A CONCEPTUAL MODEL FOR STUDY OF IMPACTS OF OIL SANDS DEVELOPMENT IN THE FORT MCMURRAY AREA

by

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CONTENTS

MANAGEMENT SUMMARY

This document is the interim report of a study entitled, "A Conceptual Model for Study of Impacts of Oil Sands Development in the Fort McMurray Area".

The fundamental objectives to which the present report is addressed are as follows: develop an overall planning/policy information framework that will serve to identify the indicators and variables for which data need to be obtained in order to provide the necessary informational support for planning and policy development initiatives with respect to the oil sands region; to design a methodology for soliciting information from departments and agencies of the Alberta government with respect to their information requirements relating to planning and policy activities in relationship to the oil sands development region; to assess the results of existing research studies to determine to what extent they contain information useful to the above stated objectives.

The data used in this report are as follows: eleven research reports completed by the Alberta Oil Sands Environmental Research Program (hereinafter referred to as AOSERP); thirty-six other reports and documents pertaining to the oil sands development region; terms of reference for eight AOSERP studies currently underway; sixteen personal interviews with representatives of the provincial government, municipal govern-

of the departments in question, the types of information required by these departments and the priorities assigned to different types of information, and the specific areas within the oil sands development region for which information is required. The survey methodology has been designed so the results of the survey may be related back to the planning/policy information framework.

The report also contains general review and assessment comments with respect to the AOSERP research reports and other research reports and documentary material considered up to this point in the study.

Initial design specifications are set forward in this report for the proposed statistical compendium study and the study of social impacts. The proposed compendium study is viewed as an opportunity to assemble and integrate strategically selected basic statistical information not presently available in the outputs of other research studies. In addition, it is proposed that the compendium study be used as an opportunity to assess the feasibility of making statistical projections in various indicator areas related to the oil sands development region and also to identify the requirements for developing an ongoing socio-economic monitoring capability with respect to the area. The social impact study is viewed as an opportunity to develop general models of the socio-economic impact process as it relates to resource development. Such a model can make an important contribution to the development of a more pro-active approach to

planning and policy development in those parts of the oil sands region where developments are yet to commence or are in the early start-up phases.

This report identifies an overall plan in terms of which the present study is linked to other components of the AOSERP research process.

The report concludes with a set of interim recommendations.

I. INTRODUCTION

This document is the interim report of a study entitled, "A Conceptual Model for Study of Impacts of Oil Sands Development on People in the Fort McMurray Area". In addition to the preceding management summary and this introduction, the report contains nine major sections. Section II outlines the data and methods used in the production of this report. Section III sets forward a general planning/policy information framework for identifying and organizing indicators and variables relevant to the analysis of and planning for the socio-economic impacts of oil sands development activity. Section IV discusses methods for surveying the information requirements of agencies having an interest in the oil sands development area and sets forward a draft version of the survey instrument designed to fulfill this objective. Section V and Section VI provide some general comments on the results of our assessment of a number of AOSERP research reports and other research reports. These reports and related documentary material were examined as background to developing the planning/policy information framework and the overall direction of this study. Section VII and Section VIII set forward preliminary directions for the intended statistical compendium study and the overall study of the social impacts of oil sands development. Section IX of this report identifies the work remaining to be done in the second phase of the present study and the time requirements associated with these various functions yet

to be performed. The final section of the report identifies, for discussion purposes, a number of interim recommendations.

The overall objectives for this study are nine in number and are set forward below.

Overall Objectives

1. Define the problem of impacts of oil sands development on human environment in the study area, in conceptual and pragmatic terms.
2. On the basis of relevant literature, theoretical considerations, and of research priorities specified by HSSAC and by other interested agencies not represented on HSSAC, define the information needs and research objectives pertinent to the study of impacts of oil sands development on the human environment.
3. Develop an overall plan for the achievement of these objectives.
4. Identify and define key indicator areas, their interrelationships, and rationalize their inclusion into the study of impacts.
5. Identify and classify the variables that should be considered within each of the key indicator areas.
6. Determine the researchability of the variables involved in each indicator area.
7. Identify proper research methods and the appropriate research management strategy to obtain the information required.

8. Develop plans for the integration of information to be obtained.
9. Present the above work in a form pertinent to the planning requirements of interested agencies.

For the purposes of the completion of the first phase of the study, a number of interim objectives were established. These interim objectives are six in number and are described below. Detail is also provided on the particular sections of the report where these interim objectives are explored and the relationship that obtains between the interim objectives and the overall objectives of the study.

Interim Objectives

1. Gather and analyze information from a number of sources in order to develop a preliminary framework of variables and indicator areas pertinent to the analysis of and development of planning and policy responses to the socio-economic impacts of oil sands development. The information sources include interviews, documentary analyses, and survey pre-tests as described in Section II below.(This interim objective is dealt with in Sections II and III of the present report and addresses in part overall objectives 1, 2, 4 and 5.
2. Design a survey to obtain data on the information requirements for planning and policy development initiatives

by agencies having an interest in the oil sands development area. (This interim objective is dealt with in Section IV of this report and addresses in part overall objectives 2 and 7).

3. Develop plans for the integration of the major sub-components of the present study, that is: the conceptual framework of relevant indicators and variables; the planning information needs of departments/agencies with interests in the oil sands development areas; and the information pertinent to the above available from currently available or forthcoming AOSERP research outputs. (This interim objective is dealt with in Sections III, IV and IX of this report and addresses in part overall objectives 3 and 8).
4. Propose directions to be taken by the forthcoming compendium and social impact studies. (This interim objective is dealt with in Sections VII and VIII of this report and addresses in part overall objectives 3, 6, 7 and 8).
5. Develop plans for the integration of the present study with other AOSERP studies. (This is dealt with at various points in this report and particularly in Section IX; this interim objective addresses in part overall objectives 3 and 8).
6. Delineate the tasks (and associated time requirements) to be completed in the second phase of the present study. (This interim objective is dealt with in Section IX of this report).

Finally, by way of general background orientation two reference maps are provided below. The first of these identifies the boundaries of the AOSERP study area and the peripheral area boundary. The second map is of the community of Fort McMurray.

EXHIBIT 1:1

Map of AOSERP Study Area

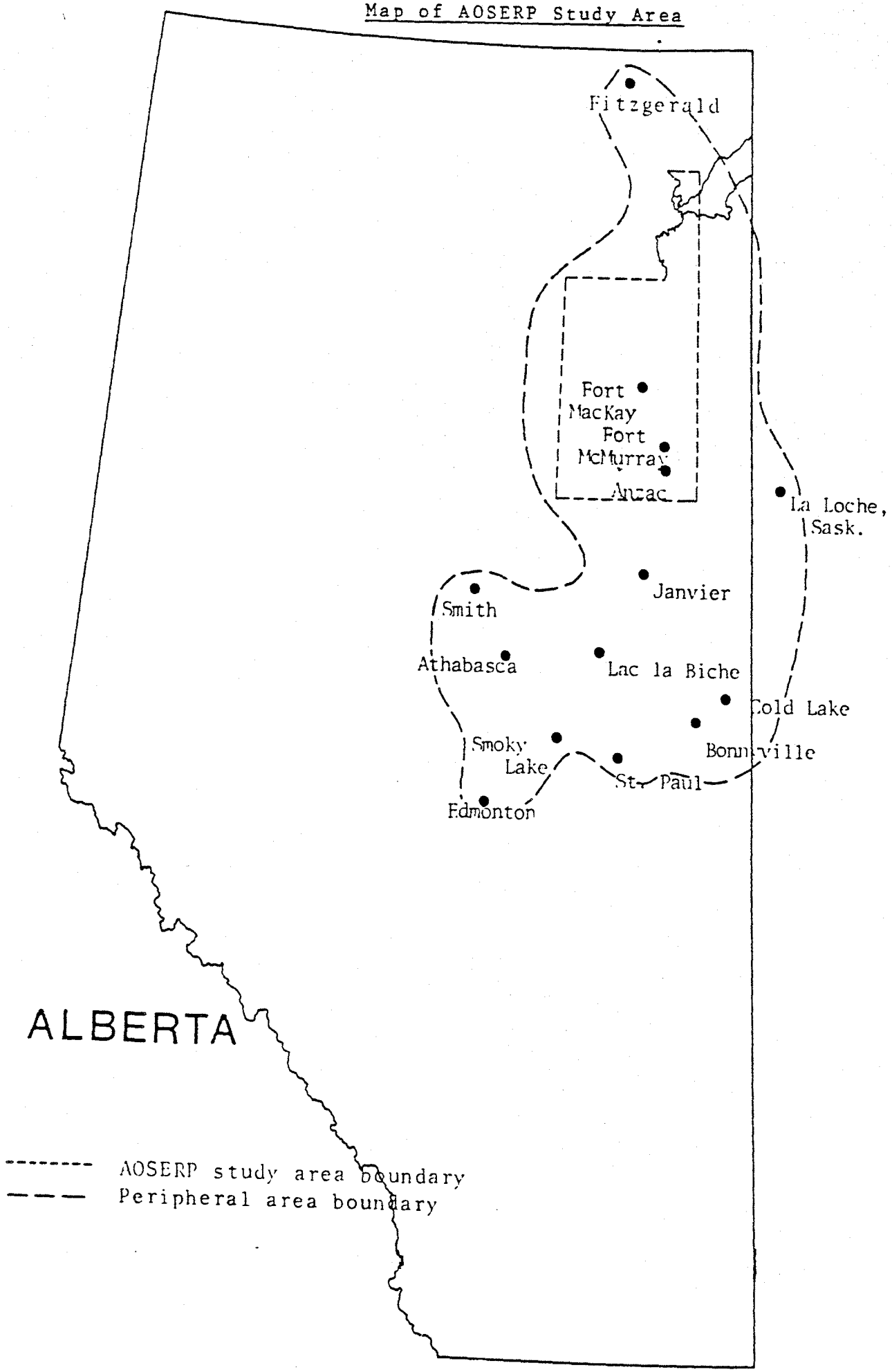
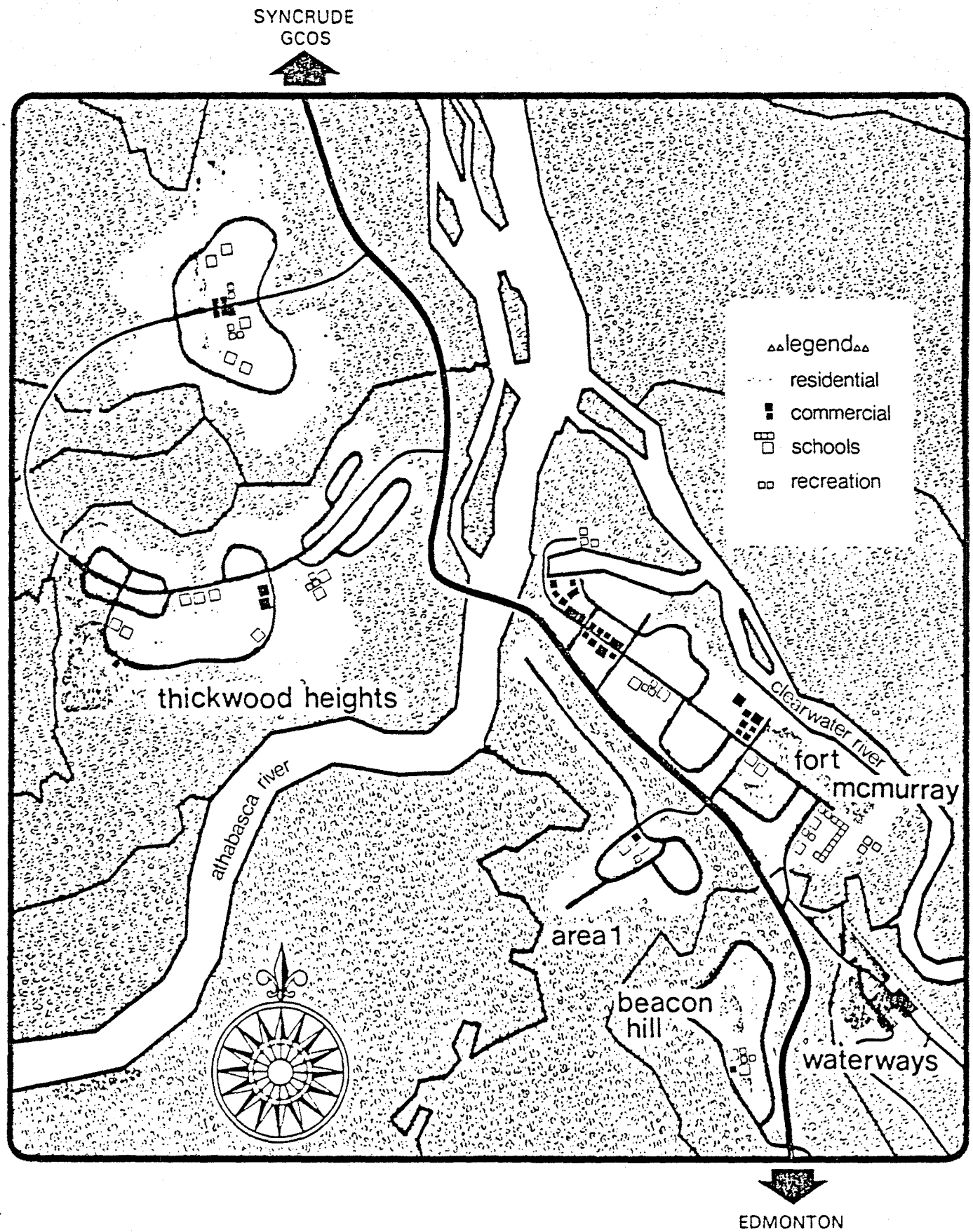


