REGIONAL DEVELOPMENT RESEARCH CENTRE

UNIVERSITY OF SHERBROOKE

STUDY OF THE DISTRIBUTION
OF HOUSEHOLDS IN RURAL AREAS
QUEBEC - ONTARIO REGION

COMMUNICATIONS

IN RURAL AREAS PROGRAM - FEDERAL DEPARTMENT

OF COMMUNICATIONS, OTTAWA

Prepared by:

Pierre Lacasse
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Study of the distribution of

households in rural areas

Quebec and Ontario Region

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Study of the distribution of households in rural areas,[1] Quebec-Ontario Region

INTRODUCTION

This study, conducted on behalf of the federal Department of Communications, falls within a pan-Canadian framework with a view to determining an optimum number of satellite-transmitted radio wave receivers, distributed throughout the area concerned in terms of the density of households and their distances apart.

The main objectives of this study were the following:

1 To identify the various types of spatial distribution of households throughout the Quebec-Ontario Region, and to determine the number of cells which might be assigned to each type. A cell in this context may be defined either as an enumeration area (EA) - see definition of an EA, Statistics Canada[2] - or as a grouping of contiguous enumeration areas which usually form part of the same census subdivision (see CS, definition of a census subdivision).

2 To determine a cell which was representative of each type of spatial distribution, such typical cells, insofar as possible, to coincide with EAs or census subdivisions (CSs).

3 To determine, for each typical cell selected, the distribution of households, and to represent the latter cartographically using appropriate symbols, making it possible to identify them all visually.

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[1]A rural area is defined here as any area with a population density of between 1 and 1000 persons per sq mi, or which has a population (territorial unit) - even one considered urban by Statistics Canada - of up to 2,500 persons (see chart, figure 1).

[2]CS catalogue 99 - 811, Census of Canada 1976, Reference list of enumeration areas, p V.

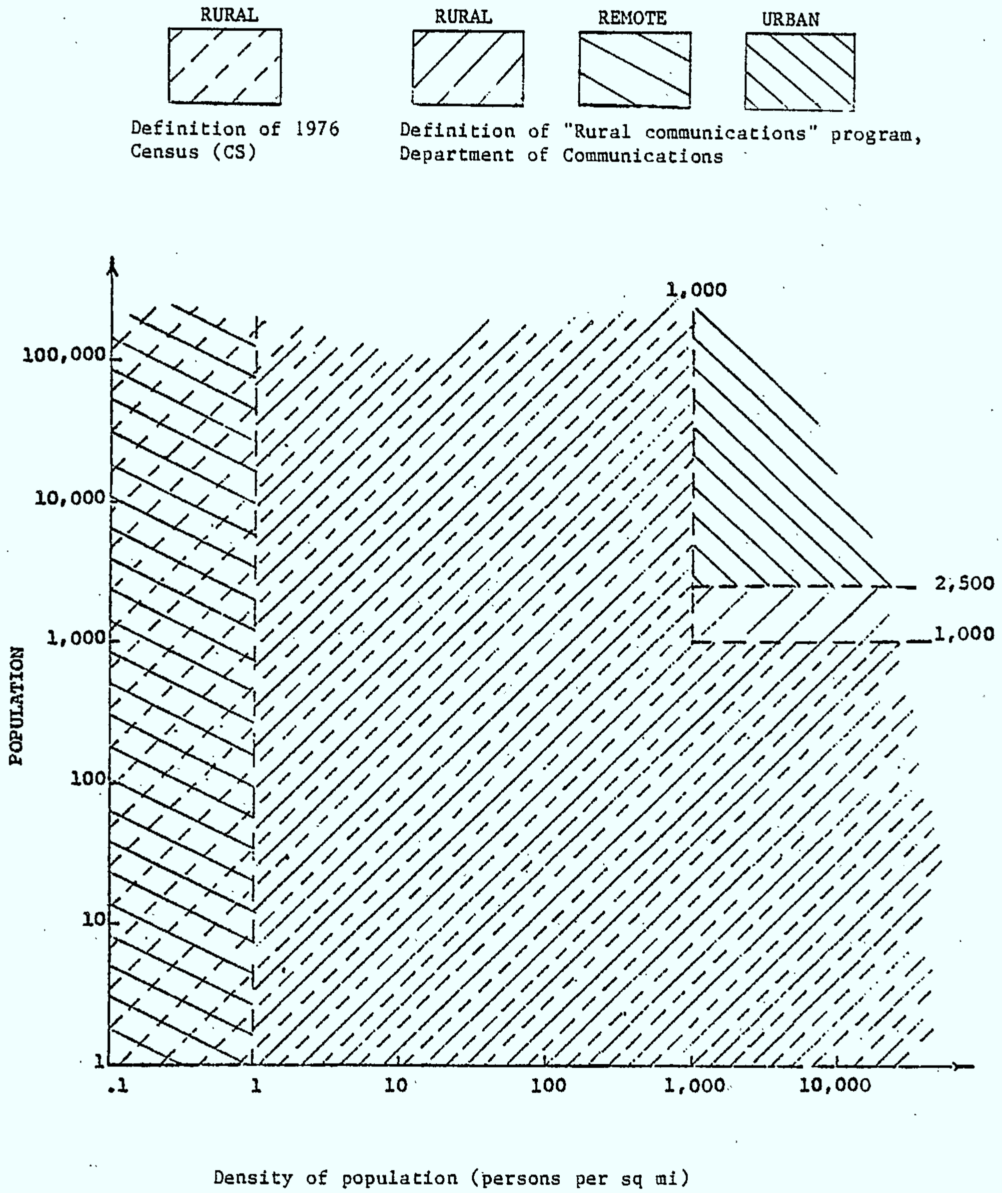

FIGURE 1. DEFINITION OF RURAL

4 To provide the necessary information to make it possible to transpose data from the typical cell to other cells of this type.

5 To check whether the proposed model may be generalized and whether it gives an accurate and reliable representation of the distribution of households throughout the entire tract. To identify all the cases encountered which do not fit into general models or any exceptions or cells presenting special difficulties when seen in the light of the cells in general.

This report contains three main parts. The first part consists of a description of the methods used for the choice of types of cells or types of distribution of households; in this section the types selected and their characteristics are also included. The second part concerns the choice of the typical cells themselves and their descriptions or characteristics. The third part describes the model used to apply the typical cell to population units of the same type; it introduces the tabulation of data about the distribution of households by type, which will be found in appendix 3. The appendices include, in addition to the tabulations, information related to the study, and particularly the cartography of each of the five typical cells, one of the main products of the study.

Members of the study group

Project Co-ordinator:	Pierre Lacasse
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Cartography:	Micheline Provencher
Typing:	Lise Nicol

SECTION 1.0 METHODOLOGY

Under this heading, we shall deal successively with (1) the main definitions of terms, then (2) the methodological approach used for the choice of the types of household distribution.

1.1: Main definitions

1.1.1: Enumeration area (EA): the smallest spatial reference area for which primary information[1] has been collected.

1.1.2: Population unit: constitutes the basic cell which was used as a household grouping unit and the level to which all compilations of the study refer. The population unit may be compared in several cases with a census subdivision (CS), but it does not always correspond to this statistical or administrative unit.

The population unit may be:

- an EA taken individually and having its own population and household spatial distribution characteristics;
- an entire/census subdivision (CS) (in Statistics Canada's terms), made up of (1) either a single EA (as for example a small village), or (2) two or more EAs (as for example a large and fairly populous township);
- part of a CS, including more than one EA and forming (1) either the rural part of a mainly urban census subdivision, or (2) a group of EAs with homogeneous spatial distribution of households, and whose household density is clearly different from that of the other EAs of the CS from which this part is taken.

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[1]Magnetic tape, households and areas, EA/1976, Statistics Canada

1.2: Methodological approach

For the choice of types of household distribution (or types of cells) two approaches have been used, the first of which, described briefly hereunder, was abandoned midway through the project.

1.2.1: First methodological approach. This was initially based on the concepts of spatial distribution of households, without taking account (except indirectly) of their density. This approach, which is described in our progress report (see appendix 1) and in the report of Mr Cormack's visit (see appendix 2), was abandoned on the advice of the project's scientific administrators.

1.2.2: Second methodological approach. This is initially based on the density of households, and only secondly on their dispersion or spatial distribution. In view of its greater flexibility, this approach was finally selected; it will be described in detail hereinafter.

1.2.2.1: Step 1: Classification of municipalities (CS) by density and characteristics of the various density brackets. An initial extraction (see table 1) of data, using a computer, made it possible on the one hand to analyse the densities of the CSs and the EAs of which they are composed, to note differences in the areas and to assess the impact of enumeration areas occupying zero land area on the results in terms of the entire municipality.

Table 1: Example: Printout of CSs and their EAs

24 6807 FRANKLIN (Identification of CS)

EA	POPULATION	HOUSEHOLDS	LAND AREA	POPULATION DENSITY	HOUSEHOLD DENSITY
5-001	303	79	14.60	20.75	5.41
5-002	572	181	15.36	37.24	11.78
5-003	78	30	0.00	0.00	0.00
5-004	599	185	13.36	44.84	13.85
(1)	1474	445	43.32	34.02	10.27
(2)	1552	475	43.32	35.83	10.96

(1) Totals and densities, zero-land-area EA excluded.
(2) Totals and densities, zero-land-area EA included

On the other hand, thanks to a classifiction of municipalities by increasing order of density of households (see table 2), we were able to identify characteristics peculiar to certain density brackets (by province); these characteristics are described below.

Table 2: Example: Printout showing CSs by increasing order of density.

CS	TYPE	POPULATION	HOUSEHOLDS	AREA	POP DENS	HSD.DENS	NUMBER EA
2912	T	16	5	11.64	1.37	0.43	1
8026	MUN	377	98	158.72	2.38	0.62	1
...							
1409	MUN	1222	331	62.82	19.45	5.27	3
0750	VL	1613	411	30.59	52.71	13.43	3
...							
5108	MUN	750	221	8.09	92.59	27.28	2
7646	VL	2113	589	1.17	1790.68	499.15	2

<u>Characteristics of CSs according to the various density brackets by province.</u>

According to three density brackets, it was possible to identify certain characteristics of CSs, and to arrive at the following conclusions:

PROVINCE OF QUEBEC

- <u>High density</u> (15 or more households per sq mi)
  - The land area is generally small (less than 10 sq mi)
  - The number of EAs is limited; generally there is only one.
  - Usually these are villages (occasionally towns).
  - In the case of larger land areas (from 10 to 50 sq mi), we encounter mainly rural (or township) municipalities, towns and even cities, with several (3 to 14) EAs.
- <u>Average density</u> (from 5 to 15 households per sq mi)
  - The land area generally varies between 20 and 90 sq mi.
  - The number of EAs is generally from 2 to 5

- In the case of larger land areas (from 100 to 200 sq mi, and in one case 360 sq mi), these are towns or cities with more than 8 EAs (with few exceptions).

- In the case of small land areas (less than 20 sq mi), we encounter mainly rural municipalities, towns or villages with 1 or 2 EAs and where the number of households is very low (less than 100).

• <u>Low density</u> (less than 5 households per sq mi)

  - The land area generally varies from 20 to 99 sq mi, and there are only 1 or 2 EAs.

  - In the case of larger land areas:

    (1) From 100 to 250 sq mi: we often encounter 3 or more EAs, and densities are usually higher than 2.5 households per sq mi.

    (2) From 250 to 500 sq mi: We encounter mainly 1 to 2 EAs, and densities of less than 2.5 households per sq mi.

    (3) There are three cases with very large land areas (from 812 to 2213 sq mi) having from 8 to 24 EAs; the number of their households is low.

  - In the case of smaller land areas (less than 20 sq mi):

    (1) Low densities (less than 2 households per sq mi) are associated with a very small number of households (from 1 to 40).

    (2) Densities of from 2 to 5 households per sq mi are associated with a small number of households (from 10 to 100 households).

    (3) Whatever the density, we are dealing here almost entirely with rural municipalities; there are some towns and villages with average land areas (from 30 to 100 sq mi), having few EAs (3 or less), and some towns and villages with very small land areas (typically 1, 5 to 7 sq mi), having <u>very few</u> households (typically 6, 16 or 32).

PROVINCE OF ONTARIO

- High density (50 households or more per sq mi)

  - High density is generally associated with a small land area (less than 10 sq mi).

  - High density, if associated with a larger land area (more than 20 sq mi), usually implies a large number of EAs (commonly 10 or more), and a large number of households (1000 or more); this is the town pattern.

- Average density (from 6 to 50 households per sq mi)

  - An average density is often associated with a large number of EAs and a fairly large land area (from 50 to 125 sq mi).

  - In the case of a small land area (less than 5 to 6 sq mi), we usually have single EA (sometimes 2), and almost always Indian reserves (and some villages); the number of households is low.

  - This group includes mainly township municipalities, but there is an increasing number of towns (and cities) as we get away from low densities (that is, 13 households per sq mi or more).

- Low density (less than 6 households per sq mi)

  - The land area generally varies between average and large (from 50 to 300 sq mi).

  - The number of EAs is quite low, from 1 to 5.

  - The very large land areas (from 500 to 2000 sq mi) are usually associated with non-organized tracts including several EAs (ex: 14).

  - The CSs in this group are usually township municipalities, there are also a considerable number of Indian reserves with one EA and an area of 10 to 100 sq mi; some towns with large land areas (100 sq mi or more); and finally, some towns and Indian reserves with 1 EA and with a smaller land area (up to 4 sq mi) and a very small number of households.

1.2.2.2 Step 2: Analysis of the dispersion of households, and formulation of the types of cells.

Using cartography (1: 50,000), each group of densities was analysed in terms of the distribution or dispersion of households. The density of the households and the land areas involved made it possible to clearly define the broad lines of each type selected. We must not forget here that the preliminary work, the first approach (see appendix 1) greatly facilitated the spatial analysis of this step; certain selected types remained the same, but this latter research made it possible to better determine certain types of distribution of households and to eliminate the types with ambivalent characteristics (thus, for example, the village type, with high density, associated with a vast rural environment, with low density, was abandoned). In this second step, therefore, the characteristics described in 1.2.2.1 were confirmed and the types became more clearly defined; thus the village type proved to be justified and is found almost totally in high densities and very small land areas. The characteristics common to each type so identified were noted, in order to make possible subsequent identification of the membership of each "population unit" in one type or another.

Types selected and their characteristics

The cell types selected, five (5) in number, are the following:

Type 1: VILLAGE (Common to Quebec and Ontario)

Usually situated at a crossroads, around which the population is more particularly concentrated. Generally small in land area, the village is characterized by high density. It is the supply point of a fairly extensive rural environment. This population concentration is often spread out along a few small secondary streets, all clustered around the central crossroads.

Type 2: TOWNSHIP MUNICIPALITY/ONTARIO

This type, which is unique to Ontario and also called "Ontario Uniform", is a fairly extensive rural "population unit", generally associated with lowland zones which are heavily agricultural; this is usually a township, with a road network which is regularly developed throughout its territory, and generally in grid form, and with a population which is distributed almost uniformly along the roads.

Type 3: DISPERSED RURAL (Common to Quebec and Ontario)

A rural tract which is generally fairly extensive, with a road network which is not uniformly distributed throughout the population unit. This type of rural unit is often associated with non-agricultural areas, and is sometimes quite distant from populous areas; it is infrequently associated with a very dense hub of population (village type). Its population is located along main roads with which a few secondary roads are associated cutting unsymmetrically through a topography which is often quite rough (elevations, cols, lakes, rivers and so forth). This type of tract generally lends itself well to the establishment of secondary residences.

Type 4: LINEAR RURAL/QUEBEC

This type, unique to Quebec, has the following characteristics:

- generally fairly extensive tract;

- the population is quite densely distributed along one or more main axes, leaving a large part of the tract unoccupied.

- usually associated with agricultural activity (or fishing on sea coasts).

- generally situated in lowlands.

Type 5: SEMI-RURAL (Common to Quebec and Ontario)

This type corresponds to denser development in rural areas. In terms of land area the range is from average to small, but is rarely as small as that of the "village" type. These semi-rural zones are either associated with an urban centre, or situated in totally rural surroundings, from which they differ by the type of household distribution. These zones do not usually form a municipal unit (or CS) in themselves; their population is generally distributed (quite densely) along the main axes and along rural roads or several secondary streets. These zones also include the dense rural parts extracted from urban municipalities.

Distribution of population units by type

The assignment of population units to each of the types mentioned above was done, as we have said, by taking into account the characteristics peculiar to each type, by analysing unit by unit the relevance of its association with one type or another. By returning to cartography by enumeration area, to topographical maps and to smaller-scale maps showing the entire land area of the provinces, it was possible to identify territorial predominances (road networks and other topographical features), thus making it feasible to assign a unit to a particular type.

