ALBERTA OIL SANDS ENVIRONMENTAL RESEARCH PROGRAM

LONGITUDINAL STUDY OF PERSONAL ADJUSTMENT AND SOCIAL CONDITIONS IN THE FORT McMURRAY AREA

HS 30.1

PHASE 1: DRAFT FINAL REPORT

VOLUME 1: RESEARCH DESIGN

AUGUST, 1978

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ABSTRACT

The purpose of Phase 1 was to establish a research design for a longitudinal study to identify and explain the relationships between social and personal adjustment of people in the oil sands region. The research design was to be implemented in Fort McMurray and to be applicable to any resource community.

The Study Team examined the literature and studies relevant to resource communities and conventional communities, and consulted with the Client and interested departments. The purposes of this review were to determine the central dimensions of personal, family, social, economic and community life to be identified and monitored during the Longitudinal Study; the data and information required; the most appropriate theoretical and methodological approaches to take; and the instruments to monitor and measure change.

The Study Team's emphasis was upon user requirements; theoretical and conceptual soundness; and feasibility within the time and resources available. This work was integrated with a comparable study being prepared by the Team for the Cold Lake Region.

This Report sets out the Team's findings. It recommends theoretical and methodological approaches and specifies the instruments and procedures to be used. The major recommendations include the establishement of an Institutional Information System to collect objective data; a study of the local economy; a study of children in school; and a statistically reliable household survey using instruments to measure psychological, attitudinal and activity characteristics of the population. These are to be applied again in Phase 3 and changes to be noted, measured and assessed.

The Report sets out the costs of each component of the research design, and describes various options, including their respective advantages and disadvantages. If it is not possible to carry out all components of the proposed Longitudinal Study, the information provided will assist the Client in establishing priorities for the selection of the components to be used.

ACKNOWLEDGEMENTS

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We wish to thank AOSERP for their support. Barbara Kasinska-Banas, Research Manager, AOSERP, always had a clear grasp of the research problems we faced and was a continuing source of sound advice. We are grateful to Gerry Archibald and Gordon Young of AOSERP's Human System committee for their guidance and encouragement.

During the course of Phase 1, we drew upon wide and diverse networks for assistance, and we wish to acknowledge those who helped us. Help was generously given by the following: David Henderson, Dennis Paproski and Keith Newton, Economic Council of Canada; John McWhinnie, Long Range Planning Branch, Health and Welfare Canada; Dr. Gavin Currie, Dr. Mark Doctoroff and Arthur Turner, Bureau of Management Consulting Services, Supply and Services Canada; Helen Salisbury, Central Statistical Services, Ontario Ministry of Treasury, Economic and Intergovernmental Affairs; and Dr. Hans Selye, International Institute of Stress, Montreal.

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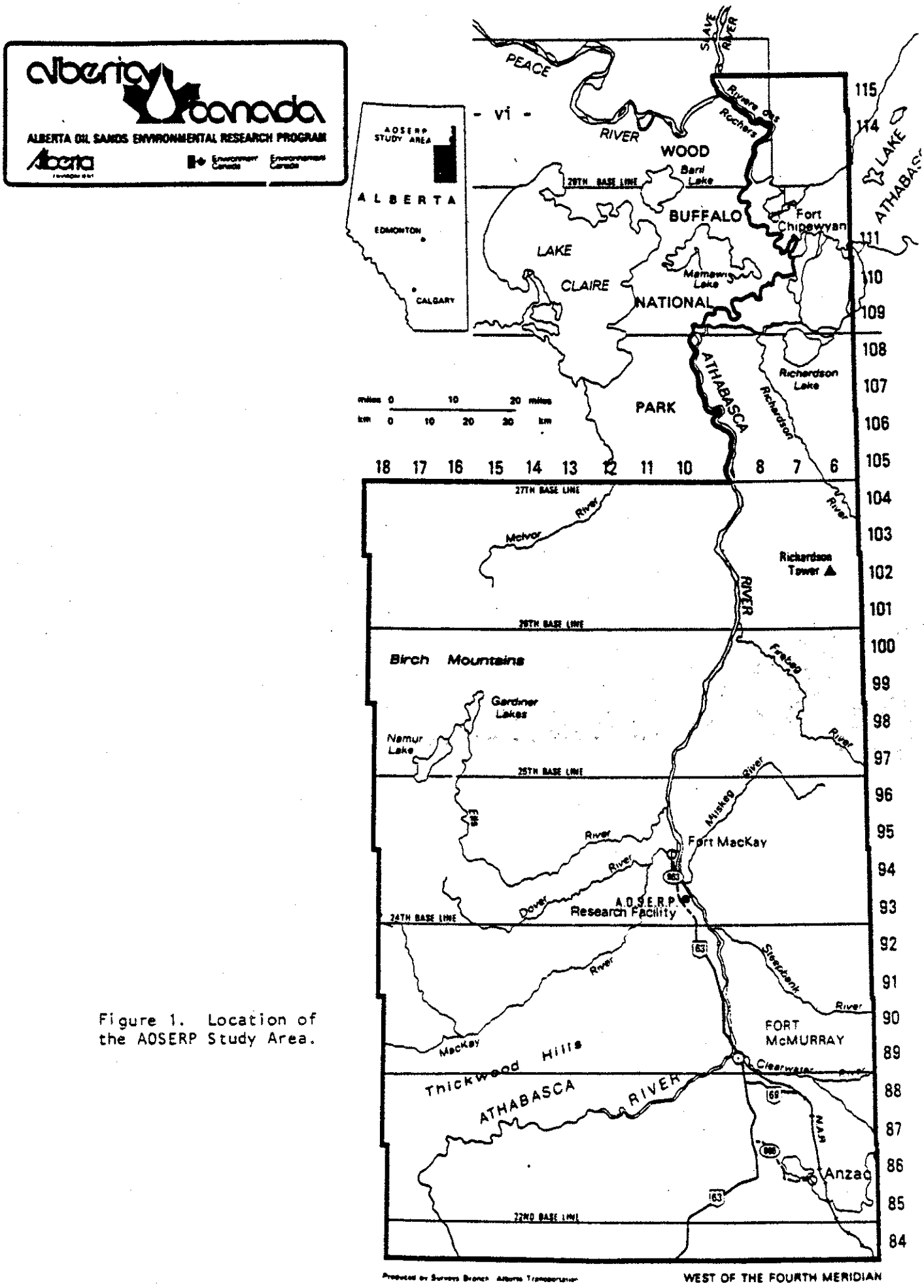

Figure 1. Location of the AOSERP Study Area.

CHAPTER 1

OBJECTIVES AND PROCEDURES

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1. INTRODUCTION

The objectives of this study are defined in our Terms of Reference.

1.1 TERMS OF REFERENCE

The Terms of Reference set out by Alberta Oil Sands Environmental Research Program, Human Systems (H.E. 3.1, August 10, 1977), with respect to Fort McMurray are as follows:

> "Purpose: To identify and explain the relationships between social and personal adjustment of people in the oil sands region and the different stages of resource development activities, in order to provide a data base and timely information which will help the interested agencies to maximize the positive effects and to minimize the negative effects of oil sands development on people of the region.
>
> "Objectives:
> 1. Identify, analyze and explain changes in social conditions in the oil sands region since 1961, in such indicator areas as e.g., population, income, housing, education, health (physical and mental), social welfare/social deviance, work/leisure characteristics, quality of environment and quality of community, in relation to various phases of oil sands development.
>
> "2. Identify, analyze and explain the specific social and personal problems faced by people, including all social groups, i.e., indigenous native and non-native, migrant native and non-native and immigrant native and non-native, in their efforts to adjust to life in the region.
>
> "3. Identify and explain the relationships that exist between social conditions in the region and the adjustment processes of people at different stages of the oil sands development.
>
> "4. Identify areas of concern which may arise out of the research and suggest practical means of meeting those concerns."

OUTLINE OF WORK:

Phase 1

"1. Identify, define and evaluate available data (refer to Feasibility Study re Baseline Data System, AOSERP, 1976).

"2. On the basis of existing demographic data, vital statistics and social statistical data, determine which of the areas of social concern, i.e., indicator areas specified in Objective 1, are most appropriate to a longitudinal study of social conditions in the oil sands region. Determine other possible indicator areas.

"3. Provide background information on baseline conditions in each indicator area incorporating statistical data since 1961.

"4. Develop research design for a longitudinal field study of social and personal adjustment of people to life in the oil sands region at different stages of the resource development."

1.2 RESEARCH DESIGN OBJECTIVES

1.2.1 Priorities

In terms of establishing a clear direction and priorities, the key words in the AOSERP Terms of Reference in order of conceptual and operational importance, are: 1) identify, 2) analyse, and 3) explain. In the design of this study, therefore, we have set our first task as establishing an information base which allows for identification for the major dimensions of personal and social adjustment, and changes in conditions over time.

This is a socio-ecological study unique in scope, comprehensiveness and time frame. It is essential to maintain a balance between the requirements of comprehensiveness and the need to develop sufficient information with respect to each dimension, so that the information generated is useful for Government policy and program purposes. No one individual theoretical pers-

pective is sufficient, because none deals with all the relevant dimensions.

It is also important to establish a research design which is applicable not only to the communities currently under study, but to other resource communities. One cannot examine resource communities in isolation from general personal, family, social, work and community phenomena. It is important to provide for comparability with other, more conventional, communities. We are looking, therefore, to a research design of broad applicability.

With these parameters in mind, we established a number of design-specific priorities with respect to the prospective research program:

1. It should produce practical and useful information to help provide a basis for the development, review and revision of Government policies, programs and priorities for managed and balanced growth in the study area.
2. It should be capable of collecting information and identifying current baseline conditions in the communities in the region for all relevant economic and social dimensions.
3. It should be able to monitor and track changes in these conditions over time.
4. It must be on-going, reliable, economical to operate, and easily accessible to users.
5. It should be applicable to other communities.

1.2.2 User Needs

As the research design progressed, potential users of the Longitudinal Study found themselves in a better position

to clarify their information and data needs. To the best of our ability we accommodated these needs within the study design. The result was an expansion of the research design.

The following is a summary of information and data needs, as defined by potential users, which we were able to incorporate to some degree into the research design.

1.2.2.1 AOSERP - Human System

In 1977, AOSERP - Human System prepared a draft of its objectives and proposed research program for the next few years. We reviewed this with the Client on several occasions to assess which of the proposed research projects might be efficiently and economically incorporated in whole or in part into the Longitudinal Study.

The following lists the specific research projects and those components which we have included in the design of the Longitudinal Study.

Project 20.1.3 Household and Personal Goods and Services

- Provide data on the need for household and personal services.
- Identify the capacity of the local economy to produce goods and services.
- Explore the relationship between the presence or absence of personal goods and services and the various personal and social stresses identified through other parts of the research program.

Project 20.1.2 Employment - Quantity, Occupations and Conditions

- Describe the conditions of employment - wages and salaries, hours of work, shift work.
- Document the extent and characteristics of local unemployment, if any, particularly at the point of transition between construction and operation of the plants.
- Relate these to the social and personal stresses identified.

Project 20.1.3 Monitoring of Economic Changes

- Monitor the effects of oil sands development on economic resources and activities in the region.
- Major dimensions of economic activity are selected in retail, service and industrial sectors, and their performance is monitored.

Project 20.1.4 Economic Diversification Assessment

- Monitor changes in the local economy with respect to current economic activities and changes with respect to attrition, diversification, etc.

Project 20.2 Population

- Collect base data with respect to population and other demographic changes since 1961, based upon existing sources of data.

Project 40.3 Labour Turnover

- Extent and character of labour turnover, and effects upon the community and workers.

Project 40.4 Study of the Effects of Shift Schedule Benefits

- Monitor the effects of shift schedules upon personal and family well-being.
- Identify types and extent of shift-work by occupation, employment, and duration of hours.

Project 50.1 Conceptual Problems of the Perception of Environmental Attributes

- Perceptions and attitudes toward the four seasons.
- Perceptions of and attitudes toward the natural landscape.
- Personal and family activities during each of the four seasons.
- Personal and family activities in the natural landscape.

Project 50.2 Recreation Use of Natural Resources

- Personal and family use of specified natural resources; frequency of use.
- Ownership of recreational vehicles and equipment.
- Development of base information from which to establish demand projections.

Project 50.4 Environmental Expectations

- Expectations regarding natural environment.
- Attitudes toward natural environment.

1.2.2.2. Provincial and Federal Departments

In December 1977, AOSERP - Human System distributed to interested Departments a request that they list the main problems they would like resolved or the key questions they would like answered. We examined the responses, and other requests, and took them into account, to the extent feasible, in establishing the research design and methodologies, as well as the specific instruments to be used.

The following is a summary of those requests from the various Departments which we were able to incorporate to some degree into the research.

. Alberta Culture

- Cultural identification with the region.
- Active or passive participation in culture of the region.
- Effects, if any, of lack of cultural facilities and opportunities upon labour turnover.

. Alberta Recreation, Parks and Wildlife

- Recreation requirements of a largely transient population.
- Demographic, social and economic information to assist in recreation planning.
- Recreation requirements of a population made up in significant measure of shift workers.
- Recreation and social needs of the senior citizens, disabled, mentally retarded and other special groups.
- Importance of recreation, and extent to which different types of people participate in specific types of recreation activities.
- Quality of life expectations of population.
- Social and recreational implications of major population adjustments.
- Demands for and use of social (private sector) entertainment.

- Effects of specific population structure on demands of specific recreation facilities.
- Analysis of recreation needs.
- Demand for public regional or provincial-scale park.
- Assessment of the effects of private recreation facilities (e.g. those owned by Northward) upon demands for public recreation facilities.
- Perceptions of financial security.
- Physical and mental health.
- Preference for local or out-of-region recreation.

. Alberta Advanced Education and Manpower

- Data concerning job stability.
- Community reactions to education systems available.
- Income and cost of living.
- Responsiveness and appropriateness of response by Government services -- including Education, Health, Social Services and Community Health -- to public needs.
- Public perceptions of various dimensions of health care.
- Recent experience in employment/unemployment situation.
- Analysis of characteristics of indigenous and newcomer populations.
- Analysis of forms of migration patterns for indigenous, resident and migrant sectors.
- Analysis of characteristic forms of employment and unemployment.
- Implications of economic, industrial and migration development for the infrastructure services, such as education, health, social and health services.
- Identification of groups requiring special services, having special needs with regard to use of Government services, or with regard to adequate access

to employment opportunities.

- Department of Regional and Economic Expansion

  - Job satisfaction.
  - Work availability, and barriers, such as prejudice.
  - Attitudes toward local political leadership.
  - Community cohesiveness/stratification/tensions.
  - The kinds of spin-off industries being developed because of oil sands activities.
  - The extent to which special needs groups (natives, women, etc.) are engaged in these activities both as entrepreneurs and as employees.
  - Barriers to the participation of special needs groups in development opportunities.

1.3 PROCEDURES

1.3.1 Phasing

Work on the study began officially on November 15, 1977. Because, however, of administrative processes associated with the contract, the major proportion of the work did not begin until February, 1978. At that time it was decided to coordinate Phase 1 of the AOSERP Longitudinal Study with the Cold Lake Region Baseline Study: Phase 1, for which we were also responsible.

Working Papers were prepared and discussed with the Clients (AOSERP and Northern Development Branch, Business Development and Tourism) in April, 1978. Notes for the Final Report were submitted for review in June. The required revisions and additions were made during July and August, and the Draft Final Report is being submitted for review at the end of August.

1.3.2 Work Program

1.3.2.1 Issues

The work program was addressed to the following issues:

- The feasibility of translating the theoretical work on social indicators into operational modes suitable for use in Phases 2 and 3.
- The central dimensions of personal, family, social, work, and community life to be identified and monitored during the longitudinal study.
- Identification of specific data and information requirements.
- The most appropriate theoretical and methodological approaches to take.
- Design and testing of specific instruments to monitor and measure social conditions and personal adjustment.

In addressing these issues, our emphasis was upon:

1. User requirements.
2. Theoretical and conceptual soundness.
3. What is possible and practical with the time and resources available.

1.3.2.2 Major Activities

The major activities in the work program consisted of the following:

Review of relevant literature and studies. An extensive review of the literature and studies from Canada, the United States, Europe and elsewhere which might have relevance to the Longitudinal Study. The material dealt with:

- Theoretical and conceptual. Social indicators, key dimensions in personal, family, social, work, business and community life in urban, rural and northern settings; cross-cultural approaches to the study

of natives, non-natives and ethnic groups; theoretical and conceptual approaches which might be relevant.

- Methodological. Methodologies used to study personal, family, social, work, business and community life in conventional and northern resource communities; applicability to natives and non-natives; compatibility of various methodologies.

- Instruments and Measures. Identification and assessment of existing state of the art instruments and measures for identifying measuring the specific dimensions noted above; instrument compatibility.

Sources consulted include:

- Glenbow Alberta Institute, Arctic and University of Alberta library card catalogues and bibliographies.
- Boreal Institute computer printouts
- Canadian Index to Periodicals
- Anthropological Abstracts
- Sociological Abstracts
- Social Science Citation Index
- National Technical Information Service
- Smithsonian Science Information Exchange

We are grateful to the Library of Alberta Environment for the use of its computer search facilities. In all more than 1,000 books, monographs, articles, abstracts and titles were examined. Those found to be relevant are noted in the Bibliography attached to the Background Papers.

Alberta Government Liaison. On-going liaison was maintained with a number of interested Government departments and agencies to ascertain information sources for the Longitudinal Study and data needs. Some of those consulted included: Alberta Business Development and Tourism; Alberta Recreation, Parks and

Wildlife; Office of the Commissioner, Northeast Alberta Region; Alberta Social Services and Community Health; Alberta Environment; Alberta Municipal Affairs; Alberta Advanced Education and Manpower; and the Alberta Bureau of Statistics. The latter provided valuable guidance on the sources, availability and status of data with the Government.

Fort McMurray Liaison. In Fort McMurray a number of officials and others provided advice, information and assistance, including the Chairman of the Board, Town Manager, planning staff, and staff from the regional offices of the Provincial Government.

Out of Province Consultation. Those consulted included:

- Department of Regional and Economic Expansion, Edmonton
- Health and Welfare Canada, Ottawa
  - Long Range Health Planning Branch
  - Health Facilities Design
- Economic Council of Canada, Ottawa
- Bureau of Management Consulting Services, Supply and Services Canada, Ottawa
- Social and Economic Data, Central Statistical Services, Ontario Ministry of Treasury, Economics and Intergovernmental Affairs, Toronto
- International Institute of Stress, Montreal

In the following several chapters we set out our general findings and come to conclusions regarding the approach and format of the Longitudinal Study. In addition, the more specific findings can be found in our Background Papers:

- Institutional Information System
- Local Business Economy in Resource Communities
- Base Demographic Data
- The Needs-Press Model
- Extended Interview
- Time-Use Diaries

- Quality of Working Life: Job Satisfaction
- Social Deviance
- Children and Education
- Indians and Metis: Approaches to Research

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ALBERTA OIL SANDS ENVIRONMENTAL RESEARCH PROGRAM

LONGITUDINAL STUDY OF PERSONAL ADJUSTMENT AND SOCIAL CONDITIONS IN THE FORT McMURRAY AREA HS 30.1

PHASE 1: FINAL REPORT

REPORT: CHAPTER 2

CURRENT STATE OF KNOWLEDGE

AUGUST, 1978

CHAPTER 2

CURRENT STATE OF KNOWLEDGE

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2. CURRENT STATE OF KNOWLEDGE

2.1 GENERAL CONDITIONS PERTAINING TO QUALITY OF LIFE

In recent years a voluminous literature has developed with respect to various dimensions of social and community life. For the sake of convenience we have chosen to use the term 'quality of life'. Other terms used in this respect include, standard of living, livability, social well-being, community well-being. Some conceptual and semantic confusions arise in distinguishing among personal, family, social, neighbourhood, community labels. The distinction is not useful for the purposes of this study; so long as the reader keeps in mind that the term, "quality of life", is intended to refer to the characteristics, conditions and changes referred to in the Terms of Reference.

One of the characteristics of the literature itself is reported inconsistencies and uncertainties with respect both to definitions of various terms (semantics), and to approaches to measurement (conceptual). With respect to the latter, conceptual difficulties, various researchers have tended to utilize different levels of conceptualization, with the result that there is considerable overlapping of terms. For example, in looking at some of the leading research into quality of life we find the following overlapping operational definitions:

- Work, including quality of working life, job satisfaction, objective work conditions, job attributes, personal aspiration, life satisfaction (Portigal, 1974; O'Toole, 1974; Seashore, 1974 and 1976; Newton and Leckie, 1977).
- Housing, including house-specific satisfaction, location-satisfaction, personal aspirations, neighbourhood satisfaction

(Mom's, et al, 1976; Angrist, 1974; Maslove, 1977a; Duncan, 1971; Headley, 1972).

- Recreation, including recreation-specific activities and facilities, needs and aspirations, personal and family well-being, community involvement and affiliation (Staley and Miller, 1972; Butler, 1973).
- Urban Living, including education, neighbourhood life, social and related services, safety and security, financial well-being, housing satisfaction, isolation/affiliation and other dimensions of metropolitan life (Perloff, 1969; Flax, 1972; Urban Affairs, 1975; Maslove, 1977b).
- Social living, including dimensions of urban life mentioned above with additional dimensions including neighbourliness, helping relationships, alienation and anomie, work and work relations, family well-being (Barker and Schoggan, 1973; Dalkey, 1972).
- Rural living, a subset of other dimensions with specific reference to the postulated urban/rural dichotomy in life styles and life quality and effects of the natural environmental (Gilligan and Wilderman, 1977).
- Neighbourhood/community satisfaction, including housing, aspirations, isolation/affiliation, alienation and anomie, safety and security, aspirations for oneself, family and children, quality of education, socio-economic status (Smith, 1975; Bach and Smith, 1977; Kain and Quigley, 1969).

It is clear from this brief, and not atypical, review that the data base must be unusually comprehensive if

it is to accommodate analysis along the various dimensions listed above and other related dimensions.

2.1.1 Social Indicators

Any discussion of quality of life invariably leads to the thorny question of social indicators. We deal with this topic in the Background Paper, 'Institutional Information System'. There are two aspects of social indicators, however, which deserve mention here.

The first is the conceptual and operational disarray in the field. This is well summarized by Snider (1976): there is little agreement as to what a social indicator is, what it is supposed to do, and how it should be defined, measured and applied in operational terms.

The second aspect worth noting is both the vagueness and specificity of various 'indicators' which have been postulated, such as:

- Indices of socially important conditions of society (Binderman, 1966).
- Direct measures of illness and welfare (Herriot, 1970; Olson, 1970).
- Monitors of the rate and direction of social change (Sheldon and Moor, 1968).
- Indices of progress towards "National Goals" (Springer, 1970).
- Measures of the social costs and benefits of technological innovation (Bauer, 1966).
- Measures of the quality of life (Government of Canada, 1975).

From the dates of the above noted references, one can gather that recent discussion with respect to social indicators has been intermittent. Nonetheless, these references, and those of a more specific Canadian content such as Harland (1973), provide some warning of the range of dimensions and the types of questions which our data may

be required to address now or in the future. A direct inference we draw from this is that our data must be not only broad in scope, but also sufficiently detailed to provide at least some indication of the applicability, utility and practicality of developing specific measures of quality of life.

2.1.2 Subjective Indicators

Much of the discussion with respect to quality of life and social indicators implies the use of secondary data, i.e. data from government and other sources collected on a regular basis, such as that described in Institutional Information System.

There is another type of data, however, which is capturing the attention of researchers: subjective data. This is data gathered from perceptions and cognitions of residents with respect to various dimensions of quality of life (Campbell, Converse and Rodgers, 1975 and 1976; Flanagan, 1978; Knepp, 1976; Andrews and Withey, 1976). By their very nature these dimensions - perceptions and cognitions - do not always lend themselves easily to quantification. Even so, in recent years, as the above references demonstrate, researchers have increasingly turned their attention to this aspect of measuring quality of life.

Walters (1972), for example, discusses quantitative indicators, and then proceeds to emphasize the importance of incorporating subjective indicators with objective indicators. She refers to "the subjective measurement of perceptions and attitudes" and notes that, "for many purposes it is important to assess how people see their condition and how they feel about it. Part of our current dilemma arises out of the apparent paradox that measured improvements in objective conditions have not been associated with similar improvements in satisfaction" (Walters, 1972, p.13-14). In its 1976 progress report, on 'Social Indicators', the

Organization for Economic Cooperation and Development assumes a subjective approach to social indicators and quality of life. In dealing with education, for example, the authors of the report stress that, "the process of learning and self-development be a satisfactory experience to the individual". With regard to the inter-relationship between objective and subjective indicators, the authors state, "subjective indicators can be used to help the analysis and interpretation of the active subjective parameters in a goal area. They are not an end in themselves, but rather a means of clarifying the significance of objective factors". (Emphasis added).

It is clear from even this cursory discussion that one of our major objectives in the research design must be to establish a reliable data base referring to perceptions and cognitions of the various major dimensions of quality of life in the study communities.

2.2 MEASUREMENTS OF THE QUALITY OF LIFE

In his review of the social indicator literature, Henderson (1974) points out that the terms, social indicators, social accounting, social reporting, and related concepts such as, monitoring social change and measures of the quality of life, do not have generally accepted definitions. He maintains that, for operational purposes, most working definitions can be grouped into one or more of the following categories:

- social statistics
- social accounting
- subsystem variable measures
- quality of life measures

The first two categories are dealt with at some length in Institutional Information Systems. There are two points we would make. Social statistics are, essentially, concept and theory-free. The definition of which statistics to collect essentially arises out of experience, the requirements of government programs, and intuition as to what is important (Michalos, 1975).

The second point is that with respect to social accounting - the integration of social statistics into various combinations on a time-series basis - one must develop a more conceptually sound and holistic approach to the definition of the dimension to be measured, the operation of the measurement and the use of the result (Terleckyj, 1975).

Implicit in this definition, which makes sense in operational terms, is the tension between broadly based, concept-free data, and the ability of the data to accommodate specific concepts effectively.

The third category - subsystem variable measures - implies the definition of social indicators as output measures related to key goal areas. That is, they are derived from and relate to various subsystems and specific policies and programs, for example education. Land (1972) defines these variable measures of output as, "measures of the end products of social processes and are most directly related to the appraisal of social problems and social policy". Henderson notes that, "such indicators can have considerable relevance for policy, since they will be either the factors resulting from functioning of a subsystem or those 'causing' (associated with) changes in the subsystem output".

The potential explanatory power of this approach in a policy context explains its adoption by the Economic Council of Canada and the United States Department of Health, Education and Welfare. Although the approaches of the two departments differ somewhat from that employed by Land, the basic premise - that of providing "a broad summary view of levels of, and changes in, output" (ECC, pp.71-72) - are consistent.

The fourth category - quality of life measures - is derived in part from the work on "master social indicators" carried out by the Stanford Research Institute (1969). In

this definition, social indicators are defined as "measures of social output; that is, they measure the attainment or a goal".

This approach incorporates and integrates both objective and subjective measures of quality of life. Land (1974), for example, views the "life-space" of the individual as consisting of the following measurement domains:

- objective conditions
- subjective value content
- subjective well-being

This is not, essentially, different from Harland's requirement (1971) that social indicators, "must be direct measures of satisfaction-attainment".

Turnstall (1970) speaks of the need to incorporate, "the subjective, which includes aspects of personal experience such as frustration, satisfaction, aspirations and perceptions". In this context, it is useful to refer back to the statement by the authors of the OECD report that, "subjective indicators can be used to help the analysis and interpretation of the active objective parameters in a goal area. They are not ends in themselves, but rather a means of clarifying the significance of objective factors".

Let us use education, by way of example, of the means by which objective and subjective considerations can be associated with each other so as to increase our <u>explanatory power</u> in measuring and assessing specific goals. Let us assume that the objective of the educational policies and programs is to increase the educational levels of a given target population, the teenager. In the objective dimension we can measure expenditures related to various education facilities and programs, including curriculum and counselling. Still in the dimension of objective data, we can measure outputs in terms of percentage of target population remaining in school through various age and/or grade levels. One could also look at local job opportunities

and wage levels available to highschool age population. This, however, is basically descriptive information. The explanatory information lies largely in the perceptions and cognitions of the target population, and parents, with respect to the value and adequacy of education, aspirations, perceptions of other life choices and of the comparative advantages and disadvantages of each choice.

To quote Henderson again, "One of the major uses of these subjective measures would be to aid in the normative interpretation of quantitative indicators by helping to decide the appropriate level and desirable direction of change. Qualitative measures could also be of assistance in the relative ranking of the quantitative indicators of a subsystem in order of some definition of overall importance ...Further, subjective indicators can be used to suggest important inputs."

2.3 MEASUREMENT FRAMEWORK FOR LONGITUDINAL STUDY

The purposes of the longitudinal study are to identify current conditions including those with respect to personal and social adjustment; to identify and track changes in current conditions over time; and to identify and track changes in personal and social adjustment over time within the context of changes in conditions.

From the foregoing discussion we can summarize the key parameters of the measurement framework as follows:

- The data must be collected across a broad range of community, social and personal dimensions.
- The data must not be limited to any one concept or theory, but must, to the extent feasible, be able to accommodate a variety of theoretical approaches.
- The measurements must incorporate explanatory as well as descriptive capability.

- The measurements must include subjective as well as objective data with respect to the specified dimensions.
- Objective data should be collected from two sources:
  1) government and institutional sources (see Background Paper, Institutional Information System, with respect to the adequacies and applicability of these data);
  2) residents in the study communities with respect to detailed and specific data not available through government and institutional sources.
- Subjective data should be collected from residents in the study communities on an individual basis.
- The data from both sources should be organized and coordinated to provide relevant information, of both a descriptive and explanatory nature, with respect to specific policy and program sectors and goals, evaluation and the establishment and review of priorities.

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ALBERTA OIL SANDS ENVIRONMENTAL RESEARCH PROGRAM

LONGITUDINAL STUDY OF PERSONAL ADJUSTMENT AND SOCIAL CONDITIONS IN THE FORT McMURRAY AREA HS 30.1

PHASE 1: FINAL REPORT

REPORT: CHAPTER 3

CHARACTERISTICS OF NORTHERN RESOURCE COMMUNITIES

AUGUST, 1978

CHAPTER 3

CHARACTERISTICS OF NORTHERN RESOURCE COMMUNITIES

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CHAPTER 3

CHARACTERISTICS OF NORTHERN RESOURCE COMMUNITIES

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3. CHARACTERISTICS OF NORTHERN RESOURCE COMMUNITIES

3.1 INTRODUCTION

In the previous chapter we discussed and set out research design parameters for the study. In particular, we noted the following:

- the importance of establishing a research design which would be of general applicability - to both conventional and resource-oriented communities - and would also provide a context for the study of resource communities within the broader context on human settlement;
- the need to collect data from across a broad range of personal, family, social and community dimensions;
- the importance of collecting both objective and subjective data with respect to these dimensions;
- the need for a research design which would enable us to organize and coordinate data to develop information relevant to policy and program, evaluation and priorities.

In this chapter, and the next, we examine northern resource communities more specifically. Our objective here is to identify specific dimensions of personal, family, social and community life which should be incorporated into the study design. As we noted in the previous chapter, we have examined a considerable amount of material with respect to what these dimensions should be. We must, however, acknowledge our debt to Riffel (1975) and especially to Larson (1977). The latter provides the most comprehensive review and summary available of studies pertaining to the human condition in northern resource communities; and his analysis and suggestions are invariably instructive.

3.2 DIMENSIONS OF CONCERN

> "The present interest in our north and farther north is well based historically. The national task of Canada has been to create the resources and institutions by which the simple northern economy of the past can be developed on a national scale to an American standard of living. This we have been doing." (Morton, 1960, p.1)

Simply stated, the national task referred to by Morton focusses on, 1) the exploitation of the local resource base; and 2) the provision of a habitable living environment accompanying that exploitation. The former is essentially economic, the latter social in nature.

Typically, original and continuing emphasis is upon economic concerns associated with exploitation, with a gradual shift over time towards increased concern for the human dimension. Riffel (1975) postulates that this shift accompanies the development of the resource community through various stages or levels of maturation. His well-known stages of development are:

1. natural or prediscovery
2. prospecting, discovery, exploration and survey
3. industrial and community construction
4. industrial operation and community improvement
5. industrial and community operation, expansion of secondary and service induatries
6. community diversification
7. community maturity and stability.

For each stage he summarizes the major economic, demographic and social characteristics of the population. Throughout these stages the development of the resource base plays the dominant role in the community's economy. During the construction phase, emphasis is entirely upon building the plant to get at the resource itself. It is

at this stage that human problems become acute. The population soars overnight, accommodation and amenities are scarce, the historical fabric of social organization suffers severe strains and often is badly disrupted with attendant consequences. By the time the stage of industrial operation and community improvement is reached, the emphasis begins to swing towards inproving the human condition. It is usually about this time that the community population has stabilized sufficiently to throw up grassroots organizations and spokesmen to protest against conditions considered unsatisfactory.

As Riffel notes, development is not always linear. A one-company town may become a two-company town; a community stabilizing after the first rush of construction may find itself subjected to another rush as the second company begins plant construction. Sometimes development is frozen at one stage of development for an extended period of time. Sometimes community maturity is coincident with community decline as the resource base runs out.

The emphasis upon economic concerns is not solely that of the resource company. A number of studies have demonstrated that, in the early stages at least, a prime motivation bringing people to the town is the prospect of handsome wages and economic gain (Matthiasson, 1971; Lucas, 1971; Van Dyke, 1975; Porteous, 1976).

Some social characteristics include:

- difficult working conditions
- disproportionately high incidences of alcohol and drug-related problems, violence, racial discrimination
- restrictive social stratifaction
- social disorganization of the native community.

Some of the personal and family conditions include:

- difficulties in adjustment to life in the community
- work-related stress
- isolation, alienation and anomie
- high incidence of mental and emotional distress
- family breakdown
- poor identification with the 'community'
- "no one stays here long enough to die" syndrome

Some of the institutional characteristics of the community include:

- inadequate facilities for entertainment and recreation
- inadequate medical and related services
- poor communication with the south
- inadequate media services
- poor municipal infrastructure
- inadequate education facilities
- inadequate employment opportunities for women
- inadequate housing

Some of the economic conditions include:

- high cost of living
- inadequate employment opportunities for women

3.3 ENVIRONMENTAL CONDITIONS

This brief list of objectively identifiable conditions and characteristics is amply described in the studies noted above.

Riffel summarizes conditions and characteristics under 13 major dimensions:

Environmental Conditions

1) housing
2) townsite and other aspects of the man-made environment
3) natural environment
4) recreation
5) communications, access and transportation

Individual Attributes of People

1) income
2) education
3) employment
4) physical and mental well-being
5) family life
6) personal safety
7) political and social participation
8) community

A brief discussion of each in turn provides a useful context within which to begin to define the major objective and subjective data requirements.

3.3.1 Housing

One of the most frequent complaints in resource towns concerns the absence of adequate housing and the cost of housing, particularly for those residents who do not receive company or government housing assistance. In terms of objective considerations such as square foot per person and insulation, the housing does not appear to be inadequate by customary standards. In the early stages it is not uncommon for people to have to camp out or live in hotels

until they can find accommodation; and frequently that accommodation is a mobile home. Also, in the early stages of construction, reports provide some evidence of overcrowding and makeshift accommodation. The shift over time, however, is toward the types of housing usually found in southern communities. As Riffel says, "Housing in resource towns is basically a transplantation of southern forms to a northern environment, with some anomalies resulting." There is some evidence (Van Dyke, 1977) that residents' feelings of housing satisfaction are closely related to, and perhaps surrogates of, their perceptions of other dimensions of community life, both objective (access to amenities and services), and subjective (isolation, anomie, family well-being). Also see the discussion of Income below.

3.3.1.2 Townsite

In the case of an isolated resource base, the primary consideration in selecting the townsite is proximity to the resource. In some cases, a new town must be built, in other cases the new town is superimposed on an existing community. In general, townsite planning is satisfactory by southern standards although not necessarily appropriate to specific, local conditions.

The location and integration of the various town components - retail, services, local government, housing types, schools, recreation, entertainment - are not always well thought through in terms of process and evolution. Historically, town planning in Canada has tended to express itself in static terms (coloured sections on a map), rather than in terms of physical, social and community evolution. In the early stages of growth, therefore, resource towns are often characterized by the physical isolation of the various components from each other (as well as by the absence of public transportation); and some years pass before the gaps are filled into to create a coherent and

integrated system of settlement and activity. In this respect, the planning and growth of resource towns are not dissimilar to conventional suburban development in southern cities. It is reasonable to assume that the adjustment processes and stresses this creates in the southern suburbs (Perloff, 1969) are heightened in the more isolated communities where the accustomed networks of affiliation and association are not available and new ones must be constructed.

Usually, planning for resource towns is carried out by outside agencies and planning terms. The local council or government, if there is one, frequently lacks the experience, sophistication or understanding to be effectively involved in the hurried and accelerated planning process. There is little time for learning. The residents themselves are not usually involved until the later stages of community maturity, by which time all or most of the critical planning decisions have been made and are in the process of implementation. As a result, planned resource towns usually reflect the values of the planners and outside agencies as to what is "good" for the community. In this respect, as well, resource community planning bears some similarity to historical, and currently unacceptable, planning processes in southern cities from which most of the new resource community residents come.

In some cases, resource community planning has paid insufficient attention to local physical conditions with long term, negative effects upon the community. The most obvious example is Fort McMurray, where the physical separation of the various town components - apparently on the basis of an idealized town model of some kind - has created an extremely expensive settlement system, in terms of capital and, more importantly, operating costs. It will be important to investigate whether these costs are

also reflected in personal, family and social costs and satisfaction. The process by which resource towns are planned and developed reflects a lack of autonomy and effective decision-making by local government and residents which may be reflected in other dimensions of community life as well (cf, Lucas, 1971).

One can also question whether planners have paid sufficient attention, in locating and staging the physical site and built environment, to personal, family and social processes which may be encouraged or discouraged as a result. The old saw attributed to Winston Churchill and quoted in every first year planning course - we shape our buildings and they, in turn, shape us - is appropriate in this context.

3.3.1.3 Environment

There are two major dimensions to this topic. The first is the environmental impact of the new community and its inhabitants upon the natural environment. Most of the concerns under this dimension - water purity, air pollution, etcetera - lie beyond our terms of reference. Our responsibility, in this context, is to provide data upon which judgements can be formulated as to the types and incidence of use local inhabitants will make of the natural environment as a basis for policy planning: for example, outdoor recreation activities, especially camping, snowmobiling, hunting and fishing. These have potentially degrading effects upon the natural environment and must be taken into account in recreation, wildlife and natural resource planning. The importance of this dimension to our study can be judged from the priority which many resource community inhabitants give to the natural environment as a reason for living in the community (Van Dyke, 1977).

The second dimension concerns the effects which the natural environment - climate and landscape - have upon the community residents. On the one hand, we

find the natural environment as a high priority for many esidents in their determination of overall community satisfaction. On the other hand, there is considerable evidence that both the climate and landscape can have negative effects upon individual and family well-being, and upon behaviour.

With respect to climate, Kevan (1978), in his discussion of the seasonal behaviour of Canadians, refers to the research in Europe concerning psychological meteorology: the study of the influences of weather and climate upon the mental processes of man. Kevan notes that this research, "has shown that there is ample statistical evidence to suggest that both seasonal and day-to-day weather changes influence the dispositions of both normal and mentally ill subjects". Kevan goes on to stress that, "that causes of the observed relationships are by no means clear".

With respect to seasonal behaviour in Canada, Kevan worked with gross national statistics on marriage, birth, births of schizophrenics, deaths and suicides. With respect to suicides, he points to a distinctive annual pattern in which there is an increase in the incidence of suicides during April, May and June. his seasonal distribution of self-destruction, he notes, is different from the distribution of death by all causes. He also quotes a study of suicide and suicide attempts in the Yukon Territory - which may be appropriate to our study. This 1975 study by Kehoe and Abbot (Kevan, 1978) points to an increase in suicidal behaviour around the times of the equinoxes. It is not clear from the data whether this northern pattern is due to climatic factors or to local socio-economic activities which precipitate latent anxieties or alienation.

Kevan also quotes some evidence that admissions to mental institutions also have seasonal trends, and increase during the spring and early summer; and notes that statistics from the United States show some seasonal variation in incidences of crime.

Kevan warns that this statistical evidence must be treated with caution. It is worth quoting him at length:

> "Interpretations of the meaning of results obtained from monthly summarized data must be made with care. The mere fact that some sort of behaviours occur with greater or lesser frequency at certain times of the year does not necessarily reflect that weather conditions have anything to do with the relationship. The distribution could be indicating the effects of social festivities, economic conditions or even astronomical forces which occur at specific times of the year. It also is possible that the true significance of the role of seasonal weather is being masked by the usage of monthly summarized weather. There is every indication that Canadians neither physiologically feel nor perceptually believe that there are four distinct seasons which begin on the first day of one month and end on the last day of another. Another biometeorological problem which arises from the usage of national data is the assumption that the seasons begin and end at the same time throughout the country. In a country as large as Canada, this assumption should not be considered valid. Arctic Canada does not have the same seasons as southern Ontario, nor do the Maritimes experience the same winter or summer weather as do the Prairies. Those factors must be kept in mind in any study of seasons and behaviours.
>
> The array of climates which exist in Canada, coupled with the assortment of cultural backgrounds among Canadians, make the fields of psychological and sociological biometeorology extremely challenging to Canadian research workers."

We have not been able to locate comparable research with respect to the effects of the natural landscape upon local residents. There is, however, considerable indirect evidence which suggests that perceptions of the landscape as friendly/unfriendly, hospitable/inhospitable, safe/threatening, are associated with attitudes towards the outdoor recreation and geographic isolation (Larsen, 1977).

There is also some likelihood that attitudes towards the climate and the landscape are associated with each other.

In this respect, it will be useful to draw some comparisons between different kinds of resource communities at different locations and different stages of development and maturity. One can postulate that in resource communities which are more isolated, smaller and less socially cohesive new residents will feel more vulnerable to, and/or disturbed by the natural environment. One can also postulate that this effect might be less among new residents in established communities, such as those in the Cold Lake Region where resource development represents incremental rather than exponential change; and where the landscape is more familiar because it is to large extent 'civilized' i.e. agricultural. Conversely, the civilized character of the landscape may represent a source of dissatisfaction to some new residents who would prefer less unnatural surroundings.

3.3.1.4 Recreation

The various studies of resource communities noted above, and others, note a heavy emphasis upon recreation by respondents. Riffel, however cautions that residents' apparent satisfaction with recreation opportunities may only mask deeper feelings of boredom and the need to escape from unsatisfying dimensions of community life: in his words, "This place is so isolated that you just have to go out and get interested in some sport or activity; otherwise you're stuck at home with all your free time".

Clearly residents' satisfaction with the recreation opportunities available in a resource community depend in part upon their own predispositions, in part upon the actual availability of these opportunities, and in part upon perceptions of physical and social access to those opportunities. Much also depends on the development stage- in the construction and early development stages of the

community the workers put in such long hours that there is little leisure time available for recreation. It is during these stages that the non-working wives seem most vulnerable to feelings of loneliness and isolation. In communities where there is no public transportation, or where distances between locations are great, some residents, particularly non-working women and their children, may find the distances physically or psychologically insurmountable. Similarly, in socially stratified communities, many residents may perceive the recreation opportunities provided by some groups or in some parts of the community to be socially inaccessible. Also, local recreational opportunities and facilities are frequently inaccessible to the general community; particularly those opportunities and facilities provided by companies only for their employees and the employees families. Within this last subset there is some evidence that employees and employee families feel cramped by unending propinquity: living, working and playing with the same people.

Riffel notes that the orientation in organized recreation in resource communities is to children and adolescents. There are relatively few organized recreation programs for adults, and of these very few are for non-working wives. Much of the responsibility for organizing these activities falls to volunteer groups, and there is not a consistent and high level of support from government or industry. Consequently, recreation programs and activities depend upon the organizational capabilities of volunteer groups which suffer from the same population turnover rates as the general community.

3.3.1.5 Access

It is in the nature of isolated communities that their residents often feel isolated from the mainstream of settlement and life. This feeling seems to be most

accentuated during the early stages of development when quality of life - enhancing conditions in the community are most scanty. In later stages of development, as the community grows and matures, and has more internal resources from which to draw these feelings seem to decline in influence. Riffel seems to favour approaching the problem by reducing the difficulties of access rather than by enhancing the quality of life. A number of large companies have long-standing policies in this regard, flying employees on a regular basis to a major urban centre. Consistent with this approach, Riffel discusses the issues associated with the friction of space: distance, time, money, convenience, safety, and allocation of costs among various parties: different levels of government, industry, individual resident.

From our perspective, it is not certain that difficulties of access are both a major and continuing concern among residents. The evidence from Van Dyke (1978) and others is that feelings of isolation seem to decrease as the community matures; and its importance for new in-migrants to the community will be associated with other dimensions of community life and satisfaction, including ease of entry into and adjustment to the community, perceived adequacy of community resources, and access to friendship networks.

Much may depend upon existing access patterns in the community. In Fort McMurray, for example, where, in the early stages there was not a strong tradition of ready and convenient access to the south, feelings of isolation might have been stronger than they would be in the Cold Lake region. One can postulate that in the Cold Lake region, with its established agricultural character and long standing communities, with established patterns of travel to and from Edmonton and other communities, new residents will receive a different kind of socialization with respect

isolation and access.

As we noted above in earlier sections of this chapter, it seems reasonable to postulate that feelings of isolation and access to the 'outside' are associated with other dimensions such as perceptions of the climate and landscape, and adequacy of the existing community life. Typically in the literature, resource communities have been associated with the north, isolation and a raw, uncivilized landscape. It is by no means clear how relevant the conventional wisdom regarding resource communities will be with respect to resource development in areas which are already well established and settled, and particularly how important the question of access will be.

