's) from the surrounding area and an expansion of marketing and servicing facilities occasioned by the development of more communications within the area. Indications of the growth in population of Glenella were given by the establishment of a creamery, two general stores, a blacksmiths, and a hotel during this five year period. Also, Glenella was made the administrative headquarters for the Rural Municipality of Glenella when it was formed in 1920.

[4]In addition to Swamp Lands belonging to the Provincial Government many of the Swamp Lands bought previously by speculators were sold during this period.

drained land and provided accessibility in the form of drainage ditch roads. Secondly, high prices for agricultural products and government sponsored programmes for the settlement of idle lands during and after World War I (Greater Production Campaign and Soldier Settlement)[1] induced settlers to make farming their livelihood. Thirdly, the railway line and town of Amaranth provided marketing, and shipping facilities. Indications of the movement of settlers into the area were the setting aside of a cemetery on the Langruth Ridge, the inclusion of Range 10 in the Municipality of Lakeview, and the building of an elevator in the town of Amaranth, all in 1919. The expansion of settlement reached its peak in Range 10 in 1919[2] with the arrival of soldier settlers. A similar pattern of expansion onto the hitherto sparsely settled severely modified till plain soils in the northeastern part of the West Lake Area (of which the severely modified till plain soils of Ranges 10 and 11 are a part) occurred between 1909 and

---

[1]R. W. Murchie and H. C. Grant, Unused Lands of Manitoba (Manitoba Department of Agriculture and Immigration, 1926), pp. 60 - 61.

Soldier Settlement on the Land, Report of the Soldier Settlement Board of Canada March 31, 1921, ed. F. A. Ackland (Ottawa: Printer To The King's Most Excellent Majesty, 1921), p. 24.

During the latter years of World War I (1916 - 1918) the Dominion Government, under a programme known as the Greater Production Campaign, encouraged the increased production of agricultural products to feed the allied soldiers and civilian population in Europe. In 1917, in anticipation of the cessation of hostilities, the Dominion Parliament passed the Soldier Settlement Act. The act was framed with the two-fold object of assisting the soldier to return to civilian life and of meeting the demand for greater agricultural production. Loans were made for land purchase, for stock and equipment, and for buildings and permanent improvements. Only soldiers who were suited to farming were to be allowed to take out farms under the act. In addition, the land was to be of a sufficiently good quality to allow the settler an adequate standard of living. However, as will be discussed in the thesis, the proposals with regard to the suitability of the soldiers and the land for farming were not carried out in the study area and possibly not in the entire West Lake Area.

[2]The township populations taken in 1916 and 1921 (Figure 24) do not record this peak population in Township 18, Range 10.

1921, chiefly during the Greater Production Campaign and Soldier Settlement (this is illustrated by a comparison of figures 31 and 36). Most of these settlers were sold Swamp Lands on the modified till plain soils (Figure 35). Flooding of crops[1] in addition to stoniness and poor yields, combined with various social or cultural factors[2] led to the abandonment of many farms on the severely modified till plain soils in Range 10 and the northern part of Range 11 from 1919 to 1921.[3] By 1921, there were few residents in Range 10 outside of the town of Amaranth. In Range 11, although some settlers abandoned farms on the severely modified till plain soils in the northern part, settlers continued to take up land on the recently drained lacustrine soils in the southeast[4] (Figure 35 and overlay 2). Thus, despite some abandonment, the township census for Range 11 records an increase between 1916 and 1921 (Figure 24).

Farm Units and Land Use

Lower Lowland Plain.[5]--In the period from 1909 to 1915 or 1916, settlers moving onto the still poorly drained lands in Ranges 10 and 11

---

[1]The artificial drainage system did not prevent flooding on the severely modified till plain soils in Ranges 10 and 11.

[2]Murchie and Grant, Unused Lands of Manitoba. In the part of this report dealing with the West Lake Area (pp. 129 - 163) it is often mentioned that many of the soldier settlers were unsuited, both in previous experience and mental attitude, as well as in physical ability, to make farming their livelihood. On the basis of interviews it appears that many of the settlers who homesteaded during the Greater Production Campaign were also unsuited for farming.

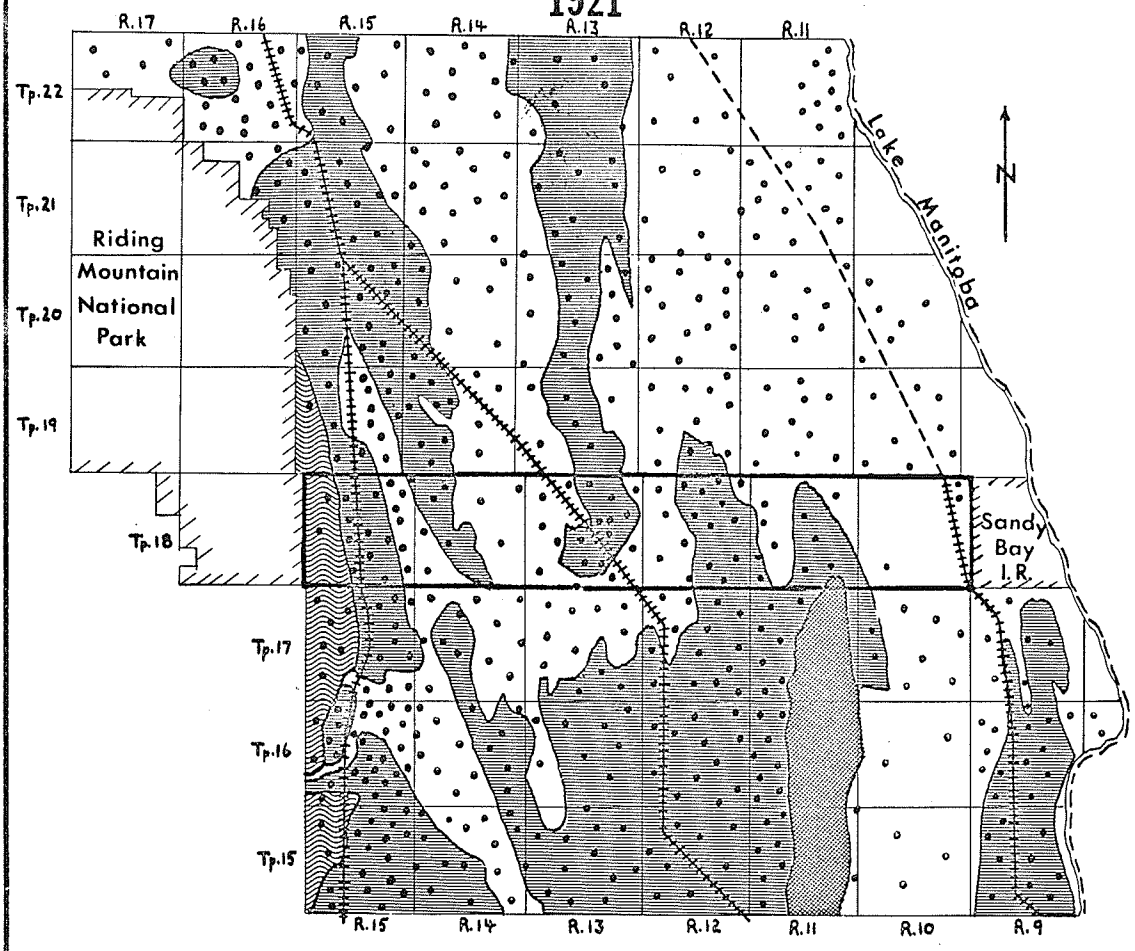
[3]No exact information on the abandonment of land sold by land companies or Homestead Lands was available. However, an indication of abandonment is given by the fact that seventeen of the eighteen soldier settlers left before 1921.

[4]Interviews indicate there was a sizeable movement of Americans onto the Swamp Lands near the Big Grass Marsh. These Swamp Lands had been bought by American land companies from 1907 to 1909.

[5] For identification of the physiographic divisions discussed under this section see overlay 1 in the back pocket.

Figure 36, page 83

Population Distribution in the West Lake Area 1921



Population of West Lake - 14,731
Population of Study Area - 1,653

Lacustrine and Alluvial

Bog and Half Bog

Moraine and Unmodified Till Plain

Modified Till Plain

Railway

Proposed Railway

1 Dot Represents 25 People

Study Area

Miles
0 6 12

Sources: Manitoba Soils Report No.8, Census Of Canada 1921, Canada Department of Mines Memoir 174

raised beef cattle on the natural grasses found in abundance in swales on the modified till plain soils and in the vicinity of the Big Grass Marsh.[1] Farmers were able to supplement the grasses found on their home quarter by grazing cattle on nearby unsettled lands. Hence, these settlers were trying to adjust their agricultural practices to the physical limitations and advantages of the physical environment. In harmony with the opinions of the Dominion Lands surveyors and actions of settlers before 1908, they realized that the area was unsuitable for arable agriculture.[2] In other parts of the Lower Lowland Plain mixed farming predominated. By 1916, horses had almost completely replaced oxen on the older farms. After 1916 improved drainage and high prices for grain[3] encouraged many of the newly arrived homesteaders and soldier settlers in Ranges 10 and 11 to attempt cash grain farming. Many of the settlers who had started out to raise beef cattle, now denied access to free grazing lands with increased settlement, also turned to grain farming. On the older farms cattle were kept but more land was cleared for grain under the incentive of high prices. Expansion of cultivated acreages was facilitated by the use of horses instead of

---

[1] As discussed under a previous section in this chapter ("Artificial Drainage", p. 73) artificial drainage did not do much to improve drainage conditions in Ranges 10 and 11.

[2] Apparently, the raising of beef cattle had not been previously attempted in this part of the study area because of the lack of access roads. However, roads accompanied the construction of drainage ditches between 1909 and 1916.

[3] W. L. Morton, Manitoba: A History (Printed in Canada: University of Toronto Press, 1957) p. 381. The peak price for wheat, which is a good indicator of all grain prices, was reached in 1920 when it sold for an average of $ 3.19 a bushel. Considering the devaluation of the dollar since 1920 and the present day demands of farmers for a guaranteed $ 2.00 a bushel for wheat, one can well imagine the incentive to raise grain in this period.

oxen.[1] Except for the rapid abandonment of farms on the severely modified till plain soils by inexperienced farmers, high prices sustained this system until 1921.

Upper Lowland Plain.--As discussed on page 73, the marsh and meadow in the central part of the Upper Lowland Plain were drained by 1916. With the exposure of many acres of good agricultural land, principally fine to medium textured lacustrine and alluvial deposits (Figure 9 and 10), farmers on the Upper Lowland Plain, who had until then practiced mixed farming utilizing the drier land for crops in combination with pasture on the marsh and meadow land, began to depend more heavily on cash grain.

Riding Mountain Region.--Settlers in the Riding Mountain Region derived most of their income, not from farming, but from the sale of wood for fuel, railway ties, and building purposes. In addition to wood obtained from their own land, leases for wood cutting could be obtained in the Riding Mountain Forest Reserve.[2] By 1921 three sawmills had been established in the Riding Mountain Region portion of the study area. The settlers had small fields of 15 to 20 acres cleared on the terraces where they grew food only for home consumption. Few cattle were kept because there was an abundance of wild game such as deer and elk in the Riding Mountain Forest Reserve. Income was augmented by part-time work on farms

---

[1] Older farmers in the area estimate that a team of oxen could plough about one and one-half to two acres per day whereas a team of horses could plough two and one-half to three acres in the same time.

[2] The present day Riding Mountain National Park was a forest preserve at this time.

south of the study area during the harvest season.[1]

Farmsites and Water Supply

Settlers taking up land on the modified till plain deposits in Ranges 10 and 11 tended to site their farmhouses on till plain ridges wherever possible. Usually they would choose a site on the ridge near one of the drainage ditch roads, thus combining good drainage with proximity to transportation routes. Water for domestic purposes was not as serious a restriction in the siting of farmhouses as it had been before this period because wells could now be drilled by machine as well as dug by hand. However, the water from deeply drilled wells in Range 10[2] and the southeastern part of Range 11 was usually impregnated with distasteful, but not seriously harmful, soluble salts derived from the gypsum and limestone surface deposits or bedrock. Those farmers who kept livestock watered them in swales, which were still not well drained despite artificial drainage, during the summer, and from drilled wells during the winter. Settlers in the western part of Range 10 settled, whenever possible, on the Langruth beach ridge.

Settlers in the Riding Mountain Region sited their farmhouses on the flat land of the terraces. Domestic water was readily obtained from shallow dug wells into which ground water, under great hydrostatic pressure, rose quickly to within about 10 feet of the surface. Numerous streams furnished water for their few livestock.

---

[1]Before leaving for harvesting the settlers would kill a supply of deer and elk sufficient to feed their families during their absence. They called this wild game "harvest meat".

[2]With the exception of the Langruth Ridge where excellent water was obtained from shallow dug wells.

Building Materials and Fuel

Most of the farm buildings erected during this period were built of local timber. The main sources were three sawmills in the Riding Mountain Region (See p. 85) and one sawmill on the Langruth Ridge near the town of Amaranth. In some instances gravel for making concrete foundations was obtained from beach ridges. Most farmers could obtain enough wood for fuel from their own land.

Summary

During the period from 1909 to 1921 the following are the most significant relationships, either new or a continuance of old, between settlement features and physical environment within the study area:

1) Farmhouses built on the severely modified till plain soils in Ranges 10 and 11, which received a large influx of settlers during this period, were usually located on till plain ridges since artificial drainage works had failed to drain the intervening swales. Moreover, farmers continued to locate on the Langruth beach ridge because it provided, besides the advantage of good drainage, good water from shallow wells in an area where well water was often saline and hard to obtain and also proximity to a main trail. The site advantages of the Langruth beach ridge, not only in the study area but also north and south of it, are well illustrated in the following comment made by a government official visiting the area in this general period:

> Gravel beaches of Glacial Lake Agassiz are found traversing the area. The most conspicuous is the Langruth Ridge. This ridge forms a natural highway into the country northward, and it has been used as such since before the days of settlement. (Italics mine).
> . . . . . .
> A significant fact about these ... ridges is that they run at right angles to the drainage from the height of land Kinosota Ridge west

of the Langruth Ridge, and that they lie between the height of land and the lake. Because of this fact water is obtained in wells dug into the ridge at relatively shallow depth. This is a noteworthy condition in a district where well water is somewhat of a problem.[1]

2) The town of Amaranth, like those of Riding Mountain and Glenella, was surveyed on a poorly drained site. Unlike them, however, it developed on a well drained site (the Langruth beach ridge) because of the physical attributes mentioned above.

3) The hope of making all the poorly drained parts of the study area suitable for cultivation through artificial drainage (it was for this reason that Swamp Lands had been set aside in 1893 and 1907) was not realized and, in some areas, drainage had a detrimental effect. Lack of a thorough investigation of the physical environment and pressure from land speculators led the Provincial Government to attempt drainage of the severely modified till plain soils in Ranges 10 and 11. Thereafter, extensive cattle ranches existing prior to artificial drainage were broken into small farms for settlers during the Greater Production Campaign and Soldier Settlement. High grain prices and restricted acreages, coupled with inexperience and lack of direction, led the new settlers to attempt grain farming on these soils. The folly, even under high prices, of this system of land use was borne out by the rapid abandonment of many farms. Whether the remaining settlers could live by grain farming or even mixed farming in years of normal prices remained to be seen. On the other hand, drainage had proved advantageous in other parts of the study area, especially on the Upper Lowland Plain where grain farming was now replacing mixed farming, and in parts of the West Marsh Area in Range 13.

---

[1] Murchie and Grant, Unused Lands of Manitoba, p. 142.

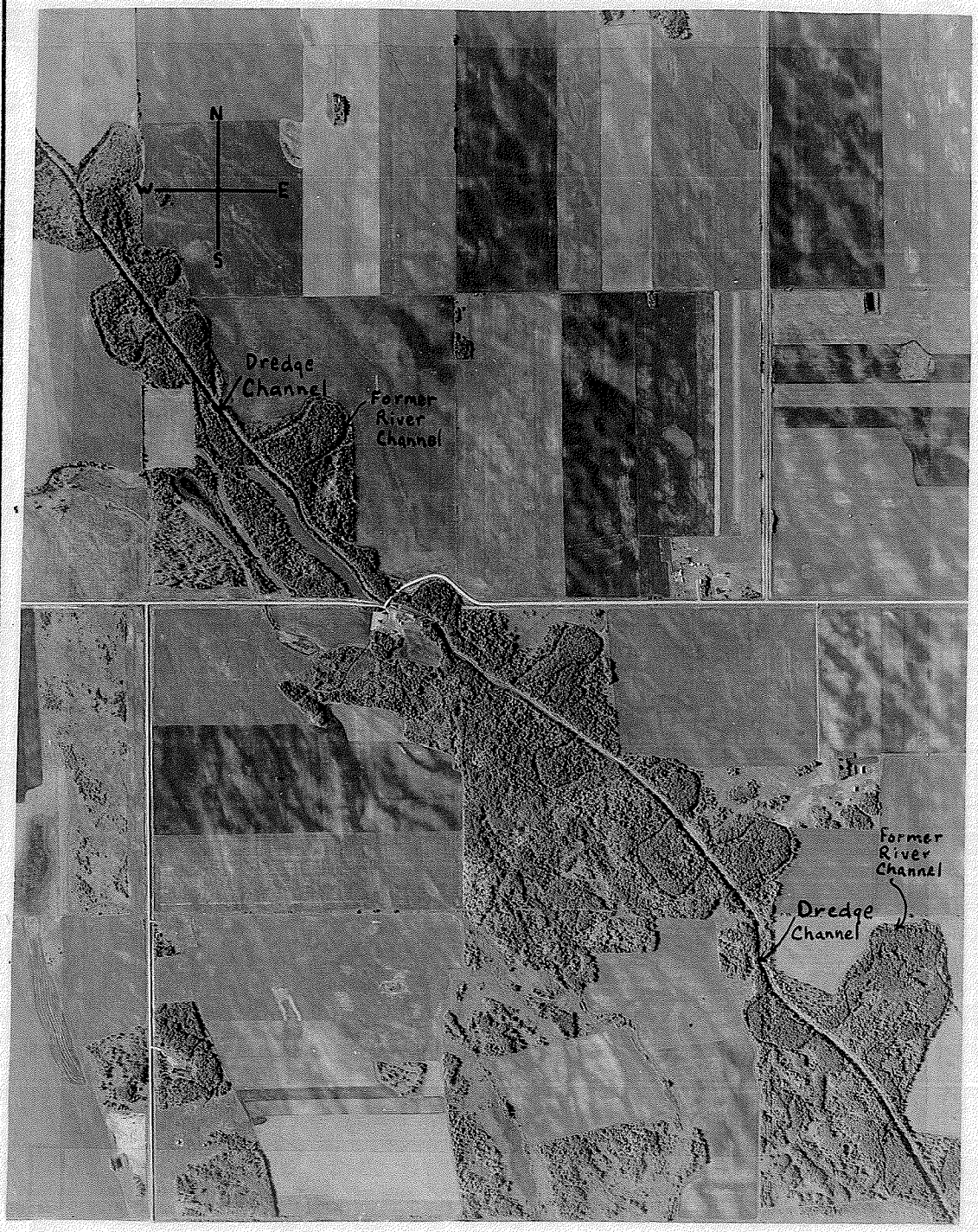
4) Trails in the Riding Mountain Region followed the natural terrain, avoiding steep slopes and ravines but, with the exception of the Dauphin Trail and the trail along the Langruth beach ridge, all the trails of former periods, following the higher, better drained topographic features to avoid the marshes, were replaced by the grid pattern of drainage ditch roads. This brings out an important relationship between settlement features and the physical environment, namely, that in an area of extremely poor drainage, trails following the naturally higher land may exist until the construction of artificial drainage works.

Relationships in other parts of the West Lake Area similar to those in the study area developed during this period are:

1) As discussed in (1) earlier in the summary, and on page 74, the Langruth beach ridge was an important physical feature in the eastern part of the West Lake Area. For the same reasons as within Range 10 of the study area, farmhouses in other parts of the West Lake Area were sited on this beach ridge and Langruth, like the town of Amaranth, was located on it.

2) High prices for agricultural products, the Greater Production Campaign and Soldier Settlement combined with artificial drainage, and railway construction led to the settlement of hitherto sparsely settled modified till plain soils in the eastern and northeastern parts of the West Lake Area (the severely modified till plain soils in Ranges 10 and 11 of the study area are part of these).

Dredge Channel along the Big Grass River



Scale: 4 inches = 1 mile

Source: R. C. A. F. Photographic Establishment, Rockcliffe, Ont.

Aerial Photograph of Parts of Sections 1, 2, 11, and 12, Range 12.

1913 Railway and Town of Amaranth

Location: Parts of {Sections 1 and 2, Range 10, Township 19
Sections 35 and 36, Range 10, Township 18}

Figure 34

Drainage Ditch Road Near Glenella

The road, which has been in use since 1909, was formed from the spoil piled adjacent to the drainage ditch. It was for many years the main road serving the area north of Glenella.

Location: The southwest quarter of Section 26, Range 13, Township 18.

CHAPTER V

DEPRESSIONS AND DROUGHT 1922 TO 1938

A rapid decline in the prices of agricultural products combined with poor climatic conditions for crop growth led to farm abandonment in many parts of Manitoba between 1922 and 1925. Alarmed by widespread abandonment, the Manitoba Government issued a report on the unused lands of the province in 1926. Many parts of the West Lake Area, including the Lower Lowland Plain portion of the study area, were investigated at this time. Following a brief recovery from 1926 to 1929, a drought and economic depression ensued in almost all parts of the prairie provinces until 1938. In the study area, this was a period of stagnation since no new land was settled or sold.[1] However, a new era of rural settlement, occasioned by developments in farm technology, in conjunction with improved economic and crop growing conditions, was dawning by 1938.

1922 - 1926

Abandonment

A combination of poor crops and low prices[2] led to farm abandonment

---

[1]Although no hitherto unused lands were taken up during this period, some movement did take place onto lands which had been previously settled. Settlement of these lands is based wholly on personal interview.

[2]Morton, Manitoba: A History, p. 381
Murchie and Grant, Unused Lands of Manitoba, p. 32.
In 1919 prices for farm products in Canada were 134 percent above pre-war

in many parts of the West Lake Area, including the Lower Lowland Plain portion of the study area, between 1922 and 1926. The effect of these natural and economic calamaties was most pronounced in Ranges 11 and 14.[1] In these areas it soon became apparent that grain growing alone, or a heavy emphasis on grain growing, could not support settlement in years of average or below normal prices or in years of adverse crop growing conditions. In the southeast part of Range 11, where settlers had tried grain growing on the lacustrine soils adjacent to the Big Grass Marsh, crops were frequently flooded and salinity inhibited growth. Settlers in this area, who had been attracted and sustained by high prices, left soon after 1922. Farm abandonment in Range 14 took place principally on the modified till plain soils (that is, in the eastern half of this range). Here crops were flooded in the wet years[2] and dried out in years of moderate or light precipitation.[3] These adverse physical conditions plus low prices led to the abandonment of numerous farms.[4] In Range 12 the natural fertility of the land sustained

---

prices, in 1921, 37 percent above, and in 1923, 7 percent below pre-war prices. The postwar slump showed itself most forcibly in the fall in the price of wheat from an average of $ 3.19 a bushel in 1920 (See footnote 2, p. 84) to $ 1.11 in 1922. The purchasing power of wheat, by an index of 100 for 1912, was 69 in 1922.

[1]Unfortunately, records for the municipality of Glenella showing the exact location and number of abandoned farms in Ranges 11 and 14 were not available. However, numerous interviews with farmers who were living in the area at that time indicate that the population decline in these ranges between 1921 and 1926 (Figure 24) was principally due to farm abandonment (as discussed in Chapter IV, abandonment had already taken place in Range 10 and the northern parts of Range 11, between 1919 and 1921).

[2]Personal interviews with farmers who were living in Range 14 at the time of abandonment indicate that the drainage ditches in the eastern half would overflow onto adjacent croplands in wet years.

[3]The high lime carbonate content of the modified till plains soils (See footnote 2, p. 25) undoubtedly aggravated drought conditions.