SECTION 2.0: SELECTION OF TYPICAL CELLS AND THEIR DESCRIPTION

2.1: Selection of typical cells

When analysing the distribution of households and the concentration or dispersion of the population using cartographic documents (see step 2 in 1.2.2.2), a large number of units or cells were selected as representing faithfully each of the types (a total of 20 for Quebec, including 98 EAs; and a total of 22 for Ontario, including 141 EAs). The following are a few examples for each type, by province.

QUEBEC

Type 1: Village:

- East Broughton Station (Beauce): 018: 020
- Cookshire (Compton): 014: 166, 167
- St-André Avelin (Papineau): 021: 212, 213

Type 3: Dispersed rural:	
• Magog (Stanstead):	044: 001 - 005
• St-Rosaire (Arthabaska):	038: 151
• Cleveland (Richmond):	054: 062 - 064
Type 4: Linear rural:	
• St-Félicien (Lac St-Jean West):	056: 067, 068, 100, 102
• St-Théophile (Beauce):	004: 007
• St-Elphège and St-Antoine (Yamaska):	053: 104, 105
Type 5: Semi-rural:	
• New Richmond (Bonaventure):	008: 157, 161, 162
• Grand-Mère (Champlain):	063: 201 - 203
• Beauharnois (Beauharnois):	005: 153, 161

ONTARIO

Type 1: Village:	
• Ripley (Bruce):	004: 155
• Cookstown (Simcoe):	086: 314, 324
• Warren (Sudbury):	040: 099
Type 2: Township municipality:	
• Luther West (Wellington):	079: 165 - 167
• Williams West (Middlesex):	038: 359, 360
• South-West Oxford (Oxford):	050: 002 - 004, 066 - 066

Type 3: Dispersed rural:

• Glamorgan (Haliburton):	075:	271
• Pakenham (Lanark):	033:	115 - 117
• Ratter and Dunnet (Sudbury):	040:	008, 010

Type 5: Semi-rural:

• Gravenhurst (Muskoka):	052:	001 - 007, 015, 024
• Timmins (Cochrane):	073:	052 - 054, 062, 063, 101 - 104
• Kingston (Frontenac):	029:	254 - 257

After analysis of the base maps of the census enumerators (Statistics Canada, 1976) which had been placed at our disposal, it was possible to select for each type a few population units, made up of one or more contiguous and homogeneous EAs. For technical considerations (it was impossible to identify households), after we had set aside entire cells or a few EAs, the following cells were selected as being representative and typical of each of the types of cells or of spatial distribution of households:

Type 1: Village: Warren (Sudbury), Ontario

Type 2: Township municipality: South-West Oxford (Oxford), Ontario

Type 3: Dispersed rural: Cleveland (Richmond), Quebec

Type 4: Linear rural: St-Elphège and St-Antoine de la Baie-du-Febvre (Yamaska), Quebec

Type 5: Semi-rural: Kingston (Frontenac), Ontario

2.2: <u>Description of typical cells</u>

2.2.1: Type 1: Name: Warren (Sudbury), Ontario

Type : VILLAGE; Number of EAs: 1

Electoral constituency/EA	Total Population	Number of Households	Land Area (sq mi)	Population Density	Household Density
040: 009	686	191	1.66	413.25	115.06
TOTAL	686	191	1.66	413.25	115.06

2.2.2: Type 2: Name: South-West Oxford (Oxford), Ontario

Type: TOWNSHIP MUNICIPALITY; Number of EAs: 5

Electoral constituency/EA	Total Population	Number of Households	Land Area (sq mi)	Population Density	Household Density
050: 002	377	112	7.88	47.84	14.21
050: 003	549	171	8.84	62.10	19.34
050: 004	413	127	8.79	46.99	14.45
050: 065	402	111	13.26	30.32	8.37
050: 066	471	107	13.55	34.76	7.90
TOTAL	2212	628	52.32	42.28	12.00

2.2.3: Type 3: Name: Cleveland (Richmond), Quebec

Type: DISPERSED RURAL; Number of EAs: 3
(Note: Cleveland contains one additional EA)

Electoral constituency/EA	Total Population	Number of Households	Land Area (sq mi)	Population Density	Household Density
054: 062	513	134	23.27	22.05	5.76
054: 063	334	95	4.88	68.44	19.47
054: 064	432	119	18.82	22.95	6.32
TOTAL	1279	348	46.97	27.23	7.40

2.2.4 Type 4: St-Elphège and St-Antoine de la Baie-du-Febvre (Yamaska), Quebec

Type: LINEAR RURAL; Number of EAs: 2

Electoral constituency/EA	Total Population	Number of Households	Land Area (sq mi)	Population Density	Household Density
053: 104	338	84	15.57	21.71	5.39
053: 105	627	160	25.98	24.13	6.16
TOTAL	965	244	41.55	23.23	5.87

2.2.5: Type 5: Name: Kingston (Frontenac), Ontario

Type: SEMI-RURAL; Number of EAs: 4

Electoral constituency/EA	Total Population	Number of Households	Land Area (sq mi)	Population Density	Household Density
029: 254	307	86	2.30	133.48	37.79
029: 255	475	132	.82	579.27	160.98
029: 256	346	101	3.89	88.95	25.96
029: 257	530	158	3.22	164.60	49.07
TOTAL	1658	477	10.23	162.07	46.63

SECTION 3.0: MODEL USED TO APPLY THE TYPICAL CELL TO OTHER POPULATION UNITS OF THE SAME TYPE

3.1 Distribution of households according to types

The model is based on the principle that generally speaking, the distribution of the households of the population units will conform to the typical cell, representing a given group (see cartography, typical cells, appendix 4, and description of typical cells in 2.2.), but that it will be influenced by a function of the land area which it covers.

An individual tabulation for each type (and by province) was made, showing for specific density brackets of households, and in terms of the main land area ranges encountered in this type, giving basic information on the units in question: number, mean density, average land area, number of EAs, and so on (see appendix 3). To facilitate a study of these tabulations, we give below the distribution of the densities and land areas peculiar to each type, by province.

Province of Quebec

Type 1: Variation in densities: 4.05 - 2025 households/sq mi

Variation in land areas: 0.04 - 4.8 sq mi

Density brackets selected:

- Less than 150 households/sq mi
- from 150 to 300
- 300 or more

Land area brackets selected:

- Less than 0.50 sq mi
- from 0.50 to 1.75
- 1.75 or more

Type 3: Variation in densities: 0.25 - 26.0

Variation in land areas: 13.0 - 2214

Density brackets selected:

- Less than 2.5
- from 2.5 to 4.5
- 4.5 or more

Land area brackets selected:

- Less than 45
- from 45 to 90
- 90 or more

Type 4: Variation in densities: 1.0 - 56.0

Variation in land areas: 4.5 - 157

Density brackets:

- Less than 8.0
- from 8.0 to 13.0
- 13.0 or more

Land area brackets:

- Less than 18
- from 18 to 30
- 30 or more

Type 5: Variation in densities: 3.54 - 229

Variation in land areas: 1.12 - 39

Density brackets selected:

- Less than 26.0
- from 26 to 46
- 46 or more

Land area brackets selected:

- Less than 5.0
- from 5 to 8
- 8 or more

ONTARIO

Type 1: Variation in densities: 15.0 - 3867

Variation in land areas: 0.06 - 3.61

Density brackets selected:

- Less than 175
- from 175 to 400
- 400 or more

Land area brackets selected:

- Less than 0.85
- from 0.85 to 1.25
- 1.25 or more

Type 2: Variation in densities: 3.62 - 30.25

Variation in land areas: 8.99 - 260

Density brackets selected:

- Less than 7.5
- from 7.5 to 11.5
- 11.5 or more

Land area brackets selected:

- Less than 70
- from 70 to 100
- 100 or more

Type 3: Variation in densities: 0.24 - 21.0

Variation in land areas: 5.59 - 2285

Density brackets selected:

- Less than 2.10
- from 2.10 to 4.70
- 4.70 or more

Land area brackets selected:

- Less than 50
- from 50 to 85
- 85 or more

Type 5: Variation in densities: 1.89 - 708

Variation in land areas: 0.17 - 52

Density brackets selected:

- Less than 32
- from 32 to 75
- 75 or more

Land area brackets selected:

- Less than 3.5
- from 3.5 to 5.5.
- 5.5 or more

For each type a matrix was thus formed, and all the population units falling at the intersection of the land areas x_l and densities y_l were taken into account, the following information being noted:

1- <u>Population units overall</u>:

- Total number of population units
- Total population
- Total number of households
- Average land area of units
- Average number of households
- Average density of households per sq mi

2- <u>Enumeration areas (EAs)</u>

- Total number of EAs
- Average number of EAs per population unit
- Average number of households per EA
- Average land area of EAs

3.2 Description of model and its application

The model presupposes a choice x of receivers, made in advance, in terms of a typical cell, whose land area A and density D are known. For a given type, the above-described tabulation (see appendix 3) furnishes all the basic information on each of the categories of population units, thus making it possible to perform the calculations required in order to find the number of receivers necessary to meet the needs of the category in question.

Steps to be taken to find the number of receivers of a given category:

(1) FIRST STEP

By keeping the land area of the typical cell constant, find a new number x_1 of receivers, in terms of the density of households in the category selected.

> This step consists, in a sense, in transposing the density of the typical cell into that of the category selected; this transposition has an influence on the number x of receivers, according to the following conditions:

. For $D_1 < D$ [1] ie when the density of the new category is less than the density of the typical cell.

- $x_1 = x$, if $A \times D_1 \geq x$

  eg: if $x = 80$, $D_1 = 32$, $D = 40$, $A = 10$

  $10 \times 32 = 320 > 80$

  $x_1 = 80$

- $x_1 = A \times D_1$ if $A \times D_1 < x$

  eg: if $x = 80$, $D_1 = 7$, $D = 40$, $A = 10$

  $10 \times 7 = 70 < 80$

  $x_1 = 70$

. For $D_1 > D$ ie when the density of the new category is greater than that of the typical cell.

- According to the dispersion of households of the typical cell, we suggest: either keep the number x of receivers constant, then $x_1 = x$; or gradually increase (and in an inversely proportional way), the number of receivers as the density increases;

---

[1] D: Known density of typical cell

D_1: New density, ie that of category selected

A: Known land areas (in sq mi) of typical cell

A_1: Average land area of category selected

x: Number of receivers determined for the typical cell

x_1: Number of receivers according to the new household density of the category selected

x_2: New quantity of receivers applicable to each of the population units in the category selected.

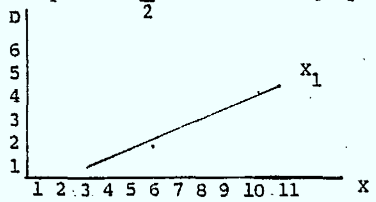
therefore:

(a) for typical cells whose households are uniformly dispersed or distributed throughout the tract:

$x_1 = x$;

(b) for cells with concentrated household density (eg: village and fringe area) apply whatever equation appears to be the most appropriate:

eg: if $D_1 = 2D$, $x_1 = x + \frac{x}{2}$ [1] (see graph hereunder)



(2) SECOND STEP

x_1 being found as a function of the new density D_1 of the category selected, find x_2 (new quantity of receivers), as a function of the average land area A_1 of the category concerned.

$$x_2 = \frac{A_1 \times x_1}{A}$$

where A = area of typical cell.

eg: for $A = 10$, $A_1 = 4.2$, $x_1 = 80$

$\frac{4.2 \times 80}{10} =$ 33.6 or 34 receivers

for $A_1 = 20$

$\frac{20 \times 80}{10} =$ 160 receivers

Note: The number of receivers is proportional to the increase or decrease in the land area, as with a constant household density, the number of households must increase or decrease with the land area.

[1] This equation is used only as a suggestion and the client may very well apply one which would, from his point of view, be closer to reality.

3.3: Observations on each of the typical cells and check of their representative character

3.3.1 Observations on the typical cells and their cartography

Type 1: - VILLAGE/WARREN (Sudbury) Ontario

Covering less than half of the territory of its EA, this village has its households distributed fairly densely in a fairly limited network of streets: 5 parallel streets, cut by an equal number of (generally shorter cross streets. The village is developed around two main axes, one of which is a secondary road and the other a more important road. Few households (about 20) are located away from the heart of the village, or are isolated from the main groupings.

This village is an exchange point for a fairly extensive tract. It is situated on the Canadian Pacific railway line.

Type 2: - TOWNSHIP MUNICIPALITY/SOUTH-WEST OXFORD (Oxford) Ontario

This unit including 5 EAs is mapped out on 4 sheets; its total area is 52.32 sq mi. The tract is divided into rural roads distributed uniformly in both directions throughout its area. The households are distributed almost equally along these roads, quite often grouped by small blocks; the frequency of households is less along the cross roads. There are also a few larger concentrations at various crossroads. The distance between the households or groups of households is generally from a quarter of a mile to one mile. Two more important roads cross this unit.

Type 3 - DISPERSED RURAL/CLEVELAND (Richmond), Quebec

Mapped an three different sheets, this cell including three EAs might be described as follows: over a relatively large area, the households on the one hand are distributed quite regularly along two main road axes leading to an urban centre, and on the other hand are spread out very sporadically over a network of ranges and rural roads, distributed asymmetrically throughout the tract. On these rural roads, there are occasional groupings of households; these households are rather isolated from one another (sometimes in groups of two or three) at distances which may vary from one quarter to three quarters of a mile.

Type 4 - <u>LINEAR RURAL/ST-ELPHEGE AND ST-ANTOINE (Yamaska), Quebec</u>

Mapped on a single sheet, this cell with 2 EAs and an area of 41.55 square miles presents the following characteristics: rows of households, distributed uniformly (generally quite close) along a few rural roads in the tract. Two larger groupings (village type) are to be noted; these are groupings with larger household densities over a short distance of road (one mile), without development of secondary streets.

Type 5 - <u>SEMI-RURAL/KINGSTON (Frontenac), Ontario</u>

This tract of 10.23 sq mi, including 4 EAs, is also mapped on four sheets. The households are densely distributed along a few major roads which cross this unit. There are also a few major residential developments over a relatively small space. Only a few households are a little farther apart (maximum of one half mile's distance).

3.3.2: <u>Check of representative character of typical cells, as a function of the population units of the various types of household distribution</u>

In order to measure or to find a relative rate of reliability of the household distribution model in terms of the typical cells, we proceeded with a visual cartographical check by sample. For each type, the cartography of a proportional percentage (in all cases, a minimum of 1% were drawn) of units (in most area and density brackets) was compared with that of each typical cell, and the results of this check are given below:

Type 1 - <u>VILLAGE</u>

<u>QUEBEC</u>

. Number of units: 375

. Sample: 8

Seven cases out of eight conform to the model; they all include a major development at an intersection of a main road and another rural road, and this development always includes a certain number of secondary streets. The development is generally at the crossroads itself, but sometimes occurs along the main road itself.

Only one case differs from the others because of the absence of secondary streets in the village; therefore, it consists only of a concentration of households at a crossroads.

ONTARIO

- Number of units: 232
- Sample: 5

Four fifths conform to the model and represent a development either at the intersection of two roads (one of which is a main road), or along a main road; in all cases we find a series of secondary streets.

Only one case differs from the model, a village made up of a few groupings or hubs of households (not concentrated at a road intersection), short distances apart (a maximum of one quarter mile).

Type 2 - TOWNSHIP MUNICIPALITY

- Number of units: 260
- Sample: 8

Four units conform to the model (uniform distribution and road network in grid form) and have a heavy concentration of households on 2 or 3 main roads; they also include 2 or 3 major hubs (or household groupings).

Three cases out of eight, which also conform to the model, have a heavy concentration of households on 2 or 3 main roads, but have only one or no major hub.

In one case however, the road network is very different from the original model, but we nevertheless find heavy concentrations along one main road. There are two major hubs or groupings of households. This unit is very different from the model because of the irregularity of its road network.

Type 3 - DISPERSED RURAL

QUEBEC

. Number of units: 622

. Sample: 6

Four cases out of six conform to the model because of their heavy concentration of households along one or two major roads; their road network is more regular. An important hub of households is found in each of these units, at a crossroads, and without any secondary streets.

Two units have a clearly dispersed road network, and we note a total absence of concentration along the main road.

ONTARIO

. Number of units: 318

. Sample: 9

Four cases out of nine conform to the model, and their households are concentrated along one or two main roads.

Three units feature wide dispersion of their households; we find one or two main roads scarcely populated.

We note in these units some small concentrations of households.

One unit is in the form of a concentrated hub of households and is isolated. It is an Indian reserve. The number of Indian reserves is 51 in type 3 in Ontario; we should not, however, conclude that all these units have the same configuration, but a good proportion, possibly as many as 50%, could have the sample characteristics.