3.3.2 Individual Attributes

3.3.2.1 Income

As we noted at the ourset of this chapter, what seems to draw many or most people to the resource community, particularly during the construction phases, is the opportunity for increased income. Traditionally, the pattern of migration seems to be that people move into the resource community, make their money, and then leave. This is one of the reasons given in the resource community literature for the high population turnover in such communities.

The literature also suggests that most people in resource communities are satisfied with their incomes. Matthiasson (1970) found that income from employment in the resource communities he studied was above the national average. It is reasonable to assume that this still holds true as a general rule. General rules can, however, contain within them anomalies.

The experience of Fairbanks in connection with Alyeska is that all sections of the labour force saw their incomes rise during the years of pipeline construction. But there were some differences. The average incomes of those

employed in construction increased by 50 percent after allowing for the effects of inflation.

About 40 percent of the Fairbanks labour force, however, saw their incomes rise at a slower rate, and at a rate less than the local inflation rate - which was about 30 per cent higher than the United States average. People in Fairbanks who fell into this group included government employees, office workers and persons working in retail outlets, general merchandise, banks and service industries. Unorganized workers were especially hard hit by the erosion on their incomes caused by inflation generated largely by the pipeline construction. (Fison, 1977; Lysyk, 1977)

There is also a third group which derives no income benefit - direct or indirect - from resource development: those on fixed incomes, particularly the pensioner and those on welfare and unable to work.

Persons in each of these groups faces particular opportunities and/or problems in a resource community.

Resource communities as a general rule suffer from cost-push inflationary pressures. These pressures are generated by the costs of transportation, the lack of local food, building, manufactured and other supplies, the difficulties and costs of construction in the north, and the cost impacts of long, severe winters.

Once the community enters into the construction phases it is subjected to heavy demand-pull inflationary pressures. Demands for labour directly and indirectly associated with construction soar. Population increases proportionately to these demands, and the secondary employment sector related to this population increase grows proportionately.

It is an uneven process, with all sectors of the resource and local economy competing vigourously for unskilled, semi-skilled and skilled labour of various kinds.

Using the estimates of Lysyk (1977) for the Alaska Highway Pipeline, it appears that for every person employed directly on the pipeline construction, an additional 1.36

jobs are created in indirect and secondary employment in the community. Assuming a work force of 9,000 persons directly employed on the construction of the Imperial Oil plant in Cold Lake, and applying the same ratio, this would mean 12,240 additional jobs in the region to be filled.

In such circumstances wages and salaries increase in some proportion to the unmet demand for labour. For those directly involved in the construction of the resource development facility, the ratio of income to cost of living is excellent; particularly since the resource company and contractors often provide additional financial incentives in the form of subsidized rents, interest free loans for housing and similar subventions.

In the indirect employment sector, the situation is more variable. In Alberta, the government and municipality frequently assist employees in the resource communities in the form of subsidized housing, isolation bonuses and the like. For the remainder of those employed in the indirect and secondary sectors, conditions can be more difficult. Wage scales vary considerably depending upon the skills of the worker, the occupation and sector in which he or she is employed.

Most of these people, however, must compete on the open market for housing in conditions of intense demand for inadequate supplies. Some people manage to establish an excellent income to cost of living ratio; others do less well.

Consequently, it is not surprising to find evidence to suggest that while incomes may be high, there is also a high rate of personal indebtedness. Respondents in Van Dyke's report (1977) speak of being so in debt they cannot afford to leave Fort McMurray. Van Dyke attributes this degree of indebtedness to both the high cost of living in the community, and also to compensatory consumption - buying goods such as recreation vehicles to compensate for the isolation of Fort McMurray.

It is not certain to what extent this syndrome would be repeated in well established communities such as those in the Cold Lake Region.

Women, as a group, seem to benefit considerably from the labour shortage. Resource companies are beginning to employ them directly on construction in jobs which traditionally belonged exclusively to men, such as truck drivers. One can find similar occurences in the indirect and secondary sectors of the local economy. We read of women earning up to $1,000 a week, including overtime. (Van Dyke, 1977) It is not yet clear whether this is a trend and how far it will extend into traditional male occupations.

Conversely, we also read of women being forced to go to work to supplement their husbands' incomes in order to cope with the high cost of living. Here again, it is not clear how prevalent this circumstance is. We also do not have, as yet, detailed information on women's earnings.

Teenagers are also drawn into the labour market during the construction phase, rather than completing school. Wages are such that a teenager can make more during the construction phase than he could expect to earn if he completed highschool and university. (Van Dyke, 1977). It is not known yet whether these people will remain in the work force after the construction phase or return to school for further education or vocational training.

The third group - those on fixed incomes - would, one assumes, suffer considerably. Even if their cost of housing and utilities did not increase, they would still be faced with higher municipal taxes and increased prices for all goods and services.

Typically, at the bottom of the ladder are the native people: the Indians and Metis. We discuss their situation further on in this Report, and in our Background Papers, Indians and Metis, and The Local Business Economy in Resource Communities (where we also discuss in more detail

incomes and employment in the non-native economy).

The income position of the natives, however, also seems to be variable. There are some who are able to take advantage of the increased demand for goods, services and labour with significant benefits to themselves. In general, the data suggests that most natives find themselves unable to participate in the benefits of the growth syndrome and, when they do, they are significantly less well-paid than whites (Riffel, 1975; Larson, 1977; NEB, 1977; Lysyk, 1977).

This is not uniformly the case. The resource companies themselves usually make a point of paying natives the going wage for the particular occupation; and, in addition, will provide training and counselling programs to bring the native employee up to the level of skill required in the particular occupation. These helping procedures are not usual in the local economy, however; indeed, they would likely be beyond the capacities of many small businesses.

In summary, although incomes in resource communities are noted to be higher than national and provincial averages, variations within the community itself are considerable. One can identify three major groups in terms of income:

1. those employed directly on construction or the operations phase for whom the ratio of income to cost of living seems to be excellent;
2. those employed in jobs indirectly related to construction and operations, and those in the secondary sector, for whom the ratio can be highly variable;
3. those on fixed incomes whose position is eroded by the effects of demand-pull inflation caused by construction and related activities.

It remains to collect more detailed and precise information regarding incomes, costs of living, and related dimensions of economic, social and community life. This is

an essential starting point for the definition of opportunities and problems with respect to specific target population where government policies and programs may be appropriate.

3.3.2.2 Education

The dimension of education in resource communities is discussed at length in our Background Paper, 'Children and Education'. We will not attempt to summarize that discussion.

There, are, however, several points worth noting with respect to Riffel's discussion. He states that the available information on the satisfaction of residents of resource communities with their education system suggests that education is not a major concern of most residents, and that it is not a major source of either satisfaction or dissatisfaction.

These findings may derive from studies carried out in communities during early stages of development, or in particular types of communities. Riffel's reference is the Jackson, Pouchinsky (1971) study of northern mining communities. The major thrust however, of the literature we have examined with respect to parental aspirations for their children runs counter to these findings. Clearly, there are differences in parental aspirations, and some of these may be attributable to the parents' socio-economic status. Nonetheless, the importance of the children in the family, and the importance of the school in the child's life makes unlikely the proposition that schools are a neutral dimension in perceived satisfaction with the community. This is discussed at length in 'Children and Education'.

Furthermore, the mediating role of the education system in the child's adjustment to the new community, to increasing maturity, and to socialization, renders the system a key dimension for detailed study. The centrality of the school's mediating role cannot be downgraded if one is to examine realistically personal,

family, and social adjustments in any community, especially resource communities.

3.3.2.3 Employment

In our Background Paper, Quality of Working Life: Job Satisfaction, we discuss the general dimensions of employment and employment satisfaction, and their relevance to community satisfaction. In summary, some points might usefully be made here.

Our concern is not primarily with job satisfaction and labour turnover per se but with the impacts it has upon the community. In a conventional large community, labour turnover may have minor impacts upon the community as a whole because the worker often takes another job in the same community. In resource towns which, typically, are smaller and more vulnerable to the effects of population turnover, the worker frequently leaves the community. He leaves behind him gaps in the social fabric which previously he and his family filled. We have some anecdotal evidence to the effect that sense of loss felt by those left behind is not insignificant and less them less willing to open themselves to comparable relationships with newcomers. The psychological aspects of this syndrome are well discussed in the literature, and the implications they may have in a transient resource community may be considerable. The effects of transiency upon those left behind is a dimension of resource communities which has not, to the best of our knowledge, been effectively researched to date.

As Riffel notes, there is not a great deal of information available pertaining to quality of working life and job satisfaction in resource communities: and what is available is not consistent in its findings. We expect that a good deal more is available in the various resource companies - and we hope to have access to some of that material from Syncrude and Great Canadian Oil Sands in Fort McMurray. In particular, one issue which needs detailed examination is the

relationship between job satisfaction, quality of working life and labour force turnover. The emphasis which the major companies are placing upon decreasing sources of job dissatisfaction belies Riffel's conclusion that labour turnover in resource towns is high but does not appear to exceed the rate for comparable employment in other towns. Our understanding, based upon discussions with the two major employers, small businessmen, and government employers is that labour turnover is a persistent and expensive problem. Consequently, any measures which increase job and/or community satisfaction, may bring significant benefits to the community.

There is perhaps a new perspective which should be taken into account with respect to job satisfaction and labour turnover. Historically, resource communities have provided almost one-of-a-kind opportunities for people to earn high incomes in comparatively short periods of time. It has been this high return for time invested which justified living in remote and perhaps uncomfortable surroundings. Having made his money, the worker would then return to his or her more customary surroundings in the south. Given current economic conditions in the country, especially the likely long-term high rate of unemployment across the country, it is not clear that the ordinarily transient worker will continue to regard his or her return to the south as a reasonable option. The combination of good earnings in a resource community, coupled with the absence of respectable earnings elsewhere, may induce a lower rate of turnover in resource communities.

Furthermore, the extraordinarily high level of capital investment proposed for northern Alberta, and elsewhere in the province, may lead to different patterns of worker and family transiency: intra-regional, or intra-provincial, rather than inter-provincial. We may find over the next few years the development of a new work force - a work force which is transient, but which is transient within a relatively small and clearly defined area. A transient

work force has always existed in this country, but the scale of the proposed developments in Alberta presages an exponential growth in its size. This implies important changes in its characteristics, its expectations and its ability to move, to enter different communities, and to pass easily through the various adjustment processes of which Larson (1977) writes.

One of the changed characteristics of the transient work force might well be a higher proportion of older married workers with growing families. During good times such workers might not normally consider transiency or extended residence in a resource community as a suitable form of family life. Given the relative lack of satisfactory employment elsewhere, they might decide otherwise. The entrance in significant numbers of such workers into a resource community labour force might well soften some of the usual impacts of resource development upon the various communities.

It will be important, therefore, to identify changes in the characteristics of the transient work force over time. The implications such changes - if they occur - will bear heavily on the significance of the kinds of social impacts historically associated with resource community development.

3.3.2.4 Physical and Mental Well-being

Riffel deals with this dimension primarily in terms of physical and mental well-being and the availability of facilities to deal with physical and mental 'unwellness'. In the terminology we use, well-being refers to a much broader range of dimensions which we will discuss below.

Within the more limited definition of Riffel, the evidence suggests that resource community residents rank dissatisfaction with medical facilities very high. In Matthiasson's study, respondents placed it third in importance. Resource communities face the same problems as most small, relatively isolated communities with respect to the provision

of medical and related facilities and services. It is difficult to attract and hold good professional staff. Facilities are small. It is difficult to provide the range of facilities available in the south. Specialists are hard to come by. As is common among many people in smaller communities, resource community residents often prefer to come to the large cities for medical and related services. This seems to be particularly true for those who feel they require specialized treatment or who have some affliction which they do not want treated in the community (e.g. venereal disease, mental and emotional distress).

Riffel notes that because of the age composition of the population (predominantly young) one would expect that the health service requirements of the resource community would differ from those of more conventional communities, lower morbidity and mortality rates, and a different distribution of causes of death and types of illness. Complaints about alochol abuse and its effects are common in all the literature.

Furthermore, a number of the studies suggest that the incidence of mental and emotional distress or ilness is higher in resource communities than elsewhere, especially among unemployed wives. We are not pursuaded that, in fact, mental illness is more common in resource communities than elsewhere, or that unemployed wives in these communities tend to be more prone to mental illness than unemployed wives elsewhere (see next section: Family). We have noted above (Environment) Kevan's review of the literature regarding seasonal variations in Canadian behaviour and well-being, and the statistics which suggest that Canadians in the north have different seasonal patterns with respect to mental illness than Canadians elsewhere. The evidence is not, however, convincing that residents of northern resource communities suffer more, although they may suffer at different times of the year.

Residents of resource communities over the past

fifteen years or so have been subjected to a kind of microscopic examination (of varying kinds and quality) which most other communities have managed to avoid. There is a very real labelling process which may occur (see our Background Paper, Social Deviance), by which a community, or type of community, is labelled as being of a certain kind (full of drunks, women aren't safe on the streets, you can die of boredom, it's the end of the world). It is possible that people entering the community may be pre-socialized so that they see what they expect to see, and behave accordingly. An unemployed housewife who has acute feelings of loneliness, depression and distress may associate these feelings with life in the resource community rather than with the common after-effects of relocation and the feelings of displacement and isolation which normally follow.

An important function of our work is to begin to clear away some of the underbrush and develop a more reliable and complete picture of what is happening in resource communities with respect to a number of different questions, such as:

- actual rates of morbidity and mortality. This will necessitate checking medical records in other communities, especially Edmonton and Calgary, to determine the use being made of medical and related services and facilities by residents from the study community, and the characteristics of use and of the users;
- demands for and use of a variety of medical, medically related and other services within the study community;
- Incidence of feelings of mental distress in the study community;
- the use of alcohol;
- the use of illegal and prescribed drugs.

Issues related to well-being are discussed in the following section.

3.3.2.5 Family

Riffel notes there is little information available with respect to family life and family well-being in resource communities. He also notes that one of the most important reasons a worker leaves a resource town (aside from economic considerations) is that his family is not happy with life in the community. It is worth quoting him with respect to the importance of examining dimensions of the family as a component of quality of life in a resource community:

> For the vast majority of Canadians, the basic social unit is the family. The family is the basic child-raising unit of society, as a major factor influencing the social opportunities of the young, and as a source of personal identity and of the satisfaction of basic emotional desires. It can thus be argued that any serious examination of social concerns or the quality of living must involve an inquiry into the famiy. (Riffel, 1976, p.45)

As one picks one's way through the resource community literature one can elicit findings which clearly bear in some way on one more dimensions of family life, well-being and perceived satisfaction with the community: marital infidelity,excessive use of alcohol, school performance, delinquency and truancy, feelings of isolation, loneliness and anomie, recreational activities, high cost of living, work-related stress and others. In general, however, the research has not addressed itself specifically to the family as a unit in the community, or to intra-family relations as an aspect of perceived individual well-being and community satisfaction.

Larsen in his review of the literature devotes considerable space to the various dimensions of family life which need examination. In justifying the importance of this

research, he states: "Given the widely accepted assumption that the family is the basic institution in the personal growth and development of the individual and the major stabilizing force of society (emphasis added), it would appear apparent that the family represents a central resource in coping with and discovering a satisfying lifestyle in resource communities." (Larson, 1977, p.11)

Even if one reduces the discussion to crude economic terms, it is plain that both government and industry have a heavy stake in the development of a satisfying family life in resource communities. The direct costs to industry of labour turnover, caused in significant measure by family dissatisfaction, are substantial. The direct costs associated with hiring, training and introducing new staff are particularly costly with respect to skilled workers, supervisors and management.

From the government perspective, there are heavy costs associated with a highly transient community; there are indirect costs associated with the social disorganization and impacts on the education and social welfare system which flow from conditions of high population turnover and dimensions of dissatisfaction associated directly or indirectly with that condition.

We have referred throughout these chapters and in the Background Papers to many dimensions of family life which need to be addressed and examined. It is not the purpose of this study to concentrate on family life in resource communities - during the construction phase the proportion of singles in Fort McMurray reached 25% (see our Institutional Information System: Preliminary Data). Nonetheless the data we collect must contain dimensions which can be aggregated to establish family profiles along the most relevant dimensions.

The literature on family life and well-being is highly diverse and extensive. In the next few pages we will

discuss in very summary form the general approach we intend to take and the major dimensions we intend to examine.

Talcott Parsons defined the family as an open, multilineal conjugal system (Parsons, 1959). Given the strong mobility characteristic of industrial (and now post-industrial) society, Parsons argues that ties with kin become multilineal, based on friendship rather than obligation. The nuclear family - father, mother, small number of children - becomes the norm, moving from place to place, establishing its affiliations in each place and then moving again.

Although the theory has been criticized from the outset, it had for a long time, a certain ring of truth, given falling birth rates and incontestably high rates of family mobility. Currently, the tide in the argument seems to have turned and once more researchers are stressing the importance of kinship links and the search of the family for community.

A recently published study by the University of Alberta Population Research Laboratory (Larson et al,1978) suggests that kinship ties are still important - in a helping and/or friendship sense - among many families. Significantly, for the purposes of our study, the study finds kinship ties of a traditional kind seem to be associated with lower rather than higher socio-economic status; and among higher status families kinship is associated with religious values, as it is among lower status families.

As one can see, the range of research and the dimensions of family life are so richly suggestive that even a few lines of definition leads one to useful questions for study.

To be effective a study of the family must encompass:

- the individual members of the family: father, mother, each child,
- The interactions of the individual members

of the family with the various dimensions of the work, social and community environments,

- the relation of the family to the community,
- the relation of the community to the family.

Clearly, these dimensions are closely related to and associated with each other. It remains to pick dynamics of each dimension which appear to be particularly appropriate to resource communities.

Larson provides an instructive model based on the postulate that the key dynamic is the entrance of the family to a new community and its adjustment to that community. One of the advantages of this model is that it can apply, with some modifications, equally well to single persons. Larson suggests there are four major factors to be studied (which in combination lead to the fifth, which is the reason for staying/leaving). The four factors are:

- Pre-mobility factors
- Transition factors
- Destination factors
- Post-mobility adjustment factors
- Pre-mobility factors. Key considerations here include:
  - characteristics of the migrating family: socio-economic status, social psychological characteristics, marriage relations, family relations
  - reasons for migrating: migration history, expectations, voluntary/involuntary migration, preparation.

The voluntary/involuntary dimension has some useful connotations with respect to resource communities. The literature on mobility generally suggests that people who migrate involuntarily (e.g. the husband is transferred, or the husband wants to go and the wife feels she had no choice) have

a harder time adjusting than do voluntary migrants (Fried, 1965). With respect to resource communities it is important to note one of Fried's conclusions: preparation for the move is the most important factor in facilitating adjustment to the move.

The research in this respect is significant. Angell (1951), for example, found that mental instability was found to be higher among wives than among husbands in mobile families. Jones (1973), however, found that women who visited a community prior to moving there appear to have adjusted better to the new surroundings than wives who had not visited first.

It is important to remember that mental instability among wives in mobile families is not uncommon, because it provides some perspective to the persistent claims noted earlier that life in resource communities encourages mental distress in wives, particularly non-working wives, and their children. One of the senior associates of our study, Dr. A.G. Scott of Glenrose Hospital, has informed us that this distress phenomenon is common among families in which the husband is in the military forces and is transferred regularly. It is also important to note Jones' finding that the women in his study who seemed most affected by the move were in the 20-29 age group, and that the eventual adjustment of wives was the most uncertain in blue collar families. The implications with respect to resource communities are clear.

The findings with respect to children are similar. We have discussed these at length in our Background Papers, Social Deviance and Children and Education. Very briefly, relocation for a child can be highly disturbing, and adjustment processes in the new community and in the new school can be difficult and prolonged. This seems to be particularly true if the school does not have mechanisms to ease the child's process of adjustment. It is also noteworthy that the child's attitudes towards and feelings about relocation

and the new community tend to reflect those of his or her parents. If the mother, with whom the child is likely to spend more time than with the father, is distressed, it is reasonable to assume these feelings of distress would be reflected in the child.

Transition factors. The migrant family enters the new community as a unit and as a set of individuals interacting with each other and individually with the community: the husband with his fellow workers; the child with the school and school children; the wife, if she is not working, with neighbours and whomever she finds. It is not an easy set of processes to unravel. If the family arrives with clearly defined goals, adjustment may be easier. If the husband and wife share the same friends the process may be easier; if the wife has physical and social access to ongoing community processes, if the child can find a place for him or herself at the school easily, if the wife works, if the community is responsive, the adjustment can be easier.

Some of the considerations are:

- spouses' satisfaction with each other
- the efficacy of family coping mechanisms
- the presence of friends and/or family
- the husband's time available with the family
- expectations of the community
- husband and wife make new friends in common
- the existence of clear family goals with respect to life in the community
- the wife's physical and social access to ongoing community networks of friendship, neighbouring, organization
- access to recreation facilities and programs
- child's adjustment in the school
- coping mechanisms in the school for new children
- the family's preparation for entrance into the community

. the community's response to newcomers

Clearly, some of these considerations lie beyond the scope and responsibility of government intervention. Others do not. We have already noted above the central mediating role played by the schoo. Another key consideration is the community response to newcomers.

Destination factors. Larson quotes a study by Hansen and Hill (1964) which specified four different types of community response to family crisis - as entrance to a new community might be perceived by many families. The four categories are:

1) therapeutic e.g. provision of housing or financial aid, counselling services
2) social welfare: e.g. provision of aid to families with inadequate incomes, provision of the information
3) repressive: e.g. control of dissent or outward signs of dissatisfaction through social isolation, threats of job loss.
4) persecutive: e.g. discrimination on the basis of race, colour.

As Larson notes, this taxonomy of community responses implies the capability of the community to create family stress as well as to ease it during entrance to the community.

One can extrapolate from this taxonomy one less oriented to event-specific crises and more oriented to the more processual conditions of family entrance to the community. It is then possible to delineate more precisely the roles and responsibilities of the government sector with respect to each component of the taxonomy. One can visualize a number of direct government interventions (local and provincial) aimed, if and where appropriate, at the therapeutic and social welfare components. There may be some usefulness to indirect policies and programs, derived from community development,

organization models, aimed at the other two components of the taxonomy with respect to ameliorating potential family/community stress at the time of the family's entry into the community. Such indirect policies might be appropriate if, in fact, our study showed that repressive and persecutive community responses were taking place generally or with respect to specific population sub-groups.

At a more specific level, as we noted above in our discussion of the townsite, the location of the various components of the built environment in relation to each other with respect to physical access can also have adjustment-enhancing effects. At a more detailed level, the specifics of urban design can enhance or deter family adjustment. There is a considerable body of evidence with respect to neighbouring, for example, which demonstrates that neighbouring is more frequent among families in dwellings with at-grade access; and that households in multiple dwellings without at-grade access tend to see each other less and not to know each other. At an even more detailed level, there is evidence (Oostendorp et al n.d.) that details of buildings, such as the design of entrance ways, stairs, and other building components, can stimulate measurable responses among observers, and that these responses can be organized into such scales as hostile/friendly, orderly/disorderly, cramped/spacious, relaxed/tense, apprehensive/confident. We do not expect to be able to extend to this level of detailed analysis in our proposed survey work. Such an examination could, however, be of considerable usefulness in setting out policy guidelines with respect to design considerations. It would be especially useful with respect to new town design and development. As we noted earlier, in our discussion regarding townsite, the physical qualities of the community can have a significant and lasting effect upon residents. Such effects can be of particular significance at the time of entrance and early adjustment to the community.

The other destination factors include the community's stage of development, the work situation, the resources of the community with respect to family life, and the demographic characteristics of the community. We would extend this last factor beyond simple demographic characteristics, although this is undoubtedly important. To cite one small example: the proportion of persons in the 65 plus age group is about .5% in Fort McMurray; a person in that age group moving to the community, perhaps with a son and his family, might have trouble finding peer companionship. We would also consider socio-economic status an important consideration, given the evidence which demonstrates differences in attitudes and behaviour between higher and lower socio-economic status groups in resource communities (Larson, 1977). We also intend to look at the perceived presence in the community of persons with whom the respondents would feel themselves compatible. Here again, community development/organization models provide instructive insights with respect to policy-relevant information.

Post mobility adjustment factors. This represents the longer term phase, following transition, during which time the family gradually adjusts itself to living in the community. During this process the more conventional dimensions of community life begin to assert their enduring importance: housing satisfaction, work satisfaction, education satisfaction, isolation and anomie, and those other dimensions which we have discussed in this chapter and in the Background Papers. Within this overall adjustment processes, the family's own dynamic proceeds both internally and in interaction with dimensions of community life. It is the longitudinal study of these adjustment processes and interactions that we will be able to defind more clearly the relationships among family well-being, quality of life and community satisfaction.

3.3.2.6 Safety

The evidence from Van Dyke (1977) and others is that residents of resource communities have some concern for law and order in their communities. We have not been able to locate any convincing research with respect to the actual incidence of crime in resource communities; the one or two studies we have seen on the subject do not appear to be instructive. Certainly, there is no doubt that some residents in Fort McMurray perceive crime to be a problem. We do not have evidence that it is any more serious there than in other urban centres. Residents of the area inform us that public disorderliness was a problem during the construction stage when young men from the camps came to town on the weekends, but that this has passed. There is also some evidence that juvenile delinquency is becoming noticeable, but again it is not clear whether the incidence of this type of behaviour is out of the ordinary. What we may have here is the labelling process we discussed earlier.

A closer examination of the evidence available suggests, but only suggests, that the perceived crime situation is closely associated with residents perceptions of and attitudes towards the local Indians. There is no doubt that natives have a very high visibility with respect to crime. Larson quotes Manitoba statistics to the effect that while Manitoba natives make up only 7 percent of the provincial population, they constitute 45 percent of the population of correctional institutions. We do not have comparable figures for Alberta, but we expect they would demonstrate a similar order of magnitude. There is overwhelming evidence that the great proportion of native offenses are related to excessive drinking (see below, Native People).

Two types of data need to be examined. Objective data with respect to the incidence of crime and related demographic characteristics,and more precise data on perceived incidences of crime. From an examination of these data one can begin to build a more precise picture with respect to

crime and safety in the community.

3.3.2.7 Participation

The evidence cited by Riffel suggests the residents in resource communities participate actively in local government and local affairs; and that married people tend to be more active than single people. This pattern does not seem dissimilar to that in communities of comparable size to the south.

Our interest with respect to resident participation is that it implies a certain degree of community affiliation and rootedness. Our instruments address this dimension from a number of different perspectives. We expect to find that participation in community affairs increases among married persons in some relation to their length of residence in the community; the pattern with respect to single persons, especially the young, may be less perceptible.

Since conceptually, participation derives directly from functional communities, the reader will find relevant discussion in the following section.

3.3.2.8 Community

Throughout this discussion and in our Background Papers we refer frequently to community satisfaction and its importance as a desirable end in itself. We noted on a number of occasions our assumption that increasing a person's satisfaction with a particular dimension of his or her environment, or decreasing a source of dissatisfaction are important objectives with respect to improving the quality of life, reducing high rates of population turnover, and other undesired characteristics of life in resource towns.

We have not, as yet, addressed the question: what is meant by 'community'? What is this human organism with which we wish to increase a person's satisfaction and lessen his or her dissatisfaction?

Nisbett, in his classic work, The Quest for Community (1953), argues that the quest for community represents the core

of social order. What is interesting about this definition is that it defines 'community' as a search rather than as an organism fixed in time and place. This is true of much of the most useful literature on the subject. The destination can be defined in broad, generic terms - as we will do in a moment. But it is the quest itself, often only half-consciously realized, the activities, operations, dynamics, processes, which the individual or family or group undergo, which give meaning, form and satisfaction to the everyday activities in life.

As people pass through the various stages of their lives, their needs change and so, accordingly, do their perceptions of the quality of life. In such conditions of constant flux, the notion of a government being able to meet all the people's needs, of making everyone satisfied, seems ephemeral. We recall coming across a variation of Parkinson's Law with respect to work, to the effect that the amount of dissatisfaction increases to fill the facilities available. The author may well have been a government official.

With that sense of the limitations which outside agencies face in dealing with an individual's satisfaction with his or her community, let us turn to defining more precisely what it is we mean in this study by the term "community".

Most definitions of community describe it as a place in which certain things happen, in which certain personal or family objectives are obtained. Researchers at the University of Calgary (Hawkes, et al, 1977) postulate three major dimensions of community:

1. Security: the need for physical safety, survival, the attainment of psychological needs such as nurturing and friendship.

2. Diversity: the human's need for variety, change and stimulation with respect to personal, family, social and work life.

3. Competency: the need for mastery of the environment, acquisition of skills, exercise of skills, mastery, power and influence.

We find this categorization, and others like it, interesting at the conceptual level. The authors derive from these concepts a number of highly specific conclusions regarding what should be done in northern communities to make them more satisfactory places in which to live. The list of conclusions is instructive by itself. We are not, however, persuaded that the conclusions necessarily follow from the prime concepts.

In our view a more valuable approach is that which bases itself on the actual experiences and expressed preferences of people. We have referred on a number of occasions to the work of Flanagan (1978) who derived his concepts of community satisfaction and quality of life from extensive interviews over a period of time. Also valuable is the research of Blake, Weigl and Perloff (1975) into people's perceptions of the ideal community. In this case, the authors hypothesized and tested a three-part categorization of satisfaction dimensions:

1. System maintenance and change: characteristics of a community insuring the environment's long-term survival. Relevant community attributes might be medical services, employment, shops and services, personal protection and safety.

2. Relationships: the extent to which persons support each other. Pertinent attributes might be the proximity of friends and immediate and extended family, neighbouring.

3. Personal development: characteristics of the community facilitating personal growth and the development of self-esteem.

The authors see this last dimension primarily in terms of community services, recreation opportunities, entertainment, clubs and organizations. We would take a broader perspective, looking to personal development dimensions, particularly with respect to work and interpersonal relationships.

After extensive testing the authors found that, in fact, the attribute values of people living in both large and small communities reflected the three hypothesized dimensions. One of

the values of these hypotheses is that, to us, they discriminate among various dimensions of community life, suggest potential areas for study, and foreshadow some distinctions among those dimensions for which government action might be relevant and others for which it might not. This is also true of the work of Flanagan. From an examination of 6,500 critical incidents in the lives of people, he derived 15 quality of life components:

1) Material well-being and financial security,
2) Health and personal safety,
3) Relations with spouse (girlfriend/boyfriend),
4) Having and raising children (being a parent),
5) Relations with parents, siblings or other relatives,
6) Relations with friends,
7) Activities related to helping or encouraging other people,
8) Activities relating to local or national government,
9) Intellectual development,
10) Personal understanding and planning,
11) Occupational role (job).
12) Creativity and personal expression,
13) Socializing,
14) Passive and observational recreational activities,
15) Active and participatory recreational activities.

Flanagan's findings are highly consistent with those of Blake, Weigl and Perloff, noted above. Here again, we find in these definitions of relevant dimensions, an implicit potential for discriminating between those which may be relevant and not relevant for purposes of policies and programs. The social modifications hypothesized to increase overall quality of life will be derived from the evaluations of which components of life are of most importance and are being poorly met for large numbers of individuals. (p.147)

What is missing from these dimensions however,

is a definition of how these dimensions come together.

What we are looking for is some conceptual and operational definition of the coping/accommodating/adjustive/mediating mechanisms through which individuals, families, groups come together in ways which are satisfying or dissatisfying for those involved. For this we have to turn to the community development/organization models.

The work of Murray Ross (1955) is instructive in this regard. Ross, and others in the field, define community in operational terms; in terms of the ways and means in which people come together and stay together. There are two definitions of community which are of particular interest to us in this study.

1. Geographical. This is a community defined solely in terms of the collection of people within defined territorial boundaries. It says nothing about what happens to them within those boundaries, except that physical and social interaction is inevitable.
2. Functional. This is community defined in terms of function, occupation, common interests, objectives, which may or may not be related to territorial propinquity.

Geographical. The definition of community in terms of geography is not as straightforward as it appears. The critical questions are: which territorial boundaries are to be used, and who is to define them?

In the planning of modern communities, the main influence in defining what is meant by the term "community" is the town planner (leaving aside the imperatives which the developer, public or private, and exigency may impose).

It is probably unfair to say that most town planning is based upon the fundamental premise that a community consists of a central business district surrounded by

neighbourhoods, each of which possess service nodes or ribbons which constitute local equivalents of the central business district: classic neighbourhood planning is centered on the school (walking distancd) and upon these service nodes. While this description does not do justice to more recent and sophisticated developments in planning (for example the work of Kevin Lynch) it is, nonetheless, not far from the truth.

The planners, we must note, did not develop this concept out of thin air. Highly influential in their planning has been the work of Lewis Mumford, particularly in his, The City in History (1961). One of the many characteristics of major cities which Mumford noted was their tendency expand to incorporate nearby villages (e.g. Paris, London, New York). Consequently, the form of the major cities was that of a central business district surrounded by small villages (neighbourhoods) each with its own little centre.

What contemporary planners hoped to foster, it appears, was the process of social organization and coherence in these major cities by imposing the form (replacing the church with the school) of the older cities. What contemporary planners lacked, inevitably, was the generations in which relationships between social organization and coherence and the built environment could evolve naturally. Cities have simple grown too quickly in past years.

In their work, planners consider the major points of greatest social interaction to include: the immediate residential surroundings, local shopping areas, the school site, place of work, and places of entertainment/recreation. These are the places in which people, perforce, come together for various purposes. It is in the distribution and interrelated locations of these places that planners hope to encourage the social coherence and organization they believe necessary to a viable and satisfying community.

What this presents us with is the realization

that the boundaries of a geographic community may differ considerably for different people. Just as many "Londoners", particularly unemployed wives, may know "London" only as an extension of Clapham which they rarely if ever leave, so many unemployed wives in Fort McMurray might define the boundaries of the town in terms of the operational characteristics of their own lives; as Abasand Heights and Franklin Avenue with a connecting highway; while their husbands would define the town as Abasand Heights connected by a highway to the Syncrude plant.

If we are to define "community" in geographic terms, therefore, we must first determine which geographic communities we are talking about and that means, which people, and what roles and activities they play in these places. While the town planners may set the major geographic and locational parameters, it is the people themselves who will set the boundaries or transitional areas between specific communities within the major boundaries, and the relative importance of these boundaries and the areas they encompass.

Functional. Functional communities are social alliances of persons who feel bound together because of common interests. They can be friendship groups, formal and informal associations of varying permanence, size and levels of organization. Two characteristics of functional communities are important for our purposes.

1. The relative importance to a person or family of the functional groupings to which he or she belongs varies enormously depending upon the purpose of the community (stamp collectors or labour union) and its role in the life of the individual or family, the life stage/life cycle of the individual or family, and current conditions and values. One should not make snap judgments about the relative importance of

these functional communities. One has only to look at the extraordinary growth in the membership and influence of the Sierra Club over the past twenty years, or of such women's rights groups as the National Organization of Women.

2. Functional communities frequently transcend local boundaries and are often unrelated to such boundaries. Within any town, however, will be a series of associative communities composed of individuals with interests in common arising both out of role preferences and geography. Such combinations of functional/geographic communities can be potent. Some of them are so deeply imbedded in the fabric of community power that we seldom think about them: for example, groups devoted to organized sports activities for young boys.

The basic premise of the community development/organization model is that as people have the opportunity to organize and to develop into their various communities, they can work together effectively to resolve their problems and create a better community. Within this context, social organization and coherence, isolation and normlessness, are seen as conditions which inhere in various levels of stages of community development and can be dealt with through the processes of continuing organization and development. The key therefore, lies in organization and development. These processes enhance the life of the individual, the family and the community.

We must not, however, repeat the errors of early community development/organization writers such as Ross. Their thinking was both utopian and rational (Morris and Rein, 1968). First, they saw the community as essentially unstratified, and did not acknowledge adequately the implications of social stratification; that a community consisted

of a variety of groups, interests and pressures which were not only diverse but also could be in conflict with each other (and that it was common for people to belong to a number of such groups simultaneously). Speaking of new communities in the United States, Morris and Rein state, "The new community is full of strife, conflict, uncertainty and anxiety." That description, somewhat softened, would not be inappropriate for a number of resource communities.

Second, these early writers believed that if people had all the facts and knowledge, and understood the problems properly, they would act "appropriately" to solve them. As an example of this utopian, rationalist approach, Morris and Rein quote a well-known study from the 1950's on the subject of social change with respect to racial discrimination:

> Once the violations of this doctrine (racial equality) became inescapably visible to everyone, community members felt obligated to take action against the discrimination in their midst and the moral position of those who openly defended the discrimination became clearly untenable.

Written in 1958, that declaration has an ironic ring to us today.

When we speak of making resource communities a better place to live, we have to ask, a better place for whom? In any situation of limited funds and related resources, some people will clearly do better than others. Life in a community is not necessarily a paradigm of John van Neuman's zero-sum game, in which the gain of one participant is the loss of the other. As an alternative to this situation van Neuman and others developed a series of concepts based on mixed strategies in which individual players can enhance their own position without necessarily worsening the position of the others.

This perspective is of particular interest in terms of community development/organization for several reasons. However utopian or rationalist the early writers on community development were, they clearly understood the effectiveness of the processes of community development/ organization on the lives of individuals and families. From our perspective we can see that it is in finding a place for themselves in these processes, in the ordinary, everyday activities of living together, that people give form and meaning to their lives and so derive satisfaction. In this sense, all players can gain without inflicting a loss on other players. The contemporary concept in this dynamic is synergy in which the whole is greater than the sum of the parts.

Community development is essentially a synergistic phenomenon. That is its value with respect to resource communities. It is out of the processes of this synergy that social organization sustains itself and adjusts to change. that people find avenues to combat isolation, alienation and anomie, and derive satisfaction.

From the point of view of policies and programs, however, it is always essential to identify and distinguish among the various communities - geographic, functional, geographic/functional - to determine which communities and which processes are to be the targets.

Some of the specific components of this are discussed throughout these chapters and in our Background Papers.

3.3.2.9 Indians and Metis

In reporting on the conditions of Indians, Metis and Inuit in resource communities, indeed in communities everywhere, Riffel (1975) reminds us of a number of well-known factors:

- Indians and Metis "often encounter particularly great difficulties in their attempts to achieve a high quality of living".

- They are at considerable competitive disadvantage in their efforts to achieve an acceptable standard of living.
- It is hard to believe that discrimination against Indians and Metis does not exist, although it may be hard to prove.
- Native peoples experience a high level of personal and social disorganization. Most social institutions, which are traditionally powerful gatekeepers to opportunity for the disadvantaged, tend to ignore, reject or discriminate against native peoples, with a resulting increase in alienation or feelings of hopelessness among them.
- Housing for native people is often grossly substandard, and many natives lack such basic amenities as running water and electricity; overcrowding is common, as homes are small and families tend to be large.

Larson (1977) adds other characteristics:

- The infant mortality rate among native peoples is more than twice that among non-natives. The age at death, on average, is almost half that of non-natives.
- In general, natives have substantially higher reported rates of alcoholism, criminal behaviour, delinquency and prostitution.
- Educational levels are very low; one study reported that less than 10 percent of those between 16 and 18 years of age were in school; and another study reported that in one community (Fort MacKay), the average education level was grade 6.

> . One study of a thousand native families in Manitoba found only about a third employed full-time. Unemployment and welfare among natives is about 10 times the national average. A 1965 survey of 200,000 registered natives found that 75 percent earned less than $2,000. per year.

Larson, in concluding these points, notes that he had not attempted to review more recent data because it was reasonable to assume that patterns had not changed very much. Riffel, in concluding his summary, comments that, "Most of the gains reportedly made by Native peoples are largely symbolic; most have yet to be made actual."

There is no question that these statistics and accompanying information imply tremendous problems to be resolved. Larson is probably correct in assuming that the most recent data on the gross measures of native quality of life would likely not show major changes compared to the data from five and ten years ago upon which Riffel and he based their findings.

We suggest, however, that relying too heavily upon these gross measures may lead one to overlook important changes which do seem to be taking place in the native communities.

Riffel may have been correct in 1975 when he wrote that the gains were largely symbolic; and not yet actual.

But we suggest that a fine grain analysis of key data would demonstrate that, in the four years since Riffel wrote his report, a number of critically important changes have taken place. We also suggest these are strong predictors of improvements in the situation of the natives.

In no way do we wish to imply that these changes indicate major improvements in the quality of life of the individual native. We do suggest, however, that these changes are the essential precursors of those improvements.

Some of the most visible changes with respect to natives are:

- substantially increased federal funding for organizations representing status Indians; and a much increased federal willingness to discuss (if not necessarily to accept) the rights of status Indians with respect to land rights and compensation.
- substantial improvements in the scale and effectiveness of native organizations, and a much increased aggressiveness in their pursuit of the objectives of these organizations.
- the success of the national and provincial native organizations in giving the "native question" a high visibility and political prominence which it certainly did not have 20 or even 10 years ago.
- the critical symbolic importance of the court victory of the James Bay Indians over the Quebec Government on the question of compensation for the Hydro Quebec project. From the perspective of personal and community self-esteem, and perceived autonomy, symbols such as this victory are essential elements in community development and change.
- the increased willingness of non-natives generally, and all levels of government, to take account of the impacts on native communities in the consideration for policies and programs.
- the increasing attention being paid by natives and non-natives alike to native culture.

Several points should be made here by way of clarification. Much of the following discussion is based upon general impressions gathered from a variety of different reports and studies, the media and direct observation. The data we have been able to locate pertinent to this discussion substantiate these impressions. But we readily acknowledge more careful examination and research is required.

The second point refers to the importance of distinguishing among status Indians, non-status Indians and Metis (the Inuit are not within our study areas). Our impression is that the changes are most visible among the status Indians; and visible but not to the same extent among the Metis. About the non-status Indians we have little information.

While the above are only impressions, we doubt we are mistaken. There is no question in our minds that over the past 20 years there has been a significant change in values and attitudes among both native and non-native leadership. We do not regard the extended and sometimes acrimonious negotiations between the various parties, the extended court battles, the land disputes, as signs of a breakdown in relations between natives and non-natives. Rather we see these events as a part of a pattern which falls into the contemporary community development model in which various interest groups compete for resources and benefits.

While the various parties involved may have some dissatisfaction with how the competition is going for them, what is striking from the perspective of the natives is that they have organized themselves to the point where they can compete in the arena with considerable effectiveness. Twenty years ago, that was not the case.

Some of the specific changes which seem to be occurring in Alberta are worth noting; and data can be generated to track most of these changes. These changes seem to be:

- the leadership among status natives seems to be younger than previously (and more aggressive).
- Native organizations in the province are more extensive and better organized than previously.
- Native organizations have access to more money than they did previously, and are retaining legal and other consulting services to help them.
- women are more visible in the Indian organizations than previously.
- in general a higher proportion of young natives seem to be involved in Indian organizations and activities than was the case several decades ago.
- more natives are going on to higher education.
- non-natives, governments, institutions, corporations, are paying increasing attention to improving the natives' access to opportunity. The emphasis being given in the Cold Lake Region to ensuring the natives obtain an adequate share of the economic benefits of the proposed resource development is one small indication of this.

It was not part of our Terms of Reference to collect data with respect to natives. We have, however, some data with respect to higher education among natives which is instructive. In 1975, the University of Alberta Senate established a Task Force on Native students to gather information about "the situation of the natives in relation to the University of Alberta" (University of Alberta Senate, 1978). Some of the specific findings are set out in the following table on page 3-51.

TABLE 1 Enrollment of Reported Indians in Alberta Universities 1975-77*

	1975	1976	1977
University of Alberta	N/A	33	47
University of Calgary	21	40	51
University of Lethbridge	25	48	91

* University of Alberta Senate 1978

It should be noted that these figures signify only those native students identified as such; it is possible that there were during these years other native students on campus not willing to be identified as such. The total number of Indians at Alberta universities during these three years is not large; however, some perspective is provided when one learns from the Senate Task Force that a total of only 40 natives graduated from the University of Alberta up to 1976. Another significant point to note is that the larger number of native students at the University of Lethbridge seems due in large measure to the establishment there of the Department of Native American Studies and the Native American Teacher Training Program. The natives' response to these two programs suggests an unfilled demand, which in turn suggests rising expectations on the part of growing numbers of Indians.

This assumption is consistent witn the data from Project Morningstar. Started by the University of Alberta in September 1975 at St. Paul to provide the first two years of the Bachelor of Education degree, the program had 33 students. Two years later these students had all graduated and were either teaching with interim certificates, studying at the University or employed (except for one who was a homemaker).

This past year, 1977-78, Project Morningstar had more than 100 applications for the 40 places available. In addition, native students from Grouard have requested a similar program, and we understand that there is considerable interest in other communities as well. This is consistent with some of the findings reviewed by Larson with respect to the aspirations of Indian students and discussed below.

There are several assumptions which one can draw from this data as worthy of study. The first is that increasing numbers of natives have increasing aspirations with respect to higher education. One can predict that the enrollment of Indians in institutions of higher learning

will continue to grow at a rapid rate.

If the judgement of the Senate Task Force is accurate, then it would seem that a major influence on that rate of growth will be the counselling/coping mechanisms which institutions of higher learning provide or do not provide to assist native students to make the transition. As, however, their student population continues to grow at these institutions, native people will be better able to draw upon their own internal resources to provide such mechanisms (through native associations and clubs) and become less reliant on external counselling and coping mechanisms.

Another important intervening factor, based on the experience in Lethbridge, will be the provision of courses which native people find relevant to their needs.

