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A Land Use Survey of the Outlying Indian Land in Rolette Country, North Dakota

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A LAND USE SURVEY OF THE OUTLYING INDIAN LAND IN ROLETTE COUNTY, NORTH DAKOTA

by

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This thesis submitted by Tony J. Kuz in partial fulfillment of the requirements for the Degree of Master of Science in the University of North Dakota, is hereby approved by the Committee under whom the work has been done.

Chairman

Dean of the Graduate School

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To my colleague, Mr. Kenneth Jensen, a special thanks for a successful summer of research.

Tony John Kuz

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Introduction

Purpose and Scope of Study

This Land Utilization Survey of the Turtle Mountain Indian Reservation was initiated by the Bureau of Indian Affairs in an effort to find out more about the area. Funds were appropriated by the Federal Government to the Geography Department, University of North Dakota, to carry out the study. It was the Bureau's desire to gain more accurate figures on the amount of land that was being used for pasture, hayland, crop land and how much of the area was idle. Other physical factors were also mapped. One of the Bureau's main concerns was the mapping of locations of wild fruits such as chokecherries, pincherries, juneberries and cranberries. Although this information concerning the wild fruit was compiled for the Bureau, this paper will only make passing mention of this information.

The study encompassed a total of 81,592 acres. The land area was broken down into it's various uses and on the basis of the information derived, it is sincerely hoped that the research will facilitate the Bureau's efforts to further develop the area which in turn should greatly benefit the Chippewan Indian on the Reservation.

Methods Employed in the Study

The field work consisted primarily of mapping land use and physical characteristics on aerial photographs. The photographs

were scaled 8 inches to one mile or 1:8,000. A fractional code method was used, whereby the numerator described the land use and the denominator described the physical characteristics of the area.

INDIAN RESERVATIONS OF NORTH DAKOTA

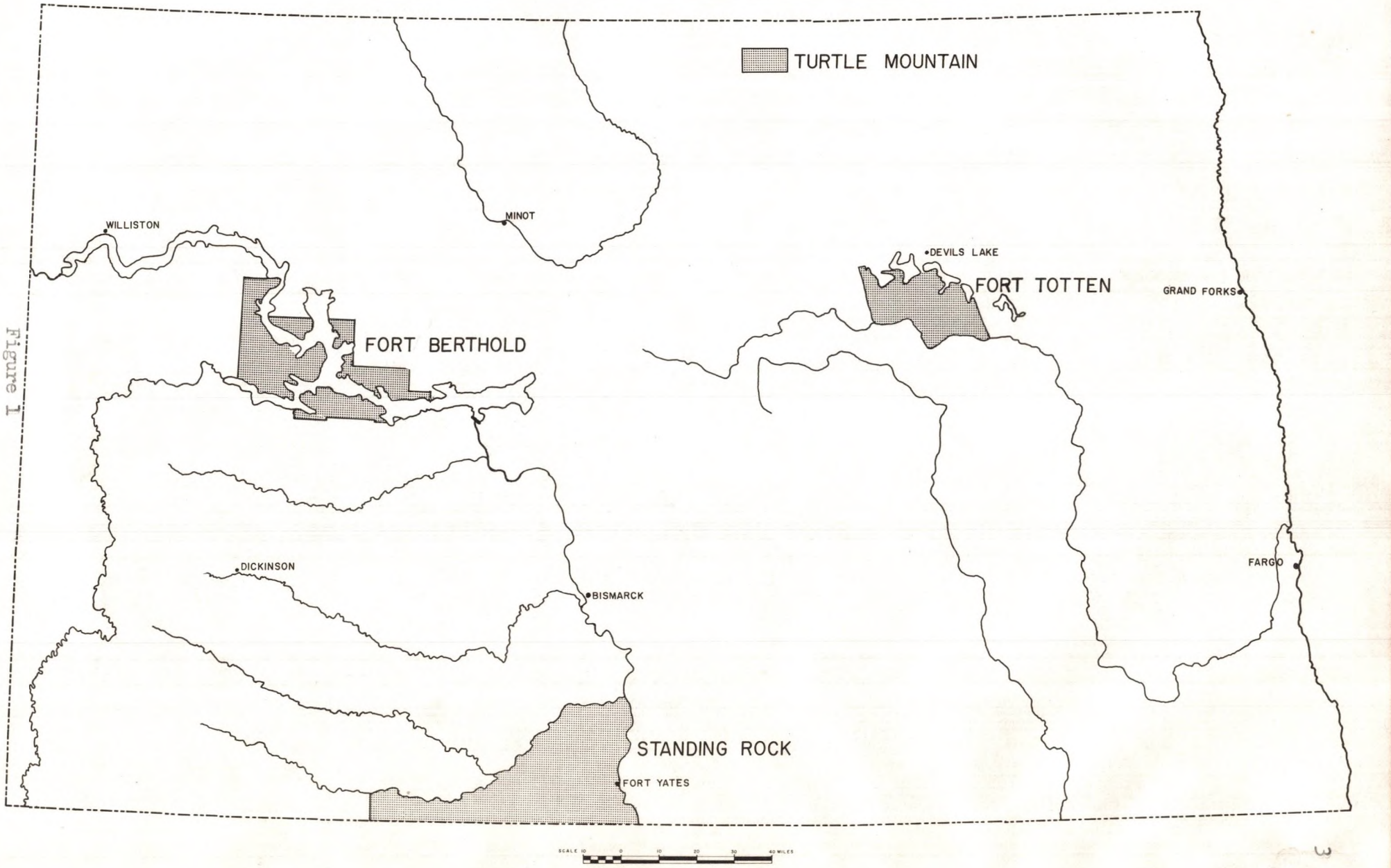

Figure 1

Chapter II

Physical Geography of the Outlying Trust Land of the Turtle Mountain Indian Reservation

Location, Size and Shape

The Turtle Mountain Indian Reservation is located entirely in Rolette County. Politically the County is bordered by the Canadian Province of Manitoba to the North, Bottineau County to the West, Towner County to the East and Pierce County to the South.[1] On an East, West axis of the state, the County is located slightly East of centre.

Most of the Reservation is situated in the Northern one-half of the county, with much of the lands located just slightly North of the centre line and many of the remaining Trust Lands extending all the way to the Canadian border.

The Turtle Mountain Reservation consists of two townships of land plus outlying Trust Land located in 13 different townships surrounding the Reservation proper. Land outside of the Reservation proper totals 35,512 acres.

Climate

The Turtle Mountain Reservation has a distinct sub-humid continental climate which is characterized by short hot summers and long cold winters. The reason for these temperature extremes, is the mid-continental location of the area.

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[1]North Dakota Department of State Highways, County Maps of North Dakota: 1936, p. 1.

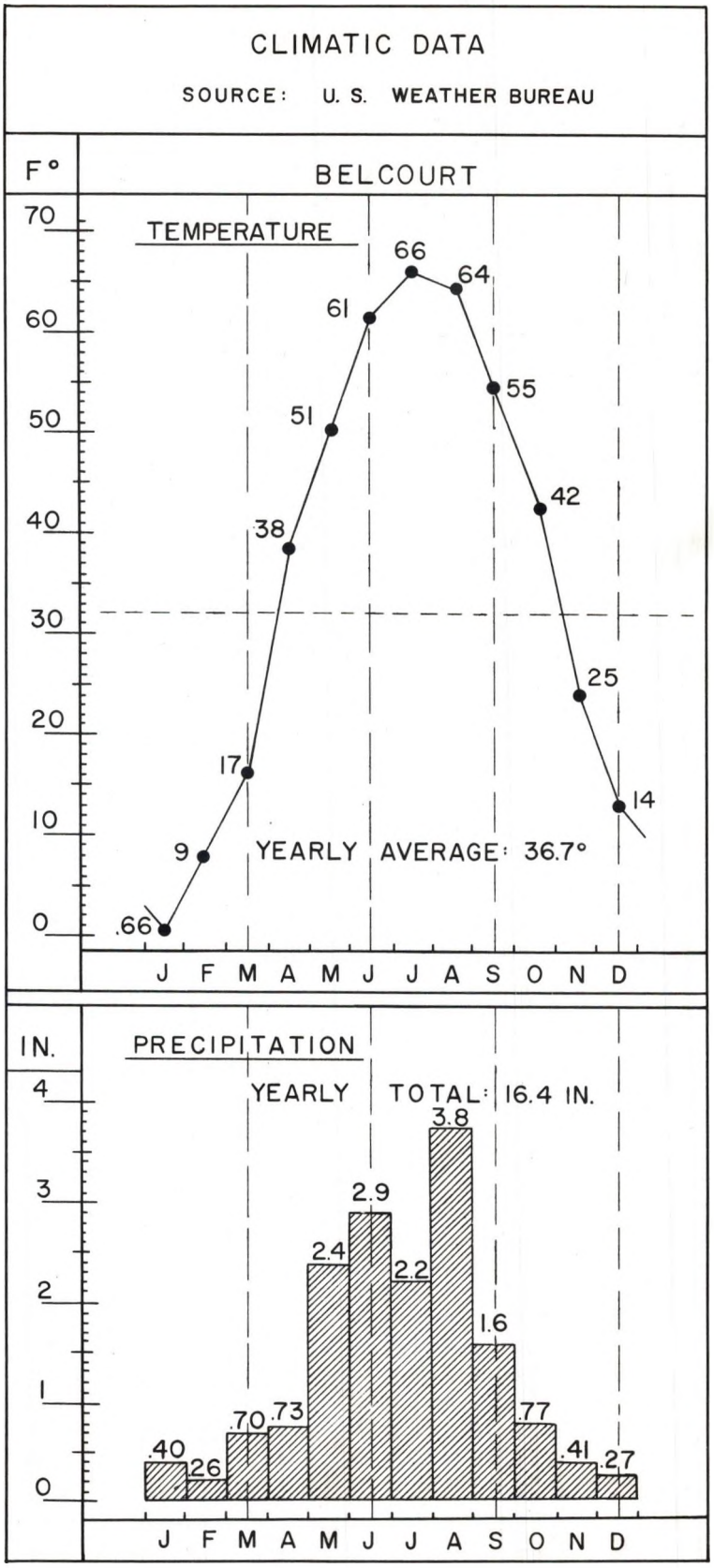
CLIMATIC DATA
SOURCE: U. S. WEATHER BUREAU
F°
BELCOURT
TEMPERATURE
70
60
50
40
30
20
10
0
.66
9
17
38
51
61
66
64
55
42
25
14
YEARLY AVERAGE: 36.7°
J F M A M J J A S O N D
IN.
PRECIPITATION
YEARLY TOTAL: 16.4 IN.
4
3
2
1
0
.40
.26
.70
.73
2.4
2.9
2.2
3.8
1.6
.77
.41
.27
J F M A M J J A S O N D

Figure 2

The Reservation is characterized by cyclonic and anticyclonic type of weather. This area is influenced by the moist, warm air from the Gulf Coast Region, coming in contact with the cooler heavier air from the North and North West. The meeting of these two distinctively different air masses generally results in some form of precipitation and associated weather phenomena. Because of the dominance of the high pressure air masses in this area, the Reservation's climate is greatly influenced by the Canadian high pressure cells.

Temperature

Large temperature fluctuations are characteristic of the sub-humid continental climate. Diurnal summer ranges may differ by 50 degrees F. or more. It isn't at all unusual to have the day temperatures during the summer register high in the 90's or even in the low 100's and have the evening temperature drop to a comfortable 60 or 65 degrees. The air is generally dry and temperature readings fall rapidly after sunset.

The winter temperatures are as extreme as the summer ones. The Dunsieth weather station has recorded temperature as low as 49 degrees below zero. This weather station is situated on the western boundary of the Reservation so it is safe to assume that such temperatures prevail throughout the Reservation area.[1]

Winter dominates the seasons at the Reservation as it does the rest of North Dakota. Approximately 5 months out of every year, can

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[1]U.S. Department of Agriculture, Climate and Man, (Washington, D. C.: U.S. Department of Agriculture, 1941), p. 1046.

be considered winter months. The first snow fall usually comes at the end of October or beginning of November and stays on the ground until the end of March or beginning of April. Although the temperatures are extreme, the low humidity in the air makes the temperature quite bearable.

Precipitation

The Reservation receives an average of 16.4 inches of precipitation a year. Although the amount tends to fall below the 20 inch mark which is considered an absolute minimum necessary for the production of crops in some parts of the United States, the 16.4 average for the Reservation is generally sufficient to produce most types of cereal grains. More important to an area than the amount of precipitation that falls is the season in which it occurs plus the mean summer and yearly temperatures. Approximately three-fourths of the precipitation is received during the six warmer months, April through September.

The Reservation during the months from May to September receives about 78% of the total yearly precipitation. The rainfall is ideal because it tends to correspond to the growing season of the area.

From the standpoint of the mean annual temperature, evaporation tends to be fairly small. Even though precipitation is below 20 inches, the factors of low annual mean temperature, long daily growing period and timely precipitation, tends to meet the moisture needs of crops being grown in the area.

It is the author's contention that besides the Reservation having cyclonic and convective forms of precipitation it also experiences precipitation due to orographic uplift. The elevation of the mountains is such that they tower 400-600 feet above the surrounding land area. It is entirely possible that an added height of 400-600 feet could sufficiently influence the air masses to reach their lifting condensation levels more often over the Turtle Mountain area than over the immediate land areas surrounding the Reservation. This is somewhat substantiated by the fact there is differing rainfall regions found in the immediate vicinity. Rugby, a town 36 miles South of Belcourt, only experiences 15.75 inches of rainfall per year; Westhope in Bottineau County, 84 miles West of Belcourt experiences 14.09 inches of precipitation per year.[1] Meanwhile the Reservation receives on the average of 16.4 inches of moisture yearly. It is this disparity in the amount of precipitation within a relatively small area that makes the author contend that some of the precipitation is due to orographic uplift.

Topography

Geologic Formation

The Turtle Mountains are North Dakota's best claim to a mountainous region. Geologically the Turtle Mountains were once a part of the Missouri Plateau to the West. The mountains that are left today, covering an area of approximately 400 square miles, were not

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[1] Ibid.

eroded away, as was the surrounding drift plain which connected the area with the plateau.[1]

During the glacial period, the Turtle Mountains were completely covered by the ice sheet. When the Continental Glacier began to recede the already pronounced landform created an obstruction to the free movement of the glacier. As a result, ice with large amounts of debris in it, covered the region. When the ice melted, the debris which it contained, added approximately 100 feet of drift to the mountains, giving the area 400-600 feet greater altitude than the surrounding plain.[2] The rough, hilly surface with it's many lakes is evidence of it's glacial origin.

Figure 3. Over 50% of the outlying Indian Trust Lands are wooded and covered by numerous lakes and swamps.

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[1]Bernt Lloyd Wills, North Dakota: The Northern Prairie State (Ann Arbor, Michigan: Edward Brothers, Inc., 1963), p. 39.

[2]Nevin M. Fenneman, Physiography of Eastern United States, (New York: McGraw-Hill Book Company, Inc., 1938), p. 562.

Drainage

In general the surface of the Turtle Mountains is about 600 feet above the level of the surrounding Lake Souris Plain. Being an area of extensive glaciation, the topography is rough and greatly rolling. Throughout the Turtle Mountains, the slope of the land tends to fall within the 6-18 percent range, consequently, drainage is generally rapid. Although small areas within the Reservation tend to be well drained, the area as a whole is not. The low areas are filled with run-off water and tend to dot the landscape with bogs and swamps.

In some instances, the run-off water tends to keep the lake areas filled thus becoming an asset to the area. These lakes are often used as a source of water supply for certain communities such as Fish Lake, the main supply of water for Belcourt.

To drain the entire Reservation would be a prodigious project both from the standpoint of finances and manpower. It could be done but the economic implications of such a project would be stiffling and in the end would provide very little increase in usable land area. The lakes that presently dot the landscape will no doubt have a much greater potential for financial return as a tourist and recreation area than any of the land that could be reclaimed by drainage.

Soils

The Outlying Indian lands to the North and Northwest of the Reservation proper have soils which are mainly of the strongly rolling Kelvin-Bottineau Series. These soils have a gray surface layer, when found in association with heavy vegetation. Wherever the vegetation is small and grass-like, the gray surface layer becomes thick and black. The soils of this variety are extremely fertile and are often called Chernozen, a slavic term meaning "black earth".

To the South and Southwestern portion of the Reservation are found some of the most productive and fertile soils in all of the Drift Prairie, the Barnes Series. Lacustrine origin plus enrichment through years of development under a grass cover has made this soil so fertile that this area tends to be a leader in yields per acre in North Dakota.[1]

The Barnes Series' profile shows the top layer to be a black loam of fine crumb structure. The depth of the soil varies with slope. Generally the top layer averages about 9 inches in thickness but with variations in the slope of the land, the thicknesses change.

Some of the other soils found in the Southern and Western portions of the Outlying lands are the Solonchak, the chernozem and the Solonetz. These soil types are all associated with a nearly level terrain on the Reservation.

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[1]Melvin E. Kazeck, North Dakota: A Human and Economic Geography, (Minneapolis: Lund Press, Inc., 1956), p. 85.