One case has a more regular road network, and it has three concentrated hubs of households. We estimate at a maximum of 5% the number of units which fall into this category.

Type 4 - LINEAR RURAL (note that the accuracy of placement of households is ± 125' on the type 4 map)

QUEBEC

- Number of units: 418
- Sample: 6

Four cases out of six conform to the model: regular concentration of households along rural roads, a village without secondary streets.

Two units have a concentration along the main road, with greater residential development.

Type 5 - SEMI-RURAL

QUEBEC

- Number of units: 174
- Sample: 6

Three out of six units conform to the model, with concentration of households along a main road leading to a large town, and showing major residential development.

Two cases have a concentrated hub at an intersection of main roads.

One case is in the form of a residential development near a town.

ONTARIO

- Number of units: 166
- Sample: 5

Two cases conform to the model, with concentration of households along a main road leading to a large town, and showing major residential development.

Three cases have a concentrated hub at an intersection of main roads.

3.4 Special cases of population units

In this part, we shall specify the EAs excluded from the tabulation, as well as marginal cases and exceptions, which do not fit perfectly into the proposed model.

3.4.1: Enumeration areas and units excluded from the tabulation

More than 50 EAs per province (see table 3/Quebec and table 4/Ontario) have no households (or an insignificant number of households), while having a notable population figure. These are in several cases convents, hospitals, monasteries... It was impossible in these cases to calculate a household density, particularly since, in general, no land area was defined for these EAs. In almost all cases, we can imagine the entire population gathered at the same point (one or more related buildings), and for which a single receiver would probably be required. We should perhaps check these cases with Statistics Canada.

TABLE 3 ENUMERATION AREAS (EAs) EXCLUDED/

PROVINCE OF QUEBEC

Constituencies/ EAs	Total Population	Households
001 - 223	72	0
001 - 224	72	0
001 - 225	38	0
003 - 120	142	0
003 - 317	104	1
006 - 108	40	1
006 - 111	378	0
006 - 215	79	0
006 - 272	42	0
007 - 004	124	0
007 - 112	10	0
008 - 012	91	0
011 - 105	140	0
011 - 274	42	0
012 - 005	89	0
012 - 269	8	0
014 - 068	8	0
014 - 213	117	0
016 - 017	89	0
017 - 205	491	0
017 - 206	482	0
018 - 068	807	0
018 - 153	97	0
018 - 175	8	0

	Constituencies/ EAs	Total Population	Households
24	020 - 020	1	0
	020 - 105	93	0
	024 - 117	6	0
	025 - 172	124	0
	025 - 270	85	1
	026 - 117	53	0
	026 - 156	13	0
	026 - 210	102	0
	026 - 262	221	0
	026 - 312	400	0
	032 - 152	82	0
	035 - 021	1	0
	035 - 113	135	0
	038 - 012	14	0
	041 - 004	4	0
	041 - 058	30	0
	042 - 016	188	0
	044 - 020	285	0
	044 - 021	61	0
	044 - 317	80	3
	045 - 319	22	0
	050 - 057	15	0
	050 - 214	10	0

TABLE 3 (cont's)

051 - 352	266	0
063 - 061	6	0
066 - 003	255	0
066 - 010	109	0
066 - 057	2	0
068 - 020	15	0
069 - 116	124	0
069 - 358	609	0
071 - 067	57	0
071 - 263	132	0
073 - 222	170	0

TABLE 4 ENUMERATION AREAS (EAs) EXCLUDED/

PROVINCE OF QUEBEC

Constituencies/ EAs	Total Population	Households		Constituencies/ EAs	Total Population	Households
001 - 210	139	0	35	028 - 104	863	0
				028 - 223	161	0
004 - 158	6	0				
004 - 168	69	0		032 - 361	182	0
004 - 271	93	0				
				035 - 204	120	0
005 - 125	3	0				
005 - 213	17	0		038 - 020	5	0
				038 - 219	102	2
009 - 054	1	0		038 - 220	99	1
009 - 119	189	0		038 - 221	163	1
009 - 217	148	1		038 - 353	240	0
010 - 264	141	0		040 - 073	118	0
				040 - 123	40	0
012 - 167	74	4				
				043 - 206	224	4
013 - 107	305	0		043 - 305	73	0
014 - 019	110	0		050 - 209	78	0
014 - 167	150	0		050 - 221	60	0
014 - 217	159	0				
014 - 218	93	0		052 - 006	45	0
014 - 267	103	0		052 - 024	127	0
				052 - 120	1	0
016 - 166	93	2		052 - 267	72	0
016 - 316	123	0				
				053 - 219	226	0
017 - 310	118	0				
				054 - 516	54	4
026 - 154	306	0				
026 - 217	33	0		055 - 273	218	0
027 - 118	49	0				

TABLE 4 (cont'd)

058 - 024	434	0
058 - 076	83	0
058 - 152	274	0
058 - 256	324	0
059 - 120	15	0
062 - 170	118	0
067 - 303	291	3
069 - 217	11	0
071 - 077	15	0
071 - 272	69	0
073 - 021	57	4
079 - 360	60	1
086 - 271	155	0

Some population units had to be isolated because of failure to find any land area value; this in turn made it impossible to calculate a density, even if we had the population and household figures; these were:

QUEBEC	Constituency/ EA	Population	Households
Unit 24-9983	001: 256	326	55
Unit 24-9990	040: 271	364	108
	272	8	1
Unit 24-8081	050: 318	141	23
Unit 24-8082	050: 316	223	44
Unit 24-2069	011: 273	102	10
ONTARIO			
Unit 35-6092	005: 221	705	117

3.4.2: Marginal cases and extreme cases

Some units, with households and areas, were excluded as their classification in one type or another could not be justified.

These marginal cases were the following:

QUEBEC	Constituency/EA	Population	Households	Land Area	Pop Dens	Househ Dens
Unit 24-1590	006: 205	2	1	.79	2.53	1.27

ONTARIO	Constituency/EA	Population	Households	Land Area	Pop Dens	Household Dens
Unit 35-5292	005: 051	13	3	.94	12.77	3.19
Unit 35-5994	027: 061	6	1	4.00	1.50	0.25
Unit 35-4993	052: 314	8	2	.38	21.05	5.26

Finally, we feel that it is advisable to mention here extreme cases which, although they have been taken into account and included in the tabulations of the various types, are nevertheless units which, in our opinion, should be given special attention.

QUEBEC

Type 1

UNIT	NAME	CONSTITUENCY/ EA	POPULATION	HOUSE-HOLDS	LAND AREA	POP DENS.	HOUSEH. DENS.	NO. OF EA's
24-6342	Mont-Gabriel	026 : 155	12	6	1.48	8.11	4.05	1
24-2704	Ste-Anne-du-Lac	018 : 014	31	10	1.14	27.19	8.77	1
24-2331	Lac Poulin	004 : 061	7	4	0.42	16.67	9.52	1
24-8387	Winneway	067 : 055	228	41	0.04	5700.0	1025.0	1
24-7102	Les Cèdres	071 : 105	421	125	0.08	5262.5	1562.5	1
24-5012	Saint-Ours	053 : 170 171	742	243	0.12	6183.34	2025.0	2

Type 3 (Quebec - contd)

UNIT	NAME	CONSTITUENCY/ EA	POPULATION	HOUSE-HOLD	LAND AREA	POP DENS	HOUSEH. DENS.	NO. OF EA'S
24-9751	North Shore of Gulf of St. Lawrence	041: 002-009	4374	868	1587.29	2.76	0.55	7
24-8490	Abitibi, not incorporated as a municipality	001: 051,053-056,058, 059,061, 062,108, 201-205; 073: 003,006-009,113, 114,158, 160.	9988	2351	2213.33	4.51	1.06	24
24-8390	Témiscamingue, not incorporated as a municipality	067: 002,003 052,102-111	6954	1712	812.15	8.56	2.11	13

Type 4

24-3330	Bécancour	053: 004-008, 012,013. 015,017, 020.	5069	1414	156.62	32.36	9.03	11

Type 5

24-3239	Saint-Georges	063: 154.	50	15	4.24	11.79	3.54	1
24-3431	Victoriaville	038: 021,022, 122.	44	12	2.14	20.56	5.61	3

ONTARIO

Type 1

35-5680	Black River-Matheson	073: 006.	705	232	0.06	11,750.0	3866.67	1

Type 3

UNIT	NAME	CONSTITUENCY/ EA	POPULATION	HOUSE-HOLD	LAND AREA	POP. DENS.	HOUSEH. DENS.	NO. OF EA's
35-4990	Parry Sound not organized	052: 174, 201, 217, 251, 304-312.	4281	1436	2284.7	1.87	0.63	13
35-5490	Timiskaming not organized	072: 025, 072, 117, 120, 121, 206, 207, 224.	2425	698	830.57	2.92	0.84	8
35-5690	Cochrane, not organized	005: 013-016, 105, 106, 161-163, 204, 210-213.	4566	1164	1001.4	4.56	1.16	11
35-5890	Thunder Bay not organized	012: 011, 014, 015; 057: 001, 010-012, 019-021, 023; 071: 065, 102, 202, 207, 209, 210, 213, 214, 271, 272	4668	1484	1064.2	4.39	1.39	19
35-4890	Nipissing not organized	041: 022-025, 156, 157, 160- 162; 059: 156.	4277	1182	841.44	5.08	1.40	10
35-5290	Sudbury not organized	001: 061; 005: 056; 040: 011-017, 022, 024, 103, 125, 265; 072: 216.	6100	1745	1239.72	4.92	1.41	15
35-5790	Algoma not organized	001: 110, 111, 222, 224, 256, 258-267; 005: 068.	6651	1886	1311.62	5.07	1.44	16

Ontario - Type 3, Cont'd

UNIT	NAME	CONSTITUENCY/ EA	POPULATION	HOUSE-HOLD	LAND AREA	POP. DENS.	HOUSEH. DENS.	NO. OF EA's
35-6090	Kenora not organized	027: 106, 109-111, 113, 114, 203, 207-210, 261, 263; 071: 159-165, 218, 223, 225.	7948	2168	1204.45	6.60	1.80	23

Type 5

35-5912	Fort Frances	027: 019.	46	14	4.63	9.94	3.02	1

APPENDIX 1

Work Progress Report

February 10, 1978

CENTRE DE RECHERCHE EN AMENAGEMENT REGIONAL
UNIVERSITE DE SHERBROOKE

CHARACTERISTICS OF TYPICAL AREAS
HOUSEHOLD DISTRIBUTION

PROGRESS REPORT

This report will state the different steps undertaken since the beginning of the project, January the 5th, up to February 10th, 1978.

The project objectives as stated in the study proposal, will serve as a base for the description of the different steps or study phases.

1. Objective 1: Identify the different types of cells.
   This objective is completed and three types were identified, the first of which devides itself in two sub-types:

. type 1: Concentrated rural community
    a) Quebec sub-type: Parish community
    b) Ontario sub type: Township & village community

. type 2: Dispersed community

. type 3: Uniformely distributed community

The number of cells in each type has also been calculated and the cells identified:

. type 1	a)	243
	1 b)	115
. type 2		1018
. type 3		170

2. Objective 2: Determine a representative cell for each type.

Possible choices have already been determined and discussed with D.O.C. representatives. The final choice will depend on the availability of reliable mapping at Statistics Canada. Two to three communities were retained for each type.

Five cells will probably represent the four above-mentionned types:

- one for type 1 a) (Quebec)
- one for type 1 b) (Ontario)
- two for type 2 (one in Quebec, one in Ontario)
- one for type 1 (probably chosen in Ontario)

3. Objective 3: Geographic distribution of households

This will start immediatly when we receive the first sets of S.C. enumerator maps, from D.O.C.

4. Objective 4: Information presentation, and model preparation.

A model of household data per cell has already been drafted, and population, household and land area data are to be tabulated, as soon as we receive a computer tape from S.C.

We are actually preparing a geographical reference file for extracting, and for grouping the individual cells information, so that proper counts can be made. The final tabulations will give the number of cells of a certain type according to different household ranges, the total count of households in the category, as well as a population count; this for the different ranges of land area, so that the model be applied with the best chance of covering all community categories, and for greater accuracy.

5. Objective 5: Model checking; this step will take place after the final tabulations and complete model design. It is intended to sample a certain number of cells in each type and check the validity of the model.

All exceptions or awkward trends will be discarded from the final counts and will be pointed out as such.

Trip and Progress Report

(January 26/78 - February 2/78: G.D. Cormack and L.A. Mougeot)

Following the trip report, a copy of which is included herein, a new orientation has been given to the project. The choice of the typical cells will be reviewed and decided upon, based on the density criteria; for making this choice, we will rely on maps that will be supplied by Mr K. Denike (U.B.C.) (see page 7, ii, trip and Progress Report).

Project schedule

When we receive the above material, choice will be confirmed, and project will continue as previously scheduled. To be noted that before the orientation change, we had a 7 weeks lead time for the mapping process. We will do our best to proceed with the work as fast as possible when mapping material is in(see # 3 above).

To be noted also that the modelling process will necessarily change due to the new project orientation. Data extraction will probably be made impossible to execute due to the lack of individual cell identification in each type of cells.

PIERRE LACASSE/Project coordinator
C.R.A.R. - March 3rd, 1978

Appendix 2

Report of visit (26/1/78 - 2/2/78)

team from DOC (Ottawa)

Trip and Progress Report on Rural Household Distribution Contracts Jan. 26/78 - Feb. 2/78: G.D. Cormack and L.A. Mougeot

Objectives: To assist the four universities presently working on the "Rural Household Distribution" contracts through:

i) Personal contact, spending one day with each contractor.

ii) Receiving verbal progress reports and discussing present and anticipated difficulties.

iii) Providing details of the DOC in-house, follow-on work that will rely on the contractor's data.

iv) Introducing L. Mougeot to contractors and giving details of the assistance he can provide by accessing resource material in Ottawa, on request.

v) Co-ordinating research efforts of contractors.

i) Personal Contacts

a) U.B.C.: Project Director:
Dr. K. Denike (Ken)
Dept. of Geography
U.B.C.
Vancouver, B.C.
phone: work: 1-604-228-3077
home: 1-604-261-3424

Assistant (graduate student in geography):
Mr. Eric Vance
Dept. of Geography
U.B.C.
Vancouver, B.C.
phone: 1-604-228-2663

b) S.F.U. (note: although S.F.U. is not presently working on the "Rural Household Distribution" study, they recently completed a rural demography study for B.C. and are presently working on a study of TV penetration into rural Canada. They have the Canada-wide '76 e.a. population data and Canada-wide e.a. maps).

Principal Researcher:
Dr. Gail M. Martin
Research Director
Telecommunications Research Group
Communications Studies Dept.
Simon Fraser University
Burnaby, B.C. V5A 1S6
phone: 1-604-291-4694

Research Associate:

N. Jean McNulty
Research Associate, TRG
Communications Studies Dept.
S.F.U.

Senior Research Assistant:

Peter S. Anderson
Senior Research Assistant, TRG
Communications Studies Dept.
S.F.U.

Plus 2 or 3 student assistants.

c) U. of A.

Principal Research:

Dr. Ken Fairbairn
Dept. of Geography
The University of Alberta
Edmonton, Alta. T6G 1H4
phone: work: 1-403-432-4154
home: 1-403-466-1023

Assistant (graduate student in geography):

Deitrich Wittkowski
Dept. of Geography
U. of A.

d) Dalhousie U.

Principal Researcher:

Dr. K.L.M. Weldon (Larry)
Assistant Professor
Dept. of Preventive Medicine
Dalhousie University
Halifax, N.S.
phone: 1-902-424-3860 or
1-902-424-7080

Co-Researcher:

Dr. Leonard C. MacLean (Len)
Dept. of Preventive Medicine
Dalhousie U.

e) U. of Sherbooke

Principal Researcher:

Dr. Pierre Lacasse
Centre de Recherches en Aménagement Régional
Université de Sherbrooke
Québec, J1K 2R1
phone: 1-819-565-4504

Assistant (graduate student in geography):

Richard Fortin
Université de Sherbrooke

f) DOC

Communications Geography Studies Co-ordinator:
Laurent Mougeot
Rural Communications Program
DOC
300 Slater St.
Ottawa, Ont. K1A 0C8
phone: 1-613-995-0421 (Feb. '78)
1-613-593-6460 (after Feb.)

ii) Progress Reports

a) University of British Columbia

- Has considerable computer mapping expertise and have recently contributed to a comprehensive atlas for British Columbia.

- Good knowledge of location and spatial distribution theories**

- In their first attempt to create a composite map of all of the E.A.'s in the province, the researchers realized that, because of the different scales used by Stats Canada in the preparation of the E.A. maps, a great investment of time would be needed. The alternative route is to use the maps as they are by identifying the density of each E.A. within a specific range using different colours for each of the ranges. (eg. blue for a density between 1 and 10, red for 10 to 100...)