EXHIBIT 1:2

Map of Fort McMurray



FORT McMURRAY

Source: Alberta Energy and Natural Resources, "The Alberta Oil Sands", July 1977, p. 14

II. DATA AND METHODS: INTERIM REPORT

Four methods were used to obtain the data discussed in this report: documentary analysis; personal interviews; observations; a pre-test of a survey method. Each of these is now described in greater detail.

Documentary Analysis

A number of reports of earlier research and other documents were assessed for the purposes of meeting the objectives we have set for this interim report. As a starting point, we examined and assessed eleven research reports which have been prepared under the auspices of the AOSERP. Exhibit 2:1 below provides the bibliographic detail on these reports. In addition, in Section V of this report some evaluative comments are presented with respect to certain of these reports.

It became evident at an early stage in this study that other data sources and research activities, relating to jurisdictions other than AOSERP, represented pertinent background to the present study. These other sources, identified in the course of the personal interviews discussed below and as a result of bibliographic searches,[1] were also followed up and evaluated. Exhibit 2:2 below provides bibliographic details on the thirty six additional reports or documents examined. In addition, Section VI of this report sets forward various evaluative comments

EXHIBIT 2:1

Alberta Oil Sands Environmental Research Program: Completed Research Reports Consulted

1. Earle Berger Ltd.
   Summary Report on Proposed Research Design: The Study of Human Adjustment in Fort McMurray

2. Earle Berger Ltd.
   Longitudinal Study of Personal Adjustment and Social Conditions in the Fort McMurray Area, Volumes 1 & 2

3. Canadian Institute for Research
   Native Employment in Alberta's Athabasca Oil Sands Region

4. Dev-Cor Technical Services
   Training and Employing Indigenous Workers in AOSERP: A Conceptual Scheme and Proposal

5. H. L. Johnson
   An Exploratory Study on "Deviance" in the Athabasca Oil Sands Area

6. Lyle E. Larson
   The Impact of Resource Development on Individual and Family Well-being

7. Wayne W. McVey
   Structure of a Traditional Baseline Data System

8. Peter C. Nichols & Associates
   Overview of Local Economic Development in the Athabasca Oil Sands Region Since 1961

9. James M. Parker
   History of Socio-economic Developments in the Athabasca Oil Sands Region Between 1890 and 1960

10. E. Snider
    Development of a Theoretical Social Indicators Model: A Feasibility Study

11. Edward W. Van Dyke, Carmen Loberg
    Community Studies: Fort McMurray, Anzac, Fort MacKay

EXHIBIT 2:2

Other Reports/Documents Consulted

1. Conservation and Utilization Committee, Government of Alberta

   Fort McMurray: Athabasca Tar Sands Development Strategy August 1972

2. Alberta Oil Sands Environmental Research Program

   First Annual Report - 1975

3. Syncrude Canada Ltd.

   A Rationale for Native Training and Counselling Programs 1975

4. Alberta Bureau of Statistics

   Alberta Statistical Review Annual - 1975 1975

5. Ekistic Design Consultants Ltd.

   An Examination of Urban Growth Alternatives in the Northeast Alberta Region April 1975

6. Graham Brown & Associates Ltd.

   Fort McMurray: A Study of the Criminal Justice Services Needs May 12, 1975

7. Alberta Education

   Alberta North Needs Assessment Task Force June 1975

8. Alberta Bureau of Statistics

   Population Projections Alberta: 1972-1985 August 1975

9. Alberta Oil Sands Environmental Research Program

   Second Annual Report, 1976-77

10. Alberta Advanced Education and Manpower

    Employment Multiplier for Fort McMurray February 1976

11. International City Management Association, Annual Conference, Toronto, 1976

    Transcript of a Session on Boom Town Management September 1976

12. Professional Environmental Recreation Consultants Ltd.

A Five Year Parks and Recreation Master Plan: A Report to the New Town of Fort McMurray
October 1976

13. Syncrude Canada Ltd.

Socio-economic Impact Assessment: A Strategy for Planning
1977

14. Alberta Oil Sands Environmental Research Program

Canada-Alberta Agreement for the Alberta Oil Sands Environmental Research Program: Amended - September 1977 1977

15. Alberta Bureau of Statistics

Retail and Service Trade Statistics, 1975
March 1977

16. Alberta Bureau of Statistics

Alberta Statistical Review - July 1977
July 1977

17. Alberta Environment

Community Impact Assessment Guideline for Use in Preparing Environmental Impact Assessments
October 10, 1977

18. Alberta Oil Sands Environmental Research Program

Alberta Oil Sands Environmental Research Program: Policy and Direction November 1977

19. Resources Management Consultants (Alberta) Ltd.

Draft Final Environmental Impact Assessment for Imperial Oil Limited Cold Lake Project: Volume II; Socio-economic Impact Assessment 1978

20. Alberta Bureau of Statistics

Retail and Service Trade Statistics, 1976
February 1978

21. Northeast Alberta Regional Commission

A Preliminary Plan for Regional Development in Northeast Alberta February 1978

22. Alberta Business Development and Tourism

Industry and Resources 1978-79 April 1978

23. Alberta Environment

Government Review Report: Cold Lake - Imperial Oil Ltd. Preliminary E.I.A. June 1978

24. Co-West Associates

Social Planning Implications for Health and Social Service: Northeast Alberta Region July 1978

25. Applied Research Associates Ltd.

Lives in Transition: The Fort McMurray Case July 1, 1978

26. Alberta Advanced Education and Manpower

In-Migration to Census Division 12, Alberta; January 1977 - June 1978 July 1978

27. Alberta Bureau of Statistics

Principal Manufacturing Statistics; Alberta 1975 July 1978

28. Alberta Advanced Education and Manpower

Construction Manpower Implications of Scheduling Alternatives for Future Oil Sands Developments August 1978

29. Alberta Advanced Education and Manpower

Recent Demographic Growth in Alberta October 1978

30. Northeast Alberta Regional Commission

Urban Alternatives - Northeast Alberta, October 1978

31. Syncrude Canada Ltd.

Environmental Impact Assessment: Mildred Lake Project; Volume C, Socio-economic Aspects November 1978

32. Hobart, Walsh & Associate Consultants Ltd.
Quest Consultants Ltd.

Regional Socio-economic Impact Assessment; Volume I - Summary December 1978

33. Fort McMurray Planning Team

Quarterly Housing Report in Fort McMurray
December 1978

34. Alberta Environment

A Bibliography of the Athabasca Oil Sands Fort McMurray, Alberta Area: Socio-economic and Environmental Studies 1979

35. Alberta Advanced Education and Manpower

Population Projections for the Cold Lake Region 1976-1986 January 1979

36. Hobart, Walsh & Associate Consultants Ltd.
Quest Consultants Ltd.

Regional Socio-economic Impact Assessment; Volume II
January 1979

with respect to certain of these other documents and reports.

Finally, with respect to documentary analysis, the AOSERP terms of reference for eight studies that are currently underway were also reviewed. The details on the terms of reference for these current studies are provided in Exhibit 2:3 below.

Interviews

Personal interviews were carried out with sixteen individuals representing Syncrude Canada Ltd., various departments or agencies of the Alberta provincial government, and the New Town of Fort McMurray. Three of these respondents were interviewed twice. The interviews were intended to be exploratory and to provide data that would be useful in developing the framework of the present study. In general, the interviews contributed effectively to this objective. In addition, the interviews served to identify a number of themes that were commented upon by different respondents. These themes are set forward below in point form.