Another assumption is that a growing proportion of native students are active in native organizations and will remain active after graduation. If the first criterion of an ethnic community's ability to protect its interests is the ability to organize effectively, then the second criterion is its ability to retain the loyalties and energies of its young people as they mature and can move into positions of responsibility in the community's organizations.

We should note that one of the values of such organizations lies in its role as a mediating and coping mechanism for the individual in his or her interactions with the larger community. We would expect to find increasing numbers of young native people who believe there is an attractive future for them within the native social, administrative and political networks.

The studies Larson reviews are not inconsistent with the data and assumptions noted above. These studies were carried out with the Inuit and with Yukon Indians; it is not unreasonable to assume that comparable studies would produce similar results in Alberta. In general, the studies found that the men wanted to work, and worked reasonable well; and that their families were supportive. Where there were opportunities for work the following year, most of the

men were willing to return.

Other studies noted by Larson suggest that a key transitional factor in native employment is the attitude between native and white. Where the employers are committed to native employment, the results are generally positive. As these studies note, however, frequently employers tend to think of natives in negative ways: shiftless, irresponsible, unreliable, lacking in drive. Similarly, natives tend to show distrust and suspicion of employers.

Discussions we have had with Syncrude officials with respect to their experiences with native employment are consistent with the findings. Native employment, which the company solicits, is accompanied by intensive and long-term counselling programs for the workers and for their families. It would be useful to monitor the long-term effects of such employment and counselling programs upon the men involved, their children and the communities in which they live.

We were particularly struck by a study of Mac-Kenzie Delta native high school students and teachers by Derek Smith (1974). Smith set out to compare the students' attitudes towards work with their teachers' predictions of those attitudes. What Smith found was that the teachers seriously underestimated the aspirations of their students. The teachers overrated the students' attitudes towards menial, unskilled and semi-skilled work, and underrated the students' attitudes towards scientific, professional and managerial occupations and skilled work.

These findings are not unexpected in the light of similar studies carried out in the United States with respect to black ghetto children and their teachers. The syndrome of the <u>self-fulfilling prophecy</u>, especially with respect to children, is well known, and its influence in the context of Alberta Indians and Metis should not be under-estimated.

It will be important in the longitudinal study to test the assumptions noted in the previous pages with respect to status Indians, non-status Indians and Metis at a personal, family and community level to track critical transitions. Assuming our assumptions are correct, these changes should prove to be reliable predictors of individual and community transitions over time.

It will also be important to track changes in the gross measures of quality of life discussed at the outset of this section. We do not expect to find any major changes in these measures over the comparatively short period of the several years during which longitudinal studies will be carried out. It may be, however, that a fine grain analysis of these gross measures, with particular attention to developments in the most recent years will produce some effective leading indicators of change.

In our Background Paper, Indians and Metis, we discuss the specifics of the longitudinal study with respect to these two groups.

3.4 SUMMARY AND CONCLUSIONS

3.4.1 Quality of Life: Research Parameters

We have attempted in the previous pages to set out our approach to the broad task of measuring quality of life and community satisfaction in resource communities. We began in Chapter One with a discussion of the general dimensions and methodological approaches to such measurements. Our major findings in Chapter One from our review of the relevant literature were:

- The data must be collected across a broad range of community, social and personal dimensions.
- The data must not be limited to any one concept or theory, but must, to the extent feasible, be concept free.
- The measurements must incorporate explanatory as well as descriptive capability.
- The measurements must include subjective as well as objective data with respect to the specific dimensions.
- Objective data should be collected from two sources:
  1) government and institutional sources (see Background Paper, Institutional Information System, with respect to the adequacies and applicability of these data);
  2) residents in the study communities with respect to detailed and specific data not available through government and institutional sources.
- Subjective data should be collected from residents in the study communities on an individual basis.
- The data from both sources should be organized and coordinated to provide relevant information, of both a descriptive and explanatory nature, with respect to specific policy and program sectors and goals, evaluation and the establishment and review of priorities.

3.4.2 Northern Resource Communities: Research Taxonomy

We then moved to a more specific examination of the dimensions of the quality of life and community satisfaction in northern resource communities. Although much of this discussion dealt with resource communities as a uniform phenomenon, we made reference where appropriate to Fort McMurray and the Cold Lake region which are our primary research concerns. As a means of organizing a very broad range of subjects, we used the taxonomy of dimensions set out by Riffel (1975):

Environmental Conditions

1) Housing
2) Townsite and other aspects of the man-made environment
3) Natural environment
4) Recreation
5) Communications, access and transportation

Individual Attributes of People

1) Income
2) Education
3) Employment
4) Physical and Mental Well-being
5) Family Life
6) Personal Safety
7) Political and Social Participation
8) Community
9) Indian and Metis

Within these dimensions we discussed a number of characteristics and conditions which have been reported as prevalent in resource communities, and which should be examined in the context of Fort McMurray.

The following points attempt to summarize some of these central characteristics and conditions. These have been selected because they are reported to be most noticeable during the construction stages and, therefore, would seem to be applicable to Fort McMurray over the next five years at least.

3.4.3 General Conclusions

One of the major conclusions we drew from our examination was that the literature did not deal in any focussed or extensive way with the dynamics and processes of change and adjustment at a community level. We found no satisfying discussion of the resource communities from the perspective of community development and organization. We consider such a perspective to be an essential component of a comprehensive study of resource communitites and their inhabitants over time.

Larson's emphasis upon the family, as a subject which has to be included as part of an effective research package, does not directly address the dimensions of community development/organization. But, his instructive conceptualization of the preocesses of family life, mobility, transition and adjustment, and interactions with the larger community, is not dissimilar.

In looking at each of the dimensions proposed by Riffel, we have set out to define and clarify in detail the specifics of each which are appropriate to longitudinal studies of personal and social adjustment and of social and economic change. We have cast our net widely and still have attempted to compress into comparatively few pages a wide range of relevant concepts, constructs and approaches. We are conscious of the potential dangers of such compression. To compensate for these, we have also prepared Background Papers which deal more extensively than is possible in these pages with some individual dimensions and with the operational aspects of measuring current and changing conditions.

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ALBERTA OIL SANDS ENVIRONMENTAL RESEARCH PROGRAM

LONGITUDINAL STUDY OF PERSONAL ADJUSTMENT AND SOCIAL CONDITIONS IN THE FORT McMURRAY AREA HS 30.1

PHASE 1: FINAL REPORT

REPORT: CHAPTER 4

FORT McMURRAY

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CHAPTER 4 FORT McMURRAY

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4. FORT McMURRAY

4.1 HISTORY

Fort McMurray is located about 275 miles northeast of Edmonton at the confluence of the Athabasca and Clearwater Rivers.

Peter Pond visited the area in 1778, and in 1790 the "Fort of the Forks" was established on the current townsite as a trading post by The Northwest Company. The system of rivers and tributaries made the trading post a natural trans-shipment point for the river barges which at that time serviced what later became the Northwest Territories. Besides transportation, the Fort dealt in fur, timber, fishing and salt. The economic life of the community continued in this vein for the next 150 years. The growth of the town was marked by the successions of booms and recessions associated with natural resources and transportation. By 1961, the town held not quite 1,200 people. (Harper, 1976)

In the meantime, the tar sands had attracted interest. Serious work began in the early 1900's on separating the oil from the sands. In 1930, the Research Council of Alberta established an experimental hot water extraction plant near the town.

The modern history of the town begins in 1960 when Great Canadian Oil Sands applied for a lease. The town then entered a period of unprecedented growth which is still underway and likely to continue for some years.

4.2 CHARACTERISTICS

4.2.1 Transportation

In recent years, the Province has developed efficient multi-model transportation links between Fort McMurray and the south. Highway 63 to Edmonton has been upgraded and paved. There is daily air service to Edmonton and Calgary, daily bus service to Edmonton, semi-weekly freight

service by rail; and the occasional barge still serves the nearby riverside communities.

4.2.2 Climate

Average daily temperatures during the winter reflect -8 degrees Celsius in November and -21 in January. Daily high temperatures in the coldest month, January, are -16, daily lows -27 degrees Celsius. Record low winter temperatures have reached -50 degrees in Fort McMurray, but record highs of +15 have also been recorded in February (1944-1973 data, Atmospheric Environment Service). Average daytime maximums in summer are around +20 degrees, with average lows about +9. Temperatures exceed 25 degrees Celsius 10 per cent of the time during July, when the record high was +35.

Snowfall in total averages 139.6 centimetres, with average monthly snowfalls from 11 cm. in October to a peak of 26 cm. in December. Winter hours of sunshine compare favorably to Edmonton's, but the valley floor at Fort McMurray may have a micro-climate somewhat less sunny than the plateaus.

4.2.3 Physiography and Physical Layout

Significant is the physiography of the area and the layout of the town. The main section of the town -- including the downtown, the old town, the high schools, and the older residential areas -- is located in the river valley floor, south of the confluence of the two rivers, about 900 feet above sea level.

However, because of water, soil and other environmental conditions, the newer residential areas are located west of the town, above the valley, on the surrounding plateaus, about 1200 feet above sea level.

The physical layout of the town is thus marked by separation and dispersal. The main section of town is separated from the suburbs, and the suburbs are separated from each other by the valleys between the various plateaus. There is no public transportation, and travel to and from the various sections of town is difficult without a car because of both the road distances between the various sections of the town,

and the differential elevations.

Further aggravating this dispersion is the location of the two oil plants, which employ about 30 per cent of the labour force, some miles north of the town.

4.2.4 Population

In 1951 the population of Fort McMurray was 926 persons, in 1961 it was 1,110. Commencing with the construction of the GCOS plant, however, population growth rates rose to exceptional levels, as the following table demonstrates.

Table 4.1 Fort McMurray Population Growth

1951	926
1961	1,110
1966	2,614*
1971	6,847
1976	15,420
1977	20,340
1978	24,000 (estimated)

* Municipal boundaries expanded after 1961

Sources: McVey, 1976
Statistics Canada, 1976 Census of Canada
Fort McMurray Municipal Census, 1977

This growth is likely to continue for some years. New oil plants are proposed for the area; and existing plants are planning additions.

With respect to population composition, the average age of the population is young, 22 years of age; younger than the national average or the provincial average. About a third of the population is under 15 years of age, which is about twice as high as the national average. Only .5 per cent of the population is 65 years of age or older, compared to a national average of about 9 per cent. This

influx is due to the heavy influx of young residents over the past years.

The population (1977) is evenly divided between males and females. In the age cohorts 20 years plus, the proportion of men is slightly higher than that of women.

4.2.5 Economy and Labour Force

The economy of the town is dominated by activities directly and indirectly associated with the construction and operation of oil extraction plants. The 1977 Fort McMurray Municipal Census found that about 22 per cent of the labour force was engaged in mining; and an additional 35 per cent were involved in construction, much of which would have involved the Syncrude plant. The Census found that almost 40 per cent of the work force worked outside Fort McMurray, and almost all of these likely worked at the two oil plants.

The Provincial Government has undertaken to maintain Fort McMurray as the capital of the region, and consequently there has been a significant increase in provincial government infrastructure, services and facilities. Taking into account municipal government and education as well as provincial employees, the 1977 Municipal Census showed perhaps 15 per cent of the work force (depending upon definition) employed in one or another sectors of government.

The following table demonstrates the growth in Fort McMurray's economy.

Table 4.2 Fort McMurray Economic Characteristics

	1966	1971	1976
Retail sales ($'000)		$8,221	$74,256
Commercial services ($'000)		985	5,355
Alcohol sales ($'000)	470	852	3,501
Municipal expenditures ($'000)	350	1,388	8,327

Sources: Alberta Bureau of Statistics
Alberta Liquor Control Board
Alberta Municipal Affairs

4.2.6 Housing

The increase in dwelling units has been commensurate with the increase in population. The total number of dwelling units has increased from 610 (1966) to 5,684 (1977). Single, detached homes now constitute only about a third of the total, just slightly more than the proportion of mobile homes. The proportion of apartments has doubled to about 22 per cent since 1966, and much of the new construction is of this type.

Like many resource communities, Fort McMurray housing is characterized by high housing costs and rents. We propose to collect data on housing prices and rents during Phase 2. Anecdotal evidence, however, suggests that house prices and rents are substantially higher in Fort McMurray than in most communities of similar size in the province.

One of the results of the price of housing is the creation of two housing markets in the town. The first is the conventional open market in which houses with about 1,000 square feet seem to sell for approximately $100,000, and rents might run to $500 to $700 a month.

The second is the closed market. This market consists of housing owned by the oil companies, and some smaller companies, which is rented to employees at perhaps less than half open market value. Employees entitled to buy homes in this market can purchase at much less than open market value, and receive interest free loans and similar assistance.

Government employees are assisted either through special housing allowances and/or subsidized housing.

4.2.7 Social Characteristics

We have already noted some of the major characteristics of the local population. The average age is 22, some seven years younger than the provincial average. This may explain why only one per cent of the adult population is widowed and only two per cent are divorced. About three quarters of the adult population are married.

The population turnover rate is reported to run at about 30 per cent a year, and labour turnover rates are reported to run at about the same level, according to Syncrude respondents. This may explain in part why, according to the latest Vital Statistics available at the time of writing, the number of live births and marriages in the town dropped marginally between 1972 and 1974, the last year for which data were available at the time of writing.

These data suggest that people do not remain in Fort McMurray long enough to experience these major events in their lives; or prefer to go elsewhere when such events are imminent. Both explanations suggest that a large number of the town's residents do not think of the town as a place in which to experience the voluntary major events in their lives.

It is reported that incomes in the town are high, at least for those directly or indirectly employed on the construction or operation of the oil plants. It is also reported that levels of personal indebtedness are high as well.

Consumption of alcohol also seems to be unusually high. A straight calculation of the sales in Fort McMurray of alcoholic drinks shows an increase in per capita expenditures from $97 in 1971 to $225 in 1977. If, however, one adjusts for the drinking age population then per capita expenditures begin to climb to impressive heights.

In 1971, 3,970 persons were 20 years of age or more (legal drinking age, 21) for a per capita expenditure of $179.29. In 1976, 10,850 persons were 15 years of age or older (legal drinking age, 18) for an annual per capita expenditure of $323.

It is reported that there is a noticeable degree of social differentiation and stratification in the town. The social differentiation and stratification has been reported,

- between employees of one oil company and another;
- within the individual oil company, between employees at different levels in the company hierarchy;
- between oil company employees and others;
- between people living in the closed housing market, and those in the open housing market;
- among Indians, Metis and non-natives.

Evidence is not yet available by which one can determine whether this situation is more pronounced in Fort McMurray than elsewhere. We would expect it to be more noticeable in Fort McMurray because of the size of the town and the strong occupational skew in the work force.

Other contributing factors may be the tendency for oil company employees to cluster in company-controlled

subdivisions and housing units; the exclusion of non-company employees from these subdivisions; and the layout and physiography of the town which emphasizes the separation of the various subdivisions from each other and from the main section of town.

4.2.8 Other Characteristics

In the previous chapter, we discussed at length the characteristics of life in northern resource communities. Some of the material in that chapter was based on studies carried out in Fort McMurray; and much of the remainder would seem to be applicable to some extent to Fort McMurray judging by the evidence of the available statistics, the various reports, and the interviews we conducted with key persons in the community.

Additional supporting information can be found in our Background Papers, most particularly in 'Local Business Economy in Resource Communities', 'Extended Questionnaire and Interview','Quality of Working Life: Job Satisfaction','Social Deviance' and 'Children and Education'. We will not attempt to summarize here the detailed discussions in the previous chapter and in the Background Papers, with specific reference to Fort McMurray.

In the following chapters, however, we set out the major dimensions of personal, family, social, work, business and community life in Fort McMurray, and how we propose the work be carried out.

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Chapter 5 FINDINGS

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5. FINDINGS

5.1 RESEARCH CRITERIA

In Chapter One of this Report we set out our criteria for the design of the research program.

1. It should produce practical and useful information to help provide a basis for the development, review and revision of Government policies, programs and priorities for managed and balanced growth in the study area.
2. It should be capable of collecting information and identifying current baseline conditions in the communities in the region for all relevant economic and social dimensions.
3. It should be able to monitor and track changes in these conditions over time.
4. It must be on-going, reliable, economical to operate, and easily accessible to users.
5. It should be applicable to other communities.

We then reviewed the literature with respect to the current state of knowledge of conditions pertaining to quality of life. From this review we drew a number of criteria with respect to a <u>conceptual approach</u> to the information requirements for the research design. These criteria were:

1. The data must be collected across a broad range of <u>personal, family, work, social and community dimensions</u>.
2. The data must not be limited to any one concept or theory, but must, to the extent feasible, be able to accommodate a variety of theoretical approaches.

3. The measurements must incorporate explanatory as well as descriptive capability.
4. The measurements must include subjective as well as objective data with respect to the specific dimensions.
5. Objective data should be collected from two sources:
   1) government and institutional sources (see Background Paper, Institutional Information System, with respect to the adequacies and applicability of these data);
   2) residents in the study communities with respect to detailed and specific data not available through government and institutional sources.
6. Subjective data should be collected from residents in the study communities on an individual basis.
7. The data from both sources should be organized and coordinated to provide relevant information, of both a descriptive and explanatory nature, with respect to specific Government policy and program sectors and goals, evaluation and the establishment and review of priorities.

5.1.1. Research Model Outline

Following from these criteria, the parameters of a research model must incorporate the following characteristics:

1. The model must encompass dimensions ranging from the individual and personal at one end of the continuum to community on the other.
2. The model must include objective and subjective data.

3. The objective data can be obtained from existing institutional, governmental and agency sources, and from personal records of activities and behaviour.
4. The subjective data can be obtained only from the individual.
5. The objective and subjective data should bear upon the same common dimensions of personal, family, social, work and community life, to the extent possible.
6. The model should possess the capacity to track changes over time.

The model, in outline form, can be demonstrated schematically as in Figure 5-1.

5.2 FINDINGS

5.2.1 Conclusions

The central, dominating factor in Fort McMurray is population growth. The population of the town has increased by more than 2,000 per cent since 1961, and it is still growing.

In circumstances where events and experiences are so greatly accelerated, compressed and intensified, problems seem to pile on top of each other. It becomes difficult to sort out what is actually happening from what seems to be happening: and to understand the difference between and significance of the two.

All the requests for information we have received from Government departments begin with the basic need to identify what is happening, what the conditions actually are. It is imperative that the research design of the Longitudinal Study meet this need.

The purpose of the Longitudinal Study is to identify and explain the relationships between social conditions and personal adjustment of people in Fort McMurray. The larger purpose is to set out the results in terms which can be applied to other resource-oriented communities.

We ended Chapter Three with the conclusion that the central issue for the Government is to identify and distinguish among:

1. Those troublesome conditions which will ameliorate over time of their own accord and regardless of Government intervention;
2. those troublesome conditions which are amenable to Government intervention;
3. those troublesome conditions beyond the influence of Government intervention;
4. those conditions which constitute the strengths of the community and should be supported or reinforced.

To this end, a comprehensive research design must be established which treats the individual (and family), and the social conditions, both separately and in interaction with each other.

5.2.2 Requirements of the Research Design

In our Background Paper, The Needs-Press Model, we describe the wide range of theories and methodologies we examined in the search for that individual theory and methodology, or combination of several, which would be most appropriate.

We had carried out a similar search some years ago with the assistance of a research design grant from the Welfare Grants Division, Department of National Health and Welfare (Berger, 1969). We carried out another, more selective search in August, 1977, preparing our proposal for the Longitudinal Study. In the Winter of 1978, we carried out a third, comprehensive search, using the bibliographic and library facilities of the University of Alberta and other institutions, consulting with specialists in the fields, and through computer-based literature search facilities of Alberta Environment. This time, more than 1,000 books, studies, summaries and abstracts were examined.

In each case, the results of the search brought us to similar conclusions.

We were looking for a theoretical and operational construct which provides information on three dimensions: person, behaviour and environment (Lewin, 1936, 1951; Stern, 1970). At a minimum, the construct had to enable us to generate sufficient information on two of the dimensions to provide us with a predictive capability regarding the third.

5.2.2.1 The Individual

In order to identify and measure personal adjustment, it was essential to deal with individuals. The selected methodology also had to enable us to aggregate individuals into grouping such as family, work cohorts, age cohorts, short term and long term residents, neighbourhoods, and any others which might be discovered to be relevant now or in the future.

It was also essential to develop a detailed and reliable portrait of the individual respondent with respect to:

- demographic characteristics
- attitudes and values across all relevant dimensions of family, work, social and family life
- behaviour
- personality

Each of these personal dimensions was necessary in order for us to be able both to describe the individual and to explain his or her behaviour.

Our review of the literature and studies revealed no one theoretical or conceptual approach which met all these criteria. Consequently, a combination of approaches became necessary.

- Demographic information would have to be collected through standardized demographic measures, such as those used by Statistics Canada.
- Attitudes and values would have to be treated separately. It was clear we would have to use concepts accepted as valid across the spectrum of community types (Blake, Weigle and Perloff, 1975;

Campbell, Converse and Rodgers, 1975 and 1976; Andrews and Withey, 1976; Flanagan, 1978); and that we would also have to establish measures dealing specifically with conditions and characteristics in resource communities drawing upon the work of such people as Matthiasson (1970), Riffel (1975), Van Dyke (1977) and Larson (1977).

- Personality measures, psychological tests and scales are plentiful. Included amongst those we examined are, the California Psychological Inventory (Gough, 1958), the Strong Vocational Interest Bank (Strong, 1943), the Kuder Preference Record (Kuder, 1946), the Edwards Personal Preference Schedule (Edwards, 1953), the Omnibus Personality Inventory (Heist and Williams, 1957) and the Stern Activities Index (Stern, 1970).

  All of these have particular value. Only one of them, Stern Activities Index, is designed specifically to relate individual dimensions of personality to comparable dimensions in the environment.

- Behaviour can be identified in two ways:
  - Behaviour can be assumed on the basis of responses to personality scale items, such as those contained in the instruments described above. Most of these personality instruments contain items which set out behaviour to which the subject indicates positive or negative preference. By examining the responses, one can draw

conclusions as to likely behaviour.

This is a useful approach when direct measures of behaviour cannot be provided.

- Behaviour can be identified directly through self-reporting by the respondent. One can ask specific questions regarding specified behaviour - how often do you visit friends? - and/or one can ask respondents to keep Time-Use Diaries (Burton, 1971 and 1978).

Given the need of the various Government departments for detailed information with respect to behaviour in connection with their own programs, as well as the need for a more comprehensive data base regarding general behaviour, both approaches seem appropriate.

5.2.2.2 Environment

It was essential to identify and discriminate among the many dimensions of the environment, to select those which seem central to personal life and community satisfaction. A number of research studies were canvassed. We found that different researchers used different levels of conceptualization and overlapping definitions. The more important studies we examined are set out in Chapter two.

None of these, however, dealt in a sufficiently comprehensive manner with the full range of community environmental dimensions required for the Longitudinal Study. Two taxonomies which seemed particularly fruitful for our purposes were those of Blake, Weigle and Perloff (1975) and Flanagan (1978), both of which are discussed above (3.3.2.8).

One of the inadequacies, however, of these two taxonomies, and the others, was the absence of an existing methodology by which the environmental dimensions could be related to personality and behaviour within a consistent and comprehensive theoretical framework.

5.2.2.3 Interactions Between the Individual and the Environment

We considered it essential to select a methodology which contained the capability of identifying and measuring the "fit" between the individual and his or her environment. Also, the fit had to be measured in terms of specified dimensions of the environment.

By tracing changes in this fit, one can build a detailed, quantifiable picture of personal adjustment in changing social conditions, and provide a basis for tracking sources of satisfaction/dissatisfaction. This was a prime requirement of the Longitudinal Study.

5.2.2.4 Theoretical Comprehensiveness and Coherence

The methodology had to encompass as many dimensions as possible of the individual and environment in a theoretically and methodologically coherent and consistent manner.

The methodology also had to be able to accommodate additional measures and instruments where these were deemed necessary for more detailed examination of a specific dimension.

5.3 THE NEEDS-PRESS MODEL

Our conclusion is that the theoretical requirements of the Longitudinal Study are best met by the Needs-Press Model; the methodological requirements by the Stern Activities Index together with an appropriate environmental press instrument (see Background Paper, The Needs-Press Model, PP. 16-31). In addition, supplementary instruments

should be used to provide the required detail of specific environmental dimensions.

5.3.1 The Stern Indexes

The Stern Indexes are well established instruments, tested and found reliable in a variety of situations, and able to produce useful information. They are able to encompass a wide range of personal and environmental dimensions in a coherent and internally consistent data form, which is our prime requirement.

Because of the widespread use of the needs concept in the development of many instruments, the Stern instruments are widely compatible.

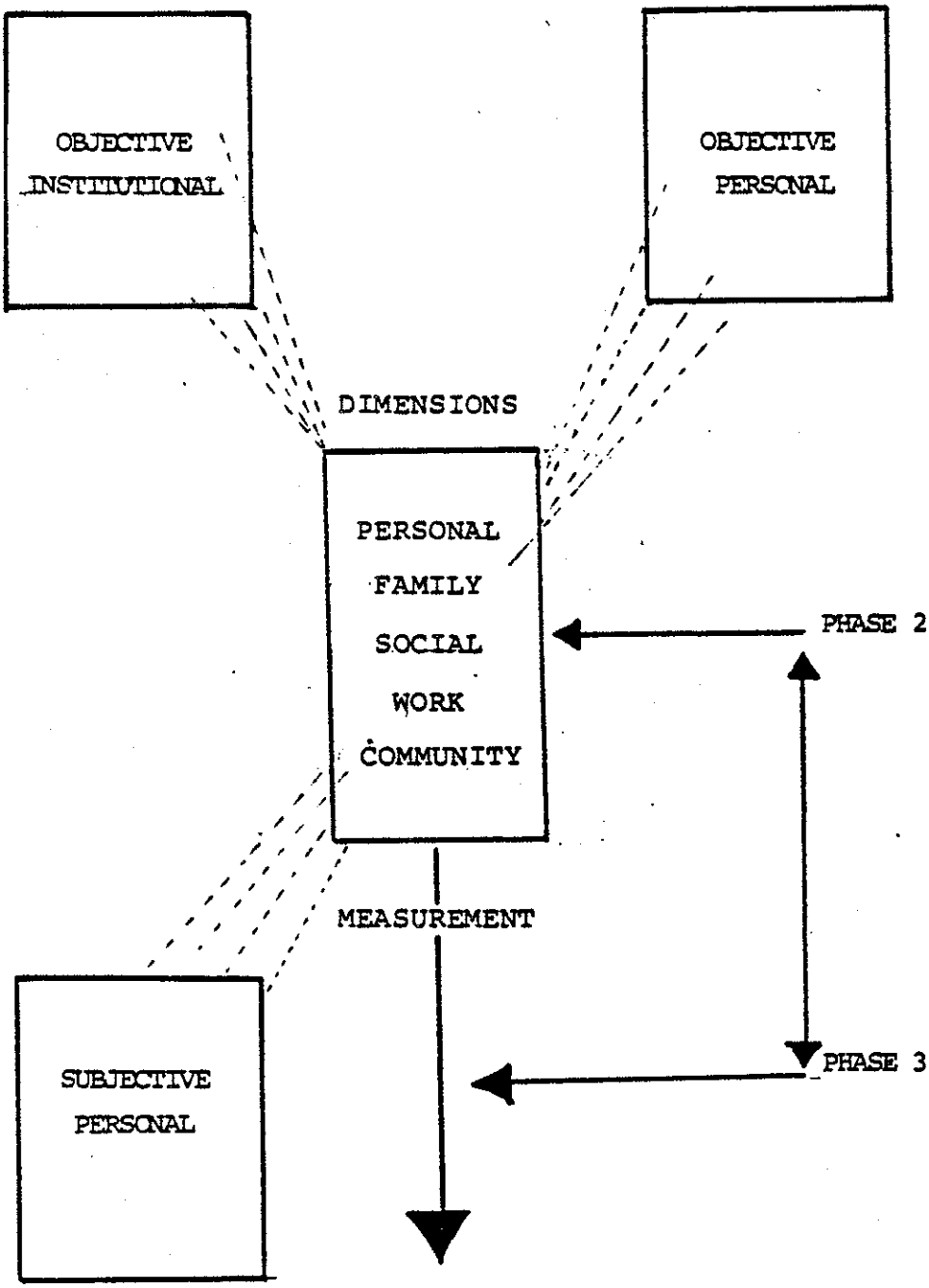
Before his death, Stern had developed and used a number of environmental press instruments such as the Organizational Climate Index used by the U.S. military (Grady, 1964; Fishburne, 1967), the Peace Corps (Stern, Cohen and Redleaf, 1966) and on remote DEWLINE installations (Richman and Stern, 1969). He was not able, however, to complete his work on a community press Index.

With the cooperation of Dr. Stern's colleague, Dr. David Kleinke, head of Test Scoring and Evaluation Services, Syracuse University, we undertook the construction, piloting and pre-testing of a Community Index. This is described in our Background Paper, The Needs-Press Model pp. 31-44, and Appendices. At the time of writing this Report, the final stages of factor analysis are being carried out.

The Background Paper also describes the relationship between the Activities Index, which describes personality characteristics, and the environmental press instruments (see particularly, Figures 1, 2 and 3). Therefore, we will confine ourselves to a brief summary here.

The Activities Index is established on the basis of 30 scales of personality needs, such as Order, Achievement, Motivation. The Community Index contains a number of items, each of which describes one dimension of the community

Figure 5-1 Research Model Outline



environmental press comparable to a personality needs scale. For example, the Activities Index contains five items pertaining to the Achievement-need scale. This scale is matched in the Community Index by items which refer to achievement-oriented activities in the community (e.g. "People who want to work can have a good career here.").

The respondent checks "agree" or "disagree" against each of the items on the Community Index. In this way he or she is telling us how they perceive specific dimensions of their environment. By the respondent's answers to the achievement-press items in the Community Index we can determine whether the respondent perceives the community as being achievement-oriented or not; and we can measure how close this achievement-orientation is to the respondent's need for achievement.

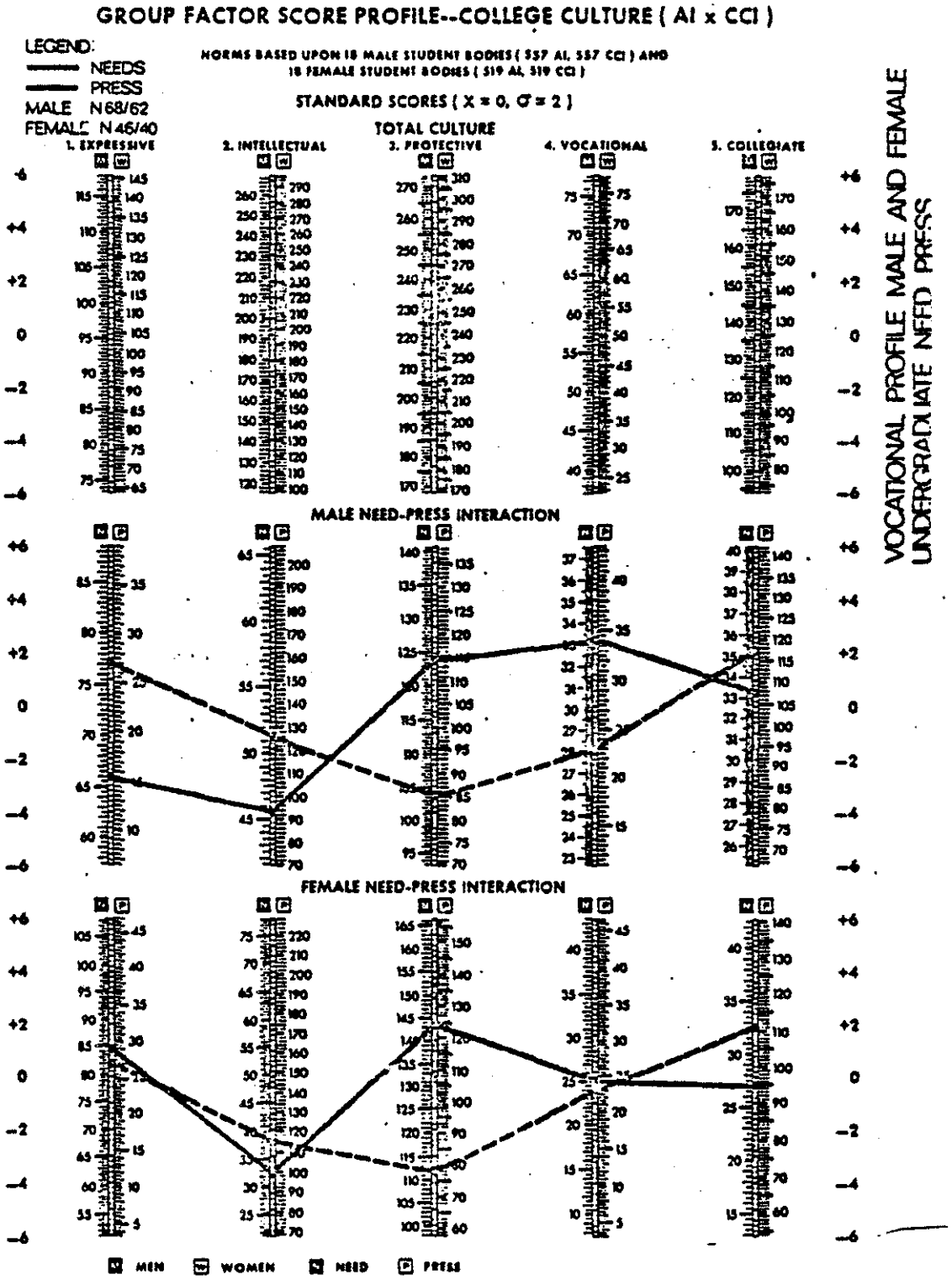
Figure 5-2 illustrates how the needs-press results can be presented. In this case, the needs-press interactions pertain to Canadian male (centre chart) and female (lower chart) undergraduates who have the same personality profile the so-called vocational needs profile. The purpose of the chart, originally, was to illustrate how these two groups, although similar in personality profiles, perceived their university environment differently. For our purposes, the chart serves to illustrate how needs-press interactions can be demonstrated for any given environmental setting.

The names given to the various dimensions are less important for our purposes than the capability, which the charts illustrate, to discriminate between the various needs dimensions of these two groups of respondents; and the respondents' perceptions of the extent to which the environmental press dimensions are congruent with the individual needs dimensions. The solid line represents the respondents' needs, and the dotted line their perception of their environment.

We can see that both men and women demonstrate a high need for a protective environment, and find the protective press of the environmental much lower, or less, than that need.

Apart from that, the women perceive

Figure 5-2: Needs-Press Interaction



their environment as reasonably congruent with their needs. The men, however, demonstrate some considerable dissonance across the various dimensions between their needs and perception of environmental press across the various dimensions.

If one wishes to carry out a more detailed examination of the sources of this dissonance, one can carry out an item analysis of the responses from the various respondents to identify its sources.

The Activities Index and the Community Index would be administered in the household survey in Phase 2 and the results noted. In the Phase 3 survey, the original respondents would be sought out and the Activities Index and Community Index would be administered again (see Chapter 7, Sampling Plan).

We can measure the differences in the respondents' responses to the Activities Index and Community Index in Phase 2 and Phase 3. We can identify changes with respect to personality needs. We can identify changes in responses with respect to specific environmental press dimensions in the Community Index. We can note dimensions in which there is greater or less congruity between need and press in Phase 3 than there was in Phase 2. From these and similar analysis we can draw conclusions with respect to personal adjustment within the context of social conditions, perceived quality of life and community satisfaction as these change over time.

The Needs-Press Model, represented by the Activities Index and the Community Index, constitutes the core of the explanatory capability of our proposed research design.

These instruments are not, however, sufficient in themselves to cover all the information needs to be encompassed in the Longitudinal Study. We now turn to the complementary instruments.

5.3.2 Complementary Instruments

Each of the complementary instruments is described in the appropriate Background Paper:

. Base Demographic Data

- (Quality of Working Life: Job Satisfaction) Job Description Index
- Extended Interview
- Time Use Diaries

Each of these instruments will be administered to the main household sample along with the Activities Index and Community Index.

In addition, we propose to carry out a separate study of children in the schools (Background Paper, Children and Education), and of the Local Business Economy (Background Paper: Local Business Economy in Resource Communities).

Each of these is discussed in the following Chapter.

DRAFT

ALBERTA OIL SANDS ENVIRONMENTAL RESEARCH PROGRAM

LONGITUDINAL STUDY OF PERSONAL ADJUSTMENT AND SOCIAL CONDITIONS IN THE FORT McMURRAY AREA HS 30.1

PHASE 1: FINAL REPORT

REPORT: CHAPTER 6
METHODOLOGY AND INSTRUMENTS

AUGUST, 1978

CHAPTER 6

METHODOLOGY AND INSTRUMENTS

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6. METHODOLOGY AND INSTRUMENTS

6.1 INTRODUCTION

In this chapter we outline our proposed methodology. We describe the instruments we intend to use, and we illustrate possible analytic relationships among the instruments.

We propose twofold methodology:

1. Institutional Information System. The collection and ordering on a time-series basis of objective data from existing data sources.
2. Household and other surveys. The collection of objective and subjective data from a statistically valid random sample of dwelling units, together with special surveys with respect to children, and the local business economy.

The purpose of this twofold approach is to collect both objective and subjective data with respect to the major dimensions of personal, family, social, work and community life in Fort McMurray.

The methodology is intended to be applied to Peace River as a control community. It may be determined that the extent of data collection proposed for Fort McMurray would be inappropriate or too costly in Peace River. In this case, it is possible to extract from the methodology and instruments those which are of central importance for comparison purposes, and apply them to Peace River.

We discuss each component of the twofold methodology in turn.

6.2 INSTITUTIONAL INFORMATION SYSTEM

6.2.1 Definition and Scope

"Institutional Information" refers to those data which are collected on a regular basis from data-collecting

institutions such as federal, provincial and municipal departments, boards and agencies; and from such other institutions as collect and make available pertinent data on a regular basis.

"Institutional Information System", refers to the policies, procedures and operations involved in collecting these data from the various sources and collating and ordering them in time-series forms suitable for analyses.

6.2.1.1 Typology of Data

In the course of our review, we identified the following typology of data based on a hierarchy of information:

- Raw data, which consist in the main of names, addresses and records of events and activities; usually maintained for administrative rather than planning purposes; confidentiality clauses often apply.
- Socio-economic statistics, which represent the conversion of raw data into numbers, usually ordered into standardized categories in a time-series format; in this format it is possible;
  - to measure changes and trends over time within Fort McMurray and Peace River;
  - to measure changes and trends over time for a given dimension of the study community;
  - to compare changes and trends between the study communities and other communities.
- Socio-economic accounts, which comprise combinations of different sets of statistics to provide a more well-rounded and useful representation of the conditions under examination, and changes over time.
- Socio-economic indicators, which constitute key surrogates of major conditions with a strong capability for the measurement and prediction of those conditions (Snider, 1976); these are discussed in our Background Paper, Institutional Information

Table 6-1 Possible Baseline Data Systems

	REAL PROPERTY	GEOGRAPHIC	PERSONAL	HOUSEHOLD/FAMILY
UNIT OF COLLECTION	Lot (land parcel)	Areal		
DATA INPUTS	Lot size Land Use Zoning Value	Selected Characteristics - Demographic data - Socio-economic data - Vital Statistics	Selected Characteristics Behavioural Sets	Selected Characteristics Behavioural Sets
DATA TABULATION	Address Lot Number Block Number	Administrative Unit Census Division Census Tract Enumeration Area	Social Insurance # File or Tax #	Address
COLLECTION AGENCIES	School Administration Transportation Department Election Office	Municipal Affairs Bureau of Statistics Statistics Canada	Health Care Commission Motor Vehicles Branch Welfare Department Income Tax Bureau	Income Tax Bureau Welfare Department Health Care Commission

System, and we have already reported to the Client our view that it would be more useful to pursue the development of such indicators once the information system is in place, rather than on an *a priori* theoretical basis.

6.2.1.2 Basic Types of Data Systems

Based on the work of one of the members of our study team (McVey, 1976), we identified four different types of data systems:

1. Person data system
2. Household or family data system
3. Real property data system
4. Geographic data system

We review the advantages and disadvantages of each system in our Background Paper (pp. 10 - 19). Our conclusion is that the most practical approach to take is a geographically coded data system with Person Data Systems and Real Property Data Systems keyed to it, to the extent feasible.

Person Data Systems can be converted to social statistics and accounts and thereby avoid problems of confidentaility. Real Property Data Systems produce data at the lot unit, and these can be aggregated to an appropriate higher geographic order.

It will be possible to proceed with this approach without waiting for a decision regarding McVey's recommendations for the establishment of a common small area system.

A major difficulty in the establishment of a geographically coded Institutional Information System is the areal discontinuities caused by the different geographic boundaries different data sources use as the catchment area for the collection of statistics. This will have to be resolved with the cooperation of the data sources to allow a fine grain discrimination among the data to select that data originating from within the study area. Whatever areal and other anomalies cannot be resolved in the resulting statistics and accounts will have to be acknowledged.

It will be important to establish priorities for the collection of institutional information, so that the time and budget resources available to the Longitudinal Study can be focused on the most important topics in terms of user needs.

6.2.1.3 Socio-Economic Statistics

We propose that statistics be collected under the following headings:

- population, income and consumption
- education
- housing
- health
- local business economy
- work and employment
- recreation and leisure
- justice
- government

Possible sources, and conditions attendant upon the collection of statistics within each category, are discussed in the Background Paper (p.25 et. seq.). Appendix 1 of this Report contains a preliminary set of social statistics.

6.2.1.4 Comparison of Data from Institutional Information System and Surveys

In the household survey we propose to collect data of an objective nature under each of the headings noted in the preceding section. This data will be reliable within a defined level of statistical precision.

We propose to compare the two sets of data - institutional and household - where such a comparison is feasible. We expect this comparison will provide an improved definition of the reliability of the institutional data as representative of local conditions in Fort McMurray and Peace River. We also expect the data from the household surveys to provide additional content to the institutional data.

6.3 SURVEYS

In addition to the Institutional Information System, we propose to carry out a set of surveys among the population in Fort McMurray.

Three such surveys are proposed for Phase 2. We propose to carry out the same surveys in Phase 3, so that changes in personal adjustment and social conditions can be measured.

The three surveys are:

1. Survey of households in dwelling units,
2. Survey of a sample of children in school,
3. Inventory and survey of local businesses.

We describe each survey in turn, together with the proposed instruments and illustrations of analysis.

6.3.1 Household Survey

The selection and development of instruments for the household survey followed an extensive review of the literature and available studies and consultation with potential users (see Chapter 1). The result is that we have selected a broad range of instruments, and a broad range of topics and items within each instrument.

Six instruments are proposed to be administered in the household survey:

1. Base Demographic Questionnaire
2. Activities Index
3. Community Index
4. Job Description Index
5. Extended Interview
6. Time-Use Diaries (seasonal)

We expect the total time required to administer the instruments will be about 120 to 150 minutes, based upon piloting experience. Up to two adults will be interviewed in each household, and one child over the age of 16. In order to encourage a good response rate, we propose to offer respondents an honorarium of $20 to a household. To ensure that respondents are at home, they will be contacted first and an appointment made. Where necessary a second visit will be made.

Each of the instruments requires no more than 5 to 15 minutes to administer, except for the Extended Interview. This will require about an hour to administer because of the number of topics covered.

It is possible to reduce the interview period by dropping either some of the instruments of some of the topics. The data to be collected, however, are all relevant to the Longitudinal Study. Not collecting them in the Longitudinal Study would likely mean that efforts would have to be made to collect them at a later date by the concerned Department. Not only would this be a more costly process on a per-respondent basis, but the data collected could not be integrated with those from the Longitudinal Study in a statistically reliable way. Also, it seems more efficient, from the point of view of the respondents to have one long interview for one comprehensive study, than to have several interviews for several different studies.

6.3.1.1 Activities Index and Community Index

These two instruments constitute the core of the survey instruments. They provide the theoretical coherence and internal consistency required for the Longitudinal Study.

The Activities Index is a personality instrument. It defines the personality of the respondent in terms of 'needs' among twelve factors and four second-order factors called "areas".

The Community Index, is the comparable environmental press instrument. It enables the respondent to define the various dimensions of community environment among factors comparable to those in the Activities Index.

The data from both the Activities Index and Community Index can be located on standardized indices. The congruence and dissonance between needs and press for each factor can be identified and measured (Background Paper, The Needs-Press Model, Figures 1, 2, 3). The measurement provides us with a reliable indication of the degree to which the respondent considers a given dimension of his or her community environment congruent with the comparable personality need.

Each Index by itself is a useful and reliable instrument. Together, the two represent a combination with considerable potential for generating explanatory capability in themselves and with respect to the rest of the data collected (Figure 6-1).

Both the Activities Index and the Community Index have answer sheets designed for optical scanning. The data, therefore, can be transferred directly from the sheets onto magnetic tape, reducing any likelihood of error in data transfer.