  This first step would provide a base for sampling the cells that are to be studied in depth. In the choice of these cells, a close look at the low scale topographic maps (1 to 50,000) is essential; factors such as spatial distribution of the households, physical constraints, and proximity (to urban centres) are some of the main criteria. Aerial photographs and the visitation record books will be the major information sources.

Some of the present and anticipated problems were also solved while visiting the contractor:

- The work could be speeded up and made more manageable if the centroids of all of the rural* E.A.'s are plotted on a map, and if these centroids are shown with an indication of population density, plotting by computer.

- The relation between population density and household density has been discussed, and we all agreed that the relationship between these two parameters was high enough that one is fairly representative of the other.

- Indian reservations are quite numerous in British Columbia. They might be distinct enough to constitute one type of cell.

* DOC RCP rural

** Ken Denike et. al., Christaller Central Places Structures, An Introductory Statement, Studies in Geography, Number 22, North Western University, Evanston Ill., 1977.

- Request for a new set of E.A. maps for the province since the first were damaged in transit.

- Finally, the contractor requested the names, telephone number and addresses of all the contractors involved in this project to facilitate co-operation and exchanges between the groups.

b) University of Alberta

The approach used by the contractor at U. of A. is somewhat similar to U.B.C. The population density is considered as the prime criterion in the choice of the cells. U. of A. also tried to produce a small scale composite map of the enumeration areas, by photographic means, but finally agreed that it would require too much time. Instead the maps were mounted on a wall. When they were told that the centroids of the enumeration areas were available on magnetic tape for computer mapping, the idea of using the computerized map as their first source for sampling the cells was appealing. Modelling is a major interest to U. of A. even though the present contract does not cover this topic. Dr. Fairbairn has very good expertise in the field of location models* and theory, while his assistant has strong mathematical interests.

Agreement was reached as to the usefulness of the enumeration maps and the visitation record book data which will be provided through DOC.

Ronald Whistance-Smith** is the map curator at the University Map Library. He is co-operating with the research group, and will assist other groups by lending or giving access to the aerial photograph collection. These photos cover Alberta in totality and extend into portions of British Columbia. Selected areas such as the lower Fraser Valley are also covered. The U. of A. collection will assist the U. of A. researchers in selecting their cells since the aerial photographs permit identification of virtually all buildings. The collection is not entirely up-to-date but is of obvious use on this contract.

c) Dalhousie University

The research group at Dalhousie selected a very different methodology, based on e.a. sampling rather than on characterization of rural tracts and selection of typical cells. Starting with the idea that household distribution is affected by different factors such as accessibility, proximity to an urban center and economic activity, the consideration of such factors will be the principal criteria in the eventual choice of typical cells. In order to expedite the initial choice, Dalhousie has adopted a unique approach of selecting about 48 enumeration areas that are different, the choice being based on:

- the extent of farming in the e.a.

- the population of the community on which the e.a. is centred.

- the proximity to a major urban centre.

- the presence of natural barriers (water, mountains)

* Ken J. Fairbairn and A.D. May, Geography of Central Places, A Review and Appraisal, Sidney, 1971.

** Phone no. (403) 432-4760

- the number of major through roads in the cell.

All of these factors are assessed from readily available data, especially topographic maps and Stats Canada information. The most typical enumeration areas are to be considered as cells and they will be described in detail. The DOC recommendation was that selected e.a.'s (from the 48) should be expanded up to cell size and that the remaining e.a.'s be discarded.

d) <u>Universite de Sherbrooke</u>

Starting from the geographical concept of spatial distribution, the contractor assumes that there are essentially three different types of cells:

1. Rural Community and Fringe Area.
   The nucleus community is a center of services, around which the fringe is spread in two different ways according to the province in which the cell is located:
   a) Ontario: fringe spreads uniformly along the numerous roads. (Township).
   b) Quebec: fringe of households spreads randomly around the core. (Parish).
   The difference is mainly due to the way the land was surveyed in these two provinces: Quebec uses the "range" system, while Ontario uses the "section".

2. Dispersed (without any regular pattern).
   This is the type of cell where no core is identifiable, and where the household dispersion is determined by physical constraints (eg. lakes) and/or irregularities in the road pattern.

3. In Proximity to an Urban Centre:
   Examples of this type of cell are: the areas immediately north of Port Hope and of Kingston.

All of the rural* enumeration areas have been clumped into cells according to their census consolidated subdivision code, and all of these cells have been classified into one of the three classes described above. Marginal cases might mean that a new category of cell would have to be considered.

Once all of the cells have been assigned to the above three classes, a tabulation matrix is made up to indicate the frequency of cells within a specific range of household density and population size (see Table 1).

Agreement has been reached with Sherbrooke on the format and quality of the maps to be presented in the final report (all other universities, please note).

<u>scale</u>:	1:50000, preferably 1:10000
<u>size</u>:	80 centimeters x 70 centimeters, maximum
<u>paper</u>:	drafting film, mylar
	Xerox-reproducible (as in contract)

* DOC RCP rural

iii) Follow-on Work

As mentioned during our visits we feel that all four groups should be knowledgeable of the use to which we will put the final reports. These four demographic studies will give us basic information that we can use to help us cost most of the presently envisaged rural communication systems for Canada. The information that is required from the four contractors is basically maps. There will be a need for us to interpret these maps in a variety of ways, for example, we would hope that we could generalize the data to give us estimates of such parameters as the number of households (within a designated linear density range) along roads in each of the four regions and the number of settlements having, say, 10 to 15 households within a radius of 1/4 mile in each of the four regions. Obviously, we will also be taking a close look at modelling and at data representaion alternatives.

On example of the usefulness of the studies is that they are essential for our costing of the ground segment of a satellite broadcast TV service. Such a service will no doubt involve a mix of single microwave TVRO's (TV receive only) units and of CATV systems, the latter being used only when households are close to each other. The importance of the number and size of cross-road communities and of the incidence and density of road-size households to these deliberations cannot be over-emphasized and, in fact, should be borne in mind by each of the four groups whenever they are confronted with having to make choices re areas and cells, in the present contracts.

iv) Communications Geography Studies Co-ordinator and Ottawa Resources Material

Details on Laurent Mougeot's duties were given to the researchers, and methods of handling requests were discussed. All of the contractors agreed on a pre-determined schedule for telephone calls during which they will inform the co-ordinator of any request and of major progress.

The main source of information until now has been Statistics Canada. The contact person at Stats Canada is Mr. André Gallant (tel. no.: 613-996-5254). Other potential sources will be listed soon and sent out to the contractors.

v) Co-ordination

All four groups have done creditable work in the short time that has elapsed since contract negotiations started. The noticeably increasing tempo of activities and the somewhat diverse approaches adopted by everyone have indicated to us (Laurent Mougeot and George Cormack) that tighter co-ordination is desireable. Therefore, it is proposed that all groups consider adopting the following methodology:

i) Obtain a map of their region that has the rural* e.a.'s indicated according to a four -colour dot system:
   a) red for S.C. rural, $1 < \rho < 10$
   b) blue for S.C. rural, $10 < \rho < 100$
   c) green for S.C. rural, $100 < \rho < 1000$
   d) yellow for S.C. urban, $1000 < N < 2500$

POP'N. PER E.A.	0-25 sq. miles		25.1-50 sq.miles		50.1-100 sq. mi.		100.1-150 sq. mi.		150.1-200 sq. mi.		200.1 + sq. mi.			
① 1-499			1											1
500-999	1		1		2									4
1000-1499			2		4		1							7
1500-1999					8		1							9
2000-2499			3		8		2		1					14
2500-2999			2		10		9		2					23
3000-3999			1		12		8				2			23
4000-4999					6		6		1					13
5000+					9		11		1					21
	1		10		59		38		5		2			→ 115
② 1-499	9		19		20		4		1		3			56
500-999	5		13		25		5		4		4			56
1000-1499	4		8		19		8		3		3			45
1500-1999	2		8		20		7		2		1			40
2000-2499	1		4		17		9		2		1			34
2500-2999			2		10		2							14
3000-3999			4		18		14				1			37
4000-4999			2		10		5				1			18
5000+	1		2		11		16		8		4			42
	22		62		150		70		20		18			→ 342
③ 1-499	2	1	2	2							1		5	3
500-999	1	1			2	2							3	3
1000-1499	2	2	1	1	1				1		1	1	6	4
1500-1999	2	1	2	1	2								6	2
2000-2499	2	1	1	1	1								4	2
2500-2999					2	1							2	1
3000-3999	1		6	4	1	1	3	1	2	2	2	1	15	9
4000-4999			2	2	1	1					1	1	4	4
5000+	1		4	4	9	8	10	2	2		6	6	32	20
Quebec	11	6	18	15	19	13	13	3	5	2	11	7	→ 77	→ 48

TABLE 1

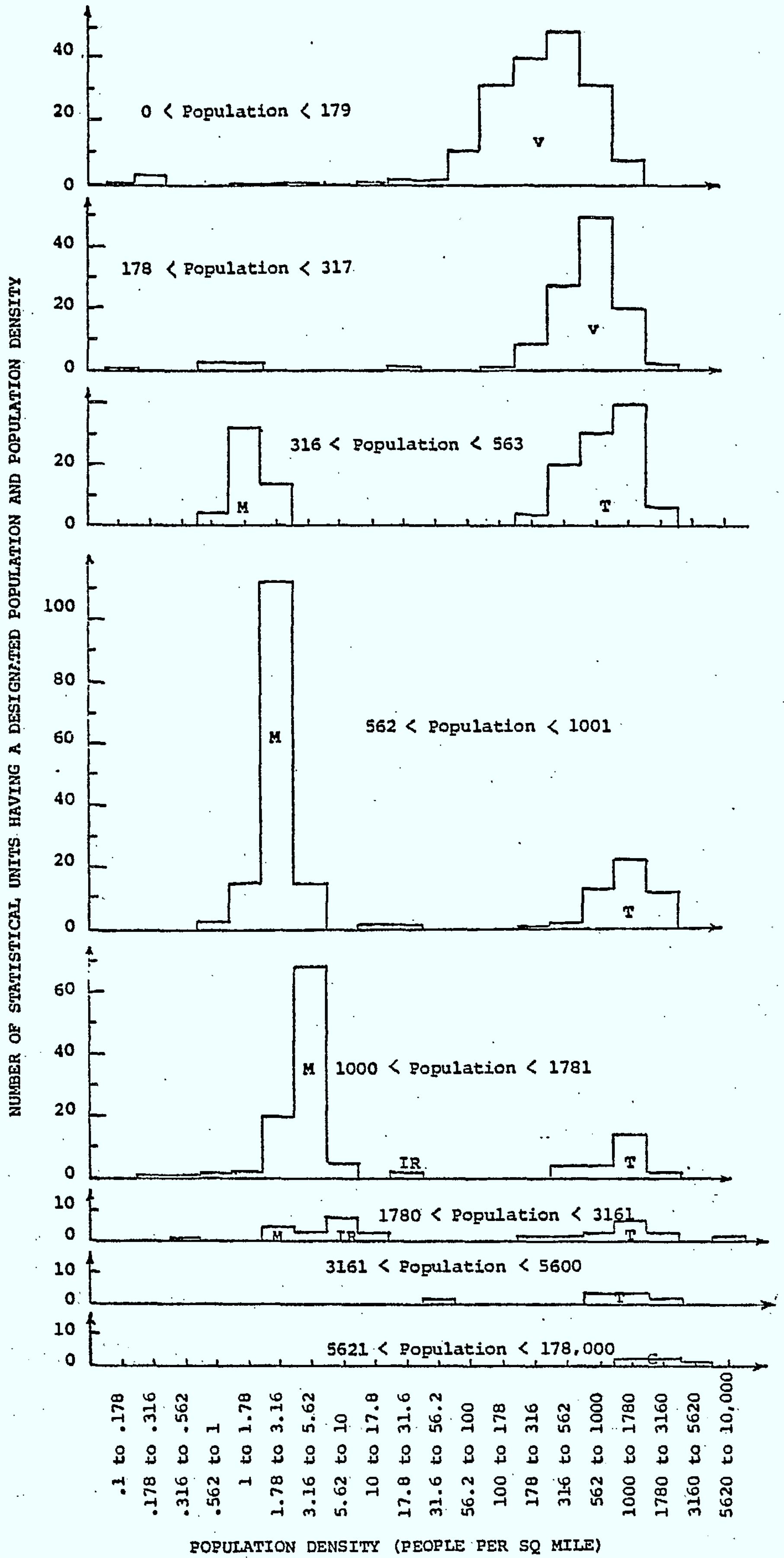


Figure : The size and density of municipalities (M), cities(C), towns(T), villages(V), and indian reservations (IR) in Saskatchewan (1971 Census).

The attached 1971 census graph for Saskatchewan appears to indicate that (a) above will pick up the scattered populace, (b) is a catch-all group that will include small market gardeners and wealthy ruralites having 2 acres or so of land and (c) should comprise all towns and villages. Such 3 colour mapping will give about 7 combinations of colours. Thus, about 7 rural tracts are definable and each university should find it a relatively easy job to outline the boundaries of the rural tracts of interest. Of course, not only colour mix can be used for defining a rural tract but also in some instances the density of dots or the relative number might be relevant. In any case, the dot maps should help all persons to define the rural tracts of interest. The next problem is to choose a typical area, i.e. a typical cell, that is typical for the tract containing that cell. Such a cell might consist of an entire central place plus controlled surrounding area (i.e. a farm city region), or might be just a small angular portion of such an area or maybe a single community or 2 or 3 contiguous e.a.'s. Of course, the dot map is only an adjunct to your work.

ii) Ken Denike (U.B.C.) has tentatively agreed to supply the above maps to each contractor subject to DOC/UBC financial arrangements and we are proceeding at the fastest possible rate to get these maps delivered to everybody. Should you wish a finer stratification than the above, we still have time to accommodate you and would appreciate receiving your comments by telephone, although this matter will likely be clarified by the time you receive this report.

APPENDIX 3

HOUSEHOLD DISTRIBUTION

TABLES

(By province and by type)

RDRC, UNIVERSITY OF SHERBROOKE 15/06/78
QUEBEC - TYPE 1

MEANING OF VARIABLES (BY CELL)

1 - Number of units
2 - Total population
3 - Number of households
4 - Average land area (unit)
5 - Average of households (unit)
6 - Household density (unit)
7 - Number of EAs
8 - Average number of EAs (unit)
9 - Average number of households per EA
10 - Average area of an EA

HOUSEHOLD DENSITY		LAND AREAS -DE 0.50	LAND AREAS DE 0.50 A 1.75	LAND AREAS 1.75 ET +
-DE 150.00	1=	5.00	52.00	85.00
	2=	226.00	21777.00	76086.00
	3=	78.00	5783.00	20978.00
	4=	0.35	1.21	2.77
	5=	15.60	111.21	246.80
	6=	44.57	92.04	89.16
	7=	5.00	53.00	126.00
	8=	1.00	1.02	1.48
	9=	15.60	109.11	166.49
	10=	0.35	1.19	1.87
DE 150.00 A 300.00	1=	9.00	80.00	21.00
	2=	2248.00	67017.00	36556.00
	3=	597.00	18511.00	10288.00
	4=	0.29	1.06	2.39
	5=	66.33	231.39	489.90
	6=	226.14	218.11	205.35
	7=	9.00	104.00	52.00
	8=	1.00	1.30	2.48
	9=	66.33	177.99	197.85
	10=	0.29	0.82	0.96
300.00 ET +	1=	55.00	64.00	4.00
	2=	36929.00	89624.00	8631.00
	3=	10516.00	25640.00	2660.00
	4=	0.28	0.92	1.96
	5=	191.20	400.63	665.00
	6=	684.64	437.32	338.42
	7=	66.00	126.00	14.00
	8=	1.20	1.97	3.50
	9=	159.33	203.49	190.00
	10=	0.23	0.47	0.56

Total of units	375.
Total number of EAs	555.
Total of households	95051.
Total population	339094.
Average land area (unit)	1.385
Average household density (unit)	183.027

RDRC, UNIVERSITY OF SHERBROOKE
QUEBEC - TYPE 3

15/06/78

MEANING OF VARIABLES (BY CELL)

1 - Number of units
2 - Total population
3 - Number of households
4 - Average land area (unit)
5 - Average of households (unit)
6 - Household density (unit)
7 - Number of EAs
8 - Average number of EAs (unit)
9 - Average number of households per EA
10 - Average area of an EA