[4]The settlers leaving Range 14 were mainly of British ethnic origin from Ontario. Those who left Range 11 were also of British origin but had come from the United States (See footnote 4, p. 82).

most farmers[1] during a return to mixed farming from a heavy emphasis on grain. Apparently (according to interviews) no farm abandonment took place on the Upper Lowland Plain. Here, grain farming, which came into ascendency after artificial drainage, proved able to support the farmers despite years of low prices (crops on the Upper Lowland Plain were consistently good). Settlers in the Riding Mountain Region were not seriously affected by the adverse climatic and economic conditions for agriculture since they relied mainly on the sale of wood products for their livelihood.

In 1926, the Government of Manitoba undertook a detailed examination of those areas in the province reporting a large percentage of the lands as unused.[2] The purpose of the survey was to determine why these lands had been passed over by succeeding generations of settlers or had been settled and then abandoned due to some apparent defect. Within the West Lake Area, the municipalities of Westbourne, Glenella, Lakeview, Lawrence, Ste. Rose, McCreary, Rosedale, Langford, and the unorganized territory lying west of Lake Manitoba (now called the Local Government District of Alonsa), which reported 41 percent of their land as unused, were investigated at this time.[3] During the course of the survey the first attempt was made to

---

[1]Personal interview with Mr. J. Single, June 17, 1963 and Mr. E. Hoehn, June 22, 1963. Interviews with these gentlemen indicate that several farms (either three or four) were abandoned in Range 12 along the Big Grass River between Waldersee and the Big Grass Marsh. Abandonment apparently took place because this portion of the river proved inadequate, despite the dredge channel (Figure 30), to remove water funneled into it by numerous drainage ditches. Consequently adjacent farmhouses and farmlands, which had been seldom flooded before the construction of the ditches, were now inundated frequently.

[2]Murchie and Grant, Unused Lands of Manitoba, p. 8. Unused lands were defined as "any parcel of land which was not, in 1926, an integral part of any occupied farm".

[3]Ibid., p. 129. The description of settlement within the study area is found on pages 129 to 162 of this report. The map on page 11 shows the

classify the soils of the West Lake Area. Physical attributes and deficiencies of each type were discussed and recommendations were made as to their best use. The land classification represented a radical departure from the previous land policy by which settlers had been allowed to take up land with little or no attempt at direction on the part of the government. The period of abandonment, which had begun in 1920 with the withdrawal of soldier settlers and had continued to 1926, made it clear that:

> The Provincial Government, as representative of the people of the province, can no longer afford to adopt the "laissez-faire" policy, because if settlers are allowed to settle on land which under prevailing economic practices will not support modern social institutions, the Provincial Government is generally called upon to assist in their support.[1]

The investigators of unused lands in the study area, on the basis of their own technical training and interviews with farmers, made recommendations concerning the suitability of the soils of the Lower Lowland Plain[2] for different uses, including arable agriculture, ranching,

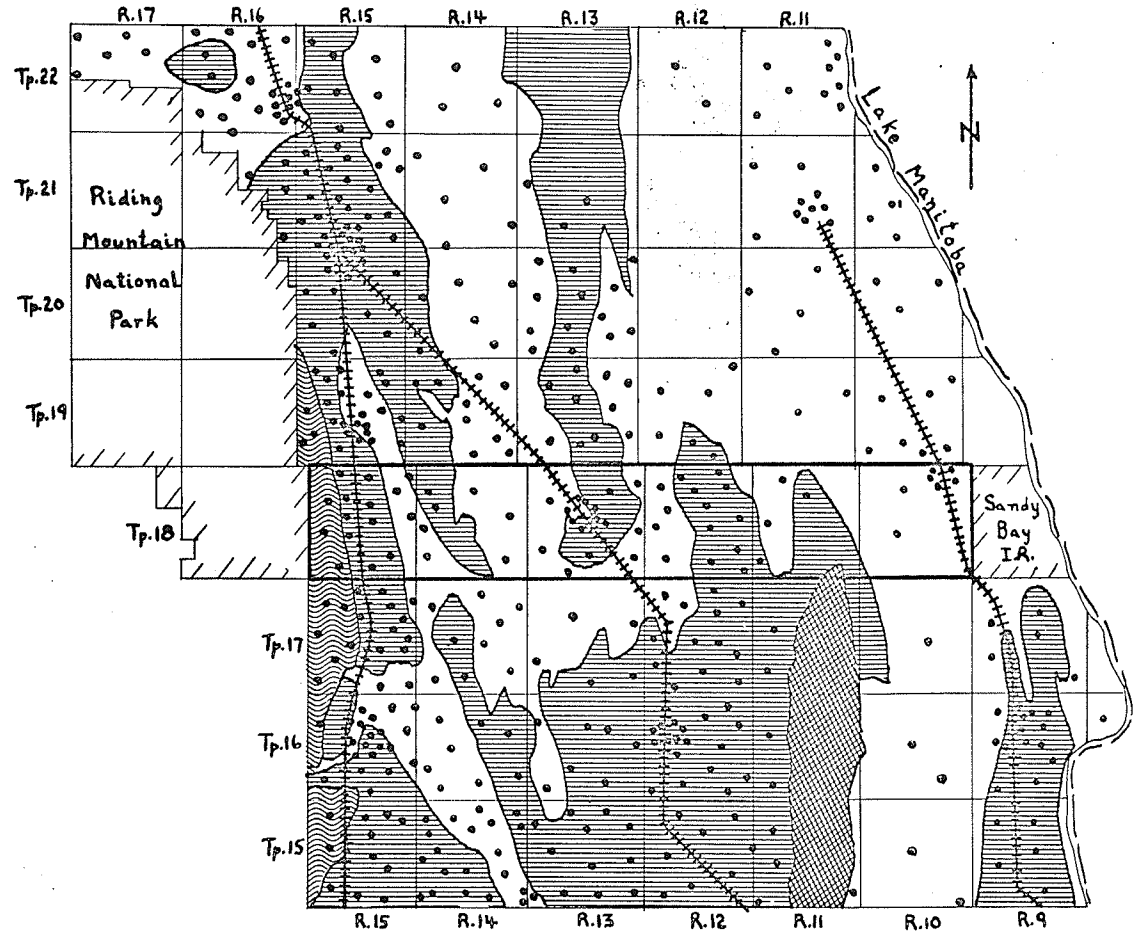
---

general distribution of unused lands within the study area and the West Lake Areas as a whole. In addition, a comparison of figures 35 and 37 indicate the areas suffering marked declines in population (notably the northeastern part of the West Lake Area on modified till plain soils). Most of this decline took place between 1921 and 1926 when soldier settlers and homesteaders, who had settled under the Greater Production Campaign and Soldier Settlement between 1916 and 1919, abandoned their farms.

[1] Ibid., p. 8.

[2] The report makes little mention of the Upper Lowland Plain or Riding Mountain Region because these areas contained few unused lands. However, interviews indicate that, on the Upper Lowland Plain in 1926, most of the lacustrine and alluvial soils, which were now well drained due to artificial drainage, and the less stony areas of modified till plain soils were under cultivation. In contrast to the Lower Lowland Plain, grain farming or mixed farming with a heavy emphasis on grain had proven satisfactory even in periods of normal or below normal prices. Through interviews with farmers and soil scientists, it appears that this contrast developed because the soils on the Upper Lowland Plain are more fertile and have a better reserve than soils developed on the Lower Lowland Plain. Interviews further indicate that almost every quarter section in the Riding Mountain Region was in use. Since settlers in this region were dependent upon forest products rather than agriculture,

Population Distribution in the West Lake Area 1931



Population of West Lake - 13,356
Population of Study Area - 1,574

GENERALIZED SURFACE DEPOSITS

- Lacustrine and Alluvial
- Bog and Half Bog
- Moraine and Unmodified Till Plain
- Modified Till Plain

- Railway
- 1 Dot Represents 25 People
- Study Area

Miles
0 6 12

Sources: Manitoba Soils Report No. 8, Census of Canada 1931
Canada Department of Mines Memoir 174

and mixed farming. In addition, comments were made with regard to settlement at this time. In the following sections an attempt has been made to organize this information in a manner most suitable for further development of the thesis.

Modified Till Plain Soils[1]

In Ranges 10 and 11, where wave modification of the high lime till plain soils has been more severe than in other parts of the study area, the main problems were:

1) On account of steeply undulating ridge and swale topography lying across the direction of landfall crops were often flooded by impeded drainage waters. Artificial drainage did little to alleviate this problem. Salinity, occasioned by poor surface and subsurface drainage, caused crops on these soils to wilt when crops on land with less alkali and the same moisture were showing no injury.

2) The stony nature of these soils in addition to areas of heavy poplar growth made clearing difficult and added to the cost of operation if the land were plowed.

3) The presence of a gravel subsurface layer impeded the upward movement of soil moisture thus subjecting crops to severe drought injury in dry years. In addition, lime induced physiological drought caused crops on these soils to fail when crops on other soils with the same amount of moisture showed little or no injury.

In order to make the best use of these soils, ranching on an extensive

---

the poor crop years and low prices for agricultural products did not affect them adversely and no abandonment took place.

[1]See figure 10 for the distribution of the soils mentioned in this discussion.

basis utilizing native pasture as the settlers in this area had done before 1916 (See pp. 82 - 84), or smaller farms with a combination of native pasture and cleared land sown down to alfalfa, root crops, and feed grains, were recommended. Artificial drainage of the swales was discouraged because the land had proved unsuitable for grain growing; in their natural or semi-drained state, however, the swales would provide excellent water and summer pasture for cattle. It was also recommended that the very poor areas should be leased for grazing rather than sold for settlement purposes.

The modified till plain soils in Range 12, Range 13, and the western part of Range 11 were extensively farmed, often with fair success. On the whole, these soils were less stony, better drained, deeper and more fertile[1] than those in other parts of the Lower Lowland Plain. Extensive areas of modified till plain soils in Range 14 were unused principally because of frequent flooding, which not only drowned out crops but also induced a severe condition of salinity.

Lacustrine Soils

The fine to medium textured lacustrine soils in Range 12 were mentioned as being the most suitable agricultural soils on the Lower Lowland Plain portion of the study area; it was on these soils that the most successful farms in the municipality of Glenella were found. Fine

---

[1]Personal interview with Dr. W. Ehrlich, Soils Department, University of Manitoba. Dr. Ehrlich did fieldwork in the study area while gathering data for the soils report of the West Lake Area (See footnote 1, p. 4). The suitability of the modified till plain soils in those areas for arable agriculture is principally due to a sandy mantle covering the till. This mantle is generally lacking in Range 10 and the eastern part of Range 11.

textured lacustrine soils in Range 13 south of Glenella were also excellent for agricultural purposes. Owing to their saline nature, the lacustrine soils in the southeast part of Range 11 were more suitable for stock raising than arable agriculture. However, development of these soils for crop raising would be feasible in the future if artificial drainage allowed the soluble salts to be leached out of the upper soil horizons. Coarse textured soils found on beach ridges and sandy lake bed and outwash deposits in the western half of Range 14 were commented upon as follows:

> Over the stratified sand and gravel of the beaches there is a covering of wind-blown loam, varying in depth from a few inches to nearly a foot. This loamy surface is excellent soil, and its quality has induced many farmers to clear and cultivate the beach ridges. Obviously such lands with so open and coarse a subsoil are droughty, however, and in 1926 crops on these beaches were short and generally below average.
>
> . . . . . .
>
> Their mantle of wind-blown loam would, in wet years, enable these beach soils to produce good crops.
>
> On the lake side of the beaches or toward the east, the gravel gives way to sands, most of which, where drainage is sufficient, make excellent soils.[1]

Peat and Swamp Soils

Although peat or swamp soils were not extensive, it was mentioned that they were found scattered throughout the study area in swales and behind beach ridges. Usually the peat was well decomposed and needed only drainage to make it into excellent hay meadows and, in some cases, even arable land.

Summary of Farming on the Lower Lowland Plain

---

[1]Murchie and Grant, Unused Lands of Manitoba, p. 154.

A government investigator of unused lands, Mr. William Stewart, summarized his impressions of Township 18, Ranges 12 - 14 inclusive as follows:

> In my opinion, a man going into this district should have a half-section, then he could find enough good land to grow some grain and winter feed for his stock and still have ample pasture. In my interviews with farmers in the district I found the main idea was that mixed farming was the only thing.
>
> The last few years have been poor years and most of the farmers have had to sell stock to keep going, thinking always if they had a good crop they could buy themselves into the cattle business again. As yet they have not succeeded in doing this. It is to be remembered, however, that good money has been made in grain growing in this district, but it is not steady and most farmers would be doing more mixed farming if they had the money to buy stock.
>
> Concerning the beach ridges in this area it is well to remember that while the soil on them is generally too poor to grow good crops, these beaches make splendid building sites, and good water is always found there in abundance.[1]

Concerning Township 18, Ranges 10 and 11 he reported: "Of all the settlers that have gone into the country the only ones that have been able to stay on their holdings are those who kept cattle".[2]

1926 - 1938

Land Use, Farm Units, and Rural Population Movements

Lower Lowland Plain.--Good crop years and a return to high prices for agricultural products between 1926 and 1929 allowed most farmers to establish themselves in mixed farming by replenishing their depleted cattle herds. Then the double impact of drought and depression from 1930 to 1937 or 1938 caused a return to self-sufficient mixed agriculture resembling the subsistence agriculture practiced by the earliest settlers

---

[1] Ibid., p. 157.

[2] Ibid., p. 144.

in the area. A common practice in the western half of Range 11 and in Ranges 12 - 14 inclusive was for a farmer to cultivate most of the quarter section he owned and to use the rest of this quarter in conjunction with a nearby unsettled quarter section for grazing purposes.[1] Cattle ranchers owned or leased[2] most of Range 10 and the eastern half of Range 11. During this period several families of British origin, who had owned farms on modified till plain soils in the southwestern part of Range 12, (Figure 10), retired or abandoned their farms.[3] These settlers were not replaced; instead the Austrian farmers in the vicinity, who apparently considered the land too stony and easily affected by drought to farm in a period of low prices and adverse climatic conditions, used it as free pasture land. Some of the Ruthenian and Galician farmers in Range 13, who were now

---

[1]This statement is based on numerous personal interviews. Although the use of unsettled land belonging to the municipal, provincial or federal governments was forbidden by law, this practice was apparently "winked at" during the depression. Thus, most farmers used at least a half-section of land even though they often owned only one-quarter section.

[2]As recommended by the unused land investigator (See p. 99) the poorest land in Ranges 10 and 11, which had come under the jurisdiction of the federal, provincial or municipal government after abandonment from 1920 to 1926, was leased rather than made available for purchase. Municipal records showing the precise location of these lands were not available. However, interviews indicate that most of the Homestead Lands and Swamp Lands in Range 10, which had been settled and abandoned between 1916 and 1926, were made available for one year leases in the early 1930's. By this policy, the government not only prevented settlement but also discouraged cultivation of the land (farmers were unlikely to make improvements when they were only assured of using the land for one year). Thus, in effect, the one year lease restricted the use of the land to grazing. The abandoned land in the eastern part of Range 11 was administered in the same manner. Abandoned or unused land in Ranges 12, 13 and 14 was made available for purchase rather than lease. Apparently, the government considered this land capable of supporting settlement in years of normal prices and crop growing conditions. However, farmers in the area did not have the money to buy these lands during the 1930's. They did, nevertheless, use them for grazing purposes (See footnote 1 above).

[3]The decline in population of Township 18, Range 12 between 1926 and 1936 (Figure 24) was apparently due to the withdrawal of settlers from the modified till plain soils.

called by the general term Ukrainians, took up land on the modified till plain soils in Range 14 which had been abandoned between 1922 and 1926 (See p. 94). It appears that the Ukrainians were not deterred by the stoniness, salinity and danger of drought and flood on these soils. Their attachment to the land, desire to be near people of their own ethnic group, and acceptance of meagre returns for their labours combined to sustain them throughout the drought and depression. In Ranges 10, 13 and 15 the rural population remained approximately constant throughout this period. Fluctuations of population which did occur in these ranges (Figure 24) took place mainly within the towns of Amaranth, Glenella, and Riding Mountain and will be discussed in a later section of this chapter.

Upper Lowland Plain.--Improved drainage, high grain prices, and good yields encouraged most farmers on the Upper Lowland Plain to change from mixed farming to grain farming with an emphasis on wheat between 1916 and 1926.[1] Despite the drought and depression, the natural fertility of the land sustained this system with few modifications until 1938.[2] The most important development was a trend towards the raising of dairy cattle as an extra source of income.[3] Grasses found on the bog soils (Figure 10)

---

[1]Prior to the completion of drainage channels in 1916, mixed farming, utilizing the better drained land for grain crops and the poorer drained land for pasture, had predominated on the Upper Lowland Plain.

[2]Johnston, W. A., Surface Deposits and Ground-water Supply of Winnipeg Map-area, Manitoba, Canada Department of Mines Memoir 174 (Ottawa: Printer To The King's Most Excellent Majesty, 1934), p. 76. While doing fieldwork in the West Lake Area during 1933 and 1934 W. A. Johnston commented as follows: "A lake clay area, which forms the most valuable tract of farming land in the sheet, extends along the Canadian National Railway near the base of Riding Mountain". He was referring to the Upper Lowland Plain, that is, that portion of the West Lake Area between the Riding Mountain Escarpment and the Campbell Escarpment. Thus, it would appear that the portion of the study area within this narrow strip was representative of other parts of the Upper Lowland Plain at that time. Figure 37 and overlay 1 shows the concentration of population along this strip in 1931.

[3]Most of the cream was shipped on Highway Number 5 which, as will be discussed later in this chapter, replaced the Dauphin Trail in 1928 (the

and the mixture of grass and trees on the uncleared parts of the modified till plain soils provided summer pasture; home-grown grains were used as winter feed.

Riding Mountain Region.--In general, settlers in the Riding Mountain Region were more prosperous during this period than farmers on the Lowland Plain. Demand for cordwood rose during the depression as many people in towns and cities could no longer afford to buy coal and, although the demand for sawn lumber for building purposes declined, there was still a market for railway ties. In addition to woodcutting many of the settlers in this region, as well as some from the Upper Lowland Plain, obtained part-time work in the Riding Mountain National Park, which had been set aside as a recreation area by the Federal Government in 1930. This work entailed construction of roads, buildings and other resort facilities at the present site of Wasagaming adjacent to Clear Lake.[1] After the formation of the Riding Mountain National Park in 1930, this area, which had previously been a forest preserve, also became a game preserve. However, settlers still obtained an adequate supply of game, albeit illegally.[2] Since wood was cut mainly on leased land in the park and cleared, or grazing land was not necessary in large amounts, most farms in this region were one-quarter sections.

Transportation and Communications

Local Roads.--The drainage ditch roads, built between 1909 and

---

cream went chiefly to Neepawa and Brandon for processing or consumption).

[1] National Parks of Canada, Report of the Commissioner, 1931, Ottawa: Department of the Interior, 1931.

[2] One of the older settlers of this region relates that he and his neighbours would go on hunting forays into the park on snowy days when the government game wardens were usually conspicuous by their absence.

1916, served as local market roads throughout this period. New roads, built during the depression as relief projects, were constructed along some of the road allowances which had not been used for drainage ditches.

Highways.--Two highways, one a provincial highway and one a secondary highway, were built through the West Lake Area during this period. Provincial Highway Number 5, built in 1928 from Neepawa to Dauphin, was constructed along a north-south road allowance through the middle of Township 18, Range 15 of the study area. In the northern and southern parts of the township it closely paralleled and soon replaced the Dauphin Trail. In the middle portion, however, it was constructed across marshy and boggy ground along the road allowance which had been avoided by the Dauphin Trail (Figures 9 and 20). Since many farmhouses were sited on beach ridges and alluvial fans along this portion of the Dauphin Trail, it was maintained. Subsequently this remaining portion of the trail, which ran along the half mile rather than the alloted one mile road allowance, became known locally as "The Half-Mile Road". In the eastern part of the West Lake Area the road surveyed along the Langruth Ridge in 1901 (See p. 60), where a trail had run since before the days of settlement, became a reality in the form of a gravel surfaced secondary highway.

Towns

Riding Mountain

Although the townsite of Riding Mountain was not as frequently flooded as it had been before the construction of artificial drainage works, the eastern part of the town, including the main street fronting on the railway tracks, was still periodically flooded by heavy spring runoffs or heavy June rains. In 1928, several events occurred which led to a gradual

relocation of the poorly drained section of the town on a better drained site. At the time Highway Number 5 was being built along the road allowance about one-third of a mile west of the original townsite, a fire razed the eastern section of the town. Rather than rebuilding along the old main street, storekeepers relocated along both sides of the highway. Shortly afterwards three garages to serve highway traffic were opened along the highway so that the highway became, in effect, the main street of the town. Many of the residents who had lost their homes in the fire relocated on the western side of the highway adjacent to the stream channel which had built up the alluvial fan forming the site for the town. The natural advantage of the new sites on the upper, western portion of the fan over previous sites on its flat eastern margin is evident from the following statement concerning drainage on the fans: "The greatest degree of relief occurs on the coarse textured soils adjacent to the stream channels . . . Near the stream channel soil drainage is moderate to good, but on the flat topography is imperfect to poor".[1]

From about 1928 onwards the town grew quite rapidly, the first impetus being the establishment of three garages, two of which also had cafes, to serve highway traffic. Then, with the demand for cordwood during the depression, disillusioned farmers and some unemployed men from cities and towns in Manitoba took up residence in Riding Mountain. They obtained part-time employment cutting and hauling cordwood to the town, from whence it was shipped by railway or highway to centres south of the study area[2] (principally to Brandon and Winnipeg). The new arrivals also

---

[1]Ehrlich et al., Soils Report No. 8, p. 79.

[2]During this period the town of Riding Mountain was locally known as the "cordwood town".

obtained work on construction jobs in the Riding Mountain National Park (See p. 103) and on farms in the study area. The increase in the population of Township 18, Range 15 between 1931 and 1936 was principally due to the expansion of Riding Mountain (Figure 24).

Glenella

Interviews indicate the population of Glenella increased between 1926 and 1938. The bulk of the increase was accounted for by the retirement of farmers from the surrounding area and an influx of city men on relief to construct roads (See p. 104).

The townsite, although it was intermittently flooded by waters from the Riding Mountain Region, was not as poorly drained as it had been prior to artificial drainage. The drier years from 1930 to 1938 also alleviated the drainage problem to some extent. Moreover, the town expanded gradually to the southeast onto a beach ridge where drainage was better and domestic water was more readily available.

Amaranth

Following farm abandonment on the severely modified till plain soils in Ranges 10 and 11 of the study area, the elevator in Amaranth, which had been opened in 1919 (See p. 81), closed in 1925, and remained closed for the remainder of this period. However, in a similar manner to the town of Riding Mountain, Amaranth received an economic stimulus following the construction of the secondary highway along the Langruth Ridge; three garages and a cafe were opened shortly after the construction of the road. In addition, trade with Indians from the Sandy Bay Indian Reserve offset the lack of rural market to some extent. Many of the town residents, as well as several cattle ranchers in the vicinity, engaged in winter fishing in Lake Manitoba during the depression. This led to the

opening of two fish handling plants in Amaranth between 1930 and 1938.

A further stimulus to the commercial district in Amaranth, and one of the major factors accounting for the increase in population of Township 18, Range 10 between 1926 and 1936, was the opening of a gypsum mine on the northeast quarter of Section 26 in 1929.[1] The mine shaft was sunk through the Langruth Ridge and underlying till deposits into the gypsum bedrock forming the Kinosota Ridge.[2] Excellent building sites for the mine workers and their families, who totalled approximately 60 people in 1935, were found along the Langruth Ridge adjacent to the highway.

Waldersee

The nucleated settlement of Waldersee, which is properly termed a hamlet rather than a village or town, remained the same as it had been in 1900 (that is, it consisted of a church and cemetery, a general store, and a post office). The stagnation of its development, even though it was situated in the most prosperous farming district on the Lower Lowland Plain (See p. 99), may be attributed mainly to its lack of a railway or highway to provide marketing, shipping and servicing facilities.