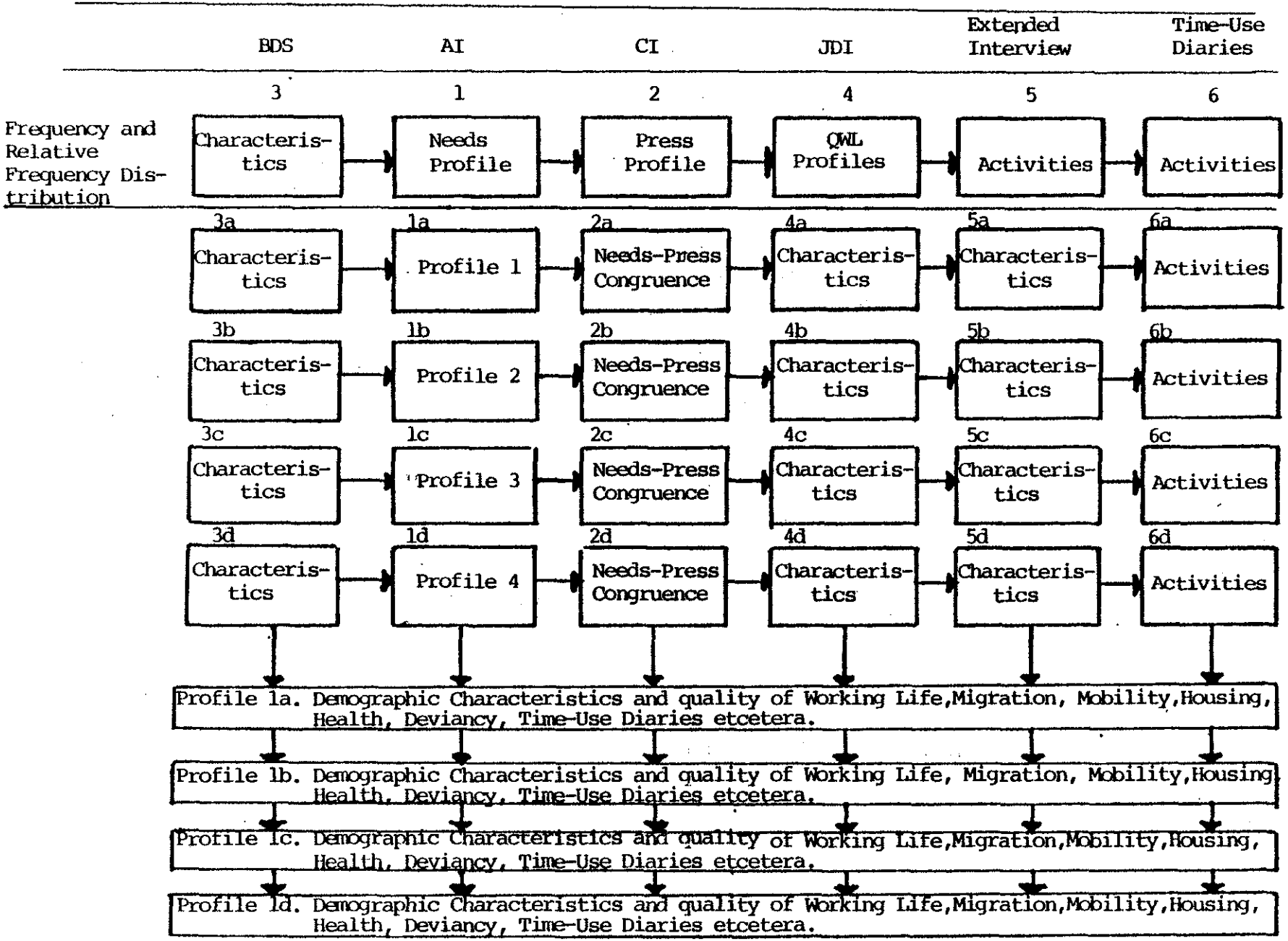
It should be emphasized that the path analysis illustrated in Figure 6-1, and in subsequent Figures are intended to be illustrative only. They are not intended to be comprehensive. Neither are they intended to represent all the intermediate steps and techniques in data analysis for the various instruments, or for relationships among data generated by different instruments.

The first data analysis of the instruments, illustrated in Figure 6-1, will provide the following:

1. Frequency distribution and relative frequency distribution for all items on all instruments.
2. Needs profiles of individual respondents together with frequency distribution and relative distribution for all items on instruments, grouped according to needs profiles. This includes needs-press congruence/dissonance.
3. Frequency distribution and relative frequency distribution for all items by family unit (husband, wife, child), for all families in sample.
4. Other analyses which may be determined as appropriate during the development of the detailed systems design, and in consultation with the Client.

Following the first data analysis, the results will be examined to establish preliminary findings. With these preliminary findings as the context, analysis priorities will be

Figure 6-1 Illustration of Path Analysis: AI-CI Profiles, with Other Instruments by Individuals



established in consultation with the Client, and further data analysis will be carried out to the extent of the study resources available for this purpose.

6.3.1.2 Base Demographic Questionnaire

The data from the Base Demographic Questionnaire will provide a statistically reliable portrait of the population in the study communities for key demographic variables.

The demographic data will be related to personality and environmental press data for each respondent, and to the data from the other instruments.

Many of the demographic items are standard, drawn from those used by Statistics Canada and Alberta Bureau of Statistics. These will provide a basis for comparison of community demographic characteristics between Fort McMurray and other communities in the province and elsewhere. The standard items deal with such measures as age, sex, marital status, family and household composition, occupation, income, education.

The Questionnaire also includes a number of items specifically directed to the special characteristics of resource communities (Riffel, 1975; Van Dyke, 1977; Larson, 1977), including migration history, marital history, normal hours of work and overtime, shift work, length of residence in the community.

The Questionnaire will be administered to up to two adults in the household, and the oldest child 16 years of age or older. This will ensure as complete a picture as possible of each dwelling unit and its occupants.

6.3.1.3 Job Description Index

The importance of the quality of working life looms particularly large in a resource community. We carried out an extensive search of the literature and an extensive process of consultation to identify the instrument or instruments best suited to meeting the information needs of the Longitudinal Study.

We selected a combination of two highly detailed and structured instruments to be used with Syncrude and Great Canadian Oil Sands employees, who constitute perhaps 20 to 25 per cent of Fort McMurray's labour force. The two instruments were the Harvard Scales (Lawler, 1973) and the Michigan Assessment of Organizations (Seashore, 1976). These are set out in Appendix 2 of our Background Paper, Quality of Working Life: Job Satisfaction.

Our intention was to develop a data base which would throw a useful light on the high rate of labour turnover which these organizations undergo: about 30 per cent a year. With this information in hand, it would be possible to define more precisely measures to reduce that labour turnover; and, thereby, reduce the population turnover in the community and what seems to be an important problem in community stability and social coherence.

Several discussions were held with representatives of Syncrude and GCOS. Both companies expressed interest. Both, however, stated they doubted they could obtain the cooperation of line managers who were working to severe deadlines. Both were also concerned that the administration of the instruments to their employees would create high expectations of the results which might flow from the study findings, and would interfere with their own organizational development programs.

Because of their highly detailed structure, the two instruments were not suitable for use among employees working in small organizations.

After an examination of general application instruments, we decided upon the Job Description Index. It contains five scales:

- work on present job
- opportunity for promotion
- present pay
- people
- supervision

The scales have been tested for internal validity, reliability and acquiescence and response, and scored well (Smith, Kendall and Hulin, 1969). Vroom (1964) described it as the most carefully constructed measure of job satisfaction in existence.

The JDI is based upon models of cognition theory and perceptions of the environment, and is, therefore, compatible with the Activities Index. The dimensions covered in the JDI will supplement the work and work environment item in the Community Index.

We have already noted that items pertaining to type and hours of work, and shift work are included in the Base Demographic Questionnaire. In addition, the Extended Interview includes items pertaining to work aspirations, and work satisfaction of respondent and spouse, as well as a number of other issues.

There is not a great deal of information with respect to job satisfaction in resource communities (Lucas, 1971). Some of the questions we intend to address are:

1. Is job satisfaction associated with community satisfaction?
2. Do factors extrinsic to job and work place explain a greater variance in job satisfaction among certain target populations than do instrinsic factors?
3. Do some population sub-groups exhibit high job satisfaction along with low community satisfaction.

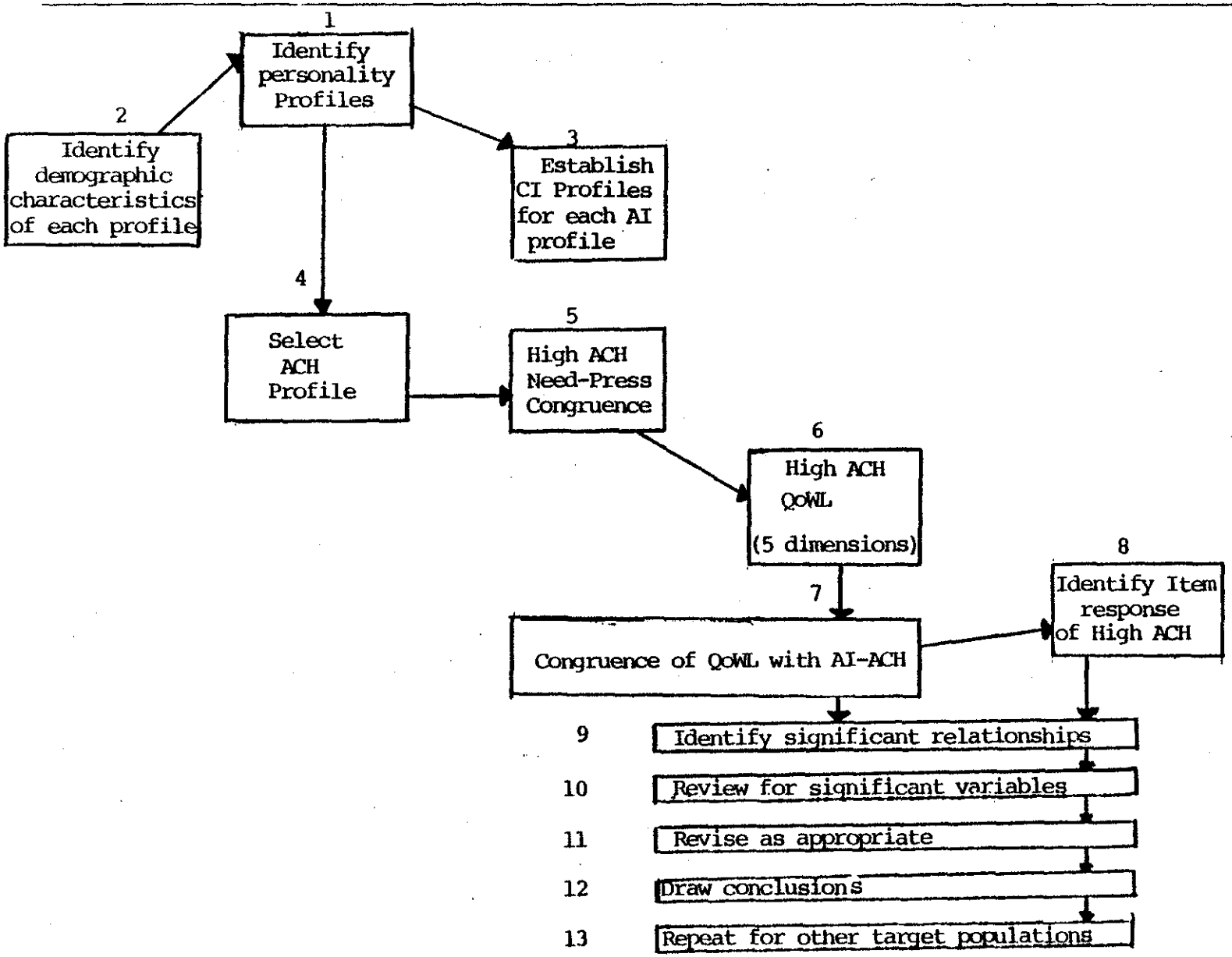
The following (Figure 6-2) illustrates some of the potential path analyses which can be undertaken with respect to Question 1.

Step 1: establish basic personality profiles for the labour force (male/female) in Fort McMurray using Activities Index.

Step 2: Identify demographic and other characteristics of each personality profile.

Step 3: Establish community press profiles for each personality profile, using the Community Index.

Figure 6-2 Illustration of Path Analysis: High Achievement Profile (ACH) and Quality of Working Life (QWL)



Step 4. Select work force profile with high achievement (ACH) need.

Step 5. Examine congruence of achievement-oriented target population with their perception of environment press. Note achievement and work press scales in particular. Identify dissonance where these exist.

Step 6. Identify direct job satisfaction through JDI for each of five scales for high achievement target population.

Step 7. Identify congruence/dissonance in high achievement need target population between level of achievement need and level of job satisfaction, for each of five JDI scales.

Step 8. Identify responses of high achievement target population to work aspiration and other work items in Extended Interview.

Step 9. Identify significant relationships, taking into account demographic variables such as hours of work, shift work, income, age, sex, length of residence in community, occupation, employer.

Step 10. Review data to ensure significant variables included in path analysis.

Step 11. Correct and revise analysis as appropriate.

Step 12. Draw conclusions with respect to the relationship between job satisfaction and community satisfaction for high achievement target population.

Step 13. Repeat steps 1 to 12 for other target populations.

Similar path analyses can be carried out with respect to target populations exhibiting low job satisfaction, and other characteristics which appear to be significant.

In Phase 3, similar steps will be undertaken to determine differences in job and community satisfaction among those who have remained in Fort McMurray.

In addition, those who have left Fort McMurray between Phases 2 and 3 will be identified, and the data from their Phase 2 responses will be re-analysed to determine what, if any, characteristics the leavers had in common with respect to job and community satisfaction, and what conclusions can be drawn from these findings.

The analysis is directed towards a number of issues with policy implications (see Background Paper, Quality of Working Life: Job Satisfaction, pp. 7 to 8), including:

- In which aspects of job satisfaction is government action potentially appropriate with respect to job turnover, community satisfaction and community population turnover?
- What effects do industrial and community maturation have upon job satisfaction vis-a-vis job turnover, community satisfaction and population turnover?

6.3.1.4 The Extended Interview

The Extended Interview and Questionnaire covers a wide range of topics (Background Paper: 'Extended Interview'). These topics were generated from our review of the literature and studies, requests from Government departments, and other sources (see Chapter 1).

The major topics are:

. mobility and migration
. housing and housing satisfaction
. recreation, leisure, and community activities
. physical environment: landscape and climate
. work
. education
. social deviance
. crime, safety and public order
. health and personal services
. facilities for children, and for the elderly
. family well-being
. cost of living and expenses
. general health and well-being
. local government

The Extended Interview is intended to provide three types of data:

1. Additional and detailed data pertaining to socio-economic status and activities;
2. data concerning behaviour;
3. data concerning aspirations, expectations, attitudes, values, preferences, and priorities, satisfaction and dissatisfaction, with specific dimensions of life.

Within these dimensions, and ranging across them, are a number of others dealing with such topics as community involvement and affiliation, stress, isolation, effects of moving, and others which experience suggests are important.

In each case, responses to items in the Extended Interview can be related to the needs-press relationships developed through the Activities Index and Community Index, and to the demographic data. In addition, relationships can also be explored to findings in the Job Description Index and in the Time-Use Diaries.

We discuss each of the major topics in the Extended Interview in turn.

Mobility and migration. There is evidence that mobility and migration variables are linked to individual and family satisfaction and stress (Larson, 1977). There is also strong evidence linking mobility to psychological stress, particularly among housewives and children (Ekstrand, 1977).

Larson discusses at some length the processes and difficulties which individuals and families move through when entering a different community; particularly one which may differ in important respects from the kind of community they are accustomed to.

Larson (1977, p. 164, et seq.) defines a typology of basic issues in the impact of resource development communitites on individual and family well-being. Some components of the typology include:

Stage 1 . Pre-mobility factors
- reasons for moving
- characteristics of movers
- community of origin characteristics

Stage 2 . Transition factors
- individual resources
- family resources
- ease of role transition

. Destination factors
- stage and type of resource development
- community resources
- work situation
- commitment of industry and government to community
- access to "South"
- demographic characteristics

Stage 3 . Post-mobility adjustment factors
- individual resources
- family resources
- community satisfaction/problems
- work satisfaction/problems
- social problems
- personal/family satisfaction/problems

Stage 4 . Stay/Exit factors

The typology has strong affinities with the processes of community development and organization described by Ross (1955), discussed within the institutional framework in Bennie, Benne and Chin (1969), and by Scott in our Background Paper, Children and Education with respect to children and schools.

Larson also discusses family adaptation and adjustment in terms of role change, role flexibility and modification, conflict and realignment. For example, does the wife have to work in order to make ends meet? If she does, what effect does this have on her relationship with her husband and children, upon family

flexibility and conflict, marital satisfaction and exit/stay choices? Similarly, one could note the effects on the family of the long overtime hours the father works.

We have provided items in the Extended Interview to generate data with respect to family, as well as individual, adaptation and adjustment characteristics and processes. In addition, therefore, to the mobility/migration items, we have designed items to deal with attitudes and aspirations towards work by the two spouses, relations with children, marital conditions and satisfaction, and other related matters.

Figure 6-3 illustrates a possible path analysis:

Step 1 Identify high mobility respondents (BDS and Extended Interview).

Step 2 Establish needs profile(s) of high mobility respondents.

Step 3 Develop press profile(s) of high mobility respondents.

Step 4 Develop needs-press congruence/dissonance for profile(s).

Step 5 Relate profile(s) to mobility/migration factors. Draw conclusions.

Step 5a Identify time-use characteristics for profile(s). Draw conclusions.

Step 6 Identify transition factors (family, work, role flexibility, conflict, etc.) for profile(s). Draw conclusions.

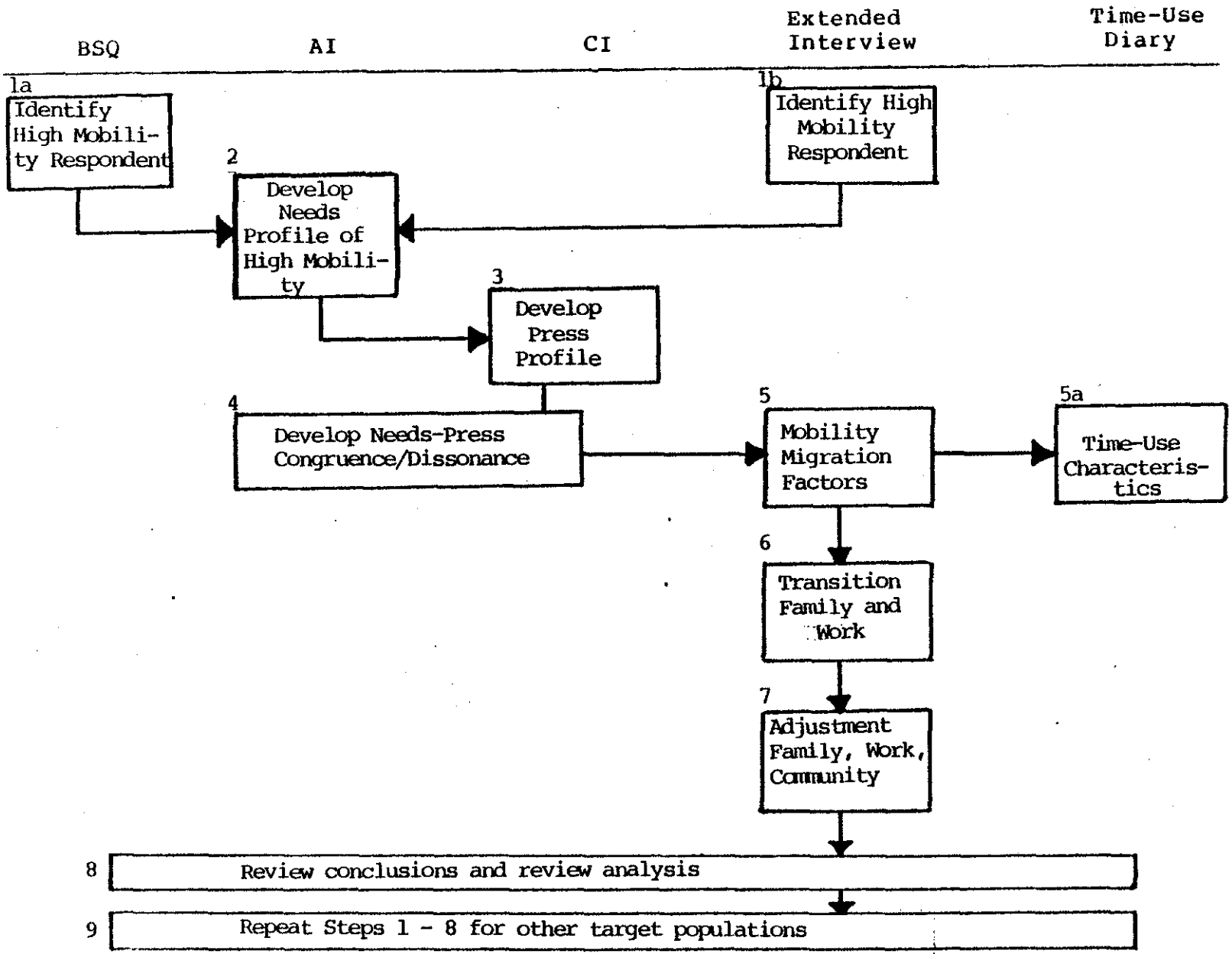
Step 7 Identify adjustment factors (family, work, role flexibility, conflict, etc.) for profile(s). Draw conclusions.

Step 8 Review conclusions and review analysis. Revise and repeat Steps 1 to 7 as appropriate.

Step 9 Repeat for other profiles as appropriate.

The resulting data and conclusions will provide one of the first comprehensive and rounded portraits of the adjustment processes of in-migrating families in resource communities.

Figure 6-3 Illustration of Path Analysis: Extended Interview (Mobility/Migration).



We expect this data to provide a centrally important information base for identifying and discriminating among those dimensions and processes appropriate for Government policy and program review.

Housing. Housing, and housing satisfaction, are accepted as central to community satisfaction in conventional as well as resource communities (Moss, 1969; Riffel, 1975; Van Dyke, 1977; Flanagan, 1978).

Base information with respect to housing - type, age, size, tenure, open/closed market - are provided through the Base Demographic Questionnaire. The Extended Interview deals with the perceived adequacy of the housing with respect to type, size, insulation, construction, location and access, alternative housing available, plans to move, cost considerations and satisfaction, as well as other matters.

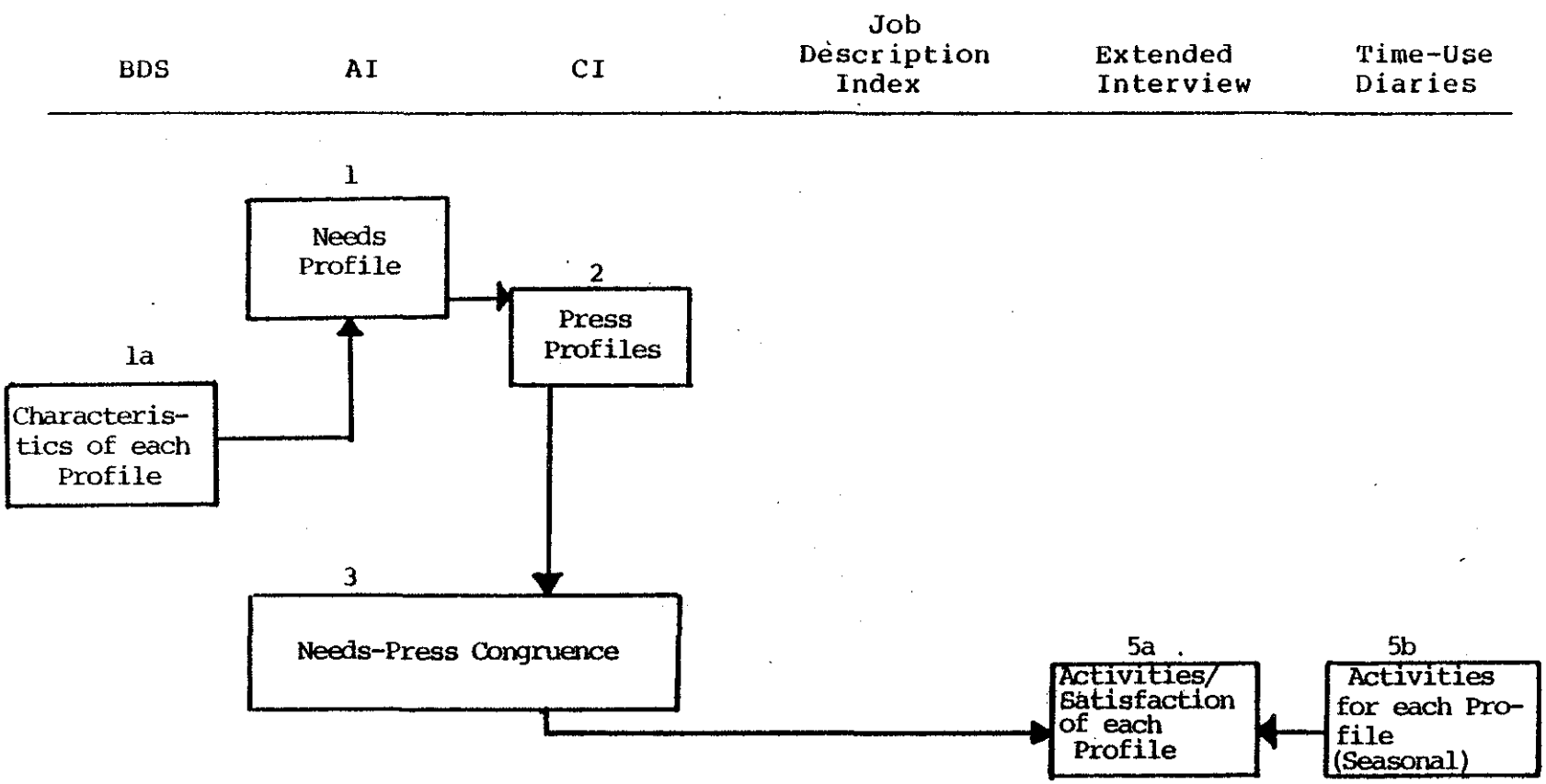
Profiles of housing type, and household composition, location and related variables, will be established, together with measures of perceived satisfaction. Findings from this analysis, together with findings from other analyses, such as those suggested in the Figures, will be examined. We will determine the existence of key variables which might warrant a more detailed analysis to relate housing matters to other topics.

Recreation, leisure and community activities. Items in this category are intended to encompass a hierarchy of three dimensions.

We have been asked by various departments to provide data with respect to public involvement in recreation, leisure and community activities, as a basis for their planning. Consequently, the items in the Extended Interview, together with data from the Time-Use Diaries, will provide a detailed picture of the types of activities which people undertake, the organizations they join, the location of these activities and the frequency of these activites and key variables such as work (Figure 6-4).

Second, this data will provide a base against which to measure the degree to which various types of people involve themselves in various kinds of recreation, leisure and community activities, their expectations with regard to these activities and their perceived satisfaction. In Phase 3 we will be able to

Figure 6-4 Illustration of Path Analysis: Recreation, Leisure and Community Activities by Needs Profiles.



track changes in these conditions among the Phase 2 respondents, and identify variables associated with those changes.

The third dimension pertains to social isolation, affiliation, social organization and related dimensions. The evidence (Moss, 1955) suggests that community satisfaction varies to some extent with the individual's or family's involvement with the community through various community, recreation and leisure activities.

It will be possible to relate personality profiles and needs-press congruence/dissonance with levels of community, recreation and other activities and measures of perceived satisfaction. In Phase 3, it will be possible to measure changes and relate these to personality and other variables.

One of the central issues to be addressed will be the identification of those variables which are strongly associated with individual and family participation in recreation, leisure and community activities; and the relationship between this participation and community satisfaction.

Natural environment. There is a considerable amount of evidence pointing to the link between perceptions of the natural climate (climate and landscape) and personal well-being and satisfaction (Kevan, 1978).

Data will be collected with respect to activities during the various seasons, perceptions of the various seasons and perceptions of the landscape. These findings can be related to personality profiles, needs-press congruence, life stage demographic data, and life style data (work, recreation, leisure). The data will likely also bear on the dimensions of social isolation and affiliation and personal and family well-being. It is also likely that findings from Fort McMurray and Peace River will differ because of the significant differences in both the landscape and the degree to which the landscape has been 'civilized' in the Peace River area by agriculture.

Work. The Base Demographic Questionnaire contains a number of items pertaining to occupation, occupational sector, hours of work, overtime, shift work and related matters.

The Job Description Index (JDI) contains items pertaining to personal aspirations, and attitudes of respondent to his or her own job and to spouse's job, and job satisfaction. In particular, emphasis is upon obtaining more data concerning working wives and the effect of their employment upon their relations with husbands and families. The data from the work related items in the Extended Interview will be used to supplement and enrich other data with respect to work satisfaction, community satisfaction, personal and family adjustments.

Figure 6-5 illustrates a possible path analysis for the examination of one target population, working wives with respect to the major dimensions noted above, and others. Similar analysis can be carried out for other designated target populations.

Education. Educational status is established through the Base Demographic Sheet. The Activities Index provides a profile of personality orientation to education. The Community Index provides a measure of perceived consonance of educational facilities with respondents' needs.

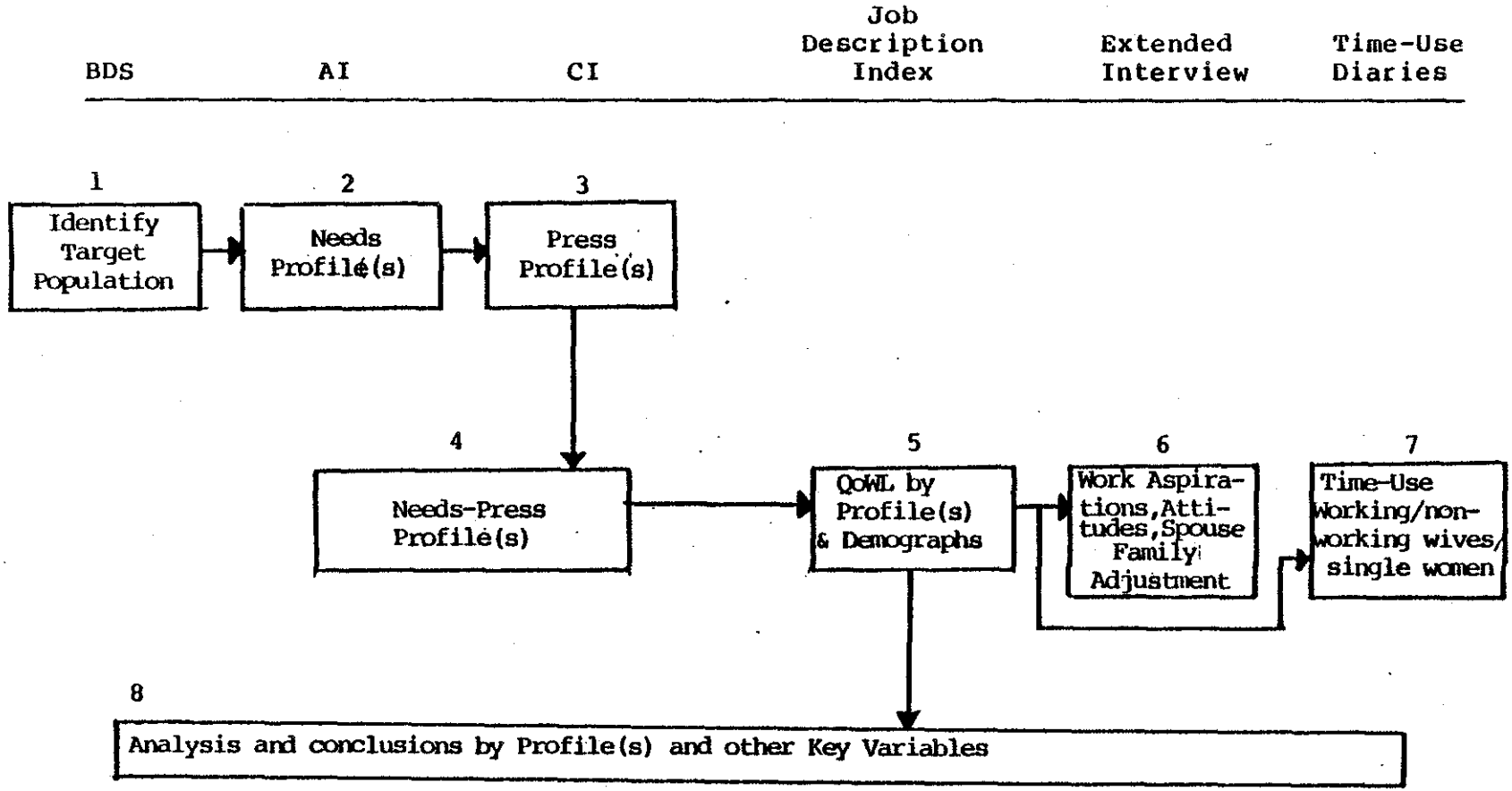
The Extended Interview includes items which deal more specifically with the respondent's interests in pursuit of education. This was requested by several departments.

In addition, the Extended Interview deals with educational aspirations of respondent for himself or herself, and for the children. The Interview also deals at length with the involvement of parents in school affairs and perceived satisfaction with the quality and operation of the education system.

This data will be related to the other data regarding personality profiles, needs-press, and perceived satisfaction with other dimensions of personal, family, social, work and community life. The path analysis will be similar to those illustrated in previous figures.

Health and Personal Services. Studies on resources communities (Riffel, 1975; Larson, 1977; Van Dyke, 1977) are replete with references to the inadequacy of services.

Figure 6-5 Illustration of Path Analysis: Working Wives and Selected Variables



Blake, Weigl, and Perloff (1975) and Flanagan (1978) stress the importance of what the former call the "Maintenance System" in influencing perceived community satisfaction.

The items in this section of the Extended Interview deal with access to, use of and satisfaction with a wide range of personal, health, and related services in and outside of Fort McMurray, and respondents' reasons. This information was requested by a number of departments especially Social Services and Community Health.

The items used are taken from the National Health Survey, Health and Welfare Canada, or modelled on the Survey.

The first data analysis will determine the patterns in the need for and use of services by the respondents in relation to the other variables.

Day Care Facilities/Facilities for the Elderly. A number of items are included with respect to the need for, access to, and satisfaction with day care facilities for children, and facilities for the elderly.

Personal Health and Well-Being. Items from the National Health Survey, and similar sources, are included as indications of the respondents' personal health and well-being. A number of related items deal with indicators such as smoking, drinking, and pace of life. These activities are related to other dimensions, particularly stress.

The needs-press interaction will provide data pertaining to areas of stress and extent of stress. The items in the Extended Interview, we will be able to identify more precisely the significances of both sets of data.

In addition, it will be useful to relate stress measures to community, and marital satisfaction and the types and frequency of recreation, leisure and community activities undertaken by respondents.

Family Well-Being. In Chapter 3, we discussed at some length the issues associated with family transition,

adjustment and well-being in resource communities. All the instruments contain items bearing upon some aspect of family status and family well-being, even if indirectly as in the Job Description Index and the Time-Use Diaries.

The Extended Interview contains items pertaining to activities the family carries out together, mobility and migration factors, adjustment factors, aspirations with respect to children, quality of education, attitudes to spouse's work, role-sharing and flexibility, marital satisfaction, privacy, and family life and expectations.

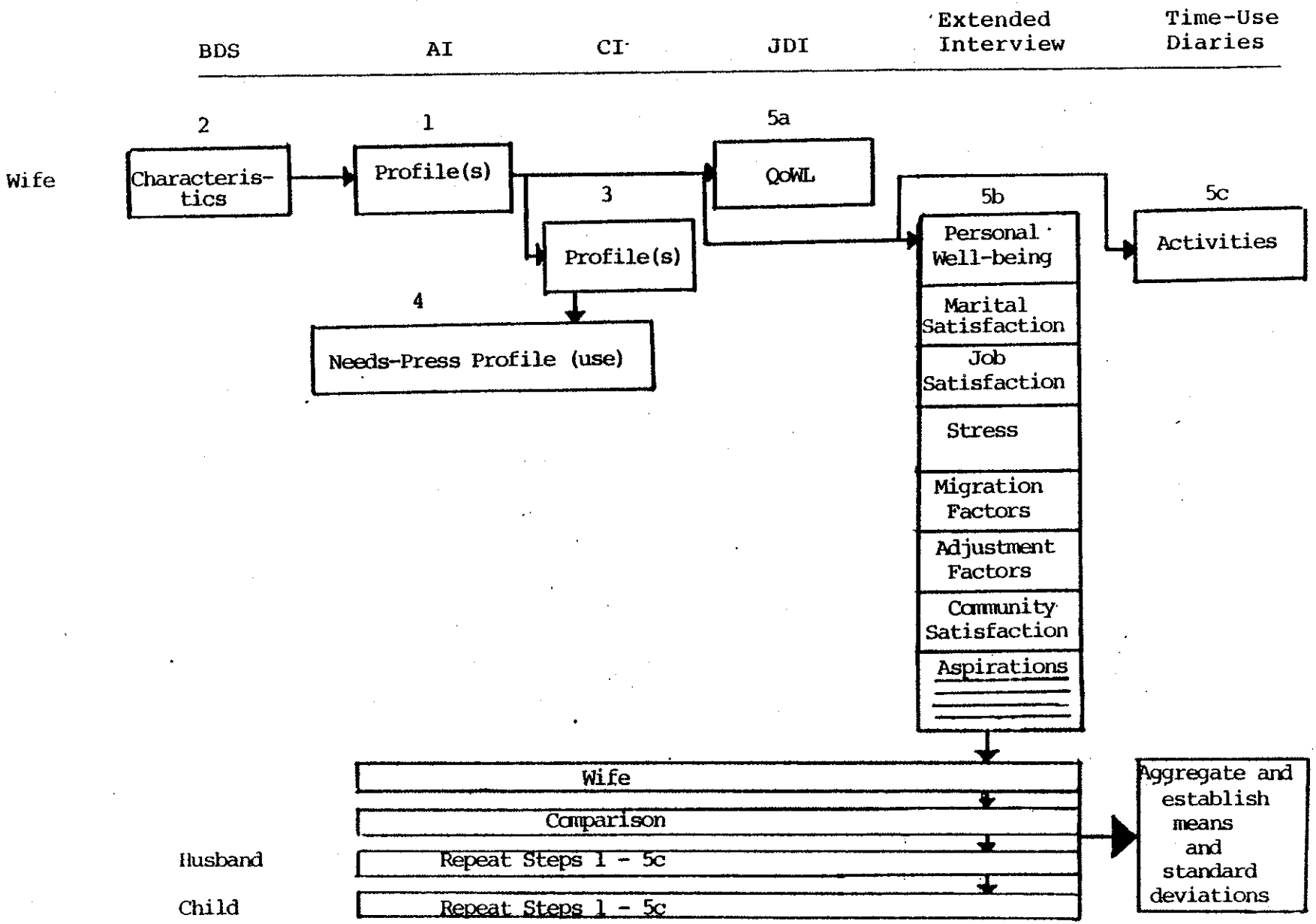
Where there is a child in the home 16 years or older, that child will also be interviewed. This will provide a different and useful perspective to the topic.

It should be noted that school age children will also be interviewed as part of a school survey (see below). A special sub-sample will be selected of children showing learning behavioural or other difficulties in school, and their families will be asked to participate by completing the Base Demographic Questionnaire, the Activities Index, the Community Index, the Job Description Index and the Extended Interview.

Figure 6-6 illustrates a possible path analysis with respect to husbands and wives across selected variables. One of the purposes of analysis is to establish areas of significant differences among spouses and in children in perceived conditions with respect to marriage, well-being, work, role adjustments and satisfaction within individual families. It is possible that significant variables may include socio-economic status, migration factors, marital history, and length of marriage.

It should be possible from this analysis to establish prototypical family profiles, much as Larson (1977) did on an <u>a priori</u> basis. Such profiles will provide a key discriminatory tool for the purposes of focusing on specific target populations for more detailed analysis and, possibly, Government policy and program review.

Figure 6-6 Illustration of Path Analysis: Extended Interview Comparative Analysis of Husbands, Wives and Children by Family Unit Across Selected Variables.



Cost of Living and Financial Matters. The intent of this section is to provide more specific data with respect to these matters than has been available until now. A central issue, with respect to job and community satisfaction, is the respondents' perceived ability to obtain the savings on income they expected. This may also be a significant variable with respect to stress.

Crime, Safety and Police. There are two parts to this topic in the Extended Questionnaire.

The first part includes items dealing with crime, safety and attitudes towards the police. These items have been drawn, in the main, from the study carried out by Alberta Bureau of Statistics and the Edmonton Police Commission in Edmonton (ABS, 1976). This will provide the basis for useful comparative analysis.

Should specific patterns emerge in our data with respect to variations among respondents related to other variables, it may be appropriate to examine this data in a fine-grain analysis.

The second part consists of a confidential questionnaire which the respondent will seal before handing to the interviewer. The intent of the questionnaire is to obtain data with respect to sensitive aspects of socially deviant behaviour: particularly child abuse, wife abuse, and illegal activities.

The items dealing with child abuse and wife abuse, are mostly indirect, and some care will have to be taken in the analysis and drawing of conclusions.

The items with respect to illegal activities deal with both acts committed against the respondent or acquaintances, and acts committed by the respondent or someone in the household. (See also Background Paper: Social Deviance). The confidential questionnaire was developed following meetings with the Client and interested Departments in late June, at which time they placed considerable emphasis upon obtaining this information.

The confidential questionnaire will be tested in

Fort McMurray as soon as arrangements can be made. Subsequently, we may find it appropriate to suggest some revisions to the questions.

Some doubts have been expressed to us about the usefulness of attempting to collect data on such sensitive topics. Some studies regarding self-reporting, however, have been carried out (Craig Taylor in Bryant and Wells, 1973); the results involving child abuse are expressed in an estimated upper limit of 21 and lower limit of 13 incidents per 1,000 population.

Despite the range between the upper and lower limit, the results provide at least some statistical perspective from which to approach Government policy and program issues associated with these matters. Similar results from the Longitudinal Study would represent an improvement on the reliability of the current data. It will be important to track changes with respect to these activities in Phase 3 as compared to Phase 2.

Local Government. A number of items deal with respondents' perception of local government and, to a lesser extent, the Provincial Government. The local government items follow the basic format of access, response and satisfaction used in the Health and Personal Services section of the Extended Interview. This data can be related to the respondents' perceptions of local government as expressed through the Community Index.

6.3.1.5 Time-Use Diaries. It is considered important to develop a more comprehensive and detailed description of the actual activities carried out by persons in Fort McMurray: type, sequence, duration, frequency, location and persons involved in the activities.

Experience has shown that the Time-Use Diary is a valid instrument for data collection and analysis. It has been used in Europe (Szalai, 1965), Britain, (BBC, 1965), the United States (Robinson and Converse, 1966; Chapin and Hightower, 1966) and Canada (Burton, 1978).

The data shed considerable light on how people spend their time. The data can also be used to supplement and enrich information obtained through questionnaires and interviews.

The Diaries will be administered to respondents once during each season of the year. The administration will ensure that responses are staggered to ensure coverage for each day of the week during that season.

In the analysis attention will focus on identifying differences between:

1. weekdays and weekend days;
2. major periods of the day;
3. the four seasons of the year;
4. longitudinally, over the study period;
5. different types of people.

We have already illustrated in previous figures possible path analyses relating demographic characteristics, needs profiles, needs-press profiles, job satisfaction, family well-being, and other characteristics and dimensions to data from the Time-Use Diaries.

The Activities Index contains detailed items regarding personal behaviour which can be related to the Diaries. In addition, the Extended Interview asks specifically for recreation, leisure and community activities, and for attitudes and activities on a seasonal basis. While this self-reported information is useful, it needs the specificity or accuracy generated by Time-Use Diaries.

Our Background Paper, Time-Use Diaries, contains a description of the Diaries themselves and the methodology associated with them.

We want to note a discrepancy in the Background Paper which needs clarification. Section 1, Introduction, was written on the assumption that not all respondents in the household sample would be asked to complete the Diaries. Consequently, it is stated in that section that the information gained from

the Diaries would "not be representative, but indicative..."(p.1).

Subsequently, however, we decided to recommend a smaller sample of households to obtain a four percent level of precision rather than three percent as originally agreed to. Section 2, on Implementation, of the Background Paper reflects that change. With the smaller sample size it will be more feasible to administer the Diaries to all respondents.

Consequently, there is a strong possibility - assuming the attrition rate can be held to a reasonable proportion - that the results will be reasonably representative of the population, even if not at a statistically precise level.

6.3.2 Supplementary Studies

6.3.2.1 Introduction

The methodology and instruments described above are intended to be administered to all dwelling units in the household survey. In addition, we propose two separate studies directed to specific populations which, because of conditions particular to each, require a separate approach. They are:

1. Study of the local business economy,
2. Survey of children in school.

We describe each in turn.

6.3.2.1 Study of the Local Business Economy

The rationale, objectives and methodology are set out in detail in our Background Paper, The Local Business Economy in Resource Communities.

Very briefly, there is little detailed data available with respect to the local business economy in resource communities. We have been asked to design a study which would generate data to fill this gap. The central question is the extent to which local businesses share in the growth generated by resource development; and the opportunities and problems associated with such growth.

The demographic structure of Fort McMurray suggests that a random sample of the population would not include a sufficiently large number of businessmen to provide a statistically reliable basis for the collection data from that sub-group. In addition, it will be necessary to collect specific and detailed information from this sub-group along a number of special dimensions.

Accordingly, we propose to carry out a separate and supplementary study of the local business economy and local businessmen in Fort McMurray.

The study will encompass the following components.

Inventory and Survey of Local Businesses. An inventory will be prepared of local businesses. This will identify businesses by name, address, location, type of services or goods, size of facility, number of male and of female employees.

In addition, a sample of 100 will be selected from those businesses, and a survey will be carried out of the owners or managers.