- Economic outlook studies should be prepared for each of the oil sands development sites.
- The interviews made clear that basic demographic information, both current and projected, is fundamental to the information needs and planning intentions of a large number of agencies concerned with development in the oil sands region. A high priority

EXHIBIT 2:3

Alberta Oil Sands Environmental Research Program: Terms of Reference Documentation Consulted

1. Development of the Commercial Sector in the Athabasca Oil Sands Region

2. Service Delivery in the Athabasca Oil Sands Region Since 1961

3. A Study of Human Adjustment in the Fort McMurray Area

4. Integration of Native Workers into the Industrial Labour Force in the Athabasca Oil Sands Region

5. The Impact of Construction Camps on People in the Athabasca Oil Sands Region

6. Review of the State of Knowledge on the Influence of Perceptions of Biophysical Environment on Human Behaviour in the Athabasca Oil Sands Region

7. Environmental Health in the Athabasca Oil Sands Region

8. Human Ecology in the AOSERP Study Area

should be assigned to the generation of such demographic information in a form pertinent to the planning and policy development process.

- Many of the ratios developed for planning purposes (e.g., social worker to population ratios, physician to population ratios, etc.) may well not be transferable to communities being affected by the impacts of resource development. For example, the reporting of low utilization rates in a community such as Fort McMurray with respect to a range of social services may indicate problems of alienation rather than a lack of need.
- Much of the research commissioned by AOSERP is regarded as interesting but there is a residual feeling that this research effort still requires additional focus if it is to be of maximum usefulness in its application to policy and planning concerns.
- The feeling was expressed that there is a need to create more effective means for reporting back results of commissioned research to the Human Systems Steering Committee in order that the Committee may play a more active role in identifying the policy and planning applications of the commissioned research.

- A number of respondents felt that it should be possible and would in fact be desirable to develop general models of the social impacts of resource development based on the Fort McMurray experience.
- Discussions with municipal officials made it clear that there is need to bring about greater involvement of local officials in the establishment of research priorities. More adequate formal mechanisms of consultation betwen provincial and municipal officials should be developed.
- A collorary of the above opinion was that the results of research on the socio-economic impacts of resource development seldom make their way down to the municipal level and, when they do, are often expressed or formulated in a form that minimizes their usefulness to such officials.
- Representatives of a department of the Alberta government engaged in broad trend analysis (population patterns, labour force trends, etc.) expressed the view that focussed work on communities such as Fort McMurray could result in a more adequate specification of the underlying causal mechanisms of large scale trends and could also result in a fine tuning of the planning and policy development process.
- The view was expressed that it would be important to link the results and implications of the AOSERP

research program to the attainment of larger scale provincial economic objectives. It was suggested that this approach would be a necessary precursor to the acceptance of AOSERP's research findings into the planning and policy development process.

- There is a need for a more systematically organized inter-department approach to oil sands impact assessment and related planning. The view was put forward that there is presently a cadre of individuals across various departments interested in the issues but lacking formal mechanisms to coordinate their efforts.
- Nonwithstanding the benefits of studies in a community such as Fort McMurray, as referred to above, AOSERP should extend its mandate to include examination of the socio-economic impact of oil sands development in other communities.
- AOSERP should carefully assess the types of variables that are being examined in its wide ranging research program to ensure that these variables are proper targets for public policy intervention. The view was expressed that household level variables may not in fact represent the most appropriate target level for public policy intervention.

Observations

Two field trips were made to Fort McMurray on January 11 and March 6, 1979. A field trip was also made to Fort MacKay on January 11. The principal purpose of these trips was to carry out interviews, however they also afforded an opportunity to gain, in addition to the interview data, impressionistic data on the physical and social organization of the communities in question. Although impossible to quantify, these impressions have proven generally useful in the analysis and organization of a diverse range of documentary and interview data.

Survey Pre-Tests

One of the major objectives of the present study is to obtain information that will be useful to the policy and planning concerns of agencies having an interest in the oil sands development area. The first task, then, was to determine whether or not such departments or agencies would be able to identify and formulate such information or "need to know" requirements.

Some data on such "need to know" requirements had been gathered by Earl Berger Ltd. in the report entitled "Longitudinal Study of Personal Adjustment and Social Conditions in the Fort McMurray Area".[2] A review of this material was carried out but the information on "need to know" requirements was not deemed to be very useful for a

Manpower, the Department of the Attorney General, and the Department of Social Services and Community Health. In addition to material gathered in the course of the interviews, the representatives of the Northeast Alberta Regional Commission and the Department of the Attorney General provided us with written "need to know" requirements statements. This information, both interview and documentary, proved helpful in the design of the information requirements survey described in Section IV of this report.

FOOTNOTES

1. The bibliographic searches included the following: an examination of the KWIK index in the office of the Northeast Alberta Regional Commission in Fort McMurray; a search of the subject index at the library of Alberta Environment in Edmonton; an examination of reports and documents collected by the Office of the Town Manager of the New Town of Fort McMurray; an examination of "A Bibliography of the Athabasca Oil Sands Fort McMurray, Alberta Area", Alberta Environment, 1979.

2. Earl Berger Ltd., "Longitudinal Study of Personal Adjustment and Social Conditions in the Fort McMurray Area", A Report prepared for the Alberta Oil Sands Environmental Research Program, Vol. 1, August 1978, pp. 1-6 to 1-8.

III. DEVELOPMENT OF A PLANNING/POLICY INFORMATION FRAMEWORK

Our evaluation of the feasibility of an information requirements survey (described in greater detail in the next section) has led us to conclude that this procedure can be used to gather reasonably detailed and prioritized data from departments and agencies of the Alberta government with respect to their information needs related to planning and policy development initiatives in the oil sands development area.

Some of these information requirements will have already been addressed in already completed AOSERP research studies. Other requirements are being addressed in AOSERP projects currently underway. A general planning/policy information framework needs to be developed in order to provide a set of reference points for the comparison and analysis of various types of information requirements with information already available, or becoming available, as a result of the AOSERP research process.

Such a planning/policy information framework serves other functions as well. The framework should serve to identify the full range of variables or indicator areas that have to be taken into account in analyzing and developing planning and policy responses to the socio-economic impacts of oil sands development. In this sense, such a framework not only provides a structure within which to compare and analyze information needs and AOSERP

outputs, it should also serve to delineate, as fully as possible, the range of planning/policy variables or information elements. In this sense, the planning/policy information framework becomes a means of identifying areas of concern which have not been identified in the course of the information requirements survey or the assessment and analysis of AOSERP research outputs.

The planning/policy information framework should also provide a means for beginning to explore the relationships among different variables or indicator areas and for examining the relationship between baseline and future (projected) information requirements.

The organization and content of such a planning/policy framework can assume a number of different forms, with some forms being more pertinent than others to making optimal use of the framework as outlined above. The planning/policy information framework set forward below in Exhibits 3:2 to 3:7 does not claim to include all the variables or indicator areas relevant to analysis and assessment of the socio-economic impact process. In fact, it is one of the objectives of the present study to continue to refine the framework and to optimize its utility as a source of guidelines for the design of the future study of social impacts in the oil sands development area.

The form of the planning/policy information framework set forward below was arrived at after a number of steps

in the data gathering and data evaluation process. These steps included the examination of AOSERP reports and Terms of Reference (Exhibits 2:1 and 2:3) and the examination of other relevant reports and documents (Exhibit 2:2). The development of the framework also proceeded in the light of information obtained from the interviews conducted and by the written and oral input obtained from representatives of various departments and agencies with respect to "need to know" requirements. Other literature, dealing with the theory and methods of social indicators analysis and social impact assessment were also consulted.[1] Both theoretical and pragmatic criteria were brought to the organization of the framework, but ultimately variables or indicator areas were retained if there appeared to be some reasonable expectation that data on the variables or indicator areas could in fact be obtained and, in addition, that the variable or indicator areas appeared to bear a realistic relationship to the planning/policy development process.

We now make some general comments on the form and uses of the framework and then go on to discuss some aspects of the sub-components in greater detail.

General Form and Use of the Framework

First, it needs to be re-emphasized that the framework will be subjected to further development and evaluation in the course of the study. The five major sub-components of

the framework are considered to represent important substantive dimensions of the socio-economic impacts of oil sands development. However, it is conceivable that, as the study progresses, additional substantive areas may be added or variables within substantive areas deleted, revised or newly introduced. The five sub-components of the framework are:

1. Population
2. Employment and Labour Force
3. Housing
4. Social Services
5. Physical Services and Regional Infrastructure

The framework is also intended to provide an approach to clarifying the relationship between baseline and future or projected data relating to the socio-economic impacts of the oil sands development process. Some baseline data provide basic points of reference against which to measure changes but do not serve as foundations for the development of projections. In other instances, baseline data can serve both as a reference point and as a foundation for projections. This distinction is reflected in the organization of the framework.

Also, if it is desirable to attempt to project certain patterns into the future - and frequently it is desirable - it then becomes of great importance that the timeframes of such projections be linked to stages in the develop-

ment process which are substantively meaningful in terms of emergent planning and policy development requirements. There are various approaches to the conceptualization of the stages of development in resource towns. Riffel, for example, (see Exhibit 3:1 below) offers a seven stage model with stage specific descriptions of economic, demographic and social characteristics.[2] This approach is useful enough as an exercise in conceptual organization, however, if one wants to develop projected data series for the purpose of anticipating planning and policy development requirements it then becomes necessary to be more specific about the timing of stages and more operationally specific in the definition of the variables or indicator areas which serve to conceptualize the processes of economic, demographic and social change.