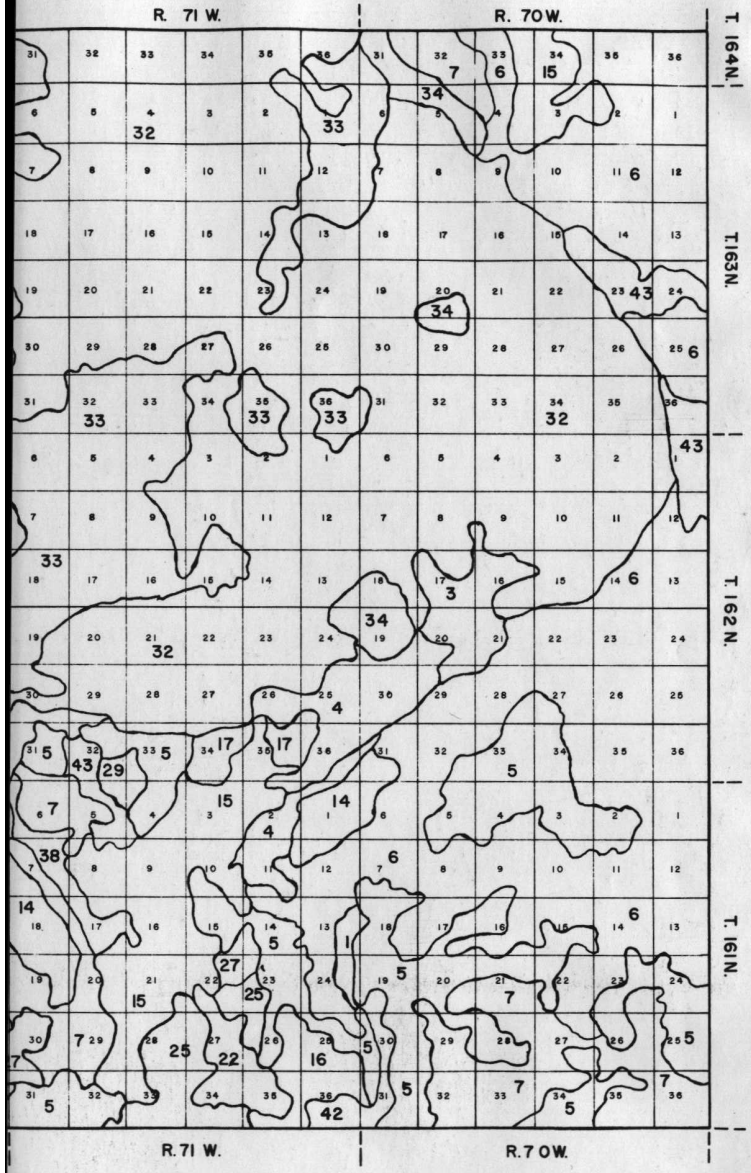

Figure 4

Soils with Thin Surface Layer (Regosol) and Associated Soils with Thick Black Surface Layer (Chernozem), or Gray Surface Layer (Gray Wooded)

Loams

1. Buse	hilly and steep
2. Buse–Barnes	strongly rolling

Loams with Sandy and Gravelly Substrata

3. Sioux–Kelvin	strongly rolling
4. Sioux–Buse	strongly rolling

Soils with Thick Black Surface Layer (Chernozem) and Associated Soils with Thin Surface Layer (Regosol), Very Limy Subsoil (Lime Solonchak), Alkali Claypan Subsoil (Solonetz), or Wet Soils (Humic Gley)

Loams and Clay Loams

5. Barnes–Buse	rolling
6. Barnes–Hamerly	undulating
7. Barnes–Svea	undulating
9. Gardena–Aberdeen	nearly level
13. Svea–Cresbard	gently undulating
14. Svea–Hamerly	gently undulating

Loams with Sandy and Gravelly Substrata

15. Renshaw	nearly level
16. Renshaw–Benoit	nearly level
17. Renshaw–Sioux	undulating

Sandy Loams with Sandy Substrata

22. Hecla	nearly level
23. Hecla–Ulen, till substratum	nearly level
24. Hecla–Letcher, till substratum	nearly level
25. Maddock–Hecla	nearly level
27. Maddock–Hecla, till substratum	undulating

Loamy Sands with Sandy Substrata

29. Maddock–Hecla	rolling

Soils with Gray Surface Layer (Gray Wooded) and Associated Soils with Thick Black Surface Layer (Chernozem)

Loams and Clay Loams

32. Kelvin–Bottineau	strongly rolling
33. Kelvin–Bottineau	rolling
34. Kelvin–Bottineau	undulating
35. Kelvin–Rolla	rolling

Clays

36. Rolla	gently sloping
37. Rolla	nearly level

Soils with Very Limy Subsoil (Lime Solonchak) and Associated Soils with Thick Black Surface Layer (Chernozem), or Alkali Claypan Subsoil (Solonetz)

Loams and Clay Loams

38. Bearden	nearly level
39. Glyndon–Gardena	nearly level

Loams with Sandy and Gravelly Substrata

42. Divide–Benoit	nearly level
43. Divide–Renshaw	nearly level

Wet Soils with Very Limy Subsoil (Lime Solonchak) and Poorly Drained Soils of Depressions (Humi Gley)

Loams and Clay Loams

47. Colvin–Borup–Perella	nearly level

Soils with Alkali Claypan Subsoil (Solonetz)

Loams and Clay Loams

49. Cavour–Cresbard	gently undulating
50. Exline	nearly level

GENERAL SOIL MAP

INDIAN LAND OF ROLETTE COUNTY

EXTRACTED FROM MAP
PREPARED BY THE NORTH DAKOTA
AGRICULTURAL EXPERIMENT STATION
DEPARTMENT OF SOILS

SCALE: 1 INCH = 3 MILES

Vegetation

One of the largest deciduous stands of trees in North Dakota is to be found in the Turtle Mountain Region. The forest is generally comprised of low quality aspen, scrub oak, ash, elm, willow and birch. Wild fruit varieties such as cranberry, chokecherry, juneberry, pincherry and plum trees are also quite prominent throughout the wooded sections of the Reservation lands.

The major stand of tall trees is concentrated in the Northern part of the Outlying lands. Here the trees tower to heights of 35 to 45 feet. Although the trees are tall, the diameter tends to be small, consequently, the economic value of the forest is very limited. To the South and Southwest of the Reservation proper, the tall trees give way to small shrubs and grassland.

It is the varying amounts of moisture available to plants in the above described areas that accounts for the differences in vegetation size. The Northern and Northwestern portions of the Outlying land are dotted with swamps and bogs, availing the vegetation in the area much moisture during the growing season. The lack of swamps and bogs to the South and Southwest because of good drainage, makes the vegetation almost entirely dependent on direct precipitation. The yearly precipitation average of 16.4 inches is alone incapable of supporting heavy vegetation.

Figure 5. Regrowth of vegetation in a cleared area. Note the tall aspen in the background.

Chapter III

The Works of Man

History of the Indian Outlying Lands

The outlying Indian Trust land in Rolette County was acquired in the early 1930's. In order to reduce the effects of the depression, the Government was buying land in many areas, from the farmers. The Government's objectives were to buy the land, pay the owner a fairly good price for it, re-locate the farmer and also put more money into circulation.

The original allotment to the Chippewa Indian was the result of a treaty in October 2, 1892. This treaty gave them two townships within the Turtle Mountain area. This is ironical, because in order to get the two townships of land, the Chippewa Indians had to cede 9,000,000 acres of surrounding area for a money payment of only one million dollars.[1]

At that time the Chippewa tribe was fairly populous and the allotted area was hardly large enough to supply all of the Indians with land.

During the 1930's the Government allotted the Outlying lands to the Indian. This land had been bought from many of the white farmers during the depression. The amount of outside land given to

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[1]United States Department of the Interior, Information on Chippewa Indians: Turtle Mountain Reservation: 1963, p. 2.

the Indian almost equalled that of the Reservation proper.[1] There were 35,512 acres of outlying land bought by the Federal Government and then given to the Indian.

Agriculture

Farming encompases only a minute segment of the overall population living on the Turtle Mountain Reservation; out of a population of 6,000 people only about 70 Indian families depend on the land for a livelihood.[2] On the outlying Indian Trust land there are only about 30 families totally or partially dependent on farm income.

Mixed farming prevails in the area. Besides raising crops, small herds of beef and dairy cattle are kept for purposes of supplying the families with milk and meat. Hogs are also kept for home consumption.

TABLE 1

Utilization of Outlying Indian Lands in Rolette County[3]

total acres of outlying lands: 35,512					
cultivated	wooded pasture	non-wooded	hayland	wooded	wasteland
2,957	6,317	4,889	3,323	13,565	4,461
Percentage of total:					
8.5	18	13.8	9.3	37.7	12.7

[1]The Reservation proper contains 46,080 acres of land.

[2]The acreages were calculated from aerial photographs by planimeter after the area was surveyed.

[3]United States Department of the Interior, Op. Cit., p. 3.

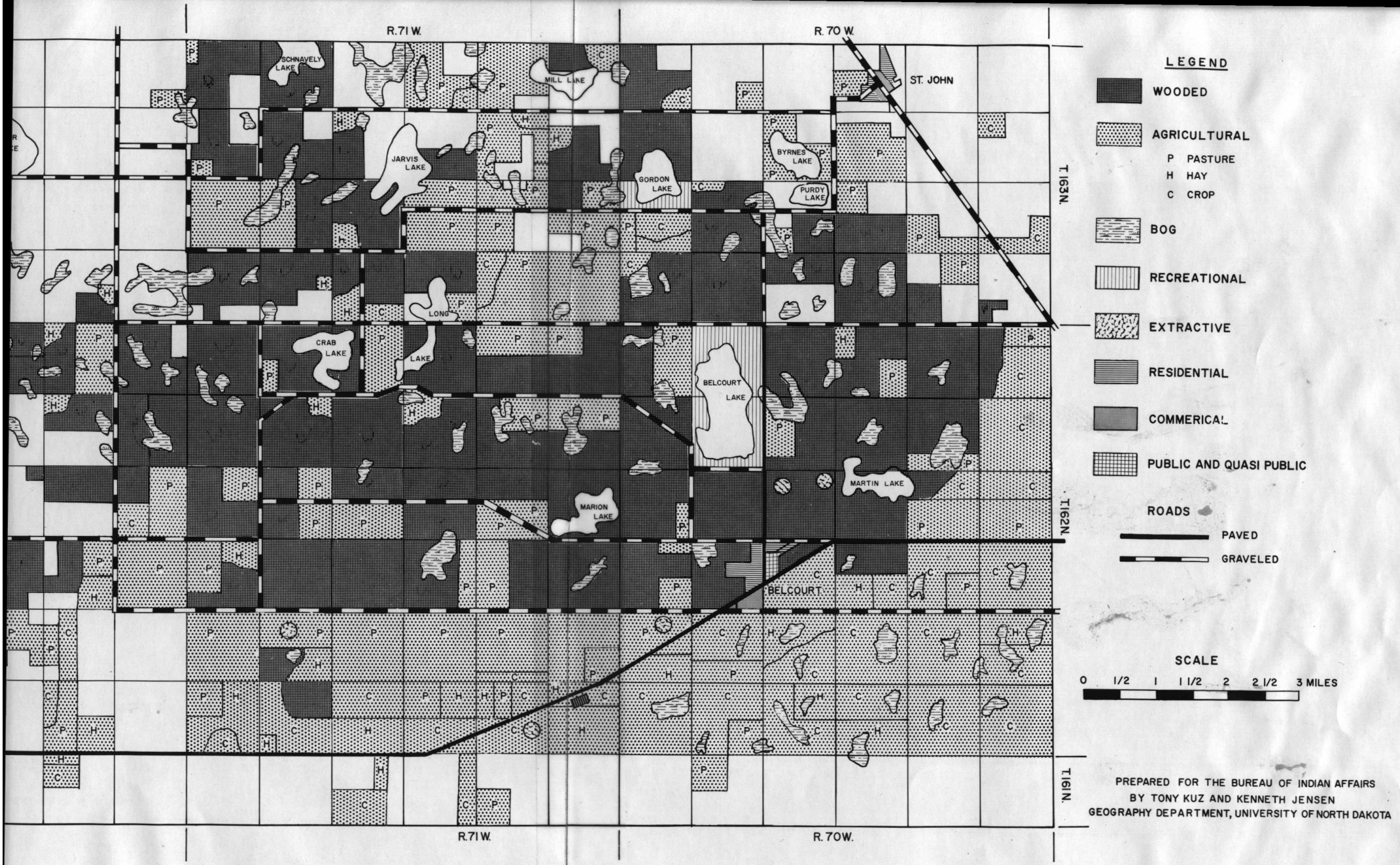
R.71 W.
R.70 W.
SCHNAVELY LAKE
MILL LAKE
ST. JOHN
JARVIS LAKE
BYRNES LAKE
GORDON LAKE
PURDY LAKE
LONG LAKE
CRAB LAKE
BELCOURT LAKE
MARTIN LAKE
MARION LAKE
BELCOURT
T.163N.
T.162N.
T.161N.
R.71W.
R.70W.
LEGEND
WOODED
AGRICULTURAL
P PASTURE
H HAY
C CROP
BOG
RECREATIONAL
EXTRACTIVE
RESIDENTIAL
COMMERICAL
PUBLIC AND QUASI PUBLIC
ROADS
PAVED
GRAVELED
SCALE
0 1/2 1 1 1/2 2 2 1/2 3 MILES
PREPARED FOR THE BUREAU OF INDIAN AFFAIRS
BY TONY KUZ AND KENNETH JENSEN
GEOGRAPHY DEPARTMENT, UNIVERSITY OF NORTH DAKOTA

Figure 6

Cultivated Land

Land on which crops are grown constitutes 8.5 percent of the total outlying area. This land which is primarily used for grain farming, tends to be concentrated South and South-West of the Reservation proper. In this area, the land is fairly level with slope ranging between 0-6 percent. The factors of good soil fertility and lack of forest vegetation made this an easy area to cultivate. Toward Rolette and Dunseith, the land becomes only slightly undulating and because it had only a cover of grass it was easily broken.

Although the bulk of the land is in the area just described, there is also agricultural crop land found within the wooded areas to the North and North West of the Reservation proper. Much of the land was cleared and broken with the financial aid of the Federal Government and the Bureau of Indian Affairs supervising the projects. This land was harder to cultivate than the other agricultural areas because it was initially heavily wooded. However, after clearing and breaking, the money invested has been worthwhile because the land is very productive.

Tractors are few, consequently, some of the land is still worked by horses. During interviews with people in the area, the author was informed that there is a slight resistance to change regarding farming methods. Among some of the older people in the area, the attitude prevails that "what was good for farming 20 years

Figure 7. This photograph shows a typical farm house on the Reservation. As can be seen from the picture, the house is constructed from logs, the cracks are filled with clay plaster and then, in some cases, whitewashed with lime. As families grow, rooms are added to the original building.

ago is still good today". The other factor preventing mechanization is one of finances. Machinery requires a large capital outlay, and that's something the Turtle Mountain Indians lack.

Figure 8. The land now growing the crop was a typical brush area in the foothills of the Turtle Mountains. This land has an excellent soil and is nearly level to gently rolling, ideal for both crop and hay production. This field yielded over 50 bushels per acre, verifying native fertility and potential.

Some of the land is worked by migrant tractor owners. These people buy the machinery and advertise themselves for hire. They do such farm work as plowing, disking, breaking of new land and cutting and stacking of hay.

The majority of the crop lands are well drained. In some instances too well! Because of the acute slope characteristic of many of the lands, water erosion is a problem. Conversely, the level lands to the South and West do not posses as great a degree of slope; and during times of heavy precipitation, water accummulates in the low spots of the fields. Inadequate drainage is particularily a problem if large amounts of precipitation are received during the Spring. The fields do not adequately drain and planting becomes impossible.

The major crops of the area are wheat, barley, oats, rye and flax. There is also some alfalfa and clover grown but this is grown primarily for fodder. Because of the fairly ideal climatic and physical conditions the crops are generally good. Newly broken land will yield up to 50 bushels of wheat per acre and even greater yields per acre are realized when oats or barley is planted.

Pasture Land

Pasture accounts for 31.8 percent of the total outlying land area or a total of 11,406 acres. The pasture is of the wooded and non-wooded variety. The wooded pasture comprises 18 percent of the total land area or 6,317 acres and the non-wooded pasture amounts to 13.8 percent of the total land area or 4,889 acres.

The majority of the wooded pasture is found to the North and North East of the Northern boundary of the Reservation proper. The factors that qualify this area as a pasture is that the land is fenced and that it does support a few head of cattle. The only place

where the cattle and horses can find any grass to eat is around the bogs and swamps that prevail throughout this area. This type of pasture is of very low quality, has a low carrying capacity, and no effort is being expended to improve it. The reason is primarily physical. Many of these wooded pastures have soil that is extremely stony, consequently, there is no feasible way in which it could be cultivated and planted into grass. Many of these pastures could truly be classified as wasteland.

The non-wooded pasture land is located to the west and South West of the Western boundary of the Reservation proper. These areas provide fine pasture land for livestock. Much of this area is kept in pasture because of the relative steepness of the slope. The majority of the land falls into the 13-20 percent slope range. Even though the soil is fertile and could raise good crops if cultivated, breaking it would only expose it to excessive wind and water erosion.

Figure 9. This is an example of a semi-forested pasture land that has been grossly overgrazed. The natural vegetation is very sparce and affords little food for livestock. The excessive stoniness make this area impossible to cultivate and plant into grass, consequently, it remains in its' natural state.

The outlying pasture lands of the Reservation support a very small number of animals.[1]

TABLE 2

Livestock	Total Number
Cattle (meat)	410
Cattle (milk)	516
Horses	215
Goats	6

The reason for such small herds on over 11,000 acres of land is due to the extreme low quality of the pasture land. The

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[1] Interview with the Land Operations Officer, about the carrying capacity of the land, July 13, 1964.

vegetation is sparse and low in food value, therefore, a large area is necessary in order to feed each animal.