LAND AREAS

HOUSEHOLD DENSITY	-DE 45.00	DE 45.00 A 90.00	90.00 ET +
-DE 2.50	1= 37.00	1= 76.00	1= 73.00
	2= 8344.00	2= 32049.00	2= 64222.00
	3= 1937.00	3= 7906.00	3= 15455.00
	4= 30.17	4= 64.61	4= 198.44
	5= 52.35	5= 104.03	5= 211.71
	6= 1.74	6= 1.61	6= 1.07
	7= 38.00	7= 84.00	7= 145.00
	8= 1.03	8= 1.11	8= 1.99
	9= 50.97	9= 94.12	9= 106.59
	10= 29.37	10= 58.45	10= 99.91
DE 2.50 A 4.50	1= 122.00	1= 74.00	1= 17.00
	2= 61306.00	2= 60824.00	2= 30556.00
	3= 14808.00	3= 15057.00	3= 8096.00
	4= 33.98	4= 60.93	4= 143.03
	5= 121.38	5= 203.47	5= 476.24
	6= 3.57	6= 3.34	6= 3.33
	7= 147.00	7= 136.00	7= 64.00
	8= 1.20	8= 1.84	8= 3.76
	9= 100.73	9= 110.71	9= 126.50
	10= 28.20	10= 33.15	10= 37.99
4.50 ET +	1= 161.00	1= 51.00	1= 11.00
	2=143354.00	2= 77328.00	2= 44251.00
	3= 36785.00	3= 19787.00	3= 11513.00
	4= 28.81	4= 56.73	4= 150.13
	5= 228.48	5= 387.98	5= 1046.64
	6= 7.93	6= 6.84	6= 6.97
	7= 296.00	7= 151.00	7= 81.00
	8= 1.84	8= 2.96	8= 7.36
	9= 124.27	9= 131.04	9= 142.14
	10= 15.67	10= 19.16	10= 20.39

Total of units	622.
Total number of EAs	1142.
Total of households	131344.
Total population	522234.
Average land area (unit)	65.567
Average household density (unit)	[illegible].221

RDRC, UNIVERSITY OF SHERBROOKE 15/06/78
QUEBEC - TYPE 4

MEANING OF VARIABLES (BY CELL)

1 - Number of units
2 - Total population
3 - Number of households
4 - Average land area (unit)
5 - Average of households (unit)
6 - Household density (unit)
7 - Number of EAs
8 - Average number of EAs (unit)
9 - Average number of households per EA
10 - Average area of an EA

LAND AREAS

HOUSEHOLD DENSITY	-DE 18.00	DE 18.00 A 30.00	30.00 ET +
-DE 8.00	1= 18.00	1= 61.00	1= 53.00
	2= 6557.00	2= 35621.00	2= 46991.00
	3= 1560.00	3= 8773.00	3= 11270.00
	4= 14.76	4= 24.08	4= 39.85
	5= 86.67	5= 143.90	5= 212.64
	6= 5.87	6= 5.98	6= 5.34
	7= 19.00	7= 81.00	7= 97.00
	8= 1.06	8= 1.33	8= 1.83
	9= 82.11	9= 108.37	9= 116.19
	10= 13.98	10= 18.13	10= 21.77
DE 8.00 A 13.00	1= 42.00	1= 63.00	1= 46.00
	2= 21444.00	2= 61771.00	2= 75842.00
	3= 5443.00	3= 15625.00	3= 19884.00
	4= 12.68	4= 24.61	4= 43.35
	5= 129.60	5= 248.02	5= 432.26
	6= 10.22	6= 10.08	6= 9.97
	7= 50.00	7= 119.00	7= 155.00
	8= 1.19	8= 1.89	8= 3.37
	9= 108.86	9= 131.30	9= 128.28
	10= 10.65	10= 13.03	10= 12.86
13.00 ET +	1= 70.00	1= 47.00	1= 18.00
	2= 68081.00	2= 75740.00	2= 41189.00
	3= 18580.00	3= 19998.00	3= 11135.00
	4= 12.29	4= 22.64	4= 38.10
	5= 265.43	5= 425.49	5= 618.61
	6= 21.59	6= 18.79	6= 16.24
	7= 127.00	7= 131.00	7= 70.00
	8= 1.81	8= 2.79	8= 3.89
	9= 146.30	9= 152.66	9= 159.07
	10= 6.78	10= 8.12	10= 9.80

Total of units	418.
Total number of EAs	849.
Total of households	112273.
Total population	433241.
Average land area (unit)	25.201
Average household density (unit)	10.658

RDRC, UNIVERSITY OF SHERBROOKE
QUEBEC - TYPE 5

15/06/78

MEANING OF VARIABLES (BY CELL)

1 - Number of units
2 - Total population
3 - Number of households
4 - Average land area (unit)
5 - Average of households (unit)
6 - Household density (unit)
7 - Number of EAs
8 - Average number of EAs (unit)
9 - Average number of households per EA
10 - Average area of an EA

LAND AREAS

HOUSEHOLD DENSITY	-DE 5.00	DE . 5.00 A 8.00	8.00 ET +
-DE 26.00	1= 19.00	1= 20.00	1= 21.00
	2= 3733.00	2= 6784.00	2= 23815.00
	3= 960.00	3= 1826.00	3= 6246.00
	4= 3.80	4= 6.32	4= 15.43
	5= 50.53	5= 91.30	5= 297.43
	6= 13.29	6= 14.44	6= 19.28
	7= 23.00	7= 21.00	7= 46.00
	8= 1.21	8= 1.05	8= 2.19
	9= 41.74	9= 86.95	9= 135.78
	10= 3.14	10= 6.02	10= 7.04
DE 26.00 A 46.00	1= 22.00	1= 21.00	1= 15.00
	2= 12048.00	2= 17852.00	2= 20474.00
	3= 3102.00	3= 4639.00	3= 5513.00
	4= 3.84	4= 6.02	4= 10.81
	5= 141.00	5= 220.90	5= 367.53
	6= 36.68	6= 36.67	6= 34.00
	7= 23.00	7= 29.00	7= 30.00
	8= 1.05	8= 1.38	8= 2.00
	9= 134.87	9= 159.97	9= 183.77
	10= 3.68	10= 4.35	10= 5.41
46.00 ET +	1= 23.00	1= 24.00	1= 9.00
	2= 22442.00	2= 46113.00	2= 34361.00
	3= 6266.00	3= 12533.00	3= 9354.00
	4= 3.95	4= 6.41	4= 13.71
	5= 272.43	5= 522.21	5= 1039.33
	6= 69.00	6= 81.40	6= 75.79
	7= 37.00	7= 68.00	7= 50.00
	8= 1.61	8= 2.83	8= 5.56
	9= 169.35	9= 184.31	9= 187.08
	10= 2.45	10= 2.26	10= 2.47

Total of units	174.
Total number of EAs	327.
Total of households	50439.
Total population	187622.
Average land area (unit)	7.265
Average household density (unit)	39.903

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MEANING OF VARIABLES (BY CELL)

1 - Number of units
2 - Total population
3 - Number of households
4 - Average land area (unit)
5 - Average of households (unit)
6 - Household density (unit)
7 - Number of EAs
8 - Average number of EAs (unit)
9 - Average number of households per EA
10 - Average area of an EA

HOUSEHOLD DENSITY	LAND AREAS: -DE 0.85	DE 0.85 A 1.25	1.25 ET +
-DE 175.00	1= 12.00 2= 2273.00 3= 610.00 4= 0.53 5= 50.83 6= 95.16 7= 12.00 8= 1.00 9= 50.83 10= 0.53	1= 20.00 2= 8373.00 3= 2461.00 4= 1.02 5= 123.05 6= 120.64 7= 20.00 8= 1.00 9= 123.05 10= 1.02	1= 44.00 2= 33409.00 3= 10253.00 4= 2.00 5= 233.02 6= 116.49 7= 62.00 8= 1.41 9= 165.37 10= 1.42
DE 175.00 A 400.00	1= 31.00 2= 19394.00 3= 6024.00 4= 0.68 5= 194.32 6= 286.58 7= 35.00 8= 1.13 9= 172.11 10= 0.60	1= 21.00 2= 17348.00 3= 5793.00 4= 1.00 5= 275.86 6= 276.78 7= 30.00 8= 1.43 9= 193.10 10= 0.70	1= 26.00 2= 36424.00 3= 11775.00 4= 1.68 5= 452.88 6= 269.76 7= 59.00 8= 2.27 9= 199.58 10= 0.74
400.00 ET +	1= 48.00 2= 49283.00 3= 16286.00 4= 0.55 5= 339.29 6= 611.80 7= 84.00 8= 1.75 9= 193.88 10= 0.32	1= 26.00 2= 44205.00 3= 14962.00 4= 1.00 5= 575.46 6= 576.35 7= 71.00 8= 2.73 9= 210.73 10= 0.37	1= 4.00 2= 8363.00 3= 2885.00 4= 1.48 5= 721.25 6= 486.51 7= 11.00 8= 2.75 9= 262.27 10= 0.54

Total of units	232.
Total number of EAs	384.
Total of households	71049.
Total population	219072.
Average land area (unit)	1.116
Average household density (unit)	274.365

RDRC, UNIVERSITY OF SHERBROOKE — 16/06/78

ont. - TYPE 2

MEANING OF VARIABLES (BY CELL)

1 - Number of units
2 - Total population
3 - Number of households
4 - Average land area (unit)
5 - Average of households (unit)
6 - Household density (unit)
7 - Number of EAs
8 - Average number of EAs (unit)
9 - Average number of households per EA
10 - Average area of an EA

HOUSEHOLD DENSITY		LAND AREAS -DE 70.00	DE 70.00 A 100.00	100.00 ET +
-DE 7.50	1=	15.00	30.00	35.00
	2=	18268.00	52880.00	77622.00
	3=	5161.00	14885.00	22143.00
	4=	59.44	83.84	114.62
	5=	344.07	496.17	632.66
	6=	5.79	5.92	5.52
	7=	44.00	130.00	187.00
	8=	2.93	4.33	5.34
	9=	117.30	114.50	118.41
	10=	20.26	19.35	21.45
DE 7.50 A 11.50	1=	28.00	31.00	27.00
	2=	40732.00	86251.00	118071.00
	3=	11472.00	24436.00	33977.00
	4=	46.22	87.46	131.79
	5=	409.71	788.26	1258.41
	6=	8.86	9.01	9.55
	7=	86.00	179.00	243.00
	8=	3.07	5.77	9.00
	9=	133.40	136.51	139.82
	10=	15.05	15.15	14.64
11.50 ET +	1=	35.00	30.00	29.00
	2=	94996.00	144249.00	205527.00
	3=	26831.00	40889.00	57935.00
	4=	43.41	82.32	139.13
	5=	766.60	1362.97	1997.76
	6=	17.66	16.56	14.36
	7=	192.00	283.00	415.00
	8=	5.49	9.43	14.31
	9=	139.74	144.48	139.60
	10=	7.91	8.73	9.72

Total of units	260.
Total number of EAs	1759.
Total of households	237729.
Total population	838596.
Average land area (unit)	88.486
Average household density (unit)	10.333

MEANING OF VARIABLES (BY CELL)

1 - Number of units
2 - Total population
3 - Number of households
4 - Average land area (unit)
5 - Average of households (unit)
6 - Household density (unit)
7 - Number of EAs
8 - Average number of EAs (unit)
9 - Average number of households per EA
10 - Average area of an EA

LAND AREAS

HOUSEHOLD DENSITY		-DE 50.00	DE 50.00 A 85.00	85.00 ET +
-DE 2.10	1=	26.00	33.00	49.00
	2=	3355.00	11385.00	74046.00
	3=	908.00	3256.00	21446.00
	4=	25.92	71.35	369.69
	5=	34.92	98.67	437.67
	6=	1.35	1.38	1.18
	7=	26.00	33.00	203.00
	8=	1.00	1.00	4.14
	9=	34.92	98.67	105.65
	10=	25.92	71.35	89.23
DE 2.10 A 4.70	1=	36.00	31.00	40.00
	2=	14030.00	22816.00	61119.00
	3=	3628.00	6712.00	18379.00
	4=	28.97	70.14	146.46
	5=	100.78	216.52	459.47
	6=	3.48	3.09	3.14
	7=	40.00	49.00	141.00
	8=	1.11	1.58	3.52
	9=	90.70	136.98	130.35
	10=	26.07	44.37	41.55
4.70 ET +	1=	49.00	23.00	31.00
	2=	36361.00	45408.00	91034.00
	3=	10208.00	12920.00	26414.00
	4=	25.19	64.75	117.45
	5=	208.33	561.74	852.06
	6=	8.27	8.68	7.25
	7=	81.00	85.00	197.00
	8=	1.65	3.70	6.35
	9=	126.02	152.00	134.08
	10=	15.24	17.52	18.48

Total of units	318.
Total number of EAs	855.
Total of households	103871.
Total population	359554.
Average land area (unit)	115.040
Average household density (unit)	2.839

RDRC, UNIVERSITY OF SHERBROOKE 16/06/78

ont. - TYPE 5

MEANING OF VARIABLES (BY CELL)

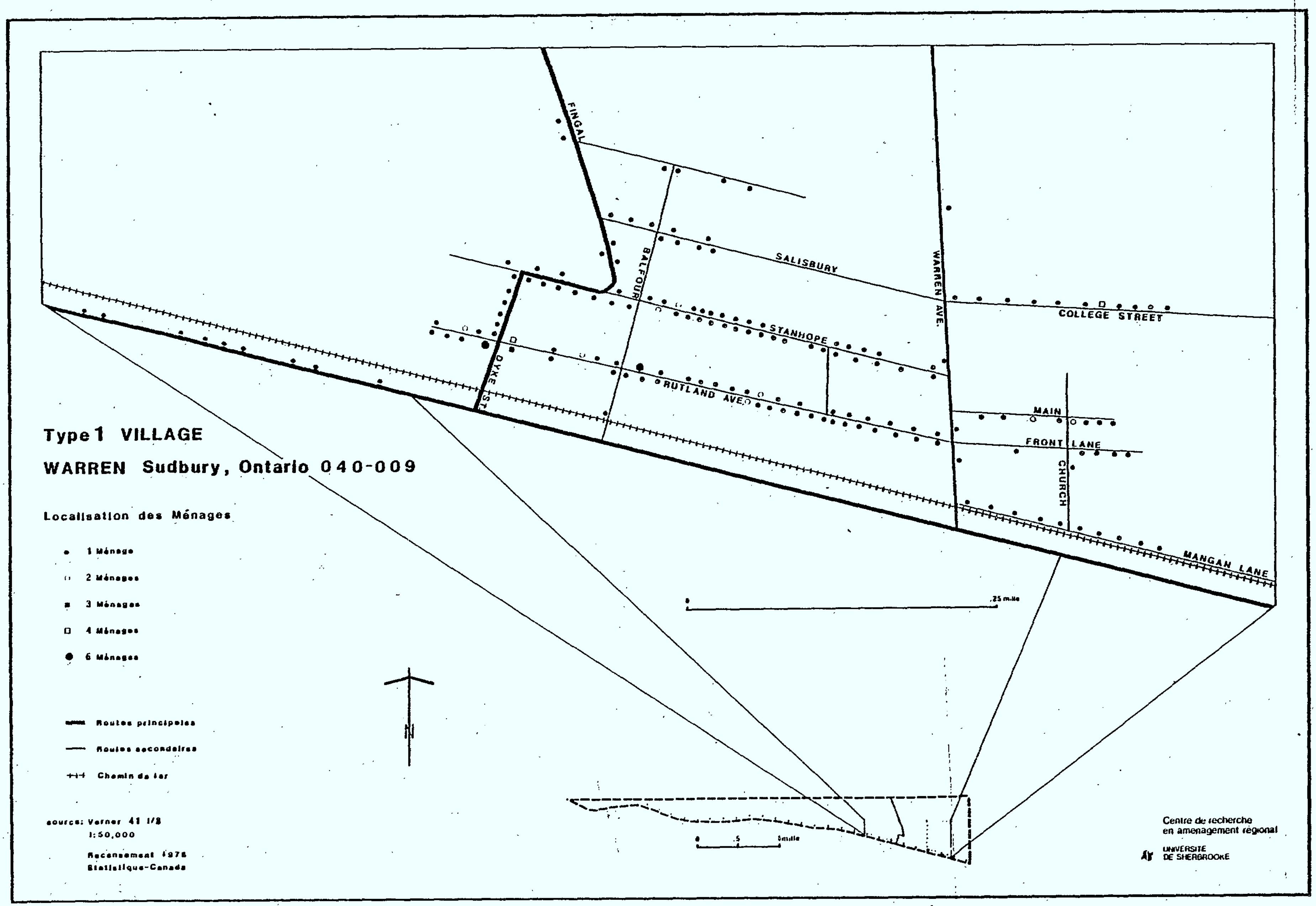
1 - Number of units
2 - Total population
3 - Number of households
4 - Average land area (unit)
5 - Average of households (unit)
6 - Household density (unit)
7 - Number of EAs
8 - Average number of EAs (unit)
9 - Average number of households per EA
10 - Average area of an EA