It is our view that planning and policy development, particularly in the social sectors, is frequently carried out in an environment of data gaps, problems of data comparability, and the necessity of working with approximations. It is for this reason that we are skeptical about the value of starting a study such as this with elaborate conceptual frameworks. Rather, the conceptual base of the study - the planning/policy information framework as it is called here - should be straightforward, oriented toward planning and policy needs and provide a realistic set of criteria against which to evaluate presently available data or to plan for the gathering of

EXHIBIT 3:1

Stages and Characteristics of Resource Town Development

Stage	Economic characteristics	Demographic characteristics	Social characteristics
Natural or prediscovery	No economic activity or only hunting and fishing by native peoples.	No population or only small bands of native peoples.	Unpopulated or small, isolated native communities in limited contact with white society.
Prospecting to survey	Short term activity. Money spent "outside". Traditional native economy persists, with some trade with whites.	Short term, summer residents Young men, no women. If there originally, native people in the majority.	Isolated. Usually, access by air only. Shack towns without amenities. Some contact with native peoples.
Industrial and town construction	The first boom period. Mushrooming economic activity. Natives may be employed.	Mostly single men. Some young workers with families. Very high turnover rates. Native in minority; only stable group in population.	Isolated, but easier access to outside. Trailer towns with basic amenities, and "pub". Signs of social problems among native peoples.
Industrial operation and community improvement	Shift in construction from industrial to residential and commercial. More money spent in town. Falling off in employment of natives.	Slowing rate of turnover. Increasing number of married workers. Native peoples a small minority.	Improvement of housing and community facilities. Completion of roads and communications services. Reduced social problems among whites; increased among natives.
Industrial and community operation	Construction over. Services established. Much of labour skilled. Few natives employed.	Turnover rates reduced to 60%. Young married workers in majority.	Amenities well developed. Few social problems among whites, but boredom among wives. Natives on welfare. Marked stratification.
Community diversification	Stabilization of industry. Expansion of other services, especially government. Small manufacturing.	Labour turnover stabilizes at 35%. Young marrieds in majority.	Employment for wives available. Special programs created, largely for native people.
Community maturity	Diversified economic base. Limited opportunities for expansion.	Balanced population structure in terms of age and sex. Low rates of turnover.	Sense of community and belongingness. Whites and natives on welfare. Less racial tension.

Source: As reproduced in B.M. Kasinska-Banas, "An Approach to Social Impact Research in the Athabasca Oil Sands Region", Expanded version of a paper delivered at the First Canadian Symposium on Social Impact Assessment, Banff, Alberta, December 1, 1978, following page 8.

further data in the future.

It is in the light of considerations such as this that we have selected a relatively simple, four stage description of the development process: exploration; development; operational; post-operational.[3] As this study proceeds, we will assess the usefulness of this four stage approach. In addition, we will assess the feasibility of estimating timeframes for the stages of development and the feasibility of developing projections for various of the variables or indicator areas contained in the framework. This process should serve to further several objectives including:

- more explicitly linking available data or required data to the planning and policy development process in both current and future oriented terms
- clarifying the relationship between base-line requirements and projection require-ments
- assessing the feasibility of developing forecasts
- developing general models of the social impacts of oil sands development which can be further evaluated and quantified in the social impact study and ultimately guide the planning and policy development process as it relates to future oil sands projects.

A further objective is to develop ways and means for the more effective use of qualitative data in conjunction with quantitative data for addressing the information needs of planners and policy makers. A number of AOSERP reports present information which is qualitative in character and it is not always clear from the reports how this information may be effectively used in the planning and policy development process. In fact, qualitative data can be most useful in developing and evaluating the assumptions which invariably underlie any exercise in projection or forecasting. In addition, qualitative data can provide important insights to underlying causal mechanisms or patterns which are not always readily discernable from quantitative data.

We believe that the optimal use of qualitative data, from the planning and policy perspective, can be made if the variables and indicator areas amenable to quantification are organized in terms of an information framework. As the planning and policy applications of these data are assessed, in both current and future oriented terms, findings of a qualitative nature can then be introduced into the analysis in order to both deepen and broaden the interpretive process. The application of qualitative data in this type of framework mitigates against the risks of using such data in unsupported ways.

Some more specific comments are now made with respect to the various sub-components of the planning/policy information framework.

The Sub-Components

The indicator areas or variables set forward below under each of the five major sub-components of the planning/policy information framework are all amenable to expression in quantitative terms. This is consistent with our view that quantitative data should form the foundation of the framework and that, where appropriate, qualitative forms of data can be introduced and related to the quantitative base.

As far as possible, the variables comprising the various sub-components are mutually exclusive. In some closely aligned areas, such as population and the labour force, minor degrees of overlap are inevitable. For several of the variables, a number of cross-classifications have been proposed. For example: occupational composition by age, sex, native/non-native. Certain of these cross-classifications may not be available, but for the purposes of establishing the outside possibilities of the framework they have been specified.

Data obtained in the interview and from the review of a wide range of documentary material has made clear that demographic information, both current and projected, is a fundamental requirement for a wide range of planning and policy development concerns with respect to oil sands development. In other parts of the framework, in particular the sub-components dealing with employment/labour force patterns and social services, variables are sub-

specified by demographic factors. The development of current and projected information on the various demographic variables identified in the population sub-component of the framework provides the type of population trend information required to interpret the planning and policy development requirements implied by relationships identified elsewhere in the framework such as, for example, information on the relationship between social service utilization patterns and demographic factors.

Section VII below deals in further detail with the steps to be taken in assembling and integrating certain aspects of the empirical data requirements implied by the framework.

Conclusions

The information framework approach outlined above can be used to organize and integrate existing data and to identify data requirements and appropriate methods for meeting such requirements. The information framework approach should be viewed as a working approach, not a product but rather a process which changes and develops over time in interaction with the requirements of the planning and policy development process. The availability of an information framework allows greater integration and application of diverse research results. It also allows, at the level of policy development, a more informed and pro-active approach to such critical negotiating areas

as the setting of responsibilities and cost sharing arrangements among levels of government and among government and the private sector with respect to the development and delivery of various programs designed to ameliorate the socio-economic impacts of oil sands development. In addition, the integration and assessment of data resources in terms of an information framework permits a more critical examination of the assumed ratios which frequently form the basis for much social program decision making.

EXHIBIT 3:2

Population

VARIABLES	ACTUAL	PROJECTED			
	Baseline	Exploration	Development	Operational	Post-Operational
Total Numbers					
Age/Sex Profile					
Household Size and Composition					
Dependency Ratio					
Educational Composition by age, sex, occupation, native/non-native					
Occupational Composition by age, sex, native/non-native					
Ethnic Composition by age, sex, occupation					
Income Pattern by age, sex, occupation, native/non-native					
Migration Patterns by age, sex, occupation, native/non-native - In-migration					
- Out-migration					
- Inter-municipal					
- Inter-provincial					
- International					
Marital Status by age, sex, occupation					

EXHIBIT 3:3

Employment and Labour Force

VARIABLES	ACTUAL	PROJECTED			
	Baseline	Exploration	Development	Operational	Post-Operational
Existing Composition of Employment by occupation, education, age, sex, native/non-native					
New basic employment generated by occupation, education, age and sex					
New service employment by occupation, education, age and sex					
Income by occupation, education, age, sex, industry, native/non-native					
Cost of Living Index					
Labour demand impacts on labour pools in surrounding areas					
Impact of new base employment growth on required levels of commercial/retail and industrial support					
Labour supply requirements by occupation, education and industry					
Labour force participation rates by age, sex, occupation, education, native/non-native					

EXHIBIT 3:3 (continued)

Employment and Labour Force

VARIABLES	ACTUAL	PROJECTED			
	Baseline	Exploration	Development	Operational	Post-Operational
Labour turnover by occupation, education, industry, age, sex, native/non-native					
Union participation by occupation, education, industry, age, sex, native/non-native					
Unemployment rates by age, sex, education, occupation, industry, native/non-native					

EXHIBIT 3:4

Housing

VARIABLES	ACTUAL	PROJECTED			
	Baseline	Exploration	Development	Operational	Post-Operational
Composition of existing stock					
Length of Occupancy					
Vacancy Rate					
Tenure Pattern					
Property Values (standardized)					
Projected Housing Requirements (specific types and mix, by target groups)					
Cost Affordability Analysis by target groups					
Impact of Market Imbalancing Factors (e.g., Corporate Housing Subsidies)					

EXHIBIT 3:5

Social Services

VARIABLES	ACTUAL	PROJECTED			
	Baseline	Exploration	Development	Operational	Post-Operational
Education					
- Teacher manpower (in place/future requirements)					
- Physical plant					
- Cost factors					
- Participation rates by age					
- Teacher qualification by age and sex					
- Teacher/pupil ratios					
- Drop-out rates					
Health					
- Manpower profile (in place/future requirements)					
- Physical plant					
- Cost factors					
- Health professional/population ratios					
- Utilization rates by type of service by age and sex					
- Death rates					
- Absenteeism by age, sex, occupation and industry					

Social Services

VARIABLES	ACTUAL	PROJECTED			
	Baseline	Exploration	Development	Operational	Post-Operational
Counselling and Welfare Services - Manpower profile (in place/future requirements)					
- Physical plant					
- Cost factors					
- Utilization rates by type of service by age, sex, occupation, native/non-native					
Culture and Recreation - Manpower profile (in place/future requirements)					
- Physical plant					
- Cost factors					
- Utilization rates by type of service by age, sex and occupation					
Protection - Manpower profile (in place/future requirements)					
- Rolling stock					
- Physical plant					
Criminal Justice - Volume and type of offences by age, sex, occupation, industry, native/non-native					

EXHIBIT 3:5 (continued)

Social Services

VARIABLES	ACTUAL	PROJECTED			
	Baseline	Exploration	Development	Operational	Post-Operational
Criminal Justice - Patterns of disposition by age, sex, occupation, industry, native/non-native					
Municipal Administration - Manpower profile (in place/future requirements)					
- Physical plant					

EXHIBIT 3:6

Physical Services and Regional Infrastructure

VARIABLES	ACTUAL	PROJECTED			
	Baseline	Exploration	Development	Operational	Post-Operational
Sewage system capacity requirements					
Sewage system cost factors					
Water system capacity requirements					
Water system cost factors					
Serviced land requirements by type of use					
Serviced land cost factors by type of use					
Transportation requirements					
Transportation cost factors					
Energy requirements					
Energy cost factors					

FOOTNOTES

1. See, for example, the following: K. Finsterbusch and C.P. Wolf, "Methodology of Social Impact Assessment", Dowden, Hutchinson and Ross Inc.; Institute of Local Government, Queen's University, "Single-Enterprise Communities in Canada", Ottawa, 1953; Centre of Community Studies, University of Manitoba, "Nature and Purposes of Single-Enterprise Communities: First Annual Report", June, 1968; Rex A. Lucas, "Minetown, Milltown, Railtown", Toronto, University of Toronto Press, 1971; K.C. Land and S. Spilerman, "Social Indicator Models", New York, Russell Sage Foundation, 1975; W.E. Moore and E.B. Sheldon, "Indicators of Social Change", New York, Russell Sage Foundation, 1968; N. Pearson, "New Towns: The Canadian Experience", Guelph, University of Guelph, Centre for Resources Development, 1972; K.S. Wood, "An Approach to Social Reporting on the Canadian North", Halifax, Dalhousie University, Institute of Public Affairs, 1974.

2. J.A. Riffel, "Quality of Life in Resource Towns", Winnipeg, Centre for Settlement Studies, University of Manitoba, 1975.