Artificial Drainage

From the survey of unused lands in 1926 it was evident that the artificial drainage system in the study area was not as efficient as had

---

[1]B. B. Bannatyne, Gypsum-Anhydrite Deposits of Manitoba (Manitoba Department of Mines and Natural Resources, Mines Branch, Publication 58-2; Winnipeg: Printed by R. S. Evans - Queen's Printer for Province of Manitoba, 1959), p. 24.

[2]Personal interview with Dr. G. M. Brownell, January 5, 1963. Dr. Brownell is the head of the Geology Department at the University of Manitoba. He made a study of the mine at Amaranth during the 1930's in preparation for several articles which he subsequently published on gypsum and anhydrite deposits in Manitoba.

originally been hoped. Only in years of moderate precipitation and evenly distributed runoff were the drainage channels able to convey water from the Riding Mountains across the Upper and Lower Lowland Plain into the Big Grass Marsh and surface water originating on the Lower Lowland Plain itself still tended to collect behind beach ridges and in swales. The general condition of drainage eastwards from the Campbell Escarpment was described at that time as follows:

> In the West (R. 14W), these swamps were narrow, almost channel like depressions, running between and parallel to the closely recurring beaches. There is some slope of the land towards the south; this is small unfortunately, not enough to prevent swampiness behind the beach ridges; where streams have carved their way through the beaches there is an outlet provided, but in the Glenella area these stream channels are few in number. As a consequence a large proportion of the land is swamp; older settlers, indeed, state that water commonly occupied the greater part of the area toward the west [West Marsh] prior to the ditching which has been done by the provincial government. In township 18 and the south half of 19 in ranges 12 and 11, or specifically in the southeastern part of the municipality the Big Grass River provides drainage and relief from swamps.[1]

In Range 10 and the northern half of Range 11, steeply undulating till plain ridges and the Kinosota Ridge combined to impede surface drainage.

A report on the condition of drainage in Drainage District Number 8, which includes the Lowland Plain portion of the study area, was made in 1936 by the Land Drainage Arrangement Commission of Manitoba, under the chairmanship of Professor John Finlayson.[2] The main drainage problems at that time were identified and have been interpreted as follows:

1) Alternate freezing and thawing along stream channels in the Riding Mountain Region during the spring caused shale to break off and slide down into the stream beds. Swollen streams would carry

---

[1]Murchie and Grant, Unused Lands of Manitoba, p. 155.

[2]See footnote 1, p. 69 for a full reference to this report.

this shale, plus that eroded by the stream itself, onto the Upper Lowland Plain. The velocity of the streams would usually be sufficient for the shale to be carried in drainage ditches across the Upper Lowland Plain and down the Campbell Escarpment. East of the Campbell Escarpment, where velocity and carrying power declined rapidly due to loss of initial momentum and flatter slopes, the shale was deposited in the ditches. In periods of heavy runoff, the shale-choked drainage ditches would overflow onto the farmlands of the Lower Lowland Plain.

2) Surface water still collected behind beach ridges and in swales on the modified till plain deposits thereby flooding cropland and perpetuating a serious condition of salinity.

3) The funneling of a large number of ditches into the Big Grass River had caused more frequent flooding than had existed before artificial drainage. Despite the dredge channel from Waldersee to the Big Grass Marsh, this section of the river would often flood the land adjacent to it (See footnote 1, p. 95).

Although the Finlayson Commission realized that water from the Riding Mountain Region, known as "foreign water", was a serious problem, it did not recommend that this area be included within Drainage District Number 8. Indeed, it had become evident that the drainage district could not pay for the existing drainage facilities.[1] Consequently, instead of extending the ditching, existing facilities were to be better maintained. Drainage District Number 8 was renamed Drainage Maintenance District "M" and plans for better maintenance of the drains, including the clearing of

---

[1]Finlayson, Holland and Spalding, Report of the Land Drainage ..., p. 33. By 1935, the Municipality of Glenella had payed the government only 10 percent of the capital plus interest on government debentures issued for drainage works constructed between 1909 and 1916.

shale and brush from the channels, were set forth. The northern two tiers of sections in Range 11 and all of Range 10 were excluded from the drainage maintenance district[1] (Compare figures 28 and 38). Coincident with this development was a reorganization of rural municipalities, whereby the same areas became part of the Local Government District of Alonsa.[2] Apparently the Finlayson Commission felt, as the unused land investigator had in 1926, that the severely modified till plain soils in this area were better left as grazing lands rather than have them drained for the growth of grain crops. The abandonment of farms in this area between 1919 and 1926 was undoubtedly a major factor leading to these actions.

The vision of exposing thousands of acres of good farmland by draining the Big Grass Marsh had also proved illusory; hence it, too, was excluded from the new drainage district. Thereafter it became first a government operated muskrat ranch and then a waterfowl preserve under the jurisdiction of Ducks Unlimited.

Water Supply

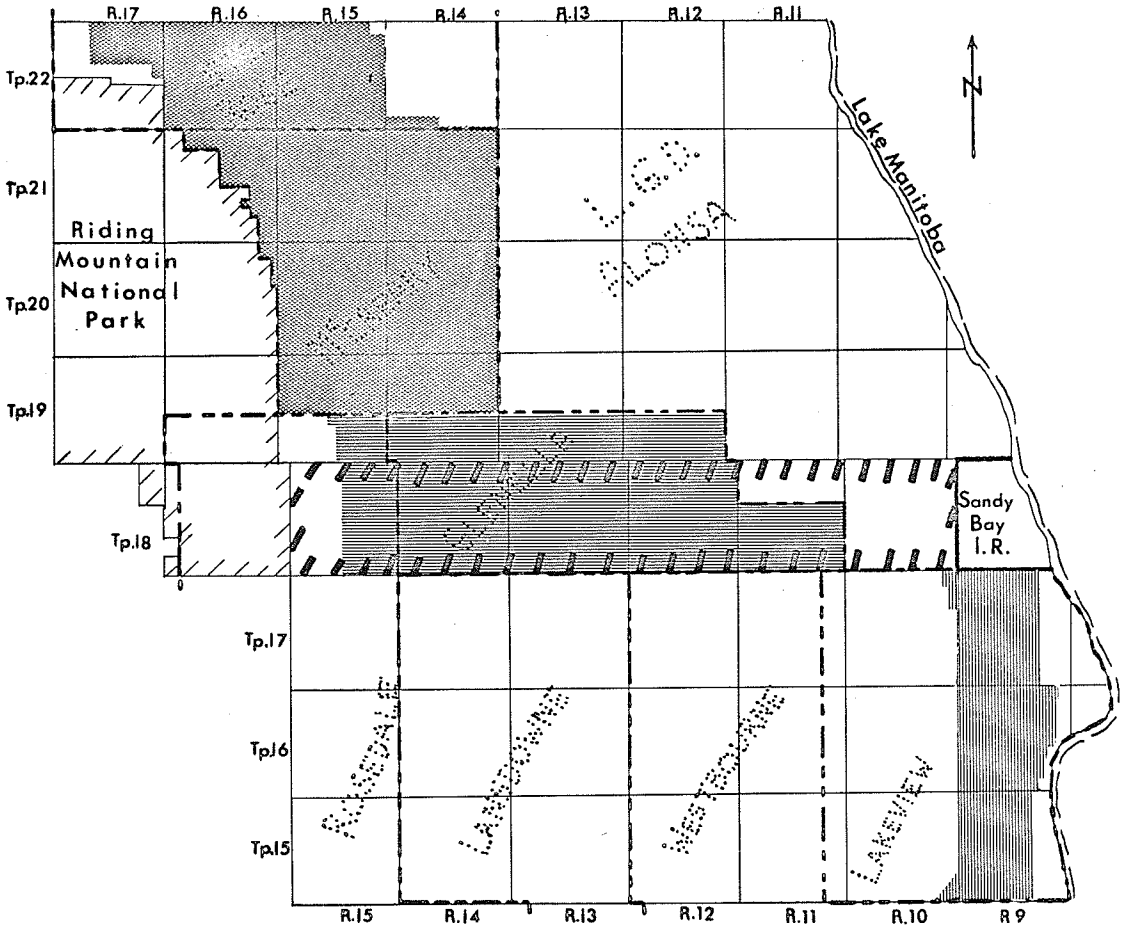
Although no significant changes occurred during this period with regard to the sources of livestock or domestic water, legislation promising future changes was included in the Prairie Farm Rehabilitation

---

[1]Artificial drainage of these areas of steeply undulating till plain deposits had been questioned by the unused land investigator in 1926 (See p. 99).

[2]A comparison of figures 35 and 37 shows the withdrawal of settlers from the severely modified till plain soils in the northeastern part of the West Lake Area. Also, it can be seen by comparing figure 37 to figure 38 that it was these soils which formed most of the Local Government District of Alonsa (as a general rule in rural areas where settlement is sparse and arable farming can be said to be marginal, the Provincial Government forms local government districts rather than municipalities).

Drainage Maintenance Districts and Municipal Boundaries in the West Lake Area 1936



Drainage Maintenance District "M"

Drainage Maintenance District "N"

Drainage Maintenance District "D"

Municipal Boundaries

Miles
0 6 12

Study Area

Source: Lyons, M.A., Report and Recommendations on "Foreign Water" 1949

Act which was passed in 1935 to provide advice and financial assistance to prairie farmers. Under the water development activities of this Act financial assistance was to be provided for dugouts built according to certain size and site specifications.[1] The inclusion of this legislation within the Act was prompted by the difficulties which had arisen during the drought years; indeed, even within the study area, water ponded in swales and behind beach ridges often evaporated in the early summer, thus forcing farmers to reduce their livestock herds or to obtain water, often with great difficulty and expense, from other sources.

Land Use

After abandonment between 1921 and 1926, the land use for the remainder of this period appears to have been as follows:[2]

1) Cultivated areas - principally on the well drained lacustrine soils and on modified till plain soils covered by a sandy mantle. The lacustrine soils where the predominant form of land use was crop growing were found:

a) On the Upper Lowland Plain.

b) Western part of Range 14 excepting for saline areas occasioned by ponding of water in the vicinity of beach ridges.

c) Range 13 excepting for some course textured, poorly drained deposits in the western half and parts of the West Marsh Area

---

[1]Prairie Farm Rehabilitation Act, "The Story of Conservation on the Prairies" Canada Department of Agriculture, October, 1961. A discussion of the size and site specifications will be given in a later section when dugouts built with government assistance appear within the study area.

[2]See figure 10 for the surface deposits-soils referred to in the following discussion.

which were now well drained but saline.

d) All the lacustrine soils in Range 12.

The most extensive area of modified till plain soils under cultivation were in Range 13 and the western part of Range 11 where drainage was good and the stoniness was not a serious problem due to a sandy surface mantle.

2) Unimproved pasture - was found on most of the remaining modified till plain soils and in the lacustrine soils surrounding the Big Grass Marsh which, although quite well drained, were saline.

3) Riding Mountain Region - here the land was used for forest products rather than agriculture. Also, the settlers here were able to obtain leases for cutting wood in the Riding Mountain National Park.

Building Materials and Fuel

The few new farmhouses built during this period by Ukrainians moving into Range 14 (See p. 103) were constructed of timber from the Riding Mountain Region. Other settlers considered it too costly to rebuild or to make any extensive repairs on their existing dwellings. Local wood was used for fuel throughout this period.

Sites

New farmhouses in the eastern part of Range 14 were commonly located on till plain ridges adjacent to drainage ditch roads thus combining adequate drainage with accessibility.

Two new cemeteries were built near the town of Amaranth on the Langruth Ridge close to the new secondary highway.

Summary

The most significant relationships between the physical environment and settlement features during this period were:

1) Previously held ideas that the entire Lowland Plain would be suitable for small grain farms after the area had been drained proved to be untenable. During this period and several years preceding it (that is, soldier settlement in 1919 and abandonment in 1920 and 1921) it had become apparent that a system of grain farming or mixed farming on small farm units could not support, in years of normal or below normal prices, settlement on the modified till plain soils in Ranges 10, 11 and 12 or on the saline lacustrine soils in the vicinity of the Big Grass Marsh.

2) The realization that the severely modified till plain soils in Ranges 10 and 11 were better suited for cattle raising led to the removal of these soils from Drainage District Number 8 when it became Drainage Maintenance District "M" in 1936.

3) A differentiation between the Upper Lowland Plain and Ranges 11 to 14 of the Lower Lowland Plain had developed whereby the lacustrine and alluvial soils of the Upper Lowland Plain, now all well drained, proved capable of supporting settlement based principally on cash grain whereas in Ranges 11 to 14 mixed farming, based on grain growing on the well drained lacustrine and sand mantled modified till plain soils in conjunction with pasture on the saline lacustrine soils and stony and/or poorly drained modified till plain soils, seemed to be the only system of farming capable of supporting permanent settlement.

4) New sites for houses in the towns of Riding Mountain and Glenella,

through relocation or expansion, were well drained in contrast to the predominately poorly drained older sites. In Riding Mountain the new sites were on the upper western part of an alluvial fan; in Glenella they were on a beach ridge.

5) The disappearance of early trails following the higher, well drained topographic features was continued by the replacement of the "Dauphin Trail" by Highway Number 5. However, a close approximation of this trail was maintained by the "Half-Mile" road. In addition, a secondary highway built in Range 10 followed the same topographic feature as an earlier trail, that is, the Langruth beach ridge.

6) Two cemeteries were sited, as had been common in former periods, on a beach ridge.

7) Man's alteration of the physical environment, in this case the funneling of numerous drainage ditches into the Big Grass River, made former excellent farmsites along the Big Grass River downstream from Waldersee unsuitable due to frequent flooding.

Relationships in other parts of the West Lake Area similar to those developed in the study area were:

1) Grain farming or mixed farming led to large scale abandonment of farms on the severely modified till plain soils in the north and east of the West Lake Area after over expansion which reached its peak during the Soldier Settlement and Greater Production Campaign. By 1931 it had become apparent that the pattern of settlement established by 1911 was probably the one most suitable to the physical capabilities of the West Lake Area (Compare figures 31, 35 and 37). In general, the areas of concentrated settlement were the lacustrine and alluvial

soils of the Upper Lowland Plain and the Lower Assiniboine Delta of the Lower Lowland Plain; those of sparse settlement were poorly drained coarse textured lacustrine soils, modified till plain soils and bog soils of the east and north.

2) Withdrawal of modified till plain soils and bog soils from drainage districts when it became apparent that they were unsuitable for grain farming or could not support a system of drainage capable of draining them adequately for agricultural use.

3) Attempts by the government, through reorganization of drainage districts, soils and land use studies (Unused Lands Report 1926) and advisory institutions (P.F.R.A.), to bring farming practices more into harmony with the physical capabilities of the West Lake Area.

CHAPTER VI

RECOVERY AND ADJUSTMENT 1939 TO 1963

Soon after the beginning of World War II in 1939, prices for agricultural products and climatic conditions for crop growing, both of which had been so adverse from 1930 to 1938, began to improve. Continuing years of good crops and high prices provided most farmers in the study area with capital to mechanize their farm operations and increase their cattle herds. These developments, in turn, led to increased farm sizes and the bringing of more land under cultivation. Automobiles and trucks completely replaced horses and partially replaced railways for transportation and hauling purposes during this period. Significant developments also took place with respect to roads, highways, artificial drainage, and sources of building materials.

Farm Units, Land Use and Population Movements 1938 - 1962

1938 - 1951

The first significant expansion of cultivated acreage, increase in farm sizes, and movement of rural population in this period took place on the lacustrine soils in the southeastern part of Range 11. These soils were used for pasture prior to 1916, then grain growing was attempted in the period of high prices from 1916 to 1921. However, poor crops, due to

flooding and excessive salinity, combined with a drop in grain prices, led to abandonment between 1922 and 1926. From 1926 until after 1942 or 1943 these soils were leased for grazing or left idle. Then, high wartime prices for flax[1] encouraged some farmers in Range 12 to attempt cultivation on some leased land. Much to their delight, flax, as well as other grain crops, grew extremely well. Apparently, improved drainage had, over the years, allowed soluble salts to be leached out of the upper soils horizons to the extent that they were no longer a serious hindrance to crop growth.[2] Even though this land was quite far removed from their central holdings,[3] many farmers in Range 12, who could now cultivate larger acreages using mechanized rather than horse-drawn equipment, felt it economical to purchase[4] land in this area (Figures 39 and 40 show the present day distribution of land separated from central holdings. The concentration of land of this type in the southeastern part of Range 11 developed as described above). Encouraged by their fathers' success, sons of farmers in Range 12 moved into Range 11.[5] Many of them obtained ideal land for mixed

---

[1]Prices for flax rose from an average of about three dollars a bushel to a maximum of six dollars a bushel between 1939 and 1945. The rise in price was largely due to a demand for flax oil to make explosives.

[2]The unused land investigator had suggested the possibility of this occurrence in 1926 (See p. 100).

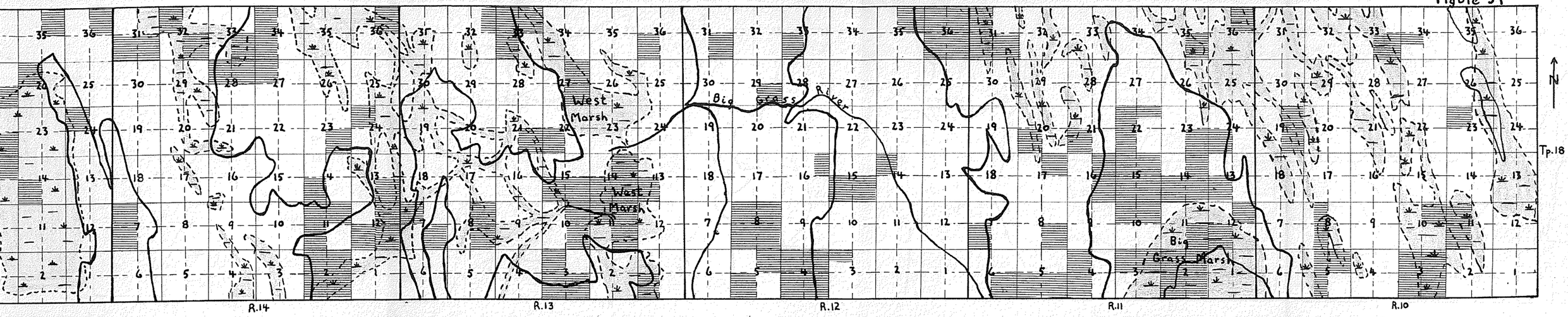
[3]Central holding is taken to be a farmer's home quarter (that is, the quarter on which his farmhouse is located) and all the land he owns which is contiguous to it.

[4]Personal interview with Mrs. E. J. Martin, Secretary Treasurer, Municipality of Glenella. When it became apparent that these soils were suitable for cultivation the land was offered for sale rather than one year leases (See footnotes 1 and 2, p. 102 for previous government administration of lands in this area).

[5]The drop in population in Range 12 and the increase in population in Range 11 between 1941 and 1951 (Figure 24) was mainly due to this movement.

LAND SEPARATED FROM THE CENTRAL HOLDING

Figure 39



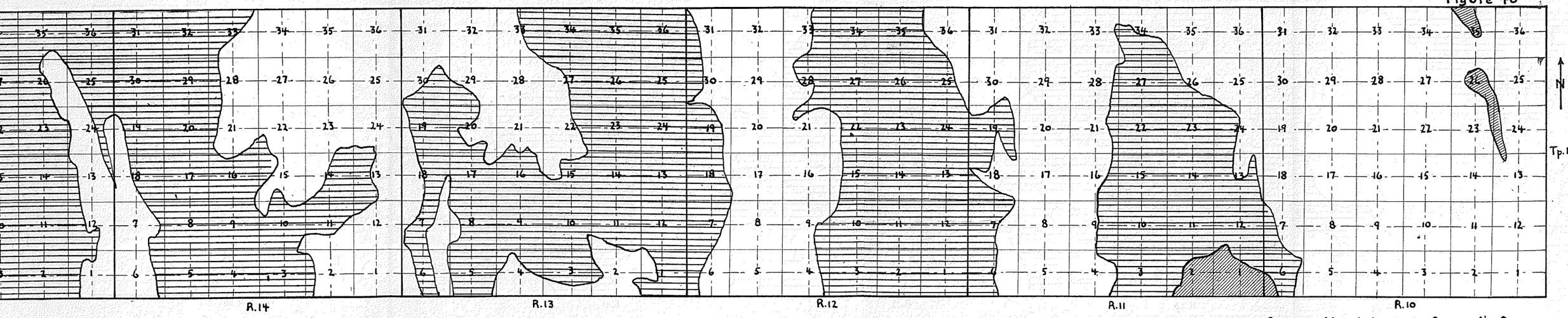
Land Separated From Central Holding

Extent of Marsh and Meadow Prior to Settlement

Sources: Manitoba Soils Report No. 8, Dominion Lands Survey 1872-1873, Interviews.

GENERALIZED SURFACE DEPOSITS-SOILS

Figure 40



Moraine and Unmodified Till Plain

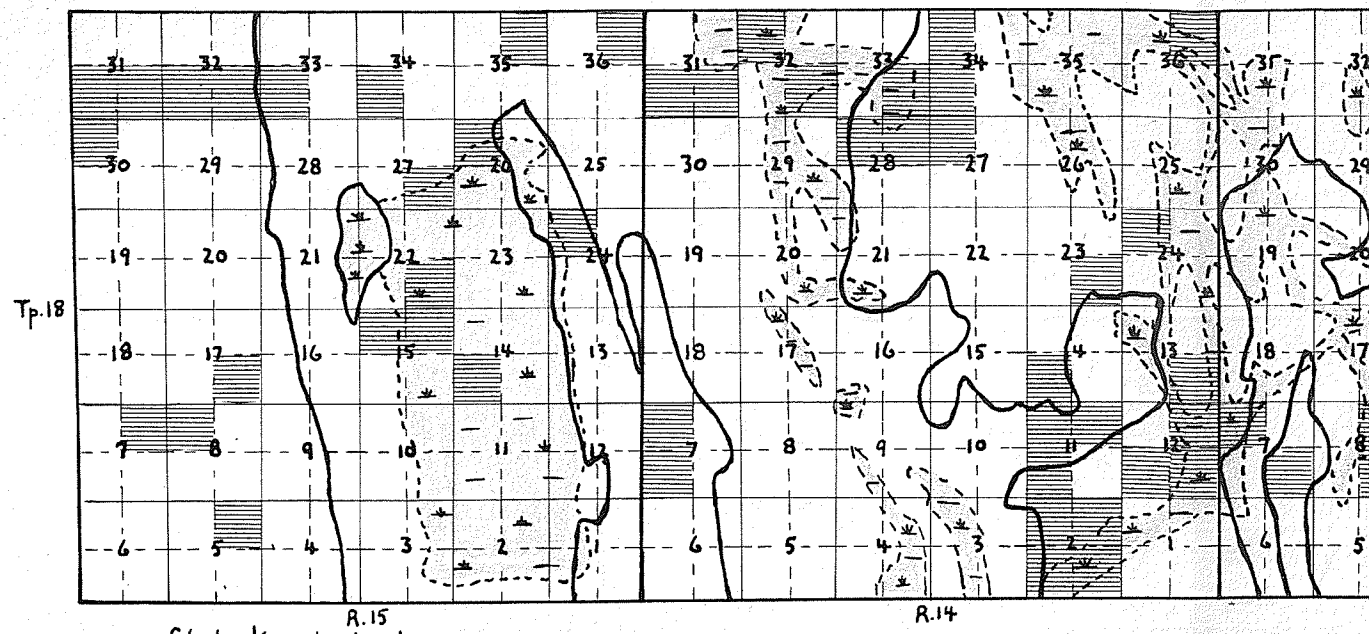
Modified Till Plain

Bog and Half Bog

Lacustrine and Alluvial

Sources: Manitoba Soils Survey No. 8, Canada Department of Mines Memoir 174.