The survey will consist of an interview structured to provide information and data for specified topics. These topics include:

- ownership (local/non-local)
- customer profiles
- commercial "leakages"
- occupation, sex and wage distribution among employees
- labour turnover
- competition and business prospects
- annual sales volume (dollar or physical volume)
- trends in sales
- financial concerns
- operating concerns and opportunities

The information and data gathered will provide a basis for categorizing businesses according to the typology discussed in the Background Paper in relation to resource development:

- direct benefit sector
- indirect benefit sector
- non-benefit sector

It will then be possible to assess the character of businesses in each sector; and to identify the opportunities and problems they face with respect to benefitting from the growth generated by resource development.

In Phase 3 the Inventory will be repeated, as will the Survey, at the same time of year as in Phase 2. The survey in Phase 3 will encompass those owners and managers surveyed in Phase 2, plus a representative sampling of newcomers. Differences between data and information gathered in Phases 2 and 3 will be identified, changes tracked and conclusions drawn.

It may be considered useful to carry out an interim inventory and survey 12 months after the first, depending upon circumstances in Fort McMurray. That decision can be taken at the completion of Phase 2.

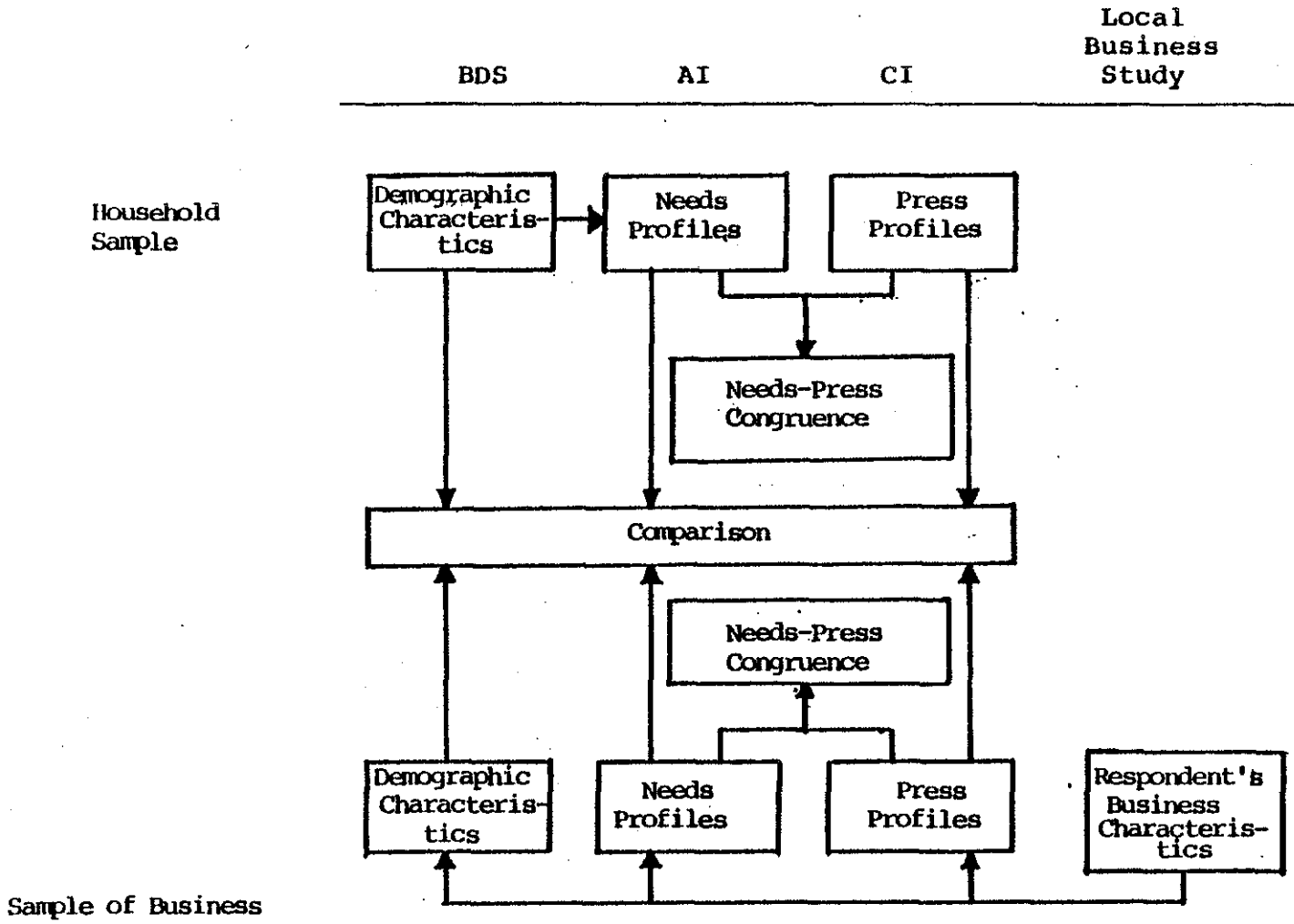
In order to provide comparability between the businessmen will be asked to complete the Base Demographic Questionnaire, the Activities Index and the Community Index (Figure 6-7).

Survey of Consumer Prices and Housing. A selected basket of goods will be surveyed to provide a basis for comparing consumer prices in Fort McMurray with Peace River and other communities in the province. The basket will be drawn from that prepared by Statistics Canada. From this comparison, it will be possible to obtain precise data with respect to the cost of living in Fort McMurray compared to elsewhere in the province.

The housing component of the survey is more complex, as we discuss in our Background Paper. Essentially, there are two housing markets in Fort McMurray. The open market is the conventional housing market, open to all interested potential purchasers and tenants.

The closed market consists of that housing stock owned or controlled by the resource companies, other large

Figure 6-7 Illustration of Path Analysis: Local Business Survey - Comparability of Respondents to General Population by Demographic, Needs and Press Variables



companies, and, to a lesser extent, by the Government. This housing is available only to employees. In the closed market, prices are subsidized through rent allowances, interest-free loans and other forms of assistance.

With respect to the open market, representative housing prices - including apartment and house rents - will be identified in Fort McMurray and Peace River, with the assistance of an experienced appraiser/assessor and the local real estate boards. Standardized categories will be used. The size of the open market sector and its characteristics will also be identified.

With respect to the closed market, the same standardized categories will be used. Levels of assistance, along with purchase prices or rents charged to employees, will be determined with the assistance of the owning agencies. Open market prices will be identified as well. The size and characteristics of the closed market sector will be identified.

The survey will be repeated again in Phase 3 at the same time of year to provide a basis for comparability. Changes in prices and rents will be noted in both sectors. Changes will also be noted in the size and characteristics of both housing sectors, and in the scale and types of assistance provided to purchasers and tenants in the closed market.

Survey of Key Cost Sectors. This will include intervals with representatives of the key sectors in the cost structure with respect to local businesses. The interviews will establish business tax and property assessment levels, utility rates, wholesale prices at point of sale and point of delivery in Fort McMurray, transportation costs to Fort McMurray and related matters.

These findings will be compared to the results of a similar survey in Peace River to establish a context within which to gauge the cost structure components in Fort McMurray.

The survey will be repeated in Phase 3, in order to track changes and their implications with respect to the cost of living.

6.3.2.3 Survey of Children in School

The rationale, objectives and methodology of the survey are discussed in our Background Paper by Dr. A.G. Scott, Children and Education.

Typically children 15 years of age and under constitute about a third of a community's population. On a per capita basis they represent a heavy expense to the community because of the costs associated with education, recreation, and related activities.

Children are also among the most vulnerable members of the community. In their well-being and behaviour they tend to reflect the stresses and strains of mobility, transition, family life, school life, and other dimensions of living in the community (Mandler and Watson, 1966; Koppitz, 1971; Wolff, 1973). In this sense, children can be regarded as a barometer of family life and community life.

The schools themselves in Fort McMurray are under considerable pressure to keep up with changing conditions. There are reports of overcrowding, heavy turnover among students, and a disproportionately high percentage of children from different school jurisdictions.

The data we have from one school in Fort McMurray shows that more than 80 percent of the children in that school in the school year 1977-78, had spent the previous year in another province or country. Only 17 percent of the children had lived in Alberta that previous year, and a smaller percentage had actually lived in Fort McMurray.

These conditions present both the schools and the children with serious adjustment problems to move through.

Accordingly, we propose to carry out a supplementary study of children in schools.

The objectives of the proposed study are:

- to identify and measure the educational progress of the children through their school years and to compare these findings with those from other communities;

- to identify and track changes in the children's processes of transition and adjustment, to determine the severity and duration of such processes and their manifestations; and to
- identify possible courses of intervention;
- to look to the child's well-being as an indication of the family's well-being, and to identify possible areas appropriate for intervention.

Two types of data will be collected.

1. School records will be examined to establish a baseline regarding absenteeism, truancy, use of counselling facilities, pass/fail rates and dropout rates;
2. Tests will be administered to a sample of school children in the public and separate school systems during Phase 2; in Phase 3, those children still in school will be located and the tests administered to them again, along with sample of children in school at that time; comparisons can then be made between the same children in Phases 2 and 3, and between children from Phase 2 and those who arrived only in time for Phase 3.

Five classes will be selected in each school system in Fort McMurray, yielding approximately 50 children (two classrooms) for each of the grades, 1, 3, 5, 9, and 11. This will provide a sample size of approximately 250 children.

Two tests will be administered to the children.

1. The Wide Range Achievement Test (WRAT). This is a widely acknowledged instrument in the United States and Canada and has been valuable in measuring the student's ability in basis school subjects. (Smith and McManis, 1977) Level 2 of the WRAT is valid to adulthood. (see Children and Education , Appendix 1)

The WRAT will be administered by Dr. A.G. Scott and qualified staff. During the administration of the test, students will also be interviewed in a semi-structured format.

2. Walker Problem Behaviour Identification Checklist. This, too, is a widely acknowledged instrument (Bolstad and Johnson, 1977). It uses a checklist approach, in which the teacher checks off the behaviour characteristics on the sheet for each child. (see Children and Education , Appendix 2)
The instrument has a proven record for the identification of problem behaviour in children and for identifying children at risk. Here, as with the WRAT, the instrument has a proven capability for identifying children's behaviour in relation to family and family-related stress.

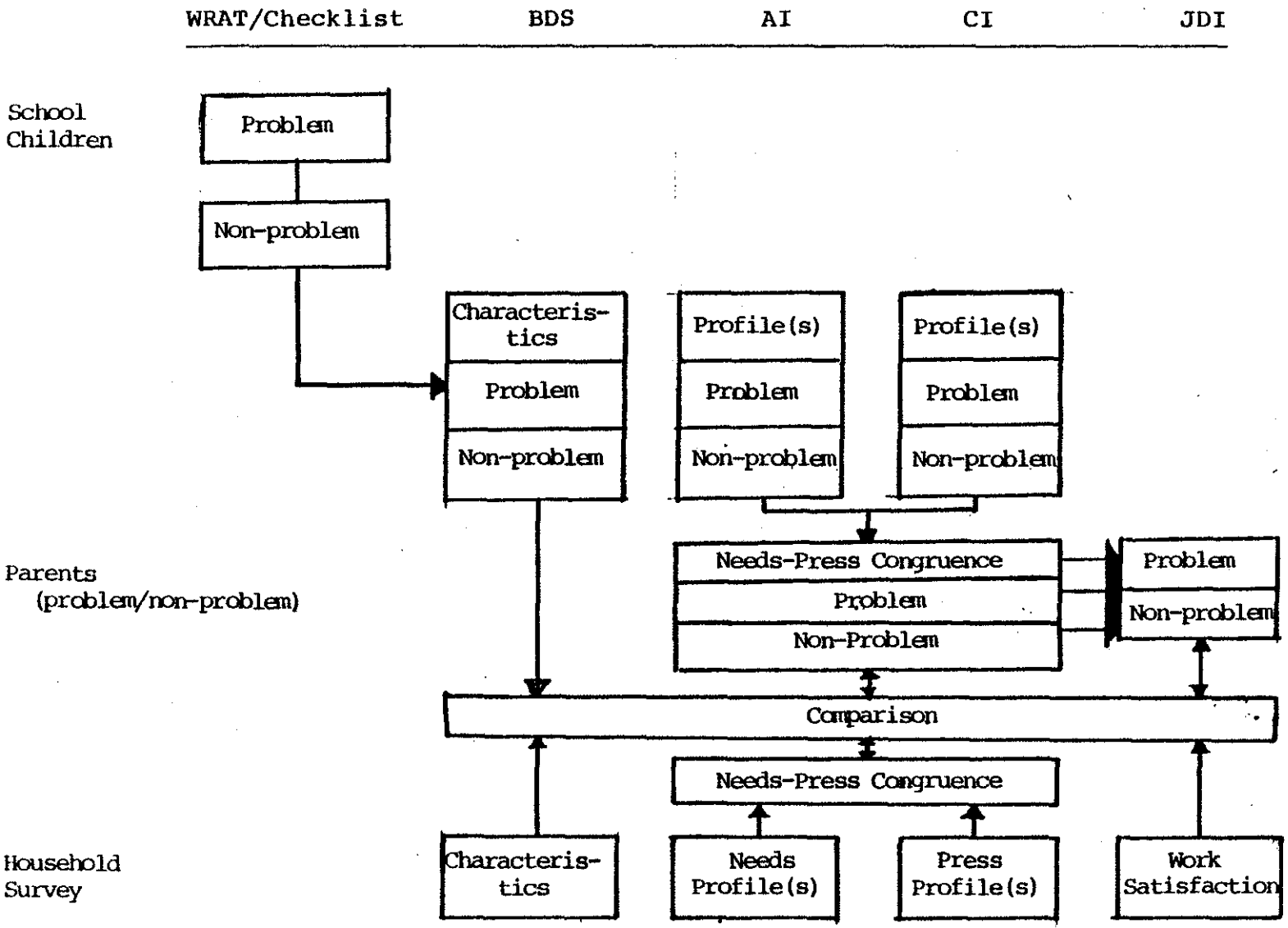
We expect that the results of the WRAT and the Problem Checklist will generate data relevant to conditions leading to deviant behaviour. (Background Paper, Social Deviance).

We propose to take a sample of children exhibiting learning and behaviour problems, and those who do not, and administer the core instruments from the household survey to their parents: the Base Demographic Questionnaire, Activities Index, Community Index and Job Description Index.

The data thus generated will provide a much more comprehensive and detailed understanding of the dynamics of family well-being and adjustment in Fort McMurray.

The data from the parents can be compared to the data from the main sample to identify significant commonalities and differences (Figure 6-8). From this analysis, and by extrapolating the findings from the parents to the general population if appropriate, we may be able to draw conclusions relevant to child and family conditions applicable to the general population.

Figure 6-8 Illustration of Path Analysis: School Survey - Comparison of Parents of School Children and the Household Survey Sample Population



We propose a comparable methodology for Peace River, in order to establish a basis for reliable comparison. In the event that it is considered too expensive to cover the same five grades as in Fort McMurray, we propose an option with fewer grades. It would also be useful, to a lesser degree, simply to compare school records from the two jurisdictions.

6.4 SYSTEM DESIGN AND DATA RETRIEVAL

6.4.1 Computer System for Data Integration

The computer systems which will be described here include those of the University of Alberta and Syracuse University. Syracuse University is involved because they will be developing the computer programs to evaluate the Needs-Press schedules. Both the Activity and Community Index must be sent to Syracuse as the University holds the copyright to the computer programs, Stern Personality and Environment Indexes.

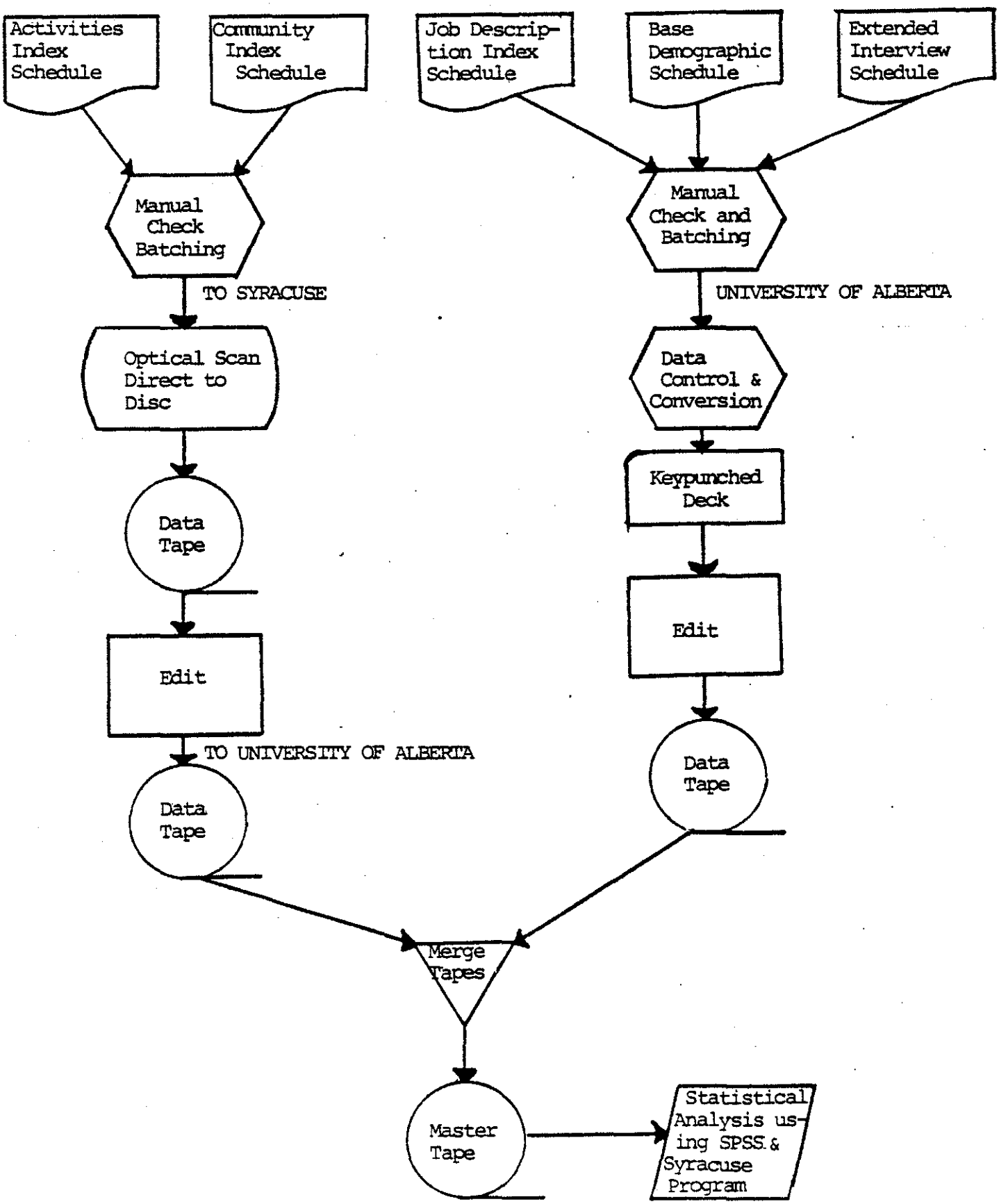
6.4.2 System Diagram for Syracuse and University of Alberta Computer System

Syracuse University has an IBM 360 Computer which uses the Job Control Language (JCL) and can provide an extensive variety of programming languages including Fortron, PL/1 and Cobol. Data is stored on both disc and 9-track magnetic tape. The Stern personality and environment Indexes are programmed in PL/1 and can be run at the University of Alberta.

The University of Alberta has an Amdahl 470V/6 with the Michigan Terminal System, offering both batch and interactive processing. The University system can handle PL/1 programming language. The two systems are completely compatible. It will be necessary to change the JCL to MTS for use at the University of Alberta.

Figure 6-9 portrays the computer system diagram using the University of Alberta for processing three instruments, and Syracuse University for processing two instruments. The Activity

Figure 6-9 System Diagram for AOSERP Study of Fort McMurray Data using Syracuse University and U of A Facilities.



and Community Indexes are both manually checked and batched for shipment to Syracuse. At Syracuse, an optical scanner will read the digitex answer sheets directly to a disc file, thereby reducing the element of human error associated with keypunching. The University of Alberta does not have a scanner which can read from digitex sheets. This disc file will then be transferred directly to a 9-track magnetic tape. This tape will consist of two sets of information relating to each respondent.

Using this two-stream system, the other three instruments would be manually checked and batched and sent to the University of Alberta for data control and conversion (keypunching). This will yield a keypunched data set which must be edited for errors. Once the cards are edited, a 9-track data tape will be produced which will contain three sets of information pertaining to each individual.

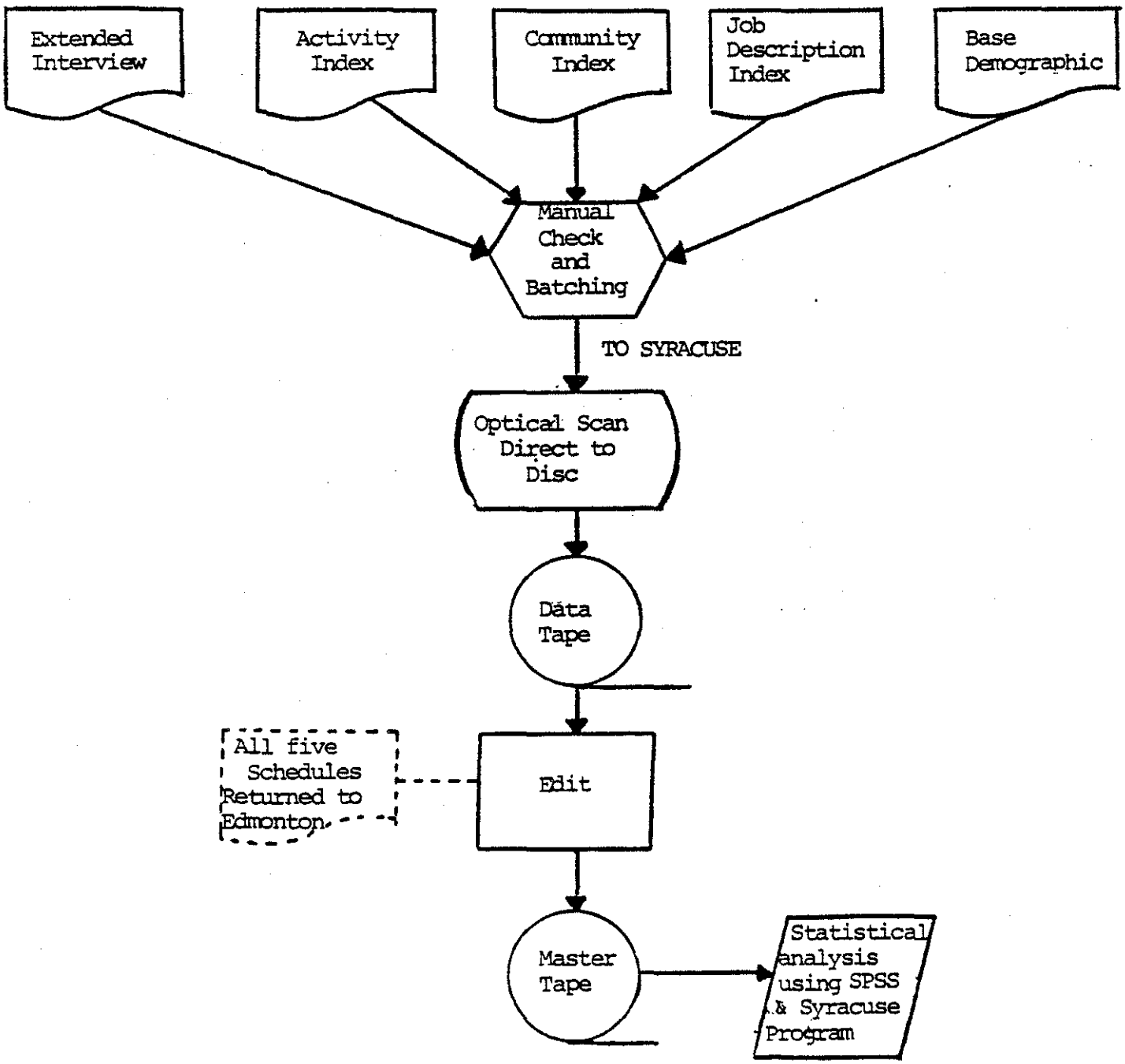
These two data tapes, one from Syracuse University and one from University of Alberta, will have to be merged in order to create a unique set of records for each individual. A program will have to be written in order to accomplish this task. Once the two tapes are merged, statistical analysis using SPSS (Statistical Package for the Social Sciences) and the Stern personality programs will be used.

6.4.3 System Diagram for Syracuse University

Figure 6-10 shows a system diagram if all data processing is done at Syracuse University. It is evident, when this figure is compared with Figure 6-9, the process is streamlined. This system is recommended to the Client as the most economic and efficient. The data transfer will be faster. The number of programs necessary to produce the final master tape will be almost half that of the two-stream system.

Using the Syracuse system for data processing, the five interview schedules are checked and batched, then sent to Syracuse where the optical scanner will create a disc file containing the five instrument responses and five sets of

Figure 6-10 System Diagram for AOSERP Study of Fort McMurray Data using Syracuse University Computer Facility



information for each person interviewed. From this, a 9-track is generated, edited and a master tape sent back to the University of Alberta where the SPSS and Syracuse programs will be run to produce the statistical analysis necessary.

The statistical analyses for the Activity Index and Community Index are being developed at Syracuse and consist of factor analyses which yield indices as defined by Stern in People in Context. (1970) The computer programs together with the special subroutines being developed by Syracuse, for the Community Index, and the associated manuals, will be shipped to Alberta where the detailed analysis will take place. Arrangements should be made to purchase the copyright to the computer programs for the Stern Indexes after Phase 2.

A copy of the master tape, manual and instruments will be deposited with the Client.

6.5 SUMMARY

In this chapter we have set out our proposed methodologies.

They include:

1. the establishment of an Institutional Information System;
2. a household survey in which the instruments to be administered include, the Base Demographic Questionnaire, Activities Index, Community Index, Job Description Index, Extended Interview and Time-Use Diaries;
3. an inventory and survey of the local business economy, and including a survey of consumer and housing prices, and interviews with the key cost sectors in the local economy,

4. a study of children in school, including a sampling of their parents.
5. the use of Syracuse University, Test Scoring and Evaluation Services to carry out the data interpretation.
6. the use of the University of Alberta computer facilities for data analysis.
7. the deposit of a copy of the master computer tape with the Client.

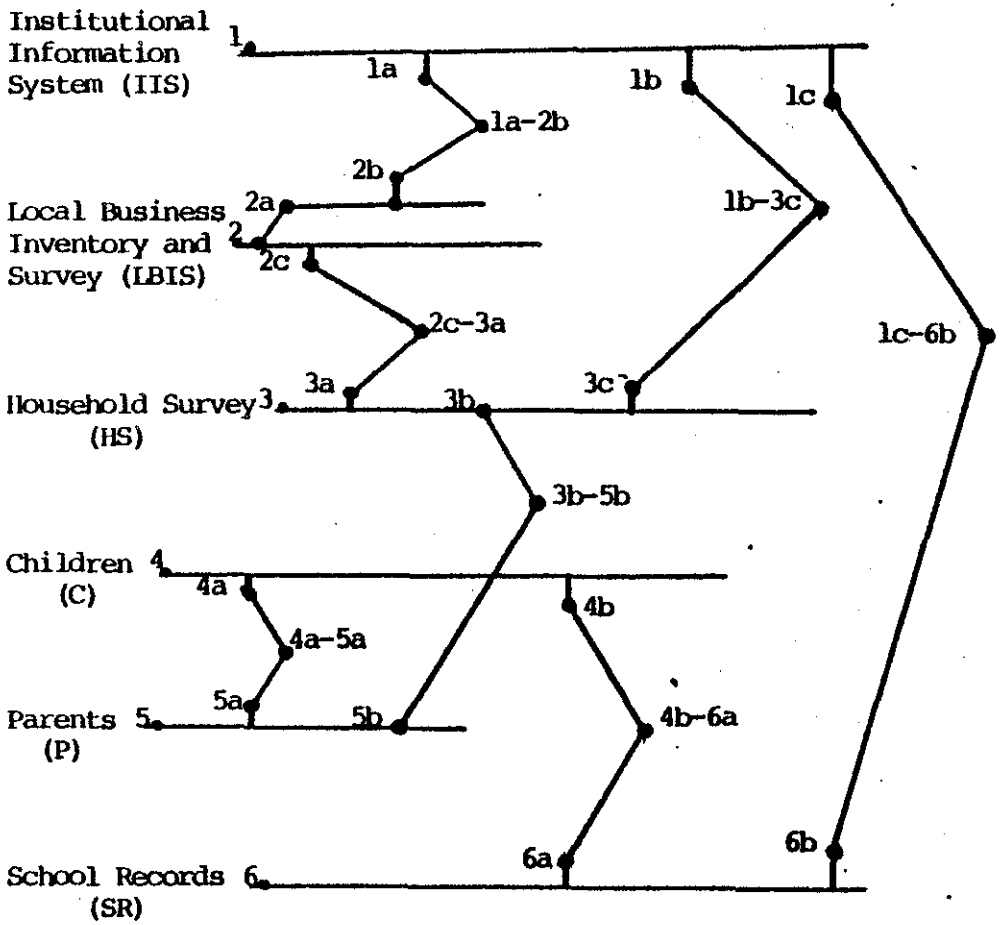
This combination of methodologies represents a comprehensive and detailed research approach to personal, family, work, social and community conditions in Fort McMurray. Figure 6-11 illustrates the analysis paths among study components. The results are intended to be applicable both to other resource communities and to more conventional communities.

The instruments we have selected represent the best state of the art which we have been able to identify as appropriate to the needs of the Longitudinal Study. Where we have developed instruments for the Longitudinal Study, we have used, to the extent possible, proven items from other instruments.

The instruments cover the topics set out in our Terms of Reference, related topics in which AOSERP has an interest, and matters of concern to, and requested by, various departments.

In the next chapter we describe the sample plan and options with respect to the household survey.

Figure 6-11 Over-view of Analysis Paths among Study Components



1. Institutional Information System (IIS)
   - 1a. IIS data comparable to LBIS data
   - 1b. IIS data comparable to HS data
   - 1c. IIS data comparable to SR data

2. Local Business Inventory & Survey (LBIS)
   - 2a. LBIS objective data
   - 2b. LBIS data comparable to IIS data
   - 2c. LBIS-BDS/AI/Ci profiles

3. Household Survey (HS)
   - 3a. BDS/AI/CI profiles
   - 3b. BDS/AI/CI/JDI profiles
   - 3c. HS objective data comparable to IIS

4. Children (C)
   - 4a. C data comparable to P data
   - 4b. C data comparable to SR data

5. Parents (P)
   - 5a. P data comparable to C data
   - 5b, P - BDS/AI/CI/JDI profiles

6. School Records (SR)
   - 6a. SR data comparable to C data
   - 6b. SR data comparable to IIS data

DRAFT

ALBERTA OIL SANDS ENVIRONMENTAL RESEARCH PROGRAM

LONGITUDINAL STUDY OF PERSONAL ADJUSTMENT AND SOCIAL CONDITIONS IN THE FORT MCMURRAY AREA HS 30.1

PHASE 1: FINAL REPORT

REPORT: CHAPTER 7

SAMPLING PLAN: FORT MCMURRAY AND PEACE RIVER

DR. WAYNE W. MCVEY AND

GEORGE B. BUSE

AUGUST, 1978

CHAPTER 7

SAMPLING PLAN

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7. SAMPLING PLAN

7.1 LONGITUDINAL ANALYSIS

The sampling plan has been specified by the client to necessarily fulfill two objectives; it must allow a cross-sectional analysis between Time 1 (1978) and Time 2 (1980), and it must be able to provide a longitudinal analysis of the changes which have occurred in the population between Time 1 and Time 2. The latter of these two objectives is met by the use of a panel, the former by a sample of the total population at both Time 1 and Time 2. In order to satisfy both of these objectives it is necessary to incorporate a panel design with the cross-sectional samples. This is achieved through the use of an overlapping sample. The panel sample is technically a type of overlapping sample which refers to an overlap of population elements over time.

The panel sample allows the comparison of change over time in both individuals and groups of individuals. The rules that apply to panel samples apply to this overlapping sample. Kish points out that overlapping samples allow the measurement of change in terms of gross (cross-sectional) and net (panel). Change over time, that is to say, the characteristics of the community of Fort McMurray at Time 2 can be compared with the characteristics at Time 1. This will allow the calculation of gross change while the net change can be measured by calculating the change within the panel. This process will facilitate the breakdown of sub-populations for statistical analysis. The sampling plan consists of two independent samples for the Cold Lake Region communities, Fort McMurray and Peace River at Time 1 (1978) and Time 2 (1980). The size of the sample for each independent sample was determined by using the following formula from Moser's book Survey Methods in Social Investigation (1969) and Kish's book, Survey Sampling (1965):

$$n = \frac{P(1 - p)}{S.E.^2(p)} \qquad (1)$$

where, n = sample size
p = expected proportion in sample
S.E.= level of precision
(Kish, 1965)

As specified by the Client, the level of precision will be 2% or 3%, for Fort McMurray. The substitution of proportions of 50% (p = .5) yield the maximum variance of .25. This procedure determines a sample size which will provide estimates of the total populations with a standard error of .02, .03 or .05 assuming maximum variance in the population. When proportions are smaller there will be a reduction in the standard error.

Whenever the populations to be sampled are small, as in the case of Fort McMurray and Peace River, a finite population correction factor is applied to correct the sample size. This correction factor was applied because the sample was picked without replacement. This fpc (finite population correction) is calculated using the following formula, from Kish:

$$\text{corrected sample size} = \frac{\text{(sample size) from 1}}{1 + \frac{\text{sample size}}{\text{population size}}} \qquad (2)$$

The corrected sample size for Fort McMurray in 1978 at the 2% precision level and Peace River at the 3% precision level are available in the Sampling Procedure Manual for Fort McMurray and Cold Lake Study. The sample is based upon households because dwellings are more stable than individuals or families. Changes within households, such as mortality or divorce can also be easily identified. The fact that the household is the basic economic and social unit helps provide clues to mobility as well as a fixed location at Time 2 sampling. Dwelling units or Primary Sampling Units (hereafter PSUs), as they are referred to in the above procedure manual,

are not subject to the mobility that individuals and families are.

7.2 EQUAL PROBABILITY SAMPLE

The systematic selection of PSU's yields an EPSEM sample; that is, a sample in which each element has an equal and known probability of being selected into the sample. A probability sample of this nature when properly managed will result in the following advantages:

- it will provide data of known precision.
- it will provide data of acceptable quality at minimum cost.
- it will provide better control over non-sampling sources of error (bias).
- mathematical statistics can be applied to analyze and interpret the data.
- it can yield better quality data than a census on a cost/benefit basis.

The sample, which will be drawn from Fort McMurray's total dwellings, will be 315 at 3% or 630 at 2% precision. See the manual for listing of particular dwelling units included in the sample.

The difference between a sample result and the result from a complete census, using the same instrument under the same conditions, is measured by precision or the reliability of the sample result. The difference between the sample result and the true value is referred to as the accuracy of the sample survey. Generally it is the accuracy per se of a survey which the client is interested in; it is the statistical precision which can be measured, in most instances.

In order to provide the client with some indication of the accuracy of the sample, a comparison of the age-sex distribution reported in the Fort McMurray Census will be superimposed with the age-sex distribution from the sample in the Fort McMurray study. Since the Census was conducted

earlier this year and the survey will be conducted in October, the two populations will be slightly different.

7.2.1 Initial Sample, Time 1

The sample drawn at Time 1 will be analyzed and post-survey stratification will be used in the analysis. The PSU's will be stratified according to Statistics Canada's definition of migration status: non-migrants, migrants and immigrants; and according to ethnic origin: native Indian, non-native Indian.

This procedure, assuming a 3% level of precision, will yield approximately 630 interviews (315 PSU's) with adults, plus 70 interviews with children over the age of 16. If the 2% precision level is utilized, the total number of interviews will be approximately 1400.

The major problem of the smaller sample size is that the number of persons in any strata is very quickly reduced when cross-tabulations are used. The net result is that the cells in the cross-tabulations tend to have very few, if any, observations. This results, not in an invalid sample, but in a cross-tabulation for which very few reliable statistics can be generated. Generally, three-way cross-tabulation distribution, with four categories per variable will result in a 64-cell table. The smallest strata is anticipated to be native which comprise about 8% of the total samples, approximately 60 native Indians.

7.2.2 Subsequent Sample, Time 2

The sample drawn for 1978 will be used as a panel of households for re-interview in 1980. The 1980 sample will reflect not only the people who have stayed in the study communities over the 18-month period, but also the people who have moved to the study communities since 1978.

Since Fort McMurray is anticipated to come on stream with a third tar sands plant in 1980, the community growth less sample attrition will likely result in a larger sample at Time 2.

The second sample will consist of the sample from Phase 1, plus a sample of the new housing units built since the first interview time. These new units will be sampled using the same interval established for the first sample, maintaining an EPSEM sample of the PSU's which exist in the study communities in 1980.

This procedure will result in an overlapping sample, see Table 1, which will consist of four distinct household types:

1. households which are still located in the same dwelling units;
2. new households replacing households which have moved out of the municipality;
3. new households located in dwellings built since 1978;
4. original householders from Sample 1 who have stayed in the study community but have a different dwelling unit.

In the case of this fourth type, the householders in the original dwelling will not be interviewed as their inclusion would bias the sample.

The procedure will allow the calculation of net change behind the gross community change. The change individuals reflect can also be measured.

7.3 SUMMARY

The principal aim of the sampling plan is to collect data on broadly the same questions from the same sample on more than one occasion. The overlapping sample will provide

Table 7-1 Panels in Overlapping Sample

1978 sample

1980 sample

1. panel from sample one - same households

2. panel from sample one - new households located in dwelling units sampled in 1978

3. new households located in new dwelling units built since 1978

4. panel from sample one - same householders who have changed dwellings within the municipality

the necessary data to calculate both net and gross change. The overlapping sample provides enough information that the change over time can be studied at the community and individual levels. The overlapping sample, like the panel design, incorporates a selected sample for the first time period; and thereafter the same core panel is utilized in seeking information at some future date. Presumably a treatment variable will be introduced between time period one and time period two, thus allowing for an assessment of change with respect to the panels, and the community's attitude, behaviour or lifestyle. The particular advantage of this design is that the researcher can identify and study the respondents who changed and determine the direction of change (Moser, 1969, p.112).

7.4 SAMPLING PROBLEMS

7.4.1 Attrition and Mortality

The chief problem associated with panel designs is the loss of original panel respondents through mortality. Mortality in this case refers to death as well as respondents who refuse to participate at Time 2, or panel members who move away from the target area. Several procedures exist to cope with sample attrition (Moser, 1969; Kish, 1965). One method of dealing with this problem is by increasing the master sample by 20%, then as attrition occurs the losses are replaced from the master list.

An alternate method of overcoming attrition losses is to be sure that replacement sample units are demographically matched to the characteristics of the losses.

The method to be employed in this study will be the increase of the master sample by 10%. This lower precentage was chosen because respondents will be offered an economic incentive to remain in the panel.

Kish (1965) suggests that if dwellings or households are utilized as primary sampling units, attrition effects can be determined more readily. The occupied dwelling (household) as an economic and social unit is relatively small in size, thus making it amenable as a sampling unit. The occupied dwelling maintains more stability than families or individuals, primarily in terms of location and identification.

7.4.2 Community Change

Growth and change in the population over the survey period will present a problem, because the study population will change as a consequence of changes in scheduling of economic activity in the area. This sampling design takes into account the changing population composition by utilizing households/dwellings as the primary sampling unit.

By utilizing the household, the migration of population into and out of the individual study community can be assessed over the time period. The problem of new dwellings/households added to the target area has been dealt with previously.

7.4.3 Sample Selection Bias

A longitudinal methodology has some associated problems which, if not accounted for in the research design, will invalidate or bias the results. Sample selection bias was attenuated by ensuring that a series of random numbers were introduced into the systematic selection process when the master sample was picked. This procedure consists of selecting a new random start from within the sampling interval, ensuring that no monotonic trends are reflected by the sample.

Sample mortality was discussed earlier and the sample design has been planned in a manner that will minimize the bias due to sample mortality.

7.4.4 Respondent Conditioning

The frequency of interviewing is not likely to have a great effect on the conditioning of respondents since only two interviews will be conducted at an 18-month interval. If the survey requires more frequent interview periods, then independent smaller samples can be utilized as a check for conditioning. Evidence from research concerning the effects of re-interviewing has not been significant enough to warrant the extra economic cost of independent control samples (Goldfarb, 1960, pp.58-60)

7.4.5 Sample Frame Adequacy

The lack of an adequate sample frame has been resolved by utilizing a listing of households/dwellings, obtained from the target area's planning and development lists and maps. To ensure that the sample has complete coverage,

all new dwelling units not on the map will be listed and sampled when the survey goes to the field. This procedure will assure total coverage at each time period.

7.4.6 Statistical Controls

Statistical controls would be accommodated internally by utilizing stratification, i.e., native vs. non-native or non-migrant, migrant, and immigrant segments or strata. In addition, economic costs permitting, there would be the option of utilizing independent samples as discussed previously. Results from this study would be compared with study findings conducted in similar community types, i.e., relatively isolated frontier communities that have experienced the social and economic impact of developmental change.

7.5 SELECTED SAMPLES

The selection of sample sizes in both Phases 1 and 2 is indicated in Tables 2 through 5 for Fort McMurray and Peace River, at 1%, 2%, 3% and 5% optional levels of precision.

It is recommended that the study samples utilize the 3% option in order to generate statistics on subgroups within the population. Four levels of precision are indicated for both Fort McMurray and Peace River.

7.5.1 Fort McMurray

At the 2% level it is necessary to interview 630 households (1260 individual adults and 140 children age 16 and older) at one time. At the 3% precision level, a sample size of only 315 households (830 individual adults plus 70 children age 16 and older) is required.

The tolerable standard error for proportions of fifty per cent at 3% is more than adequate for the study's purposes. Ideally, the Needs-Press Community Index questionnaire would be administered to this sample of 315 households, at which time determination of panel membership can be determined to provide a representation of households by migration status.

The native population sample at the 2% level indicated in Table 4 is 38 PSU's, i.e. native households. The sample at the 3% level of precision will yield 18 native households, assuming that the estimated proportions of native and non-native residents of Fort McMurray have not changed appreciably since 1971 (see Table 3). The native population sample size was included in the tables as reference information, as it is important to recognize that these 38 PSU's would be part of the 577* households by migration status. The native households are already accounted for in the non-migrant,

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* Primary Sampling Unit of 577 amounts to the reduced base from 630 households, having eliminated potential refusals and empty dwellings.

migrant, and immigrant household samples.

7.5.2 Peace River

A 3% level of precision yields a sample size in Peace River of 235 PSU's in the first stage and a sample size of 211 PSU's in the second stage. As noted in the above discussion of the Fort McMurray sample, the native Indian sample size would be 17 PSU's and are already part of the households by migration status. Census data for 1971 were utilized to determine estimates of migration status proportions and household size for Peace River.

7.5.3 Summary: Fort McMurray and Peace River

Possible sample sizes:

Fort McMurray:

2% First stage = 577 sample size
Second stage = 615 sample size

3% First stage = 268 sample size
Second stage = 318 sample size

Peace River:

2% First stage = 444 sample size
Second stage = 400 sample size

3% First stage = 235 sample size
Second stage = 211 sample size

Table 7-2 Sample Sizes for Selected Levels of Precision
Fort McMurray - Peace River

AREA	PSU's	Level of Precision			
		1%	2%	3%	5%
Fort McMurray.....	7,569	1,879	577	268	99
Peace River	1,534	951	444	235	94

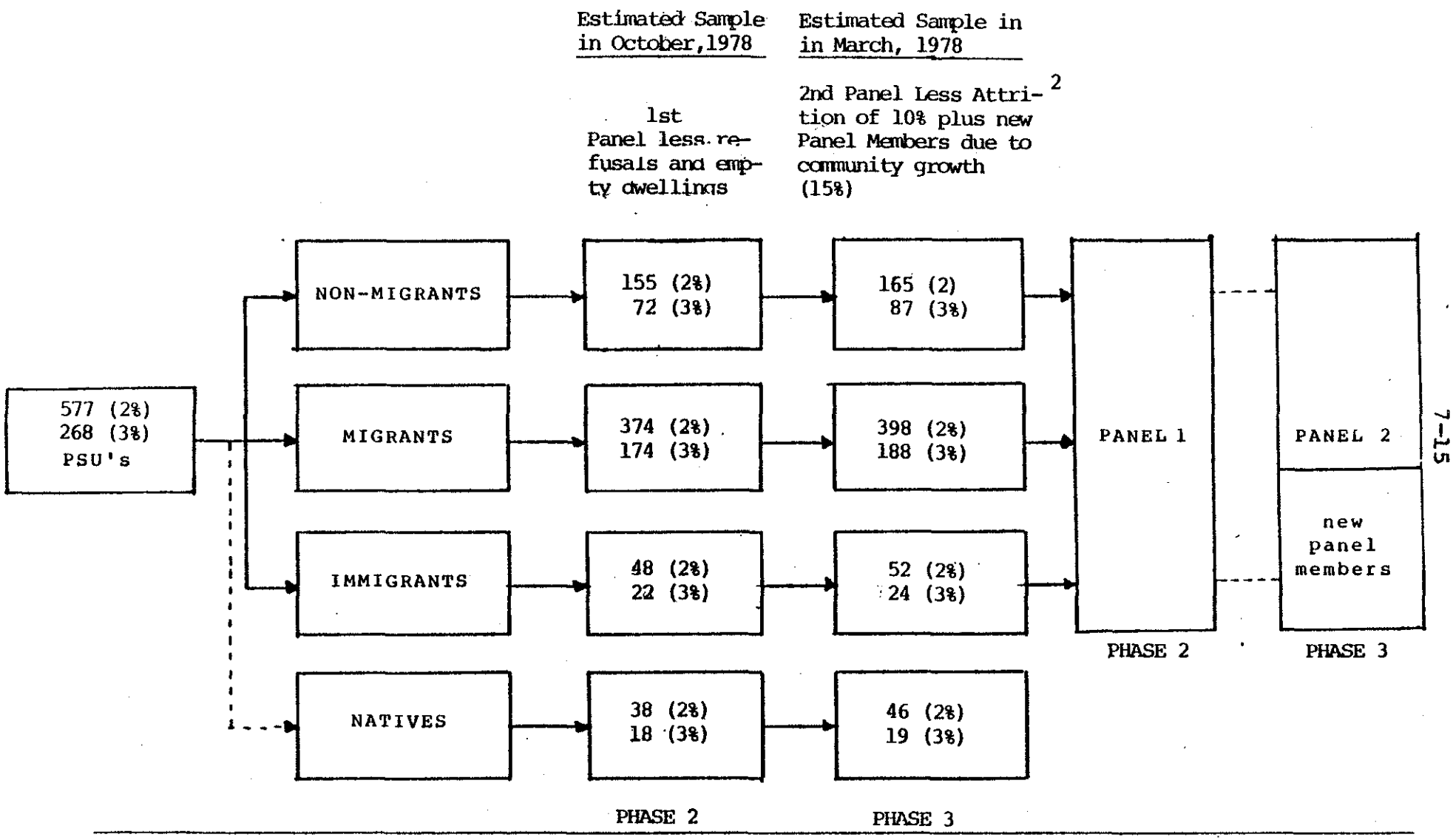
Table 7-3 Estimated Population Characteristics Fort McMurray: 1976 and 1978

Strata	%	1976[a]		1978[b]	
		population	PSU's	population	PSU's
Non-Migrants	26.8%	4,137	985	7,199	2,028
Migrants	64.8%	9,996	2,380	17,413	4,905
Immigrants	8.4%	1,294	308	2,258	636
Total	100.0%	15,427	3,673	26,870	7,569
Non-Native Households	93.5%	14,423	3,434	25,123	7,077
Native Households	6.5%	1,004	239	1,747	492
Total	100.0%	15,427	3,673	26,870	7,569

[a]1976 estimates utilized 1971 Census of Canada data on migration status for deriving the percentage distribution of non-migrants, migrants, and immigrangs. The population per household factor of 4.2 was used from the 1971 Census of Canada and applied to the 1976 Census of Canada population figures for Fort McMurray.