It is not to say that all pasture land in question is of the variety described. There are some areas which have been broken and planted into grass and provide excellent grazing areas. However, this type of pasture is an exception rather than the rule.

Hayland

Hayland comprises 9.3 per cent of the total land area, or 3,323 acres. The majority of the hay that is cut to the North of the Reservation proper is of the natural grass variety.

As much of the hay is cut around the swamps as conditions will permit. There is an inverse relationship between the amount of precipitation and the amount of hay that can be cut yearly. The wetter the summer, the less hay that is available for cutting because the water in the swamps covers a greater area. The converse is true if the summers tend to be dry.

To the North West and West of the Reservation proper, the hayland areas are much superior in quality than those to the North of the Reservation. Much of the grass is planted and it has been sown on high areas where the drainage is more than adequate. Besides, clover and alfalfa haylands, much of the other areas are planted into Brome and Timothy grass.

The Brome plant grows to a height of 3-4 feet and produces an abundance of basal and stem leaves. While the Timothy also grows to

heights of 3-4 feet, the stems emerge from a bulb-like base and form large clumps.[1] Both grasses are excellent feed for livestock. These grasses contain a great deal more food value than comparable amounts of natural grass.

Because of the critical slope of these land areas, it isn't feasible to use it as cultivated crop land. However, it can be broken up temporarily to allow grass planting; and this can be done with a minimum amount of effort because the soils tend to be relatively fertile and free of stones.

Figure 10. This shows the method of stacking hay still being used in the Turtle Mountain area. Horses are also used extensively in doing farm work.

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[1]U.S. Department of Agriculture, Grass, (Washington, D. C., U.S. Department of Agriculture, 1948), p. 685.

Figure 11. Figure 11 illustrates a typical lowland hay area. Any excessive amount of precipitation would wield this area useless, because water would tend to concentrate and stagnate. Note that the stacked hay is along the edges of the lowland. The edge is slightly higher than the center of the lowland, thus in case of heavy precipitation flooding would be avoided.

The land is initially prepared with a disk tiller which sufficiently breaks up the surface to allow planting of the grass seed.

Forestry

The forest of the outlying Reservation lands is of little value economically. It is generally comprised of low quality aspen, scrub oak, ash, elm, willow and birch. Presently it yields oak, ash and willow fence posts, a limited number of aspen poles, aspen saw logs and aspen post as well as fire wood.

In 1963, under the supervision of Edmund Sand, Land Operations Officer, extensive tree planting took place. The type of trees planted were of the variety that would yield quick financial returns. Approximately 14,000 evergreen trees were planted on 28 acres of land in an effort to meet part of North Dakota's Christmas tree demands in about 8 years time.

The site chosen for the project was just slightly West of the Reservation proper. The area is extremely well drained and the soil very fertile. The land was originally wooded and presently the standing vegetation on the outside of the cleared land area, affords sufficient protection to the planted trees from extreme winds and rapid run-off after a period of heavy precipitation.

Figure 12. Tree planting operations carried out by the Bureau of Indian Affairs under the supervision of Edmund Sand, Land Operations Officer.

Wooded areas and Waste Lands

In discussion of use of the Outlying Indian Lands, agriculture, pasture and hayland accounted for 59.6 percent of the total area. The other remaining 50.4 percent or 18,026 acres is completely idle. The area in question is heavily wooded and dotted with lakes and swamps. The wooded area amounts to 13,565 acres and the bogs, swamps and lakes total 4,461 acres.

The wooded and swamp areas are concentrated to the West and North of the Reservation proper. The forest type vegetation of this area is so thick that this land can't even be used for pasture.

The majority of the water areas are bogs, with no economic potential. Gordon and Jarvis lakes are the only exceptions.

Inspite of the fact this land area is useless and all investigations indicate it should be left idle, there are Indian families trying to make a subsistance living from the area. They invariably fail in their attempts and, consequently, must turn to welfare in order to insure survival.

Recreation

Besides the fact that the Turtle Mountains are North Dakota's best claim to a mountainous region, they are also one of North Dakota's best claims for a potential recreational area. A fitting description of the area was made by Edmund Sand, Land Operations Officer from the Bureau of Indian Affairs, when he said, "the Turtle

Mountains can be of the same importance to North Dakota as the Black Hills are to South Dakota".

A preliminary survey of the water resources of the Turtle Mountain Reservation was carried out in 1962 by the North Dakota State Water Conservation Commission.[1] Their recommendations were extensive and to implement all the projects simultaneously would have involved too much capital. However, with the advent of the Accelerated Public Works Programs, a few of the larger projects were basically completed.

A record appropriation of 236,000 dollars was designated for forestry preservation. This included construction of facilities for development and rehabilitation of forest, development of facilities necessary to assure proper use of forests by visitors and development of multiple uses of forest including fish and wild life preservation.[2]

The significance of the appropriation for the development of water and forested areas, lies in the fact that there was finally the realization of the extensive potential that this area possessed as a recreation area. There were two main areas of development; Belcourt Lake on the Reservation proper and Gordon Lake, situated just North of the Reservation boundary.

Prior to the Accelerated Public Works program, Gordon Lake had little recreational development. This is an unusual fact because it

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[1]U.S. Department of the Interior, Bureau of Indian Affairs, Branch of Land Operations Narrative Highlights-- Turtle Mountain, 1963, p. 9.

[2]Ibid.

is one of the larger and deeper lakes in the area. The Lake is approximately 300 acres in surface with a maximum depth of 27 feet.[1]

In order to make the area available for immediate public use, picnic tables, grills, and good well water were provided. Shortly after the basic needs were provided for, the building of a concession stand, sixteen by twenty-four feet, and toilet facilities were started. A caretaker-maintenace building was also constructed at Gordon Lake. The building is twenty-four by forty-eight feet and contains one bedroom, an office, a living-dining room and a sixteen by twenty-four maintenance room, which will be used to repair and store picnic tables, grills and other park equipment.

Gordon Lake is an ideal recreational area in that today it contains most of the facillities necessary for happy holidaying. It is easily accessible by good roads, only six miles north of highway number 5; boats and fishing equipment can be rented at the Lake. The lake also affords good fishing since Walleyes, Perch and Northern Pike are present.

To insure a constant water level at Gordon Lake, a spillway has been constructed at the Southern end of the lake, to control the depth of the water. With the new spillway, the depth of the lake can be increased by three feet. While the depth increase does not conform with the recommendations made by the North Dakota State Water Conservation Commission, it will increase recreational opportunities until complete renovation is economically feasible.

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[1] Ibid.

Figure 13. Gordon Lake viewed from the North shore.

Chapter IV

Physical and Cultural Interrelationships

The patterns of land use are closely related to the physical characteristics of the soils, the degree of slope and the nature and pattern of the drainage. When all of these factors are favorable, the land is generally cultivated and some forms of crops are grown on it.

An analysis of the Outlying Trust Lands in the Rolette County showed that only limited areas had favorable slope, soils and drainage. This factor of limited agricultural land available is exemplified by the small amount of the area that is actually being cultivated. When compared to the overall land area, it accounts for only 8.5 percent.

The majority of the Outlying Lands possess steep slopes and although high areas are well drained, low areas are filled with stagnant water. This land area, besides having poor drainage and steep slopes, also supports very heavy vegetation. This combination of factors accounts for the fact that over 50 percent of the land area is classified as idle.

The remaining area of the Outlying Trust Lands is favorable for only two forms of land use: hayland and pasture. The factors of soil fertility and drainage are adequate for this area but the factors of slope prevents the breaking of this land into cultivated fields. A great deal of the land area possesses a relatively steep

slope, consequently, cultivating it would not be feasible because of the excessive erosion that would occur after the land was broken.

Another physical feature which prevents the cultivation of some of the land in the area is excessive stoniness. The glacial substrata has worked it's way to the surface and has almost completely transformed the landscape into an area of excessive stoniness. These lands are true wastelands because they are not economically feasible to alter.

Presently, the Outlying Trust Lands are being as fully utilized by the inhabitants of the area as the physical conditions will allow. Some of the people who own land in the foothills of the Turtle Mountains and the less wooded and stony areas to the North of the Reservation proper make a very good living from the soil. These farm steads generally have good buildings and much of the farm work is done by machines.

The Indians living in the more wooded areas cannot make a living off the land. On these farms the Indians usually keep several head of cattle for dairy and meat products along with some chickens and swine. However, the income of these people has to be supplemented by welfare checks, because their farm receipts are so small.

Physical and Cultural Problems

If a land area does not adequately meet the needs of it's inhabitants then there must be a good reason as to why this type of situation exists. On the basis of the information gathered through

research in the area, the problems will be presented and their attempted solutions discussed.

The primary problem, that is almost immediately discernible on traversing through the Reservation, is one of overpopulation. There are too many people on too little land. As a group, the Indians are a prolific lot and the families are unusually large. Consequently, their needs are much greater than what they can get from the land.

In order to overcome this factor of too many people on the land the Bureau of Indian Affairs has attempted to bring in other forms of agriculture so that some of the presently idle land may be used. Presently 37.7 percent of the land is wooded and idle. If the Evergreen project materializes, much of the wooded area may be cleared and planted into trees, giving some economic potential to the now idle areas.

Attempts are also being made by the Bureau to develop a wild fruit industry on the Reservation. The wooded regions are full of such fruit trees as chokecherries, pincherries, juneberries and cranberries. This could easily become an industry of major importance if it ever materializes.

Both of the projects discussed have been planned in an effort to create work and incomes for the Indians. If both projects materialize, the effects are going to be twofold:

1. The added jobs will take the excess population off the land.
2. The now idle land may be made productive, thereby, allowing more Indians to make a living off the land.

A second factor of major importance in hindering the development of the Turtle Mountain Indian Reservation has been the unrest and disruption of leadership which has hindered progress and timely usage of available facilities.

Between the Bureau of Indian Affairs and the Indian, a definite strained relationship is evident. In the last election of a representative to the Indian Council, the victor was an Indian whose platform was anti-Public Health and anti-Bureau. His victory exemplifies the fact that many of the Indians are anti-Bureau.

In order to improve the economic and political situation of the area, more cooperation must be carried out between the Indian and the Bureau. The author having only spent several months in the area, could not detect the reason for the strained relationships.

Future Developments and Trends

The fate of the Indian on the Turtle Mountain Reservation in the future will be almost entirely in the hands of the Bureau of Indian Affairs. The land is no longer capable of supporting all of the population and other forms of work must be provided for the Indian. Although welfare checks are an easy way out, they are not a solution to the problem.

The Bureau's efforts to improve existing conditions have been many, and future projects are already being planned. Of all the projects, the development of the Turtle Mountains into a resort area

is most encouraging. The Bureau finally realized that the potentials of this area as a recreational site are among the finest of any area in North Dakota. Much of the presently idle wooded land could become recreational havens for tourists and in turn yield handsome incomes to the Indians living in the area.

The Bureau, in the author's estimation, is doing everything in it's power to help agriculture and develop industry. As to the future development of the Mountains a great deal rests on the amount of money that the Federal Government is willing to invest. In order to develop the necessary recreational facillities and build the necessary industry, and improve the overall well-being of the Indian, much capital investment will be required.

APPENDIX

LAND USE MAPS AND ACREAGE BREAKDOWN OF THE OUTLYING INDIAN LANDS IN ROLETTE COUNTY

The appendix of this thesis presents a detailed analysis of the land use of the Outlying Indian Lands in Rolette County. An explanation of the code, together with acreage breakdowns and land utilization maps are presented.

APPENDIX I

LAND USE KEY

CULTURAL FEATURES (numerator)

1st digit	2nd digit	3rd digit
1. Agricultural	1. Cultivated	1. Tilled
		2. Idle
	2. Pasture	1. Natural
		2. Planted
		3. Wooded
		4. Idle non-fenced
	3. Hayland	1. Natural
		2. Planted
2. Rural Non-farm	1. Wooded	1. Tall trees
		2. Small trees - shrubs - dense undergrowth
		3. Planted trees
		4. Abandoned farmland growing to shrubs
		5. Slash & burn
		6. Recreational
	2. Non-wooded	1. Brush & Brambles
		2. Swamps & intermittent lakes
		3. Wasteland - rock cliffs, gravel pits, etc.
		4. Recreational
		B. BOG
3. Urban	1. Platted town	
	2. Highway (ribbon town)	

PHYSICAL FEATURES (denominator)

1st digit (slope)

1. Level and nearly level - (0-6%)
2. Undulating (7-12%)
3. Hilly (13-18%)
4. Steep (18%)

2nd digit (Drainage)

1. Adequate
2. Poor - dried beds of stagnant water
3. Very poor - about 1/3 area shows evidence of stagnant water

3rd digit (Stoniness)

1. No stones
2. Stony - but does not prevent cultivation
3. Stony - prevent cultivation unless removed

4th digit (Erosion)

1. Practically none - little evidence of runoff by sheet or gully
2. Little - some evidence of above
3. Excessive sheet erosion and gullying

FRUIT CODE

C Chokecherries present in significant quantity

C_1 " " but insignificant

J Juneberries present in significant quantity

J_1 " " but insignificant

P Pincherries present in significant quantity

P_1 " " but insignificant quantity

CB Cranberries present in significant quantity

CB_1 " " but insignificant

APPENDIX II

Land Use Acreage Tabulations of the Outlying Indian Trust Land in Rolette County

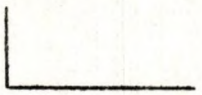
TOTAL ACRES IN OUTLYING AREA: 35,512

Township	Range	Sec.	Cultivated	Pasture Wooded	Pasture Non-Wooded	Hayland	Wooded	Wasteland
T164N	R70W	34	117					43
T163N	R70W	12	80					
		15	80	125				
		17		160				
		18	81	339				20
		19				12	460	168
		21		252				68
		22		440				
		24	143					17
		25	200					
		26		240				
		27		160			256	64
		28		17			127	33
		30	134	260			153	93
		31	118		18		329	175
		33		109	45		132	34
		34					489	151
		35		160			160	
		36			19		43	
T163N	R71W	7					278	42
		10					140	
		13	79			44	168	29
		14		105	53	137	111	154
		15	37			66	297	80
		17					404	236
		18		39	41		232	168
		19		77	33	13	233	44
		20			23	55	344	58
		22					139	141
		23		155		122	55	68

Township	Range	Sec.	Cultivated	Pasture Wooded	Pasture Non-Wooded	Hayland	Wooded	Wasteland
T163N	R71W	24				48	298	14
		25		145	147	7	160	101
		26		231	110			59
		27	8	293	53	80		106
		28	26			104	379	131
		29		195	34	101	178	92
		30		188	156		92	164
		31				58	315	147
		32		184		103	40	73
		33	70			61	453	56
		34		72		66	202	140
		35	174	301		47	45	33
T163N	R72W	13		80				
		31	96	251	44		42	117
		35				44	122	34
T162N	R72W	1				50	434	76
		2		222	43	58	216	101
		3				15	270	35
		4				39	259	22
		5	19			98	400	43
		6		98	21		285	156
		7	55	117	13		398	57
		8		80		35	236	49
		9	88				196	36
		10				25	195	20
		11				49	250	21
		12				15	256	49
		13	49	232	39	68	252	
		14				37	256	27
		15				29	91	
		16				8	152	
		17					120	
		18		57		40	388	75
		19			327	33		
		20			640			
		21			618			22
		22	13			40	427	
		23		160		140	180	
		24		385	255			
		26	103		137			

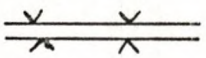
Township	Range	Sec.	Cultivated	Pasture Wooded	Pasture Non-Wooded	Hayland	Wooded	Wasteland
T162N	R72W	27			310	50		
		28			415	105		
		29			128	32		
		30				120		
		31					160	
		32	109		320			51
		33				160		
		34				160		
		35	106		150	181		43
T162N	R73W	1					26	54
		13		40			200	
		24		350			210	
T161N	R72W	2	110				50	
		5				160		
T161N	R71W	2				54		106
		3	160					
		4	240			80		
		11	29					51
		14			160			
		15	69			91		
		25	143					17
		26	130		30			
		33			67	93		
T161N	R70W	5			160			
TOTALS			2957	6317	4889	3323	13565	4461
Percentage of total land area			8.5	18	13.8	9.3	37.7	12.7