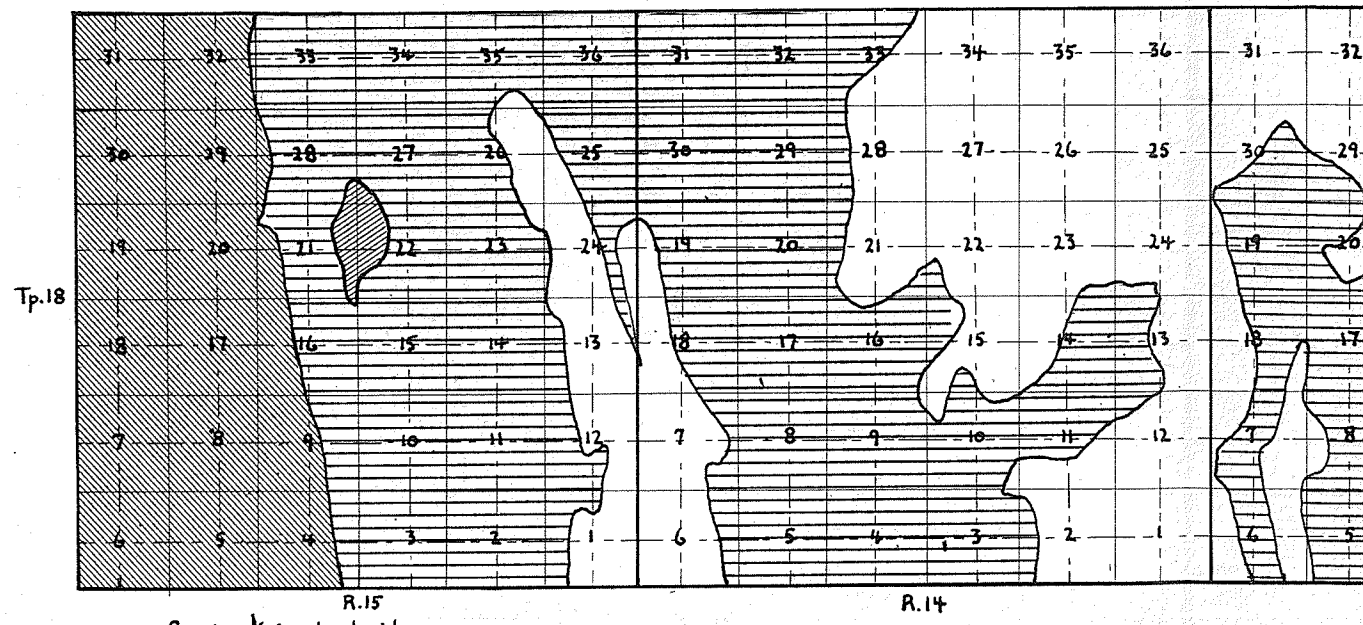
LAND SEPARA



Scale: ½ inch = 1 mile

Land Separated From Central H

GENERALIZED S



Scale: ½ inch = 1 mile

Moraine and Unmodified Till Plai

Modified Till Plain

farms by settling near the boundary of the lacustrine and modified till plain soils. They used the lacustrine soils for growing crops and the modified till plain soils for pasture. Income derived from good crops and larger acreages under cultivation enabled farmers in Range 12 to increase their cattle herds. This trend led to the purchase of pasture lands on the modified till plain soils in the southwest of Range 12.[1] In many cases this land was also separated from the farmer's central holding (Figures 39 and 40).

Farmers in Range 13 were also increasing their farmholdings during this period. Expansion took the form of consolidation of farm units as farmers retired, and the taking up of Swamp Lands, notably in the West Marsh Area (Figure 41 and overlay 2). Many of these lands (Swamp Lands) had been used as common grazing lands during the 1930's and, when purchased, were often separated from the farmer's central holding (Figure 39).

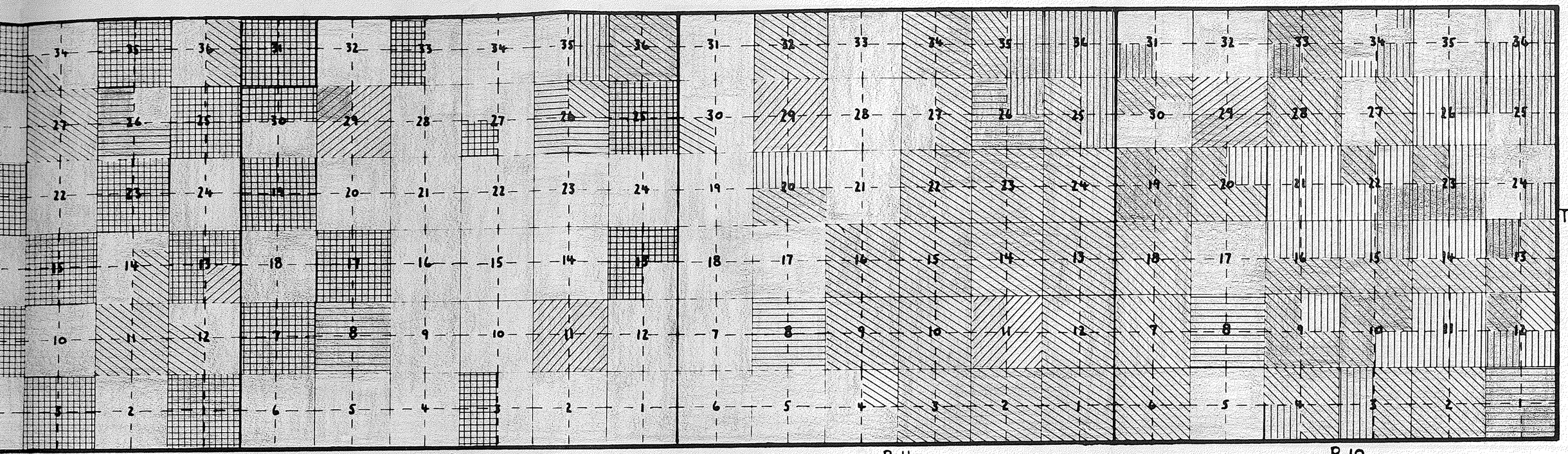
Some of the Ukrainian farmers who had moved onto the modified till plain soils in the eastern half of Range 14 in the early 1930's (See p. 103) sold their farms between 1939 and 1951. Apparently they decided to leave because they lacked capital to buy machinery or expand their holdings and they had become conscious of their meagre existence in comparison to farmers on better land in the area.[2] Many of the former Ukrainian farms were acquired by farmers living on lacustrine soils in the western parts of Ranges 13 and 14, thereby leading, in some cases, to more separated

---

[1]During the 1930's, when cattle herds were not large, this area provided more than enough grazing land for everyone (See p. 102). However, as cattle herds were increased farmers wanted to be assured of enough pasture, hence, they incorporated the land within their farmholdings.

[2]Some of the Ukrainians obtained employment in Glenella, which was experiencing a minor expansion at this time. Further details concerning the growth of Glenella will be given in a later section.

SETTLEMENT TO 1963

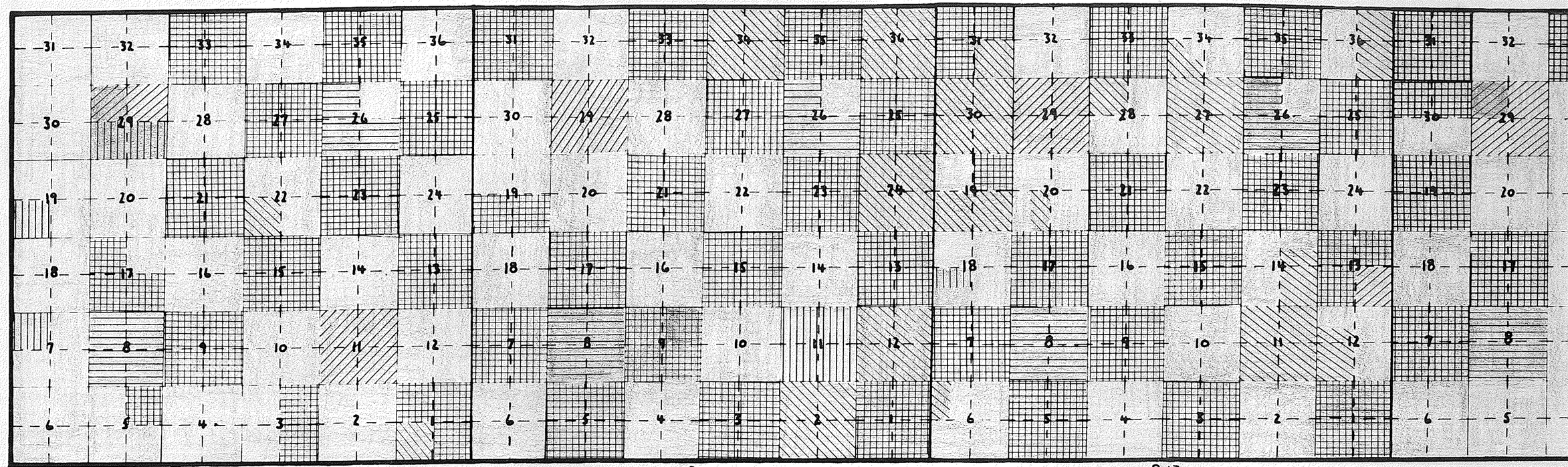


Classification of Land by the Dominion, Provincial, Municipal Governments

- School Land
- Homestead Land
- Hudson's Bay Company Land
- Swamp Land
- Railway Land
- Land Available for Lease (excluding School and Swamp Lands) from Dominion, Provincial or Municipal Governments.

Sources: Manitoba Department of Mines and Natural Resources, Lands Branch, Winnipeg; Hudson's Bay House, Winnipeg; Canadian National Railways, Land Surveys and Sales, Winnipeg.

SETTLEMENT TO 196



Scale: 3/4 inch = 1 mile

Land Settled by 1963

- 1878-1938
- 1939-1951
- 1952-1963
- Leased Land (Not Previously Settled)
- Land Never Settled and Not Presently (1963) Leased

holdings in the study area (Figures 39 and 40).

By 1945 settlers in the Riding Mountain Region were beginning to feel the effect of a declining demand for cordwood which was being replaced by coal in cities and towns now that economic conditions were on the upsurge. Between 1945 and 1951 many settlers, including the three who had operated sawmills (See p. 85), left the region.[1] Those who had lived on the steepest slopes, which were mainly found adjacent to the Park boundary, were unable to sell their land, hence, it reverted to the Municipality of Rosedale in lieu of taxes or remained in the settler's name but was unused. Farmers on the Upper Lowland Plain, and men living in nearby towns such as Neepawa, Birnie, and Riding Mountain, bought land from settlers on less steep slopes. With bulldozers the new owners quickly brought land on the terraces under cultivation. These newly introduced machines allowed rapid and easy clearance of the heavy tree growth and made possible the building of stone and earth bridges across streams, thereby opening up areas which were formerly inaccessible.[2] High yields on the newly cleared land enticed farmers to continue clearing and to sow wheat in successive years without fallowing.[3] Settlers who remained in the area had neither the capital nor the inclination to clear and cultivate the land; they supported themselves, albeit meagrely, by selling cordwood locally and

---

[1]One settler moved his sawmill to the town of Riding Mountain.

[2]Personal interview with Mr. R. Poole, Neepawa. Mr. Poole brought the first bulldozer into the area in 1946 to clear one section he bought from settlers who were leaving the Riding Mountain Region. He has subsequently cleared extensive acreages for other farmers who purchased land in the area.

[3]Thirty to forty-five bushels of wheat per acre were obtained on the newly broken land. The incentive to clear more land and to sow wheat year after year is apparent if one considers that yields of twenty bushels of wheat per acre are thought to be high on the fertile lacustrine soils of the Lowland Plain which have been under cultivation for many years.

raising enough food for their own use.

1952 - 1962

The trend towards larger farms, either by the consolidation of farmholdings or by the acquisition of formerly unused lands, continued throughout the decade from 1952 to 1962. A buoyant farm economy and a scarcity of other land for expansion led to the auctioning, undoubtedly at high prices, of many School Lands and Hudson's Bay Lands during this period (Figure 41). The only significant movement of settlers into the area took place after a cattle rancher, who owned or leased most of the southern portion of Range 10, retired and sold his farm (Figure 24).[1] As had been advised in 1926 (See p. 99), the new settlers raised cattle utilizing native pasture in combination with cleared land sown down to forage crops and feed grains. The best drained portions of their land, which were also the most stony, were cleared; the remaining portions, in addition to land leased from the government,[2] were used for pasture. Removal of stones from the cultivated land was facilitated by the introduction of mechanical stone pickers (Figure 42).

Clearing of new land and the sowing of wheat year after year was

---

[1]The movement of settlers into Range 10 actually began in 1950 when the rancher retired. Since the movement reached its peak and began so close to the period under discussion, it was not mentioned in the period from 1939 to 1951. The rancher referred to owned twelve quarter sections eight of which were along an east-west road two miles north of the boundary between Townships 17 and 18, Range 10. Between 1950 and 1956, ten families bought and took up residence on land he had formerly owned.

[2]The most poorly drained modified till plain soils in Range 10 were now leased on one year permits, thus preventing a reoccurrence of settlement and abandonment which took place between 1919 and 1926. This policy had also been recommended by the investigator of unused lands in 1926 (See p. 99 and footnote 2, p. 102).

continued in the Riding Mountain Region by part-time farmers and farmers on the Upper Lowland Plain (Compare figures 43 and 44). The older settlers turned to livestock, including beef cattle, pigs and poultry, using the rough bush on steep slopes, poor as it was, for summer pasture and small cultivated plots on the terraces for raising oats and forage crops for winter feed. Although the land cultivated consisted of the same soil (that is, soils developed under woodland vegetation on unmodified boulder till)[1] as was producing such good wheat crops on the newly cleared land, depletion over the years made it more suitable for less demanding crops than wheat. Water for livestock was available from numerous streams.

Present Day Land Use, Farm Units and Farm Sizes

Rural Land[2] Use

During the course of fieldwork, it became apparent that the most meaningful method of showing the relationship between rural land use and the physical environment within the study area was:

(a) To divide the rural land into land use categories.

(b) To compare the land use categories with the soils[3] as they were

---

[1]See p. 25 for a description of the soils in the Riding Mountain Region.

[2]Rural land was taken to be all the land within the study area excepting the townsites of Riding Mountain, Glenella and Amaranth and that used for the gypsum mine, railways, roads and drainage ditches. On this basis rural land occupies 136,261 acres or 98.5 percent of the study area.

[3]For the sake of simplicity the soils will be referred to as follows:
Class I - soils developed on fine to medium textured lacustrine and alluvial deposits.
Class II - soils developed on coarse textured lacustrine and alluvial deposits.
Class III - soils developed on modified till plain deposits.
Class IV - soils developed on unmodified till plain deposits.
Class V - soils developed on peat and muck deposits.
The reader is referred to pp. 22 - 26 of the thesis for a detailed

grouped in Chapter I (that is according to surface deposits). The comparison has been made on both an aerial (Figure 45 and overlay 3 in back flap) and statistical (Table I) basis.[1]

The rural land of the study area has been divided into two main land use categories, cultivated and uncultivated land. The cultivated land has been subdivided into land used for grain crops[2] and land used as improved pasture.[3] The uncultivated land has been subdivided into unimproved or natural pasture[4] and unused land.[5]

Lowland Plain[6]

From table I, figure 45 and overlay 3 it is apparent that there

---

description of each class

[1]All the information with regard to the present rural land use appearing in figure 45 and table I was obtained by personal interview with farmers in the study area. Mapping of the land use was done as accurately as possible with the aid of aerial photographs (flown in 1963) which were kindly loaned by the Manitoba Department of Mines and Technical Surveys, Winnipeg.

[2]Land used for grain crops include land which is normally sown to grain crops but was left idle (that is, left as fallow land) in 1963 as part of a rotation system to conserve soil moisture.

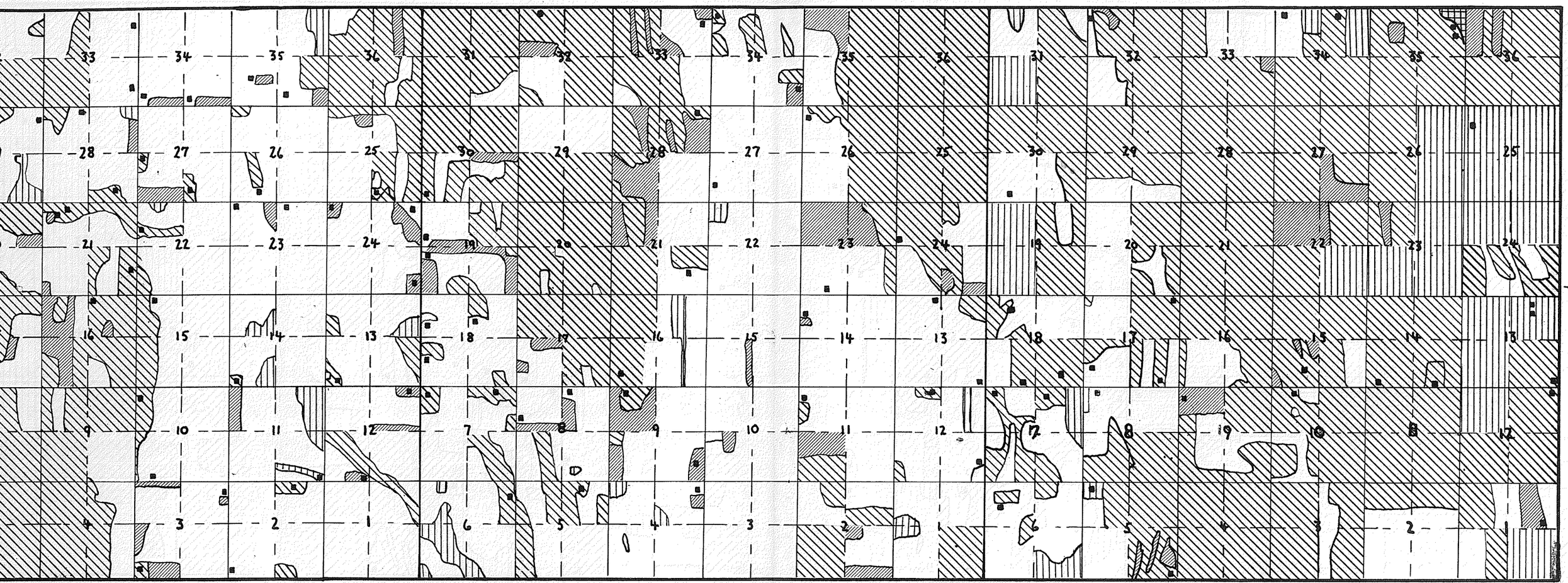
[3]Improved pasture is the common term used for land on which forage crops such as alfalfa, sweet clover, and brome grass are grown. Once seeded, they come up year after year, thus making yearly ploughing and reseeding, which is needed for grain crops, unnecessary. Rotation pasture (that is, the sowing of different portions of the cultivated land to forage crops as a soil improver between grain crops) has been included under land used for grain crops rather than as improved pasture. The areas mapped as improved pasture are, therefore, of a permanent nature.

[4]Land used in this manner may have been cultivated at some time in the past but has now reverted to its natural or semi-natural state.

[5]Unused land includes both government and privately owned land which was idle at the time of interview. Land of this type under government jurisdiction, such as School Lands and Swamp Lands, or owned by the Hudson's Bay Company always occurs in whole quarter sections; the privately owned unused land may occur as whole quarter sections or as smaller plots in the midst of lands put to some productive use.

[6]The reader is reminded that the Lowland Plain includes all the soil classes excepting the Class IV soils (unmodified till-grey-wooded) which are found only in the Riding Mountain Region. On overlay 3 the Lowland Plain extends eastwards from the Riding Mountain Escarpment.

63



Source: Interviews

proved Pasture

ed

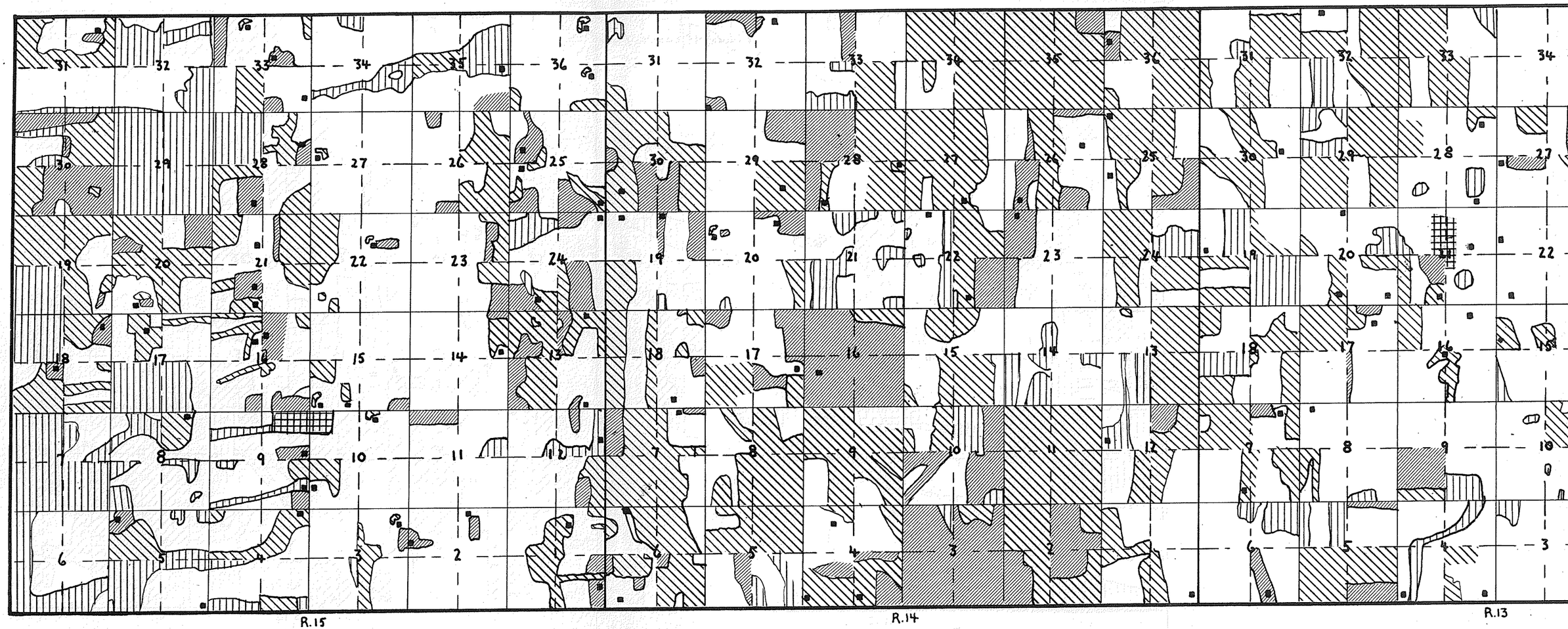
RURAL LAND USE 1963

R.14 R.13 R.12

Scale: 1 inch = 1 mile

Land Use Categories

- Grain
- Unimproved Pasture
- Improved Pasture
- Unused
- Farmhouse



Scale: 1 inch = 1 mile

TABLE I

SOILS AND LAND USE

Soil Class	Area in Acres	Percent of Total Rural Land	Land Use							
			Cultivated				Uncultivated			
			Grain		Improved Pasture		Unimproved Pasture		Unused	
			Area in Acres	Percent of Soil Class	Area in Acres	Percent of Soil Class	Area in Acres	Percent of Soil Class	Area in Acres	Percent of Soil Class
I	48,270	35.4	39,490	81.8	3,353	6.94	4,474	9.26	953	1.97
II	14,835	10.9	7,872	53.0	1,603	10.8	4,466	30.1	894	6.0
III	61,960	45.5	22,456	36.2	2,745	4.4	32,444	52.36	4,315	6.96
IV	8,434	6.2	3,795	45.0	457	5.4	1,816	21.5	2,366	28.0
V	2,762	2.0	636	23.0	71	2.6	1,845	66.8	210	7.5
Total	136,261	100.0	74,249		8,229		45,045		8,738	
Percent of Total			54.48		6.85		33.0		6.4	

TABLE I

SOILS AND LAND USE

Soil Class	Area in Acres	Percent of Total Rural Land	Land Use							
			Cultivated				Uncultivated			
			Grain		Improved Pasture		Unimproved Pasture		Unused	
			Area in Acres	Percent of Soil Class	Area in Acres	Percent of Soil Class	Area in Acres	Percent of Soil Class	Area in Acres	Percent of Soil Class
I	48,270	35.4	39,490	81.8	3,353	6.94	4,474	9.26	953	1.97
II	14,835	10.9	7,872	53.0	1,603	10.8	4,466	30.1	894	6.0
III	61,960	45.5	22,456	36.2	2,745	4.4	32,444	52.36	4,315	6.96
IV	8,434	6.2	3,795	45.0	457	5.4	1,816	21.5	2,366	28.0
V	2,762	2.0	636	23.0	71	2.6	1,845	66.8	210	7.5
Total	136,261	100.0	74,249		8,229		45,045		8,738	
Percent of Total			54.48		6.85		33.0		6.4	

is a definite relationship between the land use and soils as they have been defined for the purposes of this study. Medium to high fertility, nearly level topography, good drainage and absence of surface stones account for the high percentage (81.8 percent) of the Class I soils under grain crops. Improved pasture is usually found in small plots of five to ten acres near farmhouses for convenience in pasturing cattle rather than any physical defect in the land which would prevent grain growing. The only extensive areas used for pasture (unimproved or improved)[1] rather than grain because of adverse physical conditions are on the saline soils in Range 14, where beach ridges still impede drainage, and the depressional West Marsh Area in Range 13. No whole quarter sections of unused lands occur on these soils; the unused lands that do occur are usually found in small pockets of several acres where stoniness or salinity are extremely severe.