3. This typology of the development process is set forward in "Socio-Economic Impact Assessment", Draft document prepared by the Northeast Alberta Regional Commission, August 29, 1977.

IV. ESTABLISHING INFORMATION REQUIREMENTS

In Section II of this report we discussed the various procedures we had followed in order to assess the feasibility of carrying out a survey of the information requirements for planning and policy development of various departments and agencies of the Alberta government having an interest in the oil sands development region.

The results of these procedures led us to conclude that such a survey of information requirements would in fact be feasible and desirable. In addition, the information we obtained from certain of the interviews and from written materials provided by representatives of various departments or agencies assisted us in arriving at what appears to be an appropriate design for the survey.

Exhibit 4:1 below sets forward the proposed instrumentation for the survey. The following comments provide greater detail on the rationale underlying this design.

As may be seen from Exhibit 4:1, the proposed instrument is organized into five major sections. The first of these serves to identify the respondent for correct departmental attribution of the results and follow-up if required.

The second section of the survey is designed to elicit information from the respondent as to what he or she sees as the major planning or program activities in his or her department which relate to the oil sands development area.

The third section of the survey sets forward sixty-two items of information. These items have been designed in

such a way that they can be related back to the planning/ policy information framework described in Section III of this report. The respondent is asked to do three things with this listing of information items. To check off whether an item of information has a high priority, medium priority, or low priotity and to do this in terms of both current data and projected data. If an item is not applicable then the part of the form in question is left blank, that is, no check off is made by the respondent. Finally, in order to obtain some integration between the rating of the information items and the planning/program areas of concern identified in Section 2 of the survey, we ask the respondent to insert the number or numbers of the planning/program areas identified beside the appropriate information items.

This survey technique is detailed but pre-testing of the form has led us to conclude that completion of the instrument should not be unduly difficult for the respondent. Moreover, we are of the opinion that it is most important that some degree of structure and integration be brought to the information requirements survey if information requirements are to be identified in such a way that the elements do not overlap, are comparable from department to department, and can be assessed in terms of a priority ordering.

The fourth section of the survey seeks to target the information requirements in further detail by asking the respondent to list the communities or areas within the oil

sands development region for which such information would be desirable.

Finally, the fifth section of the survey provides the respondent an opportunity to identify any further types of quantitative or qualitative information which he or she may regard as important and which has not been provided for in the earlier parts of the survey.

Exhibit 4:2 below sets forward the departments and agencies to which we believe the survey should be directed. The selection of departments was made on a judgemental basis and may well be revised after further discussions with AOSERP officials. Within these departments or some amended selection of departments, the survey should be directed to the individual or individuals identified, again on a judgemental basis, as having planning or program responsibilities relating to the oil sands development area.

Exhibit 4:3 below is the suggested covering letter for use with the survey.

The results of the survey will be manually tabulated and used to develop a set of information requirements matrices that can then be used in conjunction with the planning/policy information framework and the assessment of AOSERP research outputs.

EXHIBIT 4:1

A SURVEY OF INFORMATION NEEDS FOR PLANNING AND PROGRAM DEVELOPMENT IN THE ALBERTA OIL SANDS DEVELOPMENT REGION

Since 1975, the Human Systems Component of the Alberta Oil Sands Environmental Research Program has been carrying out a number of research studies on the various socio-economic impacts of oil sands development in Alberta. In order to ensure that the results of this research can be made most useful to departments and agencies having an interest in the oil sands development region, we are surveying the information requirements of such departments and agencies. We thank you for taking the time to complete and return this survey.

I.

1. Name, title, department, and telephone number of person completing this survey form.

   Name: _____

   Title: _____

   Department: _____

   Telephone Number: _____

2. Date survey completed:

		1979
Day	Month	

II.

3. Please identify below, in order of priority, what you consider to be the most important planning/program activities of your department/agency in the oil sands development region.

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

6. _____

_____

III.

4. Listed below are sixty-two items of information that are relevant to different aspects of planning and programming with respect to the oil sands development region. We would ask that you provide the following information only for those items that are pertinent to your own department's interests with respect to the oil sands development region.

(1) The priority you assign to obtaining current information on each item that is relevant to your department. The priority rating is:-

1. High
2. Medium
3. Low

(2) The priority you assign to obtaining projected information (i.e., future trends) in each item that is relevant to your department. The priority rating is:-

1. High
2. Medium
3. Low

(3) Taking into account the planning/program activities you identified in question 3 above, please write in the "planning applications" column of the form below, the number or numbers of the planning/program activity identified in question 3 that would be facilitated by information on a given item.

INFORMATION ITEM	Priority of Current Data	Priority of Projections	Planning Application
Population			
1. Age-Sex Profile			
2. Household Size and Composition			
3. Number of Dependent Persons (i.e., Children 15 or younger; adults 65 or older)			
4. Educational Composition by age, sex, occupation, native/non-native			
5. Occupational Composition by age, sex, occupation, native/ non-native			
6. Ethnic Composition by age, sex, occupation			
7. Income Pattern by age, sex, occupation, native/non-native			
8. Migration Patterns by age, sex, occupation, native/non-native			
9. Marital status by age, sex, occupation			
Employment and Labour Force			
10. Composition of Employment by occupation, education, age, sex, native/non-native			
11. Income by occupation, education, age, sex, industry, native/non-native			
12. Labour supply requirements by occupation, education, industry			
13. Changes in cost of living index			
14. Labour force participation rates by age, sex, occupation, education, native/non-native			

INFORMATION ITEM	Priority of Current Data	Priority of Projections	Planning Application
15. Labour turnover by occupation, education, industry, age, sex, native/non-native			
16. Union participation by occupation, education, industry, age, sex, native/non-native			
17. Unemployment rate by age, sex, education, occupation, industry, native/non-native			
Housing			
18. Composition of existing housing stock			
19. Length of occupancy			
20. Vacancy rate			
21. Tenure pattern			
22. Property values			
23. Projected housing requirements			
Education			
24. Teacher manpower requirements			
25. Physical plant requirements			
26. Costs of education			
27. Participation rates by age			
28. Teacher qualifications by age and sex			
29. Teacher/pupil ratios			
30. Drop-out rates			

INFORMATION ITEM	Priority of Current Data	Priority of Projections	Planning Application
Health			
31. Health manpower requirements			
32. Physical plant requirements			
33. Costs of health care			
34. Health professional population ratios			
35. Utilization rates by type of service by age and sex			
36. Death rates			
37. Absenteeism by age, sex, occupation and industry			
Consulting and Welfare Services			
38. Manpower requirements			
39. Physical plant requirements			
40. Costs of welfare services			
41. Utilization rates by type of service by age, sex, occupation, native/non-native			
Culture and Recreation			
42. Manpower requirements			
43. Physical plant			
44. Costs of cultural and recreational services			
45. Utilization rates by type of service by age, sex, occupation			

INFORMATION ITEM	Priority of Current Data	Priority of Projections	Planning Application
Protection (Police/Fire)			
46. Manpower requirements			
47. Rolling stock requirements			
48. Physical plant requirements			
Criminal Justice			
49. Volume and type of offences by age, sex, occupation, industry, native/non-native			
50. Patterns of disposition by age, sex, occupation, industry, native/non-native			
Municipal Administration			
51. Manpower requirements			
52. Physical plant requirements			
Physical Services and Regional Infrastructure			
53. Sewage system capacity requirements			
54. Sewage system cost factors			
55. Water system capacity requirements			
56. Water system cost factors			
57. Serviced land requirements by type of use			
58. Service land cost factors by type of use			
59. Transportation requirements			
60. Transportation cost factors			
61. Energy requirements			
62. Energy cost factors			

IV.

5. Please identify the communities or areas within the oil sands development area for which you would like to have the types of information you have identified above.

V.

6. Please identify any other types of information, qualitative or quantitative, which you feel would be useful to your department and which have not been identified above.

EXHIBIT 4:2

Departments to be Contacted in Survey of Information Requirements

Advanced Education and Manpower

Natural Resources Coordinating Council

Alberta Alcoholism & Drug Abuse Commission

Attorney General

Energy Resources Conservation Board

Business Development and Tourism

Northeast Alberta Regional Commission

Alberta Government Recreation Committee

Conservation and Utilization Committee

Alberta Housing Corporation

Alberta Oil Sands Technology and Research Authority

Culture

Education

Energy and Natural Resources

Environment

Environment Council of Alberta

Housing and Public Works

Labour

Municipal Affairs

Native Affairs

Recreation, Parks and Wildlife

Social Services and Community Health

Solicitor General

Transportation

EXHIBIT 4:3

Covering Letter for Information Requirements Survey

403 / 427-3943

15th Floor, Oxbridge Place
9820 - 106 Street
Edmonton, Alberta, Canada
T5K 2J6

ALBERTA OIL SANDS
ENVIRONMENTAL RESEARCH PROGRAM

15 January 1979

The Alberta Oil Sands Environmental Research Program has commissioned Dr. E. Harvey to establish an overall framework for the organization and development of information requirements related to the impacts of oil sands development on people in the Fort McMurray area.

We are particularly concerned that the research carried out under the auspices of the AOSERP - Human System program be pertinent to the information and planning needs of the interested agencies.

To ensure the accomplishment of this objective, Dr. Harvey is carrying out interviews with a wide range of persons and agencies. However, it is also essential that this information be supplemented by a broader range of information obtained through a mailed survey, a copy of which is enclosed.

I hope that you will take the time necessary to complete this survey. The results will be of great importance in assuring that the results of the AOSERP - Human System research program address the needs and priorities of agencies concerned with the impacts of oil sands development in Alberta.

Completed surveys should be mailed directly to:

Dr. E. Harvey
206 Roxborough Drive
Toronto, Ontario
M4W 1X8

Thank you for your co-operation.

Yours truly,

S.B. Smith
Program Director

EH/bcg

FOOTNOTES

1. Urban Dimensions Group, Inc., "A Review of a Report Entitled 'Longitudinal Study of Personal Adjustment and Social Conditions in the Fort McMurray Area'", Toronto, A Report Prepared for the Alberta Oil Sands Environmental Research Program, October, 1978.

V. ASSESSMENT OF SELECTED AOSERP OUTPUTS

A number of presently available AOSERP reports of earlier research were reviewed for the following reasons. First, this review of completed materials contributed to our development of a general analysis of the AOSERP-Human System research program. This general analysis has been helpful in shaping the design of the present study so that the information framework and models developed in the course of this study will make optimum use, where possible, of already completed work. Second, the review of completed reports was also directly useful in helping to specify the range of indicators and variables incorporated in the planning/policy information framework. Third, the review also served to identify the types of data resources that are in place as a result of these earlier studies as well as the types of data that will still have to be obtained.