[b]1978 estimates utilized 1971 Census of Canada data on migration status for deriving the percentage distribution of non-migrants, migrants, and immigrants. The population per household factor of 3.55 was used from the Fort McMurray municipal census of 1976 and applied to the dwelling unit field counts for 1978.

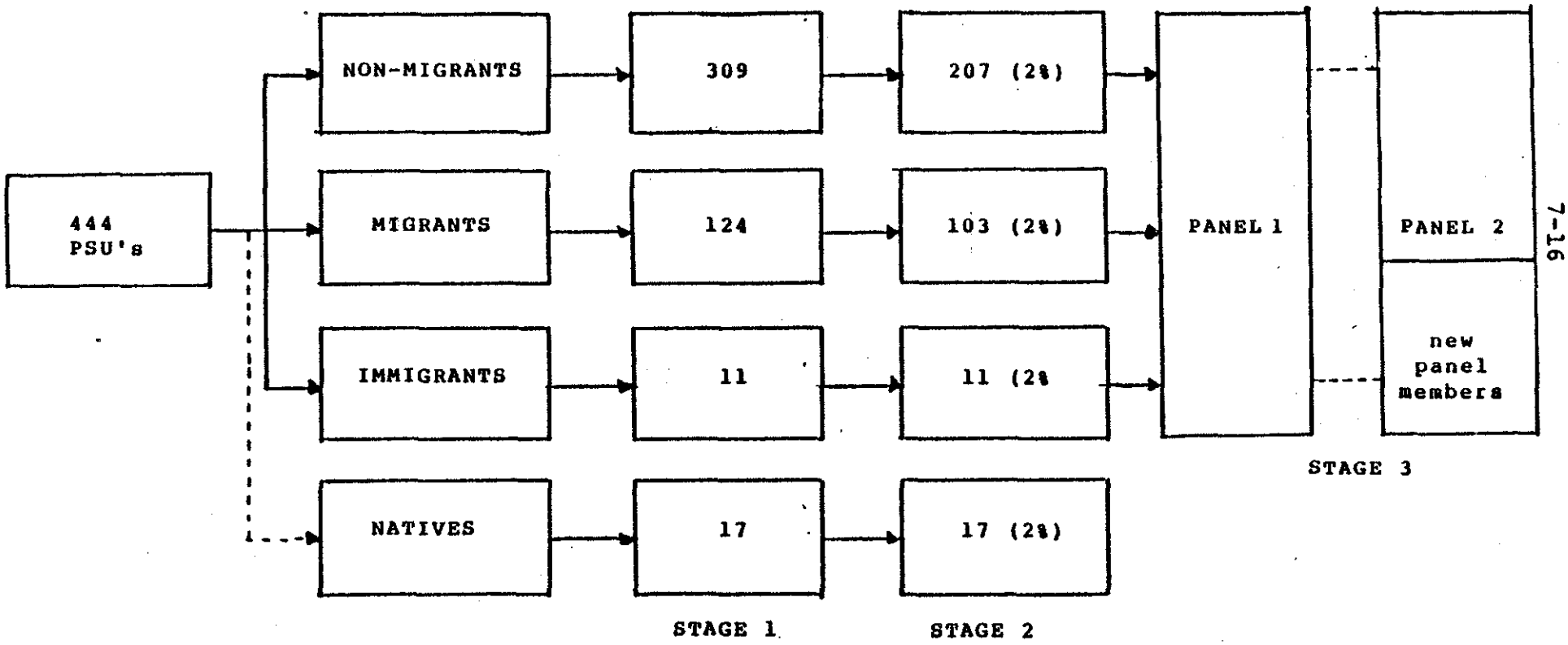
Table 7-4 Fort McMurray Sample Sizes for Selected Levels of Precision[1]



[1] precision is indicated in ( ) — tolerable standard error for proportions of 50% = 2.0% or 3.0%

[2] the phasing of the third oil sands plant could result in more samples in Phase 2 than Phase 1

Table 7-5 Peace River Sample Sizes for Selected Levels of Precision



precision is indicated in ( ) -- tolerable standard error for proportions of fifty percent.

7.6 SUMMARY

To summarize the sample plan, the sample frame will be independent. The household listing for the master sample will be generated by actual field checks throughout the target area coupled with city land use maps at both Time 1 and Time 2. (See Procedure Manual) The estimated total number of households which this process will yield in Fort McMurray is 630 at the 2% level and 315 at the 3% level, at Time 1 and 235 in Peace River at 3% level of precision.

After this master list is generated for 1978, these households will comprise a core panel for sampling in 1980. To these will be added an additional sample of new households built or added to the population since Time 1.

Both samples will be stratified as to migration status.

The sample sizes which have been picked for the town of Fort McMurray, the communities in the Cold Lake Region and Peace River, as well as the master sample lists and the procedures used to select them are elaborated in Procedure Manual for Fort McMurray and Cold Lake Study.

ERRATA

CHAPTER 8 WORK PROGRAM AND BUDGET

We apologize for two mix-ups within this chapter, where budget information has been placed in the wrong sections.

Readers looking at the Institutional Information System (section 8.3.2) would expect to find its budget at page 8-19, but it will instead be found at page 8-46 and 8-47, listed as 8.3.4.3.

Secondly, the Summary Budget of the Household Survey, which should follow on from page 8-35 is to be found on page 8-66.

We attach the corrections, for readers to insert appropriately.

Correction: Insert as 8-35a

Household Survey - Summary Budget

Fort McMurray/Peace River @ Three percent level of precision

	Fees	Expenses	Total
REVIEW			
1. Extended Interview	$ 3,570	$ 25	$ 3,595
2. Revise Sampling	2,710	340	3,050
3. A.G.T.	480	---	480
4.	1,480	250	1,730
	880	250	1,130
	8,630	2,300	10,930
	23,200	11,600	34,800
	------	1,350	1,350
5. Clean and Batch	$ 4,200	$ 480	$ 4,680
6. Programming	19,250	3,700	22,950
7. Integrate other Data	------	500	500
8. Second data Analysis	8,520	900	9,420
9. Final Report	10,500	2,400	12,900
	$83,420	$24,095	$107,435

Correction: Insert as 8-18a

SUMMARY TIME-USE DIARIES:

Option 1 $ 40,906

Option 2 $ 49,501

8.3.4.3 Budget: Institutional Information System

The budget is based on the following assumptions.

1. Data will be collected for Fort McMurray and Peace River concurrently.
2. The Study Director will be responsible for liaison with the affected departments and will review progress with the Client. Estimated involvement is 1.5 days for each of six elapsed months. (9 days)
3. The Study Manager will co-ordinate access to, collection of and preparation of data. Estimated involvement 2.5 days for each of six elapsed months (18 days).
4. Research time will involve 80 man-days (four months).
5. Part of the research time will be spent in Fort McMurray and Peace River to collect data; consequently provision is made for travel and accommodation expenses.

Correction: Insert as 8-35b

The proposed budget for 8.3.4 is:

Fees:

Study Director 9 days	$ 3,300	
Study Manager 18 days	$ 3,960	
Researchers 80 days	$12,800	
Junior Researchers 20 days	$ 2,200	
		$22,290

Expenses:

Travel and Accommodation expenses for Fort McMurray and Peace River	$ 800	
Photocopying	$ 100	
		$ 900

TOTAL FEES & EXPENSES $23,190

DRAFT

ALBERTA OIL SANDS ENVIRONMENTAL RESEARCH PROGRAM

LONGITUDINAL STUDY OF PERSONAL ADJUSTMENT AND SOCIAL CONDITIONS IN THE FORT McMURRAY AREA HS 30.1

PHASE 1: FINAL REPORT

REPORT: CHAPTER 8

WORK PROGRAM AND BUDGET

AUGUST, 1978

CHAPTER 8

WORK PROGRAM AND BUDGET

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CHAPTER 8

8. WORK PROGRAM AND BUDGET

8.1 INTRODUCTION

In this chapter we describe the work program to meet the objectives of the Longitudinal Study, and to implement the methodologies and instruments described in Chapters 6 and 7. Where appropriate, we examine the advantages or disadvantages of various options, including the budgetary implications, and make recommendations.

These recommendations represent an attempt to balance what would be desirable to accomplish, and what are likely to be the financial resources available for Phase 2 of the Longitudinal Study.

The recommendations represent our opinion at this point in time. We expect that a detailed examination with the Client of the specifics of the work program and budget will generate modifications which may be preferable. A budget, in essence, represents an allocation of priorities. The final decision on priorities rests with the Client.

For us, the thorny issue has been how much of the budget to allocate to the Peace River component of the Longitudinal Study.

8.1.1 Peace River: Budget Implications of a Control Community

At the outset of Phase 1, it was decided to include Peace River in the study for several reasons. First, Peace River would provide a control or comparison community against which the data from Fort McMurray could be judged. Second, Peace River itself is reasonably close to entering into the stages of major facilities construction associated with the extraction of the oil in the area. Therefore,

data collected on Peace River in 1978-79 would constitute a baseline against which to measure subsequent changes in the community across relevant dimensions.

Finally, collecting and analysing data on Peace River as part of the Longitudinal Study provides considerable economies from the perspective of establishing a baseline for Peace River.

The disadvantage is that, whatever the economies with respect to Peace River, there are still significant additional costs which have to be incorporated into a finite budget for the Longitudinal Study. Budget resources allocated to Peace River must, ultimately, be taken from funds which, otherwise, would be designated for research and data analysis for Fort McMurray.

Our recommendations with respect to Peace River represent an attempt to strike a fair balance in the allocation of funds. In this attempt, we have attempted to draw some conclusions as to how much data from Peace River is necessary in order to provide a basis for a reasoned comparison with conditions in Fort McMurray.

8.1.2 Duration of Phase 2

Considering the range and detail of the data to be collected, it would not be unrealistic to assume eight to ten months for data analysis and reporting.

This, however, would not meet the needs of the Client and interested departments. Consequently, it is necessary to set calendar limits to the time allocated to the analysis of the data and the preparation of reports. The limits we propose represent our best judgement at this time as to what would be appropriate and possible. Our intent is to meet the requirements of the Terms of Reference and requests from interested departments on an interim report basis as the data findings become available and conclusions can be drawn. We assume a start date of October 1, 1978 and propose to complete Phase 2 with a

Final Report by June 30, 1979. The time allocated to data analysis reflects this calendar limit.

8.1.3 Cold Lake Region Baseline Study

We have been asked to prepare an additional budget which assumes that the Longitudinal Study and the Cold Lake Region Baseline Study would be carried out concurrently. The intent of this request is to identify economies which might be achieved by concurrent data analysis and reporting. We will set out this budget in an addendum when the Cold Lake budget is established.

8.1.4 Additional Studies

There are a number of additional studies which are likely to follow logically from the completion of Phase 2. We have been asked by the Client to make recommendations as to what these studies might be, and we do so in a later section of this chapter. These studies are of two kinds:

1. Continuing analysis of the data base collected during Phase 2.
2. Other studies to deal with specific concerns or target populations in more detail or more selectively than is feasible in Phase 2.

A third type of study - impossible to predict until Phase 2 data analysis is completed - consists of special examinations of problem areas or groups identified during the data analysis.

8.1.5 Progress Reports and Interim Reports

We will submit Progress Reports monthly. The Progress Reports will contain the following information:

1. Work completed within the previous month for each study component;
2. Total work completed for each component;

3. Budget expenditures to date and budget remaining;
4. Work remaining to be completed for each component;
5. Detailed work program for the next two months;
6. Assessment of progress to date, and forthcoming progress.

These Progress Reports will be an important tool in our internal procedures for management, budget and task control.

The Reports will also provide the basis for continuing review with the Client of progress to date; and for the early identification of problems and opportunities so that these can be accommodated with minimum loss in time and budget.

Interim Reports will be issued as data become available and ordered into usable forms for each component of the Longitudinal Study. This is intended to meet the needs of user departments and agencies. It will also serve to assist the Client in assessing the quality and direction of the research, and suggesting revisions as these seem appropriate.

In a study of this size, a close reporting and co-ordination of relationships between the study team and Client is essential. The two procedures of progress and interim reporting are intended to meet this need.

8.1.6 Summary Timetable

Figure 8-1 sets out the summary of the timetables for all study components, assuming an October 1 start date.

8.3.1 Study Review. Start and complete in October.

8.3.2 Institutional Information System. Department liaison begins in October, data

collection begins November. Interim reports produced in December, February and May. Work on the information system completed end of April.

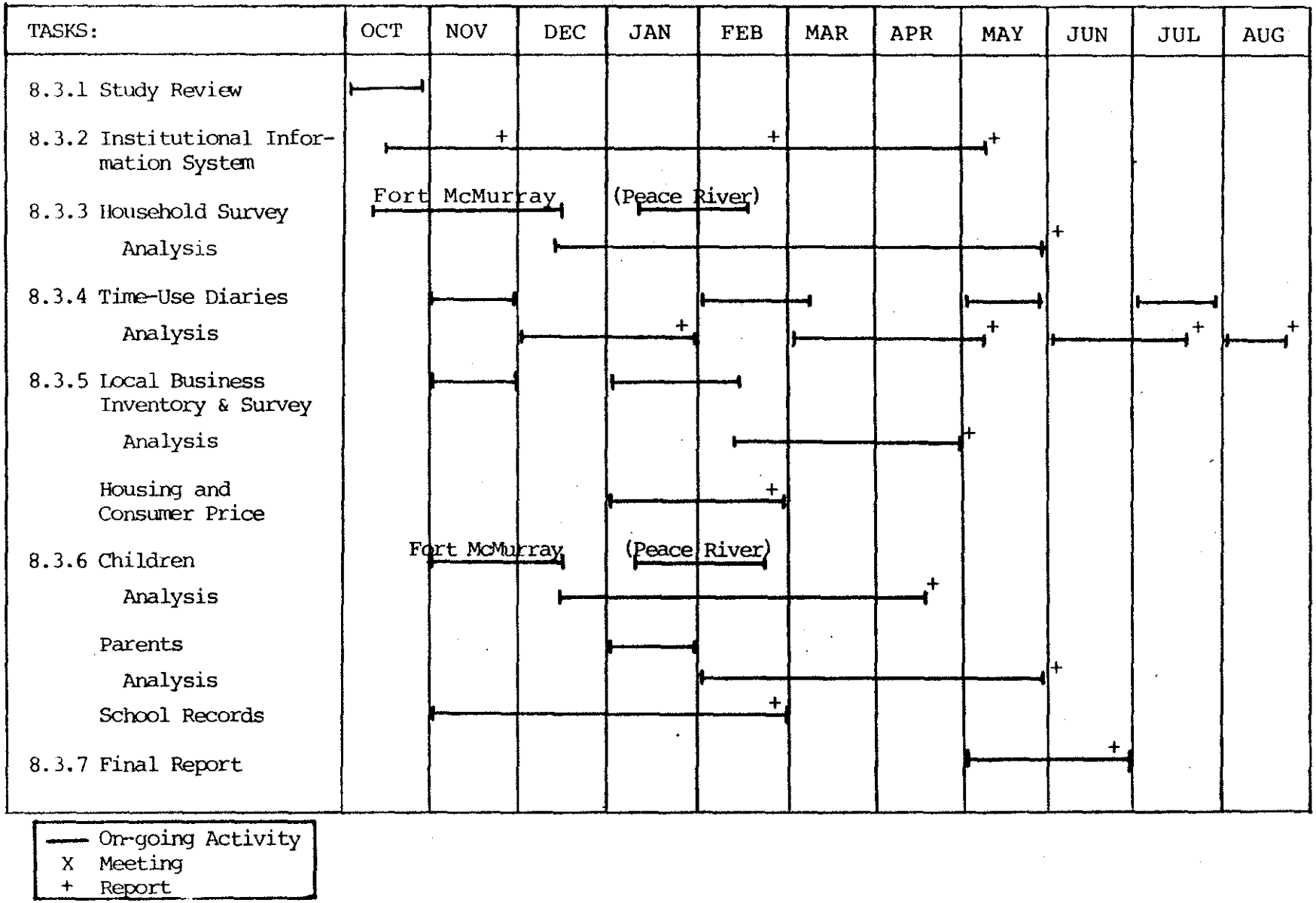
8.3.3 Household Survey. Training of interviewers begins in October, in Fort McMurray. Survey begins November 1 and is completed December 15. Begins in Peace River January 8, 1979, and finishes February 9. Data integration begins December 15. Data analysis begins February 1 and completed end of May.

8.3.4 Time-Use Diaries. Data collected November, February, May and July. Analysis and reporting will require approximately six weeks after each collection.
No collection in Peace River.

8.3.5 Local Business Inventory and Survey.
Inventory in both towns will be carried out in November. Survey will be held off until after Christmas holidays. To be completed by mid-February. Analysis and report by early May.
Consumer price and housing price survey to be carried out in January and February. Report end of February or early March.

8.3.6 Children and Education. Assessments of children carried out in Fort McMurray in November-December; in Peace River in January-February. Data analysis and report completed by mid-April.
Parents interviewed in Fort McMurray only in January. Data analysis integrated with household survey data and completed by end of May.

Figure 8-1 COMPONENT 8.3 - Activity: Summary of Timetables for all Study Components



School records in both communities examined beginning November and report ready by February 28.

8.3.7 Final Report. Work on Final Report on data analysis and conclusions will begin May 1 and will be completed June 29.

8.2 STUDY TEAM ORGANIZATION

8.2.1 Senior Members

The composition of the study team remains similar to that in Phase 1, with some additions.

We list herein the members of the study team and their responsibilities.

Study Director

Dr. Earl Berger, President of Earl Berger Limited. In the past year, Dr. Berger was study director of Phase 1 of the Fort McMurray Longitudinal Study and Phase 1 of the Cold Lake Region Baseline Study. In addition, he directed the evaluation of a traffic safety program for Alberta Transportation, provided advisory services to the Atomic Energy Commission of Canada Limited, and designed and established a national information system on the legal profession in Canada for the Canadian Bar Association and Federation of Law Societies of Canada.

Study Team

The study team consists of the following members.

Dr. Thomas L. Burton, University of Ablerta. Dr. Burton will be responsible for directing the analysis of the data collected in the Time-Use Diaries. In addition to his other work, Dr. Burton has just completed an extensive study

of outdoor recreation in the Yukon, making use of Time-Use Diaries among other instruments. His experience in the field of recreation planning will be particularly useful during Phase 2.

Dr. David Kleinke, Head, Test Scoring and Evaluation Services, Syracuse University. Dr. Kleinke was responsible for the development of the Community Index with the assistance of the Study Director and Study Team during Phase 1. Dr. Kleinke will be responsible for carrying out the analysis of the Activities Index and Community Index data, establishing unity scores, and the steps necessary to prepare a master tape to be used for data analysis purposes here, together with the preparation of computer routines and sub-routines for that analysis. Dr. Kleinke will also assist in the analysis of the data and derivation of conclusions. Because of his location, Dr. Kleinke is not included in the budget for the Study Team except where specified.

Dr. A.G. Scott, Director of the Department of Psychology at Glenrose Hospital and president, A.G. Scott and Associates Limited. Dr. Scott was responsible for the Background Paper, Children and Education, and assisted in all components of the research design, particularly with respect to the Extended Interview, Social Deviance and Quality of Working Life. Dr. Scott will direct the educational assessment component in Phase 2.

George Buse and Dr. Wayne McVey, McVey and Associates. Dr. McVey, together with Mr. Buse, were responsible for the development of the sampling plan for the Fort McMurray, Peace River

and Cold Lake Region areas: Procedure Manual for Fort McMurray and Cold Lake Study. While Dr. McVey is on sabbatical, Mr. Buse will continue to be responsible for sampling plans and procedures.

In addition, Mr. Buse was involved in the system design and with Dr. Kleinke examined alternatives for handling the number of instruments proposed for the household survey. Mr. Buse will co-ordinate with Dr. Kleinke on the systems analysis associated with integrating the instruments and with data analysis.

Rondo Wood, M.A., Study Manager. Ms. Wood joined Earl Berger Limited in June and has been actively involved in the preparation of the Draft Final Report. Her M.A. is in Sociology, from the University of Alberta and she has had considerable experience both in research and administration. Her research experience includes four years as Research Officer at the Ontario Institute for Studies in Education (1966-70). Subsequently, she joined the research staff, Education Studies, Alberta Human Resources Research Council. She also worked for a private consultant for a time. Ms. Wood's administrative experience includes Acting Director of Communications for Alberta Culture, and Executive Officer to the Senate, University of Alberta. In both positions, her responsibilities included general administration, budget preparation and administration, report preparation and editing, committee and task force members' conference co-ordination and related tasks. Ms. Wood has a combination of skills and experience which make her eminently suited as Study Manager.

Figure 8-2 Longitudinal Study - Reporting Relationship

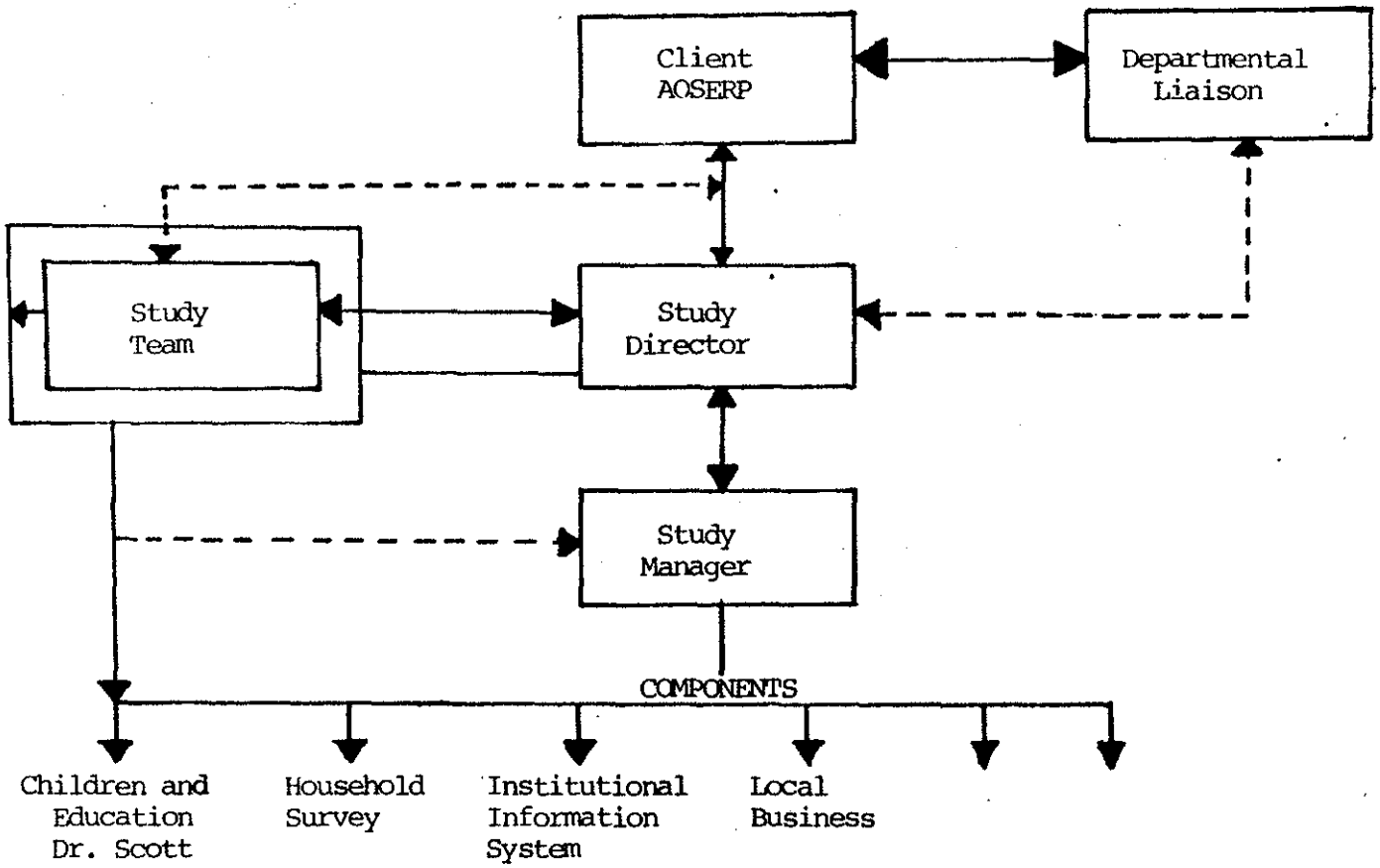
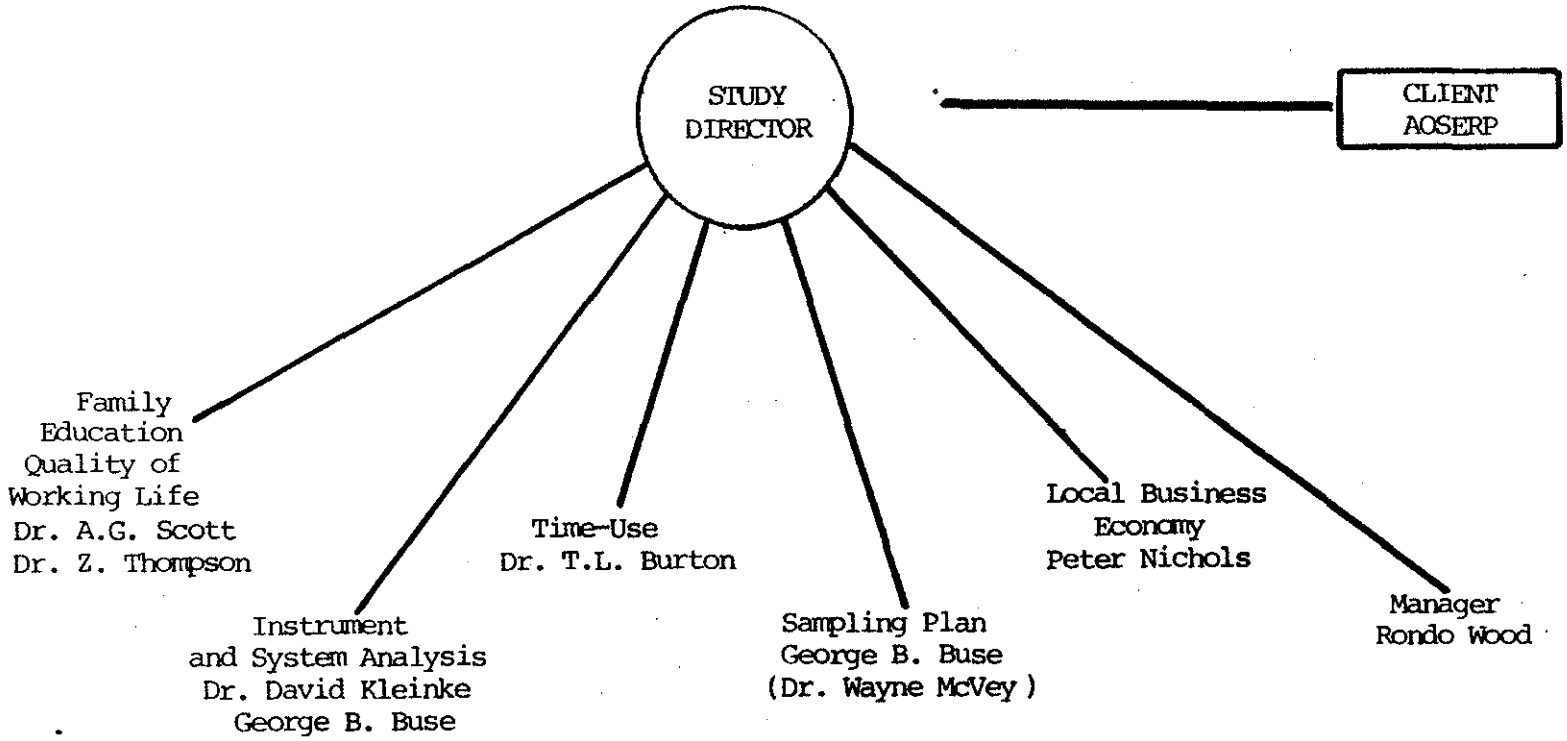


Figure 8-3 Study Team: Areas of Main Interest



Associates

We expect that at certain points during the data analysis it will be considered advisable to seek the advice of an expert with respect to a specific and detailed set of data findings. At that time we would recommend to the Client that we be allowed to draw upon a special budget, set aside for that purpose, to retain the services of a particular specialist.

During Phase 1, we gained considerable benefit from Dr. Charles Hobart, Valda Walsh and Dr. John Berry with respect to research approaches to natives; from Mark Hundert of Medicus Canada with respect to health services; David Caywood of P.S. Ross and Partners with respect to quality of working life and job satisfaction measures; and Dr. Ben Barkow of Behavioural Team with respect to the design of the Community Index. Although the cost of their involvement was modest, it did add to our budget overrun in Phase 1.

We recommend that the situation be regularized so that, with the approval of the Client, specialists can be retained for specific purposes as required.

Our experience from Phase 1 is that provision must be made in the budget for retaining the services of specialists in various fields as the need for them arises. Given the scope of the Longitudinal Study and its importance, it would be unrealistic to claim that all knowledge with regard to all dimensions of the study rest with the Study Team. At the same time, we do not wish to increase the Study Team to an unwieldy and costly size.

The amount we recommend is not large - $6,000. This will provide somewhere between 20 and 30 days of senior consultants and specialists. The amount would not be included in our working budget, but would be set aside. We would submit our request in writing, stating the individual requested and the purposes and extent of his or her involvement. The Client would review the request and come

to a decision.

Peter Nichols, M.B.A. and President, Peter Nichols and Associates Limited, joins us as a study associate. He will be principal investigator for the survey of local business, and will assist in the local economy studies, and related matters.

Mr. Nichols is well-known to the Client as a financial and economic consultant. He has done a considerable amount of work for the International Bank for Reconstruction and Development in Asia and the Middle East. In Alberta, he has carried out a number of assignments for the Commissioner of Northeastern Alberta. Mr Nichols' work includes financial studies of Fort McMurray and the Fort McMurray school districts, and an economic and employment survey of five communities in Northwestern Alberta.

In Phase 1, Mr. Nichols assisted in the identification of requirements for the Institutional Information System with respect to the local economy. He also assisted in the preparation of the methodology and instruments for the study of the local business economy.

We should note that Dr. Zonia Thompson continues as a study associate, and will work with Dr. Scott.

8.2.2 Schedule of Fees and Expenses

The fees are calculated on the standard seven-hour per diem. The variation in rates among senior members is based on different overhead responsibilities.

		Per Diem	
Study Director	Dr. Earl Berger	$370	
Senior Associates	Dr. Thomas L. Burton	250	
	Dr. David Kleinke	200	(US)
	Dr. Alvin G. Scott	370	

	Dr. Wayne McVey	$250
	Peter Nichols	$300
	George Buse	$175
	Dr. Zoe Thompson	$350
Senior Staff	Ms. Rondo Wood	$220
	Survey Manager (Field)	$180
Staff	Researchers	$160
	Junior Researchers	$110

Other persons involved in the study would be allocated to one of the various categories and fees for services would fall within the range of that category. Following the terms of the contract for Phase 1, senior associates will not be added to the study team without the consent of the Client.

Expenses associated with out-of-pocket disbursements for implementation of Phase 2, such as travel, accommodation, food, long distance telephone, photocopying, car rentals and taxis, etcetera, will be charged at cost.

8.3 WORK PROGRAM AND BUDGET: STUDY COMPONENTS

8.3.1 Study Review

8.3.1.1 Work Program

We expect the Client will wish to suggest some modifications to Phase 2 as it is proposed in this Final Report. The study team will review these modifications, assess their implications with respect to the work program and budget, and revise both accordingly. This will require close consultation with the Client to ensure a detailed agreement on what is to be done. This is an essential step.

The first Progress Report of the study team will set out a revised work program and budget in

accordance with this agreement.

In order not to delay the preparatory work for the household survey, this preparatory work will proceed immediately: hiring and training of interviewers, printing questionnaires, establishing a field office and other tasks which must be completed for the survey can begin.

We intend to make every effort to complete the household survey before December 15 - the last day prior to the Christmas holidays, one can reasonably expect to hold interviewers and respondents.

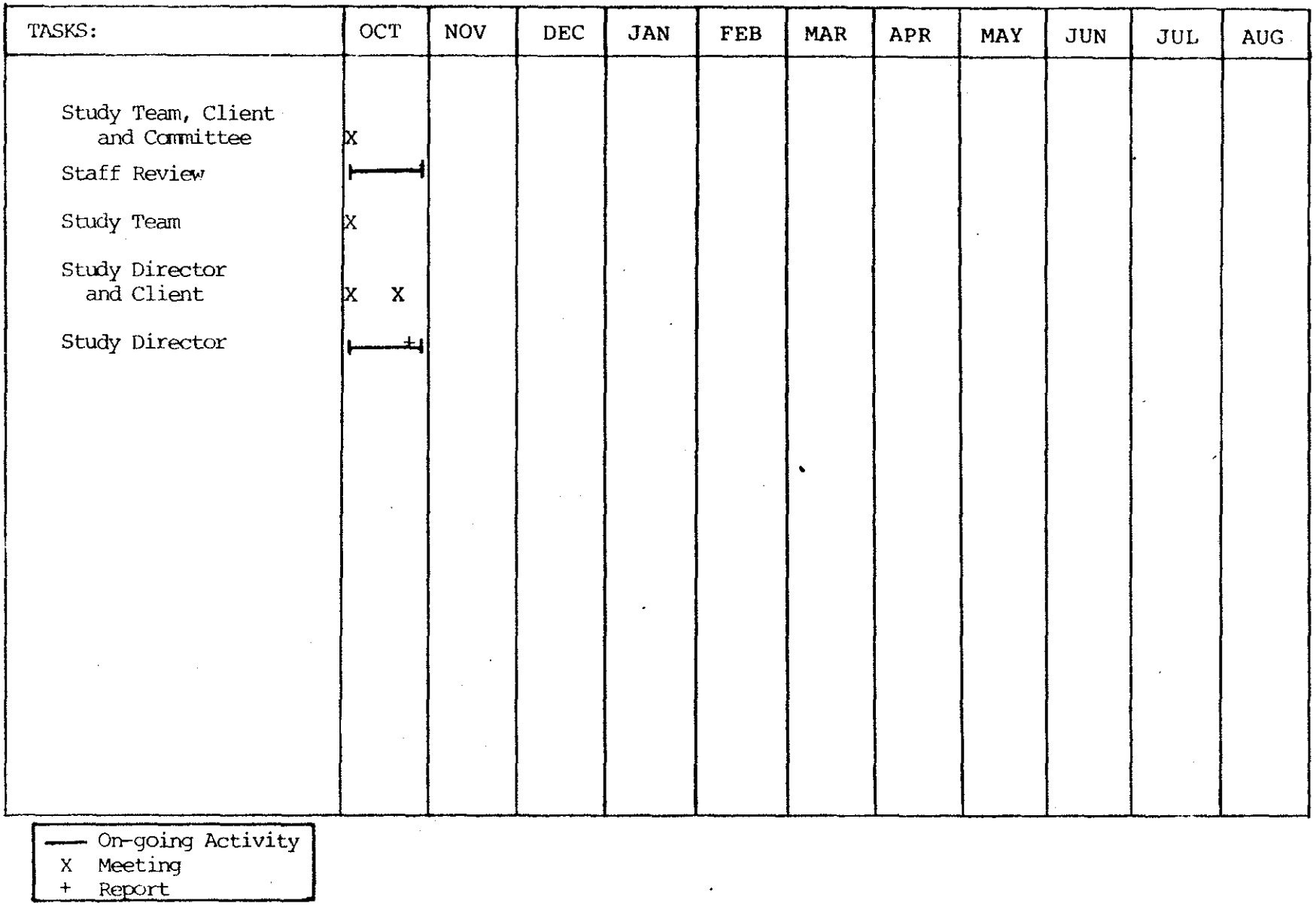
We do not expect that this overlap will create any difficulties or redundancies, unless the Client wishes to hold off the household survey or to cut it from the work program. The study review will require about three weeks in elapsed time to complete from Day 1 or Phase 2.

8.3.1.2 Budget

The budget is based on the following assumptions:

1. One meeting of Study Director, Study Manager, and Study Team with Client and committee, to discuss Phase 2, work program and data requirements.
2. Review by Study Team, Director and Manager.
3. Review by Study Director, Manager and research staff to prepare preliminary revised work program and budget.
4. Review by Study Director, Manager and Study Team.
5. Two meetings of Study Director with Client to work out final details.
6. Preparation by Study Director of Progress Report to incorporate agreement with Client.

Figure 8-4 COMPONENT 8.3.1 - Activity: Study Review



The proposed budget for Study Review, Section 8.3.1 is as follows:

Fees	Study Director	
	5 days	$1,870
	Study Team	
	1.5 days	$1,800
	Study Manager	
	3 days	$ 660
	Researchers	
	3 mandays	$ 480
		$4,810

8.3.2 Institutional Information System

8.3.2.1 Work Program

The first task will be to review the requirements of the Institutional Information System with the Client and affected departments and agencies. The purposes of this review will be to:

1. Establish priorities
2. Review accessibility of the data for the purposes of the Longitudinal Study.
3. Review problems of areal discontinuity and varying reporting procedures.
4. Agree upon and establish the procedures by which the required data is to be made accessible to the study researchers.

In some cases, the data has already been converted to statistics and is accessible on an areal basis. In other cases, the data is still in administrative format and will have to be converted to statistics on an appropriate areal basis.

In both cases, the study researchers may need access to raw data in order to deal with the problems created by areal discontinuity and varying reporting procedures. If the affected departments will undertake

this task themselves, this will represent some significant savings in budget. We doubt that all of them will have the staff or budget for this task. Consequently, we assume we will have to do most of the necessary handwork.

We intend to work in close cooperation with the affected departments and agencies to ensure that any solutions we propose will be fully cognizant of their interests and concerns.

In our monthly Progress Reports we will set out work to date with respect to the Information System, access to data, areal co-ordination and related matters.

This will provide the basis for a continuing and close review with the Client of the development of the system. This review will be critical because of the processes involved in gaining access to data in some cases. Alberta Bureau of Statistics has been very helpful in the past and promises to continue with whatever assistance and advice is possible.

We expect some departments and agencies will be in a position to work with the study team immediately. Others may require an internal review of requests for data, and this may take some time. A continuing review of priorities and procedures with respect to data collection for the Information System will be important.

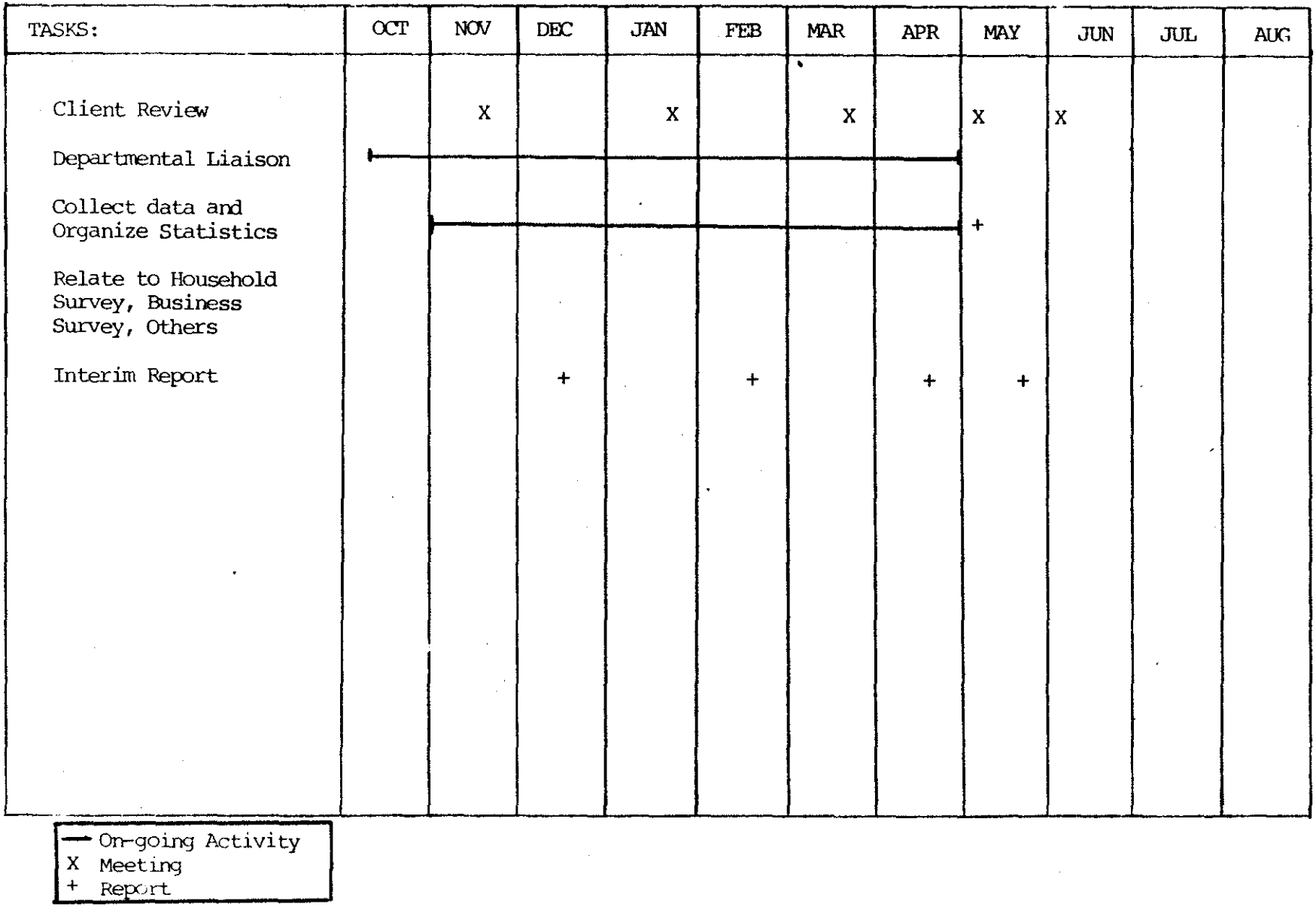
Where appropriate, institutional statistics will be compared with findings from the various surveys.

We expect that four man-months of researchers' time will be sufficient to put much of the Institutional Information System in place. Elapsed time will likely be approximately six months.

Day-to-day co-ordination of the data collection will be the responsibility of the Study Manager.

The Study Director will be responsible for liaison with the relevant departments and agencies.

Figure 8-5 COMPONENT 8.3.2 - Activity: Institutional Information System



8.3.3 Household Survey

8.3.3.1 Options

From the review of the requirements in the Terms of Reference, the information requests from interested departments, and the findings in the literature, it became clear that: (1) a household survey would be necessary; and (2) a wide and varied range of topics would have to be covered.

A number of instruments were selected:

- Base Demographic Questionnaire (administration time 5-8 minutes)
- Activities Index (administration time 8-10 minutes)
- Community Index (administration time 9-12 minutes)

Total administration time 22-30 minutes.

In addition, it was decided to use Time-Use Diaries which would be administered separately over the four seasons; and therefore are not included in this calculation.