In contrast to the Class I soils, the Class III soils are used chiefly for unimproved pasture (52.4 percent) rather than for grain crops (36 percent). In areas where the till has not been severely modified (that is, in Ranges 15 - 12 and the southwestern part of Range 11) the degree of stoniness is the main determinant of land use. Grain crops are grown mainly in areas where a sandy surface mantles the stony sub-horizons, notably in Range 13 (See p. 114). Where the mantle is absent unimproved pasture is the predominent land use. Forage crops (improved pasture) are usually grown on land formerly cleared and sown to grain crops but later found to be unsuited for this use owing to stoniness or drought. In the northern part of Range 11 and in Range 10, where wave modification was extremely severe,

---

[1] Forage crops such as alfalfa and sweet clover are more saline tolerant than most grain crops.

the Class III soils are thin and poorly drained in addition to being extremely stony.[1] However, principally because there is no other land available, farmers have often cleared the better drained portions even though stones must be removed every year[2] by hand or by mechanical stone pickers (See p. 124 and figure 42). Where stoniness is extremely severe or drainage is poor the land is used as unimproved pasture or is unused (Figure 45).

Although the Class II soils occupy a much smaller area than the Class I or Class III soils (Table I), they are significant in that they are transitional in both physical properties and land use between the Class I and Class III soils. Hence, they illustrate forcibly the close relationship between the land use pattern that has developed and the physical environment. It appears that transitional physical properties between the stony, droughty, poorly drained, and often saline Class III soils and the fertile, predominently well drained and non-stony, Class I soils, has led to the present situation whereby 53 percent of the Class II soils are under grain crops whereas 82 percent of the Class I and 36 percent of the Class III soils are put to this use. Their transitional nature is also indicated by the high percentage (10.8 percent) of land used for improved pasture.[3] In most instances land used in this manner is

---

[1]It was these severely modified till plain soils which suffered heavy abandonment in the period 1920 to 1926 when grain farming was found to be unsuitable. Also, it was this portion of the study area (all of Range 10 and the northern two tiers of sections in Range 11) which were removed from Drainage Maintenance District "M" in 1936.

[2]Loosening of the soil by cultivation allows stones to work their way to the surface continuously.

[3]Land used for forage crops is usually plowed and reseeded only once every three or four years to prevent the root system from becoming too dense, whereas land under grain crops must be plowed and reseeded yearly. Hence the loss of time clearing stones and damage to farm machinery incurred during plowing and harvesting is reduced by using the land for forage rather than grain crops.

found on sandy or gravelly beach ridges and sandy outwash deposits which were sown to grain in the past but have been found to be too stony or too droughty to produce reliably. However, since good crops can be obtained in wet years, farmers consider it more economical to sow forage crops than to use the land as unimproved pasture. Unimproved pasture is concentrated in the western part of Range 13 and in Range 14 where impeded drainage, occasioned mainly by flat topography and beach ridges, has brought about a serious condition of salinity.

The main determinant of land use on the Class V soils is drainage. In a few places the natural drainage has been sufficiently improved by ditching to allow cultivation. In most areas, however, these soils are still subject to flooding and are used as unimproved pasture. Their natural vegetation of rank hay makes them some of the best pasture in the study area. Unused land in this class is concentrated on the very poorly drained area immediately east of the Langruth Ridge.

Riding Mountain Region

Grain crops, especially wheat, predominate on the flatter portions (terraces) of the Class IV soils recently brought under cultivation by part-time farmers and farmers living on the Upper Lowland Plain. The steeper land separating terraces and adjacent to stream channels is left unused. This unused land plus whole unused quarter sections found on steep land in other parts of the region, notably near the western margin (See p. 123), account for the very high percentage of unused land in this region (Table I). The resident farmers generally grow oats or forage crops for winter feed on the small plots they have under cultivation and use the rest of their land as summer pasture for cattle (See p. 125). Judging from the appearance of their farms and interviews with the settlers themselves, one would

say they are at a bare subsistence level.

Farm Units and Farm Types

Lower Lowland Plain.--The areal extent and distribution of the Class I and Class III soils, the former being generally suited to grain crops and the latter to unimproved pasture, has induced most farmers in Ranges 11 - 14 inclusive to practice mixed farming by including both types of soil within their farmholding.[1] Commonly a farmer will live on and cultivate the Class I soils and have his pasture on nearby Class III soils. In some instances the farmer may live near the boundary of the soils classes and have his holding in a contiguous block; in others he may be centrally located on a strip of Class I soils and have his pasture several miles away. This practice has led to the present concentrations of separated land on the Class III soils shown by figures 39 and 40. Other non-contiguous farm units developed with the opening up of lacustrine soils in the southeast of Range 11 for cultivation and the sale of Swamp Lands in the West Marsh Area. In Range 10, where the Class I or Class II soils are not extensive and the Class III soils are very poorly drained, extremely thin and severely stony, mixed farming is replaced by cattle raising. Ranches are of two main types, some consisting of large holdings of two to four sections where most of the land is unimproved pasture, others being smaller holdings of one to two sections on which the better drained portions, although stony, are sown to forage crops and feed grains and the poorly drained portions are used as pasture (See p. 129). In both

---

[1]See table I and figure 45. The Class I and Class III soils occupy 80.9 percent of the rural land area and occur in strips occupying approximately one-half of Ranges 11 to 14 inclusive. Hence, many farmers are able to include both types of land within their farmholding.

cases, the holdings are usually in contiguous blocks (Figures 39 and 40), thus reducing fencing costs and making one access road sufficient to serve the entire holding.

Upper Lowland Plain[1].--As discussed in footnote 2, p. 73 and on p. 86, a farm economy based on cash grain crops with an emphasis on wheat developed on the Upper Lowland Plain soon after artificial drainage was completed. Today, grain crops, with wheat predominating, are still the main source of income but, in addition to the extra income derived from dairy cattle, beef cattle are also raised. The raising of beef cattle was begun soon after the quota system was introduced in 1940. This restricted the amount of grain a farmer could market and also the time at which he could market it. For several years after the implementation of the system, farmers on the Upper Lowland Plain were inconvenienced in two ways. Firstly, they often had a surplus of grain which they had to store and secondly they could not obtain cash when they needed it. This latter consideration has become very important in recent years since many farmers now buy on credit and must make regular payments. Consequently, farmers on the Upper Lowland Plain decided to diversify.[2] Rather than store surplus grain, they used it for winter feed for beef cattle, which could be marketed more or less at their, rather than the government's, convenience. Although summer pasture was a problem at first,[3] this difficulty has been overcome by

---

[1]On overlay 3 the area between the Riding Mountain Escarpment and the Campbell Escarpment.

[2]From interviews, it appears that only farmers on the Upper Lowland Plain portion of the study area were adversely affected, through consistently good yields and high acreages per farm under grain crops, by the quota system.

[3]Unimproved pasture was found in limited amounts in the form of natural grasses or hay on the poorly drained Class V soils and in the form

the formation of community pastures by the P.F.R.A.[1] (Figure 46).

Riding Mountain Region.--Resident farmers in the Riding Mountain Region live on holdings of one-quarter section. As described under Land Use above, they practise subsistence mixed farming using most of the grain they raise for feeding livestock and poultry. Beef cattle and pigs are the chief sources of cash income.

Farm Sizes

During the course of fieldwork, the impression was gained that, in the few instances where farmholdings were located entirely on the Class I

---

of a mixture of woods and grass on the stony, uncleared portions of Class III soils (See figure 45 and overlay 3).

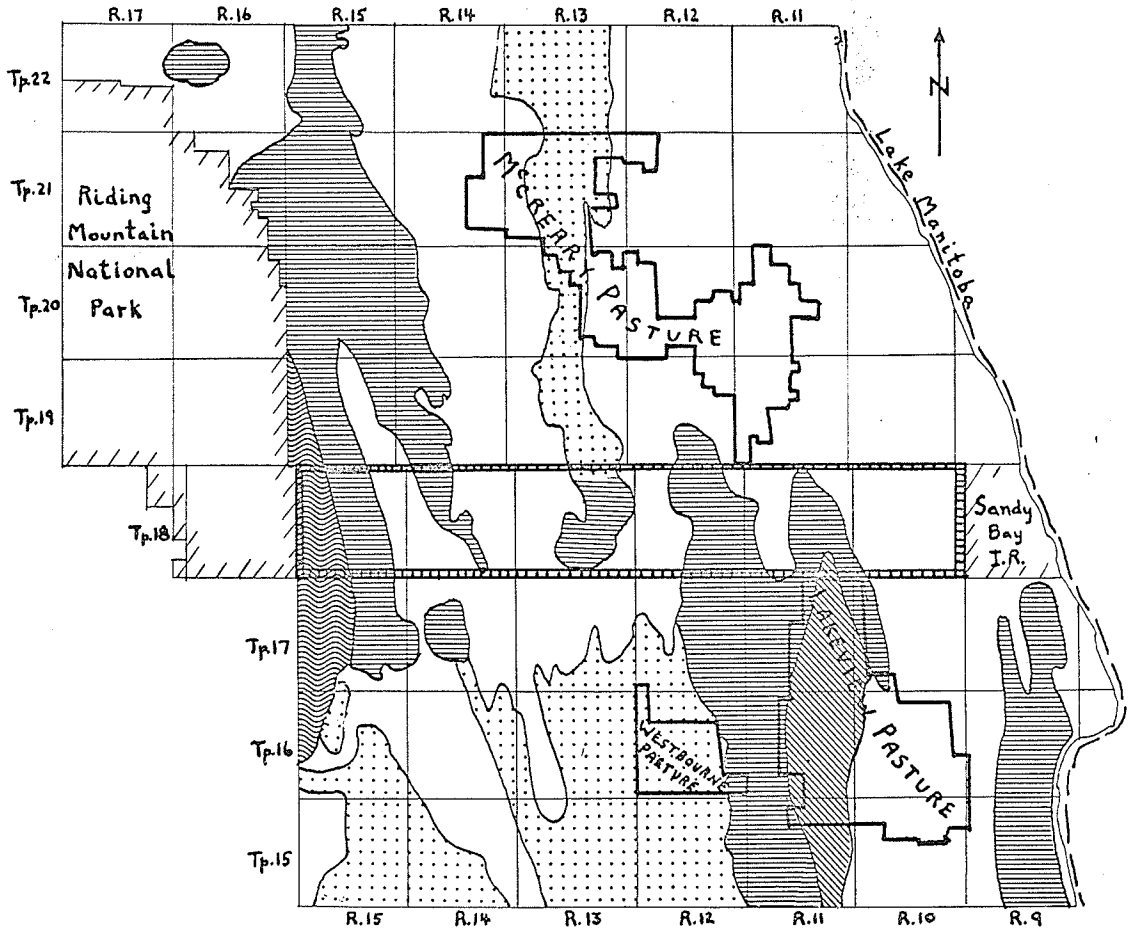
[1] Prairie Farm Rehabilitation Act, "The Story of Conservation of the Prairies", Canada Department of Agriculture, October, 1961, pp. 11 - 13. Shortly after its formation in 1935, the P.F.R.A. was met with the problem of "non-abandoned submarginal farms where economical crop production was impossible, and where social services could only be maintained at a loss to the community". Consequently, in 1937, the P.F.R.A. Land Utilization programme was passed, its principle aims being to permanently withdraw these submarginal lands from cultivation and develop them for grazing purposes. Thus, "for little if any more than the cost of using ordinary leased rangeland, they [the community pastures] provided good grazing land and relieved farmers to a considerable extent of the trouble of supervising their livestock. In case of the farmer whose land was practically all under cultivation, with little or no pasturage, and who could provide winter feeding, this service was a decided boon." (Italics mine). As shown by figure 46, the community pastures in the West Lake Area are located principally on the Class II, III and V soils which, as has been discussed in previous sections, are often more suitable for unimproved pasture than for grain crops. Interviews with P.F.R.A. officials indicate that the Class II and Class III soils presently used as unimproved pasture within the study area were not included within the McCreary pasture mainly because they occur in strips adjacent to good cropland on the Class I soils and hence form an excellent basis for mixed farming.

The distribution of community pastures with regard to soil classes is significant because it illustrates that the relationships between land use and soils for the study area are applicable to other parts of the West Lake Area.

PFRA Community Pastures

in the West Lake Area

1963



SOILS CLASSED ACCORDING TO SURFACE DEPOSITS

- Lacustrine and Alluvial Medium and Fine Textured - Class I
- Lacustrine and Alluvial Coarse Textured - Class II
- Modified Till Plain - Class III
- Class IV Moraine and Unmodified Till Plain
- Bog and Half Bog - Class V
- Community Pasture
- Study Area

Miles 0 6 12

Sources: P.F.R.A. Regional Office Winnipeg, Manitoba Soils Report No. 8

or Class III soils,[1] the farms on the Class I soils tended to be smaller because of the greater suitability of these soils for intensive use[2] (as indicated by table I, 81.8 percent of the Class I soils are used for grain crops whereas only 31.2 percent of the Class III soils are put to this use). The infrequent occurrence of a farmholding being located completely on one or the other of these two soil classes rendered invalid any generalizations concerning the average size (that is, the number of acres required, on the average, to support a farm unit) of farms located entirely on one soil class. Nevertheless, by dividing the farms into categories on the basis of land use and showing the distribution of land use on the soil classes (Table 2), it became apparent that the make-up of the farm unit in terms of the two major soil classes did influence farm sizes.[3] The relationship between farm sizes, land use, and soils was arrived at as follows:

1) All the farms within the study area, excepting those operated by

---

[1]As discussed in the preceding paragraph on farm units, most farms within the study area include significant acreages of Class I and Class III soils (that is, few farms are entirely on one or the other of these two soil classes).

[2]The three largest holdings in the study area (2,200 acres, 1,900 acres, and 1,760 acres) are located wholly on the severely modified Class III soils in Range 10 and the northern part of Range 11. The land, excepting for small acreages devoted to feed grains and forage crops, is used as unimproved cattle pasture (that is, these holdings are really extensive cattle ranches rather than farms in the usual sense where a sizeable percentage of the land is utilized for cash grain crops).

[3]The relationship between farm sizes and other soil classes in the study area will be ignored because the number of farms containing significant amounts of these soils was considered too small for generalizations to be made (the Class II, IV and V soils together occupy only 19.1 percent of the total rural area). These soil classes have been included in table 2 for the sake of showing the complete distribution of land use. Thus, the discussion about farm sizes will apply mainly to Ranges 11 to 14 where, as has been mentioned in previous sections of this chapter, most of the farms containing large amounts of both Class I and Class III soils are located.

TABLE 2

SOILS, LAND USE AND FARM SIZES

ACREAGE AND PERCENTAGE * IN		Average Acreage Distribution of Land Use by Farm Category and Soil Class																	
		Grain Farm Category (91 Farms) (66.6 to 100% Land in Grain Crops)						Mixed Farm Category (93 Farms) (33.3% to 66.6% Land in Grain Crops)						Pasture Farm Category (37 Farms) (0 to 33.3% of Land in Grain Crops)					
		SOIL CLASS						SOIL CLASS						SOIL CLASS					
		Class I	Class II	Class III	Class IV	Class V	All Classes	Class I	Class II	Class III	Class IV	Class V	All Classes	Class I	Class II	Class III	Class IV	Class V	All Classes
Grain	Acreage	194.5	27.96	59.7	13.4	4.9	300.	128.5	41.8	105.1	18.0	1.5	294.9	29.30	8.6	64.7	6.8	.8	110.2
	Percentage	64.8	9.3	19.9	4.5	1.6	100.	43.6	14.1	35.6	6.1	.5	100.	26.6	7.8	58.7	6.2	.7	100.
Improved Pasture	Acreage	9.34	4.0	2.7	.23	.5	16.85	13.96	10.7	13.6	1.36	.21	39.83	20.6	9.17	33.76	7.64	.17	71.34
	Percentage	55.4	23.7	16.0	1.3	3.0	100.	35.0	26.9	34.1	3.4	.53	100.	28.9	12.9	47.3	10.7	.24	100.
Unimproved Pasture	Acreage	13.48	12.52	22.4	2.06	2.05	52.47	26.56	20.1	146.2	9.43	8.48	210.9	11.4	27.96	375.83	19.87	18.34	457.3
	Percentage	25.7	23.9	42.7	3.9	3.9	100.	12.6	9.5	69.3	4.5	4.0	100.	2.5	6.1	82.2	4.3	4.0	100.
Unused	Acreage	3.86	.57	6.08	1.95	.38	13.02	.85	4.07	6.95	6.7	.25	18.93	0.0	.2	1.46	0.0	0	1.66
	Percentage	29.6	4.4	46.7	14.9	2.9	100.	4.5	21.5	36.7	35.4	1.3	100.	0	12.0	88.0	0	0	100.
Total	Acreage	221.5	45.1	90.7	17.6	8.8	383.7	170.0	76.84	271.7	35.59	10.17	565.	61.34	45.8	477.6	34.39	18.2	697.
	Percentage	57.7	11.8	23.6	4.6	2.3	100.	30.0	13.6	48.1	6.3	1.8	100.	9.6	7.2	75.0	5.4	2.9	100.

* The Percentage refers to the proportion, according to soil class, any particular land use is of the total acreage of that land use. For example, in the grain farm category 194.5 of the 300 acres or 64.8% of the land under grain is on Class I soils.

part-time farmers (that is, farmers who apparently obtain most of their income from sources other than farming), were divided into three categories on the basis of the percentage of the farmholding under grain crops. The three categories have, for ease of reference, been named (a) grain farms, (b) mixed farms, (c) pasture farms. The grain farms have over two-thirds of their acreage in grain, the mixed farms between one-third and two-thirds, and the pasture farms less than one-third. On this basis there are 91 grain farms, 93 mixed farms, and 37 pasture farms within the study area (Table II).[1]

2) The average size and land uses were calculated for each category. For example, the average grain farm, which was calculated from the 91 farms having over two-thirds of their total area under grain crops, has a size of 383.7 acres. Of these, 300 acres are used for grain crops, 16.85 for improved pasture, 52.47 for unimproved pasture, and 13.02 are unused.

3) The average distribution of land use on the soil classes was made for each category. For example, the average mixed farm has its 294.9 acres under grain distributed as follows:

Class I soils - 128.5 acres (43.6 percent).

Class II soils - 41.8 acres (14.1 percent).

Class III soils - 105.1 acres (35.6 percent).

Class IV soils - 18.0 acres (6.1 percent).

Class V soils - 1.5 acres (.5 percent).

---

[1]The farms were divided into categories on the basis of land use because, as discussed above, there appeared to be a relationship between size of farm, intensity of land use and soil. Excepting for small acreages of improved pasture and unused land, the land not under grain crops is used for unimproved pasture. For example, in the mixed farm category the acreage under grain and unimproved pasture account for 505.8 of the total of 565 acres.

Having calculated the average farm for each category, it became apparent that there was a decrease in average size with an increase in the acreage of the farmholding on the Class I soils and an increase in average farm size with an increase in acreage on the Class III soils. Specifically, the grain farms average 383.7 acres, with 221.5 (57.7 percent) on the Class I soils and 90.7 (23.6 percent) on the Class III soils, the mixed farms average 565 acres, with 170 (30 percent) on the Class I soils and 271.7 (48.1 percent) on the Class III soils, and the pasture farms average 637 acres, with 61.3 (9.6 percent) on the Class I soils and 477.6 (75 percent) on the Class III soils. The explanation of this relationship appears to be:

1) The Class I soils are more suitable for grain crops than the Class III soils, hence, farmholdings located principally on the Class I soils tend to be smaller, because a greater economic return is derived from grain crops, than farms located principally on the Class III soils which are not as well suited to this use (See table II for the acreage of the Class I and Class III soils under grain crops in each category).

2) The Class I soils under grain crops appear to be more productive than the Class III soils under grain crops. This becomes apparent from a consideration of the total acreage and distribution of grain crops for the grain and mixed categories. Of the 300 acres under grain in the grain farms category, 194.5 (64.8 percent) are on the Class I soils and 59.7 (19.9 percent) are on the Class III soils, whereas, of the 294.9 acres under grain in the mixed category, only 128.5 (43.6 percent) are on the Class I soils and 105.1 (35.6 percent) are on the Class III soils. Thus, even though the average mixed farm has almost as many acres under grain as the average grain farm, the greater amount of this grain land on the less productive Class III soils has apparently

led to the acquiring of pasture land, mainly on Class III soils, to make the mixed farm a viable economic unit. For, as shown by table 2, the mixed farms have 210 acres of unimproved pasture whereas the grain farms have only 52.47 acres put to this use. This larger amount of pasture land is the principal factor accounting for the larger size of the mixed farm category.

In conclusion, marked differences in the physical qualities of the Class I and Class III soils appear, through their influence on land use and productivity, to be the principal cause of variations in farm size in Ranges 11 to 14 of the study area.[1]

Farmsites

Farmers who moved into Ranges 10 and 11 during this period tended to site their farmhouses on till plain ridges adjacent to east-west or north-south roads.[2] The new settlers in Range 10 were more or less restricted to locations along an east-west road two miles north of the southern boundary of Township 18 because the retiring cattle rancher (See footnote 1, p. 124) had most of his holding along this road (Figure 47). A discernible northwest-southeast settlement pattern developed on a till plain ridge running close to the boundary between the Class I and Class

---

[1]Although time did not permit a study of the relationship between farm sizes, land use and soils in other parts of the West Lake Area, interviews with P.F.R.A. officials and other government agents familiar with the area indicate that, in general, the farms in areas of Class I soils are smaller than those on Class III soils. Also, farms on Class I soils depend on a mixed cash grain - livestock economy whereas those on Class III soils are usually based mainly on raising cattle on unimproved pasture with small areas cleared for raising feed crops, principally oats. This system is prevalent in Range 10 of the study area which is the only extensive area of Class III soils in it.

[2]The lacustrine deposits on the southeast of Range 11 have, in places, assumed the ridge and swale pattern of the underlying modified till deposits.