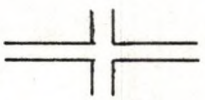
LAND USE MAP LEGEND

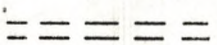
Farm Boundary 

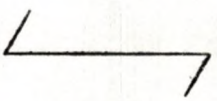
Fence Line 

Field Number 

Fence along Highway 

Public Road 

Private road or Lane 

Connecting Areas 

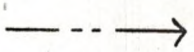
Farm Buildings 

Abandoned Farm Buildings 

School 

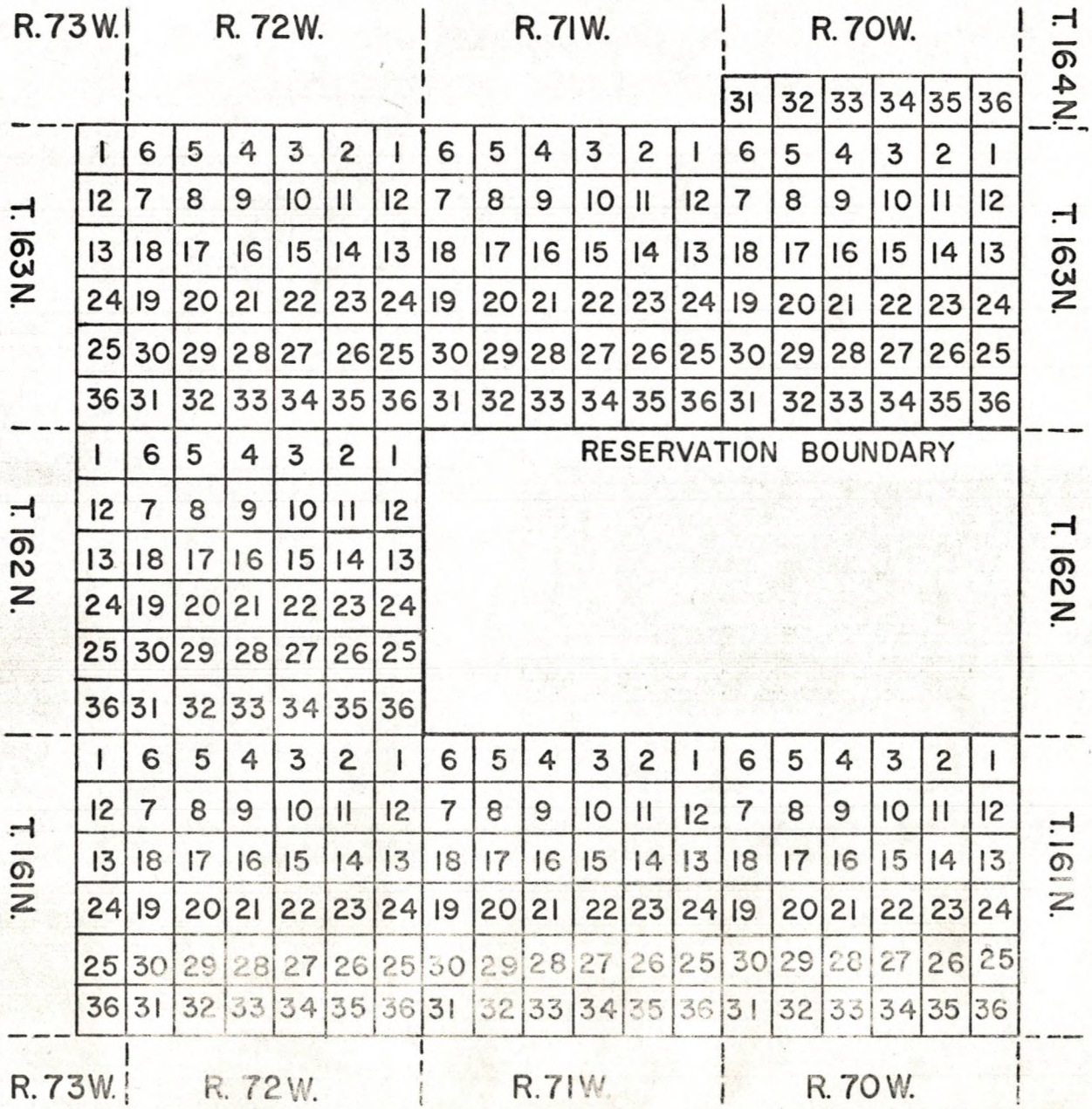
Church 

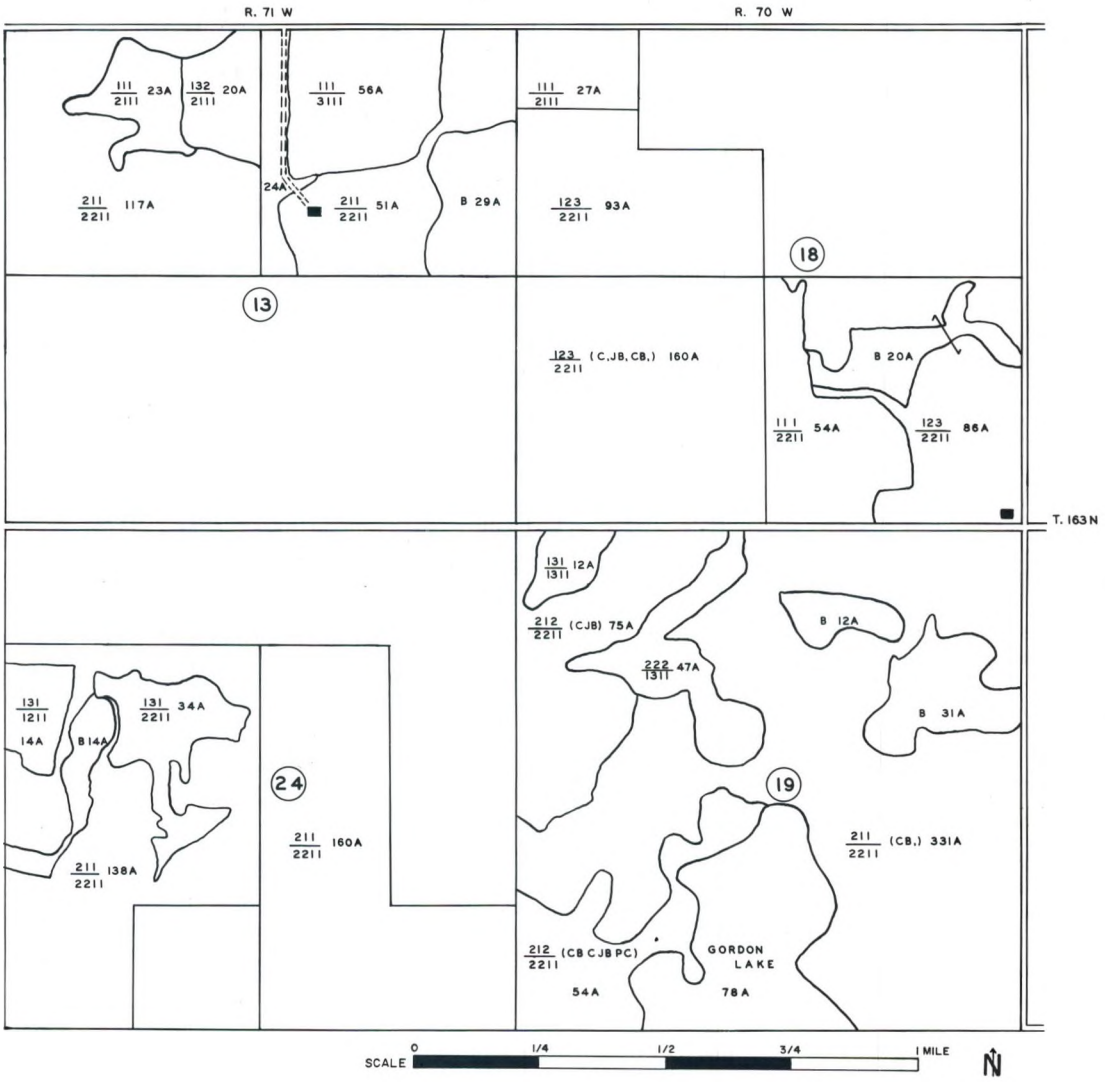
Gravel Pits GP

Streams, Intermittent 

Well-all types 

LOCATION GRID: INDIAN LAND OUTSIDE TURTLE MOUNTAIN RESERVATION

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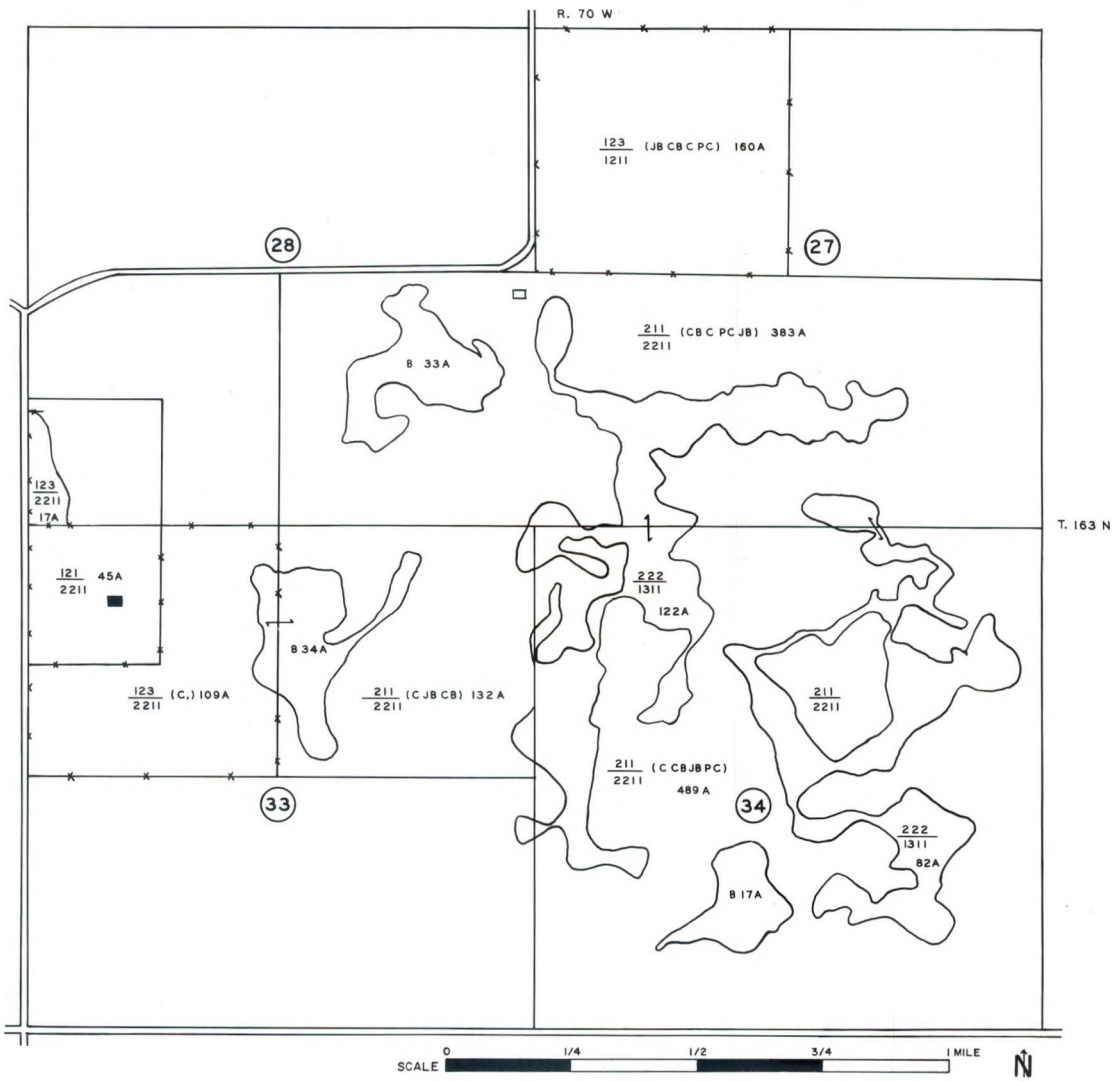
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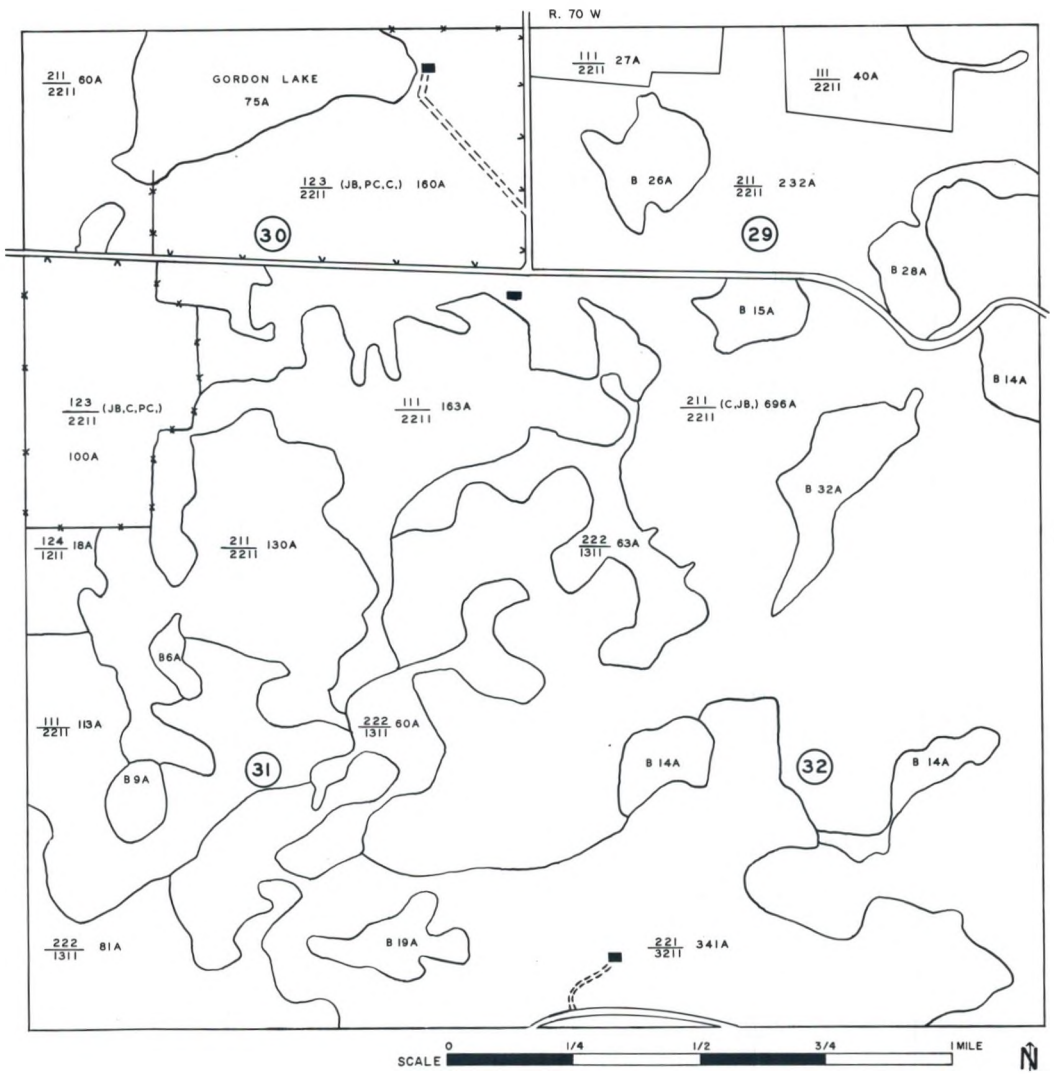
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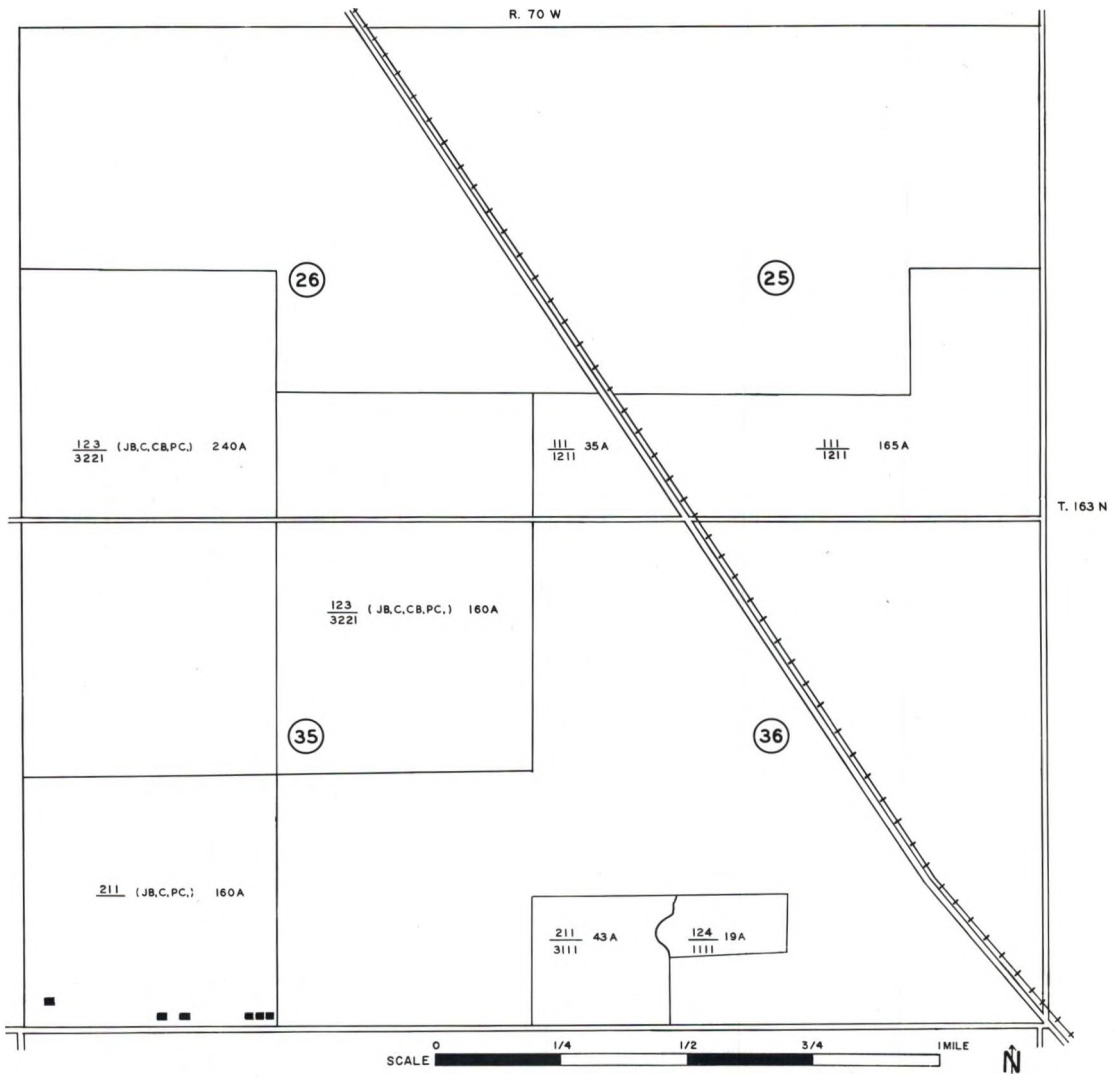
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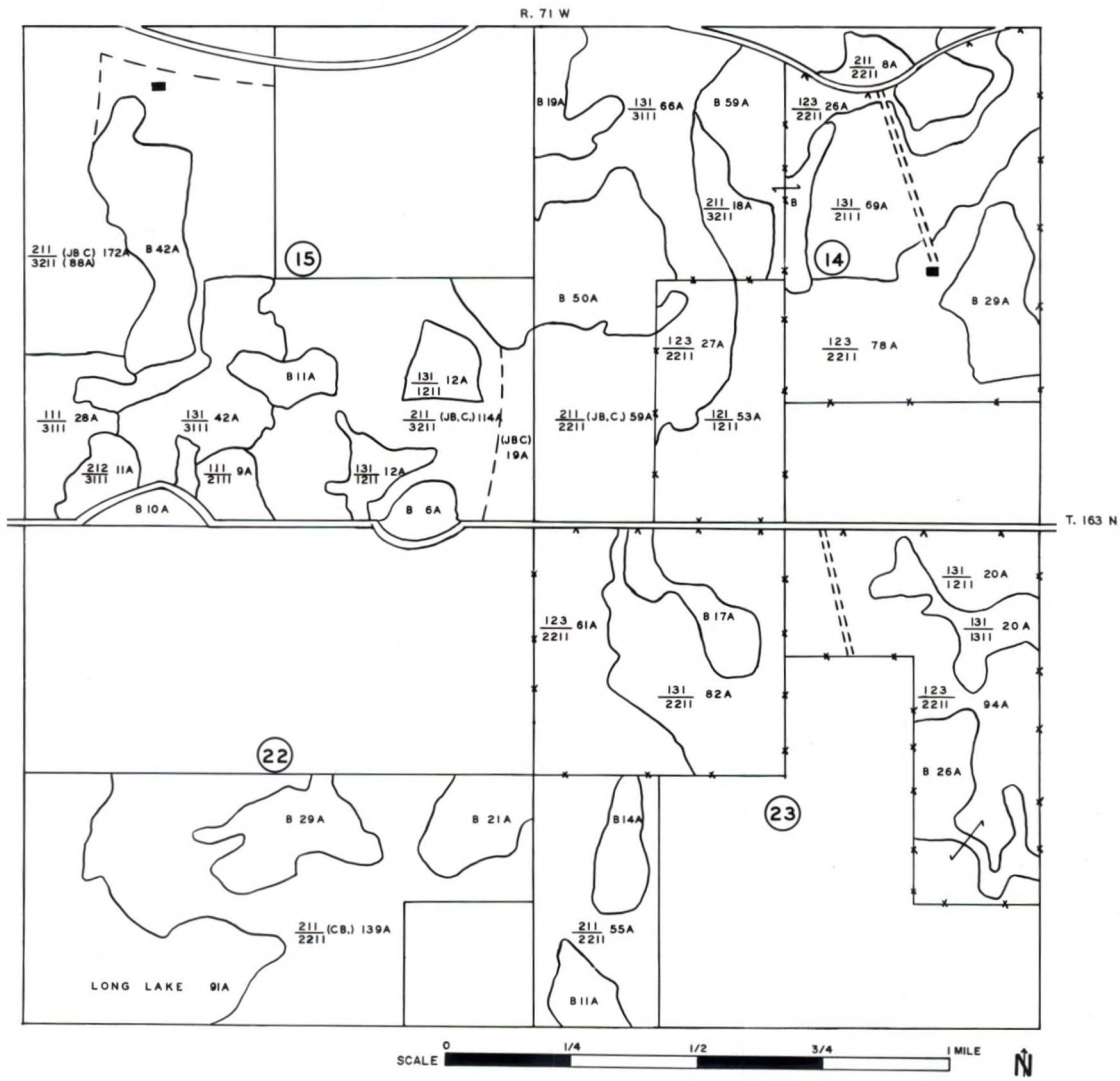
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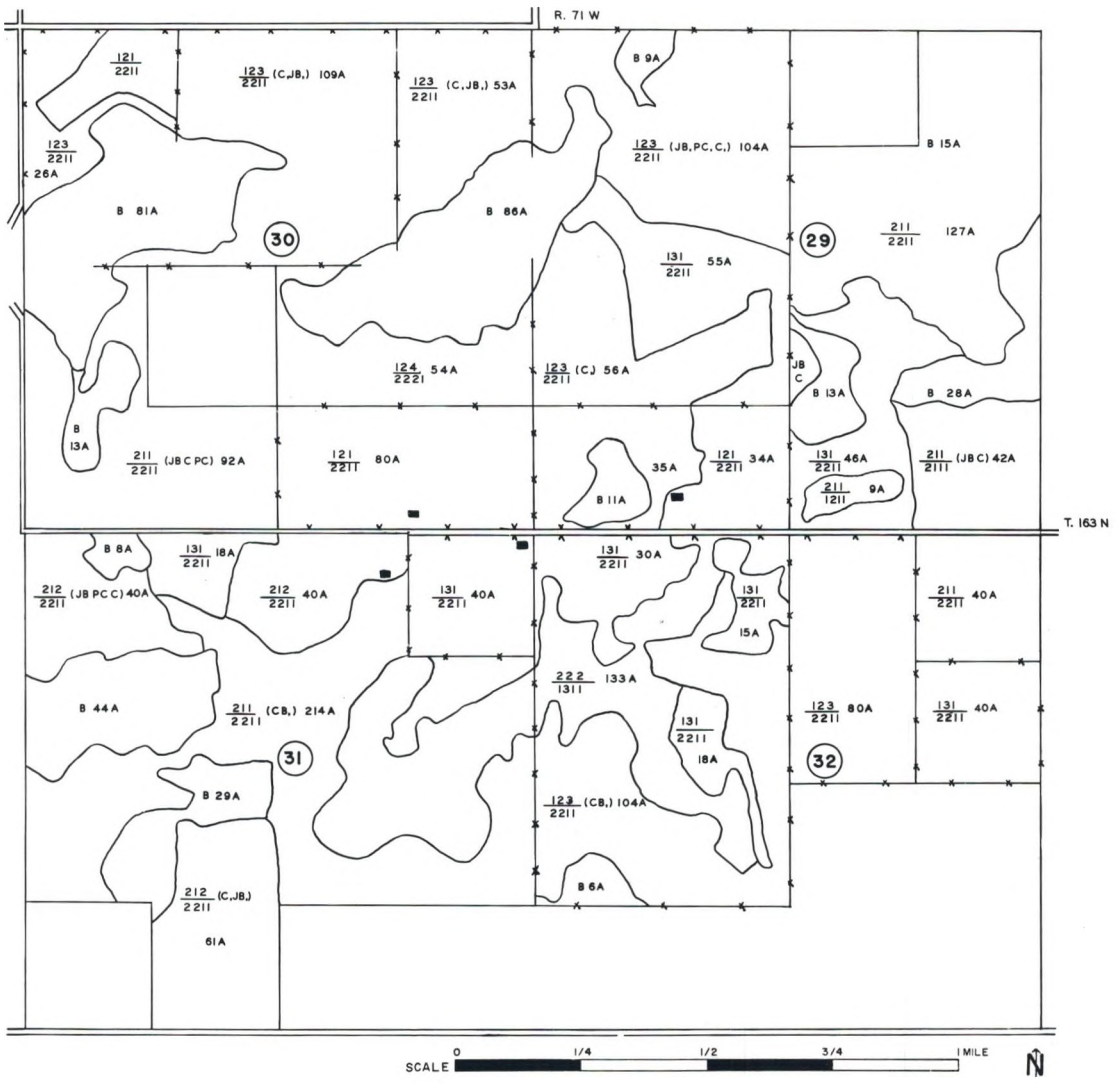
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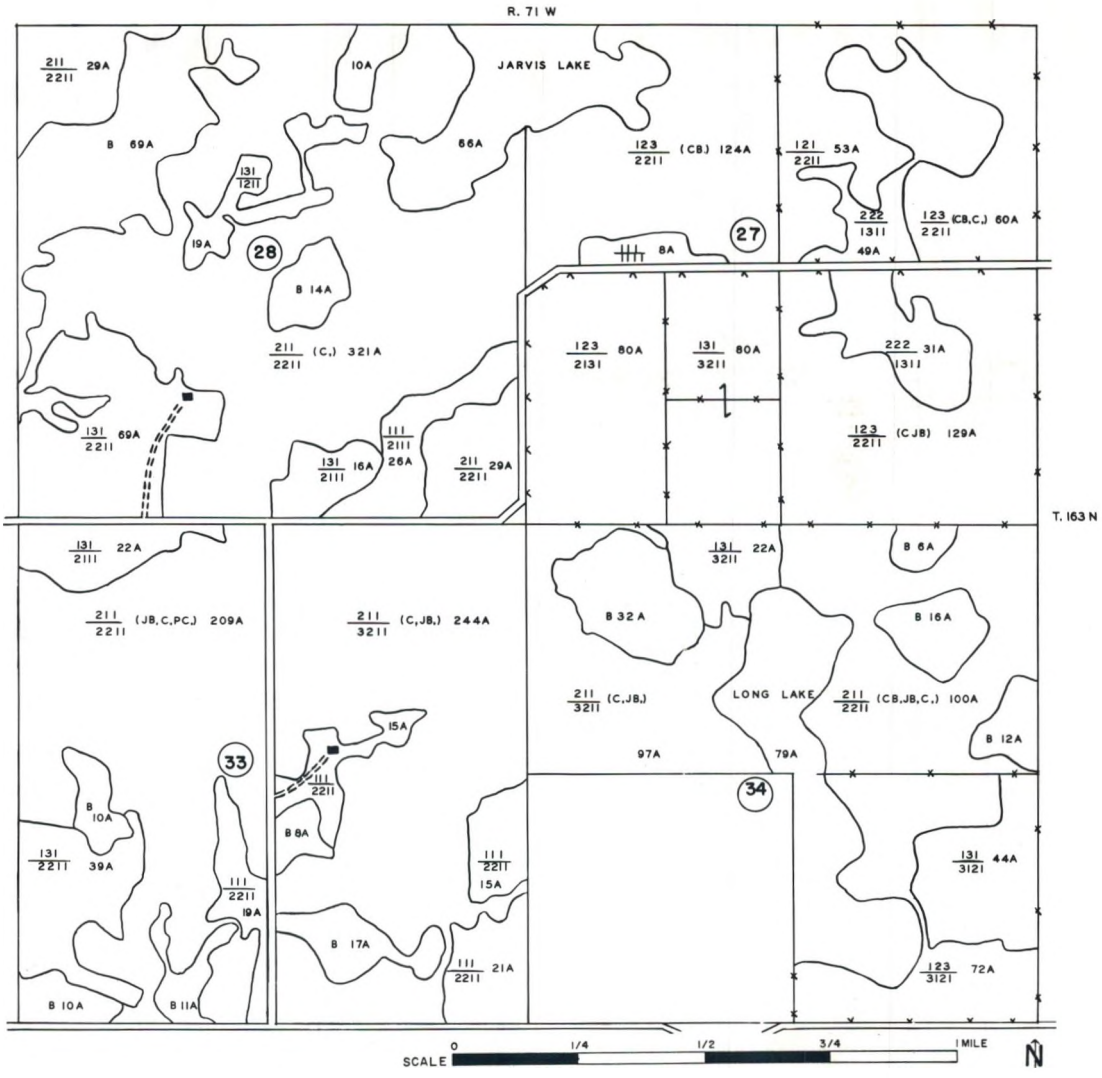
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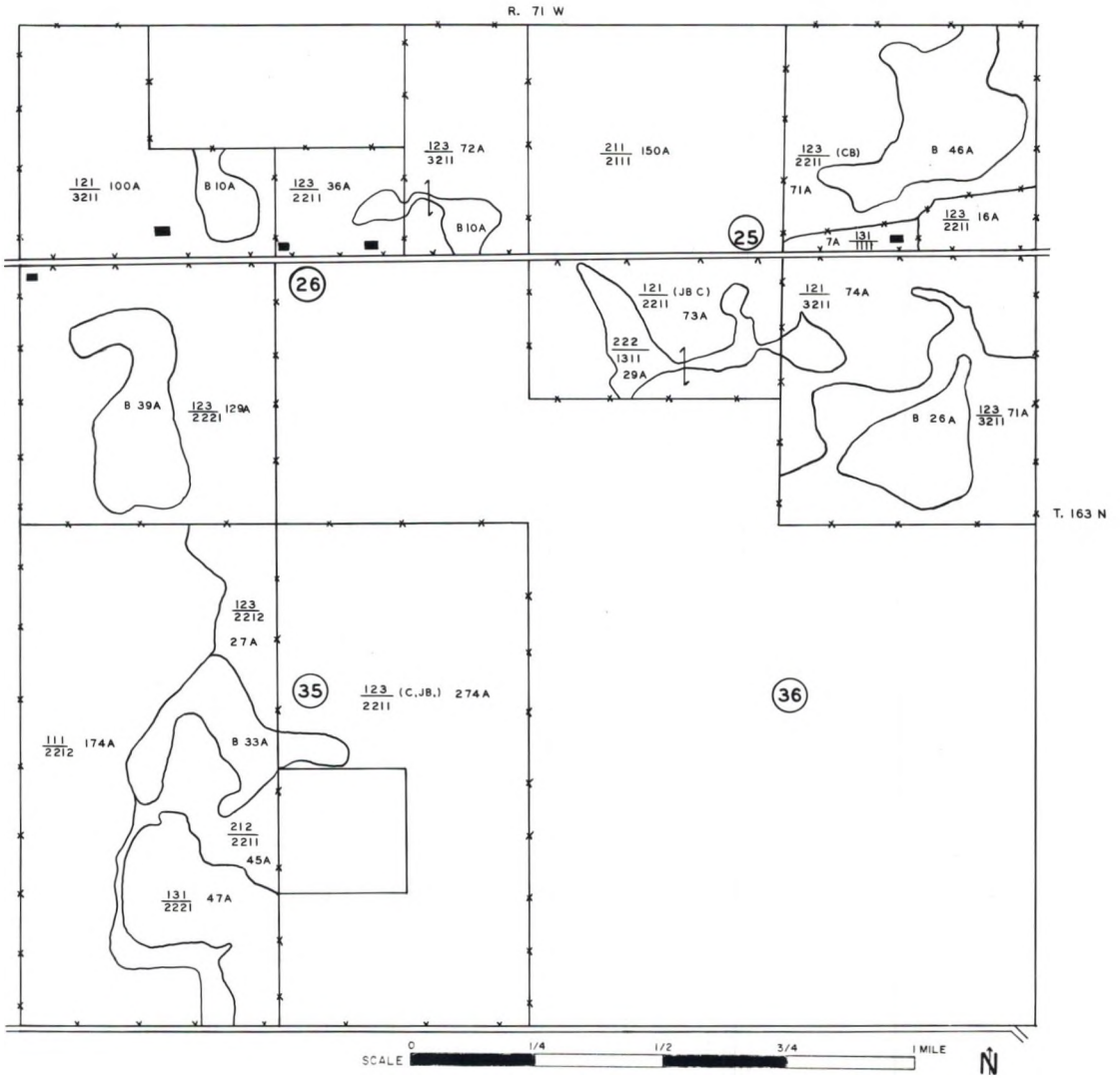
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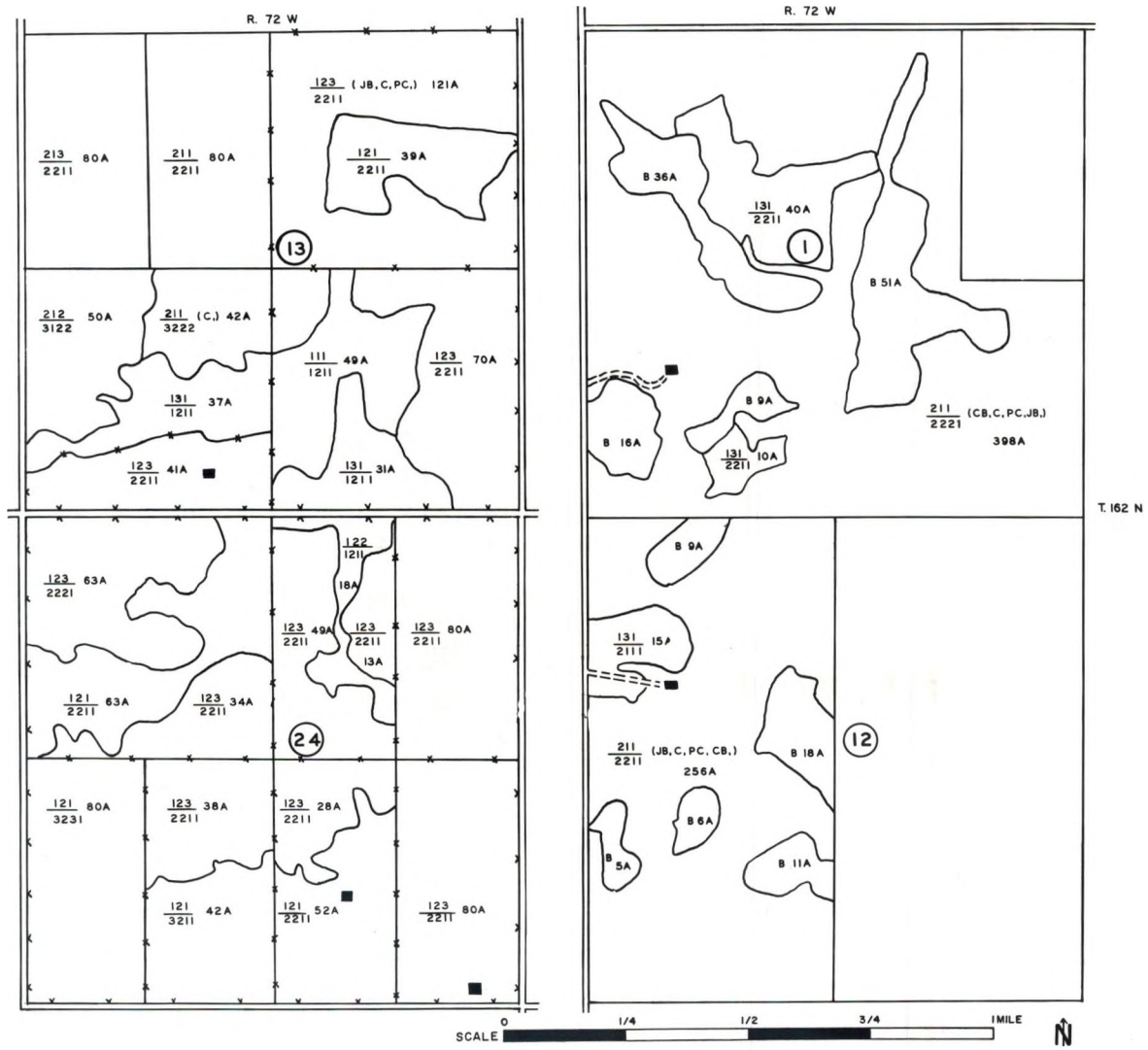
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2211
121 39A
2211
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212 50A
3122
211 (C,) 42A
3222
111 49A
1211
123 70A
2211
131 37A
1211
123 41A
2211
131 31A
1211
123 63A
2221
122
1211
18A
123 49A
2211
123
2211
13A
123 80A
2211
121 63A
2211
123 34A
2211
24
121 80A
3231
123 38A
2211
123 28A
2211