HOUSEHOLD DENSITY		LAND AREAS -DE 3.50	DE 3.50 A 5.50	5.50 ET +
-DE 32.00	1=	18.00	11.00	19.00
	2=	2506.00	2830.00	23898.00
	3=	595.00	806.00	6763.00
	4=	2.27	4.17	15.34
	5=	33.06	73.27	355.95
	6=	14.58	17.59	23.21
	7=	20.00	11.00	52.00
	8=	1.11	1.00	2.74
	9=	29.75	73.27	130.06
	10=	2.04	4.17	5.60
DE 32.00 A 75.00	1=	20.00	16.00	25.00
	2=	9833.00	14293.00	52679.00
	3=	2763.00	4240.00	15713.00
	4=	2.66	4.66	13.74
	5=	138.15	265.00	628.52
	6=	51.91	56.87	45.73
	7=	23.00	26.00	96.00
	8=	1.15	1.63	3.84
	9=	120.13	163.08	163.68
	10=	2.31	2.87	3.58
75.00 ET +	1=	28.00	9.00	20.00
	2=	39201.00	14733.00	89970.00
	3=	11078.00	4375.00	26276.00
	4=	2.10	4.52	11.69
	5=	395.64	486.11	1313.80
	6=	188.63	107.52	112.36
	7=	65.00	24.00	148.00
	8=	2.32	2.67	7.40
	9=	170.43	182.29	177.54
	10=	0.90	1.70	1.58

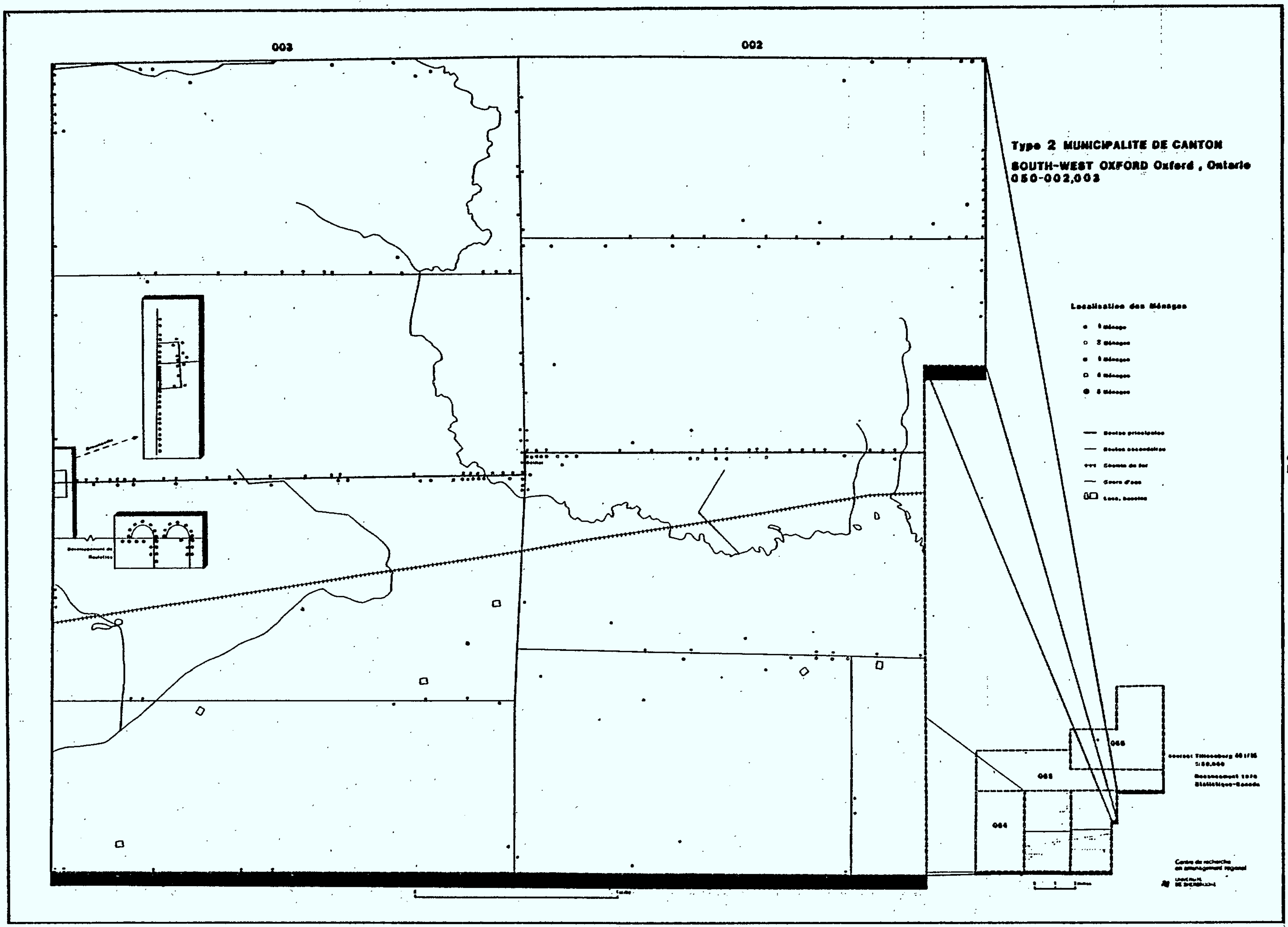
Total of units	166.
Total number of EAs	465.
Total of househods	72609.
Total population	249943.
Average land area (unit)	7.125
Average household density (unit)	61.393

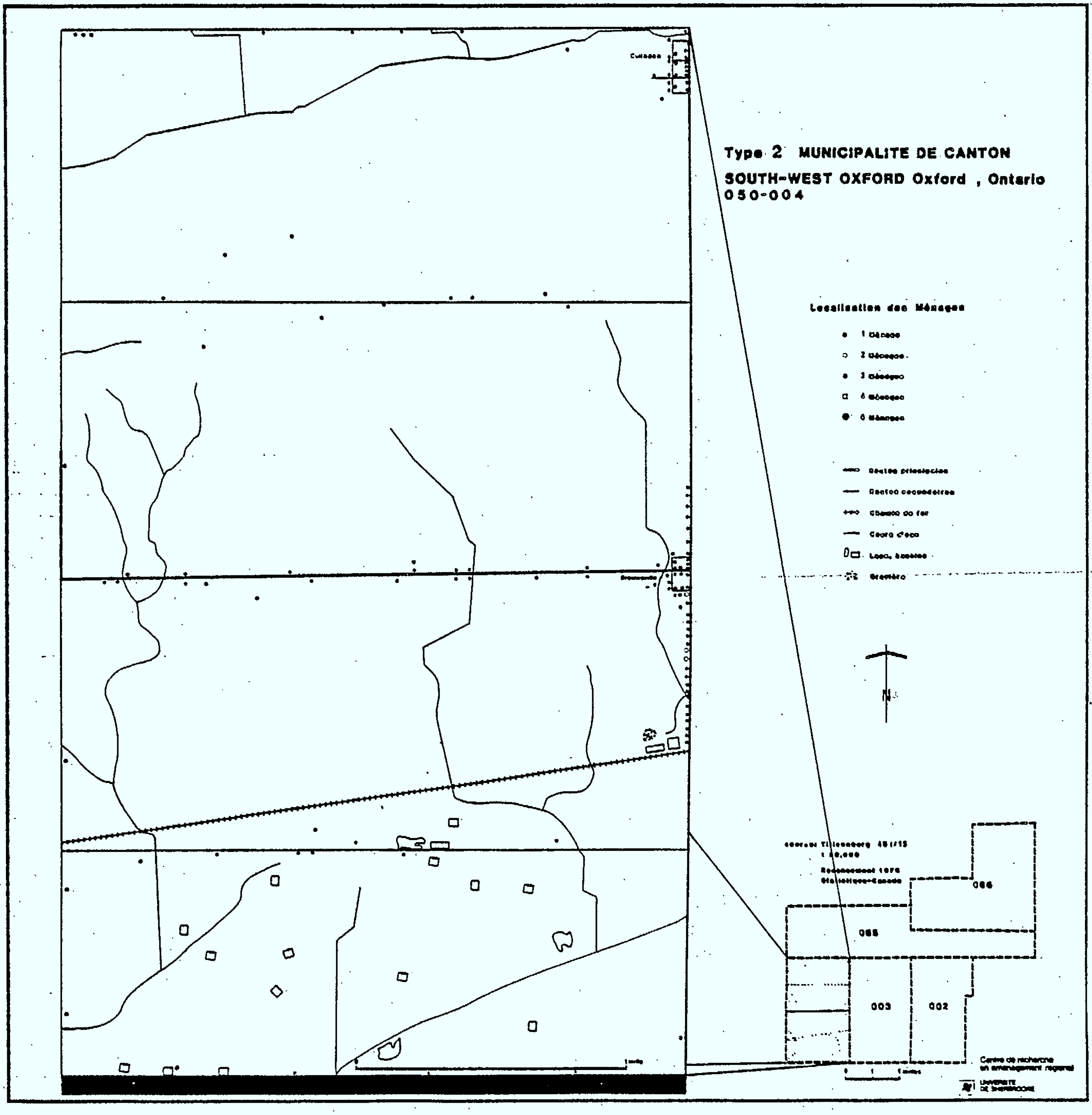
APPENDIX 4

CARTOGRAPHY OF TYPICAL CELLS



Type 1 VILLAGE
WARREN Sudbury, Ontario 040-009
Localisation des Ménages
1 Ménage
2 Ménages
3 Ménages
4 Ménages
6 Ménages
Routes principales
Routes secondaires
Chemin de fer
source: Verner 41 I/8
1:50,000
Recensement 1976
Statistique-Canada
FINGAL
SALISBURY
BALFOUR
WARREN AVE.
COLLEGE STREET
STANHOPE
DYKE ST.
RUTLAND AVE.
MAIN
FRONT LANE
CHURCH
MANGAN LANE
.25 mille
Centre de recherche
en amenagement régional
UNIVERSITE
DE SHERBROOKE


003
002
Type 2 MUNICIPALITE DE CANTON
SOUTH-WEST OXFORD Oxford , Ontario
050-002,003
066
065
064
Centre de recherche
en aménagement régional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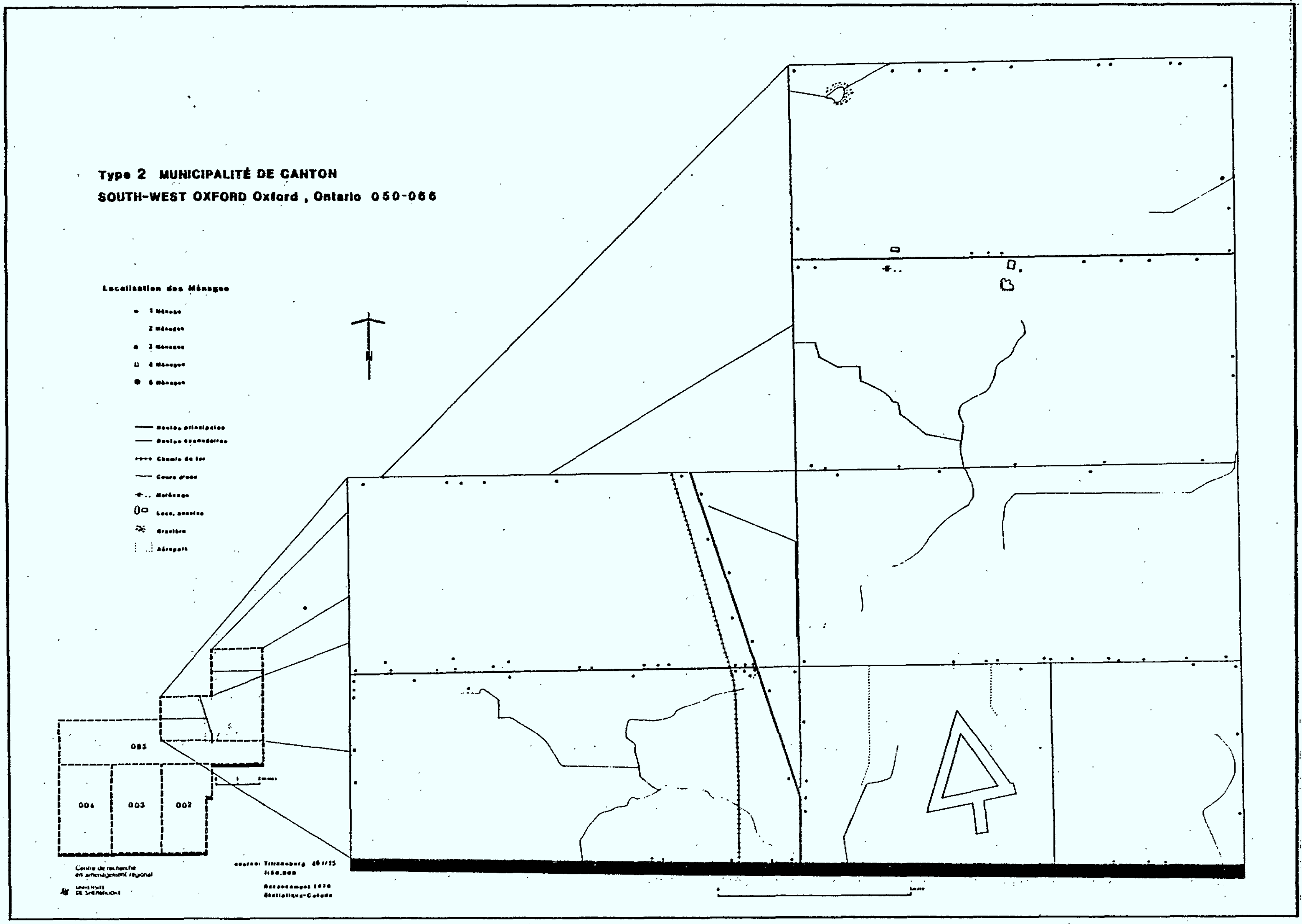
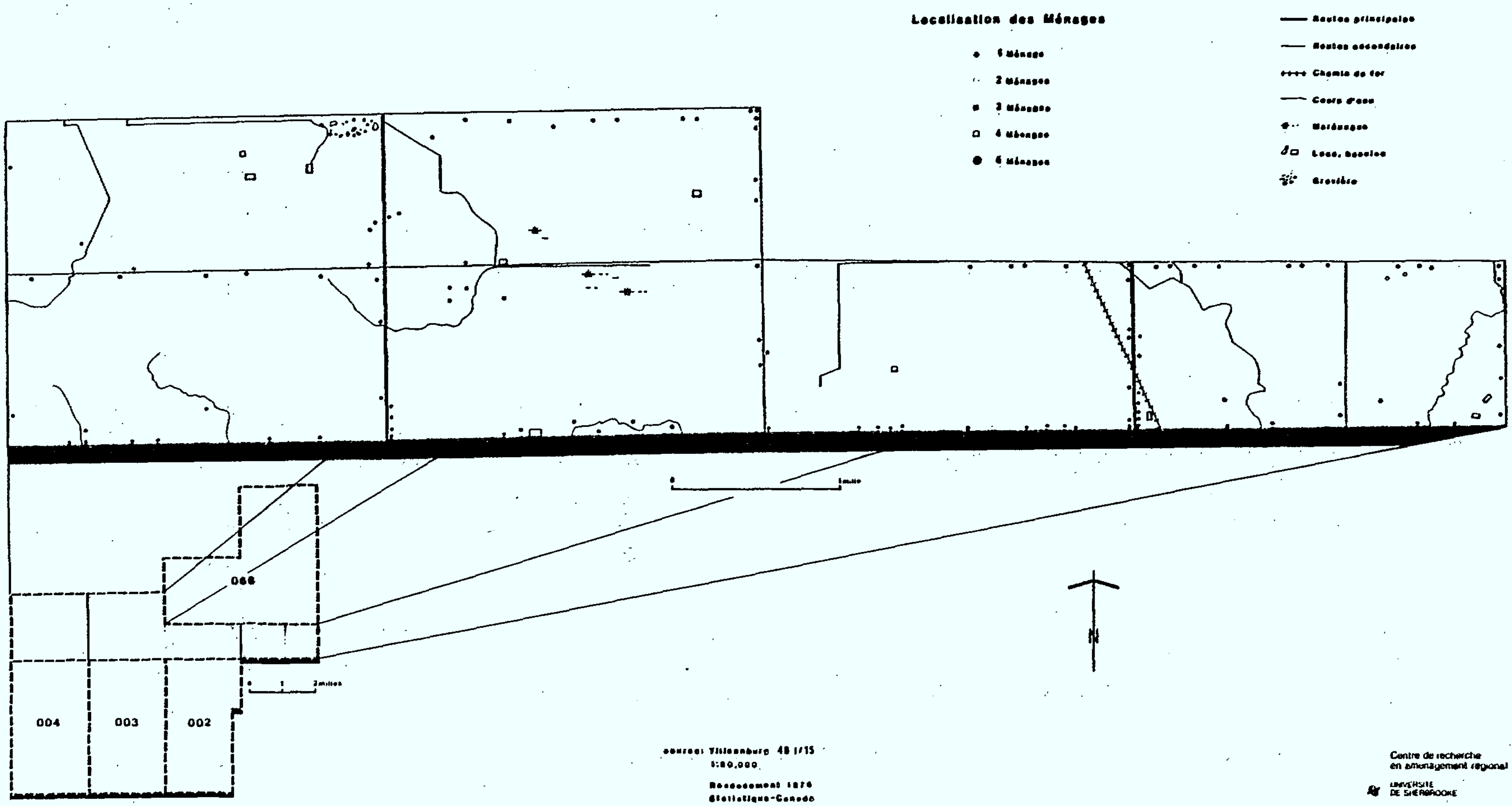
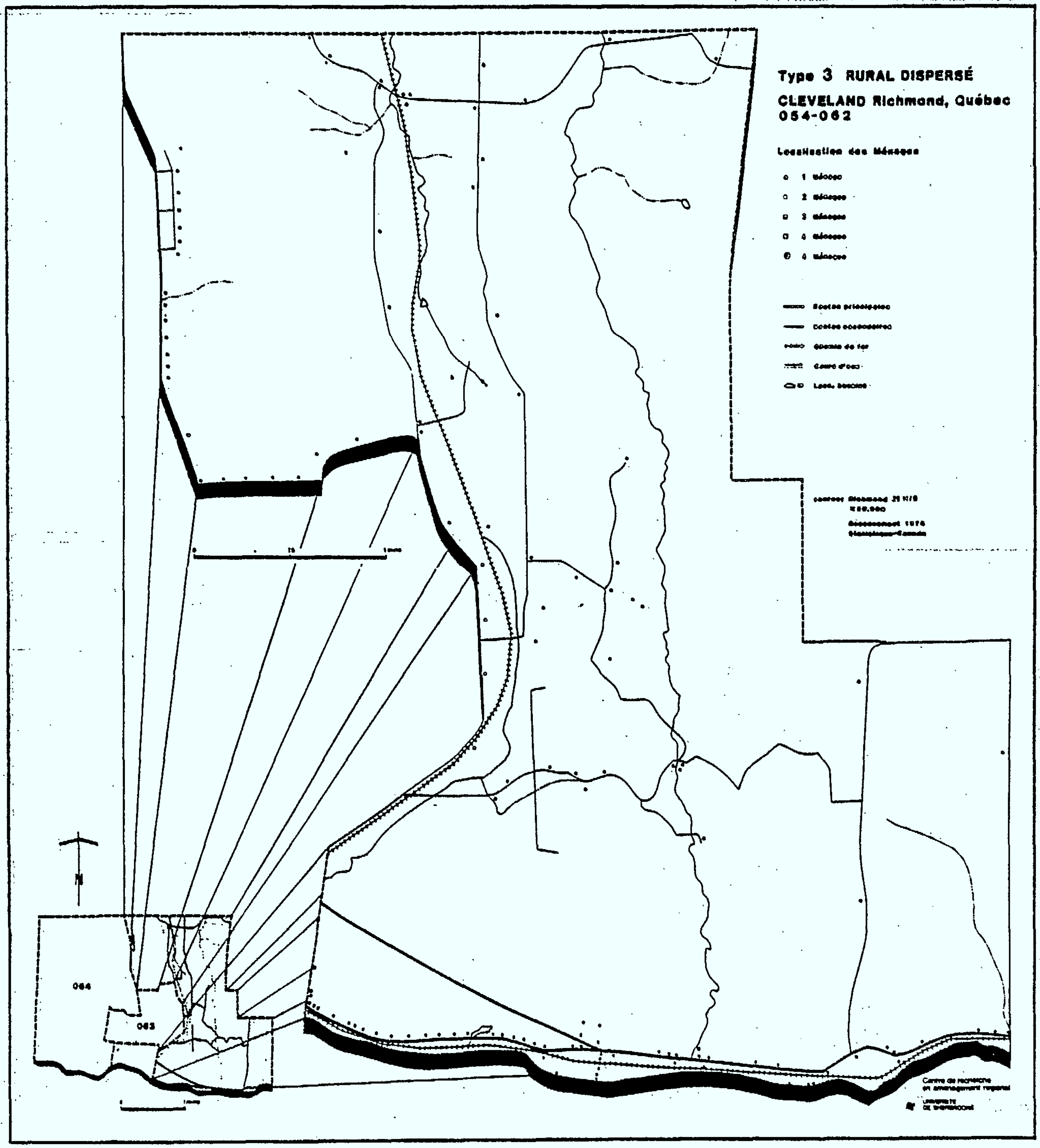
SOUTH-WEST OXFORD Oxford , Ontario
050-004
003
002
Centre de recherche
en aménagement régional