ERN 1963

Glenella Highway

Amaranth Provincial Highway No.50

Waldersee River

N

Tp.18

R.12

R.11

R.10

Farmhouses and Farmsites

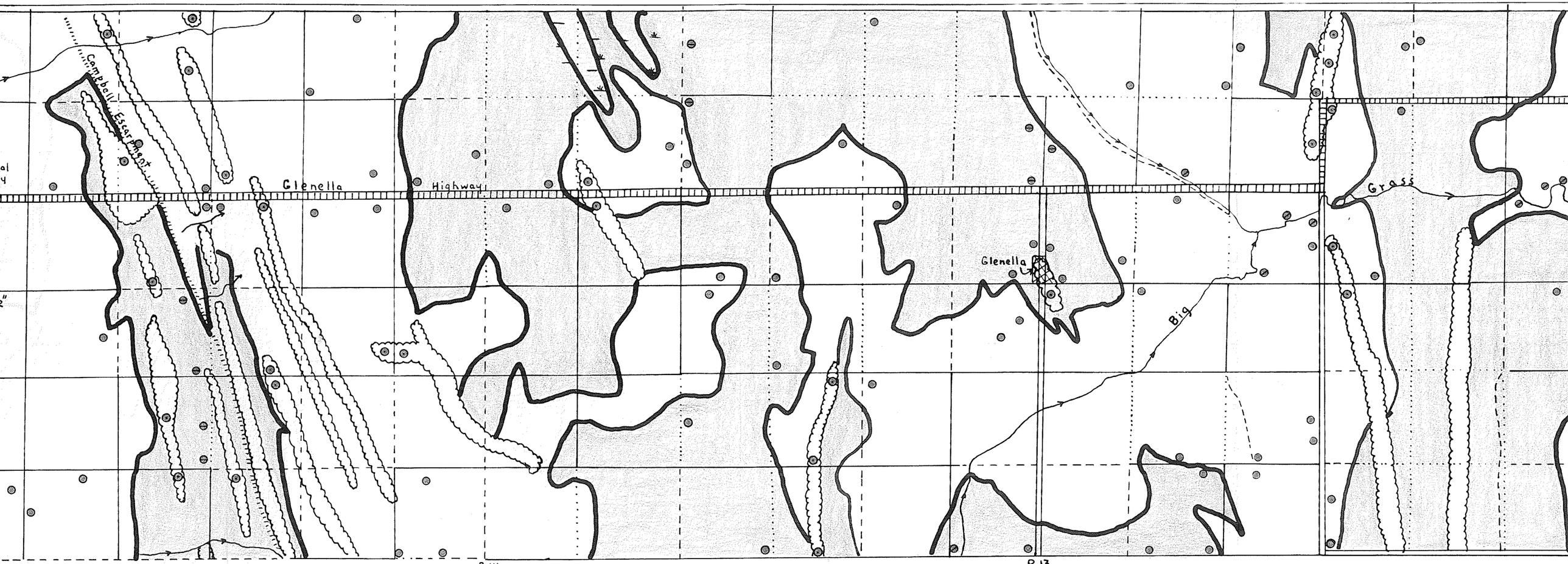
- Farmhouses on Till Plain Ridges
- Farmhouses on Beach Ridges
- Farmhouses on Alluvial Fans
- Farmhouses along the Big Grass River and Tributaries
- Other Farmhouses

Generalized Surface Deposits-Soils

- Moraine and Unmodified Till Plain
- Modified Till Plain
- Lacustrine and Alluvial
- Bog and Half Bog

Sources: Fieldwork, Interviews, Manitoba Soils Survey No. 8,
Canada Department of Mines Memoir 174
Municipal Offices - Neepawa, Glenella
Local Government District Office, Alonsa

FARMSITES AND ROAD PATTERN 19



1 mile

Highways

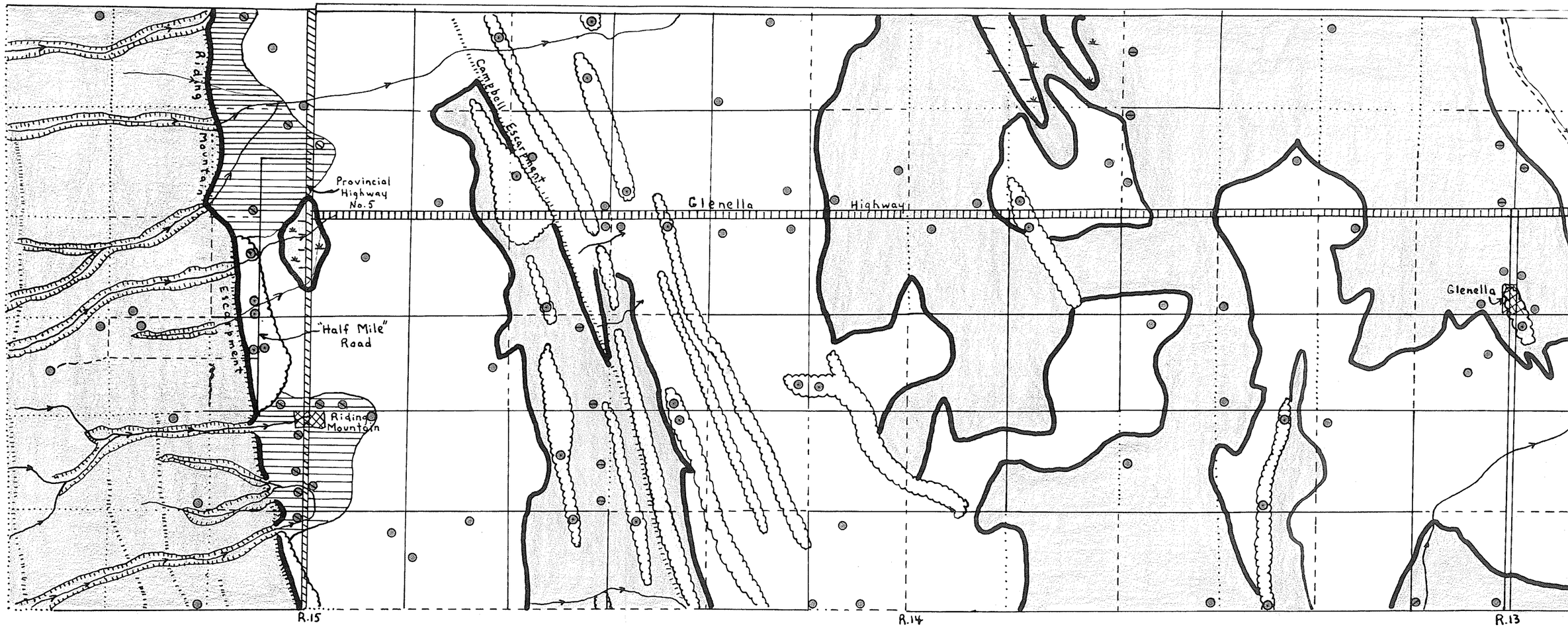
- Provincial
- Secondary

Roads

- Main Market
- Primary Local
- Secondary Local
- Surveyed Line (Road Allowance Unused)

- Stream or River
- Sharp Escarpment
- Marsh and Meadow
- Beach Ridge
- Alluvial Fan

FA



Scale: 1 inch = 1 mile

Highways

- Provincial
- Secondary

Roads

- Main Market
- Primary Local
- Secondary Local
- Surveyed Line (Road Allowance Unused)

- Stream
- Sharp

III soils in the eastern part of Range 11 (Figure 47).[1]

As mentioned on p. 3 of the Introduction, the only date for which the precise locations of all the farmhouses in the study area were available was for the year 1963. In previous chapters, the relationship between the location of farms and physical features has been estimated as closely as possible on the basis of interviews. In order to give a meaningful description of the development of the present distribution of farms it was felt worthwhile to repeat some of the past developments in this chapter.

General Distribution.--From figure 47 it can be seen that there is a concentration of farmhouses on the lacustrine and alluvial (Classes I and II) soils, which, over the years, have proven capable of supporting permanent settlement because they are (as shown by figure 45 and overlay 3 and discussed in previous chapters) generally suited to the growing of grain crops. It should be noted, however, that even though the lacustrine soils are principally under grain crops, where these soils were formerly poorly drained or saline, notably in the West Marsh and Big Grass Marsh Areas, farmhouses are not numerous. In contrast, the modified till plain and bog soils are much less densely settled because (a) large areas of land are unused, (b) the land is owned and used for pasture by settlers living on the lacustrine soils (as reflected by the distribution of land separated from the central holding on figure 39), (c) farms located on these soils are often large units, that is, cattle ranches based on

---

[1]This till plain ridge formed the site for an early cart trail marked on the surveyor's map of Range 11 in 1872 (Compare the site of the cart trail on figure 9 with the settlement pattern on figure 47). This trail was not used by settlers in the area because settlement did not occur until after the construction of drainage ditch roads (this part of Range 11 was settled for the first time in the period from 1916 to 1921).

unimproved pasture with a little land sown to feed grains. As discussed previously (pp. 123 and 131) there are few farmhouses in the Riding Mountain Region (moraine and unmodified till soils on figure 47) because, much of the land, being too steep for cultivation, is unused or, if cultivated, is owned by non-resident farmers.

Detailed Distribution.--On a more detailed scale, the distribution of farmhouses is closely related to site. The most striking patterns are concentrations along:[1]

1) The "Half-Mile" road and Highway Number 5 which, taken together, closely approximate the old "Dauphin Trail". The sites of this trail and of the farmhouses are principally on beach ridges and alluvial fans.

2) The Campbell Escarpment and till plain and beach ridges immediately east of it (note the lack of farmhouses in the central portion of the Upper Lowland Plain where a marsh and meadow existed prior to artificial drainage).

3) On beach ridges immediately east of the Campbell Escarpment.

4) On beach ridges and generally higher land near the boundary of Ranges 12 and 13.

5) Along the Big Grass River from the point where it left the "West Marsh" to the hamlet of Waldersee (as discussed on p. 95 and footnote 1, p. 95, farmhouses formerly located downstream from Waldersee were moved or abandoned due to flooding after artificial drainage).

6) Along the till plain ridge in Range 11 which formed the site for a cart trail (See p. 140 and footnote 1, p. 142).

---

[1]The reader is referred to the sections on farmsites in previous chapters for the reasons for siting farmhouses on the physical features mentioned in this discussion. Also, figures 25 and 26 will be helpful in an understanding of the past development of these patterns.

7) On till plain ridges next to an east-west road in Range 10 (See p. 140).

8) Along the Langruth beach ridge in the eastern part of Range 10.

Towns

Riding Mountain

With the sudden decline in demand for cordwood and the general improvement in economic conditions, men who formerly obtained part-time work in the town of Riding Mountain during the 1930's left to seek employment elsewhere. Several wood shipping middlemen who had bought cordwood from settlers in the Riding Mountain Region and sold it to distributors in Neepawa and Winnipeg, also left and a boarding house closed down. However, this exodus was offset by an influx of retired farmers which began about 1945[1] and has continued to the present day. The town of Riding Mountain is favoured by retiring farmers for several reasons. Sites in the new portion of the town adjacent to the stream or along Highway Number 5 are well drained (See p. 106), well treed, and afford a beautiful view, especially during the autumn when nature's colours are at their best, of the Riding Mountain Escarpment to the west.[2] Also, in contrast to Kelwood, a town five miles north of Riding Mountain, which is also well drained and affords a view of the escarpment, water is readily available in Riding Mountain from shallow dug wells in the

---

[1]Retirement of farmers in this area, which had been settled mainly between 1885 and 1910, had been delayed by the drought and depression. During this period farmers tended to remain on their farms in order to subsist even though they were quite old.

[2]Both town residents and farmers near the town of Riding Mountain boast of the beauty of their area compared to areas further east where the land is flat and uninteresting from an aesthetic point of view.

alluvial fan forming the townsite.[1] The relatively small population of the town[2] has the advantage of lessening taxes and providing a quiet atmosphere to which farmers are accustomed. In addition, a daily bus service along Highway Number 5 allows access to Neepawa in all seasons of the year. This is especially important for retired families who are often not able or inclined to drive their own automobiles.

The three garages and two cafes in the town received a stimulus in business during this period because of a great increase in summer vacationers travelling along Highway Number 5 to visit Riding Mountain National Park as well as a general increase in the use of automobiles and trucks by farmers in the area. The only other commercial enterprises remaining in the town are a grain elevator, a general store and a saw-mill.

Glenella

As automobiles and trucks came into general use in the West Lake Area, Glenella experienced a minor growth of trade and population.[3] Rather than travel to smaller centres such as Tenby,[4] which offered few services, farmers would now go to Glenella. Better economic conditions also allowed

---

[1]Drinking water for the residents of Kelwood is brought by truck from McCreary and Neepawa.

[2]1916 Census of Canada, Bulletin SP-4, Population - Unincorporated Villages. The population of Riding Mountain was 222 in 1956 and 212 in 1961.

[3]Ibid.. Although the population of Glenella dropped from 236 in 1956 to 219 in 1961, interviews indicate an overall growth for the period 1939 to 1963, especially in the period from 1945 to 1951 when it received an influx of Ukrainians from Range 14 (See footnote 2, p. 121).

[4]Tenby is located in Township 17, Range 13, four miles southeast of Glenella. The population of Tenby is less than fifty because it is not listed in the 1956 or 1961 censuses of unincorporated centres (an unincorporated centre being defined as a nucleated settlement having a population of fifty or more).

farmers to spend more money on machinery and buildings. To meet this demand two farm implement stores and a lumber yard were opened.

Amaranth

The commercial section of Amaranth continued to rely mainly on highway traffic and trade with Indians in the Sandy Bay Indian Reserve throughout this period. Although no new stores were opened the existing ones undoubtedly received increased profits due to a rise in rural population (See p. 124 and figure 24) and increased welfare allowances granted to the Indians. This increase in trade was offset to some extent by the decrease of employees in the gypsum mine from 60 to 14 during the latter part of this period. Future decreases in trade are likely for it is rumoured that the mine will close in 1965.[1]

Waldersee

A grocery store and cafe were opened in Waldersee during this period to serve farmers in the surrounding area who now, with mechanization of farm work, faster methods of transportation, and good years for agricultural production, have more time and money to spend. Otherwise the hamlet remained essentially unchanged.

---

[1]Personal interview with Mr. R. J. Willox, September 15, 1963. Mr. Willox is the foreman of the gypsum mine at Amaranth. The decrease in the number of employees was brought about by technological developments in the mining of gypsum. Since interviews revealed no other reason for the decline in population of the town of Amaranth from 358 in 1956 to 294 in 1961, it appears that the mine workers were included in the town population. Interview with Mr. Harris also revealed that the discovery of gypsum deposits in southwestern Manitoba near Morris (a town about forty miles southwest of Winnipeg) have made it uneconomical to continue operations at Amaranth (120 miles from Winnipeg) even though the gypsum deposits at Amaranth are just as extensive. The cost of shipping from Amaranth to Winnipeg, where most of the gypsum is processed, is about three dollars per ton whereas the cost from Morris to Winnipeg is one dollar per ton.

Transportation and Communications

Local Roads

As cars and trucks came into general use, the most well travelled local roads on the Lowland Plain were gravel surfaced; the less travelled roads remained unimproved, or at best, were only partially maintained. The local roads exist primarily to allow farmers access hence it is to be expected that the present day pattern and type of road would reflect the distribution of settlement within the study area. That this situation does obtain is evident from figures 45 and 47. The most dense system of roads is found on the Class I and Class II soils which, through their general suitability for grain growing, have attracted and sustained settlement from early times until the present. Thus, in many areas of Class I and Class II soils almost every road allowance is in use. In contrast, the Class III soils, although they have in places been used for grain and have supported numerous settlers for short periods of time in the past (for example, in the period from 1916 to 1921 during the Greater Production Campaign and Soldier Settlement), are sparsely settled today and few road allowances are in use. A pattern of settlement and land use has evolved whereby a large percentage of these soils are used for unimproved pasture, either in conjunction with a mixed farming economy by settlers living on cultivated Class I and Class II soils, or by cattle ranchers having large holdings entirely on these soils (See footnote 2, p. 136). In addition, eighteen quarter sections of unused land on these soils support no settlement. These factors, taken together, account for the sparse settlement and few roads on the Class III soils. It may be further stated that some of the east-west roads on the Class III soils exist primarily to serve farmers living on intervening strips of Class I and

Class II soils.

During this period, modern machinery such as bulldozers and graders allowed most of the former trails following the natural terrain in the Riding Mountain Region to be replaced by section roads. Because many of the settlers left before this machinery became available (about 1945), the present day road pattern closely reflects the existing pattern of farmhouses. Some trails leading to pre-existing sites have almost completely grown over through disuse, hence, they were not shown on figure 47.

Highways

During this period the use of trucks and automobiles for travelling and the haulage of grain and cattle became, in many cases, more economic and convenient than railways. This increased traffic was especially evident on the main arteries connecting the West Lake Area with market and service centres in southern Manitoba such as Neepawa, Gladstone, Portage la Prairie and Winnipeg. Indications of increased traffic were the designating of the highway along the Langruth Ridge as Provincial Highway Number 50 in 1952. Further indications were the macadamizing of Highway Number 5 in 1952 and Highway Number 50 in 1959.

Increased communication between Glenella and the two main arteries led to the designation of the Glenella secondary highway in 1954 which, in 1956 after widening and re-gravelling, became a provincial road (Figure 47).

Railways

The use of railways, both for passenger travel and shipping, declined steadily as trucks and automobiles gained in importance. The

branch lines of the Canadian National Railway[1] on the western and eastern margins of the West Lake Area suffered a more rapid decline[2] than the central branch, probably because of their proximity to Highway Number 5 and Highway Number 50 respectively (Figure 47). An additional factor leading to decline was a restricted hinterland; the western branch is limited by the Riding Mountain National Park, the eastern one by Lake Manitoba. It is now rumoured that both these lines will be discontinued as part of a Federal government programme to rationalize the railway network in Western Canada. The line to Amaranth will most surely be removed in 1965 when the gypsum mine, which currently ships about 120,000 tons per year, closes down (See p. 146). Present plans are to maintain the line from Gladstone through Glenella to McCreary and Dauphin. The main reasons for retention of this line appear to be lack of serious competition from highways and a large agricultural hinterland.

Artificial Drainage

Drainage conditions within the study area were included within a report made on the drainage maintenance districts of Manitoba in 1949. The government drainage engineer reported as follows:

> Drainage conditions in Drainage Maintenance District "M" are rather difficult. In Rosedale Municipality[3] there is generally sufficient fall to the surface of the ground to permit the water to flow readily from the area. All the water from the portion of the

---

[1]The Canadian Northern Railway became part of the Canadian National System in 1922.

[2]Based on numerous personal interviews with Canadian National Railway officials in Winnipeg and farmers within the study area.

[3]All of Township 18, Range 15 of the study area is within Rosedale Municipality but only the Upper Lowland Plain, or eastern half of the township, is within Drainage Maintenance District "M". The western half, or Riding Mountain Region, is excluded.

> District in Rosedale Municipality discharges onto Glenella Municipality. In this latter Municipality drainage conditions are more difficult. Streams discharging from the Riding Mountain wash shale, sand and gravel into many of the drains, making the upkeep both costly and unsatisfactory. The area frequently consists of low lands separated by higher ridges [beach ridges and till plain ridges]. This also adds to drainage difficulties.[1]

It was also reported that the Big Grass River flooded quite frequently in its lower portion due to the large number of drains funneled into it. As a whole, Drainage Maintenance District "M" could not pay the upkeep of drains. Despite debt arrears, however, it was realized that "Without drainage, much of the land in Glenella Municipality would not be valuable for agricultural purposes, but where there is adequate drainage the lands have been made suitable for agriculture".[2] Rather than let the drainage problem become worse due to lack of funds for maintenance, the government decided to bear two-thirds of the cost of maintaining drains carrying "foreign water".[3]

Interviews with farmers in the study area indicate that drainage conditions were not improved after 1949; in fact, further complications arose. Clearing of the forest cover in the Riding Mountain Region allowed snow to melt and run off more quickly than it had done previously. Consequently, drainage ditches on the Lower Lowland Plain, which also received water from the area to the north, were frequently unable to carry all the meltwater and surrounding fields would be flooded.

A significant development which may alleviate drainage conditions in the future occurred in 1959 when the Whitemud River Watershed was

---

[1] M. A. Lyons, Report and Recommendations on "Foreign Water" and Maintenance Problems (Winnipeg: 1949), p. 47.

[2] Ibid., p. 48.

[3] See p. 110. The government had paid one-third of the maintenance cost of all drains between 1936 and 1949.

proposed as a water development area (Figure 48). A watershed was defined as:

> A natural land area drained by a single designated stream and all its tributary network. It includes the highlands at the source of the main stream, and extends to the lowlands at the outlet end. Within this area several distinct but related problems may be encountered including erosion on the higher land and flooding of the lower land. The rate of run-off, land management and forest management are as much an integral part of the program as construction of control structures, such as holding dams and reservoirs. Watershed districts must be formed simply because water does not respect artificial municipal boundaries.[1] (Italics mine).

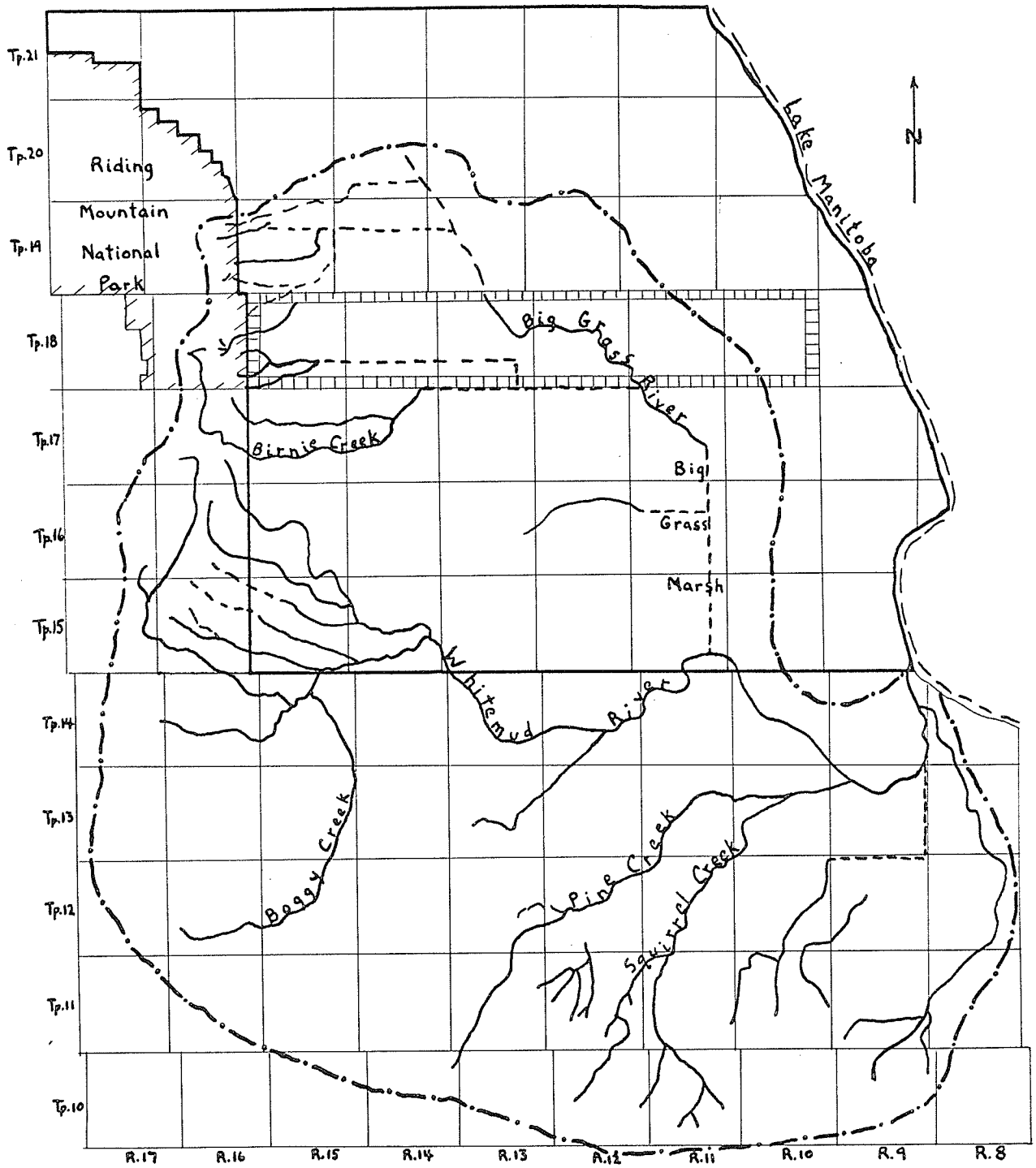
If the plans for the Whitemud River Watershed are carried out they will mark a radical departure from any past attempts to solve drainage problems in the area. Throughout the history of artificial drainage "foreign water" from the Riding Mountain Region, which is outside drainage Maintenance District "M", has been the main complicating factor; if the programme is implemented, however, this region will be included in the watershed. Ideally, government officials would like to include the Riding Mountain Region portion of the study area within the Riding Mountain National Park, thereby enabling reforestation to be carried out. In their opinion, the land which has recently been cleared and is being sown to wheat year after year will soon be depleted and should, in fact, never have been brought under cultivation.[2] However, realizing the limitations imposed on government planning by the system of private ownership of our country, the government does not anticipate the above measures can be carried out in the

---

[1] Water For Tomorrow, Manitoba Department of Agriculture and Immigration, April 10, 1963.