121 42A
3211
121 52A
2211
123 80A
2211
R. 72 W
B 36A
131 40A
2211
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B 51A
B 9A
B 16A
131 10A
2211
211 (CB,C,PC,JB,)
2221
398A
T. 162 N
B 9A
131 15A
2111
211 (JB,C,PC,CB,)
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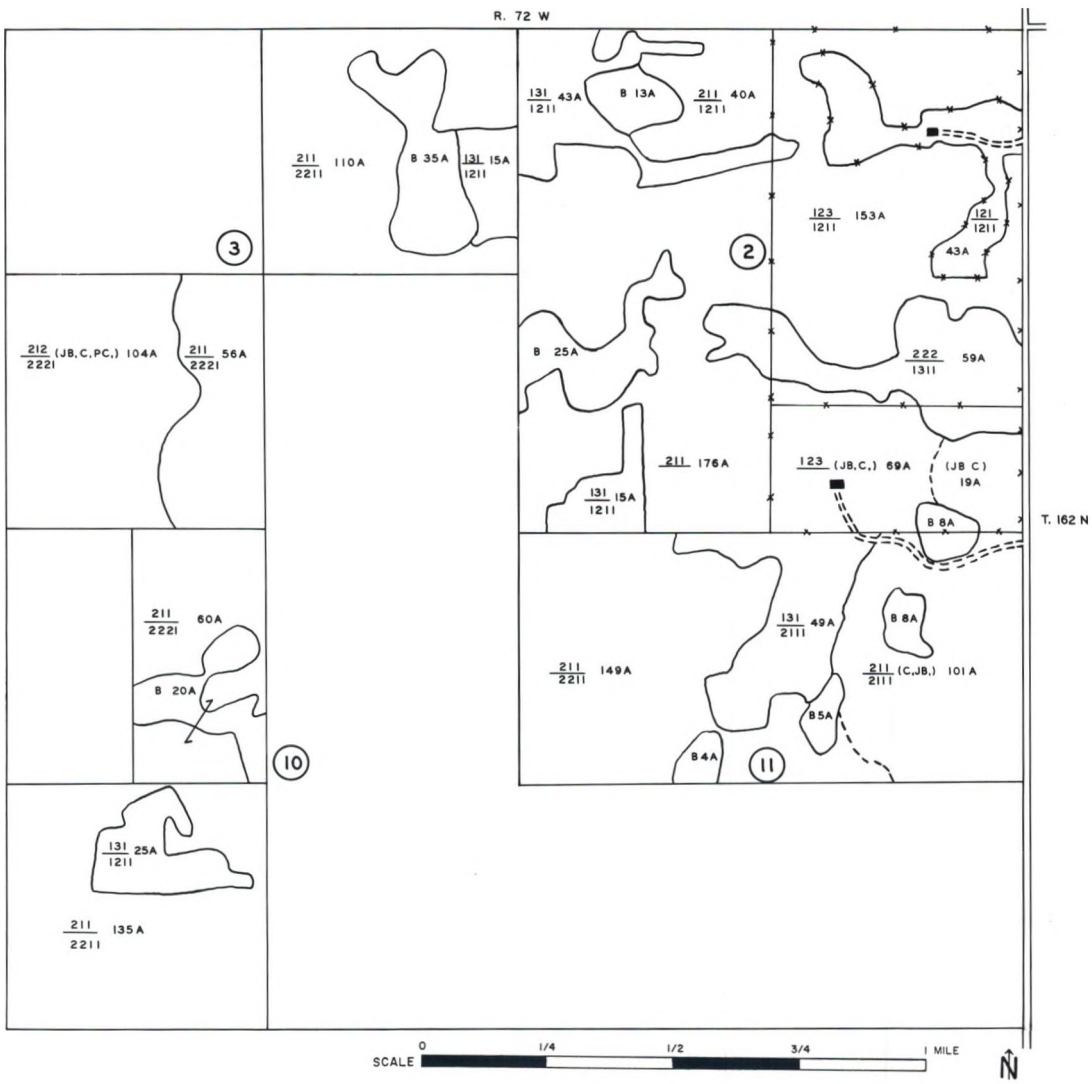
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3
212/2221 (JB,C,PC,) 104A
211/2221 56A
B 25A
222/1311 59A
211 176A
131/1211 15A
123 (JB,C,) 69A
(JB C) 19A
B 8A
211/2221 60A
B 20A
131/2111 49A
B 8A
211/2221 149A
211/2111 (C,JB,) 101A
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131/1211 25A
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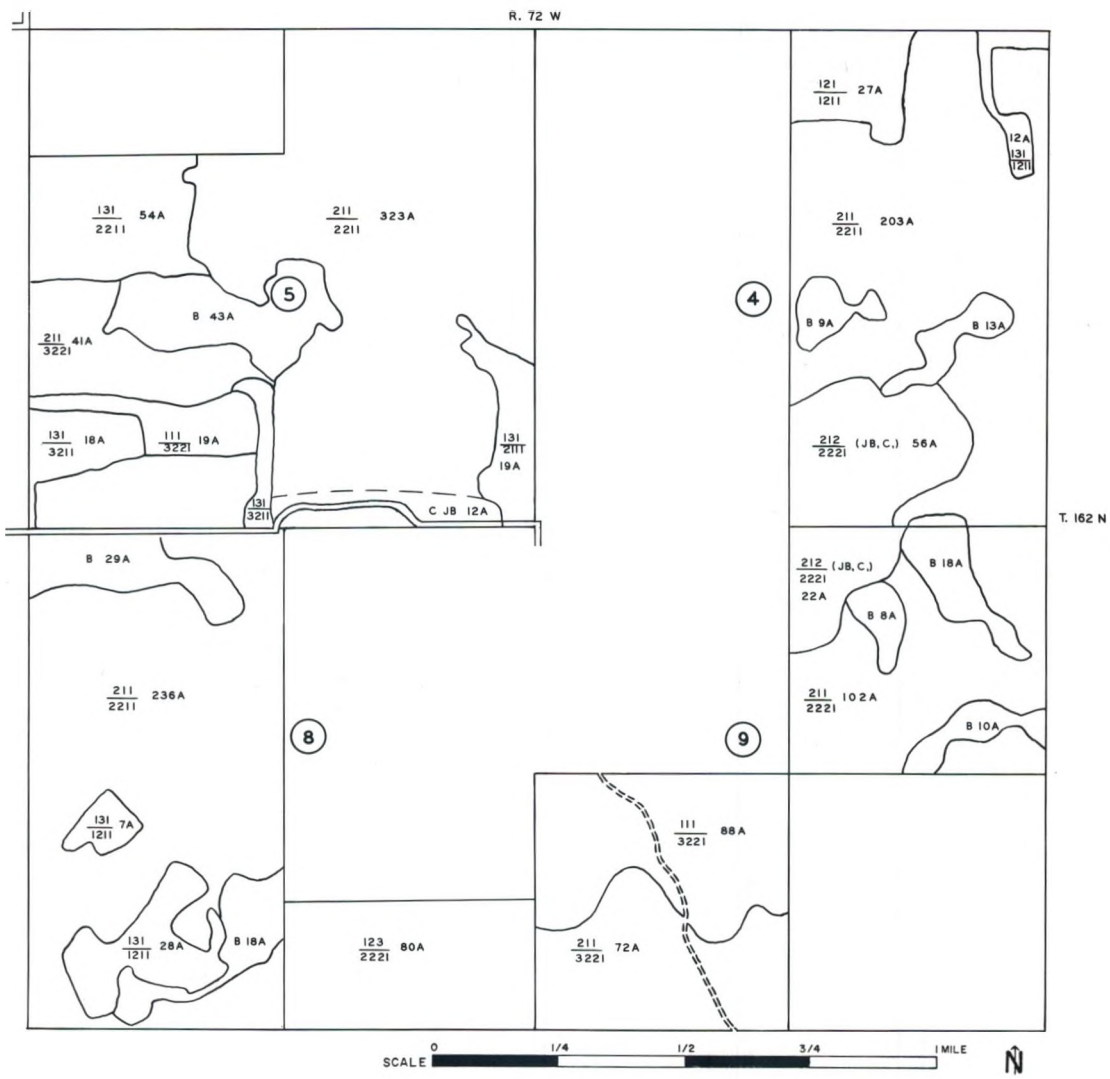
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131/2211 54A
211/2211 323A
5
B 43A
211/3221 41A
131/3211 18A
111/3221 19A
131/3211
131/2111 19A
C JB 12A
B 29A
211/2211 236A
8
131/1211 7A
131/1211 28A
B 18A
123/2221 80A
9
111/3221 88A
211/3221 72A
4
121/1211 27A
12A 131/1211
211/2211 203A
B 9A
B 13A
212/2221 (JB,C,) 56A
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211/2221 102A
B 10A
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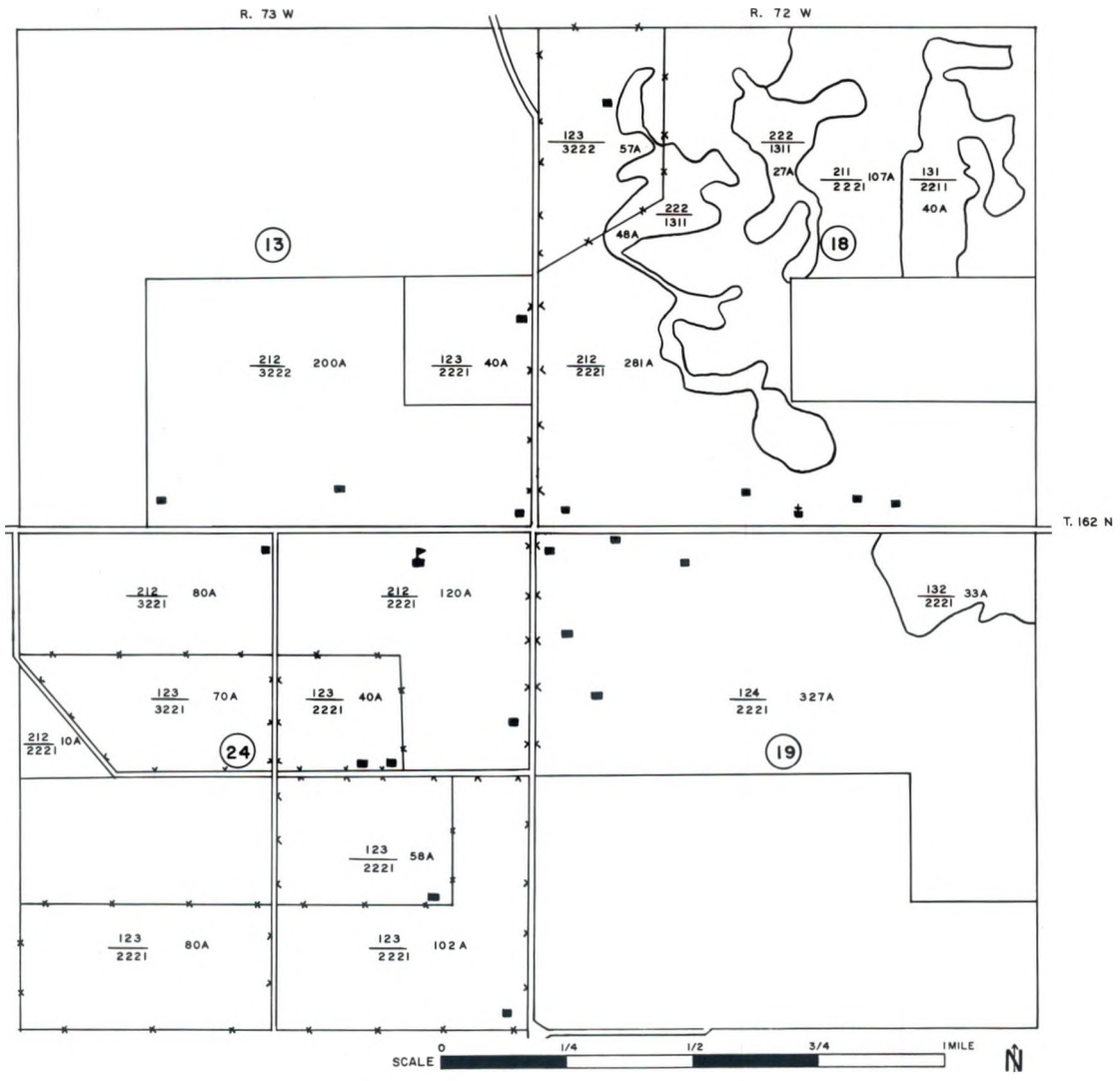
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R. 72 W
T. 162 N
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222/1311 27A
211/2221 107A
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222/1311 48A
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18
212/3222 200A
123/2221 40A
212/2221 281A
212/3221 80A
212/2221 120A
132/2221 33A
123/3221 70A
123/2221 40A
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212/2221 10A