Type 2 MUNICIPALITÉ DE CANTON
SOUTH-WEST OXFORD Oxford , Ontario 050-066
Localisation des Ménages
1 Ménage
2 Ménages
3 Ménages
4 Ménages
5 Ménages
085
004
003
002
Centre de recherche
en aménagement régional
1:50.000

Type 2 MUNICIPALITÉ DE CANTON

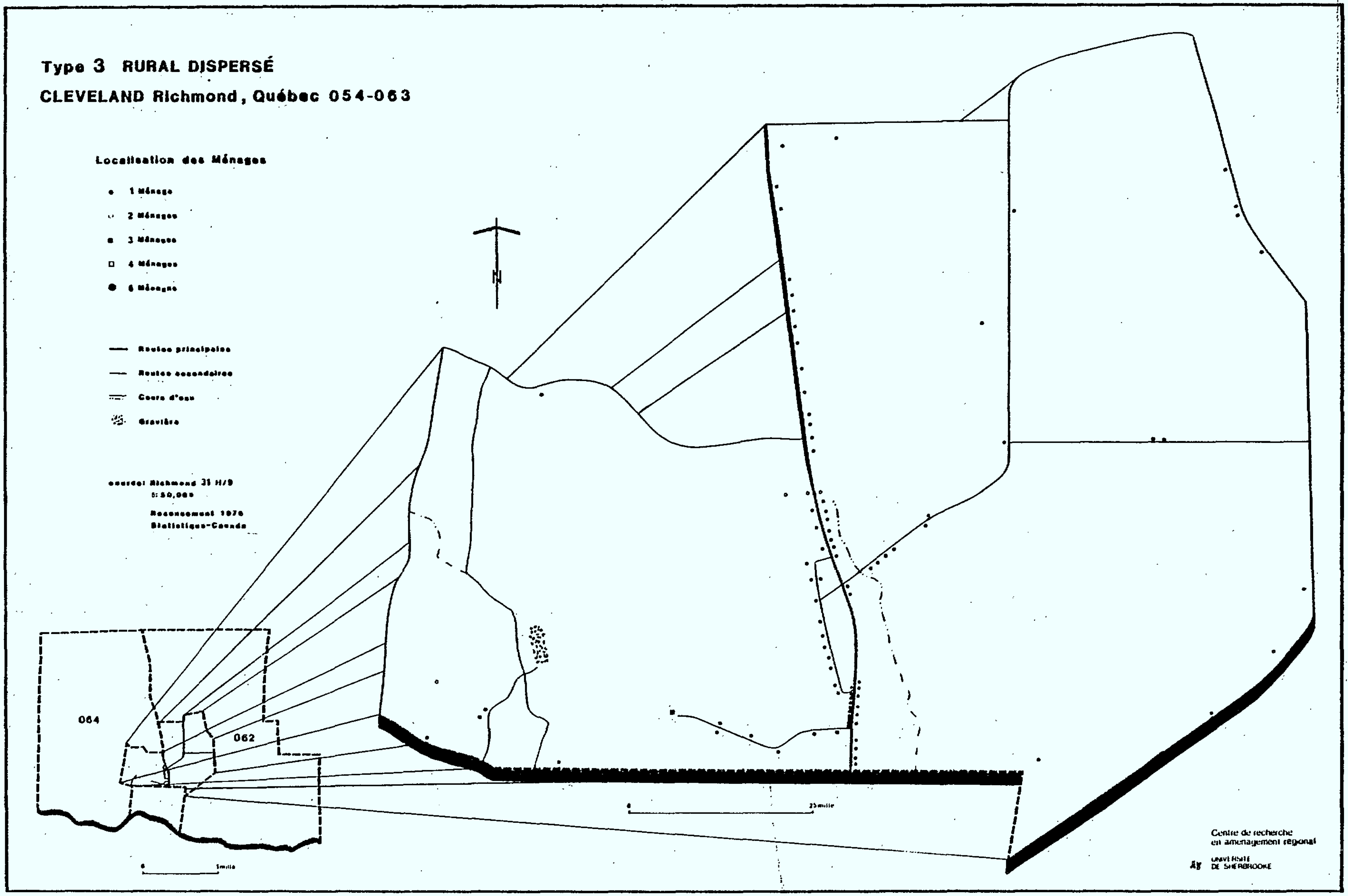
SOUTH-WEST OXFORD Oxford , Ontario 050-065