[2] Personal interview with Mr. Wallace Lee, Agricultural Representative, Neepawa, and correspondence with Mr. M. C. McKay, Soil Specialist, Brandon.

THE WHITEMUD WATERSHED



Source: Manitoba Department of Agriculture and Immigration, Soils and Crops Branch

near future. Therefore, they hope instead to encourage farmers to reforest any steep slopes that have been cleared,[1] to plant shelterbelts on the terraces, and to grow more forage crops. These practices will help check rapid runoff, soil erosion and soil depletion. In addition to the above forest and land use management proposals, water management plans, such as check dams and reservoirs, are being made for the larger streams. Indeed, a pilot project has already been introduced on Wilson Creek, which flows off the Riding Mountain Escarpment north of the West Lake Area, to measure the amount and pattern of runoff and erosion of shale.

At the time of writing, the Whitemud River Watershed has not been approved. Unfortunately, several of the better drained rural municipalities within the watershed do not feel financially or morally responsible for drainage problems in other parts of the area.[2]

Water Supply

Domestic Water.--More rapid means of transportation and better roads allowed many farmers who formerly drank distasteful water from their own wells to obtain better water from more distant sources. Farmers in the vicinity of Glenella who formerly drank poor water obtained from dug or drilled wells now haul water by truck from a good well in the town of Glenella. Recent settlers in the southern part of Range 10 and the eastern part of Range 11, in contrast to their precursors in the period from

---

[1]Some farmers in the Riding Mountain Region have cleared the terraces and, in the last year or two, have begun to clear the steep slopes (Figure 49).

[2]Personal interview with Mr. T. Poyser. Mr. Poyser is intimately involved with the Whitemud River Watershed through the Agricultural Rehabilitation and Development Board.

about 1917 to 1925 (See p. 86), haul excellent drinking water from farmers on the Langruth Ridge. In other parts of the study area sources of domestic water remained unchanged throughout this period.

Livestock Water.--Between 1939 and the present, almost every farmer in the Glenella Municipality[1] portion of the study area has constructed at least one dugout with the assistance of the Prairie Farm Rehabilitation Administration[2] (See p. 113). The proliferation of dugouts may be attributed to increasing cattle herds and to safeguard against the recurrence of water shortages which occurred during the drought years from 1930 to 1938. Due to the tendency for some farmers to site dugouts near their farmhouses for the sake of convenience rather than on good natural sites which may be farther removed, the P.F.R.A. representative must approve sites before financial assistance is granted.[3] The most commonly approved sites are in swales and on the poorly drained west side of beach ridges (Figures 50 and 51). Less common, but also excellent sites, are found near drainage ditches. Dugouts are generally unnecessary in that portion of the study area within the Local Government District of Alonsa because water tends to remain in the swales and behind beach ridges throughout the summer and autumn months. More water collects in this area because drainage ditches are no longer maintained (See p. 111) and the ridges and swales are more steeply undulating than in other parts of the study area. Streams usually supply enough livestock water on the Upper Lowland

---

[1]Figure 3 shows the portions of the study area within the Municipalities of Glenella and Rosedale and the Local Government District of Alonsa.

[2]Commonly referred to in the abbreviated form P.F.R.A..

[3]Size specifications are also made but they vary considerably from farm to farm depending on the number of livestock kept and the amount of surface water which collects; hence, it was felt unnecessary to make a detailed study of this aspect of government control.

Plain and the Riding Mountain Region (that is, Range 15 or the Rosedale Municipality portion of the study area). The only two dugouts in this area are located at the base of escarpments in the Riding Mountain Region where water under pressure rises close to the surface (See p. 19).

Building Materials and Fuel

With the appearance of relatively inexpensive and easily used manufactured materials such as plywood, beaver board, gypsum board and cinder blocks, local building materials were gradually replaced by ones from outside sources. Even lumber, formerly produced locally in large quantities is, with the exception of minor production in the town of Riding Mountain (See footnote 1, p. 123), now brought into the West Lake Area by railway or truck and distributed by lumber yards in Glenella, McCreary and Plumas.

Gravel for road surfacing (See p. 147), railway ballast, and concrete[1] was obtained from local beach ridges. In some instances concrete was mixed at the gravel pit using water which collected above the underlying till.

Although coal is now quite often used during winter nights,[2] local wood is still the main source of fuel.

The Hutterites

---

[1]The presence of large quantities of shale pebbles, which crumble very easily, renders gravel obtained from beach ridges near the base of the Riding Mountain Escarpment unsuitable for making concrete. These gravels are, however, used for road surfacing and railway ballast.

[2]Coal is used at night during the winter because it burns more slowly than wood, thus making it unnecessary to add more fuel during the night to keep the farmhouse at a comfortable temperature.

Soon after fieldwork was terminated in the autumn of 1963, a religious group, correctly called the Hutterian Brethren but commonly known as the Hutterites, founded a colony in the study area. The settlement features these people have established are, in many instances, markedly different in their relationship to the physical environment than any previous settlement in the area. Consequently, it was felt worthwhile to alter the meaning of the word "present" (See footnote 2, p. 2) to include the summer of 1964 as far as the portion of the study area affected by the Hutterites was concerned.

The Parkview Colony

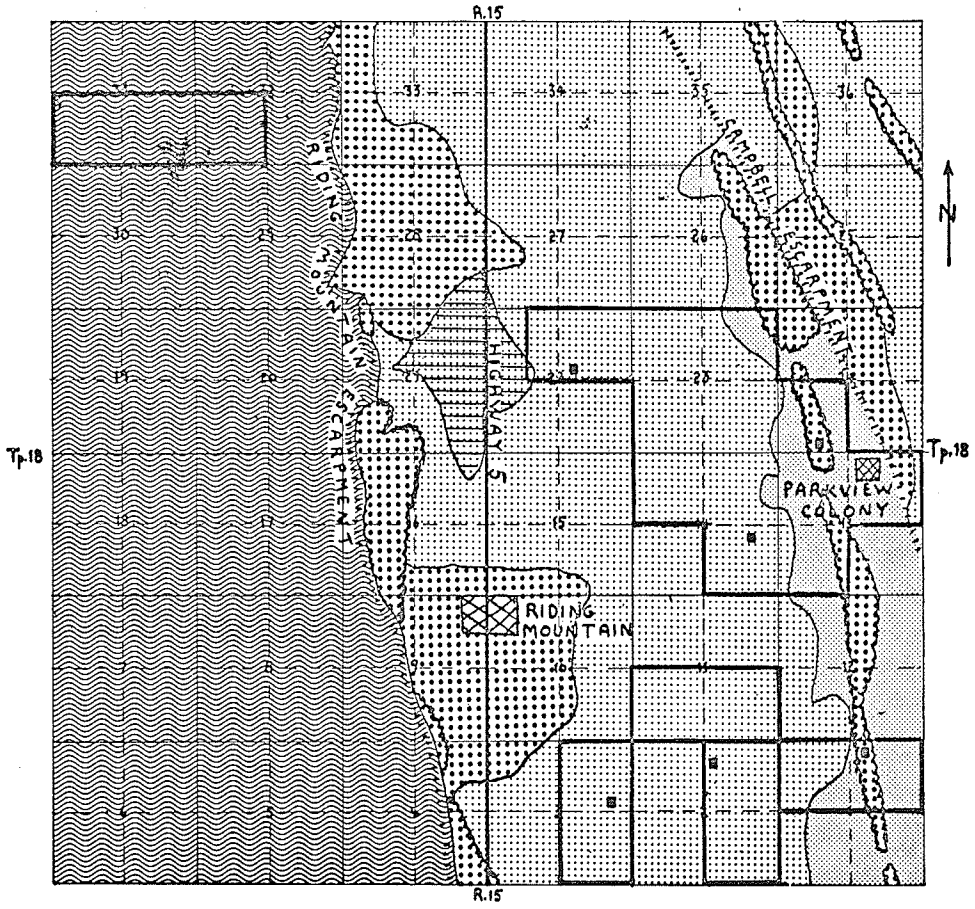
In a process involving the disappearance of six farmhouses which were present at the time of original fieldwork (See p. 27), the Hutterites acquired twenty-three and one-half quarter sections (3,760 acres) in Range 15 of the study area (Figure 52) between October, 1963 and June, 1964. At the time of interview with Reverend Jacob Waldner (June, 1964), eighty people were living on the colony. However, it is anticipated that within a year, additional movement from Elie[1] will bring the population to approximately 180.

Choice of the Land.--When it became apparent that the Elie colony would divide, the Hutterites were faced with the problem of acquiring land to support a new colony. Rapid growth in recent years has left few areas open to the Hutterites, for in Manitoba there is what may be termed a voluntary "Gentleman's Agreement" between the colonies and the Union of Rural Municipalities that restricts indiscriminate Hutterian expansion.

---

[1]The Parkview colony is a branch of the colony at Elie, Manitoba.

THE PARKVIEW HUTTERITE COLONY



LEGEND

SOILS

- CLASS I
- CLASS II
- CLASS III
- CLASS IV
- CLASS V
- BEACH RIDGE
- FARMHOUSE
- COLONY LAND

Miles
0 ½ 1

Sources: Interviews, Manitoba Soils Report No. 8

However, after several delays, the Hutterites obtained permission to locate a colony in one of the three West Lake Municipalities of Rosedale, Glenella or McCreary, where, prior to this time, no colonies had been established. Aided by the Manitoba Soils Report of the West Lake Area (See footnote 1, p. 4) and by aerial photographs, the Hutterites, who, even their detractors agree, are highly knowledgeable when choosing farmland, acquired some of the best land in the study area.[1] Of their entire holding, 2,435 acres are on the Class I soils[2] which were almost all sown to grain crops by the former owners (Compare figures 45 and 52 and overlay 3). There are 695 acres on the Class III soils, which, chiefly because of stoniness, were used predominately as unimproved wooded pasture by previous owners. Where this land was less stony, however, the land had been cleared and good grain crops were raised. The Hutterites, who have abundant manpower and home-made mechanical stone pickers, intend to clear most of this wooded pasture and sow grain crops. However, for reasons which will be discussed in the next paragraph, the uncleared land in the northern quarter of Section 13 will be left in its present state. The 480 acres in the Riding Mountain Region have recently been cleared and were, when the former owner was interviewed, still producing good grain crops. However, the Hutterites, anticipating that this land will not produce good grain crops for a long period, are going to change the land use from grain to forage crops in the near future.

Site of the Colony.--In choosing a site for their colony, the

---

[1]Having been allowed to locate a colony in a municipality, the Hutterites are, of course, still restricted to a certain extent by the willingness of farmers to sell their holdings. However, chiefly due to the high prices they offered, they were able to locate most of their holding on the rich soils of the Upper Lowland Plain.

[2]See p. 125 for the definition of soil classes.

Hutterites were primarily concerned with the need for isolation from outside influences which might tend to breakdown their way of life. Other important considerations were drainage, water supply and utilization of the poorer land. These factors took preference over central locations, for the site chosen was on the eastern edge of their holding (Figure 52). Fortunately, the primary consideration, isolation, could be combined with the less important ones of drainage, water supply and using the poorer land by placing the buildings on the northeast quarter of Section 13. On the Class III soils of this site, seclusion was provided in the form of woodland which had been formerly used as unimproved pasture. In addition, economics justified the taking of these soils out of production rather than the Class I soils because of the greater suitability of the latter for cultivation. The colony is provided with excellent drainage by its location along the western edge of the Campbell Escarpment. Although the present water supply, obtained from two dug wells, will not be enough to meet the needs of the colony when it is fully established, additional water will be conveyed in pipes from a beach ridge about one-quarter of a mile to the west where a plenteous supply is available (Figure 52).

Farm Economy.--Once established, pigs, and to a lesser extent turkeys and chickens, all raised on the colony's grain, will form the colony's chief sources of income.[1] Indeed, it is hoped that two to three thousand pigs will be marketed annually. As is the common practice on Hutterite colonies, enough ducks and geese, supplying food as well as feathers for pillows and mattresses, will be kept to meet the colony's needs. At present, beef and dairy cattle are kept only for the colony's

---

[1]In its formative state, the Parkview colony has been supported by its mother colony in Elie, Manitoba.

own use. However, a large increase in the number of beef cattle, mainly for the cash market, will take place when more grain for feed becomes available from newly cleared Class III soils.[1] Hence, their self-sufficient mixed farming economy will replace the cash grain economy (as discussed on p. 133) of the six farmers they have replaced.

Building Materials and Fuel.--Inexpensive buildings of a size suitable for the Hutterian church, school and communal dining hall were obtained in the form of old army huts from Shilo, an army training camp located south of the West Lake Area. Housing for the colony members was met by using the six farmhouses from the land they bought in conjunction with army huts. Hence, the buildings required for housing, religious, and educational purposes did not involve the use of local material. Barns and poultry sheds are now being built with lumber purchased at Glenella (See p. 155). A large piggery is also under construction. Concrete for the floor is being mixed at the same beach ridge from which water will be piped to the colony. Here, concrete gravels and water for mixing are available. Cinder blocks are being brought from Neepawa for the walls.

For the next few years wood for fuel will be supplied by the clearing of woodland on the Class III soils, excepting the colony site on the northeast quarter of Section 13 where the trees will be kept for shelter and privacy.

---

[1]Reverend Jacob Waldner firmly believes that the economic returns of the Parkview colony will be higher if all, or almost all, of the colony's grain is fed to livestock and poultry rather than selling it directly for cash. Indeed, interviews with the grain elevator operator at the town of Riding Mountain indicate that the replacement of the six farmers, who used to market most of their grain, by the Hutterites, who use most of theirs for feed, may cause the closing down of the elevator even if the railway line is not taken up (See p. 149).

Summary

The principal developments concerning the relationship between settlement features and the physical environment developed or continued during the period from 1939 to 1963 were:

1) The relationship, begun in the period from 1922 to 1938, whereby the lacustrine and alluvial soils were used principally for grain crops and the modified till plain soils for pasture was continued, notably in the bringing under cultivation of extensive areas of formerly poorly drained, saline lacustrine soils in the southeast of Range 11 and the West Marsh Area in Range 13 plus the use of modified till plain soils in Range 14 for pasture after they were abandoned or sold by Ukrainians.

2) In attempts to create viable economic units many fragmented farm units developed having the land separated from the central holding related to the land use and soils in such a way that (a) land separated from the central holding used for pasture was concentrated on modified till plain soils, (b) cultivated land separated from the central holding was concentrated on lacustrine soils formerly used for pasture due to poor drainage and salinity but which, over the years, became suitable for grain crops, the two most important examples being the lacustrine soils in the Big Grass Marsh and West Marsh Areas.

3) The unequal distribution of farmhouses and local roads with concentrations on the lacustrine and alluvial soils.

4) The replacement, with the exception of the "Half-Mile" road and Highway 50, of trails following the natural terrain, was continued by the building of section roads in the Riding Mountain Region.

5) The change in the use of the physical environment in the Riding

Mountain Region from one based on the forests of the Mixedwood Vegetation Section to the "mining" of the newly cleared unmodified till and moraine soils of that region.

6) The realization by provincial drainage officials that artificial drainage districts, to be efficient, must be based on physical boundaries, taking into account slope, forest cover and watersheds, rather than municipal or township boundaries.

7) The substitution of local building materials by ones from outside the study area.

8) The siting of farmhouses on well drained physical features was continued by the location of almost all the new farmhouses in Ranges 10 and 11 on till plain ridges.

9) The location of many dugouts in naturally poorly drained sites in swales and on the western margin of beach ridges.

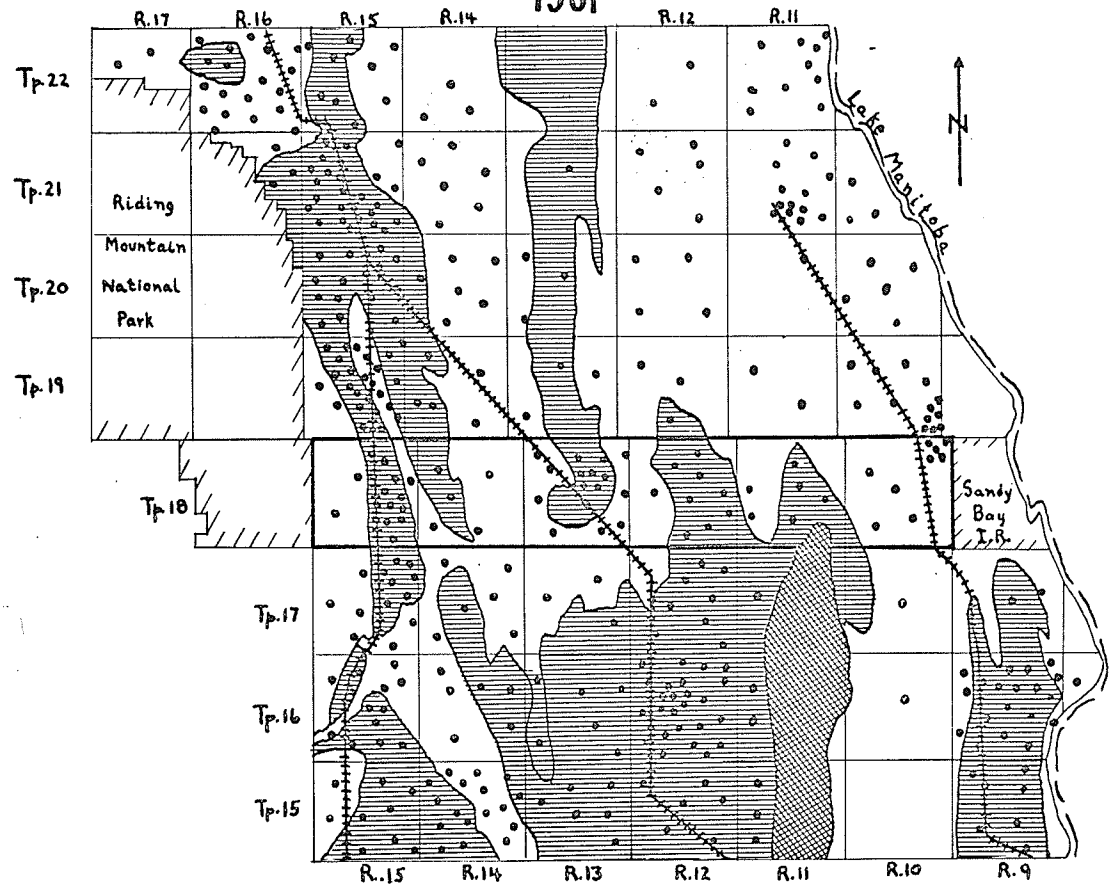
Relationships developed in the study area which appear to apply to other parts of the West Lake Area are:

1) Proposals associated with the Whitemud Watershed whereby municipal or township boundaries for drainage districts will be replaced by physical ones.

2) Development of community pastures on the same type of soils used predominately for pasture within the study area, that is, on the modified till plain and bog soils.

3) Sparse settlement on the same soils as those mentioned in (2) above as being used for pasture in contrast to the more densely populated lacustrine and alluvial soils (Figure 53).

Population Distribution in the West Lake Area 1961



Population of West Lake- 10,245
Population of Study Area- 1,558

GENERALIZED SURFACE DEPOSITS

- Lacustrine and Alluvial
- Bog and Half Bog
- Moraine and Unmodified Till Plain
- Modified Till Plain
- Railway
- 1 Dot Represents 25 People
- Study Area

Miles
0 6 12

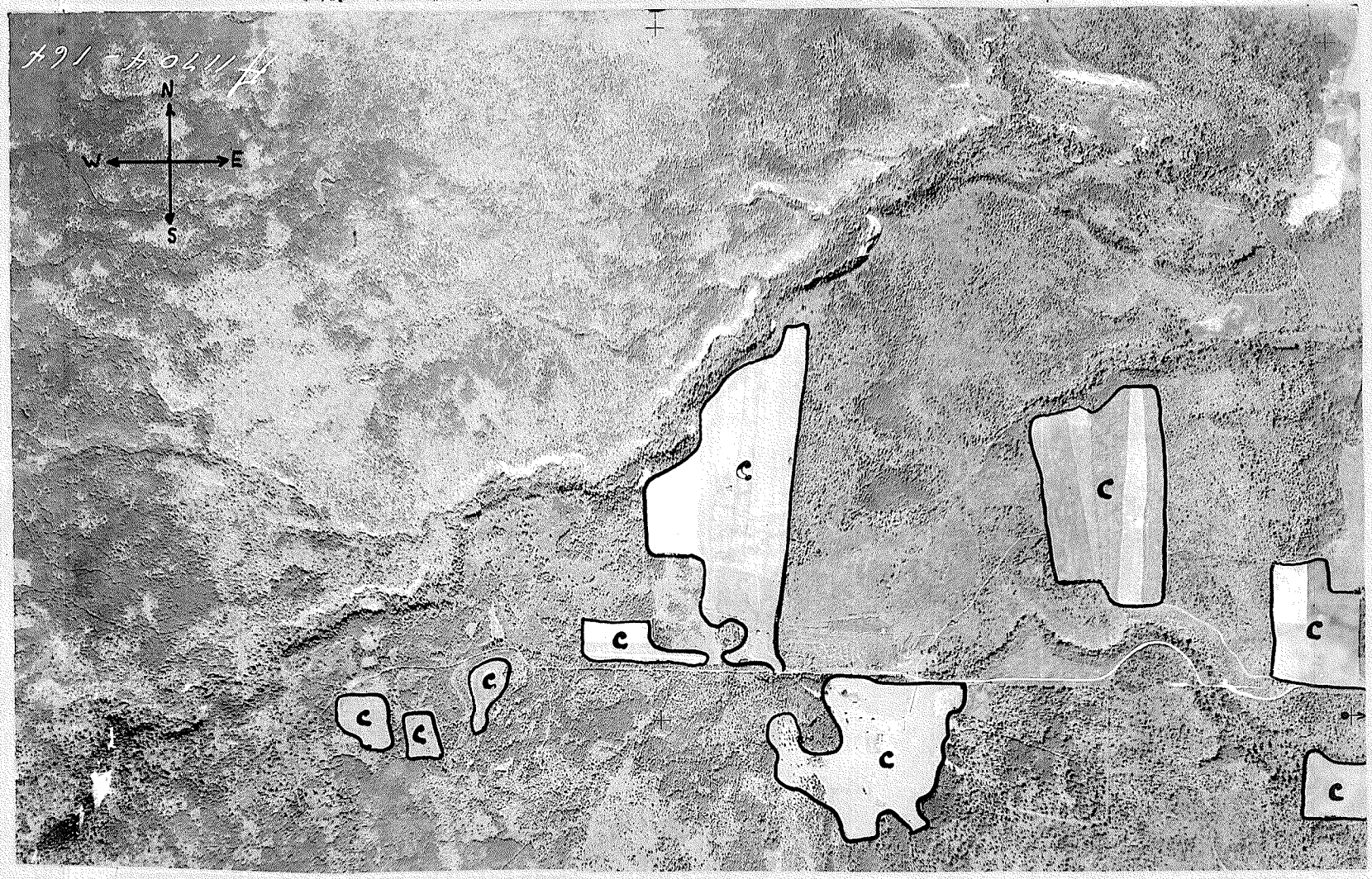
Sources: Manitoba Soils Report No. 8, Census of Canada
Canada Department of Mines Memoir 174 (1961)

Figure 42
Stone picker being used on severely modified till plain deposits.
Location: The southwest quarter of Section 18, Range 10, Township 18.

Figure 49
Recently cleared terrace in the Riding Mountain Region.
Note gullying in central foreground.
Location: The northwest quarter of Section 16, Range 15, Township 18.