This assessment process was carried out through reviews of eight of the eleven AOSERP reports detailed in Exhibit 2:1 above. The exceptions are the reports prepared by Earle Berger Ltd. which have been discussed in detail elsewhere[1] and the report by Dev-Cor Technical Services on "Training and Employing Indigenous Workers in AOSERP". The latter was regarded as a competently executed study but not of immediate relevance to the objectives of the present study.

In general terms, the eight reports in question reflect considerable variation in overall quality. Within this overall variation, the studies further vary in terms of their degree of theoretical orientation or integration and the extent to which data presented are qualitative or quantitative in character. It would appear that the usefulness of certain of these earlier studies can be maximized if they are related to and integrated, where feasible, in terms of a larger framework. It does not appear that the basis for such a larger framework is available in the studies in question. The "Development of a Theoretical Social Indicators Model" by Snider, for example, is essentially a literature review that does not yield a critical synthesis of the material or a policy relevant social indicators model. From a more data oriented point of view, the discussion of a traditional baseline data system by McVey is a useful examination of some of the very real difficulties that have to be dealt with if such a system is to be brought into place. The discussion of data strategies and evaluation of data sources found in this study would, of course, have been more useful if the discussion could have been related to a set of reference points with respect to information requirements and the uses to which the information is to be put. Explicit efforts are now being made to deal with this problem in the present study and are also reflected in the directions we have recommended below for the compendium study.

The studies of historical patterns by Parker and the community patterns by Van Dyke underscore the intriguing nature of such essentially qualitative data and the difficulties of applying such types of data with confidence to problems in planning and policy. This is particularly a problem in the case of the study by Van Dyke which uses, at points, methodological procedures that could give rise to wholly unacceptable levels of bias. The central difficulty is that there is no way, within the context of the study in question, of cross-validating reported results or relating such results to external criteria of validity. As discussed earlier in this report, this type of difficulty makes clear the need to develop an information framework that allows more systematic comparison and integration of qualitative and quantitative results across studies.

The studies of individual and family well-being by Larson and deviance by Johnson raise a further set of problems. The first of these is the difficulty of obtaining sufficiently reliable and robust data to provide an adequate base for planning and program development. Studies of social adjustment and social deviance are complicated by the intangible nature of aspects of these phenomena and the variable distribution of values and attitudes in the community. As a result of a paucity of relevant literature on social deviance in the oil sands region, Johnson found it necessary to rely substantially on the results of interviews with representatives of various protection and social service agencies. It must be borne in mind, however,

that this type of informant has opinions that are based on virtually daily exposure to marginal social behaviour. One must recognize that this may well result in a biased view of the very issues that are being investigated in the course of interviews with such respondents. Larson's treatment of individual and family adjustment processes under conditions of large scale resource development is generally theoretically sophisticated. However, one is left with the question of to what extent are adjustment patterns and processes within the frame of public policy. It may well be that planning, programming and policy development in these difficult areas of concern may be better served by examining the quantitative correlates of say, for example, deviance patterns, developing projections and providing for and targetting services accordingly.

Finally, the studies of native employment by the Canadian Institute for Research and local economic development by Nichols and Associates represent, in our view, generally competent research efforts directed toward specific and, in the planning and policy sense, generally manageable areas. Both of these areas of concern are, of course, currently under further investigation by the same investigators.

VI. ASSESSMENT OF OTHER REPORTS AND DOCUMENTARY MATERIALS

As in the case of the AOSERP research reports reviewed, the thirty-six additional reports assessed up to this point (see Exhibit 2:2 above) also vary substantially in quality and orientation. The review of these materials was carried out to further refine the indicators and variables included in the planning/policy information framework, to identify potentially useful sources of data and to identify methods that might be usefully applied in the filling of further data requirements. In the following comments on these studies, the numbers in parenthesis refer to the location of the bibliographic details in Exhibit 2:2.

Two of the studies examined, "Fort McMurray: Athabasca Tar Sands Development Strategy" (1) and"Urban Alternatives: Northeast Alberta" (30) were particularly useful in identifying overall planning and policy objectives in connection with the oil sands development area. The study of urban alternatives was particularly useful in identifying particular indicator areas and establishing the types and levels of data required for such indicators if they are to be effectively introduced into the planning/policy development process.

With respect to various types of basic statistical data, our examination of representative Alberta Bureau of Statistics publications (15, 20, 27) made clear that such published data are not available in a sufficiently

disaggregated form as to be particularly useful in meeting the information requirements identified in this report. Section VII below discusses in greater detail strategies for obtaining more disaggregated statistical data.

A number of impact assessment studies by companies planning or involved in developments in the oil sands region (13, 19, 31, 32, 36) and government responses to such reports (23), provide some data which could prove useful in augmenting the planning/policy information framework. The chief value of these materials however, from the point of view of the present study, is their contribution to identifying the types of indicators and variables that are most pertinent to the policy development process.

Other of the studies provide useful information, in addition to that already obtained through AOSERP research activities, in such areas as native training (3), the needs of the criminal justice system in communities experiencing the impact of resource development (6) and social service and health requirements peculiar to the Northeast region of Alberta (24).

Finally, a number of studies carried out in the Department of Advanced Education and Manpower provide useful information on certain of the population and employment/labour force variables identified earlier in the planning/policy information framework (10, 26, 28, 29, 35). These studies have considerable potential for application to the development of statistical projections as discussed in Section VII below in connection with the design of the

compendium study.

VII. DESIGN OF THE COMPENDIUM STUDY

In Section III of this report we outlined the various reasons for developing a planning/policy information framework. These reasons included the provision of a reference point against which departmental information requirements and AOSERP research outputs could be examined. In addition, the framework should serve the function of delineating the full range of socio-economic impact indicators and variables that are deemed to be appropriate on conceptual and pragmatic grounds. The development of a framework also provides an opportunity to address such questions as the relationship between baseline and projection data, the linkage of the information to planning and policy considerations, and the relationship between qualitative and quantitative data.

As pointed out above, the framework, as developed up to this point, resulted from analysis of the contents of a variety of reports, assessment of a number of statements of information requirements produced by various departments and individuals, and information gleaned in the course of personal interviews. In accordance with the mandate of the present study, we will continue to refine this framework and propose research strategies to obtain the necessary information.

The proposed statistical compendium study provides the appropriate opportunity to develop the empirical

dimensions of the planning/policy information framework. In general terms, the compendium study can address this objective in two ways. First, by assembling from existing statistical sources pertinent data that are not currently available or becoming available as a result of AOSERP research activities. Second, through the integration, where possible, of AOSERP research data with data from other sources. In addition to this fundamental objective, we believe that the compendium study should be designed in such a way that requirements for projections and longer term monitoring can also be addressed. These matters are now expanded upon in a discussion of the three major sub-components we envision as comprising the compendium study.

Compendium Sub-Component 1: Assembly and Integration of Existing Data

This component of the compendium study should take as its starting point the framework of indicators and variables developed in the conceptual model study. In addition to identifying indicators and variables on theoretical grounds, the conceptual model study will serve to identify existing or forthcoming data that will serve to give empirical substance to the planning/policy information framework. In addition, where such data are neither currently available nor forthcoming, the conceptual model study will serve to identify appropriate avenues for further research.

This component of the compendium study should result in the assembly and integration of the relevant data sources

required to make the planning/policy information framework empirically operational. The principal emphasis should be on working with existing data resources, such as completed or ongoing AOSERP research studies, other relevant research studies, census data, and statistical data available in the collections of various department/agencies of the Alberta government.

It is important to emphasize that, as far as possible, there should be an interactive process between the conceptual model study and this phase of the compendium study. The planning/policy information framework specifications established in the course of the conceptual model study set directions for this aspect of the compendium study while the empirically oriented work of this part of the compendium study serves to determine in greater detail the range of feasibility with respect to data requirements. In addition, given that the conceptual model study is also engaged in ascertaining the planning/policy development information requirements of various departments, interaction between the two studies will serve to focus the empirical activities of the compendium study on information requirement areas of high priority and practical utility.

In his report, "Structure of a Traditional Baseline Data System", McVey notes various of the problems of incomparability among various data collections and across different time periods.[1] Although we agree in part with his discussion of certain of these difficulties, it is our view

that a start must nonetheless be made on the assembly and integration of basic data. It is also our view that many of the difficulties inevitably encountered in this sort of process are better addressed (and potentially resolved) in the operational arena of working with the data rather than in the forum of a priori speculations. Moreover, to make the task more manageable and to ensure that priorities are properly identified and served, the guidelines for the assembly and integration of data should be closely linked to the actual informational priorities for planning and policy development. For example, the data evaluation carried out by McVey in "Structure of a Traditional Baseline Data System"[2] could have been more strategically focussed if a set of information priorities had been in place. As both priorities and feasibilities become clarified as a result of the work of and the interaction between the conceptual model and compendium study, we will be able to create an information framework with empirical substance and content that is administratively manageable and pertinent to the planning and policy development needs of departments and agencies concerned with the oil sands development area.

As Exhibit 8:1 below shows, Census Division 12 is compatible with the AOSERP target area. Within the census division, the enumeration area is the smallest unit for which data are available. Exhibit 8:2 provides details on a number of tabulations (based on 1976 census data) avail-

able for various enumeration areas within Census Division 12. With census data there are always problems of achieving comparability over time with respect to data and the geographical units for which such data are gathered. However, there are techniques available for achieving standardization or approximations of standardization. In addition, the census represents the most comprehensive source for many of the kinds of quantitative data identified in the planning/policy information framework. It is our view that census data represents the most appropriate starting point for the sub-component of the compendium study. It can serve to provide a foundation to which other forms of data can be added or related.

Compendium Sub-Component 2: Feasibility of Projections

The basic input to this study should be the identification of high priority areas for short (2 year) to medium (5 year) term projections as determined in the course of the conceptual model study.

This component of the compendium study should then undertake to determine the availability of sufficiently robust statistical series to provide a basis for the development of projections. Where standardization of statistical series is required, the techniques for obtaining this objective should be identified.

The conditional assumptions for the projections should next be developed and justified in terms of available data.