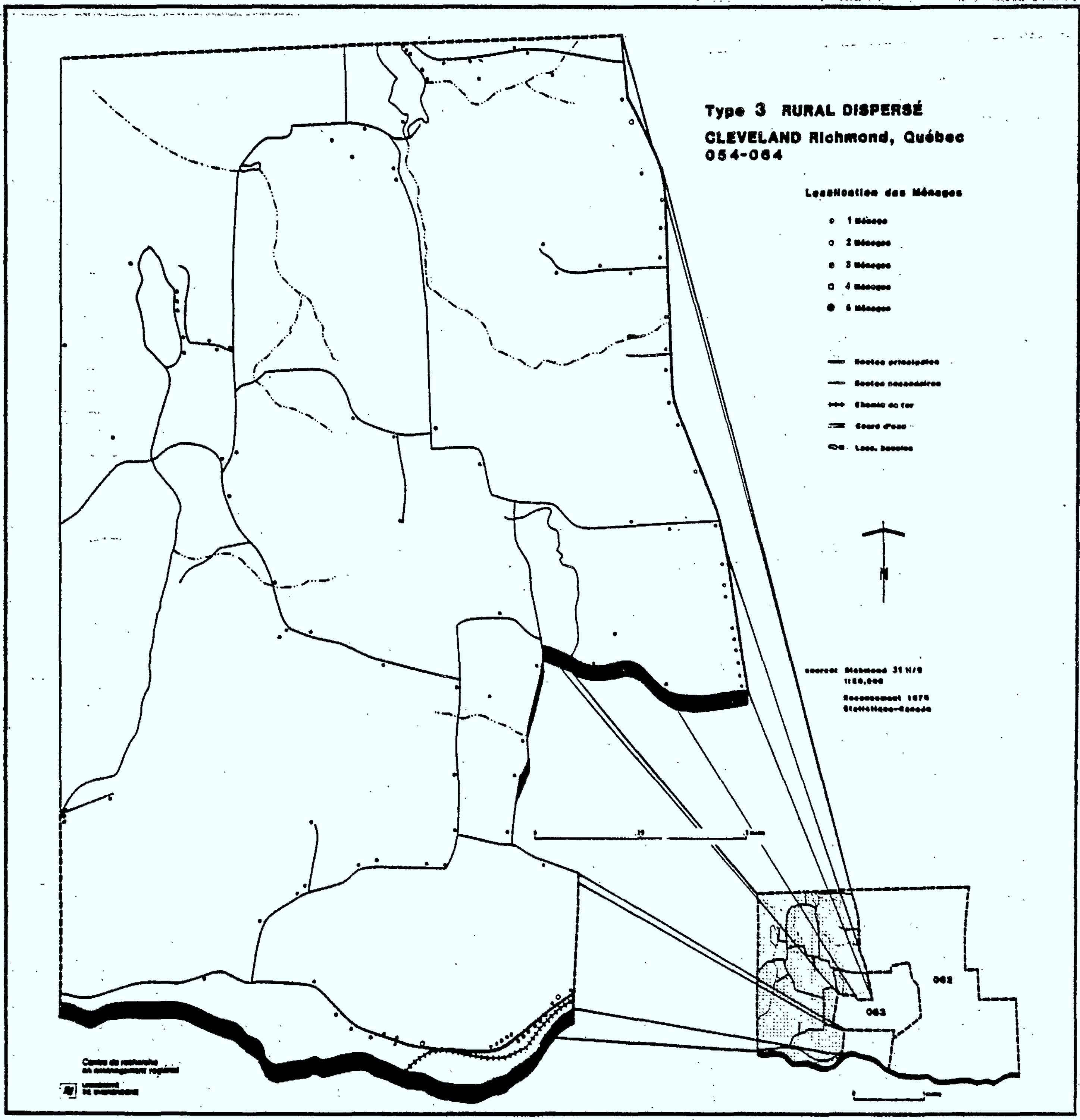



Type 3 RURAL DISPERSÉ
CLEVELAND Richmond, Québec
054-062
064
063

Type 3 RURAL DISPERSÉ

CLEVELAND Richmond, Québec 054-063

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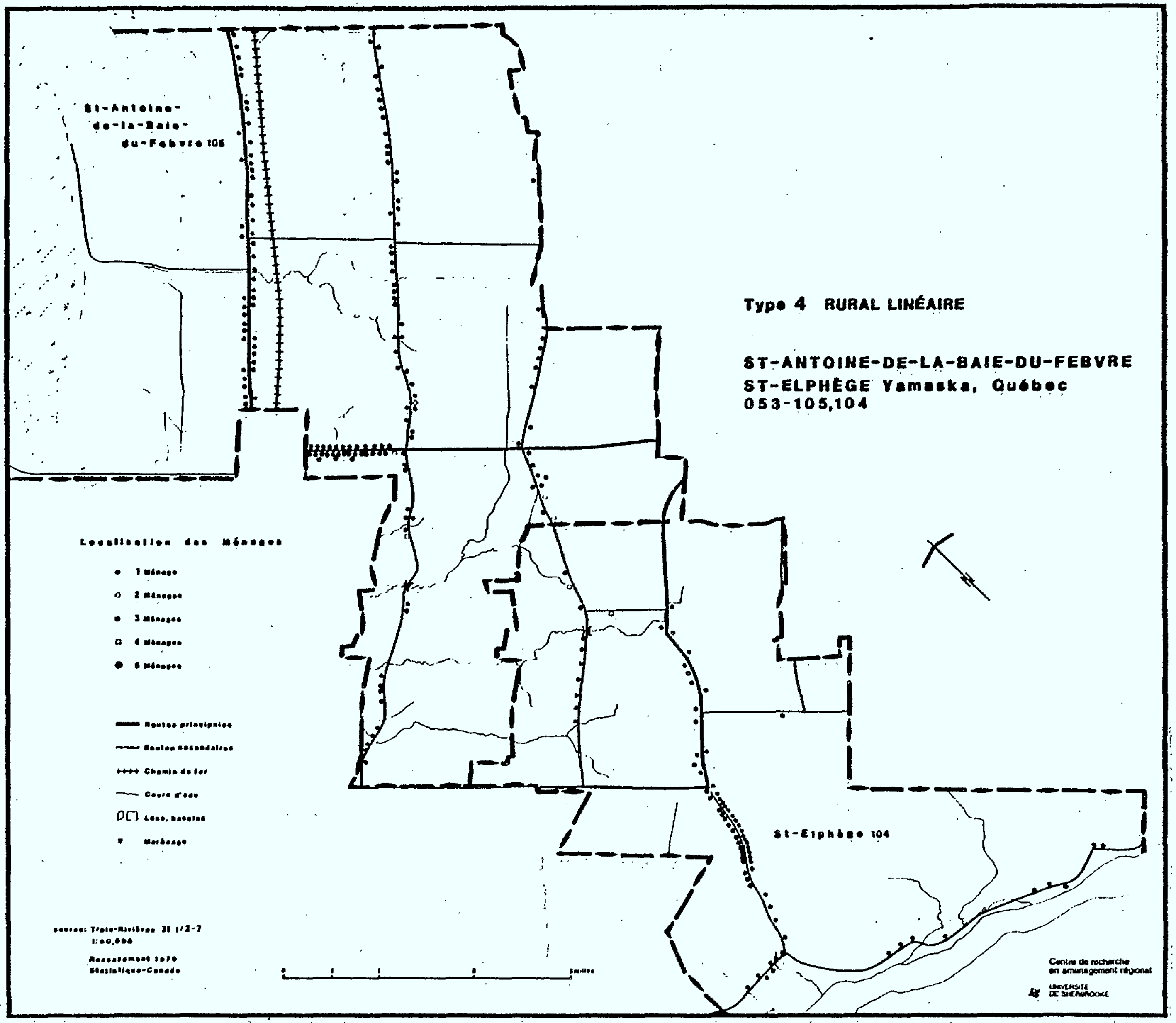
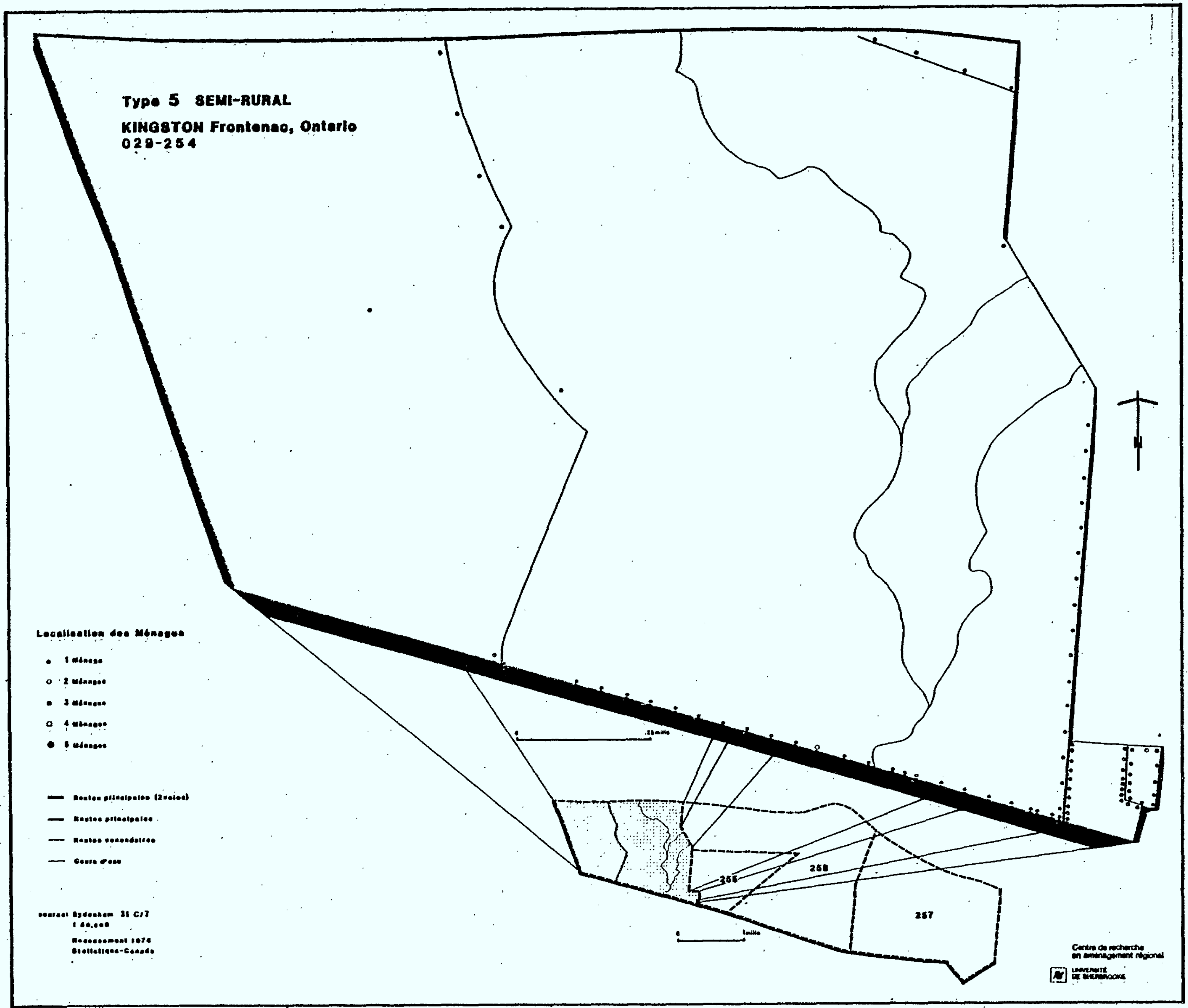
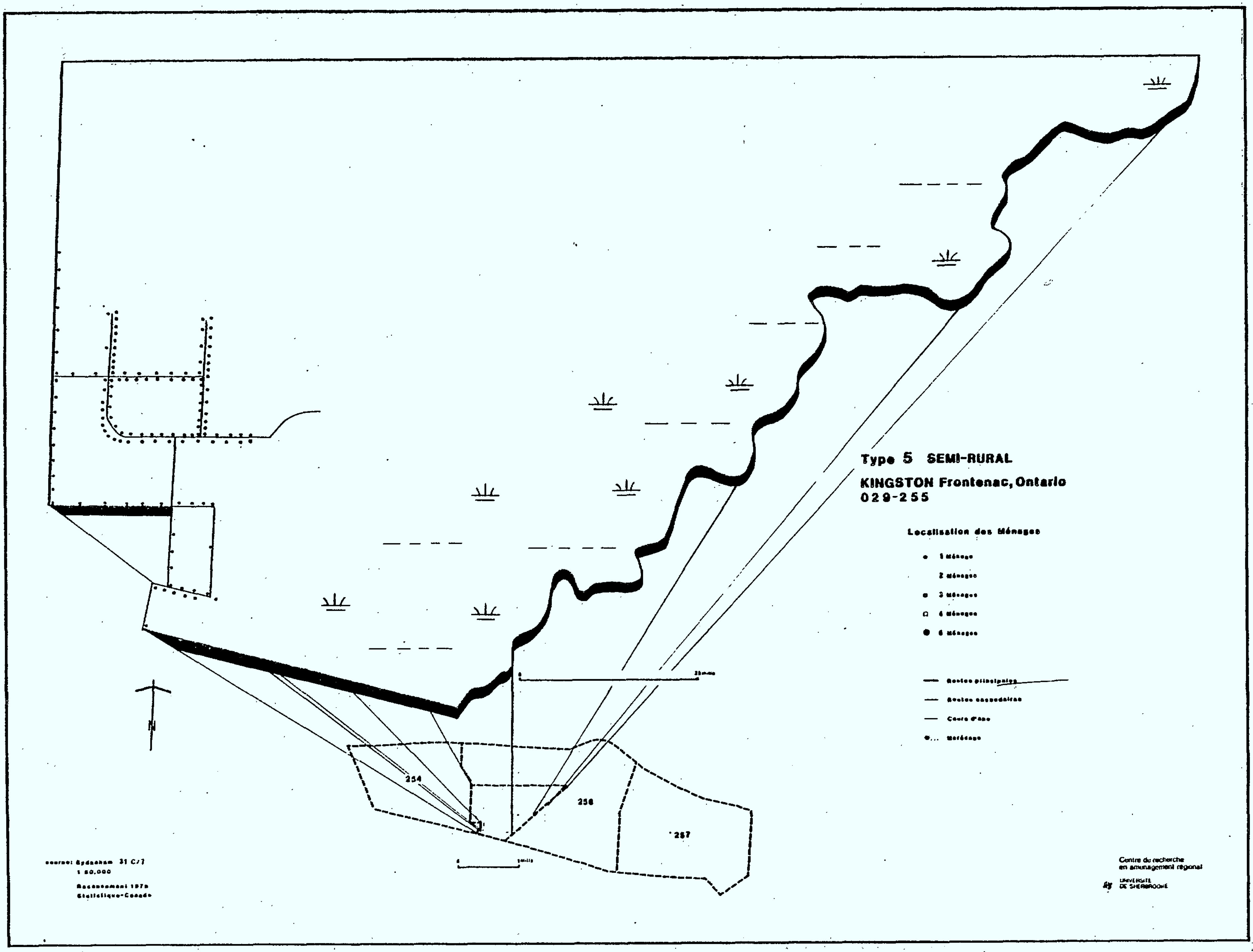
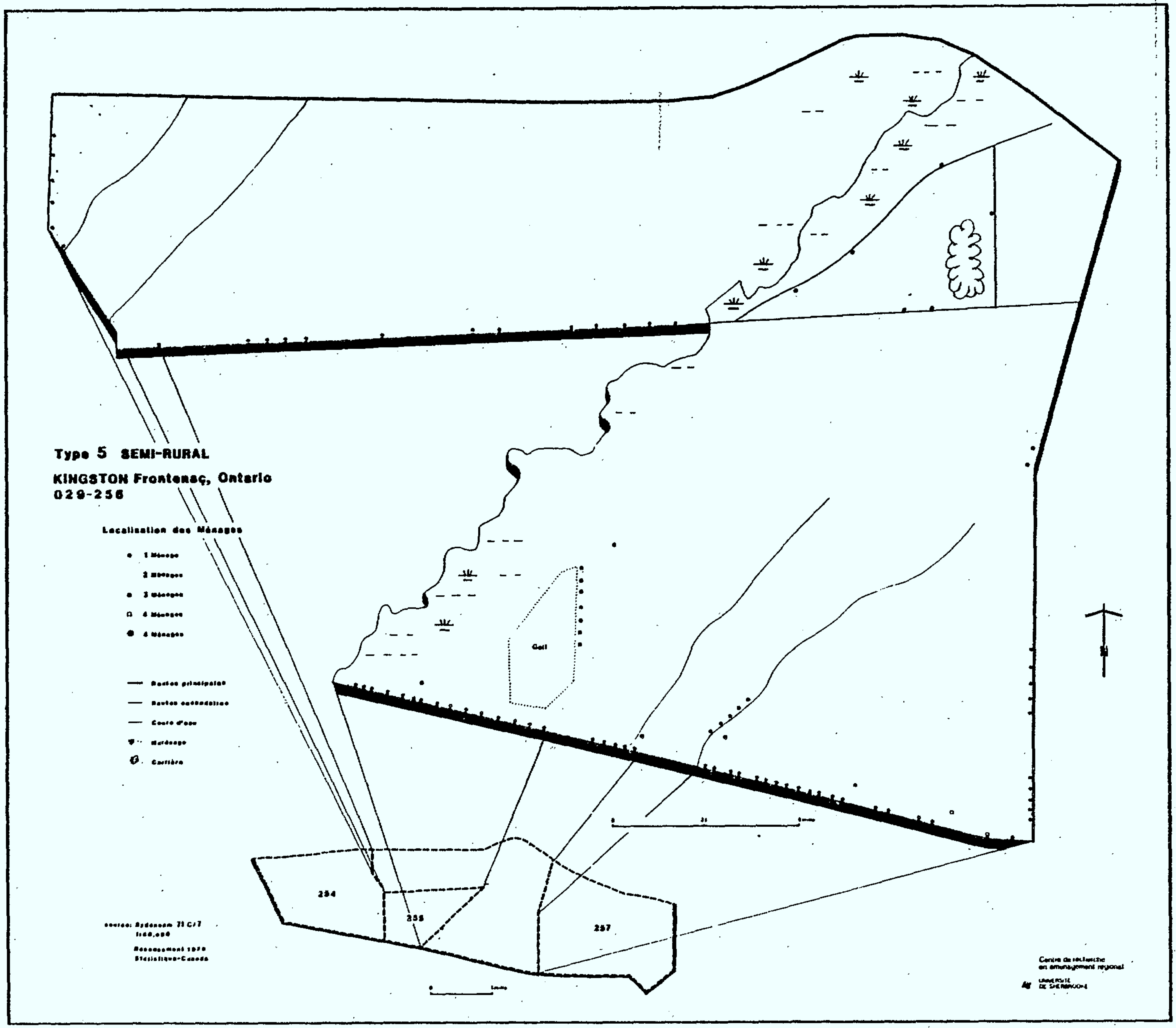
CLEVELAND Richmond, Québec
054-064
062
063

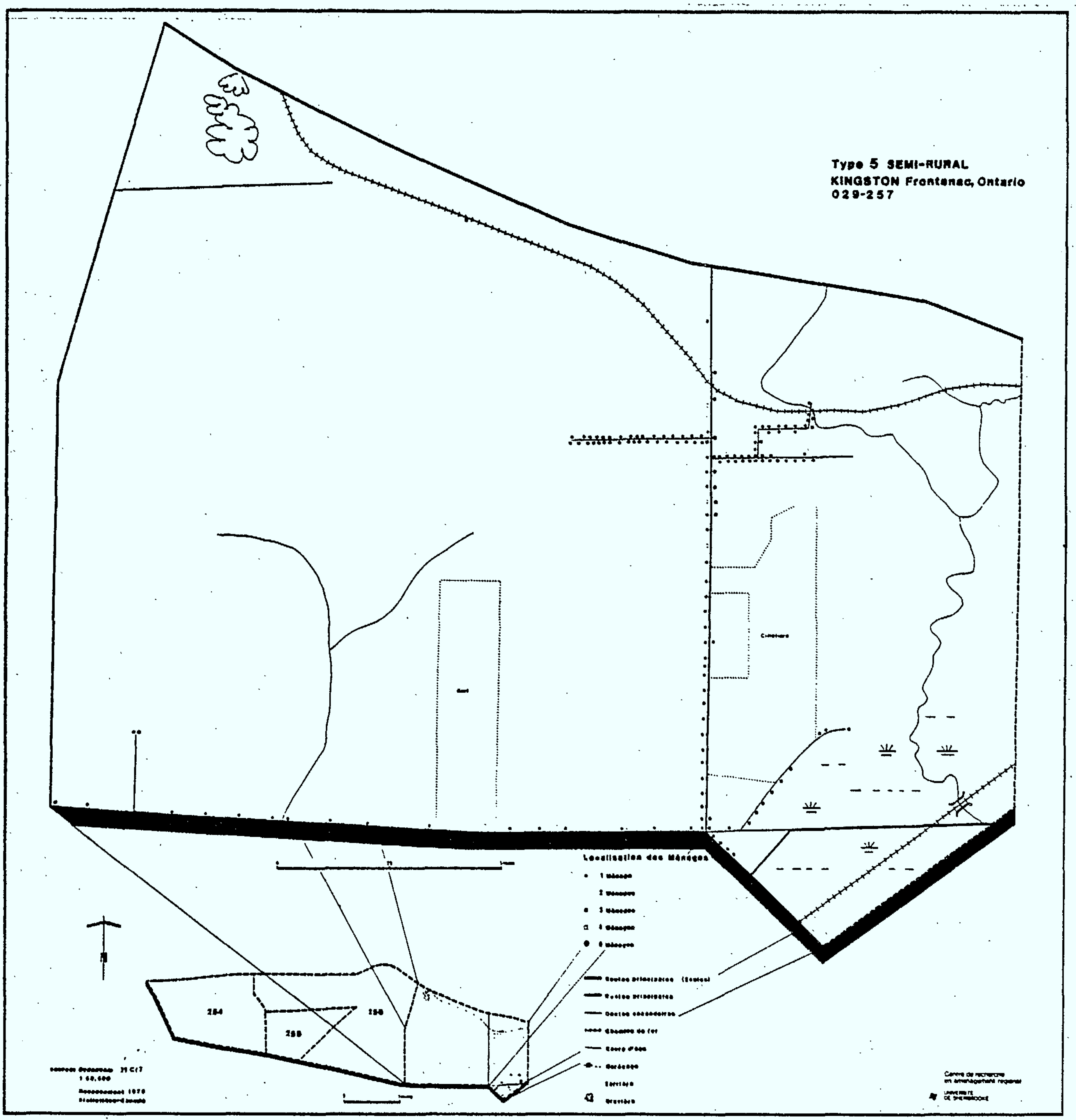


Type 4 RURAL LINÉAIRE
ST-ANTOINE-DE-LA-BAIE-DU-FEBVRE
ST-ELPHÈGE Yamaska, Québec
053-105,104
St-Antoine-de-la-Baie-du-Febvre 105
St-Elphège 104
Centre de recherche en aménagement régional
Université de Sherbrooke


Type 5 SEMI-RURAL
KINGSTON Frontenac, Ontario
029-254
255
256
257
Centre de recherche
en aménagement régional
UNIVERSITÉ
DE SHERBROOKE


Type 5 SEMI-RURAL
KINGSTON Frontenac, Ontario
029-255
Localisation des Ménages
1 Ménage
2 Ménages
3 Ménages
N
254
256
257
31 C/7
Centre de recherche
en aménagement régional
UNIVERSITÉ
DE SHERBROOKE


Type 5 SEMI-RURAL
KINGSTON Frontenaç, Ontario
029-256
Localisation des Ménages
1 Ménage
Golf
254
255
257
Centre de recherche
en aménagement regional
UNIVERSITE
DE SHERBROOKE


Type 5 SEMI-RURAL
KINGSTON Frontenac, Ontario
029-257
Localisation des Ménages