The Riding Mountain Region-1948

An Aerial View of Parts of Sections 5 6 7 and 8, Range 15



Scale: 4 inches = 1 mile

C = Cultivated

Source: Department of Mines and Technical Surveys, Winnipeg

Figure 43, page 165

The Riding Mountain Region - 1963

An Aerial View of Parts of Sections 5, 6, 7 and 8, Range 15.

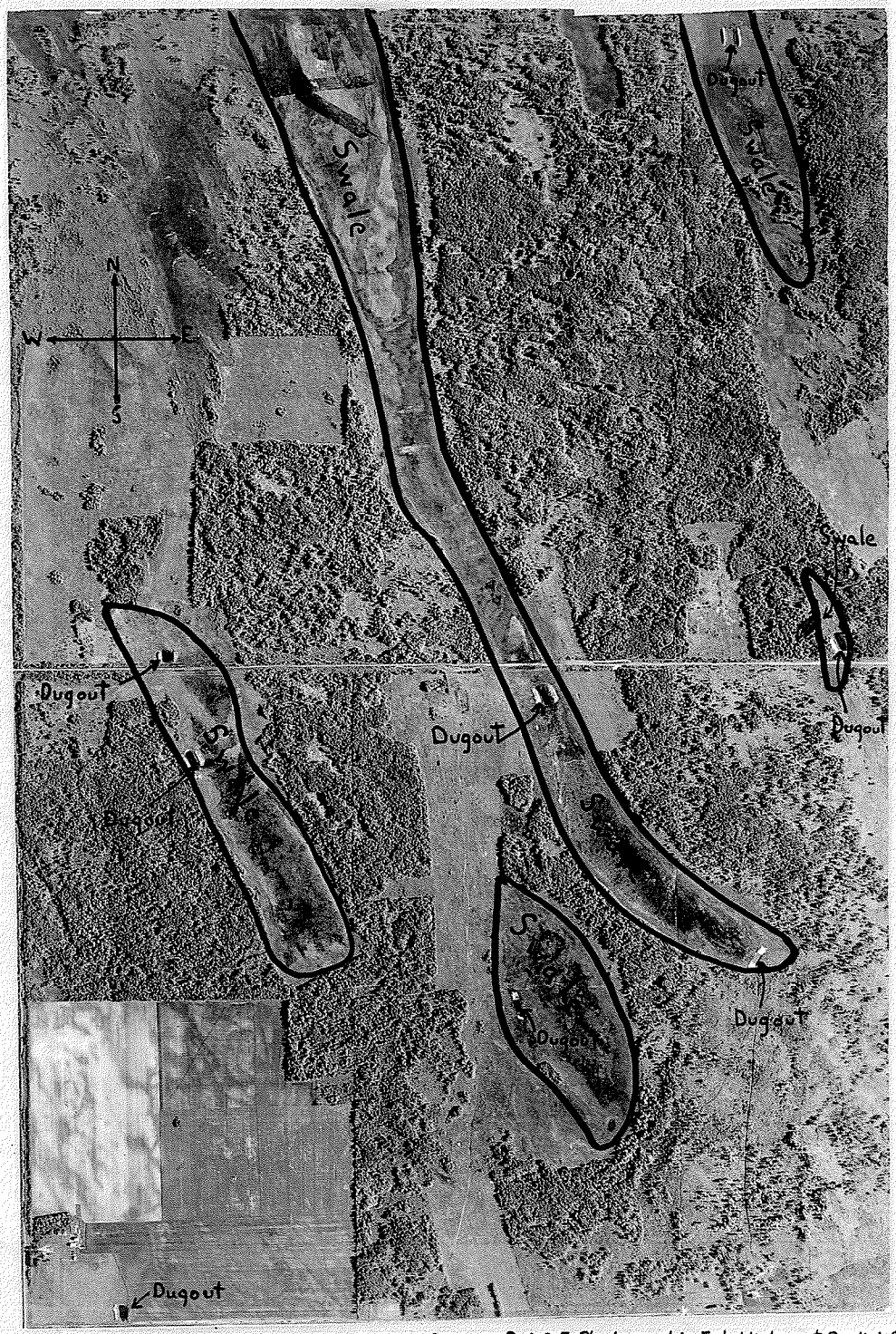
Scale: 4 inches = 1 mile

C = Cultivated

Source: R.C.A.F. Photographic Establishment, Rockcliffe, Ont.

Figure 44, page 166

Dugout Sites - Swales

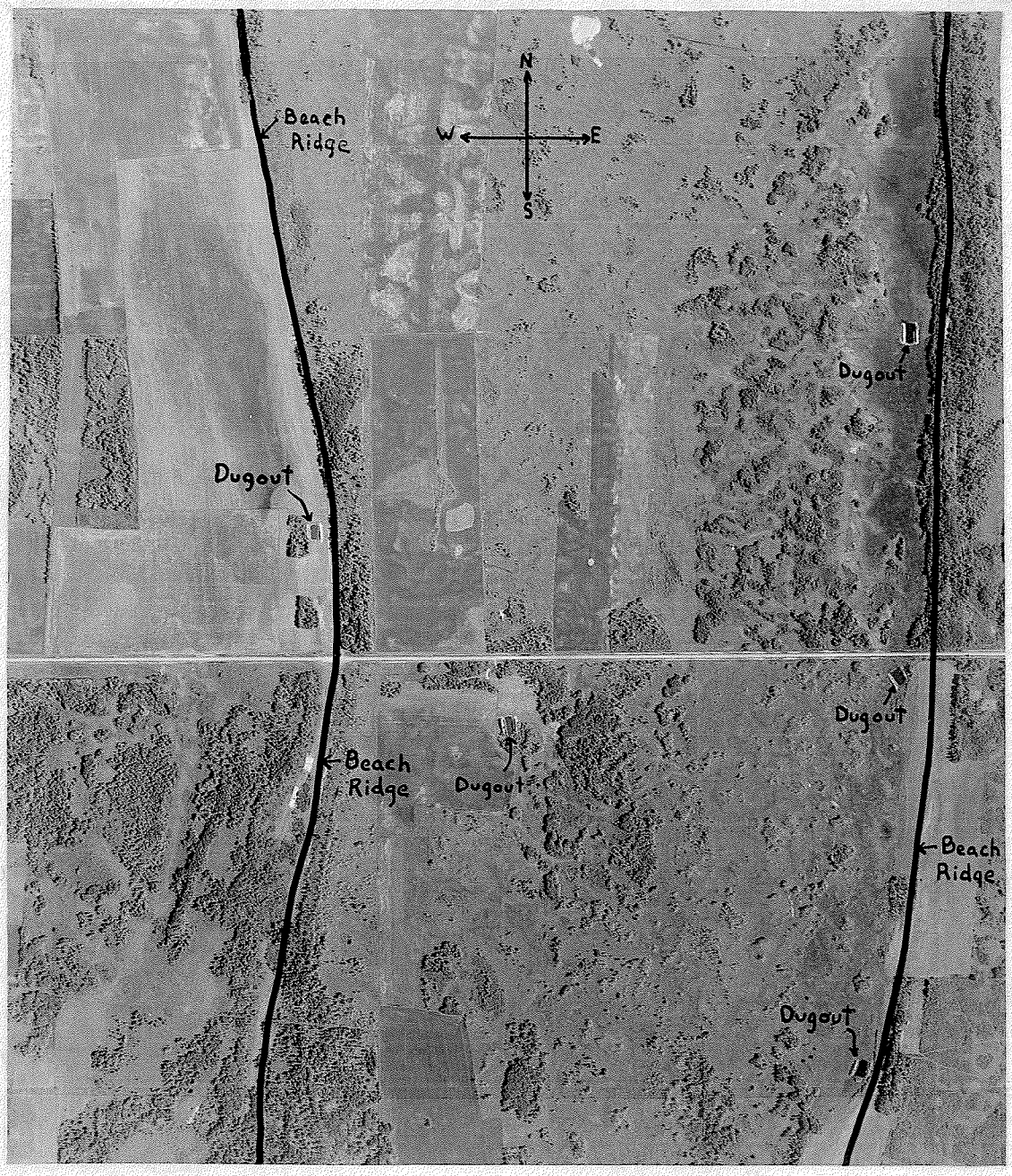


Scale: 4 inches = 1 mile

Source: R.C.A.F. Photographic Establishment, Rockcliffe, Ont.

Aerial Photograph of Parts of Sections 17, 18, 19 and 20, Range 11.

Dugout Sites - Western Margin of Beach Ridges



Scale: 4 inches = 1 mile

Aerial Photograph of Parts of Sections 5, 6, 7, and 8, Range 12.

Source: R.C.A.F. Photographic Establishment, Rockcliffe, Ont.

CHAPTER VII

SUMMARY - CONCLUSIONS

In the preceding chapters the relationships between settlement features and the physical environment in six selected townships in the West Lake Area of Manitoba were traced from 1878 to 1963. In conclusion, the most important relationships (discussed according to the type of settlement feature) are:

1) Farmsites - East of the Riding Mountain Escarpment that is, on the Lowland Plain portion of the study area, the most favoured sites for settlement were ones offering good drainage in an otherwise marshy area. The most important physical features used were (a) beach ridges, (b) till plain ridges, (c) the Big Grass River banks, (d) alluvial fans. With the exception of till plain ridges, these sites also provided farmers with good well water from shallow dug wells. In other parts of the Lowland Plain the generally higher land was chosen too but it coincided with no specific physical feature. Furthermore, it can be said that there has been, as far as can be determined, little or no change in the preference of sites from the time of first settlement up to 1963. In the Riding Mountain Region, where poor drainage was not a major factor influencing the choice of sites, farmhouses were usually located on flat land of the terraces near streams.

2) Sites of Trails, Roads and Highways - Prior to artificial drainage (1909), trails on the Lowland Plain followed the high land avoiding

the numerous marshes. Beach ridges, and to a lesser extent till plain ridges, formed excellent sites for trails because of their good drainage and uninterrupted north-south alignment leading to markets south of the study area. This pattern of trails following the natural terrain was largely replaced by a grid pattern between 1909 and 1916, that is, roads made from spoil excavated from drainage ditches and piled along the east-west and north-south road allowances. Today (1963), a highway on a beach ridge and a short section of local road running on beach ridges and alluvial fans are the only remnants of the pre-1909 pattern.

In the Riding Mountain Region, which was first settled in 1907, trails following the natural path of least resistance, that is, avoiding steep slopes along stream valleys and between terraces wherever possible, were not replaced by the surveyed grid pattern until the introduction of bulldozers after 1945.

3) Areas Settled, Land Use and Farm Types - Before the completion of artificial drainage in 1916 natural drainage was the most important physical factor influencing the areas settled, land use and farm types on the Lowland Plain. In Ranges 12 to 14 inclusive, settlers chose, wherever available, the best drained areas for their homesteads and cultivated land and used the marshy areas nearby for pasture (that is, they practiced mixed farming). In Ranges 10 and 11, which were almost all covered by marsh, cattle ranching was the basis of settlement. Then, from 1916 to 1920, a combination of (a) the exposure or partial exposure of marshy land by artificial drainage, (b) accessibility in the form of drainage ditch roads, (c) high grain prices, (d) government sponsored settlement schemes known as the Greater Production Campaign

and Soldier Settlement, led to the settlement of many formerly empty areas and to the predominance of grain farming throughout the Lowland Plain. From 1920 to 1963 there has been a gradual adjustment of the areas settled, land use and farm types to the physical capabilities of the area which, it became apparent, differed significantly from place to place. Soon after 1920, farm abandonment took place on the severely modified till plain and saline lacustrine soils in Ranges 10 and 11, after which, they have been used principally as cattle pasture (with the exception of the lacustrine soils which became suitable for cultivation about 1942) until the present day, 1963. In Ranges 12 to 14, that is, the rest of the Lower Lowland Plain, artificial drainage removed most of the marshes but it became apparent that the entire area was not suitable for grain crops. A series of adjustments took place whereby mixed farming, utilizing the lacustrine and less stony modified till plain soils for grain crops and the stony modified till plain soils for pasture, became predominant. Also, through abandonment or because they have never been settled, the modified till plain soils now used for pasture and the formerly poorly drained or saline lacustrine soils, which were also used for pasture in the past, have few farmhouses and local roads. Moreover, these same soils whether under cultivation or pasture, are often separated from the central holding. In addition, beginning with the drainage of the central part of Range 15 between the Riding Mountain Escarpment and the Campbell Escarpment, the greater productivity of the fine to medium textured lacustrine and alluvial soils on the Upper Lowland Plain allowed farmers on it to depend almost exclusively on cash grain in contrast to the mixed farming or cattle raising of the Lower Lowland Plain.

In general, it may be said that from 1878 to 1916, the principal physical factor influencing land use, areas settled and farm types was the natural drainage but from 1916 to 1963 the influence of natural drainage has been replaced by soils.

It should be noted that ethnic groups may evaluate the physical environment in different ways as illustrated in the study area by the Ukrainians and Hutterites as compared to the other ethnic groups, principally British and Austrian. The Ukrainians, until recent years, were able to support themselves on land considered too poor for permanent settlement by other ethnic groups and the Hutterites intend to bring under cultivation land considered too stony by settlers in previous periods.

The Riding Mountain Region was avoided by early settlers because steep slopes and heavy forest cover would have made clearing and cultivation, with the equipment available, extremely difficult. From 1907, when the area was first settled, until about 1945, the economy was based on the sale of forest products from the settler's own land and from the Riding Mountain National Park to the west, all of which were in the Mixedwood Vegetation Section of the West Lake Area. A decline in the demand for forest products combined with the availability of bulldozers and the hope of quick profits led to the replacement of forestry by grain farming from 1945 to 1963.

4) Railway Routes and Townsites - Within the study area, the sections of three branch lines of the Canadian Northern Railway (now the Canadian National) were located on the best drained flat land available taking into account their ultimate destinations.

All the surveyed townsites in the study area were layed out by the

Canadian Northern Railway Company on poorly drained land because, it would appear, this maximized the profits the company could make. One of these towns developed from the beginning on a well drained beach ridge instead of the surveyed site, the other two are still subject to spring flooding in the older sections but the newer sections are on well drained physical features, namely a beach ridge and an alluvial fan. Hence it would appear that where there is a choice available, townspeople, as well as rural settlers, prefer the best physical sites for their homes.

Spurred by their location on railways in addition to the development of road systems connecting them, these towns have all grown to a population of about 250 to 350 people. The only other potential town was Waldersee which was located on an attractive physical site near the Big Grass River. Although in the centre of a rich farming area, it has not grown however. Thus it would appear that the location of towns with regard to transportation routes, either railways or highways, is a more important factor in the growth of a town in this area than the productivity of its hinterland.

5) Artificial Drainage - The Lowland Plain portion of the study area was, prior to settlement, characterized by extremely poor surface drainage. Due to lack of knowledge of the physical environment the Provincial government at first thought that all the poorly drained land could be reclaimed for agricultural use. Hence, an artificial drainage system covering the entire Lowland Plain was constructed between 1909 and 1916. A combination of continued poor drainage and the unsuitability of the exposed soils for arable agriculture (due to thinness, stoniness and salinity) led to the exclusion of the severely

modified till plain soils from the drainage district in 1936. On the other hand, where lacustrine soils were exposed, notably in the Upper Lowland Plain and in the Big Grass Marsh and West Marsh Areas, artificial drainage has been a decided advantage, allowing most of these soils to be brought under cultivation. However, flooding of land has continued periodically because the highland source of the floodwaters, that is, the Riding Mountain Region, is not within the drainage district. At present, plans are being formed for a "watershed" drainage district boundary based on the physical rather than the original man-made township or municipal boundaries. If implemented this district will include the Riding Mountain Region portion of the study area thus taking into account the related physical problems of drainage, slope, vegetation cover and suceptibility to erosion of various surface materials and bedrock. Hence it would appear that, by trial and error, artificial drainage has been, over the years, brought into a closer adjustment with the physical environment.

6) Building Materials and Fuel - The principal local sources of building materials were until about 1920, wood and stones. Then, after a period during which few new farmhouses were built or repaired from 1920 to 1945, cheap, easy to work building materials from sources outside the study area, largely replaced the local sources between 1945 and 1963. Local wood for fuel and gravel from beach ridges for railway ballast and concrete have been used since the early days of settlement and, more recently, gravel from beach ridges has been used for road surfacing.

7) Other Settlement Features - All the cemeteries in the study area were sited on physical features which are well drained, hence allowing access to the burial grounds in all seasons of the year. All but one

of the sites were on beach ridges, the one exception being a cemetery along the banks of the Big Grass River. Hence, drainage would appear to be the most important physical factor influencing the location of cemeteries within the study area. The most favoured physical features for dugouts are swales and on the western margin of beach ridges where, despite artificial drainage, water still collects in the spring and early summer.

The following are the main relationships between settlement features and the physical environment which appear to apply to all parts of the West Lake Area:[1]

1) The siting of farmhouses on beach ridges and till plain ridges.

2) The development of towns on beach ridges. Amaranth, Langruth, and (just to the south of the West Lake Area as defined for this thesis) Arden are on beach ridges.

3) Location of trails on beach ridges.

4) The process whereby drainage districts at first included land which, when drained, proved unsuitable for arable agriculture or proved incapable of being drained efficiently and consequently were later excluded from the districts. Also, the watershed approach to drainage districts illustrates that interrelated factors of the physical environment should be taken into account when boundaries are formed.

5) The expansion of settlement, during the Greater Production

---

[1]The relationships appear to apply to all parts of the area because (a) the relationships established for the study area appear to be so close as to apply to similar physical features occurring throughout the West Lake Area or, (b) the relationships applying to other parts of the West Lake Area were encountered during the search for material on the study area.

Campaign and Soldier Settlement, onto poor land, composed principally of severely modified till plain and coarse textured lacustrine soils, in the east and northeast of the West Lake Area between 1916 and 1921. Then, following abandonment from 1921 to 1931 the general pattern resembling that established by 1911, has changed little to the present day.

6) As indicated by the land use pattern within the study area and the location of community pastures in other parts of the West Lake Area, it would appear that the fine to medium textured lacustrine and alluvial soils are, on the whole, suited for grain crops whereas the coarse textured lacustrine and alluvial as well as the modified till plain and bog soils are either unused or suited for unimproved pasture. In all probability, this close relationship between land uses and soils was, in earlier periods, replaced by an equally close relationship between land use and natural drainage.

7) From an examination of the relationships between farm sizes, soils and land use within the study area it would appear that in the northern and eastern parts of the West Lake Area, where severely modified till plain soils predominate, farms would be more than one section and livestock would be the basis of the economy whereas in the southern and western parts, where lacustrine and alluvial soils predominate, the economy would be a mixed one on holdings of one section or less.[1]

---

[1]The farm sizes referred to include both owned and leased land.

The Mean Monthly Temperatures and the Highest and Lowest Monthly Means Recorded at Minnedosa in the Years 1881 to 1951

Month	Number of Years Recording	Mean Monthly Temperatures in Degrees Fahrenheit	Range of Mean Temperatures	
			Highest Monthly Mean on Record	Lowest Monthly Mean on Record
January	69	-1.4	16.0 (1944)	-18.8 (1950)
February	69	1.8	19.0 (1931)	-14.8 (1936)
March	68	15.8	34.5 (1910)	0.1 (1899)
April	67	36.6	47.6 (1900)	25.6 (1907)
May	67	50.2	57.7 (1901)	38.6 (1907)
June	68	59.6	65.2 (1890)	54.3 (1902 and 1915)
July	70	64.5	72.5 (1936)	56.8 (1884)
August	70	61.5	66.0 (1920 and 1930)	54.1 (1885)
September	70	51.4	60.5 (1897)	44.7 (1886)
October	70	39.3	47.8 (1918)	30.0 (1919)
November	69	20.9	35.0 (1917)	6.6 (1896)
December	69	6.8	22.2 (1939)	-7.0 (1917 and 1927)
		Yearly Mean 33.9	Highest Yearly Mean 39.3 (1931)	Lowest Yearly Mean 27.0 (1883)

The Mean Monthly Precipitation and the Highest and Lowest Monthly Totals Recorded at Minnedosa in the Years 1881 to 1951

Month	Number of Years Recorded	Mean Monthly Precipitation in Inches	Monthly Precipitation Range in Different Years	
			Highest Monthly Precipitation	Lowest Monthly Precipitation
January	70	.77	2.22 (1917)	.00 (1944)
February	70	.66	3.66 (1938)	.03 (1928)
March	69	.84	2.58 (1902)	.09 (1939)
April	69	1.11	6.92 (1924)	.01 (1940)
May	69	1.89	5.43 (1927)	.04 (1917)
June	69	3.11	7.85 (1881)	.31 (1912)
July	70	2.61	6.00 (1933)	.51 (1936)
August	70	2.13	5.42 (1911)	.27 (1929)
September	70	1.63	4.64 (1881)	.04 (1948)
October	70	1.15	5.25 (1882)	.15 (1895)
November	69	.87	2.79 (1922)	.03 (1939)
December	69	.62	1.85 (1883)	.05 (1931)
		Yearly Mean 17.39	Highest 12 Months November to October 25.33 (1934-35)	Lowest 12 Months November to October 9.81 (1928-29)

BIBLIOGRAPHY

BOOKS

Martin, Chester. "Dominion Lands" Policy. Edited by W. A. Mackintosh and W. L. G. Joerg. 9 vols.; Canadian Frontiers of Settlement; Toronto: The Macmillan Company of Canada Limited, 1938, II, Part II.

Morton, W. L.. Manitoba: A History. Printed in Canada: University of Toronto Press, 1957.

Stevens, G. R. (O.B.E.). Canadian National Railways - Volume 2 "Towards the Inevitable 1896 - 1922". Toronto: Clarke, Irwin & Company Limited, 1962.

REPORTS AND PERIODICALS

Bannatyne, B. B.. Gypsum-Anhydrite Deposits of Manitoba. Manitoba Department of Mines and Natural Resources, Mines Branch, Publication 58-2; Winnipeg: Printed by R. S. Evans - Queen's Printer for Province of Manitoba, 1959.

Ehrlich, W. A. et al.. Report of Reconnaissance Soil Survey of West Lake Map Sheet Area. Soils Report No. 8, Winnipeg: Manitoba Department of Agriculture and Immigration, 1958.

Finlayson, Professor John N., Holland, John and Spalding, John. Report of the Land Drainage Arrangement Commission Respecting Municipalities Containing Land Subject to Levies Under "The Land Drainage Act". Winnipeg: 1936.

Johnston, W. A.. Surface Deposits and Ground-water Supply of Winnipeg Map-area, Manitoba. Canada Department of Mines Memoir 174. Ottawa: The King's Printer, 1934.

Lyons, M. A.. Report and Recommendations on "Foreign Water" and Maintenance Problems. Winnipeg: 1949.

Mavor, James. Report of the Board of Trade on the North West of Canada, with special reference to Wheat Production For Export. London: Printed For His Majesty's Stationery Office, by Eyre and Spottiswoode, 1904.

Murchie, R. W. and Grant, H. C.. Unused Lands of Manitoba. Manitoba Department of Agriculture and Immigration, 1926.

National Parks of Canada, Report of the Commissioner 1931. Ottawa: Department of the Interior, 1931.

Peters, Dr. Victor. The Hutterians - History and Communal Organization of a Rural Group in Manitoba. Papers read before the Historical and Scientific Society of Manitoba, Series III, No. 17.

Prairie Farm Rehabilitation Act - The Story of Conservation on the Prairies. Canada Department of Agriculture, October, 1961.

Richards, Irene Lawrence. The Story of Beautiful Plains. Papers read before the Historical and Scientific Society of Manitoba, Series III, No. 8.

Soldier Settlement on the Land, Report of the Soldier Settlement Board of Canada, March 31, 1921. Edited by F. A. Ackland. Ottawa: Printer To The King's Most Excellent Majesty, 1921.

Upham, Warren. The Glacial Lake Agassiz. Washington: Government Printing Office, 1895.

Water For Tomorrow. Manitoba Department of Agriculture and Immigration, April 10, 1963.

NEWSPAPERS

The Gladstone Age. June 14 and June 28, 1884; July 24 and October 23, 1885.