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3/4
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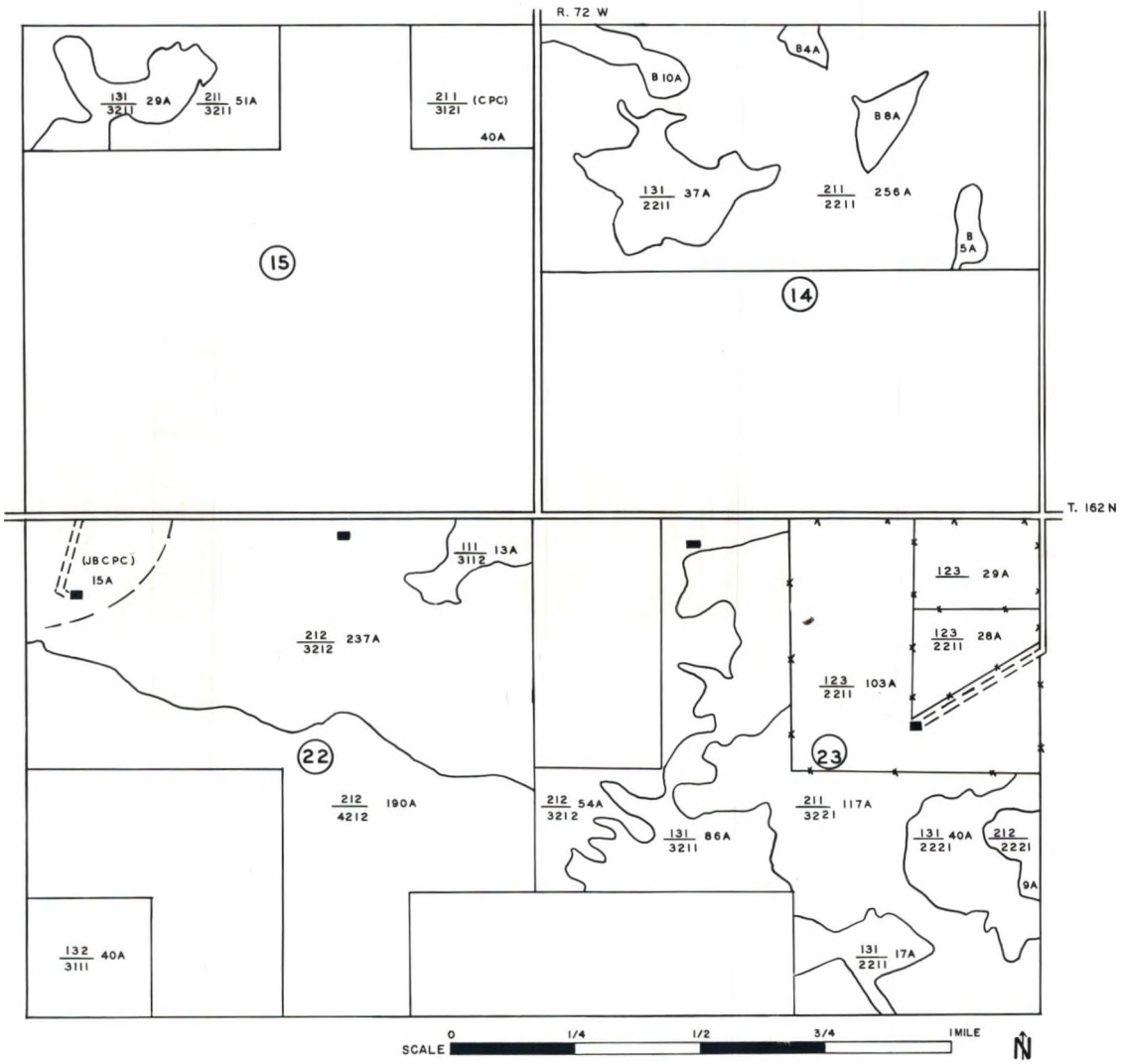
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84A
B 10A
B 8A
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211/2211 256A
B 5A
14
T. 162 N
(JBCPC) 15A
111/3112 13A
212/3212 237A
123 29A
123/2211 28A
123/2211 103A
22
23
212/4212 190A
212/3212 54A
131/3211 86A
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212/2221
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131/2211 17A
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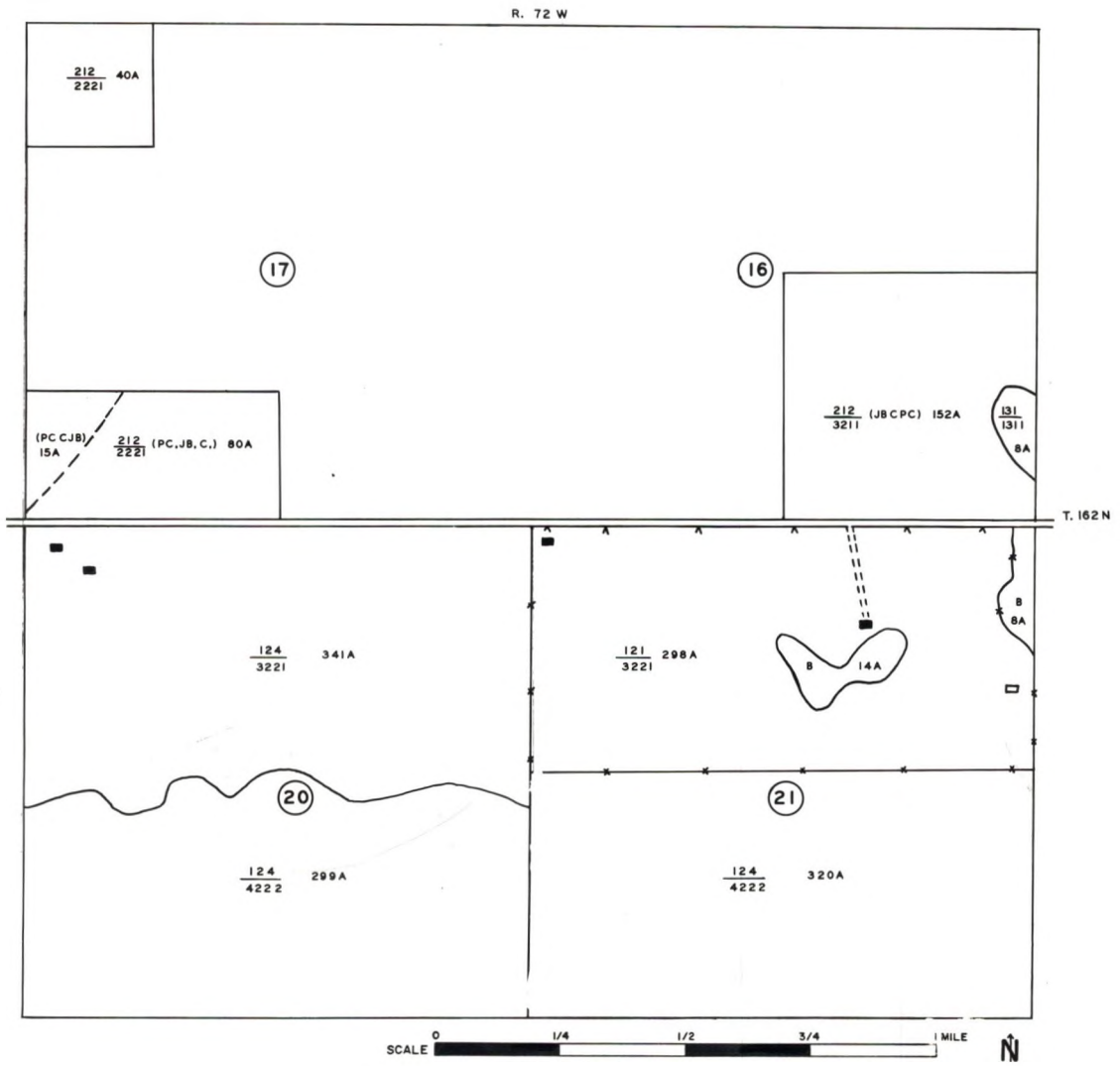
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124/3221 341A
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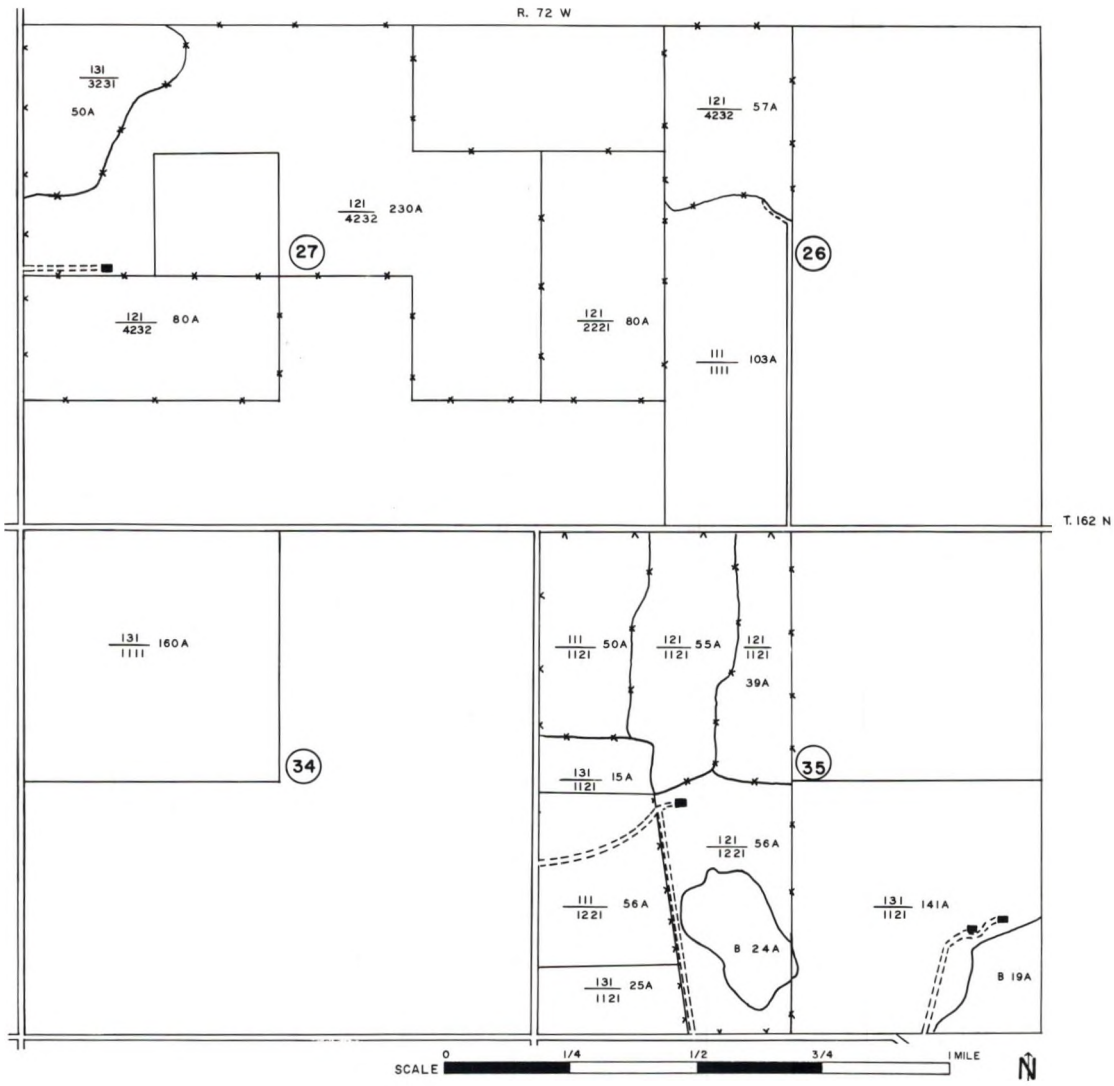
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131/3231 50A
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26
121/4232 80A
121/2221 80A
111/1111 103A
T. 162 N
131/1111 160A
111/1121 50A
121/1121 55A
121/1121 39A
34
35
131/1121 15A
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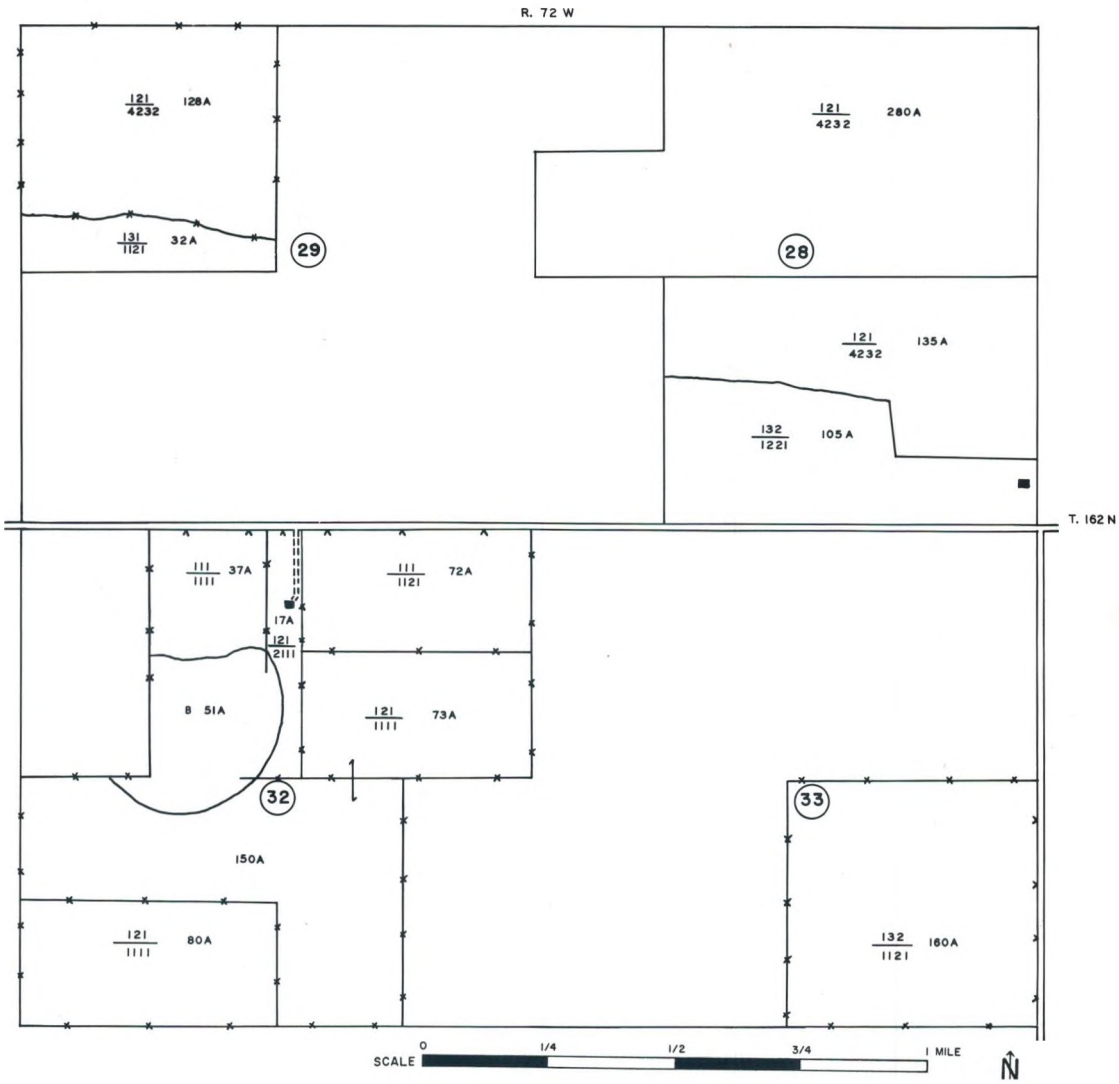
R. 72 W
121 4232 128A
131 1121 32A
29
121 4232 280A
28
121 4232 135A
132 1221 105A
T. 162 N
111 1111 37A
17A
121 2111
111 1121 72A
8 51A
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150A
121 1111 80A
132 1121 160A
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1/4
1/2
3/4
1 MILE
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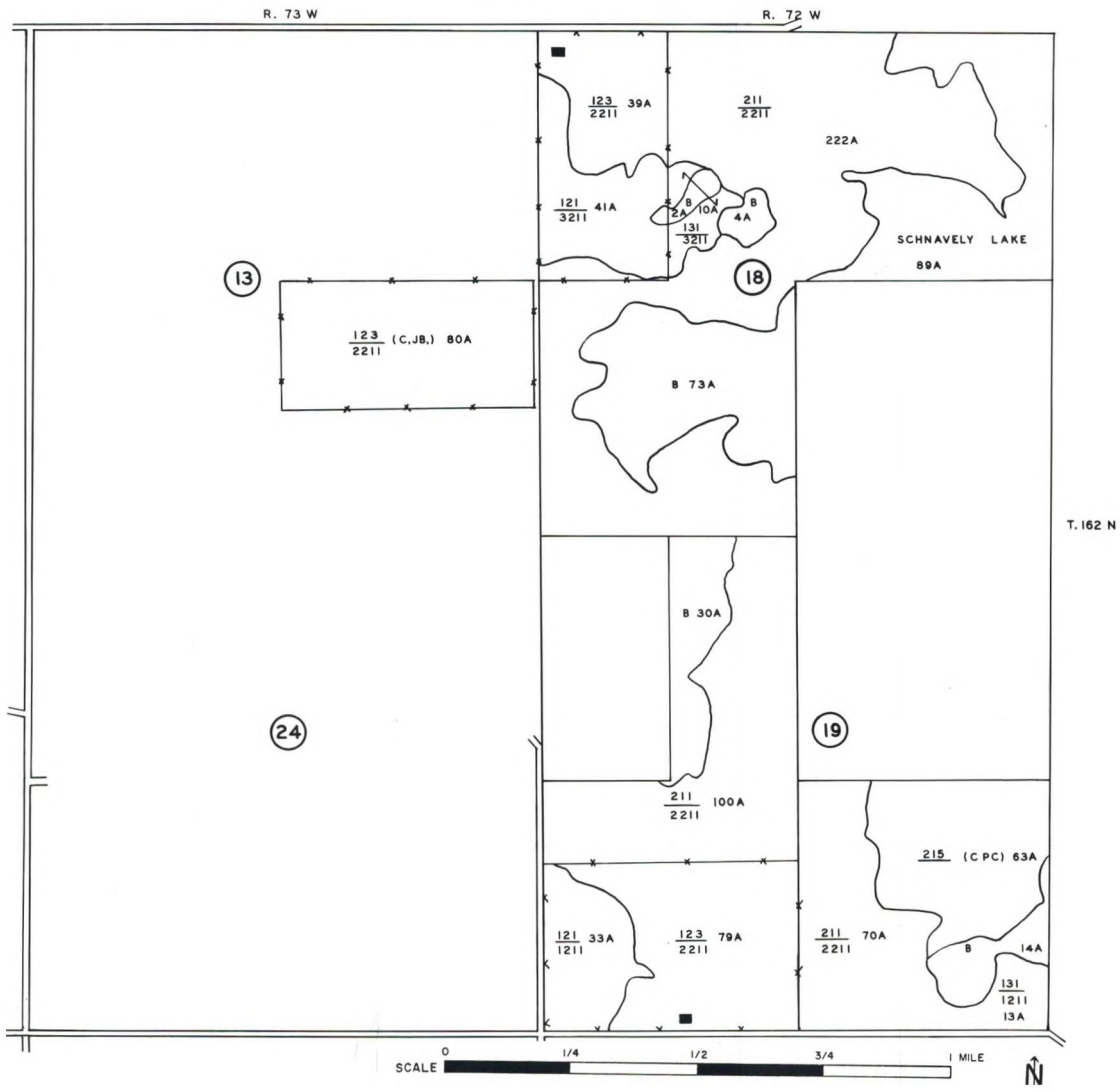
R. 73 W
R. 72 W
123 2211 39A
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222A
121 3211 41A
B 2A
10A
131 3211
B 4A
SCHNAVELY LAKE
89A
13
18
123 2211 (C,JB,) 80A