At least one more instrument was required to cover a number of diverse topics in some detail. After some debate, the study team decided to use a separate instrument for quality of working life because of the importance of this dimension in resource communities. Ultimately, the Job Description Index was agreed upon. (Administration time 5-8 minutes)

Because of the number of remaining topics needing coverage, a separate instrument was constructed using established and new items: The Extended Interview.

Given the number of instruments to be administered, a two-stage sampling plan was decided upon.

1. Main sample - the BDS, AI and CI would be administered to all households in the sample. (Administration time 27-38 minutes)

2. Sub-sample - 100 households would be selected at random or on a stratified random sample and to these would be administered the JDI and Extended Interview. (Administration time 90 minutes)

The intent of this procedure was to provide comprehensive coverage of the major topics in the main sample, and to use the sub-sample for an extended and in-depth examination of central issues. To encourage respondent participation in the sub-sample, it was decided to offer an honorarium of $20 per household.

The original format of the Extended Interview was open-ended and semi-structured, to be carried out by Dr. Scott and Dr. Thompson. Because, houwever, of the amount of detailed information requested from us, the format of the Extended Interview took on a more structured approach until, currently, most of it is designed to be self-administered; although, as we noted earlier, it is too long. Not all the topics can be covered fully, and the instrument needs to be reduced in size in consultation with concerned departments.

Because of the brief administration time required for the JDI, it was decided to incorporate it into the main sample, thereby providing the quality of working-life data with a level of statistical precision which would be useful.

At that time (Spring 1978) we were asked by the Client to design a sample for Fort McMurray and Peace River based on a two percent level of precision. We did so and submitted it to the Client. Sampling maps were produced and the Procedure Manual was prepared on the basis of a two percent level of precision.

Subsequently we established a preliminary budget, based upon 577 PSU's and 1,154 interviews (not including teenage children in family households).

Assuming a household cost of $40 each, which is minimal for a 40-minute interview with two or three separate administrations in each household, the direct field costs of the survey would be approximately $23,000 plus interviewer expenses. To this would have to be added the cost of 100 extended household interviews at $30 each plus a $20 honorarium.

Option 1. The field control a two percent level of precision are:

Fort McMurray		
577 households @ $40	$23,080	
100 household interviews @ $40	$ 4,000	
100 x $20 honoraria	$ 2,000	
		$29,080
Peace River		
444 households @ $40	$17,760	
100 households & honorario	$ 6,000	
		$23,760
Total field cost		$52,840

Members of the Study Team agreed that this figure was high, in view of the costs of the other work required for the Longitudinal Study. Consequently, we requested Dr. McVey and Mr. Buse to prepare sampling figures based upon a three percent level of precision.

They did so, and set out their findings in Chapter 7 of this Report. Essentially, they found that a three percent level of precision would require 315 PSU's generating 630 adult respondents plus about 70 teenage children. In their view, this level of precision would be more than adequate for the purposes of the Longitudinal Study, and they recommended accordingly. See Chapter 7 for sample sizes.

Option 2. The field costs of a three percent level of precision are:

Fort McMurray		
315 households = 630 adults		
+ 70 teenagers = 700	$12,600	
Assume $40/household		
100 households @ $40	4,000	
100 x $20	2,000	
	$18,600	
Cost of sample adjustment		
from 2% to 3%	$ 2,000	
		$20,600
Peace River		
235 households @ $40	$ 9,400	
100 houselds and honoria	6,000	
	$15,400	
Cost of sample adjustment		
from 2% to 3%	$ 1,000	
		$16,400
Total field cost		$37,000

At this point, several considerations came into prominence. One was the heavy front-end costs associated with Phase 2, particularly associated with establishing the various computer programs and the subsequent data analysis and reporting. The second was the cumulative cost of the other components of the Longitudinal Study.

The third was the intriguing possibility of dropping the sub-sample and including the Extended Interview in the main sample.

This would require paying all 315 households an honorarium in order to encourage their interest during perhaps a 100-minute interview.

The outstanding advantage of including all instruments in the main sample would be to provide identifiable levels of statistical accuracy to answers to all items. This would be particularly useful to departments whose requests for information are accommodated in the Extended Interview.

Option 3. The field costs associated with a three percent level of precision with all instruments included are:

Fort McMurray		
315 households @ $40	$12,600	
315 x $20	6,300	
	$18,900	
Cost of sample adjustment	$ 2,000	
		$20,900
Peace River		
235 households @ $40	$ 9,400	
235 x $20	$ 4,700	
	$14,100	
Cost of sample adjustment	$ 1,000	
		$15,100
Total field costs		$36,000

These estimates of field costs do not take into account survey management costs and other costs, such as those associated with handling, analysing and reporting on smaller or larger quantities of data. The estimates do, nonetheless, provide a perspective of the scales of costs associated with each option.

To summarize:

Option 1: Two percent level, main sample and sub-sample:

Fort McMurray	$29,080
Peace River	$23,760
Total	$52,840

Option 2: Three percent level, main sample and sub-sample:

Fort McMurray	$20,600
Peace River	$16,400
Total	$37,000

Option 3: Three percent level with all instruments:

Fort McMurray	$20,900
Peace River	$15,100
Total	$36,000

Option 4: Four percent level with all instruments:

Fort McMurray	$11,600
Peace River	$ 9,700
Total	$21,300

(Peace River 5% - $3,800)

From a cost point of view, Option 4 is the most attractive. Considering that most social science research operates at a five percent level, four percent is adequate.

For the purposes of the Longitudinal Study, it may not be sufficient, however. It is estimated that 160 households approximately will generate 320 adults plus about 30 children 16 years of age and older. These numbers may not be sufficient, depending upon the level of fine grain analysis to be carried out. The requirements with respect to Government policy and program review point to the need for such a fine grain analysis.

An influential factor will be the length of the Extended Interview. If it is decided to retain enough questions that the length of the Interview alone runs more than 50 minutes, we would recommend that we revert to a two-stage approach with a main sample and sub-sample. Our reasoning is that it will be difficult to hold several respondents in a household for more than 100-110 minutes maximum, even with a $20 honorarium. Consequently, it would be necessary to budget for interviewer callbacks in order to retain a statistically reliable sample.

Recommendation 1: Assuming funds are available, our recommendation is that a three percent level of precision be maintained; and that the Extended Interview be reduced to no more than 50 minutes administration time.

In the event it is decided to maintain an Extended Interview of more than 50 minutes, then we recommend using a two-stage procedure at the three percent level.

Our fourth choice would be a four percent level of precision. In this case, the cost of callbacks would be less in the event the Extended Interview were over 50 minutes.

Recommendation 2: In the event that funds are not available for this level of sampling, our preferred option would be to retain three percent level of precision in Fort McMurray, but reduce Peace River to five percent.

A saving of some $11,000 would be achieved this way. In this case, our first priority is an ample sample size in Fort McMurray for fine grain analysis. Comparisons between Fort McMurray and Peace River data would have to be handled carefully. Depending on the response distribution in Peace River, it may not be possible to carry out a comparable fine grain analysis. Nonetheless, the Peace River data would be adequate as a baseline against which to measure subsequent changes in the community over time.

For budget purposes we have estimated costs on the basis of Option 3. In the case of the Time-Use Diaries, however, we have calculated the budget on the basis of either 200 respondents or 350 (four percent). The costs of handling the Diaries for all respondents in a three percent sample are too high.

8.3.3.2 Work Program

1. The first task in the household survey is to consult with the Client and interested departments with respect to the Extended Interview. We have noted in the Introduction to our Background Paper, The Extended Interview, that the schedule was developed to meet the requirements of the Terms of Reference, information requests of interested departments,

and major topics identified in the literature and related studies. The last revision added a number of items dealing with social deviance which were requested.

The individual items, except for the most recent additions, have been piloted and pre-tested. Our conclusion is that the length of the instrument makes it unsuitable for administration.

Respondents are skipping questions which require thought, are sensitive, or provide for open-ended answers. Unfortunately, these are precisely the questions in which a number of departments are most interested.

As we note in the Background Paper, it is essential to establish priorities with respect to the information requirements of the Client and various departments.

There are several possibilities. One is to cut out complete topics. A second is to cut out subjects within topics. A third possibility is to concentrate only on some topics and to cut questions which deal in a comprehensive and detailed way with other topics. In their place the broadly representational questions will be retained. These items do not provide answers with sufficient specificity to provide a basis for Government policy and program considerations, but they are, nonetheless, helpful.

We propose, therefore, that at the outset of Phase 2 the Client ask interested departments to meet with the Study Team to review information requirements and priorities. The Study Team will make the necessary revisions speedily, carry out the piloting, revise and submit a proposed version of the Extended Interview to the Client within 20 days.

With this procedure, there need be no significant delay in starting the household survey as scheduled.

2. During this period, the sample and procedures will be revised and the maps redrawn.

3. To facilitate the arrangement of interviews to ensure that respondents are at home, interviewers will make prior contact with respondents. We have asked the Client to request the assistance of AGT in obtaining the names of persons in the dwelling units identified for the sample.

4. Assuming a start date of October 1, we propose to be in the field in the first week in November and to have the interviewing completed by December 15. In the event it is not possible to start in time to complete the survey work by December 15, we will complete as much as possible by then, and finish the remainder after the holidays in order to hold as close to the June 30 closing date as possible. If possible, the surveys in Fort McMurray and Peace River will be carried out concurrently.

The Survey Managers will advertise for and hire local interviewers. One-day training sessions will be provided. Interviewer instructions will be prepared for the training sessions.

Local offices will be opened for two months and telephones installed. Monitoring of interviewers will be carried out by the usual procedure of telephoning a sample of those noted as having been interviewed.

The response sheets will be checked, cleaned and transferred to optical scan sheets, and batched by respondent file. Records will be kept of all respondents' code numbers, names and addresses.

Respondents will be given change-of-address cards to send to us in the event they move prior to Phase 3. Many will not send the cards in, but the savings achieved in terms of time and cost in Phase 3 for those who do will more than offset the costs of the cards. The cards will be addressed to AOSERP to avoid difficulties in case we change our office location in the interim.

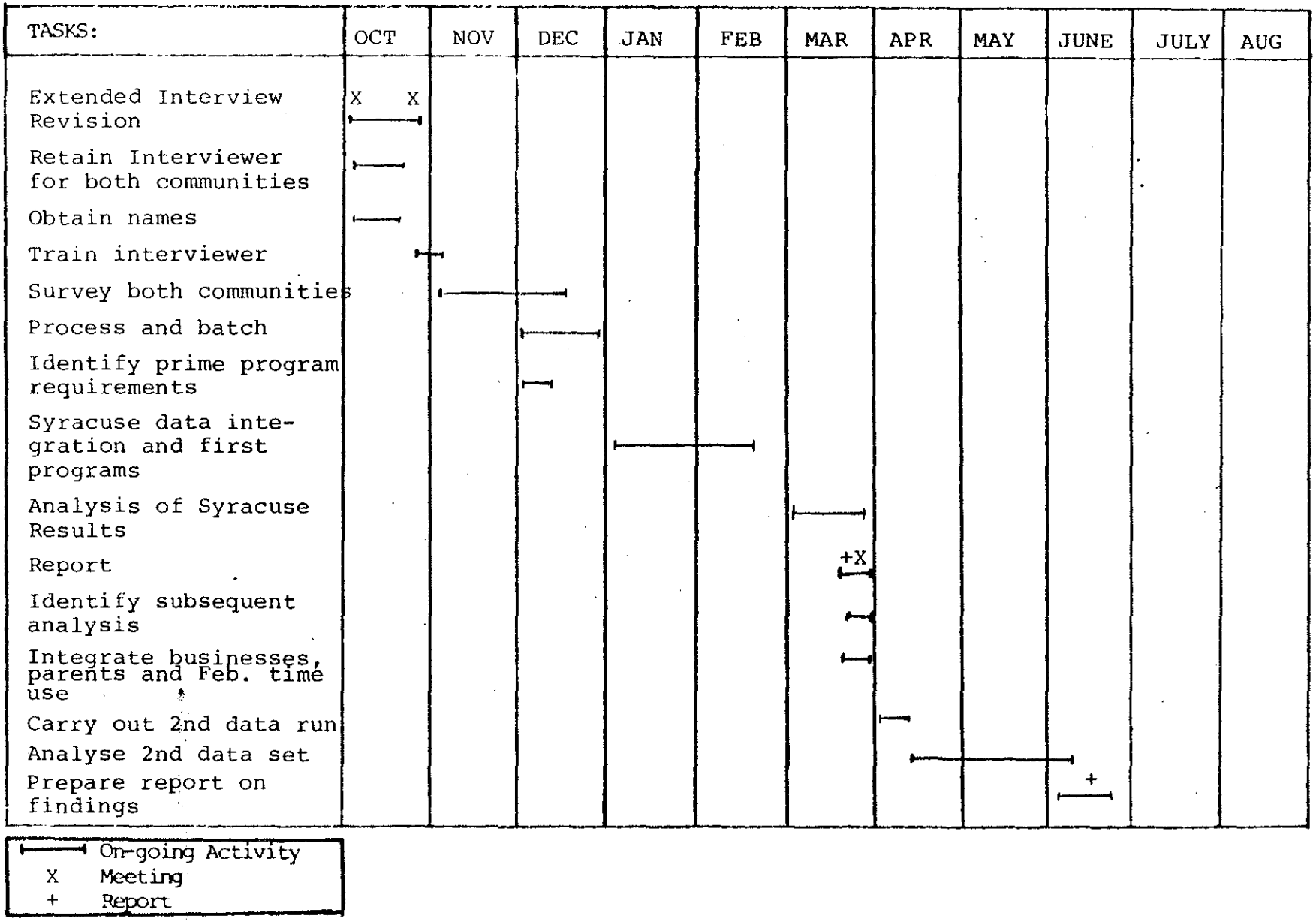
Respondents will be contacted first to arrange an interview time when at least two adult household members (and child 16 years of age or more) will be available. Because it is necessary to have the household members present, the number of interviews an interviewer can carry out in a given day may be limited to two or three. Accordingly, we propose to retain 15 interviewers in Fort McMurray and 12 in Peace River, to allow for interviewer attrition and still complete the survey within 30 days elapsed time.

Two survey managers will be used: one for Peace River, and one for Fort McMurray. We have two competent persons available from Edmonton. Managers will meet with interviewers daily and report to Edmonton daily. If local persons can be found competent to be survey managers we will substitute, and travel and accommodation expenses will be reduced accordingly.

If it is decided to eliminate the "probe" questions administered by the interviewer from the Extended Interview, we will use local interviewers. If "probe" questions are retained, we will discuss with the Client the desirability of bringing in outside interviewers. Our concern is that, in a comparatively small community, respondents may be unwilling to talk frankly to interviewers from their own community about personal feelings. If outsiders are used, an additional sum will be necessary to cover travel and accommodation. We have budgeted on the basis of local interviewers.

5. Each respondent will have a code number to facilitate the batching of responses to the five instruments, and Time-Use Diary data as they become available. The responses to the five instruments will be checked, transferred to optical scan sheets, batched and sent to Test Scoring and Evaluation Services, Syracuse University.

Figure 8-6 COMPONENT 8.3.3 - Activity: Household Survey



6. Dr. David Kleinke will be responsible for data integration, particularly the final factor analyses on the Activities Index and Community Index. He will prepare a manual setting out the computer routines and sub-routines, establish a master tape and copy and return the manual and tapes to Edmonton where the subsequent data analysis will take place. The master copy will be deposited with the Client.

Mr. George Buse, who will be co-ordinating with the Study Director and Dr. Kleinke, will oversee the systems analysis in Edmonton.

To minimize the time needed for computer runs and attendant delays, the Study Team will meet with the Client and interested departments in December to identify prime areas of interest, inter-relationships, target populations, etc. These will be incorporated into the first Syracuse data runs.

The Syracuse runs will be examined in Edmonton. The Client will be consulted, along with interested departments, with respect to findings and appropriate areas for subsequent analysis (March).

7. Data from parents, businessmen and time-use will be established in files on the master tape, and analysis will be carried out as part of the second data run.

8. The findings from the second data run will be analysed during May and into June and reported by June 30.

9. The Report for the Household Survey will consist of the findings from the two data runs. It will deal with the data analyses with respect to the high priority questions raised in the Background Papers and by the Client and interested departments. To the extent possible, the Report will attempt to place the findings within the context of the literature and studies reviewed in the Background Papers, and address the issues raised in the earlier chapters of our Phase 1 Final Report.

Because of the time constraints, however, this can be done only in a preliminary way. We take the first priority to be the identification of the relevant data in a useful form from which conclusions can be drawn to be explored by further analysis of the data.

In our Phase 2 Final Report we will indentify those areas which seem fruitful for additonal manipulation of the data. The Client may wish the Study Team and/or other researchers to pursue these tasks.

The extent to which the data analyses are useful to the Client and interested departments will depend in large measure on the degree of detail by which they are able to specify, by March, the analyses they wish or the questions they wish explored. The more specific these are, the better able we will be to generate useful data.

We propose to meet with the Client and interested departments on a continuing basis if they wish to facilitate the degree of specificity required.

8.3.3.3 Budget

Budget #1

1. Revise Extended Interview (Pilot Edmonton)

Fees:	Study Director 3 days	$1,110		
	Study Team	$1,000		
	Study Manager 3 days	$ 660		
	Researchers 160 x $5	$ 800	$3,570	
Expenses:	Photocopying		$ 25	$3,595

2.	Redo Sampling Procedures and Maps			
Fees:	George Buse 10 days	$1,750		
	Junior Researchers 8 days	$ 960	$2,710	
Expenses:	Travel & Accommodation Fort McMurray and Peace River	$ 300		
	Photocopying, tele- phone, supplies	$ 40	$ 340	$3,050
Budget #2				
3.	AGT Lists: Fort McMurray/Peace River			
	Junior Researcher 4 days			$ 480
4.	Household Survey: Fort McMurray/Peace River			
Fees:	Study Director			
	Community liaison, review procedures, orientation of survey, Managers-Client liaison - 4 days		$1,480	
Expenses:	Travel - Fort McMurray and Peace River plus travel expenses		$ 250	$1,730
Fees:	Study Manager			
	Finalize interviewer manuals, orient survey managers, liaison with survey managers 4 days		$ 880	
Expenses:	2 trips: Fort McMurray and Peace River		$ 250	$1,050

Fees:	Survey Managers			
	Select interviewers (two towns) 2 days	$ 360		
	Orientation with Study Director 2 days	$ 360		
	Train Interviewers (both towns) 2 days	$ 360		
	Payment to interviewers for training 25 interviewers @ $50/diem	$1,250		
	Management of Interviewer			
	Fort McMurray 20 days	$3,600		
	Peace River 15 days	$2,700	$8,630	
Expenses:	Travel: Fort McMurray & Peace River 3 trips each	$ 600		
	Car rentals, etc.	$ 300		
	Accommodations 35 days @ $40	$1,400	$2,300	$10,930
Fees:	Interviewers			
	580 households @ $40 including prior contact, interview, callback, monitoring		$23,200	
Expenses:	580 x $20 honorarium		$11,600	$34,800
	Two local offices & telephones (2 months) 4 months @ $300		$ 1,200	
	Long distance telephone		$ 150	$ 1,350

	5. Clean and Batch			
Expenses:	1200 answer sheets @ $3.50 each		$4,200	
	Supplies			
	Answer sheets @ 10¢ each 4 sheets/respondent		$ 480	$4,680
	6. Programming/First Data Analysis			
Fees:	Dr. David Kleinke 10 days	$2,200		
	George Buse 10 days	$1,750		
	Programming (Alberta) 20 days	$3,000		
	Study Director 5 days liaison with departments, Syracuse, Buse	$1,850		
	Study Manager 10 days preparation of analysis instruction	$2,200		
	Researchers			
	Preliminary findings from first data run 40 days @ $130	$5,200		
	Study Director			
	Draft report and presentation to Client and departments 5 days @ $370	$1,850		
	Study team review	$1,200	$19,250	
Expenses:	Syracuse data integration - 4800 sheets @ 25¢	$1,200		
	Factor analysis	$1,000		
	Alberta Computer	$1,000		
	Supplies, courier service, photocopying, answer sheets	$ 500	$ 3,700	$22,950
	7. Integrate Business, Parent, Time-Use Data			
		$ 500		$ 500

8.	Second Data Analysis			
Fees:	Study Director and liaison, preparation of interim report 6 days @ $370	$2,220		
	Study Manager			
	Preparation of interim report, outline of Final Report 10 days @ $220	$2,200		
	Researchers			
	Continuation of data analysis 20 days @ $130	$2,600		
	Study Team Review	$1,500	$8,520	
Expenses:	Computer	$ 500		
	Supplies, photocopy	$ 200		
	Telephone	$ 200	$ 900	$9,420
9.	Report			
Fees:	Study Director			
	Liaison, Final Report, presentation 15 days @ $370	$5,550		
	Study Manager			
	Compile findings, draft conclusions, co-ordinate analysis 20 days @ $220	$4,400		
	Researchers			
	Complete analysis, draft conclusions 20 days @ $130	$2,600		
	Junior Researchers			
	Compile data, prepare tables 15 days @ $100	$1,500		
	Study Team Review	$1,500		
	Kleinke Review	$ 500	$16,050	
Expenses:	Printing	$1,000		
	Photocopying	$ 300		
	Computer	$ 500		
	Telephone	$ 100		
	Kleinke Travel	$ 500	$ 2,400	$18,450

8.3.4 Time-Use Diaries

8.3.4.1 Work Program

Although the Time-Use Diary component is part of the household survey, it is dealt with separately in the work program and budget, because of its scheduling implications.

The Diaries will be administered once during each season of the year. This will require running past our June 30 Phase 2 closing in order to administer and collect the Diaries during the summer. We propose to do this during July.

The Diaries can be administered in Peace River as well as in Fort McMurray. We have not recommended this because of the costs involved.

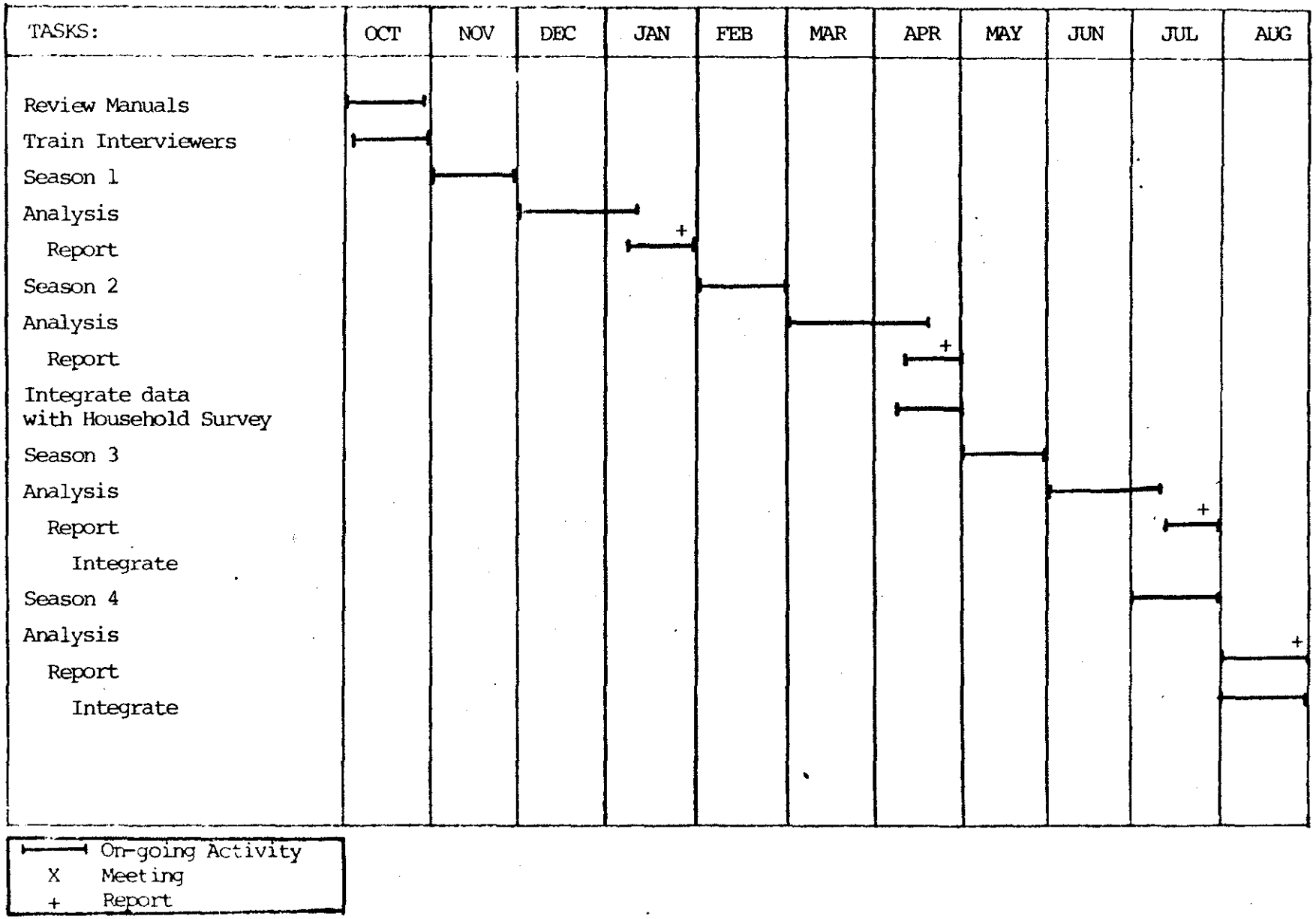
During the selected week in each season, the Diaries will be distributed to the respondents for a specified day/date and collected the following week. In the event the respondent is unable to complete the Diary for the specified date, he or she will be asked to complete it for the same day the following week. If the second attempt is unsuccessful, no further effort will be made to collect time-use data from that respondent, and no substitutions will take place.

To facilitate a good response rate and prompt completion, respondents will be paid $5 for each completion.

The interviewer, when picking up the completed Diary will be responsible for ensuring the Diary is complete.

The Diaries will then be coded. Because of the amount of detailed information in the Diaries (see Background Paper, Time-Use Diaries, Figure 2), coding is a lengthy process. We estimate 24 coding cards for each Diary, with an hour required for the coding of each Diary. Keypunching of the cards is at an average estimated rate

Figure 8.7 COMPONENT 8.3.4 - Activity: Time-Use Diaries



of 20 cards per hour.

The data will be handled in two ways. First, separate two-way tables will be prepared independent of the data from the other instruments. This will provide an overview of the activity patterns in the community.

Second, the data from each Diary will be placed in the respondent's computer file containing data from all the other instruments. Analyses will then be run to list activities, note changes from the previous administration of the Diary, and examine relationships with key variables.

With regard to the sample size, there are two main options. These are associated with the options for the household survey.

If a three percent level of precision is established for the household survey, we would recommend that only 200 respondents be selected for the Time-Use Diary component, as we suggested originally in our Working Notes, April 11, 1978. The reason is that it would be more expensive to administer the Diaries to respondents in all the households.

If a four percent level of precision is established for the household survey (i.e. 160 PSU's), we recommend that the Diary be administered to all respondents in the household. This would provide us with some measure of statistical precision. It would also provide a basis for the compilation of family records of activities - and intra-family and inter-family analysis if this were considered to be useful.

Dr. T.L. Burton will be the principal investigator for this component of the household survey. The Study Manager will be responsible for administration of the Diaries and data handling.

8.3.4.2 Budget

Option 1: Selected sample of 200 respondents. Respondents would be selected randomly from main sample, contacted and asked to confirm their participation.

The Diaries would be distributed and instructions reviewed.

The interviewer will pick up the Diary the following week and pay respondent $5. If the Diary is not completed, the interviewer will return the following week. We estimate a 33 percent callback requirement. We also estimate two respondents per household.

Also, we assume 1.0 percent attrition rate of respondents from season to season, caused by relocation to another community and loss of interest.

Season 1 : 200 diaries 100 hshlds + 33% callback=133 calls
Season 2 : 180 diaries 90 hshlds + 33% callback=120 calls
Season 3 : 162 diaries 81 hshlds + 33% callback=107 calls
Season 4 : 146 diaries 73 hshlds + 33% callback= 97 calls
688 diaries

Season 1.

Fees
1. Study Director
co-ordinate findings and report
2 days $ 740
2. Study Manager
survey administration & data handling
4 days $ 720
3. Principal Investigator
analysis review and conclusion
3 days $ 750

4.	Interviewing			
	133 calls @ $12 (deliver & pick-up)	$1,596		
5.	Coding 200 Diaries @ 1/hr x $7.50	$1,500		
6.	Keypunching			
	200 Diaries x 24 cards ÷ 20 cards/hr @ $7.50	$1,800		
7.	Programms			
	10 days	$1,500		
8.	Researchers			
	Analysis of 2-way tables and draft report 6 days	$1,080		
9.	Researchers			
	Integration of data in respondent computer file, correlations and draft report 6 days	$1,080		
			$10,766	

Season 1.

Expenses	1.	Interviewer mileage	$ 50		
	2.	Supplies, instruments	$ 100		
	3.	Survey Manager airfare and accommodation in Fort McMurray	$ 300		
		Photocopying, Long Distance telephone	$ 50		
		Computer cards for 2-way tables	$1,000		
				$ 1,500	
		Total Fees & Expenses			$12,266
		(Honororia 200 x $5)			$ 1,000
TOTAL SEASON 1					$13,266

Season 2.

Fees: reduced by reduction through attrition of 10% of sample.

1.	Study Director Study Manager Principal Investigator as in Season 1.	$2,000
2.	Interviewers 120 calls @ $12	$1,440
3.	Coding 180 Diaries	$1,350
4.	Keypunching	$1,620
5.	Programmers 2 days	$ 300
6.	Researchers analysis of 2-way tables and draft report 5 days	$ 800
7.	Researchers: Integration of data in respondent file, note changes from Season 1, draft report 3 days	$ 480
8.	Junior Researchers Assist researcher 3 days	$ 360
		$ 8,350

Season 2.

Expenses

1.	Interviewer mileage	$ 45
2.	Supplies, Instruments	$ 80
3.	Survey Manager & Accommodation	$ 300
4.	Photocopying, Long Distance Telephone	$ 50
5.	Computer Cards	$ 300
		$ 775

Total Fees and Expenses	$ 9,125
(Honororia 180 x $5)	$ 900
TOTAL SEASON 2	$10,025

Season 3.

Fees: Reduce Fees and expenses in accordance with 10% attrition to 107 calls and 162 Diaries.

Season 3.

1.	Estimated Fees	$ 9,000	
2.	Estimated Expenses	$ 600	
	Estimated Total Fees and Expenses		$9,600
	(Honororia 165 x $5)		$ 825
TOTAL SEASON 3			$10,425

Season 4.

Fees: Reduce Fees and expenses in accordance with 10% attrition to 97 calls and 146 Diaries.

Season 3.

1.	Estimated Fees	$ 7,000	
2.	Estimated Expenses	$ 600	
	Estimated Total Fees and Expenses		$7,600
	(Honororia 146 x $5)		$ 730
TOTAL SEASON 4			$ 8,330

TOTAL OPTION 1 $40,906

Option 2: A household sample of 160 PSU's is established providing a precision level of four percent. All respondents in the households are requested to fill out the Time-Use Diaries. Assume a total of 350 respondents. The costs directly associated with the Time-Use Diaries are higher than in Option 1 but the results have significantly greater representativeness.

Some savings will be achieved in Season 1 by leaving the Diaries with the respondents at the time of the household survey, thereby foregoing the need for a separate delivery.

There would also be additional costs in coding and keypunching. We would estimate, however, that the base costs associated with management, data analysis and report writing will remain the same.

Season 1 : 350 diaries 160 hshlds (only pickup)
Season 2 : 288 diaries 144 hshlds 191 calls
Season 3 : 260 diaries 130 hshlds 173 calls
Season 4 : 234 diaries 117 hshlds 156 calls

1132 diaries

Option 2:

Season 1.

Fees:

1.	Study Director 2 days	$ 740
2.	Study Manager 4 days	$ 720
3.	Principal Investigator 3 days	$ 750
4.	Interviewers 191 pickups @ $6	$1,166
5.	Coding 350 Diaries $7.50/diary	$2,625
6.	Keypunching 350 Diaries 420 hrs @ $7.50/hr	$3,150
7.	Programmer 10 days	$1,500
8.	Researchers Analysis of 2-way tables and draft report 6 days	$1,080
9.	Integration of Data in respondent computer files, correlations and draft report 6 days	$1,080
		$12,811

Season 1.

Expenses	1.	Interviewer mileage	$ 60
	2.	Supplies, instruments	$ 110
	3.	Survey Manager Travel and accommodation/expenses	$ 300
	4.	Photocopying, long distance calls, etcetera	$ 50
	5.	Computer	$1,000
			$ 1,520

Total Fees and Expenses	$14,331
(Honororia 350 x $5)	$ 1,750
TOTAL SEASON 1	$16,081

Season 2.

Fees: Assume 10% attrition

1. Study Director Study Manager Principal Investigator	$ 2,000	
2. Interviewers 191 calls x $12	$ 2,292	
3. Coding 288 Diaries @ $7.50	$ 2,160	
4. Keypunching	$ 2,592	
5. Programmer	$ 300	
6. Researchers	$ 1,000	
		$10,344

Season 2.

Expenses	$775	$ 775
Total Fees and Expenses		$11,110
(Honororia 288 x $5		$ 1,440
TOTAL SEASON 2		$12,550

Season 3:

1. Estimated Fees	$ 9,000	
2. Estimated Expenses	$ 700	
Estimated Total Fees and Expenses		$ 9,700
(Honororia 260 x $5)		$ 1,300
TOTAL SEASON 3		$11,000

Season 4:

1. Estimated Fees	$ 8,000	
2. Estimated Expenses	$ 700	
Estimated Total Fees and Expenses		$ 8,700
(Honororia 234 x $5)		$ 1,170
TOTAL SEASON 4		$ 9,870
TOTAL OPTION 2		$49,501

SUMMARY TIME-USE DIARIES:

Option 1	$ 40,906
Option 2	$ 49,501

8.3.4.3 Budget

The budget is based on the following assumptions.

1. Data will be collected for Fort McMurray and Peace River concurrently.
2. The Study Director will be responsible for liaison with the affected departments and will review progress with the Client. Estimated involvement is 1.5 days for each of six elapsed months. (9 days)
3. The Study Manager will co-ordinate access to, collection of and preparation of data. Estimated involvement 2.5 days for each of six elapsed months (18 days).
4. Research time will involve 80 man-days (four months).
5. Part of the research time will be spent in Fort McMurray and Peace River to collect data; consequently provision is made for travel and accommodation expenses.

The proposed budget for 8.3.4 is:

Fees:

Study Director 9 days	$ 3,300
Study Manager 18 days	$ 3,960
Researchers 80 days	$12,800
Junior Researchers 20 days	$ 2,200
	$22,290

Expenses:

Travel and Accommodation expenses for Fort McMurray and Peace River	$ 800
Photocopying	$ 100
	$ 900

TOTAL FEES & EXPENSES $23,190

8.3.5 Local Business Economy

Four sub-components are involved here:

1. Inventory of Local Businesses
2. Survey of Local Business
3. Survey of Consumer Prices
4. Survey of Housing Prices

These are discussed in detail in our Background

Paper, The Local Business Economy in Northern Resource Communities.

We discuss each in turn.

8.3.5.1 Inventory of Local Businesses Work Program and Budget

Work Program. We propose that the following information be collected as part of the Inventory:

- Name of establishment
- Type of establishment
- Neighbourhood location
- Specific address
- Size in square feet
- Number of employees (male/female)

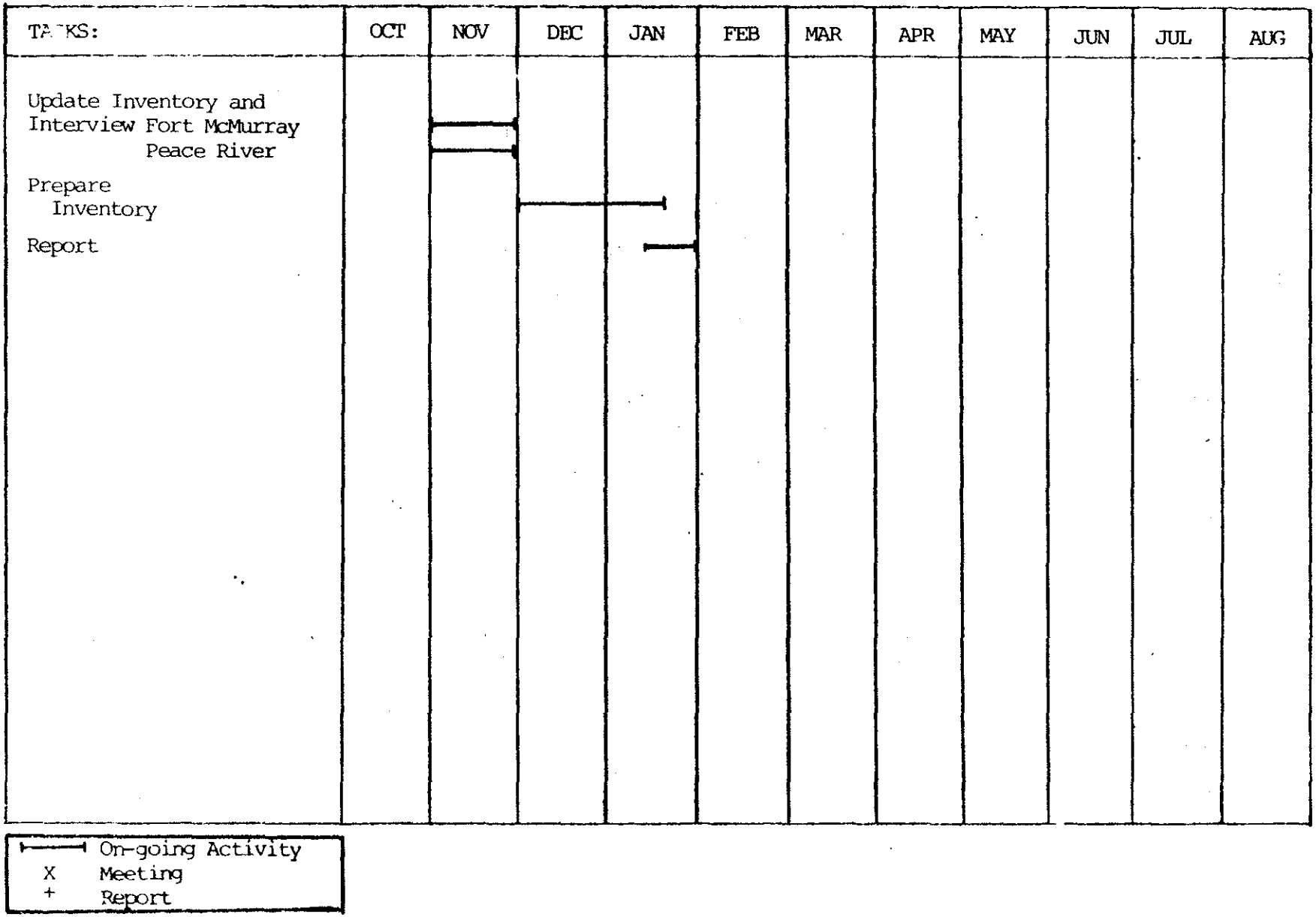
There are three possible sources for this information.

Alberta Bureau of Statistics, we understand, is considering establishing such an Inventory. We have not been informed when this will occur or what specific information will be collected.

Dun and Bradstreet maintain an Inventory based on requests for credit ratings. The cost is about $800 for 2,000 names. The data does not include the neighbourhood location, size in square feet or breakdown of male/female employees. Thus, for example, it would not be possible to assess from this data, precise employment rates for women in the local economy. The data from the household survey would, however, provide us with a statistically reliable representation of that employment rate and sectors of employment. The absence of information on the size of the establishment is more serious. Without it, it is not possible to assess changes in the size of the businesses in town.

The third source is a windshield survey together with a brief interview in each establishment to collect all the data.

Figure 8.8 COMPONENT 8.3.5.1- Activity: Business Inventory



We have budgeted on the basis of the last option.

Peter Nichols will act as principal investigator. The Study Manager will be responsible for the co-ordination of the Inventory.

Because of the non-sensitive nature of the information to be collected, local interviewers can be used. Only a brief training session will be required. This will require one trip to Fort McMurray and one to Peace River by the Survey Manager to orient interviewers. Interviewers will be selected from amongst those responding to our advertisement for interviewers for the household survey.

The collected data will be tabulated in major categories. A Summary will be drawn up, and the Summary and Inventory will be prepared in report form.

In addition, the data will be compared to that established through the Institutional Information System, so that the two sources, where appropriate, will complement each other.

Budget: Fort McMurray. A review of the telephone directory suggests perhaps 600 business establishments in the town. This list will have to be updated using the most recent AGT records. Those businesses in the main shopping areas will take little time to inventory; those in the suburbs and dispersed about the town will require more time because of travel. We estimate about 15 man-days will be required, including AGT update.

Interviewer 15 days	$1,500
Researcher Tabulation and draft summary 6 days	$ 720
Survey Manager 2 days	$ 360
Principal Investigator - 1.5 days	$ 450

Study Director .5 days	$ 170
Total Fees	$3,200

Expenses:

Travel and Supplies, Mileage, Photocopying	$ 320

TOTAL: FORT McMURRAY $ 3,520

Budget: Peace River. We estimate perhaps 300 businesses in Peace River itself. These will need to be updated. Assuming the same time requirements for senior personnel because of their responsibilities, and reduced interviewing requirements, we estimate the fees to be $2,200. Expenses will remain the same because of the air fare to Peace River.

Therefore:

TOTAL: PEACE RIVER $ 2,520

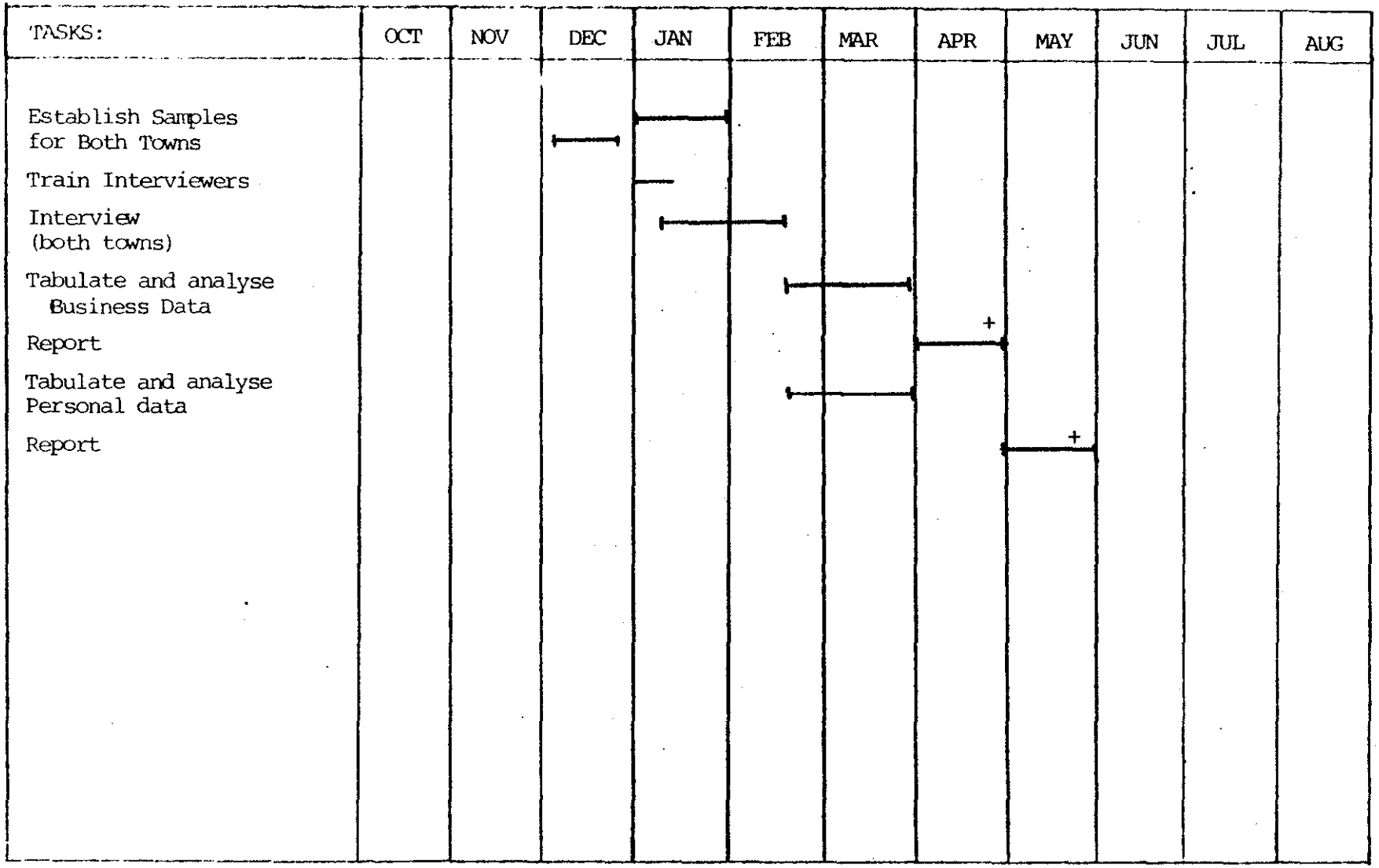
Business Inventory Total:

Fort McMurray	$ 3,520
Peace River	$ 2,520
Report	$ 300
	$ 6,140

8.3.5.2 Survey of Local Business Work Program and Budget

Work Program. One hundred local businesses will be selected from the Inventory on a stratified random sample basis to ensure adequate coverage of the major sectors of the local economy. If there is no Inventory, the telephone directory will be used. The owner or manager of each business will be interviewed, using the structured format included in the appendix of our Background Paper, The Local Business Economy in Northern Resource Communities. Each interview should take about 60 minutes.