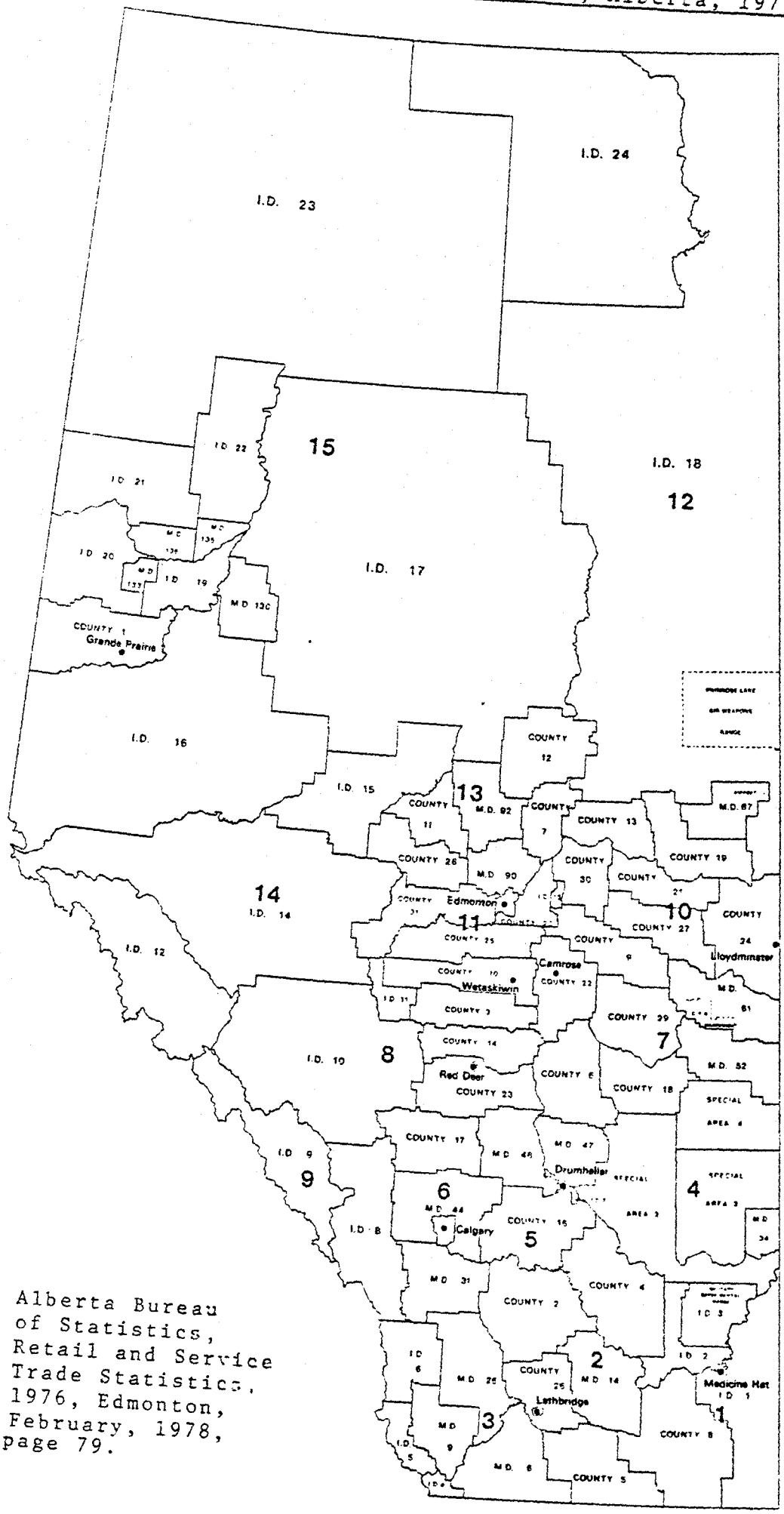
The possible usefulness of information from earlier completed qualitative studies in formulating these assumptions should not be overlooked.

The required projections should then be produced, preferably with alternate scenarios and statistical estimates of probable error.

Compendium Sub-Component 3: Requirements for Ongoing Monitoring

This component of the compendium study would be at a more modest level of effort than the two foregoing components described above. The fundamental objective of this component would be to reconcile data and administrative requirements by developing an operational plan designed to answer a number of questions, including: what sort of time schedules are appropriate for the periodic updating of various data elements? What arrangements are required for the continued collection of data? What cost sharing and staffing requirements are implied by these objectives? What sort of data dissemination mechanisms should be brought into place? The results of this component of the compendium study would provide fundamental input to the design of an ongoing socio-economic monitoring capability in the oil sands development region.

Exhibit 8:1 Census Divisions, Alberta, 1976



Source: Alberta Bureau of Statistics, Retail and Service Trade Statistics, 1976, Edmonton, February, 1978, page 79.

EXHIBIT 8:2

Description of 1976 Census of Canada Tabulations
Available by Enumeration Areas

ENUMERATION AREA	CENSUS TABULATIONS
EADEMA11	Pop. x Age (23) x Sex
EADEMA12	Pop. x Marital Status (6) x Sex
EADEMA21	Pop. x Mother Tongue (13) x Sex
EADEMB11	Pop. 15+ by School Attendance (6) x Sex
EADEMB12	Pop. 15+ by Level of Schooling (10) x Sex
EADEMB13	Pop. 5+ by Mobility Status (9) x Sex
EAECOB11	Pop. 15+ by L.F. Activity (7) x Age (6) x Sex
EAECOB21	Pop. 15+ by Labour Force Activity (7) by Level of Schooling (10) x Sex
EAECOB31	Pop. 15+ by Labour Force Activity (7) x Marital Status (6a) by Sex

ENUMERATION AREA	CENSUS TABULATIONS
EAFAMA11	Families x Family Type (5)
EAFAMA12	Families x Family Type (s) x Age Groups of Children at Home
EAFAMA13	Families x Number of Children at Home
EAFAMA14	Families Showing Total Number of Children at Home
EAFAMA15	Families x Age Groupings of Children (13) at Home
EAFAMA21	Husbands in Husband-Wife Families x Mother Tongue (8)
EAFAMA22	Wives in Husband-Wife Families x Mother Tongue
EAFAMA23	Lone Parent Families x Mother Tongue (8) x Sex of Parent
EAFAMA24	Lone Parent Families x Marital Status (6) x Sex of Parent
EAFAMA25	Families x Number of Persons (9)
EAFAMA26	Families x Total & Average Number of Persons
EAFAMB11	Husbands in Husband-Wife Families Showing Level of Schooling (10)
EAFAMB12	Wives in Husband-Wife Families Showing Level of Schooling (10)
EAFAMB13	Lone Parent Families Showing Sex by Level of Schooling (10) of Parent
EAFAMB21	Husbands in Husband-Wife Families x L.F. Activity (5)

ENUMERATION AREA	CENSUS TABULATIONS
EAFAMB22	Wives in Husband-Wife Families x L.F. Activity (5)
EAFAMB23	Lone Parent Families x Sex x Labour Force Activity (5) of Parent
EANFMA11	Non-Family Persons x Household Relationship (5) x Sex
EADHHA11	Occupied Private Dwellings x Tenure x Structural Type (9)
EADHHA12	Occupied Private Dwellings x Tenure x Type of Household (5)
EADHHA13	Private Households x Type of Household (13)
EADHHA21	Private Households x Marital Status x Sex of Head
EADHHA22	Private Households x Age (7) & Sex of Head
EADHHA23	Private Households x Number of Lodgers (6)
EADHHA24 A & B	Private Households Showing Total of Average Number of Lodgers
EADHHA25	Private Households x Number of Family Persons
EADHHA26A	Number of Family Persons in Private Households
EADHHA26B	Average Number of Family Persons Per Private Household

ENUMERATION AREA	CENSUS TABULATIONS
EADHHA27	Private Households x Number of Persons
EADHHA28A	Number of Persons in Private Households
EADHHA28B	Average Number of Persons Per Private Household
EADHHA29	Private Households x Number of Families

FOOTNOTES

1. Alberta Oil Sands Environmental Research Program, "Structure of a Traditional Baseline Data System", A Report Prepared by W. McVey, Edmonton, Alberta Environment and Environment Canada, December 1976, pp. 6-8.

2. Ibid. Appendix 1, pp. 1-43.

VIII. DESIGN OF THE SOCIAL IMPACT STUDY

The final report of the second phase of this study will set forward specifications for the design of the proposed study of social impacts. For the purposes of the present report, some general and preliminary comments are made.

Exhibit 9:2 below provides, in diagrammatic terms, a view of the linkage of the study of social impacts to certain components of the overall AOSERP research effort. Specifically, the study of social impacts will provide an opportunity to synthesize the results of the present study, the compendium study and the study of human adjustment. However, it is evident that other AOSERP studies are also likely to have implications for the analysis of the social impact process and these other sources of data will be incorporated, as required, into the study of social impacts.

The study of social impacts will also provide an opportunity to gather any further pertinent data not obtained in the course of earlier studies. This filling of remaining data gaps will be secondary, however, to the principal objective of using the study to investigate and analyze in detail the causal patterns and mechanisms underlying the socio-economic impact process.

These interconnected activities will have to be specified and defined with precision such that they lead to the attainment of the fundamental objective of the social

impact study, that is, the development of general, planning and policy relevant models that can be applied to the analysis, prevention and amelioration of oil sands development related impacts in other parts of the province and, even more generally, will contribute to the level of knowledge about the social impact implications of large scale resource developments.