B 73A
T. 162 N
B 30A
24
19
211 2211 100A
215 (C PC) 63A
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1/2
3/4
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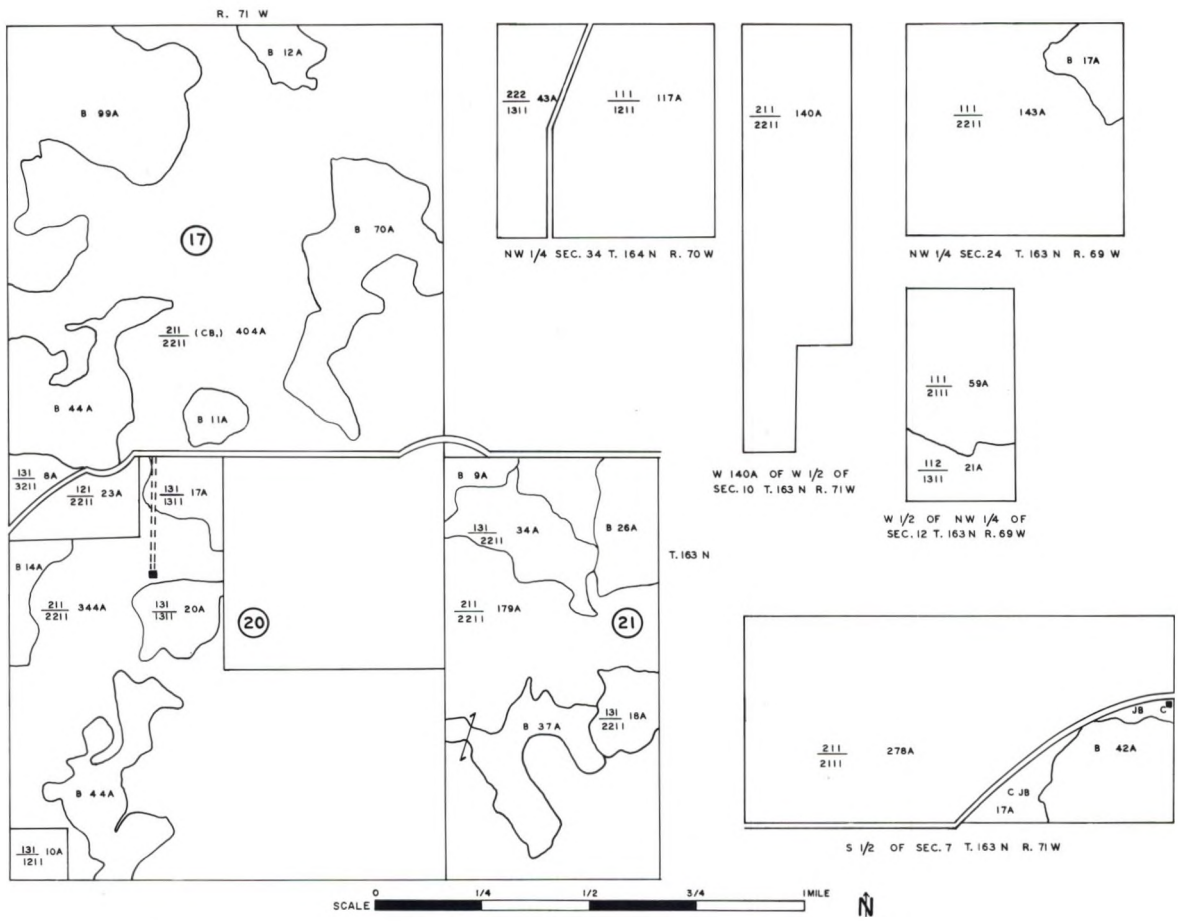
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B 99A
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B 44A
B 11A
131/3211 8A
121/2211 23A
131/1311 17A
B 14A
211/2211 344A
131/1311 20A
20
B 44A
131/1211 10A
B 9A
131/2211 34A
B 26A
T. 163 N
211/2211 179A
21
B 37A
131/2211 18A
222/1311 43A
111/1211 117A
NW 1/4 SEC. 34 T. 164 N R. 70 W
211/2211 140A
W 140A OF W 1/2 OF SEC. 10 T. 163 N R. 71 W
B 17A
111/2211 143A
NW 1/4 SEC. 24 T. 163 N R. 69 W
111/2111 59A
112/1311 21A
W 1/2 OF NW 1/4 OF SEC. 12 T. 163 N R. 69 W
211/2111 278A
JB
C
B 42A
C JB 17A
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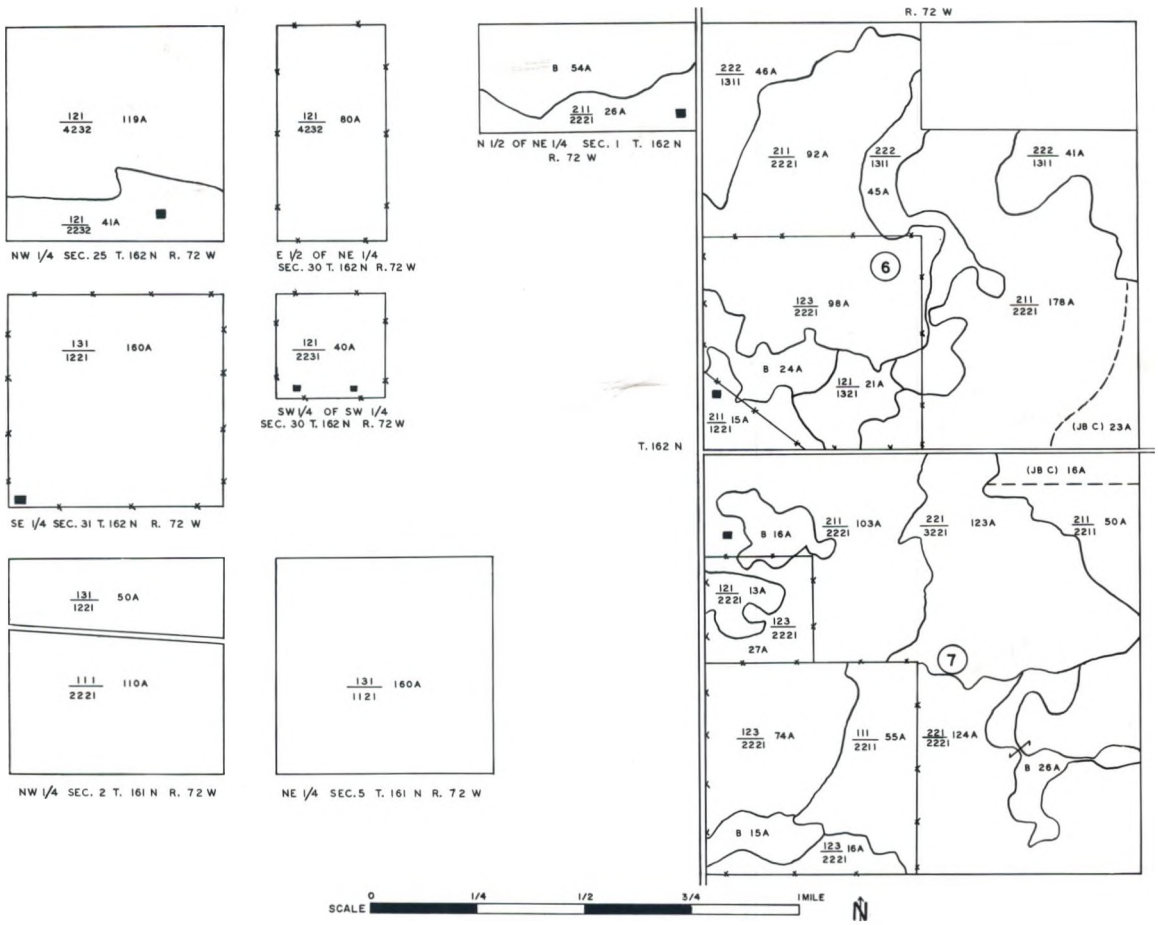
121/4232 119A
121/2232 41A
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121/4232 80A
E 1/2 OF NE 1/4
SEC. 30 T. 162 N R. 72 W
131/1221 160A
SE 1/4 SEC. 31 T. 162 N R. 72 W
121/2231 40A
SW 1/4 OF SW 1/4
SEC. 30 T. 162 N R. 72 W
131/1221 50A
111/2221 110A
NW 1/4 SEC. 2 T. 161 N R. 72 W
131/1121 160A
NE 1/4 SEC. 5 T. 161 N R. 72 W
B 54A
211/2221 26A
N 1/2 OF NE 1/4 SEC. 1 T. 162 N
R. 72 W
R. 72 W
222/1311 46A
211/2221 92A
222/1311 45A
222/1311 41A
6
123/2221 98A
211/2221 178A
B 24A
121/1321 21A
211/1221 15A
(JB C) 23A
T. 162 N
(JB C) 16A
211/2221 103A
221/3221 123A
211/2211 50A
B 16A
121/2221 13A
123/2221 27A
7
123/2221 74A
111/2211 55A
221/2221 124A
B 26A
B 15A
123/2221 16A
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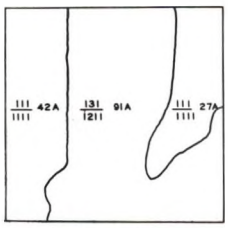
NW 1/4 SEC. 5 T. 161N R. 70W