Figure 8.9 COMPONENT 8.3.5.2 - Activity: Local Business Survey



Because of the nature of the information requested from respondents, and because the study communities are not large, we recommend that an experienced, outside interviewer be used. Mr. Peter Nichols will be responsible for selecting and training the interviewer.

In Phase 3, the same businesses will be located again and interviews carried out to determine changes. Prior to Phase 3 a decision can be taken regarding establishing another random sample for survey purposes.

As part of the interview, respondents will be asked to complete the Base Demographic Questionnaire, the Activities Index and the Community Index, and respondents' files will be established in the data bank for comparison with respondents in the household survey.

We suggest that the interviews take place in January, after the Christmas rush.

As a prelude to the survey the Study Director or Mr. Nichols will contact the local business associations, and seek their cooperation.

Assuming the interviewer can complete five interviews a day, six days a week, and perhaps some on Sunday, three to four weeks should be sufficient to complete the survey in Fort McMurray.

We suggest the survey also be carried out in Peace River if funds are available, because of the valuable economic baseline information it will provide.

Because the interview is of the probe variety, the information collected will need to be coded and then analysed. Mr. Nichols will oversee this task; and will carry out the analysis and prepare the report with respect to the businesses.

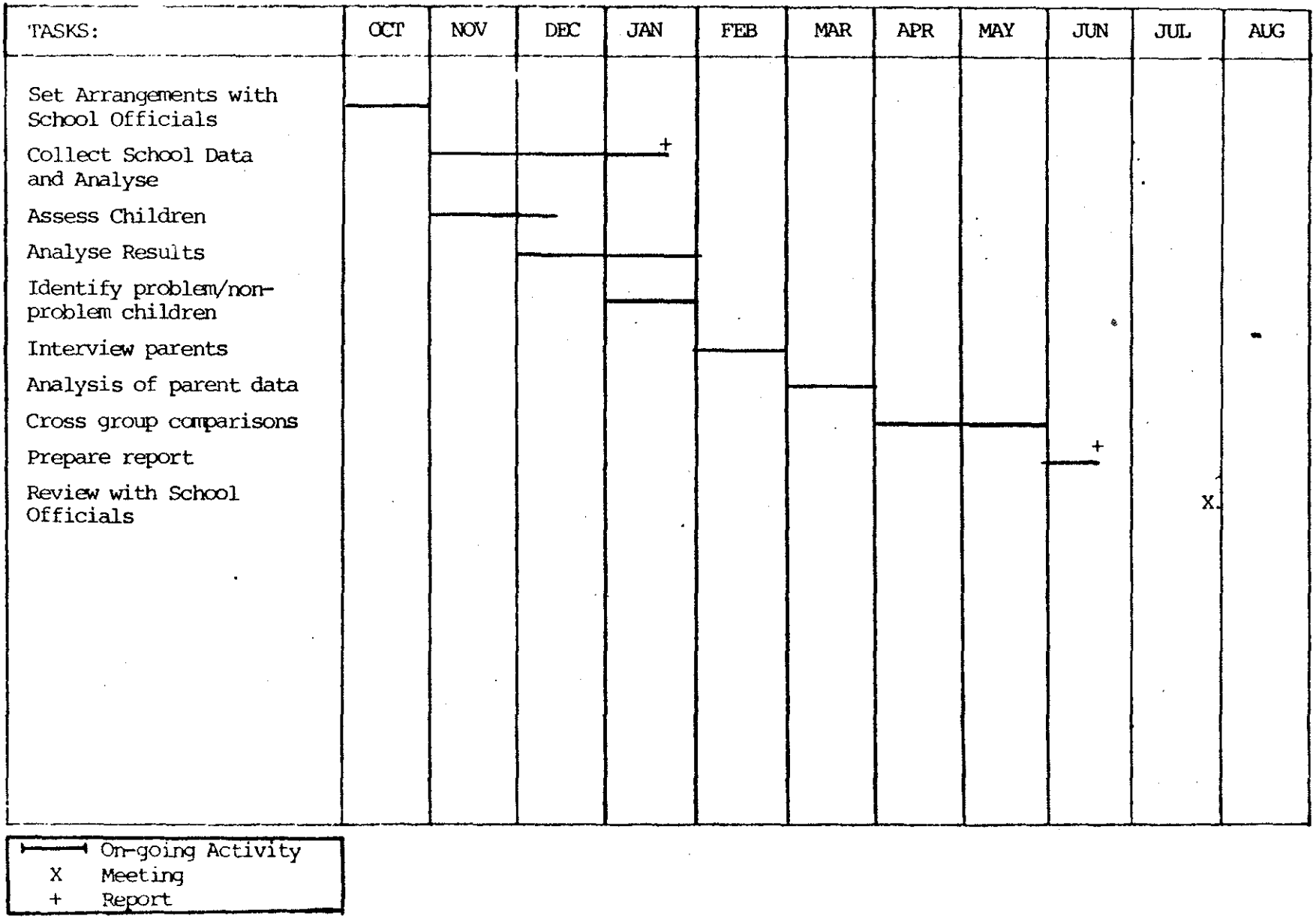
The Study Manager will be responsible for integrating the personal data into computer files, and carrying out the comparison of the profiles.

The Study Director will prepare a report.

Budget: Fort McMurray. The budget is calculated as follows:

Fees:		
Selection and Orientation of interviewer Principal Investigator - 1 day	$ 300	
Community Liaison 1 day	$ 350	
Interviewer 25 days	$3,750	
Data analysis and Report on Business Principal Investigator-14 days	$4,200	
Researcher - 10 days	$1,600	
Data analysis personal data comparison and report Study Director 2 days	$ 740	
Study Manager 4 days	$ 880	
Researcher 4 days	$ 640	
Junior Researcher 3 days	$ 330	
		$12,790
Expenses:		
Community Liaison return air fare and transportation	$ 130	
Interviewer travel-3trips Air Fare	$ 300	
Accommodation and Meals 25 days @ $40/day	$1,000	
Taxis, car rental	$ 200	
Supplies, etcetera	$ 100	
Telephone	$ 40	
Report Printing	$ 200	
		$ 1,970

Figure 8.10 COMPONENT 8.3.6 - Activity: Education: Fort McMurray



Total Fees	$12,790
Total Expenses	$ 1,970

TOTAL: FORT McMURRAY $14,760

Budget: Peace River. If the survey in Peace River, can be carried out with approximately half the cost in interviewer fees and expenses; assuming 50 businesses are surveyed. Savings in data analysis and report writing would also be obtained by integrating the work with that from Fort McMurray.

Estimated Fees	$7,000
Estimated Expenses	$1,000

TOTAL: PEACE RIVER $ 8,000

TOTAL: PEACE RIVER AND FORT McMURRAY $22,760

8.3.5.3 Consumer and Housing Price Survey Work Program and Budget

Work Program. The Consumer Price Survey would consist of a survey of prices of selected goods and services as set out in the Appendix to the Local Business Economy in Northern Resource Communities. Identification of specific goods and services would be carried out with the cooperation of Alberta Bureau of Statistics.

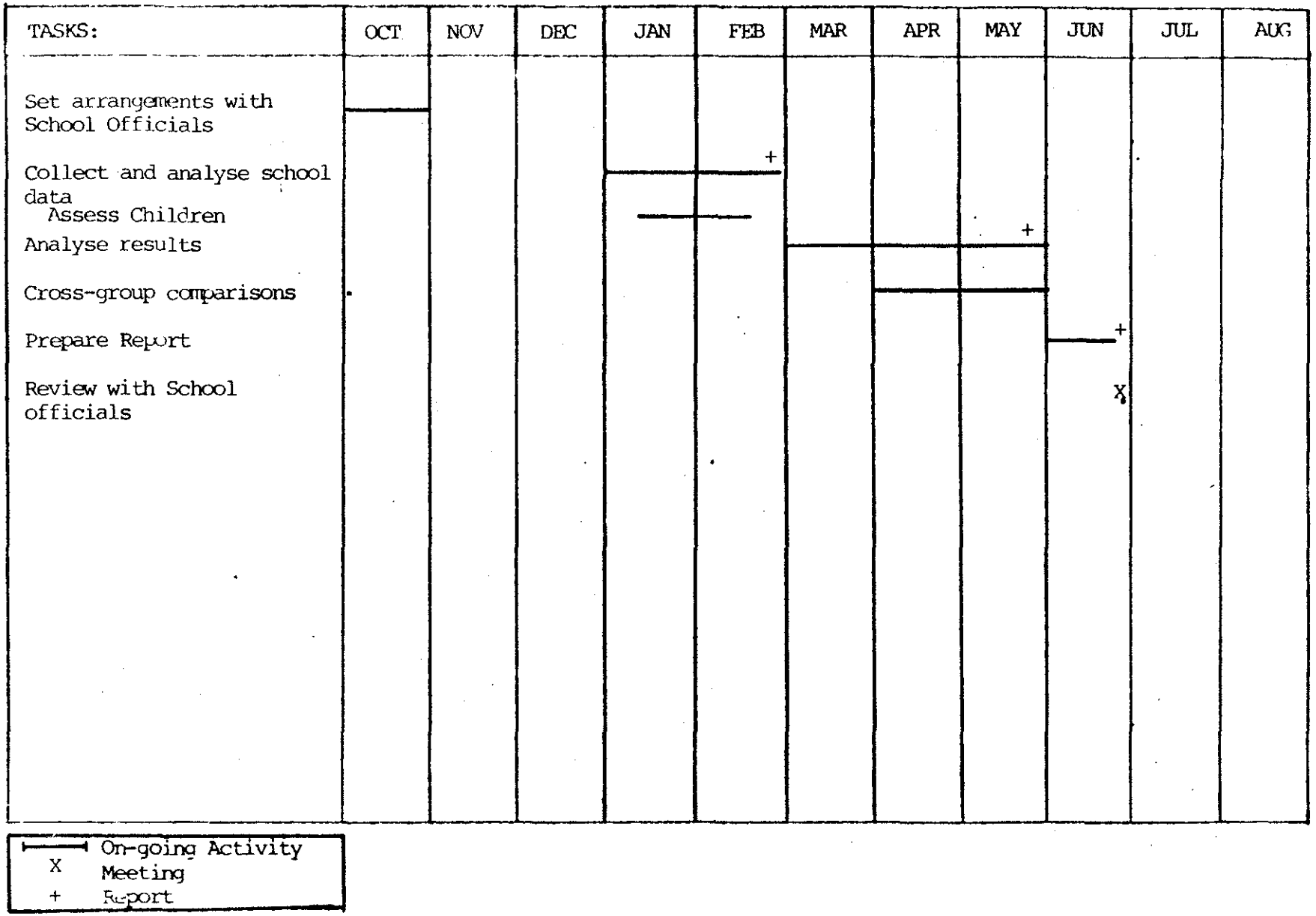
The Consumer Price Survey would be carried out by local persons. The results would be tabulated and compared with those available with respect to Alberta and selected communities in the province.

We estimate the survey can be carried out in Fort McMurray, and a report prepared for the following fees and expenses:

. Fort McMurray	$1,000
. Peace River	$ 800
TOTAL	$1,800

These calculations are based on the assumption that one meeting with Alberta Bureau of Statistics will be sufficient in identifying the specific items, and that

Figure 8.11 COMPONENT 8.3.6.1 Activity: Education: Peace River



relatively untrained surveyors can be used. In the event more sophisticated procedures are required, we would review the situation with the Client with respect to the costs and benefits of proceeding. Complaints about the high cost of living in resource communities are frequent and hard data would be useful. We would expect the Client to decide how useful.

The Housing Price Survey is more complex in Fort McMurray because of the open and closed housing markets. We would retain the services of an experienced local appraiser/assessor to assist us, and would work in cooperation with the local real estate boards, and with the major companies and government agencies owning housing stock in the town. Types and levels of assistance for closed market housing would be established - both purchase and rental - and their value on the open market estimated.

Purchase and rental rates would be established for Fort McMurray and Peace River.

The survey is intended to provide a summary overview for the purposes of comparison and to identify major variations. Consequently, we estimate the budget as follows:

Fees: Fort McMurray

Local appraiser/assessor		
2 days	$ 600	
Researcher		
4 days	$ 640	
Tabulation and Report		
4 days	$ 640	
		$ 1,880

Expenses: Fort McMurray

Air Fare	$ 100	
Car Rental	$ 60	
Accommodation & Meals		
3 days	$ 120	
Photocopying		
Telephone etcetera	$ 100	
	$ 380	
TOTAL: FORT McMURRAY		$ 2,260

Fees: Peace River			
Local appraiser/assessor			
2 days	$ 600		
Researcher			
3 days	$ 480		
Tabulation and Report			
3 days	$ 480		
		$ 1,560	
Expenses: Peace River	$ 340		
		$ 340	
TOTAL: PEACE RIVER			$1,900

FORT McMURRAY	$2,260
PEACE RIVER	$1,960
	$4,220

Total Consumer and Housing Survey:

FORT McMURRAY	$3,260
PEACE RIVER	$2,760
	$6,020

SUMMARY	FORT McMURRAY	PEACE RIVER	TOTAL
Inventory	$ 3,020	$ 2,520	$ 6,040
Survey	$14,760	$ 8,000	$22,760
Consumer Housing Prices	$ 3,260	$ 2,760	$ 6,020
			$34,820

8.3.6 Education

8.3.6.1 Work Program

This component of the study will be under the direction of Dr. A.G. Scott, who will be principal investigator. Dr. Scott has already met with the public and separate school authorities in Fort McMurray and has their support. It was decided not to approach the Peace River school authorities until it was determined this component of the study would be administered there. We expect no difficulty in obtaining their cooperation.

During October, Dr. Scott will meet with the Fort McMurray school authorities to make arrangements for the administration of the tests and for the examination and analysis of school records. Five classes in each school system will be selected at random, each yielding approximately 25 students in Grades 1, 3, 6, 9 and 11. This will generate about 250 students to be tested with the Wide Range Achievement Test.

The WRATs will be administered by Dr. Scott and trained staff. To the extent possible, local staff will be used, consistent with quality requirements.

The assessment will consist of the administration of the WRAT, plus an interview structured to deal with educational progress and problems, and personal well-being; and also an assessment of the child by teacher through the Checklist.

The teacher in each of the selected classrooms will be requested to rate each child on the Walker Problem Behaviour Identification Checklist. An orientation session will be provided.

The data will provide a basis for identifying children with learning behavioural and other problem-indicative conditions.

The first assessment of the children will occur during November-December 1978.

Dr. Scott recommends that the children be assessed one year later (see Background Paper, 'Children and Education', pp.24-25). We have budgeted accordingly, and also provided the option of not assessing the children again until Phase 3.

The major disadvantage of waiting until Phase 3 is that perhaps many of the children will be out of the school system or moved from town by that time. Against this disadvantage must be weighed the costs of carrying out the educational assessment during the interim period.

In view of the nature of the problems facing the school systems in Fort McMurray and elsewhere, our

recommendation is that the assessment be carried out next year, during the interim, rather than waiting for Phase 3.

Based on the assessments and interviews, children will be grouped according to whether or not they display learning, behaviour or other problem-indicative conditions. From each category, a sample will be drawn, and the parents of children in each sample will be asked to participate.

The Base Demographic Questionnaire, Activities Index, Community Index and Job Description Index will be administered to the parents. In addition, we propose to administer that section of the Extended Interview dealing with education. The total administration time will be about 40 minutes.

A brief interview will also be conducted in which parents will have an opportunity to express their views with respect to children and education.

The master list for the household survey will be consulted to avoid overlapping. The data from parents who have already been sampled in the household survey will be used in place of a separate interview.

We propose that about 100 families be surveyed in this way: 50 in the problem-indicative category.

Data from the parents of problem-indicative children can be compared to data from the other parents, and both categories can be compared to the general population sampled in the household interview. By holding socio-economic status and other key variables constant it will be possible to carry out a find grain analysis which will provide considerable data with respect to:

- family well-being,
- problems associated with migration, mobility and adjustment,
- family stress,
- the child's well-being,

- the relationship of family conditions and well-being to the child's well-being and educational progress.

With care, one can extrapolate the findings to various sub-groups within the general population.

Findings will be reviewed with Fort McMurray school officials.

With respect to Peace River, we recommend that an assessment of the children be carried out. Because of the costs involved, we propose that the sample of children to be assessed be reduced to 125.

Upon receiving the Client's approval to proceed with this component of the study, Dr. Scott will visit Peace River and make the necessary arrangements with the school authorities.

Implementation procedures will be the same as in Fort McMurray. The assessment will take place in January-February, 1979.

In addition, the school records will be examined, as in Fort McMurray.

Because of the costs involved, we do not recommend that the Peace River children's parents be sampled.

Data from Fort McMurray and Peace River will be analysed and compared across key variables.

It would be possible to reduce the sample size in Peace River below 125. Our concern would be to retain a sufficiently large sample to provide a basis for comparison with Fort McMurray.

It would also be possible to confine our activities in Peace River simply to an examination of school records with respect to absenteeism, pass/fail rates, dropouts, use of counselling facilities and related matters. This data would have to be treated with caution because of the number of external variables bearing on the

reliability and validity of the records. The records would have the advantage of providing a context against which to measure student turnovers and pass/fail rates in Fort McMurray. Considering the modest cost of collecting and analysing data from the records, ($3,000) this would be worthwhile in our view.

8.3.6.2 Budget

Several optional budgets have been prepared.

Fort McMurray Phase 2: (250 children)

Records will be examined for both the public and separate school systems.

The WRAT and Checklist will be administered to 250 students.

Fees - Assessment of Children: Fort McMurray: Phase 2

Principal Investigator 20 days	$ 7,000	
Senior Researcher 6 days	$ 1,200	
Interviewers 40 days	$ 6,000	
Junior Researcher 20 days	$ 750	
		$ 14,950

Expenses: Assessment of Children-Fort McMurray: Phase 2

Supplies: Tests, Checklists, Papers	$ 760	
Travel: Principal Investigator and 5 Staff	$ 1,200	
Accommodation and meals - 6 persons	$ 2,275	
Computer	$ 400	
		$ 4,635
TOTAL FEES AND EXPENSES		$19,585

Fees: Parent Interviews: Fort McMurray: Phase 2

Study Director 1 day	$ 370	
Survey Manager 6 days	$ 1,080	
Interviewer 100 families @ $40/each	$ 4,000	$ 5,450

Expenses: Parent Interviews: Fort McMurray: Phase 2

Supplies Instruments Telephone etc.	$ 200	
		$ 200
TOTAL PARENTS		$ 5,650
TOTAL FORT McMURRAY		$25,235

Option 1. Fort McMurray
Assessment of Children

This assessment would be carried out during the school year 1979-80. The children would be located. Those still in the school system would be re-assessed and the data compared with the previous results.

The parents interviewed in Phase 2 would also be re-interviewed and comparisons noted with the earlier results.

There would be some reduction in costs because of sample attrition. We estimate this at 20%. This would produce some savings in field costs.

Accordingly, the fees are estimated as follows.

Assessment of children	$12,000	
Interviews with parents	$ 6,100	
		$ 18,100

Expenses are estimated as follows:

Assessment of children	$ 4,000	
Interview with parents	$ 3,000	
		$ 7,000
TOTAL FORT McMURRAY INTERIM PERIOD		$25,100

Option 1. Peace River

Assess 125 children collect and analyse school records

FEES:		
Based on calculations for Fort McMurray	$ 7,600	
EXPENSES: including travel, accommodation, supplies, computer costs	$ 3,425	
		$11,025

Option 2. Peace River

Examination of School Records only

FEES:	$ 2,000	
EXPENSES:	$ 1,000	
		$ 3,000
TOTAL FEES AND EXPENSES		$14,025

SUMMARY:

Fort McMurray	
- 250 children and school records	$19,585
- parents	$ 5,650
	$25,235
Peace River	
- 125 children and school records	$11,025
- school records	$ 3,000
	$14,025

RANGE: $27,260 - $35,260

Household Survey - Summary Budget

Fort McMurray/Peace River @ Three percent level of precision

	Fees	Expenses	Total
REVIEW			
1. Extended Interview	$ 3,570	$ 25	$ 3,595
2. Revise Sampling	2,710	340	3,050
3. A.G.T.	480	---	480
4.	1,480	250	1,730
	880	250	1,130
	8,630	2,300	10,930
	23,200	11,600	34,800
	------	1,350	1,350
5. Clean and Batch	$ 4,200	$ 480	$ 4,680
6. Programming	19,250	3,700	22,950
7. Integrate other Data	------	500	500
8. Second data Analysis	8,520	900	9,420
9. Final Report	10,500	2,400	12,900
	$83,420	$24,095	$107,435

8.3.7 Final Report

8.3.7.1 Work Program

The Final Report will contain the following:

1. A summary of the major issues addressed in Phase 2;
2. A description of the work program in Phase 2 and suggested revisions for Phase 3;
3. A summary of the major findings in the various study components in Phase 2;
4. Recommendations for the on-going analysis of the existing data base with respect to specific issues, sub-groups and inter-relationships in the interval prior to Phase 3;
5. Suggested issues to be addressed in Phase 3.

8.3.7.2 Budget

The work consists mainly of summarizing conclusions already available in report form. Consequently we do not see this as a major activity. We expect that some revisions may be necessary to these reports to bring up to date with the later findings.

The proposed budget is:

Study Director 6 days	$2,220	
Study Manager 10 days	$2,200	
Researchers 15 days	$2,400	
		$ 6,820
Expenses:		
Printing and Supplies		$ 1,200
		$ 8,020

8.3.8 Summary Budget for all components

8.3.1	Study Review		$ 4,810
8.3.2	Institutional Information System		$23,190
8.3.3	Household Survey @ 3% level of precision for Fort McMurray and Peace River		$107,435
8.3.4	Time-Use Diaries		$41,000-$49,000
8.3.5	- Local Business Inventory		
	Fort McMurray	$ 3,520	
	Peace River	$ 2,520	$ 6,040
	- Survey		
	Fort McMurray	$14,760	
	Peace River	$ 8,000	$22,760
	- Price Survey		
	Fort McMurray	$ 3,260	
	Peace River	$ 2,760	$ 6,020
8.3.6	Children and Education		
	- Fort McMurray 250 children & School records	$19,585	
	Parents	$ 5,650	$25,235
	- Peace River 125 children & school records	$11,025	
	School Records	$ 3,000	$14,025
8.3.7	Final Report		$ 8,020
	TOTAL		$268,535 - $276,535

This sum is more than that budgeted for Phase 2. Savings can be obtained by dropping one or more components of the proposed work program and/or reducing the level of activity in various components.

Each of these components is intended to meet specific information requirements as these have been identified to us. We cannot make recommendations regarding budget cuts without presuming to establish priorities among the information requirements of the Client and interested departments.

8.4 INTERIM STUDIES

We have been asked to suggest studies which might be carried out in the interim between Phase 2 and Phase 3.

Several possibilities suggest themselves.

1. Continued analysis of the data.
   If we are to finish by June 30, there will not be time for a detailed analysis of the data for all subjects. In our Report we will identify these topics, and suggest Terms of Reference for those analyses.
2. We will, in time available, set out our findings in the context of the literature and previous studies. There will not be papers on specific papers. A selection of such topics will be suggested by us in our Final Report, and the preparation of the papers could proceed during the interim.
3. We believe that more detailed information is required with respect to job satisfaction and turnover among Syncrude and GCOS employees. We suggest that they be approached again in the Spring to discuss the feasibility of such a study.
4. It is likely that a number of topics will emerge which require separate treatment. Several which suggest themselves are:
   - The processes and problems a newly-arrived family (or single person) face upon entering the community.
     The Extended Interview deals with this topic, but in the event the topic is cut and reduced, it should be examined.

- An examination of ways to strengthen community cohesion and organization during periods of rapid growth plus high population turnover.

It is likely that interim studies into these and related matters might be most fruitful using focus group and similar techniques among selected target populations.

We expect that as we move through Phase 2 we will be able, in consultation with the Client, to specify these matters in detail.

DRAFT

ALBERTA OIL SANDS ENVIRONMENTAL RESEARCH PROGRAM

LONGITUDINAL STUDY OF PERSONAL ADJUSTMENT AND SOCIAL CONDITIONS IN THE FORT McMURRAY AREA HS 30.1

PHASE 1: FINAL REPORT

APPENDIX 1:
SELECTED SOCIAL STATISTICS

AUGUST, 1978

SELECTED SOCIAL STATISTICS

Table of Contents

POPULATION CHANGE

	Total Population	Absolute Population Change	Average Annual Population Change (%)
1961/1*	1186		
1966/8	2614	1428	24
1971/16	6845	4231	32
1976/24	15420	8575	25
1977/31	20340	4920	32

* See appropriate source number.

1961 POPULATION BY SPECIFIED AGE GROUPS AND SEX/1

	Male	Female	Total	% Male	% Female
0-4	110 (17)*	87 (16)	197 (16)	56	44
5-9	87 (13)	81 (15)	168 (14)	52	48
10-14	77 (12)	67 (12)	144 (12)	53	47
15-19	49 (8)	54 (10)	103 (9)	48	52
20-24	31 (5)	24 (4)	55 (5)	56	44
25-34	69 (11)	68 (13)	137 (12)	50	50
35-44	78 (12)	61 (11)	139 (12)	56	44
45-54	43 (7)	62 (11)	105 (9)	41	59
55-64	53 (8)	22 (4)	75 (6)	71	29
65-69	15 (2)	7 (1)	22 (2)	68	32
70+	33 (5)	8 (1)	41 (3)	80	20
TOTAL	645 (100)	541 (100)	1186 (100)	54	46

* Parentheses enclose percentages.

1966 POPULATION BY SPECIFIED AGE GROUPS AND SEX[78]

	Male		Female		Total		% Male	% Female
0-4	229	(15)	194	(16)	423	(16)	54	46
5-9	166	(11)	162	(15)	328	(13)	51	49
10-14	150	(10)	117	(11)	267	(10)	56	44
15-19	105	(7)	90	(8)	195	(8)	54	46
20-24	146	(9)	116	(10)	262	(10)	56	44
24-35	253	(16)	161	(14)	414	(16)	61	39
35-44	184	(13)	125	(11)	309	(12)	60	40
45-54	127	(9)	84	(8)	211	(8)	60	40
55-64	89	(6)	39	(5)	128	(5)	70	30
65-69	23	(2)	16	(2)	39	(1)	59	41
70+	29	(2)	9	(1)	38	(1)	76	24
TOTAL	1501	(100)	1113	(100)	2614	(100)	57	43

1971 POPULATION BY SPECIFIED AGE GROUPS AND SEX /16

	Male	Female	Total	% Male	% Female
0-4	575 (16)	535 (16)	1110 (16)	52	48
5-9	505 (14)	545 (17)	1050 (15)	48	52
10-14	425 (12)	370 (11)	795 (12)	53	47
15-19	275 (8)	310 (10)	585 (9)	47	53
20-24	325 (9)	340 (10)	665 (10)	49	51
25-34	715 (12)	580 (18)	1295 (19)	55	45
35-44	410 (11)	295 (9)	705 (9)	58	42
45-54	205 (6)	165 (5)	370 (5)	55	45
55-64	105 (3)	75 (2)	180 (3)	58	42
65-69	15 (-)	25 (1)	40 (1)	38	62
70+	30 (-)	20 (1)	50 (1)	60	40
TOTAL	3585 (100)	3260 (100)	6845 (100)	52	48

1976 POPULATION BY SPECIFIED AGE GROUPS AND SEX/24

	Male		Female		Total		% Male	% Female
0-4	1015	(12)	1020	(15)	2035	(13)	50	50
5-9	965	(12)	970	(13)	1935	(13)	50	50
10-14	790	(10)	810	(11)	1600	(10)	49	51
15-19	695	(9)	675	(9)	1370	(9)	51	49
20-24	945	(12)	955	(13)	1900	(12)	50	50
25-34	1820	(23)	1620	(22)	3440	(23)	53	47
35-44	1010	(13)	725	(10)	1735	(11)	58	42
45-54	480	(6)	375	(5)	855	(6)	56	44
55-64	260	(3)	160	(2)	420	(3)	62	38
65-69	35	(-)	25	(-)	60	(-)	58	42
70+	35	(-)	35	(-)	70	(-)	50	50
TOTAL	8050	(100)	7370	(100)	15420	(100)	52	48

1977 POPULATION BY SPECIFIED AGE GROUPS AND SEX[31]

	Male		Female		Total		% Male	% Female
0-4	1200	(11)	1262	(13)	2462	(12)	48	52
5-9	1241	(11)	1302	(14)	2543	(13)	49	51
10-14	998	(9)	976	(10)	1974	(10)	51	49
15-19	855	(8)	834	(9)	1689	(8)	51	49
20-24	1445	(13)	1302	(14)	2747	(14)	53	47
25-34	2765	(27)	2260	(24)	5025	(25)	55	45
35-44	1348	(13)	972	(9)	2320	(11)	58	42
45-54	652	(6)	427	(5)	1079	(5)	60	40
55-64	244	(2)	163	(2)	407	(2)	60	40
65-69	23	(-)	18	(-)	41	(-)	56	44
70+	29	(-)	24	(-)	53	(-)	55	45
TOTAL	10800	(100)	9540	(100)	20340	(100)	53	47

AGE GROUPS AS A PROPORTION OF THE TOTAL POPULATION

	1961/1	1966/8	1971/16	1976/24	1977/31
0 - 4	16	16	16	13	12
5 - 9	14	13	15	13	13
10 - 14	12	10	12	10	10
15 - 19	9	8	9	9	8
20 - 24	5	10	10	12	14
25 - 34	12	16	19	23	25
35 - 44	12	12	9	11	11
45 - 54	9	8	5	6	5
55 - 64	6	5	3	3	2
65 - 69	2	1	1	-	-
70+	3	1	1	-	-
Total	100	100	100	100	100

By making some assumptions about the characteristics of specified age groups in the population it is possible to identify general trends in the age structure of Fort McMurray.

First, the population under 15 can generally be considered to be attending school. Second, those between 15 and 20 can be regarded as in transition groups, that is, some are still enrolled in school while others are in the labour force. Third, the young working population in the family life cycle ranges from about 20 to 44; fourth, the older working population from 45 to 65; and fifth, the elderly are 65 and over.

As a proportion of the total population the first group (school-age population) has declined slightly while the second (transition) group has remained fairly stable. This decline is to be expected, however, as the population as a whole ages. The decline, nonetheless, is marginal, indicating that there is replacement occurring. This replacement derives largely from the increasing proportion of the young working population - from 29% in 1961 to 50% in 1977, most of whom are married and in the family life-cycle stage. Finally, the fourth (older working population) and fifth(elderly) groups have declined steadily since 1961, from 15% to 7% and 5% to less than 1%, respectively.

PROPORTION OF MALES BY SPECIFIED AGE GROUPS

	1961/1	1966/8	1971/16	1976/24	1977/31
0 - 4	56	54	52	50	48
5 - 9	52	51	48	50	49
10 - 14	53	56	53	49	51
15 - 19	48	54	47	51	51
20 - 24	56	56	49	50	53
25 - 34	50	61	55	53	55
35 - 44	56	60	58	58	58
45 - 54	41	60	55	56	60
55 - 64	71	70	58	62	60
65 - 69	68	59	38	58	56
70+	80	76	60	50	55
Total	54	57	52	52	53

Perhaps the most prominent feature of the Fort McMurray population is the relatively high proportion of males, that has remained fairly stable over the past 16 years. This derives largely from the high proportion of males in the working age population. The younger age groups - those less than 20, generally have similar proportions of males, though there has been a moderate decline since 1961. Another anomaly in the age structure is the relatively high proportion of elderly males. This is rather unusual since females generally comprise a significantly higher proportion of elderly throughout Alberta.

MARITAL STATUS

1961 /2	Single	Married	Widowed	Divorced	Total
Male	124(33)	227(62)	16(4)	4(1)	371(100)
Female	76(25	217(70)	16(5)	-	309(100)
Total	200(29)	444(65)	32(5)	4(1)	680(100)
1966 /9					
Male	309(33)	590(64)	19(2)	8(1)	926(100)
Female	122(18)	523(79)	20(3)	2(-)	667(100)
total	431(27)	1113(70)	39(3)	10(-)	1593(100)
1971 /17					
Male	550(27)	1475(71)	15(1)	25(1)	2065(100)
Female	305(17)	1455(80)	45(2)	20(1)	1825(100)
Total	855(22)	2930(75)	60(2)	45(1)	3890(100)
1976 /25 /26					
Male	1455(26)	3700(70)	30(1)	95(3)	5280(100)
Female	855(19)	3590(78)	90(2)	50(1)	4585(100)
Total	2310(23)	7290(74)	120(1)	145(2)	9865(100)

MARITAL STATUS: PER CENT CHANGE

% Change	Single	Married	Widowed	Divorced	Total
1961-66	166	151	22	150	134
1966-71	98	163	54	350	144
1971-76	170	149	100	222	154

Between 1961 and 1976 the proportion of people aged fifteen and over who were single declined slightly. Although around one-quarter of the population over fifteen was single, this included those who were still in school or living at home. Hence the figures and proportions are somewhat misleading. Nonetheless, proportional changes do provide some indication of the overall marital status picture. The proportion of the population over fifteen that was married increased from approximately two-thirds in 1961 to above three-quarters in both 1971 and 1976. Once again, this proportion would likely be higher if the proportion of singles was not inflated.

The proportion of the widowed population declined slightly, while the proportion of those divorced increased slightly. Despite an increase in the proportion of the population divorced, the divorce rate in Fort McMurray was still considerably lower than the provincial average in 1976.

FAMILIES BY MARITAL STATUS AND SEX OF HEAD

	Male Head	Female Head	Total	Married Heads
1961 /2	517(97)	15(3)	532(100)	520(97)
1966 /10	1415(96)	65(4)	1480(100)	1430(96)
1971 /18	3395(93)	230(7)	3625(100)	3455(95)

The proportion of male household heads declined slightly between 1961 and 1971 while the proportion of female heads increased slightly. The proportion of married households heads remained fairly constant. This latter figure is probably a more reliable indicator of the proportion of the population that is married as opposed to those who are single (see previous section - MARITAL STATUS).

NUMBER OF PERSONS PER HOUSEHOLD

	1	2	3	4	5	6-10	10+
1961 /3	58 (19)	60 (19)	43 (14)	35 (12)	29 (10)	65 (22)	11 (4)
1966 /11	65 (11)	123 (21)	106 (17)	94 (15)	86 (14)	120 (20)	10 (2)
1976 /27	415 (10)	880 (21)	780 (18)	1020 (24)	585 (14)	515 (12)	20 (1)
1977 /32	450 (8)	1399 (25)	1064 (19)	1582 (28)	773 (14)	413 (6)	3 (-)

	Total Persons	Total Households	Persons per Households
1961	1160	301	3.9
1966	2435	610	4.0
1976	15125	4220	3.6
1977	20340	5686	3.6

HOUSEHOLDS BY NUMBER OF FAMILIES

	1 Family	Multiple Family	Non-Family	Total
1961/3	221 (73)	3 (1)	77 (26)	301 (100)
1966/12	490 (80)	17 (3)	103 (17)	610 (100)
1971/19	1465 (89)	25 (1)	165 (10)	1655 (100)
1976/28	3515 (83)	55 (2)	645 (15)	4215 (100)

PERSONS PER FAMILY

	2	3	4	5	6	7	8	9+
1961 /4	49(21	42(19	36(16)	29(13)	31(14)	10(4)	12(5)	18(8)
1966 /13	131(25)	97(18)	99(19)	97(18)	45(8)	40(7)	13(2)	18(3)
1976 /29	900(25)	765(21)	1005(28)	540(15)	260(7)	100(3)	40(1)	20(-)

	Total Persons	Total Families	Persons per Family
1961	1045	227	4.6
1966	2245	532	4.2
1976	13560	3625	3.7

FAMILIES BY NUMBER OF CHILDREN

	0	1	2	3	4	5+
1961/5	46(20)	46(20)	33(15)	30(13)	29(13)	43(19)
1966/14	125(23)	104(20)	98(18)	98(18)	47(8)	70(13)
1971/20	215(14)	285(19)	415(28)	260(17)	165(11)	150(10)

	Total Children	Total Families	Children per Family
1961	598	227	2.6
1966	1172	532	2.2
1971	3375	1490	2.2

DWELLING TENURE

	Own	Rent	Total
1966/15	343(56)	267(44)	610(100)
1971/21	950(57)	845(43)	1655(100)
1976/30	2085(49)	2135(51)	4220(100)
1977/31	2599(46)	3085(54)	5684(100)

The proportion of tenant-owned dwellings has been steadily declining in the past eleven years as Fort McMurray continues to grow. This decline corresponds to a similar decline in the proportion of the housing stock that is comprised of single detached dwellings - the type of dwelling that has a high ownership rate. Concomitantly, other housing types - single attached, apartments and mobile homes, as a proportion of the total housing stock, have all increased.

DWELLING TYPE

	Single Detached	Single Attached	Apart-ment	Movable (Mobile)	Total
1966/15	373(61)	32(5)	64(10)	142(24)	610(100)
1971/21	1025(62)	120(7)	215(13)	295(18)	1655(100)
1976/30	1575(37)	450(11)	905(21)	1290(31)	4220(100)
1977/31	1955(34)	881(15)	1245(22)	1603(29)	5684(100)
1966-71	652(175)	88(275)	152(241)	153(108)	1045(171)
1971-76	550(54)	330(275)	690(321)	995(337)	2565(155)
1976-77	380(24)	431(96)	340(38)	313(24)	1464(35)

EXPERIENCED LABOUR FORCE BY INDUSTRY AND SEX

	1961[6]	1971[22]
Agriculture	--	20(1)
Forestry	18(5)	15(1)
Fishing/Trapping	6(2)	--
Mines/Quarries/Oil Wells	9(3)	785(30)
Manufacturing	18(5)	50(2)
Construction	20(6)	280(11)
Transp./Commun./Util.	120(36)	255(10)
Trade	34(10)	220(8)
Finance/Real Est./Insur.	2(1)	60(2)
Commer. Bus./Per. Serv.	68(21)	525(19)
Public Defence	29(9)	105(4)
Undef./Not Stated	6(2)	315(12)
TOTAL	330(100)	2630(100)

The rapid expansion of the labour force in Fort McMurray derives largely from the growth in oil-related jobs, particularly oil wells and construction and in indirectly-related jobs generated by the oil industry - commercial businesses and personnel services and trade.

Since the growth of indirect oil-related jobs is dependent, to a large degree, on future oil-based activities, it is difficult to predict accurately, the extent to which this sector will grow in the future.

VITAL STATISTICS

	Live Births			Deaths				
	Male	Female	Total	Male	Female	Total	Infants	Marriages
1972	123	142	265	12	5	17	2	56
1973	131	97	228	16	5	21	3	41
1974	118	138	256	15	6	21	1	51

Source: Statistics Canada, Vital Statistics, Catalogue 84-207 Annual (1972 - 1974).

Vital statistics for Fort McMurray were first collected on a comprehensive basis in 1972. The 1975 data have not yet been published by Statistics Canada. More up-to-date statistics are available through the provincial government Vital Statistics, but were not available at the time the data were compiled.

With regard to these data, few comments are necessary. The data themselves do not reveal any significant trends. However, some of the statistics can be used to indicate rates of birth, death, marriage and so forth.

RETAIL SERVICES

	Employment			Sales ($000's)	Number of Outlets	%Change Employment	%Change Sales	%Change Outlets
	Male	Female	Total					
1971	106	87	193	8221	36			
1972	131	89	220	11038	44	14	34	22
1973	142	105	247	13333	53	12	21	26
1974	181	176	357	23581	58	45	77	9
1975	283	196	479	43552	68	34	85	17
1976	375	332	707	74256	91	48	70	34

COMMERCIAL SERVICES

	Employment			Sales ($000's)	Number of Outlets	%Change Employment	%Change Sales	%Change Outlets
	Male	Female	Total					
1971	24	38	62	985	12			
1972	29	50	79	1342	16	27	36	33
1973	44	67	111	1831	18	41	36	13
1974	35	76	111	2066	19	-	13	6
1975	58	111	169	3289	21	52	59	11
1976	85	114	199	5355	36	18	63	71

Source: Alberta Bureau of Statistics, Retail and Service Statistics, 1971 - 1976
Alberta Treasury.

A new methodology to collect retail and service statistcs was undertaken in 1971; hence, previous data are not comparable. Nonetheless, the data collected since 1971 provide a useful benchmark for examining changes and trends in the commercial sector. These data underscore the continuing growth of Fort McMurray's commercial sector as measured by the number of people employed, total sales and number of outlets. This sector not only continues to employ a significant proportion of the total labour force - approximately 10%, but also generates a large volume of trade activity.

MUNICIPAL BUDGET (000's)

	Total Revenue	Total Expenditure	Operating Surplus/ Deficit	%Change Revenue	%Change Expenditure	Total Taxes	%Revenue from Taxes
1965	182	207	-24	-	-	143	79
1966	295	350	-55	62	69	217	73
1967	499	543	-44	69	55	385	77
1968	835	846	-11	67	56	637	76
1969	1078	1007	+71	29	19	765	71
1970	1243	1143	+101	15	13	859	69
1971	1400	1388	+12	13	21	908	65
1972	1772	1663	+108	27	45	1160	65
1973	2117	2162	-37	19	30	1384	65
1974	3184	3404	-220	50	57	2001	63
1975	5304	5294	+11	67	56	3278	62
1976	8253	8327	-71	56	57	4784	58

Source: Alberta Municipal Affairs, Municipal Statistics - 1965 to 1976, Government of Alberta.

Total revenues and expenditures continue to increase at a rapid rate, though both annual changes and operating surpluses/deficits fluctuate markedly. Taxes, as a proportion of revenue, are declining steadily, indicating other or new sources of revenue are being used to balance municipal spending.

ALCOHOL SALES (000's)

Year	Liquor	Beer	Total	%Liquor	%Beer	% Change (Total)	Per Capita Sales
1965	142	63	205[2]	69.3	30.7	-	114
1966	317	153	470	67.6	32.4	129.3	187
1967	451	244	695	65.0	35.0	48.1	205
1968	436	216	652	66.9	33.1	-6.2	130
1969	438	197	635	69.0	31.0	-2.6	107
1970	423	174	597	70.9	29.1	-6.0	97
1971	493	191	684	72.1	27.9	14.6	102
1972	635	218	853	74.4	25.6	24.7	119
1973	779	236	1,015	76.7	23.3	19.0	125
1974	1,017	290	1,307	77.8	22.2	28.8	137
1975	1,669	442	2,111	79.0	21.0	61.5	158
1976	2,696	805	3,501	77.0	23.0	65.8	229
1977	4,032	1,162	5,194	77.6	22.4	48.3	255

2. 1965 was the initial year of operation but was not a full year of operation. Hence, the relatively low volume of sales in 1965 and the large % increase between 1965 and 1966.

Source: The Alberta Liquor Control Board, Annual Reports - 42 to 53, Government of Alberta.

Since 1971, and during the last three years in particular, liquor sales have steadily increased. More importantly, since 1971, per capita expenditure on alcohol has climbed from $97 to $255 an increase of 163%. The ratio of beer to alcohol sales has also declined but this may reflect more rapid increases in the price of the latter and not a proportional decline in beer consumption.

EDUCATION

Social statistics relating to education such as enrollment, graduation, retention/dropout rate by level, age, and sex as well as teacher to student ratio by level and teacher turnover rate are available through the local schools and School Board. In addition, the highest level of schooling completed for the non-school population by age and sex is also available from the Census of Canada. These data have not been obtained for this report, but will be collected during Phase 2 of the present study.

CRIME, JUSTICE, AND PUBLIC SAFETY

Data relating to crime, justice and public safety, though available, are not useful because of changes in the methodology and accounting system. Four changes have occurred between 1966 and 1976; the lack of continuity resulting from different methods of data collection and accounting precludes data comparison on an annual basis and between municipalities. Resolution of these problems may be overcome, in part, by collecting data from the RCMP in Fort McMurray rather than from the conventional source of Statistics Canada. Social statistics such as criminal offence rate by type, age and sex, vehicular accident rate, police per capita, and so forth will be included in Phase 2.

HEALTH

Social statistics in the health field relating to services and facilities, for example, hospital beds, by type (and per capita), doctors and nurses (and per capita), patient days by cause, age and sex, and hospital admission rate, could not be obtained for this report. Obtaining these data will require an uncertain waiting period for the information request to clear "proper channels" and the information will have to be collected as a part of Phase 2.

Other data inputs in the health field that relate to vital statistics, for example, infant and proportional mortality rates, death rates by age, sex, and cause, and birth rates, have not been calculated in the present report. Rather the various statistics have been presented and rates will be included in the report for Phase 2.

SOURCES

I. 1961 Census of Canada
Alberta Bureau of Statistics
Alberta Enumeration Area Printouts

1. Population by Specified Age Groups and Sex, p. 2428.
2. Marital Status, p. 2428.
3. Households by number of Persons, p. 1285
4. Families by Number of Persons, p. 589.
5. Families by Number of Unmarried Children, p. 595.
6. Labour Force by Industry Division and Sex, p. 414
7. Labour Force by Class of Worker and Wage Earner by Earner, p. 2006.

II. 1966 Census of Canada
Alberta Bureau of Statistics
Alberta Enumeration Area Printouts

8. Population by Specified Age Groups and Sex, p. 2253.
9. Population by Marital Status and Sex, p. 2253.
10. Families by Marital Status and Sex of Head, p. 63.
11. Households by Number of Persons, p. 1189.
12. Households by Number of Families, p. 1189.
13. Families by Number of Persons, p. 1241.
14. Families by Number of Unmarried Children, p. 1241.
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