IX. WORK TO BE DONE

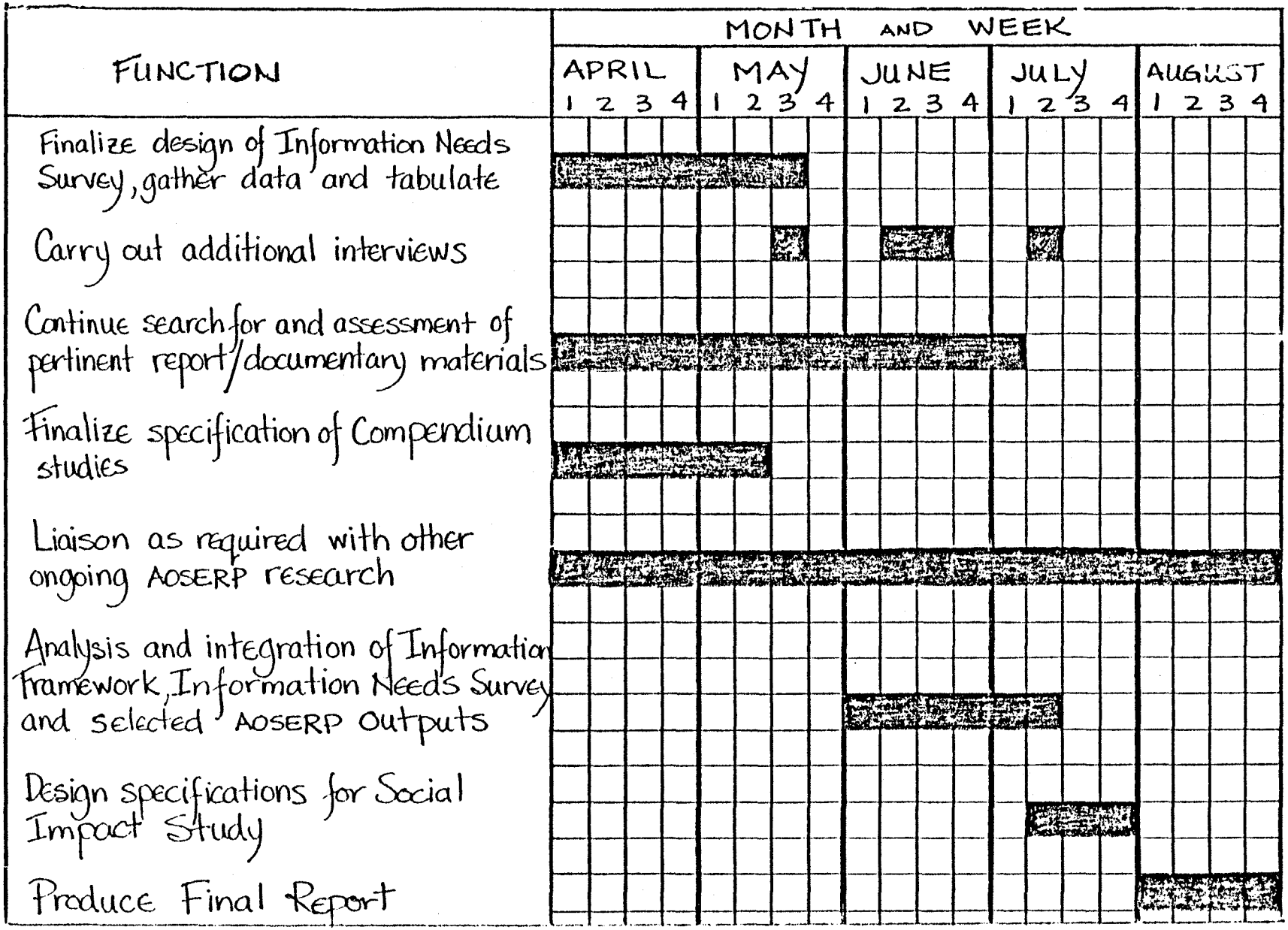
Exhibit 9:1 below sets forward the timeframe chart for the various activities required to complete this study. Exhibit 9:2 sets forward an analysis of the present study in terms of its principal components and the staging of these components and the relationship between the present study and the ultimate objective of carrying out a major study of social impacts in the oil sands development area. Each of these exhibits will now be discussed in greater detail.

The timeframe chart identifies the major activities that still remain to be carried out in order to complete the present study. As a result of discussions of this interim report the final revisions will be made to the design of the information needs survey, and the population to which it will be directed. The surveys will then be mailed out and the data tabulated as they are returned. Where necessary, follow-up inquiries will be made with respondents to the survey. It is estimated that this process will take place over a period of seven weeks

The various interviews which have been carried out to date in the study have proven helpful in defining the range of issues to be investigated and in clarifying the relationships between the various components of the present study, and the relationship of this study to certain other AOSERP studies. We will continue to carry out interviews during the second phase of the present study. The objective of this continued interviewing process will be to gather

EXHIBIT 9:1

Timeframe for Phase II of "A Conceptual Model for Study of Impacts of Oil Sands Development on People in the Fort McMurray Area



information, on an on-going basis, that will usefully add to our context of interpretation particularly when the results of the information needs survey, the planning/policy information framework, and various AOSERP research outputs are examined in relationship to one another. The interviews will also be of value in identifying the organizational and operational parameters within which study results will have to be applied. The interviews, in short, will be strategically focussed and will involve individuals or sectors that emerge as important in the continuation of the present study. It would be antithetical to the intended purpose of these interviews if we were to at this point in time draw up some arbitrary list of individuals or jurisdictions to be interviewed. In fact, our procedures for selecting individuals to be interviewed will continue to follow, at least in part, the so-called "snowball" method by which targets for interview are identified on the basis of recommendations of individuals already interviewed.

Although the first phase of this study has carried out a relatively comprehensive search for existing research and documentary materials, this search process will form an on-going component of the second phase of the study. One of the purposes served by the on-going interviews will be to seek out pertinent materials or other forms of documentation that may be relevant to concerns of this study and the anticipated larger study of social impacts.

It is recognized that some pertinent material may not be readily available in the public domain and can only be identified through this type of personal consultation.

It is our expectation that by the middle of May 1979, specifications should be finalized for the various sub-components of the compendium study described earlier in this document. As mentioned there, it is important that the various components of the study be strategically focussed to optimize the usefulness and integration of data already gathered and to provide appropriate levels of data support to certain studies currently underway or intended to be carried out in the future.

Throughout the second phase of this study, liaison will be maintained as required with other AOSERP studies that are particularly pertinent to the present study. These other studies include, in particular, the study of human adjustment and the compendium study. Liaison would also be valuable in the case of the studies of service delivery, the development of the commercial sector, and the integration of native workers into the industrial labour force.

By the beginning of June 1979, work will commence on the analysis and integration of the planning/policy information framework, the results of the information needs survey and the available outputs from various AOSERP research projects. Discussions and meetings will be held during this period to ensure that the outputs of this critical phase

meet the objectives of the study and are formulated in such a way that the outputs will be of practical use in the planning and policy development process.

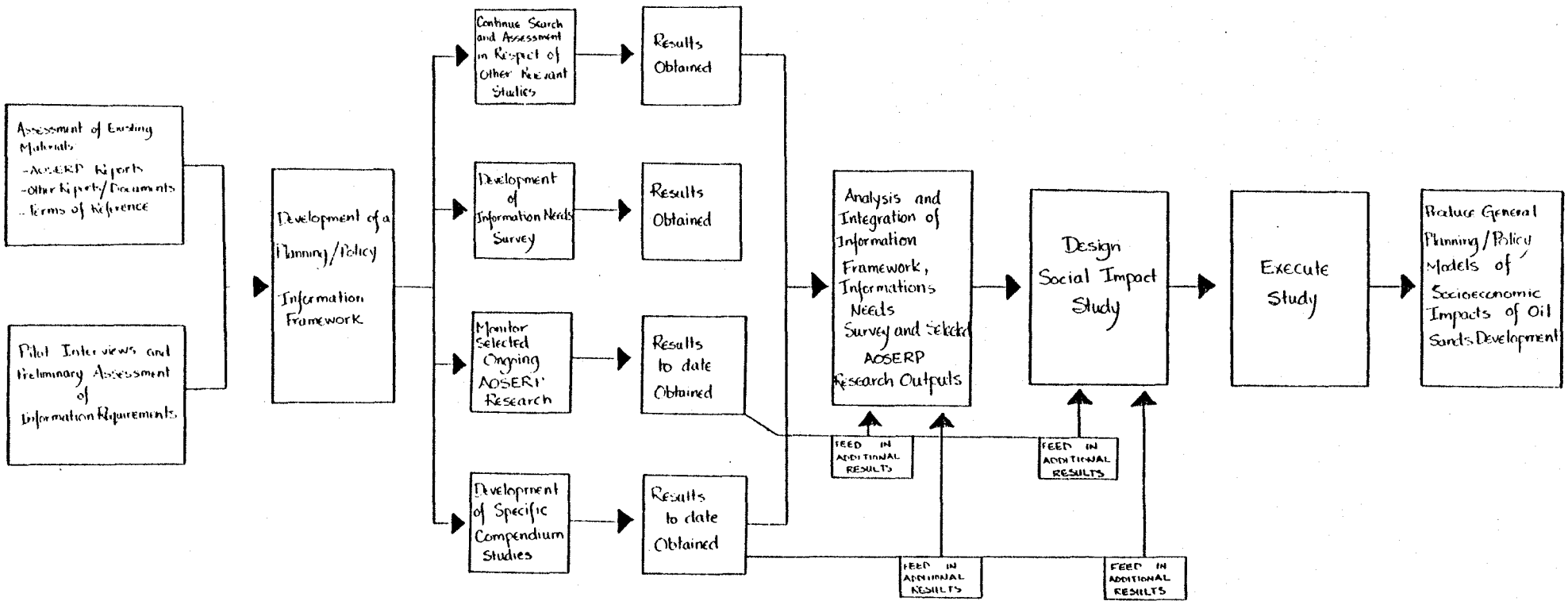
The proposed study of social impacts is, in our view, the strategic opportunity to integrate a wide range of AOSERP results with general models of the social impact process that will be of direct practical value in the amelioration of the consequences of oil sands development and the development of a pro-active approach to planning and policy development initiatives related to such impacts. By the end of the first week in July, work on the various other components of the project should be sufficiently advanced or completed to permit a precise formulation of the components and objectives that should be incorporated in the proposed study of social impact.

Finally, the final report in respect of this study will be prepared during the month of August 1979 to be tabled early in September 1979.

Exhibit 9:2 below does not contain any components which have not been described in the comments above. It does serve, however, to illustrate the flow relationships between the various components of the present study and how these relate to the future objectives of the proposed study of social impact.

EXHIBIT 9:2

The Production of General Planning/Policy Models of Socioeconomic Impact of Oil Sands Development: Components and Process



X. INTERIM RECOMMENDATIONS

1. Arrangements should be put in place to facilitate better feedback to the Steering Committee for the Human System Research Program with respect to the results obtained from the various commissioned research projects. The Steering Committee could play a valuable role in identifying planning and policy development applications with respect to the information gathered but in order to carry out this role effectively, needs feedback in a timely and regular fashion.
2. It would be desirable to identify and operationalize a core group of research and planning experts in various departments of the Alberta government who have an interest in the oil sands development region. Such a group could play an important role in ensuring that the results of various research studies are made optimal use of with respect to their planning and policy development potential.
3. In general, the AOSERP-Human System Research Program is reaching a point where a high priority should be assigned to the overall integration of the results obtained. This integration should serve to identify what is known, and what still needs to be found out. It should serve to specify more precisely the possible planning applications of the information obtained and should address other important questions as well such as the linkage between baseline data and projection data, and the linkage

between quantitative data and qualitative data.

4. Fort McMurray is a useful setting for analyzing the impacts of oil sands development and, in particular, attempting to reconstruct certain aspects of this process. However, AOSERP should give some consideration to the advisability of carrying out studies of socio-economic impact in communities where the development process is just starting.