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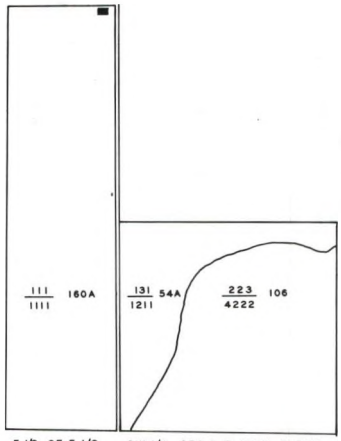

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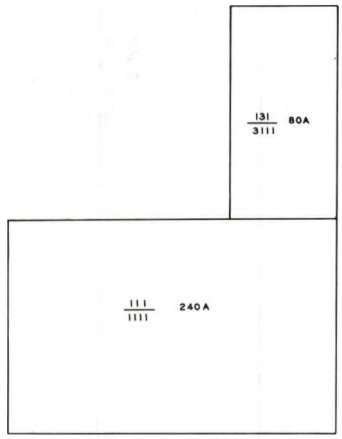
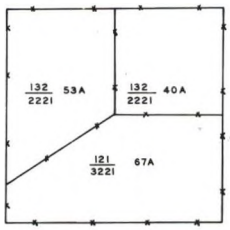
SW 1/4 SEC. 2 T. 161 N R. 71 W



SEC. 4 T. 161 N R. 71 W

SE 1/4 SEC. 14 T. 161 N R. 71 W



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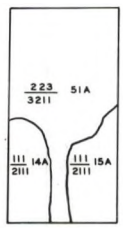
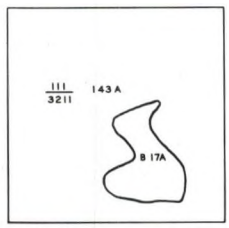


S 1/2 OF SW 1/4 SEC. 11 T. 161 N R 71 W



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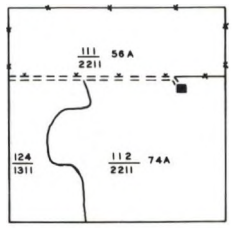

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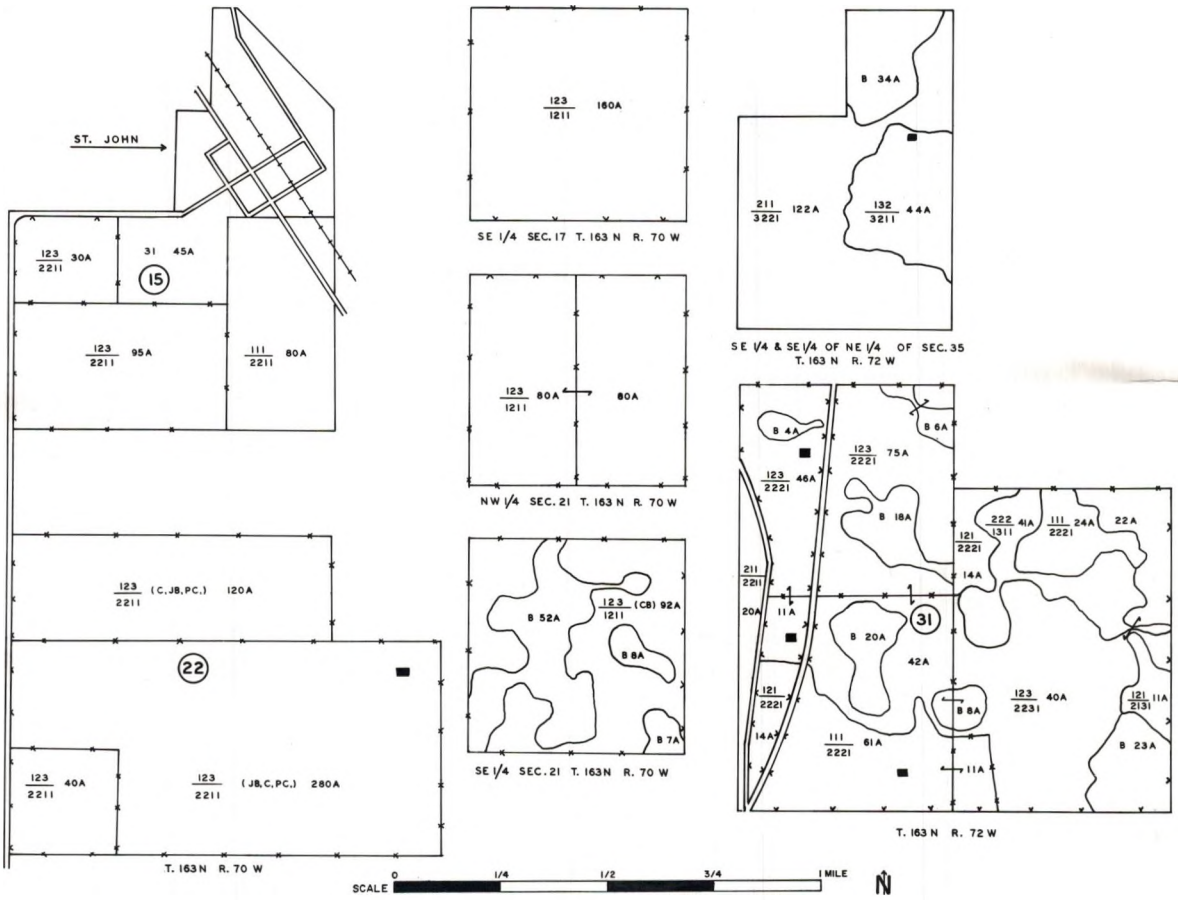
ST. JOHN
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31 45A
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22
123/2211 40A
123/2211 (JB,C,PC.) 280A
T. 163 N R. 70 W
123/1211 160A
SE 1/4 SEC. 17 T. 163 N R. 70 W
123/1211 80A
80A
NW 1/4 SEC. 21 T. 163 N R. 70 W
B 52A
123/1211 (CB) 92A
B 8A
B 7A
SE 1/4 SEC. 21 T. 163 N R. 70 W
B 34A
211/3221 122A
132/3211 44A
SE 1/4 & SE 1/4 OF NE 1/4 OF SEC. 35
T. 163 N R. 72 W
B 4A
B 6A
123/2221 75A
123/2221 46A
B 18A
222/1311 41A
111/2221 24A
22A
121/2221
14A
211/2211
20A
11A
31
B 20A
42A
121/2221
14A
111/2221 61A
B 8A
123/2231 40A
121/2131 11A
B 23A
11A
T. 163 N R. 72 W
SCALE 0 1/4 1/2 3/4 1 MILE
N

BIBLIOGRAPHY

Public Documents

U.S. Department of the Interior. Information on Chippewa Indians: Turtle Mountain Reservation. June, 1963.

U.S. Department of the Interior. Narrative Highlights: Turtle Mountain Reservation. 1962 and 1963.

U.S. Department of Agriculture. Climate and Man, 1940. Yearbook of Agriculture.

U.S. Department of Agriculture. Soil, 1957. Yearbook of Agriculture.

Books

Fenneman, Nevin. Physiography of Eastern United States. New York: McGraw-Hill Book Company, Inc., 1938.

Kazeck, Melvin. North Dakota: A Human and Economic Geography. Minneapolis: Lund Press, Inc., 1956.

Wills, Bernt Lloyd. North Dakota: The Northern Prairie State. Ann Arbor, Michigan: Edward Brothers, Inc., 1963.

North Dakota Department of State Highways: County Maps of North Dakota. 1936.

Inteviews

Belcourt, North Dakota. Personal interview with Mr. Edmund Sand, Land Operations Officer, July 13, 1964

Belcourt, North Dakota. Personal interview with Mr. Val McBroom, Resource Development Officer, July 20, 1964.

Belcourt, North Dakota. Personal interview with Mr. L. T. Mickelson, Reservation Superintendent of Schools, July 20, 1964.